INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

100 North Senate Avenue
Room N925
Indianapolis, Indiana 46204

PHONE: (317) 232-5456
FAX: (317) 232-5551

Michael R. Pence, Governor
Michael B. Cline, Commissioner

FINAL DRAFT MINUTES

March 21, 2013 Standards Committee Meeting

FINAL DRAFT MINUTES

MEMORANDUM

April 11 2013

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the March 21, 2013 Standards Committee Meeting

A Standards Committee meeting was called to order by Mr. Miller at 09:04 a.m. on March 21, 2013 in the N955 Bay Window Conference Room. The meeting was adjourned at 11:18 a.m.

The following committee members were in attendance:

Mark Miller, Chair, Director, Construction Management
Dave Boruff, Manager, Traffic Administration
Jim Reilman*, Bridge Standards and Policy
Greg Pankow, State Construction Engineer
Jim Keefer, Construction Director, Fort Wayne District
Mike Buening, Area Pavement Engineer
Michelle Gottschalk, Manager, Construction Technical Support
Richard Vancleave, Senior Standards Engineer, Roadway Services
Ron Walker, State Materials Engineer

**Proxy for* Elizabeth Phillips

Also in attendance were the following:

Kenny Anderson, INDOT
Michael Prather, INDOT
Mir Zaheer, INDOT
Bren George, FHWA
Scott Trammell, INDOT
Paul Berebitsky, ICA
Jeff James, INDOT
Lana Podorvanova, INDOT
David Holtz, INDOT
Sam Martin, ISCO
Steve Cooney, ISCO
Wendy Chiles, INDOT

The following items were listed for consideration.

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. Approval of the Minutes from the February 21, 2013 meeting.

DISCUSSION: Mr. Buening would like to re-address item 13 from the February 2013 Standards Committee meeting regarding undersealing. They would like to withdraw the item pending further review. Mr. Prather stated that the cement grout portion needs consideration. Mr. Miller requested a motion to accept the minutes from the last meeting, as presented.

Motion: Mr. Boruff
Second: Mr. Vancleave
Ayes: 8
Nays: 0

ACTION: PASSED AS REVISED

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. Inclusion of the RSP 109-C-213 into 2014 book.

Ms. Gottschalk presented the following revision to 109.07, RSP 109-C-213, which pertains to contract liens and partial payments. It is included in every CIB for all contracts but is not currently addressed in any form in the Standard Specifications.

Please note that this is not a revised version of any existing book language. The intention is to include this in the 2014 Standard Specifications book.

SECTION 109, BEGIN LINE 929, INSERT AS FOLLOWS:

109.07 Partial Payments

The contract may contain more than one project. Partial payments may be made once each month as the work progresses or twice each month if it is determined that the amount of work performed is sufficient to warrant such payment. These payments will be based on estimates, prepared by the Engineer, of the value of the work performed and materials complete in place in accordance with the contract. No partial payment will be made or estimates will not be submitted when the total value of the work done since the last estimate amounts to less than $500.

Except as set out in 105 IAC 11-3-8 of the Rules For Prequalification of Contractors and Bidding, the balance, less all previous payments and less amounts

FINAL DRAFT MINUTES

claimed which are required to be held by the Department in accordance with Indiana Code 8-23-9-26 through 8-23-9-39, will be certified for payment.

Upon receipt of a claim under Indiana Code 8-23-9-26, the Department will retain, out of the amount due the Contractor, the amount of the claim. The amount to be retained will be withheld from partial payment estimates until the total amount of the claim has been retained.

In order to retain an amount when required by Indiana Code 8-23-9-26, the Engineer will apply a negative quantity to the contract liens pay item for the actual dollar amount of the claim. Upon resolution of the claim, the Engineer will post a positive quantity to the contract liens pay item equal to the amount originally retained. The final quantity of the contract liens pay item will be zero prior to final payment.

The contract unit price for contract liens will be $1.00.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Contract Liens	*DOL*

No allowance will be made for materials received which have not been incorporated into the work except in accordance with 111.

C. STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS PROPOSED ITEMS

OLD BUSINESS

Item No. 02 06/21/12; 11/16/12 Mr. Walker pg 06
Recurring Special Provision:
728-B-XXX *DRILLED SHAFT FOUNDATIONS*

ACTION: PASSED AS REVISED

Item No. 12 02/21/13 (2012 SS) Mr. Pankow pg 28
Recurring Special Provision:
108-C-585 WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

ACTION: WITHDRAWN

Item No. 17 02/21/13 (2012 SS) Mr. Pankow pg 30
701.04(a) Approval of Pile Driving Equipment

ACTION: PASSED AS SUBMITTED

NEW BUSINESS

Item No. 01 03/21/13 (2012 SS) Mr. Pankow pg 35

FINAL DRAFT MINUTES

203.21	Embankment on Hillsides or Slopes

ACTION: WITHDRAWN

Item No. 02 03/21/13 (2012 SS) Mr. Walker pg 38

715.02	Materials
715.06	Joining Pipe
717.02	Materials

ACTION: PASSED AS SUBMITTED

Item No. 03 03/21/13 (2012 SS) Mr. Walker pg 42

715.09	Backfilling

ACTION: PASSED AS REVISED

Item No. 04 03/21/13 (2012 SS) Mr. Walker pg 45

Recurring Special Provision:

725-R-599	PIPE LINING

ACTION: PASSED AS REVISED

Item No. 05 03/21/13 (2012 SS) Mr. Walker pg 50

907.28	Reinforced Thermosetting Resin and Pipe Fittings

ACTION: PASSED AS REVISED

Item No. 06 03/21/13 (2012 SS) Mr. Walker pg 53

910.01	Reinforcing Bars and Dowel Bars

ACTION: PASSED AS SUBMITTED

Item No. 07 03/21/13 (2012 SS) Mr. Walker pg 56

SECTION 911	WOOD MATERIALS (various sections)

ACTION: PASSED AS REVISED

Item No. 08 03/21/13 (2012 SS) Mr. Walker pg 65

915.04(b)2	Structural Steel
915.04(b)3	Internal Steel Shims
915.04(f)	Certification
915.05	Bearing Assemblies with Polytetrafluoroethylene, PTFE, Sliding Surfaces

ACTION: PASSED AS SUBMITTED

Item No. 09 03/21/13 (2012 SS) Ms. Phillips pg 68

731.02	General Design Requirements
731.04	Submittals
731.05	Materials

FINAL DRAFT MINUTES

731.08	Retaining Wall Excavation
731.12	Method of Measurement
731.13	Basis of Payment

ACTION: PASSED AS REVISED

Item No. 10 03/21/13 (2012 SS) Mr. Pankow pg 74

619.08	Surface Preparation
619.11	Shop Painting

ACTION: PASSED AS REVISED

Item No. 11 03/21/13 (2012 SS) Mr. Pankow pg 77

703.06	Placing and Fastening

ACTION: PASSED AS REVISED

FINAL DRAFT MINUTES

cc: Committee Members
FHWA
ICA

Mr. Walker
Date: 03/21/13

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO SPECIAL PROVISION (OLD BUSINESS ITEM)

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: INDOT currently allows the use of drilled shaft foundations through a Unique Special Provision. A Recurring Special Provision is necessary for this application.

PROPOSED SOLUTION: Create a Recurring Special Provision for drilled shaft foundations.

APPLICABLE STANDARD SPECIFICATIONS: None

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: create new 728 provision

PAY ITEMS AFFECTED: Create or modify existing pay items to have drilled shafts designated by diameter. Also the item for exploratory core needs to be created or maintained.

Submitted By: Ron Walker

Title: State Materials Engineer

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 3-1-13

APPLICABLE SUB-COMMITTEE ENDORSEMENT: ad hoc committee consisting of: Youlanda Belew, Ron Heustis, Jim Reilman, Tom Struewing, & Mir Zaheer

FINAL DRAFT MINUTES

728-B-XXX DRILLED SHAFT FOUNDATIONS

(Adopted XX-XX-XX)

The Standard Specifications are revised as follows:

SECTION 728, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 728 - ~~BLANK~~*DRILLED SHAFT FOUNDATIONS*

728.01 Description

This work shall consist of the construction of reinforced concrete drilled shaft foundations, 5.0 ft or smaller in outside diameter, in accordance with 105.03.

MATERIALS

728.02 Materials

Materials shall be in accordance with the following:

Admixtures for Use in Concrete.....912.03*
Cement Grout.....707.09*
Coarse Aggregate
For exposed concrete, Class A or Higher,
Size No. 8 or No. 9.....904*
For non-exposed concrete, Class B or Higher,
Size No. 8 or No. 9.....904*
Fine Aggregate, Size No. 23.....904*
Fly Ash.....901.02*
Ground Granulated Blast Furnace Slag.....901.03*
*Portland Cement, type I, II, IP, or IS***.....901.01(b)*
Reinforcing Bars.....910.01*
Water.....913.01*

* *Except as modified herein*
** *Air- entraining cement shall not be used. This includes type IA, IIA, IIIA, IP-A, IS-A. If type IP cement is used, the pozzolan in the blended cement shall not be class C fly ash.*

If indicated on the plans, casings shall be in accordance with either ASTM A 252, grade 2 or ASTM A 36. Otherwise, casings shall be steel, smooth, clean, watertight, and of adequate strength to resist construction stresses. The outside diameter of casing shall not be less than the specified diameter of the drilled shaft unless otherwise shown on the plans. Casing diameters shall be within the American Pipe Institute's tolerances for regular steel pipe. The Contractor may request to provide a casing larger in diameter than that specified.

Slurry shall be either a polymer or mineral, using sodium bentonite or attapulgite. Slurry shall have a grain size that will remain in suspension with sufficient viscosity and

FINAL DRAFT MINUTES

gel characteristics to transport excavated material and shall be capable of maintaining the stability of the drilled shaft excavation to allow proper concrete placement.

728.03 Drilled Shaft Concrete Mix Design

The mix design for the drilled shaft concrete shall be determined based on the design compressive strength, f'c, and the requirements stated in Appendix X1 of ASTM C 94, as well as the following conditions:

(a) The target water/cementitious ratio for the mix design shall not exceed 0.450.

(b) The design total cementitious content shall be set such that it is no less than 650 lbs and not more than 800 lbs. Fly ash or GGBFS as outlined below shall be used in combination with portland cement.

1. If class F fly ash is used, the fly ash content for a mix design shall be a minimum of 25% and shall not exceed 30% of the total cementitious, by weight. Class F fly ash shall not be used in conjunction with blended cement or ground granulated blast furnace slag, GGBFS.

2. If class C fly ash is used, the fly ash content for a mix design shall be a minimum of 35% and shall not exceed 40% of the total cementitious, by weight. Class C fly ash shall not be used in conjunction with blended cement or ground granulated blast furnace slag, GGBFS.

3. If GGBFS is used, the GGBFS content for a mix design shall be a minimum of 35% and shall not exceed 45% of the total cementitious, by weight. GGBFS shall not be used in conjunction with blended cement or fly ash.

(c) The drilled shaft concrete shall be air entrained. The target air content for the mix design shall be set at 6.5% air or 1.755 cu ft/cu yd of concrete.

(d) The target fine aggregate content shall be set such that it is no less than 35%, but not more than 50% of the total weight of the aggregate in each cubic yard. Aggregate proportions shall be based on material in the saturated surface dry condition.

The air content shall be 6.5% ± 2.0 by volume at the time of acceptance. Air content shall be determined in accordance with 505.

The temperature of the concrete at time of placement shall not exceed 80° F. The concrete temperature shall be controlled by one of the pre-cooling methods described in ACI 207.4R and as approved by the Engineer.

FINAL DRAFT MINUTES

Drilled shaft concrete mix shall remain workable until the entire placement operation is complete and any temporary casings have been removed from the excavation. When the dry construction method is used, the concrete shall have a slump of 6 in. to 9 in. When the wet construction method or casing construction method is used, the concrete shall have a slump of 7 in. to 10 in. The concrete shall maintain a slump within the ranges specified herein until the entire placement operation is complete. One of the following admixtures shall be used to achieve and maintain the required slump:

(a) type F admixture,

(b) type G admixture,

(c) high range water reducing admixture system, or

(d) high range water reducing retarding admixture system.

A rheology-modifying admixture meeting the requirements of type S chemical admixture in accordance with ASTM C 494 may be used if approved by the Engineer and admixture manufacturer. Chemical admixtures type B, type C, and type E will only be permitted with prior written permission. The concrete shall not be retempered with additional amounts of chemical admixtures type F or type G after the initial mixing has been completed.

A concrete mix design, CMD, shall be prepared for the drilled shaft based on the requirements as specified herein and shall be verified by a trial batch. The CMD shall be submitted to the Engineer for verification at least ~~7~~seven days prior to the trial batch demonstration. The CMD submittal shall include the following:

(a) list of all ingredients
(b) source of all materials
(c) gradation of the aggregates
(d) absorption of the aggregates
(e) SSD bulk specific gravity of the aggregates
(f) specific gravity of pozzolan
(g) batch weights
(h) names of all admixtures
(i) range of admixture dosage rates as recommended by the manufacturer

728.04 Trial Batch

An American Concrete Institute certified concrete field testing technician, grade 1, hereinafter referred to as the Contractor's certified technician, shall be on site to direct and perform all sampling and testing.

A trial batch shall be produced and tested by the Contractor's certified technician and the Department's qualified technician to verify that the CMD meets the concrete mix

FINAL DRAFT MINUTES

criteria. The trial batch shall be of sufficient quantity to allow the Contractor and the Engineer to perform all required tests from the same batch. Concrete shall be batched, mixed, and delivered in accordance with 702.06, 702.07, and 702.09. The Engineer will test the trial batch and provide the Contractor with the results. Trial batch concrete shall not be used for more than one test, except the concrete used for the unit weight may be used to conduct the air content test. In order for the trial batch concrete to be considered acceptable, the air content will measure at least 6.5%. After mixing, the concrete shall be agitated for a time period to simulate delivery, not to exceed 45 minutes.

The Contractor shall cast four 6 in. diameter by 12 in. cylinders for compressive strength determination. Two of the cylinders shall be tested at an age of 7 days and ~~2~~two cylinders tested at an age of 28 days. Compressive strength shall be reported as the average of the two cylinders tested at the appropriate age.

The Department will cast four 6 in. diameter by 12 in. cylinders. Two of the cylinders will be tested at an age of 7 days and ~~2~~two cylinders tested at an age of 28 days. Compressive strength will be reported as the average of the ~~2~~two cylinders tested at the appropriate age. Additional cylinders may be cast and tested at another age. Average compressive strength test results by the Department, which achieve the minimum compressive strength requirement at an earlier age, will be considered as validating the compressive strength requirement for the CMD; however, compressive strength at 28 days is still required. The 28-day compressive strength shall meet or exceed the requirements of ASTM C 94, Appendix X1, unless otherwise approved by the Engineer.

The Department's test results will be used to validate CMD compliance with the required concrete properties.

All molds, facilities, and materials necessary to prepare and initially cure cylinders shall be provided.

Gradations will be determined to validate the fine and coarse aggregates used.

The Department's qualified technician will measure the concrete properties and verify compliance to the Contractor's results within the following tolerances.

CONCRETE PROPERTIES AND ALLOWABLE TOLERANCES BETWEEN RESULTS

Concrete Property	*Tolerance between results*
Aggregate Correction Factor	*±0.1 ~~%~~percentage point*
Air Content	*±0.5 ~~% point~~percentage points*
Slump	*±1.0 in.*
Temperature	*±1.9°F*
28-day Compressive Strength	*±8.5%*
Unit Weight	*±1.9 lb/cu ft*
Water/Cementitious ratio	*±0.015*

FINAL DRAFT MINUTES

All test results not within the tolerance are to be investigated by the Department and the Contractor as to the cause and determine corrective actions required to resolve the discrepancy. The relative yield shall be determined by both the Department and the Contractor and compared to the theoretical value for relative yield in the following table based on the measured air content. A relative yield that is more than ±0.005 from the theoretical is not cause for rejection, but will be investigated for cause and possible corrective action.

THEORETICAL EFFECT OF AIR CONTENT ON RELATIVE YIELD
(@ 6.5% Target Air Content)

Air Content	Theoretical Relative Yield	Air Content	Theoretical Relative Yield	Air Content	Theoretical Relative Yield
3.0 (fail)	0.965	5.7	0.992	8.4	1.019
3.1 (fail)	0.966	5.8	0.993	8.5	1.020
3.2 (fail)	0.967	5.9	0.994	8.6 (fail)	1.021
3.3 (fail)	0.968	6.0	0.995	8.7 (fail)	1.022
3.4 (fail)	0.969	6.1	0.996	8.8 (fail)	1.023
3.5 (fail)	0.970	6.2	0.997	8.9 (fail)	1.024
3.6 (fail)	0.971	6.3	0.998	9.0 (fail)	1.025
3.7 (fail)	0.972	6.4	0.999	9.1 (fail)	1.026
3.8 (fail)	0.973	6.5	1.000	9.2 (fail)	1.027
3.9 (fail)	0.974	6.6	1.001	9.3 (fail)	1.028
4.0 (fail)	0.975	6.7	1.002	9.4 (fail)	1.029
4.1 (fail)	0.976	6.8	1.003	9.5 (fail)	1.030
4.2 (fail)	0.977	6.9	1.004	9.6 (fail)	1.031
4.3 (fail)	0.978	7.0	1.005	9.7 (fail)	1.032
4.4 (fail)	0.979	7.1	1.006	9.8 (fail)	1.033
4.5	0.980	7.2	1.007	9.9 (fail)	1.034
4.6	0.981	7.3	1.008	10.0 (fail)	1.035
4.7	0.982	7.4	1.009	10.1 (fail)	1.036
4.8	0.983	7.5	1.010	10.2 (fail)	1.037
4.9	0.984	7.6	1.011	10.3 (fail)	1.038
5.0	0.985	7.7	1.012	10.4 (fail)	1.039
5.1	0.986	7.8	1.013	10.5 (fail)	1.040
5.2	0.987	7.9	1.014	10.6 (fail)	1.041

FINAL DRAFT MINUTES

5.3	*0.988*	*8.0*	*1.015*	*10.7 (fail)*	*1.042*
5.4	*0.989*	*8.1*	*1.016*	*10.8 (fail)*	*1.043*
5.5	*0.990*	*8.2*	*1.017*	*10.9 (fail)*	*1.044*
5.6	*0.991*	*8.3*	*1.018*	*11.0 (fail)*	*1.045*

CMD's, which have had a successful trial batch demonstration for another drilled shaft on a separate contract may be submitted for the Engineer's approval. The results from Department and Contractor testing of the concrete properties listed above from the trial batch concrete shall be included in the submittal. If the Engineer approves the use of the submitted CMD, verification of the tolerances shall be made during the first day of production by tests conducted by the Contractor's certified technician and the Department's qualified technician. The results of the tests from the first day of concrete production shall be within the concrete property tolerances listed above.

Except for adjustments to compensate for routine aggregate moisture fluctuations, changes in target aggregate SSD batch weights shall be documented and submitted to the Engineer for approval, prior to implementing. A maximum adjustment of ±3 percentage points of fine to total aggregate ratio by volume will be permitted. Changes to the admixture dosages will be permitted.

A new CMD shall be prepared and successfully demonstrated by trial batch for any change in material, cementitious content or target water/cementitious ratio.

CONSTRUCTION REQUIREMENTS

728.05 Quality Control Testing

The Contractor shall perform all quality control testing including, but not limited to, slurry testing and plastic and hardened concrete testing. The Contractor shall provide copies of all quality control test reports to the Engineer no later than ~~5~~five business days after the tests are completed. If the Contractor fails to submit test reports within the timeframe allowed, the Engineer may withhold progress estimates until the reports are provided.

728.06 Blank

728.07 Submittals

A minimum of 45 days prior to the start of drilled shaft construction, the Contractor shall submit a QCP in accordance with ITM 803 detailing the plan for construction of the drilled shafts. The QCP shall at a minimum include the following:

(a) The name of the contractor that will perform the drilled shaft construction.

FINAL DRAFT MINUTES

(b) A list of equipment to be used including, but not limited to cranes, drills, augers, bailing buckets, final cleaning equipment, de-sanding equipment, slurry pumps, core sampling equipment, tremies, concrete pumps, and temporary casings.

(c) A list of proposed materials and suppliers including, but not limited to concrete, reinforcement bars, permanent casings and slurry.

(d) A detailed description of the proposed sequence of construction through the project, at each structure and at each bent and pier of each structure.

(e) A detailed explanation of methods and procedures for construction including, but not limited to the following:

1. *The method of construction proposed for each drilled shaft.*
2. *The procedures for ensuring correct horizontal and vertical alignment of each drilled shaft.*
3. *The procedures for removing or excavating through subsurface obstructions, whether natural or man-made.*
4. *The procedures for advancing casing, as applicable.*
5. *The details regarding the lengths, sizes and locations of the temporary casings and details regarding the methods to install and extract the temporary casing as applicable.*
6. *The methods of mixing, circulating and de-sanding slurry. A copy of the slurry manufacturer's recommendations shall be included.*
7. *The names and qualifications of technicians that will perform slurry testing.*
8. *The names and qualifications of the certified technicians.*
9. *The procedures for dewatering and cleaning drilled shaft excavations.*
10. *The methods for placing and supporting reinforcement bars in the correct locations.*
11. *The materials and methods for installing, protecting and grouting crosshole sonic logging testing access tubes.*
12. *The procedures for concrete placement.*
13. *The procedures and materials for pressure grouting voids when using permanent casing.*
14. *Detailed procedures for how construction problems will be addressed.*

Drilled shaft construction shall not begin until the QCP is approved in writing by the Engineer.

728.08 Preconstruction Meeting

The Contractor shall hold a pre-construction meeting with the Engineer after approval of the QCP and a minimum of 14 days prior to construction. The pre-

FINAL DRAFT MINUTES

construction meeting shall include at a minimum representatives of the Contractor, the subcontractor performing the drilled shaft construction, the Engineer, the design consultant, the geotechnical consultant drilled shaft inspector, and the Office of Geotechnical Services.

728.09 Equipment

Drilling and excavation equipment shall be capable of producing a drilled shaft that is a minimum of 20% of the planned drilled shaft length below the tip elevations shown in the plans. Blasting will not be permitted for drilled shaft excavation unless approved in writing by the Engineer.

Drop chutes for concrete placement shall consist of a smooth tube of one piece construction with an attached hopper.

Tremies shall consist of a watertight tube of sufficient length, diameter, and wall thickness to discharge concrete at the base of the drilled shaft excavation without bending, crimping or impeding the flow of concrete. The inside diameter of the tremie shall be a minimum of 10 in. The discharge end of the tremie shall be constructed to permit the free radial flow of concrete during placement operations. The inside and outside surfaces of the tremie shall be clean and smooth.

Concrete pumps shall be capable of maintaining a continuous flow of concrete from beginning to completion of a drilled shaft pour. Pump lines shall have a minimum 4 in. diameter and shall be constructed with watertight joints.

728.10 Construction Methods

The Contractor shall use the construction methods specified in the contract for each drilled shaft. If more than one method is specified or no method is specified for a drilled shaft, the Contractor may choose the method suitable for the drilled shaft. Construction methods shall be one of the following:

(a) Dry Construction Method

The dry construction method shall consist of drilling the excavation, removing accumulated water and loose material from the excavation, and placing concrete and reinforcement in a relatively dry excavation.

The dry construction method shall only be used in locations where conditions are such that the rate of groundwater infiltration into the excavation does not exceed 12 in. per hour. The maximum depth of water shall not exceed 2 in. prior to concrete pour. The sides and bottom of the excavation shall remain stable without any caving, sloughing, or swelling, and the full depth of the excavation may be visually inspected prior to placing concrete.

(b) Wet Construction Method

FINAL DRAFT MINUTES

The wet construction method shall consist of drilling the excavation, cleaning the excavation by muck bucket and air lifting, and placing concrete in a manner to displace water and slurry up and out of the excavation as concrete is placed.

The wet construction method shall be used where conditions are not suitable for the dry construction method. To prevent caving, sloughing, or swelling of the excavation during drilling, slurry shall be added to the excavation prior to encountering groundwater.

(c) Casing Construction Method

The casing construction method shall consist of placing either a temporary or permanent casing in accordance with the following:

1. Temporary Casing Method

The temporary casing method shall consist of drilling the shaft excavation in accordance with the dry or wet construction method, placing a casing to maintain the excavation, and then withdrawing the casing during placement of the concrete.

2. Permanent Casing Method

The permanent casing method shall consist of driving, vibrating, or drilling a casing to a specified depth prior to excavation of the drilled shaft. Material inside the casing is then excavated and concrete placed in accordance with the dry or wet construction method.

728.11 Construction

The Contractor shall maintain a construction log for each drilled shaft. The log shall include the following as a minimum:

1. *The drilled shaft number.*
2. *The method of construction.*
3. *A description and approximate top and bottom elevation of each soil or rock material encountered during excavation.*
4. *The rate of groundwater infiltration.*
5. *The depth of water in the excavation just prior to concrete placement.*
6. *The type of slurry, as applicable.*
7. *The results of all slurry testing, as applicable.*
8. *The methods used to clean and check the excavation prior to concrete placement.*
9. *The method of concrete placement.*
10. *The results of all plastic concrete testing including temperature readings.*
11. *The number of concrete cylinders made for compressive strength testing.*
12. *Time of completion of excavation cleaning.*
13. *Time of installation of reinforcing steel.*

FINAL DRAFT MINUTES

14. *Time that concrete placement begins and ends.*
15. *The rate of concrete placement and the total time required to place concrete.*
16. *The method of temporary casing removal, as applicable.*
17. *A record of the head of concrete before and during removal of temporary casing, as applicable.*
18. *The total volume of concrete placed versus theoretical volume of concrete required.*
19. *A description of all equipment and materials used.*
20. *A record of any problems encountered including possible soil and water inclusion, possible voids, and possible drilled shaft or casing collapse.*

A drilled shaft excavation shall not be left unfilled overnight unless cased to full depth.

(a) Exploratory Rock Cores, Soil Borings, and Proof Testing

The Contractor shall obtain soil samples and exploratory rock cores within the footprint of each drilled shaft prior to the start of production drilling to determine the character of the material throughout the entire drilled shaft length and to a depth directly below the complete shaft excavation. Soil borings and exploratory rock cores ~~Cores shall be NX-size and~~ shall extend a minimum of 15 ft below the planned tip elevation of the drilled shaft or three times the diameter of the rock socket, whichever is greater, or as directed by the Engineer. Soil samples and exploratory rock cores shall be obtained by an approved Geotechnical Consultant and complete boring logs shall be prepared and submitted by the geotechnical consultant.

Soil samples shall be taken within soils at a maximum spacing of 5 ft, or as otherwise directed by the Engineer, using the standard penetration test method with the soil samples extracted with a split-barrel sampler or with undisturbed sample excavation.

Exploratory rock cores shall be NX-size. The exploratory rock coring operation shall include observing such indicators as speed of drilling under given drill pressure, dropping or clogging of the drill bit and loss of drill water, if used. The Engineer will observe exploratory rock coring and will inspect cores to determine if the material is suitable for the planned depth and size of drilled shaft. ~~The test borings and rock cores shall be obtained by an INDOT-Approved Geotechnical Consultant and complete boring logs shall be prepared and submitted by the geotechnical consultant.~~ Additional exploratory rock cores shall be obtained as directed by the Engineer. The core hole shall be grouted upon completion of coring. The exploratory rock cores shall be extracted with a core barrel. ~~Rock c~~Cores shall be measured, visually identified, and described on the Contractor's field log within 24 hours after the exploration is completed. The Engineer will inspect the ~~rock~~ cores and determine the final depth of required excavation based on evaluation of the material's suitability.

FINAL DRAFT MINUTES

(b) Casing

All subsurface casing shall be considered temporary unless specified as permanent casing in the contract.

If the Contractor elects to remove a casing and substitute a longer or larger diameter casing through caving soils, the excavation shall be stabilized either with slurry or by backfilling before the new casing is installed.

If the dry construction method is used and casing is not placed during excavation, the Contractor shall take appropriate measures to prevent deterioration of the excavation. If the excavation has deteriorated, the Contractor shall over-ream the excavation prior to placement of concrete and reinforcement. Over-reaming shall be by methods approved by the Engineer.

If the temporary casing method is used, the casing shall be advanced with the drilling until a nearly impervious ground formation is reached. The casing shall be seated in the formation and excavation shall continue until the required tip elevation is reached. Dependent on the rate of groundwater infiltration, construction shall proceed in accordance with either the dry or wet construction method. The temporary casing shall be withdrawn during placement of the concrete and while the concrete is still in a plastic state. The casing shall be withdrawn at a slow, uniform rate in a direction parallel to the axis of the drilled shaft. The casing shall not be rotated, reinserted, driven, or vibrated during withdrawal unless prior approval is granted by the Engineer. The rate of concrete placement and rate of casing withdrawal shall be such that the concrete displaces all loose materials, water and slurry up and out of the excavation without mixing with or displacing the concrete. At a minimum, a 5 ft head of concrete shall be maintained above either the highest hydrostatic water level or slurry, whichever is higher, as the casing is withdrawn.

Temporary casing which becomes bound and cannot be practically removed will constitute a defect in the drilled shaft. The Contractor shall submit a proposed method to remediate the defect to the Engineer for approval. The submittal shall include design drawings and calculations stamped by a professional engineer.

When temporary casing is used and the drilled shaft extends above ground or through a body of water, the portion of the drilled shaft above the existing ground or above the bottom of the body of water may be formed with a removable casing. Removable casings may be removed when the following conditions are met:

1. *The concrete has cured for a minimum of 72 hours.*

2. *The concrete attains a compressive strength of at least 2,500 psi, as determined from 6 in. diameter ~~x~~ by 12 in. concrete cylinder breaks.*

FINAL DRAFT MINUTES

3. *The drilled shaft concrete is not exposed to moving water for ~~7~~seven days.*

If the permanent casing method is used, the casing shall be driven, vibrated, or advanced by drilling to the specified tip elevation. If the casing cannot be driven to the full depth of the excavation, the Contractor may either excavate material within the embedded portion of the casing or drill a pilot hole ahead of the casing until the casing reaches the specified depth. If a pilot hole is drilled, it shall be centered in the drilled shaft and shall be no larger than ~~1/2~~one-half the diameter of the drilled shaft. The Contractor shall not over-ream the excavation to the outside diameter of the casing. Permanent casing shall be continuous between the elevations shown on the plans. Any length of permanent casing installed below the shaft cutoff elevation, shall remain in place. Temporary casing shall not be used instead of, or in addition to, permanent casing. After the permanent casing is placed, all loose materials and water shall be removed. Reinforcement shall be placed and the casing shall be filled with concrete. All voids between the casing and the soil surrounding the casing shall be pressured grouted with cement grout.

(c) Slurry

When slurry is used during drilled shaft excavation, the Contractor shall perform testing to determine the density, viscosity, and pH of the slurry. A minimum of ~~4~~four sets of tests shall be made during the first ~~8~~eight hours of slurry use. If the first ~~4~~four sets of tests indicate consistent, acceptable results, the testing frequency may be decreased to ~~1~~ one set of tests for every ~~4~~four hours of slurry use. Tests shall be performed when the slurry temperature is above 40° F. Test results shall be within the ranges shown below:

SLURRY PROPERTIES

Property	*Test Method*	*Required Range*
Density, pcf	*Density Balance*	*64.3 - 69.1*
Viscosity, seconds/quart	*Marsh Cone*	*28 - 45*
pH	*pH paper or meter*	*8 - 11*

The Contractor shall perform sand content testing in accordance with the American Petroleum Institute. The sand content shall not exceed 4% by volume at any point in the excavation when slurry is used.

Prior to placing concrete in a drilled shaft excavation with slurry, the Contractor shall obtain slurry samples from the base of the excavation and at intervals of 10 ft along the length of the excavation. The samples shall be tested and ~~2~~two consecutive samples shall have acceptable results for density, viscosity, pH, and sand content before concrete is placed in the drilled shaft excavation. If test results are not acceptable, the Contractor shall take corrective action to bring the slurry in to compliance with the requirements.

The Contractor shall ensure that heavily contaminated slurry suspension, which could impair the free flow of concrete, has not accumulated in the bottom of the shaft.

FINAL DRAFT MINUTES

The level of slurry in a drilled shaft excavation shall be maintained at a level sufficient to prevent caving of the hole, but not less than 4 ft above the highest expected piezometric pressure head along the depth of the shaft. In the event of a sudden significant loss of slurry in the excavation, the construction of that drilled shaft shall be stopped until either a method to stop slurry loss or an alternate construction procedure has been approved by the Engineer.

728.12 Excavation Inspection

The Contractor shall provide all necessary equipment for checking the dimensions, alignment, and cleanliness of the drilled shaft excavation. The dimensions and alignment shall be determined by the Contractor under the direction of the Engineer. Final drilled shaft depths shall be measured with a suitable weighted tape or other approved method after final cleaning.

The bottom of the drilled shaft excavation shall be clean such that a minimum of 50% of the base surface of each drilled shaft has less than 1/2 in. of loose material at the time of concrete placement. The maximum depth of loose material at any location on the base surface of the drilled shaft excavation shall not exceed ~~1.5~~1 1/2 in. The Contractor shall remove any loose material adhering to the vertical sides of the bedrock socket. Acceptability of the excavation for cleanliness will be determined by the Engineer by means of visual inspection and sounding for dry excavations and by measuring and sounding with a weighted tape or by other methods deemed appropriate by the Engineer for wet excavations. For dry excavations, the maximum depth of water shall not exceed 2 in. at the time of concrete placement and the rate of groundwater flow into the excavation shall not exceed 12 in. per hour.

728.13 Construction Tolerances

Drilled shafts shall meet the following construction tolerances:

(a) Drilled shafts shall be within 3 in. horizontally of the location shown in the plans.
(b) The top of drilled shafts shall be within plus 1 in. and minus 3 in. of the elevation shown in the plans.
(c) The alignment of vertical drilled shafts shall not vary from plumb by more than 1/4 in. per ft of depth.
(d) The alignment of battered drilled shafts shall not vary by more than 1/2 in. per ft of depth from the specified batter rate.
(e) After placement of concrete, the top of reinforcing bars shall be within plus 6 in. and minus 3 in. of the location shown in the plans.
(f) Excavation equipment and methods shall be such that the completed drilled shaft will have a planar bottom. The cutting edges of excavation equipment shall be normal to the vertical axis of the drilled shaft within a tolerance of 3/8 in. per ft of diameter.

FINAL DRAFT MINUTES

728.14 Reinforcing Bar Cage Construction and Placement

Reinforcement shall be fastened and placed in accordance with 703. Approved non-corrosive spacing devices shall be installed to hold the reinforcement at least 3 in. from the sides of the drilled shaft excavation along its entire height and concentrically centered within the drilled shaft. At a minimum, spacers shall be placed within 1 ft of the bottom of the drilled shafts and at intervals not exceeding 10 ft along the height of the drilled shaft. Approved bottom supports shall be installed to hold reinforcement the required dimension above the bottom of the drilled shaft. Concrete shall be placed immediately after placing reinforcement in the drilled shaft excavation. If concrete is not placed immediately after placing reinforcement, the Contractor shall remove the reinforcement to allow the Engineer to verify the integrity of the drilled shaft excavation and to ensure loose material has been removed.

Prior to placement of concrete, the Contractor shall determine and record the elevation of the bottom of the drilled shaft excavation and provide a copy of the record to the Engineer.

728.15 Concrete Production and Placement

The concrete used in the drilled shaft shall be in accordance with 728.03 and 728.04. Concrete temperature shall be measured in accordance with AASHTO T 309.

Concrete placement shall be in accordance with the applicable portions of 702, except as modified herein.

Concrete shall not be placed in a drilled shaft excavation without approval from the Engineer. Concrete placement shall be made by one continuous pour from the bottom to the top of the drilled shaft. The elapsed time from batching of the first load of concrete to the completion of concrete placement shall not exceed ~~2~~two hours. At no time during construction shall the slump loss result in a slump below the minimum specified. The Contractor may submit a request for approval by the Engineer for a longer placement time provided the concrete mix maintains the minimum specified slump requirements over the longer placement time as demonstrated by a trial batch and results of slump loss testing from a trial batch.

Concrete shall be placed by means of a chute, tremie or a concrete pump. Placement of concrete by a chute shall only be for the dry construction method in excavations where the maximum depth of water does not exceed 2 in.

Concrete placed by chute shall fall directly to the base of the drilled shaft without contacting either the reinforcement or sides of the drilled shaft excavation. The drop chute shall be supported so that the free fall of the concrete measured from the bottom of the chute is no more than 60 ft. If concrete placement causes the drilled shaft excavation to cave or slough, or if the concrete strikes the rebar cage or sidewall, the Contractor shall reduce the height of free fall or reduce the rate of concrete flow into the excavation.

FINAL DRAFT MINUTES

If concrete placement cannot be satisfactorily accomplished by chute, the Contractor shall use either a tremie or concrete pump to accomplish the pour.

Placement of concrete under water or slurry by tremie shall not begin until the tremie is in place at the base of the drilled shaft. Valves, bottom plates, or plugs shall be used only if concrete discharge can begin within a distance of ~~1/2~~one-half times the diameter of the tremie from the base. Plugs shall be removed from the drilled shaft excavation or be of a material approved by the Engineer, which if left in place will not cause a defect in the drilled shaft. The tremie discharge end shall remain at least 10 ft below the head of the plastic concrete at all times after the first 10 ft of concrete is placed. The flow of concrete shall be continuous and the concrete in the tremie shall be maintained at a positive pressure differential at all times to prevent water or slurry intrusion into the drilled shaft concrete.

Placement of concrete under water or slurry by concrete pump shall not begin until the pump discharge opening is in place at the base of the drilled shaft. A plug or similar device shall be used to separate the concrete from the fluid in the drilled shaft excavation until pumping begins. The plug shall either be removed from the drilled shaft excavation or be of a material approved by the Engineer which will not cause a defect in the drilled shaft if left in place.

The Contractor shall pump an adequate quantity of grout, mortar, or concrete without coarse aggregate through the pump system and lines ahead of the drilled shaft concrete to lubricate the pumping system. Material used for lubrication shall not be allowed to remain in the drilled shaft, but shall be discharged ahead of the drilled shaft concrete up and out of the drilled shaft excavation. The lubrication process shall not be repeated during the remainder of the pour. The pump shall be operated so that a continuous stream of concrete without air pockets is delivered into the excavation. The discharge opening shall remain at least 10 ft below the head of the plastic concrete at all times after the first 10 ft of concrete is placed. When lifting the pump line during concrete placement, the Contractor may temporarily reduce the line pressure until the opening has been repositioned at a higher level in the excavation. The rate of concrete placement shall be controlled to prevent displacement of the reinforcement. When the concrete reaches the top of the drilled shaft excavation, all laitance shall be removed.

If at any time during the concrete pour, the tremie or pump discharge opening is removed from the plastic concrete column and discharges concrete above the rising concrete head, the shaft shall be considered defective. In such case, the Contractor shall remove the reinforcement and concrete, clean the excavation, and complete any other remedial actions as directed by the Engineer.

Concrete in the drilled shaft shall not be vibrated, except that in dry excavations, the concrete in the top 10 ft of the shaft shall be vibrated.

FINAL DRAFT MINUTES

Concrete placement shall continue after the drilled shaft excavation is full and quality concrete is evident at the top of the shaft. Any laitance or contaminated concrete shall be displaced or removed.

The Contractor shall maintain a concrete volume as a function of depth chart for all concrete placed under slurry. Minimum depth measurements shall be taken after every load of concrete placed by tremie and after every 3 ft if pumped.

728.16 Acceptance

The Engineer will perform all quality assurance testing and acceptance testing.

(a) Drilled Shaft Concrete

Acceptance of drilled shaft concrete will be determined on the basis of tests performed by the Department. Concrete and any necessary labor to conduct sampling shall be furnished as required by the Department. During concrete placement at each drilled shaft, testing for slump, unit weight, relative yield, and air content will be conducted on the first load of the day and once every 30 cu yds. Slump, slump retention, and air content shall be in accordance with 728.03. The relative yield should not exceed 0.010 more than the theoretical value shown in the THEORETICAL EFFECT OF AIR CONTENT ON RELATIVE YIELD table in 728.04, based on the measured air content. If this occurs, the process and material will be reviewed through an increase in testing frequency to check results, establish trends, or validate impact of corrective actions.

During the concrete placement at each drilled shaft, two cylinders will be cast for compressive strength at a frequency of once every 60 cu yds. If plastic concrete properties of high air content, high slump, or high relative yield indicate a cause for concern, additional pairs of cylinders will be cast for compressive strength. Initial curing of cylinders shall be completed by submerging the cylinders in water saturated with calcium hydroxide at a temperature range of between 60 to 80 °F for no less than 16 hours and no more than 48 hours. Each cylinder will be tested for 28-day compressive strength and the paired values averaged to determine the sample result. Concrete placed in the drilled shafts shall have a 28-day compressive strength that meets or exceeds the compressive strength shown in the plans.

If at any time a construction method fails, in the opinion of the Engineer, to produce the desired final results, the Contractor shall stop construction of drilled shafts and submit a proposed remedy and alternate method for approval to the Engineer.

(b) Slurry

The Contractor shall provide copies of all slurry test reports, signed by the testing technician, to the Engineer. The Contractor shall receive written approval from the Engineer indicating that the slurry is acceptable prior to placing concrete in the drilled shaft.

(c) Drilled Shaft

FINAL DRAFT MINUTES

Completed drilled shafts will be tested for acceptance by the Engineer using crosshole sonic logging, CSL, and impulse response spectrum, IRS, test methods. The Contractor shall provide all equipment, labor, and material required by the Engineer to perform CSL and IRS testing. CSL and IRS testing will be performed no sooner than ~~5~~ five business days after placement of concrete in the drilled shaft.

The Contractor shall provide access for the Engineer to the top of each drilled shaft for CSL and IRS testing. Access shall include a stable work platform for the test operators and equipment close to the head of each shaft, and be large enough to accommodate two operators with a standard surveyor's tripod and a small bench or table.

1. CSL Testing

Unless otherwise specified, the Contractor shall provide and install access tubes for CSL testing in all drilled shafts. The Contractor shall at a minimum provide the following for CSL testing:

a. *Schedule 40,~~1.5~~1 1/2 in. I.D. mild steel tubes for each drilled shaft. The bottom of each tube shall be sealed watertight with a threaded end-cap. Any coupling of tubing required to make up the required lengths shall be made using threaded sleeve couplers, sealed watertight. The tubing shall be round and regular in section, with a clean interior surface, free of defects or obstructions that would prevent the passage of a 1 1/4 in. diameter probe through the tube. The exterior surfaces shall be free of dirt, oil, grease, heavy rust scale, or other contaminants which may inhibit formation of a good mechanical bond with the drilled shaft concrete. The use of used or recycled tubing or slightly rusted tubing is acceptable provided that it meets the requirements herein.*

b. *Clean, potable water sufficient to fill the access tubes completely.*

c. *Cement grout sufficient to fill the access tubes on completion of testing.*

d. *Grout mixing equipment and operator.*

e. *Grout pumping equipment and operator. The pump shall have a 1.0 in. tremie pipe capable of reaching the bottom of the access tubes.*

f. *Hosepipe, pump, or other means of placing clean water in the access tubes prior to testing, and for topping off the tubes during testing.*

The Contractor shall install access tubes for CSL testing as follows:

FINAL DRAFT MINUTES

a. A minimum of ~~4~~four tubes or ~~1~~one tube per foot of drilled shaft diameter, whichever is greater, shall be installed at approximately equidistant points around the interior of the reinforcement. Tubes shall be installed parallel to each other and securely attached to the reinforcement to prevent excessive movement during handling, installation, and placement of concrete. The diameter used when figuring the number of tubes shall be the largest diameter of the shaft and shall be rounded up to the next 1 ft. increment.

b. The bottoms of each tube shall be set a minimum of 3 in. and not more than 6 in. above the bottom of the drilled shaft. Tubes shall not be placed in contact with the bottom of the drilled shaft excavation. The top of each tube shall extend 3 ft to 6 ft above the planned top of the drilled shaft. If the top of the drilled shaft will be below grade or water, tubes shall extend 3 ft to 6 ft above grade or water level, or other reasonable access level if cofferdams or casings are used.

c. Reinforcement shall be handled and installed to prevent kinking or permanent bending of the access tubes or displacement of the tubes from the required position. Access tubes shall be parallel, undamaged, and securely fixed at the time of concrete placement.

d. Prior to placing concrete, the Contractor shall determine and record the bottom elevation of at least ~~1~~one of the access tubes and provide the record to the Engineer.

e. Prior to placing concrete, access tubes shall be completely filled with potable water and the top of the tubes sealed with watertight fittings. Anti-freeze shall be added to the water in cold weather to prevent freezing.

f. Upon acceptance of the drilled shaft by the Engineer, the Contractor shall remove the water from the CSL access tubes and completely fill the tubes with cement grout.

2. IRS Testing

The Contractor shall prepare a minimum of ~~2~~two areas on the top of each completed drilled shaft for IRS testing. The areas shall be prepared using chipping hammers or other hand tools not weighing more than 15 lb. Each prepared area shall be a minimum of 3 in. in diameter, shall be within ± 1 in. of the level of surrounding concrete, shall be clean, sound, level, and free of standing water and all foreign or loose materials. Chipping hammers shall not be heavier than 15 lb. At least ~~1~~one area shall be in the center of the drilled shaft and at least ~~1~~one area shall be a minimum of 18 in. from

FINAL DRAFT MINUTES

the center of the drilled shaft, but shall not be outside of the reinforcement of the drilled shaft.

The Engineer will make a preliminary interpretation of the IRS test results on site. If anomalous responses are recorded, or the data indicates a low modulus or contaminated concrete near the top of the drilled shaft, the Contractor shall prepare a new test area near the perimeter of the shaft, at a minimum of 60° rotation from the first test location.

The Engineer will provide copies of all CSL and IRS test results to the Contractor.

The Engineer will evaluate the results of CSL and IRS testing and notify the Contractor in writing if the drilled shaft is accepted or rejected.

If a drilled shaft is rejected, the Engineer may require excavation or coring in order to allow for further assessment of the drilled shaft. If coring is required, the Contractor shall obtain full depth cores from the drilled shaft at locations determined by the Engineer. An accurate log of the coring shall be kept. The cores and coring log shall be submitted to the Engineer for testing and inspection. The Contractor may provide calculations or other test results to the Engineer to support the acceptability of the drilled shaft.

The Engineer will evaluate cores and any additional information provided and will notify the Contractor in writing of the final determination of whether the drilled shaft is accepted or rejected. If a drilled shaft is rejected, the Contractor shall submit a plan to the Engineer for approval to either repair or replace the defective drilled shaft. The Contractor shall not continue construction on a drilled shaft until authorized in writing by the Engineer.

728.17 Method of Measurement

Drilled shafts will be measured by the linear foot for the diameter of drilled shaft specified. The length of drilled shaft will be the difference between the top of drilled shaft elevation and the actual tip elevation of the drilled shaft.

Exploratory cores for drilled shafts will be measured by the linear foot of core.

Permanent casing will be measured by the linear foot for the outside diameter of casing placed.

Reinforcing bars, concrete, slurry, and other incidental items will not be measured.

728.18 Basis of Payment

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS (OLD BUSINESS ITEM)

PROPOSED NEW 728-B-XXX DRILLED SHAFT FOUNDATIONS

Drilled shafts will be paid for at the contract unit price per linear foot of the diameter of drilled shaft specified. If, after inspecting exploratory rock cores, the Engineer determines that the final depth of the excavation needs to be extended further into rock, a contract adjustment for the cost of this additional excavation in rock will be developed in accordance with 104.02 or 104.03 and 109.05.

Exploratory cores for drilled shafts will be paid for at the contract unit price per linear foot.

Permanent casing for drilled shafts will be paid for at the contract unit price for the outside diameter placed.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Drilled Shaft, _____ diameter	*LFT*
Drilled Shaft, Exploratory Core	*LFT*
Drilled Shaft, Permanent Casing	*LFT*

All costs required for the construction of drilled shafts, including, but not limited to labor, equipment, and materials, excavation, cleaning and dewatering, temporary casing, reinforcement, trial batches, thermal control plan and its implementation, all required reports, quality control plans and logs, and all other incidentals shall be included in the cost of the drilled shaft.

The cost of reinforcing bars, concrete, slurry, and other incidentals necessary to construct a drilled shaft in accordance with this specification shall be included in the cost of the drilled shaft pay item.

All equipment, labor, materials, and costs for the testing of the drilled shaft and quality control testing and reports shall be included in the cost of the drilled shaft.

Rejected drilled shafts shall be repaired or replaced, as approved by the Engineer, with no additional payment.

FINAL DRAFT MINUTES

Item No.02 06/21/12; 11/16/12 (2012 SS)
Mr. Walker
Date: 03/21/13

COMMENTS AND ACTION (OLD BUSINESS ITEM)

728-B-XXX DRILLED SHAFT FOUNDATIONS

DISCUSSION: This item was introduced and presented by Mr. Walker. Mr. Reilman explained the need for a Recurring Special Provision for the use of Drilled Shaft Foundations. Further editorial revisions to 728.11(b), shown highlighted above, were proposed by Mr. Reilman. Mr. Zaheer also provided addition clarifications.

Mr. Miller asked how this applies to mass pours. Mr. Reilman stated that mass pours are still covered in a Unique Special Provision pending the results from the FHWA study. At that time, this RSP can be re-evaluated.

FINAL DRAFT MINUTES

Motion: Mr. Walker Second: Mr. Buening Ayes: 8 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: SECTION 728 (blank) pg 672 Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 2014 Standard Specifications Book ____ Revise Pay Items List __X__ Create RSP (No.728-B-203) Effective July 01, 2013 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? YES

SPECIFICATION, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS (OLD BUSINESS ITEM)

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The 108 working restrictions during certain holiday periods provision was enacted in May 2011. At that time there was uncertainty whether it should go into the next spec book or remain a provision. Based on comments received from the districts, minor revisions are proposed to the provision.

PROPOSED SOLUTION: Incorporate the proposed changes into the 108-C-585 RSP. Also, incorporate the new 108-C-585 into the next spec book.

APPLICABLE STANDARD SPECIFICATIONS: None

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: 108-C-585

PAY ITEMS AFFECTED: None

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 232-5502

Date: March 07, 2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee consisting of several district construction folks and Jim Reilman.

FINAL DRAFT MINUTES

REVISION TO SPECIFICATIONS, SPECIAL PROVISIONS (OLD BUSINESS ITEM)
108-C-585 WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

(Note: proposed changes shown highlighted gray.)

108-C-585 WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

(Adopted 05-19-11)

The Standard Specifications are revised as follows:

SECTION 108, AFTER LINE 333, DELETE AND INSERT AS FOLLOWS:

Contractors will not be permitted to work during the following holiday periods unless prior written approval is received from the Engineer. All deliveries and traffic coming from suppliers shall cease during the Department-ordered suspensions of work listed below. No time extensions to closure periods, intermediate completion dates, or contract completion dates will be granted for suspending work during these holiday periods.

(a) New Year's Day. If New Year's Day falls on a Sunday, work shall be suspended from noon December 31 until ~~sunrise~~9:00 a.m. local time January 3. If New Year's Day falls on a Monday through Saturday, work shall be suspended from noon December 31 until ~~sunrise~~9:00 a.m. local time January 2.

(b) Good Friday. Work shall be suspended from noon on Good Friday until ~~sunrise~~9:00 a.m. local time Monday, the day after Easter Sunday.

(c) Memorial Day. Work shall be suspended from noon the Friday before Memorial Day until ~~sunrise~~9:00 a.m. local time Tuesday, the day after Memorial Day.

(d) Independence Day. If Independence Day falls on a:

Sunday - Work shall be suspended from noon Friday, July 2, until ~~sunrise~~9:00 a.m. local time Tuesday, July 6.

Monday - Work shall be suspended from noon Friday, July 1, until ~~sunrise~~9:00 a.m. local time Tuesday, July 5.

Tuesday - Work shall be suspended from noon Friday, June 30, until ~~sunrise~~9:00 a.m. local time Wednesday, July 5.

Wednesday - Work shall be suspended from sunset on Tuesday, July 3, until ~~sunrise~~9:00 a.m. local time Thursday, July 5.

Thursday - Work shall be suspended from noon Wednesday, July 3, until ~~sunrise~~9:00 a.m. local time Monday, July 8.

FINAL DRAFT MINUTES

REVISION TO SPECIFICATIONS, SPECIAL PROVISIONS (OLD BUSINESS ITEM)

108-C-585 WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

Friday - Work shall be suspended from noon Thursday, July 3, until ~~sunrise~~9:00 a.m. local time Monday, July 7.

Saturday - Work shall be suspended from noon Thursday, July 2, until ~~sunrise~~9:00 a.m. local time Monday, July 6.

(e) Labor Day. Work shall be suspended from noon the Friday before Labor Day until ~~sunrise~~9:00 a.m. local time Tuesday, the day after Labor Day.

(f) Thanksgiving Day. Work shall be suspended from noon the Wednesday before Thanksgiving Day until ~~sunrise~~9:00 a.m. local time the Monday after Thanksgiving Day.

(g) Christmas Day. Work shall be suspended from noon December 24 until ~~sunrise~~9:00 a.m. local time December 27.

If prior written approval is received from the Engineer which permits a Contractor to work on one or more of the days shown in the holiday periods listed above, all affected intermediate and contract completion dates will subsequently be shortened by the number of days approved to work during the requested holiday period.

The Department may order the suspension of work, either wholly or in part, for a period of time for certain holidays *not already specified herein.* For such orders~~, if the contract suspension is not stated in the contract documents,~~ the contract completion time will be adjusted as follows:

FINAL DRAFT MINUTES

COMMENTS AND ACTION (OLD BUSINESS ITEM)

108-C-585 WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

DISCUSSION: Mr. Pankow withdrew this item.

Motion: Second: Ayes: Nays:	Action: _____ Passed as Submitted _____ Passed as Revised __X__ Withdrawn
Standard Specifications Sections affected: 108.08 pg 84. Recurring Special Provision affected: 108-C-585 WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS. Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	_____ 2014 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? _____

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS (OLD BUSINESS ITEM)

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There have been situations arise on some contracts where the pile hammer submitted just barely qualifies as having the minimum manufacturer's rated energy. These values assume the pile hammer is in optimum condition. In reality, the submitted hammer is not and thus its maximum energy output is not adequate to drive the piling.

PROPOSED SOLUTION: Incorporate the proposed changes into the 701 section which modifies the minimum pile hammer requirements when the dynamic formula is used.

APPLICABLE STANDARD SPECIFICATIONS: 701

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: 232-5502

Date: March 08, 2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee consisting of Jim Reilman and Mir Zaheer.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS (OLD BUSINESS ITEM)

SECTION 701 – DRIVEN PILING
701.04(a) APPROVAL OF PILE DRIVING EQUIPMENT

The Standard Specifications are revised as follows:

SECTION 701, BEGIN LINE 69, INSERT AS FOLLOWS:

If the method of pile driving approval is in accordance with the dynamic formula shown in 701.05(a)~~, a wave equation analysis is not required. T~~*t*he alternate method will be used to determine if the pile driving equipment is acceptable for use. *To be considered for approval, the proposed driving system shall obtain the nominal driving resistance between the specified blow count range of 30 and 120 blows per foot.*

SECTION 701, BEGIN LINE 125, DELETE AND INSERT AS FOLLOWS:

2. Alternate Method

If the alternate method is used, the energy of the pile driving equipment shall be rated by the manufacturer at or above the appropriate minimum manufacturer's rated hammer energy for the corresponding nominal driving resistance as shown in the table below. The table below will be used as the basis of approval of pile driving equipment for the alternate method.

ALTERNATE METHOD
MINIMUM PILE HAMMER REQUIREMENTS

Nominal Driving Resistance		Minimum Manufacturer's Rated Energy	
~~tons~~*kips*	~~(kilonewtons)~~	ft·lbs	~~(joules)~~
≤ ~~90~~*180*	~~(≤ 800)~~	12,000	~~(16,500)~~
~~91 – 150~~*181 – 300*	~~(801 – 1,340)~~	21,000	~~(28,500)~~
~~151 – 210~~*301 – 400*	~~(1,341 – 1,870)~~	~~26,750~~*28,800*	~~(36,500)~~
~~211 – 270~~	~~(1,871 – 2,400)~~	~~37,600~~	~~(51,000)~~
~~271 – 300~~	~~(2,401 – 2,670)~~	~~42,000~~	~~(57,000)~~
> ~~300~~*400*	~~(> 2,670)~~	Wave Equation Analysis required	

The minimum rated energies do not account for losses and inefficiencies in the pile driving system. If the hammer selected cannot satisfy *all of* the ~~minimum~~ criteria ~~in the above table~~, a wave equation analysis shall be submitted by the Contractor for approval.

FINAL DRAFT MINUTES

COMMENTS AND ACTION (OLD BUSINESS ITEM)

SECTION 701 – DRIVEN PILING
701.04(a) APPROVAL OF PILE DRIVING EQUIPMENT

DISCUSSION: Mr. Pankow introduced this item and Mr. Reilman and Mr. Zaheer explained the need to revise 701 to ensure the optimum energy output of pile hammers. Mr. Zaheer stated that extensive research went into determining the nature of this revision. Mr. Pankow agreed that this is now a more usable spec.

There were no additional comments, questions or concerns.

Motion: Mr. Pankow Second: Mr. Walker Ayes: 8 Nays: 0	Action: X Passed as Submitted _____ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 701.04 pg 462, 463 and 464. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	X 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Payment for benching is inconsistent within Section 203. Benching is measured and paid for in 203.21 based on the class of excavation encountered. Benching is not paid for in 203.22.

PROPOSED SOLUTION: All benching should be considered incidental to the work and should not be paid for directly.

APPLICABLE STANDARD SPECIFICATIONS: 203.21 and 203.22

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: 17-2.05

APPLICABLE SECTION OF GIFE: 3.10

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: Common Excavation

Submitted By: Jeff James for Greg Pankow

Title: Construction Field Engineer

Organization: INDOT

Phone Number: (317) 232-5082

Date: 03/04/13

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 203 – EXCAVATION AND EMBANKMENT
203.21 EMBANKMENT ON HILLSIDES OR SLOPES

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 759, DELETE AND INSERT AS FOLLOWS:

203.21 Embankment on Hillsides or Slopes

Before an embankment is placed on natural soil slopes or existing fill slopes of 4:1 or flatter, the existing ground surfaces shall be plowed or deeply scarified or, if the nature of the ground indicates greater precautions should be taken for integrating the proposed fill materials with the existing slopes, benches shall be cut into the existing slopes before fill placement is started. All such precautionary work shall be done as directed. No direct payment will be made for plowing or scarifying, the cost thereof to be included in the various pay items of the contract. Before an embankment is placed on natural soil slopes or existing fill slopes steeper than 4:1, benches a minimum of 10 ft ~~(3 m)~~ wide, unless otherwise specified, shall be cut into the slopes prior to the placement of embankment fill. ~~If benches are cut, the excavation involved will be paid for at the contract unit price per cubic yard (cubic meter) for the class or classes of excavation encountered.~~ *No direct payment will be made for benching, the cost thereof to be included in the various pay items of the contract.*

FINAL DRAFT MINUTES

COMMENTS AND ACTION

203.21 EMBANKMENT ON HILLSIDES OR SLOPES

DISCUSSION: Mr. Pankow withdrew this item.

Motion: Second: Ayes: Nays:	Action: _____ Passed as Submitted _____ Passed as Revised __X__ Withdrawn
Standard Specifications Sections affected: 203.21 pg 155. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: Section 3.10	_____ 2014 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? _____

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Specifications are not clear that dissimilar metals are prohibited within a single structure. Currently 715.06 covers dissimilar materials, but is intended to address different joint systems. Dissimilar metals within the same structure may lead to galvanic activity and chemically erode a portion of the structure before the design life of the pipe has been obtained. Since this is a metals issue, 717 will also need revision.

PROPOSED SOLUTION: Add statements in 715.02 and 717.02 to prohibit the use of dissimilar metals within the same structure. Also rewrite 715.06 to clarify that differing joint systems are to be joined with a concrete collar.

APPLICABLE STANDARD SPECIFICATIONS: 715.02, 715.06, 717.02

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED:

Submitted By: Ron Walker

Title: State Materials Engineer

Organization: INDOT OMM

Phone Number: 317-610-7251 x 204

Date: 3/1/2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: The Pipe Committee has reviewed this issue and concurs with the changes presented herein.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 715 – PIPE CULVERTS, AND STORM AND SANITARY SEWERS
715.02 MATERIALS
715.06 JOINING PIPE

The Standards Specifications are revised as follows:

SECTION 715, BEGIN LINE 10, INSERT AS FOLLOWS:

715.02 Materials

Pipe materials, minimum thickness or strength classification, and protective treatments for pipes except underdrains and drain tile will be determined based on height of cover, required service life, site abrasiveness, and structure pH criteria shown on the plans. Pipe with material thickness, strength classification, or protective coatings in excess of the minimum required by the above noted criteria may be used. *When metal pipe is selected, the same base metal and coating shall be used for the structure or a pipe extension.*

Concrete used for anchors, collars, grated box end sections, encasements, and sealing existing pipes shall be class A. Corrugated polyethylene pipe, type S has a smooth interior liner with a corrugated outer wall. Type SP pipe is a type S pipe with perforations.

SECTION 715, BEGIN LINE 279, DELETE AND INSERT AS FOLLOWS:

715.06 Joining Pipe

Band couplers for AASHTO M 36 ~~(M 36M)~~ type I and type II corrugated steel pipe and pipe-arches shall have corrugations that mesh with the corrugations of the pipe sections being joined or the annular rerolled ends of those pipe sections. Band couplers with projections (dimples) may be used with pipe having either annular or helical corrugations only when corrugated band couplers will not provide a matching connection to both pipes. Band couplers for AASHTO M 36 ~~(M 36M)~~ type IA and IIA corrugated steel pipe and pipe-arches shall have corrugations that mesh with the corrugations of the pipe or shall be gasketed flat bands.

At the connection of a pipe extension to an existing structure where the *joint system of the pipe* extension ~~is a different pipe material~~ *differs* from that in place, or *if* a satisfactory joint cannot be obtained *between the two structures*, a concrete collar shall be constructed. Portions of the existing structure shall be removed as shown on the plans, or as necessary, to ensure proper fit of the extension to the existing pipe. If not shown on the plans, the collar shall have a width of at least 18 in. ~~(450 mm)~~ and a thickness of at least 6 in. ~~(150 mm)~~ around the entire joint.

If rigid pipe connections are of lesser strength than that of the main barrel of a pipe structure, these connections shall be encased with concrete at least 6 in. ~~(150 mm)~~ thick.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 717 – STRUCTURAL PLATE PIPE, PIPE-ARCHES, AND ARCHES
717.02 MATERIALS

The Standard Specifications are revised as follows:

SECTION 717, BEGIN LINE 8, INSERT AS FOLLOWS:

717.02 Materials

Materials shall be in accordance with the following:

Concrete, Class A	702
Flowable Backfill	213
Grouted Riprap	904
Pipe Joint Sealant	907.11
Reinforcing Bars	910.01
Structural Plate Arches	908.09
Structural Plate Pipe and Pipe-Arches	908.09
Structure Backfill	904.05

Structural plate pipe and pipe-arches are part of the pipe classification system described in 715.02. The minimum material thickness and required protective treatments will be determined in accordance with 715.02. *When metal pipe is selected, the same base metal and coating shall be used for the structure or a pipe extension.*

FINAL DRAFT MINUTES

COMMENTS AND ACTION

715.02 MATERIALS
715.06 JOINING PIPE
717.02 MATERIALS

DISCUSSION: Mr. Walker introduced this item and explained the risks of having dissimilar metals within the same structure, and that the revisions shown will help minimize or eliminate the problems associated with having differing materials in contact with each other within the same structure. Mr. Anderson also provided some insight to necessity of this revision, explaining what happens to dissimilar metals when they come in contact with each other.

Mr. Anderson further explained the revisions shown above. Mr. Miller asked if this isn't something that should be caught by the designer. Mr. Anderson stated that the designer may not have been involved in the selection of the materials. Mr. Miller commented that the design manual needs to address this as well, and stated the importance of not allowing dissimilar materials.

There were no additional comments, questions or concerns.

Motion: Mr. Walker Second: Mr. Keefer Ayes: 8 Nays: 0	Action: _X_ Passed as Submitted _____ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 715.02 pg 597; 715.06 pg 603; 717.02 pg 617. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	_X_ 2014 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 _X_ Design Manual Revision GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y___N___ By ____ Addition or ____ Revision Received FHWA Approval? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Pipe installations are required to be inspected visually after the installation. When the size or location prevents visual inspection, 715.09 allows for video inspection in accordance with 718.07, which is for underdrains. The intent of this requirement is that the inspection would be performed using equipment and procedures of 718.07. However, 718.07 also includes definitions for damage or improper installation which is for underdrains only. Also, no guidance exists in 715.09 for pipe which is inspected and does not require mandrel testing.

PROPOSED SOLUTION: Clarify the portion of 718.07 that applies to the requirements of 715.09. Also include in 715.09 direction and guidance for addressing damage or other deficiencies that arise from visual or video inspection.

APPLICABLE STANDARD SPECIFICATIONS: 715.09

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED:

Submitted By: Ron Walker

Title: State Materials Engineer

Organization: INDOT OMM

Phone Number: 317-610-7251 x 204

Date: 3/4/2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee of Kenny Anderson and Jim Reilman on behalf of the Pipe Committee.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 715 – PIPE CULVERTS, AND STORM AND SANITARY SEWERS
715.09 BACKFILLING

The Standard Specifications are revised as follows:

SECTION 715, BEGIN LINE 338, INSERT AS FOLLOWS:

715.09 Backfilling

All pipes shall be backfilled with structure backfill or flowable backfill. Structure backfill shall be placed in accordance with 211. Flowable backfill shall be placed in accordance with 213.07 as shown on the plans or as directed.

Prior to placing flowable backfill, all standing water shall be removed from the trench. If the water cannot be removed from the trench, structure backfill shall be used in lieu of flowable backfill to an elevation 2 ft ~~(0.6 m)~~ above the groundwater. The remainder of the trench shall be backfilled as shown on the plans.

All pipes, except underdrains, will be visually inspected for acceptance a minimum of 30 days after the completion of backfill operations. Pipes that cannot be visually inspected shall be video inspected for acceptance *using equipment* in accordance with 718.07. The Engineer will determine the sections of pipe to be video inspected.

~~A~~*For pipes that were video-inspected, a* copy of the video inspection shall be provided in a format acceptable to the Engineer ~~prior to performing the mandrel testing~~. *The video inspection shall be provided prior to performing the mandrel testing or if mandrel testing is not required, prior to acceptance of the pipe.*

For pipe not requiring mandrel testing that is determined to be unacceptable by the Engineer, the unacceptable pipe shall be replaced between the nearest pipe joints or to the nearest structure, or a remediation plan shall be prepared by a professional engineer and submitted to the Engineer for final determination.

After the visual or video inspection, the Contractor shall check pipe deflection by performing a mandrel test for all pipes manufactured from materials listed in the following table or as otherwise directed.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

715.09 BACKFILLING

DISCUSSION: Mr. Walker introduced and presented this item stating the need for clarification of portions of 715.09 and how it relates to 718.07.

Mr. Anderson provided further clarification, stating that there was no proper reference to 718.07, and that the revisions were taken straight from the AASHTO specifications. Mr. Reilman concurred.

Mr. Keefer addressed a minor editorial revision concerning the placement of a dash between video and inspection.

There were no additional comments, questions or concerns.

Motion: Mr. Walker Second: Mr. Keefer Ayes: 8 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 715.09 pg 604. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: SECTION 4.11.2	__X__ 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The requirements stated in the Certification form result in impractical manufacturing tolerances. The balance among wall thickness, diameter and dimension ratio contribute to both strength of the liner and its hydraulic capacity. Tolerance for outside dimension and wall thickness are defined by the referenced specification (AASHTO M326). No guidance is provided for the actual DR. A decrease in the allowable DR results in less hydraulic capacity thus increasing the pooled backwater elevation, while an increase in the DR results in a pipe liner with less stiffness and thus a weaker structure.

PROPOSED SOLUTION: Provide an actual dimension ratio requirement in the recurring special provision and subsequently on the certification form. This requirement was determined by utilizing the tolerances stated in the referenced specification and iterations of calculations on various liner diameters for backwater increase. While no backwater increase is acceptable, a tolerable increase was used which produced a minimum actual DR of 30.0.

APPLICABLE STANDARD SPECIFICATIONS: None

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: revise 725-R-599

PAY ITEMS AFFECTED: None

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 3-4-13

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee consisting of Kenny Anderson, Jim Reilman, Crystal Weaver.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

725-R-599 PIPE LINING

(Note: Only affected sections of the RSP 725-R-599 are shown with proposed changes highlighted gray. The existing provision is available at http://www.in.gov/dot/div/contracts/standards/rsp/sep11/sec700.htm)

The Standard Specifications are revised as follows:

SECTION 725.02, (RSP), DELETE AND INSERT AS FOLLOWS:

The liner pipe shall either be chosen from those shown on the Department's list of approved Plastic Pipe and Pipe Liner Sources or shall be accompanied by a ~~type A~~ certification in accordance with 907.25~~(d)~~. If the liner pipe is not on the Department's list of approved Plastic Pipe and Pipe Liner Sources, then the ~~type A~~ certification ~~must~~shall be furnished. Liner pipe ~~must~~shall be submitted to the Engineer for review and approval ~~be approved by the Engineer~~ prior to installation.

SECTION 907, BEGIN LINE 312, DELETE AND INSERT AS FOLLOWS:

907.25 Thermoplastic Liner Pipe

Thermoplastic 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. *A certification addressing all of the required information for HDPE liner pipe shall be prepared by the manufacturer, when required. A sample certification is included in ITM 804.*

(a) Solid Wall HDPE Liner Pipe

Solid wall HDPE liner pipe shall be in accordance with ASTM F 714. The maximum standard dimension ratio, SDR, ~~for the liner pipe~~ as defined in ASTM F 412 *for the liner pipe* shall be 32.5. *The actual calculated minimum dimension ratio, DR, as defined in ASTM F 412 for the liner pipe shall be 30.0.* 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

Profile wall HDPE liner pipe shall be in accordance with ASTM F 894. The minimum liner ring stiffness constant, RSC, shall be ~~100~~*160 for circular installations and 250 for deformed installations*. 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

Profile wall PVC liner pipe shall be in accordance with ASTM F 949. Thermoplastic liner pipe may be added to the Department's approved list by completing the requirements of ITM 806, Procedure A.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

725-R-599 PIPE LINING

~~(d) Type A Certification Forms for Liner Pipe~~

~~*Type A certification for liner pipe shall be in accordance with 916.01, 916.02, and 916.02(a) with the exception that the sample form for type A certification shall not be used. The sample type A certification for liner pipe that shall be used is contained herein*~~.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

725-R-599 PIPE LINING

~~TYPE A~~ CERTIFICATION
FOR SOLID WALL HDPE LINER PIPE

This certifies the Solid Wall HDPE Liner Pipe, _____,
(Product Trade Name)

of _____ nominal diameter, manufactured by _____
(size) *(Manufacturer Name)*

at _____
(Plant Location, City & State)

is in accordance with the Indiana Department of Transportation Standard Specifications and AASHTO M 326 or ASTM F 714. This material is to be used for and by the following and is substantiated by the test results included herein.

Contract Number _____ Contractor Name _____

Identifying Print Line Information _____

or Lot Number _____

Material Destination (if other than contract location) _____

Test	***Method***	***Specification Limits***	***Test Results***
Resin Density	*ASTM D 3350*	*0.940 – 0.955*	
Resin Melt Index	*ASTM D 3350 Condition (190, 2.16)*	*0.15, maximum*	
Liner OD	*AASHTO M 326*	*	
Liner Wall Thickness or ID	*AASHTO M 326*	*Nominal OD, in in., divided by 32.5, minimum (For 12 in. use 12.750 in. and for 13 in., use 13.375 in.) Given ID, subtract from OD provided and divide by 2 to determine wall thickness, then use spec above*	
Liner DR (Actual Calculated)	*AASHTO M 326*	*~~32.5~~30.0, minimum*	
Length	*AASHTO M 326*	*99% specified length, minimum or 1/2 in. less than specified length, minimum, whichever is shorter*	

** These values vary depending on the pipe size. The Contractor shall include the appropriate value from AASHTO.*

Joint type (circle one): Bell/Spigot Screw Type Grooved Press-On Butt Fused Ext. Welded

Other (specify) _____

_____ _____ _____
(Date) *(Signature of Manufacturer's Representative)* *(Title)*

FINAL DRAFT MINUTES

COMMENTS AND ACTION

725-R-599 PIPE LINING

DISCUSSION: Mr. Walker introduced and presented this item stating the need for a dimension ratio requirement for RSP 725-R-599 and also in the certification form, thus improving the strength of the liner and the hydraulic capacity.

Mr. Anderson provided some clarifications as to the terminology used in this specification. Mr. Anderson also explained the engineering behind determining the revisions shown, in order to limit backwater and maximize the flow rate.

The two representatives from industry (Sam Martin and Steve Cooney from ISCO) reinforced the statements made by Mr. Anderson.

Mr. Walker stated that the certification form does not go into the book. Therefore, the language in 907.25 (d) has been revised, and the certification form will be incorporated into ITM 804.

Note: As with publishing of these minutes, the Certification forms for solid and profile walls HDPE liner pipes have been updated and posted at: http://www.in.gov/dot/div/contracts/standards

There were no additional comments, questions or concerns.

Motion: Mr. Walker Second: Mr. Boruff Ayes: 8 Nays: 0	Action: _____ Passed as Submitted __X__ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 907.25 pg 848, 849. Recurring Special Provision affected: 725-R-599 PIPE LINING Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	__X__ 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Thermosetting resin pipe (section 907.28) is susceptible to damage from ultraviolet exposure. The specification for thermosetting resin pipe does not have requirements for ultraviolet exposure and also specifies an unnecessary test method.

PROPOSED SOLUTION: Revise the specifications to include accelerated weather testing and delete the unnecessary test method.

APPLICABLE STANDARD SPECIFICATIONS: 907.28

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: No new pay items need to be created

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 3-1-13

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee consisting of Kenny Anderson and Jim Reilman. Industry comments were solicited and considered prior to submission.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 907 – CONCRETE, CLAY, AND PLASTIC DRAINAGE COMPONENTS
907.28 REINFORCED THERMOSETTING RESIN AND PIPE FITTINGS

The Standard Specifications are hereby revised:

SECTION 907, BEGIN LINE 352, DELETE AND INSERT AS FOLLOWS:

907.28 Reinforced Thermosetting Resin Pipe and Pipe Fittings

Reinforced thermosetting resin pipe and accompanying fittings shall be in accordance with ASTM D 2996 for the specified sizes. The short-term rupture strength hoop tensile stress shall be a minimum of 30,000 psi ~~(207 MPa)~~. All pipes shall be pigmented resin throughout the wall thickness. The color of the pipe shall ~~be gray~~*match color No. 26400 of Federal Standard 595.* Painting, gel-coating, or exterior coating of the pipe to obtain the specified color shall not be done. *Pipe shall be tested in accordance with ASTM G 154 for 2,500 h of accelerated weathering following cycle 2 as defined in Appendix X2. After testing, the surface of the pipe shall show no fiber exposure, crazing, or checking, and may have only a slight chalking or color change. An adhesive recommended by the manufacturer shall be used for joining pipe and fittings.* Material furnished shall be covered by a type A certification in accordance with 916. The results of the following tests shall be provided on the type A certification.

Test	ASTM
Wall Thickness & Diameter	D 3567
Short-Term Hydrostatic Failure Strength	D 1599
~~Longitudinal Tensile Properties~~	~~D 2105 or D 638~~
Stiffness Factor *(for direct-bury only)*	D 2412, based on 5% deflection

A lot will be defined as the production quantity in a given calendar month for each pipe diameter, not to exceed 10,000 lft. The accelerated weathering test shall be performed once for each pipe material formulation that is provided. A new accelerated weathering test will be required if the pipe material formulation changes. Test results shall be provided to the Engineer at the time of delivery and shall be from tests performed on the formulation representative of the pipe delivered.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

907.28 REINFORCED THERMOSETTING RESIN AND PIPE FITTINGS

DISCUSSION: This item was introduced and presented by Mr. Walker stating the need to revise 907.28 to include accelerated weather testing and to remove the unnecessary test method. Mr. Walker also proposed adding a sentence as shown, revising this proposal.

Mr. Anderson explained the proposed revisions contained in this item, as shown above.

Mr. Miller expressed concern over how our people in the field would have proof of the certification. Mr. Walker stated that it is difficult, and it is being addressed.

There were no additional comments, questions or concerns.

Motion: Mr. Walker Second: Mr. Reilman Ayes: 8 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 907.28 pg 849. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	__X__ 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The title of 910.01 does not include welded wire reinforcement (WWR). In addition, changes in ITM 301 to include terminology need to be reflected in both the general statements and epoxy coating reinforcement section.

PROPOSED SOLUTION: Add "WWR" (which is defined in 101.01) to the title and general statements within 910.01. WWR will be accepted in accordance with ITM 301 and changes need to be made to reflect this. In addition, WWR may be epoxy coated, so changes to 910.01(b)9 are required.

APPLICABLE STANDARD SPECIFICATIONS: 910.01

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED:

Submitted By: Ron Walker

Title: State Materials Engineer

Organization: INDOT OMM

Phone Number: 317-610-7251 x 204

Date: 3/1/2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee of Kenny Anderson and Jim Reilman.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 910 – METAL MATERIALS
910.01 REINFORCING BARS AND DOWEL BARS

The Standard Specifications are revised as follows:

SECTION 910, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

910.01 Reinforcing Bars, ~~and~~ Dowel Bars *and WWR*

SECTION 910, BEGIN LINE 16, DELETE AND INSERT AS FOLLOWS:

Reinforcing bars *and WWR* shall be furnished by selecting ~~bars~~ *materials* made by a manufacturer *or fabricator* on the list of Certified Uncoated Reinforcing Bar Manufacturers and *WWR Fabricators* in accordance with ITM 301. When shipped to the project site, the reinforcing bars *and WWR* shall be accompanied by the type of certifications specified in ITM 301 and in accordance with 916.

SECTION 910, BEGIN LINE 99, DELETE AND INSERT AS FOLLOWS:

9. Epoxy Coated Reinforcing Bars *and WWR*

Epoxy coated reinforcing bars shall be furnished by selecting bars coated from an applicator's plant on the list of Certified Reinforcing Bar *and WWR* Epoxy Coaters and in accordance with ITM 301. The epoxy coating material shall be selected from the list of approved Epoxy Coating for Steel.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

910.01 REINFORCING BARS AND DOWEL BARS

DISCUSSION: Mr. Walker introduced and presented this item as stated on the proposal sheet, and that this is mostly editorial.

There were no questions or comments.

Motion: Mr. Walker Second: Mr. Buening Ayes: 8 Nays: 0	Action: X Passed as Submitted _____ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 703.02 pg 516 and 910.01(b) pg 871, 873, 874 Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	X 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Current treated wood specifications reference deleted standards and do not acknowledge developments for wood preservatives in the last several years. This has caused confusion in bidding and delivering material as well as enforcing material specifications on contracts.

PROPOSED SOLUTION: Section 911 of the Standard Specifications has been edited to update references to external standards and to eliminate confusion and ambiguity over what is allowed.

APPLICABLE STANDARD SPECIFICATIONS: 911

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: 601-03456, 601-03871, 601-05857, 601-06798, 601-90027, 601-97770, 601-97950, 701-09687, 712-03819, 712-03820, 712-05098, 712-05854, 712-06384, 712-06386, 712-06852, 712-09730, 712-11612, 712-90201, 712-94080, 712-94725, 712-95676

Submitted By: Ron Walker

Title: State Materials Engineer

Organization:

Phone Number:

Date: 3-4-13

APPLICABLE SUB-COMMITTEE ENDORSEMENT: ad hoc committee of Todd Tracy and Kenny Anderson

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 911 – WOOD MATERIALS (various sections)

(Note: Proposed changes to a various sections of the 911 shown as highlighted in gray.)

The Standard Specifications are revised as follows:

SECTION 911, BEGIN LINE 68, DELETE AND INSERT AS FOLLOWS:

Softwood lumber shall be graded in accordance with grade rules which conform with the basic provisions of the American Softwood Lumber Standard ~~PS20-70~~*PS 20*. It shall be grade marked and shall be in accordance with the applicable grading rules or specifications of the following agencies for the species indicated.

SECTION 911, BEGIN LINE 140, DELETE AND INSERT AS FOLLOWS:

911.02 Treated Lumber

(a) General

Treated lumber shall be lumber which is preservative treated by pressure processes in accordance with the AWPA Standards. AWPA Standards ~~C1~~*T1 and U1* specifies general requirements for all wood products. Other AWPA Standards applying to specific items are set out in 911.02(b), 911.02(c), 911.02(d), ~~and~~ 911.02(e), and 911.02(g). Lumber to be treated shall be in accordance with 911.01, except as modified in 911.02(b), 911.02(c), 911.02(d), and 911.02(e). The lumber may be inspected at the treating plant. Preservatives shall be in accordance with 911.02(~~f~~*h*). Wherever ammoniacal *or alkaline* copper quat *azole* ~~type B~~*or wherever copper* preservative is utilized, *only* stainless steel *or hot dipped galvanized* fasteners *and hardware* shall be used. *Galvanizing for fasteners shall be in accordance with ASTM A 153. Galvanizing for hardware shall be in accordance with ASTM A 653, coating designation G185. Fasteners and hardware in contact with one another shall be of the same base material and coating if applicable, and shall be used consistently throughout the treated wood article or structure.*

(b) Bridge Lumber

This shall be southern yellow pine or coast region douglas fir. There shall be no heartwood requirements and the amount of sapwood shall not be limited. Wane will not be permitted on any treated plank for flooring and may be excluded elsewhere when so specified. In other lumber, wane shall not exceed 1/8 of the width of any face and 1/4 of the length of the piece on any ~~1~~*one* corner. Both the outer and inner bark shall be removed from any area where wane is permitted. Lumber for bridges shall be treated with a preservative in accordance with applicable provisions of *AWPA* Standards ~~C14~~*T1* and ~~C2~~*U1, use category UC4C*~~of the AWPA Standards~~.

(c) Piling

Wood piling, before treatment, shall be in accordance with 911.01(e) except piles shall be southern yellow pine, red oak, or coast region douglas fir. The outer and inner bark shall be removed before treatment. Unless otherwise specified, piling shall be treated with a preservative in accordance with the applicable requirements of AWPA ~~of~~ Standards U1 and T1, *use category UC4C*.

FINAL DRAFT MINUTES

(d) Guardrail Posts, Braces, and Battens

Wood for these items shall be cut from live, dense southern yellow pine, coast region douglas fir, red oak, or other species if so designated in the proposal or purchase order. Posts shall be rough sawed unless otherwise specified. Dimensions shall be as shown on the plans. There shall be a length tolerance of plus 2 in. ~~(50 mm)~~ for posts. The bottoms shall be sawed square and the tops roofed as shown on the plans. Wane shall not extend more than 2 ft ~~(0.6 m)~~ from the bottom end. Knots shall be closely trimmed, but hollow knots extending in close to the center of the post, loose knots, and knot clusters will not be permitted. Posts shall be practically straight and no post with a crook exceeding 1 in. ~~(25 mm)~~ between top and butt will be accepted.

Posts listed above shall be sound posts. No sapwood rot will be permitted. Ring shake will not be permitted and oak posts shall be free from pecks or excessive grub holes. Grub holes in the butt, 1/2 in. ~~(13 mm)~~ or less in diameter, are not considered defects. Posts containing ant holes will not be accepted. Any post which contains any defect which is detrimental to the post will be rejected.

Wood braces and battens shall be of the same general species and specifications as required for the posts and shall be of the dimensions shown on the plans.

Wood guardrail posts, and wood parts in connection with guardrails, shall be treated with a preservative in accordance with the applicable provisions of *AWPA* Standards ~~C14~~*T1* and ~~C2~~*U1*~~of the AWPA Standards~~.

(e) Sign Posts

Wood sign posts shall be cut from live catalpa; northern white cedar; native red cedar; southern red cedar; black locust; yellow locust; mulberry; red, black, and white oak group; osage orange; dense southern yellow pine; redwood; sassafras; coast region douglas fir, or other species as specified. Posts shall be surfaced four sides.

Dimensions shall be in accordance with the plans. There shall be a length tolerance of 2 in. ~~(50 mm)~~. Both butt and top ends shall be sawed square. All outer and inner bark shall be removed. One way sweep, not exceeding 1 in. ~~(25 mm)~~ between the top and butt, will be acceptable. Short crooks will not be permitted.

The posts shall be sound timber. No splits, shakes, excessive cracks, loose decayed or hollow knots will be permitted. Occasional pin, shot, or grub holes in oak, or bird pecks in other timbers, will not be considered defects. All posts shall be entirely treated with preservatives in accordance with all applicable provisions of *AWPA* Standards ~~C14~~*T1* and ~~C2~~*U1*~~of the AWPA Standards~~. ~~The oil carrier shall be a heavy petroleum solvent in accordance with the applicable provisions of Standard P9 of the AWPA Standards and shall be of such characteristics that the posts will be suitable for painting with an oil base paint.~~

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 911 – WOOD MATERIALS (various sections)

SECTION 911, BEGIN LINE 328, DELETE AND INSERT AS FOLLOWS:

5. Pressure Treating Posts and Blocks

Pressure treating posts and blocks shall be in accordance with the following requirements *and AWPA Standards T1 and U1*.

a. Machining

Posts and blocks shall be sawed to their final shape and holes bored prior to treatment.

b. Blank

c. Inspection Before Treatment

The treater shall be responsible for ensuring that the material has the required approved grading agency stamp before treatment is commenced. The stamp or marking shall be applied on a wide face at the trimmed end. The stamp shall be applied such that it remains readable after treating. Material that has been air dried or kiln dried shall be inspected for moisture content as specified below, in accordance with AWPA Standard M2. Tests of representative pieces shall be conducted. The minimum number of tests shall be the lesser of 5% or 50 pieces out of a charge.

d. Test for Moisture Content

The test shall be made with an electrical resistance type moisture meter with insulated needles of 1 1/2 in. ~~(38 mm)~~ in length. The readings shall be corrected for species and temperature readings in accordance with the meter instructions. The readings shall be taken on ~~1~~*one* surface at mid-length with needles driven to their full length. The lot will be considered acceptable when the average moisture content does not exceed 19%. Individual pieces exceeding 23% moisture content will be rejected. Such pieces shall be removed from the lot.

e. Preservative Treatment

All posts and blocks shall be treated with a preservative as specified herein.

f. Material for Preservative Treatments

The preservative used for treating posts and blocks shall be in accordance with the appropriate AWPA ~~s~~*S*tandards listed in ~~T~~*t*able C.

TABLE C

MATERIAL	AWPA Standard*s*
~~Ammoniacal Copper Arsenate (ACA)~~	~~P5~~
Ammoniacal Copper Zinc Arsenate (ACZA)	P5 *and P22*
Chromated Copper Arsenate (CCA)	P5 *and P23*

FINAL DRAFT MINUTES

g. Treatment Methods

Wood for guardrail posts and blocks shall be treated to be in accordance with AWPA Standard~~s~~ ~~C1~~*T1* ~~and C2, ASTM D 1760~~ and the requirements specified herein.

h. Sorting and Spacing

The material in a charge shall consist of the same species or consist of species within ~~1~~*one* group shown in ~~T~~table D. The material shall have similar moisture content and be of similar form and size. Blocks and posts may be treated in the same charge.

Pieces in the charge shall be separated by horizontal stickers so that preservative and steam, if used, shall contact all horizontal surfaces.

TABLE D

SPECIES GROUPINGS FOR TREATMENT IN SAME CHARGE	
GROUP	SPECIES
A	Southern Pine
B	Douglas Fir
C	Jack Pine*
D	Hardwoods
* Also Red Pine and Eastern White Pine Blocks	

i. Conditioning

Conditioning shall be in accordance with AWPA Standard T1.~~Material may be conditioned by means of air seasoning, kiln drying, Boulton drying, vapor drying, steaming, or heating in preservative except as limited herein. Material which is air seasoned or kiln dried shall have an average moisture content not exceeding 19% before treatment. When steam conditioning, the maximum temperature shown in Table E shall not be reached in less than 1 h. If a vacuum is applied after steaming, it shall be a minimum of 22 in. (560 mm) of mercury. In addition, when using CCA, ACA, or ACZA, material shall be removed from the cylinder and permitted to cool to 120°F (49°C), or below, after steaming and before the preservative is applied. When treating southern pine, jack pine, and red pine with CCA, ACA, or ACZA, steaming will only be permitted to thaw frozen or ice coated material.~~

~~When conditioning by heating in preservative, the solution shall cover the material. Maximum temperatures permitted shall be those shown in Table E. Conditioning by means of heating in water-borne preservatives CCA, ACA, or ACZA will not be permitted.~~

~~**TABLE E**~~

~~CONDITIONING METHODS PERMITTED AND TEMPERATURE REQUIREMENTS FOR METHOD USED~~					
		~~HEATING IN~~			
		~~STEAMING~~		~~PRESERVATIVE~~	
~~SPECIES~~	~~CONDITIONING~~	~~Max.~~	~~Max.~~	~~Max. Temp~~	~~Max.~~

FINAL DRAFT MINUTES

	~~METHODS PERMITTED~~	~~Temp °F (°C)~~	~~Duration Hrs.~~	~~°F (°C)~~	~~Duration Hrs.~~
~~Hard Maple~~	~~Air drying only~~				
~~Other Hardwoods(1)~~	~~No Steaming~~			~~220 (104)~~	~~No Limit~~
~~Southern Pine~~	~~All~~	~~245 (118)~~	~~17~~	~~220 (104)~~	~~No Limit~~
~~Eastern White Pine~~	~~All~~	~~240 (116)~~	~~4 1/2~~	~~210 (99)~~	~~6 (3)~~
~~Other Softwoods(2)~~	~~All~~	~~240 (116)~~	~~6~~	~~210 (99)~~	~~6 (3)~~
~~(1) Red Oak, White Ash, White-heartwood beech, Yellow Birch, Hickory, and Red Maple~~ ~~(2) Jack Pine, Douglas Fir, and Red Pine~~ ~~(3) If seasoned material is used, otherwise, no limits~~					

j. Blank

k. Inspection During Treatment

The treater shall determine that the preservatives used are in accordance with the requirements herein. The minimum frequency of the preservation analysis shall be each charge for the occasional single charge inspected. The minimum frequency for consecutive treatments from the same working tank shall be the ~~1~~*fir*st and at least ~~1~~*one* of every ~~5~~*five* additional charges, selected at random. Preservative samples shall be taken as appropriate so as to be representative of the solution in the treating cylinder.

l. Retentions

The minimum retentions in lb/cu ft ~~(kg/m^3)~~ for the outer 0.6 in. ~~(15 mm)~~ of guardrail posts and blocks shall be those listed in ~~T~~*t*able F. Retentions shall be determined by chemical assay with samples taken after treatment in accordance with the inspection after treatment requirements shown below and the AWPA Standards listed in ~~T~~*t*able ~~F~~*E*.

TABLE ~~F~~*E*

MINIMUM REQUIREMENTS FOR RETENTION OF PRESERVATIVE			
PRESERVATIVE	RETENTION lb/cu ft ~~(kg/m^3)~~		AWPA STANDARD
	POSTS	BLOCKS	
CCA, ~~ACA,~~ or ACZA	0.60 ~~(9.61)~~	0.40 ~~(6.41)~~	A11

If blocks are treated along with posts, retention of the charge shall be determined by assay of borings from posts.

m. Penetration

The penetration requirements for heartwood and sapwood shall be as specified in ~~T~~*t*able ~~G~~*F*. Samples to determine penetration shall be taken after treatment in accordance with the inspection after treatment requirements shown below.

FINAL DRAFT MINUTES

TABLE ~~G~~*F*

PENETRATION REQUIREMENTS FOR POSTS AND BLOCKS		
SPECIES	MINIMUM PENETRATION	
	HEARTWOOD	SAPWOOD
Permitted Species*	0.3 in.~~ (8 mm)~~	0.6 in.~~ (15 mm)~~ or 90%, whichever is greater
* For Red Oak, 65% of the total annual rings shall be penetrated. If this is not possible, properly conditioned wood may be treated to refusal.		

n. Inspection After Treatment

Following treatment, the charge shall be *inspected in accordance with AWPA Standard M2, Part A, section 4.*~~examined by the treater for cleanliness; mechanical damage to individual pieces; treatment damage such as severe checking, splitting, or honeycombing; and for untreated areas resulting from air pockets, floating material, or insufficient height of preservative.~~ All ~~such~~*non-compliant* material shall be removed from the remaining acceptable material before shipment.

Sampling and testing for preservative retention and penetration will be done by the Department.

o. Branding

All post and blocks shall be burn branded clearly and permanently on ~~1~~*one* of the wide faces. The brand shall be within 12 in.~~ (300 mm)~~ of the top of the post. The brand shall show the treater's identification, the plant designation, and the year of treatment. The month may also be included. The brand shall also show the species or group code designation shown in Table ~~H~~*G*, the preservative type, and retention, all in accordance with AWPA Standard M6.

p. Conformance

The treating plant supplying the material shall be responsible for and will be required to supply a certificate indicating the species, grade, preservative type, retention, year, and name of treater. *The certificate shall also include all of the other information which is listed in AWPA Standard M2, Part A, section 6.2.*

TABLE ~~H~~*G*

GROUP CODING AS AN ALTERNATE TO SPECIES CODING*	
GROUP	CODE
Hardwoods	MH
Jack Pine	J
Other Softwoods	MS
* Species designated in ~~T~~*t*ables A and B	

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 911 – WOOD MATERIALS (various sections)

q. Records

Copies of treating records, analysis records, and other records which may be necessary to determine accordance with specifications shall be made available to Department personnel or their designated representatives upon their request. Required information shall be that which is listed in Part *A*, ~~7.2~~*6.2* of AWPA Standard M2. These records shall be retained by the treating plant for ~~5~~*five* years from the date of material shipment.

r. Independent Inspections

The Department may inspect the material or call for a non-Departmental inspection to verify that it is in accordance with all specifications.

6. Field Treatment of Posts and Blocks

Cuts, holes, or injuries to the surface of posts and blocks which occur after pressure treatment shall be field-treated by brushing, spraying, dipping, soaking, or coating. The Contractor shall ensure that all injuries, such as abrasions and nail and spike holes, are thoroughly saturated with the field-treating solution. Holes bored in pressure-treated materials shall be poured full of preservative. Horizontal holes may be filled by pouring the preservative into the holes with a bent funnel after temporarily plugging the other end of the hole.

The solution used for field treatment shall be ~~a 20% solution of~~ copper naphthenate *in accordance with AWPA Standard P34*.

SECTION 911, BEGIN LINE 503, DELETE AND INSERT AS FOLLOWS:

(g) Recreational Applications

Lumber that will be used *in facilities* where human contact will occur, such as handrails, *pedestrian facilities* ~~*bridges*~~ *including decking* and picnic tables, ~~*will*~~*shall* be treated with ammoniacal or *alkaline* copper quat~~, type B~~ in accordance with AWPA Standards ~~C-14~~*T1, U1* and ~~P-5~~*P5*. The treater shall perform inspection and marking in accordance with AASHTO M 133. Material furnished under this specification shall be covered by a type C certification in accordance with 916.

(h) Preservatives

Preservatives shall be in accordance with AASHTO M 133 as modified by EPA regulation.

Waterborne preservatives shall be in accordance with AWPA *Standard* P5, and shall be Acid Copper Chromate, ~~Ammoniacal Copper Arsenate~~*Alkaline Copper Quat, Ammonical Copper Quat, Copper Azole, Copper Naphthenate* or Chromated Copper Arsenate.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

SECTION 911 – WOOD MATERIALS (various sections)

DISCUSSION: Mr. Walker introduced and presented this item stating the need to revise the Standard Specifications to update the requirements for wood products up to current standards.

Mr. Anderson added that the timber piles specifications ~~have changed and this revision is intended to reflect those changes~~were changed some time ago. These changes are in harmony with those changes to treated timber pile in that all of the treated wood specifications are now updated to reflect current AWPA Standards.

Some minor editorial revisions were incorporated as suggested by various members of the committee.

Mr. Walker proposed to accept this as revised, which was seconded by Mr. Keefer. (Mr. Boruff left the meeting prior to the revised vote).

There were no additional comments, questions or concerns.

Motion: Mr. Walker Second: Mr. Keefer Ayes: 8 Nays: 0	Action: _____ Passed as Submitted __X__ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: SECTION 911 pgs 904 thru 918. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	__X__ 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Bearing pad specifications (915.04) fail to address issues regarding load plate coating and shim thicknesses. The slide bearing specifications (915.05) are improper and incomplete. Also, the Design Manual (Chapter 409) has been modified to allow the use of stainless steel load plates, which are not currently addressed in the specification.

PROPOSED SOLUTION: Modify 915.04(b)2 to include coating options for load plates, add a specification tolerance for internal shim thickness in 915.04(b)3, modify 915.05 to state appropriate coating requirements, and include specifications for the use of stainless steel load plates.

APPLICABLE STANDARD SPECIFICATIONS: 915.04 & 915.05

APPLICABLE STANDARD DRAWINGS: 726-BEBP-01 through -04

APPLICABLE DESIGN MANUAL SECTION: 409

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: 726-58789, 726-92406, 726-92532, 726-97941, 726-99095

Submitted By: Ron Walker

Title: State Materials Engineer

Organization: INDOT OMM

Phone Number: 317-610-7251 x204

Date: 3/1/2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee of Kenny Anderson, Elizabeth Phillips, and Jim Reilman.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 915 – BRIDGE PILES AND BEARINGS
915.04(b)2 STRUCTURAL STEEL
915.04(b)3 INTERNAL STEEL SHIMS
915.04(f) CERTIFICATION
915.05 BEARING ASSEMBLIES WITH POLYTETRAFLUOROETHYLENE, PTFE, SLIDING SURFACES

The Standard Specifications are revised as follows:

SECTION 915, BEGIN LINE 253, INSERT AS FOLLOWS:

2. Structural Steel

Structural steel spacer plates, *top and bottom load plates*, and other steel components, including anchor bolts, *exposed to the environment* shall be galvanized in accordance with AASHTO M 111, *zinc metallized with a coating of 7 mils in accordance with SSPC-CS 23.00, or painted with the structural steel coating system in accordance with 619.09(a). The finish coat for painted steel shall be in accordance with 909.02(d). The color shall be in accordance with Federal Standard 595, color No. 20045.*

When stainless steel load plates are specified, the material shall be in accordance with ASTM A 240, type 304.

3. Internal Steel Shims

Internal steel shims shall be rolled hot and cold steel and shall be in accordance with AISI 1015 through 1025, ASTM A 1008 ~~(A 1008M)~~, or ASTM A 1011 ~~(A 1011M)~~ grade 36 or higher. *Shims shall be of the thickness specified with a tolerance of ± 0.015 in.*

SECTION 915, AFTER LINE 319, INSERT AS FOLLOWS:

When steel components are incorporated into elastomeric bearings, a mill certification, galvanization certification, if applicable, and a Buy America Certification in accordance with 106.01(c) will be required.

SECTION 915, BEGIN LINE 355, DELETE AND INSERT AS FOLLOWS:

All steel surfaces exposed to the environment shall be zinc metallized and shall be 7 mils (175 µm) thick in accordance with ~~CSA G-189~~*SSPC-CS 23.00*, or painted ~~with structural primer~~ in accordance with ~~909.02(a)~~*619.09(a)*. The finish coat for painted steel shall be in accordance with 909.02(d). The color shall be in accordance with Federal ~~Color~~ Standard 595, color No. ~~30045~~*20045*.

All required materials shall be covered by a type B certification in accordance with 916.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

915.04(b)2 STRUCTURAL STEEL
915.04(b)3 INTERNAL STEEL SHIMS
915.04(f) CERTIFICATION
915.05 BEARING ASSEMBLIES WITH POLYTETRAFLUOROETHYLENE, PTFE, SLIDING SURFACES

DISCUSSION: Mr. Walker introduced this item and Mr. Anderson explained the need to modify 915 to include load plate coating requirements and tolerances for internal shim thicknesses.

There were no additional comments, questions or concerns.

Motion: Mr. Walker Second: Mr. Reilman Ayes: 8 Nays: 0	Action: X Passed as Submitted _____ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 915.04(b) pg 943; 915.04(f) pg 319; 915.05 pg 945. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	X 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There has been a misunderstanding regarding internal drainage systems in the reinforced soil volume of MSE walls.

PROPOSED SOLUTION: Revise the 731 specification to clarify the drainage requirement.

APPLICABLE STANDARD SPECIFICATIONS: 731

APPLICABLE STANDARD DRAWINGS: No

APPLICABLE DESIGN MANUAL SECTION: Yes

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

Submitted By: Elizabeth Phillips

Title: Manager, Office Standards and Policy

Organization: Bridges

Phone Number: 232-6775

Date: February 28, 2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 731 – MECHANICALLY STABILIZED EARTH RETAINING WALLS
731.02 GENERAL DESIGN REQUIREMENTS
731.04 SUBMITTALS
731.05 MATERIALS
731.08 RETAINING WALL EXCAVATION
731.12 METHOD OF MEASUREMENT
731.13 BASIS OF PAYMENT

(Note: Some of the changes that are shown in 731.12 have been approved by the Committee on 03-15-2012 meeting)

The Standard Specifications are revised as follows:

SECTION 731, BEGIN LINE 08, DELETE AND INSERT AS FOLLOWS:

731.02 General Design Requirements

An MSE retaining wall shall consist of a non-structural concrete leveling pad, concrete face panels, precast or cast-in-place concrete coping, ground reinforcement elements mechanically connected to each panel, ~~a drainage system if required,~~ and accommodations for appurtenances behind, in front of, under, mounted upon, or passing through the wall. Ground reinforcement shall have sufficient strength, frictional resistance, and quantity as required by design. *If a drainage system is shown on the plans, the wall design shall accommodate ~~it~~the drainage system.*

SECTION 731, BEGIN LINE 148, DELETE AND INSERT AS FOLLOWS:

(c) Details for construction of the wall around drainage facilities ~~and the~~ *including* outletting of-internal drainage from the MSE volume.

(d) Details of the architectural treatment.

(e) Details for diverting ground reinforcement around obstructions such as piles, catch basins, or utilities.

(f) Details for the connections between the concrete panel and the ground reinforcement.

(g) Determination of φ angle for reinforced materials and retained materials.

MATERIALS

731.05 Materials

Materials shall be in accordance with the following:

Admixtures for Concrete.....912.03
Air Cooled Blast Furnace Slag.....901.09
Alignment Pins.....910.07(d)
B Borrow.....211.02
Coarse Aggregate, Class A or Higher, Size No. 8 or 91.....904
Components of MSE Retaining Walls.....901.10
Concrete, Class A or Class C.....702

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 731 – MECHANICALLY STABILIZED EARTH RETAINING WALLS
731.02 GENERAL DESIGN REQUIREMENTS
731.04 SUBMITTALS
731.05 MATERIALS
731.08 RETAINING WALL EXCAVATION
731.12 METHOD OF MEASUREMENT
731.13 BASIS OF PAYMENT

Fine Aggregate, Size No. 23 904
Fly Ash 901.02
Joint Spacers and Joint Covering .....901.10(b)
Portland Cement .....901.01(b)
Rapid Setting Patch Materials 901.07
Reinforcing Bars 910.01
Steel Components 910.07
Steel Welded Wire Reinforcement, Smooth and Deformed .....910.01(b)
Structure Backfill 211.03.1, 904.05
Underdrains 718
Underdrains for MSE Walls 718.03
Water 913.01

SECTION 731, BEGIN LINE 240, INSERT AS FOLLOWS:

After the excavation for the wall has been performed, the Contractor shall notify the Engineer. The material beneath the leveling pad shall be compacted in accordance with 203. Concrete for the leveling pad shall not be placed until the Engineer has approved the depth of the excavation and the foundation material. The leveling pad shall be in accordance with 731.07.

When an internal drainage system is shown on the plans, the drain pipe shall be 6 in. underdrain pipe in accordance with 715.02(d). The remainder of the internal drainage system shall be in accordance with 718, longitudinal underdrains. Video inspection will not be required.

SECTION 731, BEGIN LINE 349, DELETE AND INSERT AS FOLLOWS:

731.12 Method of Measurement

The measurement of concrete face panels and wall erection will be based on the square foot ~~(square meter)~~ of area contained within the neat line limits of the wall envelope shown on the plans and not that of the wall system supplier.

Concrete leveling pad will be measured by the linear foot ~~(meter)~~. Common excavation will be measured *by the cubic yard* in accordance with 203.27*(a) to the neat lines shown on the plans*. Structure backfill and B borrow will be measured in accordance with 211.09. *Unsuitable foundation materials, if found, will be measured in accordance with 211.09. Geotextile shall be measured in accordance with 616.12, except as otherwise specified herein.* Underdrains for MSE walls *and components of the internal drainage system* will be measured in accordance with 718.09. ~~Unsuitable foundation materials, if found, will be measured in accordance with 211.09.~~ Geotextile materials *used as joint covering* will not be measured.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 731 – MECHANICALLY STABILIZED EARTH RETAINING WALLS
731.02 GENERAL DESIGN REQUIREMENTS
731.04 SUBMITTALS
731.05 MATERIALS
731.08 RETAINING WALL EXCAVATION
731.12 METHOD OF MEASUREMENT
731.13 BASIS OF PAYMENT

Precast or cast-in-place concrete coping will not be measured. ~~Drainage of the backfill including piping, aggregates, or geotextile materials will not be measured.~~

731.13 Basis of Payment

The accepted quantities of concrete face panels will be paid for at the contract unit price per square foot ~~(square meter)~~. Wall erection will be paid for at the contract unit price per square foot ~~(square meter)~~. Concrete leveling pad, complete and in place, will be paid for at the contract unit price per linear foot ~~(meter)~~ for leveling pad. Common excavation will be paid for in accordance with 203.28. Structure backfill and B borrow will be paid for in accordance with 211.10. *Unsuitable foundation materials, if found, will be paid for in accordance with 211.10. Geotextile will be paid for in accordance with 616.13, except as otherwise specified herein.* Underdrains for MSE walls *and components of an internal drainage system* will be paid for in accordance with 718.10. ~~Unsuitable foundation materials will be paid for in accordance with 211.10.~~

Payment will be made under:

Pay Item	**Pay Unit Symbol**
Face Panels, Concrete	SFT ~~(m2)~~
Leveling Pad, Concrete	LFT ~~(m)~~
Wall Erection	SFT ~~(m2)~~

The cost of designing the wall system, services including the testing laboratory, certified testing personnel, and the testing and inspection of the concrete panels shall be included in the cost of face panels, concrete.

The cost of all wall materials including concrete face panels, ground reinforcement, tie strips, fasteners, joint materials, *joint covering*, precast or cast-in-place concrete coping, repair or replacement of face panels damaged or removed due to backfill placement, and incidentals shall be included in the cost of face panels, concrete.

The cost of all labor and materials required to prepare the wall foundation, place the ground reinforcement, and erect the concrete face panels shall be included in the cost of wall erection.

~~The cost of labor and materials required to provide for the drainage of the backfill including piping, aggregates, or geotextile materials shall be included in the cost of face panels, concrete.~~

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 731 – MECHANICALLY STABILIZED EARTH RETAINING WALLS
731.02 GENERAL DESIGN REQUIREMENTS
731.04 SUBMITTALS
731.05 MATERIALS
731.08 RETAINING WALL EXCAVATION
731.12 METHOD OF MEASUREMENT
731.13 BASIS OF PAYMENT

The cost of refilling and refinishing of the core holes from verification coring shall be included in the cost of face panels, concrete.

The cost of performing the laboratory tests by an approved geotechnical laboratory for structure backfill or ACBF slag shall be included in the cost of the pay items in this section.

~~The cost of all labor and materials for required geotextile materials shall be included in the cost of the pay items in this section.~~

The cost of cutting, altering, or recoating the ground reinforcement at the site shall be included in the cost of wall erection.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

731.02 GENERAL DESIGN REQUIREMENTS
731.04 SUBMITTALS
731.05 MATERIALS
731.08 RETAINING WALL EXCAVATION
731.12 METHOD OF MEASUREMENT
731.13 BASIS OF PAYMENT

DISCUSSION: Mr. Reilman, sitting in as Proxy for Ms. Phillips, introduced and presented this item stating the need for clarification of the internal drainage requirements associated with MSE walls.

Mr. Pankow and Mr. Miller expressed concern over when and how to pay for the geotextiles. After much discussion, it was determined that clarification is contained in other referenced sections of the Standard Specifications.

Minor editorial revisions were made, and the motion was revised to accept this item as revised.

There were no additional comments, questions or concerns.

Motion: Mr. Reilman Second: Mr. Buening Ayes: 8 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 731.02 pg 673; 731.04 pg 675; 731.05 pg 676; 731.12 pg 680 and 731.13 pg 681. Recurring Special Provision affected: 731-R-597 MSE PROVISIONS Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	__X__ 2014 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? YES

FINAL DRAFT MINUTES

SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There is an inconsistency in the surface profile requirements for abrasive blast cleaning between shop prepared steel and field prepared steel.

PROPOSED SOLUTION: Incorporate the proposed changes into the 619 section. This eliminates the requirement that shop cleaned steel have an angular profile. These changes also clarify the requirements for abrasive blast media.

APPLICABLE STANDARD SPECIFICATIONS: 619

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: 232-5502

Date: February 25, 2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 619 - PAINTING BRIDGE STEEL
619.08 SURFACE PREPARATION
619.11 SHOP PAINTING

The Standard Specifications are revised as follows:

SECTION 619, BEGIN LINE 316, DELETE AND INSERT AS FOLLOWS:

~~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 can contaminate the blasted surface. The recycling equipment shall be capable of separating the blasting abrasive from the paint debris.~~*On existing bridges when abrasive blast cleaning is used, clean dry media in accordance with SSPC-AB 1 or SSPC-AB 3 shall be used. The media shall produce a profile that is free of oil, soluble salts, greases, and other similar substances which can contaminate the blasted surface. If ferrous metallic media is chosen and the Contractor elects to recycle the media by running the media through recycling equipment, the recycling equipment shall be capable of separating the blasting media from the paint debris and the cleanliness of the recycled ferrous metallic media shall be in accordance with SSPC-AB 2.*

SECTION 619, BEGIN LINE 536, DELETE AND INSERT AS FOLLOWS:

619.11 Shop Painting

Abrasive used for cleaning steel in the shop shall be an abrasive that produces ~~an angular~~*a surface profile in accordance with 619.08*. The inorganic zinc primer coat shall be applied to all structural steel in the shop. The remaining ~~2~~*two* 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.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

619.08 SURFACE PREPARATION
619.11 SHOP PAINTING

DISCUSSION: Mr. Pankow introduced this item which was further explained by Mr. Reilman who stated that the proposed revisions to 619 will eliminate the inconsistencies in the surface profile requirements for abrasive blast cleaning between shop prepared steel and field prepared steel.

Discussion ensued pertaining to the recycling of the blast media. Minor revisions were made and the motion was therefore revised and seconded.

There were no additional comments, questions or concerns.

FINAL DRAFT MINUTES

Motion: Mr. Pankow Second: Mr. Reilman Ayes: 8 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 619.08 pg 413 and 619.11 pg 415. Recurring Special Provision affected: 619-B-192 CLEANING BRIDGE STEEL Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	__X__ 2014 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? YES

SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There is a restriction on the approved reinforcing bar splicing list that should be included in the Standard Specifications.

PROPOSED SOLUTION: Incorporate the proposed change into the 703 section.

APPLICABLE STANDARD SPECIFICATIONS: 703

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: 232-5502

Date: February 28, 2013

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 703 – REINFORCING BARS
703.06 PLACING AND FASTENING

The Standard Specifications are revised as follows:

SECTION 703, BEGIN LINE 101, INSERT AS FOLLOWS:

When splicing is indicated or permitted, an appropriate splice system on the list of approved Reinforcing Bar Splicing Systems may be used in lieu of lapped bars. The splicing system shall be installed in accordance with the manufacturer's recommendations. *If an offset splicing system is ~~used~~selected, it shall only be used on spiral, hoop, or ring-type reinforcement.*

FINAL DRAFT MINUTES

COMMENTS AND ACTION

703.06 PLACING AND FASTENING

DISCUSSION: Mr. Pankow introduced this item and Mr. Anderson explained the intention as shown in the proposed revision to 703. Mr. Anderson proposed a minor editorial change as shown, changing the word "*used*" to "*selected*".

There were no additional comments, questions or concerns, and the motion was revised and approved.

Motion: Mr. Pankow Second: Mr. Reilman Ayes: 8 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 703.06 pg 516. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	__X__ 2014 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? YES

FINAL DRAFT MINUTES