

## **INDIANA DEPARTMENT OF TRANSPORTATION**

100 North Senate Avenue Room N758 CM Indianapolis, Indiana 46204

PHONE: (317) 232-5502 www.in.gov/indot Eric Holcomb, Governor Joe McGuinness, Commissioner

# **APPROVED MINUTES**

### July 15, 2021 Standards Committee Meeting

(AS REVISED. Changes to the Final Draft Minutes by the Action of the Committee shown as highlighted in teal, pg 26.)

MEMORANDUM

August 27, 2021

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the July 15, 2021 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Pankow, Chair, at 09:03 a.m. on July 15, 2021, which was held virtually via Teams (Microsoft application). The meeting was adjourned at 11:04 a.m.

Gregory Pankow, Chairman, Director, Construction Management John Wooden, Contract Administration Division Dave Boruff, Traffic Engineering Peter White, Bridge Engineering Joseph Novak, Construction Management Kumar Dave, Pavement Engineering, Highway Design Matt Beeson\*, Materials and Tests Division Melissa Cool\*\*, District Construction, Fort Wayne District Mark Orton, Highway Engineering Kurt Pelz, Construction Technical Support \* *Proxy for* Jim Reilman \*\* *Proxy for* Michael Koch

Also, presence was captured by *Microsoft Teams* of the following:

Awwad, Nathan, INDOT Barney, Bruce, INDOT Bazlamit, Subhi, INDOT Beaucaire, Melissa, INDOT Blanchard, Jacob, INDOT Jacobs, David L, INDOT McNutt, Donald, (guest) Mouser, Elizabeth, INDOT Osborn, Dan, ICI Patel, Prakash INDOT Bruno, Joseph, INDOT Corrice, Zachariah, INDOT Duncan, Thomas, FHWA Distler, Jeff, (guest) Fisher, Steve, INDOT Frederick, Kirk, INDOT Garg, Lalit, INDOT Galetka, Jason, INDOT Hammada, Ahmmed, (guest) Harris, Tom, INDOT Hauser, Derrick, INDOT Patterson, Patrick, INDOT Pfeiffer, Nate, INDOT Redinger, Randy, (guest) Russell, Melissa, INDOT Ritter, John, INDOT Siddiki, Nayyar, INDOT Smutzer, Katherine, INDOT Stickney, Daniel, INDOT Susong, John, (guest) Trammell, Scott, INDOT Wells, Macy, INDOT (intern)

The following items were discussed:

#### A. GENERAL BUSINESS ITEMS

#### OLD BUSINESS (No items were listed)

#### **NEW BUSINESS**

- 1. Ms. Mouser introduced changes to the Standards Committee members:
- Mark Orton will now represent Highway Engineering
- Peter White will now represent Bridge Engineering.

Also, she introduced new Standards & Policy Director, Mr. Subhi Bazlamit.

2. Approval of the Minutes from the June 17, 2021 meeting

Mr. Pankow requested a motion to approve the Minutes from the June 17, 2021 meeting.

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

ACTION:

PASSED AS SUBMITTED

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS (No items were listed)

<u>NEW BUSINESS (No items were listed)</u>

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

#### OLD BUSINESS (No items were listed)

#### NEW BUSINESS

Item No. 1 (2022 SS)	Mr. Reilman	pg 5
207.02	Materials	
207.03	Construction Requirements	
207.05	Method of Measurement	
207.06	Basis of Payment	
ACTION:	PASSED AS REVISED	
<u>Item No. 2 (2022 SS)</u>	Mr. Reilman	pg 14
401.11	Preparation of Surfaces to be Overlaid	
401.15	Joints	
402.11	Preparation of Surfaces to be Overlaid	
410.05	SMA Mix Design	
SECTION 415	BASE SEALBLANK	
902.01	Asphalt	
ACTION:	PASSED AS REVISED	
<u>Item No. 3 (2022 SS)</u>	Mr. Boruff	pg 23
802.07	Installing Supports	
910.19	Overhead Sign Structures	
Standard Drawings:		
E 802-SBTS series ( -01 thru -41)	SIGN BOX TRUSS STRUCTURE	
ACTION:	PASSED AS REVISED	
<u>Item No. 4 (2022 SS)</u>	Mr. Reilman	pg 118
715.09	Backfilling	
715.13	Method of Measurements	
715.14	Basis for Payment	
ACTION:	PASSED AS SUBMITTED	

ACTON: PASED AS SUBMITTED	Item No. 5 (2022 SS)	Mr. Reilman	pg 125
cc: Committee Members FHWA ICI	901.02	Fly Ash Used as a Pozzolan	
FHWA ICI	ACTION:	PASSED AS SUBMITTED	
FHWA ICI			
R	FHWA		

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS REVISION TO STANDARD SPECIFICATIONS

#### PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Conflicting guidance within specifications for geosynthetic uses.

<u>PROPOSED SOLUTION:</u> Remove conflicting guidance and make additional clarifications in 207 based on recent revisions made in 610, 918, 214.

APPLICABLE STANDARD SPECIFICATIONS: 207

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE: Yes

APPLICABLE RECURRING SPECIAL PROVISIONS: create new 207

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: All contracts with a 207 or 214 pay item.

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman for Nayyar Siddiki

Title: State Materials Engineer

Organization: INDOT

Phone Number: 317-522-9692

Date: 6/11/2021

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS REVISION TO STANDARD SPECIFICATIONS

#### IMPACT ANALYSIS REPORT CHECKLIST

Does this item appear in any other specification sections? 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? 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? N/A

Design process? Yes

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? N/A

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

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

SECTION 207 - SUBGRADE
207.02 Materials
207.03 Construction Requirements
207.05 Method of Measurement
207.06 Basis of Payment
The Standard Specifications are revised as follows:
SECTION 207, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:
207.02 Materials
Materials shall be in accordance with the following:
Chemical Modifiers
Coarse Aggregate, Class D or Higher,
Size No. 5, 8, 43, 53, or 73
Fly Ash, Class C 901.02
Geogrid, Type IB
Geocell Confinement System 214918.04
Geotextile
Geotextile Properties for Pavement
andor Subgrade Stabilizations
Lime
Portland Cement, Type 1
Water

Air-cooled blast furnace slag shall not be used for subgrade treatment Types ID, IV, and IVA.

Soil Dron orter	Test Method	Requirements
Soil Property	Test Method	Requirements
Dry Weight Organic Material	AASHTO T 267	$\leq 3\%$
Max Dry Density	AASHTO T 99	<u>&gt;100 pcf</u>
Liquid Limit	AASHTO T 89	$\leq 50$
Soluble Sulfate	ITM 510	$\leq 1000 \text{ ppm}$
Note:		•
Only soils mosting those requirements:	will be allowed within the	an a sified this lange

Only soils meeting these requirements will be allowed within the specified thickness of the subgrade treatment in cut sections. Only soils meeting these requirements will be allowed within 24 in. of the finished subgrade elevation in fill sections.

#### **CONSTRUCTION REQUIREMENTS**

#### 207.03 Construction Requirements

#### (a) Subgrade Construction Methods

The subgrade shall be constructed uniformly transversely across the width of the pavement including shoulders or curbs unless shown otherwise on the plans, by one of the

SECTION 207 - SUBGRADE 207.02 Materials 207.03 Construction Requirements 207.05 Method of Measurement 207.06 Basis of Payment

following methods:

- 1. chemical modification in accordance with 215;
- 2. aggregate No. 53 in accordance with 301;
- 3. geogridgeosynthetic in accordance with 214 placed under *coarse* aggregate No. 53 in accordance with 301, or
- 4. soil compaction to 100% of maximum dry density;
- 5. geotextile in accordance with 214 placed under aggregate No. 5, 8, and 53 in accordance with 301.

Longitudinally, the treatment may vary depending on the method of construction.

#### (b) General Requirements

All rock greater than 3 in. shall be removed or broken off and placed at least 6 in. below the specified subgrade. Holes or depressions resulting from the removal of unsuitable material shall be filled with soils in accordance with 207.02 or B borrow and compacted in accordance with 203.23.

Coal within the specified thickness of the subgrade shall be excavated if directed, and disposed of in accordance with 202.02.

During subgrade preparation, adequate drainage shall be provided at all times to prevent water from standing on the subgrade. The grade and cross section of the subgrade shall be finished within a tolerance of 1/2 in. from the subgrade elevation shown on the plans.

Even though the subgrade has been previously accepted, the condition of the subgrade shall be in accordance with 105.03 and 207.04 at the time paving material is placed.

Finishing within this tolerance by blading or other mechanical means without the use of side forms will be allowed. If these methods do not finish within this tolerance, side forms shall be used.

#### **207.04 Subgrade Treatment Types**

The subgrade treatment type shall be as specified on the contract plans. If required,

SECTION 207 - SUBGRADE 207.02 Materials 207.03 Construction Requirements 207.05 Method of Measurement 207.06 Basis of Payment

the subgrade foundation shall be corrected as directed by the Engineer prior to subgrade treatment.

Туре	Subgrade Description
Ι	24 in. of soil compacted in accordance with 203.23
IA	[blank]
IBC	14 in. chemical soil modification using cement
IBL	14 in. chemical soil modification using lime
IC	12 in. coarse aggregate No. 53 in accordance with 301
ID	12 in. coarse aggregate with Type 2B geotextile in accordance with 918.02(c)
II	6 in. coarse aggregate No. 53 in accordance with 301
III	In-place compaction in accordance with 203.23
IV	12 in. coarse aggregate No. 53 with Type IB geogrid in accordance with 214
IVA	12 in. coarse aggregate with geocell confinement system in accordance with 214
V	3 in. of subgrade excavated and replaced with 3 in. coarse aggregate No. 53

Type ID subgrade treatment shall be constructed with 9 in. of coarse aggregate No. 53 over 3 in. of coarse aggregate No. 5 or No. 8. Geotextile Type 2B in accordance with 918.02(c) shall be placed above and below the layer of No. 5 or No. 8 coarse aggregate.

In areas where shallow utilities are encountered or chemical modification is not allowed, the Contractor may submit a request to the Engineer to substitute Type IC for Type IBC or Type IBL.

Where the strength or density and moisture control option is used, compaction of embankment areas shall be in accordance with 203.23. In cut and transition areas, the top lifts shall be removed, and the bottom 6 in. compacted in-place in accordance with 203.23. The excavated material shall then be replaced and compacted in 6 in. lifts in accordance with 203.23. Removal of the lifts may be waived and only the upper 6 in. compacted in accordance with 203.24, that the lower lifts comply with 203.23.

In sections where rock, shale, sandstone or its mixtures are encountered, these materials shall be undercut 24 in. below the subgrade elevation and replaced with coarse aggregate No. 53 or No. 73 and compacted in accordance with 301.06. Geotextiles used shall be in accordance with 918.02. All irregularities and holes shall be graded with either coarse aggregate No. 53 or No. 73. If an aggregate base is part of the HMA pavement structure, the 24 in. excavation depth shall be reduced by the thickness of the aggregate

SECTION 207 - SUBGRADE 207.02 Materials 207.03 Construction Requirements 207.05 Method of Measurement 207.06 Basis of Payment

base.

The 3 in. compacted aggregate as part of the subgrade treatment Type V shall be compacted to 100% prior to the placement of the pavement.

When conditions are encountered below the specified subgrade treatment depth that prevent achieving the specified subgrade compaction, such conditions shall be corrected in accordance with 203.09, or as directed.

Proofrolling shall be performed in accordance with 203.26.

#### 207.05 Method of Measurement

Subgrade treatment will be measured in both cut and fill areas by the square yard per type. Chemicals for soil modification using cement or lime, excavation, aggregates, geotextile, and geogrid materials will not be measured.

Geosynthetic specified for use<del>d</del> in addition to that required for the specified subgrade treatment will be measured in accordance with 214.05.

The undercutting of rock, where encountered, will be measured in accordance with 203.27(b).

Testing, sampling, coarse aggregates, chemicals for modification, water, excavation, geogrid, geotextile, and geocell confining system for specified subgrade treatment types will not be measured.

#### 207.06 Basis of Payment

The accepted quantities of subgrade treatment will be paid for at the contract unit price per square yard per type, complete in place. In areas where shallow utilities are encountered or the Contractor elects to use Type IC for Type IBC or Type IBL, payment will be made at the price of Type IBC or Type IBL.

The undercutting of rock, where encountered, will be paid for in accordance with 203.28.

Payment will be made under:

Pay Item

#### Pay Unit Symbol

Subgrade Treatment, Type \_\_\_\_\_.SYS

REVISION TO STANDARD SPECIFICATIONS

SECTION 207 - SUBGRADE 207.02 Materials 207.03 Construction Requirements 207.05 Method of Measurement 207.06 Basis of Payment

The cost of subgrade treatments including testing, sampling, *coarse* aggregates, chemicals for soil modification with cement or lime, *water*, *excavation*, geogrid, geotextile and geocell confinement system, <del>coarse aggregate</del> for *specified* subgrade *treatment types* Type IC, Type ID, Type II, Type IV, Type IVA, Type V, water, and the excavation required, shall be included in the cost of the pay item.

The cost of excavation and grading of existing railroad ballast and railroad bed material shall be included in the cost of subgrade treatment, Type V.

Geosynthetic specified for use<del>d</del> in addition to that required for the specified subgrade treatment will be paid for in accordance with 214.06.

Where conditions exist below the specified subgrade compaction depth that prevent achieving the specified compaction, payment for correcting such conditions will be made based on the directed method of treatment.

#### COMMENTS AND ACTION

207.02 Materials 207.03 Construction Requirements 207.05 Method of Measurement 207.06 Basis of Payment

#### DISCUSSION:

This item was introduced and presented by Mr. Beeson, sitting in as proxy for Mr. Reilman, along with Mr. Siddiki, who stated that there has been conflicting guidance within the specifications for geosynthetic uses.

Mr. Beeson proposed to remove conflicting guidance and make additional clarifications in 207 based on recent revisions made in 610, 918, and 214. Further explanation was provided by Mr. Siddiki.

Prior to the meeting, Mr. Koch asked if the additional geosynthetic use language is needed? If an undercut is required, we pay for excavation and stone/sand. Explanation was provided by Mr. Siddiki, to which Mr. Koch concurred with the revision as proposed.

Further discussion occurred between Mr. Dave and Mr. Siddiki, and it was determined that a USP could be used for the use of No. 2 stone in the subgrade.

Ms. Cool, sitting in as proxy for Mr. Koch, asked if there is language to instruct the Contractor to only use geosynthetic if allowed. Mr. Siddiki said that it will be determined by the offices of Geotech or pavement design. Minor revisions are as shown highlighted above. Further clarification was provided by Mr. Siddiki.

Mr. Beeson revised his motion, which was seconded by Mr. Dave.

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

#### COMMENTS AND ACTION

207.02 Materials 207.03 Construction Requirements 207.05 Method of Measurement 207.06 Basis of Payment

#### [continued]

Motion: Mr. Beeson Second: Mr. Dave Ayes: 8 Nays: 0 FHWA Approval: YES	Action:	Passed as Submitted Passed as Revised Withdrawn
Standard Specifications Sections referenced and/or affected: 207 pg 222-226.	<u>×</u> —	2024 Standard Specifications Revise Pay Items List
Recurring Special Provision references in: NONE	x	Create RSP (No. <u>207-R-735</u> ) Effective: <u>December 1, 2021</u> RSP Sunset Date: <u>2024 SS book</u>
Standard Drawing affected: NONE Design Manual Sections affected:		Revise RSP (No) Effective: RSP Sunset Date:
NONE GIFE Sections cross-references:		Standard Drawing Effective:
TBD		Create RPD (No) Effective:
-		GIFE Update Frequency Manual Update SiteManager Update

#### STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

#### PROPOSAL TO STANDARDS COMMITTEE

<u>PROBLEM(S) ENCOUNTERED</u>: unnecessary base seal language is present in 401, 402 and 415 regarding open graded mixture. Incorrect language regarding SMA mix design requirements is present in 410.

Updated requirements have been released regarding AASHTO M320 making 902 language out of date for binder specifications.

<u>PROPOSED SOLUTION</u>: Delete language in 401, 402 and 415. Correct language in 410. Update binder requirements in 902.

APPLICABLE STANDARD SPECIFICATIONS: 401, 402, 410, 415, 902

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: APAI

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman for Nathan Awwad

Title: State Materials Engineer

Organization: INDOT

Phone Number: 317-522-9692

Date: 6/17/21

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS REVISION TO STANDARD SPECIFICATIONS

#### IMPACT ANALYSIS REPORT CHECKLIST

Does this item appear in any other specification sections? N

Will approval of this item affect the Approved Materials List? N

Will this proposal improve:

Construction costs? N

Construction time? Y

Customer satisfaction? N

Congestion/travel time? N

<u>Ride quality?</u> N

Will this proposal reduce operational costs or maintenance effort? Y

Will this item improve safety:

For motorists? Y

For construction workers? N

Will this proposal improve quality for:

Construction procedures/processes? Y

Asset preservation? Y

Design process? Y

Will this change provide the contractor more flexibility? Y

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

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

Is this proposal needed for compliance with:

Federal or State regulations? N

AASHTO or other design code? Y

Is this item editorial? N

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

#### **REVISION TO STANDARD SPECIFICATIONS**

SECTION 401 – QC/QA HMA PAVEMENT 401.11 Preparation of Surfaces to be Overlaid 401.15 Joints SECTION 402 – HMA PAVEMENT 402.11 Preparation of Surfaces to be Overlaid SECTION 410 – QC/QA HMA – SMA PAVEMENT 410.05 SMA Mix Design SECTION 415 – BASE SEAL SECTION 902 – ASPHALT MATERIALS 902.01 Asphalt

The Standard Specifications are revised as follows:

SECTION 401, BEGIN LINE 366, DELETE AS FOLLOWS:

#### 401.11 Preparation of Surfaces to be Overlaid

The subgrade shall be shaped to the required grade and sections, free from all ruts, corrugations, or other irregularities, and uniformly compacted and approved in accordance with 207. Milling of an existing pavement surface shall be in accordance with 306. Surfaces on which a mixture is placed shall be free from objectionable or foreign materials at the time of placement.

Prior to placing an open graded mixture, the underlying HMA course shall have a full width base seal applied in accordance with 415. The base seal materials shall be applied within three calendar days after all density cores in accordance with 401.16 have been obtained.

#### SECTION 401, BEGIN LINE 470, DELETE AND INSERT AS FOLLOWS:

All 9.5 mm and 12.5 mm surface mixture longitudinal joints that have the joint adhesive applied shall be sealed using SS-1h, *RPE*, or AE-NT asphalt emulsion in accordance with 902.01(b). The sealing operation shall not begin until all density cores in accordance with 401.16 and 401.20 have been obtained and the installation of pavement corrugations, when specified in accordance with 606, has been completed.

The liquid asphalt sealant shall be a minimum width of 24 in., centered on the joint line, and shall be extended, when necessary, to provide coverage beyond the edge of the pavement corrugation. The sealant shall be applied at an application rate of  $0.03 \pm 0.01$  gal./sq yd onto a dry surface, free of any foreign or loose material, using a distributor in accordance with 409.03(a). Areas receiving greater than 0.04 gal./sq yd shall be lightly broomed to reduce the effects of excess sealant on the pavement surface. The sealant temperature at the time of application shall be at least 135°F and shall not exceed 180°F. The ambient air and pavement temperatures at the time of application shall be greater than 32°F.

Asphalt Emulsion	Application Rate* (gal./sq yd)
SS-1h or AE-NT	$0.03 \pm 0.01^{**}$
RPE	0.15 <del>-to</del> ±0.01***
* The asphalt material sh	all not be diluted.
** Areas receiving greater	r than 0.04 gal./sq yd shall be lightly
broomed to reduce th	ne effects of excess sealant on the
pavement surface.	

The application rate of the sealant shall be as follows:

**REVISION TO STANDARD SPECIFICATIONS** 

SECTION 401 – QC/QA HMA PAVEMENT 401.11 Preparation of Surfaces to be Overlaid 401.15 Joints SECTION 402 – HMA PAVEMENT 402.11 Preparation of Surfaces to be Overlaid SECTION 410 – QC/QA HMA – SMA PAVEMENT 410.05 SMA Mix Design SECTION 415 – BASE SEAL SECTION 902 – ASPHALT MATERIALS 902.01 Asphalt

\*\* The application rate shall be reduced when sealing milled corrugations in accordance with 606. The application rate shall be  $0.11 \pm 0.01$  gal./sq yd.

Temporary pavement markings in accordance with 801.12 shall be offset a sufficient distance from the longitudinal joint so as not to obstruct the installation of the pavement corrugations or the application of the liquid asphalt sealant.

The SS-1h or AE-NT sealant shall be cured a minimum of five days prior to applying the permanent pavement traffic markings in accordance with 808. The RPE sealant shall be cured a minimum of 48 h prior to applying the permanent pavement traffic markings in accordance with 808. Where pavement markings are to be grooved in accordance with 808.07(b)1, the minimum cure of five days for the sealant shall not apply.

SECTION 402, BEGIN LINE 140, DELETE AS FOLLOWS:

402.11 Preparation of Surfaces to be Overlaid

The subgrade shall be shaped to the required grade and sections, free from all ruts, corrugations, or other irregularities, and uniformly compacted and approved in accordance with 207. Milling of an existing surface shall be in accordance with 306. Surfaces on which a mixture is placed shall be free from objectionable or foreign materials at the time of placement.

Prior to placing an open graded mixture, the underlying HMA course shall have a full width base seal applied in accordance with 415. The base seal materials shall be applied within three calendar days upon completion of paving the underlying HMA course.

SECTION 410, BEGIN LINE 94, DELETE AND INSERT AS FOLLOWS:

A change in the source or types of aggregates, or a change in source or type of stabilizing additives, or a change in the source of the specified binder shall require a new DMF.

A PG binder grade or source change will not require a new mix design. If the upper temperature classification of the PG binder is lower than the original PG grade, a new TSR value is required.

SECTION 415, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS: SECTION 415 - BASE SEALBLANK

#### **REVISION TO STANDARD SPECIFICATIONS**

SECTION 401 – QC/QA HMA PAVEMENT 401.11 Preparation of Surfaces to be Overlaid 401.15 Joints SECTION 402 – HMA PAVEMENT 402.11 Preparation of Surfaces to be Overlaid SECTION 410 – QC/QA HMA – SMA PAVEMENT 410.05 SMA Mix Design SECTION 415 – BASE SEAL SECTION 902 – ASPHALT MATERIALS 902.01 Asphalt

#### 415.01 Description

This work shall consist of applying asphalt emulsion to the pavement surface in accordance with 105.03.

#### **MATERIALS**

#### 415.02 Materials

Base seal materials shall be in accordance with the following:

Asphalt Emulsion, SS-1h, AE-NT ......902.01(b)

#### **CONSTRUCTION REQUIREMENTS**

#### 415.03 Equipment

A distributor in accordance with 409.03(a) shall be used.

#### 415.04 Weather Limitations

Base sealing operations shall not be conducted on a wet pavement or when the ambient air or pavement temperature is below 32°F.

#### **415.05 Preparation of Surface**

Surfaces shall be clean and free of any foreign or loose material.

#### **415.06 Application of Asphalt Material**

The base seal materials shall be applied to the pavement surface uniformly with a distributor at an application rate of  $0.22 \pm 0.02$  gal./sq yd.

#### 415.07 Protection of Surface

The base seal materials shall cure a minimum of two hours after application before resuming paving operations.

#### 415.08 Method of Measurement

The base seal will be measured by the ton complete in place.

#### **REVISION TO STANDARD SPECIFICATIONS**

SECTION 401 – QC/QA HMA PAVEMENT 401.11 Preparation of Surfaces to be Overlaid 401.15 Joints SECTION 402 – HMA PAVEMENT 402.11 Preparation of Surfaces to be Overlaid SECTION 410 – QC/QA HMA – SMA PAVEMENT 410.05 SMA Mix Design SECTION 415 – BASE SEAL SECTION 902 – ASPHALT MATERIALS 902.01 Asphalt

#### 415.09 Basis of Payment

The base seal will be paid for at the contract unit price per ton.

Payment will be made under:

Pay Item

Pay Unit Symbol

The costs of all asphalt materials, surface preparation and all other necessary incidentals shall be included in the cost of the pay item.

SECTION 902, BEGIN LINE 17, INSERT AS FOLLOWS:

SECTION 902, BEGIN LINE 1/, INSERT A	S FOLLOV	vs:				
GRADE	58-28	64-22	64-28	70-22	70-28	76-22
OR	IGINAL E	BINDER				
Flash Point, minimum, °C			2.	30		
Viscosity, maximum, 3 Pa·s, Test Temp, °C			1.	35		
DSR, G*/sin δ (delta), minimum, 1.00 kPa, Test Temp. @ 10 rad/s, °C	58	64	64	70	70	76
ROLLING TH	HN-FILM	OVEN RE	ESIDUE			
Mass Loss, maximum, %			1.	00		
DSR, G*/sin δ (delta), minimum, 2.20 kPa, Test Temp. @ 10 rad/s, °C	58	64	64	70	70	76
PRESSURE AGING VESSEL (PAV) RESIDUE						
PAV Aging Temperature, °C 100 (Note 1)						
DSR, G*sin δ (delta), maximum, 5,000 kPa, Test Temp. @ 10 rad/s, °C (Note 3)	19	25	22	28	25	31
Physical Hardening			Report	(Note 2)		
Creep Stiffness, S, maximum, 300 MPa, m-value, minimum, 0.300, Test Temp. @ 60 s, °C	-18	-12	-18	-12	-18	-12
<ul> <li>Notes: 1. Oven temperature tolerance shall be ±0.5<sup>o</sup></li> <li>2. Physical Hardening is performed on a set except the conditioning time is extended temperature. The 24 h stiffness and m-val</li> <li>3. Binders that have a G*sin δ (delta) of 5, angle is 42 degrees or greater.</li> </ul>	of asphalt l to 24 h $\pm 10$ lue are report	minutes at 1 rted for info	10°C above	the minimur poses only.	n performan	ice

SECTION 902, BEGIN LINE 96, INSERT AS FOLLOWS:

**REVISION TO STANDARD SPECIFICATIONS** 

SECTION 401 – QC/QA HMA PAVEMENT 401.11 Preparation of Surfaces to be Overlaid 401.15 Joints SECTION 402 – HMA PAVEMENT 402.11 Preparation of Surfaces to be Overlaid SECTION 410 – QC/QA HMA – SMA PAVEMENT 410.05 SMA Mix Design SECTION 415 – BASE SEAL SECTION 902 – ASPHALT MATERIALS 902.01 Asphalt

#### 4. Rapid Penetrating Emulsion, RPE

The asphalt material comprising the rapid penetrating emulsion shall be in accordance with the following:

Characteristics	Test Requirement	Test Method
Test on Emulsion		
Viscosity, Saybolt Furol at 25C, max.	50	AASHTO T 59
Sieve Test, %, max.	0.10	AASHTO T 59
Oil Distillate by Volume of Emulsified Asphalt, %, max.	1.0	AASHTO T 59
Identification Test, %, min.	60	ITM 599
Water Resistance Test, %, min.	60	ITM 598
Residue by Distillation <sup>*</sup> , %, min.	30	AASHTO T 59
Test on Residue		
Penetration (0.1 mm) at 25C, 100g, 5s, max.	150	AASHTO T 49
Ash Content, %, max.	1.0	AASHTO T 111
Note: * The minimum sample size shall be 300g.	•	·

#### COMMENTS AND ACTION

401.11 Preparation of Surfaces to be Overlaid 401.15 Joints 402.11 Preparation of Surfaces to be Overlaid 410.05 SMA Mix Design SECTION 415 – <del>BASE SEALBLANK</del> 902.01 Asphalt

#### DISCUSSION:

Mr. Beeson, sitting in as proxy for Mr. Reilman, introduced and presented this item, with Mr. Awwad, who stated that unnecessary base seal language is present in 401, 402 and 415 regarding open graded mixture. Incorrect language regarding SMA mix design requirements is present in 410.

Mr. Awwad explained that updated requirements have been released regarding AASHTO M320 making 902 language out of date for binder specifications.

Mr. Beeson proposed to delete language in 401, 402 and 415, correct language in 410, and update binder requirements in 902.

Prior to the meeting, Mr. Koch asked if the application rate shown in the table is correct. Mr. Koch stated that both materials are frequently used to seal rumbles, and asked if RPE should be broomed as well? Mr. Koch also mentioned that the rate for RPE really depends on the surface texture (finer, coarse, or SMA surface) but .15 seems a bit high.

Mr. Awwad responded that both materials are frequently used to seal rumbles and doesn't think the RPE needs to be broomed. The spray rate is ridiculously low for SS-1h and AE-NT. Almost impossible, so the assumption is it will be sprayed higher. The RPE can be finely tuned because of the increased spray rate. Mr. Awwad suggested revisions to the table as shown in these minutes.

Also, concerning the rate for RPE - Mr. Awwad said that he had a phone call with the supplier and their application rate concern was with corrugations only. Mr. Awwad said that the 0.15 with the tolerance was considered acceptable for the varying new coarse/fine asphalt surfaces, and that SMA doesn't get sealed.

Mr. Koch said that the revision looks good but perhaps we should target .10 in rumbles. RPE flows like water often pooling in the bottom or side if the roadway is superelevated. From one field trial, .15 was fine for flat surfaces as excess just spread out but that rate did pool in corrugations. Most of the pooled RPE seemed to dissipate as the material cured although excess material was still visible in superelevated sections. We eventually went down to .11 which still puddled a bit.

Mr. Awwad agreed that leaving a possible range of 0.10 to 0.15 in the rumbles isn't optimal and stated that the supplier suggested  $0.12 \pm 0.02$  to allow anywhere from 0.10 to 0.14. Mr. Awwad said he likes things to be simple and direct, and suggested that we target  $0.11 \pm 0.01$ , which should be optimal for most situations. Revisions are as shown in these minutes.

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

#### COMMENTS AND ACTION

401.11 Preparation of Surfaces to be Overlaid 401.15 Joints 402.11 Preparation of Surfaces to be Overlaid 410.05 SMA Mix Design SECTION 415 – <del>BASE SEALBLANK</del> 902.01 Asphalt

[continued]

Motion: Mr. Beeson	Action:	
Second: Mr. Dave		
Ayes: 8		Passed as Submitted
Nays: 0	<u>X</u>	Passed as Revised
FHWA Approval: YES		Withdrawn
Standard Specifications Sections referenced and/or affected:	<u>_X</u>	2024 Standard Specifications
		Revise Pay Items List
401 pg 310-311, 402 pg 330, 415 pg 382- 383, 902 pg. 978-979		
	<u>X</u>	Create RSP (No. <u>401-R-736, 402-R-737,</u>
Recurring Special Provision references in:		410-R-738, 902-M-062)
		Effective: December 1, 2021
NONE		RSP Sunset Date: <u>2024 SS book</u>
Standard Drawing affected:		
		Revise RSP (No)
NONE		Effective:
Design Manual Sections affected:		RSP Sunset Date:
NONE		Standard Drawing
		Effective:
GIFE Sections cross-references:		
		Create RPD (No)
NONE		Effective:
		GIFE Update
		Frequency Manual Update
<i>e</i>		SiteManager Update

Mr. Boruff Date: 7/15/21

#### STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

#### PROPOSAL TO STANDARDS COMMITTEE

<u>PROBLEM(S) ENCOUNTERED</u>: The design of the current box truss span structures is based on the previous AASHTO design code. Currently, the drawings for extended span for box truss structures are recurring plan details. During inspections issues have been routinely found with anchor bolt hardware being loose or out of position on trusses and other types of sign structures. This can lead to premature fatiguing. Some of the ASTM references are outdated or incorrect.

<u>PROPOSED SOLUTION:</u> Update the design and standard drawings for box trusses in accordance with the current AASHTO LRFD design code. Merge the existing RPD series with 802-SBTS as many of the details are shared. Revise the procedure for anchor bolt tightenting for all sign structures incorporating recommendations from the FHWA. Update ASTM references.

APPLICABLE STANDARD SPECIFICATIONS: 802.07(b), 910.19

APPLICABLE STANDARD DRAWINGS: 802-SBTS, RPD 802-T-222d

APPLICABLE DESIGN MANUAL SECTION: 502-4

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

<u>APPLICABLE SUB-COMMITTEE ENDORSEMENT:</u> Industry, Traffic Standards Subcommittee, Parsons Corporation (structural analysis), Collins Engineers Inc. (hardware tightening procedure)

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: any contract with pay items for overhead sign structures

IMPACT ANALYSIS (attach report): Yes

Submitted By: Dave Boruff

Title: Manager, Office of Traffic Administration Organization: INDOT Phone Number: 317-234-7975 Date: 06/18/21

Mr. Boruff Date: 7/15/21

#### STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS 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.* 

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

Construction costs? No

Construction time? No

Customer satisfaction? Yes

Congestion/travel time? N/A

<u>Ride quality?</u> N/A

<u>Will this proposal reduce operational costs or maintenance effort?</u> Yes Will this item improve safety:

For motorists? Yes

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? Yes

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? N/A

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

Is this proposal needed for compliance with:

Federal or State regulations? Yes

AASHTO or other design code? Yes

Is this item editorial? No

<u>Provide any further information as to why this proposal should be placed on the Standards</u> <u>Committee meeting Agenda:</u> REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

SECTION 802 - SIGNS 802.07 Installing Supports SECTION 910 - METAL MATERIALS 910.19 Overhead Sign Structures

The Standard Specifications are revised as follows:

SECTION 802, BEGIN LINE 118, DELETE AND INSERT AS FOLLOWS:

The base plateAnchor bolt hardware tightening shall be by the turn of the nut method and as follows:

a. Lower nuts and washers shall be in full contact with the base plate,

- b. The top nuts shall be tightened to 1/6 turn beyond snug fit,
- c. The lower nuts shall be retightened to assure that full contact with the base plate has been maintained.
- a. Anchor bolts shall be clean and not be damaged or out of plumb.
- b. The threaded portion of the anchor bolts shall be lubricated within 24 h prior to of tightening.
- *c.* The distance from the bottom of the levelling nuts to the top of the foundation shall be a distance less than the diameter of the bolt from the foundation, unless specified otherwise.
- d. While holding the levelling nuts with a wrench, the top nut shall be snug tightened and brought into full contact of the base plate. Then the levelling nut shall be snug-tightened. The top nuts and base plate shall then be marked, and the nuts further tightened, pretensioned, by a minimum 1/12 turn for bolt diameters that are 1 3/4 in. or greater or a minimum 1/6 turn for bolts less than 1 3/4 in. in diameter The tightening procedure shall be as follows:
  - 1. All tightening shall be in the star pattern order as shown on the plans, or in accordance with the FHWA "Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway signs, Luminaires, and Traffic Signals".
  - 2. All leveling nuts shall be brought into contact with the base plate. While holding the levelling nut with a wrench, the top nut shall be brought to a snug tight condition in full contact with the base plate. The levelling nut shall be brought to a snug tight condition. This process shall be repeated for the remaining top and levelling nuts.

REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

SECTION 802 - SIGNS 802.07 Installing Supports SECTION 910 - METAL MATERIALS 910.19 Overhead Sign Structures

- 3. After all top and levelling nuts are made snug tight, the top nuts and base plate shall then be marked, and the nuts further tightened, pretensioned, by a minimum  $\frac{1/121}{6}$  turn for bolt diameters that are 1 3/4 in. or greater or a minimum  $\frac{1/61}{3}$  turn for bolts less than 1 3/4 in. in diameter.
- 4. For span structures, the top nuts shall be inspected for proper fit no sooner than 10 minutes after the installation of the truss or span on the end bents or columns. Nuts found not to be in a snug tight condition or nuts that have loosened, based on a visual inspection of the relative position marks, shall be tightened by repeating the steps above.
- e. For span structures, no sooner than 10 minutes after the installation of the truss or span on the end bents or columns, the top and levelling nuts shall be retightened as needed.
- f. All tightening shall be in the star pattern order as shown on the plans, or in accordance with the FHWA "Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway signs, Luminaires, and Traffic Signals".

SECTION 910, BEGIN LINE 1187, DELETE AND INSERT AS FOLLOWS:

#### 910.19 Overhead Sign Structures

The complete structure with signs in place shall be able to withstand wind pressure *loads* in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. The structure shall be designed to resist fatigue of the material in accordance with the AASHTO specifications.

All prefabricated structural units shall be packed so that there is no injury or defacement during transportation to the point of destination.

All bolts, nuts, and washers for bridge bracket assemblies shall be stainless steel in accordance with ASTM F738M F593.

SECTION 910, BEGIN LINE 1287, DELETE AND INSERT AS FOLLOWS:

Bolts Other bolts, U-bolts, nuts, screws, and flat washers shall be passivated type 304 stainless steel. Bolts and screws shall be in accordance with ASTM A193, grade B8. Hexagon nuts and washers shall be in accordance with ASTM A194, grade 8.

## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

SECTION 802 - SIGNS 802.07 Installing Supports SECTION 910 - METAL MATERIALS 910.19 Overhead Sign Structures

Bridge attached structures shall be fabricated from constant cross-section tubular steel in accordance with ASTM A53, type E or S, grade B with a minimum yield strength of 35,000 psi. Constant-cross section tubular steel with greater yield strength may be used, with written approval. However, structural dimensions shall remain as shown on the plans. Structures shall be galvanized after fabrication in accordance with ASTM A123.

Tri-chord truss structures shall be made of constant cross-section tubular members in accordance with ASTM A53, type E or S, grade B minimum yield strength of 35,000 psi. Monotube structures shall be made of tapered tubular members in accordance with either ASTM A595, grade A or B, or ASTM <del>A573</del>*A572*, grade 50. Structures shall be galvanized after fabrication in accordance with ASTM A123.

SECTION 910, BEGIN LINE 1339, DELETE AND INSERT AS FOLLOWS:

Gusset, flange, and base plates shall be in accordance with ASTM A36 and shall be galvanized after fabrication in accordance with ASTM A123. Base plates for upright poles shall develop the full strength of the poles. Castings for the vertical pole top and horizontal arm and cap shall be in accordance with ASTM A126 and shall be galvanized with a minimum coating of 2 oz/sq ft. High strength heavy hex bolts and nuts, except anchor bolts, shall be in accordance with ASTM F3125, grade A325, Type 1, and ASTM A563. Two nuts for use in plumbing upright poles shall be furnished with each anchor bolt. Anchor bolts for overhead steel structures shall be in accordance with 910.19(a). Bolts, nuts, washers, and the top ends of anchor bolts shall be either hot dip galvanized in accordance with ASTM F2329 or mechanically galvanized in accordance with ASTM B695, Class 55. Welding shall be in accordance with 711.32.

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#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

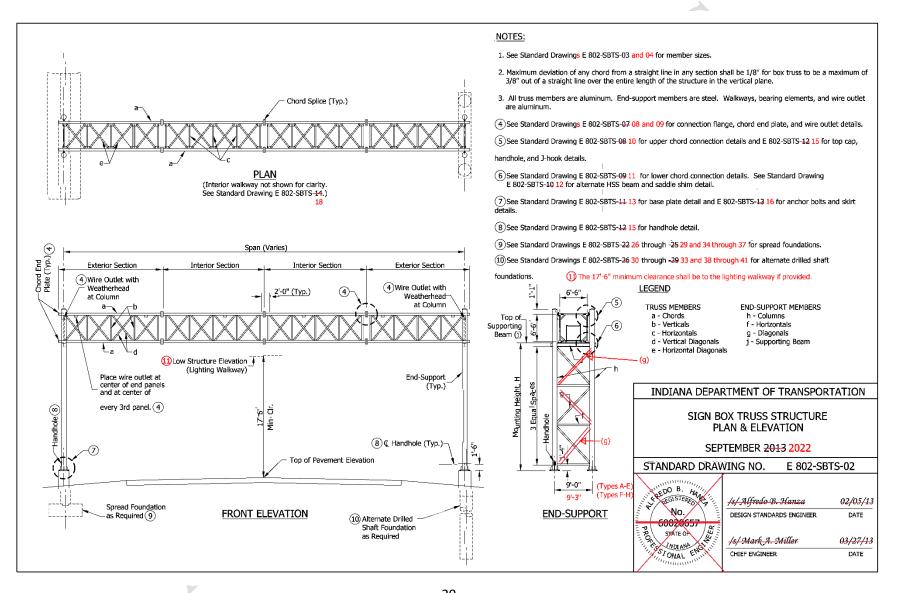
#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)

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12       End Support Top-Gap, Handholey and Hook Setable       End Support Base Plate Details         13       End Support Anchor Solt and Metal-Skirt-Betalls       End Support Base Plate Details         14       Hindrahm Valloway Grating Setable       End Support Top Cap, Handholey and J-Hook Details         15       Hindrahm Valloway Grating Setable       End Support Anchor Bolt and Metal Skirt Details         16       Highting Walkway- End Support Anchor Bolt Hardware Tightening (NEW SHEET)         18       Highting Walkway-Poella       Interior Walkway Grating & Handrail Details         20       Highting Walkway-Poella       Interior Walkway Grating & Handrail Details         21       Highting Walkway-Route Hourt Bottlam & Lighting Walkway Ilevation       Lighting Walkway-Fooder Boundetains & 32* Generate Barler Wall         22       Spread Foundation & 32* Generate Barler Wall       Lighting Walkway, Flanter Hundreh walkway Rixture Mount Details         23       Opread Foundation & 45* Generate Barler Wall       Lighting Walkway, Flanter Handrail Assembly         24       Highting Walkway Rixture Mount Details       33* Concrete Barrier Wall         25       Hopread Foundation & 45* Generate Barler Wall       A-E Spread Foundation at 33* Concrete Barrier Wall         28       Alternate Drilled Shaft Foundation at 33* Concrete Barrier Wall       33* Concrete Barrier Wall         29       Altenate Drilled Shaft Found				
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15       -interfor Walkway-Graing-Scalab       End Support Top Cap, Handhole, and J-Hook Details         16       -tighting-Walkway- End Support Anchor bolt and Metal Skirt Details         17       +tighting-Walkway- End Support Anchor Bolt Hardware Tightening (NEW S-HEET)         18       -Ughting-Walkway-an-Handrall-Assembly         19       +Ughting-Walkway-an-Handrall-Assembly         20       +Ughting-Walkway-refuter Mount-Details         20       +Ughting-Walkway-refuter Mount-Details         21       -Ughting-Walkway-refuter Mount-Details         22       -Spread-Foundation -st-32*-Concrete-Barrier Wall         23       -Spread-Foundation -st-32*-Concrete-Barrier Wall         24       -Spread-Foundation -st-32*-Concrete-Barrier Wall         25       -Spread-Foundation -st-32*-Concrete-Barrier Wall         26       -Atternate Drilled Shaft Foundation at -45* Concrete Barrier Wall         27       -Atternate Drilled Shaft Foundation at -45* Concrete Barrier Wall         28       -Atternate Drilled Shaft Foundation at -45* Concrete Barrier Wall         29       -Atternate Drilled Shaft Foundation at -45* Concrete Barrier Wall         21       -Lighting Walkway Profile         29       -Atternate Drilled Shaft Foundation at -45* Concrete Barrier Wall         21       -Atternate Drilled Shaft Foundation at -45* Concrete Barrier Wall     <				
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19       Lighting Walkway and Handrall Assembly       Interior Walkway Grating Details         20       Highting Walkway, Handrall Hinge, and Grating Details       Lighting Walkway Phane         21       Highting Walkway, Flature Meant Details       Lighting Walkway Profile         22       Spread Foundation at 15° Concrete Barrier Wall       Lighting Walkway Profile         23       Spread Foundation at 15° Concrete Barrier Wall       Lighting Walkway, Handrail Hinge, and Grating Details         24       Spread Foundation at 15° Concrete Barrier Wall       Alternate Drilled Shaft Foundation at 33° Concrete Barrier Wall         26       Alternate Drilled Shaft Foundation at 33° Concrete Barrier Wall       A-E Spread Foundation at 33° Concrete Barrier Wall         28       Alternate Drilled Shaft Foundation at 33° Concrete Barrier Wall       A-E Spread Foundation at 33° Concrete Barrier Wall         31       A-E Alternate Drilled Shaft Foundation at 35° Concrete Barrier Wall       A-E Spread Foundation at 35° Concrete Barrier Wall         32       A-E Alternate Drilled Shaft Foundation at 45° Concrete Barrier Wall       A-E Spread Foundation at 35° Concrete Barrier Wall         33       A-E Alternate Drilled Shaft Foundation at 35° Concrete Barrier Wall       A-E Spread Foundation at 35° Concrete Barrier Wall         33       A-E Alternate Drilled Shaft Foundation at 35° Concrete Barrier Wall       A-E Spread Foundation at 35° Concrete Barrier Wall         34			1661)	
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22       Spread Foundation at 32" Concrete Barrier Well       Lighting Walkway Profile         23       Spread Foundation at 45" Concrete Barrier Well       Lighting Walkway and Handrail Assembly         24       Spread Foundation for Median or Shoulder, 36" Height       Lighting Walkway, Handrail Hinge, and Grating Details         25       Spread Foundation at 33" Concrete Barrier Wall       A-E Spread Foundation at 33" Concrete Barrier Wall         27       Attemate Drilled Shaft Foundation at 45" Concrete Barrier Wall       A-E Spread Foundation at 35" Concrete Barrier Wall         28       Attemate Drilled Shaft Foundation at 33" Concrete Barrier Wall       n for Median or Shoulder, 36" Height         30       A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall       SEPTEMBER 2013-2022         31       A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall       STANDARD DRAWING NO.         31       A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall       A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall         32       A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall       A-E Alternate Drilled Shaft Foundation SQuantities         33       A-E Alternate Drilled Shaft Foundation SQuantities       A-E Alternate Drilled Shaft Foundation SQUANTIES         34       F,G,H Spread Foundation at 33" Concrete Barrier Wall       A-E Alternate Dritiled Shaft Foundation SQUANTIES <td< td=""><td></td><td></td><td></td><td></td></td<>				
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24       - Spread Foundation for Median or Shoulder, 36 <sup>o</sup> Height       Lighting Walkway, Handrail Hinge, and Grating Details         25       - Spread Foundation at 33 <sup>o</sup> Concrete Barlier Wall       A-E Spread Foundation at 33 <sup>o</sup> Concrete Barrier Wall         26       - Alternate Drilled Shaft Foundation at 45 <sup>o</sup> Concrete Barrier Wall       A-E Spread Foundation at 45 <sup>o</sup> Concrete Barrier Wall         27       - Alternate Drilled Shaft Foundation at 45 <sup>o</sup> Concrete Barrier Wall       4-E Spread Foundation at 45 <sup>o</sup> Concrete Barrier Wall         28       - Alternate Drilled Shaft Foundation at 33 <sup>o</sup> Concrete Barrier Wall       4-E Spread Foundation of 45 <sup>o</sup> Concrete Barrier Wall         30       A-E Alternate Drilled Shaft Foundation at 35 <sup>o</sup> Concrete Barrier Wall       5 <sup>o</sup> Foundation at 35 <sup>o</sup> Concrete Barrier Wall         31       A-E Alternate Drilled Shaft Foundation at 45 <sup>o</sup> Concrete Barrier Wall       5 <sup>o</sup> Fleight         32       A-E Alternate Drilled Shaft Foundation at 45 <sup>o</sup> Concrete Barrier Wall       5 <sup>o</sup> Fleight         32       A-E Alternate Drilled Shaft Foundation at 45 <sup>o</sup> Concrete Barrier Wall       5 <sup>o</sup> Fleight         33       A-E Alternate Drilled Shaft Foundation at 35 <sup>o</sup> Concrete Barrier Wall       5 <sup>o</sup> Fleight         32       A-E Alternate Drilled Shaft Foundation at 35 <sup>o</sup> Concrete Barrier Wall       5 <sup>o</sup> Fleight         33       A-E Alternate Drilled Shaft Foundation at 35 <sup>o</sup> Concrete Barrier Wall       5 <sup>o</sup> Fleight         34	_			
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26       -Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall       A-E Spread Foundation at 45" Concrete Barrier Wall       33" Concrete Barrier Wall       SIGN BOX TRUSS STRUCTURE DRAWING INDEX         27       -Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall       45" Concrete Barrier Wall       5" Concrete Barrier Wall         28       -Alternate Drilled Shaft Foundation Quantities       -A-E Spread Foundation of Median or Shoulder, 36" Height       5" Concrete Barrier Wall         30       A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall       -A-E Spread Foundation at 33" Concrete Barrier Wall       SEPTEMBER 2013-2022         31       A-E Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall       -A-E Spread Foundation at 45" Concrete Barrier Wall       -A-E Spread Foundation at 45" Concrete Barrier Wall         32       A-E Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall       -A-E Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall       -A-E Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall         33       A-E Alternate Drilled Shaft Foundation at 35" Concrete Barrier Wall       -A-E Alternate Drilled Shaft Foundation at 35" Concrete Barrier Wall       -A-E Alternate Drilled Shaft Foundation at 35" Concrete Barrier Wall         34       F.G.H Spread Foundation at 35" Concrete Barrier Wall       -A-E Alternate Drilled Shaft Foundation at 35" Concrete Barrier Wall       -A-E Alternate Drilled Shaft Foundation at 35" Concrete Barrier Wall         35<		-Spread Foundation for Median or Dhoulder, 36" Height Lighting Walkway, Handrail Hing	e, and Grating Details	
26       -Alternate Diffied Shaft Foundation at 33" Concrete Barrier Wall       A-E Spread Foundation at 45" Concrete Barrier Wall         27       -Alternate Diffied Shaft Foundation at 45" Concrete Barrier Wall       45" Concrete Barrier Wall         28       -Alternate Diffied Shaft Foundation at 33" Concrete Barrier Wall       45" Concrete Barrier Wall         29       -Alternate Diffied Shaft Foundation at 33" Concrete Barrier Wall       6" Median or Shoulder, 36" Height         30       A-E Alternate Diffied Shaft Foundation at 33" Concrete Barrier Wall       5" Concrete Barrier Wall         31       A-E Alternate Diffied Shaft Foundation at 45" Concrete Barrier Wall       5" Concrete Barrier Wall         32       A-E Alternate Diffied Shaft Foundation at 45" Concrete Barrier Wall       5" Concrete Barrier Wall         33       A-E Alternate Diffied Shaft Foundation at 45" Concrete Barrier Wall       6" Height         33       A-E Alternate Diffied Shaft Foundation at 45" Concrete Barrier Wall       6" Height         33       A-E Alternate Diffied Shaft Foundation at 33" Concrete Barrier Wall       6" Height         33       A-E Alternate Diffied Shaft Foundation at 33" Concrete Barrier Wall       6" Height         34       F.G.H Spread Foundation at 33" Concrete Barrier Wall       6" Height         35       C H Spread Foundation at 33" Concrete Barrier Wall       6" Alternate Diffied Foundation at 33" Concrete Barrier Wall				SIGN BOX TRUSS STRUCTURE
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31       A-E Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall         32       A-E Alternate Drilled Shaft Foundation for Median or Shoulder, 36" Height         33       A-E Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall         34       F.G.H Spread Foundation at 33" Concrete Barrier Wall         35       F.G.H Spread Foundation at 33" Concrete Barrier Wall         36       F.G.H Spread Foundation at 33" Concrete Barrier Wall         36       F.G.H Spread Foundation at 33" Concrete Barrier Wall				STANDARD DRAWING NO. E 802 SBTS-01
25 E.C.H. Spread Equipidation at 45" Constrate Partier Wall		E Alternate Drilled Shaft Foundation at 35° Concrete Barrier Wall		
25 E.C.H. Spread Equipidation at 45" Constrate Partier Wall	32 A-I	E Alternate Drilled Shaft Foundation for Median or Shoulder, 36" Height		DO B. A
25 E.C.H. Spread Equipidation at 45" Constrate Partier Wall	33 A-E	Alternate Drilled Shaft Foundations Quantities		States STERE 4 11 /s/ Alfredo B. Hanza 02/05
36       F.G.H. Spread Foundation for Median or Shoulder, 36" Height         37       F.G.H Spread Foundations Quantities         38       F.G.H Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall         39       F.G.H Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall         40       F.G.H Alternate Drilled Shaft Foundation or Shoulder, 36" Height				z / NUY > DESIGN STANDARDS ENGINEER DAT
37       F,G,H Spread Foundations Quantities         38       F,G,H Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall         39       F,G,H Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall         40       F,G,H Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall				li _a ( 600) (657 ) <sub>≪</sub> i
38       F,G,H Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall         39       F,G,H Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall         40       E,G.H Alternate Drilled Shaft Foundation or Shoulder, 36" Height	37 F.G	GH Spread Foundations Quantities		ATE ON SATE ON ATE A Miller 03/22
22 F.G.H Alternate Drilled Shaft Foundation at 45° Concrete Barrier Wall	<u>38 F,G</u>	6.H Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall		CHIEF ENGINEER DAT

41 F,G,H Alternate Drilled Shaft Foundations Quantities

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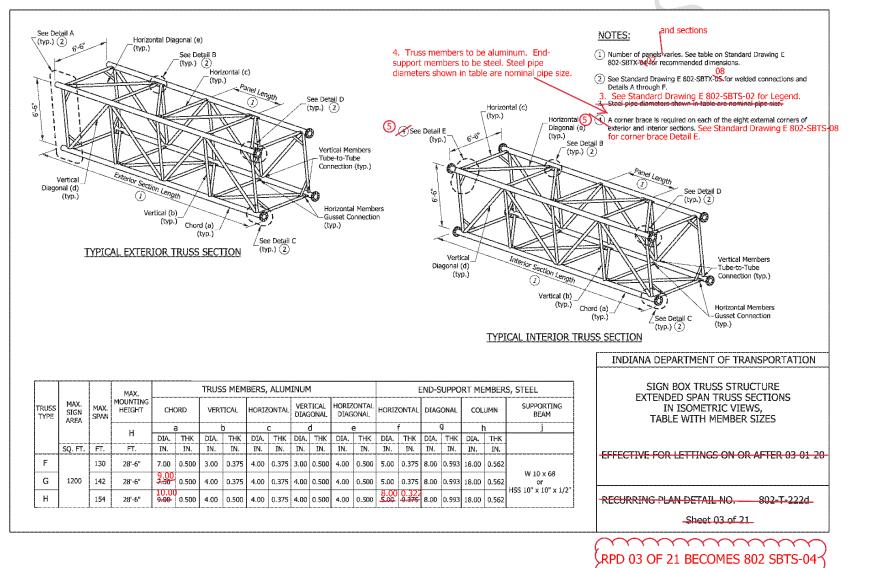
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



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#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) NOTES: (1) Number of panels and sections varies. See table on Standard Drawing E 802-SBTS-04 05 and -05 06 for recommended dimensions. (2) See Standard Drawing E 802-SBTS-06 08 for welded connections and Detail A F. Horizontal (c) 3. See Standard Drawing E 802-SBTS-02 for Legend. (Typ.) 4. Truss members to be aluminum. End-support members to be steel. Steel See Detail A Horizontal Horizontal Diagonal (e) pipe diameters shown in table are nominal pipe size. **∖(Тур.)**② Diagonal (e) (5)See Detail E (Typ.) See Detail B (Typ.) 6'-6" (5) A corner brace is required on each of the eight external corners of exterior See Detail B (Typ.) (Typ.) (2) and interior sections. See Standard Drawing E 802-SBTS-86 08 for (Typ.)(2) corner brace Detail E. Horizontal (c) (Typ.) Panel Length Panel Length $\overline{1}$ See Detail D See Detail D (1)(Тур.) (2) ъ e'-6" (Тур.) (2) Vertical Members Vertical Members Tube-to-Tube Tube-to-Tube Connection (Typ.) Interior Section Length Connection (Typ.) Exterior Section Length Vertical Vertical Diagonal (d) Diagonal (d) (Typ.) Added Column: (Typ.) MAX Horizontal Members Horizontal Members Vertical (b) SIGN Vertical (b) -00 Gusset Connection Gusset Connection HEIGHT (Typ.) (Typ.) Chord (a) (Typ.) Chord (a) (Typ.) (Typ.) See Detail C (Typ.)(2) (Typ.) See Detail C (Typ.)(2) TYPICAL EXTERIOR TRUSS SECTION TYPICAL INTERIOR TRUSS SECTION INDIANA DEPARTMENT OF TRANSPORTATION TRUSS MEMBERS, ALUMINUM END-SUPPORT MEMBERS, STEEL MAX. 10UNTING MAX. VERTICAL HORIZONTAL SUPPORTING SIGN BOX TRUSS STRUCTURE TRUSS MAX. CHORD VERTICAL HORIZONTAL ORIZONTAL DIAGONAL COLUMN HEIGHT SIGN BEAM DIAGONAL DIAGONAL TRUSS SECTIONS IN ISOMETRIC VIEWS, TYPE SPAN AREA a TABLE WITH MEMBER SIZES а b с d е h н DIA. THK SEPTEMBER 2013 2022 IN. SQ. FT. FT. FT. IN. IN. IN. IN. IN. IN. STANDARD DRAWING NO. E 802-SBTS-03 6.50 500 130 28'-6" 4.00 0.188 3.00 0.50 4.00 0.375 5.00 0.375 14.00 0.500 А 700 PEOLSTERED В 100 4.00 0.188 3.00 0.500 0.375 W 8 x 58 28'-6" 6.50 0.375 3.00 0.375 4.00 5.00 0.375 14.00 0.500 0.322or /s/ Alfredo B. Hanza 02/05/13 HSS 8" x 8" x 1/2" С 600 130 28'-6" 7.00 0.375 3.00 0.375 4.00 0.188 3.00 0.500 4.00 0.500 5.00 0.375 8.00 0.500 14.00 0.593 No. DESIGN STANDARDS ENGINEER DATE 60020657 D 900 100 28'-6" 7.00 0.375 3.00 0.375 4.00 0.188 3.00 0.500 4.00 0.500 5.00 0.375 8.00 18.00 0.500 STATE OF W 10 x 68 /s/ Mark A. Miller 03/27/13 TONAL ENG Е 130 3.00 4.00 0.250 3.00 0.500 4.00 0.500 5.00 0.375 8.00 0.593 18.00 0.562 28'-6" 7.00 0.500 0.375 800 or CHIEF ENGINEER DATE HSS 10" x 10" x 1/2"

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				1')	5 (34' THRU 8	TRUSSES	GN BOX	INS FOR SIG	DIMENSIC		
	INTERIOR SECTIONS NOTES:				R SECTIONS	EXTERIO		SPAN			
shall be the same length. The minimum	1. All panels on a truss shall be	SECTION	PANEL LENGTH	NO. OF PANELS PER SECTION	NO. OF INT. SECTIONS	SECTION LENGTH	PANEL LENGTH	VARIABLE END DIMEN.	NO. OF PANELS PER SECTION	NO. OF EXT. SECTIONS	SPAN-TRUSS LENGTH, (FT)
	length is 5'-0" and the maxir	ELNOIT	Lindini	FERSECTION	0	35'-6"	5'-6"	6"	6	1	34
					0	36'-6"	5'-8"	6"	6	1	35
on in a truss shall have an even number					0	18'-9"	5'-6"	6"	3	2	36
in of the vertical diagonals.	to maintain the pattern of th				0	19'-3"	5'-8"	6"	3	2	37
er of sections for each box truss structure	<ol><li>Use minimum number of ser</li></ol>				0	19'-9"	5'-10"	6"	3	2	38
mum section length at 36'-6".					0	20'-3"	6'-0"	6ª	3	2	39
06	•				0	20'-9"	6'-2"	6"	3	2	40
g E 802-SBTS-95 for required camber.	<ol><li>See Standard Drawing E 802</li></ol>				ŏ	21'-3"	6'-4"	6"	3	2	41
					0	21'-9"	6'-6"	6"	3	2	42
					0	22'-3"	5'-0"	6"	4	2	43
					0	22'-9"	5'-1 1/2"	6"	4	2	44
					0	23'-3"	5'-3"	6"	4	2	45
					0	23'-9"	5'-4 1/2"	6"	4	2	46
					0	24'-3"	5'-6"	6"	4	2	47
					0	24'-9"	5'-7 1/2"	6"	4	2	48
					0	25'-3"	5'-9"	6"	4	2	49
					0	25'-9"	5'-10 1/2"	6"	4	2	50
					0	26'-3"	6'-0"	6"	4	2	51
					0	26'-9"	6'-1 1/2"	6"	4	2	52
					0	27'-3"	6'-3"	6"	4	2	53
					0	27'-9"	6'-4 1/2"	6"	4	2	54
					0	28'-3"	6'-6"	6"	4	2	55
					0	28'-9"	5'-3 3/4"	5 1/4"	5	2	56
					0	29'-3"	5'-4 3/4"	6 1/4"	5	2	57
					0	29'-9"	5'-6"	6"	5	2	58
					0	30'-3"	5'-7 1/4"	5 3/4"	5	2	59
					0	30'-9"	5'- 8 1/2"	5 1/2"	5	2	60
					0	31'-3"	5'-9 1/2"	6 1/2"	5	2	61
					0	31'-9"	5'-10 3/4"	6 1/4"	5	2	62
					0	32'-3"	6'-0"	6"	5	2	63
PARTMENT OF TRANSPORTA	INDIANA DEPARTI				0	32'-9"	6'-1 1/4"	5 3/4"	5	2	64
					0	33'-3"	6'-2 1/2"	5 1/2"	5	2	65
BOX TRUSS STRUCTURE	SIGN BOX				0	33'-9"	6'-3 3/4"	5 1/4"	5	2	66
ABLE OF DIMENSIONS					0	34'-3"	6'-4 3/4"	6 1/4"	5	2	67
SPANS 34' THRU 81'		001.48	FL 48		0	34'-9"	6'-6"	6"	5	2	68
		23'-4"	5'-4"	4	1	23'-7"	5'-4"	6"	4	2	69
SEPTEMBER <del>2013 -</del> 2022	I SEP	23'-8"	5'-5"	4	1	23'-11"	5'-5"	6"	4	2	70
AWING NO. E 802-SBTS	CTANDARD DRAW	24'-0" 24'-4"	5'-6" 5'-7"	4	1	24'-3"	5'-6"	6"	4	2	71
	STANDARD DRAWIN		5'-7" 5'-8"	4	1	24'-7" 24'-11"	5'-7"	6" 6"	4	2	72
		24'-8"		4	1		5'-8"		4	2	73
	TEDO B. MA	25'-0" 25'-4"	5"-9" 5'-10"	4	1	25'-3" 25'-7"	5"-9"	6" 6"	4	2	74 75
1/6/ Alfredo B. Hanza		25'-4"	5'-10"	4		25-7"	5'-10"	6"		_	75
DESIGN STANDARDS ENGINEER	No.	25'-8"	5'-11" 6'-0"	4	1	25'-11" 26'-3"	5'-11" 6'-0"	6"	4	2	76
	<b>1</b> ( 60020657 ) <b>1</b>	26'-4"	6'-0"	4	1	26'-3"	6'-0"	6"	4	2	78
<u> </u>	TATE OF	26'-4"	6'-2"	4	1	26'-7"	6'-1"	6"	4	2	78
5 /s/ Mark A. Millor		25'-8"	6'-2"	4	1	26'-11" 27'-3"	6'-2" 6'-3"	6" 6"	4	2	79 80
CHIEF ENGINEER	SIONAL EN	27'-0"	6'-3" 6'-4"	4	1	27-3"	6'-3" 6'-4"	6" 6"	4	2	80

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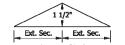
#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)

SPAN		EXTERIO	R SECTIONS		INTERIOR SECTIONS				
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	Section Length	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTIO
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8'
83	2	4	6ª	6'-6"	28'-3"	1	4	6'-6"	28'-0'
84	2	5	5 3/4"	5'-7 3/4"	30'-5 1/2"	1	4	5'-7 3/4"	24'-7'
85	2	5	6 1/2"	5'-8 1/2"	30'-10"	1	4	5'-8 1/2"	24'-10
86	2	5	5 1/2"	5'-9 1/2"	31'-2"	1	4	5'-9 1/2"	25'-2'
87	2	5	6 1/4"	5'-10 1/4"	31'-6 1/2"	1	4	5'-10 1/4"	25'-5'
88	2	5	7"	5'-11"	31'-11"	1	4	5'-11"	25'-8'
89	2	5	6"	6'-0"	32'-3"	1	4	6'-0"	26'-0'
90	2	5	6 3/4"	6'-0 3/4"	32'-7 1/2"	1	4	6'-0 3/4"	26'-3'
91	2	5	5 3/4"	6'-1 3/4"	32'-11 1/2"	1	4	6'-1 3/4"	26'-7'
92	2	5	6 1/2"	6'-2 1/2"	33'-4"	1	4	6'-2 1/2"	26'-10
93	2	5	5 1/2"	6'-3 1/2"	33'-8"	1	4	6'-3 1/2"	27'-2'
94	2	5	6 1/4"	6'-4 1/4"	34'-1/2"	1	4	6'-4 1/4"	27'-5'
95	2	5	5 1/4"	6'-5 1/4"	34'-4 1/2"	1	4	6'-5 1/4"	27'-9'
96	2	5	6"	6'-6"	34'-9"	1	4	6'-6"	28'-0'
97	2	4	6"	5'-7 1/2"	24'-9"	2	4	5'-7 1/2"	24'-6'
98	2	4	6"	5'-8 1/4"	25'-0"	2	4	5'-8 1/4"	24'-9'
99	2	4	6ª	5'-9"	25'-3"	2	4	5'-9"	25'-0'
100	2	4	6"	5'-9 3/4"	25'-6"	2	4	5'-9 3/4"	25'-3'
101	2	4	6"	5'-10 1/2"	25'-9"	2	4	5'-10 1/2"	25'-6'
102	2	4	6"	5'-11 1/4"	26'-0"	2	4	5'-11 1/4"	25'-9"
103	2	4	6"	6'-0"	26'-3"	2	4	6'-0"	26'-0'
104	2	4	6"	6'-0 3/4"	26'-6"	2	4	6'-0 3/4"	26'-3"
105 106	2	4 4	6" 6"	6'-1 1/2" 6'-2 1/4"	26'-9" 27'-0"	2	4	6'-1 1/2" 6'-2 1/4"	26'-6' 26'-9'
105	-	4	6"	6'-2 1/4" 6'-3"	27'-0"	2	4	6'-3"	20-9
107	2	4	6"	6'-3 3/4"	27-5	2	4	6'-3 3/4"	27-0
108	2	4	6"	6'-4 1/2"	27-0	2	4	6'-4 1/2"	27-5
110	2	4	6"	6'-5 1/4"	27-5	2	4	6'-5 1/4"	27-0
110	2	4	6"	6'-6"	28'-3"	2	4	6'-6"	27-9
112	2	5	6"	5'-3"	28'-5"	2	5	5'-3"	28'-3'
112	2	5	7"	5'-3 1/2"	28'-9 1/2"	2	5	5'-3 1/2"	28'-5 1/
113	2	5	5 1/2"	5'-4 1/4"	28'-11 3/4"	2	5	5'-4 1/4"	28-91/
115	2	5	6 1/2"	5'-4 3/4"	29'-3 1/4"	2	5	5'-4 3/4"	28'-11 3
116	2	5	7 1/2"	5'-5 1/4"	29'-6 3/4"	2	5	5'-5 1/4"	29'-2 1/
117	2	5	6"	5'-6"	29'-9"	2	5	5'-6"	29'-6'
118	2	5	7"	5'-6 1/2"	30'-0 1/2"	2	5	5'-6 1/2"	29'-8 1/
119	2	5	5 1/2"	5'-7 1/4"	30'-2 3/4"	2	5	5'-7 1/4"	30'-1/4
120	2	5	6 1/2"	5'-7 3/4"	30'-6 1/4"	2	5	5'-7 3/4"	30'-2 3/
121	2	5	7 1/2"	5'-8 1/4"	30'-9 3/4"	2	5	5'-8 1/4"	30'-5 1/
122	2	5	6"	5'-9"	31'-0"	2	5	5'-9"	30'-9'
123	2	5	7"	5'-9 1/2"	31'-3 1/2"	2	5	5'-9 1/2"	30'-11 1
1 <b>24</b>	2	5	5 1/2"	5'-10 1/4"	31'-5 3/4"	2	5	5'-10 1/4"	31'-3 1/
125	2	5	6 1/2"	5'-10 3/4"	31'-9 1/4"	2	5	5'-10 3/4"	31'-5 3/
126	2	5	7 1/2"	5'-11 1/4"	32' -0 3/4"	2	5	5'-11 1/4"	31'-8 1
127	2	5	6"	6'-0"	32'-3"	2	5	6'-0"	32'-0'
128	2	5	7"	6'-0 1/2"	32'-6 1/2"	2	5	6'-0 1/2"	32'-2 1/
129	2	5	5 1/2"	6'-1 1/4"	32'-8 3/4"	2	5	6'-1 1/4"	32'-6 1/
130	2	5	6 1/2"	6'-1 3/4"	33'-1/4"	2	5	6'-1 3/4"	32'-8 3

1. All panels on a truss shall be the same length. The minimum panel length is 5'-0" and the maximum is 6'-6". NOTES:

 X Camber diagrams for truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.

3. 2. See Standard Drawing E 802-SBTS-64 for additional notes.

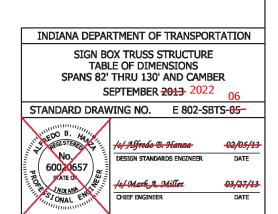


CAMBER DIAGRAM (2-Section Truss)

CAMBER DIAGRAM (3-Section Truss)



CAMBER DIAGRAM (4-Section Truss)

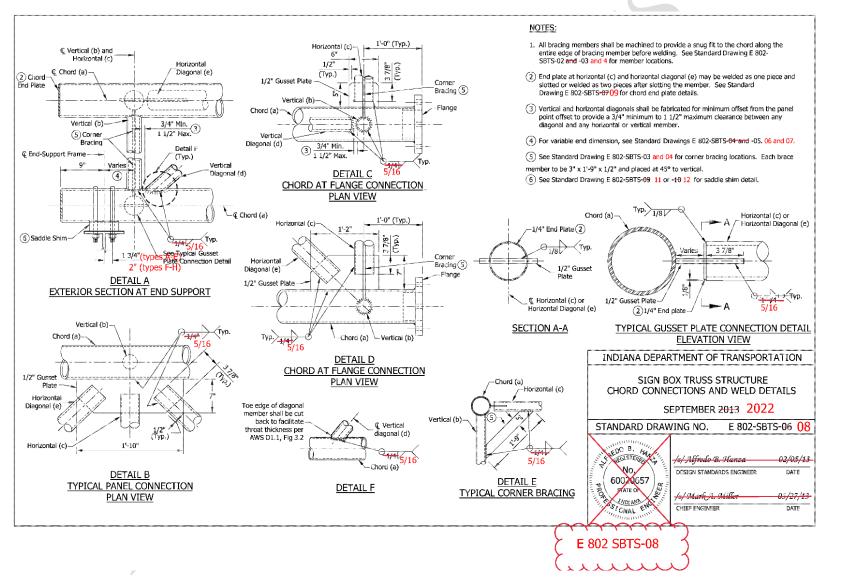


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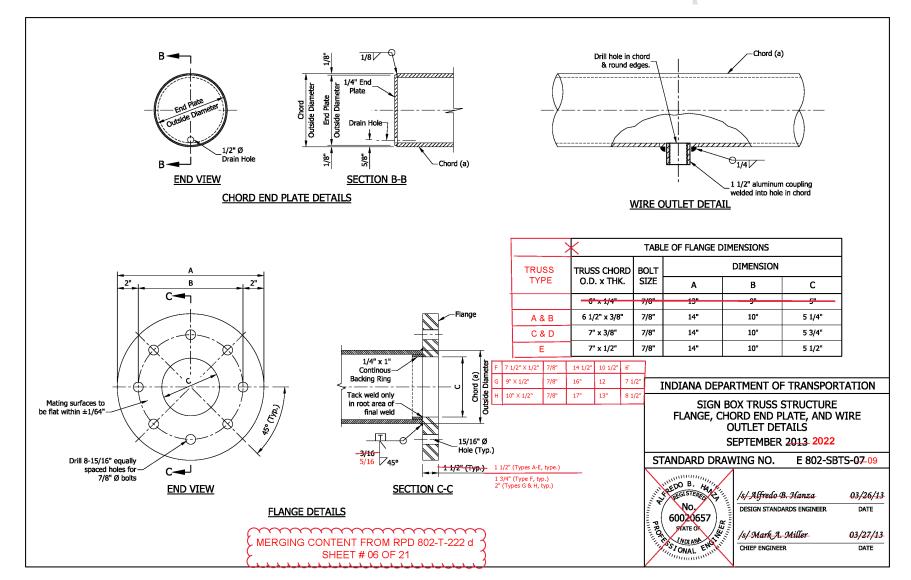
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111         DIMENSIONS FOR SIGN EQX TRUSSES (382)-TRR 154"         SPAN       MARTINESS											
SPAN         EXTERIOR SCIT         EXTERIOR SECTIONS         INTEGROR sectionsectionsecoconsections         Integror sections											<ol> <li>3. Z Use minimum number of sections for each box truss structure.</li> </ol>
DIMENSIONS FOR SIGN BOX TRUSSES (439-THRU 154")           INTERIOR SECTIONS           MANE TRUSS SECTIONS           INTERIOR SECTION           INTERIOR SECTION           INTERIOR SECTION           INTERIOR SECTION           INTERIOR SECTION           INTERIOR SECTION <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>131'</td> <td></td> <td></td> <td></td> <td></td>							131'				
SHAN LINE         EXTENDIS SECTIONS         EXTENDIS SECTIONS         EXTENDIS SECTIONS         A single intentor section in a trues shall have mumber of the vertical diagonals.         A. A single intentor section in a trues shall have mumber of the vertical diagonals.           133         2         5         0°-61/20         80.0000         10°-61/20		~~~~~	DIMENSIO	NS FOR SIG	fully supported at no-load conditions. Allowable camber tolerance for						
LINKER, (P)         SCILIONS         PEX SECTION         END of the section         End of the section         an even number of panels to maintain the patient of the vertical diagonals.           133         2         5         0°-6144         62.307         33°-0447         33°-6447         33°-6447         33°-6447         33°-6447         33°-6447         33°-6447         33°-6447         33°-647         33°-547	SPAN	EXTERIOR SECTIONS INTERIOR SECTIONS								· · · · · · · · · · · · · · · · · · ·	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$											
$\begin{array}{c c c c c c c c c c c c c c c c c c c $											
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	131		5	0" - 6 1/4"	6'-2 3/8"	33'-3 1/8"	2	5	6'-2 3/8"	32-11 7/8"	pattern of the vertical diagonals.
134       2       5       0° - 6 1/2°       6° - 1/2°       7° - 6 1/2°       6° - 1/2°       7° - 6 1/2°       6° - 1/2°       8° -1											
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$											
$ \frac{136}{137} = 2 \\ \frac{2}{5} \\ \frac{7}{6^{-6}} \\ \frac{7}{$											
138       2       6       0**070°       5*1130°       38*010°       2       5       5*1130°       31*070°         139       2       6       0**030°       5%120°       2       5       5*1130°       31*070°         140       2       6       0**0117°       38*010°       2       5       6*1130°       31*070°       1*10°       5*10°       2       5       6*1170°       31*10°       31*070°       5*10°       2       5       6*1130°       31*10°       5*10°       <	136	2	5	0" - 6 1/4"	6'-5 3/8"	34'-6 1/8"	2	5	6'-5 3/8"	34'-2 7/8"	
138       2       5       0'-0/0'       5'-11 4/0       1/4'-0/0'         139       2       6       0'-0/0'       5'-11 4/0       1/4'-0/0'       1/4'-0/0'         140       2       6       0'-0/0'       5'-11 4/0       1/4'-0/0'       1/4'-0/0'         141       2       6       0'-0/12'       8'-0/0'       2       5       6'-11' 22'-0/2'         142       2       6       0'-6/0'       2'-2-5       6'-1' 22'-0/2'       1/4''       1/1-5cc+       1											$\frac{3}{21/4^{11}}$ $\frac{3}{21/4^{11}}$ $\frac{3}{21/4^{11}}$
140         2         6         0* 61/2*         8' 61/2*         2         5         6 0 / 2* 2/2 / 2*         2         10*         2         2         5         6 0 / 2* 2/2 / 2*         10*         2         2         5         6 0 / 2* 2/2 / 2*         10*         2         5         6 0 / 2*         2         5         6 0 / 2*         2         5         6 0 / 2*         2         5         6 0 / 2*         2         5         6 0 / 2*         10*         32*         10*         10*         10*         10*											
141       2       6       0**7       6*17       38*10*       2       5       6*17       32*57         142       2       6       0**6 58*       6*156*       39*78*       2       5       6*126*       32*3 18*         143       2       6       0**6 58*       6*2 56*       39*78*       2       5       6*2 10*       32*10 59*         144       2       6       0**6 58*       6*2 56*       39*78*       2       5       6*2 10*       33*118*         145       2       6       0**6 34*       0*3 14*       2*       5       6*3 14*       33*118*         146       2       6       0**6 34*       0*3 14*       2*       5       6*3 38*       33*47       78*         148       2       6       0**6 78*       6*5 34*       30*37*       2       6       5*1138*       3*3*7       3*3*7         150       2       6       0**6*       6*1138*       3*3*7       3*3*7       3*3*7       3*3*7       3*3*7       3*3*7       3*3*7       3*3*7       3*3*7       3*3*7       5       6       6*11/2*       3*3*7       3*5*7       3*5*7       3*5*6       6       6*11/2*       <											Ext. Sec. Int. Sec. Int. Sec. Ext. Sec.
143       2       6       0* 6 10 e       92 4 3 e       122 0 5 e       122 0 5 e       123 1 10 e         144       2       6       0* 6 10 e       6* 23 e       39 1 0 3 4       2       5       6* 21 e       33 1 10 e         145       2       6       0* 6 10 e       6* 31 e       39 1 0 3 4       2       5       6* 31 e       33 6 3 1 e         166       2       6       0* 6 30 e       6* 30 e       2       5       6* 30 e       33 6 3 e         149       2       5       6* 30 e       33 e 3 e       34 2 a       6       0* 6 30 e       6* 30 e       34 2 a       6       5* 11 a       38 4 a       3* 2 a       6       5* 11 e       3* 2 a       6       5* 11 a       3* 3 a       3* 2 a       6       5* 11 a       3* 3 a       3* 2 a       6       5* 11 a       3* 3 a       3* 2 a       6       5* 11 a       3* 3 a       3* 2 a       6       6* 11 a       3* 4 a       3* 4       6       5* 11 a       3* 4 a       3* 4       6       5* 11 a       3* 4 a       5* 11 a       5* 11 a       3* 4 a		2	6								CAMBER DIAGRAM (4-Section Truss)
144       2       6       0* 7 1/6*       6* 25 (8*)       39 - 7 (6*)       37 - 1/6*       37 - 1/6*         145       2       6       0* - 6 1/4*       0* - 3 1/4*       92 - 7 (6*)       2       5       6* 25 (8*)       37 - 1 1/8*       37 - 4 1/8*       37 - 3 1/8*       38 - 3 1/8*       38 - 3 1/8*       38 - 3 1/8*       3			L								
145       2       6       0°-61/4°       6°-31/4°       3°-31/4°       2°       5       6°-31/4°       3°-41/4°         166       2       6       0°-67/6°       6°-31/4°       3°-31/4°       3°-41/4°       3°-41/4°       3°-41/4°         167       2       6       0°-57/6°       6°-31/6°       2       5       6°-31/6°       3°-67/3°       1°-71/2°       5°-13/6°       1°-71/2°       1°-71/2°       5°-13/6°       1°-71/2°       1°-71/2°       5°-13/6°       1°-71/2°       1°-71/2°       5°-13/6°       1°-71/2°       <											
146       2       6       0* - 6.3/4"       6* 33/4"       2* 2       5       6* 33/4"       33*6.3/4"         147       2       6       0* - 5.3/4"       6* 21/4"       2       5       6* 4.3/8"       33*6.3/4"         148       2       6       0* - 6.3/4"       6* 31/4"       4*0.3/8"       2* 5       6* 4.3/8"       39*0.3/8"         149       2       6       0* - 6.7/8"       6* 5.3/4"       34*0.3/8"       34*0.3/8"         149       2       6       0* - 6.7/8"       6* 5.3/4"       34*0.3/8"       34*0.3/8"         149       2       6       0* - 7.1/2"       5*11.3/8"       38*0.4"       2       6       5*11.3/8"       37*1.1/4"         151       2       6       0* - 6"       6'.1"       38*0"       2       6       6'.11/2"       38*0"         153       2       6       0* - 6"       6'.1"       39*0"       2       6       6'.11/2"       38*0"         154       2       6       0* - 6"       6'.1       39*0"       2       6       6'.1       12'       38'.6"         154       2       6       0* -1       12'       39*0"       2       6											
149       2       6       0°-6 3/8°       6'-4 /8°       2       5       6'-4 /8°       1'-6 3/8°       1'-6 3/8°       2       5       6'-4 /8°       1'-6 3/8°       1'-6 3/8°       1'-6 3/8°       1'-6 3/8°       3'-6 1/8       3'-8 1/4°       3''-8 1/4° </td <td></td> <td></td> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6'-3 3/4"</td> <td>33'-6 3/4"</td> <td></td>			6						6'-3 3/4"	33'-6 3/4"	
149       2       6       0° - 67/6°       6° - 53/6°       41 - 21/8°         150       2       6       0° - 71/2°       5° 113/6°       38° 0 3/4°       2       6       5° 113/6°       37° 114/4°         151       2       6       0° - 71/2°       5° 113/6°       38° 0 3/4°       2       6       5° 113/6°       37° 114/4°         152       2       6       0° - 6°       6° - 01/2°       38 - 6°       2       6       6° - 11/2°       38' - 6°         153       2       6       0° - 6°       6° - 11/2°       38' - 6°       2       6       6° - 11/2°       38' - 6°         154       2       6       0° - 6°       6° - 11/2°       39' - 9°       2       6       6' - 11/2°       38' - 9°         SIGN BOX TRUSS STRUCTURE       SIGN BOX TRUSS STRUCTURE       EXTENDED SPAN TABLE OF DIMENSIONS, SPANS 130° THRU 154' AND CAMBER       131'         EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20       -       -       -       802 T 222d         Sheet 04 of 21       -       -       -       -       -       -         4       0F 21 BECOMES 802 SBTS-07       -       4       0F 21 BECOMES 802 SBTS-07       -											
150       2       6       0" - 7 1/2"       5'-11 3/8"       38'-0 3/4"       2       6       5'-11 3/8"       37'-11 1/4"         151       2       6       0" - 7 1/2"       5'-11 3/8"       38'-3 3/4"       2       6       5'-11 7/8"       37'-11 1/4"         152       2       6       0" - 6"       6'-0 1/2"       38'-3"       2       6       6'-1 1/3"       38'-5"         153       2       6       0" - 6"       6'-1 1/2"       38'-5"       36'-6"       1/2"       38'-5"         154       2       6       0" - 6"       6'-1 1/2"       39'-9"       2       6       6'-1 1/2"       38'-9"         154       2       6       0" - 6"       6'-1 1/2"       39'-9"       2       6       6'-1 1/2"       38'-9"         SIGN BOX TRUSS STRUCTURE       EXENDED SPAN TABLE OF DIMENSIONS, SPAN TABLE OF DIMENSIONS, SPAN 13:0' THRU 154' AND CAMBER       131'         131'       EFFECTIVE FOR LETTINGS ON OR AFTER 03:01-20       RECURRING PLAN DETAIL NO.       802 T 222:d         Sheet-04 of -21       Sheet-04 of -21       4       OF 21 BECOMES 802 SBTS-07											
151       2       6       0° - 7 1/2°       5° 117/8°       38° 3/4°       2       6       5° - 117/8°       37° - 11 1/4°         152       2       6       0° - 6°       6° 1/2       38° 4°       2       6       6° - 11/2°       38° 4°         153       2       6       0° - 6°       6° 1/2       38° 4°       2       6       6° - 11/2°       38° 4°         154       2       6       0° - 6°       6° - 11/2°       39° 4°       2       6       6° - 11/2°       38° 4°         154       2       6       0° - 6°       6° - 11/2°       39° 4°       2       6       6° - 11/2°       38° 4°         154       2       6       0° - 6°       6° - 11/2°       38° 4°       38° 4°       SIGN BOX TRUSS STRUCTURE         EXTENDED SPAN TABLE OF DIMENSIONS, SPANS 130° THRU 154' AND CAMBER       131'       EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20         RECURRING PLAN DETAIL NO.       802 T 222d         Sheet 04 of 21         4 OF 21 BECOMES 802 SBTS-07											
153         2         6         0" - 6"         6'-1"         38'-9"         2         6         5'-1"         38'-9"           154         2         6         0" - 6"         6'-1 1/2"         39'-0"         2         6         6'-1 1/2"         38'-9"         SIGN BOX TRUSS STRUCTURE           EXTENDED SPAN TABLE OF DIMENSIONS, SPANS 130' THRU 154' AND CAMBER 131'         EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20         Sheet 04 of 21           RECURRING PLAN DETAIL NO.         802 T 222d         Sheet 04 of 21         Sheet 04 of 21           4 OF 21 BECOMES 802 SBTS-07         4         OF 21 BECOMES 802 SBTS-07         Sheet 04 of 21		2	6		5' 11 7/8"	38'-3 3/4"	2	6	5'-11 7/8"	37'-11 1/4"	
154       2       6       0" - 6"       6'-1 1/2"       39'-0"       2       6       6'-1 1/2"       38'-9"         SIGN BOX TRUSS STRUCTURE EXTENDED SPAN TABLE OF DIMENSIONS, SPANS 130' THRU 154' AND CAMBER 131'       SIGN BOX TRUSS STRUCTURE EXTENDED SPAN TABLE OF DIMENSIONS, SPANS 130' THRU 154' AND CAMBER 131'         EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20         RECURRING PLAN DETAIL NO.       802 T 222d         Sheet 04 of -21         4 OF 21 BECOMES 802 SBTS-07											INDIANA DEPARTMENT OF TRANSPORTATION
SIGN BOX TRUSS STRUCTURE EXTENDED SPAN TABLE OF DIMENSIONS, SPANS 1:30' THRU 1:54' AND CAMBER 1:31' EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20 RECURRING PLAN DETAIL NO. 802 T 222d Sheet 01 of 21 4 OF 21 BECOMES 802 SBTS-07											
RECURRING PLAN DETAIL NO. 802 T 222d Sheet 01 of 21 4 OF 21 BECOMES 802 SBTS-07		1	L		1			L	<u></u>		EXTENDED SPAN TABLE OF DIMENSIONS, SPANS <del>130'</del> THRU 154' AND CAMBER 131'
											RECURRING PLAN DETAIL NO. 802 T 222d Sheet 04 of 21

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

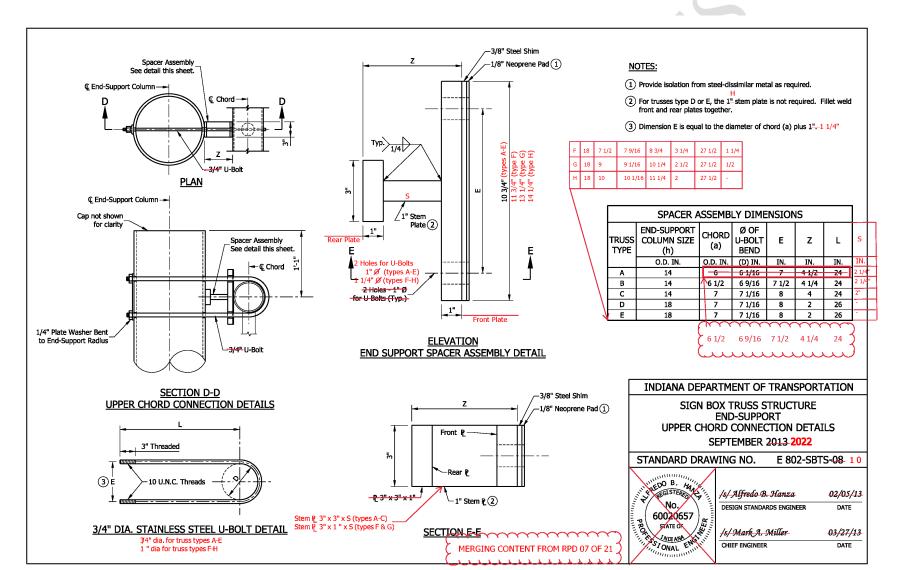


#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) Chord (a) B⊲− 1/8 Drill Hole in Chord 2 & Round Edges 1/4" End Chord Outside Diameter Plate End Plate tside Diame End Drain Hole 3 ±\_ mm 1/2" Ø 1/8" 5/8" Drain Hole <sup>O</sup>1/4V Chord (a) B≪⊐ END VIEW SECTION B-B 1 1/2" Aluminum Coupling Welded into Hole in Chord CHORD END PLATE DETAILS WIRE OUTLET DETAIL TABLE OF FLANGE DIMENSIONS DIMENSION BOLT в TRUSS TRUSS CHORD 2' TYPE O.D. x THK. SIZE C-C D А В F 7" x 1/2" 14" 10" 5 1/2" 1 3/4" 7/8" Flange 6" 2" G 7 1/2" x 1/2" 7/8" 14 1/2" 10 1/2" н 9" x 1/2" 7/8" 16" 12" 7 1/2" 2" 1/4" x 1" Continous-Chord (a) Backing Ring INDIANA DEPARTMENT OF TRANSPORTATION Tack Weld Only Mating Surfaces to in Root Area of be Flat Within Ê Final Weld ±1/64" SIGN BOX TRUSS STRUCTURE 320 EXTENDED SPAN FLANGE, Ţ 15/16" Ø CHORD END PLATE, AND WIRE OUTLET DETAILS Hole (typ.) 5/16" Drill 8-15/16" Equally 745° Spaced Holes for Dimension D C⊲J 7/8" Ø Bolts EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20 END VIEW SECTION C-C FLANGE DETAILS RECURRING PLAN DETAIL NO. 802-T-222d Sheet 06 of 21 $\sim$ MERGING RPD WITH 802-SBTS-09

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

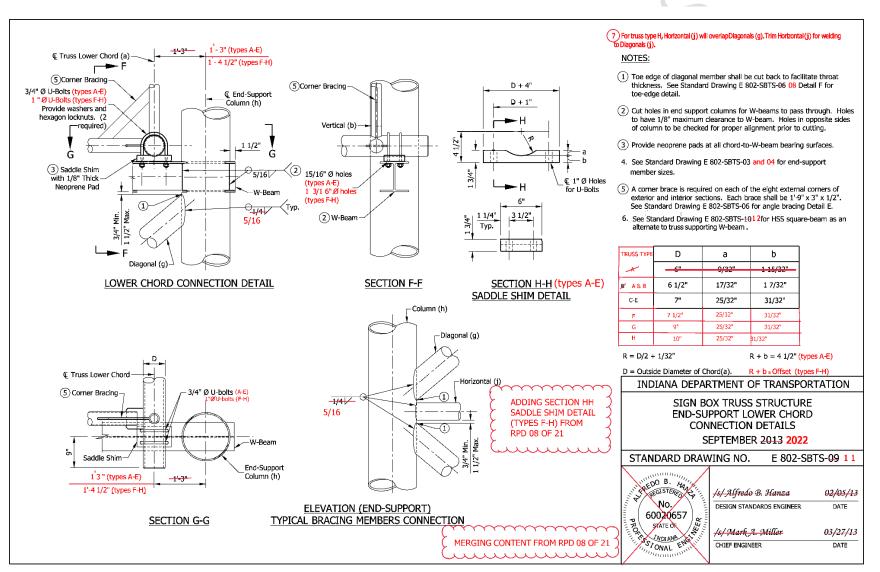


#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

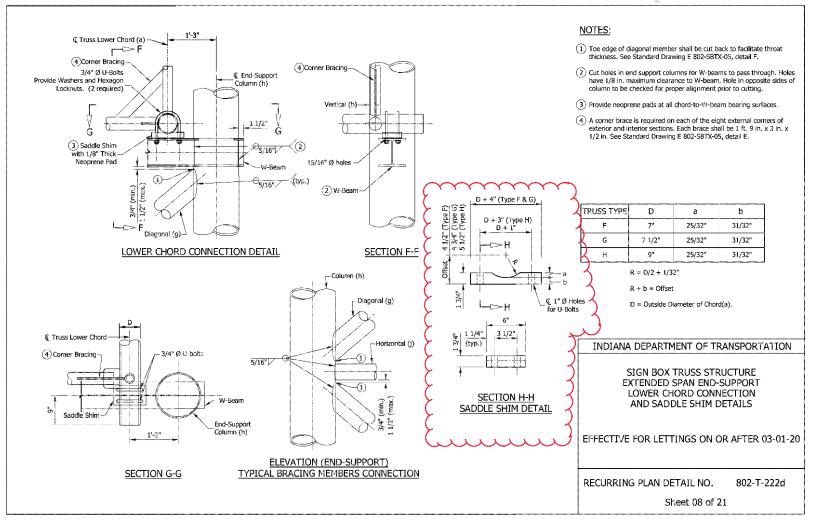
#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) Spacer Assembly -3/8" Steel Shim NOTES: € End-Support Column ----1/8" Neoprene Pad (1) (1) Provide isolation from steel-dissimilar metal as required. 征 Chord -2 For trusses, type F, the 1 in. stem plate is not required. Fillet weld front and rear plates together. Spacer assembly is not required for Truss Type G & H. (3) Dimension E is equal to the diameter of chord (a) plus 1 in. Тур -3/4" U-Bolt PLAN 10 3/4" (Type F & G) 12 3/4" (Type H) € End-Support Column ---Cap Not Shown for Clarity 1" Stem SPACER ASSEMBLY DIMENSIONS Plate 2 1" Spacer Assembly ØOF END-SUPPORT CHORD U-BOLT TRUSS E E - Chord COLUMN SIZE O. D. Ε Ζ L BEND TYPE I. 0.D (h) (a) (D) 7" F 18" 7 1/16" 8" 2" 26" 2 Holes - 1" Ø G 18" 7 9/16" 8 1/2" 1 3/4" 26" 7 1/2" for U-Bolts (Typ.) н 18" 9" 9 1/16" 10" 1" 26" 1" Ť 1/4" Plate Washer Bent to End-Support Radius -3/4" U-Boit ELEVATION END SUPPORT SPACER ASSEMBLY DETAIL SECTION D-D INDIANA DEPARTMENT OF TRANSPORTATION -3/8" Steel Shim UPPER CHORD CONNECTION DETAILS 1/8" Neoprene Pad (1) SIGN BOX TRUSS STRUCTURE Front R EXTENDED SPAN END-SUPPORT 3" Threaded UPPER CHORD CONNECTION DETAILS mum -Rear P 3 10 U.N.C. Threads EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20 ₽\_3" × 3" × 1"-└\_1" Stem ₽ (2) 3/4" DIA. STAINLESS STEEL U-BOLT DETAIL SECTION E-E RECURRING PLAN DETAIL NO. 802-T-222d Sheet 07 of 21 MERGING RPD WITH 802 SBTS-10

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#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

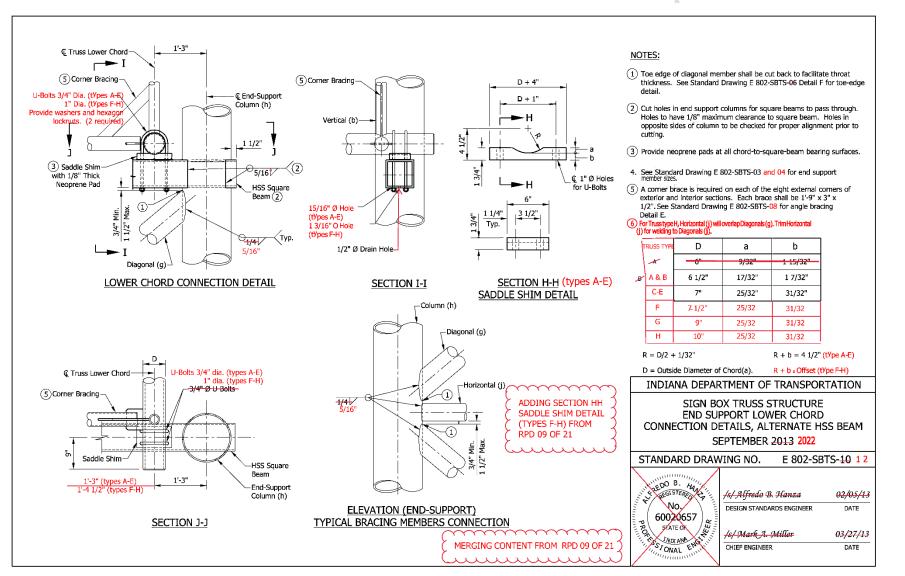


#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



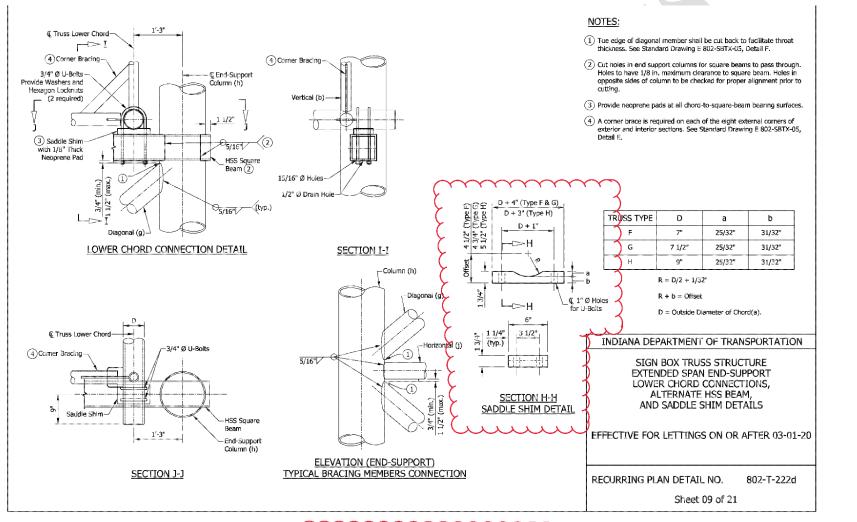


## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



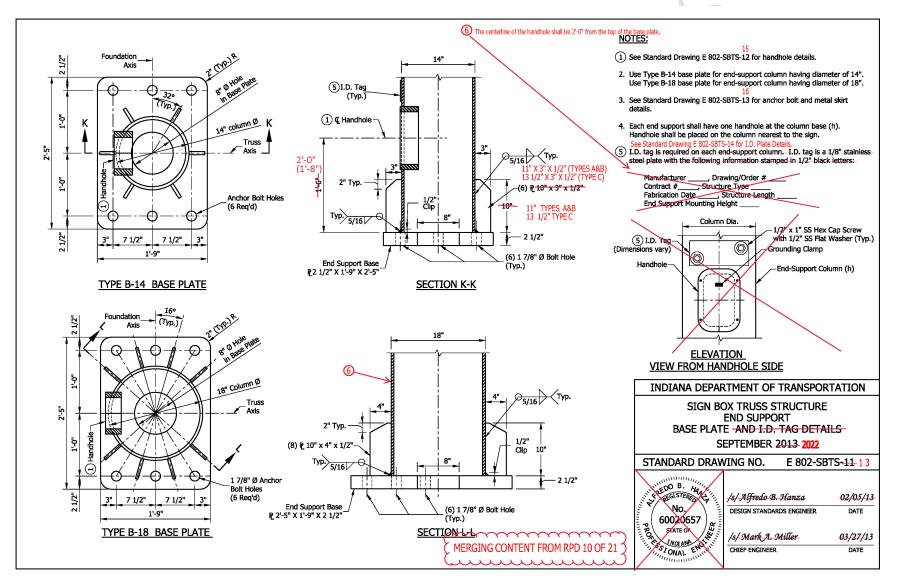
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

## E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



MERGING RPD WITH 802-SBTS-12

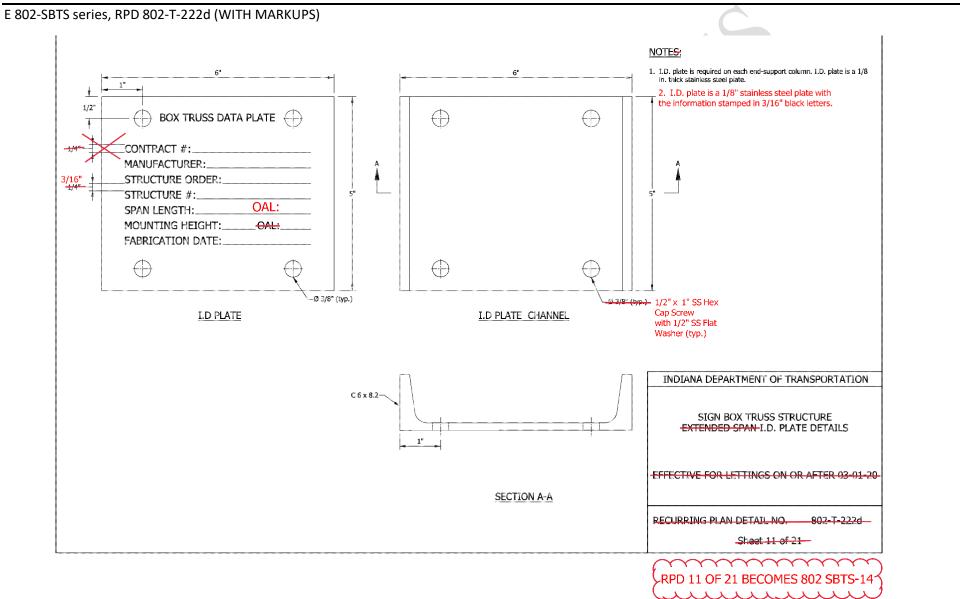
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



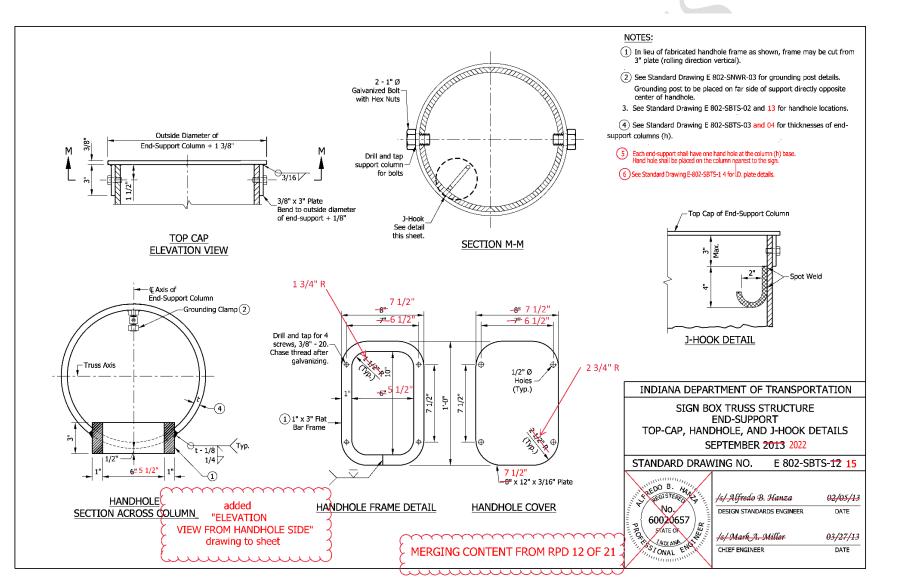
#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) NOTES: \* [19]P.) R Foundation 1/2 14" Axis Type B 11 base plate for end support iumn diameter of 14 in. B" @ Hole •Type B-18 base plate for end-support column diameter of 18 in. I.D. Plate 4î 320 (Typ.) (Typ.) "-0" 14" Column Ø ⊈ Handhole – K \_\_\_\_\_ Axis ĩ٥ Ň "-0" 1'-6" 2" (typ.) -(6) 🛯 10" x 3" x 1/2" Anchor Bolt Holes 1/2" Clip (6 Req'd) 10 (t/p.) 5/16 2' 2 1/2" 2 1/2" 3″ 7 1/2" 7 1/2" 3" 1'-9" (6) 1 7/8" Ø Bolt Hole End-Support Base ₽2 1/2" X 1'-9" X 2'-5" (typ.) TYPE B-14 BASE PLATE SECTION K-K 16º . mp.)R Foundation 2 1/2" (typ.) Axis 18<sup>n</sup> 8" O Hole 18" Column Ø -0-1 INDIANA DEPARTMENT OF TRANSPORTATION · 5/16 ⊢∕(typ.) Truss Axis 2'-5" 2" (typ.) SIGN BOX TRUSS STRUCTURE mi Handhole-2 1/2" EXTENDED SPAN END-SUPPORT BASE PLATE (8) ₽ 10" x 4" x 1/2 Clip 10" (typ.) 8" P. ക €4 1 7/8" Ø Anchor 2 1/2" Bolt Holes EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20 2 1/2" (6 Req'd) 7 1/2" 3" 7 1/2" 3' End-Support Base (6) 1 7/8" Ø Bolt Hole 1'-9" ₽ 2 1/2" X 1'-9" X 2'-5" (typ.) TYPE B-18 BASE PLATE SECTION L-L RECURRING PLAN DETAIL NO. 802-T-222d Sheet 10 of 21

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

#### **MERGING RPD WITH 802-SBTS-13**



## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



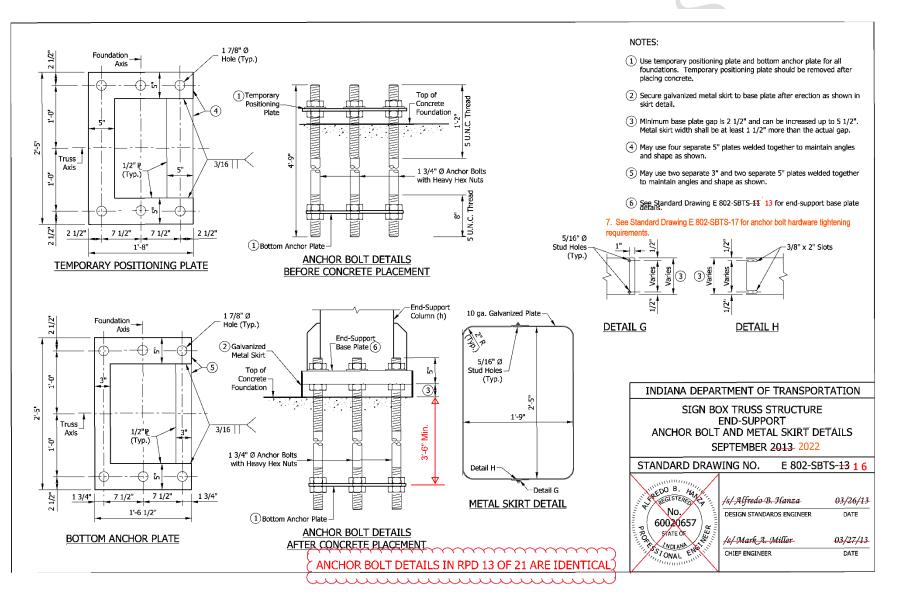
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)  $\gamma\gamma\gamma$ 6" TITIT NOTES: 2 - 1" Ø Galvanized Bolt -Column Ø  $(\widehat{1})$  In lieu of fabricatied handhole frame as shown, frame may be cut from with Hex Nuts 3 in. plate (rolling direction vertical). <(S-14 (typ.) 3/16" (2) See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post to be placed on far side of support directly opposite center of handhole. (3) See Standard Drawing E 802-SBTX-03 for thickness of end-support Drill and Tap I.D. Plate 1/2" x 1" SS Hex Cap Serew columns (h). Support Columnwith 1/2" SS Flat Washer (tvp.) for Bolts (4) Each end-support shall have one handhole at the column (h) base. 31 Handhole Handhole shall be placed on the column nearest to the sign. ± -End-Support Column J-Hook Fop Cap of End-Support Column -Grounding Clamp SECTION M-M max. ELEVATION Outside Ø of 2" -Spot Weld 3/8" End-Support Column + 1 3/8" VIEW FROM HANDHOLE SIDE Μ М Λ 儲 <sup>0</sup>3/16 / 3/8" x 3" Plate J-HOOK DETAIL Bend to Outside Ø of End-Support + 1/8" - ∉Axis of End-Support Column TOP CAP Grounding Clamp(2) 8' 8 TH ELEVATION VIEW ۲ 7" Drill and tap for 4 screws, 3/8" - 20.-INDIANA DEPARTMENT OF TRANSPORTATION Chase thread after galvanizing. -Truss Axis T 1 1/2" Ø SIGN BOX TRUSS STRUCTURE Holes -(typ.) EXTENDED SPAN END-SUPPORT 6' 7 1/2" 1/2 9 TOP CAP, HANDHOLE, AND J-HOOK DETAILS 3 (1)1" x 3" Flat Bar Frame 50 EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20 ---((typ.) 1/8 | 1/2" -6" 1' (1) -8" x 12" x 3/16" Plate 802-T-222d RECURRING PLAN DETAIL NO. HANDHOLE HANDHOLE FRAME DETAIL HANDHOLE COVER SECTION ACROSS COLUMN Sheet 12 of 21

802-SBTS-15

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## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

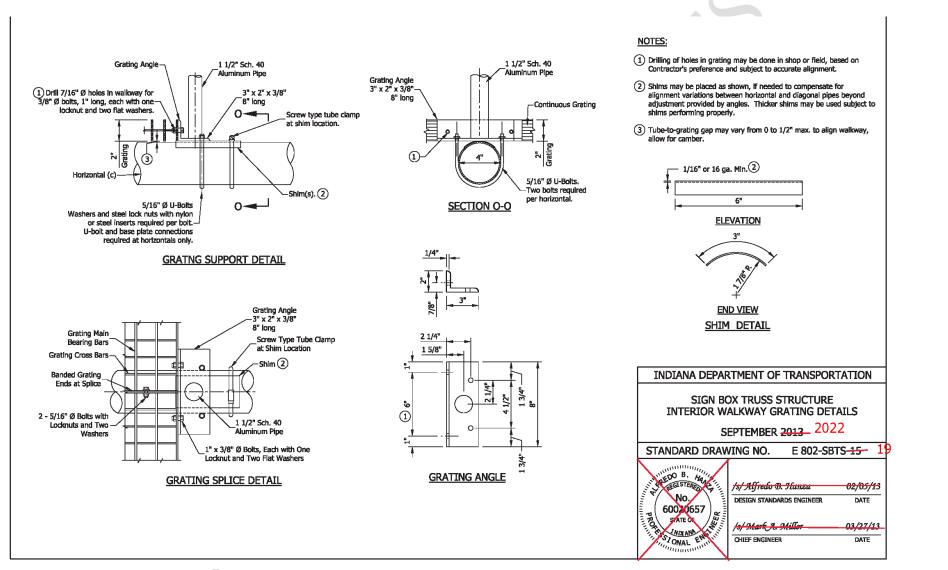
#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) 1 7/8" Ø NOTES: /2 Foundation Hole (typ.) Axis (1) Use temporary positioning plate and bottom anchor plate for all foundations. Temporary positioning plate should be removed after ⊕ - To placing concrete. NULL (1)Temporary Top of (2) Minimum base plate gap is 2 1/2 in. and can be increased up to 5 1/2 in. Metal skirt width shall be at least 1 1/2 in. more than the actual gap. Positioning Concrete 1,-0" ų. Plate 41 Foundation (3) May use four separate 5 in. plates welded together to maintain angles Ŀ and shape as shown. ō, Truss 5 3/16 1/2"P $(\overline{4})$ May use two separate 3 in. and two separate 5 in. plates welded Axis 5" 1 3/4" Ø Anchor Bolts (typ.) together to maintain angles and shape as shown. 1-0. with Heavy Hex Nuts U.N.C. Three ()-₽ $\odot$ õ TIM 1/2" 2 1/2" 7 1/2" 7 1/2" 2 1/2" 5/16" Ø N 1)Bottom Anchor Plate-Stud Holes 3/8" x 2" Slots 1'-8" (Typ.) ANCHOR BOLT DETAILS TEMPORARY POSITIONING PLATE BEFORE CONCRETE PLACEMENT /aries (2)(2 1/2" 2 - End-Support 10 ga. Gaivanized Plate -1 7/8" Ø Column (h) ŗ, Foundation Hole (typ.) DETAIL G DETAIL H Axis NO PI End-Support Galvanized Base Plate đ Metal Skirt 5/16" Ø Top of Stud Holes-Īc Concrete ç (typ.) Foundation 2 INDIANA DEPARTMENT OF TRANSPORTATION ξņ ÷. 5 THUN T NUMN 1'-9" Truss SIGN BOX TRUSS STRUCTURE 3/16 || < 3" Axis 1/2"₽ (typ.) EXTENDED SPAN END-SUPPORT 2 1'-0" ANCHOR BOLT AND METAL SKIRT DETAILS 1 3/4" Ø Anchor Bolts with Heavy Hex Nuts Detail H -Detail G 111 LI EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20 1 3/4" | 1/2"7 1/2" 7 1/2" 1 3/4" 11111 TITIT METAL SKIRT DETAIL 2 1'-6 1/2" (1)Bottom Anchor Plate-ANCHOR BOLT DETAILS BOTTOM ANCHOR PLATE RECURRING PLAN DETAIL NO. 802-T-222d AFTER CONCRETE PLACEMENT Sheet 13 of 21

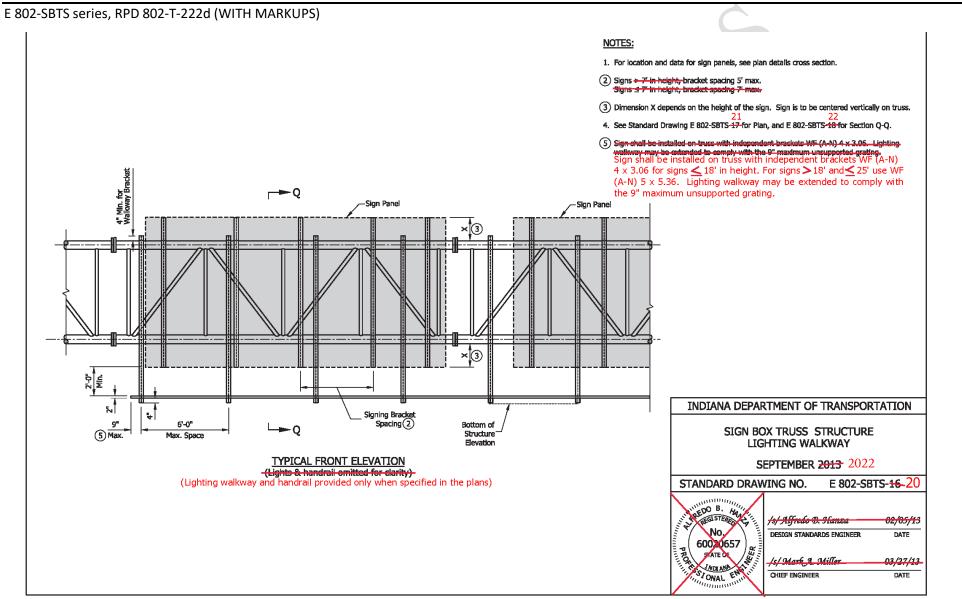
MERGING CONTENT WITH 802-SBTS-16

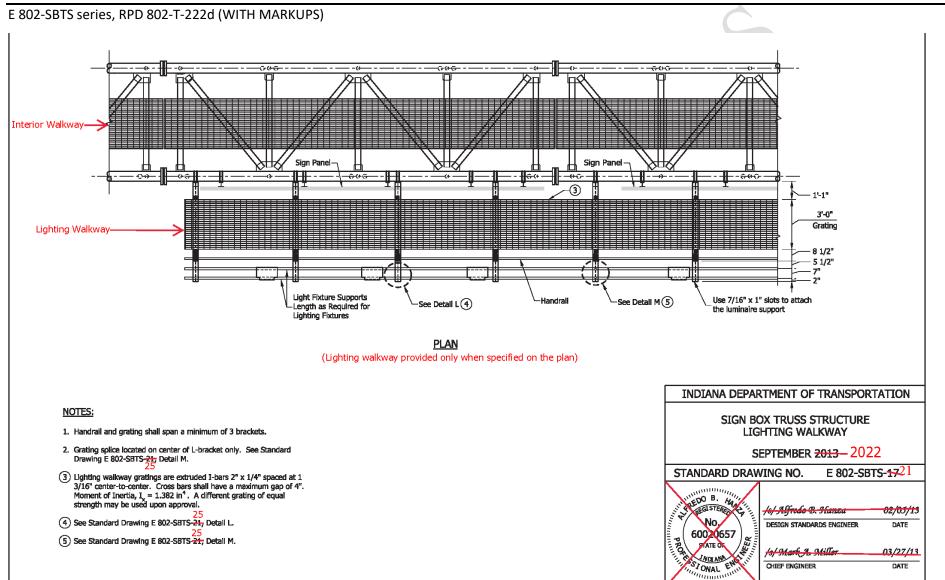
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#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) C Grating Splice - Chord Splice - Chord Splice NOTES: as Required ----- N 1. Interior walkway gratings shall be extruded I-bars 2" x 1/4" x 1 3/16" center-to-center. Cross bars shall have a maximum gap of 4<sup>n</sup>. Moment of Inertia, $I_x = 1.382 \text{ in}^4$ . A different grating of equal strength may be used upon approval. Walkway grating width is nominal and may vary ±1/2" based on available standard widths. (3) Interior walkway gratings can be spliced on center of any horizontal truss member as needed. See Standard Drawing E 802-SBTS-15 for ₅⊩৵ typical interior walkway grating splice detail. 4. Interior walkway grating shall run the full length, center-to-center, of └**→** N Splice (3) 1/2" Maximum 1/2" Maximum end-support truss members plus 9" at each end. Gap (Typ.) Gap (Typ.) (5) For drain hole details see Standard Drawing WALKWAY GRATING PLAN E 802-SBTS-23. 5/16" 💋 Stainless C Truss and Truss Grating Steel U-Bolt Chord Splice 11 3/4" 11 3/4" T Connection 5/16" Eye-Bolt 1 1/2" Ø x Sch. 40 ∂<mark>3/16</mark>√ (typ.) w/Two Nuts-Spring Aluminum Pipe-1/2" & Washers Snap Continuous over Posts Cross Connection • C Truss and Sign 7 INDIANA DEPARTMENT OF TRANSPORTATION 1 1/2" Ø Sch. 40 (typ.) -3/16" Chain 3/16 9 Aluminum Pipe 3'- 1/8' SIGN BOX TRUSS STRUCTURE (2) Sign Panel INTERIOR WALKWAY GRATING DETAILS Hand Rall Grating Angle Bottom Horizontal SEPTEMBER 2013 2022 Truss Member 5/16" Ø Stainless Steel Aluminum STANDARD DRAWING NO. E 802-SBTS-1418 U-Bolt w/ Locknut Grating annin ann TYPICAL HANDRAIL DETAIL SECTION N-N THE DO B. HAN REGISTERED /s/ Alfredo B. Hanza 02/05/13 No. DESIGN STANDARDS ENGINEER DATE 60020657 STATE OF /s/ Mark A Miller 03/27/13 SI ONAL EN CHIEF ENGINEER DATE nin in

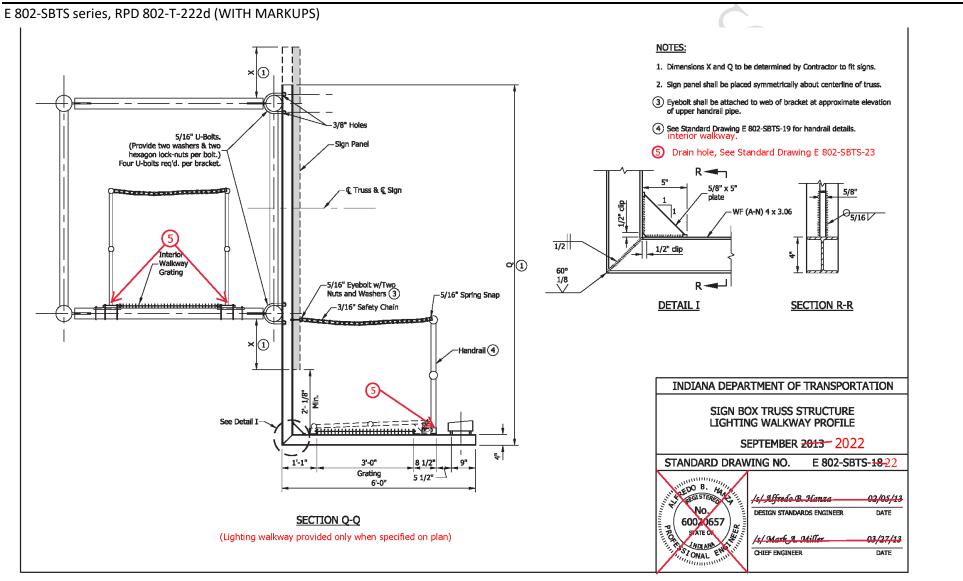
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

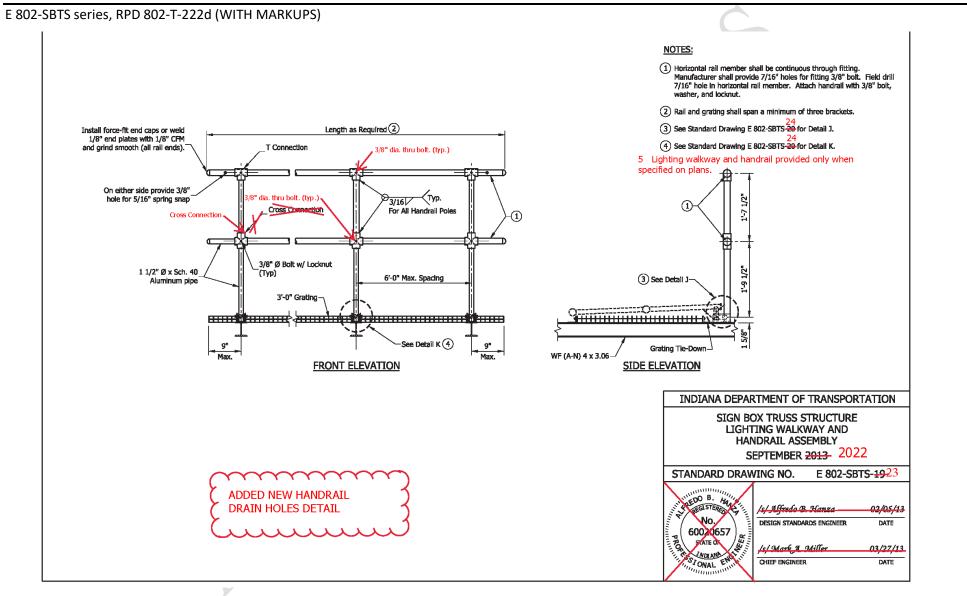


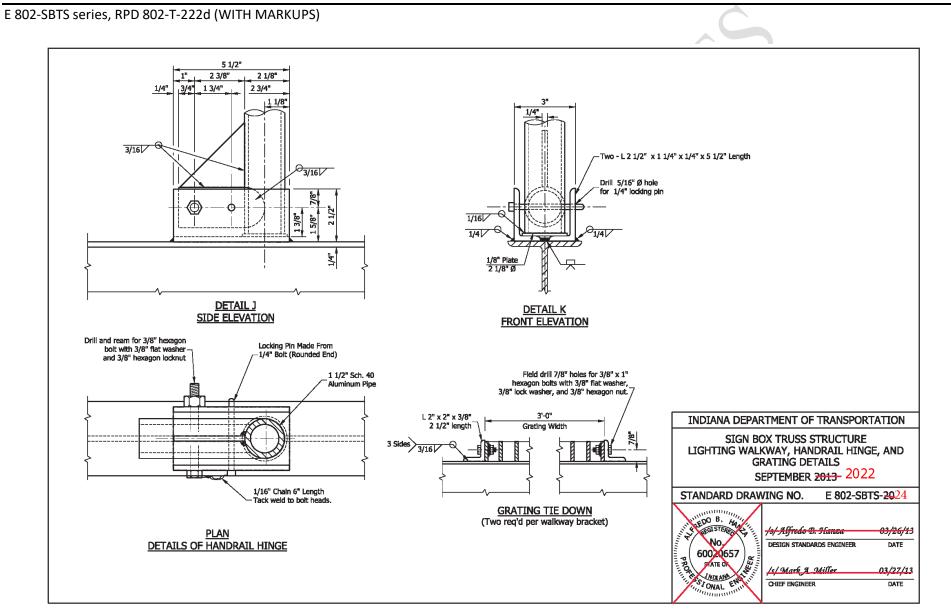




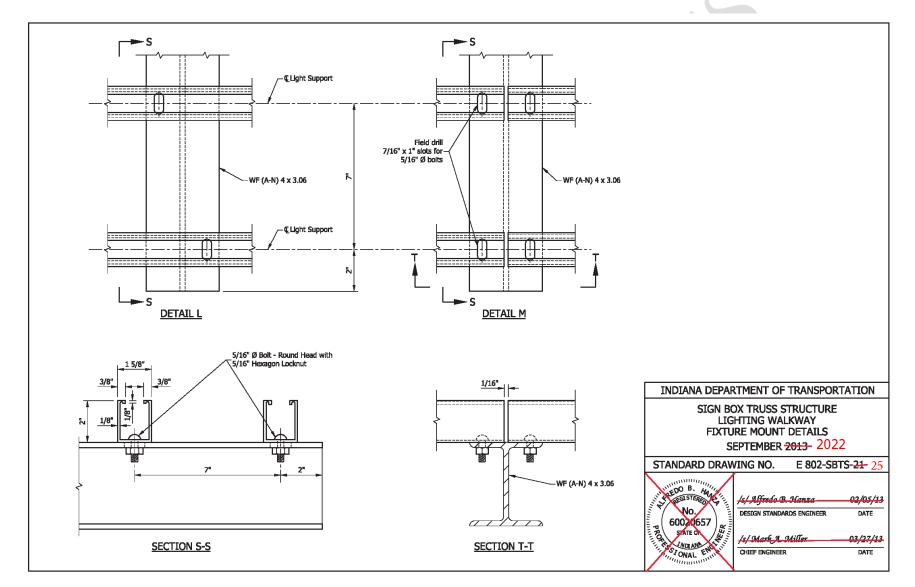
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS





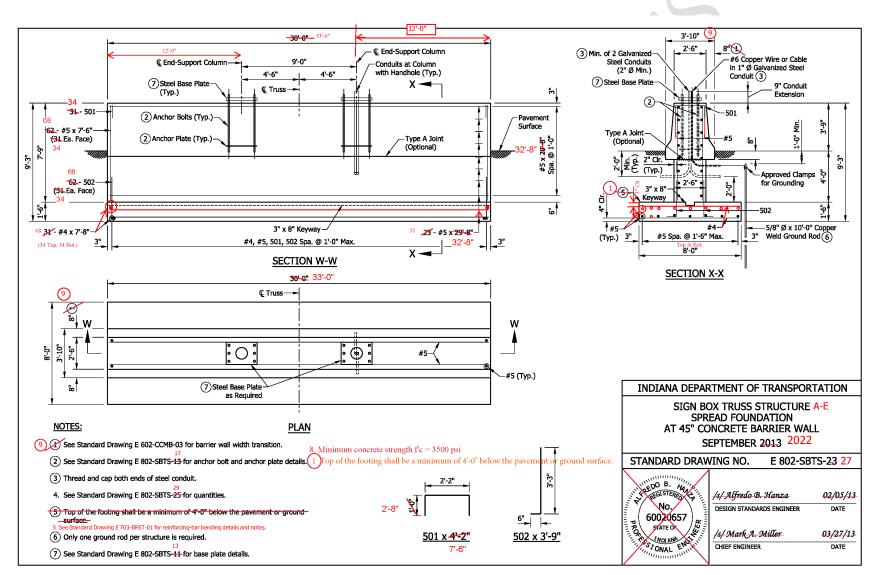


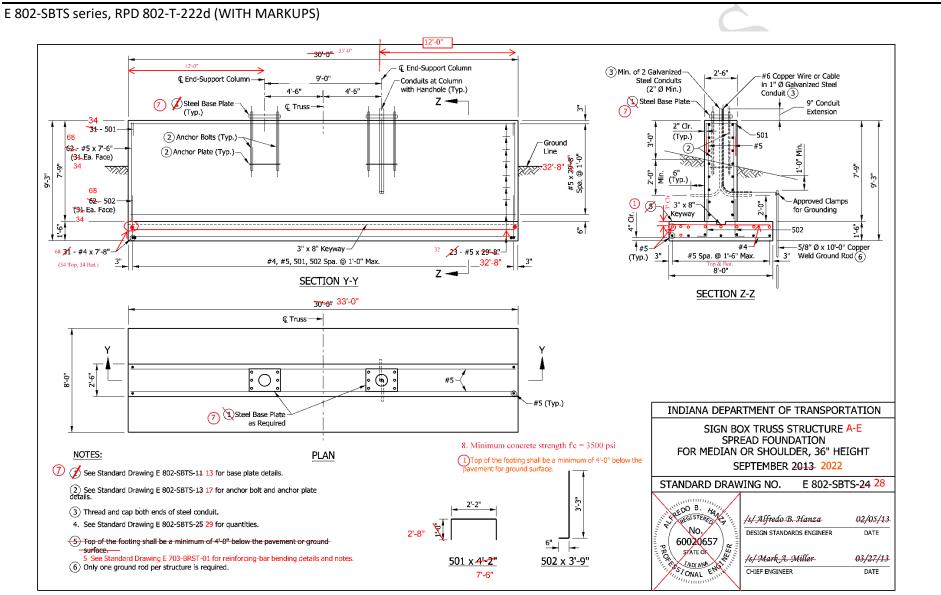
## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) 12'-0" 3'-8" 12'-0 2'-6" 7"(1) - @ End-Support Column (3) Min. of 2 Galvanized --#6 Copper Wire or Cable in 1" Ø Galvanized Steel C End-Support Column-9'-0" Conduits at Column Steel Conduits (2" Ø Min.) 4'-6" 4'-6" with Handhole (Typ.) Conduit (3) (7) Steel Base Plate V 🔫 9" Conduit (7) Steel Base Plate € Truss--Ē Extension (Typ.) - 501 -Pavement 501 Ξi. Type A Joint-Surface 34 õ x 29-8" @ 1'-0" (Optional) (2) Anchor Bolts (Typ.)-ק <mark>68</mark> Type A Joint \*\*\*\*\* m 62- #5 x 6'-6"-34 (31-Ea. Face) #5 x Spa. ( (Optional) (2) Anchor Plate (Typ.) – τά -Approved Clamps 0 68 -62 - 502 for Grounding 3" x 8 1 5 (31 Ea. Face) Kevwav b 1.6 5 ÷ -502 #5 #4--5/8" Ø x 10'-0" Copper 3" x 8" Keyway -68 🏄 - #4 x 7'-8' 30 21 - #5 x 29-8" (Typ.) 3" #5 Spa. @ 1'-6" Max. 3" Weld Ground Rod (6) (34 Top, 34 Bot.) #4, #5, 501, 502 Spa. @ 1'-0" Max. 32'-8" \_\_\_\_3" 3" 8'-0" V ----SECTION U-U SECTION V-V 30-0" 33'-0" 🖉 Truss — 🛏 ĸ U U ŝ Ο -0-.8 #5⊸ -#5 (Typ.) (7)Steel Base Plate as Required INDIANA DEPARTMENT OF TRANSPORTATION SIGN BOX TRUSS STRUCTURE A-E PLAN SPREAD FOUNDATION NOTES: 8. Minimum concrete strength fc = 3500 psi AT 33" CONCRETE BARRIER WALL (9) 🔇 See Standard Drawing E 602-CCMB-03 for barrier wall width transition. (1)Top of the footing shall be a minimum of 4'-0" below the pavement for ground surface. SEPTEMBER 2013 2022 (2) See Standard Drawing E 802-SBTS-13 17 for anchor bolt and anchor plate STANDARD DRAWING NO. E 802-SBTS-22 26 details. Thread and cap both ends of steel conduit. See Standard Drawing E 802-SBTS-25 29 for quantities. 2'-2" PEDO B. HAN 02/05/13 /s/ Alfredo B. Hanza (5) Top of the footing shall be a minimum of 4-0" below the pavement or ground-2'-8" No. DESIGN STANDARDS ENGINEER DATE -surface. 5 See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes. 60020657 6" MATE OF HE STATE PRO $\fbox{6}$ Only one ground rod per structure is required. /s/ Mark A. Miller 502 x 3'-9" 03/27/13 501 x 4'-2" (7) See Standard Drawing E 802-SBTS-11 13 for base plate CHIEF ENGINEER DATE 7'-6" detail.

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS





## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

# E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)

	SPREAD FO		
AT 33	CONCRETE	BARKIER	WALL
EPOXY-0	COATED RE	INFORCIN	g bars
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	<del>31</del> 34	<del>4' 2"</del>	7'-6"
502	<del>62</del> 68	3'-9"	
#5	<del>62</del> 68	6'-6"	
#5	- <del>21</del> 30	<del>-29'-8"</del>	2015
Total #5		32'-8"	-1447-LBS
#4	<del>31</del> 68	7'-8"	348
Total #4			-159 LBS
Total Epoxy-Coated Reinforcing Bars			-1606 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			<sup>39.8</sup> - 35.8 CYS
MISCELLANEOUS			
Surface Seal			<del>27.6</del> SYS

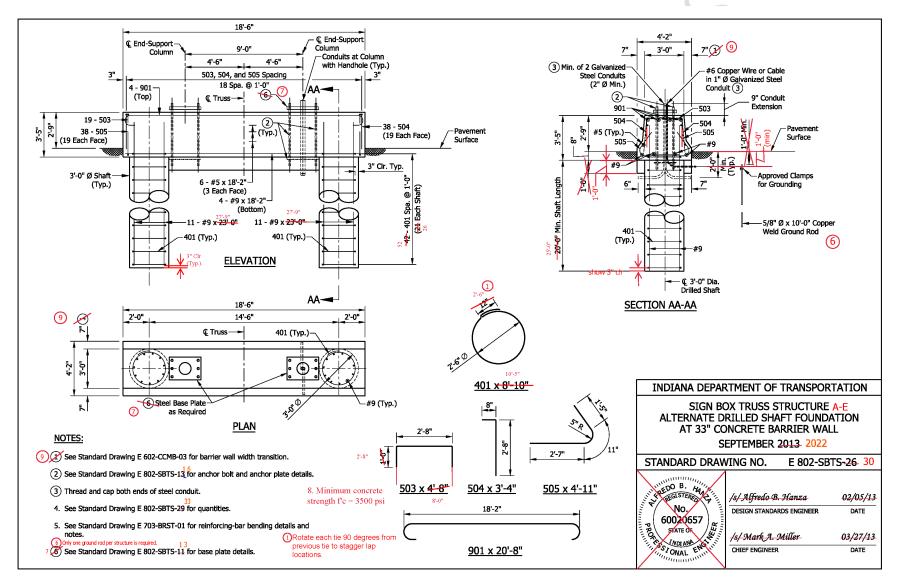
SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL				
AT 45	CUNCRETE	BARRIER	WALL	
EPOXY-0	COATED RE	INFORCIN	g bars	
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
501	<del>31</del> 34	41.2"	7'-6"	
502	<del>62</del> 68	3'-9"		
#5	<del>62</del> 68	7'-6"		
#5	-23- 32	<del>-29'-8"</del>	2154	
Total #5	1574 LBS			
#4	#4 <del>31</del> 68 7'-8"			
Total #4	-159 LBS			
Total Epoxy-Co Reinforcing Bar	<sup>2502</sup> <del>1733</del> LBS			
CONCRETE, CLASS A				
Total Concrete, Class A			-37.6 CYS	
MISCELLANEOUS				
Surface Seal			- 34.3 SYS	
			37.8	

-	SPREAD FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-0	COATED RE		g Bars	
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
501	- <del>31</del> 34	4-2"	7'-6"	
502	<del>62</del> 68	3'-9"		
#5	<del>- 62</del> 68	7'-6"		
#5	<del>23</del> 32	<u>-29' 8"</u>	2154	
Total #5		32'-8"	1574 LBS	
#4	<del>31</del> 68	7'-8"	348	
Total #4			-159 LBS	
Total Epoxy-Co Reinforcing Bar	<sup>2502</sup> - <del>1733</del> LBS			
CONCRETE, CLASS A				
Total Concrete,	<sup>38,4</sup> 34.9 CYS			
MISCELLANEOUS				
Surface Seal	-28.3 SYS			
			35.8	

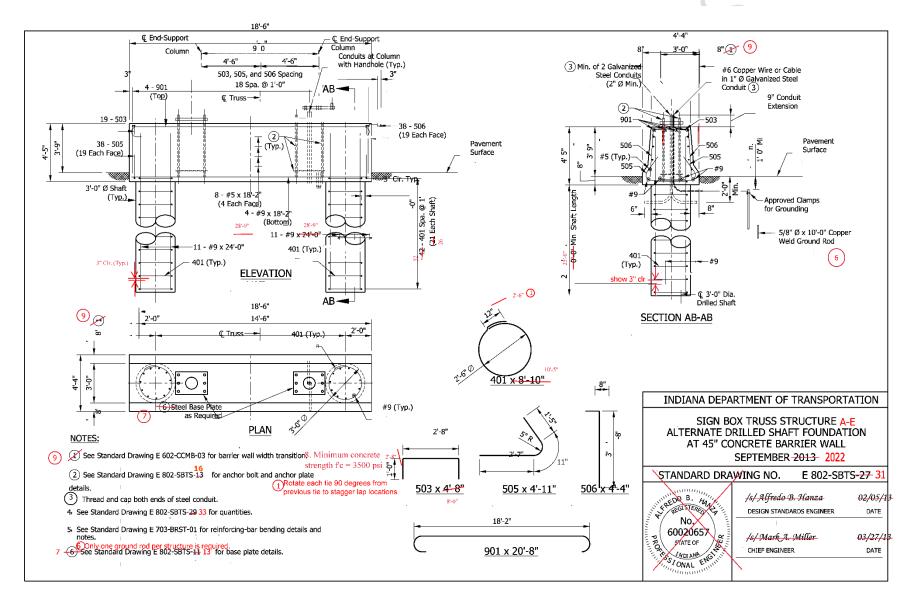
Quantities are only for the depth of footing for slope 3:1 or less.

INDIANA DEPAR	RTMENT OF T	RANSPOR	TATION		
SPRE	SIGN BOX TRUSS STRUCTURE A-E SPREAD FOUNDATIONS QUANTITIES SEPTEMBER 2013-2022				
STANDARD DRAV	STANDARD DRAWING NO. E 802-SBTS-25-29				
NO. NO. STATE OF STATE	/s/ Alfredo B. J Design standard /s/ Mark A. M Chief engineer	s Engineer	02/05/13 DATE 03/27/13 DATE		

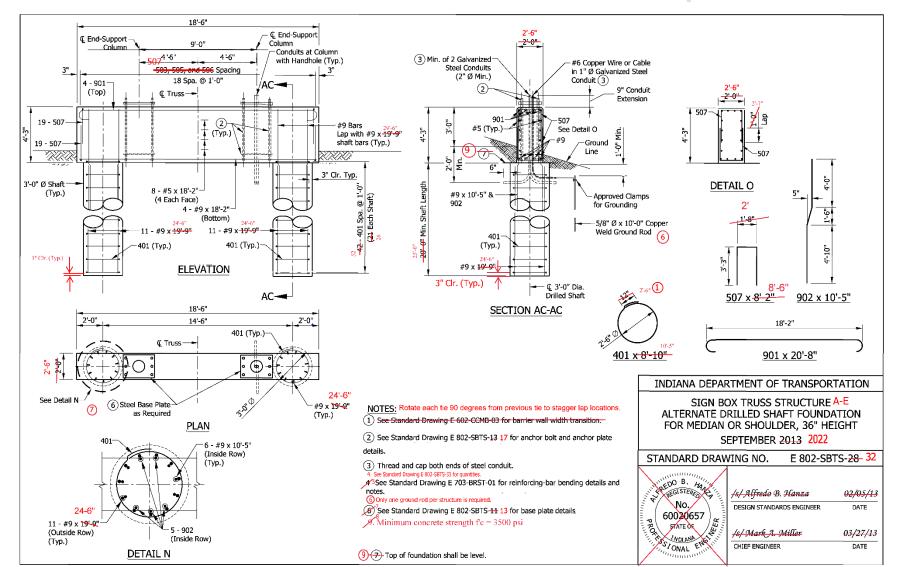
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

# E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)

ALTERNATE DRILLED SHAFT FOUNDATION				
AT 33" CONCRETE BARRIER WALL				
EPOXY-0	COATED RE	INFORCING	g bars	
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
901	4	20'-8"		
#9	4	18'-2"		
#9	22	<del>-23'-8"</del>	2604	
Total #9		27'-9"	-2249 LBS	
503	19	<del>4'-8"</del>	8'-0"	
504	38	3'-4"		
505	38	4'-11"		
#5	6	18'-2"	599	
Total #5			- <del>533</del> LBS	
401	42 52	<del>8'-10"</del>	362	
Total #4		10"-5"	-248 LBS	
Total Epoxy-Coated Reinforcing Bars			-3030 LBS	
CONCRETE, CLASS A				
Total Concrete, Class A			-20.0 CYS	
MISCELLANEOUS				
Surface Seal			<del>-17.6</del> SYS	
			18.1	

ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL					
EPOXY-C	COATED RE	INFORCIN	g bars		
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT		
901	4	20'-8"			
#9	4	18'-2"			
#9	22	<del>-24'-0"</del>	2679		
Total #9		28'-9"	-2323 LBS		
503	19	<del>4'-8"</del>	8'-0"		
505	38	4'-11"			
506	38	4'-4"			
#5	8	18'-2"	677		
Total #5	Total #5				
401	<b>42</b> 52	<del>- 8'-10"</del>	362		
Total #4 10'-5"			-248 LBS		
Total Epoxy-Co Reinforcing Bar	-3182 3718				
	CONCRETE, CLASS A				
Total Concrete, Class A			<del>20.8</del> CYS 23.9		
MISCELLANEOUS					
Surface Seal			-21.7 SYS		
			22.2		

ALTERNATE FOR MEDI		SHAFT FOL ULDER, 36		
EPOXY-0	COATED RE	INFORCING	g bars	
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
901	4	20'-8"		
902	10	10'-5"		1
#9	4	18'-2"		
#9	12	10'-5"		1
#9	#9 22 <del>19'-9"</del>			1
Total #9	•	24'-6"	-2785 LBS	
507	38	8'-2"		
#5	8	18'-2"		1
Total #5	•		<del>475 LBS</del> 488	LBS
401	<del>42</del> 52	<del>8'-10"</del>	362	
Total #4		10'-5"	-248 LBS	
Total Epoxy-Co Reinforcing Bai	<del>- 3508 LBS-</del>	3990 LBS		
Total Concrete, Class A 20.3 -16.3 CYS				
	MISCELLANEOUS			
Surface Seal			21.6 SYS	

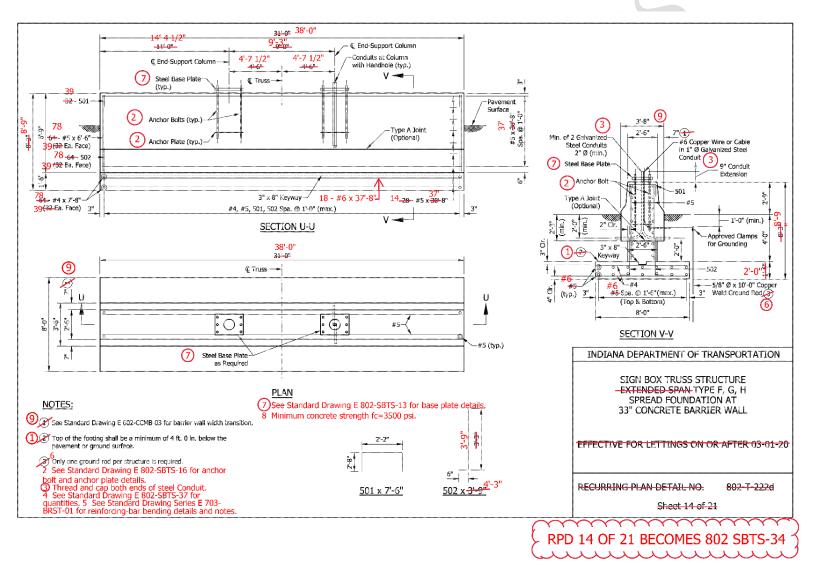
Quantities are only for the depth of footing for slope 3:1 or less.

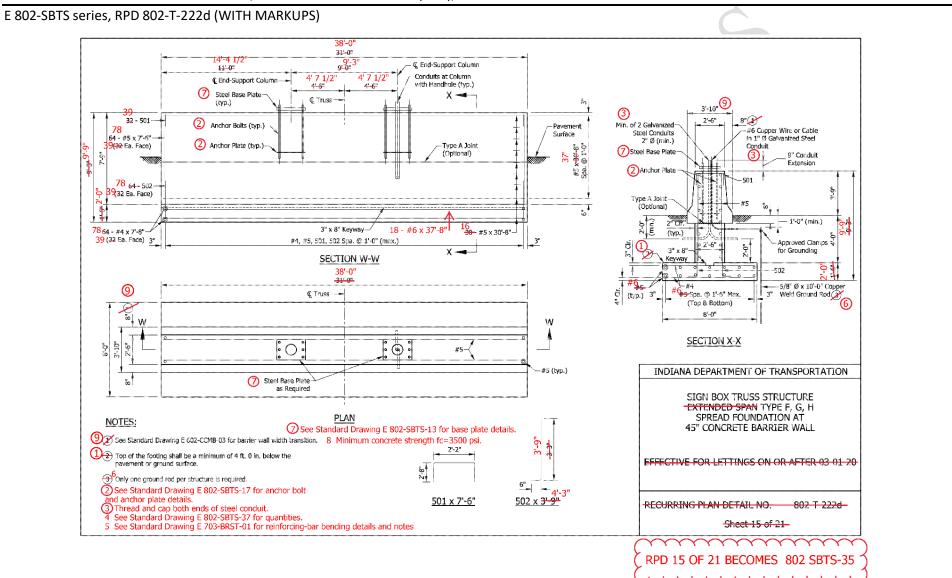
INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E ALTERNATE DRILLED SHAFT FOUNDATIONS QUANTITIES SEPTEMBER 2013 2022

STANDARD DRAWING NO. E 802-SBTS-<del>29-33</del> munn PEDO B. HAN /s/ Alfredo B. Hanza 02/05/13 No. DESIGN STANDARDS ENGINEER DATE TATE ON THE STATE OF THE STATE 60020657 PROF /s/ Mark A. Miller <del>03/27/13</del> CHIEF ENGINEER DATE

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS





#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS) <del>31' 0"</del> 38'-0' 14' 4-1/2" -'9 سو € End-Support Column -Conduits at Column 4' 7 1/2" 4' <u>7 1</u>/2' C End-Support Colum with Handhole (typ.) 3 Z 🛶 O Steel Base Plate C Truss ž Min. of 2 Galvanized-Steel Conduits (typ.) 2'-6" #6 Copper Wire or Cable 30 in 1" Ø Galvange Conduit 1 3 9" Conduit -32 - 501 2" Ø (min.) (2) Anchor Bolts (typ.). 78 Steel Base Plate Ground 39(22 Ea. Face) (2) Anchor Plate (typ.)-Line Extension 2" Cir. 0.00 ۳<u>6</u> VX 8 E 5 (typ.)/ 501 #5 Pa #5 nohor Rei 78 64 - 502-39(32 Ea. Face) 6" 늷 (typ - 1'-0" (min.) 5 ē ð 2'-0" 3" x 8" Approved Clamps 3" x 8" Keyway - 18-#6 x x37'-8 16 37 30 - #5 x 30'-8" -2 7864 - #4 x 7'-8"-'n for Grounding Keyway (32 Ea. Face) 3" #4, #5, 501, 502 Spa. @ 1'-0" Max. **|**\_3" 30 -502 Ζ-SECTION Y-Y - 5/8" Ø x 10'-0" Copper - #4 4 Q. #6\_\_\_\_\_ #5-Spa. @ 1'-6"(max.) 38'-0" (typ.) 3"\_ 3" Weld Ground Rod 31' 0" (Top & Bottom) 6 8'-0" 🕻 Truss — 🛏 SECTION Z-Z γ Y T $| \cdot \circ \cdot |$ ⊕ .0 .8 2'-6" #5--#5 (typ.) INDIANA DEPARTMENT OF TRANSPORTATION (7) Steel Base Plate as Required SIGN BOX TRUSS STRUCTURE EXTENDED SPAN TYPE F, G, H PLAN SPREAD FOUNDATION FOR NOTES: 9. The Spread Foundation shall not be used for slopes steeper MEDIAN OR SHOULDER, 36" HEIGHT . 1 than 3:1. For slopes steeper than 3:1 the Alternate Drilled (1) Top of the footing shall be a minimum of 4 ft. 0 in. below the pavement or ground surface. Shaft Foundation shall be used. EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20 (2)Only one ground rod per structure is required. 2'-2" See Standard Drawing E 802-SBTS-17 for anchor bolt and anchor plate details. Thread and cap both ends of steel conduit. See Standard Drawing E 802-SBTS-37 for quantities. ñ, 6 5 See Standard Drawing E 703-BRST-01 for reinforcing-bar RECURRING PLAN DETAIL NO. 802-T-222d bending details and notes. <u>501 x 7'-6"</u> 502 x 3' 9" 4'-3" See Standard Drawing E 802-SBTS-13 for base plate details. Sheet 16 of 21 8 Minimum concrete strength fc = 3500 psi. $\sim$ $\sim$ RPD 16 OF 21 BECOMES 802 SBTS-36

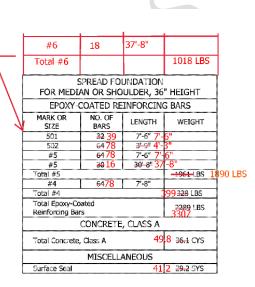
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

# E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)

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	#6	18	37'-8"		
T	Total #6			1018 LBS	
	SPREAD FOUNDATION AT 33" CONCRETE BARRIER WALL				
١ſ	EPOXY-0	COATED RE	INFORCING	G BARS	
$\mathcal{V}$	MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
	501	<del>32</del> 39	7'-6"		
	502	6478		3"	
	#5	64 <b>78</b>	6'-6" <mark>6</mark> '-	6"	
	#5	<del>28</del> 14	<del>30' 8"</del> 37	-8"	
	Total #5		17	301830 LBS	
Г	#4	64 <mark>78</mark>	7'-8"		
- [	Total #4		(n)	99 <del>328</del> LBS	
	Total Epoxy-Coated 31 Reinforcing Bars			47 <del>2158</del> L <b>B</b> S	
	CONCRETE, CLASS A				
	Total Concrete, Class A 51			. <mark>4 37.0</mark> CYS	
Ī	MISCELLANEOUS				
	Surface Seal 35.028.5 SYS				

#6	18	37'-8"			
Total #6			1018 LBS		
SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL					
EPOXY-0	COATED RE	INFORCING	S BARS		
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT		
<del>501</del>	3239	7'-6"			
502	<del>54</del> 78	<del>3' 9"</del> 4'-	3"		
#5	<del>64</del> 78	7-6"			
#5	391 <mark>6</mark>	<del>30' 8'</del> 37'	8"		
Total #5 18			90 <del>1951</del> LBS		
#4	<del>64</del> 78	7'-8"			
Total #4			99328 LBS		
	3307 LBS				
CONCRETE, CLASS A					
Total Concrete, Class A 38.9 C					
MISCELLANEOUS					
Surface Seal 4			3.435.4 SYS		
	Total #6 SAT 45" EPOXY-( MARK OR SIZE S01 502 #5 Total #5 #4 Total #4 Total #4 Total Concrete,	Total #6 SPREAD FO AT 45" CONCRETI EPOXY-COATED RE MARK OR NO. OF SIZE BARS 501 32 39 502 6478 #5 3016 Total #5 #4 6478 Total #5 #4 6478 Total #4 Total Epoxy-Coated Reinforcing Bars CONCRETE Total Concrete, Class A MISCELL	Total #6     SPREAD FOUNDATION AT 45" CONCRETE BARRIER       EPOXY-COATED REINFORCING       MARK OR SIZE     NO. OF BARS       1001     32.39       7-6"       502     64.78       3-9"     4"-       #5     64.78       #4     64.78       Total #4     7-8"       Total #4     CONCRETE, CLASS A       Total Concrete, Class A       MISCELLANEOUS		



INDIANA DEPARTMENT OF TRANSPORTATION

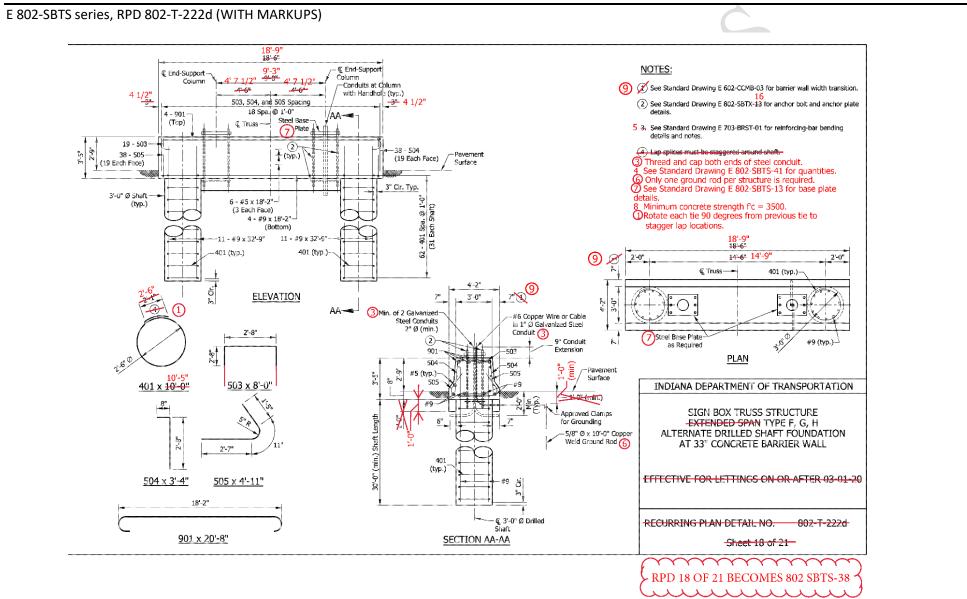
SIGN BOX TRUSS STRUCTURE EXTENDED SPAN TYPE F, G, H SPREAD FOUNDATIONS QUANATITIES

EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20

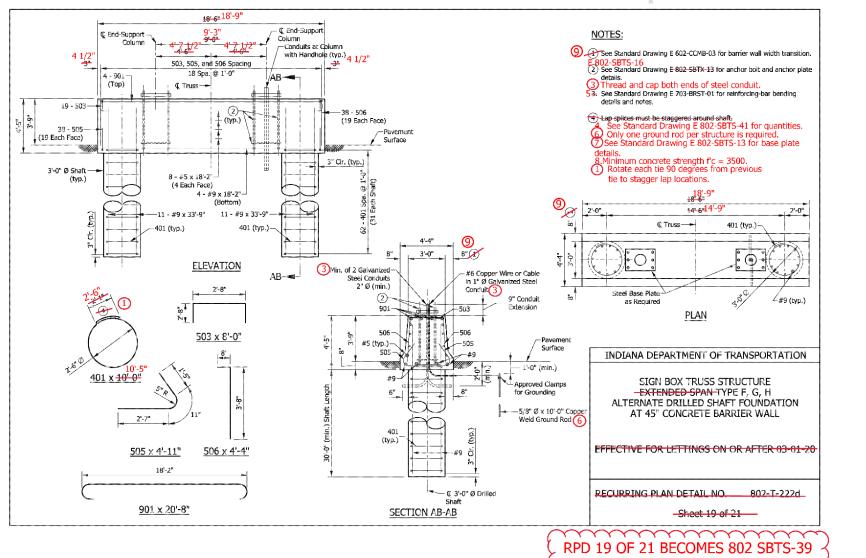
RECURRING PLAN DETAIL NO. 802-T-222d

RPD 17 OF 21 BECOMES 802 SBTS-37

Sheet 17 of 21

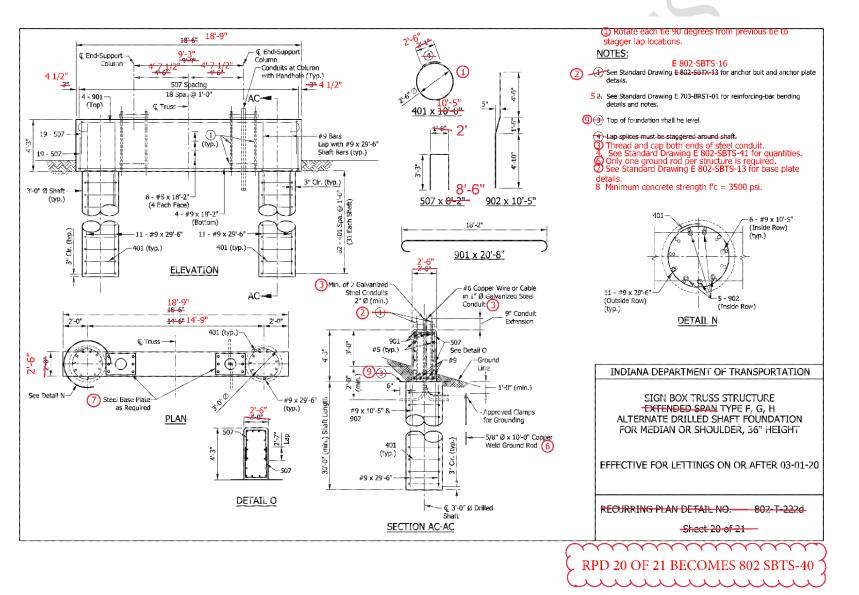


#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

#### E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

# E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)

ALTERNAT			INDATION			
ALTERNATE DRILLED SHAFT FOUNDATION AT 33" CONCRETE BARRIER WALL						
AT 33	CONCRETI	BARRIER	WALL			
EPOXY-	COATED RE	INFORCIN	g bars			
MARK OR	NO. OF	LENGTH	WEIGHT			
SIZE	BARS					
901	4	20'-8"				
#9	4	18'-2"				
#9	22	32'-9"				
Total #9			2978 LBS			
503	19	8'-0"				
504	38	31-4"				
505	38	4'-11"				
#5	6	18'-2"				
Total #5			599 LBS			
401	62 10	'-5' <del>'10' 0''</del>				
Total #4			431415 LBS			
Total Epoxy-Coated 40083992 LBS Reinforcing Bars						
	CONCRETE	, CLASS A				
Total Concrete, Class A 25.8 25.2 CYS						
MISCELLANEOUS						
Surface Seal 18.0 17.6 SYS						

	ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL							
EPOXY-(	EPOXY-COATED REINFORCING BARS							
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT					
901	4	20'-8"						
#9	4	18'-2"						
#9	22	33'-9"						
Total #9	Total #9 3053 LBS							
503	503 19 8'-0"							
505	38	4'-11"						
506	38	4'-4"						
#5	8	18'-2"						
Total #5			677 LBS					
401	62 10	-5" <del>10-0"</del>						
Totai #4		•	314 <del>15</del> LBS					
	Total Epoxy-Coated 41614145 LBS Reinforcing Bars							
	CONCRETE, CLASS A							
Total Concrete	Total Concrete, Class A 26.526.0 CYS							
	MISCELLANEOUS							
Surface Seal		2	2.2 <del>21.7</del> SYS					

		SHAFT FOU SULDER, 36			
EPOXY-	COATED RE	INFORCIN	5 BARS		
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT		
901	4	20'-8"			
902	10	10'-5"			
#9	4	18'-2"			
#9	12	10'-5"			
#9	22	29'-6"			
Total #9			3514 LBS		
507	38	8'-2"			
#5	8	18'-2"			
Total #5			475 LBS		
401	62 10	-5" <del>10'-0"</del>			
Total #4		4	314 <del>15 LBS</del>		
Total Epoxy-Coated 44334404 LBS Reinforcing Bars					
	CONCRETE	, CLASS A			
Total Concrete, Class A 231 215 CYS					
	MISCELL	ANEOUS			
Surface Sea			21.6 SYS		

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE EXTENDED SPAN TYPE F, G, H ALTERNATE DRILLED SHAFT FOUNDATIONS QUANTITIES

EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20

RECURRING PLAN DETAIL NO. 802 T 222d

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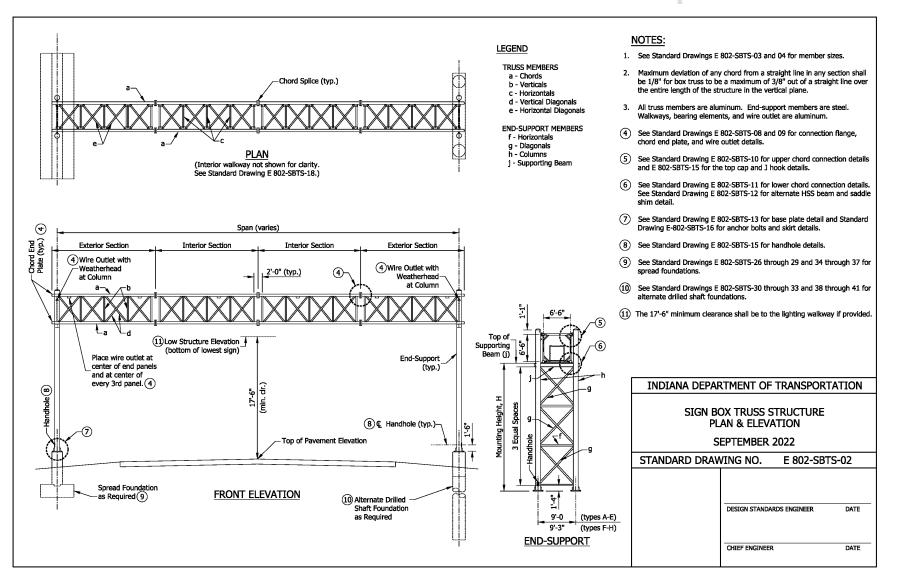
Sheet 21 of 21

RPD 21 OF 21 BECOMES 802 SBTS-41

# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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4	F-H Truss Sections in isometric views, Table with Member Sizes		
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6	Table of Dimensions, Spans 82' thru 130' and Camber		
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41	F,G,H Alternate Drilled Shaft Foundations Quantities		

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

#### E 802-SBTS series (PROPOSED DRAFT -01 thru -41) Horizontal (c) √(typ.) NOTES: Horizontal (1) Number of panels and sections varies. See table on Standard Drawings Diagonal (e) (5) See Detail E E 802-SBTS - 05 and 06 for recommended dimensions. 6.-6" (typ.) (typ.) See Detail B (2) See Standard Drawing E 802-SBTS-08 for welded connections and Details. (typ.) (2) 3. See Standard Drawing E 802-SBTS-02 for Legend. Panel Length 4. Truss members shall be aluminum. End-support members shall be steel. $\widehat{1}$ See Detail D (typ.) (2) Steel pipe diameters shown in table are nominal pipe size. .9-9 See Detail A √(typ.) ② (5) A corner brace is required on each of the eight external corners of exterior Horizontal Diagonal (e) and interior sections. See Standard Drawing E 802-SBTS-08 for corner (typ.) See Detail B (typ.) (2) brace Detail E. CV. Vertical Members Horizontal (c) Tube-to-Tube (typ.) Interior Section Length Vertical Connection (typ.) 'ane/ Diagonal (d) enat See Detail D (typ.) (2) (1)(typ.) φ. Horizontal Members Vertical (b) Gusset Connection (typ.) Chord (a) (typ.) (typ.) See Detail C Vertical Members (typ.) (2) Tube-to-Tube TYPICAL INTERIOR TRUSS SECTION Connection (typ.) Exterior Section Length Vertical Diagonal (d) (typ.) Horizontal Members Vertical (b) Ø Gusset Connection (typ.) Chord (a) (typ.) (tvn.) See Detail C (typ.) (2) TYPICAL EXTERIOR TRUSS SECTION INDIANA DEPARTMENT OF TRANSPORTATION TRUSS MEMBERS, ALUMINUM END-SUPPORT MEMBERS, STEEL MAX. MOUNTING SIGN BOX TRUSS STRUCTURE A-E MAX. HORIZONTAL SUPPORTING VERTICAL TRUSS MAX. HEIGHT CHORD VERTICAL HORIZONTA HORIZONTAL DIAGONAL COLUMN SIGN TRUSS SECTIONS IN ISOMETRIC VIEWS, DIAGONAL BEAM TYPE SPAN DIAGONA AREA TABLE WITH MEMBER SIZES q а b С d e h н SEPTEMBER 2022 DIA. THK SQ. FT. FT. FT. IN. STANDARD DRAWING NO. E 802-SBTS-03 500 130 28'-6" 6.50 0.375 3.00 0.375 4.00 0.188 3.00 0.500 4.00 0.375 5.00 0.375 8.00 0.500 14.00 0.500 Α W 8 x 58 в 700 100 28'-6" 4.00 0.188 3.00 0.500 4.00 0.375 5.00 0.375 8.00 0.322 14.00 0.500 6.50 0.375 3.00 0.375 or С HSS 8" x 8" x 1/2" 600 130 28'-6" 7.00 0.375 3.00 0.375 4.00 0.188 3.00 0.500 4.00 0.500 5.00 0.375 8.00 0.500 14.00 0.593 DESIGN STANDARDS ENGINEER DATE D 900 100 28'-6" 7.00 0.375 3.00 0.375 4.00 0.188 3.00 0.500 4.00 0.500 5.00 0.375 8.00 0.593 18.00 0.500 W 10 x 68 Е 130 3.00 0.375 4.00 0.250 3.00 0.500 4.00 0.500 8.00 0.593 800 28'-6" 7.00 0.500 5.00 0.375 18.00 0.562 CHIEF ENGINEER or HSS 10" x 10" x 1/2" DATE

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

#### E 802-SBTS series (PROPOSED DRAFT -01 thru -41) See Detail A Horizontal Diagonal (e) NOTES: (typ.) See Detail B (typ.) (2) (1) Number of panels and sections varies. See table on Standard Drawings E 802-SBTS-05, 06, & 07 for recommended dimensions. Horizontal (c) (2) See Standard Drawing E 802-SBTS-08 for welded connections and (typ.) Panel Length details. See Detail D $\widehat{(1)}$ 3. See Standard Drawing E 802-SBTS-02 for Legend. و<sub>1</sub>و" (typ.) (2) Horizontal (c) 4. Truss members to be aluminum. End-support members to be steel. (typ.) Steel pipe diameters shown in table are nominal pipe size. Horizontal Diagonal (e) 5 See Detail E (5) A corner brace is required on each of the eight external corners of 6'-6 (typ.) Vertical Members (typ.) exterior and interior sections. See Standard Drawing E 802-SBTS-08 101 See Detail B Tube-to-Tube for corner brace Detail E. (typ.) (2) Connection (typ.) Exterior Section Length Panel Length Vertical Diagonal (d) (typ.) 10 See Detail D ٩ 9 Horizontal Members (typ.) (2) Vertical (b) Gusset Connection (typ.) Chord (a) (typ.) (typ.) See Detail C TYPICAL EXTERIOR TRUSS SECTION (typ.) (2) Interior Section Length Vertical Vertical Members Diagonal (d) Tube-to-Tube Connection (typ.) (typ.) Vertical (b) 6 (typ.) Chord (a) Horizontal Members -Gusset Connection (typ.) /See Detail C (typ.) `(typ.) (2) TYPICAL INTERIOR TRUSS SECTION INDIANA DEPARTMENT OF TRANSPORTATION SIGN BOX TRUSS STRUCTURE F-H TRUSS SECTIONS IN ISOMETRIC VIEWS, TRUSS MEMBERS, ALUMINUM END-SUPPORT MEMBERS, STEEL MAX. TABLE WITH MEMBER SIZES MOUNTING MAX. HORIZONTA VERTICAL SUPPORTING TRUSS MAX. SEPTEMBER 2022 CHORD VERTICAL HORIZONTAL HORIZONTAL DIAGONAL COLUMN HEIGHT SIGN DIAGONAL DIAGONAL BEAM TYPE SPAN AREA STANDARD DRAWING NO. E 802-SBTS-04 q b d h а С е н DIA. THK IN. SQ. FT. FT. FT. F 1200 130 28'-6" 7.50 0.500 3.00 0.375 4.00 0.375 3.00 0.500 4.00 0.500 5.00 0.375 8.00 0.593 18.00 0.562 DESIGN STANDARDS ENGINEER DATE W 10 x 68 G 1200 142 28'-6" 4.00 0.375 4.00 0.500 9.00 0.500 4.00 0.375 4.00 0.500 5.00 0.375 8.00 0.593 18.00 0.562 or HSS 10" x 10" x 1/2" н 1200 154 28'-6" 10.00 0.500 4.00 0.500 4.00 0.375 4.00 0.500 4.00 0.500 8.00 0.322 8.00 0.593 18.00 0.562 CHIEF ENGINEER DATE

# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

SPAN	1		R SECTIONS			5 (34' THRU 8	INTERIOR SECTI			NOTES:
SPAN-TRUSS	NO. OF EXT.	NO. OF PANELS	VARIABLE	PANEL	SECTION	NO. OF INT.	NO. OF PANELS	PANEL	SECTION	<ol> <li>All panels on a truss shall be the same length. The minimum panel length is 5'-0" and the maximum is 6'-6".</li> </ol>
ENGTH, (FT)	SECTIONS	PER SECTION	END DIMEN.	LENGTH	LENGTH	SECTIONS	PER SECTION	LENGTH	LENGTH	<b>0 A</b> -1
34	1	6	6"	5'-6"	35'-6"	0				<ol><li>A single interior section in a truss shall have an even number of panel to maintain the pattern of the vertical diagonals.</li></ol>
35	1	6	6"	5'-8"	36'-6"	0				to maintain the pattern of the ventcal diagonals.
36	2	3	6"	5'-6"	18'-9"	0				3. Use minimum number of sections for each box truss structure, while
37	2	3	6"	5'-8"	19'-3"	0				maintaining the maximum section length at 36'-6".
38	2	3	6"	5'-10"	19'-9"	0				
39	2	3	6"	6'-0"	20'-3"	0				<ol><li>See Standard Drawing E 802-SBTS-06 for required camber.</li></ol>
40 41	2	3	6" 6"	6'-2" 6'-4"	20'-9" 21'-3"	0				
			6" 6"	-	-					
42	2	3	6"	6'-6" 5'-0"	21'-9"	0				
43	2	4			22'-3"					
44	2	4	6"	5'-1 1/2"	22'-9"	0				
45 46	2	4 4	6" 6"	5'-3" 5'-4 1/2"	23'-3" 23'-9"	0				
46 47			6" 6"	5'-4 1/2" 5'-6"	23'-9" 24'-3"	0				
47	2	4 4	6"	5'-6" 5'-7 1/2"	24'-3" 24'-9"	0				
40	2	4	6"	5-7 1/2	24-9	0				
50	2	4	6"	5'-10 1/2"	25'-9"	0				
50	2	4	6"	6'-0"	25-9	0				
52	2	4	6"	6'-1 1/2"	26-3	0				
53	2	4	6"	6'-3"	26-9	0				
55	2	4	6"	6'-4 1/2"	27-3	0				
55	2	4	6"	6'-6"	27-9	0				
55	2	5	5 1/4"	5'-3 3/4"	28'-9"	0				
57	2	5	6 1/4"	5'-4 3/4"	20-9	0				
58	2	5	6"	5"-6"	29'-9"	0				
59	2	5	5 3/4"	5'-7 1/4"	30'-3"	0				
60	2	5	5 1/2"	5'-81/2"	30'-9"	0				
61	2	5	6 1/2"	5'-9 1/2"	31'-3"	0				
62	2	5	6 1/4"	5'-10 3/4"	31'-9"	0				
63	2	5	6"	6'-0"	32'-3"	0				
64	2	5	5 3/4"	6'-1 1/4"	32'-9"	0				
65	2	5	5 1/2"	6'-2 1/2"	33'-3"	0				INDIANA DEPARTMENT OF TRANSPORTATIO
66	2	5	5 1/4"	6'-3 3/4"	33'-9"	0				
67	2	5	6 1/4"	6'-4 3/4"	34'-3"	0				SIGN BOX TRUSS STRUCTURE
68	2	5	6"	6'-6"	34'-9"	0				TABLE OF DIMENSIONS
69	2	4	6"	5'-4"	23'-7"	1	4	5'-4"	23'-4"	SPANS 34' THRU 81'
70	2	4	6"	5'-5"	23'-11"	1	4	5'-5"	23'-8"	SEPTEMBER 2022
71	2	4	6"	5'-6"	24'-3"	1	4	5'-6"	24'-0"	SEPTEMBER 2022
72	2	4	6"	5'-7 <b>"</b>	24'-7"	1	4	5'-7"	24'-4"	STANDARD DRAWING NO. E 802-SBTS-05
73	2	4	6"	5'-8"	24'-11"	1	4	5'-8"	24'-8"	
74	2	4	6"	5"- <del>9</del> "	25'-3"	1	4	5"-9"	25'-0"	
75	2	4	6"	5'-10"	25'-7"	1	4	5'-10"	25'-4"	
76	2	4	6"	5'-11"	25'-11"	1	4	5'-11"	25'-8"	
77	2	4	6"	6'-0"	26'-3"	1	4	6'-0"	26'-0"	DESIGN STANDARDS ENGINEER DA
78	2	4	6"	6'-1 "	26'-7"	1	4	6'-1 "	26'-4"	
79	2	4	6"	6'-2"	26'-11"	1	4	6'-2"	26'-8"	
80	2	4	6"	6'-3"	27'-3"	1	4	6'-3"	27'-0"	
81	2	4	6"	6'-4"	27'-7"	1	4	6'-4"	27'-4"	CHIEF ENGINEER DA

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

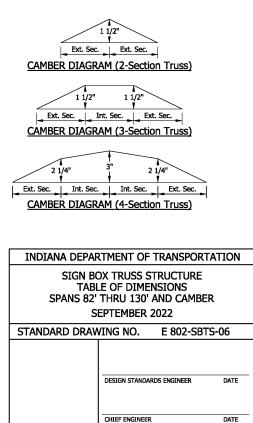
# E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN SPAN-TRUSS	NO. OF EXT.	NO. OF PANELS		DANE	CECTION		NO. OF PANELS	PANEL	SECTION
LENGTH, (FT)	SECTIONS	PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	PER SECTION	LENGTH	LENGTH
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8"
83	2	4	6"	6'-6"	28'-3"	1	4	6'-6"	28'-0"
84	2	5	5 3/4"	5'-7 3/4"	30'-5 1/2"	1	4	5'-7 3/4"	20-0
85	2	5	6 1/2"	5'-8 1/2"	30'-10"	1	4	5'-8 1/2"	24'-10"
86	2	5	5 1/2"	5'-9 1/2"	31'-2"	1	4	5'-9 1/2"	25'-2"
87	2	5	6 1/4"	5'-10 1/4"	31'-6 1/2"	1	4	5'-10 1/4"	25'-5"
88	2	5	7"	5'-11"	31'-11"	1	4	5'-11"	25'-8"
89	2	5	6"	6'-0"	32'-3"	1	4	6'-0"	26'-0"
90	2	5	6 3/4"	6'-0 3/4"	32'-7 1/2"	1	4	6'-0 3/4"	26'-3"
91	2	5	5 3/4"	6'-1 3/4"	32'-11 1/2"	1	4	6'-1 3/4"	26'-7"
92	2	5	6 1/2"	6'-2 1/2"	33'-4"	1	4	6'-2 1/2"	26'-10"
93	2	5	5 1/2"	6'-3 1/2"	33'-8"	1	4	6'-3 1/2"	27'-2"
94	2	5	6 1/4"	6'-4 1/4"	34'-0 1/2"	1	4	6'-4 1/4"	27'-5"
95	2	5	5 1/4"	6'-5 1/4"	34'-4 1/2"	1	4	6'-5 1/4"	27'-9"
96	2	5	6"	6'-6"	34'-9"	1	4	6'-6"	28'-0"
97	2	4	6"	5'-7 1/2"	24'-9"	2	4	5'-7 1/2"	24'-6"
98	2	4	6"	5'-8 1/4"	25'-0"	2	4	5'-8 1/4"	24'-9"
99	2	4	6"	5'-9"	25'-3"	2	4	5'-9"	25'-0"
100	2	4	6"	5'-9 3/4"	25'-6"	2	4	5'-9 3/4"	25'-3"
101	2	4	6"	5'-10 1/2"	25'-9"	2	4	5'-10 1/2"	25'-6"
102	2	4	6"	5'-11 1/4"	26'-0"	2	4	5'-11 1/4"	25'-9"
103	2	4	6"	6'-0"	26'-3"	2	4	6'-0"	26'-0"
104	2	4	6"	6'-0 3/4"	26'-6"	2	4	6'-0 3/4"	26'-3"
105	2	4	6"	6'-1 1/2"	26'-9"	2	4	6'-1 1/2"	26'-6"
106	2	4	6"	6'-2 1/4"	27'-0"	2	4	6'-2 1/4"	26'-9"
107	2	4	6"	6'-3"	27'-3"	2	4	6'-3"	27'-0"
108	2	4	6"	6'-3 3/4"	27'-6"	2	4	6'-3 3/4"	27'-3"
109	2	4	6"	6'-4 1/2"	27'-9"	2	4	6'-4 1/2"	27'-6"
110	2	4	6"	6'-5 1/4"	28'-0"	2	4	6'-5 1/4"	27'-9"
111	2	4	6"	6'-6"	28'-3"	2	4	6'-6"	28'-0"
112	2	5	6"	5'-3"	28'-6"	2	5	5'-3"	28'-3"
113	2	5	7"	5'-3 1/2"	28'-9 1/2"	2	5	5'-3 1/2"	28'-5 1/2
114	2	5	5 1/2"	5'-4 1/4"	28'-11 3/4"	2	5	5'-4 1/4"	28'-9 1/4
115	2	5	6 1/2"	5'-4 3/4"	29'-3 1/4"	2	5	5'-4 3/4"	28'-11 3/
116	2	5	7 1/2"	5'-5 1/4"	29'-6 3/4"	2	5	5'-5 1/4"	29'-2 1/4
117	2	5	6"	5'-6"	29'-9"	2	5	5'-6"	29'-6"
118	2	5	7"	5'-6 1/2"	30'-0 1/2"	2	5	5'-6 1/2"	29'-8 1/2
119	2	5	5 1/2"	5'-7 1/4"	30'-2 3/4"	2	5	5'-7 1/4"	30'-1/4'
120	2	5	6 1/2"	5'-7 3/4"	30'-6 1/4"	2	5	5'-7 3/4"	30'-2 3/4
121	2	5	7 1/2"	5'-8 1/4"	30'-9 3/4"	2	5	5'-8 1/4"	30'-5 1/4
122	2	5	6"	5'-9"	31'-0"	2	5	5'-9"	30'-9"
123	2	5	7"	5'-9 1/2"	31'-3 1/2"	2	5	5'-9 1/2"	30'-11 1/
124	2	5	5 1/2"	5'-10 1/4"	31'-5 3/4"	2	5	5'-10 1/4"	31'-3 1/4
125	2	5	6 1/2"	5'-10 3/4"	31'-9 1/4"	2	5	5'-10 3/4"	31'-5 3/4
126	2	5	7 1/2"	5'-11 1/4"	32' -0 3/4"	2	5	5'-11 1/4"	31'-8 1/4
127	2	5	6"	6'-0"	32'-3"	2	5	6'-0"	32'-0"
128	2	5	7"	6'-0 1/2"	32'-6 1/2"	2	5	6'-0 1/2"	32'-2 1/2
129	2	5	5 1/2"	6'-1 1/4"	32'-8 3/4"	2	5	6'-1 1/4"	32'-6 1/4

#### NOTES:

1.	All panels on a truss shall be the same length.	The minimum panel
	length is 5'-0" and the maximum is 6'-6".	-

- Camber diagrams for truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
- 3. See Standard Drawing E 802-SBTS-05 for additional notes.



# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

# E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

		DIMENSION	IS FOR SIG	GN BOX "	TRUSSES	(131' THRU 1	.54')			
SPAN		EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTI	
131	2	5	6 1/4"	6'-2 3/8"	33'-3 1/8"	2	5	6'-2 3/8"	32'-11	
132	2	5	6"	6'-3"	33'-6"	2	5	6'-3"	33'-:	
133	2	5	7"	6'-3 1/2"	33'-9 1/2"	2	5	6'-3 1/2"	33'-5 1	
134	2	5	6 3/4"	6'-4 1/8"	34'-0 3/8"	2	5	6'-4 1/8"	33'-8 !	
135	2	5	6 1/2"	6'-4 3/4"	34'-3 1/4"	2	5	6'-4 3/4"	33'-11	
136	2	5	6 1/4"	6'-5 3/8"	34'-6 1/8"	2	5	6'-5 3/8"	34'-2 7	
137	2	5	6"	6'-6"	34'-9"	2	5	6'-6"	34'-0	
138	2	6	6 7/8"	5-11 3/8"	38'-0 1/8"	2	5	5'-11 3/8"	31'-8	
139	2	6	7 3/8"	5'-11 7/8"	38'-3 5/8"	2	5	5'-11 7/8"	31'-11	
140	2	6	6 1/2"	6'-0 1/2"	38'-6 1/2"	2	5	6'-0 1/2"	32'-2 1	
141	2	6	7"	6'-1"	38'-10"	2	5	6'-1"	32'-!	
142	2	6	6 1/8"	6'-1 5/8"	39'-0 7/8"	2	5	6'-1 5/8"	32'-8 1	
143	2	6	6 5/8"	6'-2 1/8"	39'-4 3/8"	2	5	6'-2 1/8"	32'-10	
144	2	6	7 1/8"	6'-2 5/8"	39'-7 7/8"	2	5	6'-2 5/8"	33'-1	
145	2	6	6 1/4"	6'-3 1/4"	39'-10 3/4"	2	5	6'-3 1/4"	33'-4 :	
146	2	6	6 3/4"	6'-3 3/4"	40'-2 1/4"	2	5	6'-3 3/4"	33'-6 3	
147	2	6	5 7/8"	6'-4 3/8"	40'-5 1/8"	2	5	6'-4 3/8"	33'-97	
148	2	6	6 3/8"	6'-4 7/8"	40'-8 5/8"	2	5	6'-4 7/8"	34'-0 3	
149	2	6	6 7/8"	6'-5 3/8"	41'-0 1/8"	2	5	6'-5 3/8"	34'-2	
150	2	6	7 1/2"	5'-11 3/8"	38'-0 3/4"	2	6	5'-11 3/8"	37'-8 :	
151	2	6	7 1/2"	5'-11 7/8"	38'-3 3/4"	2	6	5'-11 7/8"	37'-11	
152	2	6	6"	6'-0 1/2"	38'-6"	2	6	6'-0 1/2"	38'-3	
153	2	6	6"	6'-1"	38'-9"	2	6	6'-1"	38'-	
154	2	6	6"	6'-1 1/2"	39'-0"	2	6	6'-1 1/2"	38'-9	

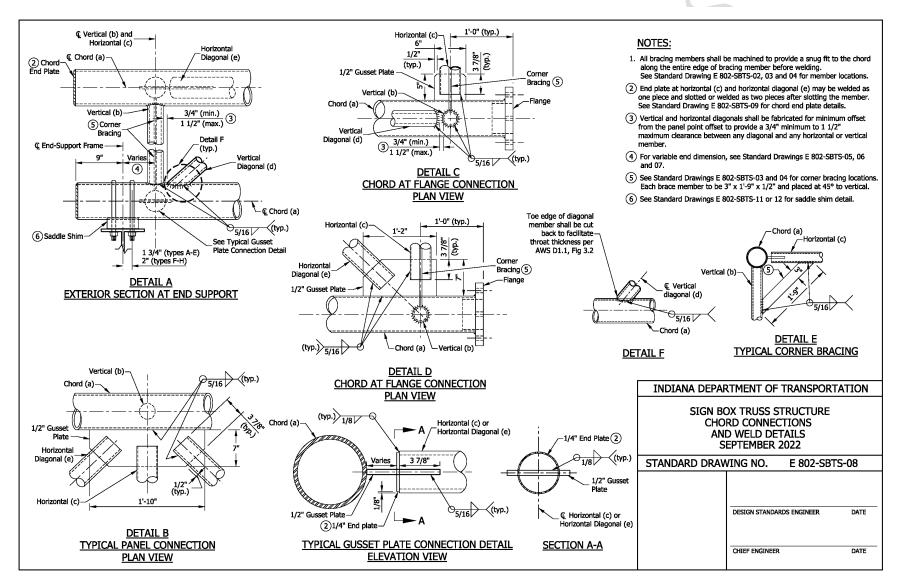
#### NOTES:

- 1. All panels on a truss shall be the same length. The minimum panel length is 5'-11 3/8" and the maximum is 6'-6".
- A single interior section in a truss shall have an even number of panels to maintain the pattern of the vertical diagonals.
- 3. Use minimum number of sections for each box truss structure.
- Camber diagrams for truss structures with 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.

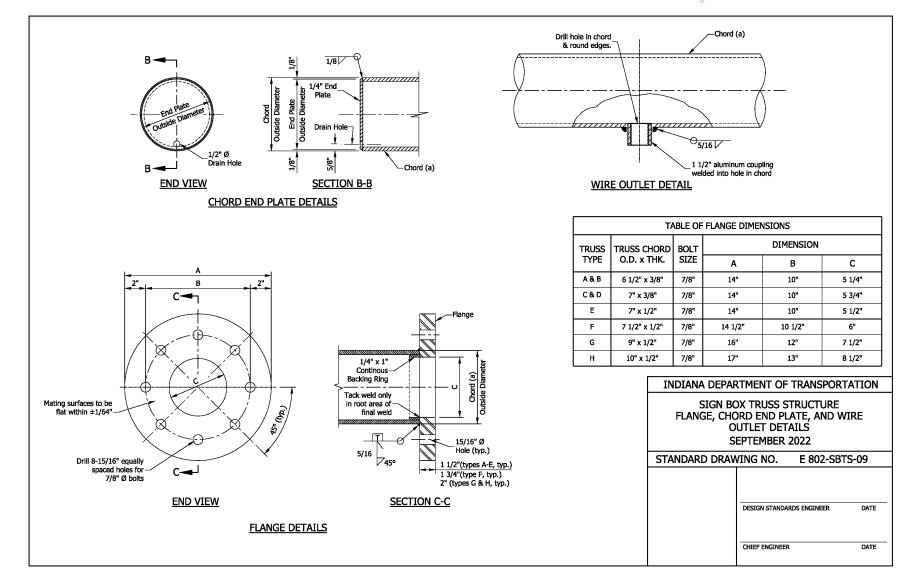
3 1/4" 3 1/4" Ext. Sec. Int. Sec. Ext. Sec. CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION						
SIGN BOX TRUSS STRUCTURE TABLE OF DIMENSIONS SPANS 131' THRU 154' AND CAMBER SEPTEMBER 2022						
STANDARD DRAWING NO. E 802-SBTS-07						
	DESIGN STANDARDS	S ENGINEER	DATE			
	CHIEF ENGINEER		DATE			

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



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CHIEF ENGINEER

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IN.

2 1/4"

2 1/4"

2"

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1 1/4

1/2

-

DATE

DATE

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

3/4" (dia.) for truss types A-E

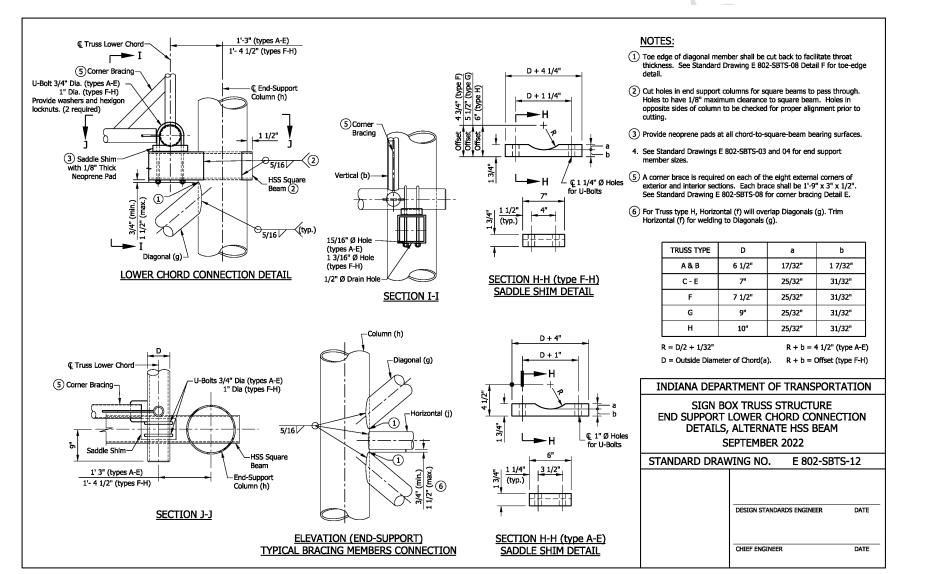
1" (dia.) for truss types F-H

#### E 802-SBTS series (PROPOSED DRAFT -01 thru -41) Spacer Assembly NOTES: -3/8" Steel Shim See detail this sheet. z -1/8" Neoprene Pad (1) (1) Provide isolation from steel-dissimilar metal as required. C End-Support Column (2) For truss types D, E, and H Stem plate is not required. Fillet weld Chord · front and rear plates together. (3) Dimension E is equal to the diameter of chord (a) plus 1 1/4". (typ.)) -U-Bolt PLAN ypes A-E) (type F) (type G) (type H) m 🕻 End-Support Column ---0 3/4" (t 11 3/4" 13 1/4" 14 1/4" Cap not shown for clarity SPACER ASSEMBLY DIMENSIONS 1" END-SUPPORT Spacer Assembly Ø OF CHORD Rear Plate See detail this sheet. TRUSS COLUMN SIZE U-BOLT Е Е E (a) S TYPE (h) BEND - € Chord 2 Stem Plate O.D. IN. 0.D. IN. (D) IN. IN. IN. Α 14 6 1/2 6 9/16 7 1/2 4 1/4 2 Holes for U Bolts в 14 6 1/2 6 9/16 7 1/2 4 1/4 1" Ø (types A-E) 1 1/4" Ø (types F-H) С 14 7 7 1/16 8 1" D 18 7 7 1/16 8 Front Plate Е 18 7 7 1/16 8 1/4" Plate Washer Bent F 18 7 1/2 7 9/16 8 3/4 3 1/4 to End-Support Radius ELEVATION G 18 9 9 1/16 10 1/4 2 1/2 -U-Bolt END SUPPORT SPACER ASSEMBLY DETAIL н 18 10 10 1/16 11 1/4 INDIANA DEPARTMENT OF TRANSPORTATION SECTION D-D -3/8" Steel Shim UPPER CHORD CONNECTION DETAILS z -1/8" Neoprene Pad (1) SIGN BOX TRUSS STRUCTURE Front P\_-END-SUPPORT UPPER CHORD CONNECTION DETAILS SEPTEMBER 2022 Rear P 3" Threaded ŗ. STANDARD DRAWING NO. E 802-SBTS-10 TH. 3 10 U.N.C. Threads Stem P 3" x 3" x S (types A - C) / Stem P 3" x 1" x S (types F & G) DESIGN STANDARDS ENGINEER STAINLESS STEEL U-BOLT DETAIL SECTION E-E

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

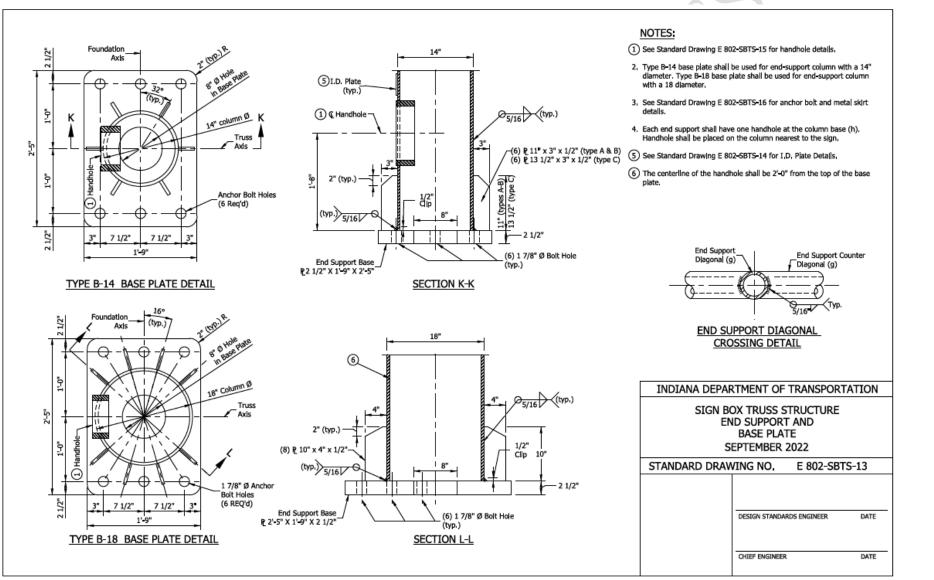
#### E 802-SBTS series (PROPOSED DRAFT -01 thru -41) 1'-3" (types A-E) C Truss Lower Chord (a) 1'- 4 1/2" (types F-H) D + 4" NOTES: (1) Toe edge of diagonal member shall be cut back to facilitate throat 5 Corner Bracing D + 1" thickness. See Standard Drawing E 802-SBTS-08 Detail F for toe-edge 3/4" Ø U-Bolts (types A-E) € End-Support detail. ٠H 1" Ø U-Bolts (types F-H) Column (h) Provide washers and hexagon (2) Cut holes in end support columns for W-beams to pass through. Holes to have 1/8" maximum clearance to W-beam. Holes in opposite sides 4 1/2 locknuts. (2 required) (5) Corner Bracing 1 of column to be checked for proper alignment prior to cutting. 1 1/2" (3) Provide neoprene pads at all chord-to-W-beam bearing surfaces. 1 3/4" Vertical (b) G ·H 4. See Standard Drawings E 802-SBTS-03 and 04 for end-support € 1"ØHoles (3) Saddle Shim (2) member sizes. for U-Bolts 6" with 1/8" Thick-Neoprene Pad (5) A corner brace is required on each of the eight external corners of 涝 1 1/4" 3 1/2" W-Ream 15/16" Ø Hole 1 3/4" exterior and interior sections. Each brace shall be 1'-9" x 3" x 1/2". (typ.) 1 (types A-E) See Standard Drawing E 802-SBTS-08 for corner bracing Detail E. -{(typ.) 5/16" 1 3/16" Ø Holes max. (inin) (types F-H) 6. See Standard Drawing E 802-SBTS-12 for HSS square-beam as an TIF alternate to truss supporting W-beam. 3/4" 2 (7) For truss type H, Horizontal (f) will overlap Diagonals (g). Trim 2 W-Beam Horizontal (f) for welding to Diagonals (g). SECTION H-H (type A-E) Diagonal (g) SADDLE SHIM DETAIL TRUSS TYPE D а b LOWER CHORD CONNECTION DETAIL 6 1/2" 17/32" 1 7/32" SECTION F-F A & B C - E 7" 25/32" 31/32" F 7 1/2" 25/32" 31/32" D + 4 1/4" -Column (h) G 9" 25/32" 31/32" D + 1 1/4" D н 10" 25/32" 31/32" -Diagonal (g) € Truss Lower Chord R = D/2 + 1/32" R + b = 4 1/2" (type A-E) 3/4" Ø U-bolts (A-E) (5) Corner Bracing D = Outside Diameter of Chord(a). R + b = Offset (type F-H) 1" Ø U-bolts (F-H) INDIANA DEPARTMENT OF TRANSPORTATION -Horizontal (f) -(1) 34 SIGN BOX TRUSS STRUCTURE 5/16" € 1 1/4" Ø Holes END-SUPPORT LOWER CHORD W-Beam for U-Bolts Γ. CONNECTION DETAILS Saddle Shim--(1) SEPTEMBER 2022 End-Support Column (h) 1' 3" (types A-E) STANDARD DRAWING NO. E 802-SBTS-11 1'- 4 1/2" (types F-H) (typ.) 12 4 SECTION G-G DESIGN STANDARDS ENGINEER DATE SECTION H-H (type F-H) **ELEVATION (END-SUPPORT)** SADDLE SHIM DETAIL TYPICAL BRACING MEMBERS CONNECTION CHIEF ENGINEER DATE

#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

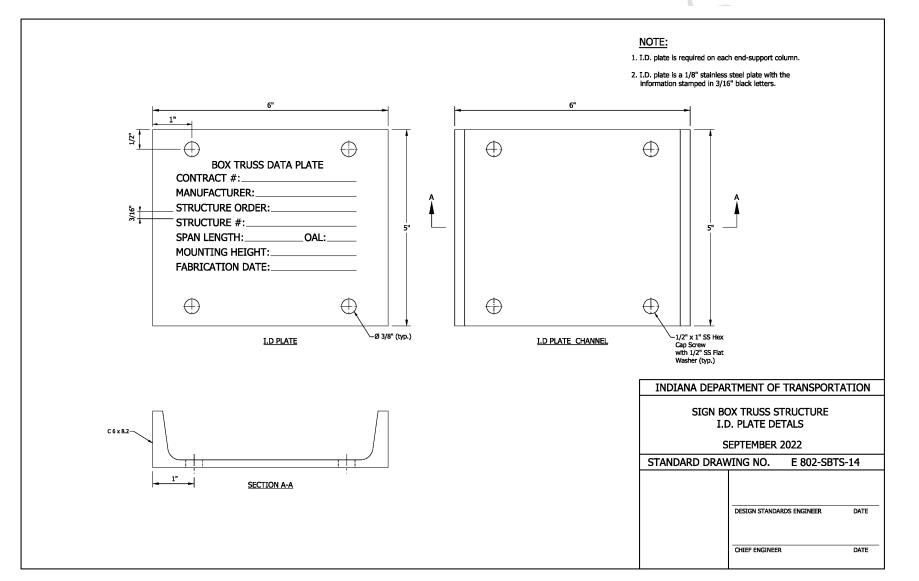


# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

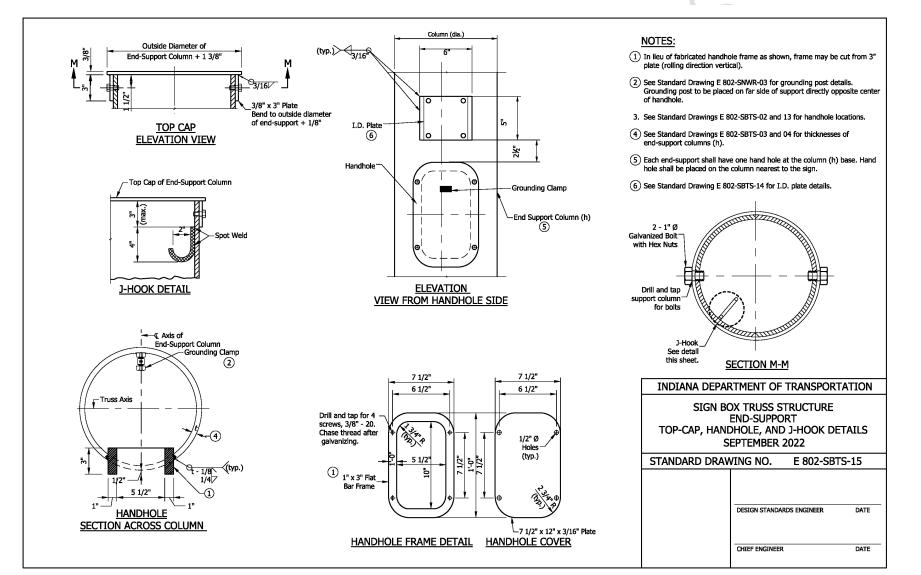
E 802-SBTS series (PROPOSED DRAFT -01 thru -41) Sheet 13 (revised draft)



# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



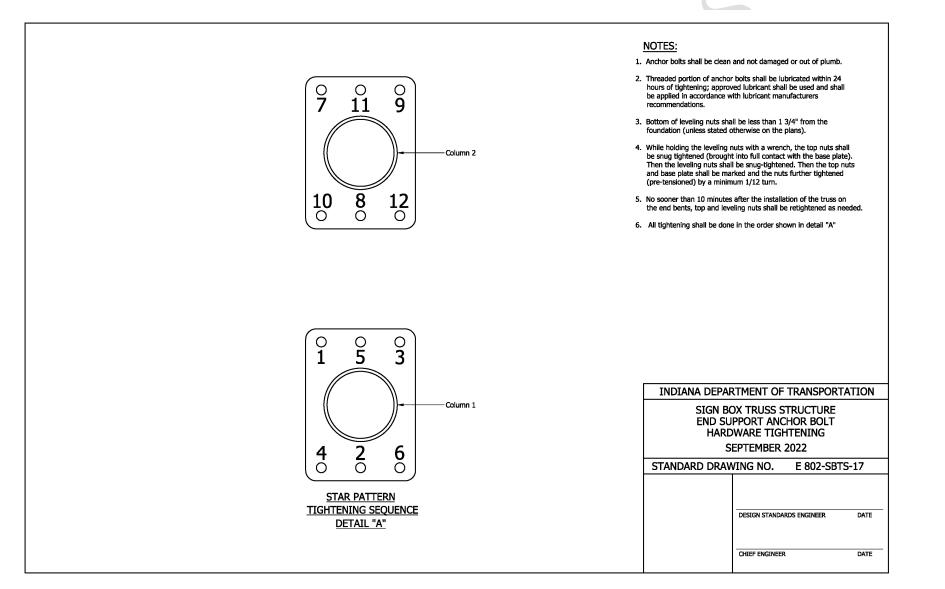
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



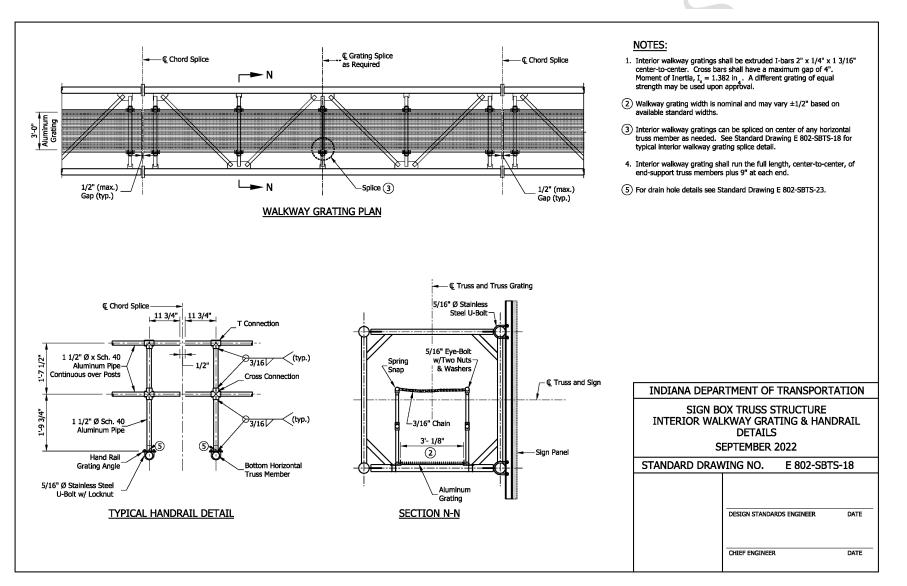
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

E 802-SBTS series (PROPOSED DRAFT -01 thru -41) 1 7/8" Ø NOTES: 1/2" Foundation 5/16" Ø Hole (typ.) Axis Stud Holes (1) Use temporary positioning plate and bottom anchor plate for all (typ.) foundations. Temporary positioning plate should be removed after Ð Æ placing concrete. 1)Temporary Top of Positioning Concrete (2) Secure galvanized metal skirt to base plate after erection as shown in Plate ų Ę. Foundation 9 skirt detail. -5' SP MINIMUM . . (3) Minimum base plate gap is 2 1/2" and can be increased up to 5 1/2". Metal skirt width shall be at least 1 1/2" more than the actual gap. DETAIL G j, (4) May use four separate 5" plates welded together to maintain angles Truss  $\prec$ 3/16 1 3/4" Ø Anchor Bolts 1/2"₽ and shape as shown. Axis 5" with Heavy Hex Nuts (typ.) 5 (5) May use two separate 3" and two separate 5" plates welded together to maintain angles and shape as shown. Threa Ħ U.N.C. T 6 See Standard Drawings E 802-SBTS-13 for end-support base plate 止力 шb 80  $\oplus$ details. 11111 1/2" 2 1/2" 7 1/2" 7 1/2" 2 1/2" 7. See Standard Drawing E 802-SBTS-17 for anchor bolt hardware 1/2" 1)Bottom Anchor Plate -3/8" x 2" Slots tightening requirements. 1'-8" ANCHOR BOLT DETAILS BEFORE CONCRETE PLACEMENT TEMPORARY POSITIONING PLATE 3 1/2" 1 7/8" Ø End-Support DETAIL H 2 Foundation Column (h) Hole (typ.) Axis End-Support 2 Galvanized Base Plate (6) 10 ga. Galvanized Plate Metal Skirt A F Top of "O-້າດ (B) P Concrete Foundation 띡 (3) INDIANA DEPARTMENT OF TRANSPORTATION P HILLING 5/16" Ø 2'-5" . Stud Holes-SIGN BOX TRUSS STRUCTURE Truss (typ.) 3/16 1/2" END-SUPPORT Axis (min.) 1.-0 (typ.) ANCHOR BOLT AND METAL SKIRT DETAILS 2'-5" 3'-6" SEPTEMBER 2022 1 3/4" Ø Anchor Bolts 1'-9" with Heavy Hex Nuts STANDARD DRAWING NO. E 802-SBTS-16 ⊕ ⊧ 2 1/2" 7 1/2" 1 3/4" 7 1/2" 1 3/4" фþ 11111 1'-6 1/2" Detail H DESIGN STANDARDS ENGINEER DATE 1)Bottom Anchor Plate –Detail G BOTTOM ANCHOR PLATE ANCHOR BOLT DETAILS AFTER CONCRETE PLACEMENT METAL SKIRT DETAIL CHIEF ENGINEER DATE

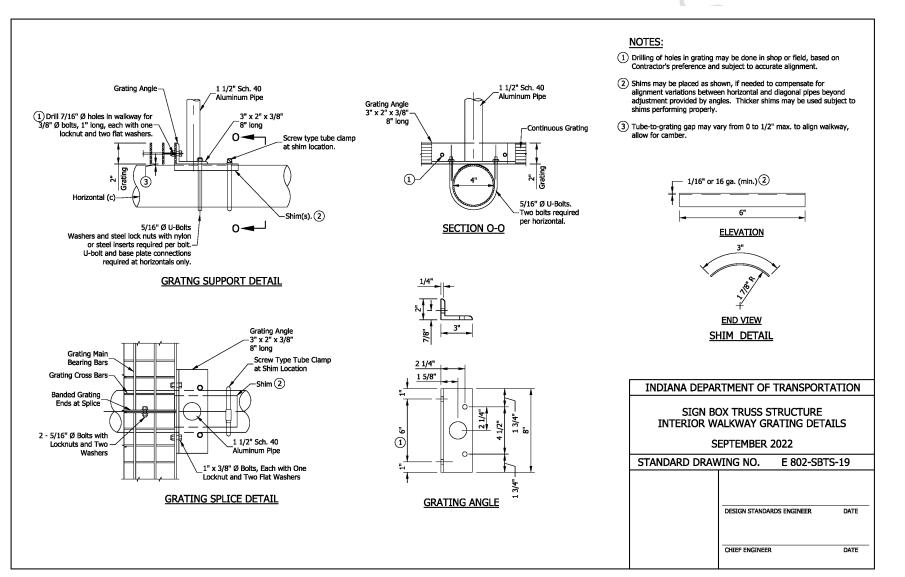
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



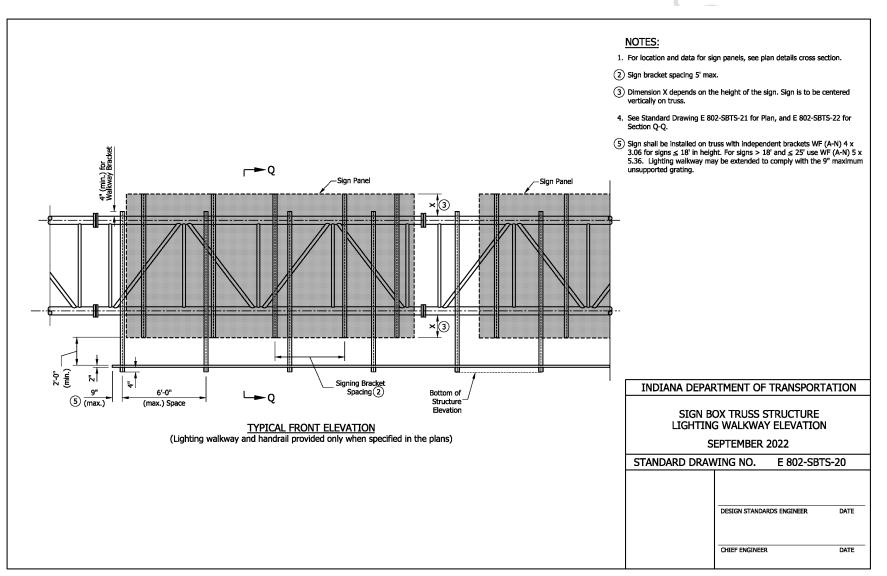
# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



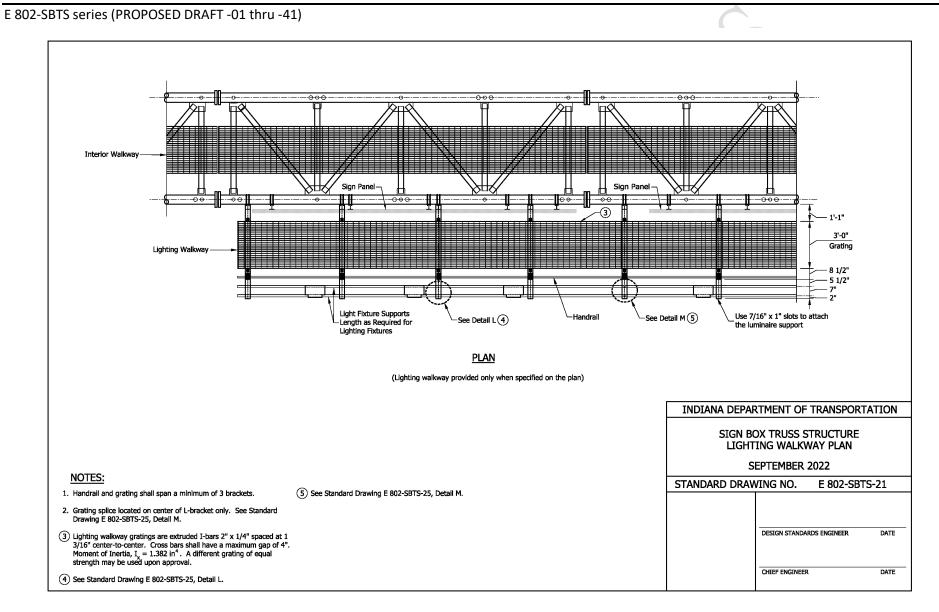
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



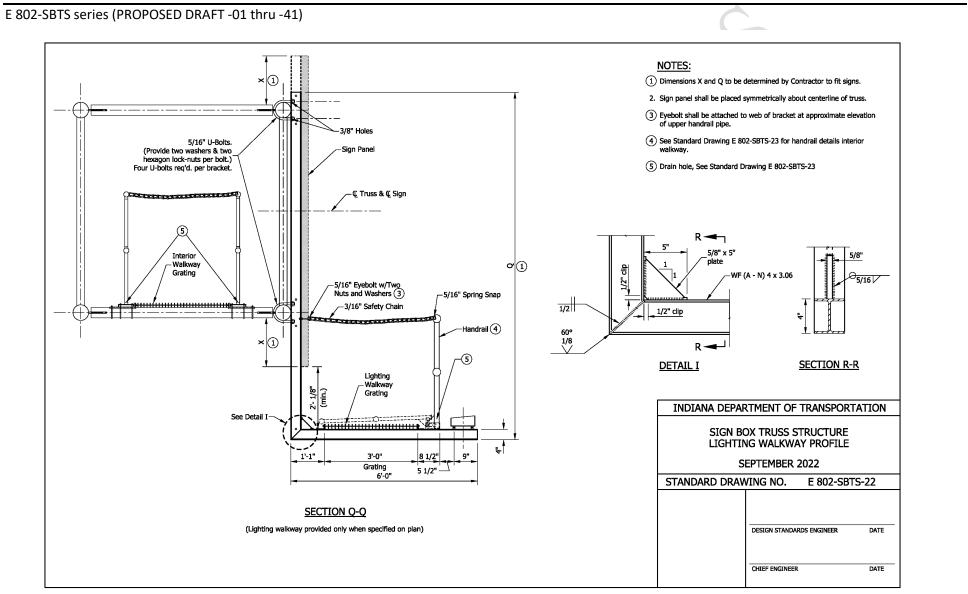
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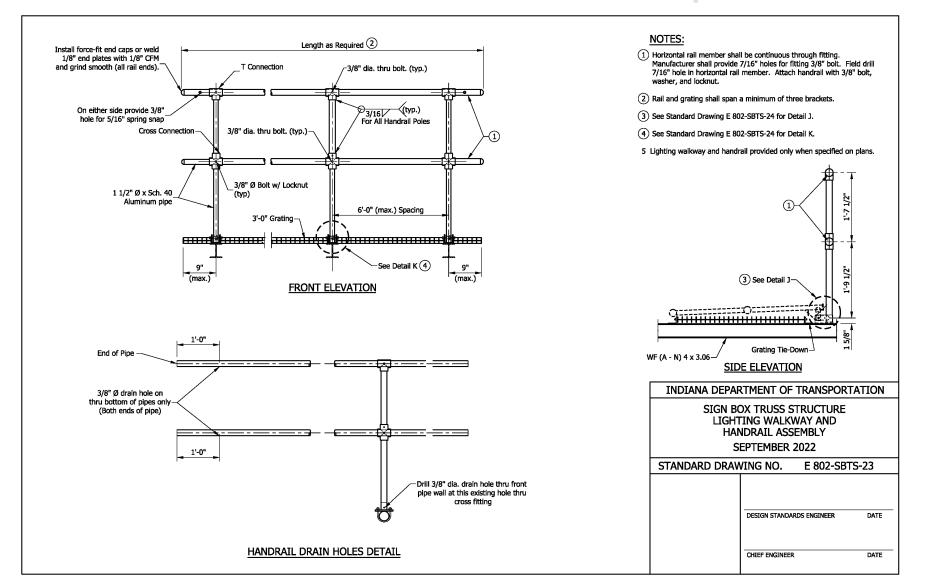
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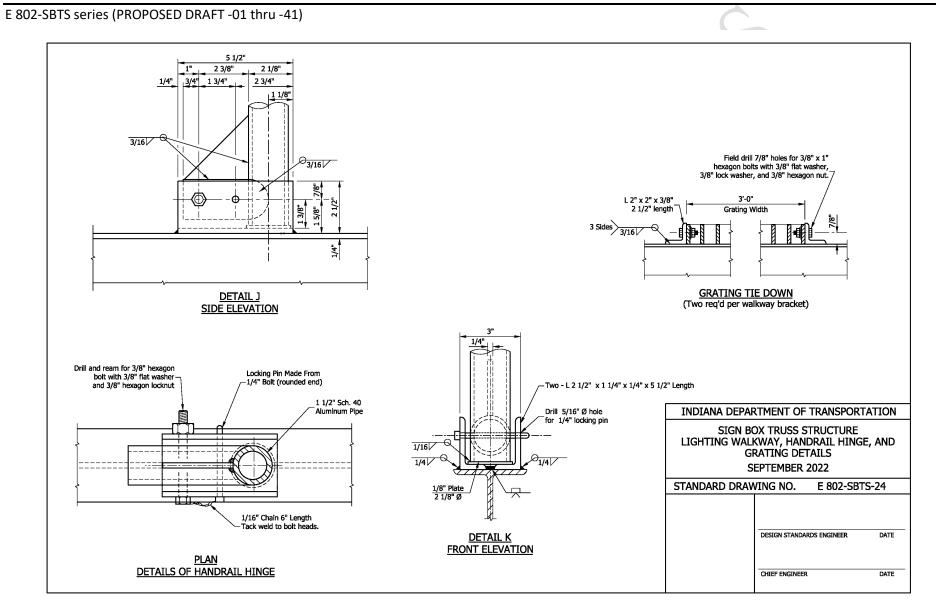
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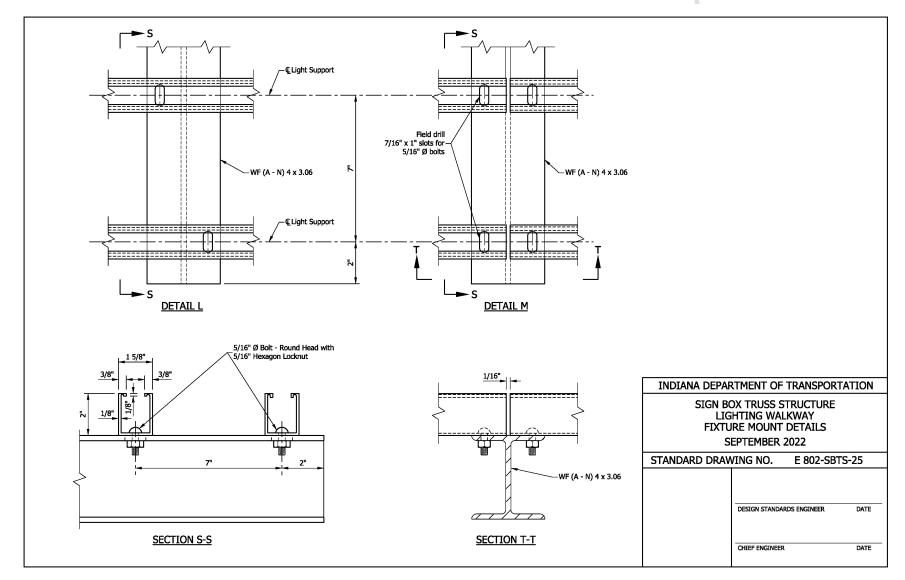
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



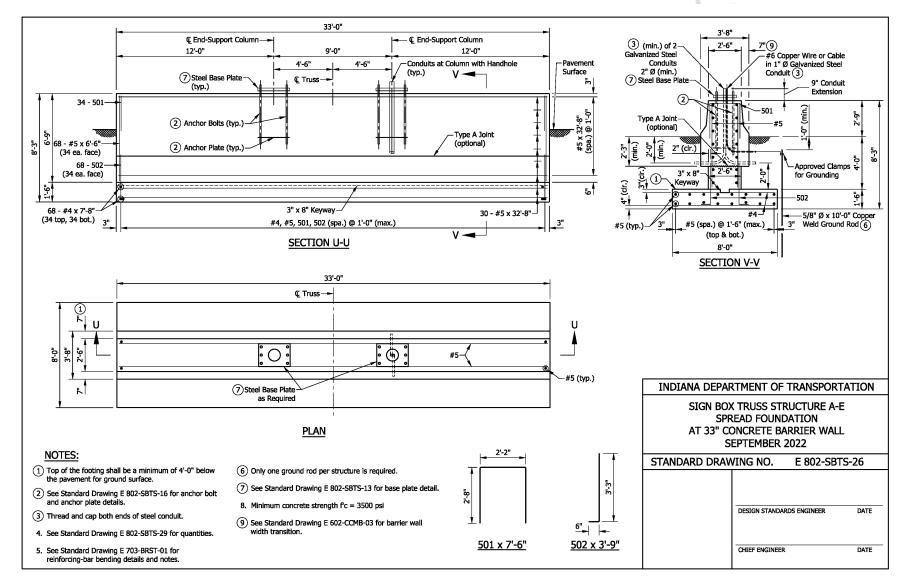
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



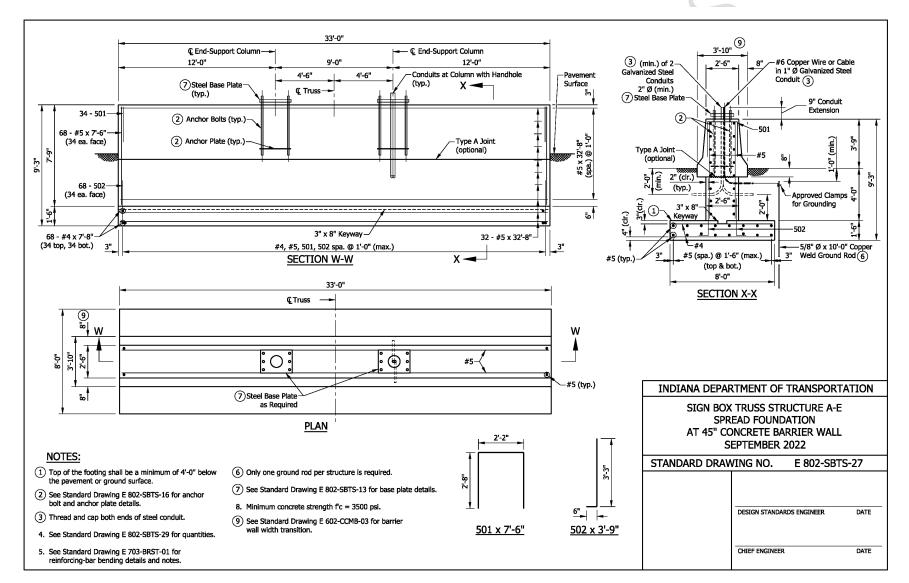
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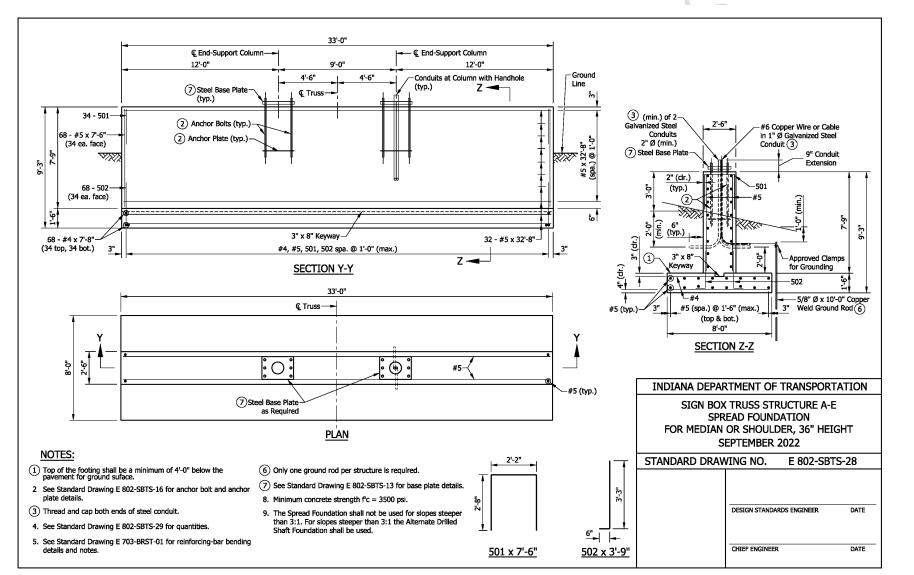
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

# E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

-	SPREAD FOUNDATION AT 33" CONCRETE BARRIER WALL					
AT 33	CUNCRET		WALL			
EPOXY-0	COATED RE	INFORCING	g Bars			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT			
501	34	7'-6"				
502	68	3'-9"				
#5	68	6'-6"				
#5	30	32'-8"				
Total #5			2015 LBS			
#4	68	7'-8"				
Total #4			348 LBS			
Total Epoxy-Co Reinforcing Ba			2363 LBS			
	CONCRETE, CLASS A					
Total Concrete,	39.8 CYS					
	MISCELLANEOUS					
Surface Seal			30.4 SYS			

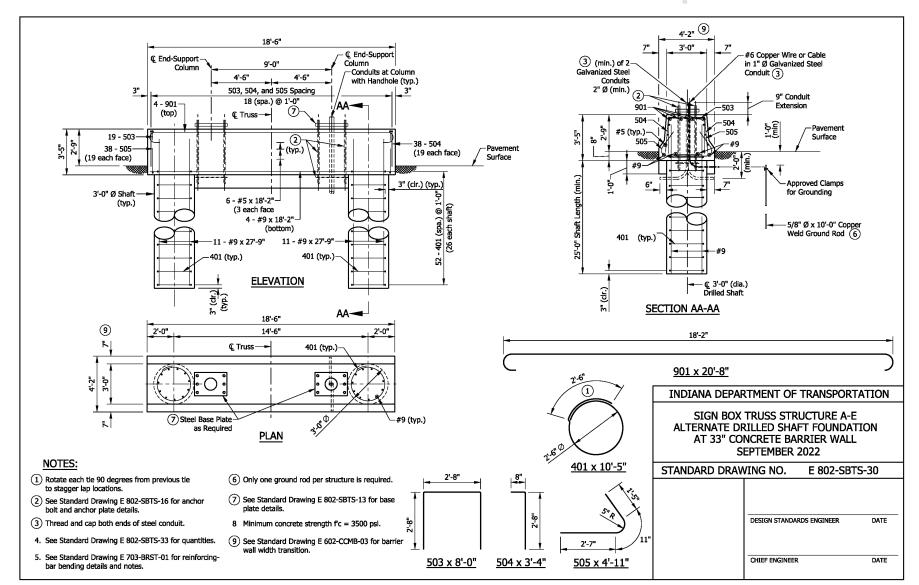
SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL					
AT 45	CONCRETE	BARRIER	WALL		
EPOXY-0	COATED RE	INFORCING	5 BARS		
MARK OR SIZE	NO. OF BARS	WEIGHT			
501	501 34 7'-6"				
502	68	3'-9"			
#5	68	7'-6"			
#5	32	32'-8"			
Total #5			2154 LBS		
#4	68	7'-8″			
Total #4			348 LBS		
Total Epoxy-Co Reinforcing Bar			2502 LBS		
CONCRETE, CLASS A					
Total Concrete,	41.4 CYS				
	MISCELL	ANEOUS			
Surface Seal			37.8 SYS		

SPREAD FOUNDATION								
FOR MEDI	an or sho	ULDER, 36	" HEIGHT					
EPOXY-0	EPOXY-COATED REINFORCING BARS							
MARK OR SIZE								
501	34	7'-6"						
502	68	3'-9"						
#5	68	7'-6"						
#5	32	32'-8"						
Total #5			2154 LBS					
#4	68	7'-8"						
Total #4			348 LBS					
Total Epoxy-Co Reinforcing Bar			2502 LBS					
	CONCRETE	, CLASS A						
Total Concrete,	38.4 CYS							
	MISCELL	ANEOUS						
Surface Seal			35.8 SYS					

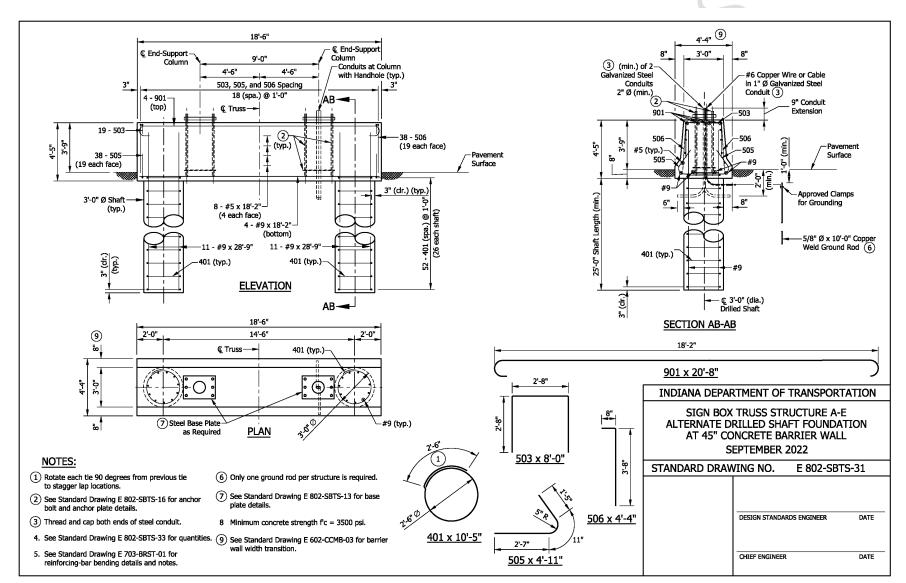
Quantities are only for the depth of footing for slope 3:1 or less.

INDIANA DEPARTMENT OF TRANSPORTATION			
SIGN BOX TRUSS STRUCTURE A-E SPREAD FOUNDATIONS QUANTITIES SEPTEMBER 2022			
STANDARD DRAWING NO. E 802-SBTS-29			
	DESIGN STANDARI	DS ENGINEER	DATE
	CHIEF ENGINEER		DATE

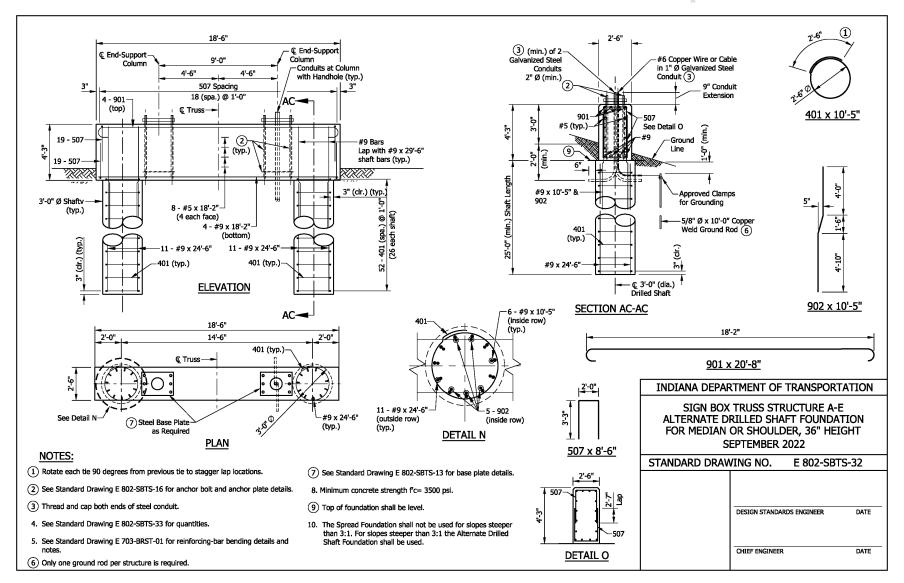
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



# REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

# E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

	ALTERNATE DRILLED SHAFT FOUNDATION			
AT 33"	AT 33" CONCRETE BARRIER WALL			
EPOXY-	COATED RE	INFORCING	G BARS	
MARK OR	NO. OF	LENGTH	WEIGHT	
SIZE	BARS	LENGTH	WEIGHT	
901	4	20'-8"		
#9	4	18'-2"		
#9	22	27'-9"		
Total #9			2604 LBS	
503	19	8'-0"		
504	38	3'-4"		
505	38	4'-11"		
#5	6	18'-2"		
Total #5			599 LBS	
401	52	10'-5"		
Total #4			362 LBS	
Total Epoxy-Coated			3565	
Reinforcing Bars			3303	
CONCRETE, CLASS A				
Total Concrete, Class A		23.1 CYS		
MISCELLANEOUS				
Surface Seal			18.1 SYS	

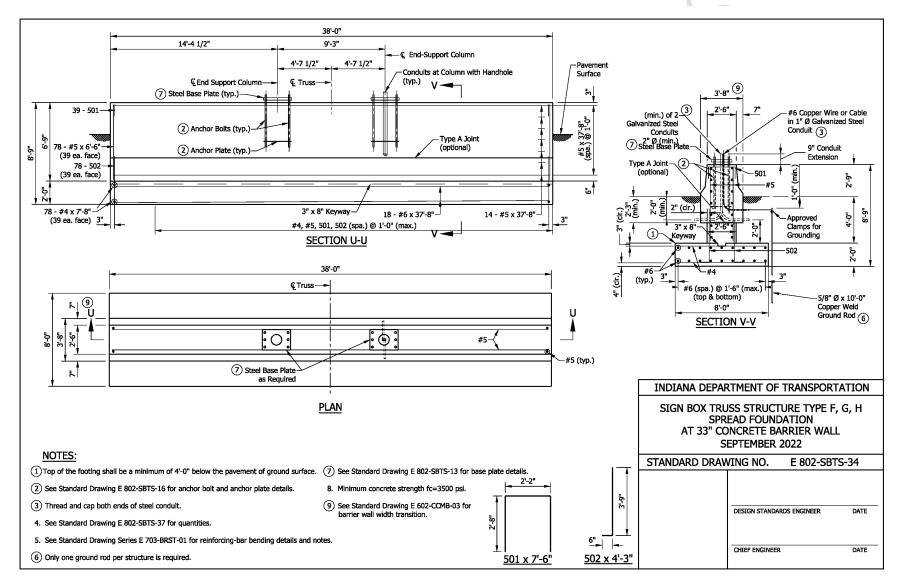
ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL				
EPOXY-0	EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
901	4	20'-8"		
#9	4	18'-2"		
#9	22	28'-9"		
Total #9			2679 LBS	
503	19	8'-0"		
505	38	4'-11"		
506	38	4'-4"		
#5	8	18'-2"		
Total #5			677 LBS	
401	52	10'-5"		
Total #4			362 LBS	
Total Epoxy-Coated Reinforcing Bars		3718 LBS		
CONCRETE, CLASS A				
Total Concrete, Class A		23.9 CYS		
MISCELLANEOUS				
Surface Seal			22.2 SYS	

	ALTERNATE DRILLED SHAFT FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-	COATED RE	INFORCING	G BARS	
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
901	4	20'-8"		
902	10	10'-5"		
#9	4	18'-2"		
#9	12	10'-5"		
#9	22	24'-6"		
Total #9			3140 LBS	
507	38	8'-6"		
#5	8	18'-2"		
Total #5			488 LBS	
401	52	10'-5"		
Total #4			362 LBS	
Total Epoxy-Coated Reinforcing Bars		3990 LBS		
CONCRETE, CLASS A				
Total Concrete, Class A		18.9 CYS		
MISCELLANEOUS				
Surface Seal			21.6 SYS	

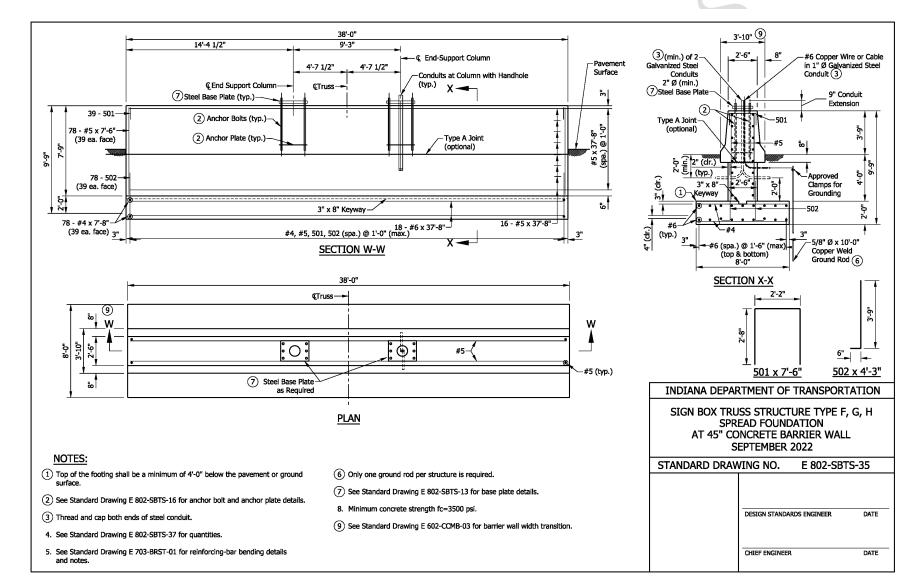
Quantities are only for the depth of footing for slope 3:1 or less.

INDIANA DEPARTMENT OF TRANSPORTATION			
SIGN BOX TRUSS STRUCTURE TYPE A-E ALTERNATE DRILLED SHAFT FOUNDATIONS QUANTITIES SEPTEMBER 2022			
STANDARD DRAWING NO. E 802-SBTS-33			
	DESIGN STANDAR	DS ENGINEER	DATE
	CHIEF ENGINEER		DATE

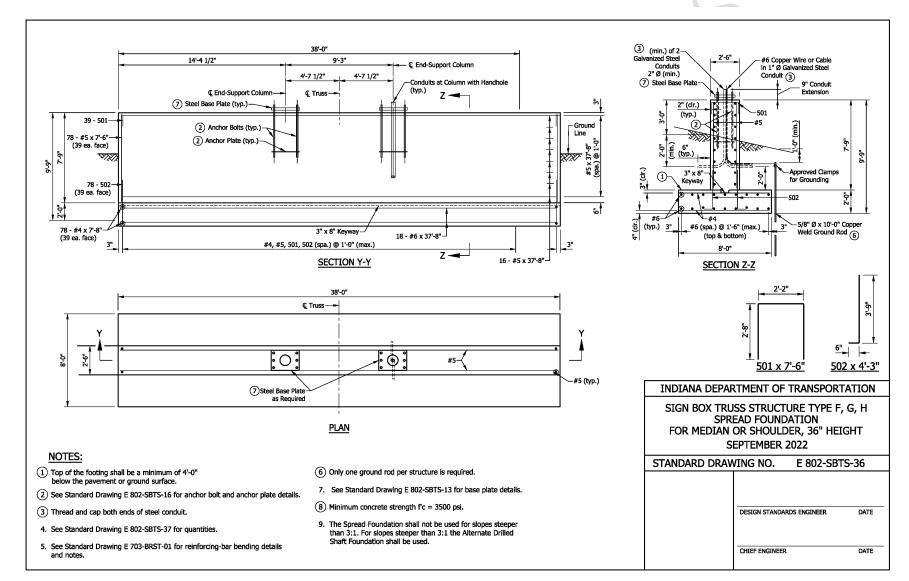
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

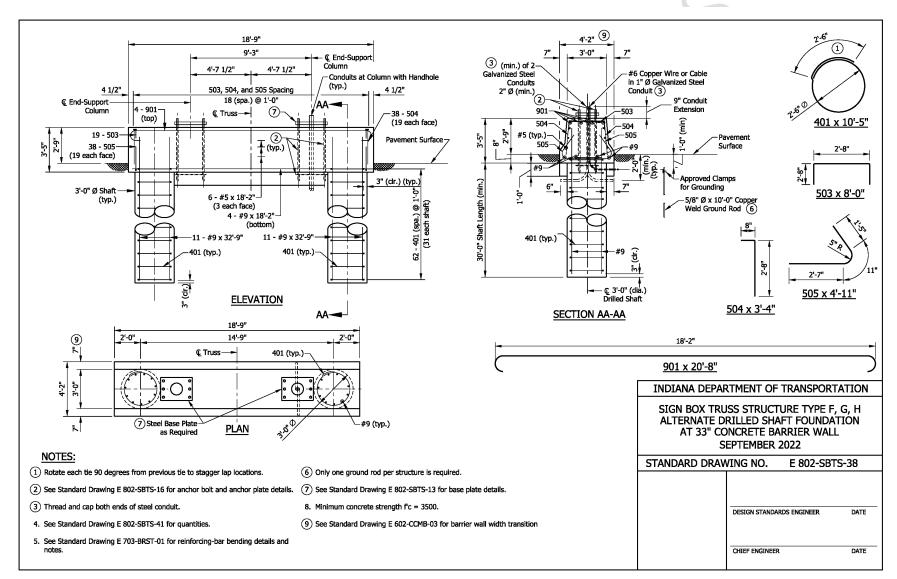
SPREAD FOUNDATION			
AT 33'	CONCRETI	E BARRIER	WALL
EPOXY-	COATED RE	INFORCIN	g Bars
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#6	18	37'-8"	
Total #6			1018 LBS
501	39	7'-6"	
502	78	4'-3"	
#5	78	6'-6"	
#5	14	37'-8"	
Total #5			1730 LBS
#4	78	7'-8"	
Total #4			399 LBS
Total Epoxy-Coated 3147 LBS Reinforcing Bars			3147 LBS
CONCRETE, CLASS A			
Total Concrete, Class A 51.4 CYS			51.4 CYS
MISCELLANEOUS			
Surface Seal 35.0 SYS			

SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-0	COATED RE	INFORCIN	g Bars
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#6	18	37'-8"	
Total #6			1018 LBS
501	39	7'-6"	
502	78	4'-3"	
#5	78	7'-6"	
#5	16	37'-8"	
Total #5			1890 LBS
#4	78	7'-8"	
Total #4			399 LBS
Total Epoxy-Coated Reinforcing Bars			3307 LBS
CONCRETE, CLASS A			
Total Concrete, Class A 53.3 CYS			53.3 CYS
MISCELLANEOUS			
Surface Seal			43.4 SYS

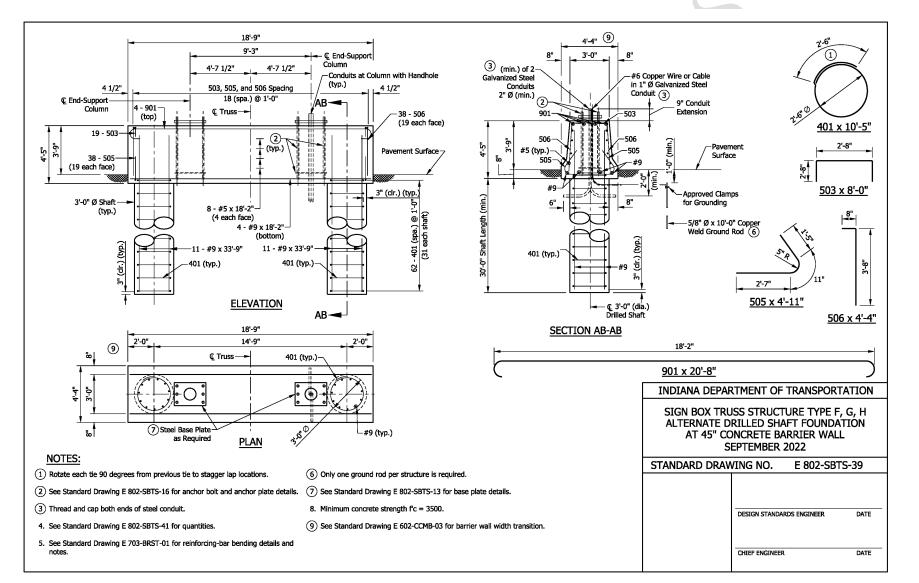
:	SPREAD FOUNDATION			
FOR MEDI	AN OR SHO	ULDER, 36	" HEIGHT	
EPOXY-	COATED RE	INFORCING	G BARS	
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
#6	18	37'-8"		
Total #6			1018 LBS	
501	39	7'-6"		
502	78	4'-3"		
#5	78	7'-6"		
#5	16	37'-8"		
Total #5			1890 LBS	
#4	78			
Total #4			399 LBS	
Total Epoxy-Coated Reinforcing Bars			3307 LBS	
CONCRETE, CLASS A				
Total Concrete, Class A			49.8 CYS	
MISCELLANEOUS				
Surface Seal 41.2 SYS			41.2 SYS	

INDIANA DEPARTMENT OF TRANSPORTATION			
SIGN BOX TRUSS STRUCTURE TYPE F, G, H SPREAD FOUNDATIONS QUANTITIES SEPTEMBER 2022			
STANDARD DRAW	VING NO.	E 802-SBTS	5-37
	DESIGN STANDAR	DS ENGINEER	DATE
	CHIEF ENGINEER		DATE

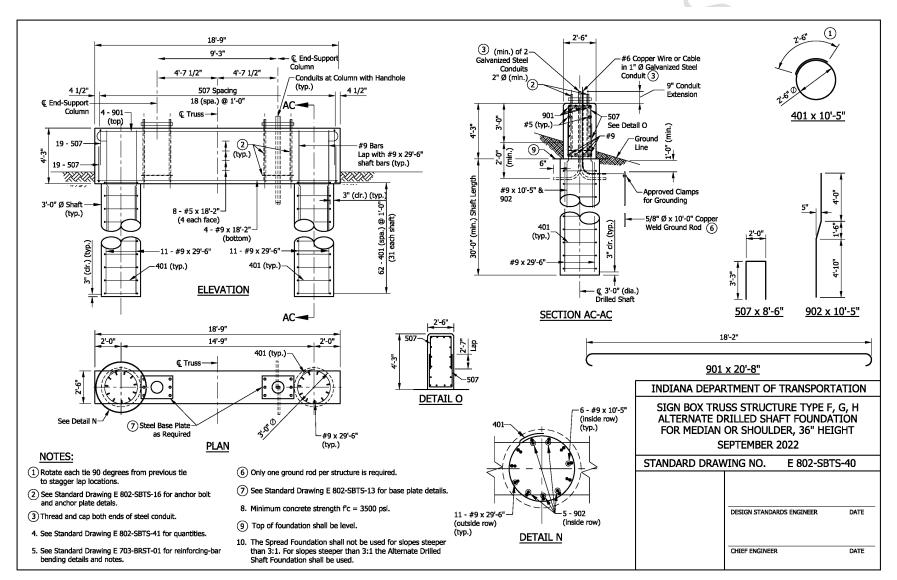
#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



#### REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS



## REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

	ALTERNATE DRILLED SHAFT FOUNDATION AT 33" CONCRETE BARRIER WALL			
EPOXY-0	COATED RE	INFORCING	g bars	
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT	
901	4	20'-8"		
#9	4	18'-2"		
#9	22	32'-9"		
Total #9			2978 LBS	
503	19	8'-0"		
504	38	3'-4"		
505	38	4'-11"		
#5				
Total #5			599 LBS	
401 62 10'-5"				
Total #4			431 LBS	
Total Epoxy-Coated Reinforcing Bars			4008 LBS	
CONCRETE, CLASS A				
Total Concrete, Class A 25.8 Ct			25.8 CYS	
	MISCELLANEOUS			
Surface Seal 18.0 SYS				

ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-0	COATED RE	INFORCING	G BARS
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
#9	4	18'-2"	
#9	22	33'-9"	
Total #9			3053 LBS
503	19	8'-0"	
505	38	4'-11"	
506	38	4'-4"	
#5	8	18'-2"	
Total #5			677 LBS
401	62	10'-5"	
Total #4			431 LBS
Total Epoxy-Coated 4161 LBS Reinforcing Bars			4161 LBS
CONCRETE, CLASS A			
Total Concrete, Class A 26.5 CYS			26.5 CYS
MISCELLANEOUS			
Surface Seal 22.2 SYS			22.2 SYS

ALTERNATE DRILLED SHAFT FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
		EINFORCING	
		INFORCING	5 DAKS
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
902	10	10'-5"	
#9	4	18'-2"	
#9	12	10'-5"	
#9	22	29'-6"	
Total #9			3514 LBS
507	38	8'-6"	
#5	8	18'-2"	
Total #5			488 LBS
401	62 10'-5"		
Total #4			431 LBS
Total Epoxy-Coated Reinforcing Bars			4433 LBS
CONCRETE, CLASS A			
Total Concrete, Class A 23.1 C			23.1 CYS
	MISCELL	ANEOUS	
Surface Seal 21.6 SYS			21.6 SYS

INDIANA DEPARTMENT OF TRANSPORTATION				
SIGN BOX TRUSS STRUCTURE TYPE F, G, H ALTERNATE DRILLED SHAFT FOUNDATIONS QUANTITIES SEPTEMBER 2022				
STANDARD DRAWING NO. E 802-SBTS-41				
	DESIGN STANDARDS ENGINEER	DATE		
	CHIEF ENGINEER	DATE		

COMMENTS AND ACTION

802.07 Installing Supports 910.19 Overhead Sign Structures E 802-SBTS series (-01 thru -41)

#### **DISCUSSION:**

This item was introduced and presented by Mr. Boruff who explained that the design of the current box truss span structures is based on the previous AASHTO design code. Currently, the drawings for extended span for box truss structures are recurring plan details. During inspections, issues have been routinely found with anchor bolt hardware being loose or out of position on trusses and other types of sign structures. This can lead to premature fatiguing. Some of the ASTM references are outdated or incorrect.

Mr. Boruff proposed to update the design and standard drawings for box trusses in accordance with the current AASHTO LRFD design code. Merge the existing RPD series with 802-SBTS as many of the details are shared. Revise the procedure for anchor bolt tightening for all sign structures incorporating recommendations from the FHWA, and update the ASTM references.

Mr. Koch, prior to the meeting, mentioned that the 33", 36", and 45" concrete barrier wall red markup proposal has 7ea #6, with the clean version having 9ea #6. Is 9ea correct? Mr. Boruff responded that the clean version is correct and that it should be 9 - # 6 bars. Mr. Boruff stated that corrections for clarification have been made and sent to the members of the Standards Committee.

Following a discussion concerning the 802 revision, part e., the term "as needed" will be reviewed. Ms. Beaucaire asked if there is also a time limit after the "no sooner than 10 minutes"? Mr. Boruff said that he is not aware of such a requirement. Mr. Pankow suggested a time frame, so it doesn't sit for too long before retightening. Minor revisions for clarification and consistency are shown in these minutes, as recommended by Mr. Boruff, Ms. Mouser, and Mr. White.

Also, additional detail on sheet 13 (revised draft shown in these minutes) is to provide for the crossing of the diagonal members in the end supports; the other changes are in formatting or are editorial per the Standards Office.

Ms. Mouser will get back to us regarding the RPD effective date. Post meeting note: RPD will be effective March 1, 2022.

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

## COMMENTS AND ACTION

802.07 Installing Supports 910.19 Overhead Sign Structures E 802-SBTS series ( -01 thru -41)

[continued]

Motion: Mr. Boruff Second: Mr. Orton	Action:	
Ayes: 8		Passed as Submitted
Nays: 0	x	Passed as Revised
FHWA Approval: YES		Withdrawn
Standard Specifications Sections referenced and/or affected:	<u>x</u>	2024 Standard Specifications
		Revise Pay Items List
802.07 pg 891 - 893;		
910.19 pg 1074 - 1078.		
	_	Create RSP (No. <u>802-T-230</u> )
Recurring Plan Details affected:		Effective: December 1, 2021
		RSP Sunset Date: <u>2024 SS book</u>
<u>802-T-222d</u>		
Steadard Drawing offected		
Standard Drawing affected:		Revise RSP (No) Effective:
E 802-SBTS		RSP Sunset Date:
<u>L 602-5015</u>		NSF Suffset Date.
Design Manual Sections affected:		
	X	Standard Drawings
502-4		Effective: September 1, 2022
GIFE Sections cross-references:	<u>X</u>	Create RPD (No. <u>802-T-230d</u> )
		Effective: March 1, 2022
NONE		
F		GIFE Update
		Frequency Manual Update
	—	SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS REVISION TO STANDARD SPECIFICATIONS

## PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Updates are needed to the pipe backfill portions of 715.

PROPOSED SOLUTION: Incorporate the proposed updates.

APPLICABLE STANDARD SPECIFICATIONS: 715

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: create new 715 RSP

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: INDOT Pipe Committee

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: all contracts with a 715 pay item.

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

**Organization: INDOT** 

Phone Number: 317-522-9692

Date: 7/1/21

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

# 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? Yes

Congestion/travel time? N/A

Ride quality? Yes

<u>Will this proposal reduce operational costs or maintenance effort?</u> Yes Will this item improve safety:

For motorists? Yes

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? N/A Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

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

SECTION 715 – PIPE CULVERTS, AND STORM AND SANITARY SEWERS 715.09 Backfilling 715.13 Method of Measurements 715.14 Basis for Payment

The Standard Specifications are revised as follows:

SECTION 715, BEGIN LINE 334, DELETE AND INSERT AS FOLLOWS:

#### 715.09 Backfilling

All pipe trenches shall be backfilled with structure backfill-or flowable backfill. Structure backfill shall be placed in accordance with 211. Flowable backfill shall be placed in accordance with 213.07 as shown on the plans or as directedStructure backfill nominal sizes 2 in. and 1 1/2 in. shall not be used as pipe backfill on any pipe with exterior ribs, corrugations, or other profile.

If a pipe is to be backfilled using one of the flowable backfill options, design calculations shall be submitted in accordance with 105.02, either proving the pipe will not float or detailing the methods to be taken to prevent the pipe from floating during installation of the flowable backfill. Prior to placing one of the flowable backfill options for structure backfill, all standing water shall be removed from the trench. If the-water cannot be removed from the trench, one of the non-flowable structure backfill options shall be used in lieu of flowable to backfill to an elevation 2 ft above the groundwater. The remainder of the trench shall be backfilled as shown on the plans.

Where material other than structure backfill is allowed and used for backfilling, it shall be of such nature that compacts readily. The portion around and for 6 in. above the top of the pipe shall be free from large stones. The material shall be placed in layers not exceeding 6 in. loose measurement, and each layer shall be compacted thoroughly by means of mechanical tamps.

Whenever a fine aggregate or dense graded backfill is placed on top of a coarse graded backfill, geotextile, in accordance with 918.02(a), Type 2A shall be used between the different backfill materials.

Backfill for slotted drain pipe and slotted vane drain pipe shall consist of class A concrete on both sides of the pipe. During the backfilling and paving operations, the slot shall be covered to prevent infiltration of material into the pipe.

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

For pipes that were video inspected, a copy of the video inspection shall be provided in a format acceptable to the Engineer. The video inspection shall be provided prior to

SECTION 715 – PIPE CULVERTS, AND STORM AND SANITARY SEWERS 715.09 Backfilling 715.13 Method of Measurements 715.14 Basis for Payment

performing the mandrel testing or if mandrel testing is not required, prior to acceptance of the pipe.

*Commercial and private drive pipesType 3 pipes in accordance with 715.02(c) are excluded from the mandrel testing and video inspection requirements.* 

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

After the visual or video inspection, the Contractor shall check pipe deflection by performing a mandrel test as directed on pipes manufactured from materials listed in the following table. The Engineer will determine the runs of pipe installations to be mandrel tested with a minimum of 10% of the total length of each material to be inspected.

Pipes Requireding to Be Mandrel Testeding		
Pipe Material	Standard Specifications	
Corrugated Polyethylene Pipe*	907.17(b)	
Corrugated Polypropylene Pipe	907.19	
Profile Wall Polyethylene Pipe	907.20	
Smooth Wall Polyethylene Pipe	907.21	
Profile Wall PVC Pipe*	907.22	
Smooth Wall PVC Pipe	907.23	
* When used as underdrain pipe, mandrel testing will not be required.		

The mandrel shall have a minimum of nine arms or prongs and a diameter that is 95% of the nominal pipe diameter. The Contractor shall provide a proving ring that is 95% of the nominal pipe diameter for each mandrel.

The Contractor shall pull the mandrel through the pipe by hand. If the mandrel does not pass through the pipe, the Contractor shall measure and report the minimum diameter of the deficient pipe to the Engineer.

If the minimum diameter of the deficient pipe is between 92.5% and 95.0% of the nominal pipe diameter, the Contractor shall provide an evaluation of the deficient pipe prepared by a professional engineer. The evaluation shall consider the severity of the deflection and its effects on structural integrity, environmental conditions, and the design service life of the pipe. A report summarizing the evaluation and including the professional

SECTION 715 – PIPE CULVERTS, AND STORM AND SANITARY SEWERS 715.09 Backfilling 715.13 Method of Measurements 715.14 Basis for Payment

engineer's recommendation for acceptance, remediation, or replacement of the pipe shall be submitted to the Engineer for final determination.

If the minimum diameter of the deficient pipe is equal to or less than 92.5% of the nominal pipe diameter, the deficient pipe shall either be replaced or a remediation plan shall be prepared by a professional engineer and submitted to the Engineer for final determination.

The deficient pipe shall be replaced if the professional engineer's remediation plan recommends replacement of the pipe or if the pipe has been damaged.

Deficient pipe shall at a minimum be replaced between the nearest pipe joints or to the nearest structure. Replaced or remediated pipe sections shall be mandrel tested a minimum of 30 days after the completion of backfill operations.

Commercial and private drive pipes are excluded from the mandrel testing and video inspection requirements.

Where material other than structure backfill or flowable backfill is allowed and used for backfilling, it shall be of such nature that compacts readily. That portion around and for 6 in. above the top of the pipe shall be free from large stones. This material shall be placed in layers not to exceed 6 in., loose measurement, and each layer compacted thoroughly by means of mechanical tamps. Where coarse aggregate is used for structure backfill, geotextile shall be installed.

An adequate earth cover, as shown on the plans, shall be placed over the structure before heavy equipment is operated over it.

Backfill for slotted drain pipe and slotted vane drain pipe shall consist of class A concrete on both sides of the pipe. During the backfilling and paving operations, the slot shall be covered to prevent infiltration of material into the pipe.

SECTION 715, BEGIN LINE 529, DELETE AND INSERT AS FOLLOWS:

Video inspection for pipe will be measured by the linear foot as determined by the electronic equipment.

Geotextile used to wrapfor backfill material will not be measured for payment.

SECTION 715, BEGIN LINE 667, DELETE AS FOLLOWS:

The cost of concrete, grating, pipe tubing, reinforcing bars, aggregate leveling bed, hardware cloth, and necessary incidentals, for construction of grated box end sections will

SECTION 715 – PIPE CULVERTS, AND STORM AND SANITARY SEWERS 715.09 Backfilling 715.13 Method of Measurements 715.14 Basis for Payment

be included in the cost of the grated box end section.

Geotextile required for coarse aggregate to be placed on top of the structure backfill material will not be paid for separately. The cost of the geotextile shall be included in the cost of the structure backfill.

The cost of providing video inspection equipment, technician, and a copy of the video inspection shall be included in the cost of video inspection for pipe.

COMMENTS AND ACTION

715.09 Backfilling715.13 Method of Measurements715.14 Basis of Payment

### **DISCUSSION:**

This item was introduced and presented by Mr. Beeson, sitting in as proxy for Mr. Reilman, who stated that updates are needed to the pipe backfill portions of 715.

Mr. Beeson proposed to incorporate the proposed updates.

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

Motion: Mr. Beeson Second: Mr. Pelz Ayes: 8 Nays: 0 FHWA Approval: YES	Action: _X	Passed as Submitted Passed as Revised Withdrawn
Standard Specifications Sections referenced and/or affected: 715.09 pg 738-740, 715.13 pg 744,	<u>×</u>	2024 Standard Specifications Revise Pay Items List
715.14 pg 746 Recurring Special Provision affected:	<u>_x</u>	Create RSP (No. <u>715-R-732</u> ) Effective: <u>December 1, 2021</u> RSP Sunset Date: <u>2024 SS book</u>
NONE (proposed to create new) Standard Drawing affected: NONE		Revise RSP (No) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE		Standard Drawing Effective:
GIFE Sections cross-references:		Create RPD (No) Effective:
NONE		GIFE Update Frequency Manual Update SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

**REVISION TO STANDARD SPECIFICATIONS** 

## PROPOSAL TO STANDARDS COMMITTEE

## PROBLEM(S) ENCOUNTERED:

The supply of fly ash is decreasing and at the same time INDOT's demand for fly ash is increasing. The specification currently limits the loss on ignition (LOI) of fly ash to a maximum of 3%. However, AASHTO M295 allows a higher limit. Increasing the limit will increase the supply of fly ash for INDOT contracts with no detrimental effect.

PROPOSED SOLUTION:

Increase the maximum Loss on Ignition from 3% to 4%.

APPLICABLE STANDARD SPECIFICATIONS: 901.02(b)1

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: N/A

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: all contracts except mowing, herbicide, ..."

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT Division of Materials and Tests

Phone Number: 317-522-9692

Date: 6/9/21

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

## 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.

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

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

<u>Will this proposal reduce operational costs or maintenance effort?</u> 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

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

<u>Item No. 5</u> (2022 SS) (contd.) Mr. Reilman Date: 7/15/21

**REVISION TO STANDARD SPECIFICATIONS** 

# SECTION 901 - PCC MATERIALS 901.02 Fly Ash Used as a Pozzolan

The Standard Specifications are revised as follows:

SECTION 901, BEGIN LINE 179, DELETE AND INSERT AS FOLLOWS:

## 1. Requirements

The fly ash shall be in accordance with AASHTO M 295 for class C or class F, with the following exceptions:

## COMMENTS AND ACTION

## 901.02 Fly Ash Used as a Pozzolan

#### **DISCUSSION:**

Mr. Beeson, sitting in as proxy for Mr. Reilman, introduced and presented this item stating that the supply of fly ash is decreasing and at the same time INDOT's demand for fly ash is increasing. The specification currently limits the loss on ignition, LOI, of fly ash to a maximum of 3%. However, AASHTO M295 allows a higher limit. Increasing the limit will increase the supply of fly ash for INDOT contracts with no detrimental effect.

Mr. Beeson proposed to increase the maximum Loss on Ignition from 3% to 4%, as shown above.

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

Motion: Mr. Beeson Second: Mr. Boruff	Action:	
Ayes: 8	<u>X</u>	Passed as Submitted
Nays: 0		Passed as Revised
FHWA Approval: YES		Withdrawn
Standard Specifications Sections referenced and/or affected:	<u>x</u>	2024 Standard Specifications
		Revise Pay Items List
901.02 pg 965.		Y
Recurring Special Provision affected:	<u>_x</u>	Create RSP (No. <u>901-M-061)</u> Effective: <u>December 1, 2021</u>
NONE (proposed to create new)		RSP Sunset Date: 2024 SS book
Standard Drawing affected: NONE Design Manual Sections affected:	_	Revise RSP (No) Effective: RSP Sunset Date:
NONE		Standard Drawing
		Effective:
GIFE Sections cross-references:		
		Create RPD (No)
NONE		Effective:
Y		GIFE Update
		Frequency Manual Update
	Х	SiteManager Update