99

Letting November 6, 2020

Notice to Bidders, Specifications and Proposal

Illinois Department of Transportation

Contract No. 89766
PEORIA County
Section 16-00368-01-PV (City Of Peoria)
Routes FAU 6594 & FAP 671 (Western Ave. & Il 8)
Project XMWJ-817 ()
District 4 Construction Funds

Prepared by	F
Checked by	

(Printed by authority of the State of Illinois)

Illinois Department of Transportation

NOTICE TO BIDDERS

1. **TIME AND PLACE OF OPENING BIDS.** Electronic bids are to be submitted to the electronic bidding system (iCX-Integrated Contractors Exchange). All bids must be submitted to the iCX system prior to 12:00 p.m. November 6, 2020 at which time the bids will be publicly opened from the iCX SecureVault.

2. **DESCRIPTION OF WORK**. The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

   Contract No. 89766
   PEORIA County
   Section 16-00368-01-PV (City Of Peoria)
   Project XMWJ-817 ()
   Routes FAU 6594 & FAP 671 (Western Ave. & Il 8)
   District 4 Construction Funds

Reconstruction of Western Ave, from Adams Street to Lincoln Avenue and a portion of IL 8, from Lincoln Avenue to Howett St in Peoria.

3. **INSTRUCTIONS TO BIDDERS**. (a) This Notice, the invitation for bids, proposal and letter of award shall, together with all other documents in accordance with Article 101.09 of the Standard Specifications for Road and Bridge Construction, become part of the contract. Bidders are cautioned to read and examine carefully all documents, to make all required inspections, and to inquire or seek explanation of the same prior to submission of a bid.

   (b) State law, and, if the work is to be paid wholly or in part with Federal-aid funds, Federal law requires the bidder to make various certifications as a part of the proposal and contract. By execution and submission of the proposal, the bidder makes the certification contained therein. A false or fraudulent certification shall, in addition to all other remedies provided by law, be a breach of contract and may result in termination of the contract.

4. **AWARD CRITERIA AND REJECTION OF BIDS**. This contract will be awarded to the lowest responsive and responsible bidder considering conformity with the terms and conditions established by the Department in the rules, Invitation for Bids and contract documents. The issuance of plans and proposal forms for bidding based upon a prequalification rating shall not be the sole determinant of responsibility. The Department reserves the right to determine responsibility at the time of award, to reject any or all proposals, to re-advertise the proposed improvement, and to waive technicalities.

By Order of the
Illinois Department of Transportation

Omer Osman,
Acting Secretary

CONTRACT 89766

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2020

This index contains a listing of SUPPLEMENTAL SPECIFICATIONS, frequently used RECURRING SPECIAL PROVISIONS, and LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS.

ERRATA Standard Specifications for Road and Bridge Construction (Adopted 4-1-16) (Revised 1-1-20)

SUPPLEMENTAL SPECIFICATIONS

RECURRING SPECIAL PROVISIONS

The following RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS

The following LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

SPECIAL PROVISION
TABLE OF CONTENTS

BDE SPECIAL PROVISIONS

The following special provisions indicated by an "X" are applicable to this contract. An * indicates a new or revised special provision for the letting.

	File Name	Pg.		Special Provision Title	Effective	Revised
	80099			Accessible Pedestrian Signals (APS)	April 1, 2003	April 1, 2020
	80274	302	X	Aggregate Subgrade Improvement	April 1, 2012	April 1, 2016
	80192			Automated Flagger Assistance Device	Jan. 1, 2008	
	80173			Bituminous Materials Cost Adjustments	Nov. 2, 2006	Aug. 1, 2017
	80246			Bituminous Surface Treatment with Fog Seal	Jan. 1, 2020	
	80241			Bridge Demolition Debris	July 1, 2009	
	5026I			Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5048I			Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5049I			Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5053I			Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
	80425			Cape Seal	Jan. 1, 2020	
	80384	305	X	Compensable Delay Costs	June 2, 2017	April 1, 2019
	80198			Completion Date (via calendar days)	April 1, 2008	
	80199			Completion Date (via calendar days) Plus Working Days	April 1, 2008	
	80293			Concrete Box Culverts with Skews > 30 Degrees and Design Fills ≤ 5 Feet	April 1, 2012	July 1, 2016
	80311			Concrete End Sections for Pipe Culverts	Jan. 1, 2013	April 1, 2016
	80277			Concrete Mix Design – Department Provided	Jan. 1, 2012	April 1, 2016
	80261			Construction Air Quality – Diesel Retrofit	June 1, 2010	Nov. 1, 2014
	80387			Contrast Preformed Plastic Pavement Marking	Nov. 1, 2017	
	80029	309	X	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Mar. 2, 2019
	80402	319	X	Disposal Fees	Nov. 1, 2018	
	80378	321	X	Dowel Bar Inserter	Jan. 1, 2017	Jan. 1, 2018
	80405			Elastomeric Bearings	Jan. 1, 2019	
	80421	328	X	Electric Service Installation	Jan. 1, 2020	
	80415	330	X	Emulsified Asphalts	Aug. 1, 2019	
	80423	333	X	Engineer's Field Office Laboratory	Jan. 1, 2020	
	80388	336	X	Equipment Parking and Storage	Nov. 1, 2017	
	80229			Fuel Cost Adjustment	April 1, 2009	Aug. 1, 2017
	80417	337	X	Geotechnical Fabric for Pipe Underdrains and French Drains	Nov. 1, 2019	
	80420			Geotextile Retaining Walls	Nov. 1, 2019	
*	80304	339	X	Grooving for Recessed Pavement Markings	Nov. 1, 2012	Nov. 1, 2020
*	80422			High Tension Cable Median Barrier Reflectors	Jan. 1, 2020	Nov. 1, 2020
	80416	341	X	Hot-Mix Asphalt – Binder and Surface Course	July 2, 2019	Nov. 1, 2019
	80398	348	X	Hot-Mix Asphalt – Longitudinal Joint Sealant	Aug. 1, 2018	Nov. 1, 2019
	80406			Hot-Mix Asphalt – Mixture Design Verification and Production (Modified for I-FIT Data Collection)	Jan. 1, 2019	Jan. 2, 2020
	80347			Hot-Mix Asphalt – Pay for Performance Using Percent Within Limits – Jobsite Sampling	Nov. 1, 2014	July 2, 2019
	80383			Hot-Mix Asphalt – Quality Control for Performance	April 1, 2017	July 2, 2019
	80411	352	X	Luminaires, LED	April 1, 2019	
	80393	361	X	Manholes, Valve Vaults, and Flat Slab Tops	Jan. 1, 2018	Mar. 1, 2019
	80045	363	X	Material Transfer Device	June 15, 1999	Aug. 1, 2014
*	80418			Mechanically Stabilized Earth Retaining Walls	Nov. 1, 2019	Nov. 1, 2020
	80424			Micro-Surfacing and Slurry Sealing	Jan. 1, 2020	
	80428	365	X	Mobilization	April 1, 2020	
	80165			Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
	80412			Obstruction Warning Luminaires, LED	Aug. 1, 2019	
	80349			Pavement Marking Blackout Tape	Nov. 1, 2014	April 1, 2016
	80371	366	X	Pavement Marking Removal	July 1, 2016	
	80389	367	X	Portland Cement Concrete	Nov. 1, 2017	

File Name	Pg.		Special Provision Title	Effective	Revised
80430	368	X	Portland Cement Concrete – Haul Time	July 1, 2020	
80359			Portland Cement Concrete Bridge Deck Curing	April 1, 2015	Nov. 1, 2019
80431			Portland Cement Concrete Pavement Patching	July 1, 2020	
80432	369	X	Portland Cement Concrete Pavement Placement	July 1, 2020	
80300			Preformed Plastic Pavement Marking Type D - Inlaid	April 1, 2012	April 1, 2016
3426I			Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157			Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80306	370	X	Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS)	Nov. 1, 2012	Jan. 2, 2020
80407	380	X	Removal and Disposal of Regulated Substances	Jan. 1, 2019	Jan. 1, 2020
80419	391	X	Silt Fence, Inlet Filters, Ground Stabilization and Riprap Filter Fabric	Nov. 1, 2019	April 1, 2020
80395			Sloped Metal End Section for Pipe Culverts	Jan. 1, 2018	
80340			Speed Display Trailer	April 2, 2014	Jan. 1, 2017
80127			Steel Cost Adjustment	April 2, 2014	Aug. 1, 2017
80408			Steel Plate Beam Guardrail Manufacturing	Jan. 1, 2019	
80413	397	X	Structural Timber	Aug. 1, 2019	
80397	398	X	Subcontractor and DBE Payment Reporting	April 2, 2018	
80391	399	X	Subcontractor Mobilization Payments	Nov. 2, 2017	April 1, 2019
80317			Surface Testing of Hot-Mix Asphalt Overlays	Jan. 1, 2013	Aug. 1, 2019
80298			Temporary Pavement Marking	April 1, 2012	April 1, 2017
80403			Traffic Barrier Terminal, Type 1 Special	Nov. 1, 2018	
80409	400	X	Traffic Control Devices – Cones	Jan. 1, 2019	
80410			Traffic Spotters	Jan. 1, 2019	
20338	401	X	Training Special Provisions	Oct. 15, 1975	
80318			Traversable Pipe Grate for Concrete End Sections	Jan. 1, 2013	Jan. 1, 2018
80429			Ultra-Thin Bonded Wearing Course	April 1, 2020	
80288	404	X	Warm Mix Asphalt	Jan. 1, 2012	April 1, 2016
80302	406	X	Weekly DBE Trucking Reports	June 2, 2012	April 2, 2015
80414			Wood Fence Sight Screen	Aug. 1, 2019	April 1, 2020
80427	407	X	Work Zone Traffic Control Devices	Mar. 2, 2020	
80071			Working Days	Jan. 1, 2002	

The following special provisions are in the 2020 Supplemental Specifications and Recurring Special Provisions.

File Name	Special Provision Title	New Location(s)	Effective	Revised
80404	Coarse Aggregate Quality for Micro-Surfacing and Cape Seals	Article 1004.01(b)	Jan. 1, 2019	
80392	Lights on Barricades	Articles 701.16, 701.17(c)(2) & 603.07	Jan. 1, 2018	
80336	Longitudinal Joint and Crack Patching	Check Sheet #36	April 1, 2014	April 1, 2016
80400	Mast Arm Assembly and Pole	Article 1077.03(b)	Aug. 1, 2018	
80394	Metal Flared End Section for Pipe Culverts	Articles 542.07(c) and 542.11	Jan. 1, 2018	April 1, 2018
80390	Payments to Subcontractors	Article 109.11	Nov. 2, 2017	

The following special provisions have been deleted from use.

File Name	Special Provision Title	Effective	Revised
80328	Progress Payments	Nov. 2, 2013	

GUIDE BRIDGE SPECIAL PROVISION INDEX/CHECK SHEET

Effective as of the: November 8, 2019 Letting

Pg #	√	File Name	Title	Effective	Revised
		GBSP 4	Polymer Modified Portland Cement Mortar	June 7, 1994	Apr 1, 2016
		GBSP 12	Drainage System	June 10, 1994	Jun 24, 2015
		GBSP 13	High-Load Multi-Rotational Bearings	Oct 13, 1988	Apr 1, 2016
		GBSP 14	Jack and Remove Existing Bearings	April 20, 1994	April 13, 2018
		GBSP 15	Three Sided Precast Concrete Structure	July 12, 1994	Dec 21, 2016
		GBSP 16	Jacking Existing Superstructure	Jan 11, 1993	April 13, 2018
		GBSP 17	Bonded Preformed Joint Seal	July 12, 1994	Aug 9, 2019
		GBSP 18	Modular Expansion Joint	May 19, 1994	Aug 9, 2019
		GBSP 21	Cleaning and Painting Contact Surface Areas of Existing Steel Structures	June 30, 2003	Aug 9, 2019
		GBSP 25	Cleaning and Painting Existing Steel Structures	Oct 2, 2001	Apr 22, 2016
		GBSP 26	Containment and Disposal of Lead Paint Cleaning Residues	Oct 2, 2001	Apr 22, 2016
		GBSP 28	Deck Slab Repair	May 15, 1995	April 13, 2018
		GBSP 29	Bridge Deck Microsilica Concrete Overlay	May 15, 1995	March 1, 2019
		GBSP 30	Bridge Deck Latex Concrete Overlay	May 15, 1995	Oct 20, 2017
		GBSP 31	Bridge Deck High-Reactivity Metakaolin (HRM) Conc Overlay	Jan 21, 2000	March 1, 2019
		GBSP 33	Pedestrian Truss Superstructure	Jan 13, 1998	Dec 29, 2014
		GBSP 34	Concrete Wearing Surface	June 23, 1994	Oct 4, 2016
		GBSP 35	Silicone Bridge Joint Sealer	Aug 1, 1995	Oct 15, 2011
		GBSP 45	Bridge Deck Thin Polymer Overlay	May 7, 1997	Feb 6, 2013
409	X	GBSP 51	Pipe Underdrain for Structures	May 17, 2000	Jan 22, 2010
		GBSP 53	Structural Repair of Concrete	Mar 15, 2006	Aug 9, 2019
		GBSP 55	Erection of Curved Steel Structures	June 1, 2007	
		GBSP 56	Setting Piles in Rock	Nov 14, 1996	Apr 1, 2016
		GBSP 59	Diamond Grinding and Surface Testing Bridge Sections	Dec 6, 2004	Mar 29, 2017
		GBSP 60	Containment and Disposal of Non-Lead Paint Cleaning Residues	Nov 25, 2004	Apr 22, 2016
		GBSP 61	Slipform Parapet	June 1, 2007	March 1, 2019
		GBSP 67	Structural Assessment Reports for Contractor's Means and Methods	Mar 6, 2009	Oct 5, 2015
		GBSP 71	Aggregate Column Ground Improvement	Jan 15, 2009	Oct 15, 2011
		GBSP 72	Bridge Deck Fly Ash or GGBF Slag Concrete Overlay	Jan 18, 2011	March 1, 2019
		GBSP 75	Bond Breaker for Prestressed Concrete Bulb-T Beams	April 19, 2012	
		GBSP 77	Weep Hole Drains for Abutments, Wingwalls, Retaining Walls And Culverts	April 19, 2012	Oct 22, 2013
		GBSP 78	Bridge Deck Construction	Oct 22, 2013	Dec 21, 2016
		GBSP 79	Bridge Deck Grooving (Longitudinal)	Dec 29, 2014	Mar 29, 2017
		GBSP 81	Membrane Waterproofing for Buried Structures	Oct 4, 2016	March 1, 2019
		GBSP 82	Metallizing of Structural Steel	Oct 4, 2016	Oct 20, 2017
		GBSP 83	Hot Dip Galvanizing for Structural Steel	Oct 4, 2016	Oct 20, 2017
		GBSP 85	Micropiles	Apr 19, 1996	Aug 9, 2019
		GBSP 86	Drilled Shafts	Oct 5, 2015	Oct 4, 2016
		GBSP 87	Lightweight Cellular Concrete Fill	Nov 11, 2011	Apr 1, 2016
		GBSP 88	Corrugated Structural Plate Structures	Apr 22, 2016	April 13, 2018
		GBSP 89	Preformed Pavement Joint Seal	Oct 4, 2016	March 1, 2019
		GBSP 90	Three Sided Precast Concrete Structure (Special)	Dec 21, 2016	April 13, 2018
		GBSP 91	Crosshole Sonic Logging Testing of Drilled Shafts	Apr 20, 2016	Aug 9, 2019
		GBSP 92	Thermal Integrity Profile Testing of Drilled Shafts	Apr 20, 2016	

Pg #	√	File Name	Title	Effective	Revised
		GBSP 93	Preformed Bridge Joint Seal	Dec 21, 2016	March 1, 2019
		GBSP 94	Warranty for Cleaning and Painting Steel Structures	Mar 3, 2000	Nov 24, 2004
		GBSP 95	Bituminous Coated Aggregate Slopewall	Mar 21, 1997	Mar 19, 2018
		GBSP 96	Erection of Bridge Girders Over or Adjacent to Railroads	Aug 9, 2019	

LIST ANY ADDITIONAL SPECIAL PROVISIONS BELOW

The following Guide Bridge Special Provisions have been incorporated into the 2016 Standard Specifications:

File Name	Title	Std Spec Location
GBSP32	Temporary Sheet Piling	522
GBSP38	Mechanically Stabilized Earth Retaining Walls	522
GBSP42	Drilled Soldier Pile Retaining Wall	522
GBSP43	Driven Soldier Pile Retaining Wall	522
GBSP44	Temporary Soil Retention System	522
GBSP46	Geotextile Retaining Walls	522
GBSP57	Temporary Mechanically Stabilized Earth Retaining Walls	522
GBSP62	Concrete Deck Beams	504
GBSP64	Segmental Concrete Block Wall	522
GBSP65	Precast Modular Retaining Wall	522
GBSP73	Cofferdams	2017 Supp
GBSP74	Permanent Steel Sheet Piling (LRFD)	522
GBSP76	Granular Backfill for Structures	2017 Supp
GBSP80	Fabric Reinforced Elastomeric	1028
GBSP84	Precast, Prestressed Concrete Beams	2017 Supp

The following Guide Bridge Special Provisions have been discontinued or have been superseded:

File Name	Title	Disposition:
GBSP70	Braced Excavation	Use TSRS per Sec 522
GBSP95	Bridge Deck Concrete Sealer	Use July 1, 2012 version for Repair projects only

STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction, adopted April 1, 2016, revised January 1, 2020", the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", and the “Manual of Test Procedures for Materials” in effect on the date of invitation for bids, and the "Supplemental Specifications and Recurring Special Provisions" indicated on the Check Sheet included herein, which apply to and govern the construction of Contract 89766 – Western Avenue Reconstruction project and in case of conflict with any part, or parts, of said Specifications, the said Special Provisions shall take precedence and shall govern.

LOCATION OF PROJECT

The project is located on Western Avenue (FAU 6594) from Adams Street to Lincoln Avenue and includes a portion of Western Avenue (Illinois Route 8 (FAP 671)) from Lincoln Avenue to Howett Street all in the City of Peoria.

DESCRIPTION OF PROJECT

The Western Avenue Project consists of the reconstruction of Western Avenue to a 3-lane section from Adams Street to Lincoln Avenue. The improvements include new PCC and HMA pavement, curb and gutter, sidewalks, storm sewers, traffic signals, lighting, pervious bicycle lanes, retaining walls, fencing, pavement markings and other incidentals items described in the plans and these special provisions.

A mill and overlay will be constructed on the section of Western Avenue that carries Illinois Route 8 between Lincoln Avenue and Howett Street. Upon completion of the overlay, permanent pavement markings will be placed on the roadway.

CONTACT INFORMATION

The City of Peoria’s Project Manager will be Jane Gerdes, P.E., she can be reached at 309-494-8800.

PROSECUTION AND PROGRESS OF WORK

Special attention is called to Section 108 of the "Standard Specifications for Road and Bridge Construction,” and specifically to Article 108.03, which states that the Contractor shall notify the City at least twenty-four (24) hours in advance of either discontinuing or resuming operations. If a City representative is not on the job and notification as required has been given, the Contractor in charge of the work shall immediately notify the City, that work has been resumed and requests that the City representative in charge of the work be notified.

Work performed without proper notification to the City as indicated herein may be rejected by the City and no compensation will be made for said work. In addition, the Contractor may be required to remove the item of construction at its own expense and replace the item of construction in accordance with the specifications.

COMPLETION DATE PLUS WORKING DAYS

The completion date for the project shall be December 30, 2022, plus 10 working days.

The assessment of liquidated damages in accordance with Article 108.09 of the Standard Specifications shall be defined with respect to the following substantial completion dates and final completion dates for the project.

Completion Date (Stage 1A, 1B & 1C – Malone Street to Howett Street). Stage 1A, 1B & 1C shall be substantially complete by December 31, 2021. Northbound and Southbound approach traffic shall be detoured. The section of Western Avenue from Malone Street to Howett Street will be closed to thru traffic. Construction operations to be performed during this time period shall include all work necessary to complete all removals; install underground utilities; construct all pavements, curbs, sidewalks, lighting, and pavement markings as shown in the plans, and other work necessary to open the road to traffic. The full amount of liquidated damages as specified herein will be assessed per calendar day should the Contractor fail to complete the specified work on or before midnight, December 31, 2021. A total of ten (10) working days will be allowed beyond the Final Completion Date for completion of landscaping including topsoil, sod, and plant material.

During winter shutdown, Western Avenue shall be opened to two-way traffic from January 1, 2022 until March 1, 2022 unless otherwise approved by the Engineer.

Completion Date (Stage 2A 2B & 2C – Adams Street to Malone Street). Stage 2A, 2B & 2C shall be substantially complete by December 30, 2022. Northbound and Southbound approach traffic shall be detoured. The section of Western Avenue from Adams to Malone Street will be closed to thru traffic. One-way westbound traffic on Jefferson Street shall be detoured to Washington Street via Greenlawn Street. Construction operations to be performed during this time period shall include all work necessary to complete all removals; install underground utilities; construct all pavements, curbs, sidewalks, lighting, and pavement markings as shown in the plans, and other work necessary to open the road to traffic. The full amount of liquidated damages as specified herein will be assessed per calendar day should the Contractor fail to complete the specified work on or before midnight Friday, December 30, 2022. A total of ten (10) working days will be allowed beyond the Final Completion Date for completion of landscaping including topsoil, sod, and plant material.

Final Completion Date
All remaining construction work for the project required to open the facilities to normal traffic shall be completed by midnight, December 30, 2022. Completed construction work shall include all major items of work, signage, pavement markings, and signals so that the roadways, bike path, and sidewalks can be opened to normal traffic. It is the City of Peoria's intent that all major items of work as specified in the contract will be completed on or before the final completion date. The

full amount of liquidated damages as specified herein shall be assessed per calendar day should the Contractor fail to complete the specified work on or before midnight, December 30, 2022.

A total of ten (10) working days will be allowed beyond the Final Completion Date for completion of landscaping for Stage 2 including topsoil, sod, and plant material, cleanup work, and punch list items.

The provisions for the completion date shall be as set forth in Section 108 of the Standard Specifications. All applicable provisions of Section 108 shall apply. The contractor should note that these completion dates are based on an expedited work schedule.

CONSTRUCTION ON PRIVATE PROPERTY

Whenever excavation is made within a temporary or permanent construction easement, including tree planting easements, on private property for driveways, sidewalks, steps, retaining walls, utility connections, tree plantings or other construction, the topsoil disturbed by the excavation operations shall be restored as nearly as possible to its original position and the whole area involved in the construction operation shall be left in a neat and presentable condition.

The Contractor shall use reasonable care to avoid disturbing portions of private property not necessary to the construction operations. If, in the judgment of the Engineer, areas are disturbed unnecessarily, the Contractor shall restore these areas at his own expense. The Contractor shall not pile excavated material outside the limits of the Right-of-Way upon adjacent private property without the written consent of the property owner and the Engineer.

The cost of compliance with this Special Provision will not be paid for separately but shall be considered, as included in the cost of the EARTH EXCAVATION pay item and no additional compensation will be allowed.

DAMAGE TO EXISTING TREES

All necessary precautions shall be taken to prevent damage to existing trees. Precautions shall be taken to prevent damage to the bark, branches and foliage of existing trees by machinery or other means. Any damage shall be corrected as directed by the City at the expense of the Contractor.

EXISTING UNDERGROUND FACILITIES

City of Peoria assumes no responsibility for the presence, specific size or location of underground distribution systems of the several public utility corporations. No responsibility for the protection of said underground systems will be assumed by City of Peoria. If such protection is found to be necessary for water mains, gas mains, steam mains, underground electrical distribution systems, underground telephone circuit systems or any other underground systems of City Ownership, the cost of same, in whole or in part, is disclaimed of City of Peoria.

COOPERATION WITH UTILITY COMPANIES

It is understood and agreed that the Contractor has considered, in their bid, all the permanent and temporary utility appurtenances in their present or relocated positions and that no additional compensation will be allowed for any delays, inconvenience or damage sustained by the contractor due to any interference from the said utility appurtenances or the operations of moving them.

All telephone, cableway, fiber, gas, water and wire lines, within the limits of the proposed construction owned by various utility companies, are to be moved by the owners of the utility involved at the owner's expense.

NOTIFICATION OF UTILITIES PRIOR TO CONSTRUCTION

In addition to notifying J.U.L.I.E., all utility companies must be notified by the Contractor, in writing, at least one (1) week in advance prior to starting construction so that they will have adequate time to locate and mark their utility locations in the field and twenty-four (24) hours prior to commencing actual construction work. All utility companies must be notified so that they may have personnel on the job site to assist in locating their utility lines and avoid damage to their utilities, including but not limited to Ameren Illinois, AT&T, City of Peoria Public Works, Comcast Communications, Illinois-American Water Company, I3 Broadband (ITV3), Bluebird Wireless, Stratus Networks and Windstream.

A copy of the letter notifying the utility companies of the Contractor's intention to start work must be received by the City of Peoria Engineering Department before the Contractor will be permitted to start construction.

JULIE SYSTEM

The J.U.L.I.E. (Joint Utility Locating Information for Excavators) must be notified prior to starting construction so that the respective utilities m3ay have adequate time to locate and mark their underground facilities. Phone: 1-800-892-0123. The following information may be requested by J.U.L.I.E.:

County Name :	Peoria
Township Name:	Peoria
Section Number:	7, 8, 17 & 18, T8N, R8E

LOCATION OF UNDERGROUND STATE MAINTAINED FACILITIES

Effective: August 3, 2007 Revised: July 31, 2009

The Contractor shall be responsible for locating existing and proposed IDOT electrical facilities

(traffic signal, overhead lighting, Intelligent Transportation System, etc.) prior to performing any work at his/her own expense if required. The Contractor shall also be liable for any damage to IDOT facilities resulting from inaccurate locating.

The Contractor may obtain, on request, plans for existing electrical facilities from the Department.

The Contractor shall also be responsible for locating and providing protection for IDOT facilities during all phases of construction. If at any time the facilities are damaged, the Contractor shall immediately notify the Department and make all necessary arrangements for repair to the satisfaction of the Engineer. This work will not be paid for separately but shall be included in the contract bid price.

UTILITIES — LOCATIONS/INFORMATION ON PLANS

Effective: November 8, 2013

The locations of existing water mains, gas mains, sewers, electric power lines, electrical ducts, telephone lines, fiber optic lines, and any other utilities as shown on the plans are based on field investigation and locations provided by the utility companies, but they are not guaranteed. Unless elevations are shown, all utility locations shown on the cross sections are based on the approximate depth supplied by the utility company. It shall be the Contractor's responsibility to ascertain their exact location, horizontal and vertical, from the utility companies and be verified by field inspection (potholing). This work shall be completed prior to ordering any drainage structures or storm sewer pipes.

STATUS OF UTILITIES/UTILITIES TO BE ADJUSTED

Effective: January 21, 2005

The following utilities are located within the project limits. For relocations, the utility companies have provided the estimated dates.

Utility	Contact Name and Phone Number	Type	Location	Relocation Needed	Estimated Date Relocation Completed
Ameren Illinois Electric	Waheed Shazad 309-693-4631	Overhead and Buried Electric, Poles	Projectwide	Yes	Per Stage Construction
Ameren Illinois Gas	Kent Kowalske 309-677-5327	Buried Gas	Projectwide	Yes	Per Stage Construction
AT&T	James Darr 217-789-8711	Overhead and	Projectwide	Yes	Per Stage Construction

		Buried Cable			
City of Peoria	Jane Gerdes 309-494-8819	Sanitary & Storm Sewer	Projectwide	Yes	Per Stage Construction
Comcast	Mark Wabel 309-303-2037	Overhead Cable	Projectwide	Yes	Per Stage Construction
GPSD	Jim Sloan 309-272-4850	Sanitary Sewer	Projectwide	Yes	Per Stage Construction
IAWC	Trip Barton 309-566-4148	Buried Water	Projectwide	Yes	Per Stage Construction
I3 Broadband	Lucas Dye 309-670-0400	Buried & Overhead Fiber	Projectwide	Yes	Per Stage Construction
Bluebird Networks	Patrick Higgins 314-877-8780	Buried Fiber	Projectwide	Yes	Per Stage Construction
Stratus Networks	Joe Huffman 309-222-2080	Buried Fiber	Stage 3	Yes	Per Stage Construction
Windstream	David Fereira 309-282-3110	Buried Fiber	Stage 3	Yes	Per Stage Construction

The above represents the best information of the Department and is only included for the convenience of the bidder. The applicable provisions of Recurring Special Provisions LRS1, LRS6 and Articles 105.07, 107.20, 107.31 and 108.02 of the Standard Specifications for Road and Bridge Construction shall apply.

The estimated utility relocation dates should be part of the progress schedule submitted by the Contractor. If any utility adjustments or relocations have not been completed by the above dates specified and when required by the Contractor's operations after these dates, the Contractor should notify the Engineer in writing. A request for an extension of time will be considered to the extent the Contractor's critical path schedule is affected.

NOTIFICATION OF THE PUBLIC

The Contractor shall notify the property owners along Western Avenue and each side street that will be impacted by this work in writing a minimum of 7 days in advance of the start of work and prior to any changes in traffic patterns including roadway closures. The City Engineer will review and approve the letter prior to distribution to the public. Please allow at a minimum one week for City review. The typed notification letter shall include at a minimum: the work schedule, no parking restrictions, property access information, and the contractor contact person's name, local phone number, and email address. The notification shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The contractor shall also place the notice on the windshield of any parked cars on the street. Submit a copy of the notification letter to the City for approval before distribution to the property owners and coordinate with the City on when the letters will be distributed.

The City will issue press releases based on the information provided by the contractor. Press releases will be issued 1-2 days in advance of the work. The Contractor shall provide press release information to the City a minimum of 2 days in advance of work starting and prior to changes in construction traffic.

It is the responsibility of the Contractor to post "NO PARKING" signs at least 7 days in advance of the start of work. If there are any vehicles that have to be towed the Contractor will first contact the City Police Dispatcher (309-673-4521) to get the name and address of the owner. If the owner lives in the area the Contractor will try to contact the owner directly and request that they move their vehicle. If the Contractor is unable to contact the owner to move the vehicle they will then contact the City Police Dispatcher (309-673-4521) and access the City Towing List and contact the next available towing vendor on the City List and arrange to have a tow truck move the vehicle to the nearest out of the way location. The tow truck will be paid for by the City of Peoria. The Contractor will keep a log of all vehicles moved that lists the date, time and number they tried to contact the owner, the date and time the vehicle is moved, make and model of vehicle, license plate number, name of towing company, vehicle owner’s name, the location the vehicle is towed from and the location the vehicle is towed to.

ITEMS DESIGNATED FOR REMOVAL AND EXCAVATION

All removal items and excavated material remain the property of the City of Peoria unless the City indicates a desire to the Contractor that they should dispose of the removed items and/or excavated material outside the limits of the improvement as the Contractor may provide. Should the City desire to keep the removed items and/or excavated material and have it disposed of at a location outside the improvement limits, the Contractor shall haul to the City's designated disposal site, provided the disposal site is within the limits of the City of Peoria. The cost of salvaging removed items and/or excavated material, as outlined herein, will not be paid for separately, but the cost shall be included in the contract unit price for the item of construction involved. All waste sites shall be approved in accordance with Article 107.22 of the Standard Specifications.

SALVAGING EXISTING MATERIALS

All existing municipally owned street castings, frames and grates on inlets and manholes, signs and posts in usable condition within the limits of the improvement shall, if not required for further use in the construction of the improvement, be carefully excavated and preserved by the Contractor. Said street castings, frames and grates on inlets and manholes, signs and posts if desired by the City, shall be picked up and hauled from the job site by the City or the Contractor shall deliver such items to a location (within the City limits) determined by the City.

The cost of salvaging existing municipally owned street castings, frames and grates on inlets and manholes, signs and posts, as outlined herein, will not be paid for separately, but the cost shall be included in the contract unit price for the item of construction involved.

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES

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

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

The following areas should be monitored by the Environmental Firm for soil contamination and workers protection.

Site 3288A-1 – Commercial Building, 609-615 S. Western Avenue, Peoria, Peoria County

- All excavation in the northwest quadrant of Western Avenue and Lincoln Avenue: The Engineer has determined this material meets the criteria of and shall be managed in accordance to Article 669.05(a)(5). Contaminants of concern sampling parameters: VOCs, SVOCs, and Metals.

Work Zones

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

Additional information on the above sites collected during the regulated substances due-diligence process is available through the District's Environmental Studies Unit (DESU).

CONSTRUCTION SEQUENCE AND SCHEDULE

The Contractor shall prepare a progress schedule as required by Section 108 of the Standard Specifications. The Contractor shall coordinate items of work in order to keep hazards, traffic inconvenience and limited access to residences along Western Avenue to a minimum. In particular, construction shall be staged as shown on the plans and as listed below to meet the following requirements:

Temporary Erosion control items shall be installed before work begins on any part of the project.

Prior to the start of any work and before the closure Western Avenue, the City of Peoria shall be contacted to inform them of the beginning date of construction. Road closures will be implemented according the standards listed in the plans or in the specifications. The detour route shall be set up before the roadway is closed.

A construction progress schedule indicating project milestones shall be completed and strictly adhered to by the Contractor unless a request to modify the schedule is submitted in writing and approved by the Engineer.

TRAFFIC CONTROL PLAN

Effective: March 1, 2020

This work shall consist of providing the necessary traffic control personnel and devices and the installation, maintenance, relocation and removal of these devices during construction of the improvement. The City of Peoria will be responsible for notifying the public, the United States Postal Service, and the emergency service agencies for road closures and changes in the traffic control and maintenance of traffic plans.

Traffic control shall be in accordance with the applicable sections of the "Standard Specifications for Road and Bridge Construction," the applicable guidelines contained in the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways," these Special Provisions, and any special details and Highway Standards contained herein and in the plans.

Special attention is called to Section 701 and Articles 107.09 and 107.14 of the "Standard Specifications for Road and Bridge Construction" and the following Highway Standards relating to traffic control:

Highway Standards: 701311, 701601, 701606, 701701, 701801, 701901

Special Provisions	
Check Sheet # 21	Nighttime Inspection of Roadway Lighting
LRS 3	Work Zone Traffic Control Surveillance
LRS 4	Flaggers in Work Zones

Traffic/Access: The contractor is required to:

- Provide access through project limits as indicated. A ten (10) foot vehicle path is required the length of each Stage along Western Avenue at all times.
- Provide "all weather" pedestrian access route along Western Avenue and side streets during the duration of the construction where existing sidewalk is present.
- Provide aggregate for temporary access at vehicle entrances.

<u>Maintenance of Traffic</u>

All construction shall follow the Maintenance of Traffic Plan as shown within the plans, unless the Contractor submits an alternate plan. Road closures and the conveyance of thru and local traffic within and around the construction zone shall be provided for in accordance with the Plan Details noted above and the use of the above referenced Highway Standards as directed by the Engineer. Except as otherwise provided herein, the Contractor shall provide at least one entrance/exit point to each property at all times.

The Contractor shall be permitted to close Western Avenue from north of Proctor Street to Lincoln Avenue in Stage 1A except to local traffic. Stage 1B from north of Marquette Street to north of

Proctor Street except to local traffic. Stage 1C from north of Malone Street to north of Marquette Street except to local traffic. Stage 1D from Lincoln Avenue to Howett Street will be completed under traffic using the provided plans and the appropriate highway standards. Western Avenue will be closed except to local traffic in Stage 2A from south of Humboldt Street to north of Malone Street. Western Avenue will be closed except to local traffic in Stage 2B from Marquette Street to Humboldt Street, except to local traffic. During Stage 2B, Western will be closed to thru traffic from north half of Adams Street to south of Humboldt Street. Jefferson Street will also be closed from Greenlawn Street to Western Avenue. A detour on Jefferson Street will take vehicles to Washington Street via Greenlawn Street. During this time traffic will be open along the south half of Adams Street at Western. Stage 2C of Western Avenue reconstruction will close the south half of Adam Street and Western Avenue for reconstruction.

With the approval of the Engineer, the Contractor may modify the suggested construction sequence and attendant traffic control procedures as shown. The Contractor shall submit his proposed sequence of operations and any necessary revisions to attendant traffic control to the Engineer for approval before actual construction operations begin.

Driveways

Except where the plans expressly authorize temporary complete closures, the Contractor shall keep driveways open to local traffic by keeping at least half of the width of said driveway open or by providing access at a temporary location, as approved by the Engineer. The Contractor shall provide and maintain access to commercial and private properties abutting the roadway being improved in accordance with Article 107.09 of the Standard Specifications. Access to commercial property shall, at no time, be shut off completely except as expressly authorized in the plans. At no time shall a driveway be closed for no more than 1 hour. An estimated quantity of AGGREGATE FOR TEMPORARY ACCESS has been included in the plans for use in the conveyance of local traffic and the provision of temporary access.

Construction of driveway entrances shall be completed within 5 consecutive days before or after construction of mainline pavement in front of the driveway. This is necessary in order to accommodate vehicle turning movements in and out of the driveways after completion of construction on, and in front of, their properties thus eliminating the need for closure of these facilities twice; i.e., once for mainline pavement construction and again for the entrance or side road construction. Closures shall be coordinated with property owners to minimize disruptions to normal driveway use.

Removing and Resetting Traffic Signs

This work shall consist of the removal, relocation, and resetting of traffic signs which interfere with construction operations. This work shall also include the removal, relocation, and resetting of existing wood signs, delineators and other miscellaneous signs which interfere with construction operations. This work shall be performed in accordance with the applicable portions of Article 107.25 of the Standard Specifications and as directed by the Engineer. The contractor shall remove, temporarily relocate and/or permanently reset existing signs which interfere with the construction operations. This work will not be paid for separately but shall be included in the contract lump sum price of TRAFFIC CONTROL AND PROTECTION, (SPECIAL). The Engineer will determine which signs will be removed, temporarily relocated and permanently reset. Before

the completion of each construction stage the Contractor shall coordinate with the City for the City to install traffic and street name signs in accordance with the signing plan.

Traffic Control Surveillance

Traffic control surveillance will be required but will not be paid for separately on this project. The special provision check sheet LRS 3 “Work Zone Traffic Control Surveillance” will apply for the inspection of traffic control devices on this project along with the following additional requirements. The minimum frequency of worksite inspections by the Contractor shall be defined as daily unless directed otherwise by the Engineer. The person responsible for surveillance shall complete an inspection form, furnished by the Engineer, on a daily basis. The completed form shall be given to the Engineer on the first working day after the inspection.

Quality of Traffic Control Devices

Traffic Control Devices include signs and their supports, signals, pavement markings, barricades with sandbags, channelizing devices, warning lights, arrow boards, daggers, or any device used for the purpose of regulating, detouring, warning or guiding traffic through or around the construction zone.

Only signs, barricades, vertical panels, drums, and cones that meet the requirements of the Department’s “Quality Standard for Work Zone Traffic Control Devices” shall be used on this project. Copies of this publication are available from the IDOT website under "Resources\Manuals\Manuals & Guides.” At the time of the initial setup or at the time of major stage changes, one hundred percent (100%) of each type of device (cones, drums, barricades, vertical panels or signs) shall be acceptable as defined by the referenced publication. Throughout the duration of the project, the percentage of acceptable devices may decrease to seventy-five percent (75 %) only as a result of damage and/or deterioration during the course of the work. Work shall not begin until a determination has been made that the traffic control devices meet the quality required in this standard. The Contractor is required to conduct routine inspections of the work site at a frequency that will allow for the prompt replacement of any traffic control device that has become displaced or damaged to the extent that it no longer conforms to the shape, dimensions, color and operational requirements of the MUTCD and the Traffic Control Standards, or that it no longer presents a neat appearance to motorists. A sufficient quantity of replacement devices, based on vulnerability to damage, shall be readily available to meet this requirement.

Placement of Traffic Control Signs and Devices

The Contractor shall be responsible for the proper location, installation, and arrangement of all traffic advance warning signs during construction operations in order to keep lane assignment consistent with barricade placement at all times. The Contractor shall immediately remove, cover, or turn from the view of the motorists all traffic control devices which are inconsistent with detour or lane alignment patterns and conflicting conditions during the transition from one construction stage to another. When the Contractor elects to cover conflicting or inappropriate signing materials used, he/she shall totally block out reflectivity of the sign and shall cover the entire sign. The method used for covering the signing shall meet the approval of the Engineer.

When directed by the Engineer, the Contractor shall remove all traffic control devices which were furnished and installed and maintained by him/her under this contract, and such devices shall

remain the property of the Contractor. All traffic control devices shall remain in place until specific authorization for relocation or removal is received from the Engineer. The Contractor shall ensure that all traffic control devices installed by him/her are operational, functional, and effective 24 hours a day, including Sundays and holidays.

Solar Powered Changeable Message Signs

Changeable message signs shall be furnished, placed and maintained in accordance with the “Stage Construction and Maintenance of Traffic Plans" and Section 701 of the Standard Specifications. All changeable message signs to be used on this project shall be solar powered. This work will be paid at the contract unit price per calendar day for each sign as CHANGEABLE MESSAGE SIGN, SPECIAL.

Solar Powered Arrow Boards

Arrow boards shall be used as required by the Standards and as directed by the Engineer. All arrow boards to be used on this project shall be solar powered. Any additional cost in meeting this requirement will be considered as included in the cost of TRAFFIC CONTROL AND PROTECTION, (SPECIAL).

Construction Signs

All signing for traffic control shaft meet current IDOT policy for retro-reflectivity requirements. Construction signs referring to daytime lane closures during working hours shall be removed, covered or turned away from the view of motorists during non-working hours. Flashing lights shall be used on each approach in advance of the work area, and in accordance with the details shown on the Plans and Standard Drawings.

All provisions of Article 107.25 of the Standard Specifications shall apply except the third paragraph shall be revised to read: “The Contractor shall maintain, furnish, and replace at his/her own expense, any traffic sign or post which has been damaged or lost by the Contractor or a third party.”

Wayfinding or Directional Signage

The Contractor shall be responsible for the proper location, installation, and arrangement of any wayfinding or directional signage as directed by the Engineer. The wayfinding or direction signage may consist of post mounted sheet signs or changeable message boards. The cost of providing, installing and maintaining wayfinding or directional signs will not be paid for separately but shall be included in the contract lump sum price of TRAFFIC CONTROL AND PROTECTION (SPECIAL). No additional compensation will be allowed.

Placement and Removal of Signs and Barricades

Placement of all signs and barricades shall proceed in the direction of flow of traffic. Removal of all signs and barricades shall start at the end of the construction areas and proceed toward oncoming traffic unless otherwise directed by the Engineer.

Temporary Sidewalks

It is the City's intention to maintain pedestrian access through the project site during construction of the improvement. The Contractor may restrict pedestrian access to the project site during working hours by utilizing Highway Standard 701801. During non-working hours the Contractor shall allow for pedestrian access through the project site by constructing temporary sidewalks at locations where existing sidewalks have been removed or as directed by the Engineer. On Western Avenue and adjacent side streets, the Contractor shall maintain pedestrian access on at least one side of the roadway at all time. This work shall consist of furnishing, placing, maintaining, and removing temporary sidewalks in accordance with Section 424 of the Standard Specifications and the plan notes.

The temporary sidewalk shall consist of either Portland Cement Concrete (4 inches minimum thickness) or Hot-Mix Asphalt (2 inches minimum thickness) at locations shown on the plans and as directed by the Engineer. This work, including furnishing and placing the materials, as well as compaction, removal, and subsequent disposal of the material in accordance with Article 202.03 of the Standard Specifications, will not be paid for separately, but will be considered included in the contract unit price per square foot for TEMPORARY SIDEWALK.

Public Safety and Convenience

The Contractor shall provide a telephone number where a responsible individual can be contacted on a 24-hour-a-day basis to receive notification of any deficiencies regarding traffic control and protection. The Contractor shall dispatch personnel, materials and equipment to correct any such deficiencies. The Contractor shall respond to any call from the Engineer or government agencies concerning any request for improving or correcting traffic control devices and begin making the requested repair within two (2) hours from the time of notification.

When traveling in lanes open to public traffic, the Contractor's vehicles shall always move with and not against or across the flow of traffic. These vehicles shall enter or leave work areas in a manner which will not be hazardous to or interfere with traffic and shall not park or stop except within areas designated by the Engineer.

Personal vehicles will not be allowed to park within the right-of-way. The Contractor shall provide for off-site parking of his/her personal vehicles. The Contractor shall maintain entrances and side roads along the proposed improvement. Interference with traffic movements and inconvenience to owners of abutting property and the public shall be kept to a minimum. Any delays or inconveniences caused to the Contractor by complying with these requirements will be considered included in the contract lump sum price for TRAFFIC CONTROL AND PROTECTION, (SPECIAL).

Construction Staging Requirements

Lane Closures and the conveyance of local traffic within and around the construction zone shall be provided for in accordance with the above referenced Highway Standards and as directed by the Engineer. With the approval of the Engineer, the Contractor may make modifications to the proposed traffic control plans. The Contractor shall submit his/her proposed sequence of operations, and any necessary revisions to the attendant traffic control plan, to the Engineer for approval before actual construction operations begin.

All traffic control devices and barricades throughout the project shall remain in place until the entire project is substantially complete, or as otherwise directed by the Engineer. All proposed traffic signal heads shall be bagged until the scheduled traffic signal turn on.

Brooming of Roadway

All traffic lanes which are closed to through traffic during construction shall be broomed or swept free of all loose gravel or construction debris before the traffic lane is reopened to traffic. All roadway surface conditions shall be approved by the Engineer before they are opened to traffic. This work will not be paid for separately but will be considered included in the contract lump sum price for TRAFFIC CONTROL AND PROTECTION, (SPECIAL).

Brooming of Pedestrian Routes

All pedestrian routes which are closed during construction operations shall be broomed or swept free of all loose gravel or construction debris before the pedestrian routes are reopened. All pedestrian route surface conditions shall be approved by the Engineer before they are opened. This work will not be paid for separately but will be considered included in the contract lump sum price for TRAFFIC CONTROL AND PROTECTION, (SPECIAL).

Western Avenue Detour

When traffic is to be directed over a detour route, the Contractor shall furnish, erect, maintain and remove all applicable traffic control devices along the detour route according to the notes in the Maintenance of Traffic plans. This includes any specific destination signs required by the engineer. Signage for the detour route will be paid for at the contract lump sum price for DETOUR SIGNING.

Construction Access

The Contractor shall present a plan that will be used to provide access by the Contractor or Subcontractor to the Engineer at the time of the Pre-Construction Meeting. The Engineer and Contractor shall both examine the plan noting any areas of concern before construction begins. Upon completion of the project the Engineer shall examine the streets prior to approving final payment to the Contractor. Any areas that have been damaged, due to construction activity, shall be repaired by the Contractor to the satisfaction of the Engineer. When work is complete, the Contractor shall arrange, within a reasonable time period, to clean up and restore areas where equipment or material has been stored on the right-of-way or easement. This work shall be included in the cost of the contract.

The Engineer may restrict the movement of construction vehicles on the completed surface in order to prevent damage to these surfaces.

Contractor Access

At road closure locations where Type III barricades are installed in a manner that will not allow Contractor access to the project without relocation of one or more of the barricades, the arrangement of the barricades at the beginning of each work day may be relocated, when

approved by the Engineer, in the manner shown on Highway Standard 701901 for Road Closed to Through Traffic. "Road Closed" signs (R11-2), supplemented by "Except Authorized Vehicles" signs (R3-1101), shall be mounted on both the near-right and far-left barricade(s). At the end of each workday, the barricades shall be returned to their in-line positions. This work will be included in the cost of the contract, and no extra compensation will be allowed.

Basis of Payment. All work prescribed and referenced herein will be measured and paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION, (SPECIAL). This price shall be considered payment in full for all labor, materials, transportation, handling and incidental work necessary to furnish, install, relocate, maintain and remove all traffic control devices as required by the traffic control plan and as directed and approved by the Engineer, for the duration of the contract. No separate payment will be made for complying with the provisions of Standard 701311, 701601, 701606, 701701, 701801, and 701901. Article 701.20 of the Standard Specifications is revised in that no additional payment will be made for furnishing, installing, maintaining, and removing additional traffic control devices or signs from those shown on the plans or as directed by the Engineer.

The cost of furnishing, placing, compacting, maintaining, removing and disposing of coarse aggregate for temporary driveways will be paid for at the contract unit price per ton of material furnished for AGGREGATE FOR TEMPORARY ACCESS.

The cost of furnishing, placing, compacting, maintaining, removing, and disposing of Portland cement concrete or hot-mix asphalt for temporary sidewalks will be paid for at the contract unit price per square foot for TEMPORARY SIDEWALK.

The cost of furnishing, placing, maintaining and removing short term pavement markings in conjunction with locations as shown in the plans between Lincoln Avenue and Howett Street or as directed by the Engineer will be paid for at the contract unit price per foot of material furnished for SHORT TERM PAVEMENT MARKING and at the contract unit price per square foot for SHORT TERM PAVEMENT MARKING REMOVAL.

The cost of furnishing, placing and maintaining Temporary Pavement Markings in conjunction with locations as shown in the plans at the transition of newly constructed pavement and the remaining pavement along Western Avenue or as directed by the Engineer will be paid for at the contract unit price per foot of material furnished or removed for TEMPORARY PAVEMENT MARKING.

All detour signing will be measured and paid for at the contract lump sum price for DETOUR SIGNING, which work will include furnishing, installing, maintaining, replacing, relocating and removing all traffic control devices provided to detour traffic on the local streets during the road closure. See the detour plan for specific route and general locations. Specific placement of signs will be as directed by the Engineer.

The portable changeable message signs will be paid for at the contract unit price per calendar day for each sign as CHANGEABLE MESSAGE SIGN, SPECIAL, which work will include furnishing, installing, maintaining, replacing, relocating and removing all portable changeable message signs as directed by the Engineer.

TEMPORARY INFORMATION SIGNING

Description. This work shall consist of furnishing, installing, maintaining, relocating for various states of construction and eventually removing temporary informational signs. Included in this item may be ground mount signs, skid mount signs, truss mount signs, bridge mount signs, and overlay sign panels which cover portions of existing signs.

Materials. Materials shall be according to the following Articles of Section 1000 - Materials:

	Item	Article/Section
a.)	Sign Base (Notes 1 & 2)	1090
b.)	Sign Face (Note 3)	1091
c.)	Sign Legends	1092
d.)	Sign Supports	1093
e.)	Overlay Panels (Note 4)	1090.02

Note 1. The Contractor may use 5/8 inch (16 mm) instead of 3/4 inch (19 mm) thick plywood.
Note 2. Type A sheeting can be used on the plywood base.
Note 3. All sign faces shall be Type A except all orange signs shall meet the requirements of Article 1106.01.
Note 4. The overlay panels shall be 0.08 inch (2 mm) thick.

GENERAL CONSTRUCTION REQUIREMENTS

Installation. The sign sizes and legend sizes shall be verified by the Contractor prior to fabrication.

Signs which are placed along the roadway and/or within the construction zone shall be installed according to the requirements of Article 701.14 and Article 720.04. The signs shall be 7 ft. (2.1 m) above the near edge of the pavement and shall be a minimum of 2 ft. (600 mm) beyond the edge of the paved shoulder. A minimum of two (2) posts shall be used.

The attachment of temporary signs to existing sign structures or sign panels shall be approved by the Engineer. Any damage to the existing signs due to the Contractor's operations shall be repaired or signs replaced, as determined by the Engineer, at the Contractor's expense.

Method of Measurement. This work will be measured for payment in Square Feet edge-to-edge (horizontally and vertically).

All hardware, posts or skids, supports, bases for ground mounted signs, connections, which are required for mounting these signs will be included as part of this pay item.

Basis of Payment. This work will be paid for at the contract unit price per Square Foot for TEMPORARY INFORMATION SIGNING.

CONSTRUCTION LAYOUT RESPONSIBILITY

Effective April 26, 2015 Revised: April 24, 2020

This special provision is included in addition to Check Sheet #9 or #10 of the Recurring Special Provisions, Special Provision for Construction Layout Stakes, to clearly define the responsibility of the Contractor for construction layout.

As the Contractor is generating the survey layout model, all roadway elements shall be verified to fit within the final proposed slopes and right-of-way. If the Contractor determines a portion of the plans is incorrect or a portion does not agree with another portion, they shall contact the Engineer to have the problem resolved and additional work, if any, agreed upon. The Contractor shall not proceed until authority is received from the Engineer and problems are resolved. The Engineer shall contact the District Studies and Plans Section if need be.

The Contractor shall set all horizontal control points at the end of construction and provide cross ties in a hardback survey book to the Engineer.

The Contractor shall also set and provide the Engineer with a list of final benchmarks in a hardback survey book at the end of construction for future control.

No additional compensation will be allowed for complying with this Special Provision, but all costs shall be included in the contract Lump Sum price for CONSTRUCTION LAYOUT.

EXISTING BUILDING PROTECTION

This work shall consist of performing building condition survey(s) and reporting the results, providing protection to the adjacent existing building(s) during construction activities, and implementing response actions as required. The proximity of the proposed new construction to existing building structures creates concern about the possibility of causing damage to the existing structures during construction activities.

The Contractor shall exercise care during all construction activities and shall utilize appropriate methods of construction in an effort to protect adjacent properties from damage due to demolition and construction activities. Special attention is called to requirements contained in Article 107.26 in the Standard Specifications. The existing building located at 1900 W Antoinette Street, Peoria, IL 61605 shall also be protected as required herein.

Condition Survey:

The purpose of the building condition survey shall be to accurately document the pre-construction conditions of the adjacent structures, in order to provide baseline data for evaluating claims of construction-related damage. A similar survey shall be conducted upon completion of the project in order to document any change in condition of the structures. The pre-construction building condition survey shall produce video recordings, descriptions, diagrams, and photographs of all:

a. Interior and exterior building walls, partitions, floors, and ceilings showing any and all defects including existing cracks and vertical alignment.

b. Interior floor defects, including sags or slope.
c. Interior basement floor slab cracks and slope, foundation wall cracks, vertical wall alignment, and elevations.
d. Exterior building elevations, cracks, lean or bow in walls, cracks or defects in walks, foundations, chimneys, porches, and trim.
e. Any indications of structure settlement or movement.
f. Binding of doors and windows.

The survey shall include such other data as is applicable to locate and define the amount and extent of existing damage in the structure. All existing structural deficiencies, major or minor, shall be recorded and shown. Visible cracks shall be noted and measured in both length and width. Special attention shall be given to locations where existing defects and cracks are visible.

Recordings shall be on standard DVD media format and digital photographs. Photographs shall be in jpeg format with at least a 5MP resolution and digital videotape shall be playable on a computer or DVD player. All recordings shall, by electronic means, display continuously and simultaneously generated, transparent, alpha-numeric information to include the following:

a. Each video shall begin with a single, multi-line, alpha-numeric display indicating the video index number, project title, and general location of the project.
b. During the entire duration of the recordings, the time and date must appear in the picture.
c. Building identification by house or building number.

All recordings shall include a simultaneously recorded audio track. The audio recording shall contain the commentary of the camera operator and shall provide information related to viewer orientation, clarification, or objective description of the structures being shown in the video portion of the recording.

The Contractor shall prepare and deliver to the City two (2) copies of both the pre-and post-construction survey containing all field notes taken, sketches and diagrams prepared, photographs obtained, video recordings, descriptions and reports, all signed and witnessed by those taking part in the inspection. The inspection and reports shall be approved and sealed by an Illinois Licensed Structural Engineer.

In the event that any property owner denies access for the survey of structures and facilities within the specified limits, the Contractor shall notify such property owner, by certified mail, on the intent of the survey. If after two (2) weeks access is still denied, the Contractor shall notify the property owner once again by certified mail, stating that this is the final notification. Copies of all correspondence between the Contractor and property owners shall be submitted to the City.

Nothing contained herein shall relieve the Contractor of responsibility for claims arising from their construction operations. Failure to inspect any structure whether required by these contract documents or inadequacy of the inspections shall not relieve the Contractor of his responsibility.

Reporting:

The Contractor shall submit Condition Survey Reports within 10 working days after the completion of either the pre or post-construction inspection, as required by the Condition Survey. The Contractor shall not publish reports or other data without prior written consent of the City.

The City is not responsible for the safety of the work, and compliance with this Specification does not relieve the Contractor of full responsibility for damage caused by the Contractor's operations.

Protection of Existing Buildings During Construction:

The Contractor shall assess the existing conditions at building(s) adjacent to the proposed construction, along with the proposed means and methods for completing the construction work, and shall determine if additional temporary measures are needed to provide adequate protection during the construction activities to prevent damage to the adjacent building structure.

The Contractor shall provide all materials, labor and equipment deemed necessary to protect the adjacent existing building structures and property, including all existing surfaces, utilities, finishes and equipment to remain, from damage during construction and restore to existing condition at the completion of the work.

Implementing Response Actions:

If damage to adjacent existing structures is determined to have occurred during or as a result of construction activities, the Contractor shall be responsible for making any repairs to such damage or shall be responsible for implementing any other response actions as determined to be appropriate by the City. If there is disagreement about whether or not damage to adjacent existing structures occurred during construction activities, the Contractor shall be responsible to demonstrate conclusively that any claim made by a third party is not justified due to the evidence shown by his condition surveys.

All materials, labor and equipment necessary to perform this work as specified herein and as directed by the Engineer will be paid for in the contract unit price per Each for EXISTING BUILDING PROTECTION.

SHRUB REMOVAL

Description. This work shall consist of cutting, removing and disposing of shrubs and roots.

General. The work shall be performed according to Article 201.08 of the Standard Specifications. The removed shrubs shall be disposed of according to Article 202.03 of the Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit price per each for SHRUB REMOVAL for which price will include all cost for labor, materials, equipment and incidental items necessary to perform the work.

EMBANKMENT

Effective: July 1, 1990 Revised: November 1, 2007

Revise the third paragraph of Article 205.06 of the Standard Specifications to read:

All embankment shall be constructed with not more than 110% of optimum moisture content, determined according to AASHTO T 99 (Method C). The 110% of optimum moisture limit may be waived in free draining granular material when approved by the Engineer.

The Contractor may, at his option, add a drying agent to lower the moisture content as specified above. The drying agent must be approved by the Engineer prior to use. Extra compensation will not be allowed for the use of a drying agent but will be considered included in the cost of the various items of excavation.

PLANTING SOIL MIX, FURNISH AND PLACE

Description. Work under this item must be performed in accordance Section 211 of the Standard Specifications for Road and Bridge Construction and subsequent special provisions except as herein modified. This work must consist of locating, stockpiling, testing, preparing, and placing planting soil including finish grading. All operations and materials to be furnished within this Item must be included PLANTING SOIL MIX FURNISH AND PLACE.

It must include the excavation of all planting sites and plant beds and tree pits, of the necessary volume of existing material to specified depths and disposing of debris and the material removed, and removal and disposal of spoil; root removal only as directed by the Engineer; grading the area; furnishing the planting soil and other soil mix ingredients, mixing them and preparing them for placement; and placing required soil mix volumes; raking and preparing the soil mix for planting. This work must also include the excavation of the volume of existing material at locations where proposed trees will be planted. It also includes any plant under drainage layers, and excess excavation and disposal of material required to accommodate drainage layers, as shown on the plans, which may be required by the Engineer.

General Requirements. Notify Utility Owner and have Utility Owner stake all locations of utilities prior to any excavation operations. Contractor must be responsible for location of all utilities prior to any disruption of grade. Adequate advance notification and clearance by Utilities Alert Network (JULIE) is required for all planting sites.

The excavation and placement of planting soil mix, after settlement, must be the entire length and width of beds, to the following depths:

Curbed Planters: Excavate to full dimensions shown on the Drawings. Add approved planting soil mix to volumes shown on the Drawings and compact as shown and specified herein.

Provide all excavations of plant beds and tree pits. Excavate to full dimensions shown on the Drawings. Excavation and grading around protected existing tree roots and plant materials must be done by hand. Remove all excavated materials and legally dispose of site. Note that excavation of all areas is incidental to this item.

Notify the Engineer immediately if unusual subgrade conditions exist, such as old foundations or uncharted utilities are discovered. Notify the Engineer immediately if conditions do not allow enough space for required soil depths.

Provide soil tests, sandy loam planting soil, sand and all other specified materials to be used as ingredients for preparing planting soil mix for all areas. All landscape areas indicated on the plans must be filled with planting soil mix. Suitable fill in all landscape areas must be defined as PLANTING SOIL, FURNISH AND PLACE. Additional or alternate materials must meet the approval of the Engineer.

Submittals. Samples: Before any planting soil is delivered, the Contractor must furnish the Engineer soil samples and statements specified herein. The Contractor must inform the Engineer in writing, 10 days in advance of the delivery of planting soil to the job site, as to the location from which the planting soil is to be obtained, names and addresses of the Owners of the properties, the crops or plants which have been grown in the soil during the past 5 years and the depth to which the top soil is to be taken. A minimum of three (3) samples of the planting soil proposed for this work must be furnished a minimum of ten days before delivery of planting soil to the jobsite. Each sample submitted must be in a separate container, approximately one-quart in size, appropriately labeled and taken from a different location at the source. Each container must be filled with un-compacted planting soil. Do not deliver soil to the site until the Engineer has approved required submittals.

Soil Testing: Planting soil must be tested and approved prior to preparing planting soil mix and prior to delivery to the site. Planting soil that is mixed or delivered to the site prior to testing and approval by the Engineer will be rejected. The Contractor must submit a horticultural soil test to the Engineer showing the results of a mechanical sieve test which demonstrates that the planting soil is sandy loam, having less than 50% preponderance of clay and silt, a pH tests evidencing compliance with pH requirements, and other test results as specified below.

The Contractor must employ a soil testing agency acceptable to the Engineer and which uses methods approved by the Association of Agricultural Chemists. A minimum of three (3) samples must be taken from different locations of proposed planting soil source.

The planting soil test must report the appropriate ranges are as follows:

1. Chemical Analysis/Soil Reaction: pH between 5.5 and 7.0.
2. Mechanical Analysis: Sandy Loam as defined by the chart below.
3. Additionally, the following variables are required.
    a. Cation exchange capacity (CEC)
    b. Soluble salts
    c. Organic matter
    d. Phosphorous
    e. Available potassium
    f. Other nutrients
    g. Residual chemicals, herbicides, pesticides
4. Recommendations to mitigate any issues from the results in items 3a through 3g.

The mechanical analysis should show that the % sand (25% to 33%), % silt (45% to 77%), and the % clay (0% to 28%) must yield a **silt loam soil**. See the attached Textural Classes diagram.

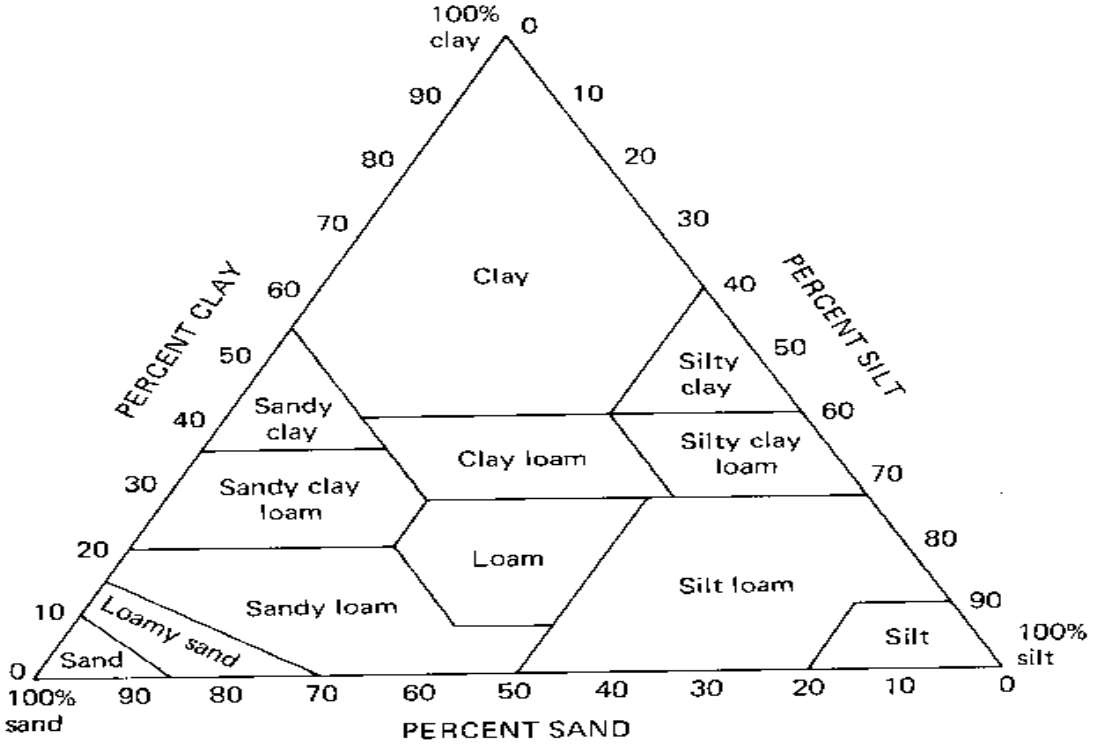
To determine the class, plot a line parallel to the % clay axis starting the line at the value of the % silt. Plot another line parallel to the % sand axis starting the line at the value of the % clay. The intersection of these lines should be in the silt loam region.

Planting Soil Quality. Planting soil must be pulverized, natural, fertile, friable, sandy loam planting soil-possessing characteristics of rich productive A horizon planting soil in the Peoria area. Clay soils will not be acceptable. Planting soil must be obtained from naturally well-drained areas, not excessively acidic or alkaline within a tolerance of 5.5 to 7.0 pH and contain no toxic substances which may be harmful to plant or sod growth. It must be free from clay lumps, roots, stones and other debris. Planting soil must not be handled in a frozen or muddy condition. Supplemental planting soil means all planting soil imported to the site, which is required to meet finish grades shown.

All planting soil for planting must be a loamy soil rich in organic matter, without admixture of B horizon subsoil or any material toxic to plant growth. It must be free from large roots, sticks, hard clays, weeds, bush, stones, or other litter or waste materials of any kind. Acceptable planting soil must also have demonstrated, in its original location that it has the ability to sustain healthy plant growth of the species required.

Planting Soil Mix and Amendments. Planting soil mix must consist of a mixture of (2) two parts of well-pulverized planting soil, as approved by the Engineer upon review of soil test compliance for mechanical properties and pH range, and (1) one part coarse sand, and all amendments recommended by the Soil Test Laboratory and as specified herein.

Sand must consist of clean, sharp, well-graded, coarse sand of an FA-2 gradation, free of dust,



foreign and organic matter, with a pH of 6.0 to 7.0. If approved by the Engineer, planting soil must be amended with 1) sulfur or limestone to adjust pH, quantity determined by soil test to achieve a slightly acid soil, 2) gypsum incorporated at the rate of 88 kg/92 square meters, and 3) fertilizers as recommended by the soil test laboratory.

Prepare Planting Soil Mix off the site. Do not store soil mix materials on site. Planting soil must be dry prior to amending. Clean planting soil of lumps, stones, debris and noxious weeds before mixing. Provide supplemental pulverized planting soil and sand to achieve soil mix volumes and ratios required to meet finish grades. Mix planting soil and amendments thoroughly to provide uniform mixture, using drum-type mechanical mixer, or other means acceptable to the Engineer. Thoroughly mix all amendments by mechanical means prior to soil placement.

Soil mix must be amended full depth. Mix specified soil amendments at rates according to soil test recommendations. Mix pH adjusters with dry soil prior to adding any gypsum or fertilizers. Fertilize according to soil test recommendation, and with super-phosphate.

Sulfur must be granular as specified by the Engineer, according to the soil test recommendations and to the types of plantings in the area requiring amendments. Ground limestone (calcium carbonate) if required as specified by the Engineer, must have an analysis as specified in accordance with Section 1124 of the Standard Specifications.

Gypsum must be pelletized, consisting of calcium sulfate, calcium, sulfur, and water-soluble binder, with a maximum moisture content of one percent, and 95% finished pellet size passing between #4 and #14 mesh and gray in color.

Fertilizer must be complete fertilizer, uniform in composition, free flowing and suitable for application with approved equipment. Type and application rates must be determined by testing agency soil test but may contain the following percentages by weight: 10% nitrogen, 10% phosphorous, and 10% potash. If recommended by testing lab, apply a soluble mixture of treated minerals, 20% available phosphoric acid, rate to be determined by testing lab.

Inspections. The Engineer retains the right to visually inspect planting soil mix on site before placement. The Engineer may ask that material suspected of not meeting specification be removed from the site. The Engineer may take samples of the planter soil after it has been placed. The same chemical and mechanical test will be performed. If the in-place planting soil does not meet specification, then that area or planter will not be paid for. The Contractor will be given an opportunity to remedy the planting soil, so that full payment can be made.

Preparation, Drainage Tests and Underdrainage. Lay out plant bed locations, mark with stakes, adjust locations if requested and obtain the Engineer’s approval of locations before proceeding. Perform excavations and clean planting areas of all trash and debris before placement of soil mix. Remove and legally dispose offsite all excavated materials and items removed from cleaning and preparing beds.

Test all tree and plant bed pits by filling with water prior to backfilling with soil. If excavation does not percolate within 2 hours, inform Engineer and obtain his instructions before proceeding with backfill operations.

Washed Drainage Gravel: Water-worked, hard, durable non-limestone gravel, washed free of loam, sand, clay and other foreign substances, such as pea Gravel: 3/8" minimum, 5/8" maximum.

Soil Separator: 100% continuous polymeric filament, polyester non-woven, needle-punched landscape filter fabric with a weight of 4.2 oz/yd., 70 mils thick, with needlepoint puncture, such as Trevira Spunbond #011/140, as manufactured by Hoechst Celanese Corporation of Spartanburg, South Carolina. Do not use woven, knitted, heat bonded or polyethylene soil separator.

Drainage Sand: Clean, sharp, well-graded, coarse sand passing 1/4" mesh screen, free of dust, foreign and organic matter, with a pH of 5.5 to 6.5.

Placement.
Structure Adjustments. Perform or coordinate final adjustments of any utility structure.

Bed Prep. Clean planters of all trash and debris before placement of soil mix. Remove and legally dispose of debris off site. Repair to the satisfaction of the Engineer any portion of the sand pre-filter under drainage fabric or layers prior to installation of planting soil mix.

Place Planting Soil Mix. All beds must be completely backfilled with planting soil mix, raked, and prepared for planting. Provide, place, spread and rough grade specified planting soil mix for planting in all areas to be planted, to depths specified.

Place planting soil in 6-inch lifts. Upon installation of the first planting soil mix lift, moisten the surface at a rate of two gallons of water per square foot. Allow water to thoroughly percolate through the soil before placing the next lift. Allow soil to settle and dry at which time compact with manual pull-behind 100 pound per square foot concrete sod roller with one pass over the entire planting soil surface. Compact to 90% under all root balls and under all areas which will be paved over.

Check permeability of soil before adding second lift. Upon approval from the Engineer, install second lift of planting soil, moisten, allow for settling and compact to 90% under all root balls and under all areas which will be paved over. Place additional planting soil mix in required lifts following the same procedures, as necessary. Place enough soil mix to meet finish grades within specified tolerances, including any additional rolls to grades as described on the plans. Allow for placement and mixing of mulch but place enough soil mix to meet finish grades within specified tolerances. Protect soil mix from freezing prior to planting.

Final Grading: Rake smooth and finish grade all planted areas. The removal of excess material or the addition of planting soil maybe required prior to landscaping. This must be considered incidental to planting soil. Grading will be to a tolerance +/- 0.10 foot of design grades. Grade disturbed by irrigation installation must be restored to finish grade and raked smooth.

The finish surface of the soil must be free from clods, stones, sticks and debris and must conform to the lines, grades and the minimum thickness shown on the plans. Raking and rolling of the entire surface must be made until the surface reaches a finish grade condition. Existing sidewalks, curbs, structures, trees and other plant materials that are to remain in place must be protected from damage. Any damage caused by the Contractor must be replaced at the Contractor's

expense. All material "tracked" down the street must be removed each day. All sidewalks, driveways, alleys and pavements must be left in a broom cleaned condition daily.

All debris, litter, tire tracks, dirt, and unintended materials must be removed, swept or washed off all landscape and hard median surfaces and pavement on a daily basis.

Method of Measurement. Planting soil mix furnish, and place 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 PLANTING SOIL MIX FURNISH AND PLACE, of the depth specified, which prices must include all materials, labor, excavation and equipment necessary to complete the work.

WEED CONTROL, PRE-EMERGENT GRANULAR HERBICIDE

Description. This work shall consist of spreading a pre-emergent granular herbicide in areas as shown on the plans or as directed by the Engineer. This item will be used in mulched plant beds and mulch rings.

Materials. The pre-emergent granular herbicide shall contain the chemicals Trifluralin 2% active ingredient and Isoxaben with 0.5% active ingredient. The herbicide label shall be submitted to the Engineer for approval at least seventy-two (72) hours prior to application.

Method. The pre-emergent granular herbicide shall be used in accordance with the manufacturer’s directions on the package. The granules are to be applied prior to mulching.

Apply the granular herbicide using a drop or rotary type designed to apply granular herbicide or insecticides. Calibrate application equipment to use according to manufacturer’s directions. Check frequently to be sure equipment is working properly and distributing granules uniformly. Do not use spreaders that apply material in narrow concentrated bands. Avoid skips or overlaps as poor weed control or crop injury may occur. More uniform application may be achieved by spreading half of the required amount of product over the area and then applying the remaining half in swaths at right angles to the first. Apply the granular herbicide at the rate of 100 lbs./acre (112 kg/ha) or 2.3 lbs./1000 sq. ft. (11.2 kg/1000 sq. meters).

Method of Measurement. Pre-emergent granular herbicide will be measured in place in Pounds of Pre-emergent Granular Herbicide applied. Areas treated after mulch placement shall not be measured for payment.

Basis of Payment. This work will be paid for at the contract unit price per pound of WEED CONTROL, PRE-EMERGENT GRANULAR HERBICIDE which price shall include all materials, equipment, and labor necessary to complete the work as specified.

MULCH PLACEMENT 3”

Description. This work shall be done in accordance with the applicable portion of Section 253.02(c) and Section 1081.06 of the Standard Specifications for Road and Bridge Construction.

This work shall consist of furnishing, transporting, and spreading approved shredded hardwood bark mulch in parkway planting areas, and around existing and proposed trees within the limits of work along Western Ave., as noted on the plans. The diameter of the ring shall be 4 feet.

Materials. Hardwood bark mulch shall be clean, finely shredded mixed-hardwood bark free of sticks, leaves, stones, dirt clods, and other debris. Individual wood chips shall not exceed 2 inches in the largest dimension.

Submittals. A mulch sample and request for material inspection must be supplied to the Engineer for approval prior to performing any work 72 hours prior to application.

Installation. The grade, depth, and condition of the area must be approved by the Engineer prior to placement. The Contractor shall remove and properly dispose of all weeds, litter and plant debris before mulching. Mulch shall not be in contact with the base of tree trunks.

All finished mulch areas shall be left smooth and level to maintain uniform surface and appearance.

After the mulch placement, any debris or piles of material shall be immediately removed from the right of way, including raking excess mulch out of turf areas.

Method of Measurement. MULCH PLACEMENT 3” will be measured per square yard.

Basis of Payment. MULCH PLACEMENT 3” will be paid for at the contract unit price per square yard.

PERENNIAL PLANTS, PRAIRIE TYPE, GALLON POT

Description. This work shall consist of furnishing and installing perennial plantings in accordance with Section 254 of the Standard Specifications, except as modified herein, and as shown in the plans. Final locations of plantings will be approved by the Engineer.

Add the following to Article 254.02 Materials:

> All plants shall be healthy, vigorous, and true to species and variety. All materials shall be provided by a certified nursery and shall be free of pests and disease. All plant materials shall comply with State and federal laws with respect to inspection for plant diseases and infestations. Written approval shall be necessary for substitutions.
> Plants shall be obtained as close to possible to the project site. Written approval will be required for substitutions and plant material purchased outside a 200-mile radius of the site.

Delete Article 254.03(b) Planting Time and substitute the following:

> Plants shall only be planted between May 1 and June 15. Approval from the Engineer must be received for all planting dates.

Add the following to Article 254.04 Transporting and Storing Plants:

Each species should be handled and packed in the manner approved for the plant, having regard for the soil climatic conditions at the time and place of digging and delivery, and for the time that will be consumed for transit and delivery.
Plant materials shall be packed to ensure adequate protection against damage during transit. The plants shall be protected with wet material to ensure that the plant materials are delivered in a moist and cool condition. The vehicle should be ventilated to prevent overheating.
Plant materials shall be stored in a shaded area. Watering shall occur to maintain plant vigor during on-site storage.
An on-site inspection will be made prior to the installation of plant material. Any plant material not meeting specification (that being of good health) must be moved off the site.

Delete Article 254.05 Layout of Planting and substitute the following:

When plants are specified to be planted in prepared soil planting beds, the planting bed shall be approved by the Engineer prior to planting. Bed limits shall be painted or flagged. Individual plants layout shall be marked prior to installation.

Delete Article 254.06 (b) Planting Procedures and substitute the following:

When planting perennials in areas as shown on the plans or as directed by the Engineer, the following work shall be performed prior to planting:

- Trees and shrubs must be installed first to establish proper layout and to avoid damage to other plantings.

Install plants through erosion control blanket (wetland type plants only have blanket) with planting bar. Planting holes shall be as deep or slightly deeper than the plug roots to allow placing the plant without bending roots. Plant shall be placed flush with the earth surface. Hole shall be filled with soil carefully to avoid damage to roots and to leave no voids and pressed to firm earth surface.

Contractor shall provide and maintain all equipment necessary for planting, including watering equipment, water, and hoses. Immediately after planting, thoroughly water plant beds. Do not wash soil onto crowns of plants. The soil surface should be damp for the first three weeks following planting.

Delete Article 254.08 (b) Period of Establishment and substitute the following:

Plants must undergo a 30-day period of establishment. Additional watering shall be performed not less than three times a week for four weeks following installation. Water shall be applied at the rate of at least 2 gallons per square foot. Should excess moisture prevail, the Engineer may delete any or all of the additional watering cycles. In severe weather, the Engineer may require additional watering.

A spray nozzle that does not damage small plants must be used when watering native plants. Water shall be applied at the base of the plant to keep as much water as possible off plant leaves. The plants to be watered and the method of application will be approved by the Engineer. The Contractor will not be relieved in any way from the responsibility for unsatisfactory plants due to the amount of watering.

Add the following to Article 254.09 Method of Measurement:

Disposal of debris (rock, stones, concrete, bottles, plastic bags, etc.) removed from the plug plantings as specified in Article 202.03.

Delete Article 254.10 Basis of Payment and substitute the following:

This work will be paid for at the contract unit price per unit for PERNNIAL PRAIRIE MIX, of the type and size specified in the plans, which price shall include the cost of all materials, equipment, labor, plant care, removal, disposal and incidentals required to complete the work as specified herein. A unit is represented by 100-gallon pots Perennial Plants.

TRASH RECEPTACLE, FURNISH AND INSTALL

Description. This work must consist of furnishing and installing a new trash receptacle with a plastic liner at the locations specified in the Contract plans or as directed by the Engineer.

Materials. Materials must be as specified in the plans and must be “Gloss Black” in color, steel trash receptacle, 45-gallon capacity with plastic liner by the following manufacturer:

Manufacturer. Victor Stanley, Inc.
Model. T-45 with S-1 formed dome lid
Mounting. Surface mount

Submittals: Submit manufacturer’s technical data for each manufactured product, including certification that each product complies with the specified requirements. In accordance with the Standard Specifications, the Contractor must submit shop drawings for the Engineer’s approval showing the bench completely assembled including shop drawings of its component parts

Certifications. Submit manufacturer’s certification that the tubing and coatings meet the project specifications. Prior to production, the manufacturer of the trash receptacle is to submit certification that the steel to be used is in compliance with the “Steel Products Procurement Act” as described in Article 112.11 of the Special Conditions.

Construction Requirements. Each trash receptacle will be placed at the location indicated in the plans. The locations will be field marked and verified for approval by the Engineer. Anchor bolts must be drilled and grouted into concrete sidewalk only after the Trash Receptacle location has been finalized.

Method of Measurement. Trash receptacles will be measured in place per each furnished and installed.

Basis of Payment. This work will be paid for at the contract unit price per each for TRASH RECEPTACLE, FURNISH & INSTALL, which price will include all labor, anchor bolt and bolt installation, equipment, materials and incidental work necessary to complete the work as specified.

BENCHES

Description. Provide materials and labor for the installation of cast stone benches as indicated on the drawings and specified herein.

Submittals.

Product Data. For each type of product indicated. For cast stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

Concrete Mix Designs. Certified report identifying the design mixes, mix proportions, and additional design information.

Samples for Initial Selection. Manufacturer's color charts.

Shop Drawings. Show fabrication and installation details for cast stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.

Include elevations showing layout of units and locations of joints and anchors.

Samples. Samples for Initial Selection: For colored mortar.

Samples for Verification:

1. For each color and texture of cast stone required, 10 inches square in size. Contractor should assume (5) different samples for final color/finish selection.
2. For colored mortar. Make Samples using same sand and mortar ingredients to be used on Project. Label Samples to indicated types and amounts of pigments used.
3. Full-Size Samples: After color/finish selection has been made, contractor shall provide one full-size sample for review by the Engineer. Reviewed sample may be installed in the Work. No other units shall be cast until sample has been reviewed.

Make available for the Engineer's review at Project site or at manufacturing plant, if acceptable to the Engineer.

Qualification Data. For manufacturer. Include copies of material test reports for completed projects, indicating compliance of cast stone with ASTM C 1364.

Material Test Reports. For each mix required to produce cast stone, based on testing according to ASTM C 1364, including test for resistance to freezing and thawing.

Provide test reports based on testing within previous two years.

Quality Assurance. Manufacturer Qualifications. A qualified manufacturer of cast stone units similar to those indicated for this Project, that has sufficient production capacity to manufacture

required units, and is a plant certified by the Cast Stone Institute the Architectural Precast Association or the Precast/Prestressed Concrete Institute for Group A, Category AT.

Testing Agency Qualifications. Qualified according to ASTM E 329 for testing indicated.

Source Limitations for Cast Stone. Obtain cast stone units through single source from single manufacturer.

Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

Pre-installation/fabrication Conference: Conduct conference at site to review methods and procedures related to Cast Stone Masonry, including but not limited to the following:

Concrete mixture design
Final color selection and finish
Field measurements and product placement
Quality control of concrete materials and construction practices

Delivery, Storage, And Handling. Coordinate delivery of cast stone to avoid delaying the Work and to minimize the need for on-site storage. Pack, handle, and ship cast stone units in suitable packs or pallets.

Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units, if required, using dollies with wood supports.

Store cast stone units on wood skids or pallets with nonstaining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.

Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp. Store mortar aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.

Project Conditions. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in ACI 530.1/ASCE 6/TMS 602.

Hot-Weather Requirements: Comply with hot-weather construction requirements in ACI 530.1/ASCE 6/TMS 602.

Cast Stone Materials.
General: Comply with ASTM C 1364 and the following:
Portland Cement: ASTM C 150, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C 114. Provide white cement as required to produce cast stone color indicated.

Coarse Aggregates: ½" to ¼" gray limestone complying with ASTM C 33; gradation and colors as needed to produce required cast stone textures and colors.

Fine Aggregates: White silica sand complying with ASTM C 33, gradation and colors as needed to produce required cast stone textures and colors.

Color Pigment: Davis Color 860 Color to be approved by Engineer.

Admixtures: Use only admixtures specified or approved in writing by the Engineer. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.

Air-Entraining Admixture: ASTM C 260. Add to mixes for units exposed to the exterior at manufacturer's prescribed rate to result in an air content of 4 to 6 percent, except do not add to zero-slump concrete mixes.

Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

Water-Reducing, Retarding Admixture: ASTM C 494/C 494M, Type D.

Water-Reducing, Accelerating Admixture: ASTM C 494/C 494M, Type E.
Reinforcement: Deformed steel bars complying with ASTM A 615/A 615M, Grade 60. Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches of cast stone material.

Epoxy Coating: ASTM A 775/A 775M.
Galvanized Coating: ASTM A 767/A 767M.
Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666, Type 304.

Cast Stone Units

A. See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers. Retain first paragraph and list of manufacturers in this article. See Division 01 Section "Product Requirements."

Provide cast stone units complying with ASTM C 1364 using either the vibrant dry tamp or wet-cast method.

Provide units that are resistant to freezing and thawing as determined by laboratory testing according to ASTM C 666/C 666M, Procedure A, as modified by ASTM C 1364.

Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.

Provide drips on projecting elements unless otherwise indicated.

Skate deterrents shall be cast as shown in the Drawings – refer to contract drawings for details.

There is a total of (20) benches. There are (10) 5’ wide benches in the plaza area and (10) 4’ wide benches throughout the rest of the project limits. All benches shall be paid for under same pay item.

Fabrication Tolerances:
Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.
Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater, but in no case by more than 1/4 inch.
Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.

Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 3/8 inch on unformed surfaces.

Cure units as follows:

- Cure units in enclosed moist curing room at 95 to 100 percent relative humidity and temperature of 100 deg F for 12 hours or 70 deg F for 16 hours.
- Keep units damp and continue curing to comply with one of the following:
- No fewer than five days at mean daily temperature of 70 deg F or above.
- No fewer than six days at mean daily temperature of 60 deg F or above.
- No fewer than seven days at mean daily temperature of 50 deg F or above.
- No fewer than eight days at mean daily temperature of 45 deg F or above.
- Acid etch units after curing to remove cement film from surfaces to be exposed to view.
- Colors and Textures: Provide units with fine-grained texture and gray color. Color to be approved by the Engineer by physical sample.

Mortar Materials
Provide mortar materials that comply standard Masonry specifications for mortar.
Mortar Cement: ASTM C 1329.
Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.
Aggregate for Mortar: ASTM C 144.

For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

For joints less than 1/4-inch-thick, use aggregate graded with 100 percent passing the No. 16 sieve.

Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
Water: Potable.

<u>Accessories</u>
Anchors: Type and size indicated, fabricated from Type 304 stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666.

Dowels: 1/2-inch diameter, round bars, fabricated from Type 304 stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666.

Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cast stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

Mortar Mixes
Do not use admixtures including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

Do not use calcium chloride in mortar or grout.

Use mortar cement mortar unless otherwise indicated. Comply with ASTM C 270, Proportion Specification.
For setting mortar, use Type S.
Pigmented Mortar: Use colored cement product – color to match bench

Pigments shall not exceed 5 percent of mortar cement by weight.

Mortar color to match the cast masonry stone units.

Application: Use pigmented mortar for exposed mortar joints.

Setting Bed
Thickened Portland cement concrete slab underlay cast masonry units refer to drawings for thickness. This shall be included in the cost of the bench. Portland cement concrete to match standard requirements.

Examination
Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.

Setting Anchored Cast Stone
Set cast stone as indicated on Drawings. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place. Set cast stone supported on clip or continuous angles on resilient setting shims. Use material of thickness required to maintain uniform spacing. Benches shall be set on thickened concrete edge with ½" threaded stainless steel dowel set in epoxy. Cost of thickened concrete walk edge shall be included in the cost of the bench.

Installation Tolerances
Variation from Plumb: Do not exceed 1/8 inch in 10 feet maximum.
Variation from Level: Do not exceed 1/8 inch in 10 feet maximum.

Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch, except where variation is due to warpage of units within tolerances specified.

Adjusting and Cleaning
Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by the Engineer. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.
In-Progress Cleaning: Clean cast stone as work progresses.

Remove mortar fins and smears before tooling joints.
Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:

Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of cast stone.

Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.

Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.

Clean cast stone by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.

Clean cast stone with proprietary acidic cleaner applied according to manufacturer's written instructions.

Method of Measurement. Benches will be measured for payment as each furnished and installed.

Basis of Payment. This work will be paid for at the contract unit price per each for BENCHES, which price shall include all samples, mockups, labor, materials, equipment and incidentals for all work involved. Thickened edge of concrete shall be included in the cost of this pay item.

GREEN INFRASTRUCTURE

Description. This section describes the Green Infrastructure elements within this contract. The following items are to be considered part of the Green Infrastructure. All other items within this contract are to be considered Gray Infrastructure

1. Brick Pavers, Permeable
2. Aggregate Base Course, Type A, CA-16
3. Aggregate Base Course, Type A, CA-7

4. Aggregate Base Course, Type A, CA-1
5. Drywells

Green Infrastructure has been included in this project to reduce the amount of storm water that enters the existing combined sewer system. During large rain events, storm water that exceeds the capacity of the existing combined sewer system overflows into the Illinois River. The above Green Infrastructure items have been designed to detain and direct storm water into the natural layers of sand beneath the proposed roadway improvements.

The Green Infrastructure items contained within this contract have been designed as a system. This system compliments the Gray Infrastructure drainage elements within the project limits, as well as the existing drainage elements that lie beyond the project limits.

Construction Requirements. Green Infrastructure items require care that is above the typical Gray Infrastructure equivalent. Additional care shall be given to Green Infrastructure items to ensure they can operate to the full extent expected. Lack of appropriate care during construction will have detrimental effects on the longevity and serviceability of each item and the system.

Construction Sequence. Green Infrastructure items shall constructed and installed in a manner and sequence that minimizes the exposure to disturbed and/or displaced soil, placement of aggregate with fines, cast-in-place concrete, application of water proofing and protective coat, striping, vehicle and equipment maintenance, or other items or work not listed that may compromise the permeability or durability of Green Infrastructure items.

When or where Green Infrastructure items may become susceptible to the above-mentioned items or work, they shall be adequately protected to the satisfaction of the Engineer. If Green Infrastructure items are damaged, clogged, or if the intended function or capacity has been compromised as a result of the Green Infrastructure items not being adequately protected, as deemed by the Engineer, the contractor shall repair, replace, clean, or otherwise restore the compromised Green Infrastructure item.

Permeable Pavers. Permeable pavers are the most vulnerable Green Infrastructure item included in this contract. Excessive care shall be exercised to ensure that the permeable are free from disturbed and/or displaced soil. This includes the work and materials associated with earth excavation, grading, placement of topsoil and planting soil, as well as all landscaping and planting pay items.

Heavy equipment and trucking will not be permitted on installed permeable pavers. Small equipment will be permitted on the pavers if performing work that is germane to the permeable pavers or work that would not be practical otherwise. Engineer shall have the discretion regarding work would be considered not practical. The contractor is responsible for any damage or displacement resulting from equipment.

Aggregate Base Course, Type A, CA7 & CA-1. Excessive care shall be exercised to ensure that the permeable pavers are free from disturbed and/or displaced soil. This includes the work and materials associated with earth excavation, grading, placement of topsoil and planting soil, as well as all landscaping and planting pay items. This also includes the migration of fines or contamination of CA-7 or CA-1.

Aggregate Base Course CA-1 is intended to extend to the depth shown within the plans. It is also intended to extend to the existing layer of undisturbed sand. If sand is not encountered within the specified depth, work shall cease, and the Engineer shall be notified.

AGGREGATE BASE COURSE, VARIOUS TYPES, VARIOUS GRADATIONS

Description. This work shall consist of furnishing all labor, equipment, and material for the installation of Aggregate Base Course, Type A or Type B. This work shall be in accordance with the Section 351 of the Standard Specifications except as modified herein.

Reference. See also the Green Infrastructure special provision.

Materials. The following coarse aggregate gradations shall be used as described below and where else shown in the plans:

COURSE	TYPE	GRADATION	DESCRIPTION
AGG BSE CSE	A	CA-16	• PERMEABLE PAVER BEDDING • NON-PERMEABLE PAVER BEDDING
AGG BSE CSE	A	CA-7	• DRAINAGE AGGREGATE BENEATH PERMEABLE PAVERS
AGG BSE CSE	A	CA-1	• DRAINAGE AGGREGATE RESERVOIR BENEATH PERMEABLE PAVERS
AGG BSE CSE	A	AS SPECIFIED IN SECTION 351	• BENEATH FULL DEPTH HMA PAVEMENT (ALTERNATE B ONLY)
AGG BSE CSE	B	AS SPECIFIED IN SECTION 351	• BENEATH COMB. CONC. CURB & GUTTER (VARIOUS TYPES) • BENEATH PCC BASE COURSE

Construction Requirements. AGGREGATE BASE COURSE, of the type and gradation specified, shall be constructed in accordance with Section 351 of the Standard Specifications for Road and Bridge Construction, except that the following shall apply and be held over the Standard Specification for AGGREGATE BASE COURSE, TYPE A, CA-7.

AGGREGATE BASE COURSE, TYPE A, CA-7

Modify the first sentence in the second paragraph of 351.05 to: Moisten, spread, and compact the aggregate base material on the prepared infiltration aggregate layer in one lift 4" in. thick when compacted.

Material shall be stockpiled such that material is free from standing water, uniformly graded, free from organic material, sediment, or debris.

Care shall be taken not to crush the aggregate during compaction.

The work shall be protected from sediment deposition and damage. Aggregate base materials contaminated with sediment shall be removed and replaced with clean material and compacted in a manner approved by the Engineer.

Surface tolerance of the compacted aggregate base shall not deviate by more than ±1" in. over a 10'-foot straight edge.

Method of Measurement. This wok will be measured in place for payment in Ton.

Basis of Payment. Payment for this work shall be at the contract unit price per Ton for AGGREGATE BASE COURSE, of the type and gradation specified, which will include all labor, material, and equipment necessary to complete this item of work.

CONCRETE EDGING 12” WIDE, VARIOUS DEPTHS

Description. This work shall be done in accordance with the details in the plans and applicable portions of Section 606 of the Standard Specifications except as modified herein.

This item includes the construction of a 12-inch wide concrete curb of various depths bordering the proposed pavers (permeable and non-permeable). The concrete curb shall be constructed in accordance with the details in the plans at locations between the pavers and HMA pavement, between adjacent sections of permeable and non-permeable pavers and where shown in the plans.

Materials. Materials shall be in accordance with article 606.02 of the Standard Specifications except that Note 1 shall be revised as follows:

Note 1. Note 1. Synthetic fibers shall be used in the concrete mixture. Synthetic fibers shall be Type III according to ASTM C 1116. The synthetic fiber shall have a minimum length of 1/2 in. (13 mm) and a maximum length of 0.75 in. (19 mm).

The synthetic fibers shall be added to the concrete and mixed per the manufacturer’s recommendation and shall be on the Department’s qualified product list. The maximum dosage rate in the concrete mixture shall be 1.5 lb/cu yd (0.9 kg/cu m).

Revise Article 606.12 to read as follows:

Protective coat, when required, shall be constructed according to Article 420.18, except that appropriate care shall be given to ensure that there is no overspray onto the adjacent pavers (permeable and nonpermeable).

Method of Measurement. Concrete edging will be measured will be measured for payment in feet.

Basis of Payment. CONCRETE EDGING 12” WIDE will be paid for at the contract unit price per foot regardless of the depth.

Protective coat will be paid for according to Article 420.20.

PORTLAND CEMENT CONCRETE PAVEMENT 8 1/4" AND VARIES (JOINTED) SPECIAL

Description. This work shall be done in accordance with Section 420 of the Standard Specifications except as modified herein. The PCC pavement shall be thickened when adjacent to non-permeable pavers (typically located in intersections) in accordance with the typical sections and details in the plans.

Method of Measurement. Portland cement concrete pavement 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 PORTLAND CEMENT CONCRETE PAVEMENT 8 1/4" AND VARIES (JOINTED).

DOWEL BAR ASSEMBLIES

Effective: January 20, 2017 Revised: August 4, 2017

Revise Article 420.05(c)(2) to read:

Dowel Bar Assemblies. Dowel bar assemblies shall be installed at right angles to the centerline of the pavement with the dowel bars parallel to the proposed pavement surface and to each other.

The assembly shall act as a rigid unit with each component securely held in position relative to the other members of the assembly. The entire assembly shall be held securely in place by means of metal stakes which shall penetrate both the stabilized subbase and soil or granular subbase. At least ten stakes shall be used for each 10, 11, or 12 ft. (3, 3.3, or 3.6 m) section of assembly.

The stakes shall loop over or attach to the top parallel spacer bar of the assembly and penetrate the subgrade or subbase at least 12 in. (300 mm).

At the location of each dowel bar assembly, the subgrade or subbase shall be reshaped and re - tamped when necessary.

Prior to placing concrete, any deviation of the dowel bars from the correct horizontal or vertical alignment greater than 3/8 in. in 12 in. (9 mm in 300 mm) shall be corrected and a light coating of oil shall be uniformly applied to the dowel bars.

Care shall be exercised in depositing the concrete at the dowel bar assemblies so that the horizontal and vertical alignment will be retained.

PAYMENT FOR USE OF MATERIAL TRANSFER DEVICE

Effective April 23, 2010

This work shall be performed as specified in the plans and specifications herein.

No payment will be made for tonnages of HMA items required to be placed with a Material Transfer Device but were not able to be placed with a Material Transfer Device.

The maximum tonnage eligible for payment when placed with the Material Transfer Device will be limited to the Final Pay Quantity of the pay items placed.

CONSTRUCTION SEQUENCE FOR MILLING AND PAVING (3P)

Effective: January 1, 2016 Revised: November 8, 2019

The following is the sequence for milling and paving:

1. Mill both lanes for the entire project.

2. Place binder on both lanes of the entire project.

3. Place the Hot-Mix Asphalt (HMA) Tack Coat and Surface Course 6" wider than the centerline when paving the first lane.

4. After surfacing the first lane and prior to priming and start of surfacing on the adjacent lane, mill the 6" of the unconfined surface to the centerline. The milling equipment must be capable of producing a straight line. The depth of the milling must be controlled so as not to gouge the underlying leveling binder lift. The intent is to create a vertical face at the centerline and provide a lateral confinement for the adjacent lane surface course. Skid-steer mounted mills will not be allowed.

5. Clean and prepare the surface of the remaining lane as per Article 406.05 of the Standard Specification prior to the placement of the HMA Surface. The HMA Tack Coat shall be sprayed the full width of the lane and also lapped onto the adjacent lane a distance not to exceed 4". In addition, the vertical face of the adjacent mat shall be thoroughly tacked by means of a dedicated spray nozzle, mounted at a 45-degree angle, aimed toward the face.

6. Placement of this HMA Surface shall require the use of a joint-matching device in lieu of a longitudinal averaging ski. The compacted height of this lane shall be exactly flush, or not more than 1/32" higher, to the adjacent lane to ensure the joint has sufficient material for adequate compaction. During placement, the side plate of the screed shall not exceed 1/2" overlap onto the adjacent lane.

   The milling of the 6" extra width at the centerline will be paid for at the contract unit price per Square Yard for HOT-MIX ASPHALT SURFACE REMOVAL – SPECIAL. The extra HMA prime coat will be paid for at the contract unit price per Pound for the tack coat specified in the plans. The extra HMA surface course will be paid for at the contract unit price per Ton for the POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE of the type specified in the plans. All other extra work will not be paid for separately, but shall be included in the unit bid price of the various pay items and no other compensation will be allowed.

HOT-MIX ASPHALT SURFACE REMOVAL, 2 1/2”
Effective: March 1, 1993 Revised: November 17, 2017

Description. This work shall consist of removing a portion of the existing hot-mix asphalt concrete surface course in accordance with the applicable portions of Section 440 and 1101 of the Standard Specifications, this special provision, details in the plans and as directed by the Engineer. The cold milled salvaged aggregate resulting from this operation shall become the property of the Contractor.

Equipment. The machine used for milling and planing shall be a self-propelled grinding machine having a minimum 12' (3.6 m) wide drum at least 28" (710 mm) in diameter. When a milling width in excess of 12′ is required and the Contractor’s milling machine is less than the required width shown in the plans, the remaining area shall be milled with a machine capable of meeting the requirements of this special provision. Milling attachments used with skid steer tractors will not be allowed for longitudinal areas to mill additional widths.

When the teeth become worn so that they do not produce a uniform surface texture, they shall all be changed at the same time (as a unit). Occasionally, individual teeth may be changed if they lock up or break, but this method shall not be used to avoid changing the set of teeth as a unit. Occasional gouges, due to deteriorated pavement condition, or separation of lifts will not be cause to replace all teeth. The Engineer will be the sole judge of the cause of the pavement gouging and the corrective work required. Corrective work due to negligence or poor workmanship shall be at the Contractor’s expense.

The moldboard is critical in obtaining the desired surface texture. It shall be straight, true, and free of excessive nicks or wear, and it shall be replaced as necessary to uniformly produce the required surface texture. Gouging of the pavement by more than 1/4 inch (6 mm) shall be sufficient cause to require replacement of all teeth.

Construction
Requirements

General. Weather conditions, when milling work is performed, must be such that short term or temporary pavement markings can be placed the day the surface is milled in accordance with Section 703 “Work Zone Pavement Markings”.

An automatic grade control device shall be used when milling mainline pavement and shall be capable of controlling the elevation of the drum relative to either a preset grade control stringline or a grade reference device traveling on the adjacent pavement surface. The automatic grade control device may be utilized only on one side of the machine with an automatic slope control device controlling the opposite side. The traveling grade reference device shall not be less than 30 feet (9 m) in length. When milling crossroads, turn lanes, intersections, crossovers, or other miscellaneous areas, the Engineer may permit the matching shoe. The Contractor, at his option, may also substitute an approved 6’ wide (1.8 m) machine for areas other than mainline pavement.

The Contractor shall mill 2.0 inches at the centerline and project the proposed cross slope to the edge of pavement. In the event the milling at the outer edge of the lane then the Contractor shall reduce the cut at the at the edge of pavement. If deemed necessary, the Contractor may reduce the cross slope from normal 1.5% to 1%.

Surface tests will be performed in accordance with Article 406.11 of the Standard Specifications. The longitudinal profile will be taken 3 ft. (0.9 m) from and parallel to each edge of pavement and 3 ft. (0.9 m) from and parallel to the centerline on each side. If a shadow area is found at the 3 ft. (0.9 m) points the pavement smoothness tester will be moved enough distance either side to measure the Contractor's milling efforts. Any surface variations exceeding the tolerance in Article 406.11 shall be corrected by reprofiling at no additional expense to the Department. In addition, the Contractor shall be responsible for refilling with approved hot-mix asphalt mixtures any area that lowered the pavement profile as a result of faulty milling operations if directed by the Engineer. The Contractor shall be responsible for providing the pavement smoothness tester described elsewhere to retest the pavement profile obtained.

If the milling depth is intended to expose the original concrete pavement, then additional hand or machine work may be necessary to remove any remaining veneer of bituminous pavement which may be left in place behind the milling machine. Such work will be at the direction of the Engineer and at no extra cost to the City.

The Contractor shall provide a 10-foot (3 m) straightedge equipped with a carpenter's level or a 7 foot (2.1 m) electronic straightedge to check the cross slope of the roadway at regular intervals as directed by the Engineer.

Surface Texture: Each tooth on the cutting drum shall produce a series of discontinuous longitudinal striations. There shall be 16 to 20 striations (tooth marks) for each tooth for each 6 feet (1.8 m) in the longitudinal direction, and each striation shall be 1.7 inches ± 0.2 inch (43 ± 5 mm) in length after the area is planned by the moldboard. Thus, the planed length between each pair of striations shall be 2.3 inches ± 0.2 inch (58 ± 5 mm). There shall be 80 to 96 rows of discontinuous longitudinal striations for each 5 feet (1.5 m) in the transverse dimension. The areas between the striations in both the longitudinal and transverse directions shall be flat topped and coplanar. The moldboard shall be used to cut this plane; and any time the operation fails to produce this flat plane interspersed with a uniform pattern of discontinuous longitudinal striations, the operation shall be stopped and the cause determined and corrected before recommencing. Other similar patterns of uniform discontinuous longitudinal striations interspersed on a flat plane may be approved by the Engineer. The drawing titled "Hot-Mix Asphalt Surface Removal" showing the desired surface texture is included in the plans.

The start-up milling speed shall be limited to a maximum of 50 foot (15 m) per minute. The Contractor shall limit his operations to this speed to demonstrate his ability to obtain the striations and ride ability as described above. If the Contractor is able to demonstrate that he can consistently obtain the desired striations and ride ability at a greater speed he will be permitted to run at the increased speed.

Cleanup. After cold milling a traffic lane and before opening the lane to traffic, the pavement shall be swept by a **self-propelled street sweeper with power vacuum capability** to prevent compaction of the cuttings onto the pavement. All loose material shall be removed from the roadway. Before the prime coat is placed, the pavement shall be cleaned of all foreign material to the satisfaction of the Engineer.

This cleanup work shall be considered included in the contract unit price per Square Meter (Square Yard) for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified, and no additional compensation will be allowed.

Method of Measurement.

1. Contract Quantities. The requirements for the use of Contract Quantities shall be Article 202.07(a) of the Standard Specifications.

2. Measured Quantities. Cold milling and planing will be measured, and the area computed in square yards (square meters) of surface.

Areas not milled (shadowed areas) due to rutting in the existing pavement surface will be included in the area measured for payment.

Basis of Payment. The cold milling and planing will be paid for at the contract unit price per Square Yard (Square Meter) for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified. Payment as specified will include variations in depth of cuts due to rutting, superelevations, and pavement crown and no additional compensation will be allowed.

PROTECTION OF FRAMES AND LIDS OF UTILITY STRUCTURES

Effective March 6, 1991 Revised January 1, 2007

This work shall consist of protecting frames and lids of utility structures in the pavement after the adjacent hot-mix asphalt surface has been removed to the required depth by cold milling or by hand methods.

After the area has been swept clean and before the lane is opened to traffic, a hot bituminous mixture shall be placed around the casting, flush with its surface and decreasing to a featheredge in a distance of 4 feet around the entire surface of the casting. Cold mix or milled material will not be permitted. This mixture shall remain in place until the day surfacing operations are undertaken within the immediate area of the structure. Prior to placing the surface course, the temporary hot-mix asphalt mixture shall be removed and disposed of by the Contractor as specified in Article 202.03 of the Standard Specifications.

The temporary tapers and their removal shall be considered included in the contract unit price per Square Yard for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified, and no additional compensation will be allowed.

SIDEWALK DRAINS

Effective March 1, 1991 Revised January 1, 2007

Drainage troughs and pipes of various designs carry storm water from inlets in commercial entrances across the sidewalk to the gutter. These drainage facilities are to be restored as they are located. The existing pipes and grates shall be salvaged if possible. The cost of any concrete

work to restore these drains shall be included in the unit price per Square Foot for PORTLAND CEMENT CONCRETE SIDEWALK, 4". Any pipe or grate materials which have to be replaced will be paid for in accordance with Article 109.04 of the Standard Specifications.

PCC SLIPFORM PAVING AGGREGATE OPTIMIZATION

Effective August 3, 2012 Revised November 7, 2014

Delete Note 8/ of Article 1004.01(c) and replace Article 1004.02(d)(1) with the following:

For the slipform paving of concrete pavement, the Class PV concrete shall be uniformly graded. This may be accomplished by using a uniformly graded single coarse aggregate, or by blending two or more coarse aggregate sizes. As a minimum for multiple coarse aggregate sizes, CA 7 or CA 11 shall be blended with CA 13, CA 14, or CA 16. The final single coarse aggregate or combined coarse aggregate gradation shall have minimum 45 percent and maximum 60 percent passing the 1/2 in. (12.5 mm) sieve. However, the Contractor may propose for approval by the Engineer an alternate uniformly graded concrete mixture using the information in the "Portland Cement Concrete Level III Technician Course – Manual of Instructions for Design of Concrete Mixtures".

MEMBRANE CURING METHOD

Effective: July 29, 2016 Revised: November 17, 2017

Revise Article 1020.13(a)(4) paragraph 2 to read:

"After all finishing work to the concrete surface has been completed, the surface and all exposed edges shall be sealed with membrane curing compound of the type specified within ten minutes. The seal shall be maintained for the specified curing period. The edges of the concrete shall, likewise, be sealed within ten minutes after the forms are removed. Two separate applications applied at least one minute and no more than fifteen (15) minutes apart, each at the rate of not less than 1 gal./250 sq. ft. (0.16L/sq. m) will be required upon the surfaces and edges of the concrete. These applications shall be made with the mechanical equipment specified. Type III compound shall be agitated immediately before and during the application.

PCC QC/QA ELECTRONIC REPORTS SUBMITTAL

Effective April 26, 2013 Revised: April 26, 2015

The Contractor's QC personnel shall be responsible for electronically submitting PRO and IND MI 654 Air, Slump, Quantity Reports, PRO MI 655 PCC Strength Reports, and MI 504 Field/Lab Gradations to the Department. The format for the electronic submittals will be the PCC QC/QA reporting program, which will be provided by the Department. Microsoft Office 2007 or newer is required for this program which must be provided by the Contractor.

PCC AUTOMATIC BATCHING EQUIPMENT

Effective April 23, 2010 Revised November 7, 2014

Portland cement concrete provided shall be produced from batch plants that conform to the requirements of Article 1103.03 (a) and (b) of the Standard Specifications for Road and Bridge Construction. Semi-automatic batching will not be allowed.

In addition, the batching plant shall be a computerized plant interfaced with a printer and shall print actual batch weights and aggregate mixtures, all water added, amount of each admixture or additive per batch, and percentage variance from design. The ticket shall also state the actual water-cement ratio as batched, and the amount of water that can be added to the batch without exceeding the maximum water-cement ratio. Truck delivery tickets will still be required as per Article 1020.11 (a)(7) of the Standard Specifications.

CONCRETE UTILITY BOX OUT

Description. This work shall consist of a portland cement concrete box out around a utility structure or appurtenance that lies within the proposed pavers or asphalt pavement.

Materials. Materials shall be in accordance with Section 420 of the Standard Specifications for Road and Bridge Construction.

Construction Requirements. Concrete box out shall be poured in one monolithic lift. Concrete may be finished by hand but shall have a similar final finish texture as that produced by Final Finish Type B as described in Article 420.09(e)(2) of the Standard Specifications. Final finished surface shall be flush with the adjacent pavement, pavers, utility structure or appurtenance, and match the slope of the adjacent pavement or pavers.

PROTECTIVE COAT, when required, shall be constructed according to Article 420.18, except that PROTECTIVE COAT shall be applied using hand methods and that appropriate care shall be given to ensure that there is no overspray onto adjacent pavers (permeable and non-permeable).

Method of Measurement. This work will be measured for payment in Square Foot of finished surface area. No deduction will be made for the utility structure or appurtenance.

Basis of Payment. This work will be paid for at the contract unit price per Square Foot for CONCRETE UTILITY BOX OUT, which price will be payment in full for all labor, material, and equipment necessary to perform the work described above.

Protective coat will be paid for at the contract unit price per square yard for PROTECTIVE COAT.

CONCRETE STEPS

Description. This work shall be done in accordance with applicable portions of Section 423 of the Standard Specifications for Road and Bridge Construction. This work shall consist of construction steps at locations indicated by the engineer in accordance with the City Standard for Concrete Steps.

Materials. The steps shall be constructed with IDOT Class SI Concrete as shown in Section 1020 of the Standard Specifications for Road and Bridge Construction.

Method of Measurement. This work will be measured for payment in cubic yard as indicated on the details in the plans.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard for CONCRETE STEPS which shall include all labor, excavation, earth backfill, granular material, materials including wire, curing compound, tools and equipment necessary to complete this work as specified. The cost will also include rubbing the face of the steps to create a clean finish.

COMBINATION CONCRETE CURB AND SIDEWALK 4 INCH (SPECIAL)

Description. This work shall consist of constructing an integrally poured portland cement concrete combination curb and sidewalk as in accordance with Sections 424 and 606 of the

Standard Specifications, the IDOT District 4 standards 424101-D4 and 424106-D4, and the details in shown in the plans.

Method of Measurement. This work will be measured for payment in place and the area computed in square feet. The width for measurement will be top surface of the curb and sidewalk and the final finished face of curb as indicated in the detail.

Basis of Payment. This work will be paid for at the contract unit price per square foot for COMBINATION CONCRETE CURB AND SIDEWALK 4 INCH (SPECIAL)

The aggregate below the concrete will be paid for separately as SUBBASE GRANULAR MATERIAL of the type and depth as specified in the plans.

PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT AND INTEGRAL CURB, 8 INCH (SPECIAL)

Description. This work shall consist of constructing an integrally poured portland cement concrete curb and driveway as in accordance with Sections 424 and 606 of the Standard Specifications, and the details in shown in the plans.

Method of Measurement. This work will be measured for payment in place and the area computed in square yards. The width for measurement will be top surface of the curb and sidewalk and the final finished face of curb as indicated in the detail.

Basis of Payment. This work will be paid for at the contract unit price per square yard for PORTLAND CEMEMNT CONCRETEDRIVEWAY PAVEMENT AND INTEGRAL CURB, 8 INCH (SPECIAL).

The aggregate below the concrete will be paid for separately as SUBBASE GRANULAR MATERIAL of the type and depth as specified in the plans.

CONCRETE STEP REMOVAL

Description. This work shall consist of the removal of all Concrete Steps as directed by the Engineer. This work shall be done in accordance with Section 440 of the Standard Specifications for Road and Bridge Construction.

Payment for removal and replacement will not be allowed for items removed beyond the limits of construction or those items damaged needlessly by the contractor. At locations where handrail coincides with Concrete Step Removal, the removal of the Handrail will be incidental to the Concrete Step Removal and no further compensation will be allowed. The cost of sawing pavement where noted or directed by the engineer shall by incidental to the item of work.

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

Basis of Payment. This work will be paid for at the contract unit price per each for CONCRETE STEP REMOVAL; which shall include saw cutting, removal, disposing of the material, excavation, backfilling, all labor, tools, materials and equipment necessary to complete this work as specified.

FILLING EXISTING VAULT

Description. If an existing vault is discovered adjacent to or under existing sidewalk being removed, the Engineer shall be notified immediately. No specific locations can be identified at this time.

Construction Requirements. This work shall consist of filling and abandoning the existing vaults that may be discovered while removing existing sidewalk adjacent to buildings. However, there is potential for a vault in the vicinity of Station 333+00 left and Station 339+50 left and at other possible unknown locations. It is assumed that vaults are 8 cubic yards (6’ wide x 6’ long x 6’ high).

The contractor shall contract to have each vault discovered inspected by an Illinois Licensed Structural Engineer to evaluate the condition of the existing wall between the open vault and basement of the building. The condition of the vault and basement walls shall be videotaped and photographed prior to being filled.

Materials. The vault will then be filled using controlled low strength material in lifts of a thickness to be determined by the Structural Engineer to avoid surcharging and compromising the existing wall. Each lift shall cure sufficiently to support itself and the next lift of material prior to placing the subsequent lift.

The Licensed Structural Engineer shall prepare a report for each vault detailing the condition of the existing wall vault/basement wall including photos; evaluation of the need to partially remove the outer vault walls to avoid conflicts with proposed features, and recommendations for backfilling the vault.

Prior to back filling the vault the existing vault/basement wall shall have a waterproofing membrane installed on the outside face of the wall. Membrane shall be a bituminous based liquid product, or a product approved by the Engineer upon the Structural Engineer’s recommendation.

The product shall be applied directly to the wall as directed by the manufacturer and in accordance with applicable portions of Article 581 of the Standard Specifications.

All controlled low strength material shall be provided and placed in accordance with Section 593 of the Standard Specifications, the detail in the plans, and as directed by the contracted Structural Engineer.

Sturdy pedestrian barriers shall be employed around the perimeter of the open vault until the vault is completely filled and brought back to level with the surrounding ground. The open vault shall also be protected from filling with water, in any form, during the course of back filling. Covers, tarps, and pumps may be required to keep the open vault dry and to avoid water infiltrating the basement of the building. Should water or fill material infiltrate the basement the Contractor will be responsible for removing the water and fill material before cleaning the affected areas of the

basement to the satisfaction of the Engineer and building owner, no additional compensation will be allowed for this cleanup work.

Method of Measurement. This work will be measured for payment in cubic yards of materials placed.

Basis of Payment. This work will be paid for at the contract unit price per Cubic Yard for FILLING EXISTING VAULT, which price will include all labor, structural engineering inspection and report, equipment, videotaping of existing conditions, and material (including the waterproofing membrane, controlled low strength material, pedestrian barricades, and protection from water) for filling existing vaults to the satisfaction of the Engineer.

TRACK REMOVAL

Description. This work shall be in accordance with this Special Provision. Streetcar track material shall be removed during the proper stage of construction at locations shown on the plans. Track material to be removed may include rails, cross ties, tie plates, spikes, joint bars, rail anchors, frogs, switches and appurtenances, and other track material. Any proposed cutting of rails must be approved by the Engineer.

Track material within the designated limits of removal, as shown on the plans or modified by the Engineer, shall become the property of the Contractor and shall be removed from the project area and salvaged or properly disposed of. Contractor will be responsible for shaping, smoothing, and compacting the roadbed after removal of track or turnouts. The roadbed shall be free of ruts and depressions and shaped to allow for proper drainage.

Track removal work will include all labor, materials and equipment required to dismantle and remove streetcar track and associated materials from locations indicated on the plans, or as directed by the Engineer.

Method of Measurement. Track removal will be measured for payment along the roadway centerline in linear feet. Individual rails will not be measured separately.

Basis of Payment. This work will be paid for at the contract unit price per foot for TRACK REMOVAL.

BRICK PAVERS, PERMEABLE
BRICK PAVERS, NON-PERMEABLE

Description. This item shall consist of furnishing all labor, materials, tools and equipment required to construct brick paver permeable and non-permeable street paving for heavy vehicle application, in accordance with the plans and as herein specified. In addition to the brick pavers, the work shall include, but is not limited to, the sand setting bed, joint sand, weep holes, and all setting accessories.

Reference. See also the Green Infrastructure special provision.

Submittals. The contractor shall provide five individual samples of each brick color and/or texture showing representative of size, shape, color and finish, indicating color variation and texture range expected in finished installation prior to ordering material. The City Engineer shall approve the color and finish. All samples shall be furnished without charge to the Department.

The Contractor shall provide to the Engineer the manufacturer's certification of conformance to ASTM standards.

Certifications. Submit certifications that all brick pavers will meet or exceed designated specifications.

Permeable Joint Opening Aggregate:

1. Provide three representative one-pound samples in containers of aggregate materials that indicate the range of color variation and texture expected upon project completion.
2. Accepted samples become the standard of acceptance for the product produced.
3. Test results from an independent testing laboratory for sieve analysis, including washed gradations per ASTM C 136.
4. Test results for void space percentage per ASTM C 29.

Polymeric Joint Sand.

1. Test results from an independent testing laboratory for sieve analysis per ASTM C 136 conforming to the grading requirements of ASTM C 144.
2. Samples for Initial Selection: Provide three representative samples in containers of Polymeric Joint Sand material, cured and dried, for color selection.
3. Samples for Verification: Provide three one-pound samples in containers of Polymeric Joint Sand.

Delivery. Deliver materials in manufacturer's original, unopened, undamaged packaging with identification labels intact.

1. Unload pavers with proper equipment, so no damage occurs to pavers.

Storage. Store materials so they are protected from contamination by foreign substances and excessive moisture.

1. Store pavers to prevent damage and staining.
2. Do not store bedding sand and jointing sand on compacted aggregate base course or in areas that channel water into the sand.
3. Cover bedding sand and jointing sand with waterproof covering. Secure the covering in place.

Installer Qualifications. Installer contractor shall have, at the time of bid letting, a minimum of five years of experience installing segmental pavers with at least 50,000 square feet of segmental pavers installed. Prior to the pre-construction meeting the installer contractor shall submit to the Engineer for approval, a list of projects similar in nature and size that establishes his/her ability to complete this project.

Prior to the pre-construction meeting a resume for the Lead Installer (project superintendent or foreman) shall be submitted to the Engineer to establish his/her ability to complete the installation. The Lead Installer shall have a minimum of three years of experience installing segmental pavers with at least 25,000 square feet of segmental pavers installed. At the time of bid letting and

installation the Lead Installer shall hold an active certification for installation from the Interlocking Concrete Pavement Institute or a similar industry recognized organization.

Installation shall not proceed unless the Lead Installer is a present and active participant of the installation process.

If for any reason the qualifications of the Installer contractor or Lead Installer are not acceptable to the Engineer, work shall not commence until an acceptable installer is found.

Pre-Installation Meeting(s):

1. Conduct pre-installation meeting two weeks prior to commencing work of this Section to verify project requirements, substrate condition, coordination with other trades and installation instructions.
2. Confirm status of ordered material.

Material.

1. Brick Pavers – Permeable: Unilock Eco-Priora
    a. Color: Rustic Red
    b. Finish: Premier
    c. Edge: Chamfer – 3mm bevel
    Dimensions: 24cm L x 12 cm W x 8 cm D (9.5” L x 4.75” W x 3.125” D)
    d. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 in all directions.
        Note: Imperial dimensions are nominal equivalents to the metric dimensions.

2. Brick Pavers – Non-Permeable: Unilock Hollandstone
    a. Color: Rustic Red
    b. Finish: Premier
    c. Edge: Chamfer – 3mm bevel
    d. Dimensions: 20cm L x 10cm W x 8cm D (7.875” L x 3.875” W x 3.125” D)
    e. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 in all directions.
        Note: Imperial dimensions are nominal equivalents to the metric dimensions.

3. Provide pavers meeting the minimum material and physical properties set forth in ASTM C 936, Standard Specification for Interlocking Concrete Paving Units. Efflorescence is not a cause for rejection.
    a. Average compressive strength 8000 psi (55MPa) with no individual unit under 7,200 psi (50 MPa).
    b. Average absorption of 5% with no unit greater than 7% when tested according to ASTM C 140.
    c. Resistance to 50 freeze-thaw cycles, when tested according to ASTM C 1645, with no breakage greater than 1.0% loss in dry weight of any individual unit. Conduct this test method not more than 12 months prior to delivery of units.

4. Accept only pigments in concrete pavers conforming to ASTM C 979.
    Note: ACI Report No. 212.3R provides guidance on the use of pigments.

5. Maximum allowable breakage of product is 5%.

Permeable Joint Opening Aggregate

1. Provide permeable joint opening aggregate materials conforming to ASTM C 33 and gradation requirements as shown in Table 1.

TABLE 1
PERMEABLE JOINT OPENING AGGREGATE
GRADATION REQUIREMENTS
(GRANITE CHIPS)

1/8 to 3/16-inch granite chips	
Sieve Size	Percent Passing
1/4 in (6 mm)	97 to 100
No. 4 (4.75 mm)	70 to 83
No. 8 (2.36 mm)	37 to 50
No. 16 (1.18 mm)	0 to 12
pan	

Polymeric Joint Sand

1. Provide Polymeric Joint Sand meeting the minimum material and physical properties as follows:
    a. Compression Strength: proven resistance to compression of 550 PSI after drying for 7 days under controlled conditions (73 degrees F (23 degrees C) at 50% Humidity).
        i. Test sand sample shape: cylinder (2” (5sm) dia. X 4” (10 cm) high).
    b. Gradation as shown in Table 2 below.

TABLE 2 – POLYMERIC JOINT SAND
GRADATION REQUIREMENTS FOR POLYMERIC JOINT SAND

ASTM C 144		
Sieve Size	Natural Sand Percent Passing	Manufactured Sand Percent Passing
No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 75
No. 50 (0.300 mm)	10 to 30	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075)	0 to 1	0 to 10

Installation. Pavers shall be installed per the respective manufacturer's recommendations. No paver setting work shall be performed when the underlayment has free moisture, ice, or snow, or

when the underlayment is frozen. Concrete underlayment shall be sound, clean, and free from debris and materials or substances that will hinder the bond of the setting bed. The top surface of concrete underlayment slab shall not vary more than one half (1/2) inch of its proposed elevation. See detail plans for cross section of typical unit paver system.

To reduce dust during paver installation, pavers shall only be cut using wet saws. No dry cutting is permitted. Cut pavers shall be placed in areas shown on the details in the plans. Pavers shall be cut radially when joints between pavers on curves exceed 1/8 inch. Radial cut pavers shall be created by trimming both sides of paver.

Paver Installation. Setting bed shall be protected from damage prior to setting pavers. Unit pavers shall be set on specified aggregate shown in construction details. Setting shall be done by competent workmen under adequate supervision, and in accordance with manufacturer's recommendations. Pavers with chips, cracks, or other structural or aesthetic defects or those rejected by the Engineer shall not be used. Pavers shall be set true to the required lines and grades in the pattern detailed on the Plans. Pavers shall be tightly butted. Joints between pavers shall be uniform and shall not exceed 1/16 in. There shall be no raised edges that could allow someone to trip for either pavers or materials adjacent to pavers. The tolerance for such edges shall be 0" - 1/16" maximum in range.

Pavers shall be laid using mechanical methods in a 90-degree rotated herringbone pattern bordered with a single solider course as shown in the plans. Unless otherwise approved by the Engineer, the herringbone pattern shall be laid before the solider course. Solider course pavers shall be cut to achieve the specified joint width requirements.

After a sufficient area of pavers has been installed, the pavers shall be compacted by running a mechanical vibratory compactor over the paved surface until the pavers are uniformly leveled, true to grade, and totally immobilized. Where required, pavers shall be accurately cut with a masonry or concrete saw. Cut edges shall be plumb and straight. Scoring and breaking shall not be acceptable. Joints between pavers shall be filled by sweeping sharp sand into the joints. When joints are filled, paver surfaces shall be swept clean of sand. Paver edgings shall be installed per manufacturer's recommendations.

After completion of the pavers, paver installation areas shall be thoroughly swept clean and surface shall be left unsoiled. Where required by the Engineer, surface shall be cleaned with water or an approved cleaner.

Protect newly laid pavers with plywood or carpeting as the work progresses. If additional leveling is required, you must protect the surface to avoid chipping.

Method of Measurement. Brick pavers, permeable and, non-permeable will be measured in per square foot in place.

Basis of Payment. This work will be paid for at the contract unit price per square foot for BRICK PAVERS, PERMEABLE, and BRICK PAVERS, NON-PERMEABLE which price shall include all materials, labor, joint aggregate, joint sand, and accessories.

REMOVE AND REINSTALL PARKING BLOCKS

Description. This work shall consist of the careful removal of the parking blocks and the reinstallation or disposal of the parking blocks, at the locations noted in the plans and in accordance with this special provision. The steel pins that anchor the existing parking blocks may be pulled out or driven into the ground 6 inches below the existing surface.

Upon reinstallation, new #6 rebar steel pins 18 inches in length shall be driven through the existing holes in the parking blocks into a new asphalt surface or through drilled holes in a concrete or asphalt surface till flush with the top of the parking block. If the existing parking blocks are damaged by the contractor, they shall be disposed of according to Article 440.06 of the Standard Specifications and replaced at his/her own expense with new material of the same kind.

Method of Measurement. Removing and reinstalling parking blocks will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVE AND REINSTALL PARKING BLOCKS.

REMOVAL OF EXISTING STRUCTURES
ETAINING WALL REMOVAL
TIMBER RETAINING WALL REMOVAL
CONCRETE RETAINING WALL REMOVAL

Description. This work shall consist of the removal of existing walls, wall sections or wall impediments to the path of new construction as shown in the plans or as directed by the Engineer. This work shall be performed in accordance with the applicable sections of the Standard Specifications. The wall or wall sections shall be removed and disposed of as directed by the Engineer.

Method of Measurement. Removal of existing structures will be measured for payment as each and the removal of walls will be measured for payment by the foot.

Basis of Payment. The work will be paid for at the contract unit price per each for REMOVAL OF EXISTING STRUCTURES, and per foot for RETAINING WALL REMOVAL, TIMBER RETAINING WALL REMOVAL, OR CONCRETE RETAINING WALL REMOVAL, at locations as shown in the plans. The appropriate items established will include all labor, equipment and material to complete the removal to the satisfaction of the Engineer and no further compensation will be allowed. Any excavation or grading will be paid for under the terms established for EARTH EXCAVATION.

HANDRAIL REMOVAL

Description. This work shall consist of the removal of the existing handrail at the locations specified in the plans and as directed by the Engineer. The rails, posts, accessories, anchor plates or pins and any other hardware associated with the rails shall be completely removed and disposed of at a suitable offsite location. After the removal of bolts and anchorage devices, any

holes remaining shall be filled flush with the surrounding surface using a color matched nonshrink grout, if the remaining surface is to remain in place.

Method of Measurement. Handrail removal will be measured for payment in place in feet along the top of the top railing from center of post to center of post along the handrail removal.

Basis of Payment. This work will be paid for at the contract unit price per FOOT for HANDRAIL REMOVAL. The unit price shall include all labor, materials and equipment necessary to perform the work described herein.

SEGMENTAL BLOCK RETAINING WALL REPAIR

Description. This work shall consist of removing, excavating, cleaning, furnishing and restoring the existing Segmental Block Retaining Wall at the locations shown on the plans in accordance with the applicable portions of Section 522 of the Standard Specifications or as directed by the Engineer.

Debris and unsatisfactory material shall be removed and disposed of to the satisfaction of the Engineer.

The Contractor shall match the existing segmental block retaining wall units for style, color, size, grout (if applicable) and shape, and install per the manufacturer's recommendations.

Contractor shall check materials upon delivery to assure that specified type and grade of materials have been received and proper color and texture of block retaining wall units have been received.

Contractor shall store and handle materials in accordance with manufacturer's recommendations.

Contractor shall protect materials from damage. Damaged materials shall not be incorporated into the retaining wall. Any damage to the segmental block retaining wall by the Contractor during the removal, repair and restorations shall be repaired in kind at the Contractor's expense to the satisfaction of the Engineer.

Method of Measurement. All Segmental Block Retaining Wall Repair shown on the plans will be measured in place per square foot.

Basis of Payment. This work will be paid for at the contract unit price per square foot price for SEGMENTAL BLOCK RETAINING WALL REPAIR.

STEEL RAILING (SPECIAL)
BICYCLE RAILING, SPECIAL

Description. This work shall consist of furnishing and erecting retaining wall mounted steel railing as detailed in the contract plans, and in accordance with Section 509 of the Standard Specifications except as modified herein.

The option in Section 509.05 (c) to drill and set the anchor rods will not be not allowed. The anchor devices must be cast in place with the concrete facing or concrete stemwall of the retaining walls. All posts, railing, splices, anchor devices, and plates shall be painted black using the Organic Zinc Rich Primer / Epoxy / Urethane Paint System in accordance with Section 506 of the Standard Specifications. Surface preparation and painting of all steel elements shall be in accordance with Section 506 of the Standard Specifications.

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

Basis of Payment. This work will be paid for at the contract unit price per Foot for STEEL RAILING (SPECIAL) and BICYCLE RAILING, SPECIAL which price shall include all materials, labor, and equipment necessary to perform the work as specified herein and as detailed in the plans.

ACCESSIBLE RAMP SYSTEM, SPECIAL

Description. This work shall consist of furnishing and installing an aluminum ramp and step system complete with associated handrails, and all fittings and appurtenances as indicated in the plans and detail sheets and in accordance with the manufacturer's recommendations, including anchoring the system to the structural concrete and any necessary work to properly furnish and install the system. The aluminum ramp and step system shall be completely covered with 2 mils. zinc powder coat primer with 4 mils. textured black powder coat top finish. Black painted aluminum will not be allowed.

Construction Requirements. The Accessible Ramp System, Special shall be a Latitude Series ramp system supplied by National Ramp. The Contractor shall submit shop drawings designed and sealed by an Illinois Structural Engineer. The shop drawings shall be supplied to the Engineer a minimum of sixty (60) days prior to placement. The Manufacturer's installation instructions shall indicate any special procedures required to install the product.

All ramp features shall comply with the latest ADA and PROWAG statutes and requirements. The system shall be secured to the new PCC sidewalk after placement as indicated by the manufacturer.

Basis of Payment. This work shall be measured and paid for at the contract unit price per each for ACCESSIBLE RAMP SYSTEM, SPECIAL.

DRIVING SOLDIER PILES

Description. This work shall consist of providing all labor, materials, and equipment necessary to install the soldier piles into position to the specified elevations. All work associated with the

installation of the soldier piles shall be in accordance with the provisions in Article 522 of the Standard Specifications, with exceptions and additional work items as noted herein.

The remainder of the retaining wall components, as shown on the plans, such as furnishing soldier piles, timber lagging, concrete facing, shear studs, reinforcement bars, railing, and various drainage items, etc. are not included in this Special Provision but are paid for as specified elsewhere in this Contract.

Also included in this work is performing building condition surveys and construction monitoring, reporting the results and implementing response actions as required. The proximity of the proposed solider pile retaining walls to existing structures causes concern about the possibility of damage to the existing structures during construction activities. The Contractor shall exercise care during all construction activities and shall utilize appropriate methods of construction to protect properties near the proposed construction limits from damage due to demolition and construction activities. At a minimum, the existing buildings adjacent to the construction limits shall be monitored as required herein. In addition, prior to beginning any work, the Contractor and the City shall observe the construction limits and determine if any additional buildings or structures shall be monitored.

The Contractor shall determine the most appropriate method of installation of the soldier piles to avoid damage to the adjacent existing structures. The Contractor has the option of drilling for the installation of the soldier piles per Article 522.08(b) (1) of the Standard Specifications. All provisions in Article 522 of the Standard Specifications apply for the installation of the soldier piles with the exception of 522.08 (b) (2) where only a vibratory hammer will be allowed to install the piles.

Construction monitoring shall include, but is not limited, to the following:

Condition Survey:

The purpose of the building condition survey shall be to accurately document the pre-construction conditions of the adjacent structures, in order to provide baseline data for evaluating claims of construction-related damage. A similar survey shall be conducted upon completion of the project in order to document any change in condition of the structures. The pre-construction building condition survey shall produce video recordings, descriptions, diagrams, and photographs of all:

g. Interior and exterior building walls, partitions, floors, and ceilings showing any and all defects including existing cracks and vertical alignment.
h. Interior floor defects, including sags or slope.
i. Interior basement floor slab cracks and slope, foundation wall cracks, vertical wall alignment, and elevations.
j. Exterior building elevations, cracks, lean or bow in walls, cracks or defects in walks, foundations, chimneys, porches, and trim.
k. Any indications of structure settlement or movement.
l. Binding of doors and windows.

The survey shall include such other data as is applicable to locate and define the amount and extent of existing damage in the structure. All existing structural deficiencies, major or minor, shall

be recorded and shown. Visible cracks shall be noted and measured in both length and width. Special attention shall be given to locations where existing defects and cracks are visible.

Recordings shall be on standard DVD media format and digital photographs. Photographs shall be in jpeg format with at least a 5MP resolution and digital videotape shall be playable on a computer or DVD player. All recordings shall, by electronic means, display continuously and simultaneously generated, transparent, alpha-numeric information to include the following:

d. Each video shall begin with a single, multi-line, alpha-numeric display indicating the video index number, project title, and general location of the project.
e. During the entire duration of the recordings, the time and date must appear in the picture.
f. Building identification by house or building number.

All recordings shall include a simultaneously recorded audio track. The audio recording shall contain the commentary of the camera operator and shall provide information related to viewer orientation, clarification, or objective description of the structures being shown in the video portion of the recording.

The Contractor shall prepare and deliver to the City two (2) copies of both the pre-and post-construction survey containing all field notes taken, sketches and diagrams prepared, photographs obtained, video recordings, descriptions and reports, all signed and witnessed by those taking part in the inspection. The inspection and reports shall be approved and sealed by an Illinois Licensed Structural Engineer.

In the event that any property owner denies access for the survey of structures and facilities within the specified limits, the Contractor shall notify such property owner, by certified mail, on the intent of the survey. If after two (2) weeks access is still denied, the Contractor shall notify the property owner once again by certified mail, stating that this is the final notification. Copies of all correspondence between the Contractor and property owners shall be submitted to the City.

Nothing contained herein shall relieve the Contractor of responsibility for claims arising from their construction operations. Failure to inspect any structure whether or not required by these contract documents or inadequacy of the inspections shall not relieve the Contractor of his responsibility.

Positional Monitoring:

For the purpose of monitoring building movement, the horizontal coordinates and vertical elevations shall be surveyed at locations as determined by the City. Positional monitoring points shall be surveyed prior to the commencement of work, after completion of work, and at times during construction as directed by the City. This work shall be performed by an Illinois Licensed Surveyor or Professional Engineer.

Prior to the start of construction and prior to performing any construction monitoring, the Contractor shall submit to the City for review a written plan detailing the procedures for condition monitoring and positional monitoring. Such details shall include: The name of the Firm providing the construction monitoring services; description of the instrumentation and equipment to be used, measurement locations, and procedures for data collection.

Reporting:

The Contractor shall submit Condition Survey Reports within 10 working days after the completion of either the pre or post-construction inspection, as required by the Condition Survey. Within 10 working days after the completion of the construction monitoring, the Contractor shall submit to the City a hard copy report documenting the results at each of the monitoring locations. The Contractor shall not disclose any instrumentation data to third parties and shall not publish data without prior written consent of the City. The City is not responsible for the safety of the work based on the monitoring data, and compliance with this Specification does not relieve the Contractor of full responsibility for damage caused by the Contractor's operations.

Implementing Response Actions:

If the positional monitoring data indicates that a significant change in the ground elevations has occurred, the Contractor shall stop all construction activity and report the information to the City. The City will provide direction to the Contractor on how to proceed with construction based on the information provided.

If damage to adjacent existing structures is determined to have occurred during construction activities, the Contractor shall be responsible for making any repairs to such damage or shall be responsible for implementing any other response actions as determined to be appropriate by the City. If there is disagreement about whether or not damage to adjacent existing structures occurred during construction activities, the Contractor shall be responsible to demonstrate conclusively that any claim made by a third party is not justified due to the evidence shown by his condition surveys.

Basis of Payment. All materials, labor, and equipment necessary to perform the work as specified herein and as directed by the Engineer will be included in the contract unit price per Foot for DRIVING SOLDIER PILES.

STORM SEWER, (WATER MAIN QUALITY PIPE)

Effective January 1, 2011 Revised August 1, 2014

This work consists of constructing storm sewer to meet water main standards, as required by the IEPA or when otherwise specified. The work shall be performed in accordance with applicable parts of Section 550 of the Standard Specifications, applicable sections of the current edition of the IEPA Regulations (Title 35 of the Illinois Administrative Code, Subtitle F, Chapter II, Section 653.119), the applicable sections of the current edition of the "Standard Specifications for Water and Sewer Main Construction in Illinois", and as herein specified.

This provision shall govern the installation of all storm sewers which do not meet IEPA criteria for separation distance between storm sewers and water mains. Separation criteria for storm sewers placed adjacent to water mains and water service lines are as follows:

(1) Water mains and water service lines shall be located at least 10 feet (3.05 meters) horizontally from any existing or proposed drain, storm sewer, sanitary sewer, or sewer service connections.

(2) Water mains and water service lines may be located closer than 10 feet (3.05 meters) to a sewer line when:

(a) Local conditions prevent a lateral separation of 10 feet (3.05 meters); and

(b) The water main or water service invert is 18 inches (460 mm) above the crown of the sewer; and

(c) The water main or water service is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

(3) A water main or water service shall be separated from a sewer so that its invert is a minimum of 18 inches (460 mm) above the crown of the drain or sewer whenever water mains or services cross storm sewers, sanitary sewers or sewer service connections. The vertical separation shall be maintained for that portion of the water main or water services located within 10 feet (3.05 meters) horizontally of any sewer or drain crossed.

When it is impossible to meet (1), (2) or (3) above, the storm sewer shall be constructed of concrete pressure pipe, slip-on or mechanical joints ductile iron pipe, or PVC pipe equivalent to water main standards of construction. Construction shall extend on each side of the crossing until the perpendicular distance from the water main or water service to the sewer or drain line is at least 10 feet (3.05 meters). Storm sewer meeting water main requirements shall be constructed of the following pipe materials:

Concrete Pressure Pipe

Concrete pressure pipe shall conform to the latest ANSI/AWWA C300, C301, C302, or C303.

Joints shall conform to Article 41-2.07B of the “Standard Specifications for Water and Sewer Main Construction in Illinois.”

Ductile Iron Pipe

Ductile Iron pipe shall conform to ANSI A 21.51 (AWWA C151), class or thickness designed per ANSI A 21,50 (AWWA C150), tar (seal) coated and/or cement lined per ANSI A 21.4 (AWWA C104), with a mechanical or rubber ring (slip seal or push on) joints.

Joints for ductile iron pipe shall be in accordance with the following applicable specifications.

1. Mechanical Joints - AWWA C111 and C600
2. Push-On Joints - AWWA C111 and C600

Plastic Pipe

Plastic pipe shall be marked with the manufacturer's name (or trademark); ASTM or AWWA specification; Schedule Number, Dimension Ratio (DR) Number or Standard Dimension Ratio (SDR) Number; and Cell Class. The pipe and fittings shall also meet NSF Standard 14 and bear the NSF seal of approval. Fittings shall be compatible with the type of pipe used. The plastic pipe options shall be in accordance with the following:

1. Polyvinyl Chloride (PVC) conforming to ASTM Standard D 1785. Schedule 80 is the minimum required for all pipe sizes, except when the pipe is to be threaded, and then it shall be Schedule 120. It shall be made from PVC compound meeting ASTM D 1784, Class 12454.
2. Polyvinyl Chloride (PVC) conforming to ASTM D 2241. A minimum wall thickness of SDR 26 is required for all pipe sizes (Note: The lower the SDR number, the higher the wall thickness and pressure rating). It shall be made from PVC compound meeting ASTM D 1784, Class 12454.
3. Chlorinated Polyvinyl Chloride (CPVC) conforming to ASTM f 441. A minimum of Schedule 80 is required for all pipe sizes. Threaded joints are not allowed. It shall be made from CPVC compound meeting ASTM D 1784, Class 23447.
4. Chlorinated Polyvinyl Chloride (CPVC) conforming to ASTM F 442. A minimum wall thickness of SDR 26 is required for all pipe sizes (Note: The lower the SDR number, the higher the wall thickness and pressure rating). It shall be made from CPVC compound meeting ASTM D 1784.
5. Polyvinyl Chloride (PVC) conforming to ANSI/AWWA C900. A minimum of wall thickness of DR 25 is required for all pipe sizes (Note: The lower the DR number, the higher the wall thickness and pressure rating). It shall be made from PVC compound meeting ASTM D 1784, Class 12454.
6. Polyvinyl Chloride (PVC) conforming to ANSI/AWWA C905. A minimum of wall thickness of DR 26 is required for all pipe sizes (Note: The lower the DR number, the higher the wall thickness and pressure rating). It shall be made from PVC compound meeting ASTM D 1784, Class 12454.

Joining of plastic pipe shall be by push-on joint, solvent welded joint, heat welded joint, flanged joint, or threaded joint, in accordance with the pipe manufacturer's instructions and industry standards. Special precautions shall be taken to insure clean, dry contact surfaces when making solvent or heat welded joints. Adequate setting time shall be allowed for maximum strength.

Elastometric seals (gaskets) used for push-on joints shall comply with ASTM F477.

Solvent cement shall be specific for the plastic pipe material and shall comply with ASTM D 2564 (PVC) or ASTM F 493 (CPVC) and be approved by NSF.

This work will be measured and paid for at the contract unit price per Foot (Meter) for STORM SEWER (WATER MAIN QUALITY PIPE) of the diameter and type specified.

PIPE UNDERDRAINS (SPECIAL)

Description. This work shall be in accordance with Section 601 of the Standard Specifications except as modified herein.

The contractor shall install battered pipe underdrain drops and surface inlets as indicated on the plans. Surface inlets shall have a flat grate that lies flush with the adjacent finished grade. Surface inlet shall be appropriate for residential uses. Grate shall be black or green in color and shall be adhered to the pipe underdrain so as not to be easily removed.

Batted pipe underdrain drops shall be backfilled with granular material.

Basis of Payment. The above work shall be paid in accordance with Section 601 of the Standard Specifications. Battered pipe underdrain drops will be paid for at the contract unit price per foot for PIPE UNDERDRAINS (SPECIAL) of the diameter specified on the plans. Backfill and surface inlets, as described above, will be incidental to PIPE UNDERDRAINS (SPECIAL).

WATER MAIN SPECIFICATIONS

Water main work shall be in accordance with “Appendix A – Water Main Specifications” and the Standard Specifications. Appendix A is an abridged version of the Illinois American Water Company technical specifications for water main work.

Water main plans are in accordance with the Construction Permit from the Illinois Environmental Agency’s Bureau of Water. Deviation from water main plans is prohibited without prior approval from the designated Illinois American Water Company representative.

SANITARY SEWER SPECIFICATIONS

Sanitary Sewer main work shall be in accordance with the following items and “Appendix B – Sanitary Sewer Specifications” and the Standard Specifications. Appendix B is an abridged version of the Greater Peoria Sanitary District technical specifications for sanitary sewer work.

This Sanitary Sewer work does not require a construction permit from the Illinois Environmental Agency’s Bureau of Waste Water. The work is considered a repair of the existing system and not an expansion. Any deviations from the associated work should be brought to the attention to the City of Peoria Public Works and/or the Greater Peoria Sanitary District.

SANITARY SEWER REMOVAL

Description. This work relates to the removal and disposal of the existing sanitary sewers.

Construction Requirements. All work relating to sanitary manholes shall be in accordance with “Appendix A – Greater Peoria Sanitary District Specifications” and Article 551.03 Standard Specifications, expect as follows:

Article 551.03 shall also include sanitary sewer removal and removed material shall not be salvageable.

Basis of Payment. This work will be paid for at the contract unit price per foot for SANITARY SEWER REMOVAL of the diameter specified. All work associated with maintaining the existing flow of the in-service sanitary sewers shall be considered incidental to SANITARY SEWER REMOVAL.

SANITARY MANHOLES TO BE REMOVED

Description. This work shall consist of removing and disposal of existing sanitary manholes.

Construction Requirements. All work relating to sanitary manholes shall be in accordance with "Appendix A – Greater Peoria Sanitary District Specifications" and the Section 605 of the Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit price each for SANITARY MANHOLES TO BE REMOVED in its entirety. All work associated with maintaining the existing flow of in-service sanitary sewers shall be considered incidental to SANITARY MANHOLES TO BE REMOVED.

SANITARY SEWER

Description. This work shall consist of constructing sanitary sewers.

Materials. New material shall be in accordance with "Appendix B – Greater Peoria Sanitary District Specifications," Section 027 – Pipe Materials.

Construction Requirements. All work relating to sanitary manholes shall be in accordance with "Appendix B – Greater Peoria Sanitary District Specifications," Section 035 – Pipe Installation Using Excavation Methods, and the Standard Specifications.

Basis of Payment. This work will be paid at the contract unit price per FOOT for SANITARY SEWERS of the diameter specified.

SANITARY SEWER, SPECIAL

Description. This work shall consist of constructing sanitary sewer at locations indicated on the plans. This work shall be done in accordance with the Construction Permit from the Illinois Environmental Agency's Department of Water. Deviation from sanitary sewer plans is prohibited without prior approval from the Engineer and the designated Illinois American Water Company representative.

Materials. Sanitary sewer pipe shall be water main quality polyvinyl chloride (PVC) pipe with a wall thickness of DR18. Pipe materials shall be in accordance with the following American Water Works Association (AWWA) standards for the specified nominal pipe size.

AWWA C900: Nominal Pipe Sizes 4-inch through 12-inch
AWWA C905: Nominal Pipe Sizes 14-inch through 48-inch

Construction Requirements. All work relating to sanitary sewer shall be in accordance with "Appendix A – Greater Peoria Sanitary District Specifications," Section 035 – Pipe Installation Using Excavation Methods, and the Standard Specifications.

Construction Sequence. SANITARY SEWER, SPECIAL shall be constructed as described in the Work Sequence section of the Water Main plan General Notes. Deviation from the Work Sequence is prohibited without prior approval from the Engineer and the designated representative.

Basis of Payment. This work will be paid for at the contract unit price per foot for SANITARY SEWER, SPECIAL of the diameter specified.

SANITARY MANHOLES TO BE RECONSTRUCTED

Description. This work relates to the adjustment or reconstruction of the existing sanitary manholes. SANITARY MANHOLES TO BE RECONSTRUCTED shall remain in place and be reconstructed as described below.

Construction Requirements. All work relating to sanitary manholes shall be in accordance with "Appendix A – Greater Peoria Sanitary District Specifications" and the Section 602 of the Standard Specifications.

Structures identified by the following table are to be removed to the depth indicated and reconstructed. Adjustments 2" or less shall be with a rubber adjusting ring. Adjustments greater than 2" but less 24" shall be made with concrete rings. Concrete ring shall have a 2" thickness or greater. Adjustments 24" or greater shall be made with concrete barrel sections. Concrete barrel sections shall have a length of 12" or 16" and shall be placed upon a concrete manhole flat-top.

Structures identified by the following table shall be reconstructed with a 4' diameter precast manhole barrel sections. A concrete collar shall be constructed around the top of existing portion of the manhole that is to remain. The proposed precast manhole barrel section shall be placed upon the top finished face of the concrete collar. Precast manhole barrel sections shall be topped with a manhole flat-top section.

Structures identified by the following table shall have the existing bench trough removed and reconstructed.

ID	Removal Depth of Existing Underlying Material	Remove and Reconstruct Existing Bench Trough	Concrete Collar with Precast Manhole Section	Concrete Manhole Flat-top
S13	2.0'	Yes	Yes	Yes
S20	3.5'	No	Yes	Yes
S29	2.5'	Yes	Yes	Yes
S39	3.0'	Yes	Yes	Yes
S42	2.0'	No	Yes	Yes
S46	1.5'	Yes	Yes	Yes
S50	3.0'	Yes	Yes	Yes
S60	2.0'	No	Yes	Yes
S63	1.0'	No	No	No
S69	1.0'	Yes	No	No
S73	3.0'	Yes	Yes	Yes
S83	1.0'	Yes	No	No
S84	2.0'	Yes	Yes	Yes

All reconstructed structures shall have new steps installed in accordance with the Greater Peoria Sanitary District detail drawings.

All reconstructed structures shall have new lid bolt-down, waterproof casting and lid, installed on 2” rubber adjusting ring.

Basis of Payment. This work will be paid for at the contract unit price EACH for SANITARY MANHOLES TO BE RECONSTRUCTED.

SANITARY MANHOLES WITH SPECIAL FRAME AND CLOSED LID

Description. This work relates to the installation of the proposed sanitary manholes. Proposed sanitary manholes shall be a Regular Drop Manhole as shown on the Greater Peoria Sanitary District detail drawings 095-2 or 095-3.

Construction Requirements. All work relating to sanitary manholes shall be in accordance with “Appendix A – Greater Peoria Sanitary District Specifications” and the Section 602 of the Standard Specifications.

All sanitary structures shall have new steps installed in accordance with the Greater Peoria Sanitary District detail drawing 095-6.

All sanitary structures shall have new lid bolt-down, waterproof casting and lid, installed on 2" rubber adjusting ring in accordance with the Greater Peoria Sanitary District detail drawing 095-05.

Basis of Payment. This work will be paid for at the contract unit price per each for SANITARY MANHOLES WITH SPECIAL FRAME AND CLOSED LID completed in place to the extent described above.

DRYWELL

Description. This work shall consist of furnishing and installing DRYWELL, including all equipment, labor, and materials for the construction of DRYWELL in accordance with Section 602 and 606 of the Standard Specifications and the details in the plans.

Reference. See also the Green Infrastructure special provision.

Construction Requirements. Prior to backfilling, the porous sections of the drywell shall be wrapped in extruded HDPE netting with ½" nominal openings.

Drywell shall be backfilled with drainage rock, CA-7 in lifts not exceeding 12" in depth and shall be compacted by mechanical means to the satisfaction of the engineer.

Geo-textile drainage fabric meeting the standard detailed in Section 1080.05 of the Standard Specifications, in locations shown in the detail, shall also be included in drywell unit price.

After setting the drywell, a filter fabric shall be installed in the interior on the bottom of drywell and on the wall of the lower two feet of the interior of the barrel to prevent sedimentation from construction activities. The Contractor shall be responsible for periodic inspection, maintenance, and removal of silt collected on the fabric to the satisfaction of the engineer. All filter fabric shall be removed from the interior of the drywell by the contractor at direction of the Engineer.

Frames, grates, and lids will be in accordance with Section 604 of the Standard Specification and will be installed on the drywells as indicated in the plans.

Basis of Payment. This work will be paid at the contract unit price per each for DRYWELL of the specified diameter which price shall including netting, filter fabric, and drainage rock, CA-7. Frames, grates, and lids will be paid separately per Article 604.05 of the Standard Specification.

CONCRETE CURB, TYPE B (SPECIAL)
COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12 (SPECIAL)

This work shall be completed in accordance with Section 606 of the Standard Specifications, except as modified by the details in the plans.

Basis of Payment. Concrete curb, and combination curb and gutter will be paid for at the contract unit price per foot for CONCRETE CURB, TYPE B (SPECIAL) and COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12 (SPECIAL).

CURB WALL (SPECIAL)

Description. This work shall include the construction of a curb wall (side curb) adjacent to PCC sidewalk or PCC driveway pavement in accordance with the detail shown in the plans. The curb wall curb shall be constructed in accordance with Section 606 of the Standard Specifications.

Method of Measurement. The work will be measured for payment in place and the area computed in square feet of the top surface of the curb wall and the above-grade front finished face of curb wall. No additional payment will be allowed in the event the back face is exposed.

Basis of Payment. This work will be paid for at the contract unit price per square foot for CURB WALL (SPECIAL) which will include all labor, materials, excavation, and earth backfill along the back of curb wall.

STEEL POST REMOVAL

Description. This work shall consist of the removal and disposal of steel posts as shown on the plans and as directed by the Engineer. This work shall be performed prior to grading as a part of the proposed improvement.

All voids left from the removal of steel posts shall be backfilled with suitable material approved by the Engineer. The surface of the filled holes shall be treated to match the surrounding area. All debris resulting from this operation shall disposed of according to Article 202.03

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

Basis of Payment. This work will be paid for at the contract unit price per each for STEEL POST REMOVAL, which price will include all excavation, labor, equipment, and material necessary to remove and dispose of existing steel posts to the satisfaction of the Engineer.

FENCE REMOVAL

Description. This work shall consist of removing chain link or wooden fence at locations noted on the plans.

The fence shall be removed to a point where it can be appropriately terminated as determined in the field by the engineer. This may require ending the removal at a post or reinstalling sections to appropriately terminate the fence at the desired location to restore the fence to proper working order. Therefore, this may require the fence to be removed in such a manner that some pieces will be available for reuse. Any fence or post that is reused shall be installed and stabilized to a condition equal to or greater than the existing condition.

Method of Measurement. This work will be measured for payment in feet, along the top of the fence from center to center of end posts.

Basis of Payment. The removal and re-erection of the existing fence will be paid for at the

contract unit price per foot for FENCE REMOVAL. The price will include all materials, equipment and labor necessary to complete the work.

REMOVE AND RESET ORNAMENTAL FENCE

Description. This work includes the removal and resetting of existing ornamental fencing that conflicts with the proposed improvements, including masonry pillars, posts, and post footings required to complete the work.

Footings shall be constructed in accordance with Standard 664001

The fencing will be re-established at their permanent location as directed by the Engineer as soon as the construction operations permit. Additional compensation will NOT be allowed for varying types or heights comprising of the existing fencing. It shall be the Contractor's responsibility to determine the type of materials required to complete the relocation operations. Any fencing damaged by the Contractor shall be replaced at his/her own expense with new material of the same kind.

Method of Measurement. This work will be measured for payment in feet, along the top of the fence from center to center of end posts.

Basis of Payment. This work will be paid for at the contract unit price per foot for REMOVE AND RESET ORNAMENTAL FENCE.

TEMPORARY CHAIN LINK FENCE

Description. This work shall consist of installing a temporary chain link fence matching existing fence height, including rails, screens, slats and posts as shown on the plans and as directed by the Engineer. The Contractor is to verify the height of the existing chain link fence before installation of the temporary chain link fence. At Sta. 328+59 left, the temporary chain link fence shall be six feet (6') in height and will require screening.

The temporary fence shall be erected immediately following the removal of existing fences.

The work shall meet the requirements of Standard Specification Section 664 and Highway Standard 640001 and 664001, except that concrete post foundations will not be required.

The temporary fence shall be removed upon substantial completion of the work and when the new fence has been installed. The temporary chain link fence may be new, used or rented. The temporary chain link will remain the property of the Contractor after construction.

Method of Measurement. Chain link fence will be measured for payment in feet (meters), along the top of the fence from center to center of end posts.

Basis of Payment. This work will be paid for at the contract unit price per foot for TEMPORARY CHAIN LINK FENCE which price will include, screening, connections to existing fence(s) and all equipment, labor and materials required to complete this work.

CHAIN LINK FENCE TO BE REMOVED AND RE-ERECTED

Description. This work includes all labor, materials, and equipment necessary to remove, store and re-erect the existing chain link fence shown on the plans to be removed and re-erected. The posts shall be reinstalled, and the fence restored to proper working order. The posts shall be installed and stabilized to a condition equal to or greater than the existing condition. Any materials not in proper condition to be reused shall be replaced at no additional cost. Any fence not used during re-erection shall be offered to the individual homeowner. Any fence not kept by the homeowner shall be disposed of by the contractor.

Method of Measurement. This work will be measured for payment in feet, along the top of the fence from center to center of end posts.

Basis of Payment. This work will be paid for at the contract unit price per foot for CHAIN LINK FENCE TO BE REMOVED AND RE-ERECTED. The price will include all materials, equipment and labor necessary to complete the work.

CHAIN LINK GATES TO BE REMOVED AND RE-ERECTED

Description. This work consists of removing and re-erecting the existing chain link gates as shown in the plans and as directed by the Engineer.

This work shall be done in accordance with Section 664 of the Standard Specifications and Highway Standard 664001. Existing posts that are set in concrete, shall be removed and disposed of and new posts shall be provided. Any fencing components, hardware or fasteners that are damaged shall be replaced with new items.

Method of Measurement. Chain link gates will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for CHAIN LINK GATES TO BE REMOVED AND RE-ERECTED, which will be payment for all materials and labor incorporated in the work.

WOOD FENCE TO BE REMOVED AND RE-ERECTED

Description. This work shall consist of the complete removal, storing, safeguarding and satisfactory re-erection of the existing wood split rail fence in its original location or as directed by the Engineer.

Construction Requirements. The existing split rail wood fence, including the rails, posts, braces, concrete, and hardware, shall be completely removed and later satisfactorily re-erected at its original location or as directed by the Engineer. If the fence or any of its appurtenances are damaged by the Contractor, the Contractor shall replace with a similar fence or appurtenance at the his/her expense.

Method of Measurement. Wood fence removal and re-erection will be measured for payment in feet along the top of the fence from center to center of the end posts.

Basis of Payment. This work will be paid for at the contract unit price per foot for WOOD FENCE TO BE REMOVED AND RE-ERECTED, which price will be payment in full for all labor, tools, equipment and materials necessary to remove and re-erect the existing wood split rail fence as herein specified.

CHAIN LINK FENCE (SPECIAL)

Description. This work shall be performed in accordance with Section 664 of the Standard Specifications, as shown on the plans and as herein modified.

Construction: The fence shall be 3 feet in height. The footing dimensions for line post shall match that of a 4-foot fence. The Contractor shall coordinate the locations with the Engineer.

Method of Measurement. Chain Link Fence (Special) will be measured for payment in feet along the top of the fence from center to center of the end posts.

Basis of Payment: This work will be paid for at the contract unit price per foot for CHAIN LINK FENCE (SPECIAL).

ORNAMENTAL FENCE, 3' (SPECIAL)
GATE, SPECIAL

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

Materials.

A. The steel material for the fence framework (i.e.., tubular pickets, rails and posts) shall meet the following:

   I. Galvanized after forming:
      a. Conform to the requirements of ASTM A1011/1011M
      b. Minimum yield strength of 50,000 psi.
      c. The exterior shall be hotdip galvanized with a 0.45 oz/ft^2 minimum zinc weight.
      d. The interior surface shall be coated with a minimum 81% normal zinc pigmented coating, 0.3 mils minimum thickness.

   II. Galvanized prior forming
      a. Conform to the requirements of ASTM A924/A924M
      b. Minimum yield strength of 50,000 psi.
      c. The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft^2, Coating Designation G-90.

B. The manufactured galvanized framework shall be subjected to a thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including as a

minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a zinc-rich thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils. The topcoat shall be a “no-mar” TGIC polyester powder coat finish with a minimum thickness of 2 mils. The color shall be as specified on the standard drawing included in the plans. The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in the following table.

C. The material for the fence pickets shall be 0.75” square x 16-gauge tubing. The cross-sectional shape of the rails shall conform to the manufacturer’s design with outside cross section dimensions of 1.25” square and a minimum thickness of 14 gauge. Picket holes in the horizontal rail shall be spaced 4.625” on center. The picket retaining rods shall be made of 0.125” diameter galvanized steel. The minimum post size shall be 2” square x 12 gauge. High quality PVC grommets shall be supplied to seal all picket-to-rail intersections.

The manufacturer's literature (or shop drawings and specifications) shall be submitted to the Engineer prior to ordering the fence.

Quality Characteristics	**ASTM Test Method**	**Performance Requirements**
Adhesion	*D3359 – Method B*	*Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).*
Corrosion Resistance	*B117 & D1654*	*Corrosion Resistance over 3,500 hours (Scribed per D1654; failure mode is accumulation of ⅛" coating loss from scribe or medium #8 blisters).*
Impact Resistance	*D2794*	*Impact Resistance over 60-inch lb. (Forward impact using 0.625" ball).*
Weathering Resistance	*D822, D2244, D523 (60° Method)*	*Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).*

Table 1 – Coating Performance Requirements

General. Installation of the fence shall be according to the applicable portions of Section 664 [Chain Link Fence] of the “Standard Specifications”, except as follows:

1. Dimensions and design details are as shown on the plans.

2. Fence post installation in soil shall be done using concrete footings at a minimum depth of 42”.

Fence Fabrication:

A. The pickets, rails and posts shall be precut to specified lengths. The horizontal rails shall be pre-punched to accept the pickets.

B. The grommets shall be inserted into the pre-punched holes in the rails and the pickets shall be inserted through the grommets so that the pre-drilled picket holes align with the internal upper raceway of the horizontal rails. (Note: This can best be accomplished by using an alignment template.) Retaining rods shall be inserted into each horizontal rail so that they pass through the predrilled holes in each picket completing the panel assembly.

C. The completed panels shall be capable of supporting a 600lb load (applied at midspan) without any permanent deformation. Panels with rings shall be biasable to a 12.5% change in grade. Panels without rings shall be biasable to a 25% change in grade.

D. Gates shall be fabricated using the same components as the fence system. The panel material and gate ends will have the same outside cross section dimensions as the horizontal rail. All rail and upright intersections shall be joined by welding. Picket and rail intersections shall be joined by welding or the same retaining rod used for the panel assembly.

Installation. The fence posts shall be set according to the spacing shown in the plan detail sheet for fence.

For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with brackets supplied by the manufacturer. For fencing installed in soil, posts shall be set in concrete footings having a minimum depth of 42”.

FENCE INSTALLATION MAINTENANCE
When cutting/drilling rails or posts adhere to the following steps to seal the exposed surfaces:

1. Remove all metal shavings from cut area.
2. Apply custom finish paint matching fence color.

GATE INSTALLATION (4’ feet wide x 3’ height, noted in the plans as Gates, Special, 3’)
Gate posts shall be spaced according to the manufacturers’ gate drawings, dependent on standard out to out gate leaf dimensions and gate hardware selected. Type and quantity of gate hinges shall be based on the application; weight, height, and number of gate cycles. The manufacturers’ gate drawings shall identify the necessary gate hardware required for the application. Gate hardware shall be provided by the manufacture of the gate and shall be installed per manufacturer’s recommendations.

Gate posts shall be spaced according to the gate openings specified in the construction plans. The fence panels shall be attached to the posts using mechanically fastened panel brackets supplied by the manufacturer.

Method of Measurement. Ornamental Fence, 3’ (SPECIAL) will be measured for payment in feet along the top of the fence from center to center of the end posts. Gates, Special will be measured per each gate installed.

Basis of Payment. This work will be paid for at the contract unit price per foot for ORNAMENTAL FENCE, 3’ (SPECIAL) and per each for GATES, SPECIAL. The unit price shall include furnishing

and installing the fence, including all fence connections, concrete foundations, fence openings and gates (where indicated) and electric grounding.

PREFORMED THERMOPLASTIC PAVEMENT MARKING – GREEN
PREFORMED THERMOPLASTIC PAVEMENT MARKING – GREEN WITH EMBEDDED WHITE SYMBOL

Description. This work shall consist of furnishing and applying Green Preformed Thermoplastic Pavement Markings (with and without Embedded White Symbols) in accordance with Section 780 and 1095 of the Standard Specifications, except as herein modified. Before the placement of the preformed thermoplastic pavement marking, the proposed area shall be grooved and cleaned before placement.

Material.

(a) The pigment used for the green thermoplastic compound shall not contain any hazardous materials listed in the Environmental Protection Agency Code of Federal Regulations (CFR) 40, Section 261.24, Table 1. The combined total of RCRA listed heavy metals shall not exceed 100 ppm when tested by X-ray fluorescence spectroscopy. The pigments shall also be heat resistant, UV stable and color fast. The pigment shall be uniformly distributed throughout the thermoplastic compound.

(b) The daytime chromaticity coordinates for green colored pavement markings shall meet the following chart.

x	0.230	0.266	0.367	0.444
y	0.754	0.500	0.500	0.555

The daytime luminance factor (Y) shall be at least 7, but no more than 35.

(c) The nighttime chromaticity coordinates for green colored pavement markings shall meet the following chart.

x	0.230	0.266	0.367	0.444
y	0.754	0.500	0.500	0.555

(d) The surface of the preformed thermoplastic markings shall provide a minimum skid resistance value of 60 BPM when tested according to ASTM E 303-74.

Method of Measurement. The Green Preformed Thermoplastic Pavement Markings (with and without Embedded white Symbols) will be measured on a square foot basis.

Basis of Payment. PREFORMED THERMOPLASTIC PAVEMENT MARKING – GREEN and PREFORMED THERMOPLASTIC PAVEMENT MARKING – GREEN WITH EMBEDDED WHITE SYMBOL will be paid for at the contract unit price per square foot installed and will include all material, labor, and incidentals necessary to complete the work as per the contract plans. Grooving will be paid for GROOVING FOR RECESSED PAVEMENT MARKING, LETTERS AND SYMBOLS.

LIGHTING SPECIAL PROVISIONS

EQUIPMENT CABINET

Description. This work will consist of furnishing and installing Stainless Steel Weatherproof cabinet with time clock and circuit breakers as shown in drawings for lighting and receptacles as indicated on the plans and diagrams. This work includes concrete foundation.

Material. The cabinet shall meet all requirements of Material Specification of IDOT.

Method of Measurement. The cabinet furnished and installed will be measured as each.

Basis of Payment. This work will be paid for at the contract unit price each for EQUIPMENT CABINET. The price will be payment in full for furnishing, installing, and testing, and will include all material, labor, and incidentals necessary to complete the work as per the contract plans.

LIGHTS, PEDESTRIAN

Description. This item shall consist of furnishing, testing as required, and installing a complete assembly of ornamental decorative pole, arms, and luminaires suitable for permanent roadway lighting as specified herein.

General. The lighting pole, ornamental base, anchor base, luminaire arms and luminaries shall be a complete assembly and designed and installed as detailed on the plans. The pole and luminaire assembly shall be designed for a minimum wind speed of 80 mph with a 1.3 gust factor and is in accordance with the latest edition of the American Association of State and Highway Officials (AASHTO) specifications for luminaire supports and assemblies.

Materials.

1. Pole

The pole assembly shall consist of an aluminum 17’ pole shaft, a cast aluminum anchor base, an ornamental shroud, luminaire arms and banner arms as detailed on the plans. The pole shaft shall be fabricated from round aluminum tubing in accordance with AA6083-t8. The tube profile will consist of three (3) pieces .250” thick with a top diameter of 4.50” and a bottom diameter of 8.00”. The bottom tube will be welded to an 11 ¼” square slotted cast aluminum base. The pole shaft will have two (2) 4” x 8” reinforced handholes with a 1 ½-13 grounding lug and a gasketed handhole cover with stainless steel core nylon hex head screws. Four (4)1” x 48” long galvanized steel anchor bolts with two (2) each hex nuts and flat washers for leveling will be supplied to anchor the pole. The bolt circle shall be 11” and the anchor bolt projection from the foundation shall be 5”. The anchor bolts shall conform to ASTM F1554 GR 55.

The pole shall be Sternberg as shown on the plans.

2. Luminaire

The luminaire shall be Sternberg 1521 LED for sidewalk as shown on the fixture schedules.

3. Finish

The pole, luminaries and bracket arm assembly shall all be painted black using a powder coat paint process. The paint finish procedures shall be submitted with catalog cuts at the time of contract award.

4. Warranty

Five-year limited warranty. See product and finish warranty guide for details.

5. Listings

UL listed, suitable for wet locations.

Method of Measurement. The assembly furnished and installed will be measured as each.

Basis of Payment. This item will be paid at the contract unit price each for LIGHTS, PEDESTRIAN, which will be payment in full for the material and work described herein.

LIGHTS, STREET

Description. This item shall consist of furnishing, testing as required, and installing a complete assembly of ornamental decorative pole, arms, and luminaires suitable for permanent roadway lighting as specified herein.

General. The lighting pole, ornamental base, anchor base, luminaire arms and luminaries shall be a complete assembly and designed and installed as detailed on the plans. The pole and luminaire assembly shall be designed for a minimum wind speed of 80 mph with a 1.3 gust factor and is in accordance with the latest edition of the American Association of State and Highway Officials (AASHTO) specifications for luminaire supports and assemblies.

Materials.

1. Pole

The pole assembly shall consist of an aluminum 30’ pole shaft, a cast aluminum anchor base, an ornamental shroud, (2) luminaire arms as detailed on the plans. The pole shaft shall be fabricated from round aluminum tubing in accordance with AA6083-t8. The tube profile will consist of three (3) pieces .250” thick with a top diameter of 4.50” and a bottom diameter of 8.00”. The bottom tube will be welded to an 11 ¼” square slotted cast aluminum base. The pole shaft will have two (2) 4” x 8” reinforced handholes with a 1 ½-13 grounding lug and a gasketed handhole cover with stainless steel core nylon hex head screws. Four (4) 1” x 57” long galvanized steel anchor bolts

with two (2) each hex nuts and flat washers for leveling will be supplied to anchor the pole. The bolt circle shall be 11” and the anchor bolt projection from the foundation shall be 5”. The anchor bolts shall conform to ASTM F1554 GR 55.

The pole shall be Sternberg as shown on the plans.

2. Luminaire

The luminaire shall be AEL ATBM LED for roadway and Sternberg 1521LED sidewalk as shown on the fixture schedules and detail.

3. Finish

The pole, luminaries and bracket arm assembly shall all be painted black using a powder coat paint process. The paint finish procedures shall be submitted with catalog cuts at the time of contract award.

4. Warranty

Five-year limited warranty. See product and finish warranty guide for details.

5. Listings

UL listed, suitable for wet locations.

Method of Measurement. The assembly furnished and installed will be measured as each.

Basis of Payment. This item will be paid at the contract unit price each for LIGHTS, STREET, which will be payment in full for the material and work described herein.

TRAFFIC SIGNAL SPECIAL PROVISIONS

STEEL COMBINATION POLE (SPECIAL)

Description. This work shall consist of furnishing an installing a steel combination pole in accordance with Section 877 of the Standard Specifications, except that no mast arm shall be furnished or installed on the pole.

Basis of Payment. This work will be paid for at the contract unit price per each for STEEL COMBINATION POLE (SPECIAL).

CONCRETE FOUNDATION, TYPE E 30-INCH DIAMETER
CONCRETE FOUNDATION, TYPE E 36-INCH DIAMETER

Description. This work shall consist installing concrete foundations in accordance with Section 878 of the Standard Specifications and State Standard 878001-10.

The proposed location of the concrete foundations may be moved in the field to avoid conflicts, or to place pedestrian push buttons at the proper locations at the approval of the Engineer. If the foundation is moved to an area not within the removal limits shown on the plans, removal and replacement of the existing sidewalk or earth disturbance shall be completed in accordance with Section 895 of the Standard Specifications and any applicable notes or Special Provisions provided in these construction documents.

Method of Measurement. This work will be measured for payment in feet according to Article 878.04.

Basis of Payment. This work will be paid for at the contract unit price per foot of depth of CONCRETE FOUNDATION of the type specified.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT

Description. This work shall be in accordance with Section 895 of the Standard Specifications except as modified herein.

The Contractor shall remove all wires pertaining to existing traffic signals, pedestrian signal accommodations, grounding, at all intersections noted within the plans, including the temporary installation at the Hopps Road intersection. The contractor shall remove all handholes, signal posts, mast arms, and poles and corresponding foundations as noted in the plans to a grade three feet below the finished ground. This work and any restoration shall be included in the bid price for this pay item.

It is the responsibility of the Contractor to verify the equipment required for removal, salvage, and disposal for each intersection and bid accordingly.

Method of Measurement. All Traffic signal equipment including but not limited to controllers, handholes, cabinets, push buttons, signs, signal posts, mast arms, concrete foundations, cable, vehicle or pedestrian signal heads, video detection equipment, and PTZ cameras and associated equipment for a particular intersection will be measured for payment as each (per intersection).

Basis of Payment. The above work will be paid for at the contract unit price per each (per intersection) for REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT and will be payment in full for removing, disposing of, and transporting the equipment described above, complete. No additional compensation will be allowed.

Removal of existing handholes will be paid for at the contract unit price per each for REMOVE EXISTING HANDHOLE.

Removal of existing concrete foundations will be paid for at the contract unit price per each for REMOVE EXISTING CONCRETE FOUNDATION.

REMOVE PEDESTRIAN PUSH-BUTTON

Description. This work shall be completed in accordance with Section 895 of the Standard Specifications.

Method of Measurement. This work will be measured for payment as each pedestrian push-button removed.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVE PEDESTRIAN PUSH-BUTTON.

RECTANGULAR RAPID FLASHING BEACON ASSEMBLY (COMPLETE).

Description. This work shall consist of furnishing and installing AC-powered cabinet-based rectangular rapid flashing beacons (RRFBs) at the intersection of Western Avenue and Starr Street. This pay item includes all necessary work to furnish and install the traffic signal post-mounted and light pole mounted rapid rectangular flashing beacon system for crossing Western Avenue at Starr Street (2 crosswalks).

This work shall be in accordance with all applicable FHWA and MUTCD guidelines as well as Article 801 of the current Standard Specifications. This specification is for a hard-wired Rectangular Rapid Flashing Beacon (RRFB) assembly. This assembly shall consist of a two direction RRFB unit along with the associated controller, wireless communications equipment, controls, pedestrian push button, and all electronics necessary to support up to 50 activations per day for up to three minutes flash time (180 seconds) per activation. This work shall include all necessary mounting brackets.

Overview
Each RRFB shall be cabinet-based and use AC power. The industry-standard cabinet will house the AC/DC power supply, circuit breaker, charge controller, flash controller, on-board user interface, and wireless communications. Each RRFB assembly shall include two light bars. The RRFB shall conform to all provisions of the MUTCD, Interim Approval IA-21 including flash pattern. The RRFB shall be pre-wired to the maximum extent possible. Solar-powered version of the RRFB shall also be available, including a smaller self-contained version that is fully compatible.

Mechanical Specifications
The control cabinet(s) shall be constructed from aluminum with a lockable industry standard #2 lock and tamper-proof hinged door. No other external control cabinet shall be required. The control cabinet(s) shall be vented to provide air circulation and cooling of the electronic system. The vents shall be screened to prevent ingress by insects and debris.

The overall weight of the control cabinet shall not exceed 90lbs (41 kg) and shall have the approximate dimensions: 24” H x 16” W x 8” D (61cm H x 41cm W x 21 cm D).
The control cabinet(s) shall be painted black. Fasteners shall be stainless steel.

Light Bars
The light bars shall be current-driven LED strings without active electronics. The LEDs shall be driven by pulse-width modulated fixed current.

The light bar housing shall be constructed from aluminum and shall have the approximate dimensions: 24” L x 1.5” D x 4.5” H (61.0 cm L x 3.8 cm D x 11.4 cm H).

Each light bar shall conform to all provisions of the MUTCD and FHWA requirements.

Each of the two modules in a light bar shall have 8 LEDs and shall be purpose-built by the manufacturer of the RRFB including the optics. The optics shall be premium, UV-resistant polycarbonate.

Each end of a light bar shall include a side-emitting pedestrian confirmation light composed of a single LED. Users shall have the option of using both confirmation lights for median applications and covering one confirmation light with an included sticker for side-of-road applications.

The light bar shall be mounted to the post or pole using a separate bracket assembly to facilitate mounting two light bars back-to-back (bi-directional) and to allow the light bar(s) to rotate horizontally for aiming.

The light bar bracket shall be constructed from galvanized or stainless steel and shall have both banding and bolting mounting options and shall be able to be mounted to all specified pole types. The light bar assembly shall open for access to the wiring connections for the LED modules. LED modules shall be rated to NEMA 3R.

Light bar wiring harnesses shall be included. Fasteners shall be stainless steel.

Mounting
Mounting adapter hardware for the RRFB cabinet shall be available for mounting to round light poles or square posts. Side-of-Pole mounting shall offer strapping as standard with an option for Z-bar and U-bolts.

Mounting configurations shall not require specialized tools.

Configuration
The RRFB cabinet shall house an auto-scrolling LED on-board user interface that provides on-site configuration adjustment, system status and fault notification.

The user interface shall provide a display of four (4) alphanumeric characters and three (3) control buttons to navigate and change settings and activate functions.

When editing the configuration, the user interface will flash the display indicating it is ready to accept editing and will flash the display rapidly 3 times to indicate the setting change has been accepted.

The flash duration shall be adjustable in-the-field from 5 to 60 seconds in one second increments, 60 to 1,200 seconds in 60-second steps, and 3,600 seconds. Default flash duration shall be 20 seconds.

The system shall provide configurable nighttime intensity settings ranging from 10% to 100% of daytime intensity.

The system shall be capable of enabling or disabling ambient brightness auto-adjustment. This feature allows the system to provide optimal output brightness in relation to ambient light levels while always maintaining adherence to SAE J595 Class I specifications. If enabled, the ambient brightness auto-adjustment shall adjust output to a range between 50% and 100% of daytime intensity.

The User Interface shall provide viewing and/or programming access for the following:
Activation Duration (5 to 60, 60 to 1200, or 3600 seconds)

Digital output that is active during the flashing cycle that allows the control of external devices such as crosswalk illumination. Digital output shall be configurable for night operation only or operation day or night.

Radio Channel (Choice of 1 to 14)

Radio Status

Night Intensity Setting

Adjustment for Ambient Daytime Brightness

Self-Test / BIST (Built-In Self-Test) including the detection of shorts or open circuits in the fixture outputs

Battery Status – General description and actual battery voltage (not applicable for AC model)

Day or Night Status (as determined by dedicated photosensor)

Solar Panel Voltage (not applicable for AC model)

Automatic Light Control. If this safety feature is enabled, it allows the RRFB to temporarily reduce the intensity of the light bars to maintain energy equilibrium. The user interface shall report the amount of dimming being applied in the range of 10% to 100%

Daily activations averaged over 90 days

Pushbutton detection

Firmware Version number

Activation duration, Night intensity setting and adjustment for ambient daytime brightness shall be automatically broadcast to all RRFBs in the system when changed in one RRFB.

AC/DC Power Supply
The RRFB shall include a universal AC/DC power supply that accepts conventional AC power input and outputs 15 volts DC. It shall be rated for at least 50 watts. AC wiring input shall terminate on a DIN-rail circuit breaker rated for 4 amps.

Operational Specification
The RRFB shall meet the minimum photometric specifications of the Society of Automotive Engineers (SAE) standard J595 Class I dated January 2005. A photometric report by a certified third-party testing laboratory shall be provided to demonstrate compliance with J595.

The color of the yellow light bar indications shall meet the specifications of SAE standard J578 (Color Specification) dated December 2006.

The controller shall be able to support up to 1.4 amps combined current through the RRFB fixtures simultaneously.

The system shall use a dedicated light sensor to detect night and day states and apply any optionally enabled intensity adjustments.

The system shall operate normally within the temperature range of -40 to +161˚F (-40 to +72˚C)

Radio System
The radio system shall operate at 2.4GHz

Upon detection of a pushbutton press, an RRFB will broadcast an activation to all other nearby RRFBs sharing the same channel.

The RRFB shall have the capability to activate other RRFBs by wireless communications within 1,000 feet (304 meters).

The RRFB shall have a minimum of 14 unique channels that can be configured on site to avoid inadvertent activation of nearby systems.

The antenna shall be a low-profile “button” shape that cannot be bent or broken by vandals

Activations
The system shall be capable of activation by pushbutton and passive microwave detection.

The pedestrian push buttons that shall have an LED indicator with audible tone with Piezo control and shall be ADA compliant and MUTCD-2009 4E compliant for momentary operation. The RRFB shall be capable of operating with either 1 or 2 pushbuttons.

All RRFBs in the system shall initiate activation simultaneously within 150ms of activation.

If an additional activation occurs while the system is activated, the flash duration shall reset. For example, with the flash duration set to 20 seconds, if an additional activation occurs after the RRFB has been activated for 15 seconds the RRFB will continue for an additional 20 seconds, or 35 seconds in total.

If the RRFB has ceased operation, any subsequent activation shall activate the RRFB without delay regardless of how recently the RRFB ceased operation.

Pushbutton wiring harnesses shall be included.

This work shall include the installation of push buttons mounted to a traffic signal post or on push buttons posts, in accordance with the information shown on the plans. Push button posts shall be installed in accordance with the information provided in the Standards Specifications and Highway Standards for “Pedestrian Push-Button Post.”

Environmental Testing
The RRFB cabinet and light bars shall be rated to a minimum of NEMA 3R.

Packaging
Packaging shall consist of only recyclable corrugated cardboard and soft plastic bags.

Qualifications
The RRFB shall be FCC certified to comply with all 47 CFR FCC Part 15 Subpart B Emission requirements.

The RRFB shall be manufactured in the USA and shall be Buy American compliant. The Manufacturer shall provide a 5-Year Limited Warranty.

The Manufacturer shall be ISO 9001 certified.

Pushbuttons
Each RRFB assembly shall include one pedestrian pushbutton for activation of the flashing beacon. The pushbuttons shall comply with the specification for PEDESTRIAN PUSHBUTTON in this contract. The pushbutton shall be installed on a proposed pedestrian pushbutton post (paid separately) or on a traffic signal post (paid separately) as indicated on the plans.

Signs
The contractor shall provide and install the regulatory pedestrian instruction sign according to MUTCD, sign series R10-25 (9”x12” sign), two (2) pedestrian signs W11-2 (30”x30”), and two (2) arrow plaques W16-7P (24”x12”). The signs shall be diamond grade sheeting. Pedestrian pushbuttons shall be fully accessible from a paved surface.

Method of Measurement. This work will be measured for payment per each assembly installed. An assembly includes furnishing all parts and labor for the installation of light bars facing both directions, associated controller, a pedestrian push button, two (2) pedestrian signs W11-2 (30”x30”), two (2) arrow plaques W16-7P (24”x12”) and one (1) crosswalk sign R10-25 (9”x12”).

Basis of Payment. This work will be paid for at the contract unit price per each for RECTANGULAR RAPID FLASHING BEACON ASSEMBLY (COMPLETE).

CONTRACT GUARANTEE

The Contractor shall guarantee all electrical equipment, apparatus, materials, and workmanship provided under the contract for a period of six (6) months after the date of final inspection according to Article 801.14.

All instruction sheets required to be furnished by the manufacturer for materials and supplies and for operations shall be delivered to the Engineer prior to the acceptance of the project, with the following warranties and guarantees:

1. The manufacturer's standard written warranty for each piece of electrical equipment or apparatus furnished under the contract.

2. The Contractor's written guarantee that, for a period of six (6) months after the date of final inspection of the project, all necessary repairs to or replacement of said warranted equipment, or apparatus shall be made by the Contractor at no cost to the City of Peoria Department of Public Works.

3. The Contractor's written guarantee for satisfactory operation of all electrical systems furnished and constructed under the contract for a period of 6 months after final inspection of the project.

SYSTEM IMPLEMENTATION, EQUIPMENT INTEGRATION AND SUPPORT

The Contractor shall install the ITS components at the locations indicated on the plans.

All ITS components shall be subject to a 30-day burn-in period. During the "burn-in" period, all components shall perform continuously, without any interruption of operation, for a period of thirty days. In the event that there are operational problems during the burn-in period, the burn-in period shall reset back to day one.

The City of Peoria Department of Public Works will program the ITS components and integrate them into the existing ITS system.

The Contractor shall be responsible for installing the proposed ITS components in accordance with the plans, specifications, and manufacturers recommended practices.

Basis of Payment. This work will not be paid for separately but will be included in the overall contract bid price.

AS-BUILT DOCUMENTATION

The Contractor shall locate all proposed conduit, communication vaults, handholes, light poles, traffic signal posts, mast arms, controller cabinets, and all other electrical structures every 100 feet using a GIS locating device that is accurate to the nearest foot.

The Contractor shall provide a GIS based map of the conduit route (located every 100 feet) with all traffic and lighting components listed above with a complete listing of all of map coordinates in an electronic format (Google Earth KML or KMZ shape file).

Basis of Payment. This work will not be paid for separately but will be included in the overall contract bid price.

POTHOLING FOR LOCATION OF EXISTING UNDERGROUND UTILITIES

Description. Potholing to locate existing underground utilities shall be included in the contract bid price for the conduit pay items (pushed or trenched).

Basis of Payment. Removal and replacement of existing sidewalk, pavement, and islands only for utility locating purposes will not be paid for separately but will also be included in the contract bid price for the conduit pay items.

LED MODULE and HPS LAMP RECYCLING

The Contractor shall recycle all LED modules and high-pressure sodium lamps through a certified recycling company. The Contractor shall submit detailed information pertaining to LED module recycling to the Resident Engineer for review along with the electrical material submittals. The Contractor shall submit proof of recycling.

Basis of Payment. This work will not be paid for separately but will be included in the contract unit price for the traffic signal removal items.

SERVICE INSTALLATION, TYPE A

Description. This work shall be in accordance with Section 805 and 1086 of the Standard Specifications except as modified herein.

The service installation shall include furnishing and installing a 10’ 6”x6” treated wood post, NEMA 4X stainless steel disconnect switch, Ameren approved meter socket, and all associated appurtenances. The service disconnect and meter socket shall be mounted on the wood post.

Galvanized steel conduit shall be used for the service riser. The use of PVC conduit will not be allowed.

A rain tight hub assembly (Myers type) shall be used when conduit enters the switch from the top of the disconnect.

The service disconnect switch shall be a stainless steel, weatherproof NEMA 4X enclosure that meets the following specifications:

60-Ampere (250 V) Minimum Fused Disconnect Switch: Unless indicated otherwise on the plan sheets, the fused disconnect switch shall be single-throw, three-wire (two poles, two fuses, and solid neutral). The switch shall provide for locking the blades in either the “On” or “Off” position

with one or two padlocks and for locking the cover in the closed position. The disconnect switch and fuse rating shall be rated at the voltage and amperage required to comply with utility company and equipment requirements. All fuses shall be provided with the disconnect installation.

The service disconnect shall be installed at a maximum height of 42”. The City of Peoria Department of Public Works will furnish all padlocks.

Basis of Payment. This work will be paid for at the contract unit price each for SERVICE INSTALLATION, TYPE A which price will be payment in full for all labor, equipment, and materials required to provide and install the electrical service installation described above, complete.

ELECTRIC CABLE IN CONDUIT, EQUIPMENT GROUNDING CONDUCTOR, NO. 6 1C

Description. This work shall be in accordance with the applicable Articles of Sections 801, 806, 873, 1076, and 1088 of the Standard Specifications with the following modifications:

This work shall consist of furnishing and installing a grounding wire to bond all traffic signal handholes (lids and rings), mast arm assemblies, posts, light poles, cabinets, exposed metallic conduits, and other metallic components.

The Contractor shall attach the proposed ground wire to the proposed traffic structures to ground and safety bond them in accordance with NEC requirements. All labor, materials, and equipment required to bond the proposed structures (wire, clamps, hardware, etc.) shall be included in the bid price for this pay item.

The Contractor shall also be responsible for locating all handholes and uncovering them as required to facilitate the work.

The proposed ground wire shall be an insulated #6 XLP copper conductor with green insulation.

Basis of Payment. This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, EQUIPMENT GROUNDING CONDUCTOR, NO. 6 1C which price shall be payment in full for all labor, materials, and equipment required to provide the grounding cable described above.

ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE) 2C NO. 6 & 1/C NO. 6 GROUND
ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE) 4-1/C NO. 6, & 1/C NO. 6 GROUND

Description. This work shall be completed in accordance with Section 817 of the Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit price per foot installed for ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE) 2C NO. 6 & 1/C NO. 6 GROUND or ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE) 4-1/C NO. 6, & 1/C NO. 6 GROUND of the type, size and number of conductors specified.

HANDHOLE, PORTLAND CEMENT CONCRETE

Description. This work shall consist of furnishing the materials and constructing a handhole in accordance with the applicable Articles of Section 814 and 1088 of the Standard Specifications with the following modifications:

The lift ring for the cover shall consist of a solid closed ring of stainless steel at least 3/8 inch in diameter. The lift ring shall be attached to the cover by a loop of stainless steel at least 3/8 inch in diameter. The lift ring and loop shall be recessed in the cover.

The Contractor shall install heavy-duty, fully-galvanized hooks, with a minimum diameter of ½" in the proposed handhole. The Contractor shall submit this material to the Engineer prior to construction of the handholes.

The lid shall be marked with the legend "Traffic Signals". Pre-cast handholes are not allowed.

All unsuitable materials shall be disposed of by the Contractor outside the job limits.

Basis of Payment: This work will be paid for at the contract unit price each for HANDHOLE, PORTLAND CEMENT CONCRETE which price will be payment in full for all labor, materials, and equipment required to provide the handhole described above as well as any necessary excavating, backfilling, disposal of unsuitable materials, and furnishing all materials within the limits of the handhole.

DOUBLE HANDHOLE, PORTLAND CEMENT CONCRETE

Description. This work shall consist of furnishing the materials and constructing a double handhole in accordance with the applicable Articles of Section 814 and 1088 of the Standard Specifications with the following modifications:

The lift ring for the cover shall consist of a solid closed ring of stainless steel at least 3/8 inch in diameter. The lift ring shall be attached to the cover by a loop of stainless steel at least 3/8 inch in diameter. The lift ring and loop shall be recessed in the cover.

The Contractor shall install heavy-duty, fully-galvanized hooks, with a minimum diameter of ½" in the proposed handhole. The Contractor shall submit this material to the Engineer prior to construction of the handholes.

The lid shall be marked with the legend "Traffic Signals". Pre-cast handholes are not allowed.

All unsuitable materials shall be disposed of by the Contractor outside the job limits.

Basis of Payment. This work will be paid for at the contract unit price each for DOUBLE HANDHOLE, PORTLAND CEMENT CONCRETE which price will be payment in full for all labor, materials, and equipment required to provide the handhole described above as well as any necessary excavating, backfilling, disposal of unsuitable materials, and furnishing all materials within the limits of the handhole.

FULL ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL

Description. This work shall be in accordance with Sections 857, 1073, and 1074 of the Standard Specifications except as modified herein.

The controller and cabinet shall be compliant with NEMA TS-2 standards and NTCIP standards 1201 and 1202.

The traffic signal cabinet shall have a powder coated black finish.

The traffic signal cabinet shall have a NEMA TS-2 back panel. The cabinet shall include a malfunction management unit to allow enhanced fault monitoring capabilities. The malfunction management unit shall support flashing yellow arrow operation and be a Reno A&E model MMU2-1600G equipped with a graphical display and Ethernet port.

The cabinet shall be equipped with an external pedestrian pushbutton isolation panel with functionality to provide for latching pedestrian pushbutton indication lights.

The controller shall be an Econolite Cobalt G-Series NEMA TS-2 Type 2 controller equipped with graphical display, Ethernet ports, USB ports, and data key. The controller shall be equipped with the latest firmware.

The malfunction management unit shall be equipped with the latest software and firmware revisions. The cabinet shall be equipped with a plexi-glass shield that covers the power panel which houses the mercury bus relay, line filter, circuit breakers, and other electrical components.

The cabinet shall be equipped with a plexi-glass shield that covers the thermostat and a LED lighting assembly that turns on when the door is opened. The lighting assembly shall be mounted in a location that will not interfere with cabinet maintenance.

The traffic signal cabinet shall be equipped with a sixteen-load switch back panel to accommodate future expansion.

The cabinet shall be furnished with a compact heater strip to be used for moisture reduction during cold weather. The heater shall be thermostatically controlled, operate at 120 volts, have a minimum wattage of 150 watts, a maximum wattage of 250 watts, have a shield to protect service personnel and equipment from damaging heat, be separately fused, and be mounted where it does not interfere with a person working in the cabinet.

The traffic signal cabinets shall be equipped with two non GFCI duplex NEMA 5-15R receptacles to be used to provide power to auxiliary equipment.

The cabinet shall be equipped with a twenty-four-fiber wall- mountable interconnect center and two six-fiber bulkheads.

The cabinet shall be equipped with toggle switch guards for all switches located on the door to prevent accidental switching. The cabinet shall include a permanent re-usable washable air filter.

The cabinet shall be equipped with additional surge protection for the controller, malfunction management unit, and detector amplifiers, and/or video detection system. The surge protector shall be a Transtector model ACP100BWN3 and shall be included in addition to an EDCO SHA-1250 IRS protector. The EDCO SHA-1250 IRS surge protector is to be provided in accordance with Section 1085.47 A(4a) and shall be wired to provide surge protection for the controller, malfunction management unit, and detector amplifiers. The Transtector surge suppressor may be wired to the equipment protected power terminals of the EDCO SHA-1250 IRS unit provided that the controller, MMU, and detection system are protected.

The Contractor shall set up each cabinet in his or her shop for inspection by the Engineer. All phases that are utilized shall be hooked up to a light board to provide observation for each signal indication. The Engineer shall be notified when the setup is complete so that all pertinent timings may be entered into each traffic signal controller. The facility shall be subject to a seven-day burn-in period before installation will be allowed.

After installing the cabinet in the field, prior to resuming normal signal operation, the Contractor shall test the cabinet by connecting a jumper to the cabinet field terminals to ensure that all conflicting signals will place the cabinet into conflict flash and to verify that the cabinet, controller, and malfunction management unit are operating correctly. The Contractor shall make arrangements with the local police agency to provide traffic control during the conflict test.

Basis of Payment. This work will be paid for at the contract unit price each for FULL ACTUATED CONTROLLER AND TYPE IV CABINET SPECIAL and will be payment in full for all labor, materials, and equipment required to remove the existing traffic signal cabinet and furnish, install, and test the traffic signal cabinet described above, complete.

CONTROLLER CABINET TYPE IV, SPECIAL

Description. This work shall be in accordance with Sections 857, 1073, and 1074 of the Standard Specifications except as modified herein.

The Contractor shall remove the existing traffic signal cabinets and deliver them to the City of Peoria maintenance facility located at 3505 N. Dries Lane, Peoria.

The cabinet shall be equipped with a plexi-glass shield that covers the thermostat and an LED type lighting assembly that turns on when the door is opened. The lighting assembly shall be installed in a location that will not interfere with cabinet maintenance.

The traffic signal cabinet shall be equipped with a NEMA TS-2 sixteen load switch back panel to accommodate future expansion.

The cabinet shall be furnished with a compact heater strip (to be used for moisture reduction during cold weather. The heater shall be thermostatically controlled, operate at 120 volts, have a minimum wattage of 150 watts, a maximum wattage of 250 watts, have a shield to protect service personnel and equipment from damaging heat, be separately fused, and be mounted where it does not interfere with a person working in the cabinet.

The traffic signal cabinets shall be equipped with two non GFCI duplex NEMA 5-15R receptacles to be used to provide power to auxiliary equipment.

The existing Econolite Cobalt TS-2 Type 2 controller will be re-used with the proposed traffic signal controller cabinet.

The cabinet shall be equipped with all components required for a complete and fully functional cabinet including, but not limited to a Reno MMU2-16G malfunction management unit (equipped with the latest firmware), TS-2 power supply, three BIU's, load switches, NEMA flasher, and flash transfer relays.

The cabinet shall be equipped with toggle switch guards for all switches located on the door to prevent accidental switching. The cabinet shall include a high quality deluxe washable filter.

The cabinet shall be equipped with additional surge protection for the controller, malfunction management unit, and detector amplifiers, and/or video detection system. The surge protector shall be a Transtector model ACP100BWN3 and shall be included in addition to an EDCO SHA-1250 IRS protector. The EDCO SHA-1250 IRS surge protector is to be provided in accordance with Section 1085.47 A(4a) and shall be wired to provide surge protection for the controller, malfunction management unit, and detector amplifiers. The Transtector surge suppressor may be wired to the equipment protected power terminals of the EDCO SHA-1250 IRS unit provided that the controller, MMU, and detection system are protected.

The Contractor shall set up each cabinet in his or her shop for inspection by the Engineer. All phases that are utilized shall be hooked up to a light board to provide observation for each signal indication. The Engineer shall be notified when the setup is complete so that all pertinent timings may be entered into each traffic signal controller. The facility shall be subject to a seven-day burn-in period before installation will be allowed.

After installing the cabinet in the field, prior to resuming normal signal operation, the Contractor shall test the cabinet by connecting a jumper to the cabinet field terminals to ensure that all conflicting signals will place the cabinet into conflict flash and to verify that the cabinet, controller, and malfunction management unit are operating correctly. The Contractor shall make arrangements with the local police agency to provide traffic control during the conflict test.

Basis of Payment. This work will be paid for at the contract unit price each CONTROLLER CABINET TYPE IV, SPECIAL and will be payment in full for all labor, materials, and equipment required to remove the existing traffic signal cabinet and furnish, install, and test the traffic signal cabinet described above, complete.

TRAFFIC SIGNAL LED MODULE SPECIFICATIONS

Description. The material requirement shall be in accordance with Sections 880 and 1078 of the Standard Specifications except as modified herein.

All traffic signal solid indication and arrow LED assemblies shall be designed for a fifteen-year service life with enhanced power supplies and LEDs and shall have a fifteen-year replacement warranty. Currently, the following manufacturers and models are approved for use:

- Dialight - 12” Long Life XL15 ITE Compliant Traffic Balls and 12” Long Life XOD15 ITE Compliant Omni-Arrows

- Leotek – 12” Extended Life DT Series Incandescent Look Ball and 12” Extended Life DT Series Incandescent Look Arrows

The LED assemblies for the red, yellow, and green solid and arrow indications shall meet or exceed the following minimum specifications:

Solid Indication LED Module Specifications

Compliance:	Fully compliant with ITE VTCSH LED Circular Signal Supplement specifications dated and adopted June 27, 2005
Compliance Verification:	Intertek ETL verified compliance – Product must be listed on the “Directory of LED Modules Certified Products” list located on the ETL website at http://www.intertek.com/lighting/performance-testing/traffic-signals/
Diameter:	12” (300mm)
Lens:	UV stabilized scratch resistant polycarbonate, tinted red or yellow, clear for green, uniform non-pixelated illumination, Incandescent Appearance
LEDS:	Hi-Flux
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	10.0 W (Red), 18.0W (Yellow), 12.5 W (Green)
Nominal Wavelength:	625-626 nm (Red), 589-590 nm (Yellow), 500-502 nm (Green)
Minimum Maintained Intensity:	365 Cd (Red), 910 Cd (Yellow), 475 Cd (Green)

Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection
Warranty:	15-year replacement (materials, workmanship, and intensity)

Arrow Indication LED Module Specifications (Red, Yellow, Green)

Compliance:	Fully compliant with ITE VTCSH LED Vehicle Arrow Supplement specifications adopted July 1, 2007
Compliance Verification:	Intertek ETL verified compliance – Product must be listed on the "Directory of LED Modules Certified Products" list located on the ETL website at http://www.intertek.com/lighting/performance-testing/traffic-signals/
Diameter:	12" (300mm)
Lens:	Clear Frosted, UV stabilized scratch resistant polycarbonate, tinted red or yellow, clear for green, uniform non-pixelated illumination, incandescent appearance, omni-directional
LEDS:	Hi-flux LEDs
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	5.0-7.0 W (Red), 6.0-12.5W (Yellow), 5.0-7.0 W (Green)
Nominal Wavelength:	625-628 nm (Red), 590 nm (Yellow), 500nm (Green)
Minimum Maintained Intensity:	56.8-58.4 Cd (Red), 141.6-146.0 Cd (Yellow), 73.9-76.0 Cd (Green)
Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection

Warranty:	15-year replacement (materials, workmanship, and intensity)

16" Pedestrian LED Module Specifications (Man/Hand with Countdown Timer)

Compliance:	Fully compliant with ITE PTCSI Part-2 LED Pedestrian Traffic Signal Modules specification adopted August 4, 2010
Compliance Verification:	Intertek ETL verified compliance – Product must be listed on the "Directory of LED Modules Certified Products" list located on the ETL website at http://www.intertek.com/lighting/performance-testing/traffic-signals/
Size:	16" x 18"
Configuration:	Man/Hand Overlay with Countdown Timer
Lens:	UV stabilized scratch resistant polycarbonate, uniform non-pixelated illumination, incandescent appearance
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	6.0-9.0 W (Man), 7.0-9.0W (Hand), 5.0-8.0 W (Timer)
Minimum Maintained Intensity:	1,400 Cd (Hand), 1,400 Cd (Timer), 2,200 Cd (Man)
Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection
Warranty:	5-year replacement (materials, workmanship, and intensity)

SIGNAL HEAD, LED

Description. This work shall be in accordance with Sections 880 and 1078 of the Standard Specifications except as modified herein.

The traffic signal heads shall consist of 12" polycarbonate sections and shall be equipped with LED assemblies for all red bulb, yellow bulb, green bulb, red arrow, yellow arrow, and green arrow indications.

The traffic signal heads shall have a black finish with black doors and tunnel visors.

The LED signal faces shall be equipped with spade connectors and connected to the traffic signal head terminal block.

The LED modules shall conform to the specifications listed under the section TRAFFIC SIGNAL LED MODULE SPECIFICATIONS.

All costs associated with furnishing and installing new signal head bracketing shall be included in the cost of this pay item. The Contractor shall minimize the total number of holes drilled in a mast arm to no more than three.

Basis of Payment. This work will be paid for at the contract unit prices each for SIGNAL HEAD, LED of the type specified and will be payment in full for all labor, equipment, and materials required to remove the existing signal heads and bracketing and furnish and install traffic signal heads equipped with LED indications and new bracketing as described above, complete.

TRAFFIC SIGNAL BACKPLATE, RETROREFLECTIVE

Description. This work shall be in accordance with Sections 882 and 1078 of the Standard Specifications except as modified herein.

The traffic signal backplates shall be of the same material as the traffic signal heads as specified on the plans.

A three (3) inch wide strip of reflective sheeting shall be applied to the outside perimeter of the face of the backplates. The reflective tape shall be fluorescent yellow in color and shall consist of type AZ sheeting.

Basis of Payment. This work will be paid for at the contract unit price each for TRAFFIC SIGNAL BACKPLATE, RETROREFLECTIVE and will be payment in full for all labor, materials, and equipment required to furnish and install a traffic signal backplate with reflective tape as described above, complete.

TRAFFIC SIGNAL POST, GALVANIZED STEEL

Description. This work shall be in accordance with Sections 878 and 1077 of the Standard Specifications except as modified herein.

The traffic signal post shall be attached to the foundation with four 3/4" x 18" galvanized anchor bolts. The post base shall be secured to the foundation using galvanized nuts and galvanized steel flat washers that have a minimum thickness of 1/4" and are trapezoidal in shape. The washers shall be sized to completely capture the mounting flanges of the traffic signal base. Round washers will not be acceptable.

The traffic signal post, breakaway base, caps, and appurtenances shall be galvanized with a powder coated black finish.

Basis of Payment. This work will be paid for at the contract unit price each for TRAFFIC SIGNAL POST, GALVANIZED STEEL of the height specified which price will be payment in full for all labor, material, and equipment required to provide and install the traffic signal post and base described above.

PEDESTRIAN PUSH BUTTON POST

Description. This work shall be in accordance with Section 876 and 1077 of the Standard Specifications except as modified herein.

This work will consist of furnishing and installing a pedestrian pushbutton post on a concrete foundation in accordance with the plan details.

The pedestrian pushbutton post shall be constructed from 3” diameter galvanized steel pipe in accordance with Highway Standard 876001. The post shall be attached to the concrete foundation using a galvanized steel pipe flange with a six-inch diameter bolt circle as shown on the plan sheet detail.

The Contractor shall utilize a galvanized steel conduit cap for the post cap.

The post, base, cap and appurtenances shall be galvanized with a powder coated black finish.

The Contractor shall furnish all brackets and hardware required to install the pedestrian push button and sign. Stainless steel hardware shall be used to install the pedestrian signs.

Basis of Payment. This work will be paid for at the contract unit price per each for PEDESTRIAN PUSH BUTTON POST and will be payment in full for all labor, materials, and equipment required to furnish and install the pedestrian pushbutton post as described above, complete.

PEDESTRIAN SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE, BRACKET MOUNTED WITH COUNTDOWN TIMER
PEDESTRIAN SIGNAL HEAD, POLYCARBONATE, LED, 2-FACE, BRACKET MOUNTED WITH COUNTDOWN TIMER

Description. This work shall be in accordance with Section 881 and 1078 of the Standard Specifications except as modified herein.

The pedestrian signal head shall consist of a single 16” polycarbonate section and shall be equipped with an overlaid LED indication with countdown timer (Walking Person/Upraised Hand).

The traffic signal head shall have a black finish with black doors and tunnel visors.

The LED signal faces shall be equipped with spade connectors and connected to the traffic signal head terminal block.

The LED signal face shall have international symbols (Upraised Hand - Color: Portland Orange, Walking Person - Color: Lunar White). Only filled indications will be allowed.

The LED modules shall conform to the specifications listed under the section TRAFFIC SIGNAL LED MODULE SPECIFICATIONS.

Combination hand/person pedestrian signal modules shall incorporate separate power supplies for the hand and the person displays.

All costs associated with furnishing and installing new pedestrian signal head bracketing shall be included in the cost of this pay item. The Contractor shall minimize the total number of holes drilled in a mast arm to no more than three.

Basis of Payment. This work will be paid for at the contract unit prices each for PEDESTRIAN SIGNAL HEAD, LED, 1-FACE, BRACKET MOUNTED or PEDESTRIAN SIGNAL HEAD, LED, 2-FACE, BRACKET MOUNTED and will be payment in full for all labor, equipment, and materials required to provide and install the pedestrian traffic signal heads equipped with LED indications described above, complete.

PEDESTRIAN PUSHBUTTON

Description. This work shall be in accordance with Sections 888 and 1074 of the Standard Specifications except as modified herein.

The Contractor shall install the proposed pedestrian pushbuttons and signs on the proposed traffic signal mast arms and posts. The proposed pedestrian pushbuttons and signs shall be installed so that the arrow on the sign corresponds to the associated street crossing and crosswalk.

All pedestrian pushbuttons shall have a round case and be equipped with a 2" diameter mushroom head for easy access.

The following models are approved for use:

- Polara, BullDog with latching LED Indicator with audible buzzer, Round, Yellow Housing, Model (BDLL2-B)

The pedestrian pushbutton installation shall include all crossing signs and hardware required to mount the pedestrian pushbutton. All hardware shall be of stainless-steel construction. All bolts shall be 1/4" Hex Head and no self-tapping/drilling screws will be allowed.

A modular pedestrian station shall be furnished and installed with each pedestrian pushbutton. The pedestrian station shall be constructed from aluminum, have a yellow finish, and be sized to accommodate a 9” x 12” pedestrian pushbutton sign (Campbell MPS 912 RND Y or Polara PBF9X12-Y.

Pedestrian pushbutton signs shall be MUTCD R10-4B (Right or Left), 9” x 12”, constructed from diamond grade sheeting and shall conform to the requirements contained in Article 1090.02 of the standard specifications.

Basis of Payment. This work will be paid for at the contract unit price each for PEDESTRIAN PUSHBUTTON and will be payment in full for all labor, equipment, and materials required to furnish and install the proposed pedestrian pushbuttons and signs described above, complete.

TRAFFIC SIGNAL BATTERY BACKUP SYSTEM

Description. The following models of Battery Backup Systems are approved for use within District Four:

- Alpha Technologies Novus XFM 1100 (with standard IDOT cabinet or Alpha Technologies Side Mount 6 Integrated BBS Cabinet), Equipped with Ethernet SNMP Interface and Enhanced Capability Battery Monitoring System (AlphaGuard Plus)

- Techpower Development DBL 1000MX. Equipped with Ethernet Communications Module

- Multilink, EP 2200-T, 1500 Watts/2 kVA, 48 Volt**,** Equipped with Internal Communication Card and Monitoring Software

- Myers Emergency Powers Systems, Model MP2000CA, Equipped with Ethernet SNMP card and Web Based Configuration

The Contractor may elect to submit an alternate product for consideration if it meets the minimum requirements contained in this specification.

The Contractor shall be responsible for providing Battery Backup Systems that are sized appropriately for the intersection load. The total system load shall not exceed the manufacturer's specifications.

The battery backup cabinet shall have a powder coated black finish.

The battery backup systems for the existing traffic signal cabinets shall be installed as shown on the plan detail sheets and as follows:

- A separate circuit breaker shall be installed in the battery backup system cabinet (or in the traffic signal cabinet). The circuit breaker shall be rated equivalent to the main power circuit breaker rating in the existing traffic signal cabinet. The Contractor shall install #6 wiring from the test circuit breaker to the line voltage in the traffic signal cabinet. The circuit breaker shall be used to shut off the incoming utility power to test the battery backup system.

- The cabinet light, ventilation fans, heater strips, and service receptacle shall be wired to a separate circuit that will not be powered by the battery backup system

- A hole of enough size for the cables will be drilled into the side of the cabinet to accommodate the battery backup system cables and harnesses from the BBS cabinet. The hole shall be free of sharp edges and equipped with a plastic or rubber grommet.

- The fail-safe automatic by-pass switch and blue indicator light shall be installed in the battery backup cabinet (or in the existing traffic signal cabinet).

GENERAL REQUIREMENTS: The Battery Back-up System (BBS) shall include, but not be limited to the following: inverter/charger, power transfer relay, batteries, battery cabinet, a separate failsafe automatic bypass switch and all necessary hardware and interconnect wiring. The BBS shall provide reliable emergency power to a traffic signal in the event of a power failure or interruption. The transfer from utility power to battery power and vice versa shall not interfere with the normal operation of traffic controller, conflict monitor/malfunction management unit or any other peripheral devices within the traffic controller assembly.

The BBS shall provide power for full run-time operation for an “LED-only” intersection (all colors red, yellow, and green) or flashing mode operation for an intersection using Red LED’s. As the battery reserve capacity reaches 50%, the intersection shall automatically be placed in all-red flash. The BBS shall allow the controller to automatically resume normal operation after the power has been restored. The BBS shall log an alarm in the controller for each time it is activated.

All 48-volt Battery Backup Systems shall include four batteries and all 36-volt Battery Backup Systems shall include six batteries.

The BBS shall be designed for outdoor applications, and shall meet the environmental requirements of, “NEMA Standards Publication No. TS 2 – Traffic Controller Assemblies,” or applicable successor NEMA specifications, except as modified herein.

The BBS shall conform to the following specifications:

1.1 OPERATION

1.1 The BBS shall be online and provide voltage regulation and power conditioning when utilizing utility power.

1.2 The BBS shall provide a minimum two (2) hours of full run-time operation and four (4) hours all-red flash operation for an “LED-only” intersection (minimum 1000W/1000VA active output capacity, with 80% minimum inverter efficiency).

1.3 The maximum transfer time from loss of utility power to switchover to battery backed inverter power shall be 150 milliseconds.

1.4 The BBS shall provide the user with 4-sets of normally open (NO) and normally closed (NC) single-pole double-throw (SPDT) relay contact closures, available on a panel-

mounted terminal block, rated at a minimum 120V/1A, and labeled to identify each contact. For typical configuration, see the plan detail sheet.

1.5 A first set of NO and NC contact closures shall be energized whenever the unit switches to battery power. Contact shall be labeled or marked “On Batt.”

1.6 The second set of NO and NC contact closures shall be energized whenever the battery approaches 40% of remaining useful capacity. Contact shall be labeled or marked “Low Batt.”

1.7 The third set of NO and NC contact closures shall be energized two hours after the unit switches to battery power. Contact shall be labeled or marked “Timer.”

1.8 The fourth set of NO and NC contact closures shall be energized in the event of inverter/charger failure, battery failure or complete battery discharge. Contact shall be labeled or marked “BBS Fail or Status.”

1.9 A surge suppression unit shall be provided for the output power if available as an option by the BBS manufacturer.

1.10 Operating temperature for both the inverter/power transfer relay and failsafe automatic bypass switch shall be -37 ◦C to +74 ◦C.

1.11 1The Power Transfer Relay shall be rated at 240VAC/30AMPS minimum and failsafe automatic bypass switch shall be rated at 240VAC/20 amps, minimum.

1.12 The fail-safe automatic bypass switch shall be wired to provide power to the BBS when the switch is set to bypass.

1.13 The BBS shall use a temperature-compensated battery charging system. The charging system shall compensate over a range of 2.5 – 4.0 mV/◦C per cell.

1.14 The temperature sensor shall be external to the inverter/charger unit. The temperature sensor shall come with 2 meters (6’6”) of wire.

1.15 Batteries shall not be recharged when battery temperature exceeds 50◦C ± 3◦C.

1.16 BBS shall bypass the utility line power whenever the utility line voltage is outside of the following voltage range: 100VAC to 130VAC (± 2VACS).

1.17 When utilizing battery power, the BBS output voltage shall be between 110 VAC and 125 VAC, pure sine wave output, ± 3% THD, 60Hz ± 3Hz.

1.18 BBS shall be compatible with Illinois DOT’s traffic controller assemblies utilizing NEMA TS 1 or NEMA TS 2 controllers and cabinet components for full time operation.

1.19 When the utility line power has been restored at above 105 VAC ± 2 VACS for more than 30 seconds, the BBS shall dropout of battery backup mode and return to utility line mode.

1.20 When the utility line power has been restored at below 125VAC ± 2 VACS for more than 30 seconds, the BBS shall dropout of battery backup mode and return to utility line mode.

1.21 BBS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service.

1.22 In the event of inverter/charger failure, battery failure or complete battery discharge, the power transfer relay shall revert to the NC state, where utility line power is reconnected to the cabinet. The BBS shall always revert to utility line power and shall be designed to revert to utility line power in the event of a BBS fault condition.

1.23 Recharge time for the battery, from “protective low-cutoff” to 80% or more of full battery charge capacity, shall not exceed twenty (20) hours.

1.24 When the intersection is in battery operation, the BBS shall bypass all internal cabinet lights, ventilation fans, heater strips, and service receptacles.

1.25 The fail-safe automatic bypass switch shall be wired to provide power to the BBS when the switch is set to bypass.

1.26 A blue LED indicator light shall be mounted on the front of the traffic signal cabinet or on the side of the BBS cabinet facing traffic and shall turn on to indicate when the cabinet power has been disrupted and the BBS is in operation. The light shall be a minimum 1" diameter, be viewable from the driving lanes, and shall be large enough and visible enough to be seen from 200 ft. away.

1.27 All 36-volt and 48-volt systems shall include an external component that monitors battery charging to ensure that every battery in the string is fully charged. The device shall compensate for the effects of adding a new battery to an existing battery system by ensuring that the charge voltage is spread equally across all batteries. All cables, harnesses, cards, and other components that are required to provide the functionality described above shall be included in the unit bid price for the battery backup system. The following products are currently approved for use: Alpha Technologies: AlphaGuard with Charge Management Technology Module.

1.28 The BBS shall be equipped with an integrated safety switch that will interrupt inverter output power in the event of a cabinet knockdown. The safety switch may be either internal to the inverter/charger is externally mounted inside of the BBS cabinet. The safety switch shall be designed to interrupt output power if the charger/inverter is tilted more than twenty degrees on any axis. The switch shall be mechanically latching to ensure that power is not automatically restored to the BBS until the charger/inverter has been "reset". The switch shall also be resettable and reusable unless it has been physically damaged.

1.29 The BBS shall be equipped with an Ethernet port and network management card.

2.0 MOUNTING AND CONFIGURATION

2.1 GENERAL

2.2 Inverter/Charger Unit shall be rack or shelf mounted.

2.3 (Reserved).

2.4 All interconnect wiring provided between Power Transfer Relay, Bypass Switch and Cabinet Terminal Service Block shall be no greater than two (2) meters (6'6") of #10 AWG wire.

2.5 Relay contact wiring provided for each set of NO/NC relay contact closure terminals shall be #18 AWG wire.

2.6 All necessary hardware for mounting (shelf angles, rack, etc.) shall be included in the bid price of the BBS. The swing-trays shall be screwed to the Type IV or Type V NEMA cabinets using continuous stainless steel or aluminum piano hinge. All bolts/fasteners and washers shall be ½" diameter galvanized or stainless steel.

3.0 EXTERNAL BATTERY CABINET

3.1 The external cabinet shall be a rated NEMA Type 3R Cabinet.

3.2 Inverter/Charger and Power Transfer Relay shall be installed inside the external battery cabinet and the failsafe automatic bypass switch shall be installed inside the existing traffic signal cabinet or proposed battery backup cabinet.

3.3 Batteries shall be housed in the external cabinet which shall be NEMA Standard rated cabinet mounted to the side of the Type IV or Type V Cabinet (see plan sheets for details). This external battery cabinet shall conform to the IDOT Standard Specifications for traffic signal cabinets for the construction and finish of the cabinet.

3.4 The external battery cabinet shall mount to the Type IV or Type V NEMA Cabinet with a minimum of four (4) bolts to the satisfaction of the Engineer.

3.5 The dimensions of the external battery cabinet shall be 25" (L) x 16" (W) x 41" (H) and installed in accordance with the plan sheet cabinet detail and this specification.

3.6 The cabinet shall include heater mats for each battery shelf and/or battery. If the BBS charger/inverter does not have facilities to accommodate heater mat connections, thermostatically controlled heater mats shall be provided with the system. The heater mat thermostat shall be a separate thermostat (from the ventilation fan thermostat) and be adjustable from 0°F to 32°F for heater mat turn-on.

3.7 A warning sticker shall be placed on the outside of the cabinet indicating that there is an Uninterruptible Power Supply inside the cabinet.

3.8 The external battery cabinet shall be ventilated through the use of louvered vents (2), filters, and one thermostatically controlled fan as per NEMA TS 2 Specifications. The cabinet shall include a cleanable or replaceable cabinet filter.

3.9 External battery cabinet fan shall be AC operated from the same line output of the bypass Switch that supplies power to the Type IV or Type V Cabinet.

3.10 The BBS with external battery cabinet shall come with all bolts, conduits and bushings, gaskets, shelves, and hardware needed for mounting. The external battery cabinet shall have a hinged door opening to the entire cabinet. The cabinet shall include a bottom constructed from the same material as the cabinet.

3.11 The external cabinet shall be equipped with a power receptacle to accommodate the inverter/charger. The receptacle shall be wired to the line output of the manual bypass switch.

4.0 MAINTENANCE, DISPLAYS, CONTROLS AND DIAGNOSTICS

4.1 The BBS shall include a display and /or meter to indicate current battery charge status and conditions.

4.2 The BBS shall have lightning surge protection compliant with IEEE/ANSI C.62.41.

4.3 The BBS shall be equipped with an integral system to prevent battery from destructive discharge and overcharge.

4.4 The BBS and batteries shall be easily replaced with all needed hardware and shall not require any special tools for installation.

4.5 The BBS shall be equipped with a RS-232 port.

4.6 The BBS shall include a resettable front-panel event counter display to indicate the number of times the BBS was activated and a front-panel hour meter to display the total number of hours the unit has operated on battery power.

4.7 Manufacturer shall include two (2) sets of equipment lists, operation and maintenance manuals, and board-level schematic and wiring diagrams of the BBS, and the battery data sheets. Manufacturer shall include any software needed to monitor, diagnose, and operate the BBS. The manufacturer shall include any required cables to connect to a laptop computer.

4.8 The BBS shall include a data cable for the serial connection to the RS232 port and diagnostic software if it is available as an option with the unit (only two cables required for project).

4.9 One copy of the owner/maintenance manuals shall be provided with the BBS.

4.1 BATTERY SYSTEM

4.2 Individual batteries shall be 12V type and shall be easily replaced and commercially available off the shelf.

4.3 The batteries shall be premium gel type with a 5-year full replacement warranty.

4.4 Batteries used for BBS shall consist of a minimum of four (4) to eight (8) batteries with a cumulative minimum rated capacity of 280 amp-hours.

4.5 Batteries shall be deep cycle, completely sealed, silver alloy VRLA (Valve Regulated Lead Acid) requiring no maintenance with maximum run time.

4.6 Batteries shall be certified by the manufacturer to operate over a temperature range of –40°C to +71°C.

4.7 The batteries shall be provided with appropriate interconnect wiring and corrosion-resistant mounting trays and/or brackets appropriate for the cabinet into which they will be installed.

4.8 Batteries shall indicate maximum recharge data and recharging cycles.

4.9 Battery interconnect wiring shall be via modular harness. Batteries shall be shipped with positive and negative terminals pre-wired with red and black cabling that terminates into a typical power-pole style connector. Harness shall be equipped with mating power-pole style connectors for batteries and a single, insulated plug-in style connection to inverter/charger unit. Harness shall allow batteries to be quickly and easily connected in any order and shall be keyed and wired to ensure proper polarity and circuit configuration.

4.10 Battery terminals shall be covered and insulated to prevent accidental shorting.

6.0 QUALITY ASSURANCE

6.1 BBS shall be manufactured in accordance with a manufacturer quality assurance (QA) program. The QA program shall include two types of quality assurance: (1) Design quality assurance and (2) Production quality assurance. The production quality assurance shall include statistically controlled routine tests to ensure minimum performance levels of BBS units built to meet this specification and a documented process of how problems are to be resolved.

6.2 QA process and test results documentation shall be kept on file for a minimum period of seven years.

6.3 Battery Backup System designs not satisfying design qualification testing and the production quality assurance testing performance requirements described below shall not be labeled, advertised, or sold as conforming to this specification.

7.0 DESIGN QUALIFICATION TESTING

7.1 The manufacturer, or an independent testing lab hired by the manufacturer, shall perform design Qualification Testing on new BBS designs, and when a major design change has been implemented on an existing design. A major design change is defined as a design change (electrical or physical) which changes any of the performance characteristics of the system, or results in a different circuit configuration.

7.2 Burn In. The sample systems shall be energized for a minimum of 5 hours, with full load of 700 watts, at temperatures of +74◦C and -37◦C., excluding batteries, before performing any design qualification testing.

7.3 Any failure of the BBS, which renders the unit non-compliant with the specification after burn-in, shall be cause for rejection.

7.4 For Operational Testing, all specifications may be measured including, but not limited to:

7.5 Run time while in battery backup mode, at full load.

7.6 Proper operation of all relay contact closures (“On-Batt,” “Low-Batt,” “Timer” and “BBS-Fail”).

7.7 Inverter output voltage, frequency, harmonic distortion, and efficiency, when in battery backup mode.

7.8 All utility mode – battery backup mode transfer voltage levels. See Section 1 Operation.

7.9 Power transfer time from loss of utility power to switchover to battery backed inverter power.

7.10 Back feed voltage to utility when in battery backup mode.

7.11 IEEE/ANSI C.62.41 compliance.

7.12 Battery charging time.

7.13 Event counter and runtime meter accuracy.

8.0 PRODUCTION QUALITY CONTROL TESTING

8.1 Production Quality Control tests shall consist of all of the above listed tests and shall be performed on each new system prior to shipment. Failure to meet requirements of any of these tests shall be cause for rejection. The manufacturer shall retain test results for seven years.

8.2 Each BBS shall be given a minimum 100-hour burn-in period to catch any premature failures.

8.3 Each system shall be visually inspected for any exterior physical damage or assembly anomalies. Any defects shall be cause for rejection.

9.0 WARRANTY

9.1 Manufacturers shall provide a minimum two (2) year factory-repair warranty for parts and labor on the BBS from date of acceptance by the State. Batteries shall be warranted for full replacement for five (5) years from date of purchase. The warranty shall be included in the total bid price of the BBS.

9.2 The Contractor shall furnish a warranty certificate for each Battery Backup System that includes the equipment description and details, serial numbers, effective dates, and the details of the warranty regarding materials and labor. The warranty period shall begin on the date of installation and the warranty certificate shall reflect this date.

Basis of Payment. The above work will be paid for at the contract unit price each for TRAFFIC SIGNAL BATTERY BACKUP SYSTEM will be payment in full for all labor, materials, and equipment required to provide, install, and test the battery backup system described above, complete.

CONCRETECLOSED CIRCUIT TELEVISION DOME CAMERA, IP BASED

Description. This work shall consist of furnishing and installing an integrated Closed-Circuit Television (CCTV) Dome Camera Assembly, camera brackets, and all other items required for installation and operation. This assembly shall contain all components identified in the Materials Section and shall be configured as indicated on the plan sheets.

Materials. The CCTV camera shall be an Axis Model Q6055-E Dome Camera Assembly for integration into the existing District 4 ITS system.

The Contractor shall provide all materials required to install the proposed camera on the proposed sign structure camera mast as shown on the plan sheets.

The Contractor shall submit catalog cut sheets to the City of Peoria Department of Public Works for all items (mounting brackets, hardware, etc.) that will be utilized for review prior to commencing work.

The City of Peoria Department of Public Works will program the cameras.

The camera shall meet or exceed the following specifications:

CAMERA

VIDEO:	60 Hz (NTSC), 50 Hz (PAL)
IMAGE SENSOR:	1/2.8” progressive scan CMOS
LENS:	4.44–142.6 mm, F1.6–4.41 Horizontal angle of view: 62.8°–2.23° Vertical angle of view: 36.8°–1.3° Autofocus, auto-iris
DAY AND NIGHT:	Automatically removable infrared-cut filter
MINIMUM ILLUMINATION:	Color: 0.3 lux at 30 IRE F1.6 B/W: 0.03 lux at 30 IRE F1.6 Color: 0.5 lux at 50 IRE F1.6

	B/W: 0.04 lux at 50 IRE F1.6
SHUTTER TIME: NTSC:	1/33000 s to 1/3 s with 50 Hz 1/33000 s to 1/4 s with 60 Hz
PAN/TILT/ZOOM:	Pan: 360° endless, 0.05° - 450°/s Tilt: 220°, 0.05°-450°/s 32x optical zoom and 12x digital zoom, total 384x zoom E-flip, 256 preset positions, Tour recording, Guard tour, Control queue, On-screen directional indicator, Set new pan 0°, Adjustable zoom speed

VIDEO

VIDEO COMPRESSION:	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
RESOLUTIONS:	HDTV 1080p 1920x1080 to 320x180 HDTV 720p 1280x720 to 320x180
FRAME RATE (H.264):	Up to 60/50 fps (60/50 Hz) in HDTV 720p Up to 30/25 fps (60/50 Hz) in HDTV 1080p
VIDEO STREAMING:	Multiple, individually configurable streams in H.264 and Motion JPEG, Axis' Zipstream technology, Controllable frame rate and bandwidth, VBR/MBR H.264
IMAGE SETTING:	Manual shutter time, compression, color, brightness, sharpness, white balance, exposure control, exposure zones, fine tuning of behavior at low light, rotation: 0°, 180°, text and image overlay, 32 individual 3D privacy masks, image freeze on PTZ, automatic defog, backlight compensation Wide Dynamic Range (WDR): Up to 120 dB depending on scene, highlight compensation

NETWORK

SECURITY:	Password protection, IP address filtering, HTTPSa encryption, IEEE 802.1Xa network access control, Digest authentication, User access log, Centralized Certificate Management
PROTOCOLS:	IPv4/v6, HTTP, HTTPSa, SSL/TLSa, QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnPTM, SNMP v1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, SFTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS, SSH, NTCIP

SYSTEM INTEGRATION

APPLICATION PROG INTERFACE:	Open API for software integration, including VAPIX® and AXIS Camera Application Platform; specifications at

	www.axis.com, AXIS Video Hosting System (AVHS) with One-Click Connection, ONVIF Profile S, specification at www.onvif.org
ANALYTICS:	Video motion detection, Autotracking, Active Gatekeeper Basic Analytics (not to be compared with third-party analytics): Object removed, Enter/Exit detector, Fence detector, Object Counter, Highlight compensation, Support for AXIS Camera Application Platform enabling installation of third-party applications, see www.axis.com/acap
EVENT TRIGGERS:	Detectors: Live stream accessed, Video motion detection, Shock Detection, Object removed, Enter/Exit detector, Fence detector, Object counter; Hardware: Fan, Network, Temperature, Casing Open; PTZ: Autotracking, Error, Moving, Ready, Preset Reached; Storage: Disruption, Recording; System: System Ready; Time: Recurrence, Use Schedule; Input signal: Manual trigger, Virtual input
EVENT ACTIONS:	Day/night mode, overlay text, video recording to edge storage, pre- and post-alarm video buffering, send SNMP trap PTZ: PTZ preset, start/stop guard tour File upload via FTP, SFTP, HTTP, HTTPS network share and Email; Notification via email, HTTP, HTTPS and TCP
DATA STREAMING	Event data
BUILT IN INSTALLATION AIDS	Pixel Counter

GENERAL

CASING:	IP66-, NEMA 4X- and IK10-rated Metal casing (aluminum), polycarbonate (PC) clear dome, sunshield (PC/ASA)
SUSTAINABILITY:	PVC Ffree
MEMORY:	512 MB RAM, 128 MB Flash
POWER CAMERA:	Axis High PoE midspan 1–port: 100–240 V AC, max 74 W Camera consumption: typical 16 W, max 60 W
CONNECTORS:	RJ45 10BASE-T/100BASE-TX PoE, RJ45 Push-pull Connector (IP66) included
EDGE STORAGE:	Support for SD/SDHC/SDXC card Support for recording to dedicated network-attached storage (NAS); For SD card and NAS recommendations see www.axis.com

OPERATING CONDITIONS:	With 30 W midspan: -20 °C to 50 °C (-4 °F to 122 °F) With 60 W midspan: -50 °C to 50 °C (-58 °F to 122 °F) Maximum temperature (intermittent): 60 °C (140 °F) Arctic Temperature Control: Start-up as low as -40 °C (-40 °F) Humidity 10–100% RH (condensing)
APPROVALS:	EMC: EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 55024, FCC Part 15 Subpart B Class A, ICES-003 Class A, VCCI Class A, RCM AS/NZS CISPR 22 Class A, KCC KN32 Class A, KN35 Safety: IEC/EN/UL 60950-1, IEC/EN/UL 60950-22 Environment: EN 50121-4, IEC 62236-4, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60721-4-3, NEMA 250 Type 4X, IEC 60068-2-30, IEC 60068-2-60, IEC 60068-2-78, IEC/EN 60529 IP66, NEMA TS-2-2003 v02.06, Subsection 2.2.7, 2.2.8, 2.2.9; IEC 62262 IK10, ISO 4892-2 Midspan: EN 60950-1, GS, UL, cUL, CE, FCC, VCCI, CB, KCC, UL-AR
WEIGHT:	3.7 kg (8.2 lb.)
INCLUDED ACCESSORIES:	Axis High PoE 60 W midspan 1-port, RJ45 Push-pull Connector (IP66), Sunshield, Installation Guide, Windows decoder 1-user license
VIDEO MANAGEMENT: SOFTWARE:	AXIS Camera Companion, AXIS Camera Station, Video management software from Axis' Application Development Partners available on www.axis.com/techsup/software
WARRANTY:	Axis 3-year warranty and AXIS Extended Warranty option

Environmental Enclosure/Housing

The environmental enclosure shall be designed to physically protect the integrated camera from the outdoor environment and moisture via a sealed enclosure. If the option exists in the standard product line of the manufacturer, the assembly shall be supplied with an integral sun shield. The enclosure shall be fully water and weather resistant with a NEMA 4 rating or better.

The camera dome shall be constructed of distortion free acrylic material that must not degrade from environmental conditions. The environmental housing shall include a camera-mounting bracket. In addition, the environmental housing shall include a heater, blower, and power surge protector. An integral fitting compatible with a standard 1-1/2 in (38.1 mm) NPT pipe, suitable for outdoor pendant mounting shall also be provided.

The enclosure shall be equipped with a heater controlled by a thermostat. The heater shall turn on when the temperature within the enclosure falls below 40□ F (4.4□C). The heater shall turn off when the temperature exceeds 60□F (15.6□C). The heater will minimize internal fogging of the dome faceplate when the assembly is operated in cold weather.

In addition, a fan shall be provided as part of the enclosure. The fan will provide airflow to ensure effective heating and to minimize condensation.

The enclosure shall be equipped with a hermetically sealed, weatherproof connector, located near the top for external interface with power, video, and control feeds.

CCTV Dome Camera Mounting Supports

The Contractor shall furnish and install an Axis Pole Mount Bracket T91L61 (Part Number 5801-721) for camera installation on traffic signal mast arms and CCTV camera poles and stainless-steel banding as required.

Mounting supports shall be configured as shown on the camera support detail plans and as approved by the Engineer. Mount shall be of aluminum construction with enamel or polyester powder coat finish. Braces, supports, and hardware shall be stainless steel. Wind load rating shall be designed for sustained gusts up to 90 mph (145 km/hr), with a 30% gust factor. Load rating shall be designed to support up to 75 lb (334 N). For roof or structural post/light pole mounting, mount shall have the ability to swivel inward for servicing. The mounting flange shall use standard 1-1/2 inch (38.1 mm) NPT pipe thread.

Connecting Cables
The Contractor shall furnish and install outdoor rated, shielded CAT 5E cable. The cable shall be terminated using the IP66 rated RJ-45 connector on the camera end and a shielded RJ-45 connector in the cabinet. The Contractor shall test the cable prior after termination.

Cable will be paid for separately under the pay item CAT 5 ETHERNET CABLE.

Construction Requirements.

General

The Contractor shall prepare a shop drawing detailing the complete CCTV Dome Camera Assembly and installation of all components to be supplied for approval of the Engineer. Particular emphasis shall be given to the cabling and the interconnection of all of the components.

The Contractor shall install the CCTV dome camera assembly at the locations indicated in the Plans. The CCTV Dome Camera Assembly shall be mounted on a pole, wall, or other structure.

Testing

The Contractor shall test each installed CCTV Dome Camera Assembly. The test shall be conducted from the field cabinet using the standard communication protocol and a laptop computer. The Contractor shall verify that the camera can be fully exercised and moved through the entire limits of Pan, Tilt, Zoom, Focus and Iris adjustments, using both the manual control and

presets. The Contractor shall maintain a log of all testing and the results. A representative of the Contractor and a representative of the Engineer shall sign the log as witnessing the results. Records of all tests shall be submitted to the Engineer prior to accepting the installation.

Method of Measurement. The closed-circuit television dome camera bid item will be measured for payment as each by the actual number of CCTV dome camera assemblies furnished, installed, tested, and accepted.

Basis of Payment. Payment will be made at the contract unit price for each CLOSED-CIRCUIT TELEVISION DOME CAMERA, IP BASED including all equipment, material, testing, documentation, and labor detailed in the contract documents for this bid item.

CAT 5 ETHERNET CABLE

Description. This work shall be in accordance with Sections 873, 1076, and 1088 of the Standard Specifications except as modified herein.

This work shall consist of furnishing and installing an outdoor rated CAT5E cable in conduits, handholes, and poles.

The cable shall be rated for outdoor use and conform to the following specifications:

- Outdoor CMX Rated Jacket (climate/oil resistant jacket)
- UV Resistant Outer Jacket Material (PVC-UV, UV Stabilized)
- Outer Jacket Ripcord
- Designed for Outdoor Above- Ground or Conduit Duct applications
- Cat5E rated to 350MHz (great for 10/100 or even 1000mbps Gigabit Ethernet)
- Meets TIA/EIA 568b.2 Standard
- Unshielded Twist Pair
- 4 Pairs, 8 Conductors
- 24AWG, Solid Core Copper
- Shielded
- UL 444 ANSI TIA/EIA-568.2 ISO/IEC 11801
- RoHS Compliant

Basis of Payment. This work will be paid for at the contract unit price per foot for CAT 5 ETHERNET CABLE, which will be payment in full for all labor, equipment, and materials required to provide and install the cable described above, complete.

VIDEO VEHICLE DETECTION, 3 CAMERAS

The following video detection system is approved for use:

- Econolite Autoscope Vision (3 Camera System)

The video vehicle detection system shall include all necessary electric cable, electrical junction boxes, electrical and communications surge suppression, hardware, software, programming, and any camera brackets that are required for installation and configuration. These items should be taken into consideration and shall be included in the bid price for the video detection system.

All CAT 5 Ethernet cable shall meet the requirements contained in the special provisions (outdoor rated, gel-filled, shielded, etc.).

One 12” – 15” color LCD video monitor and 4-camera video selector (if required to switch camera videos) shall be included for each installation to allow for the setup and monitoring of the video detection system.

All vehicle video detection systems shall be equipped with the latest software or firmware revisions.

All video detection cameras shall be installed on the mast arms, centered over the detection area, at a 25 ft. minimum mounting height. All camera brackets shall be constructed of aluminum.

The video vehicle system shall be configured and installed to NEMA TS2 Standards (use of the SDLC port and BIU). Installation conforming to NEMA TS1 standards will not be allowed.

The minimum requirements for a video vehicle detection system are listed below:

1.0 General

This Specification sets forth the minimum requirements for a system that monitors vehicles on a roadway via processing of video images and provides detector outputs to a traffic controller or similar device.

1.1 System Hardware

The system shall consist of four video cameras and an automatic control unit (ACU). The ACU shall process all detected calls and shall be equipped with the latest firmware revisions.

1.2 System Software

The system shall be able to detect either approaching or receding vehicles in multiple traffic lanes. A minimum of 24 detection zones shall be user-definable per camera. The user shall be able to modify and delete previously defined detection zones. The software shall provide remote access operation and shall be the latest revision.

2.0 Functional Capabilities

2.1 Real-Time Detection

2.2 The ACU shall be capable of simultaneously processing information from up to four (4) digital video sources. The video shall be digitized and analyzed at a rate of 30 times per second.

2.3 The system shall be able to detect the presence of vehicles in a minimum of 96 detection zones within the combined field of view of the image sensors.

3.0 Vehicle Detection

3.1 Detection Zone Placement

The video detection system shall provide flexible detection zone placement anywhere and at any orientation within the combined field of view of the image sensors. In addition, detection zones shall have the capability of implementing logical functions including AND OR.

3.2 Optimal Detection

The video detection system shall reliably detect vehicle presence when the image sensor is mounted 10m (30 ft.) or higher above the roadway, when the image sensor is adjacent to the desired coverage area, and when the length of the detection area or field of view (FOV) is not greater than ten (10) times the mounting height of the image sensor. The image sensor shall not be required to be mounted directly over the roadway. A single image sensor, placed at the proper mounting height with the proper lens, shall be able to monitor six (6) to eight (8) traffic lanes simultaneously.

3.3 Detection Performance

Overall performance of the video detection system shall be comparable to inductive loops. Using standard image sensor optics and in the absence of occlusion, the system shall be able to detect vehicle presence with 98% accuracy under normal conditions, (days & night) and 96% accuracy under adverse conditions (fog, rain, snow). The ACU shall output a constant call for each enabled detector output channel if a loss of video signal occurs in any camera.

The ACU shall be capable of processing a minimum of twenty detector zones placed anywhere in the field of view of the camera.

4.0 ACU Hardware

4.1 ACU Mounting

The ACU shall be shelf or rack mountable. Nominal outside dimensions excluding connectors shall not exceed 180mm (7.25") x 475mm (19") x 260mm (10.5") (H x W x D).

4.2 ACU Environmental

The ACU shall be designed to operate reliably in the adverse environment found in the typical roadside traffic cabinet. It shall meet the environmental requirements set forth by the NEMA (National Electrical Manufacturers Association) TS1 and TS2 standards as well as the environmental requirements for Type 170 and Type 179 controllers. The minimum

operating temperature range shall be from -35 to +74 degrees C at 0% to 95% relative humidity, non-condensing.

5.0 ACU Electrical

5.1 The ACU shall be modular in design and provide processing capability equivalent to the Intel Pentium microprocessor. The bus connections used to interconnect the modules of the ACU shall be gold-plated DIN connectors.

5.2 The ACU shall be powered by 89 - 135 VAC, 60 Hz, single phase, and draw 0.25 amps, or by 190 - 270 VAC, 50 Hz, single phase and draw 0.12 amps. If a rack mountable ACU is supplied, it shall be capable of operating from 10 to 28 VDC. The power supply shall automatically adapt to the input power level. Surge ratings shall be as set forth in the NEMA TS1 and TS2 specifications.

5.3 Serial communications to a remote computer equipped with remote monitoring software shall be through a RJ-45 Ethernet port.

5.4 The ACU shall be equipped with a NEMA TS2 RS-485 SDLC interface for communicating input and output information. Front panel LEDs shall provide status information when communications are open.

5.5 The ACU and/or camera hookup panel shall be equipped with four RJ-45 connector based/terminal block connections for cameras so that signals from four image sensors can be processed in real-time.

5.6 The ACU shall be equipped with USB ports, WiFi, and Ethernet ports to provide communications to a computer running the configuration and remote access software.

5.7 The ACU and/or camera hookup panels used for a rack mountable ACU shall be equipped with a video output port.

5.8 The ACU shall be equipped with viewable front panel detection LED indications.

6.0 Camera

6.1 The video detection system shall use high resolution, color, cameras as the video source for real-time vehicle detection. As a minimum, each image sensor shall provide the following capabilities:

a. MPEG-4 and H.264 video compression and transport

b. Support video streaming that is viewable through a standard web browser with an adjustable frame rates of 5/15/30 fps

c. Images shall be produced with a CCD sensing element with horizontal resolution of at least 720 lines and vertical resolution of at least 480 lines.

d. Useable video and resolvable features in the video image shall be produced when those features have luminance levels as low as 0.1 lux at night.

e. Useable video and resolvable features in the video image shall be produced when those features have luminance levels as high as 10,000 lux during the day.

f. Automatic gain, automatic iris, and absolute black reference controls shall be furnished.

g. An optical filter and appropriate electronic circuitry shall be included in the image sensor to suppress "blooming" effects at night.

6.2 The image sensor shall be equipped with an integrated zoom lens with zoom and focus capabilities that can be changed using either configuration computer software or hand-held controller. The machine vision processor (MVP) may be enclosed within the camera.

6.3 The image sensor and lens assembly shall be housed in an environmental enclosure that provides the following capabilities:

a. The enclosure shall be waterproof and dust-tight to NEMA-4 specifications. The camera shall be IP-67 rated.

b. The enclosure shall allow the image sensor to operate satisfactorily over an ambient temperature range from -34C to +74C while exposed to precipitation as well as direct sunlight.

c. The enclosure shall allow the image sensor horizon to be rotated in the field during installation.

d. A heater shall be at the front of the enclosure to prevent the formation of ice and condensation in cold weather, as well as to assure proper operation of the lens' iris mechanism. The heater shall not interfere with the operation of the image sensor electronics, and it shall not cause interference with the video signal.

f. The enclosure shall be light-colored and shall include a sun shield to minimize solar heating. The front edge of the sunshield shall protrude beyond the front edge of the environmental enclosure and shall include provision to divert water flow to the sides of the sunshield. The amount of overhang of the sun shield shall be adjustable to prevent direct sunlight from entering the lens or hitting the faceplate.

g. The total weight of the image sensor in the environmental enclosure with sunshield shall be less than 2.7 kg (6 pounds).

h. When operating in the environmental enclosure with power and video signal cables connected, the image sensor shall meet FCC class B requirements for electromagnetic interference emissions.

6.3 The video output of the image sensor shall be isolated from earth ground. All video connections from the image sensor to the video interface panel shall also be isolated from earth ground.

6.4 The video output, communication, and power to the image sensor shall include transient protection to prevent damage to the sensor due to transient voltages occurring on the cable leading from the image sensor to other field locations.

6.5 A stainless-steel junction box shall be available as an option with each image sensor for installation on the structure used for image sensor mounting. The junction box shall contain a terminal block for terminating power to the image sensor and connection points for cables from the image sensor and from the ACU.

6.6 Software

7.1 The system shall include the remote access software that is used to setup and configure the video detection system. The software shall be of the latest revision.

7.2 All necessary cable, adapters, and other equipment shall be included with the system.

8.0 Installation and Training

8.1 The supplier of the video detection system shall supervise the installation and testing of the video and video vehicle detection equipment. A factory certified representative from the supplier shall be on-site during installation.

9.0 Warranty, Maintenance, and Support

9.1 The video detection system shall be warranted by its supplier for a minimum of three (3) years from date of turn-on. This warranty shall cover all material defects and shall also provide all parts and labor as well as unlimited technical support.

9.2 Ongoing software support by the supplier shall include updates of the ACU and supervisor software. These updates shall be provided free of charge during the warranty period.

9.3 The supplier shall maintain a program for technical support and software updates following expiration of the warranty period. This program shall be made available to the contracting agency in the form of a separate agreement for continuing support.

Basis of Payment. This work will be paid for at the contract unit price each for VIDEO VEHICLE DETECTION, 3 CAMERAS which price will be payment in full for all labor, equipment, and materials required to furnish, install, and test the video vehicle detection system described above, complete.

FIBER OPTIC ETHERNET DROP AND REPEAT SWITCH

Description. The Contractor shall furnish a fiber optic drop and repeat switch (material only) complete with the accessories specified below and deliver it to the City of Peoria Department of Public Works.

The fiber optic drop and repeat switch shall meet or exceed the following minimum specifications:

Approved Models: Antaira (Aaxeon) Technologies Model LNX-0702G-SFP-T (7-Port (5-port 10/100/1000T + 2 10/100/1000T SFP ports Industrial Ethernet Switch, Wide Operating Temperature).

Features:	• 5-Port 10/100/1000TX + 2-Port 10/100/1000T/Mini-GBIC Combo • Store-and-Forward Switching Architecture • 10Gbps Back-Plane (Switching Fabric) • 1 Mbits Memory Buffer • 8K MAC Address Table • Wide-Range Redundant Power Design • Power Polarity Reserve Protect • Provides EFT Protection 3000 VDC for Power Line • Supports 6000 VDC Ethernet ESD Protection • IP30 Rugged Aluminum Case Design • 5-Year Warranty
Standard:	• IEEE 802.3 10BaseT Ethernet • IEEE 802.3u 100BaseTX Fast Ethernet • IEEE 802.z Gigabit Fiber • IEEE 802.3x Flow Control and Back-Pressure
Protocol:	• CSMA/CD
Switch Architecture:	• Back-Plane (Switching Fabric): 10Gbps
Transfer Rate:	• 14,880pps for Ethernet Port • 148,800pps for Fast Ethernet Port • 1,488,000pps for Gigabit Fiber Ethernet Port
MAC Address:	• 8K MAC Address Table
Memory Buffer:	• 7,926 pps (default)
LED:	• Unit: Power 1, Power 2, Fault • 10/100 TX: Link/Activity, Full Duplex/Collision • Gigabit Copper: Link/Activity, Speed • SFP: Link/Activity
Connector:	• 10/100T: 5 x RJ-45 • 100/1000T: 2 x 100/1000 SFP Sockets

Network Cable:	• 10BaseT: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) • 100BaseTX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
Power Supply:	• DC 12 ~ 48V, Redundant Power with Polarity Reverse Protect Function and Removable Terminal Block
Power Consumption:	• 6 Watts
Reverse Polarity Protection:	• Present
Overload Current Protection:	• Present
Mechanical:	• Casing: IP30 Metal Case • Dimension (W x H x D): 30 x 99 x 142 mm • Installation: DIN-Rail/Wall Mountable
Weight:	• Unit Weight: 1.3 lbs. • Shipping Weight: 1.7 lbs.
Operation Temperature:	• Wide Operating Temperature: -40° C to 75° C (-40° F to 176° F)
Operation Humidity:	• 5% to 95% (Non-condensing)
Storage Temperature:	• -40° C to 85° C
EMI:	• FCC Class A • CE EN6100-4-2/EN6100-4-3/EN6100-4-4/EN6100-4-5/EN6100-4-6 • /EN6100-4-8/EN6100-4-11/EN6100-4-12/EN6100-6-2/EN6100-6-4
Stability Testing:	• Shock: IEC60068-2-27 • Free Fall: IEC60068-2-32 • Vibration: IEC60068-2-6
Warranty:	• 5-Year Warranty

The following items shall also be included with each switch:

- SFP Fiber Optic Module – Qty. 2 (Antaira SFP-S20-T, 1.0 Gbps Ethernet SFP Transceiver, Single Mode 20KM / LC / 1310nm, -40ºC~85ºC)

- Fiber Optic Patch Cables – Qty. 2 (single mode fiber, 1-meter length, duplex, LC/ST connectors)

- Power Supply – Qty. 1 (Antaira DR-45-12, 45-Watt Series Industrial, Single Output, DIN Rail Power Supply, 12V DC, 3.5 Amps)

Basis of Payment. This work will be paid for at the contract unit price per each for FIBER OPTIC ETHERNET DROP AND REPEAT SWITCH which price will be payment in full for all labor, materials, and equipment required to provide the fiber optic Ethernet drop and repeat switch and associated equipment and deliver it to the City of Peoria Department of Public Works.

ETHERNET MANAGE SWITCH

Description. The Contractor shall furnish an Ethernet switch (material only) complete with the accessories specified below and deliver it to the City of Peoria Department of Public Works.

The Ethernet switch shall meet or exceed the following minimum specifications:

Approved Models: Antaira (Aaxeon) Technologies Model LNX-804G-SFP-T (8-Port (4-port 10/100/1000TX + 4 10/100/1000T SFP slots Industrial Ethernet Switch, Wide Operating Temperature).

Technology.

Total Ports:	8
Ethernet Ports:	4 x Gigabit ports (10/100/1,000BaseTx), auto negotiation speed, full/half duplex mode and auto MDI connection
Fiber Ports:	4 x 100/1,000 SFP Slots
Wavelength:	Refer to SFP Module
Standards:	IEEE 802.3, 802.3u, 802.3ab, 802.3x, 802.3ad, 802.1d, 802.1w, 802.1s, 802.1Q, 802.1X, 802.1p, ITU-T G.8032/Y.1344 ERPS protocol
Protocol:	IGMPv1/v2, SNMPv1/v2c/v3, TFTP, SNTP, SMTP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH/SSL, Modbus/TCP, LLDP, IPv4/IPv6
Industrial Protocol:	ModbusTCP
Jumbo Frame:	9.6 Kbytes
MAC Table Size:	8K

Network Management.

Network Redundancy:	STP, RSTP, MSTP, G.8032 ERPS Ring Redundancy Recovery <50ms
IEEE 802.1Q VLAN:	Port Based, Tag Based, 1 ~ 4094
IGMP Snooping / GMRP:	IGMP v1, v2 and Query Mode. Up to 256 Groups
IEEE 802.1x Authentication:	RADIUS Support
QoS:	Provides 4 Priority Queues per Port
System Alert Email:	By Exception Through Email
Serial Console:	RS-232 (RJ45 jack) with console cable, 115.2Kbps, 8,N,2
Configuration Backup:	USB Port
System Configuration:	Web Console, Telnet, CLI

Power.

Input Voltage:	12 - 48VDC, Redundant
Power Consumption:	15 Watts
Connection:	1 Removable 6-Contact Terminal Block
EFT Protection:	2,000 VDC
ESD Protection:	6,000 VDC
Relay Alarm Contact:	1A @ 24VDC
Reverse Polarity Protection:	Yes
Overload Protection:	Yes

Mechanical.

Enclosure:	Metal, IP30 Protection
Dimensions:	54 x 142 x 99 mm
Weight:	2.5 lbs.
Mounting:	DIN-rail or wall mount
Shock / Vibration:	IEC60068-2-27, IEC60068-2-32, IEC60068-2-6

Ratings

Operating Temperature:	Standard: -10 to 70°C or Extended: -40 to 75°C
Storage Temperature:	-40°C to 85°C
Humidity:	5% to 95% non-condensing
RoHS Compliant:	Yes
Certifications:	FCC, CE, UL-61010-2-201 (Pending)
EMC:	FCC Class A, CE EN6100-4-2, EN6100-4-3, EN6100-4-4, EN6100-4-5, EN6100-4-6, EN6100-4-8, EN6100-6-2, EN6100-6-4
Warranty:	Five-Year Warranty

The following items shall be included with each switch:

- SFP Fiber Optic Module – Qty. 2 (Aaxeon SFP-S20-T, 1.25Gbps Ethernet SFP Transceiver, Single Mode 20KM / LC / 1310nm, -40ºC~85ºC)
- Fiber Optic Patch Cables – Qty. 2 (single mode fiber, 1-meter length, duplex, LC/ST connectors)
- Power Supply – Qty. 1 (Antaira DR-45-12, 45-Watt Series Industrial, Single Output, DIN Rail Power Supply, 12V DC, 3.5 Amps)

Basis of Payment. This work will be paid for at the contract unit price per Each for ETHERNET MANAGE SWITCH, which price will be payment in full for all labor, materials, and equipment required to furnish the Ethernet switch described above complete with accessories and deliver it to the City of Peoria Department of Public Works.

FIBER OPTIC CABLE IN CONDUIT, 96 FIBERS, SINGLE MODE

Description. This work shall be in accordance with Sections 801, 864, 871, and 1076 of the Standard Specifications except as modified herein.

Each cable shall be clearly labeled in each cabinet utilizing a durable computer-generated label. The label shall contain information in regard to the location where the cable is going to or coming from, buffer tube, and fiber color. The Contractor shall provide numerical foot marking data at each handhole, vault, and cabinet to the City of Peoria Department of Public Works.

All fibers terminated inside traffic signals cabinets, ITS cabinets, lighting controllers, and other termination points shall be laterally spliced into the fiber backbone utilizing a separate 96 fiber cable and waterproof splice enclosure (PLP Products Coyote) installed inside the nearest communications vault.

The Contractor shall terminate 12 fibers from each cable direction (24 fibers per cabinet) with ST connectors inside a fiber optic termination enclosure inside all traffic signal controller cabinets, ITS cabinets, and lighting controllers if specified in the plans.

Unused buffer tubers and fiber optic cable strands shall be left intact and continuous for future use.

Unused buffer tubes shall be readily accessible for future use. Each buffer tube shall be neatly coiled inside each traffic signal and CCTV cabinet with a minimum length of eight feet.

Fibers not being used shall be labeled "spare", and fibers not attached to a distribution enclosure shall be capped and sealed.

All ancillary components, required to complete the fiber optic cable plant, including but not limited to, moisture and water sealants, cable caps, fan-out kits, weather-proof splice kits, boots, cable trays, splice enclosures, termination panels, etc., shall be supplied under this pay item and will not be paid for separately. These items shall be submitted to the City of Peoria Department of Public Works for approval.

The fiber optic cable shall be clearly marked in each handhole, communication vault, and cabinet with a brightly colored (orange or yellow) weather resistant label securely attached to the cable.

The Contractor shall provide and install a 12 Ga., stranded (EPR-TYPE RHW or THHN), insulated tracer cable in all conduits that contain fiber optic cable. This work shall be done at the same time the fiber optic cable is pulled. There will be no additional compensation for this work.

Materials. The single-mode, fiber optic cable shall incorporate a loose, buffer-tube design. The cable shall conform to the requirements of RUS 7 CFR1755.900 (PE-90) for a single sheathed, non-armored cable, and shall be new, unused and of current design and manufacture. The number of fibers in each cable shall be as specified on the plans.

Construction Requirements.
Experience Requirements.

Personnel involved in the installation, splicing and testing of the fiber optic cables shall meet the following requirements:

A minimum of three (3) years experience in the installation of fiber optic cables, including splicing, terminating and testing single mode fibers.

Install two systems where fiber optic cables are outdoors in conduit and where the systems have been in continuous satisfactory operation for at least two years. The Contractor shall submit as proof, photographs or other supporting documents, and the names, addresses and telephone numbers of the operating personnel who can be contacted regarding the installed fiber optic systems.

One fiber optic cable system (which may be one of the two in the preceding paragraph), which the Contractor can arrange for demonstration to the City of Peoria Department of Public Works representatives and the Engineer.

Installers shall be familiar with the cable manufacturer's recommended procedures for installing the cable. This shall include knowledge of splicing procedures for and equipment being used on this project and knowledge of all hardware such as breakout (furcation) kits and splice closures. The Contractor shall submit documented procedures to the Engineer for approval and to be used by Construction inspectors.

Personnel involved in testing shall have been trained by the manufacturer of the fiber optic cable test equipment to be used, in fiber optic cable testing procedures. Proof of this training shall be submitted to the Engineer for approval. In addition, the Contractor shall submit documentation of the testing procedures for approval by the Engineer.

Installation in Conduit.

During cable pulling operations, the Contractor shall ensure that the minimum bending of the cable is maintained during the unreeling and pulling operations. Entry guide chutes shall be used to guide the cable into the handhole conduit ports. Lubricating compound shall be used to minimize friction. Corner rollers (wheels), if used, shall not have radii less than the minimum installation-bending radius of the cable. A series array of smaller wheels can be used for accomplishing the bend if the cable manufacturers specifically approve the array.

The pulling tension shall be continuously measured and shall not be allowed to exceed the maximum tension specified by the manufacturer of the cable. Fuse links and breaks can be used to ensure that the cable tensile strength is not exceeded. The pulling system shall have an audible alarm that sounds whenever a pre-selected tension level is reached. Tension levels shall be recorded continuously and shall be given to the Engineer upon request.

The cable shall be pulled into the conduit as a single component, absorbing the pulling force in all tension elements. The central strength member and Aramid yarn shall be attached directly to the pulling eye during cable pulling. "Basket grip" or "Chinese-finger type" attachments, which only attach to the cable's outer jacket, shall not be permitted. A breakaway swivel, rated at 95% of the cable manufacturer's approved maximum tensile loading, shall be used on all pulls. When simultaneously pulling fiber optic cable with other cables, separate grooved rollers shall be used for each cable.

Splicing Requirements:

Splices shall be made at locations shown on the Plans. Any other splices shall be permitted only with the approval of the Engineer. The Contractor shall submit a splicing plan to the City of Peoria Department of Public Works for approval.

Operation and Maintenance Documentation:

After the fiber optic cable plant has been installed, two (2) complete sets of Operation and Maintenance Documentation shall be provided. The documentation shall, as a minimum, include the following:

- Complete and accurate as-built diagrams showing the entire fiber optic cable plant including locations of all splices.
- Final copies of all approved test procedures.
- Complete performance data of the cable plant showing the losses at each terminal connector.
- Complete parts list including names of vendors.
- Electronic Testing Files (OTDR traces, power meter data, etc.)

Testing Requirements:

Testing shall be in accordance with Article 801.13 except where modified by this special provision.

The Contractor shall submit detailed test procedures for approval by the Engineer. All continuous fiber runs shall be tested bi-directionally at both 1310 nm and 1550 nm with a power meter and optical source and OTDR. For testing, intermediate breakout fibers may be concatenated and tested end-to-end. Any discrepancies between the measured results and these specifications will be resolved to the satisfaction of the Engineer.

The Contractor shall provide the date, time and location of any tests required by this specification to the Engineer at least 5 days before performing the test. Upon completion of the cable installation, splicing, and termination, the Contractor shall test all fibers in each link for continuity and attenuation. The test procedure shall be as follows:

A Certified Technician utilizing an Optical Source/Power Meter and OTDR shall conduct the testing. The Technician is directed to conduct the test using the standard operating procedures defined by the manufacturer of the test equipment. All fibers installed shall be tested in both directions.

At the completion of the test, the Contractor shall provide two copies of documentation of the test results to the Engineer. The test documentation shall be bound and shall include the following:

Cable & Fiber Identification:
Cable ID
Cable Location - beginning and end point
Fiber ID, including tube and fiber color
Operator Name
Date & Time
Setup Parameters
Wavelength
Pulse width (OTDR)
Refractory index (OTDR)
Range (OTDR)
Scale (OTDR)
Setup Option chosen to pass OTDR “dead zone”

Test Results:
Optical Source/Power Meter

Total Attenuation
Attenuation (dB/km)

These results shall be provided in tabular form. The following shall be the criteria for the acceptance of the cable:

The test results shall show that the dB/km loss does not exceed +3% of the factory test or 1% of the cable's published production loss. However, no event shall exceed 0.10 dB. If any event is detected above 0.10 dB, the Contractor shall replace or repair the proposed fiber and/or fusion splice and connector including that event point.

The total dB loss of the cable, less events, shall not exceed the manufacturer's production specifications as follows: 0.5 dB/km at both 1310 and 1550 nm.

If the total loss exceeds these specifications, the Contractor shall replace or repair that cable run at the Contractor's expense, both labor and materials. Elevated attenuation due to exceeding the pulling tension during installation shall require the replacement of the cable run at the Contractor's expense, including labor and materials.

The Contractor shall label the destination of each trunk cable onto the cable in each handhole and termination panel.

Slack Storage of Fiber Optic Cables.

A part of this pay item, slack fiber shall be supplied as necessary to allow splicing the fiber optic cables in a controlled environment, such as a splicing van or tent. After splicing has been completed, the slack fiber shall be stored underground in handholes and in the traffic controller cabinets.

The amount of slack cable listed in Article 873.03 shall be revised as follows:

Location	Length of Slack Cable (Ft.)
Communications Vault	200.0
Double Handhole	30.0
Handhole	10.0
CCTV or Signal Cabinet	10.0
Junction Box	10.0
Equipment Cabinet	3.0

Basis of Payment. This work will be paid for at the contract unit price per foot for FIBER OPTIC CABLE IN CONDUIT, 96 FIBERS, SINGLE MODE and will be payment in full for all labor,

equipment, and materials required to provide, install, terminate, splice, and test the fiber optic cable described above, complete.

FUSION SPLICING OF FIBER OPTIC CABLES

Description. The Contractor will splice optical fibers from different cable sheaths and protect them with a splice closure at the locations shown on the Plans. Fiber splicing consists of in-line fusion splices for all fibers described in the cable plan at the particular location.

Two types of splices are identified. A mainline splice includes selected fibers from each cable run as shown in the plan sheets. In a lateral splice, the buffer tubes in the mainline cable are dressed out and those fibers identified on the plans are accessed in and spliced to lateral cables.

Materials.

Splice Closures:

Splice closures shall be designed for use under the most severe conditions such as moisture, vibration, impact, cable stress and flex temperature extremes as demonstrated by successfully passing the factory test procedures and minimum specifications listed below:

Physical Requirements:

The closures shall provide ingress for up to four cables in a butt configuration.

The closure shall prevent the intrusion of water without the use of encapsulates.

The closure shall be capable of accommodating splice organizer trays that accept mechanical, or fusion splices. The splice closure shall have provisions for storing fiber splices in an orderly manner, mountings for splice organizer assemblies, and space for excess or un-spliced fiber. Splice organizers shall be re-enterable. The splice case shall be UL rated.

Closure re-entry and subsequent reassembly shall not require specialized tools or equipment. Further, these operations shall not require the use of additional parts.

The splice closure shall have provisions for controlling the bend radius of individual fibers to a minimum of 1.5 in (38 mm).

Factory Testing of Splice Closures:

Compression Test: The closure shall not deform more than 10% in its largest cross-sectional dimension when subjected to a uniformly distributed load of 1335 N at a temperature of 0°F and 100°F (-18ºC and 38ºC). The test shall be performed after stabilizing at the required temperature for a minimum of two hours. It shall consist of placing an assembled closure between two flat parallel surfaces, with the longest closure dimension parallel to the surfaces. The weight shall be placed on the upper surface for a minimum of 15 minutes. The measurement shall then be taken with weight in place.

Impact Test: The assembled closure shall be capable of withstanding an impact of 28 N-M at temperatures of 0°F and 100°F (-18ºC and 38ºC). The test shall be performed after stabilizing the closure at the required temperature for a minimum of 2 hours. The test fixture shall consist of 20 lb (9 kg) cylindrical steel impacting head with a 2 in (5 cm) spherical radius at the point where it contacts the closure. It shall be dropped from a height of 12 in (30 cm). The closure shall not exhibit any cracks or fractures to the housing that would preclude it from passing the water immersion test. There shall be no permanent deformation to the original diameter or characteristic vertical dimension by more than 5%.

Cable Gripping and Sealing Testing: The cable gripping and sealing hardware shall not cause an increase in fiber attenuation in excess of 0.05 dB/fiber @ 1550 nm when attached to the cables and the closure assembly. The test shall consist of measurements from six fibers, one from each buffer tube or channel, or randomly selected in the case of a single fiber bundle. The measurements shall be taken from the test fibers before and after assembly to determine the effects of the cable gripping and sealing hardware on the optical transmission of the fibers.

Vibration Test: The splice organizers shall securely hold the fiber splices and store the excess fiber. The fiber splice organizers and splice retaining hardware shall be tested per EIA Standard FOTP-II, Test Condition I. The individual fibers shall not show an increase in attenuation in excess of 0.1 dB/fiber.

Water Immersion Test: The closure shall be capable of preventing a 10 ft (3 m) water head from intruding into the splice compartment for a period of 7 days. Testing of the splice closure is to be accomplished by the placing of the closure into a pressure vessel and filling the vessel with tap water to cover the closure. Apply continuous pressure to the vessel to maintain a hydrostatic head equivalent to 10 ft (3 m) on the closure and cable. This process shall be continued for 30 days. Remove the closure and open to check for the presence of water. Any intrusion of water in the compartment containing the splices constitutes a failure.

Certification: It is the responsibility of the Contractor to ensure that either the manufacturer, or an independent testing laboratory has performed all the above tests, and the appropriate documentation has been submitted to the City of Peoria Department of Public Works. Manufacturer certification is required for the model(s) of closure supplied. It is not necessary to subject each supplied closure to the actual tests described herein.

Construction Requirements. The closure shall be installed according to the manufacturer's recommended guidelines. For all splices, the cables shall be fusion spliced.

The Contractor shall prepare the cables and fibers in accordance with the closure and cable manufacturers' installation practices. A copy of these practices shall be provided to the Engineer 21 days prior to splicing operations.

Using a fusion splicer, the Contractor shall optimize the alignment of the fibers and fuse them together. The Contractor shall recoat the fused fibers and install mechanical protection over them.

Upon completing all splicing operations for a cable span, the Contractor shall measure the mean bi-directional loss at each splice using an Optical Time Domain Reflectometer. This loss shall not exceed 0.1 dB.

The Contractor shall measure the end-to-end attenuation of each fiber optic link, from connector to connector, using an optical power meter and source. This loss shall be measured from both directions and shall not exceed 0.5 dB per installed kilometer of single mode cable. Measurements shall be made at both 1300 and 1550 nm for single mode cable. For multimode cable, power meter measurements shall be made at 850 and 1300 nm. The end-to-end attenuation shall not exceed 3.8 dB/installed kilometers at 850nm or 1.8 dB per installed kilometer at 1300nm for multimode fibers.

As directed by the Engineer, the Contractor at no additional cost to the City of Peoria Department of Public Works shall replace any cable splice not satisfying the required objectives.

The Contractor shall secure the Splice Closure to the side of the splice facility using cable support brackets. All cables shall be properly dressed and secured to rails or racks within the handhole or traffic signal cabinet. No cables or enclosures will be permitted to lie on the floor of the splice facility. Cables that are spliced inside a building will be secured to the equipment racks or walls as appropriate and indicated on the Plans.

Basis of Payment. This work will not be paid for separately but will be included in the bid price for the fiber optic cable pay items.

TERMINATION OF FIBER OPTIC CABLES WITH FUSION SPLICED ST CONNECTORS

Description. The Contractor shall terminate a single mode fiber by fusion splicing a factory-formed ST connector (from a pre-formed fiber optic pigtail) onto a field fiber at the locations shown on the Plans.

Materials. The Contractor shall be responsible for ensuring that the pre-formed pigtail fiber is compatible with the field fiber that it will be fusion splice to.

The splice shall be protected with a protection sleeve/enclosure that will secure both cables and prevent cable movement.

The fiber optic patch cords shall meet or exceed the following specifications:

- High-quality 125um fiber optics
- 900um tight buffer construction
- Aramid yarn individually protected
- Duplex construction
- Stress relief boots color coded (Tx/Rx)
- ST connectors with high-grade zirconia ferrule
- Insertion Loss < 0.2 dB @ 1310 / 1550 nm
- Return Loss < -58 dB @ 1310 / 1550 nm
- Compliant with ANSI/TIA/EIA 568-B.3
- TIA/EIA-604, FOCIS-2

The Contractor shall submit a shop drawing of all proposed components to the Engineer for approval prior to commencing construction.

Construction Requirements. The Contractor shall prepare the cables and fibers in accordance with the cable manufacturers' installation practices. A copy of these practices shall be provided to the Engineer 21 days prior to splicing operations.

Using a fusion splicer, the Contractor shall optimize the alignment of the fibers and fuse them together. The Contractor shall recoat the fused fibers and install mechanical protection over them.

Upon completing all splicing operations for a cable span, the Contractor shall measure the mean bi-directional loss at each connector using an Optical Time Domain Reflectometer. This loss shall not exceed the loss of the fusion splice (0.1 dB) plus the loss of the connector (typically 0.75 dB).

As directed by the Engineer, the Contractor at no additional cost to the City of Peoria Department of Public Works shall replace any cable splice and/or connector not satisfying the required objectives.

Basis of Payment. This work will not be paid for separately but shall be included in the bid price for the fiber optic cable pay items.

COMMUNICATIONS VAULT

Description. This work shall be in accordance with Sections 814 and 1088 of the Standard Specifications except as modified herein.

This work shall consist of furnishing and installing a communications vault constructed of polymer concrete.

The following items are approved for use in District 4: Hubbel, Quazite, Part Numbers: PG2436HA00 (Cover) and PG2436BA30 (Box).

The communications vault and lid shall conform to the following specifications:

Cover:
Material: Polymer Concrete
Nominal Dimensions: 24" W x 36 L"
Gasketed, Heavy Duty Lid with 2 Bolts
Design/Test Load: 15,000/22,500 lbs.
ANSI Tier: 15
Gasketed

Box
Material: Polymer Concrete
Nominal Dimensions: 24" W x 36" L x 30" D
Open Bottom
Design/Test Load: 22,500/33,750 lbs.
ANSI Tier: 22

The location of the handhole shall be excavated so that the top of the handhole is set flush with the sidewalk or paved surface. When installed in earth shoulder away from the pavement edge, the top surface of the handhole shall be 1 in. (25 mm) above the finished grade. The excavation shall be deep enough to accommodate the depth of the box and french drain.

The french drain shall be constructed underneath the proposed handhole according to Article 601.06 and in accordance with Highway Standard 814006.

The conduits shall enter the vault at between 24" and 30" and the Contractor shall install six inches of CA 5 or CA 7 in the bottom of the vault.

The Contractor shall submit testing reports to verify that the communications vaults and lids meet the requirements of ANSI Tier 15 and ANSI Tier 22 loading.

The locating cable shall be continuous and accessible on the outside of each communication vault. The Contractor shall utilize appropriate corrosion resistant hardware (stainless steel) and connections to the locating wire. The Contractor shall submit material and installation methods to the City of Peoria Department of Public Works for review.

Basis of Payment. This work will be paid for at the contract unit price of Each for COMMUNICATIONS VAULT, which will be payment in full for all labor, equipment, and materials required to provide and install the equipment described above, complete.

CONFIRMATION BEACON

Description. This work shall be in accordance with Sections 887 and 1072 of the Standard Specifications except as modified herein.

The Contractor shall furnish and install a two-way emergency vehicle system confirmation beacon and electrical cable from the mast arm mounted confirmation beacon to the traffic signal controller cabinet.

The Contractor shall furnish and install all other items required for the installation of the confirmation beacon.

The confirmation beacon shall be equipped with outdoor rated LED lamps and shall be compatible with the existing Global Traffic Technologies Opticom GPS/secure radio communication system that is installed at multiple intersections in the city of Peoria.

Basis of Payment. This work will be paid for at the contract unit price each for CONFIRMATION BEACON and will be payment in full for all labor, materials, and equipment required to furnish, test, and install the equipment described above, complete.

LIGHT DETECTOR AMPLIFIER

Description. This work shall be in accordance with Sections 887 and 1072 of the Standard Specifications except as modified herein.

The Contractor shall furnish and install an Opticom Model 1000 GPS Phase Selector, Opticom Model 1030 Auxiliary Interface Panel inside the proposed traffic signal cabinets at the locations shown on the plan sheets.

The Contractor shall furnish and install cables, brackets, and all components required for integration into the proposed traffic signal cabinets and as required for a complete and fully functional system.

The light detector amplifier shall be compatible with the existing Global Traffic Technologies Opticom GPS system that is installed at multiple intersections in the city of Peoria. The Contractor shall test the system after installation to ensure that it is functioning correctly.

Basis of Payment. This work will be paid for at the contract unit price each for LIGHT DETECTOR AMPLIFIER and will be payment in full for all labor, materials, and equipment required to furnish, test, and install the equipment described above, complete.

LUMINAIRE (SPECIAL)

Description. This work consists of furnishing all materials, equipment and labor necessary to install Light-Emitting Diode (LED) luminaires on steel combination mast arm poles at intersections as shown in the plans, in accordance with the applicable requirements of Section 821 of the Standard Specifications and as specified herein.

Materials.

1. Luminaire
   The luminaire shall be AEL ATBM LED for roadway as shown on the fixture schedules and details.

2. Cable
   The cable shall be No. 6 (XLP-type USE). It shall be installed from the traffic signal controller in conduit to the luminaire in accordance with Section 870 of the Standard Specifications.

3. Circuit breaker, contactor and photocell control.
   The circuit breaker, contactor, and photocell controller shall be installed in the traffic signal controller in accordance with Section 870 of the Standard.

Method of Measurement. This work will be measured for payment per each luminaire installed. Cable, conduit, circuit breaker, contactor and the photocell controller shall not be paid separately.

Basis of Payment. This work will be paid for at the contract unit price per Each for LUMINAIRE (SPECIAL), which price will be payment in full for all labor, material, and equipment necessary to perform the work described above.

LIGHT DETECTOR

Description. This work shall be in accordance with Sections 887 and 1072 of the Standard Specifications except as modified herein.

The Contractor shall furnish and install one multiple direction detector at the locations shown on the plan sheets. The detector shall be an Opticom Model 101 GPS Radio Unit for integration into the existing preemption system.

The light detector shall be compatible with the existing Global Traffic Technologies Opticom GPS system that is installed at multiple intersections in the city of Peoria.

The Contractor shall furnish and install all other items required for the installation of the light detector.

Basis of Payment. This work will be paid for at the contract unit price each for LIGHT DETECTOR and will be payment in full for all labor, materials, and equipment required to furnish, test, and install the equipment described above, complete.

APPENDIX A WATER MAIN SPECIFICATIONS

APPENDIX A
WATER MAIN SPECIFICATIONS

TABLE OF CONTENTS

SECTION 01000

SUMMARY OF WORK

PART 1: GENERAL

1.01 WORK UNDER THIS CONTRACT

A. Furnish all labor, materials (except as herein noted), equipment and means to construct the project as described in the Bid Documents and shown on the Drawings.

B. The above general outline of principal features does not in any way limit the responsibility of the Contractor to perform all Work and furnish the required materials, equipment, labor and means as shown or required by the Contract Documents.

C. Materials, equipment, labor, etc., obviously a part of the Work and necessary for the proper operation and installation of same, although not specifically indicated in the Contract Documents, shall be provided as if called for in detail without additional cost to the Owner.

1.02 LOCATION

Project Location as described in the Bid Documents and as shown on the Drawings

1.04 OWNER FURNISHED PRODUCTS

A. Products furnished to the site and paid for by Owner:

1. Ductile Iron Push-on Joint Pipe
2. Ductile Iron Restraint Joint Pipe
3. Fire Hydrants
4. Meters

B. Owner's Responsibilities:

1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
2. Arrange and pay for product delivery to site.
3. On delivery, inspect products jointly with Contractor.
4. Submit claims for transportation damage and replace damaged, defective, or deficient items.

5. Arrange for manufacturers' warranties.

C. Contractor's Responsibilities:

1. Review Owner reviewed shop drawing's product data, and samples.

2. Receive and unload products at site; inspect for completeness or damage, jointly with Owner.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.
5. Arrange for manufacturers inspections, service, start-up services and training.

1.07 WORK SEQUENCE

A. Work shall be scheduled, sequenced and performed in a manner which minimizes disruption to the public and plant operations and shall not interrupt or impact the Water Company’s ability to operate and maintain service of the existing facility. During the construction periods coordinate construction schedule and operations with the Water Company, Inspectors and Engineer.

B. Allow for construction and schedule constraints in preparing the construction schedules required under Section 01300 - Submittals. The schedule shall include the Contractors activities necessary to satisfy all constraints included and referenced in the Contract Documents.

C. The Contractor is responsible for sequencing the work. It is a requirement that the Contractor's sequence result in the minimum number and duration of total or partial outages. The listing of Schedule Requirements identified below does not mean that all constraints or special conditions have been identified. The list does not substitute for the Contractor's coordination and planning for completion of the work within the Contract Time in the Agreement. The sequence is general in nature and meant to depict a possible approach by the Contractor that would minimize plant downtime and permit timely completion of the project.

1.08 CHANGE PROCEDURES

A. The Engineer may issue to Contractor a Proposal Request which includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Times for executing the change and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within 15 working days. The estimate shall contain a detailed breakdown of the labor, equipment, material, subcontract, equipment rental, contingencies, overhead, and profit costs associated with the requested change. The estimate shall also include any requested adjustments to Contract Times including the window of time the Owner has to render a decision on the matter.

1.09 DEFINED TERMS

A. Terms used in these Specifications which are defined in the General Conditions of the Contract Documents shall have the meanings assigned to them in the General Conditions.

1.10 ABBREVIATIONS

A. Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth opposite each.

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
IEEE	Institute of Electrical and Electronics Engineers, Inc.
AISC	American Institute of Steel Construction
AMCA	Air Moving and Conditioning Association
ANS	American National Standard
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood-Preservers' Association
AWWA	American Water Works Association
CS	Commercial Standard

IBR	Institute of Boiler and Radiator Manufacturers
IPS	Iron Pipe Size
JIC	Joint Industry Conference Standards
NBS	National Bureau of Standards
NEC	National Electrical Code; Latest Edition
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Services Administration, Washington, D.C.
125lb ANS	American National Standard for Cast-Iron Pipe
250lb ANS	Flanges and Flanged Fittings, Designation B16.1-1975, for the appropriate class
AWG	American or Brown and Sharpe Wire Gage
NPT	National Pipe Thread
OS&Y	Outside Screw and Yoke
Stl. WG	U.S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
UL	Underwriters' Laboratories
USS Gage	Untied States Standard Gage
WOG	Water, Oil, Gas
WSP	Working Steam Pressure

PART 2: PRODUCTS

Not Used.

PART 3: EXECUTION

3.01 FIELD SURVEY WORK

A. Unless otherwise provided in the Supplementary Conditions, the Owner shall provide engineering surveys to establish reference points for construction as provided in Article 4.05 of the General Conditions. Utilizing Owner's reference points, establish the initial control base line and all control benchmarks to be utilized throughout the project. Base line shall be set in accordance with all lines, dimensions, reference points, and elevations given in the Contract Drawings.

B. If a discrepancy between the information as presented in the Contract Drawings and any existing survey grid work, benchmarks, structures, etc., notify the Engineer immediately. New construction shall not commence until accurate control base lines and benchmarks have been established.

C. Throughout the course of the project, set all additional stakes which are needed for offset stakes, reference points, slope stakes, pavement and curb line and grade stakes, stakes for structures, sewers, utilities, roadway drainage, pipe underdrains, paved gutter, fence, culverts, or other structures, supplementary bench marks, and any other horizontal or vertical controls necessary to secure a correct layout and construction of the work. Stakes for line and grade for pavements, curbs, storm drains, sewers, etc., shall be set at twenty-five (25) foot maximum intervals. Base lines shall be staked in such manner as to clearly define them for the project.

D. The finished work shall conform to the lines, grades, elevations and dimensions called for in the Contract Documents. The Work shall be subject to checking by the Engineer, but any inspection or checking of Contractor's layout by the Engineer and the acceptance of all or part of it shall not relieve the Contractor of his responsibility to secure the proper dimensions, grades, elevations and locations on the several parts of the Work. The Contractor shall exercise care in the preservation of stakes, monuments and benchmarks and shall have them reset at his expense when they are lost or displaced.

E. Prior to the commencement of any Work activity, the contractor shall survey and layout the Work to be performed and advise the Engineer of any conflicts, obstructions, concerns, etc. that will prevent completion of such work in accordance with the requirements of the Contract Documents. If the Contractor fails to conduct such survey and layout or if the survey and layout fails to identify a conflict, obstruction, etc., which it reasonably should have, and a conflict, obstruction, concern, etc., is discovered, the Contractor shall bear the cost of any standby time for labor and/or equipment which occurs pending the Engineer's direction and the cost of rework of any Work installed which is affected by the conflict, obstruction, etc.

F. Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

3.02 COORDINATION AND MEETINGS

A. Coordinate work, to phase the construction operations, and provide, install and maintain any temporary connections necessary to prevent interference to operation of Owner's facilities. Any construction work requiring the shutdown of facilities must be scheduled and performed only at such times as shall be authorized by the Owner. Such Work must be completed during the specific periods authorized by the Owner. It may be necessary that Work will be performed during several shutdown periods and/or during periods of premium time payment to accomplish the desired construction. All costs to perform the Contractor's Work, including premium time payments, shall be borne by the Contractor and are included in the Contract Price

B. Additionally:

1. Coordinate scheduling, submittals, and work of the various sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

2. Verify the utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

3. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

4. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

5. Coordinate completion and cleanup of Work of separate sections in preparation for substantial completion and for portions of Work designated for Owner's partial occupancy.

6. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

C. Job Progress Meetings

Progress meetings will generally be held monthly. Contractor's attendance shall be required.

1. Schedule - The Engineer will establish the meeting place, time and date, notify participants and administer the meeting. Contractor shall notify major subcontractors and suppliers, as appropriate.

2. Attendance

    a. Engineer and/or resident project representative.
    b. Contractor's project manager and project superintendent
    c. Owner's representative
    d. Subcontractor, as appropriate to the agenda
    e. Suppliers, as appropriate to the agenda
    f. Other parties as determined by Engineer and/or Owner

3. Agenda

    a. Review minutes of previous meeting.
    b. Review of work progress since previous meeting.
    c. Review field observations, problems, and/or conflicts.
    d. Review problems which impede construction schedules.
    f. Review of off-site fabrication, delivery schedules.
    g. Review corrective measures and procedures to regain projected schedule.
    h. Review revisions to construction schedules.
    i. Review plan progress, schedule, during succeeding work period.
    j. Review coordination of schedules.
    k. Review submittal schedules; expedite as required.
    l. Review maintenance of quality standards.
    m. Review proposed changes for:
        - Effect on construction schedule and on completion date
        - Effect on other contracts of the project
    n. Other business

4. Minutes - Engineer will prepare and distribute copies to participants and Owner for review at the next meeting.

END OF SECTION

SECTION 01075

BASIS OF PAYMENT

PART 1: GENERAL

1.01 SCOPE

Work to be performed under this Contract shall be paid in accordance with the Bid Schedule submitted with the Bid. When applicable, and authorized by Owner, additional work will be paid for in accordance with the supplementary unit price schedule, of the Bid. The cost of labor, equipment, materials or work called for in the Specifications, shown on the Drawings, or necessary for a complete and satisfactory installation, but which are not specifically mentioned in this Section shall be included in the appropriate supplementary unit price by the Contractor at no additional expense to the Owner.

1.02 UNIT PRICE ITEMS

A. Pipeline Excavation, Laying, Jointing, and Backfilling of Pipe

Payment will be made at the Contract Unit Price per LINEAR FOOT for DUCTILE IRON WATER MAIN, of the size specified. Contract Unit Price is based upon the installed, complete in place, water main as required by the Owner. Contract Unit Price includes all incidental items described in Specification Section 15000 - Piping - General Provisions, except that ductile iron water main pipe will be provided by Illinois American Water Company. Contract Unit Price for DUCTILE IRON WATER MAIN includes coordination with Illinois American Water Company, and the transportation and handling of material to the project site.

B. Water Main Fittings

Water main fittings include tees, anchor tees, bends, reducers, and other like appurtenances to those described in Specification Section 1505 – Ductile Iron Pipe Fittings. Water main fittings shall be in accordance with Specification Section 15105 - Ductile Iron Pipe and Fittings, except that Water main fittings will be paid at the Contract Unit Price per EACH of the type and size fitting installed.

C. Tapping Valves and Sleeves

Payment will be made at the Contract Unit Price for EACH new TAPPING VALVE AND SLEEVE, of the size specified. Tapping sleeves shall be in accordance with the Specification Section 15170 - Tapping Sleeves, Saddles and Valves. Valves shall be in accordance with Specification Section 15150 – Gate Valves.

D. Trench Backfill, Watermain

Payment will be made at the Contract Unit Price per CUBIC YARD of TRENCH BACKFILL WATERMAIN in accordance with Specification Section 02210 – Trenching, Backfilling and Compacting.

E. Water Main Encasement

Payment will be made at the Contract Unit Price per LINEAR FOOT of WATER MAIN ENCASEMENT by any of the methods described in and according to Specification Section 02225 - Casing Installation (PVC). Installation of the water main within the encasement will be paid for separately at the Contract Unit Price for DUCTILE IRON WATER MAIN, of the size specified. The Contract Unit Price for WATER MAIN ENCASEMENT also includes all measures required to protect roadways, railroad tracks and embankments from settlement or damage of any type.

F. Water Valves

Payment will be made at the Contract Unit Price per EACH of WATER VALVE, of the type and size specified. WATER VALVES shall be in accordance with Specification Section 15150 – Gate Valves, except that payment for valves associated with Fire Hydrants will be made as specified in Specification Section 15150 – Gate Valves, and that valves associated with tapping sleeves will be paid for as part of the TAPPING VALVE AND SLEEVE pay item.

G. Fire Hydrant Installation

Payment will be made at the Contract Unit Price per EACH of FIRE HYDRANTS in accordance with Specification Section 15180 – Fire Hydrants, Paragraph 3.04 – Basis of Payment, except that Fire Hydrant material will be provided by Illinois American Water Company. Contract Unit Price for FIRE HYDRANTS includes coordination with Illinois American Water Company, and the transportation and handling of material to the project site.

WATER VALVES associated with FIRE HYDRANTS will be paid for separately at the Contract Unit Price for EACH for WATER VALVE at the type and size specified.

Hydrant laterals will be paid for separately at the Contract Unit Price for LINEAR FOOT for DUCTILE IRON WATER MAIN, of the size specified.

H. Fire Hydrant Removal

Fire Hydrant Installation: Payment will be made at the Contract Unit Price per EACH for FIRE HYDRANT TO BE REMOVED. The Contract Unit Price will include removal of hydrant, riser, valve box and capping lateral.

I. Abandon Existing Water Main

Payment will be made at the Contract Unit Price per LINEAR FOOT of ABANDON EXISTING WATER MAIN, FILL WITH CLSM, in accordance with Specification Section 15195 - Water Main Abandonment, except as follows:

1. Cutting & Capping of existing water mains shall be completed by Illinois American Water Company.
2. Removal of existing water main shall be where in conflict with the proposed improvements will be incidental to ABANDON EXISTING WATER MAIN, FILL WITH CLSM. Limits of removal of the existing water main shall be approved by Illinois American Water Company.
3. Payment will be made at the Contract Unit Price as described above regardless of size.

1.03 ALLOWANCE ITEMS

Not Used

1.04 LUMP SUM ITEMS

Not used

PART 2: PRODUCTS

Not Used.

PART 3: EXECUTION

Not Used.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1: GENERAL

1.01 BEFORE STARTING WORK

A. Preliminary Progress Schedule

In accordance with Section 2.05 of the General Conditions, prepare and submit to the Engineer for approval, a preliminary construction progress schedule. This submittal is to be made within ten (10) days from the Notice of Award. The construction work shall be detailed to an extent that progress can be readily monitored.

B. Shop Drawings and Samples Submittal Schedule

The preliminary progress schedule shall contain activities in the network representing submittal and review of shop drawings and material samples. The shop drawing and sample submittal schedule required per Paragraph 6.17 of the General Conditions shall be developed by sorting these activities from the progress schedule. The schedule shall be presented in a report format containing the following:

1. Activity number
2. Activity description (including reference to the appropriate specification section)
3. Early and Late start dates
4. Early and Late finish dates
5. Total and free float
6. Successor activities

C. Schedule of Values

The Bid Schedule will be used as the Schedule of Values for this project.

D. Schedule of Property Unit Values

Not Used.

E. Cash Flow Schedule

Accompanying the CPM Schedule required above, submit to the Engineer for approval a Cash Flow Schedule. The Cash Flow Schedule shall show the amounts of money by months which will be required to reimburse the Contractor for Work performed during each month of the Contract Times. The sum of all the monthly

cash requirements shall equal the Contract Price. The monthly cash requirements shall be proportioned based on the CPM Schedule. The initial cash flow schedule shall depict monthly cash requirements based on the early start dates of the CPM Schedule as well as the monthly cash requirements based on late start dates of the CPM Schedule. The approval cash flow schedule will be developed by the Engineer and will reflect the scheduled performance as of the date of approval. This process of approving cash flow schedules will occur with each required schedule update.

The approval Cash Flow Schedule will be used by the Owner to program funds for progress payments. Monthly payments will be made in accordance with the Contract Agreement, but at no time will the aggregate amount of payments exceeds the accumulated amount of payments for the same period of the approval Cash Flow Schedule.

F. Preconstruction Digital Recording

Prior to mobilization at the site, furnish to the Engineer a video recording of all planned construction areas, material storage areas, areas adjacent to these areas, including but not limited to, streets, driveways, sidewalks, curbs, ditches, fencing, railing, visible utilities, retaining structures and adjacent building structures. The purpose of the recording is to document existing conditions and to provide a fair measure of required restoration. Care should be taken to record all existing conditions which exhibit deterioration, imperfections, structural failures or situations that would be considered substandard.

The recording shall be high quality, color and in a digital format. Temporary lighting shall be provided as necessary to properly record areas where natural lighting is insufficient (indoors, shadows, etc.). The recording shall include an audio soundtrack to provide the following information:

- detailed description of location being viewed referenced to Contract Drawings (i.e. station no., building designation, pipeline route etc.)
- direction (N, S, E, W, looking up, looking down, etc.) of camera view
- date, time, temperature, environmental conditions at time of taping.

Any areas not readily visible by the recording shall be described in detail. Unless otherwise approved by Engineer, recording shall not be performed during inclement weather or when the ground is covered partially or totally with snow, ice, leaves, etc.

Prepare and provide as many copies/formats as are necessary to satisfy the requirements of this section. The original recording shall be submitted to the Engineer accompanied by a detailed log of the contents of each video. The recording will be maintained by the Engineer during construction and may be viewed at any time upon request. Upon final acceptance, the recording will become the permanent property of the Owner.

1.02 FINALIZING SCHEDULES

A. Prepare to present and discuss at the preconstruction meeting, the schedules submitted in accordance with this specification. Unless additional information is required to be submitted, the Engineer will, within 15 working days of the preconstruction conference, provide comments. Then, resubmit the affected schedules addressing the Engineer's comments.

B. Approval of the final schedules by the Engineer is advisory only and shall not be relief of responsibility for accomplishing the work within the Contract Times. Omissions and errors in the approved schedule shall not excuse performance less than that required by the Contract. Approval by the Engineer in no way makes the Engineer an insurer of the success of those schedules or liable for time or cost overruns flowing from shortcomings in such schedules.

1.03 REQUIREMENTS FOR CONFORMING WITH SCHEDULE

A. If, in the opinion of the Engineer, work falls behind the progress schedule, the steps shall be taken, as necessary, to improve progress, and Engineer may require an increase to the number of shifts and/or overtime operations, days of work, and/or the amount of construction planned, and to submit for approval such supplementary schedule or schedules as may be deemed necessary to demonstrate the manner in which the agreed rate of progress will be regained, all without additional cost to the Owner. An updated cash flow schedule will be required in this occurrence and will be provided with the supplementary schedules referenced above.

1.04 UPDATING SCHEDULES

A. Submit to the Engineer monthly updates of the schedules required per this specification section.

B. Progress and shop drawing schedule updates shall reflect the progress to date by providing actual start dates for activities started, actual finish dates for completed activities, and identifying out of sequence work, schedule logic changes and any circumstances or events impacting the current schedule. The updates shall also contain best estimates of the remaining duration for activities not complete as of the date of the update. All graphic presentations, reports and computer discs required per the initial submittal of these schedules shall be provided with each update.

C. Updated as necessary the schedule of values and cash flow schedules to reflect any changes.

1.05 ADJUSTMENT OF PROGRESS SCHEDULE AND CONTRACT TIMES

A. If there is a desire to make changes to the method of operating which affect the approved progress schedule, notify the Engineer in writing stating what changes

are proposed and the reason for the change. If the Engineer approves these changes, revise and submit for approval, without additional cost to the Owner, all of the affected portions of the schedule.

B. Shop drawings and samples which are not approved on the first submittal or within the schedule time shall be immediately rescheduled, as well as any work which fails to pass specified tests or has been rejected.

C. The Contract Times will be adjusted only for causes specified in the General Conditions. In the event a request to adjust the Contract times is desired, furnish such justification and supporting evidence as the Engineer may deem necessary for a determination as to whether such an entitled to an adjustment of Contract Times under the provisions of the General Conditions is warranted. The Engineer will, after receipt of such justification and supporting evidence, make findings of fact and will advise in writing thereof. If the Engineer finds that any adjustment of the Contract Times is entitled, the Engineer's determination as to the total number of days adjustment shall be based upon the currently approved progress schedule and on all data relevant to the adjustment. The actual delays in activities which, according to the progress schedule, do not affect the Contract completion date shown by the critical path in the network will not be the basis for an adjustment of Contract Times.

D. From time to time it may be necessary for the progress schedule and/or Contract Times to be adjusted by the Owner to reflect the effects of job conditions, weather, technical difficulties, strikes, unavoidable delays on the part of the Owner and other unforeseeable conditions which may indicate schedule and/or Contract Times adjustments. Under such conditions, the Engineer shall require the rescheduling of the work and/or Contract Time to reflect the changed conditions, and the schedule shall be revised accordingly. No additional compensation shall be made for such changes except as provided in the General Conditions. Unless otherwise directed, take all possible actions to minimize any extension to the Contract Times and any additional cost to the Owner.

1.06 SHOP DRAWINGS

A. Promptly supply to the Engineer for approval, shop drawings with details and schedules for all items contained in the list of required Shop Drawings included at the end of this Section, or for other items as may be required by the Engineer.

B. A sufficient number of copies to allow the Owner to retain **four (4)** reviewed copies of all drawings, schedules and brochures shall be submitted for approval. Black line prints, blue line prints or reproducible transparencies are required. Blueprints (white lines on a blue background) are <u>not</u> acceptable. Each submittal shall have the job name on it and the appropriate specification section or contract drawing reference.

C. Shop drawings shall be numbered with the Water Company's file number **XXXX-XXXX** Rev. _____. Detailed procedures for numbering will be outlined at the pre-construction meeting.

D. Each copy of the submittals made to the Water Company for approval shall be prepared by the Contractor and shall have an identifying title stamp as follows:

_____-American Water
_____ Division - _____ District
_____**(Project Title)**
Specification Section _____
Shop Drawing No. ___-___-___ Rev. _____

E. As required by the General Conditions, each copy of the submittals shall also be stamped with the Contractor's approval indicating that the shop drawing has been reviewed for conformance to the Contract Documents and has been coordinated with all other work and/or trades. Identify and bring to the attention of the Engineer any deviations to the Contract Documents contained in the submittal. For shop drawings being resubmitted, identify and bring to the attention of the Engineer any revisions other than those originally requested by the Engineer.

Submittals smaller than 8½x11 inches shall be secured to paper 8½x11 inches.

Submittals will be returned, stamped with the following classifications:

a) "Approved" - There are no notations or comments on the submittal, and, in Owner's opinion, the submittal meets the requirements of the Contract Documents and the equipment may be released for production.

b) "Approved as Noted" - Notations have been made on the submittals to insure conformance with the Contract Documents. The equipment may be released for production in accordance with the notations.

c) "Not Approved" - The submittal does not meet the requirements of the Contract Documents. Submit the specified product.

d) "Revise and Resubmit" - When the material submitted is incorrect or insufficient to review properly and it is necessary to see the complete package again.

e) "Resubmit Record Copy" - Used with the review action "Approved As Noted". The resubmittal shall incorporate notations.

F. Where a submittal indicates a departure from the Contract which the Engineer deems to be a minor adjustment in the interest of the Owner not involving a change in Contract Price or extension of Contract Times, the Engineer may approve the submittal but the approval will contain, in substance, the following notation:

"The modification indicated on the attached submittal is approved in the interest of the Owner to effect an improvement for the Project and is accepted with the understanding that it does not involve any change in the Contract Price or Times; that it is subject generally to all Contract stipulations and covenants; and that it is without prejudice to any and all rights of the Owner under the Contract Bonds."

G. It is emphasized that the Engineer's approval of submitted data is for general conformance to the Contract Drawings and Specifications, but subject to the detailed requirements of Drawings and Specifications. Although the Engineer may check submitted data in more or less detail, such checking is an effort to discover errors and omissions in Contractor's drawings and to assist in coordinating and expediting site work, and shall in no way relieves the Contractor of the responsibility to engineer the details of the Work in such manner that the purpose and intent of the Contract will be achieved, nor shall such detail check by the Engineer be construed as placing on the Engineer, any responsibility for the accuracy, and for proper fit, functioning and performance of any phase of the Work included under this Contract.

1.07 SAMPLES

A. When required by the Engineer or where noted in other Sections of these Specifications, samples or materials shall be submitted for approval.

B. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

C. Submit samples of finishes from the full range of manufacturer's standard colors, textures, and patterns for Engineer's selection.

Include identification on each sample, with full project information.

Submit the number or samples specified in individual specification sections; one of which will be retained by Engineer.

Reviewed samples which may be used in the Work are indicated in individual specification sections.

1.08 PROGRESS PAYMENTS

A. The detailed arrangement for submittal of progress payments shall be discussed at the preconstruction meeting and will be in accordance with Article 14 of the General Conditions. In general, progress payments shall be submitted monthly in a format acceptable to the Engineer. The progress payment request shall be based on the approved schedule of values and should provide the number of unites completed, total dollar value completed, dollar value completed prior to the current payment, and the amount requested for this progress payment for each line item

contained in the schedule of values. Progress payment requests for material and/or equipment suitably stored but not yet incorporated into the work shall be accompanied by a copy of the appropriate manufacturers invoice, shipping order, bill of lading, etc. and the progress payment amount shall be the direct cost to the Contractor, or subcontractor, for such material and/or equipment. Payment will not be made if, upon inspection by the Engineer, it is determined that the material and/or equipment does not conform to the requirements of the Contract Documents including proper storage, receipt of approved shop drawings, receipt of any special guarantees, Bonds, insurance coverage, any evidence of damage or imperfections, etc.

1.09 CONTRACTOR'S DAILY REPORTS

A. If requested by the Engineer or the Resident Project Representative, prepare and submit daily reports containing the following information:

- number of craftsmen and hours worked of each subcontractor,
- number of hours worked by each trade,
- number of hours worked of each type of equipment,
- description of work activities performed,
- description of any material or equipment deliveries,
- description of obstructions encountered,
- temperature and weather conditions.

B. The daily reports shall be submitted on a daily basis, by the end of the next business day.

C. Information provided on the daily report shall not constitute notice of delay or any other notice required by the Contract Documents. Notice shall be as required therein.

1.10 OPERATING AND MAINTENANCE INSTRUCTION MANUALS

Not Used

1.11 CONSTRUCTION PHOTOGRAPHS

A. Provide construction photographs taken within the first three working days of each month. Take a minimum of twelve (12) digital exposures each and submit digital copies of each exposure.

B. When work is complete take twelve (12) additional digital photographs and submit electronic copies of each exposure.

C. Employ a mutually acceptance commercial photographer who has shown Owner samples of his/her work. Photographer shall be equipped at all times to make either interior or exterior exposures.

D. Digital copies shall be in JPG (Joint Photographic Experts Group) format.

E. Consult with Engineer for instructions concerning view required at each specified visit to the site. Provide digital copies on computer disks or thumb drive.

F. Deliver photographs monthly to Engineer.

PART 2: PRODUCTS

Not Used.

PART 3: EXECUTION

Not Used.

END OF SECTION

SECTION 01600

PRODUCTS

PART 1: GENERAL

1.01 PROTECTION OF MATERIAL AND EQUIPMENT

A. The interior of all pipe and accessories shall be kept free from dirt and foreign matter at all times.

B. After valves and hydrants have been inspected, properly store them prior to use. In order to prevent entry of foreign material that could cause damage to the seating surfaces, the valves and hydrants shall be stored in a fully closed position unless recommended otherwise by the manufacturer. Resilient seated valves shall be stored in accordance with the manufacturer's recommendations. This may include storage with protective covers for rubber seats and in marginally open condition. Valves and hydrants should be stored indoors.

C. If valves must be stored outdoors, protect the operating mechanism, such as gears, motor, actuators and cylinders, from weather elements. Valve ports and flanges must be protected from the weather and foreign materials. If valves are subject to freezing temperatures, all water must be removed from the valve interior and the valve closed tightly before storage, unless specifically recommended otherwise by the manufacturer. Valves shall be stored on pallets with the discs in a vertical position to prevent rainwater from accumulating on top of the disc, seeping into the valve body cavity and freezing and cracking the casting.

1.02 SERVICING EQUIPMENT

A. Check all equipment upon acceptance to determine if oil reservoirs are full and areas to be greased are properly packed with grease. Provide the proper grease or oil for use in lubricating the required areas in the equipment. Perform any service to equipment while in storage, or installed pending acceptance, per manufacturer's requirements, industry standards or as stated specifically in the technical specifications.

1.03 MATERIAL/EQUIPMENT FURNISHED BY OWNER

A. Certain material and equipment will be furnished by the Owner as noted in the Contract Documents. Responsibility for material and/or equipment furnished by the Owner shall begin upon the Contractor's acceptance of such material and/or equipment at the point of delivery to him. All material and equipment shall be examined and items found to be defective in manufacture and/or otherwise damaged shall be rejected at the time and place of delivery to him. The Owner will thereupon repair or replace the damaged items.

B. After acceptance of material and/or equipment by Contractor at point of delivery to him, Contractor shall be responsible for the proper storage, handling, servicing and installation of such material and/or equipment in accordance with manufacturer's recommendations, industry standards or specific requirements of the Contract Documents. Any material and/or equipment found to be defective prior to acceptance by the Engineer shall be repaired or replaced by contractor at no additional cost to Owner unless Contractor submits proof that such defect was latent and could not have been detected by Contractor when performing his duties and responsibilities under these Contract Documents.

C. Contractor's vs. Owner's responsibilities for providing guarantees or warranty and manufacturer's representatives for service, inspection, certification of installation, installation, field training, start-up, etc. for material and/or equipment furnished by Owner shall be as follows unless otherwise specified: The Owner will provide the warranty and Contractor is responsible for providing manufacturer's representatives for all necessary field service, start-up service, installation certifications, installation, field training of Owner's personnel, etc. for Owner furnished material and/or equipment as required for acceptance of such material and/or equipment in the completed project.

PART 2: PRODUCTS

2.01 GENERAL

A. Unless otherwise specifically provided for in these Specifications, all equipment, materials and articles incorporated in the work shall be new, in current production and the best grade obtainable consistent with general construction usage.

2.02 COORDINATION OF DIMENSIONS

A. Verify and make necessary corrections to construction dimensions so that all specified and/or alternative equipment, which is approved by the Engineer, can be installed and will function within the intent of the Contract Drawings and Specifications. Promptly notify the Engineer of all necessary corrections required.

2.03 SAFETY AND HEALTH REQUIREMENTS

A. All materials, equipment, fixtures and devices furnished shall comply with applicable Laws and Regulations.

B. All equipment furnished and installed under this Contract shall be equipped with suitable and approved safety guards and devices required for the safety of the public and operating personnel. Such guards and safety devices shall be in accord with the latest requirements of safety codes approved by the American National Standards Institute as well as the safety requirements of applicable Laws and Regulations. Where said safety codes of the ANSI are incompatible with applicable Laws and Regulations, said Laws and Regulations shall prevail.

PART 3: EXECUTION

3.01 INSTALLATION

A. Material and equipment shall be installed in accordance with the appropriate Sections of these Specifications.

END OF SECTION

SECTION 02210

TRENCHING, BACKFILLING AND COMPACTING

PART 1 – GENERAL

1.01 SUMMARY

SUMMARY
This section includes trenching, backfilling and compacting at locations and elevations shown on the Drawings and as needed to meet requirement of Contract Documents. Furnishing and installing identification tape and location wire over the centerline of water mains, hydrant branches, and trenched services as indicated in this specification or noted in the Drawings.

1.02 DEFINITIONS

Refer to the Standard Details for Trench Terminology and Definitions.

1.03 REFERENCES

Refer to current standards:

A. ASTM: American Society for Testing and Materials
B. AASHTO: American Association of State Highway and Transportation Officials
C. C: Standard Specifications for Water and Sewer Construction in Illinois

1.04 SUBMITTALS

A. All backfill materials (to be used for backfill, haunching, and bedding depending on local requirements), including common fill and selected fill, ¾-inch clean granular fill, ¾-inch modified stone, ¾-inch minus granular fill, and sand shall be approved by the Engineer prior to placing the materials in the pipe trench. Test all backfill materials, whether obtained from the trench excavation or from an off-site source, as directed by the Engineer.

B. Submit samples of the materials to an approved testing agency for analysis as required by the Engineer. Submit the testing agency's test results and report to the Engineer. The report must state that the materials meet the requirements of these Specifications and the Specifications of Federal, State and Local authorities (where applicable). Provide flowable fill in areas where it is required by the local street regulator and other areas specified in the Drawings.

C. Submit in accordance with Section 01300.

1.05 SITE CONDITIONS

A. Contours, topography and profiles of the ground shown on the Drawings are believed to be reasonable approximations and are not guaranteed.

B. The Contractor accepts the construction site with the conditions that existed at the time of bidding.

PART 2 – PRODUCTS

3.01 COARSE AGGREGATE

A. ¾ inch clean granular fill material shall meet the sieve analysis requirements of AASHTO as follows: 1-inch sieve passing 100%, ½-inch sieve passing 0-5%, and sieve size No 4 passing 0-1%. This material may be wrapped in filter fabric (trench bottom, side, and over top of clean granular fill), as directed by the Engineer, to prevent the migration of finer grained soils into this material or the migration of this material into the trench bottom or sidewall.

B. ¾ inch Minus or Modified granular fill material contains additional fine material and may be used as noted in specific pipe specifications. Material shall meet the sieve analysis requirements of AASHTO as follows: 1-inch sieve passing 100%, ¾-inch sieve passing 80-90%, No 4-sieve passing 25-50%, No 10-sieve passing 0-20% No 200 passing sieve 0-5%.

3.02 FINE AGGREGATE

A. Fine Aggregate shall be natural or manufactured sand, or a combination thereof, free from injurious amounts of salt, alkali, vegetable matter or other objectionable material. The fine aggregate shall conform to the following gradation:

Sieve Size	**% Passing**
3/4 inch	100
No. 200	0-10

3.03 COMMON FILL

A. Common fill is suitable for final backfill.

B. Common Fill shall be earth materials entirely free of vegetation; trash; lumber; and frozen, soft or organic materials. No stones or rocks larger than the sizes listed below will be permitted in the Common Fill:

Common Fill-Type A: No stones or rocks larger than 1-inch

Common Fill-Type B: No stones or rocks larger than 4-inches (measured longest dimension). At the discretion of the Engineer and depending upon the quality of the material, stones and rocks up to a maximum of 6 inches may be allowed on the area one foot above the pipe.

C. Common fill material may be obtained from the trench excavation provided it has been tested in accordance with the requirements of Specification Section 02210.1.04 above and approved by the Engineer. Furnish the necessary approved common fill materials from an off-site source whenever approved material obtained from the trench excavation is insufficient to complete the backfill.

3.04 FILTER FABRIC

Filter fabric shall be porous, non-woven fabric with multiple layers of randomly arranged fibers minimum 4.0 ounce per square yard.
Acceptable manufacturers are listed in the most current version of the Supplemental Technical Specifications.

3.05 FLOWABLE FILL

A. Flowable fill is suitable for use as backfilling for utility trenches. The basic requirements for furnishing, mixing, and transporting flowable fill are as follows. Materials shall conform to the following standards: Cement ASTM C 150, Fly Ash ASTM C 618, Class C or Class F. Fine Aggregate shall be natural or manufactured sand, or a combination thereof, free from injurious amounts of salt, alkali, vegetable matter or other objectionable material. It is intended that the fine aggregate be fine enough to stay in suspension in the mortar to the extent required for proper flow. The fine aggregate shall conform to the following gradation:

Sieve Size	**% Passing**
3/4 inch	100
No. 200	0-10

If a flowable mixture cannot be produced, the sand may be rejected.

B. The following are given as typical mix designs for trial mixes. Adjustments of the proportions may be made to achieve proper solid suspension and optimum flowability. Admixtures may be used if desired to improve the characteristics of the mix. The suggested quantities of dry material per cubic yard are as follows:

- **Option 1**
  Cement 50 lbs., Fly Ash 250 lbs., Fine Aggregate 2910 lbs., Water approximately 60 gallons
- **Option 2**
  Cement 100 lbs., Fly Ash 250 lbs., Fine Aggregate 2800 lbs., Water approximately 60 gallons
- **Option 3**
  Cement 100 lbs., Fly Ash 300 lbs., Fine aggregate 2600 lbs., Water approximately 70 gallons

C. Consistency may be tested by filling an open-ended three-inch diameter cylinder six inches high to the top with flowable fill. The cylinder shall be immediately pulled straight up and the correct consistency of the flowable fill shall produce a minimum eight-inch diameter circular-type spread with no segregation.

Materials are to be measured by weight and/or volumetric methods. The flowable fill may be mixed in a central concrete mixer, a ready-mix truck, or by other acceptable methods. The flowable fill shall be transported to the point of placement in a revolving drum mixer or in an agitator unit.

PART 3 – EXECUTION

3.01 CONSTRUCTION EQUIPMENT

All backfilling and materials handling equipment shall have rubber tires when mains are located in or adjacent to pavements. Crawler equipment shall be permitted when there is no danger of damaging pavement. It is the Contractor's responsibility, to repair, at their expense, any damages due to the use of any equipment to complete the Work.

3.02 NOSE, DUST AND ODOR CONTROL

Conduct all construction activities so as to eliminate all unnecessary noise, dust and odors.

3.03 PROTECTION OF TREES

Take special care to avoid damage to trees and their root system. Open trenching shall not be used for areas marked on the Drawings and designated "ROOT PROTECTION ZONE." In these areas, methods to be used include tunneling or boring. In other areas where established trees are to remain with roots in the path of the trench line, the Engineer shall direct acceptable means to install pipe through tree roots. In these areas, methods to be used shall include careful cutting (not ripping or tearing) of larger tree roots. In all cases, operate equipment within the limb spread in a manner which will not injure trees, trunks, branches or their roots. Pay particular attention when employing booms, storing materials, and handling excavated materials.

3.04 TRENCH SUPPORT

Support open cut excavation for mains where trenching may cause danger to life, unnecessary damage to street pavement, trees, structures, poles, utilities, or other private or public property. Support the sides of the excavation by adequate and suitable sheeting, shoring, bracing or other approved means in accordance with all applicable Federal, State, County, Municipal, and OSHA rules and regulations during the progress of the Work, whenever and wherever it is necessary. Maintain the trench support materials and equipment in place until backfilling operations have progressed to the point where the supports may be withdrawn without endangering life or property.

3.05 TRENCH EXCAVATION AND BOTTOM PREPARATION

A. General Excavation shall consist of the satisfactory removal and disposal of all material taken from within the limits of the Work contracted, meaning the material lying between the original ground line and the finished ground line as shown on the Drawings regardless of whether the original ground line is exposed to air or is covered by water. Excavation below existing ground line to enable any required construction or removals is included. It is distinctly understood that any reference to earth, rock, silt, debris or other materials on the Drawings or in the Specifications is solely for the Owner's information and shall not be taken as an indication of classified excavation or the quantity of earth, rock, silt, debris or other material encountered.

   General Excavation includes excavation to the lines and grades indicated on the Drawings or established in the field by the Engineer. Backfill over-excavated areas with approved fill material. All labor and materials shall be furnished at the Contractor's expense.

Keep all excavations free from water. Maintain groundwater a minimum of 6 inches below excavations. Remove soil which is disturbed by pressure or flow of groundwater and replace with free draining material.

Remove pavement over excavations made in paved roadways by saw cutting, milling, or removal by a trench machine. Cut the full depth of the pavement with straight lines and squared edges.

Dispose of excess excavated materials and excavated materials unsuitable for backfilling off site. Furnish the Engineer with satisfactory evidence that an appropriate disposal site was used.

B. Rock Excavation shall consist of the removal, hauling, stockpiling and/or proper disposal the rock. Rock is defined as
    1. Boulders, or pieces of concrete or masonry, having a volume of one-half (1/2) cubic yard or more;
    2. Material which cannot be loosened or broken down by ripping with a hydraulic ripper or other Engineer approved devices and equipment designed to remove rock; or
    3. Material that requires systematic blasting, backhoe ramming, barring, or wedging for removal.

    Notify the Engineer promptly upon encountering rock. The Engineer's determination as to whether the material meets the definition of rock and Engineer's measurement of the volume of rock removal for which the Contractor is entitled to payment will be final and conclusive. No payment will be made for rock removed without Engineer's approval.

    Strip rock for measurements as directed by the Engineer. No payment will be made for rock excavated or loosened before measurement. Only rock actually removed will be paid for, and in no case will payment be made for rock removal beyond the payment limits shown for a standard trench or more than 12 inches beyond the edge of a pipeline or 8 inches below its bottom for pipes of nominal OD 24 inches and less, unless such rock has been removed at the direction of Engineer.

C. Blasting Rock is not allowed unless expressly permitted by the Engineer. Notify the Engineer in advance of blasting activity. Provide evidence to the Engineer that the proposed blasting will comply fully with Laws or Regulations.

    Do not blast where limited or prohibited by any Federal, State or Local laws or regulations, or in violation of any limitation or restriction contained in any right-of-way, or wherever specifically prohibited in any Drawing or other Contract Document. Do not blast within forty (40) feet of any pipe or structure without specific permission from the Owner. Properly cover blasts and protect the pipe or structure. Warn all persons in the vicinity. Blasting shall be at the risk of the Contractor who shall be liable for all damages to persons or property. Secure and pay for all necessary permits. Perform whatever pre-blast surveys and investigations that may be required by the circumstances and/or by Federal, State or Local laws.

Prepare a blasting plan and submit it to the Engineer for approval prior to commencing any blasting work. The plan shall state all procedures and methods which will be used to monitor and mitigate the effect or impact of the proposed blasting work.

Employ an experienced blaster holding a blasting license issued by the applicable State to carry out the blasting work. Use, handle, and store explosives as prescribed by the applicable State and Federal regulations. Keep all explosives in a safe place at a sufficient distance from the Work so that, in case of accident, no damage will occur to any part of the Work. Contractor shall be held responsible for and shall pay for all damage caused by blasting operations or accidental explosion.

D. Trench Width shall be held to a minimum to accommodate the pipe and appurtenances. The trench width shall be measured at the top of the pipe barrel and shall conform to the following limits. Contractor will only be compensated for the minimum trench width described below for the purposes of determining excavation and backfill pay items when items are not considered incidental:

Trench Depth	
4' or less:	Outside diameter of the pipe barrel plus 24 inches, i.e., 12 inches each side.
5' or more:	Outside diameter of the pipe barrel plus 36 inches, i.e., 18 inches each side.

E. Excessive Trench Width shall be provided additional backfill, haunching, and bedding material as specified in Specification Sections 02210-3.06, 02210-3.07, and 02210-3.08 as approved by the Engineer to fill any trench excavation that exceeds the trench width defined in Specification Section 02110-3.05. D. Dispose of excess excavated materials off site. Furnish the Engineer with satisfactory evidence that an appropriate disposal site was used. The excavation, backfill, and disposal resulting from excessive trench width shall be at no additional cost to the Owner.

F. Trench Depth shall provide prescribed minimum cover from the top of the pipe barrel to the top of the finished grade, unless otherwise authorized by the Engineer or as shown on the Drawings.

1. Earth - Excavate to the depth required, so as to provide a uniform and continuous bearing and support for the pipe barrel on solid and undisturbed ground at every point between joints. It will be permissible to disturb the finished trench bottom over a maximum length of 18 inches near the middle of each length of pipe by the withdrawal of pipe slings or other lifting tackle. Provide bell holes and prepare the finished trench bottom accurately using hand tools.

2. Rock - Excavate trenches in rock or boulders 8-inches below the pipe barrel for pipe 24-inches or less in diameter. Remove all loose material from the trench bottom. Prepare a pipe bed using bedding material as specified in Specification Section 02210-2.01.

3. Unsuitable Bottom - Notify the Engineer whenever unsuitable material is found. Remove the material over the area and to the depth determined by the Engineer.

Provide compacted bedding material as specified in Specification Sections 02210-2.01 to restore the trench bottom to the required grade.

G. Open Trench Length shall be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, Engineer may require special construction procedures such as limiting the length of the open trench or prohibiting stacking excavated material in the street. Take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public, shall be well lighted.

3.06 TRENCH BACKFILLING - OPEN TERRAIN

All trench backfilling shall be compacted so that no settlement occurs and is stable with surrounding soil that also shall not have settled.

A. Bedding

1. Ductile Iron Pipe

i. Undisturbed Earth

ii. In Rock or Unsuitable Soil - When encountering rock or unsuitable material, prepare pipe bedding immediately before pipe is laid. Provide compact Coarse Aggregate as described in Specification Section 02210-2.01 from 6 inches below the pipe to the bottom of the pipe.

2. PVC or HDPE

i. Prepare pipe bedding immediately before pipe is laid. Use compacted Coarse Aggregate as described in Specification Section 02210-2.01 from 6 inches below the pipe to the bottom of the pipe.

B. Haunching shall be placed from the bottom of the pipe barrel to the centerline (springline) of the pipe barrel with Coarse Aggregate as described in Specification Section 02210-2.01. Take care to avoid injuring or moving the pipe. Place the material in uniform 6 to 12-inch loose layers and compact each layer to eliminate the possibility of settlement, pipe misalignment, or damage of joints.

1. Ductile Iron Pipe – Haunching fill material for Ductile Iron Pipe may also include the following:

i. Coarse to fine, sandy natural soil material with maximum stone size of 1-inch or local approved selected backfill materials as noted on Standard Details and defined below in Specification Section 02210.2.03. The material shall conform to ASTM D 2487 “Standard Method for Classification of Soils for Engineering Purposes” using the “Unified Soil Classification System”, except where a higher standard is required elsewhere in the Contract Documents or by rules or regulations of Federal, State or Local governmental bodies having jurisdiction over the site of the Work.

ii. Materials shall meet the Class II soil type designation. Class II soil types include GW, GP, SW and SP that are described as non-cohesive, well graded and containing some fines. Voids, finer grained soils or movement can allow

undesirable migration of haunching material or migration of the trench sidewall material into the haunching material. In such instances place filter fabric, as directed by the Engineer, in the trench bottom and sides before placing the haunching material.

iii. Haunching material may be obtained from the trench excavation provided it has been approved by the Engineer who may, at their discretion, require testing in accordance with the requirements of Specification Section 02210-1.04 above. Furnish the necessary approved haunching materials from an off-site source whenever approved material obtained from the trench excavation is insufficient to complete the haunching.

Initial Backfill - Backfill from the centerline (springline) of the pipe barrel to 12 inches above the pipe with Common Fill-Type A as described in Specification Section 02210-2.03 or Coarse Aggregate as described in Specification Sections 02210-2.01. See Standard Details for required initial trench backfill material. Mechanical equipment may be used to place the backfill. Place the material in such a manner that the material does not free fall, but rather flows onto the previously placed material. Consolidate the backfill in such a manner as will ensure the minimum possible settlement and the least interference with traffic. Do not compact the backfill with mechanical equipment, such as wheeled vehicles, unless sufficient cover is provided over the pipe to prevent damage to the pipe.

The use of common fill is permitted in some circumstances, with approval of the Engineer, as initial backfill for HDPE pipe; however, the size of stone and rock for backfill is limited in accordance with the pipe diameter. The maximum stone or rock size is limited to 1/2-inch for pipes up to 4-inch diameter, 3/4-inch for pipes 6-inch to 8-inch diameter, 1-inch for pipes 10-inch to 16-inch diameter and 1-1/2-inch for larger pipes.

Final Trench Backfill - Backfill trench from 12 inches above the pipe to final grade with Common Fill-Type B as described in Specification Section 02210-2.03. Mechanical equipment may be used to place the backfill. Place the material in such a manner that the material does not free fall, but rather flows onto the previously placed material. Consolidate the backfill in such a manner as will ensure the minimum possible settlement and the least interference with traffic. Do not compact the backfill with mechanical equipment, such as wheeled vehicles, unless sufficient cover is provided over the pipe to prevent damage to the pipe.

Surface Conditions - Attend to the trench surface regularly during the course of the Contract. Take prompt corrective measures to correct any settlement or washout. Maintain the trench surface in a safe condition that does not interfere with natural drainage.

Deficiency of Backfill - Any material required for backfilling the trenches or for filling depressions caused by settlement or washout shall be supplied and placed by the Contractor at no additional cost to the Owner.

3.07 TRENCH BACKFILLING – Under or within 24 inches of driveways, sidewalks and roads

A. Bedding

1. Ductile Iron Pipe
   i. Undisturbed Earth
   ii. In Rock or Unsuitable Soil - When encountering rock or unsuitable material, prepare pipe bedding immediately before pipe is laid. Provide compact Coarse Aggregate as described in Specification Section 02210-2.01 from 6 inches below the pipe to the bottom of the pipe.

2. PVC or HDPE
   i. Prepare pipe bedding immediately before pipe is laid. Use compacted Coarse Aggregate as described in Specification Section 02210-2.01 from 6 inches below the pipe to the bottom of the pipe.

B. Haunching shall be placed from the bottom of the pipe barrel to the centerline (springline) of the pipe barrel with Coarse Aggregate as described in Specification Section 02210-2.01. Take care to avoid injuring or moving the pipe. Place the material in uniform 6 to 12-inch loose layers and compact each layer to eliminate the possibility of settlement, pipe misalignment, or damage of joints.

C. Initial Backfill - Backfill from the centerline (springline) of the pipe barrel to 12 inches above the pipe with Coarse Aggregate as described in Specification Sections 02210-2.01. Mechanical equipment may be used to place the backfill. Place the material in such a manner that the material does not free fall, but rather flows onto the previously placed material. Consolidate the backfill in such a manner as will ensure the minimum possible settlement and the least interference with traffic. Do not compact the backfill with mechanical equipment, such as wheeled vehicles, unless sufficient cover is provided over the pipe to prevent damage to the pipe.

A. Final Trench Backfill - Backfill trench from 12 inches above the pipe to final grade with Coarse Aggregate as described in Specification Section 02210-2.01. Mechanical equipment may be used to place the backfill. Place the material in uniform 6 to 12-inch loose layers and compact each layer to eliminate the possibility of settlement, pipe misalignment, or damage of joints. Consolidate the backfill in such a manner as will ensure the minimum possible settlement and the least interference with traffic. Do not compact the backfill with mechanical equipment, such as wheeled vehicles, unless sufficient cover is provided over the pipe to prevent damage to the pipe.

B. Surface Conditions - Attend to the trench surface regularly during the course of the Contract. Take prompt corrective measures to correct any settlement or washout. Maintain the trench surface in a safe condition that does not interfere with natural drainage.

C. Deficiency of Backfill - Any material required for backfilling the trenches or for filling depressions caused by settlement or washout shall be supplied and placed by the Contractor at no additional cost to the Owner.

3.08 SPECIAL BACKFILLING – Under roads – option to the Contractor

A. Bedding – See Section 3.07

B. Haunching and Initial Backfill – See Section 3.07

C. Remaining Trench Backfill - Backfill from 12 inches above the pipe to subgrade, all cuts, excavations, or other damage done to the public right-of-way with flowable fill as described in Specification Section 02210-2.05. Use flowable fill when required as a condition of the right-of-way excavation permit.
   1. Placement of flowable fill - Discharge the mixture from the mixing equipment into the space to be filled by a reasonable means. The flowable fill shall be brought up uniformly to the fill line. Each filling stage shall be as continuous as practicable. Do not place concrete on the flowable fill until all bleeding water has disappeared and the resistance, as measured by ASTM C403, is at least 60 psi, or as directed by Engineer. Do not place pavement until at least 24 hours after the fill is completely in place.

   2. Limitations of flowable fill - Do not place flowable fill on frozen ground. Protect flowable fill from freezing until the material has stiffened and bleeding water has disappeared. As the temperature nears freezing, additional curing time may be needed.

D. Surface Conditions - Attend to the trench surface regularly during the course of the Contract. Take prompt corrective measures to correct any settlement or washout. Maintain the trench surface in a safe condition that does not interfere with natural drainage.

E. Deficiency of Backfill - Any material required for backfilling the trenches or for filling depressions caused by settlement or washout shall be supplied and placed by the Contractor at no additional cost to the Owner.

3.09 QUALITY ASSURANCE TESTING

The Owner reserves the right to have the Contractor provide independent quality assurance testing for the backfill material, at the Contractor's expense.

3.010 TRENCH MAINTENANCE

Contractor shall assume full responsibility for the condition of the trenches for a period of one (1) year from the date of the final acceptance of the Contractor's Work, or as required by State, County or Local authorities. Any materials required for filling depressions caused by settlement or washout shall be supplied and placed by the Contractor at no additional cost to the Owner.

3.011 BASIS OF PAYMENT

The Work included in this Section and shown on the Drawings is considered incidental to the water main installation except when special backfill materials are needed. When excavated material is not suitable for backfill, special backfill material will be measured based on the maximum trench width and depth of the water main. Payment will be made at the Contract Unit

Price per ton for granular backfill. Payment will be made at the Contract Unit Price per cubic yard for flowable fill.

END OF SECTION 02210

SECTION 02225

CASING INSTALLATION (PVC)

PART 1 – GENERAL

1.01 SUMMARY

This section includes furnishing and installing PVC casing pipe at locations shown on the Drawings in accordance with any Federal, State, or Local, whichever may be more restrictive.

1.02 RELATED WORK

A. Specification Section 02210 – Trenching, Backfilling, and Compacting

1.03 REFERENCES

Refer to current standards:

A. Illinois Administrative Code, Title 35, Subtitle F, Chapter II, Parts 651-654

B. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Distribution

C. AWWA C905 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm), for Water Transmission and Distribution

1.04 SUBMITTALS

A. Submit manufacturer's literature for spacers, end seals, and casing vents.

B. Submit in accordance with Section 01300.

PART 2 – PRODUCTS

2.01 PVC CASING PIPE

PVC casing pipe shall conform to the latest edition of American Water Works Association (AWWA) Standards C900/C905. PVC casing pipe shall have a Dimension Ratio of 25 and shall be certified suitable for potable water products by the National Sanitation Foundation (NSF) Testing Laboratory (NSF Standard No. 61). The size of the pipe casing shall be shown on the Drawings. Bored casings shall be restrained joint PVC.

2.02 CASING END SEAL

A. Casing end seals shall be a pull-over type construction and made from minimum 1/8-inch Neoprene with ½-inch wide T-304 stainless steel bands for securing the ends of the end seal to the casing pipe and carrier pipe.

B. Acceptable manufacturers are listed in the most current version of the Supplemental Technical Specifications.

2.03 CASING INSULATORS

The use of casing spacers are not required in encasements of less than 30 feet. Encasements greater than 30 feet shall include casing spacers in accordance with Specification Section 02220 – Casing Installation (Steel).

PART 3 – EXECUTION

3.01 ALIGNMENT AND GRADE

Locate pipelines to cross sewers, roadways, or tracks as shown on the Drawings. Install the casing pipe on an even grade for its entire length and sloped to one end or as noted in a profile plan if provided. Satisfy a maximum tolerance of 1.5% (18 inches in one hundred feet) with the desired location of the casing or as otherwise required by regulation or specified on the Drawings, whichever is more restrictive.

3.02 PROTECTION AT ENDS OF CASING

Block up both ends of casings in such a way as to prevent the entrance of foreign material, but to allow leakage to pass in the event of a carrier break.

3.03 DEPTH OF INSTALLATION

Unless the depth of casing pipe is specifically specified on the Drawings, the casing pipe depth shall be in accordance with local requirements.

3.04 BORING INSTALLATION

A. Installation methods of casing pipes must be approved by the Engineer and governing transportation agency and or regulating authority. Prepare boring pits and receiving pits in accordance with limitations shown on the Drawings or contained in permits obtained for the Work.

B. Provide adequate supplies to allow continuous operations to be maintained once operations begin. Additional compensation will not be allowed for problems resulting from failure of Contractor to maintain continuous operations.

C. Provide Engineering and Owner a minimum 48-hour notice prior to starting the installation.

D. Excavate boring pits and receiving pits to field verify existing piping locations and depths. If rock is encountered during pit excavation, follow procedures described in Specification Section 02210.

E. Take measures required to protect roadways, railroad tracks, embankments, and other surfaces above installation from settlement or damage of any type.

F. If an obstruction is encountered during installation that stops the forward action of the pipe, and if it becomes evident that it is impossible to advance the pipe, operations will cease and the pipe shall be abandoned in place and filled completely with grout.

G. Bored installations shall have a bore hole essentially the same as the outside diameter of the pipe. Grout any voids that develop. Also grout around the casing pipe when the bore hole diameter is greater than the outside diameter of the pipe by more than 1 inch.

3.05 BORING INSTALLATION

Payment will be made at the Contract Unit Price per linear foot of casing installed. The Contract Unit Price shall specify and differentiate PVC Casing for separation and PVC Casing for bores. The Contract Unit Price shall include all casing pipe, casing end seals, casing insulators, strapping, skids, anchors, harnesses, etc. as required or as necessary for a complete and satisfactory installation. The Contract Unit Price shall include all excavation (soil) de-watering, drilling or boring (rock or soil), backfilling, sheeting, bracing, shoring, temporary construction, and all safety measures as necessary for a complete and satisfactory installation. Payment for rock excavation as describing in Specification Section 02210. **DOES NOT INCLUDE THE WATER MAIN**.

END OF SECTION 02225

SECTION 15000
PIPING – GENERAL PROVISIONS

PART 1 – GENERAL

1.010 SUMMARY
This section includes general provisions for handling material, general installation requirements, and installation methods to avoid contamination.

1.011 RELATED WORK

A. Specification Section 01600 – Products

B. Specification Section 02000 – Site Preparation

C. Specification Section 15025 – Cleaning Pipelines

1.012 REFERENCES

Refer to current standards:

A. AWWA C600, C605, C906, C105

B. AWWA C217 – Petrolatum and Petroleum Wax Tape Coatings

PART 2 – PRODUCTS

2.09 CONTRACTOR'S RESPONSIBILITY FOR MATERIAL

A. Examine all material carefully for defects. Do not install material which is known or thought to be defective.

B. The Engineer reserves the right to inspect all material and to reject all defective material shipped to the job site or stored on the site. Failure of the Engineer to detect damaged material shall not relieve the Contractor from the total responsibility for the completed Work if it leaks or breaks after installation.

C. Lay all defective material aside for final inspection by the Engineer. The Engineer will determine if corrective repairs may be made, or if the material is rejected. The Engineer shall determine the extent of the repairs.

D. Classify defective pipe prior to Engineer's inspection as follows:
1. Damage to interior and/or exterior paint seal coatings.
2. Damage to interior cement-mortar or epoxy lining.
3. Insufficient interior cement-mortar lining or epoxy thickness.
4. Excessive pitting of pipe.
5. Poor quality exterior paint seal coat.
6. Pipe out of round.

7. Pipe barrel area damaged to a point where pipe class thickness is reduced (all pipe).
8. Denting or gouges in plain end of pipe (all pipe).
9. Excessive slag on pipe affecting gasket seal (DI).
10. Any visible cracks, holes.
11. Embedded foreign materials.
12. Non-uniform color, density and other physical properties along the length of the pipe.

E. The Contractor shall be responsible for all material, equipment, fixtures, and devices furnished. These materials, equipment, fixtures and devices shall comply with the requirements and standards of all Federal, State, and Local laws, ordinances, codes, rules, and regulations governing safety and health.

F. The Contractor shall take full responsibility for the storage and handling of all material furnished until the material is incorporated in the completed project and accepted by the Engineer. Contractor shall be solely responsible for the safe storage of all material furnished to or by the Contractor until incorporated in the completed project and accepted by the Engineer.

G. Load and unload pipe, fittings, valves, hydrants and accessories by lifting with hoists or skidding to avoid shock or damage. Do not drop these materials. Pipe handled on skidways shall not be skidded or rolled against other pipe. Handle this material in accordance with AWWA C600, C605 or C906 whichever is applicable.

H. Drain and store fittings and valves prior to installation in such a manner as to protect them from damage due to freezing of trapped water. Drain, store, and protect fittings and valves in accordance with Specification Section 01600.

2.010 PETROLATUM TAPE COATING

A. The tape coating shall be in accordance with AWWA Standard C217. The tape coating shall be a cold applied, saturant tape made from either petrolatum or petroleum wax with a noncellulosic synthetic fiber fabric. The fabric shall be encapsulated and coated on both sides with the petrolatum or petroleum wax. The thickness of the tape shall be no less than 40 mil. The petrolatum or petroleum wax shall be at least 50% of the product by weight. Follow manufacturer's recommendations for storage and application.

B. The tape coating shall be supplied in sheets, pads or rolls. Pads and sheets shall be sized to fit the area that is to be covered, allowing for an overlap per AWWA Standard C217.

C. Acceptable manufacturers are listed in the most current version of the Supplementary Technical Specifications.

2.011 RUBBERIZED-BITUMEN BASED SPRAY-ON UNDERCOATING

Subject to approval by the Engineer, an alternative corrosion protection for exposed buried metal is an aerosol applied rubberized coating. The material shall be rapid dry and specifically designed for corrosion protection. Follow manufacturer's recommendations for storage and application.

Acceptable manufacturers are listed in the most current version of the Supplementary Technical Specifications.

PART 3 – EXECUTION

3.017 INSTALLATION – GENERAL REQUIREMENTS

A. Lay and maintain all pipe to the required lines and depths. Install fittings, valves and hydrants in strict accordance with the Specifications at the required locations with joints centered, spigots home, and all valve and hydrant stems plumb. Do not deviate from the required alignment, depth or grade without the written consent of the Engineer.

B. Buried steel lugs, rods, brackets, and flanged joint nuts and bolts are not permitted unless specifically shown on the Drawings or approved in writing by the Engineer. Cover any and all buried steel lugs, rods, brackets, and flanged joint nuts and bolts with approved coating in accordance with AWWA Standard C217 prior to backfilling. Encase the same in polyethylene encasement if the specifications require polyethylene encasement of the pipe.

C. Do not lay pipe in a wet trench, on subgrade containing frost, or when trench conditions are unsuitable for such work. If all efforts fail to obtain a stable dry trench bottom and the Engineer determines that the trench bottom is unsuitable for such work, the Engineer will order the kind of stabilization to be constructed, in writing. In all cases, water levels must be at least 6 inches below the bottom of the pipe. See Specification Section 02000, Site Preparation.

D. Thoroughly clean the pipes and fittings before they are installed. Keep these materials clean until the acceptance of the completed Work. Lay pipe with the bell ends facing in the direction of laying, unless otherwise shown on the Drawings, or directed by the Engineer. Exercise care to ensure that each length abuts the next in such a manner that no shoulder or unevenness of any kind occurs in the pipeline.

E. Do not wedge or block the pipe during laying unless by written order of the Engineer.

F. Before joints are made, bed each section of pipe the full length of the barrel, at the required grade, and at the invert matching the previously laid pipe. Dig bell holes sufficiently large to permit proper joint making. Do not bring succeeding pipe into position until the preceding length is embedded and secure in place.

G. Take up and relay pipe that is out of alignment or grade, or pipe having disturbed joints after laying. Take up, such in-place pipe sections found to be defective and replace

them with new pipe. Take up, relaying, and replacement will be at the Contractor's expense.

H. Place enough backfill over the center sections of the pipe to prevent floating. Take all other necessary precautions to prevent the floating of the pipeline by the accumulation of water in the trench, or the collapse of the pipeline from any cause. Place enough backfill over the center sections of the pipe to prevent floating. Should floating or collapse occur, restoration will be at the Contractor's expense.

I. Bedding materials and concrete work for the pipe bedding and thrust restraint shall be as specified in Divisions 2, 3, and 15 as well as Standard Details.

J. Prevent foreign material from entering the pipe while it is being placed. Do not place debris, tools, clothing, or other materials in the pipe during laying operations. Close all openings in the pipeline with watertight plugs when pipe laying is stopped at the close of the day's work, or for other reasons such as rest breaks or meal periods.

K. Cut pipe in accordance with the latest edition of the American Water “Cut-off and Ring Saw Safety Operations Practice.” Grind cut ends and rough edges smooth. Bevel the cut end slightly for push-on connections in accordance with manufacturer’s recommendations.

L. In distributing material at the site of the Work, unload each piece opposite or near the place where it is to be laid in the trench. If the pipe is to be strung out, do so in a straight line or in a line conforming to the curvature of the street. Block each length of pipe adequately to prevent movement. Block stockpiled pipe adequately to prevent movement. Do not place pipe, material, or any other object on private property, obstructing walkways or driveways, or in any manner that interferes with the normal flow of traffic.

M. Exercise special care to avoid damage to the bells, spigots or flanged ends of pipe during handling, temporary storage, and construction. Replace damaged pipe that cannot be repaired to the Engineer's satisfaction, at the Contractor's expense.

N. Remove all existing pipe, fittings, valves, pipe supports, blocking, and all other items necessary to provide space for making connections to existing pipe and installing all piping required under this Contract.

O. Maintain the minimum required distance between the water line and other utility lines in strict accordance with all Federal, State, and Local requirements and all right-of-way limitations.

P. Provide and install polyethylene encasement for ductile iron pipe in accordance with Specification Section 15130 and Standard Details.

Q. Joint deflection is only allowed on ductile iron pipe. The maximum allowable deflection at the joints for push-on joint pipe shall be the lesser of manufacturer’s

recommendations or as described in the DIPRA Guideline, Ductile Iron Pipe Joints and Their Uses, as follows:

Size of Pipe (inches)	Deflection Angle	Maximum Deflection (inches)	
		18-ft Length of Pipe	20-ft Length of Pipe
3 – 12	5°	19	21
14 – 42	3°	11	12
48 – 64	3°	N/A	12

R. Use short lengths of pipe (minimum length 3 feet, no more than three short sections), when approved by the Engineer, to make curves that cannot be made with full length sections of pipe without exceeding the allowable deflection. Making these curves will be at no additional cost to the Owner.

S. Furnish air relief valve assemblies in accordance with Standard Details and at locations shown on the Drawings. Any deviation from the standard detail proposed by the Contractor must be approved in advance.

T. Exercise particular care so that no high points are established where air can accumulate. If the Contractor requests a change in the pipe profile solely for ease of construction, and the requested change requires the installation of an air release valve and manhole as determined by the Engineer, the cost of furnishing and installing the air release valve and manhole will be at the expense of the Contractor.

U. Connection to existing pipelines may require shutdown of Owner facilities. Closely coordinate construction work and connections with the Owner through the Engineer. The Engineer, in consultation with the Owner, may select the time for connection to existing pipelines, including Saturdays, Sundays, or holidays, which, in the opinion of the Engineer, will cause the least inconvenience to the Owner and/or its customers. Make such connections at such times as may be directed by the Owner. If not identified in the Bidding documents, this will be considered extra Work to the Contract.

3.018 CONSTRUCTION METHODS TO AVOID CONTAMINATION

A. Heavy particulates generally contain bacteria and prevent even very high chlorine concentrations from contacting and killing such organisms. It is essential that the procedures of this Specification Section be observed to assure that a water main and its appurtenances are thoroughly clean for the final disinfection by chlorination.

B. Take precautions to protect the interior of pipes, fittings, and valves against contamination. String pipe delivered for construction so as to keep foreign material out of the pipe. Close all openings in the pipeline with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Use rodent-proof plugs approved by Engineer, where it is determined that watertight plugs are not practical and where thorough cleaning will be performed.

C. Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipe laying, the lower the likelihood of

contamination. Complete the joints of all pipe in the trench before stopping work. If water accumulates in the trench, keep the plugs in place until the trench is dry.

D. Do not use contaminated material or any material capable of supporting prolific growth of microorganisms for sealing joints. Handle sealing material or gaskets in a manner that avoids contamination. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. Deliver the lubricant to the job in closed containers and keep it clean.

E. If dirt enters the pipe, and in the opinion of the Engineer the dirt will not be removed by the flushing operation, clean the interior of the pipe by mechanical means, then swab with a 1% hypochlorite disinfecting solution. Clean using a pig, swab, or "go-devil" only when the Engineer has specified such and has determined that such operation will not force mud or debris into pipe joint spaces. Clean the pipeline in accordance with Specification Section 15025.

F. If the main is flooded during construction, the flooded section must be isolated from the remainder of the installation as soon as practical. Submit a plan to the Engineer on correcting the condition and do not proceed until authorized by the Engineer. Replace or fully clean and disinfect the affected pipe at no additional cost to the Owner.

3.019 VALVE INSTALLATION

A. Prior to installation, inspect valves for direction of opening, number of turns to open, freedom of operation, tightness of pressure-containing bolting, cleanliness of valve ports, cleanliness of seating surfaces, handling damage, and cracks. Correct defective valves or hold for inspection by the Engineer.

B. Set valves and join to the pipe in the manner specified in Specification Section 3.01. Provide valves with adequate support, such as crushed stone and concrete pads, so that the pipe will not be required to support the weight of the valve. Set truly vertical. After field installation of the valve all exposed ferrous restraint materials and external bolts except the operating nut shall receive a layer of petrolatum tape coating or, where approved, rubberized-bitumen based spray-on undercoating applied before backfill. If polyethylene is applied to the pipe, the entire valve shall be encased in polyethylene encasement prior to backfill. The polyethylene encasement shall be installed up to the operating nut leaving the operating nut exposed and free to be operated.

C. Provide a valve box for each valve. Set the top of the valve box neatly to existing grade, unless directed otherwise by the Engineer. Do not install in a way that allows the transfer shock or stress to the valve. Center and plumb the box over the wrench nut of the valve. Do not use valves to bring misaligned pipe into alignment during installation. Support pipe in such manner as to prevent stress on the valve. See Standard Details for a typical valve box installation detail.

D. Provide valve marking posts, when required by the Owner, at locations designated by the Engineer.

3.020 THRUST RESTRAINT

A. Provide all plugs, caps, tees, and bends (both horizontal and vertical) with concrete thrust blocking and/or restrained joint pipe as represented on the Drawings and Standard Details.

B. Place concrete thrust blocking between undisturbed solid ground and the fitting to be anchored. Install the concrete thrust blocking in accordance with Specification Section 03300 and Standard Details. Locate the thrust blocking to contain the resultant thrust force while keeping the pipe and fitting joints accessible for repair, unless otherwise shown or directed.

C. Provide temporary thrust restraint at temporary caps and plugs. Submit details of temporary restraint to the Engineer for approval.

D. At connections with existing water mains where there is a limit on the time the water main may be removed from service, use metal harnesses of anchor clamps, tie rods and straps; mechanical joints utilizing set-screw retainer glands; or restrained push-on joints as permitted by Engineer. No restraining system can be installed without the approval of the Engineer. Submit details of the proposed installation to the Engineer for approval. For pipe up to 12 inches in size, use a minimum of two 3/4-inch tie rods. If approved for use, install retainer glands in accordance with the manufacturer's instructions. Material for metal harnessing and tie-rods shall be ASTM A36 or A307, as a minimum requirement.

E. Protection of Metal Harnessing: Protect ties rods, clamps and other metal components against corrosion by hand application of petrolatum tape and by encasement of the entire assembly with 8-mil thick (12 mil thick in corrosive soils) loose polyethylene film in accordance with AWWA C105. Apply tape on all exposed tie rods prior to installing polyethylene.

3.021 BASIS OF PAYMENT

The items described in this Specification Section are considered incidental to the installation of the water main.

END OF SECTION 15000

SECTION 15020

DISINFECTING PIPELINES

PART 1 – GENERAL

1.013 SUMMARY

This section includes furnishing necessary labor, tools, transportation, and other equipment for flushing and disinfecting all pipelines installed under this Contract. Install, and if directed remove, all chlorination taps required for disinfection. The disinfection will be performed under the supervision of Owner.

1.014 RELATED WORK

A. Specification Section 1000 – Summary of Work

B. Specification Section 15000 – Piping – General Provisions

C. Specification Section 15025 – Cleaning Pipelines

1.015 REFERENCES

Refer to current standards:

A. AWWA C651 – Disinfecting Water Mains

B. AWWA B300 and B301

C. AWWA Manual M12

D. Standard Methods for the Examination of Water and Wastewater

1.016 SUBMITTALS

A. Submit a plan of disposal of flushed water.

B. Submit in accordance with Section 01300.

1.017 PROTECTION

A. Chlorine disinfection and dechlorination shall be performed under the direct supervision of someone familiar with the physiological, chemical, and physical properties of the form of chlorine used. They shall be trained and equipped to handle any emergency that may arise. All personnel involved shall observe appropriate safety practices to protect working personnel and the public.

B. The forwards of AWWA Standards B300 and B301 contain information and additional reference material regarding the safe handling of hypochlorites and liquid chlorine.

The Contractor's supervision shall be familiar with this information prior to performing any disinfection work.

C. See Specification Section 15025-1.05 for Protection During Flushing and Cleaning.

PART 2 – PRODUCTS

3.012 MATERIALS AND EQUIPMENT

A. Furnish liquid chlorine and injection equipment and/or calcium hypochlorite (HTH) as needed to disinfect all pipelines and appurtenances.

B. Liquid chlorine contains 100% available chlorine and is packaged in steel containers, usually of 100-pound, 150 pounds, or 1-ton net chlorine weight. Liquid chlorine is to be furnished in accordance with AWWA B301.

C. Calcium hypochlorite is available in granular form or in approximately 5-g tablets and contains approximately 65% available chlorine by weight. The material should be stored in a cool, dry, and dark environment to minimize its deterioration. Do not use calcium hypochlorite intend for swimming pool disinfection, as this material (containing trichloroisocyanuric acid) has been sequestered and is extremely difficult to eliminate from the pipe after the desired contact time had been achieved.

D. Calcium hypochlorite must conform to AWWA B300.

E. Field testing for chlorine and other parameters, must be performed with equipment approved and calibrated for the range and resolution applicable. For example, pen chlorimeters typically do not accurately measure the concentration of chlorine in the high strength solution. High Strength Testing Strips are preferred. Any field-testing equipment must be approved by Owner's local Water Quality personnel.

PART 3 – EXECUTION

3.09 PREPARATION

All pipelines shall be pressure and leak tested, flushed, and cleaned of debris and dirt prior to application of the disinfectant. Flushing shall continue until the volume in the newly installed main has turned over at least one time unless the Engineer determines that conditions do not permit the required volume to be safely discharged to waste.

3.010 APPLICATION OF DISINFECTANT

Methods to be used for disinfection are those detailed in ANSI/AWWA C651 Disinfecting Water Mains.

3.011 WATER MAINS

Two (2) methods of chlorination are described below. Information in the forward of AWWA Standard C651 will be helpful in determining the best method to be used. The tablet method cited in the AWWA standard is not approved for use.

L. Continuous Feed Method

1. Set up. The continuous feed method consists of completely filling the main to remove all air pockets, flushing the completed main to remove particulates, and then refilling the main with chlorinated potable water. The potable water shall be chlorinated, so that after a 24-hour holding period in the main, there will be a free chlorine residual of not less than 10 mg/L in collected samples.

   Chlorine can be applied in advance of preliminary flushing by swabbing joints with bleach or placing hypochlorite granules in the pipe in areas where contamination is suspected. In any such case, the Contractor shall make sure and take appropriate action to make sure that the flushed water is dechlorinated.

2. Preliminary flushing. Prior to being chlorinated, fill the main to eliminate air pockets and flush to remove particulates. The flushing velocity in the main shall be not less than 3 fps unless the Engineer determines that conditions do not permit the required flow to be discharged to waste. **Table 1** shows the rates of flow required to produce a velocity of 3 fps in pipes of various sizes. In mains of 24-inches or larger diameter, an acceptable alternative to flushing is to broom-sweep the main, carefully removing all sweepings prior to chlorinating the main. WARNING: OSHA requirements for confined space need to be addressed before entering a pipeline.

   NOTE: Flushing is no substitute for preventive measures during construction. Certain contaminants such as caked deposits resist flushing at any feasible velocity.

Table 1
Required Flow and Openings to Flush Pipelines at 3 fps
(40 psi Residual Pressure in Water Main) *

Pipe Diameter (in.)	Flow Required to Produce 3 fps Velocity in Main (gpm)	Size of Tap Used (in.) 1	1-1/2	2	Number of 2-1/2 in. Hydrant Outlets to Use
		Number of Taps Required on Pipe**			
4	120	1			1
6	260		1		1
8	470		2		1
10	730		3	2	1
12	1060			3	2
16	1880			5	2

*With a 40-psi pressure in the main with the hydrant flowing to atmosphere, a 2½-inch hydrant outlet will discharge approximately 1,000 gpm and a 4½-inch hydrant outlet will discharge approximately 2,500 gpm.

**Number of taps on pipe based on discharging through 5 feet of galvanized iron pipe with one 90-degree elbow.

3. Chlorinating the Main.

   a. Potable water may be supplied from a temporary backflow-protected connection to the existing distribution system or other approved source. The flow shall be at a constant, measured rate into the newly installed water main. In the absence of a meter, approximate the rate by placing a pitot gauge in the discharge or measuring the time to fill a container of known volume.
   b. At a point not more than 10 feet downstream from the beginning of the new main, dose the water entering the new main with chlorine fed at a constant rate such that the water will have not less than 25 mg/L free chlorine. Measure the chlorine concentration at regular intervals to ensure that this concentration is provided. Measure chlorine in accordance with the procedures described in the current edition of the AWWA Manual M12 or of Standard Methods for the Examination of Water and Wastewater.

   c. Table 2 gives the amount of chlorine required for each 100 feet of pipe of various diameters. Solutions of 1 percent chlorine may be prepared with calcium hypochlorite. The solution requires 1 pound of calcium hypochlorite in 8 gallons of water.

Table 2
Chlorine Required to Produce 25 mg/L
Concentration in 100 feet of Pipe by Diameter

Pipe Diameter (in.)	100% Chlorine (lb.)	1% Chlorine (gal.)
4	0.013	0.16
6	0.030	0.36
8	0.054	0.65
10	0.085	1.02
12	0.120	1.44
16	0.217	2.6

   d. During the application of chlorine, position valves so that the strong chlorine solution in the main being treated will not flow into water mains in active service. Do not stop the chlorine application until the entire main is filled with heavily chlorinated water. Keep the chlorinated water in the main for at least 24 hours. During this time, operate all valves and hydrants in the section treated in order to disinfect the appurtenances. At the end of this 24-hour period, the treated water in all portions of the main shall have a residual of not less than 10 mg/L free chlorine.

   e. Hypochlorite solution may be applied to the water main with a gasoline or electrically powered chemical feed pump designed for feeding chlorine solutions. Feed lines shall be of such material and strength as to safely withstand the corrosion caused by the concentrated chlorine solutions and the maximum pressures that may be created by the pumps. Check all connections

for tightness before the solution is applied to the main. The main should undergo hydrostatic testing prior to disinfection.

f. If gaseous chlorine in solution is permitted by the Engineer and proposed by the Contractor, the preferred equipment for the gas application employs a feed vacuum-operated chlorinator to mix the chlorine gas, in combination with a booster pump for injecting the chlorine gas solution water into the main to be disinfected. Direct feed chlorinators cannot be used. (A direct feed chlorinator is one which operates solely from the pressure in the chlorine cylinder.)

M. Slug Method

1. Set up. The slug method consists of placing calcium hypochlorite granules in the main during construction; completely filling the main to eliminate all air pockets, flushing the main to remove particulates, and slowly flowing a slug of water containing 100 mg/L of free chlorine through the main so that all parts of the main and its appurtenances will be exposed to the highly chlorinated water for a period of not less than 3 hours.

2. Preliminary flushing. Same as 3.03.A.2 in this Specification Section

1. Chlorinating the Main.

a. Potable water may be supplied from a temporary backflow-protected connection to the existing distribution system or other approved source. The flow shall be at a constant, measured rate into the newly installed water main. In the absence of a meter, approximate the rate by placing a pitot gauge in the discharge or measuring the time to fill a container of known volume. The main should undergo hydrostatic testing prior to disinfection.

b. At a point not more than 10 feet downstream from the beginning of the new main, dose the water entering the new main with chlorine fed at a constant rate such that the water will have not less than 100 mg/L free chlorine. Measure the chlorine concentration at regular intervals to ensure that this concentration is provided. Measure chlorine in accordance with the procedures described in the current edition of the AWWA Manual M12 or of Standard Methods for the Examination of Water and Wastewater. The chlorine shall be applied continuously and for a sufficient period to develop a solid column or "slug" of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of approximately 100 mg/L for at least 3 hours.

c. The free chlorine residual shall be measured in the slug as it moves through the main. If at any time it drops below 50 mg/L, stop the flow, relocate the chlorination equipment to the head of the slug, and as flow is resumed, apply chlorine to restore the free chlorine in the slug to not less than 100 mg/L.

d. As the chlorinated water flows past fittings and valves, operate related valves and hydrants so as to disinfect appurtenances and pipe branches.

N. Alternative Methods
   1. Alternative methods for disinfection may be considered with the approval of the Engineer and Owner's Water Quality personnel.

3.025 FINAL FLUSHING AND DISPOSAL OF HEAVILY CHLORINATED WATER

L. Do not keep heavily chlorinated water in contact with pipe for more than 48 hours after the applicable retention period. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, flush the heavily chlorinated water from the main fittings, valves, and branches until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use. Take all steps necessary to dechlorinate water where required per section 3.04B and 3.04C below. Contact the local sewer department to arrange for disposal of the heavily chlorinated water to the sanitary sewer if applicable.

M. Neutralize the chlorine residual of the water being disposed of by treating with one of the chemicals listed in Table 3. Select an alternative disposal site if a sanitary sewer system is unavailable for disposal of the chlorinated water.

N. The proposed alternative disposal site shall be inspected and approved of by the Engineer. Apply a reducing agent to the chlorinated water to be wasted to completely neutralize the chlorine residual remaining in the water. (See Table 3 for neutralizing chemicals. Do not overdose neutralizing chemicals as this may result in adverse environmental impacts. Only dose the amount required to neutralize the amount of chlorine present). Contact Federal, State and Local regulatory agencies, where necessary, to determine special provisions for the disposal of heavily chlorinated water.

Table 3
Pounds of chemicals required to neutralize various residual chlorine concentrations in 100,000 gallons of water.

Residual Chlorine Concentration (mg/L)	Sulfur Dioxide (SO_2)	Sodium Bisulfite ($NaHSO_3$)	Sodium Sulfite (Na_2SO_3)	Sodium Thiosulfate ($Na_2S_2O_3 \cdot 5H_2O$)	Ascorbic Acid ($C_6O_8H_6$)
1	0.8	1.2	1.4	1.2	2.1
2	1.7	2.5	2.9	2.4	4.2
10	8.3	12.5	14.6	12.0	20.9
50	41.7	62.6	73.0	60.0	104.0

O. Test for chlorine residual throughout the disposal process to be sure that the chlorine is neutralized.

P. Submit a plan of disposal of flushed water to the Engineer for approval.

3.026 BACTERIOLOGICAL TESTING

A. After final flushing and before the water main is placed in service, samples must be collected and tested.

B. At least one set of samples shall be collected from every 1,200 feet of the new water main, plus one set from the end of the line and at least one set from each branch greater than one pipe length.

C. Samples shall be collected by the Owner, or other qualified person approved by the Engineer. Coordinate with Owner and submit samples to the Owner for testing of bacteriological (chemical and physical) quality. Testing will be in accordance with Standard Methods of the Examination of Water and Wastewater. Samples shall show the absence of coliform organisms; and the presence of a chlorine residual. Samples shall also be tested for turbidity, pH, and standard heterotrophic plate count (HPC). HPC levels must be consistent with levels normally found in the distribution system to which the new main is connected.

D. Bacteriological tests must show complete absence of coliforms and acceptable HPCs. If tests show the presence of coliform or unacceptable HPCs, perform additional flushing and disinfection of the pipeline until acceptable tests are obtained, all at no cost to the Owner. The Contractor will not be charged for the additional testing performed by the Owner.

3.027 RETESTING AND TESTING SOURCE WATER

A. At the time of initial flushing the main to remove material and test for air pockets, Contractor may request the Owner to continue flushing until the desired chlorine residual is met at the discharge point. Notification must be provided in advance and the Contractor shall be prepared to test for chlorine at intervals of no more than five minutes as the water clears. This will provide the Contractor with some assurance that the source water is chlorinated.

A. If the subsequent tests for bacteriological contamination conducted by the Contractor fail, the Contractor may request the Owner to continue flush from the source water into the new pipe system until a chlorine residual is found at the discharge point. Notification must be provided in advance and the Contractor shall be prepared to test for chlorine at intervals of no more than five minutes as the water clears. The operation of all existing system valves shall be by the Owner at the Contractor expense and the discharge point must be opened prior to opening existing valves to avoid contamination. This will provide the Contractor with some assurance that the source water is chlorinated for subsequent tests.

3.028 BASIS OF PAYMENT

The items described in this Specification Section are considered incidental to the installation of the water main.

END OF SECTION 15020

SECTION 15025

CLEANING PIPELINES

PART 1 – GENERAL

2.01 SUMMARY

This section includes furnishing necessary labor, material, tools, transportation, and other equipment for cleaning the required pipeline when it is determined that normal flushing will not sufficiently remove dirt and debris introduced during construction. The cleaning shall use foam pigs, swabs or "go-devils" as described herein.

2.02 GENERAL

After the installation of water mains normal flushing often proves inadequate to remove all the entrapped air, loose debris and other objects that may have been left in the main during installation. Therefore, after the installation of water mains it may be necessary to use polyurethane foam pigs and/or polyurethane hard foam swabs to remove all foreign matter from the pipeline (i.e. "pig" the pipeline).

Cleaning per the requirements of this section shall be performed prior to testing and disinfection of the main.

2.03 RELATED WORK

A. Specification Section 15000-3.02-Construction Methods to Avoid Contamination.

B. Specification Section 15020-3.01-Preparation (prior to disinfecting pipelines).

2.04 SUBMITTALS

A. Submit a cleaning plan.

B. Submit in accordance with Section 01300.

2.05 PROTECTION DURING FLUSHING AND CLEANING

A. Coordinate with Engineer and Owner before flushing to ensure that an adequate amount of flushing water is available, at sufficiently high pressure. Determine if the water can be disposed of safely. Notify the Owner, Engineer, and the following prior to flushing or cleaning:

1. Fire Department
2. Other utilities, such as gas, electric and telephone companies, who may have underground facilities in the area.
3. Customers who may be inconvenienced by reduced pressure or dirty water.

B. Operation of Water System – The operation of main valves and fire hydrants on the water system in service often results in disturbance of the natural sediments and mineral deposits in mains, causing problems for Illinois-American's customers. Illinois-American has a responsibility to provide its customers the highest level of service possible. Therefore Illinois-American has adopted a strict policy that no one, other than an employee of Illinois-American, unless expressly authorized, is to operate any valve, fire hydrant, or other appurtenance of water system that is in service or which will affect the system that is in service. This operation is to be performed by an employee of Illinois-American or under Illinois-American direct supervision.

C. Coordinate with the Owner to isolate the section to be flushed from the operating distribution system. Provide a minimum notice of two (2) working days to schedule Illinois American staff to report to site.

D. Protect the work staff and the public during flushing and cleaning operation. Keep children away from the flow of flushing water. Where practical employ energy dissipators to help avoid damage to property and the flooding of streets. See General Conditions Article 6.

PART 2 – PRODUCTS

2.013 MATERIALS AND EQUIPMENT

As the cleaning described in this section pertains to new water mains, the use of pipe cleaning plugs which utilize bristles, wire brushes, carbide abrasives, steel studs or any other type of abrasive is not permitted unless specifically approved by the Engineer. Consult a manufacturer of pipe cleaning plugs, such as Knapp Polly Pig (Houston, Texas), to determine the type and size of cleaning plug best suited for the application. Two types of plugs shall be considered and are described as follows:

A. Swabs used for cleaning mains shall be made of polyurethane foam. This foam has a density of 1 to 2 pounds per cubic foot. Swabs shall be purchased from commercial manufacturers of swabs for pipes. Both soft and hard grade foam swabs are available. New mains are typically cleaned with hard foam swabs.

   Use swabs cut into cubes and cylinders slightly larger than the size of the pipe to be cleaned. Cubes one inch larger in dimension than the nominal diameter of the pipe being cleaned have worked well for cleaning pipes up to 12-inches in diameter.

   For mains greater than 12-inches in diameter, the swab diameter must be considered individually for each operation. For new mains, swabs three inches larger than the pipe diameter have worked well. Swabs for the larger mains are usually 1-1/2 times the diameter in length.

B. Pigs, if used, shall be commercially manufactured for the specific purpose of cleaning pipes. They shall be made of polyurethane foam weighing 2 to 15 pounds per cubic foot. Pigs are bullet shaped and come in various grades of flexibility and roughness. Pigs are typically 1/4 -inch to 1/2-inch larger in diameter than the pipe to be cleaned.

PART 3 – EXECUTION

3.029 PLUG INSTALLATION AND REMOVAL

A. Satisfactorily expose cleaning wyes, or other entry or exit points. Remove cleaning wye covers, etc., as required by the Engineer to insert the plugs into the mains.

B.

C. If approved by the Engineer, stripped fire hydrants, air valves and blow-offs may serve as entry and exit points for smaller sized mains. The Engineer will examine these appurtenances and the connecting laterals to ensure that adequate openings exist through which a plug may be launched. If these appurtenances are used, a special launcher to ease the insertion and launching of the plug is required. If available a pressurized water source such as a fire hydrant can be used to launch the plug. If water from the system is not available nearby, use a water truck with pump.

D.

E. If hydrants are used as entry and exit points, remove the internal mechanisms and plug the drains. Insert the plug and replace the cap with a special flange with a 2-1/2-inch fitting. Connect the 2-1/2-inch fitting with a pressure gauge and valve to a pressurized water source. After the last valve isolating the section to be cleaned is closed, open the hydrant supply valve. Propel the swab or pig into the main by opening the exit valve.

F. In mains greater than 8-inches, wyes shall be used at the entry and exit points. Fabricate the wye section one size larger than the main to ease the insertion and extraction of the plug. The use of wyes, as with the previously mentioned appurtenances, requires an outside source of pressurized water for launching. Cap the wye with a flange with a 2 to 6-inch fitting for connecting with the pressurized water source.

G. Many pigs, since they are less flexible than swabs, are harder to insert into a pipe. Other methods acceptable to insert pigs include:

1. winching with a double sling,
2. winching with a rope attached to the pig,
3. compression with a banding machine prior to insertion, and
4. the use of a specially designed tapered steel pipe which is removed after use.

H. During swab or pig installation, leave as much water as possible in the main to be cleaned. The water suspends the material being removed from the pipe and minimizes the chance of the material forming a solid plug. Water in the pipe also keeps the swab

or pig from traveling through the pipe at excessive rates. If swabs or pigs travel too fast, they will remove less material. The swab or pig will also wear more rapidly in such a case.

I. At the exit point or blow-off, install a wye long enough to house the swab or pig. Attach temporary piping to the end cap to allow the drainage of the water.

J. Take precautions to prevent backflow of purged water into the main when the cleaning plug exits through a dead end main. This can be accomplished by installing mechanical joint bends and pipe joints to provide a riser out of the trench. Additional excavation of the trench may serve the same purpose.

3.030 PRE-CLEANING PROCEDURES

A. Prepare a written cleaning plan for the Engineer's review.

B. Suggested pre-cleaning procedures include the following:

1. Identify mains to be cleaned on a map. Mark the location of the entry, water supply and exit points, any blow-offs to be used, valves to be closed, and the path of the swab or pig.

2. Under the Engineer's supervision and with Owner staff as required, inspect and operate all valves and hydrants to be used in the cleaning operation. Ensure that all operate correctly and that a tight shutdown is possible.

3. Check location and type of hydrants, launch and exit location, and blow-offs to be used. Make blow-off tap connections if necessary.

4. The Owner will notify customers served by the main to be cleaned that their water will be off for a specified period on the day of the cleaning.

5. The Owner will identify customers who may require temporary services during the main cleaning operation. The Contractor shall provide the temporary connections.

6. Determine the number and size of plugs to be used.

3.031 CLEANING PROCEDURE

Clean the pipeline using the following procedures and the Contractor’s cleaning plan, as approved by the Engineer.

A. Swab Cleaning Procedures

1. Open the water supply upstream of the swab. Throttle the flow in the main at the discharge (plug exit) point so that the swab passes through the main at a speed of 2 to 4 fps. At this velocity, swabs will effectively clean pipes for distances of up to

4000 feet before disintegrating to a size smaller than the main. Use pitot gauges at the exist hydrant or blow-off to estimate the flowrate in the main.

2. Note the time of entry of the swab into the main and estimate its time or arrival at the exit point. If the swab does not reach the exit point in the estimated time plus ten minutes, then a blockage has probably occurred. Reverse the flow in the main and note the time required for the swab to reach the original entry point. From the return travel time, approximate the location of the blockage. The Engineer may require a swab to which a transmitter has been attached to be used to accurately locate a blockage.

3. Swab repeatedly as needed. Stop swabbing when the water behind the swabs emerging at the exit clears up within one minute. Account for all swabs inserted into the main.

4. After the last swab has been recovered, flush the main to remove swab particles. This may require up to an hour or flushing.

B. Pig Cleaning Procedures

1. Remove all air valves along the line. This will provide pressure relief should the pig suddenly stop and assure that no air is trapped in the main.

2. If the pig is inserted directly into the main, set it in motion by opening the upstream gate valve and a downstream fire hydrant or blow-off valve (usually the valve on the capped end at the exit point). If the pig is launched from a wye, fire hydrant, or other appurtenance, use an external pressurized water source to inject the pig into the main as described in Section 3.01.

3. Once the pig is in motion in the main, control its speed by throttling the discharge at a downstream fire hydrant or blow-off. Operate pigs typically at 1 fps. This slow speed will help prevent pressure surges when the pig passes through undersized valves, enters smaller pipes, or turns through tees or crosses. Speeds of up to 2 fps can be used on straight runs with no restrictions or sharp turns.

4. Make sufficient passes of the pig to obtain thorough cleaning. Two pigs may be used in tandem to save time and water. Sufficient cleaning is established when the water discharging after the pig becomes clear within one minute.

3.032 POST CLEANING PROCEDURE

After successful completion of cleaning the main shall be tested, flushed and disinfected in accordance with applicable sections of these Specifications.

3.033 BASIS OF PAYMENT

The items described in this Specification Section are considered incidental to the installation of the water main.

END OF SECTION 15025

SECTION 15030

PRESSURE AND LEAKAGE TESTS

PART 1 – GENERAL

1.023 SUMMARY

This section includes furnishing necessary labor, tools, material, and equipment for testing all pipelines installed under this Contract. Testing shall be performed concurrent with installation.

1.024 RELATED WORK

F. Specification Section 15000 – Piping – General Provisions

1.025 REFERENCES

Refer to current standards:

M. AWWA C600

N. Standard Specifications for Water and Sewer Construction in Illinois

1.026 SUBMITTALS

E. Submit schedules and procedures to the Engineer for testing of all parts of the water main installed.

F. Submit the schedule at least seven days prior to any testing.

G. Submit in accordance with Section 01300.

PART 2 – PRODUCTS

2.014 EQUIPMENT

Furnish the pump, pipe connections, and all necessary apparatus for the pressure and leakage tests including gauges and metering devices. The Owner reserves the option to furnish the gauges and metering devices for the tests. Excavate, backfill, and furnish all necessary assistance for conducting the tests.

PART 3 – EXECUTION

3.034 GENERAL

A. Perform hydrostatic pressure and leak tests in accordance with AWWA C600, Section 4 - Hydrostatic Testing after the pipe or section of pipe has been laid, thrust blocking

cured (min. 5 days), and the trench is completely or partially backfilled. Where practical, testing shall be performed fully isolated from the active distribution system.

B. The Contractor may completely backfill the trench or partially backfill the trench over the center portion of each pipe section to be tested. However, the Engineer may direct the Contractor to completely backfill the trench if local traffic or safety conditions require.

C. For system operating pressures of 200 psi or less, perform the hydrostatic test at a pressure of no less than 100 psi above the normal operating pressure without exceeding the rating of the pipe and appurtenances, or a minimum of 150 psi. For system operating pressures in excess of 200 psi, perform the hydrostatic test at a pressure that is 1.5 times the normal operating pressure, but no more than the design rating of the pipe and appurtenances.

D. Valves shall not be operated in either direction at a differential pressure exceeding the rated valve working pressure. A test pressure greater than the rated valve working pressure can result in trapped test pressure between the gates of a double-disc gate valve. For tests exceeding the rated valve working pressure, the test setup should include a provision, independent of the valve, to reduce the line pressure to the rated valve working pressure on completion of the test. The valve can then be opened enough to equalize the trapped pressure with the line pressure, or the valve can be fully opened if desired.

E. The test pressure shall not exceed the rated working pressure or differential pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

F. Attach a tapping sleeve and valve assembly to the main. Pressure test the assembly prior to making the tap. The required test pressure shall be determined in the same manner as for pipe. The test is acceptable if there is no pressure drop in 15 minutes at test pressure.

3.035 FILLING AND TESTING

A. Slowly fill each segregated section of pipeline with water ensuring that all air is expelled. Extreme care must be taken to ensure that all air is expelled during the filling of pipe. The line shall stand full of water for at least twenty-four hours prior to testing to allow all air to escape. If necessary, tap the main at points of highest elevation to expel air as the pipe is filled. Remove the corporation stops and plug the taps after successfully filling the pipeline and expelling all air as approved by the Engineer.

B. Apply the specified test pressure, measured at the point of lowest elevation, using a pump connected to the pipe in a manner satisfactory to the Engineer. If the elevation of the high point of the pipeline being tested is such that the pressure during testing will be below 85% of the required test pressure, the Engineer will require a separate test to be performed on this section of pipeline. In lieu of a separate test, the test pressure measured at the lowest elevation may be increased, within the pressure

rating of the pipeline material, such that the resulting pressure at the highest point exceeds 85% of the required test pressure. The test will be conducted for at least two hours at the required test pressure ± 5 psi.

C. Conduct a leakage test concurrently with the pressure test. Leakage is defined as the volume of the water that must be supplied into the newly laid pipeline to maintain pressure within 5 psi of the test pressure after it is filled and purged of air. Measure the volume of water using a calibrated container or meter.

D. No pipeline installation will be accepted by the Engineer if the leakage is greater than that shown in the following table:

Allowable Leakage per 1000 ft. of Pipeline*---gph

Avg. Test Pressure	Nominal Pipe Diameter—*in.*													
psi	4	6	8	10	12	14	16	18	20	24	30	36	42	48
450	0.57	0.86	1.15	1.43	1.72	2.01	2.29	2.58	2.87	3.44	4.30	5.16	6.02	6.88
400	0.54	0.81	1.08	1.35	1.62	1.89	2.16	2.43	2.70	3.24	4.05	4.86	5.68	6.49
350	0.51	0.76	1.01	1.26	1.52	1.77	2.02	2.28	2.53	3.03	3.79	4.55	5.31	6.07
300	0.47	0.70	0.94	1.17	1.40	1.64	1.87	2.11	2.34	2.81	3.51	4.21	4.92	5.62
275	0.45	0.67	0.90	1.12	1.34	1.57	1.79	2.02	2.24	2.69	3.36	4.03	4.71	5.38
250	0.43	0.64	0.85	1.07	1.28	1.50	1.71	1.92	2.14	2.56	3.21	3.85	4.49	5.13
225	0.41	0.61	0.81	1.01	1.22	1.42	1.62	1.82	2.03	2.43	3.04	3.65	4.26	4.86
200	0.38	0.57	0.76	0.96	1.15	1.34	1.53	1.72	1.91	2.29	2.87	3.44	4.01	4.59
175	0.36	0.54	0.72	0.89	1.07	1.25	1.43	1.61	1.79	2.15	2.68	3.22	3.75	4.29
150	0.33	0.50	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.99	2.48	2.98	3.48	3.97
125	0.30	0.45	0.60	0.76	0.91	1.06	1.21	1.36	1.51	1.81	2.27	2.72	3.17	3.63
100	0.27	0.41	0.54	0.68	0.81	0.95	1.08	1.22	1.35	1.62	2.03	2.43	2.84	3.24

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size. The table has been generated from the formula:

$L = S*D*P^{1/2}$ where L is the allowable leakage in gallons per hour, S is the length of

148,000

pipe in feet, D is the nominal pipe diameter in inches, and P is the test pressure in psig.

E. Should any test disclose damaged or defective materials or leakage greater than that permitted, the Contractor shall, at Contractor's expense, locate and repair and/or replace the damaged or defective materials. Materials used for repair must be approved by the Engineer and meet the Specifications. Repeat the tests until the leakage is within the permitted allowance and is satisfactory to the Engineer.

3.036 BASIS OF PAYMENT

The items described in this Specification Section are considered incidental to the installation of the water main.

END OF SECTION 15030

SECTION 15105

DUCTILE IRON PIPE AND FITTINGS

PART 1 – GENERAL

1.01 SUMMARY

This section includes furnishing and installing ductile iron pipe and fittings as shown on the Drawings and Standard Details. The Owner reserves the right to provide ductile iron pipe. A list of additional materials to be provided by the Owner, if applicable, is shown in Specification Section 01000.

1.02 RELATED WORK

A. Specification Section 01000 – Summary of Work

B. Specification Section 15000 – Piping – General Provisions

C. Specification Section 02210 – Trenching, Backfilling, and Compacting

D. Specification Section 15130 – Piping Specialties

1.03 REFERENCES

A. Refer to current Standards:

B. AWWA C104 - American National Standard for Cement-Mortar Lining for Ductile- Iron Pipe and Fittings for Water

C. AWWA C105 - American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems

D. AWWA C110 - American National Standard for Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch, for Water and Other Liquids

E. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile- Iron Pressure Pipe and Fittings

F. AWWA C115 - American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges

G. AWWA C116 - American National Standard for Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings for Water Supply Service

H. AWWA C150 - American National Standard for the Thickness Design of Ductile-Iron Pipe

I. AWWA C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water

J. AWWA C153 - American National Standard for Ductile-Iron Compact Fittings, 3-inch through 24-inch and 54-inch through 64-inch, for Water Service

K. AWWA C600 -- AWWA Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances

1.04 SUBMITTALS

A. Submit shop drawings and manufacturer's literature for all Contractor supplied materials.

B. Submit in accordance with Section 01300.

PART 2 – PRODUCTS

Research has documented that certain elastomers (such as those used in gasket material) may be subject to permeation by lower-molecular weight organic solvents or petroleum products. Products supplied under this Specification Section assume that petroleum products or organic solvents will not be encountered. If during the course of pipeline installation, the Contractor identifies, or suspects the presence of petroleum products or any unknown chemical substance, notify the Engineer immediately. Stop installing piping in the area of suspected contamination until direction is provided by the Engineer.

2.01 PIPE MATERIALS

A. General

Ductile iron pipe shall conform to the latest specifications as adopted by the American National Standards Institute, Inc., (ANSI) and the American Water Works Association (AWWA). Specifically, ductile iron pipe shall conform to AWWA Standard C151.

The pipe or fitting exterior shall be coated with a bituminous coating in accordance with AWWA Standard C151. The pipe or fitting interior shall be cement mortar lined and seal coated in compliance with the latest revision of AWWA Standard C104.

B. Quality

Pipe and fittings shall meet the minimum quality requirements by conforming to the following:

1. AWWA C105 / ANSI A21.5 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water Polyethylene Encasement for Ductile-Iron Pipe Systems

2. AWWA C110 / ANSI A21.10 Ductile Iron and Gray Iron Fittings, 3 NPS through 48 NPS for Water AWWA C111 / ANSI A21.11 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

3. AWWA C115 / ANSI A21.15 Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges

4. AWWA C116 / ANSI A21.16 Protective Fusion-Bonded Epoxy Coating for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings for Water Supply Service

5. AWWA C150 / ANSI A21.50 Thickness Design of Ductile-Iron Pipe
6. AWWA C151 / ANSI A21.51 Ductile-Iron Pipe, Centrifugally Cast, for Water

7. AWWA C153 / ANSI A21.53 Ductile-Iron Compact Fittings, 3 NPS through 24 NPS and 54 NPS through 64 NPS, for Water Service

   Ductile iron water pipe and fittings will be accepted on the basis of the Manufacturer's certification that the material conforms to this specification. The certification for iron fittings shall list a fitting description, quantity, bare fitting weight and source, (AWWA Standard C110, C153 or Manufacturer, if fitting is not listed in either standard). The certification shall accompany the material delivered to the project site. The Owner reserves the right to sample and test this material subsequent to delivery at the project site. If foreign manufactured fittings are provided, then the Contractor is obligated to notify the Engineer with a submittal and provide the necessary documentation to satisfy the Engineer and the Owner that the materials provided meet the specified AWWA standards and, among other documentation that may be required, provide certificates of compliance on the component supplied.

C. Pipe Class

The pressure class of pipe to be furnished shall be in accordance with **Table 1** and the notes listed below.

Table 1

MINIMUM Rated Working Pressure
For Ductile Iron Pipe Manufactured In Accordance With
AWWA Standard C151

Pipe Size (Inch)	Pressure Class
6	350
8	350
12	350
16	300
20	300
24	250

NOTES:

1. Larger pipe sizes up to 54-inch can be installed as pressure Class 200 with cover up to nine (9) feet and an operating pressure of 200 psi, where

approved by the Engineer. When trench depths exceed fifteen (15) feet for pipe sizes of 16-inch or larger, the Engineer shall direct the Contractor on the proper class pipe to use.

2. The noted pressure class is adequate to support 3/4 and 1-inch corporation stops. Use a full saddle for larger taps (e.g.., air relief valves or larger corporations) due to limited wall thickness.

3. There are special conditions where a larger wall thickness is required. The Engineer shall direct the Contractor on the proper pressure class pipe to use in specific instances; e.g. at treatment plant or booster station sites where frequent excavation can be anticipated in the vicinity of pipe, where the pipeline is laid on a river channel bottom to prevent external damage to the pipe and minimize the potential for costly pipe replacement, etc.

D. Testing

Perform a hydrostatic test of all pipe and appurtenances as required by AWWA Standard C151 and Specification Section 15030.

E. Joints

1. Mechanical and Push-On joints including accessories shall conform to AWWA Standard C111.

2. Flanged joints shall conform to AWWA Standard C110 or ANSI B16.1 for fittings and AWWA Standard C115 for pipe. Do not use flanged joints in underground installations except within structures.

Furnish all flanged joints with 1/8-inch thick, red rubber or styrene butadiene rubber gaskets. The bolts shall have American Standard heavy unfinished hexagonal head and nut dimensions all as specified in American Standard for Wrench Head Bolts and Nuts and Wrench Openings (ANSI B18.2). For bolts of 1-3/4-inches in diameter and larger, bolt studs with a nut on each end are recommended. The high-strength, low-alloy steel for bolts and nuts shall have the characteristics listed in Table 6 of AWWA Standard C111. Exposed bolts and nuts in aggressive soils shall be Xylan or FluoroKote #1. Allowed Manufacturer for bolts is Cor-Blue.

3. Restrained Joint for pipes shall be of the boltless push-on type which provides joint restraint independent of the joint seal. Restrained push-on joints allowed for pipe only shall have accessories conforming to AWWA Standard C111. Restrained system shall be suitable for the following minimum working pressures:

Pipe Size (Inch)	Pressure (psi)
Less than 20	350
20	300
24	250

30 - 64	200

F. Acceptable Suppliers are listed in the most current version of the Supplemental Technical Specifications.

2.02 FITTINGS

A. Ductile Iron Fittings

Standard fittings shall be ductile iron conforming to AWWA Standard C110. Compact ductile iron fittings shall meet the requirements of AWWA Standard C153.

1. Working Pressures - Fittings shall be suitable for the following working pressures unless otherwise noted in AWWA Standard C110 or C153:

Size (inch)	Compact Fittings Working Pressure (psi)	Standard Fitting Working Pressure (psi)
3 - 24	350	250 (350 with special gaskets)
30 - 48	250	250
54 - 64	150	N/A

The use of standard ductile iron fittings having a 250-psi pressure rating with ductile iron pipe (having a rating of 350 psi) is not permitted except by the expressed written approval by the Engineer. Coating and Lining - The fittings shall be coated on the outside with a petroleum asphaltic coating in accordance with AWWA Standard C110 or fusion coated epoxy in accordance with AWWA Standard C116 and lined inside with cement-mortar and seal coated in accordance with AWWA Standard C104 or fusion coated epoxy in accordance with AWWA Standard C116.

B. Acceptable Suppliers are listed in the most current version of the Supplemental Technical Specifications.

C. Joints

1. Mechanical and Push-On joints including accessories shall conform to AWWA Standard C111. Anti-Rotational T-Bolts shall be used on mechanical joints and shall be of domestic origin, high strength, low alloy steel, meeting the current provisions of ANSI/AWWA C111/A21.1-90 for rubber gasket joints for cast iron or ductile iron pipe and fittings. Bolt manufacturer's certification of compliance must accompany each shipment. T-bolts shall be Xylan or FluoroKote #1, (corrosion resistant) to handle corrosive conditions on any buried bolts. Standard T-Bolts may be allowed by the Owner, but must adhere to the above characteristics.

2. Flanged joints shall meet the requirements of AWWA Standard C115 or

ANSI B16.1. Do not use flanged joints in underground installations except within structures. Furnish all flanged joints with a minimum 1/8-inch thick red rubber or styrene butadiene rubber gasket. The bolts shall have American Standard heavy unfinished hexagonal head and nut dimensions all as specified in ANSI B18.2. Xylan or FluoroKote #1 Hex Bolts (corrosion resistant) to handle corrosive conditions shall be used on any buried flanged bolts. Flange gaskets shall be rubber in composition; paper gaskets are not permitted.

Bolts and nuts shall be threaded in accordance with ASME/ANSI B1.1, Unified Inch Screw Threads (UN and UNR Thread Form) class 2A external and class 2B internal. For bolts of 1-3/4-inches in diameter and larger, bolt studs with a nut on each end are recommended. Material for bolts and nuts shall conform to ASTM A307, 60,000 psi Tensile Strength, Grade B, unless otherwise specified. Bolt manufacturer's certification of compliance must accompany each shipment.

3. Restrained joints for valves and fittings shall be of the boltless push-on type which provides joint restraint independent of the joint seal. Field Lok gaskets are not permitted on valves or fittings. Restrained push-on joints allowed for pipe only shall have accessories conforming to AWWA Standard C111. Restrained system shall be suitable for the following minimum working pressures:

Pipe Size (Inch)	Pressure (psi)
Less than 20	350
20	300
24	250
30 - 64	200

Where adjacent fittings are to be placed (as in a mechanical joint hydrant tee and a mechanical joint hydrant valve), the use of a suitably sized Foster adaptor is permitted to facilitate restraint between the fittings.

PART 3 – EXECUTION

3.01 INSTALLATION

Follow the provisions of Specification Section 15000 and 02210 in addition to the following requirements:

A. Push-On Joints - Clean the surfaces that the gasket will contact thoroughly, just prior to assembly using a bacteria free solution (bleach, potable water or NSF

approved material). Insert the gasket into the groove in the bell. Apply a liberal coating of special lubricant to the gasket and the spigot end of the pipe before assembling the joint. Center the spigot end in the bell and push home the spigot end.

B. Mechanical Joints - Clean the surfaces that the gasket will contact thoroughly, just prior to assembly using a bacteria free solution (bleach, potable water or NSF approved material). Apply a liberal coating of special lubricant to all of the surfaces that the gasket will contact. Slip the follower gland and gasket over the pipe plain end making sure that the small side of the gasket and lip of the gland face the bell socket. Insert the plain end into socket. Push the gasket into position with fingers. Seat gasket evenly. Slide gland into position, insert bolts, and tighten nuts by hand. Tighten bolts alternately (across from one another) to the recommended manufacturing rating or if not provided, to the following normal torques:

Bolt Size (inch)	Range of Torque (foot-pounds)
5/8	40 - 60
3/4	60 - 90
1	70 - 100
1-1/4	90 - 120

C. Restrained Joints

1. Ball and Socket. Assemble and install the ball and socket joint according to the manufacturer's recommendations. Thoroughly clean and lubricate the joint. Check the retainer ring fastener.

2. Push-On. Assemble and install the push-on joint according to the manufacturer's recommendations. Thoroughly clean and lubricate the joint. Check the retainer ring fastener.

Protect pipe from damage from the jacking device (backhoe bucket, pipe jack, etc.) when “pushing home” any pipe by using wood or other suitable (nonmetallic) material.

3. Mechanical Joint. Assemble and install the mechanical joint according to the manufacturer's recommendations. Thoroughly clean and lubricate the joint. Use approved restrained joint device on fittings and valves where required and approved for use by Engineer.

D. Pipe Protection

Protect pipe from damage from the jacking device (backhoe bucket, pipe jack, etc.) when “pushing home” any pipe. Wood or other suitable material (nonmetallic) shall be used to push home the pipe.

E. Gaskets

Gaskets shall be as provided or recommended by the manufacturer and satisfy AWWA standard C111 in all respects. As noted in the products section of this specification, some gasket materials are prone to permeation of certain hydrocarbons which may exist in the soil (see part 2). Under these conditions and at the Engineer's discretion provide FKM (Viton, Flourel) gasket material in areas of concern.

3.02. BASIS OF PAYMENT

The installation of water main, or restrained joint water main, will be paid at the Contract Unit Price per linear foot measured without deducting for length of fittings and valves for various sizes of watermain installation. The installation of fittings will be paid at the Contract Unit Price for each type and size of fitting installed. The unit price includes furnishing labor, material (except when provided by Owner), and equipment to install water main. Items specified in other Specification Sections that are considered incidental to water main installation shall be included in this Contract Unit Price including, but not limited to, excavation, backfill, shoring, polywrap, tracer wire, location tape, testing, disinfection, thrust restraint, and temporary blow-off outlets.

Note: Fire hydrant piping is not included in this item.

END OF SECTION 15105

SECTION 15130

PIPING SPECIALTIES

PART 1 – GENERAL

1.027 SUMMARY

This section includes furnishing and installing miscellaneous piping specialties as shown on the Drawings. Piping specialties include polyethylene encasement (polywrap); valve boxes; rods, bolts, lugs, and brackets; retaining glands; test/tracer wire boxes; and marking posts.

1.028 RELATED WORK

G. Specification Section 02210 – Trenching, Backfilling, and Compacting

H. Specification Section 15000 – Piping – General Provisions

I. Specification Section 15105 – Ductile Iron Pipe and Fittings

1.029 REFERENCES

Refer to current Standards:

N. AWWA C105 - American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems

O. AWWA C217 – Petrolatum and Petroleum Wax Tape Coatings

P. AWWA C600 – Installation of Ductile Iron Water Mains and Their Appurtenances

Q. DIPRA Field Polyethylene Installation Guide

PART 2 – PRODUCTS

2.015 POLYETHYLENE ENCASEMENT

A. Polyethylene encasement shall conform to AWWA Standard C105. The polyethylene encasement shall be 8 mils thick (12 mils thick in corrosive soil). The polyethylene film shall be translucent and blue in color and distinctly marked (at minimum 2-foot intervals) with the following information:

1. manufacturer’s name (or trademark),
2. year manufactured,
3. minimum film thickness and material type (LLDPE or HDCLPE),

4. range of nominal pipe diameter size
5. ANSI/AWWA C105/A21.5 (compliance)
6. A warning “WARNING–CORROSION PROTECTION-REPAIR ANY DAMAGE
7. labeled “WATER”

B. Tape shall be polyethylene compatible adhesive and a minimum of 1.5 inches wide. Acceptable suppliers are listed in the most current version of the Supplemental Technical Specifications.

C. Store all polyethylene encasement out of the sunlight. Exposure of wrapped pipe should be kept to a minimum.

D. Acceptable Suppliers of polyethylene encasement are listed in the most current version of the Supplemental Technical Specifications.

2.016 VALVE BOXES

A. All valves shall be provided with valve boxes. Valve boxes shall be of the standard, adjustable, cast iron extension type, multiple piece, 5-1/4-inch shaft, screw type, and of such length as necessary to extend from the valve to finished grade. Cast iron valve boxes shall be hot coated inside and out with an asphaltic compound.

B. Valve box bases shall conform to the following:

Valve Size (inch)	Base
4 and smaller	Round, 8-inch high, 10-7/8-inch diameter at bottom.
6 and 8	Round, 11-inch high, 14-3/8-inch diameter at bottom
10 and larger	Oval, 11-inch high, 15-inch by 11-1/8-inch at bottom

C. Acceptable Manufacturers are listed in the Supplemental Technical Specifications.

2.017 RODS, BOLTS, LUGS AND BRACKETS

A. All steel rods, bolts, lugs and brackets, shall be ASTM A36 or A307 carbon steel with Xylan coating as a minimum requirement. The bolts shall have American Standard heavy unfinished hexagonal head and nut dimensions all as specified in ANSI B18.2. Xylan or FluoroKote #1 T-Bolts, corrosion resistant to handle corrosive conditions shall be used on any buried flanged bolts.

B. After field installation, all steel surfaces shall receive a petrolatum wax tape coating in accordance with Specification Section 15000 and AWWA Standard C217. Subject to approval by the Engineer, an alternative corrosion protection for exposed buried metal is an aerosol applied rubberized coating per Specification Section 15000.

2.018 RETAINING GLANDS

A. All retaining glands shall be ductile iron with ductile iron set screws. Pressure ratings for use with ductile iron pipe shall be a minimum of 250 psi. Retainer Glands shall be

coated with electrostatically applied baked-on polyurethane coating. Locking wedges, bolts, and set screws shall be coated with Xylan or FluoroKote #1.

B. Acceptable Manufacturers are listed in the most current version of the Supplemental Technical Specifications.

2.019 TEST /TRACER BOXES

A. All test/tracer boxes shall be 18-inch plastic box flared and squared at base and have a 4-inch I.D. with a 1 ½-inch cast iron flange. Lid shall be a one-piece locking lid with "Test Station" marked on lid and shall contain 5 screw-type brass terminals on a nonconductive terminal board.

B. Acceptable Manufacturers are listed in the most current version of the Supplemental Technical Specifications.

2.020 MARKING POSTS

A. All marking posts shall be Rhino FiberCurveTM with PolyTechCoating fiber-composite marking posts. The color shall be standard blue for water and the length shall be a minimum 66-inches. The decals shall be UV stable, all-weather type with a no dig symbol in white and contrasting white and blue vertical lettering: Butterfly and Gate Valves decals (Rhino GD-5226K) Blow-Offs decals (Rhino GD-5411K) Pipeline decals (Rhino GD-1333K).

B. Acceptable Manufacturers are listed in the most current version of the Supplemental Technical Specifications.

2.021 IDENTIFICATION TAPE

A. Identification tape shall be manufactured of polyethylene with a minimum thickness of 4-mils. The tape shall be highly resistant to alkalis, acid and other destructive agents found in soil. Tape width shall be a minimum of 3 inches and a maximum of 6 inches and shall have a blue background color, imprinted with black letters. Imprint shall be "CAUTION – WATER LINE BURIED BELOW" and shall repeat itself a minimum of once every 2 feet for entire length of the tape.

B. Acceptable manufacturers are listed in the most current version of the Supplemental Technical Specifications.

2.022 LOCATION WIRE

A. Location wire shall be used at all pipe installations. Location wire shall be a direct burial #12 AWG (0.0808-inch diameter) fully annealed; high strength solid copper clad steel conductor (HS-CCS); insulated with a 30-mil high molecular weight, high density blue polyethylene jacket complying with ASTM D1248; and rated for direct burial use at 30 volts. HS-CCS conductor must be at 21% conductivity with 452-pound average tensile break load for open cut and 1150-pound average tensile break load for boring. Location wire may only be spliced with approved connectors.

B. Acceptable manufacturers are listed in the most current version of the Supplemental Technical Specifications.

2.023 RESTRAINED JOINT MARKING TAPE

A. Restrained Joint Marking Tape shall be used when restrained joint pipe or fittings are installed. Joint restraint tape is specifically to warn Water Company workers/contractors that the water main joint is restrained. It is not to be used in place of regular marking tape.

B. Restrained Joint Marking Tape shall be polyethylene 4-mil thick and 2 ½-inches wide with blue lettering on white background color and imprinted with the words “RESTRAINED JOINT” at 2-foot intervals. The tape shall have an adhesive backer. The tape shall be highly resistant to alkalis, acid and other destructive agents found in soil.

C. Acceptable manufacturers are listed in the most current version of the Supplemental

D. Technical Specifications.

PART 3: EXECUTION

3.037 INSTALLATION

Install “piping specialties” in accordance with the general provisions provided in Specification Section 15000 and the following:

A. Polyethylene Encasement

1. Encase piping in polyethylene as required to prevent contact with surrounding backfill and bedding material in all areas shown on the Drawings or designated by the Engineer.

2. Install the polyethylene wrap material in accordance with the DIPRA Field Polyethylene Installation Guide, AWWA Standard C105, and Standard Details. Polyethylene shall fit snugly and not tightly stretched. All holes or tears shall be repaired with tape. Large holes or tears shall be repaired by taping another piece of polyethylene over the hole. Tape or use plastic tie straps at joint overlaps and at every 3-foot interval.

3. Dig bell holes and slide polywrap over the adjacent pipe and provide a minimum of 1 foot of overlap. Tightly secure bottom of polywrap using two to three passes of polyethylene tape on the pipe to polywrap connection and the overlap polywrap to polywrap connection.

4. Where polyethylene wrapped pipe being installed connects to a pipe that is not wrapped (including existing pipe), extend the wrap a minimum of 3 feet onto the

previously uncovered pipe. This includes service lines which may be wrapped in polyethylene or dielectric tape.

5. Exposure of wrapped pipe to sunlight should be kept to a minimum. Pipe can be stored with the polywrap on for a maximum of 30 days.

6. At no time shall the polywrapped pipe be subjected to a point load during handling, temporary storage, or installation. The polywrap must be moved away from the timbers or hoisting device while on the pipe to prevent point loads and resulting pin holes.

7. Direct service taps for polyethylene encased pipe shall follow the procedure described in AWWA Standard C600 or the DIPRA Field Polyethylene Installation Guide. Access to the main for tapping through polyethylene is accomplished by making two to three passes of polyethylene tape around the pipe and over the polywrap. The tap is to be made directly through the tape and polywrap.

B. Valve Boxes

Valve boxes shall be supported so that no load can be transmitted from the valve box to the valve. See Standard Details. Make sure that the bottom of the box is centered over the operating nut and runs perpendicular to the horizontal.

C. Test/Tracer Wire Boxes

Boxes shall be placed at areas designated in the Drawings and shall be flush with existing grade unless otherwise noted.

D. Marker Posts

Install Marker Posts per manufacturer guidelines and place at locations noted in the Drawings or as approved by Engineer.

E. IDENTIFICATION TAPE, LOCATION WIRE, AND RESTRAINED JOINT MARKING TAPE

1. Install in accordance with manufacturer’s installation instructions and as specified in the Contract Documents.

2. Install identification tape one foot above the top of the pipe.

3. Install location wire directly on top of the buried pipe.

4. Loop the location wire up the outside of valve box to one foot from the surface. Insert the wires into the valve box at that depth for connection to a locating device. The wire shall be one continuous piece from valve box to valve box up to 1250 feet maximum. When distance between valve boxes exceeds 1250 feet, or when shown on the Drawings, install tracer boxes near the mid-point of such lengths that no continuous piece of location wire exceeds 1250 feet.

5. Install the joint marking tape by adhering directly to the pipe as it is installed. The marking tape shall be installed along the entire length of pipe, including around the circumference of the bells of all fittings and valves. The pipe must be free of any foreign matter along the surface of the pipe for the marking tape installation. If clear polywrap is used, the restrained joint tape can be applied on the top of the pipe so long as it is visible. Otherwise the joint marking tape shall be applied on top of the polywrap and secured so the tape is not shifted by backfilling.

6. The tape does not adhere in wet or cold conditions. The tape should be stored in temperatures above 50 degrees F until the time of application. The pipe must be free of frost and moisture along the surface of the pipe receiving the tape.

7. Contractor and/or Owner shall test the performance of the location wire prior to conducting pavement or landscape restoration.

3.038 BASIS OF PAYMENT

The Work included in this Section is considered incidental to the installation of pipe, valves, and fittings.

END OF SECTION 15130

SECTION 15150

GATE VALVES

PART 1 – GENERAL

1.030 SUMMARY

This section includes furnishing and installing gate valves as shown on the Drawings. Insertion valves may be approved for use on certain projects. If insertion valves are shown on the Drawings, see Supplemental Technical Specifications.

1.031 RELATED WORK

J. Specification Section 02210 – Trenching, Backfilling and Compacting

K. Specification Section 15000 – Piping – General Provisions

L. Specification Section 15130 – Piping Specialties

1.032 REFERENCES

Refer to current standards:

R. AWWA C509, C111, C550, C500

1.033 SUBMITTALS

H. Submit shop drawings and manufacturer's data

I. Submit in accordance with Section 01300.

PART 2 – PRODUCTS

2.024 SMALL GATE VALVES

A. All gate valves, 3 inches through 12 inches NPS, shall be iron body, resilient-seated, nut-operated, non-rising stem gate valves suitable for buried service. The valve interior and exterior shall be epoxy coated at the factory by the valve manufacturer in accordance with AWWA Standard C550 (6-8 mil average, 4 mil minimum). The valves shall be designed for a minimum differential pressure of 250 psi and a minimum internal test pressure of 500 psi unless otherwise noted on the Drawings. Valves shall be designed to operate in the vertical position.

B. Valves shall comply fully with AWWA Standard C509. Valve ends shall be push on joint or MJ (when restrained), or as shown on the Drawings or approved in writing in accordance with AWWA Standard C111. Stems shall be made of a low zinc alloy in accordance with AWWA C509. Stem seals shall be double O-ring stem seals. Square operating nuts conforming to AWWA Standard C509 shall be used. Valves shall open

(left or right) in accordance with Table 1 of the Supplemental Technical Specifications. All valve materials shall meet the requirements of NSF 61.

C. Test valves (Operation Test and Hydrostatic Tests) at the manufacturer's plant in accordance with AWWA Standard C509. If requested, provide the Engineer with certified copies of all tests prior to shipment. The Engineer reserves the right to observe all tests.

D. Acceptable Manufacturers are listed in the Supplemental Technical Specifications.

2.025 LARGE GATE VALVES

A. Gate valves larger than 12-inches NPS shall be iron body, double disc (metal to metal seat), parallel seats, bronze mounted, rubber O-ring packing seals, epoxy coated interior and exterior meeting the requirements of AWWA Standard C550 and conforming to AWWA Standard C500. Stems shall be made of a low zinc alloy in accordance with AWWA C500 4.2.2.4.3. All valves shall have openings through the body of the same circular area as that of the pipe to which they are attached. All valves furnished shall open (left or right) in accordance with Table 1 of the Supplemental Technical Specifications. All valve materials shall meet the requirements of NSF 61.

B. Test valves (Operation Test and Hydrostatic Tests) at the manufacturer's plant in accordance with AWWA Standard C515. If requested, provide the Engineer with certified copies of all tests prior to shipment. The Engineer reserves the right to observe all tests.

C. Valves shall have mechanical joint ends unless otherwise designated on the Drawings or approved by the Engineer.

D. The valves shall be designed for a minimum differential pressure of 150 psi and a minimum internal test pressure of 300 psi, unless otherwise noted on the Drawings. Make all valves tight under their working pressures after they have been placed and before the main is placed in operation. Any defective parts shall be replaced at the Contractor's expense.

E. Acceptable Manufacturers are listed in the Supplemental Technical Specifications.

PART 3 – EXECUTION

3.039 INSTALLATION

A. Install the valves in strict accordance with the requirements contained in Specification Section 15000, Drawings, and Standard Details.

B. Install valve box in accordance with Specification Section 15130.

3.040 PROTECTION

After installation of the valve all external bolts shall be protected as described in Technical Specification 15130-2.03 before backfilled in accordance with Specification Section 15000. If polyethylene is applied to the pipe, the entire valve shall be encased in the polyethylene encasement prior to backfill. The polyethylene encasement shall be installed up to the operating nut leaving the operating nut exposed and free to be operated.

3.041 BASIS OF PAYMENT

Payment will be made at the Contract Unit Price for each new valve, by type and size, complete in place. The Contract Unit Price shall include all labor, material, and equipment for the valve installation including excavation and backfilling, valve box installation, protection, location tape, tracer wire, rough grading, removal of excess excavated material, and any other ancillary Work related to valve installation.

Note: This item does not include hydrant valves.

END OF SECTION 15150

SECTION 15170

TAPPING SLEEVES, SADDLES AND VALVES

PART 1 – GENERAL

1.034 SUMMARY

This section includes furnishing and installing tapping sleeves, tapping valves, and tapping saddles as shown on the Drawings.

1.035 RELATED WORK

M. Specification Section 02210 – Trenching, Backfilling and Compacting

N. Specification Section 15000 – Piping – General Provisions

O. Specification Section 15130 – Piping Specialties

1.036 REFERENCES

Refer to current standards:

S. AWWA C509 – Resilient-Seated Gate Valves for Water Supply Service

T. AWWA C550 – Protective Interior Coatings for Valves and Hydrants

U. AWWA C207 – Steel Pipe Flanges for Waterworks Service, Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm)

V. AWWA C223 – Fabricated Steel and Stainless-Steel Tapping Sleeves

W. Manufacturer's Standardization Society (MSS) Standard Practice 60 – Connecting Flange Joints Between Tapping Sleeves and Tapping Valves

X. Manufacturer's Standardization Society (MSS) Standard Practice 124 – Fabricated Tapping Sleeves

1.037 SUBMITTALS

J. Submit shop drawings and manufacturer's data.

K. Submit in accordance with Section 01300.

PART 2 – PRODUCTS

2.026 GENERAL

F. All tapping sleeves, saddles and valves shall be designed for a working pressure of at least 250 psi for 12-inch and smaller. The valves shall be designed for a minimum differential pressure of 250 psi and a minimum internal test pressure of 500 psi unless otherwise noted on the Drawings.

G. Verify the type of existing pipe and the outside diameter of the pipe on which the tapping sleeve is to be installed.

2.027 TAPPING VALVES

A. The horizontal tapping valves, 3-inch through 12-inch, shall conform to the applicable requirements of AWWA Standard C509. The tapping valves, 3-inch through 12-inch, shall be ductile iron body, resilient-seated, nut-operated, non-rising stem gate valves suitable for buried service. The valve interior and exterior shall be epoxy coated at the factory by the valve manufacturer in accordance with AWWA Standard C550 (6-8 mil average, 4 mil minimum). The tapping valves shall have mechanical joint inlets with mechanical joint outlets, enclosed bevel gears, bypass valve, rollers, tracks and scrapers. All valves furnished shall open (left or right) in accordance with the Table 1 of the Supplemental Technical Specifications.

B. Test valves (Operation Test and Hydrostatic Tests) at the manufacturer's plant in accordance with AWWA Standard C509. If requested, provide the Engineer with certified copies of all tests prior to shipment. The Engineer reserves the right to observe all tests.

C. Acceptable Manufacturers are listed in the most current version of the Supplemental Technical Specification.

2.028 STAINLESS STEEL TAPPING SLEEVES

Stainless steel tapping sleeves shall meet the requirements of MSS SP-124 and AWWA C223 and be suitable for use with the tapping valves listed in this Specification. Tapping sleeves shall provide full circumferential seal, include a ¾" NPT test plug, have a mechanical joint outlet, and be compatible with multiple pipe materials including, but not limited to, ductile iron, steel, cast iron, asbestos cement, and PVC.

A. Acceptable Manufacturers are listed in the Supplemental Technical Specifications.

2.029 TAPPING SADDLES

Unless otherwise specified by the Drawings, tapping saddles shall conform to the requirements of AWWA Standard C800 for the High-Pressure class tapping saddles. Tapping saddles shall have a brass or bronze body and consist of ductile iron outlet castings, attached to the pipeline

with high strength stainless steel straps. Castings shall be sealed to pipeline with O-ring seals. Saddles shall have ANSI A21.10 flanged outlets counterbored for use with tapping valves and tapping equipment.

A. Acceptable Manufacturers are listed in Supplemental Technical Specifications.

PART 3 – EXECUTION

3.042 INSTALLATION

C. Install the tapping sleeves, saddles, and valves in strict accordance with the requirements contained in Specification Section 15000 and Drawings.

D. Install the tapping sleeves, tapping saddles, and tapping valves in accordance with the manufacturer's instructions. The tapping procedure is to be in accordance with the tapping machine manufacturer's instructions.

E. Install valve box in accordance with Specification Section 15130.

3.043 PROTECTION

After installation of the tapping sleeve, tapping saddle, and tapping valve all external bolts except the operating nut shall be protected as described in Technical Specification 15130-2.03 before backfilled in accordance with Specification Section 15000. If polyethylene is applied to the pipe, the entire valve shall be encased in the polyethylene encasement prior to backfill. The polyethylene encasement shall be installed up to the operating nut leaving the operating nut exposed and free to be operated.

3.044 PRELIMINARY TESTING

Perform a hydrostatic test of the tapping sleeve and valve assembly in accordance with Specification Section 15030 after installation of the tapping sleeve and valve, but prior to making the tap. The test shall be made with the valve open using a tapped mechanical joint cap. No leakage is acceptable. The test pressure shall be maintained for a minimum of 15 minutes. Close the valve, remove the cap and observe for leakage at the valve seal. No leakage is acceptable. Perform hydrostatic test of tapping saddles in accordance with AWWA Standard C800.

3.045 BASIS OF PAYMENT

Payment will be made at the Contract Unit Price for each new tapping sleeve and valve, by size, complete in place. The Contract Unit Price shall include all labor, material, and equipment for the tapping sleeve and valve installation including excavation and backfilling, thrust restraint, valve box installation, protection, location tape, tracer wire, rough grading, removal of excess excavated material, and any other ancillary Work related to tapping sleeve and valve installation.
Note: This item does not include service line taps.

END OF SECTION 15170

SECTION 15180

FIRE HYDRANTS

PART 1 – GENERAL

1.01 SUMMARY

This section includes furnishing and installing fire hydrant assemblies at locations shown on the Drawings and in accordance with Standard Details and local regulations. The fire hydrant assembly includes the connection to the water main, hydrant valve and valve box, anchor couplings, hydrant lateral, hydrant extensions, and the fire hydrant (including base and hydrant barrel). The Owner reserves the right to provide the fire hydrant (including base and hydrant barrel). A list of additional materials to be provided by the Owners, if applicable, is shown in Specification Section 01000.

1.02. RELATED WORK

A. Specification Section 01000 – Summary of Work

B. Specification Section 02210 – Trenching, Backfilling and Compacting

C. Specification Section 15105 – Ductile Iron Pipe and Fittings

D. Specification Section 15000 – Piping – General Provisions

E. Specification Section 15130 – Piping Specialties

1.03. REFERENCES

Refer to current standards:

A. AWWA C502 – Dry Barrel Fire Hydrants

B. AWWA C550 – Protective Interior Coatings for Valves and Hydrants

1.04. SUBMITTALS

A. Submit shop drawings and manufacturer's data
B. Submit in accordance with Section 01300.

PART 2 – PRODUCTS

2.01. MATERIAL

A. All fire hydrants shall be ductile iron and conform to the requirements of AWWA C502, traffic-model break-away type fire hydrants.

B. Contact the local water district and obtain written fire hydrant mechanical details for the water district prior to ordering any fire hydrants for the Work. All fire hydrants shall open left or right as required and be clearly marked on the top of the hydrant with a 1-1/2-inch pentagon top nut and have not less than two (2) O- ring stem seals. The number and sizes of hose nozzle outlets is dependent on the local regulation. (Most Districts use two (2) bronze male threaded 2-1/2-inch hose outlet nozzles and one (1) bronze male threaded 4-1/2-inch pumper outlet nozzle with American National Fire Hose Connection Screw Threads (NH).) The hydrant shall be break-away traffic flange, 5-1/4-inch valve opening, 6-inch mechanical joint pipe connection. The hydrant interior and exterior shall be epoxy coated at the factory by the hydrant manufacturer in accordance with AWWA Standard C550 (6-8 mil average, 4 mil minimum).

C. All hydrant materials shall meet the requirements of NSF 61.

D. Acceptable manufacturers and model numbers are listed in the Supplemental Technical Specifications.

PART 3 – EXECUTION

3.01 INSPECTION PRIOR TO INSTALLATION

A. Contractor shall inspect all fire hydrants upon receipt. Cycle each hydrant to full open and full closed positions to ensure that no internal damage or breakage has occurred during shipment and handling. Check all external bolts for proper tightness.

B. After inspection, close the hydrant valves and replace the outlet nozzle caps to prevent the entry of foreign matter. Protect stored hydrants from the weather/elements with the inlets facing downward.

3.02 INSTALLATION

A. The location shall provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians. When placed behind the curb, the hydrant barrel shall be set so that no portion of the pumper or hose nozzle cap will be less than eighteen to twenty-four inches, depending on local requirements, from the gutter face of the curb. All hydrants shall stand plumb with the pumper nozzle facing the curb. Set hydrants with nozzles at least eighteen inches above the finished grade as shown on the Standard Details. Set the break flange at least two but no more than six inches above finished grade, or as directed by the Engineer. Connect each hydrant to the main with a six-inch branch connection controlled by an independent six-inch gate valve, unless otherwise shown on the Drawings. All hydrants assemblies must be restrained from the hydrant to the main.

B. The Engineer may authorize hydrant protection using steel pipe bollards when hydrant installations have a greater than normal exposure to vehicular damage (e.g. parking lot installations, unusual driving situation, etc.). Install all such protection designated by the Engineer. Locate bollards as necessary adjacent to the hydrant and in such a

manner as to not interfere with the ability to connect hoses or operate the hydrant as shown in the Drawings. Additionally, locate the bottom of the bollard and encasement above the hydrant supply piping and valve to prevent the possibility of damage to the piping should the bollard be displaced when hit.

C. Unless otherwise directed by the Engineer, excavate a drainage pit two feet in diameter and two feet deep below but not beyond each hydrant. Fill the pit with compacted Coarse Aggregate, as described in Specification Section 02210, under and around the base of the hydrant to a level 12 inches above the hydrant drain opening. No hydrant drainage pit shall be connected to a sewer.

D. Cover the drainage area with geotextile fabric. The fabric shall completely isolate the gravel or stone so that no fill material or adjacent earth comes in contact with pit material.

E. Notify the Engineer of situations where the ground water table is above the drain opening of dry barrel hydrants. If directed by Engineer, plug the drain opening using a method acceptable to the hydrant manufacturer. No drainage pit is required when the hydrant drain is plugged. Mark the hydrant, in a manner acceptable to the Owner, to indicate that the drain opening has been plugged. Operation of a hydrant with plugged drain leaves the hydrant barrel full of water. Pump the hydrant barrel dry after each use.

F. Install connection to water main and hydrant lateral in accordance with Specification Sections 15000, 15130, 15150, and Standard Details.

G. Install hydrant valve and valve box in accordance with Specification Sections 15000, 15130, and 15150.

H. If thrust blocks are called for by the Drawings or the Engineer, reaction or thrust blocking at the base of each hydrant must not obstruct the drainage outlet of the hydrant. The size and shape of concrete thrust blocking and the number and size of tie rods, when required, shall be approved by the Engineer. Use the thrust blocking material specified in Specification Section 03300. See Specification Section 15000 for tie rod requirements.

I. Paint all hydrants above the bury line in accordance with the local operations standards listed in the Supplemental Technical Specifications. Touch up paint shall be applied upon completion of installation as needed. Take extreme care to avoid getting any paint on the “O” ring under the top operating nut or on the hydrant nozzles. Should paint be found on the “O” ring, the Contractor shall remove the paint and replace the “O” ring at no additional cost to the Owner. Any paint on the hydrant nozzles shall be removed at the Contractor’s expense.

3.03. TESTING

After installation and before backfilling (and after pressure testing the water main) testthe hydrant as follows:

A. Pressure Test
   1. Open the hydrant fully and fill with water; close all outlets.

   2. To prevent caps from being blow off dry-barrel hydrants and to prevent other possible damage, vent air from the hydrant by leaving one of the caps slightly loose as the hydrant is being filled. After all air has escaped, tighten the cap before proceeding.

   3. Apply line pressure.

   4. Check for leakage at flanges, nozzles and operating stem.

   5. If leakage is noted, repair or replace components or complete hydrant until no leaks are evident.

B. Drainage Test for Dry Barrel Hydrants

   1. Following the pressure test, close hydrant.

   2. Remove one nozzle cap and place pylon or hand over nozzle opening.

   3. Drainage rate should be sufficiently rapid to create a noticeable suction.

   4. After backfilling, operate the hydrant to flush out any foreign material.

   5. Tighten nozzle caps, then back them off slightly so that they will not be excessively tight; leave tight enough to prevent removal by hand.

3.04. BASIS OF PAYMENT

Payment will be made at the Contract Unit Price for each new fire hydrant assembly complete in place. The Contract Unit Price shall include all labor, material (unless provided by the Owner), and equipment for the hydrant assembly installation including excavation and backfilling, valve box installation, protection, thrust restraint, location tape, tracer wire, rough grading, removal of excess excavated material, painting, and any other ancillary Work related to fire hydrant assembly installation.

END OF SECTION 15180

SECTION 15195

WATER MAIN ABANDONMENT

PART 1 – GENERAL

1.038 SUMMARY

This section includes abandoning existing water mains, cutting & capping existing water mains, and removing associated items as shown on the Drawings and Standard Details. When shown on the Drawings or required by local agencies place flowable fill in water mains to be abandoned.

1.039 RELATED WORK

A. Specification Section 02210 – Trenching, Backfilling, and Compacting

B. Specification Section 03300 – Cast-In-Place Concrete

C. Specification Section 15000 – Piping-General Provisions

D. Specification Section 15150 – Ductile Iron Pipe & Fittings

1.040 SUBMITTALS

A. Contractor's plan for filling abandoned pipe completely with flowable fill, if required

B. Submit in accordance with Section 01300

PART 2 – PRODUCTS

2.030 FLOWABLE FILL

A. Flowable fill for abandoned water mains shall meet the requirements of flowable fill for trench backfill in accordance with Specification Section 02210, or as approved by Engineer.

PART 3 – EXECUTION

All work shall be coordinated with Owner and Engineer. Provide a minimum of 72 hours' notice prior to beginning abandonment Work. The Work described in this section shall not proceed until the Engineer has determined that all hydrants and customer service lines are transferred to the new main and placed in service.

3.046 ABANDONING WATER MAIN

A. Contractor shall have all labor, equipment, and material on site for all reasonable water main abandonment possibilities. Excavate at water main and locate the connection to the water main to be abandoned or point of abandonment. Engineer shall determine type of abandonment to be performed and its exact location for each water main abandonment. Owner will be responsible for operating valves necessary for isolating the abandonment.

B. Water main to be abandoned shall be physically separated from the rest of the system at the points determined by the Engineer. Cut and remove a sufficient length of the pipe to provide access for installing cap and thrust restraint on the portion of the main to remain in service and, if required, placing flowable fill in the portion of water main to be abandoned. The abandoned water main shall be drained and the water safely discharged. Install the type of abandonment determined by the Engineer and install thrust restraint.

C. Remove valve boxes on all valves located on abandoned water main.

D. When shown on the Drawings or required by local agencies, the abandoned main shall be filled with flowable fill. The main shall be completely filled, leaving no voids.

E. Backfill excavations in accordance with Specification Section 02210.

3.047 BASIS OF PAYMENT

Payment will be made at the Contract Unit Price for each abandonment by size. The Contract Unit Price shall include all labor, material, and equipment for the abandonment of water main including excavation, backfill, rough grading, removal of pipe and valve boxes, and any other ancillary Work related to abandoning water main. Any required line stops will be considered a separate pay item.

END OF SECTION 15195

APPENDIX B SANITARY SEWER SPECIFICATIONS

APPENDIX B
SANITARY SEWER SPECIFICATIONS
TABLE OF CONTENTS

SECTION 002

DEFINITIONS

The following terms as used in these Specifications are respectively defined as follows:

(1) "Greater Peoria Sanitary District": The Greater Peoria Sanitary and Sewage Disposal District;

(2) "Sanitary District": The Greater Peoria Sanitary and Sewage Disposal District;

(3) "District": The Greater Peoria Sanitary and Sewage Disposal District;

(4) "GPSD": The Greater Peoria Sanitary and Sewage Disposal District;

(5) "Contractor": The person, firm or corporation to whom the contract is awarded by the Owner and who is subject to the terms herein contained;

(6) "Subcontractor": A person, firm or corporation, other than the contractor, supplying labor and/or materials for work at the site(s) of the Project;

(7) "Owner": The Greater Peoria Sanitary and Sewage Disposal District or the City of Peoria, whichever is the contracting party;

(8) "Engineer": The Director of Planning and Construction of The Greater Peoria Sanitary and Sewage Disposal District or his authorized representative;

(9) "Resident Project Representative": The Resident Project Representative is the "Engineer's Agent," and will act as directed by and under the supervision of the Engineer and will confer with the Engineer regarding his actions;

(10) "The Project": The work to be performed in carrying out the Project;

(11) "Diameter of a Sewer": The inside diameter of the sewer;

(12) "Elevation of a Sewer": The invert elevation of the sewer;

(13) "Invert of a Sewer": The lowest point of the inside surface of a sewer;

(14) "Depth of Sewer": The "Depth of Sewer" is the vertical distance from the original surface of the ground to the invert of the completed sewer. Where laid in compacted embankment or fill the vertical distance from the top of embankment or fill to the sewer invert shall be used;

(14) "Depth of Manhole": The vertical distance between the top of the manhole cover to the invert of the channel through the manhole at the manhole center;

(15) "Distance between Manholes": Horizontal distance measured from center to center between manholes;

(16) "City": The City of Peoria, Peoria County, State of Illinois;

(17) "City of Peoria": The City of Peoria, Peoria County, State of Illinois;

(18) "Completion Date": The date at which all work shall be completed by the Contractor;

(19) "Specifications": The Project Specifications including any set(s) of Project Plan Sheets or Drawings;

(20) "Flexible-Type Pipe": Flexible-type pipe shall include pipe constructed of materials such as polyvinyl chloride (PVC) and polyethylene (PE, MDPE or HDPE) and not include pipe constructed of materials such as clay, concrete, ductile-iron, cast- iron or steel.

(21) "Improved Surface": An improved surface is one that has been modified from its natural state by construction, often using materials such as concrete, bituminous materials or pavers. Examples of improved surfaces include those occupied by buildings, driveways, roadways, sidewalks, patios, parking lots and floating, concrete, slabs. Surfaces that have been previously improved but have since been allowed to revert back to an unimproved state, as defined elsewhere in these Specifications, and are not considered improved.

(22) "Unimproved Surfaces": Unimproved surfaces are those that have either not been modified from their natural states or have been modified using earthen or vegetation materials. Lawns, gardens and fields are considered unimproved surfaces.

(23) "Completion Date With Guaranteed Working Days": When a completion date with guaranteed working days is specified, the Contractor shall complete all work on or before the specified completion date or within the number of guaranteed working days, whichever period is the longer.

(24) "Working Days": A working day shall be as defined in Article 108.04 of the IDOT "Standard Specifications for Road and Bridge Construction, latest edition, except that all reference to "Weekly Report of the Resident Engineer" shall not apply.

END OF
SECTION

SECTION 004

SPECIFICATIONS – STANDARD PLAN CONDITIONS

The Contractor shall consider the following conditions to be part of the Project Plans and Specifications:

1. The City of Peoria has a street repair program schedule that includes milling, patching and overlay as well as heater scarification and sealcoating. Information regarding this matter can be obtained by contacting the City of Peoria Public Works Department. The Contractor shall not claim additional compensation for delays or disruptions of planned operations caused by conflicts with City of Peoria street repair operations. Additionally, the Contractor shall prioritize work conflicting with the City's planned street repair efforts and shall complete said work prior to the commencement of any street repair efforts.

2. Unless modified by the Project Specifications, all road work shall be constructed in accordance with the "Standard Specifications for Road and Bridge Construction" adopted January 1, 2012, by the Illinois Department of Transportation and the "Supplemental Specifications and Recurring Special Provisions" adopted January 1, 2012. All references to measurement and payment therein do not apply.

3. Prior to the receipt of proposals for the completion of the work, the Contractor shall verify all measurements and dimensions shown and shall report to the District any discrepancies which may affect the performance of the work in accordance with the Plans and Specifications.

4. Property parcel information and associated addresses shown within this set of drawings are provided as an informational courtesy. Field verification of existing site conditions shall be the responsibility of the Contractor.

5. The Contractor shall yield to the garbage collection routes of garbage and rubbish collection organizations. The Contractor shall not claim additional compensation due to delays or losses in productivity caused by conflicts with garbage or rubbish collector vehicles or routes.

6. Underground conditions at and near the site(s) of the work to be performed have not been investigated. The Contractor shall be responsible for determining underground conditions to the extent that he or she deems necessary for the successful performance of the work as shown on the Plans and called for in the Specifications. The Contractor shall assume all risks and shall claim no additional compensation for both unforeseen underground conditions and incorrect determinations of the impact of underground conditions on the completion of the work.

7. The diameters and slopes of the existing sewers shown within this set of drawings are provided as an informational courtesy. Field verification of both the sewer main diameters and slopes shall be the responsibility of the Contractor. The Contractor shall not claim either additional costs or delay for unanticipated sewer main dimensions.

8. The Contractor shall be responsible for locating manholes. Contractor costs associated with locating manholes shall be part of the contract amount.

9. The existing manhole depths shown within this set of drawings are provided as an informational courtesy. Field verification of the manhole depths shall be the responsibility of the Contractor.

The District does not have other manhole dimensions. The Contractor shall be responsible for obtaining other necessary manhole dimensions. The Contractor shall not claim additional compensation for unanticipated manhole dimensions.

10. Where permanent fencing is removed, the Contractor shall provide temporary fencing in place of that removed. The intention of temporary fencing is to minimize the inconvenience of the construction on property owners. Temporary fencing shall be constructed at locations to be determined by the affected property owners and the engineer; generally, the temporary fencing shall completely enclose a portion of the property less than that enclosed by the permanent fencing and shall be extended and accessible from structures without leaving the enclosures. The height, material and construction of temporary fencing shall match that of the existing fencing; however, temporary fencing provided shall not be less than four (4) feet in height, chain-link fencing constructed in accordance with ASTM F567-07. During construction, the Contractor shall minimize both the area removed from use by property owners as well as the duration of time that temporary fencing is necessary. Furthermore, the locations of needed temporary fencing as shown on the Plans may not represent all of the locations where temporary fencing will be required.

11. Prior to removal, the Contractor shall document the location and height of all existing fencing to be removed. Included in the documentation shall be the location of all existing posts and points of horizontal or vertical deflection. Measurements included in such documentation shall be relative to fixed references and sufficient in quantity and accuracy to allow reconstruction of removed fencing without dispute. Prior to construction, the Contractor shall take all precautions necessary to document the condition of the fencing to be deconstructed. Where necessary to allow sewer repairs and modifications, existing fencing shall be removed with care to minimize damage. After completion of construction activities, existing fencing shall be promptly reconstructed using the removed fencing, posts and accessories except where the condition of that removed is too poor to be reconstructed. Where the existing is too poor to be used in the reconstruction of removed fencing, the Contractor shall provide new replacement parts and equipment equal in all aspects to that removed except in condition. Fencing reconstruction shall be performed to the satisfaction of the owners and the engineer.

12. At all times throughout the performance of the Project, the Contractor shall provide property owners vehicular access to the driveways of their respective properties. Access restrictions shall be allowed only if approved by the engineer and the owners of the affected properties.

13. All work shall be constructed in accordance with the Greater Peoria Sanitary District's (GPSD) General Specifications for Sanitary Sewers and Appurtenances, latest edition,

these Specifications and the Plans.

14. Without request for additional compensation, the Contractor shall make available supervisory personnel for meetings between GPSD personnel, Contractor representatives and persons affected by the Project. Unless otherwise indicated, existing surface topography and drainage shall not be altered by construction. Contractor shall restore to original condition any drainage feature disturbed by construction and the costs thereof shall be made part of the contract amount.

15. Protection of water mains and water services (including horizontal and vertical separation of water mains and services from sewers) shall be in accordance with the provisions of Section 41-2.01 of the Standard Specifications for Water and Sewer Main Construction in Illinois, latest edition. Any costs incurred in compliance shall be considered part of the contract amount.

16. If existing power poles or utility poles will be impacted by the proposed construction, the Contractor shall coordinate with utility company to have poles protected during construction. The cost for utility pole protection shall be made part of the contract amount.

17. The Contractor is responsible for obtaining all water necessary for the performance of the work specified and all costs associated with water procurement.

18. Sewer laterals and sewer lateral connections shown on the Plans and referenced in provided repair descriptions on the Plans are not intended to show accurately either the number or location of all private lateral connections or those that will need to be reconnected to the sewer main. It shall be the exclusive responsibility of the Contractor to reestablish all disrupted sewer services in a timely manner in accordance with GPSD Specifications.

19. Any damage to streets due to the Contractor's operations shall be repaired to the satisfaction of, and at no expense to, the owner of the damaged pavement. No additional compensation shall be provided for such repairs.

20. The Contractor shall take reasonable precautions to protect public and private property. If, at any time, he damages or destroys public or private property, the Contractor shall promptly, at his own expense, restore such property to a condition equal to that existing before such damage and to the satisfaction of the property owner and GPSD.

21. During construction, the Contractor shall not cause sewage to be discharged from the collection system.

22. Erosion control measures shown on the Plans represent the minimal amount of measures that the Contractor must take to prevent erosion. If shown measures conflict with the directions of the governing authority with jurisdiction, the directions of the governing authority shall govern. If not conflicting, the total measures taken to prevent erosion shall be the cumulative of the measures shown and the directions of the governing authority. Decisions made by the governing authority do not exempt the

Contractor from obtaining permits from other agencies and organizations that might have jurisdiction at the location(s) where the Contractor is to work. The Contractor shall obtain as the permittee all necessary permits not provided, and all costs associated with either obtaining or complying with such permits shall be made part of the contract amount.

23. The Contractor is responsible for dust and mud control. The Contractor shall protect all soil stockpiles from erosion.

24. Land survey monuments (property corners, right of way markers, etc.) which are disturbed by the Contractor shall be reset by a licensed professional surveyor at the expense of the Contractor.

25. The aerial photography shown within this set of drawings is from 2015 and is provided as an informational courtesy. Field verification of existing site conditions shall be the responsibility of the Contractor.

26. The repair descriptions included on the Plans are for informational purposes only and are not intended to be a complete description of all work to be performed in the completion of necessary repairs.

27. The location, size, and type of materials of existing underground utilities indicated on the Plans are not represented as being accurate, sufficient or complete. Neither the owner nor the Engineer assumes any responsibility whatsoever in respect to the accuracy or sufficiency of the information, and there is no guarantee, either expressed or implied, that the conditions indicated are representative of those to be encountered in the construction. It shall be the Contractor's sole responsibility to determine the actual location of all such facilities, including service connections to underground utilities, prior to construction. The Contractor shall notify the utility company of his operational plans and shall obtain from the respective utility companies detailed information and, in the event, an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The engineer shall also be immediately notified. Any such mains and services disturbed by the Contractor's operations shall be restored to service at once

28. Residents or businesses shall be notified by the Contractor in advance if their service is to be disrupted or disconnected. If residents or businesses whose utilities have been or are going to be disrupted or disconnected are not able to be contacted during normal business hours, they shall be promptly notified by the Contractor of the disruptions or disconnection by alternative means acceptable to GPSD and the owner. Costs associated with the provisions of such notifications shall be considered part of the contract amount.

29. The Contractor shall be responsible for protecting utility property from construction operations. The Contractor shall be responsible for the adjustment or relocation of any conflicting utility that impedes the completion of the work. Utility adjustments or relocations shall be completed as allowed by the owner of the utility, by whom the utility owner specifies, and in accordance with the utility’s specifications and directions. For

either costs or delays caused by the process of utility relocations, the Contractor shall not claim additional compensation in either the forms of time or money

30. Traffic control shall be in accordance with the Project Specifications including any permits made a part thereof. The Contractor shall be responsible for obtaining any necessary permits not already obtained by GPSD. Road and traffic lane closures shall be allowed only upon the approval of GPSD and the governing road authority.

31. In accordance with Public Act 90-761, which amends the Environmental Protection Act concerning general construction or demolition debris, the Contractor shall not conduct any generation, transportation or recycling of construction or demolition debris, clean or general or uncontaminated soil generated during construction, remodeling, repair, and demolition of utilities, structures and roads that is not commingled with any waste, without the maintenance of documentation identifying the hauler, generator, place of origin of the debris or soil, the weight or volume of the debris or soil, and the location, owner and operator of the facility where the debris or soil was transferred, disposed, recycled or treated. This documentation must be maintained by the Contractor for three (3) years.

32. The Contractor shall not be allowed to claim additional compensation for costs associated with the construction of temporary roadway surfaces and their removal and replacement with permanent surfaces. Construction of temporary roadway surfaces, including allowable materials and methods, shall be in accordance with the directions of the owner of the roadway in question.

33. Easements that have been acquired are either shown on the Plans or included in the Specifications. Any additional easements or agreements for access beyond what has been acquired shall be the responsibility of the Contractor.

34. Where the Contractor's equipment is operated on any portion of the pavement used by traffic on or adjacent to the section under construction, the Contractor shall clean the pavement of all dirt and debris every four hours, at the end of each day's operation, and at other times as directed. The Contractor shall also clean, as directed, all other areas of pavement that are impacted by construction activities and debris.

35. The Contractor shall reference the detail drawings provided within these Specifications.

36. When working within IDOT right-of-ways, the Contractor shall provide message boards as specified by IDOT, at locations specified by IDOT, displaying messages specified by IDOT and for the duration of the work to be performed including no less than two (2) days prior to the commencement of work. More detailed information about traffic control requirements can be obtained by contacting appropriate representatives of IDOT using the contact information included within the permits made part of the Specifications.

37. Unless otherwise allowed, the restoration of existing brick surfaces shall be in accordance with the detail titled “brick -special” as found on the detail titled “COP Pavement” included in the detail drawings made part of the Plans.

38. The Contractor shall not access roadways within twelve hours prior to the forecast of the start of winter precipitation. Access shall be again allowed after the winter precipitation event has ended and the winter precipitation has been removed by normal snowplow operations.

39. Roadway restorations performed after removal and replacement of manhole castings and lids shall conform to both the drawing titled “Manhole Casting and Lid Removal and Replacement Pavement Restoration” as found on Detail Drawing 095-17 included in Section 095 of these Specifications and Section 055 also found in these Specifications. “Hot-patch” PCC shall be installed throughout the full depth of the excavation and the limits of the saw- cut. Performing roadway restoration in this manner shall be allowed only when the manhole casting and lid as well as any underlying adjusting rings are being removed and replaced; if other components of a manhole, including flat-top sections and barrels are being removed and replaced, then roadway restoration shall be performed as defined in Section 055 of these Specifications. Prior to the commencement of work by the Contractor, unless specified otherwise by the Engineer, GPSD does not plan to repair of modify in any way the sewers in which CIPP will be constructed as part of the completion of this Project.

40. Inspection recordings provided as part of the Project Plans and Specifications are an informational courtesy only and not intended to be representative of existing site conditions. Field verification of existing site conditions shall be the responsibility of the Contractor.

41. As provided on the summary of quantities and items, quantities of CIPP to be installed are estimated and based upon distances measured using District mapping. Distances scaled from the Plans or taken from sewer inspections may be inconsistent with these quantities.

42. The Sanitary District has not inspected the conditions of private plumbing or private sewers to determine their adequacy for the prevention of either odor migration or sewer backups resulting from either preparation for or installations of CIPP to be installed as part of this Project. GPSD shall not be liable for damages caused by deficiencies in private sewers or private plumbing; the Contractor shall determine the adequacy of private sewers and private plumbing for the prevention of damages caused by the activities of the Contractor.

43. The Sanitary District has not verified the accuracy of the types of sanitary structures as represented on the Plans; specifically, the location of drop manholes has not been verified. Furthermore, the Sanitary District's definition of drop manholes may differ from that of Contractors. Determinations of the effects on cured-in-place pipe (CIPP) construction of differences of elevations between pipes connecting to manholes have not been made by the Sanitary District and shall be the exclusive responsibility of the Contractor responsible for CIPP construction.

44. At manholes bounding sewers in which CIPP will be constructed by the Contractor responsible for the completion of the Project, or an assigned Subcontractor, where the Contractor removes manhole castings and lids, the Contractor shall reinstall the

removed castings and lids in accordance with the Specifications.

45. Conditions within the sewers designated to be inspected or cleaned and inspected as part of the completion of this Project have not been investigated by the Sanitary District. Unless specifically provided within either the Plans or these Specifications, the Sanitary District does not have any knowledge of or information about the quantity or characteristics of solids in the sewers. The Contractor shall be responsible for determining conditions within the sewers to the extent that he or she deems necessary for both the submittal of a proposal for the completion of the work and the successful performance of the work as shown on the Plans and called for in these Specifications. The Contractor shall assume all risks and shall claim no additional compensation for both unforeseen conditions within the sewers and incorrect determinations of the impact of conditions on the completion of the work.

46. At the Sanitary District's wastewater treatment plant at 2322 S. Darst St. in Peoria, IL, when disposing of solids collected as part of the completion of this Project, the Contractor shall not be assessed disposal fees.

47. The Contractor shall comply with the requirements of any Storm Water Pollution Prevention Plan (SWPPP) included within the Specifications. Any and all costs including, but not limited to, fines, fees and/or penalties imposed upon the Owner due to the Contractor’s failure to comply with any provision of any applicable SWPPP will be passed on to the Contractor. This cost shall also include reasonable attorney’s fees. If the Contractor fails to repair, maintain or implement erosion control and/or sediment control devices outlined in any applicable SWPPP or shown on the contract documents, the Owner reserves the right to perform the work and the Contractor shall pay all costs incurred, including reasonable attorney’s fees. The Owner reserves the right to deduct the above said costs from progress payments due to the Contractor.

    All erosion and sediment control measures shall remain in place and shall be maintained until the Notice of Termination (NOT) has been submitted by the GPSD to IEPA. Upon acceptance of the NOT by IEPA, the Contractor shall remove the erosion and sediment control measures to the satisfaction of the GPSD and Property Owner(s).

48. Where exploratory excavations are to be performed, the Contractor shall allow GPSD all the time necessary to adjust or modify the proposed improvements. If necessary, the Contractor shall not make claims for additional compensation for either delays or disruptions of Contractor activities resulting from design alterations or modifications.

49. Where required, exploratory excavations shall be performed and prioritized relative to other construction activities.

50. Where specified, exploratory excavations shall be performed for the purpose of obtaining the information required regardless of the number of attempts by the Contractor necessary to achieve the objective. The Contractor shall be compensated per exploratory excavation despite the number of, and extent of, excavations necessary. For instance, if exploratory excavations are necessary to identify all of the drains for a residence, the Contactors shall be compensated for one exploratory excavation

independent of the number of drains for the residence, the number of attempts by the Contractor necessary to identify the location and depth of each drain, or the extent of the required excavations and restorations.

51. Existing culverts and field tiles shall be removed and replaced as necessary during construction. Any culverts or field tiles damaged during construction shall be replaced both in accordance with the directions of the Engineer and using comparably sized PVC, SDR 26, pipe bedded in CA-7 or CA-11 white rock crushed stone bedding. Crushed stone bedding shall extend from the bottom of the excavation to one (1) foot over the top of pipe. Existing storm sewers and field tiles encountered at conflicting depths with the proposed sewer shall be reconstructed.

52. In agricultural areas that are or might be cultivated, the Contractor shall remove and stockpile all existing topsoil within the limits of excavations made towards the completion of the Project. After backfilling, replace topsoil to match original ground surface.

53. The Contractor shall be solely responsible for the loading and unloading of equipment and materials as necessary to complete the work.

54. Filling of excavations shall be completed in accordance with these Project Specifications and either as shown on the Plans or in accordance with directions to be provided by the Engineer. Throughout the Plans, the types of backfill operations required within provided limits has been shown. Backfilling operations shall be necessary within the limits of excavations made to complete the work; however, backfill shall not be required where excavations are not constructed.

55. Access to locations of work within City of Peoria rights-of-way requires the acquisition of a permit or permits from the City of Peoria. Unless included in these Specifications, as necessary to allow completion of the work specified within these Specifications and shown on the Plans, the Contractor shall be responsible for the acquisition of all permits necessary from the City of Peoria and the completion of all tasks thereto, including, but not limited to, the design and proposal of proposed traffic control measures and the completion and submittal of necessary application forms. The Contractor shall be responsible for any and all payments required as part of the application process. Information about the City's application process can be obtained from the City of Peoria Department of Public Works.

    The Contractor shall recognize that the Sanitary District cannot estimate either the time or effort necessary to acquire the necessary permits from the City of Peoria. The Contractor shall not make claim for additional compensation in the forms of either contract time or contract amount for unanticipated delay or labor necessary to acquire the necessary, City of Peoria, permits.

56. The Contractor shall be responsible for obtaining any and all required building permits and associated building permit application fees.

57. The Contractor shall assure that, at all times, all work, equipment, materials, personnel and vehicles shall remain within the limits of District-owned property, temporary

construction easements granted to the District specifically for the purpose of completing the work or permanent easements granted to the District. Where and as allowed by the governing authority with jurisdiction, for the purpose of completing the work, the Contractor may encroach onto public right-of-way. The Contractor shall not disturb, alter, or traverse across property outside of these limits.

58. Within the limits of District properties, including the District's facilities at 2322 S. Darst St. in Peoria, the District is not obligated to provide parking for Contractor vehicles or equipment. During all or a portion of the duration of the Project, if desired by the Contractor, the District might have space available for the short-term parking of some or all of the Contractor's vehicles or equipment. The availability of space within the limits of the District's WWTP, if any, and the duration of time that such space will be made available to the Contractor, will be determined upon request. If such a parking allowance is granted but later wholly or partially revoked by the District, the Contractor shall immediately cease the parking arrangement including the complete removal of all Contractor vehicles and equipment.

59. As represented within the profile views of the Plans, those utilities whose elevations at the represented crossings have been field verified are indicated as such using descriptions such as "Verified" or "Hydroexcavate." The provision of this information shall not relieve the Contractor from the responsibilities to both ascertain underground conditions to avoid property damage and verify the accuracy of the information provided.

    Those utility crossings either represented within the plan views but not within the profile views or not described using descriptors such as "Verified" or "Hydroexcavate" have not been field verified or determined from field gathered information. Except where exploratory excavation is required by the Engineer, it will be the responsibility of the Contractor to determine if additional vertical information is necessary and, if so, to gather the necessary information as part of the completion of the Contract.

60. Construction of concrete materials shall be in accordance with the latest version of the American Concrete Institutes (ACI) document ACI 306R, titled "Guide to Cold Weather Concreting", as reported by ACI Committee 306.

61. As an informational courtesy, in the Project Specifications, plats of subdivisions in proximity to the location(s) of work may or may not have been included. If included in the Project Specifications, the Sanitary District has not verified the accuracy or completeness of the information provided or it's representation of existing conditions.

END OF SECTION

SECTION 017

LAWS AND REGULATIONS

1.0 Laws and Regulations

Contractor shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither the Sanitary District, the City of Peoria nor the Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

If Contractor observes that the Specifications or Plans are at variance with any Laws or Regulations, Contractor shall give Engineer prompt written notice thereof, and any necessary changes will be authorized. If Contractor performs any work knowing or having reason to know that it is contrary to such Laws and Regulations, and without such notice to Engineer, Contractor shall bear all costs arising therefrom; however, it shall not be Contractor's primary responsibility to make certain that the Specifications and Plans are in accordance with such Laws and Regulations.

2.0 Safety and Health Regulations

The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL91-54) or as amended. Nothing in these Acts shall be construed to supersede or in any manner effect any workers' compensation law or to enlarge or diminish or affect in any manner the common law or statutory rights, duties, or liabilities of employers and employees under any law with respect to injuries, diseases, or death of employees arising out of, or in the course of employment.

The Contractor shall review the District’s Contractor Safety Policy as included in the appendices of these Specifications and, prior to the commencement of construction, shall execute the Statement of Understanding included in the same.

3.0 Requirements for Greater Peoria Sanitary District Equal Employment Opportunity

In the event of the Contractor's noncompliance with any provision of this Equal Employment Opportunity Clause, the Illinois Fair Employment Practices Act or the Fair Employment Practices Commission's Rules and Regulations for Public Contracts, the Contractor may be declared non-responsible and therefore ineligible for future contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age, ancestry or physical and/or mental disability; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization;

That, if it hires additional employees in order to perform this Contract, or any portion hereof, it will determine the availability (in accordance with the Commission's Rules and Regulations for Public Contracts) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized;

1. That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, national origin, age, ancestry or physical and/or mental disability;

2. That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Fair Employment Practices Act and the Commission's Rules and Regulations for Public Contracts. If any such labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Fair Employment Practices Commission and the contracting agency and will recruit employees from other sources when necessary to fulfill its obligations thereunder;

3. That it will submit reports as required by the Illinois Fair Employment Practices Commission's Rules and Regulations for Public Contracts, furnish all relevant information as may from time to time be requested by the Commission or the contracting agency, and in all respects comply with the Illinois Fair Employment Practices Act and the Commission's Rules and Regulations for Public Contracts;

4. That it will permit access to all relevant books, records, accounts and work sites by personnel of the contracting agency and the Illinois Fair Employment Practices Commission for purposes of investigation to ascertain compliance with the Illinois Fair Employment Practices Act and the Commission's Rules and Regulations for Public Contracts;

5. That it will include verbatim or by reference the provisions of paragraphs 1 through 7 of this clause in every performance subcontract as defined in Section 2.10(b) of the Commission's Rules and Regulations for Public Contracts so that such provisions will be binding upon every such subcontractor; and that it will also so include the provisions of paragraphs 1, 5, 6 and 7 in every supply subcontract as defined in Section 2.10(a) of the Commission's Rules and Regulations for Public Contracts so that such provisions will be binding upon every such subcontractor. In the same manner as with other provisions of this contract, the contractor will be liable for compliance with applicable provisions of this clause by all its subcontractors; and further it will promptly notify the contracting agency and the Illinois Fair Employment Practices Commission in the event any subcontractor fails or refuses to comply therewith. In addition, no Contractor will utilize any subcontractor declared by the Commission to be nonresponsible and therefore ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations.

With respect to the two types of subcontracts referred to under paragraph 7 of the Equal

Employment Opportunity Clause above, following is an excerpt of Section 2 of the FEPC's Rules and Regulations for Public Contracts:

The term "Subcontract" means any agreement, arrangement or understanding, written or otherwise, between a Contractor and any person (in which the parties do not stand in the relationship of an employer and an employee):

(a) for the furnishing of supplies or services or for the use of real or personal property, including lease arrangements, which in whole or in part, is utilized in the performance of any one or more contracts; or

(b) under which any portion of the Contractor's obligation under any one or more contracts is performed, undertaken or assumed.

The Sanitary District’s affirmative action requirements are detailed in District Ordinance No. 517 that is included as Appendix B in these specifications.

END OF SECTION

SECTION 021

GENERAL CONDITIONS

The Contractor shall complete all work in accordance with the Specifications including the conditions detailed in this Section.

The Contractor shall be responsible for his entire work until completed and accepted by the Sanitary District.

The Contractor is responsible to provide a complete and operational system as shown in the construction plans, called for in the Specifications or directed by the Engineer.

The Contractor shall furnish all power, light, water and other utilities required for any purposes in the work, except as otherwise noted within these Specifications.

The Owner reserves the right to award other contracts in connection with the work if the Owner deems it expedient to do so.

1.0 Specifications

The work shall be executed in strict conformity with the Specifications including any Plans made thereof, and the Contractor shall do no work without proper instructions. The District or the Owner will furnish the Contractor all copies of the Specifications reasonably necessary to carry out the work.

Specifications are on file at the office of The Greater Peoria Sanitary and Sewage Disposal District, 2322 S. Darst Street, Peoria, Illinois.

The contract documents are complimentary, and what is required by anyone shall be as binding as if required by all. Any differences between Specifications and questions as to meaning of the Specifications shall be interpreted by the Engineer, whose decision shall be final and binding on all parties concerned. The Contractor will not be allowed to take advantage of any errors or omissions in the Specifications. The Engineer will provide full instructions when errors or omissions are discovered.

Should discrepancies occur in or between specifications, Contractor is deemed to have estimated on the more expensive method of completing work unless he shall have, prior to submission of proposal, obtained written decision of Engineer as to which method or materials will be required.

Where detailed information is lacking or errors occur, before proceeding with work, refer matter to Engineer for information or assume full responsibility for and make good any resulting defects or damage.

2.0 Materials, Workmanship and Inspection

The entire improvement and all the appurtenances shall be constructed in a good and workmanlike manner and under the direction of the Engineers of The Greater Peoria Sanitary

and Sewage Disposal District or their agents.

The Engineer and his assistants shall have at all times free access to every part of the work and to all points where material to be used in the work is manufactured, procured or stored and shall be allowed to examine any material furnished for use in the work under this Project.

The Contractor shall take all necessary precautions so as to cause no unauthorized interruption in any essential part of sewage collection and treatment operations. Sewage collection and treatment operations must be m1aintained at the same level during construction as existed prior to construction. Shutdowns for construction work shall be scheduled in advance, carefully planned, and shall be carried out in close cooperation with the Owner. The Owner shall retain the authority to require the cessation of construction activities and return to service of any component of the system should the need arise.

Generally, the inspection of any and all material furnished for use in work to be performed under this contract shall be made at the site of the work after delivery of the material; however, the Engineer may at his option perform, or have performed, inspection of material at points other than at the site of the work. In any case the Contractor shall pay to the Owner the extra cost of such inspection, including the necessary expenses of the inspector and the salary of the inspector for the extra time expended in performing any such inspection at said other points.

The Contractor shall give notice in writing to the Engineer sufficiently in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Engineer will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials or he will notify the Contractor that the inspection will be made at a point other than the point of manufacture, or he will notify the Contractor that inspection will be waived. The Contractor must comply with these provisions before shipping any material.

When inspection is waived or when the Engineer so requires, the Contractor shall furnish to him authoritative evidence in the form of Certificates of Conformance that the materials to be used in the work have been manufactured and tested in conformity with the Contract Documents. These certificates shall include copies of the results of physical tests and chemical analyses where necessary, that have been made directly on the product, or on similar products of the manufacturer.

All field inspection and testing of materials furnished under this Contract will be performed by the Contractor or his duly authorized inspection engineers and be considered as incidental to the contract. The Engineer shall direct when testing is required.

Tests to determine the quality and strength and acceptability of the various materials and pipe to be used in the construction of the work may be ordered by the Sanitary District. Tests will be in accordance with, and the acceptability of materials determined by the standard current specifications of The American Society of Testing Materials, or other standard specifications, referred to in these Specifications, as far as they apply. Other tests to determine acceptability under these Specifications may be ordered by the District, as may be necessary and such tests shall include all necessary expense attending the same to be paid for by the Contractor.

The entire improvement and all the appurtenances shall be constructed in a good and

workmanlike manner and under the direction of the Sanitary District. Employees of the Contractor whose work is unsatisfactory to the Owner or Engineer, or are considered by the Engineer to be careless, incompetent, unskilled, or otherwise objectionable shall be dismissed from the work upon notice from the Engineer.

All materials and workmanship of whatsoever kind used in the work shall be subject to the inspection and approval of the Engineer and shall be subject to the constant inspection before acceptance. Any imperfect work that may be discovered before its final acceptance shall be corrected immediately, and any unsatisfactory materials used in the work or delivered at the site shall be rejected and removed on the requirement of the Engineer. The inspection of any work shall not relieve the Contractor of any of his obligations to perform proper and satisfactory work, as herein specified, and all work which during the progress and before its final acceptance, may become damaged for any cause, shall be removed and replaced by good and satisfactory work, without extra charge therefore.

If the Contractor does not correct condemned work and remove rejected materials within a reasonable time, fixed by written notice, the District may remove them and charge the expense to the Contractor.

Should it be considered necessary or advisable by the Engineer at any time before final acceptance of the entire work to make any examination of work already completed, by removing or tearing out same, the Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any material respect, due to fault of the Contractor, or his Subcontractors, he shall defray all the expense of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus fifteen (15) percent, shall be paid the Contractor by the Owner.

If any defects or omissions in said work are hidden or concealed so that a reasonably careful inspection at the time of acceptance of said work would not have disclosed them, and such defects or omissions appear or are disclosed within two (2) years after Final Payment of the work, then the Contractor agrees, on notice given him in writing by the Engineer that such defects or omissions exist, to immediately correct and make good the same, and in the event that he fails, refuses or neglects to do so, then the Sanitary District may correct and make good the same, and the Contractor hereby agrees to pay on demand the cost and expense of doing such work.

3.0 Subcontracting

The Contractor shall not subcontract any work to be performed or any materials to be furnished in the performance of this Project without the consent of the District. If the Contractor shall sublet any part of this Project, the Contractor shall be as fully responsible to the District for the acts and omissions of his Subcontractor and of the persons either directly or indirectly employed by his Subcontractor, as he is for the acts and omissions of persons directly employed by himself.

4.0 Permits and Compliance with Laws

The Contractor shall keep himself fully informed of all existing Sanitary District ordinances, local regulations and ordinances, and state and national laws in any manner affecting the work herein specified. The Contractor shall give all notices, pay all fees, and comply with all law, ordinances,

rules and regulations bearing on the conduct of the work. The Contractor shall pay for all permits and licenses necessary for the prosecution of the work unless otherwise specifically provided. Before the Contractor commences work in any private drive, alley, street, roadway or highway, he shall first secure a permit from the municipality, person or persons having jurisdiction of these rights of way. If necessary, permits have been acquired by the Owner, the Contractor shall complete the work in conformance with the conditions and requirements expressed therein.

5.0 Protection of Work

The Contractor shall continuously and at his own expense maintain adequate protection of all his work from damage and shall protect the Owner's and adjacent property from injury arising in connection with the Project.

To secure the protection of the work, the adjacent streets, buildings or other improvements, the Contractor must furnish and put in place at his own expense, braces, sheeting, etc., as may be necessary for the safety of the work, the public, or adjacent property. The sheeting and bracing shall be removed as the work progresses in such a manner as to prevent the caving in of the sides of the excavation or damaging any adjacent improvements. While being drawn, all vacancies left shall be carefully filled with flowable backfill or fine sand that is rammed by special tools or puddled as directed. The Engineer may order sheeting and bracing left in place, when in his opinion it is necessary for the protection of the work, the public, or adjacent property.

6.0 Use of Job Site and Boundaries of Work

The Contractor shall confine his equipment, apparatus, the storage of materials and operations of his workmen to limits indicated by law, ordinances, permits or directions of the Owner and the District and shall not encumber other premises with his materials. No ground outside the limits of rights of way or easements acquired for the sewers or appurtenances thereto, or ground outside the limits of property upon which the Owner may by law have the right to construct said improvement, shall be entered or occupied by personnel, tools, materials, or equipment without the consent of the owner in control of such land. The Contractor shall be responsible for making arrangements with property owners to gain access to the various job sites.

7.0 Damages, Indemnity and Hold Harmless

Said Contractor covenants and agrees to pay all damages for injury to real or personal property, for any injury sustained by any person growing out of any act or deed of said Contractor, its employees or agents that is in the nature of a legal liability. The Contractor further agrees to indemnify and hold the Sanitary District, the City of Peoria and their agents harmless against all claims, demands, citations, losses, causes of action, damage, lawsuits, judgments, including attorney’s fees and costs against said Sanitary District, City of Peoria and/or their agents for, or on account of the actions or omissions of the Contractor, its employees or agents, including but not limited to injuries to real or personal property, injuries received or sustained by any person or persons caused by said Contractor, its employees or agents in the execution of said work by or in consequence or for claims made for violations of the Occupational Safety and Health Act of 1970, as amended.

8.0 Notifications by Contractor

Sufficient notice (at least one week, and, if possible, longer) shall be given by the Contractor to all utilities, private corporations and governmental entities whose pipes, poles, tracks, wires or conduits or other structures may be affected by the work, in order that they may adjust, remove or rebuild them. The Contractor shall likewise notify the dispatcher of the local fire and police departments twenty-four (24) hours in advance of any temporary blocking of any street and convey the anticipated time and duration of said blocking.

9.0 Superintendence

The Contractor shall give his personal superintendence to the work or have at the site of the work at all times a competent foreman, superintendent, or other representative satisfactory to the District and having authority to act for the Contractor, and to receive and execute orders from the Engineer, who shall receive shipments and material to the Contractor, and who shall see that the work is executed in accordance with the specifications and the orders of the Engineer thereunder. The Engineer shall have the right to suspend the work under the conditions of the Notice to Suspend Work when in his opinion competent superintendence is not present to direct the work.

10.0 Workers

The Contractor shall employ competent superintendence, foremen and laborers, and shall discharge, at the request of the Engineer, any incompetent or unfaithful workers in his employ. None but workers expert in their respective branches of work shall be employed where special skill is required.

11.0 Resident Project Representative

Duties and responsibilities of the District's Resident Project Representatives will include the following:

1) Review the progress schedule, schedule of shop drawing submissions and schedule of values

   prepared by the Contractor and consult with the Engineer concerning their acceptability;

2) Arrange a schedule of progress meetings and other job conferences as required in consultation with the Engineer and notify those expected to attend in advance. Attend meetings, maintain and circulate copies of minutes thereof;

3) Serve as Engineer's liaison with Contractor, working principally through Contractor's superintendent and assisting him in understanding the intent of the Specifications and Contract Documents. Assist Engineer in serving as District's liaison with Contractor when Contractor's operations affect the District's on-site operations. As requested by Engineer, assist in obtaining additional details or information at the job site for proper execution of the work;

4) Receive and record date of receipt of shop drawings and samples, receive samples which are furnished at the site by Contractor and notify Engineer of their availability for examination. Advise the Engineer and Contractor of any work requiring a shop

drawing or sample submission if the submission has not been approved by the Engineer;

5) Conduct on-site observations of the work in progress to assist Engineer in determining if the work is proceeding in accordance with the Specifications and Contract Documents and that completed work will conform to the Specifications and Contract Documents;

6) Report to Engineer whenever he/she believes that any work is unsatisfactory, faulty or defective or does not conform to the Specifications and Contract Documents, or does not meet the requirements of any inspection, test or approval required to be made or has been damaged prior to final payment. Advise the Engineer when he/she believes work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval;

7) Verify that test, equipment and system start-ups are conducted as required in the Specifications and Contract Documents;

8) Accompany, visitors, inspectors representing public or other agencies having jurisdiction over the Project, record the outcome of these inspections and report to the Engineer;

9) Transmit to Contractor clarification and interpretation of the Specifications and Contract Documents;

10) Consider and evaluate Contractor's suggestions for modifications of both the Plans and the Specifications and Contract Documents and report them with recommendation to the Engineer for his acceptance or rejection;

11) Maintain at the job site orderly files for correspondence, report of job conferences, shop drawings and samples submissions, reproduction of original Specifications and Contract Documents including all addenda, change orders, field orders and additional drawings issued subsequent to the execution of the contract. Keep a diary or logbook recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list of visiting officials and representatives of manufactures, fabricators, suppliers and distributors, daily activities, decisions, observation in general and specific observation in more detail as in the case of observing test procedures. Send copies to Engineer. Record names, addresses and telephone number of all Contractors, subcontractors, and major suppliers of material and equipment;

12) Furnish Engineer periodic reports as required of progress of the work and Contractor's compliance with the approved progress schedule and schedule of Shop Drawing submissions. Consult with the Engineer in advance of scheduled major tests, inspection or start of important phases of the work. Report immediately to Engineer upon the occurrence of any accident;

13) Review application for payment with Contractor for compliance with the established procedure for their submission and forward the application for payment with recommendations to Engineer, noting particularly their relation to the schedule of

values, work completed and materials and equipment delivered at the site but not incorporated in the work;

14) Before Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction. Conduct final inspection in company of Engineer and Contractor and prepare a final list of items to be completed or corrected. Verify that all items on final list have been completed and make recommendation to Engineer concerning acceptance;

The Resident Project Representative's authority shall be limited as follows except upon written instructions of the Engineer:

1) Shall not authorize any deviation from the Specifications and Contract Documents or approve any substitute materials or equipment;

2) Shall not exceed limitations on Engineer's authority as set forth in the Specifications and Contract Documents;

3) Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Specifications and Contract Documents;

4) Shall not advise or issue directions as to safety precautions and programs in connection with the work;

5) Shall not authorize District acceptance of the Project in whole or in part;

6) Shall not participate in specialized field or laboratory tests.

12.0 Lines and Grades

During construction, the Engineer or Owner shall furnish the Contractor with the necessary lines, grades and measurements needed unless a pay item for Construction Layout is provided. The Contractor shall check the lines and grades by such means as he may deem necessary and before using them shall call the Engineer's attention to any inaccuracies. Failure to notify the Engineer or his assistant of such inaccuracies shall make the Contractor solely responsible for the cost of repairing or replacing any or all work done in error.

The care of the stakes, markings and the lines and grades shall be the duty of the Contractor and LOST OR DISTURBED STAKES WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

When specifically called for in the Specifications, the Contractor shall be required to perform construction layout and staking for this Project. The Sanitary District or Owner will provide adequate reference points to the centerline of survey and benchmarks as listed herein. Any additional control points set by the Sanitary District or Owner will be identified in the field to the Contractor and all field notes will be kept in the office of the Engineer or his Representative.

The Contractor shall provide field forces, equipment and material to set all additional stakes for this Project which are needed to establish offset stakes, reference points, and any other horizontal or vertical controls, including supplementary benchmarks, necessary to secure a correct layout of the work. Stakes for line and grade shall be set at sufficient station intervals to assure substantial conformance to plan line and grade. The Contractor will not be required to set additional stakes to locate a utility line which is not included as a pay item in the contract nor to determine property lines between private properties.

The Contractor shall be responsible for having the finished work conform to the lines, grades, elevations, and dimensions as directed. Any inspection or checking of the Contractor's layout by the Engineer or his Representative and the acceptance of all or any part if it shall not relieve the Contractor of his/her responsibility to secure the proper dimensions, grades and elevations of the several parts of the work. The Contractor shall exercise care in the protection of stakes and benchmarks and shall have them reset at his/her expense when any are damaged, lost, displaced, or removed or otherwise obliterated.

Responsibility of the Sanitary District or Owner

(a) The Sanitary District or Owner will reference the centerline of the Project. Referencing the centerline of survey will consist of establishing and referencing the control points of the centerline of surveys.

(b) Benchmarks will be established along the Project outside of construction lines.

(c) Stakes set for (a) and (b) above will be identified in the field to the Contractor.

(d) The Sanitary District or Owner will make random checks of the Contractor's staking to determine if the work is in substantial compliance with the Engineer’s directions. Where the Contractor's work will tie into work that is being or will be done by others, checks will be made to determine if the work is in conformance with the proposed overall grade and horizontal alignment.

(e) The Sanitary District or Owner will make all measurements from which the various pay items are to be measured.

(f) Where the Contractor, in setting construction stakes, discovers discrepancies, the Sanitary District or Owner will check to determine their nature and make whatever revisions are necessary. Any additional restaking required by the Engineer will be the responsibility of the Contractor.

(g) The Sanitary District or Owner will accept responsibility for the accuracy of the initial control points as provided herein.

(h) It is not the responsibility of the Sanitary District or Owner, except as provided herein, to check the correctness of the Contractor's stakes; however, any errors that are apparent will be immediately called to the Contractor's attention and he/she shall be required to make the necessary correction before the stakes are used for construction purposes.

Responsibility of the Contractor

(a) The Contractor shall establish from the given survey points and bench marks all the control points necessary to construct the individual Project elements. He/She shall provide the Engineer adequate control in close proximity to each individual element to allow adequate checking of construction operations. This includes, but is not limited to line and grade stakes, line and grade nails in form work, and/or filed or etched marks in substantially completed construction work. The maximum distance along the sewer route between permanent and/or temporary benchmarks shall be 800 feet.

It is the Contractor's responsibility to tie in centerline control points in order to preserve them during construction operations.

(b) All work shall be in accordance with normally accepted self-checking surveying practices. Field notes shall be kept in standard survey field notebooks and those books shall become the property of the Sanitary District or Owner at the completion of the Project. All notes shall be neat, orderly, and in accepted form.

13.0 Structures and Utilities Encountered

The location of various underground and surface structures may or may not be provided. The location and dimensions of such structures where given do not purport to be absolutely correct. The Contractor shall determine in the field the exact location of all public and private existing utilities and other structures.

The Contractor shall notify J.U.L.I.E. at (800) 892-0123 prior to commencing any excavation.

The Contractor shall be entirely responsible for damage to existing utility and transportation infrastructures as well as existing features at the site(s), including, but not limited to, the following: water pipes and accessories such as control valves; existing drains, whether subsurface or above-ground; existing sewers and sewer structures such as manholes, inlets, etc.; utility poles carrying cables, wires, conduits, etc.; above-ground and subsurface utility wires, cables, conduits, etc., including those intended to serve telephone, telegraph, electrical and traffic control interests; railroad bridges, tracks and interests; streets, pavements, sidewalks, curbs, fences, culverts, field tile, buildings, trees or other structures of any kind met with during the prosecution of the work; and shall be liable for damages to public or private property resulting therefrom which amount may be deducted from any moneys due him for work done.

When it is necessary to build under, across or near any existing tracks, roads, fences or other structures, the Contractor shall make the necessary arrangements with the parties responsible for same and shall bear all expenses for protecting the property and the structures from possible loss or injury. The Contractor shall provide temporary structures where necessary. Permanent restoration of structures shall be equal to the original. Such arrangements shall be subject to the approval of the Engineer.

The Contractor shall care for and maintain all field tile, sewers, drains, water and gas pipes, conduits, culverts, bridges, buildings and foundations encountered, together with the services

therefrom, and shall maintain or otherwise provide for the service of water, gas, electricity and other utilities disturbed. Whenever such structures are interfered with, the Contractor shall, if necessary, provide temporary facilities to maintain such service. The Contractor shall promptly repair all damaged items and in case of such repairs are not made promptly or satisfactorily, the Sanitary District may have the repairs made and may deduct the cost thereof from any moneys due or to become due the Contractor.

No such sewers, drains, culverts, water pipe, gas pipe, poles or other structures shall be moved without the consent of the Engineer; and where such structures cross or extend within the work of the Contractor, these pipes or structures shall be securely hung, braced and supported in place until the work is completed.

The Contractor shall be responsible for and repair utilities damaged as a result of construction operations. The respective utility shall be notified immediately whenever any of their lines are damaged. Immediately restore pipes, conduits, service lines, wires, and other utilities to their full and permanent service condition in a manner approved by the Engineer and the affected utility company. No extra compensation shall be allowed for the repair of any utilities or structures damaged by Contractor construction operations. Residential sanitary sewer services shall be repaired in accordance with the Sanitary District specifications titled “General Specifications for Sanitary Sewers and Appurtenances,” latest edition, and “Building Sewer Regulations,” latest edition.

14.0 Pedestrians and Traffic

Excavated material, other materials, equipment and tools, shall be so piled and located that free access may be had at any time to all parts of the work; and so as to inconvenience public travel or adjoining tenants as little as possible. Walkways shall be kept clean and unobstructed. Neither the materials excavated nor the materials or plant used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, water valves, gas valves, manholes, fire alarm or police call boxes in the vicinity.

The Contractor shall make provision so far as practicable in the opinion of the Engineer at all cross streets, private driveways, and along streets carrying traffic, for the free passage of vehicles and foot passengers by building temporary roads, bridges, or as otherwise directed by the Engineer. No special allowance shall be made for this temporary construction unless so specified in these Specifications.

Where such temporary construction is impracticable or unnecessary in the opinion of the Engineer, the Contractor shall make arrangements, satisfactory to the Engineer, for the diversion of traffic, and shall at his own expense provide all material and perform all work necessary for the construction and maintenance of roadways and bridges for such diversion of traffic.

The Contractor shall provide for protection of the public by installing and maintaining traffic control signs and barricades. The State of Illinois Standards, location of traffic control equipment, should be considered the minimum required for road closures and lane reductions. However, if on roadways which are not IDOT right- of-ways any permits obtained from the governing jurisdiction (City of Peoria, etc.), which dictate traffic control measures different from those required by IDOT Standards, shall govern traffic control measures at that particular work site. Traffic Control Standards are included in Section 099 of these Specifications.

Contractors shall notify the Sanitary District and all agencies having jurisdiction over the affected right-of- ways in question at least one (1) week in advance of any road closures.

Street intersections may be blocked only one-half at a time and at all times the Contractor shall maintain suitable roadways or walks to properly accommodate traffic. Gutters and water courses shall be kept clear for the passage of storm water, or other provisions shall be made to care for it. Proper provisions shall be made for the protection of traffic and the public. The Contractor shall provide and maintain proper barricades, sign boards, fences, signal lights and watchmen to properly protect the work, persons, animals, vehicles and property against injury. These statements of specific duties on the part of the Contractor shall not be considered as a limitation on the general duties imposed by the Project or specifications.

The Sanitary District reserves the right to remedy any neglect on the part of the Contractor as regards the protection of the work, property, or public after twenty-four (24) hours notice in writing, except in case of emergency when it shall have the right to remedy any neglect without notice, and in either case bill the cost of such remedy to the Contractor.

15.0 Bulkheads

The Contractor shall build, inside the sewers constructed under this Project, suitable wooden, brick, or pneumatic plug bulkheads to protect his work against the entrance of dirt or water and also to protect adjacent work built under other Projects.

These bulkheads shall be constructed at such points and in such manner as ordered and directed by the Engineer and, when so ordered, the Contractor shall remove them. Prior to the removal of such bulkheads, or prior to the joining up of adjacent work to the work built under this Project, the Contractor shall at his own expense remove all water which has collected behind such bulkheads and which may in any way affect their satisfactory removal or interfere with adjoining work.

16.0 Temporary Sewer Connections

When existing sewers or drains have to be taken up or removed, or where special connections are made, the Contractor shall provide and maintain temporary outlets and connections for all private or public drains, culverts, sewers or catch basins. He shall also take care of all sewage and drainage which will be received from these drains, culverts, sewers and catch basins; and for this purpose, he shall provide and maintain, at his own expense, adequate pumping facilities and temporary outlets or diversions. He shall construct such troughs, pipes or other structures as may be necessary and shall be prepared at all times to dispose of the drainage and sewage received from these temporary connections until such time as the permanent connections are built and in service. Existing sewers and connections, and tile or other drains, are to be kept in service and maintained except where specified or ordered in writing to be abandoned by the Engineer.

17.0 Locations for Stub Sewers

The Contractor shall assume all responsibility for the location and connection to building inlets and risers for six (6) inch stub sewers. At the Contractor's request the Engineer may assist in the location of said inlets or risers but under no circumstances shall the Engineer be held liable

for errors resulting in time lost or materials used locating said inlets. All time lost or materials used shall be at the expense of the Contractor.

In the event that a building inlet or riser cannot be found, the Engineer may order the Contractor to tap the line using an approved saddle to form the building inlet.

18.0 Correction of Work

Neither the final acceptance nor any provision in the Project document shall relieve the Contractor of the responsibility for negligence, faulty materials or faulty workmanship which shall appear within two (2) years after date of completion and acceptance. Upon written notice, he shall correct such defects at his own expense and shall pay for any damages that may occur as a result of the faulty work. This correction shall also apply to surface areas where restoration or original conditions are not complete or satisfactory during the two (2) year guarantee period.

Failure of the Contractor to correct faulty work within seven (7) days of receipt of written notice shall result in the work being corrected by others selected by the District and all costs so incurred shall be reimbursed to the Owner by the Contractor. If the Owner deems it expedient to accept work injured or not done in accordance with the contract, an equitable adjustment will be made with a proper deduction from the contract price for unsatisfactory work.

19.0 Sales Tax

The Greater Peoria Sanitary and Sewage Disposal District and the City of Peoria are exempt from paying State Sales Tax and Contractor shall be exempt from paying State Sales Tax on materials and services purchased for the Project.

20.0 Sanitation

The Contractor shall introduce and enforce among his employees such regulations in regard to cleanliness and the disposal of garbage and wastes, which will tend to prevent the inception and spread of contagious and infectious diseases, and shall take such means as the Engineer may direct to effectually prevent the creation of a nuisance to any part, streets or adjacent property affected by the work. Necessary sanitary conveniences for the use of the laborers on the work, properly secluded from public observation, shall be constructed and maintained by the Contractor in such manner and at such points as approved, and their use shall be strictly enforced.

21.0 Final Cleaning and Final Inspection

Upon completion of the work built under this Project, or a part thereof, the Contractor promptly and without delay, shall thoroughly and systematically clean and make any further needed repairs to the sewers or other structures. He shall at his own expense remove and properly dispose of all water, dirt, rubbish, bulkheads, or any other foreign substances.

The Contractor shall avoid introducing water in amounts determined to be excessive by the Engineer, or excessive or foreign solids, materials and substances into sewers. In the judgment of the Engineer, any such introductions into either storm or sanitary sewer systems shall be stopped and the costs of any such corrections shall be exclusively that of the Contractor.

When the Contractor has cleaned and inspected the whole, or any portion of the work, he shall notify the Engineer in writing that he is ready for an inspection of the whole, or a portion of the work, and the Engineer will thereupon inspect the work. If the work is not found satisfactory, the Engineer may require further cleaning or repairs and when these are completed, the Engineer will inspect the work.

During the final inspection the sewer shall be clean and free from water. In no case will the acceptance be final until the Contractor has complied with all the requirements set forth and the Engineer has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed, in accordance with the requirements of the Specifications.

Inspection of sewers after construction may be accepted by the use of closed-circuit television, air testing, or such other procedures as may be selected at the option and direction of the District.

22.0 Cleaning Up

The Contractor shall at all times keep the site of the work free from accumulations of waste material or rubbish caused by his employees or work and at the completion of the work he shall remove all his rubbish from and about the work and all his tools, equipment, scaffolding and surplus materials and shall leave his work clean and ready for use. Marred surfaces shall be patched or repaired and touched up to match adjoining surfaces. All damaged grass areas shall be restored and reseeded. In case of dispute, the District may remove the rubbish and surplus materials and tools and charge the cost to the Contractor. The Contractor shall instruct haulers of concrete to clean the truck mixers at a location specified by the Engineer or his Representative.

Where the Contractor's equipment is operated on any portion of the pavement used by traffic on or adjacent to the section under construction, the contractor shall clean the pavement of all dirt and debris every four hours, at the end of each day's operation, and at other times as directed. The Contractor shall also clean, as directed, all other areas of pavement that are impacted by construction activities and debris.

In accordance with Public Act 90-761, which amends the Environmental Protection Act concerning general construction or demolition debris, the Contractor shall not conduct any generation, transportation, or recycling of construction or demolition debris, clean or general or uncontaminated soil generated during construction, remodeling, repair, and demolition of utilities, structures, and roads that is not commingled with any waste, without the maintenance of documentation identifying the hauler, generator, place of origin of the debris or soil, the weight or volume of the debris or soil, and the location, owner, and operator of the facility where the debris or soil was transferred, disposed, recycled, or treated. This documentation must be maintained by the Contractor for three (3) years. All costs shall be the responsibility of the Contractor.

23.0 Rights of the Sanitary District

The Owner reserves the right to withhold a sufficient amount of any payment otherwise due to the Contractor to cover claims as follows:

(a) Payments that may be earned or due for just claims for labor or materials furnished in and about the performance of the work under this contract;

(b) Defective work not remedied, or contract items not wholly completed;

(c) Failure of the Contractor to make proper payments to his Subcontractor or Suppliers.

The Sanitary District shall disburse and shall have the right to act as agent for the Contractor in disbursing such funds as have been withheld pursuant to this paragraph to the party or parties who are entitled to payment therefrom. The Sanitary District will render to the Contractor a proper accounting of all such funds disbursed on behalf of the Contractor.

The Contractor shall furnish the Engineer reasonable facilities for obtaining information regarding the progress and execution of the work and the character of the materials, including all information necessary to determine the cost of the work, such as the number of personnel employed, their pay, the time during which they have worked on the various phases of construction, the cost of repairs to machinery, or other information required by the Engineer. The Contractor shall, on request, furnish the Engineer with copies of expense bills for transportation charges on all machinery, material and supplies shipped to or from the work under this contract.

24.0 Termination for Breach

In the event that any of the provisions of this Contract are violated by the Contractor or by any of his Subcontractors, the Owner may serve written notice upon the Contractor and the Surety of their intention to terminate such contract, such notice to contain the reasons for such intention to terminate the Contract, and unless within ten (10) days after the serving of such notice upon the Contractor such violation shall cease and satisfactory arrangements for correction be made, the contract shall, upon expiration of said ten (10) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and the Contractor, and the Surety shall have the right to take over and perform the contract, provided, however, that if the Surety does not commence performance thereof within thirty (30) days from the date of the mailing to such Surety of notice of termination, the Owner may take over the work and prosecute the same to completion by contract for the account and at the expense of the Contractor, and the Contractor and his Surety shall be liable to the Owner for any excess cost occasioned the District thereby, and in such event the District may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefore.

25.0 Definition of Notice

Where in any of the contract documents there is any provision in respect to the giving of any notice, such notice shall be deemed to have been given when in accordance with the following: as to the Sanitary District, when written notice shall be delivered to the Engineer of the Sanitary District, or shall have been placed in the United States mail addressed to the Executive Director of the District at the Office of the District, 2322 S. Darst St., Peoria, Illinois; as to the Contractor, when a written notice shall be delivered to the chief representative of the Contractor at the site of the work or by mailing such written notice in the United States mail addressed to the Contractor at the place stated in the papers prepared by him to accompany his proposal as the address of his permanent place of business; as to the Surety on the performance bond, when a written notice is placed in the United States mail addressed to the Surety at the home office of such Surety or to its agent or agents who executed such performance bond in behalf of such

Surety.

26.0 Extra, Additional or Omitted Work

The Owner, upon proper action by its governing body, through a written notice signed by its Engineer, may authorize additions to or deductions from the work to be performed in accordance with the following:

(a) By unit prices contained in the Contractor's original bid and incorporated in the construction contract;

(b) By a supplemental schedule of prices contained in the Contractor's original bid and incorporated in the construction contract;

(c) By an acceptable lump sum proposal from the Contractor.

If the value of such additions or deductions does not exceed twenty-five percent (25%) of the value of the original scope of work, the Contractor shall make no claim for adjustment or invalidation of the unit prices made part of the contract and shall accept the valuation of additions or deductions based on unit prices made part of the contract.

27.0 Liens

If at any time during the progress of said work the said Contractor shall fail or neglect to pay for any labor performed, material furnished, or tools, machinery, appliances, fuel provisions, or supplies of any sort or kind used or consumed in, upon or on account of said work for thirty (30) days after payment for same shall have become due, then the said Owner shall have the right to pay for such labor, or for materials, tools, machinery, appliances, fuel, provisions, or supplies, and the amount so paid shall be retained out of the money due or to become due to said Contractor. The Owner may refuse to make payment hereinafter mentioned to the extent of such indebtedness until satisfactory evidence, sealed and in writing, has been furnished that said indebtedness has been discharged.

The Owner is hereby authorized and empowered by said Contractor to ascertain by the Engineer the amount due or owing from said Contractor to any laborer or laborers, or to any person or persons, or corporation, for labor, equipment, materials, tools, machinery, appliances, fuel, provisions, or supplies of any sort or kind consumed upon, in or on account of the work covered by this contract in such manner and upon such proofs as the said Engineer may deem sufficient.

The Owner is authorized to require from the Contractor evidence satisfactory to the Engineer, of payments made by the Contractor to entities, including persons or corporations, amounts due or owing from said Contractor in or on account of the work covered by this contract. Prior to each payment to the Contractor, the Contractor shall submit waivers of mechanic’s lien from every entity who is lawfully entitled to file a mechanic’s lien arising out of the Contract and related to the Work covered by the payment. Partial waivers shall be in writing, sealed and include an original signature of an authorized agent of the entity granting the waiver (grantee); waivers shall include the amounts paid to date as well as the amounts due from the Contractor to the grantee for work or materials associated with the Project. When all amounts due to an entity for work or materials associated with the Project have been fully paid, submit final a final

waiver(s). The owner reserves the right to designate which entities must submit waivers. Waivers forms must be acceptable to the Engineer and executed in a manner acceptable to the Engineer.

The Contractor shall submit a General Contractor waiver for the full amount of the current payment.

28.0 Liquidated Damages

It is understood and agreed that time is of the essence of this contract, and that a failure on the part of said Contractor to complete the work herein specified within the time specified will result in loss and damages to the Owner, and that on account of the peculiar nature of such loss or damage, it is difficult, if not impossible, to accurately ascertain and definitely determine the amount thereof.

It is therefore covenanted and agreed that in case the said Contractor shall fail or neglect to complete the work herein specified on or before the date hereinbefore fixed for completion, the said Contractor shall and will pay to the Owner such actual costs as can be verified by the District or the sum of not less than that given below:

Original Contract Amount From More Than	To and Including	Charge per Calendar Day
$0	$100,000	$675
$100,000	$500,000	$1,050
$500,000	$1,000,000	$1,425
$1,000,000	$3,000,000	$1,725
$3,000,000	$6,000,000	$2,000
$6,000,000	$12,000,000	$3,450
$12,000,000	and over	$9,525

Damage shall be assessed for each and every calendar day the Contractor shall exceed the "Time of Completion" as specified in this Contract.

Said sum of actual Owner cost, but not less than the sums given in the chart above is hereby agreed upon, fixed and determined by the parties hereto as the liquidated damages which said District will suffer by reason of such defaults, and not by way of a penalty. In case the said Contractor does not complete the work covered by this contract on or before the time specified herein for the completion of the said work, the Engineer shall decide the number of days the said Contractor is in default, and the decision of said Engineer shall be final and binding upon both parties hereto. It is further agreed that if the Owner shall accept any work or make any payments shall not in any respect constitute a waiver or modification of any of the provisions hereof, and particularly the provisions in regard to TIME AND LIQUIDATED DAMAGES for delays.

29.0 Notice to Suspend Work

The Contractor shall delay or suspend the progress of the work, or any part thereof, whenever he shall be so required by written order of the Engineer, and for such periods of time as the Engineer may order, provided that in the event of such delay or delays or of such suspension or suspensions, time shall be extended for a period equivalent to the time lost by reason of such suspension or suspensions, but such order of the Engineer shall not otherwise modify or invalidate in any way any of the provisions of this contract, and said Contractor shall not be entitled to any damages or compensation, except as stated in the following paragraph, from the Owner on account of such delay or delays, suspension or suspensions.

30.0 Unavoidable Delays

Should the Contractor be obstructed or delayed in the commencement, prosecution or completion of the work by any act or delay of the Owner, or by riot, insurrection, war, pestilence, acts of public authorities, fire, lightning, earthquakes, cyclones, floods, or through any default or delay of other parties under contract with the District, or by strikes, or other causes, which causes of delay mentioned in this article, in the opinion of the Engineer are entirely beyond the control of the Contractor, then the time herein fixed for the completion of the work so delayed shall be extended for a period equivalent to the time lost by reason of any of the causes aforesaid, but no such allowance shall be made unless the Engineer is notified by the Contractor, verbally at the commencement of the delay and in writing before the fifth of each succeeding month of all delay occurring in the preceding month.

It is further expressly agreed that said Contractor shall not be entitled to any damage or compensations from the Owner on account of any delays resulting from any of the causes above specified in this article except compensation for wages for extra time for any necessary watchmen and for extra premiums on his bond, actually paid by said Contractor on account of said additional time so required to complete all work hereunder, due only to delays caused by the Owner or by other parties under contract with the District. The Engineer shall decide the number of days that said Contractor has been so delayed and his decision shall be final and binding upon both parties hereto.

31.0 Assignment of Contract

No assignment by the Contractor of any principal construction contract or any part thereof, or of the funds to be received thereunder by the Contractor, will be recognized by the Owner unless such assignment has had the approval of the Owner, and the Surety has been given due notice of such assignment in writing in accordance with the terms of its bond.

No assignment will receive approval unless the instrument of assignment contains a clause to the effect that it is agreed that the funds to be paid to the assignee under the assignment are subject to a prior lien for services rendered or materials supplied for the performance of the work called for in said contract in favor of all persons, firms, or corporations rendering such services or supplying such materials.

32.0 General Requirements Relating to Rights of Way

All work in rights-of-way shall be in accordance with the regulation of the Department or Agency having jurisdiction in the area or as directed by the Engineer. The Contractor shall secure such permits and approval as may be necessary and conform to conditions therein.

32.1 Special Requirements Relating to Sewers Constructed in Township Highways

The Contractor shall advise all Township Highway Commissioners having jurisdiction in the areas where the work is to be performed and shall secure such permits or approval as may be required.

Restoration of Township Highways shall be approved by the Highway Commissioner before receiving final payment for the work from the District.

32.2 Special Requirements Relating to Sewers Constructed in County Highways

Before the Contractor commences work on the construction of the sewers in the County right of way, he shall secure a permit from the County Highway Department based on the following conditions and restrictions:

1. The Contractor and the Engineer from the County Highway Department shall inspect the condition of the streets before commencement of any construction work so that there will be no disagreement as to the existing condition of the right of way.

2. The Contractor shall furnish all material, do all work, pay all costs and shall, as soon as a section of sewer is completed in any part of the County rights of way, restore said streets to a condition similar or equal to that existing before the commencement of the work. Replacement shall be made as required in the conditions and restrictions issued by the County Superintendent of Highways.

3. The Contractor shall not unreasonably interfere with or obstruct traffic. All traffic and warning devices shall comply with the State of Illinois Manual of Uniform Traffic Control Devices for Streets and Highways. The Contractor shall furnish, at his expense, the necessary flagmen, barricades, flares, signs or any other necessary precautions as required by the County Engineer.

4. The Contractor shall remove all excess dirt and leave shoulders, ditches and backslopes in a presentable condition. All areas where existing sod has been disturbed during prosecution of the above work shall be reseeded and fertilized in accordance with the specifications of the County Highway Department.

5. In case it is necessary to remove any guard posts during construction, the Contractor shall replace posts to the alignment and grade established by Peoria County Highway Department. If necessary, to remove any highway signs, mailboxes, etc., the Contractor shall reset them immediately in their original position after preliminary backfilling is done. The above-mentioned items are to be adjusted to their former elevation and position after the final backfilling and leveling and prior to final inspection and acceptance has been made.

6. The Contractor shall not trim, cut or in any way disturb any trees or shrubbery along said highway without the approval of the County Superintendent of Highways or his duly authorized representative.

7. In certain sections of the right of way, the Contractor shall remove all excavated materials from the excavations and backfill the trench with granular material or flowable backfill, all work to be in accordance with said permit.

8. The Contractor shall assume all risk and liability for accidents and damages that may accrue to persons or property on account of the work and shall reimburse the County for any repairs the County deems necessary to the existing highway on account of said work in case of emergency or neglect by said Contractor.

9. Wherever rock or shale is encountered in the ditch excavation at the flowline or above, the Contractor shall backfill that area of rock or shale excavation with State Highway Specification porous granular backfill to a depth of one foot above the top of the shale or rock in the ditch. The balance of the excavation may be backfilled with material removed from the excavation if the material used will compact in a satisfactory manner or as approved by the Superintendent of Highways of Peoria County.

32.3 Special Requirements Relating to Sewers Constructed in Illinois State Highways

Where required, the Sanitary District will secure a permit(s) from the Illinois Department of Transportation (IDOT). The Contractor shall perform all work in accordance with the conditions of the permit(s).

No earth will be allowed to be stored or cast upon the pavement, and proper precautions shall be taken at all times to safeguard traffic by the use of lights, barricades, and warning signs along open trenches. All traffic control shall be in accordance with IDOT permits obtained to allow the performance of said work.

Flaggers shall be employed at all times to safeguard traffic when construction equipment is working close to or upon the pavement. At no time will the pavement be completely closed to traffic.

If any trenching is performed between the edge of the pavement and the centerline of the ditch, it will be necessary that the excavated earth be hauled away and the trench shall be backfilled in accordance with IDOT standards.

The Contractor shall notify the IDOT District Engineer after completion of restoration within the right of way and acceptance of the work for final payment by the District. Final payment shall be contingent upon the approval of the IDOT District Engineer. Notification of IDOT personnel shall be as specified in any issued IDOT permits.

32.4 Special Requirements Relating to Sewers Constructed in Railroad Property

The installation, repair, or modification of sewer pipe, including the digging and filling of any trench, and the time and manner of doing all of the work upon the Railroad Company's right of way, shall be as indicated by its Chief Engineer, or his authorized representative.

All of the work shall be done in a good and workmanlike manner and submitted for approval to the Railroad Company's Chief Engineer, or his authorized representative. No work shall be started prior to receipt of such notice and approval from the Railroad Company.

Ample notice in writing, or by other means acceptable to the Railroad Company’s Chief Engineer, to the Railroad Company shall be made by the Contractor of the time when work will commence so that, if so desired, the Railroad Company may have its representative present for the purpose of inspecting or directing the work in a manner satisfactory to the Railroad.

32.5 Special Requirements Relating to Sewers Constructed in Airport Property

All work performed within the premises of the Airport property shall be in full accord with the rules for safety of the Airport, the Illinois Department of Aeronautics, and the Federal Aviation Agency.

No work shall be undertaken by the Contractor at any time without first obtaining the Airport's written approval as to time and place in a manner not to endanger users of said public airport; that day and night marking of all equipment, excavation or disturbance of the earth shall be as specified in Section 60, entitled "Legal Relations and Responsibilities to Public" of the Federal Aviation Agency publication, STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS, latest edition, as amended; that the earth shall be replaced promptly and so no settlement can occur that could in any way endanger aircraft or airport users and no structure of any kind, on the surface or otherwise shall be permitted that could endanger the premises use as an airport.

33.0 Future Streets

Future streets constructed over sewer trenches must rest on compacted or flowable backfill with proper pavement sub-grade as indicated in the City Standard Specifications for Subdivision Development. Before any pavement is laid on any streets in the City, the sanitary sewer services shall be stubbed beyond the paved surface on all lots having frontage on said streets.

34.0 Temporary Structures

All false work, scaffolding, ladders, hoistways, braces, shields, trestles, roadways, sheeting, forms, barricades, drains, flumes and the like, any of which may be needed in the construction of any part of the work must be furnished, set, maintained and removed by the Contractor, and he shall be solely responsible for the safety and efficiency of such works and for any damage that may result from their failure or from their improper construction, maintenance or operation.

In accepting the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all temporary structures and work and for any damage which may result from their failure or their improper construction, maintenance or operation and will indemnify and save harmless the Sanitary District and the City, and its employees, from all claims, suits or actions and damages or costs of every description arising by reason of failure to comply with the above provisions.

35.0 Storage

The Contractor shall protect materials and equipment stored at the site against damage from the weather. When directed by the Engineer, the Contractor shall store materials on platforms or well drained paved surfaces and provide weatherproof covers when directed. Materials shall be stored in a manner to facilitate prompt inspection.

36.0 Shop Drawings

Within fifteen (15) days of execution of the Contract, the Contractor shall submit to the Engineer for review a complete list of all material, equipment and manufacturers proposed to be used in the Project. Based on approved list, the Contractor shall prepare and submit to the Engineer for review six (6) copies of detailed shop drawings and descriptive literature of proposed equipment and materials. The Contractor shall promptly submit shop drawings as to cause no delay in the progress of the work. The Contractor shall check and approve shop drawings and verify all field measurements before submission to the Engineer.

All items of material and equipment must be approved by the Engineer prior to their use towards the completion of the Project.

37.0 Reference Standards

Except as otherwise noted, any references to known standard specifications shall be to the latest edition of such specifications as adopted and published to date of invitation to submit proposals.

Reference to technical society, organization or body is made in the specifications in accordance with the following abbreviations:

AASHTO .....American Association of State Highway and Transportation Officials;
ACI..... American Concrete Institute;
ASTM ….....American Society for Testing Materials;
AWWA..... American Water Works Association;
IDOT ....Illinois Department of Transportation Specifications for Road and Bridge Construction.

38.0 Interference Drawings

Where space is limited for installation of equipment and appurtenances, piping, conduits, ducts, panel boxes, valves, etc., the Contractor shall coordinate such work, and if necessary he shall prepare composite drawings of such conditions showing accurately exact locations of such items with respect to building construction. The Contractor shall submit drawings to Engineer for approval prior to installation.

39.0 Manufacturer's Directions

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, conditioned as per manufacturer's printed directions unless specified to the contrary. The Contractor shall obtain and submit such directions to the Engineer prior to time of installation for use in supervising work.

Furnish at least three (3) copies of manufacturer's operating and maintenance instructions for equipment and systems which in the opinion of Engineer require such instructions. The Contractor shall obtain a receipt(s) for the same. When so specified or instructed, mount operating instructions in approved frame with glass cover; locate where directed.

40.0 Project Record Documents

The Contractor shall maintain at the job site one copy of all Specifications, addenda, approved shop drawings, change orders, and other contract modifications. Each of these Project record documents shall be clearly marked "Project Record Copy", shall be maintained in good condition, shall be available at all times for inspection by the Engineer and shall not be used for

construction purposes. Project-record drawings shall be marked up to show significant changes made during construction progress. Project-record drawings shall be kept current and no work shall be concealed until required information has been recorded. Record-documents shall be submitted, in satisfactory condition, to the Engineer at the completion of the Project.

41.0 Patents, Trade Secrets, Copyrights

The Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the work or in the incorporation in the work of any invention, design, process, product or device which is the subject of patent rights, trade secrets protection rights, or copyrights held by others. The Contractor shall indemnify and hold harmless the Sanitary District and the City, the Engineer and anyone directly or indirectly employed by the Sanitary District and the City from and against all claims, damages, losses and expenses (including attorney's fees and court and arbitration costs) arising out of any infringement of patent rights, trade secrets protection rights, or copyrights incident to the use in the performance of the work or resulting from the incorporation in the work of any invention, design, process, product or device not specified in the contract documents, and shall defend all such claims in connection with any alleged infringement of such rights.

42.0 Contractor Safety

Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Project. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to: all persons on the Project site or who may be affected by the Project; all the Project work and materials and equipment to be incorporated therein, whether in storage on or off the Project site; and other property at the Project site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and underground facilities not designated for removal, relocation, or replacement in the course of construction. Contractor shall designate a qualified and experienced safety representative at the Project site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

The duty of the Owner, Engineer or Owner's consultant to observe Contractor's performance does not include any review of the adequacy of Contractor's safety measures in, on, or near the Project site or sites. Owner, Engineer and Owner's consultant have not been retained or compensated to provide design and construction review services relating to Contractor's safety precautions required for Contractor to perform the work. Neither the Owner, nor any official or employee of the Owner, nor the Engineer, or any authorized assistant or agent of any of them, shall be responsible for safety precautions and programs in connection with the Project or any liability arising therefrom.

All structures to be provided by the Contractor, (except those structures for which details are shown on the Plans), that require structural design shall be designed and constructed under the observation of a structural engineer, registered in the State of Illinois, acting for and retained by the Contractor. Drawings and calculations for such structures shall be prepared and sealed by the structural engineer and submitted to the Owner for record. A clear outline of the proposed construction procedure shall be shown on the drawings. A statement in writing by the structural engineer attesting that said engineer has visited the Project site or sites, that the design does satisfy the conditions as actually encountered and that the actual construction conforms to the drawings and calculations, as submitted, must be submitted to the Owner before the work

related to such structures will be considered complete. All temporary structures, including sheeting and bracing for excavations, that affect the safety of the public, workmen, inspectors, or Owner's or Engineer's personnel shall be regarded as structures that require structural design.

Contractor shall comply with all applicable Federal, State and Local Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of underground facilities and other utility owners when prosecution of the Project may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property whether located on or off site caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the work on the Project, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Owner's consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). Contractor's duties and responsibilities for safety and for protection of the Project's work shall continue until such time as the Project is completed and Engineer has issued a notice to the Contractor that the work is acceptable. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Project site in accordance with Laws or Regulations.

In emergencies affecting the safety or protection of persons or the Project or property at the Project site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Project or variations from the Contract Documents have been caused thereby or are required as a result thereof.

The Contractor shall review the District's safety policy prior to beginning any work and shall sign a statement of understanding before being allowed to begin work at the treatment plant or on the collection system. The Contractor shall read the policy included in the appendices, initial each section and sign and date the form.

43.0 Inspections of Constructed, Repaired or Modified Sewers

For quality assurance purposes, GPSD will perform one complete inspection of each sewer after completion of all sewer and manhole construction, modification or repair. If defects are found, the Contractor will be notified of said defects for their repair. GPSD will perform a complete inspection of affected sewers after completion of repairs. If, after the initial repair of defects, additional repairs are necessary, subsequent inspections shall be performed in accordance with GPSD Specifications and at the expense of the Contractor. Inspection recordings performed at the expense of the Contractor shall be become the property of GPSD and provided to the District promptly.

44.0 Job Site Posters

The Contractor shall construct and provide a job site poster at each and every site that the

Contractor performs work towards the completion of the Project. Job site posters and the documents thereon shall be publicly visible and accessible at all times while work is being performed at each and every site represented in these Plans. Job site posters shall be fully enclosed and secured to protect documents within from weather and large enough to allow display of each required document without overlap. Throughout the duration of the Project, the Contractor shall maintain enclosures, job site posters and documents within including restocking when needed.

Job site posters shall include all documents required to be posted as determined by governing authorities including any federal agencies that have contributed funding towards the completion of the Project. Where federal funding is not utilized, documents included shall be those required by the Illinois Department of Transportation.

END OF
SECTION

SECTION 027

SPECIFICATIONS - PIPE MATERIALS FOR SEWERS

Pipe material used to construct, repair or modify sewers shall conform to the specifications within this Section. 1.0 Clay Pipe

Construction of clay pipe shall be in accordance with Section 035 of these Specifications. Clay pipe for sanitary sewers shall be used only with written approval of the Engineer.

Clay pipe for sanitary sewers may be constructed only when and where approved by the Engineer and, if approved, in depths from four (4) feet to sixteen (16) feet deep. Clay sewer pipe shall not be laid in depths greater than sixteen (16) feet.

All pipe and fittings for sewers of 6-inch to 24-inch diameter shall be extra strength vitrified clay pipe, conforming to the ASTM Designation C-700, as amended.

Compression joints for all vitrified clay bell and spigot pipe shall meet or surpass ASTM designation C-425, as amended. Compression couplings for (6) inch to (12) inch vitrified clay plain-end pipe shall be furnished with a factory installed PVC collar instead of a clay bell and shall meet or surpass the performance requirements of ASTM C-425, as amended. The PVC collar shall conform to the requirements of ASTM D-1784, Class 12454-B.

2.0 Pre-stressed Concrete Cylinder Pipe

Construction of pre-stressed concrete cylinder pipe shall be in accordance with Section 035 of these Specifications. Pre-stressed concrete cylinder pipe for sanitary sewers shall be used only with written approval of the Engineer.

Pre-stressed concrete cylinder pipe and fittings for sanitary sewers shall conform to AWWA C-301 and shall consist of a welded steel cylinder with steel joint rings welded to its ends, reinforcing cage of steel bars, or welded wire fabric; and a wall of dense concrete both inside and out.

Pre-stressed concrete cylinder pipe shall have bell and spigot ends formed by steel joint rings welded to the steel cylinder. Joints shall conform to AWWA C-301, rubber gasket shall be a special rubber designed to resist hardening and disintegration from contact with sewage and water.

3.0 PVC Pipe

Pipe shall be homogenous throughout and free from cracks, holes, foreign inclusions or other injurious defects. Pipe shall be uniform as practicable in color, opacity, density and any other physical property.

Routine inspection, sampling and testing shall be performed during pipe and fitting production to assure a product quality which exceeds the minimum requirements stated herein. Certificates of Conformance to verify conformance with the standard specifications for pipe and accessories

shall be submitted by the manufacturer for approval prior to installation.

3.1 PVC Pipe for Gravity Sanitary Sewers

Unless specified otherwise by the Engineer, PVC pipe constructed for gravity sanitary sewers shall have a standard dimension ratio (SDR) of 26 and may be laid in depths from four (4) feet to twenty-five (25) feet with specified bedding and ditch widths. PVC sewer pipe shall not be laid in depths greater than twenty-five (25) feet. PVC pipe with a SDR of 35 shall not be allowed.

Polyvinyl chloride (PVC) sewer pipe for gravity sanitary sewers is approved for 6-inch through 36-inch diameter. PVC pipe with a nominal diameter greater than twelve-inches (12”) may be used only with the approval of the Engineer.

3.1.1 PVC Pipe for Gravity Sanitary Sewers Constructed Using Excavation Methods

Pipe installation and bedding shall be in accordance with Section 035 of these Specifications. When constructed using excavation methods, PVC pipe and fittings sized from 6-inches to 15-inches shall conform to ASTM D-3034, Type PSM and shall be standard dimension ratio (SDR) 26. Pipe and fittings sized 18-inch up to 60-inches shall conform to ASTM F679, PS115. Pipe shall be provided in the maximum laying lengths available to minimize the number of joints. All joints for PVC gravity sanitary sewers shall conform to ASTM standard D-3212 and have flexible elastomeric seals.

3.1.2 PVC Pipe for Gravity Sanitary Sewers Constructed Using Pulling Methods

As specified by the Engineer, construction of PVC pipe using pulling methods shall be in accordance with Sections 071 and 079 of these Specifications. Unless specified otherwise by the Engineer, when constructed using pulling methods including horizontal directional drilling or trenchless pipe replacement methods, PVC pipe and fittings shall be Certa-Lok, C900/RJ or C905/RJ pipe, as manufactured by the Certainteed Corporation. The pressure class of the pipe shall be specified by the Engineer. However, restrained joint integral bell (RJIB) pipe, as manufactured by the Certainteed Corporation, shall not be allowed. Pipe shall be provided in the maximum laying lengths available to minimize the number of joints.

3.2 PVC Pipe for Force Main Sewers

PVC pipe materials, not including fittings, to be used in the construction of force mains shall be that specified in Subsection 3.1.2 above titled “PVC Pipe for Gravity Sanitary Sewers Constructed Using Pulling Methods.” All fittings for PVC pipe constructed for pressure pipe applications shall be ductile iron pipe in accordance with these Specifications.

Joints between PVC, Certa-Lok, C905/RJ, DR 25, pipe and DIP fittings shall be mechanical. Mechanical joints shall be constructed on plain-end PVC, Certa-Lok, C905/RJ, DR 25, pipe using either Series 2000PV mechanical joint restraint for PVC pipe as manufactured by EBAA Iron, Inc., or PVC Stargrip, Series 4000, mechanical joint wedge action restraint as manufactured by Star Pipe Products. Mechanical joints constructed on plain-end PVC, Certa-Lok, C905/RJ, DR 25, pipe shall be constructed in accordance with the

recommendations of the restraint and PVC product manufacturers.

Pipe installation shall be in accordance with Sections 035 or 071 of these Specifications as specified by the Engineer.

Fasteners, including, but not limited to, all bolts, nuts, and washers used on ductile-iron fittings, retainers, etc., shall be constructed using Type 316 stainless steel. Allowable fasteners made of materials other than stainless steel shall be approved by the Engineer before the opening of bids.

4.0 Ductile Iron Pipe

Construction of ductile iron pipe (DIP) shall be in accordance with Section 035 of these Specifications. DIP for sanitary sewers shall be used only with written approval of the Engineer. DIP for non-pressurized sanitary sewers shall meet the requirements of ASTM Specification A746. Unless specified otherwise by the Engineer, the class thickness for pipe diameters of four (4) inches through sixty (60) inches shall be determined by using a Type 4 laying condition and Class B Bedding as specified by ASTM C12. DIP used in gravity situations shall conform to ANSI/AWWA C150/A21.50.

DIP used in pressure applications shall conform to ANSI /AWWA C151/A21.51. Unless specified otherwise by the Engineer, DIP used in pressure applications shall conform to Pressure Class 350.

Including, but not limited to, tees, bends and wyes, ductile-iron fittings with mechanical joints and sized up to twenty-four inches (24”) shall be rated for 350 psi working pressure and meet the provisions of the current versions of standards ANSI/AWWA C153/A21.53 and ANSI/AWWA C111/A21.11. Ductile iron fittings with mechanical joints and sized thirty inches (30”) through forty-eight inches (48”) shall be rated for 250 psi working pressure. Flanged ductile-iron fittings sized up to twenty-four inches (24”) shall also be rated for 350 psi.

Unless specified otherwise by the Engineer, interior surfaces of all ductile iron pipe, couplings and fittings shall be lined with Protecto 401-brand ceramic epoxy lining. The applied thickness of ceramic epoxy linings shall be 40 mils. Cut surfaces of ductile iron pipe shall be sealed using Protecto 401 Joint Compound brushed on to a dry film thickness equal to the nominal thickness of the applied Protecto 401 ceramic epoxy liner.

Unless directed otherwise by the Engineer, joint locations shall be planned and located to minimize the total number of joints. Joints between ductile iron pipe and DIP fittings shall be mechanical and meet the requirements of ANSI/ AWWA C111/A21.11. Mechanical joints shall be constructed on plain-end ductile iron pipe (DIP) using Megalug Series 1100 mechanical joint restraint for DIP as manufactured by EBAA Iron, Inc. Mechanical joints constructed on plain-end ductile iron pipe (DIP) shall be constructed in accordance with the recommendations of the restraint and DIP product manufacturers. Joints for ductile iron pipe installed by jacking and tunneling shall be as specified in Section 051 of these Specifications.

Connections between DI pipe and other pipe materials shall be made with a Band Seal Adapter. A gasket shall be provided to fit over the plain end of the DI pipe so the adapter can be tightened around both pipes to make a watertight and structural seal.

Fasteners, including, but not limited to, all bolts, nuts, and washers used on ductile-iron fittings, retainers, etc., shall be constructed using Type 316 stainless steel. Allowable fasteners made of materials other than stainless steel shall be approved by the Engineer before the opening of bids.

5.0 High Density Polyethylene Pipe

High-density polyethylene (HDPE) pipe may be used for gravity sanitary sewers and force main sewers. Medium-density polyethylene (MDPE) pipe, low-density polyethylene (LDPE) pipe and linear low-density (LLDPE) pipe shall not be allowed. The sizing of HDPE pipe shall be in accordance with ASTM F714 and shall be based upon the DIPS, outside diameter sizing system. The dimension ratio (DR) of pipe to be installed shall be shown on the project Plans. All HDPE pipes shall be of virgin material and from the same manufacturer. Except that obtained from the manufacturer's own production of the same formulation, no recycled materials shall be used.

Upon delivery to the site(s) of work, both the outside and inside surfaces of the HDPE pipe shall be inspected for damage such as, but not limited to, cuts, scrapes, gouges, tears, cracks, punctures. If any damages are found, the Engineer shall be the sole judge of the damages and the acceptability of the pipe. If rejected, the Contractor shall be responsible for removing the defective pipe from the site(s) of work and replacing it with new.

Resin compounds used in the manufacture of HDPE pipe to be used in non-pressurized, sanitary sewers shall be in accordance with cell classification number or property value PE3608 as defined within the latest versions of both ASTM D3350 and ASTM F714. For pressurized, sanitary sewer application, resin compounds used in the manufacture of HDPE pipe shall be in accordance with cell classification number or property value PE4710 as defined within the same. PE material compounds shall meet Specification code C. Resins shall be in accordance with all requirements of the latest versions of both ASTM D3350 and ASTM F714.

The Contractor shall provide to the Engineer a certification, signed by an authorized agent of the manufacturer, demonstrating that the pipe provided was manufactured, sampled, tested and inspected in accordance with ASTM D3350 and ASTM F714 and that the pipe meets the requirement therein. The Contractor shall provide to the Engineer the results of all tests performed by the manufacturer on the material and pipe for the purpose of demonstrating compliance with these Specifications.

Pipe will be legibly marked in accordance with those requirements specified in the latest version of ASTM F714. Pipe not marked as directed will be rejected.

HDPE pipe lengths shall be as from the manufacturer. Lengths shall be such that the number of joints between pipes is minimized; however, the pipe must be easily and safely transportable, handled, stored, protected and constructed in accordance with the manufacturer's recommendations, the project Plans, these Specifications and all applicable laws, ordinances and regulations. Lengths shall be such that storage on the project site(s) is achievable without unacceptable traffic disruptions or disruption and peril to local residents or existing development. Any discrepancy between the recommendations of the pipe manufacturer, these Specifications, the project Plans and the recommendations of the manufacturers of any equipment used towards the completion of the project shall be brought to the attention of the

Engineer before the commencement of construction.

Prior to and during construction, HDPE pipe shall not be dragged, pushed or rolled over the ground surface. HDPE pipe shall be moved using other means in accordance with the recommendations of the manufacturer of the pipe and the Engineer.

For each pipe, the outside and inside surfaces shall be inspected. The Engineer shall be the sole judge of the acceptability of pipe. If rejected, the Contractor shall be responsible for removing the defective pipe from the project and replacing it with a new that judged to be acceptable.

Testing of installed HDPE pipe shall be in accordance with these Specifications and ASTM F714. Testing of HDPE pipe shall be performed by an independent, third-party testing firm with experience in performing such testing as acceptable to the Engineer. To confirm conformance with the specifications, the Engineer may require that pipe be tested. If required by the Engineer, the Contractor shall propose a laboratory and submit to the Engineer information about the laboratory including their qualifications. The Engineer may require that two (2) samples are tested for every delivery of HDPE pipe, if construction will use methods that rely on pulling forces, or for every four hundred (400) feet of constructed HDPE pipe if constructed using traditional excavation methods. The Contractor and the approved laboratory shall be responsible for the construction of testing samples, transportation samples to the site(s) of testing, performance of the tests as well as the provision of testing results to the Engineer in an approved format. Test results shall be the exclusive property of the Engineer.

Connections to HDPE pipe shall be made using sewer tapping methods in accordance with Section 031 of these Specifications. Additional specifications for the adjoining of HDPE pipe to manholes may be included in the other subsections of these Specifications.

All fittings attached to HDPE pipe shall be constructed of ductile-iron materials.

5.1 Joining HDPE Pipe

Joints between mainline HDPE pipes shall be constructed using heat fusion techniques in accordance with the instructions of the pipe manufacturer. Unless approved by the Engineer prior to the opening of proposals, mechanical connections of HDPE pipe constructed using pulling techniques shall not be allowed. The joining of HDPE pipes using heat fusion techniques is understood to be the joining of HDPE pipes by heating two surfaces of the pipe to a designated temperature then fusing them together by application of a sufficient force. If allowed by the manufacturer of the pipe, types of heat fusion allowed to be used towards the completion of the project include butt and electrofusion (EF). It is understood that EF utilizes electrical currents to heat the pipe; comparatively, butt fusion utilizes more conventional heating methods. The Contractor shall submit to the Engineer documentation, in a form acceptable to the Engineer, demonstrating acceptance by the pipe manufacturer of the heat fusion method proposed by the Contractor.

Joints between HDPE pipes shall be complete throughout the pipe circumference, the thickness of the pipe walls and the length of pipe heated for fusion purposes. Absolutely no leaks shall be allowed through fused joints.

Heat fusion of HDPE pipe shall be in accordance with the recommendations of the

manufacturers of both the heat fusion equipment and the pipe. The Contractor shall provide to the Engineer, in a satisfactory format, recommendations and instructions for the construction of joints between HDPE pipe using heat fusion techniques. If accepted as an alternative by the pipe manufacturer, the Generic Butt Fusion Joining Procedure for Field Joining of Polyethylene Pipe, TR-33/2005, or the most-recent version, as published by the Plastic Pipe Institute (PPI), may govern the construction of joints between HDPE pipes. Prior to the joining of any HDPE pipe as part of the project, evidence of acceptance of the PPI standard by the pipe manufacturer shall be presented to the Engineer in the form of an original correspondence from the pipe manufacture to the Engineer demonstrating such acceptance.

Fusions shall be made by trained operators using machinery in good condition and specifically designed for the type of heat fusion selected. Operators and supervisory personnel utilized by the Contractor towards the completion of the project shall be trained by the manufacturers of the fusion equipment and pipe. The Contractor shall provide the Engineer satisfactory evidence of acceptance by the manufacturers of the training and experience of the Contractor and participating personnel.

For all joints, after completion of the joining process, excessive HDPE materials (beads) near pipe joints on both the external and internal surfaces of the pipe shall be removed using methods approved by the Engineer and the pipe manufacture. The purpose of removing beads is to reestablish smooth internal and external pipe walls to improve flow internally and reduce drag externally. Both internal and external bead removal shall be performed using equipment specifically designed for the purpose and in accordance with the recommendations of the manufacturers of the pipe and the internal bead removal system. External bead removal shall be performed using equipment such as the external bead remover as manufactured by McElroy Manufacturing, Inc. Internal bead removal shall be performed using equipment such as the internal bead trimmer as manufactured by R & L Manufacturing. Proposed bead removal systems shall be acceptable to the manufacturer of the pipe. Prior to bead removal, the Contractor shall submit evidence acceptable to the Engineer of the acceptance by the pipe manufacturer of the proposed bead removal systems. Additionally, the Contractor shall provide the Engineer satisfactory evidence of acceptance by the manufacturer(s) of the bead removal system(s) of the training and experience of the Contractor and participating personnel in the operation of bead removal equipment.

The maximum length of assembled but uninstalled pipe shall not exceed the recommendations of both the manufacturer of both the HDPE pipe and the equipment used for construction via horizontal directional drilling and trenchless pipe replacement systems, where applicable.

To confirm joint integrity, operator procedure and equipment, the Engineer may require that fused joints may be destructively tested. Destructive laboratory tests of tensile specimens prepared from heat fusion joined pipes may be performed per ASTM D638 or ASTM F2634. If required by the Engineer, the Contractor shall propose a laboratory and submit to the Engineer information about the laboratory including their qualifications. The Engineer may require that two (2) samples are tested for every pull of HDPE pipe, if constructed using methods that rely on pulling forces, or for every four hundred (400) feet of constructed HDPE pipe if constructed using traditional excavation methods. The Contractor and the approved laboratory shall be responsible for the construction of testing samples, transportation samples to the site(s) of testing, performance of the tests as well as the provision of testing

results to the Engineer in an approved format. Test results shall be the exclusive property of the Engineer.

For each joint, the outside and inside surfaces shall be inspected. The Engineer shall be the sole judge of the acceptability of each joint. If rejected, the Contractor shall be responsible for correcting the defective joint in accordance with the directions of the manufacturer of the joining equipment and the pipe.

Data loggers can be used to record length of heating, fusing and cooling time, as well as temperature and pressure of each joint to ensure and record quality control.

5.2 Joining HDPE Pipe to Manholes

Connections of constructed HDPE pipe to new manholes shall be made using press seal boots unless otherwise specified by the Engineer. If joining to an existing manhole, joints between the pipe and the existing opening shall be constructed using hydraulic cement or a material approved by the pipe manufacturer and shall extend throughout the circumference of the pipe in such a manner as to form a smooth, uniform, watertight joint.

For all joints between HDPE pipe and manholes, a fixed diameter HDPE pipe stiffener, dimensioned specifically for the constructed HDPE pipe shall be inserted into the pipe at the manhole joint prior to the finalization of the joint. Pipe stiffeners shall be manufactured using Type 316 stainless steel, in accordance with ASTM 240, and installed into the pipe in accordance with the recommendations of the manufacturers of both the pipe and the stiffeners. Pipe stiffeners shall fit tightly into the pipe without the ability to be moved linearly along the alignment of the pipe or rotated in a circular manner. All stiffeners shall have a lip that prevents such movement. If the HDPE pipe is constructed using pulling methods, additional requirements for the construction of joints between manholes and the pipe can be found within other sections of these Specifications and the project Plans.

Additional specifications for the adjoining of HDPE pipe to manholes may be included in the other subsections of these Specifications.

5.3 Joining HDPE Pipe to Pipe and Fittings Manufactured of Other Materials

Connections of constructed HDPE pipe to pipe and fittings manufactured using materials other than HDPE shall be constructed in accordance with the directions of the manufacturers of the HDPE pipe and the pipe manufactured of other materials, these Specifications and the project Plans.

HDPE pipe to DIP connections shall be constructed using appropriately sized MJ adapters as manufactured by Fusion Support Services, LLC.

END OF SECTION

SECTION 035

SPECIFICATIONS - PIPE INSTALLATION USING EXCAVATION METHODS

Unless provided within either these Specifications or on the project plan sheets, information about underground conditions within and near the area of work has not been obtained by the Engineer. The Contractor shall either determine the underground conditions near the proposed sewer construction or repair locations and determine the effect of such conditions upon the proposed work. The Contractor shall assume all risks and accept all costs attributable to unknown and unforeseen underground conditions. Underground conditions such as the presence of underground obstructions or poor soil conditions that unfavorable to the means of sewer construction or reconstruction shall not be a basis for claims for additional compensation.

This Section shall govern all aspects of pipe installation performed using excavation methods. However, all aspects of pipe installation using excavation methods, including, but not limited to, joint construction, bedding, pipe material, concrete thrust block design and construction, backfilling, trench construction, maximum loading imposed on pipe in the trench, and material testing, shall also conform to the Manufacturer's Specification for the particular type of pipe specified; however, when in conflict, these Specifications shall govern. It shall be the responsibility of the Contractor to notify the Manufacturer at the start of the work and to request the Manufacturer to have a field representative on the job to instruct the Contractor, the Contractor's personnel, Engineers and Inspectors of the latest construction and installation methods.

Not included in this Section are specifications for the construction, repair or replacement of sanitary sewer using methods other than excavation. Specifications governing sewer construction, repair or replacement using methods such as pipe bursting, pipe reaming and horizontal directional drilling are included within additional sections made part of these Specifications.

Unless specified otherwise by the Engineer, when constructing pipe using excavation methods, connections between pipes of dissimilar materials, or of unequal outside diameters, shall be made using Fernco-brand flexible-type couplings. The flexible type coupling shall fit over plain ends of both pipes and then tightened to make a watertight seal.

1.0 Staking

Refer to Lines and Grades in Section 021 of these Specifications for staking requirements. Staking requirements shall apply to both gravity sanitary sewers and force main sewers

2.0 Excavation

The Contractor shall make all excavations to the width and depth necessary for proper construction of the sewers and other structures in accordance with the Plans and Specifications. Excavation shall include the following: the clearing of the site of the work; the excavating, loosening, classifying, loading, removing, transporting and disposing of all materials, wet or dry, necessary to be removed for purposes of construction; trenching and all trench shoring including sheeting and bracing; all draining and pumping of water; disposal of all excavated materials; and all incidental work. The bottom of the trench shall be smooth and cleared of stones or protruding hard objects. All materials such as trees, brush, debris, etc.

removed in site clearing shall be disposed of by the Contractor.

Trench widths shall be sufficiently wide to permit tamping around the pipe. The following specifications for trench dimensions shall apply to all conditions except where pipe construction is within strata of rock as defined in the subsection below titled "Rock Excavation." Trench widths measured at the top elevation of the pipe shall not exceed the limits for pipe sizes as follows: when the inside, nominal diameter of the pipe is from eight inches to and including twelve inches, the trench width as measured at the top elevation of the pipe shall not exceed the outside diameter of the pipe plus twenty inches; when the inside, nominal diameter of the pipe is greater than twelve inches to and including thirty-six inches, the trench width as measured at the top elevation of the pipe shall not exceed the outside diameter of the pipe plus sixteen inches; and when the inside, nominal diameter of the pipe is greater than thirty-six inches, the trench width as measured at the top elevation of the pipe shall not exceed the outside diameter of the pipe plus twenty-four inches. Whenever the trench widths measured at the top of the pipe exceed these limitations, the Contractor shall at his own expense remove any disturbed earth and shall refill the excavated trench from wall to wall with approved granular bedding, concrete cradle, concrete encasement or a combination thereof as directed by the Engineer.

3.0 Bedding

The following specifications for bedding dimensions shall apply to all conditions except where pipe construction is within strata of rock as defined in the subsection below titled "Rock Excavation." All sewer trenches shall be excavated to a depth of not less than six (6) inches lower than the lowest elevation of the sewer pipe and a minimum of six (6) inches of approved granular bedding shall be placed in the bottom of the trench. Except when constructing sanitary sewers using ductile iron pipe or when depths are greater than sixteen (16) feet, an additional amount of approved granular bedding shall be tamped and cradled around and over the pipe to a level of one (1) foot above the top of the pipe. When constructing sanitary sewers using ductile iron pipe at depths less than sixteen (16) feet, an additional amount of approved granular bedding shall be tamped and cradled around the pipe to the top of the pipe. At all times throughout the construction of pipes, over its entire length of pipes, underlying and surrounding bedding shall be constructed and maintained to evenly support loading and to avoid non-uniform loading at any point.

If the ground conditions are not suitable for bedding as outlined, the Contractor must excavate and dispose of the unsuitable material and add approved granular bedding material to support the pipe, as determined by the Engineer. The bedding shall be built up in six (6) inch to twelve (12) inch layers of approved granular backfill to the bottom of the sewer pipe with an additional amount of approved granular backfill allowed for tamping and cradle beneath, around and over the pipe to a level of one (1) foot above the top of the pipe. The above work shall be made part of the contract amount.

3.1 Approved Bedding Material

Granular pipe cradle and envelope shall be constructed with granular materials from approved local deposits graded to Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, the Section for Coarse Aggregate Standards. Acceptable graduations for the granular pipe cradle and envelope are CA-7 and CA-11. The material shall be crushed gravel or crushed stone as per IDOT's Coarse Aggregate Standards with a minimum of 75% fractured material, from approved sources as determined by the Engineer. A listing of approved granular sources is included in

the appendices of these Specifications. When constructing PVC pipe using excavation methods at depths between sixteen (16) feet to twenty (20) feet or ductile iron pipe using excavation methods at depths greater than twenty (20) feet, granular materials used for bedding purposes shall be CA-7 or CA-11 white rock crushed stone.

3.2 Concrete Encasement

Where sewers are laid at shallow depth or where shown on the plans and where ordered by the Engineer, the pipe shall be encased in concrete in accordance with the drawing for concrete encasement in Section 095 of these Specifications.

4.0 Placement of Fill or Embankment

Where a sewer is shown or ordered by the Engineer to be placed in a fill section, the Contractor shall remove any and all weeds, tree roots, large rocks, or frozen material that will decay, or other material unsuitable for compaction of the fill area. The existing ground area of the fill section shall be plowed or disked before the fill is started to aid in bonding the fill section and the existing ground together.

The fill material shall be free of large rocks, frozen ground, material that will decay, or any other substance that might cause future settlement of the fill area. As far as it is practical, each layer of fill material shall extend the entire length and width of the fill area. Each layer shall be disked to break up oversize lumps and to mix different layers of the fill to provide a uniform moisture content. The fill material shall be placed in layers not to exceed eight (8) inches in depth. Each layer shall be rolled with either a pneumatic roller weighing twenty- five (25) tons or an equivalent sheep's-foot roller. Other types of equipment must be approved by the Engineer. Should the fill material contain insufficient moisture to provide satisfactory compaction, the Contractor shall, at his own expense, apply water as directed. The fill material shall be placed and compacted to meet the following requirements: the moisture content of the fill material when placed shall be within two (2) percent of the optimum moisture content as determined ASTM D-1557 (Modified Proctor Test); compaction shall meet the requirements of ninety-five (95) of the ASTM D-1557.

All fill and compaction shall be completed to an elevation of not less than three (3) feet above the top of the pipe before installing the sewer. After the sewer has been installed and back filled, the Contractor shall dress the fill or embankment as specified on the plans.

5.0 Constructing Non-Pressurized Pipe

Pipe shall be constructed in conformity with the alignment and elevations as directed by the Engineer and in the presence of an inspector authorized by the Engineer. All pipe shall be constructed using a laser and with the bell located at the upstream end.

There are a number of lasers used in construction; hence, the method used to set up the laser prior to laying the sewer shall be approved. However, an above-ground spinning laser is unacceptable as the only laser used to check the grade of the sewer. Beginning at the first manhole, the laser will be leveled and set online and grade. As the sewer construction reaches the next manhole, the laser will be moved to that new manhole, leveled, and line and grade reset for the next reach of sewer with the percent of grade given on the Plans. The laser will be checked for level, line and grade each morning and noon or at such other times as the construction is resumed after any delay in the work or at such times as in the opinion of the Engineer the line and grade is in question as to its accuracy and conformance with the Plans.

Upstream or downstream of each manhole, using a method independent of the laser and approved by the Engineer, the elevation of pipe will be checked at the end of the first pipe laid, twenty-five (25) feet from the manhole and at hundred-foot intervals thereafter.

Before adjoining pipes connected, the interior of the pipe already constructed, including the bell thereof, shall be thoroughly cleared of all solids. A watertight plug shall be placed in the last pipe placed and not removed except to connect another pipe which in turn must be plugged. Pipes shall not be constructed where water has not been removed from the trench. Foreign materials inside constructed pipes shall be removed by the Contractor to the satisfaction of the Engineer.

The Contractor shall have a District approved ventilation system on site. The system shall be ready and available for use by the construction crew. The system shall be of adequate size to ventilate the manhole and pipes in order to remove condensation.

6.0 Constructing Pressurized Pipe

For pressure pipe construction, thrust blocks and locking glands shall be constructed where the pipe changes directions, changes size, terminates or is expected to develop thrust at valves. Slopes for force mains shall be uniform in order to maximize pumping efficiency. Unless specifically directed by the Engineer, any vertical or horizontal deflections of force pipe shall be removed and replaced by the Contractor. Minimum cover over the crown of all force main pipe shall be not less than four (4) feet.

Where necessary, properly designed combination air release and air inlet valves, suitable for operating under a specified working pressure, shall be furnished at specified locations. The valve shall be designed to exhaust large quantities of air when the line is being filled; to exhaust small air accumulations when the line is in service; and to allow large quantities of air to re-enter the pipe in case of loss of pressure in the line. The valve shall be installed as per manufacturer's instructions. A District approved valve shall be installed at the base of the air release valve. The valve shall be a ball valve, a gate valve, or a plug valve.

A No. 10, solid insulated copper tracer wire shall be buried with all force mains regardless of pipe material. Tracer wire shall be brought to the surface within six (6)-inch PVC risers located approximately every five hundred (500) feet. Risers shall have a cast iron cap; however, risers shall not be constructed in driveways, drainage ways, or property lines.

7.0 Water Removal

The Contractor shall at all times during construction provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering excavations or other parts of the work and shall keep said excavations dry until the structures to be built therein are complete. No water or unauthorized sewage shall be drained into work built or under construction.

8.0 Rock Excavation

The following specifications shall apply where pipe construction is within strata of rock. Where rock is encountered, the Contractor shall excavate the sewer trench to a depth of six (6) inches below the bottom of the pipe and to a width of sixteen (16) inches plus the outside diameter of the pipe. All loose material shall be removed from the trench. A minimum of six (6) inches of

approved bedding shall be tamped in place under the pipe with an additional six (6) inches of bedding tamped and cradled around the pipe. Additional bedding material shall also be added to a height of twelve (12) inches over the top of the pipe.

Rock shall be that material occurring in a natural state which requires blasting, barring, or wedging for removal from its original bed and having a compressive strength in excess of three hundred (300) pounds per square inch. It specifically includes all ledge rock, bedrock or boulders larger than one (1) cubic yard in volume.

9.0 Explosives

Approved explosives may be used where such blasting will not injure existing utilities, structures or improvements as determined by the Engineer, however, such approval does not relieve the Contractor from the responsibility and liability for damages as a result of the use of explosives. Local news media shall be notified twenty-four (24) hours before blasting is scheduled to start. The Engineer may provide the Contractor with some contact names and telephone numbers that shall be placed on the Contractor's listing of media contacts before the commencement of blasting.

The explosive charges used shall not make the excavation unduly large or irregular nor shall it shatter the rock upon which masonry structures are to be placed. Each charge shall be covered with heavy timber, steel mats, or other approved cover and shall be placed no closer than fifty (50) feet from the completed sewer pipe or structure. No blasting or storage of explosives will be permitted closer than three hundred (300) feet from high frequency or welding equipment.

Before use or storage of explosives is permitted, the Contractor must secure at his own expense such permits, or bonds as may be required from the governing agency having jurisdiction and shall comply with all ordinances and regulations of such authority.

10.0 Connection to Existing Sewer

When a Contractor is directed to connect an outlet sewer to an existing sewer, he shall immediately provide a temporary bulkhead at the closest manhole. Connections to existing sewers shall be performed using methods detailed in these Specifications.

11.0 Erosion Control

Where an area is disturbed due to excavation, erosion and sediment control measures shall be taken to prevent soil erosion and sediment runoff from the site. Erosion and sediment control measures shall be placed at locations shown on the Plans. All erosion and sediment control measures shall be placed on the downstream side of disturbed areas such that no sediment escapes from the site. These control measures shall be constructed and fully functional prior to initiating construction activities and shall remain in place until the ground is stabilized with permanent ground cover. The Engineer shall judge when the ground has been stabilized and where erosion prevention and sediment control devices shall be necessary. All control measures shall be properly maintained by the Contractor to ensure effective operation. When stockpiling earthen materials, control measures shall be placed downstream to prevent erosion and sediment runoff of the stockpiled material. When allowed by the Engineer, the Contractor shall be responsible for removing and disposing of materials used in erosion control.

The Contractor shall comply with all requirements of erosion control permits from the City of Peoria, Peoria County, and/or the Illinois Environmental Protection Agency.

END OF SECTION

SECTION 043

SPECIFICATIONS - MANHOLES

Manholes shall be built on the sewers where they change in size, slope or direction and other necessary points as shown on the plans. Manholes shall be constructed as shown on the plans or as directed by the Engineer.

Pre-cast manhole sections including concrete rings, tops, barrels and bases shall meet the requirements of the latest version of ASTM C478 except where otherwise directed by this Section. Any wall sections or joints of questionable quality shall be replaced as directed by the Engineer. Construction of manhole barrel reducing sections shall not be allowed. The minimum compressive strength of concrete manhole products shall be 5,000 psi in seven (7) days unless specified otherwise on project plans. Concrete compressive strength tests using cores taken from manhole products shall not be allowed; rather, concrete compressive strength tests shall be performed using compression test cylinders a set of which shall be constructed no less than daily per concrete mix. Furthermore, in contrast to that allowable within the text of ASTM C478, in no case shall any cylinder tested fall below one hundred percent (100%) of the specified strength of the concrete. All test results shall be the property of the Engineer and provided by the Contractor immediately after the completion of testing. If compression test results are less than allowable, the Engineer shall determine necessary measures to be taken including potential rejection of constructed precast, manhole components.

Manhole bottoms shall be a pre-cast "Moorbase Bottom" as manufactured by Darnall Concrete Products Company of Normal, Illinois, except where “saddle-type” manholes are specified by the Engineer. Such other pre-cast bottoms as may be approved in writing by the Engineer shall have pre- formed inverts.

Joints between concrete manhole components shall be constructed using both butyl rubber sealants and exterior joint wraps. Butyl rubber sealants shall be the CS-202 Butyl Rubber Sealant as manufactured by ConSeal Concrete Sealants, Inc. Butyl rubber sealants shall be constructed throughout the entire circumference of both the upper and lower portions of each joint between manhole components. Furthermore, the ends of each butyl rubber sealant shall overlap to ensure closure. The exterior side of the manhole joints shall be sealed with CS-212 Polyolefin Backed Exterior Joint Wrap as manufactured by ConSeal Concrete Sealants, Inc.,

Manhole connectors to seal the connection between pipes and the manholes shall be constructed using the following connector systems. Contractor selection of manhole connectors shall include consideration of factors such as, but not limited to, site conditions, specification requirements, constructability, etc. Approved boot connectors shall include the G3 Boot System as manufactured by A-Lok Products, Inc., the PSX Direct Drive system as manufactured by the Press-Seal Gasket Corporation and the PSX Positive Seal system also manufactured by the Press-Seal Gasket Corporation. Approved compression connectors shall include the Econoseal system as manufactured by the Press-Seal Gasket Corporation and, as manufactured by A-Lok Products, Inc., both the A-Lok Premium system and the X-Cel system. Other joining systems shall not be allowed.

The height of the barrel shall be suitable to fit the various depths of the manholes as shown on the plans and as directed in the field by the Engineer. The top of manhole castings and lids shall be flush and consistent with the existing surface surrounding the manhole or with a

proposed elevation as directed by the Engineer. A twelve-inch (12”) or sixteen-inch (16”) barrel section shall be required immediately beneath a flat-top lid. The maximum height of adjusting rings to be allowed for use under the manhole frame shall be eight (8) inches. Rubber adjusting rings shall be used for adjustments where the raise is less than or equal to three (3) inches; for all adjustments, at least two (2) inches of rubber adjusting rings shall be used immediately below the manhole frame. Manhole casting adjusting rings may be used for minor height adjustments not exceeding eight (8) inches; however, concrete adjusting rings of thickness two (2) inches or less shall not be allowed. If the surface surrounding the manhole is uneven, tapered rubber adjusting rings as provided by the manufacturer may be used.

Rubber adjusting rings shall be either Infra-Riser Multi-Purpose Rubber Composite Adjustment Risers as manufactured by East Jordan Iron Works, Inc. or rubber adjusting rings as manufactured by American Highway Products, Ltd.

Manholes shall carry a cast iron frame and cover, either Neenah Foundry Number R-1530, Type “B”, or East Jordan Iron Works, Inc., 1920 Frame and Lid with modifications as shown on the Sanitary District’s Detail Drawing for castings, included in Section 095 of the specifications. A waterproof frame and cover Neenah Number R-1915-H2, Neenah Number R-1916-C or East Jordan Iron Works, Inc., 1058 Frame and Lid shall be used where shown on the Plans. Where waterproof frames and covers are constructed, bolts used to secure covers to frames shall be completely coated with Loctite Marine Grade Anti-Seize. All castings shall be of uniform quality, free from blowholes, porosity, hard spots, shrinkage, distortion or other defects. They shall be smooth and well-cleaned by shot blasting or by some other approved method and shall be coated with asphalt paint that shall result in a smooth coating, tough and tenacious when cold, yet neither tacky nor brittle. Casting shall be sealed to the top of the manhole with butyl rubber sealant.

Steps in the manhole shall be equal to M.A. Industries, Inc. molded step PS-1-PF and shall be placed as specified on the applicable Detail Drawing as provided in Section 095 of these Specifications. Manhole steps shall be centered over the outlet pipe on eight (8) inch to and including twelve (12) inch diameter sewers. Steps shall be installed at ninety (90) to the outlet pipe on sewers larger than twelve (12) inches.

Where approved by the Engineer, Manhole Safety Ramps as manufactured by American Highway Products, Ltd., may be used as directed.

Coring into an existing manhole shall be performed only when and as directed by GPSD personnel. Generally, coring into a manhole shall be performed for the purpose of introducing piping into the manhole. The size of core holes shall be minimal relative to the size of hole necessary for the introduction of the specified pipe size into the joint type specified. Coring into a manhole shall be performed with great care to minimize the number of anchor holes necessary to execute the core. Joints between cored holes and specified piping shall be made using a press seal boot. If permitted by the GPSD personnel, hydraulic cement may be used as directed.

Concrete anchoring systems shall be Trubolt Wedge Anchors, Type 316 stainless steel, part of the Red Head Concrete Anchoring Systems manufactured by Illinois Tool Works (ITW), Inc., the Engineer shall specify which type of anchor shall be used as well as the thread length and anchor diameter. Alternative anchoring systems shall be used as specified on the plan sheets by the Engineer.

At the discretion of the Engineer, concrete anchoring shall be coupled with an adhesive anchoring system to provide additional reliability. Adhesive anchoring systems shall be EPCON, two-part epoxy, Adhesive Anchoring Systems as manufactured by ITW, Inc. The Engineer shall specify which EPCON product system to be used. Capsule anchors shall be of the size and length required as outlined on the Plans and Specifications and shown on the Shop Drawing unless otherwise stated. Anchors shall be Molly Parabolt type M24-1, Ramset Chemset CTR10. Installation shall be per manufacturer's recommendations.

1.0 Standard Manhole

Standard precast, concrete, and flat top manholes shall be permitted for pipe diameters up to forty-two (42) inches and for depths up to twenty (20) feet. A structural engineer, registered in Illinois, shall certify the proper design, for the intended use, of flat top manholes for pipe diameters greater than forty-two (42) inches or depths greater than twenty (20) feet.

2.0 Drop Manhole

Where a sewer discharges into a manhole, the bottom of which is two (2) feet or more below the invert of the sewer, the connection shall be made through an external manhole drop connection. External drop connections shall be constructed by completely encasing in concrete a drop connection “stack” constructed using a PVC, C900, tee, PVC, C900, pipe, Fernco Flexible Couplings, PVC, SDR 35, pipe and PVC, SDR 35, fittings. Joining of the PVC, C900, tee with the vertical portion of the stack shall be made by coupling a piece of PVC, C900, pipe to the vertical portion of the stack, constructed using PVC, SDR 35, pipe, using an appropriately sized Fernco Flexible Coupling. The nominal diameter of the tee, pipe and fittings used to construct the stack shall be at least two-thirds (2/3) as large as the diameter of the sewer tributary to and upstream of the drop manhole; however, the nominal diameter of the stack shall at no time be less than eight (8) inches.

The stack shall be completely encased in a minimum of six (6) inches of IDOT, Class “SI”, concrete as measured from all directions from the outside surface of all components of the stack; however, the upstream, bell, of the PVC, C900, tee shall remain accessible for joining with an appropriately-sized, PVC, C900, pipe. The concrete encasement is to extend to the limits of the excavation and undisturbed earth and shall be anchored to the manhole wall sections.

The first pipe upstream of the drop manhole shall be constructed using Certa-Lok, PVC, C900, pipe with a laying length of twenty-feet (20’) and DR as specified by the Engineer. The joint between the first pipe upstream of the drop manhole and the next pipe upstream of it shall be constructed using an appropriately- sized, 5000 Series, Strong Back (RC), coupling as manufactured by Fernco. Filling of excavations below and around the first pipe upstream of drop manholes shall be completed in accordance with Subsection 2.0, titled “Backfilling for Structures,” of Section 047 of these Specifications except that use of earth removed from the excavation shall not be allowed.

Regular Drop Manholes shall be precast units as manufactured by Darnall Concrete Products Company of Normal, Illinois. The Engineer shall approve cast-in-place regular drop manholes.

Detail Drawings for both regular drop manholes and those with an influent pipe at ten (10) percent grade or greater are provided in Section 095 of these specifications.

3.0 Splash-Drop Manhole

Where a sewer discharges into a manhole, the bottom of which is less than two (2) feet below the invert of the sewer, the connection shall be made through a splash drop connection. Splash-drop manholes shall be in accordance with the Detail Drawings supplied in these specifications.

4.0 Special-Type Manhole

Where specified, manholes shall be constructed based upon actual conditions revealed after field investigation. As much as possible, special-type manholes shall be constructed using precast concrete manhole parts such as wall sections, flat tops, moor bases, etc.; however, as directed by the Engineer, portions of the manholes shall be cast-in-place. Cast-in-place portions shall conform as much as possible to the specifications for standard or drop manholes detailed in these Specifications.

Unless directed by the Engineer, castings and lids shall be as specified in these Specifications.

Portland cement concrete used shall be in accordance with Class PV concrete as detailed in Section 1020 of the Illinois Department of Transportation (IDOT) Standard Specifications. Formwork shall be as directed by the Engineer. As directed by the Engineer, cast-in-place benches shall have troughs formed within that are smooth and transfer the flow through the manhole without disruption. All cast-in-place concrete shall be smoothly finished, cured and protected as directed by the Engineer. There shall be no materials or concrete debris left in the manhole after construction nor shall any concrete debris or materials be introduced into the existing sewer system.

The crown of existing sewer pipes shall be removed to the spring line of the pipe or to the top of the newly cast bench.

The Contractor shall not make any claims for additional compensation for costs associated with work performed as directed by the Engineer. Alterations to the planned design of special-type manholes shall not serve as a basis of claims for additional compensation by the Contractor.

5.0 Manhole Testing

Constructed manholes shall be tested. Testing shall conform to ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the negative air pressure (vacuum) test and ASTM C1227 Standard Test Method for Concrete Septic Tanks. All test results shall be the property of the Engineer and provided by the Contractor immediately after testing is concluded.

6.0 Manhole Internal Drop Connections

Manhole internal drop connections shall be constructed only where allowed by GPSD.

Manhole internal drop connections shall be the Reliner Inside Drop System manufactured by Duran, Inc. Products and installation shall be in accordance with the specifications of the manufacturer and project plans and Specifications except as follows: all brackets, braces and

clamps shall be made of stainless steel; all anchors shall be made of Type 316 stainless steel; all anchors shall be secured into bored holes using a fast curing adhesive anchoring system: ITW Red Head C6 Fast Curing Epoxy for all conditions.

Internal drop connections shall be constructed using the manufacturer's "B" Bowl with an 8" outlet unless otherwise noted. The drop pipe shall be anchored as directed by the manufacturer except that a clamping bracket shall be placed near the top of the drop pipe (just below the flexible external pipe coupler) and another near the bottom of the drop pipe (near the PVC pipe elbow). The turn-out at the base end of the drop pipe shall be either a 45 degree or 90-degree PVC pipe elbow whose invert shall be as directed on the applicable plan sheet.

7.0 Saddle-Type Manhole

Saddle-type manholes shall be constructed only where allowed by GPSD.

Saddle-type manholes shall be constructed using precast concrete manhole components in accordance with these Specifications except that a saddle-type manhole shall be field modified to conform to the dimensions and operation of the existing sewer over which it is to be constructed. Likewise, the existing sewer shall be field modified so that the constructed manhole is fully operational.

A saddle-type manhole shall be constructed to straddle an existing sewer by modifying an appropriately sized precast concrete manhole barrel section. The dimensions of the chosen precast concrete manhole barrel section shall be chosen based upon field conditions including the size of the existing sewer and consideration for the structural integrity of the constructed manhole. The diameter of the barrel section shall be as directed by the Engineer. The opening cut into the barrel shall be large enough to allow placement over the existing sewer; however, excessive cutting beyond that necessary to place the modified barrel section over the sewer shall not be allowed. The height of the barrel section chosen shall be great enough to allow for ample distance between the top of the cut made to provide an opening for the existing sewer and the top of the barrel section.

The manhole-base section shall be properly constructed in accordance with these Specifications and the directions of the Engineer. Manhole-base sections shall be adequately supported upon concrete blocks and sewer bedding materials. After properly supporting the manhole base, ready-mix, Portland cement concrete of quantity and quality acceptable to the Engineer shall be poured around the manhole-base section. Portland cement concrete used shall be in accordance with Class SI concrete as detailed in Section 1020 of the Illinois Department of Transportation (IDOT) Standard Specifications. No further construction upon or around the constructed base section shall be allowed until sufficient time has passed to allow the strength of the poured concrete to reach that designed.

Joints between the newly placed and modified manhole barrel section that will serve as the manhole bottom and the existing sewer shall be made using ready-mix concrete in accordance with these Specifications. The joint shall be watertight and to the satisfaction of the Engineer.

Manhole benches within saddle-type manholes shall be constructed in accordance with the directions for manhole bench and trough reconstruction provided in Section 075 of these Specifications.

The crown of existing sewer pipes shall be removed to the top of the newly cast bench. The pipe shall be cut true and even with the top of the constructed manhole bench without excessive pipe removed below or remaining above the top of the bench.

8.0 Manhole Corbel Removal and Replacement

When removing an existing manhole barrel reducing section or corbel, the entire vertical length of the corbel shall be removed. After corbel removal, the remaining manhole barrel shall be of a uniform and consistent diameter.

If the corbel to be removed is a precast, concrete unit, then the entire corbel shall be removed to the joint between the corbel and uniform-diameter, manhole barrel section below.

If the barrel section below has been constructed using precast, concrete components and a joining system is available, then the replacement of the removed corbel shall be constructed utilizing the existing joint, if possible. If available, components compatible with the existing joining system shall be used if they are in accordance with these Specifications.

If the barrel section to remain does not have a joining system that is able to be utilized, then the replacement, precast, concrete barrel sections shall be constructed on top of the remaining barrel. The new, circular sections shall be centered and leveled on top of the remaining barrel as well as possible. The remaining barrel section shall provide support for the proposed manhole sections and, where in contact, two rows of butyl-rubber rings shall be used to form the joint between the poured, concrete collar and the replacement barrel sections.

A poured-in-place concrete collar is to be constructed around the joint of the new and remaining barrel sections to both secure the position of the new barrel sections and to provide tapered surfaces. Where the position of the existing barrel deviates from the replacement sections, the concrete collar shall be tapered to promote conveyance of any water and solids down into the manhole bench and trough. Sharp angles and benches created at the location of the joint shall not be allowed. Tapered surfaces shall be made part of the concrete collar and sloped at a grade of no less than one-inch (1”) vertical for each twelve-inches (12”) horizontal away from the new wall section. The concrete collar is to be in constructed using material in accordance with these Specifications

The concrete collar shall be sufficiently sized to encompass the horizontal cross-sections of both the existing and proposed barrel sections by six-inches (6”) beyond the outer-circumference. Additionally, the concrete collar shall vertically extend at least twelve-inches (12”) below and above the joint of the remaining and new barrel sections.

Replacement of the removed manhole barrel reducing section or corbel shall be in accordance with these Specifications and the directions of the Engineer. Components necessary to reconstruct the manhole shall be chosen based on these Specifications and the existing conditions.

END OF SECTION

SECTION 075

SPECIFICATIONS - MANHOLE REHABILITATION

1.0 General

The rehabilitation of manholes shall be performed where specified. Manhole rehabilitation involves the repair and modification of existing sewer system structures without structure removal and replacement. Manhole rehabilitation shall be performed in accordance with the specifications below.

The Contractor shall demonstrate to the Engineer experience in the application of the proposed manhole rehabilitation system. In lieu of experience, throughout the duration of the project, the Contractor shall secure the support and expertise of the manhole rehabilitation system manufacturer to assure proper handling and installation of the product.

2.0 Sewer System Operation and Manhole Rehabilitation

The rehabilitation of manholes shall be performed without disrupting sewer service or operation. If necessary, the Contractor shall make provisions to isolate manholes to be rehabilitated from sewer flows. Any methods proposed to isolate manholes shall be approved by GPSD.

The Contractor shall consider the possibility and possible impact of wet weather flows upon both flow isolation measures and the rehabilitation process. Prior to the commencement of the manhole rehabilitation process including manhole preparation, the Contractor shall take all measures necessary to protect the manhole from potential damage from water intrusion, infiltration and surcharging. The Contractor shall be responsible for correcting any damage that occurs during the rehabilitation process.

3.0 Manhole Cleaning

Prior to the manhole rehabilitation, manholes shall be cleaned thoroughly throughout the entire circumference and vertical length of the manholes. However, final cleaning shall not be performed until all specified demolition and removal tasks have been completed including, but not limited to, the removal of the existing bench and trough, the cutting of protruding piping, the removal of existing manhole steps, the removal of root intrusions and the removal and replacement of the existing manhole casting and lid (if specified by the Engineer).

Cleaning shall be performed in accordance with Subsection 3.2 of Section 093 of these Specifications except those portions that pertain to water supply, protruding service connections and compensation. Furthermore, the objective of manhole cleaning is not only that stated in Subsection 3.2 of Section 093 but also the preparation of manholes for rehabilitation in accordance with manufacturer recommendations made part of applicable

manhole rehabilitation systems. Manhole cleaning shall remove all loose materials as well as all roots, broken mortar, dirt, waste materials, bricks, broken and shaved pieces of piping materials, etc.

The Contractor shall prevent large materials not in normal suspension from entering the connecting piping of cleaned manholes. If this occurs, the Contractor shall be responsible for removal of materials from the sewer system to the satisfaction of GPSD. The Contractor shall be responsible for all materials removed from cleaned and rehabilitated manholes.

The Contractor shall be responsible for the supply of all water used in the cleaning of manholes and the reconstruction or rehabilitation of manhole components.

4.0 Manhole Bench and Trough Reconstruction

Reconstruction of manhole benches and troughs shall be performed where specified and in accordance with these Specifications.

4.1 Bench and Trough Removal

Prior to the commencement of bench and trough reconstruction, the existing bench and trough shall be removed to a depth sufficient to allow bench and trough reconstruction and support but not enough to compromise the support and integrity of the manhole. Materials unsuitable to serve as base material for bench and trough reconstruction shall be removed if removal does not jeopardize the integrity of the manhole structure. Afterwards, the manhole shall be thoroughly and completely cleaned; all loose materials and debris shall be taken from the manhole and disposed of by the Contractor.

4.2 Manhole Trough Reconstruction

Bench and trough reconstruction shall be performed immediately after the removal of the existing bench and trough and before commencement of manhole barrel rehabilitation. Water shall not be allowed to either collect in the bottom of the manhole or exit by seepage through the manhole bottom; at all times, the Contractor shall maintain a system to assure that water is either removed from the manhole or allowed to flow into the exit piping of the manhole.

Reconstruction of manhole troughs shall be performed by installing modified replacement piping in the manhole trough. Sizing and configuration of replacement piping shall be governed by the size of the sewers connecting to the respective manhole as well as the angles of sewer pipes connecting to the manhole at the trough. Pipe and fittings used to reconstruct troughs shall be PVC, SDR 26, and modified in accordance with these Specifications. Trough piping shall have the top of the piping from the springline up to and including the crown removed except for that minimal portion of piping necessary to construct joints between the existing sewer piping and the trough piping.

Depending upon the configuration of the sewers connecting to the manhole at the trough, tees and wyes may be used to reconstruct a trough that will convey all sewage coming into a manhole out through the exit piping. Fittings may be used where directed by GPSD.

The slope of the reconstructed trough shall be consistent and continuous throughout the entire reconstructed trough. The slope shall be governed by the differential between the lowest manhole outlet pipe invert and the invert of the lowest manhole influent pipe that introduces flow into the manhole. If the manhole has two outlets, the trough shall be reconstructed relative to the lowest outlet pipe invert. If there are multiple influent pipes, those influent pipes that are more than four (4) inches above the lowest influent pipe shall not be connected to the replacement trough.

Where specified by GPSD, the Contractor shall construct inside drop systems in accordance with Section 043 of these Specifications. If possible, internal drop systems shall be constructed such that their bottoms are allowed to rest on the manhole bench; however, reconstructed manhole benches must be completely constructed with all materials cured prior to the placement of internal drop systems.

If there are no pipes other than that effluent pipe to which the replacement trough is joined, then the Contractor shall construct a trough pipe from the manhole outlet to the interior of the manhole at a minimum slope of one (1) percent. The length of the pipe shall be sufficient to provide access to the connecting sewer for normal sewer operating, inspecting and cleaning equipment. The trough pipe shall be blocked at the end opposite of its connection to the outlet piping to prevent materials from the bench reconstruction from slipping into the trough and to provide a solid end around which a bench can be reconstructed.

Joints between the reconstructed manhole trough and the existing piping connected to the manhole under reconstruction shall be made using a flexible type coupling in accordance with these Specifications. When modifying piping to serve as part of a replacement trough, the Contractor shall leave just enough length of the upper half of the pipe to allow for construction of joints with the existing sewers. If necessary, the Contractor shall remove a minimal amount of manhole wall material around existing sewers to be connected to the replacement trough to allow for connection of a flexible-type coupling. Voids left by the removal of manhole wall materials for the purpose of constructing joints between replacement troughs and existing sewers shall be filled with hydraulic cement during the reconstruction of the manhole bench and to the satisfaction of GPSD.

When installing replacement troughs, the new piping shall be properly supported at all times to avoid collapsing and inconsistent piping grades through the manhole. Pipes may be supported using concrete blocks. Reconstructed troughs shall be embedded in several inches of concrete to provide a cradle for the installed piping.

4.3 Manhole Bench Reconstruction

Manhole benches shall be reconstructed only after the existing benches and

troughs have been properly removed and the trough piping has been reconstructed. If the depth of the manhole walls relative to the existing bench is sufficient, the thickness of the concrete of reconstructed benches shall be no less than six (6) inches throughout the entire area of the reconstructed bench. Benches shall be reconstructed such that there is a consistent surface grade of one percent (1.0%) minimum from the inside edges of the manhole walls to the edge of the trough piping.

Benches shall be reconstructed using a high-early strength, Portland-cement concrete batched and delivered in accordance with the current IDOT Specifications for Class of Concrete PP, a fast- setting polymer modified concrete and masonry repair mortar system such as the Octocrete and Octocrete U systems as manufactured by IPA Systems, a fast-setting, high-early strength, Portland-based resurfacing material such as Underlayment No. F-120 or Underlayment No. F-120FS both manufactured by Sauereisen; a rapid-setting, high-early strength, cementitious patching material such as Strong-Seal QSR as manufactured by The Strong Co., Inc., Quadex

Hyperform as manufactured by Quadex Sewer Rehabilitation Products. Materials used in bench reconstruction shall be a low slump and quick initial set time product. When the area of bench reconstruction is wet, a water-tolerant product designed specifically for underwater installations such as Octocrete U shall be used.

Materials used during bench reconstruction shall be hand-applied into all crevices and voids within the area of the bench reconstruction. Materials shall be worked into the areas between the bricks of a brick manhole.

The Contractor shall finish the reconstructed bench by brooming its surface to create a rough finish and increase slip resistance. Brooming shall yield a pattern of grooves from the interior of the manhole wall to the reconstructed channel to assist drainage and solids removal.

5.0 Manhole Barrel Rehabilitation

The objectives of manhole barrel rehabilitation are to structurally reinforce the structure, to improve manhole access and, where specified, to protect the manhole against corrosion. Manhole barrel rehabilitation shall be performed where specified only after preparations in accordance with both the recommendations of the rehabilitation system manufacturer and these Specifications have been completed.

If manhole bench and trough reconstruction or manhole casting and frame removal and replacement are also specified, the barrel rehabilitation shall be performed only after completion of these tasks. Manhole barrel rehabilitation including preparation shall only commence after a reconstructed bench is cured sufficiently to both convey water out of the manhole without damaging the reconstructed bench and support loads without damage including loads from ladders, personnel or other equipment used during the process of manhole barrel preparation and reconstruction.

5.1 Preparation of Manhole Barrels

5.1.1 Removal of Intruding Pipes

Where existing pipes intrude into manholes greater than six (6) inches, the pipes shall be trimmed so that their intrusion is not greater than six (6) inches but not less than two
(2) inches. Pipe intrusion shall be measured from the inside edge of the manhole wall near the entrance of the intruding pipe to the greatest extent of the pipe into the manhole.

Cut edges of intruding pipes that have been trimmed shall be consistent across the circular face of the cut. Intruding pipe cuts shall be made parallel to the inside manhole surface.

The Contractor shall take care to utilize cutting or trimming methods that will not break or fracture intruding pipes. The cut edge of pipes shall not be jagged or fractured. Methods chosen by the Contractor shall not break or damage the portion of an intruding pipe that is to remain.

5.1.2 Removal of Intruding Roots

Where roots intrude into a manhole, they shall be removed in accordance with Subsection 3.2 of Section 093 of these Specifications. Additionally, if roots intrude into a manhole through a connecting pipe, they shall be removed and disposed of such that they no longer intrude into the manhole.

5.1.3 Filling Voids in Manholes

Prior to the commencement of manhole rehabilitation, all voids and areas where manhole materials are missing shall be filled with materials and methods in accordance with these Specifications and in accordance with the recommendations of the manufacturer of the manhole barrel rehabilitation system. Preparation of the manhole for planned manhole rehabilitation shall be the purpose of filling voids in the manhole.

Voids shall be filled using one of the following: a dry polymer modified concrete and masonry repair mortar system such as the Octocrete and Octocrete U systems as manufactured by IPA Systems; a fast-setting, high-early strength, Portland-based resurfacing material such as Underlayment No. F-120 or Underlayment No. F-120FS both manufactured by Sauereisen; a rapid-setting, hydraulic water plug such as InstaPlug No. F-180 as manufactured by Sauereisen, Strong-Plug as manufactured by The Strong Co., Inc., Mainstay ML-10 as manufactured by Madewell Products Corporation, Permacast Plug as manufactured by ConShield Technologies, Inc. or Quadex Quad-Plug as manufactured by Quadex Sewer Rehabilitation Products; a rapid-setting, high-early

strength. cementitious patching material such as Strong-Seal QSR as manufactured by The Strong Co., Inc., Quadex Hyperform as manufactured by Quadex Sewer Rehabilitation Products or Permacast Patch as manufactured by ConShield Technologies, Inc. Where bricks are missing from brick manholes, replacement bricks may be used in combination with the void-repair systems. Installation shall be in accordance with the recommendations of the manufacturer and these Specifications.

If deemed necessary by the Engineer, the Engineer shall specify materials and methods for filling voids that extend outside of manhole walls into the surrounding materials.

Great care shall be taken in the installation of materials intended to fill voids. All voids shall be completely filled with the replacement material leaving no air pockets or unfilled void areas. The Contractor shall trowel material into voids to assure elimination of air pockets.

The Contractor shall choose installation methods that do not compromise the complete filling of voids or allow the shifting of installed materials after installation.

After installation of the replacement materials, the Contractor shall smooth the surface of the applied material such that the surface is consistent with the shape of the interior manhole surface.

5.2 Manhole Barrel Rehabilitation

Where specified, manhole barrel rehabilitation shall be performed using one of the following products: Drycon as manufactured by IPA Systems; Substrate Resurfacer No. F-121 as manufactured by Sauereisen; Reliner MSP Cement as distributed by Standard Cement Materials, Inc.; MS-2A as manufactured by The Strong Co., Inc.; Quadex QM-1s Restore or Quadex Aluminaliner both manufactured by Quadex Sewer Rehabilitation Products; CEMTEC Calcium Aluminate Repair Mortar as manufactured by A.W. Cook Cement, Inc.; Mainstay ML-72 Sprayable Microsilica Cement Mortar as manufactured by Madewell Products Corporation; Permacast MS-10,000 as manufactured by ConShield Technologies, Inc.

For each container of material brought to the site(s) of work, the anticipated yield of the included quantity of material shall be stamped or printed on the container or an attached label by the manufacturer. If it is not, yield information shall be provided to the Engineer by the manufacturer in a format acceptable to the Engineer prior to the commencement of manhole barrel and corbel rehabilitation.

Installation of this material shall be by either hand or sprayed on using a mobile rotary-sprayer pump and in accordance with the recommendations of the manufacturer.

The material shall be applied in at least two coats of different colors to allow determination of the thoroughness of the application. Each coat shall be not less than ½ inches thick at any given location on the rehabilitated surface. The surface of each layer of applied materials shall be consistent and without irregularities including bulges or depressions; additional materials shall be used where necessary to compensate for existing irregularities in manhole internal surfaces to produce consistent layers that meet or exceed the desired minimum thicknesses. The contrast of the colors of the material coats with one another and with the existing manhole surface shall be significant enough to make evident by visual inspection any locations of missing or thin materials. Visual inspections of the material and determination of the thoroughness of the application shall be made during the installation of the coating in question. All areas where the installation is determined to be inadequate shall be promptly filled and made compliant with the installation recommendations of the manufacturer.

Locations where there are insufficient materials including voids, crevices and holes shall not be filled with materials taken from other locations on the rehabilitated manhole barrel. Rather, materials shall be added from a supply of materials not part of that material previously applied to the manhole barrel.

Material shall be worked via hand into all crevices, voids and parts of the interior manhole surface. Care shall be taken to work material into voids between existing bricks vacated by mortar materials, into areas around the entire circumference of connecting pipes and up to the bottom of existing or replacement castings. Care shall also be taken not to allow materials to be deposited into connecting pipes.

Manhole barrel rehabilitation materials shall be applied throughout the entire vertical length of manholes from the bench to the bottom of the casting. Materials shall not be applied to the interior surface of the manhole castings. Where the manhole has been constructed monolithically on top of a brick sewer, manhole rehabilitation materials shall be not be applied during wet-weather and shall be applied from the bottom of the casting down to the level of dry- weather flow.

A joint between the coats of the manhole barrel rehabilitation product and the manhole bench (if one exists in a given manhole) shall be constructed by overlapping both coats of the manhole rehabilitation product over the manhole bench. The overlapping materials of each coat shall be tapered to the manhole bench.

The surface of the first coat of material shall be left rough to facilitate the bonding between the two coats.

The second coat of material shall be applied promptly after the application of the first coat to facilitate bonding of the two coats; however, the application of the second coat shall not compromise the structural integrity of the first coat and henceforth shall not be applied until the first coat has sufficient time to assure structural stability. A cumulative thickness of not less than one-inch (1”) of coating shall be consistently applied over the entire circumference and vertical distance defined in these specifications. The surface of the applied, final coat shall be made

consistently smooth via troweling.

If multiple products are to be utilized and distributed by the same equipment, said equipment shall be thoroughly washed and made free of materials preceding mixing and application of another product.

5.3 Manhole Barrel Rehabilitation using a Cured-In-Place Fiberglass Reinforced Plastic Liner

Where specified by the Engineer, manhole barrel rehabilitation shall be performed by application of a fiberglass cloth and epoxy liner such as PerpetuWall as provided by Protective Liner Systems. Such liners shall be applied in accordance with these Specifications and the specifications and directions of the manufacturer and shall not be less than 180 mils thick through the entire circumference and vertical height of a given manhole. Application shall include the entire interior manhole wall from, but not including, the manhole bench and trough to the manhole casting. Neither the manhole bench and trough nor the casting and lid shall receive coating with a fiberglass cloth and epoxy liner.

Application of fiberglass cloth and epoxy liners shall only be performed after completion of the reconstruction of manhole benches and troughs (if specified), replacement of manhole casting and lids (if specified) and manhole barrel rehabilitation. Fiberglass cloth and epoxy liners shall only be applied to rehabilitated manhole barrels after the cementitious manhole rehabilitation material is fully cured.

Preparation of manholes for the installation of a fiberglass cloth and epoxy liners shall be per the recommendations of the fiberglass cloth and epoxy liner manufacturer.

6.0 Manhole Frame and Cover Removal and Replacement

Manhole frames and covers shall be removed and replaced where specified by GPSD. Removal and replacement of manhole frames and covers shall be in accordance with Section 043 of these Specifications.

END SECTION

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STORM WATER POLLUTION PREVENTION PLAN

Illinois Department of Transportation

Storm Water Pollution Prevention Plan

Route	Marked Route	Section Number
FAU 6594/FAP 671	Western Ave./IL 8	16-00368-00-EG
Project Number	**County**	**Contract Number**
XMWJ(817)	Peoria	89766

This plan has been prepared to comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit No. ILR10 (Permit ILR10), issued by the Illinois Environmental Protection Agency (IEPA) for storm water discharges from construction site activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date
Bill Lewis	2/12/20

Print Name	Title	Agency
Bill Lewis	City Engineer	City of Peoria

Note: Guidance on preparing each section of BDE 2342 can be found in Chapter 41 of the IDOT Bureau of Design and Environment (BDE) Manual. Chapter 41 and this form also reference the IDOT Drainage Manual which should be readily available.

I. Site Description:

A. Provide a description of the project location; include latitude and longitude, section, town, and range:

Peoria County, City of Peoria: S. Western Avenue: North limit is intersection with W Howett Street (IL Rte 116), South limit is intersection with SW Adams Street. Latitude: 40°40'26.5" N, Longitude: 89°37'23.4" W, Twp 8N; Rng. 8E; Sec. 7, 8,17,18

B. Provide a description of the construction activity which is the subject of this plan. Include the number of construction stages, drainage improvements, in-stream work, installation, maintenance, removal of erosion measures, and permanent stabilization:

Removal and replacement of the following: roadway pavement with base course aggregate, sidewalks, driveways, curb & gutter, storm sewer pipe & structures, traffic signals and cabling, street lighting, striping, landscaping. Construction will also include repairs to sanitary sewer pipe and structures. The following existing utilities are expected to be relocated: utility poles for overhead electric and communication cables, water main and services, gas services.

C. Provide the estimated duration of this project:

3 Years (June 2020 - November 2022)

D. The total area of the construction site is estimated to be 11.0 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 10.2 acres.

E. The following are weighted averages of the runoff coefficient for this project before and after construction activities are completed; see Section 4-102 of the IDOT Drainage Manual:

Before Construction: 0.51
After Construction: 0.48

F. List all soils found within project boundaries; include map unit name, slope information, and erosivity:

533 - Urban Land
672B - Cresent loam, 2 to 5 percent slopes

G. If wetlands were delineated for this project, provide an extent of wetland acreage at the site; see Phase I report:

No Wetlands

H. Provide a description of potentially erosive areas associated with this project:

No potentially erosive areas identified

I. The following is a description of soil disturbing activities by stages, their locations, and their erosive factors (e.g., steepness of slopes, length of slopes, etc.):

The project is separated into 3 primary stages, which includes 2 pairs of secondary stages. Each of the 3 primary stages will have an approximate duration of 1 construction season. The work will progress, generally, from North to South.

Stage 1A (2020) - Reconstruction of Western Avenue between Marquette Street and Lincoln Avenue. Soil disturbing activities will be related to: pavement removal, sidewalk removal, grading & earth work, storm sewer removal & construction, excavation for permeable paver aggregate reservoir.

Stage 1B (2020) - Resurface Western Avenue between Lincoln Avenue and Howett Street. No soil disturbing activities expected.

Stage 2 (2021) - Reconstruction of Western Ave between Humboldt Street and Marquette Street. Soil disturbing activities will be related to: pavement removal, sidewalk removal, grading & earth work, storm sewer removal & construction, excavation for permeable paver aggregate reservoir.

Stage 3A (2021) - Reconstruction of Western Ave between SW Adams Street and Humboldt Street, and reconstruction of the left SW Adams Street lane within the SW Adams Street / Western Avenue intersection. Soil disturbing activities will be related to: pavement removal, sidewalk removal, grading & earth work, storm sewer removal & construction, excavation for permeable paver aggregate reservoir.

Stage 3B (2022) - Reconstruction of the right SW Adams Street lane within the SW Adams Street / Western Avenue intersection. Soil disturbing activities will be related to: pavement removal, sidewalk removal, grading & earth work, storm sewer removal & construction.

J. See the erosion control plans and/or drainage plans for this contract for information regarding drainage patterns, approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking (to be added after contractor identifies locations), areas of soil disturbance, the location of major structural and non-structural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands) , and locations where storm water is discharged to surface water including wetlands.

K. Identify who owns the drainage system (municipality or agency) this project will drain into:

The existing (and proposed) drainage system is a combined sewer. The storm sewer structures and laterals are owned by the City of Peoria. The sanitary structures and trunk line are owned by the Greater Peoria Sanitary District.

L. The following is a list of General NPDES ILR40 permittees within whose reporting jurisdiction this project is located:

Peoria

M. The following is a list of receiving water(s) and the ultimate receiving water(s) for this site. In addition, include receiving waters that are listed as Biologically Significant Streams by the Illinois Department of Natural Resources (IDNR). The location of the receiving waters can be found on the erosion and sediment control plans:

Receiving waters are as follows: City of Peoria storm sewer system which drains to Greater Peoria Sanitary District sanitary system which drains to the Illinois River

N. Describe areas of the site that are to be protected or remain undisturbed. These areas may include steep slopes (i.e., 1:3 or steeper), highly erodible soils, streams, stream buffers, specimen trees, natural vegetation, nature preserves, etc. Include any commitments or requirements to protect adjacent wetlands.

For any storm water discharges from construction activities within 50-feet of Waters of the U.S. (except for activities for water-dependent structures authorized by a Section 404 permit, describe: a) How a 50-foot undisturbed natural buffer will be provided between the construction activity and the Waters of the U.S. or b) How additional erosion and sediment controls will be provided within that area.

None

O. Per the Phase I document, the following sensitive environmental resources are associated with this project and may have the potential to be impacted by the proposed development. Further guidance on these resources is available in Section 41-4 of the BDE Manual.

None

☒ 303(d) Listed receiving waters for suspended solids, turbidity, or siltation.
The name(s) of the listed water body, and identification of all pollutants causing impairment:

Illinois River (ILD-05): Mercury, Polychlorinated biphenyls

Provide a description of how erosion and sediment control practices will prevent a discharge of sediment resulting from a storm event equal to or greater than a twenty-five (25) year, twenty-four (24) hour rainfall event:

Temporary Erosion Control Seeding will stabilize disturbed earth to reduce soil erosion. Inlet Filters will be installed in all existing and proposed drainage inlets. The filters will catch displaced sediment as runoff enters the storm sewer system. No perimeter erosion control barrier is warranted as the Right of Way is higher than the existing and propsed roadway.

Provide a description of the location(s) of direct discharge from the project site to the 303(d) water body:

No direct discharge into 303(d) listed water. Site drains to closed storm sewer system (owned City of Peoria) which overflows into 303(d) water during large events.

Provide a description of the location(s) of any dewatering discharges to the MS4 and/or water body:

None

☐ Applicable Federal, Tribal, State, or Local Programs

None

☐ Floodplain

None

☐ Historic Preservation

None

☐ Receiving waters with Total Maximum Daily Load (TMDL) for sediment, total suspended solids, turbidity or siltation

TMDL (fill out this section if checked above)

The name(s) of the listed water body:

None

Provide a description of the erosion and sediment control strategy that will be incorporated into the site design that is consistent with the assumptions and requirements of the TMDL:

N/A

If a specific numeric waste load allocation has been established that would apply to the project's discharges, provide a description of the necessary steps to meet that allocation:

N/A

☐ Threatened and Endangered Species/Illinois Natural Areas (INAI)/Nature Preserves

None

☐ Other

None

☐ Wetland

None

P. The following pollutants of concern will be associated with this construction project:

- ☒ Antifreeze / Coolants
- ☒ Concrete
- ☒ Concrete Curing Compounds
- ☒ Concrete Truck Waste
- ☒ Fertilizers / Pesticides
- ☒ Paints
- ☒ Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids)
- ☒ Soil Sediment
- ☒ Solid Waste Debris
- ☒ Solvents
- ☒ Waste water from cleaning construction equipments
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

II. Controls:

This section of the plan addresses the controls that will be implemented for each of the major construction activities described in Section I.C above and for all use areas, borrow sites, and waste sites. For each measure discussed, the Contractor will be responsible for its implementation as indicated. The Contractor shall provide to the Resident Engineer a plan for the implementation of the measures indicated. The Contractor, and subcontractors, will notify the Resident Engineer of any proposed changes, maintenance, or modifications to keep construction activities compliant with the Permit ILR10. Each such Contractor has signed the required certification on forms which are attached to, and are a part of, this plan:

A. **Erosion and Sediment Controls:** At a minimum, controls must be coordinated, installed and maintained to:

1. Minimize the amount of soil exposed during construction activity;
2. Minimize the disturbance of steep slopes;
3. Maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible;
4. Minimize soil compaction and, unless infeasible, preserve topsoil.

B. **Stabilization Practices:** Provided below is a description of interim and permanent stabilization practices, including site- specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. Stabilization practices may include but are not limited to: temporary seeding, permanent seeding, mulching, geotextiles, sodding, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Except as provided below in II.B.1 and II.B.2, stabilization measures shall be initiated **immediately** where construction activities have temporarily or permanently ceased, but in no case more than **one (1) day** after the construction activity in that portion of the site has temporarily or permanently ceases on all disturbed portions of the site where construction will not occur for a period of fourteen (14) or more calendar days.

1. Where the initiation of stabilization measures is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

2. On areas where construction activity has temporarily ceased and will resume after fourteen (14) days, a temporary stabilization method can be used.

The following stabilization practices will be used for this project:

- ☐ Erosion Control Blanket / Mulching
- ☐ Geotextiles
- ☐ Permanent Seeding
- ☐ Preservation of Mature Seeding
- ☒ Protection of Trees
- ☒ Sodding
- ☒ Temporary Erosion Control Seeding
- ☐ Temporary Turf (Seeding, Class 7)
- ☐ Temporary Mulching
- ☐ Vegetated Buffer Strips
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

Describe how the stabilization practices listed above will be utilized during construction:

Protection of Trees - Tree trunk protection for trees that are to remain within the proposed grading limits.

Sodding - Final landscape restoration for the urban parkway and lawns.

Temporary Erosion Control Seeding - Seeding to stabilize disturbed soil.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

Protection of Trees - Tree trunk protection to be removed after construction

Sodding - Final landscape restoration to remain after construction

Temporary Erosion Control Seeding - Removed prior to sodding.

C. **Structural Practices:** Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include but are not limited to: perimeter erosion barrier, earth dikes, drainage swales, sediment traps, ditch checks, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. The installation of these devices may be subject to Section 404 of the Clean Water Act.

- ☐ Aggregate Ditch
- ☐ Concrete Revetment Mats
- ☐ Dust Suppression
- ☐ Dewatering Filtering
- ☐ Gabions
- ☐ In-Stream or Wetland Work
- ☐ Level Spreaders
- ☐ Paved Ditch
- ☐ Permanent Check Dams
- ☐ Perimeter Erosion Barrier
- ☐ Permanent Sediment Basin
- ☒ Retaining Walls
- ☐ Riprap
- ☐ Rock Outlet Protection
- ☐ Sediment Trap
- ☒ Storm Drain Inlet Protection
- ☐ Stabilized Construction Exits
- ☐ Stabilized Trench Flow
- ☐ Slope Mattress
- ☐ Slope Walls
- ☐ Temporary Ditch Check
- ☐ Temporary Pipe Slope Drain
- ☐ Temporary Sediment Basin
- ☐ Temporary Stream Crossing
- ☐ Turf Reinforcement Mats
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

Describe how the structural practices listed above will be utilized during construction:

Retaining Walls - Existing retaining walls replaced. Material of existing walls vary within the corridor. Proposed retaining walls are reinforced concrete with appropriate concrete foundations.

Storm Drain Inlet Protection - Inlet filters will be for all existing and proposed storm sewer inlets.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

Retaining Walls - Proposed reinforced concrete retaining walls are to remain after construction.

Storm Drain Inlet Protection - Inlet filters will be removed after site has been restored and stabilized.

D. **Treatment Chemicals**

Will polymer flocculants or treatment chemicals be utilized on this project: ☐ Yes ☒ No

If *yes* above, identify where and how polymer flocculants or treatment chemicals will be utilized on this project.

N/A

E. **Permanent (i.e., Post-Construction) Storm Water Management Controls:** Provided below is a description of measures that will be installed during the construction process to control volume and pollutants in storm water discharges that will occur after construction operations have been completed.The installation of these devices may be subject to Section 404 of the Clean Water Act.

1. Such practices may include but are not limited to: storm water detention structures (including wet ponds), storm water retention structures, flow attenuation by use of open vegetated swales and natural depressions, infiltration of runoff on site, and sequential systems (which combine several practices).

   The practices selected for implementation were determined based on the technical guidance in Chapter 41 (Construction Site Storm Water Pollution Control) of the IDOT BDE Manual. If practices other than those discussed in Chapter 41 are selected for implementation or if practices are applied to situations different from those covered in Chapter 41, the technical basis for such decisions will be explained below.

2. Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

Description of permanent storm water management controls:

The City of Peoria municipal code requires that green infrastructure be incorporated in to the drainage design. The proposed permeable concrete pavers are designed to reduce the runoff that drains to the existing combined sewer system. Beneath the proposed permeable concrete pavers is a clean aggregate reservoir. The depth of the reservoir varies (3'-5' below finished grade), but in all cases the reservoir extends to the existing, undisturbed sandy soil. The reservoir has been sized for a 4-month, 24-hour storm, and will drain within 72 hours.

F. **Approved State or Local Laws:** The management practices, controls and provisions contained in this plan will be in accordance with IDOT specifications, which are at least as protective as the requirements contained in the IEPA's Illinois Urban Manual. Procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials shall be described or incorporated by reference in the space provided below. Requirements specified in sediment and erosion site plans, site permits, storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under the Permit ILR10 incorporated by reference and are enforceable under this permit even if they are not specifically included in the plan.

Description of procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials:

The City of Peoria municipal code requires Green Infrastructure to be designed to a 4-month, 24-hour storm. The proposed permeable paver system is an approved solution to satisfy the municipal code.

G. **Contractor Required Submittals:** Prior to conducting any professional services at the site covered by this plan, the Contractor and each subcontractor responsible for compliance with the permit shall submit to the Resident Engineer a Contractor Certification Statement, BDE 2342A.

1. The Contractor shall provide a construction schedule containing an adequate level of detail to show major activities with implementation of pollution prevention BMPs, including the following items:
   - Approximate duration of the project, including each stage of the project
   - Rainy season, dry season, and winter shutdown dates
   - Temporary stabilization measures to be employed by contract phases
   - Mobilization time-frame

- Mass clearing and grubbing/roadside clearing dates
- Deployment of Erosion Control Practices
- Deployment of Sediment Control Practices (including stabilized cons

- Deployment of Construction Site Management Practices (including concrete washout facilities, chemical storage, refueling locations, etc.)
- Paving, saw-cutting, and any other pavement related operations
- Major planned stockpiling operation
- Time frame for other significant long-term operations or activities that may plan non-storm water discharges as dewatering, grinding, etc
- Permanent stabilization activities for each area of the project

2. During the pre-construction meeting, the Contractor and each subcontractor shall provide, as an attachment to their signed Contractor Certification Statement, a discussion of how they will comply with the requirements of the permit in regard to the following items and provide a graphical representation showing location and type of BMPs to be used when applicable:
   - Temporary Ditch Checks - Identify what type and the source of Temporary Ditch Checks that will be installed as part of the project. The installation details will then be included with the SWPPP.
   - Vehicle Entrances and Exits - Identify type and location of stabilized construction entrances and exits to be used and how they will be maintained.
   - Material Delivery, Storage and Use - Discuss where and how materials including chemicals, concrete curing compounds, petroleum products, etc. will be stored for this project.
   - Stockpile Management - Identify the location of both on-site and off-site stockpiles. Discuss what BMPs will be used to prevent pollution of storm water from stockpiles.
   - Waste Disposal - Discuss methods of waste disposal that will be used for this project.
   - Spill Prevention and Control - Discuss steps that will be taken in the event of a material spill (chemicals, concrete curing compounds, petroleum, etc.)
   - Concrete Residuals and Washout Wastes - Discuss the location and type of concrete washout facilities to be used on this project and how they will be signed and maintained.
   - Litter Management - Discuss how litter will be maintained for this project (education of employees, number of dumpsters, frequency of dumpster pick-up, etc.).
   - Vehicle and Equipment Fueling - Identify equipment fueling locations for this project and what BMPs will be used to ensure containment and spill prevention.
   - Vehicle and Equipment Cleaning and Maintenance - Identify where equipment cleaning and maintenance locations for this project and what BMPs will be used to ensure containment and spill prevention.
   - Dewatering Activities - Identify the controls which will be used during dewatering operations to ensure sediments will not leave the construction site.
   - Polymer Flocculants and Treatment Chemicals - Identify the use and dosage of treatment chemicals and provide the Resident Engineer with Material Safety Data Sheets. Describe procedures on how the chemicals will be used and identify who will be responsible for the use and application of these chemicals. The selected individual must be trained on the established procedures.
   - Additional measures indicated in the plan.

III. Maintenance:

When requested by the Contractor, the Resident Engineer will provide general maintenance guides (e.g., IDOT Erosion and Sediment Control Field Guide) to the Contractor for the practices associated with this project. Describe how all items will be checked for structural integrity, sediment accumulation and functionality. Any damage or undermining shall be repaired immediately. Provide specifics on how repairs will be made. The following additional procedures will be used to maintain, in good and effective operating conditions, the vegetation, erosion and sediment control measures and other protective measures identified in this plan. It will be the Contractor's responsibility to attain maintenance guidelines for any manufactured BMPs which are to be installed and maintained per manufacture's specifications.

Storm Drain Inlet Protection - The frequency of inlet filter inspections shall be as described below in Section IV. Inlet filters shall be cleaned in accordance with manufacturer specifications. If no manufacturer cleaning specifications are provided, inlet filters shall be cleaned by removing and properly disposing the collected sediment. Once sediment is removed, filters shall be rinsed with clear water and checked for permeability. If filters cannot be cleaned to the satisfaction of the Engineer they shall be replaced. Filters can be reused if permitted by manufacturer and if cleaned as stated above, and with approval of the Engineer.

Temporary Erosion Control Seeding - Established grasses shall be mowed regularly to comply with the lawn height requirements within the City of Peoria municipal code.

Tree Trunk Protection - Protected tree trunks shall be regularly inspected for indications of rubbing, wearing, or harm. Protection shall be adjusted as needed to accommodate tree trunk growth. If a protected tree trunk is

damaged due to construction related activities, the contractor shall immediately contact a certified arborist for remediate action.

IV. Inspections:

Qualified personnel shall inspect disturbed areas of the construction site including Borrow, Waste, and Use Areas, which have not yet been finally stabilized, structural control measures, and locations where vehicles and equipment enter and exit the site using IDOT Storm Water Pollution Prevention Plan Erosion Control Inspection Report, BC 2259. Such inspections shall be conducted at least once every seven (7) calendar days and within twenty-four (24) hours of the end of a storm or by the end of the following business or work day that is 0.5 inch or greater or equivalent snowfall.

Inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections will recommence when construction activities are conducted, or if there is 0.5" or greater rain event, or a discharge due to snowmelt occurs.

If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the Resident Engineer shall notify the appropriate IEPA Field Operations Section office by email at: epa.swnoncomp@illinois.gov, telephone or fax within twenty-four (24) hours of the incident. The Resident Engineer shall then complete and submit an "Incidence of Non-Compliance" (ION) report for the identified violation within five (5) days of the incident. The Resident Engineer shall use forms provided by IEPA and shall include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of non-compliance shall be signed by a responsible authority in accordance with Part VI. G of the Permit ILR10.

The Incidence of Non-Compliance shall be mailed to the following address:
Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Compliance Assurance Section
1021 North Grand East
Post Office Box 19276
Springfield, Illinois 62794-9276

V. Failure to Comply:

Failure to comply with any provisions of this Storm Water Pollution Prevention Plan will result in the implementation of a National Pollutant Discharge Elimination System/Erosion and Sediment Control Deficiency Deduction against the Contractor and/or penalties under the Permit ILR10 which could be passed on to the Contractor.

CONTRACTOR CERTIFICATION STATEMENT

Illinois Department of Transportation

Contractor Certification Statement

Prior to conducting any professional services at the site covered by this contract, the Contractor and every subcontractor must complete and return to the Resident Engineer the following certification. A separate certification must be submitted by each firm. Attach to this certification all items required by Section II.G of the Storm Water Pollution Prevention Plan (SWPPP) which will be handled by the Contractor/subcontractor completing this form.

Route	Marked Route	Section Number
FAU 6594/FAP 671	(Western Ave & IL 8)	16-00368-00-EG

Project Number	County	Contract Number
XMWJ(817)	Peoria	89766

This certification statement is a part of SWPPP for the project described above, in accordance with the General NPDES Permit No. ILR10 issued by the Illinois Environmental Protection Agency.

I certify under penalty of law that I understand the terms of the Permit No. ILR 10 that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Additionally, I have read and understand all of the information and requirements stated in SWPPP for the above mentioned project; I have received copies of all appropriate maintenance procedures; and, I have provided all documentation required to be in compliance with the Permit ILR10 and SWPPP and will provide timely updates to these documents as necessary.

☐ Contractor
☐ Sub-Contractor

Signature	Date

Print Name	Title

Name of Firm	Phone

Street Address	City	State	Zip Code

Items which this Contractor/subcontractor will be responsible for as required in Section II.G. of SWPPP

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION FOR INSURANCE

Effective: February 1, 2007
Revised: August 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

The Contractor shall name the following entities as additional insured under the Contractor's general liability insurance policy in accordance with Article 107.27:

City of Peoria

The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING SPECIAL PROVISION
Effective: August 1, 2012 Revised: February 2, 2017

In addition to the Contractor's equal employment opportunity (EEO) affirmative action efforts undertaken as required by this Contract, the Contractor is encouraged to participate in the incentive program described below to provide additional on-the-job training to certified graduates of the IDOT pre-apprenticeship training program, as outlined in this Special Provision.

IDOT funds, and various Illinois community colleges operate, pre-apprenticeship training programs throughout the State to provide training and skill-improvement opportunities to promote the increased employment of minority groups, disadvantaged persons and women in all aspects of the highway construction industry. The intent of this IDOT Pre-Apprenticeship Training Program Graduate (TPG) special provision (Special Provision) is to place these certified program graduates on the project site for this Contract in order to provide the graduates with meaningful on-the-job training. Pursuant to this Special Provision, the Contractor must make every reasonable effort to recruit and employ certified TPG trainees to the extent such individuals are available within a practicable distance of the project site.

Specifically, participation of the Contractor or its subcontractor in the Program entitles the participant to reimbursement for graduates' hourly wages at $15.00 per hour per utilized TPG trainee, subject to the terms of this Special Provision. Reimbursement payment will be made even though the Contractor or subcontractor may also receive additional training program funds from other non-IDOT sources for other non-TPG trainees on the Contract, provided such other source does not specifically prohibit the Contractor or subcontractor from receiving reimbursement from another entity through another program, such as IDOT through the TPG program. With regard to any IDOT funded construction training program other than TPG, however, additional reimbursement for other IDOT programs will not be made beyond the TPG Program described in this Special Provision when the TPG Program is utilized.

No payment will be made to the Contractor if the Contractor or subcontractor fails to provide the required on-site training to TPG trainees, as solely determined by IDOT. A TPG trainee must begin training on the project as soon as the start of work that utilizes the relevant trade skill and the TPG trainee must remain on the project site through completion of the Contract, so long as training opportunities continue to exist in the relevant work classification. Should a TPG trainee's employment end in advance of the completion of the Contract, the Contractor must promptly notify the IDOT District EEO Officer for the Contract that the TPG's involvement in the Contract has ended. The Contractor must supply a written report for the reason the TPG trainee involvement terminated, the hours completed by the TPG trainee on the Contract, and the number of hours for which the incentive payment provided under this Special Provision will be, or has been claimed for the separated TPG trainee.

Finally, the Contractor must maintain all records it creates as a result of participation in the Program on the Contract, and furnish periodic written reports to the IDOT District EEO Officer that document its contractual performance under and compliance with this Special Provision. Finally, through participation in the Program and reimbursement of wages, the Contractor is not relieved of, and IDOT has not waived, the requirements of any federal or state labor or employment law applicable to TPG workers, including compliance with the Illinois Prevailing Wage Act.

METHOD OF MEASUREMENT: The unit of measurement is in hours.

BASIS OF PAYMENT: This work will be paid for at the contract unit price of $15.00 per hour for each utilized certified TPG Program trainee (TRAINEES TRAINING PROGRAM GRADUATE). The estimated total number of hours, unit price, and total price must be included in the schedule of prices for the Contract submitted by Contractor prior to beginning work. The initial number of TPG trainees for which the incentive is available for this contract is __4__.

The Department has contracted with several educational institutions to provide screening, tutoring and pre-training to individuals interested in working as a TPG trainee in various areas of common construction trade work. Only individuals who have successfully completed a Pre-Apprenticeship Training Program at these IDOT approved institutions are eligible to be TPG trainees. To obtain a list of institutions that can connect the Contractor with eligible TPG trainees, the Contractor may contact: HCCTP TPG Program Coordinator, Office of Business and Workforce Diversity (IDOT OBWD), Room 319, Illinois Department of Transportation, 2300 S. Dirksen Parkway, Springfield, Illinois 62764. Prior to commencing construction with the utilization of a TPG trainee, the Contractor must submit documentation to the IDOT District EEO Officer for the Contract that provides the names and contact information of the TPG trainee(s) to be trained in each selected work classification, proof that that the TPG trainee(s) has successfully completed a Pre-Apprenticeship Training Program, proof that the TPG is in an Apprenticeship Training Program approved by the U.S. Department of Labor Bureau of Apprenticeship Training, and the start date for training in each of the applicable work classifications.

To receive payment, the Contractor must provide training opportunities aimed at developing a full journeyworker in the type of trade or job classification involved. During the course of performance of the Contract, the Contractor may seek approval from the IDOT District EEO Officer to employ additional eligible TPG trainees. In the event the Contractor subcontracts a portion of the contracted work, it must determine how many, if any, of the TPGs will be trained by the subcontractor. Though a subcontractor may conduct training, the Contractor retains the responsibility for meeting all requirements imposed by this Special Provision. The Contractor must also include this Special Provision in any subcontract where payment for contracted work performed by a TPG trainee will be passed on to a subcontractor.

Training through the Program is intended to move TPGs toward journeyman status, which is the primary objective of this Special Provision. Accordingly, the Contractor must make every effort to enroll TPG trainees by recruitment through the Program participant educational institutions to the extent eligible TPGs are available within a reasonable geographic area of the project. The Contractor is responsible for demonstrating, through documentation, the recruitment efforts it has undertaken prior to the determination by IDOT whether the Contractor is in compliance with this Special Provision, and therefore, entitled to the Training Program Graduate reimbursement of $15.00 per hour.

Notwithstanding the on-the-job training requirement of this TPG Special Provision, some minimal off-site training is permissible as long as the offsite training is an integral part of the work of the contract, and does not compromise or conflict with the required on-site training that is central to the purpose of the Program. No individual may be employed as a TPG trainee in any work classification in which he/she has previously successfully completed a training program leading to journeyman status in any trade, or in which he/she has worked at a journeyman level or higher.

AGGREGATE SUBGRADE IMPROVEMENT (BDE)

Effective: April 1, 2012
Revised: April 1, 2016

Add the following Section to the Standard Specifications:

"SECTION 303. AGGREGATE SUBGRADE IMPROVEMENT

303.01 Description. This work shall consist of constructing an aggregate subgrade improvement.

303.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate	1004.07
(b) Reclaimed Asphalt Pavement (RAP) (Notes 1, 2, and 3)	1031

Note 1. Crushed RAP, from either full depth or single lift removal, may be mechanically blended with aggregate gradations CS 01, CS 02, and RR 01 but shall not exceed 40 percent of the total product. The top size of the RAP shall be less than 4 in. (100 mm) and well graded.

Note 2. RAP having 100 percent passing the 1 1/2 in. (37.5 mm) sieve and being well graded, may be used as capping aggregate in the top 3 in. (75 mm) when aggregate gradations CS 01, CS 02, or RR 01 are used in lower lifts.

Note 3. The RAP used for aggregate subgrade improvement shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications".

303.03 Equipment. The vibratory machine shall be according to Article 1101.01, or as approved by the Engineer.

303.04 Soil Preparation. The stability of the soil shall be according to the Department's Subgrade Stability Manual for the aggregate thickness specified.

303.05 Placing Aggregate. The maximum nominal lift thickness of aggregate gradations CA 02, CA 06, or CA 10 shall be 12 in. (300 mm). The maximum nominal lift thickness of aggregate gradations CS 01, CS 02, and RR 01 shall be 24 in. (600 mm).

303.06 Capping Aggregate. The top surface of the aggregate subgrade shall consist of a minimum 3 in. (75 mm) of aggregate gradations CA 06 or CA 10. When the contract specifies that a granular subbase is to be placed on the aggregate subgrade improvement, the 3 in. (75 mm) of capping aggregate shall be the same gradation and may be placed with the underlying aggregate subgrade improvement material.

303.07 Compaction. All aggregate lifts shall be compacted to the satisfaction of the Engineer. If the moisture content of the material is such that compaction cannot be obtained, sufficient water shall be added so that satisfactory compaction can be obtained.

303.08 Finishing and Maintenance of Aggregate Subgrade Improvement. The aggregate subgrade improvement shall be finished to the lines, grades, and cross sections shown on the plans, or as directed by the Engineer. The aggregate subgrade improvement shall be maintained in a smooth and compacted condition.

303.09 Method of Measurement. This work will be measured for payment according to Article 311.08.

303.10 Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) or ton (metric ton) for AGGREGATE SUBGRADE IMPROVEMENT or at the contract unit price per square yard (square meter) for AGGREGATE SUBGRADE IMPROVEMENT, of the thickness specified."

Add the following to Section 1004 of the Standard Specifications:

"**1004.07 Coarse Aggregate for Aggregate Subgrade Improvement.** The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate shall be crushed gravel, crushed stone, or crushed concrete. In applications where greater than 24 in. (600 mm) of subgrade material is required, gravel may be used below the first 12 in (300 mm) of subgrade.

(b) Quality. The coarse aggregate shall consist of sound durable particles reasonably free of deleterious materials.

(c) Gradation.

(1) The coarse aggregate gradation for total subgrade thickness less than or equal to 12 in. (300 mm) shall be CA 2, CA 6, CA 10, or CS 01.

The coarse aggregate gradation for total subgrade thickness more than 12 in. (300 mm) shall be CS 01 or CS 02 as shown below or RR 01 according to Article 1005.01(c).

	COARSE AGGREGATE SUBGRADE GRADATIONS				
Grad No.	Sieve Size and Percent Passing				
	8"	6"	4"	2"	#4
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 02		100	80 ± 10	25 ± 15	

	COARSE AGGREGATE SUBGRADE GRADATIONS (Metric)

Grad No.	Sieve Size and Percent Passing				
	200 mm	150 mm	100 mm	50 mm	4.75 mm
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 02		100	80 ± 10	25 ± 15	

(2) The 3 in. (75 mm) capping aggregate shall be gradation CA 6 or CA 10."

80274

COMPENSABLE DELAY COSTS (BDE)

Effective: June 2, 2017
Revised: April 1, 2019

Revise Article 107.40(b) of the Standard Specifications to read:

"(b) Compensation. Compensation will not be allowed for delays, inconveniences, or damages sustained by the Contractor from conflicts with facilities not meeting the above definition; or if a conflict with a utility in an unanticipated location does not cause a shutdown of the work or a documentable reduction in the rate of progress exceeding the limits set herein. The provisions of Article 104.03 notwithstanding, compensation for delays caused by a utility in an unanticipated location will be paid according to the provisions of this Article governing minor and major delays or reduced rate of production which are defined as follows.

(1) Minor Delay. A minor delay occurs when the work in conflict with the utility in an unanticipated location is completely stopped for more than two hours, but not to exceed two weeks.

(2) Major Delay. A major delay occurs when the work in conflict with the utility in an unanticipated location is completely stopped for more than two weeks.

(3) Reduced Rate of Production Delay. A reduced rate of production delay occurs when the rate of production on the work in conflict with the utility in an unanticipated location decreases by more than 25 percent and lasts longer than seven calendar days."

Revise Article 107.40(c) of the Standard Specifications to read:

"(c) Payment. Payment for Minor, Major, and Reduced Rate of Production Delays will be made as follows.

(1) Minor Delay. Labor idled which cannot be used on other work will be paid for according to Article 109.04(b)(1) and (2) for the time between start of the delay and the minimum remaining hours in the work shift required by the prevailing practice in the area.

Equipment idled which cannot be used on other work, and which is authorized to standby on the project site by the Engineer, will be paid for according to Article 109.04(b)(4).

(2) Major Delay. Labor will be the same as for a minor delay.

Equipment will be the same as for a minor delay, except Contractor-owned equipment will be limited to two weeks plus the cost of move-out to either the

Contractor's yard or another job and the cost to re-mobilize, whichever is less. Rental equipment may be paid for longer than two weeks provided the Contractor presents adequate support to the Department (including lease agreement) to show retaining equipment on the job is the most economical course to follow and in the public interest.

(3) Reduced Rate of Production Delay. The Contractor will be compensated for the reduced productivity for labor and equipment time in excess of the 25 percent threshold for that portion of the delay in excess of seven calendar days. Determination of compensation will be in accordance with Article 104.02, except labor and material additives will not be permitted.

Payment for escalated material costs, escalated labor costs, extended project overhead, and extended traffic control will be determined according to Article 109.13."

Revise Article 108.04(b) of the Standard Specifications to read:

"(b) No working day will be charged under the following conditions.

(1) When adverse weather prevents work on the controlling item.

(2) When job conditions due to recent weather prevent work on the controlling item.

(3) When conduct or lack of conduct by the Department or its consultants, representatives, officers, agents, or employees; delay by the Department in making the site available; or delay in furnishing any items required to be furnished to the Contractor by the Department prevents work on the controlling item.

(4) When delays caused by utility or railroad adjustments prevent work on the controlling item.

(5) When strikes, lock-outs, extraordinary delays in transportation, or inability to procure critical materials prevent work on the controlling item, as long as these delays are not due to any fault of the Contractor.

(6) When any condition over which the Contractor has no control prevents work on the controlling item."

Revise Article 109.09(f) of the Standard Specifications to read:

"(f) Basis of Payment. After resolution of a claim in favor of the Contractor, any adjustment in time required for the work will be made according to Section 108. Any adjustment in the costs to be paid will be made for direct labor, direct materials, direct equipment, direct jobsite overhead, direct offsite overhead, and other direct costs allowed by the resolution. Adjustments in costs will not be made for interest charges, loss of anticipated profit, undocumented loss of efficiency, home office overhead and unabsorbed overhead

other than as allowed by Article 109.13, lost opportunity, preparation of claim expenses and other consequential indirect costs regardless of method of calculation.

The above Basis of Payment is an essential element of the contract and the claim cost recovery of the Contractor shall be so limited."

Add the following to Section 109 of the Standard Specifications.

"**109.13 Payment for Contract Delay.** Compensation for escalated material costs, escalated labor costs, extended project overhead, and extended traffic control will be allowed when such costs result from a delay meeting the criteria in the following table.

Contract Type	Cause of Delay	Length of Delay
Working Days	Article 108.04(b)(3) or Article 108.04(b)(4)	No working days have been charged for two consecutive weeks.
Completion Date	Article 108.08(b)(1) or Article 108.08(b)(7)	The Contractor has been granted a minimum two week extension of contract time, according to Article 108.08.

Payment for each of the various costs will be according to the following.

(a) Escalated Material and/or Labor Costs. When the delay causes work, which would have otherwise been completed, to be done after material and/or labor costs have increased, such increases will be paid. Payment for escalated material costs will be limited to the increased costs substantiated by documentation furnished by the Contractor. Payment for escalated labor costs will be limited to those items in Article 109.04(b)(1) and (2), except the 35 percent and 10 percent additives will not be permitted.

(b) Extended Project Overhead. For the duration of the delay, payment for extended project overhead will be paid as follows.

(1) Direct Jobsite and Offsite Overhead. Payment for documented direct jobsite overhead and documented direct offsite overhead, including onsite supervisory and administrative personnel, will be allowed according to the following table.

Original Contract Amount	Supervisory and Administrative Personnel
Up to $5,000,000	One Project Superintendent
Over $ 5,000,000 - up to $25,000,000	One Project Manager, One Project Superintendent or Engineer, and One Clerk
Over $25,000,000 - up to $50,000,000	One Project Manager, One Project Superintendent, One Engineer, and

	One Clerk
Over $50,000,000	One Project Manager, Two Project Superintendents, One Engineer, and One Clerk

(2) Home Office and Unabsorbed Overhead. Payment for home office and unabsorbed overhead will be calculated as 8 percent of the total delay cost.

(c) Extended Traffic Control. Traffic control required for an extended period of time due to the delay will be paid for according to Article 109.04.

When an extended traffic control adjustment is paid under this provision, an adjusted unit price as provided for in Article 701.20(a) for increase or decrease in the value of work by more than ten percent will not be paid.

Upon payment for a contract delay under this provision, the Contractor shall assign subrogation rights to the Department for the Department's efforts of recovery from any other party for monies paid by the Department as a result of any claim under this provision. The Contractor shall fully cooperate with the Department in its efforts to recover from another party any money paid to the Contractor for delay damages under this provision."

80384

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)

Effective: September 1, 2000
Revised: March 2, 2019

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract the Contractor signs with a subcontractor.

> The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
>
> (a) Withholding progress payments;
>
> (b) Assessing sanctions;
>
> (c) Liquidated damages; and/or
>
> (d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a

good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates, in the absence of unlawful discrimination and in an arena of fair and open competition, DBE companies can be expected to perform 7.00 % of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

(a) The bidder documents enough DBE participation has been obtained to meet the goal or,

(b) The bidder documents a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217) 785-4611, or by visiting the Department's website at:
http://www.idot.illinois.gov/doing-business/certifications/disadvantaged-business-enterprise-certification/il-ucp-directory/index.

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement and failure of the bidder to comply will render the bid not responsive.

The bidder shall submit a DBE Utilization Plan (form SBE 2026), and a DBE Participation Statement (form SBE 2025) for each DBE company proposed for the performance of work to achieve the contract goal, with the bid. If the Utilization Plan indicates the contract goal will not be met, documentation of good faith efforts shall also be submitted. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract. The required forms and documentation must be submitted as a single .pdf file using the "Integrated Contractor Exchange (iCX)" application within the Department's "EBids System".

The Department will not accept a Utilization Plan if it does not meet the bidding procedures set forth herein and the bid will be declared not responsive. In the event the bid is declared not responsive, the Department may elect to cause the forfeiture of the penal sum of the bidder's proposal guaranty and may deny authorization to bid the project if re-advertised for bids.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan is approved. All information submitted by the bidder must be complete, accurate and adequately document enough DBE participation has been obtained or document the good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. This means the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts the bidder has made. Mere *pro forma* efforts, in other words efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

(a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases and will be considered by the Department.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable. In accordance with the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

(5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

(6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.

(7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.

(b) If the Department determines the bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided it is otherwise eligible for award. If the Department determines the

bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification will also include a statement of reasons for the adverse determination. If the Utilization Plan is not approved because it is deficient as a technical matter, unless waived by the Department, the bidder will be notified and will be allowed no more than a five calendar day period to cure the deficiency.

(c) The bidder may request administrative reconsideration of an adverse determination by emailing the Department at "DOT.DBE.UP@illinois.gov" within the five calendar days after the receipt of the notification of the determination. The determination shall become final if a request is not made on or before the fifth calendar day. A request may provide additional written documentation or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be reviewed by the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

(a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.

(b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.

(c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.

(d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:

(1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

(2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.

(e) DBE as a material supplier:

(1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.

(2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.

(3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a DBE regular dealer or DBE manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the DBE Participation Commitment Statement.

(a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be emailed to the Department at DOT.DBE.UP@illinois.gov.

(b) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A or AER 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, a new Request for Approval of Subcontractor will not be required. However, the Contractor must document efforts to assure the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

(c) SUBCONTRACT. The Contractor must provide copies of DBE subcontracts to the Department upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.

(d) ALTERNATIVE WORK METHODS. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:

(1) The replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or

(2) The DBE is aware its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or

(3) The DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.

(e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a) of this part. Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

(1) The listed DBE subcontractor fails or refuses to execute a written contract;

(2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the Contractor;

(3) The listed DBE subcontractor fails or refuses to meet the Contractor's reasonable, nondiscriminatory bond requirements;

(4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1200 or applicable state law.

(6) The Contractor has determined the listed DBE subcontractor is not a responsible contractor;

(7) The listed DBE subcontractor voluntarily withdraws from the projects and provides written notice to the Contractor of its withdrawal;

(8) The listed DBE is ineligible to receive DBE credit for the type of work required;

(9) A DBE owner dies or becomes disabled with the result that the listed DBE subcontractor is unable to complete its work on the contract;

(10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the Contractor can self-perform the work for which the DBE contractor was engaged or so that the Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated or fails to complete its work on the Contract for any reason, the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department will provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

(f) FINAL PAYMENT. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than 30 calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Resident Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.

(g) ENFORCEMENT. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be

made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

(h) RECONSIDERATION. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department. The result of the reconsideration process is not administratively appealable to the U.S. Department of Transportation.

80029

DISPOSAL FEES (BDE)

Effective: November 1, 2018

Replace Articles 109.04(b)(5) – 109.04(b)(8) of the Standard Specifications with the following:

"(5) Disposal Fees. When the extra work performed includes paying for disposal fees at a clean construction and demolition debris facility, an uncontaminated soil fill operation or a landfill, the Contractor shall receive, as administrative costs, an amount equal to five percent of the first $10,000 and one percent of any amount over $10,000 of the total approved costs of such fees.

(6) Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(7) Statements. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with itemized statements of the cost of such force account work. Statements shall be accompanied and supported by invoices for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices, the Contractor shall furnish an affidavit certifying that such materials were taken from his/her stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

Itemized statements at the cost of force account work shall be detailed as follows.

a. Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman. Payrolls shall be submitted to substantiate actual wages paid if so requested by the Engineer.

b. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

c. Quantities of materials, prices and extensions.

d. Transportation of materials.

e. Cost of property damage, liability and workmen's compensation insurance premiums, unemployment insurance contributions, and social security tax.

(8) Work Performed by an Approved Subcontractor. When extra work is performed by an approved subcontractor, the Contractor shall receive, as administrative costs, an amount equal to five percent of the total approved costs of such work with the minimum payment being $100.

(9) All statements of the cost of force account work shall be furnished to the Engineer not later than 60 days after receipt of the Central Bureau of Construction form “Extra Work Daily Report”. If the statement is not received within the specified time frame, all demands for payment for the extra work are waived and the Department is released from any and all such demands. It is the responsibility of the Contractor to ensure that all statements are received within the specified time regardless of the manner or method of delivery.”

80402

DOWEL BAR INSERTER (BDE)

Effective: January 1, 2017
Revised: January 1, 2018

Add the following to Article 420.03 of the Standard Specifications.

"(l) Mechanical Dowel Bar Inserter .....1103.20"

Revise the first paragraph of Article 420.05(b)(1) of the Supplemental Specifications to read:

"Preformed or Drilled Holes. If applicable, the tie bars shall be installed after the dowel bars have been tested with the MIT Scan-2 device according to Article 420.05(c)(2)b.2. The tie bars shall be installed with a nonshrink grout or chemical adhesive providing a minimum pull-out strength as follows."

Revise Article 420.05(c) of the Standard Specifications to read:

"(c) Transverse Contraction Joints. Transverse contraction joints shall consist of planes of weakness created by sawing grooves in the surface of the pavement and shall include load transfer devices consisting of dowel bars. Transverse contraction joints shall be according to the following."

Revise Article 420.05(c)(2) of the Standard Specifications to read:

"(2) Dowel Bars. Dowel Bars shall be installed parallel to the centerline of the pavement and parallel to the proposed pavement surface. Installation shall be according to one of the following methods.

a. Dowel Bar Assemblies. The assembly shall act as a rigid unit with each component securely held in position relative to the other members of the assembly. The entire assembly shall be held securely in place by means of nails which shall penetrate the stabilized subbase. At least ten nails shall be used for each 10, 11, or 12 ft (3, 3.3, or 3.6 m) section of assembly.

Metal stakes shall be used instead of nails, with soil or granular subbase. The stakes shall loop over or attach to the top parallel spacer bar of the assembly and penetrate the subgrade or subbase at least 12 in. (300 mm).

At the location of each dowel bar assembly, the subgrade or subbase shall be reshaped and re-tamped when necessary.

Prior to placing concrete, any deviation of the dowel bars from the correct horizontal or vertical alignment (horizontal skew or vertical tilt) greater than 3/8 in. in 12 in (9 mm in 300 mm) shall be corrected and a light coating of oil shall be uniformly applied to all dowel bars.

Care shall be exercised in depositing the concrete at the dowel bar assemblies so the horizontal and vertical alignment will be retained.

b. Dowel Bar Insertion. The dowel bars may be placed in the pavement slab with a mechanical dowel bar inserter (DBI) attached to a formless paver for pavements ≥ 7.0 in. (175 mm) in thickness. A light coating of oil shall be uniformly applied to all dowel bars.

The DBI shall insert the dowel bars with vibration into the plastic concrete after the concrete has been struck off and consolidated without deformation of the slab. After the bars have been inserted, the concrete shall be refinished and no voids shall exist around the dowel bars. The forward movement of the paver shall not be interrupted by the inserting of the dowel bars.

The location of each row of dowel bars shall be marked in a manner to facilitate where to insert the bars, and where to saw the transverse joint.

1. Placement Tolerances for Dowel Bars. The DBI shall place the dowel bars in the concrete pavement within the following tolerances.

(a.) Longitudinal Translation (Mislocation). Longitudinal translation (mislocation) shall be defined as the position of the center of the dowel bar along the longitudinal axis, in relation to the sawed joint.

The quality control tolerance for longitudinal translation shall not exceed 2.0 in (50 mm). If this tolerance is exceeded, adjustments shall be made to the paving operation.

Any joint having two or more dowel bars with an embedment length less than 4.0 in. (100 mm) within 12 in. (300 mm) of the same wheelpath will be considered unacceptable. The left and right wheelpaths shall be determined by excluding the middle 2.5 ft (0.8 m) of the pavement lane, and by excluding the outer 1.0 ft (0.3 m) measured from each pavement lane edge. Any joint having an average dowel bar embedment length less than 5.25 in. (130 mm) will also be considered unacceptable. Embedment length shall be defined as the length of dowel bar embedded on the short side of the sawed joint. An unacceptable joint shall be replaced with a minimum of 6 ft (1.8 m) of pavement centered over the joint according to Section 442 for Class B patches.

(b.) Horizontal Translation (Mislocation). Horizontal translation (mislocation) shall be defined as the difference in the actual dowel bar location parallel to the longitudinal or edge joint from its theoretical position as shown on the plans.

The quality control tolerance for horizontal translation shall not exceed 2.0 in. (50 mm). If this tolerance is exceeded, adjustments shall be made to the paving operation.

Any joint having a dowel bar with a translation greater than 4.0 in. (100 mm) will be considered unacceptable, but may remain in place unless the Engineer determines the joint will not function. If the joint is unable to remain in place, the joint shall be replaced with a minimum of 6 ft (1.8 m) of pavement centered over the joint according to Section 442 for Class B patches.

(c.) Vertical Translation (Mislocation). Vertical translation (mislocation) shall be defined as the difference in the vertical position of the dowel bar relative to the theoretical midpoint of the slab.

The quality control tolerance for vertical translation shall be as shown in the following table. If these tolerances are exceeded, adjustments shall be made to the paving operation.

Pavement Thickness	Dowel Bar Diameter	Vertical Translation Tolerance Above Midpoint	Vertical Translation Tolerance Below Midpoint
≥7 in. to <8 in. (≥175 mm to <200 mm)	1.25 in. (31 mm)	0.25 in. (6 mm)	0.5 in. (13 mm)
≥8 in. to <9 in. (≥200 mm to <225 mm)	1.50 in. (38 mm)	0.25 in. (6 mm)	0.5 in. (13 mm)
≥9 in. to <10 in. (≥225 mm to <250 mm)	1.50 in. (38 mm)	0.75 in. (19 mm)	0.75 in. (19 mm)
≥10 in. (≥250 mm)	1.50 in. (38 mm)	0.75 in. (19 mm)	1.0 in. (25 mm)

Any joint having a dowel bar with top concrete cover less than T/3, where T is slab thickness, will be considered unacceptable. Any joint having 2 or more dowel bars with bottom concrete cover less than 2.0 in. (50 mm) will also be considered unacceptable. An unacceptable joint shall be replaced with a minimum of 6 ft (1.8 m) of pavement according to Section 442 for Class B patches.

(d.) Vertical Tilt or Horizontal Skew (Misalignment). Vertical tilt or horizontal skew (misalignment) shall be defined as the difference in position of the dowel bar ends with respect to each other. Vertical tilt is measured in the vertical axis whereas horizontal skew is measured in the horizontal axis. Misalignment shall be measured in terms of a joint score. The joint score shall be defined as the degree of misalignment evaluated for a single

transverse joint for each lane of pavement. The joint score shall be determined as follows:

$$Joint\ Score = \left(1 + \left(\frac{x}{x-n}\right)\sum_{i=1}^{x-n} W_i\right)$$

where:

W_i = weighting factor (Table 1) for dowel *i*
x = number of dowels in a single joint
n = number of dowels excluded from the joint score calculation due to measurement interference

Single Dowel Misalignment – The degree of misalignment applicable to a single dowel bar, calculated as:

$$Single\ Dowel\ Misalignment = \sqrt{(Horizontal\ Skew)^2 + (Vertical\ Tilt)^2}$$

Table 1. Weighting Factors in Joint Score Determination	
Single Dowel Bar Misalignment (SDM)	W, Weighting Factor
SDM ≤ 0.6 in. (15 mm)	0
0.6 in. (15 mm) < SDM ≤ 0.8 in. (20 mm)	2
0.8 in. (20 mm) < SDM ≤ 1 in. (25 mm)	4
1 in. (25 mm) < SDM ≤ 1.5 in. (38 mm)	5
1.5 in. (38 mm) < SDM	10

The quality control tolerance for vertical tilt or horizontal skew shall not exceed 0.6 in. (15 mm). If the tolerance is exceeded for either one, adjustments shall be made to the paving operation.

Any joint having a dowel bar with a vertical tilt or horizontal skew greater than 1.5 in. (38 mm) shall be cut. If more than one dowel bar is required to be cut in the joint, the joint will be considered unacceptable and shall be replaced with a minimum of 6 ft (1.8 m) of pavement centered over the joint according to Section 442 for Class B patches.

Single dowel bar misalignment shall be controlled to provide the joint scores shown in the following table.

Number of Dowel Bars in the Joint	Maximum Joint Score
< 5	4
≥ 5 but ≤ 9	8
> 9	12

A joint score greater than the specified maximum will be considered locked. Three consecutive joints with a score greater than the specified maximum total score will all be considered unacceptable.

Three consecutive locked joints shall be corrected by selecting one joint and cutting a dowel bar. Preference shall be given to cutting a dowel bar within the middle 2.5 ft (0.8 m) of the pavement lane to avoid the wheelpaths. If none of the three locked joints will have a joint score less than or equal to the specified maximum after selecting one dowel bar to cut, one of the joints shall be replaced with a minimum of 6 ft (1.8 m) of pavement centered over the joint according to Section 442 for Class B patches.

(e.) For unacceptable work, the Contractor may propose alternative repairs for consideration by the Engineer.

2. Testing of Dowel Bar Placement. The placement of the dowel bars shall be tested within 24 hours of paving with a calibrated MIT Scan-2 device according to "Use of Magnetic Tomography Technology to Evaluate Dowel Placement" (Publication No. FHWA-IF-06-006) by the Federal Highway Administration.

   A trained operator shall perform the testing, and all testing shall be performed in the presence of the Engineer. The device shall be calibrated to the type and size dowel bar used in the work according to the manufacturer's instructions. Calibration documentation shall be provided to the Engineer prior to construction. The device shall be recalibrated and/or validate readings as required by the Engineer. The device may be utilized as a process control and make necessary adjustments to ensure the dowel bars are placed in the correct location.

   (a.) Test Section. Prior to start of production paving, a test section consisting of 30 transverse joints shall be constructed. The test section may be performed on the actual pavement, but production paving shall not begin until an acceptable test section has been constructed. The test section will be considered acceptable when all of the following are met:

      (1.) 90 percent of the dowel bars meet the quality control tolerance for longitudinal, horizontal, or vertical translation (mislocation);

      (2.) 90 percent of the dowel bars meet the quality control tolerance for vertical tilt or horizontal skew deviation (misalignment); and

      (3.) none of the joints are considered unacceptable prior to a corrective measure for mislocation or misalignment.

If the test section fails, another test section consisting of 30 joints shall be constructed.

The test section requirement may be waived by the Engineer if the Contractor has constructed an acceptable test section and successfully used the DBI on a Department contract within the same calendar year.

(b.) Production Paving. After the test section is approved, production paving may begin. The mislocation and misalignment of each dowel bar for the first ten joints constructed, and every tenth joint thereafter, shall be tested.

If two consecutive days of paving result in 5 percent or more of the joints on each day being unacceptable prior to a corrective measure, production paving shall be discontinued and a new test section shall be constructed.

If any joint is found to be unacceptable prior to a corrective measure, testing of additional joints on each side of the unacceptable joint shall be performed until acceptable joints are found.

(c.) Test Report. Test reports shall be provided to the Engineer within two working days of completing each day's testing. The test report shall include the following.

(1.) Contract number, placement date, county-route-section, direction of traffic, scan date, Contractor, and name of individual performing the tests.

(2.) Provide the standard report generated from the on-board printer of the imaging technology used for every dowel and joint measured.

(3.) For every dowel measured, provide the joint identification number, lane number and station, dowel bar number or x-location, direction of testing and reference joint location/edge location, longitudinal translation, horizontal translation, vertical translation, vertical tilt, and horizontal skew.

(4.) Identify each dowel bar with a maximum longitudinal, horizontal, or vertical translation that has been exceeded. Identify each dowel bar with a maximum vertical tilt or horizontal skew deviation that has been exceeded.

(5.) Joint Score Details: Provide the joint identification number, lane number, station, and calculated joint score for each joint.

(6.) Locked Joint Identification: Identify each joint where the maximum joint score is exceeded.

(d.) Exclusions. Exclude the following from dowel bar mislocation and misalignment measurements.

(1.) Transverse construction joints (headers).

(2.) Dowel bars within 24 in. (610 mm) of metallic manholes, inlets, metallic castings, or other nearby or underlying steel reinforced objects.

(3.) The outside dowel bar when tie bars are installed with mechanical equipment in fresh concrete. For tie bar installations involving preformed or drilled holes, installation of the tie bar shall be performed after testing with the MIT Scan-2 device.

(4.) Joints located directly under high voltage power lines.

(5.) Subject to the approval of the Engineer, any other contributors to magnetic interference.

(e.) Deficiency Deduction. When the Contractor has cut 25 dowel bars to correct unacceptable joints, the Contractor shall be liable and shall pay to the Department a deficiency deduction of $500.00 for the cost of the bars. Thereafter, an additional deficiency deduction of $20.00 for each additional bar cut will be assessed."

Add the following to Section 1103 of the Standard Specifications.

"**1103.20 Mechanical Dowel Bar Inserter.** The mechanical dowel bar inserter (DBI) shall be self-contained and supported on the formless paver with the ability to move separately from the paver. The DBI shall be equipped with insertion forks along with any other devices necessary for finishing the concrete the full width of the pavement. The insertion forks shall have the ability to vibrate at a minimum frequency of 3000 VPM."

80378

ELECTRIC SERVICE INSTALLATION (BDE)

Effective: January 1, 2020

Revise Article 804.04 of the Standard Specifications to read:

"**804.04 Installation.** The electric service installation shall extend from the existing utility owned transformer to the point of cable termination of the incoming power at the controller enclosure.

The Contractor shall ascertain the work being provided by the electric utility and shall provide all additional material and work required to complete the electric service installation while meeting the requirements of the utility. Unless otherwise required by the utility, grounding shall be according to Section 806, raceways shall be according to Sections 810 – 812, and conductors shall be according to Sections 817 – 818.

The electric service installation shall include an appropriate service disconnect and when required, metering. Metering shall include all metering material, including potential and current transformers. The metering and service disconnect shall be installed remote to the controller enclosure where possible.

The total length of aerial and underground service between the controller enclosure and utility transformer shall not exceed 250 ft (76 m). The service pole or structure and controller shall be located adjacent to the right-of-way line or a minimum distance of 30 ft (9 m) from the edge of pavement. The exact location will be established by the Engineer.

Specific requirements for aerial and underground electric service installations shall be as follows.

(a) Aerial Electric Service. The aerial service shall be mounted on a wood pole, along with a weatherhead, disconnect switch, meter base (if required), and all appurtenances to complete the installation.

The wood pole shall be installed according to Article 830.03(c), except the pole shall be a minimum of 25 ft (7.5 m) in length and shall be increased as necessary to maintain ground clearance.

(b) Underground Electric Service.

(1) Ground Mounted Service. The ground mounted service shall be installed on a corrosion resistant pedestal or structure with a service disconnect switch, meter base (if required), and all appurtenances to complete the installation.

(2) Pole Mounted Service. The service shall be installed on a 12 ft (3.7 m) wood pole on which the meter base (if required) and service disconnect switch shall be channel

mounted. The wood pole shall be installed according to Article 830.03(c), except the pole shall be plumb.

(c) Conduit Protection. Feeder conductors in PVC conduit on the service pole or structure shall be protected by galvanized steel "U" guard. When on a pole, the "U" guard shall be attached with 3/8 in. x 3 in. (M10 x 75 mm) galvanized steel lag bolts."

Revise Article 804.05 of the Standard Specifications to read:

"**804.05 Basis of Payment.** This work will be paid for at the contract unit price per each for ELECTRIC SERVICE INSTALLATION.

For aerial electric service, work on the utility side of the weatherhead at the service pole will be paid for according to Article 109.04 when not provided by the utility company.

For underground electric service, work on the utility side of the service pole, pedestal, or structure where the service cables penetrate the ground will be paid for according to Article 109.04 when not provided by the utility company.

Any charges by the utility company to provide electrical service will be paid for according to Article 109.05."

80421

EMULSIFIED ASPHALTS (BDE)

Effective: August 1, 2019

Revise Article 1032.06 of the Standard Specifications to read:

"**1032.06 Emulsified Asphalts.** Emulsified asphalts will be accepted according to the current Bureau of Materials Policy Memorandum, "Emulsified Asphalt Acceptance Procedure". These materials shall be homogeneous and shall show no separation of asphalt after thorough mixing, within 30 days after delivery, provided separation has not been caused by freezing. They shall coat the aggregate being used in the work to the satisfaction of the Engineer and shall be according to the following requirements.

(a) Anionic Emulsified Asphalt. Anionic emulsified asphalts RS-1, RS-2, HFRS-2, SS-1h, and SS-1 shall be according to AASHTO M 140, except as follows.

(1) The cement mixing test will be waived when the emulsion is being used as a tack coat.

(2) The Solubility in Trichloroethylene test according to AASHTO T 44 may be run in lieu of Ash Content and shall meet a minimum of 97.5 percent.

(b) Cationic Emulsified Asphalt. Cationic emulsified asphalts CRS-1, CRS-2, CSS-1h, and CSS-1 shall be according to AASHTO M 208, except as follows.

(1) The cement mixing test will be waived when the emulsion is being used as a tack coat.

(2) The Solubility in Trichloroethylene test according to AASHTO T 44 may be run in lieu of Ash Content and shall meet a minimum of 97.5 percent.

(c) High Float Emulsion. High float emulsions HFE-90, HFE-150, and HFE-300 are medium setting and shall be according to the following table.

Test	HFE-90	HFE-150	HFE-300
Viscosity, Saybolt Furol, at 122 °F (50 °C), (AASHTO T 59), SFS [1/]	50 min.	50 min.	50 min.
Sieve Test, No. 20 (850 µm), retained on sieve, (AASHTO T 59), %	0.10 max.	0.10 max.	0.10 max.
Storage Stability Test, 1 day, (AASHTO T 59), %	1 max.	1 max.	1 max.
Coating Test (All Grades), (AASHTO T 59), 3 minutes	stone coated thoroughly		
Distillation Test, (AASHTO T 59): Residue from distillation test to 500 °F (260 °C), % Oil distillate by volume, %	65 min. 7 max.	65 min. 7 max.	65 min. 7 max.

Characteristics of residue from distillation test to 500 °F (260 °C): Penetration at 77 °F (25 °C), (AASHTO T 49), 100 g, 5 sec, dmm	90-150	150-300	300 min.
Float Test at 140 °F (60 °C), (AASHTO T 50), sec.	1200 min.	1200 min.	1200 min.

1/ The emulsion shall be pumpable.

(d) Penetrating Emulsified Prime. Penetrating Emulsified Prime (PEP) shall be according to AASHTO T 59, except as follows.

Test	Result
Viscosity, Saybolt Furol, at 77 °F (25 °C), SFS	75 max.
Sieve test, retained on No. 20 (850 µm) sieve, %	0.10 max.
Distillation to 500 °F (260 °C) residue, %	38 min.
Oil distillate by volume, %	4 max.

The PEP shall be tested according to the current Bureau of Materials Illinois Laboratory Test Procedure (ILTP), "Sand Penetration Test of Penetrating Emulsified Prime (PEP)". The time of penetration shall be equal to or less than that of MC-30. The depth of penetration shall be equal to or greater than that of MC-30.

(e) Delete this subparagraph.

(f) Polymer Modified Emulsified Asphalt. Polymer modified emulsified asphalts, e.g. SS-1hP, CSS-1hP, CRS-2P (formerly CRSP), CQS-1hP (formerly CSS-1h Latex Modified) and HFRS-2P (formerly HFP) shall be according to AASHTO M 316, except as follows.

(1) The cement mixing test will be waived when the polymer modified emulsion is being used as a tack coat.

(2) CQS-1hP (formerly CSS-1h Latex Modified) emulsion for micro-surfacing treatments shall use latex as the modifier.

(3) Upon examination of the storage stability test cylinder after standing undisturbed for 24 hours, the surface shall show minimal to no white, milky colored substance and shall be a homogenous brown color throughout.

(4) The distillation for all polymer modified emulsions shall be performed according to AASHTO T 59, except the temperature shall be 374 ± 9 °F (190 ± 5 °C) to be held for a period of 15 minutes and measured using an ASTM 16F (16C) thermometer.

(5) The specified temperature for the Elastic Recovery test for all polymer modified emulsions shall be 50.0 ± 1.0 °F (10.0 ± 0.5 °C).

(6) The Solubility in Trichloroethylene test according to AASHTO T 44 may be run in lieu of Ash Content and shall meet a minimum of 97.5 percent.

(g) Non-Tracking Emulsified Asphalt. Non-tracking emulsified asphalt NTEA (formerly SS-1vh) shall be according to the following.

Test	Requirement
Saybolt Viscosity at 77 °F (25 °C), (AASHTO T 59), SFS	20-100
Storage Stability Test, 24 hr, (AASHTO T 59), %	1 max.
Residue by Distillation, 500 ± 10 °F (260 ± 5 °C), or Residue by Evaporation, 325 ± 5 °F (163 ± 3 °C), (AASHTO T 59), %	50 min.
Sieve Test, No. 20 (850 µm), (AASHTO T 59), %	0.3 max.
Tests on Residue from Evaporation	
Penetration at 77 °F (25 °C), 100 g, 5 sec, (AASHTO T 49), dmm	40 max.
Softening Point, (AASHTO T 53), °F (°C)	135 (57) min.
Ash Content, (AASHTO T 111), % 1/	1 max.

1/ The Solubility in Trichloroethylene test according to AASHTO T 44 may be run in lieu of Ash Content and shall meet a minimum of 97.5 percent

The different grades are, in general, used for the following.

Grade	Use
SS-1, SS-1h, RS-1, RS-2, CSS-1, CRS-1, CRS-2, CSS-1h, HFE-90, SS-1hP, CSS-1hP, NTEA (formerly SS-1vh)	Tack Coat
PEP	Prime Coat
RS-2, HFE-90, HFE-150, HFE-300, CRS-2P (formerly CRSP), HFRS-2P (formerly HFP), CRS-2, HFRS-2	Bituminous Surface Treatment
CQS-1hP (formerly CSS-1h Latex Modified)	Micro-Surfacing Slurry Sealing Cape Seal”

80415

ENGINEER'S FIELD OFFICE AND LABORATORY (BDE)

Effective: January 1, 2020

Revise the last sentence of the first paragraph of Article 670.01 of the Standard Specifications to read:

"The building shall remain available for use until released by the Engineer."

Revise the fifth and sixth paragraphs of Article 670.02 of the Standard Specifications to read:

"Sanitary facilities shall include hot and cold potable running water, lavatory and toilet as an integral part of the office where available. A portable toilet, if necessary, shall be serviced once per week. Solid waste disposal consisting of two waste baskets and an outside trash container of sufficient size to accommodate a weekly provided pick-up service.

In addition, the following furniture and equipment meeting the approval of the Engineer shall be furnished."

Revise Article 670.02(b) through 670.02(r) of the Standard Specifications to read:

"(b) One desk with minimum working surface of 48 x 72 in. (1.2 x 1.8 m).

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

(d) Table(s) and chairs capable of seating 10 people.

(e) One equipment cabinet of minimum inside dimension of 44 in. (1100 mm) high x 24 in. (600 mm) wide x 30 in. (750 mm) deep with lock. The walls shall be of steel with a 3/32 in. (2 mm) minimum thickness with concealed hinges and enclosed lock constructed in such a manner as to prevent entry by force. The cabinet assembly shall be permanently attached to a structural element of the field office in a manner to prevent theft of the entire cabinet.

(f) One refrigerator with a minimum size of 14 cu ft (0.40 cu m) with a freezer unit.

(g) One electric desk type tape printing calculator.

(h) A minimum of two communication paths. The configuration shall include:

(1) Internet Connection. An internet service connection with a wireless router capable of providing service to a minimum of five devices. The internet service shall be for unlimited data with a minimum internet data download speed of 25 megabits per second. For areas where this minimum download speed is not available, the maximum speed available for the area shall be provided.

(2) Telephone Line. One landline touch tone telephone with voicemail or answering machine. The telephone shall have an unpublished number.

(i) One plain paper wireless color printer capable of reproducing prints up to 11 x 17 in. (280 x 432 mm) with an automatic feed tray. Separate paper trays for letter size and 11 x 17 in. (280 x 432 mm) paper shall be provided. The wireless printer shall also be equipped to copy in color and scan documents.

(j) One electric water cooler dispenser.

(k) One first-aid cabinet fully equipped.

(l) One microwave oven (minimum 700 watt) with a turntable and 1 cu ft (0.03 cu m) minimum capacity.

(m) One fire-proof safe, 0.5 cu ft (0.01 cu m) minimum capacity.

(n) One electric paper shredder.

(o) One post mounted rain gauge, located on the project site for each 5 miles (8 km) of project length."

Revise the last sentence of the first paragraph of Articles 670.04 and 670.05 of the Standard Specifications to read:

"Doors and windows shall be equipped with locks."

Revise Article 670.04(c) through 670.04(n) of the Standard Specifications to read:

"(c) Two folding chairs.

(d) One equipment cabinet of minimum inside dimension of 44 in. (1100 mm) high x 24 in. (600 mm) wide x 30 in. (750 mm) deep with lock. The walls shall be of steel with a 3/32 in. (2 mm) minimum thickness with concealed hinges and enclosed lock constructed to prevent entry by force. The cabinet assembly shall be permanently attached to a structural element of the field office to prevent theft of the entire cabinet.

(e) A minimum of two communication paths. The configuration shall include:

(1) Internet Connection. An internet service connection with a wireless router capable of providing service to a minimum of five devices. The internet service shall be for unlimited data with a minimum internet download speed of 25 megabits per second. For areas where this minimum download speed is not available, the maximum speed available for the area shall be provided.

(2) Telephone Line. One land line touch tone telephone with voicemail or answering machine. The telephone shall have an unpublished number.

(f) One electric desk type tape printing calculator.

(g) One first-aid cabinet fully equipped.

(h) One plain paper wireless color printer capable of reproducing prints up to 11 x 17 in. (280 x 432 mm) with an automatic feed tray. Separate paper trays for letter size and 11 x 17 in. (280 x 432 mm) paper shall be provided. The wireless printer shall also be equipped to copy in color and scan documents.

(i) A portable toilet meeting Federal, State, and local health department requirements shall be provided, maintained clean and in good working condition, and shall be stocked with lavatory and sanitary supplies at all times. The portable toilet shall be serviced once per week.

(j) One electric water cooler dispenser.

(k) One refrigerator with a minimum size of 14 cu ft (0.45 cu m) with a freezer unit.

(l) One microwave oven (minimum 700 watt) with a turntable and 1 cu ft (0.03 cu m) minimum capacity."

Revise Article 670.05(f) of the Standard Specifications to read:

"(f) One landline touch tone telephone with voicemail or an answering machine. The telephone shall have an unpublished number."

Delete the last sentence of the second paragraph of Article 670.06 of the Standard Specifications.

Revise the fifth sentence of the first paragraph of Article 670.07 of the Supplemental Specifications to read:

"This price shall include all utility costs and shall reflect the salvage value of the building or buildings, equipment, and furniture which remain the property of the Contractor after release by the Engineer, except the Department will pay that portion of the monthly long distance and monthly local telephone, when combined, exceed $250."

80423

EQUIPMENT PARKING AND STORAGE (BDE)

Effective: November 1, 2017

Replace the first paragraph of Article 701.11 of the Standard Specifications with the following.

"**701.11 Equipment Parking and Storage.** During working hours, all vehicles and/or nonoperating equipment which are parked, two hours or less, shall be parked at least 8 ft (2.5 m) from the open traffic lane. For other periods of time during working and for all nonworking hours, all vehicles, materials, and equipment shall be parked or stored as follows.

(a) When the project has adequate right-of-way, vehicles, materials, and equipment shall be located a minimum of 30 ft (9 m) from the pavement.

(b) When adequate right-of-way does not exist, vehicles, materials, and equipment shall be located a minimum of 15 ft (4.5 m) from the edge of any pavement open to traffic.

(c) Behind temporary concrete barrier, vehicles, materials, and equipment shall be located a minimum of 24 in. (600 mm) behind free standing barrier or a minimum of 6 in. (150 mm) behind barrier that is either pinned or restrained according to Article 704.04. The 24 in. or 6 in. measurement shall be from the base of the non-traffic side of the barrier.

(d) Behind other man-made or natural barriers meeting the approval of the Engineer."

80388

GEOTECHNICAL FABRIC FOR PIPE UNDERDRAINS AND FRENCH DRAINS (BDE)

Effective: November 1, 2019

Revise Article 1080.01(a) of the Standard Specifications to read:

"(a) Fabric Materials. Fabric materials shall be as follows.

(1) Knitted Fabric. Knitted fabric envelope shall be Type A according to ASTM D 6707 and be a continuous one piece knitted polymeric material that fits over the pipe underdrain like a sleeve. It shall be free from any chemical treatment or coating that might significantly reduce porosity and permittivity.

(2) Woven or Nonwoven Fabric. The fabric shall be Class 3 according to AASHTO M 288 and consist of woven yarns or nonwoven filaments of polyolefins or polyesters. Woven slit film geotextiles (i.e. geotextiles made from yarns of a flat, tape like character) shall not be permitted. The yarns or filaments shall be dimensionally stable (i.e. maintain their relative position with respect to each other) and resistant to delamination. The yarns or filaments shall be free from any chemical treatment or coating that might significantly reduce porosity and permittivity.

(3) Physical Properties. The physical properties for knitted, woven, and nonwoven fabrics shall be according to the following.

PHYSICAL PROPERTIES			
	Knitted [1/]	Woven [2/]	Nonwoven [2/]
Grab Strength, lb (N) ASTM D 4632 [3/]	--	180 (800) min.	112 (500) min.
Elongation/Grab Strain, % ASTM D 4632 [3/]	--	49 max.	50 min.
Trapezoidal Tear Strength, lb (N) ASTM D 4533 [3/]	--	67 (300) min.	40 (180) min.
Puncture Strength, lb (N) ASTM D 6241 [3/]	180 (800) min.	370 (1650) min.	222 (990) min.
Apparent Opening Size, Sieve No. (mm) ASTM D 4751 [4/]	30 (0.60) max.	40 (0.425) max.	40 (0.425) max.
Permittivity, sec^{-1} ASTM D 4491	1.0 min.		
Ultraviolet Stability, % retained strength after 500 hours of exposure ASTM D 4355	--	50 min.	50 min.

1/ Manufacturer's certification to meet test requirements.

2/ NTPEP results or manufacturer's certification to meet test requirements.

3/ Values represent the minimum average roll value (MARV) in the weaker principle direction [machine direction (MD) or cross-machine direction (XD)].

4/ Values represent the maximum average roll value."

Revise Article 1080.05 of the Standard Specifications to read:

"**1080.05 Geotechnical Fabric for French Drains and Pipe Underdrains, Type 2.** Geotechnical fabric for french drains and pipe underdrains, Type 2 shall be Class 3 according to AASHTO M 288 and consist of woven yarns or nonwoven filaments of polyolefins or polyesters. Woven slit film geotextiles (i.e. geotextiles made from yarns of a flat, tape-like character) shall not be permitted. The yarns or filaments shall be dimensionally stable (i.e. maintain their relative position with respect to each other) and resistant to delamination. The yarns or filaments shall be free from any chemical treatment or coating that might significantly reduce porosity and permittivity.

The fabric shall be according to the following.

PHYSICAL PROPERTIES 1/		
	Woven	Nonwoven
Grab Strength, lb (N) ASTM D 4632 2/	180 (800) min.	112 (500) min.
Elongation/Grab Strain, % ASTM D 4632 2/	49 max.	50 min.
Trapezoidal Tear Strength, lb (N) ASTM D 4533 2/	67 (300) min.	40 (180) min.
Puncture Strength, lb (N) ASTM D 6241 2/	370 (1650) min.	222 (990) min.
Apparent Opening Size, Sieve No. (mm) ASTM D 4751 3/	60 (0.25) max.	
Permittivity, sec^{-1} ASTM D 4491	0.2 min.	
Ultraviolet Stability % retained strength after 500 hours of exposure - ASTM D 4355	50 min.	

1/ NTPEP results to meet test requirements. Manufacturer shall have public release status and current reports on laboratory results in Test Data of NTPEP's DataMine.

2/ Values represent the minimum average roll value (MARV) in the weaker principle direction [machine direction (MD) or cross-machine direction (XD)].

3/ Values represent the maximum average roll value."

80417

GROOVING FOR RECESSED PAVEMENT MARKINGS (BDE)

Effective: November 1, 2012
Revised: November 1, 2020

Description. This work shall consist of grooving the pavement surface in preparation for the application of recessed pavement markings.

Equipment. Equipment shall be according to the following.

(a) Preformed Plastic Pavement Marking Installations. The grooving equipment shall have a free-floating saw blade cutting head equipped with gang-stacked diamond saw blades. The diamond saw blades shall be of uniform wear and shall produce a smooth textured surface. Any ridges in the groove shall have a maximum height of 15 mils (0.38 mm).

(b) Paint, Epoxy, Polyurea, Modified Urethane and Thermoplastic Pavement Marking Installations. The grooving equipment shall be equipped with either a free-floating saw blade cutting head or a free-floating grinder cutting head configuration with diamond or carbide tipped cutters and shall produce an irregular textured surface.

CONSTRUCTION REQUIREMENTS

General. The Contractor shall supply the Engineer with a copy of the pavement marking material manufacturer's recommendations for constructing a groove.

Pavement Grooving Methods. The grooves for recessed pavement markings shall be constructed using the following methods.

(a) Wet Cutting Head Operation. When water is required or used to cool the cutting head, the groove shall be flushed with high pressure water immediately following the cut to avoid build up and hardening of slurry in the groove. The pavement surface shall be allowed to dry for a minimum of 24 hours prior to the final cleaning of the groove and application of the pavement marking material.

(b) Dry Cutting Head Operation. When used on HMA pavements, the groove shall be vacuumed or cleaned by blasting with high-pressure air to remove loose aggregate, debris, and dust generated during the cutting operation. When used on PCC pavements, the groove shall be flushed with high pressure water or shot blasted to remove any PCC particles that may have become destabilized during the grooving process. If high pressure water is used, the pavement surface shall be allowed to dry for a minimum of 24 hours prior to the final cleaning of the groove and application of the pavement marking material.

Pavement Grooving. Grooving shall not cause ravels, aggregate fractures, spalling or disturbance of the joints to the underlying surface of the pavement. Grooves shall be cut into the pavement prior to the application of the pavement marking material. Grooves shall be cut such

that the width is 1 in. (25 mm) greater than the width of the pavement marking line as specified on the plans. Grooves for letters and symbols shall be cut in a square or rectangular shape so that the entire marking will fit within the limits of the grooved area. The position of the edge of the grooves shall be a minimum of 2 in. (50 mm) from the edge of all longitudinal joints. The depth of the groove shall not be less than the manufacturer's recommendations for the pavement marking material specified, and according to the following.

(a) Preformed Plastic and Thermoplastic Pavement Markings. Grooving shall be to a minimum depth of 110 mils (2.79 mm) and a maximum depth of 200 mils (5.08 mm).

(b) Paint, Epoxy, Polyurea, and Modified Urethane Pavement Markings. Grooving shall be to a minimum depth of 40 mils (1.02 mm) and a maximum depth of 80 mils (2.03 mm).

The cutting head shall be operated at the appropriate speed in order to prevent undulation of the cutting head and grooving at an inconsistent depth.

For new HMA pavements, grooves shall not be installed within 10 days of the placement of the final course of pavement.

Final Cleaning. Immediately prior to the application of the pavement marking material or primer sealer, the groove shall be cleaned with high-pressure air blast.

Method of Measurement. Grooving for lines will be measured for payment in place, in feet (meters).

Grooving for letters and symbols will be measured in square feet (square meters).

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for GROOVING FOR RECESSED PAVEMENT MARKING of the groove width specified, and per square foot (square meter) for GROOVING FOR RECESSED PAVEMENT MARKING, LETTERS AND SYMBOLS.

The following shall only apply when preformed plastic pavement markings are to be recessed:

Add the following paragraph after the first paragraph of Article 780.07 of the Standard Specifications.

"Recessed markings in grooving shall be capable of being applied in a grooved slot on new and existing portland cement concrete and HMA surfaces, by means of a pressure-sensitive, precoated adhesive, or liquid contact cement which shall be applied at the time of installation. A primer sealer shall be applied with a roller and shall cover and seal the entire bottom of the groove. The primer sealer shall be recommended by the manufacturer of the pavement marking material and shall be compatible with the material being used. The Contractor shall install the markings in the groove as soon as possible after the primer sealer cures according to the manufacturer's recommendations."

HOT-MIX ASPHALT – BINDER AND SURFACE COURSE (BDE)

Effective: July 2, 2019
Revised: November 1, 2019

Description. This work shall consist of constructing a hot-mix asphalt (HMA) binder and/or surface course on a prepared base. Work shall be according to Sections 406 and 1030 of the Standard Specifications, except as modified herein.

Materials. Add the following after the second paragraph of Article 1003.03(c):

"For mixture IL-9.5FG, at least 67 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, steel slag sand, or combinations thereof meeting FA 20 gradation."

Revise Article 1004.03(c) to read:

"(c) Gradation. The coarse aggregate gradations shall be as listed in the following table.

Use	Size/Application	Gradation No.
Class A-1, A-2, & A-3	3/8 in. (10 mm) Seal	CA 16 or CA 20
Class A-1	1/2 in. (13 mm) Seal	CA 15
Class A-2 & A-3	Cover Coat	CA 14
HMA High ESAL	IL-19.0	CA 11 1/
	SMA 12.5 2/	CA 13, CA 14, or CA 16
	SMA 9.5 2/	CA 13 or CA 16 3/
	IL-9.5	CA 16
	IL-9.5FG	CA 16
HMA Low ESAL	IL-19.0L	CA 11 1/
	IL-9.5L	CA 16

1/ CA 16 or CA 13 may be blended with the CA 11.

2/ The coarse aggregates used shall be capable of being combined with stone sand, slag sand, or steel slag sand meeting the FA/FM 20 gradation and mineral filler to meet the approved mix design and the mix requirements noted herein.

3/ The specified coarse aggregate gradations may be blended."

HMA Nomenclature. Revise the "High ESAL" portion of the table in Article 1030.01 to read:

"High ESAL	Binder Courses	IL-19.0, IL-9.5, IL-9.5FG, IL-4.75, SMA 12.5, SMA 9.5

	Surface Courses	IL-9.5, IL-9.5FG, SMA 12.5, SMA 9.5”

Mixture Design. Revise the table in Article 1030.04(a)(1) and add SMA 9.5 and IL-9.5FG mixture compositions as follows:

“HIGH ESAL, MIXTURE COMPOSITION (% PASSING) [1/]						
Sieve Size	SMA 12.5 [5/]		SMA 9.5 [5/]		IL-9.5FG	
	min.	max.	min.	max.	min.	max.
1 in. (25 mm)						
3/4 in. (19 mm)		100		100		
1/2 in. (12.5 mm)	90	99	95	100		100
3/8 in. (9.5 mm)	50	85	70	95	90	100
#4 4.75 mm)	20	40	30	50	60	75
#8 (2.36 mm)	16	24 [4/]	20	30	45	60
#16 (1.18 mm)				21	25	40
#30 (600 μm)				18	15	30
#50 (300 μm)				15	8	15
#100 (150 μm)					6	10
#200 (75 μm)	8.0	11.0 [3/]	8.0	11.0 [3/]	4.0	6.5
#635 (20 μm)		≤ 3.0		≤ 3.0		
Ratio of Dust/Asphalt Binder						1.0

1/ Based on percent of total aggregate weight.

2/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with Ndesign = 90.

3/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer.

4/ When establishing the adjusted job mix formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted above 24 percent.

5/ When the bulk specific gravity (Gsb) of the component aggregates vary by more than 0.2, the blend gradations shall be based on volumetric percentage."

Revise the table in Article 1030.04(b)(1) to read:

<table>
<tr><td colspan="5">"VOLUMETRIC REQUIREMENTS, High ESAL</td></tr>
<tr><td rowspan="2">Ndesign</td><td colspan="3">Voids in the Mineral Aggregate (VMA), % minimum</td><td rowspan="2">Voids Filled with Asphalt Binder (VFA),%</td></tr>
<tr><td>IL-19.0</td><td>IL-9.5
IL-9.5FG</td><td>IL-4.75 1/</td></tr>
<tr><td>50</td><td rowspan="3">13.5</td><td rowspan="3">15.0</td><td>18.5</td><td>65 - 78 2/</td></tr>
<tr><td>70</td><td rowspan="2"></td><td rowspan="2">65 – 75 3/</td></tr>
<tr><td>90</td></tr>
</table>

1/ Maximum draindown for IL-4.75 shall be 0.3 percent.

2/ VFA for IL-4.75 shall be 76-83 percent.

3/ VFA for IL-9.5FG shall be 65-78 percent."

Revise the table in Article 1030.04(b)(3) to read:

<table>
<tr><td colspan="5">"VOLUMETRIC REQUIREMENTS, SMA 12.5 1/ and SMA 9.5 1/</td></tr>
<tr><td>ESALs (million)</td><td>Ndesign</td><td>Design Air Voids Target, %</td><td>Voids in the Mineral Aggregate (VMA), % min.</td><td>Voids Filled with Asphalt (VFA), %</td></tr>
<tr><td>≤ 10</td><td>50</td><td>4.0</td><td>16.0</td><td>75 – 80</td></tr>
<tr><td>> 10</td><td>80</td><td>4.0</td><td>17.0</td><td>75 – 80</td></tr>
</table>

1/ Maximum draindown shall be 0.3 percent."

Quality Control/Quality Assurance (QC/QA). Revise the third paragraph of Article 1030.05(d)(3) to read:

"If the Contractor and Engineer agree the nuclear density test method is not appropriate for the mixture, cores shall be taken at random locations determined according to the

QC/QA document "Determination of Random Density Test Site Locations". Core densities shall be determined using the Illinois Modified AASHTO T 166 or T 275 procedure."

Add the following paragraphs to the end of Article 1030.05(d)(3):

"Longitudinal joint density testing shall be performed at each random density test location. Longitudinal joint testing shall be located at a distance equal to the lift thickness or a minimum of 4 in. (100 mm), from each pavement edge (i.e. for a 5 in. (125 mm) lift the near edge of the density gauge or core barrel shall be within 5 in. (125 mm) from the edge of pavement). Longitudinal joint density testing shall be performed using either a correlated nuclear gauge or cores.

a. Confined Edge. Each confined edge density shall be represented by a one-minute nuclear density reading or a core density and shall be included in the average of density readings or core densities taken across the mat which represents the Individual Test.

b. Unconfined Edge. Each unconfined edge joint density shall be represented by an average of three one-minute density readings or a single core density at the given density test location and shall meet the density requirements specified herein. The three one-minute readings shall be spaced 10 ft (3 m) apart longitudinally along the unconfined pavement edge and centered at the random density test location.

When a longitudinal joint sealant (LJS) is applied, longitudinal joint density testing will not be required on the joint(s) sealed."

Revise the second table in Article 1030.05(d)(4) and its notes to read:

"DENSITY CONTROL LIMITS			
Mixture Composition	Parameter	Individual Test (includes confined edges)	Unconfined Edge Joint Density, minimum
IL-4.75	Ndesign = 50	93.0 – 97.4 % 1/	91.0%
IL-9.5FG	Ndesign = 50 - 90	93.0 – 97.4 %	91.0%
IL-9.5	Ndesign = 90	92.0 – 96.0 %	90.0%
IL-9.5, IL-9.5L,	Ndesign < 90	92.5 – 97.4 %	90.0%
IL-19.0	Ndesign = 90	93.0 – 96.0 %	90.0%
IL-19.0, IL-19.0L	Ndesign < 90	93.0 2/ – 97.4 %	90.0%
SMA	Ndesign = 50 or 80	93.5 – 97.4 %	91.0%

1/ Density shall be determined by cores or by correlated, approved thin lift nuclear gauge.

2/ 92.0 % when placed as first lift on an unimproved subgrade."

Equipment. Add the following to Article 1101.01 of the Standard Specifications:

"(h) Oscillatory Roller. The oscillatory roller shall be self-propelled and provide a smooth operation when starting, stopping, or reversing directions. The oscillatory roller shall be able to operate in a mode that will provide tangential impact force with or without vertical impact force by using at least one drum. The oscillatory roller shall be equipped with water tanks and sprinkling devices, or other approved methods, which shall be used to wet the drums to prevent material pickup. The drum(s) amplitude and frequency of the tangential and vertical impact force shall be approximately the same in each direction and meet the following requirements:

(1) The minimum diameter of the drum(s) shall be 42 in. (1070 mm);

(2) The minimum length of the drum(s) shall be 57 in. (1480 mm);

(3) The minimum unit static force on the drum(s) shall be 125 lb/in. (22 N/m); and

(4) The minimum force on the oscillatory drum shall be 18,000 lb (80 kN)."

CONSTRUCTION REQUIREMENTS

Add the following to Article 406.03 of the Standard Specifications:

"(j) Oscillatory Roller .....1101.01"

Revise the third paragraph of Article 406.05(a) to read:

"All depressions of 1 in. (25 mm) or more in the surface of the existing pavement shall be filled with binder. At locations where heavy disintegration and deep spalling exists, the area shall be cleaned of all loose and unsound material, tacked, and filled with binder (hand method)."

Revise Article 406.05(c) to read.

"(c) Binder (Hand Method). Binder placed other than with a finishing machine will be designated as binder (hand method) and shall be compacted with a roller to the satisfaction of the Engineer. Hand tamping will be permitted when approved by the Engineer."

Revise the special conditions for mixture IL-4.75 in Article 406.06(b)(2)e. to read:

"e. The mixture shall be overlaid within 5 days of being placed."

Revise Article 406.06(d) to read:

"(d) Lift Thickness. The minimum compacted lift thickness for HMA binder and surface courses shall be as follows.

MINIMUM COMPACTED LIFT THICKNESS	
Mixture Composition	Thickness, in. (mm)
IL-4.75	3/4 (19) - over HMA surfaces [1/] 1 (25) - over PCC surfaces [1/]
IL-9.5FG	1 1/4 (32)
IL-9.5, IL-9.5L	1 1/2 (38)
SMA 9.5	1 1/2 (38)
SMA 12.5	2 (51)
IL-19.0, IL-19.0L	2 1/4 (57)

1/ The maximum compacted lift thickness for mixture IL-4.75 shall be 1 1/4 in. (32 mm)."

Revise Table 1 and Note 3/ of Table 1 in Article 406.07(a) of the Standard Specifications to read:

"TABLE 1 - MINIMUM ROLLER REQUIREMENTS FOR HMA				
	Breakdown Roller (one of the following)	Intermediate Roller	Final Roller (one or more of the following)	Density Requirement
Binder and Surface [1/]	V_D, P [3/], T_B, 3W, O_T, O_B	P [3/], O_T, O_B	V_S, T_B, T_F, O_T	As specified in Articles: 1030.05(d)(3), (d)(4), and (d)(7).
IL-4.75 and SMA [4/ 5/]	T_B, 3W, O_T	- -	T_F, 3W, O_T	
Bridge Decks [2/]	T_B	- -	T_F	As specified in Articles 582.05 and 582.06.

3/ A vibratory roller (V_D) or oscillatory roller (O_T or O_B) may be used in lieu of the pneumatic-tired roller on mixtures containing polymer modified asphalt binder."

Add the following to EQUIPMENT DEFINITION in Article 406.07(a) contained in the Errata of the Supplemental Specifications:

"O_T - Oscillatory roller, tangential impact mode. Maximum speed is 3.0 mph (4.8 km/h) or 264 ft/min (80 m/min).

O_B - Oscillatory roller, tangential and vertical impact mode, operated at a speed to produce not less than 10 vertical impacts/ft (30 impacts/m)."

Basis of Payment. Replace the second through the fifth paragraphs of Article 406.14 with the following:

"HMA binder and surface courses will be paid for at the contract unit price per ton (metric ton) for MIXTURE FOR CRACKS, JOINTS, AND FLANGEWAYS; HOT-MIX ASPHALT BINDER COURSE (HAND METHOD), of the Ndesign specified; HOT-MIX ASPHALT BINDER COURSE, of the mixture composition and Ndesign specified; HOT-MIX ASPHALT SURFACE COURSE, of the mixture composition, friction aggregate, and Ndesign specified; POLYMERIZED HOT-MIX ASPHALT BINDER COURSE (HAND METHOD), of the Ndesign specified; POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, of the mixture composition and Ndesign specified; POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, of the mixture composition, friction aggregate, and Ndesign specified; POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, STONE MATRIX ASPHALT, of the mixture composition and Ndesign specified; POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, of the mixture composition, friction aggregate, and Ndesign specified."

80416

HOT-MIX ASPHALT – LONGITUDINAL JOINT SEALANT (BDE)

Effective: August 1, 2018
Revised: November 1, 2019

Add the following to Article 406.02 of the Standard Specifications.

"(d) Longitudinal Joint Sealant (LJS) .....1032"

Add the following to Article 406.03 of the Standard Specifications.

"(k) Longitudinal Joint Sealant (LJS) Pressure Distributor (Note 2)
(l) Longitudinal Joint Sealant (LJS) Melter Kettle (Note 3)

Note 2. When a pressure distributor is used to apply the LJS, the distributor shall be equipped with a heating and recirculating system along with a functioning auger agitating system or vertical shaft mixer in the hauling tank to prevent localized overheating. The distributor shall be equipped with a guide or laser system to aid in proper placement of the LJS application.

Note 3. When a melter kettle is used to transport and apply the LJS, the melter kettle shall be an oil jacketed double-boiler with agitating and recirculating systems. Material from the kettle may be dispensed through a pressure feed wand with an applicator shoe or through a pressure feed wand into a hand-operated thermal push cart."

Revise Article 406.06(g)(2) of the Standard Specifications to read:

"(2) Longitudinal Joints. Unless prohibited by stage construction, any HMA lift shall be complete before construction of the subsequent lift. The longitudinal joint in all lifts shall be at the centerline of the pavement if the roadway comprises two lanes in width, or at lane width if the roadway is more than two lanes in width.

When stage construction prohibits the total completion of a particular lift, the longitudinal joint in one lift shall be offset from the longitudinal joint in the preceding lift by not less than 3 in. (75 mm). The longitudinal joint in the surface course shall be at the centerline of the pavement if the roadway comprises two lanes in width, or at lane width if the roadway is more than two lanes in width.

A notched wedge longitudinal joint shall be used between successive passes of HMA binder course that has a difference in elevation of greater than 2 in. (50 mm) between lanes on pavement that is open to traffic.

The notched wedge longitudinal joint shall consist of a 1 to 1 1/2 in. (25 to 38 mm) vertical notch at the lane line, a 9 to 12 in. (230 to 300 mm) wide uniform taper sloped toward and extending into the open lane, and a second 1 to 1 1/2 in. (25 to 38 mm) vertical notch at the outside edge.

The notched wedge longitudinal joint shall be formed by the strike off device on the paver. The wedge shall then be compacted by the joint roller.

Tack coat shall be applied to the entire surface of the notched wedge joint immediately prior to placing the adjacent lift of binder. The material shall be uniformly applied at a rate of 0.05 to 0.1 gal/sq yd (0.2 to 0.5 L/sq m).

When the use of longitudinal joint sealant (LJS) is specified, the surface to which the LJS is applied shall be thoroughly cleaned and dry. The LJS may be placed before or after the tack coat. When placed after the tack coat, the tack shall be fully cured prior to placement of the LJS.

The LJS shall be applied in a single pass with a pressure distributor, melter kettle, or hand applied from a roll. At the time of installation, the pavement surface temperature and the ambient temperature shall be a minimum of 40 °F (4 °C) and rising.

The LJS shall be applied at a width of 18 in. (450 mm) ± 1 1/2 in. (38 mm) and centered ± 2 in. (± 50 mm) under the joint of the next HMA lift to be constructed. If the LJS flows more than 2 in. (50 mm) from the initial placement width, LJS placement shall stop and remedial action shall be taken.

When starting another run of LJS placement, suitable release paper shall be placed over the previous application of LJS to prevent doubling up of thickness of LJS.

The application rate of LJS shall be according to the following.

LJS Application Table			
Overlay Thickness in. (mm)	Coarse Graded Application Rate 1/ (IL-19.0, IL-19.0L, IL-9.5, IL-9.5L, IL-4.75) lb/ft (kg/m)	Fine Graded Application Rate 1/ lb/ft (kg/m)	SMA Mixtures 1/ 2/
3/4 (19)	0.88 (1.31)		
1 (25)	1.15 (1.71)		
1 1/4 (32)	1.31 (1.95)	0.88 (1.31)	
1 1/2 (38)	1.47 (2.19)	0.95 (1.42)	1.26 (1.88)
1 3/4 (44)	1.63 (2.43)	1.03 (1.54)	1.38 (2.06)
2 (50)	1.80 (2.68)	1.11 (1.65)	1.51 (2.25)
≥ 2 1/4 (60)	1.96 (2.92)		

1/ The application rate has a surface demand for liquid included within it. The thickness of the LJS may taper from the center of the application to a lesser thickness on the edge of the application, provided the correct width and application rate are maintained.

2/ If the joint is between SMA and either Coarse Graded or Fine Graded, the SMA rate shall be used.

The Contractor shall furnish to the Engineer a bill of lading for each tanker supplying material to the project. The application rate of LJS shall be verified within the first 1000 ft (300 m) of the day's placement and every 12,000 ft (3600 m) thereafter. A suitable paper or pan shall be placed at a random location in the path of the LJS. After application of the LJS, the paper or pan shall be picked up, weighed, and the application rate calculated. The tolerance between the application rate shown in the LJS Application Table and the calculated rate shall be ± 10 percent. The LJS shall be replaced in the area where the sample was taken.

A 1 qt (1 L) sample shall be taken from the pressure distributor or melting kettle at the jobsite once for each contract and sent to the Central Bureau of Materials.

The LJS shall be suitable for construction traffic to drive on without pickup or tracking of the LJS within 30 minutes of placement. If pickup or tracking occurs, LJS placement shall stop and damaged areas shall be repaired.

Prior to paving, the Contractor shall ensure the paver end plate and grade control device is adequately raised above the finished height of the LJS.

The LJS shall not flush to the final surface of the HMA pavement."

Add the following paragraph after the second paragraph of Article 406.13(b) of the Standard Specifications.

"Application of longitudinal joint sealant (LJS) will be measured for payment in place in feet (meters)."

Add the following paragraph after the first paragraph of Article 406.14 of the Standard Specifications.

"Longitudinal joint sealant will be paid for at the contract unit price per foot (meter) for LONGITUDINAL JOINT SEALANT."

Add the following to Section 1032 of the Standard Specifications.

"**1032.12 Longitudinal Joint Sealant (LJS).** Longitudinal joint sealant (LJS) will be accepted according to the current Bureau of Materials and Physical Research Policy Memorandum, "Performance Graded Asphalt Binder Acceptance Procedure" with the following exceptions: Article 3.1.9 and 3.4.1.4 of the policy memorandum will be excluded. The bituminous material used for the LJS shall be according to the following table. Elastomers shall be added to a base asphalt and shall be either a styrene-butadiene diblock or triblock copolymer without oil extension, or a styrene-butadiene rubber. Air blown asphalt, acid modification, or other modifiers will not be allowed. LJS in the form of pre-formed rollout banding may also be used.

Test	Test Requirement	Test Method
Dynamic shear @ 88°C (unaged), G*/sin δ, kPa	1.00 min.	AASHTO T 315
Creep stiffness @ -18°C (unaged), Stiffness (S), MPa m-value	300 max. 0.300 min.	AASHTO T 313
Ash, %	1.0 – 4.0	AASHTO T 111
Elastic Recovery, 100 mm elongation, cut immediately, 25°C, %	70 min.	ASTM D 6084 (Procedure A)
Separation of Polymer, Difference in °C of the softening point (ring and ball)	3 max.	ITP Separation of Polymer from Asphalt Binder”

80398

LUMINAIRES, LED (BDE)

Effective: April 1, 2019

Description. This work shall consist of furnishing and installing light emitting diode (LED) luminaires. Work shall be according to Sections 801, 821, and 1067 of the Standard Specifications, except as modified herein.

Submittals. In addition to the requirements listed in Article 801.05(a), submittals for LED luminaires shall include the following.

- Completed manufacturer's luminaire ordering form with the full catalog number provided.
- Descriptive literature and catalog cuts for the luminaire, driver, and surge protective device.
- Lighting calculations generated with AGi32 software demonstrating compliance with the Luminaire Performance Table shown in the contract. These calculations shall be performed to the following criteria: photopic units shall be used; calculations shall be performed to an accuracy of two digits (x.xx cd/m^2); point-by-point illuminance, luminance, and veiling luminance ratios demonstrating that the submitted luminaire meets the lighting metrics specified in the Luminaire Performance Table using IES RP-8 methods.

Upon request by the Engineer, submittals for LED Luminaires shall also include any or all the following.

- IES file associated with each submitted luminaire in IES LM-63 format.
- TM-21 calculator spreadsheet (XLSX or PDF format) and if available, TM-28 report for the specified luminaire or luminaire family. Both reports shall be for 50,000 hours at an ambient temperature of 77 °F (25 °C).
- LM-79 report with National Voluntary Laboratory Accreditation Program (NVLAP) current at the time of testing in PDF format inclusive of the following: isofootcandle diagram with half candela contour and maximum candela point; polar plots through maximum plane and maximum cone; coefficient of utilization graph; candela table; and spectral distribution graph and chromaticity diagram.
- LM-80 report for the specified LED package in PDF format and if available, LM-84 report for the specified luminaire or luminaire family in PDF format. Both reports shall be conducted by a laboratory with NVLAP certification current at the time of testing.
- In Situ Temperature Measurement Test (ISTMT) report for the specified luminaire or luminaire family in PDF format.
- Vibration test report in accordance with ANSI C136.31 in PDF format.

- ASTM B117/ASTM D1654 (neutral salt spray) test and sample evaluation report in PDF format.

- ASTM G154 (ASTM D523) gloss test report in PDF format.

- LED drive current, total luminaire input wattage, and current over the operating voltage range at an ambient temperature of 77 °F (25 °C).

- Power factor (pf) and total harmonic distortion (THD) at maximum and minimum supply and at nominal voltage for the dimmed states of 70%, 50%, and 30% full power.

- Ingress protection (IP) test reports, conducted according to ANSI C136.25 requirements, for the driver and optical assembly in PDF format.

- Installation, maintenance, and cleaning instructions in PDF format, including recommendations on periodic cleaning methods.

- Documentation in PDF format that the reporting laboratory is certified to perform the required tests.

Warranty. Replace the last sentence of Article 801.14(a) with the following.

"The warranty, including the maintained minimum luminance, for LED signal head modules, optically programmed LED signal head modules, and LED pedestrian signal head modules shall cover a minimum of 60 months from the date of delivery. The warranty for LED roadway luminaires, LED highmast luminaires, LED underpass luminaires, LED sign lighting luminaires, LED obstruction warning luminaires, and all of their components shall cover a minimum of ten years from the date of delivery."

Roadway Luminaires. Revise Article 821.02(d) to read.

"(d) Light Source .....1067.06"

Revise the third paragraph of Article 821.03 to read.

"Each luminaire driver and/or driver arrangement shall be checked to assure compatibility with the project power supply. When the luminaire driver has a readily accessible electrical compartment, the driver shall be attached so as to be easily removed for maintenance."

Replace the fifth paragraph of Article 821.03 with the following.

"No luminaire shall be installed before it is approved. When independent luminaire testing is required, full approval will not be given until complete test results which demonstrate compliance with the contract documents have been reviewed and accepted by the Engineer. Independent luminaire testing will be required, and shall be conducted, according to Article 1067.01(k)".

Revise the last paragraph of Article 821.03 to read.

"When installing or adjusting the luminaire, care shall be taken to avoid touching the lenses or allowing contaminants to be deposited on any part of the optical assembly. Each lens shall be free of all dirt, smudges, etc. Should the luminaire require cleaning, the luminaire manufacturer's cleaning instructions shall be strictly followed."

Revise Article 821.08 to read.

"**821.08 Basis of Payment.** This work will be paid for at the contract unit price per each for LUMINAIRE, LED, ROADWAY, of the output designation specified; LUMINAIRE, LED, HIGHMAST, of the output designation specified; LUMINAIRE, LED, UNDERPASS, WALLMOUNT, of the output designation specified; LUMINAIRE, LED, UNDERPASS, SUSPENDED, of the output designation specified; LUMINAIRE, LED, SIGN LIGHTING, of the output designation specified.

When independent luminaire testing is required, the work will be paid for at the contract lump sum price for INDEPENDENT LUMINAIRE TESTING."

Luminaires. Revise Articles 1067.01 through 1067.06 to read.

"**1067.01 General.** The luminaire shall be mechanically strong and easy to maintain. The size, weight, and shape of the luminaire shall be designed so as not to incite detrimental vibrations in its respective pole and it shall be compatible with the pole and arm. All electrical and electronic components of the luminaire shall comply with the requirements of Restriction of Hazardous Materials (RoHS) regulations. The luminaire shall be listed for wet locations by an NRTL and shall meet the requirements of UL 1598 and UL 8750.

(a) Labels. An internal label shall be provided indicating the luminaire is suitable for wet locations and indicating the luminaire is an NRTL listed product to UL1598 and UL8750. The internal label shall also comply with the requirements of ANSI C136.22.

An external label consisting of two black characters on a white background with the dimensions of the label and the characters as specified in ANSI C136.15 for HPS luminaires. The first character shall be the alphabetical character representing the initial lumen output as specified in Table 1 of Article 1067.06(c). The second character shall be the numerical character representing the transverse light distribution type as specified in IES RP-8 (i.e. Types 1, 2, 3, 4, or 5).

(b) Surge Protection. The luminaire shall comply the requirements of ANSI C136.2 for electrical transient immunity at the "Extreme" level (20KV/10KA) and shall be equipped with a surge protective device (SPD) that is UL1449 compliant with indicator light. An SPD failure shall open the circuit to protect the driver.

(c) Optical Assembly. The optical assembly shall have an IP66 or higher rating in accordance with ANSI C136.25. The circuiting of the LED array shall be designed to minimize the effect of individual LED failures on the operation of other LEDs. All optical components shall be made of glass or a UV stabilized, non-yellowing material.

(d) Housing. All external surfaces shall be cleaned in accordance with the manufacturer's recommendations and be constructed in such a way as to discourage the accumulation of water, ice, and debris.

(e) Driver. The driver shall be integral to the luminaire and shall be capable of receiving indefinite open and short circuit output conditions without damage.

The driver shall incorporate the use of thermal foldback circuitry to reduce output current under abnormal driver case temperature conditions and shall be rated for a lifetime of 100,000 hours at an ambient temperature exposure of 77 °F (25 °C) to the luminaire. If the driver has a thermal shut down feature, it shall not turn off the LEDs when operated at 104 °F (40 °C) or less.

The driver shall have an input voltage range of 120 to 277 volts (± 10%) or 347 to 480 volts (± 10%) according to the contract documents. When the driver is operating within the rated input voltage range and in an un-dimmed state, the power factor measurement shall be not less than 0.9 and the THD measurement shall be no greater than 20%.

The driver shall meet the requirements of the FCC Rules and Regulations, Title 47, Part 15 for Class A devices with regard to electromagnetic compatibility. This shall be confirmed through the testing methods in accordance with ANSI C63.4 for electromagnetic interference.

The driver shall be dimmable using the protocol listed in the Luminaire Performance Table shown in the contract.

(f) Photometric Performance. The luminaire shall be IES LM-79 tested by a laboratory holding accreditation from the NVLAP for IES LM-79 testing procedures. At a minimum the LM-79 report shall include a backlight/uplight/glare (BUG) rating and a luminaire classification system (LCS) graph showing lumen values and percent lumens by zone as described in IES RP-8. The uplight of the BUG rating shall be U=0.

The luminaire shall also meet the requirements of the Luminaire Performance Table shown in the contract.

(g) Finish. The luminaire shall have a baked acrylic enamel finish. The color of the finish shall be gray, bronze, or black to match the pole or tower on which the luminaire is mounted.

The finish shall have a rating of six or greater according to ASTM D1654, Section 8.0 Procedure A – Evaluation of Rust Creepage for Scribed Samples after exposure to

1000 hours of testing according to ASTM B117 for painted or finished surfaces under environmental exposure.

The luminaire finish shall have less than or equal to 30% reduction of gloss according to ASTM D523 after exposure of 500 hours to ASTM G154 Cycle 6 QUV® accelerated weathering testing.

(h) Hardware. All hardware shall be stainless steel or of other corrosion resistant material approved by the Engineer.

Luminaires shall be designed to be easily serviced, having fasteners such as quarter-turn clips of the heavy spring-loaded type with large, deep straight slot heads, complete with a receptacle and shall be according to military specification MIL-f-5591.

All hardware shall be captive and not susceptible to falling from the luminaire during maintenance operations. This shall include lens/lens frame fasteners as well hardware holding the removable driver and electronic components in place.

(i) Vibration Testing. All luminaires shall be subjected to and pass vibration testing requirements at "3G" minimum zero to peak acceleration in accordance with ANSI C136.31 requirements using the same luminaire. To be accepted, the luminaire housing, hardware, and each individual component shall pass this test with no noticeable damage and the luminaire must remain fully operational after testing.

(j) Wiring. All wiring in the luminaire shall be rated for operation at 600V, 221 °F (105 °C).

(k) Independent Luminaire Testing. When a contract has 30 or more luminaires of the same manufacturer's catalog number, that luminaire shall be independently tested to verify it will meet the contract requirements. The quantity of luminaires requiring testing shall be one luminaire for the first 30 plus one additional luminaire for each additional 50 luminaires of that catalog number. Testing is not required for temporary lighting luminaires.

Prior to testing the Contractor shall propose a properly accredited laboratory and a qualified independent witness, submitting their qualifications to the Engineer for approval. After approval, the Contractor shall coordinate the testing and pay all associated costs, including travel expenses, for the independent witness.

(1) Independent Witness. The independent witness shall select from the project luminaires at the manufacturer's facility the luminaires for testing. In all cases, the selection of luminaires shall be a random selection from the entire completed lot of luminaires required for the contract. Selections from partial lots will not be allowed. The independent witness shall mark each sample luminaire's shipping carton with the IDOT contract number and a unique sample identifier.

At the time of random selection, the independent witness shall inspect the luminaire(s) for compliance with all physical, mechanical, and labeling requirements for luminaires

according to Sections 821 and 1067. If deficiencies are found during the physical inspection, the Contractor shall have all luminaires of that manufacturer's catalog number inspected for the identified deficiencies and shall correct the problem(s) where found. Random luminaire selection and physical inspection must then be repeated. When the physical inspection is successfully completed, the independent witness shall mark the project number and sample identifier on the interior housing and driver of the luminaires and have them shipped to the laboratory.

The independent witness shall be present when testing is approved to be performed by the luminaire manufacturer. If the tests are performed by a laboratory independent of the luminaire manufacturer, distributor, and Contractor, the independent witness need not be present during the testing.

(2) Laboratory Testing. Luminaires shall be tested at an NVLAP accredited laboratory approved for each of the required tests. The testing shall include photometric, colorimetric, and electrical testing according to IES LM-79. Colorimetric values shall be determined from total spectral radiant flux measurements using a spectroradiometer. Photometric testing shall be according to IES recommendations and as a minimum, shall yield an isofootcandle chart, with max candela point and half candela trace indicated, an isocandela diagram, maximum plane and maximum cone plots of candela, a candlepower table (house and street side), a coefficient of utilization chart, a luminous flux distribution table, BUG rating report, and complete calculations based on specified requirements and test results.

All testing shall cover the full spherical light output at a maximum of 5 degree intervals at the vertical angles. The vertical angles shall run from 0 to 180 degrees. There shall be a minimum of 40 lateral test planes listed in Fig. 1 of IES LM-31 plus the two planes containing the maximum candela on the left and right sides of the luminaire axis. Before testing, the luminaire when mounted on the goniometer shall be scanned for vertical and horizontal angles of maximum candela and these planes included in the test. The luminaire shall be checked for a bi-symmetric light distribution. Individual tests must be conducted for each hemisphere, quadrant, and left/right sides.

The results for each photometric and colorimetric test performed shall be presented in a standard IES LM-79 report that includes the contract number, sample identifier, and the outputs listed above. The calculated results for each sample luminaire shall meet or exceed the contract specified levels in the luminaire performance table(s). The laboratory shall mark its test identification number on the interior of each sample luminaire.

Electrical testing shall be in according to IES LM-79 as well as NEMA and ANSI standards. The report shall list luminaire characteristics including input amperes, watts, power factor, total harmonic distortion, and LED driver current for full and partial power.

(3) Summary Test Report. The summary test report shall consist of a narrative documenting the test process, highlight any deficiencies and corrective actions, and clearly state which luminaires have met or exceeded the test requirements and may be released for delivery to the jobsite. Photographs shall also be used as applicable to document luminaire deficiencies and shall be included in the test report. The summary test report shall include the Luminaire Physical Inspection Checklist (form BDE 5650), photometric and electrical test reports, and point-by-point photometric calculations performed in AGi32 sorted by luminaire manufacturers catalog number. All test reports shall be certified by the independent test laboratory's authorized representative or the independent witness, as applicable, by a dated signature on the first page of each report. The summary test reports shall be delivered to the Engineer and the Contractor as an electronic submittal. Hard copy reports shall be delivered to the Engineer for record retention.

(4) Approval of Independent Testing Results. Should any of the tested luminaires fail to satisfy the specifications and perform according to approved submittal information, all luminaires of that manufacturers catalog number shall be deemed unacceptable and shall be replaced by alternate equipment meeting the specifications. The submittal and testing process shall then be repeated in its entirety. The Contractor may request in writing that unacceptable luminaires be corrected in lieu of replacement. The request shall identify the corrections to be made and upon approval of the request, the Contractor shall apply the corrections to the entire lot of unacceptable luminaires. Once the corrections are completed, the testing process shall be repeated, including selection of a new set of sample luminaires. The number of luminaires to be tested shall be the same quantity as originally tested.

The process of retesting, correcting, or replacing luminaires shall be repeated until luminaires for each manufacturers catalog number are approved for the project. Corrections and re-testing shall not be grounds for additional compensation or extension of time. No luminaires shall be shipped from the manufacturer to the jobsite until all luminaire testing is completed and approved in writing.

Submittal information shall include a statement of intent to provide the testing as well as a request for approval of the chosen independent witness and laboratory. All summary test reports, written reports, and the qualifications of the independent witness and laboratory shall be submitted for approval to the Engineer with a copy to the Bureau of Design and Environment, 2300 S Dirksen Parkway, Room 330 Springfield, IL 62764.

1067.02 Roadway Luminaires. Roadway luminaires shall be according to Article 1067.01 and the following.

The luminaire shall be horizontally mounted and shall be designed to slip-fit on a 2-3/8 in. (60 mm) outside diameter pipe arm with a stop to limit the amount of insertion to 7 in. (180 mm). It shall not be necessary to remove or open more than the access door to mount the luminaire.

The effective projected area (EPA) of the luminaire shall not exceed 1.6 sq ft (0.149 sq m) and the weight, including accessories, shall not exceed 40 lb (18.14 kg). If the weight of the luminaire is less than 20 lb (9.07 kg), weight shall be added to the mounting arm or a supplemental vibration damper installed as approved by the Engineer.

The luminaire shall be equipped with both internal and external leveling indicators. The external leveling indicator shall be clearly visible in daylight to an observer directly under the luminaire at a mounting height of 50 ft (15.2 m).

The luminaire shall be fully prewired to accept a seven-pin, twist-lock receptacle that is compliant with ANSI C136.41. All receptacle pins shall be connected according to TALQ Consortium protocol.

The luminaire shall be provided with an installed shorting cap that is compliant with ANSI C136.10.

1067.03 Highmast Luminaires. Highmast luminaires shall be according to Article 1067.01 and the following.

The luminaire shall be horizontally mounted and shall be designed and manufactured for highmast tower use. The EPA of the luminaire shall not exceed 3.0 sq ft (0.279 sq m) and the weight, including accessories, shall not exceed 85 lb (38.6 kg).

The optical assembly shall be capable of being rotated 360 degrees. A vernier scale shall be furnished on the axis of rotation for aiming the luminaire in relation to its mounting tenon arm. The scale shall be graduated in 5 degree increments or less. The luminaire shall be clearly marked at the vernier as to ‘house-side’ and ‘street-side’ to allow proper luminaire orientation.

1067.04 Underpass Luminaires. Underpass luminaries shall be according to Article 1067.01 and the following.

The underpass luminaire shall be complete with all supports, hardware, and appurtenant mounting accessories. The underpass luminaire shall be suitable for lighting a roadway underpass at an approximate mounting height of 15 ft (4.5 m) from a position suspended directly above the roadway edge of pavement or attached to a wall or pier. The underpass luminaire shall meet the requirements of ANSI C136.27.

It shall not be necessary to remove more than the cover, reflector and lens to mount the luminaire. The unit shall be heavy duty, suitable for highway use and shall have no indentations or crevices in which dirt, salt, or other corrosives may collect.

(a) Housing. The housing and lens frame shall be made of heavy duty die cast aluminum or 16 gauge (1.5 mm) minimum thickness Type 304 stainless steel. All seams in the housing enclosure shall be welded by continuous welds.

The housing shall have an opening for installation of a 3/4 in. (19 mm) diameter conduit.

(b) Lens and Lens Frame. The frame shall not overlap the housing when closed. The luminaire shall have a flat glass lens to protect the LEDs from dirt accumulation or be designed to prevent dirt accumulation. The optic assembly shall be rated IP 66 or higher.

1067.05 Sign Lighting Luminaires. Sign lighting luminaries shall be suitable for lighting overhead freeway and expressway guide signs; and shall be according to Article 1067.01.

1067.06 Light Sources. The light sources in all luminaires shall be LED according to Article 1067.01 and the following.

(a) The light source shall be according to ANSI C136.37 for solid state light sources used in roadway and area lighting.

(b) The light source shall have a minimum color rendering index (CRI) of 70 and a nominal correlated color temperature (CCT) of 4000 K.

(c) The rated initial luminous flux (lumen output) of the light source, as installed in the luminaire, shall be according to the following table for each specified output designation.

Output Designations and Initial Luminous Flux			*(for information only)*
Output Designation	**Initial Luminous Flux (lm)**		Approximate High Pressure Sodium (HPS) Equivalent Wattage
A	2,200		35 (Low Output)
B	3,150		50 (Low Output)
C	4,400		70 (Low Output)
D	6,300		100 (Low Output)
E	9,450		150 (Low Output)
F	12,500		200 (Med Output)
G	15,500		250 (Med Output)
H	25,200		400 (Med Output)
I	47,250		750 (High Output)
J	63,300		1,000 (High Output)
K	80,000+		1,000+ (High Output)

Luminaires with an initial luminous flux less than the values listed in the above table may be acceptable if they meet the requirements given in the Luminaire Performance Table shown in the contract."

80411

MANHOLES, VALVE VAULTS, AND FLAT SLAB TOPS (BDE)

Effective: January 1, 2018
Revised: March 1, 2019

Description. In addition to those manufactured according to the current standards included in this contract, manholes, valve vaults, and flat slab tops manufactured prior to March 1, 2019, according to the previous Highway Standards listed below will be accepted on this contract:

Product	Previous Standards		
Precast Manhole Type A, 4' (1.22 m) Diameter	602401-05	602401-04	602401-03
Precast Manhole Type A, 5' (1.52 m) Diameter	602402-01	602402	602401-03
Precast Manhole Type A, 6' (1.83 m) Diameter	602406-09	602406-08	602406-07
Precast Manhole Type A, 7' (2.13 m) Diameter	602411-07	602411-06	602411-05
Precast Manhole Type A, 8' (2.44 m) Diameter	602416-07	602416-06	602416-05
Precast Manhole Type A, 9' (2.74 m) Diameter	602421-07	602421-06	602421-05
Precast Manhole Type A, 10' (3.05 m) Diameter	602426-01	602426	
Precast Valve Vault Type A, 4' (1.22 m) Diameter	602501-04	602501-03	602501-02
Precast Valve Vault Type A, 5' (1.52 m) Diameter	602506-01	602506	602501-02
Precast Reinforced Concrete Flat Slab Top	602601-05	602601-04	

The following revisions to the Standard Specifications shall apply to manholes, valve vaults, and flat slab tops manufactured according to the current standards included in this contract:

Revise Article 602.02(g) of the Standard Specifications to read:

"(g) Structural Steel (Note 4) 1006.04

Note 4. All components of the manhole joint splice shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable."

Add the following to Article 602.02 of the Standard Specifications:

"(s) Anchor Bolts and Rods (Note 5) 1006.09

Note 5. The threaded rods for the manhole joint splice shall be according to the requirements of ASTM F 1554, Grade 55, (Grade 380)."

Revise the second paragraph of Article 1042.10 of the Standard Specifications to read:

"Catch basin Types A, B, C, and D; Manhole Type A; Inlet Types A and B; Drainage Structures Types 1, 2, 3, 4, 5, and 6; Valve Vault Type A; and reinforced concrete flat slab top (Highway Standard 602601) shall be manufactured according to AASHTO M 199 (M 199M), except the minimum wall thickness shall be as shown on the plans. Additionally, catch basins, inlets, and drainage structures shall have a minimum concrete compressive strength of 4500 psi

(31,000 kPa) at 28 days and manholes, valve vaults, and reinforced concrete flat slab tops shall have a minimum concrete compressive strength of 5000 psi (34,500 kPa) at 28 days."

80393

MATERIAL TRANSFER DEVICE (BDE)

Effective: June 15, 1999
Revised: August 1, 2014

Description. This work shall consist of placing polymerized hot-mix asphalt surface course, IL 9.5, Mix "D", or hot-mix pavement full depth 9½" except that these materials shall be placed using a material transfer device (MTD).

Materials and Equipment. The MTD shall have a minimum surge capacity of 15 tons (13.5 metric tons), shall be self-propelled and capable of moving independent of the paver, and shall be equipped with the following:

(a) Front-Dump Hopper and Conveyor. The conveyor shall provide a positive restraint along the sides of the conveyor to prevent material spillage. MTDs having paver style hoppers shall have a horizontal bar restraint placed across the foldable wings which prevents the wings from being folded.

(b) Paver Hopper Insert. The paver hopper insert shall have a minimum capacity of 14 tons (12.7 metric tons).

(c) Mixer/Agitator Mechanism. This re-mixing mechanism shall consist of a segmented, anti-segregation, re-mixing auger or two full-length longitudinal paddle mixers designed for the purpose of re-mixing the hot-mix asphalt (HMA). The longitudinal paddle mixers shall be located in the paver hopper insert.

CONSTRUCTION REQUIREMENTS

General. The MTD shall be used for the placement of polymerized hot-mix asphalt surface course, IL 9.5, Mix "D", or hot-mix pavement full depth 9 ½". The MTD speed shall be adjusted to the speed of the paver to maintain a continuous, non-stop paving operation.

Use of a MTD with a roadway contact pressure exceeding 25 psi (172 kPa) will be limited to partially completed segments of full-depth HMA pavement where the thickness of binder in place is 10 in. (250 mm) or greater.

Structures. The MTD may be allowed to travel over structures under the following conditions:

(a) Approval will be given by the Engineer.

(b) The vehicle shall be emptied of HMA material prior to crossing the structure and shall travel at crawl speed across the structure.

(c) The tires of the vehicle shall travel on or in close proximity and parallel to the beam and/or girder lines of the structure.

Method of Measurement. This work will be measured for payment in tons (metric tons) for materials placed with a material transfer device.

Basis of Payment. This work will be paid for at the contract unit price per ton (metric ton) for MATERIAL TRANSFER DEVICE.

The various HMA mixtures placed with the MTD will be paid for as specified in their respective specifications. The Contractor may choose to use the MTD for other applications on this project; however, no additional compensation will be allowed.

MOBILIZATION (BDE)

Effective: April 1, 2020

Replace Articles 671.02(a), (b), and (c) of the Standard Specifications with the following:

"(a) Upon execution of the contract, 90 percent of the pay item will be paid.

(b) When 90 percent of the adjusted contract value is earned, the remaining ten percent of the pay item will be paid along with any amount bid in excess of six percent of the original contract amount."

80428

PAVEMENT MARKING REMOVAL (BDE)

Effective: July 1, 2016

Revise Article 783.02 of the Standard Specifications to read:

"**783.02 Equipment.** Equipment shall be according to the following.

Item	Article/Section
(a) Grinders (Note 1)	
(b) Water Blaster with Vacuum Recovery	1101.12

Note 1. Grinding equipment shall be approved by the Engineer."

Revise the first paragraph of Article 783.03 of the Standard Specifications to read:

"**783.03 Removal of Conflicting Markings.** Existing pavement markings that conflict with revised traffic patterns shall be removed. If darkness or inclement weather prohibits the removal operations, such operations shall be resumed the next morning or when weather permits. In the event of removal equipment failure, such equipment shall be repaired, replaced, or leased so removal operations can be resumed within 24 hours."

Revise the first and second sentences of the first paragraph of Article 783.03(a) of the Standard Specifications to read:

"The existing pavement markings shall be removed by the method specified and in a manner that does not materially damage the surface or texture of the pavement or surfacing. Small particles of tightly adhering existing markings may remain in place, if in the opinion of the Engineer, complete removal of the small particles will result in pavement surface damage."

Revise the first paragraph of Article 783.04 of the Standard Specifications to read:

"**783.04 Cleaning.** The roadway surface shall be cleaned of debris or any other deleterious material by the use of compressed air or water blast."

Revise the first paragraph of Article 783.06 of the Standard Specifications to read:

"**783.06 Basis of Payment.** This work will be paid for at the contract unit price per each for RAISED REFLECTIVE PAVEMENT MARKER REMOVAL, or at the contract unit price per square foot (square meter) for PAVEMENT MARKING REMOVAL – GRINDING and/or PAVEMENT MARKING REMOVAL – WATER BLASTING."

Delete Article 1101.13 from the Standard Specifications.

80371

PORTLAND CEMENT CONCRETE (BDE)

Effective: November 1, 2017

Revise the Air Content % of Class PP Concrete in Table 1 Classes of Concrete and Mix Design Criteria in Article 1020.04 of the Standard Specifications to read:

"TABLE 1. CLASSES OF CONCRETE AND MIX DESIGN CRITERIA		
Class of Conc.	Use	Air Content %
PP	Pavement Patching Bridge Deck Patching (10)	
	PP-1	4.0 - 8.0"
	PP-2	
	PP-3	
	PP-4	
	PP-5	

Revise Note (4) at the end of Table 1 Classes of Concrete and Mix Design Criteria in Article 1020.04 of the Standard Specifications to read:

"(4) For all classes of concrete, the maximum slump may be increased to 7 in (175 mm) when a high range water-reducing admixture is used. For Class SC, the maximum slump may be increased to 8 in. (200 mm). For Class PS, the maximum slump may be increased to 8 1/2 in. (215 mm) if the high range water-reducing admixture is the polycarboxylate type."

80389

PORTLAND CEMENT CONCRETE – HAUL TIME (BDE)

Effective: July 1, 2020

Revise Article 1020.11(a)(7) of the Standard Specifications to read:

"(7) Haul Time. Haul time shall begin when the delivery ticket is stamped. The delivery ticket shall be stamped no later than five minutes after the addition of the mixing water to the cement, or after the addition of the cement to the aggregate when the combined aggregates contain free moisture in excess of two percent by weight (mass). If more than one batch is required for charging a truck using a stationary mixer, the time of haul shall start with mixing of the first batch. Haul time shall end when the truck is emptied for incorporation of the concrete into the work. The maximum haul time shall be as follows.

Concrete Temperature at Point of Discharge, °F (°C)	Maximum Haul Time 1/ (minutes)	
	Truck Mixer or Truck Agitator	Nonagitator Truck
50 - 64 (10 - 17.5)	90	45
> 64 (> 17.5) - without retarder	60	30
> 64 (> 17.5) - with retarder	90	45

1/ To encourage start-up testing for mix adjustments at the plant, the first two trucks will be allowed an additional 15 minutes haul time whenever such testing is performed.

For a mixture which is not mixed on the jobsite, a delivery ticket shall be required for each load. The following information shall be recorded on each delivery ticket: (1) ticket number; (2) name of producer and plant location; (3) contract number; (4) name of Contractor; (5) stamped date and time batched; (6) truck number; (7) quantity batched; (8) amount of admixture(s) in the batch; (9) amount of water in the batch; and (10) Department mix design number.

For concrete mixed in jobsite stationary mixers, the above delivery ticket may be waived, but a method of verifying the haul time shall be established to the satisfaction of the Engineer."

80430

PORTLAND CEMENT CONCRETE PAVEMENT PLACEMENT (BDE)

Effective: July 1, 2020

Revise the fifth paragraph of Article 420.07 of the Standard Specifications to read:

"The concrete shall be deposited uniformly across the subgrade or subbase as close as possible to its final position. The time elapsing from when the concrete is unloaded until it is incorporated into the work shall not exceed 20 minutes. When required, hand spreading shall be accomplished with shovels."

80432

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (BDE)

Effective: November 1, 2012
Revised: January 2, 2020

Revise Section 1031 of the Standard Specifications to read:

"**SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES**

1031.01 Description. Reclaimed asphalt pavement and reclaimed asphalt shingles shall be according to the following.

(a) Reclaimed Asphalt Pavement (RAP). RAP is the material produced by cold milling or crushing an existing hot-mix asphalt (HMA) pavement. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction.

(b) Reclaimed Asphalt Shingles (RAS). Reclaimed asphalt shingles (RAS). RAS is from the processing and grinding of preconsumer or post-consumer shingles. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable material, as defined in Central Bureau of Materials Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Sources", by weight of RAS. All RAS used shall come from a Central Bureau of Materials approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. (9.5 mm) sieve and 93 percent passing the #4 (4.75 mm) sieve based on a dry shake gradation. RAS shall be uniform in gradation and asphalt binder content and shall meet the testing requirements specified herein. In addition, RAS shall meet the following Type 1 or Type 2 requirements.

(1) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.

(2) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential, or four unit or less dwellings not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

1031.02 Stockpiles. RAP and RAS stockpiles shall be according to the following.

(a) RAP Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. No additional RAP shall be added to the pile after the pile has been sealed. Stockpiles shall be sufficiently separated to prevent intermingling at the base. Stockpiles shall be identified by signs indicating the type as listed below (i.e. "Homogeneous Surface").

Prior to milling, the Contractor shall request the District provide documentation on the quality of the RAP to clarify the appropriate stockpile.

(1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures. The coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality, but shall be at least C quality. All FRAP shall be fractionated prior to testing by screening into a minimum of two size fractions with the separation occurring on or between the #4 (4.75 mm) and 1/2 in. (12.5 mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP shall pass the sieve size specified below for the mix into which the FRAP will be incorporated.

Mixture FRAP will be used in:	Sieve Size that 100 % of FRAP Shall Pass
IL-19.0	1 1/2 in. (37.5 mm)
SMA 12.5	1 in. (25.0 mm)
IL-9.5, IL-9.5FG, SMA 9.5	3/4 in. (19.0 mm)
IL-4.75	1/2 in. (12.5 mm)

(2) Homogeneous. Homogeneous RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures and represent: 1) the same aggregate quality, but shall be at least C quality; 2) the same type of crushed aggregate (either crushed natural aggregate, ACBF slag, or steel slag); 3) similar gradation; and 4) similar asphalt binder content. If approved by the Engineer, combined single pass surface/binder millings may be considered "homogeneous" with a quality rating dictated by the lowest coarse aggregate quality present in the mixture.

(3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures. The coarse aggregate in this RAP shall be crushed aggregate and may represent more than one aggregate type and/or quality, but shall be at least C quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. All conglomerate RAP shall be processed prior to testing by crushing to where all RAP shall pass the 5/8 in. (16 mm) or smaller screen. Conglomerate RAP stockpiles shall not contain steel slag.

(4) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".

RAP/FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

(b) RAS Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall not be intermingled. Each stockpile shall be signed indicating what type of RAS is present.

Unless otherwise specified by the Engineer, mechanically blending manufactured sand (FM 20 or FM 22) up to an equal weight of RAS with the processed RAS will be permitted

to improve workability. The sand shall be “B Quality” or better from an approved Aggregate Gradation Control System source. The sand shall be accounted for in the mix design and during HMA production.

Records identifying the shingle processing facility supplying the RAS, RAS type, and lot number shall be maintained by project contract number and kept for a minimum of three years.

1031.03 Testing. RAP/FRAP and RAS testing shall be according to the following.

(a) RAP/FRAP Testing. When used in HMA, the RAP/FRAP shall be sampled and tested either during or after stockpiling.

(1) During Stockpiling. For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 500 tons (450 metric tons) for the first 2000 tons (1800 metric tons) and one sample per 2000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4000 tons (3600 metric tons).

(2) After Stockpiling. For testing after stockpiling, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

Each sample shall be split to obtain two equal samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedure. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

(b) RAS Testing. RAS or RAS blended with manufactured sand shall be sampled and tested during stockpiling according to Central Bureau of Materials Policy Memorandum, “Reclaimed Asphalt Shingle (RAS) Source”.

Samples shall be collected during stockpiling at the minimum frequency of one sample per 200 tons (180 metric tons) for the first 1000 tons (900 metric tons) and one sample per 250 tons (225 metric tons) thereafter. A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). Once a ≤ 1000 ton (900 metric ton), five-sample/test stockpile has been established it shall be sealed. Additional incoming RAS or RAS blended with manufactured sand shall be stockpiled in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.

Before testing, each sample shall be split to obtain two test samples. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall perform a washed extraction and test for unacceptable materials on the other test sample according to Department procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

If the sampling and testing was performed at the shingle processing facility in accordance with the QC Plan, the Contractor shall obtain and make available all of the test results from start of the initial stockpile.

1031.04 Evaluation of Tests. Evaluation of test results shall be according to the following.

(a) Evaluation of RAP/FRAP Test Results. All of the extraction results shall be compiled and averaged for asphalt binder content and gradation, and when applicable G_{mm}. Individual extraction test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	FRAP/Homogeneous/ Conglomerate
1 in. (25 mm)	
1/2 in. (12.5 mm)	± 8 %
No. 4 (4.75 mm)	± 6 %
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	
No. 30 (600 µm)	± 5 %
No. 200 (75 µm)	± 2.0 %
Asphalt Binder	± 0.4 % 1/
G_{mm}	± 0.03

1/ The tolerance for FRAP shall be ± 0.3 %.

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, the RAP/FRAP shall not be used in HMA unless the RAP/FRAP representing the failing tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

With the approval of the Engineer, the ignition oven may be substituted for extractions according to the ITP, “Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)”.

(b) Evaluation of RAS and RAS Blended with Manufactured Sand Test Results. All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content and gradation. Individual test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	RAS
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	± 5 %
No. 30 (600 µm)	± 4 %
No. 200 (75 µm)	± 2.0 %
Asphalt Binder Content	± 1.5 %

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, or if the percent unacceptable material exceeds 0.5 percent by weight of material retained on the # 4 (4.75 mm) sieve, the RAS or RAS blend shall not be used in Department projects. All test data and acceptance ranges shall be sent to the District for evaluation.

1031.05 Quality Designation of Aggregate in RAP/FRAP.

(a) RAP. The aggregate quality of the RAP for homogeneous and conglomerate stockpiles shall be set by the lowest quality of coarse aggregate in the RAP stockpile and are designated as follows.

(1) RAP from Class I, Superpave/HMA (High ESAL), or (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.

(2) RAP from Class I binder, Superpave/HMA (High ESAL) binder, or (Low ESAL) IL-19.0L binder mixtures are designated as containing Class C quality coarse aggregate.

(b) FRAP. If the Engineer has documentation of the quality of the FRAP aggregate, the Contractor shall use the assigned quality provided by the Engineer.

If the quality is not known, the quality shall be determined as follows. Coarse and fine FRAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5000 tons (4500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant laboratory prequalified by the Department for the specified testing. The consultant laboratory shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the Central Bureau of Materials Aggregate Lab for MicroDeval Testing, according to ITP 327. A maximum loss of 15.0 percent will be applied for all HMA applications.

1031.06 Use of RAP/FRAP and/or RAS in HMA. The use of RAP/FRAP and/or RAS shall be the Contractor's option when constructing HMA in all contracts.

(a) RAP/FRAP. The use of RAP/FRAP in HMA shall be as follows.

(1) Coarse Aggregate Size. The coarse aggregate in all RAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.

(2) Steel Slag Stockpiles. Homogeneous RAP stockpiles containing steel slag will be approved for use in all HMA (High ESAL and Low ESAL) Surface and Binder Mixture applications.

(3) Use in HMA Surface Mixtures (High and Low ESAL). RAP/FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall be FRAP or homogeneous in which the coarse aggregate is Class B quality or better. FRAP from Conglomerate stockpiles shall be considered equivalent to limestone for frictional considerations. Known frictional contributions from plus #4 (4.75 mm) homogeneous FRAP stockpiles will be accounted for in meeting frictional requirements in the specified mixture.

(4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. RAP/FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP, homogeneous, or conglomerate, in which the coarse aggregate is Class C quality or better.

(5) Use in Shoulders and Subbase. RAP/FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, homogeneous, or conglomerate.

(6) When the Contractor chooses the RAP option, the percentage of RAP shall not exceed the amounts indicated in Article 1031.06(c)(1) below for a given Ndesign.

(b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.

(c) RAP/FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with RAP or FRAP in HMA mixtures up to a maximum of 5.0 percent by weight of the total mix.

(1) RAP/RAS. When RAP is used alone or RAP is used in conjunction with RAS, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the following table.

RAP/RAS Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures [1/ 2/]	RAP/RAS Maximum ABR %		
Ndesign	Binder	Surface	Polymer Modified Binder or Surface
30	30	30	10

50	25	15	10
70	15	10	10
90	10	10	10

1/ For Low ESAL HMA shoulder and stabilized subbase, the RAP/RAS ABR shall not exceed 50 percent of the mixture.

2/ When RAP/RAS ABR exceeds 20 percent, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28). If warm mix asphalt (WMA) technology is utilized and production temperatures do not exceed 275 °F (135 °C), the high and low virgin asphalt binder grades shall each be reduced by one grade when RAP/RAS ABR exceeds 25 percent (i.e. 26 percent RAP/RAS ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28).

(2) FRAP/RAS. When FRAP is used alone or FRAP is used in conjunction with RAS, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the following table.

FRAP/RAS Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures 1/ 2/	FRAP/RAS Maximum ABR %		
Ndesign	Binder	Surface	Polymer Modified Binder or Surface
30	50	40	10
50	40	35	10
70	40	30	10
90	40	30	10
SMA	- -	- -	20
IL-4.75	- -	- -	30

1/ For Low ESAL HMA shoulder and stabilized subbase, the FRAP/RAS ABR shall not exceed 50 percent of the mixture.

2/ When FRAP/RAS ABR exceeds 20 percent for all mixes, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28). If warm mix asphalt (WMA) technology is utilized and production temperatures do not exceed 275 °F (135 °C), the high and low virgin asphalt binder grades shall each be reduced by one grade when FRAP/RAS ABR exceeds 25 percent (i.e. 26 percent ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28).

1031.07 HMA Mix Designs. At the Contractor's option, HMA mixtures may be constructed utilizing RAP/FRAP and/or RAS material meeting the detailed requirements specified herein.

(a) RAP/FRAP and/or RAS. RAP/FRAP and/or RAS mix designs shall be submitted for verification. If additional RAP/FRAP and/or RAS stockpiles are tested and found that no more than 20 percent of the results, as defined under "Testing" herein, are outside of the control tolerances set for the original RAP/FRAP and/or RAS stockpile and HMA mix design, and meets all of the requirements herein, the additional RAP/FRAP and/or RAS stockpiles may be used in the original mix design at the percent previously verified.

(b) RAS. Type 1 and Type 2 RAS are not interchangeable in a mix design.

The RAP, FRAP, and RAS stone bulk specific gravities (G_{sb}) shall be according to the "Determination of Aggregate Bulk (Dry) Specific Gravity (G_{sb}) of Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS)" procedure in the Department's Manual of Test Procedures for Materials.

1031.08 HMA Production. HMA production utilizing RAP/FRAP and/or RAS shall be as follows.

(a) RAP/FRAP. The coarse aggregate in all RAP/FRAP used shall be equal to or less than the nominal maximum size requirement for the HMA mixture being produced.

To remove or reduce agglomerated material, a scalping screen, gator, crushing unit, or comparable sizing device approved by the Engineer shall be used in the RAP feed system to remove or reduce oversized material.

If the RAP/FRAP control tolerances or QC/QA test results require corrective action, the Contractor shall cease production of the mixture containing RAP/FRAP and either switch to the virgin aggregate design or submit a new RAP/FRAP design.

(b) RAS. RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within ± 0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that the mixture production is halted when RAS flow is interrupted.

(c) RAP/FRAP and/or RAS. HMA plants utilizing RAP/FRAP and/or RAS shall be capable of automatically recording and printing the following information.

(1) Dryer Drum Plants.

a. Date, month, year, and time to the nearest minute for each print.

b. HMA mix number assigned by the Department.

c. Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

d. Accumulated dry weight of RAP/FRAP/RAS in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

e. Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.

f. Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.

g. Residual asphalt binder in the RAP/FRAP material as a percent of the total mix to the nearest 0.1 percent.

h. Aggregate and RAP/FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAP/FRAP are printed in wet condition.)

(2) Batch Plants.

a. Date, month, year, and time to the nearest minute for each print.

b. HMA mix number assigned by the Department.

c. Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).

d. Mineral filler weight to the nearest pound (kilogram).

e. RAP/FRAP/RAS weight to the nearest pound (kilogram).

f. Virgin asphalt binder weight to the nearest pound (kilogram).

g. Residual asphalt binder in the RAP/FRAP/RAS material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

1031.09 RAP in Aggregate Surface Course and Aggregate Wedge Shoulders, Type B. The use of RAP in aggregate surface course (temporary access entrances only) and aggregate wedge shoulders, Type B shall be as follows.

(a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except “Non-Quality” and “FRAP”. The testing requirements of Article 1031.03 shall not apply. RAP used shall be according to the current Central Bureau of Materials Policy Memorandum, “Reclaimed Asphalt Pavement (RAP) for Aggregate Applications”.

(b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5 mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded or single sized will not be accepted.”

80306

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (BDE)

Effective: January 1, 2019
Revised: January 1, 2020

Revise Section 669 of the Standard Specifications to read:

"**SECTION 669. REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES**

669.01 Description. This work shall consist of the transportation and proper disposal of regulated substances. This work shall also consist of the removal, transportation, and proper disposal of underground storage tanks (UST), their contents and associated underground piping to the point where the piping is above the ground, including determining the content types and estimated quantities.

669.02 Equipment. The Contractor shall notify the Engineer of the delivery of all excavation, storage, and transportation equipment to a work area location. The equipment shall comply with OSHA and American Petroleum Institute (API) guidelines and shall be furnished in a clean condition. Clean condition means the equipment does not contain any residual material classified as a non-special waste, non-hazardous special waste, or hazardous waste. Residual materials include, but are not limited to, petroleum products, chemical products, sludges, or any other material present in or on equipment.

Before beginning any associated soil or groundwater management activity, the Contractor shall provide the Engineer with the opportunity to visually inspect and approve the equipment. If the equipment contains any contaminated residual material, decontamination shall be performed on the equipment as appropriate to the regulated substance and degree of contamination present according to OSHA and API guidelines. All cleaning fluids used shall be treated as the contaminant unless laboratory testing proves otherwise.

669.03 Pre-Construction Submittals and Qualifications. Prior to beginning this work, or working in areas with regulated substances, the Contractor shall submit a "Regulated Substances Pre-Construction Plan (RSPCP)" to the Engineer for review and approval using form BDE 2730. The form shall be signed by an Illinois licensed Professional Engineer or Professional Geologist.

As part of the RSPCP, the Contractor(s) or firm(s) performing the work shall meet the following qualifications.

(a) Regulated Substances Monitoring. Qualification for environmental observation and field screening of regulated substances work and environmental observation of UST removal shall require either pre-qualification in Hazardous Waste by the Department or demonstration of acceptable project experience in remediation and operations for contaminated sites in accordance with applicable Federal, State, or local regulatory requirements using BDE 2730.

Qualification for each individual performing regulated substances monitoring shall require a minimum of one-year of experience in similar activities as those required for the project.

(b) Underground Storage Tank Removal. Qualification for underground storage tank (UST) removal work shall require licensing and certification with the Office of the State Fire Marshall (OSFM) and possession of all permits required to perform the work. A copy of the permit shall be provided to the Engineer prior to tank removal.

The qualified Contractor(s) or firm(s) shall also document it does not have any current or former ties with any of the properties contained within, adjoining, or potentially affecting the work.

The Engineer will require up to 21 calendar days for review of the RSPCP. The review may involve rejection or revision and resubmittal; in which case, an additional 21 days will be required for each subsequent review. Work shall not commence until the RSPCP has been approved by the Engineer. After approval, the RSPCP shall be revised as necessary to reflect changed conditions in the field and documented using BDE 2730A "Regulated Substances Pre-Construction Plan (RSPCP) Addendum" and submitted to the Engineer for approval.

CONSTRUCTION REQUIREMENTS

669.04 Regulated Substances Monitoring. Regulated substances monitoring includes environmental observation and field screening during regulated substances management activities at the contract specific work areas. As part of the regulated substances monitoring, the monitoring personnel shall perform and document the applicable duties listed on form BDE 2732 "Regulated Substances Monitoring Daily Record (RSMDR)".

(a) Environmental Observation. Prior to beginning excavation, the Contractor shall mark the limits of the contract specific work areas. Once work begins, the monitoring personnel shall be present on-site continuously during the excavation and loading of material.

(b) Field Screening. Field screening shall be performed during the excavation and loading of material from the contract specific work areas, except for material classified according to Article 669.05(b)(1) or 669.05(c) where field screening is not required.

Field screening shall be performed with either a photoionization detector (PID) (minimum 10.6eV lamp) or a flame ionization detector (FID), and other equipment as appropriate, to monitor for potential contaminants associated with regulated substances. The PID or FID shall be calibrated on-site, and background level readings taken and recorded daily, and as field and weather conditions change. Field screen readings on the PID or FID in excess of background levels indicates the potential presence of regulated substances requiring handling as a non-special waste, special waste, or hazardous waste. PID or FID readings may be used as the basis of increasing the limits of removal with the approval of the Engineer but shall in no case be used to decrease the limits.

669.05 Regulated Substances Management and Disposal. The management and disposal of soil and/or groundwater containing regulated substances shall be according to the following:

(a) Soil Analytical Results Exceed Most Stringent MAC. When the soil analytical results indicate detected levels exceed the most stringent maximum allowable concentration (MAC) for chemical constituents in soil established pursuant to Subpart F of 35 Ill. Adm. Code 1100.605, the soil shall be managed as follows:

(1) When analytical results indicate inorganic chemical constituents exceed the most stringent MAC, but still considered within area background levels by the Engineer, the excavated soil can be utilized within the right-of-way as embankment or fill, when suitable. If the soils cannot be utilized within the right-of-way, they shall be managed and disposed of at a landfill as a non-special waste.

(2) When analytical results indicate inorganic chemical constituents exceed the most stringent MAC but do not exceed the MAC for a Metropolitan Statistical Area (MSA) County identified in 35 Ill. Admin. Code 742 Appendix A. Table G, the excavated soil can be utilized within the right-of-way as embankment or fill, when suitable, or managed and disposed of at a clean construction and demolition debris (CCDD) facility or an uncontaminated soil fill operation (USFO) within an MSA County provided the pH of the soil is within the range of 6.25 - 9.0, inclusive.

(3) When analytical results indicate chemical constituents exceed the most stringent MAC but do not exceed the MAC for an MSA County excluding Chicago, or the MAC within the Chicago corporate limits, the excavated soil can be utilized within the right-of-way as embankment or fill, when suitable, or managed and disposed of off-site at a CCDD facility or an USFO within an MSA County excluding Chicago or within the Chicago corporate limits provided the pH of the soil is within the range of 6.25 - 9.0, inclusive.

(4) When analytical results indicate chemical constituents exceed the most stringent MAC but do not exceed the MAC for an MSA County excluding Chicago, the excavated soil can be utilized within the right-of-way as embankment or fill, when suitable, or managed and disposed of off-site at a CCDD facility or an USFO within an MSA County excluding Chicago provided the pH of the soil is within the range of 6.25 - 9.0, inclusive.

(5) When the Engineer determines soil cannot be managed according to Articles 669.05(a)(1) through (a)(4) above and the materials do not contain special waste or hazardous waste, as determined by the Engineer, the soil shall be managed and disposed of at a landfill as a non-special waste.

(6) When analytical results indicate soil is hazardous by characteristic or listing pursuant to 35 Ill. Admin. Code 721, contains radiological constituents, or the Engineer otherwise determines the soil cannot be managed according to Articles 669.05(a)(1)

through (a)(5) above, the soil shall be managed and disposed of off-site as a special waste or hazardous waste as applicable.

(b) Soil Analytical Results Do Not Exceed Most Stringent MAC. When the soil analytical results indicate that detected levels do not exceed the most stringent MAC, the excavated soil can be utilized within the right-of-way as embankment or fill, when suitable, or managed and disposed of off-site according to Article 202.03. However, the excavated soil cannot be taken to a CCDD facility or an USFO for any of the following reasons.

(1) The pH of the soil is less than 6.25 or greater than 9.0.

(2) The soil exhibited PID or FID readings in excess of background levels.

(c) Soil Analytical Results Exceed Most Stringent MAC but Do Not Exceed Tiered Approach to Corrective Action Objectives (TACO) Residential. When the soil analytical results indicate that detected levels exceed the most stringent MAC but do not exceed TACO Tier 1 Soil Remediation Objectives for Residential Properties pursuant to 35 Ill. Admin. Code 742 Appendix B Table A, the excavated soil can be utilized within the right-of-way as embankment or fill, when suitable, or managed and disposed of off-site according to Article 202.03. However, the excavated soil cannot be taken to a CCDD facility or an USFO.

(d) Groundwater. When groundwater analytical results indicate the detected levels are above Appendix B, Table E of 35 Ill. Admin. Code 742, the most stringent Tier 1 Groundwater Remediation Objectives for Groundwater Component of the Groundwater Ingestion Route for Class 1 groundwater, the groundwater shall be managed off-site as a special waste or hazardous waste as applicable. Special waste groundwater shall be containerized and trucked to an off-site treatment facility, or may be discharged to a sanitary sewer or combined sewer when permitted by the local sewer authority. Groundwater discharged to a sanitary sewer or combined sewer shall be pre-treated to remove particulates and measured with a calibrated flow meter to comply with applicable discharge limits. A copy of the permit shall be provided to the Engineer prior to discharging groundwater to the sanitary sewer or combined sewer.

Groundwater encountered within trenches may be managed within the trench and allowed to infiltrate back into the ground. If the groundwater cannot be managed within the trench, it may be discharged to a sanitary sewer or combined sewer when permitted by the local sewer authority, or it shall be containerized and trucked to an off-site treatment facility as a special waste or hazardous waste. The Contractor is prohibited from discharging groundwater within the trench through a storm sewer. The Contractor shall install backfill plugs within the area of groundwater contamination.

One backfill plug shall be placed down gradient to the area of groundwater contamination. Backfill plugs shall be installed at intervals not to exceed 50 ft (15 m). Backfill plugs are to be 4 ft (1.2 m) long, measured parallel to the trench, full trench width and depth. Backfill plugs shall not have any fine aggregate bedding or backfill, but shall be entirely cohesive

soil or any class of concrete. The Contractor shall provide test data that the material has a permeability of less than 10^{-7} cm/sec according to ASTM D 5084, Method A or per another test method approved by the Engineer.

The Contractor shall use due care when transferring contaminated material from the area of origin to the transporter. Should releases of contaminated material to the environment occur (i.e., spillage onto the ground, etc.), the Contractor shall clean-up spilled material and place in the appropriate storage containers as previously specified. Clean-up shall include, but not be limited to, sampling beneath the material staging area to determine complete removal of the spilled material.

The Contractor shall provide engineered barriers, when required, and shall include materials sufficient to completely line excavation surfaces, including sloped surfaces, bottoms, and sidewall faces, within the areas designated for protection.

The Contractor shall obtain all documentation including any permits and/or licenses required to transport the material containing regulated substances to the disposal facility. The Contractor shall coordinate with the Engineer on the completion of all documentation. The Contractor shall make all arrangements for collection and analysis of landfill acceptance testing. The Contractor shall coordinate waste disposal approvals with the disposal facility.

The Contractor shall provide the Engineer with all transport-related documentation within two days of transport or receipt of said document(s). For management of special or hazardous waste, the Contractor shall provide the Engineer with documentation that the Contractor is operating with a valid Illinois special waste transporter permit at least two weeks before transporting the first load of contaminated material.

Transportation and disposal of material classified according to Article 669.05(a)(5) or 669.05(a)(6) shall be completed each day so that none of the material remains on-site by the close of business, except when temporary staging has been approved.

Any waste generated as a special or hazardous waste from a non-fixed facility shall be manifested off-site using the Department's county generator number provided by the Bureau of Design and Environment. An authorized representative of the Department shall sign all manifests for the disposal of the contaminated material and confirm the Contractor's transported volume. Any waste generated as a non-special waste may be managed off-site without a manifest, a special waste transporter, or a generator number.

The Contractor shall select a landfill permitted for disposal of the contaminant within the State of Illinois. The Department will review and approve or reject the facility proposed by the Contractor to use as a landfill. The Contractor shall verify whether the selected disposal facility is compliant with those applicable standards as mandated by their permit and whether the disposal facility is presently, has previously been, or has never been, on the United States Environmental Protection Agency (U.S. EPA) National Priorities List or the Resource Conservation and Recovery Act (RCRA) List of Violating Facilities. The use of a Contractor selected landfill shall in no manner delay the construction schedule or alter the Contractor's responsibilities as set forth.

669.06 Non-Special Waste Certification. An authorized representative of the Department shall sign and date all non-special waste certifications. The Contractor shall be responsible for providing the Engineer with the required information that will allow the Engineer to certify the waste is not a special waste.

(a) Definition. A waste is considered a non-special waste as long as it is not:

(1) a potentially infectious medical waste;

(2) a hazardous waste as defined in 35 Ill. Admin. Code 721;

(3) an industrial process waste or pollution control waste that contains liquids, as determined using the paint filter test set forth in subdivision (3)(A) of subsection (m) of 35 Ill. Admin. Code 811.107;

(4) a regulated asbestos-containing waste material, as defined under the National Emission Standards for Hazardous Air Pollutants in 40 CFR Part 61.141;

(5) a material containing polychlorinated biphenyls (PCB's) regulated pursuant to 40 CFR Part 761;

(6) a material subject to the waste analysis and recordkeeping requirements of 35 Ill. Admin. Code 728.107 under land disposal restrictions of 35 Ill. Admin. Code 728;

(7) a waste material generated by processing recyclable metals by shredding and required to be managed as a special waste under Section 22.29 of the Environmental Protection Act; or

(8) an empty portable device or container in which a special or hazardous waste has been stored, transported, treated, disposed of, or otherwise handled.

(b) Certification Information. All information used to determine the waste is not a special waste shall be attached to the certification. The information shall include but not be limited to:

(1) the means by which the generator has determined the waste is not a hazardous waste;

(2) the means by which the generator has determined the waste is not a liquid;

(3) if the waste undergoes testing, the analytic results obtained from testing, signed and dated by the person responsible for completing the analysis;

(4) if the waste does not undergo testing, an explanation as to why no testing is needed;

(5) a description of the process generating the waste; and

(6) relevant material safety data sheets.

669.07 Temporary Staging. Soil classified according to Articles 669.05(a)(2), (b)(1), or (c) may be temporarily staged at the Contractor's option. Soil classified according to Articles 669.05(a)(1), (a)(3), (a)(4), (a)(5), (a)(6), or (b)(2) shall be managed and disposed of without temporary staging to the greatest extent practicable. If circumstances beyond the Contractor's control require temporary staging of these latter materials, the Contractor shall request approval from the Engineer in writing.

Temporary staging shall be accomplished within the right-of-way and the Contractor's means and methods shall be described in the approved or amended RSPCP. Staging areas shall not be located within 200 feet (61 m) of a public or private water supply well; nor within 100 feet (30 m) of sensitive environmental receptor areas, including wetlands, rivers, streams, lakes, or designated habitat zones.

The method of staging shall consist of containerization or stockpiling as applicable for the type, classification, and physical state (i.e., liquid, solid, semisolid) of the material. Materials of different classifications shall be staged separately with no mixing or co-mingling.

When containers are used, the containers and their contents shall remain intact and inaccessible to unauthorized persons until the manner of disposal is determined. The Contractor shall be responsible for all activities associated with the storage containers including, but not limited to, the procurement, transport, and labeling of the containers. The Contractor shall not use a storage container if visual inspection of the container reveals the presence of free liquids or other substances that could cause the waste to be reclassified as a hazardous or special waste.

When stockpiles are used, they shall be covered with a minimum 20-mil plastic sheeting or tarps secured using weights or tie-downs. Perimeter berms or diversionary trenches shall be provided to contain and collect for disposal any water that drains from the soil. Stockpiles shall be managed to prevent or reduce potential dust generation.

When staging non-special waste, special waste, or hazardous waste, the following additional requirements shall apply:

(a) Non-Special Waste. When stockpiling soil classified according to Article 669.05(a)(1) or 669.05(a)(5), an impermeable surface barrier between the materials and the ground surface shall be installed. The impermeable barrier shall consist of a minimum 20-mil plastic liner material and the surface of the stockpile area shall be clean and free of debris prior to placement of the liner. Measures shall also be taken to limit or discourage access to the staging area.

(b) Special Waste and Hazardous Waste. Soil classified according to Article 669.05(a)(6) shall not be stockpiled but shall be containerized immediately upon generation in containers, tanks or containment buildings as defined by RCRA, Toxic Substances Control

Act (TSCA), and other applicable State or local regulations and requirements, including 35 Ill. Admin. Code Part 722, Standards Applicable to Generators of Hazardous Waste.

The staging area(s) shall be enclosed (by a fence or other structure) to restrict direct access to the area, and all required regulatory identification signs applicable to a staging area containing special waste or hazardous waste shall be deployed.

Storage containers shall be placed on an all-weather gravel-packed, asphalt, or concrete surface. Containers shall be in good condition and free of leaks, large dents, or severe rusting, which may compromise containment integrity. Containers must be constructed of, or lined with, materials that will not react or be otherwise incompatible with the hazardous or special waste contents. Containers used to store liquids shall not be filled more than 80 percent of the rated capacity. Incompatible wastes shall not be placed in the same container or comingled.

All containers shall be legibly labeled and marked using pre-printed labels and permanent marker in accordance with applicable regulations, clearly showing the date of waste generation, location and/or area of waste generation, and type of waste. The Contractor shall place these identifying markings on an exterior side surface of the container.

Storage containers shall be kept closed, and storage pads covered, except when access is needed by authorized personnel.

Special waste and hazardous waste shall be transported and disposed within 90 days from the date of generation.

669.08 Underground Storage Tank Removal. For the purposes of this section, an underground storage tank (UST) includes the underground storage tank, piping, electrical controls, pump island, vent pipes and appurtenances.

Prior to removing an UST, the Engineer shall determine whether the Department is considered an "owner" or "operator" of the UST as defined by the UST regulations (41 Ill. Adm. Code Part 176). Ownership of the UST refers to the Department's owning title to the UST during storage, use or dispensing of regulated substances. The Department may be considered an "operator" of the UST if it has control of, or has responsibility for, the daily operation of the UST. The Department may however voluntarily undertake actions to remove an UST from the ground without being deemed an "operator" of the UST.

In the event the Department is deemed not to be the "owner" or "operator" of the UST, the OSFM removal permit shall reflect who was the past "owner" or "operator" of the UST. If the "owner" or "operator" cannot be determined from past UST registration documents from OSFM, then the OSFM removal permit will state the "owner" or "operator" of the UST is the Department. The Department’s Office of Chief Counsel (OCC) will review all UST removal permits prior to submitting any removal permit to the OSFM. If the Department is not the “owner” or “operator” of the UST then it will not register the UST or pay any registration fee.

The Contractor shall be responsible for obtaining permits required for removing the UST, notification to the OSFM, using an OSFM certified tank contractor, removal and disposal of the UST and its contents, and preparation and submittal of the OSFM Site Assessment Report in accordance with 41 Ill. Admin. Code Part 176.330.

The Contractor shall contact the Engineer and the OSFM's office at least 72 hours prior to removal to confirm the OSFM inspector's presence during the UST removal. Removal, transport, and disposal of the UST shall be according to the applicable portions of the latest revision of the "American Petroleum Institute (API) Recommended Practice 1604".

The Contractor shall collect and analyze tank content (sludge) for disposal purposes. The Contractor shall remove as much of the regulated substance from the UST system as necessary to prevent further release into the environment. All contents within the tank shall be removed, transported and disposed of, or recycled. The tank shall be removed and rendered empty according to IEPA definition.

The Contractor shall collect soil samples from the bottom and sidewalls of the excavated area in accordance with 35 Ill. Admin. Code Part 734.210(h) after the required backfill has been removed during the initial response action, to determine the level of contamination remaining in the ground, regardless if a release is confirmed or not by the OSFM on-site inspector.

In the event the UST is designated a leaking underground storage tank (LUST) by the OSFM's inspector, or confirmation by analytical results, the Contractor shall notify the Engineer and the District Environmental Studies Unit (DESU). Upon confirmation of a release of contaminants and notifications to the Engineer and DESU, the Contractor shall report the release to the Illinois Emergency Management Agency (IEMA) (e.g., by telephone or electronic mail) and provide them with whatever information is available ("owner" or "operator" shall be stated as the past registered "owner" or "operator", or the IDOT District in which the tank is located and the DESU Manager).

The Contractor shall perform the following initial response actions if a release is indicated by the OSFM inspector:

(a) Take immediate action to prevent any further release of the regulated substance to the environment, which may include removing, at the Engineer's discretion, and disposing of up to 4 ft (1.2 m) of the contaminated material, as measured from the outside dimension of the tank;

(b) Identify and mitigate fire, explosion and vapor hazards;

(c) Visually inspect any above ground releases or exposed below ground releases and prevent further migration of the released substance into surrounding soils and groundwater; and

(d) Continue to monitor and mitigate any additional fire and safety hazards posed by vapors and free product that have migrated from the tank excavation zone and entered into subsurface structures (such as sewers or basements).

The tank excavation shall be backfilled according to applicable portions of Sections 205, 208, and 550 with a material that will compact and develop stability. All uncontaminated concrete and soil removed during tank extraction may be used to backfill the excavation, at the discretion of the Engineer.

After backfilling the excavation, the site shall be graded and cleaned.

669.09 Regulated Substances Final Construction Report. Not later than 90 days after completing this work, the Contractor shall submit a "Regulated Substances Final Construction Report (RSFCR)" to the Engineer using form BDE 2733 and required attachments. The form shall be signed by an Illinois licensed Professional Engineer or Professional Geologist.

669.10 Method of Measurement. Non-special waste, special waste, and hazardous waste soil will be measured for payment according to Article 202.07(b) when performing earth excavation, Article 502.12(b) when excavating for structures, or by computing the volume of the trench using the maximum trench width permitted and the actual depth of the trench.

Groundwater containerized and transported off-site for management, storage, and disposal will be measured for payment in gallons (liters).

Backfill plugs will be measured in cubic yards (cubic meters) in place, except the quantity for which payment will be made shall not exceed the volume of the trench, as computed by using the maximum width of trench permitted by the Specifications and the actual depth of the trench, with a deduction for the volume of the pipe.

Engineered Barriers will be measured for payment in square yards (square meters).

669.11 Basis of Payment. The work of preparing, submitting and administering a Regulated Substances Pre-Construction Plan will be paid for at the contract lump sum price for REGULATED SUBSTANCES PRE-CONSTRUCTION PLAN.

Regulated substances monitoring, including completion of form BDE 2732 for each day of work, will be paid for at the contract unit price per calendar day, or fraction thereof to the nearest 0.5 calendar day, for REGULATED SUBSTANCES MONITORING.

The installation of engineered barriers will be paid for at the contract unit price per square yard (square meter) for ENGINEERED BARRIER.

The work of UST removal, soil excavation, soil and content sampling, the management of excavated soil and UST content, and UST disposal, will be paid for at the contract unit price per each for UNDERGROUND STORAGE TANK REMOVAL.

The transportation and disposal of soil and other materials from an excavation determined to be contaminated will be paid for at the contract unit price per cubic yard (cubic meter) for

NON-SPECIAL WASTE DISPOSAL, SPECIAL WASTE DISPOSAL, or HAZARDOUS WASTE DISPOSAL.

The transportation and disposal of groundwater from an excavation determined to be contaminated will be paid for at the contract unit price per gallon (liter) for SPECIAL WASTE GROUNDWATER DISPOSAL or HAZARDOUS WASTE GROUNDWATER DISPOSAL. When groundwater is discharged to a sanitary or combined sewer by permit, the cost will be paid for according to Article 109.05.

Backfill plugs will be paid for at the contract unit price per cubic yard (cubic meter) for BACKFILL PLUGS.

Payment for temporary staging of soil classified according to Articles 669.05(a)(1), (a)(3), (a)(4), (a)(5), (a)(6), or (b)(2) will be paid for according to Article 109.04. The Department will not be responsible for any additional costs incurred, if mismanagement of the staging area, storage containers, or their contents by the Contractor results in excess cost expenditure for disposal or other material management requirements.

Payment for accumulated stormwater removal and disposal will be according to Article 109.04. Payment will only be allowed if appropriate stormwater and erosion control methods were used.

Payment for decontamination, labor, material, and equipment for monitoring areas beyond the specified areas, with the Engineer's prior written approval, will be according to Article 109.04.

When the waste material for disposal requires sampling for landfill disposal acceptance, the samples shall be analyzed for TCLP VOCs, SVOCs, RCRA metals, pH, ignitability, and paint filter test. The analysis will be paid for at the contract unit price per each for SOIL DISPOSAL ANALYSIS using EPA Methods 1311 (extraction), 8260B for VOCs, 8270C for SVOCs, 6010B and 7470A for RCRA metals, 9045C for pH, 1030 for ignitability, and 9095A for paint filter.

The work of preparing, submitting and administering a Regulated Substances Final Construction Report will be paid for at the contract lump sum price REGULATED SUBSTANCES FINAL CONSTRUCTION REPORT."

80407

SILT FENCE, INLET FILTERS, GROUND STABILIZATION AND RIPRAP FILTER FABRIC (BDE)

Effective: November 1, 2019
Revised: April 1, 2020

Revise Article 280.02(m) and add Article 280.02(n) so the Standard Specifications read:

"(m) Above Grade Inlet Filter (Fitted)..... 1081.15(j)
(n) Above Grade Inlet Filter (Non-Fitted).....1081.15(k)"

Revise the last sentence of the first paragraph in Article 280.04(c) of the Standard Specifications to read:

"The protection shall be constructed with hay or straw bales, silt filter fence, above grade inlet filters (fitted and non-fitted), or inlet filters.

Revise the first sentence of the second paragraph in Article 280.04(c) of the Standard Specifications to read:

"When above grade inlet filters (fitted and non-fitted) are specified, they shall be of sufficient size to completely span and enclose the inlet structure."

Revise Article 1080.02 of the Standard Specifications to read:

"**1080.02 Geotextile Fabric.** The fabric for silt filter fence shall consist of woven fabric meeting the requirements of AASHTO M 288 for unsupported silt fence.

The fabric for ground stabilization shall consist of woven yarns or nonwoven filaments of polyolefins or polyesters. Woven fabrics shall be Class 2 and nonwoven fabrics shall be Class 1 according to AASHTO M 288.

The physical properties for silt fence and ground stabilization fabrics shall be according to the following.

PHYSICAL PROPERTIES			
	Silt Fence Woven [1/]	Ground Stabilization Woven [2/]	Ground Stabilization Nonwoven [2/]
Grab Strength, lb (N) [3/] ASTM D 4632	123 (550) MD 101 (450) XD	247 (1100) min. [4/]	202 (900) min. [4/]
Elongation/Grab Strain, % ASTM D 4632 [4/]	49 max.	49 max.	50 min.
Trapezoidal Tear Strength, lb (N) ASTM D 4533 [4/]	--	90 (400) min.	79 (350) min.

Puncture Strength, lb (N) ASTM D 6241 [4/]	--	494 (2200) min.	433 (1925) min.
Apparent Opening Size, Sieve No. (mm) ASTM D 4751 [5/]	30 (0.60) max.	40 (0.43) max.	40 (0.43) max.
Permittivity, sec^{-1} ASTM D 4491	0.05 min.		
Ultraviolet Stability, % retained strength after 500 hours of exposure ASTM D 4355	70 min.	50 min.	50 min.

1/ NTPEP results or manufacturer's certification to meet test requirements.

2/ NTPEP results to meet test requirements. Manufacturer shall have public release status and current reports on laboratory results in Test Data of NTPEP's DataMine.

3/ MD = Machine direction. XD = Cross-machine direction.

4/ Values represent the minimum average roll value (MARV) in the weaker principle direction, MD or XD.

5/ Values represent the maximum average roll value."

Revise Article 1080.03 of the Standard Specifications to read:

"**1080.03 Filter Fabric.** The filter fabric shall consist of woven yarns or nonwoven filaments of polyolefins or polyesters. Woven fabrics shall be Class 3 for riprap gradations RR 4 and RR 5, and Class 2 for RR 6 and RR 7 according to AASHTO M 288. Woven slit film geotextiles (i.e. geotextiles made from yarns of a flat, tape-like character) shall not be permitted. Nonwoven fabrics shall be Class 2 for riprap gradations RR 4 and RR 5, and Class 1 for RR 6 and RR 7 according to AASHTO M 288. After forming, the fabric shall be processed so that the yarns or filaments retain their relative positions with respect to each other. The fabric shall be new and undamaged.

The filter fabric shall be manufactured in widths of not less than 6 ft (2 m). Sheets of fabric may be sewn together with thread of a material meeting the chemical requirements given for the yarns or filaments to form fabric widths as required. The sheets of filter fabric shall be sewn together at the point of manufacture or another approved location.

The filter fabric shall be according to the following.

PHYSICAL PROPERTIES [1/]				
	Gradation Nos. RR 4 & RR 5		Gradation Nos. RR 6 & RR 7	
	Woven	Nonwoven	Woven	Nonwoven
Grab Strength, lb (N) ASTM D 4632 [2/]	180 (800) min.	157 (700) min.	247 (1100) min.	202 (900) min.
Elongation/Grab Strain, % ASTM D 4632 [2/]	49 max.	50 min.	49 max.	50 min.
Trapezoidal Tear Strength, lb (N) ASTM D 4533 [2/]	67 (300) min.	56 (250) min.	90 (400) min.	79 (350) min.
Puncture Strength, lb (N) ASTM D 6241 [2/]	370 (1650) min.	309 (1375) min.	494 (2200) min.	433 (1925) min.
Ultraviolet Stability, % retained strength after 500 hours of exposure - ASTM D 4355	50 min.			

1/ NTPEP results to meet test requirements. Manufacturer shall have public release status and current reports on laboratory results in Test Data of NTPEP's DataMine.

2/ Values represent the minimum average roll value (MARV) in the weaker principle direction [machine direction (MD) or cross-machine direction (XD)].

As determined by the Engineer, the filter fabric shall meet the requirements noted in the following after an onsite investigation of the soil to be protected.

Soil by Weight (Mass) Passing the No. 200 sieve (75 µm), %	Apparent Opening Size, Sieve No. (mm) - ASTM D 4751 [1/]	Permittivity, sec^{-1} ASTM D 4491
49 max.	60 (0.25) max.	0.2 min.
50 min.	70 (0.22) max.	0.1 min.

1/ Values represent the maximum average roll value."

Revise Article 1081.15(h)(3)a of the Standard Specifications to read:

"a. Inner Filter Fabric Bag. The inner filter fabric bag shall be constructed of woven yarns or nonwoven filaments made of polyolefins or polyesters with a minimum silt and debris capacity of 2.0 cu ft (0.06 cu m). Woven fabric shall be Class 3 and nonwoven fabric shall be Class 2 according to AASHTO M 288. The fabric bag shall be according to the following.

PHYSICAL PROPERTIES		
	Woven	Nonwoven
Grab Strength, lb (N) ASTM D 4632 1/	180 (800) min.	157 (700) min.
Elongation/Grab Strain, % ASTM D 4632 1/	49 max.	50 min.
Trapezoidal Tear Strength, lb (N) ASTM D 4533 1/	67 (300) min.	56 (250) min.
Puncture Strength, lb (N) ASTM D 6241 1/	370 (1650) min.	309 (1375) min.
Apparent Opening Size, Sieve No. (mm) ASTM D 4751 2/	60 (0.25) max.	
Permittivity, sec^{-1} ASTM D 4491	2.0 min.	
Ultraviolet Stability, % retained strength after 500 hours of exposure – ASTM D 4355	70 min.	

1/ Values represent the minimum average roll value (MARV) in the weaker principle direction [machine direction (MD) or cross-machine direction (XD)].

2/ Values represent the maximum average roll value."

Revise Article 1081.15(i)(1) of the Standard Specifications to read:

"(i) Urethane Foam/Geotextile. Urethane foam/geotextile shall be triangular shaped having a minimum height of 10 in. (250 mm) in the center with equal sides and a minimum 20 in. (500 mm) base. The triangular shaped inner material shall be a low density urethane foam. The outer geotextile fabric cover shall consist of woven yarns or nonwoven filaments made of polyolefins or polyesters placed around the inner material and shall extend beyond both sides of the triangle a minimum of 18 in. (450 mm). Woven filter fabric shall be Class 3 and nonwoven filter fabric shall be Class 2 according to AASHTO M 288.

(1) The geotextile shall meet the following properties.

PHYSICAL PROPERTIES		
	Woven	Nonwoven
Grab Strength, lb (N) ASTM D 4632 1/	180 (800) min.	157 (700) min.
Elongation/Grab Strain, % ASTM D 4632 1/	49 max.	50 min.
Trapezoidal Tear Strength, lb (N) ASTM D 4533 1/	67 (300) min.	56 (250) min.
Puncture Strength, lb (N) ASTM D 6241 1/	370 (1650) min.	309 (1375) min.

Apparent Opening Size, Sieve No. (mm) ASTM D 4751 2/	30 (0.60) max.
Permittivity, sec^{-1} ASTM D 4491	2.0 min.
Ultraviolet Stability, % retained strength after 500 hours of exposure – ASTM D 4355	70 min.

1/ Values represent the minimum average roll value (MARV) in the weaker principle direction [machine direction (MD) or cross-machine direction (XD)].

2/ Values represent the maximum average roll value."

Add the following to Article 1081.15(i) of the Standard Specifications.

"(3) Certification. The manufacturer shall furnish a certificate with each shipment of urethane foam/geotextile assemblies stating the amount of product furnished and that the material complies with these requirements."

Revise the title and first sentence of Article 1081.15(j) of the Standards Specifications to read:

"(j) Above Grade Inlet Filters (Fitted). Above grade inlet filters (fitted) shall consist of a rigid polyethylene frame covered with a fitted geotextile filter fabric."

Revise Article 1081.15(j)(2) of the Standard Specifications to read:

(2) Fitted Geotextile Filter Fabric. The fitted geotextile filter fabric shall consist of woven yarns or nonwoven filaments made of polyolefins or polyesters. Woven filter fabric shall be Class 3 and nonwoven filter fabric shall be Class 2 according to AASHTO M 288. The filter shall be fabricated to provide a direct fit to the frame. The top of the filter shall integrate a coarse screen with a minimum apparent opening size of 1/2 in. (13 mm) to allow large volumes of water to pass through in the event of heavy flows. The filter shall have integrated anti-buoyancy pockets capable of holding a minimum of 3.0 cu ft (0.08 cu m) of stabilization material. Each filter shall have a label with the following information sewn to or otherwise permanently adhered to the outside: manufacturer's name, product name, and lot, model, or serial number. The fitted geotextile filter fabric shall be according to the table in Article 1081.15(h)(3)a above."

Add Article 1081.15(k) to the Standard Specifications to read:

"(k) Above Grade Inlet Filters (Non-Fitted). Above grade inlet filters (non-fitted) shall consist of a geotextile fabric surrounding a metal frame. The frame shall consist of either a) a circular cage formed of welded wire mesh, or b) a collapsible aluminum frame, as described below.

(1) Frame Construction.

a) Welded Wire Mesh Frame. The frame shall consist of 6 in. x 6 in. (150 mm x 150 mm) welded wire mesh formed of #10 gauge (3.42 mm) steel conforming to ASTM A 185. The mesh shall be 30 in. (750 mm) tall and formed into a 42 in. (1.05 m) minimum diameter cylinder.

b) Collapsible Aluminum Frame. The collapsible aluminum frame shall consist of grade 6036 aluminum. The frame shall have anchor lugs that attach it to the inlet grate, which shall resist movement from water and debris. The collapsible joints of the frame shall have a locking device to secure the vertical members in place, which shall prevent the frame from collapsing while under load from water and debris.

(2) Geotextile Fabric. The geotextile fabric shall consist of woven yarns or nonwoven filaments made of polyolefins or polyesters. The woven filter fabric shall be a Class 3 and the nonwoven filter fabric shall be a Class 2 according to AASHTO M 288. The geotextile fabric shall be according to the table in Article 1081.15(h)(3)a above.

(3) Geotechnical Fabric Attachment to the Frame.

a) Welded Wire Mesh Frame. The woven or nonwoven geotextile fabric shall be wrapped 3 in. (75 mm) over the top member of a 6 in. x 6 in. (150 mm x 150 mm) welded wire mesh frame and secured with fastening rings constructed of wire conforming to ASTM A 641, A 809, A 370, and A 938 at 6 in. (150 mm) on center. The fastening rings shall penetrate both layers of geotextile and securely close around the steel mesh. The geotextile shall be secured to the sides of the welded wire mesh with fastening rings at a spacing of 1 per sq ft (11 per sq m) and securely close around a steel member.

b) Collapsible Aluminum Frame. The woven or nonwoven fabric shall be secured to the aluminum frame along the top and bottom of the frame perimeter with strips of aluminum secured to the perimeter member, such that the anchoring system provides a uniformly distributed stress throughout the geotechnical fabric.

(4) Certification. The manufacturer shall furnish a certificate with each shipment of above grade inlet filter assemblies stating the amount of product furnished and that the material complies with these requirements."

80419

STRUCTURAL TIMBER (BDE)

Effective: August 1, 2019

Revise Article 1007.03 of the Standard Specifications to read:

"**1007.03 Structural Timber.** Structural timber shall be southern pine, Douglas fir (coast region), or other species listed in Chapter 8 of the AASHTO LRFD Bridge Design Specifications.

(a) Treated and Untreated Timber. When treated material is specified, the method of treatment shall be according to Article 1007.12. There shall be no heartwood requirements for timber which is to receive a preservative treatment and the amount of sapwood shall not be limited. All timber to be used without preservative treatment shall contain not less than 85 percent of heartwood measured on the girth.

(b) Standard Sizes and Grading Requirements. Rough cut and surfaced timber shall meet the applicable requirements for size and grading according to ASTM D 245 and the Southern Pine Inspection Bureau, the West Coast Lumber Inspection Bureau, or other agencies accredited by the American Lumber Standard Committee, except as provided herein.

All pieces shall be cut to length with square ends.

The dimensions and surfacing requirements will be shown in the contract.

(c) Strength Requirements. The design strengths for structural timber shall be as shown on the plans, and according to the Southern Pine Inspection Bureau, the West Coast Lumber Inspection Bureau, or other agencies accredited by the American Lumber Standard Committee. Additionally, the design strengths shall be according to Chapter 8 of the AASHTO LRFD Bridge Design Specifications."

80413

SUBCONTRACTOR AND DBE PAYMENT REPORTING (BDE)

Effective: April 2, 2018

Add the following to Section 109 of the Standard Specifications.

"**109.14 Subcontractor and Disadvantaged Business Enterprise Payment Reporting.** The Contractor shall report all payments made to the following parties:

(a) first tier subcontractors;

(b) lower tier subcontractors affecting disadvantaged business enterprise (DBE) goal credit;

(c) material suppliers or trucking firms that are part of the Contractor's submitted DBE utilization plan.

The report shall be made through the Department's on-line subcontractor payment reporting system within 21 days of making the payment."

80397

SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)

Effective: November 2, 2017
Revised: April 1, 2019

Replace the second paragraph of Article 109.12 of the Standard Specifications with the following:

"This mobilization payment shall be made at least seven days prior to the subcontractor starting work. The amount paid shall be at the following percentage of the amount of the subcontract reported on form BC 260A submitted for the approval of the subcontractor's work.

Value of Subcontract Reported on Form BC 260A	Mobilization Percentage
Less than $10,000	25%
$10,000 to less than $20,000	20%
$20,000 to less than $40,000	18%
$40,000 to less than $60,000	16%
$60,000 to less than $80,000	14%
$80,000 to less than $100,000	12%
$100,000 to less than $250,000	10%
$250,000 to less than $500,000	9%
$500,000 to $750,000	8%
Over $750,000	7%"

80391

TRAFFIC CONTROL DEVICES - CONES (BDE)

Effective: January 1, 2019

Revise Article 701.15(a) of the Standard Specifications to read:

"(a) Cones. Cones are used to channelize traffic. Cones used to channelize traffic at night shall be reflectorized; however, cones shall not be used in nighttime lane closure tapers or nighttime lane shifts."

Revise Article 1106.02(b) of the Standard Specifications to read:

"(b) Cones. Cones shall be predominantly orange. Cones used at night that are 28 to 36 in. (700 to 900 mm) in height shall have two white circumferential stripes. If non-reflective spaces are left between the stripes, the spaces shall be no more than 2 in. (50mm) in width. Cones used at night that are taller than 36 in. (900 mm) shall have a minimum of two white and two fluorescent orange alternating, circumferential stripes with the top stripe being fluorescent orange. If non-reflective spaces are left between the stripes, the spaces shall be no more than 3 in. (75 mm) in width.

The minimum weights for the various cone heights shall be 4 lb for 18 in. (2 kg for 450 mm), 7 lb for 28 in. (3 kg for 700 mm), and 10 lb for 36 in. (5 kg for 900 mm) with a minimum of 60 percent of the total weight in the base. Cones taller than 36 in. shall be weighted per the manufacturer's specifications such that they are not moved by wind or passing traffic."

80409

TRAINING SPECIAL PROVISIONS (BDE) This Training Special Provision supersedes Section 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities," and is in implementation of 23 U.S.C. 140(a).

As part of the contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyman in the type of trade or job classification involved. The number of trainees to be trained under this contract will be 4 . In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within the reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Illinois Department of Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Illinois Department of Transportation and the Federal Highway Administration. The Illinois Department of Transportation and the Federal Highway Administration shall approve a program, if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved by not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather then clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Illinois Department of Transportation and the Federal Highway Administration. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirement of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program.

It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

METHOD OF MEASUREMENT The unit of measurement is in hours.

BASIS OF PAYMENT This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

20338

WARM MIX ASPHALT (BDE)

Effective: January 1, 2012
Revised: April 1, 2016

Description. This work shall consist of designing, producing and constructing Warm Mix Asphalt (WMA) in lieu of Hot Mix Asphalt (HMA) at the Contractor's option. Work shall be according to Sections 406, 407, 408, 1030, and 1102 of the Standard Specifications, except as modified herein. In addition, any references to HMA in the Standard Specifications, or the special provisions shall be construed to include WMA.

WMA is an asphalt mixture which can be produced at temperatures lower than allowed for HMA utilizing approved WMA technologies. WMA technologies are defined as the use of additives or processes which allow a reduction in the temperatures at which HMA mixes are produced and placed. WMA is produced by the use of additives, a water foaming process, or combination of both. Additives include minerals, chemicals or organics incorporated into the asphalt binder stream in a dedicated delivery system. The process of foaming injects water into the asphalt binder stream, just prior to incorporation of the asphalt binder with the aggregate.

Approved WMA technologies may also be used in HMA provided all the requirements specified herein, with the exception of temperature, are met. However, asphalt mixtures produced at temperatures in excess of 275 °F (135 °C) will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.

Equipment.

Revise the first paragraph of Article 1102.01 of the Standard Specifications to read:

"**1102.01 Hot-Mix Asphalt Plant.** The hot-mix asphalt (HMA) plant shall be the batch-type, continuous-type, or dryer drum plant. The plants shall be evaluated for prequalification rating and approval to produce HMA according to the current Bureau of Materials and Physical Research Policy Memorandum, "Approval of Hot-Mix Asphalt Plants and Equipment". Once approved, the Contractor shall notify the Bureau of Materials and Physical Research to obtain approval of all plant modifications. The plants shall not be used to produce mixtures concurrently for more than one project or for private work unless permission is granted in writing by the Engineer. The plant units shall be so designed, coordinated and operated that they will function properly and produce HMA having uniform temperatures and compositions within the tolerances specified. The plant units shall meet the following requirements."

Add the following to Article 1102.01(a) of the Standard Specifications.

"(11) Equipment for Warm Mix Technologies.

a. Foaming. Metering equipment for foamed asphalt shall have an accuracy of ± 2 percent of the actual water metered. The foaming control system shall be electronically interfaced with the asphalt binder meter.

b. Additives. Additives shall be introduced into the plant according to the supplier's recommendations and shall be approved by the Engineer. The system for introducing the WMA additive shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes."

Mix Design Verification.

Add the following to Article 1030.04 of the Standard Specifications.

"(e) Warm Mix Technologies.

(1) Foaming. WMA mix design verification will not be required when foaming technology is used alone (without WMA additives). However, the foaming technology shall only be used on HMA designs previously approved by the Department.

(2) Additives. WMA mix designs utilizing additives shall be submitted to the Engineer for mix design verification."

Construction Requirements.

Revise the second paragraph of Article 406.06(b)(1) of the Standard Specifications to read:

"The HMA shall be delivered at a temperature of 250 to 350 °F (120 to 175 °C). WMA shall be delivered at a minimum temperature of 215 °F (102 °C)."

Basis of Payment.

This work will be paid at the contract unit price bid for the HMA pay items involved. Anti-strip will not be paid for separately, but shall be considered as included in the cost of the work.

80288

WEEKLY DBE TRUCKING REPORTS (BDE)

Effective: June 2, 2012
Revised: April 2, 2015

The Contractor shall submit a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used for DBE goal credit.

The report shall be submitted to the Engineer on Department form "SBE 723" within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

80302

WORK ZONE TRAFFIC CONTROL DEVICES (BDE)

Effective: March 2, 2020

Add the following to Article 701.03 of the Standard Specifications:

"(q) Temporary Sign Supports .....1106.02"

Revise the third paragraph of Article 701.14 of the Standard Specifications to read:

"For temporary sign supports, the Contractor shall provide a FHWA eligibility letter for each device used on the contract. The letter shall provide information for the set-up and use of the device as well as a detailed drawing of the device. The signs shall be supported within 20 degrees of vertical. Weights used to stabilize signs shall be attached to the sign support per the manufacturer's specifications."

Revise the first paragraph of Article 701.15 of the Standard Specifications to read:

"**701.15 Traffic Control Devices.** For devices that must meet crashworthiness standards, the Contractor shall provide a manufacturer's self-certification or a FHWA eligibility letter for each Category 1 device and a FHWA eligibility letter for each Category 2 and Category 3 device used on the contract. The self-certification or letter shall provide information for the set-up and use of the device as well as a detailed drawing of the device."

Revise the first six paragraphs of Article 1106.02 of the Standard Specifications to read:

"**1106.02 Devices.** Work zone traffic control devices and combinations of devices shall meet crashworthiness standards for their respective categories. The categories are as follows.

Category 1 includes small, lightweight, channelizing and delineating devices that have been in common use for many years and are known to be crashworthy by crash testing of similar devices or years of demonstrable safe performance. These include cones, tubular markers, plastic drums, and delineators, with no attachments (e.g. lights). Category 1 devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 1 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2024.

Category 2 includes devices that are not expected to produce significant vehicular velocity change but may otherwise be hazardous. These include vertical panels with lights, barricades, temporary sign supports, and Category 1 devices with attachments (e.g. drums with lights). Category 2 devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 2 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2024.

Category 3 includes devices that are expected to cause significant velocity changes or other potentially harmful reactions to impacting vehicles. These include crash cushions (impact

attenuators), truck mounted attenuators, and other devices not meeting the definitions of Category 1 or 2. Category 3 devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 3 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2029. Category 3 devices shall be crash tested for Test Level 3 or the test level specified.

Category 4 includes portable or trailer-mounted devices such as arrow boards, changeable message signs, temporary traffic signals, and area lighting supports. It is preferable for Category 4 devices manufactured after December 31, 2019 to be MASH-16 compliant; however, there are currently no crash tested devices in this category, so it remains exempt from the NCHRP 350 or MASH compliance requirement.

For each type of device, when no more than one MASH-16 compliant is available, an NCHRP 350 or MASH-2009 compliant device may be used, even if manufactured after December 31, 2019."

Revise Articles 1106.02(g), 1106.02(k), and 1106.02(l) to read:

"(g) Truck Mounted/Trailer Mounted Attenuators. The attenuator shall be approved for use at Test Level 3. Test Level 2 may be used for normal posted speeds less than or equal to 45 mph.

(k) Temporary Water Filled Barrier. The water filled barrier shall be a lightweight plastic shell designed to accept water ballast and be on the Department's qualified product list.

Shop drawings shall be furnished by the manufacturer and shall indicate the deflection of the barrier as determined by acceptance testing; the configuration of the barrier in that test; and the vehicle weight, velocity, and angle of impact of the deflection test. The Engineer shall be provided one copy of the shop drawings.

(l) Movable Traffic Barrier. The movable traffic barrier shall be on the Department's qualified product list.

Shop drawings shall be furnished by the manufacturer and shall indicate the deflection of the barrier as determined by acceptance testing; the configuration of the barrier in that test; and the vehicle weight, velocity, and angle of impact of the deflection test. The Engineer shall be provided one copy of the shop drawings. The barrier shall be capable of being moved on and off the roadway on a daily basis."

80427

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.

Construction Requirements. All work shall be according to the applicable requirements of Section 601 of the Standard Specifications except as modified below.

The pipe underdrains shall consist of a perforated pipe drain situated at the bottom of an area of drainage aggregate wrapped completely in geotechnical fabric and shall be installed to the lines and gradients as shown on the plans.

Method of Measurement. Pipe Underdrains for Structures shall be measured for payment in feet (meters), in place. Measurement shall be along the centerline of the pipe underdrains. All connectors, outlet pipes, elbows, and all other miscellaneous items shall be included in the measurement. Concrete headwalls shall be included in the cost of Pipe Underdrains for Structures, but shall not be included in the measurement for payment.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for PIPE UNDERDRAINS FOR STRUCTURES of the diameter specified. Furnishing and installation of the drainage aggregate, geotechnical fabric, forming holes in structural elements and any excavation required, will not be paid for separately, but shall be included in the cost of the pipe underdrains for structures.

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection

for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each

classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of

Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

Contract Provision - Cargo Preference Requirements

In accordance with Title 46 CFR § 381.7 (b), the contractor agrees—

"(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

(2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

Provisions (1) and (2) apply to materials or equipment that are acquired solely for the project. The two provisions do not apply to goods or materials that come into inventories independent of the project, such as shipments of Portland cement, asphalt cement, or aggregates, when industry suppliers and contractors use these materials to replenish existing inventories.

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision shall be the minimum paid by contractors and subcontractors to laborers and mechanics.