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Letting January 17, 2025

Notice to Bidders, Specifications and Proposal

Illinois Department of Transportation

Contract No. 93773
SANGAMON County
Section 20-00492-00-BR (Springfield)
Route FAU 7972 (North Grand Avenue)

District 6 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. January 17, 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. 93773
   SANGAMON County
   Section 20-00492-00-BR (Springfield)

   Route FAU 7972 (North Grand Avenue)
   District 6 Construction Funds

Construction of a two-span underpass structure to carry the Union Pacific Railroad over North Grand Avenue and construction of a two-span overpass structure to carry North Grand Avenue over the Illinois & Midland, and Norfolk Southern Railroads. This contract includes the reconstrution and re-alignment of North Grand Avenue from 9th Street to 19th Street in Springfield.

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 93773

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

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SPECIAL PROVISION
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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	331	☒	Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2022
	80274	333	☒	Aggregate Subgrade Improvement	April 1, 2012	April 1, 2022
	80192		☐	Automated Flagger Assistance Device	Jan. 1, 2008	April 1, 2023
	80173	336	☒	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	338	☒	Cement, Finely Divided Minerals, Admixtures, Concrete, and Mortar	Jan. 1, 2025	
	80384	349	☒	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	353	☒	Concrete Sealer	Nov. 1, 2023	
*	80261		☐	Construction Air Quality – Diesel Retrofit	June 1, 2010	Jan. 1, 2025
*	80029	354	☒	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Jan. 2, 2025
	80229	357	☒	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	360	☒	Hot-Mix Asphalt	Jan. 1, 2024	Jan. 1, 2025
	80446	362	☒	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	364	☒	Mechanically Stabilized Earth Retaining Walls	Aug. 1, 2023	
	80441	365	☒	Performance Graded Asphalt Binder	Jan 1, 2023	
	80459		☐	Preformed Plastic Pavement Marking	June 2, 2024	
	3426I	370	☒	Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2022
	80455	371	☒	Removal and Disposal of Regulated Substances	Jan. 1, 2024	April 1, 2024
	80445	373	☒	Seeding	Nov. 1, 2022	
	80457	379	☒	Short Term and Temporary Pavement Markings	April 1, 2024	April 2, 2024
*	80462	383	☒	Sign Panels and Appurtenances	Jan. 1, 2025	
	80448	384	☒	Source of Supply and Quality Requirements	Jan. 2, 2023	
	80340		☐	Speed Display Trailer	April 2, 2014	Jan. 1, 2022
	80127	385	☒	Steel Cost Adjustment	April 2, 2004	Jan. 1, 2022
	80397	388	☒	Subcontractor and DBE Payment Reporting	April 2, 2018	
	80391	389	☒	Subcontractor Mobilization Payments	Nov. 2, 2017	April 1, 2019
*	80463	390	☒	Submission of Bidders List Information	Jan. 2, 2025	
	80437	391	☒	Submission of Payroll Records	April 1, 2021	Nov. 2, 2023
	80435	393	☒	Surface Testing of Pavements – IRI	Jan. 1, 2021	Jan. 1, 2023
	20338	399	☒	Training Special Provisions	Oct. 15, 1975	Sept. 2, 2021
	80429		☐	Ultra-Thin Bonded Wearing Course	April 1, 2020	Jan. 1, 2022
	80439	402	☒	Vehicle and Equipment Warning Lights	Nov. 1, 2021	Nov. 1, 2022
	80458		☐	Waterproofing Membrane System	Aug. 1, 2024	
*	80302	403	☒	Weekly DBE Trucking Reports	June 2, 2012	Jan. 2, 2025
	80454		☐	Wood Sign Support	Nov. 1, 2023	
*	80427	404	☒	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
406	☒	*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
413	☒	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
419	☒	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
424	☒	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
426	☒	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
438	☒	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
445	☒	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
449	☒	GBSP 96	Erection of Bridge Girders Over or Adjacent to Railroads	Aug 9, 2019	
	☐	GBSP 97	Folded/Formed PVC Pipeliner	April 15, 2022	
450	☒	GBSP 98	Cured-in-Place Pipe Liner	April 15, 2022	
	☐	GBSP 99	Spray-Applied Pipe Liner	April 15, 2022	
452	☒	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.

F.A.U. Route 7972 (North Grand Avenue)
Section No. 20-00492-00-BR, 22-00492-01-BR
City of Springfield, Sangamon County
Contract No. 93773

STATE OF ILLINOIS
SPECIAL PROVISION

CONTRACT SPECIFICATIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction," (SSRBC) adopted January 1, 2022 and the latest edition of the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways" (ILMUTCD) and the "Manual of Test Procedures for Materials" in effect on the date of invitation for bids; and the "Supplemental Specifications and Recurring Special Provisions," indicated on the Check Sheet, included herein, which apply to and govern the construction of F.A.U. Route 7972 (North Grand Avenue) in the City of Springfield, Sangamon County. In case of conflict with any part or parts of said specifications, the said Special Provisions shall take precedence and shall govern.

LOCATION OF PROJECT

The project begins immediately north of Sangamon Avenue on the proposed Union Pacific rail corridor and extends south to Stanford Avenue, a distance of approximately 5 miles. It extends from 9th Street to 19th Street along North Grand Avenue, 10th Street to Factory Street along Ridgely Avenue, 9th Street to 11th Street along Converse Street, and North Grand Avenue to Converse Street along 13th Street / Robin Roberts Road / Michigan Avenue.

DESCRIPTION OF IMPROVEMENT

The roadway reconstruction sections consist of the removal of existing pavement including portions of parking lots, curb and gutter, driveway entrances, sidewalk, fencing, abandon utilities and street appurtenances in the existing and proposed rights of way along Ridgely Avenue, Converse Street, North Grand Avenue, 13th Street / Robin Roberts Road, and Enos Avenue. The proposed improvements include drainage structures, storm sewer, sanitary sewer, erosion control items, retaining walls, roadway pavement, curb and gutter, sidewalk, pavement marking, lighting, traffic signals, and fencing. The work includes construction of a bridge and retaining walls carrying a relocated North Grand Avenue over IM and NS Railroads.

The railway reconstruction section consists of earth excavation, track removal, and the removal of existing street and parking lot pavement. The proposed improvements include grading, sub-ballast, ballast, trackwork, railroad crossings, drainage items, erosion control, and fencing. It also includes construction of a railroad structure over North Grand Avenue and associated retaining walls.

IM and NS work forces will remove existing crossings at North Grand Avenue.

NS work forces will extend the siding constructed in usable segment IV southward into the Iles control point. NS forces will replace Iles CP signals that are north of Stanford with a 4-track signal bridge and replace the CP signals south of Stanford.

UP work forces will complete track tie-ins and install new RR signals and crossing gates.

CONSTRUCTION SEQUENCE AND SCHEDULE

The Contractor shall prepare a progress schedule as required by Section 108 of the Standard Specifications. The Contractor shall coordinate items of work in order to keep hazards and traffic inconvenience to homes and businesses to a minimum. The Contractor shall also not interfere with railroad railway operations while on railroad right-of-way except as approved by the railroad. Construction shall be staged as shown on the plans to meet the following requirements:

- Cooperation between CWLP Electric and Water utilities for the work they are performing should be included in progress schedules and anticipated staging.
- Cooperation between other utilities and railroads for the work they are performing should be included in progress schedule and anticipated staging.
- Lane closures on North Grand Avenue will not be allowed until a firm date for delivery of structural steel is established.
- A minimum of two lanes of traffic shall remain open at all times on North Grand Avenue except as noted below.
- North Grand Avenue between 9th and 11th Streets shall be fully closed for a maximum of 365 consecutive calendar days. No other full closures of North Grand Avenue will be allowed. Should the Contractor fail to satisfy this time requirement, the Contractor shall be liable to the Department for liquidated damages of $6,775 per calendar day for each day beyond the 365 calendar days that North Grand Avenue is fully closed.
- Converse Street may be closed a maximum of 80 calendar days. Two lanes in each direction will remain open at all other times. Converse Street shall not be closed at the same time that North Grand Avenue and Ridgely Avenue is closed.
- Ridgely Avenue may be closed a maximum of 65 calendar days. Two lanes shall remain open at all other times.
- The Contractor shall be liable to the Department for liquidated damages of $1,275 per day at Converse Street and Ridgely Avenue for any closures in excess of the 80 and 65 calendar days respectively.
- Capitol Avenue, Monroe Street (Pedestrian only crossing) and Washington Street may be closed a maximum of 14 calendar days. Capitol and Washington shall not be closed at the same time.
- The Contractor shall be liable to the Department for liquidated damages of $1,275 per day at Capitol Avenue, Monroe Street (Pedestrian only crossing) and Washington Street for any closures in excess of the 14 calendar days each.
- Traffic signals at 11th Street shall be constructed when North Grand Avenue is closed between 9th and 11th Street for underpass construction.

COMPLETION DATE PLUS WORKING DAYS

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 by 11:59 PM on August 1, 2027 except as specified herein.

The Contractor will be allowed **15** working days after the completion date for clean-up and seeding. Temporary lane closures for this work may be allowed at the discretion of the Engineer.

The following are the interim completion dates applicable to this contract:

- Complete N. Michigan Avenue overlay and new parking along N. Michigan Avenue by October 5, 2025. Construction shall not begin until after August 4, 2025.
- Complete stage 4 construction of the UPRR corridor by June 1, 2027.

Article 108.09 shall apply to the completion date, the interim completion dates, and the number of working days.

STATUS OF UTILITIES TO BE ADJUSTED

The following utilities are involved in this project. The utility companies have provided the estimated dates.

Name & Address of Utility	Type	Location	Estimated Date of Relocation Completed
Ameren CILCO North Alex Schroeder 825 North MacArthur Blvd. Springfield, IL 62702 Phone: (217) 753-5107	Gas	Throughout the Project	During Construction
Ameren CILCO North Doug Palmer 825 North MacArthur Blvd. Springfield, IL 62702 Phone: (217) 714-7258	Electric	Throughout the Project	During Construction
AT&T Distribution Heather Bender 1640 E. Hazel Dell Rd. Springfield, IL 62703 Phone: (217) 341-0952	Fiber Optic/ Telephone	Throughout the Project	During Construction
CenturyLink Bryan Hankins 624 White Oak Drive Chatham, IL 62629 Phone: (720) 480-3364	Fiber Optic	Throughout the Project	During Construction
City Water, Light & Power Michael Johnson 401 North 11th Street Springfield, IL 62702 Phone: (217) 789-2323, Ext. 1617	Water	Throughout the Project	During Construction

City Water, Light & Power Shaun Anders 1008 East Miller Street Springfield, Illinois 62702 Phone: (217) 321-1323	Electric	Throughout the Project	During Construction
City of Springfield (Sewer Department) Vince Smith 210 Municipal Center West Springfield, IL 62701 Phone: (217) 789-2255	Sewer	Throughout the Project	Completed By Contractor
City of Springfield (Public Works) Thomas Heavisides Room 203 Municipal Center W. 300 S. 7th St. Springfield, IL 62701 Phone: (217) 789-2255	Fiber Optic/ Traffic	Throughout the Project	Completed By Contractor
Comcast David Bly 711 South Dirksen Parkway Springfield, IL 62703 Phone: (224) 229-5267	Cable/ Fiber Optic	Throughout the Project	During Construction
Illinois & Midland AVP Engineering Dale Summers 47849 Papermill Road Coschocton, OH 43812 Phone: (503) 930-7513	RR Communication	Throughout the Project	During Construction
Metro Communications Co. Taylor Rich 8 South Washington Street Sullivan, IL 61951 Phone: (217) 728-3608	Fiber Optic	Throughout the Project	During Construction
Norfolk Southern Corporation George “Brian” Taylor 650 West Peachtree Street NW Box 45 Atlanta, GA 30308 Phone: (678) 333-4274	RR Communication	Throughout the Project	During Construction
Sangamon County Water Reclamation District Jason Jacobs 3000 North 8th Street Springfield, IL 62707 Phone: (217) 528-0491	Sewer	Throughout the Project	Completed By Contractor
Cogent (Formerly Sprint Long Distance) Paul Becker Phone: (815) 557-8416	Fiber Optic	Along RR ROW	During Construction

Stratus Networks, Inc. Butch Forkell 4700 N. Prospect Rd. Peoria Heights, IL 61616 Phone: (309) 696-6349	Fiber Optic	Throughout the Project	During Construction
Union Pacific Railroad Jacob Prose 2701 Intermodal Drive Rochelle, IL 61068 Phone: (815) 531-2405 (w) (217) 816-6833 (m)	RR Communication	Throughout the Project	During Construction
Windstream, KDL, Inc. Eric Porter 148 County Highway 25 Shumway, IL 62461 Phone: (217) 343-0864	Fiber Optic	Throughout the Project	During Construction

The above represents the best information of the Department and is only included for the convenience of the bidder. The applicable provisions of Articles 105.07, 107.20, 107.37, 107.38, 107.39, 107.40 and 108.02 of the Standard Specifications for Road and Bridge Construction shall apply.

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

ASSURANCES AND CERTIFICATIONS RELATED TO CITY'S FEDERAL GRANT

Contractor agrees to comply (and require any subcontractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing the FRA's access to records, accounts, documents, information, facilities, and staff. Contractor must comply with any program or compliance reviews, and/or complaint investigations conducted by the FRA. Contractor must keep records, reports, and submit the material for review upon request to FRA, or its designee in a timely, complete, and accurate way. Additionally, contractor must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally

assisted programs of the U.S. Department of Transportation, Federal Railroad Administration (FRA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 C.F.R. Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or FRA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or

FRA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non- discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or FRA may determine to be appropriate, including, but not limited to:

    a. withholding payments to the contractor under the contract until the contractor complies; and/or
    b. cancelling, terminating, or suspending a contract, in whole or in part.

Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or FRA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.,* 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 C.F.R. Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C.

§ 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);

- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.),* (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.),* as amended, (prohibits discrimination on the basis of disability); and 49 C.F.R. Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.),* (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 U.S.C. § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and Ill of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. Parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or

environmental effects on minority and low-income populations;

- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. § 1681 et seq).

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS – PRIMARY COVERED TRANSACTIONS

C.F.R. Parts 180 and 1200

These assurances and certifications are 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 FRA approval or that is estimated to cost $25,000 or more-as defined in 2 C.F.R. Parts 180 and 1200.

By signing and submitting the Application and by entering into this Agreement, the Recipient is providing the assurances and certifications for First Tier Participants and Lower Tier Participants, as set out below.

1. Instructions for Certification - First Tier Participants:

a. The prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination

whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "civil judgment," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 C.F.R. Parts 180 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 to any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this

transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion- Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https:/ /www.sam.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION - FIRST TIER PARTICIPANTS:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment, including a civil settlement, rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. INSTRUCTIONS FOR CERTIFICATION - LOWER TIER PARTICIPANTS:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FRA approval or estimated to cost $25,000 or more - 2 C.F.R. Parts 180 and 1200)

a. 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.

d. The terms "covered transaction," "civil settlement," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 C.F.R. Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a 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.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https:/ /www.sam.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION -- LOWER TIER PARTICIPANTS:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

REQUIREMENTS REGARDING DELINQUENT TAX LIABILITY OR A FELONY CONVICTION UNDER ANY FEDERAL LAW

As required by sections 744 and 745 of Title VII, Division E of the Consolidated Appropriations Act, 2022, Pub. L. No. 117-103 (Mar. 15, 2022), and implemented through USDOT Order 4200.6, the funds provided under this award shall not be used to enter into a contract, memorandum of understanding, or cooperative agreement with, make a grant to, or provide a loan or loan guarantee to, any corporation that:

(1) Has 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, where the awarding agency is aware of the unpaid tax liability, unless a Federal agency has considered suspension or debarment of the corporation and made a determination that suspension or debarment is not necessary to protect the interests of the Government; or

(2) Was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless a

Federal agency has considered suspension or debarment of the corporation and made a determination that suspension or debarment is not necessary to protect the interests of the Government.

The Recipient therefore agrees:

1. **Definitions.** For the purposes of this exhibit, the following definitions apply:

   "Covered Transaction" means a transaction that uses any funds under this award and that is a contract, memorandum of understanding, cooperative agreement, grant, loan, or loan guarantee.

   "Felony Conviction" means a conviction within the preceding 24 months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the United States Code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. 3559.

   "Participant" means the Recipient, an entity who submits a proposal for a Covered Transaction, or an entity who enters into a Covered Transaction.

   "Tax Delinquency" means an 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.

2. **Mandatory Check in the System for Award Management.** Before entering a Covered Transaction with another entity, a Participant shall check the System for Award Management (the **"SAM")** at http://www.sam.gov/ for an entry describing that entity.

3. **Mandatory Certifications.** Before entering a Covered Transaction with another entity, a Participant shall require that entity to:

   (1) Certify whether the entity has a Tax Delinquency; and

(2) Certify whether the entity has a Felony Conviction.

4 **Prohibition.** If

(1) the SAM entry for an entity indicates that the entity has a Tax Delinquency or a Federal Conviction;

(2) an entity provides an affirmative response to either certification in section 3; or

(3) an entity's certification under section 3 was inaccurate when made or became inaccurate after being made

then a Participant shall not enter or continue a Covered Transaction with that entity unless the USDOT has determined in writing that suspension or debarment of that entity are not necessary to protect the interests of the Government.

5. **MANDATORY NOTICE TO THE USDOT.**

(a) If the SAM entry for a Participant indicates that the Participant has a Tax Delinquency or a Felony Conviction, the Recipient shall notify the USDOT in writing of that entry.

(b) If a Participant provides an affirmative response to either certification in section 1, the Recipient shall notify the USDOT in writing of that affirmative response.

(c) If the Recipient knows that a Participant's certification under section 1 was inaccurate when made or became inaccurate after being made, the Recipient shall notify the USDOT in writing of that inaccuracy.

6. **Flow Down.** For all Covered Transactions, including all tiers of subcontracts and subawards, the Recipient shall:

(1) require the SAM check in section 2;

(2) require the certifications in section 3;

(3) include the prohibition in section 4; and

(4) require all Participants to notify the Recipient in writing of any information that would require the Recipient to notify the USDOT under section 5.

RECIPIENT POLICY TO BAN TEXT MESSAGING WHILE DRIVING

(a) *Definitions.* The following definitions are intended to be consistent with the definitions in DOT Order 3902.10, Text Messaging While Driving (Dec. 30, 2009) and Executive Order 13513, Federal Leadership on Reducing Text Messaging While Driving (Oct. 1, 2009). For clarification purposes, they may expand upon the definitions in the executive order.

For the purpose of this Term B.4, **"Motor Vehicles"** means any vehicle, self-propelled or drawn by mechanical power, designed and operated principally for use on a local, State or Federal roadway, but does not include a military design motor vehicle or any other vehicle excluded under Federal Management Regulation 102-34-15.

For the purpose of this Term B.4, **"Driving"** means operating a motor vehicle on a roadway, including while temporarily stationary because of traffic congestion, a traffic signal, a stop sign, another traffic control device, or otherwise. It does not include being in your vehicle (with or without the motor running) in a location off the roadway where it is safe and legal to remain stationary.

For the purpose of this Term B.4, **"Text messaging"** means reading from or entering data into any handheld or other electronic device (including, but not limited to, cell phones, navigational tools, laptop computers, or other electronic devices), including for the purpose of Short Message Service (SMS) texting, e-mailing, instant messaging, obtaining navigational information, or engaging in any other form of electronic data retrieval or electronic data communication. The term does not include the use of a cell phone or other electronic device for the limited purpose of entering a telephone number to make an outgoing call or answer an incoming call, unless this practice is prohibited by State or local law. The term also does not include glancing at or listening to a navigational device that is secured in a commercially designed holder affixed to the vehicle, provided that the destination and route are programmed into the device either before driving or while stopped in a location off the roadway where it is safe and legal to remain stationary.

For the purpose of this Term B.4, the **"Government"** includes the United States Government and State, local, and tribal governments at all levels.

(b) *Workplace Safety.* In accordance with Executive Order 13513, Federal Leadership on Reducing Text Messaging While Driving (Oct. 1, 2009) and DOT Order 3902.10, Text Messaging While Driving (Dec. 30, 2009), the Recipient, subrecipients, contractors, and subcontractors are encouraged to:

(1) adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers including policies to ban text messaging while driving-

(i) Company-owned or -rented vehicles or Government-owned, leased or rented vehicles; or

(ii) Privately-owned vehicles when on official Government business or when performing any work for or on behalf of the Government.

(2) Conduct workplace safety initiatives in a manner commensurate with the size of the business, such as-

(i) Establishment of new rules and programs or re-evaluation of existing programs to prohibit text messaging while driving; and

(ii) Education, awareness, and other outreach to employees about the safety risks associated with texting while driving.

(c) *Subawards and Contracts.* To the extent permitted by law, the Recipient shall insert the substance of this exhibit, including this paragraph (c), in all subawards, contracts, and subcontracts under this award that exceed the micro-purchase threshold, other than contracts and subcontracts for the acquisition of commercially available off-the-shelf items.

EQUIVALENT LABOR PROTECTIONS UNDER 49 U.S.C. 22905(C)(2)(B)

This Exhibit provides guidance on the protective arrangements equivalent to the protective arrangements established under Section 504 of the Railroad Revitalization Reform Act of 1976, with respect to employees affected by actions taken in connection with a Project financed in whole or in part with financial assistance subject to 49 U.S.C. § 22905(c)(2)(B). Fluctuations and changes in volume or character of employment brought about solely by other causes are not within the scope of this Exhibit.

1. Definitions. Whenever used in this Exhibit, capitalized terms shall have the meanings below:

(a) "Average Monthly Compensation" means the total compensation received by a Displaced Employee or a Dismissed Employee during the last twelve (12) months in which they were employed immediately preceding the date of their displacement or dismissal, divided by twelve (12). The Average Monthly Compensation shall be adjusted to reflect subsequent general wage increases.

(b) "Average Monthly Time" means the total number of hours worked by a Displaced Employee during the last twelve (12) months in which they were employed immediately preceding the date of their displacement, divided by twelve (12).

(c) "Day" means one 24-hour calendar day (including holidays and weekends) for purposes of calculating deadlines and other timeframes in this Exhibit.

(d) "Displaced Employee" means a Protected Employee who remains employed by a Railroad but, as a result of a Project, is placed in a worse position with respect to compensation and rules governing working conditions. A Protected Employee's status as a Displaced Employee begins on the date said employee is harmed.

(e) "Dismissed Employee" means a Protected Employee who: (1) as a result of a Project, is deprived of employment with the Railroad because (i) the Railroad eliminates the Protected Employee's position, or (ii) the Railroad eliminates another employee's position (and that employee's exercise of seniority rights results in the Protected Employee's inability to secure another position by the exercise of the Protected Employee's seniority rights); and (2) is unable to secure another position by exercise of their seniority rights A Protected Employee's status as a Dismissed Employee begins on the date said employee is deprived of employment.

(f) "Project" means any action financed in whole or in part with financial assistance subject to 49 U.S.C. § 22905(c)(2)(B).

(g) "Protected Employee" means an employee of a Railroad who is affected by actions taken pursuant to a Project,

whether the Project is initiated by a Railroad or a Recipient. If a Railroad rearranges or adjusts its forces in anticipation of a Project with the purpose or effect of depriving an employee of benefits to which they otherwise would have become entitled under this Exhibit, then that employee is a Protected Employee under this Exhibit. An employee's status as a Protected Employee shall continue for the duration of the applicable Protective Period. An employee who solely benefitted as a result of a Project shall not be a Protected Employee under this Exhibit.

(h) "Protective Period" means that period during which a Displaced Employee or a Dismissed Employee is provided the protections described in this Exhibit. The Protective Period begins on the date an employee of a Railroad is displaced or dismissed and ends after six (6) years. However, the Protective Period for any particular employee shall not continue longer than the period of time the Railroad employed the employee prior to the date of their displacement or dismissal. For purposes of this Exhibit, an employee's length of service shall be determined in accordance with the provisions of Section 7(b) of the Washington Job Protection Agreement of May 1936, as amended.

(i) "Recipient" means any person or entity receiving financial assistance subject to the requirements of 49 U.S.C. § 2290S(c), including grantees, subrecipients, contractors, and subcontractors.

(j) "Railroad" means (1) a railroad carrier as defined in 49 U.S.C. § 20102(3), or (2) any person deemed a rail carrier pursuant to 49 U.S.C. § 22905(b).

2. Flow Down.

(a) In accepting financial assistance for a Project, the Recipient is responsible for ensuring the compliance with the protections provided in this Exhibit. The Recipient shall make the acceptance of this Exhibit a condition of any new contract (or incorporate its terms into any existing contract by amendment) that uses funds subject to the requirements of 49 U.S.C. § 22905(c). These conditions shall apply to a Recipient, any Railroad and any contractor of any tier with which the Recipient contracts using funds subject to the requirements of 49 U.S.C. § 22905(c).

(b) The Recipient shall require in an agreement (either in a new agreement or as an amendment to an existing agreement)

with a Railroad owning the right-of-way to be improved by a Project that the Railroad notify its employees (or their representatives) of the Project being funded with financial assistance subject to 49 U.S.C. § 2290S(c) and the applicability of these protections.

(c) Any Railroad employee (or their representatives) may notify a Recipient of a dispute or controversy relating to the requirements of this Exhibit to ensure compliance with 49 U.S.C. § 22905(c)(2)(B).

3. Collective Bargaining Agreements.

(a) **Existing Agreements.** The rates of pay, rules, working conditions, and all collective bargaining and other rights, privileges, and benefits (including continuation of pension rights and benefits) of a Railroad's employees under applicable laws, regulations, and/or existing collective bargaining agreements shall be preserved and remain applicable unless changed by future collective bargaining agreements or applicable statutes or regulations. As applied to the regulation of subcontracting by the Railroads of a Project, the provisions of this section shall mean that a determination of whether or not such work validly may be subcontracted by a Railroad shall not be affected by the fact that the work is being financed by funds subject to the requirements of 49 U.S.C. § 22905(c)(2)(B). Nothing in this Exhibit shall be construed as depriving any Railroad employee of any rights or benefits or eliminating any obligations that such employee may have under any existing contractual or statutory arrangement, including job security agreements, protective conditions, or arrangements.

(b) **Election by Protected Employee.** Where a Protected Employee is eligible for protections under both this Exhibit and another contractual or statutory arrangement, the Protected Employee shall elect between the protection under this Exhibit and protection under such other arrangement. After such an election, the Protected Employee shall be protected only by the arrangement that they elect. The Protected Employee shall not be entitled to any protection or benefit (regardless of whether such benefit is duplicative) under the arrangement that they do not elect. However, if the elected protection expires pursuant to the terms of the arrangement that governs the elected protection, the Protected Employee is entitled to protection under the arrangement not originally elected for the remainder, if any, of

the Protective Period.

4. CHANGE IN OPERATIONS, SERVICES, FACILITIES, OR EQUIPMENT.

(a) **Notice.** When a Railroad contemplates a change or changes in its operations, services, facilities, or equipment as a result of a Project, which may cause the dismissal or displacement of Protected Employees or rearrangement of forces involving such employees, it shall give at least sixty (60) days' written notice of such intended changes to both Protected Employees and their duly authorized representatives (if applicable). Such notice shall contain a full and adequate description of the proposed changes, including an estimate of the number of Protected Employees of each class affected by the intended changes.

(B) **NEGOTIATIONS.**

(i) Initiation of Negotiation. Within sixty (60) days after the Railroad issues a notice under Section 4(a) of this Exhibit, the Railroad or the Protected Employees (or their representatives) may, by written notice to the other party, request a meeting and opportunity to negotiate an agreement with respect to the application of the terms and conditions of this Exhibit. These negotiations shall commence within fourteen (14) days from the receipt of such request.

(ii) Subject of Negotiations. Each change to rail operations, services, facilities, infrastructure, or equipment (including rights-of-way, track, and signal and crossing systems) that may result in dismissal or displacement of Protected Employees or rearrangement of forces involving such employees shall be subject to review and negotiation by the parties, but only to the extent necessary to ensure compliance with this Exhibit. For any contemplated rearrangement of rail forces, the Railroad and the representative(s) of the Protected Employees shall agree on the method of selection of employees to be moved, and the assignment of those employees to new roles.

(c) **Arbitration.** If the Railroad and the

representative(s) of the Protected Employees fail to agree within forty-five (45) days from the initial meeting and opportunity to negotiate, either party may submit the dispute for arbitration in accordance with the following procedures:

(i) Notice & Selection of Arbitrator. Within ten (10) days after either party has notified the other in writing of their desire to submit the dispute for arbitration, the parties shall select a neutral arbitrator. If the parties cannot agree upon the selection of said arbitrator, then the parties shall submit a request to the National Mediation Board to appoint an arbitrator. In either case, a hearing shall be scheduled no later than thirty (30) days after an arbitrator has been appointed.

(ii) Binding Decision. The decision of the arbitrator shall be final, binding, and conclusive and shall be rendered within thirty (30) days from the date of the commencement of the hearing of the dispute.

(iii) Expenses. The salary and expenses of the arbitrator shall be borne equally by the parties to the proceeding; all other expenses shall be paid by the party incurring them.

(d) **Implementation.** If a notice is issued under Section 4(a), the Railroad shall not implement such a change or changes until: (i) sixty (60) days after the notice in accordance with Section 4(a), if no party requests a meeting and opportunity to negotiate; (ii) the parties reach agreement pursuant to Section 4(b), if a party requests a meeting and opportunity to negotiate; or (iii) a referee has rendered a decision pursuant to Section 4(c).

5. PROTECTIONS FOR DISPLACED EMPLOYEES

(a) **Displacement Allowances.**

(i) In General. If a Displaced Employee is unable, in the normal exercise of such employee's seniority rights under existing agreements, rules and practices, to obtain a position that is compensated equal to or exceeding the compensation the Displaced Employee received in the position from which such employee was displaced, then the Displaced Employee shall, during the Protective Period, be

paid a monthly displacement allowance equal to the difference between the monthly compensation received by the Displaced Employee in the position in which such employee is retained and the Average Monthly Compensation received by the Displaced Employee in the position from which such employee was displaced (the "Displacement Allowance").

(ii) Application of Displacement Allowance. If a Displaced Employee's compensation in that employee's retained position is less in any month in which such employee performs work than the Average Monthly Compensation, then the Displaced Employee shall be paid the difference between the current compensation and the Average Monthly Compensation. However, the Displacement Allowance shall be reduced by the Displaced Employee's time lost as a result of voluntary absences, to the extent that the Displaced Employee is not available for service equivalent to the Displaced Employee's Average Monthly Time. If, on the other hand, the Displaced Employee, in such employee's retained position, works in excess of the Average Monthly Time in any given month, then the Displaced Employee shall be additionally compensated for such excess time at the rate of pay of the employee's retained position. If a Displaced Employee fails to exercise their seniority rights to secure another position available to the employee which does not require a change in such employee's place of residence, to which the employee is entitled under the working agreement, and which carries a rate of pay and compensation exceeding those of the position that the employee elects to retain, then the Displaced Employee shall thereafter be treated for the purposes of this section as occupying the position such employee elects to decline.

(iii) Early Expiration. The Displacement Allowance shall cease prior to the expiration of the Protective Period in the event of the Displaced Employee's resignation, death, retirement, or dismissal for justifiable cause.

(b) **Moving Expenses.** Any Protected Employee retained in the service of a Railroad, or who is later restored to service after being entitled to receive a Dismissal Allowance, and is required to change the point of such employee's employment as

a result of the Project, and within the employee's Protective Period is required to move the employee's place of residence, shall be reimbursed for all expenses of moving the employee's household and other personal effects, including travel expenses, temporary living expenses, and any actual wage loss during the time necessary to make the move, and for a reasonable time thereafter, not to exceed five (5) days.

(i) Prior Agreement. The exact extent of the responsibility of a Railroad under this Section and the ways and means of transportation shall be agreed upon in advance by the Railroad and the Protected Employee or their representatives.

(ii) Exception. Changes in residence that are not a result of a Project, which are made after the initial change and that grow out of the normal exercise of seniority rights, are not within the purview of this Section.

(iii) Furloughed Employees. The Railroad shall, to the same extent provided above, assume the moving expenses outlined in Section S(b) for an employee furloughed within three (3) years after changing such employee's point of employment as a result of a Project, who elects to move their place of residence back to their original point of employment.

(iv) Reimbursement. A claim for reimbursement shall be paid under the provisions of this Section within sixty (60) days after it is submitted, unless disputed by the Railroad, but no claim shall be paid if presented to the Railroad more than ninety (90) days after the date on which the expenses were incurred.

(c) **Losses from Home Sale or Contract Termination.** Any Displaced Employee who is retained in the service of a Railroad (or who is later restored to service after being entitled to receive a dismissal allowance), and who is required to change the point of such employee's employment during the Protective Period as a result of a Project, is entitled to the following:

(i) Home Sale for Less Than Fair Market Value. If the Displaced Employee owns their place of residence in the locality from which such employee is required to move,

then at the Displaced Employee's option, the Railroad shall reimburse the Displaced Employee for the difference between the actual sale price and the fair market value of the employee's place of residence. The Railroad shall pay such difference within sixty (60) days after the Displaced Employee has filed a claim for such loss in accordance with Section S(c)(vi), unless a controversy arises as to which Section S(c)(vii) applies. In each case, the fair market value of the home in question shall be determined without consideration of the Project. The Railroad shall in each instance be afforded an opportunity to purchase the home at such fair market value before it is sold by the Displaced Employee to any other person.

(ii) Election to Receive Closing Costs. The Displaced Employee may elect to waive the provisions of Section S(c)(i) and to receive, in lieu thereof, an amount equal to the closing costs that are customarily paid for and assumed by a seller of real estate in the jurisdiction in which the employee's residence is located. Such costs shall include customary fees paid to a licensed realtor (not to exceed six percent (6%) of the final sale price) and any prepayment penalty required by any mortgagor or beneficiary of a deed of trust. Such costs shall not include the payment of any mortgage discount points or similar interest discount fees by the Displaced Employee.

(iii) Pending Contract to Purchase. If a Displaced Employee has entered into a contract to purchase a place of residence, but due to a Project must cancel that contract, the Railroad shall indemnify the Displaced Employee against any losses due to such cancellation, and shall relieve the Displaced Employee from any further obligation under the contract.

(iv) Unexpired Lease. If the Displaced Employee holds an unexpired lease of a dwelling as the employee's primary place of residence, and the Displaced Employee must cancel the lease due to a Project, the Railroad shall indemnify the Displaced Employee from all costs and liability arising from said cancellation.

(v) Exclusions. Any change in residence that is not due to or caused by a Project, or that resulted from the normal exercise of a Protected Employee's seniority rights,

shall not be within the purview of this Section.

(vi) Notification of Claims. A Displaced Employee shall notify, in writing, the Railroad of such employee's claim arising from this Section S(c) within one (1) year of the date the Displaced Employee's claim accrues.

(vii) Home Value Disagreements. In the event of disagreement between a Railroad and a Displaced Employee as to the value of a Displaced Employee's claim, either party (or their representatives) may request, in writing, a joint conference to resolve the disagreement.

A. Real Estate Appraisers. If the parties are unable to resolve the disagreement, either party may refer the disagreement to two licensed real estate appraisers, one of whom shall be selected by the Displaced Employee (or such employee's representatives), and one of whom shall be selected by the Railroad. If the two selected real estate appraisers are unable to agree on a valuation within thirty (30) days, the selected real estate appraisers shall designate (or agree to a method by which to select) a third licensed real estate appraiser within ten (10) days. If unable to agree on a selection, either party may request the National Mediation Board to designate within twenty (20) days a third licensed real estate appraiser. A decision by two of the three licensed real estate appraisers shall be required to determine the value in dispute. Said decision shall be final and conclusive.

B. Payment of Expenses. The salary and expenses of the third or neutral appraiser shall be borne equally by the parties to the proceedings. All other expenses shall be paid by the party incurring them, including the compensation of the appraiser selected by such party.

(d) **Failure to Exercise Seniority Rights.** If a Displaced Employee is able but does not exercise such employee's seniority rights to secure another position that does not require a change in the employee's primary place of residence, the Displaced Employee shall not be entitled to

moving expenses or protections due to the sale of a home outlined in Sections S(b)&(c).

6. PROTECTIONS FOR DISMISSED EMPLOYEES.

(a) **Dismissal Allowance.** A Dismissed Employee shall be paid a monthly dismissal allowance from the date they are deprived of employment through the Protective Period.

(i) Monthly Dismissal Allowance Calculation. The monthly dismissal allowance shall be equivalent to the Average Monthly Compensation received by the Dismissed Employee in the last twelve (12) months of employment prior to the employee's dismissal.

(ii) Submission of Claim. A claim for the initial month of a dismissal allowance shall be paid within ninety {90) days and a claim for a subsequent month shall be paid within sixty
{60) days after the claim is filed by the Dismissed Employee, unless the claim is disputed by the Railroad pursuant to Section 8 of this Exhibit.

(iii) Reduction or Suspension of Dismissal Allowance. If a Dismissed Employee accepts new employment (or reemployment by the dismissing Railroad) during the Protective Period, the dismissal allowance shall be reduced such that the accepted monthly compensation at the then-current position (including any unemployment insurance compensation received) plus the dismissal allowance is equivalent to the Dismissed Employee's Average Monthly Compensation. If the compensation of the Dismissed Employee's then-current employment is greater than the dismissal allowance, the dismissal allowance shall be suspended. Such reduction or suspension shall continue for the duration of the Protective Period, unless and until the Dismissed Employee's then-current compensation is reduced or eliminated. Prior to dismissal, such Dismissed Employee (or their representative) and the dismissing Railroad shall agree upon a procedure by which such Railroad shall be informed of the earnings and benefits of such Dismissed Employee in their new position of employment.

(iv) Early Termination. The dismissal allowance shall cease prior to the expiration of the Protective Period in the event of the Dismissed Employee's resignation, death, retirement, dismissal for justifiable cause under existing agreements, failure without good cause to return to service after being notified in accordance with an applicable working agreement, or failure without good cause to accept a comparable position that does not require a change of residence, for which the Dismissed Employee is qualified and eligible with the Railroad from which such employee was dismissed after being notified, if the employee's return does not infringe upon employment rights of other employees under a working agreement.

(b) **Separation Allowance.** A Dismissed Employee may, at such employee's option, within seven (7) days of dismissal or an arbitration award establishing the employee's status as a Dismissed Employee, resign and (in lieu of all other benefits and protections provided in this Exhibit) accept a lump sum payment computed in accordance with Section 9 of the Washington Job Protection Agreement of May 1936, as amended.

(c) **Priority of Employment or Re-Employment.** Any Protected Employee whose employment is terminated or who is furloughed as a result of a Project shall, if they so request, be granted priority of employment or re-employment to fill a position comparable to that which they held on the Railroad (even if in a different craft or class), so long as they are qualified, or by training or retraining can become physically and mentally qualified, for the position. However, such priority of employment or re-employment must not be in contravention of any relevant collective bargaining agreements.

(i) **Training or Re-Training.** In the event such training or retraining is requested by a Protected Employee pursuant to Section 6(c), the Railroad shall provide such training or retraining at no cost to the Protected Employee.

(ii) **Waiver of Protections.** If a Protected Employee who has made a request under Section 6(c) fails without good cause within ten (10) days to accept an offer of a comparable position for which such employee has satisfactorily completed such training, the Protected Employee shall, upon the expiration of such ten (10) day period, forfeit all rights and benefits under this Exhibit.

7. Fringe Benefits. No Protected Employee shall be deprived during the Protective Period of any (non-salary) rights, privileges, or benefits attached to such employee's previous employment under the terms and conditions of an existing employment agreement (including, but not limited to, free transportation, hospitalization, pensions, insurance, or vacation benefits), so long as such rights, privileges, or benefits continue to be accorded to other employees of the Railroad, in active service or on furlough as the case may be, to the extent that such rights, privileges, or benefits can be so maintained under present authority of law, corporate action, or through future authorization.

8. ARBITRATION OF DISPUTES.

(a) **Scope.** Any dispute under these conditions not settled by the relevant parties will be resolved in arbitration as provided herein. In the event a Railroad and the Protected Employee(s) (or their representatives) cannot settle a dispute or controversy with respect to the interpretation, application, or enforcement of any provision of this Exhibit (other than those Sections of this Exhibit that provide for another means of dispute resolution) within thirty (30) days after the dispute arises, either party may refer the dispute to an arbitration committee. The affected Protected Employee(s) (or their representatives) may notify a Recipient of a dispute or controversy under this Section 8 to ensure compliance with 49 U.S.C. § 22905(c)(2)(B).

(b) **Notice.** The party referring the dispute to an arbitration committee shall notify the other party in writing of its intent to refer a dispute or controversy to an arbitration committee.

(c) **Selection of Members.** Within ten (10) days of receipt of the written notice, each party to the arbitration shall select one (1) member of the committee, and the members thus chosen shall select an additional, neutral member to serve as chairman. If any party fails to select its member of the arbitration committee within the prescribed time limit, the general chairman of the involved labor organization or a senior officer designated by the Railroad or the Recipient, as the case may be, shall be deemed the selected member. Should the members be unable to agree upon the appointment of the neutral member within ten (10) days, the parties shall then within an additional ten (10) days agree to a method by which a neutral member shall be appointed; failing

such agreement, either party may request the National Mediation Board to designate within twenty (20) days the neutral member whose designation will be binding upon the parties.

(d) **Multiple Representatives.** In the event a dispute involves more than one labor organization, each will be entitled to a representative on the arbitration committee, in which event the Railroad or Recipient may appoint additional representatives equivalent to the number of labor organization representatives; provided, however, that the decision in such case shall be made by the neutral member.

(e) **Decisions Binding.** The decision, by majority vote except as provided otherwise in paragraph (d) of this Section, of the arbitration committee shall be final, binding, conclusive, and rendered within forty-five (45) days after the hearing of the dispute or controversy has been concluded and the record closed.

(f) **Expenses.** The salaries and expenses of the neutral member shall be borne equally by the parties to the proceeding, and all other expenses shall be paid by the party incurring them.

9. Classification of a Protected Employee. In the event an employee (or their representatives) cannot settle a dispute or controversy with the Railroad or the Recipient as to whether or not a particular employee would be affected by a Project, either party may refer the dispute to an arbitration committee within thirty {30) days after the dispute arises pursuant to the arbitration procedures in Section 8. For any such dispute, the employee of a Railroad shall have the burden to identify, with reasonable specificity, the Project that allegedly affected them, and to specify the pertinent facts of that Project, including the change or changes resulting from the Project that allegedly affected them. The burden shall then shift to the Railroad or Recipient to show that factors other than a change resulting from the Project affected the employee. The employee shall prevail on this issue if it is established that the Project had an effect upon the employee, even if other factors also may have affected the employee.

10. Resolution of Disputes for Non-Bargaining Unit Protected Employees. Any Protected Employee who is not represented by a labor organization shall be afforded substantially the same levels of protection as are afforded to members of labor organizations under this Exhibit. In the event any dispute arises between a Railroad and an employee not represented by a labor

organization with respect to the interpretation, application, or enforcement of any provision of this Exhibit that cannot be settled by the parties within thirty (30) days after the dispute arises, either party may, as an alternative to the dispute resolution procedures outlined in this Exhibit, refer the dispute within ninety (90) days after the dispute arises to the Secretary of Labor for determination. The determination of the Secretary of Labor, or their designated representative, shall be final and binding on the parties.

11. Severability. In the event any provision of this Exhibit is held to be invalid or otherwise unenforceable under applicable law, the remaining provisions of this Exhibit shall not be affected.

[END OF ASSURANCES AND CERTIFICATIONS]

IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING SPECIAL PROVISION (TPG)

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 _10____.

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 PreApprenticeship 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 journey worker 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.

INSURANCE

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 Springfield; Illinois Department of Central Management Services

The entity listed above and its officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

CHAIN LINK FENCE (SPECIAL)

Description: This work shall consist of furnishing and constructing chain link fence with a barbed wire top, gates and accessories at the locations shown on the plans or as directed by the Engineer.

General: Except as modified below, the work and materials shall conform to the requirements of Section 664 and Article 1006.27 of the SSRBC. Barbed wire top shall conform to Article 1006.28 of the SSRBC. The materials including all fabric, posts, fasteners, wires, braces, tops, support arms, and 3 rows of barbed wire shall be included in the cost of the work. All labor, materials, and equipment shall be included in the cost of CHAIN LINK FENCE of the height specified (SPECIAL) and CHAIN LINK GATES (SPECIAL).

Barbed wire support arms shall be pressed steel, cast iron, or cast aluminum alloy fitted with clips or slots for attaching three strands of barbed wire. Arms shall be set on a 45° angle and be capable of supporting a 250 pound load at outer barbed wire connecting point without causing permanent deflection.

Basis of Payment: This work shall be paid for at the contract unit price per foot for CHAIN LINK FENCE (SPECIAL) of the height specified, and at the contract unit price per each for

CHAIN LINK GATES (SPECIAL) of the opening sizes and types specified.

CHAIN LINK GATE ASSEMBLY (SPECIAL)

Description: This work shall consist of design, fabrication, and installation of a double leaf, chain link, cantilevered rolling gate. Gate shall be 6 feet tall by 52 feet clear opening.

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

EARTH EXCAVATION

Description: This work shall be according to Section 202 of the SSRBC in addition to the following requirements for drainage. All excavated material, other than unsuitable materials, and non-special waste meeting the requirements of Article 669.05 (a) (5) of the SSRBC, shall remain on site and be used as embankment.

Drainage: The work shall be maintained so that positive drainage is provided at all times. Some drainage structures will have their outlet pipes constructed in later stages. Temporary ditches, temporary sump pumps or other methods determined by the Contractor shall be used to provide positive drainage during excavation and to protect adjacent property from damage. The method and procedure to provide positive drainage during excavation shall be submitted and approved by the Engineer prior to excavation. If the Engineer determines during construction that the positive drainage is not adequate, the Contractor shall correct this to the satisfaction of the Engineer. This work shall be included in the contract unit price for EARTH EXCAVATION.

FURNISHED EXCAVATION

Description: This work shall be according to Section 204 of the SSRBC in addition to the following requirements.

Stockpiled Material: The Contractor shall use the stockpiled material at 1020 North 10th Street east of the existing NSRR tracks and south of Ash Street and east of the rail corridor at 830 East Ash Street in Springfield, Illinois for construction of embankments. Prior to utilizing the stockpiled material, the material shall be approved for use by the Engineer. Material not approved for use by the Engineer shall be left on-site at the stockpiled site locations and not incorporated into embankments. The quantity of the stockpiled material is unknow at these sites. The remaining furnished excavation material required shall be provided according to Section 204. Excavation at the stockpiled material sites shall be limited to depletion of the stockpiles.

At completion of the project, the stockpiled material sites shall be graded to drain in a manner consistent with the existing drainage, and the ground surface elevation shall be no more than 2 feet higher than the grade on the adjacent property.

The Contractor shall seed disturbed areas of the stockpile sites as necessary to minimize erosion during construction and at the end of construction. All temporary erosion control, temporary and permanent seeding at the stockpile areas will not be measured for payment.

The use of the stockpiled material will paid for as FURNISHED EXCAVATION according to Section 204 of the SSRBC.

MAINTENANCE MOWING

Description: This work shall consist of mowing vegetated rights of way, easements and excess parcels as directed by the Engineer to maintain the project site in compliance with the City of Springfield's nuisance ordinance throughout the duration of the contract.

General: The Engineer will notify the Contractor in writing when mowing is required. The notice will include delineation of areas to be mowed on scalable drawings or on parcel maps with parcels of known acreage. Mowing shall be performed in accordance with Section 250.06(b) except that mowing of slopes as great as 1:2 (V:H) will be required. Mowing shall be completed within 10 days of the written notification.

Method of Measurement: This work will be measured in acres with areas computed from plan drawings or known parcel acreages.

Basis of Payment: This work will be paid for at the contract unit price per acre for MAINTENANCE MOWING.

PRECAST CONCRETE PARKING BLOCK

Parking blocks shall be air entrained (5%-7%) precast reinforced concrete 4,000 PSI minimum strength, length 6 ft, height 5 in. width 9 in. with pin holes and 2 to 4 reinforcement bars. Base should be raised to allow for drainage. Parking blocks shall be yellow.

This work, including furnishing and installing parking blocks with metal pins, will be paid for at the contract unit price each for PRECAST CONCRETE PARKING BLOCKS.

QC/QA OF CONCRETE MIXTURES – APPLICABLE ITEMS

The Special Provision for "Quality Control/Quality Assurance of Concrete Mixtures" (Recurring Special Provision Check Sheet Item #23) shall only apply to the following:

Pay Item:	All Items Utilizing Self-Consolidating Concrete
Location:	All Applicable

Pay Item:	PCC Pavement 8" Jointed
Location:	Streets

All other Portland Cement Concrete utilized in the construction of this project shall be produced

in accordance with Check Sheet Item #22 for "Quality Control of Concrete Mixtures at the Plant."

TEMPORARY CHAIN LINK FENCE (PORTABLE)

Description: This work shall consist of furnishing, installing, maintaining, and removing temporary chain link fence to control pedestrian traffic along the work area at locations shown on the plans or as directed by the Engineer.

General: The temporary fence shall be chain link fence and a minimum of 6 ft high with posts placed a maximum of 10 feet apart. The posts shall be self-standing and fixed to the ground with sandbags to ensure that the fence will not move or fall over. Moving the temporary fence to complete construction of work items in conflict with temporary fencing will not be measured for payment but included in the contract unit price for TEMPORARY CHAIN LINK FENCE (PORTABLE).

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

TEMPORARY FENCE

Description: This work shall consist of furnishing, installing, maintaining, and removing temporary fence to control pedestrian traffic along the work area at locations shown on the plans or as directed by the Engineer.

General: The temporary fence shall be chain link fence or woven wire fence. The fence shall be at least 6 ft high with posts spaced a maximum of 10 ft apart and shall include lockable gates for construction access at locations selected by the Contractor and approved by the Engineer.

Fence shall be erected prior to commencing other construction activities on site and shall be maintained until the Engineer authorizes its removal. Fence shall be removed, postholes filled, and surface restored to the satisfaction of the Engineer. Temporary fencing with bracing adjacent to permanent gates shall be permanently left in place. Cost of leaving temporary fencing in place shall be included in the cost of TEMPORARY FENCE.

Basis of Payment: This work will be paid for at the contract unit price per foot for TEMPORARY FENCE. Temporary gates will be included in the measured length of fence.

REMOVALS

BOLLARD REMOVAL

Description: This work shall consist of removal of bollards at locations shown on the plans.

General: Bollards and any attached concrete shall be removed and disposed of according to Article 202.03. The void caused by the removal shall be backfilled with compacted embankment.

Basis of Payment: Removal of bollards shall be paid for at the contract unit price each for BOLLARD REMOVAL which shall include the cost of furnishing and placing the backfill.

BUILDING REMOVAL BY OTHERS

Description: The State of Illinois will be completing the IEPA building removal for this project. The Contractor shall be expected to cooperate and coordinate with the agency so the building removal can be completed for this project. It is anticipated the State of Illinois will complete the IEPA building removal within the proposed UP ROW by June 1, 2025. Additional work on the IEPA building will occur outside the proposed UP ROW throughout the construction of this project. The cost for this work shall be included in the unit prices and no additional compensation will be allowed.

CLEARING

Description: This work shall be in accordance with Section 201 of the Standard Specifications. The existing subballast for the UPRR rail corridor between Carpenter Street and Iles Avenue shall be cleared of rubbish of whatever nature, logs, shrubs, bushes, saplings, grass and weeds prior to constructing track.

In addition to the items listed in Section 201.01(a), clearing shall include stockpiled railroad ties or rail, poles, broken concrete and asphalt, concrete blocks, bricks, pallets, posts, pipes, scrap materials, bollards, temporary concrete barriers, parking blocks, discarded household furniture, appliances and goods, sheds and outbuildings not listed for payment and any other unclassified material at locations not specifically listed in the schedule of quantities as being measured for payment.

Basis of Payment: Clearing work will not be measured for payment.

CONCRETE SLAB REMOVAL

Description: This work shall be in accordance with Section 440 of the Standard Specifications except that 440.07(c) shall not apply. This work shall consist of removing building slabs, steps and their foundations and saw cutting foundations full depth if required. Slabs for garages and other out-buildings are also included. The thickness of slabs will vary and no adjustment in quantity or unit price will be made due to this variation.

Measurement: This work will be measured in square feet at the top horizontal surface of the slab or step.

Basis of Payment: This work will be paid for at the contract unit price per square yard for CONCRETE SLAB REMOVAL.

CONTROLLED LOW-STRENGTH MATERIAL

Description: This work shall consist of filling steam vaults, handholes or other structures according to Section 593 of the SSRBC at locations directed by the Engineer.

General: Abandoned utility manholes and vaults are potentially located within the project limits. The number, size and location of these are unknown, but if encountered, the Engineer should be contacted immediately. Any castings or lids encountered shall be stockpiled and delivered to the City of Springfield. The Contractor shall determine if any live utilities are located within the vault that would prevent it from being filled. The Contractor shall notify the Engineer whether or not any live utilities are located within the vault and whether it is acceptable to be filled. Should the vault be filled, all open pipe connections shall be grouted shut and the vault filled with controlled low-strength material to the level of the proposed subgrade.

Other structures not intended to be removed by other means as a part of the contract, encountered by the Contractor and known not to contain live utilities, shall be filled with controlled low-strength material, upon approval of the Engineer.

Basis of Payment: This work shall be paid for at the contract unit price per cubic yard for CONTROLLED LOW-STRENGTH MATERIAL.

FENCE REMOVAL

Description: This work shall consist of removing existing fencing, posts, barbed wire, supports, concrete foundations, gates and associated hardware according to Sections 201, 664 and 665 of the SSRBC and constructing end posts and associated hardware where required to terminate existing fence at locations shown on the plans or as directed by the Engineer.

General: All material included with this removal shall be disposed of off-site by the Contractor. End post and associated hardware to terminate existing chain link fence shall be according to Standard 664001 and Section 664 of the SSRBC. End posts and associated hardware to terminate existing woven wire fence shall be according to Standard 665001 and Section 665 of the SSRBC.

Basis of Payment: This work including end posts and associated hardware shall be paid for at the contract unit price per foot for FENCE REMOVAL.

PAVEMENT REMOVAL (SPECIAL)

This work shall be in accordance with Section 440 of the Standard Specifications except as follows:

1. Pavement thickness and material type to be removed is not shown on the plans at all locations. Brick pavement removal is included in this work.

2. This work shall include removing asphalt, concrete pavement, brick, aggregate, earth, and curb and gutter at designated locations and for sewer installation. The pavement removal will be to a depth of 18 in. below the surface of the existing pavement and will include all materials within that depth. Any removal required below the 18 in. depth will be paid for as earth excavation. No adjustments will be made for variations in thickness.

3. Paragraph 440.07(c) is deleted.

4. When embankments are constructed over an existing pavement, Section 205.03 shall be followed. The cost for this shall be included in this work.

This work will be paid for at the contract unit price per square yard for PAVEMENT REMOVAL (SPECIAL).

REMOVAL OF UNCLASSIFIED MATERIAL

Description: This work shall consist of removing any unclassified material including culverts, broken concrete, and existing roadway surface found on this project as designated by the Engineer.

The material shall be disposed of beyond the limits of the right of way in accordance with Article 202.03 of the Standard Specifications, and as directed by the Engineer.

Compliance with this Special Provision will not be paid for separately but will be included in the project contract.

REMOVE EXISTING PARKING BLOCKS

This work shall consist of removing and disposing of existing concrete parking blocks. Parking blocks to be removed shall become the property of the contractor and disposed of offsite.

This work will be paid for at the contract unit price each for REMOVE EXISTING PARKING BLOCKS.

SAWING PAVEMENT (FULL DEPTH)

Description: This work shall be used in the removal of driveway pavement, sidewalk, pavement, curb, gutter and combination curb and gutter to ensure a satisfactory transition between replacements and the portion remaining in place. The contractor shall saw cut a joint between the portion of the driveway pavement, sidewalk, pavement and curb and gutter to be removed and that to be left in place in order to prevent the surface from spalling when the concrete is broken out. This work shall be done in such a manner that a straight joint will be secured.

Basis of Payment: This work will not be measured separately but shall be included in the contract unit price for the item to be removed.

SIDEWALK REMOVAL

Description: This work shall be in accordance with Section 440 of the Standard Specification and shall include removal of concrete steps.

Steps will be measured for payment in place. Only the horizontal surface will be measured, and the area computed in square feet. The vertical risers of steps will not be measured for payment.

Basis of Payment: The work will be paid for at the contract unit price per square foot for SIDEWALK REMOVAL.

SIGN REMOVAL

Description: This work consists of the removal and stockpiling or disposal of the existing specialty signs.

General: This work shall include the removal of the sign panels, posts, footings, and foundations to at least 2 ft below grade, and hardware associated with the existing signs. Salvageable material shall be delivered by the Contractor to the location designated by the Owner. Disposal of unsalvageable and unwanted material shall be in accordance with Section 202.03. The void caused by removal shall be backfilled according to Article 841.02 of the SSRBC.

Basis of Payment: This work will be paid for at the contract unit price per each for SIGN REMOVAL.

STORM SEWER, GAS MAIN AND WATER MAIN REMOVAL

Description: This work shall consist of the removal of water mains, gas mains, storm sewers, sanitary sewer or combined sewers in accordance with Section 551 of the Standard Specifications.

Sewers and mains less than 6” will not be measured for removal.

Basis of Payment: This work, regardless of the type of sewer and water main, will be paid for at the contract unit price per foot for STORM SEWER REMOVAL or WATER MAIN REMOVAL, of the diameter specified, and gas main will be paid for at the contract unit price per foot for REMOVE ABANDONED GAS MAIN.

TREE REMOVAL, ACRES

Description: This work consists of tree removal according to Section 201 of the SSRBC except that trees that are not identified for removal by the Engineer shall be saved.

The Engineer will indicate any trees within the plan quantity area that are not to be removed.

Basis of Payment: Measurement and payment of TREE REMOVAL, ACRES shall be according to Articles 201.10 and 201.11 of the SSRBC.

VALVE VAULTS TO BE REMOVED

Description: This work consists of removing valve vaults at the locations indicated on the plans. The vaults are on utilities that will be relocated by others. Work includes backfill up to the lower of existing ground or proposed subgrade.

Existing vault shall be removed to a depth at least 1' below the proposed elevation of subgrade or ground surface. Portions of vault below this elevation that interfere with the proposed construction shall also be removed.

Backfill shall be with suitable material, compacted to the satisfaction of the Engineer.

Basis of Payment: This work will be paid for at the contract unit price for each for VALVE VAULTS TO BE REMOVED. Backfill shall be included in this work and will not be measured or paid for.

RAILROAD

RAIL OPERATIONS

No charge or claims of the Contract against either the Department or the railroad will be allowed for hindrance or delay on account of railway traffic, any work by the railroad, or any other delay incident to the necessary or safe maintenance of railway traffic.

NS RAIL OPERATIONS

All work by the Contractor shall be performed in accordance with the NS Special Provisions for Protection of Railway Interests. Train movements along the NS main track or NS siding track may limit the times that the Contractor may work on NS right-of-way (ROW). The NS will likely limit access to their ROW during train movements. The Contractor shall schedule his work in coordination with NS operations.

NS SPECIAL PROVISION FOR PROTECTION OF RAILWAY INTERESTS

Norfolk Southern Railway Company

E. Norfolk Southern – Special Provisions for Protection of Railway Interests

1. AUTHORITY OF RAILROAD ENGINEER AND SPONSOR ENGINEER:

Norfolk Southern Railway Company, hereinafter referred to as "Railroad", and their authorized representative shall have final authority in all matters affecting the safe maintenance of railroad traffic including the adequacy of the foundations and structures supporting the railroad tracks. For Public Projects impacting the Railroad, the Railroad's Public Improvements Engineer or Engineer Planning, hereinafter referred to as "Railroad Engineer", will serve as the authorized representative of the Railroad.

A general engineering consultant may be utilized to assist the Railroad Engineer in handling the Project, hereinafter referred to as "Construction Engineering Representative".

Other designated personnel by the Railroad Engineer shall hereinafter be referred to as "Railroad Representative".

The authorized representative of the Project Sponsor ("Sponsor"), hereinafter referred to as the "Sponsor's Engineer", shall have authority over all other matters as prescribed herein and in the Project Specifications.

The Sponsor's Prime Contractor, hereinafter referred to as "Contractor" shall be responsible for completing any and all work in accordance with the terms prescribed herein and in the Project Specifications. This shall include the qualified protective services of a contractor directly hired by the Contractor to protect their workers and construction activities while working on or adjacent to Railroad property, hereinafter referred to as "Contractor Protective Services".

This document titled E. Norfolk Southern – Special Provisions for Protection of Railway Interests shall hereinafter be referred to as "Special Provisions".

These terms and conditions are subject to change without notice at the sole discretion of the Railroad. The Contractor must request the latest version of these Special Provisions from the Railroad prior to commencing work and must follow the requirements outlined therein.

2. AUTHORIZATION TO PROCEED:

A. The Contractor shall not commence mobilizing to the Premises, as defined in the Norfolk Southern Contractor Right of Entry Agreement, until the Contractor has complied with the following conditions:

1. Signed and received a fully executed copy of the required Norfolk Southern Contractor Right of Entry Agreement. Contractor Right of Entry Agreements to be submitted via email to the Railroad Engineer.

2. Obtained written approval from the Railroad of Railroad Protective Liability Insurance coverage as required by paragraph 15 herein. It should be noted that the Railroad does not accept notation of Railroad Protective insurance on a certificate of liability insurance form or Binders as Railroad must have the full original countersigned policy. Further, please note that mere receipt of the policy is not the only issue but review for compliance. Due to the number of projects system-wide, it typically takes a minimum of 30-45 days for the Railroad to review.

3. Held a preconstruction meeting between the Contractor, the Sponsor, Railroad Engineer and/or their Construction Engineering Representative and the Railroad Representative(s). NOTE: Railroad Representative(s) may choose to not attend the preconstruction meeting at their discretion.

4. Obtained Contractor Protective Services as required by Section 8 herein.

5. Furnished a schedule for all construction activities which may impact the Railroad's property or operations. NOTE: Contractor Protective Services shall be provided any time construction activities are taking place on or adjacent to the Railroad Property and/or has the potential to foul the Railroad's track or operations as required by Section 8 herein.

6. Schedule an onsite start-of-work meeting between the Contractor, Contractor Protective Services personnel, Railroad Engineer and/or their Construction Engineering Representative and the Railroad Representative(s). NOTE: Railroad Representative(s) may choose to not attend the start-of-work meeting at their discretion.

7. Obtained written authorization to proceed from the Railroad to begin mobilization to the Premises, as defined in the Norfolk Southern Contractor Right of Entry Agreement, such authorization to include an outline of specific conditions with which the Contractor must comply. Written Authorization will be issued by the Railroad once all items on the Norfolk Southern Checklist for Construction - Direct Hire have been completed.

B. The Railroad's written authorization to proceed with the work shall include the names, addresses, and telephone numbers of the Railroad Representative(s) and any specific Construction Engineering Representative who shall be notified as hereinafter required. Where more than one representative is designated, the area of responsibility of each representative shall be specified.

C. All project-related utility work that is to occur on, over, or under Railroad right-of-way must be coordinated with the Norfolk Southern Pipe and Wire Program. The Contractor must receive approval from the Norfolk Southern Pipe and Wire Program prior to commencing any utility work.

3. NOTICE OF STARTING WORK:

A. Before undertaking any construction activities on the Premises, as defined in the Norfolk Southern Contractor Right of Entry Agreement, the Contractor shall:

1. Notify the Railroad Representative(s) at least 72 hours in advance of any construction activities that Contractor Protective Services have been obtained for use.

2. Hold an onsite start-of-work meeting between the Contractor, Contractor Protective Services personnel, Railroad Engineer and/or their Construction Engineering Representative and the Railroad Representative(s). NOTE: Railroad Representative(s) may choose to not attend the start of work meeting at their discretion.

3. Receive assurance from the qualified protective services contractor that the Contractor Protective Services are properly equipped and have been site specific trained by the Railroad Representative prior to performing the full duties of protecting the Contractor. Until assurance from the qualified protective services contractor is obtained, Contractor Protective Services may act as an observer until such Contractor Protective Services are site specific trained by the Railroad Representative. The reference to an "observer" is defined as a person who has the authority to deny access to Contractor's workers and machinery to a specified Railroad operation zone as directed to the qualified protective services contractor by Railroad and prevent those potential to foul work events which may put the Contractor's workers and machinery at risk for injury or damage.

4. INTERFERENCE WITH RAILROAD OPERATIONS:

A. The Contractor shall so arrange and conduct the Contractor's work that there will be no interference with Railroad's operations, including train, signal, telephone and telegraphic services, or damage to the property of the Railroad or to poles, wires, and other facilities of tenants on the rights-of-way of the Railroad. Whenever work is liable to affect the operations or safety of trains, the method of doing such work shall first be submitted to the Railroad Engineer for approval, but such approval shall not relieve the Contractor from liability. Any work to be performed by the Contractor which requires Construction Engineering Representative inspection services shall be deferred by the Contractor until the Construction Engineering Representative inspection services are available at the job site. Contractor Protective Services shall be provided onsite any time construction activities are taking place on or adjacent to the Railroad Property and/or has the potential to foul the Railroad's track or operations

B. Whenever work within Railroad's rights-of-way is of such a nature that impediment to Railroad's operations such as use of runaround tracks or necessity for reduced speed is unavoidable, the Contractor shall schedule and conduct the Contractor's operations so that such impediment is reduced to the absolute minimum.

C. Should conditions arising from, or in connection with the work, require that immediate and unusual provisions be made to protect operations and property of the Railroad, the Contractor shall make such provisions. If in the judgment of the Railroad Engineer, or in the Railroad Engineer's absence, the Railroad's Division Engineer, such provisions are insufficient, either may require or provide such provisions as the Railroad deems necessary. In any event, such unusual provisions shall be at the Contractor's expense and without cost to the Railroad or the Sponsor.

D. "One Call" Services do not locate buried Norfolk Southern Signals and Communications Lines. The contractor shall contact the Railroad's representative 7 days in advance of work at those places where excavation, pile driving, or heavy loads may damage the Railroad's underground facilities. Upon request from the Contractor or Sponsor, Railroad forces will locate and paint mark or flag the Railroad's underground facilities. The Contractor shall avoid excavation or other disturbances of these facilities. If disturbance or excavation is required near a buried Railroad facility, the Contractor shall coordinate with the Railroad to have the facility potholed manually with careful hand excavation. The facility shall be protected by the Contractor during the course of the disturbance under the supervision and direction of the Railroad's Representative.

5. TRACK CLEARANCES:

   A. The minimum track clearances to be maintained by the Contractor during construction are shown on the Project Plans. If temporary clearances are not shown on the project plans, the following criteria shall govern the use of falsework and formwork above or adjacent to operated tracks.

      1. A minimum vertical clearance of 22'-0" above top of highest rail shall be maintained at all times.

      2. A minimum horizontal clearance of 13'-0" from centerline of tangent track or 14'-0" from centerline of curved track shall be maintained at all times. Additional horizontal clearance may be required in special cases to be safe for operating conditions. This additional clearance will be as determined by the Railroad Engineer.

      3. All proposed temporary clearances which are less than those listed above must be submitted to Railroad Engineer for approval prior to construction and must also be authorized by the regulatory body of the State if less than the legally prescribed clearances.

      4. The temporary clearance requirements noted above shall also apply to all other physical obstructions including, but not limited to: stockpiled materials, parked equipment, placement or driving of piles, and bracing or other construction supports.

6. CONSTRUCTION PROCEDURES:

   A. General:

      1. Construction work and operations by the Contractor on Railroad property shall be:

         a. Subject to the inspection and approval of the Railroad Engineer or their designated Construction Engineering Representative.

         b. In accordance with the Railroad's written outline of specific conditions.

         c. In accordance with the Railroad's general rules, regulations and requirements including those relating to safety, fall protection and personal protective equipment.

         d. In accordance with these Special Provisions.

      2. Submittal Requirements

         a. The Contractor shall submit all construction related correspondence and submittals electronically to the Railroad Engineer and/or their designated Construction Engineering Representative.

         b. The contractor should anticipate a minimum of 45 days for Railroad and their Construction Engineering Representative to complete the review of all construction submittals. Time frames for reviews can vary significantly depending on the complexity of the project and the quality of submittals. Submittals requiring input from other departments may require additional time.

c. All work in the vicinity of the Railroad's property that has the potential to affect the Railroad's train operations or disturb the Railroad's property must be submitted and approved by the Railroad prior to work being performed.

d. All submittals and calculations must be signed and sealed by a registered engineer licensed in the state of the project work.

e. All submittals shall first be approved by the Sponsor's Engineer prior to submission to the Railroad Engineer for review. Submittals are reviewed by the Railroad for impacts to Railroad operations only; therefore, approval from the Railroad Engineer shall not relieve the Contractor from liability.

f. For all construction projects, the following submittals, but not limited to those listed below, shall be provided for review and approval when applicable:

(1) General Means and Methods
(2) Ballast Protection
(3) Construction Excavation & Shoring
(4) Pipe, Culvert, & Tunnel Installations
(5) Demolition Procedure
(6) Erection & Hoisting Procedure
(7) Debris Shielding or Containment
(8) Blasting
(9) Formwork for the bridge deck, diaphragms, overhang brackets, and protective platforms
(10) Bent Cap Falsework. A lift plan will be required if the contractor want to move the falsework over the tracks.

g. For Undergrade Bridges (Bridges carrying the Railroad) the following submittals in addition to those listed above shall be provided for review and approval:

(1) Girder Shop Drawings including welding/fabrication procedures
(2) Bearing Shop Drawings and Material Certifications
(3) Shop Drawings for drainage, handrails/fencing, and expansion dams
(4) Concrete Mix Design
(5) Structural Steel, Rebar, and/or Strand Certifications
(6) 28-day Cylinder Test for Concrete Strength
(7) Waterproofing Material Certification
(8) Dampproofing materials
(9) Test Reports for all steel
(10) Foundation Construction Reports

Other submittals may be required upon request from the Railroad. Fabrication may not begin until the Railroad has approved the required shop drawings.

h. The Contractor shall include in all submissions a detailed narrative indicating the progression of work with the anticipated timeframe to complete each task. Work will not be permitted to commence until the Contractor has provided the Railroad with a satisfactory plan that the project will be undertaken without scheduling, performance, or safety related issues. Submissions shall also provide: a listing of the anticipated equipment to be used, plan and profile views showing the location of all equipment to be used relative to the track centerline(s) shown, and a contingency plan of action covering the event that a primary piece of equipment malfunctions.

B. Ballast Protection

1. The Contractor shall submit the proposed ballast protection system detailing the specific filter fabric and anchorage system to be used during all construction activities.

2. The ballast protection is to extend 25' beyond the proposed limit of work, be installed at the start of the project and be continuously maintained to prevent all contaminants from entering the ballast section of all tracks for the entire duration of the project.

C. Excavation:

1. The subgrade of an operated track shall be maintained with edge of berm at least 10'-0" from centerline of track and not more than 24-inches below top of rail. Contractor will not be required to make existing section meet this specification if substandard, in which case the existing section will be maintained.

2. Additionally, the Railroad will require the installation of an OSHA approved handrail and orange construction safety fencing for all excavations of the Railroad right-of-way.

D. Excavation for Structures and Shoring Protection:

1. The Contractor will be required to take special precaution and care in connection with excavating and shoring pits, and in driving piles or sheeting for footings adjacent to tracks to provide adequate lateral support for the tracks and the loads which they carry, without disturbance of track alignment and surface, and to avoid obstructing track clearances with working equipment, tools or other material.

2. The use of shoring systems utilizing tiebacks shall not be permitted without written approval from the Railroad Engineer.

3. Shoring systems utilizing trench boxes shall not be permitted within the Theoretical Railroad Embankment (Zones 1, 2, or 3) as shown on NS Typical Drawing No. 4 – Shoring Requirements without written approval from the Railroad Engineer.

4. All plans and calculations for shoring shall be prepared, signed, and sealed by a Registered Professional Engineer licensed in the state of the proposed project, in accordance with Norfolk Southern' s Overhead Grade Separation Design Criteria, subsection H.1.6 - Construction Excavation (Refer to Norfolk Southern Public Improvement Projects Manual Appendix H). The Registered Professional Engineer will be responsible for the accuracy for all controlling dimensions as well as the selection of soil design values which will accurately reflect the actual field conditions.

5. The Contractor shall provide a detailed installation and removal plan of the shoring components. Any component that will be installed via the use of a crane or any other lifting device shall be subject to the guidelines outlined in Section 6.G of these Special Provisions.

6. The Contractor shall be required to survey the track(s) and Railroad embankment and provide a cross section of the proposed excavation in relation to the tracks.

7. Calculations for the proposed shoring should include deflection calculations. The maximum deflection for excavations within 18'-0" of the centerline of the nearest track shall be 3/8". For all other cases, the max deflection shall not exceed ½".

8. Additionally, the Railroad will require the installation of an OSHA approved handrail and orange construction safety fencing for all excavations of the Railroad right-of-way.

9. The front face of shoring located closest to the NS track for all shoring setups located in Zone 2 (shown on NS Typical Drawing No. 4 – Shoring Requirements in Appendix I) shall remain in place and be cut off 2'-0" below the final ground elevation. The remaining shoring in Zone 2 and all shoring in Zone 1 may be removed and all voids must be backfilled with flowable fill.

E. Pipe, Culvert, & Tunnel Installations

1. Pipe, Culvert, & Tunnel Installations shall be in accordance with the appropriate Norfolk Southern Design Specification as noted below:

   a. For Open Cut Method refer to Norfolk Southern Public Improvement Projects Manual Appendix H.4.6.
   b. For Jack and Bore Method refer to Norfolk Southern Public Improvement Projects Manual Appendix H.4.7.
   c. For Tunneling Method refer to Norfolk Southern Public Improvement Projects Manual Appendix H.4.8.

2. The installation methods provided are for pipes carrying storm water or open flow run-off. All other closed pipeline systems shall be installed in accordance Norfolk Southern' s Pipe and Wire Program and the NSCE-8.

F. Demolition Procedures

1. General

   a. Demolition plans are required for all spans over the track(s), for all spans adjacent to the track(s), if located on (or partially on) Railroad right-of-way; and in all situations where cranes will be situated on, over, or adjacent to Railroad right-of-way and within a distance of the boom length plus 15'-0" from the centerline of track.

   b. Railroad tracks and other Railroad property must be protected from damage during the procedure.

c. A pre-demolition meeting shall be conducted with the Sponsor, the Railroad Engineer and/or the Construction Engineering Representative, and the key Contractor's personnel prior to the start of the demolition procedure.

d. The Railroad Engineer and/or the Construction Engineering Representative must be present at the site during the entire demolition procedure period.

e. Demolition of existing bridge decks in spans over the Railroad shall be performed in a controlled manner (i.e. saw-cutting). No impact equipment (track-mounted hoe-ram, jackhammers, etc.) may be used over the Railroad without approval by the Railroad Engineer.

f. Existing, obsolete, bridge piers shall be removed to a sufficient depth below grade to enable restoration of the existing/proposed track ditch, but in no case less than 2'-0" below final grade.

2. Submittal Requirements

a. In addition to the submittal requirements outlined in Section 6.A.2 of these Special Provisions, the Contractor shall submit the following for approval by the Railroad Engineer:

(1) A plan showing the location of cranes, horizontally and vertically, with proposed boom lengths, operating radii, counterweights, and delivery or disposal locations shown. The location of all tracks and other Railroad facilities as well as all obstructions such as wire lines, poles, adjacent structures, etc. must also be shown.

(2) Rating sheets showing that cranes or lifting devices are adequate for 150% of the actual weight of the pick, including all rigging components. A complete set of crane charts, including crane, counterweight, and boom nomenclature is to be submitted. Safety factors that may have been "built-in" to the crane charts are not to be considered when determining the 150% factor of safety.

(3) Plans and computations showing the weight of the pick must be submitted. Calculations shall be made from plans of the existing structure showing complete and sufficient details with supporting data for the demolition of the structure. If plans do not exist, lifting weights must be calculated from field measurements. The field measurements are to be made under the supervision of the Registered Professional Engineer submitting the procedure and calculations.

(4) The Contractor shall provide a sketch of all rigging components from the crane's hook block to the object being hoisted. Catalog cuts or information sheets of all rigging components with their lifting capacities shall be provided. All rigging must be adequate for 150% of the actual weight of the pick. Safety factors that may have been "built-in" to the rating charts are not to be considered when determining the 150% factor of safety. All rigging components shall be clearly identified and tagged with their rated lifting capacities. The position of the rigging in the field shall not differ from what is shown on the final plan without prior review from the Sponsor and the Railroad.

(5) A complete demolition procedure, including the order of lifts, time required for each lift, and any repositioning or re-hitching of the crane or cranes.

(6) Design and supporting calculations for the temporary support of components, including but not limited to the stability of the superstructure during the temporary condition, temporary girder tie-downs and falsework.

3. Overhead Demolition Debris Shield

a. The demolition debris shield shall be installed prior to the demolition of the bridge deck or other relevant portions of the superstructure over the track area to catch all falling debris.

b. The demolition debris shield shall provide a minimum vertical clearance as specified in Section 5.A.1 of these Special Provisions or maintain the existing vertical clearance if the existing clearance is less than that specified in Section 5.A.1.

c. The Contractor shall include the demolition debris shield installation/removal means and methods as part of the proposed demolition procedure submission.

d. The Contractor shall submit the demolition debris shield design and supporting calculations for approval by the Railroad Engineer.

e. The demolition debris shield shall have a minimum design load of 50 pounds per square foot plus the weight of the equipment, debris, personnel, and other loads to be carried.

f. The Contractor shall include the proposed bridge deck removal procedure in its demolition means and methods and shall verify that the size and quantity of the demolition debris generated by the procedure does not exceed the shield design loads.

g. The Contractor shall clean the demolition debris shield daily or more frequently as dictated either by the approved design parameters or as directed by the Railroad Engineer.

4. Vertical Demolition Debris Shield

    a. A vertical demolition debris shield may be required for substructure removals in close proximity to the Railroad's track and other facilities, as determined by the Railroad Engineer.

G. Erection & Hoisting Procedures

1. General

    a. Erection plans are required for all spans over the track(s), for all spans adjacent to the track(s), if located on (or partially on) Railroad right-of-way; and in all situations where cranes will be situated on, over, or adjacent to Railroad right-of-way and within a distance of the boom length plus 15'-0" from the centerline of track.

    b. Neither crane handoffs nor "walking" of cranes with suspended load will be permitted for erection on or over Railroad right-of-way.

    c. Railroad tracks and other Railroad property must be protected from damage during the erection procedure.

    d. A pre-erection meeting shall be conducted with the Sponsor, the Railroad Engineer and/or the Construction Engineering Representative, and the key Contractor's personnel prior to the start of the erection procedure.

    e. The Railroad Engineer and/or the Construction Engineering Representative must be present at the site during the entire erection procedure period.

    f. For field splices located over Railroad property, a minimum of 50% of the holes for each connection shall be filled with bolts or pins prior to releasing the crane. A minimum of 50% of the holes filled shall be filled with bolts. All bolts must be appropriately tightened. Any changes to previously approved field splice locations must be submitted to the Railroad for review and approval. Refer to Norfolk Southern' s Overhead Grade Separation Design Criteria for additional splice details (Norfolk Southern Public Improvement Projects Manual Appendix H.1, Section 4.A.3.).

2. Submittal Requirements

    a. In addition to the submittal requirements outlined in Section 6.A.2 of these provisions, the Contractor shall submit the following for approval by the Railroad Engineer:

        (1) As-built beam seat elevations - All as-built bridge seats and top of rail elevations shall be furnished to the Railroad Engineer for review and verification at least 30 days in advance of the erection, to ensure that minimum vertical clearances as approved in the plans will be achieved.

        (2) A plan showing the location of cranes, horizontally and vertically, with proposed boom lengths, operating radii, counterweights, and delivery or staging locations shown. The location of all tracks and other Railroad facilities as well as all obstructions such as wire lines, poles, adjacent structures, etc. must also be shown.

(3) Rating sheets showing that cranes or lifting devices are adequate for 150% of the actual weight of the pick, including all rigging components. A complete set of crane charts, including crane, counterweight, and boom nomenclature is to be submitted. Safety factors that may have been "built-in" to the crane charts are not to be considered when determining the 150% factor of safety.

(4) Plans and computations showing the weight of the pick must be submitted. Calculations shall be made from plans of the proposed structure showing complete and sufficient details with supporting data for the erection of the structure. If plans do not exist, lifting weights must be calculated from field measurements. The field measurements are to be made under the supervision of the Registered Professional Engineer submitting the procedure and calculations.

(5) The Contractor shall provide a sketch of all rigging components from the crane's hook block to the object being hoisted. Catalog cuts or information sheets of all rigging components with their lifting capacities shall be provided. All rigging must be adequate for 150% of the actual weight of the pick. Safety factors that may have been "built-in" to the rating charts are not to be considered when determining the 150% factor of safety. All rigging components shall be clearly identified and tagged with their rated lifting capacities. The position of the rigging in the field shall not differ from what is shown on the final plan without prior review from the Sponsor and the Railroad.

(6) A complete erection procedure, including the order of lifts, time required for each lift, and any repositioning or re-hitching of the crane or cranes.

(7) Design and supporting calculations for the temporary support of components, including but not limited to temporary girder tie-downs and falsework.

H. Blasting:

1. The Contractor shall obtain advance approval of the Railroad Engineer and the Sponsor Engineer for use of explosives on or adjacent to Railroad property. The request for permission to use explosives shall include a detailed blasting plan. If permission for use of explosives is granted, the Contractor will be required to comply with additional provisions as designated by the Railroad Engineer.

I. Track Monitoring

1. At the direction of the Railroad Engineer, any activity that has the potential to disturb the Railroad track structure may require the Contractor to submit a detailed track monitoring program for approval by the Railroad Engineer.

2. The program shall specify the survey locations, the distance between the location points, and frequency of monitoring before, during, and after construction. Railroad reserves the right to modify the survey locations and monitoring frequency as necessary during the project.

3. The survey data shall be collected in accordance with the approved frequency and immediately furnished to the Railroad Engineer for analysis.

4. If any movement has occurred as determined by the Railroad Engineer, the Railroad will be immediately notified. Railroad, at its sole discretion, shall have the right to immediately require all Contractor operations to be ceased and determine what corrective action is required. Any corrective action required by the Railroad or performed by the Railroad including the monitoring of corrective action of the Contractor will be at project expense.

J. Maintenance of Railroad Facilities:

1. The Contractor will be required to maintain all ditches and drainage structures free of silt or other obstructions which may result from the Contractor's operations and provide and maintain any erosion control measures as required. The Contractor will promptly repair eroded areas within Railroad rights-of-way and repair any other damage to the property of the Railroad or its tenants.

2. If, in the course of construction, it may be necessary to block a ditch, pipe or other drainage facility, temporary pipes, ditches, or other drainage facilities shall be installed to maintain adequate drainage, as approved by the Railroad Engineer. Upon completion of the work, the temporary facilities shall be removed, and the permanent facilities restored.

3. All such maintenance and repair of damages due to the Contractor's operations shall be done at the Contractor's expense.

K. Storage of Materials and Equipment:

1. Materials and equipment shall not be stored where they will interfere with Railroad operations, nor on the rights-of-way of the Railroad without first having obtained permission from the Railroad Engineer, and such permission will be with the understanding that the Railroad will not be liable for damage to such material and equipment from any cause and that the Railroad Engineer may move or require the Contractor to move, at the Contractor's expense, such material and equipment.

2. All grading or construction machinery that is left parked near the track unattended by Contractor Protective Services shall be effectively immobilized so that it cannot be moved by unauthorized persons. The Contractor shall protect, defend, indemnify and save the Railroad, and any associated, controlled or affiliated corporation, harmless from and against all losses, costs, expenses, claim, or liability for loss or damage to property or the loss of life or personal injury, arising out of or incident to the Contractor's failure to immobilize grading or construction machinery.

L. Cleanup:

1. Upon completion of the work, the Contractor shall remove from within the limits of the Railroad rights-of-way, all machinery, equipment, surplus materials, falsework, rubbish or temporary buildings of the Contractor, and leave said rights-of-way in a neat condition satisfactory to the Railroad Engineer or the Railroad Representative.

7. DAMAGES:

A. The Contractor shall assume all liability for any and all damages to the Contractor's work, employees, servants, equipment, and materials caused by Railroad traffic.

B. Any cost incurred by the Railroad for repairing damages to its property or to property of its tenants, caused by or resulting from the operations of the Contractor, shall be paid directly to the Railroad by the Contractor.

8. CONTRACTOR PROTECTIVE SERVICES:

A. Requirements:

1. Qualified protective services are those services of a contractor, directly hired by the Prime Contractor, that have been vetted through the Railroad and are allowed to be performed on Railroad property.

2. Contractor Protective Services shall be onsite anytime construction activities are taking place on or adjacent to the Railroad Property and/or have the potential to foul the Railroad's track or operations.

3. Contractor Protective Services shall be those services of a subcontractor to the Contractor who have the ability to fully protect the Contractor's workers and machinery once the qualified protective services contractor confirms the Contractor Protective Services are properly equipped and site specific trained by the Railroad Representative. Contractor Protective Services may act as an observer until such Contractor Protective Services are site specific trained by the Railroad Representative. The reference to an "observer" is defined as a person who has the authority to deny access to Contractor's workers and machinery to a specified Railroad operation zone as directed to the qualified protective services contractor by Railroad and prevent those potential to foul work events which may put the Contractor's workers and machinery at risk for injury or damage.

4. Contractor Protective Services will not be allowed on the property until all items on the Norfolk Southern Checklist for Construction- Direct Hire have been completed and the authorization to proceed is given by the Railroad Engineer.

5. Under the terms of the agreement between the Sponsor and the Railroad, the Railroad has sole authority to determine the need for any Railroad Protective Services required to protect its operations or work designated to be done by the Railroad through the force account estimate.

9. HAUL ACROSS RAILROAD TRACK:

   A. Where the plans show or imply that materials of any nature must be hauled across the Railroad's track, unless the plans clearly show that the Sponsor has included arrangements for such haul in its agreement with the Railroad, the Contractor will be required to make all necessary arrangements with the Railroad regarding means of transporting such materials across the Railroad's track. The Contractor or Sponsor will be required to bear all costs incidental to such crossings whether services are performed by the Contractor's own forces or by Railroad personnel.

   B. No crossing may be established for use by the Contractor for transporting materials or equipment across the tracks of the Railroad unless specific authority for its installation, maintenance, use, until the Contractor has a fully executed a temporary private crossing agreement between the Contractor and Railroad. The approval process for an agreement normally takes 90 days.

10. WORK FOR THE BENEFIT OF THE CONTRACTOR:

   A. All temporary or permanent changes in wire lines or other facilities which are considered necessary to the project are shown on the plans; included in the force account agreement between the Sponsor and the Railroad or will be covered by appropriate revisions to same which will be initiated and approved by the Sponsor and/or the Railroad.

   B. Should the Contractor desire any changes in addition to the above, then the Contractor shall make separate arrangements with the Railroad for same to be accomplished at the Contractor's expense.

11. COOPERATION AND DELAYS:

   A. It shall be the Contractor's responsibility to arrange a schedule with the Railroad for accomplishing stage construction involving work by the Railroad or tenants of the Railroad. In arranging the Contractor's schedule, the Contractor shall ascertain, from the Railroad, the lead time required for assembling crews and materials and shall make due allowance therefore.

   B. No charge or claim of the Contractor against either the Sponsor or the Railroad will be allowed for hindrance or delay on account of railroad traffic; any work done by the Railroad or other delay incident to or necessary for safe maintenance of railroad traffic or for any delays due to compliance with these Special Provisions.

12. TRAINMAN'S WALKWAYS:

   A. Along the outer side of each exterior track of multiple operated track, and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains, extending to a line not less than 10 feet from centerline of track, shall be maintained. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during work hours while Contractor Protective Service is provided shall be removed before the close of each workday. If there is any excavation near the walkway, a handrail, with 10'-0" minimum clearance from centerline of track, shall be placed and must conform to AREMA and/ or FRA standards.

13. GUIDELINES FOR PERSONNEL ON RAILROAD RIGHT-OF-WAY:

A. The Contractor and/or the Sponsor's personnel authorized to perform work on the Railroad's property as specified in Section 2 above are not required to complete Norfolk Southern Roadway Worker Protection Training; However, the Contractor and the Sponsor's personnel must be familiar with Norfolk Southern' s standard operating rules and guidelines, should conduct themselves accordingly, and may be removed from the property for failure to follow these guidelines.

B. All persons shall wear hard hats. Appropriate eye and hearing protection must be used. Working in shorts is prohibited. Shirts must cover shoulders, back and abdomen. Working in tennis or jogging shoes, sandals, boots with high heels, cowboy and other slip-on type boots is prohibited. Hard-sole, lace-up footwear, zippered boots or boots cinched up with straps which fit snugly about the ankle are adequate. Wearing of safety boots and reflective vests are required.

C. No person is allowed to perform construction activities which may impact the Railroad's property or operations without specific authorization from the Contractor Protective Services.

D. All persons working near track while train is passing are to lookout for dragging bands, chains and protruding or shifted cargo.

E. No person is allowed to cross tracks without specific authorization from the Contactor Protective Services.

F. All welders and cutting torches working within 25' of track must stop when train is passing.

G. No steel tape or chain will be allowed to cross or touch rails without permission from the Contactor Protective Services.

14. GUIDELINES FOR EQUIPMENT ON RAILROAD RIGHT-OF-WAY:

A. No crane or boom equipment will be allowed to set up to work or park within boom distance plus 15' of centerline of track without specific permission from Railroad Representative and Contractor Protective Services personnel.

B. No crane or boom equipment will be allowed to foul track or lift a load over the track without the authorization from the Contractor Protective Services personnel who are site specific trained and properly equipped.

C. All employees will stay with their machines when crane or boom equipment is pointed toward track.

D. All cranes and boom equipment under load will stop work while train is passing (including pile driving).

E. Swinging loads must be secured to prevent movement while train is passing.

F. No loads will be suspended above a moving train.

G. No equipment will be allowed within 25' of centerline of track without specific authorization of the Railroad Representative and Contractor Protective Services personnel.

H. Trucks, tractors, or any equipment will not touch ballast line without specific permission from Railroad Representative and Contractor Protective Services personnel. At the beginning of each project that involves the Contractor working within 25' of the centerline of any track, orange construction fencing must be established. Orange construction fencing shall be established in accordance with the minimum temporary horizontal clearances contained in Section 5.A.2 and shall be maintained for the duration of construction.

I. No equipment or load movement is permitted within 25' or above a standing train or Railroad equipment without specific authorization of the Contractor Protective Services personnel.

J. All operating equipment within 25' of track must halt operations when a train is passing. All other operating equipment may be halted by the Contractor Protective Services personnel if said personnel views the operation to be dangerous to the passing train.

K. All equipment, loads and cables are prohibited from touching rails.

L. While clearing and grubbing, no vegetation will be removed from Railroad embankment with heavy equipment without specific permission from the Railroad Engineer, Railroad Representative and Contractor Protective Services personnel.

M. No equipment or materials will be parked or stored on Railroad's property unless specific authorization is granted from the Railroad Engineer.

N. All unattended equipment that is left parked on Railroad property shall be effectively immobilized so that it cannot be moved by unauthorized persons.

O. All cranes and boom equipment will be turned away from track after each workday or whenever unattended by an operator.

P. Prior to performing any crane operations, the Contractor shall establish a single point of contact for the Contractor Protective Services personnel to remain in communication with at all times. Contractor Protective Services personnel must also be in direct contact with the individual(s) directing the crane operation(s).

15. INSURANCE:

A. In addition to any other forms of insurance or bonds required under the terms of the contract and specifications, the Prime Contractor will be required to carry insurance of the following kinds and amounts:

1. A Commercial General Liability ("CGL") policy containing products and completed operations, bodily injury, property damage, and contractual liability coverage, with a combined single limit of not less than $5,000,000 for each occurrence with a general aggregate limit of not less than $5,000,000. Any portion of this requirement may be satisfied by a combination of General Liability and/or Excess/Umbrella Liability Coverage. The CGL policy shall provide additional insured coverage equivalent to at least as broad as ISO CG 20 10 11/85.

2. Automobile Liability Insurance with a current ISO occurrence form policy (or equivalent) and apply on an "any auto" (Symbol 1) basis, including coverage for all vehicles used in connection with the Work or Services on the leased property, providing annual limits of at least $1,000,000 per occurrence for bodily injury and property damage combined including uninsured and underinsured motorist coverage, medical payment protection, and loading and unloading. This policy shall be endorsed to include Transportation Pollution Liability Broadened Coverage ISO CA 99 48 03 06 or MCS-90 if vehicles are subject to Federal jurisdiction. If this coverage is on a claims-made form, the Retro Active Date must be prior to the date of this Agreement and the policy endorsement must be maintained for not less than seven (7) years.

3. Workers' Compensation Insurance to meet fully the requirement of any compensation act, plan, or legislative enactment applicable in connection with the death, disability or injury of Licensee's officers, agents, servants, or employees arising directly or indirectly out of the performance of the work.

4. Employers' Liability Insurance with limits of not less than $1,000,000 each accident, $1,000,000 policy limit for disease, and $1,000,000 each employee for disease.

5. All insurance required in Section 15.A (excluding any Workers' Compensation policy) shall name Norfolk Southern Railway and its parent, subsidiary, and affiliated companies as additional insureds with an appropriate endorsement to each policy.

6. All policies secured by Contractor, whether primary, excess, umbrella or otherwise, and providing coverage to the Railroad as an additional insured (i) are intended to take priority in responding and to pay before any insurance policies Railroad may have secured for itself must respond or pay and (ii) may not seek contribution from any policies the Railroad may have secured for itself.

7. No cross-liability exclusions are permitted that would apply to the additional insureds, and there may not be any restrictions in any policy that limits coverage for a claim brought by an additional insured against a named insured.

8. To the fullest extent permitted by law, all insurance furnished by Contractor in compliance with Section 15.A shall include a waiver of subrogation in favor of Railroad with an appropriate endorsement to each policy.

9. All policies required in Section 15.A shall not be subject to cancellation, termination, modification, changed, or non-renewed except upon thirty (30) days' prior written notice to the additional insureds.

10. The insurance coverages maintained by Contractor shall not limit any indemnity obligations or other liabilities. The insurance available to Railroad and its parent, subsidiary and affiliated companies as additional insureds shall not be limited by these requirements should Licensee maintain higher coverage limits.

11. Any deductibles or retentions in excess of $50,000 maintained on any insurance required in 15.A shall be disclosed and approved by Railroad with a request made for approval to NSRISK3@nscorp.com.

12. Anyone subcontractor providing work on this project must extend CG 20 38 (or broader coverage) additional Insured endorsement to provide coverage for up stream parties.

13. Contractor shall require all subcontractors who are not covered by the insurance carried by Contractor to obtain commercially reasonable insurance coverage, but not less than the requirements of 15.A.

B. In addition to the insurances required in Section 15.A, the Contractor shall also procure on behalf of the Railroad for the entirety of the project:

1. Railroad Protective Liability (RPL) Insurance having a combined single limit of not less than $5,000,000 each occurrence and $10,000,000 in the aggregate applying separately to each annual period. Said policy shall provide coverage for all loss, damage or expense arising from bodily injury and property damage liability, and physical damage to property attributed to acts or omissions at the job site.

   The standards for the Railroad Protective Liability Insurance are as follows:

   a. The insurer must be rated A- or better by A.M. Best Company, Inc.

   b. The policy must be written using one of the following combinations of Insurance Services Office ("ISO") RPL Insurance Form Numbers:
      (1) CG 00 35 01 96 and CG 28 31 10 93; or
      (2) CG 00 35 07 98 and CG 28 31 07 98; or
      (3) CG 00 35 10 01; or
      (4) CG 00 35 12 04; or
      (5) CG 00 35 12 07; or
      (6) CG 00 35 04 13.

   c. The named insured shall read:

      Norfolk Southern Corporation and its subsidiaries and affiliates
      650 West Peachtree Street NW – Box 46
      Atlanta, GA 30308
      Attn: Risk Manager

      (NOTE: Railroad does not share coverage on RPL with any other entity on this policy)

   d. The description of operations must appear on the Declarations, must match the project description in this agreement, and must include the appropriate Sponsor project and contract identification numbers.

   e. The job location must appear on the Declarations and must include the city, state, and appropriate highway name/number. **NOTE: Do not include any references to milepost, valuation station, or mile marker on the insurance policy.**

   f. The name and address of the prime Contractor must appear on the Declarations.

g. The name and address of the Sponsor must be identified on the Declarations as the "Involved Governmental Authority or Other Contracting Party."

h. Endorsements/forms that are **required** are:

(1) Physical Damage to Property Amendment
(2) Terrorism Risk Insurance Act (TRIA) coverage must be included

i. Other endorsements/forms that will be accepted are:
(1) Broad Form Nuclear Exclusion – Form IL 00 21
(2) 30-day Advance Notice of Non-renewal or cancellation
(3) Required State Cancellation Endorsement
(4) Quick Reference or Index Form CL/IL 240

j. Endorsements/forms that are NOT acceptable are:
(1) Any Pollution Exclusion Endorsement except CG 28 31
(2) Any Punitive or Exemplary Damages Exclusion
(3) Known injury or Damage Exclusion form CG 00 59
(4) Any Common Policy Conditions form
(5) An Endorsement that limits or excludes Professional Liability coverage
(6) A Non-Cumulation of Liability or Pyramiding of Limits Endorsement
(7) An Endorsement that excludes TRIA coverage
(8) A Sole Agent Endorsement
(9) Any type of deductible endorsement or amendment
(10) Any other endorsement/form not specifically authorized in item no. 2.h above.

SPONSOR:

RAILROAD:
Risk Management
Norfolk Southern Corporation and its subsidiaries
650 West Peachtree Street NW – Box 46
Atlanta, GA 30308
NSRISK3@NSCORP.COM

C. All insurance required under Section 15.A and 15.B shall be underwritten by insurers and be of such form and content, as may be acceptable to the Railroad. Prior to entry on Railroad right-of-way, the original electronic RPL Insurance Policy shall be submitted by the Prime Contractor to the Railroad at NSRISK3@NSCORP.COM for review and approval. In addition, certificates of insurance evidencing the Prime Contractor's insurance compliant with the requirements in 15.A shall be issued to the Railroad at NSRISK3@NSCORP.COM at the same time the RPL Policy is submitted.

D. The insurance required herein shall in no way serve to limit the liability of Sponsor or its Contractors under the terms of this agreement.

E. Insurance Submission Procedures

1. The Railroad will only accept initial insurance submissions via email to NSRISK3@NSCORP.COM. The Railroad will NOT accept initial insurance submissions via hard copies that would be sent either US Mail or Overnight carrier or faxes as only electronic versions only are to be submitted to Railroad. **Please provide point of contact information with the submission including a phone number and email address.**

   For email insurance submissions, the subject line should follow the format provided unless otherwise directed by the Railroad Engineer:

   Insurance Submittal: City, State – NS File Number – NS Milepost – Project Name – Sponsor Project #

2. Railroad requires the following two (2) forms of insurance in the initial electronic insurance submission to NSRISK3@NSCORP.COM to be submitted under a cover letter providing details of the project and containing the contact information:

   a. The full original or certified true electronic countersigned copy of the RPL Insurance Policy in its entirely inclusive of all declarations, schedule of forms and endorsements along with the policy forms and endorsements as required in Section 15.B.

   b. A certificate of insurance from the Contractor evidencing the Contractor's insurance in Section 15.A (i.e. the Contractor's commercial general, automobile, and workers' compensation liability insurance, etc.). The certificate must show Norfolk Southern Railroad and its subsidiaries and affiliated companies as an additional insured on the General Liability and Auto policies. The certificate should also indicate that the Workers' Compensation policy waives subrogation against Norfolk Southern Corporation and its subsidiaries. See Appendix J for a Sample Certificate of Insurance.

16. FAILURE TO COMPLY:

A. In the event the Contractor violates or fails to comply with any of the requirements of these Special Provisions:

   1. The Railroad Engineer may require that the Contractor vacate Railroad property.

   2. The Sponsor's Engineer may withhold all monies due the Contractor on monthly statements.

B. Any such orders shall remain in effect until the Contractor has remedied the situation to the satisfaction of the Railroad Engineer and the Sponsor's Engineer.

17. PAYMENT FOR COST OF COMPLIANCE:

A. No separate payment will be made for any extra cost incurred on account of compliance with these Special Provisions. All such costs shall be included in prices bid for other items of the work as specified in the payment items.

Norfolk Southern Railway Company

18. PROJECT INFORMATION

A. Date: _____
B. NS File No.: _____
C. NS Milepost: _____
D. Sponsor's Project No. _____

In addition to the requirements of Section 8 "Contractor Protective Services" of the Norfolk Southern – Special Provision for Protection of Railway Interests dated November 4th, 2022. Below is a list of NS approved third-party Contractor Protective Service providers as of May 6, 2024.

- **RailPros (Irving, TX)**

  Note: This contact info is only for Public Improvement Projects with a governing Contractor Right of Entry. Those projects running through the NS/Railpros Portal @https://ns.railprospermitting.com must submit a Protective Services Request through the Portal which will trigger initial coordination with RailPros.

  Field Support Team
  877-315-0513 (option 1)
  NS.Info@railpros.com

  Adam Brown 334-530-2861
  adam.brown@railpros.com

- **North Carolina Railroad Company (Raleigh, NC)**
  General Inquires: tpp@ncrr.com
  John Gass | Senior Safety & Compliance Manager
  JGass@ncrr.com; 864-504-0455
  https://www.ncrr.com/

- **R&R Consulting TEAM (Harrisburg, PA)**
  David N. Craft Co-Owner & President R&R Consulting TEAM, LLC.
  PO Box 4739
  Harrisburg, PA 17111
  717-497-4373 (Cell)
  775-521-2495 (E-Fax)
  dcraft@rrconsultingteam.com
  www.rrconsultingteam.com

Cost for Contractor Protective Services shall be included in the contract unit prices bid for the various items of work involved.

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IMRR - PROTECTION OF RAILROAD INTERESTS

This project requires work to be done on or in the vicinity of railroad property. The insurance coverages set forth in Attachment A shall be required.

All work on or in the vicinity of the railroad(s)' right-of way shall be subject to and governed by the provisions titled "IMRR - PROTECTION OF RAILWAY INTERESTS". In the event of any conflict between these unique provisions and other provisions of this Contract, the unique provisions shall take precedent. The railroad information contained therein pertaining to rate of pay and additional charges applied to payment for persons performing flagging services, number of trains, and speed of trains, was furnished by the Railroad Company(s). This information shall be verified in order to determine costs for the contract.

IMRR - PROTECTION OF RAILWAY INTEREST

1. AUTHORITY OF RAILROAD ENGINEER AND STATE ENGINEER:

   The authorized representative of the Railroad Company, hereinafter referred to as Railroad Engineer, shall have final authority in all matters affecting the safe maintenance of Railroad traffic of this Company including the adequacy of the foundations and structures supporting the Railroad tracks.

   The authorized representative of the State, hereinafter referred to as the Engineer, shall have authority over all other matters as prescribed herein and in the Project Specifications.

2. NOTICE OF STARTING WORK:

   A. The Contractor shall not commence any work on Railroad rights of way until he has complied with the following conditions:

      1. Any entry or construction activities on Railroad right-of-way must be authorized by the Railroad in writing prior to the commencement of work. Written authorization is obtained through a Right of Entry Permit or Contractor Occupancy/Access Agreement. The application is accessible via the following link entitled "Accessing Property" found at the Genesee & Wyoming web site:

         https://www.gwrr.com/real-estate/accessing-property/
         This notice and all other written submissions as required within these provisions, unless otherwise noted, shall be sent to:
         Donna Killingsworth
         13901 Sutton Park Drive South
         Suite 160
         Jacksonville, FL 32224
         Phone: 904-900-6286
         E-mail: donna.killingsworth@gwrr.com

2. Obtain written approval from the Railroad of Railroad Protective Insurance coverage as required by paragraph 13 herein.
3. Furnish a schedule for all work within the Railroad rights-of-way.

B. The Contractor shall obtain from the Railroad the names, addresses, and telephone numbers of the Railroad's representatives who are to be notified as hereinafter required. Where more than one representative is designated, the area of responsibility of each representative shall be specified.

C. Flagging Request Form must be obtained from the Local Railroad Representative, completed and returned to schedule flagging.

3. INTERFERENCE WITH RAILROAD OPERATIONS

The Contractor shall so arrange and conduct his work that there will be no interference with Railroad operations, including train, signal, telephone and telegraphic services, or damage to the property of the Railroad Company or to poles, wires, and other facilities of tenants on the rights-of-way of the Railroad Company. Whenever work is liable to affect the operations or safety of trains the method of doing work shall first be submitted to the Railroad Engineer for approval, but such approval shall not relieve the Contractor from liability. Any work to be performed by the Contractor which requires flagging service or inspection service shall be deferred by the Contractor until the flagging service or inspection service required by the Railroad is available at the job site.

A. Whenever work within Railroad rights-of-way is of such a nature that impediment to Railroad operations such as use of runaround tracks or necessity for reduced speed is unavoidable, the Contractor shall schedule and conduct his operations so that such impediment is reduced to the absolute minimum.

B. Should conditions arise from, or in connection with the work, require that immediate and unusual provisions be made to protect operation and property of the Railroad, the Contractor shall make such provisions. If in the judgment of the Railroad Engineer, or in his absence the Engineer, such provisions are insufficient, either may require or provide such provisions as he deems necessary. In any event, such unusual provisions shall be at the Contractors expense and without cost to the Railroad or Department.

4. TRACK CLEARANCES:

A. The minimum track clearances to be maintained by the Contractor during construction, unless otherwise shown on the Project plans, shall be:
   Vertical: Twenty-two (22'-0") feet from top of highest rail.
   Lateral: Thirteen feet (13'-0") from centerline of nearest tangent track, or fourteen feet (14’0") from centerline of nearest curved track.

However, before undertaking any work within Railroad right of way, or before placing any obstruction over any track, the Contractor shall:

1. Notify the Railroad's representative at least five (5) business days in advance of the work to obtain Flagging Request form and schedule flagging services.

2. Receive assurance from the Railroad's representative that arrangements have been made for flagging service as may be necessary.

3. Receive permission from the Railroad's representative to proceed with the work.

4. Ascertain that the Engineer has received copies of notice to the Railroad and of the Railroad's response thereto.

B. The Contractor shall prepare and submit to the Railroad a drawing indicating actual clearances as constructed.

5. CONSTRUCTION PROCEDURES:

A. General:
Construction work on Railroad property shall be:
1. Subject to the inspection and approval of the Railroad.
2. In accord with the Railroad's written outline of specific conditions.
3. In accord with the Railroad’s general rules, regulations and requirements including those related to safety, fall protection and protective equipment
4. In accord with these Special Provisions and the Illinois Department of Transportation Standard Specifications.

B. Excavation:
The subgrade of an operated track shall be maintained with edge of berm at least 10'0" from centerline of track and not more than 24 inches below top of rail. The Contractor will not be required to make existing section meet this specification if substandard, in which case existing section will be maintained.

C. Excavation for Structures:
The Contractor will be required to take special precaution and care in connection with excavating and shoring pits, and in driving piles or sheeting for footings adjacent to tracks to provide adequate lateral support for the tracks and the loads which they carry, without disturbance of track alignment and surface, and to avoid obstructing track clearances with working equipment, tools or other material. All plans and calculations for shoring shall be prepared and signed by a Registered Professional Engineer. The Registered Professional Engineer will be responsible for the accuracy for all controlling dimensions as well as the selection of soil design values which will accurately reflect the actual field conditions. The procedure for doing such work, including need of and plans for shoring, shall first be approved by the Engineer and the Railroad Engineer,

but such approval shall not relieve the Contractor from liability. The Contractor shall submit to the Railroad, for review and written approval, three (3) sets of detailed drawings and one (1) set of calculations. The drawings and calculations shall be prepared and sealed by a Registered Professional Engineer in the State of Illinois.

D. Protection From Falling Debris:
Whenever any operation may produce falling debris over Railroad property, including tracks and wires, the Contractor shall submit plans to the Railroad Engineer, for review and written approval, detailing the method of protection of the railroad track, wires and property from falling debris. A protective shield shall be erected over the track to catch falling debris and shall not be lower than the allowed temporary clearance. Deck removal shall be by cutting it in sections and lifting out. Large pieces of deck shall not be allowed to fall on the protective shield.

E. Demolition, Erection, Hoisting:
1. Railroad tracks and other railroad property must be protected from damage during the procedure.
2. The Contractor is required to submit a plan showing the location of cranes, horizontally and vertically, operating radii, with delivery or disposal locations shown. The location of all tracks and other railroad facilities as well as all obstructions such as wire lines, poles, adjacent structures, etc. must be shown.
3. Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick. A complete set of crane charts, including crane, counterweight, and boom nomenclature is to be submitted.
4. Plans and computations showing the weight of the pick must be submitted. Calculations shall be made from plans of the existing and/or proposed structure showing complete and sufficient details with supporting data for the demolition or erection of the structure. If plans do not exist, lifting weights must be calculated from field measurements. The field measurements are to be made under supervision of the Registered Professional Engineer submitting the procedure and calculations.
5. A data sheet must be submitted listing the types, size, and arrangements of all rigging and connection equipment.
6. A complete procedure is to be submitted, including the order of lifts, time required for each lift, and any repositioning or re-hitching of the crane or cranes.
7. All erection or demolition plans, procedures, data sheets, etc. submitted must be prepared, signed and sealed by a Registered Professional Engineer.
8. The Railroad's representative must be present at the site during the entire demolition and erection procedure period.
9. All procedures, plans and calculations shall first be approved by the Engineer and the Railroad Engineer, but such approval does not relieve the Contractor from liability.
10. All submittals for Shoring, Demolition of Existing Structures or Erection Procedure are to be prepared, signed and sealed by a Registered Professional Engineer and are to be submitted to:

Heath Mondragon, General Manager
heath.mondragon@gwrr.com
(716) 341-9953

F. Blasting:
1. The Contractor shall obtain advance approval of the Railroad Engineer and the Engineer for use of explosive on or adjacent to Railroad property. If permission for use of explosives is granted, the Contractor will be required to comply with the following:
   (a) Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the Contractor.

   (b) Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.

   (c) No blasting shall be done without the presence of an authorized representative of the Railroad. At least 72 hours advance notice to the person designated in the Railroad's notice of authorization to proceed (see paragraph 2B above) will be required to arrange for the presence of an authorized Railroad representative and such flagging as the Railroad may require.

   (d) Have at the job site adequate equipment, labor and materials and allow sufficient time to clean up debris resulting from the blasting without delay to trains, as well as correcting at his expense any track misalignment or other damage to Railroad property resulting from the blasting as directed by the Railway's authorized representative. If his actions result in delay of trains, the Contractor shall bear the entire cost thereof.
2. The Railroad representative will:
   (a) Determine the approximate location of trains and advise the Contractor the approximate amount of time available for the blasting operation and clean up.
   (b) Have the authority to order discontinuance of blasting if, in his opinion, blasting is too hazardous or is not in accord with these special provisions.

G. Maintenance of Railroad Facilities:
The Contractor shall at all times maintain a system to allow proper drainage through the construction area.
The Contractor shall submit to the Railroad a proposed method of erosion control and must have written approval from the Railroad prior to beginning any excavation or grading on Railroad property or which affects Railroad property.

The Contractor will be required to maintain all ditches and drainage structures free of silt or other obstructions, which may result from his operations; to promptly repair eroded areas within Railroad rights of way and to repair any other damage to the property of the Railroad or its tenants.

All such maintenance and any damage caused by the Contractor's operations to the track or railroad property will require repair immediately upon notification from the Railroad or their designated personnel or Contractor. If the damage affects the track, track structure, railroad facilities, or train operations as determined by the Railroad, the repairs will be performed by the Railroad at the Contractor's expense including all associated costs of delays of the Railroad.

H. Storage of Materials and Equipment:
Materials and equipment shall not be stored where they will interfere with Railroad operations, nor on the rights of way of the Railroad company without first having obtained permission from the Railroad engineer, and such permission will be with the understanding that the Railroad Company will not be liable for damage to such material and equipment from any cause and that the Railroad Engineer may move or require the Contractor to move, at the Contractor's expense, such material and equipment.

All grading or construction machinery that is left parked near the track unattended by a watchman shall be effectively immobilized so that it cannot be moved by unauthorized persons. The Contractor shall protect, defend, indemnify and save Railroad, and any associated, controlled or affiliated corporation, harmless from and against all loss, costs, expenses, claim or liability for loss of or damage to property or the loss of life or personal injury, arising out of or incident to the Contractor's failure to immobilize grading or construction machinery.

I. Cleanup:
Upon completion of the work, the Contractor shall remove from within the limits of the Railroad rights of way, all machinery, equipment, surplus materials, falsework, rubbish or temporary buildings of the Contractor, and leave said rights of way in a neat condition satisfactory to the Chief Engineer of the Railroad or his authorized representative.

6. FLAGGING SERVICES:

A. When Required:
Under the terms of the agreement between the Department and the Railroad, the Railroad has sole authority to determine the need for flagging required to protect its operations. In general, the requirements of such services will be whenever the Contractor's men or equipment are, or are likely to be, working on the Railroad's right-of-way, or across, over, adjacent to, or under a track, or when such work has disturbed or is likely to disturb a railroad structure or the railroad roadbed or surface and alignment of any track to such extent that the movement of trains must be controlled by flagging.

B. Scheduling and Notification:
A minimum of five (5) business days before commencement of work is necessary to schedule a flagman. The Contractor must also contact the Railroad contact identified below well in advance of ordering a flagger for the first time to provide information to the Railroad for billing purposes. Flaggers will not be dispatched until initiation and

approval of a billing account. Reimbursement is required for a full 8-hour day for any flagman furnished. In the event that a flagman is required for more than an 8-hour day, reimbursement will be at one hundred dollars per each additional hour. Actual costs for travel, meals, lodging and transportation will be billed at actual costs. Flagging requests should be arranged through:

Heath Mondragon, General Manager
heath.mondragon@gwrr.com
(716) 341-9953

C. Payment:
The Department will reimburse the Railroad Company directly for all cost of flagging which is required on account of construction of the project, within Railroad Company's right-of-way, which is shown in the project plans, or which is covered by an approved plan revision, supplemental agreement or change order. Any flagging cost deemed to be caused by acts of omission, carelessness, or negligence or unnecessary delays by the Contractor will also be borne by the Department but will be deducted from progress or final payment made to the Contractor.

However, this deduction will be made only after written notification has been given the Contractor by the highway engineer that these flagging costs have been determined to be the Contractor's responsibility. The Contractor will be required to reimburse the Railroad Company for any flagging required on account of work for the benefit of the Contractor, (See Paragraph 7). This includes the flagging required solely for protection of a temporary crossing constructed for the benefit of the Contractor. The Contractor shall be responsible for determining the costs for flagging protection.

D. Verification:
The Railroad flagman assigned to the project will be responsible for notifying the Project Engineer upon arrival at the job site on the first day (or as soon thereafter as possible) that flagging services begin, and on the last day that he performs such services for each separate period that services are provided. The Project Engineer will document such notification in the project records. When requested, the Project Engineer will also sign the flagman's diary or report of flagging form showing daily time spent and activity at the project site.

7. HAUL ACROSS RAILROAD

A. Where plans show or imply that materials of any nature must be hauled across a Railroad, unless the plans clearly show that the Department has included arrangements for such haul in its agreement with the Railroad, the Contractor will be required to make all necessary arrangements with the Railroad regarding means of transporting such materials across the Railroad. The Contractor will be required to make all costs incidental to such crossings whether services are performed by his own forces or by Railroad personnel.

B. No crossing may be established for use of the Contractor for transporting materials or equipment across the tracks of the Railroad Company until a private crossing agreement, for the Contractors installation, maintenance, necessary watching and flagging thereof and removal, has been executed between the Contractor and the Railroad.

8. WORK FOR THE BENEFIT OF THE CONTRACTOR:

A. All temporary or permanent changes in wire lines or other facilities which are considered necessary to the project are shown on the plans; included in the force account agreement between the State and the Railroad or will be covered by appropriate revisions to same which will initiated and approved by the State and/or the Railroad.

B. Should the Contractor desire any changes in addition to the above, then he shall make separate arrangements with the Railroad for same to be accomplished at the Contractor's expense.

9. COOPERATION AND DELAYS:

A. It shall be the Contractor's responsibility to arrange a schedule with the Railroad for accomplishing stage construction involving work by the Railroad or tenants of the Railroad. In arranging his schedule he shall ascertain, from the Railroad, the lead time required for assembling crews and materials and shall make due allowance therefore.

B. No charge or claims of the Contractor against either the Department or the Railroad Company will be allowed for hindrance or delay on account of railway traffic; any work done by the Railway Company or other delay incident to or necessary for safe maintenance of railway traffic or for any delays due to compliance with these special provisions.

10. TRAINMAN'S WALKWAYS:

Along the outer side of each exterior track of multiple operated track, and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains, extending to a line not less than 10' from centerline of track, shall be maintained. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during work hours while Railroad's protective service is provided shall be removed before the close of each work day. If there is any excavation near the walkway, a handrail, with 10'-0" minimum clearance from centerline of track, shall be placed.

11. GUIDELINES FOR PERSONNEL ON RAILROAD RIGHT-OF-WAY:

A. All persons shall wear hard hats. Appropriate eye and hearing protection must be used. Working in shorts is prohibited. Shirts must cover shoulders, back and abdomen. Working in tennis or jogging shoes, sandals, boots with high heels, cowboy and other slip-on type boots is prohibited. Hard-sole, lace-up footwear, zippered boots or boots cinched up with straps which fit snugly about the ankle are adequate. Safety boots are strongly recommended.

B. No one is allowed within 25’ of the centerline of track without specific authorization from the flagman.

C. All persons working near track while train is passing are to lookout for dragging bands, chains and protruding or shifted cargo.

D. No one is allowed to cross tracks without specific authorization from the flagman.

E. All welders and cutting torches working within 25’ of track must stop when train is passing.

F. No steel tape or chain will be allowed to cross or touch rails without permission.

12. GUIDELINES FOR EQUIPMENT ON RAILROAD RIGHT-OF-WAY:

A. No crane or boom equipment will be allowed to set up to work or park within boom distance plus 15’ of center line of track without specific permission from railroad official and flagman.

B. No crane or boom equipment will be allowed to foul track or lift a load over the track without flag protection and track time.

C. All employees will stay with their machines when crane or boom equipment is pointed toward track.

D. All cranes and boom equipment under load will stop work while train is passing (including pile driving).

F. Swinging loads must be secured to prevent movement while train is passing.

F. No loads will be suspended above a moving train.

G. No equipment will be allowed within 25’ of centerline of track without specific authorization of the flagman.

H. Trucks, tractors or any equipment will not touch ballast line without specific permission from railroad official and flagman.

I. No equipment or load movement within 25’ or above a standing train or railroad equipment without specific authorization of the flagman.

J. All operating equipment within 25’ of track must halt operations if the flagman views the operation to be dangerous to the passing train.

K. All equipment, loads and cables are prohibited from touching rails.

L. While clearing and grubbing, no vegetation will be removed from railroad embankment with heavy equipment without specific permission from the Railroad Engineer and flagman.

M. No equipment or materials will be parked or stored on Railroad's property unless specific authorization is granted from the Railroad Engineer.

N. All unattended equipment that is left parked on Railroad property shall be effectively immobilized so that it cannot be moved by unauthorized persons.

O. All cranes and boom equipment will be turned away from track after each work day or whenever unattended by an operator.

13. INSURANCE:

A. The Contractor will be required to carry insurance in accordance with 103.04 of the Standard Specifications and the Railroad's requirements. In the event this project is awarded to a "joint venture" all insurance, except workman's compensation, shall be carried in the name of the joint venture.

Evidence of insurance as required above shall be furnished to the address shown. The original policies, or certificates, shall be sent to the railroad for its' review. Copies of the transmittal letter and the policies or certificates shall be forwarded to the Department.

RAILROAD POLICY "A"

Department:	Railroads:
Illinois of Transportation	SEE ATTACHMENT "A"

Trains will be operated at a maximum speed of 25 mph through the improvement. The number of trains through the improvement will be 2 freight and 0 passenger trains daily.

The named insured, description of the work and designation of the job site to be shown on the Policy are as follows:
(a) Named Insured: SEE ATTACHMENT "A"
(b) Description and Designation:
City of Springfield Contract: INSERT PROJECT DESCRIPTION

B. If any part of the work is sublet, similar insurance and evidence thereof in the same amounts as required of the Prime Contractor shall be provided by or in behalf of the

subcontractor to cover his operations. Endorsements to the Prime Contractor's policies specifically naming subcontractors and describing their operations will be acceptable for this purpose.

C. All insurance herein before specified shall be carried until all work required to be performed under the terms of the contract has been satisfactorily completed within the limits of the rights of way of the Railroad as evidenced by the formal acceptance by the Department. Insuring Companies may cancel insurance by permission of the Department and Railroad or on thirty (30) days written notice to the Railroad and copied to the City of Springfield at the same addresses shown in Par. A above.

14. FAILURE TO COMPLY:
In the event the Contractor violates or fails to comply with any of the requirements of these Special Provisions:

A. The Railroad Engineer may require that the Contractor vacate Railroad property.

B. The Engineer may withhold all monies due the Contractor on monthly statements.

Any such orders shall remain in effect until the Contractor has remedied the situation to the satisfaction of the Railroad Engineer and the Engineer.

15. PAYMENT FOR COST OF COMPLIANCE:
No separate payment will be made for any extra cost incurred on account of compliance with these special provisions. All such cost shall be included in prices bid for other items of the work as specified in the payment items.

ATTACHMENT A

INSURANCE REQUIREMENTS

CONTRACTOR shall, at its expense, procure, prior to commencement of the WORK, and shall maintain in full force and effect until the WORK has been completed and accepted, and shall require all subcontractors likewise to procure and maintain, unless they be covered by CONTRACTOR's insurance, the following kinds and minimum amounts:

1 Workmen's Compensation Insurance with minimum limits of not less than $1,000,000 Bodily Injury by Accident, Each Accident; $1,000,000 Bodily Injury by Disease, Policy Limit; $1,000,000 Bodily Injury by Disease, Each Employee, and includes a waiver of subrogation in favor of RAILROAD.

2 CONTRACTOR's Public Liability, Property Damage Liability Insurance including Products & Completed Operations coverage with a minimum single combined limit of not less than $2,000,000 per occurrence and $6,000,000 aggregate. Coverage shall include Railroad Contractual Liability endorsement ISO GL 24 17 or its equivalent, have a cross-liability clause,

name RAILROAD as an additional insured with endorsement ISO GL 20 10, and include a waiver of subrogation in favor of RAILROAD.

3 The CONTRACTOR shall maintain Commercial Automobile Insurance for all owned, non-owned and hired vehicles with a combined single limit of not less than $1,000,000 for Bodily Injury and Property Damage Liability. Such policy shall be endorsed to provide Waiver of Subrogation in favor of RAILROAD and name RAILROAD as Additional Insured. If hauling hazardous materials, policy is to be endorsed with the MCS-90 endorsement.

4 Insurance (except RRPL insurance in Section 6) shall be primary and without right of contribution from other insurance that may be in effect and without subordination. The insurance policies must be underwritten by a company licensed in the state where work is to be performed and carry a minimum Best's rating of "A- VI" or better. Insurance shall not be materially modifiable or cancelable without thirty, (30) days prior written notice to RAILROAD. CONTRACTOR shall furnish RAILROAD with certificates of insurance showing compliance with these insurance provisions ten (10) days prior to the commencement of the WORK which must be signed by an authorized member of the insurance firm and which must show the name of the agreement to which the certificate is applicable

5 If any policies providing the required coverage’s are written on a claims-made basis, the following is applicable:

- The retroactive date shall be prior to the commencement of the work
- CONTRACTOR shall maintain such policies on a continuous basis
- If there is a change in insurance companies or policies are canceled or not renewed, CONTRACTOR shall purchase an extended reporting period of not less than three (3) years after the contract completion date.

CONTRACTOR shall acquire Railroad Protective Public Liability and Property Damage Liability Insurance with limits of $2,000,000 per occurrence, $6,000,000 annual aggregate, with Official name of the subsidiary railroad and Genesee & Wyoming, Inc. as the named insured.

6 Such additional or different insurance as Railroad may require.

Contractor must submit the original Railroad Protective Liability policy, Certificates of Insurance and all notices and correspondence regarding the insurance policies to:

Kristine Storm
VP – Purchasing
13901 Sutton Park Drive South
Suite 270
Jacksonville, FL 32224
Telephone: Office: 904-900-6250
E-mail:Kristine.storm@gwrr.com

LEFT BLANK INTENTIONALLY

INSURANCE APPROVAL REQUEST - To be sent with required evidence of insurance.

TO: Genesee & Wyoming, Inc. Date: _____
13901 Sutton Park Drive South, Suite 270
Jacksonville, FL. 32224
Attn: Kristine Storm
VP – Purchasing

Railroad Agreement With:_____
(State of Illinois or Name of Local Public Agency) (Date)_____

Name of Contractor _____

Project Description:_____

(Provide both Railroad and Contract Project Description using Railroad File and Contract Nos. when available)

Anticipated Starting Date:_____ _____ Completion Date: _____

City:_____ County:_____ State: _____

Division:_____Sub-Division:_____ M.P.:_____

Attached are Original Railroad Protective Insurance Policy, in duplicate, required to be furnished to Railroad. Please advise if the attached evidence of insurance is satisfactory and complies with the insurance requirements of the agreement.

_____
Contractor

Contractor must show address below and attach self-addressed, stamped envelope)

TO:_____ Date:_____
File:_____

☐ Approved - this is not authority to proceed with work.
Please Contact _____ at_____ to arrange clearance to enter Railroad property

☐ Not Approved. Reason:
- ☐ General Liability limits inadequate ($ _____ required).
- ☐ No evidence of Contractual Liability Insurance.
- ☐ No unconditional 30-day notice of cancellation.
- ☐ Other:

☐ Returned for your further handling.

☐ Insufficient information provided Returned without approval.

Genesee & Wyoming Railroad Services, Inc.

_____
Risk Manager

UPRR SPECIFICATIONS

Union Pacific Railroad General Conditions and Specifications shall be followed for track work unless project specifications exceed and deviations are approved by UPRR Engineer. This document is located online at the following link: https://www.up.com/emp/engineering/mapcontent/standards/track standard drawings/UP_GENERAL_SPECIFICATIONS.pdf.

UPRR SPECIAL CONDITIONS

The referenced project is being constructed by a Public Agency, as such, the following clarifications are provided:

1. Where the Union Pacific General Specifications require the Contractor to notify the Union Pacific Railroad, the Contractor shall also notify the Public Agency.
2. Where the Union Pacific General Specifications require the Contractor to notify the Engineer, the Contractor shall also notify the Public Agency's Engineer as required by the Public Agency's Bid Documents.
3. Where the requirements of the Public Agency Bid Documents differ from the UPRR Bid Documents and General Specifications, the stricter requirement shall apply.
4. Refer to the Public Agency's Bid Documents for Procurement and Contracting Requirements
5. Refer to the Public Agency's Bid Documents Document for General Requirements for administration of the Contract.
6. Measurement and Payment sections in the Union Pacific General Specifications will not apply. Refer to the Public Agency's Bid Documents for Measurement and Payment requirements.
7. For disputes in the work, disputed interpretation of the plans and specifications, or other disputes that may occur, refer to the Public Agency's dispute resolution procedures. The Public Agency shall coordinate it's response with the Union Pacific Railroad if the dispute is related to current or future Union Pacific Railroad property or infrastructure.
8. Time of Completion will be in accordance with the Public Agencies Bid Documents.

00 00 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

00 07 00 General Conditions

1. Train movements may occur at any time of the day and will not be limited by an amount.
2. All material requirements and methods of construction for all track construction and all related ancillary items required for the successful completion of this project shall adhere to most current version of the UPRR General Conditions and Specifications and these Special Provisions, which shall serve as a supplement thereto.
3. The Contractor shall not take advantage of any apparent error, omission, or discrepancy in the Contract Documents. Upon discovery of such an error, omission, or discrepancy, the Contractor shall immediacy notify the UPRR Engineer. The UPRR Engineer will then make such corrections or interpretations as necessary to fulfill the intent of the Plans and/or specifications. Should discrepancies be encountered among various references, the most stringent standard shall apply.

4. UPRR General Conditions and Specifications will be followed unless project specifications exceed and deviations are approved by UPRR Engineer.
5. The Contractor, at its cost and expense, shall be responsible for testing, storage, handling, hauling, remediation, removal and disposal of, as applicable, any materials and other conditions (including without limitation, hazardous and nonhazardous wastes or materials that are encountered throughout the course of the Contractor's work, all in accordance with UPRR's General Conditions and Specifications and applicable law, and subject to UPRR review and approval. UPRR shall not be responsible for any such obligations.
6. Contractor to provide 20cy roll up dumpster to be serviced 2 times per month.
7. Contractor to provide any needed survey for UPRR work force using a rail construction experienced and qualified surveyor.

Section 01 31 10 Project Coordination

1. The Contractor shall proceed with construction phasing and sequencing as outlined in the drawings. For alternative construction phasing, the Contractor shall provide corresponding schedules and plans for UPRR review and approval. The Contractor must coordinate directly with UPRR track and signal construction groups to ensure all work is completed within allocated work windows.

01 33 00 Submittal Procedures

01 33 23 Shop Drawings

1. Contractor to follow the process outlined in the "Shop Drawing/ Material Verification Instructions" located on the UPRR website: https://www.up.com/customers/ind-dev/operations/specs/public_projects/index.htm
2. Materials purchased by contractor must be from UPRR approved vendors as outlined in "UPRR DWG 6003" (Approved Trackwork Suppliers)
3. A 14 day review timeframe should be expected for shop drawing submittals. If multiple shop drawings are submitted within a short timeframe a longer review timeframe may be required.

01 52 00 Construction Facilities

01 52 13 Office Space and Phone for Contractor and Engineer

1. Contractor shall provide a minimum of 2 portable restrooms at the job briefing location and one portable restroom with a washing station for the duration of UPRR's work. Restrooms shall be cleaned and serviced weekly.
2. In accordance with Section 01 52 13 of the UPRR General Conditions, the Contractor shall provide and maintain an office trailer on-site for UPRR personnel. Additionally, the office shall, at a minimum, be a 12'x60' trailer and include the following: three desks and chairs, drafting table and chair, plan hanger, heating/AC, refrigerator (min. 17 cubic feet), drinking water, ice supply for work crews, electricity, internet/communications, color printer and printing supplies that are capable of printing the railroad operational paperwork including, but not limited to, "Dispatcher Bulletins" and other safety documentation, and large conference table with 20 chairs. The trailer shall be configured with an office on each end and an open area in the middle. The trailer shall include a restroom with running water hooked to a potable water supply and sewer. The trailer will be located on-site as reasonably determined by the

UPRR Engineer. Contractor shall arrange for the office to be cleaned and stocked with supplies on a weekly basis.

01 55 00 Vehicular Access and Parking

01 55 13 Access Roads and Crossings

1. Temporary crossing for access during construction, if required, shall be approved by UPRR in advance of installation per section 4.3.4 of the Union Pacific Public Projects Manual. If necessary and as approved by UPRR, temporary crossing construction shall be constructed as approved in the temporary haul road crossing agreement, once executed. Construction activities may include clearing and grubbing, placement of suitable fill material, placement of pavement and filter fabric, and installation of any drainage structures required to ensure positive drainage. When the temporary crossing is no longer required, the Contractor shall remove all related materials and perform grading as necessary to maintain positive drainage. The Contractor shall also seed and restore the area to a state equal to or better than previous conditions to the satisfaction of the UPRR Engineer.

01 56 00 Temporary Barriers and Enclosures

01 56 24 Fencing and Barricades

1. Contractor shall provide a secured, fenced area for UPRR material and track construction equipment storage. The storage area shall be fenced with 8-foot high chain link fence with 3-strand barbed wire on top and have a gate at each end of sufficient size to accommodate the movement of large trucks and work equipment. The storage area shall have minimum dimensions of approximately 140 feet by 400 feet and be surfaced with a wearing coarse of subballast or other similar material and shall be graded to promote positive drainage. The storage area will be located on site as reasonably determined by the Engineer. The Contractor shall leave the fenced storage area in place for use by UPRR Track Construction forces after Contractor is substantially completed with their work. At completion of track construction activities the Contractor shall return to remove the material storage area fencing and restore the area to the previous condition or better.

31 00 00 Earthwork

31 24 13 Excavation, Embankments and Other Fills

1. The Contractor shall place subballast on the construction pads as soon as practical to provide flexibility for turnout construction.
2. The location of signal mounds and wayside detectors inside the project limits will be directed by the Engineer. Contractor shall coordinate with the Engineer to determine final locations prior to construction of mounds.
3. UPRR oversight of grading and subgrade preparation will be required at all times. Contractor to provide a schedule of this work to the UPRR Construction manager at the pre-construction meeting.

34 11 00 Rail Tracks

34 11 10 Railroad Track Construction

1. Project track material, to be installed by Contractor and UP forces, shall be delivered to a location as directed by the UPRR Engineer.
2. Tie spacings shall be installed per UPRR Field Maintenance Handbook Section 3.1.2.
3. Contractor supplied ties to be pre-plated (with tie-plates). Ties need to be robotically pre-plated per UPRR Union requirements.
4. UP shall have the right, but not the obligation, to salvage all or any portion of the tracks or other facilities owned by UP. Contractor will be responsible for the removal and disposal of any materials other than those salvaged by UPRR. Prior to the removal of any materials, contractor to verify UPRR's desire to salvage materials. If UPRR chooses to salvage materials the contractor shall remove stockpile materials for UPRR.
5. The Contractor shall be responsible for assembly and construction of all turnouts, including those to be installed by UPRR. Handling and assembly of turnouts shall be in accordance with Section WPD 5.01 of UPRR's Engineering Track Maintenance Field Handbook.
6. The contractor shall utilize Flash Butt Welds for all track/ turnout field welds.
7. Contractor to supply all track materials for use by both UPRR and the contractor with the exception of:
    a. Field weld kits that will be installed by UPRR
    b. All Insulated Joints to be used on the project.

UPRR Bid Document Index

The contractor shall solely reference the documents below when performing work for UPRR Infrastructure and all work on UPRR property. It should be noted that all documents are regularly updated and that it is the contractor's responsibility to obtain the most current documents. Unless otherwise noted the documents listed below are available online at the following link:
https://www.up.com/emp/engineering/apps/archives/standards/public/index.cfm.
Bold titles represent the section in which the documents are available.

- **BALLAST, ROADBED SECTIONS and GEOMETRY**
    - 0001 - Roadbed Sections for Wood Tie Track Construction
    - 0002 - Roadbed Sections for Concrete Tie Track Construction
    - 0008 – Recommended Ballast Section for Renewed Turnouts and Derails
    - 0010 - Ballast and Subballast Gradation Table
    - 0013 - Grain Size Distribution for Subgrade Soils
    - 0015 - Curve Marking Standard
    - 0025 - Rail Marking for Engines, Cars or Eqpt Clear Of Rd Grade Xings
    - 0026 - Clearance Point Marking

- **CONCRETE, WOOD and STEEL TIES and PANELS**
    - 0201 – Concrete Tie 505S-50 for Safelok III Fasteners
    - 0209 – Concrete Grade Crossing Tie for Safelok III Fasteners
    - 0220 – Steel Duct Transition Tie for Power Switches
    - 0230 – Wood Cross Ties
    - 0231 – Preplating Dimensions for Wood Ties
    - 0232 – Switch Machine Ties Tapered and Dapped

- 0233 – Ties for Power Switch Layouts
- 0254 – 136 Lb. Track Panel with 16” Plates and 8’-6” Long Ties
- 0255 – 136 Lb. Concrete Track Panel
- 0270 – Standard Transition Zones

- **FROGS and FROG COMPONENTS**
  - 3000 – Frog Identification
  - 3005 – Union Pacific Frog Item Number Listing
  - 3010 – Universal Mitered Heel Rails for 136 Lb. Rail Bound Manganese’s
  - 3011 – Tapered Universal Heel Rails for 136/141 Lb. RBM & Spring Frogs
  - 3015 – FGP Gauge Plage
  - 3020 – Nomenclature for Spring Frog Components
  - 3021 – Nomenclature for RBM and SMSG Frog Components
  - 3022 Nomenclature for Moveable Point Frog Components
  - 3305 – No. 11 All Rail Spring Frog, 136/141 Lb.
  - 3320 – No. 20 Solid Spring Frog 136/141 Lb. Rail
  - 3330 – No. 24 Solid Spring Frog 136/141 Lb. Rail
  - 3500 – Part Identification for Crossing Frogs

- **GUARD RAILS**
  - 4003 – Double Inside Guard Rail for Ballast Deck Bridges
  - 4004 – Inner Guard Rail Plates for Concrete Ties
  - 4011 – Specifications for 136 Lb. Adjustable Guard Rails

- **RAIL SECTIONS**
  - 0709 – 136 RE Lb. Rail Section
  - 0721 – Beveling Rail Ends and Deburring Bolt Holes
  - 0722 – Specifications for Rail Sections and Rail Drilling

- **JOINT BARS, TRANSITION RAILS, BOLTS & ACCESSORIES**
  - 0902 – Compromise Joints
  - 0903 – Insulated Joint Plug Rails
  - 0904 – Transition Insulated Joint Plug Rails
  - 0905 – Poly Insulated Joint 141-136-132 RE Rail
  - 0920 – Transition Rail 133 Lb. to 115 Lb. Worn
  - 0922 – Compromise Transition Rail 136 b. to 133 Lb. Worn
  - 0924 – Transition Rail 136 Lb. to 132 Lb. Worn
  - 0927 – Transition Rail 133 Lb. to 133 Lb. Worn
  - 0928 – Transition Rail 115 Lb. to 115 Lb. Worn
  - 0941 – Track Bolt
  - 0942 Heavy Duty Hex Frog and Crossing Diamond Bolt Assemblies

- **MISC. and CROSSING DIAMONDS**
  - 6001 – Passenger Platform Guideline
  - 6003 – Approved Trackwork Suppliers

- 6005 – High Speed Track Transition Zones for Concrete Tie Grade Crossings
- 6007 – Bridge Construction Approach Welds
- 6009 – Track Panel Tie Down
- 6010 – Expansion Joints
- 6060 – Crossing Diamonds Torquing Procedure

- **TURNOUTS and TURNOUT COMPONENTS**
  - 1505 – No. 11 Turnout Plates
  - 1515 – No. 20 Turnout Plates
  - 1520 – No. 24 Turnout Plates
  - 1700 – Specifications for 136/141 Lb. Insulated gauge Plates
  - 1702 – All Turnouts Insulated Gauge Plate GP0/2A for Tie No. 0 – Power
  - 1703 – No. 9, 11, 15, 20 & 24 Insulated Gauge Plate GPM1 for Tie No. 1 – Power
  - 1704 – No. 9, 11, 15, 20 & 24 Insulated Gauge Plate GPM2 for Tie No. 2 – Power
  - 1705 – All Turnouts Insulated Gauge Plate GP for Ties No. 6A & 10A
  - 1715 – No. 11 Insulated Gauge Plates
  - 1725 – No. 20 Insulated Gauge Plates
  - 1730 – No. 20/24 Insulated Gauge Plates
  - 1740 – No. 24 Insulated Gauge Plates
  - 1799 – "T" Insulator and Lifting Hook Details
  - 2000 – Permanent Derail Installation Instructions
  - 2020 – 16'-6" Double Switch Point Derail
  - 2022 – Concrete Tie Double Switch Point Derail
  - 5001 – Nomenclature for Most Turnouts
  - 5002 – Specifications for 136 Lb. Turnout Panels
  - 5003 – Switch Machine Configuration for Power Operated Switches
  - 5004 – Turnback Curve Layout
  - 5005 – Wire Bonding Layout for All Turnouts
  - 5011 – No. 11 Turnout 136/141 Lb.
  - 5020 – No. 20 Turnout 136/141 Lb.
  - 5024 – No. 24 Turnout 136/141 Lb.
  - 5035 – No. 24 Crossover
  - 5052 – No. 20 Turnout SP Design
  - 5090 – Turnback Curve Layout

- **Other**
  - UPRR Engineering Track Maintenance Field Handbook (Link at the bottom of the web page)

- **External Design Documents (For Third Party Work)**
  - 680000 - General Notes and Details for Round Steel Pipe Culverts
  - 680010 - Construction Notes and Table for Smooth Steel Pipe Culverts
  - 680021 - Construction Notes for Corrugated Metal Pipe Culverts
  - 680030 - Construction Notes and Table for Structural Plate Pipe Culverts

- 680100 - End Treatments for Steel Pipe Culverts – General
- 680120 - End Treatments for Steel Pipe Culverts - Type A
- 680130 - End Treatments for Steel Pipe Culverts - Type B
- 680140 - End Treatments for Steel Pipe Culverts - Type C
- 680150 - End Treatments for Steel Pipe Culverts - Type D
- 680160 - End Treatments for Steel Pipe Culverts – Handrails
- Contractor in Charge
- Fire Prevention Plan
- Fire Risk Assessment
- Guidelines for Contractors on UPRR Property
- Guidelines for Temporary Shoring
- Typical Intermediate Mounds
- Typical Mound for 6x6 House
- UPRR Back-Up Policy
- UPRR Electronic Devices Policy
- UPRR Smoking Policy
- UP General Specifications
- UP General Specifications Addendum

The documents below are not available online and therefore will be provided with the project's bid documents. Contact the project UPRR representative or obtain updated copies.

- Culvert Pipe Suppliers
- 0000 – Storm Water Pollution Plan Details
- Track Welding Rules and Procedures
- UPRR Engineering Track Maintenance Work Procedure Docs
- Rail Train Instructions
- Ballast Specification

UG TELECOM FIBER SPECIFICATIONS

2021 UG & AERIAL FIBER SPECIFICATIONS

UG TELECOM FIBER SPECIFICATION

Specifications:

(a) Contractor is responsible for supplying all materials for installation including fiber, splice enclosures, vaults, handholes, HDPE, conduit, drill stem, bridge attachments, all materials and permits (local and governmental) necessary to install fiber and power safely and professionally to Union Pacific Railroads standards and parts specifications.
(b) All fiber will be installed to a min depth of 42 inches below normal grade in normal soil conditions.
(c) All fiber will be incased in HDPE Duct SDR 9 rocky soil or SDR 11 normal soil unless otherwise specified.
(d) When boring under tracks using HDPE minimum depth must be 12' below normal grade.
(e) When boring under tracks using steel, depth must be 5 ft/60'' below normal grade.
(f) All bores under tracks shall be at a 90 degree angle unless otherwise specified by UPRR personnel due to obstructions ie. rock, bridges, building or permanent stationary equipment. (MUST BE APPROVED) Maximum bore degrees when encountering these obstacles will be no more that 60 degrees.
(With UPRR project manager written approval, when boring in solid rock under rail, a single bore may be utilized to cross both power and fiber ducts.) On minimum depth (60") below grade bores less than 12' deep, if rock does not extend 10 feet past ballast on each side, drill stem must still be used for duct protection.
(g) When encountering ditches, streambeds, minimum depth will be 5 feet (60 inches) below normal cleaned ditch or streambed grade in rigid galvanized steel conduit and covered with concrete.
(h) All bore pits will be located at a minimum distance of 30 feet from rail road track center and 3 feet from a ditch.
(i) Bore pit from a signal switch shall be a minimum of 150 feet from the switch.
(j) In the case of crossing a public streets, refer to (d) and (e) above. Also refer to Union Pacific Railroad latest revision fiber standard documents (FIBER STANDARDS MANUAL at http://www.up.com/aboutup/community/telecom/index.htm) for more detail.
(k) All bores shall end 30 feet from track center.
(l) Short bores not under rail; it is acceptable to run power and fiber cables in the same bore, **as long as the fiber-cable is encased in drill stem, power in CIC. (Exceptions must be approved by UPRR Project Manager)**
(m) Under track bores < 12' deep: a single larger bore may be utilized using 8'' - 10'' HTPE to minimize settling. Once the HTPE is in place the cables shall then be pulled into the single 8'' - 10'' HTPE, fiber duct must be in drill stem and extend a minimum of 10 feet past ballast on each side, power cable remains in CIC. Marker posts must be displayed on each end of bore.
Under track bores less than 90 degrees, **(per UP standards all bores crossing under tracks should be 90 degree and no less than 60 degrees, any bore less than 90 degrees must have written approval and be noted in as-built drawings)** require fiber marker posts on each side of tracks, start and end of bore shall have added signage stickers on the marker post noting degree of bore crossing tracks.

(n) Vaults shall be located at the fiber start and end points. In addition, vaults shall be placed every 4000' on the running line. (shorter distance between vaults in some locations may be necessary due to terrain or fiber splicing needs)
(o) Handholes shall be located at every building and case related a Signal Control Point, Intermediate/Hold Signal, HBD, AEI, ATCS, generators, and at each end of all bores and tunnels. (any additional project specific locations to be identified at pre-bid walk by UPRR personnel)
(p) All Vaults installed will have a minimum of 160 feet of slack in each vault. (all slack will be stored in vaults using a figure 8 pattern for storage, slack shall hang on wall racks, keep splice enclosures as high in the vault as possible)
(q) All handholes will have a minimum of 160 foot minimum of slack in the handhole. (all slack will be installed in handholes using a figure 8 pattern for storage and hung on the wall rack. If approved handhole size is not sufficient to hold 160 feet of slack, 60'- 100' of slack is acceptable, the slack footage difference is to be added in the nearest vault.)
(r) All cable pulls shall be pulled utilizing water based cable lubrication the full length of the fiber cable.
(s) Fiber Tracer/Test station marker posts shall be installed at all vaults with splice enclosures. (Maximum of 20,000 feet between test stations)

Fiber Specifications:
(Fiber manufacturer, model, and specifications shall be submitted to UPRR for approval)
(a) Union Pacific will require pricing for installation of 48 fiber count single mode armored shielded cable.
(b) All fiber connections shall be accomplished using up to date and certified core alignment fusion splice equipment. Fusion splicing is the only approved method for mid span installation splicing of UPRR single-mode fiber.
c) All fiber shall be installed as to not exceed bend radius or pull tension of specified fiber.
(d) UPRR expects well below industry maximum (0.5 dB/km),(0.1 dB splice),(0.50 connection) component attenuation.
(e) Contractor will be expected to install, splice fiber, and is required to provide UPRR with the following fiber records.

As Built and Test Documentation:

(a) Final route maps with locations of all Vault, Handhole, Splice, Locator Posts, Bores, include depth ranges/ bore logs, complete fiber route documentation including distance from rail in feet, running line changes shall be provided and marked with lon, lat, coordinates for each RL change.
(b) GPS locate points for all items listed in (a) for complete fiber installation.
(c) Supply Excel spread sheet with data shown in **Fig. 1** (Excel Project Documentation)
(d) List of test equipment used. Manufacturer, Model number and Date of last Factory Calibration
(e) Cable test documentation for all fibers from each end. (Single mode fiber 1310nm and 1550nm) As applicable, when installing jumpers to facilities provide fiber documentation facility to facility. (use RR mnemonic for naming each facility in tests) Clean all fiber ends before each test.
(f) OTDR loss and trace photos for each fiber in cable.
(g) Cable OTDR length report and cable foot sheath counter length report.
(h) OLTS Loss measurement using Power Meter and Source (OTDR loss measurements are not acceptable)

(i) Maximum loss specifications will be provided by UPRR determined when specific fiber type has been determined.
(j) The contractor is responsible for testing and documenting fiber optic cable end to end.

Vault and Handhole Specification:
(Vault and HH manufacturer, prints, specifications shall be submitted to UPRR for approval) **Fig. 8, 9.** Oldcastle precast vaults and handholes are the preferred product. All handholes and vaults must have racks of adequate length and extend to the top of the side walls.

(a) Traffic rated handholes, vaults, and covers are required for all right of way roads, crossings and streets. Non traffic rated are allowed only in areas where vehicle or equipment traffic is not possible. Vault minimum installation clearances will be: 30 feet from the rail and 100 feet from city streets.
(b) Vaults shall be a minimum of 4' X 4' X 4' concrete construction, no bottom, vault shall be set level on min. 3" of rock for drainage and have a steel traffic rated lid clearly marked "FIBER" on lid. **Vault lid casting shall be secured to concrete by bolts or cast in concrete, round vault lid must have factory grove for lid casting to be recessed. All components must be securely attached.**
(c) Hand holes shall be of concrete construction 3' X 3' X 4' minimum to appropriate fiber depth, no bottom, handhole shall be set level on min. 3" of rock for drainage and have a steel lid clearly marked "fiber".
(d) All vaults and handholes will have a telecom locator ball attached to the lid.
(e) All vaults and handholes located in a non paved road or area accessible to traffic of any type must be set a minimum of 12" below grade to accommodate grade equipment or snow removal equipment and be marked with (2) two fiber marker post.
(f) All knockouts locations used for duct entry shall be repaired and sealed with a hydraulic grout concrete repair product.
(g) All cables and wires shall enter or exit the vault or handhole wall through a duct. Cable ducts shall be sealed with an appropriate size duct plug.

Duct specification:
(Duct manufacturer, model, and specifications shall be submitted along with appropriate proposed duct splice sleeves to UPRR for approval)

(a) All fiber duct shall be a minimum of SDR11, 0.173 wall, SDR9 is required in rocky terrain. For single 48 count fiber cable fiber duct shall be 1 1/4" HTPE minimum at a minimum depth of 42" in normal soil clearly marked with fiber warning tape buried a minimum of 6 inches above duct. (Exceptions when boring under washes or culverts per UPRR standards)
(b) All areas where a depth of 42 inches cannot be obtain (ie. rock) the fiber cable must be installed in drill stem for added protection, **these location must be reviewed and approved by UPRR project manager.**
(c) All bridge crossings will use rigid galvanized conduit and conform to attachment methods per UPRR drawings using the correct attachment hardware and methods. Contractor to submit attachment methods and bracket drawings for UPRR bridge dept approval for each bridge.
(d) All duct splicing shall be done using glued sleeved, end fusion or approved barbed coupling. Duct plugs for correct cable size shall be used on all ducts.

(e) All tunnels with fiber passing through will use UPRR specified methods for attachment using rigid galvanized steel conduit.
(f) Fiber duct shall be located a minimum of 12" from power ducts.

Tunnels:
(Tunnel work shall include a safety plan for each specific tunnel, safety requirements provided by UPRR after contractor notifies UPRR of the number of personnel and type of equipment to be utilized in each specific tunnel.)
All bored and passed through tunnels require a handhole on each end. When the running line is routed around or over the tunnel one handhole is required on each end of the tunnel in the running line at the nearest location to the tunnel faces.
In areas where tunnels are narrow and wall attachment is not approved due to clearance, alternative methods should be discussed and approved by UPRR personnel.
(a) Find an approved route staying on RR ROW to avoiding passing through the tunnel, always keeping in mind the object of this project is to provide power and fiber to each Control Point, Signal, and a building at one or both ends of each tunnel.
(b) When attaching to tunnel wall, minimum of 6" inch spacing between power and the fiber.
When wall attachment method is used, attach rigid galvanized 3" conduit to smooth /finished walls at 5' intervals with 18" vertical mounted galvanized unistrut. Rough walls shall have 3 attachment points or 3ft spacing per 10' GSC. Conduit expansion fitting shall be used when tunnel/conduit length and temperature differential dictates. **See Fig. 15 and 16.**

Splice Cases & Fiber Protection:
(Splice case manufacturer and model information shall be submitted to UPRR for approval)

(a) Splice enclosures will be used at all location where fiber is spliced. Backbone/Butt Splices shall only be located in Vaults and will be attached to mounting brackets on the upper portion of the wall. (Specific splice enclosures will be specified by UPRR) Current Splice enclosure – Tyco FOSC450
(b) Locator post/Test station posts shall be located at all vaults containing splice cases. When fiber is installed in parallel with power cable an ACT 442-150-410 pedestal mounted surge arrestor shall be installed. When only UG fiber is installed install ACT 444-150-302 or appropriate ACT protection for the specific fiber installation. ACT protectors shall be installed in vaults at fiber end points and all backbone fiber splice locations. **Fig. 13**

Attachments:
(Contractor shall submit bridge attachment bracket drawings and attachment methods for UPRR Bridge Dept approval.)
Fig. 2, 3, 4, 5
(a) All water crossings, streams, possible water run-off areas or washes shall be bored to a minimum depth of 12 feet. When this is not possible due to rock, large wetland crossings, bridge attachment may be used only under the specific guidance of UPRR personnel using approved materials for attachment.

(b) Contractor shall submit bridge attachment bracket drawings and attachment methods for Bridge Dept approval.
(c) Non metallic flex conduit with appropriate fittings shall be used at each end of bridge to enable bridge maintenance to raise and lower the bridge.

Locator& Marker Post:
All locator and marker post shall have approved UPRR signage
(a) All locator post shall have T- posts or equivalent alternative for stability. All locator wires shall be in duct leaving through the hh wall and into the bottom of the locator post.
(b) Tri-View marker post shall be used and placed (8) per mile = 660' spacing.

Fiber Protection:
Fiber cable shall have ACT surge protectors installed at each backbone/butt splice location, regen locations and end points.
When fiber is installed in parallel with power cable an ACT 442-150-410 pedestal mounted surge arrestor shall be installed. When UG fiber is installed no power in parallel, install ACT 444-150-302 or appropriate ACT protection for the specific fiber installation. ACT protectors shall be installed in vaults at fiber end points and all backbone fiber splice locations. **Fig. 13**

Excel Project Documentation

Fig 1

		Telecom Fiber				Signal Power Services												
MP	Running line	Fiber Hand Hole	Fiber Vault	Fiber Splice	Fiber Locator Post	Electrical XFMR	Electrical Reactor	Electrical Utility Serivce Point	Electrical Primay Switch	Electrical Splice Box	Electrical Grounding Box	Electrical Standby Generator	GPS LOCATION	GPS LOCATION	N/S	Distance to closest rail	Fiber	Power
224.25	x												454002.618	1183611.373	S	11.5	x	
		1											454004.057	1183657.378	S	28.5	x	
			1	1									454004.673	1183657.378	N	32	x	
224.5	x												454005.914	1183650.173	N	24.5	x	
224.75	x												454009.807	1183630.549	N	15.5	x	
225	x												454014.798	1183611.373	N	14.5	x	
			1										454018.236	1183558.995	N	34.5	x	

Sample Bridge Attachment

Fig 2

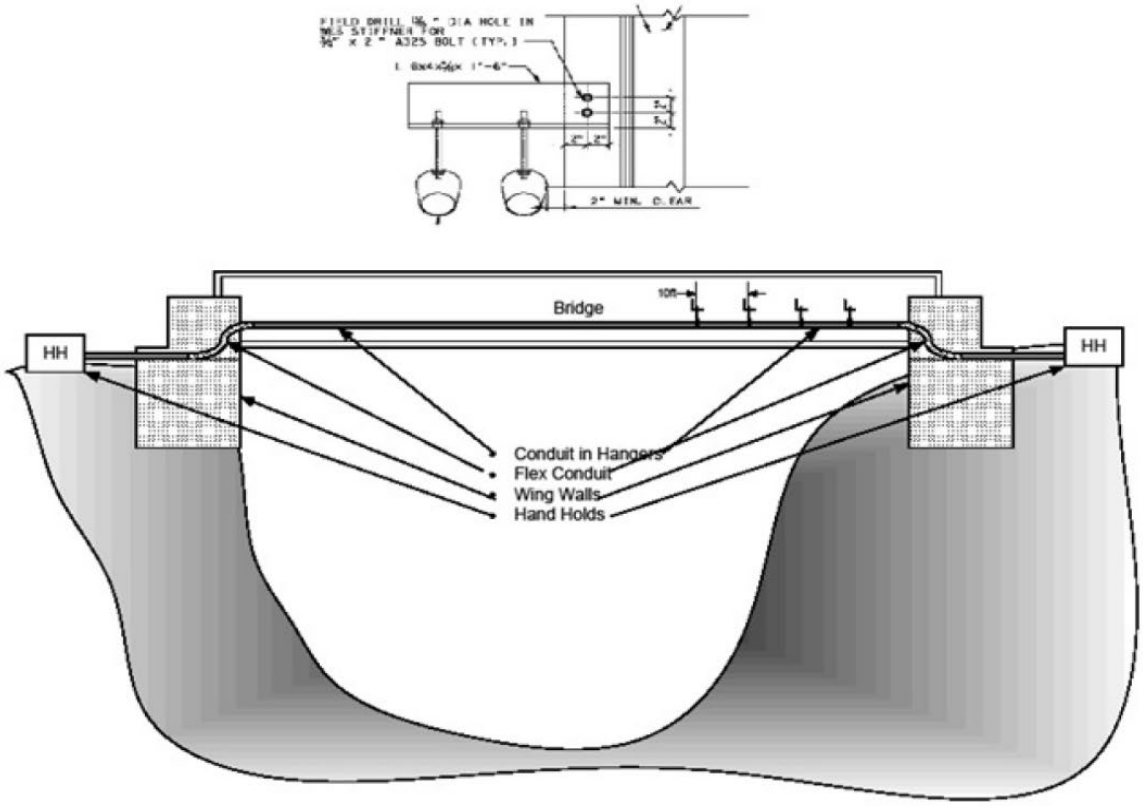
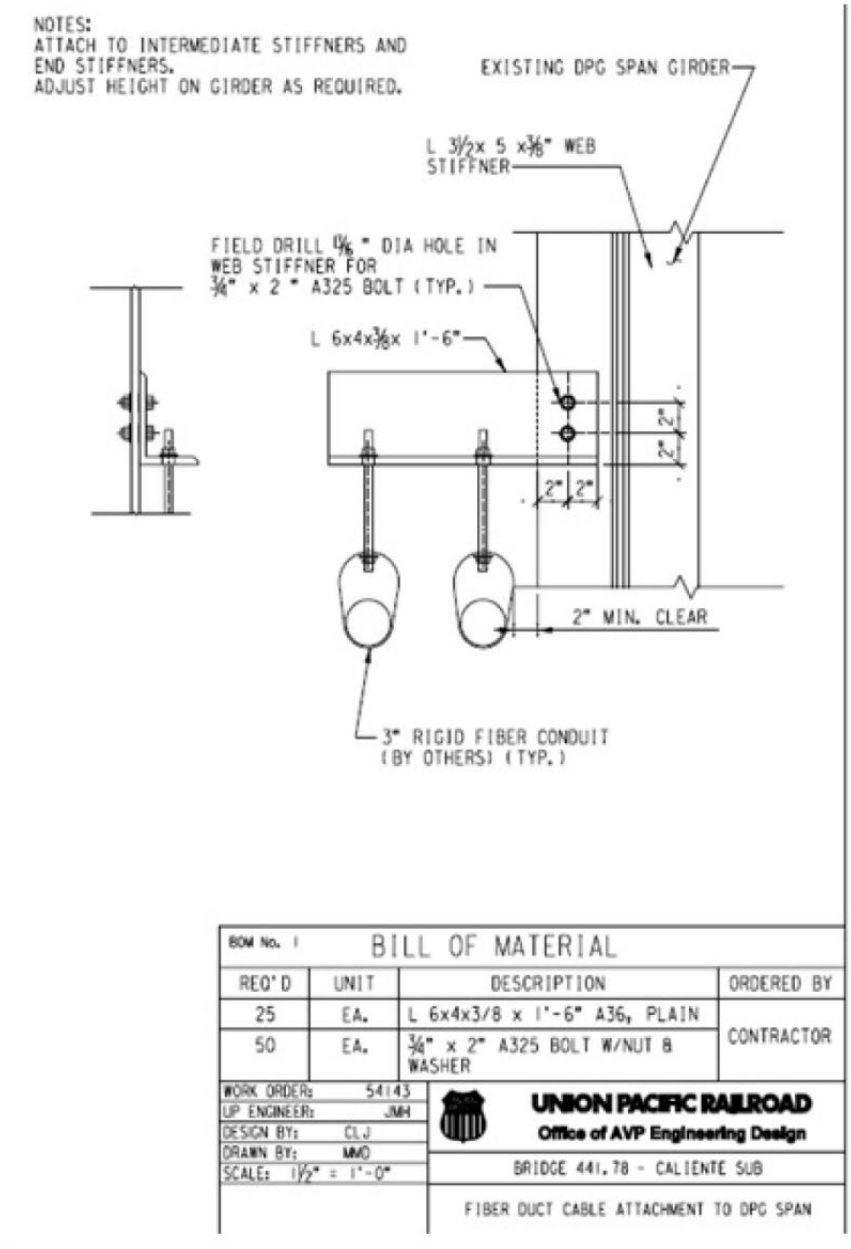


Fig 3



BOM No. 1 — BILL OF MATERIAL

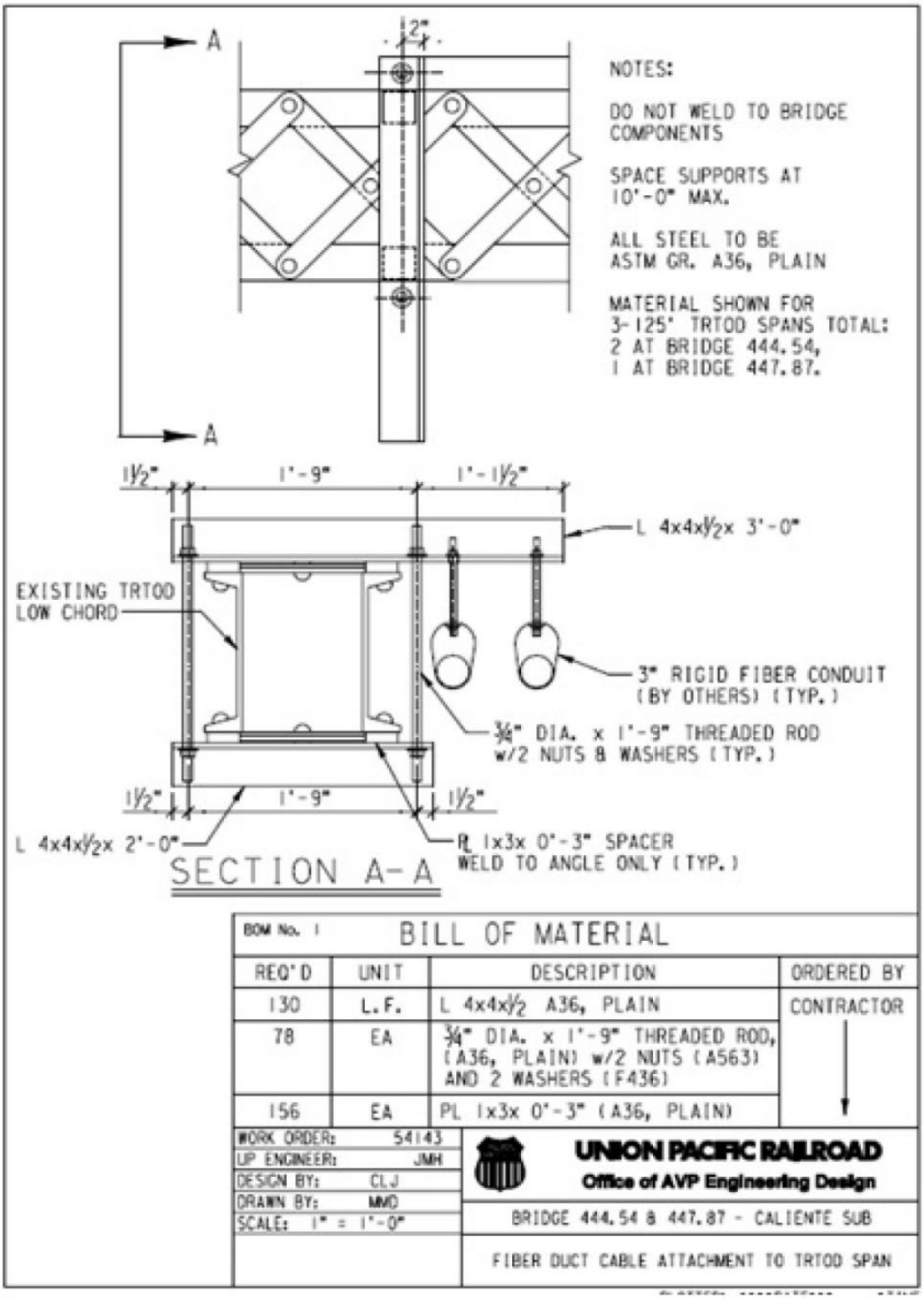
REQ'D	UNIT	DESCRIPTION	ORDERED BY
25	EA.	L 6x4x3/8 x 1'-6" A36, PLAIN	CONTRACTOR
50	EA.	¾" x 2" A325 BOLT W/NUT & WASHER	

WORK ORDER:	54143
UP ENGINEER:	JMH
DESIGN BY:	CLJ
DRAWN BY:	MWD
SCALE:	1½" = 1'-0"

UNION PACIFIC RAILROAD
Office of AVP Engineering Design

BRIDGE 441.78 - CALIENTE SUB

FIBER DUCT CABLE ATTACHMENT TO DPG SPAN



BOM No. 1 BILL OF MATERIAL

REQ'D	UNIT	DESCRIPTION	ORDERED BY
130	L.F.	L 4x4x½ A36, PLAIN	CONTRACTOR
78	EA	¾" DIA. x 1'-9" THREADED ROD, (A36, PLAIN) w/2 NUTS (A563) AND 2 WASHERS (F436)	
156	EA	PL 1x3x 0'-3" (A36, PLAIN)	

WORK ORDER:	54143
UP ENGINEER:	JMH
DESIGN BY:	CLJ
DRAWN BY:	MWD
SCALE:	1" = 1'-0"

UNION PACIFIC RAILROAD
Office of AVP Engineering Design

BRIDGE 444.54 & 447.87 - CALIENTE SUB

FIBER DUCT CABLE ATTACHMENT TO TRTOD SPAN

Fig 4

Union Pacific Railroad 2021 Fiber Specification

Additional Construction Information Requirements

Please refer to the latest revision document "Union Pacific Railroad Fiber Optic Engineering, Construction and Maintenance Standards" manual published by the Union Pacific Railroad Engineering department specifically designed to guide designers and contractors in placement of fiber cables and working around track and Right of Way**. The above mentioned Standards Manual is intended for third party companies installing fiber on UPRR ROW. The manual should only be used as a reference for distance, clearances, and acceptable work practices, not for UPRR fiber materials specifications.**

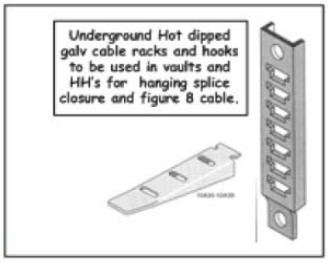
Publication information is available through your Project Manager or from UP.com, Industrial Vev./Real Estate, Telecom/Fiber Optic/SAFT section., Fiber Standards Manual.

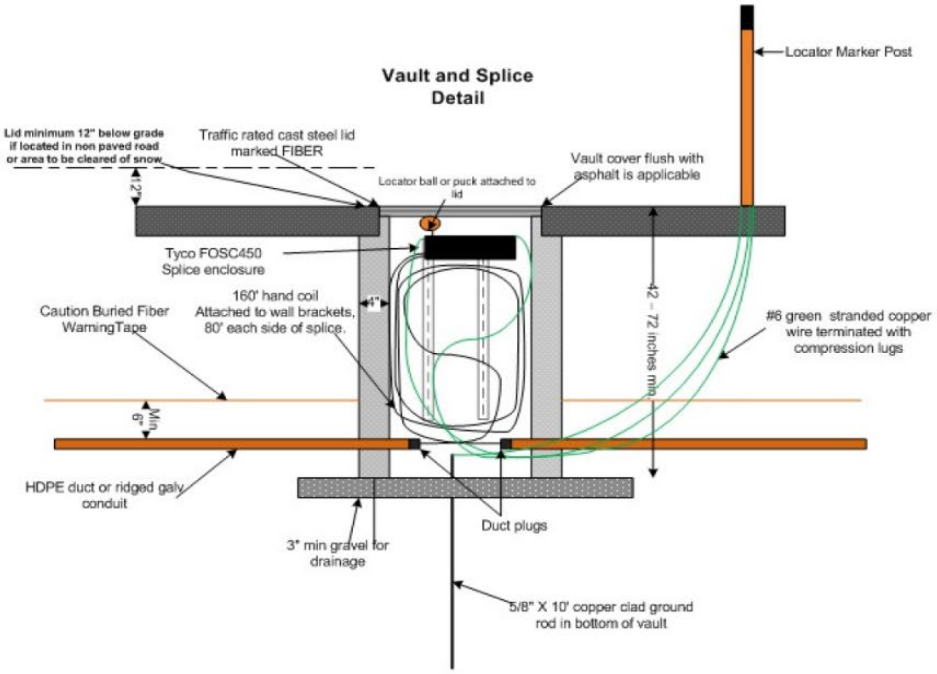
Vault Information:

Note:

1. All backbone/butt splice enclosures will be located in a vault, cable ends/splice enclosure location shall be in the middle of the slack coil.
2. Provide 160' figure 8 hand coil of cable hung on wall hangers for future use. **Fig 6, 6A, 10**
3. To be furnished with pulling eyes or irons/eyes.
4. Concrete compressive strength at 28 days shall be 4000 PSI
5. Reinforcing steel shall be deformed, new billet bars per current A.S.T.M A-615 specifications meeting grade 60 requirements.
6. Box **minimum** size will be 4ft W x 4ft H x 4ft L with heavy cover (marked fiber) for all areas.
7. All conduits directly to facilities will be rigid galvanized steel.
8. All elbows and exposed conduit to be rigid galvanized steel.
9. All underground runs to be HDPE duct, drill stem or galvanized rigid conduit. Provide pull rope (Mule Tape) in all empty ducts and conduits.
10. Cable shall be below frost line 42" to 72" for Fiber unless specified otherwise by UPRR.
11. Bottom of box must be open and have 3" of clean gravel placed on packed earth prior to vault placement for drainage
12. If sub water exists a sump pump must be installed
13. Storage length of surplus cable min 160ft hung on wall and attached to hooks. SEE **Fig 6 &10**
14. Duct plugs sized for duct and cable must be used for all cable ducts at both ends

Fig6


Underground Hot dipped galv cable racks and hooks to be used in vaults and HH's for hanging splice closure and figure 8 cable.


Vault and Splice Detail
Locator Marker Post
Lid minimum 12" below grade if located in non paved road or area to be cleared of snow
Traffic rated cast steel lid marked FIBER
Locator ball or puck attached to lid
Vault cover flush with asphalt is applicable
12"
Tyco FOSC450 Splice enclosure
160' hand coil Attached to wall brackets, 80' each side of splice.
4"
42 - 72 inches min
#6 green stranded copper wire terminated with compression lugs
Caution Buried Fiber WarningTape
6" Min
HDPE duct or ridged galv conduit
Duct plugs
3" min gravel for drainage
5/8" X 10' copper clad ground rod in bottom of vault

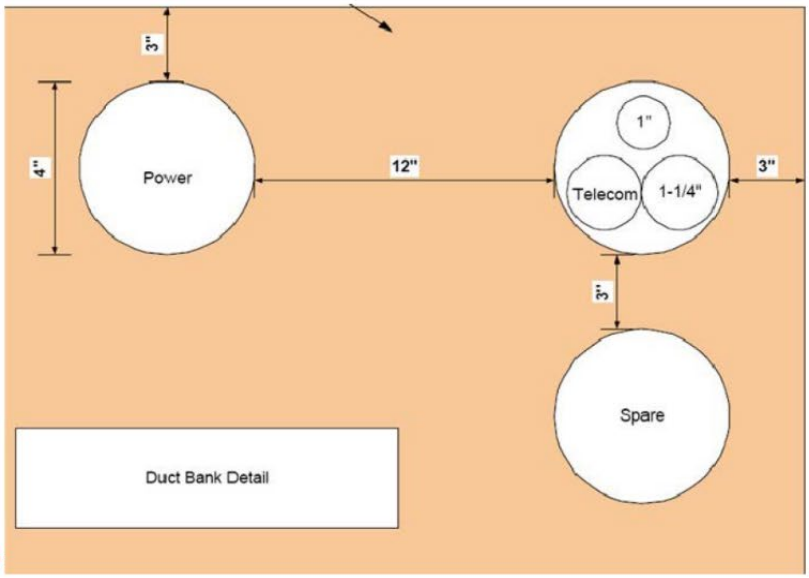


Fig7

Fig 8

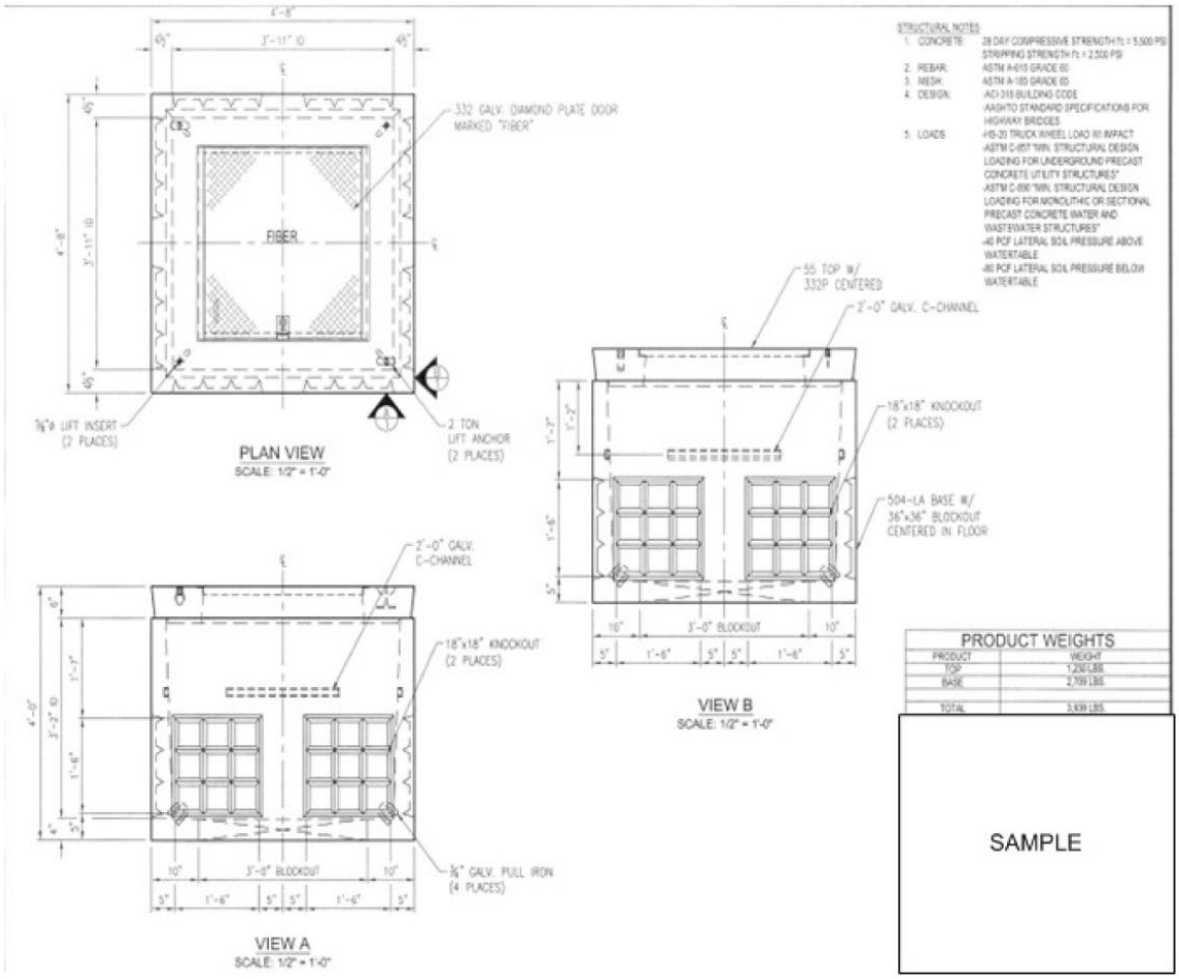
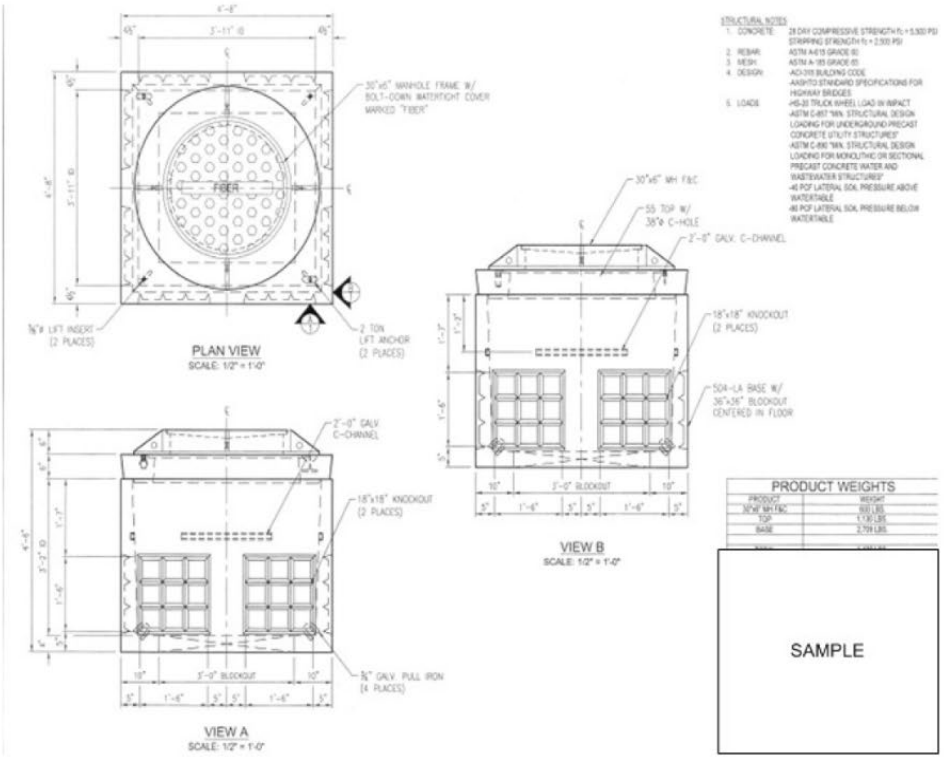
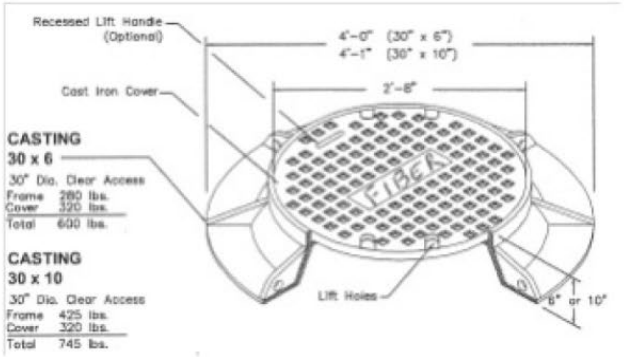

PLAN VIEW
SCALE: 1/2" = 1'-0"
FIBER
332 GALV. DIAMOND PLATE DOOR MARKED "FIBER"
2 TON LIFT ANCHOR (2 PLACES)
VIEW A
SCALE: 1/2" = 1'-0"
2'-0" GALV. C-CHANNEL
18"x18" KNOCKOUT (2 PLACES)
3'-0" BLOCKOUT
VIEW B
SCALE: 1/2" = 1'-0"
55 TOP W/ 332P CENTERED
504-LA BASE W/ 36"x36" BLOCKOUT CENTERED IN FLOOR
PRODUCT WEIGHTS
SAMPLE

Fig 9


PLAN VIEW
SCALE: 1/2" = 1'-0"
VIEW A
SCALE: 1/2" = 1'-0"
VIEW B
SCALE: 1/2" = 1'-0"
PRODUCT WEIGHTS
SAMPLE


Recessed Lift Handle (Optional)
Cast Iron Cover
4'-0" (30" x 6")
4'-1" (30" x 10")
2'-8"
CASTING
30 x 6
30" Dia. Clear Access
Frame 280 lbs.
Cover 320 lbs.
Total 600 lbs.
CASTING
30 x 10
30" Dia. Clear Access
Frame 425 lbs.
Cover 320 lbs.
Total 745 lbs.
Lift Holes
6" or 10"

Additional Bore and Track Crossing Information.

No separation needed on bores crossing under tracks, washes, or streams if the following guidelines are used.

For under track bores less than 12' below grade, HDPE Casing must be used, the same bore can be utilized for both power and fiber as long the guidelines in **(a)** are used.

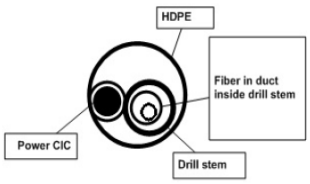
For bores not under tracks contractor may place fiber and power in the same bore using the guidelines in **(b)**.

(a) Under track bores - Keep in mind that all under track bores must use HDPE Casing to minimize settling under the rail. The contractor will determine what size reamer and size of HDPE (6" - 8" - 10") to use determined by the size needed to combine the CIC and drill stem for the fiber duct.

(b) Short non-track, – Fiber duct in drill stem and power CIC may be pulled back in the same bore as long as the fiber is placed inside drill stem.

(c) Crossing wash or stream crossing bores – See Pg. 1 (g)

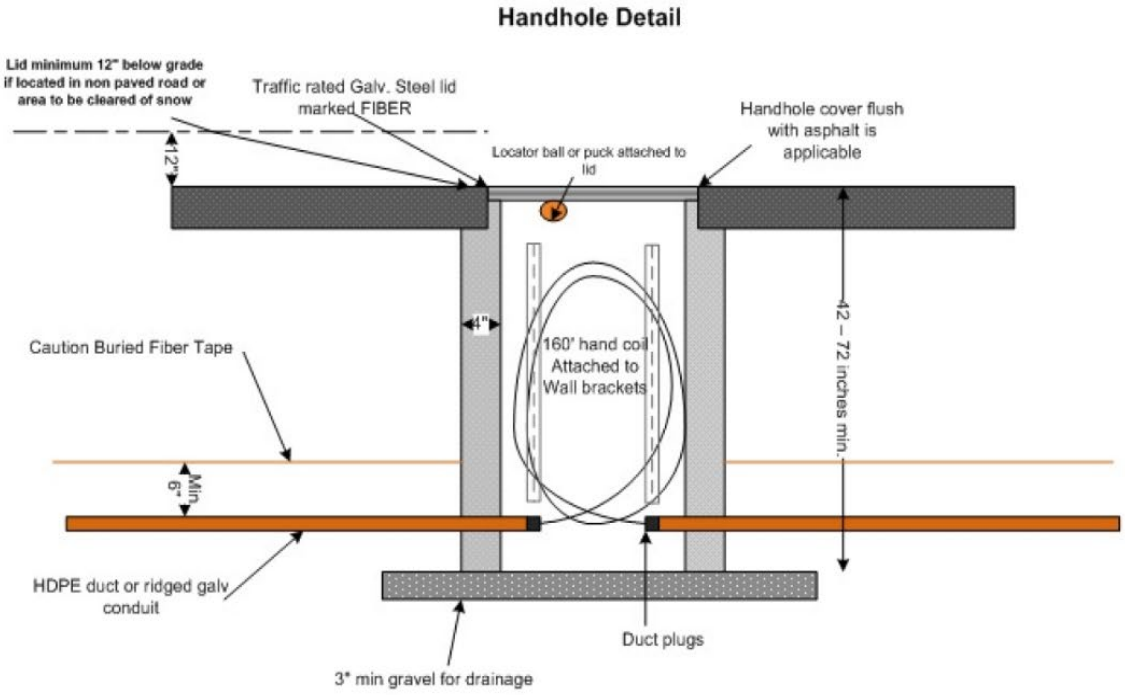
(With UPRR project manager written approval, when boring in solid rock under rail, a single bore may be utilized to cross both power and fiber ducts.) On minimum depth (60") below grade bores less than 12' deep, if rock does not extend 10 feet past rail on each side drill stem must still be used for duct protection.



Fiber Duct Encasement Drill Stem Exceptions:

(a) Walls of Tunnels, GRC will be used.

(b) Washes, dry streambeds and ditches, GRC with concrete cover may be used. See Pg. 1 (g).


Handhole Detail
Lid minimum 12" below grade if located in non paved road or area to be cleared of snow
Traffic rated Galv. Steel lid marked FIBER
Handhole cover flush with asphalt is applicable
Locator ball or puck attached to lid
12"
4"
160' hand coil Attached to Wall brackets
42 – 72 inches min.
Caution Buried Fiber Tape
Min 6"
HDPE duct or ridged galv conduit
Duct plugs
3" min gravel for drainage

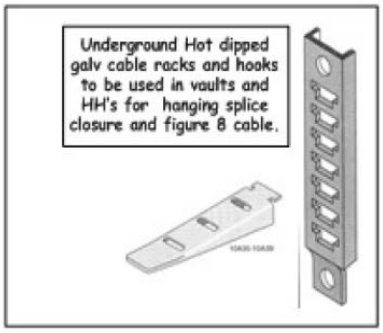

Underground Hot dipped galv cable racks and hooks to be used in vaults and HH's for hanging splice closure and figure 8 cable.

Fig 10

Handhole Information

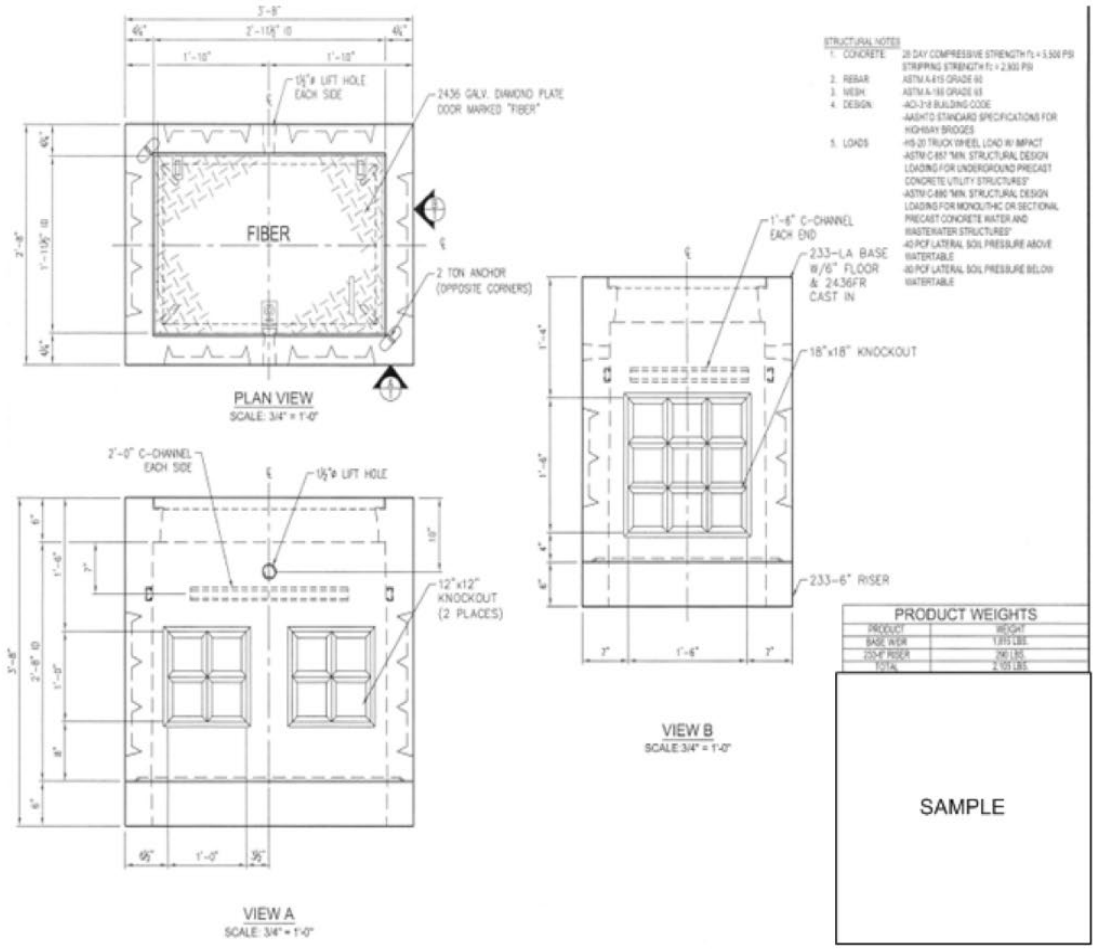


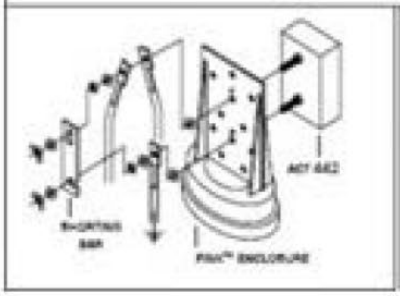
Fig 11

Test/Tracer Ped locating station post information

To be used on fiber not in parallel with power

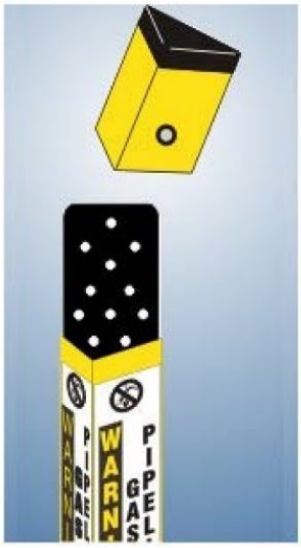
#6 Compression lug installed with appropriate compression tool shall be used for all ground attachments

Locator Post/Test Station ground details when fiber is installed parallel with power cable. ACT 442-150-410 Pedestal Mounted Surge Arrestor shall be installed at all splice/locator post locations.



Sh

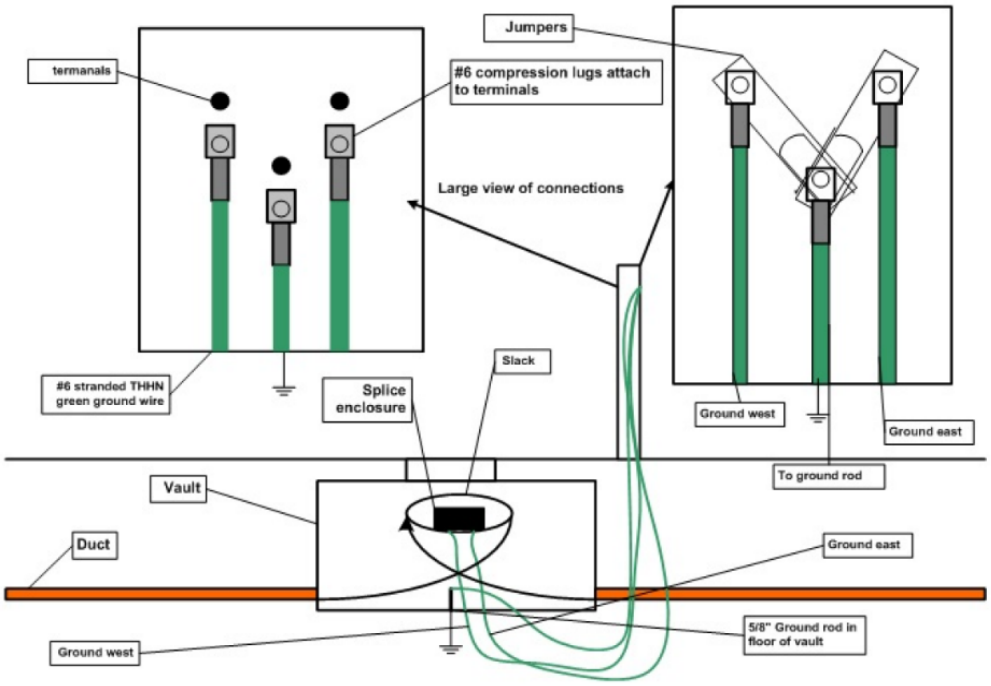
Compression Connectors installed with the correct installation tool only, mechanical connectors and insulated electrical terminals are not expectable.



T-Post or similar post support shall be used at all locator post locations.

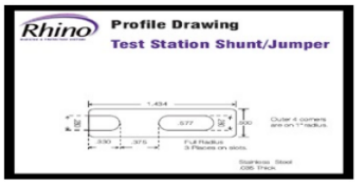
Test/ Tracer Ped locating station post information.

Locator post wiring is subject to change when using ACT protectors in the fiber system



14

Locator Post Wiring



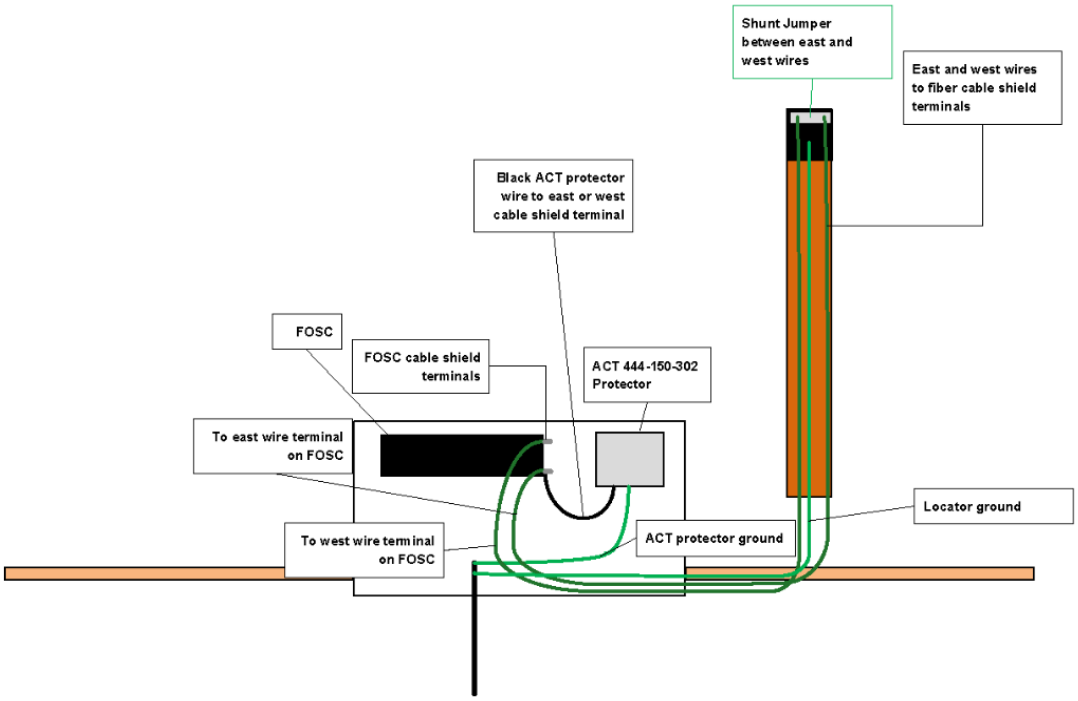
Locator wires shall be neatly dressed, excess ground wire slack should be removed. All wires leaving hh or vault shall be in duct.

Fiber slack shall be stored hanging on the vault or HH wall brackets in a figure 8.

Fiber jumper slack shall be stored in the hh neatly stored on the wall bracket.

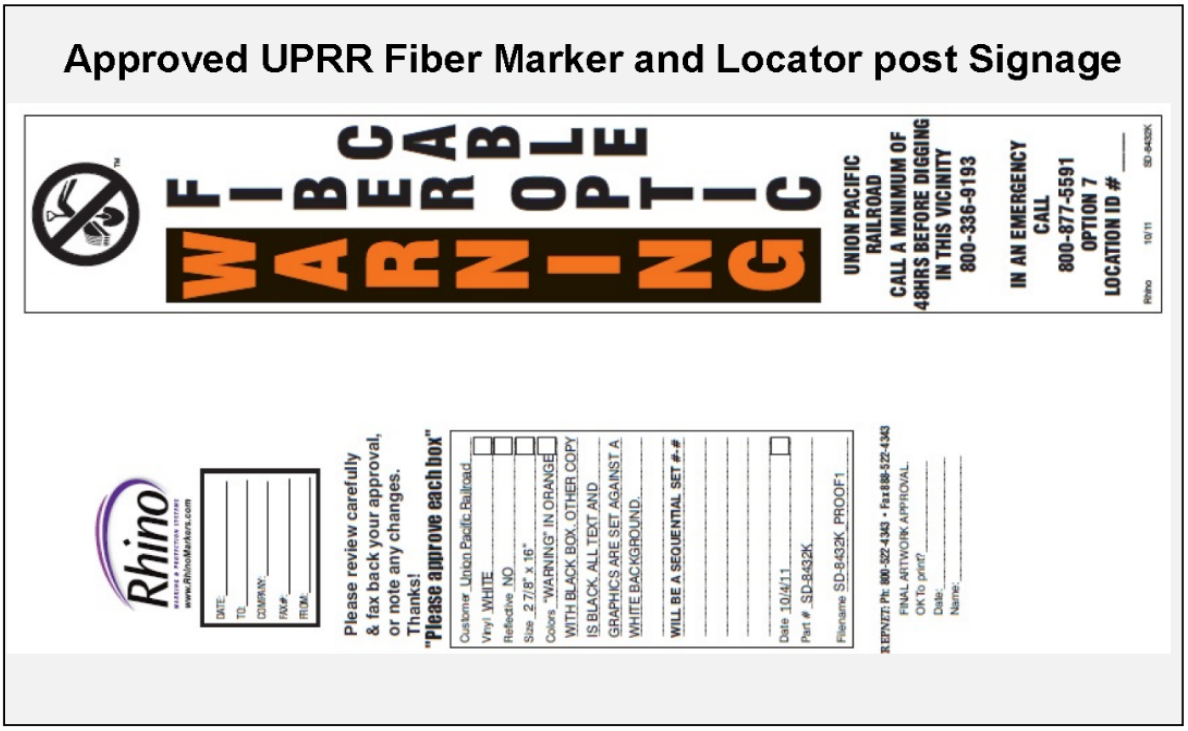
Utility	Color	Frequency
Water	Blue	145.7 kHz
Telcom	Orange	101.4 kHz
Power	Red	169.8 kHz
Waste Water	Green	121.6 kHz
Gas	Yellow	83.0 kHz

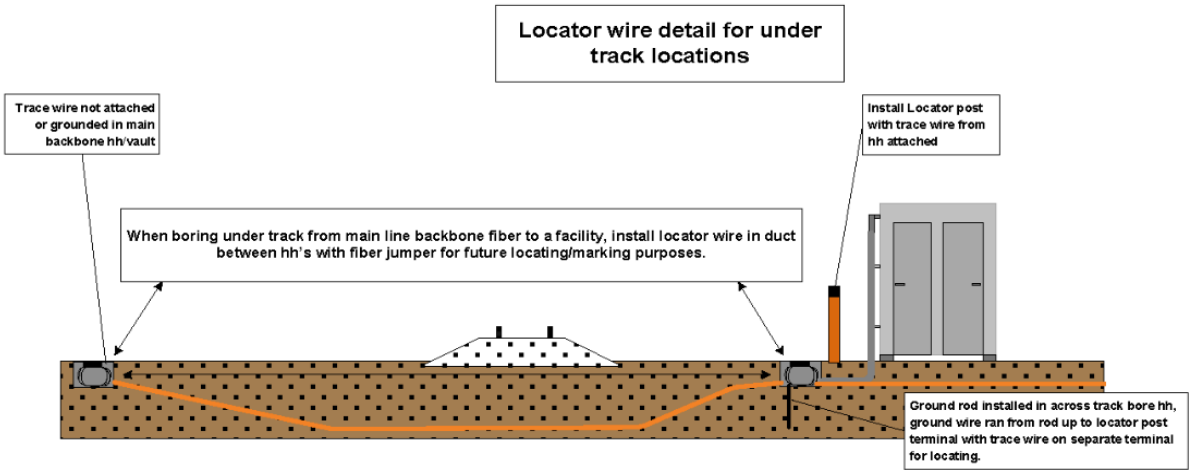
Locator post and vault wiring when ACT 444 -150-302 protectors are specified for project



Union Pacific Railroad 2021 Fiber Specification

Approved UPRR Fiber Marker and Locator post Signage





Interior hut fiber entrance

Exterior hut fiber entrance

Tunnel Attachment

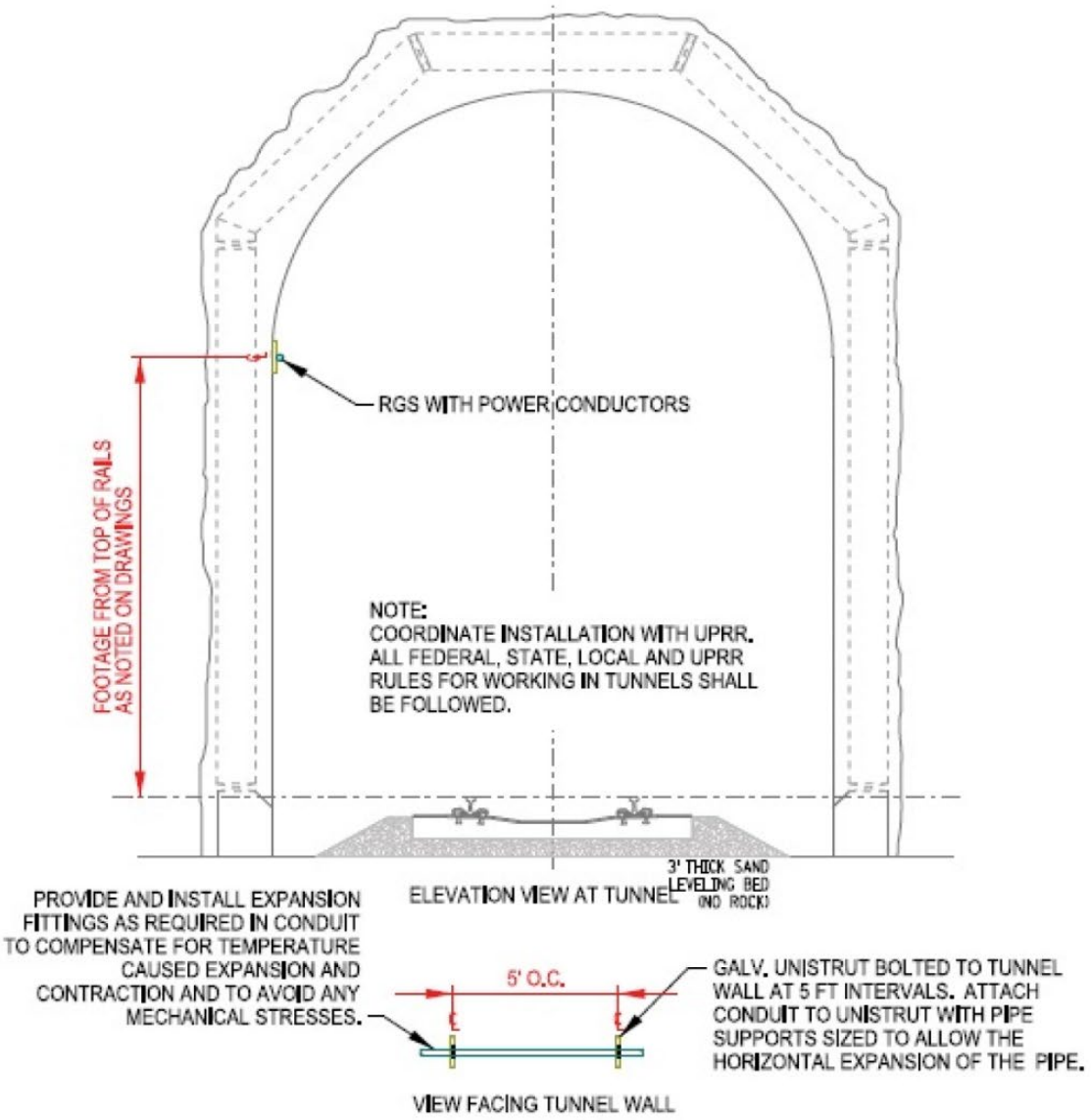


FIG 15

Conduit Expansion Fittings

LINEAR EXPANSION OF STEEL CONDUIT IN INCHES:

TOTAL DISTANCE IN FEET

Change In Temperature °F	T	50'	100'	150'	200'	250'	300'
	25	0.10	0.20	0.29	0.39	0.48	0.58
	50	0.19	0.39	0.58	0.78	0.97	1.17
	75	0.29	0.58	0.87	1.17	1.45	1.75
	100	0.39	0.78	1.17	1.56	1.95	2.34
	125	0.49	0.98	1.46	1.95	2.43	2.92
	150	0.58	1.17	1.75	2.34	2.92	3.51
	175	0.68	1.36	2.04	2.73	3.4	4.09
	200	0.78	1.56	2.34	3.12	3.90	4.68

Approved Duct Plugs

Fiber Jumper Information

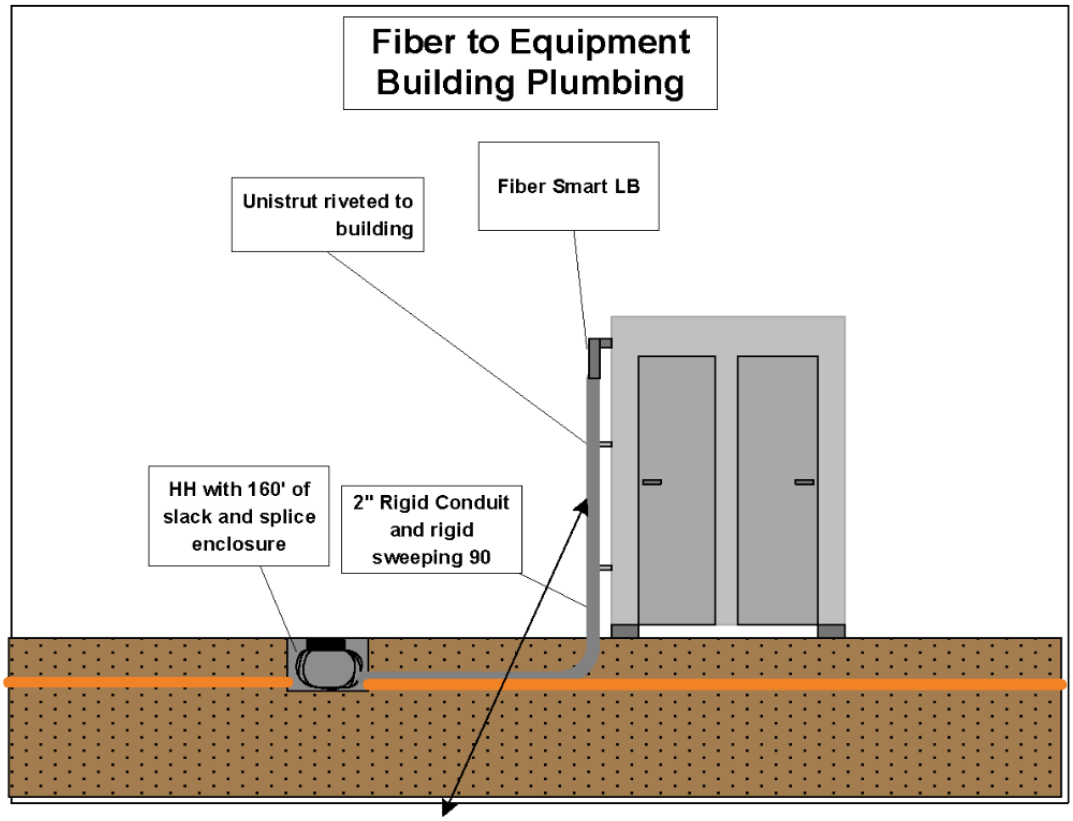
Description	Part_Number
100' anylan fiber core alignment fusion splice. Connectorize on one end and blunt on the other	00M112EB4D1E100F-P
150 anylan fiber core alignment fusion splice. Connectorize on one end and blunt on the other	00M112EB4D1E150F-P
200' anylan fiber core alignment fusion splice. Connectorize on one end and blunt on the other	00M112EB4D1E200F-P
250' anylan fiber core alignment fusion splice. Connectorize on one end and blunt on the other	00M112EB4D1E250F-P

Fiber jumpers shall have color bands applied to each end before pulling, red in from east, blue out to west. Cables will also have labels/tabs stating fiber numbers and direction attached to each end of each jumper after splicing.

Entrance hole in building shall be sized for Smart LB used, the proper knock out punch/conduit punch should be used for a clean entrance hole with no gaps. LB shall be sealed and tightened into entrance hole.

LB shall have proper coupler around cables entering cabins to ensure no gasses from the hh, or insects may gain entry though LB.

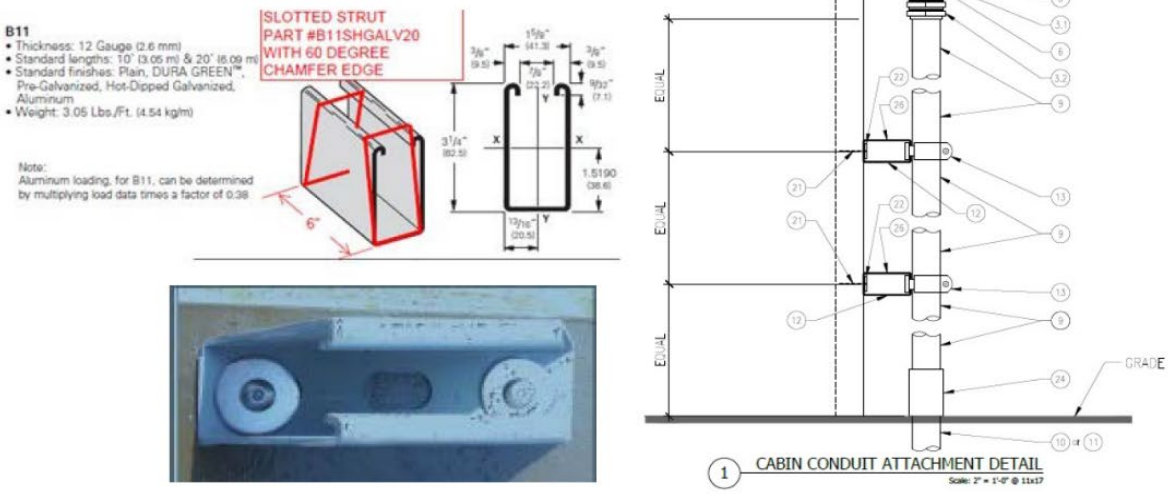
Smart LB Manufacturer, Madison Electric Products.
Contact info – Paul Roach 480-298-8687, MEproducts.net



.Building Entry:

- Only galvanized rigid conduit will be used to transition from HH to building
- Only a Smart LB shall be used to enter building and shall be sealed properly.
- Rigid conduit shall be attached to building using the proper depth hot dipped galvanized uni-strut.
- Unistrut shall be attached to metal buildings using stainless steel washer with appropriate size rivet.

Building Conduit Attachment



TELECOM AERIAL FIBER INSTALLATION SPECIFICATIONS

Contractor is responsible for supplying all materials and labor including but not limited to ADSS fiber, splice enclosures, handholes, HDPE, rigid conduit, fiber LB's, ADSS pole hardware, for installation in a safe and professional manner to Union Pacific Railroad specifications.

Fiber Specifications:

(Fiber manufacturer, model, and specifications shall be submitted to UPRR for approval)

- All Dielectric Self-Supporting fiber optic cable (ADSS). ADSS 48 fiber single mode loose tube fiber optic cable.
- All fiber shall be installed as to not exceed bend radius of specified fiber.
- All fiber connections shall be done using up to date and certified core alignment fusion splice equipment. Fusion splicing is the only approved method for mid span installation splicing of UPRR single-mode fiber.
- UPRR expects well below industry maximum (0.5 dB/km), (0.1 dB splice), (0.50 connection) component attenuation
- Contractor will be expected to install, splice fiber, and is required to provide UPRR with the following fiber records.

As Built and Test Documentation:

- Final route maps with Handhole, Splice, and hand-pull locations, depth ranges, bore logs, complete fiber route documentation including distance from rail and running line changes shall be provided and marked with lon, lat, coordinates for each item.
- GPS locate points for the entire route, including running line changes, bores, and HH's.
- Supply Excel spread sheet with data shown in **Fig. 1** (Excel Project Documentation)
- List of test equipment used. Manufacturer, Model number and Date of last Factory Calibration)
- Cable test documentation for all fibers from each end. (Single mode fiber 1310nm and 1550nm)As applicable, when installing jumpers to facilities provide fiber documentation facility to facility. (use RR mnemonic for naming each facility in tests) Clean all fiber ends before each test.
- OTDR loss and trace photos for each fiber.
- Cable OTDR length report and cable foot sheath counter length report.
- OLTS Loss measurement using Power Meter and Source (OTDR loss measurements are not acceptable)

- Maximum loss specifications will be provided by UPRR determined when specific fiber type has been determined.
- The contractor is responsible for testing and documenting fiber optic cable end to end. When contractor is installing jumpers to huts testing shall be done hut to hut and documented accordingly, through fibers shall be tested end to end.

Handhole Specifications:

(HH manufacturer, prints, specifications shall be submitted to UPRR for approval) Fig. 8. Oldcastle precast handholes are the preferred product.

- 160' of slack shall be installed figure 8 method in each handhole.
- Traffic rated handholes, and covers are required.
- Handholes shall be of concrete construction 3' X 3' X 4' minimum to appropriate fiber depth, no bottom, handhole shall be set on min. 3" of 1-½" wash rock for drainage and have a steel lid clearly marked "fiber".
- All handholes will have a telecom locator ball attached to the lid.
- All handholes located in a non paved road or area accessible to traffic of any type must be set a minimum of 12" below grade to accommodate grade equipment or snow removal equipment.
- All knockouts locations used for duct entry shall be repaired and sealed with a concrete repair product.
- All cables shall enter or exit the handhole wall through a duct or conduit and duct shall be sealed with an appropriate size duct plug.

Duct and Rigid Conduit Specifications:

- All fiber duct shall be a minimum of SDR11, 0.173 wall, SDR9 is required in rocky terrain. For single 48 count fiber cable fiber duct shall be 1 1/4" HTPE minimum at a minimum depth of 42" in normal soil clearly marked with fiber warning tape buried a minimum of 6 inches above duct.
- All areas where a depth of 42 inches cannot be obtained (ie. rock) the fiber cable must be installed in rigid galvanized conduit or drill stem for added protection; **these location and the method must be reviewed and approved by UPRR project manager.**
- All duct splicing shall be done using glued sleeved, end fusion or approved barbed coupling. Duct plugs for correct cable size shall be used on all duct ends.

- All tunnels with fiber passing through will use UPRR specified methods for attachment using rigid galvanized steel conduit.

- Split conduit and split sleeve sweeping 90 will be used to transition from pole to handhole. **Fig. 2**

- HH to Signal Cabin, 2" galvanized rigid conduit shall be used, install Mule Tape in all duct or conduit.

- (1) ridged conduit with mule tape through the wall of the HH to the building using sweeping 90° bends, bring rigid conduit up the exterior of the building, to maintain proper fiber bend radius enter building utilizing a rigid fiber Smart Pathways TM, LB or equivalent just above the ladder rack. If duct is used from HH to building conduit, contractor must use appropriate adaptor or coupler to attach duct to sweeping 90.

UG Fiber Specifications:

- When transitioning from aerial to underground (UG) or from UG to aerial a handhole is required. All fiber located in the ground will be incased in HDPE, rigid conduit, or drill stem based on location, specifications, and depth.

- All fiber will be plowed, trenched, or bored to a min depth of 42 inches in normal soil conditions.

- When boring under tracks using HDPE, minimum depth must be 12' below normal grade.

- When boring under tracks using drill stem, depth must be 5 ft/60" below normal grade. All bores under tracks shall be at a 90 degree angle unless otherwise specified by UPRR personnel due to obstructions ie. rock, bridges, building or permanent stationary equipment. (MUST BE APPROVED) Maximum bore degrees when encountering these obstacles should be no more that 60 degrees. (With UPRR project manager written approval, when boring in solid rock under rail, a single bore may be utilized to cross both power and fiber ducts.) On minimum depth (60") below grade bores less than 12' deep, if rock does not extend 10 feet past rail on each side drill stem must still be used for duct protection.

- All bore pits will be located at a minimum distance of 30 feet from rail road track center and 3 feet from a ditch.

- Bore pit from a signal switch shall be a minimum of 150 feet from the switch.

- All bores shall end 30 feet from track center.

Tunnels:

Tunnel work shall include a safety plan for each specific tunnel, safety requirements provided by UPRR after contractor notifies UPRR of the number of personnel and type of equipment to be used in the specific tunnel.

- All tunnels bored or rigid conduit on the wall require a handhole on each end.

Aerial Pole hardware specifications:

- Only galvanized bolts and drilled hardware is acceptable to use, (i.e. double arming eye, double arming full, through bolt) drive bolts, drive hooks, are not acceptable.
- All pole bolts shall have square flat washers installed on each side of the pole, all bolts will have double nuts/locking nut installed on the threaded side. All eye nuts shall have a locking nut.
- All ADSS fiber cable will be attached to poles utilizing ADSS attachment hardware.
- Appropriate size ADSS Trunnion assemblies will be used on all line poles. **Fig. 3**
- ADSS Preformed cable dead ends will be used at all poles where cable transitions to UG. **Fig 4**
- ADSS Wood pole guide clamps will be used to bring ADSS cable down and up poles. **Fig 5**
- Appropriate width 9' galvanized steel cable U guards shall be installed on all poles with cable transitioning to UG. Galvanized split conduit shall extend a minimum of 3 feet into cable guards. **Fig. 6**

Splice Cases:
(Splice case manufacturer and model information shall be submitted to UPRR for approval)

- Splice cases will be used at all location where fiber is spliced, Back bone cable splices shall only be located in Vaults, Splices for jumpers being spliced into a hut may be located in a hand hole. All FOSC will be attached to mounting brackets on the upper portion of the wall. (Specific splice enclosures will be specified by UPRR) Current Splice enclosure – **Tyco FOSC450 to be used for all splices.**

Fig 1

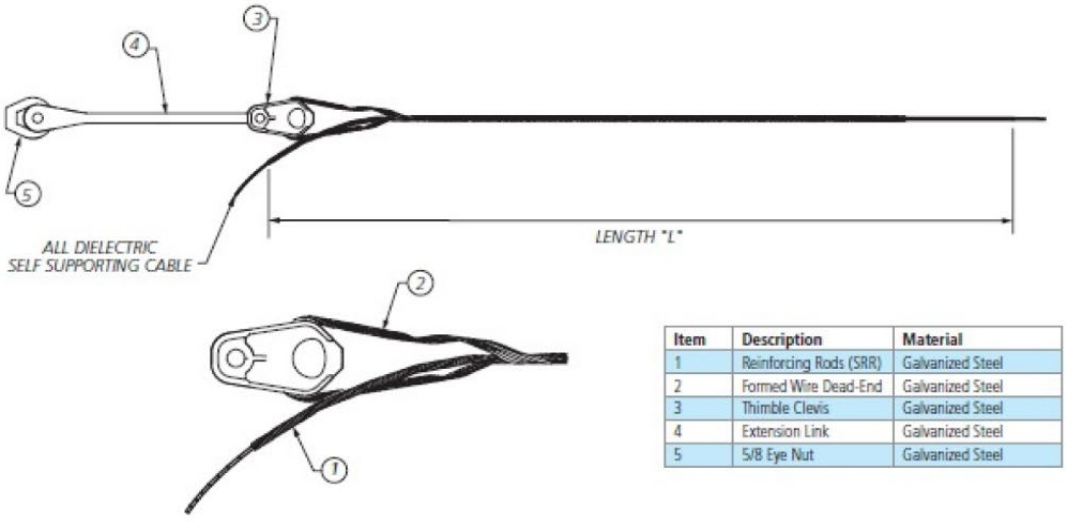
		Telecom Fiber				Signal Power Services											
MP	Running line	Fiber Hand Hole	Fiber Vault	Fiber Splice	Fiber Locator Post	Electrical XFMR	Electrical Reactor	Electrical Utility Serivce Point	Electrical Primay Switch	Electrical Splice Box	Electrical Grounding Box	Electrical Standby Generator	GPS LOCATION	GPS LOCATION	N/S	Distance to closest rail	Fiber	Power
224.25	x												454002.618	1183611.373	S	11.5	x	
		1											454004.057	1183657.378	S	28.5	x	
			1	1									454004.673	1183657.378	N	32	x	
224.5	x												454005.914	1183650.173	N	24.5	x	
224.75	x												454009.807	1183630.549	N	15.5	x	
225	x												454014.798	1183611.373	N	14.5	x	
			1										454018.226	1183558.995	N	34.5	x	

Fig 2 Split Conduit – Pole – HH

Fig 3 ADSS Trunnion Assembly

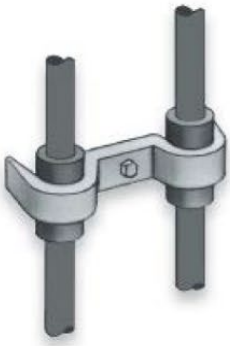
Fig 4 Dead End Hardware

Limited Tension Formed Wire Dead End for ADSS Cable



Item	Description	Material
1	Reinforcing Rods (SRR)	Galvanized Steel
2	Formed Wire Dead-End	Galvanized Steel
3	Thimble Clevis	Galvanized Steel
4	Extension Link	Galvanized Steel
5	5/8 Eye Nut	Galvanized Steel

Fig 5 ADSS Pole Clamp



Wood Pole Clamp

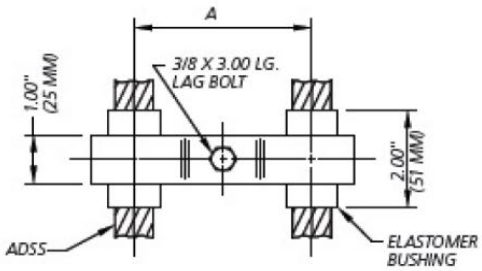
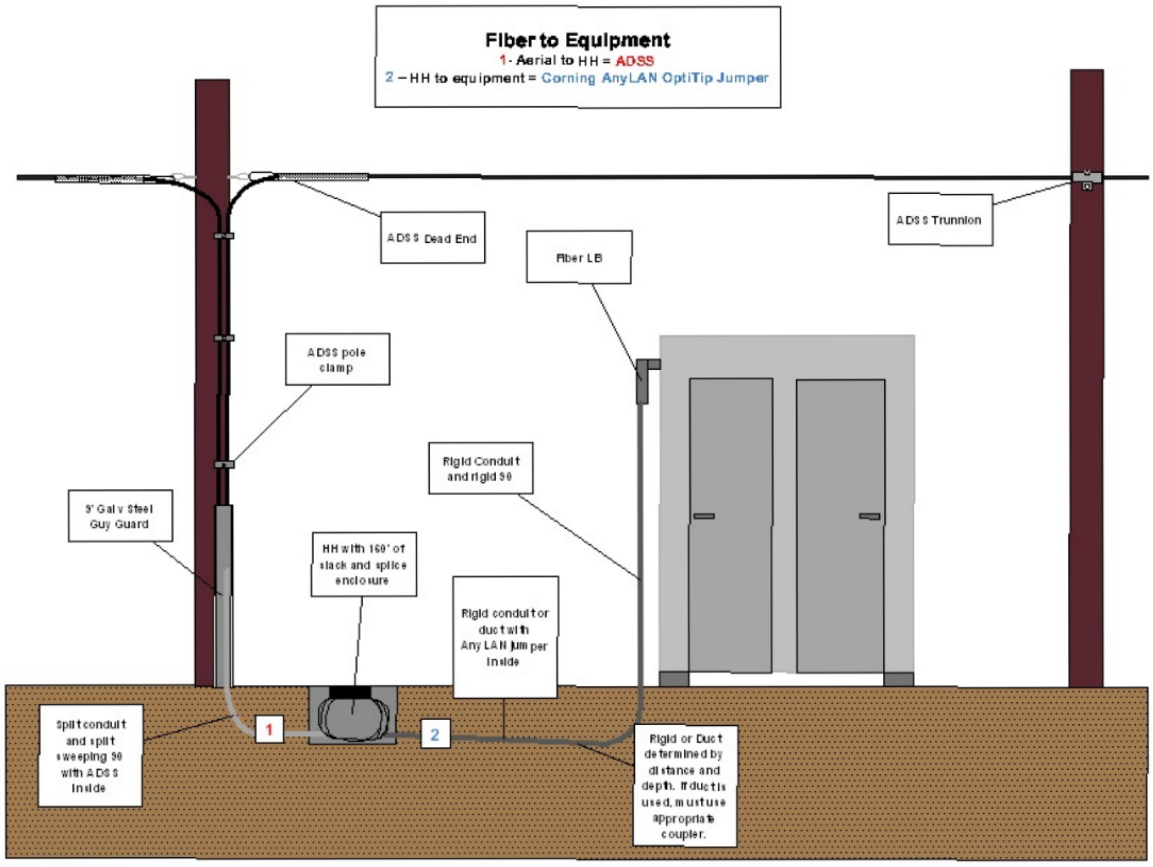


Fig 6 Cable Guard



Building Entry

Building Entry:

- Only galvanized rigid conduit will be used to transition from HH to building
- Only a Smart LB shall be used to enter building and shall be sealed properly. Fig 7
- Rigid conduit shall be attached to building using the proper depth hot dipped galvanized uni-strut Fig 8
- Unistrut shall be attached to metal buildings using stainless steel washer with appropriate size rivet. Fig 6

FIG 6

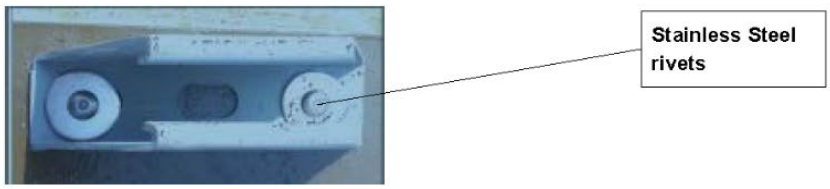

Stainless Steel rivets

FIG 7

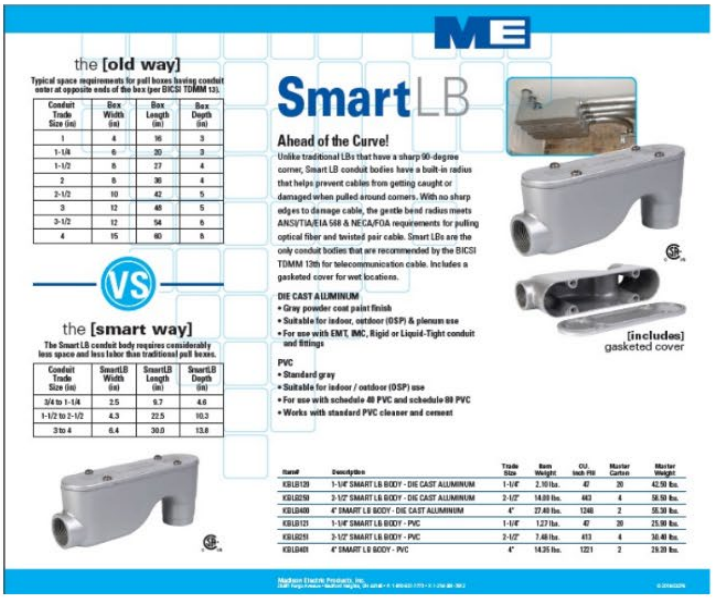
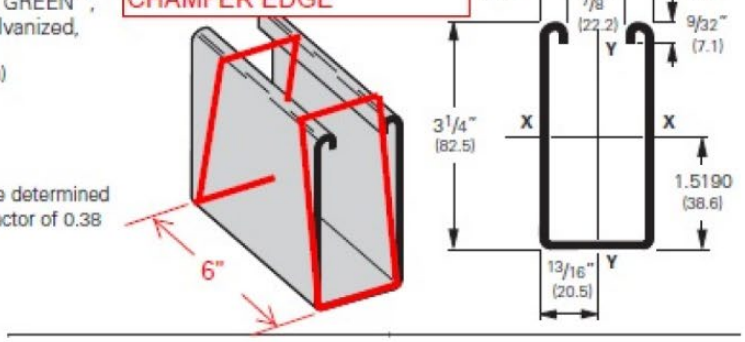

the [old way]
Typical space requirements for pull boxes having conduit enter at opposite ends of the box (per BICSI TDMM 13).
Conduit Trade Size (in)
Box Width (in)
Box Length (in)
Box Depth (in)
1 4 16 3
1-1/4 6 20 3
1-1/2 8 27 4
2 8 30 4
2-1/2 10 42 5
3 12 48 5
3-1/2 12 54 6
4 15 60 6
VS
the [smart way]
The SmartLB conduit body requires considerably less space and less labor than traditional pull boxes.
Conduit Trade Size (in)
SmartLB Width (in)
SmartLB Length (in)
SmartLB Depth (in)
3/4 to 1-1/4 2.5 9.7 4.6
1-1/2 to 2-1/2 4.3 22.5 10.3
3 to 4 6.4 30.0 13.8
SmartLB
Ahead of the Curve!
Unlike traditional LBs that have a sharp 90-degree corner, Smart LB conduit bodies have a built-in radius that helps prevent cables from getting caught or damaged when pulled around corners. With no sharp edges to damage cable, the gentle bend radius meets ANSI/TIA/EIA 568 & NECA/FOA requirements for pulling optical fiber and twisted pair cable. Smart LBs are the only conduit bodies that are recommended by the BICSI TDMM 13th for telecommunication cable. Includes a gasketed cover for wet locations.
DIE CAST ALUMINUM
• Gray powder coat paint finish
• Suitable for indoor, outdoor (OSP) & plenum use
• For use with EMT, IMC, Rigid or Liquid-Tight conduit and fittings
PVC
• Standard gray
• Suitable for indoor / outdoor (OSP) use
• For use with schedule 40 PVC and schedule 80 PVC
• Works with standard PVC cleaner and cement
[includes] gasketed cover
Item#
Description
Trade Size
Item Weight
CU. Inch/Ft
Master Carton
Master Weight
KBLB120 1-1/4" SMART LB BODY - DIE CAST ALUMINUM 1-1/4" 2.10 lbs. 47 20 42.00 lbs.
KBLB250 2-1/2" SMART LB BODY - DIE CAST ALUMINUM 2-1/2" 14.00 lbs. 443 4 56.00 lbs.
KBLB400 4" SMART LB BODY - DIE CAST ALUMINUM 4" 27.40 lbs. 1248 2 55.30 lbs.
KBLB121 1-1/4" SMART LB BODY - PVC 1-1/4" 1.27 lbs. 47 20 25.90 lbs.
KBLB251 2-1/2" SMART LB BODY - PVC 2-1/2" 7.48 lbs. 413 4 30.40 lbs.
KBLB401 4" SMART LB BODY - PVC 4" 14.35 lbs. 1221 2 29.20 lbs.

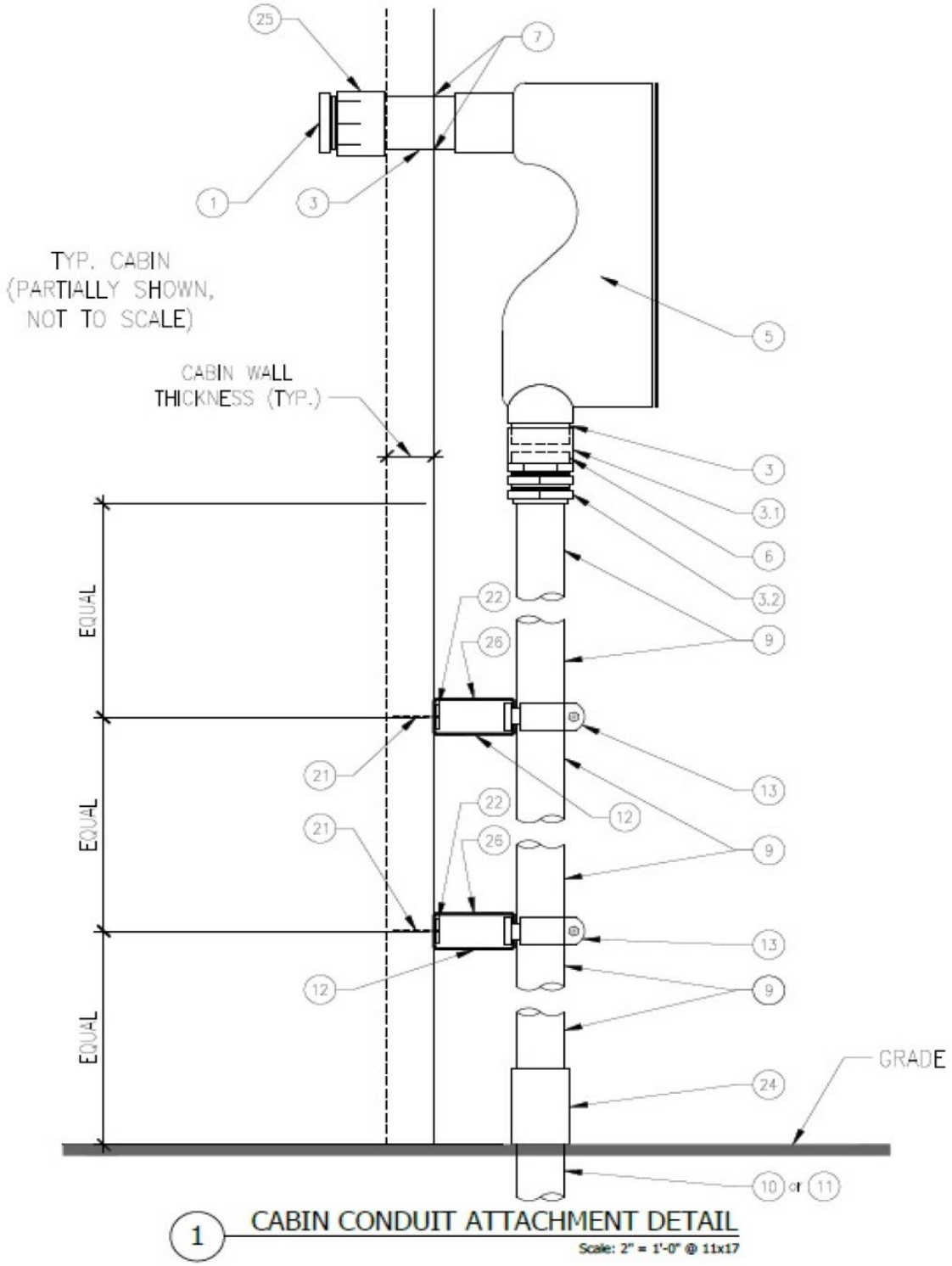
FIG 8

B11
- Thickness: 12 Gauge (2.6 mm)
- Standard lengths: 10' (3.05 m) & 20' (6.09 m)
- Standard finishes: Plain, DURA GREEN™, Pre-Galvanized, Hot-Dipped Galvanized, Aluminum
- Weight: 3.05 Lbs./Ft. (4.54 kg/m)

Note:
Aluminum loading, for B11, can be determined by multiplying load data times a factor of 0.38

SLOTTED STRUT
PART #B11SHGALV20
WITH 60 DEGREE
CHAMFER EDGE





1 CABIN CONDUIT ATTACHMENT DETAIL

Scale: 2" = 1'-0" @ 11x17

UPRR SUBMITTALS

Following their own internal review and approval the Applicant or their representative shall submit, at a minimum, all applicable submittals defined in Tables 3-1 or 3-2 of the UPRR's "Guidelines for Railroad Grade Separation Projects" to the Railroad Local Representative for review and approval. The Engineer-of-Record's review comments must be submitted to the Railroad along with the submittal.

The following construction submittals shall be prepared in PDF format. They shall include, but are not limited to, submittals for Shoring, Falsework, Demolition, Erection, Erosion Control, and Construction Phasing Plans, Construction Material Certifications, Concrete Mix Design, Structural Steel, Rebar and Strand Certifications, 28 day Cylinder Test of Concrete Strength Waterproofing Material Certification, Test reports for fracture critical members, Foundation Construction Reports (eg.: pile driving records, caisson drilling and/or crosshole sonic log testing for drilled shafts.), and any other project specific information as requested by the Railroad.

A 4-week review timeframe should be expected for submittals. Submittals which do not follow the schedules as outlined in Tables 3-1 or 3-2, are partial, incomplete or inadequate may require greater review time.

UPRR SHORING ZONE DIAGRAM

Shoring operations adjacent to railroad property and track shall be in accordance with the "Guidelines for Temporary Shoring" as found on the UPRR's website.
https://www.up.com/cs/groups/public/@uprr/@customers/@industrialdevelopment/@operationsspecs/@specifications/documents/up_pdf_nativedocs/pdf_up_str_temp-shoring.pdf

The shoring diagram is a reference for acceptable slopes and clearances when excavation occurs in the indicated zone(s).

BALLAST

Description: This work shall consist of all labor, materials, and equipment to furnish railroad ballast.

General: Materials shall conform to UPRR standard drawing 0010, be from an approved UPRR track work supplier (see UPRR standard drawing 6010), and the requirements of UPRR Special Conditions in this document.

Contractor shall furnish the material for installation by UPRR. Contractor shall deliver and place the ballast at a location directed by UPRR.

Basis of Payment: This work will be paid for at the contract unit price per Ton for BALLAST.

CONCRETE FOOTINGS FOR FENCE INSTALLATION

Description: This work shall consist of furnishing materials and installing footings for ornamental fence posts, ornamental gate posts, ornamental gate stops and escape pad swing gate posts.

Submittals:

1. For approval, prior to commencement of operations
   a. List of equipment anticipated for this project
   b. Concrete Mix Design

Warranty: Contractor shall warranty for a period of one year from acceptance of the work. If at any time during this year, cracking, pitting or other unsightly or functional impairment develops, Contractor shall repair the area to the satisfaction of the Owner.

Products:

1. Base Aggregate shall be CA-6 class B crushed stone meeting the requirements of Section 1004 Coarse Aggregates of IDOT Standard Specifications.
2. Concrete shall be Class SI in accordance with Section 1020 of IDOT Standard Specifications.

Execution:

1. Concrete Footings shall be
   a. Constructed in accordance with Section 503 Concrete and plan details.
   b. Concrete footings are not to be formed except where specified or noted.
2. Tool with a 1/2-inch diameter round over all exposed edges.
3. Footing to extend two (2) inches above grade at post locations and be trowel finished with a crown to shed water such that finished concrete matches existing ground surface at perimeter of footing. Excess concrete to be properly disposed of. Clean all residue from fence and gate posts.
4. Clean all excess material, debris, and refuse. Any excess material shall be removed from the site daily. Any damage to existing features (roads and parking, streets, trees, etc.) shall be repaired to the satisfaction of the Engineer.

Basis of Payment:

1. Concrete Footings will be included in the unit price for FENCE (SPECIAL), ORNAMENTAL FENCE SPECIAL, ORNAMENTAL METAL FENCE; GATE, SPECIAL, 3’ (16’-0” DOUBLE SWING GATE), GATE, SPECIAL, 6’ (16’-0” DOUBLE SWING GATE); GATE, SPECIAL 6’ (24’ DOUBLE SWING GATE), and GATE, SPECIAL.

DELINEATOR, SPECIAL

Description: This work consists of providing and installing delineators.

Submittals:
1. Product information; all material to meet "Buy America" requirements.
2. Shop drawings.

Warranty: The Contractor shall warranty for a period of one year against failure of assembly and installation. The product shall have a one-year manufacturer's warranty against product failure.

Products:
1. Delineator shall be:
   a. 2-1/4" diameter with recessed cap and surface mount pin lock base.
   b. Delineator shall be linear low density, flexible, co-extruded polyethylene with UV inhibitors. The color shall be yellow with two 3" reflective high-intensity silver wraps.
   c. Delineator base shall be secured to concrete surface using an adhesive butyl rubber pad.
   d. Delineator shall be Type 5 Marker Post, 36" tall, as manufactured by SAFE-HIT, a division of Energy Absorption Systems, Inc., 70 W. Madison St., Suite 2350, Chicago, IL 60602, 800-537-8958 www.safehitlx.com.
   e. Hardware/adhesives/accessories to be used for the mounting of the delineator shall be specified by the delineator manufacturer and approved by the Engineer.

Installation:
1. Delineator shall be set according to plan and manufacturer's recommendations.
2. Delineator base shall be securely attached to concrete surface according to manufacturer's recommendations, with adhesive butyl rubber pad or installation hardware taking care to protect the base and delineator from scuffing and other damage.
3. Any damage to products or site will be repaired or replaced to the satisfaction of the Engineer.

Basis of Payment: This work will be paid for at the contract unit price per each of DELINEATOR, SPECIAL, which price shall include the surface mount pin lock base, butyl rubber pad, installation hardware and all other materials, equipment and labor necessary to complete the work.

EMBANKMENT AND SUBGRADE PREPARATION

Description: This work shall consist of the construction of embankments underneath railroad track by depositing, placing and compacting earth, stone, gravel, or other materials of acceptable quality above the natural ground or other surface and shall consist of preparing the completed or existing earthwork underneath railroad track as an unimproved subgrade prior to constructing the sub-ballast.

General: Except as modified below, the work and materials shall conform to the requirements of Sections 205 and 301 of the SSRBC.

For embankments:

1. All lifts between 0 ft and 3 ft below the top of the subgrade shall be compacted to not less than 100 percent of the standard laboratory density and all lifts more than 3 ft below the top of the subgrade shall be compacted to not less than 95 percent of the standard laboratory density.

2. The moisture content of the soil shall be between 0 and 6 percentage points above the optimum moisture determined according to AASHTO T-99 (Method C).

3. New railway embankments should not be constructed over existing pavements as detailed in Section 205. All old pavements shall be removed

4. Broken concrete, bricks, rock, stone, reclaimed asphalt pavement or other construction or demolition activities or materials generally considered as debris as detailed in Section 202.03 that was referenced from Section 205 should NOT be used in new railway embankment construction.

In locations beneath the sub-ballast:

1. The Contractor shall scarify the top 12 in. of subgrade, adjust the moisture content to between 0 and 6 percentage points above the optimum moisture determined according to AASHTO T-99 (Method C), and compact to not less than 100 percent of the standard laboratory density.

Suitable material taken from drilled shafts, drainage structure excavation, or structure excavation may be used for construction of embankment.

Existing ballast and clean sub-ballast material may be used within the core of the embankment only if the coarse material is thoroughly mixed with fine material. The mixed coarse material shall be homogenous and contain at least 35 percent finer than the No. 200 sieve.

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

Basis of Payment: Subgrade preparation, embankment and any additive or water applied will not be paid for directly but shall be considered as included in the various items of excavation, and their construction shall be included in the unit prices for these items.

FENCE (SPECIAL)

Description: This work consists of providing and installing a 7’ security ornamental steel fence with curved top portion.

Submittals:
1. Product information; all material shall meet “Buy America” requirements.
2. Shop drawings.

Warranty: The Contractor shall warranty for a period of one year against failure of assembly and installation. The Product shall have a twenty year manufacturer’s warranty against product failure.

Products:

1. Fence shall be:

a. Ornamental fence, 7' high with top ornamentation and bottom rails, pickets and posts to match.

b. Fence and posts shall be galvanized steel with factory finish in accordance with manufacturer's specifications, color to be black.

c. Hardware for attachments to match and shall include stainless steel security fasteners and brackets.

d. Fence shall be Montage II, Invincible, 3-rail, as manufactured by Ameristar, 1555 N. Mingo Rd., Tulsa, OK 74116, 1-888-333-3422 www.ameristarfence.com or 3-rail Upgrade with Defender Pinnacle picket style as manufactured by BetafenceUSA, 3309 South I-45, Ennis, TX 75119, 1-972-878-7000 www.BetafenceUSA.com. The use of non-Ameristar or non-BetafenceUSA or non-approved equal parts/components will void the product warranty in its entirety.

e. Fence shall have the flexibility to permit a rack of up to thirty-six (36) inches along an eight (8) foot long section of fence.

f. Designed for a 90 mph (3-second gust) in accordance with ASCE 7-05. Wind load on an iced fence shall be designed using a wind speed of 40 mph (3-second gust). Fence shall be designed for wind exposure Category B and Category C. Foundations shall be designed for a Category 5 soils per table 1804.2 of the 2006 International Building Code (IBC). Allowable lateral bearing pressure may be increased by a factor of 2 as permitted by Section 1804.3.1 of the IBC.

Wind Exposure Category B is defined as urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single family dwellings or larger. Exposure Category B may be used when these conditions exist for a distance of 2,600 feet in the upwind direction.

Wind Exposure Category C is defined as open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country with grasslands.

g. Hardware for an attachment of fence post to concrete surface to be in accordance with details as shown on plans and to include:

   i. 6" x 6" x 1/2" thick A36 steel plate, drilled for anchor bolt holes, to be welded to fence post at point of fence post manufacture. Weld shall be made smooth and flush and shall be A36 steel and in accordance with the AWS Welding Code. Weld shall be applied prior to painting. Steel plate shall receive same paint treatment as fence components.

   ii. Anchor bolt assembly (threaded anchor rod, washer, nut and SET anchoring adhesive) shall be Simpson Strong-Tie Anchoring and Fastening System (1/2") as manufactured by Simpson Strong-Tie.

h. Portland Cement Concrete shall be Class SI in accordance with Section 1020 of the Standard Specifications and meet the requirements of Concrete Footings.

Installation:

1. Existing ornamental fencing has been provided by Ameristar. If an approved equal fencing provider is utilized in this Contract, Contractor shall provide a separate fence post to begin/end the non-Ameristar fencing at no additional cost. The use of one manufacturer's post/bracket/panel with another manufacturer's post/bracket/panel; the interface point between supplier's products, is prohibited unless approved by the Engineer. Contractor shall coordinate with the Engineer for back-to-back post spacing. Contractor shall maintain the fencing alignment per the Plans, regardless of the provision of additional posts.
2. Fence installation shall be based upon the alignment coordinates included within the plan set.
3. The Contractor may encounter miscellaneous piles of railroad material within the limits of Railroad right of way along the new High Speed Rail fencing alignment. The Contractor shall relocate such material to a new location as directed by the Engineer within Railroad right of way limits to permit placement of new High Speed Rail fencing.

a. Removal of adjacent landowner material, equipment, etc. within the limits of Railroad right of way along the new High Speed Rail fencing alignment will be by others at the direction of the Owner.

4. Installation shall be at specific locations as directed by the Engineer.
5. Holes for steel fence posts shall be augered to the diameter and depth according to the plans.
6. Coring of fence post holes through concrete, asphalt, paver stones and stumps may be required to permit augering of fence post holes.
7. Removal and legal disposal of buried materials (cross ties, metal, rocks, debris, etc.) may be required to permit augering of fence post holes.
8. Steel fence posts shall be set and centered within the augered hole according to plan and manufacturer's recommendations. Posts shall be set plumb. Fence post caps shall be epoxyed to top of fence post with manufacturer's approved product.
9. Concrete footings shall be installed as shown on plans.
10. The augering of a fence post hole, the placement of a fence post within the hole, the placement of the concrete footing and removal of augered material off-site and legal disposal shall occur on the same day. As an alternate to removal of augered material offsite daily, the Contractor would be permitted to stockpile augered material at one location with stockpile properly protected with erosion control measures in accordance with best management practices, until such time as stockpiled material has been removed legally offsite. Daily augered material from post hole locations must be moved to stockpiled location daily.
11. Fence sections shall be securely attached to post according to manufacturer's recommendations, taking care to protect the posts and fence from scuffing and other damage.
12. Continuous fence shall be grounded at intervals not exceeding 500 feet in urban areas and 1000 feet in rural areas. There shall be a minimum of one ground in any run of fencing. There shall be a ground within 100 feet of gates in each section of the fence adjacent to the gate.

    Fence under a power line shall be grounded by three grounds, one directly under the crossing and one each side 25 to 50 feet away. A single ground shall be located directly under each telephone or cable crossing.

    The counterpoise ground shall be used only where it is impossible to drive a ground rod.

The ground rod wire shall be connected to the fence panel and the ground rod by a mechanical clamp of cast bronze or stainless steel bolts and washers.

Refer to Chain Link Fence plan details.

Grounding work is to progress at the same time that fence is installed.

13. When cutting/drilling rails or posts in the field, adhere to manufacturer's recommended procedures to seal the exposed steel surface.
14. Welding of fence material in the field shall not be performed.
15. Any damage to products or site will be repaired or replaced to the satisfaction of the Engineer.
16. Fence posts shall be cleaned of any concrete residue to the satisfaction of the Engineer.
17. Existing surface around fence installation shall be cleaned up to the satisfaction of the Engineer.
18. The Contractor is required to provide fence layout surveying and staking.
19. Seeding, Class 2, Nitrogen Fertilizer Nutrients, Phosphorus Fertilizer Nutrients and Potassium Fertilizer Nutrients will be applied to all bare earth surfaces in accordance with Section 250 of the Standard Specifications. The Contractor will stabilize the seeded areas with either Mulch, Method 1 or Mulch, Method 2 in accordance with Section 251 of the Standard Specifications.
20. The Contractor shall provide "As Built" drawings in acceptable format of all fencing installed.

Basis of Payment: This work will be paid for at the contract unit price per linear foot of FENCE (SPECIAL), which price shall include concrete footings, post attachment to concrete surface, relocation of railroad material piles, temporary safety fencing, coring, removal of buried items, removal and disposal of augured material, grade adjustment, protective electrical ground, fence layout surveying and staking, seeding, "As Built" drawings and all other materials, equipment and labor necessary to complete the work.

GATE, SPECIAL, 3' (16'-0" DOUBLE SWING)

Description: This work consists of providing and installing ornamental steel gate.

Submittals:
1. Product information; all material to meet "Buy America" requirements.
2. Shop drawings

Warranty: Contractor shall warranty for a period of one year against failure of assembly and installation. Product to have one year manufacturer's warranty against product failure.

Products:
1. Steel gate shall be

a. Ornamental gate, 3’ high 16’-0” wide double swing (2-8’-3/4” sections) with flush top and bottom rails, pickets and posts to match.

b. Gate and posts shall be galvanized steel with factory finish in accordance with manufacturer’s specifications, color to be black.

c. No Dig Holdback device (1 each per gate section) consists of a mechanical device which automatically engages the lower frame rail of a gate section and holds gate section in an open position until manually released, as manufactured by Chicago Suburban Fence, 10491 Yankee Ridge Drive, Frankfort, IL 60423, 773-405-8924, www.nodigholdback.com.

The No Dig Ornamental Holdback device attaches directly to a gate post and engages the bottom rail of a gate section. Device shall be fabricated from ASTM A36 hot rolled steel and ASTM A307 and ASME B18.2.1 grade 5 bolts and nuts zinc plated or galvanized. Device shall be electrostatically epoxy primed gray and powder coated black in accordance with Advance Enameling Co., Inc., 5849 S. Bishop St., Chicago, IL 60636 tri-treatment architectural coating process. U-bolt with nuts are to be used to attach device to gate post.

The No Dig Ornamental 180 Degree Holdback device attaches to the adjacent section of fence and engages the bottom rail of a gate section. Device shall be fabricated from ASTM A36 hot rolled steel and ASTM A307 and ASME B18.2.1 grade 5 bolts and nuts zinc plated or galvanized. Device shall be electrostatically epoxy primed gray and powder coated black in accordance with Advance Enameling Co., Inc., 5849 S. Bishop St., Chicago, IL 60636 tri-treatment architectural coating process. #10 self tapping screws are to be used to attach mount plate to pinch plate to hold device to adjoining section of fence.

d. Twenty-four (24) inch deep plunger rod gate stop set in concrete shall be 1” to 1-1/8” inside diameter galvanized steel pipe and granular free draining material as approved by the Engineer.

e. Plunger rod and gate hardware to match and be in accordance with manufacturer’s recommendations, as approved by the Engineer. Gate hinges are to be heavy industrial 180 degree adjustable Model MHH 180 and gate latch is to be strong arm latch Model DSB200, both as manufactured by Modern Fence Technologies, 2631 Corporate Drive, East Troy, Wisconsin 53120, 1-888-456-6786, www.mftfence.com.

f. Gate shall be Montage II, 3-rail (Flush Bottom), Majestic Style as manufactured by Ameristar, 1555 N. Mingo Rd., Tulsa, OK 74116, 1-888-333-3422 www.ameristarfence.com or 3-rail Upgrade with Landmark picket style as manufactured by BetafenceUSA, 3309 South I-45, Ennis, TX 75119, 1-972-878-7000 www.BetafenceUSA.com. The use of non-Ameristar or non-BetafenceUSA or non-approved equal parts/components will void the product warranty in its entirety.

g. Designed for a 90 mph (3-second gust) in accordance with ASCE 7-05. Wind load on an iced fence to be designed using a wind speed of 40 mph (3-second gust). Fence designed for wind exposure Category B and Category C. Foundations to be designed

for a Category 5 soils per table 1804.2 of the 2006 International Building Code (IBC). Allowable lateral bearing pressure may be increased by a factor of 2 as permitted by Section 1804.3.1 of the IBC.

Wind Exposure Category B is defined as urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure Category B may be used when these conditions exist for a distance of 2,600 feet in the upwind direction.

Wind Exposure Category C is defined as open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country with grasslands.

h. Pad locks to be provided by Owner.

2. Concrete shall meet requirements of Concrete Footings and is to be IDOT Class SI concrete.

Installation:

1. The use of fencing material manufactured by separate manufacturers is not to occur within the same geographical location. There shall be no mixing of separate manufacturer's materials, i.e. only one supplier per town or small geographical location.
2. Gate installation is to be based upon the alignment coordinates included within the plan set.
3. Contractor may encounter miscellaneous piles of railroad material within the limits of Railroad R.O.W. along the new gate alignment. Contractor shall relocate such material to a new location as directed by the Engineer within Railroad R.O.W. limits to permit placement of a new gate. Cost is to be considered incidental to gate installation.
4. Holes for steel gate posts and gate stop shall be augered to the diameter and depth according to the plans.
   a. Any fence post hole or gate post hole excavations within 3' of a buried utility shall be accomplished by hand digging only.
5. Coring of gate post and gate stop holes through concrete, asphalt, paver stones and stumps may be required to permit augering of gate post and gate stop holes. Cost to be considered incidental to gate installation.
6. Removal and legal disposal of buried materials (cross ties, metal, rocks, debris, etc.) may be required to permit augering of gate post and gate stop holes. Cost to be considered incidental to gate installation.
7. No Dig Holdback devices, either No Dig Ornamental or No Dig 180 Degree, are to be installed for each gate section. Devices are to be installed to permit each gate section to either be held open to an angle of 90 degrees or greater (No Dig Ornamental Holdback) or held open to permit gate section to align with adjoining fence section (No Dig 180 Degree Holdback).

   No Dig Ornamental Holdback device is to be attached to the respective gate post with U-bolt and installed in accordance with manufacturer's instructions to ensure that the device engages the bottom rail of the gate section and holds it in an open position when required. The

engagement device (No Dig Flapper) can be adjusted to pivot parallel to the fence it is attached to to permit flapper to engage bottom rail between pickets.

No Dig 180 Degree Holdback device is to be attached to an adjoining section of ornamental fencing in accordance with manufacturer's instructions to ensure that the device engages the bottom rail of the gate section and holds it in an open position of nearly 180 degrees when required. Normally the No Dig 180 Degree is bolted on to two (2) pickets of the adjoining fence. For those gates which do not have pickets beneath the bottom rail the flapper can be turned around and engage the gate over the bottom rail of the gate between pickets.

Contractor shall coordinate with the Engineer or his field representative as to which No Dig Holdback device is the most appropriate for each gate section.

Minimum horizontal distance from track centerline to any portion of a gate section when in the open position is ten (10) foot.

8. Steel gate posts shall be set and centered within the augered hole and gate stop shall be set according to plan and manufacturer's recommendations. Gate posts shall be set plumb and level with one another. Adjust grade as required to ensure a maximum gap of twelve (12) inches beneath any portion of gate. Gate post caps are to be epoxyed to top of gate post with manufacturer's approved product.
9. Concrete footings shall be installed as shown on plans.
10. The augering of a gate post or gate stop hole; the placement of a gate post or gate stop within the hole; the placement of the concrete footing and removal of augered material off-site and legal disposal is to occur on the same day. As an alternate to removal of augered material off-site daily, Contractor would be permitted to stockpile augered material at one location with stockpile properly protected with erosion control measures in accordance with best management practices, until such time as stockpiled material has been removed legally off-site. Daily augered material from post or stop hole locations must be moved to stockpiled location daily.
    a. The provisions of Special Conditions Service Order Number 68406, Section 02230 Roadway Excavation and Embankment 1) are applicable to augered material. All costs to handle or dispose impacted soils as characterized in the Soil Characterization Reports shall be incidental to GATE, SPECIAL, 3' (16'- 0" DOUBLE SWING) bid item.
11. Gate sections with gate locking latch shall be securely attached to gate posts according to manufacturer's recommendations, taking care to protect the posts and gate from scuffing and other damage. Adjust grade as required to ensure full unobstructed range of travel between closed and open position for each gate section.
12. Gate plunge rod to be installed on railroad side of gate; to be verified in the field with Engineer. Gate stop to be installed plumb in accordance with plan details.
13. Continuous fence shall be grounded at intervals not exceeding 500 feet in urban areas and 1000 feet in rural areas. There is to be a minimum of one ground in any run of fencing. There shall be a ground within 100 feet of gates in each section of the fence adjacent to the gate.

Fence under a power line shall be grounded by three grounds, one directly under the crossing and one each side 25 to 50 feet away. A single ground shall be located directly under each telephone or cable crossing.

The counterpoise ground shall be used only where it is impossible to drive a ground rod.

The ground rod wire shall be connected to the fence panel and the ground rod by a mechanical clamp of cast bronze or stainless steel bolts and washers.

Refer to Chain Link Fence plan details.
Grounding work is to progress at the same time that fence is installed.

14. When cutting/drilling rails or posts in the field adhere to manufacturer's recommended procedures to seal the exposed steel surface.
15. Welding of gate material in the field shall not be permitted.
16. Any damage to products or site will be repaired or replaced to the satisfaction of the Engineer.
17. Gate posts to be cleaned of any concrete residue to the satisfaction of the Engineer.
18. Existing surface around gate installation to be cleaned up to the satisfaction of the Engineer.
19. Contractor is required to provide gate layout surveying and staking that shall be incidental to GATE, SPECIAL, 3' (16'-0" DOUBLE SWING) bid item.
20. Contractor shall provide "As Built" drawings in acceptable format of all gates installed. Cost is considered incidental to gate installation.

Basis of Payment:

1. Gate will be paid for at the contract unit price per each of GATE, SPECIAL, 3' (16'-0" DOUBLE SWING). Concrete footings, grade adjustment, protective electrical ground, No Dig Holdback devices, relocation of railroad material piles, coring, removal of buried items, gate stop, gate layout and "As Built" drawings are included in the cost of the GATE, SPECIAL, 3' (16'-0" DOUBLE SWING).

GATE, SPECIAL, 6' (DOUBLE SWING)

Description: This work consists of providing and installing ornamental steel gate.

Submittals:

1. Product information; all material to meet "Buy America" requirements.
2. Shop drawings

Warranty: Contractor shall warranty for a period of one year against failure of assembly and installation. Product to have one year manufacturer's warranty against product failure.

Products:

1. Steel gate shall be

a. Ornamental gate, 6’ high 16’-0” or 24’-0” wide double swing (2-8’-0” sections) with rails, pickets and posts to match.

b. Gate and posts shall be galvanized steel with factory finish in accordance with manufacturer’s specifications, color to be black.

c. No Dig Holdback device (1 each per gate section) consists of a mechanical device which automatically engages the lower frame rail of a gate section and holds gate section in an open position until manually released, as manufactured by Chicago Suburban Fence, 10491 Yankee Ridge Drive, Frankfort, IL 60423, 773-405-8924, www.nodigholdback.com.

The No Dig Ornamental Holdback device attaches directly to a gate post and engages the bottom rail of a gate section. Device shall be fabricated from ASTM A36 hot rolled steel and ASTM A307 and ASME B18.2.1 grade 5 bolts and nuts zinc plated or galvanized. Device shall be electrostatically epoxy primed gray and powder coated black in accordance with Advance Enameling Co., Inc., 5849 S. Bishop St., Chicago, IL 60636 tri-treatment architectural coating process. U-bolt with nuts are to be used to attach device to gate post.

The No Dig Ornamental 180 Degree Holdback device attaches to the adjacent section of fence and engages the bottom rail of a gate section. Device shall be fabricated from ASTM A36 hot rolled steel and ASTM A307 and ASME B18.2.1 grade 5 bolts and nuts zinc plated or galvanized. Device shall be electrostatically epoxy primed gray and powder coated black in accordance with Advance Enameling Co., Inc., 5849 S. Bishop St., Chicago, IL 60636 tri-treatment architectural coating process. #10 self tapping screws are to be used to attach mount plate to pinch plate to hold device to adjoining section of fence.

d. Twenty-four (24) inch deep plunger rod gate stop set in concrete shall be 1” to 1-1/8” inside diameter galvanized steel pipe and granular free draining material as approved by the Engineer.

e. Plunger rod and gate hardware to match and be in accordance with manufacturer’s recommendations, as approved by Engineer. Gate hinges are to be heavy industrial 180 degree adjustable Model MHH 180 and gate latch is to be strong arm latch Model DSB200, both as manufactured by Modern Fence Technologies, 2631 Corporate Drive, East Troy, Wisconsin 53120, 1-888-456-6786, www.mftfence.com.

f. Gate shall be Montage II, 3-rail (Standard), Classic Style as manufactured by Ameristar, 1555 N. Mingo Rd., Tulsa, OK 74116, 1-888-333-3422 www.ameristarfence.com or 3-rail Upgrade with Pinnacle picket style as manufactured by BetafenceUSA, 3309 South I-45, Ennis, TX 75119, 1-972-878-7000 www.BetafenceUSA.com. The use of non-Ameristar or non-BetafenceUSA or non-approved equal parts/components will void the product warranty in its entirety.

g. Designed for a 90 mph (3-second gust) in accordance with ASCE 7-05. Wind load on an iced fence to be designed using a wind speed of 40 mph (3-second gust). Fence

designed for wind exposure Category B and Category C. Foundations to be designed for a Category 5 soils per table 1804.2 of the 2006 International Building Code (IBC). Allowable lateral bearing pressure may be increased by a factor of 2 as permitted by Section 1804.3.1 of the IBC.

Wind Exposure Category B is defined as urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single family dwellings or larger. Exposure Category B may be used when these conditions exist for a distance of 2,600 feet in the upwind direction.

Wind Exposure Category C is defined as open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country with grasslands.

h. Pad locks to be provided by Owner.

2. Concrete shall meet requirements of Concrete Footings and is to be IDOT Class SI concrete.

Installation:

1. The use of fencing material manufactured by separate manufacturers is not to occur within the same geographical location. There shall be no mixing of separate manufacturer's materials, i.e. only one supplier per town or small geographical location.
2. Gate installation is to be based upon the alignment coordinates included within the plan set.
3. Contractor may encounter miscellaneous piles of railroad material within the limits of Railroad R.O.W. along the new gate alignment. Contractor shall relocate such material to a new location as directed by the Engineer within Railroad R.O.W. limits to permit placement of a new gate. Cost is to be considered incidental to gate installation.
4. Holes for steel gate posts and gate stop shall be augered to the diameter and depth according to the plans.
   a. Any fence post hole or gate post hole excavations within 3' of a buried utility shall be accomplished by hand digging only.
5. Coring of gate post and gate stop holes through concrete, asphalt, paver stones and stumps may be required to permit augering of gate post and gate stop holes. Cost to be considered incidental to gate installation.
6. Removal and legal disposal of buried materials (cross ties, metal, rocks, debris, etc.) may be required to permit augering of gate post and gate stop holes. Cost to be considered incidental to gate installation.
7. No Dig Holdback devices, either No Dig Ornamental or No Dig 180 Degree, are to be installed for each gate section. Devices are to be installed to permit each gate section to either be held open to an angle of 90 degrees or greater (No Dig Ornamental Holdback) or held open to permit gate section to align with adjoining fence section (No Dig 180 Degree Holdback).

   No Dig Ornamental Holdback device is to be attached to the respective gate post with U-bolt and installed in accordance with manufacturer's instructions to ensure that the device engages the bottom rail of the gate section and holds it in an open position when required. The

engagement device (No Dig Flapper) can be adjusted to pivot parallel to the fence it is attached to to permit flapper to engage bottom rail between pickets.

No Dig 180 Degree Holdback device is to be attached to an adjoining section of ornamental fencing in accordance with manufacturer's instructions to ensure that the device engages the bottom rail of the gate section and holds it in an open position of nearly 180 degrees when required. Normally the No Dig 180 Degree is bolted on to two (2) pickets of the adjoining fence. For those gates which do not have pickets beneath the bottom rail the flapper can be turned around and engage the gate over the bottom rail of the gate between pickets.

Contractor shall coordinate with the Engineer or his field representative as to which No Dig Holdback device is the most appropriate for each gate section.

Minimum horizontal distance from track centerline to any portion of a gate section when in the open position is ten (10) foot.

8. Steel gate posts shall be set and centered within the augered hole and gate stop shall be set according to plan and manufacturer's recommendations. Posts shall be set plumb and level with one another. Adjust grade as required to ensure a maximum gap of twelve (12) inches beneath any portion of gate. Gate post caps are to be epoxyed to top of gate post with manufacturer's approved product.
9. Concrete footings shall be installed as shown on plans.
10. The augering of a gate post or gate stop hole; the placement of a gate post or gate stop within the hole; the placement of the concrete footing and removal of augered material off-site and legal disposal is to occur on the same day. As an alternate to removal of augered material off-site daily, Contractor would be permitted to stockpile augered material at one location with stockpile properly protected with erosion control measures in accordance with best management practices, until such time as stockpiled material has been removed legally off-site. Daily augered material from post or stop hole locations must be moved to stockpiled location daily.
    a. The provisions of Special Conditions Service Order Number 68406, Sections 02230 Roadway Excavation and Embankment 1) are applicable to augered material. All costs to handle or dispose impacted soils as characterized in the Soil Characterization Reports shall be incidental to this bid item.
11. Gate sections with gate locking latch shall be securely attached to post according to manufacturer's recommendations, taking care to protect the posts and gate from scuffing and other damage. Adjust grade as required to ensure full unobstructed range of travel between closed and open position for each gate section.
12. Gate plunge rod to be installed on railroad side of gate; to be verified in the field with Engineer. Gate stop to be installed plumb in accordance with plan details.
13. Continuous fence shall be grounded at intervals not exceeding 500 feet in urban areas and 1000 feet in rural areas. There is to be a minimum of one ground in any run of fencing. There shall be a ground within 100 feet of gates in each section of the fence adjacent to the gate.

Fence under a power line shall be grounded by three grounds, one directly under the crossing and one each side 25 to 50 feet away. A single ground shall be located directly under each telephone or cable crossing.

The counterpoise ground shall be used only where it is impossible to drive a ground rod.

The ground rod wire shall be connected to the fence panel and the ground rod by a mechanical clamp of cast bronze or stainless-steel bolts and washers.

Refer to Chain Link Fence plan details.
Grounding work is to progress at the same time that fence is installed.

14. When cutting/drilling rails or posts in the field adhere to manufacturer's recommended procedures to seal the exposed steel surface.
15. Welding of gate material in the field shall not be permitted.
16. Any damage to products or site will be repaired or replaced to the satisfaction of the Engineer.
17. Gate posts to be cleaned of any concrete residue to the satisfaction of the Engineer.
18. Existing surface around gate installation to be cleaned up to the satisfaction of the Engineer.
19. Contractor is required to provide gate layout surveying and staking that shall be incidental to this bid item.
20. Contractor shall provide "As Built" drawings in acceptable format of all gates installed. Cost is considered incidental to gate installation.

Basis of Payment: Gate will be paid for at the contract unit price per each of GATE, SPECIAL, 6' (16'-0" DOUBLE SWING) or GATE, SPECIAL, 6' (24'-0" DOUBLE SWING). Concrete footings, grade adjustment, protective electrical ground, No Dig Holdback devices, relocation of railroad material piles, coring, removal of buried items, gate stop, gate layout and "As Built" drawings are included in this cost.

GATE, SPECIAL

Description: This work consists of providing and installing steel escape pad swing gate.

Submittals:

1. Product Information: all material to meet "Buy America" requirements. (Note: A waiver has been provided for use of the SureClose hinge).
2. Product Data: Submit product data for each type of product used on project with full model number.
3. Hardware Schedule:
   a. Submit hardware schedule detailing hardware to be provided at each opening for coordination with gate frames, gate posts and related work.
   b. For load bearing hardware provide product information showing quantity and type of hardware recommended by manufacturer to safely carry weight of gate and other applied loads.

c. Installation Instructions: Submit manufacturer's installation instructions for each hardware device.
d. Warranty: Submit copy of manufacturer's warranty for each product.

4. Shop drawings

Warranty: Contractor shall warranty for a period of one year against failure of assembly and installation. Product to have one year manufacturer's warranty against product failure.

Products:

1. Steel escape pad swing gate shall be
   a. Heavy-duty, self-closing swing gate, 3' high with gate post and stop post with closed gate stop, fully ADA compliant. Bottom of gate shall clear top of escape pad concrete by eighteen (18) inches.
   b. Gate shall be as manufactured by Ameristar, 1555 N. Mingo Rd., Tulsa, OK 74116, 1-888-333-3422, www.ameristarfence.com or as manufactured by BetafenceUSA, 3309 South I-45, Ennis, TX 75119, 1-972-878-7000 www.BetafenceUSA.com. The use of non-Ameristar or non-BetafenceUSA or non-approved equal parts/ components will void the product warranty in its entirety.
   c. Gate post, stop post and gate shall be fabricated using 6" square x 12 ga. and 4" square x 12 ga. capped posts; 1-3/4" x 1-3/4" x 0.105" channel rail gate frame; 2" square x 11 ga. gate ends; and 1" square x 14 ga. pickets conforming to ASTM 653/A653M with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.90 oz/ft^2 (276 g/m2), coating designation G-90. All frame intersections and picket intersections with frame members to gate frame shall be neatly welded continuously in place and finish so that adjoining surfaces are flush and smooth.
   d. Gate posts, gate frame, gate ends and pickets shall be pre-cut to the required lengths. Channel rails shall be punched to accept pickets and gate ends shall be punched to accept the channel rails. Pickets shall be inserted into the pre-punched holes in the channel rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. Channel rails shall be inserted into the pre-punched holes in the gate ends and shall be aligned to ensure that gate and frame are square. The aligned pickets and rails, channel rails and gate ends for the Ameristar product shall be joined at each picket-to-rail, channel rail to gate end intersection by Ameristar's proprietary fusion welding process thus completing a rigid gate assembly. The aligned pickets and rails, channel rails and gate ends for the BetafenceUSA product shall be MIG welded. Holes in specific pickets for sign installations shall be drilled in accordance with plan details. The posts and manufactured gate shall receive a factory finish in accordance with manufacturer's specifications. The color shall be black. The coated posts and gate shall be capable of meeting the ASTM Standard Specifications for Ornamental Fences Employing Galvanized Steel Tubular Pickets.
   e. Closed gate stop and open gate stop bracket shall be fabricated from standard commercial grade pre-galvanized carbon steel sheet (0.120" thick/11 ga.) conforming

to ASTM 1008 with a minimum zinc coating weight of 0.90 oz/ft^2 coating designation G-90.

f. Closed gate stop (Model KMS-GSB-6) and open gate stop bracket (Model KMS-GSB-90), as manufactured by Modern Fence Technologies, shall be cut, punched and shaped with rounded corners to the plan identified dimensions and include EZ-Screw shoulder fasteners and eight (8) 1/2" diameter rubber (Polyolefin) bumpers. Closed gate stop and open gate stop bracket finished surface to be powder coated with JASAXXG product Low Gloss Black Urethane 8702-9000; color shall be black.

g. Hardware for attachment of closed gate stop to gate end shall be 5/16" x 1" Super-Tek zinc plated self-tapping screws Xylan coated black.

h. Hardware for attachment of open gate stop bracket to gate post shall be #14 x 1" Sq. Soc Pancake Tek3 S22 Steel Zc tamper proof self-tapping screws Xylan coated black.

i. The gate hinge shall be anodized high strength aluminum SureClose self-closing flush mounted hinge with anodized high strength aluminum SureClose post mounting bracket as manufactured by D & D Technologies, 7731 Woodwind Drive, Huntington Beach, CA 92647, 1-800-716-0888, www.ddtech.com. Hinge and bracket to be black in color. Hinge shall be SureClose Item #75057223 Type 57SF AT90S Heavy-Duty Hydraulic Closer and Hinge and mounting bracket shall be SureClose Item #7515 Type 6026-05 aluminum flush mount in accordance with plan details.

j. Hardware for attachment of hinge and mounting bracket to gate post and gate end shall be #14 countersunk tamper-proof stainless-steel screws with flat head in accordance with hinge and mounting bracket manufacturer's recommendations. Screw color to be black.

k. Signs, tamper-proof stainless-steel fasteners and the neoprene washers to be in accordance with the plans.

2. Concrete shall meet requirements of Concrete Footings and is to be IDOT Class SI concrete.

Installation:

1. The use of fence material manufactured by separate manufacturers is not to occur within the same geographical location. There shall be no mixing of separate manufacturer's materials, i.e. only one supplier per town of small geographical location.
2. Holes for steel gate post and stop post shall have been pre-augered and protected with sonotube to the required diameter and depth according to the plans by others. Sonotube material shall be removed and the augered hole shall be shaped to plan dimensions prior to concrete placement.
   a. Any fence post hole or gate post hole excavations within 3' of a buried utility shall be accomplished by hand digging only.
3. Steel gate post and stop post shall be set and centered within the augered hole and be set according to the plans and manufacturer's recommendations. Gate post and stop post shall be set plumb, level and true to line and location. Gate post and stop post caps are to be epoxyed to top of post with manufacturer's approved product.
4. Gate post and stop post to be set outside the edges of the escape pad concrete per the plan.
5. Concrete footings shall be installed as shown on the plans including the rectangular forming and joint filler placement for the top portion of the footing at gate post and stop post.

6. Hinges shall be securely attached to gate end and gate post; closed gate stop shall be securely attached to gate end to align with stop post; and open gate stop bracket shall be securely attached to gate post according to plan details, taking care to protect posts and gate from scuffing and other damage. Hinges shall be secured to gate post and gate end with #14 countersunk tamper proof screws; closed gate stop shall be secured to gate end with Super-Tek screws; and open gate stop bracket shall be secured to gate post with #14 Pancake Tek3 screws. Finished gate shall be square, plumb, level, and true to line and location according to plans.
7. Signs shall be affixed to the steel pickets with four (4) tamper-proof stainless steel one-way fasteners. Neoprene washers to be placed between sign surfaces and pickets.
8. When cutting/drilling gate ends, rails or posts in the field adhere to manufacturer's recommended procedures to seal the exposed steel surface.
9. Welding of gate material in the field shall not be permitted.
10. Any damage to products or site will be repaired or replaced to the satisfaction of the Engineer.
11. Existing surface around gate installation to be cleaned up to the satisfaction of the Engineer.
12. Construct and assemble one escape pad swing gate for testing. IDOT, Illinois Commerce Commission and Owner to witness gate testing and approve gate opening and closing operation before any additional escape pad swing gate work is done at the other pedestrian crossings. If gate operation is not approved, modify gate and gate hinges as necessary and repeat testing until gate operation is approved by IDOT, Illinois Commerce Commission and Owner. Make final installation inspection with Engineer and make final adjustments prior to acceptance.
13. Contractor is required to provide gate layout survey and staking that shall be incidental to GATE, SPECIAL.
14. Contractor shall provide "As Built" drawings in acceptable format of all gates installed. Cost is considered incidental to gate installation.

Basis of Payment:

1. Gate will be paid for at the contract unit price per each of GATE, SPECIAL. Concrete footings, gate testing, gate layout and "As Built" drawings are included in the cost of the GATE, SPECIAL.

MINOR SIGN COMPLETE

Description: This work shall consist of all labor, materials, tools, and supervision to furnish and install UP railroad double sided Mile Post Markers and Private Property No Trespassing signs as shown on the Plans.

General: Mile Post Markers shall be placed along the UPRR Main 1 track at locations identified in the plan Sign Schedule. Signs shall be double sided 6" numeral signs mounted on posts in conformance with UPRR standard drawings 0501, 0502, 0535, and 0599.

Private Property No Trespassing signs shall be affixed to right-of-way fencing at locations identified in the plan Sign Schedule. Signs shall conform to UPRR standard drawing 0538.

Materials and installation shall conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Each for MINOR SIGN COMPLETE.

ORNAMENTAL FENCE SPECIAL

Description: This work consists of providing and installing ornamental steel fence.

Submittals:
1. Product information; all material to meet "Buy America" requirements.
2. Shop drawings

Warranty: Contractor shall warranty for a period of one year against failure of assembly and installation. Product to have twenty-year manufacturer's warranty against product failure.

Products:
1. Fence shall be
   a. Ornamental fence, 3' high with flush top and bottom rails, pickets and posts to match.
   b. Fence and posts shall be galvanized steel with factory finish in accordance with manufacturer's specifications, color to be black.
   c. Hardware for attachments to match and shall include stainless steel security fasteners and brackets.
   d. Fence shall be Montage II, 3-rail (Flush Bottom), Majestic Style as manufactured by Ameristar, 1555 N. Mingo Rd., Tulsa, OK 74116, 1-888-333-3422 www.ameristarfence.com or 3-rail Upgrade with Landmark picket style as manufactured by BetafenceUSA, 3309 South I-45, Ennis, TX 75119, 1-972-878-7000 www.BetafenceUSA.com. The use of non-Ameristar or non-BetafenceUSA or non-approved equal parts/components will void the product warranty in its entirety.
   e. Fence shall have the flexibility to permit a rack of up to thirty-six (36) inches along an eight (8) foot long section of fence.
   f. Designed for a 90 mph (3-second gust) in accordance with ASCE 7-05. Wind load on an iced fence to be designed using a wind speed of 40 mph (3-second gust). Fence designed for wind exposure Category B and Category C. Foundations to be designed for a Category 5 soils per table 1804.2 of the 2006 International Building Code (IBC). Allowable lateral bearing pressure may be increased by a factor of 2 as permitted by Section 1804.3.1 of the IBC.

      Wind Exposure Category B is defined as urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-

family dwellings or larger. Exposure Category B may be used when these conditions exist for a distance of 2,600 feet in the upwind direction.

Wind Exposure Category C is defined as open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country with grasslands.

g. Hardware for an attachment of fence post to concrete surface to be in accordance with details as shown on plans and to include:
   i. 6" x 6" x 1/2" thick A36 steel plate, drilled for anchor bolt holes, to be welded to fence post at point of fence post manufacture. Weld shall be made smooth and flush and shall be A36 steel and in accordance with the AWS Welding Code. Weld to be applied prior to painting. Steel plate to receive same paint treatment as fence components.
   ii. Anchor bolt assembly (threaded anchor rod, washer, nut and SET anchoring adhesive) to be Simpson Strong-Tie Anchoring and Fastening System (1/2") as manufactured by Simpson Strong-Tie.

2. Concrete shall meet requirements of Concrete Footings and is to be IDOT Class SI concrete.

Installation:

1. The use of fencing material manufactured by separate manufacturers is not to occur within the same geographical location. There shall be no mixing of separate manufacturer's materials, i.e. only one supplier per town or small geographical location.
2. Fence installation is to be based upon the alignment coordinates included within the plan set. The ± distances shown between existing track centerline and new R.O.W. fencing on plan sheets are for information only.
   a. Certain locations as noted on plans may require that the top of the fence to be raised to a minimum height above an adjacent roadway surface or top of retaining wall. In these locations longer fence posts may be required to achieve the necessary top of fence location.
3. Contractor may encounter miscellaneous piles of railroad material within the limits of Railroad R.O.W. along the new R.O.W. fencing alignment. Contractor shall relocate such material to a new location as directed by the Engineer within Railroad R.O.W. limits to permit placement of new R.O.W. fencing. Cost to be considered incidental to fence installation.
   a. Removal of adjacent landowner material, equipment, etc. within the limits of Railroad R.O.W. along the new R.O.W. fencing alignment is to be by others at the direction of the Owner.
4. Holes for steel fence posts shall be augered to the diameter and depth according to the plans.
   a. Any fence post hole or gate post hole excavations within 3' of a buried utility shall be accomplished by hand digging only.
5. Coring of fence post holes through concrete, asphalt, paver stones and stumps may be required to permit augering of fence post holes. Paver stones may need to be removed/ trimmed/reinstalled and/or replaced as necessary to permit fence installation. Cost to be considered incidental to fence installation.

6. Removal and legal disposal of buried materials (cross ties, metal, rocks, debris, etc.) may be required to permit augering of fence post holes. Cost to be considered incidental to fence installation.
7. Steel fence posts shall be set and centered within the augered hole according to plan and manufacturer's recommendations. Posts shall be set plumb. Fence post caps are to be epoxyed to top of fence post with manufacturer's approved product.
8. Concrete footings shall be installed as shown on plans.
9. The augering of a fence post hole, the placement of a fence post within the hole, the placement of the concrete footing and removal of augered material off-site and legal disposal is to occur on the same day. As an alternate to removal of augered material off-site daily, Contractor would be permitted to stockpile augered material at one location with stockpile properly protected with erosion control measures in accordance with best management practices, until such time as stockpiled material has been removed legally off-site. Daily augered material from post hole locations must be moved to stockpiled location daily.
    a. The provisions of Special Conditions Service Order Number 68406, Section 02230 Roadway Excavation and Embankment 1) are applicable to augered material. All costs to handle or dispose impacted soils as characterized in the Soil Characterization Reports shall be incidental to ORNAMENTAL FENCE SPECIAL bid item.
10. Steel fence post shall be set onto a concrete surface as shown on plans.
    a. Contractor shall anchor fence post with base plate to concrete using four (4) anchor bolt assemblies with 4 3/8" minimum embedment.
    b. 1/8" thick fabric reinforced elastomeric pad to be placed between concrete surface and bottom of base plate with holes punched for anchor bolts.
    c. Anchor bolt assembly (complete) to be installed in accordance with Simpson Strong-Tie instructions.
11. Fence sections shall be securely attached to post according to manufacturer's recommendations, taking care to protect the posts and fence from scuffing and other damage.
12. Continuous fence shall be grounded at intervals not exceeding 500 feet in urban areas and 1000 feet in rural areas. There shall be a minimum of one ground in any run of fencing. There shall be a ground within 100 feet of gates in each section of the fence adjacent to the gate.

    Fence under a power line shall be grounded by three grounds, one directly under the crossing and one each side 25 to 50 feet away. A single ground shall be located directly under each telephone or cable crossing.

    The counterpoise ground shall be used only where it is impossible to drive a ground rod.
    The ground rod wire shall be connected to the fence panel and the ground rod by a mechanical clamp of cast bronze or stainless-steel bolts and washers.
    Refer to Chain Link Fence plan details.
    Grounding work is to progress at the same time that fence is installed.
13. When cutting/drilling rails or posts in the field adhere to manufacturer's recommended procedures to seal the exposed steel surface.
14. Welding of fence material in the field shall not be performed.

15. Any damage to products or site will be repaired or replaced to the satisfaction of the Engineer.
16. Fence posts to be cleaned of any concrete residue to the satisfaction of the Engineer.
17. Existing surface around fence installation to be cleaned up to the satisfaction of the Engineer.
18. Contractor is required to provide fence layout surveying and staking that shall be incidental to ORNAMENTAL FENCE SPECIAL bid item.
19. Contractor shall provide "As Built" drawings in acceptable format of all fencing installed. Cost is considered incidental to fence installation.

Basis of Payment: Fence will be paid for at the contract unit price per linear foot of ORNAMENTAL FENCE SPECIAL. Concrete footings, post attachment to concrete surface, relocation of railroad material, coring, removal of buried items, protective electrical ground, fence layout and "As Built" drawings are included in the cost of the ORNAMENTAL FENCE SPECIAL.

ORNAMENTAL METAL FENCE

Description: This work consists of providing and installing ornamental steel fence.

Submittals:
1. Product information; all material to meet "Buy America" requirements.
2. Shop drawings

Warranty: Contractor shall warranty for a period of one year against failure of assembly and installation. Product to have twenty-year manufacturer's warranty against product failure.

Products:
1. Fence shall be
   a. Ornamental fence, 6' high with top ornamentation and bottom rails, pickets and posts to match.
   b. Fence and posts shall be galvanized steel with factory finish in accordance with manufacturer's specifications, color to be black. Longer posts will be required at swale crossing to achieve design bottom of fence according to plans. Certain locations as noted on plans may require that the top of the fence to be raised to a minimum height above an adjacent roadway surface or top of retaining wall. In these locations longer fence posts may be required to achieve the necessary top of fence location.
   c. Hardware for attachments to match and shall include stainless steel security fasteners and brackets.
   d. Fence shall be Montage II, 3-rail (Standard), Classic Style as manufactured by Ameristar, 1555 N. Mingo Rd., Tulsa, OK 74116, 1-888-333-3422 www.ameristarfence.com or 3-rail Upgrade with Pinnacle picket style as manufactured by BetafenceUSA, 3309 South I-45, Ennis, TX 75119, 1-972-878-7000 www.BetafenceUSA.com.

The use of non-Ameristar or non-BetafenceUSA or non-approved equal parts/components will void the product warranty in its entirety.

e. Fence shall have the flexibility to permit a rack of up to thirty-six (36) inches along an eight (8) foot long section of fence.

f. Designed for a 90 mph (3-second gust) in accordance with ASCE 7-05. Wind load on an iced fence to be designed using a wind speed of 40 mph (3-second gust). Fence designed for wind exposure Category B and Category C. Foundations to be designed for a Category 5 soils per table 1804.2 of the 2006 International Building Code (IBC). Allowable lateral bearing pressure may be increased by a factor of 2 as permitted by Section 1804.3.1 of the IBC.

   Wind Exposure Category B is defined as urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure Category B may be used when these conditions exist for a distance of 2,600 feet in the upwind direction.

   Wind Exposure Category C is defined as open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country with grasslands.

g. Hardware for an attachment of fence post to concrete surface to be in accordance with details as shown on plans and to include:
   i. 6” x 6” x 1/2” thick A36 steel plate, drilled for anchor bolt holes, to be welded to fence post at point of fence post manufacture. Weld shall be made smooth and flush and shall be A36 steel and in accordance with the AWS Welding Code. Weld to be applied prior to painting. Steel plate to receive same paint treatment as fence components.
   ii. Anchor bolt assembly (threaded anchor rod, washer, nut and SET anchoring adhesive) to be Simpson Strong-Tie Anchoring and Fastening System (1/2”) as manufactured by Simpson Strong-Tie.

2. Concrete shall meet requirements of Concrete Footings and is to be IDOT Class SI concrete.

Installation:

1. The use of fencing material manufactured by separate manufacturers is not to occur within the same geographical location. There shall be no mixing of separate manufacturer’s materials, i.e. only one supplier per town or small geographical location.
2. Fence installation is to be based upon the alignment coordinates included within the plan set. The ± distances shown between existing track centerline and new R.O.W. fencing on plan sheets are for information only.
3. Contractor may encounter miscellaneous piles of railroad material within the limits of Railroad R.O.W. along the new R.O.W. fencing alignment. Contractor shall relocate such material to a new location as directed by the Engineer within Railroad R.O.W. limits to permit placement of new R.O.W. fencing. Cost to be considered incidental to fence installation.

a. Removal of adjacent landowner material, equipment, etc. within the limits of Railroad R.O.W. along the new R.O.W. fencing alignment is to be by others at the direction of the Owner.

4. Location of "Rattlesnake Master" vegetation area has been identified within the plan set. Railroad shall delineate such limits of vegetation to permit placement of fencing. Contractor will be required to install temporary orange safety fencing around such area in the field. Contractor's personnel and equipment shall not be permitted to enter such area for purposes of construction unless as notified by the Railroad. Upon completion of construction items through this area, Contractor shall remove such temporary fencing. Cost to be considered incidental to fence installation.
5. Holes for steel fence posts shall be augered to the diameter and depth according to the plans.
   a. Any fence post hole or gate post hole excavations within 3' of a buried utility shall be accomplished by hand digging only.
6. Coring of fence post holes through concrete, asphalt, paver stones and stumps may be required to permit augering of fence post holes. Paver stones may need to be removed/ trimmed/re-installed and/or replaced as necessary to permit fence installation. Cost to be considered incidental to fence installation.
7. Removal and legal disposal of buried materials (cross ties, metal, rocks, debris, etc.) may be required to permit augering of fence post holes. Cost to be considered incidental to fence installation.
8. Steel fence posts shall be set and centered within the augered hole according to plan and manufacturer's recommendations. Posts shall be set plumb. Fence post caps are to be epoxyed to top of fence post with manufacturer's approved product.
9. Concrete footings shall be installed as shown on plans.
10. The augering of a fence post hole, the placement of a fence post within the hole, the placement of the concrete footing and removal of augered material off-site and legal disposal is to occur on the same day. As an alternate to removal of augered material off-site daily, Contractor would be permitted to stockpile augered material at one location with stockpile properly protected with erosion control measures in accordance with best management practices, until such time as stockpiled material has been removed legally off-site. Daily augered material from post hole locations must be moved to stockpiled location daily.
    a. The provisions of Special Conditions Service Order Number 68406, Section 02230 Roadway Excavation and Embankment 1) are applicable to augered material. All costs to handle or dispose impacted soils as characterized in the Soil Characterization Reports shall be incidental to ORAMENTAL METAL FENCE bid item.
11. Steel fence post shall be set onto a concrete surface as shown on plans.
    a. Contractor shall anchor fence post with base plate to concrete using four (4) anchor bolt assemblies with 4 3/8" minimum embedment.
    b. 1/8" thick fabric reinforced elastomeric pad to be placed between concrete surface and bottom of base plate with holes punched for anchor bolts.
    c. Anchor bolt assembly (complete) to be installed in accordance with Simpson Strong-Tie instructions.

12. Fence sections shall be securely attached to post according to manufacturer's recommendations, taking care to protect the posts and fence from scuffing and other damage.
13. Continuous fence shall be grounded at intervals not exceeding 500 feet in urban areas and 1000 feet in rural areas. There is to be a minimum of one ground in any run of fencing. There shall be a ground within 100 feet of gates in each section of the fence adjacent to the gate.

    Fence under a power line shall be grounded by three grounds, one directly under the crossing and one each side 25 to 50 feet away. A single ground shall be located directly under each telephone or cable crossing.

    The counterpoise ground shall be used only where it is impossible to drive a ground rod.

    The ground rod wire shall be connected to the fence panel and the ground rod by a mechanical clamp of cast bronze or stainless-steel bolts and washers.
    Refer to Chain Link Fence plan details.
    Grounding work is to progress at the same time that fence is installed.
14. When cutting/drilling rails or posts in the field adhere to manufacturer's recommended procedures to seal the exposed steel surface.
15. Welding of fence material in the field shall not be performed.
16. Any damage to products or site will be repaired or replaced to the satisfaction of the Engineer.
17. Fence posts to be cleaned of any concrete residue to the satisfaction of the Engineer.
18. Existing ground surface around fence installation to be cleaned up to the satisfaction of the Engineer.
19. Contractor is required to provide fence layout surveying and staking that shall be incidental to ORNAMENTAL METAL FENCE bid item.
20. Contractor shall provide "As Built" drawings in acceptable format of all fencing installed. Cost is considered incidental to fence installation.

Basis of Payment: Fence will be paid for at the contract unit price per linear foot of ORNAMENTAL METAL FENCE. Concrete footings, post attachment to concrete surface, relocation of railroad material piles, temporary safety fencing, coring, removal of buried items, protective electrical ground, fence layout and "As Built" drawings are included in the cost of the ORNAMENTAL METAL FENCE.

PRECAST CONCRETE RAILROAD CROSSING

Description: This work shall consist of all labor, materials, tools and supervision to furnish and install precast concrete railroad grade crossing panels at roadway crossings as shown on the Plans.

General: This item includes precast concrete panels, other track material, and other material in conformance with UPRR standard drawings to construct the grade crossing surface. This item shall also include marking for track identification as described in UPRR standard drawing 0520.

Materials and installation shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Foot for PRECAST CONCRETE RAILROAD CROSSING.

RAILROAD CROSSING DIAMOND

Description: This work shall consist of all labor, materials, tools and supervision to furnish and assemble a railroad crossing diamond of the degree shown on the Plans.

General: This item consists of constructing a skeletonized (no ballast) railroad crossing diamond, including, manganese inserts, rails, guard rails, wood ties, other track material, and other material as necessary to construct the complete diamond in conformance with UPRR standard drawings for installation by UPRR. This item shall also include affixing identification tags for track components in conformance with UPRR standard drawing 220000.

Contractor shall obtain a designed layout drawing for the double diamond from a UPRR approved trackwork supplier (see UPRR standard drawing 6010) and submit to the project Engineer and UPRR Engineer for approval prior to ordering material. This item may be a long lead time item, so Contractor is encouraged to begin this process early.

Contractor shall construct the diamond offline and shall coordinate with UPRR to determine the appropriate location to construct and store the skeletonized diamond. UPRR shall install the skeletonized diamond.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and installation shall conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Each for RAILROAD CROSSING DIAMOND.

RAILROAD CROSSING REMOVAL

Description: This work shall consist of furnishing all labor, materials, and equipment associated with the complete removal of railroad grade crossing surface.

General: Material shall be removed during the proper stage of construction. Contractor shall coordinate the sequencing of removal with UPRR so that UPRR operations are not impeded.

Removed material shall become the property of the Contractor and shall be removed from the project area and salvaged or properly disposed of.

Contractor shall take care not to damage any adjacent track or other finished work.

Basis of Payment: This work will be paid for at the contract unit price per Each for RAILROAD CROSSING REMOVAL.

RAILROAD DERAIL (SPECIAL)

Description: This work shall consist of all labor, materials, tools, and supervision to furnish and assemble a powered railroad double switch point derail as shown on the Plans.

General: This item consists of constructing a skeletonized (no ballast) derail, including, switch, rails, wood ties, other track material, and other material as necessary to construct the complete derail in conformance with UPRR standard drawings for installation by UPRR. This item shall also include affixing identification tags for track components in conformance with UPRR standard drawing 220000.

Contractor shall construct the derail offline and shall coordinate with UPRR to determine the appropriate location to construct and store the skeletonized derail. UPRR shall install the skeletonized derail.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and assembly shall conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Each for RAILROAD DERAIL (SPECIAL).

RAILROAD SIGNALS

Description: This work shall consist of the necessary labor, materials, equipment and supervision to design, furnish and construct a railroad control point (interlocking) signal system replacement in the shown on the Plans. Functionality shall be verified by testing including cutover and train movement testing to confirm design operation performance.

General: This item consists of designing and constructing an interlocking control point signal system to replace the existing interlocking control point signal system at the intersection of the IMRR and NSRR railroad tracks near North Grand Avenue, as shown on the plans. Design calculations and drawings for the signal system shall be sealed by a Professional Engineer licensed in the State of Illinois. Effort includes: coordination of electrical service installation with local utility company, electrical power distribution to each device, insulated joints, grounding, bonding and junction boxes, signal masts and foundations, signal house and foundations, color light assemblies, cabling including

boring under tracks if necessary, fail safe systems, control systems and circuitry, detectors, relays, filters, transformers, and other signal system items necessary to complete the interlocking control point signal system.

This item also includes the removal of the existing IMRR signal houses, including asbestos inspection/testing and asbestos abatement of signal houses if required, signal mast assemblies, and signal appurtenances on the IMRR track. The two existing NSRR signal mast assemblies shall remain in place and shall be connected to the new interlocking control point signal system.

Asbestos inspection/testing shall follow both USEPA and OSHA guidelines shall satisfy the USEPA Nation Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations and the OSHA 1926.1101 regulations that require an asbestos-containing building material inspection prior to a renovation or demolition.

The I&M signal house removal shall be according to IDOT's "Building Removal" BDE Special Provision. If the signal house contains asbestos, it shall be removed according to IDOT's "Building Removal with Asbestos Abatement" BDE Special Provision. Cost for asbestos inspection/testing and building removal with or without asbestos shall be included in in the lump sum unit price for RAILROAD SIGNALS.

Contractor shall not interfere with the operation of the existing interlocking signal system operations until such time as the replacement system is constructed, tested for functionality, and ready to be placed into service. Prior to placing the replacement system into service, Contractor shall coordinate with IMRR and NSRR to obtain sufficient track outage time(s) to make any necessary final connections and change outs, place the replacement system in service, and verify its functionality with existing IMRR and NSRR signal operating systems. Contractor shall have discussed with each railroad a contingent plan for railroad operations through the control point if delays are encountered with the in-service process. Contractor is directed to GWI Standard Construction Specifications section 130 – Delay of Trains for related information.

The interlocking signal system shall be designed in accordance with the GWI Signal & Communications Specifications and references therein, as well as additional GWI Signaling Standards & Specifications and drawings available for download at this link: (https://hanson-inc.sharefile.com/d-s3a80da25effb4435abf06f8ef301ea50). These reference documents specify necessary design submittals and approval requirements. Reference documents listed in this special provision are only applicable for work described within this special provision.

Reference documents include the following:

1. GWI Signaling Standards & Specifications
2. GWI S&C Standards Reference Manual
3. GWI S&C Test and Maintenance Procedures
4. GWI Utility Specifications
5. GWI Hazardous Materials Policy
6. GWI Roadway Worker Protection and Maintenance Machines Policy
7. Location of Insulated Joints

8. Track & Signal Plan for derails (4 drawings)
9. Contractor Safety Rules
10. Bridge Worker Safety Rules
11. Railroad Timetable and Special Instructions
12. IMRR Approved Vendor List
13. Standard Construction Specifications
    a. 110 – General
    b. 120 – Execution
    c. 124 – Control of Materials
    d. 128 – Temporary Construction
    e. 130 – Delay of Trains
    f. 140 – Submittals
    g. 150 – Inspection
    h. 160 – Legal Relations and Responsibility
    i. 170 – Safety
    j. 180 – Protection of the Environment
    k. 185 – Protection of Property
    l. 190 – Measurement and Payment
    m. 195 – Closeout
    n. 198 – General Conditions Submittal List
    o. 400 – Construction Schedule
    p. 700 – Work Windows

Modifications to the referenced documents include the following:

1. GWI Signaling Standards & Specifications (Rev 6-26-2014)
    a. Section 1.01E: change to "The Contractor shall record the final as-shipped conditions of the signal systems. As-built conditions of the signal systems shall be documented and submitted to IMRR for approval. As-builts signoff by IMRR is required prior to project closeout."
    b. Section 5.01.A: add "Signal design and construction shall be performed by vendors approved by IMRR. See the reference document 'IMRR Approved Vendor List'. Contractor may contact IMRR during the bidding process for possible additional vendors that are not on the referenced list.
2. Standard Construction Specifications
    a. All sections: replace Part 1 item 1.1 with:
    "1.1 These General Conditions are adopted by Railroad and are supplemental and complimentary to the requirements of the project specifications."
    All sections: the term "Engineer" shall be as defined in each section and apply only to the GWI Standard Construction Specifications related to this special provision and work on IMRR property. The definition shall not apply to other project work or locations.
    All sections: language referring to the application for payment to the Railroad or withholding payment by the Railroad is deleted. Contractor shall reference the project Contract regarding payments and penalties.
    b. Section 110 "General":

Part 1 items 1.2.3, 1.2.4, and 1.2.5 shall be deleted.

c. Section 120 "Execution":
Part 1 item 1.2.2: delete the second sentence.
Part 3 item 3.2.1: change to "Contractor shall submit updates to the plan and schedule monthly or at a frequency requested by the Engineer."
Part 4 item 4.1.1: replace "Contract" with "Construction and Maintenance Agreement".
Part 4 item 4.2.4: add "Any such waiver must first be approved by the project Engineer as defined in IDOT SSRBC division 100."
Part 4 items 4.2.6 and 4.2.7: The term "Engineer" in these sections shall be the project Engineer as defined in IDOT SSRBC division 100.
Part 4 item 4.6: delete all items except 4.6.2. Contractor shall refer to other portions of the project Contract for changes.
Part 4 item 4.7: delete. Contractor shall refer to other portions of the project Contract for emergency work.
Part 4 item 4.10: delete. Contractor shall refer to other portions of the project Contract for permits, taxes and fees.
Part 4 item 4.11: delete.

d. Section 140 "Submittals":
The term "Engineer" shall be replaced with "Engineer and project Engineer as defined in IDOT SSRBC division 100".

Basis of Payment: This work will be paid for at the contract unit price per Lump Sum for RAILROAD SIGNALS.

RAILROAD TIES, CONCRETE

Description: This work shall consist of all labor, materials, tools, and supervision to furnish concrete railroad ties.

General: This item consists of providing concrete railroad ties as shown on plan schedules for installation by UPRR.

Contractor shall coordinate with UPRR to determine the appropriate location to stockpile the ties. UPRR shall install the ties.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Each for RAILROAD TIES, CONCRETE.

RAILROAD TIES

Description: This work shall consist of all labor, materials, tools, and supervision to furnish wood railroad ties.

General: This item consists of providing wood railroad ties in conformance with UPRR standard drawings as shown in plan schedules for installation by UPRR.

Contractor shall coordinate with UPRR to determine the appropriate location to stockpile the ties. UPRR shall install the ties.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Each for RAILROAD TIES.

RAILROAD TRACK

Description: This work shall consist of all labor, materials, tools, and supervision to furnish and install railroad track on a prepared subballast base as detailed on the Plans.

General: This item includes 136 Lb. head hardened rail, concrete ties, transition ties, transition rails, guard rails, other track material, welds, ballast, and other material in conformance with UPRR standard drawings to construct complete UPRR mainline track. This item shall also include affixing identification tags for track components in conformance with UPRR standard drawing 220000 and culvert location tie marking in conformance with UPRR standard drawing 0519.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and installation shall conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Track Foot for RAILROAD TRACK.

RAILROAD TRACK, CONCRETE (SPECIAL)

Description: This work shall consist of all labor, materials, tools, and supervision to furnish and assemble railroad track on a prepared subballast base as detailed on the Plans.

General: This item consists of constructing skeletonized (no ballast) track, including 136 Lb. head hardened rail, concrete ties, transition ties, transition rails, guard rails, other track material, welds, and other material in conformance with UPRR standard drawings for installation by UPRR. This

item shall also include affixing identification tags for track components in conformance with UPRR standard drawing 220000.

Contractor shall construct the track offline and shall coordinate with UPRR to determine the appropriate location to construct and store the skeletonized track. UPRR shall install the skeletonized track.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and assembly shall conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Track Foot for RAILROAD TRACK, CONCRETE (SPECIAL).

RAILROAD TURNOUT

Description: This work shall consist of all labor, materials, tools, and supervision to furnish and install a powered railroad turnout of the designated size and hand as shown on the Plans.

General: This item includes spring frog, switch, rails, wood ties, other track material, and other material as necessary to construct the complete turnout in conformance with UPRR standard drawings. This item shall also include affixing identification tags for track components in conformance with UPRR standard drawing 220000.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and installation shall conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Each for RAILROAD TURNOUT of the designated size.

RAILROAD TURNOUT (SPECIAL)

Description: This work shall consist of all labor, materials, tools, and supervision to furnish and assemble a powered railroad turnout of the designated size and hand as shown on the Plans.

General: This item consists of constructing a skeletonized (no ballast) turnout, including spring frog, switch, rails, wood ties, other track material, and other material as necessary to construct the complete turnout in conformance with UPRR standard drawings for installation by UPRR. This item shall also include affixing identification tags for track components in conformance with UPRR standard drawing 220000.

Contractor shall construct the turnout offline and shall coordinate with UPRR to determine the appropriate location to construct and store the skeletonized turnout. UPRR shall install the skeletonized turnout.

Materials shall be from an approved UPRR track work supplier (see UPRR standard drawing 6010) and assembly shall conform to the requirements of UPRR Special Conditions in this document. All transportation, handling, storage, and stockpiling shall be included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price per Each for RAILROAD TURNOUT (SPECIAL) of the designated size.

SUB-BALLAST

Description: This work shall consist of furnishing, placing, and compacting subballast on the prepared subgrade at locations shown on the plans.

General: Work and material shall conform to the requirements of Section 311 of the SSRBC for Subbase Granular Material, Type A with the following modifications:

1. The maximum lift thickness shall be 6 in.
2. The compaction requirement shall be not less than 100 percent of the standard laboratory density.
3. The material shall be crushed stone in accordance with Article 1004.04 of the SSRBC.
4. The gradation shall be CA-6 in accordance with Article 1004.04 of the SSRBC, except that the gradation of the No. 200 sieve shall be 3-8 percent.

Submittals: Submittals shall be made in accordance with Section 106 of the SSRBC and the Bureau of Materials and Physical Research's Policy Memorandum "Aggregate Gradation Control System". Weekly stockpile/loadout tests shall be submitted to the Engineer.

Basis of Payment: This work shall be paid for at the contract unit price per Cubic Yard for SUBBALLAST.

TRACK REMOVAL

Description: This work shall consist of furnishing all labor, materials, and equipment associated with the complete removal of railroad track. Track material includes rails, cross ties, frogs, switches, other track material, and appurtenances.

General: Material shall be removed during the proper stage of construction and in locations shown on the plans. Contractor shall coordinate the limits and sequencing of track removal with UPRR during each stage of construction so that UPRR operations are not impeded.

Removed track material within the designated limits of removal, as shown on the plans or modified by the Engineer, shall become the property of the Contractor, and shall be removed from the project area and salvaged or properly disposed of.

Contractor will be responsible for shaping, smoothing, and compacting the roadbed after track removal. The roadbed shall be free of ruts and depressions and shaped to allow for proper drainage.

In areas designated on the plans for UPRR track removal, the material will be removed by UPRR and stockpiled in a designated area for Contractor disposal.

Contractor shall take care not to damage any adjacent track or other finished work.

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

UNDERGROUND CONDUIT, COILABLE NONMETALLIC CONDUIT, 4" DIA.

Description: This work shall consist of furnishing all equipment, material and labor necessary to conduct directional boring through soil or rock, install continuously fused HDPE duct and install 3-Cell Mesh Innerduct in the conduits for installation of fiber by others. The Contractor shall also obtain all permits local and governmental to complete this work.

Materials: The duct materials shall be 4" HDPE Duct SDR 9 in rocky soil and HDPE Duct SDR 11 in normal soil conditions in accordance with Union Pacific Railroad 2021 Fiber Specification and plan details.

For bore pits, backfilling shall be placed and compacted in 6in lifts. Backfilling within 2ft of the railroad subballast or under railroad suballast, pavements, paved shoulders, sidewalks or within 2ft of the pavement edge shall be made with sand or stone screenings. The backfill shall be compacted according to Article 550.07 of the Standard Specifications.

Utility Coordination: The utility coordination shall be in accordance with railroad client's (UPRR) standards, plan details, and the following:

The Contractor shall coordinate and confirm with all existing utilities that will be crossed underground. The plans are for information only and the Contractor is responsible for confirming the location of all underground utilities before performing the Work. The Contractor shall survey the location of the existing utilities, including vertical locations of any utilities potholed and submit the information to the Engineer.

General: All work shall be in accordance with this Special Provision, Union Pacific Railroad 2021 Fiber Specification, plans, Recuring Special Provisions, Supplemental Specifications and Section 810 and 871 of Standard Specifications in the order of this hierarchy.

All HDPE duct shall be installed by the directional boring method. Attaching conduit to bridge structures will not be allowed.

Method of Measurement: The work will be measured for payment horizontally in feet in place along the surface of the ground. The measurement would be made from center-to-center of handhole, vault, connection points or open ends. No additions or deductions for sweeps and varying depths will be made in either the vertical or horizontal direction to complete the installation. Deductions will not be made for handholes or vaults.

Basis of Payment: The work will be paid for at the contract unit price per foot for UNDERGROUND CONDUIT, COILABLE NONMETALLIC CONDUIT, 4" DIA. which includes all the labor, materials and equipment (including dewatering if required) and permits necessary to satisfactorily complete the work.

This basis shall include all work required to directional bore through soil or rock, install continuously fused HDPE conduit of the size indicated within the directional bore, regardless of depth, which shall include removal of excavated materials and spoils, removal and disposal of drilling fluids, backfilling and complete restoration of site.

The installation and attachment of 3 Cell mesh innerduct, tracking conductors (wire or tape), cable warning tags, locator and marker posts will be included in the cost of the fiber and will not be paid for separately.

No payment will be made for failed bore paths, injection of excavatable flowable fill, products taken out of service, or incomplete installations.

No payment will be made for adjustments to miss existing utilities or surveying existing utilities. This work shall be included in the cost of the fiber and will not be paid for separately.

No payment will be made for directional boring until a Bore Path Report has been delivered to the Engineer.

HEAVY-DUTY HANDHOLE

Description: This work shall consist of furnishing and installing a heavy-duty handhole and lid according to the handhole details in the Union Pacific Railroad 2021 Fiber Specification.

General: All materials and work shall be in accordance with this Special Provision, Union Pacific Railroad 2021 Fiber Specification, plans, Recuring Special Provisions, Supplemental Specifications and Section 814 of Standard Specifications in the order of this hierarchy.

Backfilling: Backfilling shall be placed and compacted in 6in lifts. Backfilling within 2ft of the railroad subballast or under railroad suballast, pavements, paved shoulders, sidewalks or within 2ft of the pavement edge shall be made with sand or stone screenings. The backfill shall be compacted according to Article 550.07 of the Standard Specifications.

Basis of Payment: The work will be paid for at the contract unit price per each for HEAVY-DUTY HANDHOLE.

COMMUNICATIONS VAULT

Description: This work shall consist of furnishing and installing a communications vault and lid according to the vault details in the Union Pacific Railroad 2021 Fiber Specification.

General: All materials and work shall be in accordance with this Special Provision, Union Pacific Railroad 2021 Fiber Specification, plans, Recuring Special Provisions, Supplemental Specifications and Section 814 of Standard Specifications in the order of this hierarchy.

Backfilling: Backfilling shall be placed and compacted in 6in lifts. Backfilling within 2ft of the railroad subballast or under railroad suballast, pavements, paved shoulders, sidewalks or within 2ft of the pavement edge shall be made with sand or stone screenings. The backfill shall be compacted according to Article 550.07 of the Standard Specifications.

Basis of Payment: The work will be paid for at the contract unit price per each for COMMUNICATIONS VAULT.

ELECTRICAL SERVICE INSTALLATION (SPECIAL)

Description: This work shall consist of furnishing all equipment, material and labor necessary to properly install the proposed electrical service installations and power distribution equipment at locations as indicated on the plans.

Materials: The materials shall be in accordance with Union Pacific General Conditions and Specifications Adopted by the UP-Engineering Department on February 21, 2022 and Articles 804, 806, 810 and 817 of the IDOT "Standard Specifications" and plan details. UP General conditions and Specifications take precedence. All panelboards and fused and non-fused switches will be manufactured by one of the following:

1. Square D
2. Eaton Cutler Hammer
3. Siemens
4. GE (ABB)

Utility Coordination: The utility coordination shall be in accordance with Article 804.03, of the "Standard Specifications", plan details, and the following:

The Contractor shall contact and coordinate with the electrical service provider (CWLP) to install each electrical service identified on the construction plans.

General: The work shall consist of installing new 480Y/277V, 3 Phase electrical services, in accordance with CWLP's requirements, 480Y/277V Distribution Panel Boards, 480-120/240V, 1 Phase pad mounted transformers and associated switch racks, feeder conduit and wire to attach the

transformers to the Distribution panels and connection of the transformer secondary to fused switches and then finally to junction boxes on the racks for future installation of UP equipment. All work shall be done in accordance with Union Pacific General Conditions and specifications and IDOT Article 804, 806, 810 and 817 of the "Standard Specifications", with the Union Pacific General Conditions and Specifications taking precedence, and the plan details, one-line diagrams, layout diagrams, and general and keyed notes.

Basis of Payment: The work will be paid for at the contract unit price per each for ELECTRICAL SERVICE INSTALLATION (SPECIAL). The unit price shall include the cost of all materials, equipment and labor required to furnish and install the electrical equipment detailed in the plans.

ROADWAY

AGGREGATE SUBGRADE IMPROVEMENT

Description: This work shall be in accordance with the BDE Special Provision AGGREGATE SUBGRADE IMPROVEMENT and the following requirements.

Coarse Aggregate: The aggregate gradation for the bottom 9 in. of the aggregate subgrade shall be RR01.

Capping Aggregate: The top 3 in. of the aggregate subgrade shall consist of aggregate gradations CA 06 or CA 10.

BOLLARDS

This work consists of furnishing and installing bollards in accordance with the details shown on the plans, Section 634 of the SSRBC and this special provision.

This work will be measured for payment in place in units of EACH.

This work shall be paid for at the contract unit price per EACH for BOLLARDS and BOLLARDS, QUICK RELEASE, which shall include all labor and equipment necessary for the completion of the work.

CHANGEABLE MESSAGE SIGN

Description: This work shall consist of providing all equipment and labor for furnishing and placing portable changeable message signs.

General: This work shall be performed in accordance with the applicable Articles of Section 701 of the Standard Specifications except as modified herein.

All changeable message signs shall be supplied by the Contractor. The placement of any sign will begin no later than 14 calendar days in advance of the upcoming closure at locations as specified by the Engineer. The changeable message signs are in addition to any changeable message sign that

may be required and is noted on the applicable Traffic Control and Protection Highway Standards. Signs will be placed as shown on the detour plans or as designated by the Engineer. The message to be shown on the message board will also be at the discretion of the Engineer and will have to change for the road closures.

Basis of Payment: Changeable Message Signs shall be measured and paid for at the contract unit price per calendar day for CHANGEABLE MESSAGE SIGN. Changeable message signs specified in the Traffic Control and Protection Highway Standards shall be measured and paid for per the applicable pay item for that work.

DETOUR SIGNING

Description: This work shall consist of furnishing, installation, maintenance, relocation, and removal of temporary detour signing as shown on the plans, as directed by the Engineer, in accordance with Section 701 of the Standard Specifications, and as herein specified.

General: Detour Signing required under this item is that which is required to implement temporary detours during the street closures. Detour signing shall be coordinated with the Engineer and the City Traffic Engineer.

Detour Signing required under this item includes barricades/drums, Type III barricades, and all temporary signing necessary to mark the detours as shown on the plan detour sheets. This item will also include changing the message on the changeable message signs, though the changeable message signs will be paid for separately.

This work will also include covering existing signs that conflict with any of the detour signs and shall also include covering or removing the detour signs when the detour is not in effect as directed by the Engineer.

The Contractor shall coordinate the items of work to keep hazards and traffic inconveniences to a minimum.

All detour signs shall be in new or like new condition at the start of the project. If a sign is damaged or becomes unreadable, the sign shall be replaced by a new or like new sign.

Basis of Payment: All the work in this special provision will be paid for at the contract unit price per Lump Sum for DETOUR SIGNING.

GEOTECHNICAL FABRIC FOR GROUND STABILIZATION

Description: This work shall be according to Section 210 of the SSRBC in addition to the following requirements.

Materials: The GEOTECHNICAL FABRIC shall be woven fabric meeting the requirements of Article 1080.02.

The aggregate shall be AGGREGATE SUBGRADE IMPROVEMENT meeting the requirements of the project Special Provisions.

PORTLAND CEMENT CONCRETE PAVEMENT

General: Except as otherwise specified hereafter, the current Standard Specifications for Road and Bridge Construction, Section 420-Portland Cement Concrete Pavement, shall apply to all work under this section.

Dowel Bar Assemblies: the light coating of oil applied uniformly to the dowel bars shall be Valvoline TECTYL 506, TECTYL 506 by Daubert Chemical Company, or BCG6116 DSMA by Bradley Coating Group.

PORTLAND CEMENT CONCRETE SIDEWALK 4 INCH

Description: This special provision shall only apply to the pedestrian escape routes for the at-grade crossings identified in the plan. This work shall consist of constructing an integral (full depth) colored concrete sidewalk according to the lines, grades shown in the plans and shall be in accordance with Section 424 of the SSRBC. The colored concrete shall be a "slate" or "charcoal" color. The color sample shall be submitted to the Engineer for approval prior to use.

The concrete color admixture shall be added according to the manufacturer's recommendation. The concrete mix used with pigment added shall meet the requirements of the manufacturer's recommendations. The aggregate, cement, and integral color shall be from the same source throughout the entire project. The material sources and mix proportions used during the project shall be accurately recorded and furnished to the Engineer at the completion of the project. The Pigment shall comply with ASTM C 979. Color pigments shall be light fast, wettable, weather resistant, alkali resistant, and free of deleterious fillers and extenders.

Do not start finishing colored concrete until the bleed water has evaporated. Finishing too early causes discoloration and a weak, non-durable surface. Use mechanical float or trowel, if possible. The one-way motion of the blades creates a more uniform colored surface than the back-and-forth motion used in hand finishing. Move concrete edgers in one direction only to produce a more uniform color. Time the pour to avoid having sunlit and shaded area.

All surfaces shall be broomed to provide a textured, non-skid surface when completed.

Concrete Sealer shall be applied to the entire sidewalk surface and included in the cost of the sidewalk.

Basis of Payment: All material, equipment and labor to perform this work shall be paid for at the contract unit price per square foot for PORTLAND CEMENT CONCRETE SIDEWALK 4 INCH.

PORTLAND CEMENT CONCRETE SIDEWALK 4 INCH, SPECIAL

Description: This work shall consist of constructing a stamped and integral (full depth) colored concrete sidewalk according to the lines, grades and herringbone brick pattern shown in the plans and shall be in accordance with Section 424 of the SSRBC. The colored concrete shall be a "slate" or "charcoal" color. The color and stamp pattern samples shall be submitted to the Engineer for approval prior to use.

The concrete color admixture shall be added according to the manufacturer's recommendation. The concrete mix used with pigment added shall meet the requirements of the manufacturer's recommendations. The aggregate, cement, and integral color shall be from the same source throughout the entire project. The material sources and mix proportions used during the project shall be accurately recorded and furnished to the Engineer at the completion of the project. The Pigment shall comply with ASTM C 979. Color pigments shall be light fast, wettable, weather resistant, alkali resistant, and free of deleterious fillers and extenders.

Do not start finishing stamped colored concrete until the bleed water has evaporated. Finishing too early causes discoloration and a weak, non-durable surface. Use mechanical float or trowel, if possible. The one-way motion of the blades creates a more uniform colored surface than the back-and-forth motion used in hand finishing. Move concrete edgers in one direction only to produce a more uniform color. Time the pour to avoid having sunlit and shaded area. The stamp pattern shall be applied according to the manufacturer's recommendation. While concrete is plastic, accurately align mats in sequence and uniformly press into concrete to produce imprint pattern, texture, and depth of imprint as recommended by manufacturer. Touch-up pattern and finish edges with hand tools as necessary.

All surfaces shall be broomed to provide a textured, non-skid surface when completed.

Concrete Sealer shall be applied to the entire sidewalk surface and included in the cost of the sidewalk.

Basis of Payment: All material, equipment and labor to perform this work shall be paid for at the contract unit price per square foot for PORTLAND CEMENT CONCRETE SIDEWALK 4 INCH, SPECIAL.

SUBGRADE PREPARATION

Description: This work shall be according to Section 301 of the SSRBC in addition to the following requirements for the roadway cut section.

General: In an effort to obtain the required density and stability to the roadway subgrade in a cut section, the Contractor shall cut temporary ditches graded to temporary sump pumps or other efforts as approved by the Engineer to drain the underpass area. This work shall be done at least two weeks prior to Step 2 in Article 301.04 of the SSRBC.

Method of Measurement: This work will not be measured for payment but shall be included in the cost of EARTH EXCAVATION.

TEMPORARY CONCRETE BARRIER

Description: This work shall consist of all labor and equipment necessary for the installation of temporary concrete barrier at the locations as shown in the plans. This work shall be completed in accordance with the applicable portions of Section 704 of the IDOT SSRBC and as directed by the Engineer. Some temporary concrete barrier will be left in place after construction is complete and become the property of the City of Springfield when shown on the plans.

This item shall also include any removal and relocation of this barrier required for the different stages of the project as directed by the Engineer.

Basis of Payment: This work shall be paid for at the contract unit price per foot for TEMPORARY CONCRETE BARRIER which price shall include all labor and equipment necessary to install, remove and relocate the barrier as many times as is necessary to complete the project to the satisfaction of the Engineer.

TRAFFIC CONTROL PLAN

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

General: Special attention is called to Sections 107 and 701 through 705 of the Standard Specifications for Road and Bridge Construction, and as amended by the Supplemental Specifications, Recurring Special Provisions, the Special Provisions contained herein, and the following highway standards relating to traffic control.

701006, 701501, 701611 (Special), 701701, 701801, 701901, BLR 21

The Contractor shall notify the Engineer and the City of Springfield Department of Public Works at least 72 hours in advance of activating the traffic control to close any traffic lanes. City of Springfield Public Works phone number is (217) 789-2255.

The Contractor shall coordinate the items of work in order to keep hazards and traffic inconveniences to a minimum, as specified below.

Traffic Control and Protection Standard 701006 shall be used for construction within 15 feet of traffic and as shown on the plans.

Traffic Control and Protection Standard 701501, 701611 (Special), and 701701 shall be used for lane closures/shifts and as shown on the plans.

Traffic Control and Protection Standard 701801 shall be used for sidewalk closures/detours and as shown on the plans.

Traffic Control and Protection Standard BLR 21 shall be used for full road closures which will require additional Type III barricades.

All commercial and private entrances along the mainline, which are part of this improvement, shall have suitable access, as determined by the Engineer, at all times during construction of this project. All weather access shall be a minimum of 10.0 ft wide. The Contractor may not deviate from this provision, except when he/she has written permission from the owner/tenant to cut off access to their property for a specific period of time.

All permanent pavement markings will be paid for separately.

All other traffic control and protection required for the completion of this improvement will not be paid for separately but will be considered as part of the unit bid prices for the pay item included in the contract.

During the road closures, the Contractor shall notify the Engineer at least 21 days in advance of each closure. The closure shall begin only after the City has notified the local emergency services, school system, and media. This notification must come at least two weeks in advance of the closure.

Basis of Payment: Traffic Control and Protection Standards 701611 (Special) and BLR 21 will not be paid for separately but will be included in the contract lump sum price for TRAFFIC CONTROL AND PROTECTION (SPECIAL).

All temporary traffic signal modifications and any additional traffic control and protection, including those standards listed above, as shown on the plans and described in these specifications will be measured on a lump sum basis and paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION, (SPECIAL). This work shall include furnishing, placement, maintenance, replacement, relocating and removal of the work zone traffic control devices used for the purpose of regulating, warning, directing, closing, and detouring traffic on the local streets impacted by the construction of the project.

TRANSVERSE DRAINS COMPLETE

Description: This work consists of constructing transverse drains at locations shown in the plans or directed by the Engineer. Transverse drains shall be constructed according to the details shown in the plans and applicable portions of Section 601 of the Standard Specifications.

Perforated pipe shall be corrugated polyethylene pipe with a smooth interior meeting the requirements of Article 1040.04. All pipes shall have a 4 in. inside diameter.

Backfill and bedding aggregate shall consist of CA-16 gravel or crushed gravel or FA-4 natural sand. All aggregate shall be reasonably free of objectionable deleterious material. Limestone CA-16 or sand shall not be allowed. Backfill aggregate shall be compacted in separate operations to the satisfaction of the Engineer.

General: This work shall be applied to the transverse drains beneath the Madison and Jefferson Streets pavement at the locations shown in the plans. Included in this pay items is the excavation for the trench, the granular backfill needed to fill the trench, the 4 in. pipe underdrain, and the pipe connection to the specified drainage structure.

Basis of Payment: This work shall be paid for at the contract unit price per each for TRANSVERSE DRAINS COMPLETE.

STRUCTURES

CONCRETE STRUCTURES

General: Except as otherwise specified hereafter, the current Standard Specifications for Road and Bridge Construction, Section 503 – Concrete Structures, shall apply to all work under this section.

Material Requirements: The minimum concrete compressive strength at fourteen (14) days shall be 4,000 psi.

Fly Ash, Silicafume and/or slag cement and any other admixtures, approved by the Engineer, shall be in addition to the minimum cement content listed in the Standard Specifications for Road and Bridge Construction, Section 1020 – Portland Cement Concrete, not in lieu of cement.

Self-Consolidating concrete shall be used for the bridge cast-in-place concrete facing that utilize form liners. Self-Consolidating admixtures shall be according to Section 1021.05 of the Standard Specifications.

CONCRETE STRUCTURES (RETAINING WALL)

General: Except as otherwise specified hereafter, the current Standard Specifications for Road and Bridge Construction, Section 522 – Concrete Structures Retaining Walls, shall apply to all work under this section.

Material Requirements: The minimum concrete compressive strength at fourteen (14) days shall be 4,000 psi.

Fly Ash, Silicafume and/or slag cement and any other admixtures, approved by the Engineer,

shall be in addition to the minimum cement content listed in the Standard Specifications for Road and Bridge Construction, Section 1020 – Portland Cement Concrete, not in lieu of cement.

Self-Consolidating concrete shall be used for the retaining wall cast-in-place concrete facing that utilize form liners. Self-Consolidating admixtures shall be according to Section 1021.05 of the Standard Specifications.

CONCRETE SUPERSTRUCTURE

General: Except as otherwise specified hereafter, the current Standard Specifications for Road and Bridge Construction, Section 503 – Concrete Structures and GBSP #78 Bridge Deck Construction, shall apply to all work under this section.

Material Requirements: Fly Ash, Silicafume and/or slag cement and any other admixtures, approved by the Engineer, shall be in addition to the minimum cement content listed in the Standard Specifications for Road and Bridge Construction, Section 1020 – Portland Cement Concrete, not in lieu of cement.

CONCRETE SURFACE COLOR TREATMENT

Description: This work shall consist of furnishing all labor, materials, and equipment for the application of a concrete surface color treatment and water based polyurethane concrete sealer to the locations shown on the plans.

General: The concrete surface color treatment shall be a two-part, colored cementitious coating. This coating shall be opaque, high-strength, extremely UV-resistant and suitable to apply to vertical surfaces. BRICKFORM Cem-Coat shall be used for the Concrete Surface Color Treatment.

The protection system shall be a water-based polyurethane concrete sealer that forms a high-solids coating with a clear matte finish, provides a chemical-resistant barrier coating that seals and protects the concrete under heavy use conditions, and shall be completed in accordance with this specification, manufacturer's recommendations and applicable sections of Section 587 of the Standard Specifications for Road and Bridge Construction. BRICKFORM UreMax WB shall be used for the Protection System.

Construction Requirements:

Surface Color Treatment: The preparation of the concrete surfaces and application of the concrete coating shall be done in such a manner as to not damage the concrete and according to the manufacturer's written instructions.

The color of the concrete coating should be Blue, Munsell No. 10B 3/6 for the locations shown on the plans. Submit samples to the Engineer, for approval, on actual substrate in the blue color to verify preliminary selections made under sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

Store the coating materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 degrees F to protect from freezing.

Prior to the application of the concrete coating, the surface shall be clean and free of laitance, dirt, films, paint, coatings, or other foreign matter. Surfaces are to be dry prior to application. The coating should only be applied after the concrete has fully cured, at least twenty-eight (28) days.

The Contractor shall use the moisture vapor evaporation rate test per ASTM F1869 to ensure that the rate of moisture vapor emission from the concrete surface is not exceeding 5 pounds per 1,000 sq. ft per twenty-four (24) hours. The Contractor shall also perform relative humidity tests per ASTM F2170 to ensure the humidity is below 75 percent.

The coating shall either be sponge, roll or brush applied to the concrete surfaces. If a second coat is required, the second coat shall be applied after two hours of the previous coat but within twenty-four hours. Apply each coat according to the manufacturer's written instructions. Use equipment recommended in writing by the manufacturer for material and texture required and apply the material at not less than manufacturer's recommended spreading rate.

Mix prepackaged ingredients together according to the manufacturer's written instructions. Mix together with mechanical mixer or by hand to required consistency. Mix proportions of the ingredients vary by manufacturer and application equipment type.

Apply coating only when temperature of surfaces to be coated and ambient air temperatures are between 55 and 80 degrees F.

The concrete coating should be allowed to cure before the application of the concrete sealer. Clean spattered coating by washing, scraping, or other methods without damaging the concrete or coating.

Comply with the manufacturer's written instructions for recommendations on curing procedures.

Concrete Sealer: The Contractor shall provide all necessary equipment for the application of the concrete sealer.

The preparation of the concrete surfaces and application of the concrete sealer shall be done in such a manner as to not damage the concrete and/or the colored cementitious coating and according to the manufacturer's written instructions.

The concrete sealer shall produce a clear matte finish. Before applying product, test the product for desired results in a discrete location on the back face of the retaining walls. The sealer test area shall be approved by the Engineer.

Store the concrete sealant materials not in use indoors away from heat and direct sunlight, and at a minimum ambient temperature of 45 degrees F to protect from freezing.

Prior to application of the concrete sealer, the surface shall be clean and free of laitance, dirt, films, or other foreign matter. Surfaces are to be dry prior to application. The sealer should only be

applied after the concrete (minimum of twenty-eight (28) days) and/or colored cementitious coatings have fully cured.

The concrete sealer shall be applied to the manufacturer's written instructions. If a second coat is required, the second coat shall be applied within four to eight hours of the previous coat. Use equipment recommended in writing by the manufacturer for material and texture required and apply the material at not less than manufacturer's recommended spreading rate.

Mix prepackaged ingredients together according to the manufacturer's written instructions. Mix together with mechanical mixer or by hand to required consistency. Mix proportions of the ingredients vary by manufacturer and application equipment type.

The concrete sealer shall only be applied when the surface or ambient temperature is between 45 and 95 degrees F. Do not apply the sealer if the ambient temperature is expected to fall below 32°F within the curing cycle of the sealer.

The concrete sealer shall be allowed to cure before any foot traffic is allowed adjacent to the retaining wall. Before the sealer dries, clean spattered locations without damaging the concrete, sealer, and/or colored cementitious coating.
Comply with the manufacturer's written instructions for recommendations on curing procedures.

Method of Measurement: This work will be measured for payment in units of square feet, at the locations specified.

Basis of Payment: This work will be paid for at the contract unit price per square foot for CONCRETE SURFACE COLOR TREATMENT. Price shall be payment in full for all labor, materials, and equipment necessary for the application of the coating and sealer.

CONTROLLED STIFFNESS COLUMN GROUND IMPROVEMENT

Description. This work shall consist of furnishing design calculations, shop drawings, materials, and labor necessary to construct a controlled stiffness column ground improvement, over the approximate horizontal limits below the footing, wall, pavement or embankment as specified on the contract plans, or as modified by the Contractor's approved design. Included in this work is the construction of a load transfer pad, consisting of coarse aggregate and layers of geosynthetics, to support the loading from above and transfer it to the columns below. In addition, the monitoring and testing of controlled stiffness column ground improvement, removal of excavation spoils resulting from the installation process and removal of any unsuitable material contaminated by the Contractor's operations shall be included in this work.

Submittals. No later than thirty (30) days prior to beginning work, the Contractor shall submit to the Engineer for approval the following information:

(a) Qualifications: The selected subcontractor's successful installation of their controlled stiffness column ground improvement system on five projects under similar site conditions using the same installation technique. The documentation to be submitted shall include a

(b) description of the project, installation technique, soil conditions and name and phone number of contracting authority.

Approved controlled stiffness column ground improvement vendors include:

1). Controlled Modulus Column (CMC) by Menard (Phone: 1-312-598-9549).

2). Auger Pressure Grouted Displacement Piling (APGD) by Berkel & Company Contractors, Inc. (Phone:1-502-225-0053).

3). Rigid Inclusions (RI) by Keller (Phone: 1-800-456-6548).

4). Vibro Concrete Columns (VCC) by Keller (Phone: 1-800-456-6548).

5). Vibro Concrete Columns (VCC) by Subsurface Constructors, Inc. (Phone: 1-866-421-2460).

(c) Evidence that the proposed project superintendent and/or foreman for the controlled stiffness column installation have a minimum of three years of method specific experience.

(d) Shop Drawings sealed by an Illinois Licensed Professional Engineer showing the controlled stiffness column ground improvement horizontal limits, locations, pattern, spacing, diameters, top and bottom elevations, and identification numbers. Details, dimensions and material requirements of the load transfer pad, consisting of coarse aggregate and layer(s) of geosynthetics shall be indicated.

(e) A description of the equipment, installation technique and construction procedures to be used, including a plan to address any water or spoils.

(f) The source, mix design and material specifications for the proposed for the controlled stiffness columns and load transfer pad elements.

(g) Design computations, sealed by an Illinois Licensed Professional Engineer, demonstrating the proposed ground improvement layout, materials and details satisfies the minimum global stability, settlement, and bearing capacity performance requirements stated in the Contract Plans and those contained in this Special Provision.

(h) The proposed verification program methods to monitor and verify the controlled stiffness column installation is satisfying the design and performance requirements. Also required is a sample of the daily report form to be used by the Contractor to document the adequacy of that day's work.

(i) Qualifications of the firm that will be performing the pile integrity tests shall also be provided.

Materials. The materials specified by the contactor shall be according to the Standard Specifications except where modified below or otherwise approved in the shop drawing submittal. Materials shall be obtained from an approved source per the IDOT Approved Materials list.

(a) Concrete: Shall be according to 1020 Class SC unless otherwise specified. Air entrainment a mid-range water reducer and retarder will be required unless otherwise approved in the shop drawings. Minimum compressive strengths are 1,500 and 3,000 at 7 and 28 days respectively.

(b) Grout: According to the Article 1024. Water reducing agents and retardant may be used to maintain the range of acceptable fluid consistency (flow cone rate 10 to 25 seconds with ¾ inch cone per ASTM C939) for a period of at least 2 hours. Minimum compressive strengths are 1,500 and 3,000 at 7 and 28 days respectively. Grout slump shall be between 6 to 8 inches.

(c) Geosynthetics for Load Transfer Pad: The geosynthetic layers may be composed of either or both geogrid and geotextile fabric with a long term design strength (determined using GRI GT7-MD or GRI GG4-MD) equal or greater than that required in the design calculations and shop drawings.

(d) Aggregate for the Load Transfer Pad: This aggregate layer shall be Class B quality or better, be crushed stone or crushed concrete, and composed of one or more of the following gradations CA5, CA7, CA8, CA11, or CA13 thru 15, according to Section 1004 of the Standard Specifications.

Design Criteria. The subcontractor selected shall provide a controlled stiffness column ground improvement design computations, using an allowable stress design, which meets the performance requirements shown on the Contract Plans. This design need only satisfy the service limit state group load case. These requirements include the global stability factor of safety, tolerable settlement amounts at various times and in the case of walls or structure footings, the equivalent uniform service bearing pressure to be resisted along the length of wall or footing. In the absence of performance requirements shown on the plans, the following allowable stress minimum performance requirements shall be used:

(a) The global slope stability factor of safety against failure shall be at least 1.5

(b) Total settlement not to exceed 4 inches (100 mm) and settlement after completing wall or pavement construction not to exceed 1 inch (25 mm). Differential settlement between the pavement support by controlled stiffness columns and the adjacent pavement supported by untreated ground shall not exceed 1/2 inch.

(c) The service bearing capacity to be provided shall be at least 3.0 ksf.

The design shall use short term strength parameters for the soil, obtained from the soil boring logs and any geotechnical laboratory testing data provided in the Contract Plans, specifications or in the geotechnical report which is available upon request. Any additional subsurface information, sampling and testing deemed necessary by the contractor for proper design of the controlled stiffness column ground improvement shall be obtained by the Contractor after award and be included in the pay item associated with this work.

The controlled stiffness column ground improvement design need not consider seismic loadings unless otherwise required as part of the performance requirements shown on the plans.

Construction. The construction procedures shall be determined by the controlled stiffness column ground improvement and submitted for approval with the shop drawings. The following are the minimum requirements that the Contactor will be expected to follow unless otherwise approved in the shop drawings submittal.

(a) The site shall be graded as needed for proper installation of the controlled stiffness column ground improvement system. Any grading and excavation below the load transfer pad shown on the approved shop drawings shall be incidental to controlled stiffness column ground improvement.

(b) Any granular base or working platform requested or proposed by the Contractor shall be considered incidental to the improvement.

(c) Columns shall be installed in a sequence that will minimize ground heave. Any heaving shall be re-compacted or excavated as directed by the Engineer prior to wall or embankment construction and be considered incidental to controlled stiffness column improvement.

(d) The controlled stiffness column ground improvement material shall be placed in a manner that allows measurement of the quantity used to construct the column.

(e) The Contractor shall provide a full-time qualified representative to verify all installation procedures and provide the verification program.

(f) If an obstruction is encountered that cannot be penetrated with reasonable effort, the Contractor shall construct the element from the depth of obstruction to its design top elevation. Depending on the depth of the completed column, column location, and design requirements, the Engineer may require the construction of a replacement column(s) at adjacent locations. Construction of additional columns will be considered extra work and paid for according to Article 109.04.

(g) The Load Transfer Pad construction shall not begin in any area until the controlled stiffness column design strength has been reached. If any columns are broken during construction of the load transfer platform, the Contractor shall propose a remediation solution within 2 days and construction shall resume once the Engineer is in agreement with the remediation solution and the remediation has taken place.

(h) The load transfer pad material shall be placed and compacted according to the applicable portions of Sections 205 and 301 of the Standard Specifications. Aggregate material should be placed in lifts and compacted to the requirements of Article 205.06 of the Standard Specifications

Tolerances. The controlled stiffness column ground improvement shall be constructed to the following tolerances:

(a) The horizontal limits and center of each controlled stiffness column shall be within 8 inches (190 mm) of the location specified on the approved shop drawings.

(b) The axis of the constructed controlled stiffness columns shall not be inclined more than 2 percent from vertical.

(c) The installed diameter of any controlled stiffness column shall not be more than 10 percent below the effective diameter indicated on the approved shop drawings.

(d) The top of the controlled stiffness columns and load transfer platform shall be located within 8 inches (190 mm) of the top elevation shown on the approved shop drawings. When supporting MSE walls, the top elevation may need to be adjusted to the base of the MSE reinforced mass elevation as shown on the approved MSE shop drawings.

(e) Except where obstructions, hard or very dense soils are encountered, the controlled stiffness columns shall be advanced to at least the treatment depth elevation shown on the approved in the Shop Drawings.

Any controlled stiffness column installation not meeting the above stated tolerances, or otherwise deemed unsatisfactory by the Engineer, may require installation of a replacement column(s) at the discretion of the Engineer and at the Contractor's expense. The Contractor shall submit to the Engineer revised plans and procedures to bring installations in those areas into tolerance.

Verification Program. The Contractor shall develop and maintain a monitoring and documentation procedure during the installation of all controlled stiffness columns to verify they satisfy the design and performance requirements. The Contractor shall provide qualified personnel to continuously observe and record the required data. The program shall include, as a minimum, the following:

(a) Quality control procedures to allow verification that each controlled stiffness column is being installed according to the designer's specifications and the requirements in this Special Provision. This will typically include observations of items such as electrical current or hydraulic pressure, grout quantity, etc. that must be obtained to achieve the performance requirements.

(b) Monitoring methods to evaluate the performance of the global controlled modulus column improvement system after construction of the overlying road, embankment or wall. This will typically include installation of settlement plates and may also include monitoring points, inclinometers, piezometers or other instrumentation.

(c) Proposed means and methods for verification that the installed controlled stiffness columns meet the strength and/or stiffness criteria required by the design. This may include modulus or load tests on individual elements and/or groups, soil borings, and other methods.

(d) A daily report form shall be completed by the Contactor and provided to the Engineer to document the work performed each day and the adequacy of each controlled stiffness

(e) column. The form shall be signed by the Contractor's qualified personnel and include as a minimum the following:

i. Controlled stiffness columns installed (identified by location number).

ii. Date constructed.

iii. Elevation of top and bottom of each column.

iv. Results of quality control testing such as average power consumption, energy obtained during column installation.

v. Grout pressure and volume, if applicable.

vi. Description of soil and groundwater conditions.

vii. Details of obstructions, delays and any unusual issues.

viii. Estimated volume of each column.

Pile Integrity Testing: Pile Integrity Testing (PIT) shall be performed on approximately 10% of the CONTROLLED STIFFNESSS COLUMNS. The PIT shall be performed in accordance with ASTM D5882 - 07 Standard Test Method for Low Strain Impact Integrity Testing of Deep Foundations. The production elements selected for the PIT shall be at the discretion of the Engineer based on daily records indicate likelihood of anomalies in the inclusions. The PIT shall be performed by a firm qualified to do such testing. Documentation of the firm's qualifications shall show that the tester has successfully performed PIT testing for at least five years, and for a minimum of 5 similar projects. A list of previous projects including name, description, relative size and contact person with phone number shall be provided. A report of the test results shall be provided to the Engineer within 48 hours of test completion.

Basis of Payment. This work shall be included in the contract lump sum price for AGGREGATE COLUMN GROUND IMPROVEMENT. Any costs to complete this work such as mobilization, soil sampling and testing, shop drawings, monitoring methods, integrity testing, temporary casing, disposal of water or spoils, working platforms etc. will not be paid for separately, but shall be considered to be included with this work.

Geosynthetics for Load Transfer Pad will not be paid for separately, but shall be considered to be included with this work.

CROSSHOLE SONIC LOGGING TESTING OF DRILLED SHAFTS

Description: This work shall be according to all applicable sections of the GBSP #91, Crosshole Sonic Logging Testing of Drilled Shafts, except as noted below.

- The Engineer will perform the CSL testing, analysis, and reporting will not be measured for payment.
- Contractor shall furnish and install access ducts in specific drilled shafts identified on the plans.

DRILLED SOLDIER PILE RETAINING WALL

Description: This work shall consist of providing all labor, materials, and equipment necessary to install a non-gravity cantilever wall consisting of closely spaced, W-section beams set in drilled excavations. All work shall be according to the details shown on the plans, Article 522.08 of the SSRBC, GBSP #86 "Drilled Shafts" and as directed by the Engineer in addition to the following requirements.

Materials: The materials used shall satisfy the following requirements:

1. Temporary casing shall be produced by electric seam, butt, or spiral welding to produce a smooth wall surface, fabricated from steel satisfying ASTM A252 Grade 2. The minimum wall thickness shall be as required to resist the anticipated installation and dewatering stresses, as determined by the Contractor, but in no case less than 1/4 in. The temporary casing shall have rock teeth on the bottom of the casing and slots in the top of the casing for twisting the casing into rock. Temporary casing of the appropriate size shall be onsite during drilling operations.

Submittals: Qualifications and installations procedure submittals shall be according to Article 516.04 GBSP #86 "Drilled Shafts." In addition to these requirements the Contractor's installation procedure submittal shall include details of soldier pile placement, timber lagging placement and CLSM placement.

Soldier Pile Installation: If the top of rock encountered is below or above that estimated on the plans, the quantities for drilling and setting soldier piles shall be recomputed. Soldier pile lengths and tip elevations shall not be modified.

At locations where shaft excavation is within 75 ft of an active rail line, the Temporary Casing Method of installation shall be used. Temporary casing shall extend at a minimum from the ground surface to the top of rock. Casing shall be socketed into rock as required to prevent loss of ground and control ground water infiltration until encasement concrete can be placed.

The following construction tolerances shall apply instead of Article 522.08(b)(3)a.

a. The top center of the soldier pile shall be within 3 in. of the plan station and -1/2 in. to +3 in. offset. (- offset towards C.I.P facing).

Geocomposite Wall Drain: Seal all splices, edges, and fastener penetrations against intrusion by self-consolidating concrete.

Excavation: Excavation for the wall to place lagging, geocomposite wall drain and concrete facing will be paid for according to Section 202 of the SSRBC.

Basis of Payment: This work shall be measured and paid for in accordance with Section 522 of the SSRBC.Excavation through existing utilities, existing sewers, and existing structures where shown

on the plans shall not be considered extra work, but shall be included in the cost for DRILLING AND SETTING SOLDIER PILES (IN SOIL) and DRILLING AND SETTING SOLDIER PILES (IN ROCK).

DRILLED TANGENT PILE RETAINING WALL

Description: This work shall consist of providing all labor, materials, and equipment necessary to install a non-gravity cantilever wall (including walls for bridge abutments) consisting of closely spaced, reinforced drilled shafts and unreinforced secant lagging. All work shall be according to the details shown on the plans, GBSP #86 "Drilled Shafts" and as directed by the Engineer in addition to the following requirements.

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

Materials: The materials used shall satisfy the following requirements:

1. Temporary casing shall be produced by electric seam, butt, or spiral welding to produce a smooth wall surface, fabricated from steel satisfying ASTM A252 Grade 2. The minimum wall thickness shall be as required to resist the anticipated installation and dewatering stresses, as determined by the Contractor, but in no case less than 1/4 in. (6 mm). The temporary casing shall have rock teeth on the bottom of the casing and slots in the top of the casing for twisting the casing into rock. Temporary casing of the appropriate size shall be onsite during drilling operations.

Submittals: Submittals shall be according to Article 516.04 GBSP #86 "Drilled Shafts." In addition to these submittal requirements the Contractor's installation method shall maintain the C.I.P. concrete facing location and minimum facing thickness shown in the plans. This method shall be detailed in the installation plan submittal.

General: No shaft excavation, casing installation, or casing removal with a vibrator hammer shall be made within four shaft diameters center to center of a shaft with concrete that has a compressive strength less than 1,500 psi, nor adjacent to secant lagging until the CLSM has reach sufficient strength to maintain its position and shape unless otherwise approved by the Engineer. 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.

Construction Tolerances: The following construction tolerances shall apply to all drilled shafts in addition to the revision requirements to GBSP #86 "Drilled Shafts."

1. Center of Shaft. The center of the drilled shaft shall be within 3 in. of the plan station and -1/2 in. to +3 in. offset at the top of the shaft. (- offset towards C.I.P facing).

2. Diameter of Drilled Shaft. Oversized production drilled shafts that exceed the construction tolerance provided by the retaining wall concrete facing will require concrete removal for portions of the drilled shaft that exceed the construction tolerance. Concrete removal shall be limited to areas where the concrete facing is installed and provide the minimum concrete facing thickness. The concrete removal method shall not damage the drilled shaft and shall be approved by the Engineer prior to removing. Cost for concrete removal will be at the expense of the Contractor and to the satisfaction of the Engineer.

3. Center of Reinforcement Cage. The center of the reinforcement cage shall be within 1 1/2 in. of plan station and -1/2 in. to +1 1/2 in. offset at the top of the shaft (- offset towards C.I.P. facing).

Excavation: Excavation in front of the drilled shafts as necessary to place a concrete facing and complete the roadway work shall be made and paid for according to Section 202. The additional excavation necessary to place geocomposite wall drain between the shafts shall be included in this work.

Geocomposite Wall Drain: When required by the plans, the geocomposite wall drain shall be installed and paid for according to Section 591 except that the drain shall be fastened to the soil face. The pervious (fabric) side of the drain shall be installed to face the soil.

Demonstration Shaft:

1. Demonstrate equipment and methods, prior to construction of the first production drilled shaft, by installing a non-production drilled shaft. This non-production drilled shaft shall have CSL tubes installed according to the General Notes of the bridge plans. Install shaft on site at a location the Engineer determines. The demonstration shaft shall not be at a location of a permanent shaft required for the wall or bridge construction.

2. Construct a 5 ft – 0 in. diameter demonstration shaft a minimum of 6 ft into bedrock. The shaft shall be constructed using a temporary casing. A reinforcing steel cage, designed by the Contractor, to adequately support the CSL tubes will be required for the demonstration shaft. Concrete shall be placed in the shaft according to the specifications.

3. Construct the demonstration shaft according to the requirements of this specification.

4. The Contractor shall excavate 6 ft below the top of the demonstration shaft to expose the upper portion of the shaft. This excavation shall be all-around the shaft. This will facilitate in determining the approximate as-built shaft size due to oversizing the drilled hole to install the temporary casing and verify if the shaft will satisfy the construction tolerances provided by the concrete retaining wall facing.

5. If the demonstration shaft installation demonstrates the equipment and methods used to construct drilled shafts to the requirements of this specification are inadequate, the Engineer will require appropriate alterations in equipment or methods, or both, to eliminate the unsatisfactory results. The Contractor may be required to perform additional demonstration shafts until an adequate procedure is demonstrated and approved by the Engineer. Additional demonstration shafts, alterations to equipment and/or methods will be at the expense of the Contractor.

6. Do not begin constructing production drilled shafts until the Engineer approves the methodology and reviews the CSL report. The CSL testing will be completed by the Engineer at no additional cost to the Contractor. The Engineer will complete the review process within five (5) working days of receiving the CSL report.

7. Cost for installing the demonstration shaft and excavating around the drilled shaft will not be measured or paid for but shall be included in the cost of DRILLED SHAFT IN SOIL and DRILLED SHAFT IN ROCK.

Drilling and placing CLSM secant lagging shall be measured for payment in cubic feet of the shaft excavation required to install the secant lagging as shown in the plans. This volume shall be the theoretical volume computed using the diameter(s) shown on the plans and the difference in elevation between the as built shaft excavation bottom and the ground surface at the time of the CLSM placement.

Basis of Payment: The secant lagging will be paid for at the contract unit price per cubic foot (cubic meter) for SECANT LAGGING. The required shaft excavation and CLSM backfill required to fill that excavation shall be included in this item.

Mitigation of undisclosed obstructions shall be paid for according to Article 109.04.

Excavation through existing utilities and sewers where shown on the plans shall not be considered extra work, but shall be included in the cost for DRILLED SHAFT IN SOIL.

No additional compensation, other than noted above, will be allowed for removing and disposing of excavated materials, for furnishing and placing concrete, CLSM, bracing, lining, temporary casings placed and removed or left in place, or for any excavation made or concrete placed outside of the plan diameter(s) of the shaft(s) specified.

ERECTION OF COMPLEX STEEL STRUCTURES

Description: In addition to the requirements of Article 505.08 (e), the following shall apply to SN 084-9973. The Contractor or sub-Contractor performing the erection of the structural steel is herein referred to as the Erection Contractor.

Erector Qualifications: The Erection Contractor shall be certified as an Advanced Certified Steel Erector (ASCE), by the AISC Certification Program. The Erection Contractor shall submit evidence of current ACSE certification to the Engineer with the submittal of the proposed erection plan.

Erection Plan: The Erection Contractor shall retain the services of an engineering firm, prequalified with the Illinois Department of Transportation in the Complex Structures category, for the completion of a project-specific erection plan. An Illinois Licensed Structural Engineer, employed by this pre-qualified engineering firm, herein referred to as the Erection Engineer, shall sign and seal the erection plan, drawings, and calculations for the proposed erection of the structural steel.

The erection plan shall be complete in detail for all phases, stages, and conditions anticipated during the erection. The erection plan shall include structural calculations and supporting documentation necessary to completely describe and document the means, methods, temporary support positions, and loads necessary to safely erect the structural steel in conformance with the contract documents and as outlined herein. The erection plans shall address and account for all items pertinent to the steel erection including such items as sequencing, falsework, temporary shoring and/or bracing, girder stability, crane positioning and movement, means of access, pick points, girder shape, permissible deformations and roll, interim/final plumbness, cross frame/diaphragm placement and connections, bolting and anchor bolt installation sequences and procedures, and blocking and anchoring of bearings. The Erection Contractor shall be responsible for the stability of the partially erected steel structure during all phases of the steel erection.

The erection plan and procedures shall be developed in accordance with the current AASHTO LRFD Bridge Construction Specifications, including interim specifications. Calculations for all items pertinent to the steel erection shall be in accordance with the 2020 AASHTO LRFD Bridge Design Specifications.

The erection plans and procedures shall be submitted to the Engineer for review and acceptance prior to starting the work. Review, acceptance and/or comments by the Department and Railroad shall not be construed to guarantee the safety or final acceptability of the work or compliance with all applicable specifications, codes, or contract requirements, and shall neither relieve the Contractor of the responsibility and liability to comply with these requirements, nor create liability for the Department nor the Railroad. The Contractor is responsible for meeting all IDOT and Railroad requirements. No additional compensation or time shall be allowed for Railroad restrictions, The erection plans and procedures shall be submitted 90 days prior to beginning work. The Contractor shall not proceed with work until written approval from each of the approval agencies has been received. Approval agencies are IDOT and the Railroad. Significant changes to the erection plan in the field must be approved by the Erection Engineer and accepted by the Engineer for the Department.

Basis of Payment: This work will not be paid for separately but shall be included in the applicable pay items according to Article 505.13 of the Standard Specifications.

FORM LINER TEXTURED SURFACE

Description: This work shall consist of designing, developing, furnishing, and installing form liners and forming concrete using reusable, high-strength urethane form liners to achieve the concrete treatment as shown in the drawings and specifications. Form lined surfaces shall include areas of the wall facing, where shown in the plans. Work shall be performed in accordance with applicable portions of Sections 503 and 504 of the Standard Specifications.

Form liners shall be installed 12 in. below finish grade unless otherwise shown on the plans. The form liner shall match the exact size of concrete units and adhere to the provisions listed herein and in the Plans.

Materials: Form liners shall be high quality, highly reusable and capable of withstanding anticipated concrete pour pressures without causing leakage or causing physical defects.

Form liners shall attach easily to pour-in-place forms and be removable without causing concrete surface damage or weakness in the substrate. Liners used for the texture shall be made from high-strength elastomeric urethane material which shall not compress more than 0.02 ft when poured at a rate of 10 vertical ft per hour. Form release agents shall be non-staining, non- residual, non-reactive and shall not contribute to the degradation of the form liner material.

Form Liner Mockup: The Contractor shall provide cast concrete mockup(s) containing the form liner surface.
Purpose of the mockup is to verify the pattern to be used, demonstrate details of form liner construction, and provide a visual quality standard.

1. Locate a mockup at construction location as directed by the Engineer. Mockup shall be readily accessible to construction personnel and the Engineer at all times during form liner construction.
2. The mockup shall be a minimum 4 ft x 4 ft x 6 in. thick and shall be cast in a vertical position, representative of the actual construction.
3. Include examples of each condition required for construction (i.e. liner joints, construction joints, expansion joints, edges of textured surface, form ties, etc.) See Exhibit A, provided below.
4. Upon receipt of comments from inspection of the mockup, adjustments or corrections shall be made where imperfections are found. If required, additional mockups shall be prepared when the initial mockup is found to be unsatisfactory.
5. After mockup is determined to be acceptable by the Engineer, construction of project may proceed.

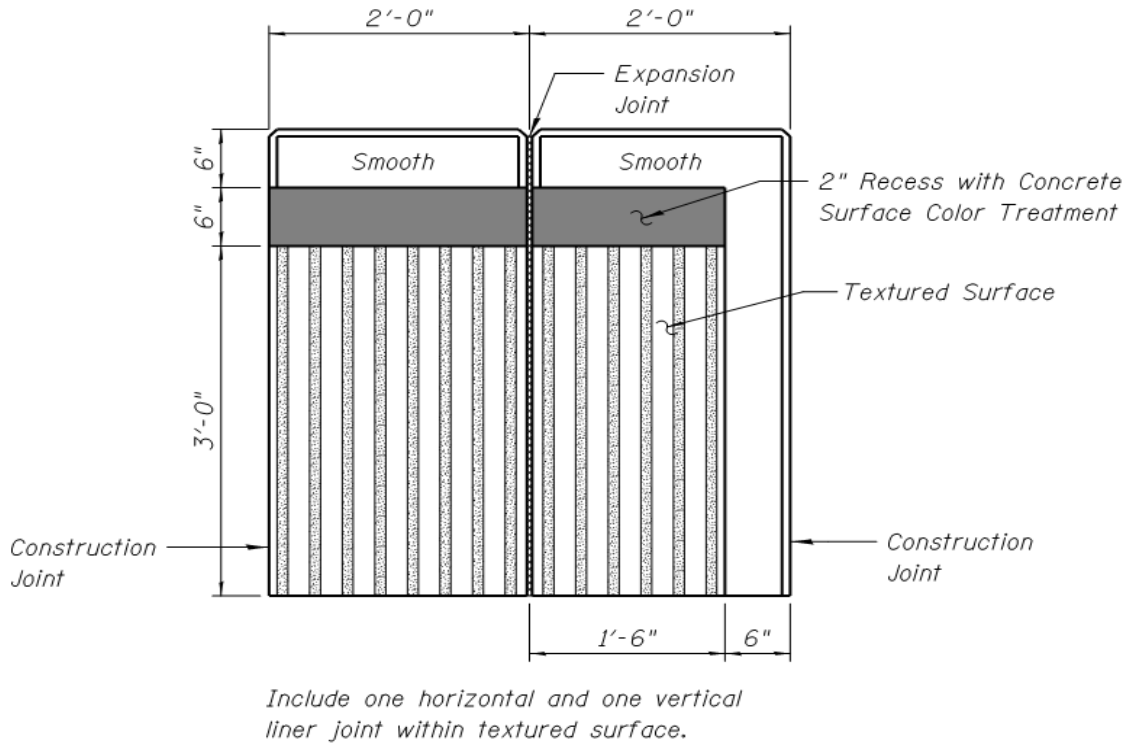


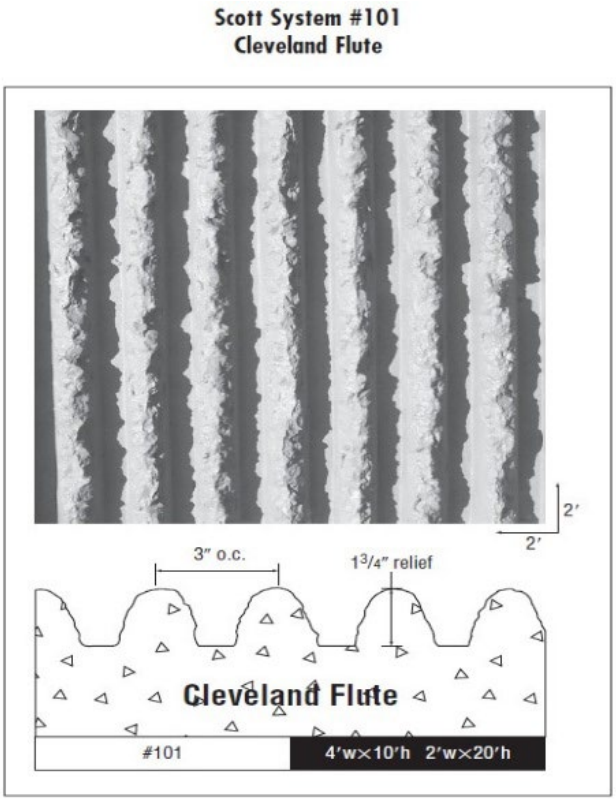
Exhibit A- Elevation View of Mockup Panel

Formliner Pattern – Large Vertical Fractured Fin: The form liner pattern for retaining wall facing shall be a large, vertical fractured fin. The uniform spacing between the raised, textured fins shall be not less than 2 in., nor more than 3 in. The maximum depth of the pattern shall be not less than 1.5 in., nor more than 2.0 in.

The following form liner manufacturers are known manufactures that provide a large, fractured fin pattern form liner for use with the cast-in-place concrete units.

a. Fitzgerald Formliners, Santa Ana, CA, #16957 Harvard Fin
b. Scott System, Denver, CO, #101 Cleveland Flute
c. customrock, St. Paul, MN, #204 Fractured Fin

A pattern "Exhibit B" is provided below, illustrating the desired appearance for large vertical fractured fin.



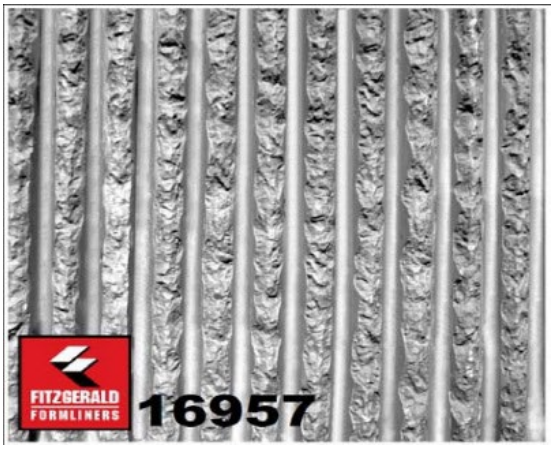


Exhibit B- Cast-in-place Pattern, Large Vertical Fractured Fin

Formliner Pattern – Small Vertical Fractured Fin:

The form liner pattern for the pier crash wall shall be a small vertical fractured fin. The uniform spacing between the raised fins shall not be less than 1", nor more than 2 inches. The maximum depth of the pattern shall not be less than 0.25", nor more than 0.50 inches.

The following form liner manufacturers are known manufacturers that provide a small, fractured fin pattern form liner for use with the cast-in-place concrete units.

a. Fitzgerald Formliners, Santa Ana, CA, #16960 Waco Rope
b. Scott System, Denver, CO, #114 Hawaiian Fractured Fin
c. Architectural Polymers, Palmerton, PA, 209-5 ½" Fractured Fin

A pattern "Exhibit C" is provided below, illustrating the desired appearance for small vertical fractured fin.

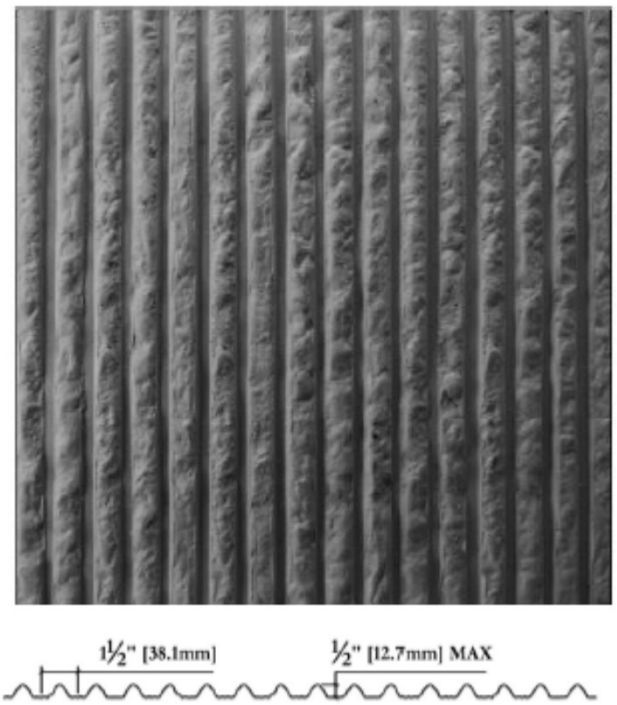


Exhibit C – Small Vertical Fractured Fin

Installation: Form liners shall be installed in accordance with the manufacturer's recommendations to achieve the highest quality concrete appearance possible. Form liners shall withstand concrete placement pressures without leakage causing physical or visual defects. A form release agent shall be applied to all surfaces of the liner which will come in contact with concrete as per the manufacturer's recommendations. After each use, liners shall be cleaned and made free of build-up prior to the next placement, and visually inspected for blemishes or tears. If necessary, the form liners shall be repaired in accordance with the manufacturer's recommendations. All form liner panels that will not perform as intended or are no longer repairable shall be replaced. An on-site inventory of each panel type shall be established based on the approved form liner shop drawings and anticipated useful life for each form liner type.

The liner shall be securely attached to the forms according to the manufacturer's recommendations. Liners shall be attached to each other with flush seams and seams filled as necessary to eliminate visible evidence of seams in cast concrete. Liner butt joints shall be blended into the pattern so as to create no visible vertical or horizontal seams or conspicuous form butt joint marks. Liner joints must fall within pattern joints or reveals. Finished textures shall be continuous without visual disruption and properly aligned over adjacent and multiple liner panels. Continuous or single liner panels shall be used where liner joints may interrupt the intended pattern. Panel remnants shall not be pieced together.

The Contractor shall coordinate concrete pours to prevent visible differences between individual pours or batches. Concrete pours shall be continuous between construction or expansion joints. Adjust form liner to align concrete joints between fins of the textured surface. Construction joints

may be shifted ±1 inch from plan location to achieve a continuous, uniformly spaced pattern. Wall ties shall be coordinated with the liner and form to achieve the least visible result. Liners shall be stripped between twelve (12) and twenty-four (24) hours as recommended by the manufacturer. Curing methods shall be compatible with the desired aesthetic result. Use of curing compounds will not be allowed.

The Contractor shall employ proper concrete placement and consolidation methods to ensure a high-quality finish. A self-consolidating concrete is required in all wall facings where form liners are specified. The finished exposed formed concrete surfaces shall be free of visible vertical seams, horizontal seams, and butt joint marks. Grinding and chipping of finished formed surfaces shall be avoided.

Method of Measurement: This work will be measured for payment in place and the area computed in square feet.

Required adjustments or corrections needed to address mockup comments and the cost of additional mockups, if required, will not be paid for separately, but shall be included in respective pay item.

Basis of Payment: Form lined surfaces will be paid for at the contract unit price per square foot for FORM LINER TEXTURED SURFACE. The unit price bid shall include all labor and material costs associated with designing, developing, furnishing, and installing form liners, forming, and disposal of forms, including satisfactory cast concrete mockup panel(s) to the requirements included herein.

FURNISHING AND ERECTING STRUCTURAL STEEL BRIDGE

Description: This work shall consist of furnishing, fabricating, transporting, erecting and painting steel structure or portions thereof for the structures listed below.

SN 084-9972 (UPRR over North Grand Avenue) – BRIDGE NO. 1
SN 084-9973 (North Grand Avenue over IMRR and NSRR) – BRIDGE NO. 2

General: Structural steel shall be fabricated to comply with the requirements indicated on the design drawings. The furnishing and erecting of structural steel shall be in accordance with this specification and applicable sections of Section 505 of the Standard Specifications for Road and Bridge Construction.

Construction Requirements: All structural steel supplied shall comply with the applicable ASTM standards listed in the plans.

Furnishing and installing the bearings shall comply with Section 521 of the Standard Specifications for Road and Bridge Construction.

The preformed fabric bearing pads for SN 084-9972, for the bearings, approved for use shall be Shock Pad Style No. 15175 as manufactured by Alert Manufacturing and Supply Company, Chicago, Illinois, or FABREEKA Pads as manufactured by Fabreeka Products Company, 1190 Adams Street, Boston, Massachusetts, or SORBTEX Pads as manufactured by Voss Engineering, Inc., Chicago,

Illinois.

Field Weld Inspection Requirements for SN 084-9972: The Contractor shall be responsible for visual inspection and Nondestructive Testing (NDT) according to the ANSI/ASSHTO/AWS D1.5 Bridge Welding Code and necessary correction of all deficiencies in material and workmanship. Fillet welds joining steel deck plates to the top flange of the primary members shall be magnetic particle tested (MT) according to the bridge welding code. Costs of this shall be included in the unit price for FURNISHING AND ERECTING STRUCTURAL STEEL of the respective bridge.

Method of Measurement: This work will be measured for payment according to Section 505.12 of the Standard Specifications for Road and Bridge Construction.

Basis of Payment: This work will be paid for at the lump sum price for FURNISHING AND ERECTING STRUCTURAL STEEL BRIDGE NO. 1 and FURNISHING AND ERECTING STRUCTURAL STEEL BRIDGE NO. 2. Price shall be payment in full for all labor, materials, and equipment necessary for furnishing, erecting, fabricating, transporting, and painting structural steel.

The cost for furnishing and installing the bearings and anchor bolts shall be included in the lump sum price for FURNISHING AND ERECTING STRUCTURAL STEEL BRIDGE, NO. 1 or NO. 2.

GROUND IMPROVEMENT

Description. This special provision allows for the substitution, at Contractor's option, of Controlled Stiffness Column Ground Improvement for Aggregate Column Ground Improvement.

General. Contractor may use Controlled Stiffness Column Ground Improvement at any location where Aggregate Column Ground Improvement is shown on the plans. Contractor may use either type of ground improvement or a combination of both types. Performance requirements shown on the plans shall apply to both types.

Controlled Stiffness Column Ground Improvement, if used, shall be subject to the requirements of the Controlled Stiffness Column Ground Improvement Special Provision.

Submittals. Submittals shall be according to the requirements of the Aggregate Column Ground Improvement and Controlled Stiffness Column Ground Improvement special provisions, as applicable. Shop drawings and design computations submittals shall be coordinated between the two types of ground improvement, if both are used.

Basis of Payment. The ground improvement work, regardless of the type(s) used, will be paid for at the contract lump sum price for AGGREGATE COLUMN GROUND IMPROVEMENT.

MECHANICALLY STABILIZED EARTH RETAINING WALLS

Description: This work shall be according to Section 522 of the SSRBC in addition to the following requirements.

Leveling Pad: The theoretical top of leveling pad line shall be 3.5 ft below finished grade line at the front face of the wall for North Grand Avenue Overpass and 2 ft below finished grade line at the front face of the wall for North Grand Avenue Underpass.

Select Fill: Provisions of Articles 1003.07 and 1004.06 apply, except as modified below.

Fine aggregate shall consist of sand, stone sand or crushed concrete sand. Coarse aggregate shall be crushed gravel, crushed stone or crushed concrete.

The select fill for the North Grand Underpass MSE walls is restricted to a rapidly draining coarse aggregate. The coarse aggregate shall be CA 7 through CA 8, CA 11 and CA 13 through CA 16, except when epoxy coated steel, geosynthentic, or geotextile soil reinforcement is utilized the course aggregate shall be CA 13 through CA 16. Fraction passing the #200 sieve shall be 2±2 percent.

The rapidly draining aggregate restriction does not apply to the North Grand Overpass MSE walls.

The select fill used as backfill in the overexcavated area behind the MSE walls, as detailed in the plans, shall be included in the cost of MSE Retaining Walls.

False Joint Rustication: The Contractor may slightly alter the dimensions and shape of joint to allow for easier fabrication, but this must be approved by the Engineer.

Excavation: Excavation necessary to place the MSE wall for North Grand Underpass and select fill shall be paid for as EARTH EXCAVATION. Excavation necessary to place the MSE wall for North Grand Overpass and select fill shall be paid for as STRUCTURE EXCAVATION measured from existing ground line at the front face to the top of the leveling pad, and from 2 ft in front of the front face of the MSE wall to the back of the reinforced soil mass.

MEMBRANE WATERPROOFING (SPECIAL)

Summary:

A. Section Includes:

1. Bridge Membrane:
   a. Furnish labor, products and equipment required for the application of a seamless, spray elastomer coating system to suitable concrete, masonry or structural and miscellaneous metal surfaces.
   b. The membrane system shall be capable of sealing across the typical expansion joint system without the need to use a separate gland and bonding agents on the membrane.
      1) This will assure a continuous waterproofing membrane system across the entire deck.

2. Integrated Ballast Protection Mat:
   a. Furnish labor, products and equipment required for the application of a spray Integrated Ballast Mat system to suitable concrete, masonry or metal surfaces.
   b. The Integrated Ballast Mat system shall be a spray applied, 100 percent solids, fast cure, high build polymer system combined with proprietary SBR rubber blend.

3. Expansion Joints:
   a. Furnish labor, products and equipment required for the application of a preformed elastomeric expansion joint system to concrete and steel substrates as shown in the Plans and specified herein.
   b. The joint system shall be a preformed, and constructed using a two-component, fast cure, high build coating system, and shall be chemically compatible with the structure waterproofing membrane system, so that both the joint system and waterproofing membrane form a continuous waterproofing system.
   c. The joint system shall be secured to the concrete or steel structure using the same two-component, fast cure, high build coating system.

B. Related Specification Sections include but are not necessarily limited to:

1. IDOT Standard Specifications for Road and Bridge Construction

Quality Assurance:

A. Referenced Standards:

1. AREMA – American Railway Engineering and Maintenance-of-Way Association Manual for Railway Engineering
   a. C-8.29.9.10, Cold Liquid-Applied Elastomeric Membrane (2005)

2. ASTM International (ASTM):
   a. C661, Standard Test Method for Indention Hardness of Elastomeric-Type Sealants by Means of a Durometer.
   b. C836, Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
   c. D57, Standard Test Methods for DC Resistance or Conductance of Insulating Materials.
   d. D412, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
   e. D624, Standard Specification for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
   f. D6378, Standard Test Method for Tensile Properties of Plastics.
   g. D2240, Standard Test Method for Rubber Property – Durometer Hardness.
   h. D4060, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
   i. D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
   j. E96, Standard Test Method for Water Vapor Transmission of Materials.

3. The Society for Protective Coating (SSPC):
   a. SP 5, White Metal Blast Cleaning.
   b. SP 6, Commercial Blast Cleaning.
   c. SP 10, Near-White Metal Blast Cleaning.
   d. PA 2, Measurement of Dry Coating Thickness with Magnetic Gages.
   e. PA 9, Measurement of Dry Coating Thickness on Cementitious Substrates using Ultrasonic Gages.

4. The Society for Protective Coatings/NACE International (SSPC/NACE):
   a. SP 13/NACE No. 6, Surface Preparation of Concrete.

B. Quality Control Provisions:

1. Manufacturer Qualifications:
   a. Use manufacturer with minimum five years experience providing similar systems on railroad bridge decks.
   b. The manufacturer should be a primary blender with proprietary formulations,

c. an Authorized Applicator training program, capacity to provide field technical services as required and manufacturer to issue warrantee to Owner.
d. List a manufacturer's batch numbers for each unit of product used in Work.

C. Quality Assurance Provisions:

1. Schedule pre-installation conference to review installation schedule, shut down and restricted access procedures.
   a. Indicate Owner's Representative and Contractor's Superintendent.
2. Inspect surface preparation, application procedures, and review proposed dry film thickness measurements at each installation location.
3. The membrane system shall pass Crack Bridging Test according to ASTM C836 at 80 mils, or the membrane thickness applied shall be at least equal to the thickness used by the manufacturer for ASTM C836 testing.
4. The membrane system shall meet AREMA C-29.9.10 cold applied waterproofing membrane and shall be applied at a minimum thickness of 80 mils, or the membrane thickness applied shall be at least equal to the thickness used by the manufacturer to pass the Crack Bridging Test according to ASTM C 836.
   a. Primer is required for all membrane applications.
5. The base waterproofing membrane for the integrated ballast protection mat shall pass Crack Bridging Test according to ASTM C836 at the thickness applied and shall be at least equal to the thickness used by the manufacturer for the ASTM C836 testing.
6. Joint membrane material shall be subjected to cyclic displacement testing.
   a. Cyclic displacement testing shall include tests at seismic displacements and velocities.

Definitions:

A. Ballast: Rock or other material used to bed rail track ties.

B. Concrete Surface Preparation: SSPC-SP 13/NACE No. 6.

C. Metal Surface preparation: SSPC Metal Preparation Standards – SSPC-SP 5, White Metal Blast; SP 6, Commercial Blast; and SP 10 Near White Blast.

Submittals:

A. Submit product data sheets and installation Specification.

B. Submit MSDS sheets for product used in the Work.

C. Submit substrate preparation details.

D. Submit sample of proposed membrane.
   1. 4 in. (100 mm) square sample shall include color, texture, and thickness of proposed membrane system.

E. Submit qualifications of applicator at least three weeks prior to installation.

F. Submit spray schedule to Engineer at least two weeks prior to installation.

Project Conditions:

A. Environmental Requirements:
   1. Install system when air and substrate temperature is above -20 DegF and substrate is +5 DegF above dew point and rising, or as required by manufacturer.

B. Personnel Requirements:
   1. Provide protective clothing, gloves, and respirators for use by installers as required.

Approved Manufacturer:

A. Bridge Preservation:
   686 South Adams
   Kansas City, KS 66105
   913-321-9000

B. Alternative products will be allowed but must meet this specification and/or be approved by the Engineer and railroad.

Materials:

A. Primer
   1. Bridge deck concrete primer:
      a. 100 percent solids, two component polymer primer.
   2. Bridge deck steel primer:
      a. Single component modified polymer primer.

B. Bridge deck membrane:
   1. 100 percent solids, rapid curing elastomer.
      a. Spray Installed.

Property, Cured Product	Test Method	Typical Value
Solids Content		100%
Shore Hardness	ASTM D 2240	50 D
Elongation	ASTM D 638	.250%
Tensile Strength, psi Tear Strength,	ASTM D 638	>2,000
pli, Die C	ASTM D 624	390
Tabor Abrasion, mg. Loss (1000 gm, 1000 rev, H-18)	ASTM D 4060	250
Moisture Vapor Transmission	ASTM E 96	<0.025 perms
Gel Time		<10 Seconds
Tack Free		<30 Seconds
Open to Light Traffic		1 Hour
Electrical Resistance	ASTM D 257-99	$\geq 2.0 \times 10^{13}$ ohm-cm
Crack Bridging Test (80 Mils - 1/8 IN Opening @ -15 DegF, 25 cycles)	ASTM C 836-00	Pass
Ballast Test (North American)	2 Million Cycles	No Damage

C. Integrated ballast mat:
   1. Bridge deck top coat:
      a. 100 percent solids, rapid curing elastomer.
      b. Spray Installed.

Property, Cured Product	Test Method	Typical Value
Solids Content		100%
Shore Hardness	ASTM D 2240	<50 D
Elongation	ASTM D 638	>250%
Tensile Strength, psi	ASTM D 638	>2,000
Tear Strength, pli, Die C	ASTM D 624	>390
Tabor Abrasion, mg. Loss (1000 gm, 1000 rev, H-18)	ASTM D 4060	>250
Moisture Vapor Transmission	ASTM E 96	<0.025 perms
Gel Time		<90 Seconds
Tack Free		<2 Minutes
Ballast Loading		1 Hour
Ballast Impact Test, Loading 9.2 - 28.1 Kips, 2,000,000 Cycles		Pass

D. Preformed Joint Materials:
   1. Expansion Joint:
      a. Preformed elastomeric expansion joint system designed specifically for use on concrete and steel structures.
      b. Designed to be used in conjunction with specified spray applied waterproofing membrane, to form a continuous monolithic membrane and joint system across the entire structure.

Properties	Test Method	Typical Value
Shore Hardness	ASTM D2240	<45D
Elongation	ASTM D638	>250%
Tensile Strength, psi	ASTM D638	>2,000
Tear Strength, pli, Die C	ASTM D624	>390
Operating Temperature Range		-40°F to 400°F
Movement Capability (of nominal joint size)		+50% and -50%

E. Coating and Joint Anchoring Materials:

1. Primer – bridge deck concrete primer.
   a. Plural component primer for porous substrates.

Properties	Test Method	Typical Value
Color		Amber/ White
Solids Content, %		89
Elongation		6%
Shore D Hardness	ASTM D2240	71
Tensile Strength, psi	ASTM D638	4,500
Adhesion to Substrate, psi, concrete	ASTM D 4541	>150
Viscosity, cps, neat, 770 F		25
VOC g/1	ASTM D 4541	2.3
Pot Life @ 770 F		5 min
Tack Free @ 770 F Final Cure @ 770 F		15 min
Tack Free @ 770 F Final Cure @ 770 F		20 min

F. Joint Adhesive:

1. Bridge deck joint adhesive.
   a. A slow setting, 100 percent solids, two-component polymer product.

Property, Cured Product	Test Method	Typical Value
Solids Content		100%
Shore Hardness	ASTM D 2240	<50 D
Elongation	ASTM D 638	>250%
Tensile Strength, psi	ASTM D 638	>2,000
Tear Strength, pli, Die C	ASTM D 624	390
Gel Time		>90 Seconds
Tack Free		>2 Minutes

G. Surface Activator:

1. Bridge deck membrane surface activator.
   a. Single component activating agent used to treat expansion joint surfaces prior to adhesive or over coating applications.
   b. May also be used with bridge deck membrane at coating overlap areas where coating has cured for more than 24 HRS.

Typical Physical Properties	Typical Value
Viscosity @ 25°C	N.D.
Appearance	Clear Liquid
Odor	Mild Sweet Odor
Specific Gravity @ 25°C	1.08
Flash Point	>200
Vapor Density (Air = 1)	N.D.

H. Joint Sealant (OPTIONAL):

1. Bridge deck joint sealant.
   a. Single component, moisture-curing product which can be used as an optional double joint.

Typical Physical Properties		Typical Value
VOC Content		35.1 g/1
Shore Hardness	ASTM C 661	25A
Elongation	ASTM D 412	>600%
Tensile Strength, psi	ASTM D 412	400
100% Modulus, psi	ASTM D 412	44
Service Temperature		-22°F - 176°F
Specific Gravity		1.17
Tack-Free Time @ 73°F and 50% RH		90 - 150 minutes

Equipment:

A. Contractor shall utilize heated 1:1 plural component heated equipment capable of at least 100 DegF Delta T without recirculation and continuous discharge pressure of 2,500 psi.
   1. Pump shall have heated hose capable of maintaining 170 DegF Temperature at all times.
   2. Spray gun shall be impingement mix with either air or mechanical purge.
   3. Pump shall be capable of recording critical functions, including, product temperature of A component, B component, hose temperature, fluid pressure of A component, B component, number of pump cycles, and pump error codes.
   4. Contractor shall have a minimum of two spray guns in working order present at all times during the application.
   5. Backup parts for critical components such as feed pumps and proportioning cylinders shall be required.
   6. Contractor shall have pump, electrical generator, air compressor, supplies, spare parts and materials in a self-contained truck or trailer.

Execution

Inspection:

A. Assure all owner property construction requirements have been made and completed prior to commencement of primer and coatings installation.

B. Prior to application of primer inspect and approve substrate preparation.

Preparation:

A. Bridge Membrane and Integrated Ballast Mat:
   1. Provide clean, sound, and dry surfaces.
   2. Sand blast metal surfaces to remove laitance and other contamination and provide suitable 3-5 mil blast profile.
   3. Prepare metal surfaces to SSPS-SP 10 near White Blast or better.
   4. Metal surfaces must be above dew point prior to application.
   5. Repair spalls and other defects with Five Star Structural Concrete or other as acceptable to the Manufacturer.
   6. Prepare concrete surfaces to SSPC SP 13/NACE No. 6 Surface Preparation of Concrete.
   7. Concrete to have less than 5.0 percent moisture content prior to installation of primer.
   8. Test prepared steel surface using Elcometer adhesion testing (ASTM D 4541).
      a. Minimum pull strength is 400 psi.

   9. Test prepared concrete surface suing Elcometer adhesion testing (ASTM D 4541).
      a. Minimum pull strength is 150 psi or failure in the concrete substrate.
   10. Mask protected surfaces prior to spray applications.
   11. Erect spray curtains and partitions as required.

B. Expansion Joints: Joint fascia shall be of a uniform width and height.

Installation:

A. Bridge Membrane and Integrated Ballast Mat:
   1. Mix all products in accordance with manufacturer's written instructions.
   2. Steel Surfaces:
      a. Spray or roll primer at 600 – 800 SR/GAL over surfaces to receive coating system.
      b. Allow primer to go tack free before spraying Bridge Deck Membrane.
      c. Primer is not necessary provided steel surface is prepared to 5 mil profile or better and no rust present.
   3. Concrete Surfaces:
      a. Spray, squeegee or roll concrete primer at 130-200 SQ FT/GAL over surfaces to receive coating system.
      b. Allow primer to go tack free before spraying Bridge Deck Membrane.
   4. Concrete and masonry surfaces must have less than 5.0 percent moisture prior to

installation.

5. Metal surfaces must be dry, rust-free, and have proper SSPC profile and preparation.
6. Reapply primer if set more than twenty-four (24) HRS.
7. Spray base coat over primed deck surfaces at 20 SQ FT/GAL for a total thickness of 80 mils on all surfaces.
8. Retouch coat by filling low spots or areas with inadequate thickness.
9. Spray additional base coats to achieve specified system thickness.
   a. Retouch as required.
10. Spray membrane over primed surfaces at 20 SF/GAL (80 mils) by using a Graco Reactor pumping system or other approved by the manufacturer.
11. Apply a base coat of Bridge Deck Membrane at 80 mils, followed by SBR rubber aggregate broadcast into Bridge Deck Top Coat in two lifts applied at 40 mils per lift with rubber aggregate broadcast.
    a. Apply a third 40 mil lift to seal rubber aggregate particles.
12. Apply immediately broadcast rubber aggregate at 0.25 to 0.35 LBS/FT^2 to achieve 100 percent coverage rate.
    a. Remove excess aggregate after initial set and repeat process a second time, followed by a 40 mil seal coat to lock rubber aggregate.
13. Total thickness of Integrated Ballast Mat system is 1/4 IN (250 mils, 6.3 mm) on all surfaces.

B. Expansion Joints:

1. Concrete and steel structures to receive joint shall be free of surface defects such as air voids, fins, form-release agents and honeycombs, scaling, rust, and shall be uniform in width.
2. Apply primer over concrete or masonry surfaces to receive joint system.
   a. Surfaces to receive adhesive membrane must be surface dry prior to application of primer and coating.
3. Reapply primer if set more than 24 HRS.
4. Assemble pre-molded joint sections, cutting joint sections to allow a minimum 4 in. overlap between sections.
5. Surfaces to be adhered and overlap sections must be treated with Bridge Preservation Activator 15 minutes prior to application.
6. Spray applied at 60 to 80 mils to adhere both the joint flanges and sealjoint overlaps.
7. Spray coating over primed surfaces at a rate of 60 to 80 mils, and immediately place joint flaps or overlap sections into the liquid material.
8. For coating and joint anchoring materials, apply uniform pressure to freshly sprayed areas to insure positive contact between joint sections and coating material.
9. For coating and joint anchoring materials, apply by brush, spray, or roller to clean, dry, properly prepared surfaces at 160-200 SF/GAL depending on substrate porosity.

a. Allow primer to dry to the touch before overcoating.

10. Inspect joint flaps and overlap sections to ensure that all areas are properly adhered and sealed.
    a. Retouch areas where additional coating is required to insure a watertight seal.
11. On ballasted decks, the joint system shall have a minimum 3/8 in. galvanized steel plate with a minimum 4 in. overlap on each side of the joint fascia and shall be held in place by imbedding in a liquid mastic or anchored on one side of the joint header using mechanical fasteners.

C. Coating to Joint Overlap Installation:
    1. Apply primer over concrete or masonry surfaces to receive coating system.
        a. Surfaces must be surface dry prior to application of primer and coating.
    2. Reapply primer if set more than 24 HRS.
    3. Surfaces to be over coated must be treated with Bridge Deck Membrane Surface Activator 15 minutes prior to application.
    4. Spray coating over treated joint surfaces and primed concrete surfaces at authorized rate.
    5. Spray additional base coats to achieve specified base coat thickness.
        a. Retouch as required.

D. Double Joint:
    1. Install closed cell backer rod in joint opening (if not utilizing optional Double Joint).
    2. Install 3/8 in. galvanized steel plate over finished joint system.
        a. Steel plate provided by others.
        b. Secure to the substrate by mastic caulking or by securing one side using mechanical fasteners.
        c. Apply a sealant in the anchor holes prior to inserting mechanical fasteners to insure a proper seal.

Field Quality Control:

A. Perform dry film thickness tests in accordance with SSPC-PA 2 Measurement of Dry Coating Thickness or SSPC-PA 9, Measurement of Dry Coating Thickness on Cementitious Substrates Using Ultrasonic Gages.

B. Use magnetic or ultrasonic test equipment, destructive testing, or stroke per gallon method of assuring proper film thickness.
    1. Spray equipment is calibrated and tested to a stroke count per gallon of product sprayed.
        a. This is suitable for thickness assurance on most project.
    2. Ultrasonic testing is usually accurate to +/-5 percent.
    3. Repair destructive testing areas by respraying or filling with special two component gun grade material provided by manufacturer.

C. Other components of the system may be wet film tested for thickness.

D. Maintain spray and other installation equipment in proper operating condition throughout installation.
   1. Provide reserve equipment as required.

E. Ensure that joint overlaps are a minimum of 4 in. and are properly sealed revealing no pinholes of defects in the joint overlap.

Cleaning:

A. Clean spills and oversprays as they occur.

B. Consult manufacturer's literature and MSDS sheets for proper cleaning products and methods.

C. High pressure water clean any liner of covering material used to contain overspray and other debris.
D. Remove drums and waste material.

E. Clean site to Owner's satisfaction prior to final acceptance.

Protection:

A. Protect installed work prior to acceptance by owner.

B. Provide protective clothing, gloves, and respirators for use by installers as required.

Method of Measurement and Basis of Payment:

Method of Measurement:

A. The elastomeric cold spray applied waterproofing will be measured in square feet of a horizontal surface area of deck finished and in place. Measurement will be based on the horizontal distance between the face of curbs and the horizontal length of the membrane installed. Membrane waterproofing applied to the curb and backwall faces will not be measured for payment but shall be included in the unit price for MEMBRANE WATERPROOFING (SPECIAL).

Basis of Payment:

A. This work will be paid for at the contract unit price per square feet for MEMBRANE WATERPROOFING (SPECIAL) which price will be payment in full for completing the work according to these specifications.

ORNAMENTAL FENCE

Description: This work shall consist of all labor, material, and equipment necessary for the installation of ornamental fence at locations shown on the plans and as detailed in the plans.
The Contractor shall submit shop drawings and structural calculations signed and sealed by a licensed structural engineer in Illinois. Shop drawings shall include plans, elevations, sections, and detail views. Detail the posts, rails, and fittings. Indicate post and panel types, sizes, orientations, and locations.

The Contractor shall warranty for a period of one year against failure of assembly and installation. The fence shall have a twenty-year manufacturer's warranty against product failure.

Fence shall be designed for a 90 mph (3-second gust) in accordance to ASCE 7-05. Wind load on an iced fence to be designed using a wind speed of 40 mph (3-second gust). Design fence for wind exposure Category C. Wind Exposure Category C is defined as open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country with grasslands.

The fence shall also be designed to resist a single concentrated load of 200 pounds applied in any direction at any point on the top rail. The fence shall also be designed to resist a load of 50 pounds/foot applied at any direction along the top rail. This load need not be applied at the same time as the 200-pound concentrated load.

The fence shall include:

1. The fence and posts shall be galvanized steel with factory finish in accordance with the manufacturer's specifications. Color to be black. Hardware for attachments shall also be galvanized.

2. Hardware for an attachment of fence post to concrete surface to be in accordance with details as shown on the plans and to include:
    i. 7½" x 6" x ½" thick A36 steel plate, drilled for anchor bolt holes, to be welded to fence post at point of fence post manufacture. Weld shall be made smooth and flush and shall be in accordance with the AWS Welding code. Weld to be applied prior to galvanizing. The steel plate shall receive the same galvanizing as the fence components.

    ii. Anchor bolts shall be as shown on the plans.

Fence installation:

1. The fence shall be installed on the proposed wall at locations shown on the plans and as directed by the Engineer.

2. Posts shall be set plumb. Fence sections shall be securely fastened to posts according to

manufacturer's recommendations, taking care to protect the posts and fence from scuffing and other damage.

3. Welding of fence material in the field shall not be performed.

4. Any damage to product or site will be repaired or replaced to the satisfaction of the engineer.

5. Fence shall be cleaned to the satisfaction of the Engineer.

Basis of Payment: This work shall be paid for at the contract unit price per foot for ORNAMENTAL FENCE which price shall include all labor, material, and equipment necessary to properly install the fence as shown on the plans and to the satisfaction of the Engineer.

PRECAST PRESTRESSED CONCRETE FASCIA BEAM

Description: This work shall consist of furnishing all labor, material, and equipment for the fabrication and erection of a precast prestressed concrete fascia beam including the curb on top of the fascia beam.

General: Except as otherwise specified hereafter, the current Standard Specifications for Road and Bridge Construction, Section 504 – Precast Concrete Structures and Section 1042 – Precast Concrete Products, shall apply to all work under this section.

Construction Requirements: Fly Ash, Slicafume and/or slag cement and any other admixtures, approved by the Engineer, shall be in addition to the minimum cement content listed in the Standard Specifications for Road and Bridge Construction, Section 1020-Portland Cement Concrete, not in lieu of cement.

Lifting loops shall be provided in the detailed locations on the design drawings. The area around all lifting loops shall be recessed so that the loops can be removed to a depth of ¾ in. and grouted.

Method of Measurement: This work will be measured for payment in units of lump sum.

Basis of Payment: This work will be paid at the contract unit lump sum price for PRECAST PRESTRESSED CONCRETE FASCIA BEAM, No. 1. Price shall be payment in full for all labor, materials, and equipment for fabrication and erection of the precast prestressed concrete fascia beam.

SHOP DRAWING SUBMITTAL (STRUCTURAL ITEMS)

Description: This work shall consist of the submittal of shop drawings to the Engineer for review.

General: Shop drawing submittal shall be in accordance with this specification and Sections 105, 504, 505, 509, and 1042 of the Standard Specifications for Road and Bridge Construction.

Construction Requirements: The following items will require a shop drawing submittal to the Engineer for review.

- Aggregate Colmn Ground Improvement
- Controlled Stiffness
- Column Ground Improvement**
- Mechanically Stabilized Earth Retaining Walls
- Structural Steel, Bearings and Anchor Bolts*
- Precast Prestressed Concrete Fascia Beam*
- Steel Railing (Special)
- Membrane Waterproofing (Special)*
- Modular Expansion Joint

* The Engineer will forward to the railroad agency for review.
** If utilized

Basis of Payment: This work will not be paid for separately but shall be included in the cost of the respective item.

STEEL RAILING (SPECIAL)

Description: This work shall consist of furnishing all labor, materials, and equipment for the fabrication and erection of the steel railing.

General: The railing shall be fabricated to comply with the requirements indicated on the design drawings. The railing shall be in accordance with this specification and applicable sections of Section 509 of the Standard Specifications for Road and Bridge Construction.

Construction Requirements: The contractor shall provide all necessary equipment for the installation of the steel railing.

All members supplied shall comply with the applicable ASTM standards.

HSS – ASTM A500, Grade B (46 ksi) (cold formed)
Plate – ASTM A36/A36M
Stainless Steel Strand and Fittings – ASTM A316
Galvanized Steel Anchor Rods – ASTM F1554
Washers for Steel Anchor Rods – ASTM F844 (Standard) or F436 (Hardened)
Nuts for Steel Anchor Rods – ASTM A583 Grade A

All railing components, with the exception of the stainless-steel parts, shall be galvanized according to Section 509.05 of the Standard Specifications for Road and Bridge Construction and general notes shown on the plans. Galvanizing will not be measured for payment but included in the unit cost of this pay item.

Stainless steel strands and fittings shall be isolated from the galvanized posts and plates to prevent galvanic corrosion due to dissimilar materials.

Welding procedures and personnel shall be qualified according to AWS D1.1/D1.1M, "Structural Welding Code – Steel."

Shop drawings shall include plans, elevations, sections, and detail views. Detail the posts, rails, strands, and fittings. Indicate post and panel types, sizes, orientations, and locations. Indicate critical dimensions from adjacent reveals, rustications, and joints.

Indicate welded connections by AWS standard symbols. Detail loose and cast-in hardware, inserts, connections, and joints, including accessories.

Indicate locations and details of anchorage devices to be embedded in other construction. Coordinate with other trades to embed anchorages in other construction.

Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 in. unless otherwise indicated. Remove sharp or rough areas on exposed surfaces. Provide a weep hole on the back face at the bottom of every HSS post.

Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint.

Intermediate tensioning posts shall be set at maximum of 70 ft spacing.

After threading strands through intermediate posts, hang a 20-pound weight at midpoint of the maximum post spacing on each strand prior to applying tension. Tension each strand to remove the sag to a maximum of 5/8 in.

Set railings accurately in location, alignment, and elevation. Set retaining wall posts plumb within a tolerance of 1/16 in. in 3 ft. Use post-installed chemical anchors for fastening the base plates to the concrete.

Method of Measurement: This work will be measured for payment in place in feet. The length measured will be the overall length along the top longitudinal railing member through all posts and small gaps.

Basis of Payment: This work will be paid for at the contract unit price per foot for STEEL RAILING (SPECIAL). Price shall be payment in full for all labor, materials, and equipment necessary to erect the steel railing.

DRAINAGE / SANITARY SEWERS

CATCH BASINS TO BE FILLED TO MAINTAIN FLOW

Description: This work shall consist of filling existing catch basins while maintain flow through the catch basin according to Section 605 of the SSRBC at locations shown on the plans or as directed by the Engineer. The same size pipe through the catch basin shall be utilized to maintain

the flow. The Contractor shall submit a plan for approval to the Engineer to fill and maintain flow through the catch basin.

Basis of Payment: This work will be paid for at the contract unit price per each for CATCH BASINS TO BE FILLED TO MAINTAIN FLOW.

DIRECTIONAL BORING

Description: This work shall consist of furnishing and installing, by jacking, pipe of the required diameter at locations shown on the plans. This method of installation consists of pushing the pipe into the earth with a boring auger rotating within the pipe to remove the spoil.

General: Installations shall have a bore hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating.

The use of water or other liquids to facilitate pipe emplacement and spoil removal is prohibited.

If during installation an obstruction is encountered which prevents installation of the pipe in accordance with this specification, the pipe shall be abandoned in place and immediately filled with grout. The abandoned pipe shall be completely filled with a sand and cement grout mixture consisting of 4 parts sand to 1 part cement and enough clean water to facilitate pumping. A new installation procedure and revised plans must be submitted to, and approved by, the Engineer, who will forward to the Railroad Engineer, before work can resume.

If the grade of the pipe at the jacking or boring end is below the ground surface, suitable pits or trenches shall be excavated for the purpose of conducting the jacking or boring operation and for placing end joints of the pipe. The pits shall be outside of the shoring zone defined as a 2h:1v line that begins 14’ horizontally from track center and 3.6’ below the top of rail. Temporary guard rail shall be provided for protection of the pit or trench when specified by the Engineer. Excavations greater than 5’ in depth shall be protected in accordance with OSHA Trench Safety Guidelines.

Materials:

A. Pipe installed by the Jack and Bore method shall be limited to Smooth Steel Pipe.

B. The steel pipe shall conform to ASTM Specifications A 139 Grade B (No Hydro). The minimum yield strength of this pipe shall be 35,000 psi. The minimum wall thickness is as follows:

Nominal Size	Minimum Wall Thickness
(Inches)	(Inches)
24	0.375

C. The pipe shall be coated externally with coal tar epoxy or bituminous asphalt. The pipe

D. shall be shop cut with ends square with centerline, leveled and welded so that the entire length of the pipe shall be straight and true. Weld seams in the field shall be field applied with coal tar epoxy or bituminous asphalt.

PIPE CONNECTIONS

Smooth steel pipe shall be connected by welding using a full depth, single "V" groove butt weld. Welding shall be performed by skilled welders, welding operators, and tackers who have had adequate experience in the type of materials to be used. Welders shall be qualified under the provisions of ANSI/AWS D1.1 by an independent local, approved testing agency not more than 6 months prior to commencing work on the pipe. Machines and electrodes similar to those used in the work shall be used in qualifications tests. The Contractor shall be responsible for all material and bear the expense of qualifying welders.

SUBMITTALS

Plans and description of the jack and bore arrangement to be used shall be submitted to the Engineer, who will forward to the Railroad Engineer, for approval and no work shall proceed until such approval is obtained.

DEWATERING

A. When water is known or expected to be encountered, pumps of sufficient capacity to handle the flow shall be maintained at the site, provided the contractor has received approval from the Railroad Engineer to operate them.

B. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgment of the Railroad Engineer, the operation can be safely halted.

C. When dewatering, close observation shall be maintained to detect any settlement or displacement of railroad embankment, tracks, and facilities.

INSTALLATION

B. Directional boring of the pipe shall be accomplished by the dry auger boring method without jetting, sluicing, or wet boring. The hole shall be bored and cased through the soil by a cutting head on a continuous auger mounted inside the pipe. The boring of the hold and installation of the pipe shall be simultaneous.

C. Unless otherwise approved by the Railroad Engineer, The boring operation shall be progressed on a 24- hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

D. The Contractor shall inspect the site where the pipe is to be installed and familiarize himself with the conditions under which the work will be performed and with all necessary details as to the orderly prosecution of the work. The omission of any details for the satisfactory

E. installation of the work in its entirety, which may not appear herein, shall not relieve the Contractor of full responsibility.

F. The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger from leading the pipe so that no unsupported excavation is ahead of the pipe.

G. The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered. If the obstruction cannot be removed without excavation in advance of the pipe, procedures as outlined in Section 1.D of this specification must be implemented immediately.

H. The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than 1/2 inch. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch, grouting or other methods approved by the Railroad Engineer, shall be employed to fill such voids. The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.

I. Construction shall be carried on in such a manner that settlement of the ground surface above the pipeline shall be held to an absolute minimum. The installation of the pipeline shall follow the heading or boring excavation as soon as possible.

J. If, in the opinion of the Railroad Engineer, the installation of the pipe is being conducted in an unsafe manner, the Contractor will be required to stop work and bulkhead the heading until suitable agreements are reached between the Contractor and the Railroad Engineer. The Railroad will not be responsible and shall be saved harmless in the event of delays to the Contractor's work resulting from any cause whatsoever.

K. Immediately upon completion of the pipe installation, the pits or trenches excavated to facilitate jacking or boring operations shall be backfilled with granular embankment in accordance with Section 206 of the SSRBC.

TRACK MONITORING

For all Jack and Bore Operations, Track Monitoring will be required in accordance with Norfolk Southern's Special Provisions for Protection of Railway Interests, Section 5.I.

SAFETY REQUIREMENTS

At all times when the work is being progressed, a field supervisor for the work with no less than twelve (12) months experience in the operation of the equipment being used shall be present. If boring equipment or similar machines are being used, the machine operator also shall have no less than twelve (12) months experience in the operation of the equipment being used.

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

Basis of Payment: This work will be paid for at the contract unit price per foot for DIRECTIONAL BORING.

Excavation in rock will be paid for according to Article 502.13 of the SSRBC.

INLET, TYPE A, WITH SPECIAL FRAME AND GRATE

Description: This work shall consist of constructing inlets with frames and grates according to Section 602 of the SSRBC at locations shown on the plans or as directed by the Engineer.

General: Inlets are to be installed within walking surface of multi-use path. Frame and grate shall be 24±1-in square. Grate shall have non-slip texture and narrow, ADA-compliant openings.

Basis of Payment: This work will be paid for at the contract unit price per each for INLETS, TYPE A, WITH SPECIAL FRAME AND GRATE

INLETS WITH TYPE 3V FRAME AND GRATE

Description: This work shall consist of constructing inlets with frames and grates according to Section 602 of the SSRBC at locations shown on the plans or as directed by the Engineer.

General: The grate shall be in accordance with Standard 604011.

Basis of Payment: This work will be paid for at the contract unit price per each for INLETS, TYPE A, TYPE 3V FRAME AND GRATE and INLETS, TYPE B, TYPE 3V FRAME AND GRATE.

MANHOLES – SANITARY SEWER

Manholes in the Drainage Structure Schedule as sanitary manholes shall be in accordance with Section 602 of the Standard Specifications and the additional requirements noted below.

Manholes shall be precast reinforced concrete. All joints shall be made with an approved bitumastic material on an approved rubber gasket. The completed manhole shall be watertight.

Where shown on the plans, drop connections shall be constructed in accordance with drawing No. 6 in the Standard Specifications for Water and Sewer Main Construction. Cost for drop connections shall be included in the contract unit price for manholes of the size and type specified.

Manhole steps, when required, shall be gray cast iron ASTM A48 or polypropylene coated steel reinforcing rods with load and pullout ratings meeting OSHA standards.

Channels shall be made to conform in shape and slope to that of the connecting sewers and shall be brought together smoothly with well-rounded junctions, satisfactory to the ENGINEER, and in conformance with details shown on the plans.

All manholes shall be tested by the Contractor for watertightness by either of the following methods

in conformance with the requirements specified:

A. ASTM C969: "Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines."
B. ASTM C 1244: "Standard Test Method for Concrete Sewer Manholes by the Negative Pressure (Vacuum) Test."

The manholes will be paid for the size and type specified, which price shall include the precast structures, gaskets, concrete fill, risers, cones or flat top slabs, frames and lids, steps, sand cushion, concrete trough, and all excavation and backfilling. The unit price per each for the size and type specified shall also include any connection to existing or proposed sewers, temporary shoring, excavation and backfill to complete the connection, the removal of existing storm sewer, if necessary, and staging and temporary construction to maintain flow during construction.

The temporary soil retention systems at each manhole will be according to Section 522 of the IDOT SSRBC and payment for these systems will be included in the unit price each for the size and type of manhole specified.

The unit price per each for the size and type specified shall also include any connection to existing or proposed sewers, temporary shoring, excavation and backfill to complete the connection, the removal of existing storm sewer, if necessary, and staging and temporary construction to maintain flow during construction.

This work will be paid for at the contract unit price per each for MANHOLES of the type and size specified.

MANHOLES, TYPE A, 10'-DIAMETER

Description: This work shall consist of construction 10'-diameter manholes with frames and grates or frames and lids according to Section 602 of the SSRBC at locations shown on the plans or as directed by the Engineer.

General: The manhole shall be in accordance with Standard 602426.

Basis of Payment: This work will be paid for at the contract unit price per each for MANHOLES, TYPE A, 10'-DIAMETER with the type of frame and grate or frame and lid specified.

PAVEMENT REPLACEMENT (SPECIAL)

Description: This work shall comply with Section 208, 353, and 406 of the IDOT SSRBC.

This work shall be in conjunction with sewer replacements or railroad crossing gate foundation removals in existing streets. The existing pavement shall be removed by saw cutting to a minimum depth of 9 inches, removal of the existing pavement, and removal of the existing subbase. The contractor shall take care during the removal of the pavement to prevent damage to the adjacent

pavement. Removal of the subgrade to the elevation of the sewer replacement shall be included in the cost of the sewer.

Once the proposed elements are in place, the trench shall be backfilled according to Section 208 to the bottom of the proposed pavement. Twelve (12) inches of aggregate subgrade improvement, 8 inches of Portland Cement Concrete Base Course and 1 ½" of HMA Surface Course shall be placed on top of the backfill. The HMA surface course should be flush with the adjacent existing pavement. Pavement Replacement, Special shall be required at any location where the existing pavement is to be removed and will not be replaced within the limits of the roadway construction. These areas include, but may not be limited to, manhole and sewer replacements, casting removal, and access points for filling existing sewers.

General: This work includes the removal, backfill, subgrade improvement, pavement, and prime coat required for replacing existing pavement.

Basis of Payment: This work will be paid for at the contract unit price per square yard for PAVEMENT REPLACEMENT (SPECIAL). Backfilling the trench will be paid for at the contract unit price per cubic yard for TRENCH BACKFILL.

PIPE DRAINS (SPECIAL)

Description: This work shall consist of constructing pipe drains of the required diameter according to Sections 601 of the SSRBC at locations shown on the plans or as directed by the Engineer, except that the materials shall be as specified on the detail in the plans.

General:

A. Pipe shall be limited to Smooth Steel Pipe.

B. The steel pipe shall conform to ASTM Specifications A 139 Grade B (No Hydro). The minimum yield strength of this pipe shall be 35,000 psi. The minimum wall thickness is as follows:

Normal Size (Inches)	Minimum Wall Thickness (Inches)
12	0.250
15	0.3125
18	0.3125
24	0.4375

C. The pipe shall be coated externally with coal tar epoxy or bituminous asphalt. The pipe shall be shop cut with ends square with centerline, leveled, and welded so that the entire length of the pipe shall be straight and true. Weld seams in the field shall be field applied with coal tar epoxy or bituminous asphalt.

Pipe Connections

Smooth steel pipe and pipe connected by welding using a full depth, single "V" groove butt weld. Welding shall be performed by skilled welders, welding operators, and tackers who have had adequate experience in the type of materials to be used. Welders shall be qualified under the provisions of ANSI/AWS D1.1 by an independent local, approved testing agency not more than 6 months prior to commencing work on the pipe. Machines and electrodes similar to those used in the work shall be used in qualifications test. The Contractor shall be responsible for all material and bear the expense of qualifying welders.

Trenches for pipe drains (special) shall be backfilled with sub-ballast or with material meeting the requirements of Section 208 of the SSRBC.

At locations noted on the plans, the pipe drains will be constructed in stages. The pipe connection between stages shall be field welded.

Basis of Payment: This work including all elbows, tees, wyes, connections and backfill shall be paid for at the contract unit price per foot for PIPE DRAINS (SPECIAL) of the diameter specified.

PIPE ELBOWS

Pipe elbows shown on the plans will not be measured separately for payment but will be paid for at the contract unit price per foot of the size and type of pipe specified. Elbows will be measured at the centerline of the pipe.

This work will be in accordance with Section 550 of the Standard Specification for Road and Bridge Construction except as follows:

PIPE UNDERDRAINS, TYPE 2

Description: This work shall consist of constructing pipe underdrains of the required diameter within a trench filled with aggregate according to Section 601 of the SSRBC and the details included in the plans at locations shown on the plans or as directed by the Engineer.

General: The materials shown in the plans, including all cleanouts, cleanout covers, elbows, tees, wyes, geotechnical fabric, and backfill shall be included in the cost for the work. All excavation, labor, equipment, and materials necessary for completing the work shall be included in the cost for PIPE UNDERDRAINS, TYPE 2 of the diameter specified.

Method of Measurement: Measurement of payment shall be in accordance with paragraph 601.07. The vertical segments of pipe underdrains will be measured for payment along with the horizontal segments.

Basis of Payment: This work shall be paid for at the contract unit price per foot for PIPE

UNDERDRAINS, TYPE 2 of the diameter specified.

SANITARY SEWER

General: All sanitary sewers shall be constructed in accordance with the most recent version of the Standard Specifications for Water and Sewer Construction in Illinois and the Sangamon County Water Reclamation District sewer use ordinance.

Materials: Except as noted below, all pipe shall be reinforced concrete conforming to ASTM designation C76 of the size and Class shown on the plans. The material for all pipe within 10 ft of any water line crossing shall be in accordance with the Special Provisions for Storm Sewer – Water Main Requirements. Concrete pipe joints shall conform to ASTM C361 or C443 for flexible gasket material. The contractor may also utilize solid wall PVC gravity sewer in lieu of the reinforced concrete pipe. Solid wall PVC sewer shall conform to ASTM F-679 with a minimum pipe stiffness of 115 for pipes 18" diameter and larger and ASTM D-3034 with an SDR of 26 for 15" and smaller. PVC sewers shall include granular backfill from the bedding through 1 ft above the crown to be included in the cost of the gravity sewer. Joints for PVC sewers shall meet ASTM D3212. Use of PVC pipe in lieu of concrete pipe shall add no additional cost to the contract. All pipe shall be marked with the pipe type, grade and standard. All pipe to manhole connectors shall be A-Lok type, cast in the structure connectors.

Water Main Separation:

Sanitary sewers shall be separated from water lines (horizontal and vertical) as required by Section 41-2 of the Standard Specifications for Water and Sewer Main Construction in Illinois.

Testing and Inspection:

In addition to the requirements of the Standard Specifications for Road and Bridge Construction, all sanitary sewers shall be tested and inspected in accordance with Section 31-1.12 of the current edition of the Standard Specifications for Water and Sewer Main Construction in Illinois.

Sanitary Sewer Line Connections:

Sanitary sewer line connections to existing trunks, mains, laterals, or side sewers shall be left uncovered until after an acceptance inspection has been made. The Engineer will make such inspection within two (2) working days after notification by the Contractor. After approval of the connection, the trench shall be backfilled as specified.

No existing sanitary sewer shall be connected to a new sanitary sewer unless specifically authorized in each instance by the Engineer.

Bypass Pumping:

Temporary bypass pumping will be from structure to structure. Any damage to or holes cut in existing

or proposed pipes or structures will result in replacement of the pipe or structure. Patching will not be allowed.

Basis of Payment: This work, including elbows and any water main quality pipe, will be paid for at the contract unit price per foot measured along the centerline of pipes and elbows for SANITARY SEWER of the size shown on the plans. Payment for associated items listed in Section 550.10 shall be paid for in accordance with that section except that pipe elbows will not be measured separately for payment.

SANITARY SEWER CONNECTION

Description: This work shall consist of furnishing all labor, material, and equipment for connecting proposed sanitary sewer to existing combined sewer manholes at the locations identified in the plans.

General: Notify the Engineer 24 hours prior to beginning sanitary sewer construction.

Sanitary sewer line connections to existing trunks, mains, laterals, or side sewers shall be left uncovered until after an acceptance inspection has been made. The Engineer will make such inspection within two (2) working days after notification by the Contractor. After approval of the connection, the trench shall be backfilled as specified.

Construction Requirements: Holes for pipe penetrations into the existing manhole shall be made by use of a coring machine that will produce a round neat hole. A smooth neat joint shall be made, and the connection made secure and watertight by encasement, if necessary, in concrete. Other means of tapping and sealing the connection may be used only when approved by the Sangamon County Water Reclamation District.

Channels in the manhole floor shall be reconstructed to conform in shape and slope to that of the connecting sewers and shall be brought together smoothly with well-rounded junctions, satisfactory to the ENGINEER.

Basis of Payment: This work will be paid for at the contract unit price per each for Sanitary Sewer Connection at each location identified in the plans, which price shall include sanitary sewer connection to existing manhole and ancillary work noted in the plans. It also includes repair of existing manhole and reconstruction of channels in the manhole floor, the temporary shoring, excavation and backfill to complete the connection, the removal of existing storm sewer, if necessary, and staging and temporary construction to maintain flow during construction.

The temporary soil retention systems at each manhole will be according to Section 522 of the IDOT SSRBC and payment for these systems will be included in the unit price each for Sanitary Sewer Connection.

SEWER IN METAL LINER

Description: This work shall consist of furnishing and installing by jacking a steel liner and then installing a sanitary sewer inside the liner in accordance with Section 552 of the Standard Specifications and this Special Provision. The metal liner shall be installed first, then the sanitary sewer installed inside the liner. This work shall consist of constructing sanitary sewer in a metal liner at locations shown on the plans and according to this special provision. IN cases where the Sewer in Metal Liner is installed ahead of the rail improvements, the casing can be installed by means of open cut.

Material:
All pipe shall be reinforced concrete conforming to ASTM designation C76 of the class shown on the plans. Concrete pipe joints shall conform to ASTM C361 or C443 for flexible gasket material. All pipe shall be marked with the pipe type, grade and standard. All pipe to manhole connectors shall be A-Lok, Kor-N-Seal or Press-Seal type, cast in the structure connectors.

The smooth steel liner pipe shall meet the following minimum requirements:

Material – Steel ASTM A-36 or AWWA C-206
Inside Diameter – Shown on Plans
Wall Thickness – Shown on Plans
Manufacture – Rolled/Welded
Grade – FY = 36 KSI minimum
Joints – Full Depth Single "V" Groove Butt Weld
Coating – Coal tar epoxy or bituminous asphalt

The sanitary sewer pipe (carrier pipe) shall be reinforced concrete pipe conforming to ASTM designation C76, of the class shown on the plans or solid wall PVC conforming to ASTM F-679 with a pipe stiffness of 115 psi.

Concrete pipe joints shall conform to ASTM C361 or C443 for flexible gasket material. PVC pipe joints shall conform to ASTM D3212 for flexible gasketed push on joints. All pipe shall be marked with the pipe type, grade and standard. All pipe to manhole connectors shall be A-Lok, Kor-N-Seal or Press-Seal type, cast in the structure connectors.

Testing and Inspection:
In addition to the requirements of the Standard Specifications for Road and Bridge Construction, all sanitary sewers shall be tested and inspected in accordance with Section 31-1.12 of the current edition of the Standard Specifications for Water and Sewer Main Construction in Illinois.

Trench excavation, foundation preparation, and backfill for the metal liner shall be according to Article 550 of the SSRBC except as follows:

Aggregate for bedding and backfill shall be crushed stone with a top size of aggregate no greater

than 2 in. and no more than 5 percent passing the number 200 sieve.

Backfill shall be in accordance with Section 208 of the SSRBC and shall be placed in loose 6 in. lifts and compacted to at least 95 percent of its maximum density with a moisture content that is no more than 1 percent greater of 2 percent less than the optimum moisture as determined according to AASHTO T 99 (Method C). When backfill is within 3 ft of the top of sub-ballast elevation, a compaction of at least 98 percent will be required.

Installation:

Jacking (Steel Pipe) Installation Method

A. This method consists of pushing sections of pipe into position with jacks placed against a backstop and excavation performed by hand from within the jacking shield at the head of the pipe. Ordinarily 36-in. (914 mm) pipe is the least size that should be used, since it is not practical to work within smaller diameter pipes.

B. Jacking shall be in accordance with the current American Railway Engineering Association Specifications, Chapter 1, Part 4 "Earth Boring and Jacking Culvert Pipe Through Fills." This operation shall be conducted without hand-mining ahead of the pipe and without the use of any type of boring, auguring, or drilling equipment.

C. Bracing and backstops shall be so designed and jacks of sufficient rating used so that the jacking can be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

D. Immediately upon completion of jacking operation, the installation shall be pressure grouted as per this specification.

Grouting

A. For jacked and tunneled installations a uniform mixture of 1:6 (cement:sand) cement grout shall be placed under pressure through the grout holes to fill any voids which exist between the pipe or liner plate and the undisturbed earth.

B. Grouting shall start at the lowest hole in each grout panel and proceed upwards simultaneously on both sides of the pipe.

C. A threaded plug shall be installed in each grout hole as the grouting is completed in that hole.

D. When grouting tunnel liner plates, grouting shall be kept as close to the heading as possible, using grout stops behind the liner plates if necessary. In no event shall more than 6 lin. ft of tunnel be progressed beyond the grouting.

E. The space between the carrier pipe and casing pipe shall be pressure grouted using a

uniform mixture of 1:6 (cement:sand).

Soil Stabilization

A. Pressure grouting of the soils or freezing of the soils before jacking, boring, or tunneling may be required at the direction of Engineer to stabilize the soils, control water, prevent loss of material and prevent settlement or displacement of embankment. Grout shall be cement, chemical or other special injection material selected to accomplish the necessary stabilization.

B. The materials to be used and the method of injection shall be prepared by a Registered Professional Soils Engineer or by an experienced and qualified company specializing in this work and submitted for approval to Engineer before the start of work. Proof of experience and competency shall accompany the submission.

Dewatering

A. When water is known or expected to be encountered, pumps of sufficient capacity to handle the flow shall be maintained at the site, provided the contractor has received approval from Engineer to operate them. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgment of Engineer, the operation can be safely halted. When dewatering, close observation shall be maintained to detect any settlement or displacement of railroad embankment, tracks, and facilities.

Safety Requirements

A. All operations shall be conducted so as not to interfere with, interrupt, or endanger the operation of trains nor damage, destroy, or endanger the integrity of railroad facilities. All work on or near railroad property shall be conducted in accordance with railroad safety rules and regulations. The Contractor shall secure and comply with the railroad safety rules and shall give written acknowledgement to railroad that they have been received, read, and understood by the Contractor and its employees. Operations will be subject to railroad inspection at any and all times.

B. All cranes, lifts, or other equipment that will be operated in the vicinity of the railroads' electrification and power transmission facilities shall be electrically grounded as directed by railroad.

C. At all times when the work is being progressed, a field supervisor for the work with no less than 12 months experience in the operation of the equipment being used shall be present. If boring equipment or similar machines are being used, the machine operator also shall have no less than 12 months experience in the operation of the equipment being used.

D. Whenever equipment or personnel are working closer than 15 ft (4.6 m) from the centerline of an adjacent rack, that track shall be considered as being obstructed. Insofar as possible, all operations shall be conducted no less than this distance. Operations closer than 15 ft (4.6) from the centerline of a track shall be conducted only with the permission of, and as directed by, a duly qualified railroad employee present at the site of the work.

E. Crossing of tracks at grade by equipment and personnel is prohibited except by prior arrangement with, and as directed by, railroad.

Blasting

A. Blasting will not be permitted.

Protection of Drainage Facilities

A. If, in the course of construction, it may be necessary to block a ditch, pipe or other drainage facility, temporary pipes, ditches or other drainage facilities shall be installed to maintain adequate drainage, as approved by Engineer. Upon completion of the work, the temporary facilities shall be removed and the permanent facilities restored.
B. Soil erosion methods shall be used to protect railroad ditches and other drainage facilities during construction on and adjacent to railroad right-of-way.

Support of Excavation Adjacent to Track

1. Launching and Receiving Pits
   A. The location of the near edge of all pits is shown on the plans. The dimension of the pits shall be determined by the Contractor and be shown in the pit design plans submitted by the Contractor. The distance from centerline of adjacent track to face of pit or excavation shall be clearly labeled. Also, the elevation of the bottom of the pit or excavation must be shown on the profile.
   B. The face of all pits shall be located a minimum of 25 ft (7.6 m) from centerline of adjacent track, **measured at right angles to track**, unless otherwise approved by railroad.
   C. If the bottom of the pit excavation intersects the theoretical railroad embankment line interlocking steel sheet piling, driven prior to excavation, must be used to protect the track stability. The use of trench boxes or similar devices are not acceptable in this area.
   D. Design plans and computations for the pits, stamped by a Professional Engineer, must be submitted by the Contractor prior to start of construction. The Contractor shall obtain railroad approval prior to beginning any work on or which may affect railroad property.
   E. The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads.
   F. After construction and backfilling, all sheet piling within 10 ft (3.0 m) of centerline track must be cut off 18 in. (457 mm) below final grade and left in place.
   G. All excavated areas are to be illuminated (flashing warning lights not permitted), fenced and otherwise protected as directed by railroad.
2. Parallel Trenching and Other Excavation
   A. When excavation for a pipeline or other structure will be within the theoretical railroad embankment line of an adjacent track, interlocking steel sheet piling will be required to protect the track.
   B. The design and construction requirements for this construction shall be in accordance with the requirements of Section 1.0 Launching and Receiving Pits, included in this specification.
3. Inspection and Testing
   A. For pipelines carrying flammable or hazardous materials, ANSI Codes, current at time of constructing the pipeline, shall govern the inspection and testing of the facility on railroad property, except as follows:

(1) One hundred percent of all field welds shall be inspected by radiographic examinations, and such field welds shall be inspected for 100 percent of the circumference.

(2) The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

4. Reimbursement of railroad Costs

A. All railroad costs associated with the pipe installation (inspection, flagging, track work, protection of signal cables, etc.) will be reimbursed by the Department as Force Account Work according to the Construction Agreement with the railroads.

Open Cut Alternative:
The Contractor may install the metal liner by open cut rather than jacking and boring methods at the Contractor's option.

Pipeline Marker Sign
The Contractor shall install pipeline marker signs directly above the centerline of the storm sewer at the railroad right-of-way limits, as shown in the plans. The signs shall be durable, weatherproof signs approved by the Engineer and shall show the following information:

CITY OF SPRINGFIELD
SEWER DIVISION
ROOM 203 MUNICIPAL CENTER WEST
300 SOUTH 7TH STREET
SPRINGFIELD, IL 62701
(217) 789-2255
COMBINED ** IN. SEWER
DEPTH TO TOP OF CASING * FT

** Diameter of sewer.
*As-built depth to be determined by Contractor.

Backfill: Jacking and/or receiving pits located beneath future track locations shall be backfilled in accordance with Section 208 (trench backfill) of the Standard Specifications.

Protection: The Contractor shall follow all railroad requirements.

Basis of Payment: This work, regardless of whether installed by jacking or open cut methods, will be paid for at the contract unit price per foot for SEWER IN METAL LINER of the diameter specified which price shall include the concrete sanitary sewer, metal liner, including grouting all voids between the sewer and metal liner, and all other materials and equipment necessary to install the sewer and all excavation except excavation in rock. The Contractor may install the sewer in metal liner by jacking rather than open cut at no additional cost to the contract. Backfill will be paid for as TRENCH BACKFILL.

FILLING EXISTING STORM SEWERS

Description: This work shall consist of filling existing storm, sanitary or combined sewer or utility pipe to be abandoned, as designated on the plans or as directed by the Engineer, with Controlled Low Strength Material (CLSM) according to Articles 593.02 and 593.03 of the SSRBC and as specified in this special provision.

Materials: CLSM shall meet the requirements of Section 1019 of the SSRBC.

Select rubble shall be pieces of natural rock, broken concrete without protruding metal bars, bricks, or reclaimed asphalt pavement with no expansive aggregate. The pieces shall have a minimum dimension no less than ten (10) times the maximum aggregate size of the CLSM and a maximum dimension no greater than 20 percent of the minimum dimension of the space to be filled. Select rubble shall be free of regulated waste material.

Construction Requirements: The portion of the sewer or utility pipe to be filled shall be inspected to identify connections, locate obstructions, and assess the condition of the pipe prior to CLSM placement. The Engineer shall be notified of any connections that were not identified in the plans to be abandoned, removed, or redirected and reconnected. Connections of existing pipes that are in service shall be reconnected to the new sewer. Irregularities in sewer pipe, obstructions, open joints, or broken pipe shall be documented and the calculated fill volume shall be adjusted to account for the anomalies.

Termini of sewers or utility pipe to be filled shall be plugged with Class SI concrete or brick and mortar. The plug shall be adequate to withstand the hydrostatic load created during the filling operation. If the plugs fail during construction, the Contractor shall be responsible for the cost of repairing the plug and filling the remainder of the pipe.

CLSM shall be placed in a manner that allows all air or water to be displaced as the CLSM fills the pipe and intermediate structures.

The tops of intermediate manholes or cleanouts shall be removed to a depth of 2 ft below finished grade. The structure may be removed to a greater depth, but not deeper than 18 in. above crown of the abandoned sewer. The remaining structure shall be filled with CLSM or select rubble with voids filled with CLSM. After the CLSM has set, the hole formed by removal of the top of the structure shall be backfilled with sand and the sand compacted to 3 in. below finished grade. The upper 3 in. shall be filled with embankment free from debris and clods and stones larger than 2 in. in the largest dimension.

All excess material resulting from filling the sewers and intermediate structures and partial removal of intermediate structures shall be disposed of by the contractor according to Article 202.03 of the SSRBC.

Method of Measurement: FILLING EXISTING STORM SEWERS shall be measured in place and

the volume computed in cubic yards.

Basis of Payment: This work, regardless of the type of sewer or utility pipe, will be paid for at the contract unit price per cubic yard for FILLING EXISTING STORM SEWERS. The unit price shall include the cost of removal, disposal, and backfill of the tops of intermediate manholes or cleanouts. The unit price shall include connections of existing pipes, identified and not identified in the plans, that are in service to the new sewer.

TELEVISION INSPECTION OF SEWER

Description: Sewer Line Inspection shall provide a visual record, via closed-circuit televising (CCTV) methods, of the condition of each pipe after cleaning in order to validate that the pipe is properly prepared for installation of a cured-in-place pipe liner, after cured-in-place pipe liner installation, and as directed by the Engineer.

Flow Control

During CCTV inspections, depth of flow shall be less than that shown in the table below.

Pipe Diameter	Maximum Depth for Television Inspection
6' - 12" Pipe	20% of pipe diameter
14" - 18" Pipe	15% of pipe diameter
21" - 36" Pipe	10% of pipe diameter
Greater than 36" Pipe	20% of pipe diameter

If the above stated depths cannot be met, flow control must be established before inspection can proceed. Bypassing and plugging the upstream flow are the two field methods that are permissible to obtain the proper depth of flow.

Bypassing the flow consists of inserting a pump at the upstream manhole and running hose from said pump to an alternative manhole that would not affect the flow in the pipe to be inspected. Bypassing combined sanitary sewers into a storm sewer line will not be permitted.

Plugging the upstream flow consists of using a plug that partially or fully blocks the flow from the upstream lines into the line to be inspected.

Care should be taken with either flow control method so as not to cause surcharges or backups that may cause damage to private or public property including flooding. When work has been completed, flow in plugged sewer systems shall be released slowly to avoid damage to the system or private property. Damages that occur as a result of actions by the Contractor are to be the sole responsibility of the Contractor.

Closed-Circuit Televising (CCTV) and Records

Once flow control has been established and the line cleaned to the satisfaction of the Engineer, CCTV inspection may proceed. Only equipment that has been specifically designed and constructed for sewer line inspection shall be used and include the following basic functions: movement of the camera on a transport device, panning and rotation of the camera head, focus of the image produced by the camera, illumination that will allow a clear picture of the entire pipe. The camera shall be operational in one-hundred percent (100%) humidity as well as be able to withstand exposure to pollutants typically found in sewage. Inspections shall be compatible with NASSCO PACP 6.0 format. If the video produced is not of a quality satisfactory to the Engineeer, the inspection shall be rejected and no payment made for work related to this video.

The camera shall move through the line at a rate no faster than that which can be easily inspected from the camera truck and/or video created by the system for cracks, deformations, etc. Any defect with the pipe as well as each and every lateral connection shall be stopped at and documented. If a winch/pulley system is used instead of tires or tracks to move the camera through the line, communication between the crew members at the upstream and downstream ends shall be maintained throughout the inspection.

A distance tracker, with a unit of a standard foot, shall be set up on the camera to measure the length that the camera has traveled. Accurate distance measurements shall be obtained from center of the upstream manhole to the center of the downstream manhole by the recorded distance on the inspection video as well as another means, for example: GPS, measuring wheel, measuring tape, etc. Secondary method of measuring shall be approved by the Engineer and be accurate to plus or minus two (2) feet.

Television inspection logs shall be stored by electronic media as well as printed and made available to the Owner. Each defect within the pipe as well as laterals shall be located within 1/10 of a foot from the starting center of manhole and appropriately labeled.

All defect and observation coding used shall conform to the NASSCO PACP 6.0 format.

The Contractor shall provide CCTV media and inspection logs to the Engineer post-cleaning and post-lining. Pre-lining CCTV activities are not required to be submitted to the Owner. Pre-lining CCTV is the responsibility of the Contractor, and during the pre-lining CCTV, the Contractor shall verify no obstructions remain in the pipe segment to be lined.

Post-cleaning CCTV videos shall be completed for a segment and submitted to the Engineer before any liners shall be ordered and before any lining activities may begin.

Method of Measurement: TELEVISON INSPECTION OF SEWER shall be measured in feet along the flowline of sewer through the length inspection.

Basis of Payment: This work will be paid for at the contract unit price per foot for TELEVISOIN INSPECTION OF SEWER.

PUMP STATION

DRAINAGE STRUCTURES (PUMP STATION)

General: This work shall consist of constructing Drainage Structures No. 1 and No. 2.

Description: Drainage Structures shall be furnished and installed in accordance with Sections 516 and 602 of the Standard Specifications with exceptions shown on the Plans and as specified herein.

Drainage Structures shall be excavated using a vertical shaft boring machine. The Contractor shall submit a detailed excavation plan and a detailed grout installation and drainage structure installation plan to the Engineer for approval prior to commencing work. The plans shall be sealed by a professional engineer. The plans shall include proposed shaft dimensions, proposed shoring, either permanent or temporary casing, and staging. The excavation plan shall include drawings and design calculations for temporary or permanent casing. The calculations shall be prepared and sealed by an Illinois Licensed Structural Engineer. This approval will not relieve the Contractor of responsibility for the safety of the excavation. The shoring shall be designed for earth loads and HS-20 live load for vehicle traffic. The plan should address completely filling the space between the structure and the rock face and shall address buoyancy issues during installation. Should there be groundwater present in the annular space between the structure and the rock face, the Contractor shall use a grout formulated for curing under water and shall install the grout from the bottom-up. The grout shall conform to ASTM C-1107 and shall have a minimum compressive strength of 5,000 psi after twenty-eight (28) days. In lieu of non-shrink grout, may use Class DS concrete with 8-10” slump.

Each Drainage Structure shall be excavated, installed, and backfilled completely prior to commencing construction on another Drainage Structure. At no time shall there be simultaneous construction on multiple Drainage Structures.

Material removed from the excavation shall be disposed of in accordance with Section 202.03 of the Standard Specifications.

Once each of the vertical shafts have been excavated, a 12-in. bedding of CA-7 aggregate or Class SI concrete shall be placed in the bottom of the shaft and leveled to form a flat base to set the Drainage Structures.

Drainage Structures shall be precast reinforced concrete manholes conforming to ASTM C-478. The structures shall be water tight. The precast manhole shall have a minimum compressive strength of 4,000 psi at twenty-eight (28) days.

All penetrations through the walls of the drainage structure shall be sealed with a link style seal or a non-shrink grout as identified on the plans. The link style seal shall form a watertight seal between a pipe and a concrete structure. The Contractor shall coordinate the sizing with link seal supplier. The seal shall be installed per manufacturer’s recommendations forming a watertight seal with the structure.

The drainage structure sections shall be a minimum of 4 ft. tall with the exception of the final section. Each section shall be sealed with two (2) strips of butyl rubber sealant. Joints in the butyl rubber sealant shall be overlapped to prevent gaps.

The drainage structure shall be checked after the installation of each section to ensure a true vertical installation. If the alignment is off, the Contractor shall take corrective action to shim the structure back to level.

The exterior and the bottom of the structures shall receive two coats of asphalt emulsion waterproofing in accordance with Section 503.18 of the Standard Specifications.

The annular space between the structures and the edge of the shaft shall be filled with non-shrink grout between the elevations shown on the plans. From the top of the grout to the surface, the annual space between the Drainage Structures and edge of the shaft shall be filled with controlled low strength material, mix 2 in accordance with Section 593 of the Standard Specifications or non-shrink grout.

After installation is complete, if there are water leaks at joints, the Contractor shall waterproof the leaks using drilled ports around the leak and a hydrophilic grout.

Openings in the structures for the pipes shall be blocked out during manufacturing with knockouts left in place during initial installation.

The top barrels of the Drainage Structures shall be flat. The precast lids shall be sealed to the top ring section with a double row of butyl mastic. The precast lids shall have a cast in place access frames and hatches per the plans. The frame and hatch design live load is AASHTO HS-20 truck load and alternate tandem loads. The access frame and hatch for Drainage Structures, No. 2 shall be located per the pump manufacturer's recommendations.

Chamfered inverts shall be installed in the structures as shown on the plans. The invert shall be constructed of Class SI concrete conforming to Section 1020.04 of the Standard Specifications. The chamfer and sloped sidewalls in Drainage Structures, No. 2 shall be per the pump manufacturer's recommendations to provide sufficient space between the volute and the invert of the station. The sidewalls shall be sloped to direct debris to the pumps and promote self-cleaning of the structure invert.

General: This work includes all mobilization, excavation, temporary or permanent shoring/casing, labor, materials and equipment required to manufacture, furnish, and install the drainage structures, precast concrete, lid, access frame and hatches, non-shrink grout, hydrophilic grout, drill ports, controlled low strength material, butyl rubber sealant, asphalt emulsion waterproofing, CA-7, concrete, removal and disposal of excess material and other incidental items as shown on the plans.

Basis of Payment: This work will be paid for at the contract unit price per each for DRAINAGE STRUCTURES of the numbers shown on the plans.

PUMPING STATION

Pumping station consists of the pumping equipment and accessories and testing as well as the valve vault.

The valve vault shall be precast reinforced concrete conforming to ASTM C913. A sump pit shall be cast in the base of the valve vault as shown on the plans. The Contractor shall submit plans and calculations for the valve vault that are signed and sealed by a licensed Structural Engineer in the State of Illinois prior to ordering or manufacturing the valve vault. The structure shall be designed for earth loads and an HL-93 live load for vehicle traffic.

Once the vault is installed and piping in place, the space between the valve vault and the limits of excavation shall be backfilled with controlled low strength material, mix 2.

The lid of the valve vault shall be flat and shall be sealed to the top of the valve vault with a double row of butyl mastic. The lid shall have a cast in place aluminum access frame and hatch. The hatch shall be hinged with a flush locking mechanism and a 36-inch by 36-inch minimum clear opening. The top of the hatch shall be a minimum one-fourth-inch aluminum diamond tread plate. The access frame and hatch shall be H20 load rated. Contractor shall coordinate hatch fabrication with the pump manufacturer.

Openings in the structure for pipes shall be sealed water-tight with a flexible resilient type gasket such as A-Lok, Inc., Press Seal, Kor-N-Seal or equal.

After installation is complete, if there are water leaks at joints, the Contractor shall waterproof the leaks using drilled ports around the leak and a hydrophilic grout.

Submersible Pumps and Accessories

Two (2) submersible wastewater pumps each with "K" single vane non-clogging impellers. Each pump shall be equipped with a submersible electric motor connected for operation on existing electrical service with 75-feet of submersible cable (SUBCAB) suitable for submersible pump applications. The power cable shall meet NEC and ICEA standards for submersible pumps and have P-MSHA Approval. The pump shall be supplied with a discharge. Each pump shall be fitted with minimum 50-feet of stainless-steel chain. The working load of the lifting system shall be 50% greater than the pump unit weight.

Submersible pumps and motors shall be designed specifically for raw stormwater use, including totally submerged operation during a portion of each pumping cycle and shall meet the requirements of National Electrical Code (NEC) for such units. Pump motor cords shall be designed for flexibility and serviceability under conditions of extra hard usage and shall meet the requirements of the NEC for flexible cords in sewage pumping stations. Ground fault interruption protection shall be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable.

The Contractor shall furnish and install totally submersible electric operated stormwater pumps of

the sizes, number, and capacities shown below. The motors shall be non-overloading at any point on the pump curve, from shut-off to zero head conditions, and shall be of the specified horsepower, operating at 480 volts, 3 phase. The pumps, discharge elbows, and associated mounting hardware shall be as manufactured by the pump manufacturer. Information associated with the equipment from Fairbanks Nijhuis was used as the basis for the design as specified herein and shown on the drawings.

The services of a manufacturer's representative are required at the time of start-up.

Pump Design
The pumps shall be furnished as one complete pump system, all of the system components supplied by one manufacturer. The pumps shall be vertical, submersible, solids handling type pump, designed to handle gritty sludge and raw stormwater, and shall be capable of passing 6-in. spherical solids. The pump base shall have 10-in. flanged outlet connection. The design shall be such that the pump unit will be automatically connected to the discharge piping when lowered into place on its mating discharge connection, permanently installed in the manhole. The pump shall be easily removable for inspection or services, requiring no bolts, nuts, or other fastenings to be disconnected.

For this purpose, there shall be no need for personnel to enter the manhole. It shall be fitted with a lifting hoop of adequate strength to permit raising and lowering the pump for inspection or removal. A stainless-steel chain or cable shall be attached to this lifting hoop and extended to the top of the manhole. A stainless-steel hook rack shall be installed just below the frame and access hatch in Drainage Structures, No. 2 and shall have at least three hooks per pump (min. 6 hooks). The pump, with its appurtenances and cable, shall be capable of continuous submergence underwater without loss of water-tight integrity to a depth of 100-feet.

Pump Construction
All major parts, such as the stator casing, oil casing, sliding bracket, volute and impeller shall be gray iron. All exposed bolts and nuts shall be of stainless steel.

A wear ring system shall be installed to provide efficient sealing between the volute and impeller. The impeller shall be gray cast iron of non-clogging design coated with acrylic dispersion zinc phosphate primer, capable of handling solids, fibrous material, and other matter found in normal stormwater applications. The impeller shall be dynamically balanced. Static and dynamic balancing operations shall not deform or weaken it. The impeller shall be retained with a non-corroding Allen head bolt.

The pump shall be provided with a mechanical rotating shaft seal system running in an oil reservoir having separate lubricated seal faces. No seal damage shall result from operating the pumping unit out of its liquid environment. The seal system shall not rely upon the pumped media for lubrication. Provision for determining the condition of the lower seal unit without disassembly of the pump shall be provided.

Pump shall be a standard production pump with attached rail guides and discharge elbow. Rail

guides shall be fastened to pump so that all lifting loads will come on the guide supports and not on the pump or motor housing. Guide mechanism on the pump shall be constructed of bronze, shall be non-sparking and UL-Listed.

Installation of the pump unit to the discharge connection shall be the result of a simple linear downward motion of the pump unit guided by no less than two guide bars. No other motion of the pump unit, such as tilting or rotating, shall be required.

The discharge flange of each pump shall be designed to automatically seal with the discharge elbow when the pump is lowered into place and the pump is in operation. The seal shall be capable of remaining reliable for water-tightness in the environment into which it will be located. Discharge elbow shall have 125 lb. standard flanges.

If a pump mounting base is furnished, these plates shall include adjustable guide rail supports and discharge elbow with flange to align the pumps with the flange. Plates and fitting shall be coated with tar base epoxy paint.

The motor cable entry water seal design shall be such that it precludes specified torque requirements to insure a water-tight and submersible seal. Pump motor cable shall be suitable for submersible pump applications, and this shall be indicated by a code or legend permanently embossed on the cable. Cable sizing shall conform to NEC Specifications for pump motors and shall be of adequate size to allow motor voltage conversion without replacing the cable. Pump power cable shall be continuous without splices from the pump to the control cabinet. The cable shall be at least 75-feet in length.

All mating surfaces of major parts shall be machined and fitted with nitrile O-rings where water-tight sealing is required. No other sealing compounds shall be required nor used.

Each pump shall have a low flow capacity of 1250 GPM at a total head of 49-feet when operating at 900 RPM with a pump efficiency of 52% or greater and have a high flow capacity of 1922 GPM at a total head of 39-feet when operating at 900 RPM with a pump efficiency of 58% or greater. Pump motor shall be a minimum of 50 horsepower. The pump and motor shall be UL-listed, FM-listed, or ETL-listed suitable for Class I Division 1 Group D hazardous location. A Fairbanks 10” 5435 MVK meets the requirements of this special provision.

Pump Assembly Configuration

Cooling System - Motors are cooled by the surrounding environment or pumped media. Pumps requiring jackets for recirculation of either pumped media or internally reticulated cooling fluid of any type are not acceptable.

Cable Entry Seal - The cable leads are to allow the connection of a cable to the motor, to be accomplished in the field without soldering cable. All leads are to be sealed with a grommet and an epoxy compound system with strain relief to prevent cable-wicking to conduit box location in the top of the motor. Leads are connected to a water-tight fully O-ringed terminal board with brass lugs.

Total grommets or other similar sealing systems are not acceptable. Motor shall be supplied with 75 feet of multi-conductor type RHW or Re Neoprene power cable and control cable. Cable sizing shall conform to NEC specifications.

Separate terminal board, which is fully o-ringed and each terminal individually o-ringed, to form a water tight barrier.

Electric Motor

Motors shall be rated for Class I, Division I, Group D.

The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class F insulation. The stator-winding and lead shall be insulated with moisture-resistant Class F insulation for continuous duty in 40 C rise liquids. The motor shall be designed for continuous duty capable to minimum of ten (10) starts per hour. Motor shaft shall be 416 stainless steel: the rotor and shaft together is to be dynamically balance to meet NEMA vibration limits: all hardware to be stainless steel.

Thermal switches set to open at 311F shall be embedded in the stator end coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The motor and the pump shall be produced by the same manufacturer.

The combined service factor shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10%. The motor shall be designed for operation up to 40°C (104°F) ambient and with a temperature rise not to exceed 80°C. A performance chart shall be provided showing curves for torque, current, power factor, input/output kW and efficiency. This chart shall also include data on starting and no-load characteristics.

The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.

The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out. Pumps shall be sized based on the total hydraulic capacity based on test data, reduction in the head range or chopped pump curves are not acceptable.

Bearings - The pump shaft shall rotate on two sets of bearings. Motor bearings shall be permanently grease lubricated. The lower bearing shall compensate for axial thrust and radial forces. The lower shaft bearing shall be locked on place to prevent shaft movement and to take thrust loads. Bearing shall be prelubricated at the factory.

Mechanical Seal - Each pump shall be provided with a tandem mechanical shaft seal system. The

seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing. The mechanical seals must be commercially available and manufactured by a major seal manufacturer. Seal shall be constructed of a polymeric body with SC/TC faces for the lower and carbon/ni-resist for the upper. Seal body shall be designed such it will not snap debris when in operation.
The motor shall be able to operate unsubmerged up to 15 minutes without damage while pumping under load.

Seal lubricant shall be FDA Approved, nontoxic.

Pump Shaft - Pump and motor shaft shall be the same unit. The shaft shall be 416 stainless-steel. The use of stainless-steel sleeves will not be considered equal to stainless-steel shafts.

Impeller - The impeller shall be one-piece, single suction, enclosed single-vane, radial flow design with well-rounded leading vane edges and thick hydrofoil shape which prevents the accumulation of solids and stringy material through the impeller. It is to be dynamically balanced and secured to the shaft by means of a key and fastener. Wiper vanes are not allowed. The impeller waterways and clearance between the impeller periphery and volute cutwater shall be capable of passing a 6" spherical solid. There shall be provisions for adjustable shims behind the impeller to maintain clearance between the impeller and suction head wear rings. Semi open impellers or impellers without hard metal wear rings are not acceptable. Coated wear rings are not acceptable. Impeller shall be designed to be fully trimmable. Semi open type impellers or impellers that will not accept wear rings are not allowed.

The impeller shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in storm water up to 3%.

Axial wear rings constructed of 416 stainless-steel shall be provided for both impeller and volute. Wear rings shall be the axial design and fully adjustable. Radial type rings are not allowed.

Volute-Suction Cover - The pump volute shall be a single piece with smooth passages of sufficient size to pass any solids that may enter the impeller. Inlet and discharge size shall be as specified. Spiral grooved suction volute insert plates that act as the impeller enclosing shroud and wear surface are not acceptable.

The volute shall be provided with a replaceable hard metal insert/wear ring, which shall be fully axially field adjustable. Ensure effective sealing between the impeller and volute housing. Non-hardened or elastomer or rubber coated metal or stainless-steel wear rings are not acceptable.

The pump discharge shall be provided with an integrally cast flange. The seal between the pump discharge and discharge piping shall be watertight.

Guide/Bracket - Guide rails shall be provided by the general contractor on which the pump rides when being raised or lowered in the sump and mount on the discharge base/elbow. The rails shall align the pump with the discharge elbow as it is lowered into place. An upper rail guide shall be

furnished to support and align the rails at the top of the sump. Intermediate guide bracket support shall be provided every 5-feet vertically and shall be coordinated through the pump manufacturer. The guide brackets shall also support the discharge pipe with both the pipe and guide rail supports affixed to the pump station walls.

Guide rails shall be provided on which the pump rides when being raised or lowered in the sump and mounted on the discharge base/elbow. The rails shall align the pump with the discharge elbow as it is lowered into place.

Guide bars shall be stainless steel and the diameter shall be as recommended by the pump manufacturer.

An upper rail guide shall be furnished to support and align the rails at the top of the sump.

The guide rail system shall be non-sparking and approved for use in Class 1, Division 1, Group D hazardous locations.

Discharge Base - A rigid discharge straight thru discharge/base to support the total weight of the pumping unit shall be provided. The base is to be bolted directly to the floor with the 90-degree 125lb. ANSI flange discharging horizontally.

Protection - All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. The thermal switches shall open at 311F, stop the motor and activate an alarm.

A leakage sensor shall be available to detect water below the upper seal and in the stator housing. Spare Parts (for each pump unit provided) - 2 sets of all gaskets. Mechanical seal set. Complete replacement bearing set. Any special tools required for pump disassembly.

Materials of Construction

Impeller	Cast Iron A48-CL30
Impeller Bolt	Steel SAE Bolt Steel GR-8
Impeller Nut	SAE Bolt Steel
Impeller Washer	A108 GR12L14
Volute	Cast Iron A48-CL30
Fronthead	Cast Iron A48-CL30
Impeller wearing ring	416 stainless steel (300-350BHN)
Volute wearing ring	416 stainless steel (300-350BHN)
Discharge Base Elbow	Cast Iron A48 CL-30
Impeller Key	Steel A108 GR1018
Guide Bracket	Brass B584 AL836
Volute Gasket	Tagboard F104
Bearing Shims	Steel A108 Commercial
Volute Handhole Cover	Cast Iron A48-CL30
Volute Handhole Cover Gasket	Tagboard F104
Upper Guide Bracket	Steel

Upper Guide Bracket Bushing	Rubber
Guide Mechanism	Bronze / non-sparking
Discharge Coupling	Non-Sparking
Lower Mechanical Seal	Silicon Carbide vs. Tungsten Carbide
Upper Mechanical Seal	Carbon vs. Ni-Resist

Installation

The Contractor shall install the pump assemblies in the permanent locations as shown on the drawings and in accordance with the manufacturer's instructions.

Contractor shall install interconnecting electrical wiring, conduit, etc. between submersible pumps and control equipment so that when power and control wiring is brought to the control equipment, the submersible pump system will be a complete operational system.

Testing

The pump manufacturer shall perform the following inspections and tests on the pump before shipment from factory.

Impeller motor rating and electrical connections shall first be checked for compliance to the customer's purchase order.

1. A motor and cable insulation test for moisture content or insulation defects.
2. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
3. The pump shall be run for 30 minutes submerged, a minimum of 6 ft under water.
4. After operational test No. 4, the insulation test (No. 2) is to be performed again.
5. Each pump shall be tested for flow versus head at the design conditions in accordance with the latest edition of the Hydraulic Institute Standards.

A written report with certified flow versus head curves stating the foregoing items have been done shall be supplied with the pump at the time of shipment. The curves indicated shall include head, capacity, horsepower, efficiency, and input KW.

Prior to system operation, all equipment shall be inspected for proper alignment, quiet operation, proper connection, and satisfactory performance by means of a functional test.

Field Testing

Functional Test - required. Performance Test - required.

Before final acceptance of the pumps specified herein, the Contractor shall submit five (5) copies of certified and properly identified performance curves which shall reflect the operating characteristics of each pump model and impeller combination being supplied. The curves shall indicate head, capacity, horsepower, efficiency, and input KW.

Finishes

Shop - All pump assemblies supplied under this section shall receive finishes that are in accordance with the pump manufacturer's standard finish.

Field - All pump assemblies shall be touch-up painted with matching paint supplied by the pump manufacturer.

Drive Motors - All pump drive motors furnished under this section shall only receive finishes that are in accordance with the motor manufacturer's standard finish. DO NOT apply shop or field coatings to the drive motors.

Manufacturer's Services

The Contractor shall include with his bid the services of the equipment manufacturer's field service technician for a period of one (1) trip for a period of two (2) 8-hour days at the site. This service shall be for the purpose of check-out, initial start-up, certification, and instruction of plant personnel. A written report covering the technician's findings and installation certification shall be submitted to the Engineer covering all inspections and outlining in detail any deficiencies noted.

Duplex Pump Control Panel

The pump control manufacturer shall coordinate with the pump supplier to ensure compatibility between the two.

1. General
   a. The duplex pump control panel enclosure shall be strut support-mounted UL-listed, NEMA 4X stainless steel rated for outdoor use, and pad lockable. Enclosure shall have three (3)-point latching mechanism and handle for easy release. Enclosure shall not have clasps around the door to maintain a NEMA 4 rating. Enclosure shall be manufactured by Hammond, Hoffman, Rittal, and shall be sized to accommodate equipment furnished. The enclosure shall also provide for "dead-front" construction using hinged inner doors (swing out panel) to mount all operator devices. Bond all panels and panel doors to ground system. Hinges shall not be considered as an adequate grounding path. All hardware shall be corrosion resistant.

   b. The panel manufacturer shall be a current Underwriters Laboratories listed UL 508 industrial control panel builder and shall show its follow-up service procedure file number on submittals. The control panel manufacturers shall be regularly engaged in the manufacture of controls for the water/wastewater industry. All devices within the panel shall be UL-listed and/or recognized where applicable and shall be mounted and wired in accordance with the most current edition of UL 508 and the NEC. All conduit runs entering or leaving the pump station wet well shall have explosion-proof conduit seals suitable for Class 1, Division 1, Group D environment. All conduits for intrinsically safe wiring shall enter the pump control panel enclosure at the intrinsically safe section of the panel. Non-intrinsically safe wiring including, but not limited to, power feeder conductors,

branch circuit conductors, alarm circuits, and pump motor cables shall not enter the control panel at the intrinsically safe wiring section and shall maintain a minimum separation distance inside the control panel from the intrinsically safe conductors as required by NEC 504 and ANSI/ISA RP12.6.

c. All conduit entries into the Pump Control Panel shall have water-tight threaded hubs, UL-listed for the respective NEMA 4X enclosure.

d. Include a label placed on the inside of the panel door with the name, address, phone number and emergency phone number of the service representative for the pumps and control panel.

e. Contractor shall furnish all equipment, labor, services, submittals, tools, and work required to provide a complete and operational Duplex Pump Control Panel as shown on the Plans and specified herein.

f. The pump control panel enclosure shall be located adjacent to proposed pump station as detailed on the Plans. Furnish and install stainless steel strut support Unistrut P1000SS and all mounting hardware. Include warning label on inner and outer door labeled "WARNING POTENTIAL ELECTRIC ARC FLASH HAZARD, DISCONNECT FEEDER BREAKER BEFORE SERVICING", or similar note conforming to the requirements of NEC 110.16 "Arc Flash Hazard Warning." Warning label shall also conform to ANSI Z535.4-2002 "Product Safety Signs and Labels."

g. The power feeding the pump control panel will be 480 VAC, three (3) phase, Three (3)-wire, 60 HZ.

2. Control Description

a. A microprocessor-based pump controller shall be provided to monitor wet well level via remote sensor as specified hereinafter and provide Duplex pump down mode pump control. The pumps shall start and stop as required to maintain an acceptable level.

b. If the capacity of the lead pump is less than the influent flow, the lag 1 pump shall be called to start. If the capacity of both pumps running in parallel is greater than the influent flow, the lag shall stop when the wet well level falls to the lag pump stop setpoint. The lead pump will continue to run.

c. If the capacity of the lead pump is greater than the influent flow, it shall stop when the level falls to the lead pump stop setpoint. The pumps shall alternate after each complete operating cycle if alternation is enabled.

d. The pump control panel shall include the following described equipment in Paragraph 3 of this document (installed complete and operational), as well as that

shown on the Plans and specified herein.

3. Components

a. Power Distribution Blocks: Each power distribution terminal block shall be provided with a clear plexiglass cover. Terminal block shall be Square D Class 9080 or approved equal sized as required for the respective conductors. All terminal blocks shall be rated 600 volt with amperage ratings in conformance with NEC Table 310-16 using 75 degrees C wire for the respective lug wire range.

b. Secondary Surge Protector: AC surge protector shall be UL listed per UL 1449, third edition, suitable for 480 VAC, three (3) phase, three (3)-wire plus ground system, with surge current rating of 40 kA per mode 8/20 µs (20kV) wave, and status indication lights, Joslyn 1451-49.

c. Control Power Transformer (2 kvA minimum): Control transformer and power supply shall be provided to provide the 120 VAC for control circuits when required. Transformers shall have circuit breaker over current protection on the primary and secondary circuits. The secondary windings shall be grounded. Control Power Transformer larger than 2 kVA shall be externally mounted on the control side of the enclosure and shall be supplied in a NEMA 4X stainless steel nonventilated weatherproof housing. Primary and Secondary Protection shall be provided for transformer. The overcurrent protection shall be achieved with fuses. The control power transformer shall Square D Type T, TF.

d. Circuit breakers: Circuit breakers for motor circuits, control circuits, and other branch circuits shall be thermal magnetic, molded case, 100-Amp frame minimum, 10,000 Amps symmetrical, interrupting current rating at 120/240 VAC for one-pole and two-pole breakers and 22,000 Amps symmetrical, interrupting current rating at 480 VAC for three-pole breakers as manufactured by Square D. Breakers shall have “on”, “off” and “tripped” positions and shall be UL-listed. Breakers shall be sized as required for the respective equipment in accordance with NEC and the respective equipment manufacturer’s recommendation. Include breakers for the following equipment as a minimum.

i. Pump motor #1 branch breaker.
ii. Pump motor #2 branch breaker.
iii. Pump control panel control circuit.
iv. Accessories (GFCI receptacle, and heater)
v. Alarm System

e. Reduced Voltage Solid State Starter (RVSSS):

i. This specification describes the required performance, functional characteristics, fabrication details and installation of a microprocessor controlled low voltage Softstarter, used for stepless start and stop as well

as protecting of standard AC squirrel cage induction motors.

ii. The softstarter shall be ABB Type PSE Series, Eaton Cutler-Hammer S 811. The softstarter shall contain at least the features, functions and adjustments described below, in order to provide the motor and application with sufficient protection and start and stop the motor in a precise and controlled manner.

iii. Operator Interface (Human Machine Interface –HMI). The starter shall be operated with a LCD display presenting all data and information using a language neutral icons and figures. All numbers shall be presented using four positions, seven segments. The use of binary, hexadecimal code, or any other code is not acceptable, and currents and measurements shall be presented as either exact values or as a percentage of the maximum value. Adjustments shall be made by a digital four push button keypad. No binary coded dipswitches shall be used for programming or function selection. The HMI shall be possible to lock to prevent unauthorized changes to the programming. Data should always be presented with the actual value, and the unit of the data (i.e. V, A or %, etc.). Data entered and selections made to the Softstarter using the display and keypad should be stored in case of a power loss. LED Indicators using long life LEDs shall provide additional quick annunciation.

f. Mode Select: Method of operation shall be by a three position maintained "Hand-Off-Auto" selector switch provided for each pump. Selector switch shall be water-tight/oil tight (NEMA 4/13) Allen Bradley 800T Series, Square D Class 9001, Type K, or Eaton Cutler-Hammer E22 or Cat. No. 10250 Series. Position commands are as follows:

i. Hand – In this position, the applicable pump shall run without regard for the level sensing commands and will relay on operator discipline to run and stop.

ii. Off – In this position, the applicable pump will not run under any circumstances.

iii. Auto – In this position, the pressure transducer, float switches and respective control relays shall control the applicable pump. The pressure transducer will sense the appropriate levels in the wet well and initiate start and stop commands to the pump through the associated control relays. Floats will act as a backup to the pressure transducer in the event the transducer fails.

g. Legend Plates: Legend plates shall be required for all starters, circuit breakers, pilot lights, control panels, and disconnects. Legend plates shall be provided to identify the equipment controlled and the function of each pushbutton, indicating

light, pilot light, selector switch and device. Legend plates shall be weatherproof and abrasion resistant phenolic materials. Lettering shall be black on white background, unless otherwise noted.

h. Condensation Heater: Provide a condensation strip type heater sized as required for the pump control panel enclosure to minimize moisture that may accumulate inside the enclosure. Heater shall be sized to maintain a minimum internal enclosure temperature of approximately 50 degrees F for an outside design temperature of -15 degrees F. Include integral thermostat and circulating fan for condensation heater. Circulating fan shall be 4 in. to 6 in. nominal diameter axial type fan with wire guards, 115 VAC, 60 Hz. Thermostat shall be line voltage thermostat, 120 VAC, 5-Amp minimum current rating, SPST, with adjustable control knob as manufactured by Honeywell, White-Rogers, Hammond, Hoffman, Rittal, or Chromalox.

i. Convenience Duplex Receptacle: Provide a duplex receptacle with ground fault circuit interrupter. Receptacle shall be rated 120 VAC, 60 Hz, and 15 Amps with a trip threshold of 5 ± 1 milliamp. Receptacle shall be a UL Class A GFCI unit complying with and tested in accordance with UL Standard No. 943. GFCI shall be as manufactured by Leviton, Hubbell, Eagle, Arrow-Hart, Bryant, or Pass & Seymour.

j. Pump Motor Thermal Trip: A thermal trip on the motor will cause immediate shutdown and activate the respective thermal trip condition alarm. Pump motor thermal trip shall be wired to provide manual reset and restarting of the pump motor in conformance with the recommendations of the respective submersible pump manufacturer's representative. Provide interposing relays as required. Verify thermal trip requirements with the respective submersible pump manufacturer.

k. Pump Motor Seal Leak Detection: The seal leak detection on the motor shall shut down the pump and activate the respective seal leak alarm as required/recommended by the respective submersible pump manufacturer's representative.

    i. Provide interposing relays as required. Verify seal leak requirements with the respective submersible pump manufacturer.

l. Motor Monitor Relays: Motor monitor relay shall be provided by the pump vendor or be a model approved by the pump vendor to ensure the pump warranty is maintained.

m. Enclosure Light: Provide a 60-watt incandescent light fixture for the pump control panel enclosure with door activated switch. Light fixture shall be Hoffman Catalog Number A-LTDB1.

fixture.

n. Construction Standards

i. Wire Numbers – Each wire in the control panel shall be marked with a wire number that corresponds to the page and ladder rung of the schematic diagrams. A unique wire number shall be provided between component contacts and coils. Wire markers shall be Brady Thermal Transfer Self-Laminating Vinyl or equal by Grafoplast or Thomas & Betts.

ii. Color Coding – Wires shall also be color-coded as follows: 120 VAC Line = black; Neutral = white; Ground = green; Switched 120 VAC = red; DC current carrying conductor = blue, DC non-current carrying conductor = white with blue stripe, Foreign voltage = yellow, Intrinsically safe = light blue.

iii. Component Identification – Each component in the system shall be identified by a unique number that corresponds to its coil's page and ladder rung location on the schematic drawings.

iv. Wire – AC control conductors shall be 600 volt and a minimum of 18 gauge. DC control conductors shall be a 300-volt and a minimum of 18 gauge. Control conductors shall be UL Type MTW rated for 105 degrees C. Analog conductors shall be 22 gauge shielded twisted three conductor rated for 300 volts. Wire shall be Beldon 8771 or equal. Shields shall be grounded at the PLC or panel location. Power conductors shall be sized per UL and NEC standards and rated for 600 volts. Conductors shall be UL Type MTW, THHN or THWN rated for 90 degrees C.

v. Control Terminals – All field control conductors shall be connected to terminal blocks. Terminals shall have machine marked wire numbers. Connection of field control conductors directly to control panel components will not be allowed. Terminal blocks shall be rated for 30 amps at 600 volts. They shall be screw terminal type capable of terminating No. 10 to 26 gauge wire. Terminal bridge bars shall be provided when it is necessary to bridge multiple like terminals together. Terminals and accessories shall be Phoenix Contact "Clipline" or equal by Allen Bradley or Weidemueller 21.

vi. Provide one (1) box (five (5) minimum quantity) of each type and size of fuse, upon completion of the job, for use as spares.

vii. A schematic diagram (showing wire color) shall be permanently fastened to the inside of the enclosure. An Installation and Service Manual shall also be included with each control panel. The control panel shall be U.L.

listed as an assembly.

viii. Ground Bar. Provide ground bar mounted and bonded inside the panel enclosure.

ix. Wiring Duct. Provide wiring duct to route conduits as necessary for a neat and workable installation.

o. Level Controller

i. General

1. The Lift Station Controller shall be an off-the-shelf, preprogrammed, dedicated to the application, microprocessor-based controller capable of monitoring process variable inputs and automatically control up to two constant speed pumps. Systems using a one-of-a-kind, non-standardized, custom programming generic controller represent additional complexity and unproven operation and thus are not in conformance to the intent of the specifications and will not be acceptable.

2. Controller shall be configured for the number of pumps to be controlled at this lift station as per these specifications.

3. The operator interface shall display the current level in feet and represent the level in bar graph form, which dynamically updates based on the level in the wet well.

4. An active/dynamic graphical representation of each pump and its status shall be displayed on the same screen along with flow in gallons per minute. Pump graphic shall change state to indicate – “Off”, “Called”, “Running”, and “Failed/Out of Service”.

5. Touching an active pump on the home screen takes you to the respective pump status screen.

6. A trend screen showing, a minimum of, the last two (2) hours of wet well level fluctuations shall also be available.

7. The operator interface shall have a display area not less than 3.5 in. with 160 x 128 pixel resolution, Transflex touch screen graphic display viewable in direct sunlight.

8. The operator interface shall be suitable for Type 12, 4 & 4X environment. Additionally, the display shall be manufactured from a UV resistant polyester substrate.

9. To prevent the loss of data during an extended power outage, longer than four (4) hours, the controller shall have a built-in replaceable battery system to keep volatile memory active for approximately ten (10) years.

ii. Inputs & Outputs: The controller shall come standard with herein specified inputs and outputs. The controller shall also have the ability to accommodate additional expansion I/O without the need to replace hardware or upgrade the controller.

iii. The controller shall be configured to monitor the following discrete input status signals:
1. Pump 1, 2 Running
2. Pump 1, 2 HOA In Auto
3. Pump 1, 2 Seal Failure
4. Pump 1, 2 Overtemp
5. Pump 1, 2 OverloadBackup Active
6. High Level Float
7. Low Level Float
8. Control Power Failure
9. Phase Failure
10. Station Intrusion
11. Flow Pulse
12. Temp Alarm High/Low

iv. The controller shall provide the following discrete output signals:
1. Pump 1, 2 Call
2. Pump 1, 2 Failure
3. Common Alarm
4. Alarm Horn
5. Alarm Horn Silence
6. Backup Reset

v. The controller shall monitor the following (4-20 mA) process signals:
1. Wet Well Level

vi. A two-level security system shall be provided for operators (OPER) and supervisors (SUPER). Without being logged in, screens are view only.

vii. OPER – Operator Access
1. Rights to edit set points and acknowledge alarms

viii. SUPER – Supervisor Access
1. All privileges as the OPER.
2. Right to change the passwords of both SUPER and OPER users.

3. Right to set lifetime pump runtime and start totals.
4. Right to toggle communication ports between telemetry communications or local programming modes.
5. Right to set the controller time and date.
6. Right to access removable media system screen.
7. Shall be provided with factory default passwords.
8. To prevent unauthorized controller adjustments, an adjustable 0-999 second delay shall be provided to automatically logoff the current user after the adjustable time period, and no operator screen navigation has been detected.
9. The controller shall be capable of operating pumps in an automatic or fixed mode. In automatic mode, a built-in alternator shall be available to equalize motor starts, stops and run time. The alternator shall have the capability of being put into fixed sequence mode at any time. Alternation shall also have the capability to alternate cyclically or following an adjustable period of time.

p. Alternation

i. Alternator shall have pump fail replace logic allowing a failed pump to be detected and the lag pump to be called into service without level increasing to lag start setpoint.

ii. Auto Alternation Mode
1. If the running signal input is not received within 60 seconds (adjustable) of the respective pump being called to start, a pump failure alarm shall be displayed in the alarm banner and the next pump in sequence shall be called to start.

iii. Fixed Alternation Mode
1. If the running signal input is not received within 60 seconds (adjustable) of the respective pump being called the respective pump shall continue to be called until the level in the wet well reaches the next level setpoint at which point the next pump in the sequence shall be called to start.

q. Setpoints

i. The following system setpoints shall be provided: (* indicates an associated, user adjustable (0-999) seconds time delay shall also be provided to prevent momentary process fluctuations from impacting alarm or control.)

1. Wet Well Level High and Low Level Alarm * 25 ft High
2. Start Lead*, Lag 1* 9.7 ft Lead 23.7 ft Lag
3. Stop Lead*, Lag 1*, 5.7 ft both

4. Pump 1, 2 Failure to Start Delay 20 sec
5. Pump 1, 2 Seal Failure Delay 20 sec
6. Pump 1, 2 Over Temp Delay 20 sec

r. Alarms

i. The controller shall monitor, display and log the following alarms:
1. High or Low Wet Well Level Alarm (Transducer)
2. Pump 1, 2 Seal Failure
3. Pump 1, 2 Over Temp
4. Pump 1, 2 Overload
5. Pump 1, 2 Failure (internal to controller, Call No Run)
6. Float Backup Active
7. Low Level Cutout (from floats)
8. High Level Alarm (from floats)
9. Control Power Failure
10. Phase Failure

s. Pump Status

i. The controller shall have Pump Status screens that provide the following information and control options:

1. Pump 1, 2 Status (Off, Called, Running, & Failed)
2. Pump 1, 2 Hard and Soft H-O-A Status
3. Pump 1, 2 Seal Failure Status
4. Pump 1, 2 Over Temp Status
5. Pump 1, 2 Overload Status
6. Today: Pump 1, 2 Runtime xx.x Hours
7. Today: Pump 1, 2 Starts xxx
8. Yesterday: Pump 1, 2 Runtime xx.x Hours
9. Yesterday: Pump 1, 2 Starts xxx
10. Current (CRNT) Month (MNTH): Pump 1, 2 Runtime xxx.x Hours
11. Current (CRNT) Month (MNTH): Pump 1, 2 Starts xxx
12. Last Month (MNTH): Pump 1, 2 Runtime xxx.x Hours
13. Last Month (MNTH): Pump 1, 2 Starts xxx
14. Total: Pump 1, 2 Runtime 999999.9 Hours
15. Total: Pump 1, 2 Starts 999999

t. Navigation

i. A menu system shall be provided for the user with proper access to change setpoints, setup pump starts, stops, alarms, alarm delays and setup pump alternation. The following parameters shall be provided:

ii. Level and Level Delay Setpoints

iii. Alternation – Auto or Fixed mode; Timed or Cyclical

iv. The operator shall have a choice of selecting automatic or a fixed sequence.
1. Pump Failure – call, no run
2. The user shall be able to enter pump failure time for each pump that is enabled. A failed pump will be replaced with the next available pump.

v. Seal Failure and Over Temp
1. The user shall be able to enter seal failure and over temp time delays for each respective pump that is enabled.

vi. Miscellaneous Alarms
1. The user shall be able to enter delays for communications failure, intrusion and high or low temperature.
2. Transducer Range (wet well level)

vii. A field shall be provided to scale the transducer in feet to setup the vertical scale on the Home screen and an adjustable offset in feet, shall be provided to compensate for the transducer to be raised off the bottom.

u. Volumetric Flow Calculation

i. The controller shall provide station flow information based on external flow transmitter or based on high accuracy volumetric process calculations using wet well level excursions as sensed by wet well level transmitter in conjunction with verified pump operations. Systems that do not monitor/use actual pump run feedback in the calculation are deemed unreliable and will not be acceptable.

ii. The controller shall provide the following flow related information as a minimum:
1. Station incoming flow rate (Average).
2. Station Effluent Todays flow total.
3. Station Effluent Yesterdays flow total
4. Station Effluent Previous Month Flow Total
5. Station Effluent Current Month Flow Total

v. Historical Data Storage

i. Controller shall log the pump run time data, alarms and analog data to the removable memory card.

w. Submersible Level Sensor

i. General

1. A loop powered submersible level transmitter shall be provided to sense the wet well level. The wet well level transducer shall sense wet well level by measuring the hydrostatic head pressure associated with water levels above the base of the diaphragm. A linear and proportional, to hydrostatic head pressure, 4-20 mA signal shall be produced and input to the pump controller. The transducer shall be installed in accordance with manufacturer's instructions.

2. The pressure transducer shall be certified by FM, UL, and CSA for installation in a Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F, and G, Class III, Division 1 hazardous location when connected to associated apparatus manufactured by PR Electronics, R.G. Stahl and others. The transducer shall be installed in accordance with manufacturer's instructions.

3. The pressure transducer wetted materials shall be 316 SS, Viton®, Polyurethane or Tefzel®.

4. Sensing diaphragm shall be 2.75 in. in diameter and include diaphragm protector allowing the unit to be placed on or near the bottom of the wet well without affecting pressure readings.

5. The transducer shall include circuitry that provides protection from overvoltage, reverse polarity, and shorted output.

6. Transducer overall accuracy shall be 0.25 percent full scale or better with a resolution of .0001 percent over the entire range of the wet well.

7. The sensing element shall exhibit non measurable hysteresis, withstand overpressures to 200 percent of rated range without damage.

ii. Warranty

1. Transducer unit shall have a manufacturer’s lifetime warranty that includes damage from electrical surges.

iii. Construction

1. The pressure transducer shall be mounted in the wet well and furnished with a minimum of 75 ft of cable.

2. The cable shall be 0.3 in. outside diameter Polyurethane or Tefzel® material.

3. Cable shall have non stretch Kevlar reinforcement strands bundled within the wiring cable to provide additional cable strength. Cable strength shall allow up to 200 lbs of pulling strength.

4. A sealed breather tube system shall extend from the top of the cable to the transducer assembly to provide barometric compensation to the transducer.

5. Breather system will be sealed and maintenance free. Systems that use gaps in wire cable and or desiccant filters that require periodic replacement will not be considered.

iv. Installation & Mounting
1. The transducer shall be suspension mounted in the wet well in an area of the wet well allowing full measurement of the wet well and in such a manner as to not be adversely affected by motor operation or incoming flow streams.

v. The transducer shall be mounted so that it is approximately 6 in. above the floor of the wet well.

vi. The transducer shall be furnished with a suspension mounting kit made out of stainless steel. It shall include a stabilization weight to maintain its position it the wet well.

x. Cellular Based Communication System: Mission M800 RTU

i. Furnish and install a factory wireless data cellular based communication system for the purpose of monitoring and controlling various equipment operations. The supplier of the communication system shall be responsible for coordination required to insure equipment compatibility. The communication system shall be provided complete, in place, as specified herein and needed for a complete, proper installation.

ii. The Contractor shall be responsible for coordinating the instrumentation equipment, communication equipment and other related equipment so that all elements are compatible and form a complete working system. Shop drawing submittals shall include sufficient information regarding component compatibility to demonstrate compliance with this requirement.

iii. Qualifications of Manufacturers Products used in the work of this Section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of satisfactory production acceptable to the Engineer.

iv. The submitting Company shall provide evidence of, and warrant compliance with, substantially all below listed requirements.

1. The submitting Company shall have been in business providing remote facility monitoring and control services through the data side of the cellular system to the water distribution / wastewater collection industry or a substantially similar industry for at least six (6) years.

2. The submitting Company shall be the actual manufacturer and operator, or a duly authorized and trained agent of the manufacturing company or a combination of both, who will actually provide, maintain, and warranty the proposed system.

3. The Manufacturing Company of the field equipment shall also be the provider of all monitoring related services associated with the field equipment and all ongoing service agreements will be with the actual company providing the monitoring service, not a subcontractor or agent.

4. The submitting company shall have a primary central monitoring and control center and a fully redundant, physically separate, backup-computer monitoring center. Either center shall have the capability of operating all the remote monitoring and control field RTU's.

5. The submitting Company shall offer and provide 24 x 7, 365 technical support.

v. System Components

1. Microprocessor Based Field RTU
   a. Data Cellular Radio
      i. The Remote Terminal Unit (RTU) shall incorporate a radio that utilizes the data side of any cellular system to transmit the data and alarms monitored, as well as receive manual or automated control commands.
      ii. Cellular radios from all cellular carriers shall be able to mount in the same mounting port on the motherboard and consequently be interchangeable in no more than 10 minutes.
   b. NEMA4X enclosure with the battery inside and which has front door and top "sun shades" to reduce internal temperatures when placed in the sun.
   c. Microprocessor Feature Updates
      i. Microprocessor features like data transmission rates shall be able to be adjusted through the cellular system without any site visits necessary.
   d. RTU Inputs and Outputs
      i. RTU shall have eight (8) digital inputs. These eight (8) inputs

ii. shall have end of line resistor supervision, or similar supervision, that can detect normal alarm trip inputs and detect input wiring disconnection/shorting as a distinctly different signal and report.
iii. RTU shall have an optional expansion board of an additional eight (8) digital inputs
iv. The digital inputs shall be user selectable as normally open (NO) or normally closed (NC).
v. In M800 Models eight of the RTU digital inputs on main board shall be capable of being programmed to record and report pump run times in one-minute increments or less as indicated by a relay opening and closing. If only two pumps are monitored, then the unit shall also be capable of recording and reporting simultaneous pump run times.
vi. RTU shall have built-in alarms for input wiring fault, AC failure, communication failure and low battery detection.
vii. RTU shall have two (2) analog inputs measuring four (4)-20mA or 1-5 VDC at 10-bit resolution with four (4) alarm thresholds per input.
viii. RTU shall have an optional expansion board of an additional four (4) analog inputs.
ix. RTU shall have an optional expansion board of an additional eight (8) digital inputs.
x. RTU shall have an optional expansion board of an additional two (2) analog outputs.
xi. RTU shall have an optional expansion board of two (2) pulse counter inputs.
xii. RTU shall have an electronic key reader input to monitor on-site personnel. The RTU shall utilize an audible tone to verify key reading. Each key in the system shall provide unique identification of the key holder when they are on site vs. "someone" is on site.
xiii. RTU shall have three (3) digital normally open or closed output relays rated 1/2 ampere@ 120VAC.

e. Status LED's on Motherboard
i. LED's above each digital input shall visually display the status of the digital input.
ii. Radio signal strength shall be displayed by at least eight (8) LED's in 5db increments between -75db and -110db to facilitate accurate antenna placement.
iii. Operational and diagnostic status of at least eight (8) criteria shall be displayed by individual LED's.

f. Power Requirements
    i. The RTU shall be powered by 12 volts AC and have a built-in battery backup capable of keeping the RTU powered for 30 hours in case of primary AC failure.
    ii. Terminations inside the RTU enclosure shall be low voltage AC or DC (28 volts or less).

2. Communication Links
    a. Communication System
        i. Wireless communication links shall be through the data side of the cellular system. The voice side of the cellular system and satellite-based links are not acceptable.
    b. Cellular Carriers
        i. The submitting company shall have direct relationships with the cellular companies and shall not use third parties to affect data transport through the cellular companies.
        ii. The RTU shall have an interchangeable data cellular radio that will communicate through third generation GPRS (ATT), CDMA (Verizon) or iDEN (Nextel) to maximize the likelihood of reliable communication.
        iii. If a GPRS (ATT) radio is used, the submitting company shall have PTCRB approval from ATT to use the radio, contract and product acceptance with ATT. If an iDEN radio is used the submitting company shall have certified partner status, contract and product acceptance with Sprint/Nextel.
        iv. The Owner shall not have or have to purchase cellular data contracts direct with the carrier(s).
    c. Security Protocols
        i. All the cellular radios shall all make continuous, secure socket connections (SSL) from the radio, through the cellular system, to the submitting company's servers and web pages.
        ii. The RTU shall utilize a transmission scheme that encrypts the transmitted data utilizing a 128-bit encryption method that meets or exceeds the advanced encryption standard (AES). The 128-bit AES encryption shall be at all stages of data transfer and storage.
        iii. The cellular radios shall all have private IP addresses.
        iv. The submitting company shall have established multiple, private gateways through the cellular system, completely behind firewalls, with at least one of the cellular providers.
    d. Data Transmission Rates
        i. All alarms regardless of unit type shall be transmitted immediately upon occurrence; delays can be added by the Owner at the RTU or the supplier's website.

ii. The RTU shall continuously transmit all digital state changes on an as occurs basis; analog and pulse inputs will be transmitted at least once every two minutes on M800 models.

iii. The RTU shall have an effective, continuous, transfer rate of at least 19,200 baud.

e. Communication Link Structure and Performance Criteria

i. The communication link structure shall be a secure socket connection from the RTU through the cellular system to the supplier's servers, and it shall be a continuous connection, 24 x 7, 365.

ii. Receipt of all data sent from the RTU to the server center shall be acknowledged by the server center back to the RTU in real time for every data packet sent. Such structure is called end-to-end data acknowledgement.

iii. The secure socket connection shall be from the RTU through the cellular system direct to the system supplier; no third parties shall receive the data from the cellular carrier and then pass it to the system supplier.

iv. The above mentioned secure socket connection shall be monitored for end-to-end uptime with interruptions as small as 15 seconds being captured.

v. Both end-to-end uptime and the number of times the link was disconnected/reconnected shall be reported for each RTU continuously with daily summary statistics posted on the Owner's website. All the end-to-end uptime history of each RTU shall be available on the Owner's web site from when it first powered up to the present. Weekly management summaries of each RTUs end-to-end uptime shall be automatically emailed to the Owner.

3. Centralized Server Centers: Hardware and Software Requirements

a. Server Center Physical Structure

i. The server center housing shall have at least six (6) separate and redundant, on-site power generating facilities to back up the local utility power such that there can be stand-alone operation of the center for at least twenty-four (24) hours.

b. Server Center Redundancy Structure

i. The server center shall house the manufacturers completely redundant and hot linked:

- Servers
- Interconnects
- Databases
- Power supplies
- Inbound cellular connections

- Outbound internet hubs and providers

c. Database Structure
    i. All data from the RTU's shall be held for access forever.
    ii. All databases shall be backed up and archived daily.
    iii. The databases shall be capable of interfacing and transferring, on a continuous basis, all RTU data to an OPC compliant database for access by other OPC compliant HMI software packages.
        - Client side OPC software shall run as an executable or NT service.
        - Client side OPC software shall, on a user definable interval, establish a socket connection to static IP address(s) at providers' server center.
        - OPC software shall retrieve all changed OPC tag values and close the socket. OPC software shall be set up so as customers OPC computers firewalls may be programmed to only allow Internet traffic to/from the designated service providers IP addresses and port numbers.
        - OPC software shall allow for multiple customer OPC software packages to establish, concurrently, OPC connections so as to provide for redundant HMI database operation at customers locations.
        - Owner's firewalls will not be programmed to accept socket connections.

d. System Security
    i. All data links shall be behind firewalls, 128 bit encrypted and never accessible, addressable or viewable via the general public Internet. Private IP's are required, pooled public IP's will not be accepted.

e. System Software
    i. The system software shall collect and display:
        - Alarms including individuals accepting alarms.
        - RTU electronic key reads with user names, time of read, and site name.
        - Pump running status.
        - Pump run times with historical graphs.
        - Individual pump flow estimates.
        - Automatic daily analysis of pump runtimes for abnormalities with automatic customer notification of such abnormalities.
        - Pump starts with hourly analysis of excess pump starts with automatic notifications of excess pump starts.

- Minute-by-minute radio health checks with automatic notification of non-reporting or poorly reporting RTU's.
- Scaled and labeled pulse totalizations and if rainfall gauges are used, inter-day rainfall graphs and run time verses rain fall based on either rain gauges installed as part of the system or as run time verses a reporting airport rain gauge.
- Performing and displaying volumetric inflow/outflow calculations from RTU supplied data for each pump cycle as they occur. Such volumetric calculations will utilize real-time pump start/stop data with simultaneously gathered level transducer data to perform the inflow/outflow and pump GPM calculations.
- Utilizing real-time data collection have the ability to based on digital input closure, open or close digital output relay on the same or another real-time unit (Intertie).

4. Alarm System Structure and Software
   a. Alarm Delivery Formats
      i. Alarms shall be delivered in the following formats:
      ii. Phone (voice call), fax, pager (numeric or alphanumeric (short alpha or long alpha format), text message, email, or any combination of the above simultaneously.
      iii. Alarms shall be able to be acknowledged by phone, text message, two (2)-way pager, email or on the Owner web site.
      iv. Voice alarm acknowledgement shall be adjustable to be able to mimic the format of dialers.
      v. Alarms shall be called out on alarm and upon return to normal conditions.
      vi. Return to normal alarms can be adjusted to call the alarm callout group or a different callout group.
   b. Alarm Callout Formats
      i. Alarm callout groups shall be able to be setup to automatically switch between callout groups at different hours of the day and/or different days of the week.
      ii. Alarm callout groups shall be able to have multiple teams within each group to easily facilitate rotation of teams of on-call personnel.
   c. Alarm Message Formats
      i. All alarms shall have the alarm condition, time, alarm location and pump status at the time of the alarm in each

message.

ii. Alarm message format shall be adjustable to include just the above information when calling a phone where it is known who will answer the phone or be adjustable to add an introductory message asking for a specific person when calling a phone where it is not known who will answer the phone (like a home phone).

iii. Alarms shall be able to be delivered individually or be able to be grouped into one message so that multiple, simultaneous alarms (like AC Fail at multiple sites) can be delivered and acknowledged in one phone call.

d. Alarm Dispatch Logs

i. Each alarm shall have a full log of each notification attempt of that alarm documenting the following:

ii. Date, time, and alarm condition

iii. If each notification attempt was a success or failure and the reason for each failure if an attempt was a failure (like line busy, call dropped, etc.)

iv. A recording of each voice notification attempt so the specific reason for a notification failure can be known.Date, time, and name of person who acknowledged the alarm.

e. Voice Alarm Delivery Capacity

i. Manufacturer shall provide at least twenty (20) outbound lines to deliver voice alarms so as not delay delivery of current alarms.

5. Remote Data Access

a. Remote Data Access Format

i. Data collected by the system shall be able to be remotely accessed by simple web browser. The system shall provide individual web pages for the User to access via any web browser.

ii. To access the web pages, the User shall have to enter a Username and Password.

iii. The User can set up any of three levels of access to the web pages:

- Read only…can see but cannot make any changes.
- Read/Write…can see and can make changes.
- Read/Write/Control…can see, make changes and effect control functions, also add or remove logins/ passwords.

iv. The vendor shall provide at least two separate web sites for the Owner. One shall be designed to be viewed on a traditional laptop or desktop computer. The other shall be designed to be viewed on a web enabled cell phone or PDA.

v. This web site shall still have graphs showing trending of data and shall be designed to minimize the data sent so as to minimize the page loading times and size of the data plans necessary to view the site on a web enabled cell phone or PDA.

vi. The system supplier shall provide secure access through a specified phone without the need for web access (Voice SCADA). This shall require login to system via numeric 5-digit code and must be set up in the system to an associated login for that site to a specific phone number to maintain site security.

vii. In addition to the above web sites, the User will be provided at no additional charge with a customizable software interface that shall display real-time status and graphic trending of data collected by the M800 RTU.

viii. The software shall be downloadable from the Mission customer website.

ix. The software shall automatically update itself every time the User accesses the software.

x. The software shall require NO programming to customize.

xi. The software shall be the Mission Real Time Viewer.

b. Remote Access Security

i. In addition to the Username and Password structure described above, all access of the User web site shall be logged. Such logging data to include date, time and duration of access, Username and Password of user to access the site and IP address of the accessing computer. The log shall be accessible through the User web site.

c. Automated Administrative Reports and Alerts

i. The User web site shall produce and automatically deliver weekly reports which summarize alarms and responses, pump runtimes and flow estimates, weekly end-to-end uptime percentages of each RTU, and all electronic key uses at the RTU sites.

ii. The web site shall be capable of sending two (2) different categories of notifications, Alarms and Alerts. Alarms are for conditions that the User decides they want to be notified immediately about. Alerts are conditions that need attention, but are not so time sensitive that they cannot wait till the next morning.

- The Alarms callout list and the Alert callout list shall be able to be separate and distinctly different.

iii. The User web site shall analyze daily pump run times at compared to a moving 30-day average of the pumps most recent runtimes and automatically Alert the User that the

iv. pump runs are outside the normal runtime variation pattern.
v. The User web site shall analyze hourly pump runtimes and automatically compare it to two (2) User set thresholds. If the Alert threshold is exceeded, an Alert shall be sent the following morning. If the Alarm threshold is exceeded, an alarm shall be sent immediately.
vi. The User web site shall send an Alert the first morning that the units are in Communications fail even though Alarms have been sent at the time the RTUs went off-line. Such Alerts are a reminder to Management that they still have units that are offline.

6. RTU Locations
   a. The RTU shall be located at the Carpenter Street Pump Station and shall be furnished with an omnidirectional antenna at grade plus 8 ft. Provide a support pole and foundation for the antenna. The antenna shall be grounded to a driven ground rod.

7. Monitoring Points per RTU
   a. The inputs to be monitored are as follows:
      i. Digital input

         DI-1 Pump 1 Run
         DI-2 Pump 2 Run
         DI-3 Pump 1 Alarm
         DI-4 Pump 2 Alarm
         DI-5 Pump 1 Runtime
         DI-6 Pump 2 Runtime
         DI-7 Power Failure
         DI-8 Wet Well High Level Alarm Backup

      ii. Analog inputs with four (4) hi/low threshold alarms

         AI-1 Pressure Transducer
         AI-2 Spare

      iii. Relay Outputs

         R-1 Spare
         R-2 Spare
         R-3 Spare

8. Other Materials
   a. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

9. Coordination
    a. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
    b. Additional coordination with the supplier's information here.

10. Installation
    a. Install the work of this Section in strict accordance with the manufacturer's recommendations and shop drawings as approved by the Engineer.
    b. Upon completion of the installation, carefully inspect each component and verify that all items have been installed in their proper location, adequately anchored, and adjusted to achieve optimum operation. If required, the Contractor shall adjust the antenna placement or elevation to obtain consistent, stable operation of the system.
    c. Delineate timing of RTU installation and commissioning.

11. Service
    a. Demonstrate to the Owner's operation and maintenance personnel the proper methods for operating and maintaining the equipment, and the contents of the operation and maintenance manual required to be submitted under Article 1.03 in this Section.
    b. The Contractor shall furnish to the Owner, through the Engineer, a written report prepared by the instrumentation equipment manufacturer's field service technician certifying that:
        i. The equipment has been properly installed in accordance with manufacturer's recommendations.
        ii. The equipment check out and initial start-up activities have been completed in accordance with manufacturer's recommendations and under the technician's supervision.
        iii. Antenna placement has been optimized.
        iv. The equipment is free from any undue stress imposed by connecting conduit or anchor bolts.
        v. The equipment operates satisfactorily and in compliance with the requirements of this Section.

General: This work includes all excavation, backfill, temporary shoring, labor, materials, and equipment required to manufacture, furnish, and install the valve vault, lid, access frame and hatch, butyl rubber sealant, pumps, pump bases, rails, lift chain, cable and chain brackets, pump rail brackets, testing, and other incidental items as shown on the plans.

The pump station control panel and accessories, and wireless monitoring and control system shall be included in the cost of the Pumping Station. Connections to conduits and wiring external to the control panel shall be included in the cost of Pump Station Electrical Work.

Basis of Payment: This work will be paid for at the contract lump sum price for PUMPING STATION.

PUMP STATION ELECTRICAL WORK

General: The work to be included under this item shall be the furnishing, installing, and testing of all materials and electrical equipment necessary in order to provide a complete and operational electrical system at the Pump Station.

The Contractor shall furnish and install all materials necessary for a complete and operational installation of the electrical equipment. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of NFPA 70 – National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, FM Approval, ETL listing (or other third-party listing), and/or the manufacturer's warranty of a device will NOT be permitted.

The electrical work and equipment specified is based on equipment of the type and size as noted on the Plans and specified herein. Should the proposed pump motors (or any other proposed loads) exceed the ratings of the electrical equipment specified, the General Contractor shall be solely responsible for furnishing any and all modifications necessary in order to provide a fully functional system to the satisfaction of the Engineer at no change to the contract cost. The Contractor shall also be required to submit for review, sufficient information determined by the Engineer to be necessary to review such alternates or modifications.

Per Illinois Environmental Protection Agency Title 35: Environmental Protection, Subtitle C: Water Pollution, Chapter II: Environmental Protection Agency Part 370: Illinois Recommended Standards for Sewage Works all electrical equipment installed in a sewage pump station wet well shall be suitable for Class I, Division 1, Group D hazardous location. In addition, equipment located in a sewage wet well shall be suitable for use under corrosive conditions. All electrical installations associated with a sewage pump station shall conform to the applicable sections of NEC 500, 501, and 504 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be UL-listed, Factory Mutual-listed, or ETL-listed suitable for use in the respective classified hazardous location.

Per NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, a wastewater pumping station wet well (with no ventilation or ventilated at less than twelve (12) air changes per hour) is classified as a Class I, Division 1, Group D hazardous location. All electrical installations associated with the pumping station wet well shall conform to the applicable sections of NEC 500, 501, and 504 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be UL- listed, Factory Mutual-approved, or ETL-listed suitable for use in the respective classified hazardous location.

All work, power outages, and/or shut down of existing systems shall be coordinated with the respective facility owner's representative. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety & Health Standards for electrical safety and lockout/tagout procedures, including, but not limited to, 29 CFR Section 1910.147 the control of hazardous energy (lockout/tagout).

Contractor shall keep a copy of the latest National Electrical Code in force on site at all times during construction for use as a reference.

Contractor and respective electrical contractor shall keep a set of construction plans and specifications with all addenda and copies of any applicable change orders on site at all times.

Submittals: Contractor shall provide shop drawings for all electrical equipment. Shop drawings shall clearly indicate proposed items, capacities, characteristics, and details in conformance with the Plans and Specifications. The respective manufacturer shall certify capacities, dimensions, special features, etc. Shop Drawings for all items shall be prepared immediately upon award of Contract. The Contractor shall submit an electronic PDF to be retained by the Engineer. No materials shown thereon shall be ordered until Shop Drawings are reviewed and approved by the Engineer. When a submittal is marked "Revise and Resubmit," "Rejected," and/or "Submit Specified Item" do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations, resubmit, and repeat if necessary to obtain a different action mark such as "No Exceptions Taken" or "Furnish as Corrected". Contractor is responsible for compliance with the specified characteristics. Contractor's responsibility for error and omissions in submittals is not relieved by the Engineer's review of submittals. Accompany each submittal with a transmittal letter that includes the date, project title and number, Contractor's name and address, the number of shop drawings, product data, and/or samples submitted, notification of any deviations from the Contract, and any other pertinent data. Shop drawing submittals shall include the following:

A. Date and revision dates.

B. Project title and number(s).

C. Identification of product or material.

D. Certified outline and installation drawings.

E. Performance data and operating characteristics.

F. Arrangement drawings showing piping, controls and accessory equipment.

G. Drawings on non-standard components and accessories.

H. Catalog data marked to indicate materials being furnished.

I. Operation and Maintenance/Instruction Manuals.

J. Specified standards, such as ASTM numbers, ANSI numbers, UL listing/standard, NEMA ratings, etc.

K. A blank space, 3 in. x 5 in., for Architect/Engineer's stamp.

L. Identification of previously approved deviation(s) from Contract documents.

M. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract documents.

N. Space for Prime Contractor's approval stamp.

EQUIPMENT AND MATERIALS

Conduit And Fittings

Comply with IDOT Standard Specifications and the following.

Galvanized Rigid Steel Conduit: Rigid Steel Conduit and fittings shall be hot-dipped, galvanized, UL-listed, and produced in accordance with UL Standard 6 – Rigid Metal Conduit and ANSI C80.1 – Rigid Steel Conduit, Zinc Coated. Couplings, connectors, and fittings for rigid steel conduit shall be threaded, galvanized steel, or galvanized, malleable iron, specifically designed and manufactured for the purpose. Fittings shall conform to ANSI C80.4 – Fittings Rigid Metal Conduit and EMT and UL 514B – Conduit, Tubing, and Cable Fittings. Set screw type fittings are not acceptable.

Schedule 40 PVC and Schedule 80 PVC Conduit: Conduit shall be Schedule 40 PVC or Schedule 80, 90 C, UL-rated. Material shall comply with NEMA Specification TC-2 (Conduit), TC-3 (Fittings-UL-514), and UL-651 (Standard for rigid nonmetallic conduit). The conduit and fittings shall carry a UL label (on each 10 ft length of conduit and stamped or molded on every fitting). Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. The markings shall be legible and permanent. The conduit shall be made from polyvinyl chloride C- 300 compound which includes inert modifiers to improve weatherability, heat distortion. Clean rework material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this Specification. The conduit and fittings shall be homogeneous plastic material free from visible cracks, holes, or foreign inclusions. The conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables. Conduit, fittings and cement shall be produced by the same manufacturer to assure system integrity and shall be Carlon Plus 40, Plus 80 conduit.

Rigid Aluminum Conduit: Rigid Aluminum conduit shall be heavy wall type fabricated from 6063 aluminum alloy, T-1 temper, (former designation T-42). Aluminum rigid conduit shall comply with Underwriter's Laboratories UL-6, latest revision, and American National Standards Institute (ANSI) C80.5 – Rigid Aluminum Conduit.

PVC Coated Rigid Aluminum Conduit: PVC coated rigid aluminum conduit and fittings shall be as manufactured by Robroy Industries, Inc., Conduit Division, 1100 US Highway 271 South, Gilmer, Texas 75644, Phone 903-843-5591, Sales Department Fax: 903-843-2516 or approved equivalent. The conduit, prior to coating, shall be new, unused material and shall conform to UL 6, Standard for Safety for Rigid Metal Conduit. An exterior gray PVC coating of a nominal 40 mils, (.040 in.), shall be applied to the conduit and conduit couplings. The PVC coating shall conform to all applicable requirements of NEMA RN-1, Standard for PVC Coated Conduit. An interior red polyurethane coating of 2 mils (.002 in.), shall be applied to the conduit and conduit couplings. The polyurethane coating shall conform to all applicable requirements of NEMA RN-1, Standard for PVC Coated Conduit. Conduit having areas of thin or no coating shall be unacceptable. The PVC and polyurethane coatings applied to conduit shall have sufficient flexibility to permit field bending without cracking or flaking at temperatures above 30°F (-1°C). All male threads on conduit and all female threads on conduit couplings shall be protected by a coat of red polyurethane.

PVC-Coated, Galvanized, Rigid Steel Conduit: PVC-coated, galvanized, rigid steel conduit shall be manufactured by Robroy Industries, Inc., (Conduit Division, 1100 US Highway 271 South, Gilmer, Texas 75644, Phone 903-843-5591, Sales Department Fax: 903-843-2516) Plasti-Bond or approved equivalent. PVC coating shall be a minimum of 40 Mils permanently fused to hot dipped, galvanized, rigid steel conduit. An interior red polyurethane coating of 2 mils (.002 in.), shall be applied to the conduit and conduit couplings.

Explosion-Proof Flexible Conduit (where applicable): Explosion-proof, flexible conduit shall be suitable for use in Class I, Division 1, Group D hazardous locations, and liquid-tight for wet locations. Conduit shall have an interior insulating liner to protect conductors from abrasion under vibrating conditions. Conduit shall provide a continuous electrical path. Explosion-proof, flexible conduit shall be Crouse-Hinds, O-Z/Gedney ECGJH, ECLK Series, Appleton EXGJH or EXLK Series Flexible Coupling.

Explosion-Proof Conduit Seal-Off Fittings: Explosion-proof conduit seals shall be listed suitable for use in Class I, Division 1, Group D hazardous location. Explosion-proof conduit seals shall be Crouse-Hinds EYS or EZS Series, Appleton EYS, ESU, or EY Series, O-Z/Gedney EYA, EY, EZS Series explosion-proof sealing fitting.

Miscellaneous Fittings: Fittings shall be suitable for use with conduits and ducts supplied. All fittings for use with rigid metal conduit shall be threaded. Set screw type fittings are not acceptable. All conduit bodies, fittings, and boxes installed in classified hazardous locations (Class I, Division 1 or 2, Group D) shall be suitable for use in Class I, Division 1, Group D locations. Fittings shall be as manufactured by Appleton, Crouse-Hinds, Hubbel-Killark, O-Z/Gedney.

Conductors

XHHW Wire: Cable shall be UL-listed as Type XHHW-2 per UL Standard 44 for Rubber-Insulated wires and cables. Cable shall also conform to ICEA S-95-658/NEMA WC70 and Federal Specification J-C-30B. Conductors shall be Class B stranded annealed uncoated copper per UL Standard 44. Insulation shall be rated for 600-Volt. Insulation shall be cross-linked polyethylene complying with the physical and electrical requirements of UL Standard 44 for Type XHHW-2. Service conductors shall be Service Wire Company, Type XHHW-2.

THWN Wire: Cable shall be 1/C sized as indicated on the Plans. Cable shall comply with Underwriters' Laboratories Standard UL-83 and shall be UL-listed as VW-1. Conductor shall be soft annealed uncoated copper and shall comply with ASTM B3 and B8. Insulation shall be rated for 600-Volt. Insulation shall be polyvinyl-chloride conforming to Underwriters' Laboratories requirements for Type THW. The outer covering shall be nylon conforming to Underwriters' Laboratories for type THHN or THWN-2. Cable shall be UL-listed and marked THWN. Power and control wiring shall be Southwire Type THWN-2.

Supporting Devices

Strut supports for exterior applications shall be stainless steel strut support. Unistrut P-1000SS is an approved product. Alternate products will be allowed but must meet this specification and be approved by the Engineer. Strut support for equipment located in the wet well, valve vault, or other corrosive areas shall be stainless steel or reinforced fiberglass material as manufactured by Unistrut, B-Line, or Aickinstruct. Provide necessary hardware, such as floor flanges, etc., as required to install equipment as specified and as shown on the Plans. All hardware shall be stainless steel.

Provide materials, sizes and types of anchors, fasteners, and supports necessary to carry the loads of equipment and conduits. Consider weights of conduit when selecting products.

Fasteners and anchors shall be corrosion resistant, stainless steel. Where suitable, nonmetallic clamps and fasteners may be used.

Cable hangers shall be heavy duty nylon saddle rack with 3 in. throat opening Underground devices, Northbrook, IL, Cat. No. 3SR1 or 3SR2. Cable hangers shall be adequately sized to accommodate the respective cables. Secure cables to cable hangers with corrosion resistant cable ties.

Circuit Breakers

Circuit breakers for feeder circuits shall be thermal magnetic, molded case, 250-Amp frame minimum, 18,000 Amps symmetrical minimum, interrupting current rating at 480 VAC for three-pole breakers. Cutler-Hammer Type EhD is an approved product. Alternate products will be allowed but must meet this specification and be approved by the Engineer. Breakers shall have

"on", "off" and "tripped" positions and shall be UL-listed. Breakers shall be sized as required for the respective equipment in accordance with NEC and the respective equipment manufacturer's recommendation. Enclosure shall be NEMA 4X stainless steel with a hinged door and be pad lockable in the off position. Include a separate ground lug. Cutler-Hammer Catalog Number WFDN225 is an approved product. Alternate products must be approved by the Engineer.

CONSTRUCTION METHODS

Temporary Power: The Contractor shall make necessary arrangements and provide all temporary electric service and lighting required during entire construction period including required fees and permits. Cost of electricity used shall be borne by the Contractor. The temporary service shall comply fully with all NEC and OSHA requirements for temporary service.

Electric services shall be of sufficient capacity and characteristics to supply proper current for various types of construction tools, motors, welding machines, lights, heating plant, ventilation system, pumps and other work required. All necessary temporary wiring, panelboard, outlets, switches, lamps, fuses, controls, and accessories shall be provided by the Contractor. All 120 VAC, 15-Amp and 20-Amp receptacles shall be ground fault circuit interrupter type.

Materials used for temporary service shall not be used in permanent system unless specific approval is given by the Engineer. Temporary service shall be so constructed and arranged as not to interfere with progress of other trades. This systems hall be erected and maintained strictly in accordance with all ordinances and requirements for temporary service pertaining thereto inclusive of OSHA and NEC, (most current issue in force).

The serving electric utility company for the work site is as follows: City

Water Light and Power (CWLP)
401 N. 11th Street Springfield, IL
(217) 789-2323

The Contractor who has installed a temporary utility connection as herein specified, shall, prior to final acceptance, remove temporary connections and installations and leave premises restored to condition in which it was found.

Electric Service Entrance: Contractor shall furnish and install electric service entrance as detailed on the Plans and specified herein. As part of the service entrance work, the Contractor shall coordinate with the serving utility:

The installation of a 480 VAC, three-phase, 3-wire service sufficient to handle the loads of the respective pump station and associated equipment located at the site. The Contractor shall coordinate the new electric service with the serving electric utility company. The service entrance shall include, but not be limited to, all service entrance equipment, labor and materials as detailed on the Plans and specified herein, in order to provide a complete and operational electrical

system.

City Water Light and Power (CWLP): Major work items to be performed by CWLP (not in contract) shall be as follows:

A. Removal and replacement of existing utility pole, transformers, and electric meter.

B. The furnishing of power for a 480 VAC, three-phase, 3-wire secondary service sufficient to handle the loads for a 225-Amp service.

C. Shall furnish & connect the service entrance conductors from the primary line location to the pad mounted transformer.

D. Shall furnish and install the meter base and meter.

E. Shall furnish and install grounding electrode for service entrance ground system.

F. CWLP shall retain the right to review and approve drawings prior to installation.

Contractor: Major work items to be performed by the Contractor (in Contract) shall be as follows: (all work, labor, equipment, and materials shall be as detailed on the Plans specified herein, and per the serving electric utility's requirements, where applicable).

A. Verifying all requirements with serving electric utility.

B. Coordinating the electric service entrance work and billing arrangements with the serving electric utility company.

C. Additional work as required by the serving electric utility and as required to provide a complete and operational electric service entrance system.

D. Extend service conduit and conductors from the secondary of the service transformer to the pump control panel service disconnect switch.

E. Coordinate a second utility service to serve the new lighting system and controller.

Installation of Conduits

A. Comply with IDOT Standard Specifications and the following.

B. All exterior above grade exposed conduit shall be PVC Coated galvanized rigid steel (GRSC) or PVC coated rigid aluminum as detailed on the Plans.

C. All work shall be laid out with sleeves for openings through slabs, pump station or valve vault walls, etc. as required. If sleeves and inserts are not properly installed, the Contractor will be required to do all necessary cutting and patching to accommodate conduits.

D. Conduit size and fill requirements shall comply with Chapter 9 and Annex C of the NEC. It should be noted these are minimum requirements and larger conduit sizes or smaller fill requirements shall be used whenever specified or detailed on the Plans.

E. Ream conduits only after threads are cut. Cut joints square to butt solidly into couplings. Where necessary to join two pieces of conduit and it is impossible to use standard coupling, use 3-piece malleable iron conduit coupling. The use of running thread is prohibited. This applies to all rigid conduit installations, underground or otherwise.

F. Make all joints in steel underground conduit water-tight with approved joint compound. Temporarily plug conduit openings to exclude water, concrete or any foreign materials during construction. Clean conduit runs before pulling in conductors.

G. Hickey bends will not be acceptable for conduits 1-in. and larger. Use manufactured elbows or bends fabricated with bending machine. Field bending of all PVC conduit shall be accomplished with the use of equipment approved by the conduit manufacturer. Open flame bending equipment will not be acceptable.

H. A run of conduit between a junction box, pull box, and/or fitting shall not contain more than the equivalent of four (4) quarter bends, including bends immediately at the respective box or fitting.

I. Where conduits enter a box or fitting, provide a steel locknut and an insulated metallic bushing. Use this method to terminate conduit in panels, pull boxes, safety switches, etc. Conduit terminations in service equipment shall have grounding bushings with ground wire connections between the bushing and the ground bus.

J. Run exposed conduits parallel with respective walls or supporting structure and at right angles to the respective building, vault, etc., not diagonally. Make bends and turns with pull boxes or hot-dipped galvanized malleable iron fittings and covers.

K. Conduit terminations shall include bushings to protect cables and wires from damage from conduit.

L. Set screw type fittings are prohibited.

M. Use only screws, bolts, washers, etc. fabricated from rust resisting metals for the supporting of boxes.

N. Schedule 40 PVC conduit and/or sleeves shall be used for grounding electrode conductors.

O. Metal conduit in direct contact with earth or concrete shall be PVC-coated GRSC or PVC coated rigid aluminum conduit.

P. Per Illinois Environmental Protection Agency Title 35: Environmental Protection, Subtitle C: Water Pollution, Chapter II: Environmental Protection Agency Part 370: Illinois Recommended Standards for Sewage Works all electrical equipment installed in a sewage pump station wet well shall be suitable for Class I, Division 1, Group D hazardous location. In addition, equipment located in a sewage wet well shall be suitable for use under corrosive conditions. All electrical installations associated with a sewage pump station shall conform to the applicable sections of NEC 500, 501, and 504 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be UL-listed, Factory Mutual-listed, or ETL- listed suitable for use in the respective classified hazardous location.

Q. Perform all work in classified hazardous locations as defined by the NEC in strict accordance with the NEC for the particular "Class", "Division", and "Group" of hazardous locations involved or indicated on the drawings. Provide conduit and cable seals in accordance with the NEC.

R. All conduits installed in classified hazardous locations (including Class I, Division 1 or 2, Group D) shall be suitable for the respective location. All boxes and fittings installed in Class I, Division 1 locations shall be approved (FM approved or UL listed) suitable for Class I, Division 1 locations. All boxes and fittings installed in Class I, Division 2 locations shall conform to the requirements of NEC 501.10 (B)(4).

S. Per Article 501.15 (C) (6) of the NEC and UL Standard 886, the cross-sectional area for conductors installed in a conduit seal off fitting shall not exceed 25 percent, unless the conduit seal off fitting has been specifically approved for a higher percentage of fill.

T. Install explosion proof conduit sealing fittings in conformance with the respective manufacturer’s instructions. Contact the respective seal off manufacturer if assistance is required for direction of installing packing fiber to form a dam and pouring the sealing compound.

U. All conduits between the sewage pump station wet well and control panel shall be PVC coated rigid aluminum. No substitutions.

V. Aluminum rigid conduit may be used for conduits entering the wet well (between the pump control panel and the wet well of the pump station), provided it has corrosion protection (PVC coating) as detailed on the Plans and as specified herein.

W. Underground conduits shall be minimum 24-in. below finish grade to the top of conduit where located in areas not subject to vehicular traffic. Underground conduits shall be minimum 36-in. below grade where located in areas subject to vehicular traffic. Where shown on the Plans or where required to avoid obstructions and/or interferences with other underground utilities, deeper burial depths may be required.

X. Conduits shall be kept clean of concrete, dirt, or foreign substances during storage and construction. After conduit installation, a standard flexible mandrel shall be used for cleaning followed by a brush with stiff bristles. Mandrel shall be at least 12-in. long and have a diameter 1/4 in. less than the inside diameter of the conduit being cleaned. All obstructions in conduits shall be removed prior to pulling wires or final acceptance. Conduits unable to pass mandrel shall be replaced. All unused conduits shall be capped.

Y. Trench widths shall be held to a minimum.

Z. Examine all available site utility information in regard to existing utility lines and locate and protect existing lines. Repair all existing utility lines that are damaged by this construction.

AA. All excavations shall be barricaded, lighted (where applicable) and protected during construction.

AB. Contractor shall backfill all excavations.

Installation of Wire and Cable

A. Wire and cable shall be installed using accepted industry methods to prevent damage to conductors and insulation. Installation shall comply with all applicable sections of the NEC regarding conduit fill.

B. No splices shall be permitted in conduit bodies. All splices shall be made in junction boxes provided for that purpose as detailed or required by need.

C. All conduits shall be swabbed until all moisture and grit is removed before any wires are pulled.

D. Manufacturers recommended pulling tension shall not be exceeded during conductor installation. Use approved pulling lubricant on long pulls or when

pulling No. 4 or larger wire.

E. Neatly train and lace wiring inside boxes, equipment and panelboards.

F. Color code conductor insulation for #6 AWG and smaller. Color code conductors with tape or colored insulation for #4 AWG and larger. Where conductors are color coded with tape, they shall be identified (color coded) at all points of access. Insulated ground wires shall have green colored insulation for all conductor AWG and/or Kcmil to comply with NEC 250.119. Neutral conductors shall have white colored insulation for No. 6 AWG and smaller to meet the requirements of NEC 200.6. Color coding shall be as follows:

480 VAC, THREE-PHASE, 3-WIRE

Phase A – Brown
Phase B – Orange
Phase C – Yellow Ground
– Green

G. Intrinsically safe wiring shall be with blue colored insulation per ANSI/ISA RP 12.6 and NEC 504.

H. Splicing 600-volt wire shall be as follows:

1. Wire #8 and smaller:

    a) Ideal “wing nut” type insulated connectors.
    b) Scotchlok R, B, and Y type insulated connectors.
    c) Thomas and Betts, PT-1, PT-2, and PT-3 insulated connectors.

2. Wire #6 and larger:

    a) For straightway connections, use compression connector with rubber shrink type insulating cover.
    b) For tee cable taps, use compression connector with rubber shrink type insulating cover.
    c) For taps in cutout cabinets, gutters, and other close locations, use O.Z., Burndy, or PLM fittings, type “PT” cable tape with type “PTC” insulating cover.

3. Use plastic tape on all uninsulated wire splices manufactured by Scotch, Okonite, Brady Co. or Plymouth.

4. Splice only in accessible junction or outlet boxes.

I. Connections and Terminations shall be as follows:

1. Identify each conductor in pump/motor control panels, panelboards, junction or pull boxes, or troughs with a permanent pressure sensitive label with suitable numbers or letters for easy recognition. Identify control wiring at each end and in junction boxes with numeric wire number corresponding to control wiring diagram.
2. Thoroughly clean wire before installing lugs and connectors.
3. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.
4. Terminate spare conductors with electrical tape and roll up in box. Label spare conductors "SPARE."
5.

J. Inspect wiring for physical damage and proper connection. All wire and cable shall be tested for continuity and short circuits prior to energizing circuits. Verify proper phasing where applicable.

Installation Of Supporting Devices

Install products in conformance with manufacturer's instructions and as detailed on the Plans. Provide anchors, fasteners and supports in accordance with NECA Standard of Installation, and as recommended by the equipment manufacturer for the respective application.

Do not fasten/secure supports to pipes, ducts, mechanical equipment, or conduit. Do not use spring steel clips or clamps. Install surface-mounted cabinets, enclosures, and panelboards with a minimum of four (4) anchors. Use spring-lock washers under all nuts. All supports installed in the wet well and/or valve vault shall be corrosion resistant. Install supports with stainless steel hardware.

Concrete work associated with support structures shall conform to Section 1020 PORTLAND CEMENT CONCRETE of the Standard Specifications for Road and Bridge Construction and as detailed on the Plans.

Installation of Separately Mounted Circuit Breaker

Secure circuit breaker to structure as shown on Plans. Provide stainless steel strut to secure electrical equipment. Mounting hardware shall be corrosion resistant stainless steel. Install equipment enclosures plumb.

Provide weatherproof, abrasion resistant, legend plates and for circuit breaker indicating function of the equipment and/or device being fed.

Bond all enclosures to ground with a ground lug or screw and a ground wire. Install grounding bushings with ground wire connections between the bushing and the ground bus at all metal conduit terminations to the enclosures.

Provide NEMA 4 hubs for all conduit entries into equipment enclosures that are rated NEMA 4X

to maintain NEMA 4, 4X rating.

Inspect circuit breakers and manual transfer switch for proper operation, tight and secure connections, and correctness. Adjust as necessary to assure proper operation.

Grounding Requirements

Grounding shall conform to the following as applicable: The Contractor shall furnish and install all grounding shown on the Plans and/or as may be necessary or required to make a complete grounding system as required by the latest National Electrical Code (NFPA 70) in force. The reliability of the grounding system is dependent on careful, proper installation and choice of materials. Improper preparation of surfaces to be joined to make an electrical path, loose joints, or corrosion can introduce impedance that will seriously impair the ability of the ground path to protect personnel and equipment and to absorb transients that can cause noise in communications circuits. The following functions are particularly important to ensure a reliable ground system:

A. All products associated with the grounding system shall be UL-listed and labeled.

B. All bolted or mechanical connections shall be coated with a corrosion preventative compound before joining. Sanchem "NO-OX-ID A Special" compound, Burndy Penetrox E is an approved product. Alternate products will be allowed but must meet this specification and be approved by the Engineer.

C. Metallic surfaces to be joined shall be prepared by the removal of all non-conductive material, per National Electrical Code Article 250-12.

D. Metallic raceway fittings shall be made up tight to provide a permanent low impedance path for all circuits. Metal conduit terminations in enclosures shall be bonded to the enclosure with UL-listed fittings suitable for grounding. Provide grounding bushings with bonding jumpers (from bushing to the respective ground connection/enclosure frame) for all metal conduits entering service equipment (meter bases, CT cabinet, service disconnects, service panelboards, main service breaker enclosure, etc.). Provide grounding bushings with bonding jumpers for all metal conduits entering an enclosure through concentric or eccentric knockouts that are punched or otherwise formed so as to impair the electrical connection to ground. Standard locknuts or bushings shall not be the sole means for bonding where a conduit enters an enclosure through a concentric or eccentric knockout.

E. Furnish and install ground fields, and or ground rods at all locations where shown on the Plans or specified herein. Ground rods for electrical installations shall be 3/4 in. diameter by 10 ft long, UL-listed, copper clad with 10 mil. minimum copper coating. Top of ground rods shall be a minimum of 30 in. below finish grade unless otherwise noted on the Plans. Ground rods shall be spaced as detailed on the Plans and in no case spaced less than one (1) rod length apart. All connections to ground rods and/or ground fields shall be made with exothermic weld type connectors, Cadweld by Erico Products, Inc., Solon, Ohio, (Phone 1-

F. 800-248-9353), or Thermoweld by Continental Industries, Inc., Tulsa, Oklahoma (Phone 918-663-1440). Exothermic weld connections shall be installed in conformance with the respective manufacturer's directions using molds as required for each respective application. Bolted connections will not be permitted at ground rods or at buried grounding electrode conductors. Grounding electrode conductors shall be bare stranded copper sized as detailed on the Plans. In addition to the grounding work described herein and shown on the Plans, the Contractor shall test the made electrode ground field with an instrument specifically designed for testing ground field systems. If ground resistance exceeds 10 Ohms, contact the Engineer for further direction. Copies of ground field test results shall be furnished to the Engineer, upon request, for review and record purposes.

G. All connections, located above grade, between the different types of grounding conductors shall be made using UL-listed double compression crimp-type connectors or UL-listed bolted ground connectors. For ground connections to enclosures, cases and frames of electrical equipment not supplied with ground lugs the Contractor shall drill required holes for mounting a bolted ground connector. All bolted ground connectors shall be Burndy, Thomas and Betts, or equal. Tighten connections to comply with tightening torques in UL Standard 486A to assure permanent and effective grounding.

H. All metal equipment enclosures, conduits, cabinets, boxes, receptacles, motors, etc. shall be bonded to the respective grounding system.

I. Each feeder circuit and/or branch circuit shall include an equipment ground wire. The equipment ground wire shall not be smaller than allowed by NEC Table 250-122 "Minimum Size Conductors or Grounding Raceway and Equipment." When conductors are adjusted in size to compensate for voltage drop, equipment-grounding conductors shall be adjusted proportionately according to circular mil area. All equipment ground wires shall be copper either bare or insulated green in color. Where the equipment grounding conductors are insulated, they shall be identified by the color green and shall be the same insulation type as the phase conductors.

(1) Provide all boxes for outlets, switches, circuit breakers, etc. with grounding screws. Provide all control panel, transfer switch, etc. enclosures with grounding bars with individual screws, lugs, clamps, etc. for each of the grounding conductors that enter the respective enclosures. Do not terminate more than one (1) ground wire in ground lug or terminal unless the respective lug or terminal is rated for multiple conductors.

J. Equipment ground wires shall be identified with green colored insulation for all conductors AWG or Kcmil. Green tape shall not meet this requirement.

K. All utility transformer bank grounds shall be installed in accordance with the

serving utility company's recommendation and in accordance with NEC.

L. Bond the main electrical service neutral to ground at the main service disconnect. Bond the service neutral to ground at one (1) location only per the National Electrical Code. A grounding connection shall not be made to any neutral circuit conductor on the load side of the service disconnecting means, except as permitted by NEC 250-24.

M. All exterior metal conduit, where not electrically continuous because of non-metallic junction boxes, etc., shall be bonded to all other metal conduit in the respective duct run, and at each end, with a copper bonding jumper sized in conformance with NEC 250-102. Where metal conduits terminate in an enclosure (such as a motor control center, switchboard, etc.) where there is not electrical continuity with the conduit and the respective enclosure, provide a bonding jumper from the respective enclosure ground bus to the conduit sized per NEC 250-102.

N. Install grounding electrode conductors and/or individual ground conductors in Schedule 40 or Schedule 80 PVC conduit. Where grounding electrode conductors or individual ground conductors are run in PVC conduit, Do Not completely encircle conduit with ferrous and/or magnetic materials. Use non-metallic reinforced fiberglass strut support. Where metal conduit clamps are installed, use nylon bolts, nuts, washers and spacers to interrupt a complete metallic path from encircling the conduit.

INSTALLATION AND TESTING OF PUMP CONTROL PANEL

Installation

A. Control panel shall be installed per manufacturer's recommendations as detailed on the Plans and as specified herein.

B. All conduit entries into the panel enclosure shall have water-tight threaded hubs, UL-listed for the use with the respective NEMA 4, 4X enclosure to maintain the NEMA 4, 4X rating of the panel enclosure.

C. Seal conduit openings in the panel enclosure with duct seal.

D. Conduits with intrinsically safe wiring, including level switch cables, shall terminate in the control panel at the intrinsically safe wiring section. Non-intrinsically safe wiring including, but not limited to, power feeder conductors, branch circuit conductors, and pump motor cables shall not enter the control panel at the intrinsically safe wiring section and shall maintain a minimum separation distance inside the control panel from the intrinsically safe conductors as required by NEC 504 and ANSI/ISA RP12.6.

E. Install explosion-proof conduit seal-off sittings as detailed on the Plans and in conformance with manufacturer's instructions. Contact the respective conduit seal-off manufacturer if assistance is required for direction of installing the packing fiber to form a dam and pouring the sealing compound.

F. Install level switches as detailed on the Plans and per manufacturer's directions and recommendations. Verify level elevations with Engineer and Pump Manufacturer's Service Representative and adjust as required. Secure slack level switch cable to cable hangers with corrosion resistant nylon cable ties. Connect equipment ground wires from individual level switches to the respective equipment ground bar in the pump control panel.

G. Terminate all equipment ground wires on the pump control panel equipment ground bar. Where pump motor cables include an equipment ground wire and an additional "ground check" wire both ground wires shall be terminated on the equipment ground wire. Where level switch cables include an equipment ground wire terminate the respective ground wire on the control panel equipment ground bar.

Testing

Contractor shall provide services of the pump control panel manufacturer's representative for the purpose of inspection, check-out, testing, start-up, instruction of user personnel, and any other required services to provide a complete and operational system. All tests shall be conducted in the presence of the Engineer. Contractor shall provide water as/if required to test pumps under load. Contractor shall furnish three (3) copies of test results to Engineer. Contractor shall also furnish three (3) copies of Operation and Maintenance Manuals, for operator personnel use, to the Engineer.

Start-up procedure and tests shall include, but not be limited to, the following, as well as other tests and requirements specified herein:

A. Conduct megger test on each motor, (see Motor Start Up Certification and Testing Report).

B. Inspect control panel for correct terminal connections and tightness, correct and tighten as required.

C. Check level switches and corresponding circuitry for proper operation.

D. Check oil in motors (where applicable).

E. Check for correct rotation of pump motors, correct as required.

F. Check for proper pump installation and operation.

G. Measure voltage at no load (pumps off) and at pumps running under load for each pump motor.

H. Measure current in each phase with motor running under load for each pump motor.

I. Verify proper operation of pump motor thermal sensors (where applicable).

J. Run the pumps in automatic and manual modes of operation. Verify proper operation of alternator.

K. Simulate alarm conditions and verify proper annunciation of each alarm on the automatic phone dialer system.

L. Verify a label is provided on the pump control panel with the name, address, phone number, and emergency phone number of the service representative.

M. Verify proper operation of all pilot lights and alarm lights.

N. Test receptacles for proper output power and proper operation.

O. Instruct user personnel about the operation of the control panel and components, indicating items for routine maintenance check, operation modes, failure modes, alarm conditions, etc.

P. Conduct any additional tests as recommended or required by the manufacturer.

Q. Correct any defects or deficiencies and retest after corrective and/or repair work has been performed to confirm proper operation of the system.

MARKING AND LABELING

Legend plates shall be provided for all equipment. Legend plates shall be provided to identify the equipment controlled, the power source, and the function of each device. Each individual circuit breaker, control panel, safety switch, shall be furnished with a phenolic engraved legend plate that identifies the respective device, the power source, and the respective voltage, phase, and wire. Furnish additional phenolic engraved legend plates as detailed on the Plans and/or where required by code. Legend plates shall be weatherproof and abrasion resistant phenolic/plastic engraved material and fastened with contact type permanent adhesive, screws, or rivets. Installation shall not break, crack, or deform the legend plate. Lettering shall be 1/4 in. high or larger. Equipment that is powered from a utility power source only (for example the main service disconnect) shall have black lettering on a white background. Equipment that is powered from a emergency source only (for example the generator breaker) shall have black lettering on a yellow background. Equipment that is normally powered from the utility and backed up by portable generator (for example the manual transfer switch) shall have white lettering on a red background.

Furnish and install weatherproof warning label for each meter socket, enclosed circuit breaker, disconnect switch, and control panel to warn persons of potential electric arc flash hazards, per the requirements of NEC 110.16 "Flash Protection." Labels shall also conform to ANSI Z535.4-2002 "American National Standard for Product Safety Signs and Labels." NEC 110.16 requires that switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized shall be field marked to warn qualified persons of potential arc flash hazards. The markings shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment. This new requirement is intended to help reduce the occurrence of serious injury or death due to arcing faults to those working on or near energized electrical equipment. The warning labels are to indicate to a qualified worker who intends to open the equipment for analysis of work that a serious hazard exists and that the worker should follow appropriate work practices and wear appropriate personal protective equipment (PPE) for the specified hazard. Labels shall be as detailed on the Plans or shall include at least the following information: Warning – Potential Arc-Flash Hazards existing while working on this energized equipment. Appropriate PPE Required."

Measurement and Payment: This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, coordination, and testing required to complete the installation of the pump station and to place it into proper working order. The duplex pump control panel shall be furnished by the respective pump manufacturer's representative and installed by the Electrical Contractor. The furnishing of the duplex pump control panel and pump manufacturer representative's services shall not be included with this item and shall be included in the contract price for PUMPING STATION. The installation of the Duplex Pump Control Panel and all associated electrical work and coordination shall be included with this item.

PUMP STATION MECHANICAL WORK

Description: This work shall consist of the 10-inch ductile iron piping, fittings, valves, steel pipe supports, and the 2" Schedule 40 drain with check valve in the valve vault and Drainage Structures, No. 2.

Ductile Iron Piping

The 10-inch ductile iron piping with flanged joints shall conform to ANSI/AWWA C115/A21.15. The pipe shall have a cement mortar lining with asphaltic coating inside and out conforming to ANSI/AWWA C104/A21.4 Gaskets shall be constructed of molded SBR rubber meeting ANSI/AWWA C111/A21.11. Fastening hardware shall be low carbon steel conforming to ASTM A307.

All pressure main fittings shall be flanged joint (FL.) ductile iron, unless otherwise indicated on the Plans. All fittings shall conform to ANSI A21.10 (AWWA C110), or ANSI A21.53 (AWWA C153), where possible. Minimum pressure rating shall be 350 psi. If shown or specified fittings are unavailable in the above standards, the manufacturer's standard may be used upon approval of

the ENGINEER. All rubber gaskets shall conform to ANSI A21.11 (AWWA C111). All fittings shall have cement mortar lining and seal coat per ANSI A21.40 (AWWA C104).

Swing Check Valve

Swing check valves shall be flanged with a weighted lever arm and shall be the end product of one manufacturer. The swing check valves shall be installed per the valve manufacturer's instructions.

Swing check valves shall conform to ANSI/AWWA C508, Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) MMS-SP-71 and MMS-SP-80, and ASTM D- 1784.

The swing check valve shall utilize a thru-valve disc hinge shaft, with outside lever and weight. The valve shall be designed for either horizontal or vertical installation, as shown on the drawings. The valve shall provide a resilient material to metal seat, and a full waterway design, as defined in AWWA C508.

Swing check valve body shall be ASTM A126 Class B cast iron. The valve body shall be flanged and of one-piece construction and constructed in a globe pattern. The valve outlet flange shall be integrally cast with the valve body and shall be one nominal pipe size larger than the valve inlet flange. Valve body shall be full waterway type, designed to provide a net flow area not less than the nominal inlet pipe size area when swung open no more than 25 degrees. Valve shall have a replaceable bronze body seat. Body seat materials shall be cast bronze meeting AWWA C508.

Swing check valve shall provide full pipeline flow area with disc at 25 degrees open and shall allow for 45 degrees total disc rotation. The disc shall be stopped in its full open position by a built-in stop in the valve body. The disc shall be constructed of cast or ductile iron with a minimum strength of 30,000 psi. The disc seat ring (resilient seal) shall be a rubber like material and shall be selected by the manufacturer in accordance with potable water requirements, as given in AWWA C508. The disc attachment arm shall be constructed of ductile iron or steel with a minimum strength of 65,000 psi. The disc attachment arm shall be prevented from rotation on the disc hinge shaft by a machined keyway and stainless-steel key.

The counterweight arm(s) shall be constructed of steel and shall be secured to the disc hinge shaft by a stainless-steel key. The counterweight shall be constructed of cast iron and shall be secured in position on the counterweight lever by a stainless-steel lock screw.

The swing check valve body assembly shall incorporate a circular flanged cover of the same construction as the valve body. The cover shall be of adequate size to permit field inspection, maintenance, and replacement of all internal valve components. The valve seat, disc seal ring, and mating surface shall be field removable and replaceable without removing the valve from the pipeline.

The Contractor, in conjunction with the swing check valve manufacturer, shall make adjustments in the position of the lever weight to achieve optimum no-slam operation.

Plug Valves
Plug valves shall be flanged with gear operators and hand wheel and shall be the end product of one manufacturer. The plug valves shall be installed per the valve manufacturer's instructions. Plug valves shall be of the non-lubricating, eccentric type and shall be designed for a working pressure of 150 psi. Valves shall provide tight shut-off at rated pressure.

The valve shall have a 100% port design. The valve body shall be cast iron ASTM A126 Class B with welded in overlay of 99 percent nickel allow content on all surfaces contacting the face of the plug. The valve plug shall be ductile iron ASTM A-536, Grade 65-45-12 with Buna N resilient seating surface to mate with the body seat.

The plug valves shall be furnished with permanently lubricated sleeve type bearings conforming to AWWA C517. Bearings shall be of sintered oil impregnated type 316 stainless steel ASTM A-743 Grade CF-8M or bronze ASTM B-127.

Valve shaft seals shall be of the "U" cup type, in accordance with AWWA C517. Seals shall be self-adjusting and re-packable without moving the bonnet from the valve.

Steel Pipe Supports
Steel pipe supports shall be utilized within the valve vault for the 10" fittings, and valves. Pipe supports shall be bolted to the floor of the vault and shall be designed to cradle the diameter of pipe they are supporting.

Valve Vault Drain
2-inch Polyvinyl Chloride (PVC) pipe shall be ASTM D2665 drain, waste, vent pipe. The drain shall be furnished and installed in accordance with Section 20 of the Standard Specifications for Water & Sewer Main Construction in Illinois, as shown on the Plans and as specified herein.

The backfill for the piping shall be controlled low strength material, mix 2 when in the vicinity of the Drainage Structures, No. 2 and the valve vault. The Contractor is responsible for any additional fittings required to plumb the drain from the valve vault to the Drainage Structures, No. 2.

The annular space around the pipe shall be sealed with non-shrink grout where it penetrates the walls of the valve vault and drainage structure.

The 2-inch check valve shall be a 2-inch ball check with integral unions to connect to the 2-inch drain pipe. The check valve shall be able to be installed in a vertical or horizontal position and still function.

General: This work includes all excavation, labor, materials and equipment required to furnish, and install the 10-inch ductile iron pipe both flanged and push on, fittings, valves, steel pipe supports, 2-inch Schedule 40 drain pipe, 2-inch check valve, pipe and rail supports, backfilling, grout, controlled low strength material, accessories, testing, and other incidental items as shown on the plans.

Basis of Payment: This work will be paid for at the contract lump sum price for PUMP STATION MECHANICAL WORK.

STORM SEWER CONNECTION

Description: This work shall consist of furnishing and installing 36-inch diameter ductile iron pipe, tunnel excavation, and grout with fill and vent pipes. The Storm Sewer Connection shall be constructed after Drainage Structures, No. 1 and No. 2 have been installed and backfilled.

Drainage Structures, No. 1 and No. 2 shall be connected by a 36-inch diameter ductile iron pipe. Drainage Structures No. 1 and No. 2 will have block-outs for the pipe cast into the base sections. The block-outs should be a minimum of 2-inches larger than the outside diameter of the ductile iron pipe. The 36-inch diameter pipe shall be installed by short tunnel excavation or micro- tunneling to remove the rock and grout between the Drainage Structures. The excavation limits shall extend just beyond the outside diameter of the 36-inch diameter ductile iron pipe. The 36-in class 52 ductile iron pipe shall meet AWWA C151.

The grout shall meet the requirements of Section 1024 of the Standard Specifications and shall have a minimum strength of 5000 psi at 28 days.

Once the tunnel has been excavated, and the 36-inch diameter ductile iron pipe has been installed, the pipe shall be sealed to Drainage Structures, No. 1 and No. 2 with a non-shrink grout and 2-inch diameter grout fill and vent ports.

Once the sealing grout has cured, the annular space between the rock and the pipe shall be grouted with a non-shrink low density, high flow grout until the material exits the vent. Once the grout has cured, the grout pipes shall be cut off flush with the interior of Drainage Structures, No. 1 and No. 2.

All rock, dirt, and debris in the Drainage Structures shall be completely removed and disposed of in accordance with Section 202.03 of the Standard Specifications.

General: This work includes the excavation, labor, materials, and equipment required to furnish and install the 36-inch diameter ductile iron pipe, grout, vent and fill ports, and other incidental items as shown on the plans.

Basis of Payment: This work will be paid for at the contract unit price per each for STORM SEWER CONNECTION.

STORM SEWERS JACKED IN PLACE, 18”

Description: This work shall be in accordance with Section 552.04 of the Standard Specifications and as specified in this Special Provision.

Steel casing shall conform to the requirements of AWWA C200 and ASTM A139, Grade “B” with

a minimum yield strength of 35,000 psi and be a minimum 0.50" thick. The pipe shall be coated externally with coal tar epoxy or bituminous asphalt. The casing shall be shop cut with ends square with centerline, leveled and welded so that the entire length of the casing shall be straight and true. Weld seams in the field shall be field applied with coal tar epoxy or bituminous asphalt.

The 18-in diameter carrier pipe shall be solid wall PVC PS46 pipe meeting ASTM F679. The pipe shall have push on joints with gaskets meeting ASTM F477. The joint design shall meet the requirements of ASTM D3212.

The carrier pipe shall be center restrained by the use of casing spacers. The casing spacers shall be constructed of non-reactive material designed specifically for that purpose. The spacers shall be positioned within 6 in. from the end of the casing, on each side of joint in the carrier pipe, and at the midpoint of each pipe length. Spacers constructed of wood and steel banding are not acceptable. End seals shall be made of synthetic rubber, conical shape, pull-on or wrap-around style with Type 304 stainless steel bands.

The steel casing alignment falls between two tangent piles of the bridge structure. The Directional Boring shall not penetrate a tangent pile. If a tangent pile is hit during jacking and boring operations, the Owner shall be contacted immediately and boring operations shall cease until permission to proceed from the structural engineer.

Upon completion of the bore the Contractor shall backfill the bore pit with granular embankment in accordance with Section 206 of the Standard Specifications. The granular embankment will not be paid for per Section 206 but shall be included in the cost of STORM SEWERS JACKED IN PLACE, 18".

All spoils and debris shall be removed and disposed of from the jacking pit, the underpass, and Drainage Structures, No. 1 in accordance with Section 202.03 of the Standard Specifications once jacking and boring operations are complete.

General: This work includes the excavation, shoring, labor, materials, and equipment required to furnish and install the 30" steel jacking pipe via jacking operations, welding, 18" in PVC carrier pipe, casing spacers, casing end seals, excess material removal, granular embankment and other incidental items as shown on the plans.

Basis of Payment: This work will be paid for at the contract unit price per foot for STORM SEWERS JACKED IN PLACE, 18".

SUNSHELTER

Description: This work shall consist of the design, fabrication, storage, delivery, and erection of a welded steel, prefabricated sunshelter with roof according to the dimensions shown in the plans. Also included in this work shall be the furnishing and installation of a concrete foundation and miscellaneous items as indicated on the plans.

Materials:

Tube Support and Roof Frame

Structural steel shall conform to the requirements of Section 1006 of the Standard Specifications, ASTM A500, Gr. B square and rectangular tubing, ASTM A36 structural steel, as applicable, unless otherwise shown on the plans or approved by the Engineer. All structural steel field connections shall be bolted with high strength bolts. The high strength bolts shall be mechanically galvanized according to the requirements of Article 1006.08(a) of the Standard Specifications. Structural steel shall be detailed, fabricated, and erected in accordance with the latest edition of the American Institute of Steel Construction (AISC) Specification Manual. All welding is performed by American Welding Society certified welders and conforms to the latest edition of AWS D1.1 or D1.3 as required.

Roofing

The materials shall comply with the applicable portions of the materials section of the Standard Specifications.

The metal roofing shall be 24 Gage and shall be galvanized per ASTM A653 with a G90 min. coating designation. Installing, fastening, trimming, cutting and overlapping the metal roofing shall be according to the manufacturer.

Concrete Foundation

The concrete foundation shall conform to the requirements of Section 878 of the Standard Specifications.

Design: The control panel support and sunshelter shall conform to the clear height, clear width, and configuration shown on the contract plans. The design and detailing shall be completed by the manufacturer. The design shall be according to the International Building Code (IBC).

Prior to beginning construction or fabrication, the Contractor shall submit design calculations and six sets of shop drawings for each sunshelter and concrete foundations to support the sunshelter to the Engineer for review and approval.

Construction: Sunshelter erection procedures shall be according to the manufacturer's instruction.

Basis of Payment: The sunshelter will be paid for at the contract unit price per each for SUNSHELTER which price shall include the concrete foundation.

TRAFFIC SIGNAL

ELECTRIC CABLE IN CONDUIT

Description: This work shall consist of furnishing and installing electric cable of the type size and number of conductors specified, in accordance with the requirements of Section 873 and 1076.04 of the Standard Specifications for Road and Bridge Construction except as described herein.

All stranded wire connections in signal heads, push buttons, terminal compartments shall be made with insulated spade connections.

Cables shall be identified by color coded tape applied at both the signal and controller ends. The color-coding shall be as shown on the plans.

Basis of Payment: This work will be paid for at the contract unit price per foot (meter) for ELECTRIC CABLE IN CONDUIT of the type, size, and number of conductors specified.

FIBER OPTIC CABLE

Description: This work shall consist of furnishing and installing a fiber optic cable in accordance with the requirements of Sections 871 and 1076.02 of the Standard Specifications for Road and Bridge Construction and the following additions.

All fibers within the cable shall be terminated. The multimode fiber shall be terminated with an ST connector and the single mode fiber shall be terminated with a SC connector. The connector type shall be either hot-melt, epoxy, or crimp-on. The connectors shall meet TIA/EIA 568B specifications and shall have an operating temperature range of 14°F (-10°C) to 140°F (60°C). The connectors shall be free from defects in material and manufacture for 6 months. Unused fibers shall be secured within the distribution enclosure and readily available for use.

Locator Wire: A #14 AWG minimum, THHN wire shall be installed along side of the fiber optic cable. The wire shall be secured in the control cabinet to prevent accidental removal. The locator wire shall not be terminated to the control facility. If the existing interconnect cable remains in place in a continuous run between cabinets, then the locator wire may be omitted.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for FIBER OPTIC CABLE, of the method of installation (in conduit or on messenger), of the type, size, and number of fibers indicated on the plans.

FULL-ACTUATED CONTROLLER AND CABINET

Description: This item shall consist of furnishing, installing and placing into operation a multi- phase microprocessor-based controller at the location(s) indicated on the plans, or as directed by the Engineer. The controller shall comply with the requirements of Sections 857, 1073.01 and 1074.03 of the Standard Specifications for Road and Bridge Construction and the following additions or exceptions.

General: The controller shall meet or exceed the requirements of the NEMA TS2 standards for a Type 1 controller. Data entry shall be by keyboard or personal computer. The controller shall be fully compatible with the NTCIP Standard.

The controller shall be an Econolite Cobalt controller.

If rivets are exposed on the outside of the cabinet, they shall be either stainless steel or aluminum to prevent oxidation.

Type IV Cabinet: The bottom edge of the main back panel for Type IV Cabinets shall be a minimum of 24" from the bottom of the cabinet enclosure to allow installation of an additional shelf and signal equipment if necessary.

The controller cabinet shall contain a pullout tray for placement of a laptop computer. The controller cabinet shall have a door switch that will turn off the video detection monitor when the cabinet door is closed.

The controller timings shall be stored in a hot swappable storage device that can be inserted or removed without powering down the controller. The device shall be capable of storing the entire controller database and the controller shall be capable of functioning without the storage device present.

There shall be three communications ports. Port 1 shall be a high-speed serial bus for communications with the Malfunction Management Unit, Terminals and Facilities, and detection. Communications shall be SDLC format with defined protocol, EIA RS-485 interface. Port 2 shall be an EIA RS-232C interface to allow use of a personal computer for data entry and transfer of status and events or output of timing and operational data to a printer. Port 3 shall be for systems interface. The controller shall also have an Ethernet port that shall support 10/100 Base T networks.

Coordination: The coordinator shall provide a minimum of twenty timing plans with a minimum of one cycle length, one set of splits and three offsets per timing plan. Cycle lengths shall be adjustable from 30-255 seconds, splits and offsets shall be set in seconds or percent, and offsets reference to beginning of green of the first served coordinated phase.

Diagnostics: The controller and terminal facility shall have full diagnostics in accordance with the NEMA TS2 standard.

Malfunction Management Unit: The malfunction management unit shall be a Type 1 sixteen channel with three inputs per channel.

Terminals and Facilities: The terminal facilities shall have TS1 compatible load switches, flasher and flash transfer relay. The load switches shall contain two LED indicators per circuit to provide information concerning the circuit input and output states. The backpanel must accommodate 16 load switches.

All main panel wiring shall conform to the following wire size and color:

Green/Walk load switch output	brown wire, 14 gauge
Yellow load switch output	yellow wire, 14 gauge
Red/Don't Walk load switch output	red wire, 14 gauge
MMU (other than AC power)	violet wire, 22 gauge

Controller I/O		blue wire, 22 gauge
AC Line - power panel to main panel (1 for each 4 LS)		black wire, 10 gauge
AC Line – main panel		black wire, 14 gauge
AC Neutral – power panel to main panel		white wire, 10 gauge
Earth ground – power panel		green wire, 8 gauge
Flash programming	flasher terminal	orange wire,14 gauge
Red or yellow field terminal		black wire, 14 gauge

The main panel shall incorporate a relay to remove +24 VDC from the common side of the load switches when the intersection is placed into flash. The relay shall have a momentary pushbutton to apply power to the load switch input for troubleshooting.

A Bus Interface Unit (BIU) shall be used for I/O electronics.

Detection interface to the controller shall be through a BIU.

The surge suppression for the controller cabinet shall be an EDCO SHA 1250, base mounted. The normally open contacts of the suppressor shall be wired to the alarm 2 input of the controller for system monitoring.

Basis of Payment: This item will be paid for at the contract unit price per each for FULL-ACTUATED CONTROLLER AND CABINET, of the sequence, phasing, and cabinet shown on the plans.

FULL-ACTUATED CONTROLLER IN EXISTING CABINET

Description: This item shall consist of furnishing, installing and placing into operation a multi- phase microprocessor-based controller at the location(s) indicated on the plans, or as directed by the Engineer. The controller shall comply with the requirements of Sections 857, 1073.01 and 1074.03 of the Standard Specifications for Road and Bridge Construction and the following additions or exceptions.

General: The controller shall meet or exceed the requirements of the NEMA TS2 standards for a Type 1 controller. Data entry shall be by keyboard or personal computer. The controller shall be fully compatible with the NTCIP Standard.

The controller shall be an Econolite Cobalt controller.

The contractor shall replace the existing traffic signal controller with the proposed controller in the existing cabinet at the intersections of Washington Street with 9th Street and 11th Street; and Capitol Avenue with 9th Street and 11th Street

The controller cabinet shall contain a pullout tray for placement of a laptop computer.

The controller timings shall be stored in a hot swappable storage device that can be inserted or removed without powering down the controller. The device shall be capable of storing the entire controller database and the controller shall be capable of functioning without the storage device present.

There shall be three communications ports. Port 1 shall be a high-speed serial bus for communications with the Malfunction Management Unit, Terminals and Facilities, and detection. Communications shall be SDLC format with defined protocol, EIA RS-485 interface. Port 2 shall be an EIA RS-232C interface to allow use of a personal computer for data entry and transfer of status and events or output of timing and operational data to a printer. Port 3 shall be for systems interface. The controller shall also have an Ethernet port that shall support 10/100 Base T networks.

Coordination: The coordinator shall provide a minimum of twenty timing plans with a minimum of one cycle length, one set of splits and three offsets per timing plan. Cycle lengths shall be adjustable from 30-255 seconds, splits and offsets shall be set in seconds or percent, and offsets reference to beginning of green of the first served coordinated phase.

Diagnostics: The controller and terminal facility shall have full diagnostics in accordance with the NEMA TS2 standard.

Malfunction Management Unit: The malfunction management unit shall be a Type 1 sixteen channel with three inputs per channel.

Terminals and Facilities: The terminal facilities shall have TS1 compatible load switches, flasher and flash transfer relay. The load switches shall contain two LED indicators per circuit to provide information concerning the circuit input and output states. The backpanel must accommodate 16 load switches.

All main panel wiring shall conform to the following wire size and color:

Green/Walk load switch output		brown wire, 14 gauge
Yellow load switch output		yellow wire, 14 gauge
Red/Don't Walk load switch output		red wire, 14 gauge
MMU (other than AC power)		violet wire, 22 gauge
Controller I/O		blue wire, 22 gauge
AC Line - power panel to main panel (1 for each 4 LS)		black wire, 10 gauge
AC Line – main panel		black wire, 14 gauge
AC Neutral – power panel to main panel		white wire, 10 gauge
Earth ground – power panel		green wire, 8 gauge
Flash programming	flasher terminal	orange wire,14 gauge
Red or yellow field terminal		black wire, 14 gauge

The main panel shall incorporate a relay to remove +24 VDC from the common side of the load switches when the intersection is placed into flash. The relay shall have a momentary pushbutton to apply power to the load switch input for troubleshooting.

A Bus Interface Unit (BIU) shall be used for I/O electronics.

Detection interface to the controller shall be through a BIU.

The surge suppression for the controller cabinet shall be an EDCO SHA 1250, base mounted. The normally open contacts of the suppressor shall be wired to the alarm 2 input of the controller for system monitoring.

Basis of Payment: This item will be paid for at the contract unit price per each for FULL-ACTUATED CONTROLLER IN EXISTING CABINET, of the sequence, phasing, and cabinet shown on the plans.

PEDESTRIAN SIGNAL HEAD, POLYCARBONATE, L.E.D., BRACKET MOUNTED WITH COUNT DOWN TIMER

Description: This work shall consist of furnishing and installing a pedestrian signal head with countdown timer and with the number of faces indicated on the plans in accordance with Sections 881 and 1078.02 of the Standard Specifications for Road and Bridge Construction and the following additions or exceptions.

Optical Unit: The optical unit shall be compliant with Section 4E.07 of the 2009 MUTCD. All Walk and Don't Walk indications shall be illuminated with light emitting diodes (LED). The LED's shall display a portland orange filled hand and a lunar white filled walking person. All countdown number indications shall consist of two (2) rows of LED's displaying portland orange numerals and shall have a minimum height of 6 inches. The countdown timer shall be capable of automatically adjusting to the programmed intervals in the traffic signal controller. LED modules shall conform to ITE specifications and standards for LED vehicle traffic signal modules and the following:

1. The LED module shall operate between -40 deg F and +165 deg F throughout an operating voltage range of 80 VAC to 135 VAC.
2. The lens of each indication shall be tinted with a wavelength-matched color or textured to reduce sun phantom effect and enhance on/off contrast. The tinting shall be uniform across the lens face. If a polymeric lens is supplied, a surface coating shall be applied to provide abrasion resistance.
3. LED modules shall not contain Aluminum Gallium Arsenide (AlGaAs) LED's.
4. LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set to a non-dimming operation.
5. In the event of a power outage, light output from the LED module shall cease instantaneously.
6. The LED module shall have a minimum life expectancy of 5 years.

Warranty Provisions: The LED modules which exhibit luminous intensities less than the minimum values specified within the first 60 months of the date of delivery shall be promptly replaced or repaired by the manufacturer at no cost to the state.

Basis of Payment: This item will be paid for at the contract unit price per each for PEDESTRIAN SIGNAL HEAD, POLYCARBONATE, L.E.D., BRACKET MOUNTED WITH COUNTDOWN TIMER with the number of faces indicated on the plans.

UNDERGROUND CONDUIT

Description: This work shall consist of furnishing and installing a conduit of the type and size specified in accordance with Sections 810 and 1088.01(b) or 1088.01(c) of the Standard Specifications for Road and Bridge Construction except as described herein.

PVC Conduits: When it is necessary to connect PVC conduit to steel conduit a heavy wall set screw connector with a PVC female adapter shall be installed and sealed by duct seal and plastic tape.

When conduits are installed in the excavation in back of curb, the conduit shall be installed below driveway and entrances at a depth which will prevent the conduit from protruding into the entrance pavement material.

PVC Conduit, Augered: The term augered shall cover both the pushed and bored method of installing conduit. Because of differences in equipment and techniques, the contractor may use either method to install the conduit for the term AUGERED.

In the event that latent subsurface physical conditions are encountered which prevents the conduit of pilot hole from being augered or pushed through the entire conduit run in three (3) sincere attempts, as determined by the Engineer, compensation for the proposed conduit run will be as follows:

1. The Department will delete the contract specified method of payment for the subject conduit run.
2. The Department will pay for the installation of the conduit run and the three unsuccessful attempts to install the conduit run, under Article 109.04 of the Standard Specification on the force account basis.
3. The Engineer will determine the method to be utilized to install the conduit run.

Basis of Payment: This work will be paid for at the contract unit price per foot (meter) for UNDERGROUND CONDUIT, of the size and type specified.

TRAFFIC SIGNAL BACKPLATE, RETROREFLECTIVE

Description: This work shall consist of furnishing and installing a traffic signal backplate in accordance with Sections 882 and 1078.03 of the Standard Specifications for Road and Bridge Construction and the following exceptions.

The traffic signal backplates shall be of the same material as the traffic signal heads as specified on the plans.

The following modifications shall be made to Art. 1078.03 TRAFFIC SIGNAL BACKPLATE paragraph 4: A three (3) inch wide strip of reflective sheeting shall be applied to the outside perimeter of the face of the backplates. The reflective tape shall be fluorescent yellow in color and shall consist of type ZZ sheeting.

Basis of Payment: This item will be paid for at the contract unit price per each for TRAFFIC SIGNAL BACKPLATE, RETROREFLECTIVE.

PEDESTRIAN PUSH-BUTTON POST

Description: This work shall be in accordance with Section 876 and 1077 of the Standard Specifications except as modified herein.

This work will consist of furnishing and installing a pedestrian pushbutton post.

The pedestrian pushbutton post shall be constructed from 3" diameter galvanized steel pipe as shown in the pedestrian push button post detail and in accordance with applicable portions of Highway Standard 876001.

Pedestrian push button posts to have a black finish.

The Contractor shall verify all field conditions prior to bidding. There will be no additional compensation for this work.

Basis of Payment: This work will be paid for at the contract unit price per Each for PEDESTRIAN PUSH-BUTTON POST and shall be payment in full for all labor, materials, and equipment required to furnish and install the pedestrian pushbutton post as described above, complete.

ACCESSIBLE PEDESTRIAN SIGNALS

Description: This work shall consist of furnishing and installing pedestrian push button accessible pedestrian signals (APS) type. Each APS shall consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a light emitting diode (LED) indicator light, a solid state electronic control board, a power supply, wiring, and mounting hardware. The APS shall meet the requirements of the MUTCD and Sections 801 and 888 of the Standard Specifications, except as modified herein.

Electrical Requirements: The APS shall operate with systems providing 95 to 130 VAC, 60 Hz and throughout an ambient air temperature range of -29 to +160 °F (-34 to +70 °C).

The APS shall contain a power protection circuit consisting of both fuse and transient protection.

Audible Indications: A pushbutton locator tone shall sound at each pushbutton with volume settings a maximum of 5 dBA louder than ambient sound.

If two accessible pedestrian pushbuttons are placed less than 10 ft (3 m) apart or placed on the same pole, the audible walk indication shall be a speech walk message.

A clear, verbal message shall be used to communicate the pedestrian walk interval. This message shall sound throughout the WALK interval only. The verbal message shall be modeled after: "Street Name." Walk Sign is on to cross "Street Name." No other messages shall be used to denote the WALK interval.

Where two accessible pedestrian pushbuttons are separated by at least 10 ft (3 m), the walk indication shall be an audible percussive tone. It shall repeat at 8 to 10 ticks per second with a dominant frequency of 880 Hz.

Automatic volume adjustments in response to ambient traffic sound level shall be provided up to a maximum volume of 100 dBA. Locator tone and verbal messages shall be no more than 5 dB louder than ambient sound.

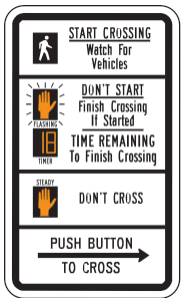
Pedestrian Pushbutton: Pedestrian pushbuttons shall be at least 2 in. (50 mm) in diameter or width. The force required to activate the pushbutton shall be no greater than 3.5 lb (15.5 N).

A red LED indicator shall be located on or near the pushbutton which, when activated, acknowledges the pedestrians request to cross the street. The recorded messages and roadway designations shall be confirmed with the engineer and included with submitted product data.

Signage: A sign shall be located immediately above the pedestrian pushbutton and parallel to the crosswalk controlled by the pushbutton. The sign shall be one of the following standard MUTCD designs: R10-3b, R10-3d, or R10-3e.

R10-3b

R10-3d



R10-3e

Tactile Arrow: A tactile arrow, pointing in the direction of travel controlled by a pushbutton, shall be provided either on the pushbutton or its sign.

Vibrotactile Feature: The pushbutton shall pulse when depressed and shall vibrate continuously throughout the WALK interval.

Training: The Contractor shall provide APS onsite training for Department personnel and person(s) or group that requested the installation of the APS. APS features and operation shall be demonstrated

during the training. The training shall be presented by the APS equipment supplier. Time, date, and location of the training and demonstration shall be coordinated with the Engineer.

Basis of Payment: This work will be paid for at the contract unit each for a pedestrian push button, ACCESSIBLE PEDESTRIAN SIGNALS type and shall include furnishing, installation, mounting hardware, message programming, and training.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT

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

The Contractor shall verify all removal items prior to bidding. There will be no additional compensation.

The Contractor shall dispose of all items off the Right-of-Way and reflect the salvage value of the material in the contract bid price.

The Contractor shall remove all LED modules and HPS lamps from luminaires prior to disposal. All HPS luminaire lamps shall be properly disposed of at a certified recycling center or alternate facility that is authorized to accept them.

Basis of Payment: The above work will be paid for at the contract unit price Each for REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT and shall be payment in full for removing and disposing of the equipment described above, complete. No additional compensation will be allowed.

RELOCATE EXISTING TRAFFIC SIGNAL EQUIPMENT

The Contractor shall relocate the existing traffic signal cabinet and controller at the intersection of 9th Street and North Grand Avenue.

All work necessary to relocate the traffic signal controller and cabinet shall be included in this pay item, including but not limited to cabinet foundation requirements, new or modified conduits, controller rewiring, and power service connection.

Basis of Payment: The above work will be paid for at the contract unit price Each for RELOCATE EXISTING TRAFFIC SIGNAL EQUIPMENT and shall be payment in full for relocating of the equipment described above, complete. No additional compensation will be allowed.

HANDHOLE

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

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

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

The lid shall be marked with the legend "Traffic Signals".

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

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

HANDHOLE, SPECIAL

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

The depth of the handhole shall be constructed as necessary to accommodate the depth of the entering conduit.

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

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

The lid shall be marked with the legend "Traffic Signals".

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

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

TRAFFIC SIGNAL POST, GALVANIZED STEEL

Description: This work shall be in accordance with Sections 878 and 1077 of the Standard Specifications except as modified herein.

The traffic signal post shall be attached to the foundation with four ¾" x 18" galvanized anchor bolts. The post base shall be secured to the foundation using galvanized nuts and galvanized steel flat washers that have a minimum thickness of ¼" and are trapezoidal in shape. The washers shall be sized so as to completely capture the mounting flanges of the traffic signal base. Round washers will not be acceptable.

The traffic signal post, breakaway base, caps, and appurtenances shall be galvanized.

Basis of Payment: This work will be paid for at the contract unit price Each for TRAFFIC SIGNAL POST, GALVANIZED STEEL of the height specified, which price shall be payment in full for all labor, material, and equipment required to provide and install the traffic signal post and base described above.

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

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

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

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

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

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

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

SIGNAL HEAD, LED

Description: This work shall be in accordance with Sections 880 and 1078 of the Standard Specifications except as modified herein.

The traffic signal heads shall consist of 12" polycarbonate sections and shall be equipped with LED assemblies for all red bulb, yellow bulb, green bulb, red arrow, yellow arrow, and green arrow indications.

The traffic signal heads shall have a black finish with black doors and tunnel visors.

The LED signal faces shall be equipped with spade connectors and connected to the traffic signal head terminal block.

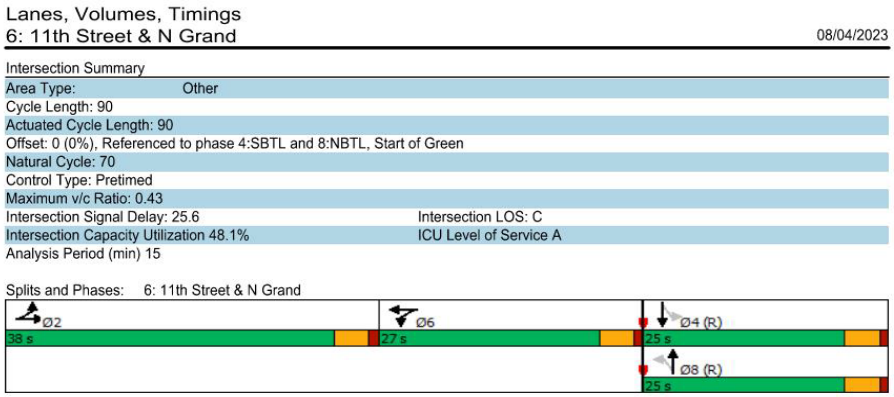
All costs associated with furnishing and installing new galvanized steel signal head bracketing shall be included in the cost of this pay item. The Contractor shall minimize the total number of holes drilled in a mast arm to no more than three.

Basis of Payment: This work will be paid for at the contract unit prices Each for SIGNAL HEAD, LED of the type specified and will be payment in full for all labor, equipment, and materials required to remove the existing signal heads and bracketing and furnish and install traffic signal heads equipped with LED indications and new bracketing as described above, complete.

TEMPORARY TRAFFIC SIGNAL TIMING

Description: This work shall consist of modifying and maintaining appropriate traffic signal timings for the effected intersections for the duration of the temporary signalized condition, as well as impact to existing traffic signal timings caused by detours or other temporary conditions.

Initial temporary signal timings shall be set to the signal timings below. The temporary traffic signal timings will need to be observed and monitored and adjustments made as necessary. The work of monitoring and adjusting the temporary traffic signal timings shall be included in this pay item.



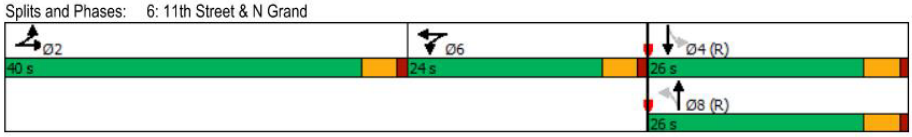
Stage 1A – North Grand Avenue and 11th Street - AM

Stage 1A – North Grand Avenue and 11th Street – PM

Lanes, Volumes, Timings
6: 11th Street & N Grand 08/04/2023

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green			
Natural Cycle: 75			
Control Type: Pretimed			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 28.8		Intersection LOS: C	
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: 11th Street & N Grand



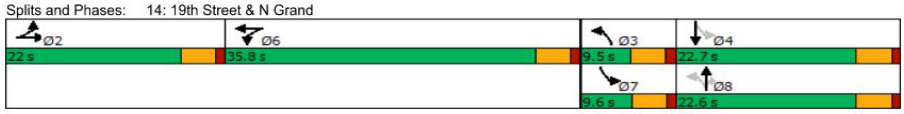
Stage 1B – North Grand Avenue and 19th Street – AM

Lanes, Volumes, Timings
14: 19th Street & N Grand 08/04/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		44.4			48.5		24.1	38.1	2.2	28.6	41.5	
LOS		D			D		C	D	A	C	D	
Approach Delay		44.4			48.5			23.9			38.1	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 41.8		Intersection LOS: D	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: 19th Street & N Grand

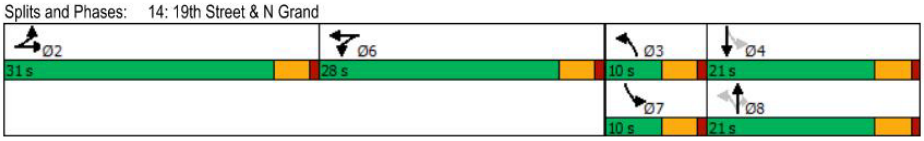


Stage 1B – North Grand Avenue and 19th Street – PM

Lanes, Volumes, Timings
14: 19th Street & N Grand 08/04/2023

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 88.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 53.7		Intersection LOS: D	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: 19th Street & N Grand



Basis of Payment: The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMING, which price shall be payment in full for performing all work described herein per intersection.

LIGHTING

HANDHOLE, COMPOSITE CONCRETE (SPECIAL)

Description: This work shall consist of furnishing and installing a precast composite concrete handhole in accordance with Sections 814 and 1088.05 of the Standard Specifications for Road and Bridge Construction and the following additions or exceptions.

General: The frame and cover shall be constructed of a polymer concrete and reinforced with a heavy-weave fiberglass cloth. The material shall be in accordance with Section 1088,05 of the Standard Specifications for Road and Bridge Construction. The nominal dimensions of the handhole shall be minimum of 12”(W) x 12”(L) x 18”(D).

The cover shall be held down by two stainless steel hex head bolts. The cover shall contain two recessed lift pins.

Basis of Payment: This work will be paid for at the contract unit price per each for HANDHOLE, COMPOSITE CONCRETE (SPECIAL).

LOCATION AND PROTECTION OF UNDERGROUND CITY ELECTRICAL FACILITIES

Description: The Contractor shall be responsible for locating existing City of Springfield and CWLP facilities prior to performing any work. The Contractor shall also be liable for any damage to facilities resulting from inaccurate locating.

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

The Contractor shall also be responsible for locating and providing protection for these facilities during all phases of construction. If at any time, the facilities are damaged, the Contractor shall immediately notify the Engineer and make all necessary arrangements for repair to the satisfaction of the Engineer.

Basis of Payment: This work will not be paid for separately but shall be included in the contract bid prices.

LIGHTING CONTROLLER, SPECIAL

Description: This work shall consist of furnishing all labor, materials, and equipment for the installation of the lighting controller as shown in the plans and in accordance with Section 825 of the Standard Specifications.

Basis of Payment: This will work will be paid for at the contract unit price per each for LIGHTING CONTROLLER, SPECIAL. The unit price shall include the cost of all materials, equipment and labor required to furnish and install the lighting controller, special.

LIGHT POLE, ALUMINUM

Description: This work shall consist of furnishing and installing a light pole complete with an arm(s), when specified, and all hardware and accessories required for the intended permanent use of the pole according to Section 830 of the of the SSRBC at locations as indicated on the plans.

Materials/Installation: The materials and installation shall be in accordance with Article 830 of the SSRBC.

LUMINAIRE, DECORATIVE ELECTROLUMINESCENT LIGHT TAPE

Description: This work shall consist of furnishing all equipment, material and labor necessary to properly install the proposed luminaires at locations as indicated on the plans.

Materials: The materials shall be in accordance with Article 821.02 of the "Standard Specifications", plan details, and the following:

Luminaires shall have an Electroluminescent light engine. Luminaires will be mounted as detailed on the plans. The fixture shall be catalog number LT200-EXT-CLASSIC NATURAL BLUE-LENGTH as shown on the plans as manufactured by Electro- LuminiX Lighting Corp.

The fixture shall have the following salient characteristics:

- Dimming comes Standard
- Energy Efficient
- UV and Moisture Resistant
- Available in Lengths up to 300 ft
- Highly Visible through smoke and fog
- Thin profile
- Generates No Heat and is cool to the touch
- 0.25 in. clear barrier encapsulation envelops the light engine on all four (4) sides
- 40,000 hour expected life
- Three (3) brightness settings
- 2 in. minimum width of lit area

Included with this pay item provide the power supply and power connector. Provide stainless steel NEMA 4X junction boxes to protect the power supply and power connector. Provide conduit between the power supply and power connection as detailed in the plans.

General: The work shall be completed in accordance with Section 821 of the "Standard Specifications", plan details, and as modified herein.

Basis of Payment: The work will be paid for at the contract unit price per foot for LUMINAIRE, DECORATIVE ELECTROLUMINESCENT LIGHT TAPE. The unit price shall include the cost of all materials, equipment and labor required to furnish and install the luminaires.

LUMINAIRE, LED, SPECIAL

Description: This work shall consist of furnishing all equipment, material, and labor necessary to properly install the proposed luminaires at locations as indicated on the plans.

Materials: The materials shall be in accordance with Article 821.02 of the "Standard Specifications", plan details, and the following:

Luminaires shall have a 97watt LED light engine. Luminaires on aluminum light poles with mast arms shall be catalog number LDRC-T2-E04-480-LCF as manufactured by LUMARK.
The fixture shall have the following salient characteristics:

- Heavy duty die-cast aluminum housing
- Removable door
- 3G vibration tested
- Tool-less entry for enhanced maintenance
- High efficiency LED optics with 4000K light color
- Designed to withstand a 10kV transient line surge
- Optimized thermal management and heavy duty die cast heat sink.
- Low temperature operation down to -30 Degree C.
- 90 percent Lumen maintenance at 60,000 hours per IESNA TM-21
- Mounting to be two bolt / one bracket slip fitter design
- 5 Stage super TGIC polyester powder paint finish, 2.5 mil nominal thickness
- 5 year limited warranty

General: The work shall be completed in accordance with Section 821 of the "Standard Specifications", plan details, and as modified herein.

Basis of Payment: The work will be paid for at the contract unit price per each for LUMINAIRE, LED, SPEICAL. The unit price shall include the cost of all materials, equipment and labor required to furnish and install the luminaires.

LUMINAIRE, LED, UNDERPASS, SUSPENDED, OUTPUT DESIGNATION B

Description: This work shall consist of furnishing all equipment, material and labor necessary to properly install the proposed luminaires at locations indicated on the plans.

Materials: The materials shall be in accordance with Article 821.02 of the "Standard Specifications", plan details, and the following:

Luminaires shall have a 25-watt LED light engine. Luminaires will be suspended from the bridge above as detailed in the drawings. The fixture shall be catalog number DSXPG LED, 20c 350, 40k T5W MVOH lighting distribution as manufactured by Lithonia Lighting.
The fixture shall have the following salient characteristics:

- Two-piece die-cast aluminum housing
- Integral heat sink fins
- Fully gasketed with molded silicone gasket
- LED light source to meet LM-70 requirements for lumen maintenance and life
- Electronic driver with a power factor > 90% and a THD of < 20%, 2.5kv surge rating
- UL listed for wet location
- IP-65 Rated

Power supply to the underside of the bridge shall be provided under other items of work. The underpass luminaire shall include a stainless-steel junction box on the power supply conduit located along the edge of the bridge and all conduit, fittings, attachment hardware, cable, and stainless-steel junction boxes needed to complete the circuit to the luminaire.

General: The work shall be completed in accordance with Section 821 of the "Standard Specifications", plan details, and as modified herein.

Basis of Payment: The work will be paid for at the contract unit price per each for LUMINAIRE, LED, UNDERPASS, SUSPENED, OUTPUT DESIGNATION B. The unit price shall include the cost of all materials, equipment and labor required to furnish and install the luminaires.

LUMINAIRE, LED, UNDERPASS, WALLMOUNT, OUTPUT DESIGNATION C

Description: This work shall consist of furnishing all equipment, material and labor necessary to properly install the proposed luminaires at locations as indicated on the plans.

Materials: The materials shall be in accordance with Article 821.02 of the "Standard Specifications", plan details, and the following:

Luminaires shall have a 48 watt LED light engine. Luminaires will be wall mounted in the recessed notch as detailed on the drawings. The fixture shall be catalog number 24320 LED K4-4000K Color, W/85CRI, SLV as manufactured by Bega.

The fixture shall have the following salient characteristics:

- Housing shall have die-cast aluminum end caps welded to an aluminum extrusion
- The welds are continuous end ground flat to provide a water tight housing
- Die castings are marine grade, copper free A360.0 aluminum alloy
- Fully gasketed with a molded silicone gasket
- ¼ in. tempered white glass lens
- LED light source to meet LM-70 requirements for lumen maintenance and life
- UL listed for wet location and 85 PSI hosedown
- IP-65 Rated
- 25 Year Warranty

As part of this pay item provide the necessary junction boxes within structure to facilitate routing the raceway from the light fixtures to the new lighting controller.

General: The work shall be completed in accordance with Section 821 of the "Standard Specifications," plan details, and as modified herein.

Basis of Payment: The work will be paid for at the contract unit price per each for LUMINAIRE, LED, UNDERPASS, WALLMOUNT, OUTPUT DESIGNATION C. The unit price shall include the cost of all materials, equipment and labor required to furnish and install the luminaires.

UNIT DUCT, 600V, 4-1C NO. 2, 1/C NO. 8 GROUND, (XLP-TYPE USE), 2" DIA POLYETHYLENE

Description: This work shall consist of furnishing and installing wire and conduit raceway in accordance with Sections 817, 1066, 1088.01 of the Standard Specifications for Road and Bridge Construction and the following additions or exceptions.

General: 600 volt XLP type wire to be provided, 4 copper conductors at #2 AWG, 1 copper ground conductor at #8 AWG, and in 2" 40 schedule polyethylene conduit.

Basis of Payment: This work will be paid for at the contract unit price per foot for UNIT DUCT, 600V, 4-1C No. 2, 1/C NO. 8 GROUND, (XLP-Type Use), 2" DIA POLYETHYLENE.

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (PROJECT SPECIFIC)

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

Contract Specific Sites: The excavation 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.

SITE SR0017 – CSX TRANSPORTATION

- Station 47672+25 to Station 47676+10 (10th Street Rail Corridor, UPRR Main 1), 0 to

60 feet LT and RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: TVOCs, arsenic, and pH. See soil boring SR0017-B01 through SR017-B08 (Figure 5).

SITE SR0018 – COMPUTER BANC

- Station 47676+10 to Station 47679+00 (10th Street Rail Corridor, UPRR Main 1), 0 to 60 feet LT and 0 to 70 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: TVOCs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and arsenic. See soil boring SR0018-B01 though SR0018-B6 (Figure 5).

SITE SR0019 – CARITAS HALL ASSOCIATION

- Station 47679+00 to Station 47680+50 (10th Street Rail Corridor, UPRR Main 1), 0 to 60 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: TVOCs. See soil borings SR0019-B01 (Figure 6).
- Station 47680+50 to Station 47681+50 (10th Street Rail Corridor, UPRR Main 1), 0 to 100 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminants of concern sampling parameters: TVOCs. See soil borings SR0019-B02 (Figure 6).
- Station 47681+50 to Station 47684+80 (10th Street Rail Corridor, UPRR Main 1), 0 to 60 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: TVOCs and arsenic. See soil borings SR0019-B03 though SR0019-B05 (Figure 6).

SITE SR0021 – STATE OF ILLINOIS-CMS

- Station 47684+80 to Station 47686+00 (10th Street Rail Corridor, UPRR Main 1), 0 to 70 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)pyrene. See soil boring SR0021-B01 (Figure 6).
- Station 47688+20 to Station 47689+15 (10th Street Rail Corridor, UPRR Main 1), 0 to

- 70 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: trichloroethene, benzo(a)pyrene, and benzo(a)fluoranthene. See soil boring SR0021-B04 (Figure 6).
- Station 47689+15 to Station 47690+75 (10th Street Rail Corridor, UPRR Main 1), 0 to 70 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. See soil boring SR0021-B05 (Figure 6).
- Station 47686+00 to Station 47688+10 (10th Street Rail Corridor, UPRR Main 1), 0 to 70 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: TVOCs, trichloroethene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, carbazole, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and lead. See soil boring SR0021-B18 and SR0021-B19 (Figure 6).
- Station 25+00 to Station 28+20 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: arsenic. See soil boring SR0021-B10 though SR0022-B15 (Figure 10).
- Station 28+20 to Station 28+75 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminants of concern sampling parameters: arsenic. See soil boring SR0021-B09 (Figure 10).
- Station 28+75 to Station 29+30 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: arsenic. See soil boring SR0021-B08 (Figure 10).
- Station 29+30 to Station 30+00 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: arsenic. See soil boring SR0021-B07 (Figure 10).

SITE SR0022 – MCDONALD CORPORATION

- Station 22+40 to Station 23+00 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)pyrene. See soil boring SR0022-B01 (Figure 10).
- Station 23+00 to Station 24+60 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, arsenic, lead, and manganese. See soil boring SR0022-B02 through SR0022-B04 (Figure 10).
- Station 24+60 to Station 25+00 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)pyrene and manganese. See soil boring SR0022-B05 (Figure 10).

SITE SR0059 – SCP2006-C23-043LLC

- Station 23+90 to Station 24+40 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: arsenic and manganese. See soil boring SR0059-B02 (Figure 4).
- Station 24+40 to Station 25+95 (CL North Grand Avenue), 0 to 60 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, arsenic, lead, and manganese. See soil boring SR0059-B03 through SR0059-B05 (Figure 10).
- Station 25+95 to Station 26+60 (CL North Grand Avenue), 0 to 90 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: lead and arsenic. See soil boring SR0059-B05 (Figure 10).
- Station 47694+90 to Station 47796+00 (10th Street Rail Corridor, UPRR Main 1), 0 to 80 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)pyrene. See soil boring SR0059-B06 (Figure 7).

- Station 47696+00 to Station 47797+10 (10th Street Rail Corridor, UPRR Main 1), 0 to 80 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminants of concern sampling parameters: arsenic. See soil boring SR0059-B07 (Figure 7).

SITE SR0060 – HIGHLAND PARK CVS LLC

- Station 22+40 to Station 23+40 (CL North Grand Avenue), 0 to 60 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: arsenic and manganese. See soil boring SR0060-B02 (Figure 10).

SITE SR0075 – MARGARET & BEN KRUGER

- Station 47702+80 to Station 47703+80 (10th Street Rail Corridor, UPRR Main 1), 0 to 90 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: manganese. See soil boring SR0075-B01 (Figure 7).
- Station 47704+80 to Station 47708+00 (10th Street Rail Corridor, UPRR Main 1), 0 to 90 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and arsenic. See soil boring SR0075-B03 through SR0075-B05 (Figure 7 and 8).

SITE SR0092 – AUTO RECYCLERS-C&D ENTERPRISES, INC.

- Station 47712+65 to Station 47714+70 (10th Street Rail Corridor, UPRR Main 1), 0 to 110 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)pyrene and lead. See soil boring SR0092-B01 and SR0092-B02 (Figure 8).
- Station 47715+70 to Station 47717+70 (10th Street Rail Corridor, UPRR Main 1), 0 to 110 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)pyrene, lead, and manganese. See soil boring SR0092-B04 (Figure 8).

- Station 47712+65 to Station 47713+65 (10th Street Rail Corridor, UPRR Main 1), 0 to 60 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: benzo(a)pyrene and lead. See soil boring SR0092-B05 (Figure 8).
- Station 47713+65 to Station 47714+40 (10th Street Rail Corridor, UPRR Main 1), 0 to 60 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: benzene, benzo(a)pyrene and arsenic. See soil boring SR0092-B06 (Figure 8).
- Station 47714+40 to Station 47715+50 (10th Street Rail Corridor, UPRR Main 1), 0 to 60 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: benzo(a)pyrene, arsenic, and lead. See soil boring SR0092-B07 (Figure 8).
- Station 47715+50 to Station 47717+70 (10th Street Rail Corridor, UPRR Main 1), 0 to 60 feet RT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: benzo(a)pyrene, arsenic, and lead. See soil boring SR0092-B06 (Figure 8).

SITE SR0095 – CITY OF SPRINGFIELD

- Station 47719+70 to Station 47720+25 (10th Street Rail Corridor, UPRR Main 1), 0 to 150 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminants of concern sampling parameters: benzo(a)pyrene. See soil boring SR0095-B02 (Figure 9).
- Station 47720+25 to Station 47721+00 (10th Street Rail Corridor, UPRR Main 1), 0 to 150 feet LT. The Engineer has determined this material meets to criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: arsenic and lead. See soil boring SR0095-B03 (Figure 9).

STORM WATER POLLUTION PREVENTION PLAN

See following pages.

Illinois Department of Transportation

Storm Water Pollution Prevention Plan

E-mail | Reset Form

Route	Marked Route	Section Number
FAU 7972	North Grand Avenue	20-00492-00-BR, 22-0492-01-BR
Project Number	**County**	**Contract Number**
N3LK(567)	Sangamon	93773

This plan has been prepared to comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit No. ILR10 (Permit ILR10), issued by the Illinois Environmental Protection Agency (IEPA) for storm water discharges from construction site activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature & Date

Bottom, Nathan Digitally signed by Bottom, Nathan
Date: 2024.09.30 10:01:30 -05'00'

Note: Guidance on preparing each section of BDE 2342 can be found in Chapter 41 of the IDOT Bureau of Design and Environment (BDE) Manual. Chapter 41 and this form also reference the IDOT Drainage Manual which should be readily available.

I. Site Description:

A. Provide a description of the project location; include latitude and longitude, section, town, and range:

Springfield, IL, LAT 39deg 48' 59", LONG 89deg 38' 30", TWP 16N, Range 5W

B. Provide a description of the construction activity which is the subject of this plan. Include the number of construction stages, drainage improvements, in-stream work, installation, maintenance, removal of erosion measures, and permanent stabilization:

Construction of underpass, overpass, 2 at-grade crossings, 1 pedestrian crossing, rail corridor. There are six construction stages

C. Provide the estimated duration of this project:

32 months

D. The total area of the construction site is estimated to be 66 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 29 acres.

E. The following are weighted averages of the runoff coefficient for this project before and after construction activities are completed; see Section 4-102 of the IDOT Drainage Manual:

Rational "C" = 0.6

F. List all soils found within project boundaries; include map unit name, slope information, and erosivity:

Using the Web Soil Survey website (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx) the soil types are identified in attachment A.

G. If wetlands were delineated for this project, provide an extent of wetland acreage at the site; see Phase I report:

Based on wetlands reconnaissance survey and the NWI mapping, this project does not affect any wetlands regulated under the Clean Water Act of 1972.

H. Provide a description of potentially erosive areas associated with this project:

Areas of exposed dirt from excavation operations.

I. The following is a description of soil disturbing activities by stages, their locations, and their erosive factors (e.g., steepness of slopes, length of slopes, etc.):

Construction for rail embankment and track from Sangamon Avenue to Stanford Avenue:
Soil disturbing activities will consist of trenching for utilities, embankment construction and placing sub-ballast.
Construction for underpass and overpass:
Soil disturbing activities will consist of trenching for utilities, embankment construction and earth excavation.

J. See the erosion control plans and/or drainage plans for this contract for information regarding drainage patterns, approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking (to be added after contractor identifies locations), areas of soil disturbance, the location of major structural and non-structural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands) , and locations where storm water is discharged to surface water including wetlands.

K. Identify who owns the drainage system (municipality or agency) this project will drain into:

City of Springfield

L. The following is a list of General NPDES ILR40 permittees within whose reporting jurisdiction this project is located:

City of Springfield
Sangamon County Water Reclamation District

M. The following is a list of receiving water(s) and the ultimate receiving water(s) for this site. In addition, include receiving waters that are listed as Biologically Significant Streams by the Illinois Department of Natural Resources (IDNR). The location of the receiving waters can be found on the erosion and sediment control plans:

The receiving waters for the project are Sugar Creek which outlets to the Sangamon River.

N. Describe areas of the site that are to be protected or remain undisturbed. These areas may include steep slopes (i.e., 1:3 or steeper), highly erodible soils, streams, stream buffers, specimen trees, natural vegetation, nature preserves, etc. Include any commitments or requirements to protect adjacent wetlands.

For any storm water discharges from construction activities within 50-feet of Waters of the U.S. (except for activities for water-dependent structures authorized by a Section 404 permit, describe: a) How a 50-foot undisturbed natural buffer will be provided between the construction activity and the Waters of the U.S. or b) How additional erosion and sediment controls will be provided within that area.

There are no protected areas within or adjacent to the job site.

O. Per the Phase I document, the following sensitive environmental resources are associated with this project and may have the potential to be impacted by the proposed development. Further guidance on these resources is available in Section 41-4 of the BDE Manual.

☐ 303(d) Listed receiving waters for suspended solids, turbidity, or siltation.
The name(s) of the listed water body, and identification of all pollutants causing impairment:

Provide a description of how erosion and sediment control practices will prevent a discharge of sediment resulting from a storm event equal to or greater than a twenty-five (25) year, twenty-four (24) hour rainfall event:

Provide a description of the location(s) of direct discharge from the project site to the 303(d) water body:

Provide a description of the location(s) of any dewatering discharges to the MS4 and/or water body:

☐ Applicable Federal, Tribal, State, or Local Programs

☐ Floodplain

☐ Historic Preservation

☐ Receiving waters with Total Maximum Daily Load (TMDL) for sediment, total suspended solids, turbidity or siltation

TMDL (fill out this section if checked above)

The name(s) of the listed water body:

Provide a description of the erosion and sediment control strategy that will be incorporated into the site design that is consistent with the assumptions and requirements of the TMDL:

If a specific numeric waste load allocation has been established that would apply to the project's discharges, provide a description of the necessary steps to meet that allocation:

☐ Threatened and Endangered Species/Illinois Natural Areas (INAI)/Nature Preserves

☐ Other

☐ Wetland

P. The following pollutants of concern will be associated with this construction project:

- ☒ Antifreeze / Coolants
- ☒ Concrete
- ☒ Concrete Curing Compounds
- ☒ Concrete Truck Waste
- ☒ Fertilizers / Pesticides
- ☒ Paints
- ☒ Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids)
- ☒ Soil Sediment
- ☒ Solid Waste Debris
- ☒ Solvents
- ☒ Waste water from cleaning construction equipments
- ☐ Other (Specify)
- ☐ Other (Specify)
- ☐ Other (Specify)
- ☐ Other (Specify)
- ☐ Other (Specify)

II. Controls:

This section of the plan addresses the controls that will be implemented for each of the major construction activities described in Section I.C above and for all use areas, borrow sites, and waste sites. For each measure discussed, the Contractor will be responsible for its implementation as indicated. The Contractor shall provide to the Resident Engineer a plan for the implementation of the measures indicated. The Contractor, and subcontractors, will notify the Resident Engineer of any proposed changes, maintenance, or modifications to keep construction activities compliant with the Permit ILR10. Each such Contractor has signed the required certification on forms which are attached to, and are a part of, this plan:

A. **Erosion and Sediment Controls:** At a minimum, controls must be coordinated, installed and maintained to:

1. Minimize the amount of soil exposed during construction activity;
2. Minimize the disturbance of steep slopes;
3. Maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible;
4. Minimize soil compaction and, unless infeasible, preserve topsoil.

B. **Stabilization Practices:** Provided below is a description of interim and permanent stabilization practices, including site- specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. Stabilization practices may include but are not limited to: temporary seeding, permanent seeding, mulching, geotextiles, sodding, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Except as provided below in II.B.1 and II.B.2, stabilization measures shall be initiated **immediately** where construction activities have temporarily or permanently ceased, but in no case more than **one (1) day** after the construction activity in that portion of the site has temporarily or permanently ceases on all disturbed portions of the site where construction will not occur for a period of fourteen (14) or more calendar days.

1. Where the initiation of stabilization measures is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

2. On areas where construction activity has temporarily ceased and will resume after fourteen (14) days, a temporary stabilization method can be used.

The following stabilization practices will be used for this project:

- [x] Erosion Control Blanket / Mulching
- [ ] Geotextiles
- [x] Permanent Seeding
- [ ] Preservation of Mature Seeding
- [ ] Protection of Trees
- [ ] Sodding
- [x] Temporary Erosion Control Seeding
- [ ] Temporary Turf (Seeding, Class 7)
- [ ] Temporary Mulching
- [ ] Vegetated Buffer Strips
- [ ] Other (Specify)
- [ ] Other (Specify)
- [ ] Other (Specify)
- [ ] Other (Specify)

Describe how the stabilization practices listed above will be utilized during construction:

Permanent seeding will be placed on bare slopes to prevent erosion. Erosion control blankets will be placed after seeding on 2:1 slopes.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

Erosion control blankets will help prevent erosion until vegetation established.

C. **Structural Practices:** Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include but are not limited to: perimeter erosion barrier, earth dikes, drainage swales, sediment traps, ditch checks, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. The installation of these devices may be subject to Section 404 of the Clean Water Act.

- [ ] Aggregate Ditch
- [ ] Concrete Revetment Mats
- [ ] Dust Suppression
- [ ] Dewatering Filtering
- [ ] Gabions
- [ ] In-Stream or Wetland Work
- [x] Stabilized Construction Exits
- [ ] Stabilized Trench Flow
- [ ] Slope Mattress
- [ ] Slope Walls
- [x] Temporary Ditch Check
- [ ] Temporary Pipe Slope Drain

☐	Level Spreaders	☐	Temporary Sediment Basin
☐	Paved Ditch	☐	Temporary Stream Crossing
☐	Permanent Check Dams	☐	Turf Reinforcement Mats
☒	Perimeter Erosion Barrier	☐	Other (Specify)
☐	Permanent Sediment Basin	☐	Other (Specify)
☐	Retaining Walls	☐	Other (Specify)
☐	Riprap	☐	Other (Specify)
☐	Rock Outlet Protection	☐	Other (Specify)
☐	Sediment Trap	☐	Other (Specify)
☒	Storm Drain Inlet Protection	☐	Other (Specify)

Describe how the structural practices listed above will be utilized during construction:

The storm drain inlet protection will be placed at all the inlets and manholes along the rail corridor with open grates to prevent sediment and silt from construction operations from entering the storm sewer system. The inlet protection will consist of inlet filters. These inlet filters should be checked on a regular basis and maintained as necessary to ensure the proper function of each filter.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

Once construction operations are completed and vegetation is sufficiently established to prevent erosion, the storm drain inlet filters can be removed.
The perimeter erosion barrier can be removed after exposed surfaces have been constructed to their final condition and all vegetation is sufficiently established to prevent sediment from flowing into the adjacent parking lots and roadways.

D. **Treatment Chemicals**

Will polymer flocculants or treatment chemicals be utilized on this project: ☐ Yes ☒ No

If *yes* above, identify where and how polymer flocculants or treatment chemicals will be utilized on this project.

E. **Permanent (i.e., Post-Construction) Storm Water Management Controls:** Provided below is a description of measures that will be installed during the construction process to control volume and pollutants in storm water discharges that will occur after construction operations have been completed.The installation of these devices may be subject to Section 404 of the Clean Water Act.

1. Such practices may include but are not limited to: storm water detention structures (including wet ponds), storm water retention structures, flow attenuation by use of open vegetated swales and natural depressions, infiltration of runoff on site, and sequential systems (which combine several practices).

   The practices selected for implementation were determined based on the technical guidance in Chapter 41 (Construction Site Storm Water Pollution Control) of the IDOT BDE Manual. If practices other than those discussed in Chapter 41 are selected for implementation or if practices are applied to situations different from those covered in Chapter 41, the technical basis for such decisions will be explained below.

2. Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

Description of permanent storm water management controls:

F. **Approved State or Local Laws:** The management practices, controls and provisions contained in this plan will be in accordance with IDOT specifications, which are at least as protective as the requirements contained in the IEPA's Illinois Urban Manual. Procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials

shall be described or incorporated by reference in the space provided below. Requirements specified in sediment and erosion site plans, site permits, storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under the Permit ILR10 incorporated by reference and are enforceable under this permit even if they are not specifically included in the plan.
Description of procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials:

G. **Contractor Required Submittals:** Prior to conducting any professional services at the site covered by this plan, the Contractor and each subcontractor responsible for compliance with the permit shall submit to the Resident Engineer a Contractor Certification Statement, BDE 2342A.

1. The Contractor shall provide a construction schedule containing an adequate level of detail to show major activities with implementation of pollution prevention BMPs, including the following items:
   - Approximate duration of the project, including each stage of the project
   - Rainy season, dry season, and winter shutdown dates
   - Temporary stabilization measures to be employed by contract phases
   - Mobilization time-frame
   - Mass clearing and grubbing/roadside clearing dates
   - Deployment of Erosion Control Practices
   - Deployment of Sediment Control Practices (including stabilized cons
   - Deployment of Construction Site Management Practices (including concrete washout facilities, chemical storage, refueling locations, etc.)
   - Paving, saw-cutting, and any other pavement related operations
   - Major planned stockpiling operation
   - Time frame for other significant long-term operations or activities that may plan non-storm water discharges as dewatering, grinding, etc
   - Permanent stabilization activities for each area of the project
2. During the pre-construction meeting, the Contractor and each subcontractor shall provide, as an attachment to their signed Contractor Certification Statement, a discussion of how they will comply with the requirements of the permit in regard to the following items and provide a graphical representation showing location and type of BMPs to be used when applicable:
   - Temporary Ditch Checks - Identify what type and the source of Temporary Ditch Checks that will be installed as part of the project. The installation details will then be included with the SWPPP.
   - Vehicle Entrances and Exits - Identify type and location of stabilized construction entrances and exits to be used and how they will be maintained.
   - Material Delivery, Storage and Use - Discuss where and how materials including chemicals, concrete curing compounds, petroleum products, etc. will be stored for this project.
   - Stockpile Management - Identify the location of both on-site and off-site stockpiles. Discuss what BMPs will be used to prevent pollution of storm water from stockpiles.
   - Waste Disposal - Discuss methods of waste disposal that will be used for this project.
   - Spill Prevention and Control - Discuss steps that will be taken in the event of a material spill (chemicals, concrete curing compounds, petroleum, etc.)
   - Concrete Residuals and Washout Wastes - Discuss the location and type of concrete washout facilities to be used on this project and how they will be signed and maintained.
   - Litter Management - Discuss how litter will be maintained for this project (education of employees, number of dumpsters, frequency of dumpster pick-up, etc.).
   - Vehicle and Equipment Fueling - Identify equipment fueling locations for this project and what BMPs will be used to ensure containment and spill prevention.
   - Vehicle and Equipment Cleaning and Maintenance - Identify where equipment cleaning and maintenance locations for this project and what BMPs will be used to ensure containment and spill prevention.
   - Dewatering Activities - Identify the controls which will be used during dewatering operations to ensure sediments will not leave the construction site.
   - Polymer Flocculants and Treatment Chemicals - Identify the use and dosage of treatment chemicals and provide the Resident Engineer with Material Safety Data Sheets. Describe procedures on how the chemicals will be used and identify who will be responsible for the use and application of these chemicals. The selected individual must be trained on the established procedures.
   - Additional measures indicated in the plan.

III. Maintenance:

When requested by the Contractor, the Resident Engineer will provide general maintenance guides (e.g., IDOT Erosion and Sediment Control Field Guide) to the Contractor for the practices associated with this project. Describe how all items will be checked for structural integrity, sediment accumulation and functionality. Any damage or undermining shall be repaired immediately. Provide specifics on

how repairs will be made. The following additional procedures will be used to maintain, in good and effective operating conditions, the vegetation, erosion and sediment control measures and other protective measures identified in this plan. It will be the Contractor's responsibility to attain maintenance guidelines for any manufactured BMPs which are to be installed and maintained per manufacture's specifications.

IV. Inspections:

Qualified personnel shall inspect disturbed areas of the construction site including Borrow, Waste, and Use Areas, which have not yet been finally stabilized, structural control measures, and locations where vehicles and equipment enter and exit the site using IDOT Storm Water Pollution Prevention Plan Erosion Control Inspection Report, BC 2259. Such inspections shall be conducted at least once every seven (7) calendar days and within twenty-four (24) hours of the end of a storm or by the end of the following business or work day that is 0.5 inch or greater or equivalent snowfall.

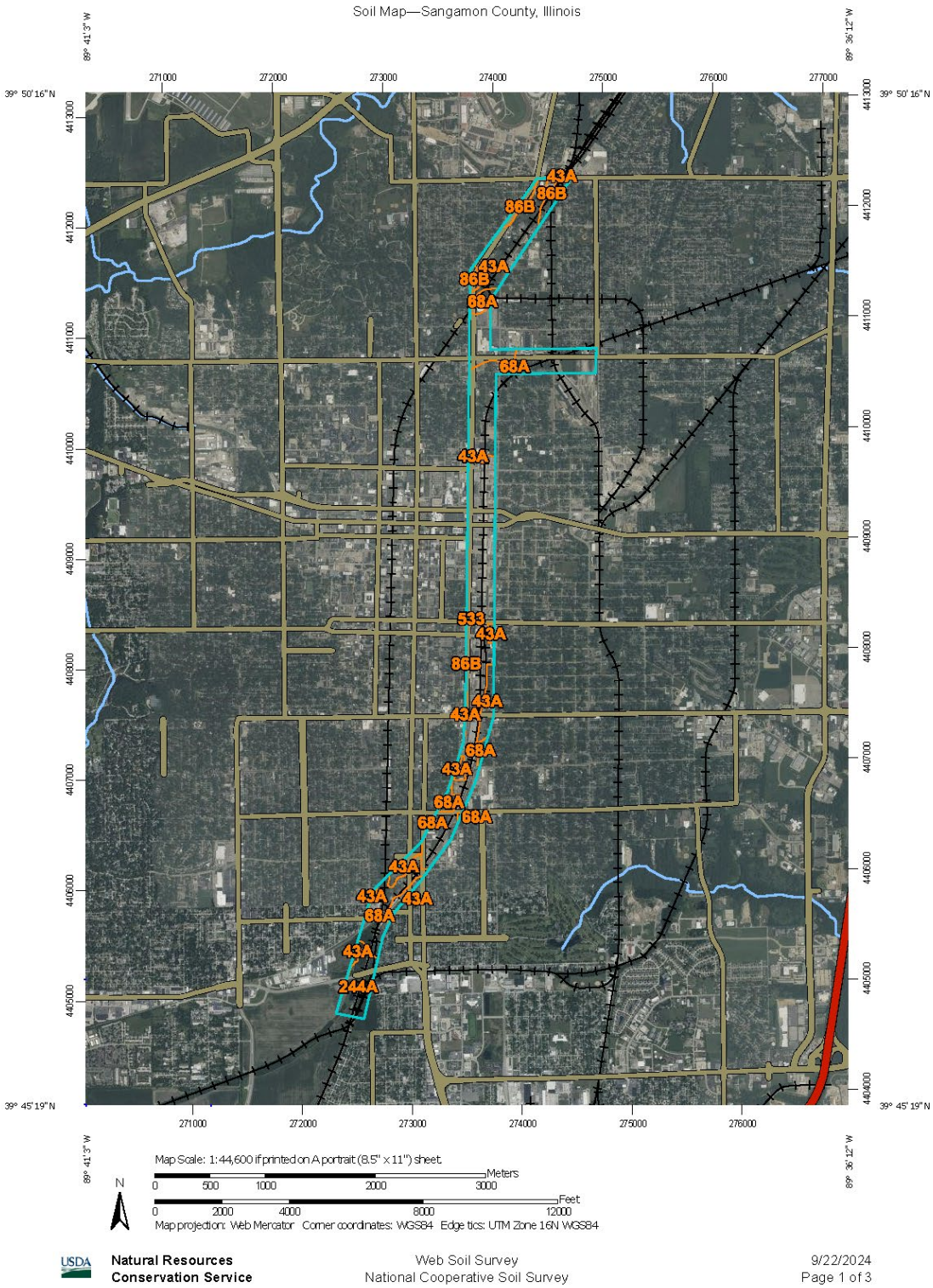
Inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections will recommence when construction activities are conducted, or if there is 0.5" or greater rain event, or a discharge due to snowmelt occurs.

If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the Resident Engineer shall notify the appropriate IEPA Field Operations Section office by email at: epa.swnoncomp@illinois.gov, telephone or fax within twenty-four (24) hours of the incident. The Resident Engineer shall then complete and submit an "Incidence of Non-Compliance" (ION) report for the identified violation within five (5) days of the incident. The Resident Engineer shall use forms provided by IEPA and shall include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of non-compliance shall be signed by a responsible authority in accordance with Part VI. G of the Permit ILR10.

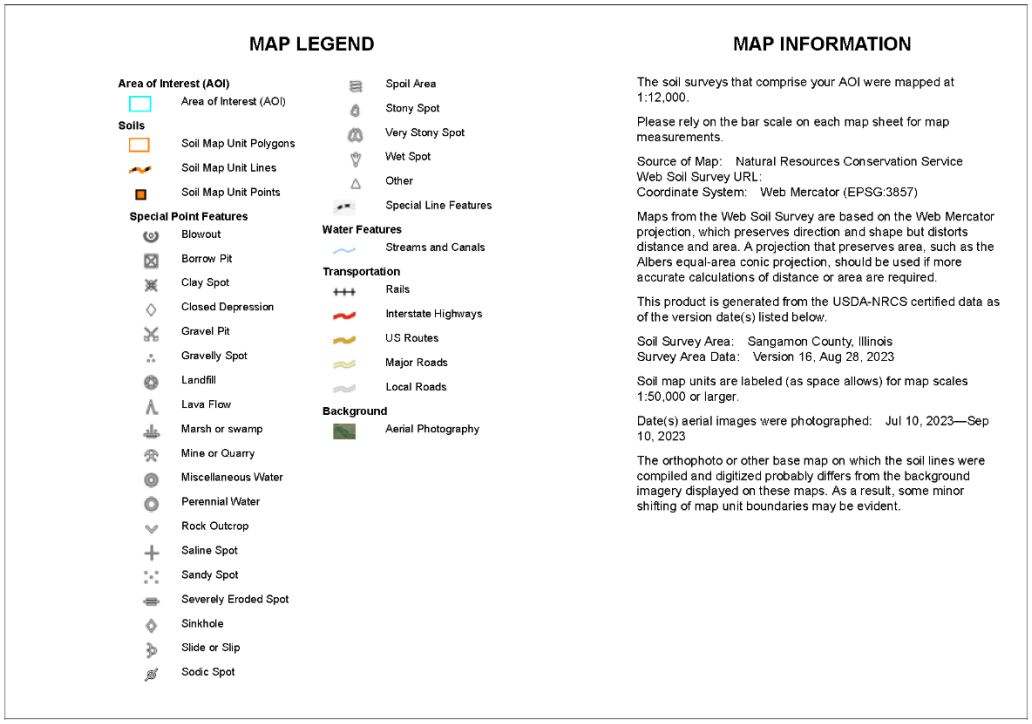
The Incidence of Non-Compliance shall be mailed to the following address:
Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Compliance Assurance Section
1021 North Grand East
Post Office Box 19276
Springfield, Illinois 62794-9276

V. Failure to Comply:

Failure to comply with any provisions of this Storm Water Pollution Prevention Plan will result in the implementation of a National Pollutant Discharge Elimination System/Erosion and Sediment Control Deficiency Deduction against the Contractor and/or penalties under the Permit ILR10 which could be passed on to the Contractor.


Soil Map—Sangamon County, Illinois
89° 41' 3" W
89° 36' 12" W
39° 50' 16" N
39° 45' 19" N
271000
272000
273000
274000
275000
276000
277000
4413000
4412000
4411000
4410000
4409000
4408000
4407000
4406000
4405000
4404000
43A
86B
68A
533
244A
Map Scale: 1:44,600 if printed on A portrait (8.5" x 11") sheet.
Meters
0 500 1000 2000 3000
N
Feet
0 2000 4000 8000 12000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84
USDA
Natural Resources
Conservation Service
Web Soil Survey
National Cooperative Soil Survey
9/22/2024
Page 1 of 3

Soil Map—Sangamon County, Illinois



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
43A	Ipava silt loam, 0 to 2 percent slopes	137.2	25.6%
68A	Sable silty clay loam, 0 to 2 percent slopes	158.0	29.5%
86B	Osco silt loam, 2 to 5 percent slopes	20.0	3.7%
244A	Hartsburg silty clay loam, 0 to 2 percent slopes	33.8	6.3%
533	Urban land	186.0	34.8%
Totals for Area of Interest		**535.0**	**100.0%**

PROJECT LABOR AGREEMENT

Effective: May 18, 2007 Revised: August 1, 2019

Description. The Illinois Project Labor Agreements Act, 30 ILCS 571, states that the State of Illinois has a compelling interest in awarding public works contracts so as to ensure the highest standards of quality and efficiency at the lowest responsible cost. A project labor agreement (PLA) is a form of pre-hire collective bargaining agreement covering all terms and conditions of employment on a specific project that is intended to support this compelling interest. It has been determined by the Department that a PLA is appropriate for the project that is the subject of this contract. The PLA document, provided below, only applies to the construction site for this contract. It is the policy of the Department on this contract, and all construction projects, to allow all contractors and subcontractors to compete for contracts and subcontracts without regard to whether they are otherwise parties to collective bargaining agreements.

Execution of Letter of Assent. A copy of the PLA applicable to this project is included as part of this special provision. As a condition of the award of the contract, the successful bidder and each of its subcontractors shall execute a "Contractor Letter of Assent", in the form attached to the PLA as Exhibit A. The successful bidder shall submit a Subcontractor's Contractor Letter of Assent to the Department prior to the subcontractor's performance of work on the project. Upon request, copies of the applicable collective bargaining agreements will be provided by the appropriate signatory labor organization at the pre-job conference.

Quarterly Reporting. Section 37 of the Illinois Project Labor Agreements Act requires the Department to submit quarterly reports regarding the number of minorities and females employed under PLAs. To assist in this reporting effort, the Contractor shall provide a quarterly workforce participation report for all minority and female employees working under the PLA of this contract. The data shall be reported on Construction Form BC 820, Project Labor Agreement (PLA) Workforce Participation Quarterly Reporting Form available on the Department's website http://www.idot.illinois.gov/Assets/uploads/files/IDOT-Forms/BC/BC%20820.docx.

The report shall be submitted no later than the 15th of the month following the end of each quarter (i.e., April 15 for the January – March reporting period). The form shall be emailed to DOT.PLA.Reporting@illinois.gov or faxed to (217) 524-4922.

Any costs associated with complying with this provision 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.

Illinois Department of Transportation
PROJECT LABOR AGREEMENT

This Project Labor Agreement ("PLA" or "Agreement") is entered into this_____ day of _____, 2019, by and between the Illinois Department of Transportation ("IDOT" or "Department") in its proprietary capacity, and each relevant Illinois AFL-CIO Building Trades signatory hereto as determined by the Illinois AFL-CIO Statewide Project Labor Agreement Committee on behalf of each of its affiliated members (individually and collectively, the "Unions"). This PLA shall apply to Construction Work (as defined herein) to be performed by IDOT's Prime Contractor and each of its subcontractors of whatever tier ("Subcontractor" or "Subcontractors") on Contract No. (hereinafter, the "Project").

ARTICLE 1 - INTENT AND PURPOSES

1.1 This PLA is entered into in accordance with the Project Labor Agreement Act ("Act", 30 ILCS 571). It is mutually understood and agreed that the terms and conditions of this PLA are intended to promote the public interest in obtaining timely and economical completion of the Project by encouraging productive and efficient construction operations; by establishing a spirit of harmony and cooperation among the parties; and by providing for peaceful and prompt settlement of any and all labor grievances or jurisdictional disputes of any kind without strikes, lockouts, slowdowns, delays, or other disruptions to the prosecution of the work. The parties acknowledge the obligations of the Contractors and Subcontractors to comply with the provisions of the Act. The parties will work with the Contractors and Subcontractors within the parameters of other statutory and regulatory requirements to implement the Act's goals and objectives.

1.2 As a condition of the award of the contract for performance of work on the Project, IDOT's Prime Contractor and each of its Subcontractors shall execute a "Contractor Letter of Assent", in the form attached hereto as Exhibit A, prior to commencing Construction Work on the Project. The Contractor shall submit a Subcontractor's Contractor Letter of Assent to the Department prior to the Subcontractor's performance of Construction Work on the Project. Upon request copies of the applicable collective bargaining agreements will be provided by the appropriate signatory labor organization consistent with this Agreement and at the pre-job conference referenced in Article III, Section 3.1.

1.3 Each Union affiliate and separate local representing workers engaged in Construction Work on the Project in accordance with this PLA are bound to this agreement by the Illinois AFL-CIO Statewide Project Labor Agreement Committee which is the central committee established with full authority to negotiate and sign PLAs with the State on behalf of all respective crafts. Upon their signing the Contractor Letter of Assent, the Prime Contractor, each Subcontractor, and the individual Unions shall thereafter be deemed a party to this PLA. No party signatory to this PLA shall, contract or subcontract, nor permit any other person, firm, company, or entity to contract or subcontract for the performance of Construction Work for the Project to any person, firm, company, or entity that does not agree in writing to become bound for the term of this Project by the terms of this PLA prior to commencing such work and to the applicable area-wide collective bargaining agreement(s) with the Union(s) signatory hereto.

1.4 It is understood that the Prime Contractor(s) and each Subcontractor will be considered and accepted by the Unions as separate employers for the purposes of collective bargaining, and it is further agreed that the employees working under this PLA shall constitute a bargaining unit separate and distinct from all others. The parties hereto also agree that this PLA shall be applicable solely with respect to this Project, and shall have no bearing on the interpretation of any other collective bargaining agreement or as to the recognition of any bargaining unit other than for the specific purposes of this Project.

1.5 In the event of a variance or conflict, whether explicit or implicit, between the terms and conditions of this PLA and the provisions of any other applicable national, area, or local collective bargaining agreement, the terms and conditions of this PLA shall supersede and control. For any work performed under the NTL Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, the National Agreement of the International Union of Elevator Constructors, and for any instrument calibration work and loop checking performed under the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, the preceding sentence shall apply only with respect to Articles I, II, V, VI, and VII.

1.6 Subject to the provisions of paragraph 1.5 of this Article, it is the parties' intent to respect the provisions of any other collective bargaining agreements that may now or hereafter pertain, whether between the Prime Contractor and one or more of the Unions or between a Subcontractor and one or more of the Unions. Accordingly, except and to the extent of any contrary provision set forth in this PLA, the Prime Contractor and each of its Subcontractors agrees to be bound and abide by the terms of the following in order of precedence: (a) the applicable collective bargaining agreement between the Prime Contractor and one or more of the Unions made signatory hereto; (b) the applicable collective bargaining agreement between a Subcontractor and one or more of the Unions made signatory hereto; or (c) the current applicable area collective bargaining agreement for the relevant Union that is the agreement certified by the Illinois Department of Labor for purposes of establishing the Prevailing Wage applicable to the Project. The Union will provide copies of the applicable collective bargaining agreements pursuant to part (c) of the preceding sentence to the Prime Contractor. Assignments by the Contractors or Subcontractors amongst the trades shall be consistent with area practices; in the event of unresolved disagreements as to the propriety of such assignments, the provisions of Article VI shall apply.

1.7 Subject to the limitations of paragraphs 1.4 to 1.6 of this Article, the terms of each applicable collective bargaining agreement as determined in accordance with paragraph 1.6 are incorporated herein by reference, and the terms of this PLA shall be deemed incorporated into such other applicable collective bargaining agreements only for purposes of their application to the Project.

1.8 To the extent necessary to comply with the requirements of any fringe benefit fund to which the Prime Contractor or Subcontractor is required to contribute under the terms of an applicable collective bargaining agreement pursuant to the preceding paragraph, the Prime Contractor or Subcontractor shall execute all "Participation Agreements" as may be reasonably required by the Union to accomplish such purpose; provided, however, that such Participation Agreements shall, when applicable to the Prime Contractor or Subcontractor solely as a result of this PLA, be amended as reasonably necessary to reflect such fact. Upon written notice in the form of a lien of a Contractor's or Subcontractor's delinquency from any applicable fringe benefit fund, IDOT will withhold from the Contractor's periodic pay request an amount sufficient to extinguish any delinquency obligation of the Contractor or Subcontractor arising out of the Project.

1.9 In the event that the applicable collective bargaining agreement between a Prime Contractor and the Union or between the Subcontractor and the Union expires prior to the completion of this Project, the expired applicable contract's terms will be maintained until a new applicable collective bargaining agreement is ratified. The wages and fringe benefits included in any new applicable collective bargaining agreement will apply on and after the effective date of the newly negotiated collective bargaining agreement, except to the extent wage and fringe benefit retroactivity is specifically agreed upon by the relevant bargaining parties.

ARTICLE II – APPLICABILITY, RECOGNITION, AND COMMITMENTS

2.1 The term Construction Work as used herein shall include all "construction, demolition, rehabilitation, renovation, or repair" work performed by a "laborer or mechanic" at the "site of the work" for the purpose of "building" the specific structures and improvements that constitute the Project. Terms appearing within quotation marks in the preceding sentence shall have the meaning ascribed to them pursuant to 29 CFR Part 5 and Illinois labor laws.

2.2 By executing the Letters of Assent, Prime Contractor and each of its Subcontractors recognizes the Unions signatory to this PLA as the sole and exclusive bargaining representatives for their craft employees employed on the jobsite for this Project. Unions who are signatory to this PLA will have recognition on the Project for their craft.

2.3 The Prime Contractor and each of its Subcontractors retains and shall be permitted to exercise full and exclusive authority and responsibility for the management of its operations, except as expressly limited by the terms of this PLA or by the terms and conditions of the applicable collective bargaining agreement.

2.4 Except to the extent contrary to an express provision of the relevant collective bargaining agreement, equipment or materials used in the Project may be pre-assembled or pre- fabricated, and there shall be no refusal by the Union to handle, transport, install, or connect such equipment or materials. Equipment or materials delivered to the job-site will be unloaded and handled promptly without regard to potential jurisdictional disputes; any such disputes shall be handled in accordance with the provisions of this PLA.

2.5 The parties are mutually committed to promoting a safe working environment for all personnel at the job-site. It shall be the responsibility of each employer to which this PLA applies to provide and maintain safe working conditions for its employees, and to comply with all applicable federal, state, and local health and safety laws and regulations.

2.6 The use or furnishing of alcohol or drugs and the conduct of any other illegal activity at the job-site is strictly prohibited. The parties shall take every practical measure consistent with the terms of applicable collective bargaining agreements to ensure that the job-site is free of alcohol and drugs.

2.7 All parties to this PLA agree that they will not discriminate against any employee based on race, creed, religion, color, national origin, union activity, age, gender or sexual orientation and shall comply with all applicable federal, state, and local laws.

2.8 In accordance with the Act and to promote diversity in employment, IDOT will establish, in cooperation with the other parties, the apprenticeship hours which are to be performed by minorities and females on the Project. IDOT shall consider the total hours to be performed by these underrepresented groups, as a percentage of the workforce, and create aspirational goals for each Project, based on the level of underutilization for the service area of the Project (together "Project Employment Objectives"). IDOT shall provide a quarterly report regarding the racial and gender composition of the workforce on the Project.

Persons currently lacking qualifications to enter apprenticeship programs will have the opportunity to obtain skills through basic training programs as have been established by the Department. The parties will endeavor to support such training programs to allow participants to obtain the requisite qualifications for the Project Employment Objectives.

The parties agree that all Contractors and Subcontractors working on the Project shall be encouraged to utilize the maximum number of apprentices as permitted under the terms of the applicable collective bargaining agreements to realize the Project Employment Objectives.

The Unions shall assist the Contractor and each Subcontractor in efforts to satisfy Project Employment Objectives. A Contractor or Subcontractor may request from a Union specific categories of workers necessary to satisfy Project Employment Objectives. The application of this section shall be consistent with all local Union collective bargaining agreements, and the hiring hall rules and regulations established for the hiring of personnel, as well as the apprenticeship standards set forth by each individual Union.

2.9 The parties hereto agree that engineering consultants and materials testing employees, to the extent subject to the terms of this PLA, shall be fully expected to objectively and responsibly perform their duties and obligations owed to the Department without regard to the potential union affiliation of such employees or of other employees on the Project.

2.10 This Agreement shall not apply to IDOT employees or employees of any other governmental entity.

ARTICLE III - ADMINISTRATION OF AGREEMENT

3.1 In order to assure that all parties have a clear understanding of the PLA, and to promote harmony, at the request of the Unions a post-award pre-job conference will be held among the Prime Contractor, all Subcontractors and Union representatives prior to the start of any Construction Work on the Project. No later than the conclusion of such pre-job conference, the parties shall, among other matters, provide to one another contact information for their respective representatives (including name, address, phone number, facsimile number, e-mail). Nothing herein shall be construed to limit the right of the Department to discuss or explain the purpose and intent of this PLA with prospective bidders or other interested parties prior to or following its award of the job.

3.2 Representatives of the Prime Contractor and the Unions shall meet as often as reasonably necessary following award until completion of the Project to assure the effective implementation of this PLA.

3.3 Any notice contemplated under Article VI and VII of this Agreement to a signatory labor organization shall be made in writing to the Local Union with copies to the local union's International Representative.

ARTICLE IV - HOURS OF WORK AND GENERAL CONDITIONS

4.1 The standard work day and work week for Construction Work on the Project shall be consistent with the respective collective bargaining agreements. In the event Project site or other job conditions dictate a change in the established starting time and/or a staggered lunch period for portions of the Project or for specific crafts, the Prime Contractor, relevant Subcontractors and business managers of the specific crafts involved shall confer and mutually agree to such changes as appropriate. If proposed work schedule changes cannot be mutually agreed upon between the parties, the hours fixed at the time of the pre-job meeting shall prevail.

4.2 Shift work may be established and directed by the Prime Contractor or relevant Subcontractor as reasonably necessary or appropriate to fulfill the terms of its contract with the Department. If used, shift hours, rates and conditions shall be as provided in the applicable collective bargaining agreement.

4.3 The parties agree that chronic and/or unexcused absenteeism is undesirable and must be controlled in accordance with procedures established by the applicable collective bargaining agreement. Any employee disciplined for absenteeism in accordance with such procedures shall be suspended from all work on the Project for not less than the maximum period permitted under the applicable collective bargaining agreement.

4.4 Except as may be otherwise expressly provided by the applicable collective bargaining agreement, employment begins and ends at the Project site; employees shall be at their place of work at the starting time; and employees shall remain at their place of work until quitting time.

4.5 Except as may be otherwise expressly provided by the applicable collective bargaining agreement, there shall be no limit on production by workmen, no restrictions on the full use of tools or equipment, and no restrictions on efficient use of manpower ortechniques of construction other than as may be required by safety regulations.

4.6 The parties recognize that specialized or unusual equipment may be installed on the Project. In such cases, the Union recognizes the right of the Prime Contractor or Subcontractor to involve the equipment supplier or vendor's personnel in supervising the setting up of the equipment, making modifications and final alignment, and performing similar activities that may be reasonably necessary prior to and during the start-up procedure in order to protect factory warranties. The Prime Contractor or Subcontractor shall notify the Union representatives in advance of any work at the job-site by such vendor personnel in order to promote a harmonious relationship between the equipment vendor's personnel and other Project employees.

4.7 For the purpose of promoting full and effective implementation of this PLA, authorized Union representatives shall have access to the Project job-site during scheduled work hours. Such access shall be conditioned upon adherence to all reasonable visitor and security rules of general applicability that may be established for the Project site at the pre-job conference or from time to time thereafter.

ARTICLE V – GRIEVANCE PROCEDURES FOR DISPUTES ARISING UNDER A PARTICULAR COLLECTIVE BARGAINING AGREEMENT

5.1 In the event a dispute arises under a particular collective bargaining agreement specifically not including jurisdictional disputes referenced in Article VI below, said dispute shall be resolved by the Grievance/Arbitration procedure of the applicable collective bargaining agreement. The resulting determination from this process shall be final and binding on all parties bound to its process.

5.2 Employers covered under this Agreement shall have the right to discharge or discipline any employee who violates the provisions of this Agreement. Such discharge or discipline by a contractor or subcontractor shall be subject to Grievance/Arbitration procedure of the applicable collective bargaining agreement only as to the fact of such violation of this agreement. If such fact is established, the penalty imposed shall not be disturbed. Work at the Project site shall continue without disruption or hindrance of any kind as a result of a Grievance/Arbitration procedure under this Article.

5.3 In the event there is a deadlock in the foregoing procedure, the parties agree that the matter shall be submitted to arbitration for the selection and decision of an Arbitrator governed under paragraph 6.8.

ARTICLE VI –DISPUTES: GENERAL PRINCIPLES

6.1 This Agreement is entered into to prevent strikes, lost time, lockouts and to facilitate the peaceful adjustment of jurisdictional disputes in the building and construction industry and to prevent waste and unnecessary avoidable delays and expense, and for the further purpose of at all times securing for the employer sufficient skilled workers.

6.2 A panel of Permanent Arbitrators are attached as addendum (A) to this agreement. By mutual agreement between IDOT and the Unions, the parties can open this section of the agreement as needed to make changes to the list of permanent arbitrators.

The arbitrator is not authorized to award back pay or any other damages for a miss assignment of work. Nor may any party bring an independent action for back pay or any other damages, based upon a decision of an arbitrator.

6.3 The PLA Jurisdictional Dispute Resolution Process ("Process") sets forth the procedures below to resolve jurisdictional disputes between and among Contractors, Subcontractors, and Unions engaged in the building and construction industry. Further, the Process will be followed for any grievance or dispute arising out of the interpretation or application of this PLA by the parties except for the prohibition on attorneys contained in 6.11. All decisions made through the Process are final and binding upon all parties.

DISPUTE PROCESS

6.4 Administrative functions under the Process shall be performed through the offices of the President and/or Secretary-Treasurer of the Illinois State Federation of Labor, or their designated representative, called the Administrator. In no event shall any officer, employee, agent, attorney, or other representative of the Illinois Federation of Labor, AFL- CIO be subject to any subpoena to appear or testify at any jurisdictional dispute hearing.

6.5 There shall be no abandonment of work during any case participating in this Process or in violation of the arbitration decision. All parties to this Process release the Illinois State Federation of Labor ("Federation") from any liability arising from its action or inaction and covenant not to sue the Federation, nor its officers, employees, agents or attorneys.

6.6 In the event of a dispute relating to trade or work jurisdiction, all parties, including the employers, Contractors or Subcontractors, agree that a final and binding resolution of the dispute shall be resolved as follows:

(a) Representatives of the affected trades and the Contractor or Subcontractor shall meet on the job site within two (2) business days after receiving written notice in an effort to resolve the dispute. (In the event there is a dispute between local unions affiliated with the same International Union, the decision of the General President, or his/her designee, as the internal jurisdictional authority of that International Union, shall constitute a final and binding decision and determination as to the jurisdiction of work.)

(b) If no settlement is achieved subsequent to the preceding Paragraph, the matter shall be referred to the local area Building & Construction Trades Council, which shall meet with the affected trades within two (2) business days subsequent to receiving written notice. In the event the parties do not wish to avail themselves of the local Building & Construction Trades Council, the parties may elect to invoke the services of their respective International Representatives with no extension of the time limitations. An agreement reached at this Step shall be final and binding upon all parties.

(c) If no settlement agreement is reached during the proceedings contemplated by Paragraphs "a" or "b" above, the matter shall be immediately referred to the Illinois Jurisdictional Dispute Process for final and binding resolution of said dispute. Said referral submission shall be in writing and served upon the Illinois State Federation of Labor, or the Administrator, pursuant to paragraph 6.4 of this agreement. The Administrator shall, within three (3) days, provide for the selection of an available Arbitrator to hear said dispute within this time period. Upon good cause shown and determined by the Administrator, an additional three (3) day extension for said hearing shall be granted at the sole discretion of the Administrator. Only upon mutual agreement of all parties may the Administrator extend the hearing for a period in excess of the time frames contemplated under this Paragraph. Business days are defined as Monday through Friday, excluding contract holidays.

6.7 The primary concern of the Process shall be the adjustment of jurisdictional disputes arising out of the Project. A sufficient number of Arbitrators shall be selected from list of approved Arbitrators as referenced Sec. 6.2 and shall be assigned per Sec. 6.8. Decisions shall be only for the Project and shall become effective immediately upon issuance and complied with by all parties. The authority of the Arbitrator shall be restricted and limited specifically to the terms and provisions of Article VI and generally to this Agreement as a whole.

6.8 Arbitrator chosen shall be randomly selected based on the list of Arbitrators in Sec. 6.2 and geographical location of the jurisdictional dispute and upon his/her availability, and ability to conduct a Hearing within two (2) business days of said notice. The Arbitrator may issue a "bench" decision immediately following the Hearing or he/she may elect to only issue a written decision, said decision must be issued within two (2) business days subsequent to the completion of the Hearing. Copies of all notices, pleadings, supporting memoranda, decisions, etc. shall be provided to all disputing parties and the Illinois State Federation of Labor.

Any written decision shall be in accordance with this Process and shall be final and binding upon all parties to the dispute and may be a "short form" decision. Fees and costs of the arbitrator shall be divided evenly between the contesting parties except that any party wishing a full opinion and decision beyond the short form decision shall bear the reasonable fees and costs of such full opinion. The decision of the Arbitrator shall be final and binding upon the parties hereto, their members, and affiliates.

In cases of jurisdictional disputes or other disputes between a signatory labor organization and another labor organization, both of which is an affiliate or member of the same International Union, the matter or dispute shall be settled in the manner set forth by their International Constitution and/or as determined by the International Union's General President whose decision shall be final and binding upon all parties. In no event shall there be an abandonment of work.

6.9 In rendering a decision, the Arbitrator shall determine:

(a) First, whether a previous agreement of record or applicable agreement, including a disclaimer agreement, between National or International Unions to the dispute or agreements between local unions involved in the dispute, governs;

(b) Only if the Arbitrator finds that the dispute is not covered by an appropriate or applicable agreement of record or agreement between the crafts to the dispute, he shall then consider the established trade practice in the industry and prevailing practice in the locality. Where there is a previous decision of record governingthe case, the Arbitrator shall give equal weight to such decision of record, unless the prevailing practice in the locality in the past ten years favors one craft. In that case, the Arbitrator shall base his decision on the prevailing practice in the locality. Except, that if the Arbitrator finds that a craft has improperly obtained the prevailing practice in the locality through raiding, the undercutting of wages or by the use of vertical agreements, the Arbitrator shall rely on the decision of record and established trade practice in the industry rather than the prevailing practice in the locality; and,

(c) Only if none of the above criteria is found to exist, the Arbitrator shall then consider that because efficiency, cost or continuity and good management are essential to the well being of the industry, the interests of the consumer or the past practices of the employer shall not be ignored.

(d) The arbitrator is not authorized to award back pay or any other damages for a mis-assignment of work. Nor may any party bring an independent action for back pay or any other damages, based upon a decision of an arbitrator.

6.10 The Arbitrator shall set forth the basis for his/her decision and shall explain his/her findings regarding the applicability of the above criteria. If lower ranked criteria are relied upon, the Arbitrator shall explain why the higher-ranked criteria were not deemed applicable. The Arbitrator's decision shall only apply to the Project. Agreements of Record, for other PLA projects, are applicable only to those parties signatory to such agreements. Decisions of Record are those that were either attested to by the former Impartial Jurisdictional Disputes Board or adopted by the National Arbitration Panel.

6.11 All interested parties, as determined by the Arbitrator, shall be entitled to make presentations to the Arbitrator. Any interested labor organization affiliated to the PLA Committee and party present at the Hearing, whether making a presentation or not, by such presence shall be deemed to accept the jurisdiction of the Arbitrator and to agreeto be bound by its decision. In addition to the representative of the local labor organization, a representative of the labor organization's International Union may appear on behalf of the parties. Each party is responsible for arranging for its witnesses. In the event an Arbitrator's subpoena is required, the party requiring said subpoena shall prepare the subpoena for the Arbitrator to execute. Service of the subpoena upon any witness shall be the responsibility of the issuing party.

Attorneys shall not be permitted to attend or participate in any portion of a Hearing.

The parties are encouraged to determine, prior to Hearing, documentary evidence which may be presented to the Arbitrator on a joint basis.

6.12 The Order of Presentation in all Hearings before an Arbitrator shall be

I. Identification and Stipulation of the Parties
II. Unions(s) claiming the disputed work presents its case
III. Union(s) assigned the disputed work presents its case
IV. Employer assigning the disputed work presents its case
V. Evidence from other interested parties (i.e., general contractor, project manager, owner)
VI. Rebuttal by union(s) claiming the disputed work
VII. Additional submissions permitted and requested by Arbitrator
VIII. Closing arguments by the parties

6.13 All parties bound to the provisions of this Process hereby release the Illinois State Federation of Labor and IDOT, their respective officers, agents, employees or designated representatives, specifically including any Arbitrator participating in said Process, from any and all liability or claim, of whatsoever nature, and specifically incorporating the protections provided in the Illinois Arbitration Act, as amended from time to time.

6.14 The Process, as an arbitration panel, nor its Administrator, shall have any authority to undertake any action to enforce its decision(s). Rather, it shall be the responsibility of the prevailing party to seek appropriate enforcement of a decision, including findings, orders or awards of the Arbitrator or Administrator determining non-compliance with a prior award or decision.

6.15 If at any time there is a question as to the jurisdiction of the Illinois Jurisdictional Dispute Resolution Process, the primary responsibility for any determination of the arbitrability of a dispute and the jurisdiction of the Arbitrator shall be borne by the party requesting the Arbitrator to hear the underlying jurisdictional dispute. The affected party or parties may proceed before the Arbitrator even in the absence or one or more stipulated parties with the issue of jurisdiction as an additional item to be decided by the Arbitrator. The Administrator may participate in proceedings seeking a declaration or determination that the underlying dispute is subject to the jurisdiction and process of the Illinois Jurisdictional Dispute Resolution Process. In any such proceedings, the non-prevailing party and/or the party challenging the jurisdiction of the Illinois Jurisdictional Dispute Resolution Process shall bear all the costs, expenses and attorneys' fees incurred by the Illinois Jurisdictional Dispute Resolution Process and/or its Administrator in establishing its jurisdiction.

ARTICLE VII - WORK STOPPAGES AND LOCKOUTS

7.1 During the term of this PLA, no Union or any of its members, officers, stewards, employees, agents or representatives shall instigate, support, sanction, maintain, or participate in any strike, picketing, walkout, work stoppage, slow down or other activity that interferes with the routine and timely prosecution of work at the Project site or at any other contractor's or supplier's facility that is necessary to performance of work at the Project site. Hand billing at the Project site during the designated lunch period and before commencement or following conclusion of the established standard workday shall not, in itself, be deemed an activity that interferes with the routine and timely prosecution of work on the Project.

7.2 Should any activity prohibited by paragraph 7.1 of this Article occur, the Union shall undertake all steps reasonably necessary to promptly end such prohibited activities.

7.2.A No Union complying with its obligations under this Article shall be liable for acts of employees for which it has no responsibility or for the unauthorized acts of employees it represents. Any employee who participates or encourages any activity prohibited by paragraph 7.1 shall be immediately suspended from all work on the Project for a period equal to the greater of (a) 60 days; or (b) the maximum disciplinary period allowed under the applicable collective bargaining agreement for engaging in comparable unauthorized or prohibited activity.

7.2.B Neither the PLA Committee nor its affiliates shall be liable for acts of employees for which it has no responsibility. The principal officer or officers of the PLA Committee will immediately instruct, order and use the best efforts of his office to cause the affiliated union or unions to cease any violations of this Article. The PLA Committee in its compliance with this obligation shall not liable for acts of its affiliates. The principal officer or officers of any involved affiliate will immediately instruct, order or use the best effort of his office to cause the employees the union represents to cease any violations of this Article. A union complying with this obligation shall not be liable for unauthorized acts of employees it represents. The failure of the Contractor to exercise its rights in any instance shall not be deemed a waiver of its rights in any other instance.

During the term of this PLA, the Prime Contractor and its Subcontractors shall not engage in any lockout at the Project site of employees covered by this Agreement.

7.3 Upon notification of violations of this Article, the principal officer or officers of the local area Building and Construction Trades Council, and the Illinois AFL-CIO Statewide Project Labor Agreement Committee as appropriate, will immediately instruct, order and use their best efforts to cause the affiliated union or unions to cease any violations of this Article. A Trades Council and the Committee otherwise in compliance with the obligations under this paragraph shall not be liable for unauthorized acts of its affiliates.

7.4 In the event that activities in violation of this Article are not immediately halted through the efforts of the parties, any aggrieved party may invoke the special arbitration provisions set forth in paragraph 7.5 of this Article.

7.5 Upon written notice to the other involved parties by the most expeditious means available, any aggrieved party may institute the following special arbitration procedure when a breech of this Article is alleged:

7.5.A The party invoking this procedure shall notify the individual designated as the Permanent Arbitrator pursuant to paragraph 6.8 of the nature of the alleged violation; such notice shall be by the most expeditious means possible. The initiating party may also furnish such additional factual information as may be reasonably necessary for the Permanent Arbitrator to understand the relevant circumstances. Copies of any written materials provided to the arbitrator shall also be contemporaneously provided by the most expeditious means possible to the party alleged to be in violation and to all other involved parties.

7.5.B Upon receipt of said notice the Permanent Arbitrator shall set and hold a hearing within twenty-four (24) hours if it is contended the violation is ongoing, but not before twenty-four (24) hours after the written notice to all parties involved as required above.

7.5.C The Permanent Arbitrator shall notify the parties by facsimile or any other effective written means, of the place and time chosen by the Permanent Arbitrator for this hearing. Said hearing shall be completed in one session. A failure of any party or parties to attend said hearing shall not delay the hearing of evidence or issuance of an Award by the Permanent Arbitrator.

7.5.D The sole issue at the hearing shall be whether a violation of this Article has, in fact, occurred. An Award shall be issued in writing within three (3) hours after the close of the hearing, and may be issued without a written opinion. If any party desires a written opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the Award. The Permanent Arbitrator may order cessation of the violation of this Article, and such Award shall be served on all parties by hand or registered mail upon issuance.

7.5.E Such Award may be enforced by any court of competent jurisdiction upon the filing of the Award and such other relevant documents as may be required. Facsimile or other hardcopy written notice of the filing of such enforcement proceedings shall be given to the other relevant parties. In a proceeding to obtain a temporary order enforcing the Permanent Arbitrator's Award as issued under this Article, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The Court's order or orders enforcing the Permanent Arbitrator's Award shall be served on all parties by hand or by delivery to their last known address or by registered mail.

7.6 Individuals found to have violated the provisions of this Article are subject to immediate termination. In addition, IDOT reserves the right to terminate this PLA as to any party found to have violated the provisions of this Article.

7.7 Any rights created by statue or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance therewith are hereby waived by parties to whom they accrue.

7.8 The fees and expenses of the Permanent Arbitrator shall be borne by the party or parties found in violation, or in the event no violation is found, such fees and expenses shall be borne by the moving party.

ARTICLE VIII – TERMS OF AGREEMENT

8.1 If any Article or provision of this Agreement shall be declared invalid, inoperative or unenforceable by operation of law or by any of the above mentioned tribunals of competent jurisdiction, the remainder of this Agreement or the application of such Article or provision to persons or circumstances other than those as to which it has been held invalid, inoperative or unenforceable shall not be affected thereby.

8.2 This Agreement shall be in full force as of and from the date of the Notice of Award until the Project contract is closed.

8.3 This PLA may not be changed or modified except by the subsequent written agreement of the parties. All parties represent that they have the full legal authority to enter into this PLA. This PLA may be executed by the parties in one or more counterparts.

8.4 Any liability arising out of this PLA shall be several and not joint. IDOT shall not be liable to any person or other party for any violation of this PLA by any other party, and no Contractor or Union shall be liable for any violation of this PLA by any other Contractor or Union.

8.5 The failure or refusal of a party to exercise its rights hereunder in one or more instances shall not be deemed a waiver of any such rights in respect of a separate instance of the same or similar nature.

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Addendum A

IDOT Slate of Permanent Arbitrators

1. Bruce Feldacker
2. Thomas F. Gibbons
3. Edward J. Harrick
4. Brent L. Motchan
5. Robert Perkovich
6. Byron Yaffee
7. Glenn A. Zipp

Execution Page

Illinois Department of Transportation

VACANT
Director of Highways Project Implementation

Director of Finance & Administration

Philip Kaufmann, Chief Counsel

Omer Osman, Acting Secretary (Date)

Illinois AFL-CIO Statewide Project Labor Agreement Committee, representing the Unions listed below:

(Date)

List Unions:

Exhibit A - Contractor Letter of Assent

(Date)

To All Parties:

In accordance with the terms and conditions of the contract for Construction Work on [Contract No.], this Letter of Assent hereby confirms that the undersigned Prime Contractor or Subcontractor agrees to be bound by the terms and conditions of the Project Labor Agreement established and entered into by the Illinois Department of Transportation in connection with said Project.

It is the understanding and intent of the undersigned party that this Project Labor Agreement shall pertain only to the identified Project. In the event it is necessary for the undersigned party to become signatory to a collective bargaining agreement to which it is not otherwise a party in order that it may lawfully make certain required contributions to applicable fringe benefit funds, the undersigned party hereby expressly conditions its acceptance of and limits its participation in such collective bargaining agreement to its work on the Project.

(Authorized Company Officer)

(Company)

ACCESSIBLE PEDESTRIAN SIGNALS (APS) (BDE)

Effective: April 1, 2003
Revised: January 1, 2022

Description. This work shall consist of furnishing and installing accessible pedestrian signals (APS). Each APS shall consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a light emitting diode (LED) indicator light, a solid-state electronic control board, a power supply, wiring, and mounting hardware. The APS shall meet the requirements of the MUTCD and Sections 801 and 888 of the Standard Specifications, except as modified herein.

Electrical Requirements. The APS shall operate with systems providing 95 to 130 VAC, 60 Hz and throughout an ambient air temperature range of -29 to +160 °F (-34 to +70 °C).

The APS shall contain a power protection circuit consisting of both fuse and transient protection.

Audible Indications. A pushbutton locator tone shall sound at each pushbutton and shall be deactivated during the associated walk indication and when associated traffic signals are in flashing mode. Pushbutton locator tones shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals. Each actuation of the pushbutton shall be accompanied by the speech message "Wait".

If two accessible pedestrian pushbuttons are placed less than 10 ft (3 m) apart or placed on the same pole, the audible walk indication shall be a speech walk message. This message shall sound throughout the WALK interval only. The verbal message shall be modeled after: "'Street Name.' Walk Sign is on to cross "Street Name'." For signalized intersections utilizing exclusive pedestrian phasing, the verbal message shall be "Walk sign is on for all crossings". In addition, a speech pushbutton information message shall be provided by actuating the APS pushbutton when the WALK interval is not timing. This verbal message shall be modeled after: "Wait. Wait to cross 'Street Name' at 'Street Name'".

Where two accessible pedestrian pushbuttons are separated by at least 10 ft (3 m), the walk indication shall be an audible percussive tone. It shall repeat at 8 to 10 ticks per second with a dominant frequency of 880 Hz.

Automatic volume adjustments in response to ambient traffic sound level shall be provided up to a maximum volume of 100 dBA. Locator tone and verbal messages shall be no more than 5 dB louder than ambient sound.

At locations with railroad interconnection, an additional speech message stating "Walk time shortened when train approaches" shall be used after the speech walk message. At locations with emergency vehicle preemption, an additional speech message "Walk time shortened when emergency vehicle approaches" shall be used after the speech walk message.

Pedestrian Pushbutton. Pedestrian pushbuttons shall be at least 2 in. (50 mm) in diameter or width. The force required to activate the pushbutton shall be no greater than 3.5 lb (15.5 N).

A red LED shall be located on or near the pushbutton which, when activated, acknowledges the pedestrians request to cross the street.

Signage. A sign shall be located immediately above the pedestrian pushbutton and parallel to the crosswalk controlled by the pushbutton. The sign shall conform to one of the following standard MUTCD designs: R10-3, R10-3a, R10-3e, R10-3i, R10-4, and R10-4a.

Tactile Arrow. A tactile arrow, pointing in the direction of travel controlled by a pushbutton, shall be provided on the pushbutton.

Vibrotactile Feature. The pushbutton shall pulse when depressed and shall vibrate continuously throughout the WALK interval.

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

Basis of Payment. This work will be paid for at the contract unit price per each for ACCESSIBLE PEDESTRIAN SIGNALS.

80099

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

BITUMINOUS MATERIALS COST ADJUSTMENTS (BDE)

Effective: November 2, 2006
Revised: August 1, 2017

Description. Bituminous material cost adjustments will be made to provide additional compensation to the Contractor, or credit to the Department, for fluctuations in the cost of bituminous materials when optioned by the Contractor. The bidder shall indicate with their bid whether or not this special provision will be part of the contract.

The adjustments shall apply to permanent and temporary hot-mix asphalt (HMA) mixtures, bituminous surface treatments (cover and seal coats), and preventative maintenance type surface treatments that are part of the original proposed construction, or added as extra work and paid for by agreed unit prices. The adjustments shall not apply to bituminous prime coats, tack coats, crack filling/sealing, joint filling/sealing, or extra work paid for at a lump sum price or by force account.

Method of Adjustment. Bituminous materials cost adjustments will be computed as follows.

$CA = (BPI_P - BPI_L) \times (\%AC_V / 100) \times Q$

Where: CA = Cost Adjustment, $.
BPI_P = Bituminous Price Index, as published by the Department for the month the work is performed, $/ton ($/metric ton).
BPI_L = Bituminous Price Index, as published by the Department for the month prior to the letting for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price, $/ton ($/metric ton).
$\%AC_V$ = Percent of virgin Asphalt Cement in the Quantity being adjusted. For HMA mixtures, the % AC_V will be determined from the adjusted job mix formula. For bituminous materials applied, a performance graded or cutback asphalt will be considered to be 100% AC_V and undiluted emulsified asphalt will be considered to be 65% AC_V.
Q = Authorized construction Quantity, tons (metric tons) (see below).

For HMA mixtures measured in square yards: Q, tons = A x D x (G_{mb} x 46.8) / 2000. For HMA mixtures measured in square meters: Q, metric tons = A x D x (G_{mb} x 1) / 1000. When computing adjustments for full-depth HMA pavement, separate calculations will be made for the binder and surface courses to account for their different G_{mb} and % AC_V.

For bituminous materials measured in gallons: Q, tons = V x 8.33 lb/gal x SG / 2000
For bituminous materials measured in liters: Q, metric tons = V x 1.0 kg/L x SG / 1000

Where: A = Area of the HMA mixture, sq yd (sq m).
D = Depth of the HMA mixture, in. (mm).
G_{mb} = Average bulk specific gravity of the mixture, from the approved mix design.

V = Volume of the bituminous material, gal (L).
SG = Specific Gravity of bituminous material as shown on the bill of lading.

Basis of Payment. Bituminous materials cost adjustments may be positive or negative but will only be made when there is a difference between the BPI_L and BPI_P in excess of five percent, as calculated by:

Percent Difference = $\{(BPI_L - BPI_P) \div BPI_L\} \times 100$

Bituminous materials cost adjustments will be calculated for each calendar month in which applicable bituminous material is placed; and will be paid or deducted when all other contract requirements for the work placed during the month are satisfied. The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

80173

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:

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"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

CONCRETE SEALER (BDE)

Effective: November 1, 2023

Replace Section 1026 of the Standard Specifications with the following:

"**SECTION 1026. CONCRETE SEALER**

1026.01 General. Sealer types shall be according to the listing in AASHTO M 224. All concrete sealer types shall meet the sealer requirements of AASHTO M 224 when tested in accordance with AASHTO T 384. The sealer shall be listed on the Department's qualified product list.

The sealer shall have a clear or amber color when dry.

The Department will perform the sealer characterization properties of ATR-FTIR spectra, total solids, and specific gravity in accordance with AASHTO M 224."

80453

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 **9**% 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

FUEL COST ADJUSTMENT (BDE)

Effective: April 1, 2009
Revised: August 1, 2017

Description. Fuel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in fuel prices when optioned by the Contractor. The bidder shall indicate with their bid whether or not this special provision will be part of the contract. Failure to indicate "Yes" for any category of work will make that category of work exempt from fuel cost adjustment.

General. The fuel cost adjustment shall apply to contract pay items as grouped by category. The adjustment shall only apply to those categories of work checked "Yes", and only when the cumulative plan quantities for a category exceed the required threshold. Adjustments to work items in a category, either up or down, and extra work paid for by agreed unit price will be subject to fuel cost adjustment only when the category representing the added work was subject to the fuel cost adjustment. Extra work paid for at a lump sum price or by force account will not be subject to fuel cost adjustment. Category descriptions and thresholds for application and the fuel usage factors which are applicable to each are as follows:

(a) Categories of Work.

(1) Category A: Earthwork. Contract pay items performed under Sections 202, 204, and 206 including any modified standard or nonstandard items where the character of the work to be performed is considered earthwork. The cumulative total of all applicable item plan quantities shall exceed 25,000 cu yd (20,000 cu m). Included in the fuel usage factor is a weighted average 0.10 gal/cu yd (0.50 liters/cu m) factor for trucking.

(2) Category B: Subbases and Aggregate Base Courses. Contract pay items constructed under Sections 311, 312 and 351 including any modified standard or nonstandard items where the character of the work to be performed is considered construction of a subbase or aggregate, stabilized or modified base course. The cumulative total of all applicable item plan quantities shall exceed 5000 tons (4500 metric tons). Included in the fuel usage factor is a 0.60 gal/ton (2.50 liters/metric ton) factor for trucking.

(3) Category C: Hot-Mix Asphalt (HMA) Bases, Pavements and Shoulders. Contract pay items constructed under Sections 355, 406, 407 and 482 including any modified standard or nonstandard items where the character of the work to be performed is considered HMA bases, pavements and shoulders. The cumulative total of all applicable item plan quantities shall exceed 5000 tons (4500 metric tons). Included in the fuel usage factor is 0.60 gal/ton (2.50 liters/metric ton) factor for trucking.

(4) Category D: Portland Cement Concrete (PCC) Bases, Pavements and Shoulders. Contract pay items constructed under Sections 353, 420, 421 and 483 including any

modified standard or nonstandard items where the character of the work to be performed is considered PCC base, pavement or shoulder. The cumulative total of all applicable item plan quantities shall exceed 7500 sq yd (6000 sq m). Included in the fuel usage factor is 1.20 gal/cu yd (5.94 liters/cu m) factor for trucking.

(5) Category E: Structures. Structure items having a cumulative bid price that exceeds $250,000 for pay items constructed under Sections 502, 503, 504, 505, 512, 516 and 540 including any modified standard or nonstandard items where the character of the work to be performed is considered structure work when similar to that performed under these sections and not included in categories A through D.

(b) Fuel Usage Factors.

English Units

Category	Factor	Units
A - Earthwork	0.34	gal / cu yd
B – Subbase and Aggregate Base courses	0.62	gal / ton
C – HMA Bases, Pavements and Shoulders	1.05	gal / ton
D – PCC Bases, Pavements and Shoulders	2.53	gal / cu yd
E – Structures	8.00	gal / $1000

Metric Units

Category	Factor	Units
A - Earthwork	1.68	liters / cu m
B – Subbase and Aggregate Base courses	2.58	liters / metric ton
C – HMA Bases, Pavements and Shoulders	4.37	liters / metric ton
D – PCC Bases, Pavements and Shoulders	12.52	liters / cu m
E – Structures	30.28	liters / $1000

(c) Quantity Conversion Factors.

Category	Conversion	Factor
B	sq yd to ton	0.057 ton / sq yd / in depth
	sq m to metric ton	0.00243 metric ton / sq m / mm depth
C	sq yd to ton	0.056 ton / sq yd / in depth
	sq m to metric ton	0.00239 m ton / sq m / mm depth
D	sq yd to cu yd	0.028 cu yd / sq yd / in depth
	sq m to cu m	0.001 cu m / sq m / mm depth

Method of Adjustment. Fuel cost adjustments will be computed as follows.

$CA = (FPI_P - FPI_L) \times FUF \times Q$

Where: CA = Cost Adjustment, $
FPI_P = Fuel Price Index, as published by the Department for the month the work is performed, $/gal ($/liter)
FPI_L = Fuel Price Index, as published by the Department for the month prior to the letting for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price, $/gal ($/liter)
FUF = Fuel Usage Factor in the pay item(s) being adjusted
Q = Authorized construction Quantity, tons (metric tons) or cu yd (cu m)

The entire FUF indicated in paragraph (b) will be used regardless of use of trucking to perform the work.

Basis of Payment. Fuel cost adjustments may be positive or negative but will only be made when there is a difference between the FPI_L and FPI_P in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(FPI_L - FPI_P) \div FPI_L\} \times 100$$

Fuel cost adjustments will be calculated for each calendar month in which applicable work is performed; and will be paid or deducted when all other contract requirements for the items of work are satisfied. The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

80229

HOT-MIX ASPHALT (BDE)

Effective: January 1, 2024
Revised: January 1, 2025

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."

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 (G_{mm}) will be based on the running average of four available Department test results for that project. If less than four G_{mm} test results are available, an average of all available Department test results for that project will be used. The initial G_{mm} 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 G_{mm}."

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 (G_{mm}) will be the Department mix design verification test result."

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

"Production is not required to stop after a test strip has been constructed."

80456

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

MECHANICALLY STABILIZED EARTH RETAINING WALLS (BDE)

Effective: August 1, 2023

Revise the second sentence of Articles 1003.07(d) and 1004.06(d) of the Standard Specifications to read:

"The Illinois Modified AASHTO T 296 test with pore pressure measurement may be used in lieu of AASHTO T 236."

Add the following to Article 522.02 of the Standard Specifications:

"(s) Metal Hardware Cast into Concrete.....1006.13"

80450

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.

Norfolk Southern Railway Co. | None | 16 Trains/Day
3 Commercial Place | | 60 mph
Norfolk, VA 25310-2191

Class 1 RR (Y or N): Y
DOT/AAR No. 479310V and 479322P | RR Mile Post: DH 413.02 and DH 413.70
RR Division: Western | RR Sub-Division: Decatur

For Freight/Passenger Information Contact: George Taylor | Phone: (678) 333-4274
For Insurance Information Contact: Scott Dickerson | Phone: (757) 629-2364

Union Pacific Railroad Company | 5 per day at 60 mph | 19 per day at 60 mph
1400 Douglas Street
Omaha, NE 68179-1870

Class 1 RR (Y or N): Y
DOT/AAR No.: 294289C | RR Mile Post: 183.43
RR Division: Illinois | RR Sub-Division: Springfield

For Freight/Passenger Information Contact: Chris Keckeisen | Phone: (402) 544-5131
For Insurance Information Contact: Chris Keckeisen | Phone: (402) 544-5131

Genesee & Wyoming, Inc. | 1 per day at 25 mph
13901 Sutton Park Drive South, Suite 270
Jacksonville, FL 32224

Class 1 RR (Y or N): N
DOT/AAR No.: 169960V | RR Mile Post: 86.05
RR Division: Northern | RR Sub-Division: Springfield

For Freight/Passenger Information Contact: Dale Summers | Phone: (530) 930-7513
For Insurance Information Contact: Kristine Storm | Phone: (904) 900-6250

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.

34261

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

SEEDING (BDE)

Effective: November 1, 2022

Revise Article 250.07 of the Standard Specifications to read:

"**250.07 Seeding Mixtures.** The classes of seeding mixtures and combinations of mixtures will be designated in the plans.

When an area is to be seeded with two or more seeding classes, those mixtures shall be applied separately on the designated area within a seven day period. Seeding shall occur prior to placement of mulch cover. A Class 7 mixture can be applied at any time prior to applying any seeding class or added to them and applied at the same time.

TABLE 1 - SEEDING MIXTURES			
Class - Type		Seeds	lb/acre (kg/hectare)
1	Lawn Mixture 1/	Kentucky Bluegrass	100 (110)
		Perennial Ryegrass	60 (70)
		Festuca rubra ssp. r*ubra* (Creeping Red Fescue)	40 (50)
1A	Salt Tolerant Lawn Mixture 1/	Kentucky Bluegrass	60 (70)
		Perennial Ryegrass	20 (20)
		Festuca rubra ssp. *rubra* (Creeping Red Fescue)	20 (20)
		Festuca brevipilla (Hard Fescue)	20 (20)
		Puccinellia distans (Fults Saltgrass or Salty Alkaligrass)	60 (70)
1B	Low Maintenance Lawn Mixture 1/	Turf-Type Fine Fescue 3/	150 (170)
		Perennial Ryegrass	20 (20)
		Red Top	10 (10)
		Festuca rubra ssp. *rubra* (Creeping Red Fescue)	20 (20)
2	Roadside Mixture 1/	*Lolium arundinaceum* (Tall Fescue)	100 (110)
		Perennial Ryegrass	50 (55)
		Festuca rubra ssp. r*ubra* (Creeping Red Fescue)	40 (50)
		Red Top	10 (10)
2A	Salt Tolerant Roadside Mixture 1/	*Lolium arundinaceum* (Tall Fescue)	60 (70)
		Perennial Ryegrass	20 (20)
		Festuca rubra ssp. *rubra* (Creeping Red Fescue)	30 (20)
		Festuca brevipila (Hard Fescue)	30 (20)
		Puccinellia distans (Fults Saltgrass or Salty Alkaligrass)	60 (70)
3	Northern Illinois Slope Mixture 1/	*Elymus canadensis* (Canada Wild Rye) 5/	5 (5)
		Perennial Ryegrass	20 (20)
		Alsike Clover 4/	5 (5)
		Desmanthus illinoensis (Illinois Bundleflower) 4/ 5/	2 (2)
		Schizachyrium scoparium (Little Bluestem) 5/	12 (12)
		Bouteloua curtipendula (Side-Oats Grama) 5/	10 (10)
		Puccinellia distans (Fults Saltgrass or Salty Alkaligrass)	30 (35)
		Oats, Spring	50 (55)
		Slender Wheat Grass 5/	15 (15)
		Buffalo Grass 5/ 7/	5 (5)
3A	Southern Illinois Slope Mixture 1/	Perennial Ryegrass	20 (20)
		Elymus canadensis (Canada Wild Rye) 5/	20 (20)
		Panicum virgatum (Switchgrass) 5/	10 (10)
		Schizachyrium scoparium (Little Blue Stem) 5/	12 (12)
		Bouteloua curtipendula (Side-Oats Grama) 5/	10 (10)
		Dalea candida (White Prairie Clover) 4/ 5/	5 (5)
		Rudbeckia hirta (Black-Eyed Susan) 5/	5 (5)
		Oats, Spring	50 (55)

Class – Type		Seeds	lb/acre (kg/hectare)
4	Native Grass 2/ 6/	*Andropogon gerardi* (Big Blue Stem) 5/	4 (4)
		Schizachyrium scoparium (Little Blue Stem) 5/	5 (5)
		Bouteloua curtipendula (Side-Oats Grama) 5/	5 (5)
		Elymus canadensis (Canada Wild Rye) 5/	1 (1)
		Panicum virgatum (Switch Grass) 5/	1 (1)
		Sorghastrum nutans (Indian Grass) 5/	2 (2)
		Annual Ryegrass	25 (25)
		Oats, Spring	25 (25)
		Perennial Ryegrass	15 (15)
4A	Low Profile Native Grass 2/ 6/	*Schizachyrium scoparium* (Little Blue Stem) 5/	5 (5)
		Bouteloua curtipendula (Side-Oats Grama) 5/	5 (5)
		Elymus canadensis (Canada Wild Rye) 5/	1 (1)
		Sporobolus heterolepis (Prairie Dropseed) 5/	0.5 (0.5)
		Annual Ryegrass	25 (25)
		Oats, Spring	25 (25)
		Perennial Ryegrass	15 (15)
4B	Wetland Grass and Sedge Mixture 2/ 6/	Annual Ryegrass	25 (25)
		Oats, Spring	25 (25)
		Wetland Grasses (species below) 5/	6 (6)

Species:	% By Weight
Calamagrostis canadensis (Blue Joint Grass)	12
Carex lacustris (Lake-Bank Sedge)	6
Carex slipata (Awl-Fruited Sedge)	6
Carex stricta (Tussock Sedge)	6
Carex vulpinoidea (Fox Sedge)	6
Eleocharis acicularis (Needle Spike Rush)	3
Eleocharis obtusa (Blunt Spike Rush)	3
Glyceria striata (Fowl Manna Grass)	14
Juncus effusus (Common Rush)	6
Juncus tenuis (Slender Rush)	6
Juncus torreyi (Torrey's Rush)	6
Leersia oryzoides (Rice Cut Grass)	10
Scirpus acutus (Hard-Stemmed Bulrush)	3
Scirpus atrovirens (Dark Green Rush)	3
Bolboschoenus fluviatilis (River Bulrush)	3
Schoenoplectus tabernaemontani (Softstem Bulrush)	3
Spartina pectinata (Cord Grass)	4

Class – Type		Seeds	lb/acre (kg/hectare)
5	Forb with Annuals Mixture 2/ 5/ 6/	Annuals Mixture (Below) Forb Mixture (Below)	1 (1) 10 (10)

Annuals Mixture - Mixture not exceeding 25 % by weight of any one species, of the following:

Coreopsis lanceolata (Sand Coreopsis)
Leucanthemum maximum (Shasta Daisy)
Gaillardia pulchella (Blanket Flower)
Ratibida columnifera (Prairie Coneflower)
Rudbeckia hirta (Black-Eyed Susan)

Forb Mixture - Mixture not exceeding 5 % by weight PLS of any one species, of the following:

Amorpha canescens (Lead Plant) 4/
Anemone cylindrica (Thimble Weed)
Asclepias tuberosa (Butterfly Weed)
Aster azureus (Sky Blue Aster)
Symphyotrichum leave (Smooth Aster)
Aster novae-angliae (New England Aster)
Baptisia leucantha (White Wild Indigo) 4/
Coreopsis palmata (Prairie Coreopsis)
Echinacea pallida (Pale Purple Coneflower)
Eryngium yuccifolium (Rattlesnake Master)
Helianthus mollis (Downy Sunflower)
Heliopsis helianthoides (Ox-Eye)
Liatris aspera (Rough Blazing Star)
Liatris pycnostachya (Prairie Blazing Star)
Monarda fistulosa (Prairie Bergamot)
Parthenium integrifolium (Wild Quinine)
Dalea candida (White Prairie Clover) 4/
Dalea purpurea (Purple Prairie Clover) 4/
Physostegia virginiana (False Dragonhead)
Potentilla arguta (Prairie Cinquefoil)
Ratibida pinnata (Yellow Coneflower)
Rudbeckia subtomentosa (Fragrant Coneflower)
Silphium laciniatum (Compass Plant)
Silphium terebinthinaceum (Prairie Dock)
Oligoneuron rigidum (Rigid Goldenrod)
Tradescantia ohiensis (Spiderwort)
Veronicastrum virginicum (Culver's Root)

Class – Type		Seeds	lb/acre (kg/hectare)
5A	Large Flower Native Forb Mixture 2/ 5/ 6/	Forb Mixture (see below)	5 (5)
		Species:	% By Weight
		Aster novae-angliae (New England Aster)	5
		Echinacea pallida (Pale Purple Coneflower)	10
		Helianthus mollis (Downy Sunflower)	10
		Heliopsis helianthoides (Ox-Eye)	10
		Liatris pycnostachya (Prairie Blazing Star)	10
		Ratibida pinnata (Yellow Coneflower)	5
		Rudbeckia hirta (Black-Eyed Susan)	10
		Silphium laciniatum (Compass Plant)	10
		Silphium terebinthinaceum (Prairie Dock)	20
		Oligoneuron rigidum (Rigid Goldenrod)	10
5B	Wetland Forb 2/ 5/ 6/	Forb Mixture (see below)	2 (2)
		Species:	% By Weight
		Acorus calamus (Sweet Flag)	3
		Angelica atropurpurea (Angelica)	6
		Asclepias incarnata (Swamp Milkweed)	2
		Aster puniceus (Purple Stemmed Aster)	10
		Bidens cernua (Beggarticks)	7
		Eutrochium maculatum (Spotted Joe Pye Weed)	7
		Eupatorium perfoliatum (Boneset)	7
		Helenium autumnale (Autumn Sneeze Weed)	2
		Iris virginica shrevei (Blue Flag Iris)	2
		Lobelia cardinalis (Cardinal Flower)	5
		Lobelia siphilitica (Great Blue Lobelia)	5
		Lythrum alatum (Winged Loosestrife)	2
		Physostegia virginiana (False Dragonhead)	5
		Persicaria pensylvanica (Pennsylvania Smartweed)	10
		Persicaria lapathifolia (Curlytop Knotweed)	10
		Pychanthemum virginianum (Mountain Mint)	5
		Rudbeckia laciniata (Cut-leaf Coneflower)	5
		Oligoneuron riddellii (Riddell Goldenrod)	2
		Sparganium eurycarpum (Giant Burreed)	5
6	Conservation Mixture 2/ 6/	*Schizachyrium scoparium* (Little Blue Stem) 5/	5 (5)
		Elymus canadensis (Canada Wild Rye) 5/	2 (2)
		Buffalo Grass 5/ 7/	5 (5)
		Vernal Alfalfa 4/	15 (15)
		Oats, Spring	48 (55)
6A	Salt Tolerant Conservation Mixture 2/ 6/	*Schizachyrium scoparium* (Little Blue Stem) 5/	5 (5)
		Elymus canadensis (Canada Wild Rye) 5/	2 (2)
		Buffalo Grass 5/ 7/	5 (5)
		Vernal Alfalfa 4/	15 (15)
		Oats, Spring	48 (55)
		Puccinellia distans (Fults Saltgrass or Salty Alkaligrass)	20 (20)
7	Temporary Turf Cover Mixture	Perennial Ryegrass	50 (55)
		Oats, Spring	64 (70)

Notes:

1/ Seeding shall be performed when the ambient temperature has been between 45 ºF (7 ºC) and 80 ºF (27 ºC) for a minimum of seven (7) consecutive days and is forecasted to be the same for the next five (5) days according to the National Weather Service.
2/ Seeding shall be performed in late fall through spring beginning when the ambient temperature has been below 45 ºF (7 ºC) for a minimum of seven (7) consecutive days and ending when the ambient temperature exceeds 80 ºF (27 ºC) according to the National Weather Service.
3/ Specific variety as shown in the plans or approved by the Engineer.
4/ Inoculation required.
5/ Pure Live Seed (PLS) shall be used.
6/ Fertilizer shall not be used.
7/ Seed shall be primed with KNO_3 to break dormancy and dyed to indicate such.

Seeding will be inspected after a period of establishment. The period of establishment shall be six (6) months minimum, but not to exceed nine (9) months. After the period of establishment, areas not exhibiting 75 percent uniform growth shall be interseeded or reseeded, as determined by the Engineer, at no additional cost to the Department."

80445

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

STEEL COST ADJUSTMENT (BDE)

Effective: April 2, 2004
Revised: January 1, 2022

Description. Steel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in steel prices when optioned by the Contractor. The bidder shall indicate with their bid whether or not this special provision will be part of the contract. Failure to indicate "Yes" for any item of work will make that item of steel exempt from steel cost adjustment.

Types of Steel Products. An adjustment will be made for fluctuations in the cost of steel used in the manufacture of the following items:

Metal Piling (excluding temporary sheet piling)
Structural Steel
Reinforcing Steel

Other steel materials such as dowel bars, tie bars, welded reinforcement, guardrail, steel traffic signal and light poles, towers and mast arms, metal railings (excluding wire fence), and frames and grates will be subject to a steel cost adjustment when the pay items they are used in have a contract value of $10,000 or greater.

The adjustments shall apply to the above items when they are part of the original proposed construction, or added as extra work and paid for by agreed unit prices. The adjustments shall not apply when the item is added as extra work and paid for at a lump sum price or by force account.

Documentation. Sufficient documentation shall be furnished to the Engineer to verify the following:

(a) The dates and quantity of steel, in lb (kg), shipped from the mill to the fabricator.

(b) The quantity of steel, in lb (kg), incorporated into the various items of work covered by this special provision. The Department reserves the right to verify submitted quantities.

Method of Adjustment. Steel cost adjustments will be computed as follows:

$SCA = Q \times D$

Where: SCA = steel cost adjustment, in dollars
Q = quantity of steel incorporated into the work, in lb (kg)
D = price factor, in dollars per lb (kg)

$D = MPI_M - MPI_L$

Where: MPI_M = The Materials Cost Index for steel as published by the Engineering News-Record for the month the steel is shipped from the mill. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

MPI_L = The Materials Cost Index for steel as published by the Engineering News-Record for the month prior to the letting for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price,. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

The unit weights (masses) of steel that will be used to calculate the steel cost adjustment for the various items are shown in the attached table.

No steel cost adjustment will be made for any products manufactured from steel having a mill shipping date prior to the letting date.

If the Contractor fails to provide the required documentation, the method of adjustment will be calculated as described above; however, the MPI_M will be based on the date the steel arrives at the job site. In this case, an adjustment will only be made when there is a decrease in steel costs.

Basis of Payment. Steel cost adjustments may be positive or negative but will only be made when there is a difference between the MPI_L and MPI_M in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(MPI_L - MPI_M) \div MPI_L\} \times 100$$

Steel cost adjustments will be calculated by the Engineer and will be paid or deducted when all other contract requirements for the items of work are satisfied. Adjustments will only be made for fluctuations in the cost of the steel as described herein. No adjustment will be made for changes in the cost of manufacturing, fabrication, shipping, storage, etc.

The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Attachment

Item	Unit Mass (Weight)
Metal Piling (excluding temporary sheet piling)	
Furnishing Metal Pile Shells 12 in. (305 mm), 0.179 in. (3.80 mm) wall thickness)	23 lb/ft (34 kg/m)
Furnishing Metal Pile Shells 12 in. (305 mm), 0.250 in. (6.35 mm) wall thickness)	32 lb/ft (48 kg/m)
Furnishing Metal Pile Shells 14 in. (356 mm), 0.250 in. (6.35 mm) wall thickness)	37 lb/ft (55 kg/m)
Other piling	See plans
Structural Steel	See plans for weights (masses)
Reinforcing Steel	See plans for weights (masses)
Dowel Bars and Tie Bars	6 lb (3 kg) each
Welded Reinforcement	63 lb/100 sq ft (310 kg/sq m)
Guardrail	
Steel Plate Beam Guardrail, Type A w/steel posts	20 lb/ft (30 kg/m)
Steel Plate Beam Guardrail, Type B w/steel posts	30 lb/ft (45 kg/m)
Steel Plate Beam Guardrail, Types A and B w/wood posts	8 lb/ft (12 kg/m)
Steel Plate Beam Guardrail, Type 2	305 lb (140 kg) each
Steel Plate Beam Guardrail, Type 6	1260 lb (570 kg) each
Traffic Barrier Terminal, Type 1 Special (Tangent)	730 lb (330 kg) each
Traffic Barrier Terminal, Type 1 Special (Flared)	410 lb (185 kg) each
Steel Traffic Signal and Light Poles, Towers and Mast Arms	
Traffic Signal Post	11 lb/ft (16 kg/m)
Light Pole, Tenon Mount and Twin Mount, 30 - 40 ft (9 – 12 m)	14 lb/ft (21 kg/m)
Light Pole, Tenon Mount and Twin Mount, 45 - 55 ft (13.5 – 16.5 m)	21 lb/ft (31 kg/m)
Light Pole w/Mast Arm, 30 - 50 ft (9 – 15.2 m)	13 lb/ft (19 kg/m)
Light Pole w/Mast Arm, 55 - 60 ft (16.5 – 18 m)	19 lb/ft (28 kg/m)
Light Tower w/Luminaire Mount, 80 - 110 ft (24 – 33.5 m)	31 lb/ft (46 kg/m)
Light Tower w/Luminaire Mount, 120 - 140 ft (36.5 – 42.5 m)	65 lb/ft (97 kg/m)
Light Tower w/Luminaire Mount, 150 - 160 ft (45.5 – 48.5 m)	80 lb/ft (119 kg/m)
Metal Railings (excluding wire fence)	
Steel Railing, Type SM	64 lb/ft (95 kg/m)
Steel Railing, Type S-1	39 lb/ft (58 kg/m)
Steel Railing, Type T-1	53 lb/ft (79 kg/m)
Steel Bridge Rail	52 lb/ft (77 kg/m)
Frames and Grates	
Frame	250 lb (115 kg)
Lids and Grates	150 lb (70 kg)

80127

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

In accordance with 49 CFR 26.11(c) all bidders for federally assisted contracts shall submit bidders list information with their bid or initial response to a procurement solicitation. Submission of the bidders list information is a material bidding requirement, and failure to comply with this requirement may render the bid non-responsive.

The bidders list information shall be provided for each firm from whom the bidder receives any bid as a subcontractor. This requirement is not limited to DBE subcontractor bids but applies to 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 contain the following.

(a) Firm name;
(b) Firm address including ZIP code;
(c) Firm's status as a DBE or non-DBE;
(d) Race and gender information for the firm's majority owner;
(e) NAICS code applicable to each scope of work the firm sought to perform in its bid;
(f) Age of the firm; and
(g) The annual gross receipts of the firm (this may be provided by indicating whether the firm’s annual gross receipts are less than $1 million; $1-3 million; $3-6 million; $6-10 million; etc.).

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

SURFACE TESTING OF PAVEMENTS – IRI (BDE)

Effective: January 1, 2021
Revised: January 1, 2023

Description. This work shall consist of testing the ride quality of the finished surface of pavement sections with new concrete pavement, PCC overlays, full-depth HMA, and HMA overlays with at least 2.25 in. (57 mm) total thickness of new HMA combined with either HMA binder or HMA surface removal, according to Illinois Test Procedure 701, "Ride Quality Testing Using the International Roughness Index (IRI)". Work shall be according to Sections 406, 407, or 420 of the Standard Specifications, except as modified herein.

Hot-Mix Asphalt (HMA) Overlays

Add the following to Article 406.03 of the Standard Specifications:

"(n) Pavement Surface Grinding Equipment.....1101.04"

Revise Article 406.11 of the Standard Specifications to read:

"**406.11 Surface Tests.** Prior to HMA overlay pavement improvements, the Engineer will measure the smoothness of the existing high-speed mainline pavement. The Contractor shall measure the smoothness of the finished high-speed mainline, low-speed mainline, and miscellaneous pavements after the pavement improvement is complete but within the same construction season. Testing shall be performed in the presence of the Engineer and according to Illinois Test Procedure 701. The pavement will be identified as high-speed mainline, low-speed mainline, or miscellaneous as follows.

(a) Test Sections.

(1) High-Speed Mainline Pavement. High-speed mainline pavement consists of pavements, ramps, and loops with a posted speed limit greater than 45 mph. These sections shall be tested with an inertial profiling system (IPS).

(2) Low-Speed Mainline Pavement. Low-speed mainline pavement consists of pavements, ramps, and loops with a posted speed limit of 45 mph or less. These sections shall be tested using a 16 ft (5 m) straightedge or with an IPS analyzed using the rolling 16 ft (5 m) straightedge simulation in ProVAL.

(3) Miscellaneous Pavement. Miscellaneous pavement are segments that either cannot readily be tested by an IPS or conditions beyond the control of the Contractor preclude the achievement of smoothness levels typically achievable with mainline pavement construction. This may include the following examples or as determined by the Engineer.

a. Pavement on horizontal curves with a centerline radius of curvature of less than or equal to 1,000 ft (300 m) and the pavement within the superelevation transition of such curves;

b. Pavement on vertical curves having a length less than or equal to 200 ft (60 m) in combination with an algebraic change in tangent grade greater than or equal to 3 percent as may occur on urban ramps or other constricted-space facilities;

c. The first and last 50 ft (15 m) of a pavement section where the Contractor is not responsible for the adjoining surface;

d. Intersections and the 25 ft (7.6 m) before and after an intersection or end of radius return;

e. Variable width pavements;

f. Side street returns, to the end of radius return;

g. Crossovers;

h. Pavement connector for bridge approach slab;

i. Bridge approach slab;

j. Pavement that must be constructed in segments of 600 ft (180 m) or less;

k. Pavement within 25 ft (7.6 m) of manholes, utility structures, at-grade railroad crossings, or other appurtenances;

l. Turn lanes; and

m. Pavement within 5 ft (1.5 m) of jobsite sampling locations for HMA volumetric testing that fall within the wheel path.

Miscellaneous pavement shall be tested using a 16 ft (5 m) straightedge.

(4) International Roughness Index (IRI). An index computed from a longitudinal profile measurement using a quarter-car simulation at a simulation speed of 50 mph (80 km/h).

(5) Mean Roughness Index (MRI). The average of the IRI values for the right and left wheel tracks.

a. MRI_O. The MRI of the existing pavement prior to construction.

b. MRI_I. The MRI value that warrants an incentive payment.

c. MRI_F. The MRI value that warrants full payment.

d. MRI_D. The MRI value that warrants a financial disincentive.

(6) Areas of Localized Roughness (ALR). Isolated areas of roughness, which can cause significant increase in the calculated MRI for a given sublot.

(7) Sublot. A continuous strip of pavement 0.1 mile (160 m) long and one lane wide. A partial sublot greater than or equal to 264 ft (80 m) will be subject to the same evaluation as a whole sublot. Partial sublots less than 264 ft (80 m) shall be included with the previous sublot for evaluation purposes.

(b) Corrective Work. Corrective work shall be completed according to the following.

(1) High-Speed Mainline Pavement. For high-speed mainline pavement, any 25 ft (7.6 m) interval with an ALR in excess of 200 in./mile (3,200 mm/km) will be identified by the Engineer and shall be corrected by the Contractor. Any sublot having a MRI greater than MRI_D, including ALR, shall be corrected to reduce the MRI to the MRI_F, or replaced at the Contractor's option.

(2) Low-Speed Mainline Pavement. Surface variations in low-speed mainline pavement which exceed the 5/16 in. (8 mm) tolerance will be identified by the Engineer and shall be corrected by the Contractor.

(3) Miscellaneous Pavements. Surface variations in miscellaneous pavement which exceed the 5/16 in. (8 mm) tolerance will be identified by the Engineer and shall be corrected by the Contractor.

Corrective work shall be completed with pavement surface grinding equipment or by removing and replacing the pavement. Corrective work shall be applied to the full lane width. When completed, the corrected area shall have uniform texture and appearance, with the beginning and ending of the corrected area perpendicular to the centerline of the paved surface.

Upon completion of the corrective work, the surface of the sublot(s) shall be retested. The Contractor shall furnish the data and reports to the Engineer within 2 working days after corrections are made. If the MRI and/or ALR still do not meet the requirements, additional corrective work shall be performed.

Corrective work shall be at no additional cost to the Department.

(c) Smoothness Assessments. Assessments will be paid to or deducted from the Contractor for each sublot of high-speed mainline pavement per the Smoothness Assessment Schedule. Assessments will be based on the MRI of each sublot prior to performing any corrective work unless the Contractor has chosen to remove and replace the pavement.

For pavement that is replaced, assessments will be based on the MRI determined after replacement.

The upper MRI thresholds for high-speed mainline pavement are dependent on the MRI of the existing pavement before construction (MRI_0) and shall be determined as follows.

Upper MRI Thresholds [1/]	MRI Thresholds (High-Speed, HMA Overlay)	
	$MRI_0 \leq 125.0$ in./mile (≤ 1,975 mm/km)	$MRI_0 > 125.0$ in./mile [1/] (> 1,975 mm/km)
Incentive (MRI_I)	45.0 in./mile (710 mm/km)	$0.2 \times MRI_0 + 20$
Full Pay (MRI_F)	75.0 in./mile (1,190 mm/km)	$0.2 \times MRI_0 + 50$
Disincentive (MRI_D)	100.0 in./mile (1,975 mm/km)	$0.2 \times MRI_0 + 75$

1/ MRI_0, MRI_I, MRI_F, and MRI_D shall be in in./mile for calculation.

Smoothness assessments for high-speed mainline pavement shall be determined as follows.

SMOOTHNESS ASSESSMENT SCHEDULE (High-Speed, HMA Overlay)	
Mainline Pavement MRI Range	Assessment Per Sublot [1/]
$MRI \leq MRI_I$	$+ (MRI_I - MRI) \times \$20.00$ [2/]
$MRI_I < MRI \leq MRI_F$	+ \$0.00
$MRI_F < MRI \leq MRI_D$	$- (MRI - MRI_F) \times \$8.00$
$MRI > MRI_D$	– \$200.00

1/ MRI, MRI_I, MRI_F, and MRI_D shall be in in./mile for calculation.

2/ The maximum incentive amount shall not exceed \$300.00.

Smoothness assessments will not be paid or deducted until all other contract requirements for the pavement are satisfied. Pavement that is corrected or replaced for reasons other than smoothness, shall be retested as stated herein."

Hot-Mix Asphalt (HMA) Pavement (Full-Depth)

Revise the first paragraph of Article 407.03 of the Standard Specifications to read:

"**407.03 Equipment.** Equipment shall be according to Article 406.03."

Revise Article 407.09 of the Standard Specifications to read:

"**407.09 Surface Tests.** The finished surface of the pavement shall be tested for smoothness

according to Article 406.11, except as follows:

The testing of the existing pavement prior to improvements shall not apply and the smoothness assessment for high-speed mainline pavement shall be determined according to the following table.

SMOOTHNESS ASSESSMENT SCHEDULE (High-Speed, Full-Depth HMA)	
Mainline Pavement MRI, in./mile (mm/km)	Assessment Per Sublot [1/]
≤ 45.0 (710)	+ (45 – MRI) × $45.00 [2/]
> 45.0 (710) to 75.0 (1,190)	+ $0.00
> 75.0 (1,190) to 100.0 (1,580)	– (MRI – 75) × $20.00
> 100.0 (1,580)	– $500.00

1/ MRI shall be in in./mile for calculation.

2/ The maximum incentive amount shall not exceed $800.00."

Portland Cement Concrete Pavement

Delete Article 420.03(i) of the Standard Specifications.

Revise Article 420.10 of the Standard Specifications to read:

"**420.10 Surface Tests.** The finished surface of the pavement shall be tested for smoothness according to Article 406.11, except as follows.

The testing of the existing pavement prior to improvements shall not apply. The Contractor shall measure the smoothness of the finished surface of the pavement after the pavement has attained a flexural strength of 250 psi (3,800 kPa) or a compressive strength of 1,600 psi (20,700 kPa).

Membrane curing damaged during testing shall be repaired as directed by the Engineer at no additional cost to the Department.

(a) Corrective Work. No further texturing for skid resistance will be required for areas corrected by grinding. Protective coat shall be reapplied to areas ground according to Article 420.18 at no additional cost to the Department.

Jointed portland cement concrete pavement corrected by removal and replacement, shall be corrected in full panel sizes.

(b) Smoothness Assessments. Smoothness assessment for high-speed mainline pavement shall be determined as follows.

SMOOTHNESS ASSESSMENT SCHEDULE (High-Speed, PCC)	
Mainline Pavement MRI, in./mile (mm/km) [3/]	Assessment Per Sublot [1/]
≤ 45.0 (710)	+ (45 – MRI) × $60.00 [2/]
> 45.0 (710) to 75.0 (1,190)	+ $0.00
> 75.0 (1,190) to 100.0 (1,580)	– (MRI – 75) × $37.50
> 100.0 (1,580)	– $750.00

1/ MRI shall be in in./mile for calculation.

2/ The maximum incentive amount shall not exceed $1200.00.

3/ If pavement is constructed with traffic in the lane next to it, then an additional 10 in./mile will be added to the upper thresholds."

Removal of Existing Pavement and Appurtenances

Revise the first paragraph of Article 440.04 of the Standard Specifications to read:

"**440.04 HMA Surface Removal for Subsequent Resurfacing.** The existing HMA surface shall be removed to the depth specified on the plans with a self-propelled milling machine. The removal depth may be varied slightly at the discretion of the Engineer to satisfy the smoothness requirements of the finished pavement. The temperature at which the work is performed, the nature and condition of the equipment, and the manner of performing the work shall be such that the milled surface is not torn, gouged, shoved or otherwise damaged by the milling operation. Sufficient cutting passes shall be made so that all irregularities or high spots are eliminated to the satisfaction of the Engineer. When tested with a 16 ft (5 m) straightedge, the milled surface shall have no surface variations in excess of 3/16 in. (5 mm)."

General Equipment

Revise Article 1101.04 of the Standard Specifications to read:

"**1101.04 Pavement Surface Grinding Equipment.** The pavement surface grinding device shall have a minimum effective head width of 3 ft (0.9 m).

(a) Diamond Saw Blade Machine. The machine shall be self-propelled with multiple diamond saw blades.

(b) Profile Milling Machine. The profile milling machine shall be a drum device with carbide or diamond teeth with spacing of 0.315 in. (8 mm) or less and maintain proper forward speed for surface texture according to the manufacturer's specifications."

80435

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 **10**. 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

HIGH LOAD MULTI-ROTATIONAL BEARINGS
Effective: October 13, 1988
Revised: June 28, 2024

Description. This work shall consist of furnishing and installing High Load Multi-Rotational type bearing assemblies at the locations shown on the plans.

High Load Multi-Rotational (HLMR) bearings shall be the type as shown on the plans, which will be one of the following:

a) Pot Bearings. These bearings shall be manufactured so that the rotational capability is provided by an assembly having a rubber disc of proper thickness, confined in a manner so it behaves like a fluid. The disc shall be installed, with a snug fit, into a steel cylinder and confined by a tight fitting piston. The outside diameter of the piston shall be no more than 0.03 in. (750 microns) less than the inside diameter of the cylinder at the interface level of the piston and rubber disc. The sides of the piston shall be beveled. PTFE sheets, or silicone grease shall be utilized to facilitate rotation of the rubber disc. Suitable brass sealing rings shall be provided to prevent any extrusion between piston and cylinder.

b) Shear Inhibited Disc Type Bearing. The Structural Element shall be restricted from shear by the pin and ring design and need not be completely confined as with the Pot Bearing design. The disc shall be a molded monolithic Polyether Urethane compound.

These bearings shall be further subdivided into one or more of the following classes:

1) Fixed. These allow rotation in any direction but are fixed against translation.

2) Guided Expansion. These allow rotation in any direction but translation only in limited directions.

3) Non-Guided Expansion. These allow rotation and translation in any direction.

Suppliers: The Department maintains a pre-qualified list of proprietary structural systems allowed for High Load Multi-Rotational Bearings. This list can be found on the Departments web site under Prequalified Structural Systems. The Contractor's options are limited to those systems pre-qualified by the Department on the date that the contract was bid. These systems have been reviewed for structural feasibility and adequacy only. Presence on this list shall in no case relieve the Contractor of the site-specific design or QC/QA requirements stated herein.

The supplier shall notify the Department at least two weeks in advance of fabrication of the fabrication shop address. The fabricator shall provide evidence of current certification by AISC according to Article 106.08(e) of the Standard Specifications.

The overall depth dimension for the HLMR bearings shall be as specified on the plans. The horizontal dimensions shall be limited to the available bearing seat area.

Any modifications required to accommodate the bearings chosen shall be submitted to the Engineer for approval prior to ordering materials. Modifications may include the addition of steel

filler plates or the adjustment of beam seat elevations. Adjustments to bridge seat elevations and accompanying reinforcement details shall be approved by the Structural Engineer of Record. Modifications required shall be made at no additional cost to the State. Inverted bearing or center-guided bearing configurations will not be permitted.

The Contractor shall comply with all manufacturer's material, fabrication and installation requirements specified.

Submittals. Shop drawings shall be submitted to the Engineer for approval according to Article 105.04 of the Standard Specifications. All steel filler plate details shall be included in the shop drawings. In addition the Contractor shall furnish certified copies of the bearing manufacturer's test reports on the physical properties of the component materials for the bearings to be furnished and a certification by the bearing manufacturer stating the bearing assemblies furnished conform to all the requirements shown on the plans and as herein specified. Submittals with insufficient test data and supporting certifications will be rejected.

Materials. The materials for the HLMR bearing assemblies shall be according to the following:

(a) Elastomeric Materials. The rubber disc for Pot bearings shall be according to Article 1083.02(a) of the Standard Specifications.

(b) Polytetrafluoroethylene (PTFE) Material. The PTFE material shall be according to Article 1083.02(b) of the Standard Specifications, except that it shall be dimpled lubricated with a maximum coefficient of friction of 0.02 on stainless steel. The dimpled and lubricated PTFE surface shall comply with AASHTO 14.7.2. The friction requirement shall be as specified in the Long Term Deterioration Test required for prequalification and the Sliding Friction Test as specified below.

(c) Stainless Steel Sheets. The stainless steel sheets shall be of the thickness specified and shall be according to Article 1083.02(c).

(d) Structural Steel. All structural steel used in the bearing assemblies shall be according to AASHTO M 270, Grade 50 (M 270M Grade 345), unless otherwise specified.

(e) Threaded studs. The threaded stud, when required, shall conform to the requirements of Article 1083.02(d)(4) of the Standard Specifications.

(f) Polyether Urethane for Disc bearings shall be according to all of the following requirements:

PHYSICAL PROPERTY	ASTM TEST METHOD	REQUIREMENTS	
Hardness, Type D durometer	D 2240	45 Min	65 Max
Tensile Stress, psi (kPa) At 100% elongation, min	D 412	1500 psi (10,350 kPa)	2300 psi (15,900 kPa)
Tensile Stress, psi (kPa) At 200% elongation, min	D 412	2800 psi (19,300 kPa)	4000 psi (27,600 kPa)
Tensile Strength, psi (kPa), min	D 412	4000 psi (27,600 kPa)	6000 psi (41,400 kPa)
Ultimate Elongation, %, min	D 412	350	220
Compression Set 22 hr. at 158 °F (70 °C), Method B %, max	D 395	40	40

The physical properties for a durometer hardness between the minimum and maximum values shown above shall be determined by straight line interpolation.

Design. The HLMR bearings shall be of the type and class specified and designed for the loads shown on the plans. Bearing details shown on the contract plans are a schematic representation of the bearing. Actual design of the bearing shall be by the supplier according to:

- the exact parameters specified in the Design Data table noted on the bridge plans,
- the appropriate AASHTO LRFD Bridge Design Specifications, and
- the IDOT Bridge Manual.

The design of the masonry and sole bearing plates are based on detail assumptions which may require modifications depending on the supplier chosen by the Contractor.

Fabrication. The bearings shall be complete factory-produced assemblies. They shall provide for rotation in all directions and for sliding, when specified, in directions as indicated on the plans. All bearings shall be furnished as a complete unit from one manufacturing source. All material used in the manufacture shall be new and unused with no reclaimed material incorporated into the finished assembly.

The translation capability for both guided and non-guided expansion bearings shall be provided by means of a polished stainless steel sliding plate that bears on a PTFE sheet bonded and recessed to the top surface of the piston or disc. The sliding element of expansion bearings shall be restrained against movement in the fixed direction by exterior guide bars capable of resisting the horizontal forces or 20 percent of the vertical design load on the bearing applied in any direction, whichever is greater. The sliding surfaces of the guide bar shall be of PTFE sheet and stainless steel. Guiding off of the fixed base, or any extension of the base, will not be permitted.

Structural steel plates shall be fabricated according to Article 505.04(l) of the Standard Specifications. Prior to shipment the exposed edges and other exposed portions of the structural steel plates shall be cleaned and given a corrosion protection coating as specified on the plans and according to the applicable Special Provisions and Articles 506.03 and 506.04 of the Standard Specifications. During cleaning and coating the stainless steel, PTFE sheet and neoprene shall be protected from abrasion and coating material.

PTFE sheets shall be bonded to steel under factory controlled conditions using heat and pressure for the time required to set the epoxy adhesive used. The PTFE sheet shall be free from bubbles and the sliding surface shall be burnished to an absolutely smooth surface.

The steel piston and the steel cylinder for pot bearings shall each be machined from a solid piece of steel. The steel base cylinder shall be either integrally machined, recessed into with a snug fit, or continuously welded to its steel masonry plate. If the sole plate and piston are not one piece, the piston shall be recessed ⅜ inch into the sole plate.

If the bottom disc plate or base cylinder is recessed into the masonry plate, the designed thickness of the masonry plate shall take into account the depth of the recess. If the top disc plate is recessed into the sole plate, the designed thickness of the sole plate shall take into account the depth of the recess.

The shear resisting mechanism shall be machined from a solid piece of steel. Connection of the shear resisting mechanism to top and bottom disc plate shall be determined by the bearing fabricator.

Packaging. Each HLMR bearing assembly shall be fully assembled at the manufacturing plant and delivered to the construction site as complete units. The assemblies shall be packaged, crated or wrapped so the assemblies will not be damaged during handling, transporting and shipping. The bearings shall be held together with removable restraints so sliding surfaces are not damaged.

Centerlines shall be marked on both masonry and sole plates for alignment in the field. The bearings shall be shipped in moisture-proof and dust-proof covers.

Performance Testing. The following performance tests are required per lot on the project. A lot size shall be the number of bearings per class (fixed, guided expansion, non-guided expansion) on the project, but not to exceed 25 bearings per class. When multiple sizes of bearings are used on the same contract, they shall be grouped by class when determining lot sizes and amount of bearings to be tested. All tests shall be performed by the manufacturer prior to shipment.

Dimension Check. Each bearing shall be checked dimensionally to verify all bearing components are within tolerances. Failure to satisfy any dimensional tolerance shall be grounds for rejecting the bearing component or the entire bearing assembly.

Clearance Test. This test shall be performed on one bearing per lot. The bearing selected for this test shall be the one with the least amount of clearance based on the dimension check. The bearing assembly shall be loaded to its service limit state rated capacity at its full design

rotation but not less than 0.02 radians to verify the required clearances exist. This test shall be performed twice for each bearing with the rotation oriented longitudinally with the bridge once in each direction. Any visual signs of rubbing or binding shall be grounds for rejection of the lot.

Proof Load Test. This test shall be performed on one bearing per lot. The bearing assembly shall be load tested to 150 percent of the service limit state rated capacity at a rotation of 0.02 radians. The load shall be maintained for 5 minutes, removed then reapplied for 5 minutes. If the load drops below the required value during either application, the test shall be restarted from the beginning. This test shall be performed twice for each bearing with the rotation oriented longitudinally with the bridge once in each direction.

The bearing shall be visually examined both during the test and upon disassembly after the test. Any resultant visual defects include, but are not limited to:

1. Extruded or deformed elastomer, polyether urethane, or PTFE.

2. Insufficient clearances such as evidence of metal to metal contact between the pot wall and the top or sole plate.

3. Damaged components such as cracked steel, damaged seal rings, or damaged limiting rings.

4. Bond failure.

If any of the above items are found it shall be grounds for rejection of the lot.

Sliding Friction Test. For expansion bearings, this test shall be performed on one bearing per lot. The sliding surfaces shall be thoroughly cleaned with a degreasing solvent. No lubrication other than that specified for the bearing shall be used. The bearing shall be loaded to its service limit state rated capacity for 1 hour prior to and throughout the duration of the sliding test. At least 12 cycles of plus and minus sliding with an amplitude equaling the smaller of the design displacement and 1 inch (25 mm) shall then be applied. The average sliding speed shall be between 0.1 inch and 1.0 inches (2.5 mm and 25 mm) per minute. The sliding friction coefficient shall be computed for each direction of each cycle and its mean and standard deviation shall be computed for the sixth through twelfth cycles.

The friction coefficient for the first movement and the mean plus two standard deviations for the sixth through twelfth cycles shall not exceed the design value used. In addition, the mean value for the sixth through twelfth cycles shall not exceed 2/3 of the design value used. Failure of either of these shall result in rejection of the lot.

The bearing shall also be visually examined both during and after the testing, any resultant defects, such as bond failure, physical destruction, or cold flow of the PTFE shall also be cause for rejection of the lot.

The Contractor shall furnish a notarized certification from the bearing manufacturer stating the HLMR bearings have been performance tested as specified, and a. purchase order prior to fabrication. The purchase order shall contain, as a minimum, the quantity and size of each type of bearing furnished. The notarized certifications and the purchase order shall be submitted in one package to the Engineer of Tests at the Bureau of Materials and Physical Research (126 East Ash Springfield, IL 62704). The Department reserves the right to perform any of the specified tests on one or more of the furnished bearings. If the tested bearing shows failure it shall be replaced and the remaining bearings shall be similarly tested for acceptance at the Contractor's expense.

The manufacturer shall furnish samples of component materials used in the bearings, for testing by the Department, to the Engineer of Tests at the Bureau of Materials and Physical Research (126 East Ash Springfield, IL 62704). The required components shall be those components of HLMR bearings that are consistent with elastomeric bearing components according to Article 1083.04 of the Standard Specifications.

Installation. The HLMR bearings shall be erected according to Article 521.05 of the Standard Specifications.

Exposed edges and other exposed portions of the structural steel plates shall be field painted as specified for Structural Steel.

Basis of Payment. This work will be paid for at the contract unit price each for HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT , FIXED; HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, GUIDED EXPANSION; HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, NON-GUIDED EXPANSION; HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, FIXED; HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, GUIDED EXPANSION; or HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, NON-GUIDED EXPANSION of the load capacity specified.

When the fabrication and erection of HLMR bearings is accomplished under separate contracts, the applicable requirements of Article 505.09 shall apply.

Fabricated HLMR bearings and other materials complying with the requirements of this item, furnished and accepted, will be paid for at the contract unit price each for
FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, FIXED; FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, GUIDED EXPANSION; FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, NON-GUIDED EXPANSION; FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, FIXED; FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, GUIDED EXPANSION; or FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, NON-GUIDED EXPANSION of the load capacity specified.

Storage and care of fabricated HLMR bearings and other materials complying with the requirements of this item by the Fabrication Contractor beyond the specified storage period, will be paid for at the contract unit price per calendar day for STORAGE OF HIGH LOAD MULTI-ROTATIONAL BEARINGS if a pay item is provided for in the contract, or will be paid for according to Article 109.04 if a pay item is not provided in the contract.

HLMR bearings and other materials fabricated under this item erected according to the requirements of the specifications, and accepted, will be paid for at the contract unit price each for ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, FIXED; ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, GUIDED EXPANSION; ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, POT, NON-GUIDED EXPANSION; ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, FIXED; ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, GUIDED EXPANSION; or ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, DISC, NON-GUIDED EXPANSION of the load capacity specified.

MODULAR EXPANSION JOINT
Effective: May 19, 1994
Revised: October 27, 2023

Description. This work shall consist of furnishing and installing a modular expansion joint(s) as shown on the plans, and according to applicable portions of Section 520 of the Standard Specifications.

General. The expansion joint device shall be capable of handling the specified longitudinal movement. In addition, when specified, the joint shall also be capable of handling the differential non-parallel longitudinal movement. The expansion joint device shall effectively seal the joint opening in the deck surface and barrier curbs against the entrance of water and foreign materials. There shall be no appreciable change in the deck surface plane with the expansion and contraction movements of the bridge.

The device shall consist of a shop-fabricated modular assembly of transverse elastomeric seals, edge and center beams, bearing on support bars spanning the joint opening. The assembly shall maintain equal distances between intermediate support rails, at any cross section, for the entire length of the joint. The assembly shall be stable under all conditions of expansion and contraction.

The noise level of the joint in service shall meet all Federal and State of Illinois noise requirements.

At sidewalks, concrete median barriers and concrete parapet joints, a sliding steel plate shall be fabricated and installed according to the plans. Painting or galvanizing of sliding steel plates shall be as specified on the plans.

Suppliers: The Department maintains a pre-qualified list of proprietary structural systems allowed for modular expansion joints. This list can be found on the Departments web site under Prequalified Structural Systems. The Contractor's options are limited to those systems pre-qualified by the Department on the date that the contract was bid. These systems have been reviewed for structural feasibility and adequacy only. Presence on this list shall in no case relieve the Contractor of the site-specific design or QC/QA requirements stated herein.

The supplier shall notify the Department at least two weeks in advance of fabrication of the fabrication shop address. The fabricator shall provide evidence of current certification by AISC according to Article 106.08(e) of the Standard Specifications.

Submittals: Shop drawings and a copy of the calculations and support documents shall be submitted to the Engineer for approval according to Article 105.04 of the Standard Specifications. Calculations shall be sealed by an Illinois Licensed Professional Engineer. Submittals will be required for each modular expansion joint device specified. In addition, the Contractor shall provide the Department with a certification of compliance by the manufacturer listing all materials in the system. The certification shall attest that the system conforms to the design requirements, material requirements, and that all components of the joint are the same

as what was included in the prequalification submittal that was successfully tested in the OMV, seal push out, and fatigue tests of Section 19, Appendix 19, Article 5.1, 5.2, and 5.3 of the AASHTO LRFD Bridge Construction Specifications. Submittals with insufficient test data and supporting certifications will be rejected.

The shop drawings shall include tables showing the total anticipated movements for each joint and the required setting width of the joint assemblies at various temperatures.

The shop drawings shall include installation drawings or details showing locations and details of temporary installation supports, and joint assembly components, in relation to the adjacent primary structural beams, girders, or members. These details shall demonstrate that the proposed modular expansion joint is designed to fit and operate around all primary structural members within the space provided on the contract plans.

Fabrication: Fabricators of the modular expansion device(s) are required to meet the following tolerances:

Allowable variation in straightness of center beam rails Length < 30' Length 30' to 45' Length > 45'	 1/8" per 10' total length 3/8" 3/8" + 1/8"*(total length (feet) – 45')/10'
Allowable lateral variation in specified location of support boxes	±1/4"
Allowable lateral variation in specified location of stirrup or other attachments to center beam	±1/16"
Allowable variation in total depth	±1/8"
Allowable vertical dimension variation of all components	±1/8"
Allowable variation from specified elevation end squareness or skew	±1/8"
Allowable variation in overall length of joint	±1"

Metallic attachments used to secure elastomeric seals to centerbeams, if welded to the centerbeams and edge beams, shall be welded continuously along either their top or bottom edges.

Run off tabs shall be used for stirrup or other attachments to the center beam full penetration welds.

Design Requirements: The maximum vertical, transverse and horizontal rotations and displacements shall be defined and included in the design.

The expansion joint device(s) shall be designed, detailed and successfully tested, according to Section 14 of the AASHTO LRFD Bridge Design Specifications.

The design forces used for centerbeam to support bar analysis shall be taken at the centerline of the centerbeam.

The maximum fatigue resistance of any detail shall not exceed that associated with the fatigue category prescribed in the table below.

Type of Detail	Maximum Permitted Category
Welded Multiple Centerbeam to Support Bar Connections	C
Weld Stirrup Attachments for Single Support Bar Systems	C
Bolted Stirrup Attachments for Single Support Bar Systems	D
Groove Welded Centerbeam Splices	B
Miscellaneous Welded Connections[1]	C
Miscellaneous Bolted Connections	D

[1]Miscellaneous connections include attachments for equidistant devices and any metallic attachments to the centerbeams or edge beams that are used to secure the elastomeric seals.

In addition, expansion joint device(s) shall be designed for the vehicular live load as specified on the General, Plan, and Elevation sheet of the plans across the entire width of the structure.

Top, bottom and sides of support bars shall be restrained to prevent uplift, transmit bearing loads, and maintain the lateral position of the bars.

The total service movement of each individual sealing element shall not exceed 3 in. (75 mm).

The joint supplier shall design, layout, and detail the modular expansion joint assembly and components to miss existing or proposed structural beams, girders, or members. Cutting of structural members to install joint assemblies shall not be permitted.

Materials:

(a) Metals. Structural Steel. All structural steel, except stainless steel, shall be according to AASHTO M 270, Grade 50 or 50W (M 270M Grade 345), unless otherwise specified. All structural steel, except stainless steel, shall be hot-dip galvanized according to ASTM A123 or A153 as applicable.

Stainless steel sheets for the sliding surfaces of the support bars shall conform to the requirements of ASTM A240 (A240M) type 302 or 304. Stainless steel mating surfaces shall require a No. 8 finish. For non-mating surfaces a 2B finish is required.

The use of aluminum components in the modular joint will not be allowed.

(b) Preformed Elastomeric Seals. The elastomeric sealing element shall be according to ASTM D5973.

Lubricant/Adhesive for installing the preformed elastomeric elements in place shall be a one-part, moisture-curing, polyurethane and hydrocarbon solvent mixture as recommended by the manufacturer and containing not less than 65 percent solids.

(c) Support Bar Bearings. Support bar bearings shall be fabricated from elastomeric pads with polytetrafluorethylene (PTFE) surfacing or from polyurethane compound with PTFE sliding surfaces. The elastomeric and PTFE materials shall meet the requirements of Section 1083 of the Standard Specifications.

(d) Support Bars. Support bars shall incorporate stainless steel sliding surfaces to permit joint movement.

Construction Requirements

General. Installation of expansion devices shall be according to the plans and shop drawings.

The fabricator of the modular joint assembly shall be AISC certified according to Article 106.08 for Bridge and Highway Metal Component Manufacturers. In lieu of AISC certification, the Contractor may have all welding on main members (support bars and center beams) observed and inspected by independent (third party) personnel at the Contractor's expense. Welding shall then be observed by a Certified Welding Inspector (CWI) in addition to the manufacturer's own welding inspection. Third-party Non-Destructive Examination (NDE) shall be performed by inspector(s), certified as level II in applicable methods, and all complete penetration beam-to-bar welds and butt joints in beams shall be UT inspected and 10 percent of fillet and partial pen welds shall be MT inspected.

The manufacturer of the expansion device shall provide a qualified technical service representative to supervise installation. Modular expansion joint devices shall be factory prefabricated assemblies, preset by the manufacturer prior to shipment with provisions for field adjustment for the ambient temperature at the time of installation.

Unless otherwise shown on the plans, the neoprene seals shall be continuous without any field splices. Installation of the joint seals shall be performed by a trained representative of the Manufacturer.

The metal surfaces in direct contact with the neoprene seals shall be blast cleaned to permit a high strength bond of the lubricant/adhesive between the neoprene seal and mating metal surfaces.

The Contractor shall anticipate and make all necessary adjustments to existing or plan-specified reinforcement bars, subject to the approval of the Engineer, in order to prevent interferences with placement of the selected joint in the structure. Any adjustments to reinforcement bars interfering with the joint installation shall be the responsibility of the Contractor and preapproved

by the Engineer prior to installation of the joint. Cutting of reinforcement shall be minimized, and any bars that are cut shall be replaced in-kind at no additional cost.

The prefabricated joint assembly shall be properly positioned and attached to the structure according to the manufacturer's approved shop drawings. The attachment shall be sufficiently rigid to prevent non-thermal rotation, distortion, or misalignment of the joint system relative to the deck prior to casting the concrete. The joints shall be adjusted to the proper opening based on the ambient temperature at the time of installation and then all restraints preventing thermal movement shall be immediately released and/or removed. The joint upturn may be recessed 1 inch into the parapet to allow for lateral adjustment. The joint assembly units shall be straight, parallel and in proper vertical alignment or reworked until proper adjustment is obtained prior to casting of the concrete around the joint.
After the joint system is installed, the joint area shall be flooded with water and inspected, from below for leakage. If leakage is observed, the joint system shall be repaired, at the expense of the Contractor, as recommended by the manufacturer and approved by the Engineer.

Method of Measurement. This work will be measured for payment in place, in feet (meters), along the centerline of the joint. All sliding plate assemblies at the sidewalks, parapets and median barriers will not be measured for payment. The size will be defined as the specified longitudinal movement rounded up to the nearest 3 inch (75 mm) increment.

Basis of Payment: When only a longitudinal movement is specified, this work will be paid for at the contract unit price per foot (meter) for the MODULAR EXPANSION JOINT, of the size specified. When a differential non-parallel movement is also specified, this work will be paid for at the contract unit price per foot (meter) for the MODULAR EXPANSION JOINT-SWIVEL, of the size specified.

All materials, equipment and labor required to fabricate, paint and install the sliding plate assemblies at the sidewalks, parapets and median barriers will not be paid for separately but shall be included in the price for the expansion joint specified.

When the fabrication and erection of modular expansion joint is accomplished under separate contracts, the applicable requirements of Article 505.09 shall apply, except the furnishing pay items shall include storage and protection of fabricated materials up to 75 days after the completion dates.

Fabricated modular expansion joints and other materials complying with the requirements of this item, furnished and accepted, will be paid for at the contract unit price per foot (meter) for FURNISHING MODULAR EXPANSION JOINT or FURNISHING MODULAR EXPANSION JOINT – SWIVEL of the size specified.

Storage and care of fabricated joints and other materials complying with the requirements of this item by the Fabrication Contractor beyond the specified storage period, will be paid for at the contract unit price per calendar day for STORAGE OF MODULAR EXPANSION JOINTS if a pay item is provided for in the contract, or will be paid for according to Article 109.04 if a pay item is not provided in the contract.

Modular expansion joints and other materials erected according to the requirements of the specifications, and accepted, will be paid for at the contract unit price per foot (meter) for ERECTING MODULAR EXPANSION JOINT or ERECTING MODULAR EXPANSION JOINT - SWIVEL of the size specified.

AGGREGATE COLUMN GROUND IMPROVEMENT
Effective: January 15, 2009
Revised: October 15, 2011

Description. This work shall consist of furnishing design calculations, shop drawings, materials, and labor necessary to construct aggregate column ground improvements, over the approximate horizontal limits below the footing, wall, or embankment as specified on the contract plans, or as modified by the Contractor's approved design.

Submittals. No later than thirty (30) days prior to beginning work, the Contractor shall submit to the Engineer for approval the following information:

(a) Evidence of the selected subcontractor's successful installation of their aggregate column system on five projects under similar site conditions using the same installation technique. The documentation to be submitted shall include a description of the project, aggregate column installation technique, soil conditions and name and phone number of contracting authority.

(b) Evidence that the proposed project superintendent for the ground improvement installation has a minimum of three years of method specific experience.

(c) Shop Drawings sealed by an Illinois Licensed Professional Engineer showing aggregate column horizontal limits, locations, pattern, spacing, diameters, top and bottom elevations, and identification numbers. If an aggregate drainage layer is specified on the plans or a working platform proposed by the Contractor, the thickness, aggregate gradation, and plan dimensions shall be shown in addition to any other details needed to describe the work.

(d) A description of the equipment, installation technique and construction procedures to be used, including a plan to address any water or spoils.

(e) The source and gradation of the aggregate proposed for the aggregate columns.

(f) Design computations, sealed by an Illinois Licensed Professional Engineer, demonstrating the proposed ground improvement plan satisfies the minimum global stability, settlement, and bearing capacity performance requirements stated in the Contract Plans and those contained in this Special Provision.

(g) The proposed verification program methods to monitor and verify the aggregate column installation is satisfying the design and performance requirements. Also required is a sample of the daily report form to be used by the Contractor to documents the adequacy of that day's work.

Materials. The aggregate used in the columns shall be Class A quality crushed stone or crushed concrete satisfying the requirements of Section 1004 of the standard specifications. The aggregate for any drainage layer specified in the plans shall be a combination of one or more of the following gradations, FA1, FA2, CA5, CA7, CA8, CA11, or CA13 thru 15, according to Sections 1003 and 1004 of the Standard Specifications. Any fine or coarse aggregate

requested by the Contractor to be used as either a drainage layer or working platform shall be approved by the Engineer.

Design Criteria. The subcontractor selected shall provide an aggregate column ground improvement plan with shop drawings, and design computations, using an Allowable Stress Design that meets the performance requirements shown on the Contract Plans. These requirements normally include the global stability factor of safety, tolerable settlement amounts at various times and in the case of walls or structure footings, the equivalent uniform service bearing pressure applied at various locations and the factor of safety required. In the absence of performance requirements shown on the plans, the following Allowable Stress minimum performance requirements shall be used:

(a) A factor of safety of 1.5 against global slope stability failure.

(b) A factor of safety of 2.5 against equivalent uniform service bearing pressure failure.

(c) Total settlement not to exceed 4 inches (100 mm) and settlement after completing wall or pavement construction not to exceed 1 inch (25 mm).

The design shall use short term strength parameters for the soil, obtained from the soil boring logs and any geotechnical laboratory testing data provided in the Contract Plans and specifications for stability and bearing capacity analyses. Settlement shall be assessed using appropriate soil parameters. Any additional subsurface information needed to design the aggregate columns shall be the responsibility of the Contractor.

The aggregate column ground improvement design need not consider seismic loadings unless otherwise required as part of the performance requirements shown on the plans.

Construction. The construction procedures shall be determined by the aggregate column installer and submitted for approval with the shop drawings. The following are the minimum requirements that the Contactor will be expected to follow unless otherwise approved in the shop drawings submittal.

(a) The site shall be graded as needed for proper installation of the aggregate column system. Any grading and excavation below the improvement limits shown on the plans shall be incidental to aggregate column installation.

(b) Any granular base drainage layer or working platform shall be considered incidental to the improvement. Contractor requested drainage layers or working platforms will only be allowed if approved as part of the shop drawings.

(c) The aggregate column material shall be placed in a manner that allows measurement of the tonnage or quantity of aggregate placed down the hole.

(d) Columns shall be installed in a sequence that will minimize ground heave. Any heaving shall be re-compacted or excavated as directed by the Engineer prior to wall or embankment construction and be considered incidental to aggregate column improvement.

(e) The Contractor shall provide a full-time qualified representative to verify all installation procedures and provide the verification program.

(f) Disposal of any spoils generated shall be according to Article 202.03.

(g) If an obstruction is encountered that cannot be penetrated with reasonable effort, the Contractor shall construct the element from the depth of obstruction to its design top elevation. Depending on the depth of the completed column, column location, and design requirements, the Engineer may require the construction of a replacement aggregate column at an adjacent location. Construction of additional columns will be considered extra work and paid for according to Article 109.04.

(h) Specific Requirements for Vibrator Compacted Aggregate Columns:

i. Vibrator compacted aggregate columns shall be constructed with a down-hole vibrator, probe and follower tubes of sufficient size to install the columns to the diameter and bottom elevation(s) shown on the approved shop drawings. Pre-boring is permitted if approved as part of the shop drawing submittal.

ii. The probe and follower tubes shall have visible markings at regular increments to enable measurement of penetration and re-penetration depths.

iii. Provide methods for supplying to the tip of the probe a sufficient quantity of air or water to widen the probe hole to allow adequate space for aggregate placement around the probe.

iv. The vibrator shall be withdrawn in 12 to 36 inch (300 to 900 mm) increments, to allow placement of the aggregate.

v. Lift thickness shall not exceed 4 ft (1.2 m). After penetration to the treatment depth, slowly retrieve the vibrator in 12 to 18 inch (300 to 450 mm) increments to allow aggregate placement.

vi. Compact the aggregate in each lift by re-penetrating it as needed with the vibrating probe to densify and force the aggregate radially into the surrounding soil. Re-penetrate the aggregate in each increment a sufficient number of times to construct the columns as specified in the approved shop drawings and to meet the verification program requirements.

(i) Specific Requirements for Tamper Compacted (Rammed) Aggregate Columns:

i. Tamper compacted (rammed) aggregate columns shall be installed by either drilling or displacement methods, capable of constructing columns to the diameters and bottom elevation(s) shown on the approved shop drawings.

ii. If temporary casing is needed to limit the sloughing of subsurface soils, the casing should be inserted to at least 2 ft (600 mm) beyond any sloughing strata. Upon extraction, the bottom of the casing shall be maintained at not more than 2 feet (600 mm) above the level of aggregate.

iii. Aggregate placement shall closely follow the excavation of each column. The aggregate shall be placed in 1 to 2 ft (300 to 600 mm) thick lifts. Each lift should be rammed with a high-energy impact tamper as specified in the approved shop drawings and to meet the verification program requirements.

Construction Tolerances. The aggregate columns shall be constructed to the following tolerances:

(a) The horizontal limits and center of each constructed aggregate column shall be within 8 inches (190 mm) of the location specified on the approved the shop drawings.

(b) The axis of the constructed aggregate columns shall not be inclined more than 1.67 percent from vertical.

(c) The installed diameter of any aggregate column shall not be more than 10 percent below the effective diameter indicated on the approved shop drawings.

(d) The average effective diameter of any group of 50 consecutively installed aggregate columns shall not be less than the effective diameter indicated on approved shop drawings.

(e) The top of the aggregate column ground improvement shall be located within 8 inches (200 mm) of the top elevation shown on the approved shop drawings. When supporting MSE walls, the top elevation may need to be adjusted to the base of the MSE reinforced mass elevation as shown on the approved MSE shop drawings.

(f) Except where obstructions, hard or very dense soils are encountered, the aggregate column shall be advanced to at least the treatment depth elevation shown on the approved in the Shop Drawings.

Any aggregate column installation not meeting the above stated tolerances, or otherwise deemed unsatisfactory by the Engineer, may require installation of a replacement aggregate column(s) at the discretion of the Engineer and at the Contractor's expense. The Contractor shall submit to the Engineer revised plans and procedures to bring installations in those areas into tolerance.

Verification Program. The Contractor shall develop and maintain a monitoring and documentation procedure during the installation of all aggregate columns to verify they satisfy the design and performance requirements. The Contractor shall provide qualified personnel to continuously observe and record the required data. The program shall include, as a minimum, the following:

(a) Quality control procedures to allow verification that each aggregate column is being installed according to the designer's specifications and the requirements in this Special Provision. This will typically include observations of items such as electrical current or hydraulic pressure, number of high-energy impact tamps, aggregate quantity, etc. that must be obtained to achieve the performance requirements.

(b) Monitoring methods to evaluate the performance of the global aggregate column improvement system after construction of the overlying embankment or wall. This will typically include installation of settlement plates and may also include monitoring points, inclinometers, piezometers or other instrumentation.

(c) Proposed means and methods for verification that the installed aggregate columns meet the strength and/or stiffness criteria required by the design. This may include modulus or load tests on individual elements and/or groups, soil borings, and other methods.

(d) A daily report form shall be completed by the Contactor and provided to the Engineer to document the work performed each day and the adequacy of each aggregate column. The form shall be signed by the Contractor's qualified personnel and include as a minimum the following:

i. Aggregate columns installed (identified by location number).

ii. Date constructed.

iii. Elevation of top and bottom of each aggregate column.

iv. Average lift thickness.

v. Results of quality control testing such as average power consumption or tamping energy obtained during aggregate column installation.

vi. Jetting pressure (air or water) if applicable.

vii. Description of soil and groundwater conditions.

viii. Details of obstructions, delays and any unusual issues.

ix. Amount of water used per aggregate column if applicable.

x. Estimated weight or volume of aggregate backfill placed in each column.

xi. Average installed diameter of each column.

Basis of Payment. This work will be paid at the contract Lump Sum price for AGGREGATE COLUMN GROUND IMPROVEMENT. Any temporary casing, excavation, disposal of water or spoils, drainage layers or working platforms will not be paid for separately, but shall be considered to be included with this work.

BRIDGE DECK CONSTRUCTION
Effective: October 22, 2013
Revised: December 21, 2016

When Diamond Grinding of Bridge Sections is specified, hand finishing of the deck surface shall be limited to areas not finished by the finishing machine and to address surface corrections according to Article 503.16(a)(2). Hand finishing shall be limited as previously stated solely for the purpose of facilitating a more timely application of the curing protection. In addition the requirements of 503.16(a)(3)a. and 503.16(a)(4) will be waived.

Revise the Second Paragraph of Article 503.06(b) to read as follows.

"When the Contractor uses cantilever forming brackets on exterior beams or girders, additional requirements shall be as follows."

Revise Article 503.06(b)(1) to read as follows.

"(1) Bracket Placement. The spacing of brackets shall be per the manufacturer's published design specifications for the size of the overhang and the construction loads anticipated. The resulting force of the leg brace of the cantilever bracket shall bear on the web within 6 inches (150 mm) of the bottom flange of the beam or girder."

Revise Article 503.06(b)(2) to read as follows.

"(2) Beam Ties. The top flange of exterior steel beams or girders supporting the cantilever forming brackets shall be tied to the bottom flange of the next interior beam. The top flange of exterior concrete beams supporting the cantilever forming brackets shall be tied to the top flange of the next interior beam. The ties shall be spaced at 4 ft (1.2 m) centers. Permanent cross frames on steel girders may be considered a tie. Ties shall be a minimum of 1/2 inch (13 mm) diameter threaded rod with an adjusting mechanism for drawing the tie taut. The ties shall utilize hanger brackets or clips which hook onto the flange of steel beams. No welding will be permitted to the structural steel or stud shear connectors, or to reinforcement bars of concrete beams, for the installation of the tie bar system. After installation of the ties and blocking, the tie shall be drawn taut until the tie does not vary from a straight line from beam to beam. The tie system shall be approved by the Engineer."

Revise Article 503.06(b)(3) to read as follows.

"(3) Beam Blocks. Suitable beam blocks of 4 in x 4 in (100 x 100 mm) timbers or metal structural shapes of equivalent strength or better, acceptable to the Engineer, shall be wedged between the webs of the two beams tied together, within 6 inches (150 mm) of the bottom flange at each location where they are tied. When it is not feasible to have

the resulting force from the leg brace of the cantilever brackets transmitted to the web within 6 inches (150 mm) of the bottom flange, then additional blocking shall be placed at each bracket to transmit the resulting force to within 6 inches (150 mm) of the bottom flange of the next interior beam or girder."

Delete the last paragraph of Article 503.06(b).

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.”

PREFORMED PAVEMENT JOINT SEAL
Effective: October 4, 2016
Revised: March 24, 2023

Description. This work shall consist of furnishing all labor, equipment and materials necessary to prepare the joint opening and install pavement joint seal(s) at the locations specified. Unless otherwise detailed on the plans, the joint shall be sized for a rated movement of 2 inches (50 mm).

Materials: Unless otherwise specified, one of the following prefabricated joint seals will be permitted.

(a) Preformed Elastomeric Joint Seal. This material shall be according to Section 1053.01.

(b) Preformed Pre-compressed, Silicone Coated, Self-Expanding Sealant System. This Sealant system shall be comprised of three components: 1) cellular polyurethane foam impregnated with hydrophobic 100% acrylic, water-based emulsion, factory coated with highway-grade, fuel resistant silicone; 2) field-applied epoxy adhesive primer, 3) field-injected silicone sealant bands.

The preformed, pre-compressed silicone joint seal shall, as a minimum, be according to the following:

- The joint seal shall be held in place by a non-sag, high modulus silicone adhesive.
- The joint seal shall be compatible with the epoxy and header material.
- The joint seal shall withstand the effects of vertical and lateral movements, skew movements and rotational movement without adhesive or cohesive failure.
- The joint seal shall be designed so that, the material is capable of movement of +50%, -50% (100% total) of nominal material size.
- The gland shall not contain any open, unsealed joints along its length in its final condition.
- Changes in plane and direction shall be executed using factory fabricated 90 degree transition assemblies. The transitions shall be watertight at the inside and outside corners through the full movement of the product.
- The depth of the joint shall be recessed 3/4 in. (19 mm) below the riding surface throughout the normal limits of joint movement.
- The joint seal shall be resistant to ultraviolet rays.
- The joint seal shall be resistant to abrasion, oxidation, oils, gasoline, salt, and other materials that may be spilled on or applied to the surface.
- The manufacturer shall certify that the joint composition shall be free of any waxes or wax compounds; asphalts or asphalt compounds.

The joint material shall meet the following physical properties:

Property	Requirement	Test Method
Tensile Strength of Silicone Coating (min)	140 psi	ASTM D 412
UV Resistance of Joint System	No Changes--2000 Hours	ASTM C793
Density of Cellular Polyurethane Foam	4.0 lb/ cu ft (200kg/cu m)	ASTM D545
Heat Aging Effects (Silicone Coating)	No cracking, chalking	ASTM C 792
Joint System Operating temp range (min)	-40^{o} F to 185^{o} F	ASTM C 711

The adhesive shall be a two-component, 100% solid, modified epoxy meeting the requirements of ASTM C881, Type I, Grade 3, Class B & C. The adhesive shall also have the following properties:

Property	Requirement	Test method
Tensile Strength	2,500 psi (24 MPa) min.	ASTM D638
Compressive Strength	7000 psi (48 MPa) min.	ASTM D695
Bond Strength (Dry Cure)	2000 psi (28MPa) min	ASTM C882
Water Absorption	0.1% by weight	ASTM D570

The silicone band adhesive shall have the following properties:

Property	Requirement	Test Method
Movement Capability	+50/-50%	ASTM C 719
Elongation at Break	>600%	ASTM D 5893
Slump	≤=0.3"	ASTM D 2202
Hardness (Shore A) max.	20	ASTM C 661
Tack free time (max)	60 minutes	ASTM C 679
Heat Aging Effects	No cracking, chalking	ASTM C 792
Resilience	≥ 75%	ASTM D5329
Bond	0% Adhesive or Cohesive Failure after 5 cycles @100%extension	ASTM D 5329

(c) Performed Silicone Joint Seal. The preformed silicone joint seal used for this item shall conform to the following specifications:

Table 1
Physical Properties of Preformed Silicone Gland

Property	Requirement	Test Method
Rated Movement Capability	+2 ¼ inch total	N/A
Tensile Strength, psi.	1000 min	ASTM D 412
Elongation	400% min	ASTM D 412
Tear (die B)	100 ppi. min	ASTM D 624
Hardness Durometer (Shore A).	55 +/- 5 max	ASTM D 2240
Compression set at 212°F, 70 hrs	30% max	ASTM D 395
Heat Aged Properties	5pt max loss on Durometer	ASTM D 573
Tensile and Elongation % Loss	10 % max	

The color of the preformed silicone seal shall be black, made by the addition of Carbon Black fillers which increases UV resistance, tensile strength, and abrasion wear properties.

The locking adhesive shall be non-sag, high modulus silicone adhesive conforming to the following specifications:

Table 2
Physical Properties of the Silicone Locking Adhesive

Property	Requirement	Test Method
Tensile Strength, psi.	200 min	ASTM D 412
Elongation, %	450 min	ASTM D 412
Tack Free Time, minutes.	20 max.	ASTM C 679
Cure Time ¼" bead, hrs	24 max	ASTM C 679
Resistance to U.V.	No cracking, chalking,or degradation	ASTM C793
VOC (g/L)	0	ASTM D 3960

Any rips, tears, or bond failure will be cause for rejection.

The two part epoxy primer shall be supplied for application to the vertical faces of the joint opening. The supplied primer shall be equally as effective when bonded to concrete or steel. This primer shall meet the following criteria:

Table 3
Physical Properties of Preformed Silicone Joint System Primer

Property	Requirement	Test Method
Viscosity (cps)	44	ASTM D 2196
Color	Light Amber	Visual
Solids (%)	41	ASTM D 4209
Specific Gravity	0.92	ASTM D 1217
Product Flash Point (◦F, T.C.C.)	48	ASTM D 56
Package Stability	N/A	One year in tightly sealed containers
Cleaning	N/A	Mineral Spirits
VOC (g/L)	520	ASTM D 3960

(d) Preformed Inverted EPDM Joint Seal. The preformed inverted EPDM joint seal used for this item shall conform to the following specifications:

Table 1
Physical Properties of Preformed Silicone Gland

Property	Requirement	Test Method
Rated Movement Capability	Up To 5 inch total	N/A
Tensile Strength, psi.	1200 psi min	ASTM D 412
Elongation	400 % min	ASTM D 412
Tear (Die C)	150 pli. min	ASTM D 624
Durometer Content	50 +/- 5 max	ASTM D 2240
Water Resistance (70 hrs @ 100c)	10% max	ASTM D 471
Ozone Resistance	100 min	ASTM D 1171

Table 2
Physical Properties of the V-Epoxy-R

V-Epoxy-R adhesive meets the requirements of ASTM C881 Type III, Grade 2. The adhesive shall also have the following properties:

Property	Requirement	Test Method
Color	Gray	Visual
Viscosity	45,000 CP (typ.)	N/A
Gel Time (minutes)	30 min.	ASTM C 881
Shelf Life (Separate Sealed Containers)	12 Months	N/A
Resistance to U.V.	No cracking, chalking,or degradation	ASTM C793
VOC (g/L)	0	ASTM D 3960

Any rips, tears, or bond failure will be cause for rejection.

(e) Bonded Preformed Joint Seal. This joint system shall consist of preformed elastomeric seal bonded to the side walls of the joint opening using an adhesive as specified by the Manufacturer of the joint seal.

The bonded preformed joint seal shall be according to Table 1 of ASTM D2628 with the following exceptions: Compression set shall not be over 40 percent when tested according to Method B (Modified) of ASTM D 395 after 70 hours at 212 ºF (100 ºC). The Compression-Deflection requirement will not apply to the bonded preformed joint seal.

The adhesive shall be epoxy base, dual component, which resists salt, diluted acids, alkalis, solvents, greases, oils, moisture, sunlight and weathering. Temperatures up to 200 ºF (93 ºC) shall not reduce bond strength. At 68 ºF (20 ºC), the bond strength shall be a minimum of 1000 psi (6.9 MPa) within 24 hours.

Any primers or cleaning solutions used on the faces of the joint or on the profile of the sides of the bonded preformed joint seal shall be supplied by the manufacturer of the bonded preformed joint seal.

Any additional installation materials and adhesive for splicing joint sections shall be as supplied by the manufacturer of the preformed joint seal.

The Contractor shall submit the Manufacturer's material certification documentation stating that their materials meet the applicable requirements of this specification for the joint seal(s) installed.

CONSTRUCTION REQUIREMENTS

General. The Contractor shall furnish the Engineer with the manufacturer's product information and installation procedures at least two weeks prior to installation.

The minimum ambient air temperature in which the joint seal can be installed is 40° F (4.4° C) and rising, except for bonded preformed joint seals which shall not be installed when temperatures below 50 ºF (10 ºC) are predicted within a 48 hour period.

The joint surface shall be completely dry before installing the Joint Seal. For newly placed concrete, the concrete shall be fully cured and allowed to dry out a minimum of seven additional days prior to placement of the seal. Cold, wet, inclement weather will require an extended drying time.

The Joint Seal shall not be installed immediately after precipitation or if precipitation is forecasted for the day. Joint preparation and installation of Joint Seal shall be done during the same day.

Surface Preparation. Surface preparation shall be according to the joint seal manufacturer's written instructions.

After surface preparation is completed, the joint shall be cleaned of debris using compressed air with a minimum pressure of 90 psi (620 kPa). The air compressor shall be equipped with traps to prevent the inclusion of water and/or oil in the air line. The compressed air shall be according to the cleanliness requirements of ASTM D 4285.

When priming is required per the manufacturer's instruction, this operation shall immediately follow cleaning.

Joint Installation. The Joint installation shall be per the manufacturer's instructions; special attention shall be given to ensure the joint seal is properly recessed below the top of the riding surface as recommended by the manufacturer.

For bonded joint seals the seal shall be inserted into the joint and held tightly against both sides of the joint until sufficient bond strength has been developed to resist the expected expansion forces.

Opening to traffic. As these joint systems are supposed to be recessed below the top of the riding surface, there should be no restriction, based on the joint seal installation, on when these joints can be reopened to traffic.

Method of Measurement. The installed prefabricated joint seal will not be measured for payment.

Basis of Payment. The prefabricated joint seal will not be paid for separately but shall be considered included in the cost of the adjacent concrete work involved.

CROSSHOLE SONIC LOGGING TESTING OF DRILLED SHAFTS
Effective: April 20, 2016
Revised: March 24, 2023

Description. This work shall consist of furnishing and installing materials and equipment necessary to install access ducts in all drilled shafts of structures identified on the plans, and to perform Crosshole Sonic Logging (CSL) testing, analysis, and reports only on selected drilled shafts where specified and as directed by the Engineer. This work shall be according to Illinois Modified ASTM D6760. This work includes investigating anomalies identified in the CSL data and grouting of all access ducts after testing and analysis.

Materials. Materials shall be according to the following.

(a) Nonshrink Grout (Note 1) ……1024.02
Note 1. Grout shall attain a minimum strength equal to the required strength of the drilled shaft concrete at 14 days.

Qualifications. A consulting firm experienced in CSL testing shall conduct this work. The CSL consulting firm shall be a company independent from the Contractor with a minimum of 3 years of experience in performing CSL testing of drilled shafts. The individual evaluating the CSL data and preparing the report shall be an Illinois Licensed Professional Engineer and have experience on a minimum of 5 CSL testing projects.

The name, contact information, and qualifications of the CSL consulting firm, including the names and experience of the individual employees performing and analyzing the test results and preparing the report, shall be submitted to the Engineer at least 30 days prior to drilled shaft construction.

Construction. Access ducts shall be placed in all drilled shafts identified on the plans according to Illinois Modified ASTM D6760. The completed rebar cage with the required access ducts shall be lifted to prevent cage bending and damage to the access ducts and/or joints. Joints of the access ducts shall be watertight.

The Engineer will determine which drilled shafts shall have CSL testing performed after the concrete has been placed, and may direct additional tests, if necessary, due to problems encountered or observed during drilled shaft construction.

After permission is given by the Engineer, the access ducts shall be grouted. The grout shall be placed with a pump, starting at the bottom of each access duct.

Superimposed loads, either dead or live, shall not be applied to a drilled shaft until CSL testing is completed, CSL reports have been submitted, any necessary testing and repairs have been completed, access ducts have been grouted, and permission has been granted by the Engineer.

Reports. Reports shall be according to Illinois Modified ASTM D6760. Reports shall identify, label, and discuss anomalies, potential flaws, or defects. If none are identified, that shall be stated in the report. An anomalous zone shall be defined as an area where the First Arrival Time (FAT) increase exceeds 20 percent of the local average FAT value of the shaft concrete at the time of testing. Reports shall discuss recommendations for additional investigation or testing of anomalous zones identified. Reports shall give an overall assessment of the constructed shaft quality based on the data and information analyzed. Reports shall be submitted to the Bureau of Bridges and Structures, or the local agency owner, for review and acceptance.

Anomalies. If anomalies are identified, they shall be investigated by coring or other methods approved by the Engineer. If coring is to be performed, the Engineer will determine the location of the core(s).

Remediation of Drilled Shaft Defects. When the Engineer determines a defect is present, the Engineer will direct the Contractor to repair the defect. The Contractor shall submit a plan to repair the defect to the Engineer for approval. No compensation will be made for remedial work, or losses, or damage, due to remedial work of drilled shafts found defective or not in accordance with the drilled shaft specifications or plans. Modifications to the structure shall be designed, detailed, and sealed by an Illinois Licensed Structural Engineer.

Method of Measurement. Installation and grouting of access ducts will be measured for payment by the linear foot of drilled shafts with access ducts. Each individual access duct will not be measured for payment.

CSL testing, analysis, and reporting will be measured for payment by each drilled shaft foundation tested.

Investigation of anomalies will not be measured for payment.

Basis of Payment. Installation and grouting of access ducts will be paid for at the contract unit price per foot for CROSSHOLE SONIC LOGGING ACCESS DUCTS. CSL testing, analysis, and reporting will be paid for at the contract unit price per each for CROSSHOLE SONIC LOGGING TESTING.

ILLINOIS MODIFIED ASTM D6760
Effective Date: April 20, 2016
Revised Date: August 4, 2023

Standard Test Method for
Integrity Testing of Concrete Deep Foundations by Ultrasonic Crosshole Testing

Reference ASTM D6760-16

<table>
<tr><th>ASTM SECTION</th><th>Illinois Modification</th></tr>
<tr><td>1.7</td><td>Revise this section as follows:
Units—The values stated in either English units or SI units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard. Reporting of test results in units other than English shall not be regarded as nonconformance with this standard.</td></tr>
<tr><td>3.1.1</td><td>Revise this section as follows:
access ducts, n – preformed steel tubes or drilled boreholes, placed in the concrete to allow probe entry in pairs to measure pulse transmission in the concrete between the probes.</td></tr>
<tr><td>5.2.1</td><td>Revise the first sentence of this section as follows:
For crosshole tests, the access ducts shall be made of steel to prevent debonding of the access duct from the concrete resulting in an anomaly.</td></tr>
<tr><td>5.2.2</td><td>Delete this section.</td></tr>
<tr><td>6.1</td><td>Revise the second sentence of this section as follows:
The access ducts shall be mild steel with internal diameter of 38 mm (1.5 in.).
Delete the third, fourth, and fifth sentences of this section.</td></tr>
<tr><td>7.1.1</td><td>Revise this section as follows:
The access ducts shall be installed during construction of the drilled shaft.
For drilled shafts foundations, access ducts shall be provided according to the following table.
<table>
<tr><th>Reinforcing Cage Diameter (feet)</th><th>Number of Access Ducts</th></tr>
<tr><td>≤ 5.0</td><td>4</td></tr>
<tr><td>5.1 to 7.0</td><td>6</td></tr>
<tr><td>> 7.0</td><td>8</td></tr>
</table>
Access ducts shall be spread equally around the perimeter and spaced at an equal distance from the axis.

Delete Fig. 4. In Section 7.1.1.</td></tr>
</table>

ILLINOIS MODIFIED ASTM D6760
Effective Date: April 20, 2016
Revised Date: August 4, 2023

Standard Test Method for
Integrity Testing of Concrete Deep Foundations by Ultrasonic Crosshole Testing

Reference ASTM D6760-16

7.1.2	Revise the second sentence of this section as follows: The exterior duct surface shall be free from contamination (for example, oil, dirt, loose rust, mill scale, etc.) to ensure a good bond between the duct surface and the surrounding concrete.
7.1.3	Delete the third sentence of this section.
7.2	Revise the first sentence of this section as follows: The access ducts shall be installed such that the bottom of the access ducts are at the bottom of the concrete deep foundation element so that the bottom of the drilled shaft can be tested. Revise the sixth sentence of this section as follows: Access ducts shall be filled with water prior to concrete placement to assure good bonding of the concrete to the duct after the concrete cools. The access ducts shall be kept full of water until the ducts are grouted.
7.3	Revise the first sentence of this section as follows: In cases where drilled shafts to be tested have access ducts that do not permit passage of the probes, do not retain water, are not plumb, are debonded from the concrete, or cannot be used for testing for other reasons, drilled boreholes shall be used to provide probe access.
7.4.2	Revise the second sentence of this section as follows: The tests shall be performed no later than 21 days after concrete casting.
7.6	Delete this section.
7.8.1	Revise the first sentence of this section as follows: If the ultrasonic profile indicates an anomaly, then the suspect anomaly zone shall be further investigated by special test procedures such as fan shaped tests, tests with the probes raised at a fixed offset distance, or other tomographical techniques.
7.8.2	Delete Note 4 of this section.
8.1.1 (New Section)	Add as follows: Test data and results shall be reported in US Customary units.

ERECTION OF BRIDGE GIRDERS OVER OR ADJACENT TO RAILROADS
Effective: August 9, 2019

Description: In addition to the requirements of Article 504.06(d) and 505.08(e), the following shall apply.

The Contractor or sub-Contractor performing the erection of steel or concrete beams or girders over, or adjacent to (within 25 ft. of), active railroad tracks shall submit an erection plan to the Engineer for approval prior to starting the work.

Erection Plan: The Erection Contractor shall retain the services of an Illinois Licensed Structural Engineer for the completion of a project-specific erection plan. The structural engineer, herein referred to as the Erection Engineer, shall sign and seal the erection plan, drawings, and calculations for the proposed erection of the structural beams or girders.

The erection plan shall be complete in detail for all phases, stages, and conditions anticipated during erection. The erection plan shall include structural calculations and supporting documentation necessary to completely describe and document the means, methods, temporary support positions, and loads necessary to safely erect the structural members in conformance with the contract documents and as outlined herein. The erection plans shall address and account for all items pertinent to the erection including such items as sequencing, falsework, temporary shoring and/or bracing, girder stability, crane positioning and movement, means of access, pick points, girder shape, permissible deformations and roll, interim/final plumbness, cross frame/diaphragm placement and connections, bolting and anchor bolt installation sequences and procedures, and blocking and anchoring of bearings. The Erection Contractor shall be responsible for the stability of the partially erected structure during all phases of erection.

The erection plans and procedures shall be submitted to the Engineer for review and acceptance prior to starting the work. Review, acceptance and/or comments by the Department shall not be construed to guarantee the safety or final acceptability of the work or compliance with all applicable specifications, codes, or contract requirements, and shall neither relieve the Contractor of the responsibility and liability to comply with these requirements, nor create liability for the Department. Significant changes to the erection plan in the field must be approved by the Erection Engineer and accepted by the Engineer for the Department.

Basis of Payment: This work shall not be paid for separately but shall be included in the applicable pay items according to Article 504.08 or 505.13 of the Standard Specifications.

CURED-IN-PLACE PIPE LINER
Effective: April 15, 2022

Description. This work shall consist of installing cured-in-place pipe (CIPP) liners to rehabilitate pipe culverts or storm sewers.

Materials. Resin-impregnated flexible tubes or pipes shall be according to ASTM D 5813. Upon delivery of materials to the jobsite, the Contractor shall furnish independent test reports from the supplier showing the physical properties of the CIPP liner meets the material requirements of the applicable ASTM documents for the proposed liner.

Construction Requirements. Installation of the CIPP liner shall consist of a resin impregnated flexible tube or pipe being inverted or pulled into the host pipe and expanded to conform to the interior of the host pipe. The resin impregnated tube shall then be cured in place, creating a continuous structural liner within the host pipe.

The Contractor shall submit the following to the Engineer for approval, at least 15 days prior to the start of work:

(a) References. A list containing at least three projects completed within the last three years prior to this project's bid date in which the Contractor performing this work has installed CIPP liners. The list of projects shall contain names and phone numbers of representatives who can verify the Contractor's participation on those projects.

(b) Experience. Name and experience record of the CIPP liner supervisor

(c) Materials. Manufacturer's published literature for the proposed CIPP liner.

(d) Installation Procedure. Proposed methods of water diversion, cleaning and preparation of the existing culvert, ASTM standard for the proposed CIPP liner, setup locations for pulling or inverting the CIPP liner, testing and inspection methods, and final clean-up operations. Quality control procedures for conformance with applicable water testing and stormwater management requirements.

The Contractor shall submit a design report for each CIPP liner in the Contract, sealed by an Illinois licensed Structural Engineer, prior to the installation of the respective CIPP liner. Prior to completion of the design report, the Contractor shall clean and inspect the host pipe as described in the installation procedure. The Contractor shall provide a recording of the inspection to the Engineer. Authorization from the Engineer shall be requested to clear any obstructions not able to be removed by conventional sewer cleaning equipment.

The design report shall be submitted to the Engineer for approval prior to installation and include the following.

(a) The anticipated length and diameter of CIPP liner.

(b) The location and characteristics of cavities in and around the existing structure, and the location and quantity of any additional materials required, such as grout, pea gravel, or flowable backfill, to repair the existing structure and fill these cavities.

(c) The location of any deformities such as jagged edges that may impact the liner installation or its function, and a plan to correct the deformities.

(d) Design calculations and required in-place liner thickness of the CIPP liner. The wall thickness shall be calculated using the methodology provided in the applicable ASTM standard practice for the approved CIPP liner. The design loads shall be as per the AASHTO LRFD Bridge Design Specifications. The host pipe shall be considered fully deteriorated. The proposed CIPP liner shall have a 50-year design life, with a factor of safety of two (2).

(e) The final in-place hydraulic opening shape and dimensions of the CIPP liner.

Liner shall not be installed until the design report has been approved by the Engineer. Liner shall not be installed if rain is in the forecast on the day of installation.

After completion of the design report, but prior to installation of the CIPP liner, the Contractor shall confirm the host pipe is in suitable condition for the installation of the proposed CIPP system.

Pipes shall be drained and flow shall be diverted.

The CIPP shall be installed according to ASTM F 1216, ASTM F 1743, or ASTM F 2019.

A resin impregnated sample (wick) shall be provided by the Contractor to provide verification of the curing process taking place in the host pipe.

The CIPP wall thickness installed by the Contractor shall be the Required In-Place Liner Thickness calculated in the design report, with allowable tolerances as per the applicable ASTM documents. Measured sample thickness will not include any portion not considered by the Engineer to be considered a structural component of the system.

The Contractor shall inspect the CIPP liner and provide the Engineer with a recording showing and describing the entire length of the completed liner. Any excessive wrinkling or damaged CIPP liner areas shall be repaired or modified to the satisfaction of the Engineer.

Method of Measurement. This work will be measured for payment in place in feet. When the CIPP enters a manhole, inlet, or catch basin, the measurement will end at the inside wall of the manhole, inlet, or catch basin.

Basis of Payment. This work will be paid for at the contract unit price per foot for CURED-IN-PLACE PIPE LINER, of the diameter specified.

Debris removal requiring equipment beyond conventional sewer cleaning equipment, repair of existing pipes, and filling of voids prior to the installation of the CIPP liner will be paid for according to Article 109.04.

BAR SPLICERS, HEADED REINFORCEMENT
Effective: September 2, 2022
Revised: October 27, 2023

Add the following to Article 508.08(b):

When bar splicers are epoxy-coated, all damaged or uncoated areas near the threaded ends shall be coated with a two-part epoxy according to ASTM D 3963 (D 3963M). All threaded ends of Stage II construction threaded splicer bars shall be coated according to ASTM D 3963 or dipped in an epoxy-mastic primer prior to joining the Stage II construction threaded splicer bar to the threaded coupler.

Add the following Article 508.02 (d)

Bar Terminators ……1006.10(a)(1)h

Add the following paragraph after Article 508.08 (c):

Bar terminators are threaded, headed attachments to reinforcement to form headed reinforcement. When specified on the plans, a bar terminator shall be attached to the designated reinforcement for development.

Add the following 4th paragraph to Article 508.11:

Bar Terminators will be paid for at the contract unit price per each for BAR TERMINATORS.

Add the following to Article 1006.10(a)(1)g:

For bar splicers with welded connections between the threaded coupler and threaded rod, the Stage I construction threaded splicer bar shall be welded to the threaded coupler using an all-around fillet weld.

Add the following Article 1006.10(a)(1)h:

Bar Terminators. Designated bars shall use a bar terminator to form headed reinforcement. Headed reinforcement shall conform to ASTM A970 with threaded attachment; Class HA; and reinforcement bars conforming to ASTM A706, except the connection strength of the bar terminator to the reinforcement bar shall meet, in tension, at least 125 percent of the specified yield strength of the reinforcement bar. The bar terminator shall be on the Department's qualified product list.

When the reinforcement bar to receive the bar terminator is epoxy coated, the bar terminator shall also be epoxy coated according to ASTM A 775 (A 775M)

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.

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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.

* * * * *

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.