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	If a seal is present on this sheet, JSP's has been electronically sealed and dated.
	JOB NO. J6I3618 St. Louis County, MO Date Prepared: 10/2/2025
Only the following items of the Job Special Provisions (Bridge) are authenticated by this seal: A thru J	

A. CONSTRUCTION REQUIREMENTS

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

2.0 Construction Requirements. The plans and the asbestos and lead inspection report for the existing structure are included in the contract in the bridge electronic deliverables zip file for informational purposes only.

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 Qualified special mortar shall be a qualified rapid set concrete patching material in accordance with Sec 704. A qualified rapid set concrete patching material will not be permitted for half-sole repair, deck repair with void tube replacement, full depth repair, modified deck repair and substructure repair (formed) unless a note on the bridge plans specifies that a qualified special mortar may be used.

2.3 Provisions shall be made to prevent any debris and material from getting into the waterway. If determined necessary by the engineer, any debris and material that falls into the waterway shall be removed as approved by the engineer at the contractor's expense.

2.4 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.

2.5 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.

2.6 The Contractor shall be responsible for determining all federal, state and local safety requirements including but not limited to, ventilation, lighting, confined space requirements, etc., for all work performed as shown on the contract plans.

2.7 Environmental Contact. Environmental Section may be contacted at the below address or phone number. The Missouri Department of Health may be contacted at (573) 751-6102.

MoDOT - Design Division - Environmental Section
P.O. Box 270
105 W. Capitol Ave., Jefferson City, MO 65102
Telephone: (573) 526-4778

2.8 Approved Smelter and Hazardous Waste Treatment, Storage and Disposal Facility. The following is the approved smelter and hazardous waste treatment, storage and disposal facility:

Doe Run Company - Resource Recycling Division - Buick Facility
Highway KK
Boss, MO 65440
Telephone: (573) 626-4813

3.0 Method of Measurement. No measurement will be made.

4.0 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.

B. COORDINATION WITH MSD FOR INSPECTION

1.0 Description. On this project, MoDOT will inspect all sections of Box Culvert J0888, including the northernmost section maintained by MSD. All decisions regarding construction inspection will be made by MoDOT's Engineer. As described in Section 4.3 (Pre-Activity Meeting) within the Roadway JSP – Contractor Quality Control, the Contractor shall, along with the Engineer, inform MSD of all pre-activity meetings related to the structural rehab on MSD's portion of the box culvert so that MSD can have a construction inspector on site if they choose. The Contractor shall email the following person 3 days prior to any pre-activity meetings regarding improvements to MSD's portion of the box culvert:

Brian Dunn
Engineering Construction Supervisor
Metropolitan St. Louis Sewer District
BPDunn@stlmsd.com

2.0 Basis of Payment. No additional payment shall be made to the Contractor to comply with this provision.

C. DEWATERING

1.0 Description. This provision covers dewatering the entire length of culvert as necessary to provide a suitable condition for repairs to the box culvert as approved by the engineer. Dewatering work shall be performed in accordance with Sec 206 and this job special provision.

2.0 Construction Requirements. Dewatering shall provide a dry work area suitable to construct the box culvert within specifications, as approved by the engineer. Typical dewatering methods consist of, but are not limited to, construction of cofferdams, seal courses, over excavation, well point systems, dewatering and drainage diversion. Any dewatering method utilized shall conform to all environmental laws and regulations.

3.0 Method of Measurement. No measurement will be made.

4.0 Basis of Payment. Payment for dewatering will be made regardless of which dewatering means is utilized. No payment will be made if the work area is not maintained in a dewatered state as approved by the engineer. The lump sum payment for dewatering will be considered full compensation, and no time extensions will be made regardless of which means and methods are utilized by the contractor.

D. CULVERT CLEANOUT

1.0 Description. This provision covers the cleanout of the entire length of existing culvert J0888 as necessary to restore full capacity to the box culvert. Culvert cleanout work shall be performed in accordance with Sec 206 and this job special provision.

2.0 Construction Requirements. Culvert cleanout shall include removal of all silt, trash, rocks, broken concrete and any other debris for the entire limits of the culvert such that the culvert is restored to full capacity. If a manual inspection cannot be made due to bends in the culvert, or

excessive length, the contractor shall provide the engineer with a video inspection recording in accordance with Sec 724.3.4.

3.0 Method of Measurement. No measurement will be made.

4.0 Basis of Payment. Payment for the above described culvert cleanout, including all material, equipment, labor and any other incidental work necessary to complete this item, will be included in the contract lump sum price for Culvert Cleanout.

E. SHOTCRETE CONCRETE REPAIR

1.0 Description. Substructure Repair (Unformed) and Superstructure Repair (Unformed) shall be in accordance with Sec 704 and as shown on the contract plans. Shotcrete, in accordance with this Special Provision, may be used at the contractor's option for unformed repairs. The Contractor and Engineer will come to an agreement on areas to be repaired prior to work beginning.

1.1 Shotcrete shall be in accordance with the current requirements of American Concrete Institute (ACI) 506.2-13, "Specification for Shotcrete", except as otherwise specified. Shotcrete shall consist of an application of one or more layers of mortar or concrete conveyed through a hose and pneumatically projected at a high velocity against a prepared surface.

1.2 Shotcrete shall be produced by a dry-mix process. The dry-mix process shall consist of thoroughly mixing all the ingredients except accelerating admixtures and mixing water and conveying the mixture through the hose pneumatically and the mixing water is introduced at the nozzle. For additional descriptive information, the Contractor's attention shall be directed to the ACI 506R-16, "Guide to Shotcrete".

2.0 Contractor Experience Requirements.

2.1 Workers, including foremen, nozzlemen and delivery equipment operators, shall be fully experienced to perform the work.

2.2 Initial qualification of nozzlemen will be based ACI or EFNARC certification for the application process being used. The nozzlemen shall submit documented proof they have been certified in accordance with the ACI 506.3R-91 "Certification of Shotcrete Nozzlemen" or EFNARC "Nozzleman Certification Scheme". The certification shall have been done by an ACI or EFNARC recognized shotcrete testing lab and/or recognized shotcreting consultant and have covered the type of shotcrete to be used (plain dry-mix).

2.3 The Contractor may supply 1 reference project for the project nozzleman in lieu of completing test panels in accordance with Section 5.1 of this Job Special Provision to demonstrate the experience of the nozzleman in similar shotcrete application work. Owner contact information for the reference project shall be provided to allow for the Engineer to confirm satisfactory results.

3.0 Shotcrete Materials.

3.1 Shotcrete materials shall consist of one of the following premixed and packaged materials:

- a) BASF MasterEmaco S 211SP
- b) Euclid Chemical Eucoshot F
- c) King Shotcrete MS-D1

d) CTS Cement Low-P

3.2 No material testing is anticipated. Acceptance will be based on the prequalified materials listed in this Special Provision, approval of the nozzleman prior to material placement, and visual inspection. If questions arise based from visual examination, placement methods, curing methods or other potentially undesirable influences the Engineer reserves the right to test any material properties listed on the published product data sheet for the material selected. Testing will be done at the Contractor's expense.

3.3 Material shall be delivered, stored and handled to prevent contamination, segregation, corrosion or damage.

3.4 Proportioning and Use of Admixtures. Admixtures will not be permitted unless approved by the Engineer.

3.5 Bonding Agents. Bonding agents will not be permitted.

3.6 Air Entrainment. Additional air entrainment admixtures will not be required.

4.0 Construction Submittals.

4.1 At least 15 days before the planned start of formed and unformed substructure repair, a copy of the following information shall be submitted in writing to the Engineer for review:

(a) Written documentation of the nozzlemen's qualifications including proof of ACI or EFNARC certification;

(b) Proposed methods of shotcrete placement and of controlling and maintaining facing alignment including equipment models;

(c) Shotcrete mix; and

(d) One reference project including: Nozzleman's name, material used, process used, and whether a blow pipe was utilized. Owner contact information shall be provided to ensure satisfactory results were accomplished on the reference project; or

(e) A satisfactory test panel shall be provided with the material to be used.

4.2 The Engineer will approve or reject the Contractor's submittals within 10 days after the receipt of a complete submission. The Contractor will not be permitted to begin formed or unformed substructure repair with Shotcrete until the submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals shall be re-submitted for approval. No adjustment in contract time will be allowed due to incomplete submittals.

4.3 A pre-construction meeting scheduled by the Engineer will be held prior to the start of work. Attendance shall be mandatory. The shotcrete Contractor shall attend.

5.0 Field Quality Control.

5.1 Production test panels will not initially be required if a reference project for the nozzleman is provided as outlined in Section 2.3 of this Job Special Provision. The Engineer may halt repair work if satisfactory results are not produced by the Contractor and require production test panels.

5.2 If a comparable project demonstrating satisfactory results cannot be provided, the skills of the nozzleman shall be demonstrated and tested with at least one production test panel being furnished prior to performing repairs.

5.3 Production Test Panels (If Required).

5.3.1 Qualified personnel shall perform shotcreting and coring of the test panels with the Engineer present. The Contractor shall provide equipment, materials and personnel as necessary to obtain shotcrete cores for testing including construction of test panel boxes, field curing requirements and coring.

5.3.2 Production test panels shall be made with the minimum full thickness and dimension of 18 x 18 inch and at least 3½ inch thick with 2-#4 bars placed in each direction. The #4 bars shall be centered in the 3½ inch dimension and evenly spaced in each direction with the bars touching at the 4 intersecting locations.

5.4 Test Panel Curing, Test Specimen Extraction and Testing.

5.4.1 Immediately after shooting, the test panels shall be field moist cured by covering and tightly wrapping with a sheet of material meeting the requirements of ASTM C 171 until delivered to the testing lab or test specimens are extracted. The test panels shall not be immersed in water. The test panels for the first 24 hours after shooting shall not be disturbed.

5.4.2 At the direction of the Engineer at least two 3 inch diameter core samples shall be cut at two of the intersections to ensure consolidation around the bars. If voids are present the material and nozzleman are not approved for use. The Contractor may continue with changes to the materials or nozzleman. The same process will be followed until no voids are present.

6.0 Shotcrete Facing Requirements.

6.1 Shotcrete Alignment Control. The final surface of the shotcrete shall maintain the existing concrete plane surface.

6.2 Surface Preparation. In addition to the manufacturer's recommendations, the surfaces to be shotcreted shall be cleaned of loose materials, mud, rebound, overspray or other foreign matter that could prevent or reduce shotcrete bond. Shotcrete shall not be placed on frozen surfaces.

6.3 Delivery and Application. In addition to the manufacturer's recommendations, a clean, dry, oil free supply of compressed air sufficient for maintaining adequate nozzle velocity shall be maintained at all times. The equipment shall be capable of delivering the premixed material accurately, uniformly and continuously through the delivery hose. Shotcrete application thickness, nozzle technique, air pressure and rate of shotcrete placement shall be controlled to prevent sagging or sloughing of freshly applied shotcrete.

6.3.1 The shotcrete shall be applied from the lower part of the area upwards to prevent accumulation of rebound. The nozzle shall be oriented at a distance and approximately perpendicular to the working face so that rebound will be minimal and compaction shall be maximized. Special attention shall be paid to encapsulating reinforcement. Care shall be taken

while encasing reinforcing steel and mesh to keep the front face of the reinforcement clean during shooting operations, so that the shotcrete builds up from behind, to encase the reinforcement and prevent voids and sand pockets from forming. If a blow pipe was used to qualify, a blow pipe shall be required. The blow pipe is used to remove rebound and overspray immediately ahead of the nozzle. Rebound shall not be worked back into the construction. Rebound that does not fall clear of the working area shall be removed. Hardened rebound and hardened overspray shall be removed prior to the application of additional shotcrete using abrasive blast cleaning, chipping hammers, high pressure water blasting or other suitable techniques.

6.3.2 When using multiple layer shotcrete construction, the surface of the receiving layer shall be prepared before application of a subsequent layer, by either:

- (a) Brooming the stiffened layer with a stiff bristle broom to remove all loose material, rebound, overspray or glaze, prior to the shotcrete attaining initial set.
- (b) If the shotcrete has set, surface preparation shall be delayed 24 hours, at which time the surface shall be prepared by sandblasting or high pressure water blasting to remove all loose material, rebound, hardened overspray, glaze or other material that may prevent adequate bond.

6.4 Defective Shotcrete. The Engineer will have authority to accept or reject the shotcrete work. Shotcrete that is not in accordance with the project specifications may be rejected either during the shotcrete application process, or on the basis of tests. Shotcrete surface defects shall be repaired as soon as possible after placement. Shotcrete that exhibits segregation, honeycombing, laminations, voids or sand pockets shall be removed and replaced. In-place shotcrete determined not meeting the published Technical Information for the product used will be subject to remediation as approved by the Engineer. Possible remediation options range from required latex over coating for excessive cracking up to removal and replacement at the Contractor's expense.

6.5 Construction Joints. Construction joints shall be tapered uniformly toward the excavation face over a minimum distance equal to the thickness of the shotcrete layer. Square joints will not be permitted except at the expansion joint. The surface of the joints shall be rough, clean and sound. A minimum reinforcement overlap at reinforcement splice joints shall be provided. The surface of a joint shall be clean and wet before adjacent shotcrete is applied.

6.6 Final Face Finish. Shotcrete finish shall be a wood float, rubber float, steel trowel or smooth screeded finish.

6.7 Additional Construction Requirements.

6.7.1 If the work to be performed is in the vicinity of a jurisdictional water of the US, care shall be taken to avoid any rebound from entering the regulated waterway.

6.7.2 If the work to be performed is in the vicinity of an enclosed drainage system, care shall be taken to avoid any rebound from entering the drainage system.

6.8 Weather Limitations.

6.8.1 The shotcrete shall be protected if placed when the ambient temperature is below 40°F and falling or when likely to be subject to freezing temperatures before gaining sufficient strength. Cold weather protection shall be maintained until the compressive strength of the shotcrete is greater than 725 psi. Cold weather protection includes blankets, heating under tents or other means

acceptable to the Engineer. The temperature of the shotcrete mix, when deposited, shall be not less than 50°F or more than 85°F. The air in contact with the shotcrete surfaces shall be maintained at temperatures above 32°F for a minimum of 7 days.

6.8.2 If the prevailing ambient temperature conditions (relative humidity, wind speed, air temperature and direct exposure to sunlight) are such that the shotcrete develops plastic shrinkage and/or early drying shrinkage cracking, shotcrete application shall be suspended. The Contractor shall reschedule the work to a time when more favorable ambient conditions prevail or adopt corrective measures, such as installation of sun screens, wind breaks or fogging devices to protect the work. Newly placed shotcrete exposed to rain that washes out cement or otherwise makes the shotcrete unacceptable shall be removed and replaced at the Contractor's expense.

6.9 Curing. Permanent shotcrete shall be protected from loss of moisture for at least 1 day after placement. Shotcrete shall be cured by methods that keep the shotcrete surfaces adequately wet and protected during the specified curing period. Curing shall commence within one hour of shotcrete application. When the ambient temperature exceeds 80°F, the work shall be planned such that curing can commence immediately after finishing. Curing shall be in accordance with the following requirements.

(a) Membrane Curing. Membrane curing is required on overhead surfaces that cannot be adequately wet cured. Curing compounds will not be permitted on any surface against which additional shotcrete or other cementitious finishing materials are to be bonded unless the surface is thoroughly sandblasted in a manner acceptable to the Engineer. Membrane curing compounds shall be spray applied as quickly as practical after the initial shotcrete set at rate of coverage of not less than 7.1 square feet per gallon.

7.0 Safety Requirements. Nozzlemen and helpers shall be equipped with gloves, eye protection and adequate protective clothing during the application of shotcrete. Whip checks are required on air lines. The Contractor shall be responsible for meeting all federal, state and local safety requirements.

8.0 Method of Measurement. Measurement of Substructure Repair (Unformed) and Superstructure Repair (Unformed) shall be in accordance with Sec 704 and may vary from the estimated quantity, but the contract unit price shall prevail regardless of the variation. The Substructure Repair (Unformed) and Superstructure Repair (Unformed) items will be measured to the nearest square foot.

9.0 Basis of Payment. Accepted quantity of Substructure Repair (Unformed) and Superstructure Repair (Unformed) will be paid for at the contract unit price. Payment for the above described work, including all material, equipment, labor and any other incidental work necessary to complete this item, will be completely covered by the contract unit price for Substructure Repair (Unformed) and Superstructure Repair (Unformed) and shall be in accordance with Sec 704.

F. EPOXY PRESSURE INJECTING

1.0 Description. Surface cracks in the box culvert concrete shall be pressure injected with epoxy. The Engineer will designate the cracks to be repaired.

2.0 Material.

2.1 Epoxy. The epoxy material shall consist of a two-component system in accordance with the requirements of ASTM C 881, Type IV, Grade 1, except that the viscosity shall be a maximum of

JOB SPECIAL PROVISIONS (BRIDGE)

4.5 poise (0.45 Pa·s). The Class designation of the epoxy shall be determined according to the temperature that exists on the job.

2.2 Certification. The contractor shall furnish manufacturer's certification that the material supplied is in accordance with these specifications. The certification shall include or have attached typical test results for all specified properties required by ASTM C 881 for the injecting resin. The engineer reserves the right to sample and test any or all material supplied.

3.0 Construction Requirements. The surface to receive the epoxy grout shall be cleaned of laitance, grease and foreign matter by sandblasting. The cracks shall be cleaned of debris by using oil-free and water-free compressed air or vacuum. After the cracks are cleaned, the epoxy shall be injected in accordance with manufacturer's recommendations. The temporary surface seal and placement and method of attachment of injection ports shall be in accordance with the epoxy manufacturer's recommendations.

4.0 Method of Measurement. The extent of epoxy pressure injecting may vary from the estimated quantity but the contract unit price shall prevail regardless of the variation. The epoxy pressure injecting will be measured to the nearest linear foot.

5.0 Basis of Payment. Accepted quantity of epoxy pressure injecting will be paid for at the contract unit price. 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 "Epoxy Pressure Injecting".

G. HIGH PRESSURE WATER JETTING (HYDRO DEMOLITION)

1.0 Description. This provision describes requirements for the high-pressure water jetting process associated with Total Surface Hydro Demolition of the bottom slab of the existing original 1931 culvert section as shown in the contract plans. The work shall consist of removal of sound and unsound concrete along the bottom slab of the culvert by high pressure water jetting, and establishment of a highly rough and bondable surface, to a removal depth of 1 ½". The work shall be performed in accordance with Sec 216 and this job special provision.

2.0 Construction Requirements

2.1 The entire bottom slab of the original 1931 existing culvert shall be sounded for areas of delamination and spalling of concrete. Unsound concrete is defined as existing culvert concrete that is deteriorated, spalled or as determined by the Engineer to be unacceptable. Delaminated and spalled concrete areas shall be identified by a readily identifiable manner such as commercially available marking paint. Unsound concrete below the cutting depth limit as indicated on the contract plans to be removed and repaired monolithically with the proposed wearing surface material. Sound concrete removal to be limited to the depth of 1 ½", as specified on the contract plans, no sound concrete removal below this limit shall occur.

2.2 Material. Water used in the hydro demolition shall be in accordance with Sec 1070.

2.3 Environmental Compliance

2.3.1 Prior to the start of any culvert repair work, the contractor shall submit to the Engineer for review an Environmental Compliance Plan (ECP) that ensures compliance with all federal, state, and local environmental laws and regulations. The ECP shall include specific details of the Contractor's plan for containment, filtering, and disposal of water, slurry, and other debris,

JOB SPECIAL PROVISIONS (BRIDGE)

including all best management practices (BMPs) that the Contractor plans to utilize to prevent environmental pollution and protect the waters of the state.

2.3.2 The Contractor shall block any location where discharge water could exit the existing culvert in order to direct runoff to a central collection and filtering location, as designed by the Contractor.

2.3.3 No direct payment will be made for compliance with this ECP, including, but not limited to, containment of the water and slurry, installing, maintaining, and removing the BMPs, filtering, and disposal of all waste materials.

2.4 Equipment.

2.4.1 The high-pressure water jetting process shall consist of a water supply system, a high-pressure water pumping system, and a demolition type unit. The demolition unit shall be robotic, computerized, and self-propelled, utilizing a high-pressure water jet stream. The high-pressure water jetting equipment shall be capable of scarifying concrete to the desired depths specified in the contract plans, with a single pass of the unit, including the selective removal of all unsound concrete and cleaning rust and particles from all exposed reinforcing steel. The resulting concrete bottom slab surface shall be one that is highly rough and bondable.

2.4.2 The hydro demolition equipment shall provide shielding to ensure containment of all dislodged concrete within the removal area in order to protect the work crew from flying debris in the work site.

2.4.3 Vacuum equipment shall be utilized for clean-up of hydro demolition debris. This equipment shall be equipped with fugitive dust control devices and shall be capable of removing wet debris and standing water in the same pass.

2.5 Calibration. The high-pressure water jetting equipment shall be calibrated on a representative sample of sound culvert concrete, as directed by the Engineer. The calibration will demonstrate the ability to cut to the desired depth, as indicated on the plans, in a single pass. The minimum allowable water pressure shall be 13,000 psi and the maximum water pressure shall not exceed 20,000 psi. The minimum allowable water usage shall be 20 gallons per minute. The calibration shall accomplish the desired surface roughness and cutting depth as indicated on the contract plans. The equipment shall then be moved to an area of deteriorated bottom slab, as directed by the Engineer, in order to demonstrate the ability to remove all unsound material. The equipment shall selectively remove all unsound concrete, avoid the removal of unnecessary sound concrete, and provide a highly rough and bondable surface.

2.5.1 If the equipment does not demonstrate the ability to produce the desired result, as determined by the Engineer, the equipment shall be removed from the project and the Contractor shall provide other equipment for calibration. No additional contract time or compensation will be allowed for the mobilization of replacement equipment to the work site.

2.5.2 After the contractor has calibrated the equipment settings to the satisfaction of the Engineer so that the equipment does selectively remove all unsound concrete and provide a highly rough and bondable surface, without removing additional sound concrete below the cutting depth limit, the calibration will be approved by the Engineer and the Contractor shall record the equipment settings as follows:

Water Pressure Gauge	
Machine Staging Control (Step)	

Nozzle Size	
Nozzle Type	
Nozzle Travel Speed	
Water Usage Rate	

2.6 High-Pressure Water Jetting Operation Requirements

2.6.1 After calibration of the equipment, the Contractor shall perform high-pressure water jetting over the surface of the bottom slab of existing 1931 section of culvert to remove unsound concrete and hydro demolish the remaining surface to a removal depth of 1 ½". The settings shall be maintained throughout the operation, unless the desired results are not being attained, in which case re-calibration shall be performed. Calibration shall be required on each cell of the box culvert and when different equipment is brought to the site for use. The Engineer will periodically verify the calibration settings to ensure the desired results are being attained.

2.6.2 The operator shall minimize the overlap of the individual high-pressure water jetting passes to limit the amount of sound concrete removal.

2.6.3 When the high-pressure water jetting process is taking place the Contractor shall take measures to avoid hydro blasting through the existing slab or cutting through existing reinforcement.

2.6.4 The Contractor shall clean up the slurry and rubble from the high-pressure water jetting operation as soon as possible following the high-pressure water jetting process. This clean-up shall be completed prior to the drying of the slurry on the bottom slab and reinforcing steel. The Contractor shall utilize a vacuum collection type system capable of removing wet debris and water in a single operation. Following the cleaning, the surface shall be free of all debris, loose material, slurry, or cement paste.

2.7 Post High-Pressure Water Jetting Concrete Removals

2.7.1 After the bottom slab has been cleaned and dried, and is free of frost, the Engineer will perform a second sounding test of the entire bottom slab within the existing 1931 culvert section and identify any unsound slab concrete material that remains.

2.7.2 The Contractor shall remove all identified unsound slab material, as well as any areas on the bottom slab that were inaccessible to the high-pressure water jetting equipment. This removal work shall be included in the cost of the Total Surface Hydro Demolition.

2.7.3 All post high-pressure water jetting removals shall be done with pneumatic hammers no heavier than the nominal 35-pound class and operated no more than a 45 degree angle from the face of slab. Use of mechanical equipment for the purpose of chipping shall be kept to the absolute minimum to avoid creating micro-fractures on the existing slab face.

2.7.4 Reinforcing Steel Repair. The Contractor shall take steps necessary to prevent damage to existing reinforcing steel. All equipment shall be operated in a manner that does not damage the culvert reinforcing steel. Any damage caused by the Contractor's equipment or negligence shall be repaired at the Contractor's expense.

2.7.5 Reinforcing steel that is exposed by the process shall be cleaned and repaired in accordance with Sec 704, except that where the bond between the existing concrete and reinforcing steel has not been compromised, as determined by the Engineer, then removal of

concrete around the perimeter of the bar, as specified in Sec 704.4.1, shall not apply. Partially exposed reinforcing steel that is bonded to the slab concrete is acceptable.

2.7.6 Replacement of damaged reinforcing steel may include the removal of additional concrete to adequately anchor reinforcing steel to the appropriate lap splice length in accordance with Sec 706.

2.7.7 No direct payment will be made for additional cleaning of reinforcing steel or for removal of loose concrete from bars. Replacement of reinforcing steel will be made at the fixed unit price in Sec 109.16, except that no payment will be made for replacement of reinforcing steel cut or broken by the Contractor.

2.8 All areas of slab, where further removal of concrete was performed with pneumatic hammering after the high-pressure water jetting, shall be thoroughly sand blasted to remove any loose material and micro-cracking. After completion of sand blasting and associated clean-up of debris, the entire slab surface shall be thoroughly cleaned by high-pressure water blasting with sufficient pressure to remove all debris and slurry residue. Water blasting shall continue until the run-off water from cleaning flows clear.

3.0 Method of Measurement. Total Surface Hydro Demolition will be measured to the nearest square yard.

4.0 Basis of Payment. Payment for the above described work will be included in the contract unit price for Total Surface Hydro Demolition per square yard.

H. HYDROPHILIC WATERSTOP

1.0 Description. This work shall consist of fabricating and installing hydrophilic waterstops between the culvert bottom slab and concrete wall repair section as shown on the contract plans.

2.0 Materials. Waterstops shall be made of hydrophilic, non-bentonite composition manufactured solely for the purpose of preventing water from traveling through construction joints. Volumetric expansion shall be limited to 3 times maximum.

3.0 Approved Products. The following are approved manufacturer products:

- a) Sika (Hydrotite CJ)
- b) Adeka (Ultraseal KBA-1510FP)
- c) DeNeef (Swellseal WA)
- d) Approved Equal

4.0 Construction Requirements. Hydrophilic waterstops shall be installed per manufacturer's recommendations.

5.0 Method of Measurement. No measurement shall be made.

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 included in the contract unit price for Class B-1 Concrete (Culverts-Bridge).

JOB SPECIAL PROVISIONS (BRIDGE)

I. CLEAN OUT AND SEAL TRANSVERSE JOINTS

1.0 Description. This work shall consist of cleaning out and sealing failed transverse box culvert joints as shown on the contract plans. Work shall be performed in accordance with Sec 1057.8 and this job special provision. The Engineer will designate the transverse box culvert joints to be repaired.

2.0 Materials. Plastic Joint Compound for Concrete Pipe. Plastic joint compound shall be a homogeneous blend of bituminous or butyl rubber material, inert filler and suitable solvents or plasticizing compounds thoroughly mixed at the factory to a uniform consistency suitable for sealing concrete pipe joints. The physical requirements of the compound shall be in accordance with ASTM C 990. Trowel grade material shall conform to the following requirement:

Bitumen, soluble in soluble chlorinated solvent, such as Trichloroethylene, percent by weight, min.	45
Ash, percent by weight.	15-50
Penetration, standard cone, 150 g, 5 sec, 25 C - uses 12 ounce can, d mm.	110-275

3.0 Construction Requirements. The surface to receive the concrete joint sealer shall be cleaned of laitance, grease and foreign matter by sandblasting. The joint shall be cleaned of debris by using oil-free and water-free compressed air or vacuum. After the joint is cleaned, the joint sealer shall be installed in accordance with the manufacturer's recommendations.

4.0 Method of Measurement. The extent of clean out and sealing of transverse joints may vary from the estimated quantity but the contract unit price shall prevail regardless of the variation. The clean out and sealing of transverse joints will be measured to the nearest linear foot.

5.0 Basis of Payment. Accepted quantity of clean out and seal transverse joints will be paid for at the contract unit price. 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 "Clean Out and Seal Transverse Joints".

J. CONCRETE CRACK FILLER

1.0 Description. This work shall consist of preparing and treating any optional construction joints of the proposed wearing surface within the defined culvert limits with a high molecular weight methacrylate (HMWM) or methyl methacrylate (MMA) crack filler material. This type of surface treatment shall be in accordance with this job special provision, the standard specifications and the manufacturer's recommendations. The objective of this treatment is to seal all optional construction joints in the proposed wearing surface to preserve and extend the life span culvert.

2.0 Materials. The low viscosity concrete bridge deck crack filler shall be a high molecular weight methacrylate (HMWM) or methyl methacrylate (MMA) system in accordance with [Sec 1053](#) and shall be on MoDOT's qualified product list.

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, dry, and free of foreign matter, oil residue and water prior to application of the treatment.

3.2 Cleaning, Surface Preparation and Sealing. Surfaces which are to be treated shall meet the approved product's requirements for surface condition. The contractor shall furnish the engineer with written instructions for the surface preparation requirements, and a representative of the manufacturer shall be present to ensure that the surface conditions meet the manufacturer's requirements.

3.2.1 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.

3.2.2 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.

3.2.3 The deck shall be shot blasted or water blasted to clean out all optional construction joints and allowed to dry prior to sealing.

3.2.4 Before starting sealing operations, all optional construction joints shall be blown out with dry high-pressure air.

3.3 Application. A flood application shall be performed along the optional construction joints on the proposed wearing surface within the limits specified by the engineer. Flood application shall be placed in accordance with the manufacturer's application rates, broadcast aggregate shall not be required.

3.4 Restoration of Culvert Flow. Flow shall be restored through the culvert only after the treated area is visibly dry.

4.0 Method of Measurement. No measurement shall be made.

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 Latex Modified Concrete Wearing Surface.