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Letting March 7, 2025

Notice to Bidders, Specifications and Proposal

Contract No. 61L05
LAKE County
Section 19-00093-00-SW (Lake Forest)
Route FAU 1245 (DeErpath Road)
Project 2DMV-695 ()
District 1 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. March 7, 2025 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. 61L05
   LAKE County
   Section 19-00093-00-SW (Lake Forest)
   Project 2DMV-695 ()
   Route FAU 1245 (DeErpath Road)
   District 1 Construction Funds

Resurfacing, PCC base course, decorative PCC sidewalk, granite cobble curb, brick paver banding, and crosswalks, decorative lighting, and landscaping on Deerpath Road from Oakwood Avenue to Western Avenue in Lake Forest.

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,
Secretary

CONTRACT 61L05

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2025

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 1-1-22) (Revised 1-1-25)

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

Table of Contents

INDEX OF SPECIAL PROVISIONS

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	Jan. 1, 2022
	80274	148	☒	Aggregate Subgrade Improvement	April 1, 2012	April 1, 2022
	80192		☐	Automated Flagger Assistance Device	Jan. 1, 2008	April 1, 2023
	80173		☐	Bituminous Materials Cost Adjustments	Nov. 2, 2006	Aug. 1, 2017
	80426		☐	Bituminous Surface Treatment with Fog Seal	Jan. 1, 2020	Jan. 1, 2022
	80241		☐	Bridge Demolition Debris	July 1, 2009	
	5053I		☐	Building Removal	Sept. 1, 1990	Aug. 1, 2022
	5026I		☐	Building Removal with Asbestos Abatement	Sept. 1, 1990	Aug. 1, 2022
*	80460	151	☒	Cement, Finely Divided Minerals, Admixtures, Concrete, and Mortar	Jan. 1, 2025	
	80384	162	☒	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	
*	80461		☐	Concrete Barrier	Jan. 1, 2025	
	80453		☐	Concrete Sealer	Nov. 1, 2023	
*	80261	166	☒	Construction Air Quality – Diesel Retrofit	June 1, 2010	Jan. 1, 2025
*	80029	168	☒	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Jan. 2, 2025
	80229		☐	Fuel Cost Adjustment	April 1, 2009	Aug. 1, 2017
	80452		☐	Full Lane Sealant Waterproofing System	Nov. 1, 2023	
	80447		☐	Grading and Shaping Ditches	Jan 1, 2023	
	80433		☐	Green Preformed Thermoplastic Pavement Markings	Jan. 1, 2021	Jan. 1, 2022
*	80456		☐	Hot-Mix Asphalt	Jan. 1, 2024	Jan. 1, 2025
	80446	171	☒	Hot-Mix Asphalt – Longitudinal Joint Sealant	Nov. 1, 2022	Aug. 1, 2023
	80438		☐	Illinois Works Apprenticeship Initiative – State Funded Contracts	June 2, 2021	April 2, 2024
	80450		☐	Mechanically Stabilized Earth Retaining Walls	Aug. 1, 2023	
	80441	173	☒	Performance Graded Asphalt Binder	Jan 1, 2023	
	80459		☐	Preformed Plastic Pavement Marking	June 2, 2024	
	3426I	178	☒	Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2022
	80455	179	☒	Removal and Disposal of Regulated Substances	Jan. 1, 2024	April 1, 2024
	80445		☐	Seeding	Nov. 1, 2022	
	80457	181	☒	Short Term and Temporary Pavement Markings	April 1, 2024	April 2, 2024
*	80462	185	☒	Sign Panels and Appurtenances	Jan. 1, 2025	
	80448	186	☒	Source of Supply and Quality Requirements	Jan. 2, 2023	
	80340		☐	Speed Display Trailer	April 2, 2014	Jan. 1, 2022
	80127		☐	Steel Cost Adjustment	April 2, 2004	Jan. 1, 2022
	80397	187	☒	Subcontractor and DBE Payment Reporting	April 2, 2018	
	80391	188	☒	Subcontractor Mobilization Payments	Nov. 2, 2017	April 1, 2019
*	80463	189	☒	Submission of Bidders List Information	Jan. 2, 2025	Mar. 2, 2025
	80437	190	☒	Submission of Payroll Records	April 1, 2021	Nov. 2, 2023
	80435		☐	Surface Testing of Pavements – IRI	Jan. 1, 2021	Jan. 1, 2023
	20338	192	☒	Training Special Provisions	Oct. 15, 1975	Sept. 2, 2021
	80429		☐	Ultra-Thin Bonded Wearing Course	April 1, 2020	Jan. 1, 2022
	80439	195	☒	Vehicle and Equipment Warning Lights	Nov. 1, 2021	Nov. 1, 2022
	80458		☐	Waterproofing Membrane System	Aug. 1, 2024	
*	80302	196	☒	Weekly DBE Trucking Reports	June 2, 2012	Jan. 2, 2025
	80454		☐	Wood Sign Support	Nov. 1, 2023	
*	80427	197	☒	Work Zone Traffic Control Devices	Mar. 2, 2020	Jan. 1, 2025
	80071		☐	Working Days	Jan. 1, 2002	

GUIDE BRIDGE SPECIAL PROVISION INDEX/CHECK SHEET

Effective as of the: November 8, 2024 Letting

Pg #	√	File Name	Title	Effective	Revised
	☐	GBSP 4	Polymer Modified Portland Cement Mortar	June 7, 1994	April 1, 2016
	☐	*GBSP 13	High-Load Multi-Rotational Bearings	Oct 13, 1988	June 28, 2024
	☐	GBSP 14	Jack and Remove Existing Bearings	April 20, 1994	April 13, 2018
	☐	GBSP 16	Jacking Existing Superstructure	Jan 11, 1993	April 13, 2018
	☐	GBSP 18	Modular Expansion Joint	May 19, 1994	Oct 27, 2023
	☐	GBSP 21	Cleaning and Painting Contact Surface Areas of Existing Steel Structures	June 30, 2003	Oct 23, 2020
	☐	GBSP 25	Cleaning and Painting Existing Steel Structures	Oct 2, 2001	April 15, 2022
	☐	GBSP 26	Containment and Disposal of Lead Paint Cleaning Residues	Oct 2, 2001	Apr 22, 2016
	☐	GBSP 28	Deck Slab Repair	May 15, 1995	Feb 2, 2024
	☐	GBSP 29	Bridge Deck Microsilica Concrete Overlay	May 15, 1995	April 30, 2021
	☐	GBSP 30	Bridge Deck Latex Concrete Overlay	May 15, 1995	April 30, 2021
	☐	GBSP 31	Bridge Deck High-Reactivity Metakaolin (HRM) Conc Overlay	Jan 21, 2000	April 30, 2021
	☐	GBSP 33	Pedestrian Truss Superstructure	Jan 13, 1998	Oct 27, 2023
	☐	GBSP 34	Concrete Wearing Surface	June 23, 1994	Oct 4, 2016
	☐	*GBSP 45	Bridge Deck Thin Polymer Overlay	May 7, 1997	June 28, 2024
	☐	GBSP 53	Structural Repair of Concrete	Mar 15, 2006	Aug 9, 2019
	☐	GBSP 55	Erection of Curved Steel Structures	June 1, 2007	
	☐	GBSP 59	Diamond Grinding and Surface Testing Bridge Sections	Dec 6, 2004	April 15, 2022
	☐	GBSP 60	Containment and Disposal of Non-Lead Paint Cleaning Residues	Nov 25, 2004	Apr 22, 2016
	☐	GBSP 61	Slipform Parapet	June 1, 2007	April 15, 2022
	☐	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	April 30, 2021
	☐	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	June 28, 2024
	☐	GBSP 85	Micropiles	Apr 19, 1996	Oct 23, 2020
199	☒	GBSP 86	Drilled Shafts	Oct 5, 2015	Oct 27, 2023
	☐	GBSP 87	Lightweight Cellular Concrete Fill	Nov 11, 2001	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 24, 2023
	☐	GBSP 90	Three Sided Precast Concrete Structure (Special)	Dec 21, 2016	March 22, 2024
	☐	GBSP 91	Crosshole Sonic Logging Testing of Drilled Shafts	Apr 20, 2016	March 24, 2023
	☐	GBSP 92	Thermal Integrity Profile Testing of Drilled Shafts	Apr 20, 2016	March 24, 2023
	☐	*GBSP 93	Preformed Bridge Joint Seal	Dec 21, 2016	June 28, 2024
	☐	GBSP 94	Warranty for Cleaning and Painting Steel Structures	Mar 3, 2000	Nov 24, 2004
	☐	GBSP 96	Erection of Bridge Girders Over or Adjacent to Railroads	Aug 9, 2019	
	☐	GBSP 97	Folded/Formed PVC Pipeliner	April 15, 2022	
	☐	GBSP 98	Cured-in-Place Pipe Liner	April 15, 2022	
	☐	GBSP 99	Spray-Applied Pipe Liner	April 15, 2022	
	☐	GBSP 100	Bar Splicers, Headed Reinforcement	Sept 2, 2022	Oct 27, 2023
	☐	*GBSP 101	Noise Abatement Wall, Ground Wall	Dec 9, 2022	June 28, 2024
	☐	*GBSP 102	Noise Abatement Wall, Structure Mounted	Dec 9, 2022	June 28, 2024
	☐	GBSP 103	Noise Abatement Wall Anchor Rod Assembly	Dec 9, 2022	

An * indicates a new or revised special provision.

STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction", adopted January 1, 2022, the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", 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 FAU 1245 (Deerpath Road), Section: 19-00093-00-SW, in Lake County, Contract: 61L05, Project Number 2DMV(695) 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

This project is located in the City of Lake Forest from the intersection of Deerpath Road and Oakwood Avenue to the intersection of Deerpath Road and Western Avenue in Lake County.

The roadway improvement along Deerpath Road covers a gross and net length of approximately 743 feet (0.141 miles).

DESCRIPTION OF PROJECT

The work consists of tree removal and replacement, landscape plantings, earth excavation, removal and disposal of unsuitable material, non-special waste disposal, storm sewer and drainage structures, irrigation systems, streetscape furniture and amenities, decorative lighting, erosion control, hot-mix asphalt surface removal and replacement, PCC base course, decorative PCC sidewalk, granite cobble curb, brick paver banding, brick paver crosswalks, combination concrete curb and gutter, as well as all incidental and collateral work necessary to complete the project as shown on the plans and described herein.

COOPERATION WITH ADJACENT CONTRACTS

The intent of this provision is to inform the Contractor that the City will have additional contracts that are scheduled during the same time period as this contract. The Contractor is required to cooperate with these adjacent contracts in accordance with Section 105.08 of the Standard Specifications and may be required to modify his/her staging operations/schedule in order to meet these requirements.

1. The City of Lake Forest Water Improvements along Deerpath Road from Green Bay Road to Western Avenue are anticipated to occur February 2025 through March 2025.

2. The City of Lake Forest Resurfacing project from Green Bay Road to Oakwood Avenue is anticipated to occur in the fall of 2025.

3. The City of Lake Forest Traffic Signal and ADA improvements at Green Bay Road and Deerpath Road anticipated to occur in the fall of 2025.

4. The City of Lake Forest Bank Lane Streetscape project from Deerpath Road to Market Square anticipated to occur July 2025 to November 2025.

AVAILABLE REPORTS (D1 LR)
Effective: July 1, 2021

☐ No project specific reports were prepared.

When applicable, the following checked reports and record information is available for Bidders' reference upon request:

☐ Record structural plans

☐ Preliminary Site Investigation (PSI) (IDOT ROW)

☒ Preliminary Site Investigation (PSI) (Local ROW)

☐ Preliminary Environmental Site Assessment (PESA) (IDOT ROW)

☒ Preliminary Environmental Site Assessment (PESA) (Local ROW)

☐ Soils/Geotechnical Report

☐ Boring Logs

☒ Pavement Cores

☐ Location Drainage Study (LDS)

☐ Hydraulic Report

☐ Noise Analysis

☒ Other: Ground Penetrating Radar Survey Report

Those seeking these reports should request access from:

Byron Kutz, P.E.
Superintendent of Engineering
(847) 810-3555
kutzb@cityoflakeforest.com

Municipal Services Building
800 N Field Drive
Lake Forest, IL 60045

MAINTENANCE OF ROADWAYS
Effective: September 30, 1985
Revised: November 1, 1996

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

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

STATUS OF UTILITIES (D-1)
Effective: June 1, 2016
Revised: January 1, 2020

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

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

Stage 1

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
12+78, 7.7' RT 13+85, 7.7' RT 13+91, 7.6' RT	FIBER	UTILITY MANHOLES TO BE ADJUSTED DURING RESURFACING	AT&T	3 DAYS INSTALLATION
14+04, 34.2' LT 14+04, 43.3' LT 14+14, 16.7' LT	ELEC	UTILITY MANHOLES TO BE ADJUSTED DURING RESURFACING	COMED	4 DAYS INSTALLATION

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
11+73, 24.6’ LT	FIBER	HANDHOLE IN CONFLICT WITH BRICK PAVER BAND TO BE RELOCATED	EXTENET	2 DAYS INSTALLATION
11+45 to 11+92 27’ RT	GAS	2” GAS MAIN IN CONFLICT WITH MASONRY WALL FOUNDATION. GAS MAIN TO BE RELOCATED	NORTH SHORE GAS	10 DAYS INSTALLATION

Stage 2

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
10+83, 7.2’ RT	FIBER	UTILITY MANHOLE TO BE ADJUSTED DURING RESURFACING	AT&T	1 DAY INSTALLATION
11+00, 17.2' LT	ELEC	UTILITY MANHOLE TO BE ADJUSTED DURING RESURFACING	COMED	1 DAY INSTALLATION

Stage 3

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
17+30, 7.5' RT	FIBER	UTILITY MANHOLE TO BE ADJUSTED DURING RESURFACING	AT&T	1 DAY INSTALLATION

Stage 1: 15 Days Total Installation

Stage 2: 2 Days Total Installation

Stage 3: 1 Day Total Installation

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

Agency/Company Responsible to Resolve Conflict	Name of contact	Phone	E-mail address
North Shore Gas	Jay Hammer	224.338.9093	Jay.Hammer@peoplesgasdelivery.com
ComEd	Daniel Mendez	773.799.6111	Daniel.Mendez@ComEd.com
AT&T	Tom Laskowski	630.779.4722	tl7895@att.com
Comcast	Thomas Munar	224.229.5851	Thomas_Munar@comcast.com
ExteNet	Sunday Aiyash	630.327.3092	saiyash@extenetsystems.com noc@extenetsystems.com
MCI/Verizon	Joe Chaney	312.617.2131	investigations@one.verizon.com
City of Lake Forest	Rich Volpe	847.810.3570	VolpeR@cityoflakeforest.com

UTILITIES TO BE WATCHED AND PROTECTED

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

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER
10+79, 46.1' LT 12+78, 27.2' LT 13+90, 27.7' LT 13+90, 30.5' RT 13+91, 30.5' RT 13+93, 27.7' LT 13+93, 30.5' RT 14+21, 30.5' RT 16+70, 7.5' RT	FIBER	EX DUCT PACKAGE TO BE WATCHED AND PROTECTED DURING INSTALLATION OF LIGHT POLES & CONDUITS, IRRIGATION, AND STORM SEWER	AT&T
10+55, 29.6' LT 10+65, 41.8' LT 10+68, 40.9' LT 11+05, 41.7' LT 12+20, 42.2' LT	FIBER	EX UNDERGROUND LINES TO BE WATCHED AND PROTECTED DURING INSTALLATION OF SIGN SUPPORT AND LIGHTING CONDUITS	COMCAST
11+14 to 16+70, 28.8' LT 11+33, 25.4' LT 12+06, 25.4' LT 12+59, 24.5' LT 13+27, 25.5' LT 13+76, 23.4' LT 14+79, 25.5' LT 15+79, 25.5' LT 16+46, 25.5' LT	FIBER	EX (2) 1.5" CONDUITS TO BE WATCHED AND PROTECTED DURING INSTALLATION OF LIGHT POLES & CONDUITS, IRRIGATION, AND STRUCTURAL SOIL	EXTENET

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER
10+40 to 10+60, 31.0' LT 11+12 to 13+87, 31.1' LT 11+33, 25.4' LT 12+06, 25.4' LT 12+59, 24.5' LT 12+61, 30.1' LT 13+27, 25.5' LT 13+76, 23.4' LT	ELEC	EX DUCT PACKAGE TO BE WATCHED AND PROTECTED DURING INSTALLATION OF LIGHT POLES & CONDUITS, IRRIGATION, AND STORM SEWER, AND TREES	COMED
10+53, 25.1' RT 10+60 to 11+92, 30.0' RT 11+23, 25.0' RT 12+06, 25.4' LT 12+12 to 12+29, 28.8' LT 13+97, 27.7' LT 16+70, 19.3' RT 16+86, 30.0' RT 16+88, 31.0' RT	GAS	EX 2” GAS MAIN TO BE WATCHED AND PROTECTED DURING INSTALLATION OF LIGHT POLES & CONDUITS, IRRIGATION, STORM SEWER, AND TREES	NORTH SHORE GAS
10+55, 29.6' LT	FIBER	EX UNDERGROUND CONDUIT TO BE WATCHED AND PROTECTED DURING INSTALLATION PR LIGHTING CONDUITS	MCI/VERIZON
10+32 to 17+75, 5’ RT 10+32 to 14+15, 19’ RT	WATER STORM	EX 12” WATER MAIN AND EX 10” STORM SEWER TO BE WATCHED AND PROTECTED DURING INSTALLATION OF LIGHT POLES AND IRRIGATION	CITY OF LAKE FOREST

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

Agency/Company Responsible to Resolve Conflict	Name of contact	Phone	E-mail address
North Shore Gas	Jay Hammer	224.338.9093	Jay.Hammer@peoplesgasdelivery.com
ComEd	Daniel Mendez	773.799.6111	Daniel.Mendez@ComEd.com
AT&T	Tom Laskowski	630.779.4722	tl7895@att.com
Comcast	Thomas Munar	224.229.5851	Thomas_Munar@comcast.com
ExteNet	Sunday Aiyash	630.327.3092	saiyash@extenetsystems.com noc@extenetsystems.com
MCI/Verizon	Joe Chaney	312.617.2131	investigations@one.verizon.com
City of Lake Forest	Rich Volpe	847.810.3570	VolpeR@cityoflakeforest.com

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

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

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

PUBLIC CONVENIENCE AND SAFETY (D-1)
Effective: May 1, 2012
Revised: July 15, 2012

Add the following to the end of the fourth paragraph of Article 107.09:

> "If the holiday is on a Saturday or Sunday, and is legally observed on a Friday or Monday, the length of Holiday Period for Monday or Friday shall apply."

Add the following sentence after the Holiday Period table in the fourth paragraph of Article 107.09:

> "The Length of Holiday Period for Thanksgiving shall be from 5:00 AM the Wednesday prior to 11:59 PM the Sunday After"

Delete the fifth paragraph of Article 107.09 of the Standard Specifications:

> "On weekends, excluding holidays, roadways with Average Daily Traffic of 25,000 or greater, all lanes shall be open to traffic from 3:00 P.M. Friday to midnight Sunday except where structure construction or major rehabilitation makes it impractical."

COMPLETION DATE PLUS WORKING DAYS
Effective: September 30, 1985
Revised: January 1, 2007

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

> "When a completion date plus working days is specified, the Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 PM on **October 31, 2025** except as specified herein.
>
> The Contractor will be allowed to complete all clean-up work and punch list items within **10** working days after the completion date for opening the roadway to traffic. Under extenuating circumstances the Engineer may direct that certain items of work, not affecting the safe opening of the roadway to traffic, may be completed within the working days allowed for cleanup work and punch list items. Temporary lane closures for this work may be allowed at the discretion of the Engineer.

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

STAGE 2 AND 3 DURATIONS
All work as shown in Stage 2 of the Suggested Maintenance of Traffic shall have a duration of no longer than 14 calendar days. All work as shown in Stage 3 of the Suggested Maintenance of Traffic shall be completed between August 7 and August 24, 2025.

The Special Provision for "Failure to Complete the Work on Time", included in this contract, shall apply to the staging durations.

FAILURE TO COMPLETE THE WORK ON TIME (D1)
Effective: September 30, 1985
Revised: January 1, 2007

Should the Contractor fail to complete the work on or before the completion date as specified in the Special Provision for "Completion Date Plus Working Days", or within such extended time as may have been allowed by the Department, the Contractor shall be liable to the Department in the amount of **$5,000**, not as a penalty but as liquidated damages, for each calendar day or a portion thereof of overrun in the contract time or such extended time as may have been allowed.

In fixing the damages as set out herein, the desire is to establish a certain mode of calculation for the work since the Department's actual loss, in the event of delay, cannot be predetermined, would be difficult of ascertainment, and a matter of argument and unprofitable litigation. This said mode is an equitable rule for measurement of the Department's actual loss and fairly takes into account the loss of use of the roadway if the project is delayed in completion. The Department shall not be required to provide any actual loss in order to recover these liquidated damages provided herein, as said damages are very difficult to ascertain. Furthermore, no provision of this clause shall be construed as a penalty, as such is not the intention of the parties.

A calendar day is every day shown on the calendar and starts at 12:00 midnight and ends at the following 12:00 midnight, twenty-four hours later.

RECLAIMED ASPHALT PAVEMENT FOR NON-POROUS EMBANKMENT AND BACKFILL
Effective: April 1, 2001
Revised: January 1, 2007

Add the following sentence to Article 1004.05 (a) of the Standard Specifications:

> "Reclaimed Asphalt Pavement (RAP) may be used as aggregate in Non-porous Granular Embankment and Backfill. The RAP material shall be reclaimed asphalt pavement material resulting from the cold milling or crushing of an existing hot-mix bituminous concrete pavement structure, including shoulders. RAP containing contaminants such as earth, brick, concrete, sheet asphalt, sand, or other materials identified by the Department will be unacceptable until the contaminants are thoroughly removed.

Add the following sentence to Article 1004.05 (c)(2) of the Standard Specifications:

> "One hundred percent of the RAP when used shall pass the 3 inch (75 mm) sieve. The RAP shall be well graded from coarse to fine. RAP that is gap-graded or single-sized will not be accepted."

HOT-MIX ASPHALT BINDER AND SURFACE COURSE (D1)

Effective: November 1, 2019
Revised: January 1, 2025

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; Stabilized Subbase IL-19.0	CA 11 1/
	SMA 12.5 2/	CA 13 4/, CA 14, or CA 16
	SMA 9.5 2/	CA 13 3/4/ or CA 16 3/
	IL-9.5	CA 16, CM 13 4/
	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 the fine aggregates and mineral filler to meet the approved mix design and the mix requirements noted herein.

3/ The specified coarse aggregate gradations may be blended.

4/ CA 13 shall be 100 percent passing the 1/2 in. (12.5mm) sieve."

Revise Article 1004.03(e) of the Standard Specifications to read:

"(e) Absorption. For SMA the coarse aggregate shall also have water absorption ≤ 2.0 percent."

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, Stabilized Subbase IL-19.0
	Surface Courses	IL-9.5, IL-9.5FG, SMA 12.5, SMA 9.5”

Revise Note 2. and add Note 6 to Article 1030.02 of the Standard Specifications to read:

“Item	Article/Section
(g) Performance Graded Asphalt Binder (Note 6)	1032
(h) Fibers (Note 2)	

Note 2. A stabilizing additive such as cellulose or mineral fiber shall be added to the SMA mixture according to Illinois Modified AASHTO M 325. The stabilizing additive shall meet the Fiber Quality Requirements listed in Illinois Modified AASHTO M 325. Prior to approval and use of fibers, the Contractor shall submit a notarized certification by the producer of these materials stating they meet these requirements. Reclaimed Asphalt Shingles (RAS) may be used in Stone Matrix Asphalt (SMA) mixtures designed with an SBA polymer modifier as a fiber additive if the mix design with RAS included meets AASHTO T305 requirements. The RAS shall be from a certified source that produces either Type I or Type 2. Material shall meet requirements noted herein and the actual dosage rate will be determined by the Engineer.

Note 6. The asphalt binder shall be an SBS PG 76-28 when the SMA is used on a full-depth asphalt pavement and SBS PG 76-22 when used as an overlay, except where modified herein. The asphalt binder shall be a SBS PG 76-22 for IL-4.75, except where modified herein..”

Revise table in Article 1030.05(a) of the Standard Specifications to read:

"MIXTURE COMPOSITION (% PASSING) [1/]												
Sieve Size	IL-19.0 mm		SMA 12.5		SMA 9.5		IL-9.5mm		IL-9.5FG		IL-4.75 mm	
	min	max	min	max	min	max	min	max	min	max	min	max
1 1/2 in (37.5 mm)												
1 in. (25 mm)		100										
3/4 in. (19 mm)	90	100		100								
1/2 in. (12.5 mm)	75	89	80	100		100		100		100		100
3/8 in. (9.5 mm)				65	90	100	90	100	90	100		100
#4 (4.75 mm)	40	60	20	30	36	50	34	69	60	75[6/]	90	100
#8 (2.36 mm)	20	42	16	24 [4/]	16	32[4/]	34 [5/]	52 [2/]	45	60[6/]	70	90
#16 (1.18 mm)	15	30					10	32	25	40	50	65
#30 (600 μm)			12	16	12	18			15	30		
#50 (300 μm)	6	15					4	15	8	15	15	30
#100 (150 μm)	4	9					3	10	6	10	10	18
#200 (75 μm)	3.0	6.0	7.0	9.0 [3/]	7.5	9.5 [3/]	4.0	6.0	4.0	6.5	7.0	9.0 [3/]
#635 (20 μm)			≤ 3.0		≤ 3.0							
Ratio Dust/Asphalt Binder		1.0		1.5		1.5		1.0		1.0		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 the percentage stated on the table.
5/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted below 34 percent.
6/ When the mixture is used as a binder, the maximum shall be increased by 0.5 percent passing."

Revise Article 1030.05(b) of the Standard Specifications to read:

(b) Volumetric Requirements. The target value for the air voids of the HMA shall be 4.0 percent, for IL-4.75 and SMA mixtures it shall be 3.5 percent and for Stabilized Subbase it shall be 3.0 percent at the design number of gyrations. The voids in the mineral aggregate (VMA) and voids filled with asphalt binder (VFA) of the HMA design shall be based on the nominal maximum size of the aggregate in the mix and shall conform to the following requirements.

	Voids in the Mineral Aggregate (VMA), % Minimum for Ndesign				
Mix Design	30	50	70	80	90
IL-19.0		13.5	13.5		13.5
IL-9.5		15.0	15.0		
IL-9.5FG		15.0	15.0		
IL-4.75[1/]		18.5			
SMA-12.5[1/2/5/]				17.0[3/]/16.0[4/]	
SMA-9.5[1/2/5/]				17.0[3/]/16.0[4/]	
IL-19.0L	13.5				
IL-9.5L	15.0				

1/ Maximum draindown shall be 0.3 percent according to Illinois Modified AASHTO T 305.

2/ The draindown shall be determined at the JMF asphalt binder content at the mixing temperature plus 30°F.

3/ Applies when specific gravity of coarse aggregate is ≥ 2.760.

4/ Applies when specific gravity of coarse aggregate is < 2.760.

5/ For surface course, the coarse aggregate can be crushed steel slag, crystalline crushed stone or crushed sandstone. For binder course, coarse aggregate shall be crushed stone (dolomite), crushed gravel, crystalline crushed stone, or crushed sandstone"

Revise the last paragraph of Article 1102.01 (a) (5) of the Standard Specifications to read:

"IL-4.75 and Stone Matrix Asphalt (SMA) mixtures which contain aggregate having absorptions greater than or equal to 2.0 percent, or which contain steal slag sand, shall have minimum surge bin storage plus haul time of 1.5 hours."

Revise the first and second paragraphs of Articles 1030.06(c)(2) of the Standard Specifications to read:

"(2) Personnel. The Contractor shall provide a QC Manager who shall have overall responsibility and authority for quality control. This individual shall maintain active certification as a Hot-Mix Asphalt Level II technician.

In addition to the QC Manager, the Contractor shall provide sufficient personnel to perform the required visual inspections, sampling, testing, and documentation in a timely manner. Mix designs shall be developed by personnel with an active certification as a Hot-Mix Asphalt Level III technician. Technicians performing mix design testing and plant sampling/testing shall maintain active certification as a Hot-Mix Asphalt Level I technician. The Contractor may provide a technician trainee who has successfully completed the Department's "Hot-Mix Asphalt Trainee Course" to assist in the activities completed by a Hot-Mix Asphalt Level I technician for a period of one year after the course completion date. The Contractor may also provide a Gradation Technician who has successfully completed the Department's "Gradation Technician Course" to run gradation tests only under the supervision of a Hot-Mix Asphalt Level II Technician. The Contractor shall provide a Hot-Mix Asphalt Density Tester who has successfully completed the Department's "Nuclear Density Testing" course to run all nuclear density tests on the job site."

Add Article 1030.06(d)(3) to the Standard Specifications to read:

"(3) The Contractor shall take possession of any Department unused backup or dispute resolution HMA mixture samples or density specimens upon notification by the Engineer. The Contractor shall collect the HMA mixture samples or density specimens from the location designated by the Engineer. The HMA mixture samples or density specimens may be added to RAP stockpiles according to Section 1031."

Revise the second paragraph of Articles 1030.07(a)(11) and 1030.08(a)(9) of the Standard Specifications to read:

"When establishing the target density, the HMA maximum theoretical specific gravity (Gmm) will be based on the running average of four available Department test results for that project. If less than four Gmm test results are available, an average of all available Department test results for that project will be used. The initial Gmm will be the last available Department test result from a QMP project. If there is no available Department test result from a QMP project, the Department mix design verification test result will be used as the initial Gmm."

Revise the following table and notes in Article 1030.09 (c) of the Standard Specifications to read:

CONTROL LIMITS						
Parameter	IL-19.0, IL-9.5, IL-9.5FG, IL-19.0L, IL-9.5L		SMA-12.5, SMA-9.5		IL-4.75	
	Individual Test	Moving Avg. of 4	Individual Test	Moving Avg. of 4	Individual Test	Moving Avg. of 4
% Passing: 1/						
1/2 in. (12.5 mm)	± 6 %	± 4 %	± 6 %	± 4 %		
3/8 in. (9.5mm)			± 4 %	± 3 %		
# 4 (4.75 mm)	± 5 %	± 4 %	± 5 %	± 4 %		
# 8 (2.36 mm)	± 5 %	± 3 %	± 4 %	± 2 %		
# 16 (1.18 mm)			± 4 %	± 2 %	± 4 %	± 3 %
# 30 (600 µm)	± 4 %	± 2.5 %	± 4 %	± 2.5 %		
Total Dust Content # 200 (75 µm)	± 1.5 %	± 1.0 %			± 1.5 %	± 1.0 %
Asphalt Binder Content	± 0.3 %	± 0.2 %	± 0.2 %	± 0.1 %	± 0.3 %	± 0.2 %
Air Voids 2/	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %
Field VMA 3/	-0.7 %	-0.5 %	-0.7 %	-0.5 %	-0.7 %	-0.5 %

1/ Based on washed ignition oven or solvent extraction gradation.

2/ The air voids target shall be a value equal to or between 3.2 % and 4.8 %.

3/ Allowable limit below minimum design VMA requirement.

Revise Article 1030.09(g)(2) of the Standard Specifications to read:

"(2) The Contractor shall complete split verification sample tests listed in the Limits of Precision table in Article 1030.09(h)(1)."

In the Supplemental Specifications, replace the revision for the end of the third paragraph of Article 1030.09(h)(2) with the following:

"When establishing the target density, the HMA maximum theoretical specific gravity (Gmm) will be the Department mix design verification test result."

Add after third sentence of Article 1030.09(b) 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."

Revise Table 1 and Note 4/ of Table 1 in Article 406.07(a) of the Standard Specifications to read:

	Breakdown/Intermediate Roller (one of the following)	Final Roller (one or more of the following)	Density Requirement
IL-9.5, IL-9.5FG, IL-19.0[1/]	V_D, P , T_B, 3W, O_T, O_B	V_S, T_B, T_F, O_T	As specified in Section 1030
IL-4.75 and SMA [3/ 4/]	T_B, 3W, O_T	T_F, 3W	As specified in Section 1030
Mixtures on Bridge Decks [2/]	T_B	T_F	As specified in Articles 582.05 and 582.06.

"4/ The Contractor shall provide a minimum of two steel-wheeled tandem rollers (T_B), and/or three-wheel (3W) rollers for breakdown, except one of the (T_B) or (3W) rollers shall be 84 inches (2.14 m) wide and a weight of 315 pound per linear inch (PLI) (5.63 kg/mm) and one of the (T_B) or (3W) rollers can be substituted for an oscillatory roller (O_T). T_F rollers shall be a minimum of 280 lb/in. (50 N/mm). The 3W and T_B rollers shall be operated at a uniform speed not to exceed 3 mph (5 km/h), with the drive roll for T_B rollers nearest the paver and maintain an effective rolling distance of not more than 150 ft (45 m) behind the paver."

Add the following after the fourth paragraph of Article 406.13 (b):

"The plan quantities of SMA mixtures shall be adjusted using the actual approved binder and surface Mix Design's G_{mb}."

Revise first paragraph of Article 1030.10 of the Standard Specifications to read:

"A test strip of 300 ton (275 metric tons), except for SMA mixtures it will be 400 ton (363 metric ton), will be required for each mixture on each contract at the beginning of HMA production for each construction year according to the Manual of Test Procedures for Materials "Hot Mix Asphalt Test Strip Procedures". At the request of the Producer, the Engineer may waive the test strip if previous construction during the current construction year has demonstrated the constructability of the mix using Department test results."

Revise fourth paragraph of Article 1030.10 of the Standard Specifications to read:

"When a test strip is constructed, the Contractor shall collect and split the mixture according to the document "Hot-Mix Asphalt Test Strip Procedures". The Engineer, or a representative, shall deliver split sample to the District Laboratory for verification testing. The Contractor shall complete mixture tests stated in Article 1030.09(a). Mixture sampled shall include enough material for the Department to conduct mixture tests detailed in Article 1030.09(a) and in the document "Hot-Mix Asphalt Mixture Design Verification Procedure" Section 3.3. The mixture test results shall meet the requirements of Articles 1030.05(b) and 1030.05(d), except Hamburg wheel tests will only be conducted on High ESAL mixtures during production."

DETECTABLE WARNINGS (SPECIAL)

Description.
Work under this item shall consist of installing cast iron detectable warning tiles on ADA curb ramps as shown on the plans and according to IDOT District Detail BD-58. Work shall be performed according to Section 424 of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, except as herein modified.

Materials.
Detectable warning tiles shall be cast iron. The detectable warning tiles shall be uncoated cast iron to allow for oxidation and formation of a natural brown patina color.

The cast iron detectable warnings shall be of uniform quality and free of surface defects.

The detectable warnings shall meet requirements of ASTM A 48 Class 30 or better.

Detectable warnings for radial ramps shall be installed using radial warning tiles. The contractor shall not use wedges to complete radial ramps, unless approved by the Engineer.

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

Basis of Payment.
This work will be paid for at the contract unit price per square foot for DETECTABLE WARNINGS (SPECIAL).

STORM SEWER ADJACENT TO OR CROSSING WATER MAIN

This work consists of constructing storm sewer adjacent to or crossing a water main, at the locations shown on the plans. The material and installation requirements shall be according to the latest edition of the “Standard Specifications for Water and Sewer Main Construction in Illinois”, and the applicable portions of Section 550 of the Standard Specifications; which may include concrete collars and encasing pipe with seals if required.

Pipe materials shall be PVC or Ductile Iron and meet the requirements of Section 40-2.01B for Ductile Iron and Section 40-2.01C for PVC. Joints shall be in accordance with Section 40-2.02 of the Standard Specifications for Water and Sewer Main Construction in Illinois. Ductile-Iron pipe shall meet the minimum requirements for Thickness Class 50. Pipe shall be installed in accordance with Section 41-2.01 of the Standard Specifications for Water and Sewer Main Construction in Illinois.

Encasing of standard type storm sewer, according to the details for “Water and Sewer Separation Requirements (Vertical Separation)” in the “STANDARD DRAWINGS” Division of the “Standard Specifications for Water and Sewer Main Construction in Illinois”, may be used for storm sewers crossing water mains.

Basis of Payment: This work will be paid according to Article 550.10 of the Standard Specifications and shall be paid for as STORM SEWERS, CLASS B, TYPE I, of the diameter specified.

ADJUSTMENTS AND RECONSTRUCTIONS (D1)
Effective: March 15, 2011
Revised: October 1, 2021

Revise the first paragraph of Article 602.04 to read:

"**602.04 Concrete.** Cast-in-place concrete for structures shall be constructed of Class SI concrete according to the applicable portions of Section 503. Cast-in-place concrete for pavement patching around adjustments and reconstructions shall be constructed of Class PP-2 concrete, unless otherwise noted in the plans, according to the applicable portions of Section 1020."

Revise the third, fourth and fifth sentences of the second paragraph of Article 602.11(c) to read:

"Castings shall be set to the finished pavement elevation so that no subsequent adjustment will be necessary, and the space around the casting shall be filled with Class PP-2 concrete, unless otherwise noted in the plans, to the elevation of the surface of the base course or binder course. HMA surface or binder course material shall not be allowed. The pavement may be opened to traffic according to Article 701.17(e)(3)b."

Revise Article 603.05 to read:

"**603.05 Replacement of Existing Flexible Pavement.** After the castings have been adjusted, the surrounding space shall be filled with Class PP-2 concrete, unless otherwise noted in the plans, to the elevation of the surface of the base course or binder course. HMA surface or binder course material shall not be allowed. The pavement may be opened to traffic according to Article 701.17(e)(3)b."

Revise Article 603.06 to read:

"**603.06 Replacement of Existing Rigid Pavement.** After the castings have been adjusted, the pavement and HMA that was removed, shall be replaced with Class PP-2 concrete, unless otherwise noted in the plans, not less than 9 in. (225 mm) thick. The pavement may be opened to traffic according to Article 701.17(e)(3)b.

The surface of the Class PP concrete shall be constructed flush with the adjacent surface."

Revise the first sentence of Article 603.07 to read:

"**603.07 Protection Under Traffic.** After the casting has been adjusted and the Class PP concrete has been placed, the work shall be protected by a barricade and two lights according to Article 701.17(e)(3)b."

ENGINEER'S FIELD OFFICE TYPE A (D1)

Revise the first paragraph of Article 670.02 to read:

> **670.02 Engineer's Field Office Type A (D1).** Type A (D1) field offices shall have a ceiling height of not less than 7 feet and a floor space of not less than 1000 square feet with a minimum of two separate offices. The office shall also have a separate storage room capable of being locked for the storage of the nuclear measuring devices. The office shall be provided with sufficient heat, natural and artificial light, and air conditioning. Doors and windows shall be equipped with locks approved by the Engineer.

Add the following to Article 670.07 Basis of Payment.

> The building or buildings, fully equipped, will be paid for at the contract unit price per calendar month or fraction thereof for ENGINEER'S FIELD OFFICE, TYPE A (D1).

Add the following sentence after the second sentence of Article 670.01:
The location shall be an office or storefront in the City of Lake Forest within ½ mile of the project.

TRAFFIC CONTROL AND PROTECTION (SPECIAL)

Specific traffic control plan details and Special Provisions have been prepared for this contract. This work shall include all labor, materials, transportation, handling and incidental work necessary to furnish, install, maintain and remove all traffic control devices required as indicated in the plans, approved by the Engineer, and in accordance with Section 701 of the SSRBC.

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 details shown in the plans or as directed by the Engineer.

If warranted, the Contractor shall furnish, erect, maintain and remove portable temporary traffic signals in accordance with Section 890 of the SSBRC along the detour route at a max of two (2) intersections for the duration of the contract. The Contractor shall complete a signal warrant analysis to be submitted to the City prior to installation. Temporary traffic signal timing for existing or temporary traffic signals may be required along the detour route if substantial queues develop. Temporary traffic signal timing shall be performed by an IDOT District 1 prequalified SCAT consultant. In lieu of temporary traffic signals, the Contractor may elect to provide certified flaggers to be used to direct traffic during peak hours (7:00 am to 9:00 am and 3:00 pm to 5:00 pm) at intersections experiencing substantial queues.

Method of Measurement: All traffic control (except "Traffic Control and Protection (Expressways)" and temporary pavement markings) indicated on the traffic control plan details and specified in the Special Provisions will be measured for payment on a lump sum basis.

Basis of Payment: All traffic control and protection will be paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION (SPECIAL).

Temporary pavement markings will be paid for separately unless shown on a Standard.

TRAFFIC CONTROL PLAN
Effective: September 30, 1985
Revised: January 1, 2007

Traffic Control shall be according to the applicable sections of the Standard Specifications, the Supplemental Specifications, the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any special details and Highway Standards contained in the plans, and the Special Provisions contained herein.

Special attention is called to Article 107.09 of the Standard Specifications and the following Highway Standards, Details, Quality Standard for Work Zone Traffic Control Devices, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

The Contractor shall contact the District One Bureau of Traffic at least 72 hours in advance of beginning work.

STANDARDS
701001 Off-Rd Operations, 2L, 2W More Than 15' Away
701006 Off-Rd Operations, 2L, 2W 15' to 24" From Pavement Edge
701011 Off-Rd Moving Operations, 2L, 2W, Day Only
701301 Lane Closure, 2L, 2W, Short Time Operations
701311 Lane Closure 2L, 2W Moving Operations-Day Only
701501 Urban Lane Closure, 2L, 2W, Undivided
701801 Sidewalk, Corner or Crosswalk Closure
701901 Traffic Control Devices

DETAILS
TC-10 Traffic Control & Protection for Side Roads, Intersections & Driveways
TC-13 District One Typical Pavement Markings
TC-21 Detour Signing for Closing State Highways

SPECIAL PROVISIONS
Maintenance of Roadways
Public Convenience and Safety (District 1)
Traffic Control and Protection (Special)
Temporary Information Signing
Pedestrian Access During Construction
Temporary Ramp, Special (Pedestrian Access)

BDE SPECIAL PROVISIONS
Vehicle Equipment Warning Lights
Work Zone Traffic Control Devices
Sign Panels and Appurtenances

FRICTION AGGREGATE (D1)

Effective: January 1, 2011
Revised: December 1, 2021

Revise Article 1004.03(a) of the Standard Specifications to read:

"**1004.03 Coarse Aggregate for Hot-Mix Asphalt (HMA).** The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate for HMA shall be according to the following table.

Use	Mixture	Aggregates Allowed
Class A	Seal or Cover	Allowed Alone or in Combination [5/]: Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete
HMA Low ESAL	Stabilized Subbase or Shoulders	Allowed Alone or in Combination [5/]: Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag[1/] Crushed Concrete
HMA High ESAL Low ESAL	Binder IL-19.0 or IL-19.0L SMA Binder	Allowed Alone or in Combination [5/ 6/]: Crushed Gravel Carbonate Crushed Stone[2/] Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Concrete[3/]

<table>
<tr><th>Use</th><th>Mixture</th><th>Aggregates Allowed</th></tr>
<tr><td>HMA
High ESAL
Low ESAL</td><td>C Surface and Binder
IL-9.5
IL-9.5FG
or IL-9.5L</td><td><u>Allowed Alone or in Combination</u> [5/]:

Crushed Gravel
Carbonate Crushed Stone[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Steel Slag[4/]
Crushed Concrete[3/]</td></tr>
<tr><td rowspan="5">HMA
High ESAL</td><td rowspan="5">D Surface and Binder
IL-9.5
or IL-9.5FG</td><td><u>Allowed Alone or in Combination</u> [5/]:

Crushed Gravel
Carbonate Crushed Stone (other than Limestone)[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Steel Slag[4/]</td></tr>
<tr><td><u>Other Combinations Allowed:</u>

Up to... | With...
25% Limestone | Dolomite</td></tr>
<tr><td>50% Limestone | Any Mixture D aggregate other than Dolomite</td></tr>
<tr><td>75% Limestone | Crushed Slag (ACBF) or Crushed Sandstone</td></tr>
<tr><td></td></tr>
<tr><td rowspan="5">HMA
High ESAL</td><td rowspan="5">E Surface
IL-9.5

SMA
Ndesign 80
Surface</td><td><u>Allowed Alone or in Combination</u> [5/ 6/]:

Crushed Gravel
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Steel Slag

No Limestone.</td></tr>
<tr><td><u>Other Combinations Allowed:</u>

Up to... | With...
50% Dolomite[2/] | Any Mixture E aggregate</td></tr>
<tr><td></td></tr>
<tr><td></td></tr>
<tr><td></td></tr>
</table>

<table>
<tr><td>Use</td><td>Mixture</td><td colspan="2">Aggregates Allowed</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td>75% Dolomite[2/]</td><td>Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone</td></tr>
<tr><td>75% Crushed Gravel[2/]</td><td>Crushed Sandstone, Crystalline Crushed Stone, Crushed Slag (ACBF), or Crushed Steel Slag</td></tr>
<tr><td rowspan="4">HMA
High ESAL</td><td rowspan="4">F Surface
IL-9.5

SMA
Ndesign 80
Surface</td><td colspan="2"><u>Allowed Alone or in Combination</u> [5/ 6/]:

Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Steel Slag
No Limestone.</td></tr>
<tr><td colspan="2"><u>Other Combinations Allowed</u>:</td></tr>
<tr><td>Up to...</td><td>With...</td></tr>
<tr><td>50% Crushed Gravel[2/] or Dolomite[2/]</td><td>Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone</td></tr>
</table>

1/ Crushed steel slag allowed in shoulder surface only.
2/ Carbonate crushed stone (limestone) and/or crushed gravel shall not be used in SMA Ndesign 80.
3/ Crushed concrete will not be permitted in SMA mixes.
4/ Crushed steel slag shall not be used as binder.
5/ When combinations of aggregates are used, the blend percent measurements shall be by volume."
6/ Combining different types of aggregate will not be permitted in SMA Ndesign 80."

HOT-MIX ASPHALT – MIXTURE DESIGN VERIFICATION AND PRODUCTION (D1)

Effective: January 1, 2019
Revised: December 1, 2021

Add to Article 1030.05 (d)(3) of the Standard Specifications to read:

" During mixture design, prepared samples shall be submitted to the District laboratory by the Contractor for verification testing. The required testing, and number and size of prepared samples submitted, shall be according to the following tables.

High ESAL – Required Samples for Verification Testing	
Mixture	Hamburg Wheel and I-FIT Testing 1/ 2/
Binder	total of 3 - 160 mm tall bricks
Surface	total of 4 - 160 mm tall bricks

Low ESAL – Required Samples for Verification Testing	
Mixture	I-FIT Testing 1/ 2/
Binder	1 - 160 mm tall brick
Surface	2 - 160 mm tall bricks

1/ The compacted gyratory bricks for Hamburg wheel and I-FIT testing shall be 7.5 ± 0.5 percent air voids.

2/ If the Contractor does not possess the equipment to prepare the 160 mm tall brick(s), twice as many 115 mm tall compacted gyratory bricks will be acceptable.

Revise the fourth paragraph of Article 1030.10 of the Standard Specifications to read:

"When a test strip is not required, each HMA mixture shall still be sampled on the first day of production: I-FIT and Hamburg wheel testing for High ESAL; I-FIT testing for Low ESAL. Within two working days after sampling the mixture, the Contractor shall deliver gyratory cylinders to the District laboratory for Department verification testing. The High ESAL mixture test results shall meet the requirements of Articles 1030.05(d)(3) and 1030.05(d)(4). The Low ESAL mixture test results shall meet the requirements of Article 1030.05(d)(4). The required number and size of prepared samples submitted for the Hamburg wheel and I-FIT testing shall be according to the "High ESAL - Required Samples for Verification Testing" table in Article 1030.05(d)(3) above."
Add the following to the end of Article 1030.10 of the Standard Specifications to read:

"Mixture sampled during first day of production shall include approximately 60 lb (27 kg) of additional material for the Department to conduct Hamburg wheel testing and approximately 80 lb (36 kg) of additional material for the Department to conduct I-FIT testing. Within two working days after sampling, the Contractor shall deliver prepared samples to the District laboratory for verification testing. The required number and size of prepared samples submitted for the Hamburg wheel and I-FIT testing shall be according to the "High ESAL - Required Samples for Verification Testing" table in Article 1030.05(d)(3) above."

PROTECTION OF DECORATIVE MATERIALS

The Contractor shall protect all existing and proposed decorative materials including brick pavers, special sidewalk, granite curb planters, light poles, etc. from JULIE paint marks. The Contractor shall use the joint meet process to provide detailed utility locating instructions for any underground locates in these areas.

The Contractor shall use appropriate means and methods to protect decorative materials from all construction activities. The Contractor shall be responsible for cleaning restoring, or replacing any damaged or defaced decorative materials as a result of this work as directed by the Engineer at no additional cost to the Contract.

PEDESTRIAN ACCESS DURING CONSTRUCTION

Description. The following special provision shall outline the requirements for pedestrian access during construction to ensure pedestrian mobility and pedestrian safety at all times.

Pedestrian Access Work Plan

When a Pedestrian Access Route (PAR) is temporarily closed by construction, alterations, maintenance operations, or other conditions, an alternate pedestrian access route (APAR) complying with PROWAG and sections 6D.01, 6D.02, and 6G.05 of the MUTCD shall be provided.

Before the Contractor may begin work for each stage, he/she must submit to the Engineer a detailed pedestrian access plan showing locations/sequence of work, how pedestrian access will be maintained, how businesses access will be maintained at all times, and how the below requirements are met.

The Engineer must approve the submitted pedestrian access plan before staged work may commence. In addition, the Contractor may be required to revise the pedestrian access plan as required by the Engineer based on actual pedestrian traffic patterns and conditions or scheduled events in the Business Districts. The Engineer reserves the right to reject or revise proposed pedestrian access plans if requirements are not met. No additional compensation shall be allowed for revisions or modifications to approved pedestrian access plans if deemed necessary by the Engineer for safety or public convenience.

Maintenance of a Clear and Accessible Pedestrian Corridor

The Contractor or permittee shall maintain an accessible corridor that provides at least one safe path of travel for all pedestrians on each side of Deerpath Road and through intersections at all times for the duration of the project. Entrances into buildings shall be maintained at all times unless approved by the Engineer and property owner.

1. Pedestrian corridor shall be a nominal width of 6’ whenever feasible, and shall conform to ADAAG guidelines. It shall not be less than 48” wide at single point of contact or obstruction.
2. Accessible pedestrian corridor shall connect with facilities throughout the project area.
3. Equipment, debris, construction materials or vehicles shall not obstruct the corridor.
4. Temporary closure of designated pedestrian routes and crossings shall be allowed only when flaggers are present and safely directing pedestrians around hazards.

Construction of Signposts, Barricades, and Fencing

Barricades that are impenetrable shall be used to separate pedestrians from hazards on all sides of excavations that may be exposed to pedestrians. The Contractor shall use materials and methods suitable to site conditions that shall be approved by the Engineer. Signs and fencing material shall not protrude into the clear pathway.

1. The Contractor shall use linking pedestrian barricades that must be approved by the Engineer prior to installation. Linking pedestrian barricades must be connected to each other to form a continuous pedestrian barrier. (Examples: TrafFix - ADA Wall, Crowd Control Warehouse - ADA Pedestrian Barricade, or Barrier Warehouse - Strongwall ADA Pedestrian Barricade).
2. The Contractor shall use jersey wall barriers (PCC or Water Filled Plastic) meeting NCHRP-350 requirements, to be approved by the Engineer, if any pedestrian access routes are adjacent to traffic lanes. Impact attenuators, if deemed necessary by the Engineer, shall be Test Level 2, and shall not be measured for payment.
3. Caution Tape shall NOT be used by itself to delineate the path of travel or create a barricade.
4. Fencing material requires a minimum 3’ height, solid, uninterrupted toe-board.
5. Signposts, scaffolding and fencing supports shall be placed entirely outside the pedestrian path of travel, minimum 4' wide and 80" high without obstruction.
6. Construction barriers shall be maintained in a sound, neat and clean condition.

Surfacing of Pedestrian Corridors

During construction, tripping hazards and barriers for people with mobility impairments must be removed to maintain an accessible pedestrian corridor.

1. Any change of level, which exceeds 1/4" height, must be beveled at 45º.
2. The Contractor shall utilize concrete, asphalt, plywood, or steel plates for the pedestrian corridor. Aggregate will NOT be allowed as a pedestrian corridor surface.
3. Closed trenches, temporary paving surfaces, walking surfaces, steel plates; etc. shall have a smoothly finished, firm walking surface made even with surrounding walkways.
4. Aisle or loading area adjacent to a parking space is part of the pedestrian corridor.

Temporary Ramps Conforming to Accessibility Standards

The Contractor or permittee shall install and maintain temporary concrete, asphalt, wood, or prefabricated aluminum ramps to provide a safe path of travel for mobility-impaired pedestrians at all locations where ramps have been temporarily removed OR needed to route pedestrians.

1. Temporary ramps shall be constructed so installation and removal will not damage existing pavement, curb and/or gutter.
2. Ramps shall have a minimum 4' wide walking surface and a slope not to exceed 8.3%.
3. Ramps shall snugly meet existing surfaces without gaps.
4. When required for drainage, schedule 40 PVC pipe minimum 2" diameter shall be installed through ramp.
5. Transitions between ramps and the street surface shall be smooth such that no lip exists at the base of the ramp.
6. Sides of a ramp shall be protected where there is any drop-off.

Identification of Safe Path of Travel

If a portion of the pedestrian way is rerouted due to construction, the path of travel shall be clearly defined with barricades and signage. The Engineer shall review any pedestrian access limitations and notification requirements for pedestrians with mobility or vision impairments.

1. Paths of travel that DO NOT continue to the next corner or to a safe crosswalk shall be closed to pedestrian traffic. Signs must be posted stating the sidewalk is closed and detour pedestrians to accessible sidewalk.
2. Pedestrian access corridors shall be clearly delineated with barricades, as approved by the Engineer.
3. If a crosswalk is closed, curb ramps leading into that crosswalk must be barricaded in such a manner that walkways that are not closed remain accessible to use.
4. Caution Tape shall NOT be used by itself to delineate the path of travel or create a barricade.
5. The contractor shall provide flaggers as directed by the Engineer to ensure uninterrupted access to existing facilities is maintained during construction activities.

Temporary Information Signing

Wayfinding Signage may be required to identify parking locations, loading zones, pickup/dropoff areas, and pedestrian access routes to commercial, retail, parking, and residential entities impacted by staged construction. Wayfinding signage shall be approved and installed according to TEMPORARY INFORMATION SIGNING special provision, the MUTCD, and as directed by the Engineer prior to implementation of a staged construction access plan. The below sign is anticipated to be used during construction. The number and locations shall be determined by the Engineer. The Contractor shall coordinate with the Engineer for more information on text, colors, and graphics of proposed temporary wayfinding signs.

Businesses Open During Construction 30” x 30”

Wayfinding Signage will be measured for payment as TEMPORARY INFORMATION SIGNING. All other MUTCD signs deemed necessary by the Engineer, such as R9-9, R9-10, R9-11, and R9-11a, will not be measured for payment, but shall be included in the cost of TRAFFIC CONTROL AND PROTECTION, SPECIAL.

Restoration of Pedestrian Routes

After construction, the site shall be returned to its former condition, or new condition as required.

1. Temporary ramps shall be removed as soon as construction and approval of permanent ramp is completed.
2. After work is completed, surface of the pedestrian path shall be restored free from all ridges, gaps, bumps and rough edges.
3. Construction that affects existing curb ramps shall include replacement or repair of the curb ramp to meet current City standards.

Basis of Payment. This work shall not be measured for payment, but shall be included in the cost of TRAFFIC CONTROL AND PROTECTION (SPECIAL). This shall include all labor, materials, equipment, coordination, and staging plan submittals to complete this work as shown or as directed by the Engineer.

SCHEDULED EVENTS AND REQUIREMENTS

1. *Lake Forest Day – August 5th and August 6th, 2025*

    - All of the sidewalks and corner curb ramps at Deerpath Road and Oakwood Avenue and Deerpath Road and Western Avenue intersections shall be open and accessible by 3 pm the day before the event and the intersections, sidewalks, and streets within the project limits shall be swept clean. No work within 100 feet of Deerpath Road and Oakwood Avenue and Deerpath Road and Western Avenue intersections will be allowed on the days of the event. Oakwood Avenue and Western Avenue shall be opened to local traffic on the days of the event.

The Contractor shall modify his/her work plans as directed by the Engineer if any additional scheduled events not listed above occur. No additional compensation shall be allowed for accommodating events not listed above. The Engineer shall have full authority to stop work when any hazardous conditions are present. The Contractor shall not begin any work until the Engineer deems the conditions are safe to pedestrians and or vehicles and gives permission to the Contractor to resume work. No compensation will be made for any delays from work stoppage caused by hazardous conditions.

Basis of Payment. This work shall not be measured for payment, but shall be included in the cost of TRAFFIC CONTROL AND PROTECTION (SPECIAL). This shall include all labor, materials, equipment, coordination, and staging plan submittals to complete this work as shown or as directed by the Engineer.

TEMPORARY RAMP, SPECIAL (PEDESTRIAN ACCESS)

Description. This item shall consist of providing a secure and safe temporary ramp for pedestrian access to properties, such as businesses, as required and as directed by the Engineer, during construction. Business access shall be maintained at all times during construction, unless otherwise approved by the Engineer.

General. The temporary ramp shall be wood frame and plywood constructed or approved prefabricated aluminum or steel. The Contractor must provide protection from any drop off adjacent to the temporary access. The temporary access shall meet all ADA requirements with regard to dimensions, longitudinal and transverse grades, skid resistance, handrails, and all other applicable criteria.

The Contractor shall submit shop drawings for wood or prefabricated ramps to the Engineer for review and approval prior to construction. The Contractor will be responsible for the observation and protection of temporary access locations at all times throughout the duration of the project: Modification to installed temporary bridges may be required due to changing conditions during construction. No additional compensation shall be allowed for any modifications to installed temporary ramps deemed necessary by the Engineer. The Contractor shall also be responsible for the installation and maintenance of signage and other items to provide safe pedestrian access.

All work involving pedestrian access shall be governed by the following requirements:

1. Work shall be planned to reduce disruption to the commercial business or public seeking to access these businesses.

2. Construction activities shall not block pedestrian access to adjacent store fronts during normal business hours.

3. The Contractor shall notify affected businesses 48 hours in advance of sidewalk removal.

4. At no time shall access to emergency or fire exits be disrupted without prior approval from the City of Lake Forest Fire Department. Alternative access points will need to be coordinated and accommodated with all commercial buildings and the Fire Department prior to the approval of a temporary ramp structure and subsequent construction activities.

Method of Measurement. This work shall be measured for payment on a per each basis for each entrance where a temporary ramp is utilized during construction, as required and as directed by the Engineer.

Basis of Payment. This work shall be paid for under the contract unit price per each for TEMPORARY RAMP, SPECIAL installed and maintained at each commercial building location, which shall include all labor, materials and equipment to install, maintain, modify, and remove the temporary ramp. No further compensation will be made for coordination and temporary ramp plan submittals. No cause for delay will be warranted for the work included in approved temporary ramp plans.

MAINTENANCE OF EXISTING RECEPTACLES

The Contractor shall be responsible for maintaining access to the existing trash and recycling receptacles throughout the work zone. Receptacles should remain easily accessible to the City of Lake Forest crews as well as pedestrian traffic.

Once the proposed receptacles are installed and accessible, the Contractor shall coordinate with the City to determine which existing receptacles are salvageable. Salvageable receptacles shall be delivered to the City Public Works facility or other location as directed by the Engineer. Non-salvageable receptacles shall be disposed of by the Contractor off-site.

This work will not be measured for payment but will be included in the cost of various removal items in the contract.

DELIVERIES AND GARBAGE COLLECTION

The Contractor shall coordinate with the Engineer to ensure deliveries and garbage collection services will be accommodated during construction. The Contractor shall provide access to Deerpath Road for delivery and garbage trucks during closures as required and as directed by the Engineer. The Contractor may propose alternate means and methods to accommodate these services, however, they must be approved by the Engineer.

No additional compensation will be allowed for labor, materials, or equipment necessary to accommodate these services. No additional compensation will be allowed for any delays in work caused by accommodating these services.

POLICE, FIRE, AND AMBULANCE SERVICES

The Contractor shall coordinate with the Engineer to ensure police, fire, and ambulance services will be accommodated during construction. The Contractor shall provide access to Deerpath Road for emergency services during closures and at the end of each work day as required and as directed by the Engineer. The Contractor shall ensure there is a continuous hard surface and a minimum lane width of 12’ available for emergency vehicles at the end of each work day.

No additional compensation will be allowed for labor, materials, or equipment necessary to accommodate emergency services. No additional compensation will be allowed for any delays in work caused by accommodating emergency services.

CONTRACTOR PARKING RESTRICTIONS

The Contractor’s and Sub-Contractor’s employees shall not, at any time, park in any on street parking spaces that are available to the public during the project. The Contractor’s and Sub-Contractor’s employees shall be limited to parking in adjacent parking lots or within the designated roadway closures or as approved by the City.

MATERIAL STORAGE

The Contractor may utilize the southeast corner of the Oakwood Avenue parking lot, owned by the City, as a material and equipment storage area. Final limits of the staging area shall be approved by the Engineer and City.

The Contractor shall access the parking lot only from the south entrance and the north entrance shall be reserved for the public. The Contractor shall take protective measures to prevent damage to the existing parking lot surface. If damaged by improper material or equipment storage, the parking lot shall be restored to existing conditions to the satisfaction of the Engineer at no additional cost to the contract.

The Contractor shall maintain a clean and organized jobsite. All spoils and construction debris that are not removed by the end of the work day shall be blocked off by barricades or fencing, to be approved by the Engineer, to ensure pedestrian safety.

All construction material shall be neatly stored and protected per manufacturers' recommendations. All construction material shall be blocked off by barricades or fencing, to be approved by the Engineer, at the end of the work day to ensure pedestrian safety. No material shall be stored within the Railroad right-of-way.

No additional compensation will be allowed for labor, materials, or equipment necessary to complete this work.

RAILROAD FLAGGERS AND MAINTENANCE PERMIT

It is the Contractor's sole responsibility to coordinate with the Union Pacific Railroad whenever construction activity is within 25 feet of the railroad right-of-way. The Contractor shall retain flagmen employed and designated by the Union Pacific Railroad to monitor on-coming train traffic, and advise Contractor personnel when activity on or near the railroad right-of-way may proceed. This item will be paid for according to Article 107.12 and will be reimbursed according to Article 109.05.

A maintenance permit is required by the Union Pacific Railroad. As part of the permit, the Contractor must complete and execute the Contractor Endorsement with Union Pacific Railroad.

In addition, the City of Lake Forest and the Contractor we will need to schedule a pre-construction meeting prior to starting the work. The purpose of meeting is discuss scope of work, railroad flagging, traffic control, and safety and badging requirements.

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

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

The following contract specific work areas shall be monitored by the Environmental Firm for soil contamination and workers protection.

Local PESA Site 18 (SB-3): Old National Bank, 241 E. Deerpath Road, Lake County.

- Depth interval 0 to 5 feet: Deerpath Rd STA12+69 to Deerpath Rd STA 13+17 CL to Project Limits RT. This material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: Staining and petroleum odors.

- Depth interval 0 to 5 feet: Deerpath Rd STA 13+17 to Deerpath Rd STA 14+11, Full Project Limits LT to Full Project Limits RT. This material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: Staining and petroleum odors.

Local PESA Site 15 (SB-4): Deerpath Wester Building, 293 E. Deerpath Road, Lake County.

- Depth interval 0 to 10 feet: Deerpath Rd STA 15+62 to Deerpath Rd STA 16+92, Full Project Limits LT to Full Project Limits RT. This material meets the criteria of and shall be managed in accordance with Article 669.05(b)(1). Contaminants of concern sampling parameters: pH.

Local PESA Site 14 (SB-5): Rosati's Pizza 630 N. Western Avenue, Lake County.

- Depth interval 0 to 10 feet: Deerpath Rd STA 16+92 to Union Pacific Railroad Right of Way, Full Project Limits LT to Full Project Limits RT. This material meets the criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: SVOCs.

Local PESA Site 13: United Pacific Railroad Corridor, No Applicable Address, Lake County.

- Depth interval 0 to 10 feet: Union Pacific Railroad Right of Way to Eastern extent of construction. Full Project Limits LT to Full Project Limits RT. This material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: Railroad ROW Risk Managed.

Local PESA Site 5 (SB-6): Mark Davids Designs, 266 E. Deerpath Road, Lake County.

- Depth interval 0 to 5 feet: Deerpath Rd STA 14+11 to Deerpath Rd STA 15+62, Full Project Limits LT to Full Project Limits RT. This material meets the criteria of and shall be managed in accordance with Article 669.05(b)(1). Contaminants of concern sampling parameters: pH.

Local PESA Site 9 (SB-7): Frank Swanton, 240 E. Deerpath Road, Lake County.

- Depth interval 0 to 10 feet: Deerpath Rd STA 12+29 to Deerpath Rd STA 13+17, CL to Full Project Limits LT. This material meets the criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: SVOCs.

Local PESA Site 10 and 11 (SB-8): City of Lake Forest, 501 N. Forest Drive and Lake Forest City Hall, Charging Station 220 E. Deerpath Road, Lake County.

- Depth interval 0 to 3.5 feet: Deerpath Rd STA 10+87 to Deerpath Rd STA 12+29, CL to Full Project Limits LT. This material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: SVOCs and pH.

- Depth interval 3.5 to 10 feet: Deerpath Rd STA 10+87 to Deerpath Rd STA 12+29, CL to Full Project Limits LT. This material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameter: Petroleum odors.

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 PESA Sites**: None**

REMOVE EXISTING BRICK PAVERS

Description. This work shall consist of the complete removal and disposal of existing brick pavers and brick paver base courses, if applicable, in sidewalk, driveway, and pavement locations shown in the plans and as directed by the Engineer. Removal of the existing brick shall be performed in accordance with the applicable portions of Section 440 of the Standard Specifications.

Method of Measurement. This work will be measured for payment per square foot of bricks removed.

Basis of Payment. This work shall paid for at the contract unit price per square foot for REMOVE EXISTING BRICK PAVERS. This price shall include all necessary labor, material and equipment necessary to complete the work.

SAW CUTS

Any and all saw cuts necessary to complete the work as shown in the plans or as directed by the Engineer shall not be measured for payment but shall be considered included in the cost of the various removal items and the various proposed roadway items.

SHRUB REMOVAL

Description. This work shall consists of the removal and disposal of existing shrubs within the right-of-way, or within the limits of construction in accordance with the details shown on the Plans and Section 201 of the Standard Specifications for Road and Bridge Construction.

Shrub removal shall be to 18" below ground surface and the contractor shall carefully work around the existing irrigation system without damaging it. Any damage to the irrigation system caused by the Contractor shall be replaced in kind to the satisfaction of the Engineer at no additional cost to the contract.

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

Basis of Payment. This item shall be paid for at the contract unit price per EACH for SHRUB REMOVAL, which shall include all labor, equipment, and materials necessary to perform the work as herein specified.

TREE REMOVAL (UNDER 6 UNITS DIAMETER)

Description. This work shall consists of the removal and disposal of existing trees within the right-of-way, or within the limits of construction in accordance with the details shown on the Plans and Section 201 of the Standard Specifications for Road and Bridge Construction with the following revisions:

Trees between 2 and 6 units diameter will be considered a tree, instead of being incidental to construction and shall be removed in accordance with aforementioned Section 201. Any saplings under 2 units diameter will be considered incidental. Tree removal shall be to 18" below ground surface. Stump grinding is allowed.

Method of Measurement. This work will be measured for payment per unit diameter of tree removed.

Basis of Payment. This item shall be paid for at the contract unit price per unit diameter for TREE REMOVAL (6 TO 15 UNITS DIAMETER) and TREE REMOVAL (UNDER 6 UNITS DIAMETER), which shall include all labor, equipment, and materials necessary to perform the work as herein specified. Any saplings under 2 units diameter will be considered incidental to the cost of construction. Stump grinding shall be considered included in the cost of TREE REMOVAL.

FILLING EXISTING VAULT

Description. Within the project, there are two (2) properties with known underground vaults beneath the sidewalks which have access to basements on private property. This work shall include blocking the existing foundation wall in a permanent manner satisfactory to the Engineer and filling the vault void with CA-6 backfill. Existing vault walls under the proposed sidewalk shall be removed to a depth of 3' below the finished sidewalk surface.

Construction Requirements. The Contractor shall refer to Areas 5 and 6 in the ground penetrating radar survey for more information on the two sidewalk vaults. The Contractor shall coordinate with the property owner to gain access to the sidewalk vaults to inspect and verify existing conditions and dimensions.

The Contractor shall provide structural design details, calculations, and specifications for a system to accomplish the work as shown in the plan details. The structural details and calculations shall be sealed by a licensed structural engineer and submitted to the Engineer for review and approval. This work shall be in accordance with Division 500 and Sections 581 and 593 of the SSRBC.

The Contractor shall provide a minimum of two week advance notice to affected businesses and property owner prior to vaulted sidewalk removal operations commencing.

Method of Measurement. This work will be measured for payment per cubic yard of sidewalk vault filled.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard for FILLING EXISTING VAULT, which price shall include all labor, material, and equipment necessary to complete the work as specified herein.

HOT-MIX ASPHALT SURFACE REMOVAL, VARIABLE DEPTH

Description. This work shall consist of milling the existing hot mix asphalt pavement at varying depths as indicated on the plans. This work shall be in accordance with Section 440 of the Standard Specifications.

The Contractor shall mill to depths indicated at the proposed edge of pavements and centerline as shown in the cross-sections of the plans, or as approved by the Engineer. No additional payment will be made for an increase in POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, IL-4.75, N50 quantity due to milling depths greater than what is shown on the plans.

Variable depth milling shall include surface removal of the PCC Class C Patches installed as part of the City's local advance water main contract. This work shall be included in the cost of HOT-MIX ASPHALT SURFACE REMOVAL (VARIABLE DEPTH).

Method of Measurement. This work will be measured for payment per square yard of pavement milled.

Basis of Payment. This work will be paid for at the contract unit price per square yard for HOT-MIX ASPHALT SURFACE REMOVAL, VARIABLE DEPTH.

DRAINAGE STRUCTURE TO BE REMOVED

Description. This work consists of furnishing equipment, labor, tools, and materials necessary for the removal and satisfactory disposal of existing inlets, catch basins, and manholes, at the locations shown on the plans or as directed by the Engineer and in accordance with Section 605 of the Standard Specifications.

Existing storm sewer connected to drainage structures proposed to be removed shall be abandoned in accordance with the ABANDON AND FILL EXISTING STORM SEWER special provision.

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

Basis of Payment. This item shall be paid for at the contract unit price per each for DRAINAGE STRUCTURE TO BE REMOVED. This cost shall include removal and disposal of the existing drainage structure and subgrade materials to the final subgrade elevation required to construct the sub-base. Trench backfill required will not be measured for payment but shall be included in the cost of this item.

ABANDON AND FILL EXISTING STORM SEWER

Description. This work shall consist of abandoning in-place the existing storm sewer in the location shown on the plans and filling with CLSM per the applicable portions Article 593 of the standard specifications.

Construction Requirements. Work shall consist of cutting the existing storm sewer and filling the pipe with CLSM to the satisfaction of the Engineer. Upon approval by the Engineer, both cut ends shall be brick and mortared and capped.

Method of Measurement. This work will be measured for payment, complete in place per foot.

Basis of Payment. This work will be paid for at the contract unit price per foot for ABANDON AND FILL EXISTING STORM and which price shall include all labor, materials, and equipment necessary to complete the work as specified herein.

FRAME AND LIDS TYPE 1, OPEN/CLOSED

Description. This work shall consist of furnishing and installing lids on proposed drainage and utility frames in accordance with Section 604 of the Standard Specifications and as revised or amended in this special provision.

Materials. Type 1 open lids shall be according to Article 604.02 and Standard Detail 604001 except open lids shall have a radial opening pattern unless in an ADA ramp area. The Contractor shall submit shop drawings of lids to the Engineer for approval.

Method of Measurement. This work will not be measured for payment. FRAME AND LIDS, TYPE 1 OPEN shall be included in the contract unit price for the proposed drainage structure or manhole.

FRAMES AND LIDS TO BE ADJUSTED (SPECIAL)

Description. This work shall consist of adjusting frame and lids of various structure types throughout the project limits located within the resurfacing sections according to District One Detail BD-8 “Frames and Lids Adjustment with Milling”.

Add the following to BD-8:
All sanitary structures to be adjusted shall be fitted with an internal or external chimney seal, which shall be included in the cost of the proposed adjustment item. Existing chimney seals may be adjusted and reused if considered suitable for reuse by the Engineer.

Method of Measurement. This work will be measured per each for frames and lids adjusted with milling.

Basis of Payment. This work will be paid for at the contract unit price per each for FRAMES AND LIDS TO BE ADJSUTED (SPECIAL), which price shall include all labor, equipment, and material, including new chimney seals where required, to complete the work as specified in the plans, specifications, and District One Detail BD-8.

CONNECTION TO EXISTING DRAINAGE STRUCTURE

Description. This work shall consist of making a connection to an existing structure at locations shown on the plans in accordance with the applicable portions of Section 602 and 550 of the Standard Specifications.

Construction Requirements. The Contractor shall core cut the existing structure to the size necessary to insert a flexible manhole connector meeting ASTM C-923 for the connecting pipe. The annular space between the connecting pipe and the flexible manhole connector shall be filled with hydraulic cement up to the centerline of the pipe. Non-shrink grout may be used to fill the annular space for ductile iron, cast iron, and reinforced concrete pipes.

The Contractor shall notify the Engineer when the existing structure cannot be cored due to exiting openings or conditions. The Contractor shall saw cut and remove portions of the existing structure to provide a minimum of 6-inches of clearance on all sides of the proposed pipe. The Contractor shall install a waterstop grout ring according to the manufacturer’s instructions. The waterstop grout ring shall be approved by the Engineer. The Contractor shall frame and pour Portland cement concrete to completely fill the void and a minimum of 6” outside of the wall of the structure.

Basis of Payment. This work will be paid for at the contract unit price per each for CONNECTION TO EXISTING DRAINAGE STRUCTURE which price shall be payment in full for all labor, equipment and material necessary to render the connection complete.

PIPE UNDERDRAIN CONNECTIONS

Description. This work shall consist of connecting proposed pipe underdrains to existing or proposed drainage structures as shown in the plans.

Construction Requirements. The proposed pipe underdrain connections shall be accomplished by coring the existing or proposed drainage structure. The connection shall be brick and mortared to the satisfaction of the Engineer.

Method of Measurement and Basis of Payment. This work will be not be measured for payment but shall be included in the cost of PIPE UNDERDRAINS, TYPE 2, 4".

TRENCH DRAIN, SPECIAL

Description. Work under this item shall be performed according to all applicable sections of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified. This work shall consist of installing a special trench drain system as defined by the limits indicated in the plans and provided details.

Materials. The grate and curb opening material must be gray iron castings conforming to ASTM A48, class 35B or better, and Article 1006.14 of the Standard Specifications. The frame shall be uncoated A36 mild steel.

1. **Trench Drain:** Trench Drain shall be consist of a steel frame, cast iron grate, and cast iron curb opening per the specifications shown below. See plans for details and locations.

    a. **Type:** Custom T-12C Frame with Metro Style Grate and Custom C-1246T Curb Openings as manufactured by Evergrate, Contact: Ben Hoe, bhoe@jrhoe.com, 606.670.8828

        i. **Size:** 12" Grate, 6" Frame Height, Length Varies
        ii. **Style**: Metro
        iii. **Finish:** Uncoated
        iv. **Color:** Natural Patina

Construction Requirements. The custom frame and curb openings shall be embedded into the PCC Base Course using the provided welded C-channel and concrete embed lug system at the lines and grades as shown in the plans and details. Both sides of the trench drain system shall be bound by STONE CURB as detailed in the plans.

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

Basis of Payment. This work will be paid for at the contract unit price per foot for TRENCH DRAIN, SPECIAL, which price shall include all labor, material, and equipment required to complete the work as specified herein.

TRENCH DRAIN

Description. This work shall consist of furnishing and installing trench drains at locations shown in the plans and as directed by the Engineer. This work shall include all materials needed for the connection to the downstream curb catch basin.

Materials Trench Drains shall be made of a lightweight channel drain system with interlocking joints and a modular design with a capacity to handle commercial vehicle loads.

Trench Drains shall have a raw ductile or cast iron grate, 8 inches in width, with a load class C to handle commercial traffic. The grate shall be heel proof, the maximum grate hole size in least dimension shall be 0.25 inch. Grate openings shall have a longitudinal design appearance.

The trench drain channels shall be connected to an in-line plastic or polymer concrete catch basin at the downstream end of the system with a minimum 4" outlet. The catch basin shall have the same width and be visually indistinguishable from the trench run.

Construction Requirements. Trench drains shall be installed per the manufacturer's guidelines and specifications and shall neatly butt up against the back of the masonry wall. Shop drawings shall be submitted to the Engineer for review and approval.

Method of Measurement. This item shall be measured in place per foot.

Basis of Payment. This work will be paid for at the contract unit price per foot for TRENCH DRAIN, which price shall include all labor, material, and equipment required to complete the work as specified herein.

MAINTENANCE OF DRAINAGE

Description. This work shall consist of maintenance of drainage throughout the project limits. When existing drainage facilities are disturbed, the Contractor shall provide and maintain temporary outlets and connections for all private or public drains, sewers, or structures. The Contractor shall provide facilities to take in all storm water which will be received by these drains and sewers and discharge the same.

The Contractor shall provide and maintain an efficient pumping plant, if necessary, temporary ditches, outlets, and connections. He/she should be prepared at all times to dispose of the water received by these ditches, drains and sewers from temporary connections until such time as the permanent connections with ditches or sewers are built and in service.

Basis of Payment. This work shall be in accordance with Lake County and local municipality guidelines and will not be paid for separately, but shall be included in the various drainage items in the contract.

TEST HOLE

Description. This work shall consist of constructing a test hole for the purpose of locating existing utility facilities. The test hole shall be constructed at the locations indicated in the plans or as directed by the Engineer.

The depth of the test hole will be variable. The width of the trench shall be sufficient to allow proper investigation of the utility. After the test hole has been inspected by the Engineer, the excavated material shall disposed of offsite. The test hole shall be backfilled with trench backfill in a manner satisfactory to the Engineer. Any excess materials shall be disposed of according to Article 202.03 of the Standard Specifications.

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

Basis of Payment. This work will be paid for at the contract unit price per EACH for TEST HOLE.

DOMESTIC WATER SERVICE BOXES TO BE ADJUSTED

Description. This work shall consist of adjusting domestic water service boxes to match the proposed finished grade as directed by the Engineer, in accordance with Section 565 of the Standard Specifications and the Standard Specifications for Water and Sewer Construction in Illinois. Top sections, extensions and/or caps compatible with the existing box, may be required to adjust the box to the final grade. Replacement of damaged caps shall be included in the cost of this item.

For boxes which are located in sidewalks or driveways constructed as part of this improvement, the contractor is responsible for confirming all caps and bolts can be opened after the concrete or asphalt has been placed.

For boxes located within brick paver areas, the box shall be fully supported by PCC or non-shrink mortar between the PCC base course and the bottom of the lid to prevent settlement.

The Contractor shall confirm each roundway is keyable. If the Contractor cannot key the roundway, he shall notify the Engineer. After the work has been completed, the Contractor shall open each box in the presence of the Engineer.

Method of Measurement. This work will be measured for payment per each water service box adjusted.

Basis of Payment. This work will be paid for at the contract unit price per each for DOMESTIC WATER SERVICE BOXES TO BE ADJUSTED which shall be payment in full for all labor, equipment, and materials to perform the work as specified herein.

IRRIGATION SYSTEM

Description. This work includes installation of the irrigation system as indicated on the drawings and as specified herein.

Contractor shall submit required shop drawings for approval by the Engineer prior to commencement of any work on this item that has changed from the original design.

This work shall include all labor, material, equipment, tools, transportation, permits, and services to construct the irrigation system as designed and per approved shop drawings, in accordance with sections 561, 562, 563, and 565 of the Standard Specification for Road and Bridge Construction and the Standard Construction Details, except as herein modified.

Sprinkler lines shown on the drawings are essentially diagrammatic. Spacing of the sprinkler heads or quick coupling valves are shown on the drawings and shall be exceeded only with the permission of the Engineer.

The irrigation system shall include a controlled valve distribution system. Contractor shall furnish and install equipment as common in the industry, associated piping and incidentals as shown and specified.

The system shall be installed such that water at no time run off or spray onto the pavement. Contractor is responsible for field adjustments and final spray head nozzles selections.

This work shall include monitoring and adjusting the completed system to assure healthy plant development.

Water Services.
Water Service Components must be installed prior to the installation of the irrigation system.

The Water Service Components to be provided by others are shown on the plans. Contractor is to verify existing water pressure at the main and notify the Engineer in writing if it is less than 42 psi static pressure.

The locations of Water Service Components are shown on the plans schematically. The location of the Water Service Components will need to be verified in the field.

Codes and Standards.
Codes: All plumbing work shall be installed within applicable provisions of the Lake Forest building codes.

All devices and their installation must be in accordance with the Lake Forest plumbing Code which incorporates Illinois Plumbing Code 2004 and Chicago Plumbing Code 2003.

Standards: Items listed to conform to ASTM, ANSI, or manufactures recommendations, for installation.

Any permits for the installation or construction of the work included under this contract which are required by any of the legally constituted authorities having jurisdiction, shall be obtained and paid for by the Contractor, each at the proper time. He shall also arrange for and pay all costs concerning any inspections and examinations required by these authorities.

In all cases where inspection of the sprinkler system work is required and/or where portions of the work are specified to be performed under the direction and/inspection of the Engineer, the Contractor shall notify the Engineer at least 72 hours in advance of the time and such inspection and/or direction is required.

Any necessary re-excavation or alterations to the system needed because of failure of the Contractor to have the required inspections, in the opinion of the Engineer, shall be performed at the "Contractor's" own expense.

Submittals.
Any required shop drawings for design changes shall be prepared by the Contractor. Submit drawings unless directed otherwise by the Engineer.

Material Sample List: Include backflow device, valves, sprinklers, controllers, enclosures, wire, wire connectors, pipe, fittings, valve boxes, swing joints and quick couplers to be used on the project prior to purchasing materials. Quantities of material need not be included. Submit paint sample chips for approval on the irrigation enclosure and RPZ/Meter enclosure.

Manufacturer's Data: Submit manufacturer's catalog cuts, specifications, and operating instructions for the equipment mentioned above and equipment shown on the materials list.

Project Record (As-Built) Drawings.
The Contractor is to provide the Engineer a scaled drawing of the completed field "As-Built" of the system.

All components of the system are to be drawn and referenced to two fixed locations on the site.

Components of the system but not limited to, sprinkler heads, electric valves, isolation valves, all piping, quick couplers, pipe sizing, grounding, and communication wire routes from the controller to the electric valves including common runs, grounding.

All piping shall be referenced in the trench for lengths of run, change in direction and distance and locations of all components referenced in feet from a two known points.

Two final hard copies of the overall drawings with dimension and notes are to be provided to the Engineer and one copy of the As-Built in AutoCAD 2018 digital format at the same scale drawing as provided to the Contractor. The Contractor is to provide individual controller sequencing sheets and as-builts in the original large scale format and 11x17". Both submittals shall be laminated and placed as directed by the Engineer.

Rules and Regulations.
Work and materials shall be in accordance with the latest edition of the National Electric Code, the Uniform Plumbing Code, and applicable laws and regulations of the governing authorities.

When the contract documents call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, provide the quality and size required by the contract documents.

Quality Assurance.
The Contractor shall maintain continuously a competent superintendent, satisfactory to the Engineer, with authority to act for him in all matters pertaining to the work. The Contractor shall coordinate his work with the other trades.

The Contractor shall confine his operations to the area to be improved and to the areas allotted him by the Engineer for material and equipment storage.

The Contractor shall have a minimum of 5 years' experience installing irrigation systems of comparable size and complexity. The contractor shall also have suitable financial status to meet obligations for this project.

The contractor is to be an Illinois Certified Irrigation Contractor(CIC). All plumbing components shall be installed by a licensed plumber.

Delivery, Storage and Handling.
Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.

Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends either threaded or plain. Store and handle materials to prevent damage and deterioration.

Provide secure, locked storage for valves, sprinkler heads and similar components that cannot be immediately replaced, to prevent installation delays.

Testing

Notify the landscape architect, Irrigation Consultant and City's representative three days in advance of testing.

Pipelines jointed with rubber gaskets or threaded connections may be subjected to a pressure test at any time after partial completion of backfill. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure at least 24 hours before testing.

Subsections of mainline pipe may be tested independently, subject to the review of the landscape architect/Irrigation consultant/City's representative.

Furnish clean, clear water, pumps, labor, fittings, and equipment necessary to conduct test or retests.

Volumetric Leakage Test:

-Cap riser of mainline components for volumetric pressure tests. Backfill to prevent pipe from moving under pressure. Expose coupling and fitting.

-Purge all air from the pipeline before test.

-Subject mainline pipe to 90 PSI. Maintain constant pressure. Test complete system under full line pressure. Pressure must be maintained with less than 1 lbs. loss in the system for 4 hours. If the system does not hold pressure, repair leaks and retest system until the system maintains pressure.

-All necessary testing equipment shall be furnished by CONTRACTOR.

-Cement or caulking to seal leaks is prohibited.

-Test piping prior to backfilling.

Operational Test:

-Activate each remote control valve in sequence from controller. The landscape architect/Irrigation Consultant will visually observe operation, water application patterns, and leakage.

-Replace defective remote control valve, solenoid, wiring, or appurtenance to correct operational deficiencies.

-Replace, adjust, or move water emission devices to correct operational or coverage deficiencies.

-Replace defective pipe, fitting, joint, valve, sprinkler, or appurtenance to correct leakage problems. Cement or caulking to seal leaks is prohibited.

-Repeat test(s) until each lateral passes all tests. Repeat tests, replace components, and correct deficiencies at no additional cost to the Contract.

Materials.

Manufacturers and Minimum Requirements.

Use materials that are new and without flaws or defects of any type, and which are the best of their class and kind. All material overages at the completion of the installation are the property of the Contractor and are to be removed from the site.

Each major component of equipment shall have manufacturer's name, address, catalog and serial number permanently attached in a conspicuous place.

The same brand or manufacturer shall be used for each specific application of valves, fittings, controls, and other equipment.

All materials shall be new and of the quality specified.

All equipment shall be listed, approved or rated by a nationally recognized testing and rating bureau of recognized manufacturer's association responsible for setting industry standards. All electrical equipment and apparatus shall be U.L. listed.

Acceptable irrigation manufacturers – as specified to be consistent with the City's previous systems.

It is the intent of this specification to establish a uniform equipment pallet for this and phases of the project. There are existing products that the City has indicated that there are certain products that they would like to maintain for consistency throughout the City. Substitutions will only be allowed by the Engineer.

The products are available through Reinders Irrigation, Site One, Ewing Irrigation and Central Irrigation. There may other distributors that the product is available through, but these are four options for contractors to price components out from.

Sleeves

HDPE Mainline Piping and Open Trench Sleeving: All sleeves shall be consistent with the mainline HDPE materials. Pipe sleeving shall be equal to twice that of the pipe being sleeved. Minimum wire sleeve shall be 2" or as indicated.

Pipe sizes referenced in the construction documents are minimum sizes and may be increased at the option of the Contractor at no cost to the Contract.

All pipes damaged or rejected because of defects shall be removed from the site at the time of said rejection.

Galvanized Sleeves under Deerpath Road

Galvanized steel pipe: Use Schedule 40 conforming to ASTM Standard A120. Use galvanized, threaded, standard weight malleable iron fittings.

Pipe sizes referenced in the construction documents are minimum sizes and may be increased at the option of the Contractor at no cost to the Contract.

All pipes damaged or rejected because of defects shall be removed from the site at the time of said rejection.

Polyethylene Piping

Polyethylene Pipe-PE Lateral Lines for Driplines headers and bubblers: All polyethylene (PE) pipe shall be virgin, high impact, polyethylene pipe, having minimum 100 PSI working pressure rating, HD100 SDR-15 PE23 and Psi that is NSF approved. All polyethylene pipe shall be continuously and permanently marked with manufacturer's name, material, size, and schedule of type.

Pipe shall conform to U.S. Department of Commerce Commercial Standard CS207-60, at latest revision. Material shall conform to all requirements of Commercial Standard (CS256-63), at latest revision.

Polyethylene insert pipe fittings shall be constructed of Schedule 80 and shall conform to ASTM D2466. Polyethylene pipe shall be secured to fitting by means of two(2) stainless steel hose clamps for fittings of 1.5" and 2". Fittings 1" and smaller shall use two (2) stainless steel crimp clamp or approved methods. Saddle fittings are not allowed.

If conditions are appropriate and rock free for vibratory plowing, the contractor may plow lateral piping, but must get the Engineer's approval prior to installation.

All mainlines and sleeves are to have a metallic tracer tape placed 4”-6” from the surface. The tape shall be 3” wide and indicate buried water below. Sleeves shall have tape brought into and looped in all valve boxes just below the surface at the ends for ease of locating or terminated in valve boxes.

Mainline HDPE Pipe and Fittings:
HDPE Pipe:

Pipe shall be manufactured from a PE 4710/PE 3608 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material will meet the specifications of ASTM D3350-05 with a cell classification of PE 345464C. Pipe shall be manufactured to the dimensions and requirements of ASTM F714. Pipe shall be DR 13.5. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All HDPE pipe shall be in straight lengths.

The supplier must be capable of manufacturing special fittings within its own manufacturing facility using a DataLogger.

The supplier must have the capability to train the contractor’s employees in butt fusion, electrofusion and socket fusion of HDPE pipe and fittings.

The supplier must be capable of providing a “Hot Line” phone number to assist in fusion and fusion equipment questions.

The supplier must be capable of providing a trained representative on site upon the request of the contractor, Engineer or consultant to address any problems that are encountered during the installation.

The supplier must be capable to rent and service fusion equipment.

The supplier must furnish a written 5 year limited Warranty for HDPE pipe and fittings.

Mainline Fittings – HDPE Pipe:

Butt Fusion Fittings - Fittings shall be DR 13.5 PE4710/3608 HDPE, Cell Classification of PE 345464C as determined by ASTM D3350-05. Butt Fusion Fittings shall have a manufacturing standard of ASTM D3261. Molded & fabricated fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans. Fabricated fittings are to be manufactured using a DataLogger. Reference to the DataLogger Quality Control records should be referenced from an indented stamp in each fusion bead of each fitting. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the quality control records.

Electrofusion– HDPE Pipe:

Electrofusion may be used where the butt fusion method cannot be used. Electrofusion couplings and fittings shall be PE4710/3608 HDPE, Cell Classification of PE 345464C as determined by ASTM D3350-05. Electrofusion couplings or fittings shall have a manufacturing standard of ASTM F1055. Couplings and fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans.

Pipe Inspection:

Inspect the pipe for defects before installation and fusion. Defective, damaged or unsound pipe will be rejected.

Protect plain ends of the pipe while inserting through sleeves. It is important that there are no scratches on the plain ends.

Record Butt Fusion-HDPE
All main line pipe joints are to be butt fused using McElroy fusion equipment. Each McElroy butt fusion unit shall be equipped with a McElroy DataLogger. The contractor shall label each butt fused joint so as it will be recorded on the DataLogger. The DataLogger shall record temperature, fusion pressure, with a graphic representation of the fusion cycle and shall be part of the quality control records. The DataLogger information shall be downloaded weekly and given to the irrigation consultant or Engineer for quality control records.

Contractor Qualification- HDPE
The contractor shall have successfully installed high density polyethylene pipe in golf/turf irrigation projects. Three references will be required to be submitted. These reference(s) must provide a satisfactory response or the experience will not be accepted.

If a contractor has not previously successfully installed HDPE pipe for golf/turf irrigation projects within the past five years, he will be required to have a qualified fusion technician from the pipe supplier for a period of three days (at the expense of the contractor). The technician must have been trained and have fusion certification. The training must have been completed within the past twelve months. A designated person or persons will be trained by the technician. The training will include the following:

- butt fusion
- socket fusion
- electrofusion
- If electro fused or side wall fusion is required, this training must also be complete while the technician is on site.

If the contractor has experience, provide the certification certificate of the individual that will be on-site at all time of the fusing.

Contractor Equipment Qualification- HDPE:
If the contractor owns butt fusion equipment, the equipment must be serviced prior to use for this project. The machine must be environmental friendly and satisfactory working order. The hydraulic system must be leak free. The pressure gage must be checked for accuracy and the thermometer checked.
If a butt fusion machine is rented, it must be rented from company that has a fusion machine service center or centers certified by the butt fusion machine manufacturer. The machine must arrive with certification that the pressure gage and heater thermometer were accurate when shipped.

HDPE Warranty:
The HDPE pipe is to be 5 Year Limited Warranty for Turf Irrigation Applications.

Seller to warrants that, for a period of five years from the date of final acceptance for turf application, it will replace any section of HDPE pipe product that is defective in materials or workmanship.

Contractor warrants that, for a period of five years from the date of final acceptance, it will re-fuse or repair a fusion connection that is defective in workmanship and promptly notifies Contractor of the defect and, allows the Contractor to inspect at the place of installation. If it is determined the fused connection to be defective, Contractor will re-fuse or repair the connection at the jobsite.

Specialized Pipe and Fittings:
All above grade pipe shall be copper pipe: Use Type "M/L/K" rigid conforming to ASTM Standard B88. Use wrought copper or cast bronze fitting, soldered or threaded per the installation details. Use 95% tin and 5% antimony solder.

Galvanized steel pipe: Use Schedule 40 conforming to ASTM Standard A120. Use galvanized, threaded, standard weight malleable iron fittings.

S-80 PVC fittings may be used and may be threaded or solvent weld. S-80 TOE nipples with S-80 couplings for plastic to metal connections. S-80 nipples cut in half will not be allowed.

Low-Density Polyethylene Hose: Use pipe specifically intended for use as a flexible swing joint, such as Funny Pipe or Swing Joint. Color: Black.

Use spiral barb fittings supplied by the same manufacturer as the hose.

Assemblies calling for threaded pipe connections shall use PVC Schedule 80 nipples and PVC Schedule 40 threaded fittings. Use only PTFE thread seal tape on plastic threads.

Irrigation Controller
Controller 1 – Hunter ICC2 Decoder Controller 2wire W/ EZ Decoders
Hunter ICC2 Decoder series controller with Stainless Steel wall mount.

All wiring to be run in electrical conduit to and from controller.

Controller is to be installed and grounded per manufacturer recommendations. Minimum grounding is detailed.

Power to the controllers will be provided by MEP. The contractor will be responsible for making the connection from the power drop to the controller. Provide and install a Paige Electric 250090LED lightning surge arrestor on the power to the controller.

Product manufacturer and local distributor are to provide base training for the operation of the controllers at no cost to the City. The distributor and contractor shall have complete knowledge of the operation and programming background of the Hunter ICC2 controller.

Use EZ-DECODER single station decoders.

Provide a Hunter ROAM XL kit to the Engineer and verify that it works.
Controller shall be a Stainless-Steel wall mount. Mount on the RPZ enclosure.

Controller is to be installed and grounded per manufacturer recommendations. Minimum grounding is detailed.

Power to the controllers will be provided by MEP. The contractor will be responsible for making the connection from the power drop to the controller. Provide and install a Paige Electric 250090LED lightning surge arrestor on the power to the controller.

Product manufacturer and local distributor are to provide base training for the operation of the controllers at no cost to the City. The distributor and contractor shall have complete knowledge of the operation and programming background of the Hunter ACC2 controller.

Provide a Roam XL receiver and verify that it works.

Electric Control Valves -
All valves shall be of globe or globe/angle configuration with a female pipe thread inlet and outlet connections. Diaphragm assembly shall be sonically welded to form a solid-piece component. The diaphragm shall be of rubber construction to retain flexibility and provide maximum sealing throughout its area.

Electric valves shall be 1" Hunter PGV 101G and 1.5" PGV 151 Globe electric valve series 24v latching solenoids. The valve shall have a manual flow control with a hand-operated, rising-type flow control stem with control wheel/handle and an internal manual bleed assembly. Size per plan.

All parts shall be serviceable without removing valve from line. Valve may be installed at any angle without affecting valve operation. The standard solenoid shall be equipped with a 24v latching solenoid for use with 120v controllers. The solenoid shall be an encapsulated, one-piece unit with captive plunger. It shall be equipped with manual internal bleed capability to release the upper chamber water to the downstream piping, allowing the valve to open.

22" solenoid lead wires shall be attached to a 24v solenoid with waterproof molded coil capable of being removed by turning coil. Valve shall be held normally closed by internal water pressure with manual bleed screw.

The legend and flow arrow shall be applied at all valve locations. Valve numbering shall be located so as to be conspicuous and legible. The controller and valve numbering can be engraved in black on a yellow plastic tag. The tag size shall be standard size of 2.25" x 2.66".

Bubblers in Tree Pits
The spray head sprinklers shall be a Hunter PROS-PRS30 shrub adapter series. Sprinkler shall be mounted just above the final finish grade.
The bubbler is to be attached to a 6" plastic stake or longer with zip ties for stability. Nozzles shall be Hunter MSBN-10F 1 gpm full circle bubbler.

Sprinkler heads and bubblers shall be mounted on funny/flex pipe flexible connection. Maximum funny pipe length to be 18". S-80 insert tees are to be used on all lateral fittings connecting the head to the pipe. Saddles will not be allowed.

Sprinkler Bubbler Heads in planter
The spray head sprinklers shall be a 6" Hunter PROS-PRS30-CV series, 12" riser spray head. Sprinkler shall be mounted flush with final finish grade.

Retraction shall be achieved by a heavy-duty stainless steel retraction spring. Sprinkler shall have a riser seal and a wiper. Sprinkler housing shall be of high impact molded plastic. Sprinkler shall have a large strainer so as to prevent nozzle clogging. Sprinkler shall be constructed such that it is serviceable from top in that drive assembly, screen, and all internal components are accessible throughout top of sprinkler without disturbing case installation. The sprinkler shall have a built-in pressure regulation device to regulate nozzle pressure regardless of the inlet pressure. The sprinkler shall have a drain check valve for up to 14 feet of elevation change.

Type and location of nozzles shall be Hunter MSBN-10F 1 gpm full circle bubbler.

Isolation Valves -HDPE Main Lines:
Isolation valves 2" shall be constructed of 304 stainless steel. Valve cross handle shall be constructed of 304 stainless steel. Valve mechanism and hardware shall be made of 100% 304-series stainless steel. The valve stem shall be fine threaded stainless steel, O-ring sealed for ease of operation. Valve outlet shall be FIPT. All valves shall have a S-80 union on both ends of the valve. Valve shall be made by LEEMCO.

Drip Irrigation Components

Drip Zones – Slotted Sleeving Pipe:

The external pipe sleeve shall be 3" ADS 3000 triple wall with 1/8" wide x 1½" long slits cut every 2" on center as available from a local ADS representative, or at www.adspipe.com. The ends shall use a 3" long sweep 90 with a minimum of 13" radius. Parallel row spacing shall be approximately 36" on center. Minor adjustments will be needed to avoid structures or to enter and exist tree pit areas. PVC short radius sweeps will not be allowed.

You will experience that the slotted pipe will bend and most likely make the curve, but if the curve is too tight, use the long sweep ell indicated above.

Drip Zones – Pipe Sleeve Fabric:

The pipe is to be in a 3" pipe sleeve by Drain EEZ sleeve by TJ Christy's. The sock shall be a non-woven geotextile produced by needle punching together 100% polypropylene staple fibers in a random network to form a stable fabric. The fibers are to be resistant to UV light deterioration and are to be inert to soil chemicals. The fabric shall not be biodegradable.

Drip Zone Drip line-

All drip line shall be pressure compensating drip line. The emitter shall be welded to the inside of the piping and have checks.

The drip line shall have factory installed inline emitters spaced every 12".

The flow rate from the emitter shall be .60 gallons per hour. The drip line shall be Hunter PLD-06-12 tubing.

Drip line shall be used in the general engineered soils in slotted pipe areas and 1" HDPE lateral pipe shall be used in the sleeves from one valve box manifold to the other.

Drip line Fittings-

Fittings used for the drip line shall be consistent with the pipe diameter and follow manufactures recommendations. Use Hunter PLD-AVR air relief/vacuum valve at the highest tree pit opening. Use Hunter PLD-BV fitting for manual flush valves, locate in tree pit opening at end of runs.

Drip Zone Electric Valve Assembly-

Soils drip zones shall all use a 1" zone kit.

All valves shall be of globe configuration with a female pipe thread inlet and outlet connections. Diaphragm assembly shall be sonically welded to form a solid-piece component. The diaphragm shall be of rubber construction to retain flexibility and provide maximum sealing throughout its area.
Electric valves shall be 1"and HUNTER ICZ-101-LF-40 electric valve assembly series. The valve shall have a manual flow control with a hand-operated, rising-type flow control stem with control wheel/handle and an internal manual bleed assembly. Size per plan.

All parts shall be serviceable without removing valve from line. Valve may be installed at any angle without affecting valve operation.

22" solenoid lead wires shall be attached to a 24 VAC solenoid with waterproof molded coil capable of being removed by turning coil. Valve shall be held normally closed by internal water pressure with manual bleed screw.

The assembly shall have a wye strainer with a 150 mesh screen. The assembly shall also have a pressure regulator device to regulate the pressure at 40psi

The legend and flow arrow shall be applied at all valve locations. Valve numbering shall be located so as to be conspicuous and legible. The controller and valve numbering can be engraved in black on a yellow plastic tag. The tag size shall be standard size of 2.25" x 2.66".

Solvent Weld Fittings.

Solvent weld PVC fittings shall be Schedule 40, ASTM D-2466 and ASTM D-1784. PVC Schedule-40 fittings shall be produced from PVC Type 1, Cell Classification 1245B. All solvents and cements shall be that recommended by the fittings manufacturer.

S-80 PVC fittings may be used and may be threaded or solvent weld. S-80 TOE Nipples with S-80 couplings for plastic to metal connections. (S-80 nipples cut in half will not be allowed)

24 v Control Wiring.
Use American Wire Gage #14 AWG standard direct burial wire. All signal wire shall include a solid copper conductor and polyethylene (PE) or PVC insulation. It shall be rated for 600 volts. All common wires shall be #14 AWG direct bury.

Color, Wire color shall be continuous over its entire length. See drawing for color coding of control wire.

24v Splices
In ground wire connections shall be rated at 600 volts and UL listed under UL486D. Wire connections shall include gel filled tubes that compress the wire insulation when closed to provide strain relief on the wire connection inside the tube. All wire splices shall be made in valve boxes, at controller, or at valves.

Wire markers
Pre-numbered or labeled with indelible non-fading ink, made of permanent, non-fading material.

All wiring to be installed following existing local and state codes.

Two Wire Control path
The 2wire decoder wire shall be Hunter twisted pair ID1YLW #14ga yellow jacketed wire bundle

Color: Wire color shall be continuous over its entire length. See drawing for color coding of control wire.

Splices: In ground wire connections shall be rated at 600 volts and UL listed under UL486D. Wire connections shall include gel filled tubes that compress the wire insulation when closed to provide strain relief on the wire connection inside the tube. All wire splices shall be made in valve boxes, at controller, or at valves.

Wire markers: pre-numbered or labeled with indelible non-fading ink, made of permanent, non-fading material.

All wiring to be installed following existing local and state codes.

Tracer Wire
Use American Wire Gage #14 standard direct burial wire. All signal wire shall include a solid copper conductor and polyethylene (PE) or PVC insulation. It shall be rated for 600 volts.

A #14 tracer wire shall be installed on all mainline and lateral line runs beginning at the electric valve through the main and dripline in slotted pipe. Label all ends.
The inline drip shall have a tracer wire run from the tree pit through the sleeves and brought back to the tree pit. Tie into the tracer from the electric valve.

Tracer wire jacket to be purple in color for mainlines and red for lateral runs. Label all ends. Wire label markers: pre-numbered or labeled with indelible non-fading ink with a TAG pen by Paige, made of permanent, non-fading material.

Power Wire
Electric wire from the power source to control unit shall be solid or stranded copper. Type UF single-conductor cable, UL approved for direct underground burial. Power wires shall be black, white and green in color.

Splices: Use approved connectors. Conduit: PVC Schedule 40. Follow all local and state codes.

Instrumentation
Hunter Wireless Rain Click system. One per controller. Wire directly to the controller. The sensor shall be mounted on the Controller enclosure in a location that will be vandal resistant and is able to gather all of the necessary data without interference. Coordinate with Engineer for proposed mounting location. The sensor shall be mounted in a Hunter WR-GUARD Enclosure.

The rain sensor shall be mounted in a location that will be vandal resistant and is able to gather all of the necessary data without interference.

Valve Boxes
Valve boxes shall be HDPE material and shall be rectangular, 12" /w 6" extension or 6" and 10" round and have "T" lid tops.

Valve box shall be of a size that provides adequate space for valve repairs. For decoder systems, two valve per 12" rectangular box, for 24v systems, a maximum of 2 electric valves per 12" rectangular valve box. A 10" round valve box may be used for isolation valves, one electric valve, quick couplers and wire drops only.

The valve box cover shall have the component markings heat stamped into the cover with a 2" letter or number. Use the following symbols for corresponding components in the valve box.

EV – for Electric Valves
QC- Quick Couplers
XX – final zone number
GV – Gate valve
GR - Grounding

The final valve numbering shall also be branded into the tops with electric valves.

If additional labels are needed add them and note it on the final as-built. All valve boxes are to have a label description on the top.

Contractor to coordinate location of valve boxes that are ganged together in clusters of three or more in planting beds with the Landscape Architect. Receive his approval of locations prior to installation.

The lids will be green when located in turf and black or brown when located in planting beds.

Quick Coupler Valves

Valves shall be 1" valves. The matching Key and Hose Swivel shall be provided for both ¾" and 1" hoses (1 set). The quick coupler is to have stabilizer wings. If the valve does not have stabilizers originally installed, use attachable horizontal stabilizers bolted to the quick coupler.

Quick coupler valves are to be mounted on a S-80 swing joint with brass male (MIPT) threads entering the quick coupler. Place quick coupler in a 10" round valve box. The valve box is to be filled with 3/8" clear chip gravel as detailed. Ensure proper height when backfilling.

Swing Joints

The 1" swing joint assemblies shall have a working pressure rating of 315 psi @73F when tested in accordance with ASTM D3139, including internal hydrostatic pressure @ 787 psi. for 60 minutes and short-term pressure of 1008 psi without leakage or failure. Their performance shall be warranted for five years to installers and owners of irrigation systems. The swing joint shall have one O-rings at each swivel joint. The inlet and outlet sockets and threads conforming to ASTM standards D 2467 and D 2464, respectively. The body wall thickness of all components conforming to ASTM D 2464.

The swing joint riser assemblies will be molded of Rigid Poly (vinyl) Chloride (PVC) Type 1, Cell Classification 12454-B per ASTM Standard D 1784. It shall be manufactured in such a way, that both the male and female O-ring sealing areas be free from mold parting lines.

The swing joint shall have a five year warranty. The quick coupler shall have a minimum length 12" riser for quick couplers. The threads shall correlate to sprinklers, quick couplers and related components. Quick Coupler Swing Joints are to have a brass MIPT 90 Ell outlet to enter the bottom of the quick coupler. The contractor will be responsible for the correct lay length of the swing joint to provide the 45 degree positive drainage.

Back Flow / Meter Enclosures

The RPZ and meter shall be in an aluminum enclosure. The enclosure shall have .05" Mill Finish H32 Aluminum. A stainless steel hinged drain. 304stainless steel rivets and pins. Mounting supports shall be 1/8" Mill finish 5052 H32 Aluminum. Concrete fasteners shall be AISI 304 Stainless Steel Wedge Anchor conforming to ASTM A276.

Enclosure at point of connection 1 shall be a minimum of 14" wide, 46" long and 44" high. The enclosure shall be WS 300SN-AL enclosure by Safe t Cover. Contractor to verify that the 1.5" RPZ with union and the 1.5" T-10meter by Neptune with flanges and 1/2hp booster pump with gauges and union will fit in the enclosure per code.

Contractor is responsible to submit shop drawings of the enclosure with components shown inside drawn to scale.

If a larger enclosure is required, contractor is responsible for the larger enclosure size.

Enclosure to be mounted on a 6" concrete pad. See manufactures recommendations for mounting and concrete specifications.

The enclosure shall be powder coated black in color.

Back Flow Unit
Install backflow unit per state and local codes. See plans for tap size. Controller A has a 1.5" tap. Contractor to coordinate with local authorities for approved back flow unit. Maximum pressure loss allowed through RPZ is 12psi. The RPZ is to have shut offs on the inlet and outlet. Use a 1 inch brass wye strainer on the inlet to the RPZ. The RPZ is to have unions or flanges for removal.

Meter Unit
Contractor to acquire and install a 1.5" meter at controller A. The meter is to be a T-10 by Neptune with flanges. Coordinate with water department for any special requirements and to verify that this meter is correct. The meter is to have flanges on both ends for winter removal.

Install in the Aluminum RPZ enclosure.

All components are to be capable of removal for seasonal operation. All piping is to be capable of winterization and draining.

Booster pump at Tap 1
The booster pump shall have unions on both ends and liquid filled pressure gauges on the inlet and discharge of the pump.

The pump shall have the following, operate with 230v power provided by others, the pump will be located in the RPZ enclosure.

The pump shall be a JBHC 1/2hp booster pump and have a pump start relay. The pump is to be capable of providing 20 gpm at a 20 psi boost from the static PSI of 42 PSI.

Other Components.
Tools and Extra Equipment: The Contractor is to provide to the City, two (2) sets of tools to repair and work on all equipment specified in this irrigation section.

One (1) 5' valve wrenches for gate valves are to be provided.

Other Materials: Provide imported fill material as required to complete this work at the Contractor's cost. Provide other materials or equipment shown on the drawings or installation details, which are part of the irrigation system, although such items may not have been referenced in these specifications.

Construction.
Inspection and Reviews.
Site Inspections: The bidder acknowledges that he/she has examined the site, plans and specifications, and the submission of a proposal shall be considered evidence that examination has been made.

Verify construction site conditions and note irregularities affecting work of this section. It shall be the contracting installer's responsibility to report to the Engineer any deviations between drawings, specifications and the site. Failure to do so before the installing of equipment and resulting in replacing and/or relocation of equipment shall be done at the Contractor's expense.

Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.

Beginning work of this section implies acceptance of existing conditions.

Utility Locations: The exact location of all existing utilities and structures and underground utilities are not indicated on the drawings; their locations shall be determined by the Contractor, and he/she shall conduct his/her work so as to prevent interruption of service or damage to them.

Arrange for and coordinate with local authorities the location of all underground utilities. Repair any underground utilities damaged during construction. Make repairs at no additional cost above the contract price.

The Contractor shall protect existing structures and utility services and be responsible for their replacement if damaged by him/her.

Excavation, Trenching and Backfilling.
Excavating shall be considered unclassified and shall include all materials encountered, except materials that cannot be excavated by normal mechanical means.

Excavate to permit the pipes to be laid at the intended elevations and to permit work space for installing connections and fittings.

Coverage of pipe and wire (distance from top of pipe or control wire to finish grade):

12-inch over mainline pipe.
8-inch over control wire, follow local and state requirements if they dictate a deeper bury depth.
12-inch over lateral pipe to sprinklers with PE piping.
Dripline in slotted pipe is to be laid on top of engineered soils

Mainlines, PE lateral pipes 2 1/2" and smaller may be pulled into the soil using a vibratory plow device specifically manufactured for pipe pulling, if in the opinion of the Engineer that conditions are suitable. Minimum burial depths equals minimum cover listed above provided soil moisture content and other conditions are suitable to allow for full depth of the right to determine suitability or conditions.

Backfill only after lines have been reviewed and tested.
Backfill shall be free from rubbish, vegetable matter, and stones larger than 2 inches in maximum dimension. Remove material not suitable for backfill. Backfill placed next to pipe shall be free of sharp objects, which may damage the pipe.

Backfill unsleeved pipe by depositing the backfill material equally on both sides of the pipe in 6-inch layers and compacting each layer to 95% Standard Proctor Density, ASTM D698-78. Use of water for compaction, "puddling," will not be permitted.

Enclose pipe and wiring beneath roadways, walks, curbs, etc., in sleeves. Minimum compaction of backfill for sleeves shall be 95% Standard Proctor Density. ASTM D698-78. Use of water for compaction around sleeve, "puddling," will not be permitted.

Dress backfilled areas to original grade. Incorporate excess backfill into existing site grades.

Where utilities conflict with irrigation trenching and pipe work, contact the Engineer for trench depth adjustments.

Provide approved fine grained earth fill or sand to point 4" above the top of pipe where soil conditions are rocky or otherwise objectionable.

Excavate trenches and install piping and backfill during the same working day. Do not leave open trenches or partially-filled trenches open overnight.

The Contractor will be responsible for all finish and fine grading of trenches, disturbed areas around sprinklers heads, electric valves and any other excavated or disturbed areas by the Contractor. Contractor will also be responsible for all trench settling throughout the project during the one-year warranty period. If settling occurs, the contractor will repair and bring back to originally set grade.

When additional backfill material is needed to replace the unsuitable materials, it will be the Contractor's responsibility and expense to supply such material. It will also be the Contractor's responsibility to dispose of the unsuitable material.

Assembling pipe and Fittings.
General: Keep pipe free from dirt and pipe scale. Cut pipe ends square and deburr. Clean pipe ends. Keep ends of assembled pipe capped. Removed caps only when necessary to continue assembly.

All mainline and continuously pressurized pipe is to be installed using open trenches. Lateral pipe may be installed by "Plowing" if soil conditions permit, and soils do not contain gravel, rock, construction debris, or other potential damaging material.

Trenches may be curved to change direction or avoid obstructions within the limits of the curvature of the pipe.

Mainline and Fittings: Use only strap-type friction wrenches for threaded plastic pipe.

PVC Solvent Weld Pipe: Use a primer and solvent cement. Join pipe in a manner recommended by the manufacturer and in accordance with accepted industry practices.
Cure for 30 minutes before handling and 24 hours before allowing water in pipe. Snake pipe from side to side within the trench.

Fittings: The uses of cross type fittings are not permitted.

Lateral Pipe and Fittings: Use only strap-type friction wrenches for threaded plastic pipe.

PVC Pipe: Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practice. Snake pipe from side to side within the trench.

Installation of Sprinkler and Irrigation Components.
Remote Control Valve (RCV) Assembly: Flush mainline before installation of RCV assembly.

Install where indicated on the drawing. Wire connectors and waterproof sealant shall be used to connect control wires to remote control valve wire. Install connectors and sealant per the manufacturer's recommendations.

Install only one RCV to a valve box. Locate valve box at least 12 inches from and align with nearby walls and edges of paved areas. Group RCV assemblies together where practical. Arrange grouped valve boxes in rectangular patterns. Allow at least 12 inches between valve boxes.

Adjust RCV to regulate the downstream operating pressure. Attach ID tag with controller station number to control wiring.

Sprinkler Assembly: Flush lateral pipe before installing sprinkler assembly. Install per the installation details at locations shown on the drawings.

Locate rotor sprinklers 6 inches from adjacent walls, fences or edges of paved areas. Locate spray sprinklers 3 inches from adjacent walls, fences or edges of paved areas. Install sprinklers perpendicular to the finish grade.

Supply appropriate nozzle or adjust arc of coverage of each sprinkler for best performance. Adjust the radius of throw of each sprinkler for best performance.

Installation of Control System Components.
Irrigation Controller Unit: The location of the controller unit as depicted on the drawings is approximate. The Engineer will determine the exact site location during sprinkler layout review.

Attach wire markers to the ends of control wires inside the controller unit housing. Label wires with the identification numbers (see drawings) of the remote control valve to which the control wire is connected. Connect control wires to the corresponding controller terminal.

Control Wire: For 24 v systems, bundle control wires where two or more are in the same trench. Bundle with pipe wrapping tape at 15-foot intervals.

Control wiring may be chiseled into the soil using a vibratory plow device specifically manufactured for pipe pulling and wire installation. Appropriate chisel must be used so that wire is fed into a chute on the chisel, and wire is not subject to pulling tension. Minimum burial depth must equal minimum cover previously listed.

Provide a 24-inch excess length of wire in an 8-inch diameter loop at each 90-degree change of direction, at both ends of sleeves and at 100-foot intervals along continuous runs of wiring. Do not tie wiring loop.

Coil 24-inch length of wire within each remote control valve box for 24v and 5 feet in each box for 2 wire.

For 24 v systems, install common ground wire and one control wire for each remote control valve.

Multiple valves on a single control wire are not permitted.

If a control wire must be spliced, make splice with wire connectors and waterproof sealant, installed per the manufacturer's instructions. Locate splice in a valve box that contains an irrigation valve assembly, or in a separate 10-inch round valve box.

Use same procedure for connection to valves as for in-line splices.

Protect wire not installed with mainline pipe with a continuous run of warning tape placed in the backfill six inches above the wiring.

Installation of Other Components.
Tools and Spare Parts: Prior to the review at completion of construction, supply to the City operating keys, servicing tools, spare parts, test equipment and any other items indicated in general notes on the drawings.

Other Materials: Install other materials or equipment shown on the drawings or installation details which are part of the irrigation system, even though such items may not have been referenced in these specifications.

Balancing and Adjusting.
The Contractor will be responsible for the balancing and adjustments of the various components of the system so the overall operation of the system is the most efficient. Including, but not limited to, the synchronization of the controllers, valves and sprinkler adjustments. Coordinate controller setup with the Engineer.

Requirements for Substantial Completion.
Cleaning Equipment and Premises: Thoroughly clean all parts of the piping, valves and equipment. Remove all construction debris, excess materials and equipment.

Operating and Maintenance Manuals: Contractor shall furnish to the City, two operating manuals for furnished equipment. Information sheets shall be bound in standard three-ring binders labeled to show Contractor's name, address, regular business phone number, emergency phone number and date. Operating manuals shall be submitted prior to completion of work to allow time for review. Manual shall contain following information:

List (keyed with identification numbers used) each item of equipment which requires service, giving the name of the item, model number, manufacturer's name and address, and providing the name, address and phone number of the nearest representative of authorized service organization.

Cut sheets to be included for the following, but not limited to: electric valves, isolation valves, swing joints, valve boxes, controllers and sprinkler heads.

A copy of the shop drawing if changes in the design are required.

A complete operating and maintenance manual, parts list, wiring diagrams, lubrication requirements, and service instructions for each major item.

Complete control diagrams with description of all operation sequences and control devices.

Properly executed registrations and registered manufacturer's warranties.

After completion of work and when the City has had sufficient time to examine operating manuals and become somewhat familiar with operation of equipment, a meeting will be arranged by the Contractor with the City for purpose of instructing the City in proper maintenance of system and to answer questions he/she may have regarding its operation. Prior to this meeting, contractor shall have programmed a base program for all stations and run times.

It will be the responsibility of the Irrigation Contractor to provide a reliable communication system (i.e.: Two way radios or remote radio control activation system) for Substantial Completion, final acceptance and all periodic site visits. Once the controllers are operational, the contractor will be required to have a tablet devise on site to operate the system. This tablet is to be accessible to the designer for any walk throughs that are scheduled.

Acceptance
Instruct the Engineer and Owner's designated personnel in the operation of the system, including adjustment of sprinklers, controller(s), valves, pump controls and moisture sensing controls, etc…. Once contractor has trained the Engineer and Owner, the system is fully operational and has completed the punch list, the project will be accepted. A written acceptance and date will be provided.

Hydrostatic Testing.
Notify the Engineer three days in advance of testing.

Pipelines jointed with rubber gaskets or threaded connections may be subjected to a pressure test at any time after partial completion of backfill. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure at least 24 hours before testing.
Subsections of mainline pipe may be tested independently, subject to the review of the Engineer.

Furnish clean, clear water, pumps, labor, fittings, and equipment necessary to conduct test or retests.

Cap riser of mainline components for volumetric pressure tests. Backfill to prevent pipe from moving under pressure. Expose coupling and fitting. Purge all air from the pipeline before test.

Subject mainline pipe to the anticipated operating pressure for two hours. Maintain constant pressure. Test complete system under full line pressure. Pressure must be maintained with less than 2lbs loss in the system for 4 hours. If the system does not hold pressure, repair leaks and retest system until the system maintains pressure.

All necessary testing equipment shall be furnished by the Contractor. Cement or caulking to seal leaks is prohibited.

Activate each remote control valve in sequence from controller. Replace defective remote control valve, solenoid, wiring, or appurtenance to correct operational deficiencies.

Replace, adjust, or move water emission devices to correct operational or coverage deficiencies.

Repeat test(s) until each lateral passes all tests. Repeat tests, replace components, and correct deficiencies at no additional cost to the City.

Guarantee / Warranty and Replacement.
It shall be the Contractor's responsibility to ensure and guarantee satisfactory operation of the entire system and restoration of the area. The entire system shall be guaranteed to be complete and perfect in every detail on the date it's accepted.

Minor maintenance and adjustment shall be by the City.

Make repairs within seven (7) days of notification from the Engineer.

Manufacturer's guarantee/warranty applies to originally installed materials, equipment, and replacements made.

Demonstration, Winterization and Spring Start-up.
Coordinate the winterization and start-up with the Engineer and City's landscape maintenance personnel.

Contractor shall winterize the system the first year as part of this contract, and will provide written instructions to the City for future service and maintenance.

Return to the site within ten (10) days of spring start-up and demonstrate to the City the proper procedures for the system start-up, operation and proper maintenance. Repair any damage caused in improper winterization at no additional cost to the City.

After completion, testing and acceptance of the system, the Contractor will instruct the Engineer and City's personnel in the operation and maintenance of the system.

Method of Measurement. The contract lump sum price for irrigation system shall be measured per complete system installed and tested.

Basis of Payment. This work shall be paid for at the contract lump sum price for IRRIGATION SYSTEM including all labor, material, equipment, and services necessary for providing the landscape irrigation systems in a serviceable, fully operational manner, including, but not limited to, excavation, backfilling, sprinkler heads, solenoid control valves, isolation valves, valve boxes, automatic controls, system testing, City personnel training, piping, equipment identification, plumbing permits, inspection fees, valve tags, charts, supports, sleeves, fittings, valves, and accessories.

STRUCTURAL SOIL

Description. Work under this item shall be performed according to Section 211, Section 253 and Section 254 of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

This work shall consist of the purchase, transportation, storage, delivery, preparation, and installation of CU Structural Soil. All labor, materials, tools, and equipment required to perform the work above is included in the unit cost. Excavation for STRUCTURAL SOIL shall be paid for separately and is not included as part of this pay item.

References.

A. Section 211 of IDOT Standard Specifications for Road and Bridge Construction

B. Section 253 of IDOT Standard Specifications for Road and Bridge Construction

C. Section 254 of IDOT Standard Specifications for Road and Bridge Construction

Materials. Materials shall be according to the following Articles of Division 1000 – Materials of the Standard Specifications:

	Article/Section
(a)	Coarse Aggregate ……1004.04
(b)	Topsoil……1081.05(a)

General Requirements. CU-Structural Soil ® shall be produced in accordance with all applicable copyrights and shall be amended per soil lab results to provide adequate soil for the growth of trees. Each amendment in the amount required to produce an acceptable CU-Structural Soil, shall be prepared offsite at the suppliers facility creating a uniform mixture. The CU-Structural Soil shall be stored in stockpiles at the producer or supplier's facility and be protected from erosion, absorption of excess water, noxious weeds, and contamination at all times.

Delivery to the job site shall only occur after the Engineer has reviewed and approved the testing results obtained by the supplier. Final approval of the CU-Structural Soil shall be based on testing performed by the Engineer on project site samples.

Submittals. Upon the completion of all mechanical and chemical analyses, a final report prepared by the certified testing laboratory (according to the Certifications paragraph within the QC/QA Requirements section) detailing these results shall be submitted to the Engineer for review by the Engineer. The final report shall include the project number, project name, source of material, quantity of material represented by the samples, and the recommendations for chemically enhancing the soil's characteristics in order to meet the intent of the application.

Placement. Prior to placing the CU-Structural Soil, all final adjustments to any utility structures within the planters must be completed and accepted by the Engineer. Planters shall be free of all trash and debris before placement begins. If geotechnical fabrics and/or drainage layers have been specified, the condition of these items shall be intact and free of holes, tears, or defects that may inhibit their function. Any deficiencies found shall be repaired by the Contractor without any additional cost to the contract. Irrigation systems located within the planters shall not be placed until the planter soil mix is approved by the Engineer.

Place, spread, and rough grade the soil to depths specified on the plans. The CU-Structural Soil shall be placed in two lifts. The first lift shall be 2/3 of the planter soil depth. After placing each lift, moisten the surface at a rate sufficient to hydraulically settle the soil, or as determined by the Engineer. Allow the water to thoroughly percolate through the soil before placing the next lift. Soil placed and found to be unacceptable by the Engineer shall be removed and replaced at no cost with a soil mix in accordance with the specifications and as approved by the Engineer. The contractor shall be responsible for repairing any damage caused during the removal and replacement operation, which includes, but is not limited to, plant material, irrigation system(s), water proofing membrane, adjacent sidewalk, curb and gutter, pavements, planters, etc. Any additional traffic control required to remove and replace any soil mix found to be unacceptable by the Engineer and / or perform said repairs shall be at no cost to the contract.

Compact soil per contract documents. The removal of excess material or the addition of soil may be required prior to tree installation. This shall be considered incidental to the cost of CU-Structural Soil and will not be paid for separately. Any areas disturbed by irrigation installation shall be restored. The finished grade shall be within ± 0.10 feet of the design grade while allowing the necessary room for placement and mixing of organics as required by the Engineer.
All debris, litter, tire tracks, dirt, and unintended materials shall be removed, swept, or washed off of all landscape, hard median surfaces, and pavement on a daily basis.

QC/QA Requirements**.** Quality control testing is required by the producer or supplier to verify compliance with the specification prior to delivery. The pH and mechanical results must be within the tolerances specified prior to performing any Quality Assurance testing by the Engineer. Upon the completion of acceptable QC results for both mechanical and chemical properties, the Engineer will conduct job site Quality Assurance testing to verify the results obtained by QC and determine if the mechanical and chemical results are acceptable.

Testing. The mechanical testing and chemical analysis requirements listed above must be conducted by QC at the frequency listed below. Testing performed by the Engineer will only be conducted once all of the soil mix has been delivered to the site and a final representative composite sample can be obtained.

Soil Quantity (c.y.)	Number of Tests**
< 300	1
300 – 1000	3

** When more than one test is performed, the average of the test results will be used to determine acceptance.

*** The resulting value shall be rounded up to the nearest whole number.

Certifications. All testing shall be completed by laboratories approved to perform the testing detailed above. Mechanical testing and chemical testing may be completed by different laboratories as long as each laboratory is certified to perform the tests for which they have provided results. Agricultural laboratories conducting the testing must be an active member with the Illinois Soil Testing Association (ISTA) and currently certified under ISTA's Laboratory Proficiency Testing Program. Standard material testing laboratories may only perform the mechanical tests provided they are AASHTO accredited to conduct those testing procedures.

Acceptance. Due to shipping and sampling variances, an additional tolerance of ± 5% will be used to evaluate the acceptance of the structural soil mix test results as they relate to the sand, silt, and clay contents. Mechanical test results that are within these tolerances will be considered acceptable. Results from the remaining Mechanical and Chemical Analysis will be evaluated based on the applicable tolerances and the recommendations provided by the testing laboratories. Soil placement shall only occur after final review and approval by the Engineer.

Method of Measurement. This work will be measured for payment in cubic yards in place after all means of consolidation have been applied and deemed satisfactory by the Engineer. The volume of soil will be computed by the method of average end areas.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard for STRUCTURAL SOIL which price shall include all testing, furnishing, stockpiling, transporting of materials, and all labor and equipment necessary to complete the work as specified.

MULCH

Description. This work shall be done in accordance with the applicable portion of Article 253.02 (c) and Section 1081.06 (b) of the Standard Specifications for Road and Bridge Construction. This work shall consist of furnishing, transporting, and spreading approved hardwood bark mulch as specified, as shown on the plans, or as directed by the Engineer.

Shredded Hardwood Bark Mulch shall be placed at 3-inch depth at all trees to create a 36" diameter mulch ring at each tree within the planting beds. Triple Processed Hardwood Bark Mulch shall be placed at 2-inch depth in the remainder of the planting beds and abutting the tree mulch rings.

Material.

Shredded Hardwood Bark Mulch shall be clean, finely shredded mixed-hardwood bark meeting the following requirements:

- Material shall be high quality, free of sticks, leaves, stones, dirt clods, and other debris.
- Material shall be free of growth or germination inhibiting ingredients.
- Individual wood chips shall not exceed 2 inches in the largest dimension.
- Mulch shall be of dark brown color approved by the Engineer.

Triple Processed Hardwood Bark Mulch shall be clean, finely shredded mixed-hardwood bark meeting the following requirements:

- Material shall be high quality, free of sticks, leaves, stones, dirt clods, and other debris.
- Material shall be triple processed to produce a consistent, spreadable mixture.
- Mulch shall be of dark brown color approved by the Engineer.

Samples. Mulch samples and request for material inspection must be supplied to the Engineer for approval prior to performing any work 72 hours prior to application.

Method. The grade, depth, and condition of the area must be approved by the Engineer prior to placement.

The Contractor shall remove all weeds, litter and plant debris before mulching. The Contractor shall repair the grade by raking and adding topsoil as needed, before mulching.

Mulch shall be placed according at the required depth as specified in the plans for planting trees, shrubs, vines and perennial plants. Care shall be taken not to bury leaves, stems, or vines under mulch material. Mulch shall not be in contact with the base of the trunk.

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. This work will be measured for payment per cubic yard of mulch furnished and installed.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard for MULCH. Payment shall include all costs for materials, equipment and labor required to complete the work specified herein, including the cost of removing and disposing of any debris.

PLANTING SOIL MIX FURNISH AND PLACE

Description. Work under this item shall be performed according to Section 211, Section 253 and Section 254 of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

This work shall consist of the purchase, transportation, storage, delivery, preparation, and installation of Planter Soil Mix. All labor, materials, tools, and equipment required to perform the work above is included in the unit cost. This item shall also include all excavation and preparation of planting area prior to installing.

References.

A. Section 211 of IDOT Standard Specifications for Road and Bridge Construction
B. Section 253 of IDOT Standard Specifications for Road and Bridge Construction
C. Section 254 of IDOT Standard Specifications for Road and Bridge Construction

Materials.

A. The following materials shall be according to the following Articles of Division 1000 – Materials of the Standard Specifications:
   (a) Fine Aggregate (Natural Sand) ……..1003.06
   (b) Topsoil…….....1081.05(a)
   (c) Compost ……1081.05 (b)

B. Soil Conditioner: One Step Soil Conditioner as manufactured by Midwest Trading, 630-365-1990, www.midwest-trading.com. Soil conditioner to be included in the price for PLANTING SOIL MIX FURNISH AND PLACE.

General Requirements. The planter soil mix shall be a loam soil consisting of 40-45% Sand, 7-20% Clay, and 35-40% Silt and must be 24 inches deep minimum per plans. Each amendment in the amount required to produce an acceptable planter mix, shall be added and mixed with pulverized topsoil and prepared offsite at the suppliers facility creating a uniform mixture. The planter soil mix shall be stored in stockpiles at the producer or supplier's facility and be protected from erosion, absorption of excess water, noxious weeds, and contamination at all times.

Delivery to the job site shall only occur after the Engineer has reviewed and approved the testing results obtained by Quality Control (QC). Final approval of the soil mix shall be based on testing performed by a third party testing contractor on project site samples.

A mechanical and chemical analysis shall be performed on the soil mix sample and the results shall fall within the following limits. The mechanical analysis may be completed prior to performing the chemical analysis. If the results of the mechanical analysis are within the specified limits, then a chemical analysis shall be performed on the soil mix sample to determine if the results fall within the specified limits.

Mechanical Analysis

Component Ingredient Contents	Minimum	Maximum
Clay content	0%	28%
Silt content	45%	77%
Sand content	25%	33%
Organic content	5%	10%

Chemical Analysis

General Components	Minimum	Maximum
pH value	5.5	7.5
Cation Exchange Capacity	*	*
Soluble salt content	*	*
Miscellaneous Constituent Chemical Contents		
Phosphorous content	*	*
Potassium content	*	*
Micro nutrient content	*	*
Residual agricultural chemical content	*	*

* The content of these items do not have a minimum or maximum amount. The resulting content will be evaluated by the Engineer and if found to be reasonable by the Engineer the stockpile represented by the sample(s) will be deemed acceptable as it relates to these items only. The sample(s) must also meet the remaining mechanical and chemical requirements for final approval.

Submittals. Upon the completion of all mechanical and chemical analyses, a final report prepared by the certified testing laboratory (according to the Certifications paragraph within the QC/QA Requirements section) detailing these results shall be submitted to the Engineer for review by the Engineer. The final report shall include the project number, project name, source of material, quantity of material represented by the samples, and the recommendations for chemically enhancing the soil's characteristics in order to meet the intent of the application.

QC/QA Requirements. Quality control testing is required by the producer or supplier to verify compliance with the specification prior to delivery. The pH and mechanical results must be within the tolerances specified in this specification prior to performing any Quality Assurance testing by the Engineer. Upon the completion of acceptable QC results for both mechanical and chemical properties, the Engineer will conduct job site Quality Assurance testing to verify the results obtained by QC and determine if the mechanical and chemical results are acceptable.

Testing. The mechanical testing and chemical analysis requirements listed above must be conducted by QC at the frequency listed below. Testing performed by the Engineer will only be conducted once all of the soil mix has been delivered to the site and a final representative composite sample can be obtained.

Soil Quantity (c.y.)	Number of Tests**
< 300	1
300 – 1000	3

** When more than one test is performed, the average of the test results will be used to determine acceptance.

*** The resulting value shall be rounded up to the nearest whole number.

Certifications. All testing shall be completed by laboratories approved to perform the testing detailed above. Mechanical testing and chemical testing may be completed by different laboratories as long as each laboratory is certified to perform the tests for which they have provided results. Agricultural laboratories conducting the testing must be an active member with the Illinois Soil Testing Association (ISTA) and currently certified under ISTA's Laboratory Proficiency Testing Program. Standard material testing laboratories may only perform the mechanical tests provided they are AASHTO accredited to conduct those testing procedures.

Acceptance. Due to shipping and sampling variances, an additional tolerance of ± 5% will be used to evaluate the acceptance of the planter soil mix test results as they relate to the sand, silt, and clay contents. Mechanical test results that are within these tolerances will be considered acceptable. Results from the remaining Mechanical and Chemical Analysis will be evaluated based on the applicable tolerances and the recommendations provided by the testing laboratories. Soil placement shall only occur after final review and approval by the Engineer.

Construction Requirements. Prior to placing the planter soil mix, all final adjustments to any utility structures within the planters must be completed and accepted by the Engineer. Planters shall be free of all trash and debris before placement begins. If geotechnical fabrics and/or drainage layers have been specified, the condition of these items shall be intact and free of holes, tears, or defects that may inhibit their function. Any deficiencies found shall be repaired by the Contractor without any additional cost. Irrigation systems located within the planters shall not be placed until the planter soil mix is approved by the Engineer.

Place, spread, and rough grade the soil to depths specified on the plans. The soil mix shall be placed in two lifts. The first lift shall be 2/3 of the planter soil depth. After placing each lift, moisten the surface at a rate sufficient to hydraulically settle the soil, or as determined by the Engineer. Allow the water to thoroughly percolate through the soil before placing the next lift. Soil mix placed and found to be unacceptable by the Engineer shall be removed and replaced at no cost with a soil mix in accordance with the specifications and as approved by the Engineer. The contractor shall be responsible for repairing any damage caused during the removal and replacement operation, which includes, but is not limited to, plant material, irrigation system(s), water proofing membrane, adjacent sidewalk, curb and gutter, pavements, planters, etc. Any additional traffic control required to remove and replace any soil mix found to be unacceptable by the Engineer and / or perform said repairs shall be at no cost to the City.

After planting soil placement, place 3” depth soil conditioner and rototill into placed soil until fully incorporated to a depth of 12”.

Rake smooth and finish grade all planted areas. The removal of excess material or the addition of planter soil mix may be required prior to landscaping. This shall be considered incidental to the cost of planter soil mix and will not be paid for separately. Any areas disturbed by irrigation installation shall be restored to finish grade and raked smooth. The finished grade shall be within ± 0.10 feet of the design grade while allowing the necessary room for placement and mixing of organics as required by the Engineer.

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

Method of Measurement. This work will be measured for payment in cubic yards in place after all means of consolidation have been applied and deemed satisfactory by the Engineer. The volume of soil will be computed by the method of average end areas.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard for PLANTING SOIL MIX FURNISH AND PLACE, which price shall include all testing, furnishing, stockpiling, transporting of materials, and all labor and equipment necessary to complete the work as specified.

PLANT INSTALLATION

Description. Work under this item shall be performed according to Section 253 and Section 254 of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

This work shall consist of the purchase, transportation, storage, delivery, preparation, and installation of balled and burlapped trees, balled and burlapped shrubs, container shrubs, perennials, grasses, groundcovers, vines, and bulbs (plant material). All labor, materials, tools, and equipment required to perform the work above is included in the unit cost. This item shall also include all excavation and preparation of planting area prior to planting, pulverized topsoil, wrapping, mulching, watering, plant care, and period of plant establishment for all balled and burlapped shrubs, container shrubs, perennials, grasses, ground covers, vines, and bulbs.

References.

A. ANSI Z60.1-2004 -- American Standard for Nursery Stock; 2004 (or latest edition)

B. Section 253 of IDOT Standard Specifications for Road and Bridge Construction

C. Section 254 of IDOT Standard Specifications for Road and Bridge Construction

Submittals.

A. Soil Laboratory Test

B. Soil sample - provide in 1 quart sealed plastic container.

C. Shredded hardwood bark mulch sample - provide in 1 quart sealed plastic container.

D. Request for inspection of Materials sheets (Soil, Mulch)

E. Request for Inspection of Plant Material sheets

F. Tree wrap – sample

G. Samples and resources of all materials shall be submitted to the Engineer for approval.

Materials. Materials shall be according to the following Articles of Division 1000 - Materials of the Standard Specifications.

	Article/Section
(a) Trees, Shrubs, Evergreens, Vines, and Seedlings……	1081.01
(b) Topsoil……	1081.05 (a)
(c) Mulch ……..	1081.06 (b)

Deciduous Shade Trees. Street tree plantings shall be free of branches equivalent to ½ of the tree height or so that the crown of tree is in proportion to trunk as the tree grows.

Trees with ascending branches may be branched 1 foot or more below a starting branch height at 6' minimum.

Provide trees of specimen quality in accordance with American Association of Nurseryman, Inc., (AAN) Code of Standards ANSI Z60.1.

Plant Material Inspections. Plant material shall comply with American Standard for Nursery Stock ANZI Z60.1- 2004 (or latest edition), which by reference is made part of these specifications.

All plant material requires inspection by the Engineer or City Forester. The Engineer or City Forester will inspect all plant material at state certified nurseries of harvest prior to the planting season and prior to being delivered to the jobsite or storage and staging yard. Balled and burlapped trees and shrubs will be inspected in ground at the nurseries. No trees shall be delivered without Engineer or City Forester approval.

This will be done upon the submittal of "Request for Inspection of Plant Material" sheets. These sheets must be submitted to the Engineer at least seven (7) weeks prior to the expected date of installation, unless otherwise directed by the Engineer. Plant material not installed within the scheduled planting season will require re-inspection the following planting season. The Engineer reserves the right to place identification seals on any or all plants selected. The City also reserves the right to select and tag all plant material prior to acceptance by the Engineer. Approval of plant material on such examination shall not be construed as final acceptance of it.

An inspection at the job site will be made prior to installation of plant material. Any plant material not meeting specification must be moved off the site and replaced at no additional cost.

QA/QC Requirements**.** All plants shall be obtained from state certified nurseries, in hardiness zones of comparable local climatic range to the City of Lake Forest and approved by the Engineer or Authorized Representative. All trees shall be dug prior to leafing out (bud break) in the spring or when plants have gone dormant in the fall, except for the following species which are only to be dug prior to leafing out in the spring: (The Engineer reserves the right to expand this list upon submittal of the Planting Schedule.)

1. Quercus (Oak)

Construction Requirements.

All plant material shall be in a healthy and thriving condition representative of its species, as determined by the Engineer, for the duration of the period of establishment. Plant material found not to be healthy as stated above due to, but not limited to: improper handling or planting; improper after care including trimming, watering, weeding, cultivating, insect infestations, or from shock of transplanting shall be removed by the contractor and replaced at no cost.

The Contractor shall replace said plant material at no cost within the time allotted by the Engineer. The replacement plant material shall be inspected by the Engineer following the same process as in the 'Plant Material Inspections' section above.

Period of Plant Establishment. The period of establishment shall be in accordance with Section 253 and 254 of the Standard Specifications for Road and Bridge Construction.

Plant Care. During period of establishment, Contractor shall properly care for all plants including weeding, watering, adjusting of braces, repair of water saucers, or other work which is necessary to maintain the health and satisfactory appearance of the plantings. All requirements for proper care during the period of establishment shall be considered as included in the cost of the contract and shall be performed within five days following notification by the Engineer. Plant care shall be in accordance with Section 253 and 254 of the Standard Specifications for Road and Bridge Construction.

Replacements: Plants which die or require replacement for other reasons during the period of establishment shall be replaced as soon as possible during following acceptable planting seasons:

1. Spring Replacement Season: All plants - when ground becomes workable to June 15.
2. Fall Replacement Season:
   a) Deciduous plants - September 1 to November 15.
   b) Evergreen plants - September 1 to November 1.

Procedure: Dispose of plants off-site in legal manner. Replacements shall be of same size and species as original plant unless otherwise approved by Engineer. Replacements shall be supplied and installed in accordance with specifications. Period of establishment for replacement plants shall be in accordance with the Standard Specifications for Road and Bridge Construction.

Replacement and Damages: Decisions of Engineer for required replacements shall be conclusive and binding upon Contractor. Contractor shall be responsible for repairing damage to property also caused by defective workmanship and materials

Method of Measurement. Tree and shrub installation will be measured for final payment, in place, after the period of establishment per each. Perennial plants will be measured for payment in units of 100 perennial plants of the type and size specified. Only acceptable plants will be measured for payment. All materials required to provide and establish healthy, thriving plant material shall be considered included in the cost to this line item.

Basis of Payment. This work will be paid for at the contract unit price per EACH for TREE, CELTIS OCCIDENTALIS (COMMON HACKBERRY), 3" CALIPER, BALLED AND BURLAPPED, TREE, QUERCUS BICOLOR (SWAMP WHITE OAK), 3" CALIPER, BALLED AND BURLAPPED, QUERCUS ROBUR LONG (REGAL PRINCE OAK), 2" CALIPER, BALLED AND BURLAPPED, TREE, ULMUS ACCOLADE (HYBRID ELM), 3" CALIPER, BALLED AND BURLAPPED, TREE, ULMUS X FRONTIER (FRONTIER ELM), 3” CALIPER, BALLED AND BURLAPPED, MATCHING HEADS, SHRUB, ARONIA MELANOCARPA (IROQUOIS BEAUTY BLACK CHOKEBERRY), 2'-6" HEIGHT, BALLED AND BURLAPPED, and SHRUB, DIERVILLA G2X88544 (KODIAK ORANGE BUSH HONEYSUCKLE), CONTAINER GROWN, 3-GALLON

This work shall be paid for at the contract unit price per UNIT for PERENNIAL PLANTS, BULB TYPE, PERENNIAL PLANTS, ORNAMENTAL TYPE, 4" POT, PERENNIAL PLANTS, ORNAMENTAL TYPE, GALLON POT, and PERENNIAL PLANTS, ORNAMENTAL TYPE, 3 GALLON POT.

The cost of these items shall include the purchase, transportation, storage, delivery, preparation, and installation of the plant material of the type and size specified, and labor, materials, tools, and equipment necessary to complete the work. Also included in these line items is initial pant care and the period of plant establishment as described with in.

TREE GRATES

Description. This item consists of furnishing all labor, materials and equipment for installing frames and grates at the locations shown on the plans. This work includes furnishing and installing the cast iron tree grates, grate frame, volcanic rock mulch, concrete, reinforcement, formwork structure excavation, protection of all existing utilities encountered, and clean up and restoration of any disturbed areas to the condition prior to the contractor's operation. The contractor shall be liable for any damages to property caused by his operations and in the event of damages; he shall at his own expense restore all disturbed or damaged areas to their original condition.

Submittals. Submit shop drawings showing dimensions and location of concrete structures and placement, size and length of reinforcement bars. Shop drawings must include provisions and details for the formwork required for casting of the concrete and the method of construction. Shop drawings of all items related to the manufacture and installation of the tree grate and frame must be submitted and approved by the Engineer before fabrication.

Material. The material must be gray iron castings conforming to ASTM A48, class 35B or better, and Article 1006.14 of the Standard Specifications.

Design. Grate pattern must comply with ADA Guidelines for equal access. Tree grates will be 1.5" thick with accompanying frame. Grate will consist of two halves with 12" minimum diameter opening for trees. Grate openings must meet or exceed ADA Standard. Grate dimensions will be specified in plans or by the Engineer. Grate halves must be able to be bolted together with tamperproof bolts, and the grate must also be bolted to the frame with tamperproof bolts.

Product. 4' x 8' Tree grate as manufactured by Urban Accessories, Contact: Brian Trodhunter, brian@urbanacessories.com, 253-572-1112

a) Model: Jamison
b) Size: 4' x 8'
c) Material: Gray Iron
d) Finish: Natural Patina of Raw Material
e) Options: 12" opening with center opening expansions at 1'-11" and 2' – 7"

Fasteners

Tree grate halves must be joined together with tamper resistant bolts and fastened to grate frame with tamper resistant bolt assembly packages as provided by the manufacturer.

Inspection

Installation assumes responsibility for performance.

Surface conditions
Examine frame, concrete ledge, or ground surface to receive grate. The seat for the grates must be cleaned prior to setting the grates. Correct conditions to comply with manufacturer's recommended installation procedures.
Join Grate Halves

Bring tree grate halves together around tree at a level to allow easy access to underside. Join sections at preformed holes using temper-resistant bolt packages provided by manufacturer as suggested. Lower grate into place and bolt to frame with tamper-proof resistant bolts. If grate manufacturer cannot accomplish this, then the grates and frame must be tapped, field drilled, and bolted on site. The cost for this work and equipment will be included in the cost of TREE GRATES.

Warranty

Manufacturer's written warranty for the tree frame and grate must be provided to the Engineer prior to installation of grates.

Material under Grate

The Contractor must remove all litter and plant debris before mulching. Mulch shall be black and large volcanic rock, 2" in depth, free of foreign materials and approved by the Engineer. The cost of furnishing and installing mulch will be included in the cost of TREE GRATES.

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

Method of Measurement: This work will be measured for payment per each, complete in place.

Basis of Payment. This work will be paid for at the contract unit price per each for TREE GRATES, which price will be payment in full for performing the work described herein including the cast iron tree frame and grate, concrete structures, reinforcement bars and required structure excavation.

MASONRY/BRICK WALL, COLUMN WITH PLANTER, CONCRETE STEPS

Description
Work under this item shall be performed according to all applicable sections of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified. This work shall consist of installing foundations, concrete core, veneer face brick, coping stones, reinforcement, and all accessories for brick veneer elements, including Masonry Wall, Column with Planter, and Brick Wall, as defined in the plans and provided details.

References

1. Section 502 of IDOT Standard Specifications for Road and Bridge Construction
2. Section 503 of IDOT Standard Specifications for Road and Bridge Construction
3. Section 584 of IDOT Standard Specifications for Road and Bridge Construction
4. Section 1020 of IDOT Standard Specifications for Road and Bridge Construction
5. Section 1024 of IDOT Standard Specifications for Road and Bridge Construction
6. Section 1025 of IDOT Standard Specifications for Road and Bridge Construction
7. Section 1041 of IDOT Standard Specifications for Road and Bridge Construction

Administrative Requirements

1. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers. Coordinate with installation of all components that comprise.

2. Submittals
    A. Product Data: Provide data for all products and accessories
    B. Concrete Design Mix: Submit design mix for concrete mix, including used to establish the required average strength in accordance with IDOT Standards Specifications, as noted above. Submit written reports of proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until the mix has been reviewed by the Engineer.
    C. Shop Drawings: Indicate pertinent dimensions, materials, reinforcement, anchorage, size and type of fasteners, and accessories for all aspects of foundations, core wall, and brickwork support system.
    D. Samples: Submit four samples of decorative block units to illustrate color, texture, and extremes of color range.
    E. Manufacturer's Qualification Statement.
    F. Installer's Qualification Statement.

3. Quality Assurance
    A. Comply with provisions of TMS 402/602, Building Code Requirements and Specification for Masonry Construction, except where exceeded by requirements of Contract Documents.
    B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.
    C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

4. Mockup: Locate where directed. Mock-up may remain as part of the Work.

5. Delivery Storage and Handling: Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials. Handle and store pre-faced concrete block units in protective cartons or trays. Do not remove from protective packaging until ready for installation.

Material Requirements.

1. Concrete
   A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
      1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

   B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.

   C. Provide a minimum 28 day compressive strength of 4000 psi and a maximum water-cementitious material ratio of 0.44, unless otherwise indicated.

   D. Footings and Foundation Walls: Proportion normal-weight concrete mix as follows unless otherwise indicated:
      1. Compressive Strength (28 Days): 4000 psi with a maximum water cementitious material ratio of 0.44 (non air-entrained).
      2. Maximum Slump at point of placement: 4 inches
      3. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8 inches after admixture is added to concrete with 2- to 4-inch slump.

   E. Cementitious Materials:
      1. For concrete exposed to deicers, limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 requirements.
      2. For all other concrete, limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
         a. Fly Ash: 25 percent by weight.

   F. Air Content: Use air-entraining admixture in exterior exposed concrete. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus 1 or minus 1.5 percent, unless otherwise indicated:
      1. Air Content: 6 percent for 3/4-inch (19-mm) nominal maximum aggregate size.

   G. Admixtures: Use admixtures according to manufacturer's written instructions.
      1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
      2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
      3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
      4. Use corrosion-inhibiting admixture in concrete mixes where indicated.

   H. Prepare design mixes for each type and strength of concrete by either laboratory trial batch of field experience methods as specified in ACI 301. If trial batch method is used, use an independent testing facility acceptable to the Landscape Architect for preparing and reporting proposed mix designs.

2. Facebrick
   A. Molded Facebrick to conform to the requirements of ASTM C 216, Grade SW, Type FBS. Size: Modular 3-5/8" thick x 2-1/4" height x 7-5/8" length. Series: Cushwa. Texture/Finish: Sand. Color: 53-DD.

   B. Manufacturer:
      1. Glen-Gery Corporation: www.glen-gery.com

   C. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
      1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
      2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
      3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
      4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

3. Mortar and Grout Materials
   A. Mortar and Grout: As specified in References above.

4. Reinforcement and Anchorage
   A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (40,000 psi) (280 MPa), deformed billet bars; galvanized.
   B. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
   C. Single Wythe Joint Reinforcement: ASTM A951/A951M.
      1. Type: Truss or ladder.
      2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
      3. Size: 0.1483 inch (3.8 mm) side rods with 0.1483 inch (3.8 mm) cross rods; width as required to provide not less than 5/8 inch (16 mm) of mortar coverage on each exposure.
   D. Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
      1. Type: Truss.
      2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
      3. Size: 0.1483 inch (3.8 mm) side rods with 0.1483 inch (3.8 mm) cross rods; width as required to provide not less than 5/8 inch (16 mm) of mortar coverage on each exposure.
   E. Strap Anchors: Bent steel shapes, 1-1/2 inch (38 mm) width, 0.105 inch (2.7 mm) thick, 24 inch (610 mm) length, with 1-1/2 inch (38 mm) long, 90 degree bend at each end to form a U or Z shape or with cross pins, hot dip galvanized to ASTM A153/A153M, Class B.
   F. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch (16 mm) of mortar coverage from masonry face.

G. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
   1. Anchor plates: Not less than 0.075 inch (1.91 mm) thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
   2. Wire ties: Manufacturer's standard shape, 0.1875 inch (4.75 mm) thick.
   3. Vertical adjustment: Not less than 3-1/2 inches (89 mm).

H. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

5. Flashings
   A. Metal Flashing Materials:
      1. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gauge, 0.0187 inch (0.48 mm) thick; finish 2B to 2D.

6. Wall and Column Coping
   A. Solid limestone coping, as manufactured by Valders Stone & Marble, Inc. Color: Buff. Finish: Smooth. Thickness: 3". Sizes and profiles as indicated in plans.
   B. Manufacturer: Eden & Valders Valders Stone & Marble Inc., 318 W. Washington Street, Valders, WI 54245, 920.775.4151. www.evstone.net

7. Planter (COLUMN WITH PLANTER)
   A. Planter as manufactured by Longshadow Planters, Kailee Burgin, kailee@longshadow.com, 618.893.4831
   B. Model: Glencoe 24 Planter with Round Base 13, Model # LL9396, as shown on plans.
   C. Size: 24" Diameter Top, 21" Height, 13" Base
   D. Finish: Natural Dry Cast Buff Limestone
   E. Planter Fill: Included in the price for each Landscaping Planter installed.
      1. Lightweight planter soil, as shown on plans, to be PM 35 Planter Mix (#1204) by Midwest Trading Horticultural Supplies, 630.365.1990, www.midwest-trading.com
      2. Filter fabric, as shown on plans.
      3. Pea gravel, as shown on plans.
   F. Price for each shall include mortar at base and planter and drainage channels as shown on drawings.

<u>Construction Requirements</u>

1. Examination and Preparation
   A. Verify that field conditions are acceptable and are ready to receive masonry.
   B. Verify that related items provided under other sections are properly sized and located.
   C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
   D. Direct and coordinate placement of metal anchors supplied for installation under other sections.
   E. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

2. Cold and Hot Weather Requirements
    A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.
3. Concrete Formwork
    A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads within acceptable deflection limits.
    B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages, ind inserts, and other features required.

    C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
        1. Class A, 1/8 inch (3 mm), for surfaces predominantly exposed to public view.
        2. Class B, 1/4 inch (6 mm), for course-textured concrete formed surfaces intended to receive plaster, stucco, or wainscoting.
        3. Class C, 1/2 inch (13 mm). for all other surfaces.
    D. Construct forms tight enough to prevent loss of concrete mortar.
    E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
        1. Do not use rust-stained steel form-facing material.
    F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
    G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
    H. Chamfer exterior corners and edges of permanently exposed concrete with 1/2"x1/2" strips (unless otherwise indicated) accurately formed and surfaced to produce uniform straight lines and tight edges. Unexposed corners may be formed square or chamfered.
    I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items, including those under separate prime contracts (if any).
    J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
    K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
    L. Coat contact surfaces of forms with non-staining, rust preventative form-release agent, according to manufacturer's written instructions, before placing reinforcement. Rust stained steel formwork is not acceptable.
    M. Support form facing materials by structural members spaced sufficiently close to prevent deflection. Fit forms placed in successive units for continuous surfaces of accurate alignment, from irregularities and within allowable tolerances
    N. Elevate formwork as required for anticipated deflections due to weight and pressures of fresh concrete, shortening of formwork system, and construction loads.
    O. Carefully inspect falsework and formwork during and after concrete placement to determine abnormal deflection or signs of failure; make necessary adjustments to produce work of required dimensions.

P. Form intersecting planes to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.
Q. Forms for exposed Concrete:
    1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes.
    2. Do not use metal cover plates for patching holes or defects in forms.
    3. Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersection.
    4. Use extra studs, walers and bracing to prevent bowing of forms between studs and to avoid bowed appearance of concrete. Do not use narrow strips of form material that will produce bow.
    5. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.

4. Coursing
    A. Establish lines, levels, and coursing indicated. Protect from displacement.
    B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

5. Placing and Bonding
    A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
    B. Lay hollow masonry units with face shell bedding on head and bed joints.
    C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
    D. Remove excess mortar and mortar smears as work progresses.
    E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
    F. Interlock intersections and external corners, except for units laid in stack bond.
    G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
    H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
    I. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

6. Weeps/Cavity Vents
    A. Install weeps in veneer and cavity walls at 24 inches (600 mm) on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.
    B. Install cavity vents in veneer and cavity walls at 32 inches (800 mm) on center horizontally below shelf angles and lintels and near top of walls.

7. Cavity Mortar Control
    A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
    B. Install cavity mortar control panels continuously throughout full height of exterior masonry cavities during construction of exterior wythe, complying with manufacturer's installation instructions.
    C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

8. Reinforcement and Anchorage - General
    A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches (400 mm) on center.
    B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.
    C. Place continuous joint reinforcement in first and second joint below top of walls.
    D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch (16 mm) mortar cover on each side.
    E. Lap joint reinforcement ends minimum 6 inches (150 mm).
    F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches (900 mm) horizontally and 24 inches (600 mm) vertically.
    G. Embed ties and anchors in mortar joint and extend into masonry unit a minimum of 1-1/2 inches (38 mm) with at least 5/8 inch (16 mm) mortar cover to the outside face of the anchor.

9. Reinforcement and Anchorage – Masonry Veneer
    A. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches (400 mm) on center vertically and 36 inches (900 mm) on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches (200 mm) on center.

10. Masonry Flashings
    A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
        1. Extend flashings full width at such interruptions and at least 6 inches (152 mm), minimum, into adjacent masonry or turn up flashing ends at least 1 inch (25.4 mm), minimum, to form watertight pan at non-masonry construction.
        2. Remove or cover protrusions or sharp edges that could puncture flashings.
        3. Seal lapped ends and penetrations of flashing before covering with mortar.
    B. Terminate flashing up 8 inches (203 mm) minimum on vertical surface of backing:
    C. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
    D. Lap end joints of flashings at least 6 inches (152 mm), minimum, and seal watertight with flashing sealant/adhesive.

11. Grouted Components
    A. Lap splices minimum 24 bar diameters.
    B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch (13 mm) of dimensioned position.
    C. Place and consolidate grout fill without displacing reinforcing.

12. Tolerances
    A. Install masonry within the site tolerances found in TMS 402/602.
    B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch (1.6 mm).
    C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft (6 mm/3 m) and 1/2 inch in 20 ft (13 mm/6 m) or more.

D. Maximum Variation from Plumb: 1/4 inch (6 mm) per story non-cumulative; 1/2 inch (13 mm) in two stories or more.
E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft (3 mm/m) and 1/4 inch in 10 ft (6 mm/3 m); 1/2 inch in 30 ft (13 mm/9 m).
F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch (minus 6.4 mm, plus 9.5 mm).
G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch (6 mm).

13. Cleaning and Protection
A. Remove excess mortar and mortar droppings.
B. Replace defective mortar. Match adjacent work.
C. Clean soiled surfaces with cleaning solution.
D. Use non-metallic tools in cleaning operations.
E. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

Method of Measurement. The work for CONCRETE STEPS will be measured in place per square foot, in place complete. The work for MASONRY WALL and BRICK WALL shall be measured per lineal foot, in place complete. The work for COLUMN WITH PLANTER, shall be measured per each, in place complete.

Basis of Payment. This work will be paid for at the contract unit price per square foot for CONCRETE STEPS, contract unit price per lineal foot for MASONRY WALL and BRICK WALL, contract unit price per each for COLUMN WITH PLANTER.

BOLLARDS (INSTALL ONLY)

Description. Work under this item shall be performed according to all applicable sections of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified. This work shall consist of installing mortared Granite Bollards, furnished by the City, as defined by the limits indicated in the plans and provided details at the locations specified in the Contract plans or as directed by the Engineer.

General Requirements. Bollards will be placed at the location indicated in the plans. The locations will be field marked and verified for approval by the City.

Assembly. Anchoring pins must be located with each bollard in place. Bollards must be mounted in place as detailed in the plans. Anchoring pins must be drilled and grouted and set on mortar bed as indicated in the plans. into the concrete base for pavers, concrete wearing surface or concrete sidewalk.

Materials. Materials must be as specified in the plans and as follows:

1. Granite Bollard: Granite Bollards, furnished by the City, must be natural Granite per the specifications shown below. See plans for locations.
a. Type: Academy Black as manufactured by Coldspring Granite USA, Contact: Sam Stuber/Randy Dolphin, SStuber@coldspringusa.com, RDolphina@colspringusa.com, 800.328.5040

i. Size: Custom Shape and Size per plans
ii. Finish: Diamond 10 finish on all surfaces
iii. Color: Academy Black

Visual inspection - All units shall be sound and free of defects that would interfere with proper placing of the unit or impair the strength or performance of the construction.

2. Setting Bed Materials:

a. Bollard Joint Material: Joint filler around bollards to be mortar per granite manufacturer's recommendations. Color to match or complement granite color.

b. Bedding Course / Leveling Course: Mortar setting bed per plans.

General Requirements.

1. Protect Granite Bollards and mortar materials during storage and construction against wetting by rain, snow, or ground water and against soil or contamination from earth and other materials.

2. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace granite work damaged by frost or freezing.

3. Weather Limitations: Protect granite work against freezing when atmospheric temperature is 40 deg F (4 deg C) and falling. Heat materials and provide temporary protection of completed portions of granite work. Comply with International Masonry all-weather Council's "Guide Specification for Cold-Weather Masonry Construction."

4. Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures granite work being without damage or deterioration at time of Substantial Completion.

5. Clean Up: Sweep clean all paved areas of excess aggregate, mortar and dirt. Pick up and remove from the site any surplus materials, equipment, and debris resulting from this section of work.

Submittals.

1. Product Data: Provide product data and cut sheets for specified granite, setting bed, anchor pins, all applicable accessories, and manufacturer's standard installation details.

2. Shop Drawings: Provide shop drawings for all granite Bollards in accordance with the typical bollard plans and details shown in the plans.

3. Product Samples:

a. Provide material sample of granite material with specified finish.

b. Provide (1) grout sample and (1) one lb sample of mortar fill in color range to match granite bollard.

Construction Requirements.

1. **Examination:** Examine surfaces indicated to receive paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of granite. Do not proceed with installation until unsatisfactory conditions have been corrected.

2. **Preparation:** Inspect prepared subgrade surface to check for unstable areas and areas requiring additional compaction. Do not proceed with installation of granite until deficient subgrades have been corrected and are ready to receive mortar base for granite.

3. **Installation:**

A General

1. Inspect custom bollard for chips, cracks, voids, discoloration, and other defects prior to installation.

2. Use full units without cutting at all times. Should cutting granite be necessary, cut granite with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Hammer cutting is not acceptable. Cut granite only after Engineer review and approval.
3. Layout: As indicated in Plans.

4. Coordination: All work for Granite Bollards must be coordinated with the installation of all adjacent hardscape and landscape materials.

B. Site Inspection - Examine the substrates on which granite will be laid and the conditions under which the work will be performed. Notify the Engineer of any unsatisfactory conditions. Do not proceed with the work until all unsatisfactory conditions have been corrected.

C. Site Preparation - All subdrained or underground services within the pavement area must be completed in conjunction with subgrade preparation and before the commencement of base construction.

D. Bedding Course

1. The bedding course shall be spread in a uniform layer to give a depth of 3 inches per plans. The contractor shall screed the bedding course using either a mechanical screed beam apparatus or by the use of screed guides and boards.

2. The screeded bedding mortar shall not be subjected to any traffic by either mechanical equipment or pedestrian use prior to the installation of the granite. The voids left after the removal of the screed rails shall be filled with additional mortar as the granite bedding course proceeds.

E. Verification of Subgrade

1. The Contractor shall verify that the subgrade has been adequately prepared and protected from damage by other trades prior to installation of Granite Bollards.

2. Further construction will not proceed until the Engineer has inspected the subgrade.

F. Bollard Installation

1. Set Granite Bollard on leveling course, being careful not to disturb leveling base. Install stainless steel pins per plans. Space granite per plans to allow for a mortar joint.

2. Place mortar fill immediately after installing granite into leveling course. Spread and screed mortar level with tops and sides of granite. Clean all granite immediately after installation.

3. Remove and replace granite bollards that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

QA/QC Requirements.

A. Installer Qualifications: Engage an experienced Installer who has successfully completed granite installations similar in material, design and extent to that indicated for Project.

Method of Measurement. This work will be measured in place per each.

Basis of Payment. This work will be paid for at the contract unit price per each for BOLLARDS, installed, including all labor, equipment, accessories, and materials.

SITE AMENITIES

Description. This work must consist of furnishing and installing benches, trash receptacles, recycling receptacles, bike racks, and landscaping planters at the locations specified in the Contract plans or as directed by the Engineer.

General Requirements. Each item will be placed at the location indicated in the plans. The locations will be field marked and verified for approval by the City.

Assembly. Anchor bolts must be located with assembled item in place. All amenities must be mounted as detailed in the plans. Anchor bolts must be drilled and grouted into the concrete base for pavers, concrete wearing surface or concrete sidewalk.

Materials. Materials must be as specified in the plans and as follows:

Metal Bench: 72" Metal Bench (BENCHES) as manufactured by Victor Stanley, Jamie McArdle, jamiem@victorstanley.com, 301.789.6935

1. Model: C-138 Bench as shown on the plans
2. Size: 72" length
3. Finish: Black Powder Coat

Trash Receptacle: Trash Receptacle as manufactured by Landscape Forms, Jennifer Woods, jenniferw@landscapeforms.com, 800.730.6206 extension 1336

1. Metal Scarborough Trash Receptacle as shown on the plans
2. Size: 41" height
3. Options: Plastic Liner
4. Finish: Black Powder Coat

Recycling Receptacle: Recycling Receptacle as manufactured by Landscape Forms, Jennifer Woods, jenniferw@landscapeforms.com, 800.730.6206 extension 1336

1. Metal Scarborough Recycling Receptacle as shown on the plans
2. Size: 41" height
3. Options: Recycling logo and lettering at top and plastic liner
4. Finish: Black Powder Coat

Bicycle Racks: Bicycle Racks as manufactured by Landscape Forms, Jennifer Woods, jenniferw@landscapeforms.com, 800.430.6206 ext.1336

1. Model: Metro40 Collection as shown on plans
2. Size: 26" Height x 28" Width
3. Options: Surface Mount Installation with Cover Plate
4. Finish: Black Powder Coat

Landscaping Planter: Landscaping Planter (LANDSCAPING PLANTER) as manufactured by Longshadow Planters, Kailee Burgin, kailee@longshadow.com, 618.893.4831

1. Model: Traditional Trough, LS 9337, as shown on plans
2. Size: 25" Height, 54" Length, 20" Base
3. Finish: Natural Dry Cast Buff Limestone
4. Planter Fill: Included in the price for each Landscaping Planter installed.
    a. Lightweight planter soil, as shown on plans, to be PM 35 Planter Mix (#1204) by Midwest Trading Horticultural Supplies, 630.365.1990, www.midwest-trading.com
    b. Filter fabric, as shown on plans.
    c. Pea gravel, as shown on plans.

Planter – 30" Diameter: Planter 30: Diameter as manufactured by Longshadow Planters, Kailee Burgin, kailee@longshadow.com, 618.893.4831

1. Model: Adams 27 Planter, LS 9173 as shown on plans
2. Size: 31" Diameter Top, 27" Height, 20" Diameter Base
3. Finish: Natural Dry Cast Buff Limestone
4. Planter Fill: Lightweight planter soil, filter fabric, and pea gravel all as shown on plans. Included in the price for each Planter – 30" Diameter installed.

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 each item completely assembled including shop drawings of its component parts.

Method of Measurement. This work will be measured in place per each unit installed.

Basis of Payment. This work will be paid for at the contract unit price per each for BENCHES, TRASH RECEPTACLES, RECYCLING RECEPTACLE, BICYCLE RACKS, LANDSCAPING PLANTER, and PLANTER – 30" DIAMETER, which price will include labor, anchor bolts and bolt installation, equipment, materials and incidental work necessary to complete the installation.

STONE CURB

Description. Work under this item shall be performed according to all applicable sections of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified. This work shall consist of furnishing and installing tumbled granite cobble curb as defined by the limits indicated in the plans and provided details.

Materials.

1. **Stone Curb (Granite Cobbles):** Granite cobbles must be natural Granite per the specifications shown below. See plans for locations.

a. **Type:** Academy Black as manufactured by Coldspring Granite USA, Contact: Sam Stuber/Randy Dolphin, SStuber@coldspringusa.com, RDolphina@colspringusa.com, 800.328.5040
   i. **Size:** Varies (6” x 6” x 10”) (6” x 6” x 12”) (6” x 6” x 14”) Refer to Typicals.
   ii. **Finish:** Split top, front, and bottom, Sawn edges and back
   iii. **Color:** Academy Black
   iv. **Joints:** Unmortared 1/4” Width

2. Stone Curb (Flush ADA Cobbles): Granite curb must be natural Granite per the specifications shown below. Flush granite cobbles shall be used at all ADA ramp locations and shall match the curb radius as specified in the geometric layout plans.

a. **Type:** Academy Black as manufactured by Coldspring Granite USA, Contact: Sam Stuber/Randy Dolphin, SStuber@coldspringusa.com, RDolphina@colspringusa.com, 800.328.5040
   i. **Size:** 6” width x 6” length x 10” deep
   ii. **Finish:** Diamond 10 top, sawn edges, front, and back
   iii. **Color:** Academy Black
   iv. **Joints:** Unmortared 1/4” Width Max

Visual inspection - All units shall be sound and free of defects that would interfere with proper placing of the unit or impair the strength or performance of the construction.

3. Setting Bed Materials:

A. **PCC Base Course**: PCC embedment per plans.

B. **Subbase Course:** See plans for more information.

General Requirements.

1. Protect granite cobble curb materials during storage and construction against wetting by rain, snow, or ground water and against soil or contamination from earth and other materials.

2. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace granite work damaged by frost or freezing.

3. Weather Limitations: Protect granite work against freezing when atmospheric temperature is 40 deg F (4 deg C) and falling. Heat materials and provide temporary protection of completed portions of granite work. Comply with International Masonry all-weather Council's "Guide Specification for Cold-Weather Masonry Construction."

4. Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures granite work being without damage or deterioration at time of Substantial Completion.

5. Clean Up: Sweep clean all paved areas of excess aggregate, mortar and dirt. Pick up and remove from the site any surplus materials, equipment, and debris resulting from this section of work.

Submittals.

1. Product Data: Provide product data and cut sheets for specified granite and manufacturer's standard installation details.

2. Shop Drawings: Provide shop drawings for all granite cobble curb in accordance with the details shown in plans.

Construction Requirements.

1. **Examination:** Examine surfaces indicated to receive paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of granite. Do not proceed with installation until unsatisfactory conditions have been corrected.

2. **Preparation:** Inspect prepared subgrade surface to check for unstable areas and areas requiring additional compaction. Do not proceed with installation of granite until deficient subgrades have been corrected and are ready to receive PCC base course for granite.

3. **Installation:**

A General

1. Do not use granite with chips, cracks, voids, discoloration, and other defects that might be visible or cause staining in finished work.

2. If necessary, cut granite with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Use full units without cutting at all times. Hammer cutting is not acceptable.

3. Layout: As indicated in Plans.

4. Hand Tight Joints: Set granite with hand tight joints, approximately ¼"

5. Coordination: All work for Granite Cobble Curb must be coordinated with the installation of all adjacent hardscape and landscape materials.

B. Site Inspection - Examine the substrates on which granite will be laid and the conditions under which the work will be performed. Notify the Engineer of any unsatisfactory conditions. Do not proceed with the work until all unsatisfactory conditions have been corrected.

C. Site Preparation - All subdrained or underground services within the pavement area must be completed in conjunction with subgrade preparation and before the commencement of base construction.

D. Bedding Course

1. The bedding course shall be spread in a uniform layer to give a depth of 2 inches per plans. The subbase granular material shall be installed in accordance with Section 311 of the Standard Specifications.

2. The screeded bedding mortar shall not be subjected to any traffic by either mechanical equipment or pedestrian use prior to the installation of the granite. The voids left after the removal of the screed rails shall be filled with additional mortar as the granite bedding course proceeds.

E. PCC Embedment

1. The Contractor shall embed the cobble curb into a PCC Base Course (Variable Depth). The base course shall be in accordance with Section 353 of the Standard Specifications and the Special Provisions.

F. Curb Installation

1. Set Granite Cobble Curb in PCC base course to the lines and grades as shown in the plans. Space granite with a ¼" mortarless joint.

2. After installing granite into PCC base course clean all granite immediately after installation.

3. Remove and replace granite bollards that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

QA/QC Requirements.

A. Installer Qualifications: Engage an experienced Installer who has successfully completed granite cobble installations similar in material, design and extent to that indicated for Project.

Extra Material

A. The Contractor shall order an extra 100 pieces, 50 feet, of 6" x 6" 14" granite cobbles to be delivered to the City's municipal services yard for future maintenance. The 50 feet shall be 100% locally funded as shown in the summary of quantities.

B. All unused extra cobbles from the Coldspring order shall also become the property of the City of Lake Forest and shall be delivered to their municipal services yard.

Method of Measurement. This work will be measured in place per foot of installed length.

Basis of Payment. This work will be paid for at the contract unit price per foot for STONE CURB installed, including all labor, equipment, and materials. PCC Base Course will be measured for payment separately as PORTLAND CEMENT CONCRETE BASE COURSE (VARIABLE DEPTH).

PORTLAND CEMENT CONCRETE BASE COURSE (VARIABLE DEPTH)

Description. This work shall consist of constructing a Portland cement concrete base course for the proposed stone curb and adjacent to existing pavement as shown in the plans and as directed by the Engineer in accordance with applicable portions of Section 353 of the Standard Specifications.

Construction Requirements. The Contractor shall saw cut a full depth, clean edge following the alignment of the proposed curb and gutter offset by 1 foot and shall remove and dispose of the existing pavement.

When the proposed curb and gutter offset is located inside the existing edge of pavement a max pay limit of 1 foot will be allowed. When the proposed curb and gutter offset is located behind the existing edge of pavement, the proposed PCC base course shall be extended from the existing edge of pavement to the proposed edge of pavement.

Saw cutting existing pavement shall be included in the cost of this item. Pavement removal shall be measured for payment as PAVEMENT REMOVAL.

The bottom of the base course shall be placed on a minimum bedding of 2” compacted CA-6. The compacted CA-6 bedding material shall be measured for payment as SUBBASE GRANULAR MATERIAL, TYPE B 2”.

The bottom of the base course shall be a minimum of 12” below the bottom of the proposed polymerized HMA binder course as shown in the plan details. The top of the base course adjacent to existing pavement shall be flush with the bottom of the proposed polymerized HMA binder course. The top of the base course on the backside of the cobble curb shall be flush with the bottom of the proposed PCC base course, 4” for the brick paver band as shown in the plans.

The concrete base course shall be set up enough to support the weight of the granite cobbles while installing at the proposed lines and grades.

Method of Measurement. This work shall be measured for payment in square yards.

Basis of Payment. This work shall be paid at the contract unit price per square yard for PORTLAND CEMENT CONRETE BASE COURSE (VARIABLE DEPTH), which shall include all labor, equipment, and materials to complete the work as described in Section 353 of the SSRBC.

PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH (SPECIAL)

Description. This work shall consist of constructing an integrally colored and exposed sand finish PCC sidewalk in accordance with Section 424 of the Standard Specifications for Road and Bridge Construction and plan details at locations shown on the plans or as directed by the Engineer.

Materials.

1. **Integral Color:** Integral color shall be SikaColor
    a. **Option 1:** SikaColor 120G Granular C-16 – Winter Beige
    b. **Option 2:** SikaColor 100P Powder U-14 – Pewter

Contact: Joshua Woodford, woodford.joshua@us.sika.com, 815.354.3252

2. **Surface Retarder:** Surface retarder shall be Top Cast by GCP Applied Technologies
    a. **Option 1:** Top Cast 03 – Acid Etch Finish (Violet)
    b. **Option 2:** Top Cast 05 – Sand Blast Finish (Powder Blue Violet)

Contact: Bill Mchugh, bill.mchugh@gcpat.com, 678.427.9928

3. **Penetrating Sealer:** Penetrating Sealer shall be part of the Top Cast Decorative System
    a. **Option 1:** Top-Cast PR 300 Penetrating Protector

4. **Tie Bars:** Epoxy Coated Tie Bars in accordance with Section 1006.10 of the SSRBC.
    a. No 4 – ½" diameter x 18" long epoxy coated tie bars
    b. PCC Sidewalk 5 Inch (Special) to be tied to adjacent PCC Base Course, 4" for the brick paver band.

Prior to placement, the Contractor shall provide a minimum of eight 4' x 4' full depth test panels constructed as outlined in this special provision and as detailed in the plans and below to be approved by the Engineer and City.

Mockup Panel 1	SikaColor – Winter Beige Finish Option 1 – Top Cast 03
Mockup Panel 2	SikaColor – Winter Beige Finish Option 2 – Top Cast 05
Mockup Panel 3	SikaColor – Winter Beige - Finish Option 3 – Top Cast 03 w/ Granite/Quartz/Marble Particle Seeding
Mockup Panel 4	SikaColor – Winter Beige - Finish Option 4 – Top Cast 05 w/ Granite/Quartz/Marble Particle Seeding
Mockup Panel 5	SikaColor – Pewter Finish Option 1 – Top Cast 03
Mockup Panel 6	SikaColor - Pewter Finish Option 2 – Top Cast 05
Mockup Panel 7	SikaColor – Pewter - Finish Option 3 – Top Cast 03 with Granite/Quartz/Marble Particle Seeding
Mockup Panel 8	SikaColor – Pewter - Finish Option 4 – Top Cast 05 with Granite/Quartz/Marble Particle Seeding

The City shall reserve the right to make additional adjustments to the color or finish options if the above panels aren't satisfactory. If other color or finish options are requested, they shall be available options from SikaColor and GCP Applied Technologies. The City may request up to 6 additional mockup panels prior to placement of the final sidewalk.

Qualifications of Installer. Installer shall have a minimum of five years of experience installing exposed sand finish concrete and be able to provide references and examples of similar installations upon the request of the Engineer.

Concrete Mix Design. Mix designs shall be conducive to an exposed sand finish. The fine aggregate color shall consist of whites, grays, and/or blacks, to the extent feasible. Color samples shall be provided to the Engineer for review and approval. A coarse to fine aggregate ratio of 50/50 is recommended and the mix design shall meet Class SI requirements.

If directed to by the Engineer, PCC sidewalk shall be constructed with a high-early-strength concrete (Class PP-1) mix at certain strategic locations determined by the Engineer to minimize construction duration and impacts to adjacent business entrances. If directed, an additional Class PP-1 mix mockup test panel of the selected color and finish shall be provided prior to installation.

The pay item's use shall determine the class of concrete in accordance with Section 1020 of the Standard Specifications, with the exception that the minimum cement factor shall be 6.05 cwt. The coarse aggregate to be used shall contain no more than two percent by weight (mass) of deleterious materials. Deleterious materials shall include substances whose disintegration is accompanied by an increase in volume which may cause spalling of the concrete.

Integral Color. SikaColor integral color shall be added to the concrete mix according to the manufacture's written instructions. A water/cement ratio range of ± 0.02 is recommended to prevent color variations between pours.

Concrete Finishing. It is very important for micro etch finishes that the concrete be screeded flat. The concrete shall be rolled with roller tamper to ensure that coarse aggregate is pushed down and away from the surface. Rolling with tamper shall be immediately followed with bullfloating. If possible, and for best results, concrete should be bullfloated in both directions.

If the particle seeding finish option is selected, an equal parts mixture of black, gray, and white granite, quartz, and marble particles between 1/16" and 1/8" in size shall be uniformly cast by hand and embedded into the concrete with a float until it's completely covered by a thin layer. A sample of the granite, quartz, and marble particles shall be submitted to the Engineer for review and approval prior to mockup installation.

Concrete shall be floated and then troweled to level and smooth surface. There shall be no trowel, edger or jointer ridge marks on the surface. If ridge marks are visible on the surface prior to application of Top Cast, then they will show on the final surface after Top-Cast removal.

Exposed Sand Finishes: The use of a rolling tamper, jitterbug or rolling jitterbug shall be considered when producing micro etched concrete surfaces. This will enable the finisher to create a denser surface paste with no obstruction due to the appearance of coarse aggregate, allowing for a uniform sand texture.

1. Protect all areas, aluminum trim, curbs, borders and adjacent concrete and masonry surfaces, pavers, stones etc. that are not to receive retarder finish prior to concrete placement and retarder application using Top Cast SS 100 Surface Protectant or other means and methods.

2. Place concrete in the manner prescribed previously. Screed or strike off the surface in two (2) directions using a wooden or metal straight edge to achieve the proper elevation in a sawing motion back and forth.

3. Allow the bleed water to evaporate the surface. It can then be floated using a wooden hand float or a bull-float preferably wooden to close the surface and surround the coarse aggregate with cement paste. Float to a uniform appearance. Follow float operations with hand trowels or Fresno steel trowels to create tight dense smooth surface. (This may require two or three passes depending upon mix design and or desired finish to be achieved)

4. To reduce the rate of evaporation of moisture from the concrete use an evaporation retardant in accordance with the manufacturer's guidelines during the finishing process. This reduction of moisture loss allows time for the proper level of finishing.

5. Do not burnish the surface or allow the micro etched surface to prematurely dry prior to the application of Top Cast. Top-Cast shall be applied when surface still has sufficient moisture content in the surface. Lack of moisture will cause loss of depth of etch and make removal more difficult.

Concrete Surface Retarder. Spray Applied, film forming top surface retarder, designed for specific sized aggregates and finish requirements. Color coded to allow for ease of application and verification of grade being used as well as even and complete coverage.

1. Soon after the final seal finish has been completed spray GCP Applied Technologies "Top Cast" surface retarder using a low-pressure sprayer with a 0.5gpm tip at a rate of 200—350 sq./ft. per gallon in a full hiding coat. Once dry GCP Applied Technologies "Top Cast" will yield a coating that provides intermittent rain protection. Once completely dry it can be covered to protect the surface if heavy extended rains are predicted.

2. Wash surface with water rinse using stiff brooms and water hose or by high pressure washing with power equipment as early as 4-16 depending on weather conditions. Retarder removal intervals are dependent upon strength of the concrete mix, aggregate size and desired washing techniques. Earlier washing on the light etches may be necessary. Verify removal timing in accordance with the mock-up approval detailed herein.

3. Rinse water and cement matrix removal shall be in accordance with local codes and should not be allowed to be washed or flow down to storm sewers, ponds, streams or sanitary sewers by precipitation or other surface flows.

4. Prior to completion of the project, remove wash water residue from the site to location approved by the local district.

Surface Repairs. The Contractor shall remove and replace concrete with defective surfaces if defects cannot be repaired to the satisfaction of the Engineer. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface as well as stains and other discolorations that cannot be removed by cleaning.

Removal and replacement of defective surfaces shall not be measured for payment but shall be included in the cost of PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH, SPECIAL.

Expansion Joints. The Contractor shall install 3/4" premolded expansion joints in accordance with Section 424 of the SSRBC or as determined by the Engineer. A polyurethane joint sealant, approved by the Engineer, shall be neatly applied to the top 1/2" of the expansion joint. The joint sealant shall be self-leveling or nonsagging and meet ASTM C-920, Type S, Grade P or NS, class 25.

Sealant color shall be beige or gray, to be approved by the Engineer, to compliment the selected color of PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH (SPECIAL). The surface shall be properly cleaned prior to installation to ensure proper adhesion.

Penetrating Sealer. Top-Cast PR 300 Penetrating Protector, a water-based surface sealer, shall be applied to the finished PCC sidewalk. Prior to final placement, the Engineer may require the contractor to perform an application test on each half of the test panels. This test shall be at no additional cost to the contract.

Sealer shall be clear and have no lasting effect on the appearance of the surface to which it is being applied. Contractor shall follow all of the manufacturer's instructions for the sealer application and shall apply sealer at the maximum application rate designated by the manufacturer. The Contractor shall submit sealer specifications to the Engineer.

Method of Measurement. This work shall be measured for payment in place and the area computed in square feet.

Basis of Payment. This work shall be paid at the contract unit price in square feet for PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH, SPECIAL which shall include all labor, equipment, and material to construct the proposed work as specified herein.

COMBINATION CONCRETE CURB AND GUTTER, TYPE M (SPECIAL)

Description. This work shall consist of constructing a mountable combination concrete curb and gutter as shown in the plans and as directed by the Engineer in accordance with Section 606 of the Standard Specifications and Lake Forest Standard Detail 2.06.

Method of Measurement. This work shall be measured for payment per foot.

Basis of Payment. This work shall be paid at the contract unit price per foot for COMBINATION CONCRETE CURB AND GUTTER, TYPE M (SPECIAL), which shall include all labor, equipment, and materials to complete the work as described herein.

PORTLAND CEMENT CONCRETE BAND FOR PAVER BRICKS

Description. This work shall consist of constructing a colored and exposed sand finish PCC band paver bricks in accordance with Section 424 and 606 of the Standard Specifications for Road and Bridge Construction and plan details at locations shown on the plans or as directed by the Engineer.

Materials. The materials shall be in accordance with the special provision PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH (SPECIAL) and shall match the selected mockup for the adjacent decorative sidewalk. Epoxy coated rebar shall be in accordance with Article 1006.10 of the SSRBC.

If directed to by the Engineer, PCC Band for Paver Bricks shall be constructed with a high-early-strength concrete (Class PP-1) mix at certain strategic locations determined by the Engineer to minimize construction duration and impacts to traffic. If directed, an additional Class PP-1 mix mockup test panel of the selected color and finish shall be provided prior to installation.

Construction Requirements. The construction requirements shall be in accordance with the special provision PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH (SPECIAL).

Method of Measurement. This work shall be measured for payment in place per foot.

Basis of Payment. This work shall be paid at the contract unit price per foot for PORTLAND CEMENT CONCRETE BAND FOR PAVER BRICKS, which shall include all labor, equipment, and material to construct the proposed work as specified herein.

BRICK PAVERS

Description. Work under this item shall be performed according to all applicable sections of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified. This work shall consist of installing concrete Brick Pavers for heavy vehicle applications in a bituminous setting bed as defined by the limits indicated in the plans and provided details.

Qualifications of Installer. Installer shall have a minimum of five years of experience installing clay pavers in a bituminous setting bed and be able to provide references and examples of similar installations upon the request of the Engineer.

Materials.

1. **Unit Brick Pavers:** Custom Unit Pavers as manufactured by Unilock, Contact: Brad Swanson, Brad.Swanson@unilock.com, 630.742.4168

    a. **Shape:** Hollandstone
    b. **Size:** 4” x 8” x 3” (100mm x 200mm x 80mm)
    c. **Finish:** Series
    d. **Color:** Nordic Star

    Visual inspection - All units shall be sound and free of defects that would interfere with proper placing of the unit or impair the strength or performance of the construction.

2. Setting Bed Materials:

1. **Paver Void Fill:** Paver void fill to be black or dark gray impervious polymeric sand per manufacturer's recommendations and requirements. Test results from an independent testing laboratory for sieve analysis per ASTM C 136 conforming to the grading requirements of ASTM C 144.

Bedding Course / Leveling Course: The leveling course for curb banding shall be a 1" thick of coarse sand in accordance with ASTM-D2940 screeded over base. The leveling course for crosswalk applications shall be a bituminous setting bed that meets the requirements of asphalt cement/binder complying with ASTM D3381 or ASTM D6373. Fine aggregate shall comply with ASTM D1073 or ASTM D3515. The bituminous setting bed will not be measured separately, but shall be included in the cost of BRICK PAVERS.

1. **Subbase Material:** The base course shall be constructed over SUBBASE GRANULAR MATERIAL, TYPE B 4" for crosswalk pavement applications and curb banding applications.

2. **Base Course:** The base course shall consist of HIGH-EARLY-STRENGTH PORTLAND CEMENT CONCRETE BASE COURSE 8" for crosswalk pavement applications and PORTLAND CEMENT CONCRETE BASE COURSE, 4" for curb banding applications.

3. **Tack Coat:** Tack coat shall be emulsified asphalt complying with ASTM D977, Type SS-1 or SS-1h or cutback asphalt complying with ASTM D2028 and shall be included in the cost of BRICK PAVERS.

4. **Bituminous Setting Bed:** Bedding sand material shall conform to the grading requirements of Mixture IL-4.75 and Section 406 of the Standard Specifications.

5. **Filter Fabric:** The filter fabric shall conform to Section 282 of the Standard Specifications and will not be measured for payment but shall be included in the cost of BRICK PAVERS. Nonwoven needle-punched geotechnical fabric, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

   Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.

   Permittivity: 0.5 per second, minimum; ASTM D 4491

6. **Weep Holes:** The Contractor shall drill 2" weep holes, spaced 24" on center as detailed in the plans and fill with washed pea gravel, CA 11, or CA 13. Weep holes shall be included in the cost of BRICK PAVERS.

Extra Material.

A. The Contractor shall order an extra 6 pallets, approx. 500 square feet, of brick pavers to be delivered to the City's municipal services yard for future maintenance. The 500 square feet shall be 100% locally funded as shown in the summary of quantities.

B. All unused brick pavers from the Unilock order shall also become the property of the City of Lake Forest and shall be delivered to their municipal services yard.

General Requirements.

1. Protect Unit Brick Pavers and aggregate during storage and construction against wetting by rain, snow, or ground water and against soil or contamination from earth and other materials.

2. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

3. Weather Limitations: Protect paver work against freezing when atmospheric temperature is 40 deg F (4 deg C) and falling. Heat materials and provide temporary protection of completed portions of paver work. Comply with International Masonry all-weather Council's "Guide Specification for Cold-Weather Masonry Construction."

4. Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures paver work being without damage or deterioration at time of Substantial Completion.

5. Clean Up: Sweep clean all paved areas of excess aggregate and dirt. Pick up and remove from the site any surplus materials, equipment, and debris resulting from this section of work.

Submittals.

1. Product Data: Provide product data and cut sheets for specified unit paver, setting bed, all applicable accessories, and manufacturer’s standard installation details.

2. Product Sample: Provide (3) three full-size samples for each specified paver type showing full range of color variation

3. Samples for Initial Selection: Provide three representative samples in containers of Polymeric Joint Sand material, cured and dried, for color selection.

4. Product Sample: Provide (3) three (1) one lb samples of Polymeric Joint Sand in standard color range to match or complement unit paving.

Construction Requirements.

1. **Examination:** Examine surfaces indicated to receive paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of pavers. Do not proceed with installation until unsatisfactory conditions have been corrected.

2. Preparation: Inspect prepared subgrade surface to check for unstable areas and areas requiring additional compaction. Do not proceed with installation of pavers until deficient subgrades have been corrected and are ready to receive subbase for pavers.

3. Installation:

A General

1. Do not use pavers with chips, cracks, voids, discoloration, and other defects that might be visible or cause staining in finished work.

2. Cut pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

3. Pattern: As indicated in Plans.

4. Hand Tight Joints: Where Unit Brick Pavers are indicated without spaced joints, set pavers with hand tight joints.

5. Tolerances: Do not exceed 1/16 inch unit-to-unit offset from flush (lippage) and a tolerance of 1/8 inch in 10'-0" from level or slope as indicated, for finished surface of paving.

6. Slope: All Unit Brick Pavers must be laid at slope as noted on plans or as approved by the Engineer.

7. Coordination: All work for Unit Brick Pavers must be coordinated with the installation of all adjacent hardscape and landscape materials.

B. Site Inspection - Examine the substrates on which pavers will be laid and the conditions under which the work will be performed. Notify the Engineer of any unsatisfactory conditions. Do not proceed with the work until all unsatisfactory conditions have been corrected.

C. Site Preparation - All subdrained or underground services within the pavement area must be completed in conjunction with subgrade preparation and before the commencement of base construction.

Tack Coat

1. The proposed concrete base course shall be cleaned of all dust, debris, and oil prior to installation of tack coat. The tack coat, should be installed when the ambient temperature is above 50 °F (10 °C). The surface of the base material should be thoroughly clean and dry before application. The tack coat should not be applied if rain is likely before placing the setting bed.

2. The tack coat should be thoroughly mixed and heated to the appropriate application temperature, taking all necessary safety precautions. The tack coat should not be diluted. It should be uniformly applied by spraying, brushing or squeegeeing to the top of the base and to all surfaces that will be in contact with bituminous setting bed. The application rate should be established before the work starts. As work progresses, the rate can be verified by marking out the area that one pail or drum will cover. The installer should not apply more tack coat at any time than can be covered with the bituminous setting bed during the same day.

3. Emulsified asphalt tack coats are typically applied at a rate of 0.9 to 1.3 gal per 100 ft² (3.6 to 5.3 liters per 10.0 m²) to concrete bases and 0.6 to 1.0 gal per 100 ft² (2.5 to 4.1 liters per 10.0 m²) to asphalt bases. Cutback asphalt tack coats are typically applied at a rate of 1.2 to 1.5 gal per 100 ft² (4.8 to 6.1 liters per 10.0 m²) to concrete bases and 1.0 to 1.3 gal per 100 ft² (4.1 to 5.3 liters per 10.0 m²) to asphalt bases. Once applied the tack coat should not be disturbed and should be allowed to cure or break before covering with the setting bed material. This may take a few hours dependent on weather conditions.

4. The tack coat should be applied to the base in a thin, continuous, uniform layer. If it is applied too thin or so that some areas of the base remain uncoated, the setting bed will not bond properly, creating a weakness or layer separation in the pavement. This can be detrimental if water accumulates and freezes in the separated area. If too much tack coat is applied, the thicker areas can create a slip plane, or the tack coat can penetrate the bituminous setting bed material and reduce its stability. These issues become more critical as the amount of vehicular traffic increases.

E. Bituminous Setting Bed

1. Asphalt shall be spread over the PCC base course to the depth indicated on the plans as a setting bed for pavers. Temperature should be above 40°F (4 °C) before placing setting bed material. Depth-control rails should be set on the existing surface to proper line and level using shims to account for surface irregularity. Allowance should be made for compaction of the bituminous mix, not only during construction but also in service. An experienced contractor will increase the thickness for different conditions so as to achieve the correct long-term surface profiles. Without additional recommendations, the setting bed thickness should be established so that when the pavers are fully set on the adhesive layer, their top surface will be about ⅛ in. (3.1 mm) above the required grades to allow for future settlement.

2. Setting bed material should be delivered to the job site in trucks with steel linings that are clean and have not been treated with materials (e.g., gasoline, kerosene, etc.) detrimental to the asphalt mix. To retain heat, the bituminous mixture should be covered prior to use. The temperature of the setting bed material at the time of delivery should not be less than 260 °F (127 °C) or more than 320 °F (160 °C). The installer should work quickly to spread and roll the material before it cools below 180 °F (82 °C).

3. When installing by hand, small orders of 1 or 2 tons (900 to 1800 kg) are generally all that can be handled before the mixture cools. Aggregate particles within the mixture ⅜ in. (9.5 mm) or larger should be removed during installation. Steel depth control rails, typically 12 ft. (3.6 m) long, are set up at 8 to 12 ft (2.4 to 3.6 m) centers on shims to achieve a uniform profile. The compacted setting bed should be within ±⅛ in. (3.2 mm) of ¾ in. (19.1 mm) in thickness.

4. Care should be taken to ensure that release agents applied to the screed rails and tools do not cause damage to the bituminous setting bed. The hot bituminous material should be spread over the tack-coated base and screeded to the appropriate profile between the depth control rails. The screeded panels should be advanced across the pavement as each screed rail length is completed. To minimize foot traffic on the screeded material, alternate panels should be constructed so that the screed rails and shims can be removed without disturbing the screeded material. The infill panel is screeded using the edges of the two outside panels to set the thickness.

5. Fill low spots and depressions with additional hot material as the work progresses to produce a firm even surface. Prior to filling, a depth of at least ¼ in. (6.3 mm) should be formed around the edges of low spots to avoid creating feather edges that could deteriorate prematurely. Low spots must not be filled with other materials. During installation of the setting bed the levels and surface profiles should be verified by fully compacting a small area of the setting bed. Care should be taken to compact the bituminous material to a uniform density and surface texture while still hot. Compaction shall be in accordance with Article 406.07 of the Standard Specifications. If the setting bed is not adequately compacted, the adhesive will be over applied and will be squeezed through the joints to the surface as the setting bed is further compacted in service. This more frequently happens when the bituminous material has cooled below the appropriate working temperature.

6. The extent of the bituminous bed installed can be equal to two to three days of subsequent paver installation. Setting bed that is not covered by pavers should be protected from rain, dust and traffic. If any contamination or damage occurs, the affected areas of setting bed should be removed and replaced to their full depth.

7. Neoprene Adhesive: Neoprene modified asphalt adhesives are proprietary materials that should be prepared in accordance with the manufacturer's instructions. The adhesive should be applied by trowel, brush or squeegee to achieve a uniform coat of adhesive no more than 1⁄16 in. (1.6 mm) thick over the top of the bituminous setting bed. Typical application rates are between 2 and 3 gal per 100 ft² (8.2 to 12.3 liters per 10.0 m²). Do not apply pavers to adhesive until dry skin forms on surface of adhesive, approximately 2-3 hours depending on air temperature. To ensure that sufficient adhesive is being applied, occasionally lift random pavers during installation to verify complete coating of the underside with adhesive. If too much adhesive is used it may ooze up to the surface through the joints. The adhesive should be permitted to become tacky before placing the pavers. This may take two to three hours after spreading, dependent on climatic conditions. While the adhesive is becoming tacky the installer may establish string lines to maintain the pattern.

F. Paver Installation

1. Setting bed shall be protected from damage prior to setting pavers. Unit pavers shall be set on bituminous setting bed. Setting shall be done by competent workmen under adequate supervision, and in accordance with manufacturer's recommendations.

2. 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.

3. Pavers shall be tightly butted. Joints between pavers shall be uniform and shall not exceed 1/16” minimum and 1/8” maximum. 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.

4. After a sufficient area of pavers has been installed, the pavers shall be compacted by running a mechanical vibratory compactor with a protective polymer pad over the paved surface until the pavers are uniformly leveled, true to grade, and totally immobilized.

5. To reduce dust during paver installation, pavers shall only be cut using wet masonry or concrete saws. Cut edges shall be plumb and straight. Scoring and breaking shall not be acceptable.

6. Joints between pavers shall be filled by sweeping an ordinary concrete sand stabilized by a water-based or solvent-based joint sand stabilizer sealer sharp sand into the joints. Series has a deep texture which may trap sand particles. Always blow surface off completely before stabilizing the sand. Refer to manufacturer’s application specifications and requirements.

7. Remove and replace pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

8. 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.

QA/QC Requirements.

A. Installer Qualifications: Engage an experienced Installer who has successfully completed paver installations similar in material, design and extent to that indicated for Project.

B. Field-Constructed Mock-Up: Prior to installation of pavers, erect mock-ups for each form and pattern of pavers required to verify selections made under sample submittals. Build mock-ups to comply with the following requirements, using materials and same base construction including special features for expansion joints and contiguous work as indicated for final unit of work.

1. Locate mock-ups on-site to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

2. Notify Engineer one week in advance of the dates and times when mock-ups will be erected.

3. Demonstrate quality of workmanship that will be produced in final unit of work.

4. Obtain Engineer's acceptance of mock-ups before start of final unit of work.

5. Retain and maintain mock-ups during construction in undisturbed condition as a standard for judging completed unit of work. Accepted mock-ups in undisturbed condition at time of Substantial Completion may become part of completed unit of work.

Method of Measurement. This work will be measured in place per square foot of installed brick pavers.

Basis of Payment. This work will be paid for at the contract unit price per square foot for BRICK PAVERS, installed, including all labor, equipment, and materials as specified herein.

BITUMINOUS MATERIALS (TACK COAT), SPECIAL

Description. This work shall consist of furnishing and installing non-tracking bituminous tack coat at the locations specified in the Plans, as directed by the Engineer, and in accordance with Section 406 of the Standard Specifications.

Materials. Tack coat shall be non-tracking in accordance with Article 1032.06 (F).

Method of Measurement. This work shall be measured for payment in pounds installed.

Basis of Payment. This work shall be paid for at the contract unit price per pound for BITUMINOUS MATERIALS (TACK COAT), SPECIAL.

HOT-MIX ASPHALT DRIVEWAY PAVEMENT 8"

Description. This work shall consist of furnishing, placing, and compacting of hot-mix asphalt driveway pavement at the locations specified in the Plans, as directed by the Engineer, and according to the applicable portions of the Standard Specifications. The HMA driveway pavement shall consist of HMA surface and binder course as specified in the HMA mix table provided in the Plans.

Construction Requirements. This work shall be performed in accordance with Section 406 of the Standard Specifications. The HMA driveway pavement shall be constructed on a compacted granular base as specified in the Plans.

Method of Measurement. This work shall be measured for payment in square yard installed.

Basis of Payment. This work shall be paid for at the contract unit price per square yard for HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 8". SUBBASE GRANULAR MATERIAL, TYPE B 4" shall be measured and paid for separately.

BLACK COLORED SIGN MOUNTING HARDWARE

Description. This work shall consist of furnishing and installing black colored mounting hardware that matches the proposed sign supports and light pole mounting. Black colored sign mounting hardware for relocated and proposed signs located throughout the project shall be in accordance with Section 720 of the Standard Specifications.

Basis of Payment. This item will not be measured for payment but shall be included in the cost of the proposed sign items.

SIGN SUPPORT (SPECIAL)

Description. This work shall consist of furnishing and installing decorative aluminum sign supports and black sign frames for ground mounted signs in accordance with Section 728 of the Standard Specifications, IDOT Highway Standard 720006 and as revised or amended in these special provisions.

Materials. Materials shall be cast aluminum with a black power coat finish as manufactured by Signature Streetscapes. The sign support shall include three components:

1. Cast aluminum post base for 3" diameter fluted post, 2 piece split, black finish (BS-03A)
2. Fluted Aluminum Sign Post, 3" diameter, black finish, 12' -0" post height (FL-0312)
3. Globe Cast Aluminum Finial, 3" diameter, black finish (FN-0203)

Sign frames shall be black powder coated aluminum and provide a 2 inch border around the proposed sign panel.

Construction Requirements. The sign locations shall be staked by the Engineer prior to the installation of the posts. The Contractor shall be responsible for the proper elevation, offset, and orientation of all signs as indicated in the plans or as directed by the Engineer. Sign posts shall have a direct bury depth of 30", backfilled with concrete, and be installed per the manufacturer's guidelines. Sign panels shall be attached to the fluted aluminum sign post in accordance with the manufacturer's guidelines.

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

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

DUST CONTROL WATERING

Description. This work shall consist of furnishing and applying water to control dust and air-borne dirt generated by construction activities.

General. This work shall be performed according to Article 107.36 of the "Standard Specifications" and the following:

Revise Article 107.36 of the "Standard Specifications" as follows:

Replace sub-paragraph (d) of under the third paragraph with the following:

> (d) Dust shall be controlled by the uniform application of sprinkled water and shall be applied only when directed and in a manner approved by the Engineer. All equipment used for this work shall meet with the Engineer's approval and shall be equipped with adequate measuring devices for determining the exact amount of water discharged. All water used shall be properly documented by ticket or other approved means.

The Contractor is reminded of the provisions of Article 107.18 of the "Special Provisions" regarding the procurement of water from fire hydrants.

Method of Measurement. This work will be measured in units of gallons of water applied. One unit is equivalent to 1,000 gallons of water applied.

Basis of Payment. This work will be paid for at the contract unit price per unit for DUST CONTROL WATERING. The unit price shall include all equipment, materials and labor required to control dust.

WASHOUT BASIN

Description. The contractor shall take sufficient precautions to prevent pollution of streams, wetlands, and natural areas of fuels, oil, bitumens, calcium chloride, or other harmful materials according to Article 107.23 of the Standard Specifications. This item shall consist of constructing and maintaining a washout basin for concrete trucks and other construction vehicles.

General. To prevent pollution by residual concrete and/or the byproduct of washing out the concrete trucks, concrete washout facilities shall be constructed and maintained on any project which includes cast-in-place concrete items. The concrete washout shall be constructed, maintained, and removed according to this special provision. Concrete washout facilities shall be required on all projects regardless of the need by NPDES permitting.

The Contractor may elect to use a pre-fabricated portable concrete washout structure or the washout basin shall be in accordance with Illinois Urban Manual standards IUM-654BW, IUM-654ET, or IUM-654SB. The Contractor shall submit a plan for the concrete washout facility to the Engineer for approval a minimum of 10 calendar days before the first concrete pour. The working concrete washout facility shall be constructed before any delivery of concrete to the site. The Contractor shall ensure that all concrete washout activities are limited to the designated area. The concrete washout facility shall be located no closer than 50 feet from any environmentally sensitive areas such as water bodies, wetlands, and/or other areas indicated on the plans. Adequate signage shall be placed at the washout facility and elsewhere as necessary to clearly indicate the location of the concrete washout facility to the operators of concrete trucks.

The concrete washout facility shall be adequately sized to fully contain the concrete washout needs of the project. The contents of the concrete washout facility shall not exceed 75% of the facility capacity.

Once the 75% capacity is reached, concrete placement shall be discontinued until the facility is cleaned out. Hardened concrete shall be removed and properly disposed of outside the right of way. Slurry shall be allowed to evaporate or shall be removed and properly disposed of outside the right of way. The Contractor shall immediately replace damaged basin liners or other washout facility components to prevent leakage of concrete waste from the washout facility. Concrete washout facilities shall be inspected by the Contractor after each use. Any and all spills shall be reported to the Engineer and cleaned immediately. The Contractor shall remove the concrete washout facility when it is no longer needed.

Basis of Payment. This work shall be paid for at the contract unit price per lump sum for WASHOUT BASIN, which shall include general maintenance and removal of all construction debris and all material, labor, tools, equipment, disposal of surplus material, and incidentals necessary to complete this item of work.

TEMPORARY INFORMATION SIGNING
Effective: November 13, 1996
Revised: January 29, 2020

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 (Note 1)	1090
b.)	Sign Face (Note 2)	1091
c.)	Sign Legends	1091
d.)	Sign Supports	1093
e.)	Overlay Panels (Note 3)	1090.02

Note 1. The Contractor may use 5/8 inch (16 mm) instead of 3/4 inch (19 mm) thick plywood.
Note 2. The sign face material shall be in accordance with the Department's Fabrication of Highway Signs Policy.
Note 3. 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 bridges, sign structures or sign panels shall be approved by the Engineer. Any damage to the existing signs and/or structures 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 shall be measured for payment in square feet (square meters) 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 shall be paid for at the contract unit price per square foot (square meter) for TEMPORARY INFORMATION SIGNING.

REMOVAL OF LIGHTING UNIT, SALVAGE

Description. This work shall consist of the removal and disposal or removal and salvage of existing roadway light units as directed by the Engineer.

Construction Requirements. All construction requirements shall be in accordance with SECTION 842 REMOVAL OF LIGHTING UNITS, of the Standard Specifications.

The poles, luminaires, fixtures, and all associated hardware and appurtenances shall remain the property of the City of Lake Forest and shall be delivered by the Contractor to a location within the City chosen by the Engineer and unloaded and stacked there, as directed by the Engineer. Wood blocking, banding, or other appurtenant items required for proper stacking and protection shall be included.

The Engineer shall determine the existing roadway poles and luminaires that will be salvaged. Pole and luminaires that are not desired by the City shall be properly disposed of offsite in accordance with Section 842 of the SSRBC.

Salvaged fixtures and luminaires shall be removed, boxed in new containers, approved by the Engineer, and delivered to a City facility, as designated by the Engineer.

The elliptical arms, cobra heads, and associated hardware and appurtenances shall be salvaged. The salvaged elliptical arms and cobra heads shall be reinstalled on new poles at locations shown on the plans. Luminaires shall be removed and properly stored until ready for reinstallation on new poles.

Method of Measurement. This work will be measured for payment for each lighting unit which is removed.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVAL OF LIGHTING UNIT, SALVAGE.

REMOVE EXISTING JUNCTION BOX

Description. This work shall consist of the removal and disposal of existing light pole junction boxes as shown in the plans or as directed by the Engineer.

General. No removal work will be permitted without approval from the Engineer. Removal shall not start until permanent lighting, as applicable, is placed in approved operation. An inspection and approval by the Engineer will take place before any associated proposed permanent lighting is approved for operation.

Removal of Junction Box. Junction boxes shall be removed and disposed off-site of according to Section 842 of the SSRBC. Underground conduits and cables shall be separated from the junction box below grade and shall be abandoned as indicated. The void caused by the removal of the foundations shall be backfilled with trench backfill, which will not be measured for payment but shall be included in the cost of the removal.

Method of Measurement. This work shall be measured for payment for each junction box removed and disposed of.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVE EXISTING JUNCTION BOX.

REMOVAL OF POLE FOUNDATION

Description. This work shall consist of the removal and disposal of existing light pole foundations.

General. No removal work will be permitted without approval from the Engineer. Removal shall not start until permanent lighting, as applicable, is placed in approved operation. An inspection and approval by the Engineer will take place before any associated proposed permanent lighting is approved for operation.

Removal of Pole Foundation. Concrete foundations shall be removed to at least 2 ft below grade, with removed material disposed of according to Article 202.03. The removal shall extend deeper where required to facilitate roadway or sidewalk construction at no additional cost to the Contract. Underground conduits and cables shall be separated from the foundation at 2.5 ft below grade and shall be abandoned or re-used as indicated. The void caused by the removal of the foundations shall be backfilled according to Article 819.04.

Method of Measurement. Each lighting unit foundation which is removed and disposed of as indicated, will be measured for payment per each.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVAL OF POLE FOUNDATION.

HANDHOLE (SPECIAL)

Description. This work shall consist of furnishing and installing lighting handholes and concealing assemblies as detailed in the plans in accordance with Section 814 of the SSRBC.

Materials. All lighting handholes shall be composite concrete per IDOT Highway Standard 814001, with inside dimensions of 24 inches minimum. Frames and lid openings shall match this dimension. The cover of the handhole frame shall be labeled “Electric” with legible letters. For grounding purposes the handhole frame shall have provisions for a 7/16 inch (15.875mm) diameter stainless bolt cast into the frame. The covers shall have a stainless steel threaded stint extended from the eye hook assembly for the purpose of attaching the grounding conductor to the handhole cover.

Each handhole shall be concealed with a stainless steel WunderCover, model WC90-90-13.5D-7.5F-P-SS. The tray shall include a wire mesh insert kit and be filled with PCC Sidewalk 5 Inch (Special) per the manufacturer’s guidelines. The WunderCover shall be mounted and installed in accordance with the manufacturer’s guidelines.

The contractor shall furnish and deliver the WunderLift Kit with a 500 pound lift capacity to the City. The Wunderlift Kit shall become the property of the City after project completion.

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

Basis of Payment. This work will be paid for at the contract unit price per each for HANDHOLE (SPECIAL), which price shall include payment in full for all necessary excavation, backfilling, disposal of unsuitable material, furnishing and installing the handhole and concealing assembly.

LIGHT POLE FOUNDATION

Description. Light pole foundations shall be constructed to support ornamental light units at locations as indicated on the Plans. This work shall include installing any necessary hardware (entering conduits, bolts, anchor rods, grounding, etc.) as shown on the Plans. This work shall also include any topsoil, fertilizing, seeding, and mulching of the distributed areas in accordance with Sections 211, 250, and 251 of the Standard Specifications.

Materials. Light pole foundations shall be according to materials defined in Article 836.02 of Section 836 of the Standard Specifications. All anchor bolts shall be in accordance with Section 1006.09 of the Standard Specifications except that all anchor bolts shall be hot dipped galvanized the full length of the anchor bolt including the hooks. Anchor bolts shall provide bolt spacing as shown in the Plans and as required by the pole manufacturer.

The light pole foundations shall also be fabricated in accordance with Section 1070 of the Standard Specifications. These concrete foundations shall be fabricated from material new and unused in any previous application. The manufacturer shall provide a Certificate of Compliance that the materials are new and meet the specified requirements in accordance with the Standard Specifications and as shown on the Plans.

Construction Requirements. The Engineer will determine the final placement of the light pole foundations. Foundation dimensions shall be in accordance with those dimensions shown in the Plans. The foundation shall be located as required in order to avoid existing and relocated utilities. The top of the foundation shall be finished level. Shimming of the appurtenance to be attached will not be permitted.

Prior to pouring the foundation, the Contractor shall check the Plans for the specific number, size, and direction of conduit entrances required at the given location. All conduits in the foundation shall be installed rigidly in place before concrete is deposited in the form. Bushings shall be provided at the ends of the conduit. Anchor rods and ground rod shall be set in place before the concrete is deposited by means of a template constructed to space the anchor rods according to the pattern of the bolt holes in the base of the appurtenance to be attached. The appurtenance shall not be erected on the foundation until the bases have cured for at least (7) days. The Concrete shall cure according to Article 1020.13 of the Standard Specifications.

Method of Measurement. Light pole foundations shall be measured for payment in feet of the concrete foundation in-place installed in accordance with the total length of concrete foundation required for light pole foundations as indicated on the Plans and as directed by the Engineer. Extra foundation depth, beyond the directive of the Engineer, will not be measured for payment.

Basis of Payment. Concrete foundations will be paid for at the contract unit price per foot for LIGHT POLE FOUNDATION, of the diameter and length indicated. The price shall include payment in full for all necessary excavation, backfilling, disposal of unsuitable material, form work, furnishing, installing, and testing all materials (entering conduits, bolts, anchor rods, grounding, etc.) within the limits of the foundation. Any topsoil, fertilizing, seeding, and mulching of the distributed areas as well as all associated labor is to be included in this Contract unit price.

PEDESTRIAN ST LIGHT

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

General. The lighting pole, octagon base, anchor base plate, and luminaires 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 90 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.

Pole. The pole assembly shall consist of a spun concrete 15’-3” pole shaft, a concrete base, and a galvanized base plate as detailed on the plans. The pole shaft shall be fabricated from fiber reinforced spun concrete (7,000 PSI Minimum). The pole shaft will have one (1) 3” x 10” handhole with aluminum cover at the base, one (1) 2” x 10” handhole with aluminum cover approx. 11’ above the base, and two (2) ¾” water access holes at approx. 11’ above the base for the hanging basket irrigation system. Four (4) 1” x 18” 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 17”. The anchor bolts shall conform to ASTM F1554 GR 55.

The pole shall be Traditional Concrete 900 series as shown on the plans. The pole shall have a mushroom top, side inserts for fixtures, 2 inserts for water access, and two handhole boxes.

Pole shall be manufactured by Traditional Concrete Inc., Contact: Matt Enevold / Jared Enevold, matt@concretepoles.com / jared@concretepoles.com, 262-308.7599 / 262.622.3226

Fixture. The fixture and arm assembly shall be an Octagon Queen Scroll Mount, powder coat finish with 60% gloss Vulcan Black, provided by the City. Stainless steel bolts and mounting clamp shall be used to attach scrolls to arm and pole.

Hanging Baskets. The hanging basket arm assembly shall compliment the Octagon Queen Scroll Mount provided by the City. Stainless steel bolts and mounting clamp shall be used to attach the hanging basket arms to the pole.

Luminaire. The luminaire shall be a 25 Watt Neptun Light LED with a color temperature of 5000k, model LED-N148025-UNV-850-E26.

Fusing. Fuse holders and fuses shall be supplied. For lighting, the fusing shall be standard-type small dimension double pole fuse holders with insulated boots and (2) 3A fuses.

Finish. The pole, luminaries and bracket arm assembly shall all be Sky Gray color with an etched finish and acrylic sealer.

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 shall be paid at the contract unit price each for PEDESTRIAN ST LIGHT, which shall be payment in full for the material and work described herein.

STREET LIGHTING UNIT

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

General. The lighting pole, octagon base, anchor base plate, and luminaires 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 90 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.

Pole. The pole assembly shall consist of a spun concrete 25’ pole shaft, a concrete base, and a galvanized base plate as detailed on the plans. The pole shaft shall be fabricated from fiber reinforced spun concrete (7,000 PSI Minimum). The pole shaft will have one (1) 3” x 10” handhole with aluminum cover at the base, one (1) 2” x 10” handhole with aluminum cover approx. 11’ above the base, and two (2) ¾” water access holes at approx. 11’ above the base for the hanging basket irrigation system.

Four (4) 1" x 18" 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 17". The anchor bolts shall conform to ASTM F1554 GR 55.

The pole shall be Traditional Concrete 900 series as shown on the plans. The pole shall have a mushroom top, side inserts for fixtures, 2 inserts for water access, and two handhole boxes. Pole shall be manufactured by Traditional Concrete Inc., Contact: Matt Enevold / Jared Enevold, matt@concretepoles.com / jared@concretepoles.com, 262-308.7599 / 262.622.3226

Fixture. The lower fixture and arm assembly shall be an Octagon Queen Scroll Mount, powder coat finish with 60% gloss Vulcan Black, provided by the City. Stainless steel bolts and mounting clamp shall be used to attach scrolls to arm and pole. The upper fixture shall be an 8' aluminum upsweep arm and cobra head, powder coated black. Two of the upper fixtures shall be from the salvaged cobra heads as shown on the lighting removal plan.

Hanging Baskets. The hanging basket arm assembly shall compliment the Octagon Queen Scroll Mount provided by the City. Stainless steel bolts and mounting clamp shall be used to attach the hanging basket arms to the pole.

Luminaire. The luminaire shall be provided by the City.

Fusing. Fuse holders and fuses shall be supplied. For lighting, the fusing shall be standard-type small dimension double pole fuse holders with insulated boots and (2) 3A fuses.

Finish. The pole, luminaries and bracket arm assembly shall all be Sky Gray color with an etched finish and acrylic sealer.

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 shall be paid at the contract unit price each for STREET LIGHTING UNIT, which shall be payment in full for the material and work described herein.

REMOVE EXISTING LIGHTING CONTROLLER AND SALVAGE

Description. This item will consist of removing and salvaging the existing electrical lighting controller as shown in the contract plans and as directed by the Engineer.

Construction Requirements. Work under this item will be performed in accordance with Section 825 of the Standard Specifications and National Electric Code Standards.

The existing lighting controller and lighting system shall remain online and functional until the proposed lighting controller and lighting system have been tested and operational. Existing circuits to remain and utility electrical service shall be transferred over to the proposed controller during the day time with limited downtime. Once all existing and proposed circuits are operational from the proposed controller, the existing controller shall be carefully removed and delivered to Lake Forest municipal services yard.

Method of Measurement. This work will be measured on a per each basis.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVE EXISTING LIGHTING CONTROLLER AND SALVAGE, which price will include all necessary materials, tools, and appurtenances. The contractor will furnish all materials for a complete installation.

RECEPTACLE OUTLET

Description. This item shall consist of furnishing, testing as required, and installing a complete recessed outdoor ground box and receptacle in a tree pit suitable for permanent festoon lighting as specified herein.

Materials. The ground box and receptacle shall be black WIREMOLD model XB814CL520BK as manufactured by Legrand. The receptacle shall feature a single twist-lock connector, 20A, 125V, 2 Pole, 3 Wire, NEMA L5-20R.

Construction Requirements. All outlets must be properly supported in accordance with NEC Article 314, Outlet, Device, Pull, and Junction Box; Conduit Bodies; Fittings; and Handhole Enclosures, and in addition to NEC requirements, outlets cannot be supported by raceways alone. The ground box and receptacle shall be installed per the manufacturer's guidelines and specifications.

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

Basis of Payment. Installation of receptacle units will be paid for at the contract unit price per each for RECEPTACLE OUTLET.

GENERAL ELECTRICAL REQUIREMENTS

This special provision replaces Articles 801.01 – 801.07, 801.09 – 801-16 of the Standard Specifications.

Definition. Codes, standards, and industry specifications cited for electrical work shall be by definition the latest adopted version thereof, unless indicated otherwise.

Materials by definition shall include electrical equipment, fittings, devices, motors, appliances, fixtures, apparatus, all hardware and appurtenances, and the like, used as part of, or in connection with, electrical installation.

Standards of Installation. Materials shall be installed according to the manufacturer's recommendations, the NEC, OSHA, the NESC, and AASHTO's Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

All like materials shall be from the same manufacturer. Listed and labeled materials shall be used whenever possible. The listing shall be according to UL or an approved equivalent.

Safety and Protection. Safety and protection requirements shall be as follows.

Safety. Electrical systems shall not be left in an exposed or otherwise hazardous condition. All electrical boxes, cabinets, pole handholes, etc. which contain wiring, either energized or non-energized, shall be closed or shall have covers in place and be locked when possible, during nonworking hours.

Protection. Electrical raceway or duct openings shall be capped or otherwise sealed from the entrance of water and dirt. Wiring shall be protected from mechanical injury.

Equipment Grounding Conductor. All electrical systems, materials, and appurtenances shall be grounded. Good ground continuity throughout the electrical system shall be assured, even though every detail of the requirements is not specified or shown. Electrical circuits shall have a continuous insulated equipment grounding conductor. When metallic conduit is used, it shall be bonded to the equipment grounding conductor, but shall not be used as the equipment grounding conductor.

Detector loop lead-in circuits, circuits under 50 volts, and runs of fiber optic cable will not require an equipment grounding conductor.

Where connections are made to painted surfaces, the paint shall be scraped to fully expose metal at the connection point. After the connection is completed, the paint system shall be repaired to the satisfaction of the Engineer.

Bonding of all boxes and other metallic enclosures throughout the wiring system to the equipment grounding conductor shall be made using a splice and pigtail connection. Mechanical connectors shall have a serrated washer at the contact surface.

All connections to structural steel or fencing shall be made with exothermic welds. Care shall be taken not to weaken load carrying members. Where connections are made to epoxy coated reinforcing steel, the epoxy coating shall be sufficiently removed to facilitate a mechanical connection. The epoxy coating shall be repaired to the satisfaction of the Engineer. Where connections are made to insulated conductors, the connection shall be wrapped with at least four layers of electrical tape extended 6 in. (150 mm) onto the conductor insulation.

Submittals. At the preconstruction meeting, the Contractor shall submit a written listing of manufacturers for all major electrical and mechanical items. The list of manufacturers shall be binding, except by written request from the Contractor and approval by the Engineer. The request shall include acceptable reasons and documentation for the change.

Within 30 calendar days after contract execution, the Contractor shall submit to the City of Lake Forest and the Engineer, for approval, the manufacturer's product data (for standard products and components) and detailed shop drawings (for fabricated items). Submittals for the materials for each individual pay item shall be complete in every respect. Submittals which include multiple pay items shall have all submittal material for each item or group of items covered by a particular specification, grouped together and the applicable pay item identified. Various submittals shall, when taken together, form a complete coordinated package. A partial submittal will be returned without review unless prior written permission is obtained from the Engineer.

Each PDF document must be a vector format PDF from the originating supplier or program and not scanned images.

The submittal must clearly identify the specific model number or catalog number of the item being proposed.

The submittal shall be properly identified by route, section, county, and contract number.

The Contractor shall have reviewed the submittal material and affixed his/her stamp of approval, with date and signature, for each individual item.

Illegible print, incompleteness, inaccuracy, or lack of coordination will be grounds for rejection.

Items from multiple disciplines shall not be combined on a single submittal and transmittal. Items for lighting, signals, surveillance and CCTV must be in separate submittals since they may be reviewed by various personnel in various locations.

The Department may provide a list of pay items broken out by discipline upon request for a particular contract.

The Engineer will review the submittals for conformance with the design concept of the project according to Article 105.04 and the following. The Engineer will stamp the drawings indicating their status as “Approved”, “Approved as Noted”, “Disapproved”, or “Information Only”. Since the Engineer’s review is for conformance with the design concept only, it shall be the Contractor’s responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, or layout drawings by the Engineer’s approval thereof. The Contractor shall still be in full compliance with contract and specification requirements.

All submitted items reviewed and marked “Disapproved” or “Approved as Noted” shall be resubmitted by the Contractor in their entirety, unless otherwise indicated within the submittal comments.

Work shall not begin until the Engineer has approved the submittal. Material installed prior to approval by the Engineer, will be subject to removal and replacement at no additional cost to the Department.

Certifications. When certifications are specified and are available prior to material manufacture, the certification shall be included in the submittal information. When specified and only available after manufacture, the submittal shall include a statement of intent to furnish certification. All certificates shall be complete with all appropriate test dates and data.

Authorized Project Delay. See Article 801.08

Maintenance transfer and Preconstruction Inspection:

General. Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor shall request a maintenance transfer and preconstruction site inspection, to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any lighting and/or traffic control systems which may be affected by the work. The request for the maintenance transfer and preconstruction inspection shall be made no less than fourteen (14) calendar days prior to the desired inspection date. The maintenance transfer and preconstruction inspection shall:

Establish the procedures for formal transfer of maintenance responsibility required for the construction period.

Establish the approximate location and operating condition of lighting and/or traffic control systems which may be affected by the work

Marking of Existing Cable Systems. The party responsible for maintenance of any existing lighting and/or traffic control systems at the project site will, at the Contractor's request, mark and/or stake, once per location, all underground cable routes owned or maintained by the State. A project may involve multiple "locations" where separated electrical systems are involved (i.e. different controllers). The markings shall be taken to have a horizontal tolerance of at least 1 foot (304.8 mm) to either side. The request for the cable locations and marking shall be made at the same time the request for the maintenance transfer and preconstruction inspection is made. The Contractor shall exercise extreme caution where existing buried cable runs are involved. The markings of existing systems are made strictly for assistance to the Contractor and this does not relieve the Contractor of responsibility for the repair or replacement of any cable run damaged in the course of his work, as specified elsewhere herein. Note that the contractor shall be entitled to only one request for location marking of existing systems and that multiple requests may only be honored at the contractor's expense. No locates will be made after maintenance is transferred, unless it is at the contractor's expense.

Condition of Existing Systems. The Contractor shall conduct an inventory of all existing electrical system equipment within the project limits, which may be affected by the work, making note of any parts which are found broken or missing, defective or malfunctioning. Megger and load readings shall be taken for all existing circuits which will remain in place or be modified. If a circuit is to be taken out in its entirety, then readings do not have to be taken. The inventory and test data shall be reviewed with and approved by the Engineer and a record of the inventory shall be submitted to the Engineer for the record. Without such a record, all systems transferred to the Contractor for maintenance during construction shall be returned at the end of construction in complete, fully operating condition."

Maintenance and Responsibility During Construction.

Lighting Operation and Maintenance Responsibility. The scope of work shall include the assumption of responsibility for the continuing operation and maintenance of the existing, proposed, temporary, sign and navigation lighting, or other lighting systems and all appurtenances affected by the work as specified elsewhere herein. Maintenance of lighting systems is specified elsewhere and will be paid for separately.

The proposed lighting system must be operational prior to opening the roadway to traffic unless temporary lighting exists which is designed and installed to properly illuminate the roadway.

Energy and Demand Charges. The payment of basic energy and demand charges by the electric utility for existing lighting which remains in service will continue as a responsibility of the Owner, unless otherwise indicated. Unless otherwise indicated or required by the Engineer duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously at the Owner's expense and lighting systems shall not be kept in operation during long daytime periods at the Owner's expense. Upon written authorization from the Engineer to place a proposed new lighting system in service, whether the system has passed final acceptance or not, (such as to allow temporary lighting to be removed), the Owner will accept responsibility for energy and demand charges for such lighting, effective the date of authorization. All other energy and demand payments to the utility shall be the responsibility of the Contractor until final acceptance.

Damage to Electrical Systems. Should damage occur to any existing electrical systems through the Contractor's operations, the Engineer will designate the repairs as emergency or non-emergency in nature.

Emergency repairs shall be made by the Contractor, or as determined by the Engineer, the Department, or its agent. Non-emergency repairs shall be performed by the Contractor within six working days following discovery or notification. All repairs shall be performed in an expeditious manner to assure all electrical systems are operational as soon as possible. The repairs shall be performed at no additional cost to the Department.

Lighting. An outage will be considered an emergency when three or more lights on a circuit or three successive lights are not operational. Knocked down materials, which result in a danger to the motoring public, will be considered an emergency repair.

Temporary aerial multi-conductor cable, with grounded messenger cable, will be permitted if it does not interfere with traffic or other operations, and if the Engineer determines it does not require unacceptable modification to existing installations.

Marking Proposed Locations for Highway Lighting System. The Contractor shall mark or stake the proposed locations of all poles, cabinets, junction boxes, pull boxes, handholes, cable routes, pavement crossings, and other items pertinent to the work. A proposed location inspection by the Engineer shall be requested prior to any excavation, construction, or installation work after all proposed installation locations are marked. Any work installed without location approval is subject to corrective action at no additional cost to the Department.

Inspection of electrical work. Inspection of electrical work shall be according to Article 105.12 and the following.

Before any splice, tap, or electrical connection is covered in handholes, junction boxes, light poles, or other enclosures, the Contractor shall notify and make available such wiring for the Engineer's inspection.

Testing. Before final inspection, the electrical work shall be tested. Tests may be made progressively as parts of the work are completed or may be made when the work is complete. Tests shall be made in the presence of the Engineer. Items which fail to test satisfactorily shall be repaired or replaced. Tests shall include checks of control operation, system voltages, cable insulation, and ground resistance and continuity.

The forms for recording test readings will be available from the Engineer in electronic format. The Contractor shall provide the Engineer with a written report of all test data including the following:

- Voltage Tests
- Amperage Tests
- Insulation Resistance Tests
- Continuity tests
- Detector Loop Tests

Lighting systems. The following tests shall be made.

(1) Voltage Measurements. Voltages in the cabinet from phase to phase and phase to neutral, at no load and at full load, shall be measured and recorded. Voltage readings at the last termination of each circuit shall be measured and recorded.

(2) Insulation Resistance. Insulation resistance to ground of each circuit at the cabinet shall be measured and recorded with all loads disconnected. Prior to performance of the insulation resistance test, the Contractor shall remove all fuses within all light pole bases on a circuit to segregate the luminaire loads.

On tests of new cable runs, the readings shall exceed 50 megohms for phase and neutral conductors with a connected load over 20A and shall exceed 100 megohms for conductors with a connected load of 20A or less.

On tests of cable runs which include cables which were existing in service prior to this contract, the resistance readings shall be the same or better than the readings recorded at the maintenance transfer at the beginning of the contract. Measurements shall be taken with a megohm meter approved by the Engineer.

(3) Loads. The current of each circuit, phase main, and neutral shall be measured and recorded. The Engineer may direct reasonable circuit rearrangement. The current readings shall be within ten percent of the connected load based on material ratings.

(4) Ground Continuity. Resistance of the system ground as taken from the farthest extension of each circuit run from the controller (i.e. check of equipment ground continuity for each circuit) shall be measured and recorded. Readings shall not exceed 2.0 ohms, regardless of the length of the circuit.

(5) Resistance of Grounding Electrodes. Resistance to ground of all grounding electrodes shall be measured and recorded. Measurements shall be made with a ground tester during dry soil conditions as approved by the Engineer. Resistance to ground shall not exceed 10 ohms.

ITS. The following test shall be made in addition to the lighting system test above.

Detector Loops. Before and after permanently securing the loop in the pavement, the resistance, inductance, resistance to ground, and quality factor for each loop and lead-in circuit shall be tested. The loop and lead-in circuit shall have an inductance between 20 and 2500 microhenries. The resistance to ground shall be a minimum of 50 megohms under any conditions of weather or moisture. The quality factor (Q) shall be 5 or greater.

Fiber Optic Systems. Fiber optic testing shall be performed as required in the fiber optic cable special provision and the fiber optic splice special provision.

All test results shall be furnished to the Engineer seven working days before the date the inspection is scheduled.

Contract Guarantee. The Contractor shall provide a written guarantee for all electrical work provided under the contract for a period of six months after the date of acceptance with the following warranties and guarantees.

(a) The manufacturer's standard written warranty for each piece of electrical material or apparatus furnished under the contract. The warranty for light emitting diode (LED) modules, including the maintained minimum luminance, shall cover a minimum of 120 months from the date of delivery.

(b) The Contractor's written guarantee that, for a period of six months after the date of final acceptance of the work, all necessary repairs to or replacement of said warranted material or apparatus for reasons not proven to have been caused by negligence on the part of the user or acts of a third party shall be made by the Contractor at no additional cost to the Department.

(c) The Contractor's written guarantee for satisfactory operation of all electrical systems furnished and constructed under the contract for a period of six months after final acceptance of the work.

The warranty for an uninterruptable power supply (UPS) shall cover a minimum of two years from date the equipment is placed in operation; however, the batteries of the UPS shall be warranted for full replacement for a minimum of five years.

Record Drawings. Alterations and additions to the electrical installation made during the execution of the work shall be made on the PDF copy of the as-Let documents using a PDF editor. Hand drawn notations or markups and scanned plans are not acceptable. These drawings shall be updated daily and shall be available for inspection by the Engineer during the work. The record drawings shall include the following:

- Cover Sheet
- The Electrical Maintenance Contract Management System (EMCMS) location designation, i.e. "L" number
- Summary of Quantities, electrical items only
- Legends, Schedules, and Notes

- Plan Sheets
- Pertinent Details
- Single Line Diagrams
- Other useful information useful to locate and maintain the systems.

Any modifications to the details shall be indicated. Final quantities used shall be indicated on the Summary of Quantities. Foundation depths used shall also be listed.

As part of the record drawings, the Contractor shall inventory all materials, new or existing, on the project and record information on inventory sheets provided by the Engineer.

The inventory shall include:

- Location of Equipment, including rack, chassis, slot as applicable.
- Designation of Equipment
- Equipment manufacturer
- Equipment model number
- Equipment Version Number
- Equipment Configuration
    - o Addressing, IP or other
    - o Settings, hardware or programmed
- Equipment Serial Number

The following electronic inventory forms are available from the Engineer:

- Lighting Controller Inventory
- Lighting Inventory
- Light Tower Inspection Checklist
- ITS Location Inventory

The information shall be entered in the forms; handwritten entries will not be acceptable; except for signatures. Electronic file shall also be included in the documentation.

When the work is complete, and seven days before the request for a final inspection, the set of contract drawings, stamped "**RECORD DRAWINGS**", shall be submitted to the Engineer for review and approval and shall be stamped with the date and the signature of the Contractor's supervising Engineer or Electrician. The record drawings shall be submitted to the Engineer in PDF format, as well as hardcopy's for review and approval.

In addition to the record drawings, PDF copies of the final catalog cuts which have been Approved and Approved as Noted with applicable follow-up shall be submitted along with the record drawings. The PDF files shall clearly indicate either by filename or PDF table of contents the respective pay item number. Specific part or model numbers of items which have been selected shall be clearly visible. Hard copies of the catalog are not required with this submittal.

The Contractor shall provide three sets of electronically produced drawings in a moisture proof pouch to be kept on the inside door of the controller cabinet or other location approved by the Engineer. These drawings shall show the final as-built circuit orientation(s) of the project in the form of a single line diagram with all luminaires numbered and clearly identified for each circuit.

Final documentation shall be submitted as a complete submittal package, i.e. record drawings, test results, inventory, etc. shall be submitted at the same time. Partial piecemeal submittals will be rejected without review.

A total of three hardcopies and two CD-ROMs of the final documentation shall be submitted. The identical material shall also be submitted through the TOCS system utilizing the following final documentation pay item numbers:

Pay Code	Description	Discipline
FDLRD000	Record Drawings - Lighting	Lighting
FDSRD000	Record Drawings - Surveillance	Surveillance
FDTRD000	Record Drawings - Traffic Signal	Traffic Signal
FDIRD000	Record Drawings - ITS	ITS
FDLCC000	Catalog Cuts - Lighting	Lighting
FDSCC000	Catalog Cuts – Surveillance	Surveillance
FDTCC000	Catalog Cuts – Traffic Signal	Traffic Signal
FDICC000	Catalog Cuts - ITS	ITS
FDLWL000	Warranty - Lighting	Lighting
FDSWL000	Warranty - Surveillance	Surveillance
FDTWL000	Warranty - Traffic Signal	Traffic Signal
FDIWL000	Warranty - ITS	ITS
FDLTR000	Test Results - Lighting	Lighting
FDSTR000	Test Results - Surveillance	Surveillance
FDTTR000	Test Results - Traffic Signal	Traffic Signal
FDITR000	Test Results - ITS	ITS
FDLINV00	Inventory - Lighting	Lighting
FDSINV00	Inventory - Surveillance	Surveillance
Pay Code	**Description**	**Discipline**
FDTINV00	Inventory - Traffic Signal	Traffic Signal
FDIINV00	Inventory - ITS	ITS
FDLGPS00	GPS - Lighting	Lighting
FDSGPS00	GPS - Surveillance	Surveillance
FDTGPS00	GPS - Traffic Signal	Traffic Signal
FDIGPS00	GPS - ITS	ITS

Record Drawings shall include Marked up plans, controller info, Service Info, Equipment Settings, Manuals, Wiring Diagrams for each discipline.

Test results shall be all electrical test results, fiber optic OTDR, and Fiber Optic power meter as applicable for each discipline.

GPS Documentation. In addition to the specified record drawings, the Contactor shall record GPS coordinates of the following electrical components being installed, modified or being affected in other ways by this contract:

- All light poles and light towers.
- Handholes and vaults.
- Junction Boxes
- Conduit roadway crossings.
- Controllers.
- Control Buildings.
- Structures with electrical connections, i.e. DMS, lighted signs.
- Electric Service locations.
- CCTV Camera installations.
- Roadway Surveillance installations.
- Fiber Optic Splice Locations.
- Fiber Optic Cables. Coordinates shall be recorded along each fiber optic cable route every 200 feet.
- All fiber optic slack locations shall be identified with quantity of slack cable included. When sequential cable markings are available, those markings shall be documented as cable marking into enclosure and marking out of enclosure.

Datum to be used shall be North American 1983.

Data shall be provided electronically. The electronic format shall be compatible with MS Excel. Latitude and Longitude shall be in decimal degrees with a minimum of 6 decimal places. Each coordinate shall have the following information:

1. District
2. Description of item
3. Designation
4. Use
5. Approximate station
6. Contract Number
7. Date
8. Owner
9. Latitude
10. Longitude
11. Comments

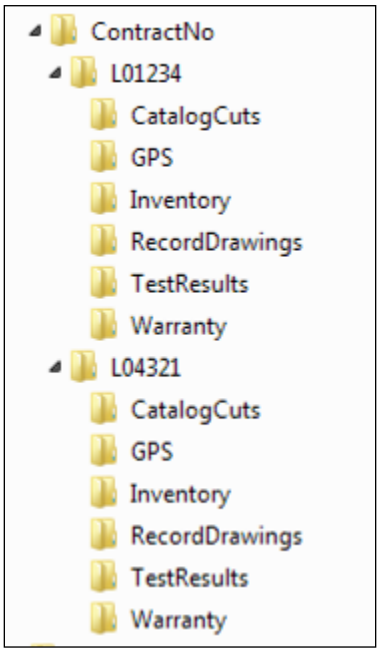
A spreadsheet template will be available from the Engineer for use by the Contractor.

Accuracy. Data collected is to be mapping grade. A handheld mapping grade GPS device shall be used for the data collection. The receiver shall support differential correction and data shall have minimum 5 meter accuracy after post processing.

GPS receivers integrated into cellular communication devices, recreational and automotive GPS devices are not acceptable.

The GPS shall be the product of an established major GPS manufacturer having been in the business for a minimum of 6 years."

The documents on the CD shall be organized by the Electrical Maintenance Contract Management System (EMCMS) location designation. If multiple EMCMS locations are within the contract, separate folders shall be utilized for each location as follows:



Extraneous information not pertaining to the specific EMCMS location shall not be included in that particular folder and sub-folder.

The inspection will not be made until after the delivery of acceptable record drawings, specified certifications, and the required guarantees.

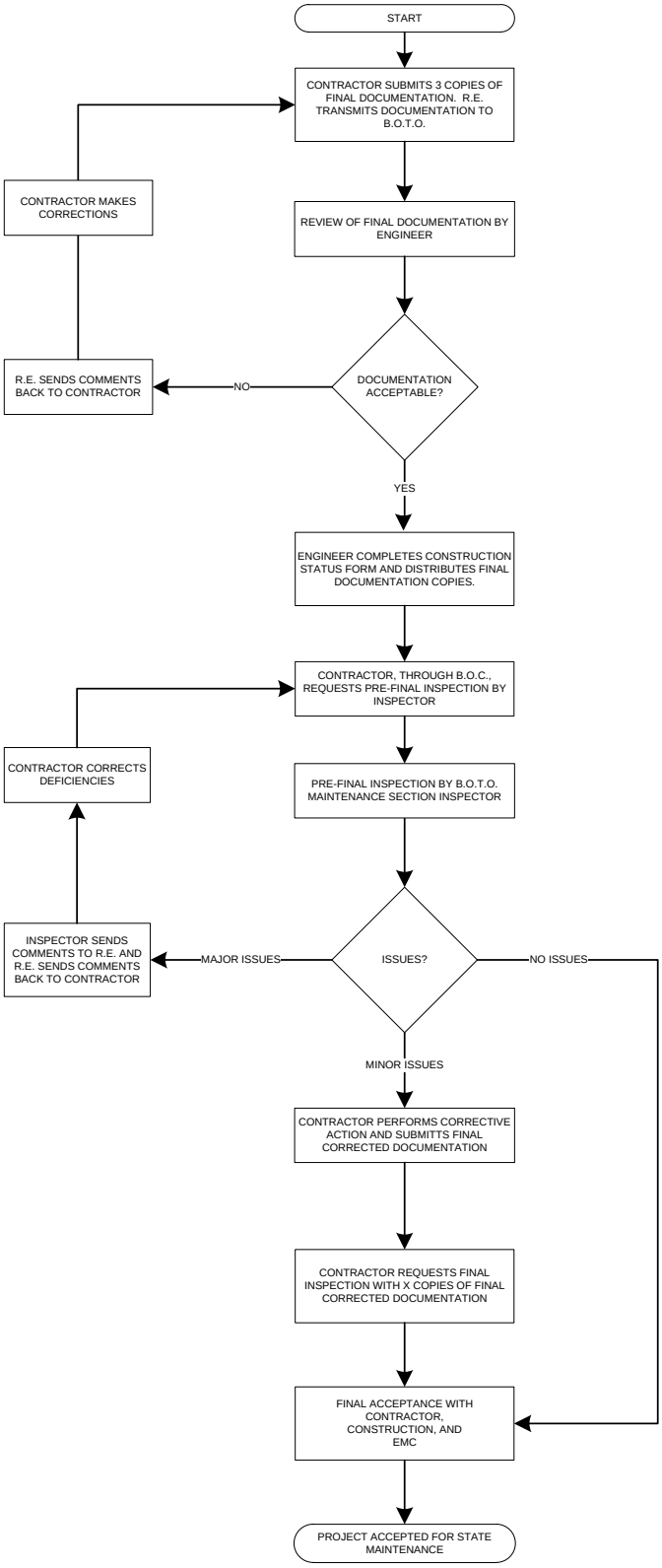
The Final Acceptance Documentation Checklist shall be completed and is contained elsewhere herein.

All CD's shall be labeled as illustrated in the CD Label Template contained herein.

Acceptance. Acceptance of electrical work will be given at the time when the Department assumes the responsibility to protect and maintain the work according to Article 107.30 or at the time of final inspection.

When the electrical work is complete, tested, and fully operational, the Contractor shall schedule an inspection for acceptance with the Engineer no less than seven working days prior to the desired inspection date. The Contractor shall furnish the necessary labor and equipment to make the inspection.

A written record of the test readings taken by the Contractor according to Article 801.13 shall be furnished to the Engineer seven working days before the date the inspection is scheduled. Inspection will not be made until after the delivery of acceptable record drawings, specified certifications, and the required guarantees.


START
CONTRACTOR SUBMITS 3 COPIES OF FINAL DOCUMENTATION. R.E. TRANSMITS DOCUMENTATION TO B.O.T.O.
REVIEW OF FINAL DOCUMENTATION BY ENGINEER
DOCUMENTATION ACCEPTABLE?
NO
R.E. SENDS COMMENTS BACK TO CONTRACTOR
CONTRACTOR MAKES CORRECTIONS
YES
ENGINEER COMPLETES CONSTRUCTION STATUS FORM AND DISTRIBUTES FINAL DOCUMENTATION COPIES.
CONTRACTOR, THROUGH B.O.C., REQUESTS PRE-FINAL INSPECTION BY INSPECTOR
PRE-FINAL INSPECTION BY B.O.T.O. MAINTENANCE SECTION INSPECTOR
ISSUES?
MAJOR ISSUES
INSPECTOR SENDS COMMENTS TO R.E. AND R.E. SENDS COMMENTS BACK TO CONTRACTOR
CONTRACTOR CORRECTS DEFICIENCIES
NO ISSUES
MINOR ISSUES
CONTRACTOR PERFORMS CORRECTIVE ACTION AND SUBMITTS FINAL CORRECTED DOCUMENTATION
CONTRACTOR REQUESTS FINAL INSPECTION WITH X COPIES OF FINAL CORRECTED DOCUMENTATION
FINAL ACCEPTANCE WITH CONTRACTOR, CONSTRUCTION, AND EMC
PROJECT ACCEPTED FOR STATE MAINTENANCE

Final Acceptance Documentation Checklist

LOCATION	
Route	Common Name
Limits	Section
Contract #	County
Controller Designation(s)	EMC Database Location Number(s)

ITEM	Contractor (Verify)	Resident Engineer (Verify)
Record Drawings -Three hardcopies (11" x 17") -Scanned to two CD-ROMs	☐ ☐	☐ ☐
Field Inspection Tests -Voltage -Amperage -Cable Insulation Resistance -Continuity -Controller Ground Rod Resistance (Three Hardcopies & scanned to two CD's)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
GPS Coordinates **-**Excel file (Check Special Provisions, Excel file scanned to two CD's)	☐	☐
Job Warranty Letter (Three Hardcopies & scanned to two CD's)	☐	☐
Catalog Cut Submittals -Approved & Approved as Noted (Scanned to two CD's)	☐	☐
Lighting Inventory Form (Three Hardcopies & scanned to two CD's)	☐	☐
Lighting Controller Inventory Form (Three Hardcopies & scanned to two CD's)	☐	☐
Light Tower Inspection Form (If applicable, Three Hardcopies & scanned to two CD's)	☐	☐

Three Hardcopies & scanned to two CD's shall be submitted for all items above. The CD ROM shall be labeled as shown in the example contained herein.

General Notes:

Record Drawings – The record drawings should contain contract cover sheet, summary of quantities showing all lighting pay item sheets, proposed lighting plans and lighting detail sheets. Submit hardcopies shall be 11" x 17" size. Temporary lighting plans and removal lighting plans should not be part of the set.

Field Inspection Tests – Testing should be done for proposed cables. Testing shall be per standard specifications. Forms shall be neatly filled out.

GPS Coordinates – Check special provisions "General Electrical Requirements". Submit electronic "EXCEL" file.

Job Warranty Letter – See standard specifications.

Cutsheet Submittal – See special provisions "General Electrical Requirements". Scan Approved and Approved as Noted cutsheets.

Lighting Inventory Form – Inventory form should include only proposed light poles, proposed light towers, proposed combination (traffic/light pole) lighting and proposed underpass luminaires.

Lighting Controller Inventory Form – Form should be filled out for only proposed lighting controllers.

Light Tower Safety Inspection Form – Form should be filled out for each proposed light tower.

CD LABEL FORMAT TEMPLATE.

Label must be printed; hand written labels are unacceptable and will be rejected.

UNDERGROUND RACEWAYS
Effective: March 1, 2015

Revise Article 810.04 of the Standard Specifications to read:

> "Installation. All underground conduits shall have a minimum depth of 30-inches (700 mm) below the finished grade."

Add the following to Article 810.04 of the Standard Specifications:

> "All metal conduit installed underground shall be Rigid Steel Conduit unless otherwise indicated on the plans."

Add the following to Article 810.04 of the Standard Specifications:

> "All raceways which extend outside of a structure or duct bank but are not terminated in a cabinet, junction box, pull box, handhole, post, pole, or pedestal shall extend a minimum or 300 mm (12") or the length shown on the plans beyond the structure or duct bank. The end of this extension shall be capped and sealed with a cap designed for the conduit to be capped.
>
> The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap.
>
> The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 3 mm (0.125") thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring."

WIRE AND CABLE
Effective: January 1, 2012

Add the following to the first paragraph of Article 1066.02(a):

> "The cable shall be rated at a minimum of 90°C dry and 75°C wet and shall be suitable for installation in wet and dry locations, and shall be resistant to oils and chemicals."

Revise the Aerial Electric Cable Properties table of Article 1066.03(a)(3) to read:

Aerial Electric Cable Properties

Phase Conductor				Messenger wire	
Size AWG	Stranding	Average Insulation Thickness		Minimum Size AWG	Stranding
		mm	mils		
6	7	1.1	(45)	6	6/1
4	7	1.1	(45)	4	6/1
2	7	1.1	(45)	2	6/1
1/0	19	1.5	(60)	1/0	6/1
2/0	19	1.5	(60)	2/0	6/1
3/0	19	1.5	(60)	3/0	6/1
4/0	19	1.5	(60)	4/0	6/1

Add the following to Article 1066.03(b) of the Standard Specifications:

> "Cable sized No. 2 AWG and smaller shall be U.L. listed Type RHH/RHW and may be Type RHH/RHW/USE. Cable sized larger than No. 2 AWG shall be U.L. listed Type RHH/RHW/USE."

Revise Article 1066.04 to read:

> **"**Aerial Cable Assembly. The aerial cable shall be an assembly of insulated aluminum conductors according to Section 1066.02 and 1066.03. Unless otherwise indicated, the cable assembly shall be composed of three insulated conductors and a steel reinforced bare aluminum conductor (ACSR) to be used as the ground conductor. Unless otherwise indicated, the code word designation of this cable assembly is "Palomino". The steel reinforced aluminum conductor shall conform to ASTM B-232. The cable shall be assembled according to ANSI/ICEA S-76-474."

Revise the second paragraph of Article 1066.05 to read:

> "The tape shall have reinforced metallic detection capabilities consisting of a woven reinforced polyethylene tape with a metallic core or backing."

MAINTENANCE OF LIGHTING SYSTEMS
Effective: March 1, 2017

Replace Article 801.11 and 801.12 of the Standard Specifications with the following:

Effective the date the Contractor's activities (electrical or otherwise) at the job site begin, the Contractor shall be responsible for the proper operation and maintenance of all existing and proposed lighting systems which are part of, or which may be affected by the work until final acceptance or as otherwise determined by the Engineer.

Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor shall initiate a request for a maintenance transfer and preconstruction inspection, as specified elsewhere herein, to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any lighting systems which may be affected by the work. During the maintenance preconstruction inspection, the party responsible for existing maintenance shall perform testing of the existing system in accordance with Article 801.13a. The Contractor shall request a date for the preconstruction inspection no less than fourteen (14) days prior to the desired date of the inspection.

The Engineer will document all test results and note deficiencies. All substandard equipment will be repaired or replaced by the existing maintenance contractor, or the Engineer can direct the Contractor to make the necessary repairs under Section109.04.

Existing lighting systems, when depicted on the plans, are intended only to indicate the general equipment installation of the systems involved and shall not be construed as an exact representation of the field conditions. It remains the Contractor's responsibility to visit the site to confirm and ascertain the exact condition of the electrical equipment and systems to be maintained. Contract documents shall indicate the circuit limits.

Maintenance of Existing Lighting Systems

Existing lighting systems. Existing lighting systems shall be defined as any lighting system or part of a lighting system in service at the time of contract Letting. The contract drawings indicate the general extent of any existing lighting, but whether indicated or not, it remains the Contractor's responsibility to ascertain the extent of effort required for compliance with these specifications and failure to do so will not be justification for extra payment or reduced responsibilities.

Extent of Maintenance.

Partial Maintenance. Unless otherwise 'indicated, if the number of circuits affected by the contract is equal to or less than 40% of the total number of circuits in a given controller and the controller is not part of the contract work, the Contractor needs only to maintain the affected circuits within the project limits. The project limits are defined as those limits indicated in the contract plans. Equipment outside of the project limits, on the affected circuits shall be maintained and paid for under Article 109.04. The affected circuits shall be isolated by means of in-line waterproof fuse holders as specified elsewhere and as approved by the Engineer. The unaffected circuits and the controller will remain under the maintenance of the State.

Full Maintenance. If the number of circuits affected by the contract is greater than 40% of the total number of circuits in a given controller, or if the controller is modified in any way under the contract work, the Contractor shall maintain the entire controller and all associated circuits within the project limits. Equipment outside of the project limits shall be maintained and paid for under Article 109.04.

If the existing equipment is damaged by normal vehicular traffic, not contractor operations, is beyond repair and cannot be re-set, the contractor shall replace the equipment in kind with payment made for such equipment under Article 109.04. If the equipment damaged by any construction operations, not normal vehicular traffic, is beyond repair and cannot be re-set, the contractor shall replace the equipment in kind and the cost of the equipment shall be included in the cost of this pay item and shall not be paid for separately.

Maintenance of Proposed Lighting Systems

Proposed Lighting Systems. Proposed lighting systems shall be defined as any lighting system or part of a lighting system, temporary or permanent, which is to be constructed under this contract regardless of the project limits indicated in the plans.

The Contractor shall be fully responsible for maintenance of all items installed under this contract. Maintenance shall include, but not be limited to, any equipment failures or malfunctions as well as equipment damage either by the motoring public, Contractor operations, vandalism, or other means. The potential cost of replacing or repairing any malfunctioning, damaged, or vandalized equipment shall be included in the bid price of this item and will not be paid for separately.

Lighting System Maintenance Operations

The Contractor's responsibility shall include all applicable responsibilities of the Electrical Maintenance Contract, State of Illinois, Department of Transportation, Division of Highways, District One. These responsibilities shall include the maintenance of lighting units (including sign lighting), cable runs and lighting controls. In the case of a pole knockdown or sign light damage, the Contractor shall promptly clear the lighting unit and circuit discontinuity and restore the system to service. The equipment shall then be re-set by the contractor within the time limits specified herein.

If the existing equipment is damaged by normal vehicular traffic, not contractor operations, is beyond repair and cannot be re-set, the contractor shall replace the equipment in kind with payment made for such equipment under Article 109.04. If the equipment damaged by any construction operations, not normal vehicular traffic, is beyond repair and cannot be re-set, the contractor shall replace the equipment in kind and the cost of the equipment shall be included in the cost of this pay item and shall not be paid for separately.

Responsibilities shall also include weekly night-time patrol of the lighting system, with patrol reports filed immediately with the Engineer and with deficiencies corrected within 24 hours of the patrol. Patrol reports shall be presented on standard forms as designated by the Engineer. Uncorrected deficiencies may be designated by the Engineer as necessitating emergency repairs as described elsewhere herein.

The following chart lists the maximum response, service restoration, and permanent repair time the Contractor will be allowed to perform corrective action on specific lighting system equipment.

INCIDENT OR PROBLEM	SERVICE RESPONSE TIME	SERVICE RESTORATION TIME	PERMANENT REPAIR TIME
Control cabinet out	1 hour	4 hours	7 Calendar days
Hanging mast arm	1 hour to clear	na	7 Calendar days
Radio problem	1 hour	4 hours	7 Calendar days
Motorist caused damage or leaning light pole 10 degrees or more	1 hour to clear	4 hours	7 Calendar days
Circuit out – Needs to reset breaker	1 hour	4 hours	na
Circuit out – Cable trouble	1 hour	24 hours	21 Calendar days
Outage of 3 or more successive lights	1 hour	4 hours	na
Outage of 75% of lights on one tower	1 hour	4 hours	na
Outage of light nearest RR crossing approach, Islands and gores	1 hour	4 hours	na
Outage (single or multiple) found on night outage survey or reported to EMC	na	na	7 Calendar days
Navigation light outage	na	na	24 hours

- **Service Response Time** -- amount of time from the initial notification to the Contractor until a patrolman physically arrives at the location.

- **Service Restoration Time** – amount of time from the initial notification to the Contractor until the time the system is fully operational again (In cases of motorist caused damage the undamaged portions of the system are operational.)

- **Permanent Repair Time** – amount of time from initial notification to the Contractor until the time permanent repairs are made if the Contractor was required to make temporary repairs to meet the service restoration requirement.

Failure to provide this service will result in liquidated damages of $500 per day per occurrence. In addition, the Department reserves the right to assign any work not completed within this timeframe to the Electrical Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Electrical Maintenance Contractor within one month after the incident will result in additional liquidated damages of $500 per month per occurrence. Unpaid bills will be deducted from any monies owed to the Contractor. Repeated failures and/or a gross failure of maintenance shall result in the State's Electrical Maintenance Contractor being directed to correct all deficiencies and the resulting costs deducted from any monies owed the contractor.

Damage caused by the Contractor's operations shall be repaired at no additional cost to the Contract.

Operation of Lighting

The lighting shall be operational every night, dusk to dawn. Duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously. Lighting systems shall not be kept in operation during long daytime periods.

Method of Measurement

The contractor shall demonstrate to the satisfaction of the Engineer that the lighting system is fully operational prior to submitting a pay request. Failure to do so will be grounds for denying the pay request. Months in which the lighting systems are not maintained and not operational will not be paid. Payment shall not be made retroactively for months in which lighting systems were not operational.

Basis of Payment. Maintenance of lighting systems shall be paid for at the contract unit price per calendar month for **MAINTENANCE OF LIGHTING SYSTEM.**

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 **2**.

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.

The Contractor or subcontractor shall provide each TPG with a certificate showing the type and length of training satisfactorily completed.

LOCAL ROADS SPECIAL PROVISION 107-4

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 Lake Forest

The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

State of Illinois
DEPARTMENT OF TRANSPORTATION
Bureau of Local Roads & Streets
SPECIAL PROVISION
FOR
LOCAL QUALITY ASSURANCE/ QUALITY MANAGEMENT QC/QA
Effective: January 1, 2022

Replace the first five paragraphs of Article 1030.06 of the Standard Specifications with the following:

"**1030.06 Quality Management Program.** The Quality Management Program (QMP) will be Quality Control / Quality Assurance (QC/QA) according to the following."

Delete Article 1030.06(d)(1) of the Standard Specifications.

Revise Article 1030.09(g)(3) of the Standard Specifications to read:

"(3) If core testing is the density verification method, the Contractor shall provide personnel and equipment to collect density verification cores for the Engineer. Core locations will be determined by the Engineer following the document "Hot-Mix Asphalt QC/QA Procedure for Determining Random Density Locations" at density verification intervals defined in Article 1030.09(b). After the Engineer identifies a density verification location and prior to opening to traffic, the Contractor shall cut a 4 in. (100 mm) diameter core. With the approval of the Engineer, the cores may be cut at a later time."

Revise Article 1030.09(h)(2) of the Standard Specifications to read:

"(2) After final rolling and prior to paving subsequent lifts, the Engineer will identify the random density verification test locations. Cores or nuclear density gauge testing will be used for density verification. The method used for density verification will be as selected below.

Density Verification Method	
☑	Cores
☐	Nuclear Density Gauge (Correlated when paving ≥ 3,000 tons per mixture)

Density verification test locations will be determined according to the document "Hot-Mix Asphalt QC/QA Procedure for Determining Random Density Locations". The density testing interval for paving wider than or equal to 3 ft (1 m) will be 0.5 miles (800 m) for lift thicknesses of 3 in. (75 mm) or less and 0.2 miles (320 m) for lift thicknesses greater than 3 in. (75 mm). The density testing interval for paving less than 3 ft (1 m) wide will be 1 mile (1,600 m). If a day's paving will be less than the prescribed density testing interval, the length of the day's paving will be the interval for that day. The density testing interval for mixtures used for patching will be 50 patches with a minimum of one test per mixture per project.

If core testing is the density verification method, the Engineer will witness the Contractor coring, and secure and take possession of all density samples at the density verification locations. The Engineer will test the cores collected by the Contractor for density according to Illinois Modified AASHTO T 166 or AASHTO T 275.

If nuclear density gauge testing is the density verification method, the Engineer will conduct nuclear density gauge tests. The Engineer will follow the density testing procedure detailed in the document "Illinois Modified ASTM D 2950, Standard Test Method for Density of Bituminous Concrete In-Place by Nuclear Method".

A density verification test will be the result of a single core or the average of the nuclear density tests at one location. The results of each density test must be within acceptable limits. The Engineer will promptly notify the Contractor of observed deficiencies."

Revise the seventh paragraph and all subsequent paragraphs in Section D. of the document "Hot-Mix Asphalt QC/QA Initial Daily Plant and Random Samples" to read:

"Mixtures shall be sampled from the truck at the plant by the Contractor following the same procedure used to collect QC mixture samples (Section A). This process will be witnessed by the Engineer who will take custody of the verification sample. Each sample bag with a verification mixture sample will be secured by the Engineer using a locking ID tag. Sample boxes containing the verification mixture sample will be sealed/taped by the Engineer using a security ID label."

REMS Project: 508321
Agency Project: IDOT C 61L05
Start Date: 9/25/2024
End Date: 9/25/2025

BUILDING AMERICA®

Maintenance Consent Letter

Jim Lockefeer
City of Lake Forest
800 N Field Drive
Lake Forest, IL 60045

It is the intention of the CITY OF LAKE FOREST (**Agency**) to perform the scope of work at the location(s) identified in Exhibit A (**Work**) of the Contractor Endorsement (**Endorsement**). This letter serves as acceptance by UNION PACIFIC RAILROAD COMPANY (**Railroad**) of the proposed Work to be performed.

If a contractor is to perform any Work on Railroad's property, the Agency shall require its contractor to execute and return the attached Endorsement. Under no circumstances will Agency's contractor be allowed on Railroad's property until the executed Endorsement is received with a $2,200 administrative fee to be paid by the Agency or the contractor.

This Consent Letter shall be valid for one (1) year or until the Work is completed or this Consent Letter is revoked by the Railroad.

Prior to performing the Work, the contractor agrees to provide forty-five (45) days advance notice to the Railroad Representative identified below.

Leo Craig (817) 901-9560 – lcraig@olsson.com

DocuSigned by:
Tiecy Cotton
81B9181BE48B4B6...

Tiecy Cotton 10/3/2024
Manager I
Engineering-Public Projects

REMS Project: 508321
Agency Project: IDOT C 61L05
Consent End Date: 9/25/2025

Contractor Endorsement

A. It is the intention of the CITY OF LAKE FOREST (**Agency**) to perform the scope of work at the location(s) identified in Exhibit A (**Work**) of this Contractor Endorsement (**Endorsement)**. As a condition to entering upon UNION PACIFIC RAILROAD COMPANY (**Railroad**) property to perform the Work, contractor acknowledges and agrees to comply with the following conditions.

- Completion of Union Pacific Property Access Training (UP-PAT).
  www.up.com/up-pat

- Compliance with Contractor Endorsement-General Terms and Provisions.
  www.up.com/ce-terms

- Acknowledgement of Third-party Flagging Policy.
  www.up.com/flagging

- Acknowledgement that insurance documentation will be provided to Railroad upon request.

B. Fiber optics and telecommunication facilities can be present on Railroad property. Prior to performing work with the potential to impact Railroad facilities, the Agency or its contractor shall follow the procedures outlined on the Railroad webpage link below.

Fiber Optics & Telecommunications (Call Before You Dig) - www.up.com/CBUD

C. Prior to performing the Work, contractor agrees to provide forty-five (45) days advance notice to the Railroad Representative identified below.

Leo Craig (817) 901-9560 – lcraig@olsson.com

D. This Endorsement must be executed and sent to the Railroad before the **Consent End Date** above. The terms of this Endorsement shall commence on the date of execution and continue for one (1) year or until such time as contractor has completed the Work. The Work may be terminated within 24 hours' notice by either party. No work may proceed until the terms of this Endorsement have been met and the executed Endorsement is submitted with the $2,200 administrative fee payment.

Email a scanned copy of the executed Endorsement to **upmaintenance@olsson.com** Proceed to the next page for payment instructions.

Remainder of page intentionally left blank.

REMS Project: 508321
Agency Project: IDOT C 61L05
Consent End Date: 9/25/2025

The administrative fee must be submitted by one of the payment remittance methods indicated on the attached Bill. If mailing by check, send the Bill with the check. For ACH or Wire transfers, include the Bill Number in the transmittal notes.

Company Name			
Contact Name			
Address			
City, ST Zip			
Phone	**Email**		
Contact Signature		**Date**	
Payment Method	☐ **Check**	☐ **ACH**	☐ **Wire Transfer**

REMS Project: 508321
Agency Project: IDOT C 61L05
Consent End Date: 9/25/2025

Exhibit A to Contractor Endorsement
Project Scope and Location(s)

Scope of Work

Perform sidewalk removal, curb and gutter removal and replacement, reconstructing the northeast and southeast ADA ramps at Deerpath and Western, reconstructing the existing brick crosswalk with decorative brick pavers, HMA mill and overlay, proposed thermoplastic pavement markings, and traffic control.

Location

Kenosha Subdivision

DOT	Milepost	Street Name
176596C	28.20	East Deerpath Road

Union Pacific Railroad Company

BUILDING AMERICA℠

Bill Number	**335402120**
Project Number	0508321
Audit Number	NW12086
Customer Number	19271
Folder Number	0283615
Bill Date	9/13/2024
Due Date	10/13/2024

CITY OF LAKE FOREST
ACCOUNTS PAYABLE
800 NORTH FIELD DRIVE
LAKE FOREST,IL 60045

Bill Description : Agency No: IDOT C 61L05; DOT 176596C; Mntnc-Roadway. Effective date: 09/12/24
Location of Agreement: LAKE FOREST, IL
Primary Purpose of Agreement:

If payment has already been submitted , please email REBilling@up.com

Description	Period		Amount
	From	To	
Roadway-Contractor's ROE Fee	9/13/2024	9/13/2024	$2,200.00
		Total Due:	**$2,200.00**

Please include Project 0508321 and/or Bill 335402120 when submitting payment.

To assure proper credit to your account, please remit payment using one of these methods:

ACH/Wire Information:
Union Pacific Acct nbr: 3752021457 (Checking)

Company Wire XFER ABA Routing nbr: 026009593
ACH PYMT ABA Routing nbr: 111000012

Remittance Email: MISCash@up.com
Project Number: 0508321
Bill Number: 335402120

Receiving Bank's Address
Bank of America
901 Main Street
Dallas, TX 75202

DUNS nbr: 00-699-1590
SWIFT Code: BOFAUS3N
Tax ID: 94-6001323
Network ID: 0136400825

SEND Checks to:
Union Pacific Railroad Company
12567 Collections Center Drive
Chicago, Il 60693

Please Include Remittance Information:

Bill Number	***335402120***
Project Number	*0508321*
Audit Number	*NW12086*
Customer Number	*19271*
Payable Upon Receipt:	***$2,200.00***

Illinois Environmental Protection Agency

1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276 • (217) 782-3397

Uncontaminated Soil Certification
by Licensed Professional Engineer or Licensed Professional Geologist
for Use of Uncontaminated Soil as Fill in a CCDD or Uncontaminated Soil Fill Operation LPC-663

Revised in accordance with 35 Ill. Adm. Code 1100, as amended by PCB R2012-009 (eff. Aug. 27, 2012)

This certification form is to be used by professional engineers and professional geologists to certify, pursuant to 35 Ill. Adm. Code 1100.205(a)(1)(B), that soil (i) is uncontaminated soil and (ii) is within a pH range of 6.26 to 9.0. If you have questions about this form, please telephone the Bureau of Land Permit Section at 217/524-3300.

This form may be completed online, saved locally, printed and signed, and submitted to prospective clean construction or demolition debris (CCDD) fill operations or uncontaminated soil fill operations.

I. Source Location Information

(Describe the location of the source of the uncontaminated soil)

Project Name: Deerpath Road Streetscape Project Office Phone Number, if available:

Physical Site Location (address, including number and street):
Deerpath Road from Oakwood Avenue to Western Avenue

City: Lake Forest State: IL Zip Code: 60045

County: Lake Township: Shields

Lat/Long of approximate center of site in decimal degrees (DD.ddddd) to five decimal places (e.g., 40.67890, -90.12345):

Latitude: 42.25109 (Decimal Degrees) Longitude: - 87.84117 (-Decimal Degrees)

Identify how the lat/long data were determined:

○ GPS ○ Map Interpolation ○ Photo Interpolation ○ Survey ⊘ Other

ISGS Public Land Survey System. Lat/lon above refer to the approximate center of the Project Area

IEPA Site Number(s), if assigned: BOL: BOW: BOA:

Approximate Start Date (mm/dd/yyyy): Approximate End Date (mm/dd/yyyy):

Estimated Volume of debris (cu. Yd.):

II. Owner/Operator Information for Source Site

Site Owner

Name: City of Lake Forest
Street Address: 800 N. Field Drive
PO Box:
City: Lake Forest State: IL
Zip Code: 60045 Phone: 847-810-3555
Contact: Byron Kutz - Engineering superintendent
Email, if available: kutzb@cityoflakeforest.com

Site Operator

Name:
Street Address:
PO Box:
City: State:
Zip Code: Phone:
Contact:
Email, if available:

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42). This form has been approved by the Forms Management Center.

Project Name: Deerpath Road Streetscape Project Latitude: 42.25109 Longitude: - 87.84117

Uncontaminated Soil Certification

III. Basis for Certification and Attachments

For each item listed below, reference the attachments to this form that provide the required information.

a. A Description of the soil sample points and how they were determined to be sufficient in number and appropriately located 35 Ill. Adm. Code 1100.610(a)]:

A PESA was completed by GZA/H&H on January 9, 2024 for the Project Area. Ten (10) potentially impacted properties (PIPs) were identified in connection with the Project Area as part of PESA activities. Refer to the attachments for additional information.

b. Analytical soil testing results to show that soil chemical constituents comply with the maximum allowable concentrations established pursuant to 35 Ill. Adm. Code Part 1100, Subpart F and that the soil pH is within the range of 6.25 to 9.0,including the documentation of chain of custody control, a copy of the lab analysis; the accreditation status of the laboratory performing the analysis; and certification by an authorized agent of the laboratory that the analysis has been performed in accordance with the Agency's rules for the accreditation of environmental and the scope of the accreditation [35 Ill. Adm. Code 1100.201 (g), 1100.205(a), 1100.610]:

Eight (8) soil borings were advanced for one or more of: VOCs, PNAs, total RCRA/TCLP Metals, pesticides/herbicides and pH. Areas corresponding to each soil boring achieved the MACs and pH criteria for CCDD disposal except for areas identified in the attached documentation at SB-3, SB-4, SB-6, and SB-8). Refer to attached narrative and supporting documentation for details.

IV. Certification Statement, Signature and Seal of Licensed Professional Engineer or Licensed Professional Geologist

I, Jeremy J. Reynolds, P.G. (name of licensed professional engineer or geologist) certify under penalty of law that the information submitted, including but not limited to, all attachments and other information, is to the best of my knowledge and belief, true, accurate and complete. In accordance with the Environmental Protection Act [415 ILCS 5/22.51 or 22.51a] and 35 Ill. Adm. Code 1100.205(a), I certify that the soil from this site is uncontaminated soil. I also certify that the soil pH is within the range of 6.25 to 9.0. In addition, I certify that the soil has not been removed from the site as part of a cleanup or removal of contaminants. All necessary documentation is attached.

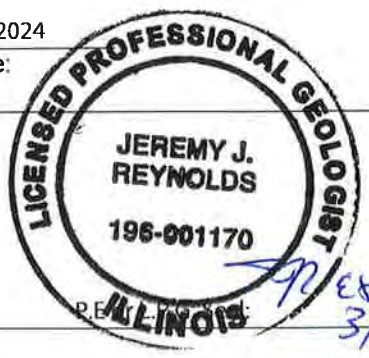
Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))

Company Name:	Huff & Huff, Inc.
Street Address:	915 Harger Rd Suite 330
City:	Oak Brook State: IL Zip Code: 60523
Phone:	(630) 684-9100

Jeremy J. Reynolds, P.G.
Printed Name:

Licensed Professional Engineer or
Licensed Professional Geologist Signature:

Apr 11, 2024
Date:



AGGREGATE SUBGRADE IMPROVEMENT (BDE)

Effective: April 1, 2012
Revised: April 1, 2022

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 (ASI).

303.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate	1004.07
(b) Reclaimed Asphalt Pavement (RAP)	1031.09

303.03 Equipment. The vibratory roller shall be according to Article 1101.01, or as approved by the Engineer. Vibratory machines, such as tampers, shall be used in areas where rollers do not fit.

303.04 Soil Preparation. The minimum immediate bearing value (IBV) of the soil below the improved subgrade shall be according to the Department's "Subgrade Stability Manual" for the aggregate thickness specified.

303.05 Placing and Compacting. The maximum nominal lift thickness of aggregate gradations CA 2, CA 6, and CA 10 when compacted shall be 9 in. (225 mm). The maximum nominal lift thickness of aggregate gradations CS 1, CS 2, and RR 1 when compacted shall be 24 in. (600 mm).

The top surface of the aggregate subgrade improvement shall consist of a layer of capping aggregate gradations CA 6 or CA 10 that is 3 in. (75 mm) thick after compaction. Capping aggregate will not be required when aggregate subgrade improvement is used as a cubic yard pay item for undercut applications.

Each lift of aggregate 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.

303.06 Finishing and Maintenance. 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.

303.07 Method of Measurement. This work will be measured for payment according to Article 311.08.

303.08 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 (ASI).** 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 ASI material is required, gravel may be used below the top 12 in (300 mm) of ASI.

(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 ASI thickness less than or equal to 12 in. (300 mm) shall be CA 2, CA 6, CA 10, or CS 1.

The coarse aggregate gradation for total ASI thickness greater than 12 in. (300 mm) shall be CS 1 or CS 2 as shown below or RR 1 according to Article 1005.01(c).

	COARSE AGGREGATE SUBGRADE GRADATIONS				
Grad No.	Sieve Size and Percent Passing				
	8"	6"	4"	2"	#4
CS 1	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 2		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 1	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 2		100	80 ± 10	25 ± 15	

(2) Capping aggregate shall be gradation CA 6 or CA 10."

Add the following to Article 1031.09 of the Standard Specifications:

"(b) RAP in Aggregate Subgrade Improvement (ASI). RAP in ASI shall be according to Articles 1031.01(a), 1031.02(a), 1031.06(a)(1), and 1031.06(a)(2), and the following.

(1) The testing requirements of Article 1031.03 shall not apply.

(2) Crushed RAP used for the lower lift may be mechanically blended with aggregate gradations CS 1, CS 2, and RR 1 but it shall be no greater than 40 percent of the total product volume. RAP agglomerations shall be no greater than 4 in. (100 mm).

(3) For capping aggregate, well graded RAP having 100 percent passing the 1 1/2 in. (38 mm) sieve may be used when aggregate gradations CS 1, CS 2, CA 2, or RR 1 are used in the lower lift. FRAP will not be permitted as capping material.

Blending shall be through calibrated interlocked feeders or a calibrated blending plant such that the prescribed blending percentage is maintained throughout the blending process. The calibration shall have an accuracy of ± 2.0 percent of the actual quantity of material delivered."

80274

CEMENT, FINELY DIVIDED MINERALS, ADMIXTURES; CONCRETE, AND MORTAR (BDE)

Effective: January 1, 2025

Revise the first paragraph of Article 285.05 of the Standard Specifications to read:

"**285.05 Fabric Formed Concrete Revetment Mat.** The grout shall consist of a mixture of cement, fine aggregate, and water so proportioned and mixed as to provide a pumpable slurry. Fly ash or ground granulated blast furnace (GGBF) slag, and concrete admixtures may be used at the option of the Contractor. The grout shall have an air content of not less than 6.0 percent nor more than 9.0 percent of the volume of the grout. The mix shall obtain a compressive strength of 2500 psi (17,000 kPa) at 28 days according to Article 1020.09."

Revise Article 302.02 of the Standard Specifications to read:

"**302.02 Materials.** Materials shall be according to the following.

	Item	Article/Section
(a)	Cement	1001
(b)	Water	1002
(c)	Hydrated Lime	1012.01
(d)	By-Product, Hydrated Lime	1012.02
(e)	By-Product, Non-Hydrated Lime	1012.03
(f)	Lime Slurry	1012.04
(g)	Fly Ash	1010
(h)	Soil for Soil Modification (Note 1)	1009.01
(i)	Bituminous Materials (Note 2)	1032

Note 1. This soil requirement only applies when modifying with lime (slurry or dry).

Note 2. The bituminous materials used for curing shall be emulsified asphalt RS-2, CRS-2, HFE 90, or HFE 150; rapid curing liquid asphalt RC-70; or medium curing liquid asphalt MC-70 or MC-250."

Revise Article 312.07(c) of the Standard Specifications to read:

"(c) Cement ..... 1001"

Add Article 312.07(i) of the Standard Specifications to read:

"(i) Ground Granulated Blast Furnace (GGBF) Slag ..... 1010"

Revise the first paragraph of Article 312.09 of the Standard Specifications to read:

"**312.09 Proportioning and Mix Design.** At least 60 days prior to start of placing CAM II, the Contractor shall submit samples of materials to be used in the work for proportioning and testing.

The mixture shall contain a minimum of 200 lb (120 kg) of cement per cubic yard (cubic meter). Cement may be replaced with fly ash or ground granulated blast furnace (GGBF) slag according to Article 1020.05(c)(1) or 1020.05(c)(2), respectively, however the minimum cement content in the mixture shall be 170 lbs/cu yd (101 kg/cu m). Blends of coarse and fine aggregates will be permitted, provided the volume of fine aggregate does not exceed the volume of coarse aggregate. The Engineer will determine the proportions of materials for the mixture according to the "Portland Cement Concrete Level III Technician Course" manual. However, the Contractor may substitute their own mix design. Article 1020.05(a) shall apply, and a Level III PCC Technician shall develop the mix design."

Revise Article 352.02 of the Standard Specifications to read:

"**352.02 Materials.** Materials shall be according to the following.

Item	Article/Section
(a) Cement (Note 1)	1001
(b) Soil for Soil-Cement Base Course	1009.03
(c) Water	1002
(d) Bituminous Materials (Note 2)	1032

Note 1. Bulk cement may be used for the traveling mixing plant method if the equipment for handling, weighing, and spreading the cement is approved by the Engineer.

Note 2. The bituminous materials used for curing shall be emulsified asphalt RS-2, CRS-2, HFE 90, or HFE 150; rapid curing liquid asphalt RC-70; or medium curing liquid asphalt MC-70 or MC-250."

Revise Article 404.02 of the Standard Specifications to read:

"**404.02 Materials.** Materials shall be according to the following.

Item	Article/Section
(a) Cement	1001
(b) Water	1002
(c) Fine Aggregate	1003.08
(d) Bituminous Material (Tack Coat)	1032.06
(e) Emulsified Asphalts (Note 1) (Note 2)	1032.06
(f) Fiber Modified Joint Sealer	1050.05
(g) Additives (Note 3)	

Note 1. When used for slurry seal, the emulsified asphalt shall be CQS-1h according to Article 1032.06(b).

Note 2. When used for micro-surfacing, the emulsified asphalt shall be CQS-1hP according to Article 1032.06(e).

Note 3. Additives may be added to the emulsion mix or any of the component materials to provide the control of the quick-traffic properties. They shall be included as part of the mix design and be compatible with the other components of the mix.

Revise the last sentence of the fourth paragraph of Article 404.08 of the Standard Specifications to read:

"When approved by the Engineer, the sealant may be dusted with fine sand, cement, or mineral filler to prevent tracking."

Revise Note 2 of Article 516.02 of the Standard Specifications to read:

"Note 2. The sand-cement grout mix shall be according to Section 1020 and shall be a 1:1 blend of sand and cement comprised of a Type I, IL, or II cement at 185 lb/cu yd (110 kg/cu m). The maximum water cement ratio shall be sufficient to provide a flowable mixture with a typical slump of 10 in. (250 mm)."

Revise Note 2 of Article 543.02 of the Standard Specifications to read:

"Note 2. The grout mixture shall be 6.50 hundredweight/cu yd (385 kg/cu m) of cement plus fine aggregate and water. Fly ash or ground granulated blast furnace (GGBF) slag may replace a maximum of 5.25 hundredweight/cu yd (310 kg/cu m) of the cement. The water/cement ratio, according to Article 1020.06, shall not exceed 0.60. An air-entraining admixture shall be used to produce an air content, according to Article 1020.08, of not less than 6.0 percent nor more than 9.0 percent of the volume of the grout. The Contractor shall have the option to use a water-reducing or high range water-reducing admixture."

Revise Article 583.01 of the Standard Specifications to read:

"**583.01 Description.** This work shall consist of placing cement mortar along precast, prestressed concrete bridge deck beams as required for fairing out any unevenness between adjacent deck beams prior to placing of waterproofing membrane and surfacing."

Revise Article 583.02(a) of the Standard Specifications to read:

"(a) Cement .....1001"

Revise the first paragraph of Article 583.03 of the Standard Specifications to read:

"**583.03 General.** This work shall only be performed when the air temperature is 45 °F (7 °C) and rising. The mixture for cement mortar shall consist of three parts sand to one part cement by volume. The amount of water shall be no more than that necessary to produce a workable, plastic mortar."

Revise Note 2/ in Article 1003.01(b) of the Standard Specifications to read:

.

"2/ Applies only to sand. Sand exceeding the colorimetric test standard of 11 (Illinois Modified AASHTO T 21) will be checked for mortar making properties according to Illinois Modified ASTM C 87 and shall develop a compressive strength at the age of 14 days when using Type I, IL, or II cement of not less than 95 percent of the comparable standard.

Revise the second sentence of Article 1003.02(e)(1) of the Standard Specifications to read:

"The test will be performed with Type I, IL, or II portland cement having a total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.90 percent or greater."

Revise the first sentence of the second paragraph of Article 1003.02(e)(3) of the Standard Specifications to read:

"The ASTM C 1293 test shall be performed with Type I, IL, or II portland cement having a total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.80 percent or greater."

Revise the second sentence of Article 1004.02(g)(1) of the Standard Specifications to read:

"The test will be performed with Type I, IL, or II portland cement having a total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.90 percent or greater."

Revise Article 1017.01 of the Standard Specifications to read:

"**1017.01 Requirements.** The mortar shall be high-strength according to ASTM C 387 and shall have a minimum 80.0 percent relative dynamic modulus of elasticity when tested by the Department according to Illinois Modified AASHTO T 161 or AASHTO T 161 when tested by an independent lab. The high-strength mortar shall have a water-soluble chloride ion content of less than 0.40 lb/cu yd (0.24 kg/cu m). The test shall be performed according to ASTM C 1218, and the high-strength mortar shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an independent lab a minimum of once every five years, and the test results shall be provided to the Department. Mixing of the high-strength mortar shall be according to the manufacturer's specifications. The Department will maintain a qualified product list."

Revise the fourth sentence of Article 1018.01 of the Standard Specifications to read:

"The ASTM C 1218 test shall be performed by an independent lab a minimum of once every five years, and the test results shall be provided to the Department."

Revise Article 1019.02 of the Standard Specifications to read:

"**1019.02 Materials.** Materials shall be according to the following.

Item	Article/Section
(a) Cement	1001
(b) Water	1002

(c) Fine Aggregate for Controlled Low-Strength Material (CLSM) 1003.06
(d) Fly Ash 1010
(e) Ground Granulated Blast Furnace (GGBF) Slag 1010
(f) Admixtures (Note 1)

Note 1. The air-entraining admixture may be in powder or liquid form. Prior to approval, a CLSM air-entraining admixture will be evaluated by the Department. The admixture shall be able to meet the air content requirements of Mix 2. The Department will maintain a qualified product list."

Revise Article 1019.05 of the Standard Specifications to read:

"**1019.05 Department Mix Design.** The Department mix design shall be Mix 1, 2, or 3 and shall be proportioned to yield approximately one cubic yard (cubic meter).

Mix 1	
Cement	50 lb (30 kg)
Fly Ash – Class C or F, and/or GGBF Slag	125 lb (74 kg)
Fine Aggregate – Saturated Surface Dry	2900 lb (1720 kg)
Water	50-65 gal (248-322 L)
Air Content	No air is entrained

Mix 2	
Cement	125 lb (74 kg)
Fine Aggregate – Saturated Surface Dry	2500 lb (1483 kg)
Water	35-50 gal (173-248 L)
Air Content	15-25 %

Mix 3	
Cement	40 lb (24 kg)
Fly Ash – Class C or F, and/or GGBF Slag	125 lb (74 kg)
Fine Aggregate – Saturated Surface Dry	2500 lb (1483 kg)
Water	35-50 gal (179-248 L)
Air Content	15-25 %"

Revise Article 1020.04, Table 1, Note (8) of the Standard Specifications to read:

"(8) In addition to the Type III portland cement, 100 lb/cu yd of ground granulated blast-furnace slag and 50 lb/cu yd of microsilica (silica fume) shall be used. For an air temperature greater than 85 ºF, the Type III portland cement may be replaced with Type I, IL, or II portland cement."

Revise Article 1020.04, Table 1 (Metric), Note (8) of the Standard Specifications to read:

"(8) In addition to the Type III portland cement, 60 kg/cu m of ground granulated blast-furnace slag and 30 kg/cu m of microsilica (silica fume) shall be used. For an air temperature greater than 30 ºC, the Type III portland cement may be replaced with Type I, IL, or II portland cement."

Revise the second paragraph of Article 1020.05(a) of the Standard Specifications to read:

"For a mix design using a portland-pozzolan cement, portland blast-furnace slag cement, portland-limestone cement, or replacing portland cement with finely divided minerals per Articles 1020.05(c) and 1020.05(d), the Contractor may submit a mix design with a minimum portland cement content less than 400 lbs/cu yd (237 kg/cu m), but not less than 375 lbs/cu yd (222 kg/cu m), if the mix design is shown to have a minimum relative dynamic modulus of elasticity of 80 percent determined according to AASHTO T 161. Testing shall be performed by an independent laboratory accredited by AASHTO re:source for Portland Cement Concrete."

Revise the first sentence of the first paragraph of Article 1020.05(b) of the Standard Specifications to read:

"Corrosion inhibitors and concrete admixtures shall be according to the qualified product lists."

Delete the fourth and fifth sentences of the second paragraph of Article 1020.05(b) of the Standard Specifications.

Revise the third sentence of the second paragraph of Article 1020.05(b)(5) of the Standard Specifications to read:

"The qualified product lists of concrete admixtures shall not apply."

Revise second paragraph of Article 1020.05(b)(10) of the Standard Specifications to read:

"When calcium nitrite is used, it shall be added at the rate of 4 gal/cu yd (20 L/cu m) and shall be added to the mix immediately after all compatible admixtures have been introduced to the batch. Other corrosion inhibitors shall be added per the manufacturer's specifications."

Delete the third paragraph of Article 1020.05(b)(10) of the Standard Specifications.

Revise Article 1020.15(b)(1)c. of the Standard Specifications to read:

"c. The minimum portland cement content in the mixture shall be 375 lbs/cu yd (222 kg/cu m). When the total of organic processing additions, inorganic processing additions, and limestone addition exceed 5.0 percent in the cement, the minimum portland cement content in the mixture shall be 400 lbs/cu yd (237 kg/cu m). For a drilled shaft, foundation, footing, or substructure, the

minimum portland cement may be reduced to as low as 330 lbs/cu yd (196 kg/cu m) if the concrete has adequate freeze/thaw durability. The Contractor shall provide freeze/thaw test results according to AASHTO T 161, and the relative dynamic modulus of elasticity of the mix design shall be a minimum of 80 percent. Testing shall be performed by an independent laboratory accredited by AASHTO re:source for Portland Cement Concrete. Freeze/thaw testing will not be required for concrete that will not be exposed to freezing and thawing conditions as determined by the Engineer."

Revise Article 1021.01 of the Standard Specifications to read:

"**1021.01 General.** Admixtures shall be furnished in liquid or powder form ready for use. The admixtures shall be delivered in the manufacturer's original containers, bulk tank trucks or such containers or tanks as are acceptable to the Engineer. Delivery shall be accompanied by a ticket which clearly identifies the manufacturer, the date of manufacture, and trade name of the material. Containers shall be readily identifiable as to manufacturer, the date of manufacture, and trade name of the material they contain.

Concrete admixtures shall be on one of the Department's qualified product lists. Unless otherwise noted, admixtures shall have successfully completed and remain current with the AASHTO Product Eval and Audit Concrete Admixture (CADD) testing program. For admixture submittals to the Department; the product brand name, manufacturer name, admixture type or types, an electronic link to the product's technical data sheet, and the NTPEP testing number which contains an electronic link to all test data shall be provided. In addition, a letter shall be submitted certifying that no changes have been made in the formulation of the material since the most current round of tests conducted by AASHTO Product Eval and Audit. After 28 days of testing by AASHTO Product Eval and Audit, air-entraining admixtures may be provisionally approved and used on Departmental projects. For all other admixtures, unless otherwise noted, the time period after which provisionally approved status may be earned is 6 months.

The manufacturer shall include the following in the submittal to the AASHTO Product Eval and Audit CADD testing program: the manufacturing range for specific gravity, the midpoint and manufacturing range for residue by oven drying, and manufacturing range of pH. The submittal shall also include an infrared spectrophotometer trace no more than five years old.

For air-entraining admixtures according to Article 1021.02, the specific gravity allowable manufacturing range established by the manufacturer shall be according to AASHTO M 194. For residue by oven drying and pH, the allowable manufacturing range and test methods shall be according to AASHTO M 194.

For admixtures according to Articles 1021.03, 1021.04, 1021.05, 1021.06, 1021.07, and 1021.08, the pH allowable manufacturing range established by the manufacturer shall be according to ASTM E 70. For specific gravity and residue by oven drying, the allowable manufacturing range and test methods shall be according to AASHTO M 194.

All admixtures, except chloride-based accelerators, shall contain a maximum of 0.3 percent chloride by weight (mass) as determined by an appropriate test method. To verify the test result, the Department will use Illinois Modified AASHTO T 260, Procedure A, Method 1.

Prior to final approval of an admixture, the Engineer reserves the right to request a sample for testing. The test and reference concrete mixtures tested by the Engineer will contain a cement content of 5.65 cwt/cu yd (335 kg/cu m). For freeze-thaw testing, the Department will perform the test according to Illinois Modified AASHTO T 161. The flexural strength test will be performed according to AASHTO T 177. If the Engineer decides to test the admixture, the manufacturer shall submit AASHTO T 197 water content and set time test results on the standard cement used by the Department. The manufacturer may select their lab or an independent lab to perform this testing. The laboratory is not required to be accredited by AASHTO.

Random field samples may be taken by the Department to verify an admixture meets specification. A split sample will be provided to the manufacturer if requested. Admixtures that do not meet specification requirements or an allowable manufacturing range established by the manufacturer shall be replaced with new material."

Revise Article 1021.03 of the Standard Specifications to read:

"**1021.03 Retarding and Water-Reducing Admixtures.** The admixture shall be according to the following.

(a) Retarding admixtures shall be according to AASHTO M 194, Type B (retarding) or Type D (water-reducing and retarding).

(b) Water-reducing admixtures shall be according to AASHTO M 194, Type A.

(c) High range water-reducing admixtures shall be according to AASHTO M 194, Type F (high range water-reducing) or Type G (high range water-reducing and retarding)."

Revise Article 1021.05 of the Standard Specifications to read:

"**1021.05 Self-Consolidating Admixtures.** Self-consolidating admixture systems shall consist of either a high range water-reducing admixture only or a high range water-reducing admixture combined with a separate viscosity modifying admixture. The one or two component admixture system shall be capable of producing a concrete that can flow around reinforcement and consolidate under its own weight without additional effort and without segregation.

High range water-reducing admixtures shall be according to AASHTO M 194, Type F.

Viscosity modifying admixtures shall be according to AASHTO M 194, Type S (specific performance)."

Revise Article 1021.06 of the Standard Specifications to read:

"**1021.06 Rheology-Controlling Admixture.** Rheology-controlling admixtures shall be capable of producing a concrete mixture with a lower yield stress that will consolidate easier for slipform applications used by the Contractor. Rheology-controlling admixtures shall be according to AASHTO M 194, Type S (specific performance)."

Revise Article 1021.07 of the Standard Specifications to read:

"**1021.07 Corrosion Inhibitor.** The corrosion inhibitor shall be according to one of the following.

(a) Calcium Nitrite. Corrosion inhibitors shall contain a minimum 30 percent calcium nitrite by weight (mass) of solution and shall comply with either the requirements of AASHTO M 194, Type C (accelerating) or the requirements of ASTM C 1582. The corrosion inhibiting performance requirements of ASTM C 1582 shall not apply.

(b) Other Materials. The corrosion inhibitor shall be according to ASTM C 1582.

For submittals requiring testing according to ASTM M 194, Type C (accelerating), the admixture shall meet the requirements of the AASHTO Product Eval and Audit CADD testing program according to Article 1021.01.

For submittals requiring testing according to ASTM C 1582, a report prepared by an independent laboratory accredited by AASHTO re:source for portland cement concrete shall be provided. The report shall show the results of physical tests conducted no more than five years prior to the time of submittal, according to applicable specifications. However, ASTM G 109 test information specified in ASTM C 1582 is not required to be from an independent accredited lab. All other information in ASTM C 1582 shall be from an independent accredited lab. Test data and other information required to be submitted to AASHTO Product Eval and Audit according to Article 1021.01, shall instead be submitted directly to the Department."

Add Article 1021.08 of the Standard Specifications as follows:

"**1021.08 Other Specific Performance Admixtures.** Other specific performance admixtures shall, at a minimum, be according to AASHTO M 194, Type S (specific performance). The Department also reserves the right to require other testing, as determined by the Engineer, to show evidence of specific performance characteristics.

Initial testing according to AASHTO M 194 may be conducted under the AASHTO Product Eval and Audit CADD testing program according to Article 1021.01, or by an independent laboratory accredited by AASHTO re:source for Portland Cement Concrete. In either case, test data and other information required to be submitted to AASHTO Product Eval and Audit according to Article 1021.01, shall also be submitted directly to the Department. The independent accredited lab report shall show the results of physical tests conducted no more than five years prior to the time of submittal, according to applicable specifications."

Revise Article 1024.01 of the Standard Specifications to read:

"**1024.01 Requirements for Grout.** The grout shall be proportioned by dry volume, thoroughly mixed, and shall have a minimum temperature of 50 °F (10 °C). Water shall not exceed the minimum needed for placement and finishing.

Materials for the grout shall be according to the following.

Item	Article/Section
(a) Cement	1001
(b) Water	1002
(c) Fine Aggregate	1003.02
(d) Fly Ash	1010
(e) Ground Granulated Blast Furnace (GGBF) Slag	1010
(f) Concrete Admixtures	1021"

Revise Note 1 of Article 1024.02 of the Standard Specifications to read:

"Note 1. Nonshrink grout shall be according to Illinois Modified ASTM C 1107.

The nonshrink grout shall have a water-soluble chloride ion content of less than 0.40 lb/cu yd (0.24 kg/cu m). The test shall be performed according to ASTM C 1218, and the grout shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an independent lab a minimum of once every five years, and the test results shall be provided to the Department. Mixing of the nonshrink grout shall be according to the manufacturer's specifications. The Department will maintain a qualified product list."

Revise Article 1029.02 of the Standard Specifications to read:

"**1029.02 Materials.** Materials shall be according to the following.

Item	Article/Section
(a) Cement	1001
(b) Fly Ash	1010
(c) Ground Granulated Blast Furnace (GGBF) Slag	1010
(d) Water	1002
(e) Fine Aggregate	1003
(f) Concrete Admixtures	1021
(g) Foaming Agent (Note 1)	

Note 1. The manufacturer shall submit infrared spectrophotometer trace and test results indicating the foaming agent meets the requirements of ASTM C 869 in order to be on the Department's qualified product list. Submitted data/results shall not be more than five years old."

Revise the second paragraph of Article 1103.03(a)(4) the Standard Specifications to read:

"The dispenser system shall provide a visual indication that the liquid admixture is actually entering the batch, such as via a transparent or translucent section of tubing or by independent check with an integrated secondary metering device. If approved by the Engineer, an alternate indicator may be used for admixtures dosed at rates of 25 oz/cwt (1630 mL/100 kg) or greater, such as accelerating admixtures, corrosion inhibitors, and viscosity modifying admixtures."

Revise the first two sections of Check Sheet #11 of the Supplemental Specifications and Recurring Special Provisions to read:

"Description. This work shall consist of filling voids beneath rigid and composite pavements with cement grout.

Materials. Materials shall be according to the following Articles of Division 1000 - Materials of the Standard Specifications:

Item	Article/Section
(a) Cement	1001
(b) Water	1002
(c) Fly Ash	1010
(d) Ground Granulated Blast Furnace (GGBF) Slag	1010
(e) Admixtures	1021
(f) Packaged Rapid Hardening Mortar or Concrete	1018"

Revise the third paragraph of Materials Note 2 of Check Sheet #28 of the Supplemental Specifications and Recurring Special Provisions to read:

"The Department will maintain a qualified product list of synthetic fibers, which will include the minimum required dosage rate. For the minimum required fiber dosage rate based on the Illinois Modified ASTM C 1609 test, a report prepared by an independent laboratory accredited by AASHTO re:source for Portland Cement Concrete shall be provided. The report shall show results of tests conducted no more than five years prior to the time of submittal."

80460

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

CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)

Effective: June 1, 2010
Revised: January 1, 2025

The reduction of emissions of particulate matter (PM) for off-road equipment shall be accomplished by installing retrofit emission control devices. The term "equipment" refers to diesel fuel powered devices rated at 50 hp and above, to be used on the jobsite in excess of seven calendar days over the course of the construction period on the jobsite (including rental equipment).

Contractor and subcontractor diesel powered off-road equipment assigned to the contract shall be retrofitted according to the table below.

Horsepower Range	Model Year and Older
50-99	2003
100-299	2002
300-599	2000
600-749	2001
750 and up	2005

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

a) Included on the U.S. Environmental Protection Agency (USEPA) *Verified Retrofit Technology List* (https://www.epa.gov/verified-diesel-tech/verified-technologies-list-clean-diesel), or verified by the California Air Resources Board (CARB) (http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm); or

b) Retrofitted with a non-verified diesel retrofit emission control device if verified retrofit emission control devices are not available for equipment proposed to be used on the project, and if the Contractor has obtained a performance certification from the retrofit device manufacturer that the emission control device provides a minimum PM emission reduction of 50 percent.

Note: Large cranes (Crawler mounted cranes) which are responsible for critical lift operations are exempt from installing retrofit emission control devices if such devices adversely affect equipment operation.

Diesel powered off-road equipment with engine ratings of 50 hp and above, which are unable to be retrofitted with verified emission control devices or if performance certifications are not available which will achieve a minimum 50 percent PM reduction, may be granted a waiver by the Department if documentation is provided showing good faith efforts were made by the Contractor to retrofit the equipment.

Construction shall not proceed until the Contractor submits a certified list of the diesel powered off-road equipment that will be used, and as necessary, retrofitted with emission control devices. The list(s) shall include (1) the equipment number, type, make, Contractor/rental company name; and (2) the emission control devices make, model, USEPA or CARB verification number, or performance certification from the retrofit device manufacturer. Equipment reported as fitted with emissions control devices shall be made available to the Engineer for visual inspection of the device installation, prior to being used on the jobsite.

The Contractor shall submit an updated list of retrofitted off-road construction equipment as retrofitted equipment changes or comes on to the jobsite. The addition or deletion of any diesel powered equipment shall be included on the updated list.

If any diesel powered off-road equipment is found to be in non-compliance with any portion of this special provision, the Engineer will issue the Contractor a diesel retrofit deficiency deduction.

Any costs associated with retrofitting any diesel powered off-road equipment with emission control devices 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. The Contractor's compliance with this notice and any associated regulations shall not be grounds for a claim.

Diesel Retrofit Deficiency Deduction

When the Engineer determines that a diesel retrofit deficiency exists, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be $1,000.00 for each deficiency identified.

The deficiency will be based on lack of diesel retrofit emissions control.

If a Contractor accumulates three diesel retrofit deficiency deductions for the same piece of equipment in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of the contract time, waiver of penalties, or be grounds for any claim.

80261

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)

Effective: September 1, 2000
Revised: January 2, 2025

1. OVERVIEW AND GENERAL 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 in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory. Award of the contract is conditioned on meeting the requirements of 49 CFR Part 26, and failure by the Contractor to carry out the requirements of Part 26 is a material breach of the contract and may result in the termination of the contract or such other remedies as the Department deems appropriate.

2. CONTRACTOR ASSURANCE. All assurances set forth in FHWA 1273 are hereby incorporated by reference and will be physically attached to the final contract and all subcontracts.

3. CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. The Department has determined the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies and that, in the absence of unlawful discrimination and in an arena of fair and open competition, DBE companies can be expected to perform **19**% 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 in accordance with the requirements of 49 CFR 26.53 and SBE Memorandum No. 24-02.

4. IDENTIFICATION OF CERTIFIED DBE. Information about certified DBE Contractors can be found in the Illinois UCP Directory. Bidders can obtain additional information and assistance with identifying DBE-certified companies at the Department's website or by contacting the Department's Bureau of Small Business Enterprises at (217) 785-4611.

5. BIDDING PROCEDURES. Compliance with this Special Provision and SBE Policy Memorandum 24-02 is a material bidding requirement. The following shall be included with the bid.

   (a) DBE Utilization Plan (form SBE 2026) documenting enough DBE participation has been obtained to meet the goal, or a good faith effort has been made to meet the goal even though the efforts did not succeed in obtaining enough DBE participation to meet the goal.

(b) Applicable DBE Participation Statement (form SBE 2023, 2024, and/or 2025) for each DBE firm the bidder has committed to perform the work to achieve the contract goal.

The required forms and documentation shall 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 bid if it does not meet the bidding procedures set forth herein and the bid will be declared non-responsive. A bidder declared non-responsive for failure to meet the bidding procedures will not give rise to an administrative reconsideration. In the event the bid is declared non-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.

6. UTILZATION PLAN EVALUATION. 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 the bidder has committed to DBE participation sufficient to meet the goal, or that the bidder has made good faith efforts to do so, in the event the bidder cannot meet the goal, in order for the Department to 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 Department determines, based upon the documentation submitted, that the bidder has made a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A and the requirements of SBE 2026.

   If the Department determines that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan of that determination in accordance with SBE Policy Memorandum 24-02.

7. CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work the bidder commits to have performed by the specified DBEs 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 firms. 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 guidelines for counting goal credit are provided in 49 CFR Part 26.55. In evaluating Utilization Plans for award the Department will count goal credit as set forth in Part 26 and in accordance with SBE Policy Memorandum 24-02.

8. CONTRACT COMPLIANCE. The Contractor must utilize the specific DBEs listed to perform the work and supply the materials for which each DBE is listed in the Contractor's approved Utilization Plan, unless the Contractor obtains the Department's written consent to

terminate the DBE or any portion of its work. The DBE Utilization Plan approved by SBE is a condition-of-award, and any deviation to that Utilization Plan, the work set forth therein to be performed by DBE firms, or the DBE firms specified to perform that work, must be approved, in writing, by the Department in accordance with federal regulatory requirements. Deviation from the DBE Utilization Plan condition-of-award without such written approval is a violation of the contract and may result in termination of the contract or such other remedy the Department deems appropriate. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan.

(a) NOTICE OF DBE PERFORMANCE. The Contractor shall provide the Engineer with at least three days advance notice of when all DBE firms are expected to perform the work committed under the Contractor's Utilization Plan.

(b) SUBCONTRACT. If awarded the contract, the Contractor is required to enter into written subcontracts with all DBE firms indicated in the approved Utilization Plan and must provide copies of fully executed 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.

(c) PAYMENT TO DBE FIRMS. 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 goal has been paid to the DBE. The Contractor shall document and report all payments for work performed by DBE certified firms in accordance with Article 109.11 of the Standard Specifications. All records of payment for work performed by DBE certified firms shall be made available to the Department upon request.

(d) FINAL PAYMENT. After the performance of the final item of work or trucking, or delivery of material by a DBE and final payment 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 (form SBE 2115) to the Engineer. 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.

(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.

80029

HOT-MIX ASPHALT – LONGITUDINAL JOINT SEALANT (BDE)

Effective: November 1, 2022
Revised: August 1, 2023

Add the following after the second sentence in the eighth paragraph of Article 406.06(h)(2) of the Standard Specifications:

"If rain is forecasted and traffic is to be on the LJS or if pickup/tracking of the LJS material is likely, the LJS shall be covered immediately following its application with FA 20 fine aggregate mechanically spread uniformly at a rate of 1.5 ± 0.5 lb/sq yd (0.75 ± 0.25 kg/sq m). Fine aggregate landing outside of the LJS shall be removed prior to application of tack coat."

Add the following after the first sentence in the ninth paragraph of Article 406.06(h)(2) of the Standard Specifications:

"LJS half-width shall be applied at a width of 9 ± 1 in. (225 ± 25 mm) in the immediate lane to be placed with the outside edge flush with the joint of the next HMA lift. The vertical face of any longitudinal joint remaining in place shall also be coated."

Add the following after the eleventh paragraph of Article 406.06(h)(2) of the Standard Specifications:

"LJS Half-Width Application Rate, lb/ft (kg/m) [1/]			
Lift Thickness, in. (mm)	Coarse Graded Mixture (IL-19.0, IL-19.0L, IL-9.5, IL-9.5L, IL-4.75)	Fine Graded Mixture (IL-9.5FG)	SMA Mixture (SMA-9.5, SMA-12.5)
¾ (19)	0.44 (0.66)		
1 (25)	0.58 (0.86)		
1 ¼ (32)	0.66 (0.98)	0.44 (0.66)	
1 ½ (38)	0.74 (1.10)	0.48 (0.71)	0.63 (0.94)
1 ¾ (44)	0.82 (1.22)	0.52 (0.77)	0.69 (1.03)
2 (50)	0.90 (1.34)	0.56 (0.83)	0.76 (1.13)
≥ 2 ¼ (60)	0.98 (1.46)		

1/ The application rate includes a surface demand for liquid. 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."

Revise the second paragraph of Article 406.13(b) of the Standard Specifications to read:

"Aggregate for covering tack, LJS, or FLS will not be measured for payment."

Add the following to the end of the second paragraph of Article 406.14 of the Standard Specifications:

“Longitudinal joint sealant (LJS) half-width will be paid for at the contract unit price per foot (meter) for LONGITUDINAL JOINT SEALANT, HALF-WIDTH.”

80446

PERFORMANCE GRADED ASPHALT BINDER (BDE)

Effective: January 1, 2023

Revise Article 1032.05 of the Standard Specifications to read:

"**1032.05 Performance Graded Asphalt Binder.** These materials will be accepted according to the Bureau of Materials Policy Memorandum, "Performance Graded Asphalt Binder Qualification Procedure." The Department will maintain a qualified producer list. These materials shall be free from water and shall not foam when heated to any temperature below the actual flash point. Air blown asphalt, recycle engine oil bottoms (ReOB), and polyphosphoric acid (PPA) modification shall not be used.

When requested, producers shall provide the Engineer with viscosity/temperature relationships for the performance graded asphalt binders delivered and incorporated in the work.

(a) Performance Graded (PG) Asphalt Binder. The asphalt binder shall meet the requirements of AASHTO M 320, Table 1 "Standard Specification for Performance Graded Asphalt Binder" for the grade shown on the plans and the following.

Test	Parameter
Small Strain Parameter (AASHTO PP 113) BBR, ΔTc, 40 hrs PAV (40 hrs continuous or 2 PAV at 20 hrs)	-5 °C min.

(b) Modified Performance Graded (PG) Asphalt Binder. The asphalt binder shall meet the requirements of AASHTO M 320, Table 1 "Standard Specification for Performance Graded Asphalt Binder" for the grade shown on the plans.

Asphalt binder modification shall be performed at the source, as defined in the Bureau of Materials Policy Memorandum, "Performance Graded Asphalt Binder Qualification Procedure."

Modified asphalt binder shall be safe to handle at asphalt binder production and storage temperatures or HMA construction temperatures. Safety Data Sheets (SDS) shall be provided for all asphalt modifiers.

(1) Polymer Modification (SB/SBS or SBR). Elastomers shall be added to the base asphalt binder to achieve the specified performance grade and shall be either a styrene-butadiene diblock, triblock copolymer without oil extension, or a styrene-butadiene rubber. The polymer modified asphalt binder shall be smooth, homogeneous, and be according to the requirements shown in Table 1 or 2 for the grade shown on the plans.

Table 1 - Requirements for Styrene-Butadiene Copolymer (SB/SBS) Modified Asphalt Binders		
Test	Asphalt Grade SB/SBS PG 64-28 SB/SBS PG 70-22	Asphalt Grade SB/SBS PG 64-34 SB/SBS PG 70-28 SB/SBS PG 76-22 SB/SBS PG 76-28
Separation of Polymer ITP, "Separation of Polymer from Asphalt Binder" Difference in °F (°C) of the softening point between top and bottom portions	4 (2) max.	4 (2) max.
TESTS ON RESIDUE FROM ROLLING THIN FILM OVEN TEST (AASHTO T 240)		
Elastic Recovery ASTM D 6084, Procedure A, 77 °F (25 °C), 100 mm elongation, %	60 min.	70 min.

Table 2 - Requirements for Styrene-Butadiene Rubber (SBR) Modified Asphalt Binders		
Test	Asphalt Grade SBR PG 64-28 SBR PG 70-22	Asphalt Grade SB/SBS PG 64-34 SB/SBS PG 70-28 SBR PG 76-22 SBR PG 76-28
Separation of Polymer ITP, "Separation of Polymer from Asphalt Binder" Difference in °F (°C) of the softening point between top and bottom portions	4 (2) max.	4 (2) max.
Toughness ASTM D 5801, 77 °F (25 °C), 20 in./min. (500 mm/min.), in.-lbs (N-m)	110 (12.5) min.	110 (12.5) min.
Tenacity ASTM D 5801, 77 °F (25 °C), 20 in./min. (500 mm/min.), in.-lbs (N-m)	75 (8.5) min.	75 (8.5) min.
TESTS ON RESIDUE FROM ROLLING THIN FILM OVEN TEST (AASHTO T 240)		
Elastic Recovery ASTM D 6084, Procedure A, 77 °F (25 °C), 100 mm elongation, %	40 min.	50 min.

(2) Ground Tire Rubber (GTR) Modification. GTR modification is the addition of recycled ground tire rubber to liquid asphalt binder to achieve the specified performance grade. GTR shall be produced from processing automobile and/or truck tires by the ambient

grinding method or micronizing through a cryogenic process. GTR shall not exceed 1/16 in. (2 mm) in any dimension and shall not contain free metal particles, moisture that would cause foaming of the asphalt, or other foreign materials. A mineral powder (such as talc) meeting the requirements of AASHTO M 17 may be added, up to a maximum of four percent by weight of GTR to reduce sticking and caking of the GTR particles. When tested in accordance with Illinois Modified AASHTO T 27 "Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates" or AASHTO PP 74 "Standard Practice for Determination of Size and Shape of Glass Beads Used in Traffic Markings by Means of Computerized Optical Method", a 50 g sample of the GTR shall conform to the following gradation requirements.

Sieve Size	Percent Passing
No. 16 (1.18 mm)	100
No. 30 (600 µm)	95 ± 5
No. 50 (300 µm)	> 20

GTR modified asphalt binder shall be tested for rotational viscosity according to AASHTO T 316 using spindle S27. GTR modified asphalt binder shall be tested for original dynamic shear and RTFO dynamic shear according to AASHTO T 315 using a gap of 2 mm.

The GTR modified asphalt binder shall meet the requirements of Table 3.

Table 3 - Requirements for Ground Tire Rubber (GTR) Modified Asphalt Binders

Test	Asphalt Grade GTR PG 64-28 GTR PG 70-22	Asphalt Grade GTR PG 76-22 GTR PG 76-28 GTR PG 70-28
TESTS ON RESIDUE FROM ROLLING THIN FILM OVEN TEST (AASHTO T 240)		
Elastic Recovery ASTM D 6084, Procedure A, 77 °F (25 °C), 100 mm elongation, %	60 min.	70 min.

(3) Softener Modification (SM). Softener modification is the addition of organic compounds, such as engineered flux, bio-oil blends, modified vegetable oils, glycol amines, and fatty acid derivatives, to the base asphalt binder to achieve the specified performance grade. Softeners shall be dissolved, dispersed, or reacted in the asphalt binder to enhance its performance and shall remain compatible with the asphalt binder with no separation. Softeners shall not be added to modified PG asphalt binder as defined in Articles 1032.05(b)(1) or 1032.05(b)(2).

An Attenuated Total Reflectance-Fourier Transform Infrared spectrum (ATR-FTIR) shall be collected for both the softening compound as well as the softener modified

asphalt binder at the dose intended for qualification. The ATR-FTIR spectra shall be collected on unaged softener modified binder, 20-hour Pressurized Aging Vessel (PAV) aged softener modified binder, and 40-hour PAV aged softener modified binder. The ATR-FTIR shall be collected in accordance with Illinois Test Procedure 601. The electronic files spectral files (in one of the following extensions or equivalent: *.SPA, *.SPG, *.IRD, *.IFG, *.CSV, *.SP, *.IRS, *.GAML, *.[0-9], *.IGM, *.ABS, *.DRT, *.SBM, *.RAS) shall be submitted to the Central Bureau of Materials.

Softener modified asphalt binders shall meet the requirements in Table 4.

Table 4 - Requirements for Softener Modified Asphalt Binders	
Test	Asphalt Grade SM PG 46-28 SM PG 46-34 SM PG 52-28 SM PG 52-34 SM PG 58-22 SM PG 58-28 SM PG 64-22
Small Strain Parameter (AASHTO PP 113) BBR, ΔTc, 40 hrs PAV (40 hrs continuous or 2 PAV at 20 hrs)	-5°C min.
Large Strain Parameter (Illinois Modified AASHTO T 391) DSR/LAS Fatigue Property, Δ|G*|peak τ, 40 hrs PAV (40 hrs continuous or 2 PAV at 20 hrs)	≥ 54 %

The following grades may be specified as tack coats.

Asphalt Grade	Use
PG 58-22, PG 58-28, PG 64-22	Tack Coat”

Revise Article 1031.06(c)(1) and 1031.06(c)(2) of the Standard Specifications to read:

“(1) RAP/RAS. When RAP is used alone or RAP is used in conjunction with RAS, the percentage of virgin ABR shall not exceed the amounts listed in the following table.

HMA Mixtures - RAP/RAS Maximum ABR % 1/ 2/			
Ndesign	Binder	Surface	Polymer Modified Binder or Surface 3/
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).

3/ The maximum ABR percentages for ground tire rubber (GTR) modified mixes shall be equivalent to the percentages specified for SBS/SBR polymer modified mixes.

(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.

HMA Mixtures - FRAP/RAS Maximum ABR % 1/ 2/			
Ndesign	Binder	Surface	Polymer Modified Binder or Surface 3/
30	55	45	15
50	45	40	15
70	45	35	15
90	45	35	15
SMA	- -	- -	25
IL-4.75	- -	- -	35

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).

3/ The maximum ABR percentages for GTR modified mixes shall be equivalent to the percentages specified for SBS/SBR polymer modified mixes."

Add the following to the end of Note 2 of Article 1030.03 of the Standard Specifications.

"A dedicated storage tank for the ground tire rubber (GTR) modified asphalt binder shall be provided. This tank shall be capable of providing continuous mechanical mixing throughout and/or recirculation of the asphalt binder to provide a uniform mixture. The tank shall be heated and capable of maintaining the temperature of the asphalt binder at 300 °F to 350 °F (149 °C to 177 °C). The asphalt binder metering systems of dryer drum plants shall be calibrated with the actual GTR modified asphalt binder material with an accuracy of ±0.40 percent."

80441

RAILROAD PROTECTIVE LIABILITY INSURANCE (BDE)

Effective: December 1, 1986
Revised: January 1, 2022

Description. Railroad Protective Liability and Property Damage Liability Insurance shall be carried according to Article 107.11 of the Standard Specifications. A separate policy is required for each railroad unless otherwise noted.

NAMED INSURED & ADDRESS	NUMBER & SPEED OF PASSENGER TRAINS	NUMBER & SPEED OF FREIGHT TRAINS
Union Pacific Railroad 1400 Douglas St. Omaha NE, 68179	51, 15-30 mph	3, 15-30 mph

Class 1 RR (Y or N): Y
DOT/AAR No.: 176596C RR Mile Post: 0028.200
RR Division: Commuter Operations RR Sub-Division: Kenosha Sub

For Freight/Passenger Information Contact: Union Pacific Railroad Phone: 402-554-3721
For Insurance Information Contact: Matt Hertel, Marsh McLennan Phone: 630-524-8438

Class 1 RR (Y or N):
DOT/AAR No.: RR Mile Post:
RR Division: RR Sub-Division:

For Freight/Passenger Information Contact: Phone:
For Insurance Information Contact: Phone:

Basis of Payment. Providing Railroad Protective Liability and Property Damage Liability Insurance will be paid for at the contract unit price per Lump Sum for RAILROAD PROTECTIVE LIABILITY INSURANCE.

3426I

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (BDE)

Effective: January 1, 2024
Revised: April 1, 2024

Revise the first paragraph of Article 669.04 of the Standard Specifications to read:

"**669.04 Regulated Substances Monitoring.** Regulated substances monitoring includes environmental observation and field screening during regulated substances management activities. The excavated soil and groundwater within the work areas shall be managed as either uncontaminated soil, hazardous waste, special waste, or non-special waste.

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)"."

Revise the first two sentences of the nineteenth paragraph of Article 669.05 of the Standard Specifications to read:

"The Contractor shall coordinate waste disposal approvals with the disposal facility and provide the specific analytical testing requirements of that facility. The Contractor shall make all arrangements for collection, transportation, and analysis of landfill acceptance testing."

Revise the last paragraph of Article 669.05 of the Standard Specifications to read:

"The Contractor shall select a permitted landfill facility or CCDD/USFO facility meeting the requirements of 35 Ill. Admin. Code Parts 810-814 or Part 1100, respectively. The Department will review and approve or reject the facility proposed by the Contractor based upon information provided in BDE 2730. The Contractor shall verify whether the selected facility is compliant with those applicable standards as mandated by their permit and whether the 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 facility shall in no manner delay the construction schedule or alter the Contractor's responsibilities as set forth."

Revise the first paragraph of Article 669.07 of the Standard Specifications to read:

"**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. All other 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.

Topsoil for re-use as final cover which has been field screened and found not to exhibit PID readings over daily background readings as documented on the BDE 2732, visual staining or

odors, and is classified according to Articles 669.05(a)(2), (a)(3), (a)(4), (b)(1), or (c) may be temporarily staged at the Contractor's option."

Add the following paragraph after the sixth paragraph of Article 669.11 of the Standard Specifications.

"The sampling and testing of effluent water derived from dewatering discharges for priority pollutants volatile organic compounds (VOCs), priority pollutants semi-volatile organic compounds (SVOCs), or priority pollutants metals, will be paid for at the contract unit price per each for VOCS GROUNDWATER ANALYSIS using EPA Method 8260B, SVOCS GROUNDWATER ANALYSIS using EPA Method 8270C, or RCRA METALS GROUNDWATER ANALYSIS using EPA Methods 6010B and 7471A. This price shall include transporting the sample from the job site to the laboratory."

Revise the first sentence of the eight paragraph of Article 669.11 of the Standard Specifications to read:

"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) to be managed and disposed of, if required and approved by the Engineer, will be paid according to Article 109.04."

80455

SHORT TERM AND TEMPORARY PAVEMENT MARKINGS (BDE)

Effective: April 1, 2024
Revised: April 2, 2024

Revise Article 701.02(d) of the Standard Specifications to read:

"(d) Pavement Marking Tapes (Note 3) .....1095.06"

Add the following Note to the end of Article 701.02 of the Standard Specifications:

"Note 3. White or yellow pavement marking tape that is to remain in place longer than 14 days shall be Type IV tape."

Revise Article 703.02(c) of the Standard Specifications to read:

"(c) Pavement Marking Tapes (Note 1) .....1095.06"

Add the following Note to the end of Article 703.02 of the Standard Specifications:

"Note 1. White or yellow pavement marking tape that is to remain in place longer than 14 days shall be Type IV tape."

Revise Article 1095.06 of the Standard Specifications to read:

"**1095.06 Pavement Marking Tapes.** Type I white or yellow marking tape shall consist of glass spheres embedded into a binder on a foil backing that is precoated with a pressure sensitive adhesive. The spheres shall be of uniform gradation and distributed evenly over the surface of the tape.

Type IV tape shall consist of white or yellow tape with wet reflective media incorporated to provide immediate and continuing retroreflection in wet and dry conditions. The wet retroreflective media shall be bonded to a durable polyurethane surface. The patterned surface shall have approximately 40 ± 10 percent of the surface area raised and presenting a near vertical face to traffic from any direction. The channels between the raised areas shall be substantially free of exposed reflective elements or particles.

Blackout tape shall consist of a matte black, non-reflective, patterned surface that is precoated with a pressure sensitive adhesive.

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

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

*Shall match Aerospace Material Specification Standard 595 33538 (Orange Yellow) and the chromaticity limits as follows.

x	0.490	0.475	0.485	0.530
y	0.470	0.438	0.425	0.456

(b) Retroreflectivity. The white and yellow markings shall be retroreflective. Reflective values measured in accordance with the photometric testing procedure of ASTM D 4061 shall not be less than those listed in the table below. The coefficient of retroreflected luminance, R_L, shall be expressed as average millicandelas/footcandle/sq ft (millicandelas/lux/sq m), measured on a 3.0 x 0.5 ft (900 mm x 150 mm) panel at 86 degree entrance angle.

Coefficient of Retroreflected Luminance, R_L, Dry					
Type I			Type IV		
Observation Angle	White	Yellow	Observation Angle	White	Yellow
0.2°	2700	2400	0.2°	1300	1200
0.5°	2250	2000	0.5°	1100	1000

Wet retroreflectance shall be measured for Type IV under wet conditions according to ASTM E 2177 and meet the following.

Wet Retroreflectance, Initial R_L	
Color	R_L 1.05/88.76
White	300
Yellow	200

(c) Skid Resistance. The surface of Type IV and blackout markings shall provide a minimum skid resistance of 45 BPN when tested according to ASTM E 303.

(d) Application. The pavement marking tape shall have a precoated pressure sensitive adhesive and shall require no activation procedures. Test pieces of the tape shall be applied according to the manufacturer's instructions and tested according to ASTM D 1000, Method A, except that a stiff, short bristle roller brush and heavy hand pressure will be substituted for the weighted rubber roller in applying the test pieces to the metal test panel. Material tested as directed above shall show a minimum adhesion value of 750 g/in. (30 g/mm) width at the temperatures specified in ASTM D 1000. The adhesive shall be resistant to oils, acids, solvents, and water, and shall not leave objectionable stains or residue after removal. The material shall be flexible and conformable to the texture of the pavement.

(e) Durability. Type IV and blackout tape shall be capable of performing for the duration of a normal construction season and shall then be capable of being removed intact or in large sections at pavement temperatures above 40 °F (4 °C) either manually or with a roll-up device without the use of sandblasting, solvents, or grinding. The Contractor shall provide a manufacturer's certification that the material meets the requirements for being removed after the following minimum traffic exposure based on transverse test decks with rolling traffic.

(1) Time in place - 400 days
(2) ADT per lane - 9,000 (28 percent trucks)
(3) Axle hits - 10,000,000 minimum

Samples of the material applied to standard specimen plates will be measured for thickness and tested for durability in accordance with ASTM D 4060, using a CS-17 wheel and 1000-gram load, and shall meet the following criteria showing no significant change in color after being tested for the number of cycles indicated.

Test	Type I	Type IV	Blackout
Minimum Initial Thickness, mils (mm)	20 (0.51)	65 (1.65) 1/ 20 (0.51) 2/	65 (1.65) 1/ 20 (0.51) 2/
Durability (cycles)	5,000	1,500	1,500

1/ Measured at the thickest point of the patterned surface.

2/ Measured at the thinnest point of the patterned surface.

The pavement marking tape, when applied according to the manufacturer's recommended procedures, shall be weather resistant and shall show no appreciable fading, lifting, or shrinkage during the useful life of the marking. The tape, as applied, shall be of good appearance, free of cracks, and edges shall be true, straight, and unbroken.

(f) Sampling and Inspection.

(1) Sample. Prior to approval and use of Type IV pavement marking tape, the manufacturer shall submit a notarized certification from an independent laboratory, together with the results of all tests, stating that the material meets the requirements as set forth herein. The independent laboratory test report shall state the lot tested, the manufacturer's name, and the date of manufacture.

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

(2) Inspection. The Contractor shall provide a manufacturer's certification to the Engineer stating the material meets all requirements of this specification. All material samples for acceptance tests shall be taken or witnessed by a representative of the Bureau of Materials and shall be submitted to the Engineer of Materials, 126 East Ash Street, Springfield, Illinois 62704-4766 at least 30 days in advance of the pavement marking operations."

80457

SIGN PANELS AND APPURTENANCES (BDE)

Effective: January 1, 2025

Revise the third paragraph of Article 720.02 of the Standard Specifications to read:

"Steel support channels shall be according to ASTM A 653 (A 653M) (mild strip), Standard 720001, and galvanized according to AASHTO M 232, Class B 2 after forming."

Revise the fifth paragraph of Article 720.02 of the Standard Specifications to read:

"The stainless steel banding for mounting signs or sign support channels to light or signal standards shall be according to ASTM A 240 (A 240M) Type 302 stainless steel."

80462

SOURCE OF SUPPLY AND QUALITY REQUIREMENTS (BDE)

Effective: January 2, 2023

Add the following to Article 106.01 of the Standard Specifications:

"The final manufacturing process for construction materials and the immediately preceding manufacturing stage for construction materials shall occur within the United States. Construction materials shall include an article, material, or supply that is or consists primarily of the following.

(a) Non-ferrous metals;

(b) Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);

(c) Glass (including optic glass);

(d) Lumber;

(e) Drywall.

Items consisting of two or more of the listed construction materials that have been combined through a manufacturing process, and items including at least one of the listed materials combined with a material that is not listed through a manufacturing process shall be exempt."

80448

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

SUBMISSION OF BIDDERS LIST INFORMATION (BDE)

Effective: January 2, 2025
Revised: March 2, 2025

In accordance with 49 CFR 26.11(c) all DBE and non-DBEs who bid as prime contractors and subcontractors shall provide bidders list information, including all DBE and non-DBE firms from whom the bidder has received a quote or bid to work as a subcontractor, whether or not the bidder has relied upon that bid in placing its bid as the prime contractor.

The bidders list information shall be submitted with the bid using the link provided within the "Integrated Contractor Exchange (iCX)" application of the Department's "EBids System".

80463

SUBMISSION OF PAYROLL RECORDS (BDE)

Effective: April 1, 2021
Revised: November 2, 2023

FEDERAL AID CONTRACTS. Revise the following section of Check Sheet #1 of the Recurring Special Provisions to read:

"STATEMENTS AND PAYROLLS

The payroll records shall include the worker's name, social security number, last known address, telephone number, email address, classification(s) of work actually performed, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof), daily and weekly number of hours actually worked in total, deductions made, and actual wages paid.

The Contractor and each subcontractor shall submit certified payroll records to the Department each week from the start to the completion of their respective work, except that full social security numbers, last known addresses, telephone numbers, and email addresses shall not be included on weekly submittals. Instead, the payrolls need only include an identification number for each employee (e.g., the last four digits of the employee's social security number). The submittals shall be made using LCPtracker Pro software. The software is web-based and can be accessed at https://lcptracker.com/. When there has been no activity during a work week, a payroll record shall still be submitted with the appropriate option ("No Work", "Suspended", or "Complete") selected."

STATE CONTRACTS. Revise Item 3 of Section IV of Check Sheet #5 of the Recurring Special Provisions to read:

"3. Submission of Payroll Records. The Contractor and each subcontractor shall, no later than the 15th day of each calendar month, file a certified payroll for the immediately preceding month to the Illinois Department of Labor (IDOL) through the Illinois Prevailing Wage Portal in compliance with the State Prevailing Wage Act (820 ILCS 130). The portal can be found on the IDOL website at https://www2.illinois.gov/idol/Laws-Rules/CONMED/Pages/Prevailing-Wage-Portal.aspx. Payrolls shall be submitted in the format prescribed by the IDOL.

In addition to filing certified payroll(s) with the IDOL, the Contractor and each subcontractor shall certify and submit payroll records to the Department each week from the start to the completion of their respective work, except that full social security numbers shall not be included on weekly submittals. Instead, the payrolls shall include an identification number for each employee (e.g., the last four digits of the employee's social security number). In addition, starting and ending times of work each day may be omitted from the payroll records submitted. The submittals shall be made using LCPtracker Pro software. The software is web-based and can be accessed at https://lcptracker.com/.

When there has been no activity during a work week, a payroll record shall still be submitted with the appropriate option (“No Work”, “Suspended”, or “Complete”) selected.”

80437

TRAINING SPECIAL PROVISIONS (BDE)

Effective: October 15, 1975
Revised: September 2, 2021

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 **2**. In the event the Contractor subcontracts a portion of the contract work, it 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 ensure 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 it employs 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 it 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 or she has successfully completed a training course leading to journeyman status or in which he or she 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 Employment Training Administration 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 than 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 shall provide for the maintenance of records and furnish periodic reports documenting its performance under this Training Special Provision.

For contracts with an awarded contract value of $500,000 or more, the Contractor is required to comply with the Illinois Works Apprenticeship Initiative (30 ILCS 559/20-20 to 20-25) and all applicable administrative rules to the extent permitted by Section 20-20(g). For federally funded projects, the number of trainees to be trained under this contract, as stated in the Training Special Provisions, will be the established goal for the Illinois Works Apprenticeship Initiative 30 ILCS 559/20-20(g). The Contractor shall make a good faith effort to meet this goal. For federally funded projects, the Illinois Works Apprenticeship Initiative will be implemented using the FHWA approved OJT procedures. The Contractor must comply with the recordkeeping and reporting obligations of the Illinois Works Apprenticeship Initiative for the life of the project, including the certification as to whether the trainee/apprentice labor hour goals were met.

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

VEHICLE AND EQUIPMENT WARNING LIGHTS (BDE)

Effective: November 1, 2021
Revised: November 1, 2022

Add the following paragraph after the first paragraph of Article 701.08 of the Standard Specifications:

"The Contractor shall equip all vehicles and equipment with high-intensity oscillating, rotating, or flashing, amber or amber-and-white, warning lights which are visible from all directions. In accordance with 625 ILCS 5/12-215, the lights may only be in operation while the vehicle or equipment is engaged in construction operations."

80439

WEEKLY DBE TRUCKING REPORTS (BDE)

Effective: June 2, 2012
Revised: January 2, 2025

The following applies to all Disadvantaged Business Enterprise (DBE) trucks on the project, whether they are utilized for DBE goal credit or not.

The Contractor shall notify the Engineer at least three days prior to DBE trucking activity.

The Contractor shall submit a weekly report of DBE trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) to the Engineer on Department form "SBE 723" within ten business days following the reporting period. The reporting period shall be Sunday through Saturday 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
Revised: January 1, 2025

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 shall be MASH compliant.

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 shall be MASH compliant.

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 compliant. Category 3 devices manufactured on or before December 31, 2019, and compliant

with NCHRP 350, 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 sign supports, speed feedback displays, 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 compliant is available, an NCHRP 350 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

DRILLED SHAFTS
Effective: October 5, 2015
Revised: October 27, 2023

Revise Section 516 of the Standard Specifications to read:

"SECTION 516. DRILLED SHAFTS

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

516.02 Materials. Materials shall be according to the following.

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

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

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

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

516.03 Equipment. Equipment shall be according to the following.

Item	Article/Section
(a) Concrete Equipment	1020.03
(b) Drilling Equipment (Note 1)	
(c) Hand Vibrator	1103.17(a)
(d) Underwater Concrete Placement Equipment	1103.18

Note 1. The drilling equipment shall have adequate capacity, including power, torque and down thrust, to create a shaft excavation of the maximum diameter specified to a depth of 20 percent beyond the depths shown on the plans.

516.04 Submittals. The following information shall be submitted on form BBS 133.

(a) Qualifications. At the time of the preconstruction conference, the Contractor shall provide the following documentation.

(1) References. A list containing at least three projects completed within the three years prior to this project's bid date which the Contractor performing this work has installed drilled shafts of similar diameter, length, and site conditions to those shown in the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractor's participation on those projects.

(2) Experience. Name and experience record of the drilled shaft supervisor, responsible for all facets of the shaft installation, and the drill operator(s) who will be assigned to this project. The supervisor and operator(s) shall each have a minimum of three years experience in the construction of drilled shafts.

(b) Installation Procedure. A detailed installation procedure shall be submitted to the Engineer for acceptance at least 28 days prior to drilled shaft construction and shall address each of the following items unless otherwise directed by the Engineer in writing.

(1) Equipment List. List of proposed equipment to be used including cranes, drill rigs, augers, belling tools, casing, vibratory hammers, core barrels, bailing buckets, final cleaning equipment, slurry equipment, tremies, or concrete pumps, etc.

(2) General Sequence. Details of the overall construction operation sequence, equipment access, and the sequence of individual shaft construction within each substructure bent or footing group. The submittal shall address the Contractor's proposed time delay and/or the minimum concrete strength necessary before initiating a shaft excavation adjacent to a recently installed drilled shaft.

(3) Shaft Excavation. A site specific step by step description of how the Contractor anticipates the shaft excavation to be advanced based on their evaluation of the subsurface data and conditions expected to be encountered. This sequence shall note the method of casing advancement, anticipated casing lengths, tip elevations and diameters, the excavation tools used and drilled diameters created. The Contractor shall indicate whether wet or dry drilling conditions are expected and if groundwater will be sealed from the excavation.

(4) Slurry. When the use of slurry is proposed, details on the types of additives to be used and their manufacturers shall be provided. In addition, details covering the measurement and control of the hardness of the mixing water, agitation, circulation, de-sanding, sampling, testing, and chemical properties of the slurry shall be submitted.

(5) Shaft Cleaning. Method(s) and sequence proposed for the shaft cleaning operation.

(6) Reinforcement Cage and Permanent Casing. Details of reinforcement placement including rolling spacers to be used and method to maintain proper elevation and location of the reinforcement cage within the shaft excavation during concrete placement. The method(s) of adjusting the reinforcement cage length and permanent casing if rock is encountered at an elevation other than as shown on the plans. As an option, the Contractor may perform soil borings and rock cores at the drilled shaft locations to determine the required reinforcement cage and permanent casing lengths.

(7) Concrete Placement. Details of concrete placement including proposed operational procedures for free fall, tremie or pumping methods. The sequence and method of casing removal shall also be stated along with the top of pour elevation, and method of forming through water above streambed.

(8) Mix Design. The proposed concrete mix design(s).

(9) Disposal Plan. Containment and disposal plan for slurry and displaced water. Containment and disposal plan for contaminated concrete pushed out of the top of the shaft by uncontaminated concrete during concrete placement.

(10) Access and Site Protection Plan. Details of access to the drilled shafts and safety measures proposed. This shall include a list of casing, scaffolding, work platforms, temporary walkways, railings, and other items needed to provide safe access to the drilled shafts. Provisions to protect open excavations during non- working hours shall be included.

The Engineer will evaluate the drilled shaft installation procedure and notify the Contractor of acceptance, need for additional information, or concerns with the installation's effect on the existing or proposed structure(s).

CONSTRUCTION REQUIREMENTS

516.05 General. Excavation for drilled shaft(s) shall not proceed until written authorization is received from the Engineer. The Contractor shall be responsible for verification of the dimensions and alignment of each shaft excavation as directed by the Engineer.

Unless otherwise approved in the Contractor's installation procedure, no shaft excavation, casing installation, or casing removal with a vibratory hammer shall be made within four shaft diameters center to center of a shaft with concrete that has a compressive strength less than 1500 psi (10,300 kPa). The site-specific soil strengths and installation methods selected will determine the actual required minimum spacing, if any, to address vibration and blow out concerns.

Lost tools shall not remain in the shaft excavation without the approval of the Engineer.

Blasting shall not be used as a method of shaft excavation.

516.06 Shaft Excavation Protection Methods. The construction of drilled shafts may involve the use of one or more of the following methods to support the excavation during the various phases of shaft excavation, cleaning, and concrete placement dependent on the site conditions encountered. Surface water shall not flow uncontrolled into the shaft excavation, however water may be placed into the shaft excavation in order to meet head pressure requirements according to Articles 516.06(c) and 516.13.

The following are general descriptions indicating the conditions when these methods may be used.

(a) Dry Method. The dry construction method shall only be used at sites where the groundwater and soil conditions are suitable to permit the drilling and dewatering of the excavation without causing subsidence of adjacent ground, boiling of the base soils, squeezing, or caving of the shaft side walls. The dry method shall consist of drilling the shaft excavation, removing accumulated water, cleaning the shaft base, and placing the reinforcement cage and concrete in a predominately dry excavation.

(b) Slurry Method. The slurry construction method may be used at sites where dewatering the excavation would cause collapse of the shaft sidewalls or when the volume and head of water flowing into the shaft is likely to contaminate the concrete during placement resulting in a shaft defect. This method uses slurry, or in rare cases water, to maintain stability of the shaft sidewall while advancing the shaft excavation. After the shaft excavation is completed, the slurry level in the shaft shall be kept at an elevation to

maintain stability of the shaft sidewall, maintain stability of the shaft base, and prevent additional groundwater from entering the shaft. The shaft base shall be cleaned, the reinforcement cage shall be set, and the concrete shall be discharged at the bottom of the shaft excavation, displacing the slurry upwards.

(c) Temporary Casing Method. Temporary casing shall be used when either the dry or slurry methods provide inadequate support to prevent sidewall caving or excessive deformation of the shaft excavation. Temporary casing may be used with slurry or be used to reduce the flow of water into the excavation to allow dewatering and concrete placement in a dry shaft excavation. Temporary casing shall not be allowed to remain permanently without the approval of the Engineer.

During removal of the temporary casing, the level of concrete in the casing shall be maintained at a level such that the head pressure inside the casing is a minimum of 1.25 times the head pressure outside the casing, but in no case is less than 5 ft (1.5 m) above the bottom of the casing. Casing removal shall be at a slow, uniform rate with the pull in line with the shaft axis. Excessive rotation of the casing shall be avoided to limit deformation of the reinforcement cage. In addition, the slump requirements during casing removal shall be according to Article 516.12.

When called for on the plans, the Contractor shall install a permanent casing as specified. Permanent casing may be used as a shaft excavation support method or may be installed after shaft excavation is completed using one of the above methods. After construction, if voids are present between the permanent casing and the drilled excavation, the voids shall be filled with grout by means of tremie(s) or concrete pump which shall be lowered to the bottom of the excavation. The contractor's means and methods for grout placement shall fill the annular void(s) between the permanent casing and the surrounding earth material to restore and provide lateral earth resistance to the shaft. Grout yield checks shall be performed by the contractor for submittal to the Engineer. Permanent casing shall not remain in place beyond the limits shown on the plans without the specific approval of the Engineer.

When the shaft extends above the streambed through a body of water and permanent casing is not shown, the portion above the streambed shall be formed with removable casings, column forms, or other forming systems as approved by the Engineer. The forming system shall not scar or spall the finished concrete or leave in place any forms or casing within the removable form limits as shown on the plans unless approved as part of the installation procedure. The forming system shall not be removed until the concrete has attained a minimum compressive strength of 2500 psi (17,200 kPa) and cured for a minimum of 72 hours. For shafts extending through water, the concrete shall be protected from water action after placement for a minimum of seven days.

516.07 Slurry. When slurry is used, the Contractor shall provide a technical representative of the slurry additive manufacturer at the site prior to introduction of the slurry into the first shaft where slurry will be used, and during drilling and completion of a minimum of one shaft to adjust the slurry mix to the specific site conditions. During construction, the level of the slurry shall be maintained a minimum of 5 feet (1.5 m) above the height required to prevent

caving of the shaft excavation. In the event of a sudden or significant loss of slurry in the shaft excavation, the construction of that foundation shall be stopped and the shaft excavation backfilled or supported by temporary casing, until a method to stop slurry loss, or an alternate construction procedure, has been approved by the Engineer.

(a) General Properties. The material used to make the slurry shall not be detrimental to the concrete or surrounding ground. Mineral slurries shall have both a mineral grain size that remains in suspension and sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. Polymer slurries shall have sufficient viscosity and gel characteristics to transport excavated material to suitable screening systems or settling tanks. The percentage and specific gravity of the material used to make the slurry shall be sufficient to maintain the stability of the excavation and to allow proper concrete placement.

If approved by the Engineer, the Contractor may use water and excavated soils as drilling slurry. In this case, the range of acceptable values for density, viscosity and pH, as shown in the following table for bentonite slurry shall be met.

When water is used as the slurry to construct rock sockets in limestone, dolomite, sandstone or other formations that are not erodible, the requirements for slurry testing shall not apply if the entire fluid column is replaced with fresh water after drilling. To do so, fresh water shall be introduced at the top of the shaft excavation and existing water used during drilling shall be pumped out of the shaft excavation from the bottom of the shaft excavation until the entire volume of fluid has been replaced.

(b) Preparation. Prior to introduction into the shaft excavation, the manufactured slurry admixture shall be pre-mixed thoroughly with clean, fresh water and for adequate time in accordance with the slurry admixture manufacturer's recommendations. Slurry tanks of adequate capacity shall be used for slurry mixing, circulation, storage and treatment. No excavated slurry pits will be allowed in lieu of slurry tanks without approval from the Engineer. Adequate desanding equipment shall be provided to control slurry properties during the drilled shaft excavation in accordance with the values provided in Table 1.

(c) Quality Control. Quality control tests shall be performed on the slurry to determine density, viscosity, sand content and pH of freshly mixed slurry, recycled slurry and slurry in the shaft excavation. Tests of slurry samples from within two feet of the bottom and at mid-height of the shaft excavation shall be conducted in each shaft excavation during the excavation process to measure the consistency of the slurry. A minimum of four sets of tests shall be conducted during the first eight hours of slurry use on the project. When a series of four test results do not change more than 1% from the initial test, the testing frequency may be decreased to one set every four hours of slurry use. Reports of all tests, signed by an authorized representative of the Contractor, shall be furnished to the

Engineer upon completion of each drilled shaft. The physical properties of the slurry shall be as shown in Table 1.

The slurry shall be sampled and tested less than 1 hour before concrete placement. Any heavily contaminated slurry that has accumulated at the bottom of the shaft shall be removed. The contractor shall perform final shaft bottom cleaning after suspended solids have settled from the slurry. Concrete shall not be placed if the slurry does not have the required physical properties.

Table 1 – SLURRY PROPERTIES				
	Bentonite	Emulsified Polymer	Dry Polymer	Test Method
Density, lb/cu ft (kg/cu m) (at introduction)	65.2 ± 1.6[1] (1043.5 ± 25.6)	63 (1009.0) max.	63 (1009.0) max.	ASTM D 4380
Density, lb/cu ft (kg/cu m) (prior to concrete placement)	67.0 ± 3.5[1] (1073.0 ± 56.0)	63 (1009.0) max.	63 (1009.0) max.	ASTM D 4380
Viscosity[2], sec/qt (sec/L)	46 ± 14 (48 ± 14)	38 ± 5 (40 ± 5)	65 ± 15 (69 ± 16)	ASTM D 6910
pH	9.0 ± 1.0	9.5 ± 1.5	9.0 ± 2.0	ASTM D 4972
Sand Content, percent by volume (at introduction)	4 max.	1 max.	1 max.	ASTM D 4381
Sand Content, percent by volume (prior to concrete placement)	10 max.	1 max.	1 max.	ASTM D 4381
Contact Time[3], hours	4 max.	72 max.	72 max	

Note 1. When the slurry consists of only water and excavated soils, the density shall not exceed 70 lb/cu ft (1121 kg/cu m).
Note 2. Higher viscosities may be required in loose or gravelly sand deposits.
Note 3. Contact time is the time without agitation and sidewall cleaning.

516.08 Obstructions. An obstruction is an unknown isolated object that causes the shaft excavation method to experience a significant decrease in the actual production rate and requires the Contractor to core, break up, push aside, or use other means to mitigate the obstruction. Subsurface conditions such as boulders, cobbles, or logs and buried infrastructure such as footings, piling, or abandoned utilities, when shown on the plans, shall not constitute an obstruction. When an obstruction is encountered, the Contractor shall notify the Engineer immediately and upon concurrence of the Engineer, the Contractor shall mitigate the obstruction with an approved method.

516.09 Top of Rock. The top of rock will be considered as the point where rock, defined as bedded deposits and conglomerate deposits exhibiting the physical characteristics and difficulty of rock removal as determined by the Engineer, is encountered which cannot be drilled with augers and/or underreaming tools configured to be effective in the soils indicated in the contract documents.

516.10 Design Modifications. If the top of rock elevation differs from that shown on the plans by more than 10 percent of the length of the drilled shaft above the rock, the Engineer shall be contacted to determine if any drilled shaft design changes may be required. In addition, if the type of soil or rock encountered is not similar to that shown in the subsurface exploration data, the Contractor may be required to extend the drilled shaft length(s) beyond those specified in the plans. In either case, the Engineer will determine if revisions are necessary and the extent of the modifications required.

516.11 Excavation Cleaning and Inspection. Materials removed or generated from the shaft excavations shall be disposed of according to Article 202.03.

After excavation, each shaft shall be cleaned. For a drilled shaft terminating in soil, the depth of sediment or debris shall be a maximum of 1 1/2 in. (38 mm). For a drilled shaft terminating in rock, the depth of sediment or debris shall be a maximum of 1/2 in. (13 mm).

A shaft excavation shall be overreamed when, in the opinion of the Engineer, the sidewall has softened, swelled, or has a buildup of slurry cake. Overreaming may also be required to correct a shaft excavation which has been drilled out of tolerance. Overreaming may be accomplished with a grooving tool, overreaming bucket, or other approved equipment. Overreaming thickness shall be a minimum of 1/2 in. (13 mm) and a maximum of 3 in. (75 mm).

516.12 Reinforcement. This work shall be according to Section 508 and the following.

The shaft excavation shall be cleaned and inspected prior to placing the reinforcement cage. The reinforcement cage shall be completely assembled prior to drilling and be ready for adjustment in length as required by the conditions encountered. The reinforcement cage shall be lifted using multiple point sling straps or other approved methods to avoid reinforcement

cage distortion or stress. Cross frame stiffeners may be required for lifting or to keep the reinforcement cage in proper position during lifting and concrete placement.

The Contractor shall attach rolling spacers to keep the reinforcement cage centered within the shaft excavation during concrete placement and to ensure that at no point will the finished shaft have less than the minimum concrete cover(s) shown on the plans. The rolling spacers or other approved non-corrosive spacing devices shall be installed within 2 ft (0.6 m) of both the top and bottom of the drilled shaft and at intervals not exceeding 10 ft (3 m) throughout the length of the shaft to ensure proper reinforcement cage alignment and clearance for the entire shaft. The number of rolling spacers at each level shall be one for each 1.0 ft (300 mm) of shaft diameter, with a minimum of four rolling spacers at each level. For shafts with different shaft diameters throughout the length of the excavation, different sized rolling spacers shall be provided to ensure the reinforcement cage is properly positioned throughout the entire length of the shaft.

When a specific concrete cover between the base of the drilled shaft and the reinforcement cage is shown on the plans, the bottom of the reinforcement cage shall be supported so that the proper concrete cover is maintained.

If the conditions differ such that the length of the shaft is increased, additional longitudinal bars shall be either mechanically spliced or lap spliced to the lower end of the reinforcement cage and confined with either hoop ties or spirals. The Contractor shall have additional reinforcement available or fabricate the reinforcement cages with additional length as necessary to make the required adjustments in a timely manner as dictated by the encountered conditions. The additional reinforcement may be non-epoxy coated.

516.13 Concrete Placement. Concrete work shall be performed according to the following.

Throughout concrete placement the head pressure inside the drilled shaft shall be at least 1.1 times the head pressure outside the drilled shaft.

Concrete placement shall begin within 1 hour of shaft cleaning and inspection. The pour shall be made in a continuous manner from the bottom to the top elevation of the shaft as shown on the contract plan or as approved in the Contractor's installation procedure. Concrete placement shall continue after the shaft excavation is full and until 18 in. (450 mm) of good quality, uncontaminated concrete is expelled at the top of shaft. Vibration of the concrete will not be allowed when the concrete is displacing slurry or water. In dry excavations, the concrete in the top 10 ft (3 m) of the shaft shall be vibrated.

When using temporary casing or placing concrete under water or slurry, a minimum of seven days prior to concrete placement, a 4 cu yd (3 cu m) trial batch of the concrete mixture shall be

performed to evaluate slump retention. Temporary casing shall be withdrawn before the slump of the concrete drops below 6 in. (150 mm). For concrete placed using the slurry method of construction, the slump of all concrete placed shall be a minimum of 6 in. (150 mm) at the end of concrete placement.

Devices used to place concrete shall have no aluminum parts in contact with concrete.

When the top of the shaft is at the finished elevation and no further concrete placement above the finished elevation is specified, the top of the shaft shall be level and finished according to Article 503.15(a).

Concrete shall be placed by free fall, tremie, or concrete pump subject to the following conditions.

(a) Free Fall Placement. Concrete shall only be placed by free fall when the rate of water infiltration into the shaft excavation is less than 12 in. (300 mm) per hour and the depth of water in the shaft excavation is less than 3 in. (75 mm) at the time of concrete placement.

Concrete placed by free fall shall fall directly to the base without contacting the reinforcement cage, cross frame stiffeners, or shaft sidewall. Drop chutes may be used to direct concrete to the base during free fall placement.

Drop chutes used to direct placement of free fall concrete shall consist of a smooth tube. Concrete may be placed through either a hopper at the top of the tube or side openings as the drop chute is retrieved during concrete placement. The drop chute shall be supported so that free fall does not exceed 60 ft (18.3 m) for conventional concrete or 30 ft (9.1 m) for self-consolidating concrete. If placement cannot be satisfactorily accomplished by free fall in the opinion of the Engineer, either a tremie or pump shall be used to accomplish the pour.

(b) Tremie and Concrete Pump Placement. Concrete placement shall be according to Article 503.08, except the discharge end of the steel pipe shall remain embedded in the concrete a minimum of 10 ft (3.0 m) throughout concrete placement when displacing slurry or water.

516.14 Construction Tolerances. The following construction tolerances shall apply to all drilled shafts.

(a) Center of Shaft. The center of the drilled shaft shall be within 3 in. (75 mm) of the plan station and offset at the top of the shaft.

(b) Center of Reinforcement Cage. The center of the reinforcement cage shall be within 1 1/2 in. (40 mm) of plan station and offset at the top of the shaft.

(c) Vertical Plumbness of Shaft. The out of vertical plumbness of the shaft shall not exceed 1.5 percent.

(d) Vertical Plumbness of Reinforcement Cage. The out of vertical plumbness of the shaft reinforcement cage shall not exceed 0.83 percent.

(e) Top of Shaft. The top of the shaft shall be no more than 1 in. (25 mm) above and no more than 3 in. (75 mm) below the plan elevation.

(f) Top of Reinforcement Cage. The top of the reinforcement cage shall be no more than 1 in. (25 mm) above and no more than 3 in. (75 mm) below the plan elevation.

(g) Bottom of shaft. Excavation equipment and methods used to complete the shaft excavation shall have a nearly planar bottom. The cutting edges of excavation equipment used to create the bottom of shafts in rock shall be normal to the vertical axis of the shaft within a tolerance of 6.25 percent.

516.15 Method of Measurement. This work will be measured for payment in place and the volume computed in cubic yards (cubic meters). The volume will be computed using the plan diameter of the shaft multiplied by the measured length of the shaft. The length of shaft in soil will be computed as the difference in elevation between the top of the drilled shaft shown on the plans, or as installed as part of the Contractor's installation procedure, and the bottom of the shaft or the top of rock (when present) whichever is higher. The length of shaft in rock will be computed as the difference in elevation between the measured top of rock and the bottom of the shaft.

When permanent casing is specified, it will be measured for payment in place, in feet (meters). Permanent casing installed at the Contractor's option will not be measured for payment.

Reinforcement furnished and installed will be measured for payment according to Article 508.07.

516.16 Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) for DRILLED SHAFT IN SOIL, and/or DRILLED SHAFT IN ROCK.

Permanent casing will be paid for at the contract unit price per foot (meter) for PERMANENT CASING.

Reinforcement furnished and installed will be paid for according to Article 508.08.

Obstruction mitigation will be paid for according to Article 109.04.”

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, United States Code, as required in 23 CFR 633.102(b) (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). 23 CFR 633.102(e).

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. 23 CFR 633.102(e).

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) in accordance with 23 CFR 633.102. 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 solicitation-for-bids or request-for-proposals 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). 23 CFR 633.102(b).

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. 23 CFR 633.102(d).

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. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A 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 Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), 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 Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), 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 Part 230, Subpart A, 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 (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 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 Part 35 and 29 CFR Part 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. 23 CFR 230.409 (g)(4) & (5).

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, sexual orientation, gender identity, 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 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 or other knowledgeable company official.

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, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure 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. 23 CFR 230.409. 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, sexual orientation, gender identity, 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, sexual orientation, gender identity, 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 thereunder. 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, sexual orientation, gender identity, 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, 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. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. 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 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 recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

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 more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, 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, sexual orientation, gender identity, 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), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

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 (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), 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 basic hourly 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. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. 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 must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. 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 classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must 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. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must 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 be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate 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 used 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) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) 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 will be sent by the contracting officer by email to *DBAconformance@dol.gov*. 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.

(4) 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 will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The 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.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must 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.

d. *Fringe benefits not expressed as an hourly rate.* 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 may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* 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, in accordance with the criteria set forth in § 5.28, 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.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and 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.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; 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 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section 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 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must 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.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working 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 29 CFR part 3; and

(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(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, 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, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform 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 (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must 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, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must 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 this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. 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. 23 CFR 230.111(e)(2). 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 journeyworkers 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 as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 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 as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, 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 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 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), 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 watchpersons 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. 29 CFR 5.5.

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 and interest from the date of the underpayment. 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 watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* 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.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, 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 that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

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” in paragraph 1 of Section VI 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: (based on longstanding interpretation)

(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. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), 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. Pursuant to 23 CFR 635.116(c), 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. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

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 Part 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. 23 CFR 635.108.

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 Part 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). 29 CFR 1926.10.

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 Part 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 11, 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 (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

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. 2 CFR 180.220 and 1200.220.

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. 2 CFR 180.320.

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. 2 CFR 180.325.

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. 2 CFR 180.345 and 180.350.

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, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient 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 recipient or subrecipient 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. 2 CFR 180.330.

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. 2 CFR 180.220 and 180.300.

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. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. 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 System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

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 CFR 180.325.

* * * * *

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 CFR 180.335;.

(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, 2 CFR 180.800;

(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, 2 CFR 180.700 and 180.800; 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. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

* * * * *

3. **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). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant 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. 2 CFR 180.365.

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, Subpart I, 180.900 – 180.1020, 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 recipient or subrecipient 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 recipient or subrecipient 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. 2 CFR 1200.220 and 1200.332.

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. 2 CFR 180.220 and 1200.220.

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 System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

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. 2 CFR 180.325.

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4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

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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 Part 20, App. A.

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.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor 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. 46 CFR 381.7.

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 Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B) 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.