STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATIONS TO
2015 STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES

JANUARY 19, 2022

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

MAKE THE FOLLOWING CHANGES TO THE INDICATED SECTIONS:

Section 1.4 – Page 1 – Add the following to page 1:

AADT – Annual Average Daily Traffic

Section 1.5 – Page 3 – Delete the heading and definition for "Major Contract Item" at the bottom of page 4 and replace with the following:

Major Contract Item (Major Item of Work) - A contract item having a contract value greater than 5.0% of the original contract amount.

Section 1.5 – Page 3 – Delete the heading and definition for "Minor Contract Item" at the bottom of page 4 and replace with the following:

Minor Contract Item (Minor Item of Work) - A contract item that is not a major contract item. A minor contract item becomes a major contract item when the total cost of the contract item increases to more than 5.0% of the original contract amount.

Section 1.5 – Page 3 – Delete the heading and definition for "Holiday" on page 7 and replace with the following:

HOLIDAY - In the State of South Dakota the first day of every week, known as Sunday; the first day of January, commonly known as New Year's Day; the third Monday in January, commonly known as Martin Luther King Jr. Day; the third Monday in February, commonly known as Presidents Day; the last Monday of May, commonly known as Memorial Day; the nineteenth day of June, commonly known as Juneteenth; the fourth day of July, commonly known as Independence Day; the first Monday in September, commonly known as Labor Day; the second Monday in October, commonly known as Native American Day; the eleventh day of November, commonly known as Veterans' Day; the fourth Thursday in November, commonly known as Thanksgiving Day; and the twenty-fifth day of December, commonly known as Christmas Day; and every day designated by the President of the United States, or by the Governor of this State for a public fast, thanksgiving, or holiday will be observed as a legal holiday.

If the first day of January, the nineteenth day of June, the fourth day of July, the eleventh day of November, or the twenty-fifth day of December falls upon a Sunday, the Monday following

is a legal holiday and will be so observed. If any such day falls upon a Saturday, the preceding Friday is also a legal holiday and both Friday and Saturday will be so observed.

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 7:

Major Item of Work – See Contract Item.

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

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

Section 2.1 – Page 13 – Delete and replace with the following:

2.1 PREQUALIFICATION OF BIDDERS - Prequalification on state highway construction contracts is required unless the amount being bid is less than $250,000.

A prospective bidder must be prequalified prior to the time and date specified for bid opening. A prospective bidder may apply for prequalification by completing and executing a Contractor's prequalification statement on a form approved by the Department. This application must be received by the Department's classification and rating committee at least 14 calendar days before the opening of the prospective bidder's bid, unless a shorter time frame is approved by the committee.

Once prequalified, the Department will issue a notice to the prospective bidder stating the prospective bidder's approved work classification or work classifications, the prospective bidder's overall bidding capacity, the prospective bidder's per contract bidding capacity, and the prospective bidder's expiration date for prequalification status.

The complete prequalification requirements are contained in South Dakota Administrative Rule 70:07.

Section 2.2 – Page 13 – Delete and replace with the following:

2.2 ELECTRONIC IDENTIFICATION - For contracts let using the South Dakota Electronic Bid System (SDEBS), a prospective bidder must obtain a company identification and password from the Department's website. Each company will receive one company identification and password. With a company identification and password, a prospective bidder will be able to access electronic files and the plan holders list.

In addition to a company identification and password, the prospective bidder must obtain a bidder identification and password for each individual authorized to prepare and submit a bid

proposal on behalf of the company. To obtain a bidder identification and password, a prospective bidder must complete a bidding administrator authorization form (available on the Department's website), furnishing all required information and all appropriate signatures, and submit the form to the Department allowing 2 business days for the Department to set-up bidding administrator(s) and issue bidder identification(s) and password(s).

A bidding administrator will have privileges in the SDEBS to prepare bids, submit bids, and authorize additional company employees to prepare and submit bids. Additionally, a bidding administrator will be responsible for maintaining the list of authorized bidders for the company and will have the ability to add employees, remove employees, and set-up bidder identifications and passwords within the SDEBS. Bidding Administrator authorization will remain in full force and effect until written notice of termination of this authorization is sent by an Officer of the company and received by the Department.

A bidder identification and password, coupled with a company identification previously assigned by the Department, will serve as authentication that an individual is a valid bidder for the company.

Section 2.3 – Page 13 – Delete the 1st sentence of the 2nd paragraph and replace with the following:

For contracts let using the SDEBS letting process, the Department will not place restrictions on who may download the bidding package, except the ability to prepare and submit a bid proposal will require a bidder identification and password as described in Section 2.2.

Section 2.7 B. – Page 17 – Delete the 1st paragraph and replace with the following:

A bidder must prepare and submit a bid proposal using the SDEBS.

Section 3.1 G.1. – Page 21 – Delete and replace with the following:

1. Submittal of more than one bid proposal for the same contract from an individual, firm, or corporation under the same or different name; or,

Section 3.2 A. – Page 22 – Delete and replace with the following:

A. The bid proposal is incomplete, or is not submitted through the Department's SDEBS or the form furnished by the Department, the form is altered, or part thereof is detached or incomplete;

Section 3.2 G. – Page 23 – Add "or," to the end of this section.

Section 3.2 H. – Page 23 – Delete and replace with the following:

H. For SDEBS lettings, confirmation of receipt and incorporation of all addenda is not included in the bid proposal.

Section 3.2 I. – Page 23 – Delete this section

Section 5.16 – Page 38 – Delete this section and replace with the following:

5.16 ACCEPTANCE OF FIELD WORK - When the contract work, including authorized modifications and final cleanup has been completed, the Area Engineer or designee will, within 14 calendar days, make a final inspection of the work. When provided in the contract, the Area Engineer or designee may make inspections following completion of portions of the contract. If the work is found to conform to the requirements of the contract, the Area Engineer or designee will issue written notification to the Contractor of Acceptance of Field Work. Such notice is not to be construed as an acceptance by the Area Engineer or designee of previously noted defective or unauthorized work, or of defective or unauthorized work subsequently identified prior to Final Acceptance in accordance with Section 9.9.

If the work fails to conform with the requirements of the contract, the Engineer will provide the Contractor with a written statement of the features to be corrected. The Contractor will make the corrections, at no additional cost to the Department. If the Engineer determines the work conforms to the requirements of the contract, the Area Engineer or designee will issue written notification to the Contractor of Acceptance of Field Work.

Following the Acceptance of Field Work, but prior to Final Acceptance as described in Section 9.9, the Contractor will correct any additional defective or unauthorized work identified by the Engineer. The Contractor will perform the corrective work at no additional cost to the Department. Final Acceptance in accordance with Section 9.9 will not be made until the Contractor has completed all corrective work and the Engineer determines all contract requirements have been met.

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 7.17 – Page 51 – Delete the 2nd paragraph and replace with the following:

Following the Acceptance of Field Work, but prior to Final Acceptance as described in Section 9.9, the Contractor will be responsible for injury or damage to work resulting from any act, omission, neglect, or misconduct in the Contractor's manner or method of executing the work, at no additional cost to the Department.

Section 8.1 – Page 57 – Delete the 1st sentence of the 1st paragraph and replace with the following:

The Contractor will not subcontract, assign, or otherwise dispose of the contract or contracts in whole or in part, without the Engineer's prior written approval.

Section 8.1 – Page 57 – Delete the 2nd paragraph and replace with the following:

The Contractor may subcontract up to 70% of the original contract amount, based on the contract unit prices, but must perform not less than 30% of the total amount of the original contract with the Contractor's own organization.

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 8.8 A – Page 66 – Delete TABLE A and replace with the following:

SCHEDULE OF LIQUIDATED DAMAGES
TABLE A

Original Contract Amount		Amount of Liquidated Damages	
From More Than	To And Including	Per Calendar Day (Calendar Day Count Contracts)	Per Working Day (Working Day Count or Fixed Completion Date Contracts)
$0	$50,000	$325.00	$450.00
$50,000	$100,000	$425.00	$600.00
$100,000	$500,000	$575.00	$800.00
$500,000	$1,000,000	$800.00	$1100.00
$1,000,000	$2,000,000	$950.00	$1350.00
$2,000,000	$4,000,000	$1150.00	$1600.00
$4,000,000	$6,000,000	$1300.00	$1800.00
$6,000,000	$8,000,000	$1450.00	$2000.00
$8,000,000	$10,000,000	$1600.00	$2200.00
$10,000,000	$15,000,000	$1700.00	$2400.00
$15,000,000	Over $15,000,000	$1850.00	$2600.00

Section 8.8 B – Page 66 – Delete TABLE B and replace with the following:

SCHEDULE OF LIQUIDATED DAMAGES
TABLE B

Original Contract Amount		Amount of Liquidated Damages	
From More Than	To And Including	Per Calendar Day (Calendar Day Count Contracts)	Per Working Day (Working Day Count or Fixed Completion Date Contracts)
$0	$50,000	$150.00	$225.00
$50,000	$100,000	$200.00	$300.00
$100,000	$500,000	$300.00	$400.00
$500,000	$1,000,000	$400.00	$550.00
$1,000,000	$2,000,000	$500.00	$675.00
$2,000,000	$4,000,000	$575.00	$800.00
$4,000,000	$6,000,000	$650.00	$900.00
$6,000,000	$8,000,000	$700.00	$1000.00
$8,000,000	$10,000,000	$800.00	$1100.00
$10,000,000	$15,000,000	$850.00	$1200.00
$15,000,000	Over $15,000,000	$925.00	$1300.00

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 4.25% 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 260.3 A.2.a – Page 118 – Delete the 1st sentence and replace with the following:

Granular material will be processed by the central plant mix method and placed with a spreading device capable of uniformly placing the material to the specified width and depth without excessive loss of material, as approved by the Engineer.

Section 260.3 A.2.b.1) – Page 118 – Delete the 1st sentence and replace with the following:

Granular material will be processed by the central plant mix method and placed with a spreading device capable of uniformly placing the material to the specified width and depth without excessive loss of material, as approved by the Engineer.

Section 320.2 E – Page 126 – Delete the 1st sentence and replace with the following:

An additive is any material added to a bituminous mixture or material including, but not limited to; mineral filler, warm mix asphalt additives, asphalt additives, and similar products without a specific pay item.

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

The Contractor will cover the loads with a tarp during inclement weather conditions and when ordered by the Engineer. Tarps will 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 will be allowed to break (turn from brown to black) and will be allowed a cure period, as determined by the Engineer, prior to asphalt concrete placement.

Section 320.3 G – Page 133 – Delete the 7th full paragraph on page 134 and replace with the following:

On the final surfacing lift, laydown operations may progress continuously toward or away from the plant. If the Engineer, in the Engineer's sole discretion, determines damage to the top mat is occurring, the Engineer may require laydown operations to commence from the farthest point and progress continuously toward the plant.

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 will not exceed 1/4 inch.

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

Section 322.3 B.5.c.1.) – Page 153 – Delete Table L and replace with the following:

TABLE L - PAY FACTOR ATTRIBUTES			
a.	% Air Voids	4.0% ± 1.0%	
b.	In Place Density (% Compaction)	Class Q1	92.0% to 97.0%
		Class Q2	92.0% to 97.0%
		Class Q3	92.0% to 97.0%
		Class Q4	92.0% to 97.0%
		Class Q5	92.0% to 97.0%

Section 322.3 B.5.c.1.) – Page 153 – Delete the 4th paragraph and replace with the following:

If new materials are to be incorporated into the asphalt concrete or if any cold feed bin split percentage is adjusted by more than ±5 from the job mix formula, a new mix design will be required by the Contractor (unless waived by the Bituminous Engineer) with verification by the Department's Bituminous Mix Design Lab.

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 324.2 – Page 165 – Delete the 1st indented paragraph after the 3rd paragraph and replace with the following:

The asphalt binder used in the mixture will be PG 64-28, PG 58-34, or PG 64-34 unless otherwise specified in the plans. In addition, PG 58-28 may be used on projects with a future truck AADT less than 250 trucks per day or projects with no mainline or turning lane paving

areas. The Department will use the design designation information in the plans and the following formula to calculate the future truck AADT:

Future AADT (future year) x AADT T% = Future Truck AADT

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

There will 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, will 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 will 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 will begin after the asphalt surface treatment is cured and will not begin prior to completing final brooming. Fog seal application will 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 will 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 will 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 will be uniformly mixed by adding potable water and if necessary, agitating the mixture. The amount of emulsion and any added water will be included on the ticket delivered to the project. If the emulsion is diluted, the emulsified asphalt supplier will 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 and reported to the Engineer. Field dilution will be performed as recommended by the emulsified asphalt supplier.

The final rate of dilution will 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 will 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 will not be diluted.

The storage tank for diluted emulsified asphalt must utilize a recirculation system or agitator that will prevent settlement or separation of the material.

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

The tack coat will be allowed to break (turn from brown to black) and will 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 will not exceed 1/4 inch when tested in accordance with SD 320.

Section 332.3 C – Page 177 – Delete the last sentence of the 3rd paragraph on page 178 and replace with the following:

The resultant transition will be of sufficient length to provide a slope no steeper than 20 feet:1 inch.

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 D – Page 186 – Add the following paragraph to this section:

The Contractor will ensure transverse rumble strips are not damaged or otherwise modified to lose their functionality during the application of the surface treatment. The Contractor will only apply a fog seal to the rumble strips. The Contractor will repair any damage or loss of functionality of rumble strips to the satisfaction of the Engineer at no additional cost to the Department.

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

When loading trucks, the Contractor will 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 will 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 will 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 will 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 will 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 will be disposed of at sites provided by the Contractor and approved by the Engineer.

1. **Initial Brooming:** The Contractor will perform initial brooming while traffic is maintained as described in Section 360.3 H. Initial brooming will consist of a light brooming of the surface to remove loose chips. The initial brooming will 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 will 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 will 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, will 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 will be uniform and smooth riding. Transverse or horizontal ridges, raveled spots, wheel marks, depressions, abrupt color changes, and other inequalities will be corrected. Payment will not be made for this correction work.

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

Section 380.2 – Page 193 – Add the following to this section:

M. Non-Shrink Grout: Non-shrink grout will be of the type intended for anchoring horizontal dowel bars or reinforcement bars, (AMBEX AAC or an approved equal by the Department's Concrete Engineer).

Section 380.3 A – Page 193 – Delete the 1st paragraph and bullet points on page 194 and replace with the following:

The Contractor will design and be responsible for the performance of all concrete mixes used in the pavement.

The Contractor will submit the proposed mix design on a completed Contractor Concrete Mix Design form (DOT-24) for review by the Department. If concrete mix design requirements are not designated in the plans, the Contractor will develop and use a concrete mix design conforming to the following:

- Minimum cementitious material content of 600 pounds or 575 pounds if well graded* with a maximum cementitious content of 800 pounds per cubic yard.
- The Contractor will substitute a portion of the cement with Class F modified fly ash in accordance with Section 605. The amount of cement to be replaced will be 20% to 25% by weight.
- A maximum Water/Cementitious ratio "W/C Ratio" of 0.42.
- Minimum coarse aggregate content of 55% by weight of total aggregates.
- A water reducer at manufacturer's recommendations will be used.
- Minimum 28 day compressive strength of 4,000 psi.

*Well graded concrete mixes are those mixes conforming to the aggregate gradation shown in 460.3 B Chart A and utilize a size #15 coarse aggregate.

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

The Contractor will produce a concrete paving mix with a uniform consistency. The Contractor will produce a concrete paving mix in accordance with the successfully reviewed mix design and the following:

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

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

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

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

The concrete will 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 will be determined in accordance with Section 460.3 B. If the 28 day compressive strength is less than the specified 28 day compressive strength, the Department's Concrete Engineer will evaluate the average compressive strength and determine if the concrete is structurally adequate.

Section 380.3 B.4 – Page 197 – Delete the last 3 sentences of the 1st paragraph.

Section 380.3 C.1 – Page 199 – Delete and replace with the following:

1. **Insert Steel Bar in PCC Pavement:** When specified in the plans and at the locations specified in the plans, the Contractor will insert steel bars into drilled holes in the existing concrete pavement. An epoxy resin adhesive or a non-shrink grout must be used to anchor the steel bar in the drilled hole. The Contractor will adhere to the manufacturer's recommendations for mixing and placing the materials.

   When opening to traffic times are less than 3 days, the Contractor will provide the Engineer with a letter from the manufacturer stating the required minimum cure times of the epoxy resin adhesive or non-shrink grout used to anchor either the dowel bars or reinforcement bars comply with the early opening times. The Contractor will not allow construction equipment or traffic on the affected area until the manufacturer's recommended minimum cure times are met.

   Epoxy resin adhesive will conform to Section 380.2 L. Non-shrink grout will conform to Section 380.2 M.

   The diameter of the drilled holes in the existing concrete pavement for the steel bars will not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. Holes drilled into the existing concrete pavement will be located at mid-depth of the slab and true and normal. The drilled holes will 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 installation of the anchoring material. The drilled holes will be dry when the anchoring material is installed.

a. **Epoxy Resin Adhesive Installation:** The Contractor will 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 will mix the components at the manufacturer's designated rate.

   The Contractor will fill the drilled holes 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping method will not be allowed.

b. **Non-Shrink Grout Installation:** The Contractor will insert a self-contained grout capsule capable of reaching the back of the drilled hole and the steel bar in accordance with the manufacturer's recommendations.

Final approval of the methods used to anchor steel bars will be based on actual field performance as verified by random coring by the Department. The Engineer in conjunction with the Department's Concrete Engineer will determine if the anchoring of the steel bars is acceptable. All cores will become the property of the Engineer.

The Engineer will suspend operations if steel bars are anchored improperly. Operations will not resume until the Contractor has demonstrated to the Engineer the problem which caused the air voids is corrected.

If the cores show proper anchoring, the Department will fill the core holes with concrete mix.

Section 380.3 D – Page 201 – Delete the 5th paragraph.

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

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

Section 380.3 I – Page 203 – Delete the "Transverse Placement (side shift)" tolerance at the top of page 205 and replace with the following:

Transverse Placement (side shift): ±1/2 inch when measured parallel to the longitudinal joint line

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 will 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, will be installed in accordance with Section 380.3 C.1 with an epoxy resin adhesive conforming to Section 380.2 L and will 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 will 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 will 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 will 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 will be thoroughly clean and dry. All materials such as old sealant, oil, asphalt, curing compound, paint, rust, and other foreign materials will be completely removed. Cleaning will be accomplished by abrasive blasting and other tools as necessary. Joints to be sealed with silicone sealant will 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 will have a mechanism attached that will correctly guide the device in the joint.

Section 390.2 B.3 – Page 225 – Delete the 1st paragraph and replace with the following:

Type III: A dry, bagged air entrained concrete patching material (known as 3U58M) meeting the following requirements:

Section 390.2 B.3.b – Page 226 – Delete the gradation table and replace with the following:

3U58M Gradation Requirements	
Sieve Size	**Percent Passing**
3/8 inch	100
#4	80-100
#8	40-80
#16	25-50
#30	15-35
#50	0-18
#100	0-8
#200	0-2.3

Section 390.2 B.3.e.1) – Page 227 – Delete and replace with the following:

1) The Phrase “3U58M Concrete Patch Mix”

Section 390.3 B – Page 227 – Add the following after the 4th full paragraph on page 228:

Compressive strength results that do not meet the minimum requirement will be evaluated by the Department’s Concrete Engineer to determine if the concrete is structurally adequate. If the Contractor disputes the accuracy of the results of the compressive strength testing, the

Contractor must submit a written proposal for how the in place strength will be evaluated to the Department's Concrete Engineer within 5 calendar days of the Department notifying the Contractor of the deviation. The proposal must be successfully reviewed by the Department's Concrete Engineer before the Contractor may proceed with any in place strength evaluation.

Section 391.2 A – Page 231 – Add the following after the 3rd paragraph:

Compressive strength results that do not meet the minimum requirement will be evaluated by the Department's Concrete Engineer to determine if the grout is structurally adequate. If the Contractor disputes the accuracy of the results of the compressive strength testing, the Contractor must submit a written proposal for how the in place strength will be evaluated to the Department's Concrete Engineer within 5 calendar days of the Department notifying the Contractor of the deviation. The proposal must be successfully reviewed by the Department's Concrete Engineer before the Contractor may proceed with any in place strength evaluation.

Section 392.2 A – Page 237 – Add the following after the 3rd paragraph:

Compressive strength results that do not meet the minimum requirement will be evaluated by the Department's Concrete Engineer to determine if the grout is structurally adequate. If the Contractor disputes the accuracy of the results of the compressive strength testing, the Contractor must submit a written proposal for how the in place strength will be evaluated to the Department's Concrete Engineer within 5 calendar days of the Department notifying the Contractor of the deviation. The proposal must be successfully reviewed by the Department's Concrete Engineer before the Contractor may proceed with any in place strength evaluation.

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

Bolts will conform to Section 972.

Section 410.3 A – Page 249 – Delete the last sentence of the 2nd paragraph and replace with the following:

The Contractor is responsible for the shop drawings satisfying contract requirements, regardless of any review by the Engineer.

Section 410.3 A – Page 249 – Delete the 4th paragraph and replace with the following:

Prior to fabrication, the Contractor will submit shop plans to the Department for the Department's opportunity for review. Any review by the Department of the shop plans is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans attached as a PDF to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

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

Unless otherwise specified, high-strength bolts will 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 will be tightened with an electric or hydraulic wrench.

Section 423.3 B – Page 285 – Delete and replace with the following:

B. Structure Falsework:

1. **Substructure Falsework:** Plans and design calculations for substructure falsework will be prepared by a Professional Engineer registered in the State of South Dakota. Falsework will be constructed in accordance with the falsework plans.

2. **Superstructure Falsework:** Plans and design calculations for superstructure falsework will be prepared by a Professional Engineer registered in the State of South Dakota. The Contractor will submit detailed and dimensioned falsework plans with full design calculations to the Department for the Department's opportunity for review. Any review by the Department of the falsework plans and design calculations is limited to general conformance with the contract plans and specifications only. Falsework plans will include a plan and elevation view and any details necessary for the Department's general review. The falsework plan will include a minimum 2 foot walkway on both sides outside the edge of the concrete pour. For concrete slab bridges, the total dead load deflection will not exceed 1/4 inch. The Contractor will send an email with the falsework plans and design calculations attached as two separate PDFs to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 28 calendar days of receiving the falsework plans and design calculations, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the falsework plans and design calculations for review as specified above. The Contractor will not begin falsework construction until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review". The review of the falsework plans and design calculations by the Department will not relieve the Contractor of any responsibility for safely and adequately designing and constructing falsework.

Falsework will be constructed in accordance with the final falsework plans. Before placing any loads on the falsework, the Contractor will provide the Engineer written certification from the Contractor's Professional Engineer stating the falsework has been assembled in conformance with the final falsework plans. If field changes are made during falsework construction, new falsework plans prepared by a Professional Engineer registered in the State of South Dakota will be submitted to the Project Engineer and Office of Bridge Design for review. Falsework construction affected by the change will not continue until the Department confirms, in writing, a completed review of the change with a response of "No Exceptions Noted" or "Not Required for Review" and the Contractor has submitted a revised written certification.

Section 423.3 C – Page 286 – Delete and replace with the following:

C. Cofferdams, Cribs, and Shoring for Substructures: Plans and design calculations for substructure cofferdams, cribs, and shoring will be prepared by a Professional Engineer registered in the State of South Dakota. The Contractor will submit detailed and dimensioned cofferdam, crib, and shoring plans with full design calculations to the Department for the Department's opportunity for review. Any review by the Department of the cofferdam, crib, and shoring plans and design calculations is limited to general conformance with the contract plans and specifications only. Cofferdam, crib, and shoring plans will include any details necessary for the Department's general review. The Contractor will send an email with the cofferdam, crib, and shoring plans and design calculations attached as two separate PDFs to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 28 calendar days of receiving the cofferdam, crib, and shoring plans with design calculations, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the cofferdam, crib, and shoring plans and design calculations for review as specified above. The Contractor will not begin cofferdam, crib, or shoring construction until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review". The review of the cofferdam, crib, and shoring plans and design calculations by the Department will not relieve the Contractor of any responsibility for safely and adequately designing and constructing cofferdams, cribs, and shoring. Cofferdams, cribs, and shoring for foundation construction will be carried to adequate depths and heights, be safely designed and constructed, and be made watertight as necessary for the proper performance of the work. When the bottom of the excavation is of sandy or porous material, which will not permit the footing to be poured in the dry, the excavation will be sealed in accordance with Section 423.3 D. The interior dimensions of cofferdams and cribs will give sufficient clearance for the construction of forms, inspection, and to permit pumping outside of the forms.

Cofferdams or cribs which are tilted or moved laterally during the process of sinking will be righted, reset, or enlarged to provide the necessary clearance at the expense of the Contractor.

Cofferdams, cribs, and shoring will be constructed to protect fresh concrete against damage from sudden rising of the stream and to prevent damage to the foundation by erosion. Timber or bracing that extends into the substructure concrete will not be left in the cofferdams or cribs. After completion of the substructure, cofferdams, cribs, and shoring

including all sheeting and bracing will be removed without disturbing or otherwise damaging the finished concrete.

Section 423.3 D – Page 287 – Delete and replace with the following:

D. Foundation Seals: A foundation seal will not be used unless specified on the plans or approved by the Engineer. If the necessity for a foundation seal is due to inadequate or improper cofferdam construction, the Engineer may order the removal or reconstruction of the cofferdam or permit the placing of a foundation seal at the expense of the Contractor.

When a foundation seal is specified on the plans, the construction of the foundation seal will be in accordance with these specifications unless otherwise specified on the plans.

When no foundation seal is specified in the plans, the Contractor is responsible to design the foundation seal in accordance with the AASHTO "Guide Design Specifications for Bridge Temporary Works". Foundation seal plans and design calculations will be prepared by a Professional Engineer registered in the State of South Dakota. The Contractor will submit detailed and dimensioned foundation seal plans with full design calculations to the Department for the Department's opportunity for review. Any review by the Department of the foundation seal plans and design calculations is limited to general conformance with the contract plans and specifications only. Foundation seal plans will include any details necessary for the Department's general review. The Contractor will send an email with the foundation seal plans and design calculations attached as two separate PDFs to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 28 calendar days of receiving the foundation seal plans and design calculations, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the foundation seal plans and design calculations for review as specified above. The Contractor will not begin foundation seal construction until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review". The review of the foundation seal plans and design calculations by the Department will not relieve the Contractor of any responsibility for safely and adequately designing and constructing foundation seals.

Foundation seal concrete will be placed in accordance with Section 465.3 M and will be placed up to the elevation of the bottom of the footing elevation, unless otherwise approved by the Engineer. The pumping of water from the interior of any foundation enclosure will be done without moving water through any freshly placed concrete. Pumping will not be permitted during concrete placement or for at least 24 hours thereafter unless it can be done from a suitable sump which separates fresh concrete from the water.

Dewatering of the foundation enclosure may proceed when the foundation seal concrete has attained sufficient strength to withstand the hydrostatic pressure. After dewatering, all laitance and other unsound material on the top of the foundation seal will be removed by scraping, chipping, or other approved methods prior to placing the footing.

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 will 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 will install the flexible watertight gaskets in accordance with the manufacturer's instructions.

Section 460.2 J – Page 307 – Delete and replace with the following:

J. Fly Ash: Sections 605 and 753.

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 L – Page 321 – Delete the 1st sentence of the 2nd paragraph and replace with the following:

As soon as the concrete has set in accordance with Section 460.3 O, the forms on all exposed surfaces will be carefully removed and all depressions including, but not limited to; air pockets, bug holes, honeycombing, and voids from the removal of metal ties will be carefully pointed with a mortar of sand and cement in the same proportions as the concrete being treated.

Section 460.3 L.1 – Page 321 – Delete the 1st sentence and replace with the following:

One of these three finishes will be required for all railing, curbs, parapets, wing walls, and other surfaces not subject to wear which are visible from the travelled way unless otherwise designated in the plans.

Section 460.3 L.1 – Page 321 – Delete the last sentence.

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 will be cured as follows:

As soon as the concrete surface has received the final surface finish, linseed oil base emulsion curing compound will 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 will 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 will be protected from the curing compound and will be cured with curing blankets and white polyethylene sheeting. All reinforcing steel will be protected from the compound application

Section 460.3 N – Page 327 – Delete and replace with the following:

N. Protection of Concrete: The following requirements are in addition to the requirements for curing contained in Section 460.3 M.

Vibrations caused by any work activities that may be detrimental to the freshly placed concrete will not be allowed for at least 72 hours after placement or until the concrete has attained a minimum compressive strength of 1500 psi. If the Engineer suspects construction activities may be causing excessive vibration, the Contractor will drive a 2 inch x 4 inch stake solidly into the ground adjacent to the freshly placed concrete. A small container of water will then be placed on top of the stake. If the water surface remains calm, the construction activity will be allowed to continue. When the water surface shows any movement, vibrations are reaching the freshly placed concrete and the construction activities will be either stopped or altered such that vibrations at the freshly placed concrete are eliminated.

Appropriate measures will be taken to ensure one of the following requirements are met between October 15th and May 1st and when directed by the Engineer during periods of cold weather:

1. Concrete for sidewalks, curb and gutter, drop inlets, manholes, ditch checks, pipe headwalls, sleeper slabs, approach slabs, pavement, etc. will be maintained at a temperature of 35°F or above until it has attained 1500 psi compressive strength. In addition, when the air temperature is forecast to be below 32°F for more than 4 hours, the Contractor will protect the concrete surface.

2. Concrete for bridges, box culverts, retaining walls, anchor blocks, median barriers, light and signal footings, and other structures will be maintained at a temperature of 50°F or above for the first 72 hours after the concrete has been placed. The concrete will be

maintained at a temperature of 40°F or above for the next 48 hour period. If low temperatures are recorded during this protection period, one extra day of protection time above 40°F will be added to the original five days of protection for each day that the minimum concrete temperature falls below the specified temperature.

Alternatively, the concrete will be maintained at a temperature of 65°F or above for at least 72 hours. If temperatures less than 65°F are recorded during this protection period, the protection time required will revert back to that in the preceding paragraph with its provision for low temperatures also being applicable.

Until one of the protection periods have been satisfied, cold weather protection will continue, falsework will remain in place, live loads will not be applied, and the concrete temperature will be maintained above 35°F.

3. Any work may be protected by flooding concrete with water for 7 calendar days after the concrete is placed. The water temperature must be maintained to prevent freezing of the water in contact with the concrete.

At the end of the protection period, the concrete surface temperature will not be permitted to fall more than 40°F in each subsequent 24 hour period.

The surface temperature of concrete protected by housing and heating or insulated forms will not exceed 100°F during the protection period.

Enclosures for protection of concrete will be capable of maintaining the temperature specified and permit free circulation of artificial heat. Open flame type heating units are prohibited except when the entire concrete surface is covered by forms

Form insulation will be bats of fiberglass, rockwool, balsam wool, or similar commercial insulation material. Insulation will remain in place for the full protection period.

If deemed necessary by the Engineer, the Contractor will provide thermometer wells 1/2 inch to 1 inch in depth at locations established by the Engineer. This may require the Contractor to drill holes in the forms to determine the temperature of the concrete.

Section 462.2 J – Page 333 – Delete and replace with the following:

J. Fly Ash: Sections 605 and 753.

Section 462.3 A.1 – Page 333 – Add the following to the end of this section:

The 28 day compressive strength will be determined in accordance with Section 460.3 B. If the 28 day compressive strength is less than the specified 28 day compressive strength, the Department's Concrete Engineer will evaluate the average compressive strength and determine if the concrete is structurally adequate.

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

B. Equipment: Equipment will conform to the following:

1. **Batching Equipment:** A concrete batch ticket will accompany each load of concrete to the project site and will 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 will conform to Section 460.3 C.2.

2. **Mixing and Hauling Equipment:** Mixers will be capable of combining the concrete ingredients into a thoroughly mixed and uniform mass and will uniformly discharge the concrete.

3. **Forms:** Wood and metal forms will conform to Section 460.3 C.4.

Section 462.3 J – Page 334 – Delete the last sentence of this section.

Section 464.2 E – Page 337 – Delete and replace with the following:

E. Fly Ash: Section 753.

Section 465.2 A.3 – Page 339 – Add the following to the end of this section:

Slump loss will be tested within 30 days of placing concrete in the shaft.

Section 465.3 K – Page 347 – Delete the first sentence of the 2nd paragraph and replace with the following:

In the case that any shaft is determined to be unacceptable, the Contractor will submit a plan for remedial action to the Engineer for review.

Section 465.3 L – Page 347 – Delete the 1st sentence and replace with the following:

Concrete must be continuously agitated in the hauling unit and be discharged within 105 minutes for the first load and then 135 minutes for all remaining loads. When the concrete temperature is 80°F or above, the time limitation will be reduced to the first load discharged within 75 minutes then 105 minutes for all remaining loads. The interval between batches will not exceed 30 minutes.

Section 465.5 D – Page 351 – Delete and replace with the following:

D. Crosshole Sonic Log (CSL) Test: When a bid item for crosshole sonic log (CSL) test is included in the plans, the accepted quantity of CSL tests will be paid at the contract unit price per each test. Payment will be full compensation for all labor, equipment, tools, materials, services, and incidentals required to perform the tests and analyze the results. Payment will be made only once per shaft tested. When no bid item for crosshole sonic log (CSL) test is included in the plans, the following will apply:

If the CSL testing shows the shaft is sound with no anomalies, the Department will pay for the CSL testing by CCO. If the CSL test shows anomalies with the shaft, the Department will not make payment for the CSL testing or cost of any remedy necessary.

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

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

Section 470.3 – Page 353 – Delete the 3rd paragraph and replace with the following:

Prior to fabrication, the Contractor will submit shop plans to the Department for the Department's opportunity for review. Any review by the Department of the shop plans is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans attached as a PDF to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

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

Bars will 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%) will be tied.

All lap splices shown are contact lap splices unless specifically noted otherwise

Section 480.3 C.1 – Page 356 – Delete the 3rd paragraph and replace with the following:

Chair spacing will not exceed 3 feet 6 inches in either direction. If plastic chairs are used, chair spacing will not exceed 2 feet 6 inches in either direction. The Engineer may require a closer chair spacing for mat rigidity.

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 A.1.a.1) – Page 359 – Delete the last sentence of this section.

Section 491.3 A.2 – Page 361 – Delete the 2nd paragraph and replace with the following:

The grinding will remove the existing surface conditions as defined by the plan notes including, but not limited to; epoxy chip seal, polymer chip seal, pavement markings, and tining to the satisfaction of the Engineer.

Section 491.3 B.2 – Page 362 – Delete the 1st sentence and replace with the following:

A manufacturer approved representative will be present on the jobsite for the first two full production days of the polymer chip seal.

Section 491.3 B.2 – Page 362 – Add the following paragraph to the end of this section.

If the Contractor has a minimum of 100,000 square yards of experience with the polymer being used, the Manufacturer's Representative will not be required to be on the jobsite.

Section 491.3 B.6 – Page 364 – Delete the 4th sentence and replace with the following:

In the event of rain before second coat is applied, the surface will be dried 24 hours prior to application.

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

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

Section 510.3 G – Page 371 – Delete the 2nd sentence and replace with the following:

Cuts or breaks that expose untreated wood will be field treated in accordance with the requirements of AWPA Standard M4.

Section 560.3 A.1 – Page 393 – Delete the heading of this section and replace with the following:

Notification:

Section 560.3 A.3 – Page 394 – Delete the 1st paragraph and replace with the following:

Shop Plans: Prior to fabrication, the Contractor will submit shop plans to the Department for the Department's opportunity for review. Any review by the Department of the shop plans is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans attached as a PDF to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

The shop plans will consist of fabrication details including reinforcing steel and spacer placement and configurations, total quantities for the complete structure, and all information necessary for fabrication and erection.

Section 560.3 A.5 – Page 394 – Delete the last sentence of the partial paragraph at the top of page 396 and replace with the following:

The Engineer may allow a different minimum concrete strength for form removal and yarding, based upon fabricator demonstrated results or as shown on design details submitted with the shop plans.

Section 560.3 B.3 – Page 398 – Delete the 1st paragraph and replace with the following:

Installation: Box culvert installation will conform to the shop plans and the following:

Section 560.3 B.3.b – Page 398 – Delete the last sentence of the 1st paragraph and replace with the following:

The lift holes will be plugged with a non-shrink grout conforming to Section 460.2 or as shown on the shop plans.

Section 560.3 B.3.c – Page 399 – Delete the 1st paragraph and replace with the following:

Joint Ties: Each section will be tied to adjacent sections with joint ties as shown on the shop plans.

Section 560.3 C.2 – Page 399 – Delete and replace with the following:

2. **Forms**: Forms will be set on a rigid foundation and the soffit form will be a plane surface at right angles to the vertical axis of the element

   The element will be accurately cast to the dimensions shown in the plans or in the shop plans. Requests for minor shape changes to accommodate the available forms will be accompanied by design calculations.

Section 560.3 C.4.b – Page 400 – Delete the last sentence of the 1st paragraph and replace with the following:

Alternative stressing procedures will be reviewed by the Engineer prior to fabrication.

Section 560.3 C.4.b – Page 400 – Delete the 1st sentence of the 2nd paragraph and replace with the following:

Tendons will be tensioned to produce the forces shown in the plans, or on the shop plans with appropriate allowances for all loses.

Section 560.3 C.5 – Page 401 – Delete and replace with the following:

5. **Placement of Concrete:** Elements will be cast in an upright position and the concrete will be placed in continuous lifts not exceeding one half the depth of the element. A continuous

flow of concrete from end to end of the element may be permitted provided segregation of the concrete is not taking place. Cold joints or initial set between lifts will not be allowed. The rate of placement will be maintained at a minimum rate such that no cold joints exist in the element.

The concrete in each element will be vibrated internally, externally, or both to produce uniformly dense concrete and to avoid displacement of enclosures or steel units.

The top surface of the element will be float finished to seal the surface and depress the coarse aggregate. After finishing and prior to initial set, the top surface of beams will be given a transverse grooving. The grooves will be approximately 1/4 inch deep by 1/4 inch wide at 1 inch spaces. The top surface of the outside edges of the top flange of beams will be finished with a concrete edging tool for the full length of the beam. The edging tool will be of sufficient size to produce a smooth finish for approximately the outside 3 inches of flange top width. In addition, a smooth spot will be left at the span tenth points.

Section 560.3 C.6 – Page 401 – Delete the paragraph at the top of page 402 and replace with the following:

When the Contractor elects to remove the elements from the casting bed during the cooling process, the Contractor will take appropriate measures to keep the elements warm during moving operations and will immediately resume the cooling process at the storage area.

Section 560.3 C.7 – Page 402 – Delete the 2nd paragraph and replace with the following:

Complete temperature recording charts for all cures will be submitted to the Engineer prior to acceptance of the elements. If the records indicate the specified temperature and time element pertaining to the curing are not being complied with, the affected elements will be subject to rejection.

Section 560.3 C.8 – Page 402 – Delete the 1st paragraph and replace with the following:

Prestress Transfer: The prestress transfer will not be made until the control cylinders, cured with the elements, indicate the concrete has reached the compressive strength specified in the plans, or as amended by the shop plans.

Section 560.3 C.8 – Page 402 – Delete the 2nd indented paragraph after the 4th paragraph and replace with the following:

The prestress transfer may be made by the gradual release of hydraulic jacks, by heating exposed portions of individual strands to failure, or will be completed as detailed in the production procedures.

Section 560.3 C.9 – Page 403 – Delete the 1st paragraph and replace with the following:

Tolerances: Dimensional tolerances of the completed elements will not exceed the dimensional tolerances specified in the current edition of Prestressed Concrete Institute Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products.

Section 560.3 C.10 – Page 403 – Delete the 1st paragraph and heading and replace with the following:

Handling, Storage, Transportation, and Installation: Pretensioned elements may be moved from the casting bed to the storage yard after the prestress transfer strength has been reached but will not be removed from the casting yard or installed until they have reached the specified minimum design compressive strength, as indicated by the test cylinders cured with the elements.

Section 560.3 C.10 – Page 403 – Delete the last paragraph and replace with the following:

Pretensioned concrete elements will be installed in accordance with the plans.

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 will be installed beneath the worktable.

Section 600.2 D.1 – Page 408 – Delete the 2nd sentence and replace with the following:

The exterior width will be a minimum of 8 feet.

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

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

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

Type 2 and Type 3 temporary fence will be constructed in accordance with Section 620.3 A. Type 2 and Type 3 temporary fence will remain in place and become the property of the landowner. Type 2 temporary fence will consist of 4 strands of barbed wire fastened to steel posts spaced 20 feet center to center. Type 3 temporary fence will 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 630.2 A – Page 427 – Delete the 3rd sentence of the 1st paragraph and replace with the following:

Timber for posts will either be rough sawn or surfaced 4 sides (S4S) with nominal dimensions indicated.

Section 630.3 B – Page 427 – Delete the last paragraph of this section on page 428 and replace with the following:

Field cuts and bored holes in treated wood will be field treated in accordance with the requirements of AWPA Standard M4.

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

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

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

3. Date Decal: The Contractor will 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 will consist of two contrasting colors. The date decal will be placed in the lower left corner on the back of flat aluminum signs. The date decal will be placed in the lower left corner on the front of extruded aluminum signs. The date decal on extruded aluminum signs will be of the same color as the background of the sign and will be retroreflective. Sign supports and other obstructions will 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 will be formulated as cold weather waterborne paint. Cold weather waterborne paint will 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 will 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 will simultaneously place a dashed marking, a solid marking and a dashed marking, or two solid markings as detailed in the plans.

Section 633.3 B – Page 438 – Delete the second to last paragraph of this section on page 439 and replace with the following:

The Contractor will apply the pavement marking paint, glass beads, and bonded core reflective elements (if required) at the rates specified in the plans. Restriping of pavement markings to meet this requirement and to provide a quality retroreflective line will be at the expense of the Contractor with no additional cost to the Department. Sections to be restriped will be determined by the Engineer.

Section 633.4 E – Page 441 – Delete and replace with the following:

E. Pavement Marking Paint, Beads, and Elements: Paint, beads, and elements will be measured by the foot, square foot, each, or gallon of paint depending on the unit designated by the contract quantity.

Section 633.5 E – Page 441 – Delete and replace with the following:

E. Pavement Marking Paint, Beads, and Elements: Payment for paint, beads, and elements will be by the foot, square foot, each, or gallon for each type of pavement marking. Payment will be full compensation for furnishing paint, beads, and elements (if required) and for labor, equipment, and incidentals necessary.

Section 634.2 – Page 443 – Delete the 4th paragraph from the bottom of the page and replace with the following:

Paint used for temporary pavement marking will be in accordance with Section 980.1 A.

Section 634.3 E – Page 445 – Add the following paragraph to this section:

On unfinished grades until gravel is in place, the Contractor will place reflectorized devices (cones, drums, or vertical panels back-to-back) defining the outside edge of the road. The Contractor will place the devices at 264 feet maximum spacing on tangents and at 132 feet maximum spacing on curves (greater than 3 degrees). The devices are required at all times during night time hours and only at locations where grading work is not active during daytime hours.

Section 634.3 I.2.a – Page 447 – Add the following to the end of this section:

Except as required in this section, all traffic signal equipment and materials will meet the requirements of Section 635 and 985.

Section 634.3 I.2.b – Page 447 – Add the following to the end of the 1st paragraph:

Except as required in this section, all traffic signal equipment and materials will meet the requirements of Section 635 and 985.

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 634.5 A – Page 454 – Add the following to the beginning of this section:

Flagging will be paid for at the contract unit price per hour.

Section 634.5 B – Page 454 – Add the following after the 1st sentence of this section:

Payment for pilot car will include all cost for provided operator, vehicle, and required sign.

Section 635.3 A – Page 457 – Delete the 3rd paragraph.

Section 635.3 A – Page 457 – Delete 1, 2, 3, and 4.

Section 635.3 Q.5 – Page 466 – Delete the last sentence.

Section 635.4 P – Page 467 – Delete and replace with the following:

P. Detector Units: No field measurement will be made.

Section 635.5 P – Page 469 – Delete and replace with the following:

P. Detector Units: The cost of detector units is to be included in the contract unit price for traffic signal controllers.

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

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

Section 651.3 – Page 473 – Delete the 6th paragraph and replace with the following:

Contraction and longitudinal joints will be placed at intervals that will provide approximately square sections. The joints will be formed by a grooving tool or sawing to a depth of at least one third the thickness of the sidewalk. When the sidewalk is greater than 8 feet in width, a longitudinal joint may be required, depending on the thickness of the sidewalk. When a longitudinal joint is required, the Contractor will provide the longitudinal joint at the center and the contraction joints will be adjusted to result in approximately square sections. The maximum length and width of a square section is determined by the following formula:

24 x Thickness of Sidewalk (inches) = Maximum Length & Width of Square Sections (inches)

Section 651.3 – Page 473 – Add the following sentence to the end of the partial paragraph at the top of page 474:

The Contractor will ensure the expansion joint filler material is securely held in place during concrete placement.

Section 670.2 A. – Page 475 – Delete the last sentence and replace with the following:

For precast drop inlets cast at a facility regularly producing other precast concrete items under Section 560 or 990, the concrete will conform to Section 560.

Section 670.3 C.3 – Page 476 – Delete the 1st paragraph and replace with the following:

Shop Plans: If using a design that varies from the standard plates, the Contractor will submit shop plans in accordance with this section. Prior to fabrication, the Contractor will submit shop plans to the Department for the Department's opportunity for review. Any review by the Department of the shop plans is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans attached as a PDF to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

The shop plans will consist of fabrication details including reinforcing steel and spacer placement and configurations, total quantities for the complete item, and all information necessary for fabrication and installation.

Section 670.3 C – Page 476 – Delete 5, 6, 7, and 8 on pages 477- 479 and replace with the following:

5. **Fabrication:** Welding of mild reinforcing steel will not be permitted.

   Steel wire bar supports will be used to maintain proper reinforcement location and concrete cover. Cutting of reinforcement and bending to the form surface, for support, will not be permitted. Steel wire bar supports, in contact with the casting forms, will be stainless steel, hot dipped galvanized, or plastic tipped extending at least 1/2 inch from the form surface.

   The surface temperature of the forms and reinforcing steel, which come into contact with the concrete being placed, will be raised to a temperature above freezing prior to concrete placement. All deleterious material will be removed from the forms prior to concrete placement. For cold weather placements, concrete surfaces will be protected from freezing throughout the pour and until covered for the waiting period before application of live steam or radiant heat.

   The precast units will have sufficient strength to prevent damage to the units during removal of the forms and yarding. Precast units will have a minimum concrete compressive strength of 800 psi prior to form removal. Precast units will have a minimum concrete compressive strength of 3000 psi prior to yarding. The Engineer may approve a different minimum concrete strength for form removal and yarding, based upon fabricator demonstrated results or as shown on design details submitted and approved with the shop plans.

6. **Concrete Cure:** The concrete will be cured by low pressure steam, radiant heat, or as specified in Section 460.3 M. When curing in accordance with Section 460.3 M., the concrete temperature requirements of Section 460.3 N. will apply.

   Low pressure steam or radiant heat curing will be done under an enclosure to contain the live steam or the heat and prevent heat and moisture loss. The concrete will be allowed to attain initial set before application of the steam or heat. The initial application of the steam or heat will be three hours after the final placement of concrete to allow the initial set to occur. When retarders are used, the waiting period before application of the steam or radiant heat will be five hours. When the time of initial set is determined by ASTM C 403, the time limits described above may be waived.

   During the waiting period, the minimum temperature within the curing chamber will not be less than 50°F and live steam or radiant heat may be used to maintain the curing chamber between 50°F and 80°F. During the waiting period the concrete will be kept moist.

   Application of live steam will not be directed on the concrete forms causing localized high temperatures. Radiant heat may be applied by pipes circulating steam, hot oil, hot water, or by electric heating elements. Moisture loss will be minimized by covering exposed concrete surfaces with plastic sheeting or by applying an approved liquid membrane curing compound to exposed concrete surfaces. The top surface of concrete members for use in composite construction will be free of membrane curing compound residue unless suitable mechanical means for full bond development are provided.

   During the initial application of live steam or radiant heat, the concrete temperature will increase at an average rate not exceeding 40°F per hour until the curing temperature is reached. The maximum concrete temperature will not exceed 160°F. The maximum

temperature will be held until the concrete has reached the desired strength. After discontinuing the steam or radiant heat application, the temperature of the concrete will decrease at a rate not to exceed 40°F per hour until the concrete temperature is within 20°F of the ambient air temperature.

The test cylinders will be cured with the unit, or in a similar manner (similar curing method and concrete curing temperature, as approved by the Department's Concrete Engineer) as the unit, until minimum compressive strength has been obtained.

7. **Surface Finish and Patching:** If a precast or prestressed item shows stone pockets, honeycomb, delamination, or other defects which may be detrimental to the structural capacity of the item, it will be subject to rejection at the discretion of the Engineer. Minor surface irregularities or cavities, which do not impair the service of the item, and which are satisfactorily repaired will not constitute cause for rejection. Repairs will not be made until the Engineer has inspected the extent of the irregularities and has determined whether the item can be satisfactorily repaired. If the item is deemed to be repairable, the repair method and procedures will be agreed upon by the Department and fabricator prior to the work commencing.

   Depressions resulting from the removal of metal ties or other causes will be carefully pointed with a mortar of sand and cement in the proportions, which are similar to the specific class of concrete in the unit.

8. **Fresh Concrete Testing:** The Contractor will be responsible for performing all fresh concrete testing in accordance with the Department's Materials Manual. Tests will be documented on a DOT-54 form and submitted to the Engineer.

9. **Concrete Compressive Strength:** The Contractor will make a minimum of one group of test cylinders for each class of concrete for each day's production, not to exceed 150 cubic yards per group of cylinders.

   At a minimum, a group of test cylinders will consist of the following:

   a. Two test cylinders are required for the 28 day compression test.

   b. Two additional cylinders will be required for determining concrete strength, when the Contractor desires to make delivery and obtain acceptance by the Department prior to the 28 day compression test.

   Acceptance of the precast units will be in accordance with Section 460.3 B. except that the fabricator will be responsible for the sampling, preparing, and properly curing of all concrete cylinders for concrete compressive strength in accordance with the Department's Materials Manual and the fabricator will be responsible for all costs. The precast units will be accepted when the minimum design concrete compressive strength requirements have been met. Accepted precast units represented by that test group of cylinders may be delivered to the project and will not require the 28 day cylinder test.

   The Engineer will be responsible for breaking of all concrete cylinders for concrete compressive strength in accordance with the Department's Materials Manual.

Section 670.5 – Page 479 – Delete the 1st paragraph and replace with the following:

When payment for drop inlets is made per each, payment will be full compensation for excavation required to furnish and install the drop inlet; for furnishing and installing concrete and reinforcing steel; and for labor, equipment, and incidentals necessary. Cast iron frames with grates and the required mortar bed will be paid for in accordance with 670.5 A.

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

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

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

The fabrication of precast manholes will conform to Section 560.

Section 680.4 C – Page 486 – Delete the heading of this section and replace with the following:

Concrete Headwall for Drain:

Section 680.5 C – Page 486 – Delete the heading of this section and replace with the following:

Concrete Headwall for Drain:

Section 732.4 B – Page 503 – Delete the 1st sentence and replace with the following:

Fiber mulch will be measured to the nearest pound or 0.1 ton, as specified in the plans, of mulch applied.

Section 732.4 C – Page 503 – Delete the 1st sentence and replace with the following:

Bonded fiber matrix will be measured to the nearest pound or 0.1 ton, as specified in the plans, of matrix applied.

Section 732.4 D – Page 503 – Delete the 1st sentence and replace with the following:

Fiber reinforced matrix will be measured to the nearest pound or 0.1 ton, as specified in the plans, of matrix applied.

Section 734.3 – Page 510 – Delete the 2nd paragraph and replace with the following:

Erosion control and water pollution control devices will be inspected by the Contractor and Engineer in accordance with the storm water permit and the plan notes. The Engineer will document these inspections on a DOT-298 form.

Section 750 – Page 519 – Delete and replace with the following:

750 PORTLAND CEMENT

Unless otherwise permitted by the Engineer, the product of only one mill of any one brand and type of Portland cement will be used on the project.

The specifications may reference a specific cement type for a construction application. When a cement type is specified, the cement type referenced is applicable to Section 750 A; however, the Contractor may use any of the following cements:

A. Portland Cement: Portland cement will conform to AASHTO M 85 for the type specified. All cements will not have more than 0.60% of Alkalies (Na_2O + $0.658K_2O$).

B. Portland Limestone Cement (PLC): Portland limestone cement will conform to AASHTO M 240 Type IL. When Type II cement is specified, the cement will meet MS requirements of AASHTO M 240. When Type V cement is specified, the cement will meet HS requirements of AASHTO M 240. The Contractor will submit ASTM C1012 test results from within the last 12 months to the Engineer prior to using Portland limestone cement.

C. Portland-Pozzolan Cement: Portland-pozzolan cement will conform to AASHTO M 240 Type IP. When Type II cement is specified, the cement will meet MS requirements of AASHTO M 240. When Type V cement is specified, the cement will meet HS requirements of AASHTO M 240. The Contractor will submit ASTM C1012 test results from within the last 12 months to the Engineer prior to using Portland-pozzolan cement.

Fly ash used in the cement manufacturing will meet the requirements of Section 753. The fly ash content will meet the fly ash percent specified. Fly ash may not be substituted for a portion of the Portland-pozzolan cement during concrete production. If a different pozzolan is used in the cement manufacturing, the Portland-pozzolan cement will meet equivalent performance of historical fly ash percent specified mixes, as determined and reviewed by the Department's Concrete Engineer.

D. Ternary Blended Cement: Ternary blended cement will conform to AASHTO M 240 Type IT. When Type II cement is specified, the cement will meet MS requirements of AASHTO M 240. When Type V cement is specified, the cement will meet HS requirements of AASHTO M 240. The Contractor will submit ASTM C1012 test results from within the last 12 months to the Engineer prior to using ternary blended cement.

The ternary blended cement will meet the equivalent performance of historical fly ash percent specified mixes, as determined and reviewed by the Department's Concrete Engineer.

Fly ash may not be substituted for a portion of the ternary blended cement during concrete production.

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 753 A – Page 520– Delete and replace with the following:

A. Class C Fly Ash: Class C fly ash conforming to AASHTO M 295 will only be allowed in grout for pavement jacking, undersealing, controlled density fill, or when specified.

Section 760 – Page 521– Delete the 3rd paragraph and the gradation table and replace with the following:

The maximum percent by weight of residue retained will conform to the following requirements:

Sieve Size	Maximum Percent Retained
#30	3.0
#200	20.0

Section 760 – Page 521– Delete the 5th paragraph and the list of tests and replace with the following:

The chemical and physical properties listed above will be tested based on the intended use of the hydrated lime in accordance with the following:

Hydrated Lime for Soil Stabilization: .....AASHTO M 216
Hydrated Lime for Asphalt Mixtures:.....AASHTO M 303

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 will 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 will 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 will not be used.

Section 800.2 D – Page 524 – Delete the 3rd and 4th paragraphs on page 525 and replace with the following:

When more than one source of fine aggregate is blended to meet the gradation specifications, the expansion value of the blended sands will be used. Blended sources will be treated as a new source. The Contractor is responsible to submit the blended samples for testing 30 days prior to performing the concrete mix design.

Section 800.2 E – Page 525 – Delete the gradation table and replace with the following:

Table 1

Sieve Size	Percent Passing
3/8 inch	100
#4	95 – 100
#8	80 – 100
#16	50 – 85
#30	25 – 60
#50	5 – 30
#100	0 – 10

Section 800.2 E – Page 525 – Delete the 2nd paragraph and replace with the following:

The fine aggregate will have no more than 45% passing any sieve and retained on the next consecutive sieve of those shown in Table 1.

Section 800.2 F – Page 525 – Delete this section and replace with the following:

F. Uniformity of Grading: The gradation requirements given in Section 800.2 E represent the extreme limits which will determine suitability for use from the source(s) of supply. The gradation will be uniform and not subject to the extreme percentages of gradation specified above. For the purpose of determining the degree of uniformity for the proposed source(s), a target Fineness Modulus (FM) value will be set based upon the gradation, or combined gradation if more than one source is used, established during mix design.

The FM requirements do not apply to fine aggregate for low slump dense concrete and Class M concrete.

1. For all Portland cement concrete except concrete paving conforming to Section 380, low slump dense concrete, and Class M concrete; the following will apply:

Fine aggregate will maintain a FM within ±0.20 from the target FM value. For determining the FM variation from the target FM value, the average of the 5 most recent FM tests will be used. Until 5 FM tests have been made; base the variation on the first FM test, then on the average of all previously run FM tests. If the FM falls outside this limit, the Department's Concrete Engineer must be notified. A new or adjusted mix design may be reviewed or provided.

2. For Portland cement concrete paving conforming to Section 380, the following will apply:

The fine aggregate target FM value established by the mix design will be set within the wide band limits of 2.30 to 3.10.

Fine aggregate will maintain all single FM tests within the wide band limit (2.30 to 3.10).

Additionally, fine aggregate will maintain a FM within ±0.20 (narrow band) from the target FM value. For determining the FM variation from the target FM value, the average of the 5 most recent FM tests will be used. Until 5 FM tests have been made; base the variation on the first FM test, then on the average of all previously run FM tests. If the FM falls outside this limit, the Department's Concrete Engineer must be notified. A new or adjusted mix design may be reviewed or provided.

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

Coarse aggregate for all other PCC pavements will 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 will 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 will have a minimum of 2 crushed faces as defined under SD 211.

Section 860.1 – Page 538 – Delete the 1st paragraph and replace with the following:

Preformed expansion joint filler for concrete will conform to the requirements of AASHTO M 213, AASHTO M 153, AASHTO M 33, ASTM D7174, or ASTM D8139.

Section 871 – Page 541 – Delete and replace with the following:

871 ASPHALT CONCRETE CRACK SEALANT

A. Asphalt Concrete Crack Sealant Type IV:

The sealant will conform to the requirements of ASTM D6690 Type IV.

The sealant material will not weigh more than 9.35 pounds per gallon.

Only products that meet the above requirements and have performed satisfactorily based on Department analysis may be used. A listing of acceptable products meeting ASTM D6690 Type IV requirements may be obtained from the Department's Approved Products List. Products on the Department's Approved Products List for joint sealant for asphalt over long jointed concrete pavement may also be used.

The blocking medium will be an inert, compressible material which is compatible with the sealant.

B. Asphalt Concrete Crack Sealant Type IV Modified:

The sealant will conform to the requirements of ASTM D6690 Type IV except as modified below.

The sealant material will not weigh more than 9.75 pounds per gallon.

Resilience % will be between 30 – 60%.

Only products that meet the above requirements and have performed satisfactorily based on Department analysis may be used. A listing of acceptable products meeting ASTM D6690 Type IV Modified requirements may be obtained from the Department's Approved Products List. Products on the Department's Approved Products List for joint sealant for asphalt over long jointed concrete pavement may also be used.

The blocking medium will be an inert, compressible material which is compatible with the sealant.

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

Section 890.2 E – Page 554 – Delete the table and replace with the following:

	AE150S		**AE150L**		**AE200S**		**AE300**	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
TESTS ON EMULSIONS:								
Viscosity, Saybolt Furol at 122ºF, s	35	150	35	150	35	150	35	150
Sieve test, %		0.30		0.30		0.30		0.30
Oil Portion, %	0.5	3			1	6		8
Residue by distillation, %	62		65*1		62		65	
TESTS ON RESIDUE FROM DISTILLATION TESTS								
Penetration, 77ºF, 100 g, 5s	140	225	140	225	250		300	
Ductility, 77ºF, 5 cm/min, cm	40		30		40		40	
Ash Content, %	1.0		1.0		1.0		1.0	
Float test, 140ºF, s	1200		1200		1200		1200	

Section 890.2 G – Page 554 – Delete and replace with the following:

G. Polymer Modified Emulsified Asphalt will conform to AASHTO M 316, with the following exceptions. The sieve test requirement on representative samples will be waived unless

requested by the Engineer. If requested, a maximum percentage of 0.30% is acceptable for samples taken at the point of use.

The distillation test for CRS-2P emulsion will be in accordance with AASHTO T 59, except the distillation temperature will be the temperature recommended by the emulsion manufacturer.

The Elastic Recovery test will be in accordance with AASHTO T 301, except the residue will be obtained by distillation, not oven evaporation. The distillation temperature will be as recommended by the emulsion manufacturer.

Section 950.1 B – Page 560 – Delete and replace with the following:

B. Preservative Selection

1. Sawn posts, round posts, poles, and lumber in contact with the ground will be treated with preservatives meeting the requirements of AASHTO M133 or AWPA Standard U1;
Commodity Specification A: Sawn Products – use category UC4A
Commodity Specification B: Posts – use category UC4A
Commodity Specification D: Poles – use category UC4A, UC4B, or UC4C

2. Lumber not in contact with the ground will be treated with preservatives meeting the requirements of AWPA Standard U1 Commodity Specification A: Sawn Products – use category UC3B at a minimum.

3. Round timber piling will be treated with preservatives meeting the requirements of AWPA Standard U1 Commodity Specification E: Round Timber Piling – use category UC4C.

Section 970.4 – Page 563 – Add the following to this section:

Galvanizing repair will be in accordance with ASTM A780.

Section 972.2 A – Page 564 – Delete the last paragraph and replace with the following:

The Contractor will provide all mechanical and chemical test data as specified in ASTM A563 and ASTM A194.

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

Bolts will conform to ASTM F3125 Grade A325. The high-strength bolts will 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 will conform to ASTM F3125 Grade A325. When Grade A325 Type 3 bolts are specified, the bolts along with nuts and washers will 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 2nd sentence of the 1st paragraph and replace with the following:

Other materials may be submitted for review providing the following information is submitted:

Section 972.2 C – Page 566 – Delete the 2nd sentence of the 1st full paragraph on page 567 and replace with the following:

Details for any mechanical end anchorage will be included in the shop plans submittal.

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

Swaged anchor bolts and anchor rods are not allowed. Anchor bolts and anchor rods with hooked end anchorage are only allowed for use in anchoring pedestrian push button poles, traffic signal cabinets, and battery backup cabinets.

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 will 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 will 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 will 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 will satisfy supplemental requirement S4 and will be tested to +40ºF and -20ºF 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:

High build waterborne paint will meet the requirements of Section 980.1 B except high build waterborne paint applied after October 15 will be formulated as cold-weather waterborne paint. Cold weather waterborne paint will meet the requirements of Section 980.1 C.

Section 980.1 – Page 569 – Add the following to this section:

The manufacturer will submit a "Certificate of Compliance" for each batch of paint produced for use under this specification. The certification will 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.

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

A. Waterborne Paint: The paint will use 100% acrylic polymer such as Dow FASTRACK™ 3427, Arkema DT 250, or an approved equal.

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

	WHITE	YELLOW
Lead, parts per million, max ASTM D3335 or X-ray fluorescence	100	100
Pigment, percent by weight Tested in accordance with ASTM D3723	60.0 - 62.5	56.1 - 58.6
Titanium Dioxide, pounds/gallon, min ASTM D 476 Type II-IV Rutile 92% min. TiO_2 tested in accordance with ASTM D1394 or ASTM D4764	1.00	0.20
Total Solids, percent by weight, min Tested in accordance with ASTM D2369	77.0	76.1
Non-volatile Vehicle, percent by weight, min Tested in accordance with NIST 141C (Method 4051.1)	42.5	42.5
Consistency (Viscosity), KU Krebs-Stormer, equivalent units, shearing rate 200 rpm. When tested in accordance with ASTM D562, the consistency of the paint will be within the stated specification when determined a minimum 48 hours after packaging the material.	80 to 95	80 to 95

Weight per Gallon, pounds, min
Tested in accordance with ASTM D1475. In addition to compliance with the minimum, the weight per gallon will not vary more than ± 0.3 pounds/gallon between batches.

Dow FASTRACK™ 3427	13.85	13.30
Arkema DT 250	13.75	13.20

Fineness of Dispersion, Hegman Scale, min 2 2
Tested in accordance with ASTM D1210 "B" Cleanliness"

Drying Time, No Pick-Up, minutes, max 12 12
Tested in accordance with ASTM D711, except the wet film thickness will be 12.5 ± 0.5 mils.

Drying Time, Dry-through, minutes, max 120 max. 120 max.
Tested in accordance with ASTM D1640, except the wet film thickness will be 12.5 ± 0.5 mils. A reference control paint will be run in conjunction with the candidate paint. Dow FASTRACK™ 3427 formulation will be the referenced-control paint. If either the candidate or reference-control paint exceeds the 120 minute maximum, then the candidate paint will not exceed the dry time of the reference-control paint by more than 15 minutes.

Directional Reflectance, min 85 50
When applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E1347 using the 45/0 illumination.

pH, min 9.6 9.6
Tested in accordance with ASTM E70

Dry Opacity, Contrast ratio, min 0.95 0.88
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, max 115 115
Tested in accordance with ASTM D3960

Color: The paint will 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 will not discolor in sunlight and will maintain the colors and luminance factors throughout the life of the paint.

Table 1*[1]

Color	Chromaticity Coordinates (corner points)								Min. Luminance Factor (Y %)
	1		2		3		4		
	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.

2. Qualitative Requirements: The finished paint will 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 will not show excessive settling in a freshly-opened full can and will be easily redispersed with a paddle to a smooth homogeneous state. The paint will show no undesirable characteristics to include curdling, livering, caking, gelling, or thixotropic properties, lumps, skins, or color separation. The consistency will not change more than 5 Kreb Units from that of the original sample, the degree of settling will have a rating of 6 or better per ASTM D869, and the drying time will be as specified.

Skinning. The paint will 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 will 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 80ºF in a horizontal position for 18 hours, then bake in an oven at 122 ± 4ºF 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 will 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 80ºF 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 80ºF) 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 will 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 will have satisfactory spraying and hiding properties when applied by either airless or air-assisted type traffic stripers to glass or metal plates at a wet film thickness of 0.015 inches.

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

Freeze-Thaw Stability. The paint will 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 will 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 will 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. High Build Waterborne Paint: The paint will be a durable high build, low VOC, fast drying, waterborne traffic paint using 100% acrylic polymer Dow FASTRACK™ HD-21A or an approved equal.

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

	WHITE	**YELLOW**
Lead, parts per million, max ASTM D3335 or X-ray fluorescence	100	100
Pigment, percent by weight Tested in accordance with ASTM D3723	60.0 - 62.0	58.0 - 62.0
Titanium Dioxide, pounds/gallon, min ASTM D476 Type II-IV Rutile 92% min. TiO_2 tested in accordance with ASTM D1394 or ASTM D4764	1.00	0.20
Total Solids, percent by weight, min Tested in accordance with ASTM D2369	77.0	76.0
Non-volatile Vehicle, percent by weight, min Tested in accordance with NIST 141C (Method 4051.1)	42.5	42.5
Consistency (Viscosity), KU Krebs-Stormer, equivalent units, shearing rate 200 rpm. When tested in accordance with ASTM D562, the consistency of the paint will be within the stated specification when determined a minimum 48 hours after packaging the material.	80 to 95	80 to 95
Weight per Gallon, pounds, min Tested in accordance with ASTM D1475. In addition to compliance with the minimum, the weight per gallon will not vary more than ± 0.3 pounds/gallon between batches.	13.50	13.00

Fineness of Dispersion, Hegman Scale, min 2 2
Tested in accordance with ASTM D1210 “B” cleanliness

Drying Time, No Pick-Up, minutes, max 12 12
Tested in accordance with ASTM D711, except the wet film thickness will be 12.5 ± 0.5 mils.

Drying Time, Dry-through, minutes, max 120 120
Tested in accordance with ASTM D1640, except the wet film thickness will be 12.5 ± 0.5 mils. A reference control paint will be run in conjunction with the candidate paint. Dow FASTRACK™ HD-21A formulation will be the referenced-control paint. If either the candidate or reference-control paint exceeds the 120 minute maximum, then the candidate paint will not exceed the dry time of the reference-control paint by more than 15 minutes.

Directional Reflectance, min 85 50
When applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E1347 using the 45/0 illumination.

pH, min 9.6 9.6
Tested in accordance with ASTM E70

Dry Opacity, Contrast ratio, min 0.95 0.88
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, max 115 115
Tested in accordance with ASTM D3960

Color: The paint will 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 will not discolor in sunlight and will maintain the colors and luminance factors throughout the life of the paint.

Table 1*[1]

Color	Chromaticity Coordinates (corner points)								Min. Luminance Factor (Y %)
	1		2		3		4		
	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.

2. **Qualitative Requirements:** The finished paint will 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 will not show excessive settling in a freshly-opened full can and will be easily redispersed with a paddle to a smooth homogeneous state. The paint will show no undesirable characteristics to include curdling, livering, caking, gelling, or thixotropic properties, lumps, skins, or color separation. The consistency will not change more than 5 Kreb Units from that of the original sample, the degree of settling will have a rating of 6 or better per ASTM D869, and the drying time will be as specified.

Skinning. The paint will 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 will 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 80ºF in a horizontal position for 18 hours, then bake in an oven at 122 ± 4ºF 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 will 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 80ºF 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 80ºF) 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 will 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 will have satisfactory spraying and hiding properties when applied by either airless or air-assisted type traffic stripers to glass or metal plates at a wet film thickness of 0.015 inches.

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

Freeze-Thaw Stability. The paint will 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 will 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 will be required for removal of the paint film when tested in accordance with Federal Specification TT-P-1952 F 4.3.7.

C. Cold Weather Waterborne Paint: The paint will use Dow FASTRACK™ 5408, Dow FASTRACK™ XSR™ resin binder, or an approved equal.

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

	WHITE	**YELLOW**
Lead, parts per million, max ASTM D3335 or X-ray fluorescence	100	100
Pigment, percent by weight Tested in accordance with ASTM D3723	58.0 – 62.5	56.1 – 62.5
Titanium Dioxide, pounds/gallon, min ASTM D476 Type II-IV Rutile 92% min. TiO_2 tested in accordance with ASTM D1394 or ASTM D4764	1.00	0.20
Total Solids, percent by weight, min Tested in accordance with ASTM D2369	75.0	75.0
Non-volatile Vehicle, percent by weight, min Tested in accordance with NIST 141C (Method 4051.1)	41.5	41.5
Consistency (Viscosity), KU Krebs-Stormer, equivalent units, shearing rate 200 rpm. When tested in accordance with ASTM D562, the consistency of the paint will be within the stated specification when determined a minimum 48 hours after packaging the material.	75 to 95	75 to 95
Weight per Gallon, pounds, min Tested in accordance with ASTM D1475. In addition to compliance with the minimum, the weight per gallon will not vary more than ± 0.3 pounds/gallon between batches.		
Dow FASTRACK™ XSR	13.00	13.00
Dow FASTRACK™ 5408	13.00	13.00
Fineness of Dispersion, Hegman Scale, min Tested in accordance with ASTM D1210 “B” Cleanliness	2	2
Drying Time, No Pick-Up, minutes, max Tested in accordance with ASTM D711, except the wet film thickness will be 12.5 ± 0.5 mils.	12	12
Directional Reflectance, min When applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E1347 using the 45/0 illumination	85	NA
pH, min Tested in accordance with ASTM E70	9.6	9.6
Dry Opacity, Contrast ratio, min	0.95	0.88

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, max 150 150
Tested in accordance with ASTM D3960

Color: The paint will 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 will not discolor in sunlight and will maintain the colors and luminance factors throughout the life of the paint.

Table 1*[1]

Color	Chromaticity Coordinates (corner points)								Min. Luminance Factor (Y %)
	1		2		3		4		
	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.

2. **Qualitative Requirements:** The finished paint will 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 will not show excessive settling in a freshly-opened full can and will be easily redispersed with a paddle to a smooth homogeneous state. The paint will show no undesirable characteristics to include curdling, livering, caking, gelling, or thixotropic properties, lumps, skins, or color separation. The consistency will not change more than 5 Kreb Units from that of the original sample, the degree of settling will have a rating of 6 or better per ASTM D869, and the drying time will be as specified.

Skinning. The paint will 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 will 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 80ºF in a horizontal position for 18 hours, then bake in an oven at 122 ± 4ºF 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 will 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 80ºF 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 80ºF) 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 will 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 will have satisfactory spraying and hiding properties when applied by either airless or air-assisted type traffic stripers to glass or metal plates at a wet film thickness of 0.015 inches.

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

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

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

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

Section 982.2 A.5 – Page 575 – Delete this section

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, will conform to Section 972.

Section 982.2 E.1 – Page 576 – Delete the 1st sentence of the 1st full paragraph on page 577 and replace with the following:

Details for any proposed vibration mitigation devices must be submitted with the shop plans for review by the Department prior to fabrication.

Section 982.2 E.3 – Page 577 – Delete the 1st paragraph and replace with the following:

Shop Plans: Plans and design calculations for the sign support structure (including anchor bolts or anchor rods) will be prepared by a Professional Engineer registered in the State of South

Dakota. Prior to fabrication, the Contractor will submit shop plans and design calculations to the Department for the Department's opportunity for review. Any review by the Department of the shop plans and design calculations is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans and design calculations attached as a PDF to the Project Engineer, Region Traffic Engineer, and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 28 calendar days of receiving the shop plans and design calculations, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans and design calculations for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

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

2. **Anchor Bolts and Anchor Rods:** Anchor bolts and anchor rods will 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 will 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 will 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, will be fluorescent yellow. Warning signs for bicycle and shared use path facilities will be fluorescent yellow-green. All pedestrian and school signs will be fluorescent yellow-green.

Section 982.2 J.2 – Page 582 – Delete the 1st sentence and replace with the following:

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

Section 982.2 J.6 – Page 583 – Delete the 5th sentence of the 2nd paragraph and replace with the following:

The post will be punched or bored with 3/8 inch diameter holes on 1.0 inch centers beginning 1.0 inch from the top of the post.

Section 982.2 K.2 – Page 583 – Delete the 1st sentence and replace with the following:

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

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

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades will be reflectorized with sheeting applied to a satisfactory backing. All fluorescent orange background material on traffic control signs, all temporary delineators, and all temporary STOP (R1-1), YIELD (R1-2), DO NOT ENTER (R5-1), and WRONG WAY (R5-1a) signs will conform to the requirements of ASTM D4956 Type IX or XI. All other traffic control signs and background colors will conform to the requirements of ASTM D4956 Type IV. For barricades, vertical panels, and direction indicator barricades; the reflective sheeting will 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 will be reflectorized with reflectorized sheeting meeting or exceeding the standards of Type IV as defined by ASTM D4956. All orange colored material will be fluorescent.

Section 984.3 B. – Page 587 – Add the following to this section:

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

Section 985.1 – Page 590 – Delete the 1st paragraph and replace with the following:

Prior to fabrication, the Contractor will submit shop plans or catalog cuts for all signal equipment and luminaires to the Department for the Department's opportunity for review. Any review by the Department of the shop plans or catalog cuts is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans or catalog cuts attached as a PDF to the Project Engineer and Office of Road Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans or catalog cuts, the Office of Road Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans or catalog cuts for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans or catalog cuts until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

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

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

Section 985.1 E – Page 591 – Delete replace with the following:

E. Bolts: All bolts, anchor bolts, anchor rods, nuts, and washers will conform to Section 972.

Section 985.1 I.3 – Page 594 – Delete the 1st paragraph and replace with the following:

Shop Plans: Plans and design calculations for the traffic signal poles (including anchor bolts or anchor rods) will be prepared by a Professional Engineer registered in the State of South Dakota. Prior to fabrication, the Contractor will submit shop plans or catalog cuts and the design calculations for traffic signal poles to the Department for the Department's opportunity for review. Any review by the Department of the shop plans or catalog cuts and the design calculations is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans or catalog cuts and design calculations attached as a PDF to the Project Engineer and Office of Road Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans or catalog cuts and design calculations, the Office of Road Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans or catalog cuts and design calculations for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans or catalog cuts until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

Section 985.1 J.3 – Page 595 – Delete the 1st paragraph and replace with the following:

Shop Plans: Plans and design calculations for the roadway luminaire poles (including anchor bolts or anchor rods) will be prepared by a Professional Engineer registered in the State of South Dakota. Prior to fabrication, the Contractor will submit shop plans or catalog cuts and the design calculations for roadway luminaire poles to the Department for the Department's opportunity for review. Any review by the Department of the shop plans or catalog cuts and the design calculations is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans or catalog cuts and design calculations attached as a PDF to the Project Engineer and Office of Road Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans or catalog cuts and design calculations, the Office of Road Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans or catalog cuts and design calculations for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans or catalog cuts until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

Section 985.1 L.4 – Page 599 – Delete the 1st paragraph and replace with the following:

Shop Plans: Plans and design calculations for the light towers (including anchor bolts or anchor rods) will be prepared by a Professional Engineer registered in the State of South Dakota. Prior to fabrication, the Contractor will submit shop plans or catalog cuts and the design calculations for the light towers to the Department for the Department's opportunity for review. Any review by the Department of the shop plans or catalog cuts and the design calculations is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the shop plans or catalog cuts and design calculations attached as a PDF to the Project Engineer and Office of Road Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the shop plans

or catalog cuts and design calculations, the Office of Road Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted; 2) Returned for Revision; or 3) Not Required for Review. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the shop plans or catalog cuts and design calculations for review as specified above. The Contractor will not begin fabrication or construction of the work contained in the shop plans or catalog cuts until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted" or "Not Required for Review".

Section 985.1 M – Page 599 – Delete replace with the following:

M. Photoelectric Control Requirements: Photoelectric controls will be one of the photoelectric controls listed on the Department's Approved Products List or an approved equal.

Section 985.1 Q.1 – Page 603 – Delete the 1st sentence and replace with the following:

Feeder wires from loop leads to detector units will be twisted shielded pairs conforming to International Municipal Signal Association (IMSA) 50-2, #16 AWG minimum size.

Section 985.1 Q.2.c – Page 603 – Delete replace with the following:

c. Loop Sealants: Loop sealants will be one of the products listed on the Department's Approved Products List or an approved equal.

Section 985.1 R.10 – Page 604 – Delete and replace with the following:

10. Backplates for Signal Heads: Signal backplates will be 0.06 inch thick aluminum, 0.08 inch thick aluminum composite, or 0.1 inch thick polycarbonate. Polycarbonate backplates will consist of no more than two pieces. Signal heads will have backplates with retroreflective border. The vehicle signal head backplates will have a factory applied 3-inch wide yellow retroreflective border. Sheeting for the border will be Type XI or Type IX in conformance with ASTM D4956. Signal backplates will extend not less than 5 inches from the edge of the signal head at the top, bottom, and sides. The bottom of the backplate on vehicle signal faces mounted directly above pedestrian signal indications will be sized to permit the separate adjustment of the vehicle and pedestrian signal indication and may be less than 4 inches.

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

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

Section 1010.1 A – Page 608 – Add the following to this section:

When stainless steel deformed reinforcing bars are specified in the plans, the stainless steel deformed reinforcing bars will conform to the requirements of ASTM A955.

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

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

Section 1010.1 E – Page 608 – Add the following to the beginning of the 1st paragraph:

Epoxy coatings will be applied by a plant certified by the Concrete Reinforcing Steel Institute (CRSI).

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