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Letting August 4, 2017

Notice to Bidders, Specifications and Proposal



**Illinois Department
of Transportation**

Springfield, Illinois 62764

**Contract No. 93704
SANGAMON County
Section 14-00477-00-BR (Springfield)
Routes FAU 7991 & FAU 7992 (Laurel St. & Ash St.)
Project TIG-5146(098)
District 6 Construction Funds**

Prepared by

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Checked by

(Printed by authority of the State of Illinois)



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 10:00 a.m. August 4, 2017 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. 93704
SANGAMON County
Section 14-00477-00-BR (Springfield)
Project TIG-5146(098)
Routes FAU 7991 & FAU 7992 (Laurel St. & Ash St.)
District 6 Construction Funds**

Project consists of constructing an underpass to carry the Norfolk Southern Railway Company over Laurel Street between 8th Street and 11th Street and the construction of an underpass to carry the Norfolk Southern Railway company over Ash Street between 6th Street and 10th Street, located in the City of 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 readvertise the proposed improvement, and to waive technicalities.

By Order of the
Illinois Department of Transportation

Randall S. Blankenhorn,
Secretary

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2017

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

ERRATA Standard Specifications for Road and Bridge Construction
(Adopted 4-1-16) (Revised 1-1-17)

SUPPLEMENTAL SPECIFICATIONS

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CHECK SHEET
FOR
RECURRING SPECIAL PROVISIONS

Adopted January 1, 2017

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

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LR SD12		<input type="checkbox"/> Slab Movement Detection Device	Nov. 11, 1984	Jan. 1, 2007
LR SD13		<input type="checkbox"/> Required Cold Milled Surface Texture	Nov. 1, 1987	Jan. 1, 2007
LR 107-2		<input type="checkbox"/> Railroad Protective Liability Insurance for Local Lettings	Mar. 1, 2005	Jan. 1, 2006
LR 107-4	197	<input checked="" type="checkbox"/> Insurance	Feb. 1, 2007	Aug. 1, 2007
LR 108		<input type="checkbox"/> Combination Bids	Jan. 1, 1994	Mar. 1, 2005
LR 109		<input type="checkbox"/> Equipment Rental Rates	Jan. 1, 2012	
LR 212		<input type="checkbox"/> Shaping Roadway	Aug. 1, 1969	Jan. 1, 2002
LR 355-1		<input type="checkbox"/> Bituminous Stabilized Base Course, Road Mix or Traveling Plant Mix	Oct. 1, 1973	Jan. 1, 2007
LR 355-2		<input type="checkbox"/> Bituminous Stabilized Base Course, Plant Mix	Feb. 20, 1963	Jan. 1, 2007
LR 400-1		<input type="checkbox"/> Bituminous Treated Earth Surface	Jan. 1, 2007	Apr. 1, 2012
LR 400-2		<input type="checkbox"/> Bituminous Surface Plant Mix (Class B)	Jan. 1, 2008	
LR 400-3		<input type="checkbox"/> Hot In-Place Recycling (HIR) – Surface Recycling	Jan. 1, 2012	
LR 400-4		<input type="checkbox"/> Full-Depth Reclamation (FDR) with Emulsified Asphalt	Apr. 1, 2012	Jun. 1, 2012
LR 400-5		<input type="checkbox"/> Cold In-Place Recycling (CIR) With Emulsified Asphalt	Apr. 1, 2012	Jun. 1, 2012
LR 400-6		<input type="checkbox"/> Cold In Place Recycling (CIR) with Foamed Asphalt	June 1, 2012	
LR 400-7		<input type="checkbox"/> Full-Depth Reclamation (FDR) with Foamed Asphalt	June 1, 2012	
LR 400-8		<input type="checkbox"/> Pulverization	Jan. 24, 2017	
LR 402		<input type="checkbox"/> Salt Stabilized Surface Course	Feb. 20, 1963	Jan. 1, 2007
LR 403-1		<input type="checkbox"/> Surface Profile Milling of Existing, Recycled or Reclaimed Flexible Pavement	Apr. 1, 2012	Jun. 1, 2012
LR 403-2		<input type="checkbox"/> Bituminous Hot Mix Sand Seal Coat	Aug. 1, 1969	Jan. 1, 2007
LR 403-3		<input type="checkbox"/> Preventive Maintenance - Bituminous Surface Treatment (A-1)	July 1, 2016	
LR 406		<input type="checkbox"/> Filling HMA Core Holes with Non-Shrink Grout	Jan. 1, 2008	
LR 420		<input type="checkbox"/> PCC Pavement (Special)	May 12, 1964	Jan. 2, 2007
LR 442		<input type="checkbox"/> Bituminous Patching Mixtures for Maintenance Use	Jan. 1, 2004	Jun. 1, 2007
LR 451		<input type="checkbox"/> Crack Filling Bituminous Pavement with Fiber-Asphalt	Oct. 1, 1991	Jan. 1, 2007
LR 503-1		<input type="checkbox"/> Furnishing Class SI Concrete	Oct. 1, 1973	Jan. 1, 2002
LR 503-2		<input type="checkbox"/> Furnishing Class SI Concrete (Short Load)	Jan. 1, 1989	Jan. 1, 2002
LR 542		<input type="checkbox"/> Pipe Culverts, Type _____ (Furnished)	Sep. 1, 1964	Jan. 1, 2007
LR 542-1		<input type="checkbox"/> Pipe Culverts, Special	Apr. 1, 2016	
LR 663		<input type="checkbox"/> Calcium Chloride Applied	Jun. 1, 1958	Jan. 1, 2007
LR 702		<input type="checkbox"/> Construction and Maintenance Signs	Jan. 1, 2004	Jun. 1, 2007
LR 1000-1		<input type="checkbox"/> Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) with Emulsified Asphalt Mix Design Procedures	Apr. 1, 2012	Jun. 1, 2012
LR 1000-2		<input type="checkbox"/> Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) with Foamed Asphalt Mix Design Procedures	June 1, 2012	
LR 1004		<input type="checkbox"/> Coarse Aggregate for Bituminous Surface Treatment	Jan. 1, 2002	Jan. 1, 2007
LR 1030		<input type="checkbox"/> Growth Curve	Mar. 1, 2008	Jan. 1, 2010
LR 1032-1		<input type="checkbox"/> Emulsified Asphalts	Jan. 1, 2007	Feb. 7, 2008
LR 1102		<input type="checkbox"/> Road Mix or Traveling Plan Mix Equipment	Jan. 1, 2007	
LR 80029-1		<input type="checkbox"/> Disadvantaged Business Enterprise Participation for Local Lettings	Aug. 26, 2016	

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.

<u>File Name</u>	<u>Pg.</u>		<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80099			Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2014
80382			Adjusting Frames and Grates	April 1, 2017	
80274	198	X	Aggregate Subgrade Improvement	April 1, 2012	April 1, 2016
80192			Automated Flagger Assistance Device	Jan. 1, 2008	
* 80173			Bituminous Materials Cost Adjustments	Nov. 2, 2006	Aug. 1, 2017
80241			Bridge Demolition Debris	July 1, 2009	
50261			Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50481	201	X	Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50491			Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50531	216	X	Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
80366			Butt Joints	July 1, 2016	
* 80384	218	X	Compensable Delay Costs	June 2, 2017	
80198			Completion Date (via calendar days)	April 1, 2008	
80199			Completion Date (via calendar days) Plus Working Days	April 1, 2008	
80293			Concrete Box Culverts with Skews > 30 Degrees and Design Fills ≤ 5 Feet	April 1, 2012	July 1, 2016
80311			Concrete End Sections for Pipe Culverts	Jan. 1, 2013	April 1, 2016
80277			Concrete Mix Design – Department Provided	Jan. 1, 2012	April 1, 2016
80261			Construction Air Quality – Diesel Retrofit	June 1, 2010	Nov. 1, 2014
80029	222	X	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	July 2, 2016
80378	233	X	Dowel Bar Inserter	Jan. 1, 2017	
* 80229	240	X	Fuel Cost Adjustment	April 1, 2009	Aug. 1, 2017
80304			Grooving for Recessed Pavement Markings	Nov. 1, 2012	Aug. 1, 2014
80246	243	X	Hot-Mix Asphalt – Density Testing of Longitudinal Joints	Jan. 1, 2010	April 1, 2016
80347			Hot-Mix Asphalt – Pay for Performance Using Percent Within Limits - Jobsite Sampling	Nov. 1, 2014	April 1, 2017
* 80383			Hot-Mix Asphalt – Quality Control for Performance	April 1, 2017	April 2, 2017
80376	244	X	Hot-Mix Asphalt – Tack Coat	Nov. 1, 2016	
80368			Light Tower	July 1, 2016	
80336			Longitudinal Joint and Crack Patching	April 1, 2014	April 1, 2016
80369			Mast Arm Assembly and Pole	July 1, 2016	
80045			Material Transfer Device	June 15, 1999	Aug. 1, 2014
80165			Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
80349			Pavement Marking Blackout Tape	Nov. 1, 2014	April 1, 2016
80371	245	X	Pavement Marking Removal	July 1, 2016	
80298			Pavement Marking Tape Type IV	April 1, 2012	April 1, 2016
80377			Portable Changeable Message Signs	Nov. 1, 2016	April 1, 2017
80359	246	X	Portland Cement Concrete Bridge Deck Curing	April 1, 2015	Jan. 1, 2017
80338			Portland Cement Concrete Partial Depth Hot-Mix Asphalt Patching	April 1, 2014	April 1, 2016
* 80385	248	X	Portland Cement Concrete Sidewalk	Aug. 1, 2017	
80300			Preformed Plastic Pavement Marking Type D - Inlaid	April 1, 2012	April 1, 2016
80328	249	X	Progress Payments	Nov. 2, 2013	
34261			Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157	250	X	Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80306	252	X	Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS)	Nov. 1, 2012	April 1, 2016
80340			Speed Display Trailer	April 2, 2014	Jan. 1, 2017
* 80127	262	X	Steel Cost Adjustment	April 2, 2004	Aug. 1, 2017
80379	265	X	Steel Plate Beam Guardrail	Jan. 1, 2017	
80317			Surface Testing of Hot-Mix Asphalt Overlays	Jan. 1, 2013	April 1, 2016

<u>File Name</u>	<u>Pg.</u>		<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80298	268	X	Temporary Pavement Marking (NOTE: This special provision was previously named "Pavement Marking Tape Type IV".)	April 1, 2012	April 1, 2017
20338	271	X	Training Special Provision	Oct. 15, 1975	
80318			Traversable Pipe Grate	Jan. 1, 2013	April 1, 2014
80381			Traffic Barrier Terminal, Type 1 Special	Jan. 1, 2017	
80380			Tubular Markers	Jan. 1, 2017	
80288	274	X	Warm Mix Asphalt	Jan. 1, 2012	April 1, 2016
80302	276	X	Weekly DBE Trucking Reports	June 2, 2012	April 2, 2015
80071	277	X	Working Days	Jan. 1, 2002	

The following special provisions have been deleted from use:

80289 Wet Reflective Thermoplastic Pavement Marking

The following special provisions are in the 2017 Supplemental Specifications and Recurring Special Provisions.

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80360	Coarse Aggregate Quality	Article 1004.01	July 1, 2015	
80363	Engineer's Field Office	Article 670.07	April 1, 2016	
80358	Equal Employment Opportunity	Recurring CS #1 and #5	April 1, 2015	
80364	Errata for the 2016 Standard Specifications	Supplemental	April 1, 2016	
80342	Mechanical Side Tie Bar Inserter	Articles 420.03, 420.05, and 1103.19	Aug. 1, 2014	April 1, 2016
80370	Mechanical Splicers	Article 1006.10	July 1, 2016	
80361	Overhead Sign Structures Certification of Metal Fabricator	Article 106.08	Nov. 1, 2015	April 1, 2016
80365	Pedestrian Push-Button	Article 888.03	April 1, 2016	
80353	Portland Cement Concrete Inlay or Overlay	Recurring CS #34	Jan. 1, 2015	April 1, 2016
80372	Preventive Maintenance – Bituminous Surface Treatment (A-1)	Recurring CS #28	Jan. 1, 2009	July 1, 2016
80373	Preventive Maintenance – Cape Seal	Recurring CS #29	Jan. 1, 2009	July 1, 2016
80374	Preventive Maintenance – Micro Surfacing	Recurring CS #30	Jan. 1, 2009	July 1, 2016
80375	Preventive Maintenance – Slurry Seal	Recurring CS #31	Jan. 1, 2009	July 1, 2016
80362	Steel Slag in Trench Backfill	Articles 1003.01 and 1003.04	Jan. 1, 2016	
80355	Temporary Concrete Barrier	Articles 704.02, 704.04, 704.05, and 704.06	Jan. 1, 2015	July 1, 2015

The following special provisions require additional information from the designer. The additional information needs to be included in a separate document attached to this check sheet. The Project Development and Implementation section will then include the information in the applicable special provision. The Special Provisions are:

- Bridge Demolition Debris
- Building Removal-Case I
- Building Removal-Case II
- Building Removal-Case III
- Building Removal-Case IV
- Completion Date
- Completion Date Plus Working Days
- DBE Participation
- Material Transfer Device
- Railroad Protective Liability Insurance
- Training Special Provisions
- Working Days

GUIDE BRIDGE SPECIAL PROVISION INDEX/CHECK SHEET

Effective as of the: June 16, 2017 Letting

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

Pg #	√	File Name	Title	Effective	Revised
		GBSP 93	Preformed Bridge Joint Seal	Dec 21, 2016	
		GBSP 94	Warranty for Cleaning and Painting Steel Structures	Mar 3, 2000	Nov 24, 2004

LIST ANY ADDITIONAL SPECIAL PROVISIONS BELOW

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

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

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

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

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**STATE OF
ILLINOIS SPECIAL
PROVISIONS**

CONTRACT SPECIFICATIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction," (SSRBC) adopted April 1, 2016 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 FAU Route 7991 (Laurel Street), FAU Route 7992 (Ash Street), Section 14- 00477-00-BR, Project TIG-5146(098) 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 Ash Street roadway portion of the reconstruction project begins east of the 6th Street and Ash Street intersection and ends at the east side of the 10th Street and Ash Street intersection, a distance of approximately 0.21 miles.

The Laurel Street roadway portion of the reconstruction project begins east of the 8th Street and Laurel intersection and ends approximately 200 ft west of the Laurel Street and 11th Street intersection, a distance of approximately 0.19 miles.

The railway portion of the reconstruction project begins approximately 100 ft south of the South Grand Avenue grade separation at the Norfolk Southern Railway Company (NS) tracks and ends at a point on the NS tracks approximately 400 ft north of the NS bridge over 6th Street, a distance of approximately 0.83 miles.

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 right of way and within the proposed right of way along Ash Street and Laurel Street. The roadway reconstruction also includes removal of buildings to accommodate the proposed improvements. The proposed improvements consist of the construction of underpasses. It includes earth excavation, four

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railroad structures, retaining walls, pump stations, drainage structures, storm sewer, sanitary sewer, erosion control items, roadway pavement, curb and gutter, sidewalk, pavement marking, lighting, and fencing.

The railway reconstruction section between South Grand Avenue and 6th Street consists of earth excavation, track removal, building removal, and the removal of existing street and parking lot pavement. The proposed improvements include grading, interim track and future tracks, subballast, drainage items, erosion control, and fencing.

NS work forces will be removing existing signals and gates at the existing street crossings. The NS work forces will also be installing all ballast and track work.

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 along Ash Street, Laurel Street, Oak Street, 9th Street, 10th Street and 10 ½ Street to a minimum. The Contractor shall also not interfere with NS railway operations while on NS right-of-way except as approved by the NS. Construction shall be staged as shown on the plans and as listed below 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 for the work they are performing should be included in progress schedule and anticipated staging.
- The relocated west parking lot entrance for the Illinois Auditor General's office at 740 East Ash Street shall be constructed prior to closing the existing parking lot entrance. Access shall be maintained at all times to this parking lot along Ash Street. Access to the east parking lot shall be closed a maximum of two closures lasting the combined maximum period of (2) two months.
- Laurel Street and Ash Street shall not be closed at the same time. One or the other must be open to one lane of traffic in each direction at all times.
- The alley widening at Laurel Street ±Station 1004+97, and the new commercial entrance on the north side of Ash Street at Station 1005+77 shall both be constructed prior to closing 10 ½ Street between Ash and Laurel streets. Access shall be maintained at all time to the alleys and entrances during construction.
- 10 ½ Street between Laurel Street and South Grand Avenue shall remain open at all times for local access.
- The alley extension to 10th Street, south of Ash Street, shall be completed prior to closing Ash Street.

WORKING DAYS

Working days shall be according to Section 108.04 of the SSRBC. The Contractor shall complete the work within 345 working days. A construction progress schedule indicating project milestones shall be completed and strictly adhered to by the Contractor unless a request to modify the schedule is submitted in writing and approved by the Engineer.

Working days may be suspended by the Engineer at such time that the construction activities by railroad personnel inhibit or become the controlling item of work.

TRAFFIC CONTROL PLAN

Description: Traffic control shall be in accordance with the applicable sections of the SSRBC, the applicable guidelines contained in the ILMUTCD for Streets and Highways, the Manual on Uniform Traffic Control Devices, latest edition; these special provisions, and any details and highway standards contained herein and in the plans.

General: Special attention is called to Articles 107.09 and 107.14, Sections 701 through 705 of the SSRBC, and the following traffic control related Highway Standards; Supplemental Specifications and Recurring Special Provisions; BDE Special Provisions; and Other Special Provisions relating to Traffic Control.

Ash Street shall be closed to all traffic as shown in the plans. The east end of the road closure shall be located west of 10th Street to maintain traffic through the Ash and 10th intersection and maintain access to the commercial entrance at this location. A one month temporary closure of 10th Street will be permitted for 10th Street intersection construction prior to opening Ash Street to traffic. During this one (1) month closure, access shall be maintained to the commercial entrance at this location. Standard 701701 shall be used for lane closures at the Ash and 10th Street intersection for sewer and sidewalk construction that is not concurrent with 10th Street closure for intersection construction.

Laurel Street shall be closed to all traffic as shown on the plans. The west end of the road closure shall be near Station 995+00. The east end of the road closure shall be near Station 1004+75. Laurel Street and Ash Street shall not be closed at the same time. One or both streets shall remain open to one lane of traffic in each direction at all times.

The contractor shall be responsible for the traffic control devices at all times during construction activities and shall coordinate the items of work to keep traffic hazards and/or inconveniences to a minimum.

No lane closures will be permitted without the use of the appropriate traffic control standard or flagger protection.

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All advance-warning signs shall be in new or like new condition at the start of the project. If an advanced warning sign is damaged or becomes unreadable, the sign shall be replaced by a new or like new sign.

Standard 701006 shall be used for construction within 15 ft of the existing back of curb on 9th Street, 10th Street, Ash Street and Laurel Street.

Standard 701501 shall be used for lane closure on 9th Street during curb and gutter reconstruction for the 9th Street Cul-de-Sac, alley widening intersection at Laurel Street Station 1004+97, and milling and overlay between Laurel Street Station 1004+75 and 1005+26.

Standard 701606 shall be used for lane closures along Ash Street west of the relocated parking lot entrance for the Illinois Auditor General's office at 740 East Ash Street and for lane closure for curb and gutter reconstruction at the new entrance to the Illinois Department of Transportation parking lot on the north side of Ash Street east of the NS tracks.

Standard 701701 shall be used for lane closures at the Ash and 10th Street intersection while the intersection is open for traffic.

Standard 701801 shall be used for all sidewalk closures necessary during the construction.

Standard 701901 shall be used for traffic control devices during construction.

The Contractor shall provide the name and phone number of a contact on a twenty-four (24)-hour basis in the event an accident or other unforeseen damage occurs that necessitates replacement or resetting of traffic control items.

Basis of Payment: Traffic control and protection standards 701501, 701606, 701701, and 701801 shall be paid for at the contract lump sum price.

All detour signing and any additional traffic control and protection, other than those standards listed to be paid for above, as shown on the plans and described in these specifications will be paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION, (SPECIAL). This work shall include furnishing, installing, maintaining, replacing, relocating, and removing all 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.

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 Mr. Rick Combs 825 North MacArthur Blvd. Springfield, IL 62702 Phone: (217) 753-5187	Gas	Throughout the Project	During Construction
City Water, Light & Power Mr. 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 Mr. Rick Meadows 1008 East Miller Street Springfield, Illinois 62702 Phone: (217) 321-1354	Electric	Throughout the Project	During Construction
City of Springfield (Sewer Department) Mr. John Higgenbotham Room 303 Municipal Center W. 300 S. 7 th St. Springfield, IL 62701 Phone: (217) 789-2260	Sewer	Throughout the Project	Completed By Contractor
Springfield Metro Sanitary District Mr. Gregg Humphrey 3000 North 8 th Street Springfield, IL 62707 Phone: (217) 528-0491	Sewer	Throughout the Project	Completed By Contractor
Windstream KDL, Inc. Mr. David E. Fereira 211-B SW Adams Street Peoria, IL 61602 Phone: (309) 282-3110	Fiber Optic	Throughout the Project	During Construction
Comcast Mr. David Bly 711 South Dirksen Parkway Springfield, IL 62703 Phone: (224) 229-3204	Fiber Optic Cable	Throughout the Project	During Construction

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AT&T Mr. Jeff Goad 1640 E. Hazel Dell Rd. Springfield, IL 62703 Phone: (217) 789-5543	Fiber Optic/Telephone	Throughout the Project	During Construction
Norfolk Southern Corporation Mr. Frederick Schesny 1200 Peachtree Street NE Box 142 Atlanta, GA 30316 Phone: (404) 529-1256	RR Communication	Throughout the Project	During Construction
Buried Fiber Optic Taylor Law Offices Mr. Matthew R. Hortenstine 122 East Washington Ave. Effingham, IL 62401 Phone: (217) 342-3925	Service to Springfield Partners III LLC	Rt UP Main1 Sta. 47834+50	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.

Springfield Partners III LLC reported a buried fiber optic service line near the southeast corner of the Auditor General building that proceeds northeasterly from the corner of the building. The utility line shall be located by the Contractor prior to commencing excavation along railroad ROW and Ash Street. This work shall be complete at no additional cost to the contract.

Some utility companies such as CWLP Water and Ameren Gas have indicated that they plan to replace existing underground facilities with new ones beneath the Ash and Laurel pavement at the underpasses. The Contractor shall coordinate with utilities companies for these installations after earth excavation and before installation of aggregate subsurface improvement.

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

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ROADWAY

AGGREGATE SUBGRADE IMPROVEMENT

Description: This work shall be according to the BDE Special Provision AGGREGATE SUBGRADE IMPROVEMENT and the following requirements.

Course 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.

COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.18 (MODIFIED)

Description: This work shall consist of constructing modified curb and gutter around the 9th Street cul-de-sac in accordance with Section 606 and Standard 606001 except that the gutter pan slope shall be modified as detailed in the plans.

Basis of Payment: This work shall be paid for at the contract unit price per foot for COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.18 (MODIFIED).

CONCRETE BARRIER WALL (SPECIAL)

Description: This work shall consist of construction a concrete barrier wall according to the details shown in the plans, Section 502, Section 503 and Section 508 of the Standard Specifications.

Method of Measurement: CONCRETE BARRIER WALL (SPECIAL) will be measured for payment by the foot in along the length of the barrier.

Basis of Payment: this work including excavation, concrete and reinforcement bars will be paid for at the contract unit price per foot for CONCRETE BARRIER WALL (SPECIAL).

CONCRETE PAVER SIDEWALK

Description: This work shall be in accordance with the plans and Special Provision LRS14. The 4 in. portland cement concrete base shall be constructed in accordance with Section 424 of the Standard Specifications except that it shall not be measured for payment.

General:

Submittals

- Paver manufacturer's material test data certifying pavers comply with specification.
- Paver samples representing actual size, shape, and color range.
- Paver contractor's methods and quality control plan/statements identifying milestones and procedures to receive approvals and to assure adherence to this specification. This must be tailored to this specific project with actual dates for mockups, approvals and quality control meetings.
- Data sheet for polymeric paver locking sand.

Environmental Requirements

- Do not install sand or pavers during heavy rain or snowfall.
- Do not install sand and pavers over frozen aggregate base materials.
- Do not install frozen sand or saturated sand.
- Do not install concrete pavers on frozen or saturated sand.

P.C.C. Pavers

- Acceptable Concrete Pavers shall be according to Section 1042 of the Standard Specifications and match the style, size and colors of the P.C.C. Pavers used as the Basis for Design.
- Compressive Strength: Greater than 8000 psi.
- Water Absorption: Maximum of 5 percent; ASTM 936 and freeze-thaw testing per Section 8 of ASTM C-67.
- Basis for Design for Size and Color as follows:
 - Size: 7 7/8 in. x 3 7/8 in. x 3 1/8 in.
 - Color: Charcoal or Slate

Paver Locking Sand

- Paver locking sand shall be a polymeric sand specifically designed for filling joints between interlocking pavers.

Installation of Pavers

- The “Aesthetic Mockup” shall be required on the project site for approval by the Engineer prior to installation.
- After the sand setting bed has been installed, carefully place the pavers in straight courses with “hand” tight joints and uniform top surface.
- Paver spacer bars will provide joints between pavers (joints may be between 1/16 in. and 3/16 in. wide and no more than 5 percent of the joints shall exceed 1/4 in. wide to achieve straight bond lines).
- Paver Joint lines shall not deviate more than $\pm < 1/2$ in. over 50 ft from string lines.
- Fill gaps at the edges of the paved area with cut pavers or edge units.
- Cut pavers, to be placed along the edge, with a double blade paver splitter or masonry saw.
- Adjust paver pattern at pavement edges such that cutting of edge pavers is minimized.
- All cut pavers exposed shall be no smaller than one-third of a whole paver measured in the long direction (approximately 2 5/8 in.) and no smaller than two-thirds of a whole paver measured in the short direction (approximately 2 9/16 in.).
- Cut pavers edges are to abut pavers only; a paver spacer bar must abut the cut edge of a paver.
- Do not place cut paver edges against concrete.
- Keep skid steer and forklift equipment off newly laid pavers that have not received initial compaction and joint sand.

Joint Filling

- In addition to the manufacturer’s recommendations, the paver locking sand for joint filling shall be spread over the pavement or sidewalk and hand broomed into the joints. The aggregate shall then be worked down into the joints with multiple passes of the vibrator/compactor. Each pass shall be alternated 90 degrees from the previous pass. This process shall be repeated until the joints are completely filled.

Excess fine aggregate shall be removed by hand brooming.

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All bricks and pavers within 6 ft (1.8 m) of the laying face shall be compacted and the joints completely filled with sand at the end of each workday.

Field Quality Control

- The surface elevation of pavers shall be 1/8 in. to 1/4 in. above adjacent drainage inlets, concrete collars or channels.
- Lippage: No greater than 1/8 in. difference in height between adjacent pavers.

Basis of Payment: This work shall be paid for at the contract unit price per square yard for CONCRETE PAVER SIDEWALK.

The 4 in. Portland Cement Concrete Base, 1 in. sand bedding, pavers, paver locking sand and weep holes will be included in the contract unit price per square yard for CONCRETE PAVER SIDEWALK.

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 proposed subgrade of Ash Street. 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.

Existing signal handholes noted in the plans to be removed, but containing unknown existing wires, upon approval of the Engineer, shall be filled with controlled low-strength material.

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.

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 No. 1 and No. 2 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.

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 non-shrink grout.

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 base 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 annular space between the manhole and the edge of the shaft shall be filled with controlled low strength material, mix 2 in accordance with Section 593 of the SSRBC 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 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.

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 hatch, non-shrink grout, 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.

EARTH EXCAVATION

Description: This work shall be according to Section 202 of the SSRBC in addition to the following requirements for the roadway cut section drainage.

Drainage: The excavation shall be maintained so that positive drainage is provided at all times. Temporary ditches, temporary sump pumps or other methods determined by the Contractor shall be used to provide positive drainage during excavation. 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 his to the satisfaction of the Engineer.

Earthwork Staging Area: The Contractor has the option to use the areas shown on the plans for earthwork staging of embankment material. As an example, the Contractor may elect to use material excavated from the staging areas to construct a portion of the Stage 1 embankment rather than using material from the Ash Street excavation. The Contractor shall dispose of all excess earthwork material, except non special waste within the earthwork staging area. The Contractor shall seed disturbed areas as necessary during earthwork staging to minimize erosion at no additional cost to the contract.

At completion of the project, the staging areas shall be graded to drain in a manner consistent with the existing drainage, and the ground surface elevation shall be no more than 10 feet higher than the existing elevation.

Any additional excavation due to the Contractor's selected method of earthwork staging or use of the staging area will not be measure for payment. All temporary erosion control or seeding at the earthwork staging area will not be measured for payment.

Basis of Measurement: This work will not be measured for payment but shall be included in the cost of EARTH EXCAVATION.

FENCE REMOVAL

Description: This work shall consist of removing existing fencing, posts, barbed wire, supports, 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

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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.

FRAMES AND LIDS, SPECIAL

Description: This work shall consist of installing frames and lids according to Section 604 of the SSRBC at locations shown on the plans or as directed by the Engineer.

The frame and lid shall be according to this specification and as detailed in the plans.

Basis of Payment: This work will be paid for at the contract unit price per each for FRAMES AND LIDS, SPECIAL.

GEOTECHNICAL FABRIC FOR GROUND STABILIZATION

Description: This work shall be according to Section 201 of the SSRBC in addition to the following requirements.

Materials: The GEOTECHNICAL FABRIC shall be woven fabric meeting the requirements of Article 1080.02.

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

Effective: August 1, 2012

Revised: February 1, 2014

In addition to the Contractor's equal employment opportunity affirmative action efforts undertaken as elsewhere required by this Contract, the Contractor is encouraged to participate in the incentive program to provide additional on-the-job training to certified graduates of IDOT funded pre-apprenticeship training programs outlined by this Special Provision.

It is the policy of IDOT to fund IDOT pre-apprenticeship training programs throughout Illinois to provide training and skill-improvement opportunities to assure the increased participation of minority groups, disadvantaged persons and women in all phases of the highway construction industry. The intent of this IDOT Training Program Graduate (TPG) Special Provision is to place certified graduates of these IDOT funded pre-apprentice training

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programs on IDOT project sites when feasible, and provide the graduates with meaningful on-the-job training intended to lead to journey-level employment. IDOT and its sub-recipients, in carrying out the responsibilities of a state contract, shall determine which construction contracts shall include "Training Program Graduate Special Provisions." To benefit from the incentives to encourage the participation in the additional on-the-job training under this Training Program Graduate Special Provision, the Contractor shall make every reasonable effort to employ certified graduates of IDOT funded Pre-apprenticeship Training Programs to the extent such persons are available within a reasonable recruitment area.

Participation pursuant to IDOT's requirements by the Contractor or subcontractor in this Training Program Graduate (TPG) Special Provision entitles the Contractor or subcontractor to be reimbursed at \$15.00 per hour for training given a certified TPG on this contract. As approved by the Department, reimbursement will be made for training persons as specified herein. This reimbursement will be made even though the Contractor or subcontractor may receive additional training program funds from other sources for other trainees, provided such other source does not specifically prohibit the Contractor or subcontractor from receiving other reimbursement. For purposes of this Special Provision the Contractor is not relieved of requirements under applicable federal law, the Illinois Prevailing Wage Act, and is not eligible for other training fund reimbursements in addition to the Training Program Graduate (TPG) Special Provision reimbursement.

No payment shall be made to the Contractor if the Contractor or subcontractor fails to provide the required training. It is normally expected that a TPG will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project through completion of the contract, so long as training opportunities exist in his work classification or until he has completed his training program. Should the TPG's employment end in advance of the completion of the contract, the Contractor shall promptly notify the designated IDOT staff member under this Special Provision that the TPG's involvement in the contract has ended and supply a written report of the reason for the end of the involvement, the hours completed by the TPG under 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 TPG.

The Contractor will provide for the maintenance of records and furnish periodic reports documenting its performance under this Special Provision.

Method of Measurement: The unit of measurement is in hours.

Basis of Payment: This work will be paid for at the contract unit price of \$15.00 per hour for certified TRAINEES TRAINING PROGRAM GRADUATE. The estimated total number

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of hours, unit price and total price have been included in the schedule of prices.

The Contractor shall provide training opportunities aimed at developing full journeyworker in the type of trade or job classification involved. The initial number of TPGs for which the incentive is available under this contract is **10**. During the course of performance of the Contract the Contractor may seek approval from the Department for additional incentive eligible TPGs. In the event the Contractor subcontracts a portion of the contract work, it shall determine how many, if any, of the TPGs are to be trained by the subcontractor, provided however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this Special Provision. The Contractor shall also insure that this Training Program Graduate Special Provision is made applicable to such subcontract if the TPGs are to be trained by a subcontractor and that the incentive payment is passed on to each subcontractor.

For the Contractor to meet the obligations for participation in this TPG incentive program under this Special Provision, the Department has contracted with several entities to provide screening, tutoring and pre-training to individuals interested in working in the applicable construction classification and has certified those students who have successfully completed the program and are eligible to be TPGs. A designated IDOT staff member, the Director of the Office of Business and Workforce Diversity (OBWD), will be responsible for providing assistance and referrals to the Contractor for the applicable TPGs. For this contract, the Director of OBWD is designated as the responsible IDOT staff member to provide the assistance and referral services related to the placement for this Special Provision. For purposes of this Contract, contacting the Director of OBWD and interviewing each candidate he/she recommends constitutes reasonable recruitment.

Prior to commencing construction, the Contractor shall submit to the Department for approval the TPGs to be trained in each selected classification. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. No employee shall be employed as a TPG in any classification in which he/she has successfully completed a training course leading to journeyman status or in which he/she has been employed as a journeyman. Notwithstanding the on-the-job training purpose of this TPG Special Provision, some offsite training is permissible as long as the offsite training is an integral part of the work of the contract and does not comprise a significant part of the overall training.

Training and upgrading of TPGs of IDOT pre-apprentice training programs is intended to move said TPGs toward journeyman status and is the primary objective of this Training Program Graduate Special Provision. Accordingly, the Contractor shall make every effort to enroll TPGs by recruitment through the IDOT funded TPG programs to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that it has taken in pursuance thereof, prior to a

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determination as to whether the Contractor is in compliance and entitled to the Training Program Graduate Special Provision \$15.00 an hour incentive.

The Contractor or subcontractor shall provide each TPG with a certificate showing the type and length of training satisfactorily completed.

INLETS TYPE A WITH SALVAGED FRAME AND GRATE

Description: This work shall be in accordance with Section 602 of the Standard Specifications except that the existing frame and grate at the new inlet location shall be salvaged and used on the new inlet.

Basis of Payment: This work will be paid for at the contract unit price per each for INLET TYPE A WITH SALVAGED FRAME AND GRATE.

INLETS TYPE B

Description: This work shall be in accordance with Section 602 of the Standard Specifications. The following inlets will be modified as described below.

R212
R216
R225
R226
R227
R228

These inlets shall include a flat slab top (Standard 602601) without an opening for a frame or grate. The flat slab top shall be 9 in. thick and reinforced with #4 bars at 6 in. on center each way in the bottom of the slab.

The wall thickness "T" shown on Standard 602306 shall be 6 in. and the inlet walls shall be reinforced with #4 bars at 12 in. centers.

The bottom slab shall be 9 in. thick and reinforced with #4 bars at 6 in. on center each way in the top of the slab.

Where shown on the plans and schedules, a hole shall be cut in the inlet for a future pipe drain 18 in. The hole shall be covered with an 8 gauge galvanized metal plate bolted on the outside of the inlet.

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

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INLET TYPE B.

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.

INSURANCE

The Contractor shall obtain and keep in force insurance as described in Section 107.27 of the Standard Specifications except that Paragraph 107.27(b) shall be modified to include a requirement that the Department, the City of Springfield, the Illinois Department of Central Management Services shall all be named as additional insureds with respect to the policies and any umbrella excess liability coverage.

MANHOLES

Manholes shall be in accordance with Section 602 of the Standard Specifications except that those noted on the plans as sanitary manholes shall have 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 poly propylene coated steel reinforcing rods with load and pullout ratings meeting OSHA standards.

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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."

This work will be paid for at the contract unit price per each for MANHOLES of the type and size specified.

MANHOLE, SPECIAL

Description: This work shall consist of constructing manholes as shown in the plans in accordance with Section 602 of the SSRBC with exceptions shown on the Plans and as specified herein.

Materials:

Manhole Pipe Gaskets: Flexible pipe to manhole connectors shall be installed to create a watertight seal between the pipe and the manhole. Connectors shall be A-Lok type cast in the structure. Each shall be specifically designed for the size and type of pipe being installed.

Precast concrete base, if used, and top slab shall be according to Section 1042 of the SSRBC except that shop drawings according to Article 1042.03(b) will be required, and concrete shall have a minimum compressive strength of 5000 psi at twenty-eight (28) days.

Construction Requirements:

Temporary soil retention system shall be furnished and installed in accordance with Section 522 of the SSRBC based on field verified location of existing storm sewers.

The existing 72 in. diameter sewer is a combined sewer that carries waste water as well as storm water. Blockage of the sewer may result in wide spread property damage during a large storm event. Low flow is primarily waste water and shall be conveyed in temporary piping through the manhole excavation. The contractor shall make all necessary provisions

to maintain both storm and sanitary flow through the project area.

Existing storm sewer shall be maintained on temporary supports during construction of cast-in-place manhole base. The contractor has the option of constructing a precast manhole base in accordance with Article 602.07 of the SSRBC except that the cushion shall be 8 in. thick well compacted course aggregate for backfill, bedding, and trench backfill for pipe culverts and storm sewers according to Article 1004.05.

Flexible pipe to manhole connectors shall be provided at all manhole penetrations. The connectors shall be sized specifically for the type of pipe being used. Connector and connecting pipe installation shall be according to the recommendations of the connector manufacturer.

Connections to existing storm sewer shall be completed by removing existing storm sewer to the first joint outside the working area required to construct the manhole wall and constructing new sewer according to Section 550 of the SSRBC of sufficient length to extend through the manhole wall. If the first joint is located outside of the Temporary Soil Retention System, the retention system shall be adjusted at no additional cost to the contract. Following installation of all pipes, concrete troughs shall be constructed in the bottom of the manhole to ensure laminar flow through the structure.

Basis of Payment: This work will be paid for at the contract unit price per each for MANHOLE, SPECIAL, which price shall include the cast-in-place or precast structures, reinforcement, gaskets, concrete fill, the 48 in. diameter risers, cones or flat slab tops, frames and lids, steps, sand cushion, concrete trough, and all excavation and backfilling. The unit price per each for MANHOLE, SPECIAL shall also include removal and disposal of existing storm sewer as required for manhole construction and connection to existing sewers, construction of new storm sewer to connect existing storm sewer to the manhole, temporary shoring, excavation and backfill to complete the connection, and staging and temporary construction to maintain flow during construction.

The temporary soil retention systems at each Manhole, Special location will be paid for according to Section 522 of the SSRBC, except that removal of existing storm sewer shall be included in the unit price of MANHOLE, SPECIAL. Exposed surface area to accommodate aggregate cushion below precast manhole base will not be measured for payment.

PAVEMENT REMOVAL

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

1. Pavement thickness for drives, slabs, parking areas and entrances to be removed is

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not shown on the plans at all locations.

2. Paragraph 440.07(c) is deleted.

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

PAVEMENT REMOVAL (SPECIAL)

Description: This work shall consist of removing asphalt, concrete pavement, brick, aggregate, earth, and curb and gutter along Ash Street and Laurel Street. This work shall be according to Section 440 of the IDOT SSRBC. 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.

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

PLANTING EVERGREEN PLANTS

Description: This work shall be in accordance with Section 253 of the SSRBC with exceptions as specified herein.

Location: The evergreen trees shall be planted near the intersection of Truman Road and Stanford Ave. in Springfield, Illinois. The evergreen trees will be planted on the south side of Stanford Ave. at this intersection and shall be planted between the existing ROW and 20 ft from the existing sidewalk. The planting area is approximately 350 ft long by 30 ft wide with the trees staggered and spaced 20 ft apart. The Engineer will mark the specific planting locations.

Planting Time: Evergreen planting shall occur between September 1 and November 1, 2017.

Excavation of Plant Holes: The planting area between the sidewalk and ROW may contain aggregate and deteriorated portions of oil and chip pavement. The Engineer will try to mark planting locations outside of this area. If this area is unavoidable, no addition compensation will be allowed to remove the aggregate and oil and chip pavement. This work shall be included in the unit price of the evergreens. Suitable backfill or top soil may also be needed to backfill the holes for planting. This work shall also be included in the unit price of the evergreens.

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 TECTYL 506 by Valvoline, TECTYL 506 by Daubert Chemical Company or BCG 6116 DSMA by Bradley Coating Group.

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

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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 a minimum of four (4) copies to be retained by the Engineer plus the number of copies, for which the Contractor requires distribution. 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:

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- 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, or approved equal.

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., Thomas & Betts or Plasti-Bond. 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 degrees F (-1 degrees 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., Thomas & Betts or Plasti-Bond. PVC coating shall be a minimum of 40 Mil 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.

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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, or 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, or 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, or 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, Encore Wire or General Cable 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, Encore Wire or General Cable Type THWN-2.

Supporting Devices

Strut supports for exterior applications shall be 304 stainless steel strut support 1 5/8 in. x 1 5/8 in. 12 gauge thickness with 9/16 in. slot at 2 in. spacing. 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. 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, Square D or GE. 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, Square D or GE. 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,

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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) 321-1354

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:

- A. The installation of a 480 VAC, three (3)-phase, three (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.
- B. City Water Light and Power (CWLP): Major work items to be performed by CWLP (not in contract) shall be as follows:
 1. Removal and replacement of existing utility pole, transformers, and electric meter.
 2. The furnishing of power for a 480 VAC, three (3)-phase, three (3)-wire secondary service sufficient to handle the loads for a 225-Amp service.
 3. Shall furnish & connect the service entrance conductors from the primary line location to the pad mounted transformer.

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4. Shall furnish and install the meter base and meter.
 5. Shall furnish and install grounding electrode for service entrance ground system.
 6. CWLP shall retain the right to review and approve drawings prior to installation.
- C. 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).
1. Verifying all requirements with serving electric utility.
 2. Coordinating the electric service entrance work and billing arrangements with the serving electric utility company.
 3. Additional work as required by the serving electric utility and as required to provide a complete and operational electric service entrance system.
 4. Extend service conduit and conductors from the secondary of the service transformer to the pump control panel service disconnect switch.
 5. 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 three (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.

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- 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:

240 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, may use one of the following:
 - 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 straight way 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

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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."
- 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 weather proof, abrasion resistant, legend plates 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, or Gardner-Bender shall be used. 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.

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- 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, shall be Cadweld by Erico Products, Inc., Thermoweld or Burndy. 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.
- F. 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 Erico. Tighten connections to comply with tightening torques in UL Standard 486A to assure permanent and effective grounding.
- G. All metal equipment enclosures, conduits, cabinets, boxes, receptacles, motors, etc. shall be bonded to the respective grounding system.
- H. 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.

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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.
 - I. Equipment ground wires shall be identified with green colored insulation for all conductors AWG or Kcmil. Green tape shall not meet this requirement.
 - J. All utility transformer bank grounds shall be installed in accordance with the serving utility company's recommendation and in accordance with NEC.
 - K. 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.
 - L. 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.
 - M. 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.

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- 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 fittings 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.

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- 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 an 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

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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.

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**MOTOR START UP CERTIFICATION AND TESTING
REPORT**

(One (1) form is to be provided for each motor, copy as
required)

Page 1 of 2 pages

Hanson Professional Services, Inc. 1525 South Sixth Street Springfield, Illinois 62703
Phone (217) 788-2450

Project Location: _____ Project Name: _____
Client (End User) _____ Project Number: _____
Client Site Location: _____

Temperature (°F): _____
Humidity: _____
Time of Day: _____
Weather (if outdoors): _____
Motor Function/Designation/Location: _____

Motor Nameplate Data

1. Manufacturer's Name: _____
2. Motor Serial Number: _____
3. Manufacturer's type and frame designation _____
4. Horsepower _____
5. Time Rating (5, 15, 30, 60 minutes, or Continuous) _____
6. Maximum ambient temperature for which motor is designed _____
7. NEMA Insulation Class Designation _____
8. NEMA Torque Design Class _____
9. RPM at rated load _____
10. Frequency _____
11. Number of Phases _____
12. Rated Full-Load Amperes _____
13. Voltage _____
14. Code letter for Locked-Rotor KVA _____
15. Service Factor _____
16. Efficiency (NEMA Nominal) _____
17. Internal motor thermal protected (if required)? (Yes/No) _____

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Motor Start-Up Certification and Testing Report (Continued)

Motor Start-Up & Commissioning Data

Insulation Resistance Test

Megohms measured to ground @ 500 VDC (60 Second continuous test)

Motor Lead T1 measured to Ground _____ Megohms Motor Lead
T2 measured to Ground _____ Megohms Motor Lead
T3 measured to Ground _____ Megohms T1-T2-T3
(Tied) measured to Ground _____ Megohms

Voltage (at motor)

	Phase A-B	Phase B-C	Phase C-
No-Load	_____	_____	_____
Full Load	_____	_____	_____

Motor Current (field measured data)

No Load
Phase A _____ Amps
Phase B _____ Amps
Phase C _____ Amps

Full Load
Phase A _____ Amps
Phase B _____ Amps
Phase C _____ Amps

DATA CERTIFIED BY:

Firm: _____

Name _____

Date: _____

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PUMP STATION MECHANICAL WORK

Description: This work shall consist of the ductile iron piping, fittings, valves, steel pipe supports, and the 2 in. Schedule 40 drain with check valve in the valve vault and Drainage Structures, No. 2.

Ductile Iron Piping

The 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 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 either 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

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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 percent 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 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.

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Valve Vault Drain

2-in. 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-in. check valve shall be a 2-in. ball check with integral unions to connect to the 2 in. 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 ductile iron pipe both flanged and push on, fittings, valves, steel pipe supports, 2-in. Schedule 40 drain pipe, 2-in. check valve, pipe and rail supports, backfilling, 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.

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, an HS-20 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-in. by 36-in. minimum clear opening. The top of the hatch shall be a minimum 1/4-in. aluminum diamond tread plate. The access frame and hatch shall be HL93 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, or Kor-N-Seal.

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

Ash Street - Furnish and install two (2) submersible non-clog wastewater pump(s). Each pump shall be equipped with a 12 HP submersible electric motor, connected for operation on 480 volts, three (3) phase, 60 hertz, four (4) wire service, with submersible cable (SUBCAB) suitable for submersible pump applications. The power cable shall be sized according to NEC and ICEA standards and also meet with P-MSHA Approval. The contractor shall determine the length of cable needed with a minimum of 5 ft of additional cable coiled in the wet well. Information associated with the equipment from Flygt and Pentaire was used as the basis for the design as specified herein and shown on the drawings. Contractor may use equivalent pumps from other manufacturers meeting the performance specifications of this special provision.

Laurel Street - Furnish and install two (2) submersible non-clog wastewater pump(s). Each pump shall be equipped with a 35 HP submersible electric motor, connected for operation on 480 volts, three (3) phase, 60 hertz, four (4) wire service, with submersible cable (SUBCAB) suitable for submersible pump applications. The power cable shall be sized according to NEC and ICEA standards and also meet with P-MSHA Approval. The contractor shall determine the length of cable needed with a minimum of 5 ft of additional cable coiled in the wet well. Information associated with the equipment from Flygt and Pentaire was used as the basis for the design as specified herein and shown on the drawings. Contractor may use equivalent pumps from other manufacturers meeting the performance specifications of this special provision.

Pump Design Configuration

Ash Street - 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 3-in. spherical solids. The pump base shall have 6-in. flanged outlet connection. The pump shall be supplied with a mating cast iron 6 in. discharge connection and be capable of delivering 1,377 GPM at 17 FT. TDH. A second operating point on the pump curve shall be 900 GPM at 34 FT. TDH. The pump(s) shall be automatically and firmly connected to the discharge

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connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet-well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor. Each pump shall be fitted with a short section of stainless steel lifting chain with a stainless steel guide cable. The working load of the chain section shall be 50 percent greater than the pump unit weight. The pumps shall be supplied with a pump lifting device that follows the guide cable and grabs a section of the chain lead allowing for pump removal. 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). Each pump shall conform to Section 101.46 of the IDOT manual with regards to domestically sourced iron and steel products.

Laurel Street - 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 3-in. spherical solids. The pump base shall have a 10-in or 12-in. flanged outlet connection. The pump shall be supplied with a mating cast iron 10-in or 12 in. discharge connection and be capable of delivering 3,000 GPM at 28 FT. TDH. A second operating point on the pump curve shall be 1,250 GPM at 38 FT. TDH. The pump(s) shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet-well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor. Each pump shall be fitted with a short section of stainless steel lifting chain with a stainless steel guide cable. The working load of the chain section shall be 50 percent greater than the pump unit weight. The pumps shall be supplied with a pump lifting device that follows the guide cable and grabs a section of the chain lead allowing for pump removal. 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). Each pump shall conform to Section 101.46 of the IDOT manual with regards to domestically sourced iron and steel products.

Pump Construction

Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be of stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a

polyester resin paint finish on the exterior of the pump.

Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.

Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

Cooling System

Each pump motor shall be sufficiently cooled by submergence in the pumped media.

Cable Entry Seal

The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered equal.

Motor

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 H insulation rated for 180 degrees C (356 degrees F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95 percent. The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31. The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of pins, bolts, screws or other fastening devices used to locate or hold the stator and that penetrate the stator housing are not acceptable. The motor shall be designed for continuous duty while handling pumped media of up to 104°F. The motor shall be capable of no less than 30 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of aluminum. Three thermal switches shall be embedded in the stator end coils, one per phase winding, to monitor the stator temperature. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the motor control panel.

The junction chamber shall be sealed off from the stator housing and shall contain a terminal board for connection of power and pilot sensor cables using threaded compression type

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terminals. The use of wire nuts or crimp-type connectors is not acceptable. The motor and the pump shall be produced by the same manufacturer.

The motor service factor (combined effect of voltage, frequency and specific gravity) shall be 1.15. The motor shall have a voltage tolerance of +/- 10 percent. The motor shall be designed for continuous operation in up to a 40 degrees C ambient and shall have a NEMA Class B maximum operating temperature rise of 80 degrees C. A motor performance chart shall be provided upon request exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. The chart shall also include data on motor starting and no-load characteristics.

Motor horsepower shall be sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 ft or greater.

Power Cable

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 cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 ft or greater.

Bearings

The integral pump/motor shaft shall rotate on two bearings. The motor bearings shall be sealed and permanently grease lubricated with high temperature grease. The upper motor bearing shall be a two row angular contact ball bearing to handle radial loads. The lower bearing shall be a two row angular contact ball bearing to handle the thrust and radial forces. The minimum L_{10} bearing life shall be 50,000 hours at any usable portion of the pump curve.

Mechanical Seals

Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide ring. The upper secondary seal, located between the seal chamber and the seal inspection chamber shall be a leakage-free seal. The upper seal shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide seal ring. The rotating seal ring shall have small back-swept grooves laser inscribed upon its face to act as a pump as it rotates, returning any fluid that should enter the dry motor chamber back into the lubricant chamber. All seal rings shall be individual solid sintered rings. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals

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containing either a common single or double spring acting between the upper and lower seal faces are not acceptable. The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.

Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion. The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit. The seal system shall not rely upon the pumped media for lubrication.

The area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove. This groove shall protect the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.

A separate seal leakage chamber shall be provided so that any leakage that may occur past the upper, secondary mechanical seal will be captured prior to entry into the motor stator housing. Such seal leakage shall not contaminate the motor lower bearing. The leakage chamber shall be equipped with a float type switch that will signal if the chamber should reach 50 percent capacity.

Pump Shaft

The pump and motor shaft shall be a single piece unit. The pump shaft is an extension of the motor shaft. Shafts using mechanical couplings shall not be acceptable. The shaft shall be stainless steel – ASTM A479 S43100-T. Shaft sleeves will not be acceptable.

Impeller

The impeller shall be of Hard-Iron™ (ASTM A-532 (Alloy III A) 25 percent chrome cast iron), dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The leading edges of the impeller shall be hardened to Rc 60 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5 percent sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impeller shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.

Volute – Suction Cover

The pump volute shall be a single piece grey cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across

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which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be cast of Hard-Iron™ (ASTM A-532 (Alloy III A) 25 percent chrome cast iron) and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

Protection

Each pump motor stator shall incorporate three thermal switches, one per stator phase winding and be connected in series, to monitor the temperature of the motor. Should the thermal switches open, the motor shall stop and activate an alarm. A float switch shall be installed in the seal leakage chamber and will activate if leakage into the chamber reaches 50 percent chamber capacity, signaling the need to schedule an inspection.

The thermal switches and float switch shall be connected to a Mini CAS control and status monitoring unit. The Mini CAS unit shall be designed to be mounted in the pump control panel.

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 25 ft 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.

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.

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Testing

The pump manufacturer shall perform the following inspections and tests on the pump before shipment from factory.

1. Impeller motor rating and electrical connections shall first be checked for compliance to the customer's purchase order.
2. A motor and cable insulation test for moisture content or insulation defects.
3. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
4. The pump shall be run for 30 minutes submerged, a minimum of 6 ft under water.
5. After operational test No. 4, the insulation test (No. 2) is to be performed again.
6. 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.

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) eight (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

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- 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, or approved equal 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 304 stainless steel Unistrut, B Line or Fastenal, strut support 1 5/8 in. x 1 5/8 in. 12 gauge thickness with 9/16 in. slot at 2 in. spacing and all mounting

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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, Cutler Hanner or GE 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 μ s

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(20kV) wave, and status indication lights, Joslyn, Emmerson or Square D.

- 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, Cutler-Hammer or GE.
- 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, Cutler-Hammer or GE. 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 (RVSS):
 - 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, or Square D. The softstarter shall contain at least the features, functions and adjustments described below, in order to provide the motor and application with

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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.

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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.

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- m. Enclosure Light: Provide a 60-watt incandescent light fixture for the pump control panel enclosure with door activated switch. Light fixture shall be Acenty, Hubbel or Phillips. Include lamps for respective 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 Thermal Transfer Self-Laminating Vinyl by Brady, 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, Alpha or General Cable. 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 by Phoenix Contact, Allen Bradley or Weidemueller 21.

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- 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 these 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.

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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 Overload
 6. Backup Active
 7. High Level Float
 8. Low Level Float
 9. Control Power Failure
 10. Phase Failure
 11. Station Intrusion
 12. Flow Pulse
 13. 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

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- 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 * 25.4 ft
High
2. Start Lead*, Lag 1* 8 ft Lead 25.4 ft Lag
3. Stop Lead*, Lag 1*, 4.0 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:

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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

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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 life time 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.

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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 in 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

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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

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- i. RTU shall have eight (8) digital inputs. These eight (8) inputs 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.
 - ii. RTU shall have an optional expansion board of an additional eight (8) digital inputs
 - iii. The digital inputs shall be user selectable as normally open (NO) or normally closed (NC).
 - iv. 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.
 - v. RTU shall have built-in alarms for input wiring fault, AC failure, communication failure and low battery detection.
 - vi. 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.
 - vii. RTU shall have an optional expansion board of an additional four (4) analog inputs
 - viii. RTU shall have an optional expansion board of an additional eight (8) digital inputs
 - ix. RTU shall have an optional expansion board of an additional two (2) analog outputs.
 - x. RTU shall have an optional expansion board of two (2) pulse counter inputs
 - xi. 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.
 - xii. 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

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- 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 be 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

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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.

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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 backup 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

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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

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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

- Alarms shall be delivered in the following formats:
- Phone (voice call), fax, pager (numeric or alphanumeric (short alpha or long alpha format), text message, email, or any combination of the above simultaneously.
- Alarms shall be able to be acknowledged by phone, text message, two (2)-way pager, email or on the Owner web site.
- Voice alarm acknowledgement shall be adjustable to be able to mimic the format of dialers.
- Alarms shall be called out on alarm and upon return to normal conditions.
- Return to normal alarms can be adjusted to call the alarm callout group or a different callout group.

b. Alarm Callout Formats

- 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.
- 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

- All alarms shall have the alarm condition, time, alarm location and pump status at the time of the alarm in each message.
- 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).

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- 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.
 - v. 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 User Name 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. This

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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.

- v. 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.
 - vi. 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.
 - vii. The software shall be downloadable from the Mission customer website.
 - viii. The software shall automatically update itself every time the User accesses the software.
 - ix. The software shall require NO programming to customize.
 - x. 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, User Name 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
- ii. 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.
 - iii. 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,

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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.
- iv. 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 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 off line.

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 inputs

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

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- 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

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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.

OC/OA OF CONCRETE MIXTURES - APPLICABLE ITEMS

The Special Provision for "Quality Control/Quality Assurance of Concrete Mixtures" (Recurring Special Provision Check Sheet Item #25) shall only apply to the following:

Pay Item:	All Items Utilizing Self-Consolidating Concrete
Location:	All Applicable
Pay Item:	Superstructure Concrete
Location:	Bridge Decks
Pay Item:	PCC 8" (Jointed) Roadway Pavement
Location:	

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

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produced in accordance with Check Sheet item #24 for "Quality Control of Concrete Mixtures at the Plant."

REMOVAL OF EXISTING STRUCTURES

Description: This work shall be in accordance with Article 501 of the Standard Specifications. This work consists of removing retaining walls, billboards, supporting structure, and foundations. All wooden supports shall be removed full depth. All concrete supports and foundations shall be removed to a depth of 3 ft below the proposed elevation of subgrade or ground surface. This work also includes any excavation necessary for removal. Structure removal #8 and #9 shall occur after October 31, 2017.

The void caused by removal and excavation shall be backfilled with compacted embankment. In locations beneath proposed streets or railroad subballast, the void shall be backfilled with granular embankment.

Basis of Payment: This work, including excavation and backfill will be paid for at the contract unit price per each for REMOVAL OF EXISTING STRUCTURES at the location designated on the plans.

REMOVAL OF EXISTING TRAFFIC SIGNAL EQUIPMENT

Description: This work shall consist of removing the traffic signals at 9th and Laurel streets in accordance with Section 895 of the Standard Specifications. The Engineer will determine which equipment will be salvaged and delivered to a location designated by the Engineer. All other equipment shall become the property of the Contractor.

Basis of Payment: This work will be paid for at the contract unit price per each for REMOVAL OF EXISTING TRAFFIC SIGNAL EQUIPMENT.

REMOVE EXISTING CONCRETE FOUNDATION

Description: This work shall consist of removal and disposal of railroad signal foundations, traffic signal foundations, sign foundations, light pole foundations, cell tower foundations and other miscellaneous foundations.

General: The Contractor shall remove and dispose of the existing concrete foundations according to Article 845.05 of the SSRBC. The void caused by removal of the foundations shall be backfilled according to Article 841.02 of the SSRBC. The Contractor will remove and dispose of existing railroad foundations but the NSRR will remove the existing railroad signals and gates.

Basis of Payment: The work will be paid for at the contract unit price per each for REMOVE EXISTING CONCRETE FOUNDATION.

SANITARY SEWER

This work shall be in accordance with Section 550 of the Standard Specification for Road and Bridge Construction except as follows:

Materials:

All pipe shall be reinforced concrete conforming to ASTM designation C76 Class IV. 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 Inc., Press Seal or Kor-N-Seal 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.

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.

Sanitary Service Risers:

Where the depth of the sanitary sewer invert is greater than twelve (12) ft (3.65 m) below the surface of the ground, a sanitary service riser shall be constructed to an elevation of nine (9) ft (2.75 m) below the ground elevation or as shown on the Plans.

The sanitary service riser shall be constructed with a tee or wye as shown on the Plans placed to receive the riser pipe. The tee or wye shall be bedded as shown on the drawings.

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The riser pipe shall extend to the proper elevation and shall terminate with a manufactured plug.

Extreme care shall be taken in backfilling around risers. Where the excavated material is not suitable for this purpose in the opinion of the Engineer, granular material shall be placed around the riser.

Basis of Payment: This work will be paid for at the contract unit price per foot for SANITARY SEWER of the diameter specified. Payment for associated items listed in Section 550.10 shall be paid for in accordance with that section.

SANITARY SEWER, SPECIAL

This work will be in accordance with Section 550 of the Standard Specification for Road and Bridge Construction except as follows:

Materials:

All pipe shall be 72 in. diameter 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 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.

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.

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

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SANITARY SEWER, SPECIAL. Payment for associated items listed in Section 550.10 shall be paid for in accordance with that section.

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.

SIGN REMOVAL

Description: This work consists of the removal and 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. Disposal 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.

SEWER IN METAL LINER, 12" or 72"

Description: This work shall consist of constructing 12 in. or 72 in. diameter reinforced concrete sanitary sewer in metal liner at locations shown on the plans according to the special provision "STORM SEWERS JACKED IN PLACE, 12" or 72" except that the liner may be installed by open cut method.

All pipe shall be reinforced concrete conforming to ASTM designation C76 Class III. 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 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

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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 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 subballast elevation, a compaction of at least 98 percent will be required.

Installation:

The Contractor may install the metal liner by jacking rather than open cut methods at the Contractor's option.

Basis of Payment: This work, regardless of whether installed by jacking or open cut methods, a will be paid for at the contract unit price per foot for STORM SEWER IN METAL LINER, 12" or SEWER IN METAL LINER, 72", which price shall include the sewer, metal liner, including grouting all voids between the sewer and metal liner, backfill 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.

STEEL CASINGS, 24"

Description: This work shall consist of furnishing and installing a 24-in. steel casing beneath the rail corridor for installation of the 12-in. pump station force main.

Materials:

Steel pipe conforming to ASTM A-36 or AWWA C-206 with a nominal diameter of 24 in. and a minimum wall thickness of .375 in. The casing pipe shall be coated with coal tar or bituminous asphalt.

Joints between the sections of pipe shall be fully welded around the complete circumference

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of the pipe.

Construction Requirements:

The casing pipe shall be installed in two stages by the open cut method. The open cut trench shall be a minimum of 25 ft from active track. Installation shall be in accordance with Section 550.04 of the Standard Specification. The Contractor shall follow all of the requirements contained in the NS Special Provisions for Protection of Railway Interest.

Pipe Marker Sign

The Contract 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 approve by the Engineer and shall show the following information:

CITY OF SPRINGFIELD
SEWER DEPARTMENT
ROOM 303 MUNICIPAL CENTER WEST
300 SOUTH 7TH STREET
SPRINGFIELD, IL 62701
(217) 789-2260
COMBINED ** IN. SEWER
DEPTH TO TOP OF CASING * FT

** Diameter of sewer.

*As-built depth to be determined by Contractor.

Basis of Payment: This work will be paid for at the contract unit price per foot for STEEL CASINGS, 24". Trench backfill will be paid for according to 208.04.

STORM SEWER CONNECTION

Description: This work shall consist of furnishing and installing 36-in. 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-in. 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-in. larger than the outside diameter of the ductile iron pipe. The 36-in. diameter pipe shall be installed by short tunnel excavation or micro- tunneling to remove the rock and grout between the Drainage Structures. The

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excavation limits shall extend just beyond the outside diameter of the 36-in. 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 5,000 psi at twenty-eight (28) days.

Once the tunnel has been excavated, and the 36-in. 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-in. 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-in. 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, 24"

Description: This work shall consist of installing casings and connection pipes to the pump stations in accordance with Section 552.04 and 552.06 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 0.595 in. 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 24-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

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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, 24”.

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 will include all excavation including rock, shoring, labor, materials and equipment required to furnish, and install the 36 in. steel casing pipe via jacking operations, welding, 24-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, 24”.

STORM SEWERS JACKED IN PLACE, 12” or 72”

Description: This work shall be in accordance with Section 552 of the Standard Specifications and this Special Provision. A metal liner shall be installed first, then the sewer installed inside the liner.

The liner pipe may be placed by one of two methods at the Contract’s option:

1. Jack in place smooth steel liner pipe.
2. Tunneling and installation of steel tunnel liner plates.

The smooth steel liner pipe shall meet the following minimum requirements:

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Material – Steel ASTM A-36 or AWWA C-206
Inside Diameter – 24 in. for 12 in. sewer or 102 in. for 72 in. sewer
Wall Thickness – 0.53 in. for 24 in. diameter, 1.25 in. for 102 in. diameter
Manufacture – Rolled/Welded
Grade – FY = 36 KSI minimum
Joints – Full Depth Single “V” Groove Butt Weld
Coating – Coal tar epoxy or bituminous asphalt

The steel tunnel liner plates shall meet the following minimum requirements.

Material:

Steel conforming to current AREMA Specifications Chapter 1, Part 4, Section 4.16. Plates are to be a minimum of 12 gauge and fabricated from structural quality, hot-rolled carbon steel sheets or plates conforming to ASTM Specifications A 569.

Design:

Tunnel liner plates shall be designed and sealed by a structural engineer registered in Illinois. They shall be designed using the following assumptions:

Maximum Deflection – 3%
Live Load Plus Impact – 800 PSF
Soil Weight – 120 PCF
Soil Stiffness Factor – $K=0.33$
AREMA Design Specifications

The carrier pipe shall be reinforced concrete pipe conforming to ASTM designation C76, Class IV for 12 in., Class III for 72 in.

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 type, cast in the structure connectors.

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.

The following Norfolk Southern Railroad (NS) requirements shall also apply:

General Requirements

- A. Bored, jacked or tunneled installations shall have a bore hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating.
- B. The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited.
- C. 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 and grout. A new installation procedure and revised plans must be submitted to, and approved by, NS before work can resume.

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.

Tunneling (Tunnel Liner Plate) Installation Method

- A. This method consists of placing rings of liner plate within the tail section of a tunneling shield or tunneling machine. A tunneling shield shall be used for all liner plate installations.

- B. The shield shall be of steel construction, designed to support a railroad track loading as specified in Section 4.1.3. of NSCE-8 “Specifications for Pipeline Occupancy on Norfolk Southern Corporation Property,” in addition to the other loadings imposed. The advancing face shall be provided with a hood, extending no less than 20 in. (508 mm) beyond the face and extending around no less than the upper 240 degrees of the total circumference. It shall be of sufficient length to permit the installation of at least one complete ring of liner plates within the shield before it is advanced for the installation of the next ring of liner plates. The shield shall conform to and not exceed the outside dimensions of the liner plate tunnel being placed by more than 1 in. (25.4 mm) at any point on the periphery.
- C. The shield shall be adequately braced and provided with necessary appurtenances for completely bulkheading the face with horizontal breastboards, and arranged so that the excavation can be benched as may be necessary. Excavation shall not be advanced beyond the edge of the hood, except in rock.
- D. Manufacturer’s shop detail plans and manufacturer’s computations showing the ability of the tunnel liner plates to resist the jacking stresses shall be submitted for approval.
- E. The tunneling shall be conducted continuously, on a 24-hour basis, until the tunnel liner extends at least beyond the theoretical railroad embankment line.
- F. At any interruption of the tunneling operation, the heading shall be completely bulkheaded.
- G. The liner plates shall have tapped grout holes for no smaller than 1 ½ in. (38 mm) pipe, spaced at approximately 3 ft (0.9 m) around the circumference of the tunnel liner and 4 ft (1.2 m) longitudinally.
- H. Grouting behind the liner plates shall be in accordance with 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 NS 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 NS 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 NS to operate them. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgment of NS, 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

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integrity of railroad facilities. All work on or near NS property shall be conducted in accordance with NS safety rules and regulations. The Contractor shall secure and comply with the NS safety rules and shall give written acknowledgement to NS that they have been received, read, and understood by the Contractor and its employees. Operations will be subject to NS 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 NS.
- 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 track, 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 NS 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, NS.

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 NS. 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 NS right-of-way.

Support of Excavation Adjacent to Track

1.0 Launching and Receiving Pits

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- 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 NS.
- 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 NS approval prior to beginning any work on or which may affect NS 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 NS.

2.0 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.

3.0 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 NS property, except as follows:

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- (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.

4.0 Reimbursement of NS Costs

- A. All NS 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.

The Contractor shall follow all of the requirements contained in the NS Special Provision for Protection of Railway Interests.

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 DEPARTMENT
ROOM 303 MUNICIPAL CENTER WEST
300 SOUTH 7TH STREET
SPRINGFIELD, IL 62701
(217) 789-2260
COMBINED ** IN. SEWER
DEPTH TO TOP OF CASING * FT

** Diameter of sewer.

*As-built depth to be determined by Contractor.

Basis of Payment: This work will be paid for at the contract unit price per foot for STORM SEWER JACKED IN PLACE, 12" (SPECIAL), or STORM SEWERS JACKED IN PLACE, 72", which price shall include the storm sewer, metal liner, including grouting all voids between the storm sewer and metal liner, all other materials and equipment necessary to install the storm sewer and pipeline marker signs, and all excavation except excavation in rock.

STORM SEWER REMOVAL

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

This work, regardless of the type or sewer, will be paid for at the contract unit price per foot for STORM SEWER REMOVAL, of the diameter specified.

STORM SEWER TO BE FILLED

Description: This work shall consist of filling storm, sanitary or combined sewer 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 to be filled shall be cleaned and 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. 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 storm sewers 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 shall be removed to a depth of 2 ft below finished grade.

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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:

STORM SEWER TO BE FILLED shall be measured in place and the volume computed in cubic yards.

Basis of Payment: This work, regardless of the type of sewer, will be paid for at the contract unit price per cubic yard for STORM SEWER TO BE FILLED. The unit price shall include the cost of removal, disposal, and backfill of the tops of intermediate manholes.

STORM SEWERS, TYPE 1, WATER MAIN QUALITY PIPE

This work shall consist of construction storm sewer using water main quality pipe in accordance with Section 961 of the Standard Specifications except as follows:

12 in. diameter pipes: Pipe shall be AWWA C900, DR 25

24 in. diameter pipes: Pipe shall be AWWA C905, DR 32.5

Disinfection and pressure testing will not be required.

This work will be paid for at the contract unit price per foot for STORM SEWERS, TYPE 1 WATER MAIN QUALITY PIPE of the diameter specified.

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 FENCE AND TEMPORARY CONSTRUCTION FENCE

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

TEMPORARY FENCE: 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.

TEMPORARY CONSTRUCTION FENCE: The fence shall be orange plastic and at least 4 ft high with posts spaced a maximum of 10 ft.

General: 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 or TEMPORARY CONSTRUCTION FENCE. Temporary gates will be included in the measured length of fence.

TEMPORARY CHAIN LINK FENCE (PORTABLE)

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 and a minimum of 6 ft high with posts placed a maximum of 10 ft apart. The posts shall be self-standing and fixed to the ground with sand bags to ensure that the fence will not move or fall over.

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

TRANSVERSE DRAINS COMPLETE

Description: This work consists of constructing transverse drains at locations shown in the

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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 Ash Street 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.

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.

All right of way within the limits of the project, easement areas, and building demolition parcels are included in the plan quantity for tree removal, acres. 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.

TREES

This work shall be in accordance with the Section 253 of the Standard Specifications
Trees shall be planted within the Iles Park easement at locations determined by the engineer.

The work will be paid for at the contract unit price per each for TREES of the species root type and size specified.

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VALVE BOX FRAMES TO BE ADJUSTED

Description: This work consists of adjusting valve box frames to finished grade elevation according to Section 603 of the SSRBC.

Basis of Payment: This work shall be paid for at the contract unit price per each for VALVE BOX FRAMES TO BE ADJUSTED.

WATER MAIN

This work shall consist of constructing the outlet pipe from the pump station in accordance with Section 561 of the Standard specifications except as follows:
Pipe shall be AWWA C900, DR18.

Disinfection will not be required.

This work will be paid for at the contract unit price per foot for WATER MAIN of the diameter specified.

WATER MAIN REMOVAL

Description: This work consists of removal of existing water main underneath Ash Street and Laurel Street. CWLP will specify locations in which to terminate the existing water line. After these locations are determined, the contractor will remove the remaining existing water line and appurtenances. The excavation should be according to relevant procedures found in section 550.04. Disposal shall be according to section 202.03.

Basis of Payment: This work, including any necessary excavation, shall be paid for at the contract unit price per foot of WATER MAIN REMOVAL of the size specified. Removal of water lines smaller than 6 in. diameter shall not be measured for payment but shall be included in the cost of Earth Excavation. Removal of valves, meters and other appurtenances within the limits of water line removal is included in the cost of removing the water line.

RAILWAY

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.

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

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.

CONCRETE PAD REMOVAL

Description: This work shall consist of completely removing the concrete pad under railroad signal cabinets

General: After NSRR removes the railroad signal cabinets, Contractor shall remove all existing concrete, steel and attachments. Material resulting from removal shall be disposed of according to Article 202.03. The void caused by removal shall be backfilled with embankment or subballast.

Method of Measurement: This item will be measured for payment in place at the top surface of the concrete pad and the area computed in square feet.

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

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 subballast.

General: Except as modified below, the work and materials shall conform to the

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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).

In locations beneath the subballast:

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 subballast 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.

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 track or in the NS rail yard north of Laurel Street 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 in the yard. The Contractor shall schedule his work in coordination with NS operations.

No charge or claims of the Contract against either the Department or the railroad will be

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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 SPECIAL PROVISION FOR PROTECTION OF RAILWAY INTERESTS

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 Projects Engineer, hereinafter referred to as "Railroad Engineer", will serve as the authorized representative of the Railroad.

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. These terms and conditions are subject to change without notice, from time to time in the sole discretion of the Railroad. Contractor must request from Railroad and follow the latest version of these provisions prior to commencing work.

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. Signed and received a fully executed copy of the required Norfolk Southern Contractor Right of Entry Agreement.
2. Given the Railroad written notice in electronic format to the Railroad Engineer, with copy to the Sponsor's Engineer who has been designated to be in charge of the work, at least ten days in advance of the date he proposes to begin work on Railroad rights-of-way.
3. Obtained written approval from the Railroad of Railroad Protective Liability Insurance coverage as required by paragraph 14 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.
4. Obtained Railroad's Flagger Services as required by paragraph 7 herein.
5. Obtained written authorization from the Railroad to begin work on Railroad's rights-of-way, such authorization to include an outline of specific conditions with which he must comply.
6. Furnished a schedule for all work within the Railroad's rights-of-way as required by paragraph 7.B.1.

B. The Railroad's written authorization to proceed with the work shall include 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.

3. INTERFERENCE WITH RAILROAD OPERATIONS:

- A. The Contractor shall so arrange and conduct his 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 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.
- 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 his 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 his absence, the Railroad's Division Engineer, such provisions is insufficient, either may require or provide such provisions as he 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 Railroad utilities. The contractor shall contact the Railroad's representative 2 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.

4. 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.
- B. Before undertaking any work within Railroad right-of-way, and before placing any obstruction over any track, the Contractor shall:
1. Notify the Railroad's representative at least 72 hours in advance of the work.
 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 Sponsor's Engineer has received copies of notice to the Railroad and of the Railroad's response thereto.

S. 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.
 - b. The Contractor shall allow for 30 days for the Railroad's review and response.
 - 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 and the Railroad Engineer, but such approval 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) Shop Drawings
- (2) Bearing Shop Drawings and Material Certifications
- (3) Concrete Mix Design
- (4) Structural Steel, Rebar, and/or Strand Certifications
- (5) 28 day Cylinder Test for Concrete Strength
- (6) Waterproofing Material Certification
- (7) Test Reports for Fracture Critical Members
- (8) Foundation Construction Reports

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. Submission shall also provide a listing of the anticipated equipment to be used, the location of all equipment to be used and insure a contingency plan of action is in place should a primary piece of equipment malfunction.

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 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. 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.E-Construction Excavation (Refer to Norfolk Southern Public 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.
3. 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 5.G of these provisions.
4. 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.
5. 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 1/2".
6. 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.
7. The front face of shoring located to the closest NS track for all shoring set-ups located in Zone 2 as shown on NS Typical Drawing No. 4 – Shoring Requirements (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

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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 Projects Manual Appendix H.4.6.
 - b. For Jack and Bore Method refer to Norfolk Southern Public Projects Manual Appendix H.4.7.
 - c. For Tunneling Method refer to Norfolk Southern Public 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 or their representative, and the key Contractor's personnel prior to the start of the demolition procedure.
- d. The Railroad Engineer or his designated representative must be present at the site during the entire demolition procedure period.
- e. 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 5.A.2 of these provisions, the Contractor shall submit the following for approval by the Railroad Engineer:
 - (1) 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 also be shown.

- (2) Rating sheets showing cranes or lifting devices to be 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 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 beam. 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 4.A.1 of these provisions or maintain the existing vertical clearance if the existing clearance is less than that specified in Section 4.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. Railroad tracks and other Railroad property must be protected from damage during the erection procedure.
- c. A pre-erection meeting shall be conducted with the Sponsor, the Railroad Engineer or their representative, and the key Contractor's personnel prior to the start of the erection procedure.
- d. The Railroad Engineer or his designated representative must be present at the site during the entire erection procedure period.
- e. 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 Projects Manual Appendix H.1, Section 4.A.3.).

2. Submittal Requirements

- a. In addition the submittal requirements outlined in Section 5.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, operating radii, with 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 cranes or lifting devices to be 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 beam. 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 the following:
 - a. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the Contractor and a licensed blaster.
 - b. Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way radios.
 - c. No blasting shall be done without the presence of the Railroad Engineer or his authorized representative. At least 72 hours advance notice to the person designated in the Railroad's notice of authorization to proceed (see paragraph 2.B) 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.
 - e. The blasting Contractor shall have a copy of the approved blasting plan on hand while on the site.
 - f. Explosive materials or loaded holes shall not be left unattended at the blast site.
 - g. A seismograph shall be placed on the track shoulder adjacent to each blast which will govern the peak particle velocity of two inches per second. Measurement shall also be taken on the ground adjacent to structures as designated by a qualified and Independent blasting consultant. The Railroad reserves the option to direct the placement of additional seismographs at structures or other locations of concern, without regard to scaled distance.
 - h. After each blast, the blasting Contractor shall provide a copy of their drill log and blast report, which includes number of holes, depth of holes, number of decks, type and pounds of explosives used per deck.
 - i. The Railroad may require top of rail elevations and track centers taken before, during and after the blasting and excavation operation to check for any track misalignment resulting from the Contractor's activities.

2. The Railroad representative will:
 - a. Determine approximate location of trains and advise the Contractor the appropriate 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.
3. The Contractor must hire, at no expense to the Railroad, a qualified and independent blasting consultant to oversee the use of explosives. The blasting consultant will:
 - a. Review the Contractor's proposed drilling and loading patterns, and with the blasting consultant's personnel and instruments, monitor the blasting operations.
 - b. Confirm that the minimum amounts of explosives are used to remove the rock.
 - c. Be empowered to intercede if he concludes that the Contractor's blasting operations are endangering the Railway.
 - d. Submit a letter acknowledging that he has been engaged to oversee the entire blasting operation and that he approves of the blasting plan.
 - e. Furnish copies of all vibration readings to the Railroad representative immediately after each blast. The representative will sign and date the seismograph tapes after each shot to verify the readings are for that specific shot.
 - f. Advise the Railroad representative as to the safety of the operation and notify him of any modifications to the blasting operation as the work progresses.
4. The request for permission to use explosives on the Railroad's Right-of-Way shall include a blasting proposal providing the following details:
 - a. A drawing which shows the proposed blasting area, location of nearest hole and distance to Railway structures, all with reference to the centerline of track.
 - b. Hole diameter.
 - c. Hole spacing and pattern.
 - d. Maximum depth of hole.
 - e. Maximum number of decks per hole.
 - f. Maximum pounds of explosives per hole.
 - g. Maximum pounds of explosives per delay.
 - h. Maximum number of holes per detonation.

- i. Type of detonator and explosives to be used. (Electronic detonating devices will not be permitted). Diameter of explosives if different from hole diameter.
- j. Approximate dates and time of day when the explosives are to be detonated.
- k. Type of flyrock protection.
- l. Type and patterns of audible warning and all clear signals to be used before and after each blast.
- m. A copy of the blasting license and qualifications of the person directly in charge of the blasting operation, including their name, address and telephone number.
- n. A copy of the Authority's permit granting permission to blast on the site.
- o. A letter from the blasting consultant acknowledging that he has been engaged to oversee the entire blasting operation and that he approves of the blasting plan.
- p. In addition to the insurance requirements outlined in Paragraph 14 of these Provisions, A certificate of insurance from the Contractor's insurer stating the amount of coverage for XCU (Explosive Collapse and Underground Hazard) insurance and that XCU Insurance is in force for this project.
- q. A copy of the borings and Geotechnical information or report.

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 his 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 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 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 his authorized representative.

6. DAMAGES:

- A. The Contractor shall assume all liability for any and all damages to his 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.

7. FLAGGING SERVICES:

A. Requirements:

1. Flagging services will not be provided until the Contractor's insurance has been reviewed & approved by the Railroad.

2. Under the terms of the agreement between the Sponsor 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 personnel 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.
3. Normally, the Railroad will assign one flagman to a project; but in some cases, more than one may be necessary, such as yard limits where three (3) flagmen may be required. However, if the Contractor works within distances that violate instructions given by the Railroad's authorized representative or performs work that has not been scheduled with the Railroad's authorized representative, a flagman or flagmen may be required full time until the project has been completed.
4. For Projects exceeding 30 days of construction, Contractor shall provide the flagmen a small work area with a desk/counter and chair within the field/site trailer, including the use of bathroom facilities, where the flagman can check in/out with the Project, as well as to the flagman's home terminal. The work area should provide access to two (2) electrical outlets for recharging radio(s), and a laptop computer; and have the ability to print off needed documentation and orders as needed at the field/site trailer. This should aid in maximizing the flagman's time and efficiency on the Project.

B. Scheduling and Notification:

1. The Contractor's work requiring Railroad flagging should be scheduled to limit the presence of a flagman at the site to a maximum of 50 hours per week. The Contractor shall receive Railroad approval of work schedules requiring a flagman's presence in excess of 40 hours per week.
2. Not later than the time that approval is initially requested to begin work on Railroad right-of-way, Contractor shall furnish to the Railroad and the Sponsor a schedule for all work required to complete the portion of the project within Railroad right-of-way and arrange for a job site meeting between the Contractor, the Sponsor, and the Railroad's authorized representative. Flagman or flagmen may not be provided until the job site meeting has been conducted and the Contractor's work scheduled.
3. The Contractor will be required to give the Railroad representative at least 10 working days of advance written notice of intent to begin work within Railroad right-of-way in accordance with this special provision. Once begun, when such work is then suspended at any time, or for any reason, the Contractor will be required to give the Railroad representative at least 3 working days of advance notice before resuming work on Railroad right-of-way. Such notices shall include sufficient details of the proposed work to enable the Railroad representative to determine if flagging will be required. If such notice is in writing, the Contractor shall furnish the Engineer a copy; if notice is given verbally, it shall be confirmed in writing with copy to the Engineer. If flagging is required, no work shall be undertaken until the flagman, or flagmen are present at the job site. It may take up to 30 days to obtain flagging initially from the Railroad. When flagging begins, the flagman is usually assigned by the Railroad to work at the project site on a continual basis until no longer

needed and cannot be called for on a spot basis. If flagging becomes unnecessary and is suspended, it may take up to 30 days to again obtain from the Railroad. Due to Railroad labor agreements, it is necessary to give 5 working days notice before flagging service may be discontinued and responsibility for payment stopped.

4. If, after the flagman is assigned to the project site, an emergency arises that requires the flagman's presence elsewhere, then the Contractor shall delay work on Railroad right-of-way until such time as the flagman is again available. Any additional costs resulting from such delay shall be borne by the Contractor and not the Sponsor or Railroad.

C. Payment:

1. The Sponsor will be responsible for paying the Railroad directly for any and all costs of flagging which may be required to accomplish the construction.
2. The estimated cost of flagging is the current rate per day based on a 10-hour work day. This cost includes the base pay for the flagman, overhead, and includes a per diem charge for travel expenses, meals and lodging. The charge to the Sponsor by the Railroad will be the actual cost based on the rate of pay for the Railroad's employees who are available for flagging service at the time the service is required.
3. Work by a flagman in excess of 8 hours per day or 40 hours per week, but not more than 12 hours a day will result in overtime pay at 1 and 1/2 times the appropriate rate. Work by a flagman in excess of 12 hours per day will result in overtime at 2 times the appropriate rate. If work is performed on a holiday, the flagging rate is 2 and 1/2 times the normal rate.
4. Railroad work involved in preparing and handling bills will also be charged to the Sponsor. Charges to the Sponsor by the Railroad shall be in accordance with applicable provisions of Subchapter B, Part 140, Subpart I and Subchapter G, Part 646, Subpart B of the Federal-Aid Policy Guide issued by the Federal Highway Administration on December 9, 1991, including all current amendments. Flagging costs are subject to change. The above estimates of flagging costs are provided for information only and are not binding in any way.

D. Verification:

1. Railroad's flagman will electronically enter flagging time via Railroad's electronic billing system. Any complaints concerning flagging must be resolved in a timely manner. If the need for flagging is questioned, please contact the Railroad Engineer. All verbal complaints will be confirmed in writing by the Contractor within 5 working days with a copy to the Sponsor's Engineer. Address all written correspondence electronically to Railroad Engineer.
2. The Railroad flagman assigned to the project will be responsible for notifying the Sponsor 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 Sponsor's Engineer will document such notification in the project records. When requested, the Sponsor's Engineer will also sign the flagman's diary showing daily time spent and activity at the project site.

8. HAUL ACROSS RAILROAD TRACK:

- A. Where the plans show or imply that materials of any nature must be hauled across 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 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 unless specific authority for its installation, maintenance, necessary watching and flagging thereof and removal, until a temporary private crossing agreement has been executed between the Contractor and Railroad. The approval process for an agreement normally takes 90 days.

9. 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 he shall make separate arrangements with the Railroad for same to be accomplished at the Contractor's expense.

10. 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 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.

11. 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 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 and must conform to AREMA and/or FRA standards.

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

- A. The Contractor and/or the Sponsor's personnel authorized to perform work on 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 is strongly recommended. In the vicinity of at-grade crossings, it is strongly recommended that reflective vests be worn.
- C. No one is allowed within 25' of the centerline of track without specific authorization from the flagman.
- D. All persons working near track while train is passing are to lookout for dragging bands, chains and protruding or shifted cargo.
- E. No one is allowed to cross tracks without specific authorization from the flagman.
- 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 Railroad.

13. 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 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).
- 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 flagman.
- H. Trucks, tractors or any equipment will not touch ballast line without specific permission from Railroad official and flagman. Orange construction fencing may be required as directed.
- 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 when a train is passing. All other operating equipment may be halted by the flagman 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.
- P. Prior to performing any crane operations, the Contractor shall establish a single point of contact for the Railroad flagman to remain in communication with at all times. Person must also be in direct contact with the individual(s) directing the crane operation(s).

14. 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 Insurance having a combined single limit of not less than \$2,000,000 per occurrence for all loss, damage, cost and expense, including attorneys' fees, arising out of bodily injury liability and property damage liability during the policy period. Said policy shall include explosion, collapse, and underground hazard (XCU) coverage, shall be endorsed to name Railroad specified in Item A.2.c. below both as the certificate holder and as an additional insured, and shall include a severability of interests provision.
 - b. Automobile Liability Insurance with a combined single limit of not less than \$1,000,000 each occurrence for injury to or death of persons and damage to or loss or destruction of property. Said policy or policies shall be endorsed to name Railroad specified in Item A.2.c. below both as the certificate holder and as an additional insured and shall include a severability of interests provision.
- 2. Railroad Protective Liability Insurance having a combined single limit of not less than \$2,000,000 each occurrence and \$6,000,000 in the aggregate applying separately to each annual period. If the project involves track over which passenger trains operate, the insurance limits required are not less than a combined single limit of \$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.

FAU Route 7991 (Laurel Street)
FAU Route 7992 (Ash Street)
Section 14-00477-00-BR
City of Springfield
Sangamon County

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.
NOTE: NS does not accept from insurers Chartis (AIG or Affiliated Company including Lexington Insurance Company), Hudson Group or Liberty or Affiliated Company, American Contractors Insurance Company and Erie Insurance Company including Erie Insurance Exchange and Erie Indemnity Company.
- b. The policy must be written using one of the following combinations of Insurance Services Office ("ISO") Railroad Protective Liability 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
Three Commercial Place
Norfolk, Virginia 23510-2191
Attn: S. W. Dickerson Risk Management

(NOTE: Railroad does not share coverage on RRPL 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:

FAU Route 7991 (Laurel Street)
FAU Route 7992 (Ash Street)
Section 14-00477-00-BR
City of Springfield
Sangamon County

- (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.

B. If any part of the work is sublet, similar insurance, and evidence thereof as specified in A.1 above, shall be provided by or on behalf of the subcontractor to cover its operations on Railroad's right of way.

C. All insurance required under the preceding subsection A shall be underwritten by insurers and be of such form and content, as may be acceptable to the Company. Prior to entry on Railroad right-of-way, the original Railroad Protective Liability Insurance Policy shall be submitted by the Prime Contractor to the Department at the address below for its review and transmittal to the Railroad. In addition, certificates of insurance evidencing the Prime Contractor's and any subcontractors' Commercial General Liability Insurance shall be issued to the Railroad and the Department at the addresses below, and forwarded to the Department for its review and transmittal to the Railroad. The certificates of insurance shall state that the insurance coverage will not be suspended, voided, canceled, or reduced in coverage or limits without (30) days advance written notice to Railroad and the Department. No work will be permitted by Railroad on its right-of-way until it has reviewed and approved the evidence of insurance required herein.

SPONSOR:

RAILROAD:

Risk Management
Norfolk Southern Railway Company
Three Commercial Place
Norfolk, Virginia 23510-2191

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. Railroad will only accept initial insurance submissions via US Mail or Overnight carrier to the address noted in C above. Railroad will NOT accept initial insurance submissions via email or faxes. **Please provide point of contact information with the submission including a phone number and email address.**

2. Railroad requires the following two (2) forms of insurance in the Initial Insurance submission to be submitted under a cover letter providing details of the project and contact information:
 - a. The full original or certified true countersigned copy of the railroad protective liability insurance policy in its entirety inclusive of all declarations, schedule of forms and endorsements along with the policy forms and endorsements.
 - b. The Contractor's commercial general, automobile, and workers' compensation liability insurance certificate of liability insurance evidencing a combined single limit of a minimum of \$2M per occurrence of general and \$1M per occurrence of automobile liability insurance naming Norfolk Southern Railway Company, Three Commercial Place, Norfolk, VA 23510 as the certificate holder and as an additional insured on both the general and automobile liability insurance policy.
3. 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.

15. 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.

16. 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.

17. PROJECT INFORMATION

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

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

- 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.

Basis of Payment: This work including all elbows, tees, wyes and backfill shall be paid for at the contract unit price per foot for PIPE DRAINS (SPECIAL) of the diameter specified.

PIPE UNDERDRAIN CLEANOUT, COMPLETE

Description: This work shall consist of constructing cleanouts to proposed underdrains according to Sections 601 of the SSRBC at locations shown on the plans or as directed by the Engineer.

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General: The materials shown in the plans, including all elbows, tees, wyes, frame and covers, 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 UNDERDRAIN CLEANOUT, COMPLETE.

Basis of Payment: This work shall be paid for at the contract unit price per each for PIPE UNDERDRAIN CLEANOUT, COMPLETE.

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 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.

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.

PIPE UNDERDRAIN 10" (SPECIAL)

This work shall be in accordance with Section 601 of the Standard Specifications. Pipe underdrains 10" (special) shall be Type 2. The pipe underdrain material shall be perforated composite sewer pipe conforming to ASTM D2680 with solvent cemented joints in accordance with ASTM D2235, D2564 and D3138, flexible elastomeric seals conforming to ASTM D3212 and F477 or gasketed bell coupling connections. Minimum pipe stiffness when measured in accordance with ASTM D2412 shall be 200 PSI.

Pipe underdrains shall have four rows of perforations at 2 in. centers.

This work will be paid for at the contract unit price per lineal foot per PIPE UNDERDRAIN 10" (SPECIAL).

STEEL POST REMOVAL

Description: This work shall consist of removal of steel posts at locations shown on the

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plans.

General: Steel posts 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 steel posts shall be paid for at the contract unit price each for STEEL POST REMOVAL which shall include the cost of furnishing and placing the backfill.

SUBBALLAST

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 be in accordance with this Special Provision.

Track material shall be removed during the proper stage of construction and in locations shown

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on the plans. Contractor shall coordinate the limits and sequencing of all track material removal with Norfolk Southern (NS) during each stage of construction so that NS operations are not impeded.

Track material includes rails, cross ties, tie plates, spikes, joint bars, rail anchors, frogs, switches and appurtenances, and other track material. No cutting of rails will be allowed unless approved by the Engineer.

Track material within the designated limits of removal, as shown on the plans or modified by the Engineer, shall become the property of the Contractor and shall be removed from the project area and salvaged or properly disposed of.

Contractor will be responsible for shaping, smoothing, and compacting the roadbed after removal of track or turnouts. The roadbed shall be free of ruts and depressions and shaped to allow for proper drainage. Cost for this work shall be included in the cost of TRACK REMOVAL.

Removal of pavement and sidewalk within tie width shall be included in the cost of TRACK REMOVAL.

General: This work will include all labor, materials and equipment required to dismantle and remove track and turnouts from locations shown on the plans, or as directed by the Engineer.

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

WOVEN WIRE FENCE, 4'

This work shall be in accordance with Section 665 of the Standard Specifications except that the barbed wire shall be omitted, and the design number of the fence fabric shall be either 1047-6-11 or 1047-6-12 ½. This work will be paid for at the contract unit price per foot for WOVEN WIRE FENCE.

WOVEN WIRE FENCE AND GATES

Description: This work shall consist of installing woven wire fence and gates according to Section 665 of the SSRBC at locations shown on the plans or as directed by the Engineer. The fence and gates shall be installed at the beginning at the project prior to the initial grading of railway embankment. The Contractor shall maintain and avoid damaging the fence and gates during construction. Any maintenance required or damage to the fence or gates by the Contractor during construction shall be repaired to the satisfaction of the Engineer at no additional cost to the contract

STRUCTURAL

ANTI-GRAFFITI PROTECTION SYSTEM

Description: This work shall consist of furnishing all labor, materials, and equipment for the application of an anti-graffiti protection system to the retaining walls as shown in the plans.

General: The anti-graffiti 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 Anti-Graffiti Protection System.

Construction Requirements: 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.

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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 ANTI-GRAFFITI PROTECTION SYSTEM. Price shall be payment in full for all labor, materials, and equipment necessary for the application of the concrete sealer.

CERTIFICATION OF METAL FABRICATOR

Certification of Metal Fabricator

Effective: January 1, 2014

Add the following after the last paragraph of Article 106.08 of the Supplemental Specifications and Recurring Special Provisions:

“Fabricators with the old Simple Steel Bridges AISC certification that expires in July 2014 or before are considered to have Intermediate Bridges AISC certification for the purposes of this article.

Fabricators with the old Major Steel Bridges AISC certification that expires in July 2014 or before are considered to have Advanced Bridges AISC certification for the purposes of this article.”

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 3,500 psi and at twenty-eight (28) 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 tangent pile retaining wall cast-in-place concrete facing and the abutment 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.

Initial Finishing: Use of a finishing machine may not be practical due to the transverse deck profile. At the Contractor's option, a vibrating screed may be used in lieu of a finishing machine for superstructures with a pour width less than or equal to 24 ft. After the concrete is placed and consolidated, it shall be struck off with a vibrating screed. The vibrating screed shall be of a type approved by the Engineer. A slight excess of concrete shall be kept in front of the cutting edge at all times during the striking off operation. After screeding, the entire surface shall be finished with hand-operated, long-handled floats having blades not less than 10 ft (3 m) in length and 6 in. (150 mm) in width. Decks so finished need not be straightedge tested as specified in 503.16(a)(2). The plans indicate locations of optional transverse construction joints that will allow for the bridge deck to be transversely screeded. These optional joints are only allowed if the bridge deck is transversely screeded with a vibrating screed. The Contractor may propose a different option to initial finish/strike off the bridge deck but it must be approved by the Engineer.

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 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.

Construction Requirements: 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. 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.

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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.

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.
- Six (6) access ducts shall be installed in the drilled shafts to be tested.

DRAINAGE SYSTEM

Description: This work shall consist of furnishing all labor, materials, and equipment for the installation of the drainage system beneath the bridge deck and behind the abutment as shown in the plans, including all piping, fittings, clean outs, support brackets, inserts, bolts, and splash blocks when specified.

General: The drainage system shall be a longitudinal collection system capable of disposing runoff without permitting it to enter the compacted granular backfill behind the bridge abutment.

Construction Requirements: All pipes, tees, bells, and bends shall be Class 54 ductile iron with 6 in. I.D. A minimum fall of 1 percent shall be used on all drain pipes.

The drainage system shall be designed with allowance for the longitudinal differential expansion and contraction from thermal movements and longitudinal deflection from live load longitudinal forces expected between the superstructure and substructure to which the drainage system is attached. The total allowance for longitudinal movement in the drainage system shall be 2.25 in. each way between the superstructure and substructure.

Runs of pipe shall be supported at spacings not exceeding those recommended by the manufacturer of the pipe. Standard slings, clamps, clevis hangers, and shoe supports designed for use with ductile iron pipe may be used. All connections of pipes and fittings shown on the plans shall facilitate future removal and maintenance clean out or flushing.

The drainage system shall be a closed system and tie into the pipe underdrain system

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behind either abutment.

All ductile iron pipe, fittings, and expansion joints shall be handled and installed according to guidelines and procedures recommended by the manufacturer or supplier of the material.

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

Basis of Payment: This work will be paid for at the contract unit price each for DRAINAGE SYSTEM, No. 2 or No. 4. Price shall be payment in full for all labor, materials, and equipment necessary for the installation of the drainage system.

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

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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 six (6) CSL tubes installed according to the General Notes of the UPRR bridge. 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 construction.
2. Construct a 5 ft – 0 in. diameter demonstration shaft a minimum of 6 ft into

bedrock. The shaft shall be construction 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 6ft 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.

FLOOR DRAINS (SPECIAL)

Description: This work shall consist of furnishing all labor, materials, and equipment for the installation of the floor drains including iron pipe, cast iron grate, and all materials required for the connection of pipe to grate.

General: The floor drains shall be capable of collecting runoff from the deck and depositing it into the drainage system.

Construction Requirements: The floor drain shall be composed of a 6 in. interior diameter ductile iron pipe and heavy duty grey cast iron solid pipe grate with a 6 ¾ in. diameter and a 3 in. depth at grate for a 6 in. diameter pipe.

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

Basis of Payment: This work will be paid for at the contract unit price each for FLOOR DRAINS (SPECIAL). Price shall be payment in full for all labor, materials, and equipment necessary for the installation of the floor drains.

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.

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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 on each construction location (Laurel Street and Ash Street) as directed by the Engineer. Mockup shall be readily accessible to construction personnel and the Engineer at all times during form liner construction. The same mockup may be used at both locations if it is moved when required.
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.

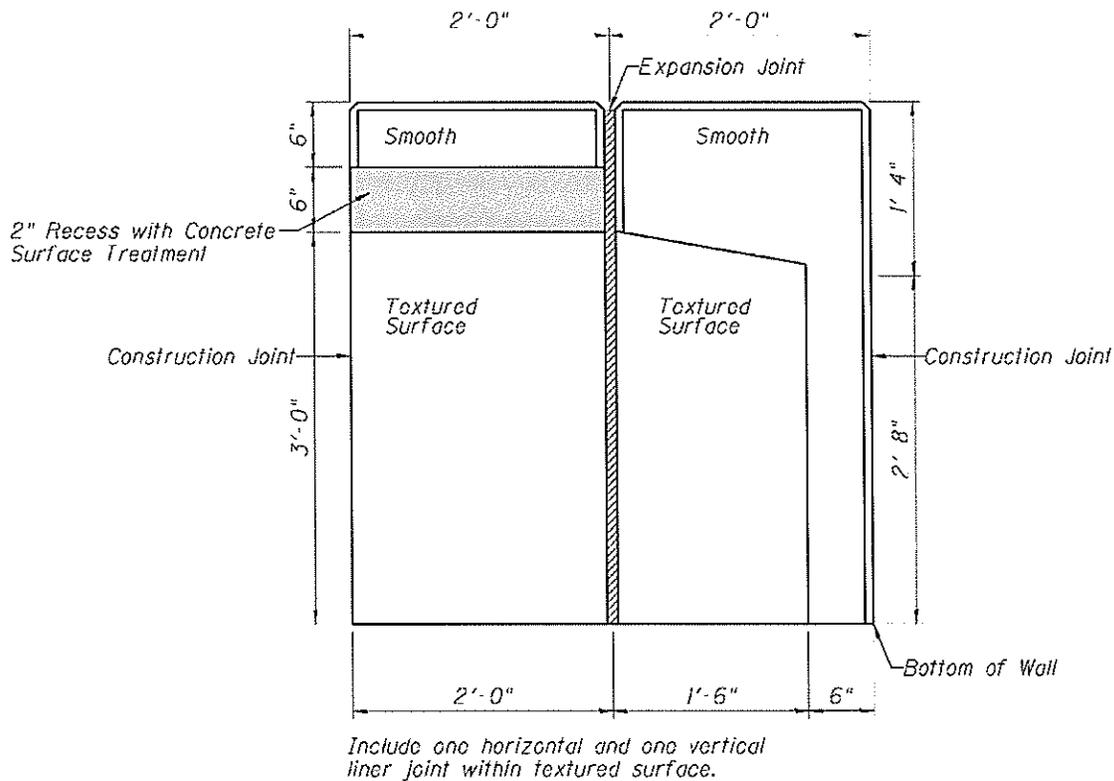


Exhibit A- Elevation View of Mockup Panel

Formliner Pattern: The form liner pattern 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.

**Scott System #101
Cleveland Flute**

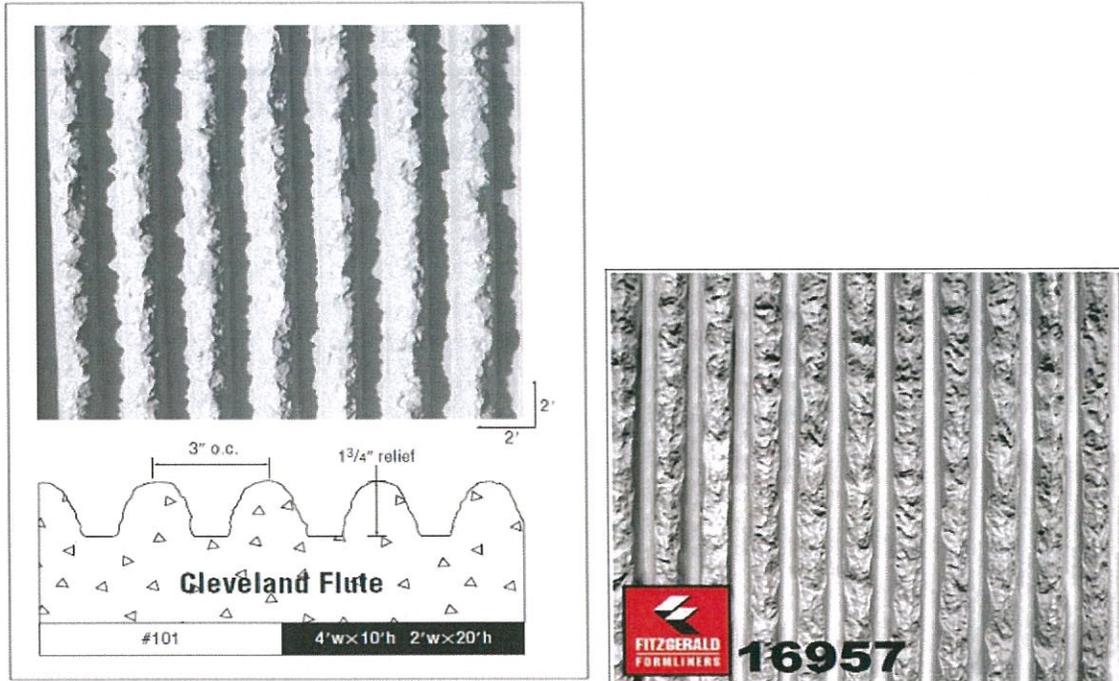


Exhibit B- Cast-in-place Pattern

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.

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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 084-9954 (UPRR over Ash Street) – BRIDGE NO. 1

SN 084-9955 (NSRR over Ash Street) – BRIDGE NO. 2

SN 084-9956 (UPRR over Laurel Street) – BRIDGE NO. 3

SN 084-9957 (NSRR over Laurel Street) – BRIDGE NO. 4

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 the NSRR bridge 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. Alternate products will be allowed but must be approved by the Engineer.

Field Weld Inspection Requirements: 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 not 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, FURNISHING AND ERECTING STRUCTURAL STEEL BRIDGE NO. 3 and FURNISHING AND ERECTING STRUCTURAL STEEL BRIDGE NO. 4. 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, NO. 2, NO. 3 or NO. 4.

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 2 ft below finished grade line at the front face of the wall.

Select Fill: The select fill must be a course aggregate with 2±2 percent passing the #200 sieve. The course aggregate shall be CA 7 through CA 8, CA 11 and CA 13 through CA 16,

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except when epoxy coated steel, geosynthetic, or geotextile soil reinforcement is utilized the course aggregate shall be CA 13 through CA 16.

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 and select fill shall be paid for as EARTH EXCAVATION according to Section 202 except as noted on the Laurel Street retaining wall plans.

MEMBRANE WATERPROOFING

This work shall be in accordance with Section 580 of the Standard Specification except as modified within this Special Provision.

In lieu of using a Butyl Rubber Membrane the Contractor may elect to use an Ethylene Propylene Diene Terpolymer (EPDM) membrane at no additional cost to the contract. The EPDM membrane shall be equivalent to the Butyl Rubber Membrane and approved by the Engineer prior to installation.

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

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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, an Authorized Applicator training program, capacity to provide field technical services as required and manufacturer to issue warrantee to Owner.
 - c. 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.

D. 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.

<u>Property, Cured Product</u>	<u>Test Method</u>	<u>Typical Value</u>
Solids Content		100%
Shore Hardness	ASTM D 2240	50 D
Elongation	ASTM D 638	.250%
Tensile Strength, psi Tear	ASTM D 638	>2,000
Strength, pli, Die C	ASTM D 624	390
Tabor Abrasion, mg. Loss (1000 gm, 1000 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.

<u>Property, Cured Product</u>	<u>Test Method</u>	<u>Typical Value</u>
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

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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.

<u>Properties</u>	<u>Test Method</u>	<u>Typical Value</u>
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.

<u>Properties</u>	<u>Test Method</u>	<u>Typical Value</u>
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/l	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		

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F. Joint Adhesive:

1. Bridge deck joint adhesive.

- a. A slow setting, 100 percent solids, two-component polymer product.

<u>Property, Cured Product</u>	<u>Test Method</u>	<u>Typical Value</u>
Solids Content Shore		100%
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.

<u>Typical Physical Properties</u>	<u>Typical Value</u>
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.

<u>Typical Physical Properties</u>	<u>Typical Value</u>
VOC Content	35.1 g/l
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. 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 using 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/FT² 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 seal joint 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 insure 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.

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 $\frac{3}{4}$ in. and grouted.

Cast-In Place Fascia Beam Alternative: The Contractor may elect to construct the cast-in place fascia beam detailed in the plans instead of the precast fascia beam. This alternative shall be constructed to Section 503 and 508 of the Standard Specifications. Shop drawings will not be required for the cast-in place fascia beam. No additional compensation will be allowed for construction the cast-in place fascia beam.

If the Contractor elects to construct the cast-in place fascia beam alternative the Method of Measurement and Basis of Payment prescribed below shall still be applicable for this

alternative.

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 or No. 3. 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.

- Mechanically Stabilized Earth Retaining Walls
- Structural Steel, Bearings and Anchor Bolts *
- Precast Prestressed Concrete Fascia Beam*
- Steel Railing (Special)*

- Membrane Waterproofing*
- Membrane Waterproofing (Special)*

* The Engineer will forward to the railroad agency for review.

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

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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, chains, and handrails. 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. The posts on the railroad bridge superstructures, cheek walls, and wing walls need not be set plumb. Use post-installed chemical anchors for fastening the base plates to the concrete.

Method of Measurement: This work will be measured for payment in units by the foot.

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.

ELECTRICAL

CONTRACT GUARANTEE

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

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

1. The manufacturer's standard written warranty for each piece of electrical equipment or apparatus furnished under the contract.
2. The Contractor's written guarantee that, for a period of six (6) months after the date of final inspection of the project, all necessary repairs to or replacement of said warranted equipment, or apparatus shall be made by the Contractor at no cost to the Department.
3. The Contractor's written guarantee for satisfactory operation of all electrical systems furnished and constructed under the contract for a period of 6 months after final inspection of the project.

HANDHOLE (CONTRACTOR OPTION)

Description: This work shall consist of furnishing the material and constructing a cast-in-place handhole, heavy-duty handhole, or double handhole or installing a precast composite concrete handhole, heavy-duty handhole, or double 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: Precast composite concrete handhole or double handhole: If the Contractor chooses to install a precast structure, 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 a minimum 17 in. (W) x 30 in. (L) x 30 in. (D) and the nominal dimensions of the double handhole shall be a minimum 30 in. (W) x 48 in. (L) x 36 in. (D).

The cover shall contain the legend "LIGHTING" or "ELECTRICAL" and shall be held down by two stainless steel hex head bolts. The cover shall contain two (2) recessed left pins. The cover for a double handhole shall be split led, two (2)-piece cover.

Basis of Payment: This work will be paid for at the contract unit price each for HANDHOLE or DOUBLE HANDHOLE.

LOCATION OF UNDERGROUND ELECTRICAL FACILITIES

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 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. This work will not be paid for separately but shall be included in the contract bid prices.

LUMINAIRE, ELECTROLUMINESCENT DECORATIVE 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 along the steel sacrificial beam on the NSRR bridge and precast prestressed fascia beam on the UPRR bridge 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.

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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 a stainless steel junction box NEMA 4X j-box with 1 in. threaded conduit hub for to protect the power connector. **The junction box for the power supply will be IDOT pay item number 81300310.**

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 COBRA HEAD STYLE

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 95 watt LED light engine. Luminaires on aluminum light poles with mast arms shall be catalog number LDRC-T3-B04-480-LCF as manufactured by LUMARK,
or luminaires shall have a 102 watt LED light engine. Luminaires on aluminum light poles with mast arms shall be catalog number LDRC-T4-B04-480-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 COBRA HEAD STYLE. The unit price shall include the cost of all materials, equipment and labor required to furnish and install the luminaires.

UNDERPASS LUMINAIRE (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 40 watt LED light engine. Luminaires will be wall mounted in the recessed notch as detailed on the drawings. The fixture shall be catalog number 4312 LED, K4-400K Color, W/85CRI, SLV as manufactured by Bega-45.

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 gloss 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 recessed junction boxes within the structure to facilitate routing the raceway from the light fixtures to the new lighting controller.

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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 UNDERPASS LUMINAIR (SPECIAL). The unit price shall include the cost of all materials, equipment and labor required to furnish and install the luminaires.

UNDERPASS LUMINAIRE, 40W, LED

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 830.02 of the “Standard Specifications”, plan details, and the following:

Luminaires shall have a 40 watt LED light engine. Luminaires will be suspended mounted from the bridge above as detailed in the drawings. The fixture shall be catalog number KACM LED, 20c LEDS, 530mA driver, 40K color, W/85CRI, type 5 lighting distribution as manufactured by Lithonia Lighting.

The fixture shall have the following salient characteristics:

- Housing shall have die-cast aluminum end caps welded to an aluminum extrusions.
- 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 molded silicone gasket
- LED light source to meet LM-70 requirements for lumen maintenance and life
- UL listed for wet location
- IP-65 Rated

As part of this pay item provide the necessary junction boxes on the 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 830 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 UNDERPASS LUMINAIRE, 40W, LED. The unit price shall include the cost of all materials, equipment and labor required to furnish and install the luminaires.

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STORM WATER POLLUTION PREVENTION PLAN

See following pages.



Route FAU 7991 and 7992	Marked Route Ash Street, Laurel Street	Section 14-00477-00-BR
Project Number TIG-5146(098)	County Sangamon	Contract Number 93704

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.

Print Name Nathan Botttom	Title City Engineer	Agency City of Springfield
Signature <i>Nathan Botttom</i>	Date 6/12/2017	

I. Site Description

A. Provide a description of the project location (include latitude and longitude):

The project is located along Ash and Laurel streets and along the 10th Street (Norfolk Southern) rail corridor from South Grand Avenue (Lat. 39°-47'-13.9", Long. 89°-38'-54.8"). The west limit is 6th Street, the east limit is 11th Street.

B. Provide a description of the construction activity which is subject of this plan:

The proposed project will consist of constructing underpasses for Ash Street and Laurel Street which will cross underneath the NSRR tracks. The proposed roadway at Ash Street will consist of two lanes in each direction. At Laurel Street the roadway will be one lane in each direction. Curb and gutter with sidewalks will also be provided along the roadways. In order to construct this new structure, the railroad will be temporarily relocated to a proposed interim alignment along the east side of the existing tracks. While on the interim tracks, new subballast will be construction south of South Grand Avenue to 6th Street to accommodate four sets of tracks in the future. The proposed improvements also include pipe underdrains and storm sewer construction.

C. Provide the estimated duration of this project:

36 months

D. The total area of the construction site is estimated to be 25 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 23 acres.

E. The following is a weighted average of the runoff coefficient for this project after construction activities are completed:

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 following soil types were identified:

M.U.S. Description

43A Ipava silt loam, 0 to 2% slopes, a somewhat poorly drained soil with moderately high permeability

68A Sable silt clay loam, 0 to 2% slopes, a poorly drained soil with moderately high to high permeability

533 Urban Land

See Attachment A for Soils Mat.

G. Provide an aerial extent of wetland acreage at the site:

Based on the 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 scopes, etc.):

Construction along NSRR

Preliminary grading stage: Soil disturbing activities will consist of _____ trenching for utilities, embankment construction and placing subballast east of the existing tracks.

Final Grading Stage: Same as for preliminary grading except on the west side of the proposed track.

Construction along Ash Street and Laurel Street: Soil disturbing activities will consist of _____, utility trenching, earth excavation, drilled shafts and retaining wall construction.

J. See the erosion control plans and/or drainage plans for this contract for information regarding drainage patterns, approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent off site 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
Springfield Metro Sanitary District

M. The following is a list of receiving water(s) and the ultimate receiving water(s) for this site. 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, highly erodible soils, streams, stream buffers, specimen trees, natural vegetation, nature preserves, etc.

There are no protected areas within or adjacent to the job site.

O. The following sensitive environmental resources are associated with this project, and may have the potential to be impacted by the proposed development:

- Floodplain
- Wetland Riparian
- Threatened and Endangered Species
- Historic Preservation
- 303(d) Listed receiving waters for suspended solids, turbidity, or siltation
- Receiving waters with Total Maximum Daily Load (TMDL) for sediment, total suspended solids, turbidity, or siltation
- Applicable Federal, Tribal, State or Local Programs
- Other

1. 303(d) Listed receiving waters (fill out this section if checked above):

a. The name(s) of the listed water body, and identification of all pollutants causing impairment:

b. 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:

c. Provide a description of the location(s) of direct discharge from the project site to the 303(d) water body:

d. Provide a description of the location(s) of any dewatering discharges to the MS4 and/or water body:

2. TMDL (fill out this section if checked above)

a. The name(s) of the listed water body:

b. 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:

c. 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 the allocation:

P. The following pollutants of concern will be associated with this construction project:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Soil Sediment | <input type="checkbox"/> Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids) |
| <input checked="" type="checkbox"/> Concrete | <input type="checkbox"/> Antifreeze / Coolants |
| <input checked="" type="checkbox"/> Concrete Truck waste | <input checked="" type="checkbox"/> Waste water from cleaning construction equipment |
| <input type="checkbox"/> Concrete Curing Compounds | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Solid waste Debris | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Paints | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Solvents | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Fertilizers / Pesticides | <input type="checkbox"/> 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 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:

- | | |
|--|--|
| <input type="checkbox"/> Preservation of Mature Vegetation | <input checked="" type="checkbox"/> Erosion Control Blanket / Mulching |
| <input type="checkbox"/> Vegetated Buffer Strips | <input type="checkbox"/> Sodding |
| <input type="checkbox"/> Protection of Trees | <input type="checkbox"/> Geotextiles |
| <input type="checkbox"/> Temporary Erosion Control Seeding | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Temporary Turf (Seeding, Class 7) | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Temporary Mulching | <input type="checkbox"/> Other (specify) _____ |
| <input checked="" type="checkbox"/> Permanent Seeding | <input type="checkbox"/> 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 is 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.

The following stabilization practices will be used for this project:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Perimeter Erosion Barrier | <input type="checkbox"/> Rock Outlet Protection |
| <input type="checkbox"/> Temporary Ditch Check | <input checked="" type="checkbox"/> Riprap |

- | | |
|--|--|
| <input checked="" type="checkbox"/> Storm Drain Inlet Protection | <input type="checkbox"/> Gabions |
| <input checked="" type="checkbox"/> Sediment Trap | <input type="checkbox"/> Slope Mattress |
| <input type="checkbox"/> Temporary Pipe Slope Drain | <input type="checkbox"/> Retaining Walls |
| <input type="checkbox"/> Temporary Sediment Basin | <input type="checkbox"/> Slope Walls |
| <input type="checkbox"/> Temporary Stream Crossing | <input type="checkbox"/> Concrete Revetment Mats |
| <input type="checkbox"/> Stabilized Construction Exits | <input type="checkbox"/> Level Spreaders |
| <input type="checkbox"/> Turf Reinforcement Mats | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Permanent Check Dams | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Permanent Sediment Basin | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Aggregate Ditch | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Paved Ditch | <input type="checkbox"/> 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 with open grates to prevent sediment and silt from construction operations from entering the storm sewer system. The inlet protection will consist of inlets 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.

The proposed wet will on Ash Street and Laurel Street will serve as a permanent sediment basin after construction is completed.

Stone riprap will be placed at the pump station outlet in the detention ditch and at the ditch outlets.

D. Treatment Chemicals

Will polymer flocculents or treatment chemicals be utilized on this project: Yes No

If yes above, identify where and how polymer flocculents or treatment chemicals will be utilized on this project.

E. Permanent 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.

- 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 on the basis of the technical guidance in Chapter 41 (Construction Site Storm Water Pollution Control) of the IDOT Bureau of Design & Environment Manual. If practices other than those discussed in Chapter 41 are selected for implementation or if practices are applied to situations different from those covered in Chapter 41, the technical basis for such decisions will be explained below.

2. Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

Description of permanent storm water management controls:

The proposed storm water management system includes storm sewer, wet wells, a pumping station, and force main. Proposed storm sewer will be placed along the curb and gutter for drainage in the roadway, adjacent slopes, and sidewalks. Three wet wells will be placed at each pump station. The pump station will be used in conjunction with the wells to carry the water through a force main and empty into the sewer system. The proposed drainage system will be designed to regulate the amount of additional flow into the existing drainage system and to avoid adverse impacts to the current functionality.

Vehicle entrances and exits must be constructed and maintained to prevent tracking of sediments on opened roadways. The Contractor will provide the resident engineer with a written plan identifying the locations of the entrances and exits and the procedures that will be used to construct and maintain them.

Stockpiles shall be maintained to eliminate pollution of storm water runoff. Runoff from stockpiles containing materials such as aggregates, aggregate subbase, topsoil, fill material, or other materials will be stored for construction can be contained using BMPs such as perimeter erosion barrier, temporary mulch, plastic covers, or storm drain inlet protection. The contractor will provide the resident engineer a written plan of the procedures to be used in addition to how they will be maintained.

- 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 Illinois Environmental Protection Agency'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:

IDOT Standard Specifications, Supplemental Specifications and Recurring Special Provisions

- 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 construction entrances/exits)
- 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 operations
- Time frame for other significant long-term operations or activities that may plan non-storm water discharges such as dewatering, grinding, etc.
- Permanent stabilization activities for each area of the project

2. 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:

- 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 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 to the Contractor for the practices associated with this project. 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 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 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 e-mail 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

Additional Inspections Required:

N/A

V. Failure to Comply

Failure to comply with any provisions of this Storm Water Pollution Prevention Plan will result in the implementation of a National Pollutant Discharge Elimination System/Erosion and Sediment Control Deficiency Deduction against the Contractor and/or penalties under the Permit ILR10 which could be passed on to the Contractor.



Contractor Certification Statement



Prior to conducting any professional services at the site covered by this contract, the Contractor and every subcontractor must complete and return to the Resident Engineer the following certification. A separate certification must be submitted by each firm. Attach to this certification all items required by Section II.G of the Storm Water Pollution Prevention Plan (SWPPP) which will be handled by the Contractors/subcontractor completing this form.

Route FAU 7991 and 7992	Marked Route Ash Street, Laurel Street	Section 14-00477-00-BR
Project Number TIG-5146(098)	County Sangamon	Contract Number 93704

This certification statement is a part of SWPPP for the project described above, in accordance with the General NPDES Permit No. ILR10 issued by the Illinois Environmental Protection Agency.

I certify under penalty of law that I understand the terms of the Permit No. ILR10 that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

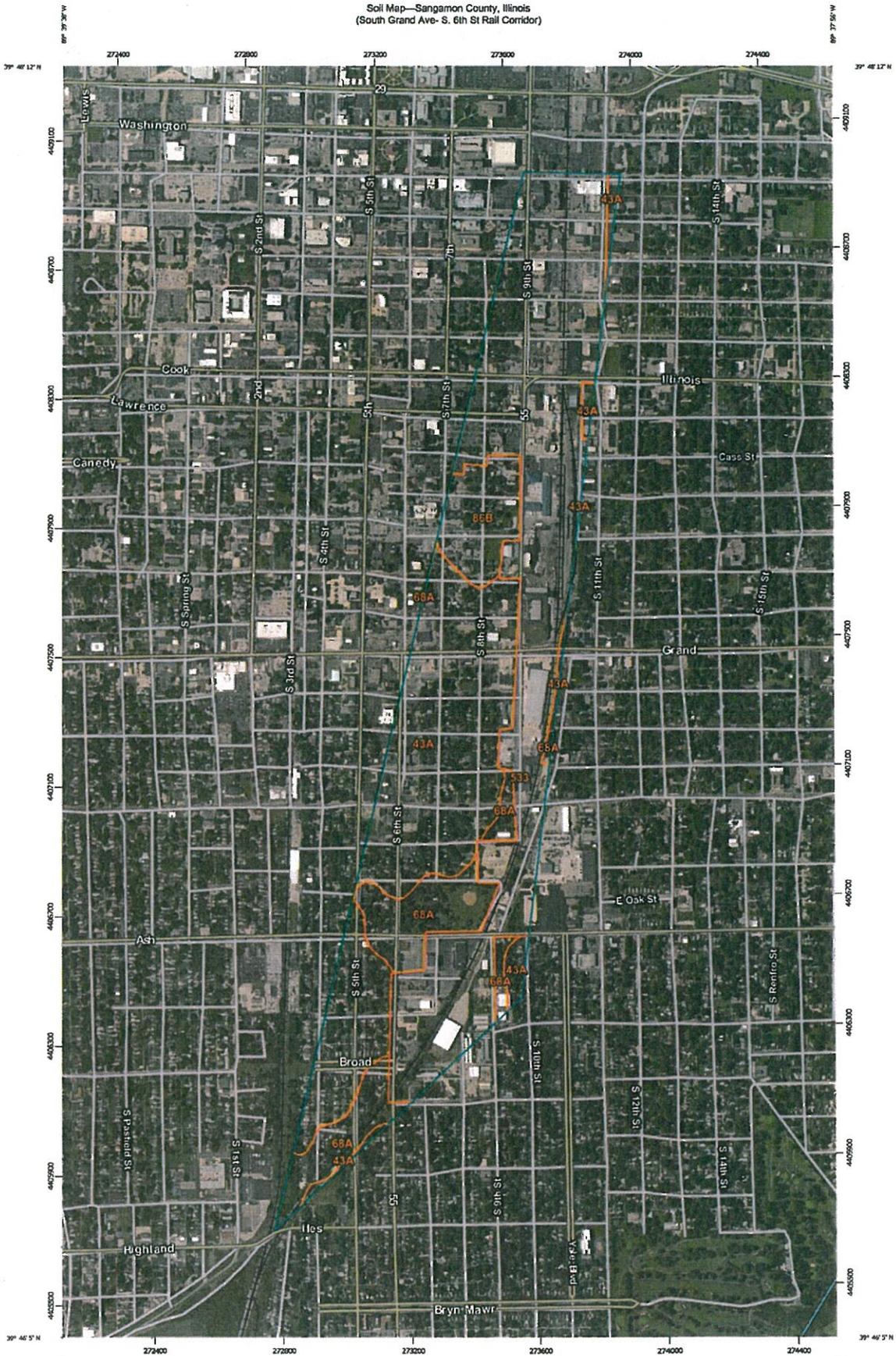
In addition, I have read and understand all of the information and requirements stated in SWPPP for the above mentioned project; I have received copies of all appropriate maintenance procedures; and, I have provided all documentation required to be in compliance with the Permit ILR10 and SWPPP and will provide timely updates to these documents as necessary.

- Contractor
- Sub-Contractor

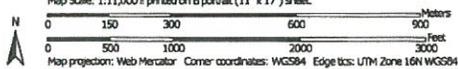
Print Name []	Signature []
Title []	Date []
Name of Firm []	Telephone []
Street Address []	City/State/Zip []

Items which the Contractor/subcontractor will be responsible for as required in Section II.G. of SWPPP:
[]

Soil Map—Sangamon County, Illinois
(South Grand Ave- S. 6th St Rail Corridor)



Map Scale: 1:11,000 if printed on B portrait (11" x 17") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

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Map Unit Legend

Sangamon County, Illinois (IL167)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
43A	Ipava silt loam, 0 to 2 percent slopes	117.2	34.6%
68A	Sable silty clay loam, 0 to 2 percent slopes	40.2	11.9%
86B	Osco silt loam, 2 to 5 percent slopes	19.3	5.7%
533	Urban land	162.4	47.9%
Totals for Area of Interest		339.0	100.0%

FAU Route 7991 (Laurel Street)
FAU Route 7992 (Ash Street)
Section 14-00477-00-BR
City of Springfield
Sangamon County

PROJECT LABOR AGREEMENT – QUARTERLY EMPLOYMENT REPORT

See following pages.

PROJECT LABOR AGREEMENT - QUARTERLY EMPLOYMENT REPORT

Public Act 97-0199 requires the Department to submit quarterly reports regarding the number of minorities and females employed under Project Labor Agreements. To assist in this reporting effort, the Contractor shall provide a quarterly workforce participation report for all minority and female employees working under the project labor agreement 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.dot.il.gov/const/conforms.html>.

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 _____, 2017 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. 93704 (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/architectural/surveying consultants' materials testing employees are subject to the terms of this PLA for Construction Work performed for a Contractor or Subcontractor on this Project. These workers 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 or techniques 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.
- 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 The 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 governing the 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.

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 agree to 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 of 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 be 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 breach 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 statute 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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Execution Page

Illinois Department of Transportation

Paul Loete, Director of Highway Project Implementation

Jeff Heck, Director of Finance & Administration

William Barnes, Chief Counsel

Randall S. Blankenhorn, Secretary

Date

Illinois AFL-CIO Statewide Project Labor Agreement Committee, representing the Unions listed below:

Date

List Unions:

****RETURN WITH BID****

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)

****RETURN WITH BID****

FAU Route 7991 (Laurel Street)
FAU Route 7992 (Ash Street)
Section 14-00477-00-BR
City of Springfield
Sangamon County

TIGER GRANT REQUIREMENTS

See following pages.

TIGER Grant Requirements

“The Recipient, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.”

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 the 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 the 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 the 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.

6. **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 the 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:

Potentially 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 III 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).

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
INSURANCE

Effective: February 1, 2007
Revised: August 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

The Contractor shall name the following entities as additional insured under the Contractor's general liability insurance policy in accordance with Article 107.27:

City of Springfield, Illinois

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

AGGREGATE SUBGRADE IMPROVEMENT (BDE)

Effective: April 1, 2012

Revised: April 1, 2016

Add the following Section to the Standard Specifications:

"SECTION 303. AGGREGATE SUBGRADE IMPROVEMENT

303.01 Description. This work shall consist of constructing an aggregate subgrade improvement.

303.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate	1004.07
(b) Reclaimed Asphalt Pavement (RAP) (Notes 1, 2, and 3)	1031

Note 1. Crushed RAP, from either full depth or single lift removal, may be mechanically blended with aggregate gradations CS 01, CS 02, and RR 01 but shall not exceed 40 percent of the total product. The top size of the RAP shall be less than 4 in. (100 mm) and well graded.

Note 2. RAP having 100 percent passing the 1 1/2 in. (37.5 mm) sieve and being well graded, may be used as capping aggregate in the top 3 in. (75 mm) when aggregate gradations CS 01, CS 02, or RR 01 are used in lower lifts.

Note 3. The RAP used for aggregate subgrade improvement shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications".

303.03 Equipment. The vibratory machine shall be according to Article 1101.01, or as approved by the Engineer.

303.04 Soil Preparation. The stability of the soil shall be according to the Department's Subgrade Stability Manual for the aggregate thickness specified.

303.05 Placing Aggregate. The maximum nominal lift thickness of aggregate gradations CA 02, CA 06, or CA 10 shall be 12 in. (300 mm). The maximum nominal lift thickness of aggregate gradations CS 01, CS 02, and RR 01 shall be 24 in. (600 mm).

303.06 Capping Aggregate. The top surface of the aggregate subgrade shall consist of a minimum 3 in. (75 mm) of aggregate gradations CA 06 or CA 10. When the contract specifies that a granular subbase is to be placed on the aggregate subgrade improvement, the 3 in. (75 mm) of capping aggregate shall be the same gradation and may be placed with the underlying aggregate subgrade improvement material.

303.07 Compaction. All aggregate lifts shall be compacted to the satisfaction of the Engineer. If the moisture content of the material is such that compaction cannot be obtained, sufficient water shall be added so that satisfactory compaction can be obtained.

303.08 Finishing and Maintenance of Aggregate Subgrade Improvement. The aggregate subgrade improvement shall be finished to the lines, grades, and cross sections shown on the plans, or as directed by the Engineer. The aggregate subgrade improvement shall be maintained in a smooth and compacted condition.

303.09 Method of Measurement. This work will be measured for payment according to Article 311.08.

303.10 Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) or ton (metric ton) for AGGREGATE SUBGRADE IMPROVEMENT or at the contract unit price per square yard (square meter) for AGGREGATE SUBGRADE IMPROVEMENT, of the thickness specified."

Add the following to Section 1004 of the Standard Specifications:

"1004.07 Coarse Aggregate for Aggregate Subgrade Improvement. The aggregate shall be according to Article 1004.01 and the following.

- (a) Description. The coarse aggregate shall be crushed gravel, crushed stone, or crushed concrete. In applications where greater than 24 in. (600 mm) of subgrade material is required, gravel may be used below the first 12 in (300 mm) of subgrade.
- (b) Quality. The coarse aggregate shall consist of sound durable particles reasonably free of deleterious materials.
- (c) Gradation.
 - (1) The coarse aggregate gradation for total subgrade thickness less than or equal to 12 in. (300 mm) shall be CA 2, CA 6, CA 10, or CS 01.

The coarse aggregate gradation for total subgrade thickness more than 12 in. (300 mm) shall be CS 01 or CS 02 as shown below or RR 01 according to Article 1005.01(c).

COARSE AGGREGATE SUBGRADE GRADATIONS					
Grad No.	Sieve Size and Percent Passing				
	8"	6"	4"	2"	#4
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 02		100	80 ± 10	25 ± 15	

COARSE AGGREGATE SUBGRADE GRADATIONS (Metric)					
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Grad No.	Sieve Size and Percent Passing				
	200 mm	150 mm	100 mm	50 mm	4.75 mm
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 02		100	80 ± 10	25 ± 15	

(2) The 3 in. (75 mm) capping aggregate shall be gradation CA 6 or CA 10."

80274

BUILDING REMOVAL - CASE II (NON-FRIABLE ASBESTOS ABATEMENT) (BDE)

Effective: September 1, 1990

Revised: April 1, 2010

BUILDING REMOVAL: This work shall consist of the removal and disposal of 2 building(s), together with all foundations, retaining walls, and piers, down to a plane 1 ft (300 mm) below the ultimate or existing grade in the area and also all incidental and collateral work necessary to complete the removal of the building(s) in a manner approved by the Engineer. Any holes, such as basements, shall be filled with a suitable granular material. The building(s) are identified as follows:

<u>Bldg. No.</u>	<u>Parcel No.</u>	<u>Location</u>	<u>Description</u>
7	SR0181	830 E. Ash Street Springfield, IL 62703	One-story metal commercial structure on a concrete slab with a metal roof.
13	SR0161	1000 E. Laurel Street Springfield, IL 62703	One-story metal commercial structure on a concrete slab with a metal roof.

Discontinuance of Utilities: The Contractor shall arrange for the discontinuance of all utility services and the removal of the metering devices that serve the building(s) according to the respective requirements and regulations of the City, County, or utility companies involved. The Contractor shall disconnect and seal, in an approved manner, all service outlets that serve any building(s) he/she is to remove.

Signs: Immediately upon execution of the contract and prior to the wrecking of any structures, the Contractor shall be required to paint or stencil, in contrasting colors of an oil base paint, on all four sides of each residence and two opposite sides of other structures, the following sign:

PROPERTY ACQUIRED FOR
HIGHWAY CONSTRUCTION
TO BE DEMOLISHED BY THE

VANDALS WILL BE PROSECUTED

The signs shall be positioned in a prominent location on the structure so that they can be easily seen and read and at a sufficient height to prevent defacing. The Contractor shall not paint signs nor start demolition of any building(s) prior to the time that the State becomes the owner of the respective building(s).

The Contractor has the option of removing the non-friable asbestos prior to demolition or demolishing the building(s) with the non-friable asbestos in place. Refer to the Special Provisions titled "Asbestos Abatement (General Conditions)" and "Removal and Disposal of Non-Friable Asbestos Building No. 7 & 13" contained herein.

Basis of Payment: This work will be paid for at the contract lump sum unit price for BUILDING REMOVAL, numbers as listed above, which price shall be payment in full for complete removal of the buildings and structures, including any necessary backfilling material as specified herein. The lump sum unit price(s) for this work shall represent the cost of demolition and disposal assuming all non-friable asbestos is removed prior to demolition. Any salvage value shall be reflected in the contract unit price for this item.

EXPLANATION OF BIDDING TERMS: Two separate contract unit price items have been established for the removal of each building. They are:

1. BUILDING REMOVAL NO. 7 & 13
2. REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, BUILDING NO. 7 & 13

The Contractor shall have two options available for the removal and disposal of the non-friable asbestos.

The pay item for removal and disposal of non-friable asbestos will not be deleted regardless of the option chosen by the Contractor.

ASBESTOS ABATEMENT (GENERAL CONDITIONS): This work consists of the removal and disposal of non-friable asbestos from the building(s) to be demolished. All work shall be done according to the requirements of the U.S. Environmental Protection Agency (USEPA), the Illinois Environmental Protection Agency (IEPA), the Occupational Safety and Health Administration (OSHA), the Special Provision for "Removal and Disposal of Non-Friable Asbestos, Building No. 7 & 13," and as outlined herein.

Sketches indicating the location of Asbestos Containing Material (ACM) are included in the proposal on pages 214 thru 216. Also refer to the Materials Description Table on page 217 for a brief description and location of the various materials. Also included is a Materials Quantities Table on page 218. This table states the ACM is non-friable and gives the approximate quantity. The quantities are given only for information and it shall be the Contractor's responsibility to determine the exact quantities prior to submitting his/her bid.

The work involved in the removal and disposal of non-friable asbestos if done prior to demolition, shall be performed by a Contractor or Sub-Contractor prequalified with the Illinois Capital Development Board.

The Contractor shall provide a shipping manifest, similar to the one shown on page 219, to the Engineer for the disposal of all ACM wastes.

Permits: The Contractor shall apply for permit(s) in compliance with applicable regulations of the Illinois Environmental Protection Agency. Any and all other permits required by other federal, state, or local agencies for carrying on the work shall be the responsibility of the Contractor. Copies of the permit(s) shall be sent to the district office and the Engineer.

Notifications: The "Demolition/Renovation Notice" form, which can be obtained from the IEPA office, shall be completed and submitted to the address listed below at least ten days prior to commencement of any asbestos removal or demolition activity. Separate notices shall be sent for the asbestos removal work and the building demolition if they are done as separate operations.

Asbestos Demolition/Renovation Coordinator
Illinois Environmental Protection Agency
Division of Air Pollution Control
P. O. Box 19276
Springfield, Illinois 62794-9276
(217) 785-1743

Notices shall be updated if there is a change in the starting date or the amount of asbestos changes by more than 20 percent.

Submittals:

- A. All submittals and notices shall be made to the Engineer except where otherwise specified herein.
- B. Submittals that shall be made prior to start of work:
 1. Submittals required under Asbestos Abatement Experience.
 2. Submit documentation indicating that all employees have had medical examinations and instruction on the hazards of asbestos exposure, on use and fitting of respirators, on protective dress, on use of showers, on entry and exit from work areas, and on all aspects of work procedures and protective measures as specified in Worker Protection Procedures.
 3. Submit manufacturer's certification stating that vacuums, ventilation equipment, and other equipment required to contain airborne fibers conform to ANSI 29.2.
 4. Submit to the Engineer the brand name, manufacturer, and specification of all sealants or surfactants to be used. Testing under existing conditions will be required at the direction of the Engineer.
 5. Submit proof that all required permits, site locations, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials, supplies, and the like have been obtained (i.e., a letter of authorization to utilize designated landfill).

6. Submit a list of penalties, including liquidated damages, incurred through non-compliance with asbestos abatement project specifications.
7. Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the plan the location and layout of decontamination units, the sequencing of work, the respiratory protection plan to be used during this work, a site safety plan, a disposal plan including the location of an approved disposal site, and a detailed description of the methods to be used to control pollution. The plan shall be submitted to the Engineer prior to the start of work.
8. Submit proof of written notification and compliance with the "Notifications" paragraph.

C. Submittals that shall be made upon completion of abatement work:

1. Submit copies of all waste chain-of-custodies, trip tickets, and disposal receipts for all asbestos waste materials removed from the work area;
2. Submit daily copies of work site entry logbooks with information on worker and visitor access;
3. Submit logs documenting filter changes on respirators, HEPA vacuums, negative pressure ventilation units, and other engineering controls; and
4. Submit results of any bulk material analysis and air sampling data collected during the course of the abatement including results of any on-site testing by any federal, state, or local agency.

Certificate of Insurance:

- A. The Contractor shall document general liability insurance for personal injury, occupational disease and sickness or death, and property damage.
- B. The Contractor shall document current Workmen's Compensation Insurance coverage.
- C. The Contractor shall supply insurance certificates as specified by the Department.

Asbestos Abatement Experience:

- A. Company Experience. Prior to starting work, the Contractor shall supply evidence that he/she has been prequalified with the Illinois Capital Development Board and that he/she has been included on the Illinois Department of Public Health's list of approved Contractors.

B. Personnel Experience:

1. For Superintendent, the Contractor shall supply:
 - a. Evidence of knowledge of applicable regulations in safety and environmental protection is required as well as training in asbestos abatement as evidenced by the successful completion of a training course in supervision of asbestos abatement as specified in 40 CFR 763, Subpart E, Appendix C, EPA Model Contractor Accreditation Plan. A copy of the certificate of successful completion shall be provided to the Engineer prior to the start of work.
 - b. Documentation of experience with abatement work in a supervisory position as evidenced through supervising at least two asbestos abatement projects; provide names, contact, phone number, and locations of two projects in which the individual(s) has worked in a supervisory capacity.
2. For workers involved in the removal of asbestos, the Contractor shall provide training as evidenced by the participation and successful completion of an accredited training course for asbestos abatement workers as specified in 40 CFR 763, Subpart E, Appendix C, EPA Model Contractor Accreditation Plan. A copy of the certificate of successful completion shall be provided to all employees who will be working on this project.

ABATEMENT AIR MONITORING: The Contractor shall comply with the following:

- A. Personal Monitoring. All personal monitoring shall be conducted per specifications listed in OSHA regulation, Title 29, Code of Federal Regulation 1926.58. All area sampling shall be conducted according to 40 CFR Part 763.90. All air monitoring equipment shall be calibrated and maintained in proper operating condition. Excursion limits shall be monitored daily. Personal monitoring is the responsibility of the Contractor. Additional personal samples may be required by the Engineer at any time during the project.
- B. Interior Non-Friable Asbestos-Containing Materials. The Contractor shall perform personal air monitoring during removal of all non-friable Transite and floor tile removal operations. The Engineer will also have the option to require additional personal samples and/or clearance samples during this type of work.
- C. Exterior Non-Friable Asbestos-Containing Materials. The Contractor shall perform personal air monitoring during removal of all non-friable cementitious panels, piping, roofing felts, and built up roofing materials that contain asbestos.

The Contractor shall conduct down wind area sampling to monitor airborne fiber levels at a frequency of no less than three per day.

D. Air Monitoring Professional

1. All air sampling shall be conducted by a qualified Air Sampling Professional supplied by the Contractor. The Air Sampling Professional shall submit

documentation of successful completion of the National Institute for Occupational Safety and Health (NIOSH) course #582 - "Sampling and Evaluating Airborne Asbestos Dust".

2. Air sampling shall be conducted according to NIOSH Method 7400. The results of these tests shall be provided to the Engineer within 24 hours of the collection of air samples.

REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, BUILDING NO.7 & 13 : The Contractor has the option of removing and disposing of the non-friable asbestos prior to demolition of the building(s) or demolishing the building(s) with the non-friable asbestos in place.

Option #1 - If the Contractor chooses to remove all non-friable asbestos prior to demolition, the work shall be done according to the Special Provision titled "Asbestos Abatement (General Conditions)".

Option #2 - If the Contractor chooses to demolish the building(s) with the non-friable asbestos in place, the following provisions shall apply:

1. Continuously wet all non-friable ACM and other building debris with water during demolition.
2. Dispose of all demolition debris as asbestos containing material by placing it in lined, covered transport haulers and placing it in an approved landfill.

This work will be paid for at the contract unit price per lump sum for REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, BUILDING NO. 7 & 13, as shown.

The cost for this work shall be determined as follows:

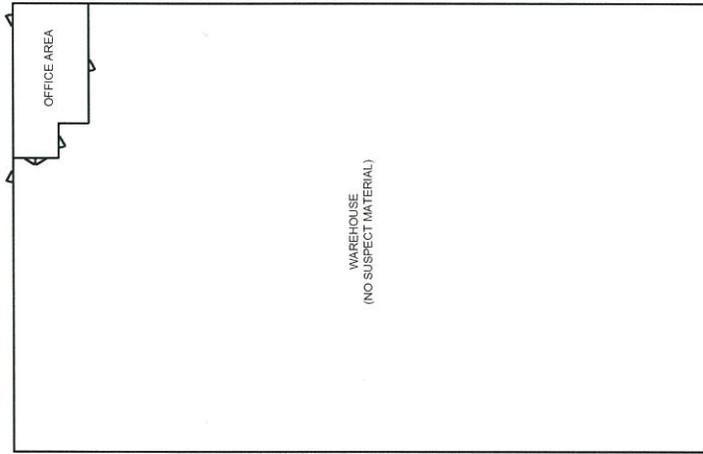
Option #1 - Actual cost of removal and disposal of non-friable asbestos.

Option #2 - The difference in cost between removing and disposing of the building if all non-friable asbestos is left in place and removing and disposing of the building assuming all non-friable asbestos is removed prior to demolition.

The cost of removing and disposing of the building(s), assuming all non-friable asbestos is removed first, shall be represented by the pay item "BUILDING REMOVAL NO.7 & 13."

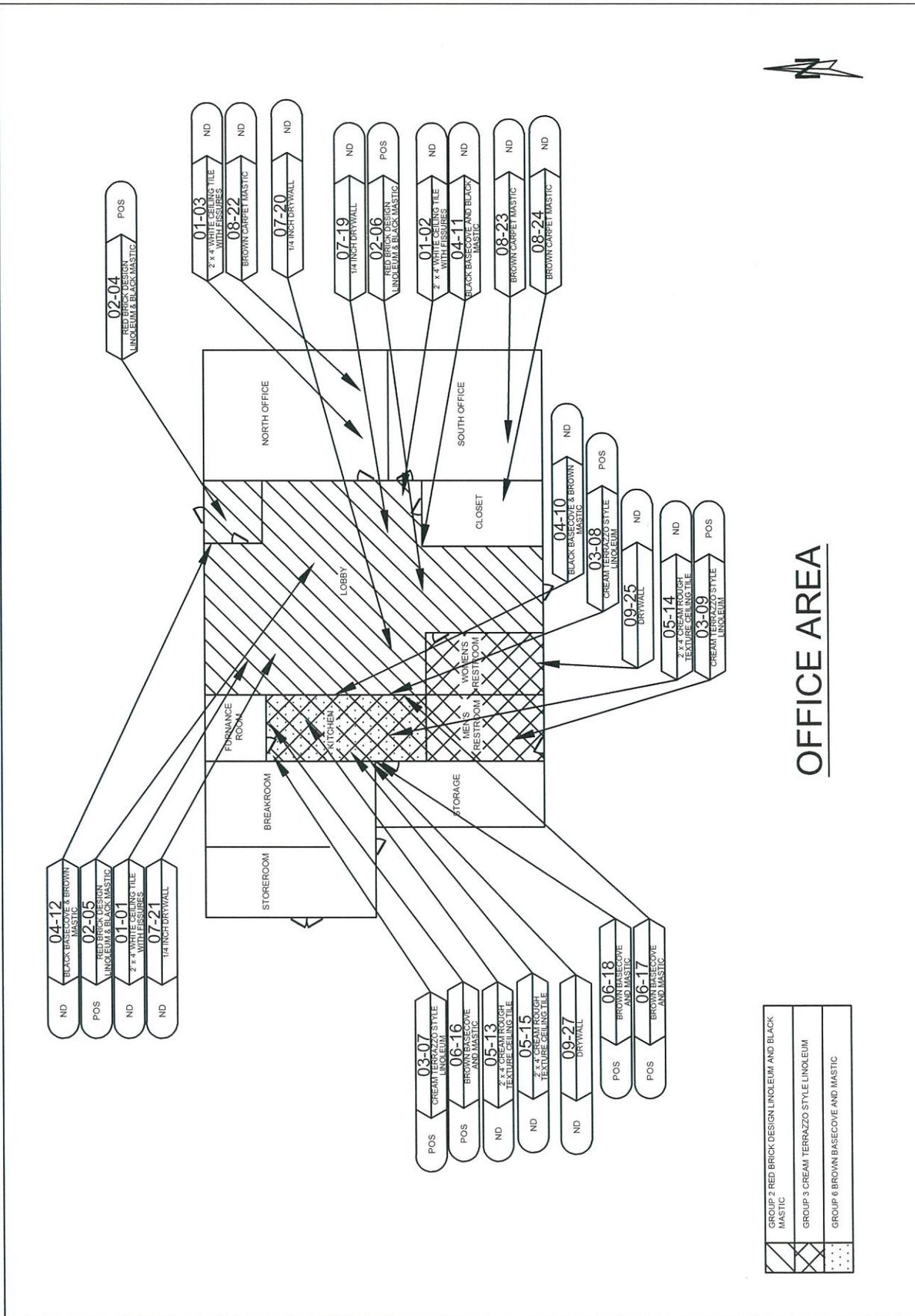
Regardless of the option chosen by the Contractor, this pay item will not be deleted, nor will the pay item BUILDING REMOVAL NO. 7 & 13 be deleted.

50481



WAREHOUSE

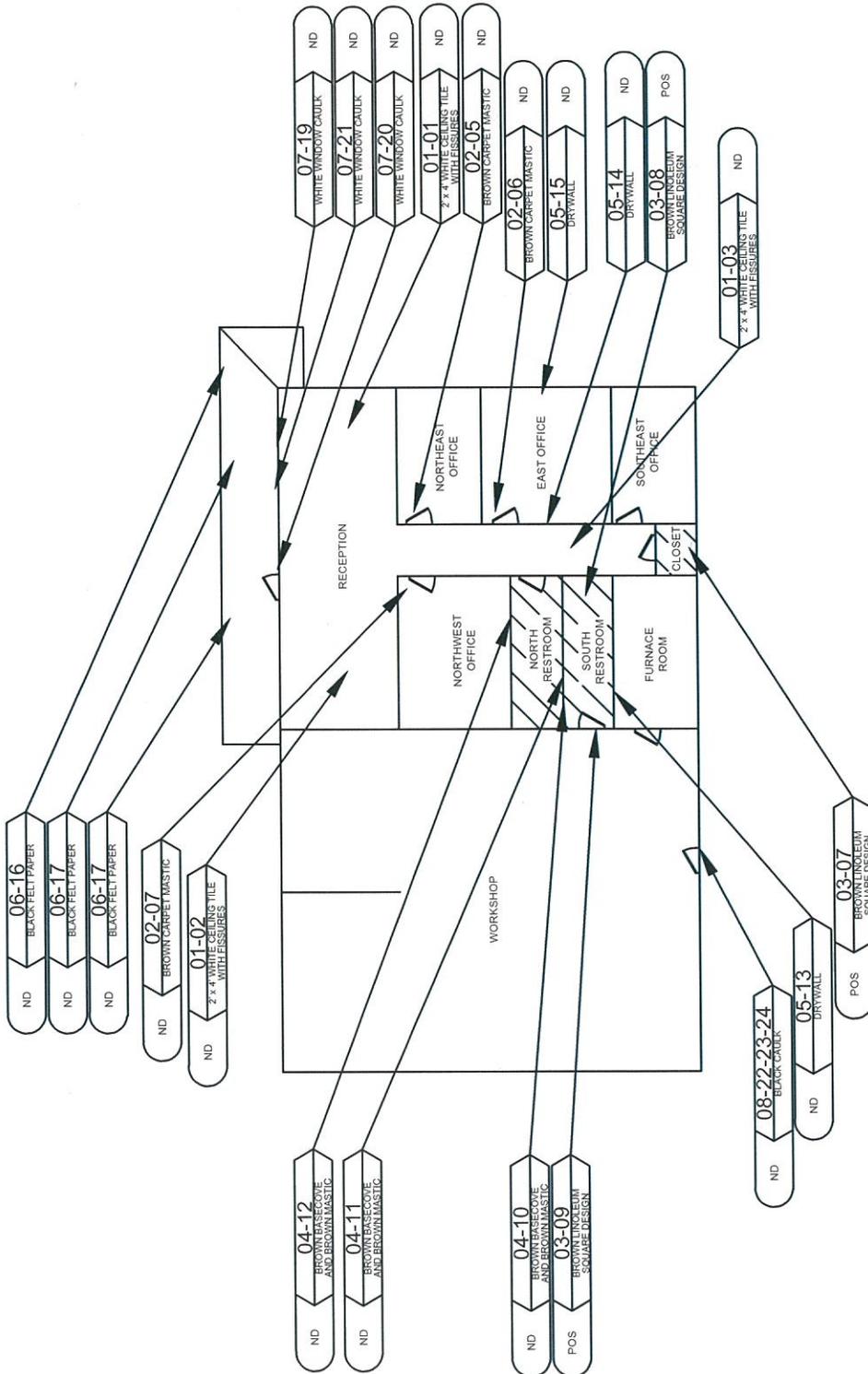
	ASBESTOS SAMPLE GROUP ST-53AV FLOOR INSULATION		SAMPLE LEGEND NA = NOT ANALYZED P = POSITIVE TR = TRACE • = POINT COUNT ANALYSIS			PARCEL NO. SR0181 830 EAST ASH STREET SPRINGFIELD, ILLINOIS 62703 ILLINOIS DEPARTMENT OF TRANSPORTATION 2300 SOUTH DIRKSEN PARKWAY SPRINGFIELD, ILLINOIS 62764	DRAWN: S.J.L.	CHECKED: J.C.	DATE: 03-22-17	FIGURE: 1
	MATERIAL J DESCRIPTION		SAMPLE RESULT				PROJECT NO: 00472669	SCALE: NTS	WO # 620	



[Pattern]	GROUP 2 RED BRICK DESIGN LINOLEUM AND BLACK MASTIC
[Pattern]	GROUP 3 CREAM TERRAZZO STYLE LINOLEUM
[Pattern]	GROUP 6 BROWN BASECOAT AND MASTIC

OFFICE AREA

PSI Information To Build On Engineering • Consulting • Testing 4441 W. Hennepin, Bl. Minneapolis, MN 55412 (763) 838-0720	ASBESTOS SAMPLE GROUP 01-534V Floor Tiles/Mastic MATERIAL J DESCRIPTION	SAMPLE LEGEND N = NOT ANALYZED P = POSITIVE Tr = TRACE * = POINT COUNT ANALYSIS	Illinois Department of Transportation PARCEL NO. SR07181 830 EAST ASH STREET SPRINGFIELD, ILLINOIS 62703 ILLINOIS DEPARTMENT OF TRANSPORTATION 2300 SOUTH DIRKSEN PARKWAY SPRINGFIELD, ILLINOIS 62764	DRAWN: S.J.L. PROJECT NO: 00472669	CHECKED: J.C. SCALE: NTS	DATE: 09-22-17 W/O # 620	FIGURE: 2
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SITE PLAN

GROUP 3 BROWN LINOLEUM SQUARE DESIGN

<p>PSJ Information To Build On Engineering • Consulting • Testing 4421 W. Harrison St. Moline, Illinois 61702 (309) 593-0200</p>	<p>ASBESTOS SAMPLE GROUP</p> <p>10-133AV Floor Linoleum</p> <p>W/ITR</p> <p>MATERIAL J</p> <p>DESCRIPTION</p>	<p>PARCEL NO. SR0161 1000 EAST LAUREL STREET SPRINGFIELD, ILLINOIS 62703 ILLINOIS DEPARTMENT OF TRANSPORTATION 2300 SOUTH DIRKSEN PARKWAY SPRINGFIELD, ILLINOIS 62764</p>	<p>DRAWN: S.J.L.</p> <p>PROJECT NO: 00472669</p>	<p>CHECKED: J.C.</p> <p>SCALE: NTS</p>	<p>DATE: 03-10-17</p> <p>WO # 616</p>	<p>FIGURE: 1</p>
	<p>SAMPLE LEGEND</p> <p>NA = NOT ANALYZED N = NONE DETECTED P = POSITIVE Tr = TRACE + = POINT COUNT ANALYSIS</p>	<p>Illinois Department of Transportation</p>	<p>DRAWN: S.J.L.</p> <p>PROJECT NO: 00472669</p>	<p>CHECKED: J.C.</p> <p>SCALE: NTS</p>	<p>DATE: 03-10-17</p> <p>WO # 616</p>	<p>FIGURE: 1</p>

APPENDIX B

MATERIAL DESCRIPTION TABLE

Material Description	% And Type Of Asbestos	Location, Description, Sample Number (If Applicable)
I. 830 E. Ash Street	(Building Removal No.7)	
Red-Brick style sheet flooring/mastic	30% chrysotile (floor) ND (mastic)	Lobby, good condition. Sample 02-04, 02-05 and 02-06.
Terrazzo-style sheet flooring/mastic	30% chrysotile (floor) ND (mastic)	Kitchen, restrooms, good condition. Sample 03-07, 03-08 and 03-09.
Brown base cove/mastic	ND (base) 2% chrysotile (mastic)	Kitchen, good condition. Sample 06-16, 06-17 and 06-18.
II. 1000 E. Laurel Street	(Building Removal No.13)	
Brown vinyl sheet flooring/mastic	30% chrysotile (floor) ND (mastic)	Restrooms and closet, good condition. Sample 03-07, 03-08 and 03-09

APPENDIX C

MATERIAL QUANTITIES TABLE

The following are approximate quantities of ACM to be removed from the building indicated. These material quantities do not indicate the cleaning required to remove asbestos debris and resulting contamination from the work areas.

I. 830 E. Ash Street (Building Removal No. 7)

<u>Material</u>	<u>Floor</u>	<u>Quantity Present</u>	<u>Friable</u>
Red-Brick style sheet flooring/mastic	1 st Floor	400 S.F.	No
Terrazzo-style sheet flooring/mastic	1 st Floor	200 S.F.	No
Brown base cove/mastic	1 st Floor	45 L.F.	No

II. 1000 E. Laurel Street (Building Removal No. 13)

<u>Material</u>	<u>Floor</u>	<u>Quantity Present</u>	<u>Friable</u>
Brown vinyl sheet flooring/mastic	1 st Floor	150 S.F.	No

APPENDIX D

SHIPPING MANIFEST
Generator

1. Work Site Name and Mailing Address	Owner's Name	Owner's Telephone No.
2. Operator's Name and Address		Operator's Telephone No
3. Waste Disposal Site (WDS) Name Mailing Address, and Physical Site Location		WDS Telephone No.
4. Name and Address of Responsible Agency		
5. Description of Materials		
6. Containers	No.	Type
7. Total Quantity	M ³	(Yd ³)
8. Special Handling Instructions and Additional Information		
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.		
Printed/Typed Name & Title	Signature	Month Day Year

Transporter

10. Transporter 1 (Acknowledgement of Receipt of Materials)		
Printed/Typed Name & Title	Signature	Month Day Year
Address and Telephone No.		
11. Transporter 2 (Acknowledgement of Receipt of Materials)		
Printed/Typed Name & Title	Signature	Month Day Year
Address and Telephone No.		

Disposal Site

12. Discrepancy Indication Space		
13. Waste Disposal Site Owner or Operator: Certification of Receipt of Asbestos Materials Covered By This Manifest Except As Noted in Item 12		
Printed/Typed Name & Title	Signature	Month Day Year

APPENDIX D

INSTRUCTIONS

Waste Generator Section (Items 1-9)

1. Enter the name of the facility at which asbestos waste is generated and the address where the facility is located. In the appropriate spaces, also enter the name of the owner of the facility and the owner's phone number.
2. If a demolition or renovation, enter the name and address of the Company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.
3. Enter the name, address, and physical site location of the waste disposal site (WDS) that will be receiving the asbestos materials. In the appropriate spaces, also enter the phone number of the WDS. Enter "on-site" if the waste will be disposed of on the generator's property.
4. Provide the name and address of the local, State, or EPA Regional Office responsible for administering the asbestos NESHAP program.
5. Indicate the types of asbestos waste materials generated. If from a demolition or renovation, indicate the amount of asbestos that is
 - Friable asbestos material
 - Nonfriable asbestos material
6. Enter the number of containers used to transport the asbestos materials listed in Item 5. Also enter one of the following container codes used in transporting each type of asbestos material (specify any other type of container used if not listed below):
 - DM - Metal drums, barrels
 - DP - Plastic drums, barrels
 - BA - 6 mil plastic bags or wrapping
7. Enter the quantities of each type of asbestos material removed in units of cubic meters (cubic yards).
8. Use this space to indicate special transportation, treatment, storage or disposal or Bill of Lading information. If an alternate waste disposal site is designated, note it here. Emergency response telephone numbers or similar information may be included here.
9. The authorized agent of the waste generator shall read and then sign and date this certification. The date is the date of receipt by transporter.

NOTE: The waste generator shall retain a copy of this form.

APPENDIX D

INSTRUCTIONS

Transporter Section (Items 10 & 11)

10. & 11. Enter name, address, and telephone number of each transporter used, if applicable. Print or type the full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport.

NOTE: The transporter shall retain a copy of this form.

Disposal Site Section (Items 12 & 13)

12. The authorized representative of the WDS shall note in this space any discrepancy between waste described on this manifest and waste actually received as well as any improperly enclosed or contained waste. Any rejected materials should be listed and destination of those materials provided. A site that converts asbestos-containing waste material to nonasbestos material is considered a WDS.
13. The signature (by hand) of the authorized WDS agent indicates acceptance and agreement with statements on this manifest except as noted in Item 12. The date is the date of signature and receipt of shipment.

NOTE: The WDS shall retain a completed copy of this form. The WDS shall also send a completed copy to the operator listed in Item 2.

APPENDIX E

<u>Bldg. No.</u>	<u>Parcel No.</u>	<u>Location</u>	<u>Description</u>
7	SR0181	830 E Ash Street Springfield, IL 62703	One-story metal commercial structure on a concrete slab with a metal roof.
13	SR0161	1000 E. Laurel Street Springfield, IL 62703	One-story metal commercial structure on a concrete slab with a metal roof.

BUILDING REMOVAL - CASE IV (NO ASBESTOS) (BDE)

Effective: September 1, 1990

Revised: April 1, 2010

BUILDING REMOVAL: This work shall consist of the removal and disposal of 5 building(s), together with all foundations, retaining walls, and piers, down to a plane 1 ft (300 mm) below the ultimate or existing grade in the area and also all incidental and collateral work necessary to complete the removal of the building(s) in a manner approved by the Engineer. Any holes, such as basements, shall be filled with a suitable granular material. The building(s) are identified as follows:

<u>Bldg. No.</u>	<u>Parcel No.</u>	<u>Location</u>	<u>Description</u>
11	SR0166	1907 S. 10 1/2 St., Springfield, IL 62703	Two-story wood framed structure on a concrete slab with pitched asphalt-shingled roof
12	SR0165	1907 S. 10 1/2 St., Springfield, IL 62703	Monopole cell tower and prefabricated building (Building. No. 12 Removal shall occur after October 31, 2017. Contractor shall maintain access to this property prior to this date. Cost for providing access shall be included with Building Removal #12
26	SR0139	1425 S. 10 1/2 St., Springfield, IL 62703	One-story metal commercial structure on a concrete slab with metal roof
27	SR 139	1425 S. 10 1/2 St., Springfield, IL 62703	Two-car wood framed garage on a concrete slab with metal roof
28	SR 138	1403 S 10 1/2 St., Springfield, IL 62703	One-story metal commercial structure on a concrete slab with a metal roof

Discontinuance of Utilities: The Contractor shall arrange for the discontinuance of all utility services and the removal of the metering devices that serve the building(s) according to the respective requirements and regulations of the City, County, or utility companies involved. The Contractor shall disconnect and seal, in an approved manner, all service outlets that serve any building(s) he/she is to remove.

Signs: Immediately upon execution of the contract and prior to the wrecking of any structures, the Contractor shall be required to paint or stencil, in contrasting colors of an oil base paint, on all four sides of each residence and two opposite sides of other structures, the following sign:

PROPERTY ACQUIRED FOR
HIGHWAY CONSTRUCTION
TO BE DEMOLISHED BY THE
VANDALS WILL BE PROSECUTED

The signs shall be positioned in a prominent location on the structure so that they can be easily seen and read and at a sufficient height to prevent defacing. The Contractor shall not paint signs nor start demolition of any building(s) prior to the time that the State becomes the owner of the respective building(s).

Basis of Payment: This work will be paid for at the contract lump sum unit price for BUILDING REMOVAL, numbers as listed above, which price shall be payment in full for complete removal of the buildings and structures, including any necessary backfilling material as specified herein.

The lump sum unit price(s) for this work shall represent the cost of demolition. Any salvage value shall be reflected in the contract unit price for this item.

Notifications: The "Demolition/Renovation Notice" form, which can be obtained from the IEPA office, shall be completed and submitted to the address listed below at least ten days prior to commencement of any demolition activity.

Asbestos Demolition/Renovation Coordinator
Illinois Environmental Protection Agency
Division of Air Pollution Control
P. O. Box 19276
Springfield, Illinois 62794-9276
(217)785-1743

Notices shall be updated if there is a change in the starting date or the amount of asbestos changes by more than 20 percent.

Submittals:

- A. All submittals and notices shall be made to the Engineer except where otherwise specified herein.
- B. Prior to starting work, the Contractor shall submit proof of written notification and compliance with the "Notifications" paragraph.

50531

COMPENSABLE DELAY COSTS (BDE)

Effective: June 2, 2017

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 working day contracts the payment will be made according to Article 109.04. For completion date contracts, an adjustment will be determined as follows.

Extended Traffic Control occurs between April 1 and November 30:

$$\text{ETCP Adjustment (\$)} = \text{TE} \times (\% / 100 \times \text{CUP} / \text{OCT})$$

Extended Traffic Control occurs between December 1 and March 31:

$$\text{ETCP Adjustment (\$)} = \text{TE} \times 1.5 (\% / 100 \times \text{CUP} / \text{OCT})$$

Where: TE = Duration of approved time extension in calendar days.

% = Percent maintenance for the traffic control, % (see table below).

CUP = Contract unit price for the traffic control pay item in place during the delay.

OCT = Original contract time in calendar days.

Original Contract Amount	Percent Maintenance
Up to \$2,000,000	65%
\$2,000,000 to \$10,000,000	75%
\$10,000,000 to \$20,000,000	85%
Over \$20,000,000	90%

When an ETCP 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."

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (DBE)

Effective: September 1, 2000

Revised: July 2, 2016

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (a) Withholding progress payments;
- (b) Assessing sanctions;
- (c) Liquidated damages; and/or
- (d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a

good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform 11.00 % of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

- (a) The bidder documents that enough DBE participation has been obtained to meet the goal or,
- (b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217) 785-4611, or by visiting the Department's website at:
<http://www.idot.illinois.gov/doing-business/certifications/disadvantaged-business-enterprise-certification/il-ucp-directory/index>.

BIDDING PROCEDURES. Compliance with this Special Provision is required prior to the award of the contract and the failure of the low bidder to comply will render the bid not responsive.

In order to assure the timely award of the contract, the low bidder shall submit:

- (a) The bidder shall submit a DBE Utilization Plan on completed Department forms SBE 2025 and 2026.
 - (1) The final Utilization Plan must be submitted within five calendar days after the date of the letting in accordance with subsection (a)(2) of Bidding Procedures herein.

- (2) To meet the five day requirement, the bidder may send the Utilization Plan electronically by scanning and sending to DOT.DBE.UP@illinois.gov or faxing to (217) 785-1524. The subject line must include the bid Item Number and the Letting date. The Utilization Plan should be sent as one .pdf file, rather than multiple files and emails for the same Item Number. It is the responsibility of the bidder to obtain confirmation of email or fax delivery.

Alternatively, the Utilization Plan may be sent by certified mail or delivery service within the five calendar day period. If a question arises concerning the mailing date of a Utilization Plan, the mailing date will be established by the U.S. Postal Service postmark on the certified mail receipt from the U.S. Postal Service or the receipt issued by a delivery service when the Utilization Plan is received by the Department. It is the responsibility of the bidder to ensure the postmark or receipt date is affixed within the five days if the bidder intends to rely upon mailing or delivery to satisfy the submission day requirement. The Utilization Plan is to be submitted to:

Illinois Department of Transportation
Bureau of Small Business Enterprises
Contract Compliance Section
2300 South Dirksen Parkway, Room 319
Springfield, Illinois 62764

The Department will not accept a Utilization Plan if it does not meet the five day submittal requirement and the bid will be declared not responsive. In the event the bid is declared not responsive due to a failure to submit a Utilization Plan or failure to comply with the bidding procedures set forth herein, 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. The Department reserves the right to invite any other bidder to submit a Utilization Plan at any time for award consideration.

- (b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of Utilization Plan approval or disapproval under the procedures of this Special Provision.
- (c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and scanned or faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:

- (1) The names and addresses of DBE firms that will participate in the contract;
- (2) A description, including pay item numbers, of the work each DBE will perform;
- (3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;
- (4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;
- (5) If the bidder is a joint venture comprised of DBE companies and non-DBE companies, the Utilization Plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,
- (6) If the contract goal is not met, evidence of good faith efforts; the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not document sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

- (a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors

are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.

- (1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.
- (2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.
- (3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable. In accordance with subsection (c)(6) of the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

- (5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
 - (6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
 - (7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.
 - (8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.
- (b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons for the determination. If the Utilization Plan is not approved because it is deficient as a technical matter, unless waived by the Department, the bidder will be notified and will be allowed no more than a five calendar day period in order to cure the deficiency.
- (c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217) 785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for consideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration

Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

- (a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.
- (b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.
- (c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.
- (d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:
 - (1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
 - (2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement.
- (e) DBE as a material supplier:

- (1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
- (2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.
- (3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a DBE regular dealer or DBE manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the DBE Participation Commitment Statement.

- (a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.
- (b) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A or AER 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, then a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

- (c) SUBCONTRACT. The Contractor must provide DBE subcontracts to IDOT upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.
- (d) ALTERNATIVE WORK METHODS. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:
- (1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or
 - (2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or
 - (3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.
- (e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a) of this part. Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor,

with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

- (1) The listed DBE subcontractor fails or refuses to execute a written contract;
- (2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
- (3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;
- (4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
- (5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1200 or applicable state law.
- (6) You have determined that the listed DBE subcontractor is not a responsible contractor;
- (7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;
- (8) The listed DBE is ineligible to receive DBE credit for the type of work required;
- (9) A DBE owner dies or becomes disabled with the result that the listed DBE subcontractor is unable to complete its work on the contract;
- (10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department shall provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

- (f) PAYMENT RECORDS. The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Resident Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.
- (g) ENFORCEMENT. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.
- (h) RECONSIDERATION. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department. The result of the reconsideration process is not administratively appealable to the U.S. Department of Transportation.

DOWEL BAR INSERTER (BDE)

Effective: January 1, 2017

Add the following to Article 420.03 of the Standard Specifications.

“(l) Mechanical Dowel Bar Inserter1103.20”

Revise Article 420.05(c) of the Standard Specifications to read:

“(c) Transverse Contraction Joints. Transverse contraction joints shall consist of planes of weakness created by sawing grooves in the surface of the pavement and shall include load transfer devices consisting of dowel bars. Transverse contraction joints shall be according to the following.”

Revise Article 420.05(c)(2) of the Standard Specifications to read:

“(2) Dowel Bars. Dowel Bars shall be installed parallel to the centerline of the pavement and parallel to the proposed pavement surface. Installation shall be according to one of the following methods.

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

Metal stakes shall be used instead of nails, with soil or granular subbase. The stakes shall loop over or attach to the top parallel spacer bar of the assembly and penetrate the subgrade or subbase at least 12 in. (300 mm).

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

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

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

- b. Dowel Bar Insertion. The dowel bars may be placed in the pavement slab with a mechanical dowel bar inserter (DBI) attached to a formless paver for pavements ≥ 7.0 in. (175 mm) in thickness. A light coating of oil shall be uniformly applied to all dowel bars.

The DBI shall insert the dowel bars with vibration into the plastic concrete after the concrete has been struck off and consolidated without deformation of the slab. After the bars have been inserted, the concrete shall be refinished and no voids shall exist around the dowel bars. The forward movement of the paver shall not be interrupted by the inserting of the dowel bars.

The location of each row of dowel bars shall be marked in a manner to facilitate where to insert the bars, and where to saw the transverse joint.

1. Placement Tolerances for Dowel Bars. The DBI shall place the dowel bars in the concrete pavement within the following tolerances.

(a.) Longitudinal Translation (Mislocation). Longitudinal translation (mislocation) shall be defined as the position of the center of the dowel bar along the longitudinal axis, in relation to the sawed joint.

The quality control tolerance for longitudinal translation shall not exceed 2.0 in. (50 mm). If this tolerance is exceeded, adjustments shall be made to the paving operation.

Any joint having two or more dowel bars with an embedment length less than 4.0 in. (100 mm) within 12 in. (300 mm) of the same wheelpath will be considered unacceptable. Any joint having an average dowel bar embedment length less than 5.25 in. (130 mm) will also be considered unacceptable. Embedment length shall be defined as the length of dowel bar embedded on the short side of the sawed joint. An unacceptable joint shall be replaced with a minimum of 6 ft (1.8 m) of pavement centered over the joint according to Section 442 for Class B patches.

(b.) Horizontal Translation (Mislocation). Horizontal translation (mislocation) shall be defined as the difference in the actual dowel bar location parallel to the longitudinal or edge joint from its theoretical position as shown on the plans.

The quality control tolerance for horizontal translation shall not exceed 2.0 in. (50 mm). If this tolerance is exceeded, adjustments shall be made to the paving operation.

Any joint having a dowel bar with a translation greater than 4.0 in. (100 mm) will be considered unacceptable, but may remain in place unless the Engineer determines the joint will not function. If the joint is unable to remain in place, the joint shall be replaced with a minimum of 6 ft (1.8 m) of pavement centered over the joint according to Section 442 for Class B patches.

(c.) Vertical Translation (Mislocation). Vertical translation (mislocation) shall be defined as the difference in the vertical position of the dowel bar relative to the theoretical midpoint of the slab.

The quality control tolerance for vertical translation shall be as shown in the following table. If these tolerances are exceeded, adjustments shall be made to the paving operation.

Pavement Thickness	Dowel Bar Diameter	Vertical Translation Tolerance Above Midpoint	Vertical Translation Tolerance Below Midpoint
≥7 in. to <8 in. (≥175 mm to <200 mm)	1.25 in. (31 mm)	0.25 in. (6 mm)	0.5 in. (13 mm)
≥8 in. to <9 in. (≥200 mm to <225 mm)	1.50 in. (38 mm)	0.25 in. (6 mm)	0.5 in. (13 mm)
≥9 in. to <10 in. (≥225 mm to <250 mm)	1.50 in. (38 mm)	0.75 in. (19 mm)	0.75 in. (19 mm)
≥10 in. (≥250 mm)	1.50 in. (38 mm)	0.75 in. (19 mm)	1.0 in. (25 mm)

Any joint having a dowel bar with top concrete cover less than T/3, where T is slab thickness, will be considered unacceptable. Any joint having 2 or more dowel bars with bottom concrete cover less than 2.0 in. (50 mm) will also be considered unacceptable. An unacceptable joint shall be replaced with a minimum of 6 ft (1.8 m) of pavement according to Section 442 for Class B patches.

(d.) Vertical Tilt or Horizontal Skew (Misalignment). Vertical tilt or horizontal skew (misalignment) shall be defined as the difference in position of the dowel bar ends with respect to each other. Vertical tilt is measured in the vertical axis whereas horizontal skew is measured in the horizontal axis. Misalignment shall be measured in terms of a joint score. The joint score shall be defined as the degree of misalignment evaluated for a single transverse joint for each lane of pavement. The joint score shall be determined as follows:

$$\text{Joint Score} = \left(1 + \left(\frac{x}{x-n} \right) \sum_{i=1}^x W_i \right)$$

where:

W_i = weighting factor (Table 1) for dowel i

x = number of dowels in a single joint

n = number of dowels excluded from the joint score calculation due to measurement interference

Single Dowel Misalignment – The degree of misalignment applicable to a single dowel bar, calculated as:

$$\text{Single Dowel Misalignment} = \sqrt{(\text{Horizontal Skew})^2 + (\text{Vertical Tilt})^2}$$

Table 1. Weighting Factors in Joint Score Determination	
Single Dowel Bar Misalignment (SDM)	W, Weighting Factor
SDM ≤ 0.6 in. (15 mm)	0
0.6 in. (15 mm) < SDM ≤ 0.8 in. (20 mm)	2
0.8 in. (20 mm) < SDM ≤ 1 in. (25 mm)	4
1 in. (25 mm) < SDM ≤ 1.5 in. (38 mm)	5
1.5 in. (38 mm) < SDM	10

The quality control tolerance for vertical tilt or horizontal skew shall not exceed 0.6 in. (15 mm). If the tolerance is exceeded for either one, adjustments shall be made to the paving operation.

Any joint having a dowel bar with a vertical tilt or horizontal skew greater than 1.5 in. (38 mm) shall be cut. If more than one dowel bar is required to be cut in the joint, the joint will be considered unacceptable and shall be replaced with a minimum of 6 ft (1.8 m) of pavement centered over the joint according to Section 442 for Class B patches.

Single dowel bar misalignment shall be controlled to provide the joint scores shown in the following table.

Number of Dowel Bars in the Joint	Maximum Joint Score
< 5	4
≥ 5 but ≤ 9	8
> 9	12

A joint score greater than the specified maximum will be considered locked. Three consecutive joints with a score greater than the specified maximum total score will all be considered unacceptable.

Three consecutive locked joints shall be corrected by selecting one joint and cutting a dowel bar. Preference shall be given to cutting a dowel bar within the middle 2.5 ft (0.8 m) of the pavement lane to avoid the wheelpaths. If none of the three locked joints will have a joint score less than or equal to the specified maximum after selecting one dowel bar to cut, one of the joints shall be replaced with a minimum of 6 ft (1.8 m) of

pavement centered over the joint according to Section 442 for Class B patches.

(e.) For unacceptable work, the Contractor may propose alternative repairs for consideration by the Engineer.

2. Testing of Dowel Bar Placement. The placement of the dowel bars shall be tested within 24 hours of paving with a calibrated MIT Scan-2 device according to "Use of Magnetic Tomography Technology to Evaluate Dowel Placement" (Publication No. FHWA-IF-06-006) by the Federal Highway Administration.

A trained operator shall perform the testing, and all testing shall be performed in the presence of the Engineer. The device shall be calibrated to the type and size dowel bar used in the work according to the manufacturer's instructions. Calibration documentation shall be provided to the Engineer prior to construction. The device shall be recalibrated and/or validate readings as required by the Engineer. The device may be utilized as a process control and make necessary adjustments to ensure the dowel bars are placed in the correct location.

(a.) Test Section. Prior to start of production paving, a test section consisting of 30 transverse joints shall be constructed. The test section may be performed on the actual pavement, but production paving shall not begin until an acceptable test section has been constructed. The test section will be considered acceptable when all of the following are met:

- (1.) 90 percent of the dowel bars meet the quality control tolerance for longitudinal, horizontal, or vertical translation (mislocation);
- (2.) 90 percent of the dowel bars meet the quality control tolerance for vertical tilt or horizontal skew deviation (misalignment); and
- (3.) none of the joints are considered unacceptable prior to a corrective measure for mislocation or misalignment.

If the test section fails, another test section consisting of 30 joints shall be constructed.

The test section requirement may be waived by the Engineer if the Contractor has constructed an acceptable test section and successfully used the DBI on a Department contract within the same calendar year.

(b.) Production Paving. After the test section is approved, production paving may begin. The mislocation and misalignment of each dowel bar for the

first ten joints constructed, and every tenth joint thereafter, shall be tested.

If two consecutive days of paving result in 5 percent or more of the joints on each day being unacceptable prior to a corrective measure, production paving shall be discontinued and a new test section shall be constructed.

If any joint is found to be unacceptable prior to a corrective measure, testing of additional joints on each side of the unacceptable joint shall be performed until acceptable joints are found.

(c.) Test Report. Test reports shall be provided to the Engineer within two working days of completing each day's testing. The test report shall include the following.

(1.) Contract number, placement date, county-route-section, direction of traffic, scan date, Contractor, and name of individual performing the tests.

(2.) Provide the standard report generated from the on-board printer of the imaging technology used for every dowel and joint measured.

(3.) For every dowel measured, provide the joint identification number, lane number and station, dowel bar number or x-location, direction of testing and reference joint location/edge location, longitudinal translation, horizontal translation, vertical translation, vertical tilt, and horizontal skew.

(4.) Identify each dowel bar with a maximum longitudinal, horizontal, or vertical translation that has been exceeded. Identify each dowel bar with a maximum vertical tilt or horizontal skew deviation that has been exceeded.

(5.) Joint Score Details: Provide the joint identification number, lane number, station, and calculated joint score for each joint.

(6.) Locked Joint Identification: Identify each joint with a joint score > 12.

(d.) Exclusions. Exclude the following from dowel bar mislocation and misalignment measurements.

(1.) Transverse construction joints (headers).

(2.) Dowel bars within 24 in. (610 mm) of metallic manholes, inlets, metallic castings, or other nearby or underlying steel reinforced objects.

- (3.)The outside dowel bar when tie bars are installed with mechanical equipment in fresh concrete. For tie bar installations involving preformed or drilled holes, installation shall be performed after testing with the MIT Scan-2 device.
- (4.) Joints located directly under high voltage power lines.
- (5.) Subject to the approval of the Engineer, any other contributors to magnetic interference.
- (e.) Deficiency Deduction. When the Contractor has cut 25 dowel bars to correct unacceptable joints, the Contractor shall be liable and shall pay to the Department a deficiency deduction of \$500.00 for the cost of the bars. Thereafter, an additional deficiency deduction of \$20.00 for each additional bar cut will be assessed."

Add the following to Section 1103 of the Standard Specifications.

"1103.20 Mechanical Dowel Bar Inserter. The mechanical dowel bar inserter (DBI) shall be self-contained and supported on the formless paver with the ability to move separately from the paver. The DBI shall be equipped with insertion forks along with any other devices necessary for finishing the concrete the full width of the pavement. The insertion forks shall have the ability to vibrate at a minimum frequency of 3000 VPM."

80378

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	Factor	Units
Category		
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	Factor	Units
Category		
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 - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE)

Effective: January 1, 2010

Revised: April 1, 2016

Description. This work shall consist of testing the density of longitudinal joints as part of the quality control/quality assurance (QC/QA) of hot-mix asphalt (HMA). Work shall be according to Section 1030 of the Standard Specifications except as follows.

Quality Control/Quality Assurance (QC/QA). Delete the second and third sentence of the third paragraph of Article 1030.05(d)(3) of the Standard Specifications.

Add the following paragraphs to the end of Article 1030.05(d)(3) of the Standard Specifications:

"Longitudinal joint density testing shall be performed at each random density test location. Longitudinal joint testing shall be located at a distance equal to the lift thickness or a minimum of 4 in. (100 mm), from each pavement edge. (i.e. for a 5 in. (125 mm) lift the near edge of the density gauge or core barrel shall be within 5 in. (125 mm) from the edge of pavement.) Longitudinal joint density testing shall be performed using either a correlated nuclear gauge or cores.

- a. Confined Edge. Each confined edge density shall be represented by a one-minute nuclear density reading or a core density and shall be included in the average of density readings or core densities taken across the mat which represents the Individual Test.
- b. Unconfined Edge. Each unconfined edge joint density shall be represented by an average of three one-minute density readings or a single core density at the given density test location and shall meet the density requirements specified herein. The three one-minute readings shall be spaced 10 ft (3 m) apart longitudinally along the unconfined pavement edge and centered at the random density test location."

Revise the Density Control Limits table in Article 1030.05(d)(4) of the Standard Specifications to read:

"Mixture Composition	Parameter	Individual Test (includes confined edges)	Unconfined Edge Joint Density Minimum
IL-4.75	N _{design} = 50	93.0 – 97.4% ^{1f}	91.0%
IL-9.5	N _{design} = 90	92.0 – 96.0%	90.0%
IL-9.5, IL-9.5L	N _{design} < 90	92.5 – 97.4%	90.0%
IL-19.0	N _{design} = 90	93.0 – 96.0%	90.0%
IL-19.0, IL-19.0L	N _{design} < 90	93.0 ^{2f} – 97.4%	90.0%
SMA	N _{design} = 50 & 80	93.5 – 97.4%	91.0% ^g

80246

HOT-MIX ASPHALT – TACK COAT (BDE)

Effective: November 1, 2016

Revise Article 1032.06(a) of the Standard Specifications to read:

“(a) Anionic Emulsified Asphalt. Anionic emulsified asphalts shall be according to AASHTO M 140. SS-1h emulsions used as a tack coat shall have the cement mixing test waived.”

80376

PAVEMENT MARKING REMOVAL (BDE)

Effective: July 1, 2016

Revise Article 783.02 of the Standard Specifications to read:

“783.02 Equipment. Equipment shall be according to the following.

Item	Article/Section
(a) Grinders (Note 1)	
(b) Water Blaster with Vacuum Recovery	1101.12

Note 1. Grinding equipment shall be approved by the Engineer.”

Revise the first paragraph of Article 783.03 of the Standard Specifications to read:

“783.03 Removal of Conflicting Markings. Existing pavement markings that conflict with revised traffic patterns shall be removed. If darkness or inclement weather prohibits the removal operations, such operations shall be resumed the next morning or when weather permits. In the event of removal equipment failure, such equipment shall be repaired, replaced, or leased so removal operations can be resumed within 24 hours.”

Revise the first and second sentences of the first paragraph of Article 783.03(a) of the Standard Specifications to read:

“The existing pavement markings shall be removed by the method specified and in a manner that does not materially damage the surface or texture of the pavement or surfacing. Small particles of tightly adhering existing markings may remain in place, if in the opinion of the Engineer, complete removal of the small particles will result in pavement surface damage.”

Revise the first paragraph of Article 783.04 of the Standard Specifications to read:

“783.04 Cleaning. The roadway surface shall be cleaned of debris or any other deleterious material by the use of compressed air or water blast.”

Revise the first paragraph of Article 783.06 of the Standard Specifications to read:

“783.06 Basis of Payment. This work will be paid for at the contract unit price per each for RAISED REFLECTIVE PAVEMENT MARKER REMOVAL, or at the contract unit price per square foot (square meter) for PAVEMENT MARKING REMOVAL – GRINDING and/or PAVEMENT MARKING REMOVAL – WATER BLASTING.”

Delete Article 1101.13 from the Standard Specifications.

80371

PORTLAND CEMENT CONCRETE BRIDGE DECK CURING (BDE)

Effective: April 1, 2015
 Revised: January 1, 2017

Revise the following two entries in the table in Article 1020.13 of the Standard Specifications to read:

"INDEX TABLE OF CURING AND PROTECTION OF CONCRETE CONSTRUCTION"			
TYPE OF CONSTRUCTION	CURING METHODS	CURING PERIOD DAYS	LOW AIR TEMPERATURE PROTECTION METHODS
Superstructure (Approach Slab)	1020.13(a)(5)(6) ^{19/}	3	1020.13(d)(1)(2) ^{17/}
Deck	1020.13(a)(5)(6) ^{19/}	7	1020.13(d)(1)(2) ^{17/}

Add the following footnote to the end of the Index Table of Curing and Protection of Concrete Construction in Article 1020.13 of the Standard Specifications:

"19/ The cellulose polyethylene or synthetic fiber with polymer polyethylene blanket method shall not be used on latex modified concrete."

Revise Article 1020.13(a)(5) of the Standard Specifications to read:

"(5) Wetted Cotton Mat Method. After the surface of concrete has been textured or finished, it shall be covered immediately with dry or damp cotton mats. Cotton mats in poor condition will not be allowed. The cotton mats shall be placed in a manner which will not create indentations greater than 1/4 in. (6 mm) in the concrete surface. Minor marring of the surface is tolerable and is secondary to the importance of timely curing. The cotton mats shall then be wetted immediately and thoroughly soaked with a gentle spray of water. Thereafter, the cotton mats shall be covered with white polyethylene sheeting or burlap-polyethylene blankets. The cotton mats shall be kept saturated with water.

- a. Bridge Decks. For bridge decks, a foot bridge shall be used to place and wet the cotton mats. The cotton mats shall be maintained in a wetted condition until the concrete has hardened sufficiently to place soaker hoses without indentations to the concrete surface. The soaker hoses shall be placed on top of the cotton mats at a maximum 4 ft (1.2 m) spacing. The cotton mats shall be kept wet with a continuous supply of water for the remainder of the curing period. Other continuous wetting systems may be used if approved by the Engineer.

For areas inaccessible to the cotton mats, curing shall be according to Article 1020.13(a)(3)."

Add the following to Article 1020.13(a) of the Standard Specifications.

“(6) Cellulose Polyethylene Blanket Method and Synthetic Fiber with Polymer Polyethylene Blanket Method. After the surface of concrete has been textured or finished, it shall be covered immediately with a cellulose polyethylene or synthetic fiber with polymer polyethylene blanket. Damaged blankets will not be allowed. The blankets shall be installed with the white perforated polyethylene side facing up. Adjoining blankets shall overlap a minimum of 8 in. (200 mm). Any air bubbles trapped during placement shall be removed. The blankets shall then be wetted immediately and thoroughly soaked with a gentle spray of water. Thereafter, the blankets shall be kept saturated with water. For bridge decks, the blankets shall be placed and kept wet according to Article 1020.13(a)(5)a.”

Revise the first paragraph of Article 1022.03 of the Standard Specifications to read:

“1022.03 Waterproof Paper Blankets, White Polyethylene Sheeting, Burlap-Polyethylene Blankets, Cellulose Polyethylene Blankets, and Synthetic Fiber with Polymer Polyethylene Blankets. These materials shall be white and according to ASTM C 171, except moisture loss test specimens shall be made according to Illinois Modified AASHTO T 155.

The cellulose polyethylene blanket shall consist of a white polyethylene sheeting with cellulose fiber backing and shall be limited to single use only. The cellulose polyethylene blankets shall be delivered to the jobsite unused and in the manufacturer’s unopened packaging until ready for installation. Each roll shall be clearly labeled with product name, manufacturer, and manufacturer’s certification of compliance with ASTM C 171.

The synthetic fiber with polymer polyethylene blanket shall consist of a white polyethylene sheeting with absorbent synthetic fibers and super absorbent polymer backing, and shall be limited to single use only. The synthetic fiber with polymer polyethylene blankets shall be delivered to the jobsite unused and in the manufacturer’s unopened packaging until ready for installation. Each roll shall be clearly labeled on the product with product name, manufacturer, and manufacturer’s certification of compliance with ASTM C 171.”

80359

PORTLAND CEMENT CONCRETE SIDEWALK (BDE)

Effective: August 1, 2017

Revise the first paragraph of Article 424.12 of the Standard Specifications to read:

“424.12 Method of Measurement. This work will be measured for payment in place and the area computed in square feet (square meters). Curb ramps, including side curbs and side flares, will be measured for payment as sidewalk. No deduction will be made for detectable warnings located within the ramp.”

80385

PROGRESS PAYMENTS (BDE)

Effective: November 2, 2013

Revise Article 109.07(a) of the Standard Specifications to read:

- “(a) Progress Payments. At least once each month, the Engineer will make a written estimate of the quantity of work performed in accordance with the contract, and the value thereof at the contract unit prices. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than \$1000.00 will be approved for payment other than the final payment.

Progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics' Lien Act, 770 ILCS 60/23(c).

If a Contractor or subcontractor has defaulted on a loan issued under the Department's Disadvantaged Business Revolving Loan Program (20 ILCS 2705/2705-610), progress payments may be reduced pursuant to the terms of that loan agreement. In such cases, the amount of the estimate related to the work performed by the Contractor or subcontractor, in default of the loan agreement, will be offset, in whole or in part, and vouchered by the Department to the Working Capital Revolving Fund or designated escrow account. Payment for the work shall be considered as issued and received by the Contractor or subcontractor on the date of the offset voucher. Further, the amount of the offset voucher shall be a credit against the Department's obligation to pay the Contractor, the Contractor's obligation to pay the subcontractor, and the Contractor's or subcontractor's total loan indebtedness to the Department. The offset shall continue until such time as the entire loan indebtedness is satisfied. The Department will notify the Contractor and Fund Control Agent in a timely manner of such offset. The Contractor or subcontractor shall not be entitled to additional payment in consideration of the offset.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved.”

80328

RAILROAD PROTECTIVE LIABILITY INSURANCE (5 and 10) (BDE)

Effective: January 1, 2006

Description. Railroad Protective Liability and Property Damage Liability Insurance shall be carried according to Article 107.11 of the Standard Specifications, except the limits shall be a minimum of \$5,000,000 combined single limit per occurrence for bodily injury liability and property damage liability with an aggregate limit of \$10,000,000 over the life of the policy. A separate policy is required for each railroad unless otherwise noted.

NAMED INSURED & ADDRESS	NUMBER & SPEED OF PASSENGER TRAINS	NUMBER & SPEED OF FREIGHT TRAINS
Norfolk Southern Railway Company Three Commercial Place Norfolk, Virginia 23510-2191	None	16 trains/day 60 mph
DOT/AAR No.: 479338L & 479340M RR Division: Western	RR Mile Post: DH-415.54 & DH-415.80 RR Sub-Division: Decatur	
For Freight/Passenger Information Contact: Fred Schesny For Insurance Information Contact: Scott Dickerson		Phone: (404) 529-1256 Phone: (757) 629-2364

DOT/AAR No.:
RR Division:

RR Mile Post:
RR Sub-Division:

For Freight/Passenger Information Contact: Phone:
For Insurance Information Contact: Phone:

Additional Insured. The Contractor shall name the following entities as additional insured under the Contractor's Railroad Protective Liability Insurance Policy:

Approval of Insurance. The original and one certified copy of each required policy shall be submitted to the following address for approval:

Illinois Department of Transportation
Bureau of Design and Environment
2300 South Dirksen Parkway, Room 326
Springfield, Illinois 62764

The Contractor will be advised when the Department has received approval of the insurance from the railroad(s). Before any work begins on railroad right-of-way, the Contractor shall submit to the Engineer evidence that the required insurance has been approved by the railroad(s). The Contractor shall also provide the Engineer with the expiration date of each required policy.

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.

80157

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (BDE)

Effective: November 1, 2012

Revise: April 1, 2016

Revise Section 1031 of the Standard Specifications to read:

"SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES

1031.01 Description. Reclaimed asphalt pavement and reclaimed asphalt shingles shall be according to the following.

- (a) Reclaimed Asphalt Pavement (RAP). RAP is the material produced by cold milling or crushing an existing hot-mix asphalt (HMA) pavement. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction.
- (b) Reclaimed Asphalt Shingles (RAS). Reclaimed asphalt shingles (RAS). RAS is from the processing and grinding of preconsumer or post-consumer shingles. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable material, as defined in Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Sources", by weight of RAS. All RAS used shall come from a Bureau of Materials and Physical Research approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. (9.5 mm) sieve and 93 percent passing the #4 (4.75 mm) sieve based on a dry shake gradation. RAS shall be uniform in gradation and asphalt binder content and shall meet the testing requirements specified herein. In addition, RAS shall meet the following Type 1 or Type 2 requirements.
 - (1) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.
 - (2) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential, or four unit or less dwellings not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

1031.02 Stockpiles. RAP and RAS stockpiles shall be according to the following.

- (a) RAP Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. No additional RAP shall be added to the pile after the pile has been sealed. Stockpiles shall be sufficiently separated to prevent intermingling at the base. Stockpiles shall be identified by signs indicating the type as listed below (i.e. "Homogeneous Surface").

Prior to milling, the Contractor shall request the District provide documentation on the quality of the RAP to clarify the appropriate stockpile.

- (1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures. The coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality, but shall be at least C quality. All FRAP shall be fractionated prior to testing by screening into a minimum of two size fractions with the separation occurring on or between the #4 (4.75 mm) and 1/2 in. (12.5 mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP shall pass the sieve size specified below for the mix into which the FRAP will be incorporated.

Mixture FRAP will be used in:	Sieve Size that 100 % of FRAP Shall Pass
IL-19.0	1 1/2 in. (40 mm)
IL-9.5	3/4 in. (20 mm)
IL-4.75	1/2 in. (13 mm)

- (2) Homogeneous. Homogeneous RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures and represent: 1) the same aggregate quality, but shall be at least C quality; 2) the same type of crushed aggregate (either crushed natural aggregate, ACBF slag, or steel slag); 3) similar gradation; and 4) similar asphalt binder content. If approved by the Engineer, combined single pass surface/binder millings may be considered "homogeneous" with a quality rating dictated by the lowest coarse aggregate quality present in the mixture.
- (3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures. The coarse aggregate in this RAP shall be crushed aggregate and may represent more than one aggregate type and/or quality, but shall be at least C quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. All conglomerate RAP shall be processed prior to testing by crushing to where all RAP shall pass the 5/8 in. (16 mm) or smaller screen. Conglomerate RAP stockpiles shall not contain steel slag.
- (4) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".

RAP/FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

- (b) RAS Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall not be intermingled. Each stockpile shall be signed indicating what type of RAS is present.

Unless otherwise specified by the Engineer, mechanically blending manufactured sand (FM 20 or FM 22) up to an equal weight of RAS with the processed RAS will be permitted to improve workability. The sand shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The sand shall be accounted for in the mix design and during HMA production.

Records identifying the shingle processing facility supplying the RAS, RAS type, and lot number shall be maintained by project contract number and kept for a minimum of three years.

1031.03 Testing. RAP/FRAP and RAS testing shall be according to the following.

(a) RAP/FRAP Testing. When used in HMA, the RAP/FRAP shall be sampled and tested either during or after stockpiling.

(1) During Stockpiling. For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 500 tons (450 metric tons) for the first 2000 tons (1800 metric tons) and one sample per 2000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4000 tons (3600 metric tons).

(2) After Stockpiling. For testing after stockpiling, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

Each sample shall be split to obtain two equal samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedure. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

(b) RAS Testing. RAS or RAS blended with manufactured sand shall be sampled and tested during stockpiling according to Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Source".

Samples shall be collected during stockpiling at the minimum frequency of one sample per 200 tons (180 metric tons) for the first 1000 tons (900 metric tons) and one sample per 250 tons (225 metric tons) thereafter. A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). Once a ≤ 1000 ton (900 metric ton), five-sample/test stockpile has been established it shall be sealed. Additional incoming RAS or RAS blended with manufactured sand shall be stockpiled in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.

Before testing, each sample shall be split to obtain two test samples. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall perform a washed extraction and test for unacceptable materials on the other test sample according to Department procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

If the sampling and testing was performed at the shingle processing facility in accordance with the QC Plan, the Contractor shall obtain and make available all of the test results from start of the initial stockpile.

1031.04 Evaluation of Tests. Evaluation of test results shall be according to the following.

- (a) Evaluation of RAP/FRAP Test Results. All of the extraction results shall be compiled and averaged for asphalt binder content and gradation, and when applicable G_{mm} . Individual extraction test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	FRAP/Homogeneous/ Conglomerate
1 in. (25 mm)	
1/2 in. (12.5 mm)	± 8 %
No. 4 (4.75 mm)	± 6 %
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	
No. 30 (600 µm)	± 5 %
No. 200 (75 µm)	± 2.0 %
Asphalt Binder	± 0.4 % ^{1/}
G_{mm}	± 0.03

1/ The tolerance for FRAP shall be ± 0.3 %.

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, the RAP/FRAP shall not be used in HMA unless the RAP/FRAP representing the failing tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

With the approval of the Engineer, the ignition oven may be substituted for extractions according to the ITP, "Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)".

- (b) Evaluation of RAS and RAS Blended with Manufactured Sand Test Results. All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content and gradation. Individual test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	RAS
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	± 5 %
No. 30 (600 µm)	± 4 %
No. 200 (75 µm)	± 2.0 %
Asphalt Binder Content	± 1.5 %

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, or if the percent unacceptable material exceeds 0.5 percent by weight of material retained on the # 4 (4.75 mm) sieve, the RAS or RAS blend shall not be used in Department projects. All test data and acceptance ranges shall be sent to the District for evaluation.

1031.05 Quality Designation of Aggregate in RAP/FRAP.

(a) RAP. The aggregate quality of the RAP for homogeneous and conglomerate stockpiles shall be set by the lowest quality of coarse aggregate in the RAP stockpile and are designated as follows.

(1) RAP from Class I, Superpave/HMA (High ESAL), or (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.

(2) RAP from Class I binder, Superpave/HMA (High ESAL) binder, or (Low ESAL) IL-19.0L binder mixtures are designated as containing Class C quality coarse aggregate.

(b) FRAP. If the Engineer has documentation of the quality of the FRAP aggregate, the Contractor shall use the assigned quality provided by the Engineer.

If the quality is not known, the quality shall be determined as follows. Coarse and fine FRAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5000 tons (4500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant laboratory prequalified by the Department for the specified testing. The consultant laboratory shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the Bureau of Materials and Physical Research Aggregate Lab for MicroDeval Testing, according to ITP 327. A maximum loss of 15.0 percent will be applied for all HMA applications.

1031.06 Use of RAP/FRAP and/or RAS in HMA. The use of RAP/FRAP and/or RAS shall be the Contractor's option when constructing HMA in all contracts.

(a) RAP/FRAP. The use of RAP/FRAP in HMA shall be as follows.

- (1) Coarse Aggregate Size. The coarse aggregate in all RAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.
 - (2) Steel Slag Stockpiles. Homogeneous RAP stockpiles containing steel slag will be approved for use in all HMA (High ESAL and Low ESAL) Surface and Binder Mixture applications.
 - (3) Use in HMA Surface Mixtures (High and Low ESAL). RAP/FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall be FRAP or homogeneous in which the coarse aggregate is Class B quality or better. RAP/FRAP from Conglomerate stockpiles shall be considered equivalent to limestone for frictional considerations. Known frictional contributions from plus #4 (4.75 mm) homogeneous RAP and FRAP stockpiles will be accounted for in meeting frictional requirements in the specified mixture.
 - (4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. RAP/FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP, homogeneous, or conglomerate, in which the coarse aggregate is Class C quality or better.
 - (5) Use in Shoulders and Subbase. RAP/FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, homogeneous, or conglomerate.
 - (6) When the Contractor chooses the RAP option, the percentage of RAP shall not exceed the amounts indicated in Article 1031.06(c)(1) below for a given Ndesign.
- (b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.
- (c) RAP/FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with RAP or FRAP in HMA mixtures up to a maximum of 5.0 percent by weight of the total mix.
- (1) RAP/RAS. When RAP is used alone or RAP is used in conjunction with RAS, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the Max RAP/RAS ABR table listed below for the given Ndesign.

RAP/RAS Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures <i>1, 2'</i>	RAP/RAS Maximum ABR %		
	Binder/Leveling Binder	Surface	Polymer Modified
30	30	30	10

50	25	15	10
70	15	10	10
90	10	10	10

1/ For Low ESAL HMA shoulder and stabilized subbase, the RAP/RAS ABR shall not exceed 50 percent of the mixture.

2/ When RAP/RAS ABR exceeds 20 percent, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28). If warm mix asphalt (WMA) technology is utilized and production temperatures do not exceed 275 °F (135 °C), the high and low virgin asphalt binder grades shall each be reduced by one grade when RAP/RAS ABR exceeds 25 percent (i.e. 26 percent RAP/RAS ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28).

(2) FRAP/RAS. When FRAP is used alone or FRAP is used in conjunction with RAS, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the FRAP/RAS table listed below for the given Ndesign.

FRAP/RAS Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures <i>1/, 2/</i>	FRAP/RAS Maximum ABR %			
	Ndesign	Binder/Leveling Binder	Surface	Polymer Modified ^{3/, 4/}
	30	50	40	10
	50	40	35	10
	70	40	30	10
	90	40	30	10

1/ For Low ESAL HMA shoulder and stabilized subbase, the FRAP/RAS ABR shall not exceed 50 percent of the mixture.

2/ When FRAP/RAS ABR exceeds 20 percent for all mixes, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28). If warm mix asphalt (WMA) technology is utilized and production temperatures do not exceed 275 °F (135 °C), the high and low virgin asphalt binder grades shall each be reduced by one grade when FRAP/RAS ABR exceeds 25 percent (i.e. 26 percent ABR would require a virgin asphalt binder grade of PG 64-22 to be reduced to a PG 58-28).

3/ For SMA the FRAP/RAS ABR shall not exceed 20 percent.

4/ For IL-4.75 mix the FRAP/RAS ABR shall not exceed 30 percent.

1031.07 HMA Mix Designs. At the Contractor's option, HMA mixtures may be constructed utilizing RAP/FRAP and/or RAS material meeting the detailed requirements specified herein.

- (a) RAP/FRAP and/or RAS. RAP/FRAP and/or RAS mix designs shall be submitted for verification. If additional RAP/FRAP and/or RAS stockpiles are tested and found that no more than 20 percent of the results, as defined under "Testing" herein, are outside of the control tolerances set for the original RAP/FRAP and/or RAS stockpile and HMA mix design, and meets all of the requirements herein, the additional RAP/FRAP and/or RAS stockpiles may be used in the original mix design at the percent previously verified.
- (b) RAS. Type 1 and Type 2 RAS are not interchangeable in a mix design. A RAS stone bulk specific gravity (G_{sb}) of 2.300 shall be used for mix design purposes.

1031.08 HMA Production. HMA production utilizing RAP/FRAP and/or RAS shall be as follows.

- (a) RAP/FRAP. The coarse aggregate in all RAP/FRAP used shall be equal to or less than the nominal maximum size requirement for the HMA mixture being produced.

To remove or reduce agglomerated material, a scalping screen, gator, crushing unit, or comparable sizing device approved by the Engineer shall be used in the RAP feed system to remove or reduce oversized material. If material passing the sizing device adversely affects the mix production or quality of the mix, the sizing device shall be set at a size specified by the Engineer.

If the RAP/FRAP control tolerances or QC/QA test results require corrective action, the Contractor shall cease production of the mixture containing RAP/FRAP and either switch to the virgin aggregate design or submit a new RAP/FRAP design.

- (b) RAS. RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within ± 0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that the mixture production is halted when RAS flow is interrupted.
- (c) RAP/FRAP and/or RAS. HMA plants utilizing RAP/FRAP and/or RAS shall be capable of automatically recording and printing the following information.

(1) Dryer Drum Plants.

- a. Date, month, year, and time to the nearest minute for each print.

- b. HMA mix number assigned by the Department.
- c. Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
- d. Accumulated dry weight of RAP/FRAP/RAS in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
- e. Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.
- f. Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.
- g. Residual asphalt binder in the RAP/FRAP material as a percent of the total mix to the nearest 0.1 percent.
- h. Aggregate and RAP/FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAP/FRAP are printed in wet condition.)

(2) Batch Plants.

- a. Date, month, year, and time to the nearest minute for each print.
- b. HMA mix number assigned by the Department.
- c. Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).
- d. Mineral filler weight to the nearest pound (kilogram).
- e. RAP/FRAP/RAS weight to the nearest pound (kilogram).
- f. Virgin asphalt binder weight to the nearest pound (kilogram).
- g. Residual asphalt binder in the RAP/FRAP/RAS material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

1031.09 RAP in Aggregate Surface Course and Aggregate Wedge Shoulders, Type B.
The use of RAP in aggregate surface course (temporary access entrances only) and aggregate wedge shoulders, Type B shall be as follows.

- (a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except "Non-Quality" and "FRAP". The testing requirements of Article 1031.03 shall not apply. RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications".
- (b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5 mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded or single sized will not be accepted."

80306

STEEL COST ADJUSTMENT (BDE)

Effective: April 2, 2004

Revised: August 1, 2017

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, mesh 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) Furnishing Metal Pile Shells 12 in. (305 mm), 0.250 in. (6.35 mm) wall thickness) Furnishing Metal Pile Shells 14 in. (356 mm), 0.250 in. (6.35 mm) wall thickness) Other piling	23 lb/ft (34 kg/m) 32 lb/ft (48 kg/m) 37 lb/ft (55 kg/m) 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
Mesh Reinforcement	63 lb/100 sq ft (310 kg/sq m)
Guardrail Steel Plate Beam Guardrail, Type A w/steel posts Steel Plate Beam Guardrail, Type B w/steel posts Steel Plate Beam Guardrail, Types A and B w/wood posts Steel Plate Beam Guardrail, Type 2 Steel Plate Beam Guardrail, Type 6 Traffic Barrier Terminal, Type 1 Special (Tangent) Traffic Barrier Terminal, Type 1 Special (Flared)	20 lb/ft (30 kg/m) 30 lb/ft (45 kg/m) 8 lb/ft (12 kg/m) 305 lb (140 kg) each 1260 lb (570 kg) each 730 lb (330 kg) each 410 lb (185 kg) each
Steel Traffic Signal and Light Poles, Towers and Mast Arms Traffic Signal Post Light Pole, Tenon Mount and Twin Mount, 30 - 40 ft (9 - 12 m) Light Pole, Tenon Mount and Twin Mount, 45 - 55 ft (13.5 - 16.5 m) Light Pole w/Mast Arm, 30 - 50 ft (9 - 15.2 m) Light Pole w/Mast Arm, 55 - 60 ft (16.5 - 18 m) Light Tower w/Luminaire Mount, 80 - 110 ft (24 - 33.5 m) Light Tower w/Luminaire Mount, 120 - 140 ft (36.5 - 42.5 m) Light Tower w/Luminaire Mount, 150 - 160 ft (45.5 - 48.5 m)	11 lb/ft (16 kg/m) 14 lb/ft (21 kg/m) 21 lb/ft (31 kg/m) 13 lb/ft (19 kg/m) 19 lb/ft (28 kg/m) 31 lb/ft (46 kg/m) 65 lb/ft (97 kg/m) 80 lb/ft (119 kg/m)
Metal Railings (excluding wire fence) Steel Railing, Type SM Steel Railing, Type S-1 Steel Railing, Type T-1 Steel Bridge Rail	64 lb/ft (95 kg/m) 39 lb/ft (58 kg/m) 53 lb/ft (79 kg/m) 52 lb/ft (77 kg/m)
Frames and Grates Frame Lids and Grates	250 lb (115 kg) 150 lb (70 kg)

80127

STEEL PLATE BEAM GUARDRAIL (BDE)

Effective: January 1, 2017

Revise Article 630.02 of the Standard Specifications to read:

“630.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Steel Plate Beam Guardrail	1006.25
(b) Wood Posts and Wood Block	1007.01, 1007.02, 1007.06
(c) Steel Posts, Blockouts, Restraints and Wire Rope for Guardrail	1006.23
(d) Preservative Treatment	1007.12
(e) Reinforcement Bars	1006.10
(f) Plastic Blockouts (Note 1)	
(g) Chemical Adhesive Resin System	1027.01
(h) Controlled Low-Strength Material (CLSM)	1019

Note 1. Plastic blockouts may be used in lieu of wood blockouts for steel plate beam guardrail. The plastic blockouts shall be the minimum dimensions shown on the plans and shall be on the Department’s qualified product list.”

Revise Article 630.05 of the Standard Specifications to read:

“630.05 Posts. Posts shall be as follows.

- (a) Wood Posts. Wood posts and blocks shall be treated. The posts and blocks shall be cut to the proper dimensions before treatment. No cutting of the posts or blocks will be permitted after treatment. Posts shall be erected according to Article 634.05.
- (b) Steel Posts. Steel posts may be driven by hand or mechanical methods provided they are protected by a suitable driving cap and the earth around the posts compacted, if necessary, after driving. When steel posts are driven to incorrect alignment or grade, they shall be removed and set according to Article 634.05.

When it is necessary to shorten the posts in the field, the lower portion shall be cut off in a manner to provide a smooth cut with minimum damage to the galvanizing. Cut areas shall be repaired according to the requirements of AASHTO M 36.”

Revise Article 630.06 of the Standard Specifications to read:

“630.06 Shoulder Stabilization at Guardrail. Shoulder stabilization shall be constructed at the locations of steel plate beam guardrail installation according to the details shown on the plans. On new construction projects, the material used in the shoulder stabilization shall be the same as that used in the adjacent paved shoulder. On shoulder resurfacing projects, the

material used in the shoulder stabilization shall be the same as that used for the shoulder resurfacing.

When portland cement concrete is used, shoulder stabilization shall be constructed according to the applicable portions of Section 483. The shoulder stabilization shall be constructed simultaneously with the adjacent portland cement concrete shoulder. Guardrail posts shall be driven through leaveouts or holes cored in the completed shoulder stabilization. The void around each post shall be backfilled with earth or aggregate and capped with hot-mix asphalt (HMA) or CLSM.

When HMA is used, shoulder stabilization shall be constructed according to the applicable portions of Section 482. On new construction, the shoulder stabilization shall be constructed simultaneously with the HMA shoulder. On shoulder resurfacing projects, the portion of the shoulder stabilization below the surface of the existing paved shoulder shall be placed and compacted separately. The guardrail posts shall be driven through holes cored in the completed shoulder stabilization. The void around each post shall be backfilled with earth or aggregate and capped with HMA or CLSM.

When driving guardrail posts through existing shoulders, shoulder stabilization, or other paved areas, the posts shall be driven through cored holes. The void around each post shall be backfilled with earth or aggregate and capped with HMA or CLSM."

Revise Article 630.08 of the Standard Specifications to read:

"630.08 Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for NON-BLOCKED STEEL PLATE BEAM GUARDRAIL; STEEL PLATE BEAM GUARDRAIL, TYPE A, 6 FOOT (1.83 M) POSTS; STEEL PLATE BEAM GUARDRAIL, TYPE A, 9 FOOT (2.74 M) POSTS; STEEL PLATE BEAM GUARDRAIL, TYPE B, 6 FOOT (1.83 M) POSTS; STEEL PLATE BEAM GUARDRAIL, TYPE B, 9 FOOT (2.74 M) POSTS; or STEEL PLATE BEAM GUARDRAIL, TYPE D, 6 FOOT (1.83 M) POSTS.

When end sections are specified, they will not be paid for as a separate item, but shall be considered as included in the unit price for steel plate beam guardrail.

Steel plate beam guardrail mounted on existing culverts will be paid for at the contract unit price per foot (meter) for STRONG POST GUARDRAIL ATTACHED TO CULVERT or WEAK POST GUARDRAIL ATTACHED TO CULVERT, of the case specified.

Portland cement concrete shoulder stabilization at guardrail will be paid for according to Article 483.10.

HMA shoulder stabilization at guardrail will be paid for according to Article 482.08.

Excavation in rock will be paid for according to Article 502.13.

Steel plate beam guardrail incorporating long-span spacing will be paid for at the contract unit price per foot (meter) for LONG-SPAN GUARDRAIL OVER CULVERT, 12 FT 6 IN (3.8 M) SPAN; LONG-SPAN GUARDRAIL OVER CULVERT, 18 FT 9 IN (5.7 M) SPAN; or LONG-SPAN GUARDRAIL OVER CULVERT, 25 FT (7.6 M) SPAN.

Steel plate beam guardrail incorporating treated timber at the back side of the post will be paid for at the contract unit price per foot (meter) for BACK SIDE PROTECTION OF GUARDRAIL."

80379

TEMPORARY PAVEMENT MARKING (BDE)

Effective: April 1, 2012

Revised: April 1, 2017

Revise Article 703.02 of the Standard Specifications to read:

703.02 Materials. Materials shall be according to the following.

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

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

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

Revise Article 703.07 of the Standard Specifications to read:

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

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

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

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

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

Add the following to Section 1095 of the Standard Specifications:

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

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

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

Wet Retroreflectance, Initial R_L

Color	R _L 1.05/88.76
White	300
Yellow	200

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

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

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

x	0.490	0.475	0.485	0.530
y	0.470	0.438	0.425	0.456

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

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

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

80298

TRAINING SPECIAL PROVISIONS (BDE)

Effective: October 15, 1975

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, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The Contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the Contractor's needs and the availability of journeymen in the various classifications within the reasonable area of recruitment. Prior to commencing construction, the Contractor shall submit to the Illinois Department of Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the Contractor shall make every effort to enroll minority trainees and women (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used, the Contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by the Illinois Department of Transportation and the Federal Highway Administration. The Illinois Department of Transportation and the Federal Highway Administration shall approve a program, if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved by not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather 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 his performance under this Training Special Provision.

Method of Measurement. The unit of measurement is in hours.

Basis of Payment. This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price, and total price have been included in the schedule of prices.

20338

WARM MIX ASPHALT (BDE)

Effective: January 1, 2012

Revised: April 1, 2016

Description. This work shall consist of designing, producing and constructing Warm Mix Asphalt (WMA) in lieu of Hot Mix Asphalt (HMA) at the Contractor's option. Work shall be according to Sections 406, 407, 408, 1030, and 1102 of the Standard Specifications, except as modified herein. In addition, any references to HMA in the Standard Specifications, or the special provisions shall be construed to include WMA.

WMA is an asphalt mixture which can be produced at temperatures lower than allowed for HMA utilizing approved WMA technologies. WMA technologies are defined as the use of additives or processes which allow a reduction in the temperatures at which HMA mixes are produced and placed. WMA is produced by the use of additives, a water foaming process, or combination of both. Additives include minerals, chemicals or organics incorporated into the asphalt binder stream in a dedicated delivery system. The process of foaming injects water into the asphalt binder stream, just prior to incorporation of the asphalt binder with the aggregate.

Approved WMA technologies may also be used in HMA provided all the requirements specified herein, with the exception of temperature, are met. However, asphalt mixtures produced at temperatures in excess of 275 °F (135 °C) will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.

Equipment.

Revise the first paragraph of Article 1102.01 of the Standard Specifications to read:

"1102.01 Hot-Mix Asphalt Plant. The hot-mix asphalt (HMA) plant shall be the batch-type, continuous-type, or dryer drum plant. The plants shall be evaluated for prequalification rating and approval to produce HMA according to the current Bureau of Materials and Physical Research Policy Memorandum, "Approval of Hot-Mix Asphalt Plants and Equipment". Once approved, the Contractor shall notify the Bureau of Materials and Physical Research to obtain approval of all plant modifications. The plants shall not be used to produce mixtures concurrently for more than one project or for private work unless permission is granted in writing by the Engineer. The plant units shall be so designed, coordinated and operated that they will function properly and produce HMA having uniform temperatures and compositions within the tolerances specified. The plant units shall meet the following requirements."

Add the following to Article 1102.01(a) of the Standard Specifications.

"(11) Equipment for Warm Mix Technologies.

- a. Foaming. Metering equipment for foamed asphalt shall have an accuracy of ± 2 percent of the actual water metered. The foaming control system shall be electronically interfaced with the asphalt binder meter.

- b. Additives. Additives shall be introduced into the plant according to the supplier's recommendations and shall be approved by the Engineer. The system for introducing the WMA additive shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes."

Mix Design Verification.

Add the following to Article 1030.04 of the Standard Specifications.

"(e) Warm Mix Technologies.

- (1) Foaming. WMA mix design verification will not be required when foaming technology is used alone (without WMA additives). However, the foaming technology shall only be used on HMA designs previously approved by the Department.
- (2) Additives. WMA mix designs utilizing additives shall be submitted to the Engineer for mix design verification."

Construction Requirements.

Revise the second paragraph of Article 406.06(b)(1) of the Standard Specifications to read:

"The HMA shall be delivered at a temperature of 250 to 350 °F (120 to 175 °C).
WMA shall be delivered at a minimum temperature of 215 °F (102 °C)."

Basis of Payment.

This work will be paid at the contract unit price bid for the HMA pay items involved. Anti-strip will not be paid for separately, but shall be considered as included in the cost of the work.

80288

WEEKLY DBE TRUCKING REPORTS (BDE)

Effective: June 2, 2012

Revised: April 2, 2015

The Contractor shall submit a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used for DBE goal credit.

The report shall be submitted to the Engineer on Department form "SBE 723" within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

80302

WORKING DAYS (BDE)

Effective: January 1, 2002

The Contractor shall complete the work within *345* working days.

80071

PIPE UNDERDRAINS FOR STRUCTURES

Effective: May 17, 2000

Revised: January 22, 2010

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

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

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

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

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

Construction Requirements. All work shall be according to the applicable requirements of Section 601 of the Standard Specifications except as modified below.

The pipe underdrains shall consist of a perforated pipe drain situated at the bottom of an area of drainage aggregate wrapped completely in geotechnical fabric and shall be installed to the lines and gradients as shown on the plans.

Method of Measurement. Pipe Underdrains for Structures shall be measured for payment in feet (meters), in place. Measurement shall be along the centerline of the pipe underdrains. All connectors, outlet pipes, elbows, and all other miscellaneous items shall be included in the measurement. Concrete headwalls shall be included in the cost of Pipe Underdrains for Structures, but shall not be included in the measurement for payment.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for PIPE UNDERDRAINS FOR STRUCTURES of the diameter specified. Furnishing and installation of the drainage aggregate, geotechnical fabric, forming holes in structural elements and any excavation required, will not be paid for separately, but shall be included in the cost of the pipe underdrains for structures.

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 4, 2016

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. 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.”

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CROSSHOLE SONIC LOGGING TESTING OF DRILLED SHAFTS

Effective: April 20, 2016

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 of selected drilled shafts on these structures. This work shall be according to Illinois Modified ASTM D6760. This work also includes analysis of the CSL data, preparation of reports summarizing the CSL data, and investigating anomalies identified in the CSL data. This work shall also include grouting of all access ducts after testing and approval by the Engineer.

Materials. Materials shall be according to the following.

- (a) Grout (Note 1).....1024.01
 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 employee of the CSL consulting firm performing analysis of the CSL data and preparing the report shall be an Illinois Licensed Professional Engineer and have experience on a minimum of 5 projects performing CSL testing of drilled shafts.

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 for the structures indicated on the plans, attached to the reinforcement cage and situated symmetrically around the diameter of the shaft according to the Illinois Modified ASTM D6760. The Engineer will determine which drilled shafts shall have CSL testing performed after the concrete has been placed in the drilled shafts, 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 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. Each anomalous zone detected by the CSL testing shall be identified and discussed in the report. An anomalous zone shall be defined as areas where velocity reduction exceeds 20 percent of the average velocity of properly placed and cured shaft concrete at the time of testing.

Anomalies. If anomalies are identified, they shall be investigated by coring or other methods approved by the Engineer.

Correction of Drilled Shaft Defects. When testing determines that a defect is present, the Engineer will direct the Contractor to submit remedial measures 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 drilled shaft design, or any load transfer mechanisms required by the remedial action, must be designed, detailed, and sealed by an Illinois Licensed Structural Engineer, and submitted for approval.

Method of Measurement. Installation and grouting of access ducts will be measured for payment per shaft by the linear foot of drilled shaft(s) with access ducts.

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

Standard Test Method for

Integrity Testing of Concrete Deep Foundations by Ultrasonic Crosshole Testing

Reference ASTM D6760-14

ASTM SECTION	Illinois Modification										
3.1.1	Revise this section as follows: <i>access ducts, n</i> – 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.										
6.1	Revise the second sentence of this section as follows: The tubes shall be mild steel. Delete the third, fourth, and fifth sentences of this section.										
7.1.1	<p>Revise this section as follows: The access ducts shall be installed during construction of the drilled shaft.</p> <p>For drilled shafts foundations, access ducts shall be provided according to the following table.</p> <table border="1"> <thead> <tr> <th>Reinforcing Cage Diameter (feet)</th> <th>Number of access ducts</th> </tr> </thead> <tbody> <tr> <td>≤ 4.0</td> <td>3</td> </tr> <tr> <td>4.1 to 5.0</td> <td>4</td> </tr> <tr> <td>5.1 to 7.0</td> <td>6</td> </tr> <tr> <td>> 7.1</td> <td>8</td> </tr> </tbody> </table> <p>Access ducts shall be spread equally around the perimeter and spaced at an equal distance from the axis.</p> <p>Delete Fig. 4.</p>	Reinforcing Cage Diameter (feet)	Number of access ducts	≤ 4.0	3	4.1 to 5.0	4	5.1 to 7.0	6	> 7.1	8
Reinforcing Cage Diameter (feet)	Number of access ducts										
≤ 4.0	3										
4.1 to 5.0	4										
5.1 to 7.0	6										
> 7.1	8										
7.1.2	Revise the second sentence of this section as follows: The exterior tube surface shall be free from contamination (for example, oil, dirt, loose rust, mill scale, etc.) to ensure a good bond between the tube surface and the surrounding concrete.										
7.1.3	Delete the third sentence of this section.										

ILLINOIS MODIFIED ASTM D6760

Effective Date: April 20, 2016

Standard Test Method for

Integrity Testing of Concrete Deep Foundations by Ultrasonic Crosshole Testing

Reference ASTM D6760-14

7.2	<p>Revise the first sentence of this section as follows: The access tubes shall be installed such that their bottom is within 4 inches of the bottom of the concrete deep foundation element so that the bottom condition can be tested.</p> <p>Revise the sixth sentence of this section as follows: Access tubes shall be filled with water prior to concrete placement to assure good bonding of the concrete to the tube after the concrete cools. The access tubes shall be kept full of water until the tubes are grouted.</p>
7.3	<p>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.</p>
7.4.2	<p>Revise the second sentence of this section as follows: The tests shall be performed no later than 21 days after concrete casting.</p>
7.6	<p>Delete this section.</p>
7.8.1	<p>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 (1, 2).</p>
7.8.2	<p>Delete Note 5 of this section.</p>

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor

performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection

for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#).

The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the

employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates

(expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular

programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this

section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential

that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction.

The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

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

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

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

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

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

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

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

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

Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

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

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

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

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

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

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

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

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

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

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

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

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

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

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

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

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension,

continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

Contract Provision - Cargo Preference Requirements

In accordance with Title 46 CFR § 381.7 (b), the contractor agrees—

“(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

(2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.”

Provisions (1) and (2) apply to materials or equipment that are acquired solely for the project. The two provisions do not apply to goods or materials that come into inventories independent of the project, such as shipments of Portland cement, asphalt cement, or aggregates, when industry suppliers and contractors use these materials to replenish existing inventories.

**MINIMUM WAGES FOR FEDERAL AND FEDERALLY
ASSISTED CONSTRUCTION CONTRACTS**

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision shall be the minimum paid by contractors and subcontractors to laborers and mechanics.