



**MISSOURI  
HIGHWAYS and TRANSPORTATION  
COMMISSION**

**JEFFERSON CITY, MISSOURI**

**GENERAL PROVISIONS AND  
SUPPLEMENTAL SPECIFICATIONS TO 2023  
MISSOURI STANDARD SPECIFICATIONS FOR  
HIGHWAY CONSTRUCTION**

**Effective April 1, 2024**

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**MISSOURI HIGHWAY AND TRANSPORTATION  
COMMISSION**  
105 W. Capitol Ave. Jefferson City, MO 65102  
1-888-275-6636



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## GENERAL PROVISIONS

### 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).

**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 U.S. 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 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*

**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 gender 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 External Civil Rights Division, 105 W. Capitol Avenue, P.O. Box 270, Jefferson City, Missouri 65102-0270. Phone (573) 526-2978, Fax (573) 526-0558, E-Mail: [dbec@modot.mo.gov](mailto:dbec@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-external-civil-rights>.

**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 gender 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 External Civil Rights Division. However, 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.

(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 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 External Civil Rights 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](mailto:DBE@MoDOT.Mo.Gov)

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 bidders.

**10.1 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.

**10.2 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.

**10.3 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.

**10.4 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.

**11.0 DBE Participation for Contract Goal Credit.** In addition to participation outlined by 49 CFR part 26, the following shall apply:

- (a) In addition to allowances provided for in the Federal Regulations, a bidder may count toward the DBE contract goal the following expenditures to certified DBE firms that are not "regular dealers" or "manufacturers" for DBE program purposes:
  - (1) A bidder may count toward the DBE contract goal 100 percent of the fees paid to a certified DBE trucker or hauler for delivery of material and supplies required on a job site, but not for the cost of those materials or supplies themselves, or for the removal or relocation of excess material from or at the job site, when the DBE certified trucking company is not also the manufacturer of or a regular dealer in those material and supplies, provided that the trucking or hauling fee is determined by MoDOT to be reasonable as compared with fees customarily charged by non-DBE firms for similar services. The certified DBE trucking firm shall also perform a CUF on the project and not operate merely as a pass through for the purposes of gaining credit toward the contract DBE goal. Prior to submitting a bid, the bidder shall determine, whether a DBE trucking firm will meet the criteria for performing a CUF on the project.
  - (2) The bidder will receive DBE contract goal credit for the fees or commissions charged by and paid to a DBE broker who arranges or expedites sales, leases or other project work or service arrangements, provided that those fees are determined by MoDOT to be reasonable and not excessive, as compared with fees customarily charged by non-DBE firms for similar services. A broker will be defined as a person or firm that does not own or operate the delivery equipment necessary to transport materials, supplies or equipment to or from a job site. In most instances, the broker is merely the entity making arrangements for delivery of material, supplies, equipment, or arranging project services. To receive DBE contract goal credit, MoDOT must determine that the DBE broker has performed a CUF in providing the contract work or service.

**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 External Civil Rights 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 Monthly DBE Reporting.** Each month, the prime contractor must file a record of all payments made to DBEs by contract during the previous month. Submission of this report is required by the 15<sup>th</sup> of each month until all DBE payments on the contract are complete. Reporting format is designated by MoDOT's External Civil Rights Division.

**13.2 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.

**13.3 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 Data Collection from Bidders for DBE and Non-DBE Subcontractors, Suppliers, Manufacturers and/or Brokering used and not used in bids during the reporting period.** MoDOT is a recipient of federal funds and is required by 49 CFR 26.11, to provide data about its DBE program. The information shall consist of all subcontractor quoting received for actual use and of consideration by the prime bidder. MoDOT will be requesting this information from bidding prime contractors and will provide prime bidders a form to submit the data by the last day of each month for the current letting. The information shall only include the names of both DBE and non-DBE companies that the prime bidders received quotes. MoDOT will then contact the DBEs and non-DBE subcontractors and request additional information from DBE and non-DBE subcontractors including current year of gross receipts and number of years in business. The information provided by the prime bidders shall not include any bid quote pricing regardless if it was used or not. This information will aid MoDOT in the determination of the availability of DBEs and will be used in subsequent availability studies.

## **TRAINING PROVISION**

04/22

**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 External Civil Rights Division (ECR) 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 External Civil Rights 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 contract 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 External Civil Rights 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 from 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 External Civil Rights 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 Committee 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 External Civil Rights Division to increase the Training Hours assigned to a contract. Approval of such requests by the External Civil Rights 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 ECR 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:

<u>OJT Goal</u>	<u>Hours Achieved</u>	<u>Payable Hours</u>
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 External Civil Rights 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 ECR 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 15<sup>th</sup> 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  $550 \times \$20.00 = \$11,000.00$ .

**11.2** If the External Civil Rights 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 ECR 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 ECR 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 15<sup>th</sup> 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:

<b>Supplementary Cementitious Material (SCM)</b>	
<b>SCM</b>	<b>Maximum Percent of Total Cementitious Material</b>
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<sup>2</sup> 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<sup>2</sup> 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 3/4 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 subplot 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.

<b>Individual Measurements</b>	
<b>Control Parameter</b>	<b>Action Limit</b>
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:

<b>Test</b>	<b>Frequency</b>
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.

## **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<sup>SM</sup>**

*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<sup>SM</sup> 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<sup>SM</sup> 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.

## **DIVISION 600**

### **"RATE OUR WORK ZONE" SIGNS**

*03/12; 05/12*

**1.0 Description.** This work shall consist of furnishing and installing a 72 X 36 inch or 48 X 24 inch "Rate Our Work Zone" signs, as indicated in the plans. The contractor shall furnish signs, labor, equipment, posts and hardware for installation of the signs in accordance with this provision, or as directed by the engineer.

**2.0 Material.** All material shall be in accordance with Division 1000, Material Details.

**3.0 Construction Requirements.** The signs shall be post-mounted and placed approximately 500 feet before the beginning of the project limits or the "ROAD WORK AHEAD" sign or the "ROAD WORK NEXT XX MILES" sign, if used, when these signs are located outside the project limits for each direction of travel affected by the project. A project on only one pavement of a dual divided facility will require only one sign. The contractor shall maintain all signs until completion of the project. Upon completion of the project, the contractor shall remove the signs, posts and hardware. The signs, posts and hardware shall remain the property of the contractor.

**4.0 Basis of Payment.** The accepted quantity of signs will be paid for at the contract unit price per square feet of construction signs.

### **"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 2023 MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

## **SECTION 101 – DEFINITION OF TERMS**

*Delete Sec 101.1 and substitute the following:*

04/24

### **101.1 Abbreviations.**

<b>AASHTO</b>	American Association of State Highway and Transportation Officials
<b>AISC</b>	American Institute of Steel Construction
<b>AGC</b>	Associated General Contractors of America
<b>ANSI</b>	American National Standards Institute
<b>AREA</b>	American Railroad Engineering Association
<b>ASME</b>	American Society of Mechanical Engineers
<b>ASTM</b>	ASTM International
<b>AWG</b>	American Wire Gauge
<b>AWPA</b>	American Wood-Preservers' Association
<b>AWS</b>	American Welding Society
<b>AWWA</b>	American Water Works Association
<b>CFR</b>	Code of Federal Regulations
<b>CS</b>	Commercial Standards, U. S. Department of Commerce
<b>CSR</b>	Code of State Regulations
<b>COE</b>	Corps of Engineers
<b>CUF</b>	Commercially Useful Function
<b>DBE</b>	Disadvantaged Business Enterprise
<b>EEI</b>	Electrical Engineer's Institute
<b>EEO</b>	Equal Employment Opportunity
<b>EPA</b>	Environmental Protection Agency
<b>EPG</b>	Engineering Policy Guide
<b>ESAL</b>	Equivalent 18-kip Single Axle Load
<b>FCC</b>	Federal Communications Commission
<b>FHWA</b>	Federal Highway Administration
<b>GGBFS</b>	Ground Granulated Blast Furnace Slag
<b>GRI</b>	Geosynthetic Research Institute
<b>ICEA</b>	Insulated Cable Engineers Association
<b>IMSA</b>	International Municipal Signal Association

<b>ITE</b>	Institute of Transportation Engineers
<b>LED</b>	Light Emitting Diode
<b>MASH</b>	AASHTO Manual for Assessing Safety Hardware
<b>MDC</b>	Missouri Department of Conservation
<b>MDNR</b>	Missouri Department of Natural Resources
<b>MGS</b>	Midwest Guardrail System
<b>MHTC</b>	Missouri Highways and Transportation Commission
<b>MoDOT</b>	Missouri Department of Transportation
<b>MSDS</b>	Material Safety Data Sheet
<b>MUTCD</b>	Manual on Uniform Traffic Control Devices
<b>NCHRP 350</b>	National Cooperative Highway Research Program (NCHRP) Report 350, <i>Recommended Procedures for the Safety Performance Evaluation of Highway Features</i>
<b>NEC</b>	National Electrical Code
<b>NEMA</b>	National Electrical Manufacturers Association
<b>NESC</b>	National Electrical Safety Code
<b>NFPA</b>	National Fire Protection Association
<b>NRCS</b>	Natural Resources Conservation
<b>NRMCA</b>	National Ready Mixed Concrete Association
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PAL</b>	Pre-Acceptance List
<b>PS</b>	U.S. Product Standard, U.S. Department of Commerce
<b>PWL</b>	Percent Within Limits
<b>QA</b>	Quality Assurance
<b>QC</b>	Quality Control
<b>RETMA</b>	Radio Electronics Television Manufacturer's Association
<b>RSMo</b>	Revised Statutes of the State of Missouri
<b>SAE</b>	Society of Automotive Engineers
<b>SHPO</b>	State Historic Preservation Office
<b>SSPC</b>	Society of Protective Coatings
<b>SWPPP</b>	Stormwater Pollution Prevention Plan
<b>UCP</b>	Unified Certification Program
<b>UL</b>	Underwriter's Laboratory

USA	United States of America
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USFW	United States Fish and Wildlife
VOC	Volatile Organic Compound

**SECTION 106 – CONTROL OF MATERIAL**

*Delete Sec 106.9.3 and substitute the following:*

**04/24**

**106.9.3** Buy America requirements include a step certification for all fabrication processes of all steel or iron materials that are accepted per Sec 1000. The AASHTO Product Evaluation and Audit Solutions compliance program verifies that all steel and iron products fabrication processes conform to 23 CFR 635.410 Buy America Requirements and is an acceptable standard per 23 CFR 635.410(d). AASHTO Product Evaluation and Audit Solutions compliant suppliers will not be required to submit step certification documentation with the shipment for some selected steel and iron materials. The AASHTO Product Evaluation and Audit Solutions compliant supplier shall maintain the step certification documentation on file and shall provide this documentation to the engineer upon request.

**SECTION 108 – PROSECUTION AND PROGRESS**

*Delete Sec 108.1.1 and substitute the following:*

**10/23**

**108.1.1** The contractor shall not sublet, sell, transfer, assign or otherwise dispose of the contract or contracts or any portion thereof, or of any right, title, or interest therein, without written consent of the engineer. Requests for permission to sublet, assign or otherwise dispose of any portion of the contract shall be in writing and accompanied by evidence that the organization that will perform the work is particularly experienced and equipped for such work. In case such consent is given, the contractor will be permitted to sublet a portion thereof, but the contractor's organization shall perform work amounting to no less than 30 percent of the original contract price. Certification or classification of a contractor by type of work performed or consent to a subcontract shall not constitute the Commission's endorsement of the qualifications of the subcontractor or that the particular subcontractor's work will constitute compliance with any other provisions of the contract.

**SECTION 109 – MEASUREMENT AND PAYMENT**

*Delete Sec 109.16 and substitute the following:*

**04/24**

**109.16 Fixed Cost Items.** The following fixed prices shall be used when referenced in the specifications:

Sec	Item No.	Item of Work	Unit	Fixed Price
<a href="#">201.4.3</a>	201-30.00	Clearing and Grubbing	Acre	\$3,500.00
<a href="#">203.9.4</a>	203-20.00	Class C Excavation ≤ 500 cy	cy	\$75.00
<a href="#">206.6.2</a>	206-36.00	Supplemental Foundation Test Holes	ft	\$6.00
<a href="#">206.6.3.1</a>	206-10.03	Class 1 Excavation in Rock	cy	\$175.00
<a href="#">206.6.3.2</a>	206-20.03	Class 2 Excavation in Rock	cy	\$200.00
<a href="#">206.6.3.3</a>	206-31.00	Class 3 Excavation in Rock	cy	\$135.00
<a href="#">206.6.3.4</a>	206-34.00	Class 4 Excavation in Rock	cy	\$135.00
<a href="#">214.5.1.2</a>	214-20.00	Furnishing Rock Fill	cy	\$15.00
<a href="#">303.5.1.2</a>	303-06.00	Furnishing Rock Base Material	sy	\$10.00
<a href="#">401.14</a>	401-05.00	Sample of Compacted Plant Mix Bituminous Pavement	Each	\$75.00
<a href="#">403.23.2</a>	403-05.00	Sample of Compacted Asphaltic Concrete Pavement	Each	\$75.00
<a href="#">505.10.14</a>	505-00.04	Supplementary Wearing Surface Material	cy	\$800.00

Sec	Item No.	Item of Work	Unit	Fixed Price
		(Low Slump Concrete)		
505.20.14	505-00.04	Supplementary Wearing Surface Material (Latex Modified Concrete)	cy	\$700.00
505.30.14	505-00.04	Supplementary Wearing Surface Material (Silica Fume Concrete)	cy	\$800.00
505.40.14	505-00.04	Supplementary Wearing Surface Material (Latex Modified Very Early Strength Concrete)	cy	\$900.00
505.50.14	505-00.04	Supplementary Wearing Surface Material (CSA Cement Very Early Strength Concrete)	cy	\$700.00
505.60.14	505-00.04	Supplementary Wearing Surface Material (Steel Fiber Reinforced Concrete)	cy	\$500.00
505.70.14	505-00.04	Supplementary Wearing Surface Material (Polyester Polymer Concrete)	cy	\$900.00
611.30.5.1	611-30.10	Furnishing Type 1 Rock Blanket	cy	\$24.00
611.30.5.1	611-30.20	Furnishing Type 2 Rock Blanket	cy	\$25.00
701.7.7	701-15.00	Concrete Coring	lf	\$100.00
618.3	618-10.20	Additional Mobilization for Seeding	Each	\$600.00
703.5.1	703-20.02	Class B Concrete (Misc) (Concrete Fill > 2 cy)	cy	\$500.00
703.5.1	703-20.02	Class B Concrete (Misc) (Concrete Fill ≤ 2 cy)	cy	\$750.00
706.4	706-10.00	Reinforcing Steel	lb	\$2.00

**SECTION 302 – STABILIZED PERMEABLE BASE**

*Delete Sec 302.2 and substitute the following:*

10/23

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

Item	Section
Aggregate for Drainage	1009
Asphalt Binder (PG 64-22, PG 70-22, PG 76-22)	1015
Type II or Portland Cement	1019
Water	1070

*Delete Sec 302.2.3 and substitute the following:*

10/23

**302.2.3 Cement Stabilized Permeable Base.** Cement stabilized base mixtures shall be composed of the base aggregate with a cement factor of 2.5 sacks per cubic yard. All proportioning, mixing and transporting shall be in accordance with [Sec 501](#). Fly ash and slag cement shall not be used.

**SECTION 304 – AGGREGATE BASE COURSE**

*Delete Sec 304.4.2 and substitute the following:*

10/23

**304.4.2 Quality Assurance.** The contractor’s QC test results and the engineer’s QA test results shall meet the specifications and the following. For Type 1 and 5 base the contractor’s compaction standard tests shall compare within 3.0 pounds of the maximum density of the MoDOT determined compaction standard. For Type 7 base the contractor’s average DCP penetration index shall compare within 0.1 inches per blow of the MoDOT determined average penetration index. For retained samples, the contractor’s test results and the engineer’s test results shall compare within the following limits:

- (a) The total deleterious material shall be within 2.0 percentage points.
- (b) The plasticity index shall be within 2.
- (c) The gradation test results shall compare within the following limits:

Sieve	Tolerance (%)
1-inch	± 6.0
1/2-inch	± 6.0
No. 4	± 6.0



No. 30	± 4.0
No. 200	± 3.0

**SECTION 401 – PLANT MIX BITUMINOUS BASE AND PAVEMENT**

*Delete Sec 401.7.1 and substitute the following:* 10/23

**401.7.1 Weather Limitations.** No mixture shall be placed on any wet or frozen surface. No mixture shall be placed when either the air temperature or the temperature of the surface on which the mixture is to be placed is below 40 F. Temperatures shall be obtained in accordance with MoDOT Test Method TM 20.

**SECTION 402 – PLANT MIX BITUMINOUS SURFACE LEVELING**

*Delete Sec 402.10.1 and substitute the following:* 10/23

**402.10.1 Weather Limitations.** No mixture shall be placed on any wet surface or frozen pavement. No mixture shall be placed when either the air temperature or the temperature of the surface on which the mixture is to be placed is below 50 F, except as otherwise allowed in [Sec 402.10.1.1](#). Temperatures shall be obtained in accordance with MoDOT Test Method TM 20.

**SECTION 403 – ASPHALTIC CONCRETE PAVEMENT**

*Delete Sec 403.10.1 and substitute the following:* 10/23

**403.10.1 Weather Limitations.** No mixture shall be placed on any wet or frozen surface. No mixture shall be placed when either the air temperature or the temperature of the surface on which the mixture is to be placed is below 40 F. Temperatures shall be obtained in accordance with MoDOT Test Method TM 20.

**SECTION 501 – CONCRETE**

*Delete Sec 501.2 and substitute the following:* 10/23

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

Item	Section
Coarse Aggregate <sup>a</sup>	<a href="#">1005.2</a>
Fine Aggregate <sup>a</sup>	<a href="#">1005.3</a>
Slag Cement	<a href="#">1017</a>
Fly Ash	<a href="#">1018</a>
Cement	<a href="#">1019</a>
Concrete Admixture	<a href="#">1054</a>
Concrete Tinting Material	<a href="#">1056</a>
Water	<a href="#">1070</a>

<sup>a</sup>Regardless of the gradation of the coarse and fine aggregate used in concrete for pavement or base, the aggregate shall meet the quality requirements of coarse and fine aggregate for concrete pavement.

*Delete Sec 501.2.1 and substitute the following:* 10/23; 04/24

**501.2.1 Aggregate Acceptance.** Quality control (QC) sampling and testing will be performed by the contractor and quality assurance (QA) sampling and testing will be performed by the engineer for aggregate in Type IL or Portland cement concrete masonry (PCCM) in accordance with the following table at the last possible point of incorporation into the project. Aggregate samples may be taken either by sampling the flowing aggregate stream or upon approval by the engineer, from the stockpile.

Item	Property	QC Test Frequency	QA Test Frequency
Portland Cement Concrete Masonry (PCCM)	Gradation of Coarse Aggregate - AASHTO T 27 and T 11	One per 500 cubic yards per fraction per project.	One QC split per 2,500 cubic yards with a minimum of one per project.
	Gradation of Fine Aggregate - AASHTO T 27 and T 11		
	Deleterious Content - MoDOT Test Method TM 71		
	Absorption of Coarse Aggregate - AASHTO T 85		
	Thin or Elongated Pieces - ASTM D 4791 (+3/4 in., 5:1)	One per source per project.	One per source per year.

Delete Sec 501.3.1 and substitute the following:

10/23

**501.3.1 Required Information.** The concrete mix design shall contain the following information:

- (a) Source, type and specific gravity of Type IL or Portland cement
- (b) Source, type (class, grade, etc.) and specific gravity of supplementary materials, if used
- (c) Source, name, type and amount of admixtures
- (d) Source, type (formation, etc.), ledge number if applicable, and gradation 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) The percent of each aggregate component used for optimized concrete mixes
- (h) The design air content and slump
- (i) Batch weights of Type IL or Portland Cement and supplemental cementitious materials
- (j) Batch weights of coarse, intermediate and fine aggregates
- (k) Batch weight of water

Delete Sec 501.3.2 and substitute the following:

04/24

**501.3.2 Paving Concrete.** For Portland cement concrete pavement (PCCP) mixes, the gradation requirements of Sec 1005 will not apply. For all fractions, 100 percent of each fraction shall pass the 2-inch sieve. When Grade F is required, 100 percent of each fraction shall pass the 3/4-inch sieve.

Delete Sec 501.3.6 and substitute the following:

10/23

**501.3.6 Cement Factors.** The minimum cement requirements in pounds per cubic yard of concrete for the various classes of sand shall be as follows:

Cement Requirements <sup>a,b</sup>							
Class of Sand	Class A-1 Concrete	Class B Concrete	Class B-1 Concrete	Class B-2 Concrete	Class MB-2 Concrete <sup>a,b</sup>	Pavement Concrete	Seal Concrete
A <sup>c</sup>	600	525	610	705	600	560	660
B <sup>d</sup>	640	565	640	735	620	560	695
C <sup>e</sup>	--	585	660	750	640	560	715
D <sup>f</sup>	--	620	695	790	660	560	735

<sup>a</sup>When used, IP, IS or IT cement shall be substituted on a pound for pound basis for Type IL or Portland cement and adjustments in design mix proportions will be required to correct the volume yield of the mixture.

<sup>b</sup>The contractor may submit an optimized mix design which has a maximum 50 pounds per cubic yard reduction in cement from that shown in the tables. If the contractor chooses this option, the mixture will be subject to review, laboratory testing and approval by the engineer. All other requirements for the cement factor will apply.

<sup>c</sup>Class A sand will include all sand, except manufactured sand, weighing 109 pounds per cubic foot or more.

<sup>d</sup>Class B sand will include all chert, river and Crowley Ridge sand weighing from 106 to 108 pounds, inclusive, per cubic foot or glacial sand weighing 108 pounds or less per cubic foot.

<sup>e</sup>Class C sand will include all chert, river and Crowley Ridge sand weighing from 101 to 105 pounds, inclusive, per cubic foot.

<sup>f</sup>Class D sand will include all sand weighing 100 pounds or less per cubic foot and any manufactured sand that is produced by the process of grinding and pulverizing large particles of aggregate or which contains more than 50 percent of material produced by the reduction of coarser particles. Manufactured sand produced from limestone or dolomite shall not be used in Type IL or Portland cement concrete for driving surfaces such as bridge decks, pavements and full depth shoulders.

<sup>g</sup>Modified B-2 (MB-2) concrete may be used in-place of Class B-2 Concrete.

<sup>h</sup>Modified B-2 (MB-2) concrete shall use at least one supplementary cementitious material in accordance with this specification. In no case shall MB-2 concrete use less than 15 percent fly ash or slag cement when used as the individual supplementary cementitious material. In no case shall MB-2 concrete use less than 6 percent metakaolin when used as the individual supplementary cementitious material.

*Add as new Section:* 10/23

**501.3.10 Air Content.** The maximum air content for the mix design submittal shall be 6.0%.

*Delete Sec 501.14 and substitute the following:* 10/23

**501.14 Supplementary Cementitious Materials in Concrete.** The contractor may use fly ash, slag cement, silica fume or metakaolin in the production of concrete in accordance with these specifications. Ternary mixes will be allowed for all concrete classes. Ternary mixes are mixes that contain a combination of Type IL or Portland cement and two supplementary cementitious materials. Supplementary cementitious materials may be used to replace a maximum of 40 percent of the Type IL or Portland cement. The amount of each supplementary cementitious materials used in a ternary mix shall not exceed the limits specified herein.

*Delete Sec 501.14.1 and substitute the following:* 04/24

**501.14.1 Fly Ash.** Approved Class C or Class F fly ash may be used to replace a maximum of 25 percent of the Type IL or Portland cement on a pound for pound basis in all concrete.

*Delete Sec 501.14.2 and substitute the following:* 10/23

**501.14.2 Slag Cement.** Approved slag cement may be used to replace a maximum of 30 percent of the Type IL or Portland cement on a pound for pound basis in all concrete.

*Delete Sec 501.14.3 and substitute the following:* 10/23

**501.14.3 Silica Fume.** Approved silica fume may be used to replace a percent of the Type IL or Portland cement on a pound for pound basis. The following limits shall apply when silica fume is used:

Silica Fume Replacement Limits, %		
Class of Concrete	Minimum	Maximum
MB-2	6	8
A-1, B, B-1, B-2, PCCP, Seal	----	8

*Delete Sec 501.14.4 and substitute the following:* 10/23

**501.14.4 Metakaolin.** Approved metakaolin may be used to replace a maximum of 15 percent of the Type IL or Portland cement on a pound for pound basis in all concrete.

*Delete Sec 501.14.5 and substitute the following:* 10/23

**501.14.5 Source Changes.** Changes in class or source of fly ash, grade and source of slag cement, brand and source of silica fume or brand and source of metakaolin used in concrete structures will be permitted only with written approval from the engineer.

Only fly ash, slag cement, silica fume or metakaolin resulting in concrete of the same color shall be used in any individual unit of the structure.

**Delete Sec 501.14.6 and substitute the following:** 10/23

**501.14.6 Mix Proportions.** When fly ash, slag cement, silica fume or metakaolin is used, an adjustment in design mix proportions will be required to correct the volume yield of mixture. Approval shall be obtained from the engineer prior to any change in mix design or proportions.

**Delete Sec 501.14.8 and substitute the following:** 10/23

**501.14.8 Measuring Fly Ash and Slag Cement.** Fly ash or slag cement shall be measured in the same manner and with the same accuracy as cement. Fly ash or slag cement may be weighed separately on the same scale as cement, provided the scale increments are such that the specified weighing accuracy can be maintained. If the fly ash or slag cement is weighed together with the cement, the cement shall be weighed first and the accuracy shall apply to the combined weight.

**Delete Sec 501.14.12 and substitute the following:** 10/23

**501.14.12 Measuring Cementitious Materials.** Fly ash, slag cement, silica fume or metakaolin will be considered as cement when measuring mixing time.

**Delete Sec 501.15.1 and substitute the following:** 10/23

**501.15.1 Minimum Cement Content.** The concrete shall contain no less than 517 pounds of cement per cubic yard. The use of fly ash, slag cement, silica fume or metakaolin shall be in accordance with [Sec 501.14](#). The plant shall comply with other requirements of these specifications or be as approved by the engineer. The concrete will be subject to acceptance or rejection by visual inspection at the job site.

## **SECTION 612 – IMPACT ATTENUATORS**

**Delete Sec 612.4.1 and substitute the following:** 04/24

**612.4.1 Truck Mounted Attenuator.** A truck mounted attenuator (TMA) shall be used as specified in the contract. Each TMA shall consist of an impact attenuator unit, a support vehicle, and a truck-mounted flashing arrow panel. Trailer mounted attenuators, with support vehicle and mounted flashing arrow panel, may be used in lieu of truck mounted attenuators. Any damaged TMA shall be removed from service and either repaired or replaced to the satisfaction of the engineer.

**Delete Sec 612.4.2.2 and substitute the following:** 04/24

**612.4.2.2** A decal designed as a Type I object marker with fluorescent orange retroreflective sheeting or a Type 3 object marker with yellow sheeting shall be applied to the lead module facing traffic for arrays located 12 feet or less from the edge of the traveled way.

**Delete Sec 612.5.1 and substitute the following:** 04/24

**612.5.1** No payment will be made for truck mounted attenuators (TMAs) used in mobile operations or for any TMAs designated as optional. TMAs required for stationary work activities will be paid as specified in the contract.

**Add as new section:** 04/24

**612.5.2** Impact attenuator arrays (sand barrels), will be paid for at the contract unit price for each impact attenuator array per the manufacturer's recommendations for the posted speed limit. Relocation of impact attenuator arrays will be paid for at the contract unit price included in the contract.

**Renumber old Sec 612.5.2 as 612.5.2.1:** 04/24

**612.5.2.1** Furnishing and installing replacement sand barrels will be paid for at the contract unit price per each sand barrel. Final payment for this item will be based on the actual number of modules replaced.

## **SECTION 613 – PAVEMENT REPAIR**

*Delete Sec 613.40.2.1 and substitute the following:*

*04/24*

**613.40.2.1 Repair Material.** Rapid set concrete patching material shall be used. The maximum aggregate size in the gradation shall be ½ inch. Prior to use, the material shall be approved by the engineer. Material having completed current testing through AASHTO's Product Evaluation and Audit Solutions program will be considered for qualification upon submittal of a written request by the manufacturer with accompanying documentation. The material shall be handled, prepared and mixed in accordance with the manufacturer's recommendations. The contractor shall supply a manufacturer's certification to the engineer for each lot of material furnished. Certification shall include the name of the manufacturer and a manufacturer's certification statement that the material supplied is the same as the material that was qualified.

## **SECTION 616 – TEMPORARY TRAFFIC CONTROL**

*Delete Sec 616.5.1 and substitute the following:*

*10/23*

**616.5.1 Amber or Amber and White Warning Lights.** All on-road construction-related vehicles and equipment shall operate with amber or amber and white warning lights and as follows:

- (a) Lighting shall be visible to approaching traffic from front, rear and sides.
- (b) For daytime operations, SAE Class 1 or 2 lights shall be used. For dusk to dawn operations, SAE Class 2 lights shall be used, or SAE Class 1 lights with dimming capabilities to minimize glare experienced by travelers.
- (c) Lighting display will be high intensity rotating, flashing, oscillating or strobe lights.

## **SECTION 704 – CONCRETE MASONRY REPAIR**

*Delete Sec 704.6 and substitute the following:*

*04/24*

**704.6 Method of Measurement.** Final measurement will not be made for preparation of the existing deck. No duplication of measurement will be made for full depth repair, half-sole repair, deck repair with void tube replacement, monolithic deck repair, shallow deck repair, slab edge repair, superstructure repair (unformed) or modified deck repair. No duplication of measurement will be made for substructure repair, unformed and formed.

## **SECTION 806 – POLLUTION, EROSION AND SEDIMENT CONTROL**

*Add Sec 806.30.2.2.1 as new section:*

*10/23*

**806.30.2.2.1** Compost filter socks used for alternate ditch checks shall meet the requirements of AASHTO R51. Other proprietary devices may be used, as approved by the engineer. Acceptance of the material will be based on the manufacturer's certification and upon acceptable performance in the field, as determined by the engineer.

*Renumber Sec 806.30.2.2.1 as 806.30.2.2:*

*10/23*

**806.30.2.2.2** Unless otherwise disallowed, the contractor has the option to construct rock ditch checks in lieu of alternate ditch checks. Rock ditch checks constructed in lieu of alternate checks shall have a minimum effective height of 18 inches. Spacing shall be increased, as determined by the engineer, to account for the additional height of rock ditch check. The toe-to-top capacity requirements shown on the plans will be used to determine the spacing.

*Delete Sec 806.30.2.4 and substitute the following:*

*10/23*

**806.30.2.4 Curb Inlet Checks.** Curb inlet checks shall consist of socks filled with rock, or other fillers of sufficient weight to keep the device in place. Curb inlet checks shall be installed in the gutter or as shown on the plans. Compost filter socks used for curb inlet checks shall meet the requirements of AASHTO R51. Other proprietary devices may be used, as approved by the engineer.

*Delete Sec 806.70.3.2 and substitute the following:*

*10/23*

**806.70.3.2 Alternate Fence Types.** Alternate fence types shall have a minimum effective height of 9 inches, shall follow guidance provided in the SWPPP, and shall perform to the level that meets or exceeds the requirement of the current Missouri Operating Permit. Compost filter socks meeting the requirements of AASHTO R51 may be used as an alternate to fabric silt fence. Additional alternate silt fence types shall be in accordance with the SWPPP or as approved by the engineer. Acceptance of the material will be based on the manufacturer's certification and upon acceptable performance in the field, as determined by the engineer.

**SECTION 902 – TRAFFIC SIGNALS**

*Delete Sec 902.17.7 and substitute the following:*

**04/24**

**902.17.7 External Conduit on Structure.** For existing structures, or if provisions are not made in the plans for providing a conduit raceway in new structures as described in [Sec 707](#), the conduit shall be external conduit on structure. Conduit on structure will include conduit on bridges, retaining walls or other structures, and shall be installed as shown on the plans or as directed by the engineer. The final location of all conduit and junction boxes shall be approved by the engineer before installation begins. Conduit shall not be attached to prestressed concrete girders or prestressed, precast concrete deck panels. The conduit shall be secured to the concrete with clamps at no more than 5-foot intervals. Concrete anchors for clamps shall be in accordance with Commercial Item Description (CID) A-A-1923A and shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C, or ASTM B695, Class 55, or constructed of stainless steel. The minimum embedment in concrete shall be 1 3/4 inches. The supplier shall furnish a manufacturer's certification that the concrete anchors meet the required material and galvanizing specifications. If necessary to anchor the conduit to steel bridge members, the attachment method shall not involve drilling, grinding or welding. Attachment method to steel members shall be approved by the engineer. Junction boxes shall be installed as shown on the plans or as directed by the engineer. Junction boxes shall be surface-mounted and installed such that covers are accessible. If the conduit crosses a bridge expansion joint, a conduit expansion fitting shall be used. The expansion fitting shall provide a minimum movement in either direction as shown on the plans or as specified by the engineer. Junction boxes, expansion fittings and any hardware or material required for conduit installation shall be at the contractor's expense.

**SECTION 1005 – AGGREGATE FOR CONCRETE**

*Delete Sec 1005.2.1 and substitute the following:*

**10/23**

**1005.2.1** All coarse aggregate for concrete shall consist of sound, durable rock, free from objectionable coatings and frozen and cemented lumps. The percentage of deleterious substances shall not exceed the following values, and the sum of percentages of all deleterious substances, exclusive of the material passing No. 200 sieve (Gradations D and E), and thin or elongated materials, shall not exceed 6.0 percent. For crushed stone, the percentage of wear shall not exceed 50 when tested in accordance with AASHTO T 96.

<b><i>Deleterious Material</i></b>	<b><i>Percent by Weight</i></b>
Deleterious Rock	6.0
Shale	1.0
Chert in Limestone	4.0
Other Foreign Material	0.5
Material Passing No. 200 Sieve Gradations D & E	2.5 <sup>a</sup>
Thin or Elongated	5.0

<sup>a</sup> Value may be raised to 3.0 percent, providing the material passing the #200 sieve in the fine aggregate is less than or equal to 1.0 percent.

*Delete Sec 1005.2.1.2 and substitute the following:*

**10/23**

**1005.2.1.2** Crushed stone shall be obtained from rock of uniform quality. Rock tested for initial approval, source samples, and production samples shall meet the requirements below for Los Angeles abrasion, absorption, and soundness. The absorption and soundness test results may be waived provided a durability factor of 75 percent or higher is achieved.

<b><i>Property</i></b>	<b><i>Value</i></b>
Los Angeles Abrasion, AASHTO T 96, percent loss, max	50
Absorption, AASHTO T 85, percent, max.: (a) Portland Cement Concrete Pavement	2.0

(b) Portland Cement Concrete Masonry	3.5
<u>Soundness, MoDOT Test Method TM 14, percent loss, max.:</u>	
(a) Portland Cement Concrete Pavement	16.0
(b) Portland Cement Concrete Masonry	18.0
<u>Durability Factor, AASHTO T 161 Procedure B, percent, min:</u>	
(a) Portland Cement Concrete Pavement	75 <sup>a</sup>
(b) Portland Cement Concrete Masonry	75 <sup>b</sup>

<sup>a</sup> Approval will be based on maximum aggregate size produced that meets durability requirements.

<sup>b</sup> The maximum top size of the aggregate tested shall be 1 inch or greater.

**Delete Sec 1005.2.4 and substitute the following:**

**10/23**

**1005.2.4** Grade F shall be obtained from rock of uniform quality. Rock tested for initial approval, source samples, and production samples, shall meet the requirements below for Los Angeles abrasion, absorption, soundness, and bulk specific gravity shall be in accordance with the criteria below. The absorption, soundness, and bulk specific gravity test results may be waived provided a durability factor of 75 percent or higher is achieved.

Property	Value
Los Angeles Abrasion, AASHTO T 96, percent loss, max.	50
Absorption, AASHTO T 85, percent, max.	1.5
Soundness, MoDOT TM 14, percent loss, max.	10.0
Bulk Specific Gravity, AASHTO T 85, min.	2.58
<u>Durability Factor, AASHTO T 161 Procedure B, percent, min:</u>	75 <sup>a</sup>

<sup>a</sup> Approval will be based on maximum aggregate size produced that meets durability requirements.

**Delete Sec 1005.2.5 and substitute the following:**

**10/23**

**1005.2.5** Coarse aggregate for concrete for structures, except as specified in [Sec 1005.2.6](#), may be gravel or crushed stone. Coarse aggregate for Class B, B-1, B-2, MB-2 or Seal concrete shall be in accordance with either Gradation D or E. Coarse aggregate for Class A-1 concrete shall be in accordance with Gradation E.

Gradation D	Percent by Weight
Passing 1-inch sieve	100
Passing 3/4-inch sieve	85-100
Passing 3/8-inch sieve	15-55
Passing No. 4 sieve	0-10

Gradation E	Percent by Weight
Passing 3/4-inch sieve	100
Passing 1/2-inch sieve	70-100
Passing 3/8-inch sieve	30-70
Passing No. 4 sieve	0-20
Passing No. 8 sieve	0-6

**Delete old Sec 1005.2.5 and Add as Sec 1005.2.6:**

**10/23**

**1005.2.6** Coarse aggregate for ornamental concrete shall be crushed stone in accordance with [Sec 1005.2.5](#), Gradation E. However, the use of coarse aggregate containing more than 2 percent chert will not be permitted.

**SECTION 1017 – GROUND GRANULATED BLAST FURNACE SLAG**

**Delete the entire Section and substitute the following:**

**10/23**

**1017.1 Scope.** This specification covers slag cement for use in concrete.

**1017.2 General.** All slag cement shall be in accordance with AASHTO M 302, Grade 100 or 120, except as herein specified. Only slag cement from sources qualified in accordance with these specifications will be permitted.

**1017.2.1** Slag cement may be utilized as a blend according to AASHTO M 240 and Sec 1019.

**1017.2.2** The mixing of different grades and sources of slag cement will not be permitted.

**1017.2.3** The term "manufacturer", as used in this specification, will be the company grinding the granulated blast furnace slag to produce slag cement. The term "marketing entity", as used in this specification, will be the supplier or broker of the slag cement. The marketing entity will be responsible for complying with these specifications.

**1017.2.4** All tests shall be performed in a MoDOT approved laboratory.

**1017.3 Sampling, Testing and Acceptance Procedures.** All marketing entities and terminals furnishing slag cement to MoDOT projects shall be qualified as herein described. All slag cement will be subject to inspection and sampling by MoDOT at the source of manufacture, an intermediate shipping terminal or destination. MoDOT shall be allowed unlimited access to all facilities and records as required to conduct inspection and sampling.

**1017.3.1 Marketing Entity Qualification.** In order to become qualified, a written request shall be sent by the marketing entity to Construction and Materials, along with a copy of the marketing entity's QC plan. The production source and terminals may be inspected to verify the information and to establish personal contact with the QC personnel.

**1017.3.1.1** The following information shall be included in the request for qualification:

(a) An outline of the QC program from the source of manufacture to the point where the product is relinquished to the purchaser. The QC program shall cover all tests in accordance with the specification and include the testing frequency for each test. The name of the testing laboratory shall be included. Each sample shall not represent less than 500 tons.

(b) A copy of the testing laboratory's most recent Cement and Concrete Reference Laboratory (CCRL) inspection report and the latest CCRL proficiency sample report. The CCRL inspection shall cover all tests in accordance with the specification. Documentation showing satisfactory resolution of all inspection deficiencies shall be included.

(c) Complete name and address of the slag cement source and owner. If located in an area without precise address identification, a complete map description shall be furnished. If more than one source is used, all sources shall be listed.

(d) Grade of slag cement produced.

(e) Description of storage facilities, including capacities, set-aside capabilities and sampling method(s).

(f) A copy of a typical bill of lading with the required certification statement.

(g) A split sample of the slag cement proposed for use, obtained over a minimum of one production day. The marketing entity's test results for the split sample shall also be submitted. The marketing entity shall provide CCRL reference cement for testing.

**1017.3.1.2** In order to maintain qualification, the following will be required:

(a) QC test results covering the production of all slag cement proposed for use in MoDOT projects, including the high, low and average results shall be kept on file by the marketing entity. Sampling and testing shall be in accordance with these specifications.

(b) A sample shall be tested for each 2000 tons intended for use. The sample shall be tested by the marketing entity for fineness, No. 325 sieve analysis and Blaine, air content, 7-day and 28-day Slag Activity Index and percent sulfide sulfur (S), taken from a composite sample representing each 2000 tons of slag cement transported to the storage silo. The composite shall be comprised of a minimum of four samples, each representing not more than 500 tons. Automatic samplers may be used in lieu of the individual 500-ton grab samples.

(c) A copy of the most recent CCRL inspection and proficiency sample reports and any deficiency resolutions shall be forwarded promptly to MoDOT.



(d) Semi-annual split samples for the class of approved slag cement will be obtained by MoDOT for joint testing by the marketing entity. Marketing entity test results on the split samples shall be furnished to Construction and Materials when completed.

(e) All QC test results shall be available for a minimum of three years, for MoDOT review upon request.

(f) Only slag cement in compliance with these specifications shall be allowed into a silo destined for MoDOT projects.

**1017.3.2 Terminal Qualification.** In order to become a qualified terminal, a written request shall be sent from terminal personnel to Construction and Materials. A letter shall accompany the request from each affected and qualified marketing entity, advising of the intent to ship through the respective terminal. Any changes in slag cement sources shall be updated in the same manner. Terminals will be inspected to ensure adequacy to accept, retain and ship slag cement from qualified marketing entities.

**1017.3.3 Failure to Comply.** Failure to fulfill any of these requirements may result in disqualification of the slag cement manufacturer, marketing entity or terminal. In cases of dispute, test results obtained by MoDOT will control.

**1017.3.4 Disqualified Facilities.** If a facility has been disqualified, the marketing entity will be required to designate the silo, bin or storage facility from which the marketing entity proposes to furnish slag cement for MoDOT projects. Each silo, bin or storage facility designated must be sampled, tested, sealed and approved by MoDOT prior to shipment. The marketing entity shall also sample, test and report the test results for each designated silo, bin or storage facility. This procedure will continue until adequate QC has been established.

**1017.3.5 Shipping.** Slag cement continually sampled and tested via autosamplers at a location, frequency and duration acceptable to MoDOT, may be continuously shipped direct from a marketing entity. All slag cement manually sampled and tested shall be held in the silo or bin until such time as the test results are completed prior to shipping.

**1017.3.6 Storage.** All slag cement intended for use shall be sampled, tested and placed in a designated silo or bin.

**1017.4 Acceptance.** The marketing entity shall certify that the material complies with the specification requirements. When a qualified marketing entity or terminal is shipping slag cement for, or purchasing slag cement from, another qualified marketing entity, the bill of lading or delivery receipt shall be from the shipping company. The certification statement showing the actual manufacturer shall be prominently placed on the bill of lading or delivery receipt. A copy of the bill of lading or delivery receipt shall accompany each shipment and shall be furnished to MoDOT at the shipping and destination points.

**1017.4.1** The bill of lading or delivery receipt for each shipment to MoDOT projects shall carry the following certification statement:

"This is to certify this Grade \_\_\_\_\_ slag cement originated from a MoDOT qualified manufacturer, has been maintained to meet MoDOT specifications and was loaded from silo number \_\_\_\_\_."

\_\_\_\_\_  
Name and Location of Manufacturer

\_\_\_\_\_  
Name and Location of Shipping Facility

By \_\_\_\_\_  
Signature and Name of Marketing Entity

**SECTION 1019 – CEMENT**

***Delete Sec 1019.2.1 and substitute the following:*** **10/23**

**1019.2.1 Portland Cement.** All Portland cement shall be in accordance with AASHTO M 85.

***Delete Sec 1019.2.4 and substitute the following:*** **10/23**

**1019.2.4** Different manufacturers and/or types of cement shall not be mixed, nor shall different manufacturers and/or types be used in the same unit of construction.

*Delete Sec 1019.2.5 and substitute the following:*

10/23

**1019.2.5 Sack or Bag.** A sack or bag of cement equals 94 pounds net.

#### **SECTION 1026 – REINFORCED CONCRETE CULVERT PIPE**

*Delete Sec 1026.3.2 and substitute the following:*

10/23

**1026.3.2 Cement.** Cement shall be in accordance with [Sec 1019](#). Fly ash or slag cement may be used to replace cement in accordance with [Sec 501](#), except approved Class C or Class F fly ash may be used to replace a maximum of 25 percent of Type II or Portland cement on an equivalent weight basis. Fly ash shall not exceed 25 percent by weight of the total cementitious material, i.e., microsilica, slag cement or other pozzolanic material.

#### **SECTION 1033 – PRECAST DRAINAGE UNITS**

*Delete Sec 1033.3.1 and substitute the following:*

10/23

**1033.3.1 Cement.** Cement shall be in accordance with [Sec 1019](#). Fly ash or Slag cement may be substituted for cement in accordance with [Sec 501](#)

*Delete Sec 1033.3.3 and substitute the following:*

10/23

**1033.3.3 Slag Cement.** Slag cement shall be in accordance with [Sec 1017](#).

#### **SECTION 1041 – POLYPROPYLENE CULVERT PIPE**

*Delete Sec 1041.3 and substitute the following:*

10/23

**1041.3 Material.** All polypropylene culvert pipe, couplings and fittings shall be in accordance with AASHTO M 330, Type S or Type D, except as follows.

*Delete Sec 1041.4.1 thru 1041.5 and substitute the following:*

10/23; 04/24

**1041.4.1 Application for Placement on Qualified List.** To become qualified, a written request shall be sent by the manufacturer to Construction and Materials with the following:

- (a) A copy of the manufacturer's current AASHTO Product Evaluation and Audit Solutions audit compliance.
- (b) The pipe manufacturer's certified analysis certificate setting forth the name or brand of pipe to be furnished, the specified type, category, grade and class of polypropylene compounds. The certificate shall be sworn for the manufacturer by a person having legal authority to bind the company. The certificate shall have attached a certified test report from an approved independent testing laboratory showing specific results of tests performed on each diameter pipe to be furnished, conforming to all requirements of these specifications. Pipes shall be randomly selected for test by the independent testing laboratory and shall be representative of that manufacturer's pipe.
- (c) A guarantee that all pipe furnished shall be in accordance with the specification requirements, shall bear a suitable identification brand or mark and shall be replaced without cost to the Commission when not in accordance with the specified requirements. The guarantee shall be worded such that the guarantee will remain in effect as long as the manufacturer continues to furnish material. The manufacturer shall conduct tests and measurements as necessary to ensure the material produced complies with all specification requirements. These tests and measurements shall be identified by the identification symbols or code used on the pipe in a manner that will permit the manufacturer to produce specific reports showing test results representative of specific lots of polypropylene pipe. Copies of reports of these tests shall be kept on file and shall be submitted to the engineer upon request. The brand shall be removed or obliterated by the manufacturer on all material where control tests, as outlined herein, are not in accordance with this specification.
- (d) Units of measurement, English or metric, used to fabricate the pipe.

**1041.4.2 Maintaining Qualification.** To maintain qualification, the manufacturer shall perform and maintain a quality control program in accordance with the AASHTO Product Evaluation and Audit Solutions Certification Program. The manufacturer's AASHTO Product Evaluation and Audit Solutions certification shall be maintained. The manufacturer shall maintain for three years

a record of all test results, inspections and the bill of lading for each shipment of material used in the production of pipe and for each shipment of pipe. The manufacturer shall notify Construction and Materials at least 24 hours prior to each shipment of pipe to a MoDOT project. Additional pipe may be considered part of the original shipment when the ordered quantity was underestimated or material was lost or damaged. A bill of lading in accordance with [Sec 1041.6](#) shall be provided for each shipment of pipe.

**1041.4.3 Disqualification of a Manufacturer.** A manufacturer may be disqualified from providing pipe for use on MoDOT projects based on the discretion of Construction and Materials, for reasons including, but not limited to, not maintaining AASHTO Product Evaluation and Audit Solutions certification, failure of material to consistently meet specifications, falsification of any documentation, misbranding of the pipe, unsatisfactory performance in the field or for other reasons indicating lack of consistent material quality.

**1041.4.3.1** In the case where a manufacturer loses AASHTO Product Evaluation and Audit Solutions certification and was not disqualified for any other reason, reinstatement will be considered when the manufacturer is recertified by AASHTO Product Evaluation and Audit Solutions program.

**1041.4.3.2** A manufacturer will not be considered for reinstatement until after one year from the date of removal for falsification of documents.

**1041.4.3.3** Three notices of failure to meet specification requirements within a 12-month period will be cause for disqualification of the manufacturer for one year, effective from the date of the third notice.

**1041.4.3.4** A manufacturer disqualified within one year of the end of a disqualification may be subject to permanent removal, with no application for reinstatement accepted for a period of three years.

**1041.4.4 Reinstatement of a Manufacturer or Plant.** Consideration of reinstatement of a manufacturer once disqualified will be no sooner than specified in [Sec 1041.4.3](#), will require a written document from the manufacturer stating the reasons for disqualification and the action taken to correct those deficiencies, written concurrence from Construction and Materials that the problem has been suitably addressed, followed by an application in accordance with [Sec 1041.4.1](#).

**1041.4.5 Sampling of Material.** Random sampling of the pipe will be conducted by the engineer to verify if the pipe and material are in accordance with these specifications. Samples of polypropylene pipe will be obtained from fabricated culvert sections in accordance with AASHTO M 330 at a frequency determined by the engineer.

**1041.4.6 Inspection.** Inspection will include an examination of the pipe for markings, deficiency in specified diameter, net length of fabricated pipe and any evidence of poor workmanship. The inspection may include taking samples.

**1041.4.7 Testing.** Specimen testing size and method of tests shall be in accordance with AASHTO M 330. The contractor or manufacturer shall provide the equipment and personnel to cut a sample from a section of pipe. The sample shall include the markings or a record of the markings for that section of pipe.

**1041.4.8 Unacceptable Material.**

**1041.4.8.1** Any individual section of pipe failing to meet the marking, diameter, length or workmanship requirements of these specifications will be unacceptable. If 10 percent of the pipe in any lot fails to meet these requirements, the entire shipment of that pipe size may be rejected.

**1041.4.8.2** If a test specimen taken in accordance with [Sec 1041.4.7](#) fails to meet the requirements of AASHTO M 330, the pipe sampled will be rejected and the lot will be resampled. A resample will be of the same size as the original sample. The resample shall be in accordance with these specifications, or the entire shipment will be rejected.

**1041.5 MoDOT Identification Number.** When the manufacturer contacts the engineer in accordance with [Sec 1041.4.2](#), the engineer will assign a specific MoDOT identification number for each size of pipe in the shipment.

## **SECTION 1042 – HIGHWAY SIGN MATERIAL**

*Delete Sec 1042.2.7 and substitute the following:*

**10/23**

**1042.2.7 Retroreflective Sheeting.** Retroreflective sheeting shall be in accordance with latest versions or ASTM D 4956 and AASHTO M 268, except as noted herein. Retroreflective sheeting shall have sufficient adhesion, strength and flexibility such that the sheeting can be handled, processed and applied according to the manufacturer's recommendations without appreciable

stretching, tearing, cracking or other damage. Adhesive performance for retroreflective sheeting shall be in accordance with ASTM D 4956. The sheeting surface shall be in condition to be readily screen processed and compatible with transparent overlay films, plus recommended transparent and opaque screen process colors. The retroreflective sheeting manufacturer shall furnish information as to the type of solvent or solvents that may be used to clean the surface of the sheeting without detrimental loss of performance and durability. Retroreflective sheeting having a datum mark on the surface shall be oriented vertically. ASTM D 4956 Type IX, XI or AASHTO M 268 Type C or D retroreflective sheeting applied as legend and border for specific signing applications, without a datum mark on the surface of the sheeting, shall be evaluated for rotational sensitivity per AASHTO M 268, Section 3.3. Retroreflective sheeting products that do not meet the rotational sensitivity requirements of Section 3.3 shall follow guidelines detailed in AASHTO M 268 Section 3.3.1 and fabricated per AASHTO M 268 Section 3.3.2.

*Delete Sec 1042.2.7.2 and substitute the following:*

*10/23*

**1042.2.7.2 Sign Sheeting.** Background sheeting applied to flat sheet and extruded panel signs shall be in accordance with ASTM D 4956 Type IV, Class 1. All yellow, orange and yellow green sheeted signs shall be fabricated with fluorescent sheeting in accordance with ASTM D 4956 Type IX, XI or AASHTO M 268 Type C or D.

*Delete Sec 1042.2.7.3 and substitute the following:*

*10/23*

**1042.2.7.3 Channelizers.** All reflective sheeting for trim-line and drum-like channelizers shall be in accordance with ASTM D 4956 Type IV for fluorescent orange and white sheeting. All retroreflective marking on channelizers shall be in accordance with ASTM D 4956, Supplemental Requirements, and Section S2. Reflective sheeting applied to channelizers shall be reboundable in accordance with ASTM D 4956. Retroreflective marking on cones will not be required.

*Delete Sec 1042.2.7.6 and substitute the following:*

*10/23*

**1042.2.7.6** Retroreflective sheeting applied as legend and border shall be in accordance with ASTM D 4956, Type IX, XI or AASHTO Type C or D, Class 1.

## **SECTION 1045 – PAINT FOR STRUCTURAL STEEL**

*Delete Sec 1045.3.3 and substitute the following:*

*04/24*

**1045.3.3 Alternate Approval.** If approved by Construction and Materials, compliance with all specified requirements for the system under AASHTO Product Evaluation and Audit Solutions program or Northeast Protective Coating Committee (NEPCOAT), in addition to the physical property requirements of this specification, may be substituted for the manufacturer and brand name approval requirements of [Sec 1045.3.2](#). The manufacturer shall provide documentation identifying specific products evaluated, along with the manufacturer's code numbers and/or report code numbers.

*Delete Sec 1045.4.5 and substitute the following:*

*04/24*

**1045.4.5 Alternate Approval.** If approved by Construction and Materials, compliance with all specified requirements for the system under AASHTO Product Evaluation and Audit Solutions program or NEPCOAT, in addition to the physical property requirements of this specification, may be substituted for the manufacturer and brand name approval requirements of [Sec 1045.4.4](#). If approval is requested under AASHTO Product Evaluation and Audit Solutions program or NEPCOAT, the accelerated weathering requirements stated in [Sec 1045.4.4](#) will apply. The manufacturer shall provide documentation identifying specific products evaluated, along with the manufacturer's code numbers and/or report code numbers.

*Delete Sec 1045.10.2 and substitute the following:*

*04/24*

**1045.10.2 Manufacturer and Brand Name Approval.** Prior to approval and use of organic zinc-rich primer, 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. 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 1047 – POLYETHYLENE CULVERT PIPE**

*Delete Sec 1047.4.1- Sec 1047.4.3.1 and substitute the following:*

*04/24*

**1047.4.1 Application for Placement on Qualified List.** To become qualified to furnish pipe meeting AASHTO M 294, a written request shall be sent by the manufacturer to Construction and Materials, and shall include the following information:

(a) A copy of the manufacturer's current AASHTO Product Evaluation and Audit Solutions) audit compliance.

(b) The pipe manufacturer's certified analysis certificate setting forth the name or brand of pipe to be furnished, the specified type, category, grade and class of polyethylene compounds. The certificate shall be sworn for the manufacturer by a person having legal authority to bind the company. The certificate shall have attached a certified test report from an approved independent testing laboratory showing specific results of tests performed on each diameter pipe to be furnished, conforming to all requirements of these specifications. Pipes shall be randomly selected for test by the independent testing laboratory and shall be representative of that manufacturer's pipe.

(c) A guarantee that all pipe furnished shall be in accordance with the specification requirements, shall bear a suitable identification brand or mark and shall be replaced without cost to the Commission when not in accordance with the specified requirements. The guarantee shall be worded such that the guarantee will remain in effect as long as the manufacturer continues to furnish material. The manufacturer shall conduct tests and measurements as necessary to ensure the material produced complies with all specification requirements. These tests and measurements shall be identified by the identification symbols or code used on the pipe in a manner that will permit the manufacturer to produce specific reports showing test results representative of specific lots of polyethylene pipe. Copies of reports of these tests shall be kept on file and shall be submitted to the engineer upon request. The brand shall be removed or obliterated by the manufacturer on all material where control tests, as outlined herein, are not in accordance with this specification.

(d) Units of measurement, English or metric, used to fabricate the pipe.

**1047.4.2 Maintaining Qualification.** To maintain qualification to furnish pipe meeting AASHTO M 294, the manufacturer shall perform and maintain a quality control program in accordance with the AASHTO Product Evaluation and Audit Solutions Certification Program. The manufacturer's AASHTO Product Evaluation and Audit Solutions certification shall be maintained. The manufacturer shall maintain for three years a record of all test results, inspections and the bill of lading for each shipment of material used in the production of pipe and for each shipment of pipe. The manufacturer shall notify Construction and Materials at least 24 hours prior to each shipment of pipe to a MoDOT project. Additional pipe may be considered part of the original shipment when the ordered quantity was underestimated or material was lost or damaged. A bill of lading in accordance with [Sec 1047.6](#) shall be provided for each shipment of pipe.

**1047.4.3 Disqualification of a Manufacturer.** A manufacturer may be disqualified to provide pipe for use on MoDOT projects based on the discretion of Construction and Materials, for reasons including, but not limited to, not maintaining AASHTO Product Evaluation and Audit Solutions certification, failure of material to consistently meet specifications, falsification of documentation, misbranding of pipe, unsatisfactory performance in the field or for other reasons indicating lack of consistent material quality.

**1047.4.3.1** In the case where a manufacturer loses AASHTO Product Evaluation and Audit Solutions certification and was not disqualified for any other reason, reinstatement will be considered when the manufacturer is recertified by AASHTO Product Evaluation and Audit Solutions.

## **SECTION 1048 – PAVEMENT MARKING MATERIAL**

*Delete Sec 1048.10.1.1.2.2 and substitute the following:*

*04/24*

**1048.10.1.1.2.2 Durability Testing.** Determination of conformance to this specification will include, but will not be limited to, the evaluation of test data from AASHTO Product Evaluation and Audit Solutions or other MoDOT approved facilities. The maintained retroreflectivity and durability shall be in accordance with the following requirements after being installed on at least one AASHTO Product Evaluation and Audit Solutions test deck in a northern, wet climate region for a minimum of six months, including December, January and February.

*Delete Sec 1048.10.1.1.2.4 and substitute the following:*

*04/24*

**1048.10.1.1.2.4 Durability.** Paint shall have a durability rating of at least 4 for both concrete and bituminous surfaces when tested in the wheel path area of the AASHTO Product Evaluation and Audit Solutions test deck.

*Delete Sec 1048.10.1.1.1.5.3 and substitute the following:* 04/24

**1048.10.1.1.1.5.3** In addition to the requirements of [Sec 1048.1.1](#), the certification supplied by the manufacturer shall include reference to the specific AASHTO Product Evaluation and Audit Solutions test deck to which the paint formulation was applied, including AASHTO Product Evaluation and Audit Solutions identification numbers and report numbers.

*Delete Sec 1048.10.1.1.2.3.2 and substitute the following:* 04/24

**1048.20.1.1.2.3.2 Durability.** Paint shall have a durability rating of at least 4 on both concrete and bituminous surfaces when tested in the wheel path area of the AASHTO Product Evaluation and Audit Solutions test deck.

*Delete Sec 1048.20.1.1.4.3 and substitute the following:* 04/24

**1048.20.1.1.4.3** In the addition to the requirements of [Sec 1048.1.1](#), the certification supplied by the manufacture shall include reference to specific AASHTO Product Evaluation and Audit Solutions test deck to which the paint formulation was applied, including AASHTO Product Evaluation and Audit Solutions identification numbers and report numbers.

*Delete Sec 1048.20.1.2.2.3 and substitute the following:* 04/24

**1048.20.1.2.2.3 Durability Testing.** Determination of conformance to this specification will include, but will not be limited to, the evaluation of test data from AASHTO Product Evaluation and Audit Solutions or other MoDOT approved facilities. The maintained retroreflectivity and durability shall be in accordance with the following requirements after being installed on at least one AASHTO Product Evaluation and Audit Solutions test deck in a northern climate region for a minimum of six months, including December, January and February.

*Delete Sec 1048.20.1.2.2.3.2 and substitute the following:* 04/24

**1048.20.1.2.2.3.2 Durability.** Paint shall have a durability rating of at least 4 for both concrete and bituminous surfaces when tested in the wheel path area of the AASHTO Product Evaluation and Audit Solutions test deck.

*Delete Sec 1048.20.1.2.4.3 and substitute the following:* 04/24

**1048.20.1.2.4.3** In addition to the requirements of [Sec 1048.1.1](#), the certification supplied by the manufacturer shall include reference to the specific AASHTO Product Evaluation and Audit Solutions test deck to which the paint formulation was applied, including AASHTO Product Evaluation and Audit Solutions identification numbers and report numbers.

*Delete Sec 1048.20.2.1.1.1.12 and substitute the following:* 04/24

**1048.20.2.1.1.1.12 Qualification.** In addition to the requirements of [Sec 1048.1.1](#), the material shall have been field tested at AASHTO Product Evaluation and Audit Solutions test decks in a northern, wet climate region for a minimum of six months. The maintained retroreflectivity and durability shall be in accordance with the following requirements after being installed on at least one AASHTO Product Evaluation and Audit Solutions test deck for a minimum of six months, including December, January and February.

*Delete Sec 1048.20.2.1.1.1.12.2- Sec 1048.20.2.1.1.1.13 and substitute the following:* 04/24

**1048.20.2.1.1.1.12.2 Durability.** Paint shall have a durability rating of at least 5 for both concrete and asphalt surfaces when tested in the wheel path area of the AASHTO Product Evaluation and Audit Solutions test deck.

**1048.20.2.1.1.1.13 Packaging.** The manufacturer's name and address, product name, color, manufacturing date, date of expiration and if the material is Part A or B shall be visible on the containers. In addition to the requirements of [Sec 1048.1.1](#), the certification supplied by the manufacturer shall include reference to the specific AASHTO Product Evaluation and Audit Solutions test deck to which the paint formulation was applied, including AASHTO Product Evaluation and Audit Solutions identification numbers and report numbers.

*Delete Sec 1048.20.2.1.2.9 and substitute the following:* 04/24

**1048.20.2.1.2.9 Accelerated Weathering.** The material shall have been field tested at AASHTO Product Evaluation and Audit Solutions test decks for a minimum of six months. The material shall have satisfactory results from the AASHTO Product Evaluation and Audit Solutions test deck.

*Delete Sec 1048.20.2.1.2.11 and substitute the following:* 04/24

**1048.20.2.1.2.11 Qualification.** In addition to the requirements of [Sec 1048.1.1](#), the material shall have been field tested at AASHTO Product Evaluation and Audit Solutions test decks in a northern, wet climate region for a minimum of six months. The maintained retroreflectivity and durability shall be in accordance with the following requirements after being installed on at least one AASHTO Product Evaluation and Audit Solutions test deck for a minimum of six months, including December, January and February.

*Delete Sec 1048.20.2.1.2.11.2 and substitute the following:* 04/24

**1048.20.2.1.2.11.2 Durability.** Paint shall have a durability rating of at least 5 for both concrete and asphalt surfaces when tested in the wheel path area of the AASHTO Product Evaluation and Audit Solutions test deck.

*Delete Sec 1048.20.2.3.1.7 and substitute the following:* 04/24

**1048.20.2.3.1.7 Qualification.** In addition to the requirements of [Sec 1048.1.1](#), the material shall have been field tested at AASHTO Product Evaluation and Audit Solutions test decks in a northern, wet climate region for a minimum of six months. The maintained retroreflectivity and durability shall be in accordance with the following requirements after being installed on at least one AASHTO Product Evaluation and Audit Solutions test deck for a minimum of six months, including December, January and February.

*Delete Sec 1048.20.2.3.1.9- Sec 1048.20.2.3.1.10 and substitute the following:* 04/24

**1048.20.2.3.1.9 Durability.** Paint shall have a durability rating of at least 5 for both concrete and asphalt surfaces when tested in the wheel path area of the AASHTO Product Evaluation and Audit Solutions test deck.

**1048.20.2.3.1.10 Packaging.** The manufacturer's name and address, product name, color, manufacturing date, date of expiration of the material. In addition to the requirements of [Sec 1048.1.1](#), the certification supplied by the manufacturer shall include reference to the specific AASHTO Product Evaluation and Audit Solutions test deck to which the product was applied, including AASHTO Product Evaluation and Audit Solutions identification numbers and report numbers.

## **SECTION 1049 – PRECAST CONCRETE BOX CULVERTS**

*Delete Sec 1049.3.3 and substitute the following:* 10/23

**1049.3.3 Slag Cement.** Slag cement shall be in accordance with the requirements of [Sec 1017](#).

## **SECTION 1055 – CONCRETE CURING MATERIAL**

*Delete Sec 1055.2.3.1 and substitute the following:* 01/24

**1055.2.3.1 Application for Placement on Qualified List.** A copy of the manufacturer's current AASHTO Product Evaluation and Audit Solutions program number (xxx-ccc-cc) shall be submitted to the State Construction and Materials Engineer. The manufacturer will be required to maintain participation in the program when retesting is required by the workplan. The PAL samples will be tested against those on the test report from AASHTO. Prior to use and in addition to the required PAL documentation, the manufacturer shall submit certification to Construction and Materials, setting forth the brand name and designation, the composition or description of the curing material, the manner in which the material will be identified on the containers. If the material fails to meet the values on the AASHTO report it will be removed from the Qualified Products list.

## **SECTION 1060 – ELECTRICAL CONDUIT**

*Delete Sec 1060.3.2.2 and substitute the following:* 10/23

**1060.3.2.2 High Density Polyethylene Conduit.** HDPE conduit shall be in accordance with ASTM F 2160 SDR11.

*Delete Sec 1060.3.2.4 and substitute the following:* 10/23

**1060.3.2.4 Fittings for High Density Polyethylene Conduit.** Fittings for HDPE conduit shall be in accordance with ASTM D 3350. Epoxy used for the fittings shall be in accordance with the conduit manufacturer's recommendations.

## **SECTION 1063 – TEMPORARY TRAFFIC CONTROL DEVICES**

*Delete Sec 1063.4.2.1 and substitute the following:*

04/24

**1063.4.2.1 Sign Substrate.** Sign and overlay blanks shall consist of either white, yellow, fluorescent orange and/or pink microprismatic retroreflective sheeting sealed to a heavy-duty coated fabric or vinyl material. The sheeting shall have a minimum coefficient of retroreflection, expressed as candelas per footcandle per square foot, as shown below, when measured in accordance with ASTM E 810 and shall meet the minimum color requirements in accordance with **MGS-04-01L** specification. The color specifications shall be in accordance with ASTM D 4956. Material shall be submitted by the manufacturer to AASHTO Product Evaluation and Audit Solutions program for a minimum exposure time of one year. Results shall be published by AASHTO Product Evaluation and Audit Solutions program and available for MoDOT review. For all AASHTO Product Evaluation and Audit Solutions test decks, weathered material shall be within the color specification limits. Heat and impact resistance of the sheeting shall be in accordance with the latest version of ASTM D 4956.

## **SECTION 1092 – SIGNAL EQUIPMENT**

*Delete Sec 1092.2.4 and substitute the following:*

04/24

**1092.2.4 Steel Posts and Mast Arms.** Steel posts and mast arms shall be continuously tapered, hollow shafts fabricated as one continuous shaft or as individual segments at least 10 feet long, joined together using electrically welded, intermediate, transverse, full penetration, circumferential joints. Steel posts and mast arms shall be fabricated from basic oxygen or open-hearth steel sheet. The continuous, tapered, hollow shafts or individual segments shall be manufactured from one or two lengths of steel sheet, with one or two continuous, welded, longitudinal seams. The longitudinal seams in the mast arm shall be located outside of the upper half of the cross section of the member. Where transverse, full penetration, circumferential welds are used, the fabricator shall furnish to the engineer written certification that 100 percent of all such welds have been radiographed or ultrasonic tested by an independent testing agency using a qualified non-destructive testing technician, as described in Clause 8.14.6 of ANSI/AWS D1.1 Structural Welding Code-Steel and equipment calibrated annually. The testing agency shall be approved by the engineer prior to fabrication. Post base and mast arm attachment plates shall be plate steel attached to the larger end of the shafts by continuous welds on the inside and outside of the shaft. After manufacture, the material shall have a minimum yield strength of 48,000 psi.

*Delete Sec 1092.2.4.2 and substitute the following:*

04/24

**1092.2.4.2** Welding and fabrication of the assemblies shall be in accordance with the ANSI/AWS D1.1 Structural Welding Code-Steel. All requirements of the welding code for tubular structures will apply to the fabrication for the post and mast arm shafts and shall include any welds used to attach these members to plates or other hardware. The manufacturer shall employ qualified personnel to perform all visual and nondestructive testing (NDT) required. In addition to the visual inspections and NDT that may otherwise be required by the welding code, the manufacturer shall perform 100 percent magnetic particle (MT) testing of circumferential fillet welds used to attach the flange plate to the larger end of the mast arm shaft. NDT personnel shall be qualified as set forth in Clause 8.14.6 of ANSI/AWS D1.1 Structural Welding Code-Steel. Qualifications of NDT personnel shall be submitted to the engineer for approval.