Mr. Walker
Date: 02/17/11

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: For the past 4 years, the 725 specification section in the book has been superseded with RSP 725-R-541.

PROPOSED SOLUTION: Incorporate the modified 725-R-541 provision into the SS book to replace the existing 725 section

APPLICABLE STANDARD SPECIFICATIONS: 725, 907.25, 912.05

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION:

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS: delete 725-R-541

PAY ITEMS AFFECTED: Delete the option to specify pipe liner for payment by the diameter.

Submitted By: Ron Walker

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Organization: INDOT

Phone Number: 610-7251

Date: January 25, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee consisting of: Kenny Anderson, Merril Dougherty, Jim Reilman, John Wright. Industry representatives that attend the Pipe Committee meetings have submitted comments on the 725 section. These comments have been reviewed and considered for inclusion into this proposal.

REVISION TO STANDARD SPECIFICATIONS

SECTION 725 – SLIP LINING OF EXISTING PIPE

(Proposed changes shown: deletion - strikethrough and addition - underlined.)

The Standard Specifications are revised as follows:

SECTION 725, DELETE LINES 1 THROUGH 172.

SECTION 725, AFTER LINE 173 INSERT AS FOLLOWS:

SECTION 725 – SLIP LINING OF EXISTING PIPE

725.01 Description

This work shall include installing a thermoplastic liner pipe into an existing pipe and filling the space between the liner pipe and the existing pipe with cellular concrete grout all in accordance with 105.03. Existing circular pipe structures shall be lined with solid wall high density polyethylene, HDPE, liner pipe; profile wall HDPE liner pipe; or profile wall polyvinyl chloride, PVC, liner pipe. Existing deformed pipe structures shall be lined with solid wall HDPE liner pipe.

MATERIALS

725.02 Materials

Materials shall be in accordance with the following.:

Admixture	***
Cellular Concrete Grout	*ASTM C 796*
Cement, Type I or Type III	*901.01(b)*
Concrete, A	*702*
*Fine Aggregate***	*904*
Flowable Backfill	*213*
Foaming ~~Concentrate~~Agent	*~~ASTM C869~~912.05*
Profile Wall HDPE Liner Pipe ~~Liner~~	*907.25(b)*
Profile Wall PVC Liner Pipe ~~Liner~~	*907.25(c)*
Solid Wall HDPE Liner Pipe ~~Liner~~	*907.25(a)*
Water	*913.01*

** An admixture may be used as recommended by and in accordance with the foaming agent manufacturer's specifications.*

*** The supplier may elect to use gradations in accordance with 904.02(h) or may propose the use of alternate gradations.*

~~*Individual liner section lengths shall be a minimum of 19 ft (5.8 m), but shall not exceed 55 ft (16.7 m) unless approved.*~~ *The maximum number of joints and corresponding maximum length of each section of liner pipe used in each pipe structure to be lined shall be as shown on the plans. If the Contractor has obtained the necessary right-of-entry from all affected property owners, the Department will consider a written request by the Contractor to use liner pipe sections which exceed the maximum length shown on the plans. A corresponding reduction in the maximum allowable number of joints shall be included with the written proposal. The Contractor shall not install longer sections of liner pipe until written approval has been received from the Engineer. The* ~~*pipe*~~ *liner pipe shall* ~~*either*~~ *be chosen from those shown on the Department's list of approved Thermoplastic Liner Pipe* ~~*Liners or shall be covered by a Type A certification in accordance with 916.*~~

~~*If the pipe liner is not on the Department's list of approved Thermoplastic Pipe Liners, then the Type A certification must be furnished and t*~~*The* ~~*pipe*~~ *liner pipe must be approved by the Engineer prior to installation.*

Proper care shall be taken to ensure that no damage is done to the liner pipe during the unloading process. All liner pipes shall be unloaded with straps and lifting equipment.

Liner pipe joints shall be bell and spigot, screw type, grooved press-on, butt fused, ~~*thermal*~~*extrusion welded, or other joint as recommended by the* ~~*pipe*~~ *liner pipe manufacturer and shall be installed according to the manufacturer's recommended methods.*

CONSTRUCTION REQUIREMENTS

Where an oval HDPE liner pipe is specified, the liner pipe shall be made oval by using equipment specifically designed to take a round pipe and make it oval. The equipment and method used to make the pipe oval shall be described in the QCP. Once the pipe is made oval, it shall be structurally reinforced in both the horizontal and vertical planes. The structural reinforcement shall be spaced at a distance not to exceed 3 ft (0.9 m). The structural reinforcement shall not be removed until the installation of the liner pipe and cellular grout has been completed.

725.03 Joining Liner Pipe

Each liner pipe joint shall be welded, fused, or joined according to the manufacturer's recommended methods. ~~*If a*~~*Welded liner pipe joints* ~~*is welded, it*~~ *shall be welded with a continuous weld for the circumference of the liner pipe both inside and outside. Welded liner pipe joints shall have weld beads that are smooth and flush with the inside of the liner pipe and shall not reduce the hydraulic capacity of the liner pipe. The ends of* ~~*pipe*~~ *liner*~~*s*~~ *pipe that are to be welded or butt fused shall be at the same* ~~*ambient*~~ *temperature ±5º F (±3º C).*

A visual inspection will be conducted for acceptance of all liner pipe joined by methods other than by welding or fusing joints. All joints that do not pass visual inspection shall be removed, shall have a new joint fabricated, and will be re-inspected.

All liner pipe joints shall have sufficient mechanical strength to withstand the liner pipe installation and cellular concrete grouting operations.

(a) Welder, Butt Fuser, or Joiner Joint Testing

Welding, butt fusing, or joining shall be performed at all times by an ~~installer~~operator trained and certified by either the manufacturer of the ~~pipe~~ liner~~'s~~ pipe ~~manufacturer~~ or the manufacturer of the welding, butt fusing, or joining equipment ~~manufacturer~~. A copy of the ~~welder's, fuser's, or joiner~~operator's certificate~~ion~~ shall be provided to the Engineer prior to the start of work. ~~Destructive testing shall be done on a test section of pipe liner of the same size and material as the liner being installed. The method and frequency of destructive and non-destructive testing shall be as directed by the Engineer. The results of the destructive testing shall be provided on a Type A certification in accordance with 916.~~ Prior to fabricating a production joint on a liner pipe, each operator who is performing welding, butt fusing, or joining, shall demonstrate that they can produce a joint that will withstand a destructive test prior to being allowed to join liner pipe. This test shall be repeated as many times as necessary in order to produce a joint that will pass the destructive test. One passing joint test is required per operator per contract. The method of joint testing shall be in accordance with section (b) or (c) below.

~~*All joints shall have sufficient mechanical strength to withstand the liner pipe installation and grouting operations. Joints shall not reduce the hydraulic capacity of the liner.*~~

(b) Solid Wall HDPE Liner Pipe

Solid Wall HDPE liner pipe joined using butt fusion shall be in accordance with ASTM F 2620.

Solid wall HDPE liner pipe that is to have butt fused or extrusion welded joints shall have destructive testing performed on a test section of liner pipe of the same size and material as the liner pipe being installed. The Contractor shall propose and describe in the QCP a destructive test, such as but not limited to a bend strap test, to demonstrate that an operator can produce a butt fusion or extrusion welded joint that will not fail. Once a butt fused joint or extrusion welded joint is produced on a test section that passes the destructive test, each subsequent joint fabricated that same day by that operator will be visually inspected for acceptance. A destructive test in accordance with the approved QCP shall be conducted on the test section at the beginning of each day that solid wall HDPE liner pipe joining is being done.

(c) Profile Wall HDPE Liner Pipe

Profile Wall HDPE liner pipe joined using extrusion welding shall be in accordance with ASTM F 894. The Contractor shall propose and describe in the QCP a destructive test, such as but not limited to a bend strap test, to demonstrate that an operator can produce an extrusion welded joint that will not fail. Destructive testing shall be performed on 2 flat pieces of HDPE sheet stock that has been butt welded together to verify the extrusion gun is working properly and that the operator can produce an extrusion welded joint that will not fail. Once an extrusion welded joint is produced on a test section that passes the destructive test, each subsequent joint fabricated that same day by that operator will be visually inspected for acceptance. A destructive

test in accordance with the approved QCP shall be conducted on the test section at the beginning of each day that profile wall HDPE liner pipe joining is being done.

725.04 Cellular Concrete Grout

The cellular concrete grout shall be designed in accordance with ASTM C 796 except as herein modified.

The admixtures, retarders, and plasticizers used in the grout shall be in accordance with the foam concentrate supplier's specifications.

The grout shall be made using the preformed foam process using foam generating equipment calibrated daily by the foam manufacturer to produce a precise and predictable volume of foam. The foam concentrate shall be certified by the manufacturer to have specific liquid/foam expansion ratio at a constant dilution ratio with water.

The specific job mix shall be submitted to the Engineer by either the foam concentrate supplier or the certified or licensed grouting contractor for approval prior to use on the contract. The mix shall have a minimum 28-day compressive strength of 150 psi (1040 kPa). The mix shall be tested by a laboratory approved by the Department or shall be approved based on prior acceptable performance on Department contracts.

The cellular concrete grout pump gauges shall be calibrated a minimum of once per month in the presence of the Engineer by the method described in the QCP.

Grout mixed off site shall be delivered to the job site in a truck mixer in accordance with 702.09 filled to half its capacity. The foaming ~~concentrate~~agent shall then be added to the cement mix in the truck and mixed to a uniform consistency.

Grout mixed on site shall be batched in a deck mate or similar device. Small batches of approximately 1 ~~cubic yard~~cu yd (1 ~~cubic meter~~m^3) shall be mixed and pumped in a continuous operation.

For each day worked or for each 100 ~~cubic yards~~ cu yd (100 ~~cubic meters~~ m^3) placed, ~~four~~4 test cylinders measuring 3 in. by 6 in. (75 mm by 150 mm) shall be cast at the point of placement of the grout. Sampling, molding, curing, and compressive strength testing of the cylinders shall be in accordance with ASTM C 495, except as modified herein.

Initial curing shall be at a temperature of 70° ± 10°F (21.1° ± 5.5°C) and shall be from 2 to 5 days. After the initial curing, the test specimens shall be placed in a moist closet or moist room or stored in an enclosed curing tank above the water level. All specimens shall be kept in their molds in the moist storage for the remainder of the curing period. The specimens shall be tested at 28 days. At that time the specimens shall be prepared for testing in accordance with ASTM C 495 except the bearing surface may be ground or cut with a dry saw to meet surface tolerance. The specimens shall not be capped. Specimens shall be tested in compression as rapidly as possible to minimize drying. If more than ~~one~~1 specimen is removed from the moist

storage at the same time, these specimens shall be covered with a damp cloth until time of testing. The Contractor shall provide a Type A certification ~~with~~ in accordance with 916 that provides the compressive strength results ~~in accordance with 916~~.

~~*Existing circular pipe structures shall be lined with solid wall high density polyethylene, HDPE, pipe liner; profile wall HDPE pipe liner; or profile wall polyvinyl chloride, PVC, pipe liner. Existing deformed pipe structures shall be lined with solid wall HDPE pipe liner.*~~

~~*CONSTRUCTION REQUIREMENTS*~~

725.~~03~~05 ~~Construction Requirements~~ Right-of-Entry Areas

~~*(a) Right-of-Entry Areas*~~

If the ~~right-of-way does not provide sufficient room for performance of the work,~~Contractor desires more working room than the right-of-way provides, the Contractor may elect to pursue rights-of-entry from all necessary adjacent property owners ~~shall be obtained by the Contractor~~ in accordance with 107.14. A temporary fence shall be installed as required to prevent encroachment of the public or livestock into the work area. Upon completion of the work, disturbed areas on private property shall be restored in accordance with 107.14.

~~*(a.1)*~~*725.06 Quality Control ~~and Quality Assurance~~*

A QCP shall be submitted in accordance with ITM 803. No work on the pipe lining operation shall begin until written notice has been received that the QCP has been accepted by the Engineer. Acceptance of the QCP in no way relieves the Contractor of the responsibility for installation procedures and testing requirements.

~~*A signed and dated QCP shall be prepared and submitted to the Engineer for acceptance at least 15 days prior to the start of slip lining the pipe. No work may begin until written notice has been received that the QCP has been accepted by the Engineer. Acceptance of the QCP will in no way relieve the Contractor of responsibility for installation procedures and testing requirements. The QCP shall include, as a minimum, identification of the QC representative by name and documentation verifying the QC representative's experience; the Contractor's method for cleaning and preparation of the existing pipe; method for joining, welding, or fusing the pipe joints; the personnel and certification of the personnel who will be welding or fusing the pipe liners; the method and frequency of destructive and non-destructive testing on the welded or fused joints; the initial testing of the first joining, welding, or fusing at each pipe liner installation location; the corrective action that will be taken if defective or non-passing joints are found; the grouting process including the daily calibration process procedures for the foam generating equipment; the inspection of bulkheads; the specific job mix of the foam concentrate; the grouting procedure and grouting process to ensure complete filling of voids; the corrective action to be taken if the foam compressive strength does not meet specifications; and the plan if the installation of the foam causes damage or deflection to the pipe liner.*~~

~~*(a.2) Quality Control (QC) Representative on Site*~~

REVISION TO STANDARD SPECIFICATIONS

SECTION 725 – SLIP LINING OF EXISTING PIPE (CONTINUED)

~~*The QC representative shall either be a manufacturer's representative or a Professional Engineer with experience inspecting slip lining of pipes. A*~~*The QC representative shall be present at the jobsite* ~~*at the following milestones:*~~*for the initial testing of the first welding or fusing at each liner pipe installation location and for the joining, welding, or fusing of the liner pipe at each location.*

- ~~*Cleaning and preparation of the existing pipe,*~~
- ~~*Initial testing of the first welding or fusing at each pipe liner installation location,*~~
- ~~*Joining, welding, or fusing of the pipe liner,*~~
- ~~*Inspection of bulkheads,*~~
- ~~*Grouting procedure and process to ensure 100% filling of voids,*~~
- ~~*Project clean-up.*~~

~~*The Contractor shall provide a minimum of 24 hours notice to the QC person prior to performing any of the above milestones. The QC person does not supersede the responsibility of the Contractor.*~~

(b)725.07 Filling of Cavities Outside the Existing Pipe

All obvious cavities outside the existing pipe shall be filled with non-removable flowable backfill in accordance with 213 prior to the liner pipe installation or with cellular concrete grout placed in conjunction with the grouting operation after the liner pipe is installed.

(c)725.08 Liner Pipe Installation

Prior to commencing the liner pipe installation, all jagged existing pipe edges or other deformities shall be repaired. All debris and foreign material shall be removed from the existing pipe. A visual walk-through inspection shall be performed after all debris and foreign material has been removed from the existing pipe in order to assess the current condition of the pipe. If visual inspection is not possible, a video inspection of the existing pipe shall be performed. A copy of the video inspection shall be provided to the Engineer. If, upon completion of the inspection of the existing pipe, the Contractor believes that they cannot proceed with the work as shown on the plans, the Engineer shall be notified.

~~*The inside diameter of the liner shall be in accordance with the following:*~~*The cross-sectional area of the liner pipe shall be as shown on the plans.*

~~*EXISTING CIRCULAR CMP STRUCTURES*~~	
~~*PAY ITEM DIAMETER in. (mm)*~~	~~*MINIMUM LINER INSIDE DIAMETER in. (mm)*~~
~~*12 (300)*~~	~~*10.0 (250)*~~
~~*15 (375)*~~	~~*11.7 (290)*~~
~~*18 (450)*~~	~~*14.3 (355)*~~
~~*21 (525)*~~	~~*16.8 (420)*~~
~~*24 (600)*~~	~~*18.5 (460)*~~

REVISION TO STANDARD SPECIFICATIONS

SECTION 725 – SLIP LINING OF EXISTING PIPE (CONTINUED)

~~27 (675)~~	~~20.7 (515)~~
~~30 (750)~~	~~23.5 (585)~~
~~33 (825)~~	~~26.1 (650)~~
~~36 (900)~~	~~29.5 (735)~~
~~42 (1050)~~	~~33.6 (840)~~
~~48 (1200)~~	~~39.2 (980)~~
~~54 (1350)~~	~~42.0 (1050)~~
~~60 (1500)~~	~~48.0 (1200)~~
~~66 (1650)~~	~~51.6 (1350)~~
~~72 (1800)~~	~~59.1 (1475)~~
~~78 (1950)~~	~~60.0 (1500)~~
~~84 (2100)~~	~~66.0 (1650)~~
~~90 (2250)~~	~~72.0 (1800)~~
~~96 (2400)~~	~~78.0 (1950)~~
~~102 (2550)~~	~~78.0 (1950)~~
~~108 (2700)~~	~~84.0 (2100)~~
~~114 (2850)~~	~~90.0 (2250)~~
~~120 (3000)~~	~~96.0 (2400)~~
~~126 (3150)~~	~~96.0 (2400)~~
~~132 (3300)~~	~~108.0 (2700)~~
~~138 (3450)~~	~~108.0 (2700)~~
~~144 (3600)~~	~~120.0 (3000)~~

~~*EXISTING CIRCULAR STRUCTURAL PLATE PIPE STRUCTURES*~~	
~~*PAY ITEM DIAMETER ft in. (mm)*~~	~~*MINIMUM LINER INSIDE DIAMETER in. (mm)*~~
~~5 0 (1500)~~	~~48.0 (1200)~~
~~5 6 (1655)~~	~~51.7 (1290)~~
~~6 0 (1810)~~	~~59.1 (1475)~~
~~6 6 (1965)~~	~~59.1 (1475)~~
~~7 0 (2120)~~	~~59.1 (1475)~~
~~7 6 (2275)~~	~~72.0 (1800)~~
~~8 0 (2430)~~	~~78.0 (1950)~~
~~8 6 (2585)~~	~~84.0 (2100)~~
~~9 0 (2740)~~	~~90.0 (2250)~~
~~9 6 (2895)~~	~~96.0 (2400)~~
~~10 0 (3050)~~	~~96.0 (2400)~~
~~10 6 (3205)~~	~~96.0 (2400)~~
~~11 0 (3360)~~	~~108.0 (2700)~~
~~11 6 (3515)~~	~~108.0 (2700)~~
~~12 0 (3670)~~	~~120.0 (3000)~~

EXISTING DEFORMED PIPE STRUCTURES	
PAY ITEM END AREA ft^2 (m^2)	*MINIMUM LINER INSIDE DIAMETER in. (mm)*
CORRUGATED METAL PIPE-ARCH	
2 2/3 in. x 1/2 in. (68 mm x 13 mm) Corrugations	
1.1 (0.10)	*12.0 (300)*
1.6 (0.15)	*14.9 (370)*
2.2 (0.20)	*16.8 (420)*
2.9 (0.27)	*18.5 (460)*
4.5 (0.42)	*24.0 (600)*
6.5 (0.60)	*29.5 (735)*
8.9 (0.83)	*33.6 (840)*
11.6 (1.08)	*39.2 (980)*
14.7 (1.37)	*42.0 (1050)*
18.1 (1.68)	*48.0 (1200)*
21.9 (2.03)	*51.6 (1290)*
26.0 (2.42)	*59.1 (1475)*
3 in. x 1 in. (75 mm x 25 mm) Corrugations	
15.6 (1.45)	*42.0 (1050)*
19.3 (1.79)	*48.0 (1200)*
23.2 (2.16)	*51.6 (1290)*
27.4 (2.55)	*59.1 (1475)*
32.1 (2.98)	*60.0 (1500)*
37.0 (3.44)	*66.0 (1650)*
42.4 (3.94)	*72.0 (1800)*
48.0 (4.46)	*78.0 (1950)*
59.2 (5.04)	*78.0 (1950)*
60.5 (5.62)	*84.0 (2100)*
67.4 (6.26)	*90.0 (2250)*
74.5 (6.92)	*96.0 (2400)*
STRUCTURAL PLATE STEEL PIPE-ARCH	
22 (2.0)	*48.0 (1200)*
24 (2.2)	*51.7 (1290)*
26 (2.4)	*51.7 (1290)*
28 (2.6)	*59.1 (1475)*
31 (2.9)	*59.1 (1475)*
33 (3.1)	*59.1 (1475)*
35 (3.3)	*59.1 (1475)*
38 (3.5)	*59.1 (1475)*
40 (3.7)	*59.1 (1475)*
43 (4.0)	*59.1 (1475)*
46 (4.3)	*72.0 (1800)*

~~49 (4.6)~~	~~72.0 (1800)~~
~~52 (4.8)~~	~~78.0 (1950)~~
~~55 (5.1)~~	~~84.0 (2100)~~
~~58 (5.4)~~	~~84.0 (2100)~~
~~61 (5.7)~~	~~90.0 (2250)~~
~~64 (5.9)~~	~~90.0 (2250)~~
~~67 (6.2)~~	~~96.0 (2400)~~
~~71 (6.6)~~	~~96.0 (2400)~~
~~74 (6.9)~~	~~96.0 (2400)~~
~~78 (7.2)~~	~~96.0 (2400)~~
~~81 (7.5)~~	~~96.0 (2400)~~
~~85 (7.9)~~	~~96.0 (2400)~~
~~97 (9.0)~~	~~108.0 (2700)~~
~~102 (9.5)~~	~~108.0 (2700)~~
~~105 (9.8)~~	~~108.0 (2700)~~
~~109 (10.1)~~	~~120.0 (3000)~~

Prior to commencing the liner pipe installation operation, steps shall be taken ~~by the Contractor~~ to verify that a liner pipe meeting the ~~minimum inside diameter requirements~~required cross-sectional area can be successfully placed inside the existing pipe. If it is discovered prior to installation that a liner pipe with the required ~~inside diameter~~ opening area cannot fit, the inside and outside diameters of a substitute liner pipe shall be submitted to the Engineer for approval. If this discovery is not made until after the liner pipe installation has begun, the partially installed liner pipe shall be removed. Inside and outside diameters for a substitute liner pipe shall then be submitted to the Engineer for approval.

After the liner pipe installation is complete and the liner pipe has cooled to ~~approximately~~ the temperature of the existing pipe, the liner pipe shall be cut so that each end is 8 in. (200 mm) outside the end of the existing pipe.

The cellular concrete grout within the annular space between the existing pipe and the liner pipe shall be contained by bulkheads. The bulkheads shall be constructed at each end of the structure. Each bulkhead shall be constructed of concrete of sufficient strength to withstand the pressure of the grouting operation. The bulkhead shall be free from leaks and the exterior surface shall be given a smooth trowel finish. The bulkhead shall extend from the end of the existing pipe inward a minimum depth of 18 in. (450 mm).

~~G~~Cellular concrete grout shall be injected into the annular space between the existing pipe and the liner pipe. The injection operation shall provide sufficient cellular concrete grout to fill all voids between the existing pipe and the liner pipe over the entire structure length, but shall also be performed in a manner that does not distort the liner pipe. Injection of the cellular concrete grout in lifts, use of spacers, or other safeguards shall be taken in order to keep the liner pipe in position and prevent the liner pipe from floating. The pressure developed in the

annular space between the liner pipe and the existing pipe shall not exceed the liner pipe manufacturer's recommended maximum value.

All existing culverts, storm drains, underdrain pipes, drain tile, or other pipes that are directly connected to the lined structure shall be perpetuated. GCellular concrete grout shall not leak through the liner pipe at these connections.

725.0409 Method of Measurement

TAll thermoplastic liner pipe will be measured by the linear foot (meter), for the cross-sectional area of the liner pipe, complete in place. AFor liner pipes with an inside diameter of up to 24 in. (600 mm), an allowance of 51 ft (1.50.3 m) of liner pipe will be made for the perpetuation of anall existing pipes with an inside diameter up to 24 in. (600 mm) through the liner pipe. For liner pipes with an inside diameter of 24 in. (600 mm) and greater, an allowance of 3 ft (0.9 m) of liner pipe will be made for the perpetuation of all existing pipes with an inside diameter of 24 in. (600 mm) and greater through the liner pipe.

No measurement will be made of liner pipe joints or the length of joint welding or fusing, or other incidentals necessary to join sections of liner pipe in accordance with the manufacturer's recommendations. The test section lengths of liner pipe or flat sheet stock used for destructive testing will not be measured for payment. No measurement will be made of a liner pipe meeting the required opening area that does not fit.

No measurement will be made for debris removal, filling existing voids, or trimming, cutting, jacking, or other corrective measures performed on jagged edges or other deformities of the existing pipe in order to facilitate installation of the liner pipe. No measurement will be made for visual or video inspection of the existing pipe.

No measurement will be made of the concrete used in the bulkhead.

No measurement will be made for a liner meeting the minimum inside diameter requirements that does not fit.

725.0510 Basis of Payment

The accepted quantities of pipe thermoplastic liner pipe, thermoplastic, will be paid for at the contract unit price per linear foot (meter) for the size of the existing pipe in which the liner is installedcross-sectional area of the liner pipe, complete in place. An allowance of 1 ft (0.3 m) of liner pipe will be paid for the perpetuation of all existing pipe(s) with an inside diameter up to 24 in. (600 mm) through the liner pipe. An allowance of 3 ft (0.9 m) of liner pipe will be paid for the perpetuation of all existing pipes with an inside diameter of 24 in. (600 mm) and greater through the liner pipe.Perpetuating the direct connection of an existing pipe through the liner will be paid for by means of an allowance of 5 ft (1.5 m) of liner for each such connection.

Payment will be made under:

Pay Item	***Pay Unit Symbol***

~~Pipe Liner, Thermoplastic, _____ in. (mm)~~ ..... ~~LFT (m)~~
~~diameter~~

~~Pipe~~ Liner Pipe, Thermoplastic, ____ sft (m2) ..... LFT (m)
cross-sectional area

The cost of repairing, trimming, or cutting jagged edges or deformities to existing pipe, filling cavities around the existing pipe with cellular concrete grout, acquisition and restoration of ~~required~~ right-of-entry areas, erection, maintenance, and removal of temporary fence, removing debris and foreign material from the existing pipe, visual or video inspection of the existing pipe, making a round pipe oval, supplying the concrete for and constructing the bulkheads, grouting the annular space between the existing pipe and the liner pipe, and other incidentals will not be paid separately, but shall be included in the cost of the pay items in this section.

The cost of liner pipe joints, ~~and~~ other incidentals necessary to join sections of liner pipe in accordance with the manufacturer's recommendations, and all test sections of liner pipe and test sections of HDPE sheet stock shall be included in the cost of the pay items in this section. All costs associated with having the QC representative on site shall be included in the cost of the pay items in this section.

The cost of training and certifying an ~~installer~~operator, destructive and non-destructive testing, ~~pipe~~ liner pipe, and incidentals used in destructive testing, and all costs associated with the development of an acceptable QCP shall be included in the cost of the pay items in this section.

~~All welded or fused joints that do not pass the destructive testing will be rejected. The non-compliant joint shall be removed, a new joint fabricated, and retested, all with no additional compensation.~~ Any joint that does not pass the visual inspection and needs to be re-fused, re-welded, or re-joined shall be done at no additional cost to the Department.

In situations where the condition of the existing pipe requires that a substitute liner pipe be utilized, there will be no reduction in payment for the installation of the substitute liner pipe. There will be no additional payment for the additional cellular concrete grout required to fill the larger void between the existing pipe and the smaller liner pipe.

There will be no payment for the installation or removal of any liner pipe that cannot be successfully installed due to the condition of the existing pipe. There will be no payment for a liner pipe meeting the ~~minimum inside diameter requirements~~required cross-sectional area that does not fit.

If the existing pipe or any other object not designated for removal is damaged while performing this work, it shall be considered unauthorized work and repaired or replaced in accordance with 105.11.

REVISION TO STANDARD SPECIFICATIONS

907.25 THERMOPLASTIC PIPE LINERS
907.25(a) SOLID WALL HDPE PIPE LINER
907.25(b) PROFILE WALL HDPE PIPE LINER
907.25(c) PROFILE WALL PVC PIPE LINER

(Changes shown highlighted in gray approved by the Standards Committee on January 21, 2010, March 18, 2010, and October 21, 2010 meetings.)

The Standard Specifications are revised as follows:

SECTION 907, AFTER LINE 242, DELETE AND INSERT AS FOLLOWS:

907.25 Thermoplastic *Liner* Pipe ~~Liners~~

Thermoplastic ~~pipe~~ liners ~~liner~~ *pipe* shall be high density polyethylene or polyvinyl chloride pipe with sufficient rigidity to withstand the installation operation and shall exhibit a minimum amount of distortion. The liner *pipe* shall be free from visible cracks, holes, foreign inclusions, or other defects. ~~Thermoplastic pipe liners may be added to the Department's approved list by completing the requirements of ITM 806, Procedure A.~~

(a) Solid Wall HDPE *Liner* Pipe ~~Liner~~

Solid wall HDPE *liner* pipe ~~liner~~ shall be in accordance with ASTM F 714. The maximum standard dimension ratio, SDR, for the liner *pipe* as defined in ASTM F 412 shall be 32.5. ~~The resin used in the fabrication of the liner shall have a minimum cell classification of 345464C as shown in ASTM D 3350.~~ *The resin used in the manufacture of the liner pipe shall have a minimum cell classification of 345464C in accordance with ASTM D 3350 or a minimum grade of PE4710 in accordance with ASTM F 714.* A 12 in. (300 mm) section of the liner *pipe* shall show no evidence of splitting, cracking, or breaking when compressed between parallel plates to 40% of its outside diameter within 2 to 5 min. *Thermoplastic liner pipe may be added to the Department's approved list by completing the requirements of ITM 806, Procedure Q.*

(b) Profile Wall HDPE *Liner* Pipe ~~Liner~~

Profile wall HDPE *liner* pipe ~~liner~~ shall be in accordance with ASTM F 894. The minimum liner ring stiffness constant, RSC, shall be 100. ~~The resin used in the fabrication of the liner shall have a minimum cell classification of 345434C as shown in ASTM D 3350.~~ *Thermoplastic liner pipe may be added to the Department's approved list by completing the requirements of ITM 806, Procedure A.*

(c) Profile Wall PVC *Liner* Pipe ~~Liner~~

Profile wall PVC *liner* pipe ~~liner~~ shall be in accordance with ASTM F 949~~, with the exception that PVC material with a minimum cell classification of 12454B as shown 270 in ASTM D 1784 is added to the list of acceptable PVC materials.~~ *Thermoplastic liner pipe may be added to the Department's approved list by completing the requirements of ITM 806, Procedure A.*

Item No. 01 02/17/11 (2010 SS)
Mr. Walker
Date: 02/17/11

REVISION TO STANDARD SPECIFICATIONS

912.05 FOAMING AGENT

The Standard Specifications are revised as follows:

SECTION 912, AFTER LINE 173, INSERT AS FOLLOWS:

912.05 Foaming Agent

Foaming agents used in making preformed foam for cellular concrete grout shall be in accordance with ASTM C 869. A type C certification shall be furnished in accordance with 916.

COMMENTS AND ACTION

SECTION 725 – SLIP LINING OF EXISTING PIPE
907.25 THERMOPLASTIC PIPE LINERS
907.25(a) SOLID WALL HDPE PIPE LINER
907.25(b) PROFILE WALL HDPE PIPE LINER
907.25(c) PROFILE WALL PVC PIPE LINER
912.05 FOAMING AGENT

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: SECTION 725 pg 644; 907.25 pg 797; SECTION 912 pg 863. Recurring Special Provision affected: 725-R-541 SLIP LINING OF EXISTING PIPE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Recurring Special Provisions 714-R-578 Concrete Box Scour Protection, 715-R-579 Pipe Culvert Scour Protection, and 723-R-568 Three-Sided Scour Protection have language calling a portion of the geotextile and riprap used in the 714, 715 and 723 as scour protection and the cost of this scour protection is to be included in the cost of the structure.

INDOT Construction has received several complaints and comments from both contractors and project personnel regarding these changes.

Also, INDOT is going to require all culverts to have headwalls and wingwalls, or in the case of pipes, end sections.

PROPOSED SOLUTION: Remove the specification language that incorporates the cost of riprap and geotextile into the cost of three-sided culverts, box culverts, and pipe structures and return to measuring and paying for riprap and geotextiles in accordance with 616. The attached modifications to RSPs 714-R-578, 715-R-579, and 723-R-568 and the 714 and 723 sections are intended to affect the way these RSPs and sections go into the 2012 SS. Modifications to the active RSPs are not proposed.

In summary, changes that were approved regarding riprap and geotextile in relation to scour protection are proposed to be undone. Riprap and geotextile would revert back to being measured and paid for as per 616.

Delete the projecting option as shown in the attached Standard Drawings.

BRIEF HISTORY OF SC ACTIONS ON THESE PROVISIONS:

1. RSP 723-R-568 was adopted by the Standards Committee at the 10-15-09 meeting (old business item 03).

2. New business item 05 on the Standards Committee agenda dated 4-15-10 proposed changes to RSP 723-R-568. The proposed changes propose to incorporate similar "geotextile and riprap as scour protection" language into the 714 and 715 specification sections. Changes to all three specification sections (714, 715, & 723) were shown as proposed changes to existing RSP 723-R-568. Discussion during the 4-15-10 Standards Committee meeting resulted in a request to have an RSP for each section that incorporated the scour protection changes. Thus, RSPs 714-R-578 and 715-R-579 were created and RSP 723-R-568 was adjusted to amend corresponding sections of the 2010 SS book. These provisions all went into effect 9-1-10. The changes contained within these three RSPs are to be incorporated into the 2012 SS book.

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

3. New business item 06 the Standards Committee agenda dated 4-15-10 incorporated the scour protection changes into the section rewrites for sections 714 and 723. These changes are to be incorporated into the 2012 SS book.

APPLICABLE STANDARD SPECIFICATIONS: 714.03, 714.11, 714.12, 715.03, 715.14, 723.16, 723.17, 723.18

APPLICABLE STANDARD DRAWINGS: 714-BCSP-01, 714-BCSP-02, 715-PCSP-01, 723-CCSP-01, 723-CCSP-02, 723-CCSP-03, 723-CCSP-04, 723-CCSP-05, 723-CCSP-06

APPLICABLE DESIGN MANUAL SECTION: 31-4.05, 31-4.06

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None.

PAY ITEMS AFFECTED: No pay items will change.

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 2-5502

Date: January 11, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None. Some ICA members were consulted and were in favor of this change.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 714 – CONCRETE BOX STRUCTURE
714.03 DESIGN REQUIREMENTS
714.09 METHOD OF MEASUREMENT
714.10 BASIS OF PAYMENT

(RSP 714-R-578 CONCRETE BOX SCOUR PROTECTION was approved (item 05) for incorporation into 2012 SS on April 15, 2010 meeting.)

714-R-578 CONCRETE BOX SCOUR PROTECTION

(Adopted 04-15-10)

The Standard Specifications are revised as follows:

SECTION 714, AFTER LINE 45, INSERT AS FOLLOWS:

~~*Scour protection shall be installed as shown on the plans.*~~

When riprap is specified, geotextile shall first be placed on the in-situ soil in accordance with 616.11. Riprap shall then be placed in accordance with 616.

SECTION 714, BEGIN LINE 270, DELETE AS FOLLOWS:

reinstate

Reinforcing bars, plain or epoxy coated, will be paid for in accordance with 703.08. ~~Geotextille or riprap will be paid for in accordance with 616.13.~~ Structure backfill will be paid for in accordance with 211.10. Field drilled holes will be paid for in accordance with 702.28.

SECTION 714, BEGIN LINE 296, INSERT AS FOLLOWS:

The cost of excavation except as provided in 206.11(a), ~~*scour protection,*~~ expansion joint material, perpetuation of existing drains show on the plans, removal of portions of existing structures, cleaning out old channels or structures, approved chemical anchor system, precast reinforced concrete structure joints, and necessary incidentals shall be included in the cost of the pay items in this section.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 714 – CONCRETE BOX STRUCTURE (CONTINUED)
714.03 DESIGN REQUIREMENTS
714.09 METHOD OF MEASUREMENT
714.10 BASIS OF PAYMENT

(Statements with strikethrough approved on April 15, 2010 meeting (item 06).
Proposed changes shown as highlighted in gray.)

The Standard Specifications are revised as follows:

SECTION 714, BEGIN LINE 252, DELETE AND INSERT AS FOLLOWS:

~~Cast-in-place concrete used in structures and structure extensions will be measured in accordance with 702.27. Reinforcing bars and epoxy coated reinforcing bars will be measured in accordance with 703.07.~~ *Geotextile and riprap will be measured in accordance with 616.12.* Structure backfill will be measured in accordance with 211.09. Flowable backfill will be measured in accordance with 213.08. Field drilled holes will be measured in accordance with 702.27.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 715 – PIPE CULVERTS, AND STORM AND SANITARY SEWERS
715.03 GENERAL REQUIREMENTS
715.14 BASIS OF PAYMENT

(RSP 715-R-579 PIPE CULVERT SCOUR PROTECTION was approved (item 05) for incorporation into 2012 SS on April 15, 2010 meeting.)

09-01-10

715-R-579 PIPE CULVERT SCOUR PROTECTION

(Adopted 04-15-10)

The Standard Specifications are revised as follows:

SECTION 715, AFTER LINE 181, INSERT AS FOLLOWS:

~~*Scour protection shall be installed as shown on the plans.*~~

When riprap is specified, geotextile shall first be placed on the in-situ soil in accordance with 616.11. Riprap shall then be placed in accordance with 616.

SECTION 715, BEGIN LINE 631, INSERT AS FOLLOWS:

The cost of sawing of pavement, excavation above the trench bottom elevation shown on plans, backfilling with material other than structure backfill or flowable backfill, ~~*scour protection,*~~ dewatering, shoring, timber mats, class A concrete required for collar construction or sealing existing pipe, joint materials, replacing pipe which is damaged during installation or re-laying operations, sanitary sewer testing required by the local utility, and all other necessary incidentals shall be included in the cost of the pay items in this section. The cost of removal of pavement, existing pipe, end sections, anchors, or headwalls, concrete collars, encasements, and the disposal of surplus materials shall be included in the cost of the pay items.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 723 - REINFORCED CONCRETE THREE-SIDED DRAINAGE STRUCTURES
723.17 SCOUR PROTECTION
723.18 METHOD OF MEASUREMENT
723.19 BASIS OF PAYMENT

(RSP 723-R-568 THREE-SIDED SCOUR PROTECTION was approved (item 05) for incorporation into 2012 SS on April 15, 2010 meeting.)

723-R-568 THREE-SIDED SCOUR PROTECTION

(Revised 04-15-10)

The Standard Specifications are revised as follows:

SECTION 723, BEGIN LINE 366, DELETE AND INSERT AS FOLLOWS:

723.17 Scour Protection

Scour protection shall be installed as shown on the plans.

When riprap is specified, geotextile shall first be placed on the in-situ soil in accordance with 616.11. Riprap shall then be placed in accordance with 616.

For concrete base slabs, concrete shall be placed in accordance with 702.

723.18 Method of Measurement

Structures and wingwalls will not be measured. The accepted quantities for payment will be the quantities shown on the plans.

Structure backfill will be measured in accordance with 211.09. Flowable backfill will be measured in accordance with 213.08. ~~Geotextile and riprap will be measured in accordance with 616.12.~~ reinstate

723.19 Basis of Payment

The accepted quantities of structure will be paid for at the contract unit price per linear foot (meter) for structure, precast three-sided, of the span and rise specified. The accepted quantities of wingwalls will be paid for at the contract unit price per square foot (square meter) for wingwalls. Structure backfill will be paid for in accordance with 211.10. Flowable backfill will be paid for in accordance with 213.09. ~~Geotextiles and riprap will be paid for in accordance with 616.13.~~ reinstate

SECTION 723, BEGIN LINE 401, INSERT AS FOLLOWS:

The cost of designing, coring, testing, pedestals or extended legs, reinforcement, excavation, *scour protection,* repairs, plugging core and handling holes, mortar, sealer, and necessary incidentals shall be included in the cost of the structure.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 723 - REINFORCED CONCRETE THREE-SIDED DRAINAGE STRUCTURES
723.17 SCOUR PROTECTION
723.18 METHOD OF MEASUREMENT
723.19 BASIS OF PAYMENT

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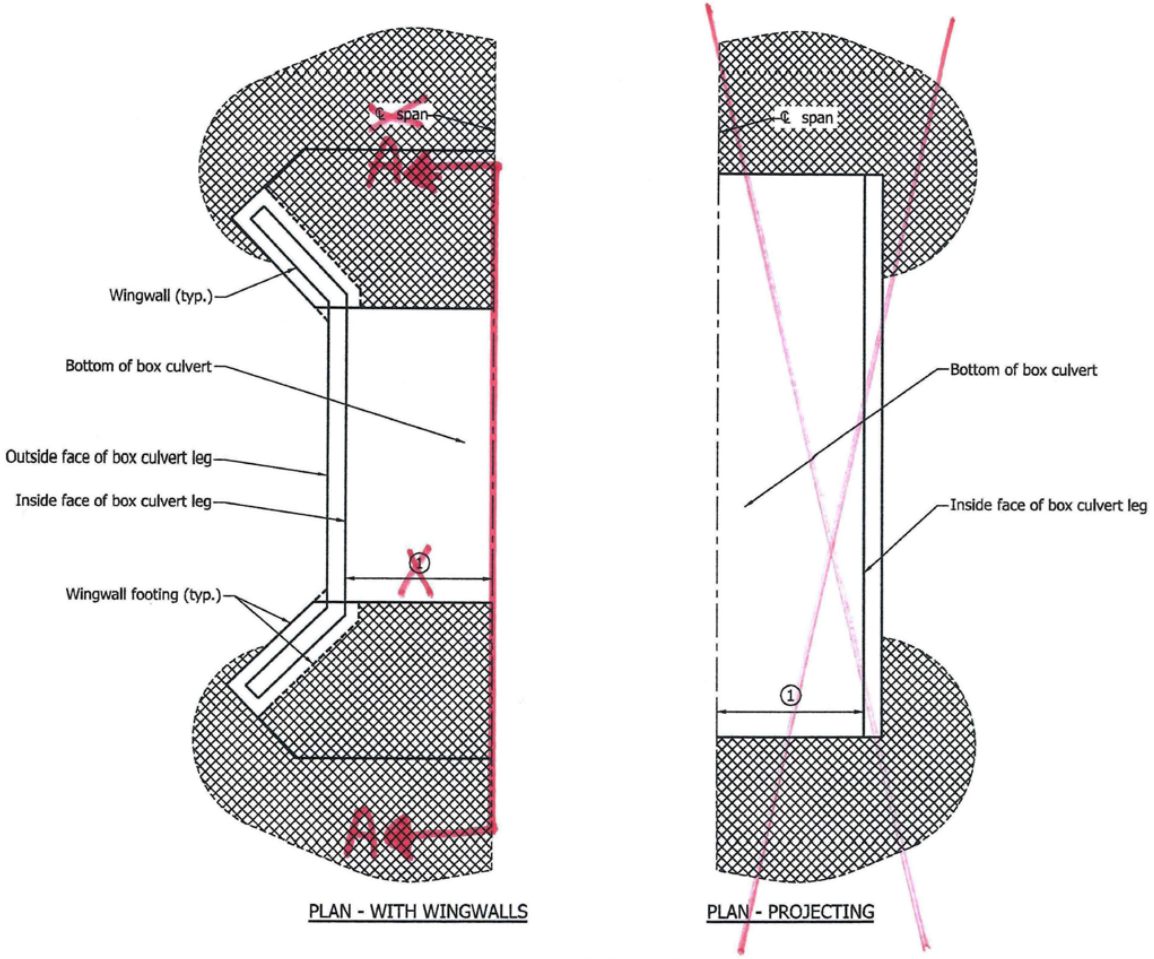
REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

714-BCSP-01 BOX CONCRETE CULVERT SCOUR PROTECTION

mirror image to show entire plan - with wing walls view. Reduce size of the corresponding plan view and include on 714-BCSP-02. Delete this drawing and remainder.



RIPRAP METHOD

NOTES:

1. Half of span width.
2. See Standard Drawing E 714-BCSP-02 for Elevation view.

LEGEND:

Limits of scour protection shown on plans outside limits of structure.

Riprap on geotextiles as shown on the plans.

INDIANA DEPARTMENT OF TRANSPORTATION

BOX CONCRETE CULVERT
SCOUR PROTECTION

SEPTEMBER 2010

STANDARD DRAWING NO. E 714-BCSP-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

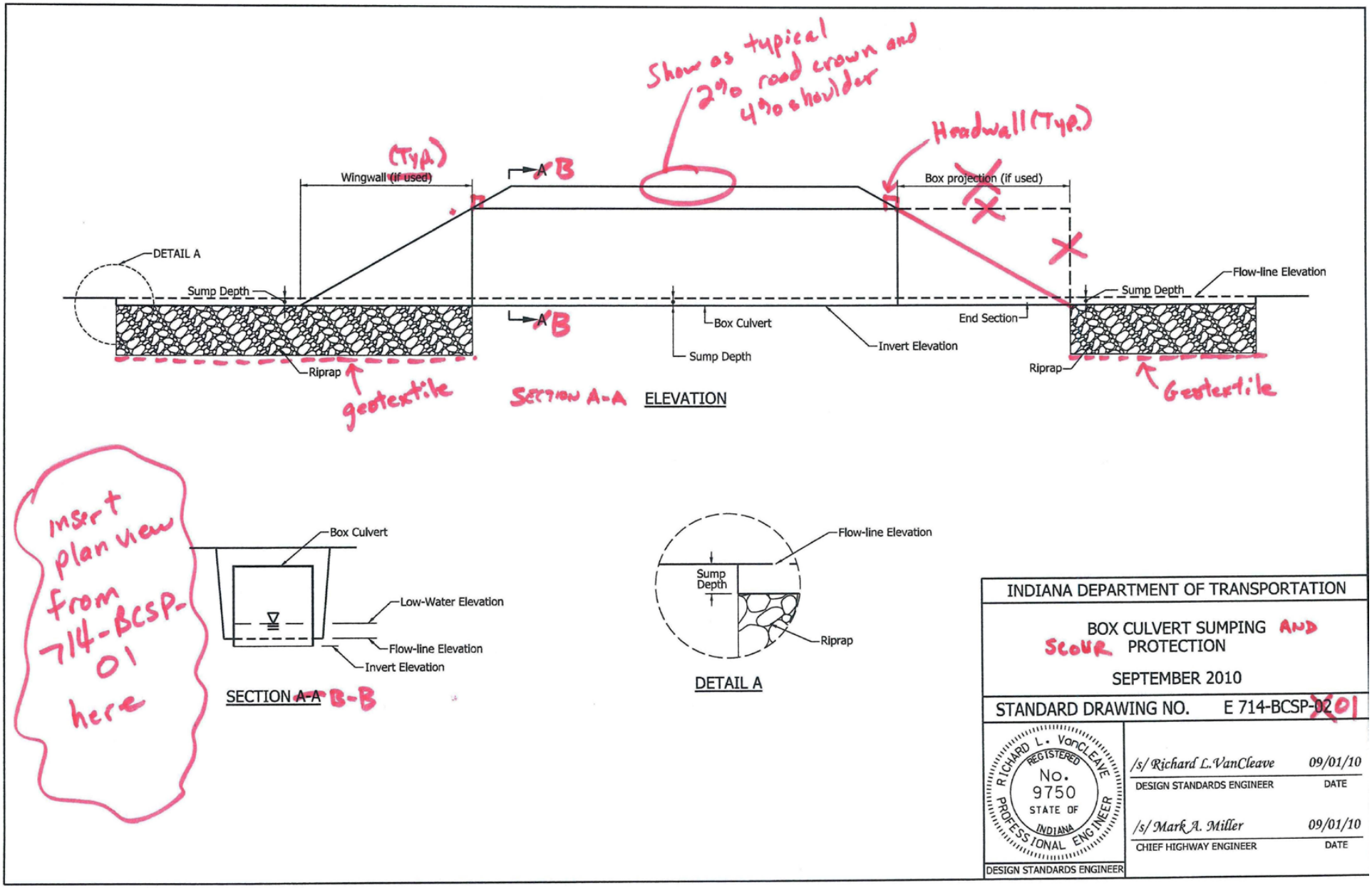
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

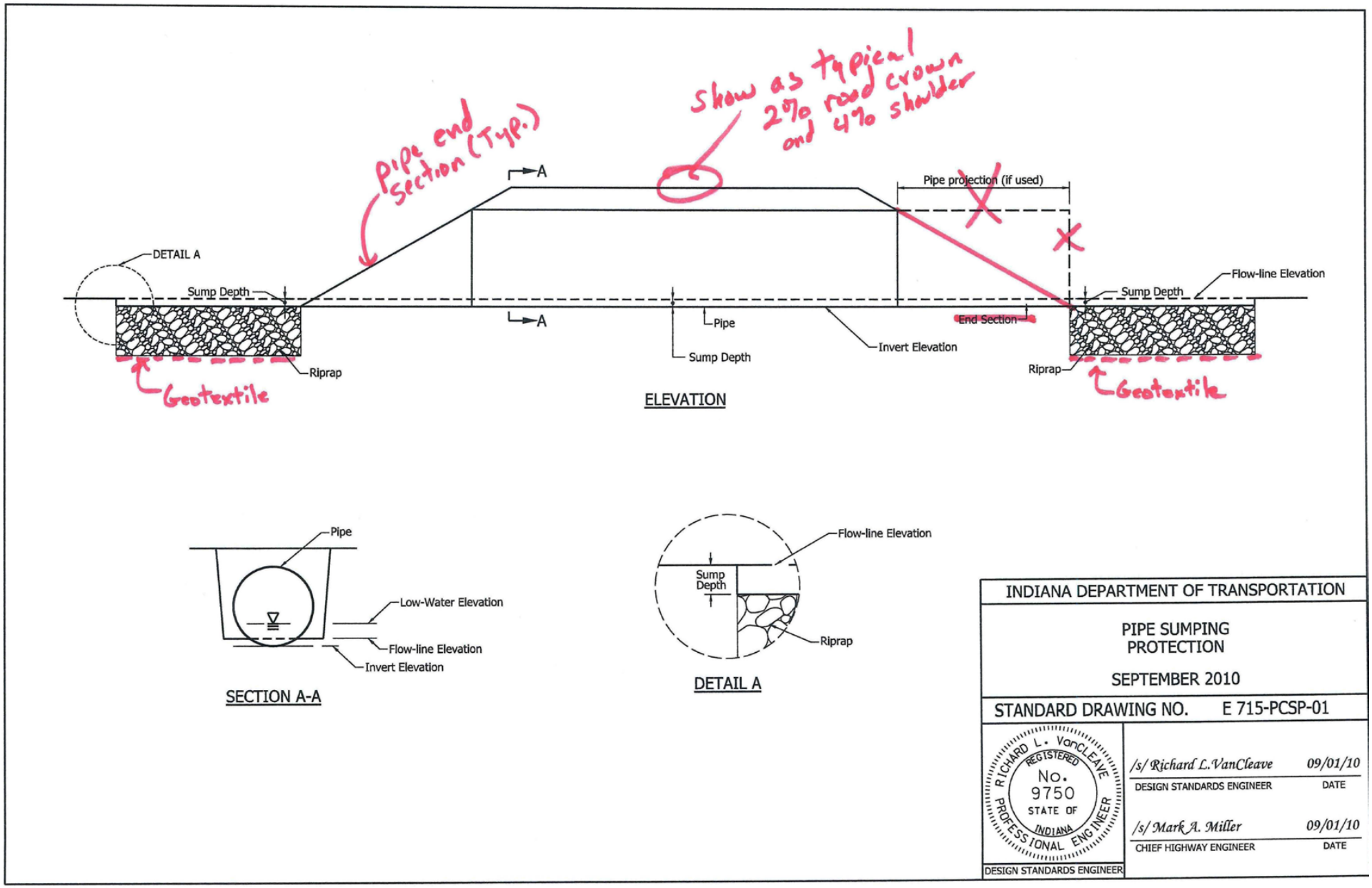
REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

714-BCSP-02 BOX CULVERT SUMPING PROTECTION



REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

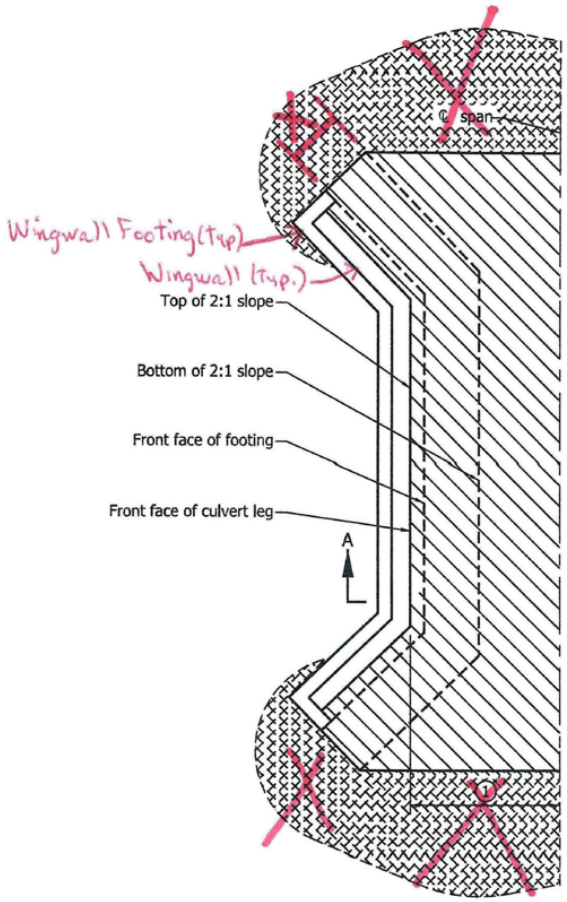
715-PCSP-01 PIPE SUMPING PROTECTION



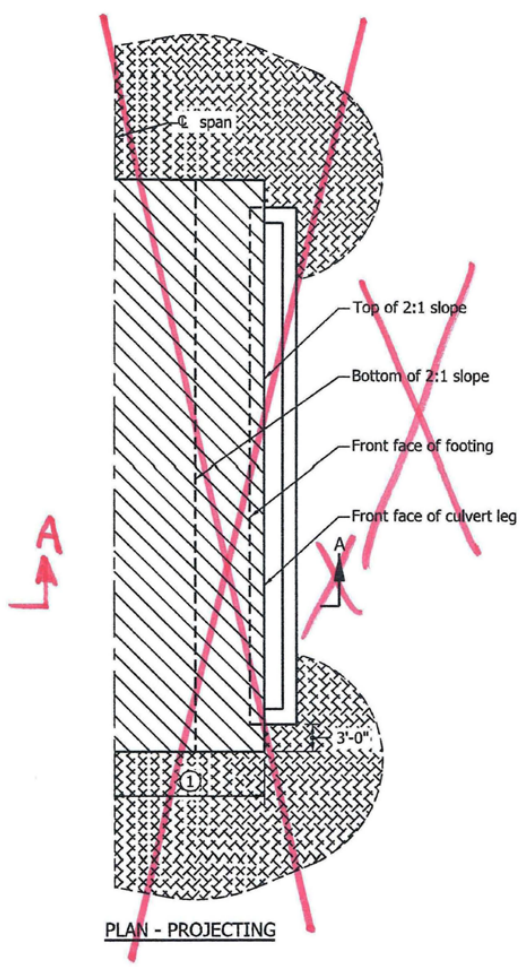
REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

723-CCSP-01 THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION

Mirror image to show entire plan-with wingwalls view



PLAN - WITH WINGWALLS



PLAN - PROJECTING

RIPRAP METHOD

NOTES:

1. ~~(1) Half of span width.~~ ~~2.~~ See Standard Drawing E 723-CCSP-02 for Section A-A.
2. Distance "X" is equal to two times the sump depth shown on the plans.

LEGEND:

~~Limits of scour protection within limits of structure.~~ Riprap or geotextiles as shown on the plans.

~~Limits of scour protection shown on plans outside limits of structure.~~

Show with riprap fill pattern

INDIANA DEPARTMENT OF TRANSPORTATION

THREE-SIDED CONCRETE CULVERT
SCOUR PROTECTION
10'-0" ≤ SPAN WIDTH < 20'-0"

SEPTEMBER 2010

STANDARD DRAWING NO. E 723-CCSP-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

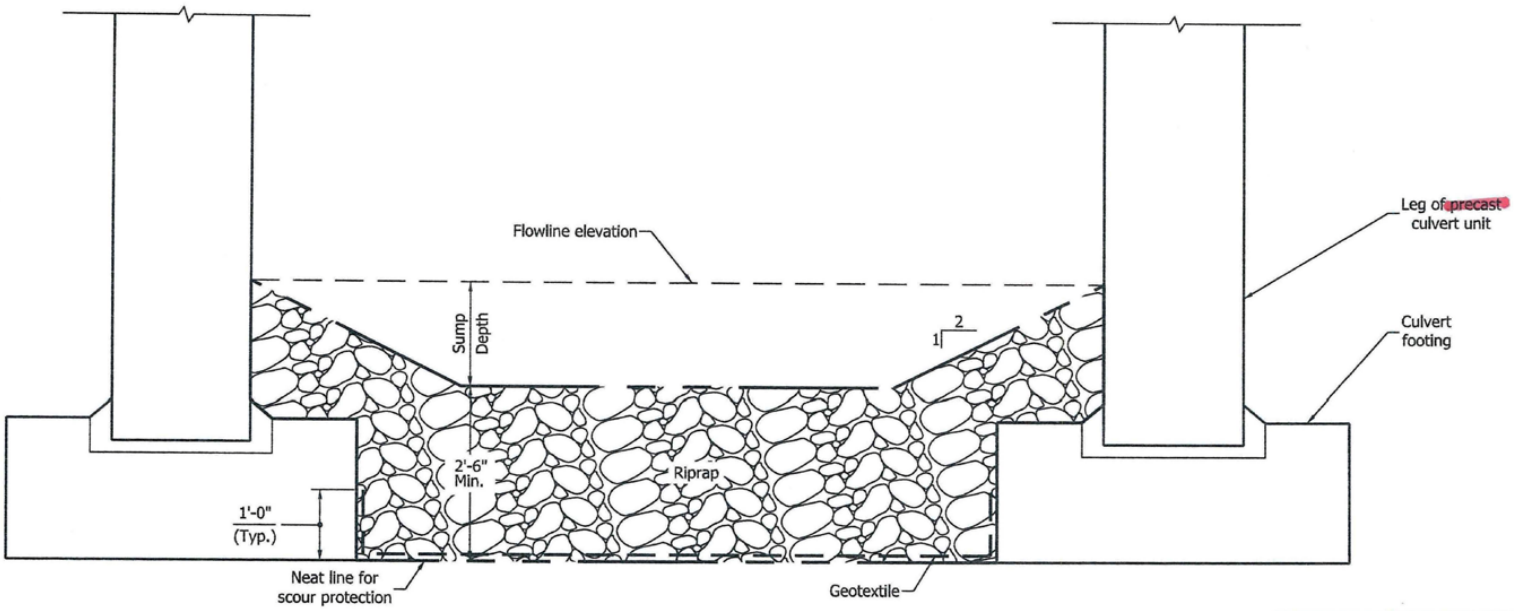
/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

723-CCSP-02 THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION, SECTION

NOTES:

1. See Standard Drawing E 723-CCSP-01 for plan view of Section A-A.



SECTION A-A

RIPRAP METHOD

INDIANA DEPARTMENT OF TRANSPORTATION

THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION, SECTION, 10'-0" ≤ SPAN WIDTH < 20'-0"

SEPTEMBER 2010

STANDARD DRAWING NO. E 723-CCSP-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

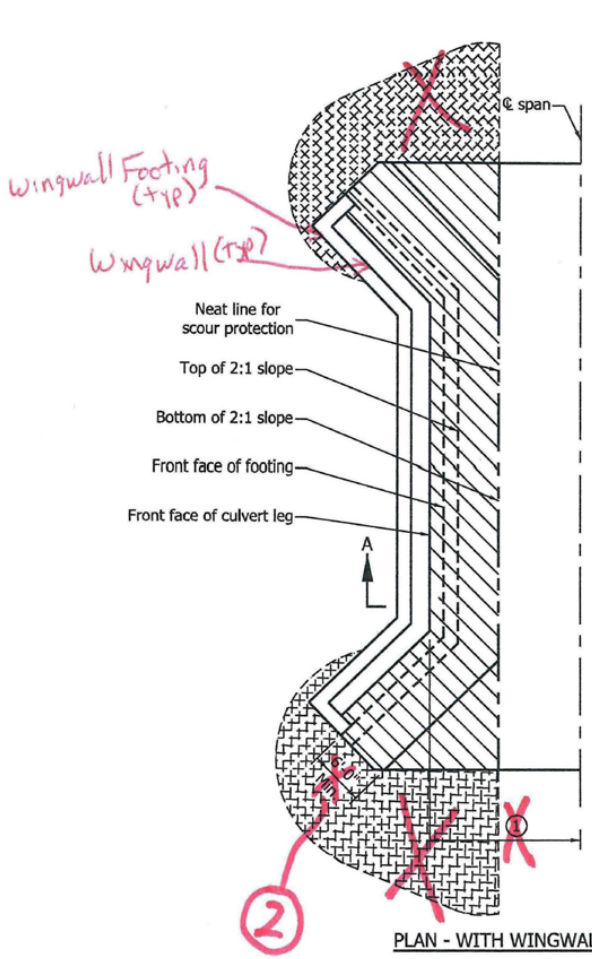
/s/ Richard L.VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

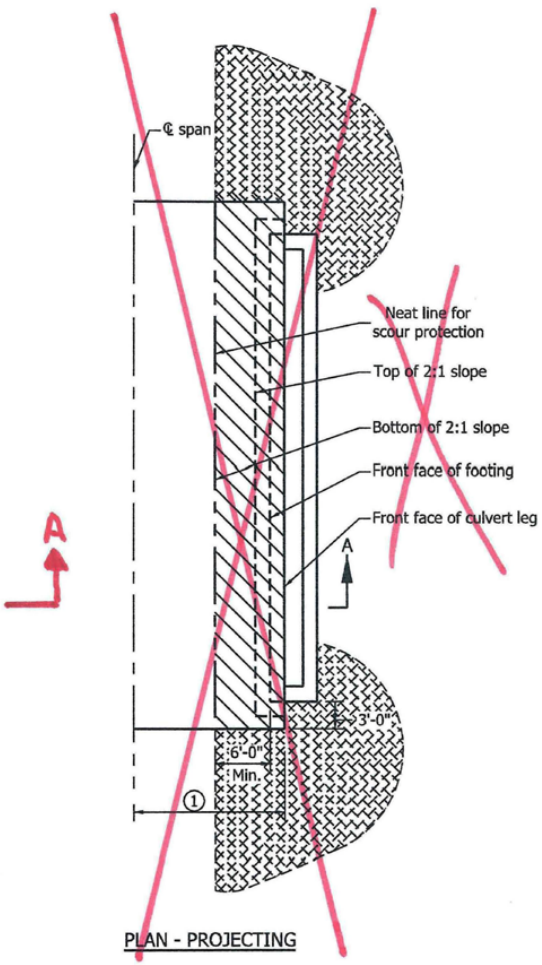
/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

723-CCSP-03 THREE-SIDED CONCRETE STRUCTURE SCOUR PROTECTION, PLAN

Mirror image to show entire plan - with wingwalls view





RIPRAP METHOD

NOTES:

1. Half of span width.
2. See Standard Drawing E 723-CCSP-04 for Section A-A.

1. 2. Distance "X" is equal to two times the sump depth shown on the plans or 6'-0", whichever is greater.

LEGEND:

Limits of scour protection within limits of structure.

Limits of scour protection shown on plans outside limits of structure.

Riprap on geotextiles as shown on the plans.

Show with riprap fill pattern

INDIANA DEPARTMENT OF TRANSPORTATION

THREE-SIDED CONCRETE STRUCTURE
SCOUR PROTECTION, PLAN,
SPAN WIDTH ≥ 20'-0"
SEPTEMBER 2010

STANDARD DRAWING NO. E 723-CCSP-03

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

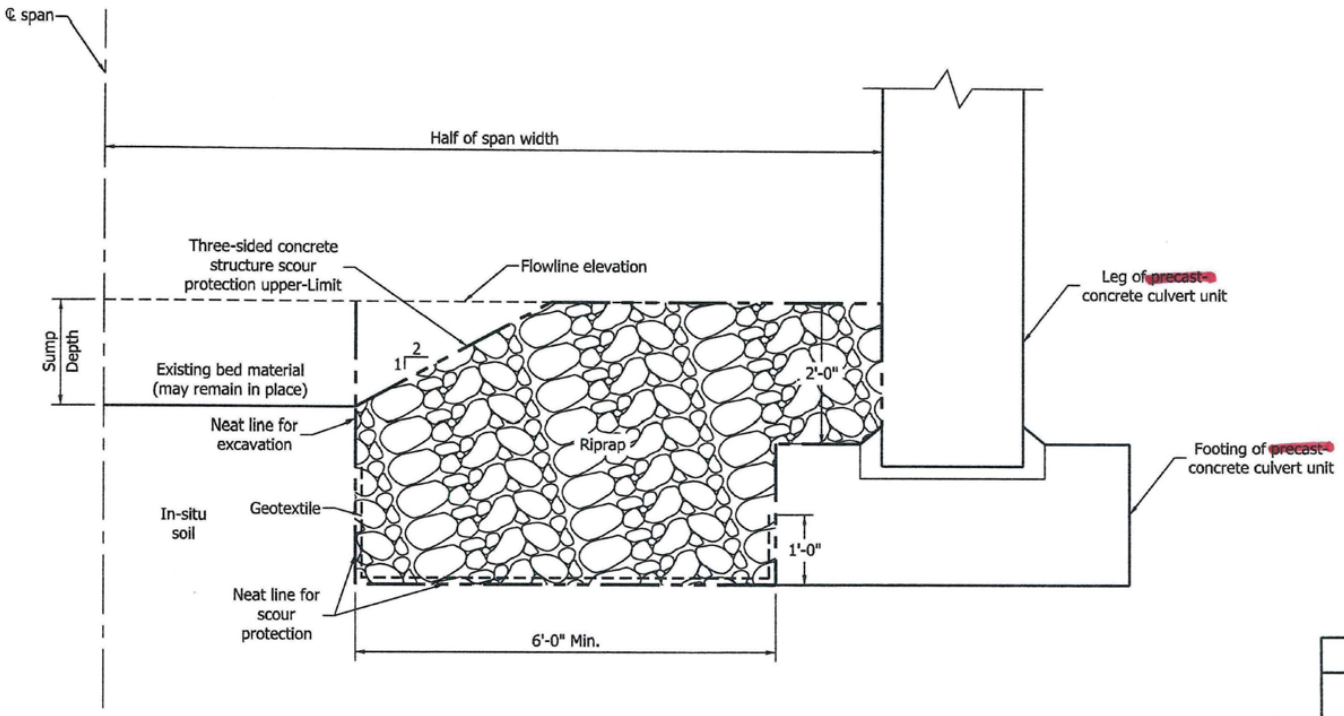
/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

723-CCSP-04 THREE-SIDED CONCRETE STRUCTURE SCOUR PROTECTION, SECTION

NOTES:

1. See Standard Drawing E 723-CCSP-03 for plan view of Section A-A.



SECTION A-A

RIPRAP METHOD

INDIANA DEPARTMENT OF TRANSPORTATION

THREE-SIDED CONCRETE STRUCTURE SCOUR PROTECTION, SECTION, SPAN WIDTH ≥ 20'-0"

SEPTEMBER 2010

STANDARD DRAWING NO. E 723-CCSP-04

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

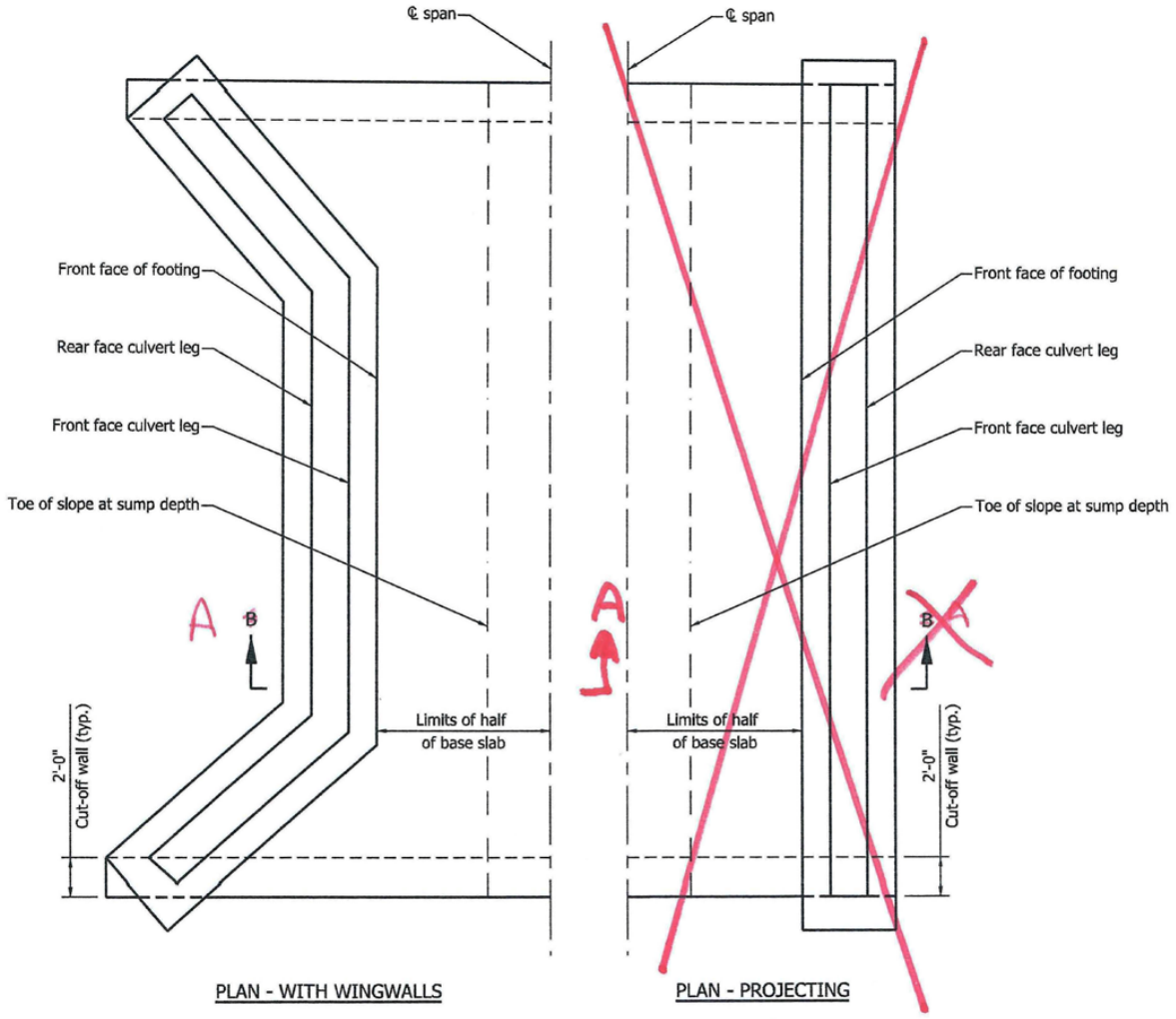
/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

723-CCSP-05 THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION, PLAN, BASE-SLAB METHOD

Mirror image to show entire plan-with wingwalls view



NOTES:

1. See Standard Drawing E 723-CCSP-06 for Section A-A ~~B-B~~.

INDIANA DEPARTMENT OF TRANSPORTATION

THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION, PLAN, BASE-SLAB METHOD

SEPTEMBER 2010

STANDARD DRAWING NO. E 723-CCSP-05

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

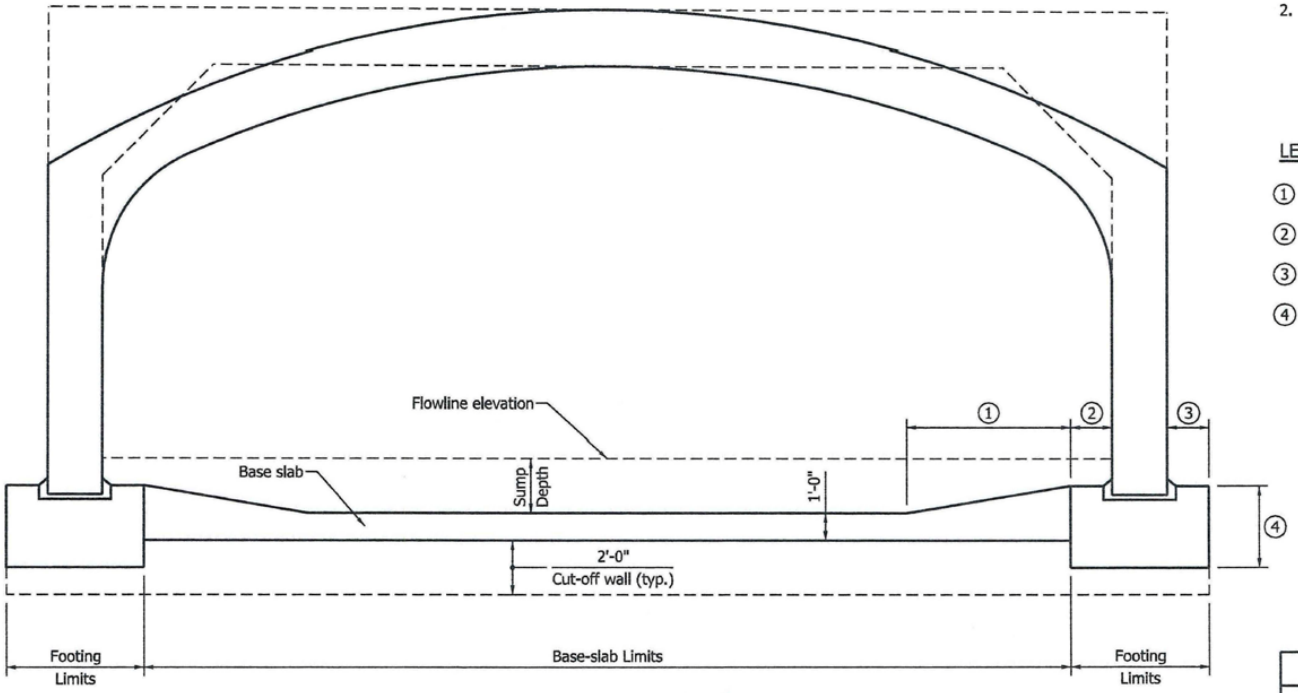
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

723-CCSP-06 THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION, SECTION



SECTION ~~B-B~~ A-A

BASE SLAB METHOD

NOTES: working

1. See the ~~shop~~ drawings for dimension ① through ④.
2. See Standard Drawing E 723-CCSP-05 for plan view of Section ~~B-B~~ A-A

LEGEND:

① Taper length
② Inside-footing width
③ Outside-footing width
④ Footing depth

INDIANA DEPARTMENT OF TRANSPORTATION

THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION, SECTION, BASE-SLAB METHOD

SEPTEMBER 2010

STANDARD DRAWING NO. E 723-CCSP-06

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

723-CCSP-06 THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION, SECTION

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COMMENTS AND ACTION

714.03 DESIGN REQUIREMENTS
714.09 METHOD OF MEASUREMENT
714.10 BASIS OF PAYMENT
715.03 GENERAL REQUIREMENTS
715.14 BASIS OF PAYMENT
723.17 SCOUR PROTECTION
723.18 METHOD OF MEASUREMENT
723.19 BASIS OF PAYMENT
714-BCSP-01, -02; 715-PCSP-01; 723-CCSP-01 through -06.

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 714.03 pg 576, 714.09 pg 581, 714.10 pg 581 and 582, 715.03 pg 586, 715.14 pg 596, 723.17 pg 641, 723.18 pg 641, 723.19 pg 641. Recurring Special Provision affected: 714-R-578; 715-R-579; 723-R-568. Standard Sheets affected: 714-BCSP-01, -02; 715-PCSP-01; 723-CCSP-01 through -06. Design Manual Sections affected: SECTIONS 31-4.05 and 31-4.06. GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The 619 painting bridge steel specification needs updating to clarify some QC requirements. Also the current method of measurement is causing confusion amongst Designers, PE/Ss, and Contractors. There is also confusion regarding painting weathering steel.

PROPOSED SOLUTION: Incorporate the proposed changes into the 619, 711, and 910.02 specification sections.

Adding a new 910.02(b) section will result in 11 locations throughout the SS where references to 910.02 (b) will need to be changed to 910.02(c), etc…. For brevity, the sections where these editorial changes occur have not been provided with this item

APPLICABLE STANDARD SPECIFICATIONS: 619, 711, 910.02
707.01, 711.02, 711.65, 711.66, 712.02, 724.02, 726.02, 907.06, 910.19

APPLICABLE STANDARD DRAWINGS: One new drawing, 619 series, proposed

APPLICABLE DESIGN MANUAL SECTION: 17-5.11

APPLICABLE SECTION OF GIFE: 5.24

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: 619 pay item units changing

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 2-5502

Date: January 24, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: An ad hoc committee consisting of Greg Pankow, Jim Reilman, and Todd Tracy.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 619 – PAINTING BRIDGE STEEL

(Changes shown highlighted in gray approved by the Standards Committee on March 18, 2010 meeting.)

The Standard Specifications are revised as follows:

SECTION 619, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 619 – PAINTING BRIDGE STEEL

619.01 Description

This work shall consist of preparing surfaces and applying paint to steel bridges in accordance with 105.03.

MATERIALS

619.02 Materials

Materials shall be in accordance with the following:

Epoxy Intermediate Paint	909.02(b)
Finish Coat for Weathering Steel	909.02(e)
Multi-Component Inorganic Zinc *Silicate* Primer	909.02(a)1
Organic Zinc Primer	909.02(a)2
Polyurethane Finish Coat	909.02(c)
Structural Steel Coating Systems	909.03
Waterborne Finish Paint	909.02(d)

Material safety data sheets shall be provided in the QCP for all materials to be delivered to the project site.

Caulk used to form the drip bead on weathering steel shall be a clear, 100% silicone caulk.

Caulk used on joints of lapping members shall be compatible with either the structural steel paint system or the partial paint system, and in accordance with the paint manufacturer's recommendations.

CONSTRUCTION REQUIREMENTS

619.03 Quality Control and Quality Assurance

The Contractor shall be responsible for the quality of work on the contract and shall ensure that all work has been performed by accepted quality control methods. A QCP shall be prepared and submitted by the Contractor in accordance with ITM 803. No work may begin until written notice has been received that the QCP was accepted by the Engineer. The QC manager shall furnish the current referenced SSPC Standards at the project site.

Cleaning and painting shall be done by a Contractor certified as SSPC-QP 2 for cleaning and painting existing bridge steel on steel bridges constructed before 1995, regardless of whether the existing coating is advertised as non-hazardous based or hazardous based. Cleaning and painting shall be done by a Contractor that at a minimum is certified as SSPC-QP 1 for cleaning and painting new bridge steel or for cleaning and painting existing bridge steel on steel bridges constructed after 1994.

The Department will accept work performed on the project through quality assurance inspections and testing. Acceptance testing will be performed and will be the basis for which acceptance will be made.

(a) Test Methods and Procedures

The current version of the following test methods and procedures shall be performed as a minimum for quality control by the Contractor. These and other tests may be performed for acceptance testing by the Engineer. The results of the following tests and procedures shall be compiled and submitted to the Engineer on a daily basis.

TEST/PROCEDURE	*METHOD AND PROCEDURE*
Clean Compressed Air	*ASTM D 4285*
Cleaning of Steel	*SSPC-Vis 1, -Vis 3*
Cleanliness of Recycled Ferrous Metallic Abrasives	*SSPC-AB 2*
Dry Film Thickness	*SSPC-PA 2*
Relative Humidity	*ASTM E 337*
State of Cure of Inorganic Zinc Primers	*ASTM D 4752*
Surface Profile	*ASTM D 4417, Method B or C*

Relative humidity, dew point, and surface temperature shall be recorded before the application of any coating and at least once per hour during the application of any coating.

Air compressor output and blasting abrasives shall be inspected at least once every 4 hours for contamination.

Visual inspections for cleaning shall be performed after each phase of the applicable cleaning operations for compliance with the specified requirements for each lot. The surface shall be wiped with a white glove or white rag to ensure the surface is free of dust and other contaminants.

The blast cleaned surface shall be inspected for surface profile, oil contamination, dust, and blasting residue, and accepted prior to the application of the primer.

The required number of surface profile measurements and dry film thickness measurements shall be in accordance with SSPC-PA 2.

If a lot is non-conforming, corrective action shall be taken to make the lot acceptable. Corrective action shall be submitted in writing and performed as approved. A phase shall not be covered until the whole lot has been accepted.

~~(a)~~*(b)* Acceptance Testing ~~Definitions~~

~~The following definitions of terms shall apply to a~~Acceptance testing of painting steel bridge work *will be in accordance with ITM 803. The results of the acceptance testing will be compared to the specific requirements for that phase of work. The Contractor shall not proceed to the next phase of work until written approval has been received from the Engineer that the current phase is accepted.*

~~**1. Lot**~~

~~A lot shall be a series of tests performed on each phase for each 1000 sq ft (93 m^2), or portions thereof.~~

~~**2. Series**~~

~~A series shall be 10 random tests performed by the Engineer on a lot.~~

~~**3. Phase**~~

~~A phase shall be painting operations consisting of either the cleaning of steel or the application of each coat of paint.~~

~~**(b) Testing Procedure**~~

~~During acceptance testing, the results of the random testing within a series will be compared to the specified requirements for that phase of work. A series of spot measurements spaced evenly over each lot will be made. The average of the 10 spot measurements for each lot shall not be less than the specified thickness. A single spot measurement in any lot shall not be less than 80% of the specified thickness. A reading below the minimum of the average of 10 spot measurements less than the specified thickness shall be considered a defect. If there is only one defect for the series of tests, the lot will be accepted provided there are no visual defects. If two defects are found in the first series of tests, then a second series of tests for each lot shall be measured. If three defects are found in the first series of tests, then the lot fails. If the first and second series of tests have four or less defects, both series pass. If there are more than four defects, then the lot fails.~~

~~If a lot fails, corrective action shall be taken to make the lot acceptable. Corrective action shall be submitted in writing and performed as approved. A failed lot shall not be covered until the whole lot has been accepted.~~

~~**(c) Test Methods and Procedures**~~

~~The current version of the following test methods and procedures shall be performed as a minimum for quality control by the Contractor. These and other tests may be performed for acceptance testing by the Engineer.~~

~~TEST/PROCEDURE ..... METHOD AND PROCEDURE~~

~~Surface Profile .....ASTM D 4417~~
~~Clean Compressed Air .....ASTM D 4285~~
~~Cleaning of Steel.....SSPC Vis 1, Vis 3~~
~~Cleanliness of Recycled Ferrous Metallic Abrasives .....SSPC AB 2~~
~~Dry Film Thickness..... SSPC PA 2~~
~~State of Cure of Inorganic Zinc Primers.....ASTM D 4752~~
~~Relative Humidity.....ASTM E 337~~

619.04 Prosecution of Work

Prosecution of work shall be in accordance with the applicable requirements of 108.03. Once the cleaning and painting operations have begun, it shall be performed on all work days without stoppage until all work has been completed. If the contract contains more than ~~one~~ *1* bridge, a schedule shall be included in the QCP which provides the sequence of work on the bridges. Once work has begun on a bridge, it shall be performed until complete, including all cleanup.

Permission shall be obtained in writing to start or continue work at the hold points as follows:

(a) prior to the acceptance of the QCP and start of work;
(b) immediately following each phase of surface preparation;
(c) immediately before the application of the first coat;
(d) prior to the application of each succeeding coat; and
(e) after the final coat has cured.

A minimum of ~~one~~*1* day's notice shall be given in advance of each of the hold points.

619.05 Inspection Access to Bridges

Safe and reasonable access to all points of the bridge shall be provided for the Engineer's inspections immediately upon request.

619.06 Maintaining Traffic

The traffic lanes may be restricted when surface preparation or painting phases are being performed on a portion of the bridge over the traveled roadway, or as directed, when the need exists.

Construction signs in accordance with 801.04 shall be furnished and placement at each project site shall be as shown in the QCP. However, a "Bridge Painting Ahead" sign may be used in place of the "Road Construction Ahead" sign.

The traffic maintenance plan shall include a type of barrier system which shall protect against blasting of vehicles or pedestrians, eliminate abrasive materials and debris from falling onto the traveled portion of the pavement, and prevent the spreading of abrasive materials and debris in the area which may create a traffic hazard. If the intended purpose of the protective

devices has not been accomplished, work shall stop until adequate corrections have been made. All abrasive material or debris shall be removed by the end of each day's work in accordance with 619.07.

619.07 Environmental and Safety Requirements

Pollution control and waste disposal of existing paint residue and debris shall be in accordance with the following requirements.

Workers shall be protected in accordance with IOSHA requirements. All personnel on the project site shall wear personal protective equipment. The protective equipment shall be furnished by the Contractor, including to Department personnel. Training shall be given to all personnel provided with the protective equipment. Protective equipment shall include, but not be limited to, clean air supplied respirators, air purifying respirators, conventional hood as applicable, eye protection, and protective clothing. Two rooms for changing and washing shall be provided on bridges containing hazardous-based coatings.

(a) Pollution Control

Blasting materials, scrapings, wire brushings, and paint particles shall be contained in accordance with SSPC-Guide 6, Class 2A with method A, level 2 emissions, specifically for non-hazardous primed bridges, and SSPC-Guide 6, Class 2A or better with method A, level 0 emissions, for hazardous primed bridges.

If a spill, as defined in IDEM Regulation 327 IAC 2-6.1 does occur, all work shall stop and immediate action shall be taken to clean up the site. Spills of material~~, which~~*that* enter or threaten to enter the water, shall be handled in accordance with IDEM Regulation 327 IAC 2-6.1. The IDEM Emergency Response Branch, the local health department, and all water intake users within 500 ft (150 m) of the bridge shall be immediately contacted and advised of the spill. Written documentation of all such contacts and actions shall be kept. All applicable Federal, State, and local rules and regulations described in 619.07(b)1 shall be observed.

~~On existing bridges with hazardous-based coatings, either steel grit blasting abrasives in accordance with SSPC-AB-1 shall be used and recycled or mineral/slag blasting abrasives in accordance with SSPC-AB-3 shall be used and the waste residue generated shall be treated at a facility rendering it to a non-hazardous state and disposed of in accordance with all applicable Federal, State, and local regulations. If steel grit blasting abrasives are used, the recycling equipment shall be capable of separating the blasting abrasive from the paint debris.~~

Each bridge shall generate a separate waste stream and shall not be commingled with other materials. The first sample of waste residue from the bridge shall be sampled after the first day of removal and shipped to be tested within 24 h~~ours~~ in a manner agreed to by the Department and as described in the QCP. The Engineer will witness the extraction of each waste residue sample. The Department will maintain custody of each waste residue sample until it is shipped. A duplicate of each waste residue sample will be retained by the Department. Each waste residue sample shall be taken by random method as described in the QCP which reflects representation of the entire bridge. Each waste residue sample shall represent approximately 25%

of the cleaning area. All samples shall be analyzed for ~~full Toxicity Characteristic Leaching Procedure (TCLP)~~*all contaminants listed in ITM 803 by the TCLP*. Residue shall be placed in an approved container. Such containers shall be labeled and maintained to comply with 40 CFR 264.

No waste shall remain on the booms or on any water surface overnight. All blasting debris shall be cleaned up after each day's work. All waste material shall be properly stored at the project site to prevent loss or pollution.

If hazardous materials are found in the first or subsequent waste residue sample of an advertised, non-hazardous site, the Contractor shall immediately stop all cleaning and painting operations on that bridge. The Contractor shall notify the Engineer that hazardous materials have been found and, if not addressed in the QCP, the Contractor shall submit revisions to the QCP that detail the necessary changes due to the presence of hazardous materials. The Contractor shall not return to work until the revised QCP is approved in writing.

(b) Waste Disposal

Disposal of existing paint and debris shall be in accordance with SSPC-Guide 7 and the following requirements*:*

1. Laws to be Observed

Federal and State laws and regulations regulate the disposal of bridge painting debris. Bridge paint debris shall be manifested or certified and shall be disposed of at an appropriate disposal facility.

The Contractor shall have direct knowledge regarding compliance with laws pertaining to pollution control and waste management such as follows.

a. subtitle C of the Resource Conservation and Recovery Act, 40 CFR 261, 262, 263, 265, and 268;

b. the Solid Waste Rule, 329 IAC 10;

c. the Hazardous Waste Rule, 329 IAC 3.1;

d. the Air Pollution Rule 329 IAC 6-4;

e. the Water Pollution Rule, 327 IAC 2-6.1;

f. the United States Department of Transportation regulations 49 CFR 172.300; and

g. OSHA worker safety regulations 29 CFR 1926.

2. Time Limitations

The maximum time limit from the date the generated waste is placed in a container and the date the material is transported to a permitted treatment, storage, and disposal facility shall be 90 calendar days.

3. Marking of Spent Material Containers

Spent material containers shall be marked with the date that waste residue is first placed in the container. Until laboratory results are received concerning the category of the waste residue, the containers shall be labeled "LEAD PAINT WASTE DEBRIS" or "ZINC PAINT WASTE DEBRIS", as appropriate. The labeling shall include the contract number, bridge number, sample number, and sample date. Labeling of containers as hazardous waste will not be required until the appropriate laboratory analysis determines the waste residue to be hazardous in accordance with the current ~~Resource Conservancy Recovery Act (~~RCRA~~)~~ hazardous waste definitions. Immediately upon notice that the waste residue is hazardous, the containers shall be marked in accordance with 49 CFR 172, Subpart D.

4. Instruction for Disposal of Paint Waste Residue

Sampling and analysis of the paint waste residue shall be performed to determine if the wastes are hazardous. If the waste residue is not found to be hazardous in accordance with current RCRA hazardous waste definitions, the waste residue material shall be disposed of at an appropriate disposal facility. If the waste residue is found to be hazardous, IDEM will be notified and an EPA identification number will be obtained. This number will be provided to the Contractor within 30 days of the start of waste generation for bridges having hazardous waste paint debris. The waste residue from different bridges shall not be mixed. The Contractor shall have the following responsibilities:

a. determining the location for disposal, treatment, or recycling of the waste residue, obtaining the Engineer's approval of the site, and arranging with the approved site for acceptance of the materials;

b. preparing a hazardous waste manifest, as required by Federal and State requirements, for signature;

c. scheduling the shipment of waste residue to the permitted disposal site;

d. ensuring that the hazardous waste manifest is carried in the transportation vehicle;

e. ensuring that all required hazardous materials placards are properly displayed on the vehicle;

f.ensuring prompt movement of the vehicle to the disposal site; and

g. returning ~~one~~*1* copy of signed manifest documents to the Engineer. A copy of the chemical and physical analysis of the waste, all deposit receipts, manifests, and required paperwork for disposal shall be given to the

Engineer and all waste residues disposed of before the contract will be accepted.

5. Instructions for Disposal of Other Project Generated Waste

The other wastes that may be generated on the project include, but are not limited to, spent solvents from cleaning of equipment and empty or partially empty containers of paint, paint thinners, spent abrasives, and solvents. The Contractor shall recycle or dispose of all project generated waste materials.

If the waste is defined as a hazardous waste in accordance with the current RCRA definitions, the waste shall be recycled or disposed of in accordance with 619.07(b)4. All project generated waste and the method of recycling or disposal shall be identified in the QCP.

619.08 Surface Preparation

Cleaning of steel surfaces shall be performed by an SSPC certified contractor. This requirement will not apply to the following:

(a) shop cleaning;

~~(b) bearings at end bents;~~

~~(c) small sections of beams at end bents or at piers with open joints; or~~

(~~d~~*b*) ~~small~~ sections of beams or other structural members *less than 180 sq ft (16.7 m2) of total area to be painted for the contract* where heat-straightening or similar repairs have taken place.

Surfaces to be painted shall be cleaned in accordance with the SSPC classification, unless otherwise specified. Compressed air shall pass through an oil and water extractor before entering another apparatus.

Pressure washing in accordance with 619.08(a) and solvent cleaning in accordance with 619.08(b) shall be performed to remove all oils, soluble salts, visible grease, and any other surface contaminants before all other cleaning methods are started. The Contractor may propose alternate cleaning methods in the QCP that will accomplish the removal of all oils and soluble salts.

Field cleaned steel surfaces shall be primed the same day as cleaned. If rust forms after cleaning, the surface shall be cleaned again before painting. Work shall be stopped when there is disagreement about whether a surface has been adequately cleaned. Written notification shall be provided specifically identifying the problem.

Cleaning shall be scheduled so that dust or other contaminates do not fall on wet, newly painted surfaces.

A dust collector suitable for the containment type and size shall be used during all blast cleaning operations in preparation for all structural steel paint systems and as directed for a partial paint system.

On existing bridges when abrasive blast cleaning is used, clean, dry, uniformly graded steel grit or a recyclable steel grit, in accordance with SSPC-AB 3 or SSPC-AB 2, shall be used. The steel grit used shall produce an angular profile that is free of oil, soluble salts, and other similar substances which could contaminate the blasted surface. The recycling equipment shall be capable of separating the blasting abrasive from the paint debris.

The surface profile of cleaned new steel surfaces *and cleaned existing steel surfaces* shall not be less than 1.*5* mil (~~25~~*38* µm) and not greater than ~~2~~*3.5* mil (~~50~~*89* µm). ~~The surface profile of cleaned existing steel shall not be less than 1 mil (25 µm) and not greater than 3 mil (75 µm).~~

~~Pressure washing in accordance with 619.08(a) and solvent cleaning in accordance with 619.08(b) shall be performed to remove all oils and soluble salts before all other cleaning methods are started. The Contractor may propose alternate cleaning methods in the QCP that will accomplish the removal of all oils and soluble salts.~~

(a) Pressure Washing

All surfaces to be painted and the tops of pier and abutment caps shall be washed. The washing shall be accomplished by means of a low pressure power water washer with potable water. The pressure shall be between 800 and 1500 psi (5 and 10 MPa). If detergents or other additives are added to the water, the surface shall be rinsed with potable water before the detergents dries. All washed surfaces shall be completely free of all oils and soluble salts and shall be approved prior to other surface preparation activities.

(b) Solvent Cleaning

After pressure washing has been approved, solvent cleaning shall be in accordance with SSPC-SP 1.

(c) Near-White Blast Cleaning

Near-white blast cleaning shall be in accordance with SSPC-SP 10/NACE No. 2.

(d) Commercial Blast Cleaning

Commercial blast cleaning shall be in accordance with SSPC-SP 6/NACE No. 3.

(e) Hand Tool Cleaning

Hand tool cleaning shall be in accordance with SSPC-SP 2.

(f) Brush-Off Blast Cleaning

Brush-off blast cleaning shall be in accordance with SSPC-SP 7/NACE No. 4.

(g) Power Tool Cleaning

Power tool cleaning shall be in accordance with SSPC-SP 3.

(h) Power Tool Cleaning to Bare Metal

Power tool cleaning to bare metal shall be in accordance with SSPC-SP 11.

~~All mill scale shall be removed, except for that mill scale which remains in the lower portion of deep pits. The Engineer will determine the amount of mill scale that is to remain.~~

Upon completion of cleaning operations and prior to beginning painting operations, the Contractor shall remove all sharp fins, burrs, slivers, thermal cutting residue, abrupt deformities, sharpness (corner more acute than a 1/32 in. (1 mm) radius), and other impediments to uniform coating application and performance by grinding. After completion of the grinding operation, the Contractor shall vacuum or blow off under full containment any residual dust remaining from the cleaning or grinding operation.

The Engineer will check the prepared surface for dust prior to the Contractor beginning painting operations. This work will not have any weather or temperature restrictions.

619.09 Paint Systems

Paint systems shall be applied in accordance with the manufacturer's recommendations. The dry film thickness of a paint coating will be measured with a calibrated film thickness gauge in accordance with SSPC-PA 2. All paint coatings shall have a dry film thickness not less than 80% of the required dry film thickness.

(a) Structural Steel Paint System

The coating system shall consist of an inorganic zinc primer with a dry film thickness of 3 mil (75 µm), an epoxy intermediate coat with a dry film thickness of 4 mil (100 µm), and a polyurethane finish coat with a dry film thickness of 3 mil (75 µm) for the painting of steel bridges and other structural steel.

(b) Partial Paint System

The coating system shall consist of organic zinc primer with a dry film thickness of 3 mil (75 µm) and a waterborne finish coat with a dry film thickness of 3 mil (75 µm) for partial painting of steel bridges and other structural steel.

619.10 Painting

Painting shall be performed by a SSPC certified contractor, except as noted in 619.08.

Concrete at all junction points of concrete and steel shall be adequately shielded or otherwise protected so the application of paint on steel is full and complete, and that spraying onto the concrete is minimized.

If a blasted or painted surface is unsatisfactory, removal of the paint, thorough cleaning of the surface, and repainting or other correction will be required as directed. Where defects or

damages occur in a film of any coating, all defective areas shall be removed to soundly bonded paint or bare steel and painted to the specified thickness.

No lettering shall be painted on bare or painted steel surfaces, except marks required for erection and project information stenciled in accordance with 619.10(g).

Joints of all lapping members shall be caulked after either the application of the epoxy intermediate coat of the structural steel paint system or the application of the organic zinc primer of the partial paint system. The intermediate or primer coat shall be cured to the manufacturer's recommended coating cure time prior to caulking. ~~The caulk used shall be compatible with either the structural steel paint system or the partial paint system, and in accordance with the paint manufacturer's recommendations as described in the QCP.~~

1. All vertical and diagonal lapping members shall be caulked along the top and sides. The bottom shall remain open for drainage.

2. All horizontal lapping members shall be caulked along the leading edge and sides of steel members facing toward oncoming traffic or facing toward the prevailing wind direction.

3. All horizontal members shall remain uncaulked along the side of steel members facing away from oncoming traffic or prevailing wind direction.

(a) Weather Limitations

Field painting will not be permitted between November 15 and the following April 1 unless *different date ranges are* requested in the QCP and approved in writing. Painting shall begin only when the 24 h ambient temperature is to remain above 50°F (10°C) after paint application, and the steel surface temperature is between 50°*F* and 100°F (10°*C* and ~~40~~*38*°C) *unless different temperature ranges are requested in the QCP and approved in writing*. Coating, *painting,* and curing shall be done only when the relative humidity is to remain between 30*%* and 80%. The pot life and induction time shall be in accordance with the manufacturer's recommendations for the existing temperature and humidity.

Paint shall not be applied when the air is misty, or when conditions are otherwise unsuitable. The surface temperature of the steel to be painted shall not be within 5°F (3°C) of the dew point. When painting in a protected area to eliminate the above conditions, the steel shall remain under cover until the paint is dry. All wet paint which has been exposed to excessive humidity, rain, snow, or condensation shall be permitted to dry. Damaged paint shall then be removed. The surface shall be re-cleaned and repainted as directed. The Engineer will be the sole authority to decide when work may begin or shall stop due to weather conditions.

(b) Storage

Paint shall be stored in accordance with the manufacturer's recommendations. If paint is permitted to remain in storage, the containers shall be turned end for end at least once per week. The paint shall be used within the manufacturer's recommended shelf life.

(c) Mixing

Paint shall be thoroughly mixed so that the pigment is completely in suspension and the consistency is uniform. Mechanical mixers shall be used in accordance with the manufacturer's instructions. The paint shall remain in this condition during application to the steel surface. After initial mixing and before application, zinc primer shall be strained through a metal screen not coarser than the No. 30 (600 µm) sieve.

Partially empty containers of paint shall not be used. Partial mixing of containers will not be permitted. All paint containers shall remain closed until needed for mixing.

(d) Thinning

When required for proper application, the thinning of field paint will be permitted. Only thinners recommended by the manufacturer and as approved shall be used. Thinners shall be added to paint in accordance with the manufacturer's recommendations. The maximum quantity added shall not exceed the manufacturer's recommendations. The thinned paint shall not exceed IDEM regulations for volatile organic compounds.

The Contractor shall contact IDEM and the local air pollution control board for information about any volatile organic compound regulations or restrictions.

(e) Application of Paint

All paint coatings shall be of colors to produce a distinct contrast with adjacent coatings, including the color of a clean steel surface.

Paint shall be applied by either an airless or conventional spray method which has been recommended by the paint manufacturer. The compressed air used for painting shall pass through an oil and water extractor before entering the paint pot. However, areas to be painted which are inaccessible to spray application or areas requiring touchup may be painted with brush or daubers. Epoxy intermediate and polyurethane finish paints may be applied by brushes or rollers provided the coating cures to a smooth and uniform finish. *Spray shall be adjusted to produce a uniform coating.*

1. Stripe Coat

~~Spray shall be adjusted to produce a uniform coating.~~ If using the structural steel paint system in accordance with 619.09(a), *a stripe coat in accordance with SSPC-PA Guide 11 shall be applied.* ~~a~~*A*ll ~~90 degree~~ *sharp* edges, *welds, outside corners, bolt heads, nuts, threads, crevices, plate seams, back-to-back angle seams, pitted steel, rivet heads, and other sharp discontinuities* shall be striped on the second and third coats, and then repainted with the remaining steel surfaces. *Striping shall extend at least 1 in. (25 mm) from edges.* If specified, the stripe coat shall be allowed to dry to the manufacturer's recommended recoat dry time prior to painting the second and third coats on the remaining steel surfaces.

If using the partial paint system in accordance with 619.09(b), *a stripe coat in accordance with SSPC-PA Guide 11 shall be applied.* ~~a~~*A*ll ~~90 degree~~ *sharp* edges, *welds, outside*

corners, bolt heads, nuts, threads, crevices, plate seams, back-to-back angle seams, pitted steel, rivet heads, and other sharp discontinuities shall be striped on each of the coats, and then repainted with the remaining steel surfaces. *Striping shall extend at least 1 in. (25 mm) from edges.* If specified, the stripe coat shall be allowed to dry to the manufacturer's recommended recoat dry time prior to painting the remaining steel surfaces. Painting techniques shall minimize dry overspray. Dry overspray shall be removed prior to application of other coatings and after application of the finish coat.

For both paint systems, the stripe coat may be applied with either a brush or a sprayer. If the Contractor-chosen method of applying the stripe coat is not producing results acceptable to the Engineer, the Engineer will require the stripe coat application method to be changed.

(f) Curing Time

The minimum curing time between coatings shall be 24 h for inorganic zinc primers and 8 h for the epoxy intermediate coat. The curing time will vary depending on the temperature and humidity. The inorganic zinc primer shall be cured to a minimum solvent resistance rating of 4 in accordance with ASTM D 4752 prior to the application of the epoxy intermediate coat. It shall be demonstrated that the inorganic zinc primer is in accordance with this requirement. The epoxy intermediate coat shall be cured in accordance with the manufacturer's recommendations prior to the application of the polyurethane finish coat. The polyurethane finish coat shall be applied within 12 calendar days of application of the epoxy intermediate coat.

The curing time of all other paint systems or coatings shall be in accordance with the manufacturer's recommendations.

(g) Stencil Identification

After the finish coat has been approved, project identification information shall be painted with a stencil in 2 in. (50 mm) black capital letters onto the outside of both ~~facia~~*fascia* beams, at the right end of the beam and near the end bent, which reads as follows:

_____
bridge number

_____
contract number

PAINTED _____
date

619.11 Shop Painting

~~All structural steel shall be cleaned in accordance with 619.08(c).~~

~~All structural steel, except for ASTM A 709, grade 50W (ASTM A 709M, grade 345W) steel, shall receive an inorganic zinc primer, including faying surfaces of high strength bolted~~

~~connections and areas in contact with concrete. When shear connectors have been specified, the top of the top flange shall not be painted.~~

~~Surfaces, other than the contact surfaces described above, which are inaccessible after erection shall be painted in the shop with the full paint system required on the completed bridge.~~

~~Machine finished surfaces for sliding contact shall be coated with heavy grease as soon as practicable after being accepted, but before removal from the shop.~~

~~Erection marks may be painted on zinc painted surfaces. Shop painted beams shall not be loaded for shipment until the paint has been allowed to dry to the manufacturer's recommended dry to handle time.~~

~~ASTM A 709, grade 50W (ASTM A 709, grade 345W) steel shall be left unpainted, except as shown on the plans. Surfaces, when specified, shall be painted in accordance with 619.09(a), except the finish coat shall be in accordance with 909.02(c).~~

Abrasive used for cleaning steel in the shop shall be an abrasive that produces an angular profile. The inorganic zinc primer coat shall be applied to all structural steel in the shop. The remaining 2 coats shall be applied in the field after final erection. A structural steel paint system in accordance with 619.09(a) shall be used. When shear connectors have been specified, the top of the top flange shall not be painted. Erection marks may be painted on zinc painted surfaces. Machine finished surfaces for sliding contact shall be coated with heavy grease as soon as practicable after being accepted, but before removal from the shop.

Shop painted beams shall not be loaded for shipment until the paint has been allowed to cure for a minimum of 48 h.

(a) Non-Weathering Steel

All structural steel shall be cleaned in accordance with 619.08(c).

All structural steel shall receive an inorganic zinc primer, including faying surfaces of high strength bolted connections and areas in contact with concrete. Surfaces, other than the contact surfaces described above, which are inaccessible after erection shall be painted in the shop with the full paint system required on the completed bridge.

(b) Weathering Steel

All structural steel shall be left unpainted, except as shown on the plans. All diaphragms, stiffeners, and other appurtenances located within the limits shown on the plans shall be included in the painting area. Surfaces to be painted shall be cleaned in accordance with 619.08(c). Surfaces shall be painted in accordance with 619.09(a), except the finish coat shall be in accordance with 909.02(e).

619.12 Field Painting New Steel Bridge

All structural steel ~~which has been painted with inorganic zinc primer in the shop, except for steel contact~~ surfaces ~~and surfaces to be in contact with concrete,~~ *which are accessible after final erection* shall be painted with the ~~other~~ *remaining* coatings specified for structural steel paint system in accordance with 619.09(a) *in the field after final erection*. ~~All steel surfaces which become inaccessible to field painting after final erection shall be painted with all coats of structural steel paint system before structural steel is erected.~~

If application of ~~the~~ inorganic zinc primer on a steel surface is not ~~permitted~~*performed* in the shop before erection of the bridge, the surfaces which are exposed shall be cleaned in accordance with 619.08(a), 619.08(b), and 619.08(c). These surfaces shall then be painted with the structural steel paint system after *final* erection.

Surface areas where the inorganic zinc primer was damaged during shipping, handling, and erection shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d) or 619.08(h). Likewise, all bolt and field connections shall be cleaned in the same manner. All the damaged areas, and bolt and field connections shall then be painted with the inorganic zinc primer applied in the shop. This requirement will not apply to temporary steel bridges.

Where steel surfaces have been painted with the full paint system and the paint coatings have been damaged, the affected steel surface areas shall be cleaned in accordance with 619.08(h). Structural steel paint system shall then be re-applied.

For weathering steel girders, caulk shall be applied to act as a drip bead as shown in the plans.

619.13 Painting Existing Steel Bridges

The surfaces to be cleaned and painted shall include the surfaces of all steel members of the superstructure, substructure, floor beams, stringers, plates, castings, bearing assemblies, ornamental handrails, lattice work, and other steel appurtenances. *When shear connectors have been specified, the top of the top flange within the limits of each shear connector group and a distance of 3 in. (75 mm) of beyond these limits shall not be painted.*

If the contract specifies clean steel bridge, the bridge steel shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d) or 619.08(h). The structural steel paint system in accordance with 619.09(a) shall be used for painting.

If the contract specifies clean steel bridge, partial, the bridge steel shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d), or 619.08(g), or 619.08(h). The partial paint system in accordance with 619.09(b) shall be then be used for painting.

619.14 Drain Castings Treatment

Roadway ~~D~~*d*rain castings *located in a bridge deck* shall be satisfactorily cleaned~~.~~ *in accordance with 619.08(g) or 619.08(f).* The castings shall not be shot-blasted. ~~If castings are sandblasted, a brush blast technique shall be used in accordance with 619.08(f).~~

The *roadway* drain castings shall be painted with a black finish coat in accordance with 909.02(c).

If a roadway drain casting extension pipe is damaged or missing, it shall be replaced. The extension pipe shall be in accordance with 715.

619.15 Responsibility for Damage

Unless otherwise permitted by the Engineer in writing, full containment shall be provided when performing the surface preparation operation and when applying all coats of paint (except primer coats) with spray equipment. All persons and property shall be protected from damage or injury from the surface preparation operations and painting operations by providing containment as described in the QCP. Persons and property shall include, but not be limited to, pedestrians, vehicles, and other traffic upon or underneath a bridge, all portions of the bridge superstructure and substructure, and all adjacent property. The Contractor shall be responsible for damages in accordance with 107.17.

619.16 ~~Bridge Types~~*Blank*

~~For the purposes of this specification, bridges will be identified by one of the following types.~~

~~(a) Type 1 – The steel to be cleaned and painted is entirely beneath the bridge deck. A beam or girder bridge is a representative bridge.~~

~~(b) Type 2 – The majority of the steel to be cleaned and painted is beneath the bridge deck. However some steel extends above, but not over, the bridge deck. A pony truss bridge is a representative bridge.~~

~~(c) Type 3 – The majority of steel to be cleaned and painted is above and over the bridge deck. There is some steel to be painted beneath the bridge deck. A through truss is a representative bridge.~~

619.17 Method of Measurement

Cleaning and painting will *not* be measured *for payment*.~~by the square foot (square meter) of surface area for each bridge deck of each type as specified. The length of the structure will be the out-to-out length measured longitudinally along the centerline of the structure. The width of the structure will be the out-to-out width measured on a line perpendicular to the centerline of the structure.~~ *Grinding to remove sharp flange edges of all beams and girders, all fins, burrs, slivers, thermal cutting residue, abrupt deformities, and sharpness, will not be measured for payment.*

Cleaning *roadway* drain castings, ~~and~~ caulking joints of lapping members, *and caulking on weathering steel* will not be measured for payment.

If a bridge is advertised as having existing hazardous materials, no measurement will be made of the area covered by mill scale. For bridges advertised as having existing non-hazardous materials, the area of structural steel covered by mill scale will be measured for payment after a

proper cleaning of the entire containment area or an agreed large portion there of and removing all other existing materials, including all paint and rust. The percentage of the area of structural steel covered by existing mill scale will be representative of this entire area. The pre-established remedies for this changed condition apply in accordance with 104.02(d) and 619.18.

~~Floor drain extensions will be measured per each drain extended.~~ *Roadway drain casting extension pipe will be measured in accordance with 715.13.*

The estimated weight (mass), length, number of steel spans, surface area of steel, and type of primer shown on the plans or in the Proposal book is incidental information. Such information is approximate only. The Department will not guarantee its accuracy.

619.18 Basis of Payment

~~Removal of paint from an existing bridge~~*Existing steel bridges to be cleaned, or partially cleaned, whichever is specified,* will be paid for at the contract ~~unit~~ *lump sum* price ~~per square foot (square meter) of the surface area of the bridge deck~~ for clean steel bridge or clean steel bridge, partial, at the bridge number specified. ~~The accepted quantities of e~~*E*xisting steel bridges to be painted, or ~~partial~~*partially* painted, whichever is specified, will be paid for at the contract ~~unit~~ *lump sum* price ~~per square foot (square meter) of the surface area of the bridge deck~~ for paint steel bridge or paint steel bridge, partial, at the bridge number specified.

(a) Pre-Established Remedies for Changed Conditions

1. Discovery of Hazardous Materials but No Mill Scale on a Site Advertised as Non-Hazardous

The payment will be an additional 25% of the clean steel bridge item as computed in 619.18(b)1 in accordance with 109.05 as payment for all additional costs incurred.

2. Discovery of Mill Scale but No Hazardous Materials on a Site Advertised as Non-Hazardous

If, on a bridge advertised as having existing non-hazardous materials and the presence of hazardous materials has not been confirmed by laboratory analysis, the area of structural steel covered by mill scale comprises greater than 15% of the area of structural steel in accordance with 619.17, additional compensation for the removal of the mill scale will be made as an adjustment to the clean steel bridge item in accordance with the following:

a. For areas of structural steel greater than 15% and up to and including 25% of the area covered by mill scale, an additional payment of 15% of the clean steel bridge item as computed in accordance with 619.18(b)1 will be made.

b. For areas of structural steel greater than 25% and up to and including 50% of the area covered by mill scale, an additional payment of 30% of the clean steel bridge item as computed in accordance with 619.18(a)1 will be made.

c. For areas of structural steel greater than 50% and up to and including 75% of the area covered by mill scale, an additional payment of 45% of the clean steel bridge item as computed in accordance with 619.18(b)1 will be made.

d. For areas of structural steel greater than 75% of the area covered by mill scale, an additional payment of 60% of the clean steel bridge item as computed in accordance with 619.18(b)1 will be made.

3. Discovery of Hazardous Materials and Mill Scale on a Site Advertised as Non-Hazardous

If the laboratory analysis of a waste residue sample on a bridge advertised as having non-hazardous materials yields results indicating the presence of hazardous materials, the entire bridge shall be considered as having mill scale and the following pre-established remedy for this changed condition in accordance with 104.02(d) shall apply. If agreed to in writing between the Contractor and the Department, the work shall proceed with the Contractor assuming all risks for removal of mill scale. An additional 55% of the clean steel bridge item as computed in 619.18(b)1 in accordance with 109.05 will be paid as additional compensation for the removal and disposal of the hazardous materials, the removal of the mill scale, the additional containment required, and all other incidental items associated with the removal of the hazardous materials and mill scale.

(b) Prices used in Pre-Established Remedies to Changed Conditions

The following prices will be computed and used as the price for the pay item identified below in all pre-established remedies to changed conditions referenced in this section.

~~1.~~ The price for the clean steel bridge item, per bridge, used in all pre-established remedies to changed conditions referenced in this section will be limited to the lesser of the following:

a. 70% of the sum of the clean steel bridge item and paint steel bridge item for that bridge; or

b. the actual amount for the clean steel bridge item for that bridge shown in the Schedule of Pay Items.

~~Drain extensions will be paid for at the contract unit price per each.~~ *Roadway drain casting extension pipe will be paid for in accordance with 715.14.*

Payment will be made under:

Pay Item	**Pay Unit Symbol**
Clean Steel Bridge, ~~Type ____,~~ QP- ____, ~~Str~~*Br*. No. ___	~~SFT (m2)~~*LS*

Clean Steel Bridge, Partial, ~~Type ____,~~ QP- ____, ~~Str~~*Br*. No. ____~~SFT (m2)~~*LS*
~~Drain Extension~~.....~~EACH~~
Paint Steel Bridge, ~~Type ____, Str~~*Br*. No.____..... ~~SFT (m2)~~*LS*
Paint Steel Bridge, Partial, ~~Type ____, Str~~*Br*. No.____ .....~~SFT (m2)~~*LS*

The cost to prepare a QCP shall be included in the cost of the pay items of this section. The cost of providing the Department with access to the bridge and seasonal or weather limitations shall be included in the cost of the pay items of this section.

If a bridge is advertised as having existing hazardous materials, no additional payment will be made for the removal of mill scale. The cost of the removal of mill scale shall be included in the cost of clean steel bridge or clean steel bridge, partial.

If a bridge is advertised as having existing non-hazardous materials and the percentage of the area covered by mill scale is less than or equal to 15% of the total structural steel surface area of a bridge measured in accordance with 619.17 no additional payment will be made for the removal of mill scale. The cost of the removal of mill scale shall be included in the cost of clean steel bridge or clean steel bridge, partial.

The cost of furnishing all materials, equipment, and labor required for washing, solvent cleaning, scraping, steel brushing, or other acceptable methods for removing paint in the locations directed shall be included in the cost of clean steel bridge or clean steel bridge, partial. The cost of cleaning *roadway* drain castings shall be included in the cost of clean steel bridge or clean steel bridge, partial.

The cost of providing containment in accordance with 619.15 and *personal protective equipment* shall be included in the cost of the pay items of this section.

The cost of furnishing all materials, equipment, and labor required to perform the quality control tasks outlined in 619.03 shall be included in the cost of clean steel bridge or clean steel bridge, partial.

The cost of all grinding shall be included in the cost of clean steel bridge, or clean steel bridge, partial.

The cost of furnishing all materials including caulk, equipment, and labor to perform caulking and painting, *including the stripe coats*, with *the* structural steel *paint system* or *the* partial paint system shall be included in the cost of paint steel bridge or paint steel bridge, partial. *The cost of switching stripe coat application methods shall be included in the cost of paint steel bridge or paint steel bridge, partial.* The cost of furnishing all materials, equipment, and labor to perform painting of the *roadway* drain castings shall be included in the cost of paint steel bridge or paint steel bridge, partial.

The cost of all equipment, material, labor, testing, use of special cleaning methods, shipping of waste residue samples, handling and disposal of spent materials, waste residues,

waste residue containers and all other debris associated with environmental control and cleaning shall be included in the cost of the clean steel bridge or clean steel bridge, partial pay item.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 711 – STEEL STRUCTURES
711.02 MATERIALS
711.48 SHOP CLEANING AND STORAGE OF ASTM A 709 GRADE 50W (ASTM A 709M GRADE 345W) STEEL
711.70 FIELD CLEANING AND STORAGE OF ASTM A 709 GRADE 50W (ASTM A 709M GRADE 345W) STEEL

The Standard Specifications are revised as follows:

SECTION 711, BEGIN LINE 16, INSERT AS FOLLOWS:

Where grade HPS 70W (HPS 485W) or grade HPS 50W (HPS 345W) steel is shown on the plans, the high performance steel shall be in accordance with 910.02(c).

Where grade 50W (grade 345W) steel is shown on the plans, the weathering steel shall be in accordance with 910.02(b).

SECTION 711, BEGIN LINE 729, DELETE AND INSERT AS FOLLOWS:

711.48 Shop Cleaning and Storage of ~~ASTM A 709 Grade 50W (ASTM A 709M Grade 345W)~~ *Weathering* Steel

The fabricator shall protect bare steel sections and sub-assemblies so as not to damage or stain them. The use of paints, crayons, or other materials used for identification purposes shall be avoided *on bare steel sections*. Storage shall be such to permit free drainage to avoid moisture pockets.

A sound uniform surface for the formation of a protective oxide coating on surfaces shall be prepared as follows:

(a) Hot Rolled Products

These products shall include structural shapes, plates, hot-rolled sheets, and hot-rolled strip. The ~~outside~~ *entire length and perimeter* of each ~~facia~~*fascia* beam or girder~~, including the bottom of the bottom flange,~~ shall be cleaned in accordance with 619.08(c). *The entire length and perimeter of each interior beam or girder shall be cleaned in accordance with 619.08(d).* Contamination from grease, oil, or shop marking shall be avoided. If such contamination is unavoidable, such surfaces shall be cleaned in accordance with 619.08(b).

(b) Welded Area

All exposed welds on ~~facia~~*fascia* surfaces shall be prepared by means of power grinding or blast cleaning in accordance with 619.08(d) to remove welding flux, slag, scale, or spatter.

SECTION 711, BEGIN LINE 1107, DELETE AND INSERT AS FOLLOWS:

711.70 Field Cleaning and Storage of ~~ASTM A 709 Grade 50W (ASTM A 709M Grade 345W)~~ *Weathering* Steel

Cleaning of structural steel specified to be left unpainted shall be in accordance with 619.08(b) or 619.08(f), *or as determined by the Engineer*, depending on the severity of the soilage. Foreign matter which adheres to the steel after it has been blasted, and which inhibits formation of the oxide film shall be removed as soon as practical. The use of acids to remove scale and stains will not be permitted.

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

SECTION 910 – METAL MATERIALS
910.02 (b) HIGH STRENGTH STRUCTURAL STEEL
910.02 (c) HIGH PERFORMANCE STEEL
910.02 (d) CHARPY V-NOTCH TOUGHNESS TESTS
910.02 (e) MILL TEST REPORTS
910.02 (f) HIGH STRENGTH BOLTS, NUTS, AND WASHERS
910.02 (g) BOLTS OTHER THAN HIGH STRENGTH BOLTS

The Standard Specifications are revised as follows:

SECTION 910, AFTER LINE 179, DELETE AND INSERT AS FOLLOWS:

(b) Weathering Steel

Steel in accordance with ASTM A 709 that has an atmospheric corrosion resistance index that meets or exceeds the index value shown in ASTM A 709.

(~~b~~*c*) High Strength Structural Steel

SECTION 910, LINE 198, DELETE AND INSERT AS FOLLOWS:

(~~c~~*d*) High Performance Steel

SECTION 910, LINE 209, DELETE AND INSERT AS FOLLOWS:

(~~d~~*e*) Charpy V-Notch Toughness Tests

SECTION 910, BEGIN LINE 223, DELETE AND INSERT AS FOLLOWS:

(~~e~~*f*) Mill Test Reports

Mill test reports for structural steel shall be in accordance with 711.08 and 916 and shall include Charpy-Impact test data as set out in 910.02(~~d~~*e*).

(~~f~~*g*) High Strength Bolts, Nuts, and Washers

SECTION 910, LINE 255, DELETE AND INSERT AS FOLLOWS:

(1) Rotational Capacity

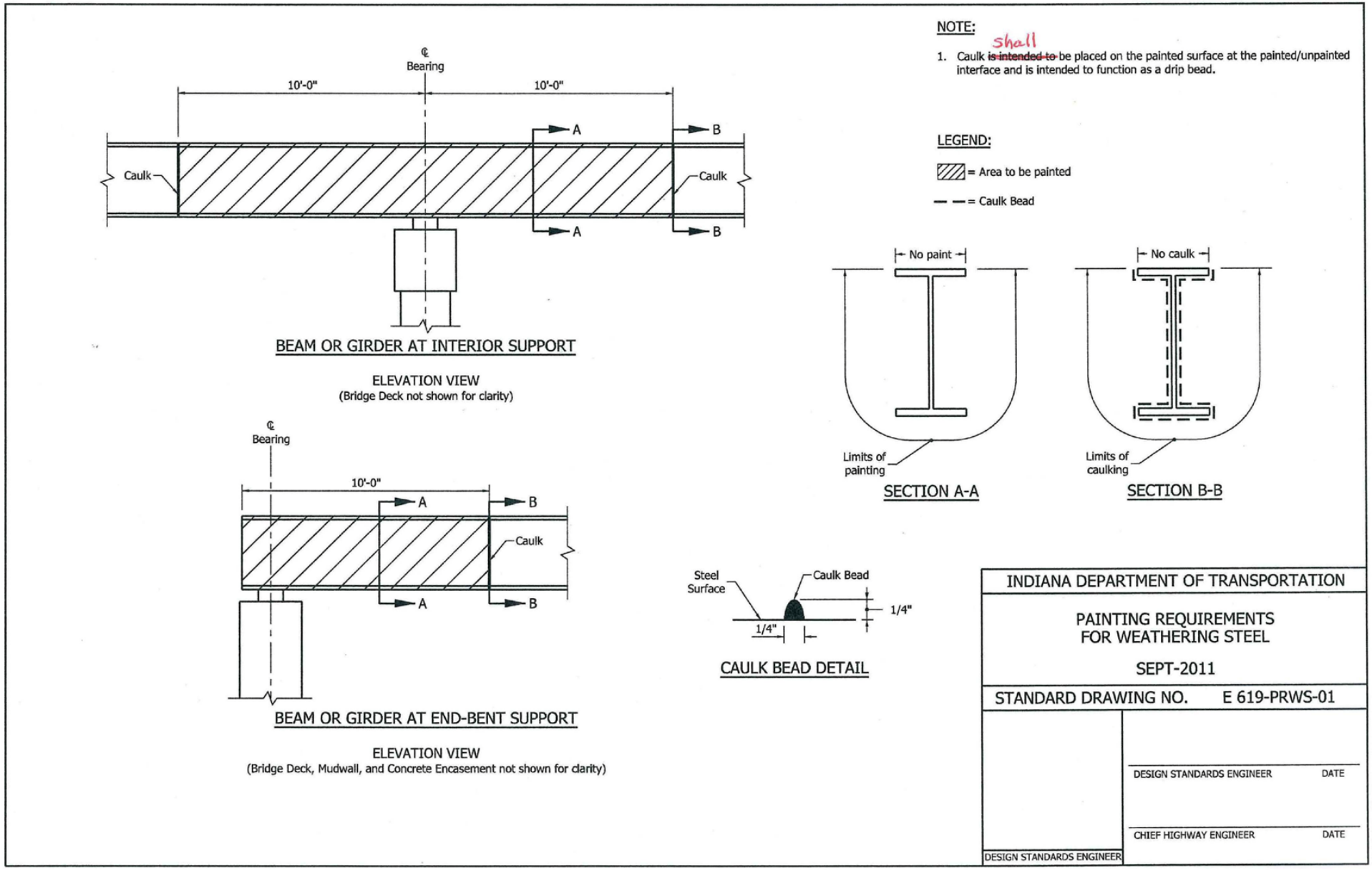
High strength fasteners shall be subjected to the rotational capacity test in accordance with ~~AASHTO M 169, Section 8.5~~*ASTM A 325, Section 6.3.* The fastener shall complete two times the required number of turns from snug tight conditions in accordance with AASHTO ~~Standard Specifications for Highway Bridges, Division II~~*LRFD Bridge Construction Specifications,* in a Skidmore-Wilhelm calibrator or equivalent tension measuring device without stripping or failure. During this test, the maximum recorded tension shall be at least 1.15 times the required fastener tension indicated in AASHTO ~~Standard Specifications for Highway Bridges, Division II~~*LRFD Bridge Construction Specifications.* The measured torque required to produce the required fastener tension shall not exceed the value obtained by the following equation.

SECTION 910, LINE 289, DELETE AND INSERT AS FOLLOWS:

(~~g~~*h*) Bolts other than High Strength Bolts

REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

PROPOSED NEW STANDARD DRAWING 619-PRWS-01 PAINTING REQUIREMENTS FOR WEATHERING STEEL



REVISION TO STANDARD SPECIFICATIONS AND STANDARD DRAWINGS

BACKUP 1. RSP 619-B-181 PAINTING BRIDGE STEEL (AFFECTED PROVISION)

09-01-09

619-B-181 PAINTING BRIDGE STEEL

(Adopted 05-18-09)

The Standard Specifications are revised as follows:

SECTION 619, BEGIN LINE 161, DELETE AND INSERT AS FOLLOWS:

On existing bridges with hazardous-based coatings, either steel grit blasting abrasives in accordance with SSPC AB ~~1~~*3* shall be used and recycled or mineral/slag blasting abrasives in accordance with SSPC AB ~~3~~*1* shall be used and the waste residue generated shall be treated at a facility rendering it to a non-hazardous state and disposed of in accordance with all applicable Federal, State, and local regulations. If steel grit blasting abrasives are used, the recycling equipment shall be capable of separating the blasting abrasive from the paint debris.

COMMENTS AND ACTION

SECTION 619 – PAINTING BRIDGE STEEL
711.02 MATERIALS
711.48 SHOP CLEANING AND STORAGE OF ASTM A 709 GRADE 50W (ASTM A 709M GRADE 345W) STEEL
711.70 FIELD CLEANING AND STORAGE OF ASTM A 709 GRADE 50W (ASTM A 709M GRADE 345W) STEEL
910.02 (b) HIGH STRENGTH STRUCTURAL STEEL
910.02 (c) HIGH PERFORMANCE STEEL
910.02 (d) CHARPY V-NOTCH TOUGHNESS TESTS
910.02 (e) MILL TEST REPORTS
910.02 (f) HIGH STRENGTH BOLTS, NUTS, AND WASHERS
910.02 (g) BOLTS OTHER THAN HIGH STRENGTH BOLTS
NEW STANDARD DRAWING 619-PRWS-01 PAINTING REQUIREMENTS FOR WEATHERING STEEL

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected, including with cross-references: 619, 711, 910.02, 707.01, 711.02, 711.65, 711.66, 712.02, 724.02, 726.02, 907.06, 910.19 Recurring Special Provision affected: 619-B-181 PAINTING BRIDGE STEEL Standard Sheets affected: NONE Design Manual Sections affected: SECTION 17-5.11 GIFE Sections cross-references: SECTION 5.24	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Pankow
Date: 02/17/11

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Minor changes needed to the 701 specification.

PROPOSED SOLUTION: Incorporate the proposed changes into 701.

APPLICABLE STANDARD SPECIFICATIONS: 701.05, 701.08

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None.

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 2-5502

Date: January 25, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee consisting of: Ron Heustis, Jim Reilman, Mir Zaheer

Item No. 04 02/17/11 (2010 SS)
Mr. Pankow
Date: 02/17/11

REVISION TO STANDARD SPECIFICATIONS

SECTION 701 – DRIVEN PILING
701.05(b)1 SCHEDULING
701.05(b)3 RESTRIKE
701.08 NOMINAL DRIVING RESISTANCE OF PRODUCTION PILES

The Standard Specifications are revised as follows:

SECTION 701, BEGIN LINE 395, INSERT AS FOLLOWS:

1. Scheduling

The Contractor shall notify the Engineer at least 7 calendar days before the scheduled date of driving piles to be monitored by PDA. The Contractor shall confirm the driving date 3 calendar days prior to the scheduled driving date. *The Contractor shall indicate at which foundation production pile driving is to begin. The Engineer will provide final driving criteria for the indicated foundation first.*

SECTION 701, BEGIN LINE 439, DELETE AS FOLLOWS:

~~The Contractor shall indicate at which foundation production pile driving is to begin. The Engineer will provide final driving criteria for the indicated foundation first~~. Once the restrike test for the test pile is complete, the Engineer will run CAPWAP analyses and will provide the final driving criteria within 2 business days of the restrike test.

SECTION 701, BEGIN LINE 567, DELETE AND INSERT AS FOLLOWS:

701.08 Nominal Driving Resistance of Production Piles

~~Piles shall be driven to the penetration depth necessary to obtain the nominal driving resistance, as determined by 701.05. For acceptance, the Engineer will record the number of hammer blows per 12 in. of pile movement for the last 12 in. of driving. Production piles shall also attain the minimum pile tip elevation, if a minimum pile tip elevation is shown on the plans.~~

Production piles shall be driven the depth necessary to obtain the required nominal driving resistance as determined by 701.05. If a minimum pile tip elevation is shown on the plans, in addition to obtaining the required nominal driving resistance, production piles shall also be driven to the minimum pile tip elevation or to practical refusal.

When the nominal driving resistance is determined in accordance with 701.05(a), for acceptance, the Engineer will record at a minimum the number of hammer blows per inch or per foot of pile movement for the last 24 in. of driving. When the nominal driving resistance is determined in accordance with 701.05(b), for acceptance, the Engineer will record the blow count per inch or foot of pile movement and the associated hammer stroke for the last 2 consecutive feet of driving, and the final pile tip elevation as per the pile driving criteria established through the dynamic pile load test.

COMMENTS AND ACTION

701.05(b)1 SCHEDULING
701.05(b)3 RESTRIKE
701.08 NOMINAL DRIVING RESISTANCE OF PRODUCTION PILES

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 701.05 pg 462, 463; 701.08 pg 465. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: SECTION 5.7	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Strain
Date: 02/17/11

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Pavement (subsurface) drainage using the typical underdrain system is not possible when a pavement section is on top of an MSE wall section.

PROPOSED SOLUTION: Modify the typical underdrain detail to provide subsurface drainage for pavement sections when located within MSE wall limits.

APPLICABLE STANDARD SPECIFICATIONS: 718

APPLICABLE STANDARD DRAWINGS: 706-BRRW-01, 706-BRRW-02, 706-BRRW-03, 706-BRRW-04, 706-BRRW-05, 706-BRRW-06, 706-BRRW-07, 706-BRRW-08, 706-BRRW-10

APPLICABLE DESIGN MANUAL SECTION: 52-10.0

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None. The pay item for underdrain for MSE wall is an existing pay item, aggregate for underdrains.

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer,
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 2-3339

Date: January 24, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee consisting of: Dave Andrewski, Jim Reilman, Randy Strain, and Tony Uremovich. Industry was also provided a copy of the proposed changes.

Item No. 05 02/17/11 (2010 SS)
Mr. Strain
Date: 02/17/11

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

SECTION 718 - UNDERDRAINS
718.02 MATERIALS
718.03 PIPE INSTALLATION
718.09 METHOD OF MEASUREMENT
718.10 BASIS OF PAYMENT

The Standard Specifications are revised as follows:

SECTION 718, BEGIN LINE 24, DELETE AND INSERT AS FOLLOWS:

Rodent screens shall be woven stainless steel wire mesh or galvanized hardware cloth. Coarse aggregate No. 8 or 9 shall be used for 6 in. (150 mm) underdrain installations *and for underdrains for MSE walls*. Coarse aggregate No. 9 shall be used for 4 in. (100 mm) underdrain installations.

The mixture for HMA for underdrains shall be Intermediate OG19.0 mm in accordance with 401. An ESAL Category 5 in accordance with 401.04 and a PG Binder 76-22 shall be used. A MAF in accordance with 401.05 will not apply. Acceptance of the HMA for underdrains will be in accordance with 402.09.

CONSTRUCTION REQUIREMENTS

718.03 Pipe Installation

(a) Locations Outside MSE Wall Limits

Trenches shall be excavated to the dimensions and grade shown on the plans. Each longitudinal underdrain trench shall be cut continuously across all twin outlet areas and all single outlet areas. Such pipeless portions of the trench shall be backfilled with aggregate for underdrains. Pipes shall be secured to ensure that the pipe's required grade and horizontal alignment are maintained. Perforated pipe shall be placed with the perforations down. The pipe sections shall be joined securely with the appropriate couplings, fittings, or bands. The pipe shall be installed in the underdrain trench such that a minimum clearance of 2 in. (50 mm) exists between the pipe and the trench walls. Aggregate for underdrains shall be placed in a manner which minimizes contamination. HMA for underdrains shall be placed and compacted separately from mainline mixtures. HMA for underdrains may be placed in ~~one~~*1* lift and shall be compacted with equipment in accordance with 409.03(d).

If plain end concrete pipe is being laid, no joint width shall not exceed 1/4 in. (6 mm).

(b) Underdrains for MSE Walls

Where the pavement section is located within the limits of an MSE wall, the underdrain pipe and trench described in 718.03(a) shall be omitted. The underdrains for MSE walls shall be as shown on the plans. Aggregate for underdrains used as underdrains for MSE walls shall be compacted in accordance with 731.11.

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

SECTION 718 - UNDERDRAINS
718.02 MATERIALS
718.03 PIPE INSTALLATION
718.09 METHOD OF MEASUREMENT
718.10 BASIS OF PAYMENT

SECTION 718, BEGIN LINE 134, INSERT AS FOLLOWS:

Aggregate for underdrains *and underdrains for MSE walls* will be measured by the cubic yard (cubic meter), complete in place. The pay limits will not extend beyond the neat lines shown on the plans.

SECTION 718, AFTER LINE 159, INSERT AS FOLLOWS:

Underdrains for MSE Walls will be paid for at the contract unit price per cubic yard as aggregate for underdrains.

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

SECTION 718 - UNDERDRAINS
718.02 MATERIALS
718.03 PIPE INSTALLATION
718.09 METHOD OF MEASUREMENT
718.10 BASIS OF PAYMENT

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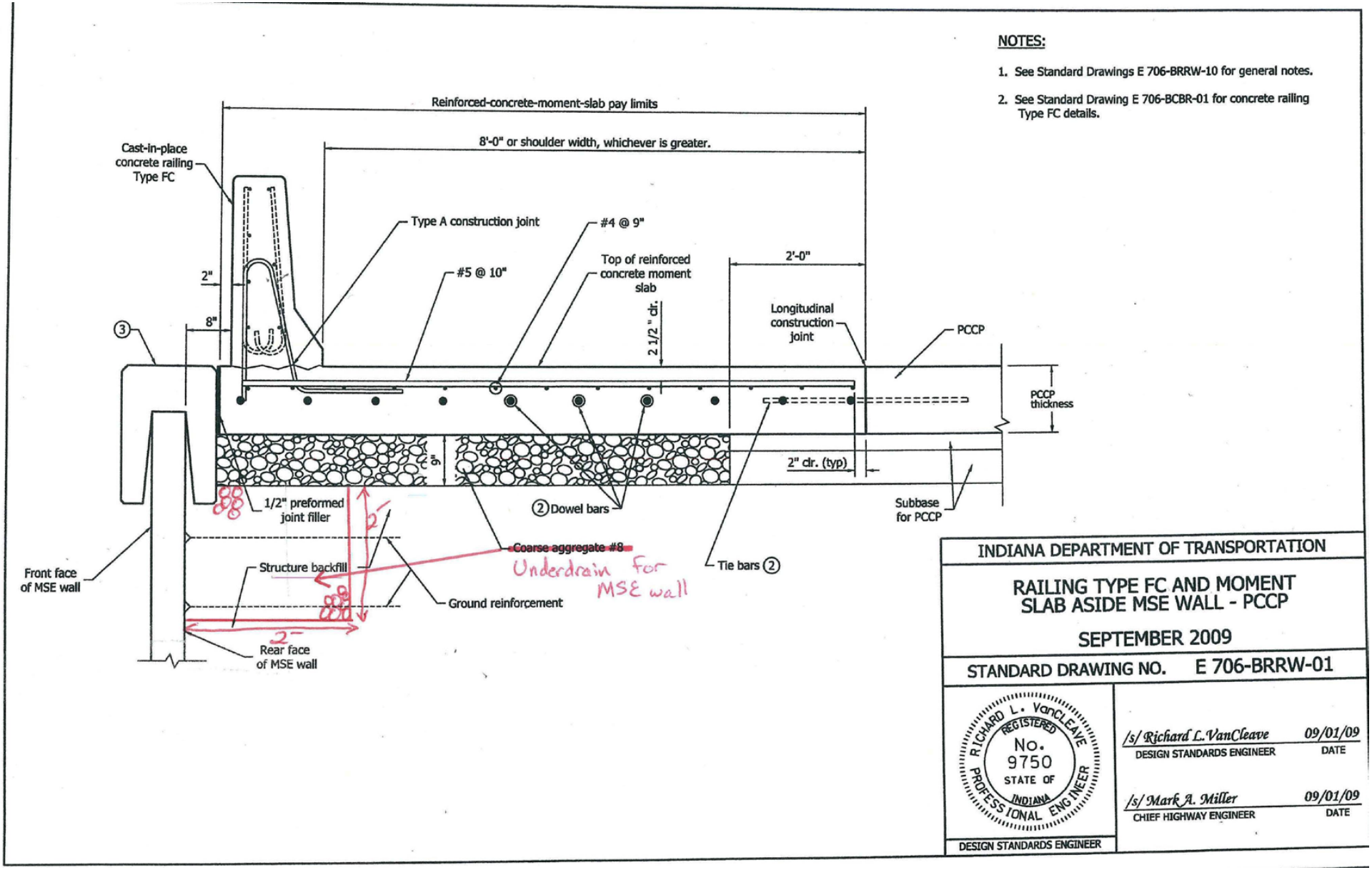
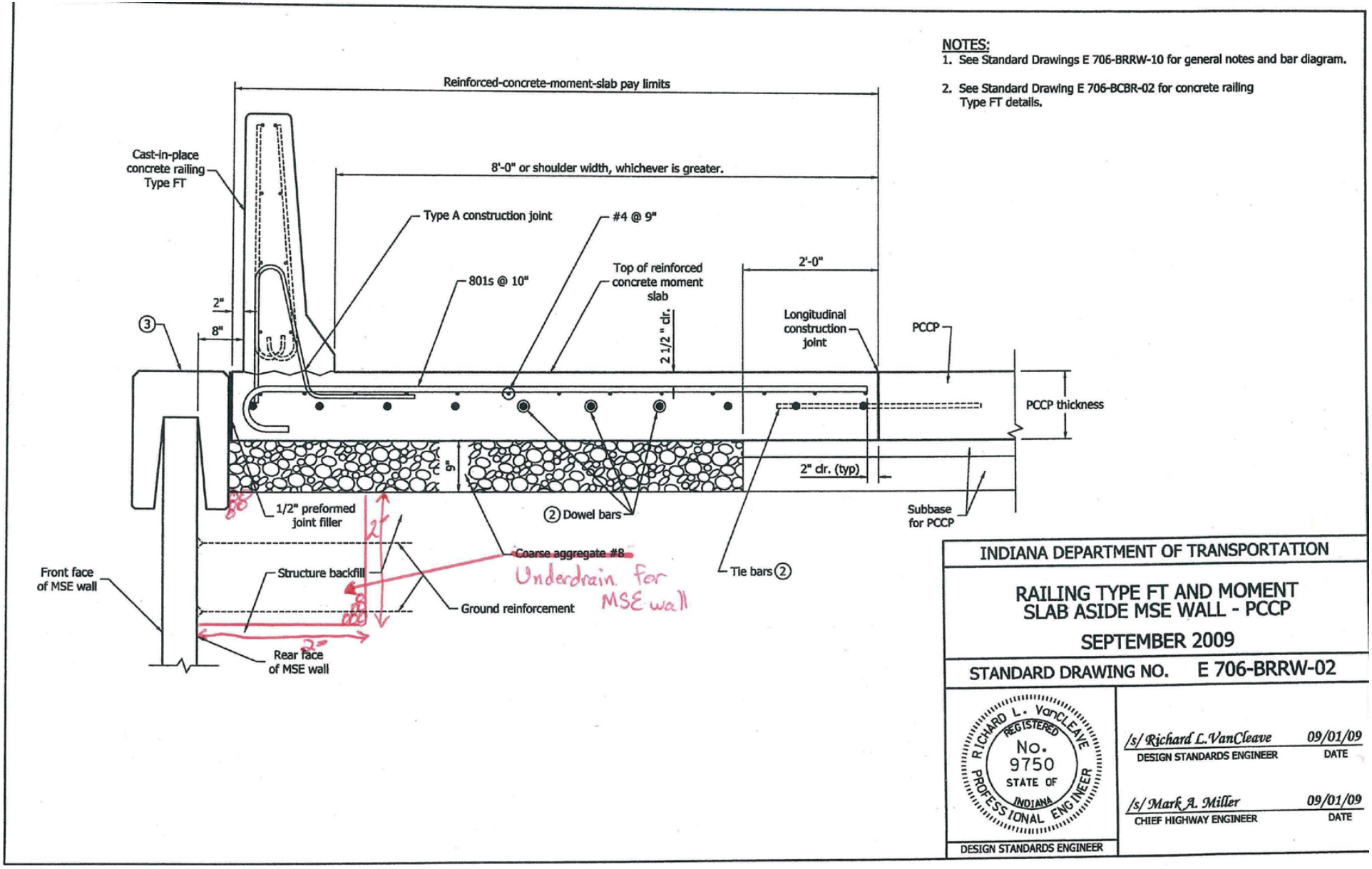
REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-01 RAILING TYPE FC AND MOMENT SLAB ASIDE MSE WALL - PCCP



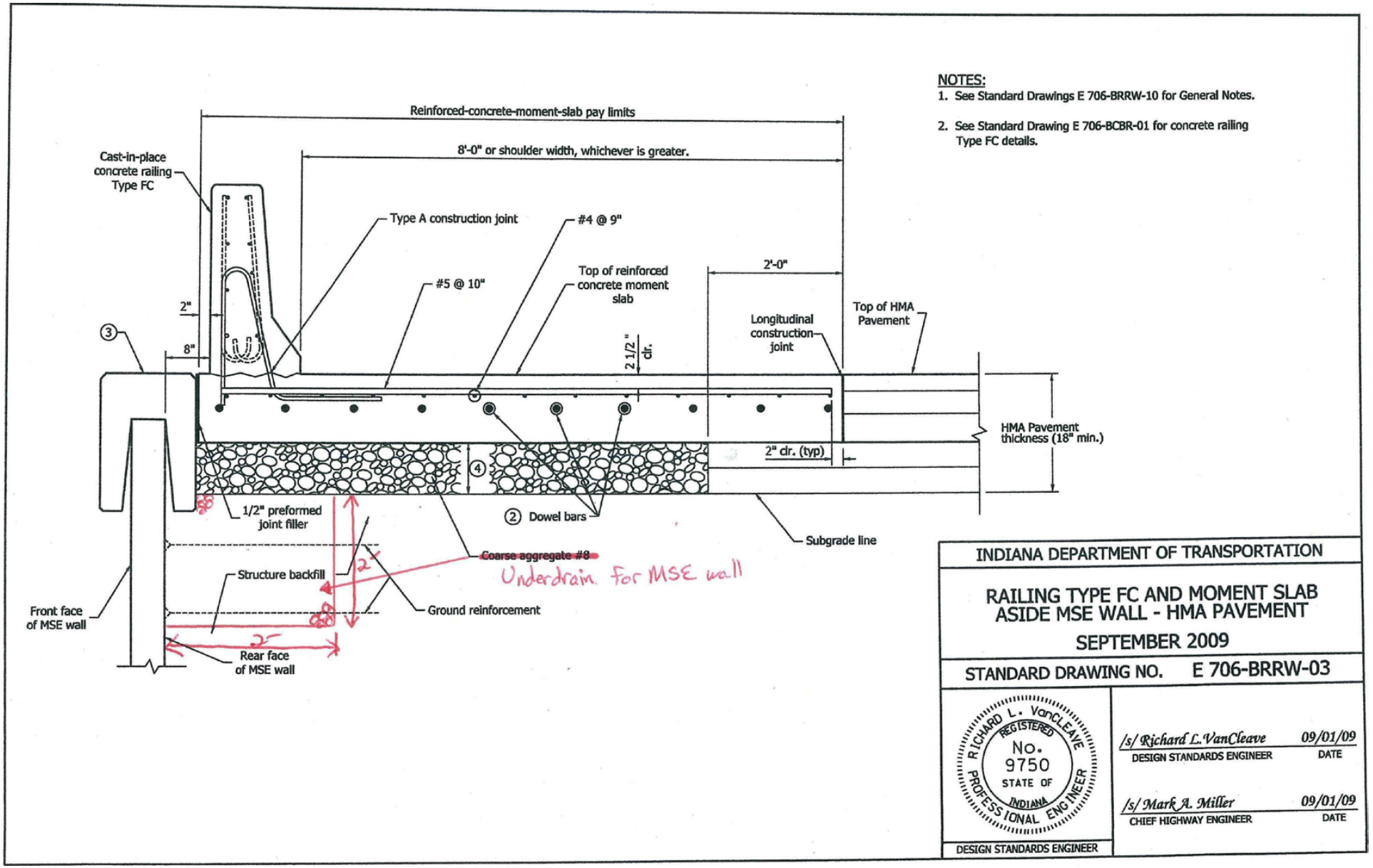
REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-02 RAILING TYPE FT AMD MOMENT SLAB ASIDE MSE WALL -PCCP



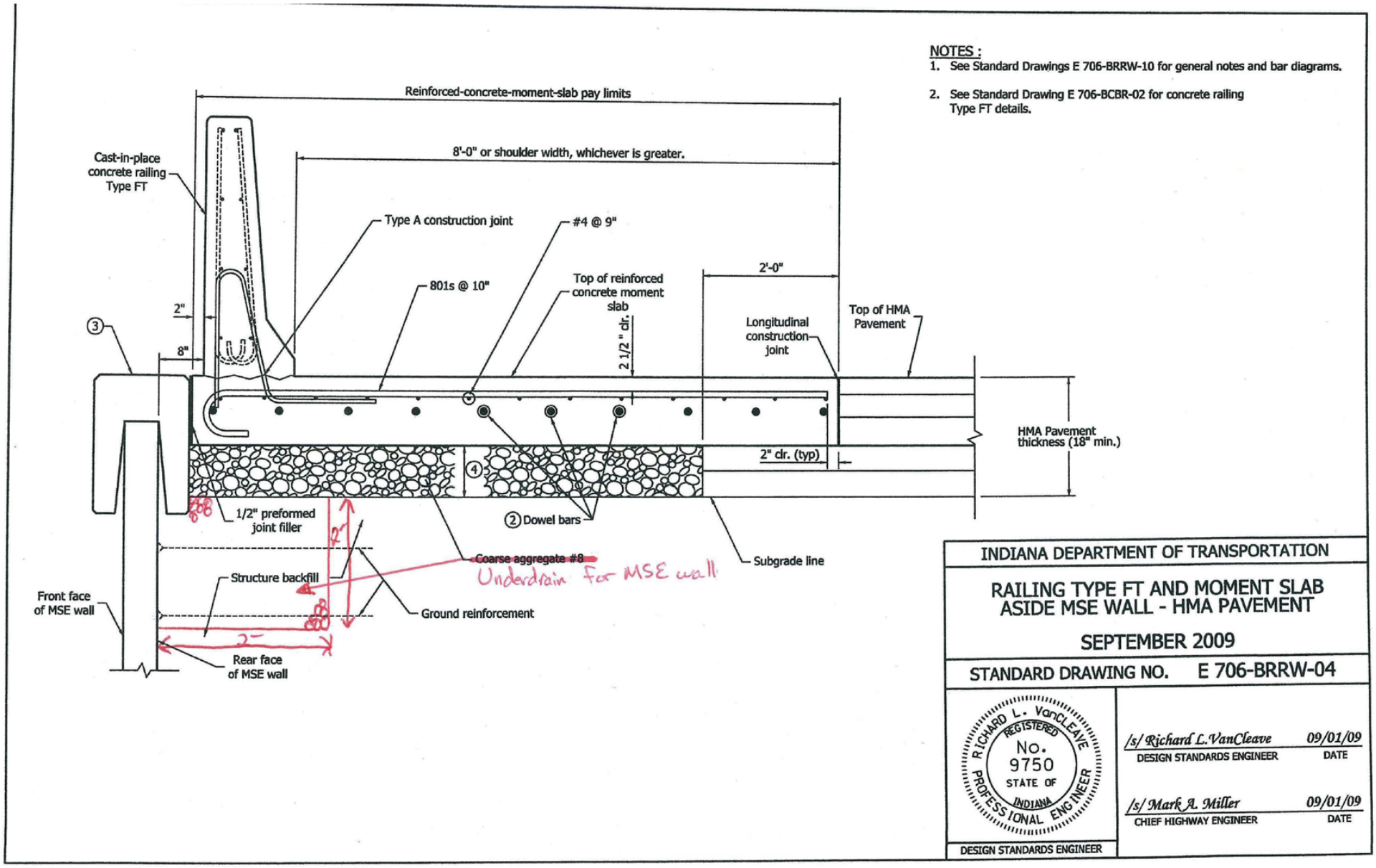
REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-03 RAILING TYPE FC AND MOMENT SLAB ASIDE MSE WALL – HMA PAVEMENT



REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

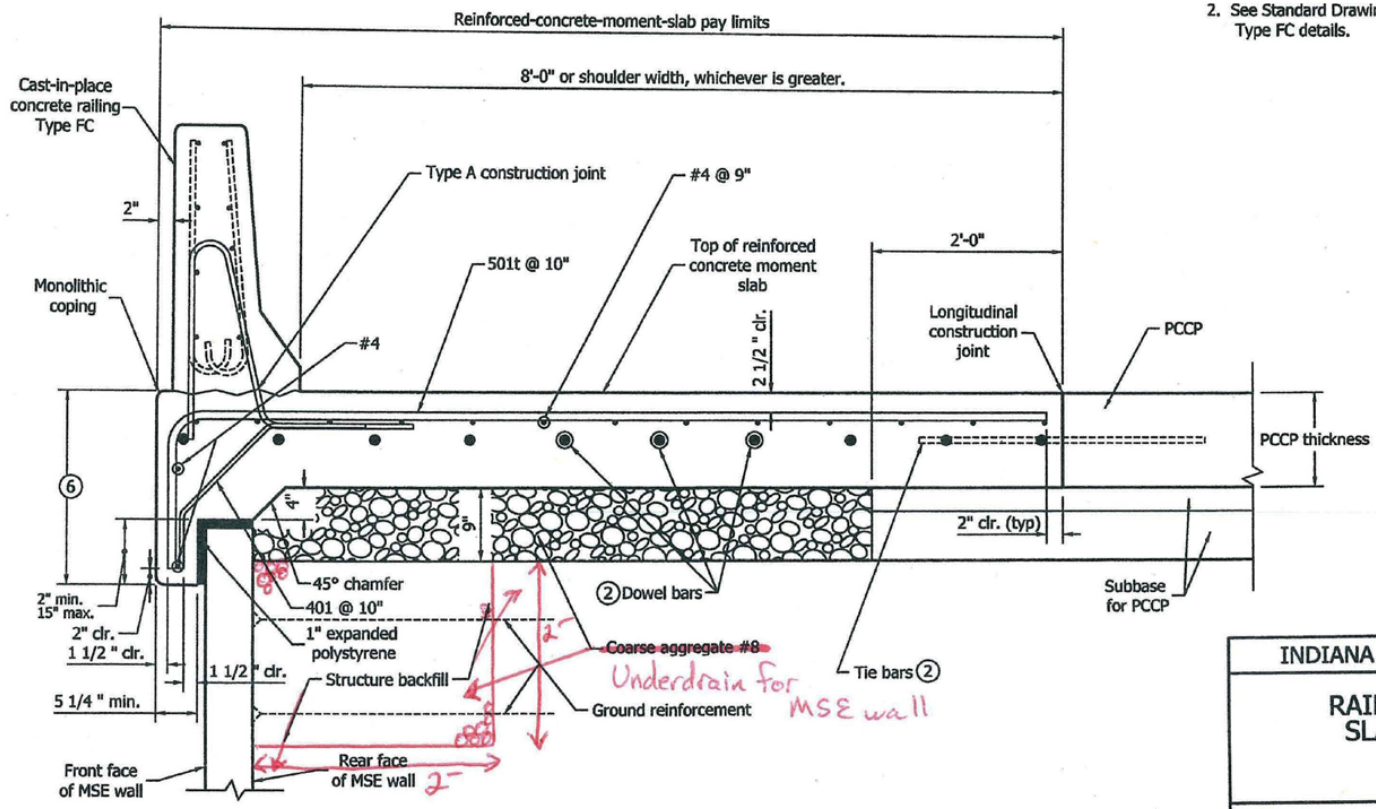
706-BRRW-04 RAILING TYPE FT AND MOMENT SLAB ASIDE MSE WALL – HMA PAVEMENT



REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-05 RAILING TYPE FC AND MOMENT SLAB ATOP MSE WALL - PCCP

NOTES :
1. See Standard Drawings E 706-BRRW-10 for general notes and bar diagrams.
2. See Standard Drawing E 706-BCBR-01 for concrete railing Type FC details.



INDIANA DEPARTMENT OF TRANSPORTATION

RAILING TYPE FC AND MOMENT SLAB ATOP MSE WALL - PCCP

SEPTEMBER 2009

STANDARD DRAWING NO. E 706-BRRW-05

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

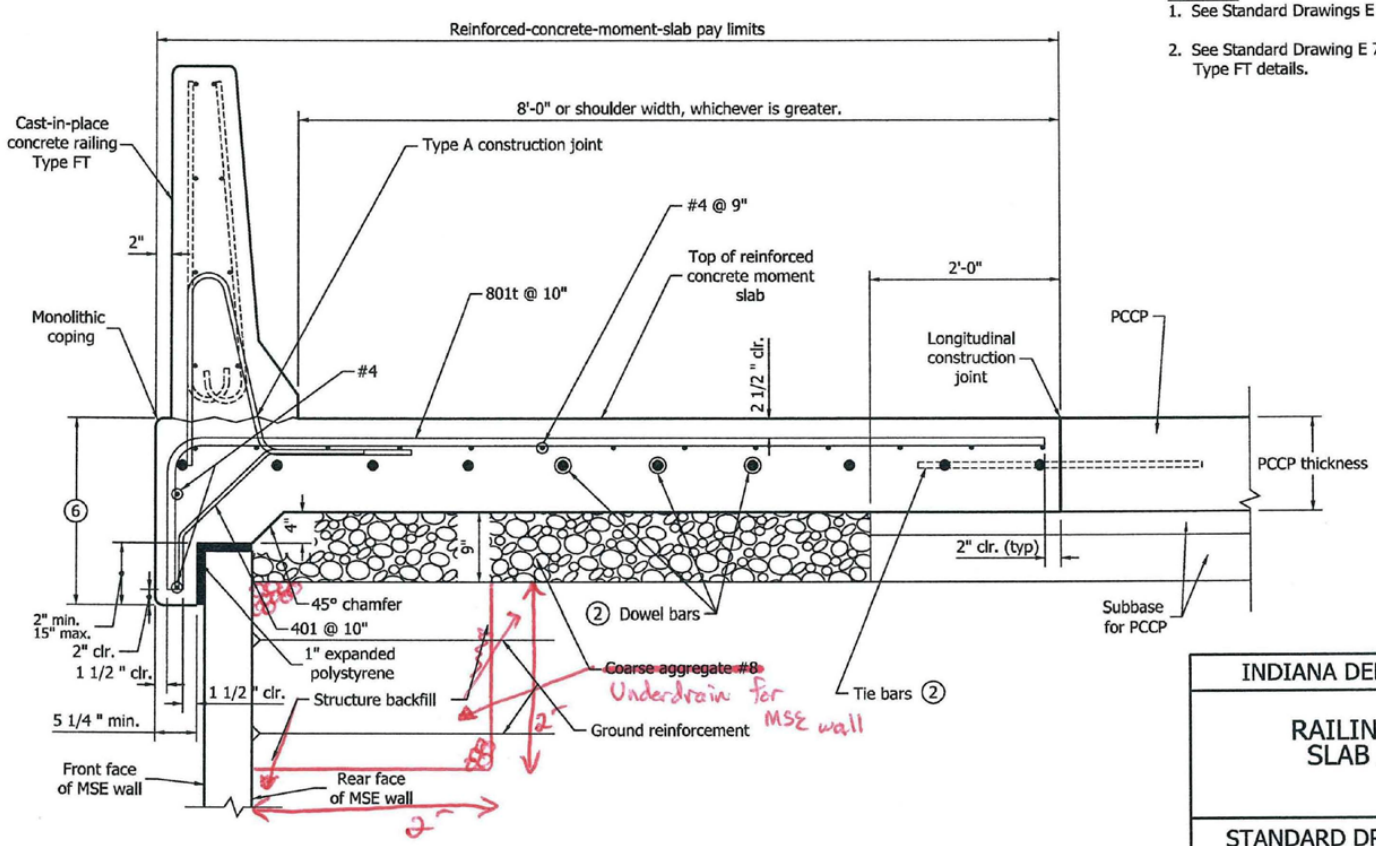
/s/ Richard L. VanCleave 09/01/09
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-06 RAILING TYPE FT AND MOMENT SLAB ATOP MSE WALL - PCCP

NOTES :
1. See Standard Drawings E 706-BRRW-10 for general notes and bar diagrams.
2. See Standard Drawing E 706-BCBR-02 for concrete railing Type FT details.



INDIANA DEPARTMENT OF TRANSPORTATION

RAILING TYPE FT AND MOMENT SLAB ATOP MSE WALL - PCCP

SEPTEMBER 2009

STANDARD DRAWING NO. E 706-BRRW-06

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

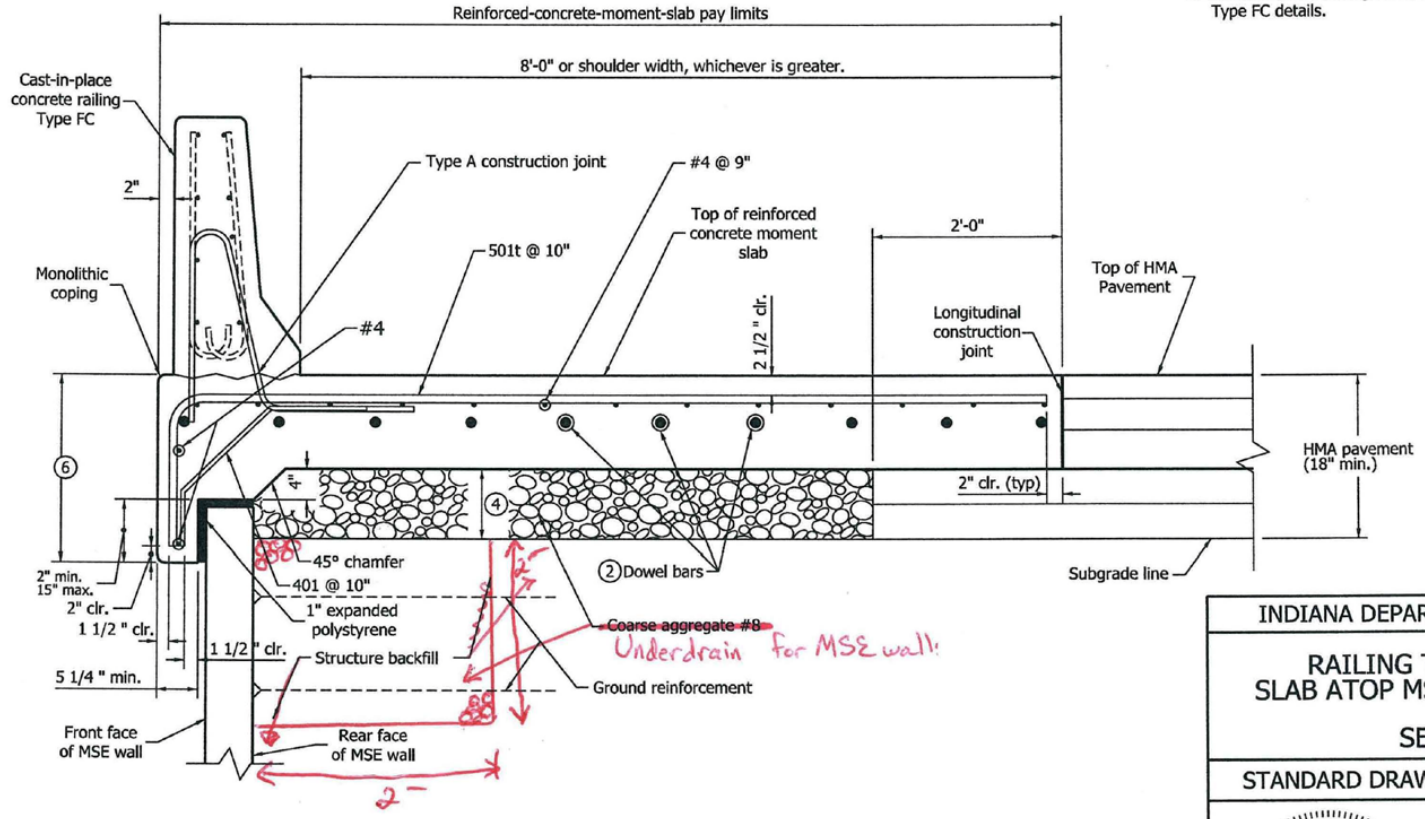
/s/ Richard L. VanCleave 09/01/09
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-07 RAILING TYPE FC AND MOMENT SLAB ATOP MSE WALL – HMA PAVEMENT

NOTES :
1. See Standard Drawings E 706-BRRW-10 for general notes and bar diagrams.
2. See Standard Drawing E 706-BCBR-01 for concrete railing Type FC details.



INDIANA DEPARTMENT OF TRANSPORTATION

RAILING TYPE FC AND MOMENT SLAB ATOP MSE WALL - HMA PAVEMENT

SEPTEMBER 2009

STANDARD DRAWING NO. E 706-BRRW-07

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

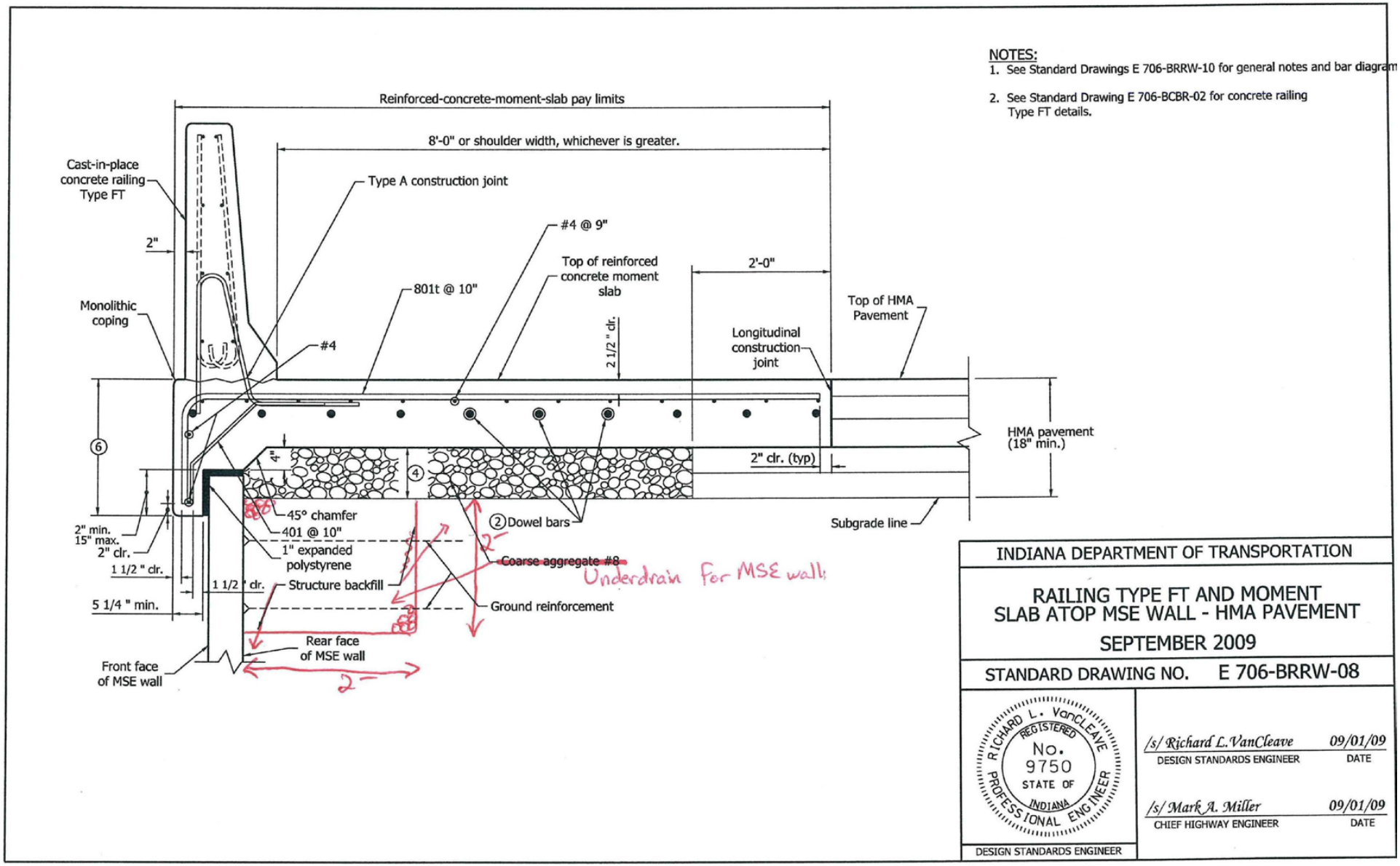
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/09
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-08 RAILING TYPE FT AND MOMENT SLAB ATOP MSE WALL – HMA PAVEMENT

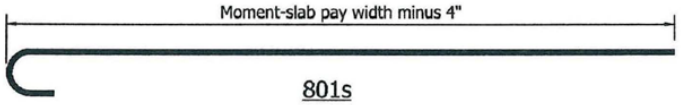


REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

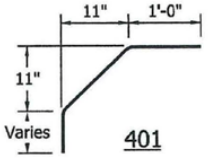
706-BRRW-10 RAILING AND MOMENT SLAB AT MSE WALL

GENERAL NOTES:

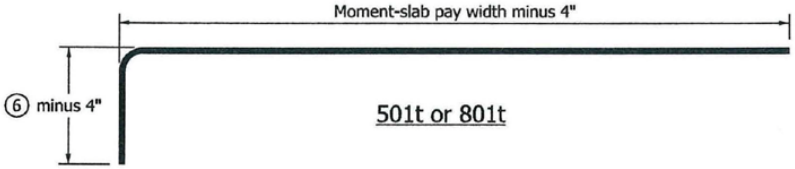
1. The locations of the transverse joints in the moment slab and the railing shall be the same.
2. See Standard Drawing E 706-BRRW-09 for plan view and additional reinforcing bars in the railing at the railing joints.
3. The coping by be precast or cast in place. See Standard Drawing E 731-BRRW-01 for coping details.
4. The thickness of the ~~coarse aggregate No. 8~~ underdrain for MSE wall shall be equal to the combined thicknesses of the first two lifts of HMA, but not less than 6 in.
5. The moment-slab thickness shall match that of adjoining PCCP, but shall not be less than 12 in., regardless of pavement type.
6. For moment slab thickness ≤ 15 in., this shall be 2'-0".
   For moment slab thickness > 15 in., this shall be moment-slab thickness plus 12 in.
7. The moment slab shall be used only within the limits of the MSE wall.
8. Reinforcing bars in the moment slab shall be epoxy coated.



801s



401



501t or 801t

INDIANA DEPARTMENT OF TRANSPORTATION

RAILING AND MOMENT SLAB AT MSE WALL

SEPTEMBER 2009

STANDARD DRAWING NO. E 706-BRRW-10

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/09
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD SPECIFICATION AND STANDARD DRAWINGS

706-BRRW-10 RAILING AND MOMENT SLAB AT MSE WALL

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COMMENTS AND ACTION

718.02 MATERIALS
718.03 PIPE INSTALLATION
718.09 METHOD OF MEASUREMENT
718.10 BASIS OF PAYMENT
706-BRRW-01 through -08 and 706-BRRW-10.

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 718.02 pg 606; 718.03 pg 606-607; 718.09 pg 609; 718.10 pg 609. Recurring Special Provision affected: NONE Standard Sheets affected: 706-BRRW-01 through -08 and 706-BRRW-10. Design Manual Sections affected: SECTION 52-10.0 GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Various locations throughout the SS refer to the AASHTO Standard Specifications for Highway Bridges, Division II. This is outdated.

PROPOSED SOLUTION: Since the Department has switched to LRFD design, the reference to the AASHTO Standard Specifications for Highway Bridges, Division II should be changed to the AASHTO LRFD Bridge Construction Specifications.

APPLICABLE STANDARD SPECIFICATIONS: 711.65(d)1, 717.03, 906.07(b), 908.09(a)

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 2-5502

Date: January 25, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

REVISION TO STANDARD SPECIFICATIONS

711.65(d)1 BOLT TENSION
717.03 GENERAL REQUIREMENTS
906.07(b) TYPE M
908.09 STRUCTURAL PLATE PIPE, PIPE-ARCHES, AND ARCHES

The Standard Specifications are revised as follows:

SECTION 711, BEGIN LINE 976, DELETE AND INSERT AS FOLLOWS:

Installation of all high strength bolts shall be in accordance with AASHTO ~~Standard Specifications for Highway Bridges, Division II~~*LRFD Bridge Construction Specifications*. The snug tight condition as defined in AASHTO ~~Specifications for Highway Bridges, Division II~~*LRFD Bridge Construction Specifications*, shall be obtained for all final tightening.

SECTION 717, BEGIN LINE 26, DELETE AND INSERT AS FOLLOWS:

717.03 General Requirements

Forming, punching, and assembling shall be in accordance with AASHTO ~~Standard Specifications for Highway Bridges, Division II, Sections 23.2 and 23.3~~*LRFD Bridge Construction Specifications*. The radius of the arc joining the top to the bottom shall be in accordance with 908.09(a)1. Excavation shall be in accordance with the applicable requirements of 715 for pipe and pipe-arches and 206 for arches. Concrete shall be placed in accordance with 702 and reinforcing bars shall be placed in accordance with 703.

SECTION 906, BEGIN LINE 241, DELETE AND INSERT AS FOLLOWS:

(b) Type M

This joint shall consist of prefabricated multiple elastomeric seals, separator beams, and support bars. The structural design of the joint shall be in accordance with AASHTO ~~Standard Specifications for Highway Bridges~~ *LRFD Bridge Construction Specifications* and shall be for the same design loading as the bridge structure at which it is to be installed, but not less than HS 20-44 truck loading and impact. The joint shall be designed to accommodate the movement shown on the plans.

SECTION 908, BEGIN LINE 135, DELETE AND INSERT AS FOLLOWS:

908.09 Structural Plate Pipe, Pipe-Arches, and Arches

(a) Steel

Steel structural plate pipe, pipe-arches, and arches shall be constructed from individually galvanized corrugated steel plates as described herein. For pipes and pipe-arches having a thickness less than 0.280 in. (7.11 mm), the bottom plates shall be of the next greater thickness than that specified for the top and side plates, not including corner plates for pipe-arches. The individual plates shall be in accordance with AASHTO M 167 (M 167M) and ~~Section 26 of the~~ AASHTO ~~Standard Specifications for Highway Bridges, Division II~~ *LRFD Bridge Construction Specifications*.

COMMENTS AND ACTION

711.65(d)1 BOLT TENSION
717.03 GENERAL REQUIREMENTS
906.07(b) TYPE M
908.09 STRUCTURAL PLATE PIPE, PIPE-ARCHES, AND ARCHES

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 711.65(d)1 pg 562, 717.03 pg 602, 906.07(b) pg 789, 908.09(a) pg 801. Recurring Special Provision with similar references: 707-B-085; 717-R-152; 731-R-202; 732-R-310. Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Andrewski
Date: 02/17/11

SPECIFICATION REVISIONS

REVISION TO STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:
Standard Drawing E 503-CCPJ-02 tie bar sizes are not in accordance with MEPDG.
Standard Drawing E 503-CCPJ-08 retrofit tie bar sizes are not in accordance with MEPDG.
Standard Drawing E 506-CCPP-01 retrofit tie bar spacing for patches is in error. The drawing has tie bars spaced at 6 inches for a 6'-0" patch, referenced Standard Drawings are in error, and editorials.

PROPOSED SOLUTION:
Standard Drawing E 503-CCPJ-02 - Revise tie bar sizes.
Standard Drawing E 503-CCPJ-08 - Revise retrofit tie bar sizes.
Standard Drawing E 506-CCPP-01 - Revise retrofit tie bar spacing, correct references, and make editorial revisions.

APPLICABLE STANDARD SPECIFICATIONS: No change to 503.03 (b) Longitudinal Joint, 503.03(d) Longitudinal Construction Joint, and 503.03(g) Retrofitted Tie Bars

APPLICABLE STANDARD DRAWINGS: E 503-CCPJ-02, E 503-CCPJ-08, & E 506-CCPJ-01

APPLICABLE DESIGN MANUAL SECTION: Chapter 52 Pavements

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: Retrofitted Tie Bars, QC/QA PCCP, PC

Submitted By: David Andrewski

Title: Manager, Office of Pavement Engineering

Organization: INDOT

Phone Number: 317-232-5452

Date: January 21, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: -

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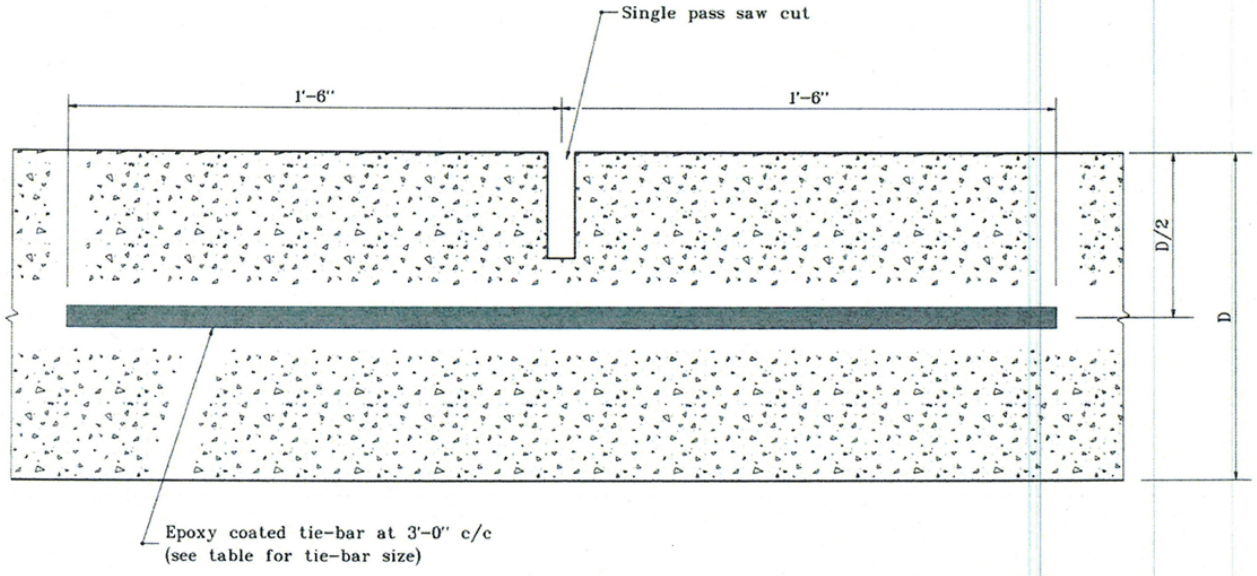
REVISION TO STANDARD DRAWINGS

REVISION TO 503-CCPJ-02 LONGITUDINAL JOINT

TIE-BAR SIZES FOR LONGITUDINAL JOINT	
Pavement Thickness, D	Tie Bar Size
Less than 9" (or equal to)	#5
~~9" through 12"~~	~~#6~~
Greater than ~~12"~~ 9"	~~#7~~ #6



TRANSVERSE SECTION THROUGH CONCRETE PCCP

INDIANA DEPARTMENT OF TRANSPORTATION

LONGITUDINAL JOINT

SEPTEMBER 1999

STANDARD DRAWING NO. E 503-CCPJ-02

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

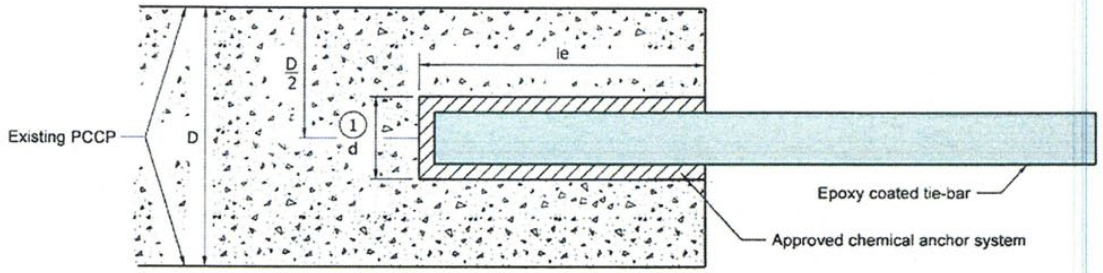
/s/ Anthony L. Uremovich 9-01-99
DESIGN STANDARDS ENGINEER DATE

/s/ Donald W. Lucas 9-01-99
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

REVISION TO 503-CCPJ-08 LONGITUDINAL CONSTRUCTION JOINT

PAVEMENT THICKNESS, D	LONGITUDINAL CONSTRUCTION JOINT Retrofit Tie-bars at 3'-0 c/c	
	TIE-BAR SIZE	MIN. LENGTH OF EMBEDMENT, le
Less than 9" or equal to	#5	1'-0"
~~9" to 12"~~	~~#7~~	~~1'-3"~~
Greater than ~~12~~ 9"	~~#8~~ #6	~~1'-6"~~ 1'-0



RETROFIT CONSTRUCTION TIE-BAR EMBEDMENT DETAIL

NOTES:

(1) Diameter of drilled hole (d) shall be in accordance with the chemical anchor system manufacturer's instructions.

INDIANA DEPARTMENT OF TRANSPORTATION

LONGITUDINAL CONSTRUCTION JOINT

SEPTEMBER 2009

STANDARD DRAWING NO. E 503- CCPJ-08

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

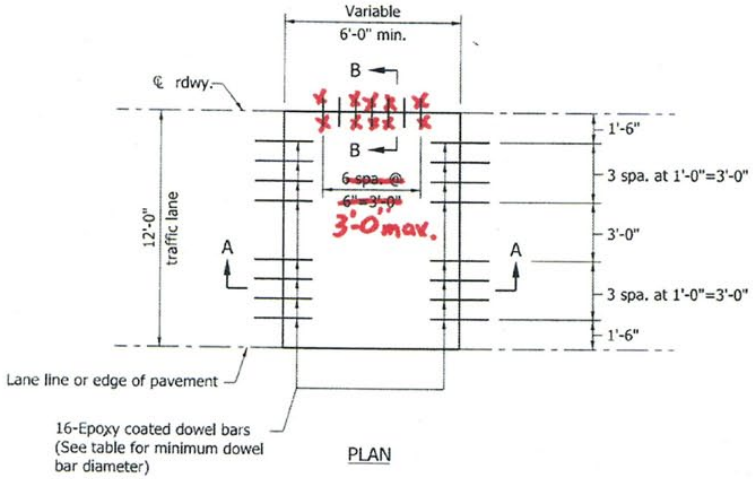
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/09
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

REVISION TO 506-CCPP-01 CONCRETE PAVEMENT PATCH DETAILS



PLAN

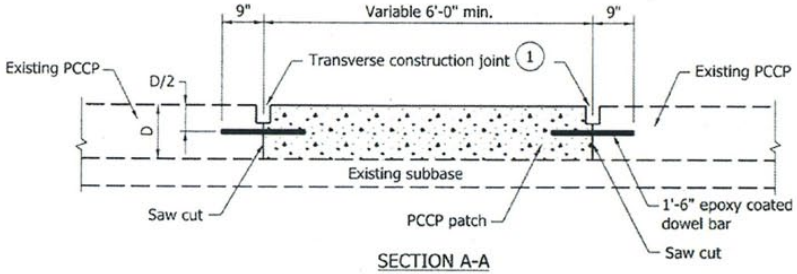
DOWEL BAR SIZES	
Pavement Thickness, D	Minimum Dowel Bar Diameter
Less than 9"	1"
9" through 12"	1 1/4"
Greater than 12"	1 1/2"

NOTES:

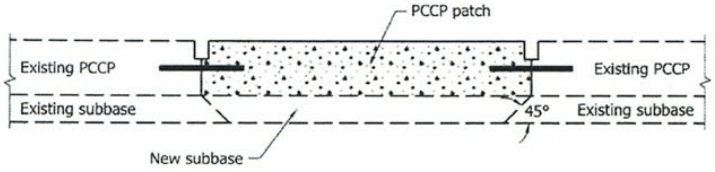
03

1. See Standard Drawing E 503-CCPP-06 for joint seal details.
2. Saw cuts and joint seal shall be omitted if PCCP is to be overlaid.
3. Minimum of 2'-0" horizontal distance between retrofitted tie bar and the nearest D-1 contraction joint within the patch or the end of the patch.
4. Retrofitted tie bars are not to be placed less than 2'-0" from any transverse joint or random crack in an adjacent PCCP lane or PCCP shoulder.
5. See Standard Drawing E 503-CCPP-07 for retrofit tie bar sizing and spacing.

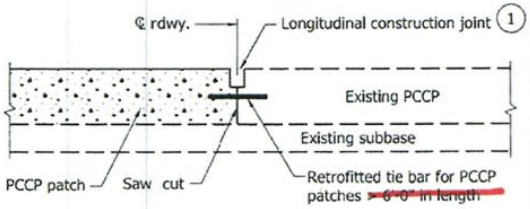
08



SECTION A-A
(Where Existing Subbase is not removed)



SECTION A-A
(Where Existing Subbase must be removed)



SECTION B-B

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT PATCH DETAILS

SEPTEMBER 2010

STANDARD DRAWING NO. E 506-CCPP-01

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

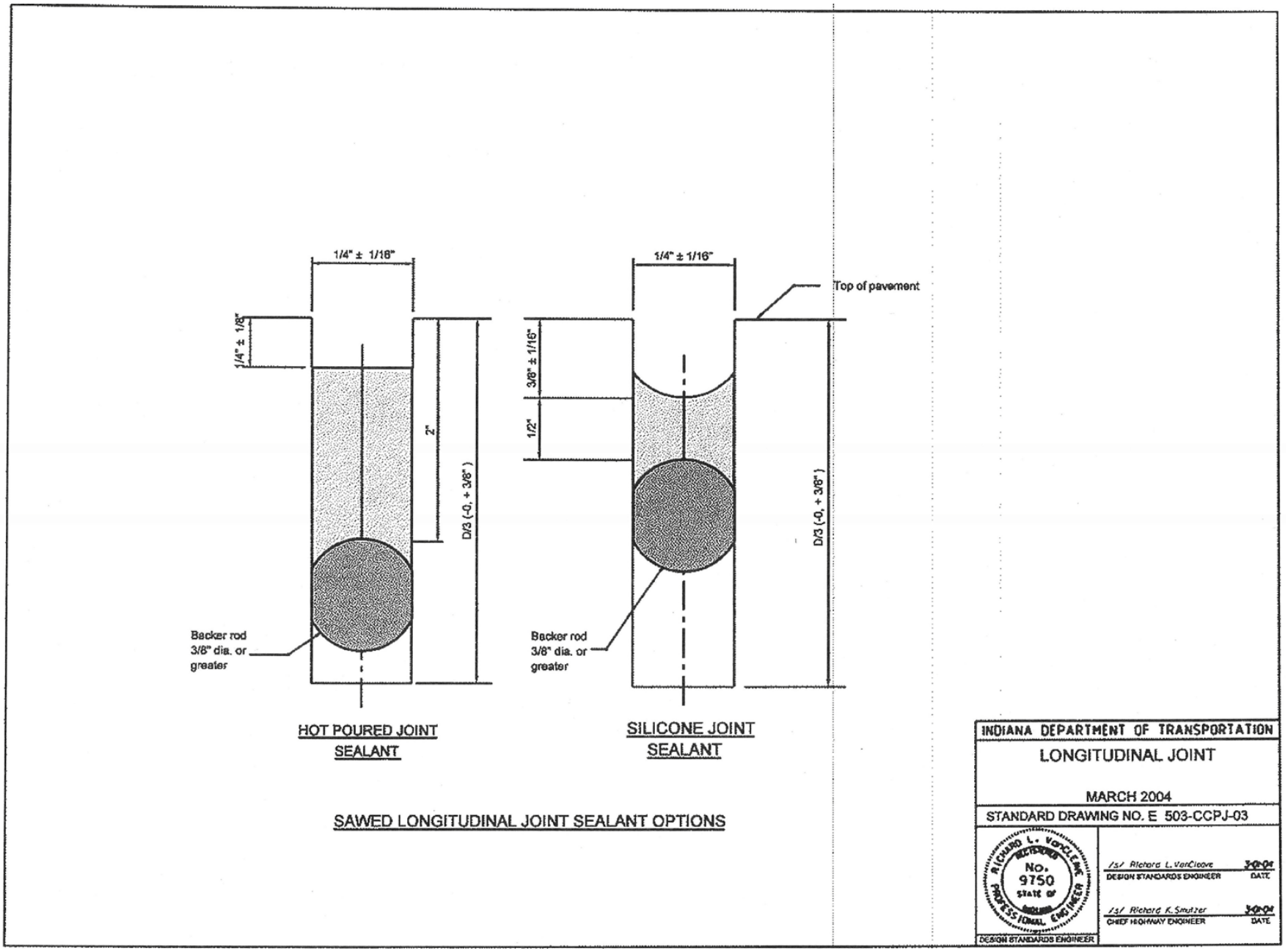
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

BACKUP 1. 503-CCPJ-03 LONGITUDINAL JOINT



COMMENTS AND ACTION

503-CCPJ-02 LONGITUDINAL JOINT
503-CCPJ-08 LONGITUDINAL CONSTRUCTION JOINT
506-CCPP-01 CONCRETE PAVEMENT PATCH DETAILS

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: NONE Standard Sheets affected: 503-CCPJ-02 503-CCPJ-08 506-CCPP-01 Design Manual Sections affected: CHAPTER 52 GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Pankow
Date: 02/17/11

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:
The 2010 Work Zone Findings Report showed that flagging operations continue to not comply with the requirements of the IMUTCD. Section 801 does not have a requirement for flagger qualifications. This specification adds the requirement that flagging operations are conducted by trained personnel under the supervision of a certified flagger or Certified Workzone Traffic Supervisor. There are currently around 630 certified flaggers, 24 flagger trainers and several hundred CWTS certified by ATSSA in the state of Indiana. Also, certified flagger training is available through the ATSSA web site.

PROPOSED SOLUTION: Insert the enclosed language into Section 801.16

APPLICABLE STANDARD SPECIFICATIONS: 801.16

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: Section 2.9

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Greg Pankow

Title:

Organization: INDOT

Phone Number: 232-5502

Date: January 18, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT?

Item No. 08 02/17/11 (2010 SS)
Mr. Pankow
Date: 02/17/11

REVISION TO STANDARD SPECIFICATION

SECTION 801 – TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS
801.16(b) MAINTENANCE OF TRAFFIC FOR MOBILE OPERATIONS

The Standard Specifications are revised as follows:

SECTION 801, BEGIN LINE 818, INSERT AS FOLLOWS:

(b) Maintenance of Traffic for Mobile Operations

Signs, flagging, flashing arrow signs, and other required traffic control devices shall be furnished in accordance with the details shown on the plans or as directed. The Engineer reserves the right to stop work at any time to relieve traffic congestion.

Flagging operations shall be conducted under the direct supervision of either the designated CWTS or a flagger certified by ATSSA or approved equal certifying organization. The person supervising the flagging operation shall ensure that the flaggers are trained in proper flagging procedures and that the flagging operation is in compliance with the applicable sections of the MUTCD.

COMMENTS AND ACTION

801.16(b) MAINTENANCE OF TRAFFIC FOR MOBILE OPERATIONS

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections references "flagger" at: 801.16 pg 670, 107.12, 612.05, and 801.16(c). Recurring Special Provision affected: 104-R-168 Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: SECTION 2.9	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 701-B-068 describes bitumen coating for piles. It is a method which the Office of Geotechnical Services, and the INDOT-ASCE Structural Subcommittee, through concurrence in its meeting of 1-18-11, indicate to be unsatisfactory. It peels in hot weather during placement. It does not function well in drag-down where overburden material is semi-sound, and the underlying material is compressible.

PROPOSED SOLUTION: Delete the provision from the menu.

APPLICABLE STANDARD SPECIFICATIONS: n/a

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

RECURRING SPECIAL PROVISION

701-B-068 BITUMEN COATING FOR PILES

~~701-B-068 BITUMEN COATING FOR PILES~~

(Revised 09-01-05)

Description

The work shall consist of furnishing and applying bitumen coating and primer to steel pile surfaces in accordance with these specifications and in reasonably close conformance with the lines and at the locations shown on the plans or as directed.

Materials

Bitumen coating shall be canal liner bitumen in accordance with ASTM D 2521. It shall have a softening point of 190°F to 200°F (88°C to 93°C), a penetration of 56 to 61 at 77°F (25°C), and a ductility in excess of 1.38 in. (35 mm) at 77°F (25°C).

Primer shall be in accordance with AASHTO M 116.

Construction Requirements

All surfaces to be coated with bitumen shall be dry and thoroughly cleaned of dust and loose materials. Primer or bitumen shall not be applied in wet weather, nor when the ambient temperature is below 65°F (18°C).

Application of the prime coat shall be with a brush or other approved means and in a manner which thoroughly coats the surface of the piling with a continuous film of primer. The primer shall have set thoroughly before the bitumen coating is applied.

The bitumen shall be heated to 300°F (149°C) and applied at a temperature between 200°F and 300°F (93°C and 149°C) by means of one or more mop coats or other approved means. The average coating depth shall be 3/8 in. (10 mm). Whitewashing of the coating may be required during hot weather as directed to prevent running or sagging of the asphalt coating prior to driving of the pile.

Bitumen coated piles shall be protected from sunlight or heat immediately after the coating is applied. The bitumen coating shall not be exposed to damage or contamination during storage, hauling, or handling. Once the bitumen coating has been applied, dragging the piles on the ground or the use of cable wraps around the piles during handling will not be permitted. Pad eyes, or other suitable devices, shall be attached to the piles to be used for lifting and handling.

A nominal length of the pile shall be left uncoated as directed where field splices will be required. After completing the field splice, the splice area shall be brush coated or mop coated with a minimum of one coat of bitumen as directed.

Method of Measurement

This work will not be measured for payment.

RECURRING SPECIAL PROVISION

701-B-068 BITUMEN COATING FOR PILES

Basis of Payment

No direct payment will be made for this work. The cost of this work shall be included in the cost of the piling specified. The cost of this work shall include the costs of furnishing all labor, materials, tools, equipment, and incidentals for applying the bitumen coating and primer. If the bitumen coating is damaged, it shall be reapplied as directed with no additional payment.

COMMENTS AND ACTION

701-B-068 BITUMEN COATING FOR PILES

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 701-B-068 BITUMEN COATING FOR PILES Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 701-B-154 regarding oversized predrilled pile holes has recurred since 12-06-01, and has appeared in its present intent form since 1-15-09.

PROPOSED SOLUTION: Incorporate into 2012 Standard Specifications.

APPLICABLE STANDARD SPECIFICATIONS: Revise 701.02, 701.09(a)2, 701.14, 701.15; add 913.05

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

Item No. 10 02/17/11 (2010 SS)
Mr. Strain
Date: 02/17/11

REVISION TO STANDARDS SPECIFICATIONS

701.02 MATERIALS
701.09(a)2 PREDRILLING
701.15 BASIS OF PAYMENT
913.05 BENTONITE GROUT

(Changes shown as modification to RSP 701-B-145:
deletion – strikethrough and edition - underlined.)

701-B-154 OVERSIZED PREDRILLED PILE HOLES AND BENTONITE GROUT FOR REDUCTION OF PILE DOWNDRAG

(Revised 01-15-09)

The Standard Specifications are revised as follows:

SECTION 701, AFTER LINE 16, INSERT AS FOLLOWS:

Bentonite Grout.....*913.05*

~~**Description**~~

~~This work shall consist of pre-drilling pile holes to the elevations and at the location shown on the plans, driving piles, and backfilling with bentonite grout.~~

SECTION 913, AFTER LINE 64, INSERT AS FOLLOWS:

~~**Materials**~~***913.05 Bentonite Grout***

Bentonite grout shall be untreated, sodium bentonite, ~~mined in South Dakota or Wyoming,~~ finely ground with not more than 5% retained on the No. 200 (75 µm) sieve. It shall be free of lumps and ~~objectionable~~ materials that ~~would~~can prevent ~~easy~~ mixing into a ~~smooth~~ fluid free of lumps of unmixed bentonite. Calcium bentonite will not be ~~acceptable~~accepted.

~~The following are acceptable suppliers of bentonite.~~

~~Baroid, Haliburton Services, Houston (281) 871-5900~~

~~Local distributors are:~~
~~IES Drilling Supply, Pearl City, IL (800) 388-2906~~
~~Hughes Supply, Indianapolis, IN (317) 543-3603~~
~~Laibe Supply, Indianapolis, IN (317) 231-2250~~

~~Cetco, Arlington Heights (847)392-5800~~

~~Wyo-ben, Billings MT (406) 652-6351~~

~~Local distributors are:~~
~~Midsouth Supply, Greenfield, IN (317) 894-2210~~
~~Griffin Dewatering, Hammond, IN (219) 931-1662~~
~~J Line Pump, Yorkville, IL (630) 553-5100~~
~~Pump and Irrigation Supply, Evansville, IN (812) 985-3545~~

The grout shall be proportioned at 2 lbs (~~0.907~~*0.24* kg) of pure bentonite powder per ~~1~~ gal. ~~(3.785 L)~~ of potable water. Deviations from these proportions ~~require~~shall be subject to approval ~~of the Engineer~~.

REVISION TO STANDARDS SPECIFICATIONS

701.02 MATERIALS
701.09(a)2 PREDRILLING
701.15 BASIS OF PAYMENT
913.05 BENTONITE GROUT

SECTION 701, AFTER LINE 662, INSERT AS FOLLOWS:

~~**Construction Requirements**~~

The minimum diameter of ~~the~~oversized holes shall be 4 in. (100 mm) greater than the maximum cross sectional dimension of the pile. The holes shall be drilled to the elevations shown on the plans. The piles shall then be driven to the required penetration depth and nominal driving resistance. If pile sleeves are shown on the plans, the drilled holes shall be sleeved to maintain the opening during the driving of the piles.

Immediately after driving the piles, the annular space between the pile and the permanent casing or the pre-drilled hole shall be filled with the bentonite grout. The grout shall be ~~em~~placed at the depths shown on the plans or as directed. The ~~method of emplacement will be to fill the~~ entire annular space shall be filled from the bottom upwards to the top of the pile in one pumping operation using a tremie pipe.

Tremie-pipe construction shall include side discharge ports. ~~Termination of t~~The tremie pipe ~~using~~can be terminated by means of a tee connection. ~~will be acceptable.~~ Tremie pipe may be ~~constructed of~~ polyvinyl chloride, however, joints shall not be glued or cemented.

SECTION 701, AFTER LINE 807, INSERT AS FOLLOWS:

Epoxy coated piles, prebored holes, predrilled oversized pile holes, and cored holes in rock will be measured by linear foot (meter), complete in place, of the diameter specified.

SECTION 701, AFTER LINE 841, INSERT AS FOLLOWS:

Prebored holes, predrilled oversized pileholes, and cored holes in rock will be paid for at the contract unit price per linear foot (meter).

~~**Method of Measurement**~~

~~Predrilled pile holes will be measured by the linear foot (linear meter). Bentonite grout will not be measured.~~

~~**Basis of Payment**~~

~~Predrilled pile holes will be paid for at the contract unit price per linear foot (linear meter) for oversized predrilled pile holes.~~

~~Payment will be made under:~~

~~**Pay Item**~~	~~**Pay Unit Symbol**~~

SECTION 701, AFTER LINE 872, INSERT AS FOLLOWS:

Predrilled Oversized Pile Holes	*LFT (m)*

SECTION 701, AFTER LINE 920, INSERT AS FOLLOWS:

The cost~~s~~ of sleeves and sleeving, maintaining open holes during pile driving, bentonite grout, ~~and placing bentonite grout and all miscellaneous materials and work~~ shall be included in the cost of predrilled oversized pile hole~~s~~.

COMMENTS AND ACTION

701.02 MATERIALS
701.09(a)2 PREDRILLING
701.15 BASIS OF PAYMENT
913.05 BENTONITE GROUT

Motion:
Second:
Ayes:
Nays:

Action:
____ Passed as Submitted
____ Passed as Revised
____ Withdrawn

Standard Specifications Sections affected:

701.02 pg 453; 701.09 pg 467;
701.15 pg 471 and 4752; 913 pg 869.

Recurring Special Provision affected:

707-B-154 OVERSIZED PREDRILLED PILE HOLES AND BENTONITE GROUT FOR REDUCTION OF PILE DOWNDRAG

Standard Sheets affected:

NONE

Design Manual Sections affected:

NONE

GIFE Sections cross-references:

NONE

____ 20__ Standard Specifications Book
____ Revise Pay Items List

____ Create RSP (No.____)
Effective ____Letting
RSP Sunset Date: ____

____ Revise RSP (No.____)
Effective ____Letting
RSP Sunset Date: ____

Standard Drawing Effective ____
____ Create RPD (No. ____)
Effective ____Letting
____ Technical Advisory

GIFE Update Req'd.? Y ___ N ___
By ____ Addition or ____ Revision

Frequency Manual Update Req'd? Y__N__
By ____ Addition or ____ Revision

Received FHWA Approval? ____

Mr. Strain
Date: 02/17/11

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Current RSP 701-B-182 that we desire to incorporate into 2012 SS.

PROPOSED SOLUTION: To incorporate provision into 2012 SS.

APPLICABLE STANDARD SPECIFICATIONS: 701

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

REVISION TO STANDARD SPECIFICATIONS

701.15 BASIS OF PAYMENT

701-B-182 DRIVEN PILING

(Adopted 05-18-09)

The Standard Specifications are revised as follows:

SECTION 701, BEGIN LINE 832, DELETE AS FOLLOWS:

If the quantity of driven piling is less than the plan quantity or the quantity as ordered by the Engineer, the ~~Department will pay for the difference as piling, furnished but not used. The~~ Department will pay 50% of the cost to re-stock unused piling if the Contractor elects to re-stock piling and provides a paid invoice showing the re-stocking fee. Payment will be made for piling, restock.

COMMENTS AND ACTION

701.15 BASIS OF PAYMENT

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 701.15 pg 471 Recurring Special Provision affected: 701-B-182 DRIVEN PILING Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 703-C-138 regards hard-metric designated reinforcing bars. They are not U.S.-manufactured nor available for use. For a metric-units contract, the english-sized bars are assigned soft-metric designations.

PROPOSED SOLUTION: Delete provision from menu.

APPLICABLE STANDARD SPECIFICATIONS: n/a

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

RECURRING SPECIAL PROVISION

703-C-138 REINFORCING BARS FOR METRIC DESIGNED CONTRACTS

~~703-C-138 REINFORCING BARS FOR METRIC DESIGNED CONTRACTS~~

(Revised 04-08-09)

The Standard Specifications are revised as follows:

SECTION 703, AFTER LINE 6, INSERT AS FOLLOWS:

If the Contractor desires to substitute english dimensioned reinforcing bars for the metric dimensioned reinforcing bars shown on the plans, a written request shall be submitted to the Engineer. This substitution will be allowed providing the Contractor provides adequate documentation that metric dimensioned reinforcing bars are not available in sufficient quantities, due to the requirements of 106.01(c), and that the cross sectional area of the english dimensioned reinforcing bars is equal to or greater than the cross sectional area of the metric dimensioned reinforcing bars as shown on the plans. If the Contractor desires to revise the bar spacing or the method of splicing from that as shown on the plans, it shall submit revised detailed drawings and engineering calculations prepared by a professional engineer to the Engineer for approval. Placement of english dimensioned reinforcing bars shall not begin until written approval has been received by the Contractor.

SECTION 703, LINE 182, INSERT AS FOLLOWS:

specified bars had been used. *All costs associated with the substitution of english dimensioned reinforcing bars for metric dimensioned reinforcing bars including the engineering fees necessary to produce the revised detailed drawings and calculations to support a revised spacing or method of splicing request shall be included in the cost of the reinforcing bars.*

COMMENTS AND ACTION

703-C-138 REINFORCING BARS FOR METRIC DESIGNED CONTRACTS

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 703-C-138 REINFORCING BARS FOR METRIC DESIGNED CONTRACTS Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Strain
Date: 02/17/11

SPECIFICATION REVISIONS

RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 707-B-085 regards the Illinois Type IV prestressed-concrete I-beam section. It is too rarely specified for use to warrant retaining its RSP. The INDOT-ASCE Structural Subcommittee concurred in this recommendation in its meeting of 1-18-11.

PROPOSED SOLUTION: Delete provision from menu.

APPLICABLE STANDARD SPECIFICATIONS: n/a

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

RECURRING SPECIAL PROVISION

707-B-085 ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM

~~707-B-085 ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM~~

(Revised 09-01-05)

The Contractor will be permitted to substitute, with no change in payment, the Illinois 54 in. (1372 mm) prestressed precast concrete I-beam, hereinafter referred to as the Illinois 54 inch I-beam, for the standard AASHTO type IV prestressed precast concrete I-beam. This substitution will be permitted on a one for one basis. The number, spacing, and location of the alternate beams shall be as shown on the plans for the standard AASHTO type IV I-beam. Intermixing of the two beam types will not be permitted on the same structure. Modifications to the substructure design and plan details will not be permitted except for adjustments to the substructure elevations as described herein.

The alternate Illinois 54 inch I-beam shall be in accordance with 707. Dimension tolerances shall be as shown on the plans. The design of the alternate Illinois 54 inch I-beam shall be in accordance with Division I of the AASHTO Standard Specifications for Highway Bridges, and the Department's design criteria. The cross section dimensions, mild reinforcement, and standard grid system for the Illinois 54 inch I-beam shall be as shown on the plans.

If the Contractor elects to use this alternate, the work shall also be in accordance with the requirements shown below.

(a) Design Computations and Shop Drawing Submissions

The Contractor shall submit one set of design computations and four sets of detailed shop drawings of the Illinois 54 inch I-beam for approval. The alternate beams shall not be fabricated until design computations and shop drawings are approved. The design and details of the end region reinforcement shall be as required to resist the bursting stresses. Shop drawings shall show revised plan dimensions for the location of the 1 in. (25 mm) diameter holes through the beams and the 3/4 in. (19 mm) diameter inserts in the interior face of the exterior beams at the diaphragm locations on skewed structures.

One set of design computations and four sets of detailed shop drawings of the elastomeric bearing pads shall be submitted for approval. The elastomeric bearing pads shall not be fabricated until the design computations and shop drawings are approved.

Design computations for the Illinois 54 inch I-beam and the elastomeric bearing pads, and the computations for the screed elevations, the adjusted bridge seat elevations, and related substructure elevations shall be prepared by an approved consulting engineering firm and checked by another approved consulting engineering firm prior to submission for approval. All computation sheets shall be signed, sealed, and dated by a professional engineer registered in the State. These signatures, seals, and dates shall be required for both the design and the checking of the design.

RECURRING SPECIAL PROVISION

707-B-085 ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM

(b) Prestressing Strands

The Illinois 54 inch I-beam may be fabricated using draped strands or debonded strands to reduce stresses in the end regions of the beam.

1. Draped Strands

At the ends of each beam, the top row of draped strands shall be placed 3 in. (80 mm) from the top of the beam. The remaining rows of draped strands shall be spaced 4 in. (100 mm) apart when practical. This reduces the possibility of cracking at the ends of the beam by de-emphasizing the separate grouping of strands.

2. Debonded Strands

The guidelines to be used when debonding strands at the ends of the Illinois 54 inch I-beam shall be as follows:

Number of Strands in a Row	Maximum Number of Debonded Strands in a Row
8 or 10	4
4 or 6	2

Debonded strands will not be permitted in rows with fewer than four strands.

(c) Concrete Compressive Strength

The use of concrete compressive strengths of up to 5,000 psi (345 MPa) at initial prestress and up to 6,000 psi (415 MPa) at 28 days will be permitted for the Illinois 54 inch I-beam.

(d) Residual Camber

Theoretical residual beam cambers, which are beam cambers after the slab and diaphragm are in place, for the Illinois 54 inch I-beam shall be compared to the residual beam camber shown on the plans for the AASHTO type IV I-beam. If the difference between these residual cambers is greater than 1/2 in. (13 mm), then the bridge seat elevations and all substructure elevations below the bridge seats shall be adjusted. The Contractor shall submit such adjusted elevations for approval.

(e) Screeds

The Contractor shall submit screed elevations for the Illinois 54 inch I-beam.

(f) Damage of Beams

All beams shall be checked for tendency to buckle sideways before they are moved. All beams damaged during handling, storage, transporting, or erecting shall be replaced with no additional payment.

RECURRING SPECIAL PROVISION

707-B-085 ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM

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COMMENTS AND ACTION

707-B-085 ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 707-B-085 ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Strain
Date: 02/17/11

SPECIFICATION REVISIONS

RECURRING SPECIAL PROVISION AND STANDARD DRAWING

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 709-M-019 regards surface sealing of concrete surfaces of a bridge for which the structural-steel members are being repainted. We have no research that indicates that sealing the surfaces described in the RSP prolongs structure service life.

PROPOSED SOLUTION: Delete the provision from the menu.

APPLICABLE STANDARD SPECIFICATIONS: n/a

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

RECURRING SPECIAL PROVISION AND STANDARD DRAWING

709-M-019 SURFACE SEAL FOR BRIDGE TO BE PAINTED

709-M-019 SURFACE SEAL FOR STEEL BRIDGE TO BE PAINTED

(Revised 09-01-05)

The Standard Specifications are revised as follows:

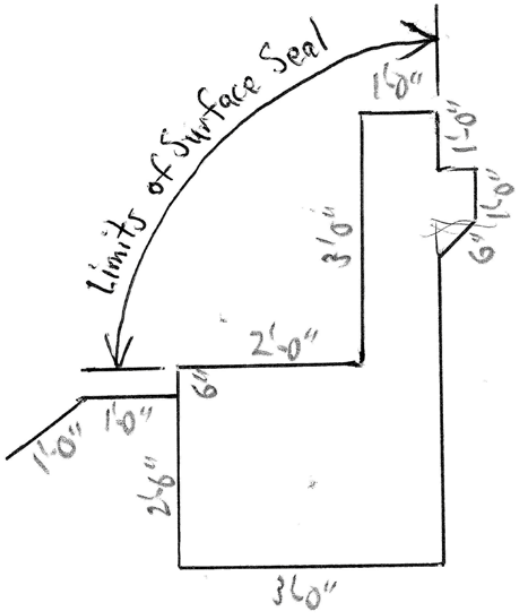
SECTION 709, AFTER LINE 68, INSERT AS FOLLOWS:

Concrete surfaces ~~on~~ shown on the plans for existing bridges with structural steel to be repainted shall be prepared and sealed with epoxy penetrating sealer in accordance with 709.05(b). The portions of abutments and bents to be sealed shall include the vertical surfaces above the tops of such abutments or bents and the tops and the sides of the caps. For portions of piers or bents which do not have definite demarcations for caps, the sealer shall be extended 24 in. (600 mm) below the tops on all accessible sides.

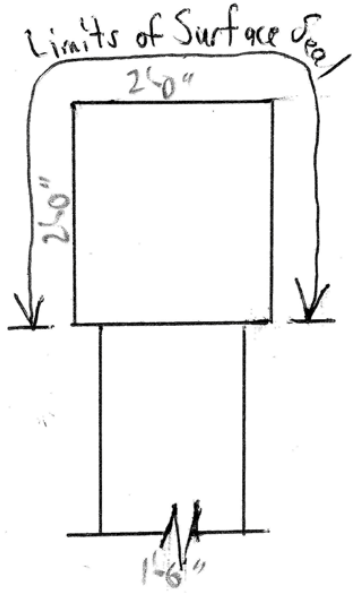
DELETED PORTION TO NEW STD DWG 709-SSBP-01

RECURRING SPECIAL PROVISION AND STANDARD DRAWING

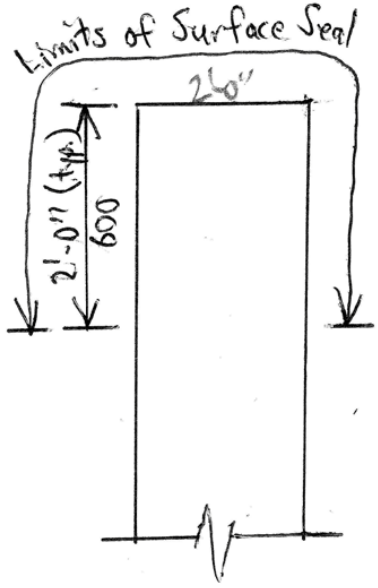
PROPOSED NEW STANDARD DRAWING 709-SSBP-01 SURFACE SEAL IN BRIDGE-STEEL-PAINTING PROJECT (DRAFT)



END SUPPORT



PIER WITH CAP



PIER WITHOUT CAP

PENCIL DIMENSIONS FOR DRAFTING GUIDANCE

NOTES:

1. The exposed portions of the support faces which are parallel to the roadway centerline shall be sealed.

709-SSBP-01

SURFACE SEAL IN BRIDGE-~~RM~~ STEEL-PAINTING PROJECT

COMMENTS AND ACTION

709-M-019 SURFACE SEAL FOR BRIDGE TO BE PAINTED
NEW STANDARD DRAWING 709-SSBP-01 SURFACE SEAL IN BRIDGE-STEEL-PAINTING PROJECT

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 709-M-019 SURFACE SEAL FOR BRIDGE TO BE PAINTED Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y___N___ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 713-B-076 regarding temporary pipe and approaches has recurred since 12-28-88, and has appeared in its present intent form since 1-21-93.

PROPOSED SOLUTION: Incorporate into 2012 Standard Specifications.

APPLICABLE STANDARD SPECIFICATIONS: Add 713.04.1; revise 713.08, 713.09

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

REVISION TO THE STANDARD SPECIFICATIONS

SECTION 713 – TEMPORARY BRIDGES AND APPROACHES
713.04.1 TEMPORARY PIPE
713.05 TEMPORARY APPROACHES
713.08 METHOD OF MEASUREMENT
713.09 BASIS OF PAYMENT

713-B-076 TEMPORARY PIPE

(Revised 09-01-05)

The Standard Specifications are revised as follows:

SECTION 713, AFTER LINE 44, INSERT AS FOLLOWS:

713.04.1 Temporary Pipe

The minimum thickness required for the temporary pipe or pipe-arch shall be as follows:

(a) Corrugated Steel Circular Pipe

Thickness, inches (millimeters)	*Pipe Diameter, inches (millimeters)*
0.064 (1.63)	*48 (1200) or less*
0.079 (2.01)	*54 (1350) or less*
0.109 (2.77)	*72 (1800) or less*
0.138 (3.51)	*78 (1950) or less*
0.168 (4.27)	*84 (2100) or less*

(b) Corrugated Steel Pipe-Arch, 3 in. ~~x~~by 1 in. (75 mm ~~x~~by 25 mm) Corrugations

Thickness, inches (millimeters)	*Pipe-Arch Area, square feet (square meters)*
0.109 (2.77)	*40 (3.71) or less*
0.138 (3.51)	*58 (5.39) or less*

(c) Structural Plate Pipe-Arch 6 in. ~~x~~by 2 in. (150 mm ~~x~~by 50 mm) Corrugations

Thickness, inches (millimeters)	*Pipe-Arch Area, square feet (square meters)*
0.111 (2.82)	*38 (3.50) or less*
0.140 (3.56)	*71 (6.61) or less*
0.170 (4.32)	*122 (11.58) or less*
9.188 (4.78)	*131 (12.26) or less*

For thicknesses, diameters, or areas not listed above, the Engineer shall be contacted for approval.

Item No. 15 02/17/11 (2010 SS)
Mr. Strain
Date: 02/17/11

REVISION TO THE STANDARD SPECIFICATIONS

SECTION 713 – TEMPORARY BRIDGES AND APPROACHES
713.04.1 TEMPORARY PIPE
713.05 TEMPORARY APPROACHES
713.08 METHOD OF MEASUREMENT
713.09 BASIS OF PAYMENT

SECTION 713, BEGIN LINE 58, INSERT AS FOLLOWS:

Guardrail and guardrail end treatment shall be provided at each corner of the temporary bridge *or at the temporary pipe location* as shown on the plans or as directed. The furnishing of materials and

SECTION 713, BEGIN LINE 83, INSERT AS FOLLOWS:

713.08 Method of Measurement

Temporary bridges, *temporary pipes*, and approaches will not be measured for payment unless otherwise specified. HMA mixtures for temporary pavement will be measured by the

SECTION 713, BEGIN LINE 93, INSERT AS FOLLOWS:

713.09 Basis of Payment

The accepted quantities of temporary bridge and approaches, *or temporary pipe and approaches* will be paid for at the contract lump sum price for the work, complete in place and later removed as specified. HMA mixtures for temporary pavement will be paid for as the type of

SECTION 713, AFTER LINE 118, INSERT AS FOLLOWS:

Temporary Pipe..... *LS*
Temporary Pipe and Approaches..... *LS*

COMMENTS AND ACTION

713.04.1 TEMPORARY PIPE
713.05 TEMPORARY APPROACHES
713.08 METHOD OF MEASUREMENT
713.09 BASIS OF PAYMENT

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 713-B-076 TEMPORARY PIPE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Strain
Date: 02/17/11

SPECIFICATION REVISIONS

RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 717-R-152 regarding alternates to structural-plate structures serves as nothing more than a cost-reduction incentive. This is already addressed in Standard Specifications Section 109.04. The Office of Hydraulic Design concurs.

PROPOSED SOLUTION: Delete the provision from the menu.

APPLICABLE STANDARD SPECIFICATIONS: n/a.

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

RECURRING SPECIAL PROVISION

717-R-152 ALTERNATES TO STRUCTURAL PLATE STRUCTURES

~~717-R-152 ALTERNATES TO STRUCTURAL PLATE STRUCTURES~~

(Revised 11-01-06)

The Standard Specifications are revised as follows:

SECTION 717, LINE 119, DELETE AND INSERT AS FOLLOWS:

717.06 ~~Blank~~ *Alternate Structural Plate Structures*

The Contractor will be permitted to furnish and place an alternate type structural plate structure to such structure specified. The alternate structure shall be in accordance with the following requirements.

(a) Plans and specifications shall be submitted for review and approved prior to commencing work.

(b) The structure shall be designed for the more critical of AASHTO HS20-44 live load or alternate military loading of two axles spaced 48 in. (1200 mm) apart with each axle weighing 24,000 lb (10 900 kg). The alternate military loading shall be applied to structures under primary, secondary, or local routes if the design year truck traffic volume exceeds 600 vehicles per day, or structures under interstate routes.

(c) The design shall be in accordance with the applicable minimum design requirements of the AASHTO Standard Specifications for Highway Bridges, Division I, Article 12.6 Long Span Structural Plate Structures. Either continuous longitudinal structural stiffeners or designed reinforcing ribs will be permitted. The design shall also include revisions to foundations if required.

(d) The structure shall have the same geometrical shape as the originally specified structure.

(e) The extent of the backfill envelope shall equal or exceed the horizontal and vertical limits of the originally specified structure. Backfill material shall be structure backfill in accordance with 904 and compacted in accordance with 211.04. Exposed backfill material shall be encased with geotextiles and riprap, both in accordance with 616.

(f) A list shall be submitted listing 30 similar structures of the same span or larger which have been installed within the continental United States.

(g) Design computations and design drawings, together with an itemization of all contract modifications shall be signed and sealed by a professional engineer and submitted for approval.

RECURRING SPECIAL PROVISION

717-R-152 ALTERNATES TO STRUCTURAL PLATE STRUCTURES

(h) A qualified technician, provided by the manufacturer, shall be present during erection and backfilling of the structure.

SECTION 717, BEGIN 177, INSERT AS FOLLOWS:

The cost of excavation, concrete field paved inverts, disposal of surplus materials, reinforcing bars, straps, and hook bolts used in anchors, *substitution of an alternate structural plate structure,* and necessary incidentals shall be included in the cost of the pay items.

COMMENTS AND ACTION

717-R-152 ALTERNATES TO STRUCTURAL PLATE STRUCTURES

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 717-R-152 ALTERNATES TO STRUCTURAL PLATE STRUCTURES Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 720-M-021 regards extension of cast-iron bridge-floor drains. Standards Committee action of 3-18-10 revised Standard Drawing 704-BDGC-05 to 715-BDGC-01, and incorporated materials requirements shown thereon to revised Standard Specifications Sections 907.23 and 908.10, and new Section 907.28. The RSP's requirements are in conflict with this action.

PROPOSED SOLUTION: Delete the provision from the menu.

APPLICABLE STANDARD SPECIFICATIONS: n/a

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

RECURRING SPECIAL PROVISION

720-M-021 EXTENSION OF CAST IRON FLOOR DRAINS

~~720-M-021 EXTENSION OF CAST IRON FLOOR DRAINS~~

(Revised 09-01-05)

This work shall consist of extension of cast iron floor drains by 1 ft (305 mm) with polyvinylchloride pipe as shown on the plans.

This work will not be measured for payment. This work will be paid for at the contract lump sum price for extension of cast iron drains for the structure number shown on the Schedule of Pay Items. The costs of furnishing, transporting, necessary storage of materials, all labor equipment, tools, and incidentals necessary shall be included in the cost of this work.

COMMENTS AND ACTION

720-M-021 EXTENSION OF CAST IRON FLOOR DRAINS

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 720-M-021 EXTENSION OF CAST IRON FLOOR DRAINS Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 720-R-104 regarding capping storm-sewer inlets has recurred since 7-01-86, and has appeared in its present intent form since 6-06-03.

PROPOSED SOLUTION: Incorporate into 2012 Standard Specifications.

APPLICABLE STANDARD SPECIFICATIONS: Add 720.04.1; revise 720.05, 720.06.

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

REVISION TO STANDARD SPECIFICATIONS

720.04.1 CAPPING EXISTING STRUCTURES
720.05 METHOD OF MEASUREMENT
720.06 BASIS OF PAYMENT

720-R-104 CAPPED INLET

(Revised 09-01-05)

The Standard Specifications are revised as follows:

SECTION 720, AFTER LINE 191, INSERT AS FOLLOWS:

720.04.1 Capping Existing Structures

~~*If capping of existing drainage structures is specified, regardless of type, such work shall be as shown on the plans or as otherwise directed.*~~

All structures directed to be capped shall be as shown on the plans or by ~~completely~~ filling the structure with class A concrete after the existing drainage has been maintained. The flow of water through pipes or underdrains in structures shall be perpetuated. Alternate methods for capping shall be submitted for approval before they may be used.

All removed castings will become the property of the Department. Such castings shall be placed in the location directed for pickup by the Department.

SECTION 720, AFTER LINE 201, INSERT AS FOLLOWS:

The capping of existing structures will be measured by the number of structures capped.

SECTION 720, AFTER LINE 211, INSERT AS FOLLOWS:

The capping of inlets and other structures will be paid for at the contract unit price per each for cap inlet.

SECTION 720, BEGIN LINE 249, INSERT AS FOLLOWS:

The cost of excavation, backfill, reinforcing bars, structure backfill, concrete collar required for pipe connection to structures, removal, disposal and replacement of pavement, or surface material, *casting removal, installation of concrete cap, HMA wedge, damage repair to pavement and shoulders,* and necessary incidentals shall be included in the cost of the pay items.

COMMENTS AND ACTION

720.04 GRADE ADJUSTMENT OF EXISTING STRUCTURES
720.05 METHOD OF MEASUREMENT
720.06 BASIS OF PAYMENT

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 720.04 pg 617; 720.05 pg 617; 720.06 pg 618. Recurring Special Provision affected: 720-R-104 CAPPED INLET Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 720-T-021 regarding retrofitting existing drainage structures has recurred since 12-01-88, and has appeared in its present intent form since 11-01-92.

PROPOSED SOLUTION: Incorporate into 2012 Standard Specifications.

APPLICABLE STANDARD SPECIFICATIONS: Add 720.03.1; revise 720.06.

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

Item No. 19 02/17/11 (2010 SS)
Mr. Strain
Date: 02/17/11

REVISION TO STANDARD SPECIFICATIONS

720.03.1 RETROFITTING EXISTING STRUCTURES
720.06 BASIS OF PAYMENT

(Changes shown as modification to RSP 720-T-021:
deletion – strikethrough and edition - underlined.)

720-T-021 DRAINAGE STRUCTURES

(Revised 09-01-05)

The Standard Specifications are revised as follows:

SECTION 720, AFTER LINE 160, INSERT AS FOLLOWS:

720.03.1 Retrofitting Existing Structures

All existing median structures to remain in place shall be cleaned of all silt and other foreign matter.

Construction of ~~all~~ new inlets, *catch basins, or manholes* involving existing structures shall be accomplished such that the existing pipe structure shall not be damaged.

~~All existing median structures and median areas within the project limits shall be cleaned of all silt and other foreign matter.~~

Where a new casting is to be fitted to an existing ~~catch basin~~*structure*, or an existing ~~casting~~*structure* is to be fitted to a new inlet, all dimensions and conditions shall be checked in the field. The Contractor shall assume responsibility for ~~their~~ correctness and fit.

SECTION 720, AFTER LINE 248, INSERT AS FOLLOWS:

The cost~~s~~ of ~~the~~ removal of headwalls, ~~and~~ cleanup of ~~the~~ existing pipes, *and replacement of existing structures damaged during construction* shall be included in the cost~~s~~ of the pay items for the new drainage structures.

~~All existing structures damaged during construction shall be replaced with no additional payment.~~

COMMENTS AND ACTION

720.03.1 RETROFITTING EXISTING STRUCTURES
720.06 BASIS OF PAYMENT

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 720.03 pg 616; 720.06 pg 618. Recurring Special Provision affected: 720-T-021 DRAINAGE STRUCTURE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y __ N __ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 724-B-145 regarding bridge expansion-joint sealing system has recurred since 12-01-00, and has appeared in its present intent form since 7-14-06.

PROPOSED SOLUTION: Incorporate into 2012 Standard Specifications.

APPLICABLE STANDARD SPECIFICATIONS: Add 724.02(c), 906.07(c); revise 724.04, 724.05.

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

Item No. 20 02/17/11 (2010 SS)
Mr. Strain
Date: 02/17/11

REVISION TO STANDARDS SPECIFICATIONS

SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02(c) EXPANSION JOINT SEALING SYSTEM
724.04 METHOD OF MEASUREMENT
724. 05 BASIS OF PAYMENT
906.07(c) EXPANSION JOINT SEALING SYSTEM

(Proposed changes shown as: deletion – strikethrough and addition – highlighted in gray.)

~~724-B-145 EXPANSION JOINT SEALING SYSTEM~~

(Revised 07-14-06)

The Standard Specifications are revised as follows:

SECTION 724, AFTER LINE 24, INSERT AS FOLLOWS:

~~Description~~

~~This work shall consist of furnishing and placing the joint sealant, and the nosing, if required, in accordance with the plans and these requirements.~~

Expansion Joint Sealing System.....906.07(c)

SECTION 724, AFTER LINE 44, INSERT AS FOLLOWS:

(c) Expansion Joint Sealing System

The location and ~~general~~ appearance of the installed joint shall be as shown on the plans. Additional details shall be ~~in accordance with the manufacturer's~~ as shown on the working drawings. ~~Drawings, specifications, and other details shall be provided to the Engineer prior to commencing joint installation.~~ A qualified representative of the sealant and polymer mortar manufacturer shall be present at the beginning of the work to ensure adequate workmanship and inspection of the sealing operation.

A bond-breaker material shall be installed prior to installation of the sealant to maintain minimum or maximum depth of sealant. The bond breaker shall serve to ensure that the bottom of the sealant is bond-free, thereby allowing the sealant to adhere only to the sides of the joint. No bond or adverse reaction shall occur between the bond breaker and the sealant.

Primer shall be applied as shown on the plans prior to installation of the nosing material and sealant, or as recommended by the sealant manufacturer.

Rapid-cure joint sealant shall be installed ~~when~~ once the ambient temperature is above 60ºF (16ºC), or as directed. The sealant shall be installed ~~in the expansion joints~~ when the openings are at or near a minimum width.

REVISION TO STANDARDS SPECIFICATIONS

SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02(c) EXPANSION JOINT SEALING SYSTEM
724.04 METHOD OF MEASUREMENT
724. 05 BASIS OF PAYMENT
906.07(c) EXPANSION JOINT SEALING SYSTEM

Joints shall be inspected for proper depth, width, alignment, and preparation, as shown on the plans. Joints shall be cleaned of all old joint seals, old expansion materials or devices, ~~bituminous~~ asphalt material, dirt, grease, and all other deleterious material. The joints shall be cleaned over the total area of the blockout or openings to receive the nosing or sealant material. Preparation shall be as recommended by the nosing or sealant manufacturer. If an armored joint is present, a near white blast cleaning shall be provided for the steel in accordance with ~~619.03~~ 619.08(c). All joints to receive nosing or sealant shall be sound, clean, dry, and frost-free.

The nosing material shall be mixed and placed in accordance with the manufacturer's ~~printed~~ instructions and as provided herein. As a witness point, the ~~Design/Builder~~ Contractor shall provide one set of the manufacturer's instructions to the Engineer not less than one week prior to the beginning of joint placement.

The nosing material shall be installed ~~when~~ once the temperature is 45ºF (7ºC) and rising. Cure time of the nosing material may be accelerated by the use of methods or techniques ~~as approved~~ recommended by the manufacturer. Prior to placing the nosing material, the surface of the substrate against which the polymer-based mortar is to be placed shall be primed with neat binder. The polymer-based mortar shall be applied within 15 min of ~~the~~ mixing ~~and must be thoroughly~~. It shall be consolidated and finished within 30 min of mixing or before the primer has set. The polymer-based mortar shall be troweled even with and parallel to the roadway surface, and finished to provide a smooth surface free of voids or tears.

The ~~rapid cure, silicone~~ joint sealant shall be installed ~~on~~ in accordance with the manufacturer's recommendations. If the joint opening at the time of installation is less than 1 in. (25 mm), or greater than 3 in. (75 mm), the work shall be stopped and the joint manufacturer contacted. ~~Joints~~ Joint openings outside this range shall not be sealed without the approval of the ~~joint manufacturer~~ Engineer.

SECTION 724, BEGIN LINE 80, INSERT AS FOLLOWS:

Structural expansion joints *and expansion joint sealing system* will be measured by the linear foot (meter) along and parallel to the plane of the finished joint surface. *Concrete removal for the expansion joint sealing system, sealant material, nosing material if required, and backer rods will not be measured for payment.* Replacement of existing structural

SECTION 724, BEGIN LINE 90, INSERT AS FOLLOWS:

Structural expansion joint *and expansion joint sealing system* will be paid for at the contract unit price per linear foot (meter) of the type specified, complete in place. Replacement of existing

SECTION 724, AFTER LINE 101, INSERT AS FOLLOWS:

Expansion Joint Sealing System.....LFT (m)

REVISION TO STANDARDS SPECIFICATIONS

SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02(c) EXPANSION JOINT SEALING SYSTEM
724.04 METHOD OF MEASUREMENT
724. 05 BASIS OF PAYMENT
906.07(c) EXPANSION JOINT SEALING SYSTEM

SECTION 724, AFTER LINE 114, INSERT AS FOLLOWS:

The cost of concrete removal, sealant material, nosing materials if required, backer rods, and all other related materials shall be included in the ~~pay item~~ cost of expansion joint sealing system.

SECTION 906, AFTER LINE 316, INSERT AS FOLLOWS:

~~Materials~~

~~The materials for this work shall be supplied by:~~

~~Silicone Specialties, Inc.~~
~~P.O. Box 50009~~
~~Tulsa, OK 74150~~
~~Telephone (918) 587-5567~~
~~www.ssicm.com~~

~~Dow Corning Corporation~~
~~P.O. Box 994~~
~~Midland, MI 48688-0994~~
~~Telephone (517) 496-6000~~

~~Watson Bowman Acme~~
~~95 Pineview Drive~~
~~Amherst, NY 14228~~
~~Telephone (716) 691-7566~~
~~www.watsonbowman.com~~

~~Or Approved Equal~~

(c) Expansion Joint Sealing System

1. Joint Sealant

The joint sealant shall be rapid-cure 100% silicone, self-leveling, two-part formulation, and cold applied, in accordance with 906.02(a)1. Silicone sealant shall be compatible with the surface to which it is applied.

Sealant shall be delivered to the project site in the manufacturer's original container. Each container shall be marked with the manufacturer's name and lot number. Each lot number shall be accompanied by a Type A certification in accordance with 916. The ~~materials shall meet~~ material shall be in accordance with the following:

REVISION TO STANDARDS SPECIFICATIONS

SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02(c) EXPANSION JOINT SEALING SYSTEM
724.04 METHOD OF MEASUREMENT
724. 05 BASIS OF PAYMENT
906.07(c) EXPANSION JOINT SEALING SYSTEM

Test	*Limit*	*Test Method*
Extrusion Rate	*200 – 500 G/min*	*MILS S 8802*
Specific Gravity	*1.23 – 1.25*	*ASTM D 1475*
Nonvolative Content	*93% minimum*	---

~~and as~~ As installed at 77 ºF (25 ºC) and 50% relative humidity, after 48 h cure, the material shall be in accordance with the following:

Test	*Limit*	*Test Method*
Skinover Time	*20 min, max.*	---
Joint Elongation	*600% minimum*	*ASTM D 3583* [1, 2]
Joint Modulus	*3 – 12 psi (21 – 83 kPa)*	*ASTM D 3583* [1, 2]

[1] *Section 114, modified with pull rate of 2 in./minimum (50 mm/minimum)*
[2] *Joint size 1/2 in. by 1/2 in. by 2 in. (13 mm by 13 mm by 50 mm)*

2. Binder

~~The binder shall be Silspec 900 PNSS polymer nosing system or approved equal.~~ The binder shall be a two component, rapid curing, liquid polymer that cures to a dense semi-flexible polymer that is resistant to chemicals, weather, abrasion, and impact. The material shall be capable, when blended with ~~Silspec blended~~ aggregate, of forming a polymer-based mortar for nosing and joint repair~~, or when~~. If cured in ~~neat~~ form ~~of acting~~, it shall act as a combination primer and protective coating for steel. A Type A certification in accordance with 916 ~~shall~~ will be required ~~for polymer nosing system binder~~. The combined liquid base and reactor component materials shall ~~meet~~ be in accordance with the following ~~as supplied:~~.

a. As Supplied

Test	*Limits*	*Test Method*
Mixing Ratio	*1:1 by volume of weight*	*ASTM D 2393*
Viscosity	*9-20 passses, Brookfield Model LVT Spindle No. 2, 30 rpm, 75 ºF ± 2 ºF (24 ºC ± 1 ºC)*	---
Color	*Black*	---
Gel Time	*25-50 min*	*AASHTO M 200*

~~and as cured:~~ ***b. As Cured***

REVISION TO STANDARDS SPECIFICATIONS

SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02(c) EXPANSION JOINT SEALING SYSTEM
724.04 METHOD OF MEASUREMENT
724. 05 BASIS OF PAYMENT
906.07(c) EXPANSION JOINT SEALING SYSTEM

Test	*Limits*	*Test Method*
Elongation	*40-55%*	*ASTM D 638* [1]
Tensile Strength	*900 psi (6200 kPa) min.*	*ASTM 638* [1]
Shore Hardness at 25 ºC (77 ºF)	*45*	*ASTM D 2240*

[1] Test method Type 1, molded specimens, 0.25 in. (6 mm) thickness

3. Mortar

A Type A certification in accordance with 916 ~~shall~~ will be required ~~for polymer nosing system mortar~~. The ~~materials shall meet~~ material shall be in accordance with the following:

Test	*Limits*	*Test Method*
Compressive Strength	*2200 psi (15200 kPa) min.*	*ASTM C 579* [1]
Bond Shear Strength	*900 psi (4800 kPa) min.*	*ASTM C 882*
Abrasion Resistance, Wear Index, Table H-22	*1.0 max.*	*ASTM C 502*
Compressive Stress	*350 psi (2400 kPa) min.*	---
Resilience	*70% max.*	---

[1] at 24 hours, Method B

Aggregate for the nosing material shall be ~~Silspec blended aggregate or aggregate as approved~~ that recommended by the manufacturer.

~~*A bond breaker material shall be installed prior to installation of the sealant to maintain minimum or maximum depth of sealant. The bond breaker shall serve to ensure that the bottom of the sealant is bond free, thereby allowing the sealant to adhere only to the sides of the joint. No bond or adverse reaction shall occur between the bond breaker and the sealant.*~~

Acceptable types of bond breakers shall include the following:

~~(a)~~ a. Closed-Cell Expanded Polyethylene Foam Backer Rod

~~*Primary use shall be with new joint construction and remedial joint construction.*~~ *This device shall be used for new-joint construction or existing-joint repair.*

~~(b)~~ b. Bond-Braker Tape

~~*Application of bond breaker tape shall be subject to written approval by the sealant manufacturer. Primary use is with wide shallow joints.*~~ *This device shall be used only upon*

REVISION TO STANDARDS SPECIFICATIONS

SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02(c) EXPANSION JOINT SEALING SYSTEM
724.04 METHOD OF MEASUREMENT
724. 05 BASIS OF PAYMENT
906.07(c) EXPANSION JOINT SEALING SYSTEM

written approval of the Engineer. It shall be used for joints of wider than 4 in. (100 mm) and shallower than 2 in. (50 mm).

~~(c)~~ c. Open-Cell Backing Material with ~~an~~ Impervious Skin

~~Application shall be subject to written approval by the sealant manufacturer. Primary use is with irregular remedial joint construction.~~ This device shall be used only upon written approval of the Engineer. It shall be used for repair of existing joints which are not properly expanding or contracting.

~~Primer shall be applied as shown on the plans prior to installation of the nosing and sealant, or as specified by the sealant manufacturer.~~

COMMENTS AND ACTION

724.02(c) EXPANSION JOINT SEALING SYSTEM
724.04 METHOD OF MEASUREMENT
724. 05 BASIS OF PAYMENT
906.07(c) EXPANSION JOINT SEALING SYSTEM

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 724.02(c); 724.04; 724.05; 906.07(c). Recurring Special Provision affected: 724-B-145 EXPANSION JOINT SEALING SYSTEM Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 727-B-012 regarding concrete repair by epoxy injection has recurred since 7-08-87, and has appeared in its present intent form since 11-01-92.

PROPOSED SOLUTION: Incorporate into 2012 Standard Specifications.

APPLICABLE STANDARD SPECIFICATIONS: Add new 727, 909.12

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

REVISION TO STANDARD SPECIFICATIONS

SECTION 727- CONCRETE REPAIR BY EPOXY INJECTION
909.12 EPOXY RESIN ADDITIVES FOR INJECTION INTO CONCRETE

727-B-012 CONCRETE REPAIR BY EPOXY INJECTION

(Revised 09-01-05)

The Standard Specifications are revised as follows:

SECTION 727, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 727 – CONCRETE REPAIR BY EPOXY INJECTION

727.01 Description

This work shall consist of ~~furnishing all supervision, labor, materials, and equipment to~~ structurally rebonding concrete cracks, fractures, or delaminations by means of an epoxy injection system.

In accordance with 105.03

727.02 Approvals

Prior to the start of the work, the Contractor shall submit a certification which indicates that the firm has been engaged in this type of work for not less than five years. The certification shall also indicate that the personnel performing the repair shall have a minimum of five years experience with the epoxy injection system.

The epoxy injection system proposed for use shall be subject to approval prior to the start of the repair work. One copy of ~~comprehensive~~ preparation, mixing, and application instructions shall be furnished. Such instructions shall have been developed especially for use with the proposed epoxy injection system.

727.03 Materials
Materials shall be in accordance with 909.12.

727.03 Construction Requirements

The location and extent of cracks to be repaired by epoxy injection will be determined.

The work shall be performed with 2-component automatic metering and mixing equipment.

Concrete surfaces adjacent to the cracks shall be cleaned to the extent necessary to achieve adequate bond of the surface seal material. Entry ports shall be provided along the crack at intervals determined in the field to ensure full depth penetration of the injection resin. Surface seal shall be applied between entry ports, and on both faces of through cracks when possible.

Epoxy injection shall begin at the lower entry port and continue until there is an appearance of epoxy at the adjacent entry port. Injection shall continue until all cracks are ~~completely~~ filled. If port to port travel is not apparent, the work shall be stopped immediately. The Engineer shall be notified.

Upon completion of the injection, the adhesive shall be permitted to cure for sufficient time to permit removal of surface seal without draining or runback of material from the cracks. Surface seal material and injection adhesive runs or spills shall be removed from concrete surfaces. The face of the crack shall be finished flush to the adjacent concrete. The face of the concrete shall show no indentations or protrusions caused by the placement of entry ports.

Item No. 21 02/17/11 (2010 SS)
Mr. Strain
Date: 02/17/11

REVISION TO STANDARD SPECIFICATIONS

SECTION 727- CONCRETE REPAIR BY EPOXY INJECTION
909.12 EPOXY RESIN ADDITIVES FOR INJECTION INTO CONCRETE

09-01-09

05

727.04 Method of Measurement

Furnishing equipment for epoxy injection will not be measured for payment. Crack preparation for epoxy injection will be measured by the linear foot (meter) of prepared crack. Epoxy material will be measured by the gallon (liter) placed.

06

727.05 Basis of Payment

This work will be paid for at the contract lump sum price for epoxy injection, furnishing equipment. Crack preparation will be paid for at the contract unit price per linear foot (meter) for epoxy injection, crack preparation. Epoxy resin adhesive will be paid for at the contract unit price per gallon (liter) for epoxy injection, epoxy material.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Epoxy Injection, Crack Preparation	*LFT (m)*
Epoxy Injection, Epoxy Material	*GAL. (L)*
Epoxy Injection, Furnishing Equipment	*LS*

SECTION 909, AFTER LINE 637, INSERT AS FOLLOWS:

909.12 Epoxy Resin Additives for Injection into Concrete

The epoxy resin adhesive shall be of low enough viscosity such that it flows to the next open port in the surface seal material. The adhesive shall be capable of penetrating crack widths down to 0.005 in. (125 µm). The adhesive shall be capable of bonding to dry or damp surfaces. The adhesive shall exhibit a slant shear strength exceeding the concrete strength when tested fully cured in accordance with AASHTO T 237.

The surface seal material shall have adequate strength to hold injection fittings ~~firmly~~ in place and to resist injection pressures adequately to prevent leakage during injection.

The epoxy resin adhesive for injection shall be covered by a type C certification in accordance with 916.

COMMENTS AND ACTION

SECTION 727- CONCRETE REPAIR BY EPOXY INJECTION
909.12 EPOXY RESIN ADDITIVES FOR INJECTION INTO CONCRETE

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: Recurring Special Provision affected: 727-B-012 Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 729-B-009 regarding concrete for patching bridge structures has recurred since 8-30-85, and has appeared in its present intent form since 9-27-07.

PROPOSED SOLUTION: Incorporate into 2012 Standard Specifications.

APPLICABLE STANDARD SPECIFICATIONS: Add new Section 729.

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer, of
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 1-24-11

REVISION TO STANDARD SPECIFICATIONS

SECTION 729 – CONCRETE FOR PATCHING BRIDGE STRUCTURES

729-B-009 CONCRETE FOR PATCHING BRIDGE STRUCTURES

(Revised 04-08-09)

The Standard Specifications are revised as follows:

SECTION 729, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 729 – CONCRETE FOR PATCHING BRIDGE STRUCTURES

729.01 Description

This work shall consist of the removal of existing concrete from outside the deck area of a bridge structure and replacing such concrete with new mortar or concrete in accordance with 105.03.

729.02 Materials

Materials shall be in accordance with the following:

Concrete, Class A.....702.02
Epoxy Resin Adhesive 909.11

The cement shall be portland cement type I.

Mortar shall consist of one part portland cement to two parts No. 23 sand.

An epoxy resin adhesive shall be selected from the Department's list of approved Non-Vapor Barrier Type Bonding Agents.

729.03 Construction Requirements

(a) Concrete Removal

Areas of unsound concrete to be removed will be marked by the Engineer. Removal of the unsound concrete shall be performed by handchipping. Handchipping tools may be hand or mechanically driven. Jack hammers shall not be heavier than nominal 45 lb (20.5 kg) class and chipping hammers shall not be heavier than nominal 15 lb (6.8 kg) class. Only chipping hammers shall be used when removing concrete within 1 in. (25 mm) of reinforcement. Mechanically driven tools shall be operated at a maximum angle of 45 degrees from the concrete surface. Power-driven hand tools for removal by hand chipping will be permitted, as set out above.

Regardless of the method of removal, the removal operation shall be stopped if it is determined that sound concrete is being removed. Appropriate recalibration or changes in equipment and methods shall be performed prior to resuming the removal operation.

Where the bond between the existing concrete and the reinforcement has been destroyed, the concrete adjacent to the reinforcement shall be removed to a minimum clearance of 1 in. (25 mm) around the entire periphery of the exposed reinforcement. Exposed reinforcing steel shall not be damaged by the removal operation. All damaged reinforcement shall be replaced or repaired as directed.

A saw cut shall be made perpendicular to the existing concrete surface at least 1 in. (25 mm) outside the spalled area before the mortar or concrete is placed. The cut shall be a minimum 1 in. (25 mm) ~~deep~~ or to the top of reinforcing steel, whichever is less.

(b) Patching

After the concrete removal operation is completed and just prior to placing the patches, all patch areas shall be sandblasted to expose fine and coarse aggregates and to remove unsound concrete or laitance layers from the surface. Exposed reinforcement and the concrete under and around the exposed reinforcement shall be cleaned by sandblasting. The surface shall then be cleaned free of all dust, chips, water, ~~and~~ foreign material to the extent necessary to produce a firm, solid surface for adherence of the new concrete. The final surface shall be free of oil, grease, ~~and~~ water. The air lines for sandblasting and air cleaning shall be equipped with oil traps.

The surfaces of the prepared cavities and all the exposed ~~reinforcement~~ steel within the cavities shall be coated with an epoxy resin adhesive in accordance with 722.06(a)1 prior to placement of the patching materials.

Cavities of 1/2 in. (13 mm) ~~in~~ depth or greater shall be filled with concrete. Cavities less than 1/2 in. (13 mm) ~~in~~ depth shall be filled with mortar.

Patches shall be finished to ~~closely~~ match the texture and finish of the abutting existing concrete.

Patches shall be cured in accordance with 702.22.

729.04 Method of Measurement

This work will be measured by the square foot (square meter). Measurements will be recorded for payment as follows:

(a) Patches greater than 0 and less than or equal to 0.5 ft^2 (0.05 m^2) will be recorded as 0.5 ft^2 (0.05 m^2).

(b) Patches greater than 0.5 ft^2 (0.05 m^2) and less than or equal to 1 ft^2 (0.1 m^2) will be recorded as 1.0 ft^2 (0.1 m^2).

(c) Patches greater than 1.0 ft^2 (0.1 m^2) will be recorded as the actual measurement of the patch to the nearest 0.1 ft^2 (0.01 m^2).

729.05 Basis of Payment

This work will be paid for at the contract unit price per square foot (square meter) for concrete, A, patching.

Payment will be made under:

Pay Item	***Pay Unit Symbol***

REVISION TO STANDARD SPECIFICATIONS

SECTION 729 – CONCRETE FOR PATCHING BRIDGE STRUCTURES

Concrete, A, Patching ..... SFT (m2)

The areas where the patching exceeds an average of 4 in. (100 mm) in depth will be paid for at a price to be determined by multiplying the contract unit price for concrete, A, patching by the following factors: (means of

(a) For portions thereof whose average depth is greater than 4 in. (100 mm) but not more than 6 in. (150 mm) 1.25

100

(b) For portions thereof whose average depth is greater than 6 in. (150 mm) but not more than 8 in. (200 mm) 1.50

(c) For portions thereof whose average depth is greater than 8 in. (200 mm) but not more than 10 in. (250 mm) 1.75

(d) For portions thereof whose average depth is greater than 10 in. (250 mm) but not more than 12 in. (300 mm) 2.00

110 *(e) For all portions thereof whose average depth is greater than 12 in. (300 mm), the work shall be done as extra work. Payment will be made in accordance with 104.03.*

The cost of removing the existing concrete, furnishing, hauling, and placing all materials, preparing the surface, and all necessary incidentals shall be included in the cost of concrete, A, patching.

The cost of replacing or repairing damaged reinforcement shall be included in the cost of concrete, A, patching.

120

COMMENTS AND ACTION

SECTION 729 – CONCRETE FOR PATCHING BRIDGE STRUCTURES

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: Recurring Special Provision affected: 729-B-009 Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____