



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

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Mitchell E. Daniels, Jr., Governor
Michael B. Cline, Commissioner

AGENDA

March 15, 2012 Standards Committee Meeting

MEMORANDUM

February 28, 2012

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Agenda for the March 15, 2012 Standards Committee Meeting

A Standards Committee meeting is scheduled for 09:00 a.m. on March 15, 2012 in the N955 Bay Window Conference Room. Please enter meeting through the double doors directly in front of the conference room.

The following agenda items are listed for consideration.

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. Approval of the Minutes from February 16, 2012 Meeting

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

(No items on this agenda)

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

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

Item No. 01 03/15/12 (2012 SS) Mr. Strain (INDOT web site)

<http://www.in.gov/dot/div/contracts/standards/sc/>

609.03	General Requirements
704.02	Materials
704.08	Basis of Payment
706.04	Concrete Railing with Reinforced Concrete Moment Slab
Standard Drawings:	
701-BPIL-02	REINFORCED-CONCRETE ENCASEMENT FOR PILES
701-BPIL-04	SPLICING PIPE PILES IN FIELD
701-BPIL-05	STEEL H-PILE SPLICE PROCEDURE
701-BPIL-06	ALTERNATE STEEL H-PILE SPLICE
702-BCAW-01	TYPICAL SECTION R.C. ABUTMENT OR WING
702-CJTA-01	TYPE A CONSTRUCTION JOINT
703-BRST-01	BAR BENDING DETAILS
704-BDAF-01	ADJUSTING FRAME DETAILS TYPE SQ AND OS
704-BDCG-01	CASTING DETAILS GRATE A
704-BDCG-02	CASTING DETAILS GRATE D
704-BDCG-03	CASTING DETAILS ROADWAY DRAIN TYPE OS
704-BDCG-04	CASTING DETAILS ROADWAY DRAIN TYPE SQ
704-SBFD-01	SLAB BRIDGE FLOOR DRAIN DETAIL
706-BRRW-01	RAILING TYPE FC AND MOMENT SLAB ASIDE MSE WALL - PCCP
706-BRRW-02	RAILING TYPE FT AND MOMENT SLAB ASIDE MSE WALL - PCCP
706-BRRW-03	RAILING TYPE FT AND MOMENT SLAB ASIDE MSE WALL - HMA PAVEMENT
706-BRRW-04	RAILING TYPE FT AND MOMENT SLAB ASIDE MSE WALL - HMA PAVEMENT
706-BRRW-05	RAILING TYPE FC AND MOMENT SLAB ATOP MSE WALL - PCCP
706-BRRW-06	RAILING TYPE FT AND MOMENT SLAB ATOP MSE WALL - PCCP
706-BRRW-07	RAILING TYPE FC AND MOMENT SLAB ATOP MSE WALL - HMA PAVEMENT
706-BRRW-08	RAILING TYPE FT AND MOMENT SLAB ATOP MSE WALL - HMA PAVEMENT
706-BRRW-10	RAILING AND MOMENT SLAB AT MSE WALL
706-TASE-01	BRIDGE RAILING TRANSITION TBC SLAB EXTENSION
706-TASE-02	BRIDGE RAILING TRANSITION TBT SLAB EXTENSION

(continued)

706-TASE-03	BRIDGE RAILING TRANSITION WBC SLAB EXTENSION
706-TASE-04	BRIDGE RAILING TRANSITION WBT SLAB EXTENSION
706-TASE-05	BRIDGE RAILING TRANSITION SLAB EXTENSION GENERAL NOTES

NOTE: Proposed changes and new designations are listed on the proposal for this item

Item No. 02 03/15/12 (2012 SS) Mr. Strain (INDOT web site)

<http://www.in.gov/dot/div/contracts/standards/sc/>

707.01	Description
707.02	Materials
707.09	Placing Structural Members
707.10	Precast Prestressed Concrete Deck Panels
707.11	Method of Measurements
707.12	Basis of Payment

Standard Drawings:

706-CBRT-01	BRIDGE RAILING TRANSITION WBC OR TBC DETAILS AT END BENT
706-CBRT-02	BRIDGE RAILING TRANSITION WBC ATTACHMENT OF GUARDRAIL
706-CBRT-03	BRIDGE RAILING TRANSITION TBT DETAILS AT END BENT
706-CBRT-04	BRIDGE RAILING TRANSITION TBC OR TBT ATTACHMENT OF GUARDRAIL
706-TPBT-01	BRIDGE RAILING TRANSITION TPBT ELEVATION
706-TPBT-02	BRIDGE RAILING TRANSITION TPBT
706-TPBT-03	BRIDGE RAILING TRANSITION TPBT DETAIL "A"
706-TPBT-04	BRIDGE RAILING TRANSITION TPBT (FOR TF-2) REINFORCEMENT ELEVATION
706-TPBT-05	BRIDGE RAILING TRANSITION TPBT SECTION A-A WITH REINFORCEMENT
706-TPBT-06	BRIDGE RAILING TRANSITION TPBT SECTION B-B
706-TPBT-07	BRIDGE RAILING TRANSITION TPBT SECTION C-C
706-TPBT-08	BRIDGE RAILING TRANSITION TPBT SECTION D-D
706-TPBT-09	CONCRETE BRIDGE RAILING TRANSITION TYPE TPBT
706-TTBC-01	CONCRETE BRIDGE RAILING TRANSITION TBC PLAN AND ELEVATION
706-TTBC-02	CONCRETE BRIDGE RAILING TRANSITION TYPE TBC SECTIONS
706-TTBC-03	CONCRETE BRIDGE RAILING TRANSITION TYPE TBC
706-TTBP-01	CONCRETE BRIDGE RAILING TRANSITION, TPF-1
706-TTBP-02	CONCRETE BRIDGE RAILING TRANSITION, TPF-1

(continued)

706-TTBP-03	CONCRETE BRIDGE RAILING TRANSITION, TPF-2
706-TTBP-04	CONCRETE BRIDGE RAILING TRANSITION, TPF-2
706-TTBP-05	CONCRETE BRIDGE RAILING TRANSITION, TPS-1
706-TTBP-06	CONCRETE BRIDGE RAILING TRANSITION, TPS-1
706-TTBP-07	CONCRETE BRIDGE RAILING TRANSITION, TPS-2
706-TTBP-08	CONCRETE BRIDGE RAILING TRANSITION, TPS-2
706-TTBP-09	CONCRETE BRIDGE RAILING TRANSITION TYPE TPF, TPS, OR TTX
706-TTBT-01	CONCRETE BRIDGE RAILING TRANSITION TBT PLAN AND ELEVATION
706-TTBT-02	CONCRETE BRIDGE RAILING TRANSITION TYPE TBT

NOTE: Proposed changes and new designations are listed on the proposal for this item

[Item No. 03 03/15/12 \(2012 SS\) Mr. Strain \(INDOT web site\)](#)

<http://www.in.gov/dot/div/contracts/standards/sc/>

Standard Drawings:

707-BPBB-01	BRIDGE PRESTRESSED BOX BEAM ADJACENT BOX BEAM
707-BPBF-01	FABRICATION TOLERANCES PRESTRESSED BOX BEAM
707-BPBF-02	FABRICATION TOLERANCES PRESTRESSED I BEAM
707-BPBF-03	FABRICATION TOLERANCES PRESTRESSED BULB-TEE BEAM
707-BPDP-01	PRECAST DECK PANEL PLAN AND SECTIONS
707-BPDP-02	PRECAST DECK PANEL STRAND TABLE & NOTES
707-BPDP-04	PRECAST DECK PANEL DETAILS
707-BPDP-05	SKewed PANELS AT PIERS AND END BENTS
707-BREB-01	STEEL STRUCTURES
711-BSTS-01	FIXED STEEL SHOE DETAILS
711-BSTS-02	EXPANSION STEEL SHOE DETAILS
724-BJTS-02	TYPE BS EXPANSION JOINT
724-BJTS-03	EXPANSION JOINT TYPICAL DETAILS
724-BJTS-04	BEAM END SLAB NOTCH TYPICAL DETAILS
724-BJTS-05	CONSTRUCTION AND EXPANSION JOINT DETAILS
724-BJTS-06	OPTIONAL RAILING VERTICAL REINFORCEMENT SPLICE
731-BRRW-01	MSE WALL PRECAST CONCRETE COPING DETAILS
731-BRRW-02	MSE WALL C-I-P COPING AND PEDESTRIAN FENCE DETAILS
IDM FIGURE 406-12A	ADJACENT BOX BEAM WITH TRANSVERSE TENSIONING RODS

(continued)

NOTE: Proposed changes and new designations are listed on the proposal for this item

[Item No. 04 03/15/12 \(2012 SS\)](#) [Mr. Strain](#) [pg 06](#)

Recurring Special Provision:

731-X-XXX

MSE PROVISIONS

[Item No. 05 03/15/12 \(2012 SS\)](#) [Mr. Pankow](#) [pg 11](#)

203.02

Common Excavation

[Item No. 06 03/15/12 \(2012 SS\)](#) [Mr. Pankow](#) [pg 14](#)

201.07(e)

Clearing Right-Of-Way

202.14

Basis of Payment

[Item No. 07 03/15/12 \(2012 SS\)](#) [Mr. Boruff](#) [pg 17](#)

Recurring Special Provision:

805-T-169

TRAFFIC SIGNALS

[Item No. 08 03/15/12 \(2012 SS\)](#) [Mr. Strain](#) [pg 29](#)

Recurring Special Provision:

711-B-195

STRUCTURAL STEEL, GENERAL

Standard Specifications:

920.01(b)2

Welding

920.01(b)2a

Inspection

Recurring Special Provision:

922-T-168

TRAFFIC SIGNAL MATERIALS AND
EQUIPMENT

cc: Committee Members (11)
FHWA (2)
ICA (1)

SPECIFICATION, SPECIAL PROVISIONS AND DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Need to further clarify the MSE retaining wall design requirements required by the contractor, specify the service life, and clarify the height of wall used in calculations.

PROPOSED SOLUTION: Approve the modifications contained in the proposed new 731 recurring special provision which address the above concerns.

APPLICABLE STANDARD SPECIFICATIONS: 211 & 731

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: 410-5.01

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: create new 731-x-xxx recurring special provision

PAY ITEMS AFFECTED: None

Submitted By: Randy Strain

Title: Bridge Standards & Policy Engineer

Organization: INDOT

Phone Number: 232-3339

Date: February 20, 2012

APPLICABLE SUB-COMMITTEE ENDORSEMENT: INDOT Retaining Wall Committee, Nayyarzia Siddiki, and Randy Strain

REVISION TO SPECIAL PROVISIONS
PROPOSED NEW 731-X-XXX MSE PROVISIONS

731-X-XXX MSE PROVISIONS

(Adopted XX-XX-12)

The Standard Specifications are revised as follows:

SECTION 211, BEGIN LINE 111, INSERT AS FOLLOWS:

(c) Type 3

Structure backfill in accordance with 904.05, except only nominal size aggregates 1 in., 1/2 in., No. 4 or No. 30, or coarse aggregate No. 5, No. 8, No. 9, No. 11, or No. 12 shall be used. No slag other than ACBF No. 8 will be permitted.

SECTION 731, BEGIN LINE 30, DELETE AND INSERT AS FOLLOWS:

~~The wall design shall follow the general dimensions of the wall envelope shown on the plans. The working drawings shall show the location of the concrete leveling pad to be at or below the theoretical leveling pad elevation shown on the plans. The top of each face panel shall be at or above the panel elevation shown on the plans. The Contractor shall determine the final leveling-pad layout and step elevations that provide the wall envelope shown on the plans. The Contractor shall use this information to provide a final horizontal plan and vertical elevation profile along the front face of the wall to account for the wall envelope shown on the plans. The final coping or top-of-wall elevations shall be at or above those shown on control line 1 on the plans. The final top-of-leveling-pad elevations shall be at or below those shown on control line 3 on the plans.~~

SECTION 731, BEGIN LINE 40, INSERT AS FOLLOWS:

Where walls or wall sections intersect with an included angle of 130° or less, a vertical corner element separate from the standard panel face shall abut and interact with the opposing panels. The corner element shall have ground reinforcement connected specifically to that panel. *All turn-point locations where the wall forms an angle that are shown on the working drawings shall correspond to those shown on the plans unless otherwise approved in writing by the Engineer.*

SECTION 731, AFTER LINE 60, INSERT AS FOLLOWS:

An MSE wall shall be designed for a maximum service life of 75 years. If a wall is supporting a spread footing for a bridge, the wall's design life shall be 100 years.

SECTION 731, BEGIN LINE 77, DELETE AND INSERT AS FOLLOWS:

(b) Height of Wall

The wall limits shall be defined by the wall envelope shown on the plans. For *internal stability* design purposes, the *design* height of wall, *H*, shall be ~~measured from the theoretical top of the leveling pad to the top of the wall. For a wall with a level surcharge, the top of the wall shall be measured to the top of the coping or to the gutter line of the traffic barrier. The top of the wall shall be the theoretical top of the face panels only where a coping or barrier is not used. For a wall with a sloping surcharge, the top of~~

REVISION TO SPECIAL PROVISIONS
PROPOSED NEW 731-X-XXX MSE PROVISIONS

~~the wall shall be measured at a point that is 0.3H back from the face where the design height is H and the actual wall height is H. For an abutment face, H shall be defined as the height measured from the top of the leveling pad to the top of the roadway surface as follows:~~

1. *For a wall with a level surcharge, the design height of the wall, H, shall be measured from the theoretical top of the leveling pad to the top of the coping or to the gutter line of the traffic barrier. The top of the wall shall be the theoretical top of the face panels only where a coping or barrier is not used.*
2. *For a wall with a sloping surcharge, the design height of the wall, Z, shall be measured from the theoretical top of the leveling pad to a point above the top of the wall as calculated from the formula as follows:*

$$Z = H + \frac{0.3H \tan \beta}{1 - 0.3 \tan \beta}$$

*Where β = surcharge slope angle as measured from the top of the coping, and
H = height of the wall from the theoretical top of the leveling pad to the top of the coping.*

3. *For an abutment face, the design height of the wall, H, shall be measured from the theoretical top of the leveling pad to the top of the roadway surface.*

SECTION 731, BEGIN LINE 112, DELETE AND INSERT AS FOLLOWS:

731.04 Submittals

The Contractor shall submit working drawings and design calculations in accordance with 105.02. Wall construction operations shall not begin until the Contractor receives written notice that the working drawings are approved.

- (a) The working drawings shall include all details, dimensions, quantities and cross-sections necessary to construct the wall. They shall include, but shall not be limited to, the following:
 1. Plan and elevation ~~sheets~~, views along the front face of wall alignment, which shall include the following:
 - a. A final profile along the front face of the wall.
 - b. A plan layout of the front face of the wall showing all alignment points with stations and offsets.

REVISION TO SPECIAL PROVISIONS
PROPOSED NEW 731-X-XXX MSE PROVISIONS

2. A plan view of the wall that indicates the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. A plan view and elevation view which detail the placing position and connection of all ground reinforcement units in areas where piling, utility, or other structures are near the wall.
 3. An elevation view *along the front face* of the wall *with respect to the wall alignment*, which shall include the following:
 - a. The elevation at the top of the wall at all horizontal and vertical break points at least every 50 ft (~~15 m~~) along the face of the wall.
 - b. All steps in the leveling pad.
 - c. The designation as to the type of wall unit.
 - d. The length of ground reinforcement units.
 - e. *A wall-elevation envelope that encompasses such envelope shown on the plans.*
 4. All general notes required for constructing the wall.
-

COMMENTS AND ACTION
 731-X-XXX MSE PROVISIONS

Motion: Second: Ayes: Nays:	Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections affected: 211.03.1 pg 196; 731.03(b) pg 674; 731.04 pg 675.	<input type="checkbox"/> 20 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List <input type="checkbox"/> Create RSP (No.____) Effective ____ Letting RSP Sunset Date: ____
Recurring Special Provision affected: NONE	<input type="checkbox"/> Revise RSP (No.____) Effective ____ Letting RSP Sunset Date: ____
Standard Sheets affected: NONE	Standard Drawing Effective ____ <input type="checkbox"/> Create RPD (No. ____) Effective ____ Letting <input type="checkbox"/> Technical Advisory
Design Manual Sections affected: SECTION 410-5.01	GIFE Update Req'd.? Y __ N __ By ____ Addition or ____ Revision
GIFE Sections cross-references: NONE	Frequency Manual Update Req'd? Y __ N __ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION, SPECIAL PROVISIONS AND DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Common Excavation is defined in section 203.02. The definition excludes material that is considered rock. Included in common excavation item are “all rippable materials.” Rippable is not defined and this has led to confusion on what material may or may not be rippable. Rock is clearly as defined in 203.03. Since 203.03 clearly defines the materials to be considered rock the ambiguous language in 203.02 should be removed.

PROPOSED SOLUTION: revise 203.02

APPLICABLE STANDARD SPECIFICATIONS: 203.02

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: This will not have any impact on Section 3 of the GIFE.

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: This clarification will not affect any pay items.

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 232-5502

Date: February 22, 2012

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

SPECIFICATION, SPECIAL PROVISIONS AND DRAWINGS

SECTION 203 - EXCAVATION AND EMBANKMENT

203.02 COMMON EXCAVATION

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 11, DELETE AS FOLLOWS:

203.02 Common Excavation

Common excavation shall consist of all excavation not included as rock excavation or excavation which is otherwise classified and paid for, including asphalt type pavement ~~and all ripplable materials.~~

AGENDA

COMMENTS AND ACTION

203.02 COMMON EXCAVATION

Motion: Second: Ayes: Nays:	Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections affected: 203.02 pg 138.	<input type="checkbox"/> 20 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List
Recurring Special Provision affected: NONE	<input type="checkbox"/> Create RSP (No. ___) Effective ___ Letting RSP Sunset Date: ___
Standard Sheets affected: NONE	<input type="checkbox"/> Revise RSP (No. ___) Effective ___ Letting RSP Sunset Date: ___
Design Manual Sections affected: NONE	<input type="checkbox"/> Standard Drawing Effective ___ <input type="checkbox"/> Create RPD (No. ___) Effective ___ Letting
GIFE Sections cross-references: SECTION 3	<input type="checkbox"/> Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ___ Addition or ___ Revision
	Frequency Manual Update Req'd? Y ___ N ___ By ___ Addition or ___ Revision Received FHWA Approval? ___

SPECIFICATION, SPECIAL PROVISIONS AND DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Clearing Right-of-Way is listed as a pay item in both the 201 and the 202 sections. The pay item description used in contracts is “201-52370 Clearing Right-of-Way”. Some contractors have attempted to interpret this to mean that the 201 section only is to be referred to for instructions for the work to be done under this pay item. When work described in 202 is performed those contractors have claimed for addition compensation. The department does not agree with this interpretation and disputing these claims can be time consuming.

This proposed change clarifies that the pay item Clearing Right-of-Way includes the work from both sections and is to be paid for using the same pay item.

PROPOSED SOLUTION: Revise the 201 and 202 sections of the Standard Specifications removing the Clearing Right-of-Way pay item from 202.

APPLICABLE STANDARD SPECIFICATIONS: 201.07(e), 202

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: No changes to Section 3

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: Clearing Right-of-Way

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 232-5502

Date: February 22, 2012

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

REVISION TO STANDARD SPECIFICATIONS

SECTION 201 - CLEARING AND GRUBBING

201.07(e) CLEARING RIGHT-OF-WAY

SECTION 202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

202.14 BASIS OF PAYMENT

The Standard Specifications are revised as follows:

SECTION 201, BEGIN LINE 165, DELETE AND INSERT AS FOLLOWS:

(e) Clearing Right-of-Way

If the Schedule of Pay Items contains a lump sum item for clearing right-of-way, such pay item shall include the cost of all work described *in this section and all of the work performed in accordance with Section 202 herein* within the construction limits except for such work set out as pay items or as otherwise provided for herein.

SECTION 202, BEGIN LINE 560, DELETE AND INSERT AS FOLLOWS:

Clearing right-of-way within the construction limits will be paid for ~~at a contract lump sum price~~ *in accordance with 201.07 and shall include the cost of all work described herein except for that which is set out specifically as pay items, or work which is described in 104.06, 202.08, 202.09, 202.10, or 202.11.* All clearing the Contractor is directed to perform outside the construction limits, including clearing for utility relocation which is for the benefit of the Department, and not simply for the Contractor's convenience, will be paid for in accordance with 104.03 or 109.03 unless such clearing is shown on the plans or in the Contract Information book.

SECTION 202, BEGIN LINE 605, DELETE AS FOLLOWS:

Pay Item

Pay Unit Symbol

Clearing Right of WayLS

SECTION 202, BEGIN LINE 732, DELETE AS FOLLOWS:

~~The cost of clearing right of way shall include the cost of all work described herein except for that which is set out specifically as pay items, or work which is described in 104.06, 202.08, 202.09, 202.10, or 202.11.~~

COMMENTS AND ACTION

201.07(e) CLEARING RIGHT-OF-WAY

202.14 BASIS OF PAYMENT

<p>Motion: Second: Ayes: Nays:</p>	<p>Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p>
<p>Standard Specifications Sections affected: 201.07(e) pg 121; 202.14 pg 134, 135 and 137.</p>	<p><input type="checkbox"/> 20__ Standard Specifications Book <input type="checkbox"/> Revise Pay Items List</p>
<p>Recurring Special Provision: (Basis for use: "Required for all pay items for Clearing Right-of-Way): 201-C-052 CLEARING RIGHT-OF-WAY</p>	<p><input type="checkbox"/> Create RSP (No.____) Effective ____ Letting RSP Sunset Date: ____</p> <p><input type="checkbox"/> Revise RSP (No.____) Effective ____ Letting RSP Sunset Date: ____</p>
<p>Standard Sheets affected: NONE</p>	<p>Standard Drawing Effective ____</p>
<p>Design Manual Sections affected: NONE</p>	<p><input type="checkbox"/> Create RPD (No. ____) Effective ____ Letting <input type="checkbox"/> Technical Advisory</p>
<p>GIFE Sections cross-references: SECTION 3</p>	<p>GIFE Update Req'd.? Y __ N __ By ____ Addition or ____ Revision</p>
	<p>Frequency Manual Update Req'd? Y __ N __ By ____ Addition or ____ Revision</p>
	<p>Received FHWA Approval? ____</p>

SPECIFICATION, SPECIAL PROVISIONS AND DRAWINGS
REVISION TO SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: [1] The loop detector rack and loop amplifier pay items should only be paid for separately when they are part of signal maintenance or signal modernization contracts. [2] There is also a need to further describe radio signal interconnection as it is now the preferred method to interconnect traffic signals.

PROPOSED SOLUTION: [1] Clarify the basis of payment for loop detector racks in 805-T-169 [2] Add pay items and construction information to 805-T-169 for signal systems connected via radio interconnect.

APPLICABLE STANDARD SPECIFICATIONS: 805.07, 805.08, 805.15, and 805.16

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: 805-T-093, 805-T-169, and 922-T-168

PAY ITEMS AFFECTED:

805-02658 Cable, Coaxial
805-03793 Detector Card Rack and Detector Modules
805-08464 Radio, Interconnect
805-09088 Radio Antenna, Omni
805-09089 Radio Antenna, Yagi
805-09091 Radio Antenna, Dual
805-09540 Loop Detector Rack
805-78790 Loop Detector Delay Amplifier, 4 Chan.
805-92504 Loop Detector Delay Amplifier, 2 Chan.

SUBMITTED BY: Dave Boruff
TITLE: Traffic Administration Section Supervisor
ORGANIZATION: INDOT
PHONE NUMBER: (317) 234-7975
DATE: 2/17/12

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc review by industry, district traffic engineers, and the Traffic Control Systems Division.

REVISION TO SPECIAL PROVISION
REVISION TO RSP 805-T-169 TRAFFIC SIGNALS

(Only affected sections of the RSP 805-T-169 are shown with proposed changes highlighted in gray)

805.07 Wire, ~~and~~ Cable, and Radio Installations

(a) Wire and Cable Installations

All cable runs attached to utility poles shall have code clearance relative to utility cables. They shall be no less than 18 ft ~~(5.5 m)~~ above the ground level except over railroad tracks when a minimum of 27 ft ~~(8.2 m)~~ clearance shall be maintained. All cable runs shall be installed in continuous lengths without splices between terminals except when necessary at handholes, junction boxes, pole signal bases, and pedestal bases. The type of cable and the number of conductors as well as the gage shall be as shown on plans unless otherwise specified.

Cable rings shall be used to support the signal cable on the signal span cable. They shall be spaced 12 in. ~~(300 mm)~~ on center. Cable shall be pulled through the conduit to the terminal panel in the controller cabinet. Caution shall be used to prevent damage to the cable when it is being pulled through conduit.

Coded cable conductors shall be used throughout the installation. Cable conductors shall be tagged at all detector housings, handholes, ~~pole~~ signal pole bases, and controller cabinets. *At the ends of each cable, the tag shall be placed between 4 and 8 in. ~~(100 and 200 mm)~~ from the end of the wire and on the outer jacket. At all other locations, the tag shall be placed in the middle of the length of cable stored at the location. The tag shall be 1/2 in. ~~(13 mm)~~ wide, thermal printed black on yellow or black on white, polyester or nylon tape with permanent adhesive and shall be water, chemical and scratch resistant. The font shall be arial, size 10. Tags shall be installed flag style around the cable with the backs of the tag ends placed together. Tags shall ~~consist of an aluminum blank of sufficient size to be stamped with not less than 3/16 in. (5 mm) high all upper case letters which identify the cables by their use and phase.~~ The following are the uses which shall be indicated by the tags:*

- ~~(a)~~1. Power
- ~~(b)~~2. Pedestrian Signal
- ~~(c)~~3. Pedestrian Actuation
- ~~(d)~~4. Signal Phase Identification
- ~~(e)~~5. Detection Loop Identification
- ~~(f)~~6. Interconnect

REVISION TO SPECIAL PROVISION
REVISION TO RSP 805-T-169 TRAFFIC SIGNALS

Signal cables shall be tagged to identify the direction of travel. Detector lead-in cables shall be tagged throughout the installation with the corresponding loop tag information.

~~Loop identification shall consist of the following:~~

~~Inside of the Detector Housing, the loop wires of each loop shall be tagged with, in _____, out _____, as shown on the plans.
Loop Number — Loop Number~~

~~Inside of the Controller Cabinet, each lead in cable shall be tagged within 6 in. (150 mm) of the terminal strip connection with: Lane designation, Phase Number, Loop Number, and when applicable with loop system number, and speed trap according with the plans.~~

~~Phase identification shall consist of the single number “1”, “2”, “3”, etc., which corresponds to the phase diagram for the respective intersection. Tags shall be securely fastened to the cable with a non-corroding material. The tagging material and fastening shall be approved prior to proceeding with this work. The color coded wires shall be connected properly. The white wire shall be the common or ground. Wire used for all identical indications of any individual phase shall be color coded and, where possible, shall use red wire to connect red lenses, orange wire to connect yellow lenses, and green wire to connect green lenses. Signal heads shall be assembled and wired before being installed. The testing of the loops shall be documented in the Loop Testing Table provided by the State.~~

(b) Radio Installations

1. General

This work shall consist of furnishing and installing spread spectrum radio equipment for interconnecting traffic signal controllers utilizing materials from the Department’s list of approved Traffic Signal and ITS Control Equipment. The Contractor shall furnish 2 copies of the instructions for hardware installation, programming and system commissioning.

2. Installation

To receive maximum signal strength, the radio antennas shall be positioned by adjusting the antenna direction while monitoring signal strength through the telemetry radio. The radio antenna mounts shall be securely fastened to the poles. Coaxial cable shall be installed inside metal poles and conduits. External cable on poles shall not exceed 3 ft unless approved by the Engineer. Approved external cable runs exceeding 3 ft shall be secured using manufacturer specified hangers at a maximum spacing of 3 ft. Cable terminations shall be in accordance with the manufacturer’s recommendations. Connectors outside of cabinets shall be sealed in accordance with the manufacturer’s recommendations. The Contractor shall deburr any holes made in metal poles and install

REVISION TO SPECIAL PROVISION
REVISION TO RSP 805-T-169 TRAFFIC SIGNALS

grommets for protection. Drip loops shall be provided between the antenna connector and the metal pole entrance or first pole clamp. Cable bends shall be in accordance with the manufacturer's specified bending radius.

3. Testing

A test of the radio interconnection system shall be performed after the installation is complete. Notice of the testing shall be provided to the district traffic office at least 2 work days prior to the test. The Contractor shall adjust the radio antennas to optimize the communication signal for the system. The strength of the communication signal shall be determined using computer software provided by the radio interconnection system manufacturer. The test shall be conducted with complete foliage on deciduous trees in the vicinity to assure a minimum level of communications during the summer months. The test results shall include the signal strength, site polling results using long message polling, and noise levels. The test results shall be above the minimum guidelines set by the radio interconnect system manufacturer.

SECTION 805.15, REVISE AS FOLLOWS:

805.15 Method of Measurement

Traffic signal head;; pedestrian signal head;; pedestrian push button;; controller cabinet foundation;; M foundation modified to P-1 foundation; signal steel strain pole;; signal wood pole;; ~~signal cantilever structure, signal cantilever structure, signal arm; signal cantilever structure, combination arm; signal cantilever structure, pole section 2, pole diameter 17 in. (432 mm); signal cantilever structure, pole section 2, pole diameter 24 in. (610 mm);~~ signal cantilever structure, drilled shaft foundation type; signal cantilever structure, spread footing foundation type; signal support foundation;; signal service;; disconnect hanger;; magnetometer detector;; microloop detector;; loop detector delay amplifier;; *loop detector delay counting amplifier; loop detector rack; auxiliary BIU panel;* signal handhole;; signal detector housing;; span catenary and tether;; and span catenary for flasher will be measured by the number of units installed.

The pay length for a signal cantilever arm or combination arm will be the length shown in the Schedule of Pay Items.

Conduit of the type specified will be measured by the linear foot ~~(meter)~~ from outside to outside of foundations. Signal cable and signal interconnect cable will be measured by the linear foot ~~(meter)~~.

Preformed pave-over loops will be measured by the number of loops placed. Each loop will be measured only once, regardless of the number of signal cable turns. Signal cable from preformed pave-over loops to handholes, detector housings or from loop to loop will not be measured for payment.

The accepted quantities for payment for electrical signal or loop lead-in cable will be the quantities shown in the Schedule of Pay Items. Such quantities may be corrected if they are in error by more than 25%.

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Saw cut for roadway loop detector and sealant will be measured by the linear foot ~~(meter)~~ for the full depth of slot cut in the pavement as shown on the plans or as directed.

If class X material is encountered during foundation excavation, measurement will be made in accordance with 206.10.

~~Radio interconnection system, T~~ traffic signal installation or modernization, flasher installation or modernization, miscellaneous equipment for traffic signals, and final cleanup in accordance with 805.14 will not be measured for payment.

Traffic signal equipment removal ~~and will be measured per each installation to be removed.~~ Transportation of salvageable signal equipment will not be measured.

805.16 Basis of Payment

~~Radio interconnection system, T~~ traffic signal installation, flasher installation, traffic signal modernization, and flasher modernization, all of the type and the location number specified, will be paid for at a contract lump sum price.

If specified as pay items, ~~traffic signal controller and cabinet,;~~ traffic signal head,; pedestrian signal head,; pedestrian push button,; controller cabinet foundation,; M foundation modified to P-1 foundation,; signal steel strain pole,; signal wood pole,; ~~signal cantilever structure,;~~ signal cantilever structure, signal arm,; signal cantilever structure, combination arm,; signal cantilever structure, pole section 2, pole diameter 17 in. ~~(432 mm),;~~ signal cantilever structure, pole section 2, pole diameter 24 in. ~~(610 mm),;~~ signal cantilever structure, drilled shaft foundation type,; signal cantilever structure, spread footing foundation type,; signal support foundation,; signal pedestals,; signal service,; disconnect hanger,; magnetometer detector,; microloop detector,; loop detector delay amplifier,; loop detector delay counting amplifier,; loop detector rack,; auxiliary BIU panel,; signal handhole,; signal detector housing,; span catenary and tether,; and span catenary for flasher will be paid for at the contract unit price per each. Conduit of the type specified, signal cable, interconnect cable, electrical signal cable, loop lead-in cable, and saw cut for roadway loop detector and sealant will be paid for at the contract unit price per linear foot ~~(meter)~~.

Preformed pave-over loops will be paid at the contract unit price per each.

The removal of existing traffic signal equipment designated to be removed will be paid for at the contract ~~lump sum~~ unit price per each for traffic signal equipment, remove for each location removed. When designated as a pay item, the transportation of salvageable signal equipment will be paid for at the contract lump sum price for transportation of salvageable signal equipment.

Class X excavation will be paid for in accordance with 206.11.

REVISION TO SPECIAL PROVISION
 REVISION TO RSP 805-T-169 TRAFFIC SIGNALS

Miscellaneous equipment for traffic signals will be paid for at a contract lump sum price.

Payment will be made under:

Pay Item	Pay Unit Symbol
<i>Auxiliary BIU Panel</i>	<i>EACH</i>
<i>Conduit</i> _____.....	<i>LFT</i> (m)
<i>type</i>	
Controller and Cabinet, _____, _____ Phase.....	EACH
<i>type no.</i>	
Controller and Cabinet, Flasher, _____.....	EACH
<i>type</i>	
Controller Cabinet Foundation, _____.....	EACH
<i>type</i>	
Controller Cabinet Foundation, M, Modify to P-1.....	EACH
Disconnect Hanger.....	EACH
Flasher Installation, Location No. _____.....	LS
Flasher Modernization, Location No. _____.....	LS
Handhole, Signal.....	EACH
Loop Detector Delay Amplifier, _____ Channel.....	EACH
<i>no.</i>	
Loop Detector Delay <i>Counting</i> Amplifier, _____ Channel.....	EACH
<i>no.</i>	
<i>Loop Detector Rack</i>	<i>EACH</i>
Magnetometer Detector.....	EACH
Microloop Detector <i>Probe</i>	EACH
Miscellaneous Equipment for Traffic Signals.....	LS
Pedestrian Push Button.....	EACH
Pedestrian Signal Head, _____, _____.....	EACH
<i>type lens size</i>	
<i>Radio, Interconnect, Location No.</i> _____.....	<i>LS</i>
Saw Cut for Roadway Loop and Sealant.....	LFT (m)
Signal Cable, _____, No. _____ Copper, _____ C/ _____.....	LFT (m)
<i>type conductors/size</i>	
<i>Signal Cable, Preformed Pave-Over Loop</i>	<i>EACH</i>
Signal Cantilever Structure, Mast Arm _____ ft (m).....	EACH
<i>length</i>	
Signal Cantilever Structure, Signal Arm _____ ft (m)	<i>EACH</i>
<i>length</i>	
Signal Cantilever Structure, Pole Section 2, Pole Diameter 17 in. (432 mm)	<i>EACH</i>
Signal Cantilever Structure, Pole Section 2, Pole Diameter 24 in. (610 mm)	<i>EACH</i>

REVISION TO SPECIAL PROVISION
 REVISION TO RSP 805-T-169 TRAFFIC SIGNALS

Signal Cantilever Structure, Combination Arm _____ ft-(m).....	EACH
length	
Signal Cantilever Structure, Drilled Shaft Foundation, _____	EACH
type	
Signal Cantilever Structure, Spread Footing Foundation, _____	EACH
type	
Signal Detector Housing	EACH
Signal Interconnect Cable, _____, No. _____	
type	
Copper, _____ C/ _____	LFT-(m)
conductors/size	
Signal Pedestal, _____ ft-(m).....	EACH
length	
Signal Pole, Wood, _____, _____ ft-(m).....	EACH
class length	
Signal Service.....	EACH
Signal Strain Pole, Steel, _____ ft-(m).....	EACH
length	
Signal Support Foundation, _____ in. (mm)-x _____ in. (mm)	
x _____ in. (mm)	EACH
Span and Catenary for Flasher	EACH
Span, Catenary, and Tether	EACH
Traffic Signal Equipment, Remove.....	LSEACH
Traffic Signal Head, _____ Way, _____ Section, _____	EACH
no. no. lens sizes & colors	
Traffic Signal Installation, _____, Location No. _____	LS
type	
Traffic Signal Modernization, _____, Location No. _____	LS
type	
Transportation of Salvageable Signal Equipment.....	LS

The cost of the solar panel, battery cabinet, program timing module, signal heads, wiring, and all hardware required to complete the installation shall be included in the cost of flasher installation or flasher modernization.

The cost of all wiring, hardware, anchor bolts, and associated equipment required to operate the intersections shall be included in the cost of controller and cabinet, flasher.

The cost of all wiring, hardware, loop detector delay amplifiers, loop detector delay counting amplifiers, loop detector racks, anchor bolts, and associated equipment required to operate the intersection shall be included in the cost of controller and cabinet.

The cost of signal face hook-up wire, pole plates and arms for side mounts, mid-mast arm mount, pipe arms, signal brackets, visors, louvers, bulbs, span hanger,

REVISION TO SPECIAL PROVISION
REVISION TO RSP 805-T-169 TRAFFIC SIGNALS

backplates, balance adjuster, weatherhead, and all additional hardware required to assemble a combination of signal faces as shown on the plans shall be included in the cost of traffic signal head or pedestrian signal head.

The cost of the push button, pedestrian actuated signal sign, and all hardware required to complete the installation shall be included in the cost of pedestrian push button.

The cost of concrete, conduits, grounding bushings, ground rod, ground wire, drainage, and all hardware required to complete the installation shall be included in the cost of controller cabinet foundation.

The cost of the base plate, metal skirt base plate, anchor bolts, handhole and cover grounding lug, 2 in. ~~(50 mm)~~ pipe cable entrance, J hook, and top cover as shown on the plans shall be included in the cost of signal strain pole, steel.

The cost of downguys, anchor rods, downguy guards, and hub-eyes as shown on the plans, and all hardware required to complete the installation shall be included in the cost of signal pole, wood.

The cost of all hardware including the metal skirt base plate, where necessary, to complete the installation as shown on the plans shall be included in the cost of signal cantilever structure.

The cost of signal pole section 1 shall be included in the cost of the signal cantilever structure.

The cost of concrete, reinforcing steel, conduits, ground rod, ground wire, grounding bushings, and all hardware required to complete the installation shall be included in the cost of signal support foundation.

The cost of the pedestal metal base, pedestal pole, pole cap when necessary, anchor bolts, and all hardware required to complete the installation shall be included in the cost of signal pedestal.

The cost of weatherhead, 1 in. ~~(25 mm)~~ conduit riser, entrance switch, 1 in. to 2 in. ~~(25 mm to 50 mm)~~ conduit reducer, ground rod, ground wire, and all hardware required to complete the installation, including the meter base when required and supplied by the utility company shall be included in the cost of signal service.

The cost of the detector unit, lead-in cable, and all work necessary for proper installation shall be included in the cost of magnetometer detector or microloop detector probe. *The cost of all hardware and work required to provide and install signal cable from microloop detector probe, including extra-low voltage (home-run), from the*

REVISION TO SPECIAL PROVISION
REVISION TO RSP 805-T-169 TRAFFIC SIGNALS

handhole adjacent to the detector probe to the controller cabinet shall be included in the cost of signal cable.

The cost of the slot cut on the pavement, ~~sash cord~~, backer rod, loop sealant, and all testing in accordance with 805.09 shall be included in the cost of saw cut for roadway loop and sealant.

The cost of signal cable from preformed pave-over loops to handholes, detector housings or from loop to loop shall be included in the cost of the preformed pave-over loop.

The cost of all work and hardware required to properly install overhead or underground signal cable as shown on the plans or as directed shall be included in the cost of signal cable and signal interconnect cable.

~~The cost of the independent shelf mount unit or card rack unit, and power module shall be included in the cost of loop detector delay amplifier.~~

The cost of concrete reinforcing pipe, ring and cover eye bolts, hardware, handhole bottom, and aggregate under the handhole bottom as shown on the plans shall be included in the cost of handhole, signal.

The cost of aluminum casting, enclosure concrete, ~~steel~~ conduit and elbow, and all hardware required to complete the installation shall be included in the cost of signal detector housing.

The cost of steel pole bands or straight eye bolts, span, catenary, and tether of wire rope cables, cable rings, type A support cable, wire rope clips, safety cable, thimble, service sleeve, and all hardware required to complete the installation as shown on the plans shall be included in the cost of span, catenary, and tether for signal, or span and catenary for flasher.

The cost to repair or replace damaged or lost salvageable traffic signal equipment shall be at the Contractor's expense.

The cost of excavation, backfill, final cleanup in accordance with 805.14, and necessary incidentals shall be included in the cost of the pay items in this section.

REVISION TO SPECIAL PROVISION

BACKUP 01. RADIO SITE SURVEY REPORT (DRAFT)



RADIO SITE SURVEY REPORT

General Location Information			
Location:			
Commission Number:		Project Des Number:	
Date of Survey:		Weather Conditions:	
Location of Master Controller:			
Radio Survey Information			
Radio Configuration:	Master:	Repeater:	Remote:
Was a Spectrum Analyzer used? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Personnel in Attendance:			
Instruction: Will need #1 and #2 Primary Pattern if this is a repeater location.			
1. Identify Primary Hop Pattern #1:			
2. Identify Primary Hop Pattern #2:			
Identify recommended antenna location:			
Recommended orientation of antenna:	<input type="checkbox"/> Vertical <input type="checkbox"/> Horizontal		Pointing:
Mounting:	<input type="checkbox"/> Standard Bracket		<input type="checkbox"/> Truss Arm Length
Communications Test	No. of Polls:		% Successful:
Base Unit Signal Strength:		Mobile Unit Signal Strength:	
Comments:			
Radio Site Surveyor Signature:			

REVISION TO SPECIAL PROVISION
BACKUP 02. REVISION TO IDM 77-6 (DRAFT)

77-6.03 Communications Techniques

A system other than a time-based coordinated system requires a communications medium to maintain synchronized operation between intersections. The primary options available for system interconnection are hardwired communications and through-the-air frequency. Hardwired communications can include leased telephone lines, cable-television lines, fiber optics, or direct wiring. Through-the-air interconnections can include radio, microwave, or cellular telephones. ~~The requirements for the communications network are dependent on the needs of the system.~~ *Radio interconnection is the Department's preferred communication method if the radio site survey is satisfactory. Therefore, the decision on which* ~~The use of other interconnection method to use methods~~ will be determined on a system-by-system basis.

77-6.03(01) Radio Site Survey

The District or the designer will conduct a site survey and submit the completed radio site survey report to the District Traffic Engineer. The radio site survey report form is shown in Figure 77-6A.

77-6.03(02) Radio Communication Equipment

The District or the designer will determine, based on the results of the radio site survey, what type of radio antenna should be used and the number of repeaters, if any, which are necessary for the signal system.

COMMENTS AND ACTION

RSP 805-T-169 TRAFFIC SIGNALS

<p>Motion: Second: Ayes: Nays:</p>	<p>Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p>
<p>Standard Specifications Sections affected: SECTION 805 (SEE RSP 805-T-169)</p>	<p><input type="checkbox"/> 20 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List</p>
<p>Recurring Special Provision affected: 805-T-169 TRAFFIC SIGNALS</p>	<p><input type="checkbox"/> Create RSP (No. ___) Effective ___ Letting RSP Sunset Date: ___</p>
<p>Standard Sheets affected: NONE</p>	<p><input type="checkbox"/> Revise RSP (No. ___) Effective ___ Letting RSP Sunset Date: ___</p>
<p>Design Manual Sections affected: SECTION 77-06</p>	<p>Standard Drawing Effective ___ <input type="checkbox"/> Create RPD (No. ___) Effective ___ Letting <input type="checkbox"/> Technical Advisory</p>
<p>GIFE Sections cross-references: NONE</p>	<p>GIFE Update Req'd.? Y ___ N ___ By ___ Addition or ___ Revision Frequency Manual Update Req'd? Y ___ N ___ By ___ Addition or ___ Revision Received FHWA Approval? ___</p>

SPECIFICATION, SPECIAL PROVISIONS AND DRAWINGS
REVISION TO SPECIFICATION AND SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Need to clean up edge block requirements in 711.32. Also, some portions of the specifications reference 711.32 for welding, however the incorrect AWS welding code is specified.

PROPOSED SOLUTION: Incorporate the proposed changes.

APPLICABLE STANDARD SPECIFICATIONS: 711.32 & 920.01(b)2

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: revise RSPs 711-B-195 and 922-T-168

PAY ITEMS AFFECTED: None

Submitted By: Randy Strain

Title: Bridge Standards & Policy Engineer

Organization: INDOT

Phone Number: 232-3339

Date: February 20, 2012

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad Hoc Committee consisting of: Dave Boruff, Kevin Day, Lalit Garg, Jim Reilman, Randy Strain

REVISION TO SPECIFICATION AND SPECIAL PROVISIONS
REVISION TO RSP 711-B-195 STRUCTURAL STEEL, GENERAL

(This RSP 711-B-195 STRUCTURAL STEEL, GENERAL has been approved by the Standards Committee on January 19, 2012 meeting. This RSP has not been published pending changes from February 16, 2012 meeting and changes shown as highlighted in gray.)

711-B-195 STRUCTURAL STEEL, GENERAL

(Adopted 01-19-12)

The Standard Specifications are revised as follows:

SECTION 711, BEGIN LINE 402, DELETE AND INSERT AS FOLLOWS:

711.32 Welds

Welding of steel shall be done only as shown on the plans or as specified and only with specific approval. Welding may be done to remedy minor defects, if approved. No temporary or permanent welds, if not shown on the plans or otherwise specified, shall be made without specific written authorization. *Edge blocks shall not be tack welded.*

(a) AWS Requirements

Welding of steel structures, when authorized, shall be performed in accordance with the following AWS Specifications *steel bridges and bridge components shall be performed in accordance with AASHTO/AWS D1.5 Bridge Welding Code, hereinafter referred to as the Bridge Welding Code. Welders, welder operators, and tack welders shall be qualified in accordance with Bridge Welding Code Chapter 5 Part B.*

- ~~A5.1 Mild Steel Covered Arc Welding Electrodes.~~
- ~~A5.5 Low Alloy Steel Covered Arc Welding Electrodes.~~
- ~~A5.17 Bare Mild Steel Electrodes and Fluxes for Submerged Arc Welding.~~
- ~~A5.18 Mild Steel Electrodes for Gas Metal Arc Welding.~~
- ~~A5.20 Mild Steel Electrodes for Flux Cored Arc Welding.~~
- ~~D1.5 (AASHTO/AWS), hereinafter referred to as the Bridge Welding Code.~~

~~Welders, welder operators, and tack welders shall be qualified in accordance with AWS D1.5 the Bridge Welding Code, Chapter 5, Part B.~~

~~When welding steel structural or steel non-structural tubing or steel structural supports for highway signs, luminaires, or traffic signals, it shall be performed in accordance with AWS D1.1 Structural Welding Code – Steel, hereinafter referred to as AWS D1.1. Welders, welder operators, and tack welders shall be qualified in accordance with AWS D1.1 Chapter 4 Part C.~~

(b) Edge Blocks

~~Edge blocks shall be used when radiographing flange butt shop welds of greater than 1/2 in. (13 mm) thickness. The edge blocks shall have the dimensions shown on the plans. The edge block shall be centered on the weld with a snug fit against the plate being radiographed, with the maximum gap shown on the plans. Edge blocks shall not be tack~~

REVISION TO SPECIFICATION AND SPECIAL PROVISIONS
REVISION TO RSP 711-B-195 STRUCTURAL STEEL, GENERAL

~~welded. Edge blocks shall be made of radiographically clean steel. The surface shall have an ANSI finish of 0.125 mil (3 µm) or smoother.~~

~~Field welding shall be in accordance with the requirements herein, except where welded connections do not carry calculated stresses. Magnetic particle inspection will not be required, so ANSI/AASHTO/AWS D1.5 88 Table 4.4 "Minimum Preheat and Interpass Temperature" as it refers to thicknesses to 3/4 in. (19 mm) inclusive, shall read "None". Electrodes with a low hydrogen classification will not be required.~~

(eb) Welding of High Performance Steel

All welding on high performance steel shall be in accordance with the ~~ANSI/AASHTO/AWS D1.5M/D1.5 Bridge Welding Code~~, hereinafter referred to as the Bridge Welding Code, except as modified herein and by the AASHTO Guide Specifications for Highway Bridge Fabrication with HPS 70W Steel, an addendum to the 2002 Edition of the Bridge Welding Code, *hereinafter referred to as the Guide*.

Only submerged arc welding, SAW, and shielded metal arc welding, SMAW, processes will be permitted. Consumable handling requirements shall be in accordance with the Bridge Welding Code, Sections 12.6.5 and 12.6.6, when using reduced preheat as described in Table 3 of the Guide, except that SAW consumables for matching weld metal shall meet the hydrogen control level of H4 in accordance with Section 12, Article 12.6.2. Consumable handling requirements shall meet the provisions of ~~the~~ Bridge Welding Code, Section 4, when using the preheat requirements of ~~Table 4.4 contained in Section 4~~, except that the diffusible hydrogen level must never exceed H8. SMAW consumables may meet diffusible hydrogen levels of either H4 or H8 except the higher preheat and interpass temperatures as noted in Table 3 of the ~~AASHTO Guide Specifications for Highway Bridge Fabrication with HPS 70W Steel~~ shall apply to H8 conditions.

SECTION 711, BEGIN LINE 520, INSERT AS FOLLOWS:

(dc) Field Welding

Field welding shall be by the shielded metal arc welding, SMAW, process and shall be in accordance with the requirements herein. Magnetic particle testing will not be required on welded connections that do not carry calculated stresses. All field welding shall be preheated in accordance with Section 4 of the Bridge Welding Code. The Contractor shall provide a copy of the minimum preheat and interpass temperature table to the Engineer prior to beginning welding. Electrodes with a low hydrogen classification shall be used.

SECTION 711, BEGIN LINE 1226, INSERT AS FOLLOWS:

The cost of drilling holes for anchor bolts, elastomeric bearings, bridge bearing pads, fabrication, *painting*, erecting falsework, welding material, Charpy V-Notch toughness tests, and necessary incidentals shall be included in the cost of the pay items in this section.

REVISION TO SPECIFICATION AND SPECIAL PROVISIONS

SECTION 920 - HIGHWAY ILLUMINATION MATERIALS

920.01(b)2 WELDING

920.01(b)2a INSPECTION

The Standard Specifications are revised as follows:

SECTION 920, BEGIN LINE 256, DELETE AND INSERT AS FOLLOWS:

2. Welding

The welding symbols and all information regarding location, type, size, welding sequence, and welding procedure specifications shall be shown on the shop drawings.

Welds shall be smooth and cleaned of flux and spatter in accordance with AWS procedure. Minimum preheats for welds shall be 100°F (~~38°C~~) for seams, and 225°F (~~107°C~~) for circumferential welds.

All welds shall be performed at the factory. Circumferential welds shall be backed-up welds with 100% penetration. Longitudinal welds shall have a minimum of 60% penetration except within 2 ft (~~0.6 m~~) of either side of the circumferential joint, the welds shall be backed-up and of 100% penetration. Base plate welds shall be 100% penetration. Circumferential welds and 100% penetration longitudinal welds shall be 100% ultrasonically inspected. The 60% penetration longitudinal welds shall be 100% ultrasonically or radiographically inspected for soundness. Welding shall be performed in accordance with ~~AWS D1.5 and~~ 711.32. Weld filler shall provide Charpy V Notch equal to or greater than 20 ft lbs (~~27.1 J~~) at 0° F (~~-18°C~~).

a. Inspection

The manufacturer shall provide quality control, QC, inspection. The inspector shall be an AWS certified welding inspector, CWI, in accordance with AWS ~~D1.5~~ *D1.1*. The NDT inspector shall be an independent non-destructive-testing inspector, certified as level II in RT, UT, or MT, or all as applicable. Copies of the inspection reports and NDT reports shall be provided to the Engineer.

The method for testing full penetration and partial penetration welds by the independent welding inspector shall be the same as specified above.

REVISION TO SPECIFICATION AND SPECIAL PROVISIONS

REVISION TO RSP 922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

(Only affected section of the RSP 922-T-168 are shown with proposed changes highlighted in gray)

SECTION 922.10(c)3, REVISE AS FOLLOWS:

3. Materials

The signal cantilever pole, arms, base plates, arm flange plates, gusset plates, ring stiffeners, and pole splice plates shall be in accordance with ASTM A 595 or A 572 with a minimum yield strength of 50,000 psi (345 MPa). Welding shall be in accordance with 711.32.

AGENDA

COMMENTS AND ACTION

711-B-195 STRUCTURAL STEEL, GENERAL
 920.01(b)2 WELDING
 920.01(b)2a INSPECTION
 922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

<p>Motion: Second: Ayes: Nays:</p>	<p>Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p>
<p>Standard Specifications Sections affected: 920.01 pg 968.</p>	<p><input type="checkbox"/> 20 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List</p>
<p>Recurring Special Provision affected: 711-B-195 STRUCTURAL STEEL, GENERAL; 922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT</p>	<p><input type="checkbox"/> Create RSP (No.____) Effective ____ Letting RSP Sunset Date: ____</p>
<p>Standard Sheets affected: NONE</p>	<p><input type="checkbox"/> Revise RSP (No.____) Effective ____ Letting RSP Sunset Date: ____</p>
<p>Design Manual Sections affected: NONE</p>	<p>Standard Drawing Effective ____ <input type="checkbox"/> Create RPD (No. ____) Effective ____ Letting <input type="checkbox"/> Technical Advisory</p>
<p>GIFE Sections cross-references: NONE</p>	<p>GIFE Update Req'd.? Y __ N __ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y __ N __ By ____ Addition or ____ Revision Received FHWA Approval? ____</p>