INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N925 CM
Indianapolis, Indiana 46204

PHONE: (317) 232-5502
FAX: (317) 232-5551

Eric Holcomb, Governor
Joe McGuinness, Commissioner

FINAL DRAFT MINUTES

June 18, 2020 Standards Committee Meeting

(Changes to the Agenda by the Action of the Committee shown as highlighted in yellow)

July 8, 2020

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the June 18, 2020 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Pankow, Chair, at 09:00 a.m. on June 18, 2020. This meeting was held virtually via *Microsoft Teams*. The meeting was adjourned at 10:30 a.m.

The following committee members were in attendance:

Gregory Pankow, Chairman, Director, Construction Management
John Wooden, Contract Administration Division
Dave Boruff, Traffic Engineering
Mark Orton, Bridge Design Division
Joseph Novak, Construction Management
Kumar Dave, Pavement Engineering, Highway Design
Jim Reilman, Materials Management
Michael Koch, District Construction, Fort Wayne District
Elena Veksler, Highway Design and Technical Support
Kurt Pelz, Construction Technical Support
Louis Feagans, Engineering and Asset Management

Also, in attendance were the following:

Wortkoetter, Andrew J., INDOT
White, Peter, INDOT
Wencke, Carla, INDOT
Trammel, Scott, INDOT
Sumner, Rebecca, INDOT
Stickney, Daniel, INDOT
Jilg, Chris, INDOT
Hauser, Derrick, INDOT
Harris, Tom, INDOT
Fletcher, Eryn, FHWA
Fisher, Steve, INDOT
Fegan, Roland, INDOT

Smutzer, Katherine, INDOT
Sharp, Matthew, CONTECH
Rearick, Anne, INDOT
Popovich, Marko, CONTECH
Podorvanova, Lana, INDOT
Phillips, Elizabeth, INDOT
Pfeiffer, Nathaniel, INDOT
Osborn, Dan, ICI
Leckie, John, ACPA
Languell, Susan, INDOT
Kachler, Mischa, INDOT
Duncan, Thomas, FHWA
Culbertson, James, INDOT
Craig, Patrick, INDOT
Courtney, Kurt C, INDOT
Corrice, Zachariah, INDOT
Colonis, James, INDOT
Bruno, Joseph E, INDOT
Blanchard, Jacob, INDOT
Beeson, Matthew, INDOT
Anuka, Rowland S, INDOT

The following items were discussed:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. Approval of the Minutes from the May 21, 2020 meeting

DISCUSSION: Mr. Pankow requested a motion to approve the Minutes from the May 21, 2020 meeting, as revised.

Motion: Mr. Feagans
Second: Mr. Boruff
Ayes: 10
Nays: 0

ACTION: PASSED AS REVISED

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

(No items were listed)

NEW BUSINESS

Item No. 1 — Mr. Reilman — pg 4

Special Provisions:

702-R-691	STRUCTURAL CONCRETE

ACTION: PASSED AS SUBMITTED

Item No. 2 — Mr. Reilman — pg 11

Special Provision:

729-B-204	HEAT STRAIGHTENING OF STEEL MEMBERS IN THE FIELD

ACTION: PASSED AS REVISED

Item No. 3 — Mr. Novak — pg 22

106.01(c)	Buy America Requirement

ACTION: PASSED AS REVISED

Item No. 4 — Mr. Pelz — pg 27

Special Provision and Details:

801-T-XXX	*TRUCK MOUNTED ATTENUATORS*
801-T-XXX(d)	*TRUCK MOUNTED ATTENUATORS DETAILS*

ACTION: PASSED AS SUBMITTED

---

cc: Committee Members
FHWA
ICI

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:

The minimum water-cement ratio for both class A and class C concrete is too high for slipformed railing applications and does not allow ready mix suppliers to produce mixes that will comply with slump requirements. Also, due to the lower water-cement ratios that are inherent with slipformed mixes it is not necessary to include a water reducing admixture.

PROPOSED SOLUTION:

For both class A and class C concrete used in slipformed railings reduce the minimum water-cement ratio from 0.380 to 0.360 and eliminate the requirement to use a water reducing admixture.

APPLICABLE STANDARD SPECIFICATIONS: 702.02 and 702-R-691 (eff. 6-1-20)

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

APPLICABLE RECURRING SPECIAL PROVISIONS:

PAY ITEMS AFFECTED: none

APPLICABLE SUB-COMMITTEE ENDORSEMENT: INDOT-IRMCA working committee 4-21-20

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT Office of Materials Management

Phone Number: 317-522-9692

Date: 5-22-20

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? No

Can this item improve/reduce the number of potential change orders? No

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO SPECIAL PROVISION

702-R-691 STRUCTURAL CONCRETE

(Note: Proposed changes shown highlighted gray)

702-R-691 STRUCTURAL CONCRETE

(Revised 12-19-19)

The Standard Specifications are revised as follows:

SECTION 702, BEGIN LINE 7, INSERT AS FOLLOWS:

702.02 Classes of Concrete

The following classes of concrete shall be used where specified.

Class of Concrete	A	B	C
Cement content in lbs/cu yd	564	470	658
Maximum water/cement ratio in lbs of water per lbs of cement	0.450	0.620	0.443
*Minimum water/cement ratio in lbs of water per lbs of cement**	*0.380*	*0.400*	*0.380*
**The minimum water/cement ratio for all slipformed railings shall be 0.360*			

SECTION 702, BEGIN LINE 34, DELETE AND INSERT AS FOLLOWS:

Fabric for Waterproofing.....~~918.01~~*918.06*

SECTION 702, BEGIN LINE 99, DELETE AND INSERT AS FOLLOWS:

~~Blended portland pozzolan cements, fly ash, and ground granulated blast furnace slag used as a pozzolan may only be used in concrete bridge decks between April 1 and October 15 of the same calendar year~~*Slag cement or silica fume in accordance with 709.05(c) shall be used in all bridge decks and reinforced concrete bridge approaches.*

Blended portland pozzolan cements, fly ash, and slag cement may be used in concrete when the ambient temperature is above 50°F during the entire placement period. Immediately following placement, the average ambient temperature shall be above 50°F for the entire curing period. The average temperature shall be calculated based on hourly temperature measurements taken at the jobsite or from published weather station data within 10 miles of the jobsite. If the temperature restrictions are not met during placement or during the required curing period, curing shall continue and the element shall not be put into service until the strength requirements in accordance with 702.24 are met. If no test specimens are available to determine the concrete strength, curing shall continue and the concrete will be adjudicated as failed material. In no case shall the curing period be reduced below the minimum number of days specified for the element.

SECTION 702, BEGIN LINE 116, DELETE AND INSERT AS FOLLOWS:

Class A concrete shall contain a water-reducing admixture. Class C concrete shall contain either a water-reducing admixture or both a water-reducing admixture and a retarding admixture. The types used shall not be changed during any individual contiguous pour. *For class C concrete,* ~~T~~*t*he types of admixtures to be used, shall be selected based on

the expected concrete or air temperature. When either temperature is expected to be 65°F or above, both a water-reducing admixture and a retarding admixture shall be used. A water-reducing admixture shall be used when both temperatures are expected to be below 65°F unless retardation is required due to the structure design or the proposed pour sequence such as the requirements for floor slab pours set out in 704.04. If class C concrete contains ground granulated blast furnace slag, the producer may propose an alternate temperature threshold for including a retarding admixture. *If either class A concrete or class C concrete is used in slipformed railings, the requirement to use a water reducing admixture is waived.* Air-entraining cements will not be allowed in class C concrete.

SECTION 702, BEGIN LINE 237, INSERT AS FOLLOWS:

Concrete that is not within the specified slump limits at time of placement shall not be used. Except as required in 702.05 for *class A and* class C concrete, chemical admixtures type A, type B, type D, type F, and type G, may be used in the concrete. Chemical admixtures type C and type E will be allowed only with prior written permission.

SECTION 702 BEGIN LINE 477, DELETE AND INSERT AS FOLLOWS:

702.11 Cold Weather Concrete

When it is necessary to place concrete at or below an atmospheric temperature of ~~35°~~*40°*F, or whenever it is determined that the temperature may fall below ~~35°~~*40°*F within the curing period, the water, aggregates, or both shall be heated and suitable enclosures and heating devices provided. Cold weather concrete shall be placed at the risk of the Contractor and shall be removed and replaced with no additional payment if it becomes frozen or otherwise damaged.

SECTION 702, BEGIN LINE 528, DELETE AND INSERT AS FOLLOWS:

702.12 Consistency

Slump will be measured in accordance with 505 and shall be no less than 1 in. and no more than 4*6* in. except for concrete placed in foundation seals.

SECTION 702, BEGIN LINE 1286, INSERT AS FOLLOWS:

702.24 Application of Loads to and Acceptance of New Concrete

Except as otherwise hereinafter provided, application of loads to new concrete shall be in accordance with the following:

(a) Equipment or traffic will not be allowed on structures until test beams representing all concrete required to carry live loads have attained a flexural strength of 550 psi for third-point loading.

(b) Unbalanced backfill will not be allowed until test beams representing the concrete required to resist it have attained a flexural strength of 440 psi for third-point loading. The unbalanced height shall not exceed 10 ft until test beams representing the concrete have attained a flexural strength of 480 psi for third-point loading.

(c) The dead weight of steel or precast concrete superstructure shall not be placed on concrete until test beams representing the concrete have attained a flexural strength of 400 psi for third-point loading. A dead load shall not be placed on hammer-head piers until test beams representing have attained a flexural strength of at least 480 psi for third-point loading. The concrete floor, if to be placed thereon, shall not be poured until test beams representing the concrete supporting the superstructure have attained a flexural strength of at least 440 psi for third-point loading.

(d) Test beams representing concrete anchoring inserts to support falsework shall attain a flexural strength of a minimum of 480 psi for third-point loading, before a dead load of concrete is applied.

(e) When blended portland pozzolan cements, fly ash, or slag cement are used in bridge railings or concrete barrier and the temperature limitations in accordance with 702.05 are not met, the bridge railings or concrete barrier may be put into service when flexural strength testing performed on test specimens indicate a modulus of rupture of 500 psi has been attained.

COMMENTS AND ACTION

702-R-691 STRUCTURAL CONCRETE

DISCUSSION:

This item was introduced and presented by Mr. Reilman who explained that the minimum water-cement ratio for both class A and class C concrete is too high for slipformed railing applications and does not allow ready mix suppliers to produce mixes that will comply with slump requirements. Also, due to the lower water-cement ratios that are inherent with slipformed mixes, it is not necessary to include a water reducing admixture.

Mr. Reilman therefore proposed that both class A and class C concrete be used in slipformed railings, reduce the minimum water-cement ratio from 0.380 to 0.360, and eliminate the requirement to use a water reducing admixture.

The item was approved as submitted.

Mr. Osborn mentioned a previous revision to the cold weather concrete mixes from November 2019 and that ICI was not involved in developing a solution to that issue and that ICI would very much like to be involved in any future revisions to items pertaining to structural concrete, especially cold weather protection. Mr. Reilman stated that ICI was provided with a copy of the proposed changes in October 2019, and that no comments were received before or during the November 2019 meeting.

Mr. Osborn stated that they would like to be involved in any future language concerning temperature restrictions, and would also like to discuss the previously approved spec book language from November 2019. Also, the use of the word “may” in 702.11 is raising concerns regarding unequal specification enforcement.

Mr. Pankow agreed that we should address any inconsistencies pertaining to this issue, and make sure that we do the right thing.

There was no further discussion and this item passed as submitted.

COMMENTS AND ACTION

702-R-691 STRUCTURAL CONCRETE

[continued]

Motion: Mr. Reilman Second: Mr. Dave Ayes: 10 Nays: 0 FHWA Approval: YES	Action:	
	X	Passed as Submitted
	___	Passed as Revised
	___	Withdrawn
Standard Specifications Sections referenced and/or affected: 702.02 pg 576.	X	2022 Standard Specifications
	___	Revise Pay Items List
Recurring Special Provision references in: 702-R-691 STRUCTURAL CONCRETE	___	Create RSP (No.___) Effective: RSP Sunset Date:
Standard Drawing affected: NONE	X	Revise RSP (No. 702-R-691) Effective: December 1, 2020 RSP Sunset Date: 2022 SS book
Design Manual Sections affected: NONE	___	Standard Drawing Effective:
GIFE Sections cross-references: NONE	___	Create RPD (No. ___) Effective:
	X	GIFE Update
	X	SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Updates are needed to revise the means allowable to remove the existing coating, clarification on grinding and the method of measurement and basis of payment sections. Also, as this is specialized work, added a prequalification requirement.

PROPOSED SOLUTION: incorporate the proposed changes

APPLICABLE STANDARD SPECIFICATIONS: none

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

APPLICABLE RECURRING SPECIAL PROVISIONS: 729-B-204

PAY ITEMS AFFECTED: none

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad Hoc: Jose Murillo, Joe Novak, Nate Pfeiffer, Jim Reilman, Pete White

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT, Office of Materials & Tests

Phone Number: 317-522-9692

Date: 5/22/20

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No
Will approval of this item affect the Approved Materials List? N/A
Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO SPECIAL PROVISION

729-B-204 HEAT STRAIGHTENING OF STEEL MEMBERS IN THE FIELD

(Note: Proposed changes shown highlighted gray)

729-B-204 HEAT STRAIGHTENING OF STEEL MEMBERS IN THE FIELD

(Adopted 09-19-13)

The Standard Specifications are revised as follows:

SECTION 729, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 729 – ~~BLANK~~*HEAT STRAIGHTENING OF STEEL MEMBERS IN THE FIELD*

729.01 Description

This work shall consist of field-repairing damaged steel members by the planned and supervised application of limited amounts of localized heat and jacking forces, grinding, and drilling crack-arrest holes in accordance with 105.03. ~~*It shall include furnishing and installing or removing structural steel materials as directed in accordance with 105.03.*~~

729.02 Prequalification Requirement

The Contractor performing the heat straightening work shall hold a current prequalification certification from the Department with a work type of 0050, steel bridge beam heat-straightening, regardless of whether the value of the total work under contract from all sources is less than $300,000.

MATERIALS

729.~~02~~03 Materials

Materials shall be in accordance with the following:

Organic Zinc Primer	*909.02(a)2*
Partial Paint System	*619.09(b)*
Structural Steel	*910.02*
~~*Waterborne Finish Paint*~~	~~*909.02(d)*~~

CONSTRUCTION REQUIREMENTS

729.~~03~~04 Pre-Heat Straightening Inspection

~~*Damaged s*~~*Steel members shall be inspected by the Engineer and Contractor for impact damage such as but not limited to gouges, sharp dents, cracks, or other damage* ~~*resulting from the impact*~~ *prior to any other work related to heat straightening commencing. All areas identified as having impact damage shall have the paint removed by* ~~*using only a chemical-based paint-stripping product. Power*~~*abrasive blasting, hand tool cleaning,* ~~*hand*~~*power tool cleaning, or water blasting*~~*, or any other method to remove paint shall not be usedthat does not inhibit the ability to inspect the underlying steel substrate*~~*. The existing coating shall not be removed by flame or heat. The steel members in the areas*

identified as having damage resulting from an impact ~~damage~~ shall be checked for fine cracks using liquid ~~dye penetration~~penetrant testing in accordance with ASTM E 165 or magnetic particle testing in accordance with ASTM E 709.

(a) NDT Testing and Reporting Requirements

The testing shall be performed on surfaces that are clean, dry, and free of contaminants such as oil, grease, rust, weld flux, spatter, paint, and any other contaminant detrimental to NDT testing. A minimum visible light having an intensity of 200 ft-candles and 2150 lux shall be provided.

The following requirements apply to magnetic particle testing. The yoke method shall be used. Half-wave rectified DC yokes shall demonstrate the ability to lift a 30 lb steel block at 2 in. ≤ yoke pole spacing ≤ 4 in. and 50 lbs at 4 in. ≤ yoke pole spacing ≤ 6 in. AC yokes shall demonstrate the ability to lift a 10 lb steel block at 2 in. ≤ yoke pole spacing ≤ 4 in. and 50 lbs at 4 in. ≤ yoke pole spacing ≤ 6 in. Dry, non-fluorescent medium meeting the requirements of AMS 3040, SE-709 shall be used. The Contractor shall provide a test medium in contrasting color to the test part.

(b) NDT Personnel Qualifications

Personnel performing either the liquid penetrant testing or magnetic particle testing shall be qualified and certified in accordance with the American Society of Nondestructive Testing, ASNT, recommended practice SNT-TC-1A, or ANSI/ASNT Standard CP-189, and shall be a Level II Inspector.

(c) Results and Reporting

At the conclusion of the testing, the NDT testing technician shall provide a report of each impact location tested; one report per location. The following information shall be included in the report:

1. *location of the test on the structure, using nomenclature matching the contract plans,*
2. *date of examination and testing,*
3. *technician's name, certification, and signature,*
4. *examination results and findings. If no cracks are found, this shall be stated in the report,*
5. *the medium used, manufacturer, and color, and*
6. *a high quality photo with a scale reference and location label. The photo shall be taken immediately after the testing and the reports shall be submitted on a daily basis to the Engineer.*

The Contractor shall notify the Engineer no later than the end of each work day of any base metal or weld metal defects that require additional treatment.

729.~~04~~05 Contractor's Work Plan

Upon completion of the pre-heat straightening inspection, the Contractor shall submit a written work plan for the following:

(a) cleaning of, and existing coating removal from the work area and any other areas of concern discovered during the pre-heat straightening inspection;

(b) types of heat patterns at each location and sequences;

(c) jacking or other means used to augment the heat straightening process. Detailed information on the method used and the proposed force measurement system shall be included. The force measurement system shall have been calibrated within the past 12 months;

(d) disconnecting, supporting, and adjusting steel members, as required;

(e) cleaning method and painting system to be used following the heat straightening.

The Contractor shall receive written approval of the work plan from the Engineer prior to beginning any work described in the work plan.

729.~~05~~06 Grinding

After the damaged areas have been checked for cracks or other damage as outlined above, all gouges, tears, and sharp dents shall be ground smooth. An area 3 in. larger than the impact area on each side of the location of the impact shall be ground to a smooth, bright metal surface to remove the cold-worked region of the steel resulting from the impact. Any weld toes within, or immediately adjacent to, the impact area shall be ground smooth with a die grinder. Cracks discovered in the pre-heat straightening inspection shall be ground out by excavating the crack into a dish-like shape, the sides of which shall approximate a 3:1 taper. If the crack is not removed after grinding approximately a 1/8 in. depth of steel or if prior to grinding, the crack appears to be excessively long, deep or wide, the Engineer shall be notified prior to any grinding. Under no circumstances shall the cracks be v-grooved, filled with welding material, and then ground smooth.

729.~~06~~07 Surface Preparation of Area to be Heated

Before cutting or heating any steel member, paint shall be removed from inside the limits of the heat straightening area. Surface preparation shall be in accordance with

619.08(a), ~~619.08(b),~~ and either 619.08(d) or 619.08(~~g~~h). ~~Hand tool cleaning or brush-off blast cleaning shall not be used.~~

729.~~07~~08 Equipment

All gas fueled heating equipment, force application devices, and accessories shall be supplied by the Contractor. Fuel for heating shall be an oxygen-fuel mixture. The fuel shall be acetylene, natural gas, or propane.

Heat application shall be by a torch designed for heating, not cutting, with single-orifice tips only, unless otherwise specified herein. The size of the tip shall be proportional to the thickness of the heated material. As a guide, the tip size is shown in the following table:

Steel Member Thickness, t (in.)	*Orifice Size*
$t \leq 1/4$	*3*
$1/4 < t \leq 3/8$	*4*
$3/8 < t \leq 1/2$	*5*
$1/2 < t \leq 5/8$	*7*
$5/8 < t \leq 7/8$	*8*
$t > 7/8$	*
** multiple torches, rosebud, or multiple orifice tips may be used*	

729.~~08~~09 Suspension of Work

If adverse weather conditions such as rain, snow, or hail arise, or anything else causing unexpected or sudden cooling of the heated members, the Engineer may order the suspension of work. If a suspension of work is ordered, the Contractor shall immediately cease applying heat to the steel members. The suspension of work will only apply while adverse weather conditions exist at the project location. The Contractor shall not recommence work until directed by the Engineer.

729.~~09~~10 Heat Application and Heat Patterns

The Contractor shall identify, by measurements, all yield zones and yield lines prior to starting heat straightening. The temperature of the steel member within a heat pattern during any heat straightening cycle shall be between the minimum and maximum temperature values for the respective type of steel shown in the table below.

Temperature, °F		*Type of Steel Shown on the Plans (ASTM Classification Shown)*
Minimum	*Maximum*	
850	*950*	*A 709, grade HPS 100W*
900	*1000*	*A 709, grade 70W; A 709, grade HPS 50W; A 709, grade HPS 70W; A 852; A 913*
950	*1050*	*A 514; A 709, grade non-HPS 100/100W*
1100	*1200*	*A 7; A 36; A 242; A 373; A 440; A 441; A 529; A 572; A 588; A 709, grades 36, 50, 50S, and 50W; A 992*

Temperatures outside the limits specified above will be cause for rejection and replacement of the steel member.

The Contractor shall provide and use one or more of the following devices to verify temperatures during heat straightening:

(a) Contact ~~P~~pyrometer
(b) Infrared non-contact thermometer

The contact pyrometer shall be calibrated daily with temperature crayons prior to use. The ~~devices~~infrared non-contact thermometer shall be calibrated every 12 months. Documentation showing the last date of calibration for the infrared non-contact thermometer shall be provided to the Engineer before use. Heat application shall not be performed unless at least one of the devices listed above is being used to verify the temperature of the steel member. Heat patterns and sequences shall be selected to match the type of damage and cross section shape.

Heat shall be applied within an included angle of 15 to 55~~ degrees~~°, but limited to a base width of 12 in. Sufficient number of heat patterns shall be used to eliminate chording effects, where chording effects are defined as straightening small portions of the damaged steel member. Each heat pattern shall be heated in a single pass. The entire heat pattern shall not be reheated until the steel member has cooled below 250°F. Only cooling with clean, dry air will be ~~permitted~~allowed. Cooling with compressed air will only be ~~permitted~~allowed after the steel member has cooled naturally to 600°F. When the steel member thickness exceeds 1 in., two torches shall be used simultaneously to heat both sides of the heat pattern. The torches shall be located one above the other throughout the heating process.

The number, location, and sequence of the areas to be heated shall be marked on the steel members. The following heat patterns shall be used:

(a) edge heats
(b) line heats
(c) spot heats
(d) strip heats
(e) vee heats

Heat pattern boundaries shall be marked with soapstone. In no case shall heat be applied to undamaged portions of the steel member.

When using vee heats, the heat pattern shall be located on the convex side of the steel member; heat pattern edges shall not overlap and shall be greater than the width of the bottom flange element apart. The apex of the vee should be truncated to an approximate 1 in. width at the junction of the web and flange with the boundaries extending to the edge

of the flange. Once the desired temperature of the steel member has been obtained, heating shall progress in a serpentine motion from the apex of the vee toward the base of the vee in a single pass.

729.~~10~~11 Application of Restraining Forces

Restraining forces shall not be applied without acceptable force measurement systems in place. Force measurement devices shall be calibrated every 12 months. Jacks or come-alongs, not exceeding 25 t capacity, may be used to put steel members into limited compression as a means of mechanically augmenting the heat straightening process. The load shall be applied prior to the application of heat. The load shall not be increased during the heat cycle. After a number of heat cycles and the steel member has cooled below 250°F, the load may be adjusted to compensate for the effects of the heat cycles. Any section of the steel member that becomes distorted, cracked, or permanently deformed due to methods of handling, supporting, and loading or by any other means shall be replaced or repaired as determined by the Engineer.

729.~~11~~12 Tolerances

The steel member shall be straightened to within the following tolerances:

Criteria	*Tolerance*
Horizontal Sweep	*3/8 in. per every 20 ft of length*
Horizontal Sweep at the point of impact	*3/8 in. per every 5 ft of length, or 1/2 in. per every 8 ft of length*
Vertical Deflection	*1/4 in. maximum*
Deflection of Web (out of plane of web)	*1/4 in. maximum in both the vertical and horizontal direction*

Tolerances shall be achieved before cross frames, diaphragms, or any other lateral restraint devices are attached. In no case shall the steel member be forced into position and then welded or bolted to the cross frames or diaphragms to hold the steel member in position.

729.~~12~~13 Post-Heat Straightening Inspection

Following the completion of steel member straightening, the straightened steel member shall be inspected by the Engineer and the Contractor. The inspection shall be performed using the same methods and procedures used in the pre-heat straightening inspection, including performing NDT. ~~When the Engineer deems additional structural repairs are required, additional work shall be in accordance with 109.05.~~

729.~~13~~14 Epoxy Injection

If the top flange of the steel member has pulled away from and is no longer in contact with the concrete bridge deck, the resultant void shall be completely filled by epoxy injection in accordance with 727 after completion of all of the steel member straightening and repairs.

729.~~14~~15 Painting

Upon completion and acceptance of the heat straightened steel members, the Contractor shall clean, prime, and paint the steel members. Surface preparation shall be in accordance with 729.~~06~~07. The paint system shall be in accordance with 619.09(b). Painting shall be in accordance with 619.10. All exposed surfaces on heat-straightened steel members shall be fully painted from the edge of the nearest splice plate or steel member end outside the heat straightened area to the nearest splice plate or steel member end on the other side of the heat straightened area. The color of the top coat shall be a similar color to match the color of the existing bridge.

729.~~15~~16 Method of Measurement

~~This work~~Heat straightening, grinding, drilling crack-arrest holes, NDT testing, and other incidentals will not be measured for payment.

New structural steel and drilled holes for installation of bolts will be measured in accordance with 711.72.

729.~~16~~17 Basis of Payment

New structural steel and drilled holes for installation of bolts will be paid for in accordance with 711.73.

The accepted heat straightened steel members will be paid for at the contract lump sum price for straighten steel member.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Straighten Steel Member	*LS*

The cost for all material, labor, equipment, and incidentals for the inspection of the steel members, the temperature verification devices, calibration of the temperature verification devices, ~~and removal of any cracks~~ grinding, and drilling crack-arrest holes if shown on the plans or directed by the Engineer, shall be included in the cost of straighten steel member.

The cost for all NDT activities, including but not limited to all material, equipment, and labor necessary to clean the test areas, perform and interpret NDT, and preparation of all NDT reports shall be included in the cost of straighten steel member.

The cost for all materials, labor, equipment, and incidentals necessary for disconnecting, supporting, or adjusting the steel members or secondary steel members, jacks or other augmenting devices, the force measurement system, and calibration of the force measurement system shall be included in the cost of straighten steel member.

REVISION TO SPECIAL PROVISION

729-B-204 HEAT STRAIGHTENING OF STEEL MEMBERS IN THE FIELD

The cost for all materials, labor, equipment, and incidentals required for existing coating removal, preparing, priming, and painting of the steel members shall be included in the cost of straighten steel member.

If the Engineer deems it necessary for the Contractor to perform epoxy injection as outlined above, this extra work will be paid for in accordance with 109.05.

If, as a result of the Contractor's methods used in the prosecution of the work, the integrity of the steel member has been compromised as determined by the Engineer, all costs to remedy the situation up to and including replacing of the steel members and all costs associated with replacing the steel members shall be at no additional cost to the Department.

COMMENTS AND ACTION

729-B-204 HEAT STRAIGHTENING OF STEEL MEMBERS IN THE FIELD

DISCUSSION:

Mr. Reilman introduced and presented this item stating that updates are needed to revise the allowable means to remove the existing coating, clarification on grinding and the method of measurement and basis of payment sections. Also, since this is specialized work, a prequalification requirement was added.

Based on feedback prior to the meeting, Mr. Reilman proposed to incorporate the revisions as shown above which represents a condensed version of the referenced ASTM and provides further clarification to the contractor, and our field personnel, what options the Department wants for the NDT testing.

Mr. Duncan (FHWA) inquired about the proposed 729.10 Heat Application and Heat Patterns, and asked if we should add a statement to require documentation of that calibration? Mr. Reilman agreed and the revisions are as shown.

Mr. Reilman proposed that this item be accepted as revised.

Motion: Mr. Reilman Second: Mr. Dave Ayes: 10 Nays: 0 FHWA Approval: YES	Action:	
	___	Passed as Submitted
	X	Passed as Revised
	___	Withdrawn
Standard Specifications Sections referenced and/or affected: NONE	X	2022 Standard Specifications
	___	Revise Pay Items List
Recurring Special Provision references in: 729-B-204 HEAT STRAIGHTENING OF STEEL MEMBERS IN THE FIELD	___	Create RSP (No.___) Effective: RSP Sunset Date:
Standard Drawing affected: NONE	X	Revise RSP (No. 729-B-204) Effective: December 1, 2020 RSP Sunset Date: 2022 SS book
Design Manual Sections affected: NONE	___	Standard Drawing Effective:
GIFE Sections cross-references: NONE	___	Create RPD (No. ___) Effective:
	___	GIFE Update
	___	SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: It was found that the current specification needs to be updated to reflect language called out in the IC and CFR.

PROPOSED SOLUTION: The purpose of this revision is to promote clarification of the Buy America process and allow foreign steel to be incorporated in projects at the Department's discretion, if two conditions apply; insufficient supply and under the minimal usage amount.

APPLICABLE STANDARD SPECIFICATIONS: 106.01(c)

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report): Yes

Submitted By: Joe Novak

Title: State Construction Engineer

Organization: Construction Management

Phone Number: (317) 232-5456

Date: 06/08/20

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No
Will approval of this item affect the Approved Materials List? No
Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? No

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? No

Design process? No

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? No

Is this proposal needed for compliance with:

Federal or State regulations? Ys

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO STANDARD SPECIFICATIONS

SECTION 106 - CONTROL OF MATERIAL
106.01(c) Buy America Requirement

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 106, BEGIN LINE 81, DELETE AND INSERT AS FOLLOWS:

(c) Buy America Requirement

~~All contracts, whether financed entirely or partially with State or Federal funds,~~*All contracts shall be supplied with steel and iron products that are made in the United States and* shall comply with IC 5-16-8 and the 23 CFR 635.410.

~~Except for pig iron and processed, pelletized, and reduced iron ore, steel shall be made in the United States by the open hearth, basic oxygen, electric furnace, Bessemer, or other steel making process. Except for pig iron and processed, pelletized, and reduced iron ore, all steel and cast iron materials and products permanently incorporated in the contract shall be manufactured in the United States. Manufactured products include those which are rolled, formed, shaped, drawn extruded, forged, cast, or fabricated. The United States includes all territories, continental and insular, subject to the jurisdiction of the United States of America.~~

~~Except for pig iron and processed, pelletized, and reduced iron ore, no steel or cast iron products produced in the United States may be modified in a foreign country and still comply with the Buy America Requirement.~~*All steel or iron products incorporated permanently into a contract ~~must~~shall be made of steel or iron produced in the United States and all subsequent manufacturing ~~must~~shall be performed in the United States except for pig iron and processed, pelletized, and reduced iron ore. Manufacturing is any process that modifies the chemical content; physical shape or size; or final finish of a product. Manufacturing begins with the initial melting and mixing and continues through the bending and coating stages. If a domestic product is taken out of the United States for any process, it becomes a foreign source material. Manufactured products that are partially or predominantly steel, shall be entirely produced with domestic steel. If a product has miscellaneous foreign steel incorporated, such as fasteners or brackets, then those miscellaneous pieces shall be replaced or substituted.*

1. Exceptions

The Engineer may grant specific written permission to use foreign steel or iron products when both of the following conditions apply:

a) *The total cost of all foreign products to be used does not exceed 0.1 percent of the total Contract cost, or $2,500, whichever is greater. The cost is the value of the product as delivered to the project.*

b) The specified products are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet the requirements of the

REVISION TO STANDARD SPECIFICATIONS

SECTION 106 - CONTROL OF MATERIAL
106.01(c) Buy America Requirement

Contract Documents. The Engineer may require the Contractor to obtain letters from three different suppliers documenting the unavailability of a product from a domestic source if the shortage is not previously established by the Department.

A Buy America Certification shall be submitted and received for each product or source of material prior to being incorporated into the contract in accordance with 916.02(g) and 916.03(a).

COMMENTS AND ACTION

106.01(c) Buy America Requirement

DISCUSSION:

This item was introduced and presented by Mr. Novak who explained that the current language in 106.01(c) needs to be updated to reflect the language called out in the IC and CFR.

Mr. Novak stated that the purpose of this revision is to promote clarification of the Buy America process and allow foreign steel to be incorporated in projects at the Department's discretion, if two conditions apply; insufficient supply and under the minimal usage amount.

Following a brief discussion on clarifying the language concerning the total cost of all foreign materials, Mr. Novak revised his motion. The minor revisions are as shown above.

With no further discussion, this item passed as revised.

Motion: Mr. Novak Second: Mr. Reilman Ayes: 10 Nays: 0 FHWA Approval: YES	Action:	
	___	Passed as Submitted
	X	Passed as Revised
	___	Withdrawn
Standard Specifications Sections referenced and/or affected: 106.01 pg 64.	X	2022 Standard Specifications
	___	Revise Pay Items List
Recurring Special Provision references in: NONE	X	Create RSP (No. 106-C-267) Effective: December 1, 2020 RSP Sunset Date: 2022 SS book
Standard Drawing affected: NONE	___	Revise RSP (No.___) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE	___	Standard Drawing Effective:
GIFE Sections cross-references: NONE	___	Create RPD (No. ___) Effective:
	___	GIFE Update
	___	SiteManager Update

PROPOSAL TO THE STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unique Special Provisions are intended for a single use on a specific contract for a specific situation on the contract that is not already covered by the Standard Specification or a Special Provision. However, some USPs have been utilized quite frequently on numerous contracts and have become somewhat "standard".

PROPOSED SOLUTION: The proposed solution for this USP is to convert it to a Recurring Special Provision in order to expedite the process of implementing this Special Provision into future contracts, which will make it easier for the implementation of Truck Mounted Attenuators on contracts.

APPLICABLE STANDARD SPECIFICATIONS: 801
APPLICABLE STANDARD DRAWINGS:
APPLICABLE DESIGN MANUAL SECTION:
APPLICABLE SECTION OF GIFE:
APPLICABLE RECURRING SPECIAL PROVISIONS:

PAY ITEMS AFFECTED: Truck Mounted Attenuators

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Scott Trammell, Construction Specifications Engineer, and the USP Review Process, et al.

IMPACT ANALYSIS (attach report): Yes

Submitted By: Kurt Pelz,

Title: Technical Services Manager

Organization: Construction Management

Phone Number: 317-234-7726

Date: January 24, 2020

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No, just 801.
Will approval of this item affect the Approved Materials List? No
Will this proposal improve:

Construction costs? Yes

Construction time? Yes

Customer satisfaction? Yes

Congestion/travel time? Yes

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? Yes
Will this item improve safety:

For motorists? Yes

For construction workers? Yes

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? Yes

AASHTO or other design code? N/A

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: For ease of use for implementation and to improve the USP Review Process flow capacity.

801-T-XXX TRUCK MOUNTED ATTENUATORS

(Adopted xx-xx-20)

Description

This work shall consist of furnishing truck mounted or trailer mounted attenuators, TMAs, in accordance with 105.03.

Materials

Materials shall be in accordance with 801.02 and as follows:

Each TMA shall be in accordance with the appropriate TL-2 or TL-3 NCHRP 350 or MASH crash testing requirements. TL-2 or TL-3 units shall be used where the work zone speed limit is 45 mph or less. TL-3 units shall be required where the work zone speed limit is 50 mph or greater.

A copy of the FHWA eligibility letter for each TMA model shall be provided to the Engineer prior to use.

All TMAs shall be in good working condition.

Construction Requirements

Where specified, the TMA shall be used in accordance with 801.03 and the Indiana Manual of Uniform Traffic Control Devices, MUTCD, and the manufacturer's recommendations.

The TMA shall be an energy absorbing device attached to the rear of shadow trailers or trucks. When used, the shadow vehicle with the TMA shall be positioned a sufficient distance in advance of the work area, workers, or equipment to reduce the severity of rear end collisions from errant vehicles, but not so far in advance that errant vehicles can travel around the shadow vehicle and endanger the workers or equipment.

An additional shadow vehicle shall be provided for any gaps in the operation of 500 ft or more.

A TMA may be used on the work vehicle and the shadow vehicle.

TMA units shall be maintained in such a manner as to provide continuous service. No time extension will be considered for delays due to inoperable TMAs.

Method of Measurement

TMAs will be measured by the number of calendar days that each unit is in use.

Basis of Payment

The accepted quantities of TMAs will be paid for at the contract unit price per day, per each. Payment will be made only once for each day of use, regardless of the number of times the TMAs are moved to accommodate different phases of traffic maintenance or construction operations as shown in the contract.

Payment will be made under:

REVISION TO SPECIAL PROVISIONS AND PLAN DETAILS

801-T-XXX(d)TRUCK MOUNTED ATTENUATORS DETAILS (PROPOSED NEW)

Pay Item	**Pay Unit Symbol**
Truck Mounted Attenuator.....	DAY

The cost of furnishing the truck, trailer, flashing arrow sign, and truck mounted impact attenuator shall be included in the cost of the pay item. No additional payment will be made for maintenance, repairs, or replacement of TMAs that are damaged or become inoperable.

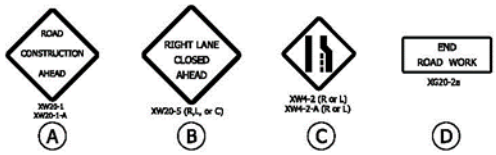
REVISION TO SPECIAL PROVISIONS AND PLAN DETAILS

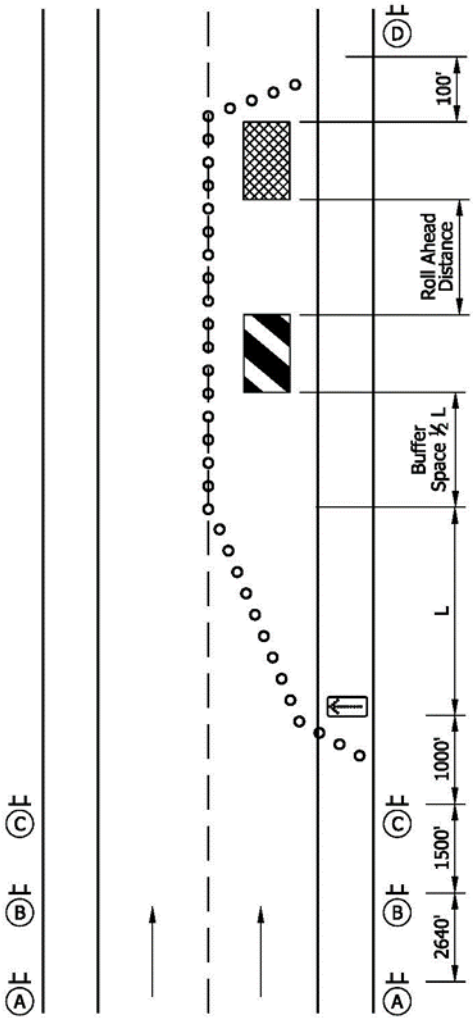
801-T-XXX(d)TRUCK MOUNTED ATTENUATORS DETAILS (PROPOSED NEW)

SINGLE LANE CLOSURE

NOTES:

1. Channelizing Devices shall be spaced at 50' in tapered sections and 100' in tangent sections. See Standard Drawing 801-TCDV-01 for acceptable types of devices.
2. Portable changable message sign shall be placed as directed by Engineer.
3. Type III barricade may replace Truck Mounted Attenuators when workers are not present.
4. Roll Ahead Distance shall be per manufacture's specifications.
5. Worksite Added Penalty signs shall be placed as directed by the Engineer.





LEGEND

- Work Site
- Truck Mounted Attenuator
- Flashing Arrow Sign
- Channelizing Device

Posted Speed Limit Prior to work (mph)	Taper Length "L"
55	660'
60	720'
65	780'
70	840'

COMMENTS AND ACTION

801-T-XXX TRUCK MOUNTED ATTENUATORS (PROPOSED NEW)
801-T-XXX(d)TRUCK MOUNTED ATTENUATORS DETAILS (PROPOSED NEW)

DISCUSSION:

This item was introduced and presented by Mr. Pelz who stated that the Unique Special Provision for Truck Mounted Attenuators has been utilized quite frequently on numerous contracts and has become somewhat "standard".

Therefore, Mr. Pelz proposes to make this a Recurring Special Provision in order to expedite the process of implementing the use of Truck Mounted Attenuators on contracts.

Mr. Bruno confirmed that he has reviewed this USP on a regular basis and provided further clarification. As for the RPD, the details shown illustrate the most current standards and practices. Mr. Reilman inquired about the speeds shown and Mr. Bruno and Ms. Smutzer confirmed that those speeds are correct. Ms. Smutzer proposed having language that the equipment is approved for use if the eligibility letter is not available. Ms. Smutzer also asked if Work Zone Safety has provided any input. Mr. Boruff offered that we could specify that all equipment shall be in proper working condition, of which that language already exist in the special provision. Mr. Kachler offered that he could find no specific material requirements in ATTSSA for TMAs.

Mr. Koch asked about the Basis for Use for the RSP to ensure it is used when and where needed. Mr. Boruff said that he and Mr. Bruno will work with Mr. Koch to determine the proper basis for use.

Mr. Osborn said that the Work Zone Safety subcommittee can meet and discuss the proper implementation of the use of the TMAs. Mr. Culbertson suggested that the best place to address the use in during design. Mr. Koch said he is fine with the provision as-is, but could also be paid as lump sum. Mr. Pankow said it would be more appropriate for the AEs to get together and discuss experiences to see if any changes need to be made.

Following discussions about eligibility letters and basis for use, Mr. Pelz offered that we need to have a standard document for the use of the TMAs, understanding that each job will be unique and that District Construction should be the ones to determine when and where this should be utilized. The committee members agreed.

With no other discussion, this item passed as submitted.

COMMENTS AND ACTION

801-T-XXX TRUCK MOUNTED ATTENUATORS (PROPOSED NEW)
801-T-XXX(d)TRUCK MOUNTED ATTENUATORS DETAILS (PROPOSED NEW)

[CONTINUED]

Motion: Mr. Pelz Second: Mr. Boruff Ayes: 10 Nays: 0 FHWA Approval: YES	Action: X Passed as Submitted ___ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 801 begin pg 811. Recurring Special Provision references in: NONE Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	___ 2022 Standard Specifications X Revise Pay Items List X Create RSP (No. 801-T-227) Effective: December 1, 2020 RSP Sunset Date: ___ Revise RSP (No.___) Effective: RSP Sunset Date: ___ Standard Drawing Effective: X Create RPD (No. 801-T-227d) Effective: December 1, 2020 ___ GIFE Update ___ SiteManager Update