STATE OF MISSOURI
HIGHWAYS and TRANSPORTATION
COMMISSION

JEFFERSON CITY, MISSOURI

CONSTRUCTING OR IMPROVING
CONTRACT I.D. 160318-C05

THIS JOB SHALL BE CONSTRUCTED UNDER
FEDERAL PROJECT NUMBER(S): FAS S300 (94)

Job J4P3057 Route Various VARIOUS County

Contract Id: 160318-C05

BIDDER CHECKLIST
FINAL CHECKLIST BEFORE SUBMITTING BID

1. Submit completed Contractor Questionnaire and/or Contractor Prequalification Questionnaire with attachments not later than seven (7) days prior to the date and hour of the bid opening. See Secs 101-103 of the Missouri Standard Specifications for Highway Construction, and Rule 7 CSR 10-15.010, "Prequalifications to Bid of Certain Contractors". Questionnaire and Contact information are provided on MoDOT's website.

2. All bids shall be submitted electronically using "Bid Express Secure Internet Bidding" at www.bidx.com. Any paper bid submitted will be considered irregular per section 102.8 of the Missouri Standard Specifications for Highway Construction.

3. Please read all items in the bidding document carefully. The EBS files from MoDOT's website may be used for the itemized bid.

4. If submitted in the name of a firm or corporation, the legal name of the firm or corporation should appear in the space designated, and be signed for by one or more persons legally qualified to execute papers in the name of said firm or corporation.

5. The bidder shall submit a Bid Guaranty meeting the requirements of Sec 102 of the Missouri Standard Specifications for Highway Construction. If submitting a project specific or annual bid bond, bidders must use the MoDOT provided bid bond forms. The project specific bond form is included in the request for bid. The project specific and annual bid bond forms are also available on MoDOT's website. Annual bid bonds shall be executed by June 15th of each year.

6. Submit the Subcontractor Disclosure Form in accordance with the bidding documents. For bids of more than $2,000,000, each bidder shall submit with each bid a disclosure of the subcontracts that have a subcontract value that is equal or greater than twenty percent of the total project bid or subcontracts that are greater than or equal to $2,000,000. If that information is not available at the time of bid the bidder shall submit the "Subcontractor Disclosure Form" pages with MoDOT on or before 4:00 p.m. of the third business day after the bid opening date.

7. Submit the DBE Identification Submittal in accordance with the bidding documents for Federal Projects Only.

8. Alternate Pavements; to exercise this option, separate pay items, descriptions and quantities are included in the itemized proposal for each of the two alternates. The bidder shall bid only one of the two alternates and leave the contract unit price column blank for any pay item listed for the other alternate.

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9. When submitting a bid, your bid will still come through with "red" folders. You should make sure that it is not the Schedule of Items folder or the Signature and Identity of Bidder folder. Click on the yellow checkmark at the top and it will tell you what the errors are.

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Below is a list of common mistakes made by bidders leading to non-responsive bids. Please refer to the Standard Specifications for the appropriate procedures for completing and submitting a bid.

a) Submitting a paper bid for a project
b) Using a different bid bond form than the one provided
c) Improper use of the Maximum Monetary Value Award Provision
   -only used if bidding more than one project and should be in only one bid proposal
d) Not obtaining a digital ID in advance of the letting
   (obtaining a digital ID may take 5 business days)

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All questions concerning the bid document preparation shall be directed to the Central Office - Design Division at (573) 751-2876. Project specific questions shall be directed to the project contact listed in the Job Special Provisions.

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*These forms are also available on MoDOT's Website, www.modot.org under General Information on the Bid Opening Info page of the Contractor Resources site.

Contract Id: 160318-C05

NOTICE TO CONTRACTORS

Electronic bids submitted through the Bid Express website for the proposed work will be received by the Missouri Highways and Transportation Commission until 11:00 o'clock a.m. (prevailing local time) on 03-18-16.

Bid bonds will be received at the office of the Secretary to the Commission in the Missouri Department of Transportation Central Office Building, 105 West Capitol Avenue, Jefferson City, Missouri; delivered by US Mail should be mailed to: Missouri Highways and Transportation Commission, Attention: State Design Engineer/Bid Bond, P.O. Box 270, Jefferson City, MO 65102 or delivered by parcel delivery services, (such as UPS, Fed Ex, DHL, etc.) should be shipped to Missouri Highways and Transportation Commission, Attention: State Design Engineer/Bid Bond, 105 West Capitol Avenue, Jefferson City, MO 65102.

(1) PROPOSED WORK: The proposed work, hereinafter called the work, includes:

****(1): Job J4P3057 Route Various VARIOUS County. JOC - Bridge repair at various locations in the urban area of the Kansas City District., the total length of improvement being 0 miles.

Combination bids will be Not Required on the Jobs listed above.

(2) COMPLIANCE WITH CONTRACT PROVISIONS: The bidder, having examined and being familiar with the local conditions affecting the work, and with the contract, contract documents, including the Missouri Highways and Transportation Commission's "Missouri Standard Specifications for Highway Construction, 2011," and "Missouri Standard Plans for Highway Construction, 2009", their revisions, and the request for bid, including appendices, the special provisions and plans, hereby proposes to furnish all labor, materials, equipment, services, etc., required for the performance and completion of the work. All references are to the Missouri Standard Specifications for Highway Construction, as revised, unless otherwise noted. All questions concerning the bid document preparation shall be directed to the Central Office - Design Division at (573) 751-2876.

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(3) PERIOD OF PERFORMANCE: If the bid is accepted, the bidder shall continuously and diligently prosecute the work in such order and manner as will ensure the completion of the work within the time specified in the Job Special Provisions in accordance with Sec 108.

(4) LIQUIDATED DAMAGES: The bidder agrees that, should the bidder fail to complete the work in the time specified or such additional time as may be allowed by the engineer under the contract, the amount of liquidated damages as specified in the Job Special Provisions to be recovered in accordance with Sec 108.

(5a) ACCEPTANCE OF PROVISION FOR PRICE ADJUSTMENT FOR FUEL: Bidders have the option to accept the provision for Price Adjustment for Fuel in accordance with Sec. 109.14. The bidder must select "Yes" for those items of work in which they choose to accept the provision. No price adjustments will be made, due to fuel price changes, for bidders who do not accept this provision. This provision does not apply to Seal Coat.

EXCAVATION PRODUCTION
ASPHALT PAVING PRODUCTION AND HAULING
CONCRETE PAVING PRODUCTION AND HAULING
AGGREGATE BASE HAULING

(5b) ACCEPTANCE FOR PROVISION FOR ASPHALT CEMENT PRICE INDEX, SEAL COAT PRICE INDEX, UNDERSEAL PRICE INDEX, OR UBAWS MEMBRANE PRICE INDEX: Bidders have the option to accept the provision for Asphalt Cement Price Index, Seal Coat Price Index, Underseal Price Index, and/or UBAWS Membrane Price Index in accordance with the General Provisions. The bidder must mark each box below if they choose to accept the provision. No price adjustments will be made, due to asphalt price changes, for bidders who do not accept this provision. The Asphalt Cement provision applies only to projects that have a quantity of asphalt wet ton mix pay items or converted square yard quantity over 1,000 tons, the Seal Coat provision applies only to projects that have a quantity that exceeds 14,000 gallons, the Underseal provision applies only to projects that have a quantity that exceeds 10,000 gallons, and the UBAWS Membrane provision applies only to projects that have a quantity exceeds 5,000 square yards. The above quantity limits apply to an individual project or any number of projects in the contract combination.

ASPHALT CEMENT
SEAL COAT
UNDERSEAL
UBAWS MEMBRANE

(6) MAXIMUM MONETARY VALUE OF AWARDS ACCEPTED THIS BID OPENING: Bidders have the option to specify the maximum monetary value of awards that they will accept for the total of all bids they have submitted in the bid opening, Sec 102.7.2. If the bidder is submitting only one bid, or if the bidder does not want to specify a maximum monetary value for submitted bids, this section should not be completed. If a submitted bid upon correction exceeds the indicated maximum monetary amount, the bid may be

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declared non-responsive. If a bidder's submitted bids show different values for the maximum monetary value, the lowest value will govern.

MAXIMUM MONETARY VALUE OF AWARDS ACCEPTED THIS BID OPENING

(Note: this amount should be entered in only one of the bids for this bid opening)

(7) COMBINATION BIDS: (Applies only if combination bids are specified. See cover and/or notice to contractor(s).) Combination bids will be in accordance with Sec 102.12. By selecting "ALL OR NONE", the bidder desires to combine all projects in accordance with Sec 102.12.2.1.

(8) BID GUARANTY: The bidder shall submit a Bid Guaranty meeting the requirements of Section 102 of the Missouri Standard Specifications for Highway Construction. MoDOT's bid bond and annual bid bond forms are available on MoDOT's website.

(9a) CERTIFICATIONS FOR FEDERAL JOBS: (Applies to Federal Projects only.) By signing and submitting this bid, the bidder makes the certifications appearing in Sec. 102.18.1 (regarding affirmative action and equal opportunity), Sec. 102.18.2 (regarding disbarment, eligibility, indictments, convictions, or civil judgments), Sec.102.18.3 (regarding anti-collusion), and Sec.102.18.4 (regarding lobbying activities). Any necessary documentation is to accompany the bid submission, as required by these sections. As provided in Sec.108.13, the Commission may terminate the contract for acts of misconduct, which includes but is not limited to fraud, dishonesty, and material misrepresentation or omission of fact within the bid submission.

(9b) CERTIFICATIONS FOR STATE JOBS: (Applies to State Projects only.) By signing and submitting this bid, the bidder makes the certifications appearing in Sec. 102.18.2 (regarding diseligibility, indictments, convictions, or civil judgments), Sec. 102.18.3 (regarding anti-collusion), and Sec. 102.18.5 (regarding Missouri Domestic Products Procurement Act). Any necessary documentation is to accompany the bid submission, as required by these sections. As provided in Sec. 108.13, the Commission may terminate the contract for acts of misconduct, which includes but is not limited to fraud, dishonesty, and material misrepresentation or omission of fact within the bid submission.

(9c) CERTIFICATIONS FOR FEDERAL STATE COMBINATION: (Applies to Federal/State Projects combinations only.) By signing and submitting this bid, the bidder makes the certifications appearing in Sec. 102.18.1 (regarding affirmative action and equal opportunity), Sec. 102.18.2 (regarding disbarment, eligibility, indictments, convictions, or civil judgments), Sec. 102.18.3 (regarding anticollusion), Sec. 102.18.4 (regarding lobbying activities), and Sec. 102.18.5 (regarding Missouri Domestic Products Procurement Act).

Any necessary documentation is to accompany the bid submission, as required by these sections. As provided in Sec. 108.13, the Commission may terminate the contract for acts of misconduct, which includes but is not limited to fraud, dishonesty, and material misrepresentation or omission of fact within the bid submission.

By selecting "No" the bidder REFUSES to make one or more certifications for the above items 9a, 9b or 9c. The bidder shall provide a statement of explanation for the refusal in the space below or by fax to the Design Division @ Fax no. 573-522-2281.

(10) ANTIDISCRIMINATION: The Commission hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, businesses owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, age, ancestry, or national origin in consideration for an award.

(11) PREFERENCE TO MISSOURI FIRMS IN AWARDING OF CONTRACTS: (Applies to State Projects and Federal/State Project Combinations only.) The bidder's attention is directed to Section 34.355 RSMo Supp 2000, et seq, which requires that preference be given in awarding contracts to firms, corporations, or individuals doing business as Missouri firms, corporations, or individuals, or which maintain Missouri offices or places of business, when the quality of performance promised is equal, or better, and the price quoted is the same, or less.

The law also requires that a contractor or bidder domiciled outside the state of Missouri shall be required, in order to be the successful bidder, to submit a bid which is the same percent less than the lowest bid submitted by a responsible contractor or bidder domiciled in Missouri as would be required for the Missouri domiciled contractor or bidder to succeed over the bidding contractor or bidder domiciled outside Missouri in a like contract or bid being let in his state. A contractor or bidder domiciled outside Missouri domiciliary shall also be required to submit an audited financial statement as would

be required of a Missouri domiciled contractor or bidder on a like contract or bid being let in the domiciliary state of that contractor or bidder.

For firms, corporations or individuals domiciled outside the state of Missouri, it is requested they submit the following information:

List the state of domicile

List address of all Missouri offices or places of business

I acknowledge that I have read, understand and completed the above Contract Provisions.

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(12) Signature and Identity of Bidder

BY SUBMITTING THIS BID ELECTRONICALLY, I HEREBY ACKNOWLEDGE THAT ALL REQUIREMENTS INCLUDED IN THE HARD COPY REQUEST FOR BID, AND AMENDMENTS ARE A PART OF THIS BID AND CONTRACT.

*** AN ELECTRONIC PROPOSAL SUBMITTED AND SIGNED WITH A DIGITAL ID, UNDER THE PROVISION OF THE MISSOURI DEPARTMENT OF TRANSPORTATION, WILL BE CONSIDERED VALID AND BINDING. ***

THE BIDDER CERTIFIES THAT THE BIDDER AND ITS OFFICIALS, AGENTS, AND EMPLOYEES HAVE NEITHER DIRECTLY NOR INDIRECTLY ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY COLLUSION, OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THIS BID, AND THAT THE BIDDER INTENDS TO PERFORM THE WORK WITH ITS OWN BONAFIDE EMPLOYEES AND SUBCONTRACTORS, AND DID NOT BID FOR THE BENEFIT OF ANOTHER CONTRACTOR.

THE BIDDER CERTIFIES THAT THE BIDDER'S COMPANY KNOWINGLY EMPLOYS ONLY INDIVIDUALS WHO ARE AUTHORIZED TO WORK IN THE UNITED STATES IN ACCORDANCE WITH THE APPLICABLE FEDERAL AND STATE LAWS AND ALL PROVISIONS OF MISSOURI EXECUTIVE ORDER NO. 07-13 FOR CONTRACTS WITH THE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION, ACTING THROUGH THE MISSOURI DEPARTMENT OF TRANSPORTATION.

THE BIDDER ACKNOWLEDGES THAT THIS IS AN UNSWORN DECLARATION, EXECUTED UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE UNITED STATES AND/OR FALSE DECLARATION UNDER THE LAWS OF MISSOURI, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS. THE FAILURE TO PROVIDE THIS CERTIFICATION IN THIS BID MAY MAKE THIS BID NON-RESPONSIVE, AND CAUSE IT TO BE REJECTED.

Select "No" ONLY if the bidder REFUSES to make this certification. The bidder may provide an explanation for the refusal with this submittal in the space below or by fax to the Design Division @ fax no. 573-522-2281.

USE OF ANOTHER PERSON'S DIGITAL ID IN THIS BIDDING PROCESS VIOLATES THE LAWS OF MISSOURI.

I acknowledge that I have read, understand and completed the above Electronic Bid Submission Certification.

DBE CERTIFICATION

(13) Trainees: (Applies to Federal Projects only) The number of trainee hours provided under this contract will be 0 slots at 1000 hours per slot or 0 hours.

(14) Bidder's Certification for DBE Program and Contract Goal
(Applies to Federal Projects Only.)
(A) DBE Contract Goal: By submitting this bid, the bidder certifies that the bidder is familiar with the DBE Program Requirements in the General Provisions. The contract goal for the amount of work to be awarded is 0% of the total federal project price. The bidder shall also complete the DBE Identification Submittal form in accordance with the General Provisions. This form is available on MoDOT's Website, www.modot.org under General Information on the Bid Opening Info page of the Contractor Resources site.

(B) DBE Participation: The bidder certifies that it will utilize DBE's as follows: % OF TOTAL FEDERAL CONTRACT

NOTE: Bidder must fill in the above box. If no percentage is specified, the bidder certifies that it agrees to and will comply with the contract goal. If a percentage below the contract goal is specified, then the bidder must submit complete documentation of good faith efforts to met the DBE contract goal, immediately below.

The DBE Identification Submittal form will be submitted via

(C) Certification of Good Faith Efforts to Obtain DBE Participation: By submitting its signed bid, the bidder certifies under penalty of perjury and other provisions of law, that the bidder took each of the following steps to try to obtain sufficient DBE participation to achieve the Commission's proposed DBE Contract Goal:

(15) ITEMIZED BID: The bidder should complete the following section in accordance with Sec 102.7. The bidder proposes to furnish all labor, materials, equipment, services, etc. required for the performance and completion of the work, as follows:

State of MISSOURI
Dept of Transportation
Schedule of Items

Contract ID: 160318-C05
Letting Date: 03-18-16
Project(s):

Bidder: -

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars	Unit Price Cts	Bid Amount Dollars	Bid Amount Ct
Section 0001	ROADWAY ITEMS - J4P3057					
	Alt Group					
0010	6189916 MISC. NORMAL WORK ADJUSTMENT FACTOR	600,000.000 DLR				
0020	6189916 MISC. NIGHTTIME WORK ADJUSTMENT FACTOR	300,000.000 DLR				
0030	6189916 MISC. WEEKEND WORK ADJUSTMENT FACTOR	600,000.000 DLR				
	Section 0001 Total				0.00	
	Bid Total				0.00	

Contract Id: 160318-C05 Vendor Number:
Vendor Name:

SUBCONTRACTOR DISCLOSURE

The bidder shall submit with this bid any subcontracts that meet the requirements of Sec 102. List below the name of each subcontractor that will be furnishing labor or labor and materials, the category of work that the subcontractor will be performing (e.g. asphalt, concrete, earthwork, bridges...), and the dollar value of the subcontract. Select "NONE" if there are no subcontractors that need to be disclosed.

If the information is not available at the time of bid the bidder shall submit the "Subcontractor Disclosure Form", located on MoDOT's website, on or before 4:00 p.m. of the third business day after the bid opening date, directly to the Design Division, Missouri Department of Transportation, 105 W. Capitol Avenue, P.O. Box 270, Jefferson City, Missouri 65102-0270. Telefax transmittal to MoDOT will be permitted at fax no. 573-522-2281 or e-mailed to subcontractor.disclosure@modot.mo.gov The complete signed original documents do not need to be mailed to MoDOT, but the bidder shall have it available if requested by the Design Division or the engineer.

SUBCONTRACTOR NAME	DOLLAR VALUE OF SUBCONTRACT	CATEGORY OF WORK

Contract Id: 160318-C05

BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that we
as principal and
and
as surety, are held and firmly bound unto the state of Missouri (acting by and through the Missouri Highways and Transportation Commission) in the penal sum of 0.00 Dollars to be paid to the commission to be credited to the state road fund, the principal and surety binding themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this.

THE CONDITION OF THIS OBLIGATION is such that WHEREAS the principal is submitting herewith a bid to the commission on

route(s)
in County(ies)
project(s)

for construction or improvement of state highway as set out in said bid;

NOW THEREFORE, if the commission shall accept the bid of the principal and if the principal shall properly execute and deliver to the commission the contract, contract bond, and evidence of insurance coverage in compliance with the requirements of the bid, the specifications, and the provisions of section 227.100 RSMo, to the satisfaction of the commission, then this obligation shall be void and of no effect, otherwise to remain in full force and effect.

In the event the said principal shall, in the judgment of the commission, fail to comply with any requirement as set forth in the preceding paragraph, then the state of Missouri, acting by and through the commission, shall immediately and forthwith be entitled to recover the full penal sum above set out, together with court costs, attorney's fees, and any other expense of recovery.

The principal and surety hereby certify that the document is the original or a verbatim copy of the bid bond form furnished by the Commission, in accordance with Sec 102.9 of the Missouri Standard Specifications for Highway Construction.

Contract Id: 160318-C05

This Bid contains 0 amendment files

Job No. J4P3057
Various Routes
Various Counties

JOB SPECIAL PROVISIONS TABLE OF CONTENTS (ROADWAY)

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

OO. Epoxy Polymer Concrete Resurfacing Over and Near Streams and Wetlands
PP. Removal of Bridge Debris
QQ. Preformed Silicone or EPDM Expansion Joint Seal
RR. Epoxy Polymer Concrete Overlay Repair
SS. Stormwater Compliance Requirements
TT. e-Construction

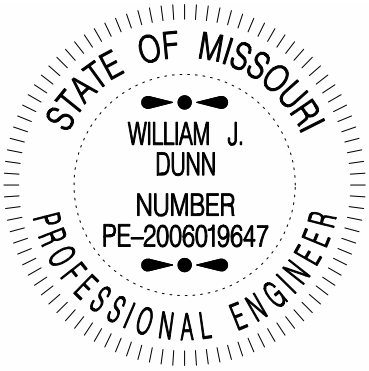
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 W. CAPITOL AVE.
JEFFERSON CITY, MO 65102
Phone (888) 275-6636

If a seal is present on this sheet, JSP's has been electronically sealed and dated.

JOB NO. J4P3057
VARIOUS COUNTIES, MO
Date Prepared: 1/28/2016

Only the following items of the Job Special Provisions are authenticated by this seal: A – EE, and SS-TT



THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 W. CAPITOL AVE.
JEFFERSON CITY, MO 65102
Phone (888) 275-6636

If a seal is present on this sheet, JSP's has been electronically sealed and dated.

JOB NO. J4P3057
VARIOUS COUNTIES, MO
Date Prepared: 1/28/2016

Only the following items of the Job Special Provisions are authenticated by this seal: FF – RR

Job No. J4P3057
Various Routes
Various Counties

JOB
SPECIAL PROVISIONS

A. GENERAL - FEDERAL JSP-09-02A

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 under "Bidding". 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 under "Business"; "Standards and Specifications". The effective version shall be determined by the letting date of the project.

General Provisions & Supplemental Specifications

Supplemental Plans to October 2009 Missouri Std. Plans
For Highway Construction

These supplemental bidding documents contain all current revisions to the bound printed 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. PROJECT CONTACT FOR CONTRACTOR/BIDDER QUESTIONS

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

Mr. Richard Kingery
District Bridge Engineer
600 NE Colbern Road
Lee's Summit, MO 64086

Telephone Number: (816) 607-2036
Email: Richard.Kingery@modot.mo.gov

2.0 Any questions relating to the bidding process or concerning the bid document preparation shall be directed to the Central Office Design Division to:

Mr. Jason Vanderfeltz
Bidding and Contract Services Engineer
MoDOT – Central Office

Telephone Number: (573) 526-2923
Email: Jason.Vanderfeltz@modot.mo.gov

3.0 Upon award and execution of the contract, the successful bidder/contractor shall forward all questions and coordinate the work with the contract administrator. The contract will be administered and inspected by the engineer/contract administrator listed below:

Tom Markway, Resident Engineer
MoDOT – Kansas City District
Truman Road Project Office
908 E. Truman Road,
Kansas City, MO 64106

Telephone Number: (816) 889-3380
Email: Thomas.Markway@modot.mo.gov

C. SCOPE OF WORK

1.0 The scope of work for this project includes various types of maintenance and repair to select bridges, as determined by the engineer. The work will be prescribed through individual Job Orders negotiated between the contractor and the Commission on an as needed basis at each work location. A work location shall be limited to a specific bridge, twin structures, or a series of bridges within a common complex of structures. The engineer reserves the right to have others (including Commission forces) perform some or all of the work at individual locations based on the needs of the Commission.

2.0 The work boundaries for the terms of the contract include all Commission owned bridge structures in Counties of Cass, Clay, Jackson and Platte, within the limits of Commission right-of-way.

3.0 Job Orders for Asphaltic Concrete Overlay Repair will only be issued for work to be performed from April 1 to November 30, unless otherwise mutually agreed upon between the contractor and the engineer.

4.0 The Commission is not bound to issue a minimum or maximum number of Job Orders during the contract term. It is the intent, however, to meet the anticipated budget, as noted elsewhere within this proposal. Award of contract does not guarantee any Job Orders during the duration of the contract.

D. JOB ORDER CONTRACT

1.0 A Job Order Contract is an indefinite quantity contract pursuant to which the contractor shall perform the work itemized in a Job Order at individual work locations throughout the project limits. The contractor shall perform all tasks itemized in the Job Order.

2.0 The engineer will identify the required work at an individual work location in collaboration with the contractor at a Joint Scope Meeting. The engineer will provide the contractor with a draft Detailed Scope of Work which the contractor shall review. Once the detailed Scope of Work is agreed upon, the engineer will issue a Job Order to the contractor. At any given time the contractor may be performing more than one Job Order.

3.0 The contract includes a list of fixed cost pay items with fixed unit prices. Payment for the work will be determined by multiplying the fixed unit prices by an applicable Adjustment Factor. The contractor shall bid three separate Adjustment Factors to be applied to the fixed unit prices as applicable for work performed during normal working hours, nighttime hours or weekend hours as defined elsewhere in this contract. The total cost of an individual Job Order will be determined by multiplying the fixed unit prices of each fixed cost pay item by the appropriate quantity and then multiplying the total cost of all pay items by the appropriate Adjustment Factor.

4.0 Definitions.

4.1. Detailed Scope of Work. A written document that sets forth the work the contractor is obligated to perform in connection with a particular Job Order.

4.2 Joint Scoping Process. Field meeting between the engineer and the contractor to review site conditions and determine job tasks to be performed within the scope of an agreed to Job Order.

4.3 Job Order Proposal. A draft document that gives an itemized listing of the job tasks to be performed by the contractor, estimated quantities, fixed cost pay items and any non-fixed cost pay items and costs that have been determined. The Job Order must also include a proposed project schedule; a list of proposed subcontractors indicating D/M/WBE status; and any sketches, drawings, or layouts; amendments to the safety plan and an erosion and sedimentation control plan; or technical data or information on proposed materials or equipment.

4.4 Job Order. A written order from the engineer to the contractor directing the work required at an individual work location in accordance with the Detailed Scope of Work within the Job Order Completion Time.

4.5 Job Order Completion Time. The time within which the contractor must complete the Detailed Scope of Work for a particular Job Order.

4.6 Fixed Cost Pay Item. Work for which a description and fixed cost is set forth in the fixed cost pay item list.

4.7 Non-Fixed Cost Pay Item. Work for which a description and fixed cost is not set forth in the pay item list. Payment for non-fixed cost pay items will be determined in accordance with Sec 109.4.2, 109.4.3, or 109.4.4. Non-fixed cost pay items will be paid using an Adjustment Factor of 1.000.

E. PROCEDURES FOR DEVELOPING A JOB ORDER

1.0 Initiation of a Job Order. The engineer will notify the contractor of a potential Job Order by issuing a Notice of Joint Scope Meeting. The notification will be issued by electronic mailing or facsimile machine at the discretion of the engineer to the contractor, unless the engineer approves other arrangements. The contractor shall confirm receipt of all job orders by the same means as issued. Notification for accelerated repair work can be initiated by telephone.

1.1 The contractor shall attend the Joint Scope Meeting and be prepared to discuss, at a minimum:

a. The general scope of the work;
b. Existing conditions, presence of waterways, wetlands, or other natural resources,
c. Presence of hazardous materials
d. Methods and alternative for accomplishing the work;
e. Access to the site;
f. Staging area availability/location;
g. Requirements for catalog cuts, technical data, samples and shop drawings;
h. Requirements for professional services, including sketches, drawings, and specifications;
i. Hours of operation;
j. Construction duration;
k. Liquidated damages;
l. Specific quality requirements for equipment and material;
m. Date on which Job Order Proposal is due.

1.2 Upon completion of the joint scoping process, the engineer will prepare a draft detailed Scope of Work referencing any sketches, drawings, photographs, and specifications required to document accurately the work to be accomplished. The contractor shall review the detailed Scope of Work and request any desired changes or modifications thereto. When an acceptable detailed Scope of Work has been completed, the engineer will issue a Draft Job Order.

1.3 The contractor does not have the right to refuse to perform any Job Order or any work identified in a Job Order. If the contractor refuses to perform any Job Order or any work identified in a Job Order, the contractor may be considered to be in default in accordance with Sec 108.

2.0 Preparation Of The Job Order. The engineer will prepare a Draft Job Order and submit the order to the contractor for final review. The contractor and the engineer will jointly review the Draft Job Order and finalize the order. Establishment of pricing for any non-fixed cost pay items shall be in accordance with Sec 109.4.2 or 109.4.3. If no agreement to pricing can be made then the work will proceed with payment for non-fixed cost items under Sec 109.4.4.

3.0 Job Order Proposal. The engineer's Job Order Proposal shall include, at a minimum:

a. Job Order Price Proposal;
b. Required architectural or engineering drawings or sketches;
c. Catalog cuts, technical data or samples;
d. List of anticipated Subcontractors and Material Suppliers indicating DBE status and anticipated price;
e. Construction schedule;

f. Sample warranties or guarantees for materials, equipment or systems proposed;

3.1 The engineer's Job Order Proposal shall be submitted by the date as agreed to by the contractor and the engineer at the Joint Scoping Meeting. It will be the contractor's responsibility to furnish any documentation or information as requested by the engineer in order to process the Job Order Proposal. The time allowed for preparation of the Job Order Proposal will depend on the complexity and urgency of the Job Order, but should typically be less than 7 days. On complex Job Orders allowance will be made to provide adequate time for preparation and submittal of the necessary documents.

3.2 Job Order Issuance. When the engineer and contractor have agreed to the scope of work and fixed price and non-fixed price tasks to be performed, the engineer will finalize the official Job Order and submit a signed Job Order for the contractor to review and sign. The affixed signatures by the engineer and the contractor shall bind the Job Order. The Job Order will reference the Detailed Scope of Work and set forth the amount to be paid and the time to complete the work.

3.2.1 If the contractor is not clear or in disagreement with the terms of the Job Order he shall NOT sign the Job Order, but shall work with the engineer to clear up any discrepancies in the work to be done. If the contractor fails to execute the Job Order, the contractor may be considered to be in default in accordance with Sec 108.

4.0 The Commission reserves the right to reject a Job Order Proposal or cancel a proposed work task for any reason. The Commission also reserves the right not to issue a Job Order if it is determined to be in the best interests of the Commission. The contractor shall not recover costs arising out of or related to the development of the Job Order including but not limited to the costs to attend the Joint Scope Meeting, review the Detailed Scope of Work, prepare a Proposal, subcontractor costs, and the cost to review the Job Order Proposal with the Commission.

5.0 Notice to Proceed. Each Job Order will include a notice to proceed, which will stipulate the date the contractor is expected to begin work. The notice to proceed date will normally be within 14 calendar days after the job order is issued. Job orders that require an accelerated response will normally have a notice to proceed of 48 hours from the time telephone contact is made with the contractor, identifying the Detailed Scope of Work to be performed. The executed Job Order shall be in place prior to work beginning on an Accelerated Bridge Repair.

5.1 The contractor shall provide 48-hour notification prior to start of repair work for accelerated Job Orders and 5-days notification for all other Job Orders.

F. TERM OF CONTRACT

1.0 The term of this contract shall be for the period commencing May 10, 2016 and shall end April 30, 2017.

1.1 Any work already ordered or in progress when the contract term ends shall be completed in accordance with the provisions, price proposals and timelines established in the issued Job Order(s), or liquidated damages will be assessed against the contractor in accordance with the provisions of this contract.

2.0 The contract may be extended under the original terms and contract prices for the period commencing May 1, 2017 and shall end April 30, 2018 for a maximum contract term of two (2) years. If, in the sole discretion of the Commission, the Commission desires to extend the contract, the contractor will be given written notification of the extension no later than December 1 of the current contract year. The contractor shall provide written notification of acceptance or rejection of the extension of this contract no later than January 1 of the current contract year. If the option for extending the contract is exercised by MoDOT, a time adjustment change order will be issued by the Commission to extend the contract to the new term limits. The contractor shall increase the performance contract bond to an amount equal to the original contract amount plus the extended contract amount (i.e., double the original bond amount).

G. FIXED UNIT PRICE LIST

1.0 Description. A fixed unit price list containing unit prices associated with bridge deck repair and traffic control is listed below. Fixed unit prices are for complete and in-place construction and include all labor, equipment and material required to complete the construction task. All labor, material, equipment and work required by a specification shall be considered part of the fixed unit price, unless otherwise stated elsewhere in this contract. Pay limits will be defined in the approved Job Order.

2.0 Fixed Unit Price List for Bridge Deck Repair and Traffic Control.

Item Number	Description	Unit	Fixed Unit Price
2169903	Removal of Existing Expansion Joint Silicone Sealant	Lin Ft	$26.00
2169903	Removal of Existing Expansion Joint Compression Seal	Lin Ft	$52.00
4019904	Asphaltic Concrete Overlay Repair	SF	$12.00
4094000	Seal Coat, Grade A	SY	$4.00
4094010	Seal Coat, Grade B	SY	$4.00
6123000A	Truck Or Trailer Mounted Attenuator (TMA)	Each	$250.00
6161005	Construction Signs	SF	$1.00
6161008	Advanced Warning Rail System	Each	$15.00
6161009	Flag Assembly	Each	$2.00
6161025	Channelizer (Trim Line)	Each	$3.00
6161030	Type III Moveable Barricade	Each	$25.00
6161033	Directional Indicator Barricade	Each	$6.25
6161040	Flashing Arrow Panel	Each	$130.00
6161055	Sequential Flashing Warning Light	Each	$50.00
6161098	CMS, contractor Furnished/Retained	Each	$400.00
6169902	Accelerated Bridge Repair	Each	$2,200.00
6169902	Single Lane Closure	Each	$1,000.00
6169902	Double Lane Closure	Each	$1,300.00
6169902	Interior Lane Closure	Each	$1,300.00
6169902	Triple Lane Closure	Each	$1,500.00
6169902	Ramp Closure	Each	$900.00
6169902	One-Lane Two-Way Operation with Flagger	Each	$1,000.00
6234000	Polymer Concrete	CF	$300.00
7049904	Bridge Deck Approach Slab Repair (Partial Depth) (Over 200 SF)	SF	$35.00
7049904	Bridge Deck Approach Slab Repair (Partial Depth) (0-200 SF)	SF	$70.00

Item Number	Description	Unit	Fixed Unit Price
7049904	Bridge Deck Approach Slab Repair (Full Depth)	SF	$70.00
7049904	Repairing Concrete Deck (Half-Soling) (Over 600 SF)	SF	$30.00
7049904	Repairing Concrete Deck (Half-Soling) (200-600 SF)	SF	$45.00
7049904	Repairing Concrete Deck (Half-Soling) (Under 200 SF)	SF	$56.00
7049904	Deck Repair with Void Tube Replacement (Over 80 SF)	SF	$70.00
7049904	Deck Repair with Void Tube Replacement (0-80 SF)	SF	$100.00
7049904	Full Depth Repair (Over 600 SF)	SF	$50.00
7049904	Full Depth Repair (200-600 SF)	SF	$70.00
7049904	Full Depth Repair (Under 200 SF)	SF	$90.00
7049904	Dense Concrete Overlay Repair (Over 600 SF)	SF	$18.00
7049904	Dense Concrete Overlay Repair (200-600 SF)	SF	$25.00
7049904	Dense Concrete Overlay Repair (Under 200 SF)	SF	$30.00
7049904	Epoxy Polymer Overlay Repair, Concrete Deck (Over 600 SF)	SF	$6.40
7049904	Epoxy Polymer Overlay Repair, Concrete Deck (200-600 SF)	SF	$9.60
7049904	Epoxy Polymer Overlay Repair, Concrete Deck (Under 200 SF)	SF	$12.80
7119905	Penetrating Sealer – Class 1	SY	$4.00
7119905	Penetrating Sealer – Class 2	SY	$4.20
7119905	Penetrating Sealer – Class 3	SY	$4.40
7179903	Silicone Expansion Joint Sealant (<2.5” Width)	Lin Ft	$48.00
7179903	Preformed Silicone or EPDM Expansion Joint Seal (2.5” to 4.5” Width)	Lin Ft	$80.00

H. ADJUSTMENT FACTORS

1.0 Description. Adjustment Factors include business and construction related costs as defined in this specification. It is the responsibility of the contractor to verify the unit prices provided in this contract and to modify their Adjustment Factors accordingly.

1.1 Business Costs. Business related costs consist of profit, overhead costs, subcontractor profit and overhead, taxes, finance costs, and other costs including but not limited to;

(a) insurance, bonds and indemnification
(b) project meetings, training, management and supervision
(c) project office staff and equipment
(d) employee or subcontractor wage rates that exceed prevailing wages
(e) fringe benefits, payroll taxes, worker’s compensation, insurance costs and any other payment mandated by law in connection with labor that exceeds the labor rate allowances
(f) Business risks such as the risk of low than expected volumes of work, smaller than anticipated Job Orders, poor subcontractor performance, and inflation or material cost fluctuations

1.2 Construction Costs. Construction related costs include but are not limited to;

(a) personnel safety equipment
(b) security requirements
(c) excess material waste
(d) daily and final clean-up
(e) costs resulting from inadequate supply of materials, fuel, electricity, or skilled labor

(f) costs resulting from productivity loss
(g) working in extreme and adverse weather conditions
(h) any other discreet items of work required to complete a particular Job Order

1.3 Mobilization Costs. All costs in accordance with Sec 618 shall be included in the contractor's Adjustment Factors as defined in the contract except as otherwise noted in this contract.

1.4 General Costs. The above lists are not exhaustive and are intended to provide general examples of cost items to be included in the contractor's Adjustment Factors as defined in the contract.

2.0 Normal Work Adjustment Factor. The Adjustment Factor for *Normal Working Hours* includes work conducted from 6:00 a.m. to 7:30 p.m. Monday through Friday.

2.1 In addition to the time period specified in 2.0, work performed during *Normal Working Hours* must also be done during daylight hours, unless the contractor provides the necessary lighting equipment. Daylight hours are defined as ½ hour after sunrise to ½ hour before sunset. If the contractor chooses to work during *Normal Working Hours,* but outside of the defined daylight hours, the contractor shall provide lighting equipment at no additional cost to the Commission.

3.0 Nighttime Work Adjustment Factor. If the engineer determines traffic volumes are such that work cannot be performed during the daytime, Monday through Friday, without significant traffic impacts, the Job Order will specify nighttime repair operations. The Adjustment Factor for *Nighttime Work* includes any work conducted from 7:30 p.m. to 6:00 a.m. Monday through Thursday.

3.1 Any costs for additional lighting equipment necessary to perform nighttime repair operations is considered included in the Nighttime Work Adjustment Factor.

4.0 Weekend Work Adjustment Factor. If the engineer determines traffic volumes are such that work cannot be performed Monday through Friday without significant traffic impacts, the Job Order will specify weekend repair operations. The Adjustment Factor for *Weekend Work* includes any work conducted from 7:30 p.m. on Friday through 6:00 a.m. on Monday, night or day, or a Holiday.

4.1 All work shall be scheduled to avoid major holidays. During the term of this contract there are six major holiday periods: Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas, and New Year's Day. All lanes shall be scheduled to be open to traffic during these holiday periods, from 12:00 noon on the last working day preceding the holiday until 9:00 a.m. on the first working day subsequent to the holiday, unless designated as *Weekend Work* by the engineer.

5.0 The Adjustment Factor for Nighttime Work and Weekend Work will not be applied to adjust the unit bid price(s) unless the contractor is specifically directed to perform *Nighttime* or *Weekend Work* by the engineer as part of the Job Order. If the Job Order does not otherwise restrict nighttime or weekend hours, the contractor may, with the approval of the engineer, perform some or all of the repair operations during nighttime or weekend hours but will paid for the Adjustment Factor specified in the Job Order (i.e. the contractor may be allowed to complete nighttime work on the weekend but will be paid the Nighttime Adjustment Factor).

I. BIDDING THE ADJUSTMENT FACTORS

1.0 The bidder shall complete the bid form by writing in three Adjustment Factors, one for *Normal Working Hours,* one for *Nighttime Work* and one for *Weekend Work.* The Adjustment Factors shall be specified to three decimal places. Note that these are contract pay items for contractor payment, not work items.

EXAMPLE: The Adjustment Factors shall be entered as the following example illustrates.

1 . 1 9 8

OR

0 . 9 8 7

J. CONTRACT AWARD

1.0 The Commission will evaluate the bids with the intent of awarding the contract to the lowest responsible bidder. The anticipated budget for this project is $1,500,000.

2.0 The lowest bid will be determined by multiplying each individual Adjustment Factor by the anticipated budget for each individual adjustment factor. For purposes of determining award of this contract, the estimated percentage of work performed during Normal Working Hours is 40%, the estimated percentage of Nighttime work is 20%, and the estimated percentage of Weekend work is 40%. The extended amount for each item will then be totaled, and the total sum will be used for bid comparison purposes. The initial contract value will be equal to the total sum. The dollar quantities provided in the bid form are anticipated budgets and are not intended to represent the actual value of work that will be assigned.

EXAMPLE: The initial contract value is determined by entering the Adjustment Factors as the following example illustrates:

Item Description	Approximate Quantity	Unit	Unit Price		Bid Amount	
			Dollar	Cts	Dollar	Cts
6189916 Normal Work Adjustment Factor	600,000.00	DLR	**1.150**		690,000.00	
6189916 Nighttime Work Adjustment Factor	300,000.00	DLR	**1.200**		360,000.00	
6189916 Weekend Work Adjustment Factor	600,000.00	DLR	**1.250**		750,000.00	
Bid Total					1,800,000.00	

K. BONDS

1.0 The amount of the Bid Bond shall be 5% of the anticipated budget for this project.

2.0 The amount of the Performance Bond shall be 100% of the anticipated budget for this project.

L. ACCELERATED BRIDGE REPAIR

1.0 If a significant failure (partial or full depth) suddenly develops in a bridge deck, expansion device or other structural member, and the engineer determines the safety of the public is unduly compromised by the damage, the work will be designated as an accelerated repair. Commission forces or others may initially respond to the location and temporarily cover the deteriorated area with steel plates or perform other such work as necessary to reduce the immediate danger to the public as required to safely accommodate traffic.

2.0 The contractor will be notified by telephone of the location of the accelerated repair and extent of work needed. Written confirmation of the required work will be provided by fax, e-mail or personal delivery immediately after notification. The contractor shall provide a means for the engineer to contact the contractor 24 hours a day for emergencies. The Job Order will be negotiated, issued by the Commission and executed by the contractor within 24 hours of notification to the contractor. It is estimated that accelerated bridge repairs could occur up to 3 times during the term of this contract. There is no guarantee that any accelerated bridge repair will be needed during the term of the contract. There is no maximum number of call outs to perform accelerated bridge repair within this contract.

3.0 The contractor shall respond to the work location and begin the accelerated repair work within 24 hours of execution of the Job Order. After beginning the accelerated repair work, the contractor shall continuously and diligently pursue the work according to the mutually agreed upon schedule in the Job Order until all of the repairs described in the Job Order are complete, unless otherwise approved by the engineer. After completing the repair, the contractor shall remove and transport the steel plates to the Missouri Department of Transportation's Stadium Maintenance Facility, 9101 E 40th Terrace, Kansas City, MO 64133.

4.0 The contractor will be paid a one-time accelerated repair payment for beginning the accelerated repair work within the required time period. An Adjustment Factor will not be applied to the accelerated repair payment. All other items necessary to complete the repair work will be paid for at the fixed unit price multiplied by the Normal, Nighttime or Weekend Adjustment Factor, as mutually agreed upon in the Job Order.

M. NOTICE TO PROCEED

Delete Sec 108.2 and substitute the following:

108.2 Notice to Proceed. For each Job Order, the engineer will include a notice to proceed, which will stipulate the date the contractor is expected to begin work. The notice to proceed date will normally be 14 calendar days after the job order is issued.

108.2.1 The Notice to Proceed for Job Orders that require an accelerated repair shall be in accordance with Job Special Provision Accelerated Bridge Repair.

N. COMPLETING THE WORK

1.0 The contractor shall perform any task in the fixed unit price list for the fixed unit price multiplied by the quantity, multiplied by the appropriate Adjustment Factor for tasks performed during Normal Working Hours or for tasks performed during Nighttime or Weekend hours. The

contractor shall perform the Detailed Scope of Work for the Job Order Price as calculated in accordance with the procedure for developing Job Orders set forth herein.

2.0 When installed quantities differ from the estimated quantities in the issued Job Order, the as built quantities in the final Job Order will address the quantity variation(s) for final payment. When quantities are not specified in the Detailed Scope of Work, the Job Order Price will be deemed to be lump sum for such work.

3.0 The contractor shall employ and supply a sufficient force of workers, materials and equipment and shall progress the work with such diligence so as to ensure completion of the Detailed Scope of Work within the Job Order completion Time or within such extended time for completion as may be granted by the engineer.

4.0 In order to assist in reviewing the Job Order Price Proposal, the contractor shall as part of the Job Order Proposal prepare and submit to the engineer for approval, a progress schedule showing the order in which the contractor proposes to carry on the work, the date of which it will start the major items of work (including but not limited to excavation, drainage, paving, structures, mobilization, soil erosion and sediment control, etc.) and the critical features (including procurement of materials, plant and equipment) and the contemplated dates for completing the same.

O. FINAL INSPECTION AND ACCEPTANCE OF THE WORK

Delete Secs 105.10.7 through 105.10.7.2 and substitute the following:

105.10.7 Final Inspection. Upon completion of the required work for each Job Order, the contractor shall notify the engineer by phone, facsimile, or electronic mailing, and the engineer will perform an inspection. If the engineer determines all work required by the contract has been satisfactorily completed, the engineer will make the acceptance for maintenance and notify the contractor in writing of the date of acceptance for maintenance.

105.10.7.1 Work determined to be unsatisfactory by the engineer and not accepted shall be corrected to acceptable standards at the contractor's sole cost. All items that are unsatisfactory shall be corrected within the specified working days for each job order. If needed for correction of unsatisfactory work, the contractor will be given an extension of contract time in an amount equal to the number of working days remaining in the job order at the time the engineer was notified for inspection. No contract time extension will be made for notification made prior to completion of the work. Any time extension given will be considered a noncompensable delay. Upon completion of the corrections, the contractor shall notify the engineer for a reinspection.

105.10.7.2 Following a Job Order final inspection, the contractor, subcontractors, and suppliers are relieved of any new or additional liability to third parties for personal injury, death, or property damages which may be alleged to result from the performance of the work required by that job order, unless additional work on the right of way is required by the engineer.

105.10.7.3 Nothing in this section shall be deemed to excuse the contractor of liability or responsibility for any personal injury, death, or property damages which may arise from acts or the failure to act prior to the final inspection of the work required by the Job Order.

P. LIQUIDATED DAMAGES FOR FAILURE OR DELAY IN BEGINNING WORK AND/OR COMPLETING WORK ON TIME

1.0 Description. If the contractor, or in case of default, the surety fails to begin the work by the notice to proceed date or fails to complete the work within the mutually agreed schedule included in each job order, 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 delay, with its resulting cost to the traveling public. 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 **$1,000.00 per day** for each full day that the work is not started and **$1,000.00 per day** for each full day that the work is not completed within the required time periods. It shall be the responsibility of the engineer to determine the quantity of excess time.

2.0 The said liquidated damages specified for beginning work and/or completing work will be assessed in addition to any other applicable liquidated damages specified elsewhere in the contract documents.

Q. LIQUIDATED DAMAGES SPECIFIED FOR ACCELERATED REPAIR RESPONSE AND COMPLETION

1.0 Description. For work designated as accelerated bridge repair work, if the work is not started within the required 24 hours of execution of the Job Order contract, 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 delay, with its resulting cost to the traveling public. 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 **$250.00 per hour** for each full hour that the accelerated bridge repair work is not started within the required time period.

2.0 The contractor will be charged with liquidated damages specified in the amount of **$250.00 per hour** for each full hour that the accelerated repair work is not completed beyond the mutually agreed upon schedule established in the Job Order, 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 excess time.

3.0 The said liquidated damages specified for accelerated repair response will be assessed in addition to any other applicable liquidated damages specified elsewhere in the contract documents.

R. LIQUIDATED DAMAGES SPECIFIED FOR NIGHTTIME LANE CLOSURES

1.0 Description. The contractor shall be required to have all lanes open to unrestricted traffic and free of any equipment by the time specified in Job Order for each closure location. Should the contractor fail to have the roadway completely open, and free of any equipment by the time specified in Job Order, the Commission, the traveling public, 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. 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 **$1,000 per 15 minutes** for each 15-minute increment that the roadway is not open and free of any equipment, 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.

1.1 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.

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

2.0 A contingency plan mutually agreed upon by the contractor and the engineer shall be established at the joint meeting and documented in each Job Order in the event of a delay of the scheduled traffic opening time due to weather or other unforeseen circumstances.

S. LIQUIDATED DAMAGES FOR WINTER MONTHS JSP-04-17

1.0 Description. Revise Sec 108.8.1.2 (a) and (b) and substitute the following for the project:

(a) Liquidated damages will be assessed from December 15 to March 15
(b) Liquidated damages will be assessed for Saturdays, Sundays and Holidays.

T. CONTRACT PAYMENTS

1.0 The engineer will make semi-monthly payment estimates in writing for the Job Orders completed and final inspected during the semi-monthly interval and the value thereof at the price established in the Job Order, including any necessary adjustments. The semi-monthly estimates will include deductions from the contractor's invoice for any liquidated damages applicable to any of the Job Orders.

U. WORK ZONE TRAFFIC MANAGEMENT PLAN

1.0 Description. The contractor may be responsible for the work zone traffic management as mutually agreed upon by the contractor and engineer for each individual Job Order. 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.

2.0 Work Zone Scheduling.

2.1 The contractor shall notify the engineer at least 48 hours prior to performing any work at each work site. The notification shall include all information needed to identify traffic impacts such as work location, anticipated work hours, traffic control plan type, required lane or shoulder closures, anticipated duration of the work, etc. The contractor shall designate a contact person who is available for the duration of the work to resolve any traffic impact issues resulting from the contractor's operations. The engineer will make appropriate notification to the public, MoDOT customer service, and MoDOT work crews of the contractor's operations. The

contractor shall notify the engineer as soon as practical any postponement due to weather, material, or other circumstances and shall notify the engineer when the work has been rescheduled.

2.2 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 reopened to traffic.

2.3 Traffic shall be maintained through the work zone using the existing pavement. Provisions shall be made to allow the movement of emergency vehicles through the limits of construction at all times. During non-working hours the contractor shall have all lanes of traffic open for all routes, ramps, and side roads. All channelizers and other traffic control devices shall be removed from the roadway during non-working hours unless otherwise approved by the engineer.

2.4 The contractor shall be responsible for maintaining the existing traffic flow through the job site during construction. If disruption of the traffic flow occurs and traffic is backed up in queues of 15 minute delays or longer, then the contractor shall review the construction operations which contributed directly to disruption of the traffic flow and make adjustments to the operations to prevent queues from occurring again.

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

3.0 Work Hour Restrictions.

3.1 During non-working hours the contractor shall have all lanes of traffic open for all routes, ramps, and side roads. Working hours for weekends and holidays shall be determined by the engineer.

3.2 Due to the wide variance in traffic volumes throughout the contract area, it is not possible to give specific work hours for the term of the contract. Each Job Order will specify work hours or work hour restrictions based on the repair location, this may include peak hour restrictions. The following table provides general guidance as to the most restrictive schedule for when work on or adjacent to the roadway may be allowed.

Traffic Control Plan Type	Work Hours (Monday thru Friday)
Single Lane Closure	7:30 p.m. to 4:30 a.m.
Double Lane Closure	9:30 p.m. to 4:30 a.m.
Triple Lane Closure	10:00 p.m. to 4:30 a.m.
Interior Lane Closure	10:00 p.m. to 4:30 a.m.
Ramp Closure	Hours and days as approved by the engineer
One Lane Two Way Operation with Flagger	Hours and days as approved by the engineer

Specific work hours for an individual work location shall be according to the mutually agreed upon schedule in the Job Order. All work shall be scheduled to avoid major sporting events, conventions, concerts, etc.

4.0 Weekend Bridge Work. Some bridges will need full weekend lane closures. The contractor is required to give at least one week notice prior to any weekend lane closures.

5.0 Ramp Closure. Ramp closures shall be minimized and shall be approved by the engineer a minimum of five days prior to the closure. Only one ramp closure will be permitted in a particular interchange or complex at one time. Work on acceleration / deceleration lanes will not require ramp closure unless approved by the engineer. Detour traffic handling details will be as specified by the engineer. Major ramp closures may require detour signing with other ramp closures only requiring use of changeable message signs (CMS) for detours. If the engineer determines detour signing is required, all necessary detour trailblazing placards will be furnished, installed, and covered by others. The contractor shall furnish all CMS required by the engineer. The contractor shall be responsible for uncovering and covering the trailblazing placards as work progresses.

6.0 Changeable Message Signs. The contractor shall provide changeable message signs notifying motorists of future traffic disruption and possible traffic slow down one week before traffic is shifted to a detour. The changeable message sign installation shall be placed at a location as approved or directed by the engineer.

7.0 Basis of Payment. All items necessary to complete the traffic control will be paid for at the fixed unit price multiplied by the Normal, Nighttime or Weekend Adjustment Factor, as mutually agreed upon in the Job Order.

V. TRAFFIC CONTROL PLAN TYPES

1.0 Description. The following traffic control plan types shall be used for the work. The contract provides an estimated number of traffic control items required for single lane closures, double lane closures, triple-lane closures, and ramp closures. The engineer may determine that the contractor shall perform work on more than one bridge within a lane closure when the bridges are within close proximity to each other.

2.0 Plan Types.

2.1 Single Lane Closure. A single lane closure shall be performed by furnishing, installing, and removing the following set of traffic control devices.

2 each	Bridge Work Ahead
2 each	Reduced Speed Ahead
2 each	Speed Limit 40 MPH
4 each	Work Zone (Plaque)
2 each	Right (Left) Lane Closed Ahead
2 each	Right (Left) Lane Closed
2 each	Speed Limit 60 (Normal Speed)
2 each	Advanced Warning Rail System
12 each	Flag Assembly
14 each	Directional Indicator Barricade
30 each	Channelizer (Trim Line)
2 each	Flashing Arrow Panel (One Truck Mount for TMA)
1 each	Truck Mounted Attenuator
1 each	Changeable Message Sign (Contractor Furnished / Retained)

2.2 Double Lane Closure. The contractor shall obtain approval from the engineer prior to any double lane closure. A double lane closure shall be performed by furnishing, installing, and

removing the following set of traffic control devices.

2 each	Bridge Work Ahead
2 each	Reduced Speed Ahead
4 each	Speed Limit 40 MPH
6 each	Work Zone (Plaque)
2 each	Right (Left) Lane Closed Ahead
2 each	Right (Left) Two Lanes Closed Ahead
4 each	Right (Left) Lane Closed
2 each	Speed Limit 60 (Normal Speed)
2 each	Advanced Warning Rail System
18 each	Flag Assembly
28 each	Directional Indicator Barricade
100 each	Channelizer (Trim Line)
3 each	Flashing Arrow Panel (One Truck Mount for TMA)
1 each	Truck Mounted Attenuator
1 each	Changeable Message Sign (Contractor Furnished / Retained)

2.3 Interior Lane Closure. The contractor shall obtain approval from the engineer prior to any interior lane closure. An interior lane closure shall be performed by furnishing, installing, and removing the following set of traffic control devices.

2 each	Bridge Work Ahead
2 each	Reduced Speed Ahead
2 each	Speed Limit 40 MPH
4 each	Work Zone (Plaque)
2 each	Left (Right) Lane Closed Ahead
2 each	Left (Right) Lane Closed
2 each	Speed Limit 60 (Normal Speed)
2 each	Advanced Warning Rail System
12 each	Flag Assembly
14 each	Directional Indicator Barricade
100 each	Channelizer (Trim Line)
3 each	Flashing Arrow Panel (One Truck Mount for TMA)
1 each	Truck Mounted Attenuator
1 each	Changeable Message Sign (Contractor Furnished / Retained)

2.4 Triple Lane Closure. The contractor shall obtain approval from the engineer prior to any triple lane closure. A triple lane closure shall be performed by furnishing, installing, and removing the following set of traffic control devices.

2 each	Bridge Work Ahead
2 each	Reduced Speed Ahead
6 each	Speed Limit 40 MPH
8 each	Work Zone (Plaque)
4 each	Right (Left) Lane Closed Ahead
2 each	Right (Left) 3 Lanes Closed Ahead
6 each	Right (Left) Lane Closed
2 each	Speed Limit 60 (Normal Speed)
2 each	Advanced Warning Rail System
24 each	Flag Assembly
42 each	Directional Indicator Barricade

70 each	Channelizer (Trim Line)
4 each	Flashing Arrow Panel (One Truck Mount for TMA)
1 each	Truck Mounted Attenuator
1 each	Changeable Message Sign (Contractor Furnished / Retained)

2.5 Ramp Closure. The contractor shall obtain approval from the engineer a minimum of five days prior to any ramp closure. A ramp closure shall be performed by furnishing, installing, and removing the following set of traffic control devices. Uncovering and covering any detour trailblazing placards furnished and installed by others is included in the work.

2 each	Bridge Work Ahead
2 each	Speed Limit 50 MPH
4 each	Work Zone (Plaque)
2 each	Ramp Closed Ahead
2 each	Detour Ahead
1 each	Road Closed
2 each	Speed Limit 60 (Normal Speed)
2 each	Advanced Warning Rail System
10 each	Flag Assembly
14 each	Directional Indicator Barricade
40 each	Channelizer (Trim Line)
2 each	Flashing Arrow Panel (One Truck Mount for TMA)
1 each	Truck Mounted Attenuator
2 each	Changeable Message Sign (Contractor Furnished / Retained)
3 each	Type III Movable Barricade

2.6 One-Lane Two-Way Operation with Flaggers. A minimum of two flaggers will be required to direct traffic. Additional flaggers may be required when working at intersecting streets or ramps as directed by the engineer. No direct payment will be made for flaggers. "One-Lane Two-Way Operation with Flaggers", shall include furnishing, installing, and removing the following set of traffic control devices as shown on the plans:

2 each	Road Work Ahead
2 each	One Lane Road Ahead
2 each	Be Prepared To Stop
2 each	Flagger (Symbol)

3.0 Additional Traffic Control Devices. The engineer may determine that signs, channelizers, and Type III Movable Barricades in addition to those devices shown in the plans are necessary to safely accommodate traffic. These additional devices may be needed for merging ramp traffic, detours, multiple bridges, or other special cases to supplement the specified lane closure devices. The contract provides a fixed cost for any additional traffic control items.

4.0 Flaggers. Flaggers may be required when working at intersecting streets or ramps as directed by the engineer. No direct payment will be made for flaggers.

5.0 Method of Measurement and Basis of Payment.

5.1 Measurement of lane closures will be made per each set-up made within the term of the Job Order. A set-up is defined as each installation and removal of traffic control devices at a specific work site. If a set-up is switched to a different lane (i.e., from a left lane closure to a

right lane closure), the contractor will be paid per each set-up. If the duration of a lane closure exceeds one week, the contractor will be paid an additional fixed unit cost for the Changeable Message Sign (Contractor Furnished/Retained) and the Flashing Arrow Panel (One Truck Mount for TMA) per week. If the engineer determines that a lane closure is needed both on the bridge and under the bridge to accommodate the work, each lane closure type will be paid for at the work site per the fixed unit price established for each type lane closure. Payment will not be made for any lane closure that does not result in productive deck repair work as determined by the engineer. Additional lane closures may be installed by the contractor at his expense. The accepted quantity of each lane closure will be paid for at the fixed unit price for:

Item 616-99.02	Single Lane Closure	Each
Item 616-99.02	Double Lane Closure	Each
Item 616-99.02	Interior Lane Closure	Each
Item 616-99.02	Triple Lane Closure	Each
Item 616-99.02	Ramp Closure	Each
Item 616-99.02	One-Lane Two-Way Operation with Flaggers	Each

multiplied by the Normal, Nighttime or Weekend Adjustment Factor, as mutually agreed upon in the Job Order.

5.2 Measurement of additional traffic control devices will be made per each set-up made within the term of the Job Order. Payment for the devices shall include furnishing, installing, and removing the additional devices at a specific work site. No payment will be made for additional devices used by the contractor without prior approval of the engineer. The accepted quantity of additional traffic control devices will be paid for in accordance with the fixed unit price list, multiplied by the Normal, Nighttime or Weekend Adjustment Factor, as mutually agreed upon in the Job Order.

W. DELAY PROVISIONS

1.0 If the contractor is delayed in the commencement, prosecution or completion of the work by any act of the Commission, or by any cause beyond the contractor's control, then the contractor will be entitled to an extension of time. If the contractor is delayed or prevented from working on a particular date as a result of a delay, error or omission of the Commission, and the contractor incurs unavoidable labor costs as a direct result thereof because the contractor did not have enough time to cancel or divert its labor force, then the contractor will be reimbursed for such costs. For each worker so paid, the contractor will be reimbursed the amount paid the worker. Also, the contractor will be reimbursed for construction tasks required as a direct result of such delay, error or omission, such as closing off areas of work. No other costs shall be paid as a result of a delay or late cancellation.

1.1 If the contractor fails to provide 48-hour notification prior to start of accelerated work or 5-days notification for all other Job Orders this provision will not apply.

X. ELIMINATED MATERIALS

1.0 Materials required by the Detailed Scope of Work and not incorporated into the work due to changes caused by field conditions or revisions to the design by the Commission after the material was ordered or purchased will be reimbursed at the material portion of the Pre-priced

Task, or if there is no Pre-priced Task, then its material cost minus salvage value, or the material cost plus delivery costs.

Y. SAMPLE JOB ORDERS

1.0 Description. The following are example Job Orders intended to be illustrations that may be used as a guide for formulating the bid of the Adjustment Factor. For each example Job Order, the appropriate items that would be used and the quantities are computed based upon the sample work that would be completed in the Job Order. The contractor shall be reminded these are Job Order samples and the quantity totals in actual Job Orders, if issued, may be more or less than that depicted below or be totally different from the samples illustrated.

1.1 Job Order Sample 1: Bridge deck repair for Bridge No. A1234 on Interstate or Major Route requiring night work and quick response due to safety concerns.

Item Description	Fixed Unit Price	Quantity	Price
Repairing Concrete Deck (Half-Soling) (Under 200 SF)	$56.00	150 SF	$8,400.00
Full Depth Repair (Under 200 SF)	$80.00	50 SF	$4,000.00
Dense Concrete Overlay Repair (Under 200 SF)	$25.60	180 SF	$4,608.00
Double Lane Closure	$1,300.00	1 Each	$1,300.00
		Subtotal:	**$18,308.00**
Nighttime Work Factor	1.200		
		Subtotal:	**$21,969.60**
Accelerated Repair	$2,200.00	1 Each	$2,200.00
		TOTAL:	**$24,169.60**

1.2 Job Order Sample 2: Bridge deck and epoxy polymer overlay repair for Bridge No. A1501 on Interstate requiring night work and quick response due to safety concerns. Includes closing WB entrance ramp from Broadway.

Item Description	Fixed Unit Price	Quantity	Price
Construction Signs	$1.00	480 SF	$480.00
Type III Moveable Barricade	$25.00	10 Each	$250.00
Single Lane Closure	$1000.00	10 Each	$10,000.00
Repairing Concrete Deck (Half-soling) (Over 600 SF)	$30.00	1000 SF	$30,000.00
Epoxy Polymer Overlay Repair, Concrete Deck (Over 600 SF)	$6.40	1200 SF	$7,680.00
		Subtotal:	**$48,410.00**
Nighttime Work Factor	1.171		
		TOTAL	**$56,688.11**

1.3 Job Order Sample 3: Accelerated bridge deck repair in center lane eastbound on Manchester Trafficway Bridge No. L0967. Nighttime work and quick response due to safety concerns.

Item Description	Fixed Unit Price	Quantity	Price
Single Lane Closure	$1,000.00	6 Each	$6,000.00
Double Lane Closure	$1,300.00	8 Each	$10,400.00
Repairing Concrete Deck (Half-soling) (Over 600 SF)	$30.00	2500 SF	$75,000.00
Full Depth Repair (Under 200 SF)	$80.00	100 SF	$8,000.00
		Subtotal:	**$99,400.00**
Nighttime Work Factor	1.218		
		Subtotal:	**$121,069.20**
Accelerated Repair	$2,200.00	1 Each	$2,200.00
		TOTAL:	**$123,269.20**

Z. EMERGENCY PROVISIONS AND INCIDENT MANAGEMENT

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

Mr. Richard Kingery - District Bridge Engineer (816-607-2036)

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

Missouri Highway Patrol	314-340-4000
MoDOT District Customer Service	816-622-6500
MoDOT Incident Response	816-241-2223
City of Kansas City Police	816-234-5000
City of Kansas City Fire	816-513-0911
Clay County Sheriff	816-407-3750
Platte County Sheriff	816-858-2424
Cass County Sheriff	816-380-2039
Jackson County Sheriff	816-524-4302

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 police agency.

2.2 The contractor shall notify 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 enforcement and emergency agencies, a report shall be furnished to the engineer on the status of incident management.

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

AA. UTILITIES

1.0 It is the inherent risk of the work under this contract that the contractor may encounter utilities above and/or below the ground or in the vicinity of any given job order which may interfere with their operations. The contractor expressly acknowledges and assumes this risk even though the nature and extent is unknown to both the contractor and the Commission at the time of bidding and award of the contract. The effect in cost or time of the presence of utilities above, below or in the vicinity of the contractor's work under this contract shall not be compensable.

2.0 The contractor will be responsible and is required to call for utility locates prior to performing any excavation work within any project limits for a given job order. Calling for utility locates will not relieve the contractor of his liability for utility damages caused by excavating operations performed by the contractor and/or any of his subcontractors. The contractor shall be solely responsible for all costs, fines, and penalties associated with the repair of any damaged utility caused by the actions of the contractor and/or any subcontractor within the given job order limits.

2.1 It shall be noted by the contractor that MoDOT is a member of Missouri One Call (800 Dig Rite). Some work on this project may be in the vicinity of MoDOT utility facilities, which includes but is not limited to traffic signal cables, highway lighting circuits, ITS cables, cathodic protection cables, etc. Prior to beginning work, the contractor shall request locates from Missouri One Call. The contractor shall also complete the Notice of Intent to Perform Work form located at the Missouri Department of Transportation website:

http://www.modot.mo.gov/asp/intentToWork.shtml

The contractor shall submit the form over the web (preferred method) or by fax to the numbers on the printed form. The notice must be submitted a minimum of 2 and a maximum of 10 working days prior to excavation just as Missouri One Call requires.

3.0 Any representation of the presence of utilities on any bidding document provided or job order issued under this contract is disclaimed by the Commission. The contractor fully understands this disclaimer when determining the basis of their bid for this contract. The contractor agrees to hold the Commission harmless in the presents or absents of any utility within the limits of any job order resulting from this contract.

BB. SUPPLEMENTAL REVISIONS JSP-09-01R

Insert Sec 109.15, Sec 109.16 and Sec 109.17, subsequent section renumbered accordingly:

109.15 Seal Coat Price Index. Adjustments will be made to the payments due the contractor for Seal Coat placed in accordance with Sec 409 of the Standard Specifications when the quantity exceeds 14,000 gallons for an individual project or any number of projects in the contract combination. Adjustments will be calculated in accordance with Asphalt Cement Price Index of the General Provisions, except as defined herein.

109.15.1 Basis of Payment. To determine the adjustment for any material specified in this provision the following formula will be used.

$$A = B \times (8.58/2000) \times (D - E)$$

Where: A = adjustment for Seal Coat placed during the index period
B = gallons of seal coat placed during the index period
D = average index price at the beginning of the period
E = average index price at the time of bid
(use average specific gravity of 1.03 for seal coat)

109.15.2 Optional. This provision is optional. If the bidder wishes to be bound by this provision, the bidder shall execute the acceptance form in the Bid for the Asphalt Cement Price Index. Acceptance of this provision will apply to both the Asphalt Cement Price Index and Seal Coat Price Index. Failure by the bidder to execute the acceptance form will be interpreted to mean election to not participate in the Asphalt Cement Price Index or Seal Coat Price Index.

109.16 Asphalt Underseal Price Index. Adjustments will be made to the payments due the contractor for Asphalt underseal placed in accordance with Sec 625 of the Standard Specifications when the quantity exceeds 10,000 gallons for an individual project or any number of projects in the contract combination. Adjustments will be calculated in accordance with Asphalt Cement Price Index of the General Provisions, except as defined herein.

109.16.1 Basis of Payment. To determine the adjustment for any material specified in this provision the following formula will be used.

$$A = B \times (8.66/2000) \times (D - E)$$

Where: A = adjustment for asphalt underseal placed during the index period
B = gallons of asphalt underseal placed during the index period
D = average index price at the beginning of the period
E = average index price at the time of bid
(use average specific gravity of 1.04 for underseal)

109.16.2 Optional. This provision is optional. If the bidder wishes to be bound by this provision, the bidder shall execute the acceptance form in the Bid for the Seal Coat Price Index. Failure by the bidder to execute the acceptance form will be interpreted to mean election to not participate in the Seal Coat Price Index.

109.17 Polymer Modified Emulsion Membrane Price Index. Adjustments will be made to the payments due the contractor for Polymer Modified Emulsion Membrane placed in accordance with Sec 413.30 when the quantity exceeds 5,000 square yards. Adjustment will be calculated in accordance with the Supplemental Asphalt Price Adjustment except as defined herin.

109.17.1 Basis of Payment. To determine the adjustment for any material specified in this provision the following formula will be used.

$$A=B \times (1.20/2000) \times (D - E)$$

Where: A = adjustment for membrane placed during the index period
B = square yards of membrane placed during the index period
D = average index price at the beginning of the period
E = average index price at time of bid

109.17.2 Optional. This provision is optional. If the bidder wishes to be bound by the provision, the bidder shall execute the acceptance form in the Bid for Polymer Modified Emulsion Membrane Price Index. Failure by the bidder to execute the acceptance form will be interpreted to mean election not to participate in the Polymer Modified Emulsion Membrane Price Index.

Delete Section 401.2.2 and substitute the following:

401.2.2 Reclaimed Asphalt. Reclaimed Asphalt may be obtained from Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS). The asphalt binder content of recycled asphalt materials shall be determined in accordance with AASHTO T 164, ASTM D 2172 or other approved method of solvent extraction. A correction factor for use during production may be determined for binder ignition by burning a sample in accordance with AASHTO T 308 and subtracting from the binder content determined by extraction.

The use of reclaimed asphalt shall be limited to one of the following options with the exception of bituminous base. For bituminous base the limits specified may be increased according to the recycled materials used as follows; 10 % for RAP only, 5 % for RAS only and 10 % for the appropriate RAP and RAS combination.

Binder	**Percent Effective Virgin Binder Replacement**		
	RAP	**RAS**	**RAP and RAS combination**
Contract Grade Virgin Binder shall be used	0 – 20	0 -10	RAP + (2*RAS) ≤ 20
Virgin Binder shall be Softened One Grade[a]	21 – 40	11 – 20	20 < RAP + (2*RAS) ≤ 40
Blend Chart[b]	0 – 100	N/A	N/A
Extraction and Grading of Binder from final Mixture[c]	0 - 100		

[a] The virgin binder shall have a low temperature grade 6 degrees lower than the binder grade specified in the contract. Lowering the high temperature of the virgin binder is not required; however, if lowered, the virgin binder shall have a high temperature grade no lower than 6 degrees below the binder grade specified in the contract. (Ex. Contract grade PG 64-22; virgin binder could be either PG 58-28 or PG 64-28). The Pressure Aging Vessel (PAV) test temperature (AASHTO M320) shall be tested at 19° C, regardless of the high temperature grade of the selected virgin binder

[b] Testing in accordance with AASHTO M323 including raw data shall be included with the mix design which demonstrates that the grade of the combine mixture meets the contract requirements.

[c] Testing in accordance with either AASHTO T319, or AASHTO T164 and R59 along with grading in accordance with AASHTO M320 including raw data shall be included with the mixt design which demonstrates that the grade of the combine mixture and rejuvenator, if applicable, meets the contract requirements.

Amend Section 401.2.2 to include the following:

401.2.2.1 Reclaimed Asphalt Pavement. Reclaimed Asphalt Pavement (RAP) may be used in any Section 401, Plant Mix Bituminous Base and Pavement. All RAP material, except as noted below, shall be tested in accordance with AASHTO T 327, *Method of Resistance of Coarse Aggregate Degradation by Abrasion in the Micro-Deval Apparatus.* Aggregate shall have the asphalt coating removed either by extraction or binder ignition during production. The

material shall be tested in the Micro-Deval apparatus at a frequency of once per 1500 tons. The percent loss shall not exceed the Micro-Deval loss of the combined virgin material by more than five percent. Micro-Deval testing will be waived for RAP material obtained from MoDOT roadways. All RAP material shall be in accordance with Sec 1002 for deleterious and other foreign material. The aggregate specific gravity shall be determined by performing AASHTO T 209 in accordance with Sec 403.19.3.1.2 and calculating the G_{se} to which a 0.98 correction factor will be applied in order to determine Gsb as follows:

$$G_{se} = \frac{100 - P_b}{\frac{100}{G_{mm}} - \frac{P_b}{G_b}}$$

RAP Gsb = RAP Gse x 0.98

See Section 401.4.4.1 for mixes containing more than 40% effective binder replacement from reclaimed asphalt.

Amend Section 401.2.2 to include the following:

401.2.2.2 Reclaimed Asphalt Shingles. Reclaimed Asphalt Shingles (RAS) may be used in any mixture specified to use PG 64-22 in accordance with AASHTO PP 53. In addition, shingles shall be ground to 3/8-inch minus. Waste, manufacturer or new, shingles shall be essential free of deleterious materials. Post-consumer RAS shall not contain more than 1.5 percent wood by weight or more than 3.0 percent total deleterious by weight. Post-consumer RAS shall be certified to contain less than the maximum allowable amount of asbestos as defined by national or local standards. The bulk specific gravity of RAS used in the job mix formula shall be 2.600.

$$\text{RAS } G_{sb} = 2.600$$

See Sec 401.4.4.1 for mixes containing more than 40% effective binder replacement from reclaimed asphalt.

The gradation of the aggregate may be determined by solvent extraction of the binder or using the following as a standard gradation:

Shingle Aggregate Gradation	
Sieve Size	**Percent Passing by Weight**
3/8 in.	100
No. 4	95
No. 8	85
No. 16	70
No. 30	50
No. 50	45
No. 100	35
No. 200	25

Amend Section 401.2.2 to include the following:

401.2.2.3 Rejuvenators. Rejuvenators may be used in any asphalt mixture containing recycled material. When a rejuvenator is used for the purpose of softening the binder grade, the requirements for the Extraction and Grading of Binder from Final Mixture option in section 401.2.2 must be satisfied.

Delete Section 401.3 and substitute the following:

401.3 Composition of Mixtures. Aggregate sources shall be from the specific ledge or combination of ledges within a quarry, or processed aggregate from a particular product, as submitted in the mix design. The total aggregate prior to mixing with asphalt binder shall be in accordance with the following gradation requirements:

Sieve Size	Percent Passing by Weight			
	Base	BP-1	BP-2	BP-3
1 inch	100	100	100	100
3/4 inch	85-100	100	100	100
1/2 inch	60-90	85-100	95-100	100
3/8 inch	---	---	---	100
No. 4	35-65	50-70	60-90	90-100
No. 8	25-50	30-55	40-70	---
No. 16	---	---	---	30-60
No. 30	10-35	10-30	15-35	---
No. 200	4-12	5-12	5-12	7-12

Delete Section 401.4.4.1 and substitute the following:

401.4.4.1 Base, BP-1, BP-2 and BP-3 mixtures shall have the following properties, when tested in accordance with AASHTO T 245 or AASHTO T 312. The number of blows with the compaction hammer shall be 35 or the number of gyrations shall be 35 with the gyratory compactor. BP-1 and BP-2 mixtures shall have between 60 and 80 percent of the VMA filled with asphalt binder and dust to effective binder ratio of 0.8 to 1.6. BP-3 mixtures shall be compacted with the gyratory compactor to 35 gyrations and shall have a minimum 75 percent of the VMA filled with asphalt binder and dust to effective binder ratio of 0.9 to 2.0.

Mix Type	Percent Air Voids	AASHTO T 245 Stability lb	Voids in Mineral Aggregate (VMA) [b]
BB	3.5	750	13.0[a]
BP-1	3.5	750	13.5
BP-2	3.5	750	14.0
BP-3	3.5	750	15.0

[a] Bituminous base mixtures that would require 12.0 percent VMA following Asphalt Institute MS-2 will have a minimum 12.0 percent requirement.

[b] If the effective virgin binder replacement from any combination of RAP and RAS is greater than 40 percent; then the minimum VMA required shall be increased by 0.5.

Delete Sec 402.3 and substitute the following:

402.3 Composition of Mixture. Aggregate sources shall be from the specific ledge combination of ledges within a quarry, or processed aggregate from a particular product, as submitted in the mix design. The total aggregate prior to mixing with asphalt binder shall be in accordance with the following gradation requirements:

Plant Mix Bituminous Surface Leveling	
Sieve Size	**Percent Passing by Weight**
3/4" inch	100
1/2 inch	99-100
3/8 inch	90-100
No. 4	60-90
No. 8	40-70
No. 30	15-35
No. 200	5-12

BP-3 in accordance with Sec 401.3 is an allowable substitution.

Amend Sec 402.3.1 to include the following:

402.3.1 Mixture Characteristics. Bituminous surface leveling mixture shall have the following properties, when tested in accordance with AASHTO T 245 or AASHTO T 312. The number of blows with the compaction hammer shall be 35 or the number of gyrations shall be 35 with the gyratory compactor. The mixture shall have a minimum voids filled with asphalt (VFA) of 75 percent. The dust to effective binder ratio shall be 0.8 to 1.6.

Percent Air Voids	AASHTO T 245 Stability lb	Voids in Mineral Aggregate (VMA)
3.5	750	14.5

Delete Sec 402.2.3 and substitute the following:

402.2.3 Reclaimed Asphalt. The asphalt binder content of recycled asphalt materials shall be determined in accordance with AASHTO T 164, ASTM D 2172 or other approved method of solvent extraction. A correction factor for use during production may be determined for binder ignition by burning a sample in accordance with AASHTO T 308 and subtracting from the binder content determined by extraction.

Amend Sec 402.2.3.1 and Sec 402.2.3.2 to include the following:

402.2.3.1 Reclaimed Asphalt Pavement. Reclaimed Asphalt Pavement (RAP) may be used in any mixture, except SMA mixtures. Mixtures may be used with more than 30 percent virgin effective binder replacement provided testing according to AASHTO M 323 is included with the job mix formula that ensures the combined binder meets the grade specified in the contract. All RAP material, except as noted below, shall be tested in accordance with AASHTO T 327, *Method of Resistance of Coarse Aggregate Degradation by Abrasion in the Micro-Deval Apparatus.* Aggregate shall have the asphalt coating removed either by extraction or binder ignition during production. The material shall be tested in the Micro-Deval apparatus at a frequency of once per 1500 tons . The percent loss shall not exceed the Micro-Deval loss of the combined virgin material by more than five percent. Micro-Deval testing will be waived for RAP material obtained from MoDOT roadways. All RAP material shall be in accordance with Sec 1002 for deleterious and other foreign material. The aggregate specific gravity shall be

determined by performing AASHTO T 209 in accordance with Sec 403.19.3.1.2 and calculating the G_{se} to which a 0.98 correction factor will be applied in order to determine G_{sb} as follows:

$$G_{se} = \frac{100 - P_b}{\frac{100}{G_{mm}} - \frac{P_b}{G_b}}$$

RAP G_{sb} = RAP G_{se} X 0.98

As an option, the RAP G_{sb} may be calculated as follows: The bulk specific gravity of RAP used in the job mix formula shall be equivalent to the combined bulk specific gravity of the virgin aggregate materials:

RAP G_{sb} = Virgin Aggregate G_{sb}

Mixes designed using this calculation may not be transferred to projects let after June 2015.

402.2.3.2 Reclaimed Asphalt Shingles. Reclaimed Asphalt Shingles (RAS) may be used in any mixture specified to use PG 64-22 in accordance with AASHTO PP 53 except as follows:

For mixtures containing RAS or a combination of RAS and RAP, the RAS contribution shall not exceed 20 percent effective virgin binder replacement. Mixtures containing a combination of RAS and RAP may have a maximum 30 percent effective virgin binder replacement with no virgin binder grade change. Mixtures containing a combination of RAS and RAP may have a 30 to 40 percent effective virgin binder replacement under the following conditions: (1) with a virgin binder grade change from a PG64-22 to a PG 58-28 or (2) with a combination of a PG64-22 binder and a rejuvenator provided testing demonstrates that a PG58-28 , meeting the requirements of AASHTO M320, is achieved. Shingles shall be ground to 100 percent passing the 3/8-inch sieve. Waste, manufacturer or new, shingles shall be essential free of deleterious materials. Post-consumer RAS shall not contain more than 1.5 percent wood by weight or more than 3.0 percent total deleterious by weight. Post-consumer RAS shall be certified to contain less than the maximum allowable amount of asbestos as defined by national or local standards. The bulk specific gravity of RAS used in the job mix formula shall be 2.600.
RAS G_{sb} = 2.600

The gradation of the aggregate may be determined by solvent extraction of the binder or using the following as a standard gradation:

Shingle Aggregate Gradation	
Sieve Size	**Percent Passing by Weight**
3/8 inch	100
No. 4	95
No. 8	85
No. 16	70
No. 30	50
No. 50	45
No. 100	35
No. 200	25

Delete Sec 403.2.5.2 and substitute the following:

403.2.5.2 Fibers. A fiber additive shall be used as a stabilizer in SMA Mixtures. Fibers shall be uniformly distributed by the end of the plant mixing process. The dosage rate for fibers shall be no less than 0.3 percent by weight of the total mixture for cellulose and no less than 0.4 percent by weight for mineral fibers.

Delete Sec 407 in its entirety and substitute the following:

407.1 Description. This work shall consist of preparing and treating an existing bituminous or concrete surface with bituminous material, in accordance with these specifications.

407.2 Material. All material shall be in accordance with Division 1000, Material Details, and specifically as follows:

Item	Section
Emulsified Asphalt or PG Liquid Asphalt	1015

407.3 Equipment. The contractor shall provide a system for heating and applying the bituminous material. The system shall be designed, equipped, maintained and operated such that emulsified asphalt or liquid asphalt, at even heat, may be applied uniformly on variable widths of surface up to 15 feet with uniform pressure and an allowable variation from any specified rate of ±0.01 gallon per square yard. The system shall include a calibrated tank and a thermometer for measuring temperature of tank contents. The system shall be equipped with instrumentation that continuously verifies application rates. The calibration of the system shall be approved by the engineer prior to use, and the contractor shall furnish all equipment, material and assistance if calibration is required.

407.4 Construction Requirements.

407.4.1 Preparation of Surface. The existing surface shall be free of all dust, loose material, grease or other foreign material at the time the tack is applied. Any excess bituminous surface mixture or bituminous joint material will be removed by MoDOT without cost to the contractor before the tack is applied.

407.4.2 Application. Asphalt emulsion or PG liquid asphalt shall be applied uniformly with a pressure distributor at the minimum rates indicated in the following table. No dilution of the emulsified asphalt material shall be allowed. The tack coat material shall be heated at the time of application to a temperature in accordance with Sec 1015. The tack coat shall be properly cured and the tacked surface shall be clean of all dirt before the next course is placed.

Tack Coat Application Rates	
Surface Type	**Minimum Application Rate (gal/sq yd)**
New Asphalt Pavement	0.05
Existing Asphalt or Concrete Pavement	0.08

407.4.3 Tack. The tack coat shall be applied in such a manner as to cause the least inconvenience to traffic and to permit one-way traffic without tracking of asphalt emulsion. All exposed tack coat shall be covered with bituminous mixture prior to opening to traffic.

407.5 Method of Measurement. Measurement of asphalt emulsion to the nearest 10 gallons will be made in accordance with Sec 1015.

407.6 Basis of Payment. The accepted quantity of tack coat will be paid for at the contract unit price.

Delete Sec 413.30.2.4 and substitute the following:

413.30.2.4 Asphalt Binder. The asphalt binder shall be in accordance with Sec 1015, including all subsections pertaining to PG 76-22.

Delete Sec 413.30.4.1 through 413.30.4.3 and substitute the following:

413.30.4.1 Asphalt Amount. The amount of asphalt binder in the mixture shall meet the following limits for the type of mixture specified in the contract.

Mix Design Criteria			
	Type A	**Type B**	**Type C**
Asphalt Content, %	5.3 – 5.8	5.1 – 5.6	4.9 – 5.6

413.30.4.2 Gradation. Prior to mixing with asphalt binder, the combine aggregate gradation, including filler if needed, shall meet the following gradation for the type of mixture specified in the contract.

Mix Design Criteria Composition by Weight Percentages			
Sieves	**Type A % Passing**	**Type B % Passing**	**Type C % Passing**
3/4 in.	-	100	100
1/2 in.	-	97-100	85 – 100
3/8 in.	100	75 – 100	50 – 80
No. 4	40 – 55	25 – 41	25 – 41
No. 8	22 – 32	17 – 27	17 – 27
No. 16	15 – 25	23 max.	23 max.
No. 30	18 max.	18 max.	18 max.
No. 50	13 max.	13 max.	13 max.
No. 100	10 max.	10 max.	10 max.
No. 200	4.0 – 6.0	4.0 – 6.0	4.0 – 6.0

413.30.4.3 Film Thickness. The film thickness shall be a minimum 10.0 microns when calculated using the effective asphalt content in conjunction with the surface area for the aggregate in the Job Mix Formula. The surface area factors can be found in Table 6.1 of the Asphalt Institute MS-2, *Mix Design for Asphalt Concrete and Other Hot Mix Types,* Sixth Edition.

Delete Sec 413.30.5.9 and substitute the following:

413.30.5.9 Wearing Course. The finished wearing course shall have a minimum thickness of 1/2 inch for Type A, 3/4 inch for Type B, and 3/4 inch for Type C.

Delete Sec 413.30.6.2 and substitute the following:

413.30.6.2 Gradation and Asphalt Binder Tolerances. The total aggregate and asphalt content shall be within the range specified in Sec 413.30.4.1, Sec 413.30.4.2 and the maximum variations from the approved job mix formula and shall be within the following tolerances:

Gradation and Asphalt Binder Tolerances			
Sieves	Percent Passing		
	Type A	Type B	*Type C*
3/4 in.	-	-	-
1/2 in.	-	-	± 5.0
3/8 in.	-	± 5.0	-
No. 4	± 5.0	± 4.0	± 4.0
No. 8	± 4.0	± 4.0	± 4.0
No. 16	± 4.0	-	-
No. 200	± 1.0	± 1.0	± 1.0
Asphalt Content, %	± 0.3	± 0.3	± 0.3

Amend Sections 620.10.3.1.1.1, and 620.10.3.1.1.2 to include the following:

620.10.3.1.1.1 Type 1 Preformed Marking Tape in Lieu of Type 2. Type 1 Preformed Pavement Marking Tape will be allowed in lieu of Type 2 Preformed Marking Tape (Grooved) at no additional cost to the Commission. This work shall be in accordance with Sec 620 and accompanying provisions except as modified herein.

620.10.3.1.1.2 Construction Requirements. Grooving will not be required when Type 1 Preformed Marking Tape is used.

Delete Sec 622.30.4.1.1 and substitute the following:

622.30.4.1.1 Each segment of the finished ground surface shall be reprofiled in the right wheel path and have a final IRI segment of 65 percent of the control IRI or 80 inches per mile, whichever is greater.

Delete Sec 622.30.4.1.4 and substitute the following:

622.30.4.1.4 The engineer shall use the ProVAL software program to compute IRIs in accordance with TM-59. The contractor shall provide the raw unfiltered profile data file in .pff format.

Delete Sec 1015.10.3.1 and substitute the following:

1015.10.3.1 In lieu of AASHTO M 320, AASHTO MP 19 may be substituted eliminating the elastic recovery requirement, except for use with Sec 413.30, Ultrathin Bonded Asphalt Wearing Surface. The equivalent grading will be PG 64-22, Grade S for PG 64-22, Grade H for PG 70-22 and Grade V for PG 76-22. Specialty grades will be tested at the grade temperature for the desired characteristics, i.e. PG 58-28 for RAS mixture.

Delete Sec 1048.10.1.1 and substitute the following:

1048.10.1.1 Application. Application shall be in accordance with the manufacturer's recommendations.

Delete Sec 1048.50.2 and substitute the following:

1048.50.2 Type I Temporary Raised Pavement Markers. Wide flexible pavement markers shall consist of an L-shaped or T-shaped marker with a minimum of 2 inches tall by 1 inch deep, with (min.) 0.060 inch thick walls, comprised of a base and an upright vertical reflector with a protective rib running the length of the top of the marker. The prismatic reflective faces shall be a minimum of 0.38 square inches for each face. All markers shall be self-adhesive, with a solid butyl rubber adhesive factor-applied to the entire length of the marker base. The butyl shall be a minimum of 0.125 inches thick and 0.75 inches on 1.0 inch wide release paper and of sufficient strength to secure the marker to the pavement and retain its position after vehicle impacts. The markers shall be flexible and durable, capable of sustaining numerous automobile wheel-over impacts at 60 MPH without loss of adhesion and without sustaining damage to the marker body, vertical reflector or the reflective tape applied to the marker. When specified in the plans, a protective sleeve that prevents contamination of the reflective faces during pavement surface treatment operations and sweeping shall be affixed to each marker. The protective sleeve shall be easily removable after the work is complete. All markers shall be constructed of UV-stabilized thermo-plastic polyurethane (TPU) for superior durability, conforming to the following material specifications:

Property	ASTM Test	Results
Specific Gravity (min.)	D 792	1.10
Hardness (min.)	D2240	80 A
Tear Strength @ yield, (min. PSI)	D 624, Die C	600
Tensile Strength @ yield, (min. PSI)	D 412	4,000
Tensile Elongation @ break (min. %)	D 412	600

CC. PREVIOUS JOB ORDER INFORMATION

1.0 Previous Job orders. Job order information, consisting of quantities and pay items that were issued for past contracts will be available from the Project Contact upon the bidder's written request. This information does not constitute part of the bid or contract documents. It is provided for the bidder's use during bid preparation, and shall not be considered a representation of actual job orders to be issued during construction for this contract. Furnishing this information does not relieve a bidder or contractor from the responsibility of estimating the number and types of job orders that will be issued for future contracts. The bidder or contractor shall assume the risk of error if the information is used for any purposes for which the information was not intended. The Commission makes no representation as to the accuracy or reliability of the information, since the information may not be representative of the sealed contract documents. Any assumption the bidder or contractor may make from this information is at the bidder or contractor's risk; none are intended by the Missouri Highways and Transportation Commission. The bidder or contractor assumes the sole risk of liability or loss if the bidder or contractor does rely on this information to its detriment, delay or loss.

DD. RAILROAD REQUIREMENTS

1.0 The right of way of various Railroads, herein called "Railroad", are located within the limits of this project. However, this project has been developed with the specific intention that no involvement with the Railroad's facilities, traffic or right of way is required for the performance of the contractual work herein. The work to be performed over the Railroad's right of way shall not interfere with the Railroad's operations or facilities. Under these circumstances, the requirements of Sec 104.12.3, Sec 104.12.8 through 104.12.10.5 (inclusive), and Sec 107.13.4 shall not apply.

2.0 Should the contractor violate this condition of no railroad involvement, all terms and conditions of the interaction with the Railroad shall be solely between the Railroad and the contractor.

EE. SAFETY PLAN NJSP-15-26

1.0 Description. This contractor shall submit to the engineer a project Safety Plan (SP) for all work performed by the contractor and all subcontractors. The purpose of the SP is to encourage and enable all work to be performed in the safest possible manner and that all parties involved are aware of their individual responsibility for safety on the jobsite.

1.1 The SP shall be completed by the contractor and provided to the engineer prior to the beginning of any construction activity or phase on the project.

1.2 The contractor shall designate a person to serve as Project Safety Manager (PSM). The PSM shall be responsible for implementing and overseeing the SP. The PSM is not required to be present on the project at all times, but must be available to address safety issues and needs.

1.3 The PSM shall make revisions to the SP as necessary. Any new project activities or phases shall be included in the SP prior to work beginning on that activity or phase.

1.4 An example Safety Plan is available at: www.modot.org/safetyplan

2.0 Emergency Preparedness. The SP shall outline and detail for all workers, the specific procedures and actions necessary to respond to a jobsite emergency and the measures taken to communicate these requirements to all workers.

2.1 The SP shall include a list of local emergency contacts including phone numbers. A copy of the emergency contact list shall be accessible to workers.

2.2 In the case where there is no cellular or land line phone service at the jobsite, the SP shall identify how to reach the nearest available phone service.

3.0 Project Safety Analysis. The SP should contain a basic Project Safety Analysis (PSA) that outlines the actions necessary to complete each activity or phase of the project. The SP shall include a general description of the primary activities or steps required to safely complete the project.

3.1 Each activity should also include a general description of the work involved along with the known risks associated with the activity. In addition the PSA should outline the controls for those risks, including any Personal Protection Equipment (PPE) requirements for that activity or

phase, and whether or not the activity or phase requires a specific safety meeting prior to beginning the activity or phase.

3.2 Submittal of the PSA for all activities or phases is not required with the initial submittal of the SP; however, the PSA for each activity or phase shall be completed prior to the beginning of that activity or phase.

4.0 Safety Meetings. The SP shall include the types of safety meetings that will be required of and conducted by the contractor.

5.0 Safety Training. The SP shall identify the required safety training provided to the contractor's personnel. The contractor shall require that the appropriate safety training for the contractor's personnel is completed prior to the beginning of work on each activity or phase.

5.1 The SP shall identify the recommended safety training needs and PPE for MoDOT employees who will be exposed to the work activities. MoDOT will provide safety training and PPE to MoDOT employees based on MoDOT safety policies.

6.0 Payment. There will be no direct payment for compliance with this Safety Plan provision.

FF. CONSTRUCTION REQUIREMENTS

1.0 Description. This provision contains general construction requirements for this project.

2.0 Construction Requirements. Plans for the existing structure(s) will be available to the successful bidder as directed by the engineer.

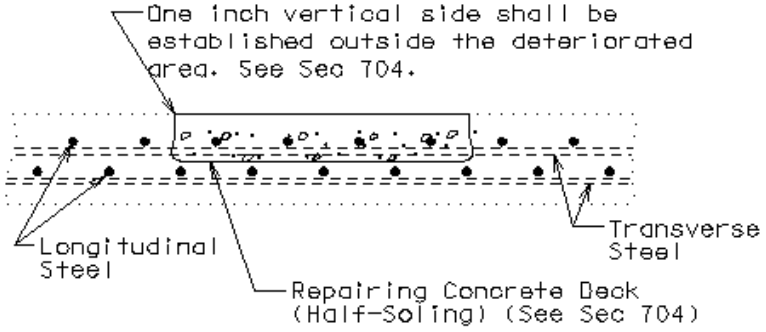
2.1 In order to assure the least traffic interference, the work shall be scheduled so that a lane closure is for the absolute minimum amount of time required to complete the work. A lane shall not be closed until material is available for continuous construction and the contractor is prepared to diligently pursue the work until the closed lane is opened to traffic.

2.2 Provisions shall be made to prevent any debris and materials from falling into the stream, lake or onto the roadway. Any debris and materials that falls below the bridge outside the limits mentioned previously and if determined necessary by the engineer, the debris shall be removed as approved by the engineer at the contractor's expense. Traffic under the bridge shall be maintained in accordance with the contract documents.

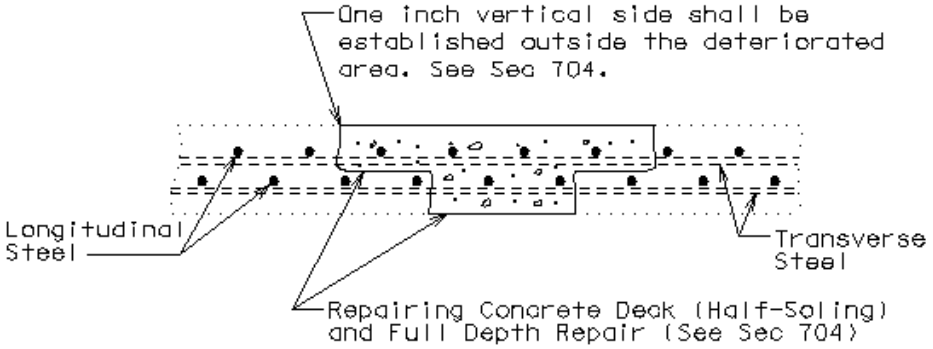
2.3 Any damage sustained to the remaining structure as a result of the contractor's operations shall be repaired or the material replaced as approved by the engineer at the contractor's expense.

2.4 Provisions shall be made to prevent damage to any existing utilities. Any damage sustained to the utilities as a result of the contractor's operations shall be the responsibility of the contractor. All costs of repair and disruption of service shall be as determined by the utility owners and as approved by the engineer.

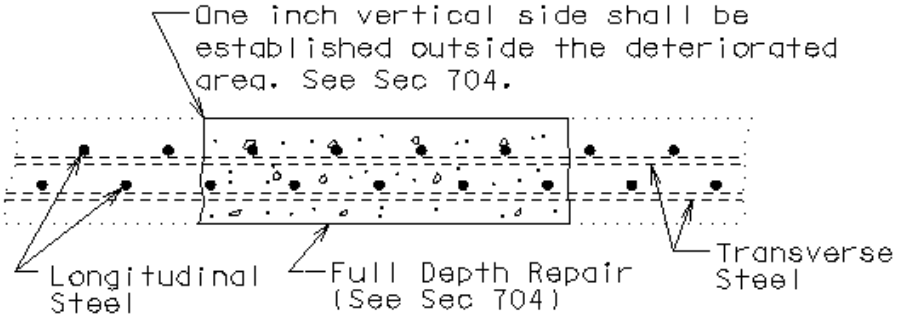
3.0 Bridge Deck Repairs.



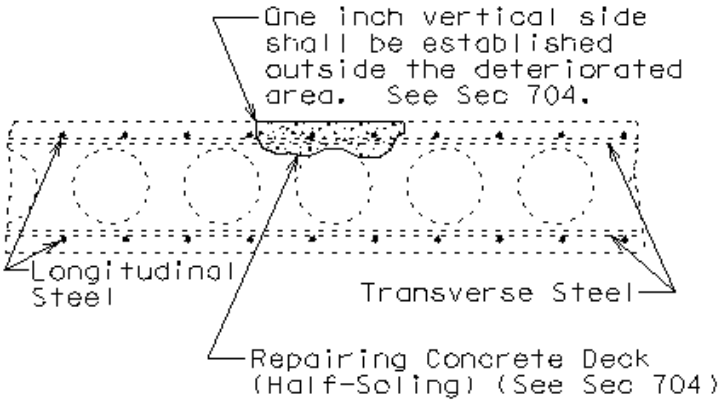
HALF-SOLED AREA



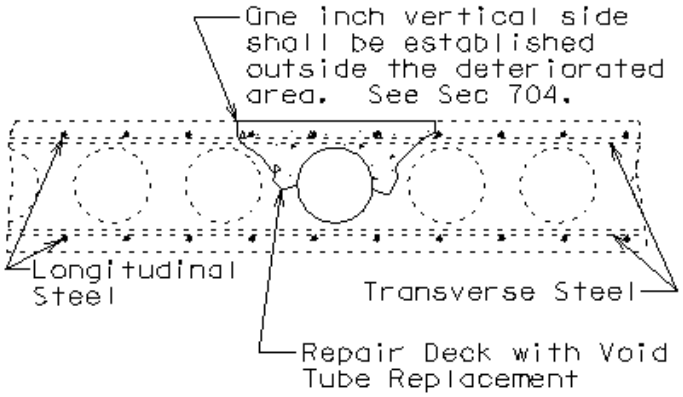
FULL DEPTH REPAIR
IN HALF-SOLED AREA



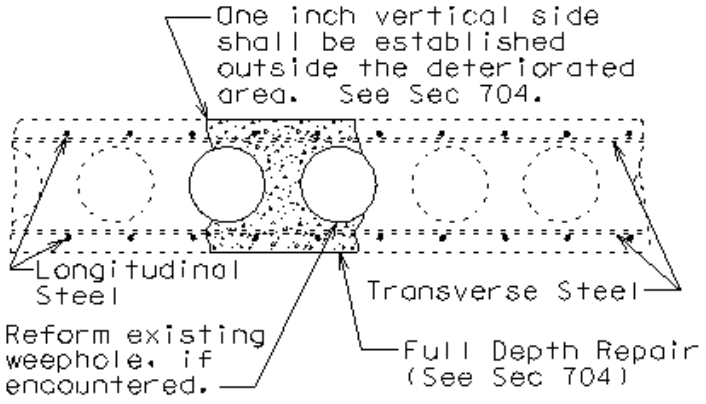
FULL DEPTH REPAIR



HALF-SOLED REPAIR



DECK REPAIR WITH VOID TUBE REPLACEMENT



FULL DEPTH REPAIR

4.0 Method of Measurement. No measurement will be made.

5.0 Basis of Payment. Payment for the above described work will be considered completely covered by the contract unit price for other items included in the contract.

GG. CONCRETE MASONRY REPAIR

Delete paragraphs 704.4.1.6.2 and substitute the following:

704.4.1.6.2 Deck Repairs. The minimum depth of repair for repairing concrete deck (half-soling), approach slab repair or modified deck repair shall expose the upper layer of the top mat of reinforcing steel. All repair areas shall completely expose 100 percent of the reinforcing steel providing one inch (25 mm) clearance around all bars, regardless of observed bond or condition.

Delete paragraph 704.5.1 and substitute the following:

704.5.1 Repairing concrete deck (half-soling), approach slab repair, deck repair with void tube replacement, full depth repair, modified deck repair, superstructure repair (unformed) and substructure repair (formed and unformed) will be measured to the nearest square foot (0.1 m^2).

Amend Sec 704 to include the following:

704.3.10 Approach Slab Repair. This work shall consist of partial removal and replacement of approach slab concrete in the required areas.

704.4.1.9 Zone Requirements. Bridges with steel girder superstructures like plate girders and I-beams or wide flange girders may have unlimited repair quantities per span unless otherwise shown on the plans or as designated by the engineer. Bridges with concrete superstructures like voided slabs, solid slabs, deck girders, rigid frame and box girders always have special repair zones.

704.4.1.9.1 Special Repair Zones. Any half-soling required in the areas designated as special repair zones shall be completed in alphabetical sequence. The contractor shall make a request to the engineer for the special repair zones areas before commencing work on bridges that always have special repair zones. Any repair in the remainder of the bridge that is adjacent to Zone A and not designated as a special repair zone shall be completed prior to work in Zone A. Removal and repair shall be completed in one special repair zone and concrete shall have attained a compressive strength of 3200 psi (22 MPa) before work can be started in the next special repair zone. Before placing concrete in areas adjacent to areas of subsequent repair, the concrete shall be separated with a material such as polyethylene sheets to aid in removal of old concrete.

704.4.1.9.2 Multiple Column Bents. Zones with the same letter designation may be repaired at the same time.

704.4.1.9.3 Single Column Bents. Zones with the same letter designation may be repaired at the same time except for the zones directly adjacent to the centerline of bent. If either of the zones adjacent to centerline of bent has a single repair area of over 10 square feet (0.9 m^2) or a total repair area of over 20 square feet (1.9 m^2), that zone shall be repaired before removing concrete in the other zone of the same designation at that bent.

704.4.1.9.4 Voided or Solid Slab Structures. If any single repair area does not exceed 4 square feet (0.35 m^2) in size and the total repair within a special repair zone does not exceed 12 square feet (1.1 m^2), the special repair zone requirement does not apply for that zone. An exposed void in the deck of a voided slab bridge shall be patched as approved by the engineer in a manner that shall maintain the void area completely free of concrete. Cost of patching an

exposed void will be considered completely covered by the contract unit price of other items included in the contract.

704.4.1.9.5 Box and Deck Girder Structures. Total width of full depth repair shall not exceed 1/3 of the deck width at one time. For any area of deck repair that extends over a concrete girder and is more than 18 inches (460 mm) in length along the girder, the concrete removal shall stop at the centerline of girder and repair completed in this area. Prior to continuing work in this area, the concrete shall have attained a compressive strength of 3200 psi (22 MPa). No traffic shall be permitted over the girder that is undergoing repair. When the full depth repair extends over a diaphragm or girder and the deteriorated concrete extends into the diaphragm or girder, all deteriorated concrete shall be removed and replaced as full depth repair. Concrete in girders shall not be removed below the deck haunch of the girder without prior review and approval from the engineer.

704.4.1.9.6 Box Girder Structures. Interior falsework installed by the contractor resting on the bottom slab shall be removed where entry access is available. If any single repair area does not exceed 9 square feet (0.8 m^2) in size and the total repair within a special repair zone does not exceed 27 square feet (2.5 m^2), the special repair zone requirement does not apply for that zone. Half-soling repair in the special repair zone, on either side of the intermediate bents, shall be to a depth that will not expose half the diameter of the longitudinal reinforcing bar. Full depth repair shall be made when removal of deteriorated concrete exposes half or more of the diameter of the longitudinal reinforcing bar.

HH. RAPID SET CONCRETE PATCHING MATERIAL – VERTICAL AND OVERHEAD REPAIRS JSP-02-01

1.0 Description. This specification covers cementitious concrete, polymer-modified concrete and polymer concrete that are suitable for repairing concrete surfaces on bridges or concrete structures, particularly under fast setting or special conditions. The repairs would involve vertical or overhead applications. The work shall consist of removing, furnishing, preparing, and placing materials at locations as shown on the plans or as directed by the engineer.

2.0 Material. All materials shall be in accordance with MoDOT specifications and as noted herein.

2.1 Aggregate For Extending Commercial Mixture. Coarse and fine aggregates shall be in accordance with Sec 1005, except the requirements for gradation and percent passing the No. 200 sieve shall not apply. Coarse aggregate meeting Gradation E requirements shall be used for repairs greater than one inch (25 mm) in depth. Fine aggregate will be allowed for repairs less than one inch (25 mm). Aggregate specified, bagged, labeled and furnished by the rapid set concrete patching material manufacturer may also be used for mortar extension.

2.2 Material Applications. The contractor shall select and use the product most suitable for the work and field conditions in accordance with these specifications.

2.3 Curing. Rapid set concrete patching material shall be cured until the minimum compressive strength 1500 psi is attained using standard curing specifications, unless otherwise specified by the manufacturer.

2.4 Qualification and Project Acceptance.

2.4.1 Inspection. All materials shall be subject to inspection and sampling by MoDOT at the source of manufacture, intermediate shipping terminal or destination. MoDOT will be allowed free access to all facilities and records as required to conduct inspection and sampling.

2.4.2 Qualification. Prior to use, rapid set concrete patching materials need to be qualified.

2.4.2.1 Requested Information. The manufacturer shall submit with samples of the materials, a written request to Construction and Materials with the following information:

(a) New Products Evaluation Form
(b) Brand name of the product.
(c) Certification that the material meets this specification.
(d) Certified test results from an independent laboratory showing compliance with this specification.
(e) Specific preparation instructions of repair area.
(f) Specific mixing, handling and curing instructions.
(g) Application type (i.e., vertical or overhead).

2.4.2.2 Field Evaluation. Final approval will be granted when the following requirements are met:

(a) MoDOT report documenting two years of field performance on MoDOT system. The report will contain the placement date, field observations (semiannual), description of field performance and photographs of in-place material.
(b) A manufacturer's representative shall be present during placement of the material to provide technical expertise.

2.4.2.2.3 Disqualification. If during the two year observation period the repair area(s) fails the product will not be added to the qualified list.

2.5 Qualified List. The listing of qualified products are available from Construction and Materials or on MoDOT's web site. New certified test results and samples shall be submitted any time the manufacturing process or the material formulation is changed. The material will be subject to removal from the qualified list if there is evidence of unsatisfactory performance or a change in manufacturing process or formulation, or when random sampling and testing of material offered for use indicates nonconformity with any of the requirements herein specified.

2.6 Certification. The contractor shall supply a manufacturer's certification to the engineer for each lot of material furnished. The certification shall include the name of the manufacturer, a manufacturer certification statement that the material supplied is the same as that qualified and listing the date of qualification.

2.7 Acceptance. Acceptance of the material will be based on the use of a qualified product, the manufacturer's certification that the material supplied is the same as that approved and upon the results of such tests as may be performed by the engineer.

3.0 Mixture. Unless otherwise specified, rapid set concrete patching material shall be approved commercial mixtures meeting Sections 3.1 – 3.1.3. Rapid set concrete patching materials shall be specifically designed for the application needed.

3.1 Commercial Mixtures. Rapid set concrete patching material in its sacked form and mixtures when properly prepared in accordance with the manufacturer's specifications, shall meet the minimum test requirements given in Table 1. Mixtures may be supplied, as required, as a patching mortar or as a patching mortar with aggregate extension. If the material is to be supplied with extender aggregate, this shall also pass the required tests in Table 1 using the maximum allowed amount of extender aggregate.

3.1.1 Mixture Requirements. Rapid set concrete patching material shall be single packaged dry mix requiring the addition of water or other liquid component just prior to mixing. The material shall not contain soluble chlorides as an ingredient of manufacture. The material shall be placed in accordance to the manufacturer's recommendations.

Table 1
(English Unit)

Physical Test Property	Specification	Requirement for cementitious concrete	Requirement for polymer-modified concrete	Requirement for polymer concrete
Bond Strength by Slant Shear	ASTM C882/C928 [2]	min. 1000 psi @ 24hrs.& min. 1500 psi @ 7 days	n/a	min. 1000 psi @ 24hrs.& min. 1500 psi @ 7 days
Linear Coefficient of Thermal Expansion [1] (for bagged mortar only, without extension aggregate)	ASTM C531	n/a	n/a	4 – 8 X 10-6 in/in/deg F
Resistance to Rapid Freezing & Thawing	AASHTO T161 or ASTM C666	80% min. using Procedure B[3] (300 Cycles)	80% min. using Procedure B[3] (300 Cycles)	n/a
Compressive Strength	AASHTO T22 or ASTM C39	1500 psi @ 3 hr & 3000 psi @ 24 hr	1500 psi @ 3 hr & 3000 psi @ 24 hr	n/a
Rapid Chloride Permeability	AASHTO T277 or ASTM C1202	1000 coulombs @ 28 days	1000 coulombs @ 28 days	1000 coulombs @ 28 days
Length Change	AASHTO T 160 or ASTM C157	In water Storage (+0.15) In air storage (-0.15)	In water storage (+0.15) In air storage (-0.15)	n/a
Color		gray	gray	gray

1 Not required for extended mixtures if the mortar passes this requirement.
2 ASTM C882 shall be performed on non-water based materials. ASTM C928 shall be performed on water-based materials.
3 Procedure A may be used in lieu of Procedure B

3.1.2 Construction Requirements. The manufacturer shall provide with the bagged mixture, specifications for the mixing procedure, amount and kind of liquid to be added, and the amount of aggregate extension allowed, if any. All mixing, handling and curing practices recommended by the manufacturer shall be followed and will be considered a part of these specifications.

3.1.3 Removal from Qualified List. All mixtures shall be approved before use. Reoccurring failures of any mixture for any reason will be cause for removal from the qualified list.

3.2 Vertical Repair.. A qualified rapid set concrete patching material approved for vertical use may be used when specified on the plans and as approved by the engineer. The engineer will make field cylinders to verify the 1500 psi (10 MPa) minimum strength. The material shall adhere to the concrete surface without sagging.

3.3 Overhead Repair. A qualified rapid set concrete patching material approved for overhead use may be used when specified on the plans and as approved by the engineer. The material shall be placeable in layers of at least 1 inch on overhead applications without the use of formwork or anchoring devices. The material shall adhere to the concrete surface without sagging. The engineer will make field cylinders to verify the 1500 psi (10 MPa) minimum strength.

4.0 Construction Requirements.

4.1 Mixing. Rapid set concrete patching material shall be mixed and finished according to the manufacturer's recommendation.

4.2 Preparation of Repair Area. Deteriorated, damaged or defective concrete as shown on the plans, required by the specifications or as directed by the engineer, shall be removed. All exposed reinforcement shall be thoroughly cleaned as shown on the plans, required by the specifications or as directed by the engineer. Unless otherwise specified by the commercial mixture manufacturer, the existing surface shall be damp and all free water shall be removed prior to placement of the required material.

4.3 Bonding Agent. A bonding agent may be used if recommended by the rapid set concrete patching material manufacturer.

5.0 Method of Measurement. No measurement will be made for rapid set concrete patching material.

6.0 Basis of Payment. Rapid set concrete patching material will be paid for at the contract unit price for other items and will be considered full compensation for all labor, equipment and material to complete the described work.

II. RAPID SET CONCRETE PATCHING MATERIAL – HORIZONTAL REPAIRS JSP-02-10

1.0 Description. This specification covers cementitious concrete, polymer-modified concrete and polymer concrete that are suitable for repairing concrete surfaces on bridges or roadways, particularly under fast setting or special conditions. The repairs would involve horizontal applications. The work shall consist of removing, furnishing, preparing, and placing materials at locations as shown on the plans or as directed by the engineer.

2.0 Material. All materials shall be in accordance with MoDOT specifications and as noted herein.

2.1 Aggregate For Extending Commercial Mixture. Coarse and fine aggregates shall be in accordance with Sec 1005, except the requirements for gradation and percent passing the No. 200 sieve shall not apply. Coarse aggregate meeting Gradation E requirements shall be used for repairs greater than one inch (25 mm) in depth. Fine aggregate will be allowed for repairs less than one inch (25 mm). Aggregate specified, bagged, labeled and furnished by the rapid set concrete patching material manufacturer may also be used for mortar extension.

2.2 Material Applications. The contractor shall select and use the product most suitable for the work and field conditions in accordance with these specifications.

2.3 Curing. Rapid set concrete patching material shall be cured until the minimum compressive strength 3200 psi is attained using standard curing specifications, unless otherwise specified by the manufacturer.

2.4 Qualification and Project Acceptance.

2.4.1 Inspection. All materials shall be subject to inspection and sampling by MoDOT at the source of manufacture, intermediate shipping terminal or destination. MoDOT will be allowed free access to all facilities and records as required to conduct inspection and sampling.

2.4.2 Qualification. Prior to use, rapid set concrete patching material shall be qualified. In order to become qualified, a material shall have completed testing through AASHTO's National Transportation Product Evaluation Program (NTPEP). The manufacturer shall contact the AASHTO/NTPEP coordinator to obtain the testing location for the rapid setting concrete patching material.

2.4.2.1 Requested Information. The manufacturer shall submit with samples of the materials, a written request to Construction and Materials with the following information:

(a) Brand name of the product.

(b) Certification that the material meets this specification.

(c) NTPEP test results showing compliance with this special provision.

(d) Specific mixing, handling and curing instructions.

(e) Application type (i.e., bridge or roadway).

2.4.2.2 Qualified List. Upon approval by the engineer, the brand name and manufacturer will be placed on a qualified list of rapid set concrete patching materials. The listing of qualified materials is available from Construction and Materials or on MoDOT's web site. New certified test results and samples shall be submitted any time the manufacturing process or the material formulation is changed. The material will be subject to removal from the qualified list if there is evidence of unsatisfactory performance or a change in manufacturing process or formulation, or when random sampling and testing of material offered for use indicates nonconformity with any of the requirements herein specified.

2.4.3 Provisional Approval. Provisional approval may be granted provided the following requirements have been met:

(c) New Products Evaluation Form

(d) Certified test results from an independent laboratory showing compliance with this special provision.

(e) Documentation prepared by MoDOT covering two years of field performance on MoDOT's system. MoDOT will need to approve the location of the test site.

Documentation will contain the placement date, field observations (semi annual), description of field performance and photographs of in-place material.

(f) During placement the manufacturer's representative shall be present on the project to provide technical expertise.

2.4.3.1 Disqualification. If during the two year observation period the repair area(s) fails provisional approval will not be granted. Repair area(s) experiencing any cracking, debonding or spalling will be considered a failure.

2.4.3.2 Length of Provisional Approval. Provisional approval will be granted for three years or until NTPEP testing is completed.

2.5 Certification. The contractor shall supply a manufacturer's certification to the engineer for each lot of material furnished. The certification shall include the name of the manufacturer, a manufacturer certification statement that the material supplied is the same as that qualified and listing the date of qualification.

2.6 Acceptance. Acceptance of the material will be based on the use of a qualified or provisionally approved material, the manufacturer's certification that the material supplied is the same as that approved and upon the results of such tests as may be performed by the engineer.

3.0 Mixture. Unless otherwise specified, rapid set concrete patching material shall be approved commercial mixtures meeting Sections 3.1 – 3.1.3 or deck repair cementitious mortar meeting Section 3.2. Rapid set concrete patching materials shall be specifically designed for the application needed.

3.1 Commercial Mixtures. Rapid set concrete patching material in its sacked form and mixtures when properly prepared in accordance with the manufacturer's specifications, shall meet the minimum test requirements given in Table 1. Mixtures may be supplied, as required, as a patching mortar or as a patching mortar with aggregate extension. If the material is to be supplied with extender aggregate, this shall also pass the required tests in Table 1 using the maximum allowed amount of extender aggregate.

3.1.2 Mixture Requirements. Rapid set concrete patching material shall be single packaged dry mix requiring the addition of water or other liquid component just prior to mixing. The material shall be capable of ½ inch (13 mm) to full depth repair and require no bonding agent. The material shall not contain soluble chlorides as an ingredient of manufacture. The material shall be placed in accordance to the manufacturer's recommendations.

Table 1
(English Unit)

Physical Test Property	Specification	Requirement for cementitious concrete	Requirement for polymer-modified concrete	Requirement for polymer concrete
Bond Strength by Slant Shear[1]	ASTM C882/C928 [3]	min. 1000 psi @ 24hrs.& min. 1500 psi @ 7 days	n/a	min. 1000 psi @ 24hrs.& min. 1500 psi @ 7 days

Linear Coefficient of Thermal Expansion[1, 2] (for bagged mortar only, without extension aggregate)	ASTM C531	n/a	n/a	4 – 8 X 10-6 in/in/deg F
Resistance to Rapid Freezing & Thawing[1]	AASHTO T161 or ASTM C666	80% min. using Procedure B[5] (300 Cycles)	80% min. using Procedure B[5] (300 Cycles)	n/a
Compressive Strength[1]	AASHTO T22 or ASTM C39	3200 psi @ 3 hr & 4000 psi @ 7 days	3200 psi @ 3 hr & 4000 psi @ 7 days	n/a
Rapid Chloride Permeability[1]	AASHTO T277 or ASTM C1202	Bridge Decks 1000 coulombs @ 28 days Roadway 2000 coulombs @ 28 days	Bridge Deck 1000 coulombs @ 28 days Roadway 2000 coulombs @ 28 days	Bridge Deck 1000 coulombs @ 28 days Roadway 2000 coulombs @ 28 days
Length Change[1, 4]	AASHTO T 160 or ASTM C157	In water Storage (+0.15) In air storage (-0.15)	In water storage (+0.15) In air storage (-0.15)	n/a
Color		gray	gray	gray

[1]The commercial mix test values can be located in the AASHTO's National Transportation Product Evaluation Program (NTPEP) reports for Laboratory Evaluations of Rapid Set Concrete Patching Materials. Data for provisionally approved materials is located at the Construction and Materials Division.
[2]Not required for extended mixtures if the mortar passes this requirement.
[3] ASTM C882 shall be performed on non-water based materials. ASTM C928 shall be performed on water-based materials.
[4] As modified by ASTM C928.
[5] Procedure A may be used in lieu of Procedure B

3.1.2 Construction Requirements. The manufacturer shall provide with the bagged mixture, specifications for the mixing procedure, amount and kind of liquid to be added, and the amount of aggregate extension allowed, if any. All mixing, handling and curing practices recommended by the manufacturer shall be followed and will be considered a part of these specifications.

3.1.3 Removal from Qualified List. All mixtures shall be approved before use. Reoccurring failures of any mixture for any reason will be cause for removal from the qualified list.

3.2 Deck Repair Concrete. A qualified rapid set concrete patching material indicated for horizontal use and intended for patching concrete bridge decks may be used when specified on the plans and as approved by the engineer. If this option is selected, the contractor shall provide a trial mix to determine the total cure time needed to achieve a compressive strength of 3200 psi (22 MPa). Compressive specimens shall be prepared in accordance with current MoDOT test methods and cured to simulate actual field conditions. Testing of compressive specimens shall be performed by methods and at facilities acceptable to the engineer. The repaired deck shall not be opened to traffic until at least 4 hours after the last placement of deck repair concrete, the established cure time has elapsed and until such concrete has achieved a compressive strength of 3200 psi (22 MPa). A new trial mix may be required if the engineer determines the field conditions vary substantially from trial mix conditions. The engineer will make field cylinders to verify the 3200 psi (22 MPa) minimum strength.

4.0 Construction Requirements.

4.1 Mixing. Rapid set concrete patching material shall be mixed and finished according to the manufacturer's recommendation.

4.2 Preparation of Repair Area. Deteriorated, damaged or defective concrete as shown on the plans, required by the specifications or as directed by the engineer, shall be removed. All exposed reinforcement shall be thoroughly cleaned as shown on the plans, required by the specifications or as directed by the engineer. Unless otherwise specified by the commercial mixture manufacturer, the existing surface shall be damp and all free water shall be removed prior to placement of the required material.

4.3 Bonding Agent. A bonding agent may be used if recommended by the rapid set concrete patching material manufacturer.

5.0 Method of Measurement. No measurement will be made for rapid set concrete patching material.

6.0 Basis of Payment. Rapid set concrete patching material will be paid for at the contract unit price for other items and will be considered full compensation for all labor, equipment and material to complete the described work.

JJ. DENSE CONCRETE OVERLAY REPAIR

1.0 Description. This work shall consist of repairing designated areas of bridge decks with an existing dense concrete overlay (low slump, latex modified, or silica fume concrete). All work shall be in accordance with Sec 704 and the job special provision "Concrete Masonry Repair" except as herein modified.

2.0 Construction Requirements.

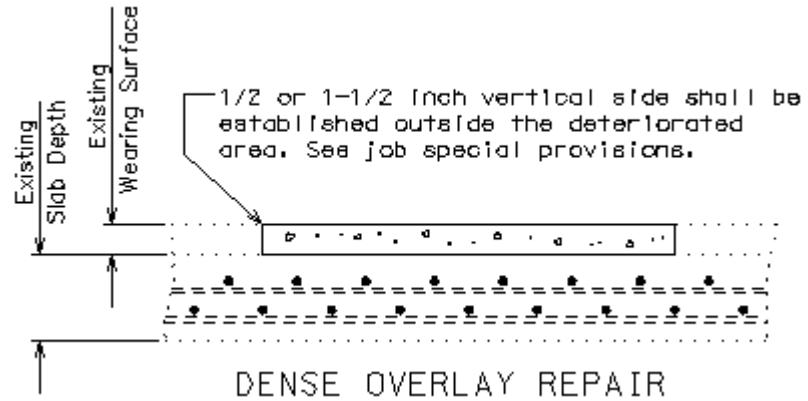
2.1 Bridges without Cathodic Protection Systems. A boundary perimeter with vertical sides shall be established outside the delaminated and deteriorated dense concrete overlay repair areas by saw cutting 1 ½ inch minimum in depth. The contractor shall use caution to not saw into the underlying bridge deck. The remaining overlay around the perimeter of the saw cut shall be chipped vertically and all overlay material within the perimeter removed. Upon removal of the deteriorated overlay, the engineer will sound the underlying bridge deck to determine areas of deteriorated concrete. The engineer may require removal of additional areas of dense overlay to determine the extent of deteriorated underlying bridge deck.

2.2 Bridges with Cathodic Protection Systems. Cathodic protection system shall be turned off before operations of repairing the dense overlay starts. A boundary perimeter with vertical sides shall be established outside the delaminated and deteriorated dense concrete overlay repair areas by saw cutting ½ inch minimum in depth and not cutting the cathodic protection system. The remaining overlay around the perimeter of the saw cut shall be chipped vertically and all overlay material within the perimeter removed. Upon removal of the deteriorated overlay, the engineer will sound the underlying bridge deck to determine areas of deteriorated concrete. The engineer may require removal of additional areas of dense overlay to determine the extent of deteriorated underlying bridge deck. The cathodic protection system shall be repaired before the concrete for the dense overlay is poured. Cathodic protection system shall

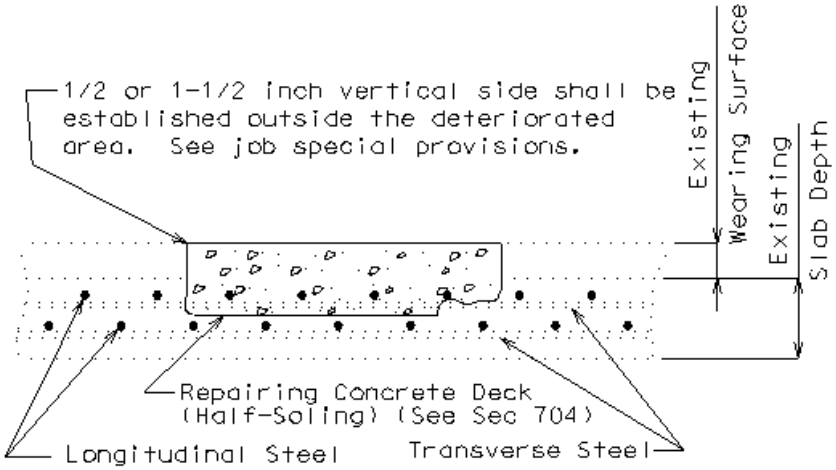
be turned on after the dense overlay repair areas are opened to traffic.

2.2 Dense overlay repairs shall be performed the same as deck repairs except no exposed reinforcing steel is required. Deck repairs shall be in accordance with Sec 704. Concrete to replace the dense overlay repair with or without deck repairs shall be the same as that required for the deck repairs. Concrete for the dense concrete overlay repairs with deck repairs shall be placed monolithically up to the top surface of the dense overlay. Finishing and curing the repair area shall be in accordance with Sec 704.

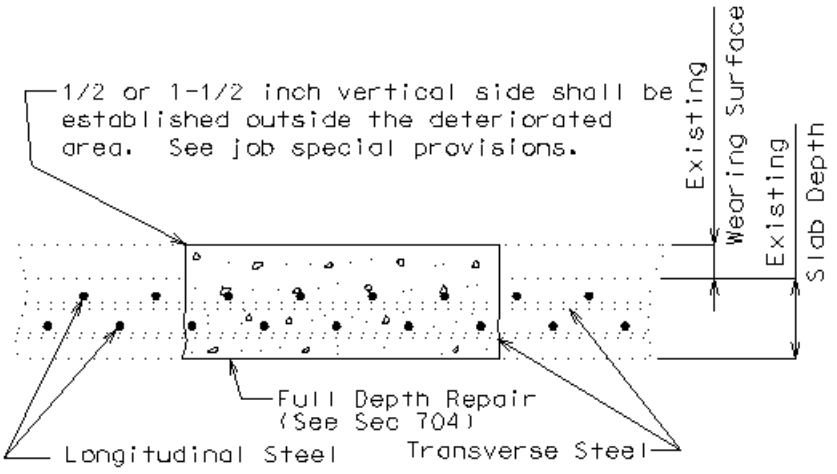
2.3 Dense Concrete Overlay Repair With or Without Underlying Bridge Deck Repair.



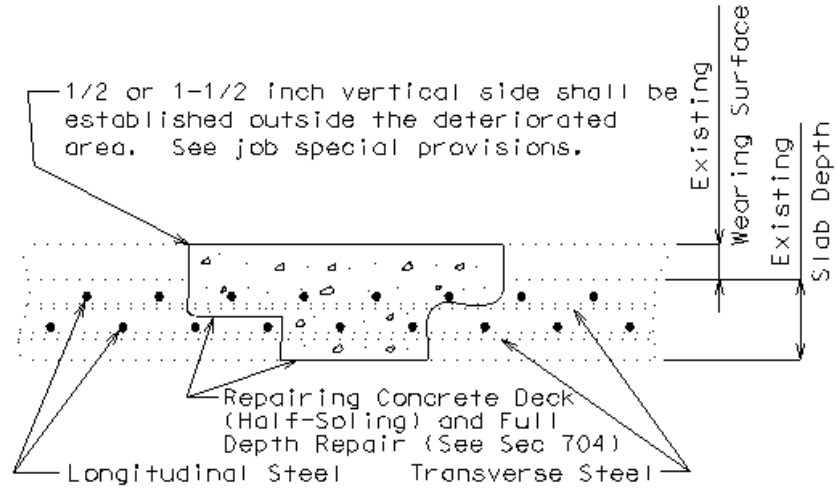
DENSE OVERLAY REPAIR
(Voids not shown for Void Slab Bridges)



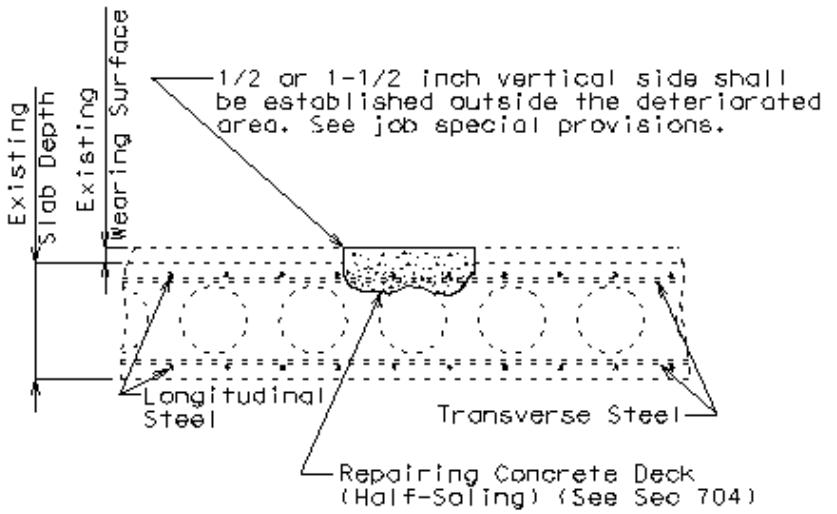
HALF-SOLED REPAIR



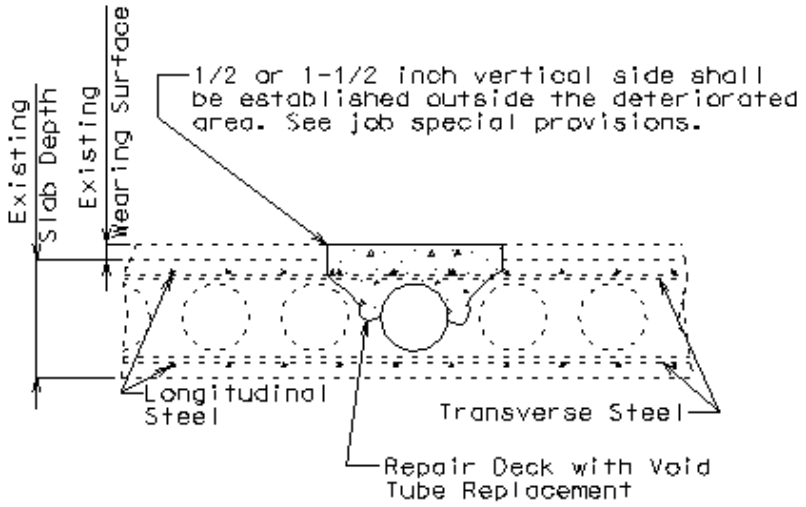
FULL DEPTH REPAIR



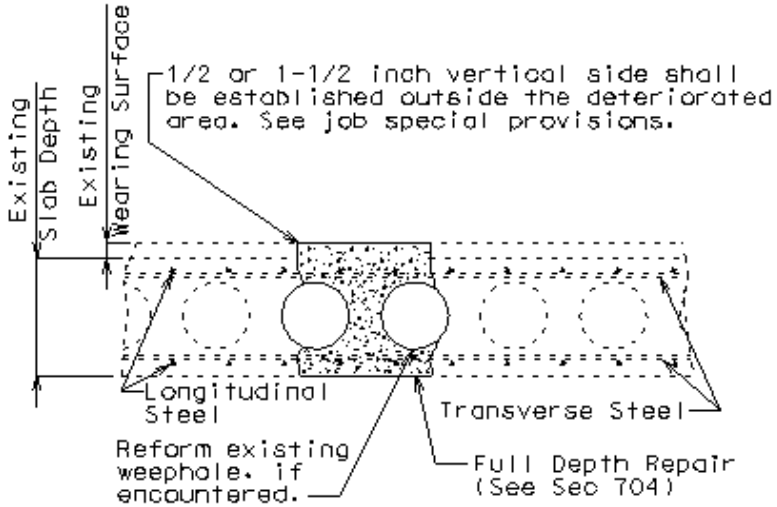
FULL DEPTH REPAIR
WITH HALF-SOLED REPAIR



HALF-SOLED REPAIR



DECK REPAIR WITH VOID TUBE REPLACEMENT



FULL DEPTH REPAIR

3.0 Method of Measurement. The depth of repair may vary but the contract unit price shall prevail regardless of the variation. No duplication of measurement will be made for full depth repair, repairing concrete deck (half-soling), deck repair with void tube replacement or dense concrete overlay repair. Areas of dense concrete overlay repair will be measured to the nearest square foot. Deck repairs will be measured and paid for in accordance with Sec 704.

4.0 Basis of Payment. The accepted quantity of dense concrete overlay repair will be paid for at the contract unit price for:

Item 704-99.04	Dense Concrete Overlay Repair	Square Foot

KK. ASPHALT WEARING SURFACE REPAIR

1.0 Description. This work shall consist of repairing designated areas of bridge deck with an existing asphaltic concrete. All work shall be in accordance with Sec 704 and the job special provision "Concrete Masonry Repair" except as herein modified.

2.0 Materials.

2.1 All material shall be in accordance with Division 1000, Materials Details, and specifically as follows:

Item	Section
Asphaltic Concrete	401.5.3
Tack Coat	407

2.2 Patching material for repairing asphaltic concrete overlays shall be an approved asphaltic concrete surface mix that meets or exceeds the requirements of Sec 401.5.3 and is sufficiently stable enough to withstand axle loads of interstate highway traffic..

3.0 Construction Requirements.

3.1 A boundary perimeter with vertical sides shall be established outside the delaminated and deteriorated asphalt overlay area by saw cutting. The contractor shall use caution to not saw into the underlying bridge deck. All overlay material within the perimeter shall be removed. The contractor may, with approval of the engineer, remove the asphalt wearing surface by cold milling so long as satisfactory results are obtained and there is minimal disturbance to the underlying bridge deck. Upon removal of the deteriorated overlay, the engineer will sound the underlying bridge deck to determine areas of deteriorated concrete. The engineer may require removal of additional areas of asphalt overlay to determine the extent of deteriorated underlying bridge deck.

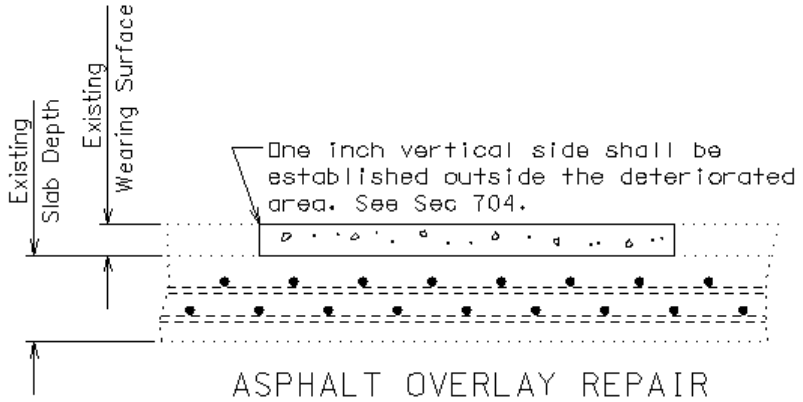
3.2 Deck repairs shall be in accordance with Sec 704. Concrete for the deck repairs shall be placed up to the top of the driving surface unless otherwise directed by the engineer. Finishing and curing the repair area shall be in accordance with Sec 704.

3.3 The asphalt overlay repair area shall be prepared for patching by uniformly applying tack coat to the bottom and sides of the repair area in accordance with Sec 407. Asphaltic concrete patching material shall be placed in the repair area and thoroughly compacted with a minimum 1 1/4 ton roller. The finished repair shall be smooth and level with the existing asphalt wearing surface. The lane shall not be opened to traffic until the patch has sufficiently cooled. All asphaltic concrete overlay repairs shall be complete before traffic is restored to the lane.

3.4 Before opening to traffic, the contractor shall seal all edges of the repaired area with a rapid setting polymer modified liquid asphalt emulsion. The sealed edges shall be coated with a black colored sand to prevent tracking and to blend in with the existing asphalt surface. There will be no direct payment for furnishing or placing the asphalt emulsion or sand.

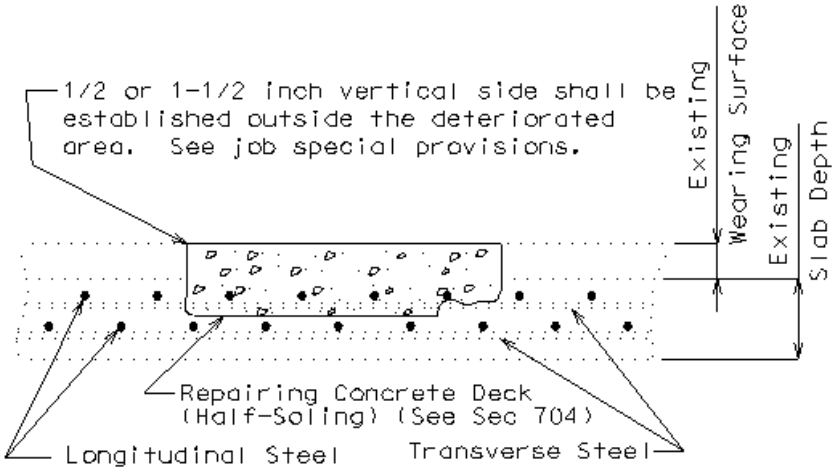
3.5 Asphalt Overlay Repair With or Without Underlying Bridge Deck Repair. If an asphalt wearing surface has been placed on top of a dense concrete overlay, the dense concrete overlay and bridge deck repair shall be performed the same as shown in job special provision "Dense Concrete Overlay Repair". If the dense concrete overlay needs repaired but the bridge

deck does not require repair, the dense concrete overlay shall be repaired monolithically with the asphalt wearing surface.

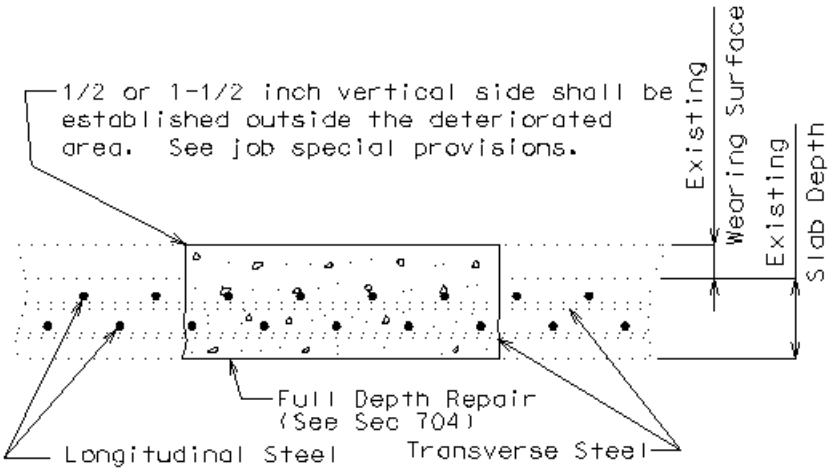


ASPHALT OVERLAY REPAIR

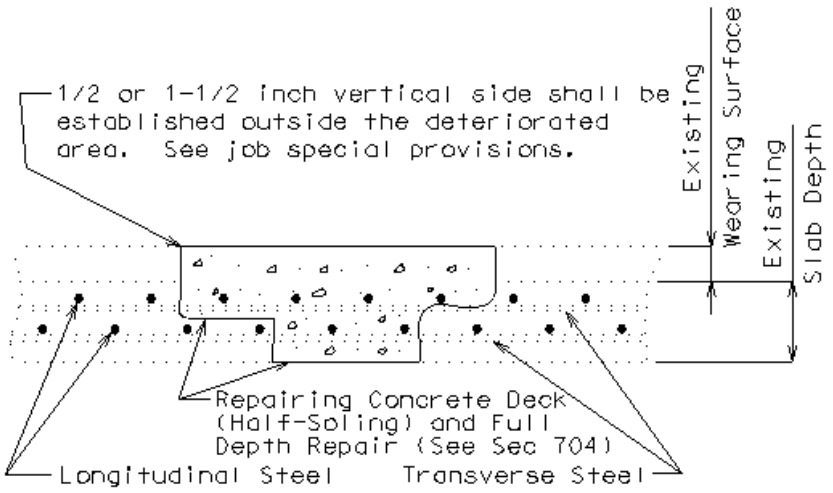
(Voids not shown for Void Slab Bridges)



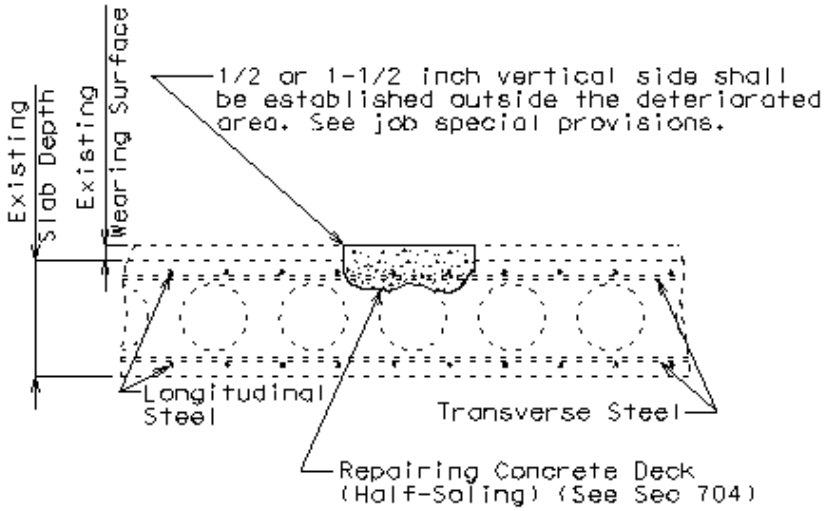
HALF-SOLED REPAIR



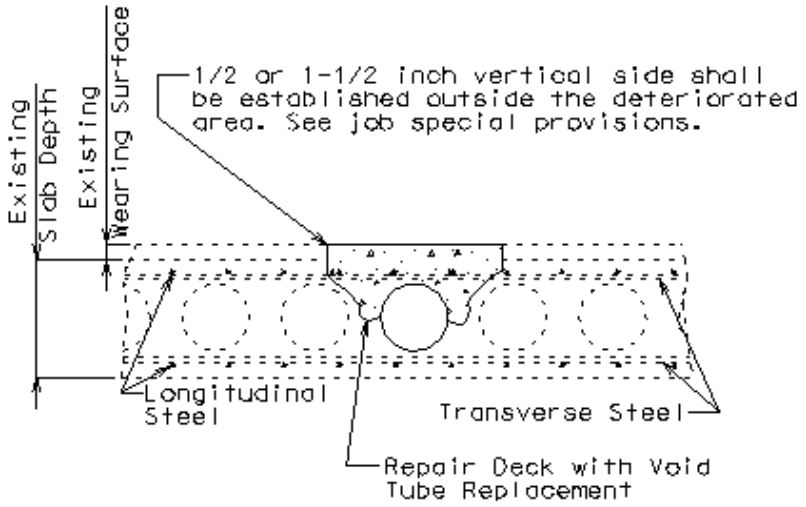
FULL DEPTH REPAIR



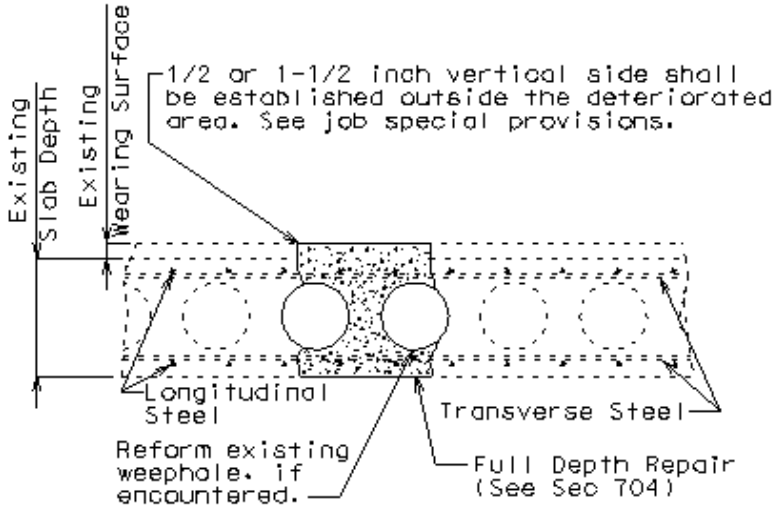
FULL DEPTH REPAIR
WITH HALF-SOLED REPAIR



HALF-SOLED REPAIR



DECK REPAIR WITH VOID TUBE REPLACEMENT



FULL DEPTH REPAIR

4.0 Method of Measurement. The depth of repair may vary but the contract unit price shall prevail regardless of the variation. No duplication of measurement will be made for full depth repair, repairing concrete deck (half-soling), deck repair with void tube replacement or asphaltic concrete overlay repair. Areas of asphaltic concrete overlay repair will be measured to the nearest square foot. Deck repairs will be measured and paid for in accordance with Sec 704.

5.0 Basis of Payment. Accepted quantity of asphaltic concrete overlay repair will be paid for at the contract unit price for:

Item 401-99.04	Asphaltic Concrete Overlay Repair	Square Feet

LL. PROTECTIVE SURFACE TREATMENT FOR CONCRETE – PENETRATING SEALERS JSP 07-08A

1.0 Description. This work shall consist of preparing and treating Portland cement concrete bridge deck and bridge approach slab surfaces with a penetrating sealer meeting this specification. This type of sealer shall be used in lieu of the normal surface sealing for concrete in accordance with Sec 703.

2.0 Materials. The protective surface treatment shall meet one of the three classes of penetrating sealers in accordance with this job special provision. The penetrating sealer selected by the contractor shall be submitted to the engineer for approval 30 days before application and shall be listed on MoDOT's Pre-Qualified Product List. The submittal shall include certified test data from an independent test laboratory and the application rate at which penetrating sealer was tested. The penetrating sealer shall be delivered pre-mixed and ready to use. Mixing/agitation shall be in accordance with the manufacturer's recommended procedures. The penetrating sealer shall be stored in tightly sealed containers in a dry location and as recommended by the manufacturer.

2.1 Class 1 Penetration Sealer – Water Soluble. The protective surface treatment shall be a 100 percent acrylic latex specialty additive or similar water soluble mixture with the percent solids clearly specified by the manufacturer. The treatment system shall meet the performance requirements listed in section 2.2.3 of this job special provision based on a single application at the manufacturer's recommended application rate.

2.1.1 Absorption. The absorption of the treated concrete under total immersion shall not exceed 1.0 percent after 48 hours or 2.0 percent after 50 days per ASTM C 642 as modified below for non-air entrained concrete. Concrete shall be proportioned and mixed in accordance with ASTM C 672.

2.1.1.1 In addition to ASTM C 642 section 4.1, one 4-inch (10 cm) diameter by 4 inch (10 cm) long core shall be retrieved from the surface of a Portland cement concrete to which penetrating sealer solution has been applied. The core shall be oven dried as designated by ASTM C 642 section 5.1. The core shall be sealed with a rapid setting coating on the sides and bottom. The coating shall overlap the top edge of the core 1/8" (3mm). The core shall be weighed to determine the oven dry weight (mass) of the core and coating. The weight (mass) shall be designated as "A".

2.1.1.2 The core, processed in accordance with section 2.1.1.1 of this job special provision, shall be immersed in a suitable receptacle and covered with tap water. The procedure as designated by ASTM C 642 section 5.2 shall be followed to determine the soaked surface dry weight (mass) of the core and coating. This weight (mass) shall be designated as "B".

2.1.1.3 The percent moisture absorption of the core shall be determined by ASTM C 642 section 6.1, equation (1). ASTM C 642 sections 5.3, 5.4, 6.1 and equations (2) through (7) shall not apply.

2.1.2 Salt water ponding. After 90 days ponding of 3 percent NaCl solution per ASSHTO T 259, the chloride ion content of the concrete shall not exceed 1.00 lbs. per cubic yard (0.45 kg/m^3) at ½ to 1 inch (13 to 25 mm) depth.

2.1.3 Skid resistance. The skid resistance of the treated concrete deck shall not reduce by more than 10 percent as compared to the same untreated concrete deck. A 5 test average shall be performed in accordance with ASTM E 274 using ASTM E 501 ribbed tire at 40 mph (64 kph).

2.2 Class 2 Penetrating Concrete Sealer. The sealer shall meet the requirements of this job special provision. The sealer selected by the contractor shall be submitted to the engineer for approval two weeks before application and shall be listed on MoDOT's Pre-Qualified Product List. If the contractor chooses to submit a new product for MoDOT's Pre-Qualified Product List, the product shall be submitted to the engineer 30 days prior to application. Either submittal shall include certified test data from an independent test laboratory and the concrete mix design and curing procedure on the test specimens in which sealer was tested.

2.2.1 The sealer shall be a solvent-free 100% solids isobutyltrialkoxysilane, with low oligomer and polymer compound content. The chemical composition shall meet the following requirements:

Property	Specification
Purity	98% minimum monomer by weight
Solvent	Less than 0.1% by weight
Siloxan or polymer Residue	Less than0.1% by weight
Chloride Ion Content	Less than 40 PPM
Density	ASTM D2111: 7.2 to 7.4 pounds per gallon
Flash Point	ASTM D93: greater than 145 degrees F
Dry Time	ASTM D7539: less than one hour

2.2.2 The sealer shall meet the following performance criteria based on a single application at the manufacturer's recommended application rate. All test specimens shall be produced using MoDOT Class B-2 concrete in accordance with Section 501.

Test	Test Method	Duration	Max Absorption / Cl^-
Water Immersion	ASTM C 642	48 hours	0.5 percent by weight (mass)
Water Immersion	ASTM C 642	50 days	1.5 percent by weight (mass)
Salt Water Ponding (based on non-abraded specimen)	AASHTO T 259	90 days	0.50 lbs/cu yd (0.30 kg/m^3) Cl^- Depth: (1/2 to 1") (13 to 25 mm)

2.2.3 Absorption. The absorption of the treated concrete under total immersion shall not exceed 0.5 percent after 48 hours or 1.5 percent after 50 days per ASTM C 642 as modified below for non-air entrained concrete.

2.2.4 In addition to ASTM C 642 section 4.1, one 4-inch diameter by 4 inch long core shall be retrieved from the surface of a concrete test specimen to which sealer has been applied. No cores shall be taken from the bridge deck. The core shall be oven dried as designated by ASTM C 642 section 5.1. The core shall be sealed with a rapid setting two part epoxy on the sides and bottom. The epoxy shall overlap the top edge of the core 1/8". The core shall be weighed to determine the oven dry weight of the core and coating. The weight shall be designated as "A".

2.2.5 The core, processed in accordance with section 2.2.1.1 of this job special provision, shall be immersed in a suitable receptacle and covered with tap water. The procedure as designated by ASTM C 642 section 5.2 shall be followed to determine the soaked surface dry weight of the core and coating. This weight shall be designated as "B".

2.2.6 The percent moisture absorption of the core shall be determined by ASTM C 642 section 6.1, equation (1). ASTM C 642 sections 5.3, 5.4, 6.1 and equations (2) through (7) shall not apply.

2.2.7 Salt water ponding. After 90 days ponding of 3 percent NaCl solution per ASSHTO T 259, the chloride ion content of the concrete shall not exceed 0.5 pounds per cubic yard (0.30 kg/m^3) at ½ to 1 inch (13 to 25 mm) depth.

2.3 The sealer shall not permanently stain, discolor or darken the concrete. Application of the sealer shall not alter the surface texture or form a coating on the concrete surfaces. Treated concrete shall be surface dry within 60 minutes after application.

2.4 The sealer shall be tinted with a fugitive dye to enable the coating to be visible on the treated concrete surface for at least 4 hours after application. The fugitive dye shall not be conspicuous more than 7 days after application when exposed to direct sunlight.

2.5 The sealer shall be delivered to the project in unopened containers with the manufacturer's label identifying the product and with the seal(s) intact. Each container shall be clearly marked by the manufacturer with the following information:

- Manufacturer's name and address.
- Product name.
- Date of manufacture and expiration date.
- Lot identification.
- Storage requirements.

2.6 Class 3 Penetrating Sealer – High Molecular Weight Methacrylate. The material used shall be a low viscosity, non-fuming, and high molecular weight methacrylate resin in accordance with the following:

Property	Test Method	Requirement
Viscosity	Brookfield RVT 100 RPM @ 72°F (22°C)	25 cps maximum
Pot Life	Application life before curing begins [@ 68°F (20°C) air temperature]	15 minutes minimum
Curing Time	On site at 50°F (10°C)	6 hours Maximum

3.0 Construction Requirements.

3.1 Equipment. Application equipment shall be as recommended by the manufacturer. The spray equipment, tanks, hoses, brooms, rollers, coaters, squeegees, etc. shall be thoroughly clean, free of foreign matter, oil residue and water prior to applying the treatment.

3.2 Cleaning and Surface Preparation. Surfaces, which are to be treated, shall meet the approved product's requirements for surface condition. Sealing shall not be done until all concrete repairs and any corrective actions needed have been completed and cured. The contractor shall furnish the engineer with written instructions for surface preparation requirements and a representative of the manufacturer shall be present to assure that the surface condition meets the manufacturer's requirements.

3.2.1 Sealing shall be done after the bridge deck and bridge approach slabs have been textured.

3.2.2 At a minimum, the surface shall be thoroughly cleaned to remove dust, dirt, oil, wax, curing components, efflorescence, laitance, coatings and other foreign materials. The manufacturer or manufacturer's representative shall approve the use of chemicals and other cleaning compounds to facilitate the removal of these foreign materials before use. The treatment shall be applied within 48 hours following surface preparation.

3.2.3 Cleaning equipment shall be fitted with suitable traps, filters, drip pans and other devices to prevent oil and other foreign material from being deposited on the surface.

3.3 Test Application. Prior to final application, the contractor shall treat a measured test coverage area on horizontal and vertical surfaces of the different components of the structure to be treated for the purpose of demonstrating the desired physical and visual effect on an application or of obtaining a visual illustration of the absorption necessary to achieve the specified coverage rate. In the latter case, the applicator shall use at least ½ gallon (1.9 liter) of treatment following the manufacturer's recommended method of application for the total of the test surfaces. Horizontal test surfaces shall be located on the deck and on the curb or sidewalk, and vertical test surfaces shall be located on a parapet or safety barrier curb so that the different textures are displayed.

3.4 Application. The concrete treatment shall be applied to concrete surfaces as designated on the plans or per the manufacturer’s specification. The penetrating sealer shall be applied by thoroughly saturating the concrete surfaces at an application rate specified by the manufacturer and as shown in the approved certified test data.

3.4.1 The concrete surface temperature shall be above 35°F (2°C).

3.4.2 The treatment shall be spread from puddles to dry areas.

3.4.3 If the applicator is unable to complete the entire application continuously, the location where the application was stopped shall be noted and clearly marked.

3.5 Protection of Adjoining Surfaces and the Public.

3.5.1 When applying a treatment, the contractor shall protect adjoining surfaces of the structure that are not to be sealed by masking off or by other means. The contractor shall also make provision to protect the public when treating the fascia of a bridge that spans an area used by the public.

3.5.2 Asphalt and mastic type surfaces shall be protected from spillage and heavy overspray. Joint sealants, traffic paints and asphalt overlays may be applied to the treated surfaces 48 hours after the treatment has been applied. Adjoining and nearby surfaces of aluminum or glass shall be covered where there is possibility of the treatment being deposited on the surfaces. Plants and vegetation shall be protected from overspray by covering with drop cloths. Precautions shall be followed as indicated on the manufacturer's material and safety data sheet.

3.6 Opening to Traffic. Traffic shall be allowed on a deck only after a treated area does not track.

4.0 Method of Measurement. Measurement will be made to the nearest square yard (m^2) measured longitudinally from end of the bridge approach slab to end of the bridge approach slab and transversely from roadway face of curb to roadway face of curb extended to end of the approach slabs. No deduction will be made for gaps to avoid, raised pavement markers,

manholes or other obstructions. Material placed on curb faces will not be measured. Final measurement 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.

5.0 Basis of Payment. Payment for the above described work, including all material, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for "Penetrating Sealers".

MM. SEAL COAT FOR BRIDGE DECKS PRIOR TO ASPHALT OVERLAY

1.0 Description. This work shall consist of placing bituminous material followed by placing cover aggregate on bridge decks. All work shall be in accordance with Sec 409 except as herein modified.

2.0 Material.

2.1 Bituminous material shall be polymer modified liquid asphalt emulsion in accordance with Sec 1015.

2.2 Cover aggregate shall be Grade A in accordance with Sec 1003, unless otherwise approved by the engineer.

3.0 Construction Requirements.

3.1 Bridge Deck Repairs. Bridge sealing shall not begin until bridge deck repair operations are complete and repaired areas have adequately cured. For bridge decks repaired using a qualified special mortar in accordance with Sec 704, the repaired areas shall have adequately cured in compliance with the patching material manufacturer's recommendations.

3.2 Seal Coat. Seal coat shall be applied, rolled and then shall be allowed to cure as recommended by the manufacturer. After curing, all loose aggregate shall be removed prior to opening to traffic. Any seal coat that is pulled up or damaged during the operation shall be repaired by the contractor at the contractor's expense.

4.0 Traffic Control. Delete Sec 409.6.2. Temporary striping with tape shall be incidental to the operation.

5.0 Basis of Payment. Payment for the above described work, including all materials, equipment, labor and any other incidental work necessary to complete this work, will be considered completely covered by the contract unit price. The accepted quantity of seal coat and any temporary striping will be paid for at the contract unit price for:

Item 409-40.00	Seal Coat, Grade A	Square Yard

NN. REMOVAL OF EXISTING EXPANSION JOINT SILICONE SEALANT OR COMPRESSION SEAL

1.0 Description. This work shall consist of removing and disposing of existing expansion joints compression seals or silicone sealant as directed by the engineer.

2.0 Removal Requirements. The existing compression seal or silicone sealant shall be cleanly removed and disposed of in accordance with Sec 202.

3.0 Method of Measurement. Final measurement of removal of existing expansion joint compression seal or silicone sealant will not be made except for authorized changes during construction or where appreciable errors are found in the contract quantity. Removal of the existing expansion joint compression seal and silicone sealant will be measured to the nearest linear foot based on measurement from roadway face of curb to roadway face of curb along centerline of the existing joint. Portions of the joint extending past the roadway face of curbs will not be measured for payment.

4.0 Basis of Payment. Payment for the above described work, including all material, equipment, labor and any other incidental work necessary to complete this item, will be based on the Job Order quantities and will be considered completely covered by the contract unit price for "Removal of Existing Expansion Joint Silicone Sealant" or "Removal of Existing Expansion Joint Compression Seal". Any change in the job order quantities, based on approved change orders, will be paid for at the contract unit price.

OO. EPOXY POLYMER CONCRETE RESURFACING OVER AND NEAR STREAMS AND WETLANDS

1.0 Description. In general, because of the process for epoxy polymer application, that being the use of an epoxy spray for adhesion or fluid epoxy polymer mix, care must be taken to avoid overspray or runoff that will enter bodies of water. For use on bridges, all drains must be adequately blocked until the mixture is set up permanently. This includes the cleanup process for loose material/aggregate. No spray, runoff, or materials shall be allowed to enter the drains or the stream or wetland.

PP. REMOVAL OF BRIDGE DEBRIS

1.0 Description. Environmental surveys of the Missouri and Mississippi Rivers for pallid sturgeon and Meramec River for mussels and endangered fish species were not conducted at the project location because debris is not anticipated to fall into the water. If debris including, but not limited to, sand from sandblasting, water from hydroblasting, paint chips, runoff from painting/sealing processes, etc. falls into the water, the project will be required to shut down while biologists determine if there are any threatened or endangered species at the site and while MoDOT's environmental section reassesses impacts to those species.

1.1 The contractor shall make provisions to prevent debris and materials from falling below the bridges. If this does occur and if deemed necessary by the engineer, it shall be removed as directed by the engineer at the contractor's expense.

1.2 The contractor shall prevent any debris and materials from falling into the river, stream, lake, or wetland below the bridges.

1.3 Any damage sustained by the remaining structures as a result of the contractor's operations shall be repaired or the material replaced as determined by the engineer at the contractor's expense.

1.4 If the contractor's operation requires work below the deck, directly above the river, stream, lake or wetland below the bridge, the contractor shall notify the engineer who will then contact MoDOT's Environmental Section for further review.

2.0 Basis of Payment. No direct payment will be made for any expense incurred by the contractor by reason of compliance with the specific requirements of the provision, including any delay, inconvenience, or extra work except for those items for which payment is included in the contract.

QQ. PREFORMED SILICONE OR EPDM EXPANSION JOINT SEAL

1.0 Description. This work shall consist of furnishing and installing the preformed silicone or EPDM expansion joint seal for joints as shown on the plans or as directed by the engineer.

2.0 Material. All material shall be in accordance with Division 1000, Material Details, and specifically as follows. All necessary components, materials and equipment required for the installation shall be obtained through an approved supplier. All components of each respective joint system shall come from the same manufacturer and cannot be substitutes for others.

2.1 Joint Seal.

2.1.1 The gland material shall meet or exceed the following physical requirements:

Joint Seal		
Property	**Specification**	**Requirement**
Durometer (Shore A)	ASTM D 2240	55 ±5 min.
Tensile Strength	ASTM D 412	550 psi min.
Elongation	ASTM D 412	350% min.
Tear Strength (Die B)	ASTM D 624	100 ppi min.
Compression Set At 350° F 22 hrs	ASTM D 395	30% max.
Operating Temperature Range		-60° F to 350° F
Specific Gravity		1.51 ±0.10

2.1.2 The joint seal shall be pre-qualified by undergoing and passing a cyclic loading test. Any rips, tears or bond failure will be cause for rejection. Manufacturer shall provide documentation to verify testing meetings these minimum requirements.

Cyclic Loading Test	
Property	**Requirement**
Test Sample Length	2 feet min.
Joint Skew	45°
Number of Cycles	200 min.
Joint Opening	2 inches
Movement	±1 inch
Temperature	-20° F

2.2 Epoxy Primer. Epoxy primer shall be as specified by the manufacturer to insure the appropriate bond of the joint sealing system and shall meet the following physical requirements:

Epoxy Primer		
Property	**Specification**	**Requirement**
Viscosity (centipoises)	ASTM D 2196	44
Solids	ASTM D 4209	41
Specific Gravity	ASTM D 1217	0.92
Flashpoint	ASTM D 56	48
VOC	ASTM D 3960	520

2.3 Locking Adhesive. The adhesive material shall cure quickly and shall be as recommended by the manufacturer. The material shall adhere to concrete, elastomeric concrete, polymer concrete and steel and shall meet the following physical requirements:

Locking Adhesive		
Property	**Specification**	**Requirement**
Sag/Flow	ASTM C 639	3/16 inch max.
Hardness	ASTM C 661	20-30
Tack Free Time	ASTM C 679	30 minute max.
Cure Through To ¼ inch thickness	At 75°F/50% Relative Humidity	24 hours max.
Skin over time (Tooling Time)	At 75°F/50% Relative Humidity	5 minute max.
Resistance to U.V.	ASTM C 793	No cracking, Ozone Chalking or Degradation
Tensile Strength	ASTM D 412	200 psi min.
Elongation	ASTM D 412	450% min.

2.4 Certification. The contractor shall furnish a manufacturer's certification for all material specified in this job special provision. The certification shall show representative test results of the material and certify that the material supplied is in accordance with this job special provision.

3.0 Construction Requirements. The contractor shall furnish to the engineer the manufacturer's written product information, installation procedures and instructional information at least two weeks prior to installation. The contractor shall obtain the services of a qualified technical representative approved by the manufacturer of the expansion joint seal and acceptable to the engineer, to assist during the installation. The contractor, the technical representative and the engineer shall meet to review and clarify installation procedures and requirements prior to starting the work. The start of surface preparations and seal installation shall not occur without the technical representative being present. The technical representative shall be present for at least one day at the start of surface preparations and seal installation.

3.1 Surface Preparation. The concrete or steel surface shall be prepared for priming and seal placement. New Portland cement concrete shall be fully cured and allowed to dry a minimum of seven days. The joint shall be cleaned of all gravel, loose material and other contaminates before sand blasting. Areas that will be in contact with the sealant shall be sand blasted with a clean, hard aggregate that will leave little to no dust residue. Sand blasted concrete surfaces will be considered acceptable when areas that will be in contact with the sealant have a

roughened surface with clean, exposed aggregate. The surface shall be free of foreign matter or plastic residue. Sand blasted steel surfaces will be considered acceptable when the steel surfaces have been cleaned to an SSPC-SP10 degree of cleanliness. After sand blasting is completed, the joint shall be cleaned of debris using oil-free and water-free compressed air or a vacuum, either being at least 90 psi. Using a rag saturated in denatured alcohol, wipe clean both vertical faces of the expansion joint opening.

3.2 Priming. Priming shall immediately follow sand blasting and cleaning and will only be permitted to proceed when the air and substrate temperatures are at least 40° F and rising. Sand blasting, priming and installing the seal shall be performed on the same day. The entire sand blasted surface shall be primed. Application and drying times for primers shall be in accordance with the manufacturer's recommendations. All leftover primer shall be properly disposed.

3.3 Installation. The preformed silicone or EPDM expansion joint seal shall be installed in joints in one continuous piece without field splices. The locking adhesive and seal shall be applied in accordance with the manufacturer's recommendations, in a manner that prevents the seal from being damaged and from being in tension. Twisting, curling and nicking the seal will be prohibited. Unless the installation tool is capable of installing the seal without elongation prior to placement, the seal shall be pre-cut to the exact length for the joint plus ends as shown in the contract documents or as directed by the engineer. The pre-cut seal shall be installed and measured for stretch. The seal shall be removed and reinstalled if the seal stretch length exceeds five percent of the pre-cut length at the contractor's expense.

4.0 Method of Measurement. The preformed silicone or EPDM expansion joint seal will be measured to the nearest linear foot based on measurement from the roadway face of curb to roadway face of curb along the centerline of the joint. Final measurement will not be made except for authorized changes during construction, or if appreciable errors are found in the contract quantity. Portions of the joint that extend past the roadway face of curbs will not be measured for payment.

5.0 Basis of Payment. Payment for the above described work, including all material, equipment, labor, technical assistance and any other incidental work necessary to complete this item, will be based on the contract plan quantities and will be considered completely covered by the contract unit price for "Preformed Silicone or EPDM Expansion Joint Seal". Any change in the contract plan quantities, based on approved change orders, will be paid for at the contract unit price.

RR. EPOXY POLYMER CONCRETE OVERLAY REPAIR

1.0 Description. This work shall consist of repairing designated areas of bridge decks with an existing epoxy polymer concrete overlay. All work shall be in accordance with Sec 623, Sec 704 and the job special provisions "Concrete Masonry Repair" except as herein modified.

2.0 Construction Requirements.

2.1 Epoxy Polymer Overlay Thickness. The total thickness of the overlay repair will vary and shall match the existing overlay thickness but shall not be greater than ½ inch.

2.2 Concrete Deck.

2.2.1 A boundary perimeter with vertical sides shall be established outside the delaminated and deteriorated epoxy polymer concrete overlay repair areas by saw cutting. The contractor shall use caution to not saw into the underlying bridge deck. All overlay material within the perimeter shall be removed. Upon removal of the deteriorated overlay, the engineer will sound the underlying bridge deck to determine areas of deteriorated concrete. The engineer may require removal of additional areas of epoxy polymer overlay to determine the extent of deteriorated underlying bridge deck.

2.2.2 Deck repairs shall be in accordance with Sec 704. Concrete for the deck repairs shall be placed up to the top surface of the original deck unless otherwise directed by the engineer.

2.2.3 Epoxy polymer concrete overlay shall be installed in accordance with Sec 623.

3.0 Method of Measurement. The thickness of repair may vary but the contract unit price shall prevail regardless, unless the total thickness is greater than ½ inch. Areas of epoxy polymer concrete overlay repair will be measured to the nearest square foot (0.1 m^2) and be tabulated separately for repairs on concrete deck. Deck repairs will be measured and paid for separately in accordance with Sec 704.

4.0 Basis of Payment. The accepted quantity of epoxy polymer concrete overlay repair, concrete deck, will be paid for at the contract unit price for:

Item 704-99.04 Epoxy Polymer Overlay Repair, Concrete Deck Square Foot

SS. STORMWATER COMPLIANCE REQUIREMENTS NJSP-15-38

1.0 The land disturbance necessary to complete this project is not anticipated to exceed one (1) acre. Should the contractor disturb more than one (1) acre to complete the work, or for any other reason, all terms of this Job Special Provision will apply.

1.1 Description. The Contractor shall comply with the terms of the United States of America v. Missouri Highways and Transportation Commission Consent Decree (Consent Decree) that are identified as the responsibility of the Contractor or subcontractor, and with the terms of this provision. Viewing of the Consent Decree is available on the MoDOT Land Disturbance webpage under Contractor Resources, or by going to the web address www.modot.org/LD.

1.2 Applicability. The Consent Decree and this provision apply to any project that includes land disturbance of areas totaling greater than one (1) acre on the project site. The project site consists of all areas designated on the plans, including temporary and permanent easements. The Consent Decree and this provision do not apply to Contractor staging, plant, or borrow areas that are not located on MoDOT right of way (Off-site). The Contractor is responsible for obtaining its own separate land disturbance permit for Off-site areas. This provision is in addition to any other stormwater, environmental, and land disturbance requirements specified elsewhere in the contract.

2.0 Stormwater Training for Contractor Employees. The Contractor's on-site project manager, designated Water Pollution Control Manager (WPCM), as defined in Section 3.0, and WPCM delegate, shall complete MoDOT Stormwater Training prior to serving in those roles. If someone other than the Contractor's project manager is given the authority to manage the grading or erosion control operations, the project manager(s) for those operations shall also complete MoDOT Stormwater Training. MoDOT Stormwater Training is also required for any

other person who the Contractor gives authority to take measures to prevent or minimize the consequences of non-compliance with the Stormwater requirements, as defined in Section 3.1(a) of this provision.

2.1 The Commission will provide MoDOT Stormwater Training to the Contractor employees specified in Section 2.0 at a location and time determined by MoDOT. There will be no fee for attending the training; however, the Contractor shall be responsible for all other cost related to the training, such as travel expenses, if necessary, and wages for its employees. The time to complete the training is anticipated to be no more than 6 hours. As long as the Consent Decree is in effect, MoDOT will provide periodic trainings at various locations around the state, as needed, to ensure contractors and bidders have the opportunity to maintain the number of WPCMs they need to comply with this provision.

2.2 Those who require MoDOT Stormwater Training per Section 2.0 shall complete the training prior to beginning any land disturbance work. Thereafter, training shall occur at least once every two (2) years. The training is not project-specific. Any Contractor employee who receives the training will be qualified to perform the WPCM duties on any MoDOT project for a period of two (2) years.

2.3 MoDOT will document the names and dates that contractor employees attend MoDOT Stormwater Training and will retain those records for the period of time specified in the Consent Decree. Duplicate record keeping by the contractor is not required.

3.0 Water Pollution Control Manager (WPCM). Prior to the Pre-Activity meeting for Grading/ Land Disturbance, the Contractor shall designate a Water Pollution Control Manager (WPCM) to fulfill the duties and responsibilities listed in Section 3.1 until final stabilization occurs. The Contractor's on-site project manager may also serve as the WPCM or that role may be assigned to another manager employed by the contractor or a subcontractor. The Contractor shall also maintain a WPCM delegate to temporarily fulfill the WPCM duties in the absence of the primary WPCM (e.g. illness, vacation, other leave).

3.1 Duties of the WPCM:

(a) Be familiar with Stormwater Requirements including the National Pollutant Discharge Elimination System (NPDES), the current MoDOT State Operating Permit for construction stormwater discharges/ land disturbance activities, the Project-specific Stormwater Pollution Prevention Plan (Project SWPPP), the Corps of Engineers Section 404 Permit, when applicable, the Consent Decree, and this provision. The Project SWPPP includes: a title page with project-specific information, the general SWPPP posted on the MoDOT land disturbance website, the Project Erosion & Sediment Control Plan, all applicable special provisions, and all applicable specifications and standard drawings;

(b) Complete the stormwater training set forth in Section 2.0;

(c) Attend the Pre-Activity for Grading/ Land Disturbance Meeting or, if hired after the meeting has occurred, be familiar with the conference decisions;

(d) Review and sign the Project-specific SWPPP and all updates thereto within time periods set out in the Consent Decree;

(e) Visit and review the project site for compliance with Stormwater Requirements at least once per week from the start of any grading operations until final stabilization is achieved and permit is closed;

(f) Be authorized by the Contractor to supervise all work performed by the Contractor and subcontractors that involves compliance with Stormwater Requirements, including the authority to order work be stopped on a Project, implement MoDOT-directed changes in work related to Stormwater Requirements, and order the taking of, measures to cease, correct, prevent, or minimize the consequences of non-compliance with Stormwater Requirements;

(g) Review and certify electronically each MoDOT inspection report for the Project within three (3) days of receiving each report to ensure it conforms with report requirements in the National Pollution Discharge Elimination System Stormwater (NPDES SW) Permit, Project SWPPP and the Consent Decree and ensure that all Stormwater Deficiencies noted on the report are corrected within the time required;

(h) Recommend in writing within three (3) days of discovering any changes in site conditions and Best Management Practices (BMPs) that require an update to the Project-specific SWPPP; and

(i) Be the point of contact relating to Stormwater Requirements and the Consent Decree between the Contractor, Subcontractors and MoDOT.

4.0 Pre-Activity Meeting for Grading/Land Disturbance and Required Hold Point. At each Project, a Pre-Activity Meeting for Grading/Land Disturbance shall be held prior to the start of any land disturbance and shall include a physical visit and review of the project site. 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.

4.1 Contractor employees who shall attend the Pre-Activity Meeting for Grading/Land Disturbance include the WPCM for the Project and the person(s) designated the authority to manage the grading and erosion control operations.

4.2 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.

5.0 Compliance with the NPDES SW Permit and Project SWPPP. On all projects, the Contractor shall comply with all applicable Stormwater Requirements which are defined as, but are not limited to:

(a) Consulting with the engineer on recommended design revisions to the Project SWPPP to accommodate the Contractor's staging plan, implementation, managing, and maintaining BMPs or other control measures to prevent or minimize sediment and other pollutants in stormwater runoff in accordance with contract specifications or any relevant manufacturer specifications and good engineering practices, including but not limited to

the manuals (*Note: two manuals cited in the MoDOT permit are "Developing your stormwater pollution prevention plan: A guide for construction activities" and "Protecting Water Quality: A Field Guide to erosion, sediment and stormwater best management practices for development sites in Missouri"*) and any other applicable standards for sedimentation basins, stabilization, rock dams, brush checks, construction entrances, and other BMPs;

(b) Installing all BMPs at the locations and relative times specified in the Project SWPPP; and

(c) Complying with the Missouri Water Quality Standards and with effluent limitations in Section E.1 of the NPDES SW Permit. Measurement of effluent is not required except as specified in E.2.

5.1 Stormwater Deficiency Corrections. Per terms of the Consent Decree, Stormwater Deficiencies identified on the MoDOT Land Disturbance Inspection Report shall be corrected within 7 days of the inspection date to avoid stipulated penalties, except that more time might be 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.

6.0 Inspection Protocol. The Contractor and all subcontractors shall review and adhere to MoDOT's written Stormwater Inspection Protocol, found on the MoDOT Land Disturbance webpage (www.modot.org/LD). The Inspection Protocol is applicable to all Projects under the consent decree. The MoDOT Resident Engineer will serve the role of Stormwater Resident Engineer, or a delegate will be named in their absence.

6.1 Inspection Reports. MoDOT will provide one or more Environmental Construction Inspectors (ECI) to perform the weekly and post run-off inspections and other duties described in paragraph 17 of the Consent Decree. The ECI will enter the inspection reports into a web-based Stormwater Compliance database. The WPCM will have access to this database to view all report information, including any noted deficiencies, and to certify the report as required in Section 3.1 (g.). Automated email reminders of pending reports that need to be certified and for deficiencies that need to be corrected will be sent to the WPCM. The Contractor may designate other employees or subcontractor employees to have viewing access to this database and to receive the email reminders. Completion of MoDOT Stormwater Training is necessary in order to receive the email reminders. The WPCM and other users shall be equipped with an electronic device (desktop computer, laptop, tablet, smartphone, etc.) with a browser and internet access to connect to the database. The contractor shall be responsible for providing the electronic devices.

7.0 Stipulated Penalties. If the Contractor fails to comply fully and timely with the requirements of the Consent Decree, stipulated penalties will be assessed to the Commission. For matters under the Contractor's responsibility and control the following stipulated penalties will be assessed to the Contractor and MoDOT will withhold payment pursuant to the following:

Violation	Stipulated Penalty Amount
Failure to Designate or Maintain WPCM at each Project in Accordance with Section 3.0.	$750 for the initial violation (each person not designated) and then $750 for each fourteen (14) day period that person is not designated.
Failure to complete MoDOT Stormwater Training by an Individual Required to be Trained in Accordance with Section 2.0, such as the WPCM or Project Manager.	$750 per person for each missed training. This $750.00 per person violation shall continue to accrue for each fourteen (14) day period that the person fails to timely receive the applicable training
Failure of WPCM to Review and Certify an Inspection Report in Accordance with Inspection Protocol as set forth in Section 6.	$250 per inspection report not reviewed or signed.
Failure to Comply with Any NPDES SW Permit or SWPPP Requirement.	$1000 per violation for the first ten (10) days of the violation; $2500 per violation for days 11-20; $3500 per violation for days 21 and beyond.
Failure to Correct a Stormwater Deficiency Identified in a MoDOT Inspection Report, or Otherwise Discovered by the WPCM, within the Time Required by the NPDES SW Permit or SWPPP.	$1000 per deficiency for the first ten (10) days after correction was required; $2500 per deficiency for days 11-20 after correction was required; $3500 per deficiency for days 21 and beyond after correction was required.

8.0 Information Collection and Retention. The EPA, its representatives and its agents shall have the right of entry into any facility covered by this Consent Decree, at all reasonable times, upon presentation of credential, to:

(a) monitor the progress of activities required under the Consent Decree;

(b) verify any data or information submitted to the United States in accordance with the terms of the Consent Decree;

(c) obtain samples and, upon request, splits of any samples taken by MoDOT or its representatives, contractors, or consultants;

(d) obtain documentary evidence, including photographs and similar data; and

(e) assess MoDOT's compliance with the Consent Decree.

8.1 Until three (3) years after the termination of the Consent Decree, Contractors and the agents of the Contractors shall preserve all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its Contractors' or agents' possession or control, or that come into the Contractor's or agent's possession or control, and that relate to MoDOT's performance of its obligations under the Consent Decree or to the Contractor's performance of its obligations under the Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures.

9.0 Basis of Payment. Should the contractor disturb more than one (1) acre due to its method of operations, or for any other reason, no direct payment will be made for compliance with this provision, including the cost to provide a WPCM. Should the engineer direct the contractor to exceed one (1) acre of land disturbance, payment will be made only for the actual cost of the weekly duties of the WPCM. Separate payment will be made for erosion and sediment control

devices, and for permanent and temporary seeding and mulching, when payment for those items are provided elsewhere in the contract.

TT. E-CONSTRUCTION NJSP-15-36

1.0 Description. e-Construction is a paperless construction administration delivery process that includes electronic submission of construction documents, approval of documents with digital signatures, and communication between stakeholders by mobile devices. e-Construction saves both time and money for all stakeholders involved, simplifies document storage, and eliminates waste of paper and other resources. This provision does not apply to the contract or other contract execution documents.

2.0 Document Submittals.

2.1 The contractor shall submit all required documents to MoDOT electronically, except as described in section 2.2 of this provision. Documents to be submitted electronically include, but are not limited to, Change Orders, Request to Subcontract Work (C-220), Project Payrolls, Progress Schedules, Value Engineering proposals, Safety Plans, Quality Plans, Pre-Construction conference submittals, etc. All documents shall be submitted in standard pdf format, except when otherwise directed by the engineer.

2.2 The Affidavit for Compliance with the Prevailing Wage Law and the Contractor's Affidavit Regarding Settlement of Claims (Form C-242) require a notarization and therefore, by law, must be submitted on paper.

2.3 The engineer will submit project documents to the contractor via email or through other secure file sharing sites, except that the Contractor Performance Questionnaire will be submitted by certified mail.

2.4 Documents that require multiple signatures, such as change orders, must include all required signatures on the original electronic document, without scanning.

2.5 Project Payrolls from subcontractors shall be digitally signed by the subcontractor. Payrolls shall be submitted as separate files per contractor per pay period.

3.0 Digital Signature.

3.1 All electronic documents that require signature, such as those listed in section 2.1, must be signed electronically. Scanning an ink-signed document is not considered a valid digital signature.

3.2 All users who are authorized to sign documents for the contractor shall submit their Digital Signature Certificate (Public Key .fdf file) to the Division of Construction prior to signing any documents. This file is used to validate the user's signature on documents. An authorization letter is also required for each person authorized to sign documents. A Digital Signature for Contractors Quick Reference Guide (QRG) is available on MoDOT's Engineering Policy Guide at http://epg.modot.mo.gov/ (click on QRG in the left hand column).

4.0 Communication. The contractor shall be able to communicate and exchange information with MoDOT staff by email and mobile phone.

5.0 Basis of Payment. No payment will be made for compliance with this provision.