

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENTAL SPECIFICATIONS TO
2015 STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES**

APRIL 18, 2018

All items included in this Supplemental Specification will govern over the Supplemental Specifications for Errata.

MAKE THE FOLLOWING CHANGES TO THE INDICATED SECTIONS:

Section 1.5 – Page 3 – Add the following to page 7:

Inspection - The Department's act of examining the work.

Section 1.5 – Page 3 – Add the following to page 7:

Ledge Rock - A solid, continuous, homogenous rock mass found in its original state; distinguished from boulders or rocks that have been transported from their deposited or formed location.

Section 1.5 – Page 3 – Add the following to page 11:

Testing - A form of inspection based upon criteria and procedure.

Section 5.17 – Page 38 – Delete the 1st sentence and replace with the following:

If the Contractor contends additional compensation is warranted for assessments made by the Department to the contract, work or material not covered by the contract, or adjustments made pursuant to Section 5.3, the Contractor will give the Area Engineer written notice of the claim for additional compensation.

Section 7.12 – Page 49 – Add the following paragraph after the 3rd paragraph of this Section:

The Contractor will not indiscriminately drive or park vehicles within the right-of-way. The Contractor will restore the property to a condition similar or equal to that existing before such damage or injury occurred by repairing, rebuilding, or restoring and making good such damage or injury as directed by the Engineer and at the Contractor's expense.

Section 8.1 – Page 57 – Delete the 5th paragraph and replace with the following:

Any item designated in the contract as a "specialty item" may be performed by subcontract, and the cost of any designated specialty item performed by subcontract will be deducted from the total amount of the original contract before computing the percentage of work performed by the Contractor's own organization.

Section 8.8 A.1 – Page 65 – Make the following revision:

Delete “or,” from the end of this section.

Section 8.8 A.2 – Page 65 – Delete and replace with the following:

2. When the Contractor does not complete all work required for the field work completion of the project specified, or extended, but has not used all days specified by a working day count or calendar day count substantial completion requirement. In this instance, the Engineer will use the value in Table A for each day after the time specified, or extended, for the field work completion of the project until the Contractor substantially completes the work; or,
3. When the Contractor does not complete all work required for the field work completion of the project specified, or extended, in cases where substantial completion is not specified.

Section 8.10 – Page 67 – Delete the 1st paragraph on page 68 and replace with the following:

The Engineer will give written notice to the Contractor and the Contractor’s Surety of such default.

Section 9.9 – Page 82 – Delete the last sentence of the 3rd paragraph and replace with the following:

Interest will accrue at a rate of 5.50% per annum for the time period after the noted 120 calendar days until final payment is made.

Section 9.10 – Page 82 – Delete and replace with the following:

9.10 MOBILIZATION - Mobilization consists of preparatory work and operations, including, but not limited to the necessary movement of personnel, equipment, and incidentals to the project site; for the establishment of offices, buildings, and other facilities necessary for work on the project; for work and operations which must be performed, and for cost incurred before starting work on the various contract items on the project site.

When an item for mobilization is included in the bid proposal, the Department payment at the contract lump sum price will be considered full compensation for mobilization costs.

The Department will make partial payments on the following schedule:

- A. When the contract has been fully executed by parties thereto, the Department will make a partial mobilization payment. The partial mobilization payment will be made at 25% of the total amount bid for mobilization except the payment will not exceed 2.5% of the total contract amount.
- B. When 10%, or more, of the original contract amount is earned, an additional amount will be paid to bring the total payment for mobilization to 50% of the amount bid except the payment will not exceed 5% of the total contract amount.

- C. When 25%, or more, of the original contract amount is earned, an additional amount will be paid to bring the total payment for mobilization to 70% of the amount bid except the payment will not exceed 7% of the total contract amount.
- D. When 50%, or more, of the original contract amount is earned, an additional amount will be paid to bring the total payment for mobilization to 100% of the amount bid except the payment will not exceed 10% of the total contract amount.
- E. When either 90%, or more, of the original contract amount is earned or when the Engineer issues the Acceptance of Field Work, whichever occurs earlier; an additional payment will be made to bring the total payment for mobilization to 100% of the amount bid.

If, at any time, it becomes evident the Contractor will not reach the 90% of the original contract amount threshold and the final mobilization will not be automatically prompted, the Contractor may request the final mobilization payment from the Department. The Contractor must make the request in writing to the Engineer. If the Engineer determines the Contractor's request is valid and it is evident the final mobilization payment will not be automatically prompted, the Engineer will process the final mobilization payment.

When an item for "mobilization" is not included in the proposal, this work will be considered as incidental to the various contract items.

Section 320.3 E – Page 133 – Delete the 2nd paragraph and replace with the following:

The Contractor shall cover the loads with a tarp during inclement weather conditions and when ordered by the Engineer. Tarps shall be of sufficient condition to protect the load from infiltration by rain, snow, dust, and other foreign matter and to slow the loss of heat. The Engineer, in the Engineer's sole discretion, will determine the acceptability of the condition of the tarp.

Section 320.3 G – Page 133 – Delete the last sentence of the 1st paragraph and replace with the following:

The tack coat shall be allowed to break (turn from brown to black) and shall be allowed a cure period, as determined by the Engineer, prior to asphalt concrete placement.

Section 320.3 G – Page 133 – Delete the 3rd sentence of the 4th paragraph on page 136 and replace with the following:

The variation of the surface from the straightedge between any two contact points shall not exceed 1/4 inch.

Section 320.5 A – Page 138 – Delete the last sentence.

Section 320.5 E – Page 139 – Delete the last sentence.

Section 322.5 A – Page 162 – Delete the last sentence of the first paragraph.

Section 325.3 B – Page 167 – Delete the 1st sentence of the 2nd paragraph and replace with the following:

There shall be at least three steel faced tandem rollers for each paver in use.

Section 325.3 C – Page 167 – Delete the 2nd sentence of the 2nd paragraph and replace with the following:

Breakdown rolling, consisting of a minimum of two complete coverages with at least two self-propelled tandem smooth steel rollers, shall proceed on the mat as soon as laydown is completed.

Section 325.3 C – Page 167 – Delete the 4th sentence of the 2nd paragraph and replace with the following:

Final or finish rolling shall consist of a minimum of one complete coverage with at least one self-propelled tandem smooth steel roller.

Section 330.3 A.3 – Page 172 – Add the following to this section:

- c. Fog seal application shall begin after the asphalt surface treatment is cured and shall not begin prior to completing final brooming. Fog seal application shall be completed no later than 7 calendar days following asphalt surface treatment application.

Section 330.3 B – Page 172 – Delete and replace with the following:

B. Dilution of Tack, Fog Seal, and Flush Seal: Emulsified asphalt for tack, fog seal, and flush seal with a specified application rate of 0.07 gallons per square yard or less may be diluted. The rate of dilution for tack shall be at a ratio of at least 1 part emulsion to no more than 1 part added water (1:1 ratio minimum) by volume, unless otherwise approved by the Engineer. The rate of dilution for fog seal and flush seal shall be at a ratio of not more than 3 parts emulsion to 1 part added water (3:1 ratio maximum) by volume to not less than 1 part emulsion to 1 part added water (1:1 ratio) by volume, unless otherwise approved by the Engineer. The emulsion shall be uniformly mixed by adding potable water and if necessary, agitating the mixture. The amount of emulsion and any added water shall be included on the ticket delivered to the project. If the emulsion is diluted, the emulsified asphalt supplier shall perform the dilution. Dilution of asphalt emulsion in the field will not be allowed unless approved by the Engineer. Field dilution of the emulsified asphalt will only be allowed when the rate of dilution is accurately controlled. The final rate of dilution shall not be less than the minimum ratio of at least 1 part emulsion to no more than 1 part added water (1:1 ratio minimum). Diluted emulsified asphalt for tack, fog seal, and flush seal shall be applied at an adjusted rate proportional to the dilution ratio resulting in application of the specified rate of emulsion. Emulsified asphalt for tack, fog seal, or flush seal with a specified rate exceeding 0.07 gallons per square yard shall not be diluted.

Section 330.3 E – Page 174 – Add the following sentence to the beginning of the last paragraph of this Section:

The tack coat shall be allowed to break (turn from brown to black) and shall be allowed a cure period, as determined by the Engineer, ahead of mat laydown.

Section 332.3 C – Page 177 – Delete the last sentence of the 1st paragraph and replace with the following:

The difference between the ridge and valley of the mat surface shall not exceed 1/4 inch when tested in accordance with SD 320.

Section 360.3 A – Page 185 – Delete and replace with the following:

A. Weather and Seasonal Requirements: Surface treatment operations will be permitted only during daylight hours, when conditions are dry, when wind does not adversely affect the spraying operation, and when overnight low air temperatures within 24 hours of the planned application are forecasted to be at least 45°F.

Minimum temperatures and seasonal limitations are as follows:

Minimum Temperature and Seasonal Limitations		
Cover Aggregates	Air and Surface Temperature (in the shade and rising)	Seasonal Limitations (dates are inclusive)
Type 1	60°F	May 15 – Aug. 31
Type 2	60°F	May 15 – Aug. 31
Type 3	60°F	May 15 – Sept. 15

Section 360.3 F – Page 186 – Delete the 3rd paragraph on page 187 and replace with the following:

When loading trucks, the Contractor shall screen the cover aggregate to minimize segregation, eliminate oversize, reduce aggregate dust, and effectively break up or discard material bonded into chunks. At the discretion of the Engineer, if the cover aggregate does not prove the need for screening, the screening requirement may be waived provided all test results and visual inspections produce satisfactory results. If segregation, oversize material, excessive dust, or material bonded into chunks becomes evident during cover aggregate placement, the Contractor will immediately resume screening of the cover aggregate. When required, aggregate shall be uniformly moistened before or during loading.

Section 360.3 H – Page 187 – Delete the last sentence of the 1st paragraph and replace with the following:

Traffic shall be controlled by pilot cars and flaggers during application of the surface treatment on driving lanes with the speed of pilot cars not to exceed 20 miles per hour on the freshly applied surface treatment for a period of at least 1 hour after application or until the asphalt surface treatment is sufficiently cured. Prior to moving the pilot car operation from the section of roadway, the Contractor shall perform initial brooming in accordance with Section 360.3 I.

Section 360.3 I – Page 187 – Delete and replace with the following:

I. Brooming: In curb and gutter sections and in areas where a finished and maintained lawn extends to the edge of the shoulder, the loose material shall be swept up with a pickup broom. Brooming the material into a pile with a rotary broom for pickup will not be allowed. In sections without curb and gutter and in areas where a finished and

maintained lawn does not extend to the edge of the shoulder, the loose material may be swept onto the roadway inslopes, as approved by the Engineer.

Broomed off material picked up by the Contractor shall be disposed of at sites provided by the Contractor and approved by the Engineer.

- 1. Initial Brooming:** The Contractor shall perform initial brooming while traffic is maintained as described in Section 360.3 H. Initial brooming shall consist of a light brooming of the surface to remove loose chips. The initial brooming shall not cause damage to the asphalt surface treatment. If initial brooming causes damage to the asphalt surface treatment, the Engineer, in the Engineer's sole discretion, may require the Contractor to alter the initial brooming operation or to waive the initial brooming requirement.
- 2. Final Brooming:** The Contractor shall perform final brooming during a cool period of the following morning, within 24 hours of application, to remove all loose material remaining on the surface. The brooming shall include the entire surface of the asphalt surface treatment application, additional lane widths, intersections, and shoulders.

J. Maintenance and Repair: Areas of the surface treatment, which peel or are otherwise unsatisfactory, shall be repaired with additional asphalt, cover aggregate, and rolling. Compensation for repairs due to causes beyond the control of the Contractor will be paid at the contract unit price for asphalt surface treatment.

The finished surface treatment shall be uniform and smooth riding. Transverse or horizontal ridges, raveled spots, wheel marks, depressions, abrupt color changes, and other inequalities shall be corrected. Payment will not be made for this correction work.

Asphalt splattered on roadway appurtenances shall be satisfactorily cleaned off by the Contractor.

Section 380.3 A – Page 193 – Delete the last 4 paragraphs of this section on page 194 and replace with the following:

The Contractor shall produce a concrete paving mix with a uniform consistency. The Contractor shall produce a concrete paving mix in accordance with the approved mix design and the following:

For the stationary side form method, the slump of the concrete shall be between 1 inch and 3 inches.

For the slip-form method, the slump of the concrete shall not be more than 2 inches.

The concrete shall contain 6.5% entrained air with an allowable tolerance of +1% to -1.5%. Air shall be entrained by an approved air-entraining admixture.

The concrete shall exhibit a minimum compressive strength of 4000 psi at 28 days.

The concrete shall have a maximum Water/Cementitious ratio "W/C Ratio" as listed on the mix design.

The Engineer will be responsible for the sampling, preparing, curing, and testing of all concrete cylinders for concrete compressive strength in accordance with the Department's Materials Manual.

The 28 day compressive strength acceptance shall be in accordance with Section 460.3 B.

Section 380.3 C.1 – Page 199 – Delete the last sentence of the 1st paragraph on page 200 and replace with the following:

The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris and loose material has been removed prior to epoxy injection. The drilled holes shall be dry when the epoxy material is injected.

Section 380.3 C.1 – Page 199 – Delete the 2nd paragraph on page 200 and replace with the following:

The Contractor shall mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, the pump shall mix the components at the manufacturer's designated rate.

Section 380.3 I – Page 203 – Add the following to the 2nd paragraph on page 204:

Tie bars shall be tied to at least one stake or supporting device.

Section 380.3 L.2 – Page 210 – Delete the 2nd, 3rd, and 4th paragraphs and replace with the following:

When adjacent lanes of pavement are constructed separately, epoxy-coated deformed steel tie bars of specified length, size, spacing, and material shall be placed across the longitudinal construction joint to tie the lanes together. The epoxy-coated tie bars installed in drilled holes along the vertical edge of the first lane placed, shall be installed in accordance with Section 380.3 C.1 with an epoxy resin adhesive conforming to Section 380.2 L and shall meet or exceed the minimum pull strength requirement of 8,200 pounds.

Section 380.3 L.5 – Page 212 – Delete the 2nd and 3rd paragraphs and replace with the following:

If the Contractor constructs the transverse construction joint in the plastic concrete, the Contractor shall construct the joint either at the contraction joint or a minimum of 5 feet from the nearest contraction joint in accordance with the details in the plans. With this method, the Contractor shall have supplemental hand vibrators immediately available to provide satisfactory consolidation at joints. Paving in the area of a transverse construction joint will not be permitted for 12 hours after installation.

If the Contractor constructs the transverse construction joint in hardened concrete, the Contractor must construct the joint as a contraction joint in accordance with the details in the plans. With this method, the Contractor shall install epoxy-coated steel bars in drilled holes as detailed in the plans and in accordance with Section 380.3 C.1 utilizing an epoxy resin adhesive conforming to Section 380.2 L.

Section 380.3 P – Page 217 – Delete the 6th paragraph and replace with the following:

Joints to be sealed shall be thoroughly clean and dry. All materials such as old sealant, oil, asphalt, curing compound, paint, rust, and other foreign materials shall be completely removed. Cleaning shall be accomplished by abrasive blasting and other tools as necessary. Joints to be sealed with silicone sealant shall be abrasive blasted utilizing a mechanical device that holds the abrasive blaster at the appropriate angle and distance from the joint to ensure proper cleaning. The device shall have a mechanism attached that will correctly guide the device in the joint.

Section 410.2 B – Page 249 – Delete the 1st sentence and replace with the following:

Bolts shall conform to Section 972.

Section 410.3 G.5.a – Page 255 – Delete the 1st sentence and replace with the following:

Unless otherwise specified, high-strength bolts shall be new ASTM F3125 Grade A325.

Section 410.3 G.6.a – Page 256 – Delete the 4th sentence.

Section 410.3 G.6.d – Page 257 – Delete the 2nd sentence of the 1st paragraph and replace with the following:

For installations utilizing Grade A490 bolts where the steel work comprising the grip has a specified yield strength less than 40 ksi, special requirements for hardened washers will be noted in the plans.

Section 410.3 G.6.e – Page 258 – Delete the 2nd sentence of the 5th paragraph and replace with the following:

Grade A490 bolts shall be tightened with an electric or hydraulic wrench.

Section 430.5 B – Page 295 – Delete the 2nd sentence and replace with the following:

Payment will be full compensation for all labor, equipment, materials, water, and all other items incidental to furnishing and installing the geotextile fabric and for furnishing and installing the embankment material, including any hauling or stockpiling required.

Section 450.3 A – Page 303 – Delete the 5th sentence of the 1st paragraph and replace with the following:

Except where flexible watertight gaskets are specified, each joint shall be effectively protected against infiltration of backfill soil by using a flexible watertight gasket conforming to Section 990, by filling the joint space with a sealant conforming to ASTM C990, or by providing a circumferential wrap on the exposed portion of the pipe joint above the cradle with a 1 foot wide strip of drainage fabric around the perimeter of the pipe.

Section 450.3 A – Page 303 – Delete the 3rd paragraph and replace with the following:

When flexible watertight gaskets are used, the Contractor shall install the flexible watertight gaskets in accordance with the manufacturer's instructions.

Section 460.3 A – Page 307 – Delete footnote *4 below Table 1 on page 308 and replace with the following:

*4 Well graded concrete mixes are those mixes conforming to the aggregate gradation shown in Chart A for size #15 coarse aggregate or Chart B for size #20 coarse aggregate. Size #20 coarse aggregate will only be allowed when specified in the plans.

Section 460.3 B.5 – Page 312 – Delete the 1st and 2nd sentence of the 4th paragraph and replace with the following:

The average compressive strength of the 3 cores will be used for the determination of the concrete compressive strength. If the average core compressive strength is greater than or equal to the specified 28 day compressive strength, then no single core compressive strength may be more than 15% below the specified strength.

Section 460.3 M.2.b – Page 326 – Delete and replace with the following:

- b. Approach slabs and sleeper slab top surfaces poured with the approach slab shall be cured as follows:

As soon as the concrete surface has received the final surface finish, linseed oil base emulsion curing compound shall be uniformly applied at the specified rate. This application is not a substitute for curing with curing blankets and polyethylene sheeting but is required for moisture retention until the curing blankets and polyethylene curing materials can be placed. The curing blankets and polyethylene sheeting curing materials shall be in place not later than 4 hours after completion of concrete surface finishing. The concrete surfaces which are to have superimposed concrete placed upon or against them shall be protected from the curing compound and shall be cured with curing blankets and white polyethylene sheeting. All reinforcing steel shall be protected from the compound application

Section 460.3 N. – Page 327 – Delete the last sentence of the 1st paragraph on page 328 and replace with the following:

Open flame type heating units are prohibited except when the entire concrete surface is covered by forms.

Section 462.3 B – Page 334 – Delete and replace with the following:

B. Equipment: Equipment shall conform to the following:

1. **Batching Equipment:** A concrete batch ticket shall accompany each load of concrete to the project site and shall be presented to the Engineer prior to discharging the load at the project site unless the Engineer approves an alternate procedure.

The concrete batch ticket must contain the following minimum information:

- Date and time batched
- Total volume of the load, in cubic yards
- Actual weigh (mass) or volume of each component of the mix:
 - Coarse Aggregate

Fine Aggregate
Cement
Fly Ash
Water (batch water)
Admixtures

Computerized batching equipment shall conform to Section 460.3 C.2.

2. **Mixing and Hauling Equipment:** Mixers shall be capable of combining the concrete ingredients into a thoroughly mixed and uniform mass and shall uniformly discharge the concrete.
3. **Forms:** Wood and metal forms shall conform to Section 460.3 C.4.

Section 470.2 B – Page 353 – Delete and replace with the following:

- B. **Bolts:** Bolts, anchor bolts, and anchor rods shall be as specified in the plans and shall conform to Section 972.

Section 480.3 C – Page 356 – Delete the 2nd sentence and replace with the following:

Bars shall be tied at all intersections (100%) when spacing is 1 foot or more in any direction (longitudinal, vertical, or horizontal), otherwise a minimum of every other intersection (50%) shall be tied.

Section 491.2 A – Page 359 – Delete the heading of this section and replace with the following:

Concrete Patching Material, Bridge Deck:

Section 491.3 B.7 – Page 364 – Delete the 3rd sentence and replace with the following:

Placement of the pull-off test shall be randomly selected by the Engineer and shall not be located within 1 foot of the barrier curb. The pull-off test shall be performed prior to opening to traffic.

Section 600.2 A.6 – Page 406 – Delete the 1st sentence and replace with the following:

One storage closet, a minimum of 24 inches deep and a minimum of 7 feet high, with a minimum door width of 24 inches.

Section 600.2 A.16 – Page 407 – Delete the 1st sentence and replace with the following:

On projects requiring concrete test specimens, a metal or polyethylene tank a minimum of 6 feet long, a minimum of 29 inches wide, and a minimum of 2 feet deep shall be installed beneath the worktable.

Section 620.3 B - Page 418 - Delete and replace with the following:

- B. **Temporary Fence:** Temporary fence shall not be attached to right-of-way fence.

Type 1 temporary fence shall be constructed in a manner to ensure that livestock will be confined, but in no case shall less than 3 wires be used or shall the post spacing exceed 20 feet. Additional wires may be necessary due to weather conditions and type of livestock confined. Electric fence shall not be used for temporary fence. Following completion of grading operations and construction of right-of-way fence, the Contractor shall remove Type 1 temporary fence. Type 1 temporary fence shall remain the property of the Contractor only if the Contractor removes the temporary fence under the bid item of remove fence.

Type 1A temporary fence shall meet all the requirements of Type 1 temporary fence. Type 1A temporary fence shall remain in place and become the property of the landowner.

Type 2 and Type 3 temporary fence shall be constructed in accordance with Section 620.3 A. Type 2 and Type 3 temporary fence shall remain in place and become the property of the landowner. Type 2 temporary fence shall consist of 4 strands of barbed wire fastened to steel posts spaced 20 feet center to center. Type 3 temporary fence shall consist of a 26 inch width of woven wire with 2 strands of barbed wire fastened to steel posts spaced 20 feet center to center.

Section 620.4 D - Page 419 - Delete and replace with the following:

D. Temporary Fence:

1. **Type 1:** Type 1 temporary fence will be measured by the linear foot complete in place parallel to the ground, including any necessary brace panel and gate construction.
2. **Type 1A:** Type 1A temporary fence will be measured by the linear foot complete in place parallel to the ground, including any necessary brace panel and gate construction.
3. **Type 2 and 3:** Type 2 and 3 temporary fence will be measured as specified in Section 620.4 A.

Section 620.5 D - Page 420 - Delete and replace with the following:

D. Temporary Fence:

1. **Type 1:** Type 1 temporary fence will be paid for at the contract unit price per foot. Payment will be full compensation for furnishing materials, labor, equipment, and incidentals required to construct the fence. Separate payment will not be made for clearing the fence line, disposal of debris, smoothing the irregularities of the ground, excavation, or backfill.
2. **Type 1A:** Type 1A temporary fence will be paid for at the contract unit price per foot. Payment will be full compensation for furnishing materials, labor, equipment, and incidentals required to construct the fence. Separate payment will not be made for clearing the fence line, disposal of debris, smoothing the irregularities of the ground, excavation, or backfill.

3. **Type 2 and 3:** Type 2 and 3 temporary fence will be paid for at their respective contract unit prices per foot. Payment will be full compensation for material, labor, equipment, and incidentals except brace panels and tubular frame gates. Separate payment will not be made for clearing the fence line, disposal of debris, smoothing the irregularities of the ground, excavation, or backfill.

Section 620.5 E - Page 420 - Delete and replace with the following:

- E. **Salvaging Fence:** Salvaging fence will be paid for at the contract unit price per foot. Payment will be full compensation for labor, equipment, excavation, backfill, filling in holes from wood posts, and incidentals required.

Section 620.5 F - Page 420 - Delete and replace with the following:

- F. **Remove Fence:** Remove fence will be paid for at the contract unit price per foot. Payment will be full compensation for labor, equipment, excavation, backfill, filling in holes from wood posts, and incidentals required.

Section 632.2 D – Page 431 – Delete and replace with the following:

- D. **Bolts:** High-strength bolts shall conform to Section 972. Bolts for mounting sign panels to posts and backing hardware shall conform to Section 982.

Section 632.3 A.3 – Page 431 – Delete and replace with the following:

3. **Date Decal:** The Contractor shall affix a date decal to each new sign installed. The date decal is a 2 inch by 2 inch self-adhesive sticker with removable paper backing. The date decal displays the last two digits of the year the sign was manufactured and shall consist of two contrasting colors. The date decal shall be placed in the lower left corner on the back of flat aluminum signs. The date decal shall be placed in the lower left corner on the front of extruded aluminum signs. The date decal on extruded aluminum signs shall be of the same color as the background of the sign and shall be retroreflective. Sign supports and other obstructions shall not block the view of the date decal upon completion of the sign installation.

Section 632.5 A – Page 434 – Delete and replace with the following:

- A. **Signs:** Sheet aluminum and extruded aluminum signs will be paid for at the contract unit price per square foot. Payment will be full compensation for furnishing and installing materials including borders, legend, date decal, and edge trim.

Section 633.3 B – Page 438 – Add the following after the 1st sentence of the 3rd paragraph:

Waterborne paint applied after October 15th shall be formulated as cold weather waterborne paint. Cold weather waterborne paint shall be applied in accordance with this section except where the manufacturer's recommendations, including minimum temperature requirements, vary from this section.

Section 633.3 B – Page 438 – Delete the 3rd and 4th sentences of the 4th paragraph and replace with the following:

The equipment shall be capable of placing lines on the left and right sides with each line in a solid or intermittent pattern and each gun applying 4 to 8 inches wide. The left carriage shall simultaneously place a dashed marking, a solid marking and a dashed marking, or two solid markings as detailed in the plans.

Section 634.4 F – Page 453 – Delete the 1st sentence and replace with the following:

Traffic control signs will be measured to the nearest 0.1 foot and the area computed to the nearest 0.1 square foot of the sign face. Deduction will not be made for rounded corners.

Section 634.4 J – Page 454 – Delete the 1st and 2nd paragraphs and replace with the following:

Measurement for tape, paint, tabs, and raised pavement markers will be made either by the foot or by the mile depending on the unit designated by the contract quantity.

When measurement of temporary pavement marking is made by the mile, a single measurement will be made longitudinally along the centerline of the roadway to the nearest 0.1 mile. The resulting single measured distance will be the quantity used for payment for all temporary pavement markings including, but not limited to, temporary dashed centerline, lane lines, edge lines, gore lines, no passing zone lines, and Do Not Pass and Pass With Care signing (if utilized). Separate measurement and determination of quantity for each individual temporary pavement marking line measured by the mile will not be made.

When measurement of temporary pavement marking is made by the foot, all temporary lane line, centerline, and edge line markings will be measured separately to the nearest foot.

All temporary gore lines, stop bars, and crosswalks will be measured separately as a 4 inch equivalent marking.

All temporary area markings, arrows, and word messages will not be measured and the accepted quantity will be the 4 inch equivalent marking quantity listed in the plans unless additional work is ordered by the Engineer.

Each surface course or surface treatment receiving temporary pavement marking will be measured to the nearest 0.1 mile increment for payment. If a single set of temporary flexible vertical markers is utilized on multiple surface courses or surface treatments, payment will be made as though each surface course or surface treatment was marked separately.

Section 651.2 C – Page 473 – Delete the 1st sentence and replace with the following:

Cushion material shall consist of rock, gravel, or sand; crushed or screened to eliminate material retained on a 1 inch sieve.

Section 671.2 D – Page 481 – Delete and replace with the following:

D. Precast Units: Precast manhole units shall conform to AASHTO M 199 and Section 990.1 A.2 except that Section 990.1 A.2.h shall not apply.

Section 671.3 D – Page 482 – Delete the 1st paragraph and replace with the following:

The fabrication of precast manholes shall conform to Section 560.

Section 752 – Page 519 – Add the following to the end of this section:

Chemical admixtures for dry cast concrete which are not classified in AASHTO M 194 or do not meet the requirements of Section 751 must be approved by the Department's Concrete Engineer prior to use.

Section 800.2 D – Page 524 – Delete the 1st paragraph on page 525 and replace with the following:

Fine aggregate with a 14 day expansion value below 0.250 shall require Type II cement with a fly ash content of 20 to 25% in the concrete mix. Fine aggregate with a 14 day expansion value of 0.250 or greater shall require Type II cement with a fly ash content of 25% in the concrete mix. Fine aggregate with a 14 day expansion value of 0.400 or greater shall not be used.

Section 820.1 A – Page 530 – Delete the last sentence and replace with the following:

Coarse aggregate for all other PCC pavements shall conform to Size #1 or Size #15.

Section 820.1 B – Page 530 – Add the following to this section:

Size #20 will only be allowed when specified in the plans.

Section 820.2 E – Page 531 – Delete the 1st sentence and replace with the following:

The maximum amount of flat and elongated particles in the coarse aggregate of concrete pavement utilizing Size #15 or Size #20 shall not exceed 10%.

Section 830.1 A – Page 535 – Delete the 3rd sentence and replace with the following:

If field stone is utilized for Class B or larger, the stone shall have a minimum of 2 crushed faces as defined under SD 211.

Section 881.2 – Page 546 – Add the following requirements to the column for Type 1A cover aggregate:

#40 0-4

Foot Notes *1

Section 884.2 A – Page 549 – Delete the last sentence of this section.

Section 884.2 C – Page 549 – Add the following to this section:

Prior to incorporation, RAP shall be processed over a 1½ inch screen to remove large chunks. Material screened off shall be crushed and reincorporated into the process. Scalping of the cold milled asphalt concrete stockpile to generate material meeting the RAP requirements will not be allowed.

Section 884.2 D – Page 549 – Add the following to this section:

Prior to incorporation, salvaged material shall be processed over a 1½ inch screen to remove large chunks. Material screened off shall be crushed and reincorporated into the process. Scalping of the salvaged material stockpile will not be allowed.

Section 972.2 B – Page 564 – Delete the 1st paragraph and replace with the following:

Bolts shall conform to ASTM F3125 Grade A325. The high-strength bolts shall be Type 1 for painted steel structures and Type 3 for weathering steel bridges.

Section 972.2 B – Page 564 – Delete the 2nd paragraph on page 565 and replace with the following:

High-strength bolts for structural steel joints shall conform to ASTM F3125 Grade A325. When Grade A325 Type 3 bolts are specified, the bolts along with nuts and washers shall have an atmospheric corrosion resistance approximately two times that of carbon steel with copper.

Section 972.2 B – Page 564 – Delete the 2nd paragraph on page 566.

Section 972.2 C – Page 566 – Delete the 1st sentence of the last paragraph of this section on page 567 and replace with the following:

Anchor bolts, anchor rods, nuts, and washers shall be hot dipped galvanized in accordance with ASTM F2329 or mechanically galvanized in accordance with ASTM B695 Class 55.

Section 972.2 D – Page 567 – Delete the 1st sentence of the 2nd paragraph and replace with the following:

When bolts, anchor bolts, or anchor rods conforming to ASTM F3125, A449, A307, or F1554 are designated for use in the plans or shop plans, a Certified Mill Test Report for each type designated shall be submitted for approval to the Certification Engineer a minimum of 14 days prior to incorporating these bolts into the work.

Section 972.2 D – Page 567 – Delete the column heading for A325 in the table on page 568 and replace with the following:

F3125

Section 972.2 D – Page 567 – Delete footnote ^{*3} under the table on page 568 and replace with the following:

^{*3} Rotational Capacity Test required for Zinc Coated (Galvanized) Grade A325 bolts only. This test shall be conducted using the actual assemblies used on the project.

Section 972.2 D – Page 567 – Delete footnote *4 under the table on page 568 and replace with the following:

*4 Anchor bolts conforming to ASTM F1554 Grades 55 & 105 shall satisfy supplemental requirement S4 and shall be tested to +40°F and -20°F respectively.

Section 972.2 D – Page 567 – Delete the 2nd sentence of the first paragraph on page 568 and replace with the following:

Wedge testing of full size bolts and anchor rods is required in accordance with ASTM F3125.

Section 980.1 – Page 569 – Delete the 2nd paragraph and replace with the following:

Waterborne paint shall meet the requirements of Section 980.1 A except waterborne paint applied after October 15 shall be formulated as cold-weather waterborne paint. Cold weather waterborne paint shall meet the requirements of Section 980.1 B.

Section 980.1 A – Page 569 – Delete and replace with the following:

A. Waterborne Paint: The vehicle shall be composed of a 100% acrylic polymer such as Dow FASTRACK™ 3427, Arkema DT-250, or an approved equal.

1. Quantitative Requirements: The finished paint shall meet the following quantitative requirements:

	<u>WHITE</u>	<u>YELLOW</u>
<u>Lead</u> , parts per million ASTM D3335 or X-ray fluorescence	100 max.	100 max.
<u>Pigment</u> , percent by weight; Tested in accordance with ASTM D3723	60.0 - 62.5	56.1 - 58.6
The residual extracted pigment upon analysis shall conform to the following quantitative compositional requirements when tested in accordance with ASTM D1394 or ASTM D4764.		
<u>Titanium Dioxide</u> , pounds/gallon ASTM D 476 Type II Rutile 92% min. TiO ₂ tested in accordance with ASTM D1394 or ASTM D4764	1.00 min.	0.20 min.
<u>Total Solids</u> , percent by weight; Tested in accordance with ASTM D3723	77.0 min.	76.1 min.
<u>Non-volatile Vehicle</u> , percent by weight Tested in accordance with ASTM D3723 and then calculating the % total solids minus the % pigment	42.5 min.	42.5 min.
<u>Consistency, grams</u> Krebs-Stormer Shearing rate 200 rpm.	190 to 300	190 to 300
<u>Equivalent K.U.</u>	80 to 95	80 to 95

Tested in accordance with ASTM D562*1

*1 The consistency of the paint shall be within the stated specification when determined a minimum 48 hours after packaging the material.

Weight per Gallon, pounds

Tested in accordance with ASTM D1475*2

Dow FASTRACK™ 3427	13.85 min.	13.30 min.
Arkema DT 250	13.75 min.	13.20 min.

*2 In addition to compliance with the minimum, the weight per gallon shall not vary more than ± 0.3 pounds/gallon between batches.

Fineness of Dispersion, Hegman Scale

2 min. 2 min.

Tested in accordance with ASTM D1210

"B" Cleanliness "B" Cleanliness

Drying Time, No Pick-Up, minutes

12 max. 12 max.

Tested in accordance with ASTM D711, except the wet film thickness shall be 12.5 ± 0.5 mils. The applied film shall be immediately placed in a laboratory drying chamber maintaining the relative humidity of $65 \pm 3\%$, the temperature $73.5 \pm 3.5^\circ\text{F}$, and air flow less than 1 foot per minute.

Drying Time, Dry-through, minutes*3

120 max. 120 max.

Tested in accordance with ASTM D1640, except the wet film thickness shall be 12.5 ± 0.5 mils. The applied film shall be immediately placed in a laboratory drying chamber maintaining the relative humidity at $90 \pm 3\%$, and the temperature at $73.5 \pm 3.5^\circ\text{F}$. The pressure exerted will be the minimum needed to maintain contact between the thumb and film. A reference control paint will be run in conjunction with the candidate paint. Dow FASTRACK™ 3427 formulation will be referenced-control paint.

*3 If either the candidate or reference-control paint exceeds the 120 minute maximum, then the candidate paint shall not exceed the dry time of the reference-control paint by more than 15 minutes.

Field Drying Time, Track-Free, minutes.

2 max. 2 max.

When applied under the following conditions, the line shall show no visual tracking when viewed from 50 feet after driving a passenger vehicle over the line at a speed of 25-35 mph:

- 15 mils wet film thickness
- 8 pounds of glass beads per gallon of paint
- Paint temperature at nozzle between 70 to 120°F
- Pavement dry, pavement temperature 50 to 120°F
- Relative humidity of 85% maximum

Directional Reflectance

85 min. 50 min.

When applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E1347 using the 45/0 illumination.

pH

9.80 min. 9.80 min.

Tested in accordance with ASTM E70

Dry Opacity, Contrast ratio.

0.955 min. 0.880 min.

When applied at a wet film thickness of 6 to 7 mils and when tested in accordance with ASTM D2805.

Volatile Organic Content (VOC), grams/liter

115 max. 115 max.

Tested in accordance with ASTM D3960

Flash Point, closed cup, °F

115 min. 115 min.

Color: The paint shall meet the color specification limits and luminance factors listed in Tables 1 & 2 when tested in accordance with ASTM E1347 or ASTM E1349. The paint shall not discolor in sunlight and shall maintain the colors and luminance factors throughout the life of the paint. No Bayferrox 3950, iron oxides or other color enhancers will be permitted to achieve the color chromaticity coordinates.

Table 1*1

Color	Chromaticity Coordinates (corner points)								Min. Luminance Factor (Y %)
	X	Y	X	Y	X	Y	X	Y	
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375	35
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400	25

*1 Daytime Color Specification Limits and Luminance Factors for Pavement Markings Material with CIE 2° Standard Observer and 45/0 (0/45) Geometry and CIE Standard Illuminant D65

Table 2*2

Color	Chromaticity Coordinates (corner points)							
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
White	0.480	0.410	0.430	0.380	0.405	0.405	0.455	0.435
Yellow	0.575	0.425	0.508	0.415	0.473	0.453	0.510	0.490

*2 Nighttime Color Specification Limits for Pavement Marking Retroreflective Material With CIE 2° Standard Observer, Observation Angle = 1.05°, Entrance Angle + 88.76° and CIE Standard Illuminant A.

Certificate of Compliance: The manufacturer shall submit a “Certificate of Compliance” for each batch of paint produced for use under this specification. The certification shall contain the manufacturer’s code number and batch number along with the test results of each batch for weight per gallon, viscosity, drying time, percent pigment, percent vehicle, and fineness of grind.

2. Qualitative Requirements: The finished paint shall meet the following qualitative requirements:

Condition in Container - Storage Stability. Within a period of 12 months from the time of delivery and when examined in accordance with Federal Specification TT-P-1952F 4.3.2, the paint shall not show excessive settling in a freshly-opened full can and shall be easily redispersed with a paddle to a smooth homogeneous state. The paint shall show no undesirable characteristics to include curdling, livering, caking, gelling, or thixotropic properties, lumps, skins, or color separation. The consistency shall not change more than 5 Krieb Units from that of the original sample, the degree of settling shall have a rating of 6 or better per ASTM D869, and the drying time shall be as specified.

Skinning. The paint shall not skin within 48 hours in a three-quarter filled, tightly closed container when examined in accordance with Federal Specification TT-P-1952F 4.3.14.

Flexibility and Adhesion. The paint shall show no cracking, flaking, or chipping when tested as specified. Apply a wet film thickness of 0.005 inches with a film applicator to a 3 inch x 5 inch tin panel weighing 0.39 to 0.51 pounds per square foot, previously

cleaned with benzene and lightly buffed with steel wool. Dry the paint film at 70 to 80°F in a horizontal position for 18 hours, then bake in an oven at 122 ± 4°F for two hours, and cool to room temperature for at least 1/2 hour. Bend over a 1/2 inch diameter rod and examine, without magnification, in accordance with ASTM D522 Test Method B.

Water Resistance. The paint shall show no softening, blistering, loss of adhesion or other evidence of deterioration, other than a slight loss in gloss when tested as specified. Apply a wet film thickness of 0.015 inches with a film applicator to a clean glass plate. Dry the paint film at 70 to 80°F in a horizontal position for 72 hours. Immerse one-half of the painted plate in distilled water in a vertical position at room temperature (70 to 80°F) for 18 hours in accordance with ASTM D870. Remove the painted plate from the immersion liquid, allow to air dry for 2 hours, and then examine.

Dilution Stability. The paint shall be capable of dilution with water with no separation, curdling or precipitation observed when examined in accordance with NIST 141D (Method 4203.2), such that the wet paint can be readily cleanable with only water.

Spraying Properties. The paint as received shall have satisfactory spraying and hiding properties when applied by either airless or air-assisted type traffic strippers to glass or metal plates at a wet film thickness of 0.015 inches.

Bleeding. The paint shall have a minimum bleeding ratio of 0.97 when tested in accordance with ASTM D868. The asphalt saturated felt shall conform to ASTM D 226 (Type I).

Freeze-Thaw Stability. The paint shall show no coagulation or change in consistency greater than 5 Kreb Units when tested in accordance with Federal Specification TT-P-1952 F 4.3.8.

Heat-Shear Stability. The paint shall show no gelling, signs of instability, or change in consistency greater than 5 Kreb Units when tested in accordance with Federal Specification TT-P-1952 F 4.3.13.

Abrasion Resistance. No less than 190 Liters of sand shall be required for removal of the paint film when tested in accordance with Federal Specification TT-P-1952 F 4.3.7.

Section 980.1 B – Page 571 – Delete and replace with the following:

B. Cold Weather Waterborne Paint: The vehicle shall be Dow FASTRACK™ 5408, Dow FASTRACK™ XSR™ resin binder, or an approved equal.

1. Quantitative Requirements: The finished paint shall meet the following quantitative requirements:

	<u>WHITE</u>	<u>YELLOW</u>
<u>Lead</u> , parts per million ASTM D3335 or X-ray fluorescence	100 max.	100 max.

<u>Pigment</u> , percent by weight;	58.0 – 62.5	56.1 – 62.5
Tested in accordance with ASTM D3723		

The residual extracted pigment upon analysis shall conform to the following quantitative compositional requirements when tested in accordance with ASTM D1394 or ASTM D4764.

<u>Titanium Dioxide</u> , pounds/gallon	1.00 min.	0.20 min.
ASTM D476 Type II Rutile 92% min.		
TiO ₂ tested in accordance with ASTM D1394 or ASTM D4764		

<u>Total Solids</u> , percent by weight;	75.0 min.	75.0 min.
Tested in accordance with ASTM D3723		

<u>Non-volatile Vehicle</u> , percent by weight	41.5 min.	41.5 min.
Tested in accordance with ASTM D3723 and then calculating the % Total Solids minus the % Pigment		

<u>Consistency, grams</u>	165 to 300	165 to 300
Krebs-Stormer Shearing rate 200 rpm.		

<u>Equivalent K.U.</u>	75 to 95	75 to 95
Tested in accordance with ASTM D562*1		
*1 The consistency of the paint shall be within the stated specification when determined a minimum 48 hours after packaging the material.		

<u>Weight per Gallon</u> , pounds		
Tested in accordance with ASTM D1475*2		
Dow FASTRACK™ XSR	13.00 min.	13.00 min.
Dow FASTRACK™ 5408	13.00 min.	13.00 min.

*2 In addition to compliance with the minimum, the weight per gallon shall not vary more than ± 0.3 pounds/gallon between batches.

<u>Fineness of Dispersion</u> , Hegman Scale	2 min.	2 min.
Tested in accordance with ASTM D1210		
Cleanliness	"B" Cleanliness	"B"

<u>Drying Time</u> , No Pick-Up, minutes	12 max.	12 max.
Tested in accordance with ASTM D711, except the wet film thickness shall be 12.5 ± 0.5 mils. The applied film shall be immediately placed in a laboratory drying chamber maintaining the relative humidity of 65 ± 3%, the temperature 73.5 ± 3.5°F, and air flow less than 1 foot per minute.		

<u>Field Drying Time</u> , Track-Free, minutes.	5 max.	5 max.
When applied under the following conditions, the line shall show no visual tracking when viewed from 50 feet after driving a passenger vehicle over the line at a speed of 25-35 mph:		
15 mils wet film thickness		
8 pounds of glass beads per gallon of paint		
Paint temperature at nozzle between 70 to 120°F		
Pavement dry, pavement temperature 50 to 120°F		
Relative humidity of 85% maximum		

Directional Reflectance 85 min. NA
When applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E1347 using the 45/0 illumination

pH 9.80 min. 9.80 min.
Tested in accordance with ASTM E70

Dry Opacity, Contrast ratio. 0.955 min. 0.880 min.
When applied at a wet film thickness of 6 to 7 mils and when tested in accordance with ASTM D2805

Volatile Organic Content (VOC), grams/liter 150 max. 150 max.
Tested in accordance with ASTM D3960

Flash Point, closed cup, °F 115 min. 115 min.

Color: The paint shall meet the color specification limits and luminance factors listed in Tables 1 & 2 when tested in accordance with ASTM E1347 or ASTM E1349. The paint shall not discolor in sunlight and shall maintain the colors and luminance factors throughout the life of the paint. No Bayferrox 3950, iron oxides or other color enhancers will be permitted to achieve the color chromaticity coordinates.

Table 1*1

Color	Chromaticity Coordinates (corner points)								Min. Luminance Factor (Y %)
	X	Y	X	Y	X	Y	X	Y	
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375	35
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400	25

*1 Daytime Color Specification Limits and Luminance Factors for Pavement Markings Material with CIE 2° Standard Observer and 45/0 (0/45) Geometry and CIE Standard Illuminant D65

Table 2*2

Color	Chromaticity Coordinates (corner points)							
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
White	0.480	0.410	0.430	0.380	0.405	0.405	0.455	0.435
Yellow	0.575	0.425	0.508	0.415	0.473	0.453	0.510	0.490

*2 Nighttime Color Specification Limits for Pavement Marking Retroreflective Material With CIE 2° Standard Observer, Observation Angle = 1.05°, Entrance Angle + 88.76° and CIE Standard Illuminant A.

Certificate of Compliance: The manufacturer shall submit a "Certificate of Compliance" for each batch of paint produced for use under this specification. The certification shall contain the manufacturer's code number and batch number along with the test results of each batch for weight per gallon, viscosity, drying time, percent pigment, percent vehicle, and fineness of grind.

- 2. Qualitative Requirements:** The finished paint shall meet the following qualitative requirements:

Condition in Container - Storage Stability. Within a period of 12 months from the time of delivery and when examined in accordance with Federal Specification TT-P-1952F 4.3.2, the paint shall not show excessive settling in a freshly-opened full can and shall

be easily redispersed with a paddle to a smooth homogeneous state. The paint shall show no undesirable characteristics to include curdling, livering, caking, gelling, or thixotropic properties, lumps, skins, or color separation. The consistency shall not change more than 5 Krieb Units from that of the original sample, the degree of settling shall have a rating of 6 or better per ASTM D869, and the drying time shall be as specified.

Skimming. The paint shall not skin within 48 hours in a three-quarter filled, tightly closed container when examined in accordance with Federal Specification TT-P-1952F 4.3.14.

Flexibility and Adhesion. The paint shall show no cracking, flaking, or chipping when tested as specified. Apply a wet film thickness of 0.005 inches with a film applicator to a 3 inch x 5 inch tin panel weighing 0.39 to 0.51 pounds per square foot, previously cleaned with benzene and lightly buffed with steel wool. Dry the paint film at 70 to 80°F in a horizontal position for 18 hours, then bake in an oven at $122 \pm 4^\circ\text{F}$ for two hours, and cool to room temperature for at least 1/2 hour. Bend over a 1/2 inch diameter rod and examine, without magnification, in accordance with ASTM D522 Test Method B.

Water Resistance. The paint shall show no softening, blistering, loss of adhesion or other evidence of deterioration, other than a slight loss in gloss when tested as specified. Apply a wet film thickness of 0.015 inches with a film applicator to a clean glass plate. Dry the paint film at 70 to 80°F in a horizontal position for 72 hours. Immerse one-half of the painted plate in distilled water in a vertical position at room temperature (70 to 80°F) for 18 hours in accordance with ASTM D870. Remove the painted plate from the immersion liquid, allow to air dry for 2 hours, and then examine.

Dilution Stability. The paint shall be capable of dilution with water with no separation, curdling or precipitation observed when examined in accordance with NIST 141D (Method 4203.2), such that the wet paint can be readily cleanable with only water.

Spraying Properties. The paint as received shall have satisfactory spraying and hiding properties when applied by either airless or air-assisted type traffic strippers to glass or metal plates at a wet film thickness of 0.015 inches.

Bleeding. The paint shall have a minimum bleeding ratio of 0.97 when tested in accordance with ASTM D868. The asphalt saturated felt shall conform to ASTM D226 (Type I).

Freeze-Thaw Stability. The paint shall show no coagulation or change in consistency greater than 5 Krieb Units when tested in accordance with Federal Specification TT-P-1952F 4.3.8.

Heat-Shear Stability. The paint shall show no gelling, signs of instability, or change in consistency greater than 5 Krieb Units when tested in accordance with Federal Specification TT-P-1952F 4.3.13.

Abrasion Resistance. No less than 190 Liters of sand shall be required for removal of the paint film when tested in accordance with Federal Specification TT-P-1952F 4.3.7.

Section 982.2 C.4 – Page 576 – Delete and replace with the following:

4. High-strength bolts for structural steel joints, including nuts and washers, shall conform to Section 972.

Section 982.2 F.2 – Page 578 – Delete and replace with the following:

2. **Anchor Bolts and Anchor Rods:** Anchor bolts and anchor rods shall conform to Section 972.

Section 982.2 G.2 – Page 578 – Delete the 1st sentence and replace with the following:

Bolts, hex nuts, and washers used in conjunction with base plates or friction fuse plates shall conform to ASTM F3125 Grade A325, except 1/2 inch and 5/8 inch bolts conforming to ASTM A449 are permissible instead of Grade A325.

Section 982.2 H.1 – Page 578 – Delete and replace with the following:

1. **Grade:** The reflective sheeting shall be of the Type conforming to ASTM D4956 specified in the plans.

Section 982.2 H.6 – Page 580 – Add the following to the end of the 1st paragraph:

Warning signs, except those for bicycle and shared use path facilities, shall be fluorescent yellow. Warning signs for bicycle and shared use path facilities shall be fluorescent yellow-green. All pedestrian and school signs shall be fluorescent yellow-green.

Section 982.2 J.2 – Page 582 – Delete the first sentence and replace with the following:

The reflective sheeting shall be Type XI conforming to ASTM D4956.

Section 982.2 K.2 – Page 583 – Delete the first sentence and replace with the following:

The reflective sheeting shall be Type XI conforming to ASTM D4956.

Section 984.1 – Page 587 – Delete the 1st paragraph and replace with the following:

For all projects let prior to September 1, 2018 the following shall apply:

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectorized with sheeting applied to a satisfactory backing. For all temporary traffic control warning signs, the reflective sheeting shall meet the standards of Type VII, Type VIII, Type IX, or Type XI as defined by ASTM D4956. For all other temporary traffic control signs, the reflective sheeting shall meet the standards of Type IV, Type V, Type VII, Type VIII, Type IX, or Type XI as defined by ASTM D4956. For barricades, vertical panels, and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type III as defined by ASTM

D4956. Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectorized with reflectorized sheeting meeting or exceeding the standards of Type IV as defined by ASTM D4956. All orange colored material shall be fluorescent.

For all projects let September 1, 2018 and after the following shall apply:

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectorized with sheeting applied to a satisfactory backing. For all temporary traffic control signs, the reflective sheeting shall be of the Type conforming to ASTM D4956 specified in the plans. For barricades, vertical panels, and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type IV as defined by ASTM D4956. Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectorized with reflectorized sheeting meeting or exceeding the standards of Type IV as defined by ASTM D4956. All orange colored material shall be fluorescent.

Section 984.3 B. – Page 588 – Add the following to this section:

Cones shall be a minimum of 42 inches in height.

Section 985.1 B – Page 590 – Add the following to this section:

3. Innerduct Conduit: Innerduct conduit shall be Schedule 40 HDPE. Innerduct conduit shall provide 1 inch nominal duct size, be orange in color, and be longitudinally ribbed on the inside wall.

Section 985.1 B.2 – Page 590 – Delete the last sentence and replace with the following:

The Contractor shall use schedule 80 nonmetallic conduit under all roadways and other locations as shown in the plans.

Section 990.1 A.2.h – Page 606 – Delete and replace with the following:

h. Flexible watertight gaskets shall conform to ASTM C1619 or ASTM C1628.

Section 1010.1 B – Page 608 – Delete and replace with the following:

B. Welded Wire Reinforcement: Welded wire reinforcement shall conform to ASTM A1064. The optional yield strength measurement will only be required for welded wire reinforcement utilized in box culverts and prestressed concrete.

* * * * *