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	If a seal is present on this sheet, JSP's has been electronically sealed and dated.
	JOB NO. J6I3020D St. Louis County, MO Date Prepared: 3/27/2026
Only the following items of the Job Special Provisions (Bridge) are authenticated by this seal: A thru H	

JOB SPECIAL PROVISIONS (BRIDGE)

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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 and the geotechnical report for the new structures 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 the bridge closure is for the absolute minimum amount of time required to complete the work. The bridge shall not be closed until material is available for continuous construction and the contractor is prepared to diligently pursue the work until the closed bridge is opened to traffic.

**2.2** For restrictions on traffic and working hours during demolition see Roadway Plans and Job Special Provisions.

**2.3** Bridge work by contractor forces, including erection, rehabilitation or demolition, shall not be allowed over traffic unless a bridge platform protection system is installed below the work area except for work performed above a deck that is intact. The protection system shall be capable of catching all falling objects such as tools, overhang brackets or materials. Lifting of objects that are heavier than the capacity of the bridge protection system shall not be permitted.

**2.4** Provisions shall be made to prevent any debris and material from falling onto the roadway. If determined necessary by the engineer, any debris and material that falls below the bridge outside the previously specified limits 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.

**2.5** 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.

**3.0 Environmental Information.**

**3.1 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

**3.2 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

**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.

B. VE (VALUE ENGINEERING) STUDY FOR J6I3020D, JSL0021 AND J6I3580B WITHIN ELECTRONIC DELIVERABLES

**1.0 Description.** The contractor shall be advised that MoDOT conducted a value engineering study during the preliminary plans phase of the projects listed above. The final report of the study includes recommendations and other design ideas along with whether each recommendation/idea was accepted to move forward into Final Design. The contractor is encouraged to review this document prior to submitting their own value engineering ideas to the engineer. The final report of the study is included within the electronic deliverables. No additional pay shall be made to the contractor if he or she chooses to use this information provided within the electronic deliverables.

**2.0 Method of Measurement.** No measurement will be made.

**3.0 Basis of Payment.** No payments or adjustments will be made where the value engineering final report information provided within the electronic deliverables is utilized by the contractor.

C. SPECIAL CONSIDERATION OF CHANGE ORDERS AND VALUE ENGINEERING

**1.0 Description.** Increased Federal Share has been approved by the FHWA for an innovative technology or practice. The Commission will receive an additional five percent Federal Share of the overall contract value due to innovations within the following pay item(s).

Pay Item Number	Pay Item Description	Innovation
7109911	Reinforcing Steel (Galvanized)	Reinforcing Steel (Galvanized)

Due to the increased Federal Share, the project components related to the innovation(s) described above must be constructed with the materials, quantities, methods and innovations as shown on the project plans and specifications. If the contractor requests materials, quantities, methods or innovations other than those included in the plans and specifications, the request must be reviewed and approved by the Commission and FHWA. Approved changes to the innovation items above shall be at no additional cost to the Commission and shall not increase the contract time.

**2.0 Special Consideration of Change Orders and Value Engineering Change Proposals (VECP).** Change ordering and/or value engineering the pay item(s) listed in section 1.0 jeopardize the ability for the Commission to receive an additional Federal Share for the overall contract value. Special consideration should be given to the change order value for removing or modifying such item(s) from the contract ensuring the benefit outweighs the cost.

**3.0 Contacting Financial Services.** If it is determined that the proposed change order and/or VECP outweighs the additional overall five percent Federal Share value, the Engineer shall notify the MoDOT project manager.

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D. DECORATIVE PEDESTRIAN FENCE

**1.0 Description.** This work shall consist of fabricating and installing a steel decorative pedestrian fence to provide a complete and properly functioning fence system as indicated on the plans and in this specification.

**2.0 Performance Requirements.**

**2.0.1** The fence design shall allow for thermal movement of 1/4 inch per 30 feet of fence, minimum. The fence design shall account for the differential thermal expansion characteristics of the fence and concrete to which it is mounted.

**2.0.2** Base plates shall be furnished for mounting posts to top of concrete. Base plate anchors shall be cast into the concrete as shown on the plans.

**2.1 Materials.** Decorative fence system products shall meet or exceed the following requirements.

**2.1.1 Acceptable Manufacturer Systems.** Decorative fence system shall meet the performance requirements as stated in this special provision and shall consist of one of the approved decorative fence systems listed on the Bridge Pre-qualified Product Listing.

**2.1.2 Visual Condition.** Metal free from surface blemishes shall be provided where exposed to view in the finished unit. Exposed-to-view surfaces exhibiting pitting, seam marks, roller marks, stains, discolorations, or other imperfections on finished units are not acceptable.

**2.1.3 Surface Coatings.** The steel shall be hot-dip galvanized to meet the requirements of ASTM A 653 with a minimum zinc coating weight of 0.90 oz/sf, coating designation G-90. Surface preparation of galvanized surface for the aliphatic polyurethane finish coat shall be in accordance with the product specifications for the finish coat. The exterior of all fence components shall be coated with an aliphatic polyurethane finish coat to provide a total dry film thickness of 4 mils minimum and 6 mils maximum. The color of the finish coat shall be black (Federal Standard #17038).

**2.2 Construction Requirements.**

**2.2.1** Delivery, storage, handling and installation methods shall be per fence manufacturer's recommendations.

**2.2.2** Fence posts shall be spaced no greater than the maximum post spacing shown on the plans, plus one-half inch. For installations along sloping grades, the post spacing will be measured along the grade. Separation gaps shall be provided at a minimum of every six panels.

**2.2.3** For field assembly, zinc-rich primer shall be applied to thoroughly cover field-cut or field-drilled edges. Two coats of manufacturer supplied finish paint shall be applied to match fence color.

**2.3 Warranty.** All structural fence components shall be warranted by the manufacturer for a period of ten (10) years from the date of final acceptance by the engineer. Warranty shall cover any defects in material finish, including cracking, peeling, chipping, blistering, or corrosion and necessary labor required to replace or restore such parts.

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**3.0 Method of Measurement.** Measurement shall be made horizontally and to nearest linear foot of fence installed.

**4.0 Basis of Payment.** Payment for the work described above and on the contract plans, including all material, equipment, labor, and any other incidental work necessary, will be considered completely covered by the contract unit price for (60 in.) Decorative Pedestrian Fence (Structures).

E. FORM LINERS

**1.0 Description.** This work item shall consist of constructing the form liner aesthetic treatment on cast-in-place concrete, mechanically stabilized earth (MSE) wall systems, and architectural elements as shown on the plans and described in this special provision.

**2.0 Materials.**

**2.1 Shop Drawings.** Contractor shall provide complete shop drawings of all aesthetic treatments.

**2.2 Formwork.** Formwork for aesthetic treatment of the cast-in-place concrete, concrete facing panels for the MSE wall systems, and architectural elements shall be a type that produces uniform results consistent in both, pattern and depth of relief with the project design aesthetics. The contractor shall be responsible to coordinate the aesthetic treatments of all components to meet the design aesthetic criteria described herein and as shown on plans. No mixing of pattern numbers or manufacturers will be permitted. The form liner pattern shall be one of the patterns listed on the plans or approved equal.

**2.3 Form Ties.** Wall form ties shall be placed in a uniform pattern. In surface areas receiving the aesthetic treatment form liner, all form ties shall be placed in the simulated stone surface. Form ties shall be fiberglass ties that shall hold the forms in the correct alignment. The color of the ties shall closely match the concrete wall color. Ties shall be ground flush with the surface of concrete prior to pressure washing.

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

**2.5 Gaskets.** Closed cell compressible neoprene of such thickness as is appropriate to assure leakage prevention shall be used to prevent joint leakage. One face shall be coated with an adhesive tape to assure proper positioning at the time of form closure. The neoprene shall be sufficiently compressible as to assure virtual "zero" separation of the forms as a result of the use of this product.

**2.6 Aggregates.**

**2.6.1 Aggregate Source.** The aggregate incorporated into the concrete mix of all aesthetic concrete MSE Wall components shall be from the same source. The aggregate incorporated into the concrete mix of all aesthetic concrete bridge components shall be from the same source as the balance of the bridge concrete work. The purpose for this provision is to ensure uniformity of materials and color once areas are pressure washed and aggregates become exposed. Single-source shall be interpreted as one contiguous rock quarry, gravel pit or dredging location. This

provision in no way alters the specification requirements for aggregate quality specified in other sections of the project specifications.

**2.6.2 Aggregate Gradation.** Concrete mixes supplied for the construction of the aesthetic treatments shall be in accordance with the following requirements. The concrete aggregate for the aesthetic treatment mix shall be Gradation E in accordance with [Sec 1005](#) for any areas where aesthetic treatment is formed monolithically with the structure. This requirement for aggregate size is necessary to permit concrete mixture to flow freely and fill completely into reveals and form liner proposed in the aesthetic treatment. Gradation E aggregate shall meet the aggregate source requirements.

**2.7 Joint Materials.** Bond breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The backup material shall be compressible, non-shrink, non-reactive with the sealant and non-absorptive material type such as extruded butyl or polychloroprene foam rubber. The joint sealant shall be an elastomeric, multi-component sealant, in accordance with Federal Specification TT-S-227, Type II. The sealant color shall match the pressure washed concrete surface color.

### **3.0 Construction Requirements.**

**3.1 Reveals and Texture.** All reveals and texture shall be continuous from element to element through construction joints and around corners. Techniques shall be utilized to ensure true continuous texture between separate elements. Sand blasting will not be permitted for cleaning concrete surface, as sand blasting will reduce the special surface texture specified. Pressure washing with water is the preferred method of removing laitance. Pressure washing cleaning shall provide a minimum pressure of 3000 psi at a rate of 3 to 4 gallons per minute (11.4 to 15.1 L/min) using a fan nozzle held perpendicular to the surface at a distance of 2 to 3 feet. The completed surface shall be free of blemishes, discolorations, surface voids and conspicuous form marks to the satisfaction of the engineer.

**3.2 Sample Test Panels.** Sample test panels shall be constructed to demonstrate the contractor's workmanship for all form liner textures and patterns as shown on the plans. The sample test panels may also be used for demonstration special surface finish if approved by the engineer. The architectural surface treatment of the finished work shall achieve the same final effect as demonstrated on the approved sample test panels. The materials used in construction of the sample test panels shall be in accordance with all standards as listed in this specification and the plans. The concrete mix shall be consistent with the project specifications and criteria. The minimum size of the sample test panels shall be 6 x 6 feet x 8 inches. The form liner finish shall be demonstrated in a vertical strip covering one-half to three-quarters of the sample test panel(s).

**3.3 Patches.** Holes and defects in concrete surface shall be filled within 48 hours of when the forms are removed. The same patching materials and techniques shall be used that were approved on sample test panels. The patches shall be made with a stiff mortar made with the same material sources as the concrete. The mortar mix proportions shall be adjusted so the dry patch matches the dry adjacent concrete. White cement shall be added to the mortar mix if necessary to lighten the mortar mix.

**3.4 Joints.** Joints shall be sealed when the sealant, air and concrete temperatures are above 40°F. Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's recommendation. All construction control and expansion joints shall occur within the vertical joints as shown in the elevation views on the plans. All vertical expansion joints shall

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be filled with preformed fiber expansion joint filler covered with bond break tape and sealed with elastomeric, multi-component sealant.

**4.0 Method of Measurement.** Final measurement will not be made except for authorized changes during construction or where significant errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract quantity.

**4.1 Form Liners on MSE Wall Systems.** No measurement of form liners on MSE wall systems shall be made.

**5.0 Basis of Payment.**

**5.1 Form Liners on MSE Wall Systems.** Payment for the above described work, including all material, additional concrete, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for MSE Wall Systems.

F. AESTHETIC CONCRETE STAIN

**1.0 Description.** This work shall consist applying aesthetic concrete stain to the MSE wall panels for MSE Walls No. A9498 and A9501 as shown on the contract plans. The stain shall be in accordance with Sec 703.3.13 and the following:

**2.0 Materials**

**2.1 Color.** The color of the stain shall be opaque gray, matching Sherwin Williams exterior satin latex paint, color "7066 Gray Matters". The contractor shall submit a 1' x 1' sample concrete panel with the proposed stain for approval by the Engineer. Upon approval, the panel will be used to assure color consistency on the project.

**2.2 Characteristics.** The stain shall be suitable for application to concrete per the manufacturer's recommendations, breathable (allowing water vapor transmission) and resist deterioration from water, acid, alkali, fungi, sunlight or weathering. Stain mix shall be a water-borne, low V.O.C. material.

**3.0 Construction Requirements**

**3.1 Cleaning.** All areas to be stained shall have cured for at least 30 days prior to application of the stain. Prior to application of the stain, surfaces shall be cleaned of latency, dirt, dust, grease or other foreign material and in accordance with the manufacturer's recommendations. Concrete surface shall be free of blemishes, discoloration, surface voids and unnatural form marks.

**3.2 Application.** The method of application shall be in accordance with the manufacturer's recommendations and as approved by the Engineer. The contractor shall protect adjacent areas from overspray and if overspray occurs shall be responsible for removing the stain from the affected area to the satisfaction of the Engineer.

**4.0 Method of Measurement.** No measurement will be made.

**5.0 Basis of Payment.** Payment for all work associated with the concrete stain, including all

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material, material property verifications, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the lump sum price for Aesthetic Concrete Stain per structure.

G. REINFORCING STEEL (GALVANIZED)

**1.0 Description.** This job special provision contains general requirements for furnishing and placing hot-dip galvanized reinforcing steel as shown on the plans and shall be in addition to the requirements of Sec 706.

**2.0 Material.** Reinforcing bars shall be in accordance with ASTM A 123, ASTM A 767 and ASTM A 1094. All damage to the galvanized coating, including coating removed or compromised due to field cutting of bars, shall be repaired in accordance with ASTM A 780.

**3.0 Construction Requirements.**

**3.1 Fabrication.** The fabricator shall consult with the hot-dip galvanizer regarding potential problems or potential handling problems during the galvanizing process that may require modifications of design before fabrication proceeds.

**3.1.1** Surface contaminants that are not removable by the normal chemical cleaning process in the galvanizing operation shall be removed by blast cleaning or an alternative method prior to delivery of steel to the galvanizer.

**3.1.2** Shop or field bending of reinforcing bar before or after galvanizing shall pay special attention to the minimum bend diameters required by Table 2 of ASTM A 767.

**3.2 Delivery, Storage and Handling.** Materials shall be delivered in accordance with the manufacturer's written instructions and in accordance with ASTM A 1094/A 1094M. Materials shall be delivered with identification labels intact and product name and manufacturer clearly visible.

**3.2.1 Storage.** Galvanized bars that will be stored in the field in excess of 30 days shall be stored off the ground on dunnage to allow air circulation to prevent the formation of wet storage stain. These corrosion deposits, if present, shall be removed in a manner satisfactory to the engineer prior to incorporation of the material into the work.

**3.3 Accessories.** Reinforcement ties shall be galvanized steel wire in accordance with ASTM A 641/A 641M. Metal bar chairs in contact with galvanized steel shall be galvanized steel. Other materials for bar chairs may be accepted with the approval of the engineer. Mechanical bar splices shall for suitable for use with galvanized reinforcement.

**3.4** Use of metal formwork shall be in accordance with ASTM A 767.

**4.0 Submittals.** The contractor shall submit a copy of the coating applicator's notarized Certificate of Compliance that the hot-dip galvanized coating meets or exceeds the specified requirements of ASTM A 767.

**5.0 Method of Measurement.** Measurement shall be in accordance with Sec 706.4.

JOB SPECIAL PROVISIONS (BRIDGE)

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**6.0 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 Reinforcing Steel (Galvanized).

H. PIPE PILE SPACERS

**1.0 Description.** In lieu of using pipe pile spacers, the contractor will have the option to use pile jackets. This job special provision contains general requirements for furnishing and placing pile jackets on piles.

**2.0 Material.** All material shall be in accordance with [Division 1000](#), Material Details, and specifically as follows.

**2.1 Pile Jackets.**

**2.1.1** The pile jacket material shall meet or exceed the following physical requirements:

Pile Jackets		
Property	Specification	Requirement
Specific Gravity	ASTM D 1505	0.906 g/cc
Tensile @ Yield	ASTM D 638	4,000 psi
Flexural Modulus	ASTM D 790	195,000 psi
Elongation @ Break	ASTM D 638	> 500%
Heat Deflection Temperature @ 66 psi	ASTM D 648	190°F
Impact Strength, Notched Izod @ 73°F	ASTM D 256	No Break ft-lb/in
Rockwell Hardness	ASTM D 785	75 R scale

**3.0 Construction Requirements.**

**3.1** For pile jacket option, the contractor shall drive piles before construction of the mechanically stabilized earth (MSE) wall. Pile jackets shall be installed on each pile and placed in the zone between the bottom of the leveling pad and the bottom of beam cap. The pile jacket shall be installed and backfill and soil reinforcements shall be placed around the pile jacket per the pile jacket manufacturer's installation requirements and recommendations. The contractor shall adequately support the piling to ensure that proper pile alignment is maintained during wall construction. The contractor's plan for bracing the pile shall be submitted to the engineer for review. The contractor shall avoid any damage to pile jacket during MSE wall construction. For damaged pile jacket sections, the contractor shall follow manufacturer's recommendations for the proper methods of in-place repair.

**4.0 Method of Measurement.** The pipe pile spacer or pile jacket will be measured per each.

**5.0 Basis of Payment.** Payment for furnishing and installing pipe pile spacers or pile jackets complete in place including all equipment, labor, and any other incidental work necessary to complete this item will be considered completely covered by the contract unit price for Pipe Pile Spacers.

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- F. Modified Type D Barrier
- G. Reinforcing Steel (Galvanized)
- H. Drainage System (On Structure)
- I. Pipe Pile Spacers
- J. Temporary MSE Wall System
- K. Mechanically Stabilized Earth Wall Systems with Lightweight Fill

	<b>MISSOURI HIGHWAYS AND                  TRANSPORTATION COMMISSION</b> 105 W. CAPITOL AVE. JEFFERSON CITY, MO 65101 Phone (888) 275-6636
	<b>HDR Engineering, Inc.</b> 1001 Highlands Plaza Drive, Suite 200 St. Louis, MO 63110 Certificate of Authority: 000856 Consultant Phone: 314-425-8300
	If a seal is present on this sheet, JSP's has been electronically sealed and dated.
	JOB NO. JSL0021 St. Louis County, MO Date Prepared: 3/27/2026
Only the following items of the Job Special Provisions (Bridge) are authenticated by this seal: A thru K	

JOB SPECIAL PROVISIONS (BRIDGE)

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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(s) for the existing structure(s) and the geotechnical report for the new structure(s) 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** The contractor shall remove the substructure in accordance with Sec 216.10, except the following: partially remove the substructure footings and piles as needed at Intermediate Bent No. 3 of Bridge No. J0847 and partially remove the substructure footings as needed at Intermediate Bent No. 2 of Bridge No. A0241.

**2.2.1** For restrictions on traffic and working hours during demolition see Roadway Plans and Job Special Provisions.

**2.3** Bridge work by contractor forces, including erection, rehabilitation or demolition, shall not be allowed over traffic unless a bridge platform protection system is installed below the work area except for work performed above a deck that is intact. The protection system shall be capable of catching all falling objects such as tools, overhang brackets or materials. Lifting of objects that are heavier than the capacity of the bridge protection system shall not be permitted.

**2.4** Provisions shall be made to prevent any debris and material from falling onto the roadway. If determined necessary by the engineer, any debris and material that falls below the bridge outside the previously specified limits 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.

**2.5** 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.

**3.0 Environmental Information.**

**3.1 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

JOB SPECIAL PROVISIONS (BRIDGE)

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**3.2 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

**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.

B. VE (VALUE ENGINEERING) STUDY FOR J6I3020D, JSL0021 AND J6I3580B WITHIN ELECTRONIC DELIVERABLES

**1.0 Description.** The contractor shall be advised that MoDOT conducted a value engineering study during the preliminary plans phase of the projects listed above. The final report of the study includes recommendations and other design ideas along with whether each recommendation/idea was accepted to move forward into Final Design. The contractor is encouraged to review this document prior to submitting their own value engineering ideas to the engineer. The final report of the study is included within the electronic deliverables. No additional pay shall be made to the contractor if he or she chooses to use this information provided within the electronic deliverables.

**2.0 Method of Measurement.** No measurement will be made.

**3.0 Basis of Payment.** No payments or adjustments will be made where the value engineering final report information provided within the electronic deliverables is utilized by the contractor.

C. SPECIAL CONSIDERATION OF CHANGE ORDERS AND VALUE ENGINEERING

**1.0 Description.** Increased Federal Share has been approved by the FHWA for an innovative technology or practice. The Commission will receive an additional five percent Federal Share of the overall contract value due to innovations within the following pay item(s).

Pay Item Number	Pay Item Description	Innovation
7109911	Reinforcing Steel (Galvanized)	Reinforcing Steel (Galvanized)

Due to the increased Federal Share, the project components related to the innovation(s) described above must be constructed with the materials, quantities, methods and innovations as shown on the project plans and specifications. If the contractor requests materials, quantities, methods or innovations other than those included in the plans and specifications, the request must be reviewed and approved by the Commission and FHWA. Approved changes to the innovation items above shall be at no additional cost to the Commission and shall not increase the contract time.

**2.0 Special Consideration of Change Orders and Value Engineering Change Proposals (VECP).** Change ordering and/or value engineering the pay item(s) listed in section 1.0 jeopardize the ability for the Commission to receive an additional Federal Share for the overall contract value. Special consideration should be given to the change order value for removing or modifying such item(s) from the contract ensuring the benefit outweighs the cost.

**3.0 Contacting Financial Services.** If it is determined that the proposed change order and/or VECP outweighs the additional overall five percent Federal Share value, the Engineer shall notify the MoDOT project manager.

D. FORM LINERS

**1.0 Description.** This work item shall consist of constructing the form liner aesthetic treatment on cast-in-place concrete, mechanically stabilized earth (MSE) wall systems, and architectural elements as shown on the plans and described in this special provision.

**2.0 Materials.**

**2.1 Shop Drawings.** Contractor shall provide complete shop drawings of all aesthetic treatments.

**2.2 Formwork.** Formwork for aesthetic treatment of the cast-in-place concrete, concrete facing panels for the MSE wall systems, and architectural elements shall be a type that produces uniform results consistent in both, pattern and depth of relief with the project design aesthetics. The contractor shall be responsible to coordinate the aesthetic treatments of all components to meet the design aesthetic criteria described herein and as shown on plans. No mixing of pattern numbers or manufacturers will be permitted. The form liner pattern shall be one of the patterns listed on the plans or approved equal.

**2.3 Form Ties.** Wall form ties shall be placed in a uniform pattern. In surface areas receiving the aesthetic treatment form liner, all form ties shall be placed in the simulated stone surface. Form ties shall be fiberglass ties that shall hold the forms in the correct alignment. The color of the ties shall closely match the concrete wall color. Ties shall be ground flush with the surface of concrete prior to pressure washing.

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

**2.5 Gaskets.** Closed cell compressible neoprene of such thickness as is appropriate to assure leakage prevention shall be used to prevent joint leakage. One face shall be coated with an adhesive tape to assure proper positioning at the time of form closure. The neoprene shall be sufficiently compressible as to assure virtual "zero" separation of the forms as a result of the use of this product.

**2.6 Aggregates.**

**2.6.1 Aggregate Source.** The aggregate incorporated into the concrete mix of all aesthetic concrete MSE Wall components shall be from the same source. The aggregate incorporated into the concrete mix of all aesthetic concrete bridge components shall be from the same source as the balance of the bridge concrete work. The purpose for this provision is to ensure uniformity of materials and color once areas are pressure washed and aggregates become exposed. Single-source shall be interpreted as one contiguous rock quarry, gravel pit or dredging location. This provision in no way alters the specification requirements for aggregate quality specified in other sections of the project specifications.

**2.6.2 Aggregate Gradation.** Concrete mixes supplied for the construction of the aesthetic treatments shall be in accordance with the following requirements. The concrete aggregate for the aesthetic treatment mix shall be Gradation E in accordance with [Sec 1005](#) for any areas where aesthetic treatment is formed monolithically with the structure. This requirement for aggregate size is necessary to permit concrete mixture to flow freely and fill completely into reveals and form liner proposed in the aesthetic treatment. Gradation E aggregate shall meet the aggregate source requirements.

**2.7 Joint Materials.** Bond breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The backup material shall be compressible, non-shrink, non-reactive with the sealant and non-absorptive material type such as extruded butyl or polychloroprene foam rubber. The joint sealant shall be an elastomeric, multi-component sealant, in accordance with Federal Specification TT-S-227, Type II. The sealant color shall match the pressure washed concrete surface color.

### **3.0 Construction Requirements.**

**3.1 Reveals and Texture.** All reveals and texture shall be continuous from element to element through construction joints and around corners. Techniques shall be utilized to ensure true continuous texture between separate elements. Sand blasting will not be permitted for cleaning concrete surface, as sand blasting will reduce the special surface texture specified. Pressure washing with water is the preferred method of removing laitance. Pressure washing cleaning shall provide a minimum pressure of 3000 psi at a rate of 3 to 4 gallons per minute (11.4 to 15.1 L/min) using a fan nozzle held perpendicular to the surface at a distance of 2 to 3 feet. The completed surface shall be free of blemishes, discolorations, surface voids and conspicuous form marks to the satisfaction of the engineer.

**3.2 Sample Test Panels.** Sample test panels shall be constructed to demonstrate the contractor's workmanship for all form liner textures and patterns as shown on the plans. The sample test panels may also be used for demonstration special surface finish if approved by the engineer. The architectural surface treatment of the finished work shall achieve the same final effect as demonstrated on the approved sample test panels. The materials used in construction of the sample test panels shall be in accordance with all standards as listed in this specification and the plans. The concrete mix shall be consistent with the project specifications and criteria. The minimum size of the sample test panels shall be 6 x 6 feet x 8 inches. The form liner finish shall be demonstrated in a vertical strip covering one-half to three-quarters of the sample test panel(s).

**3.3 Patches.** Holes and defects in concrete surface shall be filled within 48 hours of when the forms are removed. The same patching materials and techniques shall be used that were approved on sample test panels. The patches shall be made with a stiff mortar made with the same material sources as the concrete. The mortar mix proportions shall be adjusted so the dry patch matches the dry adjacent concrete. White cement shall be added to the mortar mix if necessary to lighten the mortar mix.

**3.4 Joints.** Joints shall be sealed when the sealant, air and concrete temperatures are above 40°F. Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's recommendation. All construction control and expansion joints shall occur within the vertical joints as shown in the elevation views on the plans. All vertical expansion joints shall be filled with preformed fiber expansion joint filler covered with bond break tape and sealed with elastomeric, multi-component sealant.

**4.0 Method of Measurement.** Final measurement will not be made except for authorized changes during construction or where significant errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract quantity.

**4.1 Form Liners on MSE Wall Systems.** No measurement of form liners on MSE wall systems shall be made.

## **5.0 Basis of Payment.**

**5.1 Form Liners on MSE Wall Systems.** Payment for the above described work, including all material, additional concrete, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for MSE Wall Systems with Lightweight Fill.

## **E. AESTHETIC CONCRETE STAIN**

**1.0 Description.** This work shall consist applying aesthetic concrete stain to the MSE wall panels for MSE Walls No. A9491 and A9492 as shown on the contract plans. The stain shall be in accordance with Sec 703.3.13 and the following:

### **2.0 Materials**

**2.1 Color.** The color of the stain shall be opaque gray, matching Sherwin Williams exterior satin latex paint, color "7066 Gray Matters". The contractor shall submit a 1' x 1' sample concrete panel with the proposed stain for approval by the Engineer. Upon approval, the panel will be used to assure color consistency on the project.

**2.2 Characteristics.** The stain shall be suitable for application to concrete per the manufacturer's recommendations, breathable (allowing water vapor transmission) and resist deterioration from water, acid, alkali, fungi, sunlight or weathering. Stain mix shall be a water-borne, low V.O.C. material.

### **3.0 Construction Requirements**

**3.1 Cleaning.** All areas to be stained shall have cured for at least 30 days prior to application of the stain. Prior to application of the stain, surfaces shall be cleaned of latency, dirt, dust, grease or other foreign material and in accordance with the manufacturer's recommendations. Concrete surface shall be free of blemishes, discoloration, surface voids and unnatural form marks.

**3.2 Application.** The method of application shall be in accordance with the manufacturer's recommendations and as approved by the Engineer. The contractor shall protect adjacent areas from overspray and if overspray occurs shall be responsible for removing the stain from the affected area to the satisfaction of the Engineer.

**4.0 Method of Measurement.** No measurement will be made.

**5.0 Basis of Payment.** Payment for all work associated with the concrete stain, including all material, material property verifications, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the lump sum price for Aesthetic Concrete Stain per structure.

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F. MODIFIED TYPE D BARRIER

**1.0 Description.** This work will consist of all items necessary to form and install the barrier on bridge approach slabs as shown in the plans.

**2.0 Material.** Concrete for barrier shall be Class B-1 and shall be in accordance with Sec 501. Coarse aggregate shall be Gradation E in accordance with Sec 1005. Reinforcing steel shall be as noted in the plans.

**3.0 Construction Requirements.** Construction requirements for placement of new concrete for barrier shall be in accordance with Sec 703.

**4.0 Method of Measurement.** Modified Type D Barrier shall be measured to the nearest linear foot.

**5.0 Basis of Payment.** Payment for the above described work, including all material, equipment, labor and any other incidental work necessary, shall be considered completely covered by the contract unit price for Modified Type D Barrier per linear foot.

G. REINFORCING STEEL (GALVANIZED)

**1.0 Description.** This job special provision contains general requirements for furnishing and placing hot-dip galvanized reinforcing steel as shown on the plans and shall be in addition to the requirements of Sec 706.

**2.0 Material.** Reinforcing bars shall be in accordance with ASTM A 123, ASTM A 767 and ASTM A 1094. All damage to the galvanized coating, including coating removed or compromised due to field cutting of bars, shall be repaired in accordance with ASTM A 780.

**3.0 Construction Requirements.**

**3.1 Fabrication.** The fabricator shall consult with the hot-dip galvanizer regarding potential problems or potential handling problems during the galvanizing process that may require modifications of design before fabrication proceeds.

**3.1.1** Surface contaminants that are not removable by the normal chemical cleaning process in the galvanizing operation shall be removed by blast cleaning or an alternative method prior to delivery of steel to the galvanizer.

**3.1.2** Shop or field bending of reinforcing bar before or after galvanizing shall pay special attention to the minimum bend diameters required by Table 2 of ASTM A 767.

**3.2 Delivery, Storage and Handling.** Materials shall be delivered in accordance with the manufacturer's written instructions and in accordance with ASTM A 1094/A 1094M. Materials shall be delivered with identification labels intact and product name and manufacturer clearly visible.

**3.2.1 Storage.** Galvanized bars that will be stored in the field in excess of 30 days shall be stored off the ground on dunnage to allow air circulation to prevent the formation of wet storage stain. These corrosion deposits, if present, shall be removed in a manner satisfactory to the engineer prior to incorporation of the material into the work.

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**3.3 Accessories.** Reinforcement ties shall be galvanized steel wire in accordance with ASTM A 641/A 641M. Metal bar chairs in contact with galvanized steel shall be galvanized steel. Other materials for bar chairs may be accepted with the approval of the engineer. Mechanical bar splices shall for suitable for use with galvanized reinforcement.

**3.4** Use of metal formwork shall be in accordance with ASTM A 767.

**4.0 Submittals.** The contractor shall submit a copy of the coating applicator's notarized Certificate of Compliance that the hot-dip galvanized coating meets or exceeds the specified requirements of ASTM A 767.

**5.0 Method of Measurement.** Measurement shall be in accordance with Sec 706.4.

**6.0 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 Reinforcing Steel (Galvanized).

H. DRAINAGE SYSTEM (ON STRUCTURE)

**1.0 Description.**

**1.1** This work shall consist of furnishing, fabricating and installing the drainage items necessary to complete the entire drainage systems on Bridges A9490, A9493 and A9494 as shown on the contract plans.

**1.2** Detailed shop drawings of the drainage system shall be prepared and submitted to the engineer. Shop drawings shall be in accordance with [Sec 1080](#). Catalog data may be furnished for components that are standard manufactured items in lieu of detailed drawings, provided that governing dimensions are given.

**2.0 Materials.**

**2.1** Reinforced fiberglass pipe, saddles, guards and fittings shall be a Reinforced Thermosetting Resin Pipe (RTRP) system in accordance with the requirements of ASTM D 2996. The RTRP system shall have a minimum short time rupture strength hoop tensile stress of 30,000 psi. The RTRP system shall be pigmented resin throughout the wall. The color of the RTRP system shall be concrete gray or as specified on the bridge plans. The RTRP system shall not be coated with paint, gel-coat or any other exterior coating.

**2.2** The contractor shall furnish a manufacturer's certification to the engineer for each lot furnished, certifying that the materials supplied are in accordance with all requirements specified. The certification shall include results of all required tests. Acceptance of the material will be based on the manufacturer's certification and upon results of such tests as may be performed by the engineer. The certification shall show the quantity and lot number that is represented.

**3.0 Construction Requirements.**

**3.1** All connections shown on the plans to facilitate future removal for maintenance cleanout or flushing shall be made with a threaded gasket coupler system, bolted gasket flange system or a female to male threaded PVC plug. Adhesive bonded joints will be permitted for runs of pipe between such connections.

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**3.2** Runs of pipe shall be supported at a spacing of not greater than the lesser of those as recommended by the manufacturer of the pipe or as shown on the bridge plans. Supports that have point contact or narrow supporting areas shall be avoided. Standard sling, clamp, clevis hangers and shoe supports designed for use with steel pipe may be used. Minimum hanger thickness shall be 3/16 inch with the minimum strap width for the pipe sizes shown in the table below. Straps shall have 120 degree minimum contact with the pipe. Pipe supported on a surface with less than 120 degrees of contact shall have a split fiberglass pipe protective sleeve bonded in place with adhesive. All new steel, hangers and miscellaneous hardware for drainage system shall be ASTM A 709 Grade 36 steel except as noted on the bridge plans. All new steel, hangers and miscellaneous hardware for drainage system shall be galvanized in accordance with ASTM A 153 except as noted on the bridge plans.

<b>Pipe Size inches (mm)</b>	<b>Minimum Strap Width inches (mm)</b>
3 (76.2)	1.25 (32)
4 (101.6)	1.25 (32)
6 (152.4)	1.50 (38)
8 (203.2)	1.75 (45)
10 (254.0)	1.75 (45)
12 (304.8)	2.00 (51)
14 (355.6)	2.00 (51)

**3.3** The RTRP system shall be handled and installed in accordance with guidelines and procedures as recommended by the manufacturer.

**3.4** When the drainage system continues between superstructure units and/or between the superstructure and substructure units, the drainage system shall have allowance for the expected differential expansion and contraction movements as recommended by the manufacturer. Runs of pipe shall not exceed 200 feet in length.

**4.0 Method of Measurement.** No measurement will 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 lump sum price for Drainage System (On Structure) per structure.

**I. PIPE PILE SPACERS**

**1.0 Description.** In lieu of using pipe pile spacers, the contractor will have the option to use pile jackets. This job special provision contains general requirements for furnishing and placing pile jackets on piles.

**2.0 Material.** All material shall be in accordance with [Division 1000](#), Material Details, and specifically as follows.

**2.1 Pile Jackets.**

**2.1.1** The pile jacket material shall meet or exceed the following physical requirements:

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<b>Pile Jackets</b>		
<b>Property</b>	<b>Specification</b>	<b>Requirement</b>
Specific Gravity	ASTM D 1505	0.906 g/cc
Tensile @ Yield	ASTM D 638	4,000 psi
Flexural Modulus	ASTM D 790	195,000 psi
Elongation @ Break	ASTM D 638	> 500%
Heat Deflection Temperature @ 66 psi	ASTM D 648	190°F
Impact Strength, Notched Izod @ 73°F	ASTM D 256	No Break ft-lb/in
Rockwell Hardness	ASTM D 785	75 R scale

**3.0 Construction Requirements.**

**3.1** For pile jacket option, the contractor shall drive piles before construction of the mechanically stabilized earth (MSE) wall. Pile jackets shall be installed on each pile and placed in the zone between the bottom of the leveling pad and the bottom of beam cap. The pile jacket shall be installed and backfill and soil reinforcements shall be placed around the pile jacket per the pile jacket manufacturer’s installation requirements and recommendations. The contractor shall adequately support the piling to ensure that proper pile alignment is maintained during wall construction. The contractor’s plan for bracing the pile shall be submitted to the engineer for review. The contractor shall avoid any damage to pile jacket during MSE wall construction. For damaged pile jacket sections, the contractor shall follow manufacturer’s recommendations for the proper methods of in-place repair.

**4.0 Method of Measurement.** The pipe pile spacer or pile jacket will be measured per each.

**5.0 Basis of Payment.** Payment for furnishing and installing pipe pile spacers or pile jackets complete in place including all equipment, labor, and any other incidental work necessary to complete this item will be considered completely covered by the contract unit price for Pipe Pile Spacers.

J. TEMPORARY MSE WALL SYSTEM

**1.0 Description.** This work shall consist of furnishing material and placement of a temporary mechanically stabilized earth (MSE) wall system constructed in accordance with these special provisions and in reasonably close conformance with the location shown on the plans or otherwise established.

**1.1** The temporary MSE wall system (temporary wire face wall) is located on the plans for staging of the permanent precast MSE wall system (MSE wall). The contractor may locate the temporary wall differently than that shown on the plans with the approval of the engineer. No additional payment will be made for change in wall location or subsequent changes in labor or material for the relocation.

**1.2** The contractor will be solely responsible for determining the dimensions of the temporary MSE wall and ensuring that the temporary MSE wall is compatible with the construction of the MSE walls and bridges.

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**2.0 Design Requirements.** The design by the wall system supplier shall be in accordance with acceptable engineering practice and these special provisions. The design life of the structure shall be 3 years unless otherwise specified by the owner. Design calculations in accordance with the AASHTO specifications shown on the plans shall be provided to the engineer.

**2.1** Temporary MSE wall shall be designed and detailed by the same wall designer and wall manufacturer responsible for the design of the MSE wall.

**2.2** The contractor shall be responsible for the internal stability, external stability, compound stability, and overall global stability of the structure.

**2.3** The contractor shall ensure that the temporary MSE wall is capable of supporting all applicable dead loads, any contributed live load from staged traffic handling, and any construction loads while not interfering with load distribution of final roadway and MSE wall configuration. Submittals shall be required in accordance with Secs 720.3.3, 720.3.4, 720.3.5 and 720.3.6.

**2.4** The structure's design height, H, shall be from the bottom of the excavation cut to the top of the roadway/approach slab or where the ground surface intercepts the temporary MSE wall facing. The temporary MSE wall shall extend past the end of the bottom layer of MSE wall soil reinforcement a minimum of one foot and then step up to the final grade at a 1:1 maximum slope. Any deviation to wall extents shall be approved by the engineer.

**2.5** The soil reinforcement length shall be the same length from top to bottom of the wall. The minimum soil reinforcement length shall be greater than or equal to 70 percent of the design height, H. The minimum reinforcement length shall be 8 feet.

**2.6** The soil parameters assumed for the temporary MSE wall design shall be those shown on the plan details for the MSE wall and shown in the foundation report. Improved foundation and unimproved foundation requirements shall match the requirements shown in the foundation report.

**2.7** The lateral earth pressure to be resisted by the reinforcement at each reinforcement layer shall be calculated using the appropriate coefficient of earth pressure, K, times the vertical stress at each reinforcement layer. The vertical soil stress at each reinforcement layer shall consider the local equilibrium of all the forces acting above the layer under investigation.

**2.8** For temporary MSE walls, the contractor may adjust the stiffness of the facing and spacing of the reinforcements such that the local deformation between the reinforcement is within the elastic range in bending and tension, and the overall geometry meets the line and grade requirements for the temporary walls.

**3.0 Material.** The contractor shall make arrangements to purchase the material covered by this section of the special provisions.

**3.1** Select granular backfill shall be in accordance with Sec 1010.

**3.2** Lightweight Cellular Concrete (LCC) fill shall be in accordance with Roadway Job Special Provisions.

**3.3** Geotextile fabric shall be in accordance with Sec 1011. Strength and class of geotextile fabric for temporary MSE walls shall be the same as for MSE walls.

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**3.4** Soil reinforcement and attachment devices shall be in accordance with Sec 1052. Metallic or non-metallic soil reinforcement may be used for temporary MSE walls. Non-metallic soil reinforcement shall be folded near top of wire facing and embedded at least 4 feet in the fill material.

**3.5** Metallic soil reinforcement, fasteners, and wire facing for temporary MSE wall will not require galvanization in accordance with Sec 1052 if the contractor ensures that a 3-inch minimum clearance will be provided between any ungalvanized steel used in the temporary wall and the galvanized steel provided for the MSE wall. Damage done to the galvanization prior to the soil reinforcement installation shall be repaired in accordance with ASTM A780.

**3.6** Wire facing shall be shop fabricated of cold drawn steel wire and welded into the finished configuration in accordance with AASHTO M 336 (ASTM A1064). A wire tie shall be shop fabricated in accordance with AASHTO M 336 (ASTM A1064) and shall be installed as a strut to hold the face unit in place.

**3.7** Inspection of the foundation conditions, the materials of construction, and the construction procedures will be the responsibility of the owner or their agents.

**4.0 Construction Requirements.**

**4.1** Foundation preparation shall be in accordance with Sec 720.

**4.2** The wall system components for the temporary MSE wall shall be constructed in accordance with the wall system supplier's recommendations and construction manual. The temporary MSE wall shall be constructed vertical or as near vertical as the wall system will allow. The erection of the first level of facing elements requires only a level grade. Wire face unit or basket height shall be limited to a maximum of 18 inches for non-metallic soil reinforcement. The vertical spacing between non-metallic soil reinforcement shall be limited to a maximum of 18 inches. Retention geotextile fabric wrap shall be embedded at least 12 inches into the fill material at top and bottom of each wire face unit. Geotextile fabric shall be extended a minimum of 12 inches past corner of MSE wall and temporary MSE wall. The overall vertical tolerance of the wall and the horizontal alignment tolerance shall not exceed 3 inches per 10 feet. Batter requirements shall be in accordance with Sec 720.

**4.3** The contractor shall coordinate construction of the MSE wall and temporary MSE wall, and the walls shall be constructed simultaneously. Backfill material shall be placed and compacted in layers not exceeding a loose lift thickness of 9 inches and brought up evenly. A minimum fill thickness of 6 inches over non-metallic and 3 inches over metallic reinforcement shall be required prior to operating any compaction equipment. Lifts within 3 feet of the wall shall not exceed 6 inches. Placement of select granular backfill and Lightweight Cellular Concrete (LCC) for temporary MSE walls and MSE walls shall be in accordance with Sec 720 and Roadway Job Special Provisions, respectively.

**4.4** Wall materials damaged during backfill placement shall be removed and replaced at the contractor's expense.

**4.5** Technical assistance shall be in accordance with Sec 720.

**5.0 Method of Measurement.** No measurement will be made.

**6.0 Basis of Payment.** Payment for the above described work including all material, equipment, labor, and any other incidental work necessary to complete the temporary MSE wall will be considered completely covered by the contract lump sum price for Temporary MSE Wall System for each MSE wall where a temporary MSE wall is required.

K. MECHANICALLY STABILIZED EARTH WALL SYSTEMS WITH LIGHTWEIGHT FILL

**1.0 Description.** This work will consist of furnishing and constructing mechanically stabilized earth wall systems with lightweight fill for MSE Walls No. A9491 and A9492 as shown in the contract plans and shall be in accordance with Sec 720.

**2.0 Material.** All materials shall be in accordance with Sec 720.2.

**2.1 Lightweight Cellular Concrete.** Lightweight fill material shown in the contract plans shall be in accordance with the Roadway Job Special Provision for Lightweight Cellular Concrete.

**3.0 Design Requirements.** All design requirements shall be in accordance with Sec 720.3.

**4.0 Construction Requirements.** All construction requirements shall be in accordance with Sec 720.4.

**5.0 Method of Measurement.** Measurement of mechanically stabilized earth wall systems will be made to the nearest square foot. The quantity to be paid will be measured from the wall outline as shown on the plans. No adjustments in the measured quantity will be permitted for additional wall area required to meet the minimum wall elevations shown on the plans for any particular wall system.

**6.0 Basis of Payment.** The accepted quantity of mechanically stabilized earth wall systems with lightweight fill, complete in place, will be paid for at the contract unit price for each of the pay items included in the contract.