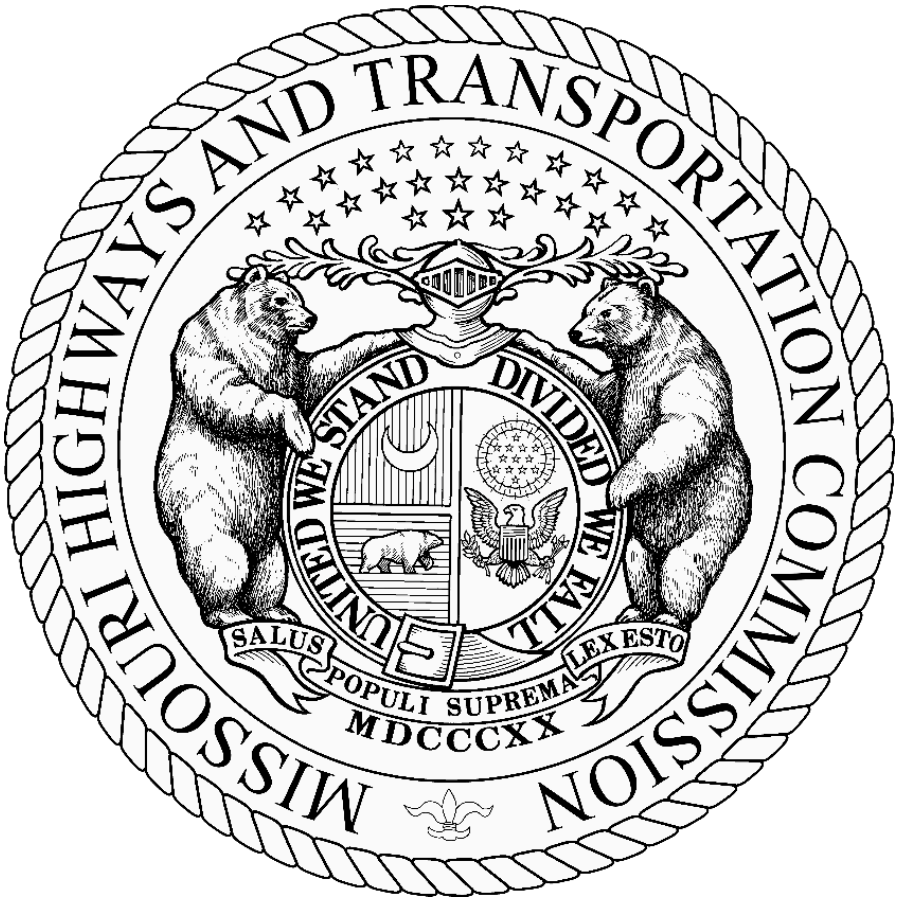

MISSOURI
HIGHWAYS and TRANSPORTATION COMMISSION

JEFFERSON CITY, MISSOURI

GENERAL PROVISIONS AND
SUPPLEMENTAL SPECIFICATIONS TO 2025
MISSOURI STANDARD SPECIFICATIONS FOR
HIGHWAY CONSTRUCTION

Effective October 1, 2025

CONTENTS

GENERAL PROVISIONS

REVISIONS TO 2025 MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION
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Effective Date: 10/01/2025

GENERAL PROVISIONS

DIVISION 100

SECTION 404 NATIONWIDE PERMIT GENERAL CONDITIONS

04/17

General Conditions. The following general conditions shall be followed in order for authorization by a Nationwide Permit (NWP) to be valid. Permit authorization from U.S. Army Corps of Engineers (USACE) may have additional conditions that will be binding to the project. The contractor shall refer to the permit authorization letter included in the contract.

1.0 Navigation. No activity shall cause more than a minimal adverse effect on navigation.

2.0 Aquatic Life Movements. No activity shall substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3.0 Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practical. Activities that result in the physical destruction (e.g., through excavation, fill or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4.0 Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5.0 Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

6.0 Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

7.0 Adverse Effects from Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

8.0 Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

9.0 Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

10.0 Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures shall be taken to minimize soil disturbance.

11.0 Soil Erosion and Sediment Controls. Appropriate erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the US during periods of low-flow or no-flow.

12.0 Removal of Temporary Fills. Temporary fills must be completely removed in their entirety and the affected areas returned to the pre-construction elevations. The affected areas must be revegetated, as appropriate.

13.0 Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status.

14.0 Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

15.0 Endangered Species No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which ''may affect'' a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have ''no effect'' on listed species or critical habitat, or until ESA section 7 consultation has been completed.

16.0 Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether ''incidental take'' permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

17.0 Historic Properties. In cases where the USACE District Engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

18.0 Mitigation. The project must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the U.S. to the maximum extent practicable at the project site (i.e., on site).

19.0 Regional and Case-by-Case Conditions. The contractor's activity shall comply with any regional conditions that may have been added to the contract by the USACE Division Engineer, (see 33 CFR 330.4(e)), and with any case-specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its Section 401 water quality certifications.

20.0 Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a USACE federally authorized Civil Works project (a ''USACE project''), the prospective permittee must submit a preconstruction notification. See paragraph (b)(10) of general condition 32. An activity that requires Section 408 Permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the USACE District Engineer issues a written NWP verification.

21.0 Section 404 Conditions. In addition to the General Conditions, the following conditions will apply only to activities that involve the discharge of dredged or fill material into waters of the US, and shall be followed to maintain compliance with the NWP authorization.

21.1 Section 404 Nationwide Permit No. 3.

21.1.1 The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for the fill in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in material, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

21.1.2 This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverts road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was

built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

21.1.3 This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After conducting the maintenance activity, temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

21.2 Section 404 Nationwide Permit No. 12. Activities required for the construction, maintenance and repair of utility lines and associated facilities in waters of the U.S. shall be as follows.

21.2.1 Utility lines. This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A ''utility line'' is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and internet, radio and television communication. The term ''utility line'' does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area. Material resulting from trench excavation may be temporarily sidecast into waters of the U.S. for no more than three months, provided that the material is not placed in such a manner that it is dispersed by currents or other forces. The USACE District Engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks shall be stabilized immediately upon completion of the utility line crossing of each waterbody.

21.2.2 Utility line substations. This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States.

21.2.3 Foundations for Overhead Utility Line Towers, Poles, and Anchors. This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the U.S., provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

21.2.4 Access Roads. This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the US, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2 acre of non-tidal waters of the U.S. Access roads shall be the minimum width necessary. Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the US and must be as near as possible to preconstruction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above preconstruction contours and elevations in waters of the U.S. must be properly bridged or culverted to maintain surface flows. This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

21.3 Section 404 Nationwide Permit No. 13. The following bank stabilization activities will be necessary for erosion prevention provided the activity meets all of the following criteria.

21.3.1 No material is placed in excess of the minimum needed for erosion protection.

21.3.2 The bank stabilization activity is no more than 500 feet in length.

21.3.3 The activity will not exceed an average of one cubic yard per running foot as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in no more than minimal adverse environmental effects.

21.3.4 No material is placed in any special aquatic site, including wetlands. Special aquatic sites include wildlife sanctuaries and refuges, wetland, mudflats, vegetated shallow and riffle and pool complexes.

21.3.5 No material is of the type, or is placed in any location, or in any manner, to impair surface water flow into or out of any waters of the U.S.

21.3.6 No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas).

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21.3.7 Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization.

21.3.8 This NWP shall not be used for the channelization of a water of the U.S.

21.4 Section 404 Nationwide Permit No. 14. Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the US if the activity meets the following criteria.

21.4.1 The discharge does not cause the loss of greater than 1/2-acre of waters of the US.

21.4.2 . Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

21.4.3 This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

21.5 Section 404 Nationwide Permit No. 15. Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the U.S., including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided the construction of the bridge structure has been authorized by the U.S. Coast Guard under Section 9 of the Rivers and Harbors Act of 1899 or other applicable laws. Causeways and approach fills are not be included in this NWP and will require a separate Section 404 permit.

21.6 Section 404 Nationwide Permit No. 23. Activities undertaken, assisted, authorized, regulated, funded, or financed, in whole or in part, by another Federal agency or department where that agency or department has determined, pursuant to the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act (40 CFR Part 1500 et seq.), that the activity is categorically excluded from the requirement to prepare an environmental impact statement or environmental assessment analysis, because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and the USACE Office of the Chief of Engineers (ATTN: CECW-OR) has concurred with that agency's or department's determination that the activity is categorically excluded and approved the activity for authorization under NWP23.

21.7 Section 404 Nationwide Permit No. 33. Temporary structures, work and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites; provided that the associated primary activity is authorized by the USACE or the U.S. Coast Guard. This NWP also authorizes temporary structures, work, and discharges, including cofferdams, necessary for construction activities not otherwise subject to the Corps or U.S. Coast Guard permit requirements. Appropriate measures shall be taken to maintain near normal downstream flows and to minimize flooding. Fill must consist of materials and placed in a manner that will not be eroded by expected high flows. The use of dredged material may be allowed if the USACE District Engineer determines that it will not cause more than minimal adverse effects. Following completion of construction, temporary fill must be entirely removed to areas an area that has no waters of the U.S., dredged material must be returned to its original location, and the affected areas must be restored to pre-construction elevations. Cofferdams shall not be

used to dewater wetlands or other aquatic areas changing the use of these areas. The affected areas must also be revegetated, as appropriate. This permit does not authorize the use of cofferdams to dewater wetlands or other aquatic areas to change their use. Structures left in place after cofferdams are removed will require a Section 10 permit if located in navigable waters of the U. S. (See 33 CFR, Part 322).

SECTION 401 WATER QUALITY CERTIFICATION CONDITIONS

04/17; 04/22

1.0 Description. When a Clean Water Act Section 404 Nationwide Permit is in effect, the contractor is automatically permitted to perform this work under a Water Quality Certification (Section 401) by the Missouri Department of Natural Resources (MDNR). The contractor shall adhere to the following conditions:

1.1 Missouri Water Quality Standards antidegradation requirements dictate all appropriate and reasonable Best Management Practices (BMPs) related to erosion and sediment control, project stabilization, and prevention of water quality degradation are applied and maintained [10 CSR 20-7.031(3)]; for example, preserving vegetation, streambank stability, and basic drainage. BMPs shall be properly installed prior to conducting authorized activities and maintained, repaired, and/or replaced as needed during all phases of the project to limit the amount of discharge of water contaminants to waters of the state. The project shall not involve more than normal stormwater or incidental loading of sediment caused by project activities so as to comply with Missouri's general water quality criteria [10 CSR 20-7.031(4)]; [also see MoDOT Engineering Policy Guide (EPG) Sections 127.29 and 136.6.4.8].

1.2 Temporary stream crossings shall be sized and placed appropriately and shall not create an impediment to the passage of aquatic organisms and/or sediment. This will ensure compliance with the Missouri Water Quality Standards general criterion requiring waters to be free from physical or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].

1.3 Stream channel modifications shall be avoided as much as possible and, if needed, shall be minimized. Where modifications are necessary for highway design safety or protection of state infrastructure, to the extent practicable, the project shall incorporate natural channel design features relative to a morphologically stable and appropriate stream channel and incorporate measures such as grade control, in-stream habitat, riparian plantings, etc. This will ensure compliance with the Missouri antidegradation requirement that waters of the state shall be maintained and protected [10 CSR 20-7.031(3)] under Missouri Clean Water Law, which provides the Department authority to adopt remedial measures to prevent, control, or abate pollution [Section 644.026.1(9)].

1.4 The following materials are not suitable where contact with water is expected and shall not be used due to their potential to cause violations of the general criteria of Missouri's Water Quality Standards [10 CSR 20-7.031(4)]: earthen fill, gravel, and broken concrete where the material does not meet the Suitable Material specifications stated in the "Missouri Nationwide Permit Regional Conditions" (https://usace.contentdm.oclc.org/digital/collection/p16021coll11/id/2662/)in locations where erosive flows are expected to occur on a regular basis, such as streambanks and/or lake shorelines; asphalt; concrete with exposed rebar; tires, vehicles or vehicle bodies, and construction or demolition debris are solid waste and are excluded from placement in the waters of the state, but properly sized, broken concrete without exposed rebar is allowed; liquid concrete, including grouted riprap, if not placed in forms as part of an engineered structure; material containing chemicals that would result in violation of Missouri Water Quality Standards general criteria [10 CSR 20-7.031(4)] or specific criteria [10 CSR 20-7.031(5)].

1.5 Waste concrete or concrete rinsate shall be disposed of in a manner that does not result in any discharge to the jurisdictional water ways. This will ensure compliance with the Missouri Water Quality Standards general criteria requiring waters be free from unsightly bottom deposits [10 CSR 20-7.031(4)(A)]; substances resulting in toxicity [10 CSR 20-7.031(4)(D)]; and physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].

1.6 During construction, clearing of vegetation shall be kept to the minimum necessary to accomplish the project except for the removal of invasive or noxious species and placement of ecologically beneficial practices. This will ensure compliance with the Missouri antidegradation requirement for BMPs [10 CSR 20-7.031(3)].

1.7 Care shall be taken to keep machinery out of the water way as much as possible. If work in the water way is unavoidable, it shall be performed in a way that minimizes the duration and amount of any disturbance to banks, substrate and vegetation to prevent increases in turbidity. Fuel, oil and other petroleum products, equipment, construction materials and any solid waste shall not be

stored below the ordinary high water mark at any time. All precautions shall be taken to avoid the release of wastes or fuel to streams and other adjacent waters as a result of this operation. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for Best Management Practices [10 CSR 20-7.031(3)] and Missouri Water Quality Standards general criteria requiring waters be free from substances preventing beneficial uses [10 CSR 20-7.031(4)(A)]; substances causing unsightly color or turbidity [10 CSR 20-7.031(4)(C)]; and physical, chemical or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].

1.8 Disturbed riparian areas, banks, etc., shall be restored to a stable condition to protect water quality as soon as possible. This will ensure compliance with the Missouri antidegradation requirement for BMPs [10 CSR 20-7.031(3)].

1.9 All efforts shall be made to minimize exposure of unprotected soils. To the best of MoDOT's or its contractor's ability, project activity shall be conducted at times of little or no rainfall to limit the amount of overland flow as well as sediment disturbance and transport caused by heavy equipment. This will ensure compliance with the Missouri antidegradation requirement for BMPs [10 CSR 20-7.031(3)] and general criteria [10 CSR 20-7.031(4)]

1.10 Any stockpiled excess material resulting from the project shall be managed with appropriate BMPs or removed from the site and placed beyond the high bank on a non-wetland site. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement that waters of the state shall be maintained and protected [10 CSR 20-7.031(3)] and general criterion requiring waters to be free from physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].

1.11 Petroleum products spilled into any water or on the banks where the material may enter waters of the state shall be cleaned up immediately and disposed of properly. Spills of any amount of petroleum in a waterway shall be reported as soon as possible, but no later than 24 hours after discovery, to the Department's Environmental Emergency Response phone line at 573-634-2436 or website at https://dnr.mo.gov/waste-recycling/investigations-cleanups/environmental-emergency-response. This will ensure compliance with Missouri Environmental Improvement Authority [Section 260.015, RSMo] to provide for the conservation of state water resources by the prevention of pollution and proper methods of disposal and Missouri Water Quality Standards general criteria requiring waters be free from substances that prevent maintenance of beneficial uses; cause unsightly color, turbidity, or toxicity; and/or impair the natural biological community [10 CSR 20-7.031(4)].

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM REQUIREMENTS

04/21; 07/22; 04/23; 10/24; 07/25

1.0 Program Applicability. The subsequent sections will apply only to contracts involving U.S. Department of Transportation (USDOT) federal-aid or federal funded participation. Federal-aid or federal funded participation includes, but is not limited to, any funds directly or indirectly received by MoDOT, or authorized for distribution to or through MoDOT, by the USDOT or any operating administration within the USDOT. These provisions will not apply to Commission contracts funded exclusively with state funds, or state and local funds. Any contractor, subcontractor, supplier, DBE firm, and contract surety involved in the performance of a federal-aid contract shall be aware of and fully understand the terms and conditions of the USDOT DBE Program, as the terms appear in Title 49 CFR Part 26 (as amended), the USDOT DBE Program regulations; Title 7 CSR Division 10, Chapter 8 (as amended), and the Commission's DBE Program rules.

2.0 DBE Program Distinguished from Other Affirmative Action Programs. The USDOT DBE Program established by the U.S. Congress is not the same as, and does not involve or utilize, any of the elements or authority of other state or local affirmative action programs, nor does the program rely upon state legislation or gubernatorial executive orders for implementation or authorization, other than the general authority given the Commission in Section 226.150, RSMo. The USDOT DBE Program is implemented by the Commission and MoDOT, through and in conjunction with the FHWA, FTA and FAA, as a "recipient" defined in Title 49 CFR 26.5.

3.0 Policy Regarding DBE Firms. It is the policy of the U. S. Department of Transportation and MoDOT that businesses owned by socially and economically disadvantaged individuals have an opportunity to participate in the performance of contracts funded in whole or in part with federal funds. Consequently, the requirements of 49 CFR Part 26 (as amended) and the Commission's implementing state regulations in Title 7 CSR Division 10, Chapter 8, "Disadvantaged Business Enterprise Program", will apply to any contract funded in whole or part with federal funds.

4.0 Opportunity for DBEs to Participate. Each contractor, subcontractor and supplier working on a contract funded in whole or in part with federal funds shall take all necessary and reasonable steps to ensure that DBEs have an opportunity to compete for and participate in performance on project contracts and subcontracts in which a DBE goal is established.

5.0 Required Contract Provision. The federal-aid contract will include the following provision, as mandated by USDOT at Title 49 CFR 26.13(b):

(a) The contractor, sub-recipient or subcontractor shall not discriminate based on race, color, religion, national origin, or sex in the performance of the contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of the contract, which may result in the termination of the contract or such other remedy, as the recipient deems appropriate.

In this provision, "contractor" will be defined as the contractor on the contract; sub-contractor, or material supplier performing the work on or for the project. For the purposes of any federal-aid contract awarded by the Commission, "the recipient" will be defined as either the Commission, or MoDOT, or both. The contractor shall include this same contract provision in every supply contract or subcontract the contractor makes or executes.

6.0 DBE Program Information. DBE Program information may be obtained from the MoDOT Business Development and Compliance Division, 105 W. Capitol Avenue, P.O. Box 270, Jefferson City, Missouri 65102-0270. Phone (573) 526-2978, Fax (573) 526-0558, E-Mail: dbe@modot.mo.gov. It will be the duty of each contractor, and for the contractor's subcontractors to take the steps necessary to determine the legal obligations and limitations under the DBE Program, as an element of responsibility. It will be the duty of each certified DBE firm to know, understand and comply with the DBE firm's legal obligations and limitations under the DBE Program, as a requirement of program participation.

7.0 DBE Certification, and the Missouri Unified Certification Program. MoDOT and other certifying agencies within Missouri have partnered to form the Missouri Regional Certification Committee (MRCC) and have developed a Unified Certification Program (UCP) pursuant to 49 CFR 26.81 and 7 CSR 10-8.061. Only DBE firms certified by the MRCC are eligible to perform work on a federal-aid contract for DBE contract goal credit. It is the contractor's responsibility to ensure firms identified for participation are approved certified DBE firms. The MRCC DBE Directory can be found at the following link: https://www.modot.org/welcome-business-development-and-compliance.

8.0 DBE Program-Related Certifications Made by Bidders and Contractors. By submitting a bid on any call involving USDOT federal funded participation, and by entering into any contract on the basis of that bid, the contractor makes each of the following DBE Program-related certifications and assurances to USDOT, to the Commission, and to MoDOT:

(a) The bidder certifies that management and bidding officers have reviewed and understand the bidding and project construction and administration obligations of the USDOT DBE Program regulations at Title 49 CFR Part 26 (as amended), and the Commission's DBE Program rules at Title 7 CSR Division 10, Chapter 8 (as amended).

(b) The bidder agrees to ensure that certified DBE firms have a full and fair opportunity to participate in the performance of the contract funded in whole or in part with federal funds. The bidder certifies that all necessary and reasonable steps were taken to ensure that DBE firms have an opportunity to compete for and perform work on the contract. The bidder further certifies that the bidder not discriminate on the basis of race, color, age, national origin, religion or sex in the performance of the contract, or in the award of any subcontract.

(c) The bidder certifies that if awarded the federal-aid contract, the contractor will make a good faith effort to utilize the certified DBE firms committed to with the awarded contract.

(d) The bidder certifies, that if awarded the federal-aid contract with less than the original DBE contract goal proposed by the Commission in the bid documents, as a result of an approved good faith effort, the revised lower amount shall become the final DBE goal, and that goal will be used to determine any liquidated damages to be assessed at the completion of the project.

(e) The bidder understands and agrees that if awarded the contract the contractor is legally responsible to ensure that the contractor and each DBE, comply fully with all regulatory and contractual requirements of the USDOT DBE Program, and that each DBE firm participating in the contract fully perform the designated tasks, with the DBE's own forces and equipment, under the DBE's own direct supervision and management. The bidder certifies, that if awarded the contract and if MoDOT or the Commission determine that the contractor, a DBE or any other firm retained by the contractor has failed to comply with the DBE Program requirements or federal or state DBE Program regulations, the Commission, through MoDOT, shall have the sole authority and discretion to determine the extent of the monetary value to which the DBE contract goals have not been met at the project completion, and to assess against and withhold monetary damages

from the contractor up to the full amount of that breach. The bidder further understands and agrees that this clause authorizes the Commission, through MoDOT, to determine and fix the extent of the damages caused by a breach of any contractual or regulatory DBE Program requirement and that the damage assessment will be enforced in addition to, and not in lieu of, any other general liquidated damages clause in the contract. By submitting a bid for a federal-aid contract, and by entering into a contract, the bidder irrevocably agrees to such an assessment of liquidated damages for DBE Program purposes, and authorizes the Commission and MoDOT to make such an assessment of liquidated damages against the contractor, and to collect that assessment from any sums due the contractor under the contract, or any other contract, or by other legal process. The bidder makes this certification, agreement and authorization on behalf of itself, for each federal-aid contract.

9.0 Designation of DBE firms to perform on contract. The bidder states and certifies that the DBE participation information submitted in the bid or within the contract designated time is true, correct and complete and that the information provided includes the names of all DBE firms that will participate in the contract, the specific line item (s) that each DBE firm will perform or partially perform, and the creditable dollar amounts of the participation of each DBE. The specific line item must reference the MoDOT line number and item number contained in the proposal. The bidder further states and certifies that the bidder has committed to use each DBE firm listed for the work shown to meet the DBE contract goal and that each DBE firm listed has clearly confirmed to the bidder that the DBE firm will participate in and perform the work, with the DBE's own forces.

(a) The bidder certifies the bidder's understanding that as the contractor on a contract funded in whole or in part by USDOT federal funds, the bidder may not unilaterally terminate, substitute for, or replace any DBE firm that was designated in the executed contract, in whole or in any part, with another DBE, any non-DBE firm or with the contractor's own forces or those of an affiliate, without the prior written consent of MoDOT. The bidder understands it must receive approval in writing from MoDOT for the termination of a DBE firm, or the substitution or replacement of a DBE before any substitute or replacement firm may begin work on the project in lieu of the DBE firm participation information listed in the executed contract. Unless MoDOT's written consent is provided as outlined above, the bidder shall not be entitled to any payment of work or material unless it is performed or supplied by the listed DBE.

(1) The bidder further certifies understanding, that if a DBE firm listed in the bid or approved in the executed contract documents ceases to be a certified DBE firm, at any time during the performance of the contract work, and a contract or subcontract with that firm has not yet been executed by the prime and subcontractor, the contractor cannot count any work performed by that firm after the date of the firm's loss of eligibility toward meeting the DBE contract goal. The contractor can pursue efforts to replace the work planned with the decertified firm, with other certified DBEs, in coordination with MoDOT's Business Development and Compliance Division. If the contractor has executed a subcontract with the firm before the DBE lost eligibility and ceased to be a certified DBE, the contractor may continue to receive credit toward the DBE contract goal for that firm's work on the executed subcontract. However, if the reason for the firm's DBE decertification is due to the firm being acquired or merged with a non-DBE, the portion of the work remaining after the date of decertification is not eligible for counting towards the contract goal. In this case, the Contractor must seek additional DBE participation to the extent needed to meet the contract goal or demonstrate that it has made good faith efforts to do so. Subcontract extensions that add work for firms that become decertified from the DBE program may not count for DBE goal credit without MoDOT's prior written consent.

(2) The bidder further certifies the bidder's understanding, that the dollar value of any work completed by a DBE firm prior to approval of the DBE's substitution or replacement, in writing, by MoDOT may not be credited toward meeting the DBE contract goal. No credit toward the DBE goal will be given for any amount withheld from payment to the DBE or "back charged" against monies owed to the DBE, regardless of the purpose or asserted debt.

10.0 DBE Participation for Contract Goal Credit. Goal credit will be in accordance with 49 CFR Part 26.55 as outlined for the following DBE Types:

-Subcontractor
-Manufacturer
-Regular Dealer
-Distributor
-Broker
-Trucker

11.0 Contract Goal Submittal. The bidder may submit the completed "DBE Identification Submittal" information in the bid documents at the same time as, and within the sealed bid, at the time the bid is submitted. However, if that information is not completed and submitted with the initial sealed bid, then as a matter of responsiveness and responsibility, all bidders shall file the completed "DBE Identification Submittal" pages with MoDOT on or before 4:00 p.m. of the third business day after the bid opening date, directly to the Business Development and Compliance Division, Missouri Department of Transportation, 105 W. Capitol

Avenue, P.O. Box 270, Jefferson City, Missouri 65102-0270. Submission via email and telefax transmittal to MoDOT will be permitted.

Fax no. (573) 526-0558
Email: DBE@MoDOT.Mo.Gov

Any "DBE Identification Submittal" that identifies a DBE regular dealer or distributor must be accompanied by a "DBE Regular Dealer/Distributor Affirmation Form" that is completed and signed by both the bidder and the DBE. This form must be received on or before 4:00 p.m. of the third business day after the bid opening date.

No extension of time will be allowed for any reason. The means of transmittal and the risk of timely receipt of the information shall be the bidder's.

11.1 Good Faith Effort Submittal. If the bidder is not able to meet the Commission's DBE contract goal, the bidder has the opportunity to submit with and as a part of the bid, a true, accurate, complete and detailed written explanation of good faith efforts taken to meet the DBE Contract Goal established in the bid documents. The bidder shall use the "DBE Identification Submittal" sheets for any DBE participation that will be committed towards the goal and an explanation, with any supporting documentation, for the inability to meet the full goal established on the contract. Any Good Faith efforts shall be submitted as part of the bid or within the three business days after the bid opening.

11.2 Bidders Good Faith Efforts Described. MoDOT will consider the quality, quantity, and intensity of the different kinds of efforts that the bidder has made based upon 49 CFR Appendix A to Part 26 and the following additional efforts:

(a) Providing documentation on any and all past GFE activities for review.
(b) Past project DBE performance utilization.
(c) Race neutral methods utilized on completed projects.

All good faith efforts are evaluated on a case-by-case basis whereas any of the numerous good faith elements listed individually or collectively is not a guarantee of approval.

11.3 Administrative Reconsideration of the Bidder's Good Faith Efforts Made as a Part of the Bid Submittal. If MoDOT determines that the apparent low bidder has failed to adequately document in the bid that the bidder made a good faith effort to achieve sufficient DBE participation in the contract work, that firm will be offered the opportunity for administrative reconsideration upon written request, before MoDOT and the Commission reject that bid as non-responsive.

11.4 Forfeiture of Bid Bond possible when: The failure of the apparent low bidder to file the completed and executed "DBE Identification Submittal", listing actual, committed DBE participation equal to or greater than the DBE contract goal percentage specified in the bid, or complete good faith effort participation by 4:00 p.m. on the third business day after the bid opening, will be cause for rejection of that bid. In addition, the bid surety bond or bid guaranty of the apparent low bidder will be forfeited to and become the property of the Commission upon Commission demand, only if the contract is awarded.

(a) By submitting a bid on a federal-aid project, the bidder accepts and agrees to these provisions, and the disposition of the bidders bid bond or guaranty, upon demand by the Commission.

12.0 DBE Required to Perform a Commercially Useful Function (CUF). The DBE CUF requirements are stated in 49 CFR Part 26, (26.55). Any questions or further information needed for CUF determinations should be directed to MoDOT's Business Development and Compliance Division.

12.1 Quality Control (QC) and Quality Assurance (QA) Reviews. The prime contractor shall monitor their planned DBE project usage for CUF compliance and provide MoDOT information for areas of concern for further evaluation. MoDOT will perform a QA review, or compliance review, for DBE CUF and project documentation retained by the contractor through project completion. The contractor shall maintain all DBE related information it has received, documented, and provided to MoDOT for a period of three years beyond the date of final inspection. MoDOT's determination that a DBE's participation may not count toward the project goal, or good faith effort level approved will be subject to administrative reconsideration.

12.2 MoDOT Makes Final Determination on Whether a CUF Is Performed. MoDOT will have the final authority to determine whether a DBE firm has performed a CUF on a federal-aid contract.

13.0 Verification of DBE Participation. (Assessment of Liquidated Damages Possible)

13.1 Final Payment from the Commission. Prior to final payment by the Commission, the contractor shall file with the Commission a detailed list showing each DBE used on the contract work, and the work performed by each DBE (Section 105.15.2.1). The list shall show the actual dollar amount paid to each DBE for the creditable work on the contract, less any rebates,

kickbacks, deductions, withholdings or other repayments made. The list shall be certified under penalty of perjury, or other law, to be accurate and complete. MoDOT and the Commission will use this certification and other information available to determine if the contractor and the contractor's DBEs satisfied the DBE contract goal percentage specified in the contract and the extent to which the DBEs were fully paid for that work. The contractor shall acknowledge, by the act of filing the detailed list, that the information is supplied to obtain payment regarding a federal participation contract.

13.2 Failure on the part of the contractor to achieve the DBE participation to which the contractor committed in the contract may result in liquidated damages being imposed on the contractor by the Commission for breach of contract and for non-compliance. If the contract was awarded with less than the original DBE contract goal proposed by the Commission, the revised lower amount became the final DBE contract goal, and that goal will be used to determine any liquidated damages to be assessed. Additionally, the Commission or MoDOT may impose any other administrative sanctions or remedies available at law or provided by the contract in the event of breach by the contractor by failing to satisfy the contractor's DBE contract goal commitment. The contractor will be offered the opportunity for administrative reconsideration of any assessment of liquidated damages determined at the project completion, upon written request. The administrative reconsideration officer may consider all facts presented, including the legitimacy or business reason for back charges assessed against a DBE firm, in determining the final amount of liquidated damages.

14.0 Miscellaneous DBE Program Requirements. In accordance with Title 49 CFR Part 26 and the Commission's DBE Program rules in Title 7 CSR Division 10, Chapter 8, the contractor, for both the contractor and for the contractor's subcontractors and suppliers, whether DBE firms or not, shall commit to comply fully with the auditing, record keeping, confidentiality, cooperation and anti-intimidation or retaliation provisions contained in those federal and state DBE Program regulations. By bidding on a federal-aid contract, and by accepting and executing that contract, the contractor agrees to assume these contractual obligations, and to bind the contractor's subcontractors contractually, at the contractor's expense.

15.0 Bidders List Data Collection. MoDOT is a recipient of federal funds and is required by 49 CFR 26.11, to provide data about its DBE program. To be considered responsive, all bidders must submit bidders list data with their bid. The information shall consist of the names of all DBE and non-DBE subcontractors, suppliers, manufacturers, distributors, or brokers for actual use and of consideration by the prime bidder. Submission of all other information outlined in 49 CFR 26.11(c)(2)(ii-vii) is at MoDOT's discretion. Electronic submittals and forms are provided to bidders that specify all required data points.

TRAINING PROVISION

04/22; 07/25

1.0 Description. This provision supplements subparagraph 7e of the Contract Provision entitled, "Standard Federal Equal Opportunity Construction Contract Specification ", and in the implementation of CFR Part 230, Subpart A, Appendix B.

2.0 Purpose. It is the policy of MoDOT to require full utilization of all available training and skill-improvement opportunities to assure the increased participation of minority groups, disadvantaged persons and women in all phases of the highway construction industry. The intent of the On-the-Job Training Program is to recruit entry-level individuals, when feasible, and provide them with meaningful training intended to lead to journey-level employment. MoDOT and its sub-recipients, in carrying out the responsibilities of a federally assisted contract, shall determine which federal-aid construction contract shall include "Training Special Provisions." Under the Training Special Provisions, the Contractor shall make every reasonable effort to enroll minority, disadvantaged persons and women trainees to the extent such persons are available within a reasonable recruitment area. This training provision is not intended and shall not be used to discriminate against any applicant for training.

2.1 The Contractor is hereby advised that it is no excuse for a union, with which the Contractor has a collective bargaining agreement providing for exclusive referral, to fail to refer minority and female employees (23 CFR 230.411(e)(1)). Contractors are hereby made aware that if union referral practices prevent the contractor from meeting the EEO requirements, the contractor should make written notification to MoDOT's Business Development and Compliance Division (BDC) immediately. Furthermore, the FHWA's Form FHWA-1273 EO bid conditions are to be included in the Contractor's affirmative action plan (AAP). The EEO bid conditions specifically state, "In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the Contractor will, through independent recruitment efforts, fill the employment vacancies. Unions are not allowed to discriminate based on race, color, national origin or sex, union membership or non-membership, or domicile.

2.2 Contractors can sometimes demonstrate that they referred minorities and women to the unions for referral back to them, or the Contractors can demonstrate efforts made to request minorities and women from the union when they see their work force is deficient in certain construction trades. These efforts should be documented and will be verified by MoDOT.

3.0 Program Administration. All training goals, including the number of training hours, on federally funded projects are to be established by the Business Development and Compliance Division with Federal Highway Administration (FHWA) oversight. The following guidelines will be utilized in selecting projects and determining the goal to be set:

a. a. Availability of minorities and women for training
b. The potential for effective training.
c. Duration of the contract (number of working days)
d. Dollar value of the contract
e. Total normal work force that the average bidder could be expected to use.
f. Geographical location.
g. Type of work.
h. The need for additional journeymen in the area.
i. The need to correct underutilization of minorities and females in specific trades.
j. A satisfactory ratio of trainees to journeymen expected to be on the contractor's workforce during normal operations (considered to fall between 1:10 and 1:4).
k. Recognition of the suggested minimum goal for the State

3.1 Trainee goals will be set in 1,000 increments or 1 slot (person) per 1,000 hours per project. For example, if the trainee goal on the project is 2,000 hours a maximum of 2 trainees will be approved for the project. In the event a trainee leaves the project for valid reasons the trainee shall be replaced as soon as possible. **No apprentice/trainee can be assigned less than 500 hours on a contract.** MoDOT will not assign training on contracts that will not support the 500 hours. **Providing less than 500 hours is not considered to be beneficial training nor helping to achieve journey-level status. Therefore, a trainee/apprentice, regardless of craft, must have been trained on the contact for at least 500 hours to be eligible for reimbursement.** Upon reaching the 500 hours, the contractor will be compensated as noted herein. FHWA and MoDOT will only approve training programs meeting the requirements of the Training Special Provisions (TSP). A program will be approved if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training will also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts.

3.2 No individual shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman status or in which the individual has been employed as a journeyman. The Contractor shall satisfy this requirement by including appropriate questions in the employee application or by other suitable means. It is the Contractor's responsibility to verify that the individual has not been trained or worked at the journey level and their records shall document the findings. Training under the TSP should only be directed toward those trades where underutilization/under representation exists. Flagging/traffic control programs are not considered as meeting the intent of the TSP. However, other programs that including flagging training will be approved if the flagging portion is limited.

3.3 The OJT Program is only intended to be utilized if the contractor is failing to attain the affirmative action goals in its contract, which are determined by the county the project is located. The affirmative action goals are broken down by minority and female goals. If the contractor is meeting or exceeding the minority and female goals in all crafts being utilized on the project, then the OJT requirements are not applicable. If the contractor is not obtaining the minority and female goals in each craft, then the OJT goal will be depended upon the actual participation achieved and the authentic contract as outlined in the contract.

4.0 Approval Process. Any trainee submitted to fulfill the OJT requirement must be in a registered training program. Acceptable training programs include:

a. BAT Programs – Apprenticeship programs approved by the U.S. Department of Labor, Bureau of Apprenticeship and Training.
b. Any other program, such as the Missouri Manpower Programs, which have been approved by FHWA and MoDOT on an annual basis.

4.1 Submittal of the TRAINEE NOTIFICATION – After the training plan has been approved, the Trainee Notification Form should be submitted within 30 days of the trainee commencing work on the project. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower-level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification will be permitted only with the approval of the Business Development and Compliance Division. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training. Reimbursement to the Contractor for off-site training as indicated above may only be made when the Contractor does one or more of the following and the trainees are concurrently employed on federal-aid projects:

Contributes to the cost of the training.

Provides the instruction to the trainee.
Pays the trainee's wages during the off-site training period.

5.0 Good Faith Efforts (GFE). Substantial Compliance – Although the OJT Program is specifically designed to increase minority and female participation on federal aid highway construction projects where underutilization exists, it is not intended to be discriminatory. Contractors and subcontractors may utilize a non-minority male apprentice/trainee if sufficient documented good faith efforts are taken to fill the specific training position with either minorities or females. The Contractor shall enroll minorities, women or economically disadvantaged individuals, where possible, and document their good faith efforts, prior to the hiring of non-minority males not identified as economically disadvantaged. The Contractor may suggest that a subcontractor fulfill a portion of the contract work. However, he/she shall determine how many, if any, of the trainees are to be trained by the subcontractor, and secure approval from MoDOT. Nevertheless, the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this Special Provision. The Contractor shall apply the requirements of this Training Special Provision to such subcontracts. Where feasible, 25% of apprentice or trainees in each craft shall be in their first year of apprenticeship training. The Contractor shall be aware that even if a trainee has been previously approved to work on a prior MoDOT project, that trainee may not be approved on future projects if the trainee is not in their first year of apprenticeship training.

5.1 A good faith effort requires that the Contractor furnish evidence of their systematic and direct recruitment efforts through the use of public and private sources likely to yield minorities and females. The following example represents one element of good faith efforts: The Contractor must submit letters that are project specific (project location, how long it will last, type of pay) and targeted for the crafts utilized and must be sent to Community Based Organizations (CBOs) (two or three that are likely to refer minorities or females), and unions/apprenticeships (if union shop). The letters must be forwarded prior to job startup to alert CBOs to the possibility of the Contractor needing assistance finding minorities and females. These letters should be ongoing and targeted when the Contractor needs assistance in locating minorities and/or females in a specific craft. The Contractor's letters should also address anything the Contractor has done to hire minorities and/or females as well as files including employee referrals. The Contractor in his or her letter must request a response and the Contractor must note the results of the Contractor's request for assistance. Good faith efforts must be two-way communications with documented results. If a union contractor, contact the union first, then any and all other resources to include two or three CBOs.

5.2 The Contractor shall, upon request, be able to provide documentation of written solicitations to the unions, local or regional community action agencies, or other sources likely to refer minorities or women. Such efforts may be considered good-faith efforts if they were results oriented. If the Contractor's efforts are repetitive mechanical exercises that have never produced a referral or are "stuffing" - that is copies of letters not sent, then the non-productive activity cannot be considered to have been made in good faith. If, however, the Contractor can demonstrate that it employed referrals form the sources contacted on prior occasions and some efforts were not productive due to the lack of availability from usually dependable and responsive sources, then the non-productive effort can be considered good faith. In the absence of reasonable representation in any craft, the Contractor should be able to provide proof of its having requested referrals of minorities and women (i.e., records of telephone requests, including dates and times, persons talked with, and for which crafts minorities and women were requested). Letters should be detailed and include the type of vacancy to be filled, location of the project, potential employment opportunities with the company, and current as it relates to the specific job opportunity(ies).

5.3 All sources relied upon by the Contractor in advertising for vacancies and recruiting employees, especially those that resulted in referrals and employment should be identified and reported. Lists of minority organizations and other recruiting sources that have not been used or which have not been used recently or which if used have never referred anyone for employment should not be considered to meet the good faith effort test. All efforts reported by the Contractor to contact recruiting sources will be verified with the recruiting source listed. Contractors often send these recruiting sources "form" letters indicating they are under contract for a federal project. To be considered valid, recruitment letters should be specific. For example, recruitment letters should specify the positions for which referrals are sought, the number of employees needed, position requirements, estimated dates, who to contact, wage/salary range, and other information sufficient to elicit interest and references of potential employees. Form letters without specific information will not be considered good-faith efforts.

5.4 The terms and conditions of employment practiced by the Contractor should be explored to allow the Contractor the opportunity to demonstrate whether there is adequate representation of minorities and women throughout the life of the contract.

5.5 While it is the Contractor's prerogative to select who will be hired, recalled, rehired, or name requested, it is also the Contractor's responsibility to ensure equal employment opportunity for minorities and women.

5.6 The hours of minority and female employment and training should be substantially uniform throughout the length of the contract, and in each trade, and the Contractor is required to make a good faith effort to employ minorities and women evenly on each project when there are opportunities to do so. The Contractor should not wait to hire minorities and women at the "eleventh hour" or "bicycle" employees from project to project.

5.7 In the event the Business Development and Compliance Division denies the Good Faith Effort (GFE) submitted by the contractor, the contractor shall have the right to an Administrative Reconsideration Hearing. The request for an administrative reconsideration hearing must be made within seven (7) days of the receipt of the denial letter. The Administrative Reconsideration Committee may be constituted, as MoDOT deems appropriate and fair, provided that no committee member on the Reconsideration Committee shall have taken part in the original MoDOT determination that the contractor failed to meet the OJT contract goal and/or failed to make adequate good faith efforts to do so.

5.8 If the Administrative Reconsideration Committee does not find the contractor met the OJT contract goal, and/or does not find that the contractor made adequate and sufficient good faith efforts to do so, then The Administrative Reconsideration Committee will recommend that liquidated damages as outlined in the non-compliance sanctions section below be carried out. If the Administrative Reconsideration Committed does find that the contractor has met a good faith effort (GFE), then no liquidated damages will be assessed.

6.0 Economically Disadvantaged Verification. When a contractor submits a trainee who is economically disadvantaged the following information should be submitted with the trainee notification to verify this status:

The previous year's tax return verifying the individual's income is less than the federal poverty guidelines, or
Verification of enrollment in any government issued entitlement programs.

7.0 Beneficial Training. MoDOT will ensure its contractors provide on-the-job training aimed at developing or contributing to full journey level status in the type of trade(s) involved. Training shall be consistent with the trainee/apprentice program. Training tasks will be consistent with the approved trade classification for the specific contract. The Contractor shall furnish the trainee a copy of the program the Contractor will follow in providing the training. The Contractor shall provide each trainee and Resident Engineer documentation showing the type and length of training that will be completed include classroom and on-the-job hours. This includes providing information on the monthly trainee report and trainee notification as to the total working and classroom hours the trainee/apprentice has completed to date.

8.0 Training Reimbursement Process. Except as otherwise noted herein, the Contractor will be reimbursed $10.00 per hour of training given an employee on this contract in accordance with an approved training program.

8.1 Reimbursement will be made at the end of the project, once all trainee hours have been submitted, as well as the trainee summary. The Contractor will be reimbursed for hours each trainee has attained on the project, with the minimum hours for reimbursement eligibility being 500. Contractors will be reimbursed in instances where the OJT goal is met as well as if a Good Faith Effort is made to meet the goal. Reimbursement will not be made if the OJT goal was not met, and the contractor did not make a Good Faith Effort to meet the goal.

8.2 Training will not be reimbursed if the Contractor fails to provide beneficial training. This includes only partially meeting the training goal on the project.

8.3 A request may be submitted to the Business Development and Compliance Division to increase the Training Hours assigned to a contract. Approval of such requests by the Business Development and Compliance Division will be granted on a case-by-case basis.

8.4 The Contractor is eligible to be reimbursed the total OJT hours assigned to the project once those hours have been fulfilled. For any hours achieved beyond the goal, the contractor must request this additional reimbursement from the BDC Division, and, with concurrence from the Resident Engineer, the contractor is then eligible to receive reimbursement of hours achieved beyond the goal, either 25% of hours over the goal or 500, whichever is less. Outlined below is the maximum overrun reimbursements:

OJT Goal	Hours Achieved	Payable Hours
1,000	1,250	1,250
2,000	1,500	1,500
3,000+	1,501+	1,500

9.0 Monitoring. MoDOT will monitor contractors to ensure trainees and apprentices are receiving beneficial training in the type of trades submitted. Training shall be consistent with the training program or those OJT Programs the FHWA and MoDOT have approved.

9.1 It is normally expected that the trainee/apprentice will begin training on the project as soon as possible, utilizing the skills involved and remaining on the project as long as training opportunities exist in the work classifications or until the completion of the training program.

9.2 Project Office staff will periodically interview trainees to determine:

Whether apprentice/trainee is receiving training in designated craft
Workplace environment
If trainee/apprentice is experiencing problems on the job site
If the apprentice/trainee is being treated fairly

9.3 MoDOT monitors contracts with training through onsite visits, monthly training reports and construction reports. These reports are generated by the Contractor and are to be disseminated to the Project Office. If there are problems, the Business Development and Compliance Division will contact the Contractor to address the deficiencies.

9.4 Trainees will be paid at the rate set by the training program. The appropriate minimum journeyman's rate paid cannot be less than the amounts set out in the 23 CFR Subpart A, Appendix B. For example, at least 60 percent of the appropriate minimum journey person's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period and 90 percent for the last quarter of the training period. The appropriate rates approved by the Department of Labor or Transportation in connection with the existing programs shall apply to all apprentice or trainees being trained for the same classification who are covered by the Training Special Provision.

10.0 Reports. The Contractor shall provide for the maintenance of records and furnish monthly reports documenting the Contractor's performance under this provision. All trainee notifications must be submitted within 30 days of the trainee's start date. If a trainee has been previously approved by MoDOT, the Contractor must still notify MoDOT of the name of the individual(s) and proposed craft the trainees will be trained in, as well as indicate which project the trainees will be working on. The trainee notifications or listing of the proposed trainees must be submitted via fax, mail or electronically to the BDC Division. If the Contractor fails to submit the trainee notification or list of proposed trainees prior to the onset of the project, the Contractor will be subject to the sanctions as outlined in this OJT TSP. All sections in the monthly reports shall be completed and the report submitted to the project office by the 15th of the following month.

11.0 Non-Compliance Sanctions. Progress payments shall be withheld for failing to comply with all OJT Program requirements unless MoDOT accepts Good Faith Efforts.

11.1 If the training hours have not been obtained and a GFE has not been displayed upon project completion, the Contractor will be assessed liquidated damages in the amount of $20.00 per hour for those hours not realized. For instance, if the project goal was 1,000 hours and only 450 hours were met, then liquidated damages would be assessed at 550 x $20.00 = $11,000.00.

11.2 If the Business Development and Compliance Division approves a GFE, then liquidated damages will not be assessed. An approved GFE along with the minimum 500 training hours will result in reimbursement for the applicable hours.

11.3 If the Contractor does not achieve the full OJT goal, they will not receive partial credit for hours completed under 500 per trainee. For instance, if the goal on the project was 1,000 hours and only 450 were convened, then no reimbursement will be given for any hours fulfilled. If the goal on the project is 2,000 hours and only 1,500 hours are completed and no GFE is demonstrated, the contractor will receive credit for the 1,500 hours and also be assessed liquidated damages in the amount of the 500 hours that there were not met.

11.4 In the event the Contract exceeds the trainee goal on the project, the Contractor must submit a request to BDC to obtain an extension of hours. The maximum number of hours beyond those enumerated in the contract cannot exceed 25% per 1,000 hours, with a maximum of 500 hours eligible for reimbursement beyond the goal. This extension is subject to the **advance** approval of the BDC Division, and concurrence from the Resident Engineer.

11.5 Trainee reports must be submitted following the last pay period of the month, no later than the 15th of the following month. Failure to timely submit the reports, hours completed during that month could result in hours not being credited. In the cases of voluntary or involuntary trainee termination or when the trainee completes the hours specified in the program, the contractor must complete the trainee completion form within 30 days. The Contractor's failure to submit the proper reports in a timely manner may result in the loss of reimbursement for the training hours for that month

11.6 Failure to satisfactorily comply with the OJT requirements will also be reflected in the contractor's performance evaluation.

OPTIONAL ROLLER COMPACTED CONCRETE SHOULDERS AND MAINLINE

01/16; 04/22

1.0 Description. Roller Compacted Concrete (RCC) is an optional method to be used in constructing A2 and A3 shoulders or mainline pavement up to 7 inches thick in lieu of conventional PCCP or HMA placement. RCC may be used, as designed in the plans, for mainline pavements greater than 7 inches. RCC consists of aggregate, portland cement and water. Supplementary

cementing materials, such as fly ash, slag cement (ground granulated blast- furnace slag - GGBFS), and silica fume may be used. RCC is proportioned, mixed, placed, compacted, and cured in accordance with these specifications. RCC shall conform to the lines, grades, thickness, and typical cross section shown in the plans or otherwise established by the Engineer.

2.0 Materials. All materials shall be in accordance with Division 1000, Materials Details, and specifically as follows:

Item	Section
Coarse Aggregate	1005.2
Fine Aggregate	1005.3
Ground Granulated Blast Furnace Slag	1017
Fly Ash	1018
Cement	1019
Concrete Admixture	1054
Curing Compound	407, 1055
Water	1070

2.1 Aggregate. The plasticity index of the aggregates used shall not exceed 5. The aggregate gradation shall be well-graded without gradation gaps and shall meet the following combined gradation for the application type for RCC specified in the contract:

Application	**RCC as a Base or Intermediate Lift** (Overlaid with 2-inch HMA or greater)	**RCC as the Final Surface or with a Thin Lift Overlay** (RCC as the final surface or capped with a thin HMA overlay less than 2-inches)
Sieve Size	**Percent Passing by Weight**	**Percent Passing by Weight**
1 inch	100	---
¾ inch	---	100
½ inch	70 - 95	85 - 100
3/8 inch	60 - 85	---
No. 4	40 - 60	60 - 85
No. 8	--	40 - 60
No. 200	0 - 8	0 - 10

3.0 Mix Design. At least 30 days prior to the beginning of placing RCC on the project, the Contractor shall submit a proposed mix design to the Engineer. The target and allowable gradation range of each fraction shall be included. The contractor may be required to submit representative samples of each ingredient to Construction and Materials for laboratory testing.

3.1 Required Information. The mix design shall contain the following information:

(a) Source, type and specific gravity of portland cement

(b) Source, type (class, grade, etc.) and specific gravity of supplementary materials, if used

(c) Source, name, type and amount of admixture, if used

(d) Source, type (formation, etc.), ledge number if applicable, of the aggregate

(e) Specific gravity and absorption of each fraction in accordance with AASHTO T 85 for coarse aggregate and AASHTO T 84 for fine aggregate, including raw data

(f) Unit weight of each fraction in accordance with AASHTO T 19

(g) Batch weights of portland cement and supplemental cementitious materials

(h) Batch weights of coarse, intermediate and fine aggregates

(i) Batch weight of water in pounds per cubic yard (optimum moisture content)

(j) Maximum laboratory density

(k) The laboratory proctor curves illustrating moisture contents vs. density for each cementitious material content.
The RCC mix design shall be done in a similar fashion as is done to determine the relationship between the moisture content and

the unit weight as soils and soil aggregate mixtures. The apparatus and compacted effort used to fabricate the moisture density specimens correspond to that described in AASHTO T 180, Method D. Strength specimens shall be made in accordance with ASTM C 1176 or ASTM C 1435 at the optimum moisture content for each cementitious material content to verify minimum compressive strength requirements.

3.2 Trial Batch. The Contractor shall prepare and test a trial batch mixture at the mixing facility to verify that the RCC mix complies with the design criteria. The trial batch shall be prepared and tested in the presence of the Engineer.

3.3 Production. Production shall not begin until an approved mix design has been obtained and verified by the trial batch.

3.4 Design Strength. The mix design shall have a minimum compressive strength of 3,500 psi within 28 days when specimens prepared according to ASTM C 1176 or ASTM C 1435. Compressive strength test shall be performed in accordance with AASHTO T 22.

3.5 Minimum Water Content. The water-cement ratio shall not be lower than 0.25.

3.6 Minimum Cementitious Content. The total amount of cementitious materials shall not be below 450 pounds per cubic yard.

3.7 Supplementary Cementitious Material. RCC may use fly ash, slag cement (GGBFS), or silica fume. Ternary mixes will be allowed for RCC. Ternary mixes are mixes that contain a combination of portland cement and two supplementary cementitious materials. The amount of supplementary cementitious material content shall be limited to the following requirements:

Supplementary Cementitious Material (SCM)	
SCM	**Maximum Percent of Total Cementitious Material**
Fly Ash (Class C or Class F)	25 %
Slag Cement (GGBFS)	30 %
Silica Fume	8 %
Ternary Combinations	40 %

4.0 Equipment. RCC shall be constructed with any combination of equipment that will produce a pavement meeting the requirements for mixing, transporting, placing, compacting, finishing, and curing as provided in this specification.

4.1 Mixing Plant: The mixing plant shall be capable of producing RCC to the proportions defined by the final approved mix design and within the specified tolerances. The capacity of the plant shall be sufficient to produce a uniform mixture at a rate compatible with the placement equipment.

4.2 Paver: RCC shall be placed with a high-density or conventional asphalt type paver subject to approval by the Engineer. The paver shall be of suitable weight and stability to spread and finish the RCC material, without segregation, to the required thickness, smoothness, surface texture, cross-section, and grade.

4.3 Compactors: When a conventional asphalt type paver is used, self-propelled steel drum vibratory rollers shall be used for primary compaction. For final compaction, a steel drum roller, operated in a static mode, or a rubber-tired roller may be utilized to meet density requirements.

4.4 Haul Equipment: The hauling equipment shall be smooth, mortar-tight, metal containers capable of discharging the concrete at a controlled rate without segregation. Hauling equipment shall have a retractable cover to protect mix from weather and excessive evaporation.

4.5 Access for Inspection and Calibration: The Engineer shall have access at all times for any plant, equipment, or machinery to be used in order to check calibration, scales, controls, or operating adjustments.

5.0 Construction Requirements.

5.1 Preparation of Subgrade. Before the RCC processing begins, the subgrade and base course must be prepared in accordance with Sec 304.

5.2 Subbase Condition. The surface of the subbase shall be clean and free of foreign material and standing water prior to placement of the RCC. The aggregate base shall be uniformly moist at the time of RCC placement. RCC shall not be placed upon frozen subbase.

5.3 Mixing Time. Mixing time shall be adequate to ensure a thorough and complete mixing of all materials. Concrete shall be homogeneous with no aggregate segregation. In no case shall the mixing time, after all materials including water are in the mixer, be less than 90 seconds.

5.4 Operating Tolerances. The mixing plant shall receive the quantities of individual ingredients to within the following tolerances:

Material	Variation by Weight
Cementitious Materials	± 2.0%
Water	± 3.0%
Aggregates	± 4.0%

5.5 Plant Calibration. Prior to RCC production, the Contractor shall calibrate the plant in accordance with the manufacturer's recommended practice. A copy of the calibration shall be provided to the Engineer when requested.

5.6 Curing. Immediately after final rolling, the RCC surface shall be kept continuously moist until an approved curing compound is applied. The application of the curing compound shall progress such that no more than 10 linear feet of the final RCC surface is exposed without curing at any time.

5.6.1. Water Cure. Water cure shall be applied such that a uniform moist condition on the surface of the RCC is attained. Application of this moisture shall be done in a manner that will not erode or damage the finished RCC surface.

5.6.2 Curing Compound. When RCC is used as the final surface, either white pigmented curing compound applied at the rate of one gallon for each 100 square feet or a tack coat product applied at 0.14 gal/yd^2 shall be used for curing. When RCC is to be overlaid with asphalt, the curing compound shall be a tack coat product applied at 0.14 gal/yd^2 in accordance with Sec 407.

5.7 Weather Conditions.

5.7.1 Hot Weather Precautions. During periods of hot weather or windy conditions, special precautions shall be taken to minimize moisture loss due to evaporation.

5.7.2 Cold Weather. The contractor shall provide a method, meeting the approval of the engineer, of monitoring the concrete that demonstrates that the concrete has been protected from freezing.

5.7.3 Protection Against Rain. To protect against rain, the contractor shall have on location at all times material for the protection of the unhardened concrete. The contractor shall protect the concrete from damage due to rain.

5.8 Finished Surface. The finished RCC surface shall be smooth, uniform, and continuous without tears, ridges, or aggregate segregation once it leaves the paver. RCC mainline pavement shall meet the smoothness criteria of Sec 502.8. When RCC is the final surface, the finished surface texture shall be broom finished, diamond ground, or other finishes approved by the engineer. All finished surface textures shall be in accordance with Sec 502.4.

5.8.1 Inaccessible Areas. All areas inaccessible to either roller or paver shall be paved with cast-in-place concrete in accordance with Sec 502.

5.8.2 Handwork. Broadcasting or fanning the RCC material across areas being compacted is not permissible. Such additions of materials may only be done immediately behind the paver and before any compaction has taken place.

5.8.3 Segregation. If segregation occurs in the RCC during paving operations, placement shall cease until corrective measures are taken.

5.9 Cold Joints. Prior to placing fresh RCC mixture against a cold vertical joint, the joint shall be thoroughly cleaned of loose or foreign material. The vertical joint face shall be wetted and in a moist condition immediately prior to placement of the adjacent lane.

5.10 Control Joints. Concrete control joints shall be constructed at 15-foot intervals in RCC mainline pavement. Control joint spacing for RCC shoulders adjacent to HMA or composite pavement shall be a minimum of 30-foot intervals. RCC shoulders adjacent to existing PCC pavement shall have control joints located to match the joints of the adjacent pavement. For all other PCC joint spacing; the RCC control joints shall match the adjacent PCC pavement's joints or cracks not to exceed a 30-foot interval. All control joints shall be tooled or cut to 1/3 the depth of the RCC thickness. Sealing the control joints is not required.

5.11 Opening to Traffic. The Contractor shall protect the RCC from traffic during the curing period. The RCC shoulder pavement may be opened to light traffic after one day and opened to unrestricted traffic after 5 days. The RCC mainline pavement may be opened to light traffic at 2,500 psi and opened to unrestricted traffic at 3,000 psi.

6.0 Material Acceptance.

6.1 Quality Control Testing. The contractor shall perform all quality control tests necessary to control the production and construction processes applicable to this specification. Quality control testing shall be performed by technicians qualified through MoDOT's technician certification program. Testing shall include, but not necessarily be limited to, deleterious content, aggregate gradation, coarse aggregate absorption, thin or elongated pieces, pavement thickness and density. The contractor shall record all test results and furnish a copy to the engineer no later than the beginning of the day following the test.

6.2 Quality Control Plan. A Quality Control Plan (QCP) for RCC mainline pavement and shoulders will be required as per Sec 502.11.1.

6.3 Testing.

6.3.1 Density. The density shall be determined in accordance with AASHTO T 310, direct transmission. Tests shall be performed no later than 30 minutes after the completion of the rolling. Only wet density shall be used for evaluation. QC shall determine the density of the RCC shoulder and mainline pavement at a frequency of no less than one per 7500 square yards. Sampling locations will be determined by the engineer using random sampling procedures in accordance with ASTM D 3665.

6.3.2 Thickness. The contractor shall determine thickness of the RCC shoulder and mainline pavement by testing the fresh concrete. The Resident Engineer will need to review and approve the testing procedure. QC shall determine the thickness of the RCC mainline pavement and shoulders at a frequency of no less than one per 7,500 square yards. Sampling locations will be determined by the engineer using random sampling procedures in accordance with ASTM D 3665.

6.4 Aggregate Gradation. A sieve analysis shall be performed once a week. Testing shall be performed in accordance with AASHTO T 27 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

6.5 Deleterious Materials. Deleterious content shall be determined each day at a frequency of one test per 7500 square yards of material placed or fraction thereof. Test shall be performed in accordance with MoDOT TM 71 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt. Tests shall be performed on coarse aggregate fractions.

6.6 Absorption. Samples for coarse aggregate absorption shall be taken from the discharge gate of storage bins or from the conveyor belt at least once every 2000 cubic yards with a minimum of once per project. Coarse aggregate absorption shall be performed in accordance with AASHTO T 85.

6.7 Thin or Elongated. Thin or elongated pieces shall be determined on samples of coarse aggregate taken from the discharge gate of the storage bins or from the conveyor belt. Test shall be performed in accordance with ASTM D 4791 using a ratio of 5:1. Test shall be performed on aggregate particles retained on the ¾ in. sieve. Tests shall be performed at least once every 10,000 cubic yards with a minimum of once per project.

6.8 Retained Samples. All aggregate samples taken by the contractor, including but not limited to gradation, deleterious, absorption, and thin or elongated pieces shall be retained for the engineer for a minimum of seven days unless otherwise instructed. The retained sample shall be the remaining half of the final reduction in sample size obtained for QC testing. These samples shall be maintained in clean covered containers, without contamination, readily accessible to the engineer. The retained sample's identification shall consist of, but is not limited to:

(a) Time and date sampled

(b) Product specification number

(c) Type of sample, i.e., belt, bin, stockpile

(d) Lot and sublot designation

(e) Sampler/Tester

(f) Project Job Number

6.9 Acceptance.

6.9.1 Density. The density shall not be less than 98 percent of the maximum laboratory density.

6.9.1.1 Compressive Strength. Roller compacted concrete properly placed and compacted, but not meeting the density requirements shall be cored and tested for compressive strength at no additional cost. Cores shall be taken in accordance with AASHTO T 24. The compressive strength shall be determined by approved methods. Cores shall be tested for compressive strength within 7 days of density testing. If the tested area achieves the design strength, the material will be paid for at full price. Areas that fail to comply with the design strength will be deemed unacceptable and shall be addressed in accordance with Sec 105.11.

6.9.2 Thickness. The thickness shall not be deficient by more than 10 percent of the plan thickness. Areas that fail to comply with the design thickness will be deemed unacceptable and shall be addressed in accordance with Sec 105.11.

6.9.3 Aggregate Gradation. When one test is outside the allowable gradation range, immediate steps shall be taken to correct the gradation.

6.9.4 Deleterious Materials. When one test is outside the specification limits, immediate steps shall be taken to correct the deleterious content.

6.9.5 Absorption. The contractor shall halt production and make appropriate adjustments whenever either of the following occurs:

(a) One point falls outside the action limit line for individual measurement

(b) Two points in a row fall outside the specification limit but within the action limit line for individual measurement

6.9.5.1 Action Limits. The following action limit shall be used to control the aggregate absorption.

Individual Measurements	
Control Parameter	**Action Limit**
Absorption	Mix Design plus 0.3% to Mix Design plus 0.6%

6.9.6 Thin or Elongated Pieces. The coarse aggregate shall not have more than 5 percent thin or elongated pieces.

7.0 Quality Assurance.

7.1 Independent Samples. Corrective action shall be required when any QA tests are outside the required ranges or action limits. The engineer will at a minimum, independently test at the following frequency:

Test	Frequency
Density	1 test per 30,000 square yards
Thickness	1 test per 30,000 square yards
Aggregate Gradation	1 per project
Coarse Aggregate Deleterious	1 per week
Absorption	1 per 10,000 cubic yards
Thin or Elongated	1 per project

7.2 Test Procedures. The engineer will use the same test procedures as the contractor for determining the density and thickness of the RCC.

7.3 Retained Samples. The QA inspector will test at least ten percent of the retained portion of the QC samples for aggregate gradations and deleterious content. The QA inspector will test at least twenty percent of the QC retained samples for absorption and thin or elongated pieces. Retained samples will be chosen at random. A comparison will be considered favorable when the QA results of a QC retained sample are within the applicable limits specified in Sec 403.

8.0 Method of Measurement. Final measurement of the completed pavement will not be made except for authorized changes during construction, or where appreciable errors are found in the contract quantity. Where required, measurement of the RCC

mainline pavement and shoulders, complete in place, will be made to the nearest 1/10 square yard. The revision or correction will be computed and added to or deducted from the contract quantity.

9.0 Basis of Payment. The accepted quantities of RCC will be paid for at the contract unit price, for specified A2 or A3 shoulders or mainline. Sec 610 for smoothness pay factor adjustments will apply to the final RCC mainline pavement surface. The contract unit price for A2 or A3 shoulders or mainline pavement will be considered as full compensation for all materials, equipment, tools, labor, and incidentals necessary to satisfactorily complete the work. No additional compensation will be allowed for any excess thickness.

GROUND TIRE RUBBER (GTR) DRY PROCESS MODIFICATION OF BITUMINOUS PAVEMENT MATERIAL

07/24

1.0 Description. This work shall consist of the dry process of adding ground tire rubber (GTR) to modify bituminous material to be used in highway construction. Existing GTR requirements in Section 1015 pertain to the wet process method of GTR modification that blends GTR with the asphalt binder (terminal blending or blending at HMA plant). The following requirements shall govern for dry process GTR modification. The dry process method adds GTR as a fine aggregate or mineral filler during mix production. All GTR modified asphalt mixtures shall be in accordance with Secs 401, 402, or 403 as specified in the contract; except as revised by this specification.

2.0 Materials. The contractor shall furnish a manufacturer's certification to the engineer for each shipment of GTR furnished stating the name of the manufacturer, the chemical composition, workability additives, and certifying that the GTR supplied is in accordance with this specification.

2.1 Product Approval. The GTR product shall contain a Trans-Polyoctenamer (TOR) added at 4.5 % of the weight of the crumb rubber or an engineered crumb rubber (ECR) workability additive that has proven performance in Missouri. Other GTR additives shall be demonstrated and proven prior to use such as a five-year field performance history in other states or performance on a federal or state-sanctioned accelerated loading facility.

2.2 General. GTR shall be produced from processing automobile or truck tires by ambient or cryogenic grinding methods. Heavy equipment tires, uncured or de-vulcanized rubber will not be permitted. GTR shall also meet the following material requirements:

Table 1 – GTR Material Properties

Property	Test Method	Criteria
Specific Gravity	ASTM D1817	1.02 to 1.20
Metal Contaminates	ASTM D5603	$\leq$0.01%
Fiber Content	ASTM D5603	$\leq$0.5%
Moisture Content	ASTM D1509	$\leq$1.0%*
Mineral Filler	AASHTO M17	$\leq$4.0%

*Moisture content of the GTR shall not cause foaming when combined with asphalt binder and aggregate during mix production

2.3 Gradation. The GTR material prior to TOR or ECR workability additives shall meet the following gradation and shall be tested in accordance with ASTM D5603 and ASTM D5644.

Table 2 – GTR Gradation	
Sieve	**Percent Passing by Weight**
No. 20	100
No. 30	98-100
No. 40	50-70
No. 100	5-15

3.0 Delivery, Storage, and Handling. The GTR shall be supplied in moisture-proof packaging or other appropriate bulk containers. GTR shall be stored in a dry location protected from rain before use. Each bag or container shall be properly labeled with the manufacturer's designation for the GTR and specific type, mesh size, weight and manufacturer's batch or Lot designation.

4.0 Feeder System. Dry Process GTR shall be controlled with a feeder system using a proportioning device that is accurate to within ± 3 percent of the amount required. The system shall automatically adjust the feed rate to always maintain the material within this tolerance and shall have a convenient and accurate means of calibration. The system shall provide in-process monitoring, consisting of either a digital display of output or a printout of feed rate, in pounds per minute, to verify feed rate. The supply system shall report the feed in 1-pound increments using load cells that will enable the user to monitor the depletion of the GTR. Monitoring the system volumetrically will not be allowed. The feeder shall interlock with the aggregate weight system and asphalt binder pump to maintain correct mixture proportions at all production rates.

Flow indicators or sensing devices for the system shall be interlocked with the plant controls to interrupt mixture production if GTR introduction rate is not within ± 3 percent. This interlock will immediately notify the operator if GTR introduction rate exceeds introduction tolerances. All plant production will cease if the introduction rate is not brought back within tolerance after 30 seconds. When the interlock system interrupts production and the plant has to be restarted, upon restarting operations; the modifier system shall run until a uniform feed can be observed on the output display. All mix produced prior to obtaining a uniform feed shall be rejected.

4.1 Batch Plants. GTR shall be added to aggregate in the weigh hopper. Mixing times shall be increased per GTR manufacturer recommendations.

4.2 Drum Plants. The feeder system shall add GTR to aggregate and liquid binder during mixing and provide sufficient mixing time to produce a uniform mixture. The feeder system shall ensure GTR does not become entrained in the exhaust system of the drier or plant and is not exposed to the drier flame at any point after introduction.

5.0 Testing During Mixture Production. Testing of asphalt mixes containing GTR shall not begin until at least 30 minutes after production or per additive supplier's recommendation.

6.0 Construction Requirements. Mixes containing GTR shall have a target mixing temperature of 325 F or as directed by the GTR additive supplier. The additive supplier's recommendations shall be followed to allow for GTR binder absorption/reaction. This may include holding mix in the silo to allow time for binder to absorb into the GTR. Rolling operations may need to be modified.

7.0 Mix Design Test Method Modification. A formal mixing procedure from the additive supplier shall be provided to the contractor and engineer that details the proper sample preparation, including blending GTR with the binder or other additives. Samples shall be prepared and fabricated in accordance with this procedure by the engineer and contractor throughout the duration of the project.

8.0 Mix design Volumetrics. Mix design volumetric equations shall be modified as follows:

8.1 Additional virgin binder added to offset GTR absorption of binder shall be counted as part of the mix virgin binder

8.2 GTR shall be included as part of the aggregate when calculating VMA of the mix.

8.2.1 GTR SPG shall be 1.15

8.3 Mix G_{sb} used to determine VMA shall be calculated as follows:

$$G_{sb\ (JMF)} = \frac{(100 - P_{bmv})}{\left(\frac{P_s}{G_{sb}} + \frac{P_{GTR}}{G_{GTR}}\right)}$$

where:

$G_{sb\ (JMF)} = bulk\ specific\ gravity\ of\ the\ combined\ aggregate\ including\ GTR$

$P_{bmv} = percent\ virgin\ binder\ by\ total\ mixture\ weight$

$P_s = percent\ aggregate\ by\ total\ mixture\ weight\ (not\ including\ GTR)$

$P_{GTR} = percent\ GTR\ by\ total\ mixture\ weight$

$G_{sb} = bulk\ specific\ gravity\ of\ the\ combined\ aggregate\ (not\ including\ GTR)$

$G_{GTR} = GTR\ specific\ gravity$

8.4 G_{se} shall be calculated as follows:

$$G_{se} = \frac{(100 - P_b - P_{GTR})}{\left(\frac{100}{G_{mm}} - \frac{P_b}{G_b} - \frac{P_{GTR}}{G_{GTR}}\right)}$$

8.5 P_{be} shall be calculated as follows:

$$P_{be} = P_b - \frac{P_{ba}}{100} * (P_s + P_{GTR})$$

9.0 Minimum GTR Amount. The minimum dosage rate for GTR shall be 5 % by weight of total binder for an acceptable one bump grade or 10 % by weight of total binder for an acceptable two bump grade as detailed in the following table. Varying percentage blends of GTR and approved additives may be used as approved by the engineer with proven performance and meeting the specified requirements of the contract grade.

Contract Binder Grade	Percent Effective Virgin Binder Replacement Limits	Required Virgin Binder Grade	Minimum GTR Dosage Rate
PG 76-22	0 - 20	PG 70-22	5 %
		PG 64-22	10 %
PG 70-22	0 - 30	PG 64-22	5 %
		PG 58-28	10 %
PG 64-22	0 – 40*	PG 58-28	5 %
		PG 52-34	10 %
PG 58-28	0 – 40*	PG 52-34	5 %
		PG 46-34	10 %

* Reclaimed Asphalt Shingles (RAS) may be used when the contract grade is PG 64-22 or PG 58-28. RAS replacement shall follow the 2 x RAS criteria when calculating percent effective binder replacement in accordance Sec 401.

OPTIONAL BALANCED MIX DESIGN REQUIREMENTS FOR SEC 403 ASPHALTIC CONCRETE PAVEMENT

07/24

1.0 Description. MoDOT is currently piloting use of Balanced Mix Design (BMD) special provisions for Sec 403 asphaltic concrete pavement surface and base course mixes on select projects with intent to ultimately replace volumetrics in Sec 403 with BMD standard specifications. For projects that do not require BMD by special provision, this general provision allows the Contractor the option to adopt MoDOT BMD provisions, or parts thereof, as defined herein. For projects that require use of BMD by special provision, this general provision does not apply.

2.0 Definitions. The following definitions apply only for purposes of these Optional BMD provisions:

a) MoDOT Job Special Provisions: MoDOT JSPs referenced herein shall be as posted at time of bid at this site: https://epg.modot.org/index.php/Job_Special_Provisions
b) BMD Provisions: BMD Provisions, as referenced in these provisions, shall be as stated in Section 2.0 of MoDOT JSP2401, Balanced Mix Design Requirements for Sec 403 Asphaltic Concrete Pavement
c) Rapid Penetrating Emulsion (RPE): Any use of RPE for corrective action shall be in accordance with Section 1.1 of MoDOT JSP2401, Balanced Mix Design Requirements for Sec 403 Asphaltic Concrete Pavement
d) Paver-Mounted Thermal Profiles (PMTP): PMTP provisions shall be as stated in Section 3.0 of MoDOT JSP2401, Balanced Mix Design Requirements for Sec 403 Asphaltic Concrete Pavement
e) Partial BMD for Base Mixes: Partial BMD for Base Mixes shall be as defined in Section 4.0 of these provisions
f) Surface Mixes: SP048, SP095, and SP125 (both Superpave and SMA mixes)
g) Base Mixes: SP190, and SP250 Superpave mixes

3.0 Contractor Options. The contractor is hereby provided the option to be bound by BMD Provisions in lieu of Sec 403 for all Surface Mixes. When this option is selected, the contractor has three options for administration of Base Mixes, as described herein. When BMD Provisions for Surface Mixes is not selected, Sec 403 shall apply for both Surface and Base Mixes and the Base Mix Options shall not apply. To designate its choices for Surface and Base Mixes, the contractor shall notify the engineer in writing of its selected options prior to the start of work. Upon receipt of this notification, the engineer will acknowledge the selections by issuance of a Documentation Record and will enforce the applicable provisions, as described herein. No change order will be issued. The contractor's choice becomes binding once work begins on any 403 mix. If no choices are designated prior to the start of work, Sec 403 shall apply for both Surface and Base Mixes.

Options for Base Mixes when BMD Provisions are accepted for Surface Mixes:

A. The Contractor accepts to be bound by the BMD Provisions for all Base Mixes.
B. The Contractor declines to accept BMD Provisions for Base Mixes. Sec 403 shall apply for all Base Mixes.
C. The Contractor accepts to be bound by Partial BMD for Base Mixes for all Base Mixes.

4.0 Partial BMD for Base Mixes. When Option C in Section 3.0 is selected, Sec 403 shall apply to Base Mixes, except that partial BMD provisions shall be required to establish performance requirements for cracking and rutting resistance, as stated herein.

4.1 Performance Testing During Design. Acceptable test results meeting the performance requirements for both Cracking Tolerance Index (CT_{Index}), Rutting Tolerance Index (RT_{Index}), and Hamburg Wheel Track (HWT) shall be submitted with the mix design for approval. No incentive/disincentive payment will be imposed during production. The performance requirements for each mix type are detailed in the table below:

4.1.1 Cracking Tolerance Index (CT_{Index}) Testing. The CT_{Index} testing shall be completed in accordance with ASTM D8225 and at a test temperature of 25 +/- 0.5 °C.

Mix Type	**Minimum CT_{Index}**	**$CT_{Index,(Critically\ Aged)*}$**
SuperPave (Non-SMA)	50	Informational Only

*Critically Aged defined as loose mix aging for 20 hours at 115° C.

4.1.2 Rutting Tolerance Index (RT_{Index}) Testing. The RT_{Index} testing shall be completed in accordance with ASTM D8360 and at a test temperature of 50 +/- 1°C.

PG Grade High Temperature*	Minimum RT_{Index}
58-28H / 64-22	50
64-22H / 70-22	65
64-22V / 76-22	80

*Determined by the binder grade specified in the contract.

4.1.3 Hamburg Wheel Track (HWT). HWT testing will be completed in accordance with AASHTO T324 at test temperature of 50 +/- 1°C and 2.44-inch specimen height.

PG Grade High Temperature *	Minimum Wheel Passes	Maximum Rut Depth (in.)
58-28H / 64-22	7,500	0.38
64-22H / 70-22	15,000	0.38
64-22V / 76-22	20,000	0.38

*Determined by the binder grade specified in the contract.

4.2 Design Gyrations. The minimum number (N) of gyrations required for gyratory compaction shall be as follows:

Design	N_{design}[a]
F	35
E	50
C	60
B	65

[a] SMA mixtures shall have N_{design} equal to 100.

4.2.1 Mixture Characteristics. When compacted in accordance with AASHTO T 312, the mixture shall meet the following criteria.

4.2.2 Air Voids (V_a). Design air voids for SuperPave mixtures at all traffic levels shall be between 3.0 and 5.0 percent.

4.2.3 Voids in the Mineral Aggregate (VMA). SuperPave mixtures shall have a minimum volume of effective asphalt, equal to the VMA minus the air voids, as shown in the chart below, with design air voids between 3.0% to 5.0% for SupePave. The minimum VMA shall be equal to the minimum volume of effective binder (V_{be}) plus design air voids.

Mixture	V_{be} Minimum (percent)
SP250	9.0
SP190	10.0

4.3 Field Testing. The contractor shall conduct CT_{Index} and RT_{Index} at a frequency of 1/10,000 tons for the mainline pavement. Results shall be reported to the engineer for informational purposes and sampling times do not need to be random.

4.3.1 Specimen Fabrication. All loose mix shall be sampled at the plant by the contractor during production in accordance with AASHTO R 97 and split to the appropriate size in accordance with AASHTO R 47. The contractor shall wait 30 minutes after sampling loose mix before fabricating specimens for CT_{Index} and RT_{Index} testing. Loose mix temperatures shall not drop below the molding temperature. The 30 minutes shall start when all the material for the loose mix sample has been obtained and the time this occurs shall be recorded. All specimens shall be fabricated as soon as possible after the 30 minute delay.

The following table details the minimum number of specimens required for performance testing:

Test Method	Minimum Number of Specimens	Molded Specimen Height (mm)
Required Fabrication for CT_{Index} and RT_{Index} QC Frequency: 1 Set per 10,000 tons		
Cracking Tolerance Index (CT_{Index})	5 Compacted Specimens	62 (95 mm for SP250)
Rutting Tolerance Index (RT_{Index})	3 Compacted Specimens	62 (95 mm for SP250)
Retained Loose Mix [(a)]	150 lbs	N/A

(a) Loose Mix shall be given to the engineer and sent to the Central Lab for additional testing

4.3.2 Molding Samples. The specimens shall be compacted to an air void content of 7.0 +/- 0.5%. The gyratory specimen weight for each performance test shall be submitted with the mix design. The compacted test specimens shall be allowed to cool to 25 +/- 3° C prior to determining the air void content.

4.3.3 Determining Air Voids. The bulk specific gravity of the test specimen will be determined in accordance with AASHTO T166. Specimens shall be air dried for 24 +/- 3 hours before preconditioning the test specimens for CT_{Index} testing. Test specimens shall be preconditioned as specified in the test methods. If a water bath is utilized, it is critical that samples are kept dry.

4.4 Sec 403 Revisions. These revisions shall only apply to Base Mixes.

Delete Sec 403.5.2 and substitute the following:

403.5.2 Density. The final, in-place density of the mixture shall be between 92.5 and 98.0 percent of the theoretical maximum specific gravity for all mixtures. The theoretical maximum specific gravity shall be determined from a sample representing the material being tested. Tests shall be taken not later than the day following placement of the mixture. The engineer will randomly determine test locations.

Delete Sec 403.23.7.3 and substitute the following:

403.23.7.3 Removal of Material. All lots of material with a PFT less than 50.0 shall be removed and replaced with acceptable material by the contractor. Any sublot of material with a percent of theoretical maximum density of less than 90.5 percent or greater than 98.5 percent shall be removed and replaced with acceptable material by the contractor. Any sublot of material with air voids in the compacted specimens less than 1.5 percent shall be evaluated with Hamburg testing and removed and replaced with acceptable material by the contractor if the rut depth is greater than 12.5 mm at the designated number of wheel passes above. No additional payment will be made for such removal and replacement. The replaced material will be tested at the frequencies listed in Sec 403.19. Pay for the material will be determined in accordance with the applicable portions of Sec 403.23 based on the replacement material.

Delete Sec 403.23.7.4.1 and substitute the following:

403.23.7.4.1 Small Quantities. Small quantities are defined in Sec 403.19.3.2.1. Unless the contractor has elected to use the normal evaluation in the Bituminous QC Plan for small quantities, the following shall apply for each separate mixture qualifying as a small quantity

(a) QLA and PWL will not be required.

(b) Mixtures shall be within the specified limits for VMA, V_a, AC and density. In addition to any adjustments in pay due to profile, the contract unit price for the mixture represented by each set of cores will be adjusted based on actual field density above or below the specified density using the following schedule:

Field Density (Percent of Laboratory Max. Theoretical Density)			Pay Factor (Percent of Contract Unit Price)
For all SP mixtures other than SMA:			
		92.5 to 98.0 inclusive	100
		90.5 to 92.4 inclusive	Correction[(a)]
Above 98.0	or	Below 90.5	Remove and Replace

(a) Correction requires spraying rapid penetrating emulsion on deficient density areas in accordance with JSP2303. All costs associated with correction shall be at the contractor's expense with no additional payment.

SAFETY PLAN

04/16

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

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

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

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

1.4 An example Safety Plan is available at: https://www.modot.org/safety-plan

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

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

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

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

3.1 Each activity should also include a general description of the work involved along with the known risks associated with the activity. In addition, the PSA should outline the controls for those risks, including any Personal Protection Equipment (PPE) requirements for that activity or phase, and whether or not the activity or phase requires a specific safety meeting prior to beginning the activity or phase.

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

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

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

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

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

SAFETY EDGE[SM]

04/16; 04/18

1.0 Description. An approved longitudinal shoulder wedge system shall be used to create a beveled edge at the edge of pavement for a roadway without a paved shoulder, or at the edge of shoulder for pavement with a paved shoulder up to and including 4 feet in width.

2.0 Construction Requirements. The Safety Edge shall be constructed as shown in Standard Plan 401.00 The construction tolerance of the 30 degree Safety Edge[SM] shall be plus or minus 5 degrees.

2.1 The shoulder wedge system shall maintain contact between the device and road shoulder surface and allow automatic transition to cross roads, driveways and obstructions. The device must be removable or be able to be lifted when not in use.

2.2 All shoulder wedge systems to be used for the purpose of creating a Safety Edge[SM] must be approved by the engineer. The device must be designed to constrain the material, increase the consolidation of the extruded profile, and provide a smooth wedged surface. The use of a conventional single plate strike-off is not permitted.

3.0 Basis of Payment. There will be no direct payment for compliance with the requirements of this provision.

E-CONSTRUCTION

01/17; 1/19; 04/22

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

2.0 Document Submittals.

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

2.2 Documents that require notarization, such as the Affidavit for Compliance with the Prevailing Wage Law and the Contractor's Affidavit Regarding Settlement of Claims (Form C-242), may be submitted either through an Electronic Notary, or on the original form in a paper medium sealed with the notary attestation.

2.3 The engineer will submit project documents to the contractor via email or through other secure file sharing sites.

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

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

3.0 Digital and Electronic Signatures.

3.1 All documents that require signature shall be signed with an electronic signature, except that change orders shall be signed with a registered digital signature in accordance with Section 3.2. Acceptable electronic signatures include any of the following options:

1. A digital signature, either registered or non-registered. A registered digital signature is defined in Section 3.2. Registration is only required for digital signatures on change orders.
2. An electronically written signature by the signee, such as with a stylus pen.
3. Simply typing the name of the author of a document in the signature field is acceptable if the document is also uploaded by the contractor to MoDOT's external Microsoft SharePoint®. This option is authenticated by the user's login credentials which are provided by MoDOT.

3.2 Digital Signature on Change Orders. All change orders shall be executed by the contractor with a registered Digital Signature. The contractor shall submit a letter to the engineer listing all personnel who are authorized to sign change orders on the contractor's behalf. All contractor personnel who are authorized to sign change orders shall create a Digital Signature and shall register their signature with MoDOT by submitting their Digital Signature Certificate (Public Key fdf file) to the Division of Construction prior to signing any change orders. The Public Key file will be used to validate the signee's signature on change orders. To assist contractors with setting up a digital signature, a Quick Reference Guide (QRG) is available in MoDOT's Engineering Policy Guide at http://epg.modot.org (click on QRGs in the left hand column and choose "Digital Signature for Adobe Reader").

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

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

ELECTRONIC INFORMATION FOR BIDDER'S AUTOMATION

07/17

1.0 Description. If electronic information for bidder's automation is provided in the Electronic Deliverables, it is for information only. This information, used for project design and quantity estimation purposes, is provided for the bidder's use in automation of bid estimating, project staking, automated machine guidance and other construction methods.

2.0 Information Provided. Electronic information may be provided consisting of survey and design information including but not limited to 3-dimensional design models, cross-section models, alignment data, and plan view geometry. This information does not constitute part of the bid documents or contract documents.

3.0 Disclaimers. The electronic information shall not be considered a representation of actual conditions to be encountered during construction. Furnishing this information does not relieve a bidder or contractor from the responsibility of making an investigation of conditions to be encountered including, but not limited to site visits, and basing the bid on information obtained from these investigations, and the professional interpretations and judgment of the bidder or contractor. The bidder or contractor shall assume the risk of error if the information is used for any purposes for which the information was not intended. The Commission makes no representation as to the accuracy or reliability of the information, since the information may not be representative of the sealed contract documents. Any assumption the bidder or contractor may make from this electronic information is at the bidder or contractor's risk; none are intended by the Missouri Highways and Transportation Commission. The bidder or contractor assumes the sole risk of liability or loss if the bidder or contractor does rely on this electronic information to its detriment, delay or loss.

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

COVID-19 SAFETY

07/22; 04/24

1.0 Description. To reduce the impact of COVID-19 outbreak conditions on businesses, workers, customers and the public, the contractor shall be aware of all COVID-19 guidance from the Center for Disease Control (CDC) and other government health mandates. The contractor shall conduct all operations in conformance with these safety directives. The guidance may change during the project construction and the contractor shall change and adapt their operation and safety protocols accordingly.

2.0 Safety Plan. The contractor shall include these procedures in the project safety plan as called for in the contract documents and revise the safety plan as needed.

3.0 Essential Work. In accordance with any state or local Stay at Home Order, care for the infrastructure has been deemed essential

and MoDOT is moving forward with construction projects, this project is considered essential and the contractor and their employees, subcontractors and suppliers are considered essential business and performing essential functions.

4.0 Basis of Payment. Compliance with regulations and laws pertaining to COVID-19 is covered under Sec 107 of the Missouri Standard Specifications for Highway Construction. No direct payment will be made for compliance with this provision.

ANTI-DISCRIMINATION AGAINST ISRAEL CERTIFICATION

07/24

By signing this contract, the Company certifies it is not currently engaged in and shall not, for the duration of the contract, engage in a boycott of goods or services from the State of Israel, companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel, or persons or entities doing business in the State of Israel as defined by Section 34.600 RSMo. This certification shall not apply to contracts with a total potential value of less than One Hundred Thousand Dollars ($100,000) or to contractors with fewer than ten (10) employees.

DISPOSAL OF BLAST MEDIA AND PAINT RESIDUE

07/24

1.0 Description. Whereas Sec 1081.10 requires delivery of Blast Media and Paint Residue (BMPR) produced from bridge coating activities to The Doe Run Company for recycling, and considering the amount of BMPR produced on all active MoDOT projects statewide at any given point in time may exceed the recycling capacity of Doe Run, this provision allows for an alternate method of disposal of BMPR. The contractor, at its discretion, can choose this disposal option or the Doe Run recycle option, when both are available. When Doe Run is not currently capable or agreeable to accept the BMPR, this alternate disposal option shall be considered mandatory, and at no additional cost to the Commission.

2.0 Disposal in Landfill. In lieu of delivery to Doe Run for recycling, BMPR material shall be disposed in the appropriate type of approved landfill, as determined by Toxicity Characteristic Leaching Procedure (TCLP) testing. The material must be TCLP tested to determine if it contains a level of hazardous waste such that requires disposal in a hazardous waste landfill. A sampling plan for testing shall be submitted to MoDOT for review and concurrence. Sampling shall be performed by the contractor. MoDOT will witness the sampling to ensure it is conducted per the plan submitted.

2.1 The contractor shall submit the collected samples to a qualified third-party testing facility to perform TCLP testing. If the sample indicates that the BMPR material qualifies as hazardous waste, then the materials represented by that sample shall be delivered to a licensed hazardous waste landfill for disposal. The contractor shall be responsible for hiring a licensed hazardous waste transporter to transport the hazardous waste to the landfill. The contractor shall comply with all applicable laws and regulations for storage and shipping of the hazardous waste material. If the testing indicates that the BMPR material qualifies as a special waste, it shall be taken to a certified landfill for disposal. The contractor shall be responsible for the transportation of the special waste material to the certified landfill. The requirement to ship the BMPR material by barrels will be waived. Any alternate containers utilized shall comply with all applicable laws and regulations for shipping this type of special waste material. Copies of all shipping manifests, landfill disposal agreements, and any other legally required documentation shall be provided to the engineer.

3.0 Basis of Payment. No payment will be made for any costs associated with this landfill disposal option, including, but not limited to, sampling, testing, delivery, temporary storage, or disposal fees.

DIVISION 600

"POINT OF PRESENCE" SIGNS

03/12; 05/12

1.0 Description. This work shall consist of furnishing and installing a 36 X 48 inch or a 96 X 48 inch “Point of Presence" signs, as indicated in the plans. The contractor shall furnish signs, labor, equipment, posts and hardware for installation of the sign in accordance with this provision or as directed by the engineer.

2.0 Construction Requirements. The sign shall be placed as shown on the plans. A project impacting only one direction of a divided highway will require only one sign. The contractor shall maintain all signs until completion of the project. Upon completion of the project, the “Point of Presence” signs shall remain in place ninety days with the “Completed as Promised” decal or plaque

attached. After the ninety day period expires, the contractor shall be required to remove the sign. The sign, decal or plaque, posts and hardware will remain the property of the contractor.

2.1 The 36 X 48 inch "Point of Presence" sign shall be post mounted on two 3-pound/foot U-channel posts, or one-2 ½ inch perforated square steel tube post.

2.2 The 96 X 48 inch "Point of Presence" sign shall be post mounted on three 3-pound/foot U-channel posts with 32-inch spacing between posts.

3.0 Basis of Payment. The accepted quantity of "Point of Presence" signs will be paid for at the contract unit price per square feet of construction signing. The "Completed as Promised" decal or plaque shall be considered incidental to the "Point of Presence" sign.

FLAGGING PROCEDURE FOR TWO-LANE ROADWAYS (3-2-1 CONE PROCEDURE)

04/23

1.0 Description. Flagging operations shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) Chapter 6, Section 107 and 616 in Missouri Standard Specifications for Highway Construction, Missouri Standard Plans for Highway Construction, temporary traffic control plans, and as described herein.

2.0 Procedures for Flagging Short, Intermediate, or Long-Term Stationary Operations. This procedure includes the use of three traffic cones or other channelizing devices. See a pictorial representation in EPG Article 616.5.7.2.

2.1 Step 1. The flagger shall place three cones across the lane of traffic to be stopped, from centerline to shoulder. When no vehicles are present, the flagger should remain on the shoulder with the stop paddle visible.

2.2 Step 2. When traffic has stopped, the flagger shall move towards the centerline of the roadway, keeping the stop paddle visible, and keeping a visual contact with the stopped drivers. Once the flagger has confirmed that opposing traffic is clear, the flagger shall prepare to release the stopped traffic.

2.3 Step 3a. If the vehicles are to travel in the current lane, the flagger shall remove the center cone from the center of the lane.

2.4 Step 3b. If the vehicles are to travel in the opposite lane, the three cones shall remain across the closed lane.

2.5 Step 4. If opening the lane (Step 3a above) the flagger shall walk back to the shoulder with the cone, turn the stop paddle to slow, and then release traffic using a hand signal to direct vehicles between the two remaining cones. If releasing traffic to the other lane (Step 3b above) the flagger shall remain near the centerline of the roadway, turn the stop paddle to slow, and use a hand signal to direct the traffic around the cones into the open lane.

2.6 Once all traffic has cleared, the flagger shall return the slow paddle to stop. The flagger shall replace the cone to the center of the lane or leave the cones across the lane. The flagger then returns to the shoulder and repeats the steps.

2.7 If the roadway width is less than 12 feet, the number of cones may be reduced to two or one, or other channelizing devices may be used.

3.0 Basis of Payment. No direct payment will be made for any cost associated with this provision.

SUPPLEMENTAL GUIDE SIGNS

07/21

1.0 Description. All installation, relocation and repair of Tourist Oriented Destination Signs (TODS), Specific Service Signing (Logos), traffic generator signs (private tourist-oriented activity sites, Colleges, State and Federal Agency sites, Welcome Center Affiliate sites and State Correctional Centers) shall be coordinated between the engineer, contractor and the designated Program Manager for MoDOT's Supplemental Signing Program.

1.1 It shall be noted by the contractor that the Program Manager is responsible for the installation, relocation and repair of all TODS, Logo and traffic generator signs on Commission owned right of way. The contractor shall be solely responsible for determining if the project will affect these signs due to contractor operations during construction of this contract. The contractor shall be responsible for notifying the Program Manager at the time of the preconstruction meeting when one of these signs is determined to be affected and advise the Program Manager of the project details. The Program Manager will attend these meetings at their discretion and shall be contacted during normal business hours Monday-Friday at the number provided by the engineer.

1.2 The Program Manager will be responsible for any installation or relocation of these signs. If the Program Manager has to perform work within the limits of the project, the Program Manager will conduct work so as not to interfere with or hinder the progress or completion of the work being performed by the contractor. Full cooperation of the contractors involved, in careful and complete coordination of their respective activities in the area, will be required.

2.0 Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials or time required to fulfill this provision. The Program Manager shall submit an invoice to the engineer for the work completed, with the costs associated being based on the Supplemental Guide Sign Contract agreed upon pricing. This work is considered non-contractual and will be processed through MoDOT's Financial Services Division.

REVISIONS TO 2025 MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

SECTION 102 – ASPHALTIC CONCRETE PAVEMENT

Delete Sec 102.2 and substitute the following: ***10/25***

102.2 Contractor Questionnaire. Each prospective bidder, including a joint venture, shall file a contractor questionnaire on the form furnished by the Commission, which is available on MoDOT's website. The contractor questionnaire shall be furnished to the Commission as a separate document apart from any other document submitted. A bid will not be opened and read unless a fully responsive contractor questionnaire is on file with the Commission at least seven days prior to the time set for the opening of the bids. A new contractor questionnaire shall be filed as described in **Title 7 CSR 10-15.010**, except the Commission reserves the right to request a contractor questionnaire from any contractor as of any date if the Commission has shown reason to believe that the contractor's experience data may have changed from that shown on the questionnaire on file. This document shall include a record of the bidder's experience data. The Commission will use this information as an aid to determine in each instance the lowest responsible bidder and nothing contained herein shall be construed as depriving the Commission of the Commission's discretion in the matter of determining the lowest responsible bidder.

Delete Sec 102.2.2 through 102.2.3 and substitute the following: ***10/25***

102.2.2 Each prospective bidder shall sign the contractor questionnaire acknowledging that such bidder will fully comply with all written requests by the Missouri Department of Labor and Industrial Relations, Division of Labor Standards, to provide information for the purpose of establishing a prevailing wage.

102.2.3 The prospective bidder doing business in the State of Missouri, shall submit the charter number with the contractor questionnaire. The entity must be in good standing on file with the Corporation Division of the Missouri Secretary of State's Office to be approved and successfully awarded a bid. Each corporation that is a party to a joint venture shall submit the same required report with the corporation's joint venture contractor questionnaire.

Delete Sec 102.2.4 ***10/25***

Renumber Sec 102.2.5 as Sec 102.2.4: ***10/25***

102.2.4 All prospective bidders who are corporations organized in states other than Missouri or countries other than the USA shall furnish, at the prospective bidder's cost, a certified copy of a current certificate of authority to do business in Missouri, with said certificate to remain on file with the Commission. Such a certified copy may be secured from the corporation supervisor in the Office of the Secretary of State, Jefferson City, Missouri. The prospective bidder agrees to cause the prospective bidder's authority to do business as a foreign corporation to be continued and extended throughout the life of any contract awarded and until all claims thereon and thereunder shall have been finally settled. All prospective bidders shall have a valid certificate of authority to transact business in Missouri at the time of bid opening as a condition of responsiveness.

SECTION 108 – PROSECUTION AND PROGRESS

Delete Sec 108.13.1 and substitute the following: ***10/25***

108.13.1 The acts, omissions and liabilities of persons or firms affiliated with the contractor or of persons that are principals of the contractor, are those of the contractor, unless the circumstances clearly negate that conclusion. Persons or firms are "affiliates" of each other if, directly or indirectly, either one controls or has the power to control the other or a third person controls or has the power to control both. Examples of control include, but are not limited to: interlocking management or ownership, identity of

interests among family members, shared facilities and equipment, common use of employees on projects or a new business entity organized following the determination of ineligibility or non-responsibility of a person or firm which has the same or similar management, ownership or principal employees as the ineligible person. A "principal" will be defined as an officer, director, owner, partner or other natural person within a firm with primary management, supervisory or contracting responsibilities, including participating in, or formulating, bids.

SECTION 403 – ASPHALTIC CONCRETE PAVEMENT

Delete Sec 403.13.1 and substitute the following: ***10/25***

403.13.1 Uneven Lanes. For roadways constructed under traffic, uneven pavement lanes shall not be left in place for more than seven days, unless approved by the engineer.

SECTION 413 – SURFACE TREATMENTS

Delete Sec 413.10.3 and substitute the following: ***10/25***

413.10.3 Job Mix Formula (JMF). The manufacturer of the polymer-modified emulsion shall develop the job mix formula for the specific materials to be used and shall present the JMF and certified test results at least 30 days prior to use for the engineer's approval. The JMF shall include raw data from the design process and contain the following information: (all percentages are based on the dry weight of the aggregate)

a. Source, type (formation, etc.), and ledge number if applicable from each parent aggregate used in the JMF.
b. Aggregate property test results from each ledge or ledge combinations from the parent rock used in the JMF that includes: deleterious rock, shale, other foreign material, micro-deval, and Los Angeles abrasion. Sand equivalent tests results reported on the fine portion of the blended aggregate.
c. Bulk specific gravities and absorption of each aggregate fraction in accordance with AASHTO T 85 for coarse aggregate and AASHTO T 84 for fine aggregate including all raw data.
d. Percentage of each aggregate component.
e. Combined aggregate gradation and bulk specific gravity of the JMF.
f. Source and type of mineral filler.
g. Percentage of mineral filler and minimum and maximum range.
h. Percentage of water and minimum and maximum range.
i. Source and type of additives (if required).
j. Percentage of mix set additives (if required) and minimum and maximum range.
k. Source and type of asphalt emulsion.
l. The residual asphalt content.
m. The emulsion application rate minimum and maximum range.
n. The JMF shall meet the following International Slurry Surfacing Association (ISSA) performance criteria:

ISSA Performance Criteria		
Test	**ISSA Technical Bulletin No.**	**Specification**
Mix Time @ 77 ° F	TB 113	120 seconds, Min.
Wet Cohesion @ 30 minutes, Min. (Set) @ 60 minutes, Min. (Traffic)	TB 139	12 kg-cm, Min. 20 kg-cm or Near Spin, Min.
Wet Stripping	TB 114	90 %, Min.
Wet Track Abrasion Loss @ 1-hour soak @ 6-day soak	TB 100	50 g/ft^2 (538 g/m^2), Max. 75 g/ft^2 (807 g/m^2), Max.

Lateral Displacement	TB 147	5 % Maximum

The micro-surfacing mixture shall meet the minimum aggregate application rate requirements as listed in the following table for the type and application specified in the plans. If more than one aggregate is used, the aggregates shall be blended in designated proportions as indicated in the JMF, and those proportions shall be maintained throughout the placement process. If aggregate proportions are changed, a new JMF shall be submitted for approval.

Micro-Surfacing Application Requirements for All Grades			
Micro-Surfacing Mineral Aggregate Type	**Application Type**		**Minimum Application Rate (lbs./yd^2) dry mass**
Type II Micro-Surfacing	Type II Single Pass		20.0
	Type II Double Pass	Top Course	20.0
		Bottom Course	15.0
Type III Micro-Surfacing	Type III Single Pass		30.0
	Type III Double Pass	Top Course	25.0
		Bottom Course	20.0
Type II / Type III Micro-Surfacing Combination	Type II over Type III	Top Course	20.0
		Bottom Course	20.0
Type IIIR Micro-Surfacing	As necessary		

The micro-surfacing JMF shall also meet the other material requirements as listed in the following table:

Other Material Requirements	
Material	**Requirement**
Polymer solids content, based on asphalt weight, percent, min.	3.0
Polymer Modified Emulsion (residual), percent, min.	7.5
Mineral Filler, percent by mass of dry aggregate, max.	2.0
Additive	As required to control set/break time
Water	As required for proper mix consistency

SECTION 702 – LOAD-BEARING PILES

Delete Sec 702.2 and substitute the following: ***10/25***

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

Item	**Section/Specification**
Reinforcing Steel for Concrete	1036
Cast-In-Place Pile Shells (Thick Shell Type) Welded or Seamless Steel Pipe	ASTM A 252, Modified Grade 3*
Closure Plates	AASHTO M 270, Grade 50 (ASTM A 709 Grade 50)
Structural Steel (HP) Pile	AASHTO M 270, Grade 50 (ASTM A 709 Grade 50)
Fluted Pipe	SAE-1010 or SAE-1015
Forged Steel Tips or Noses	SAE-1020
Pile Point Reinforcement	ASTM A 148, Grade 90-60
Galvanizing	1081, ASTM A 123
Field Galvanizing and Galvanizing Repair	ASTM A 780**

*Physical and chemical requirements shall meet ASTM A 572 Grade 50.
**Zinc rich paints will not be allowed.

Delete Sec 702.4.5 and substitute the following: ***10/25***

702.4.5 Pile Point Reinforcement. Each point shall be manufactured in one piece of cast steel. Pile points furnished for cast-in-place concrete piles shall be attached to the pile as shown on the plans. Pile points for structural steel piles shall be furnished with the minimum point web and flange thickness at the location of attachment to the pile equal to the thickness of that portion of the pile being attached thereto multiplied by the factor (t) shown below with additional requirements as described herein.

Material	(t)
ASTM A 148 Grade 90-60	1.6

SECTION 712 – STRUCTURAL STEEL CONSTRUCTION

Delete Sec 712.7.1 through 712.7.4 and substitute the following: ***10/25***

712.7.1 Bolted Parts. The slope of surfaces of bolted parts in contact with the bolt head and nut shall not exceed one in 20 with respect to a plane normal to the bolt axis. All bolted parts, including underhead bearing areas and joint surfaces within the grip of the bolt, shall fit solidly together when assembled in the snug tight condition, and shall not be separated by gaskets or any other interposed compressible material. When assembled, all joint surfaces, including those adjacent to the bolt heads, nuts or washers, shall be free of scale, dirt, burrs, other foreign material and other defects that would prevent solid seating of the parts. Contact surfaces within friction-type joints shall be free of oil and paint, except in accordance with Sec 1081.10.3.10, lacquer, rust inhibitor and galvanizing. All bolts, nuts and washers shall be free of rust, burrs, dirt, other foreign material and other defects that would prevent proper tensioning. All galvanized nuts used with heavy hex bolts shall be properly lubricated with a visible water-soluble lubricant in accordance with ASTM A563 S2 or S3. All nuts for uncoated bolts shall be properly lubricated with a water-soluble lubricant in accordance with ASTM A563 S1.

712.7.2 Snug Tightness of Connections. Regardless of the method of final tightening used to install the fasteners, the joint and all fasteners shall first be brought to the snug tight condition. Snug tight will be defined as the tightness where all faying surfaces of the joint are in firm contact as attained by a few impacts of an impact wrench or the full effort of a person using an ordinary spud wrench. When using the Combined Method of pre-tensioning, snug tight shall be further defined as the application of the installation tool to achieve the snug tight condition, using the tool output as demonstrated during preinstallation verification testing. Following the initial snug tightening of the fitting-up bolts, the remaining holes shall be filled with high strength bolts and tightened to a snug tight condition. All final bolts completing the connection shall be high strength and required nominal diameter. Snug tightening shall progress systematically from the most rigid part of the connection to the free edges. Bolts shall be retightened in a similar manner as necessary until all bolts are simultaneously snug tight, and the section is fully compacted with the bolted parts of the joint in full contact. For Type 3 and Type 1 bolts that will be field coated, if a connection is not completely tightened within five days of snug tightening, the contractor shall remove three bolts of a given connection and conduct rotational capacity testing in accordance with Sec 1080 to verify nut lubrication. For bolted field splices, the amount of bolts specified for bolt removal shall apply to each element of the splice (top flange, web and bottom flange). If the rotational capacity test is unacceptable, all bolts shall be removed, inspected, relubricated and may then be reinstalled. For galvanized bolts, the above condition shall be met as well as the threads of the bolts and nuts shall be inspected for galling prior to final tensioning. Any bolts or nuts with threads that are galled shall be removed and replaced.

712.7.3 Bolt Tension. Each fastener shall be tightened to provide, when all fasteners in the joint are tight, at least the minimum bolt tension shown below for the size and grade of fastener used. Threaded bolts shall be tightened by methods described in Secs 712.7.5, 712.7.6, 712.7.7 or 712.7.8. If required because of bolt entering and wrench operation clearances, tightening may be done by turning the bolt while the nut is prevented from rotating. On non-parallel abutting surfaces where bevel washers will not be required, the nut shall be torqued against the non-sloping surface. Nuts shall be placed on the inside face of exterior girders, the top of girder flanges or in other situations the least exposed position, except if inaccessible for turning, on a sloping surface or otherwise approved by the engineer. Impact wrenches, if used, shall be of adequate capacity and sufficiently supplied with air to perform the required tightening of each bolt in approximately 10 seconds for bolts up to and including 1 ¼-inch diameter and within approximately 15 seconds for larger bolts. Bolts or nuts, once tensioned and subsequently loosened (turned), shall not be used as permanent bolts or nuts. Bolt tension calibration devices shall be calibrated and certified as to accuracy by a private testing lab within one year before usage, or at any time the tensioning process indicates that the calibration is in error.

Bolt Tension		
English		
	Minimum Initial Bolt Tension[a] (lb x 1000)	Minimum Final Bolt Tension (lb x 1000)

Bolt Size (in.)	ASTM F3148 Grade 144	ASTM F3125 Grade A325	ASTM F3125 Grade 144 and Grade A490 ASTM F3148 Grade 144
1/2	7	12	15
5/8	11	19	24
3/4	16	28	35
7/8	22	39	49
1	29	51	64
1 1/8	36	64	80
1 1/4	46	81	102
1 3/8	55	97	121
1 1/2	66	118	148

[a]Applies to preinstallation verification testing when using the Combined Method of Pre-tensioning

712.7.4 Washers. All fasteners shall have a hardened washer under the nut or bolt head, whichever is turned in tightening. All heavy hex head fasteners over all oversized or slotted holes shall also have a hardened washer under the non-turned element. Round heads meeting the minimum dimensional requirements of ASTM F3148 do not require a washer under the head for oversized or short slotted holes. Where an outer face of the bolted parts has a slope of more than one in 20 with respect to a plane normal to the bolt axis, a smooth beveled washer shall be used to compensate for the lack of parallelism. Direct tension indicators (DTI) washers will not be permitted.

Delete Sec 712.7.7 and substitute the following: ***10/25***

712.7.7 Twist Off Tension Control Bolt Method. Tightening by this method will be permitted, provided it can be demonstrated by the following procedure that the bolt has been tightened, at a minimum, to 1.05 times the bolt tension indicated in Sec 712.7.3. Three bolts of a representative length and of the same grade, diameter and condition as those under inspection shall be placed individually in a calibration device capable of indicating bolt tension. There shall be a washer under the part turned in tightening each bolt. Each bolt specified shall be tightened in the calibration device until the spline drive has sheared off. When this method is used to provide the bolt tension, all bolts in the joint shall be tightened in stages to prevent or minimize slackening of the installed bolts. The first stage shall be to tighten all bolts to a snug tight condition at which point all of the faying surfaces of the joint shall be firmly in contact. The final stage of tightening to full tension shall be accomplished by progressing systematically from the most rigid part of the joint to the free edges.

Add Sec 712.7.8 as new section: ***10/25***

712.7.8 Combined Method. ASTM F3148 fixed spline bolts shall be installed by this method unless otherwise approved by the engineer. Preinstallation Verification Testing and Installation of the combined method installation shall be in accordance with ASTM F3148 Appendix X2 and X3. Inspection shall be in accordance with Sec 712.7.13.

Renumber Sec 712.7.8 through 712.7.12 as Sec 712.7.9 through 712.7.13: ***10/25***

712.7.9 Bolt Length. When snug tight, the beginning of the bolt threads shall be even with or project slightly beyond the nut. When properly tensioned, the bolt projections beyond the nut shall be as such to prevent the nut from engaging the thread runout.

712.7.10 Bolt Tension Calibration Device. A Skidmore-Wilhelm Calibrator or an acceptable equivalent tension measuring device will be required at each job site during erection. Periodic testing, at least once each working day when the calibrated wrench method is used, shall be performed to assure compliance with the installation test procedures required for the tightening method used, and to perform pre-installation job site rotational-capacity testing. Bolts too short for the Skidmore-Wilhelm Calibrator short bolt setup shall have pre-installation job site rotational-capacity testing done according to ASTM F3125 Annex A2, Method 2 Short Bolt Test Procedure or ASTM F3148 Annex A1, Method 2 Short Bolt Test Procedure, as applicable. Bolt tension calibration devices shall be calibrated and certified as to accuracy by a private testing laboratory within one year before usage or at any time the accuracy is questionable.

712.7.11 Rotational-Capacity Testing. The rotational-capacity test shall be performed on three (3) bolts of each rotational-capacity lot prior to the start of bolt installation in accordance with Sec 1080.2.5.4 except ASTM F3148 Grade 144 fixed spline bolts shall have pre-installation verification testing performed on three (3) bolt assemblies of each lot in accordance with ASTM F3148 Appendix X2 in lieu of rotational-capacity testing. Hardened steel washers shall be part of the test, regardless if washers will not be required as part of the installation procedure. Bolt, nut, and washer when required, combinations as installed shall be only from the established and tested rotational-capacity lot.

712.7.12 Weathered Bolts. Weathered or rusted bolts or nuts not in accordance with Secs 712.7.1, 712.7.3 and 712.7.11 shall be cleaned and relubricated prior to installation. Recleaned or relubricated bolt, nut and washer assemblies shall be retested in accordance with Sec 712.7.11 prior to installation. Relubrication shall be performed by or at the direction of the manufacturer for ASTM F3148 Grade 144 and ASTM F3125 Grade 144 bolts, Grade F1852 (A325TC) and F2280 (A490TC) twist-off tension control bolts.

712.7.13 Inspection. The engineer will observe the installation and tightening of bolt assemblies to determine that the selected tightening procedure is properly used, and will determine that all bolt assemblies are tightened. The following verification inspection will be used:

(a) Either the engineer, or the contractor in the presence of the engineer, will use an inspecting torque wrench and bolt tension calibration device furnished by the contractor.

(b) Three bolt assemblies of a representative length, and of the same grade, diameter and condition as those under inspection will be placed individually in a calibration device capable of indicating bolt tension. There will be a washer under the part turned in tightening each bolt. Each bolt specified will be tightened in the device, using the measuring torque wrench, to the minimum tension specified in Sec 712.7.3. Of the three values obtained, the highest value will be taken as the job inspecting torque to be used in the manner specified in Sec 712.7.13. The inspecting torque will be re-established at intervals of no more than 30 calendar days or at any time appreciable changes are encountered.

(c) Bolts represented by the sample prescribed in Sec 712.7.13 that have been tightened in the structure will be inspected by applying, in the tightening direction, the inspecting wrench and the wrench's job inspecting torque to 10 percent of the bolts, but no less than two bolts, selected at random in each connection. If no nut or bolt head is turned by this application of the job inspecting torque, the connection will be accepted as properly tightened. If any nut or bolt head is turned by the application of the job inspecting torque, this torque shall be applied to all bolts in the connection. All bolts whose nut or head was turned by the job inspecting torque shall be tightened and re-inspected.

(d) Calibrated wrench tightening will be verified during actual installation in the assembled steel work. The wrench setting selected by the calibration process shall not produce a bolt or nut rotation from snug tight greater than permitted in Sec 712.7.6.

SECTION 1018 – FLY ASH FOR CONCRETE

Delete Sec 1018.1 and 1018.2 and substitute the following: ***10/25***

1018.1 Scope. This specification covers fly ash for use in concrete.

1018.2 General. Only fly ash from sources qualified in accordance with these specifications will be permitted. The mixing of different classes and sources of fly ash will not be permitted. All fly ash shall be in accordance with AASHTO M 295, Class C, F or N, except as herein specified.

Delete Sec 1018.2.1 (a) and substitute the following: ***10/25***

(a) The 7-day Strength Activity Index with Type IL cement shall be a minimum of 85 percent of the control.

Delete Sec 1018.2.1.1 and substitute the following: ***10/25***

1018.2.1.1 All Class C fly ash shall have a minimum Strength Activity Index with Type IL cement of 85 percent of the control at 28 days.

Delete Sec 1018.2.3 and substitute the following: ***10/25***

1018.2.3 Loss on Ignition shall not exceed 1.5 percent unless suppliers provide test data verifying performance and durability of fly ash concrete applications for sources exceeding this requirement.

Delete Sec 1018.2.5 and substitute the following: ***10/25***

1018.2.5 Cement used for testing fly ash shall be a Type IL in accordance with AASHTO M240.

Delete Sec 1018.4.1 (f) and substitute the following: ***10/25***

(f) Class of fly ash produced and number of units producing fly ash meeting the specified requirements herein.

Delete Sec 1018.4.1 (j) and substitute the following: ***10/25***

(j) A split sample of the class of fly ash proposed for use, MoDOT will request where the sample shall be obtained for approval. The marketing entity's test results for the split sample shall also be submitted.

Delete Sec 1018.6.3 and substitute the following: ***10/25***

1018.6.3 Shipping. Fly ash shall be continually sampled and tested at a location, frequency and duration acceptable to MoDOT, and may be continuously shipped direct from a marketing entity or generating station silo.

SECTION 1045 – PAINT FOR STRUCTURAL STEEL

Delete Sec 1045.10.1 and substitute the following: ***10/25***

1045.10.1 Description. This specification covers an organic zinc-rich primer system designed for adhesion to field-blasted steel and suitable for use under an epoxy System G intermediate coating, waterborne acrylic System H intermediate coating or polysiloxane System I finish coating. This specification also covers organic zinc for repair of existing galvanized steel, touch-up of inorganic-zinc coated steel and other uses. The organic zinc-rich primer shall be a multiple-component material which, when mixed and applied in accordance with Sec 1081, cures without the use of a separate curing solution. The organic zinc-rich coating shall be in accordance with the latest edition of the RCSC *Specification for Structural Joints Using High-Strength Bolts* Class B requirements for slip coefficient and creep resistance on faying surfaces and other requirements specified herein. The VOC content shall not exceed 3.50 pounds per gallon. If thinning is necessary for application, the maximum VOC content after thinning shall not exceed 3.50 pounds per gallon.

Add Sec 1045.11 through 1045.11.2 as new sections: ***10/25***

1045.11 High Solids Inorganic Ethyl Silicate Coating

1045.11.1 Description. The coating shall be a mono-component, high solids inorganic ethyl silicate coating compatible as a topcoat over high solids inorganic zinc primer. The inorganic ethyl silicate coating shall be in accordance with the latest edition of the RCSC *Specification for Structural Joints Using High-Strength Bolts* Class B requirements for slip coefficient and creep resistance on faying surfaces and other requirements specified herein. The VOC content shall not exceed 3.50 pounds per gallon. If thinning is necessary for application, the maximum VOC content after thinning shall not exceed 3.50 pounds per gallon.

1045.11.2 Manufacturer and Brand Name Approval. Prior to approval and use of high solids inorganic ethyl silicate, the manufacturer shall submit to Construction and Materials a certified test report from AASHTO Product Evaluation and Audit Solutions program showing specific test results conforming to all quantitative and resistance test requirements of these specifications. An additional certified test report from an independent test lab must show that the inorganic ethyl silicate when used as a topcoat over a compatible high solids inorganic zinc primer has less than 1mm scribe corrosion when tested in accordance with two consecutive cycles of ISO 12944-9 CX, equivalent to 8400 hours cyclic aging. The certified test report shall also contain the exact ratio, by weight, of each component of the coating used for the tests, the lot tested, the manufacturer's name, brand name of coating and date of manufacture. Upon approval from the engineer of this certified test report, further resistance tests will not be required, except as hereinafter noted, of that manufacturer for that brand name of coating. New certified test results shall be submitted any time the manufacturing process or the coating formulation is changed and may be required by the engineer when sampling and testing of material offered for use indicates nonconformance to any of the requirements herein specified. All resistance testing shall be performed on duplicate sets of test panels, and upon completion of the prescribed exposure testing, the manufacturer shall submit one set of the exposed panels to Construction and Materials.

SECTION 1061 – ELECTRICAL CONDUCTORS

Delete Sec 1061.2 and substitute the following: ***10/25***

1061.2 Conductors. Except as noted, all conductors shall be soft drawn, Class B or C stranded copper wire in accordance with ANSI/NEMA WC70/ICEA S-95-658. Solid conductors may be used only for grounding where connected to a ground rod.

Delete Sec 1061.4 and substitute the following: ***10/25***

1061.4 Low Voltage Power Cable. Low voltage power cable shall be 600-volt, single conductor cable with a temperature rating of 90° C in wet and dry environments and thermosetting cross-linked polyethylene (XLP) insulated. All cable shall be plainly marked on the outside with the manufacturer's name and identification in accordance with industry practice. Insulation type shall be XHHW-2. Cable used for service entrances shall be USE-2 rated. Average thickness of insulation shall be no less than specified in the following table, with a minimum thickness of 90 percent thereof.

Size (AWG or kcmil)	Thickness, Mils (XHHW-2)
14-10	30
8-2	45
1-4/0	55
213-500	65
501-1000	80

Delete Sec 1061.6 and substitute the following: ***10/25***

1061.6 Pole and Bracket Cable. Pole and bracket cable located in the lighting or signal pole that supplies electrical power to highway lighting shall consist of two single conductors. Wire size shall be No. 10 AWG in accordance with the requirements of low voltage power cable. Insulation type shall be XHHW-2. Average insulation shall be in accordance with Sec 1061.4.

SECTION 1080 – STRUCTURAL STEEL FABRICATION

Delete Sec 1080.2 and substitute the following: ***10/25***

1080.2 Material. Except as amended by Sec 1080.2.4, all material shall be in accordance with Division 1000, Material Details, and specifically as follows:

Item	Section / Specification
Shear Connectors	1037
Paint for Structural Steel	1045
Coating of Structural Steel	1081
Structural Carbon Steel	AASHTO M 270, Grade 36 ASTM A709, Grade 36
Structural Low Alloy Steel	AASHTO M 270, Grade 50 ASTM A709, Grade 50 AASHTO M 270, Grade 50W ASTM A709, Grade 50W
Quenched and Tempered Alloy Steel	AASHTO M 270, Grade HPS 50W ASTM A709, Grade HPS 50W AASHTO M 270, Grade HPS 70W ASTM A709, Grade HPS 70W ASTM A709, Grade 100/100W
Carbon Steel Bolts and Nuts	ASTM A307
High Strength Bolts, Nuts and Washers	ASTM F3125 Grade A 325 Type 1 ASTM F3125 Grade A325 Type 3 ASTM F3125 Grade 144 Type 1 ASTM F3125 Grade 144 Type 3 ASTM F3125 Grade A490 Type 1 (Plain only) ASTM F3125 Grade A490 Type 3 ASTM F3148 Grade 144 Type 1 ASTM F3148 Grade 144 Type 3 ASTM F436 ASTM A563 AASHTO M 292
Cold Finished Carbon Steel Shafting	AASHTO M 169
Carbon Steel Forgings	AASHTO M 102 Class F
Alloy Steel Forgings	AASHTO M 102 Class G
Gray Iron Castings	AASHTO M 105 Class 50
Malleable Iron Castings	ASTM A47

Carbon Steel Castings	AASHTO M 103 Grade 485-275
Galvanized Coatings	AASHTO M 111 AASHTO M 232 Class C ASTM B695 Class 55
Lead for Bearing Pads	ASTM B29
Identification of Metals	ASTM A6

Delete Sec 1080.2.5 through 1080.2.5.1.2 and substitute the following: ***10/25***

1080.2.5 High Strength Fastener Assemblies. In addition to the requirements of Sec 712.2, high strength bolts, nuts and washers shall meet the following requirements. The contractor shall furnish a manufacturer's certified test report showing the results. Identification in accordance with the appropriate AASHTO/ASTM specifications shall be maintained by container markings which shall match identifying numbers on the certifications and be traceable to the certified mill test reports. High strength fastener assemblies shall be galvanized unless specifically indicated otherwise by the contract documents. When high strength bolts are used with weathering steel, the fasteners shall be Type 3, including fasteners located in areas of the structure to be partially coated, expansion device supports, slab drain brackets and similar items. High strength fasteners in partially coated areas of weathering steel and slab drain baskets attached to weathering steel shall be coated in accordance with Sec 1080.4.5.1. ASTM F3125 Grade A490 bolts shall be installed plain (also referred to as uncoated or black), tensioned and then cleaned and coated with the coating system as specified on the plans. The cleaning and the zinc coating shall not be applied by any process, which can cause hydrogen embrittlement. All certification testing requirements and mill test reports referenced in the following sections shall be in accordance with Sec 106.

1080.2.5.1 Bolts. All bolts shall be in accordance with ASTM F3125 Grade A325 except when ASTM F3125 Grade 144 or A490 bolts or ASTM F3148 assemblies are specified on the plans. If the contractor elects to use twist-off tension control bolts, ASTM F3125 Grade F1852 (A325TC) or ASTM F3125 Grade F2280 (A490TC), only a hex head will be permitted. The type of head used shall be consistent throughout the entire structure, unless otherwise approved by the engineer.

1080.2.5.1.1 Proof Load Tests. Proof load tests in accordance with ASTM F606 Method 1 shall be performed. Minimum test frequency shall be in accordance with ASTM F3125 or ASTM F3148.

1080.2.5.1.2 Wedge Tests. Wedge tests on full size bolts, in accordance with ASTM F606, paragraph 3.5 shall be performed. If bolts are to be galvanized, tests shall be performed after galvanizing. Minimum test frequency shall be in accordance with ASTM F3125 or ASTM F3148.

Delete Sec 1080.2.5.2.1 and substitute the following: ***10/25***

1080.2.5.2.1 Nut Grades. Ungalvanized nuts shall be grades C, D or C3 with a minimum Rockwell hardness of 89 HRB or Brinell hardness 180 HB or heat-treated grades DH or DH3. Nuts that are to be galvanized shall be heat-treated grades DH or DH3. Weathering steel nuts shall be grade C3 or DH3 for use with ASTM F3125 Grade A325 Type 3 and grade DH3 for use with ASTM F3125 Grade 144 Type 3, A490 Type 3 or ASTM F3148 Grade 144 Type 3.

Delete Sec 1080.2.5.2.3 and substitute the following: ***10/25***

1080.2.5.2.3 Nut Lubrication. All galvanized nuts shall meet the supplementary requirements of ASTM A563. Galvanized nuts used with heavy hex bolts shall be properly lubricated with a visible water-soluble lubricant in accordance with ASTM A563 S2 or S3. All nuts for uncoated bolts shall be properly lubricated with a water-soluble lubricant in accordance with ASTM A563 S1.

Delete Sec 1080.2.5.3 and substitute the following: ***10/25***

1080.2.5.3 Washers. All washers shall be in accordance with ASTM F436. Hardness testing shall be performed on galvanized washers. The coating shall be removed prior to taking hardness measurements. Washers for weathering steel shall be Type 3. Direct tension indicators (DTI) washers will not be permitted.

Delete Sec 1080.2.5.4.1 through 1080.2.5.4.2 and substitute the following: ***10/25***

1080.2.5.4.1 Test Methods. Except as modified herein, the rotational-capacity test shall be performed in accordance with ASTM F3125 or ASTM F3148, as applicable.

1080.2.5.4.2 Test Lots. Each combination of bolt production lot, nut lot and washer lot shall be tested as an assembly. Where washers are not required as part of the installation procedures, washers need not be included in the lot identification. A rotational-capacity lot number shall be assigned to each combination of lots tested. The minimum frequency of testing shall be two (2) assemblies per rotational-capacity lot.

Delete Sec 1080.2.5.4.4 through 1080.2.5.4.5 and substitute the following: ***10/25***

1080.2.5.4.4 Minimum Rotation. The minimum rotation, from a snug tight condition, 10 percent of the specified proof load, shall be as follows:

Minimum Bolt Rotation		
	Rotation	
Bolt Length	ASTM F3125 Grade A325 and Grade 144 ASTM-F3148 Grade 144	ASTM F3125 Grade A490
≤ 4 Diameters	240° (2/3 turn)	240° (2/3 turn)
> 4 Diameters and ≤ 8 Diameters	360° (1 turn)	300° (5/6 turn)
> 8 Diameters	420° (1 1/6 turn)	360° (1 turn)

1080.2.5.4.5 Required Tension. The tension reached at the above rotation shall be equal to or greater than 1.15 times the required installation tension. The installation tension and the tension for the turn test for ASTM F3125 Grade A325, 144 and A490 and ASTM F3148 Grade 144 bolts shall be as follows:

Required Bolt Tensions									
Diameter, in.	**1/2**	**5/8**	**3/4**	**7/8**	**1.00**	**1-1/8**	**1-1/4**	**1-3/8**	**1-1/2**
ASTM F3125 Grade A325									
Req. Installation Tension, kips	12	19	28	39	51	64	81	97	118
Turn Test Tension, kips	14	22	32	45	59	74	94	112	136
ASTM F3125 Grade 144 or A490 or ASTM F3148 Grade 144									
Req. Installation Tension, kips	15	24	35	49	64	80	102	121	148
Turn Test Tension, kips	17	28	40	56	74	92	117	139	170

Delete Sec 1080.2.10 and substitute the following: ***10/25***

1080.2.10 Steel Stamping. Any metal die stamping of match marks and erection marks in structural steel members shall be limited to a position in the end 1 1/2 inches of flange plates and flange splice plates, the middle third of web plates and the outside edge of the middle third of web splice plates. Metal die stamping at other locations or for other purposes may be approved by the engineer provided low stress dies are used. Low stress dies will be defined as those manufactured to produce impressions that are rounded at the bottom rather than sharp edged. Metal die stamping on pin plates and hanger plates will not be permitted. Plasma etching will not be permitted.

Delete Sec 1080.3.1.5 and substitute the following: ***10/25***

1080.3.1.5 Office Space. A suitable office area shall be provided for exclusive use by the engineer. The office may be enclosed or semi-enclosed as available at the location of QA inspection, but shall be suitable for use as determined by the engineer. The floor space shall be at least 120 square feet unless otherwise approved by the engineer, weatherproof, secure, insulated and lighted. The office space shall be adequately ventilated, heated and air conditioned. Electric outlets with 110-120 volt, 60 Hz current and a telephone with outside line, inter-plant and Wi-Fi or Ethernet connection to the internet shall be provided. Office furniture consisting of a desk, a minimum of 30 x 60 inches with drawers, a swivel desk chair with arms and a storage/filing cabinet with lock hardware and key shall be provided. All office furniture will be subject to approval by the engineer. Should any furniture become unsatisfactory, the furniture shall be promptly repaired or replaced to the satisfaction of the engineer. Accessible parking shall be provided near the office any time the shop is in operation on MoDOT projects. No direct payment will be made for furnishing and maintaining an acceptable office area for QA inspection.

Delete Sec 1080.3.3.2 and substitute the following: ***10/25***

1080.3.3.2 Holes. Holes for connections of main members shall be subpunched or subdrilled and reamed while assembled in the shop or may be drilled from the solid with main members and each splice plate fully assembled in their final erected positions. Holes for floor beams and framed stringer connections shall be drilled or reamed to a steel template of sufficient thickness to center the drill accurately and all members to be secured through the same group of holes shall be drilled or reamed from the same template. Holes may be punched full size in secondary members such as lateral, longitudinal and sway bracing, lacing bars, stay

plates and diaphragms. Stacking of web splice plates during drilling or reaming operations on straight girders will be permitted. Thermal cutting of holes will not be permitted.

Delete Sec 1080.3.3.5.3 and substitute the following: ***10/25***

1080.3.3.5.3 AWS Sec 2.8 Paragraph 2.8.1.1 - Paragraph 2.8.1.1 shall be replaced with the following:

The minimum fillet weld size, except for fillet welds used to reinforce groove welds, shall be as shown in the following table or as calculated using procedures established to prevent cracking in accordance with Paragraph 4.2.2. In both cases, the minimum size shall apply if the size is sufficient to satisfy design requirements.

Material Thickness of Thicker Part Joined, in.	Minimum Size of Fillet Weld[a], in.
To 3/4	1/4[b]
Over 3/4 to 2 ½	5/16[b]
Over 2 ½	1/2

[a]Except that the weld size need not exceed the thickness of the thinner part joined.
[b]Single pass welds must be used.

Delete Sec 1080.3.3.5.7 and substitute the following: ***10/25***

1080.3.3.5.7 AWS Sec 3.3 Paragraph 3.3.8 - Paragraph 3.3.8 shall be replaced with the following:

Temporary welds shall be subject to the same WPS requirements as final welds. Temporary welds shall be removed unless otherwise permitted by the engineer and the surface shall be made flush with the original surface. Unless previously approved in writing by the engineer, there shall be no temporary welds for fabrication, transportation, erection or other purposes on main members except at locations more than 1/6 the depth of the web from the flanges of beams and girders. There shall be no temporary welds in tension zones of members of quenched and tempered steels. Temporary welds at other locations shall be shown on shop drawings and shall be made with approved consumables. Removal of temporary welds shall conform to Paragraphs 3.3.7.3 and 3.3.7.4.

Delete Sec 1080.3.3.5.15 and substitute the following: ***10/25***

1080.3.3.5.15 AWS Sec 6.1 Paragraph 6.1.6 – A new Paragraph 6.1.6 shall be added as follows:

The contractor shall submit to Bridge Division the following documentation for each individual performing nondestructive testing (NDT); their certifications, current eye exam, and the NDT company written practice, including the Level III individual certification used for the written practice.

Delete Sec 1080.3.3.10 and substitute the following: ***10/25***

1080.3.3.10 Pin Holes. Pin holes shall be bored true to size, smooth and straight, at right angles to the axis of the member and parallel with each other. The boring shall be done after the member is assembled and welded. The center-to-center distance of pin holes shall be correct within 1/32 inch for an individual component or member. The diameter of bored/milled pin holes shall not exceed that of the pin by more than 1/50 inch for pins 4 inches or less in diameter or no more than 1/32 inch for pins larger than 4 inches in diameter.

SECTION 1081 – COATING OF STRUCTURAL STEEL

Delete Sec 1081.10.2 and substitute the following: ***10/25***

1081.10.2 Systems of Coatings. The required system and color or choice of systems and color will be specified on the plans. Each coat of the specified system shall be applied to all structural steel, unless the contract specifically delineates otherwise. The system and color of coating to be shop-applied shall be shown on the shop drawings. All coatings shall comply with local VOC (Volatile Organic Compound) regulations where the paint is applied. The system and color shall not vary for any portion of the entire structure, including material for field repairs and shall be compatible products of a single manufacturer. The contractor shall coordinate the various items of work to ensure compliance with the requirements of this section. Approved material specifications and dry film thickness for the coating systems shall be as indicated in the following table:

Paint Systems for Structural Steel
System G (High Solids, Zinc-Epoxy-Polyurethane)

Coating	Section	Dry Film Thickness, mils
Inorganic Zinc Prime Coat or Organic Zinc Prime Coat	1045.3 or 1045.10	3.0 min. to 6.0 max. or 3.0 min to 6.0 max.
Epoxy Intermediate Coat	1045.4	3.0 min. to 5.0 max.
Polyurethane Finish Coat, Gray or Brown	1045.5	2.0 min. to 4.0 max.
System H (High Solids, Zinc-Waterborne Acrylic Intermediate-Waterborne Acrylic Finish)		
Coating	**Section**	**Dry Film Thickness, mils**
Inorganic Zinc Prime Coat or Organic Zinc Prime Coat	1045.3 or 1045.10	3.0 min. to 6.0 max. or 3.0 min. to 6.0 max.
Waterborne Acrylic, Intermediate Coat	1045.6	2.0 min. to 4.0 max.
Waterborne Acrylic, Finish Coat, Gray or Brown	1045.6	2.0 min. to 4.0 max.
System I (High Solids, Zinc-Polysiloxane)		
Coating	**Section**	**Dry Film Thickness, mils**
Inorganic Zinc Prime Coat or Organic Zinc Prime Coat	1045.3 or 1045.10	3.0 min. to 6.0 max. or 3.0 min to 6.0 max.
Polysiloxane Finish Coat	1045.7	3.0 min. to 6.0 max.
System L (High Solids, Zinc-Inorganic Ethyl Silicate)		
Coating	**Section**	**Dry Film Thickness, mils**
Inorganic Zinc Prime Coat	1045.3	3.0 min. to 6.0 max.
Inorganic Ethyl Silicate	1045.11	3.0 min. to 6.0 max.
Aluminum & Gray Epoxy-Mastic Primer		
Coating	**Section**	**Dry Film Thickness mils**
Aluminum Epoxy-Mastic Primer	1045.8	5.0 min.
Gray Epoxy-Mastic Primer	1045.9	5.0 min

Delete Sec 1081.10.3.4 and substitute the following: ***10/25***

1081.10.3.4 Limits of Coating Application. Unless otherwise indicated on the plans, the application of the intermediate and finish coats for Systems G and H, and the application of the finish coat for System I and L, hereinafter referred to as field coats, shall be applied to the structure within the following limits.

Add Sec 1081.10.3.4.1.6 as a new section: ***10/25***

1081.10.3.4.1.6 When System L is specified on the plans for beam and girder spans, an intermediate coat shall not be applied to the beams and girders. The System L finish coat shall be applied to the surfaces of all structural steel, except that areas of steel to be in contact with concrete shall not receive the finish coat. The finish coat shall also be applied to the bearings, except where bearings will be encased in concrete.

Add Sec 1081.10.3.4.2.5 as a new section: ***10/25***

1081.10.3.4.2.5 When System L is specified on the plans for beam and girder spans, an intermediate coat shall not be applied to the beams and girders. The System L finish coat shall be applied to the surfaces of all structural steel, except that areas of steel to be in contact with concrete shall not receive the finish coat. The finish coat shall also be applied to the bearings, except where bearings will be encased in concrete.

Delete Sec 1081.10.3.10.1 and substitute the following: ***10/25***

1081.10.3.10.1 Contact Surfaces. Contact surfaces of high strength bolted field splice and diaphragm connections shall be prime coated to produce a dry film thickness no less than 1.5 mils or more than 2.5 mils. The limits of the coating thickness for these surfaces shall be shown on the shop drawings. The maximum limit of 2.5 mils may be increased provided acceptable test results in accordance with the Testing Method to Determine the Slip Coefficient for Coatings Used in Bolted Joints (RCSC *Specification for Structural Joints Using High Strength Bolts*, Appendix A) are submitted and approved by the engineer. Revised shop drawings will not be required upon acceptance of the test results. The tests shall meet the requirements for the slip coefficient and creep resistance for Class B coatings and shall be performed by a nationally recognized independent testing laboratory. Any change in the formulation of the coating will require retesting, except when thinned within the limits of manufacturer's recommendations. At the contractor's option, the contact surfaces of connections for all non-slab bearing diaphragms on non-curved girders may be prime coated with a dry film thickness of no less than 3.0 mils or more than 6.0 mils, unless noted otherwise on the plans.

Delete Sec 1081.10.3.11.4 and substitute the following: ***10/25***

1081.10.3.11.4 Partial Applications. If partial applications of the field finish coats to a structure as provided in Sec 1081.10.3.4 is required or permitted, the contractor shall perform field touch-up coating to areas of the structural steel outside the limits to receive the intermediate and finish coats. Touch-up shall be in accordance with Sec 1081.10.3.11 and at the contractor's expense.

Delete Sec 1081.10.4 and substitute the following: ***10/25***

1081.10.4 Recoating of Structural Steel (System G, H, I or L).