INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

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Indianapolis, Indiana 46204

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

APPROVED MINUTES

September 15, 2011 Standards Committee Meeting

MEMORANDUM

October 25, 2011

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes for the September 15, 2011 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Pankow, sitting in for Mr. Miller, at 9:08 a.m. on September 15, 2011 in the N955 Bay Window Conference Room.
The meeting was adjourned at 11:15 a.m.

The following committee members were in attendance:

Greg Pankow*, Chairman
Joseph Bruno**, Traffic Admin.
Ron Walker, Materials Mgmt.
Mike Beuchel***, Contr. Admin.
Dave Andrewski, Pvmt. Eng.
Jim Keefer, Fort Wayne Dist.
Randy Strain, Str. Services

**Proxy for Mark Miller*
***Proxy for Dave Boruff*
****Proxy for Bob Cales*

Also in attendance were the following:

Bren George, FHWA
Scott Trammell, Secretary
Paul Berebitsky, ICA
Joe Fisher, CONTECH
Tony Uremovich, INDOT
Steve Fisher, INDOT SiteMgr
Steve Smart, ICP Co.
Danny Wampler, INDOT

The following agenda items were considered:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. Approval of Minutes from August 18, 2011 meeting

ACTION: Approved as Submitted

Motion: Mr. Andrewski
Second: Mr. Strain
Ayes: 6
Nays: 0

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

(No items were listed)

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

OLD BUSINESS

Item No. 06 11/18/10 (2012 SS) Mr. Boruff pg 04
805.10 MAGNETOMETER AND MICROLOOP DETECTORS
805.15 METHOD OF MEASUREMENT
805.16 BASIS OF PAYMENT
Recurring Special Provision
922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT
Recurring Plan Details
~~*805-T-1XXd*~~ ~~*MICROLOOP DETECTOR PROBES CROSS SECTION DETAILS*~~

ACTION: PASSED AS REVISED

NEW BUSINESS

Item No. 01 09/15/11 (2012 SS) Mr. Strain pg 16
Recurring Special Provision
711-B-XXX *PEENING WELDS BY MEANS OF ULTRASONIC IMPACT TREATMENT, UIT*

ACTION: PASSED AS REVISED

Item No. 02 09/15/11 (2012 SS) Mr. Strain pg 21
Recurring Special Provision
723-X-XXX *THREE-SIDED STRUCTURE FOOTINGS*

ACTION: PASSED AS SUBMITTED

Recurring Special Provision

618-X-XXX	SHOP-APPLIED THERMAL SPRAYED METALLIC COATING SYSTEM, METALLIZING
ACTION:	WITHDRAWN

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

SPECIFICATION REVISIONS (OLD BUSINESS ITEM)

REVISION TO SPECIFICATIONS, RECURRING SPECIAL PROVISION AND PLAN DETAILS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Sometimes it is difficult to install inductive loop detectors on an approach to a signalized intersection due to poor pavement condition, or due to maintenance of traffic concerns associated with the longer lane closures for standard inductive loop installations.

PROPOSED SOLUTION: Microloop detectors make it possible to install vehicle detection on an approach without cutting loops in the pavement. The microloops are installed in 3" diameter PVC conduit that is bored underneath the pavement from one side across to the other side. The microloop probe sets are wired in series to a traffic monitoring card or controller. Detection is achieved by monitoring the changes in the Earth's magnetic field caused by a passing vehicle. The development of a recurring plan detail and revisions to existing recurring special provision 805-T-169 and 922-T-168 will ensure that the system is constructed properly when specified.

APPLICABLE STANDARD SPECIFICATIONS: 805.10, 805.15, 805.16, and 922

APPLICABLE STANDARD DRAWINGS: 805-SGLI-03

APPLICABLE DESIGN MANUAL SECTION: Section 77-4.02(03)

APPLICABLE SECTION OF GIFE: none

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

Submitted By: David Boruff, P.E.

Title: Traffic Administration Section Supervisor

Organization: INDOT

Phone Number: (317) 234-7975

Date: 08/19/11

APPLICABLE SUB-COMMITTEE ENDORSEMENT? Ad-hoc review by district traffic, contractors, and Traffic Management.

REVISION TO SPECIFICATIONS, RECURRING SPECIAL PROVISIONS AND PLAN DETAILS

805.10 MAGNETOMETER AND MICROLOOP DETECTORS
805.15 METHOD OF MEASUREMENT
805.16 BASIS OF PAYMENT

(Underlined changes have been approved on May 05, 2008)

The Standard Specifications are revised as follows:

SECTION 805, BEGIN LINE 382, DELETE AND INSERT AS FOLLOWS:

805.10 Magnetometer and Microloop Detectors

(a) Testing

Before installation of ~~M~~*m*agnetometer or ~~M~~*m*icroloop probes the Contractor shall confirm the adequacy of the magnetic field intensity, to be sure that the range is suitable for their operation.

The Contractor shall demonstrate that the microloop count data recorded in the controller's detector log is within 5% of count data obtained visually over a 15-minute period for every detector installation. The test shall be performed by the Contractor in the presence of the Engineer. If detector sensitivity or calibration settings are adjusted in order to meet this test, the new settings shall be recorded on the wiring diagram in the cabinet.

(b) Installation

Arrangement of probes shall be located at maximum distance from ~~steel support under bridges~~*metal objects as per manufacturer's recommendation*. Probes shall be installed with their long dimension vertical, and with the cable end at the top. Probes shall be firmly supported, so the lateral and vertical motion is restricted. Probes shall be connected in series. The splice shall be soldered by means of hot iron, or pouring or dripping without flames, with rosin core solder and shall be insulated and waterproofed in accordance with the manufacturer's specifications.

PVC conduit for the microloop detector probes shall be directionally pushed beneath the pavement at the depth and slope determined by the manufacturer to ensure proper carrier and probe installation. The Contractor shall repair any damage to the pavement that occurs during the installation. The microloop detector probe location in each lane shall be per the manufacturer's recommendation.

SECTION 805, BEGIN LINE 458, INSERT 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 support foundation, signal service, disconnect hanger, magnetometer detector, microloop detector *probes*, 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.

SECTION 805, BEGIN LINE 493, INSERT AS FOLLOWS:

REVISION TO SPECIFICATIONS, RECURRING SPECIAL PROVISIONS AND PLAN DETAILS

805.10 MAGNETOMETER AND MICROLOOP DETECTORS
805.15 METHOD OF MEASUREMENT
805.16 BASIS OF PAYMENT

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 support foundation, signal pedestals, signal service, disconnect hanger, magnetometer detector, microloop detector *probe*, 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).

SECTION 805, AFTER LINE 517, INSERT AS FOLLOWS:

Auxiliary BIU Panel ..... *EACH*

SECTION 805, BEGIN LINE 532, INSERT AS FOLLOWS:

Magnetometer Detector ..... EACH
Microloop Detector *Probe* ..... EACH
Miscellaneous Equipment for Traffic Signals ..... LS

SECTION 805, BEGIN LINE 609, INSERT AS FOLLOWS:

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

(Only the affected sections of the RSP 922-T-168 are shown.
Proposed changes are shown highlighted in gray.)

922.13 Detection ~~Wire and Sealant~~Components

(a) Loop Detector Lead-in Cable

Runs 700 ft (213 m) and less of loop detector lead-in cable shall be in accordance with IMSA 50-2 and shall be stranded 2 conductor No. 16 AWG, 19 strands of No. 29 wire. Runs greater than 700 ft (213 m) shall use 14 AWG wire.

The nominal capacitance between conductors shall be 57 pF/ft (187 pF/m) and 98 pF/ft (322 pF/m) between ~~1~~one conductor and the other conductor connected to the shield.

(b) Roadway Loop Wire

Roadway loop wire shall be 14 AWG gauge IMSA 51-7 duct-loop wire with polyvinyl chloride or polyethylene outer jacket of 1/4 in. (6.3 mm) diameter.

(c) Preformed Pave-Over Loops

All components of preformed pave-over loops designed for HMA paved-over application shall have a minimum temperature rating ~~exceeding the maximum temperature range for class B HMA mixtures in accordance with 402.07 of (~~300°F~~degrees Fahrenheit~~ (150°C~~ degrees Celsius~~). Preformed pave-over loops shall be selected from the Department's list of approved Traffic Signal and ITS Control Equipment.

The size of a preformed pave-over loop shall be 6 ft (1.83 m) diameter, 18.9 ft (5.75 m) circumference round or 6 ft (1.83 m) octagonal, 20~~.0~~ ft (6.1 m) perimeter. The loops placed in the same lane shall be spaced 15 ft (4.57 m) from the center of ~~1~~one loop to the center of the next loop.

Preformed pave-over loops may be constructed as a single loop or as 2, 3 or 4 loops in series. Each individual loop shall be wired with 4 turns of wire unless otherwise specified. Loops constructed in a series shall also be wired in series.

(d) Microloop Detectors

Materials for microloop detectors shall be selected from the Department's approved materials list. The microloop detectors selected shall be capable of counting vehicles in addition to detecting vehicle presence.

Each microloop detector location shall include the following items:

1. *Non-invasive probe, lead-in cable and carriers for microloop detector as shown on the plans;*

2. *3-in. diameter schedule 80 PVC conduit containing the probes, lead-in cable and carriers;*

REVISION TO SPECIFICATIONS, RECURRING SPECIAL PROVISION AND PLAN DETAILS

922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

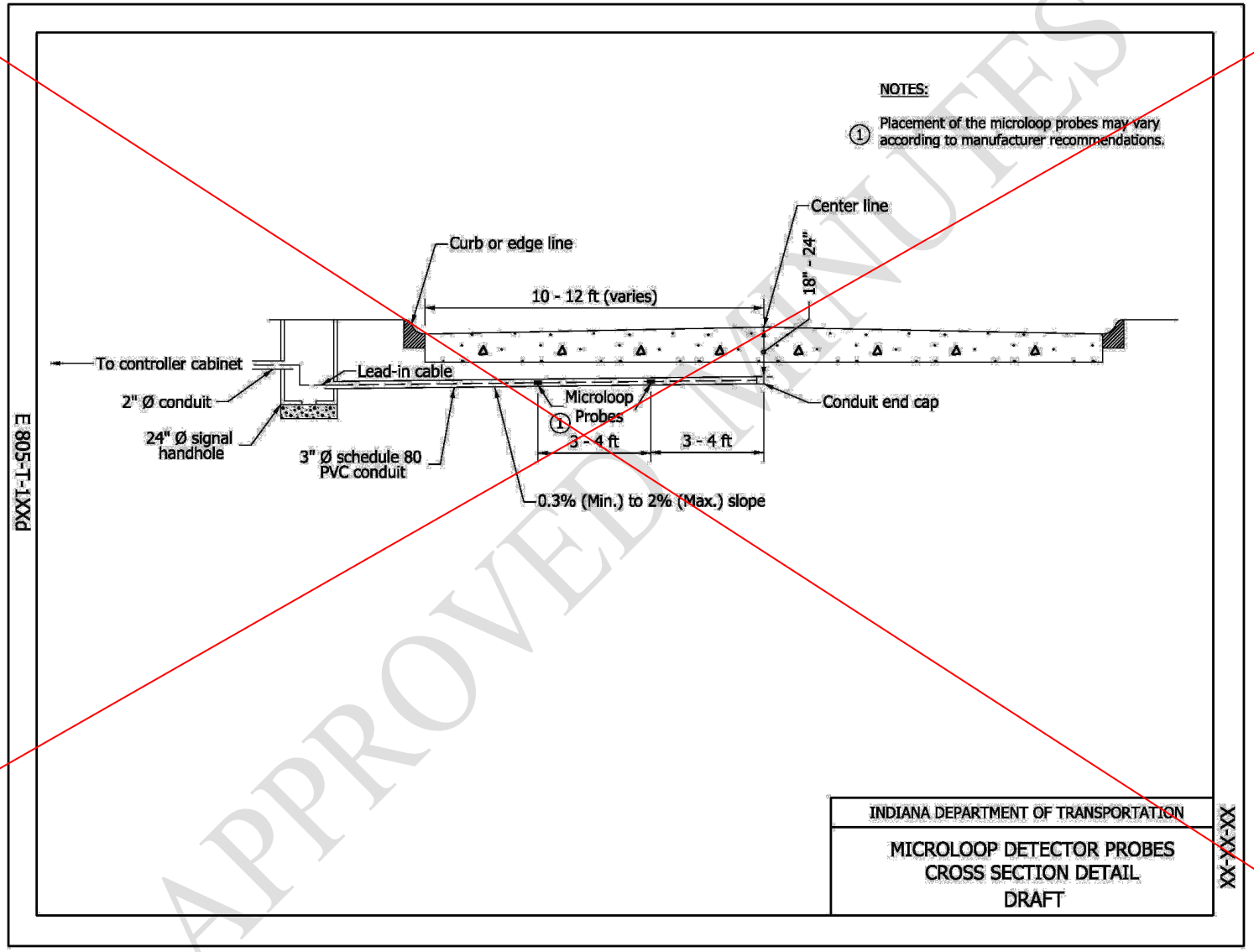
3. Buried service wire encapsulation kit compatible with microloop detector for all splicing between the lead-in cable and the home run cable;

4. Installation kit, ~~(~~one for each conduit containing probes~~)~~;

5. All mounting hardware, conduit bushings, wiring, connectors, grounding wires, ground rods, grounding cables, etc.~~,~~ necessary to complete the microloop detector location installation.

REVISION TO SPECIFICATIONS, RECURRING SPECIAL PROVISION AND PLAN DETAILS

~~PROPOSED RECURRING PLAN DETAILS 805-T-1XX MICROLOOP DETECTOR PROBES CROSS SECTION DETAIL~~



REVISION TO SPECIFICATIONS, RECURRING SPECIAL PROVISION AND PLAN DETAILS

~~PROPOSED RECURRING PLAN DETAILS 805-T-1XX MICROLOOP DETECTOR PROBES CROSS SECTION DETAIL~~

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PROPRIETARY-MATERIAL-USE
PUBLIC-INTEREST FINDING

PROGRAMMATIC APPROVAL

PROGRAMMATIC APPROVAL PERIOD: July 1, 2011 – June 30, 2013

FHWA OVERSIGHT: YES ☒ NO ☐

PROPRIETARY MATERIAL:
Global Traffic Technologies, LLC
Canoga™ 702 Non-invasive Microloop™ Sensor

Product Selection

The Traffic Control Systems Division of the Indiana Department of Transportation is seeking approval to create a recurring special provision and ultimately incorporate into the Standard Specifications additional requirements for a common alternative to inductive vehicle detection loops at signalized intersections. The Canoga™ 702 Non-invasive Microloop™ Sensor is a useful alternative to the conventional method in the following situations:

- if the pavement is in poor condition
- if a shorter lane closure is desired for maintaining traffic, as the Canoga™ 702 Non-invasive Microloop™ Sensor is bored underneath the pavement from the side of the road
- if the pavement is due to be resurfaced within the next few years

Product History

The existing requirements for microloop vehicle detectors can be found in Section 805 of the current edition of the INDOT Standard Specifications. The proposed additional requirements would limit the types of Microloop detectors that can be used to just one product. These additional requirements are already being used as unique special provision on a somewhat recurring basis, particularly in the Fort Wayne District. The desired product is also currently listed on INDOT's Approved Materials List for Traffic Signal Control Equipment under the non-counting loop amplifier section. Even though it is listed as a non-counting loop amplifier, it does have vehicle counting capabilities and is the only one of the three that currently has this capability. The ability to count vehicles and communicate this data is important if a vehicle detection device is to be a true alternative to traditional inductive vehicle detection loops.

Project Compatibility.

The product desired would be compatible with many traffic signal installation and traffic signal modernization projects throughout the State. The product would be intended for use at all traffic signal projects when its advantages outweigh its disadvantages.

Product Availability

The product desired is the only product of its type that is currently available. A Google search for "vehicle detection microloop" will turn up only the Canoga™ 702 Non-invasive Microloop™ Sensor within the first 20 relevant search results.

Product Cost

The most recent unit price summaries show an average unit price of $1,203.88 for a Microloop Detector (pay item 805-92512) out of a total of 114 items. Typically, the conventional inductive loops are paid for by the amount of saw cutting and cable installed (to the nearest linear foot). However, when an inductive loop is paid for by the unit, the unit price summaries show an average unit price of $391.00 (pay item 805-01161) out of a total of 11 items. So while the product desired is not cheaper than conventional vehicle detection methods, it is the preferred detection method when the existing pavement is in poor condition (for example on local road approaches) or to minimize lane closures.

Product Alternatives – Summary Table

	Microloop Detectors	Video Detection Systems	Wireless Vehicle Detection Systems	Traditional Inductive Loops
Non-invasive to Pavement	Yes, system bored underneath pavement	Yes, system installed on traffic signal mast arms	No, requires 4 inch pavement cores	No, requires saw cutting for loops
High Accuracy Rate	Yes, meets ITM 934	No, see JTRP Report 2005-30	Yes, meets ITM 934	Yes, meets ITM 934
Minimizes Lane Closure During Installation	Yes, system can be installed with shoulder closure	No, requires short lane close to install camera over lanes	No, requires short lane closure for pavement cores	No, requires moderate lane closure for saw cutting
Capable of Providing Vehicle Counts	Yes, Canoga 702 Microloop	Yes	Yes, Type F Sensor	Yes
Proprietary Item	Yes, Canoga by GTT	No, multiple manufacturers	Yes, VDS 240 by Sensys Networks	No, multiple manufacturers

Maintenance

The product is easier to maintain than inductive loops because they are not as susceptible to being torn by the pavement (because they are bored underneath the pavement) and the sensors can be replaced without cutting the pavement.

PREPARED BY:

Date: 5/2/2011

REVISION TO SPECIFICATIONS, RECURRING SPECIAL PROVISION AND PLAN DETAILS

BACKUP 1. PROPRIETARY-MATERIAL-USE PUBLIC-INTEREST FINDING

Joseph E. Bruno
Traffic Administration Engineer
INDOT – Traffic Support Division
(317) 234-7949

Based upon the above finding, the use of the proprietary material listed is in the public interest and is hereby approved.

APPROVED: _____ _____ ①

Deputy Commissioner, Design, Project Management, & Technical Support, INDOT

Division Administrator, FHWA (if FHWA oversight req'd)

Date: 10 June 2011 Date: Aug 11, 2011

① Approved programmatic use on projects that meet 3 conditions noted under Product Selection

COMMENTS AND ACTION (OLD BUSINESS ITEM)

805.10 MAGNETOMETER AND MICROLOOP DETECTORS
805.15 METHOD OF MEASUREMENT
805.16 BASIS OF PAYMENT
922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT
~~805-T-1XXd MICROLOOP DETECTOR PROBES CROSS SECTION DETAILS~~

DISCUSSION: This item was introduced and presented by Mr. Bruno. Mr. Bruno explained the reasoning behind this proposal which is described in the proposal sheet above.

Mr. Uremovich asked if this would revise the Recurring Special Provision or the spec book. Mr. Bruno answered that this would revise the Recurring Special Provision which supersedes the spec book section 805.

Mr. Pankow commented on the reference to the distance from steel structures and asked for clarification as to the intention. Mr. Keefer asked if the manufacturer's recommendation would address this. Mr. Pankow expressed concern that the equipment needs to function properly and not have any interference by other metals. Also, what is meant by the maximum distance? Mr. Bruno answered that it would be located per manufacturer's recommendations. Mr. Strain offered that it could simply refer to metal objects, and not just steel structures. The revisions to 805.10(b) made by the group are shown in these minutes.

Mr. Pankow also addressed the reference to pushing the conduit under the existing pavement and expressed concern over damaging the integrity of that pavement. Mr. Bruno responded that the following sentence instructs the Contractor to repair any damaged pavement. A brief discussion revealed that the reference to the 18 to 24 in on the standard drawing is acceptable.

Mr. Pankow asked what would happen if the manufacturer recommended a depth other than the 18 to 24 in.?

Further, the Method of Measurement and Basis for Payment show the Auxiliary BIU Panels, but it is not shown in the list of pay items. This revision was added as shown above.

Also discussed was the reference to the temperature rating exceeding 300 deg F. The revision to 922.13(c) as approved by the group is as shown above. Also, note 2 in 922.13(d) was revised to remove the language for ~~*3 in. diameter schedule 80 PVC*~~ since it is already shown on the standard drawing.

Mr. Andrewski inquired as to the location of the handhole as shown on the standard drawing. Mr. Pankow commented that we should make this as generic as we can. Should we also take out the curb? Mr. Bruno said that we can show it off the edge of the pavement, and not show the curb or shoulder. Mr. Andrewski also suggested removing the dimension showing 10 to 12 ft (varies).

Further discussion then ensued concerning the slope of the conduit, to make sure there is positive drainage. Mr. Andrewski mentioned that often times the turn lanes slope more than the travel lanes, and may make it difficult to maintain the 18 to 24 in depth. Mr. Keefer asked if we need this drawing at all since now there isn't much left on the drawing due to all the revisions, and recommended throwing away the drawing. Mr. Keefer also recommended putting the language back into the spec concerning depth and slope and then removing the drawing. Mr. Bruno said he would be okay with that. Mr. Pankow said that everyone needs to be okay with what the manufacturer recommends. The group agreed to get rid of the drawing and unstrike what was previously struck out in section 922.13(d).

The committee also agreed to incorporate the revisions resulting from this discussion into RSP 805-T-169 and RSP 922-T-168 and making them effective for the January 2012 letting.

COMMENTS AND ACTION (OLD BUSINESS ITEM)

805.10 MAGNETOMETER AND MICROLOOP DETECTORS
805.15 METHOD OF MEASUREMENT
805.16 BASIS OF PAYMENT
922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT
~~805-T-1XXd MICROLOOP DETECTOR PROBES CROSS SECTION DETAILS~~

(Continued)

Motion: Mr. Bruno
Second: Mr. Keefer
Ayes: 6
Nays: 0

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

Standard Specifications Sections affected:

805.10 pg 741; 805.15 pg 743, 744; 805.16 pg 744, 745, and 746.

Recurring Special Provision affected:

805-T-169 TRAFFIC SIGNALS;
922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

Standard Sheets affected:

805-SGLI-03

Design Manual Sections affected:

Section 77-4.02(03)

GIFE Sections cross-references:

NONE

____ 20__ Standard Specifications Book
__X__ Revise Pay Items List

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

__X__ Revise RSP (No.805-T-169 and 922-T-168)
Effective Jan. 01 2012 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 REVISIONS

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Occasionally it is necessary to peen welds on existing structures in order to improve the fatigue category of the structural member.

PROPOSED SOLUTION: As the Department is requiring peening of welds on a more frequent basis and is requiring use of an ultrasonic impact treatment procedure, we propose to make the attached unique provision a recurring special provision.

APPLICABLE STANDARD SPECIFICATIONS: None

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: do you want some language regarding when to use peening to appear in the design manual? if so, identify the section(s) where you think it should go.

APPLICABLE SECTION OF GIFE: 5

APPLICABLE RECURRING SPECIAL PROVISIONS: create new 711-x-xxx recurring special provision

PAY ITEMS AFFECTED: obsolete the current pay item 711-04702 and create a new 711-xxxxx pay item that is Peen Weld, UIT and is paid by the inch

Submitted By: Randy Strain

Title: Bridge Standard Engineer

Organization: INDOT

Phone Number: 2-3339

Date: August 3, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT:

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSED NEW 711-B-XXX PEENING WELDS BY MEANS OF ULTRASONIC IMPACT TREATMENT, UIT

711-B-XXX PEENING WELDS BY MEANS OF ULTRASONIC IMPACT TREATMENT, UIT

(Adopted xx-xx-xx)

The Standard Specifications are revised as follows:

SECTION 711, LINE 400, DELETE AND INSERT AS FOLLOWS:

711.31 ~~Blank~~ *Peening Welds by Means of Ultrasonic Impact Treatment, UIT*

This work shall consist of removing existing paint, repairing existing cracked welds, peening existing and repaired welds, and painting in accordance with 105.03.

~~*The Contractor shall furnish a QCP at least 2 weeks prior to commencing work. The QCP shall identify the project personnel, their duties, and their prior peening experience. Referenced certifications of all personnel shall be furnished as a part of the QCP. Work described herein shall not begin until written notice has been received that the QCP was accepted by the Engineer.*~~

Equipment operators shall be American Society for Nondestructive Testing, ASNT, Level II technicians, trained in the use of the equipment for peening by ultrasonic impact methods. Proof of certification shall be furnished 2 weeks prior to commencing work. ~~*Operators shall have experience with similar UIT projects. The lists of projects completed and contact persons shall be submitted as a part of the QCP.*~~

All welding shall be in accordance with the applicable section of the ANSI/AASHTO/AWS D1.5M/D1.5 Bridge Welding Code, hereinafter referred to as the Bridge Welding Code. All welding shall be performed by AWS certified welders. Weld repair shall be in accordance with Bridge Welding Code section 3.7.

Paint removal ~~*and repainting*~~ *shall be in accordance with 619.08(b) and 619.08(h). However, pressure washing will not be required. Painting shall be in accordance with 619.09 and 619.10.* ~~*Paint removal and re-painting need not be performed by an SSPC certified Contractor*~~*.*

~~*Personal protective equipment shall be furnished by the Contractor, including to Department personnel. Protective equipment shall include, but not be limited to, safety harnesses, safety glasses, hearing protection, and respirators.*~~

Prior to beginning the peening process, all welds shall be inspected with a 10x magnifying glass and with either ultrasonic or magnetic particle non-destructive testing equipment. Welds needing repair shall be ground and repaired in accordance with the Bridge Welding Code. Peening using ultrasonic impact treatment methods shall be applied to all repaired welds in addition to the welds shown on the plans.

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSED NEW 711-B-XXX PEENING WELDS BY MEANS OF ULTRASONIC IMPACT TREATMENT, UIT

UIT shall be performed along the toe of the weld to cause the center of the treatment groove to be at the weld toe. UIT shall be performed to result in a uniform groove with a bright, metallic surface. All non-uniform areas shall be retreated.

SECTION 711, AFTER LINE 1133, INSERT AS FOLLOWS:

Peening will be measured by the linear inch (mm) of peened weld. The length of weld peened will be measured once per weld regardless of the number of passes necessary to complete the work as specified.

Repair welds will be measured by the linear inch (mm) of repaired weld.

SECTION 711, AFTER LINE 1158, INSERT AS FOLLOWS:

The accepted quantities of peened weld will be paid for at the contract unit price per inch (mm). The accepted quantities of repaired weld will be paid for at the contract unit price per inch (mm).

SECTION 711, AFTER LINE 1219, INSERT AS FOLLOWS:

Peening Weld, UIT.....INCH (mm)
Repair Weld .....INCH (mm)

SECTION 711, BEGIN LINE 1225, INSERT AS FOLLOWS:

The cost of paint removal, painting, non-destructive testing, equipment, labor, materials, access, permits, and necessary incidentals shall be included in the cost of ~~the~~ peening weld, UIT.

~~SECTION 711, BEGIN LINE 1226, INSERT AS FOLLOWS:~~

~~The cost of drilling holes for anchor bolts, elastomeric bearings, bridge bearing pads, fabrication, erecting falsework, welding material, Charpy V-Notch toughness tests, *paint removal, painting, non-destructive testing, equipment, labor, materials, access, traffic control, permits,* and necessary incidentals shall be included in the cost of the pay items of this section.~~

COMMENTS AND ACTION

711-B-XXX PEENING WELDS BY MEANS OF ULTRASONIC IMPACT TREATMENT, UIT

DISCUSSION: This item was introduced and presented by Mr. Strain who explained that this would be a good item to have in the tool chest.

Mr. Pankow inquired as to what ASNT stood for and Mr. Strain explained that it means: ***American Society for Nondestructive Testing***, and mentioned that it does need to be defined since it is not mentioned anywhere else in the spec book. This clarification has been incorporated into the preceding pages.

Mr. Pankow expressed concern over the reference to cleaning and painting and the group agreed to revise the language to *Paint removal and repainting*.

Mr. Pankow also commented on the payment and measurement of welds per inch. Should we at least round up, so the payment for the peen cannot be zero? There then ensued discussion on how to measure it in relation to the dollar value of the unit of measurement. This is typically not associated with a separate Mob/Demob item. Mr. Pankow mentioned that if the whole job is just peening itself, the unit price could be quite high if Mob/Demob is not paid for separately. Mr. Keefer commented that every contract has a Mobilization pay item in it. Mr. Pankow said he'd like to leave it at the inch, for the units. Mr. Pankow agreed with Mr. Keefer in that we will leave that one alone for now.

Mr. Pankow also expressed concern over the personal protective equipment in relation to the respirators, since it is a rather personal item. The recommendation is to strike that entire paragraph.

Mr. Pankow also mentioned that last paragraph as revised addresses the entire section and not just peening activities. The recommendation is to leave the existing paragraph in section 711 alone and insert a new one for peening alone. This new language is as shown above, inserted at line 1225 of section 711.

Mr. Keefer asked about the reference to 619.08 (b) and (h) concerning painting and cleaning. Mr. Keefer recommended removing the language for repainting. That paragraph was revised by the group, as shown above, with the last sentence being removed and a sentence on painting being added.

Mr. Walker commented on the language in reference to the QCP and specific personnel. The recommendation is to add language to insure the appropriate personnel are on the job and to remove the QCP requirements. The language was revised as shown above (*Proof of certification…*).

COMMENTS AND ACTION

711-B-XXX PEENING WELDS BY MEANS OF ULTRASONIC IMPACT TREATMENT, UIT

(Continued)

Motion: Mr. Strain Second: Mr. Bruno Ayes: 6 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 711.31 pg 560; 711.73 pg 579. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: Section 5	__X__ 2014 Standard Specifications Book __X__ Revise Pay Items List __X__ Create RSP (No.711-B-190) Effective ~~Jan.~~ *March* 01, 2012 Letting RSP Sunset Date: 2014 Book ____ 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 REVISIONS

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Manufacturers of three sided structures were concerned that precast footings may be used in the construction of three sided structures without the use of a closure pour between precast units. The use of precast footing units without a closure pour could lead to differential settlement.

PROPOSED SOLUTION: It is proposed that the language of 723.09 clearly state that the use of precast footing units must include a closure pour in order that the footing can function as a continuous strip footing.

APPLICABLE STANDARD SPECIFICATIONS: 723.09

APPLICABLE STANDARD DRAWINGS: N.A.

APPLICABLE DESIGN MANUAL SECTION: N.A.

APPLICABLE SECTION OF GIFE: N.A.

APPLICABLE RECURRING SPECIAL PROVISIONS: none

PAY ITEMS AFFECTED: none

Submitted By: Randy Strain

Title: Bridge Standard Engineer

Organization: INDOT

Phone Number: 317-232-3339

Date: August 22, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: none

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSED NEW 723-X-XXX THREE-SIDED STRUCTURE FOOTINGS

723-X-XXX THREE-SIDED STRUCTURE FOOTINGS

(Adopted xx-xx-xx)

The Standard Specifications are revised as follows:

SECTION 723, BEGIN LINE 200, INSERT AS FOLLOWS:

7. Design calculations and details for pedestals *or closure pours*, if required.

SECTION 723, BEGIN LINE 248, DELETE AND INSERT AS FOLLOWS:

723.09 Footings

~~Where a precast footing is utilized, a 4 in. (100 mm) layer of coarse aggregate No. 53 in accordance with 301 shall be placed under the full width of the footing.~~ All footings shall be given a smooth float finish. ~~The f~~*F*ooting concrete shall reach a compressive strength of 2,000 psi (13,800 kPa) or flexural strength in accordance with 702.24(c) ~~before~~ *prior to* placement of the structure sections or wingwalls. The surface shall not vary more than 1/4 in. in 10 ft (6 mm in 3 m) when tested with a 10 ft (3 m) straightedge.

Where a precast footing is utilized, a 4 in. (100 mm) layer of coarse aggregate No. 53 in accordance with 301 shall be placed under the full width of the footing. Precast footings shall be made into a continuous strip footing by the use of closure pours between the precast units. Closure pours shall be as detailed in the working drawings and shall be designed to accommodate the design loads.

COMMENTS AND ACTION

723-X-XXX THREE-SIDED STRUCTURE FOOTINGS

DISCUSSION: This item was introduced and presented by Mr. Strain who stated that this was brought his attention by various manufacturers.

Steve Smart, with Independent Concrete Pipe Co., commented that the cast-in-place footing design should not be used in the precast option. The manufacturer should provide the precast design and working drawings for use with the precast structure. Mr. Pankow offered that we would get better results if we use cast in place footings. The representative from CONTECH, Joe Fisher, mentioned that it is important to make sure that the precast units are manufactured by an INDOT approved precaster. During the discussion concerning the use of precast vs cast-in-place footings, Mr. Andrewski said that if the working drawings show cast-in-place, then that is what shall be constructed. Mr. Walker confirmed that all precast units are to come from certified precast manufacturers.

Mr. Pankow expressed that the concern was to ensure continuity between the precast pieces, and Mr. Strain confirmed that is the reason behind requiring a closure pour. Mr. Joe Fisher also mentioned that it should be shown on the working drawings and be designed that way.

Mr. Pankow said that we will notify our people to make sure the units are constructed correctly since we have been putting in a lot of these precast structures lately. Continuity between pieces is the main issue of concern.

Motion: Mr. Strain
Second: Mr. Andrewski
Ayes: 6
Nays: 0

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

Standard Specifications Sections affected:

723.04(c) pg 653; 723.09 pg 654.

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

__X__ Create RSP (No.~~723-B-191~~*723-R-585*)
Effective ~~Jan.~~*March* 01, 2012 Letting
RSP Sunset Date: 2014 book

____ 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 REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Metalizing has performed well in the field and can be a desired alternative to traditional paint systems. One of our project engineers submitted the need for shop applied metalizing as a cost savings proposal. His submittal outlined the benefits of metalizing and recommended that INDOT perform more shop metalizing in order to reduce the cost as compared to field applied operations.

PROPOSED SOLUTION: This recurring special provision will allow this option on projects where the benefits of shop metalizing can be shown to be a cost benefit.

APPLICABLE STANDARD SPECIFICATIONS: 618

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

APPLICABLE RECURRING SPECIAL PROVISIONS: none

PAY ITEMS AFFECTED: Cost is to be included in the pay item structural steel.

Submitted By: Randy Strain

Title: Bridge Standards Engineer

Organization: INDOT

Phone Number: 317-232-3339

Date: 08-30-11

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad Hoc committee appointed by the Standards Committee to write a recurring special provision for metalizing.

REVISION TO STANDARD SPECIFICATIONS

PROPOSED NEW RSP 618-X-XXX SHOP-APPLIED THERMAL SPRAYED METALLIC COATING SYSTEM, METALlIZING

618-X-XXX SHOP-APPLIED THERMAL SPRAYED METALLIC COATING SYSTEM, METALLIZING

(Adopted XX-XX-11)

The Standard Specifications are revised as follows:

SECTION 618, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 618 - ~~BLANK~~ *SHOP-APPLIED THERMAL SPRAYED METALLIC COATING SYSTEM, METALLIZING*

618.01 Description

This work shall consist of applying a thermal sprayed metallic coating system, metallizing, to new structural steel in accordance with SSPC-CS 23.00/AWS C2.23M/NACE No. 12, and 105.03. Areas to be coated shall include all steel surfaces including, but not limited to, inside box sections and bearings.

MATERIALS

618.02 Materials

Materials shall be in accordance with 909.03.1.

CONSTRUCTION REQUIREMENTS

618.03 Reference Standards

The industry standards listed below shall apply to this work and shall be made available to the Engineer upon request.

(a) ASTM

ASTM B 833	*Standard Specification for Zinc Wire for Thermal Spraying (Metallizing)*
ASTM C 633	*Test Method for Adhesive/Cohesive Strength of Flame Sprayed Coatings*
ASTM D 1200	*Standard Test Method for Viscosity by Ford Viscosity Cup*
ASTM D 3276	*Standard Guide for Painting Inspectors (Metal Substrates)*
ASTM D 3925	*Sampling Liquid Paints and Related Pigmented Coatings*
ASTM D 4285	*Method for Indicating Oil or Water in Compressed Air*
ASTM D 4417	*Test Method for Field Measurement of Surface Profile of Blasted Steel*
ASTM D 4541	*Test Method for Pull-Off Strength of Coating Using Portable Adhesion Testers*
ASTM E 337	*Standard Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures)*

(b) AWS

AWS C2.16/C2.16M	*Guide for Thermal-Spray Operator Qualification*
ANSI/AWS C2.18-93	*Guide for the Protection of Steel with Thermal Spray Coatings of Aluminum, Zinc, and their Alloys and Composites*
AWS C2.23M/C2.23	*Specification for the Application of Thermal Spray Coatings of Aluminum, Zinc, and their Alloys and Composites for the Corrosion Protection of Steel*
AWS C.25/C2.25M	*Specification for Thermal Spray Feedstock – Solid and Composite Wire and Ceramic Rods*
AWS TS 1	*Recommended Safety Practices for Thermal Spraying, 1973*

(c) ISO

ISO 8502-3	*Preparation of Steel Substrates Before Application of Paint and Related Products – Tests for the Assessment of Surface Cleanliness – Part Assessment of Dust on Steel Surfaces Prepared for Painting (Pressure-Sensitive Tape Method)*

(d) NACE

NACE Std RP0287	*Field Measurement of Surface Profile of Abrasive Blast Cleaned Steel Surfaces Using a Replica Tape*

(e) SSPC

SSPC Publication	*The Inspection of Coatings and Linings: A Handbook of Basic Practice for Inspectors, Owners, and Specifiers*
SSPC-AB 1	*Mineral and Slag Abrasives*
SSPC-AB 2	*Cleanliness of Recycled Ferrous Metallic Abrasives*
SSPC-AB 3	*Newly Manufactured or Re-Manufactured Steel Abrasives*
SSPC-PA 1	*Shop, Field, and Maintenance Painting*
SSPC-PA 2	*Measurement of Dry Paint Thickness with Magnetic Gages*
SSPC-PA Guide 3	*A Guide to Safety in Paint Application*
SSPC-SP COM	*Surface Preparation Commentary*
SSPC-SP 5/NACE No. 1	*White Metal Blast Cleaning*
SSPC-TR 3	*Dehumidification and Temperature Control During Surface Preparation, Application, and Curing for Coatings/Linings of Steel Tanks, Vessels, and Other Enclosed Spaces*
SSPC-VIS 1	*Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning*

618.04 Contractor Submittals

(a) QCP

A QCP in accordance with ITM 803 section 8.0 shall be submitted at the preconstruction conference. Revisions to ITM 803 section 8.5.2 are as follows:

(k) ~~Primer coat application, cure and recoatability~~ *Metallizing application and recoatability*

(l) ~~Intermediate coat application, cure and recoatability~~ *Seal coat application and recoatability*

(m) ~~Finish coat application and cure~~ *Top coat application and cure*

The QCP shall also include quality control procedures for training and qualification requirements for blast cleaning, thermal spray operation, and quality control inspection. The thermal spray operation procedure shall also be in accordance with the electric arc spray equipment supplier's recommended procedures. The QCP shall include the application process, in-process quality control, inspection standards, inspector qualifications and tools, test procedures, and inspection/test logs. The information shall also include the in-process quality control checkpoints and procedure for repairing the metallized coating.

(b) Operator Testing

Each thermal spray operator shall be evaluated in accordance with AWS C2.16/C2.16M:2002 Sections JK-1, and AS-1, and shall pass the relevant tests prior to performing thermal spray work. At the discretion of the Engineer, an operator may be required to be retested at any time. The Contractor shall provide all materials and equipment necessary for these tests.

618.05 Quality Control and Assurance

(a) Compressed-Air Quality

Blast cleaning and metallizing compressed air shall be tested daily in accordance with ASTM D 4285. If the cloth or blotter retains oil or other contaminants, abrasive blasting operations shall be suspended until retests verify that the problem has been corrected.

(b) Visual Inspection Requirements

Prior to sealing, the thermal sprayed coating shall have a uniform appearance, as defined in 618.09(c). If, according to the Engineer, the coating does not have a uniform appearance, the Contractor shall correct the coating by means of an acceptable repair method as defined in the QCP.

(c) Thickness Conformance

The Contractor shall inspect the work for thickness conformance as necessary to ensure a uniform coating of the specified thickness. The thickness inspection procedure shall be as specified in the QCP.

The metallized coating thickness shall be measured in accordance with AWS C2.23M/C2.23. One measurement line or spot measurement shall be taken for every 100 to 200 sq ft (9.3 to 18.6 m^2) to of applied metallized coating. A measurement line shall be used for flat surfaces. Five gage readings shall be taken in a line at 1 in. (25 mm) intervals and the readings averaged. A spot measurement shall be used for complex geometries and geometry transitions.

The spot in which the 5 gage readings are taken shall be 2 sq in (1290 mm^2). A gage reading that is unusually high or low shall be discarded provided that it is not consistently repeated. No single spot measurement shall be less than 80% of the specified minimum thickness or greater than 25 mils (630 μm).

(d) Thickness Less Than Contract Requirement

If upon inspection and prior to sealer application, the metallized coating thickness is less than the contract requirement, the Contractor shall apply, within the same work day, additional coating to satisfy the minimum thickness requirement.

(e) Bend Test

The bend test shall be used as a qualitative test for proper surface preparation, equipment setup, and spray parameters. The bend test coupons shall be low carbon steel, thickness 0.050 in. (1.27 mm), width 2 in. (50 mm) by length 4 to 8 in. (100 to 200 mm). The coupons shall be blast cleaned and electric arc sprayed in accordance with the requirements described herein. The bend test is a pass/fail test. Once sprayed, the coupons shall be bent 180 around a mandrel with diameter of 1/2 in. (13 mm). The bend test passes if there is no cracking or spalling on the bend radius, or only minor cracking that cannot be lifted from the substrate with a knife blade. The bend test fails if the coating cracks due to lifting from the substrate. Each operator will be subject to a complete retest at the discretion of the Engineer.

(f) Tensile Bond, Adhesion, and Measurement Schedule

The metallized coating's tensile bond, or adhesion, strength shall be measured in accordance with ASTM D 4541 using a self-aligning adhesion tester. The results shall be documented. One portable tensile-bond measurement shall be made every 500 sq ft (46.5 m^2) at a location randomly selected by the Engineer. The adhesion test shall be performed in the presence of the Engineer. The minimum tensile bond strength for the metallized zinc coating shall be 500 psi (3,450 kPa).

If the tensile bond is less than the contract requirement, the degraded metallized coating shall be removed and reapplied. The tensile bond strength of the metallized coating shall be measured before the application of the sealer. Damage to the coated surface shall be repaired as directed in accordance with 618.05(g).

(g) Repair of Defective Areas

All coated areas which have been rejected or damaged shall be repaired in accordance with the QCP. Touch-up of rejected or damaged areas shall be completed prior to final acceptance of the work.

618.06 Prefabrication Meeting

At the prefabrication meeting, specific items addressed for metallizing shall include the Contractor's work plan, inspection standards, inspector qualifications and tools, test procedures, and inspection/test logs. All of the above shall also be included in the QCP.

REVISION TO STANDARD SPECIFICATIONS

PROPOSED NEW RSP 618-X-XXX SHOP-APPLIED THERMAL SPRAYED METALLIC COATING SYSTEM, METALlIZING

618.07 Equipment and Techniques

The metal spraying equipment shall be of electric arc spray type. Flame spray will not be permitted. The equipment shall be portable and capable of spraying zinc wire of maximum diameter of 3/16 in. (5 mm) at a controllable rate. The wire shall be automatically dispensed to the spray gun. The spray gun shall be equipped with an arc shorting control device. The spray gun shall operate with oil-free and dry compressed air at minimum pressure of 90 psi (620 kPa). The air quality shall be in accordance with ASTM D 4285. The spray equipment shall be capable of the following.

(a) Spray for 3 minutes without sputtering or shutdown.

(b) Produce test specimens that are acceptable for visual standards, the bend test of minimum 3 repetitions, and the tensile bond strength as specified in 618.05(d), 618.05(e), and 618.05(f).

(c) Start-and-stop spraying test consisting of eight 10 s spray, 5 s off sequences without fusing or sputtering that can cause discontinuities of improperly melted sprayed metal on the work surface. The proof of equipment function shall be demonstrated by means of spraying the feedstock material specified herein.

Equipment shall be operated in accordance with the manufacturer's written instructions, including, but not limited to, air pressure, gun-to-work-piece standoff distance, and gun angle relative to the work surface.

618.08 Stages of Work

The thermal spray safety procedures specified in AWS TS 1 shall be followed during thermal spraying. Personal protective equipment such as, but not limited to, respirators, masks, or other equipment deemed necessary by the Engineer shall be provided to Department personnel.

If the Contractor believes that a section of work is ready for acceptance, the Contractor shall contact the Engineer and arrange for inspection of the work in order to proceed to the next quality control checkpoint.

(a) Removal of Surface Defects

Surface irregularities interfering with the performance of the coating, e.g., sharp edges or carburized edges, shall be removed by means of grinding before blast cleaning is performed.

(b) Surface Preparation

The surface shall be abrasive blast cleaned to a white metal blast in accordance with SSPC-SP 5/NACE No. 1. The abrasive type, size, and hardness shall be selected so as to produce an angular surface profile of 3 to 5 mils (75 to 125 μm). Shot blasting or peening is not acceptable. The abrasive shall be checked at the beginning of each shift and at 4 h intervals for oil content and water-soluble contamination in accordance with SSPC-AB 2.

The surface profile shall be measured in accordance with ASTM D 4417, Method B or C. Surface profile readings shall be taken at least one per every 200 sq ft (18.6 m^2) of blasted surface. Profile readings shall be taken at random locations on flanges, webs, cross frames, or other locations identified by the Engineer.

The blast cleaned surface shall be inspected for surface profile, oil contamination, dust, or blasting residue. It shall be subject to approval prior to the application of the metallized coating.

If a subcontractor is performing the metallizing work, the same one shall also perform the abrasive blast operation in preparation for all metallized coatings.

(c) Holding Period and Flash Coat

The holding period, or time between the completion of the abrasive blast cleaning and the completion of the thermal spraying, shall not exceed 6 h or before flash rusting occurs. In an environment deemed to be damp or of high humidity, a shorter holding period may be used. If rust bloom occurs, the surface shall be blast cleaned in accordance with 618.08(b). Rust bloom shall be the overriding consideration. In an environment deemed to be of low humidity or an enclosed space, the oxidation of the steel shall be retarded and the surface finish held for more than 6 h using industrial dehumidification equipment. The Contractor shall validate the temperature-humidity envelope for the work enclosure by means of spraying and analyzing bend coupons, or by means of tensile-bond test, or both. For a small or movable part, if more than 15 min is expected to elapse between completion of surface preparation and the start of thermal spraying, or if the part is moved to another location, the prepared surface shall be protected from moisture, contamination, or finger or hand marks. Wrapping with clean print-free paper will be acceptable.

A flash coat of metalized coating of at least 2 mils (50 μm) shall be applied within 6 h of blasting or before flash rusting occurs, whichever is sooner. This single layer shall cover the peaks of the surface profile. Before applying additional sprayed metal to the specified thickness, the first layer of coating shall be visually inspected to verify that the coating surface has not become contaminated. All contamination between coats shall be removed in accordance with the QCP before additional material is applied. The coating shall be sprayed to achieve the specified thickness as soon as possible and within 36 h after initial coating.

The flash coat, holding period, and final metallized coating will be acceptable provided the final metallized coating satisfies the quality requirements of 618.09.

618.09 Application of Metallized Coating

(a) Steel Surface

The steel surface to be thermal sprayed shall be inspected and in accordance with 618.08(b) prior to application of the metallized coating.

(b) Environmental Conditions

Metallizing shall not be performed if the steel surface temperature is 32 °F (0 °C) or lower. The temperature shall be monitored using a recording thermometer. The Contractor may use a heated enclosure in accordance with SSPC-TR3/NACE-6A192 that uniformly and continuously heats the enclosure to maintain the minimum required steel surface temperature during all blasting, metallizing, and sealing operations.

If the Contractor elects to use industrial dehumidification equipment, the steel surface temperature shall be maintained at a temperature above 32°F (0 °C) and at least 15 °F (8 °C) above the dew point. The maximum relative humidity within the enclosure shall not exceed 54%.

Metallizing shall not be applied to a surface which shows a sign of surface moisture. Metallizing or abrasive blasting shall not be performed if the steel temperature is less than 5 ºF (3 °C) above the dew point; if the steel surface is wet, damp, frosted, or ice-coated; during periods of rain, fog, or mist unless the moisture criteria described above are satisfied; or if the relative humidity is 85% or greater.

Surfaces to be metallized shall be dust free.

(c) Spray Pattern

The metallized coating shall be applied in multiple, overlapping passes to ensure uniform coverage. Each layer or pass shall be applied at a right angle to the previous layer. Spraying shall be performed in a block pattern, of 4 sq ft (0.4 m^2). The metallized coating thickness shall not exceed 4 mils (100 µm) in a single layer.

(d) Metallized Coating Thickness

The applied total metallized coating thickness shall be from 10 mils (250 µm) through 12 mils (300 µm)

(e) Metallized Coating Properties

The coating shall be adherent, free of spots, lumps, blisters, chips, or loosely adhering particles. The metallized coating shall be inspected and subjected to approval before application of the sealer.

618.10 Application of Sealer and Top Coat

The sealer and top coat shall be applied in accordance with the manufacturer's recommendations.

(a) Sealer

Sealer shall be applied at a rate as to obtain a nominal dry film thickness of 2 mils (50 µm), and shall be shop-applied the same day as the metallized coating. If the sealer cannot be applied within 8 h of the completion of metallizing, the metallized coating shall be visually inspected to verify that it has not been contaminated. The metallized coating shall be inspected to

ensure that it is dust free by using the ISO 8502-3 clear cellophane tape test method before applying the sealer. The sealed metallized coating shall be inspected and subjected to approval prior to shipping the structural members.

(b) Top Coat

The top coat shall be field-applied in accordance with 619 over the sealed metallized coating in accordance with the manufacturer's recommended procedures for use of the product with a thermal sprayed coating system and SSPC-PA1 after the steel has been erected. The top coat shall be applied at a rate as to obtain a nominal dry film thickness of 4 mils (100 μm).

(c) Stencil Information

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

_____
bridge number

_____
contract number

*METALLIZED-Zn*_____
date

618.11 Acceptance for Shipping

The Department will base acceptance for shipping upon the results of the adhesion tests and dry film thickness measurements obtained during the work. The Contractor shall provide a certified written report containing the raw field data which demonstrates compliance to all aspects of this specification. The Department will review the report, progressive project documentation, and progressive field measurements to determine the acceptance of the metallized coating prior to shipping.

618.12 Method of Measurement

Surface preparation, metallizing, seal coating, top coating, or other incidentals described herein will not be measured for payment.

618.13 Basis of Payment

The costs to perform the work, repair work, materials and equipment necessary for thermal operator tests, and other incidentals described herein shall be included in the cost of the structural steel pay items.

SECTION 909, AFTER LINE 256, INSERT AS FOLLOWS:

REVISION TO STANDARD SPECIFICATIONS

PROPOSED NEW RSP 618-X-XXX SHOP-APPLIED THERMAL SPRAYED METALLIC COATING SYSTEM, METALlIZING

909.03.1 Shop-Applied Thermal Sprayed Metallic Coating System

(a) Abrasives

Abrasives shall be hard and sharp in order to produce an angular surface profile on the steel substrate as described in 618.08(b). The blast cleaning abrasive shall be angular aluminum oxide, chilled iron grit, steel grit, or garnet. Angular aluminum oxide abrasives shall be commercially pure materials of the appropriate gradation to produce the specified blast profile. Steel grit hardness shall be Rockwell C of 51 or greater. Garnet abrasive shall be in accordance with SSPC-AB 1, Type 1, Class A, and shall be an appropriate grade to produce the specified blast profile.

Shot or other abrasives producing a round surface profile shall not be used. Coal slag shall not be used.

A type A certification in accordance with 916 shall be provided for the abrasive used.

1. Mineral and Slag Abrasives

Mineral and slag abrasives and non-metallic abrasives shall be selected and evaluated in accordance with SSPC-AB 1. The results of the tests specified in SSPC-AB 1 sections 4.1 through 4.4, and documented in accordance with SSPC-AB 1 section 5.4 shall be provided on the type A certification.

2. Recycled Abrasives

The abrasive shall be cleaned of paint, chips, rust, mill scale, or other foreign material after each use and before each reuse according to SSPC-AB 2. Equipment specifically designed to clean the abrasive shall be used. The abrasive shall be checked for oil content and water-soluble contamination in accordance with SSPC-AB 2 at the frequency defined in 618.08(b).

a. Metallic Abrasives

Recycled ferrous metallic abrasives shall be in accordance with the chemical and physical properties of SSPC-AB 2.

b. Non-metallic Abrasive

Recycled non-metallic abrasive shall be in accordance with SSPC-AB 1 each time that it is placed in the blast pot.

3. Metallic Abrasive

New and remanufactured steel grit shall be selected and evaluated in accordance with SSPC-AB 3. The results of the tests specified in SSPC-AB 3 sections 4.1.3 and 5 shall be provided on the type A certification.

(b) Coating Wire

The coating wire shall be in accordance with AWS C.25 or ASTM B-833, and shall be 99.99% Zinc – UNS (Z13005). A type A certification in accordance with 916 shall be provided

for the coating wire. The type A certification shall include copies of all of the chemical composition test results and wire diameter measurements. The chemical composition analysis and wire diameter measurements shall be tested at the frequency defined in ASTM B 833.

(c) Sealer and Top Coat

The sealer shall be compatible with the metallized substrate and the top coat. The sealer and top coat shall be provided by a single manufacturer. The cured film of the sealer shall not contain contaminants in concentrations which exceed the regulatory levels of 40 CFR 261.24, table 1, when tested in accordance with EPA TCLP, or contain other material which will require characterization as a hazardous waste for the disposal of the dried film.

1. Sealer

The sealer shall be a low viscosity acrylic, epoxy, phenolic, silicone, or polyurethane, and shall be colored white. The sealer shall be formulated to penetrate and fill the pores in the metallized coating. The sealer shall have a minimum fineness of grind of 5 Hegman when determined in accordance with ASTM D 1210. A type A certification in accordance with 916 shall be provided for the sealer. The information specified in ASTM D 1210 section 10 shall be provided on the type A certification.

2. Top Coat

The mixed top coat shall be in accordance with 909.02(c), except that it shall be suitable for use as a top coat over metallizing sealers. The specular gloss when tested at 60 degrees in accordance with ASTM D 523 shall be a maximum of 50. The requirements of 909.01 shall apply.

The color of the dried paint film shall match Federal Standard 595, color number 23717, buff.

COMMENTS AND ACTION

618-X-XXX SHOP-APPLIED THERMAL SPRAYED METALLIC COATING SYSTEM, METALlIZING

DISCUSSION: Mr. Strain introduced and presented this item as described in the proposal sheet.

Mr. Walker suggested that we handle this as a Unique Special Provision, since he believes this to not be appropriate as a standard specification. Mr. Strain added that this is a lot more expensive than a standard paint system. Mr. Walker stated that as a Unique Special Provision, we can control it, as opposed to a Recurring Special Provision which can be accessed and utilized by anyone.

Mr. Walker offered to work with Mr. Strain in re-writing this spec to make it unique. Mr. Pankow also mentioned that re-working it would also shorten up the document quite a bit. Mr. Strain said that he cannot contest that recommendation. So, in order to be able to control its use, this spec will become a Unique Special Provision.

The process of metalizing was explained by Mr. Wampler, pointing out that although this is more expensive initially, it saves money in the long run since you don't have any maintenance for a very long time afterwards. The issue is coming up with the funds up-front.

This item has been withdrawn.

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