

JOB SPECIAL PROVISIONS TABLE OF CONTENTS (ROADWAY)

(Job Special Provisions shall prevail over General Special Provisions whenever in conflict therewith.)

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	<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 W. CAPITOL AVE. JEFFERSON CITY, MO 65102 Phone 1-888-275-6636
	<b>CRAWFORD, MURPHY &amp; TILLY, INC.</b> 1631 West Elfindale St. Springfield, MO 65807 Certificate of Authority: 000631 Consultant Phone: 314-436-5500
	If a seal is present on this sheet, JSP's have been electronically sealed and dated.
	JOB NUMBER: J8I3044C, JSU0076, & JST0088B GREENE COUNTY, MO DATE PREPARED: 8/19/2024
	ADDENDUM DATE:
Only the following items of the Job Special Provisions (Roadway) are authenticated by this seal: A-B, D-EE	

Job No. J8I3044C,  
JSU0076, JST0088B,  
J8I3225, & JSU0114  
Route: I-44  
County: Greene

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	JOB NUMBER: JSU0076 COUNTY, MO DATE PREPARED: 8/19/2024
	ADDENDUM DATE:
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	<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 W. CAPITOL AVE. JEFFERSON CITY, MO 65102 Phone 1-888-275-6636
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	If a seal is present on this sheet, JSP's have been electronically sealed and dated.
	JOB NUMBER: JSU0114 COUNTY: GREENE, MO DATE PREPARED: 8/19/2024
	ADDENDUM DATE:
Only the following items of the Job Special Provisions (Roadway) are authenticated by this seal: VV-XX	

Job No. J8I3044C,  
JSU0076, JST0088B,  
J8I3225, & JSU0114  
Route: I-44  
County: Greene

	<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 W. CAPITOL AVE. JEFFERSON CITY, MO 65102 Phone 1-888-275-6636
	<b><i>HG Consult, Inc.</i></b> <i>11010 Haskell Ave. #210</i> Kansas City, KS 66109 Certificate of Authority: Consultant Phone: 816-682-6177
	If a seal is present on this sheet, JSP's have been electronically sealed and dated.
	JOB NUMBER: J8I3044C, JSU0076, JST0088B, & J8I3225 COUNTY: GREENE, MO DATE PREPARED: 8/19/2024
	ADDENDUM DATE:
Only the following items of the Job Special Provisions (Roadway) are authenticated by this seal: C, FF & GG	

JOB  
SPECIAL PROVISION

A. General - Federal JSP-09-02K

**1.0 Description.** The Federal Government is participating in the cost of construction of this project. All applicable Federal laws, and the regulations made pursuant to such laws, shall be observed by the contractor, and the work will be subject to the inspection of the appropriate Federal Agency in the same manner as provided in Sec 105.10 of the Missouri Standard Specifications for Highway Construction with all revisions applicable to this bid and contract.

**1.1** This contract requires payment of the prevailing hourly rate of wages for each craft or type of work required to execute the contract as determined by the Missouri Department of Labor and Industrial Relations and requires adherence to a schedule of minimum wages as determined by the United States Department of Labor. For work performed anywhere on this project, the contractor and the contractor's subcontractors shall pay the higher of these two applicable wage rates. State Wage Rates, Information on the Required Federal Aid Provisions, and the current Federal Wage Rates are available on the Missouri Department of Transportation web page at [www.modot.org](http://www.modot.org) under "Doing Business with MoDOT", "Contractor Resources". Effective Wage Rates will be posted 10 days prior to the applicable bid opening. These supplemental bidding documents have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

**1.2** The following documents are available on the Missouri Department of Transportation web page at [www.modot.org](http://www.modot.org) under "Doing Business with MoDOT"; "Standards and Specifications". The effective version shall be determined by the letting date of the project.

General Provisions & Supplemental Specifications

Supplemental Plans to July 2024 Missouri Standard Plans  
For Highway Construction

These supplemental bidding documents contain all current revisions to the published versions and have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

B. Contract Liquidated Damages JSP- 13-01D

**1.0 Description.** Liquidated Damages for failure or delay in completing the work on time for this contract shall be in accordance with Sec 108.8. The liquidated damages include separate amounts for road user costs and contract administrative costs incurred by the Commission.

**2.0 Period of Performance.** Prosecution of work is expected to begin on the date specified below in accordance with Sec 108.2. Regardless of when the work is begun on this contract, all

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work on all projects shall be completed on or before the date specified below. Completion by this date shall be in accordance with the requirements of Sec 108.7.1.

Notice to Proceed: February 10, 2025  
Contract Completion Date: May 21, 2027

**2.1 Calendar Days and Completion Dates.** Completion of the project is required as specified herein. The count of calendar days will begin on the date the contractor starts any construction operations on the project.

Project	Calendar Days	Daily Road User Cost
J8I3044C	N/A	\$9,800
JSU0076	N/A	\$9,800
JST0088B	N/A	\$9,800
J8I3225	N/A	\$9,800
JSU0114	N/A	\$9,800

**3.0 Liquidated Damages for Contract Administrative Costs.** Should the contractor fail to complete the work on or before the contract completion date specified in Section 2.0, or within the number of calendar days specified in Section 2.1, whichever occurs first, the contractor will be charged contract administrative liquidated damages in accordance with Sec 108.8 in the amount of **\$3,000** per calendar day for each calendar day, or partial day thereof, that the work is not fully completed. For projects in combination, these damages will be charged in full for failure to complete one or more projects within the specified contract completion date or calendar days.

**4.0 Liquidated Damages for Road User Costs.** Should the contractor fail to complete the work on or before the contract completion date specified in Section 2.0, or within the number of calendar days specified in Section 2.1, whichever occurs first, the contractor will be charged road user costs in accordance with Sec 108.8 in the amount specified in Section 2.1 for each calendar day, or partial day thereof, that the work is not fully completed. These damages are in addition to the contract administrative damages and any other damages as specified elsewhere in this contract.

C. Work Zone Traffic Management JSP-02-06N

**1.0 Description.** Work zone traffic management shall be in accordance with applicable portions of Division 100 and Division 600 of the Standard Specifications, and specifically as follows.

**1.1 Maintaining Work Zones and Work Zone Reviews.** The Work Zone Specialist (WZS) shall maintain work zones in accordance with Sec 616.3.3 and as further stated herein. The WZS shall coordinate and implement any changes approved by the engineer. The WZS shall ensure all traffic control devices are maintained in accordance with Sec 616, the work zone is operated within the hours specified by the engineer, and will not deviate from the specified hours without prior approval of the engineer. The WZS is responsible to manage work zone delay in accordance with these project provisions. When requested by the engineer, the WZS shall submit a weekly report that includes a review of work zone operations for the week. The report shall identify any problems encountered and corrective actions taken. Work zones are subject to unannounced

inspections by the engineer and other departmental staff to corroborate the validity of the WZS's review and may require immediate corrective measures and/or additional work zone monitoring.

**1.2 Work Zone Deficiencies.** Failure to make corrections on time may result in the engineer suspending work. The suspension will be non-excusable and non-compensable regardless if road user costs are being charged for closures.

## **2.0 Traffic Management Schedule.**

**2.1** Traffic management schedules shall be submitted to the engineer for review prior to the start of work and prior to any revisions to the traffic management schedule. The traffic management schedule shall include the proposed traffic control measures, the hours traffic control will be in place, and work hours.

**2.2** The traffic management schedule shall conform to the limitations specified in Sec 616 regarding lane closures, traffic shifts, road closures and other width, height and weight restrictions.

**2.3** The engineer shall be notified as soon as practical of any postponement due to weather, material or other circumstances.

**2.4** In order to ensure minimal traffic interference, the contractor shall schedule lane closures for the absolute minimum amount of time required to complete the work. Lanes shall not be closed until material is available for continuous construction and the contractor is prepared to diligently pursue the work until the closed lane is opened to traffic.

**2.5 Traffic Congestion.** The contractor shall, upon approval of the engineer, take proactive measures to reduce traffic congestion in the work zone. The contractor shall immediately implement appropriate mitigation strategies whenever traffic congestion reaches an excess of **15 minutes** to prevent congestion from escalating beyond this delay threshold. If disruption of the traffic flow occurs and traffic is backed up in queues equal to or greater than the delay time threshold listed above, then the contractor shall immediately review the construction operations which contributed directly to disruption of the traffic flow and make adjustments to the operations to prevent the queues from reoccurring. Traffic delays may be monitored by physical presence on site or by utilizing real-time travel data through the work zone that generate text and/or email notifications where available. The engineer monitoring the work zone may also notify the contractor of delays that require prompt mitigation. The contractor may work with the engineer to determine what other alternative solutions or time periods would be acceptable. When a Work Zone Analysis Spreadsheet is provided, the contractor will find it in the electronic deliverables on MoDOT's Online Plans Room. The contractor may refer to the Work Zone Analysis Spreadsheet for detailed information on traffic delays.

### **2.5.1 Traffic Safety.**

**2.5.1.1 Recurring Congestion.** Where traffic queues routinely extend to within 1000 feet of the ROAD WORK AHEAD, or similar, sign on a divided highway or to within 500 feet of the ROAD WORK AHEAD, or similar, sign on an undivided highway, the contractor shall extend the advance warning area, as approved by the engineer.



**2.5.1.2 Non-Recurring Congestion.** When traffic queues extend to within 1000 feet of the ROAD WORK AHEAD, or similar, sign on a divided highway or to within 500 feet of the ROAD WORK AHEAD, or similar, sign on an undivided highway infrequently, the contractor shall deploy a means of providing advance warning of the traffic congestion, as approved by the engineer. The warning location shall be no less than 1000 feet and no more than 0.5 mile in advance of the end of the traffic queue on divided highways and no less than 500 feet and no more than 0.5 mile in advance of the end of the traffic queue on undivided highways.

**2.6 Transportation Management Plan.** The contractor Work Zone Specialist (WZS) shall review the Transportation Management Plan (TMP), found as an electronic deliverable on MoDOT's Online Plans Room and discuss the TMP with the engineer during the preconstruction conference. Throughout the construction project, the WZS is responsible for updating any changes or modifications to the TMP and getting those changes approved by the engineer a minimum of two weeks in advance of implementation. The WZS shall participate in the post construction conference and provide recommendations on how future TMPs can be improved.

**2.7 Traffic Management Center (TMC) Coordination.** The Work Zone Specialist (WZS) or their designee shall contact by phone the MoDOT Traffic Management Center (Transportation Management Center of the Ozarks at #417-864-1160) within five minutes of a lane or ramp closure beginning and within five minutes of a lane or ramp closure being removed. The TMC is operated seven days a week, 7:00 a.m. – 6:00 p.m.

### **3.0 Work Hour Restrictions.**

**3.1** Except for emergency work, as determined by the engineer, and long term lane closures required by project phasing, all lanes shall be scheduled to be open to traffic during the five major holiday periods shown below, from 12:00 noon on the last working day preceding the holiday until 6:00 a.m. on the first working day subsequent to the holiday unless otherwise approved by the engineer.

Memorial Day  
Labor Day  
Thanksgiving  
Christmas  
New Year's Day

**3.1.1 Independence Day.** The lane restrictions specified in Section 3.1 shall also apply to Independence Day, except that the restricted periods shall be as follows:

<b>When Independence Day falls on:</b>	<b>The Holiday is Observed on:</b>	<b>Halt Lane Closures beginning at:</b>	<b>Allow Lane Closures to resume at:</b>
Sunday	Monday	Noon on Friday	6:00 a.m. on Tuesday
Monday	Monday	Noon on Friday	6:00 a.m. on Tuesday
Tuesday	Tuesday	Noon on Monday	6:00 a.m. on Wednesday
Wednesday	Wednesday	Noon on Tuesday	6:00 a.m. on Thursday
Thursday	Thursday	Noon on Wednesday	6:00 a.m. on Friday
Friday	Friday	Noon on Thursday	6:00 a.m. on Monday
Saturday	Friday	Noon on Thursday	6:00 a.m. on Monday



**3.1.2** Except for emergency work, as determined by the engineer, and long term lane closures required by project phasing, the contractor's working hours will be restricted for the Special Events as shown below. All lanes shall be scheduled to be open to traffic during these Special Events.

Construction shall be staged and scheduled so all ramps and bridge underpasses remain open for:

- Ozark Fall Farmfest, Oct. 4-6 2024. Dates TBD for future years.
- Mid-America Street Rod Nationals. Usually last weekend of May. Dates TBD for future years.
- Ozark Empire Fair, July 31 – August 10, 2025. Dates TBD for future years.

**3.2** The contractor shall not perform any construction operation on the roadbed, including the hauling of material within the project limits, during restricted periods, holiday periods or other special events specified in the contract documents.

**3.3** The contractor shall be aware that traffic volume data indicates construction operations on the roadbed between the following hours will likely result in traffic queues greater than 15 minutes. Based on this, the contractor's operations will be restricted accordingly unless it can be successfully demonstrated the operations can be performed without a 15 minute queue in traffic. It shall be the responsibility of the engineer to determine if the above work hours may be modified. Working hours for evenings, weekends and holidays will be determined by the engineer. The contractor may not work during the following listed hours:

Route I-44 Eastbound:

6:00 a.m. - 8:00 p.m. Saturday through Thursday  
6:00 a.m. - 9:00 p.m. Friday

Route I-44 Westbound:

7:00 a.m. - 7:00 p.m. Saturday through Thursday  
6:00 a.m. - 9:00 p.m. Friday

**3.4** Any work requiring a reduction in the number of through lanes of traffic shall be completed during nighttime hours. Nighttime hours shall be considered to be 8:00 p.m. to 6:00 a.m. for this project.

**3.5** The contractor shall not alter the start time, ending time, or a reduction in the number of through lanes of traffic or ramp closures without advance notification and approval by the engineer. The only work zone operation approved to begin 30 minutes prior to a reduction in through traffic lanes or ramp closures is the installation of traffic control signs. Should lane closures be placed or remain in place, prior to the approved starting time or after the approved ending time, the Commission, the traveling public, and state and local police and governmental authorities will be damaged in various ways, including but not limited to, increased construction administration cost, potential liability, traffic and traffic flow regulation cost, traffic congestion and motorist delays, with a resulting cost to the traveling public. These damages are not easily computed or quantified. Therefore, the contractor will be charged with liquidated damages specified in the amount of **\$1,000 per 15 minute increment** for each 15 minutes that the temporary lane closures are in place and not open to traffic in excess of the limitation as specified

elsewhere in this special provision. It shall be the responsibility of the engineer to determine the quantity of unapproved closure time.

**3.5.1** The said liquidated damages specified will be assessed regardless if it would otherwise be charged as liquidated damages under the Missouri Standard Specification for Highway Construction, as amended elsewhere in this contract.

#### **4.0 Detours and Lane Closures.**

**4.1** When a changeable message sign (CMS) is provided, the contractor shall use the CMS to notify motorists of future traffic disruption and possible traffic delays one week before traffic is shifted to a detour or prior to lane closures. The CMS shall be installed at a location as approved or directed by the engineer. If a CMS with Communication Interface is required, then the CMS shall be capable of communication prior to installation on right of way. All messages planned for use in the work zone shall be approved and authorized by the engineer or its designee prior to deployment. When permanent dynamic message signs (DMS) owned and operated by MoDOT are located near the project, they may also be used to provide warning and information for the work zone. Permanent DMS shall be operated by the TMC, and any messages planned for use on DMS shall be approved and authorized by the TMC at least 72 hours in advance of the work.

**4.1.1** Road closures and detours for construction on bridges over Broadway Avenue and Grant Avenue shall not occur simultaneously.

**4.1.2** Ramp closures and detours for the Route 13 EB on ramp and Glenstone EB off ramp shall not occur simultaneously.

**4.1.3** All ramps with the exception of the Glenstone WB on ramp have allowable closure durations of two weeks for ramp gore reconstruction.

**4.2** Two lanes of traffic shall be maintained for all major construction phases, with at least one lane of traffic in each direction shall be maintained at all times except for brief intervals of time required when the movement of the contractor's equipment will seriously hinder the safe movement of traffic. Periods during which the contractor will be allowed to interrupt traffic will be designated by the engineer.

**5.0 Basis of Payment.** No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract document. All authorized changes in the traffic control plan shall be provided for as specified in Sec 616.

#### **D. Emergency Provisions and Incident Management JSP-90-11A**

**1.0** The contractor shall have communication equipment on the construction site or immediate access to other communication systems to request assistance from law enforcement or other emergency agencies for incident management. In case of traffic accidents or the need for law enforcement to direct or restore traffic flow through the job site, the contractor shall notify law enforcement or other emergency agencies immediately as needed. The area engineer's office shall also be notified when the contractor requests emergency assistance.

**2.0** In addition to the 911 emergency telephone number for ambulance, fire or law enforcement services, the following agencies may also be notified for accident or emergency situation within the project limits.

Missouri Highway Patrol: 417-895-6868		
City of Springfield	Greene County	MoDOT
Fire: 417-874-2300	Police: 417-868-4040	Customer Service: 417-895-7600
Police: 417-864-1810		Incident Management: 417-864-1160

**2.1** This list is not all inclusive. Notification of the need for wrecker or tow truck services will remain the responsibility of the appropriate law enforcement agency.

**2.2** The contractor shall notify law enforcement and emergency agencies before the start of construction to request their cooperation and to provide coordination of services when emergencies arise during the construction at the project site. When the contractor completes this notification with law enforcement and emergency agencies, a report shall be furnished to the engineer on the status of incident management.

**3.0** No direct pay will be made to the contractor to recover the cost of the communication equipment, labor, materials or time required to fulfill the above provisions.

**E. Project Contact for Contractor/Bidder Questions JSP-96-05**

All questions concerning this project during the bidding process shall be forwarded to the project contact listed below.

Kristi Bachman, PE  
Transportation Project Manager – Southwest District  
3025 East Kearney Street  
Springfield, MO 65803

Telephone Number: 417-829-8040  
Email: kristi.bachman@modot.mo.gov

All questions concerning the bid document preparation can be directed to the Central Office – Design at (573) 751-2876.

**F. Supplemental Revisions JSP-18-01CC**

Compliance with [2 CFR 200.216 – Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment](#).

The Missouri Highways and Transportation Commission shall not enter into a contract (or extend or renew a contract) using federal funds to procure or obtain equipment, services, or systems that

uses covered telecommunications equipment or services as substantial or as critical technology as part of any system where the video surveillance and telecommunications equipment was produced by Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

## Stormwater Compliance Requirements

**1.0 Description.** This provision requires the contractor to provide a Water Pollution Control Manager (WPCM) for any project that includes land disturbance on the project site and the total area of land disturbance, both on the project site, and all Off-site support areas, is one (1) acre or more. Regardless of the area of Off-site disturbance, if no land disturbance occurs on the project site, these provisions do not apply. When a WPCM is required, all sections within this provision shall be applicable, including assessment of specified Liquidated Damages for failure to correct Stormwater Deficiencies, as specified herein. This provision is in addition to any other stormwater, environmental, and land disturbance requirements specified elsewhere in the contract.

**1.1 Definitions.** The project site is defined as all areas designated on the plans, including temporary and permanent easements. The project site is equivalent to the "permitted site", as defined in MoDOT's State Operating Permit. An Off-site area is defined as any location off the project site the contractor utilizes for a dedicated project support function, such as, but not limited to, staging area, plant site, borrow area, or waste area.

**1.2 Reporting of Off-Site Land Disturbance.** If the project includes any planned land disturbance on the project site, prior to the start of work, the contractor shall submit a written report to the engineer that discloses all Off-site support areas where land disturbance is planned, the total acreage of anticipated land disturbance on those sites, and the land disturbance permit number(s). Upon request by the engineer, the contractor shall submit a copy of its land disturbance permit(s) for Off-site locations. Based on the total acreage of land disturbance, both on and Off-site, the engineer shall determine if these Stormwater Compliance Requirements shall apply. The Contractor shall immediately report any changes to the planned area of Off-site land disturbance. The Contractor is responsible for obtaining its own separate land disturbance permit for Off-site areas.

**2.0 Water Pollution Control Manager (WPCM).** The Contractor shall designate a competent person to serve as the Water Pollution Control Manager (WPCM) for projects meeting the description in Section 1.0. The Contractor shall ensure the WPCM completes all duties listed in Section 2.1.

### 2.1 Duties of the WPCM:

- (a) Be familiar with the stormwater requirements including the current MoDOT State Operating Permit for construction stormwater discharges/land disturbance activities; MoDOT's statewide Stormwater Pollution Prevention Plan (SWPPP); the Corps of Engineers Section 404 Permit, when applicable; the project specific SWPPP, the Project's Erosion & Sediment Control Plan; all applicable special provisions, specifications, and standard drawings; and this provision;

- (b) Successfully complete the MoDOT Stormwater Training Course within the last 4 years. The MoDOT Stormwater Training is a free online course available at MoDOT.org;
- (c) Attend the Pre-Activity Meeting for Grading and Land Disturbance and all subsequent Weekly Meetings in which grading activities are discussed;
- (d) Oversee and ensure all work is performed in accordance with the Project-specific SWPPP and all updates thereto, or as designated by the engineer;
- (e) Review the project site for compliance with the Project SWPPP, as needed, from the start of any grading operations until final stabilization is achieved, and take necessary actions to correct any known deficiencies to prevent pollution of the waters of the state or adjacent property owners prior to the engineer's weekly inspections;
- (f) Review and acknowledge receipt of each MoDOT Inspection Report (Land Disturbance Inspection Record) for the Project within forty eight (48) hours of receiving the report and ensure that all Stormwater Deficiencies noted on the report are corrected as soon as possible, but no later than stated in Section 5.0.

**3.0 Pre-Activity Meeting for Grading/Land Disturbance and Required Hold Point.** A Pre-Activity meeting for grading/land disturbance shall be held prior to the start of any land disturbance operations. No land disturbance operations shall commence prior to the Pre-Activity meeting except work necessary to install perimeter controls and entrances. Discussion items at the pre-activity meeting shall include a review of the Project SWPPP, the planned order of grading operations, proposed areas of initial disturbance, identification of all necessary BMPs that shall be installed prior to commencement of grading operations, and any issues relating to compliance with the Stormwater requirements that could arise in the course of construction activity at the project.

**3.1 Hold Point.** Following the pre-activity meeting for grading/land disturbance and subsequent installation of the initial BMPs identified at the pre-activity meeting, a Hold Point shall occur prior to the start of any land disturbance operations to allow the engineer and WPCM the time needed to perform an on-site review of the installation of the BMPs to ensure compliance with the SWPPP is met. Land disturbance operations shall not begin until authorization is given by the engineer.

**4.0 Inspection Reports.** Weekly and post run-off inspections will be performed by the engineer and each Inspection Report (Land Disturbance Inspection Record) will be entered into a web-based Stormwater Compliance database. The WPCM will be granted access to this database and shall promptly review all reports, including any noted deficiencies, and shall acknowledge receipt of the report as required in Section 2.1 (f.).

**5.0 Stormwater Deficiency Corrections.** All stormwater deficiencies identified in the Inspection Report shall be corrected by the contractor within 7 days of the inspection date or any extended period granted by the engineer when weather or field conditions prohibit the corrective work. If the contractor does not initiate corrective measures within 5 calendar days of the inspection date or any extended period granted by the engineer, all work shall cease on the project except for work to correct these deficiencies, unless otherwise allowed by the engineer. All impact costs

related to this halting of work, including, but not limited to stand-by time for equipment, shall be borne by the Contractor. Work shall not resume until the engineer approves the corrective work.

**5.1 Liquidated Damages.** If the Contractor fails to complete the correction of all Stormwater Deficiencies listed on the MoDOT Inspection Report within the specified time limit, the Commission will be damaged in various ways, including but not limited to, potential liability, required mitigation, environmental clean-up, fines, and penalties. These damages are not reasonably capable of being computed or quantified. Therefore, the contractor will be charged with liquidated damages specified in the amount of \$2,000 per day for failure to correct one or more of the Stormwater Deficiencies listed on the Inspection Report within the specified time limit. In addition to the stipulated damages, the stoppage of work shall remain in effect until all corrections are complete.

**6.0 Basis of Payment.** No direct payment will be made for compliance with this provision.

***Delete Sec 106.9 in its entirety and substitute the following:***

**106.9 Buy America Requirements.**

Buy America Requirements are waived if the total amount of Federal financial assistance applied to the project, through awards or subawards, is below \$500,000.

**106.9.1 Buy America Requirements for Iron and Steel.**

On all federal-aid projects, the contractor's attention is directed to Title 23 CFR 635.410 *Buy America Requirements*. Where steel or iron products are to be permanently incorporated into the contract work, steel and iron material shall be manufactured, from the initial melting stage through the application of coatings, in the USA except for "minimal use" as described herein. Furthermore, any coating process of the steel or iron shall be performed in the USA. Under a general waiver from FHWA the use of pig iron and processed, pelletized, and reduced iron ore manufactured outside of the USA will be permitted in the domestic manufacturing process for steel or iron material.

**106.9.1.1 Buy America Requirements for Iron and Steel for Manufactured items.**

A manufactured item will be considered iron and steel if it is "predominantly" iron or steel. Predominantly iron or steel means that the cost of iron or steel content of a product is more than 50 percent of the total cost of all its components.

**106.9.2** Any sources other than the USA as defined will be considered foreign. The required domestic manufacturing process shall include formation of ingots and any subsequent process. Coatings shall include any surface finish that protects or adds value to the product.

**106.9.3** "Minimal use" of foreign steel, iron or coating processes will be permitted, provided the cost of such products does not exceed 1/10 of one percent (0.1 percent) of the total contract cost or \$2,500.00, whichever is greater. If foreign steel, iron, or coating processes are used, invoices to document the cost of the foreign portion, as delivered to the project, shall be provided and the engineer's written approval obtained prior to placing the material in any work.

**106.9.4** Buy America requirements include a step certification for all fabrication processes of all steel or iron materials that are accepted per Sec 1000. The AASHTO Product Evaluation and



Audit Solutions compliance program verifies that all steel and iron products fabrication processes conform to 23 CFR 635.410 Buy America Requirements and is an acceptable standard per 23 CFR 635.410(d). AASHTO Product Evaluation and Audit Solutions compliant suppliers will not be required to submit step certification documentation with the shipment for some selected steel and iron materials. The AASHTO Product Evaluation and Audit Solutions compliant supplier shall maintain the step certification documentation on file and shall provide this documentation to the engineer upon request.

**106.9.4.1** Items designated as Category 1 will consist of steel girders, piling, and reinforcing steel installed on site. Category 1 items require supporting documentation prior to incorporation into the project showing all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements. This includes the Mill Test Report from the original producing steel mill and certifications documenting the manufacturing process for all subsequent fabrication, including coatings. The certification shall include language that certifies the following. That all steel and iron materials permanently incorporated in this project was procured and processed domestically and all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410.

**106.9.4.2** Items designated as Category 2 will include all other steel or iron products not in Category 1 and permanently incorporated in the project. Category 2 items shall consist of, but not be limited to items such as fencing, guardrail, signing, lighting and signal supports. The prime contractor is required to submit a material of origin form certification prior to incorporation into the project from the fabricator for each item that the product is domestic. The Certificate of Materials Origin form ([link to certificate form](#)) from the fabricator must show all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements and be signed by a fabricator representative. The engineer reserves the right to request additional information and documentation to verify that all Buy America requirements have been satisfied. These documents shall be submitted upon request by the engineer and retained for a period of 3 years after the last reimbursement of the material.

**106.9.4.3** Any minor miscellaneous steel or iron items that are not included in the materials specifications shall be certified by the prime contractor as being procured domestically. Examples of these items would be bolts for sign posts, anchorage inserts, etc. The certification shall read "I certify that all steel and iron materials permanently incorporated in this project during all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements procured and processed domestically in accordance with CFR Title 23 Section 635.410 Buy America Requirements. Any foreign steel used was submitted and accepted under minor usage". The certification shall be signed by an authorized representative of the prime contractor.

**106.9.5** When permitted in the contract, alternate bids may be submitted for foreign steel and iron products. The award of the contract when alternate bids are permitted will be based on the lowest total bid of the contract based on furnishing domestic steel or iron products or 125 percent of the lowest total bid based on furnishing foreign steel or iron products. If foreign steel or iron products are awarded in the contract, domestic steel or iron products may be used; however, payment will be at the contract unit price for foreign steel or iron products.



**106.9.6 Buy America Requirements for Construction Materials other than iron and steel materials.** Construction materials means articles, materials, or supplies that consist of only one of the items listed. Minor additions of articles, materials, supplies, or binding agents to a construction material do not change the categorization of the construction material. Upon request by the engineer, the contractor shall submit a domestic certification for all construction materials listed that are incorporated into the project.

- (a) Non-ferrous metals
- (b) Plastic and Polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables)
- (c) Glass (including optic glass)
- (d) Fiber optic cable (including drop cable)
- (e) Optical fiber
- (f) Lumber
- (g) Engineered wood
- (h) Drywall

**106.9.6.1 Minimal Use allowance for Construction Materials other than iron or steel.**

"The total value of the non-compliant products is no more than the lesser of \$1,000,000 or 5% of total applicable costs for the project." The contractor shall submit to the engineer any non-domestic materials and their total material cost to the engineer. The contractor and the engineer will both track these totals to assure that the minimal usage allowance is not exceeded.

**106.9.7 Buy America Requirements for Manufactured Products.**

Manufactured products means:

- (a) Articles, materials, or supplies that have been:
  - (i) Processed into a specific form and shape; or
  - (ii) Combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies.
- (b) If an item is classified as an iron or steel product, a construction material, or a section 70917(c) material under § 184.4(e) and the definitions set forth in this section, then it is not a manufactured product. However, an article, material, or supply classified as a manufactured product under § 184.4(e) and paragraph (1) of this definition may include components that are construction materials, iron or steel products, or section 70917(c) materials.

**106.9.7.1** Manufactured products are exempt from Buy America requirements. To qualify as a manufactured product, items that consist of two or more of the listed construction materials that have been combined together through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials.

**106.9.7.2** Manufactured items are covered under a general waiver to exclude them from Buy America Requirements. To qualify for the exemption the components must comprise of 55% of the value of materials in the item. The final assembly must also be performed domestically.

**1.0 Description.** High Build acrylic waterborne pavement marking paint shall be used in lieu of standard acrylic waterborne pavement marking paint for all Standard Waterborne Pavement Marking Paint items and all Temporary Pavement Marking Paint items. Paint thickness, bead type, bead application rate, retroreflectivity requirements, and all other specifications shall remain as stated in the Missouri Standard Specifications for Highway Construction, except as otherwise amended in the contract documents.

**2.0 Material Requirements.** Material requirements for Sec 620.20.2.5 Standard Waterborne Paint, and Sec 620.10.2 Temporary Pavement Marking Paint shall be per Sec 1048.20.1.2 High Build Acrylic Waterborne Pavement Marking Paint.

G. Quality Management NJSP-15-22

**1.0 Quality Management.** The contractor shall provide Quality Management as specified herein to ensure the project work and materials meets or exceeds all contract requirements.

**1.1** The contractor shall provide Quality Control (QC) of the work and material, as specified herein, to ensure all work and material is in compliance with contract requirements. QC staff shall perform and document all inspection and testing. The QC inspectors and testers may be employed by the contractor, sub-contractor, or a qualified professional service provided by the contractor.

**1.2** The engineer will provide Quality Assurance (QA) inspection. The role of QA is to verify the performance of QC and provide confidence that the product will satisfy given requirements for quality.

**1.3** The contractor shall designate a person to serve as the project Quality Manager (QM). The QM shall be knowledgeable of standard testing and inspection procedures for highway and bridge construction, including a thorough understanding of the Missouri Standard Specifications. The QM shall be responsible for the implementation and execution of the Quality Management Plan and shall oversee all QC responsibilities, including all sub-contract work. The QM shall be the primary point of contact for all quality related issues and responsibilities, and shall ensure qualified QC technicians and inspectors are assigned to all work activities. The QM should be separate from the manager of the work activities to effectively manage a QC program.

**1.4** Any QC personnel determined in sole discretion of the engineer to be incompetent, derelict in their duties, or dishonest, shall at a minimum be removed from the project. Further investigation will follow with a stop work notification to be issued until the contractor submits a corrective action report that meets the approval of the engineer.

**2.0 Quality Management Plan.** The contractor shall develop, implement and maintain a Quality Management Plan (QMP) that will ensure the project quality meets or exceeds all contract requirements, and provides a record for acceptance of the work and material. A sample QMP, which shows minimum requirements, is provided on the MoDOT website at: [www.modot.org/quality](http://www.modot.org/quality).

**2.1** The QMP shall address all QC inspection and testing requirements of the work as described herein. A draft QMP shall be submitted to the Resident Engineer for review at least two weeks

prior to the pre-construction conference. An approved QMP is required at least two weeks prior to the start of work, unless otherwise allowed by the engineer. Physical work on the project shall not begin prior to approval of the QMP by the engineer.

**2.2** The approved QMP shall be considered a contract document and any revisions to the QMP will require approval from the engineer.

**2.3** The following items shall be included in the Quality Management Plan:

- a) Organizational structure of the contractor's project management, production staff, and QC staff, specific to this project.
- b) Name, qualifications and job duties of the Quality Manager.
- c) A list of all certified QC testers who will perform QC duties on the project, including sub-contract work, and the tests in which they are certified.
- d) A list of all QC inspectors who will perform QC inspection duties on the project, including sub-contract work, and the areas of inspection that they will be assigned.
- e) A procedure for verifying documentation is accurate and complete as outlined in Section 3.
- f) A procedure describing QC Inspections as outlined in Section 4.
- g) A procedure describing QC Testing, as outlined in Section 5, including a job specific Inspection and Test Plan (ITP).
- h) A procedure describing Material Receiving as outlined in Section 6.
- i) A list of Hold Points that are not included in the checklist forms, as outlined in Section 8.
- j) A procedure for documenting and resolving Non-Conforming work as outlined in Section 9.
- k) A procedure for tracking and documenting revisions to the QMP.
- l) A list of any approved changes to the Standard Specifications or ITP, including a reference to the corresponding change order.
- m) Format for the Weekly Schedule and Work Plans as outlined in Section 10, including a list of activities that will require pre-activity meetings.

**3.0 Project Documentation.** The contractor shall establish a Document Control Procedure for producing and uploading the required Quality Management documents to a MoDOT-provided server. The document management software used by MoDOT is Microsoft SharePoint®. Contractors do not need to purchase Microsoft SharePoint®, however, it is recommended that new users acquire some basic training to better understand how to use this software. MoDOT

does not provide the software training, but there are several online vendors who do. Contractors are required to use Microsoft Excel® and Microsoft Word® with some documents.

**3.1** The contractor shall utilize the file structure and file naming convention provided by MoDOT. A sample file structure is available on the MoDOT website.

**3.2** Documents (standard forms, reports, and checklists) referenced throughout this provision are considered the minimum documentation required. They shall be obtained from MoDOT at the following web address: [www.modot.org/quality](http://www.modot.org/quality). The documents provided by MoDOT are required to be used in the original format, unless otherwise approved by the engineer. Any alteration to these forms shall be approved by the engineer.

**3.3** Timely submittal of the required documents to the MoDOT document storage location is essential to ensure payment can be processed for the completed work. Submittal of the documents is required within 12 hours of the work shift that the work was performed, or on a document-specific schedule approved by the engineer and included in the QMP.

**3.4** The contractor shall establish a verification procedure that ensures all required documents are submitted to the engineer within the specified time, and prior to the end of each pay period for the work that was completed during that period. Payment will not be made for work that does not include all required documents. Minimum documents that might be required prior to payment include: Test Reports, Inspection Checklists, Materials Receiving Reports, and Daily Inspection Reports.

**3.5** The contractor shall perform an audit at project closeout to ensure the final collection of documents is accurate and complete.

**4.0 Quality Control Inspections.** The QMP shall identify a procedure for performing QC inspections. QC inspections shall be performed for all project activities to ensure the work is in compliance with the contract, plans and specifications.

**4.1** The QM shall identify the QC inspectors assigned to each work activity. The QC inspectors shall inspect the work to ensure the work is completed in accordance with the plans and specifications, and shall document the inspection by completing the required inspection checklists, forms, and reports provided by MoDOT. Depending on the type of work, the checklists may be necessary daily, or they may follow a progressive work process. The frequency of each checklist shall be stated in the QMP. The contractor may propose alternate versions of checklists that are more specific to the work.

**4.2** A Daily Inspection Report (DIR) is required to document pertinent activity on the project each day. This report shall include a detailed diary that describes the work performed as well as observations made by the inspection staff regarding quality control. The report shall include other items such as weather conditions, location of work, installed quantities, tests performed, and a list of all subcontractors that performed work on that date. The report shall include the full name of the responsible person who filled out the report and shall be digitally signed by an authorized contractor representative.

**4.3** External fabrication of materials does not require further QC inspection if the product is currently under MoDOT inspection or an approved QC/QA program. QC inspection and testing required in the production of concrete for the project shall be the responsibility of the contractor.

**4.4** The contractor shall measure, and document on the DIR, the quantity for all items of work that require measurement. Any calculations necessary to support the measurement shall be included with the documentation. The engineer will verify the measurements prior to final payment.

**5.0 Quality Control Testing.** The QMP shall identify a procedure for QC testing. The contractor shall perform testing of the work at the frequency specified in the Inspection and Test Plan (ITP).

**5.1** MoDOT will provide a standard ITP and the contractor shall modify it to include only the items of work in the contract, including adding any Job Special Provision items. The standard ITP is available on the MoDOT website at [www.modot.org/quality](http://www.modot.org/quality). The contractor shall not change the specifications, testing procedures, or the testing frequencies, from the standard ITP without approval by the engineer and issuance of a change order.

**5.2** Test results shall be recorded on the standard test reports provided by the engineer, or in a format approved by the engineer. Any test data shall be immediately provided to the engineer upon request at any time, including prior to the submission of the test report.

**5.3** The contractor shall ensure that all personnel who perform sampling and/or testing are certified by the MoDOT Technician Certification Program or a certification program that has been approved by MoDOT for the sampling and testing they perform.

**5.4** If necessary, an independent third party will be used to resolve any significant discrepancies between QC and QA test results. All dispute resolution testing shall be performed by a laboratory that is accredited in the AASHTO Accreditation Program in the area of the test performed. The contractor shall be responsible for the cost to employ the third party laboratory if the third party test verifies that the QA test was accurate. The Commission shall be responsible for the cost if the third party test verifies that the QC test was accurate.

**6.0 Material Receiving.** The QMP shall identify a procedure for performing material receiving. Standard material receiving forms will be provided by the engineer.

**6.1** The procedure shall address inspections for all material delivered to the site (excluding testable material such as concrete, asphalt, aggregate, etc.) for general condition of the material at the time it is delivered. The material receiving procedure shall record markings and accompanying documentation indicating the material is MoDOT accepted material (MoDOT-OK Stamp, PAL tags, material certifications, etc.).

**6.2** All required material documentation must be present at the time of delivery. If the material is not MoDOT accepted, the contractor shall notify the engineer immediately and shall not incorporate the material into the work.

**7.0 Quality Assurance.** The engineer will perform Quality Assurance inspection and testing (QA) to verify the performance of QC inspection and testing. The frequency of the QA testing will be as shown in the ITP, but may be more frequent at the discretion of the engineer. The engineer

will record the results of the QA testing and inspection and will inform the contractor of any known discrepancies.

**7.1** QA is responsible for verifying the accuracy of the final quantity of all pay items in the contract. This includes taking measurements on items that require measurement and other items that are found to have appreciable errors.

**7.2** QA inspection and test results shall not be used as a substitute for QC inspection and testing.

**7.3** QA will be available for Hold Point inspections at the times planned in the Weekly Schedule. The inspections may be re-scheduled as needed, but a minimum 24-hour advance notification from the contractor is required unless otherwise approved by the engineer.

**8.0 Hold Points.** Hold Points are events that require approval by the engineer prior to continuation of work. Hold Points occur at definable stages of work when the succeeding work depends on a QA review of the preceding work before work can continue.

**8.1** A list of minimum Hold Points will be provided by the engineer and shall be included in the QMP. The engineer may make changes to the Hold Point list at any time.

**8.2** Prior to all Hold Point inspections, QC shall provide the engineer with the Daily Inspection Reports, Inspection Checklists, Test Reports, and Material Receiving Reports for the work performed leading up to the Hold Point. If the engineer identifies any corrective actions needed during a Hold Point inspection, the corrections shall be completed prior to continuing work. The engineer may require a new Hold Point to be scheduled if the corrections require a follow-up inspection.

**9.0 Non-Conformance Reporting.** Non-conformance reports shall be issued by the contractor for work that does not meet the contract requirements. Non-conforming work includes work, testing, materials and processes that do not meet contract requirements. The contractor shall establish a procedure for identifying and resolving non-conforming work as well as tracking the status of the reports.

**9.1** Contractor QC staff or production staff should identify non-conforming work and document the details on the Non-Conformance Report form provided by MoDOT. QA staff may also initiate a non-conformance report.

**9.2** In-progress work that does not meet the contract requirements may not require a non-conformance report if production staff is aware of the issue and corrects the problem during production. QC or QA may issue a non-conformance report for in-progress work when documentation of the deficiency is considered beneficial to the project record.

**9.3** The contractor shall propose a resolution to the non-conforming work. Acceptance of a resolution by the engineer is required before closure of the non-conformance report.

**9.4** For recurring non-conformance work of the same or similar nature, a written Corrective Action Request will be issued by QC or QA. The contractor shall then establish a procedure for tracking the corrective action from issuance of the request to implementation of the solution. Approval



from the engineer is required prior to implementation of the proposed corrective action. The contractor shall notify the engineer after the approved corrective action has been implemented.

**10.0 Work Planning and Scheduling.** The contractor shall include Quality Management in all aspects of the work planning and scheduling. This shall include providing a Weekly Schedule, a Work Plan for each work activity, and holding pre-activity meetings for each new activity.

**10.1** A Weekly Schedule shall be provided to the engineer each week that outlines the planned project activities for the following two-week period. This schedule shall include all planned work, identification of all new activities, traffic control events, and requested Hold Point inspections for the period. Planned quantity of materials, along with delivery dates should also be included in the schedule.

**10.2** A Work Plan shall be submitted to the engineer at least one week prior to the pre-activity meeting. The Work Plan shall include the following: a safety plan, list of materials to be used, work sequence, defined responsibilities for QC testing and inspection personnel, and stages of work that will require Hold Point inspections.

**10.3** A pre-activity meeting is required prior to the start of each new activity. The purpose of this meeting is to discuss details of the Work Plan and schedule, including all safety precautions. Those present at the meeting shall include: the production supervisor for the activity, the Quality Manager, QC inspection and testing staff, and QA. The Quality Manager will review the defined responsibilities for QC testing and inspection personnel and will address any quality issues with the production staff. Attendees may join the meeting in person or by phone or video conference.

**11.0 Basis of Payment.** Payment for all costs associated with developing, implementing and maintaining the Quality Management Plan, providing Quality Control inspection and testing, and all other costs associated with this provision, will be considered included in the unit price of each contract item. No direct pay will be made for this provision.

H. Liquidated Damages for Winter Months JSP-04-17A

Delete Sec 108.8.1.3 (a)

Liquidated damages for failure to complete the work on time shall not be waived from December 15 to March 15, both dates inclusive.

I. Liquidated Damages / Savings Specified – US 65 & I-44 Westbound On-Ramp JSP 03-05B

**1.0 Description.** If construction of the US 65 & I-44 Westbound On-Ramp is not completed within 12 calendar days, the Commission, the traveling public, and state and local police and governmental authorities will be damaged in various ways, including but not limited to potential liability, traffic and traffic flow regulation cost, traffic congestion and motorist delay, with its resulting cost to the traveling public.

**2.0 Liquidated Damages Specified for Failure To Complete Work on Time.** These costs are not reasonably capable of being computed or quantified. Therefore, the contractor will be charged with liquidated damages specified in the amount of \$7,000 per day for each day thereof, that the



US 65 & I-44 WB On-Ramp is not open to traffic and in excess of the limitation as specified elsewhere in the special provision. It will be the responsibility of the engineer to determine the quantity of excess closure time.

**2.1** The said liquidated damages specified will be assessed in addition to any other liquidated damages charged under the Missouri Standard Specifications for Highway Construction, as indicated elsewhere in this contract.

**2.2** This deduction will continue until such time as the necessary work is completed and traffic is restored.

**3.0 Liquidated Savings Specified for Early Completion.** The contractor may receive an incentive payment from the Commission, in addition to all other sums earned under the contract, if the contractor completes the US 65 & I-44 Westbound On-Ramp. To qualify for this incentive payment, the US 65 & I-44 Westbound On-Ramp must be completed and open to traffic with two lanes of I-44 Mainline traffic maintained in each direction. An incentive payment of \$7,000 will be paid per day for each full day that the work described above is completed prior to 12 calendar days. The maximum amount paid as liquidated savings will not exceed \$70,000.

**3.1** In the event of an excusable delay, including differing site conditions, an extension of the contract completion time will not extend the time specified for determining any liquidated savings or incentive, except that, in its discretion, the Commission may extend the time specified should the delay be directly caused by the Commission. Further, in the event of an excusable delay, if the contractor completes the work providing for liquidated savings or incentive on or before the milestone or other date, that shall not constitute a basis to claim acceleration costs in addition to the liquidated savings or incentive that may be earned.

**3.2** The incentive payment described above is made, not as a bonus or gift, but as stipulated compensation in full for reduced risks, delay and inconvenience experienced by the traveling public, and for other reduced costs to the Commission and public resulting from early completion.

J. Liquidated Damages / Savings Specified – MO 13 (Kansas Expressway) & I-44 Eastbound On-Ramp JSP 03-05B

**1.0 Description.** If construction of the MO 13 & I-44 Eastbound On-Ramp is not completed within 12 calendar days, the Commission, the traveling public, and state and local police and governmental authorities will be damaged in various ways, including but not limited to potential liability, traffic and traffic flow regulation cost, traffic congestion and motorist delay, with its resulting cost to the traveling public.

**2.0 Liquidated Damages Specified for Failure To Complete Work on Time.** These costs are not reasonably capable of being computed or quantified. Therefore, the contractor will be charged with liquidated damages specified in the amount of \$7,000 per day for each day thereof, that the MO 13 & I-44 WB On-Ramp is not open to traffic and in excess of the limitation as specified elsewhere in the special provision. It will be the responsibility of the engineer to determine the quantity of excess closure time.

**2.1** The said liquidated damages specified will be assessed in addition to any other liquidated damages charged under the Missouri Standard Specifications for Highway Construction, as indicated elsewhere in this contract.

**2.2** This deduction will continue until such time as the necessary work is completed and traffic is restored.

**3.0 Liquidated Savings Specified for Early Completion.** The contractor may receive an incentive payment from the Commission, in addition to all other sums earned under the contract, if the contractor completes the MO 13 & I-44 Westbound On-Ramp. To qualify for this incentive payment, the MO 13 & I-44 Westbound On-Ramp must be completed and open to traffic with two lanes of I-44 Mainline traffic maintained in each direction. An incentive payment of \$7,000 will be paid per day for each full day that the work described above is completed prior to 12 calendar days. The maximum amount paid as liquidated savings will not exceed \$70,000.

**3.1** In the event of an excusable delay, including differing site conditions, an extension of the contract completion time will not extend the time specified for determining any liquidated savings or incentive, except that, in its discretion, the Commission may extend the time specified should the delay be directly caused by the Commission. Further, in the event of an excusable delay, if the contractor completes the work providing for liquidated savings or incentive on or before the milestone or other date, that shall not constitute a basis to claim acceleration costs in addition to the liquidated savings or incentive that may be earned.

**3.2** The incentive payment described above is made, not as a bonus or gift, but as stipulated compensation in full for reduced risks, delay and inconvenience experienced by the traveling public, and for other reduced costs to the Commission and public resulting from early completion.

K. Liquidated Savings Specified – J8I3044C, JSU0076, & JST0088B JSP 03-06A

**1.0 Description.** If construction of the I-44 Widening from MO 13 (Kansas Expressway) to US 65 is not completed by May 21, 2027, the Commission, the traveling public, and state and local police and governmental authorities will be damaged in various ways, including but not limited to potential liability, traffic and traffic flow regulation cost, traffic congestion and motorist delay, with its resulting cost to the traveling public.

**2.0 Liquidated Savings Specified for Early Completion.** The contractor may receive an incentive payment from the Commission, in addition to all other sums earned under the contract, if the contractor completes the I-44 Widening from MO 13 (Kansas Expressway) to US 65. To qualify for this incentive payment, the six lanes of I-44 from MO 13 (Kansas Expressway) to US 65 must be completed and open to traffic. An incentive payment of \$2,500 will be paid per day for each full day that the work described above is completed prior to May 21, 2027. The maximum amount paid as liquidated savings will not exceed \$350,000.

**2.1** In the event of an excusable delay, including differing site conditions, an extension of the contract completion time will not extend the time specified for determining any liquidated savings or incentive, except that, in its discretion, the Commission may extend the time specified should the delay be directly caused by the Commission. Further, in the event of an excusable delay, if the contractor completes the work providing for liquidated savings or incentive on or before the

milestone or other date, that shall not constitute a basis to claim acceleration costs in addition to the liquidated savings or incentive that may be earned.

**2.2** The incentive payment described above is made, not as a bonus or gift, but as stipulated compensation in full for reduced risks, delay and inconvenience experienced by the traveling public, and for other reduced costs to the Commission and public resulting from early completion.

L. Utilities JSP-93-26F

**1.0** For informational purposes only, the following is a list of names, addresses, and telephone numbers of the known utility companies in the area of the construction work for this improvement:

<u>Utility Name</u>	<u>Known Required Adjustment</u>	<u>Type</u>
AT&T – Distribution Scott Hall 600 St. Louis, Room 630 Springfield, MO 65806 Phone: 417-849-8265 Email: <a href="mailto:sh4949@att.com">sh4949@att.com</a>	No	Communications
City Utilities of Springfield - Electric T&D Eric Cochran 301 E. Central St. Springfield, MO 65801 Phone: 417-831-8612 Email: <a href="mailto:eric.cochran@cityutilities.net">eric.cochran@cityutilities.net</a>	Yes (See Sections 2.0 – 2.7.2)	Power
City Utilities of Springfield - Gas & Water Craig Kern 301 E. Central St. Springfield, MO 65801 Phone: 417-425-4355 Email: <a href="mailto:craig.kern@cityutilities.net">craig.kern@cityutilities.net</a>	No (See Section 3.0)	Gas & Water
City Utilities of Springfield - SpringNet Josh Fletcher 301 E Central St. Springfield, MO 65801 Phone: 417-831-8519 Email: <a href="mailto:jfletcher@springnet.net">jfletcher@springnet.net</a>	Yes (See Section 4.0)	Communications
MoDOT – Signals, Lighting, ITS Joe Dotson 2455 N. Mayfair Ave. Springfield, MO 65803 Phone: 417-733-0664	Yes (See Sections 5.0 - 5.3)	Signals, Lighting, ITS

Job No. J8I3044C,  
JSU0076, JST0088B,  
J8I3225, & JSU0114  
Route: I-44  
County: Greene

Email: joseph.dotson@modot.mo.gov

City of Springfield – Traffic  
Brett Foster  
1107 W. Chestnut Expressway  
Springfield, MO 65802  
Phone: 417-864-1937  
Email: bfoster@springfieldmo.gov

Yes  
(See Section 6.0)

Signals/ITS

City of Springfield – Clean Water Services  
Matt Taylor  
840 Boonville Ave.  
Springfield, MO 65802  
Phone: 417-864-1934  
Email: mtaylor@springfieldmo.gov

No

Sewer

Lumen  
Kimberly Singleton, Engineering Manager  
Phone: 419-631-4683  
Email: kimberly.singleton@lumen.com  
Olsson (Lumen's contract engineer)  
Sandra Munoz-Cabuya  
7301 W. 133<sup>rd</sup> Street, Suite 200  
Overland Park, KS 66213  
Phone: 913-748-2646  
Email: smunozcabuya@olsson.com

Yes  
(See Section 7.0)

Communications

Mediacom  
Kyle Keller  
1533 S. Enterprise Ave.  
Springfield, MO 65804  
Phone: 417-496-8577  
Email: kkeller@mediacomcc.com

No

Communications

**1.1 Disclaimer and Verification of Utility Information.** The existence and approximate location of utility facilities known to exist, as shown on the plans, are based upon the best information available to the Commission at this time. This information is provided by the Commission "as-is" and the Commission expressly disclaims any representation or warranty as to the completeness, accuracy, or suitability of the information for any use. Reliance upon this information is done at the risk and peril of the user, and the Commission shall not be liable for any damages that may arise from any error in the information. It is, therefore, the responsibility of the contractor to verify the above listing information indicating existence, location and status of any facility. Such verification includes direct contact with the listed utilities.

**1.2 Overhead Primary Electric.** Various utilities listed above have overhead lines within the project limits in the vicinity of the Contractor's work. The contractor shall comply with the Missouri Overhead Powerline Safety Act; this statute makes it illegal for an unauthorized person or entity to work or bring equipment within 10 feet of a high voltage line that has not been covered or de-energized. The purpose of the Missouri Overhead Powerline Safety Act is to ensure the safety

of the public when working around overhead power lines. If the contractor needs line cover when working near a primary powerline, then the contractor shall notify that utility owner a minimum of 14 days in advance of needing line cover. Most power providers perform this service free of charge for municipally driven projects. The contractor shall be responsible for any damage to the overhead lines caused by their operations. There will be no direct payment for compliance to this specification.

## **2.0 City Utilities Electric.**

**2.1 Coordination with City Utilities Electric.** There are several locations where the proposed roadway improvements will either impact existing or require new electrical facilities owned by City Utilities. The contractor shall request a copy of CU Electric Line Engineering drawings noted below from Eric Cochran (see contact information above). The contractor will be required to pick up all CU supplied items from their stockroom located at 742 N. Belcrest. The contractor shall coordinate construction activities with CU's Contract Inspector, Corey Bryan (417-450-7347). The contractor shall assume at least one on-site meeting per location a minimum of two weeks in advance of planned construction activities. All work performed for the future ownership/maintenance of City Utilities shall conform to their standard drawing located at: <https://www.cityutilities.net/business/construction/> There will be no direct payment for compliance to this specification.

**2.2 Secondary Power at Broadway.** The proposed roadway improvements include lighting under the new I-44 bridges over Broadway Ave. The power source for the new Type 2 power supply will come from an existing guy pole in the southwest quadrant. City Utilities will provide the secondary pedestal and stand-off brackets for MoDOT's contractor to install. The contractor will be required to pick these items up at CU's stockroom and transport them to the site. The contractor will be responsible for providing and installing the riser conduit up the drop pole over to the secondary pedestal. The contractor will also be responsible for providing and installing the conduit and wire from the secondary pedestal over to the new Type 2 power supply. CU Electric will not install a meter in the new power supply until it has been inspected and approved by Springfield's Building Development Services (BDS). MoDOT will be responsible for submitting the application to BDS. The contractor will be required to pay the \$166 fee for the BDS permit. All work shall conform to CU's drawing number 92478 (2863 N. Broadway) and MoDOT's standard plans. All costs required for compliance with this special provision shall be included in the contractor's submitted unit price for Item 902-86.20 Power Supply Assembly, Type 2, per each.

**2.3 Secondary Power at Grant.** The proposed roadway improvements include the relocation of the DMS board on EB I-44 near MM 78.47 and lighting under the new I-44 bridges over Grant Ave. A new Type 2 power supply will be installed for each item. The power source for the new power supplies will come from an existing Type 1 power supply feeding the existing DMS controller cabinet. The contractor shall remove the meterback from the existing service pole and replace it with a riser conduit and secondary pedestal set near the base of the service pole. This new secondary pedestal will feed the new Type 2 power supply for the DMS controller as well as the new Type 2 power supply for the bridge lighting controller. City Utilities will provide the secondary pedestal and stand-off brackets for MoDOT's contractor to install. The contractor will be required to pick these items up at CU's stockroom and transport them to the site. The contractor will be responsible for providing and installing the riser conduit up the existing service pole over to the secondary pedestal. The contractor will also be responsible for providing and



installing the conduit and wire from the secondary pedestal over to both new Type 2 power supplies. The contractor shall remove all trees within 15ft on each side of the existing overhead triplex from the transformer pole on the south side of Evergreen Street to the secondary drop pole along the south I-44 R/W line. CU Electric will not install a meter in a new power supply until it has been inspected and approved by Springfield's Building Development Services (BDS). MoDOT will be responsible for submitting both applications to BDS. The contractor will be required to pay the \$166 fee for each BDS permit. All work shall conform to CU's drawing number 92479 (632 W. I-44) and MoDOT's standard plans. All costs required for compliance with this special provision, including tree removal, shall be included in the contractor's submitted unit price for Item 902-86.20 Power Supply Assembly, Type 2, per each.

**2.4 Primary Power at Grant.** The contractor is advised City Utilities has a three phase overhead crossing of I-44 on the west side of Grant Avenue. This powerline will meet the required NESC vertical clearance with the change in profile grade of I-44. City Utilities will not be relocating this primary power line for the proposed roadway improvement. The contractor is advised to call for line cover as noted in paragraph 1.2 above for the bridge and MSE wall construction work.

**2.5 Secondary Power for Doling Trail.** The proposed roadway improvements include lighting for the new Doling Park pedestrian trail underpass. The power source for the new Type 2 power supply will come from a new CU installed power pole on the south side of Norton Road. The new pole will generally be located 12ft west of the existing pole currently located in the middle of the proposed trail connection to Norton Road. City Utilities will provide the secondary pedestal and stand-off brackets for MoDOT's contractor to install. The contractor will be required to pick these items up at CU's stockroom and transport them to the site. The contractor will be responsible for providing and installing the riser conduit up the new power pole over to the secondary pedestal. The contractor will also be responsible for providing and installing the conduit and wire from the secondary pedestal over to the new Type 2 power supply. CU Electric will not install a meter in the new power supply until it has been inspected and approved by Springfield's Building Development Services (BDS). MoDOT will be responsible for submitting the application to BDS. The contractor will be required to pay the \$166 fee for the BDS permit. All work shall conform to CU's drawing number 92480 (204 E. Norton) and MoDOT's standard plans. All costs required for compliance with this special provision shall be included in the contractor's submitted unit price for Item 902-86.20 Power Supply Assembly, Type 2, per each.

**2.6 Transmission & Primary Power to Norton Substation.** City Utilities has an overhead crossing of I-44 near Sta 1171+78. This crossing consists of an upper 69kV transmission circuit and lower three phase distribution circuit. The height of the proposed soundwall will infringe upon the minimum vertical clearance to the lower distribution circuit. City Utilities will be setting a pole on the south side of I-44 to raise the height of the distribution circuit above the minimum NESC clearance. City Utilities intends to have the power lines raised before the start of the soundwall construction. The contractor is advised to call for line cover on the lower distribution as noted in paragraph 1.2 above. The contractor shall maintain a minimum of 10ft clearance from the lower distribution circuit at all times. Depending on the contractor's construction methods, it might be necessary to construct this section of sound wall in multiple segments in order to obtain the wall height and maintain the required clearance. The contractor shall be responsible for investigating the site clearance and adjusting the shop drawing for the sound wall as necessary to comply with this special provision.

**2.7 Electrical Work at National.**

**2.7.1 Primary Power.** City Utilities has two 600A buried feeders running along the east side of National. Both feeders pass through an existing concrete vault located just south of the EB I-44 bridge over National. This vault is in conflict with the new MSE wall (A9424) along the east side of National and will need to be relocated. Due to the unavailability of sufficient area under National caused by the existing double 8'x3' RCB, City Utilities will be splitting the circuits into two separate crossings under I-44. Norton feeder 5 will cross I-44 on the west side of National and Norton feeder 1 will cross I-44 on the east side of National. As part of the roadway improvements, the contractor will be required to provide/install the conduit for the new crossings as shown on CU drawing number 92213 included with the roadway plans. City Utilities will provide the associated vaults for the contractor to install. There are some low tree branches in the northeast quadrant in the path to the proposed vault. The contractor shall assume removal of any overhanging branch impeding the vault installation. Both feeders will need to be relocated before beginning any new bridge or MSE wall work at National. The contractor is advised to perform the conduit work early in the construction schedule to allow City Utilities time to install the new conductors and wreck out old facilities. All costs associated with the work shown on CU drawing 92213 shall be completely covered in the contractor's submitted bid price for the various CU items in the roadway contract.

**2.7.2 Secondary Power.** A new Type 2 power supply will be required in the northwest quadrant of National for a new lighting controller to the under-bridge lighting. The power source for the new Type 2 power supply will come from the existing CU primary riser power pole in the northwest quadrant. City Utilities will provide the secondary pedestal and stand-off brackets for MoDOT's contractor to install. The contractor will be required to pick these items up at CU's stockroom and transport them to the site. The contractor will be responsible for providing and installing the riser conduit up the new power pole over to the secondary pedestal. The contractor will also be responsible for providing and installing the conduit and wire from the secondary pedestal over to the new Type 2 power supply. CU Electric will not install a meter in the new power supply until it has been inspected and approved by Springfield's Building Development Services (BDS). MoDOT will be responsible for submitting the application to BDS. The contractor will be required to pay the \$166 fee for the BDS permit. All work shall conform to CU's drawing number 92213 and MoDOT's standard plans. All costs required for compliance with this special provision shall be included in the contractor's submitted unit price for Item 902-86.20 Power Supply Assembly, Type 2, per each.

**3.0 City Utilities Gas & Water.** The contractor is advised that City Utilities has a 36" concrete water main running parallel to Grant Avenue along the east side of the roadway. The water main is located between the east curb line and the east interior bridge columns supporting I-44 over Grant Ave. The contractor shall use selective demolition to remove the old bridge columns as to not disturb this high profile water main. Any damage to this water main caused by the contractor's operations shall be repaired to the satisfaction of City Utilities solely at the contractor's expense.

**4.0 City Utilities - SpringNet.** SpringNet has an existing handhole within the limits of the new Doling Park trail on the left side near Sta 13+09. This is near the north trail limits near Norton Road. This handhole will remain within the limits of the new trail but an elevation adjustment might be necessary in order for the handhole lid to match the finished trail surface. If an elevation adjustment is necessary, then the contractor shall coordinate that adjustment with Josh Fletcher (see contact information above). The roadway contractor is advised that it may take 3 weeks for SpringNet to mobilize and make the adjustment. The roadway contractor shall be responsible for



removing any hard surface (asphalt/concrete) around the handhole and establishing the finished elevation for SpringNet's contractor. There will be no direct payment for compliance to this specification.

## **5.0 MoDOT – Signals, Lighting, ITS.**

**5.1 Signals.** There are no anticipated signal impacts with the proposed improvements.

### **5.2 Lighting.**

**5.2.1 Mainline I-44 lighting.** The proposed roadway improvements include modifications to the existing lighting along the ramps at the MO13, LP44, and US65 interchanges. The contractor shall be responsible for making these modifications as shown in the lighting plans. All costs associated with the lighting modifications shall be included within the contractor's submitted unit prices for the various lighting items included in the roadway contract.

**5.2.2 Under bridge & trail lighting.** The proposed roadway improvements include lighting under the new I-44 bridges over Broadway, Grant, and National as well as the new Doling Park pedestrian trail. The power supplies for each of these locations are addressed in the various City Utilities Electric sections above. The contractor shall install the new lighting equipment as shown on the plans. All costs associated with the lighting installation shall be included within the contractor's submitted unit prices for lighting items included in the roadway contract.

**5.3 ITS.** There is an existing DMS board on the south side of I-44 near Sta 1110+70 that is in conflict with the proposed roadway improvements. As part of the roadway improvements, the contractor shall install a new DMS board and relocate the existing controller cabinet to a new concrete base. The power to the relocated controller is addressed in Section 2.3 above. The contractor shall install one 2" conduit run from the new pullbox by the relocated controller to an existing City handhole located near the south R/W. The reestablishment of communications to the new DMS board is addressed in Section 6.0 below. All costs associated with compliance to this specification shall be included in the contractor's submitted unit cost for the ITS items included in the roadway contract.

**6.0 City of Springfield - Traffic.** Communications to the existing DMS board on EB I-44 near MM 78.47 is through an 18 count SM fiber owned by the City of Springfield. This fiber comes from an existing City handhole located on Evergreen R/W just southeast of the existing Type 1 power supply for the DMS controller. As part of Lumen's median fiber relocation, they will be setting a new City handhole on I-44 R/W near Sta 1110+35. Lumen will also be installing a new 2" conduit run from the new City handhole to the existing City handhole. The roadway contractor will be responsible for installing a 2" conduit run from the City's new handhole (set by Lumen) to the new Class 5 pullbox placed by the relocated DMS controller. The roadway contractor shall disconnect the 18SM fiber from the existing DMS controller and pull it back south to the existing City handhole by the existing Type 1 power supply. From the existing City handhole, the roadway contractor shall reroute the 18SM fiber through the new 2" conduit and new City handhole set by Lumen and back to the relocated DMS controller through the 2" conduit and Class 5 pullbox set by the roadway contractor. The roadway contractor shall be responsible for reconnecting the 18SM fiber back up to the relocated DMS controller. The roadway contractor shall make a note of the existing splice diagram inside the existing DMS controller before disconnecting the 18SM fiber so the same splice can be used to reconnect the fiber to the relocated DMS controller. All

costs associated with disconnecting and reconnecting the City's 18SM fiber to the DMS controller, including splicing, shall be included in the contractor's bid price for item 910-99.02, Misc. (DMS Structure, Furnish and Install), each.

**7.0 Lumen.** Lumen has an existing 288 count fiber cable located in the I-44 median throughout the entire length of the project. The fiber must be relocated and cut over before any contract work can be performed in the median. Lumen intends to relocate the fiber to the south R/W to a point generally located 4ft inside of the I-44 R/W. The only deviation will be at the MO13 interchange where their fiber will be placed along the existing NB to EB ramp near mainline MO13 in an attempt to avoid a conflict with the future MO13 interchange improvements. Lumen will have new buried I-44 crossings near Sta 1171+50 and Sta 1301+50 to refeed SpringNet's Norton hut and MoDOT's CCTV camera, respectively. Lumen intends to start their relocation the first part of November 2024. The relocation is estimated to take 3 months to install and another 1 month to fully cut over to the new fiber.

#### **M. Alternates for Pavements JSP-96-04G**

**1.0 Description.** This work shall consist of a pavement composed of either portland cement concrete or asphaltic concrete, constructed on a prepared subgrade in accordance with the standard specifications and in conformity with the lines, grades, thickness and typical cross sections shown on the plans or established by the engineer.

**1.1** Separate pay items, descriptions and quantities are included in the itemized proposal for each of the alternates. The bidder shall only bid one of the alternates and leave the contract unit price column blank for any pay item listed for any other alternate. If the bidder leaves any value in the unit price column for another alternate other than the one they are bidding, the bid will be rejected.

#### **2.0 Mainline Pavements**

**2.0.1** A sum of \$\_\_\_\_\_ (*amount to be inserted by Central Office*) will be added by the Commission to the total bid using an asphalt alternate for the (*Mainline/Ramp/Outer Road/ Route 21/ Alternate A*) pavement for bid comparison purposes to factor in life cycle cost analysis of the roadway. The additional amount added will not represent any additional payment to be made to the successful bidder and is used only for determining the low bid.

**\*\*\*ADD PARAGRAPH 2.0.2 IF MORE THAN ONE ASPHALT ALTERNATE ON THE PROJECT\*\*\***

**2.0.2** A sum of \$\_\_\_\_\_ (*amount to be inserted by Central Office*) will be added by the Commission to the total bid using an asphalt alternate for the (*Mainline/Ramp/Outer Road/ Route 21/ Alternate E*) pavement for bid comparison purposes to factor in life cycle cost analysis of the roadway. The additional amount added will not represent any additional payment to be made to the successful bidder and is used only for determining the low bid.

**\*\*\*ADD PARAGRAPHS 2.1 and 2.1.1 IF A2 SHOULDERS ON THE PROJECT\*\*\***

#### **2.1 A2 Shoulders**

**2.1.1** A sum of \$\_\_\_\_\_ (*amount to be inserted by Central Office*) will be added by the Commission to the total bid using an asphalt A2 Shoulder alternate for the (*Mainline/Ramp/Outer Road/ Route 21/ Alternate C*) pavement for bid comparison purposes to factor in life cycle cost analysis of the roadway. The additional amount added will not represent any additional payment to be made to the successful bidder and is used only for determining the low bid.

**\*\*\*ADD PARAGRAPH 2.1.2 IF MORE THAN ONE ASPHALT A2 SHOULDER ALTERNATE IS ON THE PROJECT\*\*\***

**2.1.2** A sum of \$\_\_\_\_\_ (*amount to be inserted by Central Office*) will be added by the Commission to the total bid using an asphalt A2 Shoulder alternate for the (*Mainline/Ramp/Outer Road/ Route 21/ Alternate G*) pavement for bid comparison purposes to factor in life cycle cost analysis of the roadway. The additional amount added will not represent any additional payment to be made to the successful bidder and is used only for determining the low bid.

**2.2** The quantities shown for each alternate reflect the total square yards of pavement surface designated for alternate pavement types as computed and shown on the plans. No additional payment will be made for asphaltic concrete mix quantities to construct the required 1:1 slope along the edge of the pavement, or for tack applied between lifts of asphalt.

**2.3** The grading shown on the plans was designed for the (*thicker/ thinner/ asphalt/ concrete*) pavement alternate. (*The designer should have a note on the Quantity Sheets by the Alternate Paving Quantities that identifies the pavement thickness used to design the project. Some projects have more than two pavement thicknesses.*)

**2.4** Pavement alternates composed of Portland cement concrete shall have contrast pavements for intermittent markings (skips), dotted lines, and solid intersection lane lines. The pavement markings shall comply with Sec 620. No additional payment will be for the contrast pavement markings.

**3.0 Method of Measurement.** The quantities of concrete pavement will be measured in accordance with Sec 502.14. The quantities of asphaltic concrete pavement will be measured in accordance with Sec 403.22.

**4.0 Basis of Payment.** The accepted quantity of the chosen alternate and other associated items will be paid for at the unit price for each of the appropriate pay items included in the contract.

**4.1** For projects with previously graded roadbeds, any additional quantities required to bring the roadway subgrade to the proper elevation will be considered completely covered by the pay item for Subgrading and Shouldering.

**4.2** For projects with grading in the contract, there will be no adjustment of the earthwork quantities due to adjusting the roadway subgrade for alternate pavements.

**N. Notice to Bidders of Funding by Third Party – JSU0076 JSP-18-02A**

**1.0** Bidders are advised that the City of Springfield and Greene County is required to provide substantial funds for construction of Job No. JSU0076.

**2.0** Bidders acknowledge that their bids are made with knowledge of and subject to the condition City of Springfield and Greene County providing substantial funds prior to authorization of any award of a contract for this job by the Commission.

**3.0** Bidders agree that they shall be estopped, both in law and equity, to assert any right to award of a contract for this job by the Commission should City of Springfield and Greene County not provide substantial funds for any reason.

O. Notice to Bidders of Third Party Funding & Acceptance for Aesthetic Items – JSU0076

**1.0** Bidders are advised that the City of Springfield and Greene County are providing funding for the below mentioned aesthetic items on Job No. JSU0076.

- 1.1** Bid Item # 7033009 – Aesthetic Concrete Stain
- 1.2** Bid Item # 7201100 – Form Liners for MSE Wall Systems
- 1.3** Bid Item # 9012230 – Base Mounted Control Station 240 Volt – 4 Circuit
- 1.4** Bid Item # 9013002 – Conduit, 2 In. Rigid, In Trench
- 1.5** Bid Item # 9014502 – Conduit, 2 In. Rigid, External on Structure
- 1.6** Bid Item # 9016120 – Pull Box, Concrete Standard
- 1.7** Bid Item # 9017002 – Cable, 2 AWG 1 Conductor
- 1.8** Bid Item # 9017006 – Cable, 6 AWG 1 Conductor
- 1.9** Bid Item # 9018612 – Power Supply Assembly, Type 2, 240/120 Volt Service, Lighting Only
- 1.10** Bid Item # 9019902 – Misc. (LED Luminaire)
- 1.11** Bid Item # 9019902 – Misc. (12" x 10 x 5" Junction Box)
- 1.12** Bid Item # 9019902 – Misc. (6" x 6" x 4" Junction Box)
- 1.13** Bid Item # 9028219 – Cable, 10 AWG 1 Conductor, Power

**2.0** Bidders acknowledge that the City of Springfield and Greene County have the right to refuse bids on the above items at their discretion.

P. Alternate Pavement Design – Grading, Base, and Paving

**1.0 Description.** This specification allows the use of alternate grading, base, and pavement sections. The Commission has provided a complete set of plans, quantities, and cross sections to construct this project if the contractor does not elect to use the alternate grading, base, and pavement designs.

**2.0 General Conditions.**

**2.1** The contractor may consider one, all, or a combination of the following approved alternate grading, base and pavement concepts listed below. The contractor shall not be allowed to construct pavement with a combination of asphalt and concrete layers.

Base Type	HMA Design	PCCP Design	Shoulders
12" Rock Base	<u>15.0" HMA</u> 2" SP125BSM W/PG 76-22 Over 2" SP125B W/PG 76-22 Over 11" SP250C W/PG 64-22	<u>11.5" PCCP</u> 15" Joints 1 ½" Dowels	A2 or Full Depth
18" Rock Base	<u>14.0" HMA</u> 2" SP125BSM W/PG 76-22 Over 2" SP125B W/PG 76-22 Over 10" SP250C W/PG 64-22	<u>11.5" PCCP</u> 15" Joints 1 ½" Dowels	A2 or Full Depth

**2.2** The life cycle cost analysis factor shall apply to the asphalt alternates regardless of the technical concept selected.

**2.3** The contractor shall build the roadway to the final profile as shown in the plans, regardless of the pavement design selected.

**2.4** There will be no adjustment of the earthwork quantities due to adjusting the roadway subgrade based on the alternate pavement design selected. Earthwork quantities in the plans are based on the 12" Rock Base option.

**2.5** Section 303 shall be deleted and replaced as follows:

**303.1.1 Description.** This work shall consist of furnishing and placing select rock excavation material in the top 12 to 18 inches of the subgrade for use as a base to provide support and drainage as shown on the plans or as directed by the engineer. This work also includes daylighting the 12-inch and/or 18-inch rock base and finishing the in-slopes.

**303.1.2 Material.** The material source for rock base shall be in accordance with approval from the engineer. Geologic conditions may vary from available subsurface information. Approval from the engineer of a source for the inherent stone will not constitute approval of the final rock base product. Additional mechanical processing beyond excavation, such as, but not limited to, scalping, size reduction, washing, etc., of the material may be necessary to meet this specification.

**303.1.3** Material for rock base shall be durable stone or broken concrete or asphalt containing a combined total of no more than 10 percent of earth, sand, shale and non-durable rock. Material from geologic-filled sink deposits or stone indicating evidence of solution activity shall not be used.

**303.1.4** The material shall be as large as can be conveniently handled within the limits of this specification. No particle dimension shall

exceed 12 inches for 18-inch rock base or 9 inches for 12-inch rock base. There shall be some material with particle dimensions exceeding 9 inches for 18-inch rock base or 6 inches for 12-rock base. The material shall be uniformly graded from coarse to fine.

**303.1.5** Broken, sound concrete pavement and composite pavements may be used provided the ratio of the longest dimension measurement to thickness does not exceed 2:1 and provided there is no excessive exterior steel mesh that would affect compaction.

**303.1.6** Acceptance of quality and size of material will be made by visual inspection at the job site.

### **303.2 Construction Requirements.**

**303.2.1** Except as noted herein, all applicable provisions in Sec 203 for the handling and placement of roadway excavation material shall apply.

**303.2.2** The material shall not be dumped in place but shall be distributed by blading or dozing in a manner to ensure proper placement in final position in the subgrade.

**303.2.3** Rock base may be placed in one lift. Rock base material may be placed thicker, in maximum 18-inch (450 mm) lifts, provided a uniform drainage plane under the rock base is provided. No additional payment will be made for the thicker rock base material. Class C excavation in rock cuts shall be performed to allow placement of the specified lift thickness.

**303.2.4** Material shall be compacted in accordance with Sec. 203.5

**303.2.5** The final surface shall be of a uniform texture and grade suitable for paving. The top 2 inches of the rock base shall consist of either 2-inch maximum rock fragments or spalls or of milled asphalt or crushed concrete. The 2-inch maximum size granular type material shall have a plasticity index not to exceed 10 and a gradation such that at least 50 percent of the material will be retained on the No. 4 Recycled concrete or asphalt or Type 5 aggregate shall have a gradation meeting that as specified Sec. 1007. There shall be no exposed rock exceeding the 2-inch size in the final surface that would interfere with final preparation of the base for paving.

**3.0 Method of Measurement.** Final measurement of completed rock base will not be made, except for authorized changes during construction. Where appreciable errors are found in the contract quantity, the revision or correction will be computed and added to or deducted from the contract quantity for Optional Base to the nearest 0.10 squared yard.

### **4.0 Basis of Payment.**

**4.1** Payment for the alternate pavement designs will be considered completely covered by the bid items in the contract documents for pavement and 304-99.05, Optional Base, per square yard.



There will be no additional compensation for any items associated with the use of an alternate pavement design.

**4.2** The Commission does not warrant that there are sufficient quantities of Class C material within the project limits to construct the 12-inch and/or 18-inch rock base alternate technical concepts. If the contractor elects to provide additional material to construct the 12 and/or 18-inch rock base for any of these concepts, the additional material will be considered included in plan quantity for items set up in the contract. No additional pay will be provided for any material needed to accomplish any of these designs.

Q. Cooperation Between Contractors - SW

**1.0 Description.** The contractor shall be aware that other contracts will be administered in the vicinity and timeframe as this contract.

**1.1** Job Number J8S3156 is a bridge replacement project on Melville Road over I-44. Construction is scheduled for 2025.

**1.2** Job Number JSRM0039 is barrier replacement project at the Route CC bridge over I-44 in Marshfield, MO. Construction is scheduled for 2025.

**1.3** Job Number J8S3238 is an intersection improvement project at Route 125 in Strafford, MO. Construction is scheduled for 2025 and 2026.

**1.4** Job Number JSR0015 is a resurfacing project of I-44 in Webster County. Construction schedule is anticipated from 2025-2028.

**1.5** Job Number JSU0013 is a resurfacing project of I-44 in Greene County. Construction schedule is anticipated from 2025-2028.

**1.6** Job Number JSU0146 is a pavement rebuild project of I-44 in Greene County. Construction schedule is anticipated from 2025-2028.

**1.7** Job Number J7I3010 is a pavement rebuild project of I-44 in Greene County. Construction schedule is anticipated from 2025-2028.

**1.8** Job Numbers J8P3050C, J8S3190, J8S3149, J8S3162, J8S3169, J8S3172 and JSU0085 are resurfacing, ADA replacement, and safety and operational improvement projects let in combination on Kearney Street in Springfield, MO. Construction is scheduled for 2024 and 2025.

**1.9** Job Number JSU0101 is intersection improvement project at US 65 and Bluegrass road in Greene County, MO. Construction is scheduled for December 1, 2024.

**1.10** Job Number J8P3144 is a safety and operational improvement project on Chestnut Expressway in Springfield, MO. Construction is scheduled to begin in 2025.

**1.11** Job Number J8S3224 is a resurfacing project on Chestnut Expressway in Springfield, MO. Construction is scheduled for 2024 through 2026.

**2.0 Requirements.** The contractor shall coordinate work so as not to interfere with or hinder the progress or completion of the work being performed by the other contractor. The contractor shall also coordinate work to minimize impacts to the traveling public between the work zones.

**2.1** The contractor will not be granted additional time due to conflicts with other contractors, unless approved by the engineer.

**3.0 Basis of Payment.** No direct payment or additional time will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract document.

R. Right-Of-Way Clearance – Delayed Possession – JSU0076

**1.0 Description.** The right of way for this project has been acquired except for

Parcel 1 (City of Springfield, Mo) –TCE  
Parcel 2 (Want More Property, LLC) – RW and TCE  
Parcel 3 (Tracy Wheeler) – RW, PE and TCE  
Parcel 4 (City of Springfield, Mo) –TCE

**1.1** The contractor shall inform itself of the location of this tract. No encroachment, storage of equipment and materials or construction on these tracts shall be permitted until notification by the engineer is given that these tracts have been acquired.

**1.2** The contractor shall schedule its work utilizing the available right of way until this tract is cleared for construction, which is estimated to be January 6, 2025. However, this date expressly is not a warranty by or contractually binding on the Commission as the date the four Tracts will be clear for construction. No encroachment, storage of equipment and materials or construction on these tracts shall be permitted until the contractor is notified by the engineer that these tracts have been acquired.

**1.3** The contractor shall have no claim for damage for delay, disruption, interference or otherwise as a result of the unavailability of **Parcels listed above in Item 1.0.** The contractor may be given an extension of time upon proof of actual delay caused by the unavailability of these tracts as approved by the engineer.

S. Section 4F Requirements – Doling Park Property

**1.0 Description.** The construction of the Doling Trail south of I-44 is within the City of Springfield Doling Park property (Parcel #1). Section 4F requirements require that all construction within the park limits be complete within 6 months of beginning. Therefore, the contractor is required to complete all construction activities on the Doling Park property within 6 months of the beginning of their work within the property.

**2.0 Basis of Payment.** No direct pay shall be provided for any labor, equipment, time, or materials necessary to complete this work.

T. Tree Clearing Restriction

**1.0 Description.** The project is within the known range of the federally endangered Indiana bat, northern long-eared bat, and proposed endangered tricolored bat. These bats are known to roost in trees with suitable habitat characteristics during summer months.

**1.1** MoDOT has determined that suitable trees for one or more of these bat species exist within the project area.

**1.2** To avoid negative impacts to these bat species, removal of any trees/limbs greater than three (3) inches in diameter shall only occur between October 16 and March 31.

**2.0 Basis of Payment.** No direct pay shall be provided for any labor, equipment, time, or materials necessary to complete this work.

U. Contractor Furnished Surveying and Staking – SW

In addition to the requirements of Section 627 of the Missouri Standard Specifications for Highway Construction, the following shall apply:

**1.0 Description.** The contractor shall be responsible for all layout required on the project. This responsibility shall include, but not be limited to the following: Construction signing, transition milling, pavement marking, loop detectors, etc.

**1.1** The above list is not all inclusive. The contractor shall have the primary responsibility for these operations. The contractor shall provide the Resident Engineer (RE) with a staking plan layout for approval prior to the installation of signs. The RE will also provide assistance during this layout provided a request is submitted to the RE or Construction Project Manager 48 hours in advance. This will ensure that all permanently mounted traffic control devices remain consistent with District policy and avoid re-staking. If the contractor installs any signs without engineer approval, all costs associated with re-staking and/or relocation will be at the contractor's expense.

**1.2** The intent of this provision is to increase the quality of our work zones and minimize negative impacts to the contractor's schedule that can result from delays in staking.

**1.3** Any adjustments to the plan quantities or line numbers established in the contract shall be approved by the Engineer.

**2.0 Basis of Payment.** No direct payment will be made to cover the costs associated with these additional requirements. All costs will be considered completely covered by the unit bid price submitted for Contractor Furnished Surveying and Staking.

V. ADA Compliance and Final Acceptance of Constructed Facilities JSP-10-01C

**1.0 Description.** The contractor shall comply with all laws pertaining to the Americans with Disabilities Act (ADA) during construction of pedestrian facilities on public rights of way for this project. An ADA Checklist is provided herein to be utilized by the contractor for verifying compliance with the ADA law. The contractor is expected to familiarize himself with the plans

involving pedestrian facilities and the ADA Post Construction Checklist prior to performing the work.

**2.0 ADA Checklist.** The contractor can locate the ADA Checklist form on the Missouri Department of Transportation website:

<https://www.modot.org/forms-contractor-use>

**2.1** The ADA Checklist is not to be considered all-inclusive, nor does it supersede any other contract requirements. The ADA checklist is a required guide for the contractor to use during the construction of the pedestrian facilities and a basis for the commission's acceptance of work. Prior to work being performed, the contractor shall bring to the engineer's attention any planned work that is in conflict with the design or with the requirement shown in the checklist. This notification shall be made in writing. Situations may arise where the checklist may not fully address all requirements needed to construct a facility to the full requirements of current ADA law. In those situations, the contractor shall propose a solution to the engineer that is compliant with current ADA law using the following hierarchy of resources: 2010 ADA Standards for Accessible Design, Draft Public Rights of Way Accessibility Guidelines (PROWAG) dated November 23, 2005, MoDOT's Engineering Policy Guidelines (EPG), or a solution approved by the U.S. Access Board.

**2.2** It is encouraged that the contractor monitor the completed sections of the newly constructed pedestrian facilities in attempts to minimize negative impacts that his equipment, subcontractors or general public may have on the work. Completed facilities must comply with the requirements of ADA and the ADA Checklist or have documented reasons for the non-compliant items to remain.

### **3.0 Coordination of Construction.**

**3.1** Prior to construction and/or closure on an existing pedestrian path of travel, the contractor shall submit a schedule of work to be constructed, which includes location of work performed, the duration of time the contractor expects to impact the facility and an accessible signed pedestrian detour compliant with MUTCD Section 6D that will be used during each stage of construction. This plan shall be submitted to the engineer for review and approval at or prior to the pre-construction conference. Accessible signed detours shall be in place prior to any work being performed that has the effect of closing an existing pedestrian travel way.

**3.2** *When consultant survey is included in the contract, the contractor shall use their survey crews to verify that the intended design can be constructed to the full requirements as established in the 2010 ADA Standards. When 2010 ADA Standards do not give sufficient information to construct the contract work, the contractor shall refer to the PROWAG.*

**3.3** When consultant survey is not included in the contract, the contractor shall coordinate with the engineer, prior to construction, to determine if additional survey will be required to confirm the designs constructability.

**4.0 Final Acceptance of Work.** The contractor shall provide the completed ADA Checklist to the engineer at the semi-final inspection. ADA improvements require final inspection and compliance with the ADA requirements and the ADA Checklist. Each item listed in the checklist must receive either a "YES" or an "N/A" score. Any item receiving a "NO" will be deemed non-compliant and shall be corrected at the contractor's expense unless deemed otherwise by the engineer. Documentation must be provided about the location of any non-compliant items that are allowed to remain at the end of the construction project. Specific details of the non-compliant items, the ADA requirement that the work was not able to comply with, and the specific reasons that justify the exception are to be included with the completed ADA Checklist provided to the engineer.

**4.1** Slope and grade measurements shall be made using a properly calibrated, 2 foot long, electronic digital level approved by the engineer.

**5.0 Basis of Payment.** The contractor will receive full pay of the contract unit cost for all sidewalk, ramp, curb ramp, median, island, approach work, cross walk striping, APS buttons, pedestrian heads, detectible warning systems and temporary traffic control measures that are completed during the current estimate period as approved by the engineer. Based upon completion of the ADA Checklist, the contractor shall complete any necessary adjustments to items deemed non-compliant as directed by the engineer.

**5.1** No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract documents.

W. No value Engineering Proposals for 2.5 Inch Perforated Square Steel Tube (PSST) Posts and Concrete Post Anchors for 2.5 Inch Perforated Square Steel Tube (PSST) Posts

**1.0 Description.** This project will require 2.5 In. Perforated Square Steel Tube (PSST) Posts and Concrete Post Anchors for 2.5 In. Perforated Square Steel Tube (PSST) Posts as specified in the plans. No Contractor initiated Value Engineering Change Proposals (VECPs) or Practical Design Value Engineering Change Proposals (PDVECPs) will be accepted for any part of installing existing signs or new signs on new Perforated Square Steel Tube (PSST) Posts and Concrete Post Anchors different than the 2.5 Inch Perforated Square Steel Tube (PSST) Posts and Concrete Post Anchor for 2.5 Inch Perforated Square Steel Tube (PSST) Posts that is required.

X. Removal and Delivery of Existing Signs JSP-12-01C

**1.0 Description.** All Commission-owned signs removed from the project shall be disassembled, stored, transported, and disposed of as specified herein. Sign supports, structures and hardware removed from the project shall become the property of the contractor.

**2.0 Disassembly and Delivery.**

**2.1** All Commission-owned signs, (excluding abandoned billboard signs), designated for removal in the plans, or any other signs designated by the Engineer, shall be removed from the sign

supports and structures, disassembled, stored, transported, and delivered by the contractor to the recycling center for destruction.

**2.2** The contractor shall coordinate and make arrangements with the recycling center for delivery of the signs. Sign panels shall be disassembled and/or cut into sizes as required by the recycling center.

**2.3** The contractor shall provide the Engineer with a "Sign Delivery Certification" attesting to completion of delivery of all existing sign material from the project to the recycler. In addition, the contractor shall provide to the Engineer a final "Sign Certification of Destruction" from the recycler that documents the total pounds of scrap sign material received from the project and attests that all such material will not be re-purposed and will be destroyed in a recycling process. The contractor can locate the required certification statements from the Missouri Department of Transportation website:

<https://www.modot.org/forms-contractor-use>

**2.4** Funds received from the disposal of the signs from the recycling center shall be retained by the Contractor.

**3.0 Basis of Payment.** All costs associated with removing, disassembling and/or cutting, storing, transporting, and disposing of signs shall be considered as completely covered by the contract unit price for Item No. 202-20.10, "Removal of Improvements", per lump sum.

Y. Removal and Delivery of Existing Adopt-A-Highway Signs

**1.0 Description.** All Commission-owned Adopt-A-Highway signs removed from the project shall be disassembled, stored, transported, and disposed of as specified herein. Sign supports, structures and hardware removed from the project shall become the property of the contractor.

**2.0 Disassembly and Delivery.**

**2.1** All Commission-owned Adopt-A-Highway signs, designated for removal in the plans, shall be removed from the sign supports and structures, disassembled, stored, transported, and delivered by the contractor to the Springfield, MO Maintenance:

2455 N Mayfair Ave  
Springfield, MO 65803

**2.2** The contractor shall coordinate and make arrangements with the contact below for delivery of the signs:

Justin Sundell, Maintenance Supervisor  
(417) 766-3219

**3.0 Basis of Payment.** All costs associated with removing, disassembling and/or cutting, storing, transporting, and disposing of signs shall be considered as completely covered by the contract unit price for Item No. 202-20.10, "Removal of Improvements", per lump sum.



Z. Damage to Existing Pavement, Shoulders, Side Roads, and Entrances

**1.0 Description.** This work shall consist of repairing any damage to existing pavement, shoulders, side roads and entrances caused by contractor operations. This shall include, but is not limited to, damage caused by the traffic during contractor operations within the project limits including the work zone signing.

**2.0 Construction Requirements.** Any cracking gouging, or other damage to the existing pavement, shoulders, side roads, or entrances from general construction shall be repaired within twenty-four (24) hours of the time of damage at the contractor's expense. Repair of the damaged pavement, shoulders, side roads, or entrances shall be as determined by the engineer.

**3.0 Method of Measurement.** No measurement of damaged pavement or shoulder areas or damaged side roads or entrances as described above shall be made.

**4.0 Basis of Payment.** No payment will be made for repairs to existing pavement, shoulders, side roads or entrances damaged by contractor expenses.

AA. Special Drainage Structures

**1.0 Description.** This work covers the furnishing and installation of special drainage structures as shown in the plans and details.

**2.0 Construction Requirements.** Construction shall be in accordance with the Missouri Department of Transportation Standard Specifications and Plans, latest edition.

**3.0 Method of Measurement.**

**3.1** Measurement of Special Inlet No. 1, 2, & 3 shall be the depth for payment, as per the Special Sheets and as shown in the Culvert Section Plan Sheets.

**3.1.1** Specified Grate for Special Inlet No. 1 is included in the contract unit price for the inlet.

**3.2** Excavation for Special Inlets is paid for separately as Class 3 Excavation. See plans for quantities.

**4.0 Basis of Payment.** The contract unit price shall be considered as full compensation for all labor, equipment, materials, or other construction involved to complete the work. The following is the Pay Item No. for each type of structure listed above:

Pay Item No. 731-99.13, Special Inlet, per foot.

BB. Gravity Block Retaining Wall

**1.0 Description.** This work involves the construction of a strapless (no geogrid or tie backs) gravity block retaining wall along the Doling Trail. The area is constrained by proximity to the Greystone Properties parking lot.

**2.0 Material and Construction Requirements.** The contractor shall submit shop drawings prior to beginning construction. The contractor shall provide and install a gravity block wall system per the block manufacturer's instructions.

**3.0 Basis of Payment.** The Unit bid price for Item number "Gravity Block Retaining Wall" shall include total costs for furnishing all design, labor, materials, equipment, and all necessary incidentals needed to complete the work. Pay item is paid for by the square foot of exposed face of wall.

Item No. 720-99.04, Gravity Block Retaining Wall, per square foot

CC. Bollard (Removable)

**1.0 Description.** This specifications covers the furnishing and installation of a removable bollard in the locations as shown on the plans.

**2.0 Parts Specifications**

- 2.1 ASTM A500 – Bollard Post 1/4" Wall
- 2.2 ASTM A500 – Bollard ground Sleeve, 3/16" wall
- 2.3 ASTM A36 – Lid Assembly

**3.0 Color.** Bollard post shall be powdered-coated, or painted a high-visibility yellow color.

**4.0 Performance Requirements.** Bollard will remove completely from ground sleeve and provide flush surface when galvanized lid drops down or filler piece is inserted.

**5.0 Submittals.** The contractor shall submit shop drawings of proposed removable bollard to engineer for acceptance prior to ordering of materials.

**6.0 Quality.** Bollard post, ground sleeve and filler piece must be supplied by one manufacturer to provide consistent quality in appearance and performance.

**7.0 Installation.** Contractor to comply with manufacturer instruction and drawings for installation.

**8.0 Basis of Payment.** Payment for the above described work including all materials, equipment, labor and any other incidental work necessary to complete the item shall be considered as completely covered in pay items:

6089902, Pipe Bollard (Removable), per each

DD. Remove and Relocate Signs

**1.0 Description.** The contractor shall remove and relocate ground mount signs as designated in the plans.

**2.0 Ground Mount Signs.** The contractor shall remove existing ground mount signs from their current locations and relocate said signs to new ground mount sign posts at locations specified in the plans. The contractor shall exercise reasonable care in the handling of all signs during removal and relocation. Should any of the said signs be damaged by the contractor's negligence, it shall be replaced in kind at the contractor's expense.

**3.0 Method of Measurement.** Measurement for the removal and relocation of ground mount special signs will be made per each.

**4.0 Basis of Payment.** All labor, equipment and material to complete the described work will be paid for at the contract unit price for Item No. 903-99.02, 'Relocation Sign", per each.

**4.1** Payment for all ground mount sign posts and relocation of the said signs specified in this provision shall be paid per plan quantity.

EE. 4-Inch Square Steel Sign Post JSP-23-02

**1.0 Description.** The 4-inch square steel post and breakaway system shall be MASH 2016 approved and on [MoDOT's Approved Products List](#).

**2.0 Material.** All material shall be in accordance with Division 1000 and as further specified per this provision. The 4-inch square steel posts are to be multi-directional. The posts shall be 4 inches square, 8 gauge, and galvanized. The 4-inch square steel posts shall be hot-dip galvanized after fabrication. Galvanizing of sign posts, bolts, nuts, washers, other appurtenances, and repair of galvanizing shall be in accordance with Sec. 1081.

**3.0 Construction Requirements.** Concrete footing construction shall be in accordance with Sec. 903.3.1.2. Post installation shall follow the manufacturer's recommendations.

**4.0 Method of Measurement.** Measurement of 4-inch square steel posts will be made to the nearest linear foot for each post, as shown on the plans. Measurement for 4-inch square steel post base will be made per each.

**5.0 Basis of Payment.** Payment for 4-inch square steel post will be paid for at the contract unit price for: **903-12.30 4-Inch Square Steel Post**. Post cap, post clamp, hardware (nuts and bolts), and backing bars are incidental to the post. Payment for **903-10.05 Square Steel Sign Post (4-In.) Base** shall include, complete and in place, the concrete footing, ground anchor, breakaway assembly, and hardware (nuts and bolts).

FF. Overhead Sign Trusses

**1.0 Description.** This work shall consist of furnishing and installing overhead sign trusses as shown on the plans. All materials and construction procedures shall meet MoDOT specifications and specifically the applicable requirement listed in Section 903.

**2.0 Basis of Payment.** All costs associated with furnishing and installing the Overhead Sign Trusses shall include any additional materials, equipment, and labor, shall be considered completely covered by the contract unit price for the following items:

<b>JSU0076</b>		
Item Number	Type / Description	Unit
903-99.01	Sign No. 6, Overhead Box Truss, 64 FT. – 0 IN.	Lump Sum
903-99.01	Sign No. 15, Overhead Box Truss, 78 FT. – 9 IN.	Lump Sum
903-99.01	Sign No. 22, Overhead Box Truss, 78 FT. – 10 IN.	Lump Sum
903-99.01	Sign No. 27, Overhead Box Truss, 78 FT. – 10 IN.	Lump Sum
903-99.01	Sign No. 41, Overhead Box Truss, 90 FT. – 10 IN.	Lump Sum
<b>J8I3044C</b>		
903-99.01	Sign No. 46, Overhead Box Truss, 90 FT. – 10 IN.	Lump Sum
903-99.01	Sign No. 59, Overhead Box Truss, 78 FT. – 10 IN.	Lump Sum
903-99.01	Sign No. 62, Overhead Box Truss, 89 FT. – 5 IN.	Lump Sum
903-99.01	Sign No. 65, Overhead Box Truss, 78 FT. – 10 IN.	Lump Sum
903-99.01	Sign No. 77, Overhead Box Truss, 78 FT. – 10 IN.	Lump Sum

**GG. Temporary Long-Term Rumble Strips JSP-13-04C**

long-term rumble strips, as shown in the plans, or as designated by the engineer.

**2.0 Material.**

**2.1** The long-term rumble strips shall be 10 feet to 12 feet in length, fabricated from a polymer material, and be orange in color.

**2.2** The long-term rumble strips shall have a minimum width of 4 inches, but no greater than 6 inches. The long-term rumble strips shall have a minimum thickness of 0.25 inch, but no greater than 0.50 inch.

**2.3** The long-term rumble strips shall have a pre-applied adhesive backing for securing to the asphalt or concrete roadway surface.

**3.0 Construction.** Long-term rumble strips layout and spacing shall be in accordance with the plans or as approved by the engineer. The long-term rumble strips shall be installed and removed in accordance with manufacturer's recommendation. The contractor shall monitor and repair, and maintain if necessary the long-term rumble strips until removed.

**3.1** Each set shall consist of five individual strips spaced ten to twelve feet on center.

**3.2** The long-term rumble strips removal process shall not damage the roadway surface. If any damage occurs to the pavement during the removal of long-term rumble strips, the contractor shall replace or repair the damaged pavement at no cost to the Commission.

**4.0 Method of Measurement.** Measurement of long-term rumble strips will be per each complete set of five strips.

**5.0 Basis of Payment.** The accepted quantity of Temporary Long-Term Rumble Strips sets will be paid for at the contract unit price for 616-20.02, Temporary Long-Term Rumble Strips, per each set. The long-term rumble strips unit bid price shall include the cost of all labor, equipment and materials to install, maintain, and remove the rumble strips.

HH. Work Zone Intelligent Transportation System NJSP-15-32A

**1.0 General.** The Work Zone Intelligent Transportation System (WZITS) shall be a portable, real-time, automated, solar powered system that calculates and displays travel time through work zones. The goal of this system is to provide advance traffic condition information to motorists at key decision points due to construction activity. The information reported to the public will include an accurate drive time through the work zone. This system shall be in operation 24 hours per day, seven days per week, during the construction period.

**2.0 Description.** This item shall consist of submittal and approval of a Work Zone Intelligent Transportation System plan, furnishing, installing, relocating, and operating a portable, automated, solar powered real-time work zone system ("Work Zone Intelligent Transportation System") meeting the requirements noted herein, and providing a system manager to maintain the system during the duration of the project. The contractor shall assume responsibility for any damaged equipment due to crashes, vandalism, adverse weather, etc. that may occur during the system's deployment.

**2.1** The Contractor shall furnish and maintain this system for measuring and delivering real-time messages for the work zone.

**2.2** The contractor is responsible for coordinating any work in adjacent roadway construction projects.

**2.3** The contractor will be responsible to relocate the devices as directed by the engineer. When the equipment is no longer required for this project, the contractor shall remove it and retain ownership.

### **3.0 System Requirements**

**3.1** The Work Zone Intelligent Transportation System shall be installed on I-44. It shall consist of the following as a minimum:

- (9) portable changeable message signs (three per I-44 eastbound and westbound approaches, one per Route 13 southbound approach, and one per US-65 northbound approach)
- (8) portable non-intrusive traffic sensors (4 per approach)
- 1 central computer

### **4.0 Smart Work Zone Plan**

**4.1 General.** The contractor shall submit to the Engineer for approval a written and illustrated WZITS Plan three (3) weeks prior to mobilization of any component of the WZITS System. The WZITS Plan shall include the items required in this specification. The Contractor will not be allowed to start any construction activities that will affect traffic on the project until the WZITS Plan

is approved by the Engineer.

**4.2 Content of the WZITS Plan.** The WZITS Plan shall include, as a minimum, the following items:

- (a) A detailed plan showing the proposed locations of all WZITS devices and equipment description including make and model.
- (b) A description of all proposed thresholds and proposed CMS messages to be implemented.
- (c) The name and contact information of the WZITS System Manager.
- (d) A detailed description of the proposed methods of communication between WZITS devices and WZITS Central Computer and between WZITS Central Computer and the [MoDOT Transportation Management Center \(TMC\)](#) located at [1107 W Chestnut Expressway, Springfield, MO](#).
- (e) Proposed corrective method procedures including response times and notification process.

**Review MnDOT or ATSSA ITS solutions for possible WZITS plans.**

**4.3 Approval of Plan.** Approval of the WZITS Plan by the Engineer is required prior to the placement of any WZITS devices. Approval is conditional and will be predicated on satisfactory performance during construction. The Engineer reserves the right to require the Contractor to make changes in the WZITS Plan and operations, at no additional cost to the Commission, including removal of personnel, as necessary, to obtain the quality specified. The Contractor shall notify the Engineer in writing a minimum of [seven \(7\)](#) calendar days prior to any proposed changes in the WZITS Plan. Proposed changes are subject to approval by the Engineer.

**5.0 Materials.**

**5.1 Changeable Message Signs.** The Work Zone Intelligent Transportation System shall utilize MoDOT approved portable changeable message signs (CMS) in accordance with Missouri Standard Specifications for Highway Construction section 616 Temporary Traffic Control and 1063 Temporary Traffic Control Devices and Standard Plans for Highway Construction 616.10. Each CMS shall be capable of displaying eight characters on each of three rows. Each CMS power supply shall be properly sized to allow continuous operation for up to ten days during periods of darkness and inclement weather.

**5.2** Each CMS shall be integrated with a radio/modem, and/or a traffic sensor or other equipment (e.g. controller) mounted on it and shall act as a single “device” for the purpose of communicating with similarly integrated “devices” and displaying real-time traffic condition information. Each device shall be capable of communicating through radios/modems with other device(s) at upstream or downstream locations. MoDOT District [TMC](#) staff must have the ability to override messages displayed on any CMS in the system. This feature must be password protected and on a website separate from MoDOT’s public website.



**5.3 Portable Non-Intrusive Traffic Sensors.** The Smart Work Zone System traffic sensors shall be side-fired microwave radar type whose accuracy is not degraded by inclement weather and visibility conditions including precipitation, fog, darkness, excessive dust and road debris. These sensors shall be capable of acquiring traffic data from up to six (6) lanes of traffic on a lane-by-lane basis.

**5.4 Central Computer.** The central computer shall provide the functionality described below:

**General**

- Provide a Graphical User Interface that is compliant with Windows standards.
- Communication between the central computer and any device shall be independent and *non-reliant* upon communications with any other CMS or sensor.
- Alerts to MoDOT TMC staff and the Engineer shall be provided via pagers and/or e-mail. Alerts shall be sent in the event of device failure or traffic delays over 15 minutes.

**Data Processing Software**

- The capability to collect and store sensor data.
- The capability to compare traffic data collected from sensors to user-defined thresholds and automatically update one or more CMS's.
- The capability to estimate travel times and automatically update one or more portable CMS's consistent with user-defined thresholds.
- The capability to display alternate route messages consistent with user-defined thresholds.

**Data Management**

- Storage of speed, volume, occupancy, CMS message history, and travel times as well as appropriate sensor status for each day.

**Website**

- The Contractor will be responsible for hosting the website and obtaining domain names. Possible domain names and overall website design must be submitted to the Engineer for approval prior to it being made available.
- The website shall contain an accurate map of the area affected by the work zone, including state highways or routes that may be used as alternates.
- Icons or hyperlinked text should accurately depict the current location of the system components and give real-time information provided by each component. In the event components are moved to a new location, the website must reflect these changes to the system layout.
- Historical data should be password protected and stored on the website for each day the system is in use, with date and time stamps included. The above data shall be available to MoDOT staff at all times for the duration of work zone activity. An electronic copy of all data, including date and duration of system malfunction, shall be provided to MoDOT staff after all work zone activity is completed and the WZITS has been removed.
- The MoDOT TMC staff and the Engineer shall have the capability to override messages, via password protection, from the website.
- Device information shall be provided to MoDOT TMC staff through icons or hyperlinked text representing each device. Detectors should provide real-time speeds at the respective locations and CMS's should provide the current message of each sign.

- The website shall be designed and operated to allow 20 users to access the site at one time.

**6.0 System Manager.** The contractor shall employ a system manager for the WZITS. The system manager shall be locally available to maintain system components, maintain the website, move portable devices as necessary, and respond to emergency situations. The system manager shall be responsible for coordinating the placement of devices in the project areas. It is the responsibility of the system manager to move system components that interfere with construction operations and relocate the components to another area. The system manager shall supply a local phone number and/or a toll free number to the engineer to contact the system manager or other system representative at any time. The system manager shall not perform any other duties on the jobsite.

**7.0 Operational Test.** Once the WZITS is installed, it shall undergo a five-day operational test. The operational test shall include a test of the system in operation during a lane closure to ensure that all WZITS equipment (including the changeable message signs, traffic sensors, central computer, communication devices, and website) is operating in a fully functional manner and in accordance with the Smart Work Zone Plan for a duration of at least five (5) calendar days. The contractor shall provide for complete operations support from the vendor during the operational test, and the contractor shall provide verification that the reported drive time through the work zone accurately reflects actual field conditions. If any equipment malfunctions occur for a combined period of four (4) hours or more during this operational test on any day, no credit will be given for that day for the operational test period, and the five-day operational test will reset.

**7.1** The contractor shall maintain records of equipment stoppages and resumptions during the five-day operational test for submission to the engineer for his approval. In the event that ten percent or more of the time similar malfunctions occur that affect the proper operation of the WZITS, the engineer may declare a system component defective and require replacement of the equipment at no additional cost. When a system component defect is declared, the five-day operational test shall begin again after all defective equipment is replaced and the system is fully operational.

**7.2 Report.** The contractor shall submit a report to the engineer detailing the daily activity of the system during the operational test. The report shall indicate the date and time of any activity necessary to maintain operation of the WZITS during the operational test period. Each entry shall include the following information:

- Identity of the equipment on which work was performed
- Cause of equipment malfunction (if known)
- A description of the type of work performed
- Time required to repair equipment malfunction

Once the operational test report is received and approved by the engineer, the WZITS will be considered operational and the system will be accepted for use.

**8.0 Method of Measurement.** Work Zone Intelligent Transportation System (WZITS) shall be measured by one lump sum and shall be divided into the following payment schedule:

- 35 percent will be paid when all of the WZITS equipment is delivered to the jobsite.

- 25 percent will be paid when the engineer approves the Operational Test Report.
- 20 percent will be paid after 30 calendar days of full system operation.
- 20 percent will be paid after traffic is in its final position, the contractor's equipment has been removed from the project, and historical data has been provided to the engineer.

**8.1 Deduction for Failed System.** A percentage of the lump sum will be deducted should the system malfunction for three (3) or more consecutive calendar days or any total of five (5) calendar days in any one calendar month after the approval of the operational test. This deduction will be based on a ratio of calendar days of unsuccessful operation to total calendar days of operation following the approval of the operational test. This deduction will not reduce the total system payment to less than 60 percent of the lump sum.

**9.0 Basis of Payment.** Payment for submittal and approval of a Work Zone Intelligent Transportation plan, furnishing, installing, relocating, operating, maintaining, testing, monitoring, providing a website, providing historical data, and removal of the Work Zone Intelligent Transportation System (WZITS), including all items required for proper operation of this installation, will be completely covered by the contract unit price for Item Number 616 99.01, "Work Zone Intelligent Transportation System," per lump sum.

## II. Roadside Dynamic Message Sign Replacement

**1.0 Description of Work.** Replace existing dynamic message sign (DMS) with a Contractor furnished full color/full matrix display DMS (support structure for DMS Sign Board is excluded from this provision; see STRUCTURES provisions). Install the new DMS on the new sign structure indicated in the plans. Also includes the work to relocate the existing DMS controller cabinet and install it on the new DMS cabinet base (DMS cabinet base is excluded from this provision; see STRUCTURES provisions). The DMS display shall have a pixel pitch of 20 mm. The sign controller shall be installed in the existing equipment cabinet. Provide a multimode fiber optic communications cable connecting the DMS to the sign controller in the equipment cabinet. Connect the sign and existing controller to power, communication and ground. The contractor shall install, configure, and test the DMS for proper operation with assistance from the manufacturer's representative.

The existing signs to be replaced are Ledstar full matrix DMS. They are full matrix signs with amber LEDs and 66 mm pixel pitch.

## **2.0 Materials.**

**2.1 General.** All materials furnished, assembled, fabricated, or installed shall be new products and approved by the engineer. All internal and external components shall be manufactured from corrosion resistant material. Dissimilar metals shall be separated by an inert dielectric material. Sign components shall be capable of operating without any decrease in performance over a temperature range of -30°F to 165°F (-34°C to 74°C) with a relative humidity of up to 90 percent non-condensing.

**2.2 Display Size.** The sign display shall provide a 96 rows x 304 columns pixel matrix of 20 mm pixels.

**2.3 Housing.** The sign housing shall be front access. The sign housing shall meet the requirements of NEMA TS4 2016, Section 3.2.8.

**2.3.1 Dimensions and Weight.** The maximum exterior dimensions and weight of the DMS shall be as follows:

7' – 4-7/8" (H) x 21' – 6-1/2" (W) and 2,600 lbs.

**2.3.2 Enclosure.** The sign housing external skin shall be constructed of aluminum alloy 5052 H32 that is a minimum of 0.125 inch thick. All exterior, excluding the sign face, and all interior housing surfaces shall be natural aluminum mill finish. The interior structure shall be constructed of aluminum. No internal frame connections or external skin attachments shall rely upon adhesive bonding or rivets. The sign enclosure shall meet the requirements of NEMA TS4 2016, Section 3.1.1. All drain holes and other openings in the sign housing shall be screened to prevent the entrance of insects and small animals.

**2.3.3 Design.** The sign housing shall comply with the fatigue resistance requirements of the sixth-edition American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals with current addendums. Design and construct the DMS unit for continuous usage of at least 20 years and the sign housing for a 50-year design life.

**2.3.4 Hoist Points.** The top of the housing shall include multiple galvanized or stainless steel lifting eyebolts or equivalent hoisting points. Hoist points shall be positioned such that the sign remains level when lifted. Ensure that the hoist points and sign frame allow the sign to be shipped, handled and installed without damage. Hoist points shall be attached directly to structural frame members by the sign manufacturer.

**2.3.5 Fabrication.** The sign shall be fabricated, welded and inspected in accordance with the requirements of the current American National Standard Institute/American Welding Society (ANSI/AWS) Structural Welding Code-Aluminum. Exterior seams and joints, except the finish coated face pieces, shall be continuously welded using an inert gas welding method. Limit the number of seams on the top of the housing to a maximum of three. Stitch weld the exterior housing panel material to the internal structural members to form a unitized structure.

**2.3.6 Mounting Assembly.** Exterior mounting assemblies shall be fabricated from aluminum alloy 6061-T6 extrusions a minimum of 0.1875 inch thick. For the DMS, include a minimum of three 6061-T6 structural aluminum Z members on the rear of the sign housing. The number of Z members shall be sufficient for mounting the sign on the two post structure shown in the plans. These structural members shall run parallel to the top and bottom of the sign housing and are each a single piece of material that spans the full length of the sign. These structural members shall be attached to the internal framework of the sign.

**2.3.7 U-Bolts.** Provide galvanized or stainless steel U-bolts of sufficient size to attach the Z member to the DMS structure posts.

**2.4 Housing Face.** The sign face surfaces shall be finished with a matte black coating system that meets or exceeds American Architectural Manufacturers Association (AAMA) Specification No. 2605. Provide certification that the sign face parts are coated with the prescribed thickness.

The sign face shall include a contrast border that meets the requirements of NEMA TS 4-2016, Section 3.1.6. No exposed fasteners shall be allowed on the housing face. Display modules shall be easily and rapidly removed from within the sign without disturbing adjacent display modules. If the sign includes external fascia panels, they shall be constructed using aluminum. Finish each fascia panel with a matte black coating system that meets or exceeds AAMA Specification No. 2605. The sign shall be resistant, either by active or passive subsystem, to fog and frost on the front face.

**2.5 Lens Panel Assembly.** If sign includes lens panel assemblies, they shall be modular in design, removable and interchangeable without misalignment of the lens panel and the light-emitting diode (LED) pixels. The lens panel assembly must consist of an environmental shielding layer coating to protect and seal the LEDs and internal electronics. The coating shall be a minimum 90 percent ultraviolet (UV) opaque. Lens panels must have a matte black coating that meets or exceeds AAMA Specification No. 2605. The mask shall be perforated to provide an aperture for each pixel on the display module. The apertures shall not block the LED output at the required viewing angle.

**2.6 Sign Housing Ventilation System.** The ventilation system must meet the requirements of NEMA TS 4-2016, Section 3.1.2. Air drawn into the sign shall be filtered upon entry. The ventilation system shall be testable on command from remote and local control access locations. The sign shall include a sensor or a sensor assembly to monitor airflow volume to predict the need for a filter change. All ventilation system fans shall be new. The ventilation system fans shall have a 60,000-hour, L10-life rating. The sign controller shall continuously measure and monitor the temperature sensors. The sign shall blank when a critical temperature is exceeded and will report this event when polled. All temperature measurements from the sign controller shall be readable remotely. Humidity sensors shall detect from 0 to 100 percent relative humidity in 1 percent or smaller increments. Sensors shall operate and survive in 0 to 100 percent relative humidity, and have an accuracy that is better than plus or minus 5 percent relative humidity. A humidistat is not acceptable.

**2.7 Photo Sensors.** The sign shall meet the requirements of NEMA TS 4-2016, Section 9.1.3.1. The photo sensors shall provide accurate ambient light condition information to the sign controller for automatic light intensity adjustment. The automatic adjustment of the LED driving waveform duty cycle shall occur in small enough increments that the sign's brightness changes smoothly, with no perceivable brightness change between adjacent levels. Stray headlights shining on the photoelectric sensor at night shall not cause LED brightness changes.

**2.8 Display Modules.** Provide display modules manufactured by one source and fully interchangeable throughout the manufacturer's sign systems. Removal or replacement of a complete display module or LED board can be accomplished without the use of special tools. Removal or failure of any display module shall not affect the operation of any other display module or sign component. Display modules shall contain solid-state electronics needed to control pixel data and read pixel status. The sign shall have a full matrix display area as defined in the glossary of NEMA TS 4-2016. The brightness and color of each pixel shall be uniform over the sign's entire face within a 30-degree viewing angle in all lighting conditions.

**2.9 LED and Pixel.** The LED lamps shall have a minimum viewing angle of 30 degrees. All pixels in all signs in a project shall have equal color and on-axis intensity. The sign display shall



meet the luminance requirements of NEMA TS 4-2016, Section 5.4, for light emitting signs connected at full power. Provide LED brightness and color bins that are used in each pixel to the engineer for approval. The LED manufacturer shall demonstrate testing and binning according to the International Commission on Illumination (CIE) 127 (1997) standard. All LEDs shall operate within the LED manufacturer's recommendations for typical forward voltage, peak pulsed forward current and other ratings. Component ratings shall not be exceeded under any operating condition. Provide a pixel test as a form of status feedback to the traffic management center (TMC) from the local sign controller. The operational status of each pixel in the sign can be automatically tested once a day. The pixel status test shall determine the functional status of the pixel as defined by the pixel Failure Status object in National Transportation Communications for ITS Protocol (NTCIP) 1203v0239 and shall not affect the displayed message for more than half a second. The LEDs shall be individually mounted directly on a printed circuit board (PCB).

**2.10 Display Optical, Electrical and Mechanical.** The display modules shall be rectangular and have an identical vertical and horizontal pitch between adjacent pixels. The separation between the last column of one display module and the first column of the next module shall be equal to the horizontal distance between the columns of a single display module. The pitch shall be 20 mm. All components on the LED side of PCBs shall be black. There shall be a minimum of two power supplies that are wired in a parallel configuration for redundancy, so that if one or 25 percent of the supplies in a group, whichever is greater, completely fails, the sign shall still be supplied with enough power to run 40 percent of all pixels at a 100 percent duty cycle with an ambient operating temperature of 165°F. The sign controller shall continuously measure and monitors all LED module power supply voltages and provides the voltage readings to the TMC central ATMS or a laptop computer on command. The LEDs shall be protected from external environmental conditions, including moisture, snow, ice, wind, dust, dirt and UV rays. Do not use epoxy to encapsulate the LEDs. Removal of one or more display modules shall not affect the structural integrity of any part of the sign.

**2.11 Characters, Fonts, and Color.** The display area shall be capable of displaying three lines of 16 characters using an 18-inch font that meets the height-to-width ratio and character spacing in the Manual on Uniform Traffic Control Devices for Streets and Highways 2009 Edition (MUTCD), Section 2L.04, Paragraphs 05, 06, and 08. The signs shall be capable of displaying American Standard Code for Information Interchange (ASCII) characters 32 through 126, including all uppercase and lowercase letters and digits 0 through 9, at any location in the message line. The sign must be loaded (as a factory default) with a font in accordance with or that resembles the standard font set described in NEMA TS 4-2016, Section 5.6. The sign shall also be loaded (as a factory default) with a font set that resembles the Federal Highway Administration (FHWA) Series E Modified 2000 standard font. Signs shall display the colors prescribed in the MUTCD, Section 1A.12.

**2.12 Power Supply.** The sign shall meet the requirements of NEMA TS 4-2016, Section 10.2 and shall operate from a 120/240 VAC, 60Hz, single-phase power source. Locate all 120 VAC wiring in conduit, pull boxes, raceways or control cabinets as required by the National Electrical Code (NEC). No 120 VAC wiring shall be exposed inside or outside of the sign housing. Do not use the sign housing as a wiring raceway or control cabinet. Provide Type THHN/THWN-2 or XHHW-2 power cables sized as required by the NEC for acceptable voltage drops while supplying alternating current from the existing cabinet to the sign. Provide surge protective devices (SPD) installed or incorporated in the sign system by the manufacturer to guard against



lightning, transient voltage surges, and induced current. The SPDs shall protect all electric power and data communication connections.

**2.13 Sign Controller.** The sign controller shall monitor the sign in accordance with NEMA TS 4-2016, Section 9. The sign shall monitor the status of any photocells, LED power supplies, humidity and airflow sensors. The sign controllers shall use fiber optic cables for data connections between the sign housing and ground-level cabinet. The sign controller within ground cabinets shall be rack-mountable, designed for a standard EIA-310 19-inch rack and include a keypad and display.

**2.14 Sign Controller Communications Interface.** The sign controller shall have communication interfaces in accordance with NEMA TS 4-2016, Section 8.3.2. The sign controller shall have a 10/100 Base TX 8P8C port and EIA-232 serial interface. The EIA-232 serial interface shall support the following:

- Data Bits - 7 or 8 bits
- Parity - Even, Odd, or None
- Number Stop Bits - 1 or 2 bit

Switching between Ethernet and serial operation shall not require sign controller software or hardware modifications. The TMC central ATMS or a laptop computer shall be able to remotely reset the sign controller.

**2.15 Message and Status Monitoring.** The DMS shall provide two modes of operation: (1) remote operation, where the TMC central ATMS commands and controls the sign and determines the appropriate message or test pattern; and (2) local operation, where the sign controller or a laptop computer commands and controls the sign and determines the appropriate message or test pattern. The sign shall provide for local or remote sign control to be selected. There shall be a visual indicator on the controller that identifies whether the sign is under local or remote control. The sign controller shall be able to select a blank message or any one of the messages stored in the sign controller's nonvolatile memory when the control mode is set to local. The sign controller shall activate the selected message. The sign shall be programable to display a user-defined message, including a blank page, in the event of power loss. Remotely from the TMC central ATMS or from a local laptop computer message additions, deletions and sign controller changes can be made. Each font shall be customizable, and modifications to a font may be downloaded to the sign controller from the TMC central ATMS or a local laptop computer at any time without any software or hardware modifications. No perceivable flicker or ghosting of the pixels during sign erasure and writing periods shall be visible.

**2.16 TMC Communications.** The sign controller shall be addressable by the TMC central ATMS through the Ethernet communications network using software that complies with the NTCIP 1101 base standard (formerly the NEMA TS 3.2 -1996 standard), including all amendments as published at the time of contract letting, the NTCIP Simple Transportation Management Framework, and conforms to Compliance Level 1. The sign shall comply with the NTCIP 1102v01.15, 2101 v01.19, 2103v02.07, 2201v01.15, 2202 v01.05 and 2301v02.19 standards. The sign shall also comply with NTCIP 1103v02.17, Section 3. The controller's internal time clock shall be configurable to synchronize to a time server using the network time protocol (NTP). NTP synchronization frequency must be user-configurable and permit polling intervals from once per minute to once per week in one-minute increments. The controller shall allow the user to define the NTP server by internet protocol (IP) address.

**2.17 Central Software Compatibility.** The sign controller shall be compatible with the central ATMS software protocol for sign functionality, which is compliant with NTCIP 1203 version 3.

**2.18 Sign Control Software.** Computer software from the manufacturer shall be provided that allows an operator to program, operate, exercise, diagnose and read current status of all sign features and functions using a laptop computer. The sign control software shall provide a graphical representation that visibly depicts the sign face and the current ON/OFF state of all pixels, as well as allows messages to be created and displayed on the sign. The laptop computer and sign shall be able to communicate when connected directly by an EIA-232 cable and via Ethernet. The software shall allow communication between multiple users and multiple signs across the same communication network.

**2.19** Use an AWG # 6 wire or equivalent bonding straps to bond the sign to the structure.

**2.20** The Contractor shall furnish any other miscellaneous hardware required to complete this task per manufacturer and MoDOT specifications.

### **3.0 Construction Requirements.**

**3.1** Examine DMS carefully to verify that the materials, design, construction, markings, and workmanship comply with all applicable standards, specifications and requirements.

**3.2** Remove the existing DMS from the structure and install the new DMS on the same day. The DMS shall not be removed until the contractor has the new DMS delivered and ready for installation. Transport the existing DMS to an off-site indoor facility for the salvaging of components. The contractor is responsible for any damage occurring during existing DMS removal and new DMS installation.

**3.3** The contractor shall mount the DMS to the sign structure in accordance with the manufacturer's recommendations. The manufacturer shall have an on-site representative for sign commissioning. Do not provide initial power to the sign without the permission of the manufacturer's representative.

**3.4** Use a device that measures resistance to ground using the three-point fall-of-potential method to ensure that the resistance from the sign's ground bar to ground does not exceed 10 ohms. If resistance exceeds 10 ohms check and repair grounding system to meet the requirement.

**3.5** Install new sign controller in existing cabinet. Make needed power and network connections within the cabinet.

**3.6** Install the new power conductor and fiber optic communications cables between the new roadside cabinet and the sign housing. Connect the new and existing cabling in the sign.

### **4.0 Testing.**

**4.1 Site Testing.** Conduct stand-alone equipment installation tests at the field site following an engineer approved test plan. Test all stand-alone (i.e., non-network) functions of the DMS

equipment using equipment installed as detailed in the plans and as approved by the engineer. Complete approved testing documentation forms and turn them over to the engineer for review and as a basis for rejection or acceptance. Provide a minimum notice of 15 calendar days prior to all tests to permit the engineer or his representative to observe each test.

**4.2 System Testing.** Conduct DMS system tests on the field equipment with the master equipment including, at a minimum, all remote-control functions. Testing shall follow an engineer approved test plan. Display the return status codes from the sign controller for a minimum of 72 hours. Demonstrate the sign's ability to display the proper predefined message or remain blank when power is restored following an AC power interruption. Complete approved testing documentation forms and turn them over to the engineer for review, and as a basis for rejection or acceptance.

**4.3 Testing Failure.** If any component fails during either site or system testing, the component shall be corrected or another component substituted in its place and the test repeated. If a component has been modified as a result of a failure, a report shall be prepared and delivered to the engineer. The report shall describe the nature of the failure and the corrective action taken. If a failure pattern develops, the engineer may direct that design and construction modifications be made to all signs without additional cost to the Department or an extension of the contract period.

**4.4 Acceptance Testing.** Conduct a 60-day acceptance test after the successful completion of the system test. During the 60-day test period, limit downtime due to mechanical, electrical, or other malfunctions to a maximum total of five calendar days. If the equipment fails to operate for a total of five or more calendar days, testing will be restarted. The engineer may select to pause and extend the 60-day test period by the number of days lost by failure and repair time in lieu of restarting the full 60-day test. The engineer will furnish the contractor with a letter of approval and completion stating the first and last day of the 60 day test period.

## **5.0 Warranty.**

**5.1** Provide a one year manufacture warranty for parts and material that begins when the project is accepted.

## **6.0 Documentation.**

**6.1 Electronic Equipment.** Provide documentation for electronic equipment. Provide operational manuals, troubleshooting and service manuals, assembly and installation instructions and warranty information. The manufacturer shall grant MoDOT a license that allows for use and internal distribution of any and all sign communications protocols, operating systems, drivers and documentation.

**6.2 As-Built Drawings.** Provide drawings illustrating the equipment locations, conduit routing and display module attachment. A wiring diagram shall also be provided for the new electrical and communications wiring.

**7.0 Basis of Payment.** Measurement and payment for replacing the existing DMS with a new color DMS on the new sign structure, as well as relocated the existing DMS cabinet. This includes all miscellaneous DMS and DMS cabinet wiring, connections, hardware, etc required for a safe,

fully operational color DMS along with removal, transport, testing and documentation. Payment will be made as follows:

Item No.	Type	Description
910.99.02	Each	Roadside Dynamic Message Sign Replacement

JJ. Structures

**1.0 Drilled Shafts for DMS Structures.**

**1.1 Description.** Follow the requirements of Sec 701 of the Standard Specifications except for the following:

Delete Secs 701.4.10.3 through 701.4.11.2  
Delete Secs 701.6.4 and 701.6.5  
Replace Secs 701.7.1 with Section 1.2.1 below  
Delete Secs 701.7.5 and 701.7.6

**1.2 Basis of Payment.** Follow the requirements of Sec 701.7 of the Standard Specifications except for the following.

**1.2.1 Drilled Shaft.** Replaces Sec 701.7.1 of the Standard Specifications. Payment will be considered full compensation for all reinforcing steel, anchor bolts and templates, washers, nuts, disposal of excavated soil, restoration of site around the drilled shaft, costs of drilling (including temporary casing), excavation (including rock), slurry, cleaning, an acceptable method of inspection as required, furnishing and placing concrete, grouting and incidental work and material required by the contract documents. Payment for any drilled shaft installed and accepted will be at the contract unit price per linear foot for the diameter of the drilled shafts specified, irrespective of the character of the material actually encountered during excavation. No additional compensation will be made for concrete required to fill an oversized casing or for oversized excavation.

Item No.	Unit	Description
701-11.04	Linear Foot	Drilled Shafts (3 FT. 0 IN. DIA.)

**2.0 Furnish and Install DMS Structure.**

**2.1 Description.** Furnish and install DMS support structure as shown on the plans.

**2.2 Shop Drawings.** Shop drawings shall be prepared and submitted in accordance with Standard Specification section 1080.3.2. Shop drawings shall include all details of the DMS support structures including but not limited to details of handholds, cable inlets, pipe end caps, and base plates.

**2.3 Basis of Payment.** Measurement and payment for DMS structure include the furnishing and the installation of all items required for the support of the DMS (excludes DMS Sign Board) and all miscellaneous hardware required for a fully operational system as shown on the plans, exclusive of items covered under Drilled Shaft (3 FT. 0 IN. Dia.).

Item No.	Unit	Description
910-99.02 {1}	Each	DMS Structure, Furnish and Install

KK. DMS Controller Cabinet Base

**1.0 Description.** Provide a concrete base for the relocated-existing DMS controller cabinet. See details in the plans.

**2.0 Basis of Payment.** Payment for cabinet base includes all excavation, foundation construction, ground rod, anchor bolts, materials, equipment, tools, labor, and work incidental thereto. Payment will be made as follows:

Item No.	Unit	Description
910-91.00	Cu. Yd.	Base, Concrete

LL. DMS Training

**1.0 Description.** Conduct a training course for MoDOT operations and maintenance staff on operating and maintaining the new DMS. Design the training course to ensure that MoDOT staff achieves a full knowledge and appreciation of the design, operation and maintenance of equipment. Training may consist of field device operations and maintenance training, field communications operations and maintenance training and system operations and maintenance training.

**2.0 Materials.** Provide all training documentation, and coordination with the sign vendor to provide teaching staff. Provide the training to consist of lectures and demonstrations that shall provide practical (hands-on) training and experience. Provide five hard copies of the training manual and one electronic copy of the training manual.

Provide a detailed training plan and a syllabus for the course for the approval of the engineer. Include in the information: tentative dates for course, location, and an outline of topics and names of instructors. Provide this information to the engineer at least 30 days in advance of the training course.

**3.0 Construction Requirements.** Provide up to a two-day training class to train operations and field maintenance personnel. Include in-field demonstrations.

**4.0 Basis of Payment.** Payment for work covered by this specification includes equipment and materials, necessary to prepare for and conduct the training. Payment will be made as follows:

Item No.	Unit	Description
910-99.01	Lump Sum	DMS Training

MM. DMS Communication Cable

**1.0 Description.** Furnish and install DMS control cable that is recommended by DMS vendor.

**2.0 Materials.** Provide DMS control cable that is recommended by the DMS vendor.

**3.0 Construction Requirements.** Install and terminate the DMS control cable between the cabinet and the new DMS in a manner recommended by the sign vendor.

**4.0 Basis of Payment.** Measurement and payment for work covered by this specification includes equipment, tools, and materials, necessary to furnish and install DMS Control Cable. Payment will be made as follows:

Item No.	Unit	Description
910-99.03	Linear Foot	DMS Communication Cable

NN. LED Tunnel Luminaire, 100W

**1.0 Description.** Furnish and install 100W (nominal) LED Tunnel luminaire at the locations within the Doling Trail tunnel as shown in the lighting plans.

**2.0 Materials.** Provide ANYX ARV17HO LED luminaires to illuminate the Doling Trail tunnel. The luminaire model shall be "ARV17HO-MIN10-100W-35-MVOLT-OP-GRY" as stated in the plans.

**3.0 Construction Requirements.** Install the luminaires at the locations and height detailed in the plans in a manner recommended by the luminaire manufacturer and plan notes and details.

**4.0 Basis of Payment.** Measurement and payment for work covered by this specification includes equipment, tools, and materials, necessary to furnish and install the 100W LED Tunnel Luminaire. Payment will be made as follows:

Item No.	Unit	Description
901-99.02 {2}	Each	LED Tunnel Luminaire, 100W

OO. RPP20 Power Pack Relay

**1.0 Description.** Furnish and install nLight AIR rPP20 power/relay packs at the locations shown within the Doling Trail tunnel lighting plans.

**2.0 Materials.** Provide nLight AIR rPP20 power/relay packs to facilitate dimming control of the Doling Trail tunnel. The power/relay pack model shall be "RPP20-D-EFP-G2" as stated in the plans.

**3.0 Construction Requirements.** Install the power/relay packs within the pull box locations detailed in the plans in a manner recommended by the power/relay pack manufacturer and plan notes and details.

**4.0 Basis of Payment.** Measurement and payment for work covered by this specification includes equipment, tools, and materials, necessary to furnish and install the Power Pack Relay. Payment will be made as follows:

Item No.	Unit	Description
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901-99.02 {3}	Each	Power Pack Relay
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PP. Dimming Cable, 18 AWG, 1 Conductor, 600V

**1.0 Description.** Furnish and install 0-10VDC #18 AWG, 600V rated dimming conductors as shown in the plans to switch dimming intensity to the LED Tunnel Luminaires via the RPP20 Power Pack.

**2.0 Materials.** Provide low voltage #18 AWG dimming conductors as required by the NEC, Sec 1061 Electrical Conductors, and the RPP20 Power Pack manufacturer for the Doling Trail tunnel lighting system.

**3.0 Construction Requirements.** Install the dimming cables from the RPP20 Power Packs to the LED Tunnel Luminaires as detailed in the plans in a manner consistent with the recommendations by the RPP20 manufacturer and plan notes and details.

**4.0 Basis of Payment.** Measurement and payment for work covered by this specification includes equipment, tools, and materials, necessary to furnish and install the dimming cables. Payment will be made as follows:

Item No.	Unit	Description
901-99.03	Linear Foot	Dimming Cable, 18 AWG, 1 Conductor, 600V

QQ. Pull Box, Type Metal NEMA

**1.0 Description.** Furnish and install metal NEMA rated pull boxes with vandal resistant covers at the locations on the walls within the Doling Trail tunnel as shown in the lighting plans.

**2.0 Materials.** Provide metal NEMA rated pull boxes that meet the specifications and sizes detailed in the plans within the Doling Trail tunnel. The cover shall consist of vandal resistant features and be able to accept the conduits sized and detailed in the plans.

**3.0 Construction Requirements.** Install the metal NEMA pull boxes at the locations and height detailed in the plans in a manner recommended by the pull box manufacturer and plan notes and details.

**4.0 Basis of Payment.** Measurement and payment for work covered by this specification includes equipment, tools, and materials, necessary to furnish and install the metal NEMA pull box. Payment will be made as follows:

Item No.	Unit	Description
901-99.02 {4}	Each	Pull Box, Type Metal NEMA

RR. Tunnel Dimming Controller

**1.0 Description.** Furnish and install nLight ECLYPSE system dimming controller to facilitate dimming control of the Doling Trail tunnel lighting plans.

**2.0 Materials.** Provide nLight ECLYPSE controller and enclosure to facilitate dimming control of the Doling Trail tunnel. The nLight ECLYPSE controller and enclosure model shall be "NECY-MVOLT-ENC-NECYD NLIGHTAIR G2" as stated in the plans.

**3.0 Construction Requirements.** Install the tunnel dimming controller on the tunnel wall at the height and location detailed in the plans, and in a manner consistent with the manufacturer's recommendations and plan notes and details.

**4.0 Basis of Payment.** Measurement and payment for work covered by this specification includes equipment, tools, and materials, necessary to furnish and install the Tunnel Dimming Controller. Payment will be made as follows:

Item No.	Unit	Description
901-99.02	Each	Tunnel Dimming Controller

SS. General Electrical Requirements

**1.0 Dissimilar Metals.** To prevent galvanic corrosion, avoid connections between dissimilar metals. Where this is not practical, connections between dissimilar metals shall incorporate a means of keeping moisture out of the connection. Where the connection need not conduct electricity, interpose a non-absorbing, inert material or washer between the dissimilar metals. Use nonconductive liners and washers to insulate fasteners from dissimilar metals. Where the connection must conduct electricity, use a conductive sealant between the dissimilar metals. Alternatively, use an insulating gasket and a bond wire connecting the two metal parts.

**2.0 Wiring.** Every conductor, except a conductor contained entirely within a single piece of equipment, must terminate either in a connector or on a terminal block. Provide and install the connectors and terminal blocks where needed, without separate payment. Approved splice kits shall be used instead of connectors and terminal blocks for underground power cable splices.

**2.1** All connectors must be permanently labeled and keyed to preclude improper connection. The labeling method(s) shall be approved by the engineer prior to use.

**2.2** Terminal blocks shall be affixed to panels that permanently identify the block and which wire connects to each terminal. This may be accomplished by silk screening or by installing a laminated printed card under the terminal block, with the labels on portions of the card that extend beyond the block. Installation of terminal blocks by drilling holes in the exterior wall of the cabinet is not acceptable.

**2.3** Do not install conductors carrying AC power in the same wiring harness as conductors carrying control or communication signals.

**2.4** Arrange wiring, including jumpers, so that any removable assembly can be removed without disturbing wiring that is not associated with the assembly being removed.

**2.5** Use wire saddles to guide and protect bundles of wires, jumpers and cables. Affix the wire saddles to the wall of the cabinet or vertical member of the rack and keep power and signal

cables separated.

**3.0 Labeling Cables.** Label every cable immediately upon installation. Label the cables at every point of access, including pull boxes, and termination points. Use self-laminating vinyl labels at least 1.5" wide and long enough that the translucent portion of the label completely covers the white area bearing the legend. The vinyl shall have a layer of pressure sensitive acrylic adhesive. The labels shall resist oil, water and solvents and shall be self-extinguishing. The legend shall be machine printed in letters at least 3/32" high. Consult with the engineer concerning the desired method of identifying each cable. Labeling cables is incidental to the installation of cable and will not be paid separately.

**4.0 Basis of Payment.** No direct payment will be made for any materials, equipment or labor which is performed under this provision. All costs of compliance with this provision shall be considered included in the bid unit prices of the pay items included in the contract.

TT. Site Restoration

**1.0 Description.** Restore to its original condition any disturbed areas at sites including, but not limited to, pull box, conduit and pole base installations. Restoration shall be accomplished by placing material equivalent to that of the adjacent undisturbed area. Disturbed unpaved areas shall be fertilized and either seeded and mulched or sodded as directed by the engineer. The engineer will have the final authority in determining the acceptability of the restoration work.

**2.0 Basis of Payment.** The cost of restoration of disturbed areas will be incidental to the unit price of pole base, conduit and/or pull box. No direct payment will be made for any materials or labor, which is performed under this provision.

UU. Conduit

**1.0** Furnish and install DMS conduits as shown on the plans and as described within this section. The plans depict conduit routing in schematic form only. Determine final routing based on actual field conditions at each site, including utility locator service markings, to assure no conflicts with existing utilities.

**2.0 Materials.**

**2.1** Use PVC conduit meeting the requirements of Sec 1060.

**2.2** Use HDPE conduit meeting the requirements of Sec 1060. Use orange conduit for communication cable and black for power cable.

**2.3** Use GRC conduit meeting the requirements of Sec 1060 and supplemental anchoring notes within the lighting plans for the Doling Trail Tunnel Lighting System.

**2.4** Pull ropes or tapes shall be polypropylene with a minimum tensile strength of 600 pounds.

**3.0 Construction Requirements.**

**3.1 General.** The contractor shall comply with Sec 902.17, except as noted in this special

Provision and/or as noted in the plans.

**3.1.2** Pull ropes shall be furnished and installed in all empty conduit cells.

**3.1.3** HDPE duct shall not be spliced. All runs shall be continuous.

**3.1.4** Use an impact mole to install conduit under existing paved surfaces unless otherwise indicated, or unless the crossing is part of a longer bore or unless otherwise indicated in the plans. The portion installed using a mole will be paid for at the same price per foot as trenched conduit.

### **3.2 Directional Drilling.**

**3.2.1 Preliminary Site Work.** Determine all utility locations near the path of the proposed bore, including depth. Use this information to avoid damage to utilities and/or facilities within the work area. Provide this information, including the sources, to the engineer a minimum of five working days prior to boring. Do not bore until the engineer approves that submittal. Prior to boring, expose all utilities for which it is customary and safe to do so.

**3.2.2 Boring.** The diameter of the drilled hole shall conform to the outside diameter of the conduit as closely as practical. Pressure grout as directed by the engineer, to fill any voids, which develop during the installation operation. Remove and replace any conduit damaged in directional drilling operations at no expense to the project.

**3.2.3 Drilling Fluid ("Slurry").** The use of water and other fluids in connection with the drilling operation will be permitted only to the extent necessary to lubricate cuttings. Jetting will not be permitted, and the use of water alone as a drilling fluid will not be permitted. Use a drilling fluid consisting of at least 10 percent high grade, processed Bentonite to consolidate excavated material, seal the walls of the hole, and furnish lubrication for subsequent removal of material and immediate installation of the pipe.

Provide a means of collecting and containing drilling fluid that returns to the surface, such as slurry pit, or a method approved by the engineer. Provide measures to prevent drilling fluids from entering storm sewer systems. Prevent drilling fluid from accumulating on or flowing onto sidewalks, other pedestrian walkways, driveways or streets. Immediately remove any slurry that is inadvertently deposited on pedestrian walkways. Transport waste drilling slurry from the site and dispose of it. Do not allow slurry to enter wetlands. Protect wetlands using appropriate soil erosion control measures approved by the engineer. This requirement also applies to slurry resulting from vacuum excavation to locate underground utilities.

**3.2.4 Drilling Control.** Use a digital walkover locating system to track the drill head during the bore. At minimum, the locating system shall be capable of determining the pitch, roll, heading, depth and horizontal position of the drill head at any point along the bore. During each drilling operation, locate the drill head every 10 feet along the bore and prior to crossing any underground utility or structure. Upon completion of the drilling operation and conduit installation, furnish the engineer with an as-built profile drawing and plan drawing for the drilled conduit showing the horizontal and vertical locations of the installed conduit.

**3.3** Install Conduit into Existing Pull Box.

**3.3.1** Carefully expose the outside of the existing pull box without disturbing any existing conduits or cabling.

**3.3.2** Make the appropriate sized hole for the entering conduit at a location within the pull box that will not disturb the existing cabling and that will not hinder the installation of new cabling within the installed conduit.

**3.3.3** Install the conduit.

**3.3.4** Fill any void area between the drilled hole and the conduit with an engineer-approved filling material to protect against conduit movement and the entry of fill material.

**3.3.5** Backfill shall be carefully tamped in place. All disturbed areas shall be restored.

#### **4.0 Basis of Payment.**

**4.1** Conduit may be installed by directional boring at locations shown as trenched on the plans. Such conduit will be paid for as if it had been installed by trenching.

**4.2** Measurement and payment for work covered by this specification includes equipment, tools and materials, necessary to install conduit. It includes excavation and site restoration. Payment will be made as follows:

Item No.	Unit	Description
9013002	Linear Foot	Conduit, 2 in., Rigid, In Trench
901-99.02 {1}	Each	Install Conduit Into Existing Pull Box

#### **VV. Coordination With ITS Staff and Utility Locates**

**1.0 Description.** Any work that will impact the existing communications network must be coordinated with the Commission's Central District ITS staff. This includes but not limited to removal and replacement of any existing communications equipment, adding new devices and changes to power sources or disconnects. Minor modifications to the existing communications network can have significant impacts on the system and operation of other ITS and traffic signal systems.

**1.1 MoDOT** is a member of MO-One-Call System. Prior to any excavation or work within MoDOT Right-Of-way, the contractor must contact MO-One Call at 1-800-DIG-RITE and request for Utility Locates within noted project limits. If the scope of work contains modification, addition and/or expansion of existing underground MoDOT ITS, lighting, or signal facilities, the contractor must notify the MoDOT Utilities Locate staff prior to any work, in order for MoDOT to update MoDOT utility location records with Missouri One Call.

**2.0 Contact.** Initial contact must be made at least seven calendar days before work that may impact the existing communications network commences. Notify the engineer.

**3.0** The ITS and network devices located within the project limits are a crucial part of the traffic operation system for this area. It is imperative that the downtime be kept to a minimum when adding, removing, or modifying any existing ITS and network devices. This may require the contractor to perform work that will affect existing network devices during nighttime and/or

weekend hours, at the discretion of the engineer. Allowable timeframes for this work will be subject to the need for ITS devices in the area to be used to manage other traffic impacting work zones.

**4.0 Basis of Payment.** No direct payment shall be made for compliance with this provision.

WW. Noise Wall System – JSU0114

### **1.0 Description.**

**1.1** This work consists of furnishing and erecting noise walls. The walls are to be designed as post-supported or free standing. The walls shall be designed according to the AASHTO Guide Specifications for Structural Design of Sound Barriers 1989 with 1992 and 2002 Interim Specifications.

**1.2** Any deviation from the noise wall alignment as shown on the MoDOT plans will require approval from the MoDOT engineer.

**1.3** Detailed layout, fabrication drawings, and complete engineering calculations based on the wall layout in the MoDOT plans shall be submitted for approval prior to construction.

**1.4** The drawings shall include all information necessary for prefabricating or field constructing wall sections and posts. Drawings shall show shape, dimensions and layout of wall components and details of reinforcing steel, as well as the quantity, type, size, and details of connection and lifting hardware, and any additional details necessary for a complete review. The Contractor shall design the top of the walls to be horizontal and at or above the wall profiles shown on the plan drawings. Changes in elevation shall be accomplished by stepping sections at posts. Steps shall allow for a smooth transition in wall height as determined by the engineer and shall not exceed 1 foot in height except at the locations shown in the plan sheet profiles. The drawings shall also include all information needed to erect the wall, including the drilled shaft elevations and depths, proposed pier and/or footing elevations, locations and positions in relation to conflicting utilities, the details and construction procedure for connecting panels to panels, panels to posts, details for the connection of posts to the foundation shafts or footing. The drawings shall show any details necessary to account for change of grade, details for any additional drainage structures if required, details for spanning any existing utilities, drainage structures or ditches if required and any additional details necessary to complete the work.

**1.5** All drawings shall be clear and complete, and shall be thoroughly checked before submittal. Six sets of prints of the completed wall design plans shall be submitted for distribution. The prints submitted shall be legible and have distinct details of sufficient contrast to be suitable for microfilming. Prints which do not have the desired clarity and contrast will be returned for corrective action. The wall manufacturer shall be solely responsible for the content of the design plans and shall ensure the details of the wall conform to all requirements of the contract plans and specifications.

**1.6** Design calculations shall include a summary of all design parameters used, including material types, strength values and allowable stresses, soil parameters, assumed loads and load combinations, and hydraulic flow calculations for drainage structures if used. Calculations shall be submitted covering the full range of heights and loading conditions of each noise wall.



**1.7** All wall drawings and design plans submitted for distribution shall be signed, sealed, and stamped in accordance with the laws relating to architects and professional engineers. (Chapter 327, RSMo.) The design by the wall system supplier shall be verified by the Contractor. Information to be verified shall include, but not be limited to soils, ground topography, wind pressures, locations of utilities and other obstructions. Shop drawing requirements for the wall system shall also apply as required in Section 712.3.2.

## **2.0 Products and Manufacturers.**

**2.1** The following products have received a cursory review by MoDOT. Masonry type noise walls have been developed by the National Concrete Masonry Association (NCMA), who may be contacted at 1-703-713-1900 for a list of local manufacturers and distributors. Proprietary noise wall system manufacturers that cannot produce wall systems meeting the required architectural aesthetic treatment or other project requirements shall not be considered. The following list is not exclusive. Other products/manufacturers may be suitable. When a proprietary noise wall system and/or manufacturer is selected, it shall require engineer approval.

Product	Manufacturer
AcoustaCrete	Faddis Concrete Products 2206 Horseshoe Pike Honey Brook, PA 19344 (610) 269-4685
Fanwall	The Reinforced Earth Co. 1444 North Farnsworth Avenue, Suite 505 Aurora, IL 60505 (630) 898-3334

## **3.0 Appearance of Wall Systems.**

**3.1 Architectural Aesthetic Treatment.** As specified herein and on the plans, all panels shall have a random uncoursed ashlar stone pattern on both sides. The aesthetic treatment shall have similar dimensions and pattern as the noise wall system along Route 65 between Chestnut Expressway and Route 60 (James River Freeway) in southeast Springfield, along Route 60 (James River Freeway) between Kansas Expressway and National Avenue, or as approved by the engineer.

**3.2 Finished Wall Top Cap or Coping.** A precast or cast-in-place coping shall be installed on top of all of the complete-in-place walls as shown on the plans. Shape, finish and details of the cap or coping shall be as shown on the plans or to the satisfaction of the engineer.

**3.3 Finish.** The Contractor shall provide complete shop drawings of all aesthetic treatments. All reveals and texture shall be continuous from element to element through construction joints and around corners. Techniques must be utilized to ensure true continuous texture between separate elements.

**3.4 Cleaning.** Sandblasting shall not be allowed for cleaning concrete panel surfaces, as it will reduce the special surface texture specified elsewhere herein. Pressure washing with water is the preferred method of removing laitance. If cleaned by pressure washing, a pressure of 3000 psi at a rate of three to four gallons per minute using a fan nozzle held perpendicular to the surface at a distance of two to three feet shall be utilized. The completed surface shall be free of blemishes, discolorations, surface voids and conspicuous form marks to the satisfaction of the engineer.

**3.5 Full Size Wall Test Section.** The Contractor shall demonstrate his workmanship by constructing at least one actual size test wall section complete with connecting posts and cap or coping with the proposed form liner texture/pattern treatment on each side of the wall. Placement location of the actual test wall section(s) shall be approved by the engineer. The architectural surface treatment of the finished noise wall work shall achieve the same final effect as demonstrated on the approved wall test section. The approved wall test section with connecting posts may be acceptable for all noise wall systems if approved by the engineer. The engineer reserves the right to require one or more wall test sections for each noise wall to be constructed. The engineer will determine whether the color and various surface treatments of the wall test section(s) and posts are acceptable. If any wall test section is found to be unacceptable, the concrete precaster shall make additional sections until an acceptable product is produced at no additional cost to the Commission. The approved wall test section(s) may be incorporated into the permanent wall construction if acceptable to the engineer.

**3.6 Standards.** The materials used in construction of the wall test section shall comply with all standards as listed in this specification and the plan documents. The concrete mix shall be consistent with the project specifications and criteria. The form liner finish shall be demonstrated on the full area of each wall test section.

**3.7 Form Materials.** Form work for aesthetic treatment of noise walls shall be a type which produces uniform results consistent in both, pattern, and depth of relief with the project design aesthetics. The Contractor shall be responsible to coordinate the aesthetic treatments of all components to meet the design aesthetic criteria described herein and as shown on plans.

**3.8 Form Ties.** Wall form ties shall be placed in a uniform pattern. In surface areas receiving aesthetic treatment form liner, all form ties shall occur in the simulated stone surface. Fiberglass ties shall be 0.500 inch diameter rod with a minimum ultimate tensile strength of 15,000 pounds. Ties shall closely match the concrete wall color. Ties shall be ground flush with the surface of concrete prior to water blasting.

**3.9 Form Release Agent.** Form release agents shall be manufacturer's standard non-staining, non-petroleum based, and compatible with surface sealer finish coating. Form release agents shall be applied to all surfaces of the form liner at the manufacturer's recommended rate.

**3.10 Gaskets.** That material which is to be used to prevent joint leakage, on horizontal joints between panels, shall be closed cell compressible neoprene of such thickness as is appropriate to assure leakage prevention. One face shall be coated with an adhesive tape to assure proper positioning at the time of form closure. The neoprene shall be sufficiently compressible as to assure virtual "zero" separation of the forms as a result of the use of this product. Horizontal joints should have a tongue and groove fitting and panels should be flush to the satisfaction of the engineer when adjoined.

**3.11 Aggregate Gradation.** Concrete mixes supplied will meet the following requirements for the construction of the following elements. The concrete aggregate for aesthetic treatment mix for noise walls and any other areas where aesthetic treatment is formed monolithically with the structure shall be aggregate Gradation E. This requirement for aggregate size is necessary to permit concrete mixture to flow freely and fill completely into reveals and form liner proposed in the aesthetic treatment. Gradation E aggregate shall comply to the aggregate source requirements as specified above.

#### **4.0 Technical Assistance.**

**4.1** When a proprietary system is used, the Contractor shall obtain the services of a technical advisor from the manufacturer to advise the engineer during critical stages of the installation process or if problems arise. This advisor shall be a qualified representative, knowledgeable of the design and construction process. The Contractor shall be responsible for ensuring the advisor is present when required. Manufacturer's representative must be present at preconstruction meeting, and must submit 12" x 12" samples of each type, texture, and color of wall system.

#### **5.0 Materials.**

**5.1 Panels.** Noise wall panels shall be constructed of precast concrete panels. Panels may be cast in sections and stacked to achieve the design height. Any material damage sustained making the material unstable as a result of Contractor or fabricator operations shall be repaired or replaced to the satisfaction of the engineer at no expense to the Commission.

**5.2 Concrete Panel Reinforcement.** One layer of 4 x 4 - W4xW4 welded wire fabric meeting the requirements of AASHTO M55 (ASTM A185) placed at mid-depth, or as directed in the AASHTO guide specifications. Welded wire fabric shall be galvanized in accordance with AASHTO M111. Reinforcing steel shall meet the requirements of AASHTO M31 (ASTM A615) Grade 60. All deformed reinforcing steel in wall panels above finish ground line shall be epoxy coated in accordance Section 1036.3 or galvanized in accordance with AASHTO M111, except coating will not be required if the walls are located more than 25 feet from a permanent roadway. Steel strands for pre-stressed concrete shall not be epoxy coated and shall be low relaxation type.

**5.3 Concrete.** Cement and fly ash shall comply with the requirements of Sections 1019 and 1018 respectively. Fine and coarse aggregates shall comply with the quality requirements of Section 1005 and as specified herein for form liner work.

**5.4** The concrete mix shall be as designed by the pre-caster and submitted to the engineer for approval before production begins. The mix design is subject to the following limitations:

- (a) The amount of cementitious material shall not be less than 564 pounds (six sacks) per cubic yard.
- (b) Fly ash, if used, shall constitute no more than 15% of the total cementitious material in the mix.
- (c) Retarding or accelerating admixtures or any additive containing chlorides shall not be used without specific approval from the engineer.

- (d) The concrete shall be designed with an entrained air content of 5.5%, and shall be maintained between 4% and 7%.

**5.5** The concrete shall be cured sufficiently to develop a minimum compressive strength of 4000 psi at 28 days. No panels may be shipped until 7 days after casting and until the specified compressive strength has been attained.

**5.6** Finished panel and cap dimensions shall be within  $\frac{1}{4}$ " of those shown on the shop drawings. Locations of embedded hardware shall be within  $\frac{1}{4}$ ". The difference between the two diagonals shall not exceed  $\frac{1}{2}$ ".

**5.7** Each panel shall be marked in an inconspicuous place with the manufacturer's identification, piece mark, date of manufacture and production lot number.

**5.8** Grout, if used, shall comply with the requirements of ASTM C476 "Specification for Grout for Masonry."

**5.9 Panel Connections.** Cable-type panel connector assemblies shall be all stainless steel, aircraft-type, 7 x 19 strand, minimum  $\frac{3}{8}$  inch diameter, with a rated breaking strength of 12,000 pounds minimum. All connections of the post and panels to the foundation, and panel to panel, shall be designed using a minimum safety factor of two or as specified in the AASHTO guide. All exposed steel parts, except as specified above, shall be galvanized or stainless steel.

**5.10** Posts and wall coping final color shall match, to the satisfaction of the engineer, that of adjacent panels. Panels will be slipped into posts by tongue-and-groove connection. Shims as needed will be neoprene. Post attachment to the footing may be by steel anchor plate or by embedment in poured concrete. Post construction and connection details shall be specified in the shop drawings.

**5.11** Shop drawings shall specify the diameter and depth of all augured post holes. Poured concrete and reinforcement shall be in accordance with the design calculations and shall be shown on the shop drawings.

**5.12** Acceptance of the posts, pre-cast wall panels with pre-cast cap or coping will be based on compliance with the contract requirements, freedom from defects in workmanship, and color and surface texture acceptable to the engineer.

## **6.0 Installation.**

**6.1** The wall panels shall be installed in accordance with the MoDOT plans, the manufacturer's recommendations, and the manufacturer's approved drawings. Minor field modifications in the alignment may be required to avoid obstacles such as utilities and existing landscaping, as determined by the engineer. Any tree trimming or tree removal required shall be considered incidental to noise wall system construction and shall be in accordance with ANSI A-300. The Contractor shall not perform any tree work trimming or removal without the engineer's approval.

**6.2** Joints and connections shall be secured in such a manner as to be structurally sound, with no visible openings for sound transmission or light penetration.

**6.3** Within fourteen days of erection of any panel, the adjacent embedment backfill shall be placed to the lines and grades as shown on the plans. The embedment backfill shall be placed in lifts not exceeding 8" (loose) and shall be compacted to not less than 90% of the maximum dry density as determined by AASHTO T-99.

## **7.0 Method of Measurement.**

**7.1** The unit of measurement for furnishing and fabricating all materials for the walls, including concrete wall panels, any associated top coping treatment, posts, piers, footings, reinforcement, joint materials, masonry seal will be per square foot of "NOISE WALL SYSTEM".

**7.2** The noise wall quantity to be paid for shall be determined by the wall outline shown on the bidding plans, defined by the minimum allowable wall elevations on top, the bottom of the wall, and the station limits at each end. The Contractor shall verify existing conditions. Additional square footage required to meet the minimum wall elevations for a particular wall system will be furnished at the Contractor's expense.

**7.3** Final measurements for noise walls will not be made except for authorized changes during construction, or where appreciable errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract quantity.

## **8.0 Basis of Payment.**

**8.1** The accepted quantity, determined as provided above, will be paid for at the contract unit price for Item No. 720-99.04, Noise Wall System, per square foot and Item No. 703-46.20, Form Liners, square yard. Payment shall include compensation for Technical Advisor, furnishing all materials, fabricating, and installing the concrete wall panels with aesthetic façade and supporting post system, including all necessary connecting hardware, and constructing the noise wall complete in place.

**8.2** Payment shall include compensation for all labor and materials required to prepare the wall foundation and erect the wall complete in place to the lines and the grade shown on the plans.

### **XX. Aesthetic Concrete Stain – JSU0114**

**1.0 Description.** This work consists of applying solvent-based solid color concrete sealer to all exposed concrete surfaces of installed noise wall systems, including noise wall panels, posts, coping and caps.

**2.0 Materials.** H&C Solvent Based Solid Concrete Sealer, or Loxon Vertical Concrete Stain, or an equivalent product as approved by the engineer, shall be applied to noise walls.

**2.1** The aesthetic stain used on the panels, posts and copings will be tinted to match Sherwin Williams color "Gray Area" #SW 7052. All exposed concrete surfaces shall have a minimum of two coats of "Gray Area" applied.

**2.2** Before staining all walls, a sample (8 ft by 8 ft minimum) area will be tinted and must meet the approval of the engineer.

**3.0 Construction Requirements.** Contractor will follow manufacturer's directions for preparation of surface and product application. Contractor should be aware new concrete must cure as per manufacturer's direction before being stained. All surfaces must be covered to the satisfaction of the engineer. A minimum of two coats shall be applied.

**4.0 Basis of Payment.** All cost for preparation of surfaces, materials and application of the product shall be considered completely covered by the contract unit price bid for Item No. 703-30.09

YY. Additional Noise Wall System Geotechnical and Subsurface Evaluations – JSU0114

**1.0 Description.** Contractor shall be responsible for any additional geotechnical investigation and subsurface evaluations necessary for foundation and structural recommendations for the noise wall included in this project.

**2.0 Basis of Payment.** Payment for this requirement shall be considered to be completely covered by the contract unit prices for Item No. 720-99.04, "Noise Wall System", per square foot.

ZZ. Miscellaneous Construction Requirements – J8I3225

**1.0 Description.** The Contractor shall be required to provide the following project coordination efforts and miscellaneous project requirements for the successful completion of this project:

**1.1 Traffic Control Quantities and** A set number of traffic control devices has been included in the pay items based on an assumed two (2) maximum independent work zones with a maximum two (2) mile length of work area. No direct pay will be made for additional traffic control devices due to the contractor's preferred method of construction or preferred schedule of work.

**1.2 Ramp Closures.** No ramp closures were deemed necessary for the scope of work. If ramp closures are deemed necessary to the contractor or engineer for the safety the workers and/or the traveling public, the contractor shall provide traffic control as required by the latest typical application on MoDOT EPG and in compliance with the latest MUTCD edition. Sequential entrance or exit ramps shall NOT be allowed to be closed CONCURRENTLY by the contractor. Allowable working hours and duration length for ramp closures shall be at the complete discretion of the engineer.

**1.3** No direct pay will be made for any clearing or grubbing required to construct this project.

**1.4 Seeding and Mulching.** The contractor shall be required to complete the permanent seeding and mulching immediately following the completion of the guardrail replacement operation. No direct pay for any temporary seeding or additional mobilization.

**2.0** Payment for compliance with the above requirements will be considered completely covered by the items provided for in the contract.

AAA. Special Provisions for Protection of BNSF Railway Company Interests – J8I3225

To Report an Emergency on the railroad call: (800) 832-5452



Greene County I-44E US DOT# 669823U MP 197.5 BNSF Fort Scott Sub Southwest of Morton, MO. **Current FRA data shows 7 day, 7 night trains and 0 passenger trains.**

## **1.0 Authority of Railroad Engineer and Commission's Representative.**

**1.1** The authorized representative of BNSF Railway Company, herein called "Railroad Engineer", shall have final authority in all matters affecting the safe maintenance and operation of railroad traffic including the adequacy of the foundations and structures supporting the railroad tracks.

**1.2** The authorized representative of the Missouri Highways and Transportation Commission, herein called "Engineer", shall have authority over all other matters as prescribed herein and in the project specifications.

## **2.0 Contractor's indemnity Obligations to the Railroad.**

**2.1** The term "contractor" as used in this special provision includes any and all subcontractors. The contractor shall indemnify, defend and hold harmless the Railroad from and against any and all loss, damage, claims, demands, causes of action, costs and expenses of whatsoever nature arising out of injury to or death of persons whomsoever, or out of damage to or destruction of property whatsoever, including, without limitation, damage to fiber optic, communication and other cable lines and systems, where such injury, death, damage or destruction results from any cause arising out of work performed by the contractor pursuant to the agreement between Railroad and the Commission for the project, and shall also release the Railroad from and shall waive any claims for injury or damage to equipment or other property, which may result from the construction, maintenance and operation of railroad tracks, wire lines, fiber optic cable, pipe lines and other facilities on said right of way of the Railroad by the contractor. **THE LIABILITY ASSUMED BY THE CONTRACTOR WILL NOT BE AFFECTED BY THE FACT, IF IT IS A FACT, THAT THE DAMAGE, DESTRUCTION, INJURY, DEATH, CAUSE OF ACTION OR CLAIM WAS OCCASIONED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF THE RAILROAD, THE RAILROAD'S AGENTS, SERVANTS, EMPLOYEES OR OTHERWISE, EXCEPT TO THE EXTENT THAT SUCH CLAIMS ARE PROVEN BY ANY CLAIMANT TO HAVE BEEN PROXIMATELY CAUSED BY THE INTENTIONAL MISCONDUCT OR SOLE OR GROSS NEGLIGENCE OF THE RAILROAD.** The contractor's indemnity shall include loss of profits or revenue arising from damage or destruction to fiber optic, communication and other cable lines and systems.

**2.2** In addition to the indemnity obligations contained in the preceding paragraph, the contractor shall indemnify, defend and hold harmless the Railroad from any claims, expenses, costs, actions, demands, losses, fines, penalties, and fees, of whatsoever nature arising from, related to or connected, in whole or in part, with the following:

(a) The removal of the contractor's agents, servants, employees or invitees from the Railroad's property for safety reasons.

(b) Contractor's compliance or failure to comply with the provision of applicable law in connection with the performance of contractor's work.

## **3.0 Notice of Starting Work.**

**3.1** The contractor shall not commence any work on Railroad's right of way until the contractor has complied with the following conditions:

- (a) The contractor shall be required to apply for, execute and comply with all provisions of a permit obtained by accessing the following link: <http://bnsf.railpermitting.com>

**3.2** The Railroad's written authorization to proceed with the work, with a copy to the Engineer, will 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.

#### **4.0 Interference with Railroad Operations.**

**4.1** The contractor shall arrange and conduct all work so that there shall be no interference with the Railroad's operations, including train, signal, telephone and telegraphic services; or damage to the Railroad's property; poles, wires and other facilities of tenants, licensees, easement grantees and invitees on the Railroad's right of way. Whenever work may 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 that requires flagging service or inspection service shall be deferred by the contractor until the flagging service required by the Railroad is available at the job site.

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

**4.3** Should conditions arising from, or in connection with the work require that immediate and unusual provisions be made to protect the Railroad's operations and property, the contractor shall make such provisions. If in the judgment of the Railroad Engineer, or the Engineer if the Railroad Engineer is absent, such provision is insufficient, the Railroad Engineer or Engineer may require or provide such provisions as deem necessary. In any event, such provisions shall be at the contractor's expense and without cost to the Railroad or the Commission.

**4.4** The contractor shall be responsible for any damage to the Railroad as a result of work on the project, which shall include but not be limited to interference with the normal movement of trains caused exclusively by the work performed by the contractor. The contractor shall be responsible for damages for the Railroad's train delays that are caused exclusively by the contractor. The Railroad agrees not to perform any act to unnecessarily cause any train delay. The damages for train delays per freight hour will be billed at an average rate per hour as determined from the Railroad's records. These records shall be provided by the Railroad, upon request, to the Commission or the Commission's contractor.

#### **5.0 Track Clearances.**

**5.1** The minimum track clearances to be maintained by the contractor during construction are shown on the project plans. However, before undertaking any work within Railroad's right of way, or before placing any obstruction over any track, the contractor shall:

- (a) Notify the Railroad Engineer at least 72 hours in advance of the work.
- (b) Receive assurance from the Railroad Engineer that arrangements have been made for flagging service as may be necessary.
- (c) Receive permission from the Railroad Engineer to proceed with the work.
- (d) Ascertain that the Engineer has received copies of notice to the Railroad and of the Railroad's response.

**5.2** The contractor shall fully comply with any horizontal and vertical clearance requirements imposed by Missouri state statutes and regulations and Federal statutes and regulations regarding the placement of structures or equipment near or over railroad tracks.

## **6.0 Construction Procedures.**

**6.1 General.** Construction work on the Railroad's property shall be:

- (a) Subject to the inspection and review of the Railroad.
- (b) In accordance with the Railroad's written outline of specific conditions.
- (c) In accordance with this special provision.

**6.2 Excavation.** The subgrade of an operated track shall be maintained with the berm edge at least 12 feet from centerline of track and not more than 26 inches below top of the rail. The contractor will not be required to make existing section meet this specification if substandard, in which case the existing section will be maintained. The contractor shall cease all work and notify the Railroad immediately before continuing excavation in the work area if obstructions are encountered which do not appear on the drawings. If the obstruction is a utility and the owner of the utility can be identified, then the contractor shall also notify the owner immediately. If there is any doubt about the location of underground cables or lines of any kind, no work shall be performed until the exact location has been determined. There will be no exceptions to these instructions. Additionally, all excavations shall be conducted in compliance with applicable Occupational Safety and Health Act regulations and, regardless of depth, shall be shored where there is any danger to tracks, structures or personnel. Any excavations, holes or trenches on the Railroad's property shall be covered, guarded and/or protected when not being worked on. When leaving work site areas at night and over weekends, the areas shall be secured and left in a condition that will ensure that Railroad's employees and other personnel who may be working or passing through the area are protected from all hazards. All excavations shall be back filled as soon as possible.

**6.3 Excavation for Structure.** The contractor shall be required to take special precaution and care in connection with excavating, shoring pits and in driving piles for footings adjacent to tracks to provide adequate lateral support for the tracks and the loads which the tracks carry, without disturbance of track alignment and surface, and to avoid obstructing track clearances with working equipment, tools or other material. The procedure for doing such work, including need of and plans for shoring, shall be approved by the Railroad Engineer before work is performed, but such approval shall not relieve the contractor from liability. Before submission of plans to the Railroad

Engineer for approval, the Engineer will first review such plans in accordance with the Missouri Standard Specifications for Highway Construction, hereinafter called "Standard Specifications". The responsibility for the design and construction of the sheeting rests solely with the contractor. The temporary shoring along the railroad tracks shall be designed for the Cooper E80 loading. The design shall insure that the shoring is braced or substantially securely to prevent movement. The contractor shall submit plans for the temporary shoring that shall be signed, sealed, and stamped in accordance with the laws relating to Architects and Professional Engineers, Chapter 327, RSMo. and then submitted for review by the Engineer.

**6.4 Demolition of Existing Structures.** The contractor shall be required to take special precaution and care in connection with demolition of existing structures. The procedure for doing such work, including need of and plans for temporary falsework, shall first be approved by Railroad Engineer before work is performed, but such approval shall not relieve the contractor from liability. Before submission of plans to the Railroad Engineer for approval, the Engineer will first review such plans.

**6.5 Falsework.** The contractor shall be required to take special precaution and care to prevent any material from falling on the Railroad's right of way. The procedure for preventing material from falling, including need of and plans for temporary falsework, shall first be approved by the Railroad Engineer, but such approval shall not relieve the contractor from liability. Before submission of plans to the Railroad Engineer for approval, the Engineer will first review such plans.

#### **6.6 Blasting.**

**6.6.1** The contractor shall obtain advance approval of the Railroad Engineer and the Engineer for use of explosives on or adjacent to the Railroad's property. If permission for use of explosives is granted, the contractor shall be required to comply with the following:

(a) Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the contractor.

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

(c) No blasting shall be done without the presence of the Railroad Engineer. At least 72 hours advance notice to the person designated in the Railroad's notice of authorization to proceed as mentioned in Section 2.2 of this job special provision, the contractor shall be required to arrange for the presence of the Railroad Engineer and such flagging as the Railroad may require.

(d) The contractor shall 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 contractor's expense, any track misalignment or other damage to the Railroad's property resulting from the blasting as directed by the Railroad Engineer. If contractor's actions result in delay of trains, the contractor shall bear the entire cost thereof.

**6.6.2** The Railroad Engineer will:

- (a) Determine the approximate location of trains and advise the contractor the approximate amount of time available for the blasting operation and clean-up.
- (b) Have the authority to order discontinuance of blasting if blasting is too hazardous or is not in accordance with this special provision.

**6.7 Maintenance of Railroad Facilities.** The contractor shall be required to maintain all ditches and drainage structures free of silt or other obstructions which may result from contractor's operations. The contractor shall promptly repair eroded areas within Railroad's right of way and repair any other damage to the Railroad's property, tenants, licensees, easement grantees and invitees. All such maintenance and repair of damages due to the contractor's operations shall be done at the contractor's expense.

**6.8 Storage of Materials and Equipment.**

**6.8.1** The contractor shall not store or stockpile construction materials or equipment closer than 25 feet to the centerline of the nearest railroad track or on the Railroad's property not covered by construction easement, contractor's permit, lease or agreement. Additionally, the contractor shall not store or leave materials or equipment within 250 feet of the edge of any highway/rail at-grade crossings. Further, both sides of a main track shall remain unobstructed for a distance of 10 feet from the exterior edge of the track at all times to allow for stopped train inspection.

**6.8.2** Machines or vehicles shall not be left unattended with the engine running. Parked machines or equipment shall be in gear with brakes set and with blade, pan or bucket lowered to the ground if so equipped. All grading or construction machinery that is left parked near the track unattended shall be effectively immobilized so that unauthorized persons cannot move such equipment.

**6.9 Cleanup.** Upon completion of the work, the contractor shall remove from within the limits of the Railroad's right of way, all machinery, equipment, surplus materials, falsework, rubbish or temporary buildings of the contractor, and leave said right of way in a neat condition satisfactory to the Railroad Engineer.

**6.10 Buried Cable and Other Buried Facilities.**

**6.10.1** The contractor is placed on notice that fiber optic, communication and other cable lines and systems, collectively the "Lines", owned by various telecommunications companies may be buried on Railroad's property or right of way. The locations of the buried Lines, pipelines or utility facilities have been included on the plans based on information from the telecommunications companies, pipeline operators, or utilities, as the case may be. The contractor shall be responsible for contacting the Railroad Engineer, the Railroad's 24-hour information number (1-800-533-2891), the telecommunications companies, pipeline operators and utilities and notifying them of any work that may damage the buried Lines, pipelines, utility facilities and/or interfere with their service. The contractor shall verify the location of all buried Lines, pipelines and utility facilities shown on the plans or marked in the field in order to establish their exact locations prior to or while doing work on the Railroad's property or right of way. The contractor shall also use all reasonable methods when working on the Railroad's property or right of way to determine if any other buried Lines, pipelines or utility facilities exist on the Railroad's property or right of way.



**6.10.2** Failure to mark or identify the buried Lines, pipelines or utility facilities will be sufficient cause for the Railroad Engineer to stop construction at no cost to the Commission or Railroad until these items are completed. The contractor shall be responsible for the rearrangement of any buried facilities, Lines, pipelines or utility facilities determined to interfere with the construction. The contractor shall cooperate fully with any telecommunications companies, pipeline operators and utility facility owners in performing such rearrangements.

**7.0 Damages.** The Railroad will not assume liability for any damages to the contractor, contractor's work, employees, servants, equipment and materials caused by railroad traffic. Any cost incurred by the Railroad for repairing damages to Railroad's property or to property of the Railroad's tenants, licensees, easement grantees and invitees caused by or resulting from the contractor's operations shall be paid directly to the Railroad by contractor.

## **8.0 Flagging Services.**

**8.1 When Required.** Under the terms of the agreement between the Commission and the Railroad, the Railroad has sole authority to determine the need for flagging required to protect the Railroad's 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 within 25 feet of the centerline of any track, 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, or reasonable probability of accidental hazard to Railroad's operations or personnel. Normally, the Railroad will assign one flagger to a project; but in some cases, more than one may be necessary, such as yard limits where 3 flaggers may be required. However, if the contractor works within distances that violate instructions given by the Railroad Engineer or performs work that has not been scheduled with the Railroad Engineer, flaggers may be required full time until the project has been completed.

## **8.2 Scheduling and Notification.**

**8.2.1** Not later than the time that approval is initially requested to begin work on the Railroad's right of way (30 days), contractor shall furnish to the Railroad and the Commission a schedule for all work required to complete the portion of the project within Railroad's right of way and arrange for a job site meeting between the contractor, the Engineer, and the Railroad Engineer. Flaggers may not be provided until the job site meeting has been conducted and the contractor's work scheduled.

**8.2.2** The contractor shall be required to give the Railroad Engineer at least 30 days of advance written notice of intent to begin work within Railroad's right of way in accordance with this special provision. Once begun, if such work is then suspended at any time, or for any reason, the contractor shall be required to give the Railroad Engineer at least 5 working days of advance notice before resuming work on Railroad's right of way. Such notices shall include sufficient details of the proposed work to enable the Railroad Engineer 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, the notice shall be confirmed in writing with copy to the Engineer. If flagging is required, no work shall be undertaken until the flagger or flaggers are present at the job site. Obtaining a flagger or flaggers may take up to 30 days to obtain initially from the Railroad. When flagging begins, the flagger 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, obtaining a flagger or flaggers may take up to 30 days to again obtain from the Railroad. Due to Railroad labor agreements, 10 working days notice may be necessary before flagging services may be discontinued and responsibility for payment stopped. Notification for flagging should be addressed to:

Brian Hennigh  
BNSF Railroad  
[Brian.Hennigh@bnsf.com](mailto:Brian.Hennigh@bnsf.com)  
Cell:1-620-704-4061

**8.2.3** If, after the flagger is assigned to the project site, emergencies arise which require the flagger's presence elsewhere, then the contractor shall delay work on the Railroad's right of way until such time as the flagger is again available. Any additional costs resulting from such delay shall be borne by the contractor and not the Railroad.

### **8.3 Payment.**

**8.3.1** The Contractor will pay the Railroad or appropriate flagging contractor directly for the cost of flagging services associated with the project and notify the MoDOT Resident Engineer of such payments.

**8.3.2** The Contractor shall be responsible for arranging needed flagging services as required by the Railroad to accomplish the highway improvement.

**8.3.3** The cost of flagging service is estimated at approximately \$1,500 per day based on an 8-hour work day and a 40-hour work week. This cost includes the base pay for the flagger, overhead, and per diem charge for travel expenses, meals and lodging. The charge to the contractor 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. Work by a flagger 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 1/2 times the appropriate rate. Work by a flagger in excess of 12 hours per day will result in overtime pay at 2 times the appropriate rate. If work is performed on a holiday, the flagging rate is 2 1/2 times the normal rate. Railroad expenses incurred preparing and handling invoices will also be charged to the contractor and/or the Commission. Charges to the contractor and/or the Commission by the Railroad shall be in accordance with applicable provisions of Volume 1, Chapter 4, §3 and Volume 6, Chapter 6, §2, Subsection 1 of the Federal-Aid Highway Program Manual issued by the Federal Highway Administration, including all current amendments. Flagging costs are subject to change. The above estimates of flagging cost are provided for information only and are not binding in any way. Each time a flagger is called, the minimum period for billing will be the 8 hour basic day unless the flagger can be assigned to other Railroad work during the work day.

**8.3.4** In addition to the hours of providing flagging at the construction site, the flagger hours will include, but is not limited to, travel time to and from the project, time to complete paperwork for the flagging operations and time for setting warning signs/flags for the train traffic.

### **8.4 Verification.**

**8.4.1** Any complaints concerning a flagger shall be resolved in a timely manner. If need for a flagger is questioned, please contact the Railroad Engineer and Ms. Kara Brockamp, Manager of Public Projects at (913) 551-4484. All verbal complaints shall be confirmed in writing by the contractor within 5 working days with copy to the Railroad Engineer and Engineer. All written correspondence shall be addressed to Mr. Wegner as shown in Section 2.1 of this job special provision.

**8.4.2** The Railroad flagger assigned to the project will be responsible for notifying the 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 flagger performs such services for each separate period that services are provided. The Engineer will document such notification in the project records.

## **9.0 Haul Across Railroads.**

**9.1** Where the plans show or imply that materials of any nature must be hauled across the Railroad's tracks, unless the plans clearly show that the Commission has included arrangements for such haul in the agreement with the Railroad, the contractor shall be required to make all necessary arrangements with the Railroad regarding means of transporting such materials across the Railroad's tracks. The contractor shall be required to bear all costs incidental to such crossings, including flagging, whether services are performed by contractor's own forces or by Railroad's personnel.

**9.2** 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 the installation, maintenance, necessary watching and flagging thereof and removal, all at the expense of the contractor, is first obtained from the Railroad Engineer.

**10.0 Work for the Benefit of the Contractor.** All temporary or permanent changes in wire lines or other facilities which are considered necessary to the project are shown on the plans, and are included in the agreement between the Commission and the Railroad or will be covered by appropriate revisions to same which will be initiated and approved by the Commission and/or the Railroad. Should the contractor desire any changes in addition to the above, then contractor shall make separate arrangements with the Railroad for same to be accomplished at the contractor's expense.

**11.0 Cooperation and Delays.** The contractor shall arrange a schedule with the Railroad for accomplishing staged construction involving work by the Railroad or tenants, licensees, easement grantees and invitees of the Railroad. In arranging a schedule, the contractor shall ascertain, from the Railroad, the lead time required for assembling crews, materials and make due allowance. No charge of claims of the contractor against the Railroad will be allowed for hindrance or delay on account of railway traffic for any work done by the Railroad, other delay incident to or necessary for safe maintenance of railway traffic, or for any delays due to compliance with this special provision.

**12.0 Trainman's Walkways.** Along the outer side of each exterior track of multiple operated track and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains shall be maintained extending to a line not less than 12 feet from centerline of track. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during work hours while Railway's protective service is

provided shall be removed before the close of each workday. Any excavation near the walkway, the contractor shall install a handrail with a 12 feet minimum clearance from centerline of track.

**13.0 Insurance.** The amount of work to be performed upon, over or under Railroad's right of way is estimated to be 1 percent of the contractor's total bid for the project.

**13.1** In addition to any other forms of insurance or bonds required under the terms of the contract and specifications, Contractor must, at its sole cost and expense, procure and maintain during the life of this Agreement the following insurance coverage:

(a) Commercial General Liability insurance. This insurance shall contain broad form contractual liability with a combined single limit of a minimum of \$2,000,000 each occurrence and an aggregate limit of at least \$6,000,000 but in no event less than the amount otherwise carried by the contractor. Coverage must be purchased on a post 2004 ISO occurrence form or equivalent and include coverage for, but not limit to the following:

- Bodily Injury and Property Damage
- Personal Injury and Advertising Injury
- Fire legal liability
- Products and completed operations

This policy must also contain the following endorsements, which must be indicated on the certificate of insurance:

- The definition of insured contract must be amended to remove any exclusion or other limitation for any work being done within 50 feet of railroad property.
- Waiver of subrogation in favor of and acceptable to Railway.
- Additional insured endorsement in favor of and acceptable to Railway.
- Separation of insureds.
- The policy shall be primary and non-contributing with respect to any insurance carried by Railway.

It is agreed that the workers' compensation and employers' liability related exclusions in the Commercial General Liability insurance policy(s) required herein are intended to apply to employees of the policy holder and shall not apply to Railway employees.

No other endorsements limiting coverage as respects obligations under this Agreement may be included on the policy with regard to the work being performed under this agreement.

(b) Business Automobile Insurance. This insurance must contain a combined single limit of at least \$1,000,000 per occurrence, and include coverage for, but not limited to the following:

- Bodily injury and property damage
- Any and all vehicles owned, used or hired

The policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- Waiver of subrogation in favor of and acceptable to Railway.
- Additional insured endorsement in favor of and acceptable to Railway.
- Separation of insureds.
- The policy shall be primary and non-contributing with respect to any insurance carried by Railway.

(c) Workers Compensation and Employers Liability insurance including coverage for, but not limited to:

- Contractor's statutory liability under the worker's compensation laws of the state(s) in which the work is to be performed. If optional under State law, the insurance must cover all employees anyway.
- Employers' Liability (Part B) with limits of at least \$500,000 each accident, \$500,000 by disease policy limit, \$500,000 by disease each employee.

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- Waiver of subrogation in favor of and acceptable to Railway.

(d) Railroad Protective Liability insurance naming only the Railway as the Insured with coverage of at least \$2,000,000 per occurrence and \$6,000,000 in the aggregate. The policy Must be issued on a standard ISO form CG 00 35 10 93 and include the following:

- Endorsed to include the Pollution Exclusion Amendment (ISO form CG 28 31 10 93)
- Endorsed to include the Limited Seepage and Pollution Endorsement.
- Endorsed to remove any exclusion for punitive damages.
- No other endorsements restricting coverage may be added.
- The original policy must be provided to the Railway prior to performing any work or services under this Agreement

In lieu of providing a Railroad Protective Liability Policy, Licensee may participate in Licensor's Blanket Railroad Protective Liability Insurance Policy available to contractor.

### **13.2 Other Requirements:**

**13.2.1** All policies (applying to coverage listed above) must not contain an exclusion for punitive damages and certificates of insurance must reflect that no exclusion exists.

**13.2.2** Contractor agrees to waive its right of recovery against Railway for all claims and suits against Railway. In addition, its insurers, through the terms of the policy or policy endorsement, waive their right of subrogation against Railway for all claims and suits. The certificate of insurance must reflect the waiver of subrogation endorsement. Contractor further waives its right

Job No. J8I3044C,  
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J8I3225, & JSU0114  
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of recovery, and its insurers also waive their right of subrogation against Railway for loss of its owned or leased property or property under contractor's care, custody or control.

**13.2.3** Contractor is not allowed to self-insure without the prior written consent of Railway. If granted by Railway, any deductible, self-insured retention or other financial responsibility for claims must be covered directly by contractor in lieu of insurance. Any and all Railway liabilities that would otherwise, in accordance with the provisions of this Agreement, be covered by contractor's insurance will be covered as if contractor elected not to include a deductible, self-insured retention or other financial responsibility for claims.

**13.2.4** Prior to commencing the Work, contractor must furnish to Railway an acceptable certificate(s) of insurance including an original signature of the authorized representative evidencing the required coverage, endorsements, and amendments and referencing the contract audit/folder number if available. Contractor shall notify Railway in writing at least 30 days prior to any cancellation, non-renewal, substitution or material alteration. Upon request from Railway, a certified duplicate original of any required policy must be furnished. Contractor should send the certificate(s) to the following address:

<u>Railroad:</u>	<u>Commission:</u>			
BNSF Railway Company	Ms.	Brandi		Baldwin
P.O. Box 140528	State	Construction	and	Materials
Kansas City, MO 64114	MoDOT			Engineer
Toll Free: 877-576-2378	P.O.	Box		270
Fax number: 817-840-7487	Jefferson	City,	MO	65102
Email:			<a href="mailto:BNSF@certfocus.com">BNSF@certfocus.com</a>	
<a href="http://www.certfocus.com">www.certfocus.com</a>				

**13.2.5** Any insurance policy must be written by a reputable insurance company acceptable to Railway or with a current Best's Guide Rating of A- and Class VII or better, and authorized to do business in the state(s) in which the service is to be provide.

**13.2.6** Contractor represents that this Agreement has been thoroughly reviewed by contractor's insurance agent(s)/broker(s), who have been instructed by contractor to procure the insurance coverage required by this Agreement. Allocated Loss Expense must be in addition to all policy limits for coverages referenced above. Not more frequently than once every five years, Railway may reasonably modify the required insurance coverage to reflect then-current risk management practices in the railroad industry and underwriting practices in the insurance industry.

**13.2.7** If any portion of the operation is to be subcontracted by contractor, contractor must require that the subcontractor provide and maintain the insurance coverages set forth herein, naming Railway as an additional insured, and requiring that the subcontractor release, defend and indemnify Railway to the same extent and under the same terms and conditions as contractor is required to release, defend and indemnify Railway herein.

**13.2.8** Failure to provide evidence as required by this section will entitle, but not require, Railway to terminate this Agreement immediately. Acceptance of a certificate that does not comply with this section will not operate as a waiver of contractor's obligations hereunder.

**13.2.9** The fact that insurance (including, without limitation, self-insurance) is obtained by contractor will not be deemed to release or diminish the liability of contractor including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by Railway will not be limited by the amount of the required insurance coverage.

**13.2.10** For purposes of this section, Railway means "Burlington Northern Santa Fe LLC", "BNSF RAILWAY COMPANY" and the subsidiaries, successors, assigns and affiliates of each.

**13.2.11** Railroad will not accept binders as evidence of insurance, the original policy shall be provided. The named insured, description of the work and designation of the job site to be shown on the Policy are as follows:

(a) Named Insured: BNSF Railway Company

(b) Description and Designation:

High Friction Resurfacing of pavement on I-44E over crossing  
Greene County I-44E.

Job No. J8I3225

US DOT# 669823U MP 197.5 BNSF Ft. Scott Sub Southwest of Springfield, MO.

**13.2.12** The contractor must notify BNSF Manager of Public Projects at [Kara.brockamp@bnsf.com](mailto:Kara.brockamp@bnsf.com) when applying for railroad insurance coverage.

**13.3** If any part of the work is sublet, similar insurance and evidence thereof in the same amounts as required of the prime contractor, shall be provided by or in behalf of the subcontractor to cover the subcontractor's operations. Endorsements to the prime contractor's policies specifically naming subcontractors and describing their operations will be acceptable for this purpose.

**13.4** All Insurance hereinbefore specified shall be carried until all work required to be performed under the terms of the contract has been satisfactorily completed within the limits of the Railroad's right of way as evidenced by the formal acceptance by the Commission. Insuring Companies may cancel insurance by permission of the Commission and Railroad or on 30 days written notice to the Railroad and Commission.

**14.0 Hazardous Materials Compliance and Reporting.** Contractor shall be responsible for complying with all applicable federal, state and local governmental laws and regulations, including, but not limited to environmental laws and regulations (including but not limited to the Resource Conservation and Recovery Act, as amended; the Clean Water Act, as amended; the Oil Pollution Act, as amended; the Hazardous Materials Transportation Act, as amended; and the Comprehensive Environmental Response, Compensation and Liability Act, as amended), and health and safety laws and regulations. In addition to the liability provisions contained elsewhere in this job special provision, the contractor hereby indemnifies, defends and holds harmless the Railroad for, from and against all fines or penalties imposed or assessed by federal, state and local governmental agencies against the Railroad which arise out of contractor's work under this special provision. Notwithstanding the preceding sentence, the contractor will not be liable for pre-existing hazardous materials or hazardous substances discovered on Railroad's property or right of way so long as such hazardous materials or hazardous substances were not caused by (in whole or in part) contractor's work, acts or omissions. If contractor discovers any hazardous waste, hazardous substance, petroleum or other deleterious material, including but not limited to any non-containerized commodity or material, on or adjacent to Railroad's property, in or near



any surface water, swamp, wetlands or waterways, while performing any work under this special provision, the contractor shall immediately:

- (a) Notify the Railroad's Resource Operations Center at (800) 832-5452, of such discovery.
- (b) Take safeguards necessary to protect employees, subcontractors, agents and/or third parties.
- (c) Exercise due care with respect to the release, including the taking of any appropriate measure to minimize the impact of such release

**15.0 Personal Injury Reporting.** The Railroad is required to report certain injuries as a part of compliance with Federal Railroad Administration ("FRA") reporting requirements. Any personal injury sustained by any employee of the contractor, subcontractor or contractor's invitees while on the Railroad's property shall be reported immediately, by phone or mail if unable to contact in person, to the Railroad's representative in charge of the project. The Non-Employee Personal Injury Data Collection Form is to be completed and sent by Fax to the Railroad at (817) 352-7595 and to the Railroad's Project Representative no later than the close of shift on the date of the injury.

**16.0 Failure to Comply.** In the event the contractor violates or fails to comply with any of the requirements of this special provision, the below orders will be applied. Any such orders shall remain in effect until the contractor has remedied the situation to the satisfaction of the Railroad Engineer and the Engineer.

- (a) The Railroad Engineer may require that the contractor to vacate the Railroad's property.
- (b) The Engineer may withhold all monies due to the contractor until contractor has remedied the situation to the satisfaction of the Railroad Engineer and the Engineer.

**17.0 Payment for Cost of Compliance.** No separate payment will be made for any extra cost incurred on account of compliance with this special provision. All such cost shall be included in the contract unit price for other items included in the contract. Railroad will not be responsible for paying the contractor for any work performed under this special provision.

**BBB. Truck Mounted Attenuator (TMA) for Stationary Activities JSP-23-04**

**1.0 Description.** Provide and maintain Truck Mounted Attenuators (TMA) in accordance with Sec 612 and as specified herein.

**2.0 Construction Requirements.** Truck Mounted Attenuators (TMA) shall be used for the work activities indicated in the plans or specified herein.

**2.1 Lane Closures on I-44:**

- (a) Any left or right lane closures.

**2.2 Shoulder Closures on I-44:**

- (a) Any left or right shoulder closures.

**3.0 Method of Measurement.** No measurement will be made for Truck Mounted Attenuators (TMA).

**4.0 Basis of Payment.** Delete Sec 612.5.1 and substitute with the following:

**612.5.1** No payment will be made for truck mounted attenuators (TMAs) used in mobile operations or for any TMAs designated as optional.

**612.5.1.1** Payment for TMAs required for stationary work activities will be paid for at the contract unit bid price for Item 612-30.01, Truck Mounted Attenuator (TMA), per lump sum. The lump sum payment includes all work activities that require a TMA, regardless of the number of deployments, relocations, or length of time utilized. No payment will be made for repair or replacement of damaged TMAs.

CCC. Permanent Pavement Marking – SW

**1.0 Description.** This work shall consist of furnishing and placing permanent centerline, edge line, lane line markings, and preformed thermoplastic pavement marking, as specified, at locations shown on the plans or as approved by the engineer. The preformed thermoplastic pavement marking includes, but not limited to, 24" White (Stop Bars) and 24" Yellow (Hash Mark), 6" White for Crosswalks, Turn Arrows, Railroad Crossings, Yield Markings, and the word "ONLY". This work shall be in accordance with Section 620 and specifically as follows.

**2.0 Construction Requirements.** On roadways open to traffic, permanent centerline, edge line, and lane line markings shall be in place no later than five days after the final paving operations. This requirement applies per individual route if multiple routes are included in a contract or if a 15 mile section of an individual route is open to traffic within a contract. This requirement also applies to divided highways, once a directional segment of 15 mile, or the entire directional segment if less than 15 miles, is paved and open to traffic within a contract. To fulfill this requirement, the contractor may have to mobilize more than once for the installation of permanent centerline, edge line, and lane line markings. The contractor will also need to coordinate the permanent pavement marking with the installation of rumble strips.

The contractor shall place the preformed thermoplastic pavement marking after the permanent centerline, edge line, and lane line marking is installed by the contractor or by others. The contractor will have 5 five days after the permanent centerline, edge line, and lane line markings are placed to start the preformed thermoplastic pavement marking installation and shall be placed in accordance with manufacturer's recommendations or as approved by the engineer.

**3.0 Basis of Payment.** The accepted quantity of permanent pavement marking paint and preformed thermoplastic pavement marking will be paid for at the contract unit price for each of the pay items include in the contract. Payment will be considered full compensation for all labor, equipment, material or time necessary to complete the described work including any other incidental items.

Job No. J8I3044C,  
JSU0076, JST0088B,  
J8I3225, & JSU0114  
Route: I-44  
County: Greene

Preliminary