INDIANA DEPARTMENT OF TRANSPORTATION

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Indianapolis, Indiana 46204

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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)*

NEW BUSINESS *(No items were listed)*

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

OLD BUSINESS *(No items were listed)*

NEW BUSINESS

Item No. 1 (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	

Item No. 2 (2022 SS)	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 SEAL~~*BLANK*	
902.01	Asphalt	
ACTION:	PASSED AS REVISED	

Item No. 3 (2022 SS)	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	

Item No. 4 (2022 SS)	Mr. Reilman	pg 118
715.09	Backfilling	
715.13	Method of Measurements	
715.14	Basis for Payment	
ACTION:	PASSED AS SUBMITTED	

901.02 Fly Ash Used as a Pozzolan

ACTION: PASSED AS SUBMITTED

cc: Committee Members
FHWA
ICI

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.

PROPOSED SOLUTION: 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

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

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 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~~ ..... ~~215.02~~
Coarse Aggregate, Class D or Higher,
Size No. 5, 8, 43, 53, or 73 ..... 904.03
Fly Ash, Class C *901.02*
Geogrid, Type IB 918.05
Geocell Confinement System ..... ~~214~~*918.04*
Geotextile *918.02*
Geotextile *Properties* for Pavement
~~and~~*or* Subgrade *Stabilizations* ..... 918.02(c)
Lime ..... *913.04(b)*
Portland Cement, Type 1 ..... *901.01(b)*
Water 913.01

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

Soil Property	Test Method	Requirements
Dry Weight Organic Material	AASHTO T 267	≤ 3%
Max Dry Density	AASHTO T 99	≥ 100 pcf
Liquid Limit	AASHTO T 89	≤ 50
Soluble Sulfate	ITM 510	≤ 1000 ppm
Note: 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

REVISION TO STANDARD SPECIFICATIONS

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. ~~geogrid~~*geosynthetic* 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,

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

Type	Subgrade Description
I	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 203.23 when it is determined, through testing 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

REVISION TO STANDARD SPECIFICATIONS

SECTION 207 - SUBGRADE
207.02 Materials
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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~~d~~ 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, ~~coarse aggregate~~ 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~~d~~ 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
	X	Passed as Revised
	___	Withdrawn
Standard Specifications Sections referenced and/or affected: 207 pg 222-226.	X	2024 Standard Specifications
	___	Revise Pay Items List
Recurring Special Provision references in: NONE	X	Create RSP (No. 207-R-735) Effective: December 1, 2021 RSP Sunset Date: 2024 SS book
Standard Drawing affected: NONE	___	Revise RSP (No.__) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE	___	Standard Drawing Effective:
GIFE Sections cross-references: 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

PROBLEM(S) ENCOUNTERED: 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.

PROPOSED SOLUTION: 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

Ride quality? 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

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

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 ±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.

The application rate of the sealant shall be as follows:

Asphalt Emulsion	*Application Rate* (gal./sq yd)*
SS-1h or AE-NT	*0.03 ±0.01***
RPE	*0.15 ~~to~~ ±0.01****
* *The asphalt material shall not be diluted.* ** *Areas receiving greater than 0.04 gal./sq yd shall be lightly broomed to reduce the effects of excess sealant on the pavement surface.*	

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 ±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 SEAL~~*BLANK*

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 ±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**~~
~~Base Seal .....~~	~~TON~~

~~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:

GRADE	58-28	64-22	64-28	70-22	70-28	76-22
ORIGINAL BINDER						
Flash Point, minimum, °C	230					
Viscosity, maximum, 3 Pa·s, Test Temp, °C	135					
DSR, G*/sin δ (delta), minimum, 1.00 kPa, Test Temp. @ 10 rad/s, °C	58	64	64	70	70	76
ROLLING THIN-FILM OVEN RESIDUE						
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

Notes:
1. Oven temperature tolerance shall be ±0.5°C.
2. Physical Hardening is performed on a set of asphalt beams according to AASHTO T 313, Section 12.1, except the conditioning time is extended to 24 h ±10 minutes at 10°C above the minimum performance temperature. The 24 h stiffness and m-value are reported for information purposes only.
3. *Binders that have a G*sin δ (delta) of 5,001 to 6,000 Kpa will be considered acceptable if the phase angle is 42 degrees or greater.*

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, %, 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 – ~~BASE SEAL~~*BLANK*
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 ± 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 ± 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 – ~~BASE SEAL~~*BLANK*
902.01 Asphalt

[continued]

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

PROBLEM(S) ENCOUNTERED: 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.

PROPOSED SOLUTION: 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

APPLICABLE SUB-COMMITTEE ENDORSEMENT: 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.

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

Construction costs? No

Construction time? No

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? N/A

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

For motorists? Yes

For construction workers? 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

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

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 plate~~*Anchor* 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 ~~1/12~~1/6 turn for bolt diameters that are 1 3/4 in. or greater or a minimum ~~1/6~~1/3 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 ~~A573~~*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.

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

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

INDEX

SHEET NO.	SUBJECT
1	~~Index~~ Sign Box Truss Structure Drawing Index
2	Plan & Elevation
3	~~Truss Sections, Table with Member Sizes~~ A-E Truss Sections in isometric views, Table with Member Sizes
4	~~Table of Dimensions, Spans 34' thru 81'~~ F-H Truss Sections in isometric views, Table with Member Sizes
5	~~Table of Dimensions, Spans 82' thru 130' and Camber~~ Table of Dimensions, Spans 34' thru 81'
6	~~Chord Connections and Weld Details~~ Table of Dimensions, Spans 82' thru 130' and Camber
7	~~Flange, Chord End Plate, and Wire Outlet Details~~ Table of Dimensions, Spans 131' thru 154' and Camber
8	~~Upper Chord Connection Details~~ Chord Connections and Weld Details
9	~~Lower Chord Connection Details~~ Flange, Chord End Plate, and Wire Outlet Details
10	~~End Support Lower Chord Connections, Alternate HSS Beam Details~~ End Support Upper Chord Connection Details
11	~~End Support Base Plate and I.D. Tag Details~~ End Support Lower Chord Connection Details
12	~~End Support Top Cap, Handhole, and J-Hook Details~~ End Support Lower Chord Connections, Alternate HSS Beam Details
13	~~End Support Anchor Bolt and Metal Skirt Details~~ End Support Base Plate Details
14	~~Interior Walkway Grating Details~~ I.D. Plate Details
15	~~Interior Walkway Grating Details~~ End Support Top Cap, Handhole, and J-Hook Details
16	~~Lighting Walkway~~ End Support Anchor bolt and Metal Skirt Details
17	~~Lighting Walkway~~ End Support Anchor Bolt Hardware Tightening (NEW SHEET)
18	~~Lighting Walkway Profile~~ Interior Walkway Grating & Handrail Details
19	~~Lighting Walkway and Handrail Assembly~~ Interior Walkway Grating Details
20	~~Lighting Walkway, Handrail Hinge, and Grating Details~~ Lighting Walkway Elevation
21	~~Lighting Walkway Fixture Mount Details~~ Lighting Walkway Plan
22	~~Spread Foundation at 33" Concrete Barrier Wall~~ Lighting Walkway Profile
23	~~Spread Foundation at 45" Concrete Barrier Wall~~ Lighting Walkway and Handrail Assembly
24	~~Spread Foundation for Median or Shoulder, 36" Height~~ Lighting Walkway, Handrail Hinge, and Grating Details
25	~~Spread Foundations Quantities~~ Lighting Walkway Fixture Mount Details
26	~~Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall~~ A-E Spread Foundation at 33" Concrete Barrier Wall
27	~~Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall~~ A-E Spread Foundation at 45" Concrete Barrier Wall
28	~~Alternate Drilled Shaft Foundation for Median or Shoulder, 36" Height~~ A-E Spread Foundation for Median or Shoulder, 36" Height
29	~~Alternate Drilled Shaft Foundations Quantities~~ A-E Spread Foundations Quantities
30	A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall
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 Foundations Quantities
34	F,G,H Spread Foundation at 33" Concrete Barrier Wall
35	F,G,H Spread Foundation at 45" Concrete Barrier Wall
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 45" Concrete Barrier Wall
40	F,G,H Alternate Drilled Shaft Foundation for Median or Shoulder, 36" Height
41	F,G,H Alternate Drilled Shaft Foundations Quantities

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
DRAWING INDEX

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. ~~E 802-SBTS-01~~

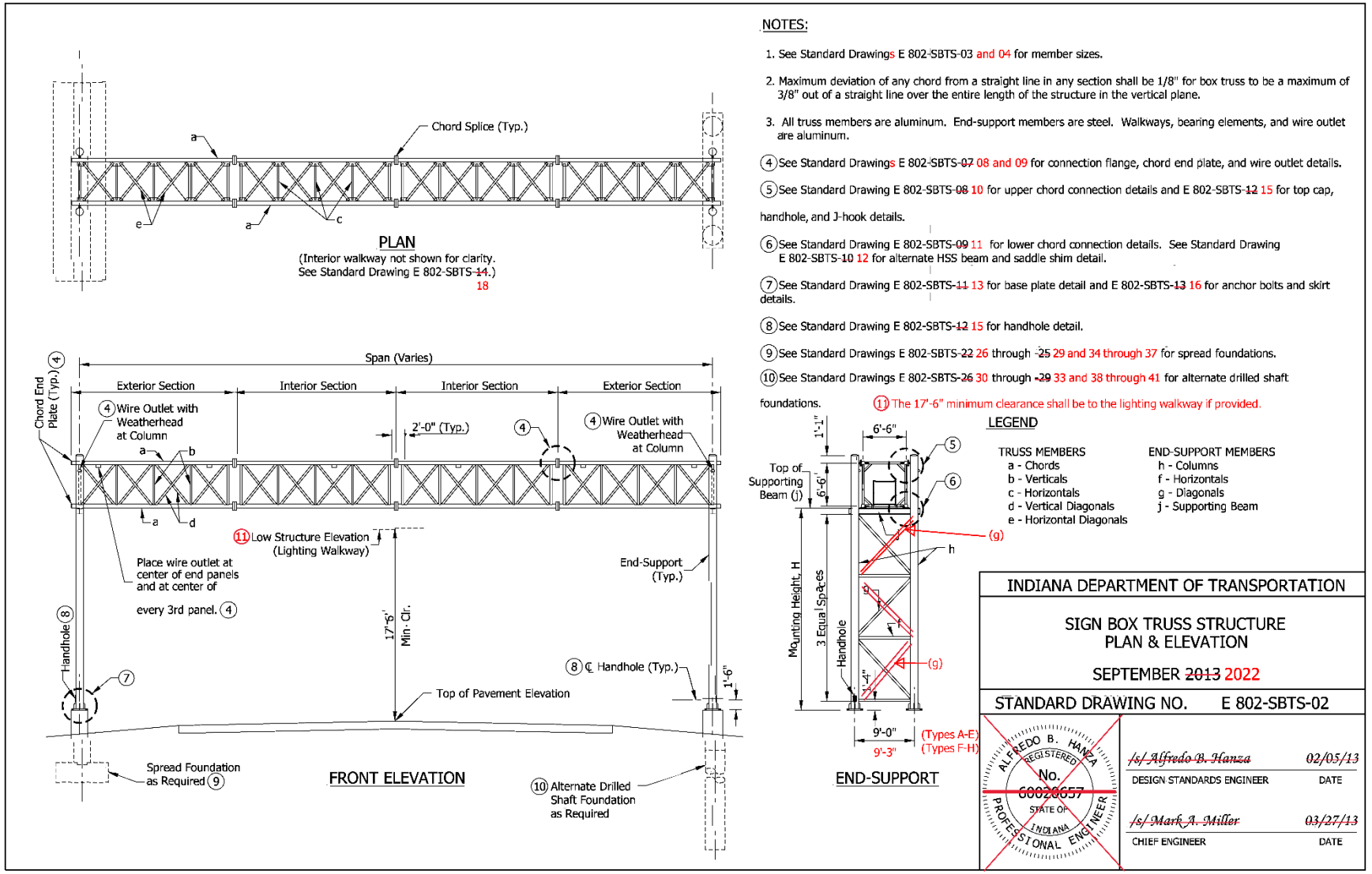
ALFREDO B. HANZA REGISTERED No. 600.0657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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



NOTES:

1. See Standard Drawings E 802-SBTS-03 and 04 for member sizes.
2. Maximum deviation of any chord from a straight line in any section shall be 1/8" for box truss to be a maximum of 3/8" out of a straight line over the entire length of the structure in the vertical plane.
3. All truss members are aluminum. End-support members are steel. Walkways, bearing elements, and wire outlet are aluminum.

(4) See Standard Drawings E 802-SBTS-~~07~~ 08 and 09 for connection flange, chord end plate, and wire outlet details.

(5) See Standard Drawing E 802-SBTS-~~08~~ 10 for upper chord connection details and E 802-SBTS-~~12~~ 15 for top cap, handhole, and J-hook details.

(6) See Standard Drawing E 802-SBTS-~~09~~ 11 for lower chord connection details. See Standard Drawing E 802-SBTS-~~10~~ 12 for alternate HSS beam and saddle shim detail.

(7) See Standard Drawing E 802-SBTS-~~11~~ 13 for base plate detail and E 802-SBTS-~~13~~ 16 for anchor bolts and skirt details.

(8) See Standard Drawing E 802-SBTS-~~12~~ 15 for handhole detail.

(9) See Standard Drawings E 802-SBTS-~~22~~ 26 through ~~25~~ 29 and 34 through 37 for spread foundations.

(10) See Standard Drawings E 802-SBTS-~~26~~ 30 through ~~29~~ 33 and 38 through 41 for alternate drilled shaft foundations.

(11) The 17'-6" minimum clearance shall be to the lighting walkway if provided.

LEGEND

TRUSS MEMBERS	END-SUPPORT MEMBERS
a - Chords	h - Columns
b - Verticals	f - Horizontals
c - Horizontals	g - Diagonals
d - Vertical Diagonals	j - Supporting Beam
e - Horizontal Diagonals	

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
PLAN & ELEVATION

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-02

ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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

NOTES:

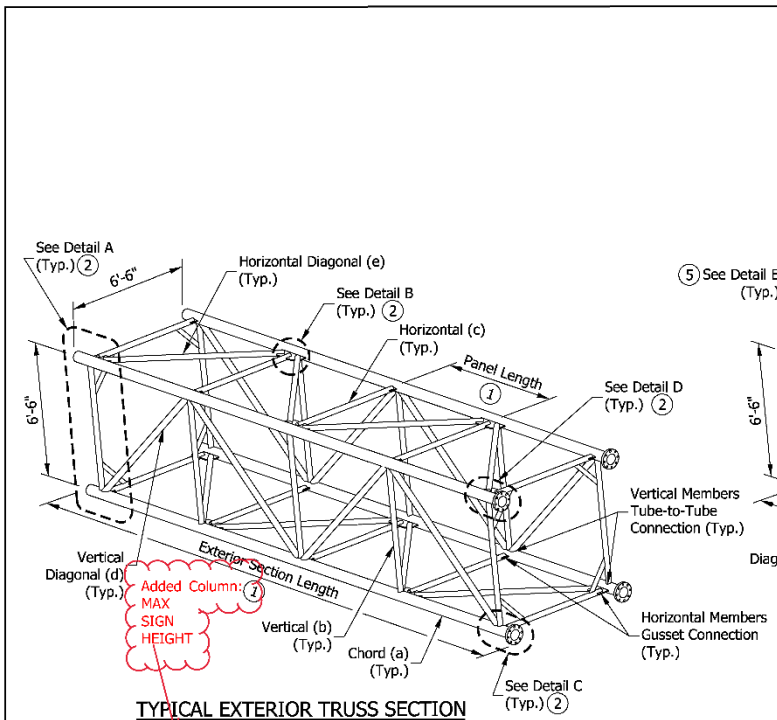
(1) Number of panels and sections varies. See table on Standard Drawing E 802-SBTS-~~04~~ 05 and -~~05~~ 06 for recommended dimensions.

(2) See Standard Drawing E 802-SBTS-~~06~~ 08 for welded connections and Detail ~~A F~~.

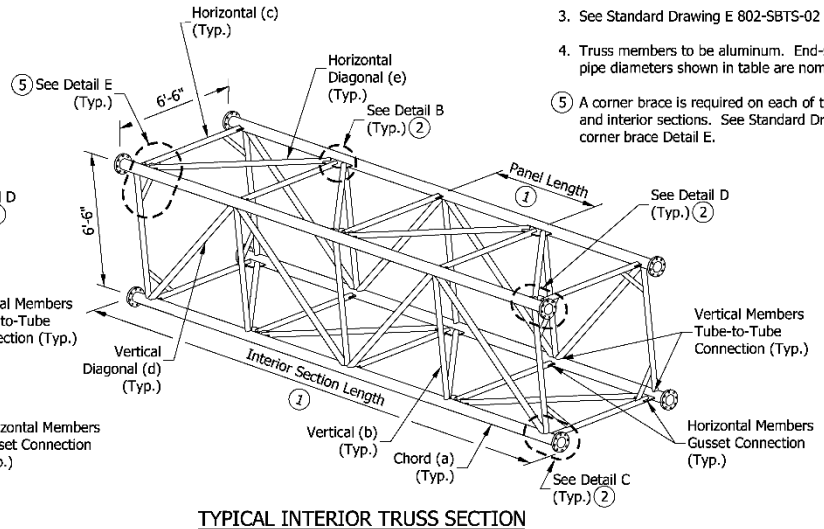
3. See Standard Drawing E 802-SBTS-02 for Legend.

4. Truss members to be aluminum. End-support members to be steel. Steel pipe diameters shown in table are nominal pipe size.

(5) A corner brace is required on each of the eight external corners of exterior and interior sections. See Standard Drawing E 802-SBTS-~~06~~ 08 for corner brace Detail E.



TYPICAL EXTERIOR TRUSS SECTION



TYPICAL INTERIOR TRUSS SECTION

TRUSS TYPE	MAX. SIGN AREA	MAX. SPAN	MAX. MOUNTING HEIGHT	TRUSS MEMBERS, ALUMINUM										END-SUPPORT MEMBERS, STEEL						
				CHORD		VERTICAL		HORIZONTAL		VERTICAL DIAGONAL		HORIZONTAL DIAGONAL		HORIZONTAL		DIAGONAL		COLUMN		SUPPORTING BEAM
			H	a		b		c		d		e		f		g		h		j
				DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	
	SQ. FT.	FT.	FT.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
A	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	
B	700 ~~700~~	100	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	0.322	14.00	0.500	W 8 x 58 or HSS 8" x 8" x 1/2"
C	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	
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	
E	~~900~~ 800	130	28'-6"	7.00	0.500	3.00	0.375	4.00	0.250	3.00	0.500	4.00	0.500	5.00	0.375	8.00	0.593	18.00	0.562	W 10 x 68 or HSS 10" x 10" x 1/2"

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
TRUSS SECTIONS IN ISOMETRIC VIEWS,
TABLE WITH MEMBER SIZES

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-03

ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

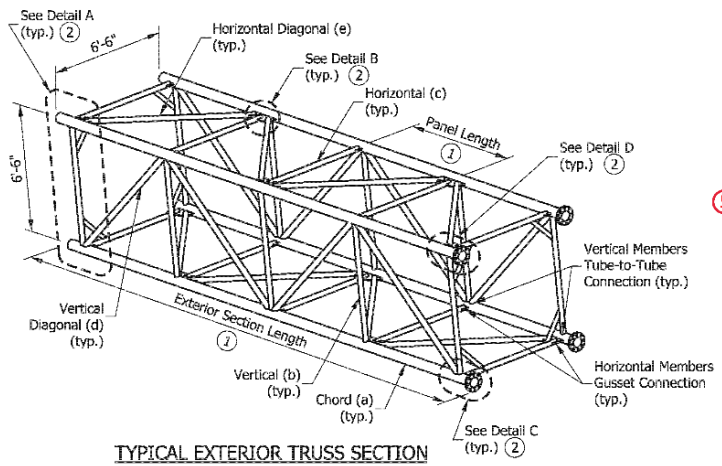
~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

Item No. 3 (2022 SS) (contd.)
Mr. Boruff
Date: 7/15/21

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

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

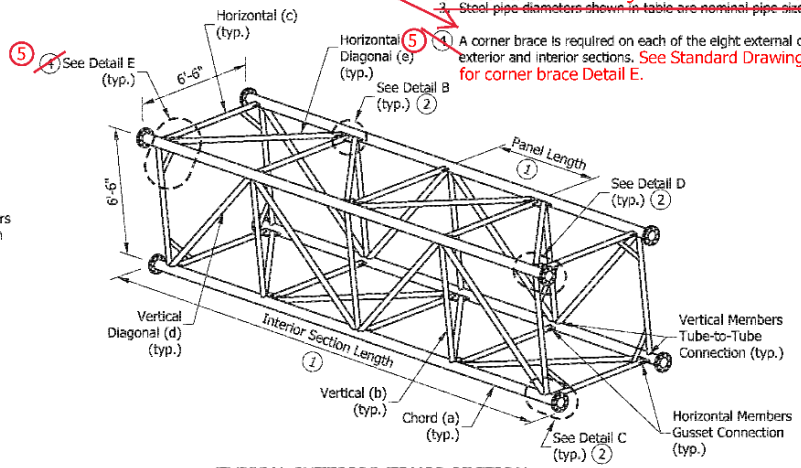


TYPICAL EXTERIOR TRUSS SECTION

NOTES:

4. Truss members to be aluminum. End-support members to be steel. Steel pipe diameters shown in table are nominal pipe size.

1. Number of panels varies. See table on Standard Drawing E 802-SBTX-04 and sections 07 for recommended dimensions.
2. See Standard Drawing E 802-SBTX-05 08 for welded connections and Details A through F.
3. See Standard Drawing E 802-SBTS-02 for Legend.
~~4. Steel pipe diameters shown in table are nominal pipe size.~~
5. A corner brace is required on each of the eight external corners of exterior and interior sections. See Standard Drawing E 802-SBTS-08 for corner brace Detail E.



TYPICAL INTERIOR TRUSS SECTION

TRUSS TYPE	MAX. SIGN AREA	MAX. SPAN	MAX. MOUNTING HEIGHT	TRUSS MEMBERS, ALUMINUM										END-SUPPORT MEMBERS, STEEL						
				CHORD		VERTICAL		HORIZONTAL		VERTICAL DIAGONAL		HORIZONTAL DIAGONAL		HORIZONTAL		DIAGONAL		COLUMN		SUPPORTING BEAM
			H	a		b		c		d		e		f		g		h		j
				DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	
	SQ. FT.	FT.	FT.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
F	1200	130	28'-6"	7.00	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	W 10 x 68 or HSS 10" x 10" x 1/2"
G		142	28'-6"	~~7.50~~ 9.00	0.500	4.00	0.375	4.00	0.375	4.00	0.500	4.00	0.500	5.00	0.375	8.00	0.593	18.00	0.562	
H		154	28'-6"	~~9.00~~ 10.00	0.500	4.00	0.500	4.00	0.375	4.00	0.500	4.00	0.500	~~5.00~~ 8.00	~~0.375~~ 0.322	8.00	0.593	18.00	0.562	

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
EXTENDED SPAN TRUSS SECTIONS
IN ISOMETRIC VIEWS,
TABLE WITH MEMBER SIZES

~~EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20~~

~~RECURRING PLAN DETAIL NO. 802-T-222d~~

~~Sheet 03 of 21~~

RPD 03 OF 21 BECOMES 802 SBTS-04

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

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

DIMENSIONS FOR SIGN BOX TRUSSES (34' THRU 81')

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	SECTION LENGTH
34	1	6	6"	5'-6"	35'-6"	0			
35	1	6	6"	5'-8"	36'-6"	0			
36	2	3	6"	5'-6"	18'-9"	0			
37	2	3	6"	5'-8"	19'-3"	0			
38	2	3	6"	5'-10"	19'-9"	0			
39	2	3	6"	6'-0"	20'-3"	0			
40	2	3	6"	6'-2"	20'-9"	0			
41	2	3	6"	6'-4"	21'-3"	0			
42	2	3	6"	6'-6"	21'-9"	0			
43	2	4	6"	5'-0"	22'-3"	0			
44	2	4	6"	5'-1 1/2"	22'-9"	0			
45	2	4	6"	5'-3"	23'-3"	0			
46	2	4	6"	5'-4 1/2"	23'-9"	0			
47	2	4	6"	5'-6"	24'-3"	0			
48	2	4	6"	5'-7 1/2"	24'-9"	0			
49	2	4	6"	5'-9"	25'-3"	0			
50	2	4	6"	5'-10 1/2"	25'-9"	0			
51	2	4	6"	6'-0"	26'-3"	0			
52	2	4	6"	6'-1 1/2"	26'-9"	0			
53	2	4	6"	6'-3"	27'-3"	0			
54	2	4	6"	6'-4 1/2"	27'-9"	0			
55	2	4	6"	6'-6"	28'-3"	0			
56	2	5	5 1/4"	5'-3 3/4"	28'-9"	0			
57	2	5	6 1/4"	5'-4 3/4"	29'-3"	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'- 8 1/2"	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			
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			
68	2	5	6"	6'-6"	34'-9"	0			
69	2	4	6"	5'-4"	23'-7"	1	4	5'-4"	23'-4"
70	2	4	6"	5'-5"	23'-11"	1	4	5'-5"	23'-8"
71	2	4	6"	5'-6"	24'-3"	1	4	5'-6"	24'-0"
72	2	4	6"	5'-7"	24'-7"	1	4	5'-7"	24'-4"
73	2	4	6"	5'-8"	24'-11"	1	4	5'-8"	24'-8"
74	2	4	6"	5"-9"	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"
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"

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".
2. 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, while maintaining the maximum section length at 36'-6".
4. See Standard Drawing E 802-SBTS-~~05~~ 06 for required camber.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
TABLE OF DIMENSIONS
SPANS 34' THRU 81'
SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~04~~05

ALFREDO B. HANNA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanna~~ ~~03/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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

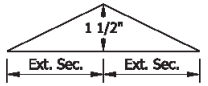
DIMENSIONS FOR SIGN BOX TRUSSES (82' THRU 130')

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	SECTION 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"	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	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 3/4"
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 1/2"
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"
130	2	5	6 1/2"	6'-1 3/4"	33'-1/4"	2	5	6'-1 3/4"	32'-8 3/4"

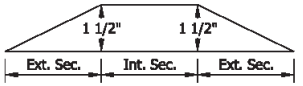
1. All panels on a truss shall be the same length. The minimum panel length is 5'-0" and the maximum is 6'-6".

NOTES:

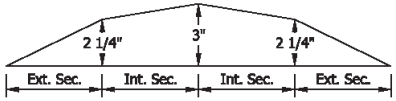
2. ~~1.~~ Camber diagrams for truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
3. ~~2.~~ See Standard Drawing E 802-SBTS-~~04~~ 05 for additional notes.



CAMBER DIAGRAM (2-Section Truss)



CAMBER DIAGRAM (3-Section Truss)



CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
TABLE OF DIMENSIONS
SPANS 82' THRU 130' AND CAMBER
SEPTEMBER ~~2013~~ 2022 06

STANDARD DRAWING NO. E 802-SBTS-~~05~~

ALFREDO B. HANZA REGISTERED No. 600?0657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~03/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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

131'

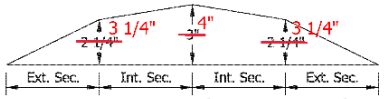
DIMENSIONS FOR SIGN BOX TRUSSES (~~130'~~ THRU 154')

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	SECTION LENGTH
~~130~~	~~2~~	~~5~~	~~0" - 6 1/2"~~	~~6'-1 3/4"~~	~~33'-0 1/4"~~	~~2~~	~~5~~	~~6'-1 3/4"~~	~~32'-8 3/4"~~
131	2	5	0" - 6 1/4"	6'-2 3/8"	33'-3 1/8"	2	5	6'-2 3/8"	32'-11 7/8"
132	2	5	0" - 6"	6'-3"	33'-6"	2	5	6'-3"	33'-3"
133	2	5	0" - 7"	6'-3 1/2"	33'-9 1/2"	2	5	6'-3 1/2"	33'-5 1/2"
134	2	5	0" - 6 3/4"	6'-4 1/8"	34'-0 3/8"	2	5	6'-4 1/8"	33'-8 5/8"
135	2	5	0" - 6 1/2"	6'-4 3/4"	34'-3 1/4"	2	5	6'-4 3/4"	33'-11 3/4"
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"
137	2	5	0" - 6"	6'-6"	34'-9"	2	5	6'-6"	34'-6"
138	2	6	0" - 6 7/8"	5'-11 3/8"	38'-0 1/8"	2	5	5'-11 3/8"	31'-8 7/8"
139	2	6	0" - 7 3/8"	5'-11 7/8"	38'-3 5/8"	2	5	5'-11 7/8"	31'-11 3/8"
140	2	6	0" - 6 1/2"	6'-0 1/2"	38'-6 1/2"	2	5	6'-0 1/2"	32'-2 1/2"
141	2	6	0" - 7"	6'-1"	38'-10"	2	5	6'-1"	32'-5"
142	2	6	0" - 6 1/8"	6'-1 5/8"	39'-0 7/8"	2	5	6'-1 5/8"	32'-8 1/8"
143	2	6	0" - 6 5/8"	6'-2 1/8"	39'-4 3/8"	2	5	6'-2 1/8"	32'-10 5/8"
144	2	6	0" - 7 1/8"	6'-2 5/8"	39'-7 7/8"	2	5	6'-2 5/8"	33'-1 1/8"
145	2	6	0" - 6 1/4"	6'-3 1/4"	39'-10 3/4"	2	5	6'-3 1/4"	33'-4 1/4"
146	2	6	0" - 6 3/4"	6'-3 3/4"	40'-2 1/4"	2	5	6'-3 3/4"	33'-6 3/4"
147	2	6	0" - 5 7/8"	6'-4 3/8"	40'-5 1/8"	2	5	6'-4 3/8"	33'-9 7/8"
148	2	6	0" - 6 3/8"	6'-4 7/8"	40'-8 5/8"	2	5	6'-4 7/8"	34'-0 3/8"
149	2	6	0" - 6 7/8"	6'-5 3/8"	41'-0 1/8"	2	5	6'-5 3/8"	34'-2 7/8"
150	2	6	0" - 7 1/2"	5'-11 3/8"	38'-0 3/4"	2	6	5'-11 3/8"	37'-8 1/4"
151	2	6	0" - 7 1/2"	5'-11 7/8"	38'-3 3/4"	2	6	5'-11 7/8"	37'-11 1/4"
152	2	6	0" - 6"	6'-0 1/2"	38'-6"	2	6	6'-0 1/2"	38'-3"
153	2	6	0" - 6"	6'-1"	38'-9"	2	6	6'-1"	38'-6"
154	2	6	0" - 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 ft. 0 in.~~ 5'-11 3/8" and the maximum is 6 ft. 6 in.
3. ~~2.~~ Use minimum number of sections for each box truss structure.
4. ~~3.~~ Camber diagrams for truss structures with 4 sections is 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.

2. A single interior section in a truss shall have an even number of panels to maintain the pattern of the vertical diagonals.



CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

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~~

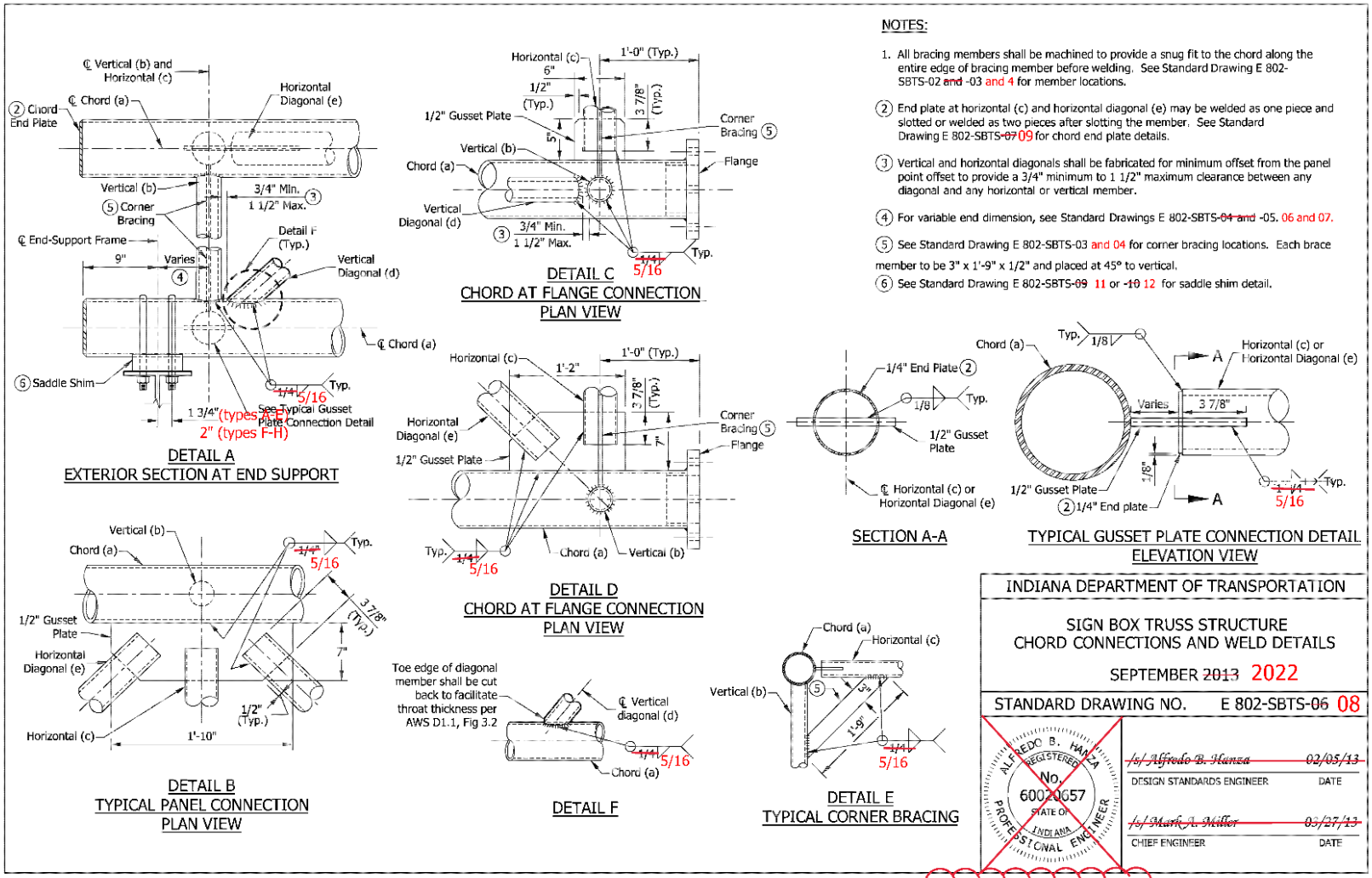
~~RECURRING PLAN DETAIL NO. 802-T-222d~~

~~Sheet 04 of 21~~

4 OF 21 BECOMES 802 SBTS-07

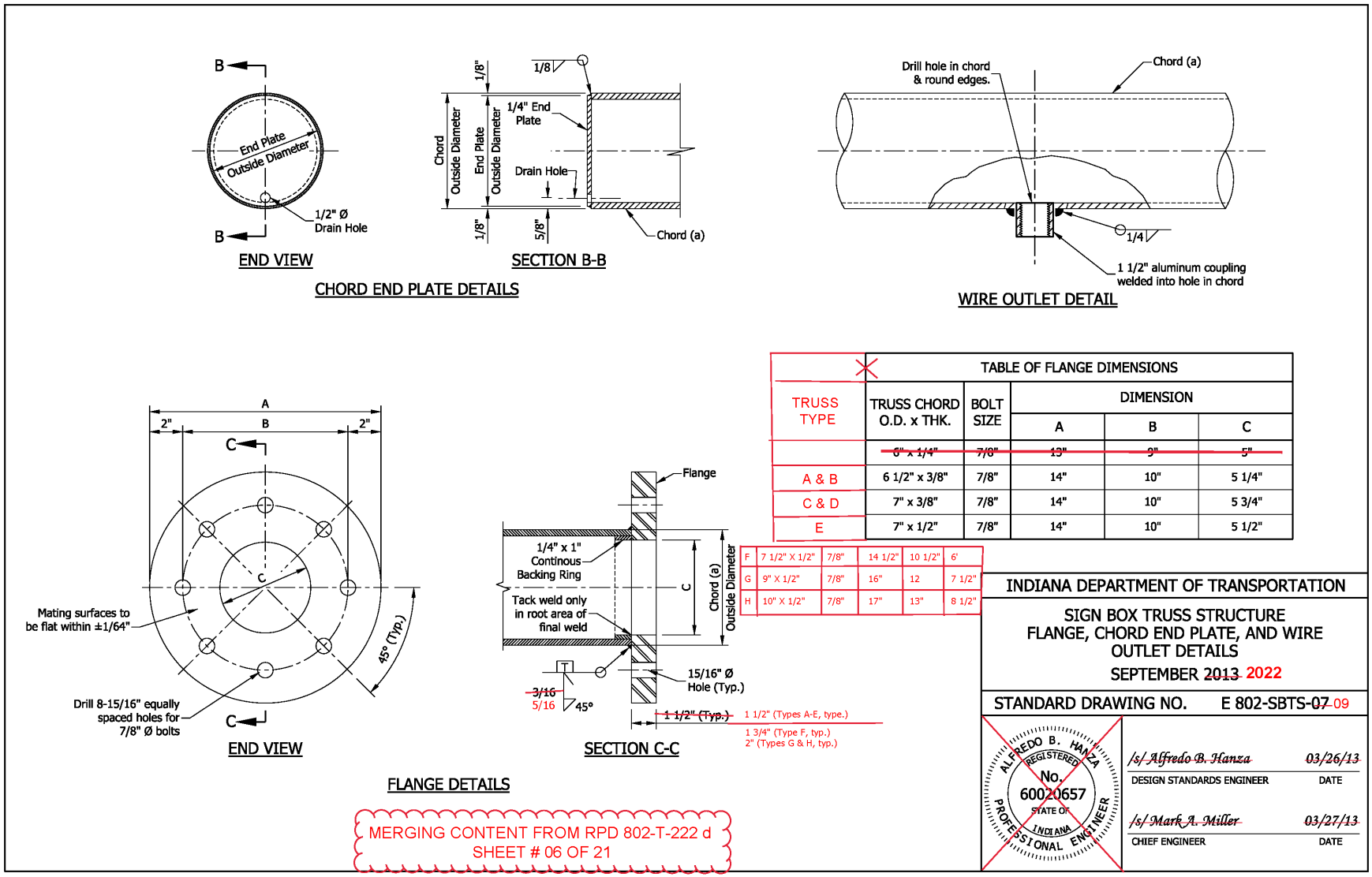
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



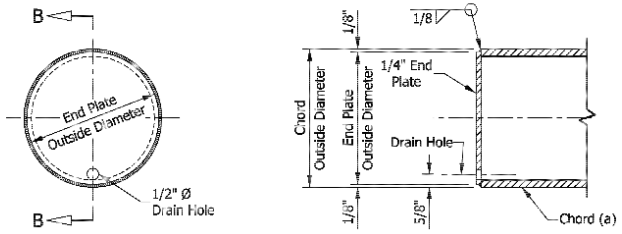
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



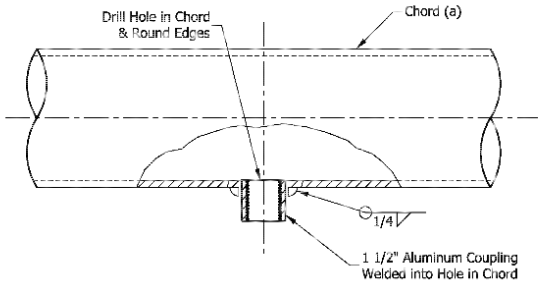
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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

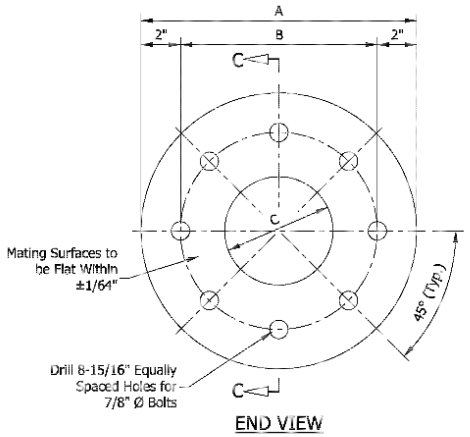


END VIEW SECTION B-B

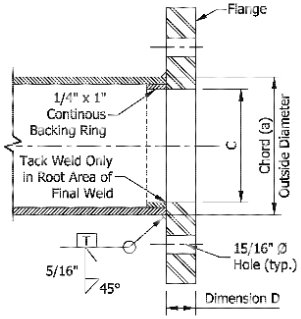
CHORD END PLATE DETAILS



WIRE OUTLET DETAIL



END VIEW



SECTION C-C

FLANGE DETAILS

TABLE OF FLANGE DIMENSIONS						
TRUSS TYPE	TRUSS CHORD O.D. x THK.	BOLT SIZE	DIMENSION			
			A	B	C	D
F	7" x 1/2"	7/8"	14"	10"	5 1/2"	1 3/4"
G	7 1/2" x 1/2"	7/8"	14 1/2"	10 1/2"	6"	2"
H	9" x 1/2"	7/8"	16"	12"	7 1/2"	2"

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
EXTENDED SPAN FLANGE,
CHORD END PLATE, AND WIRE OUTLET DETAILS

EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20

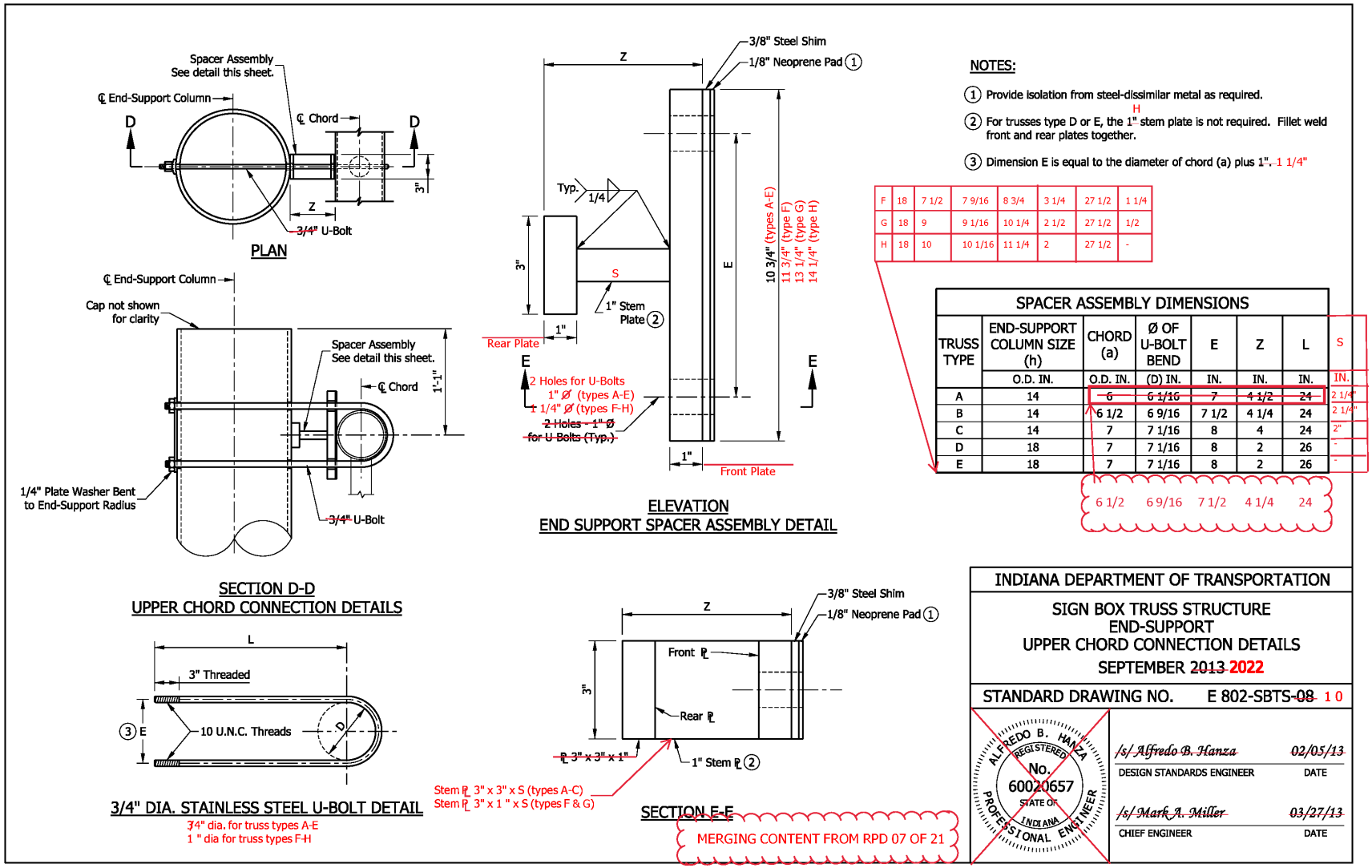
RECURRING PLAN DETAIL NO. 802-T-222d

Sheet 06 of 21

MERGING RPD WITH 802-SBTS-09

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

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



NOTES:

1. Provide isolation from steel-dissimilar metal as required.
2. For trusses type D or E, the 1" H stem plate is not required. Fillet weld front and rear plates together.
3. Dimension E is equal to the diameter of chord (a) plus 1". 1 1/4"

F	18	7 1/2	7 9/16	8 3/4	3 1/4	27 1/2	1 1/4
G	18	9	9 1/16	10 1/4	2 1/2	27 1/2	1/2
H	18	10	10 1/16	11 1/4	2	27 1/2	-

SPACER ASSEMBLY DIMENSIONS

TRUSS TYPE	END-SUPPORT COLUMN SIZE (h)	CHORD (a)	Ø OF U-BOLT BEND	E	Z	L	S
	O.D. IN.	O.D. IN.	(D) IN.	IN.	IN.	IN.	IN.
A	14	~~6~~	~~6 1/16~~	~~7~~	~~4 1/2~~	24	2 1/4"
B	14	6 1/2	6 9/16	7 1/2	4 1/4	24	2 1/4"
C	14	7	7 1/16	8	4	24	2"
D	18	7	7 1/16	8	2	26	-
E	18	7	7 1/16	8	2	26	-

6 1/2 6 9/16 7 1/2 4 1/4 24

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
END-SUPPORT
UPPER CHORD CONNECTION DETAILS
SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~08~~ 10

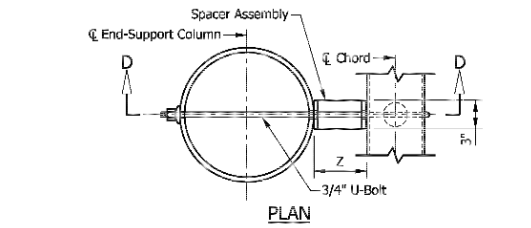
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

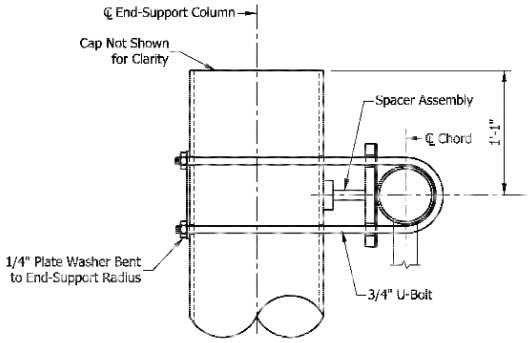
~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

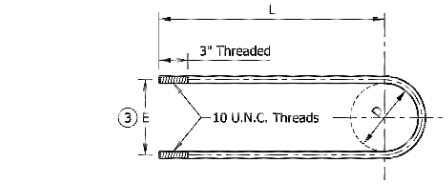
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



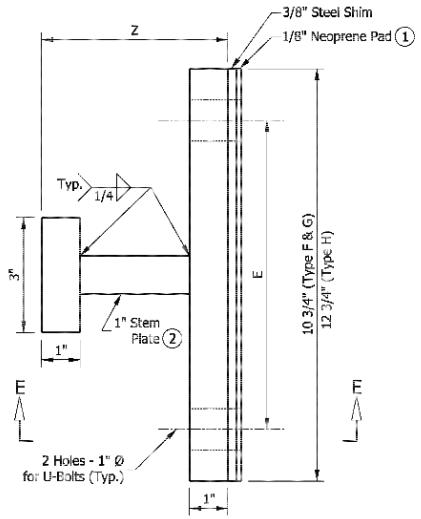
PLAN



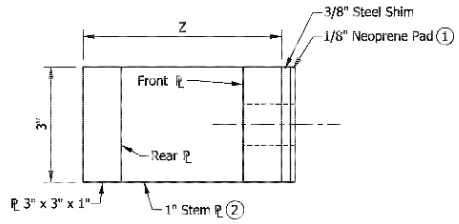
SECTION D-D
UPPER CHORD CONNECTION DETAILS



3/4" DIA. STAINLESS STEEL U-BOLT DETAIL



ELEVATION
END SUPPORT SPACER ASSEMBLY DETAIL



SECTION E-E

NOTES:

1. Provide isolation from steel-dissimilar metal as required.
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.

SPACER ASSEMBLY DIMENSIONS

TRUSS TYPE	END-SUPPORT COLUMN SIZE O.D (h)	CHORD O. D. (a)	Ø OF U-BOLT BEND (D)	E	Z	L
F	18"	7"	7 1/16"	8"	2"	26"
G	18"	7 1/2"	7 9/16"	8 1/2"	1 3/4"	26"
H	18"	9"	9 1/16"	10"	1"	26"

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
EXTENDED SPAN END-SUPPORT
UPPER CHORD CONNECTION DETAILS

EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20

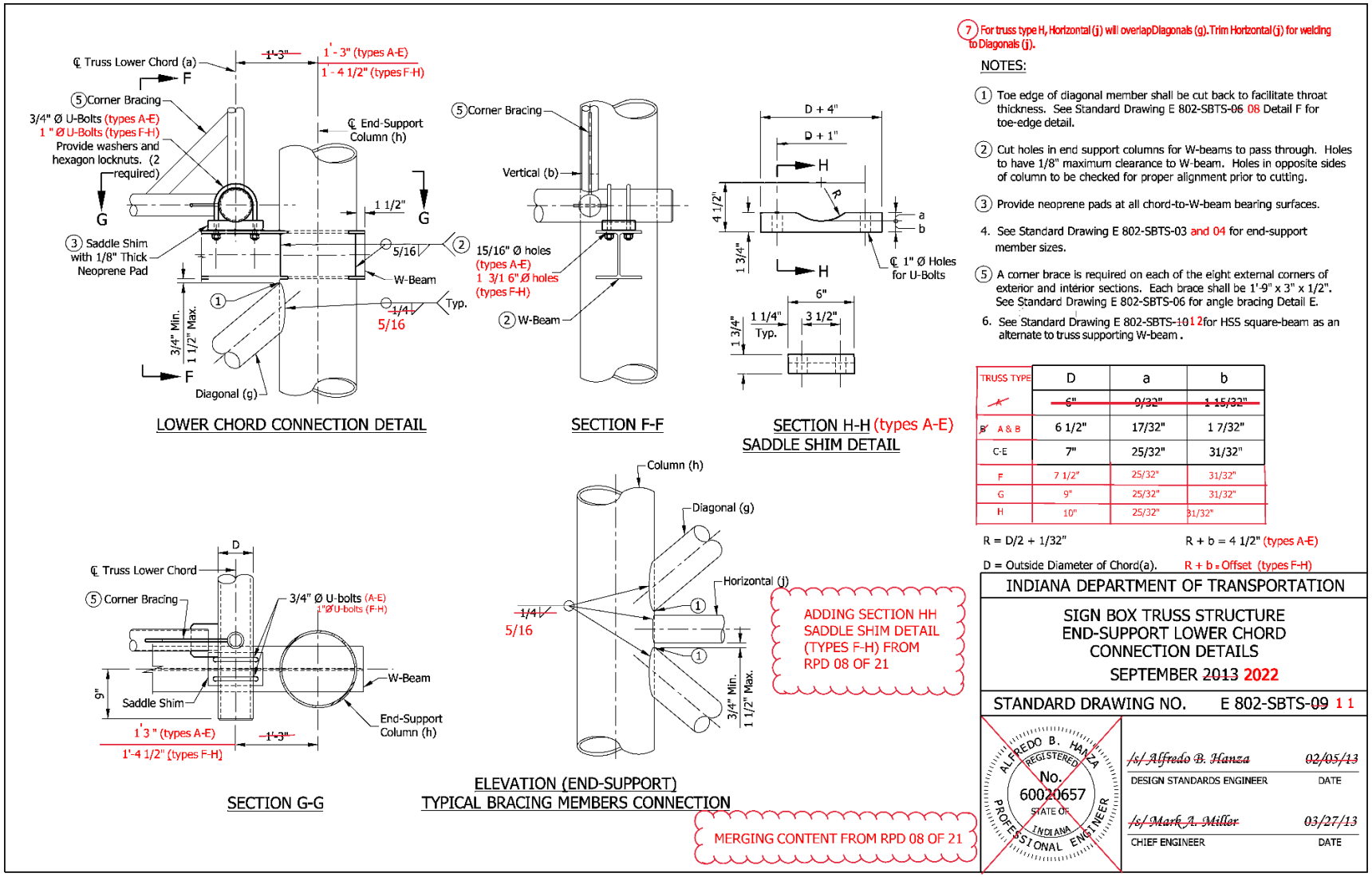
RECURRING PLAN DETAIL NO. 802-T-222d

Sheet 07 of 21

MERGING RPD WITH 802 SBTS-10

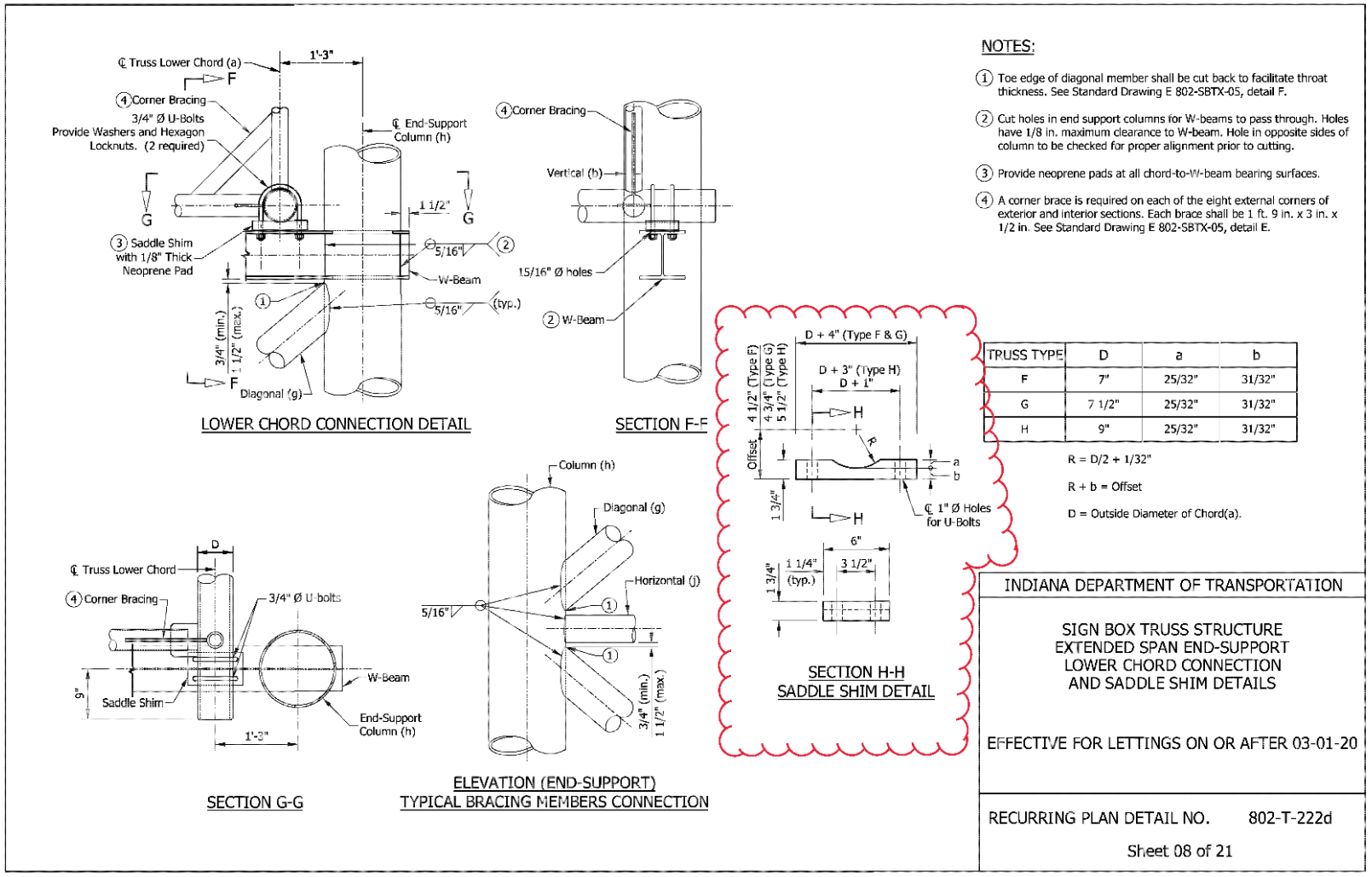
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



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

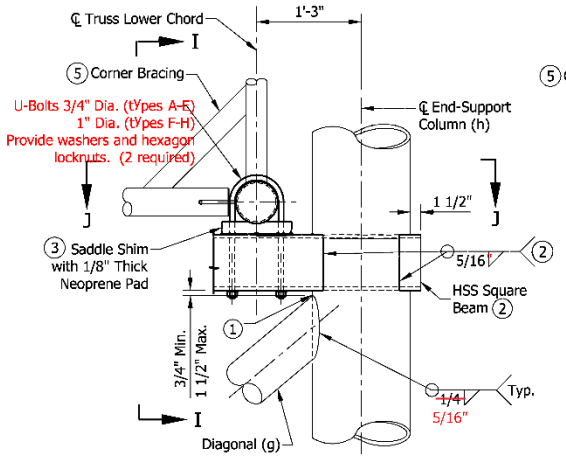
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



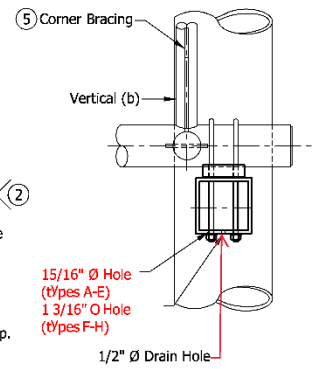
MERGING RPD WITH 802-STS-11

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

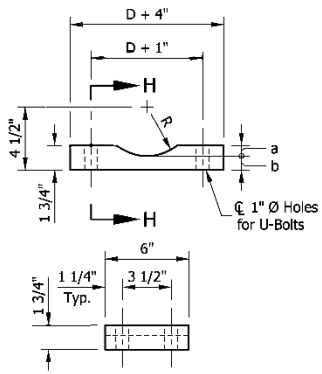
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



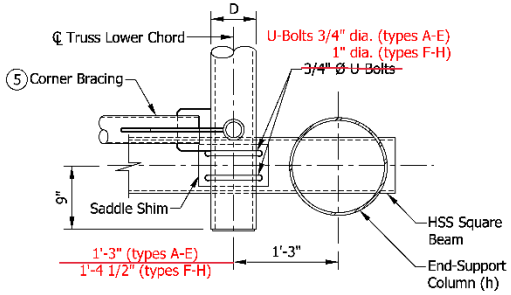
LOWER CHORD CONNECTION DETAIL



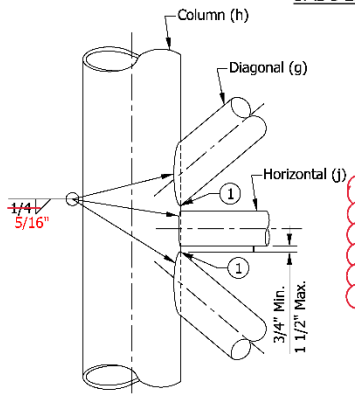
SECTION I-I



SECTION H-H (types A-E)
SADDLE SHIM DETAIL



SECTION J-J



ELEVATION (END-SUPPORT)
TYPICAL BRACING MEMBERS CONNECTION

ADDING SECTION HH SADDLE SHIM DETAIL (TYPES F-H) FROM RPD 09 OF 21

MERGING CONTENT FROM RPD 09 OF 21

NOTES:

1. Toe edge of diagonal member shall be cut back to facilitate throat thickness. See Standard Drawing E 802-SBTS-~~06~~ Detail F for toe-edge detail.
2. Cut holes in end support columns for square beams to pass through. Holes to have 1/8" maximum clearance to square beam. Holes in opposite sides of column to be checked for proper alignment prior to cutting.
3. Provide neoprene pads at all chord-to-square-beam bearing surfaces.
4. See Standard Drawing E 802-SBTS-03 and 04 for end support member sizes.
5. A corner brace is required on each of the eight external corners of exterior and interior sections. Each brace shall be 1'-9" x 3" x 1/2". See Standard Drawing E 802-SBTS-08 for angle bracing Detail E.
6. For Truss type H, Horizontal (j) will overlap Diagonals (g). Trim Horizontal (j) for welding to Diagonals (g).

TRUSS TYPE	D	a	b
~~A~~	~~6"~~	~~9/32"~~	~~1 15/32"~~
~~B~~ A & B	6 1/2"	17/32"	1 7/32"
C-E	7"	25/32"	31/32"
F	7 1/2"	25/32	31/32
G	9"	25/32	31/32
H	10"	25/32	31/32

R = D/2 + 1/32" R + b = 4 1/2" (type A-E)

D = Outside Diameter of Chord(a). R + b = Offset (type F-H)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
END SUPPORT LOWER CHORD
CONNECTION DETAILS, ALTERNATE HSS BEAM
SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~10~~ 1 2

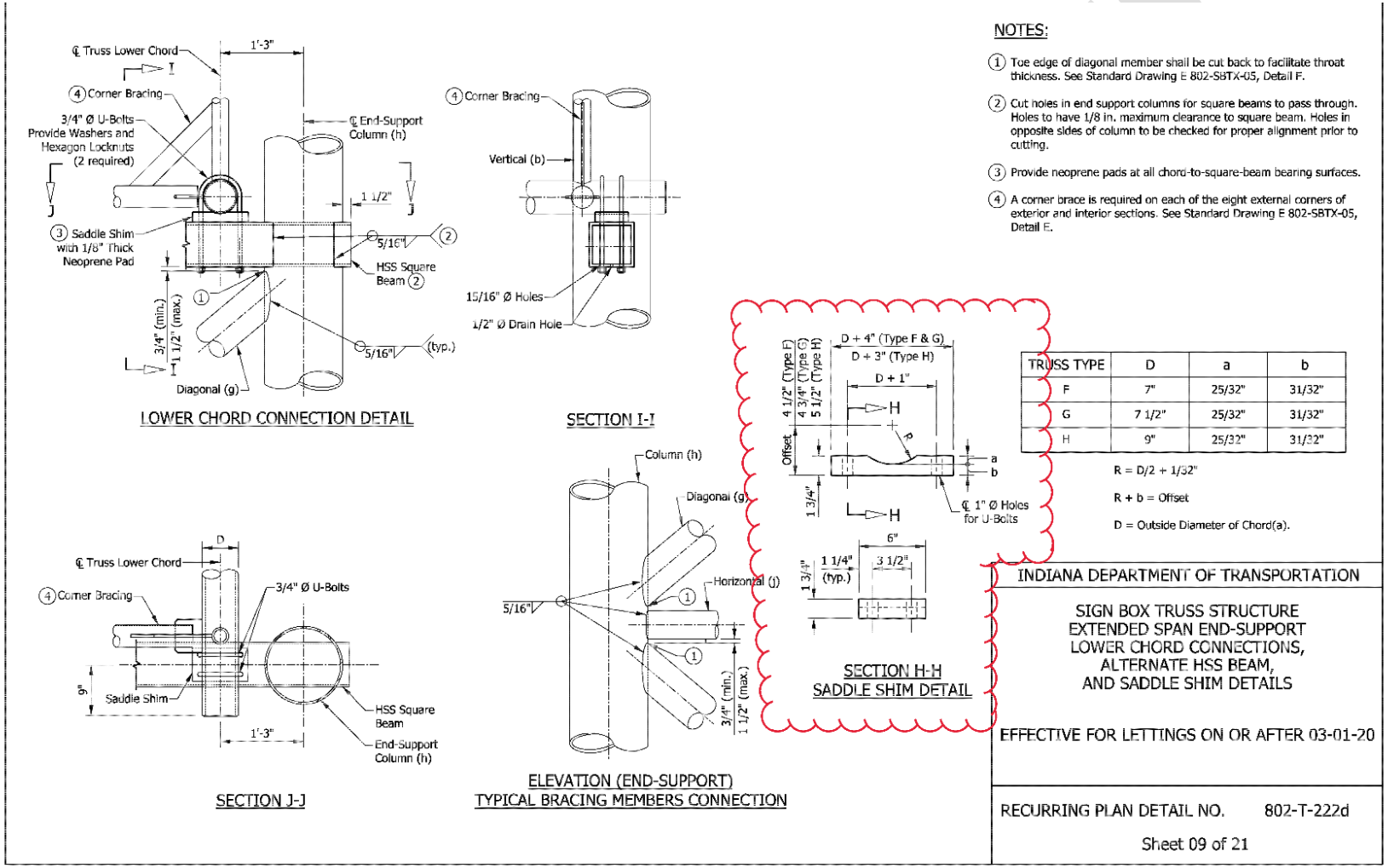
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

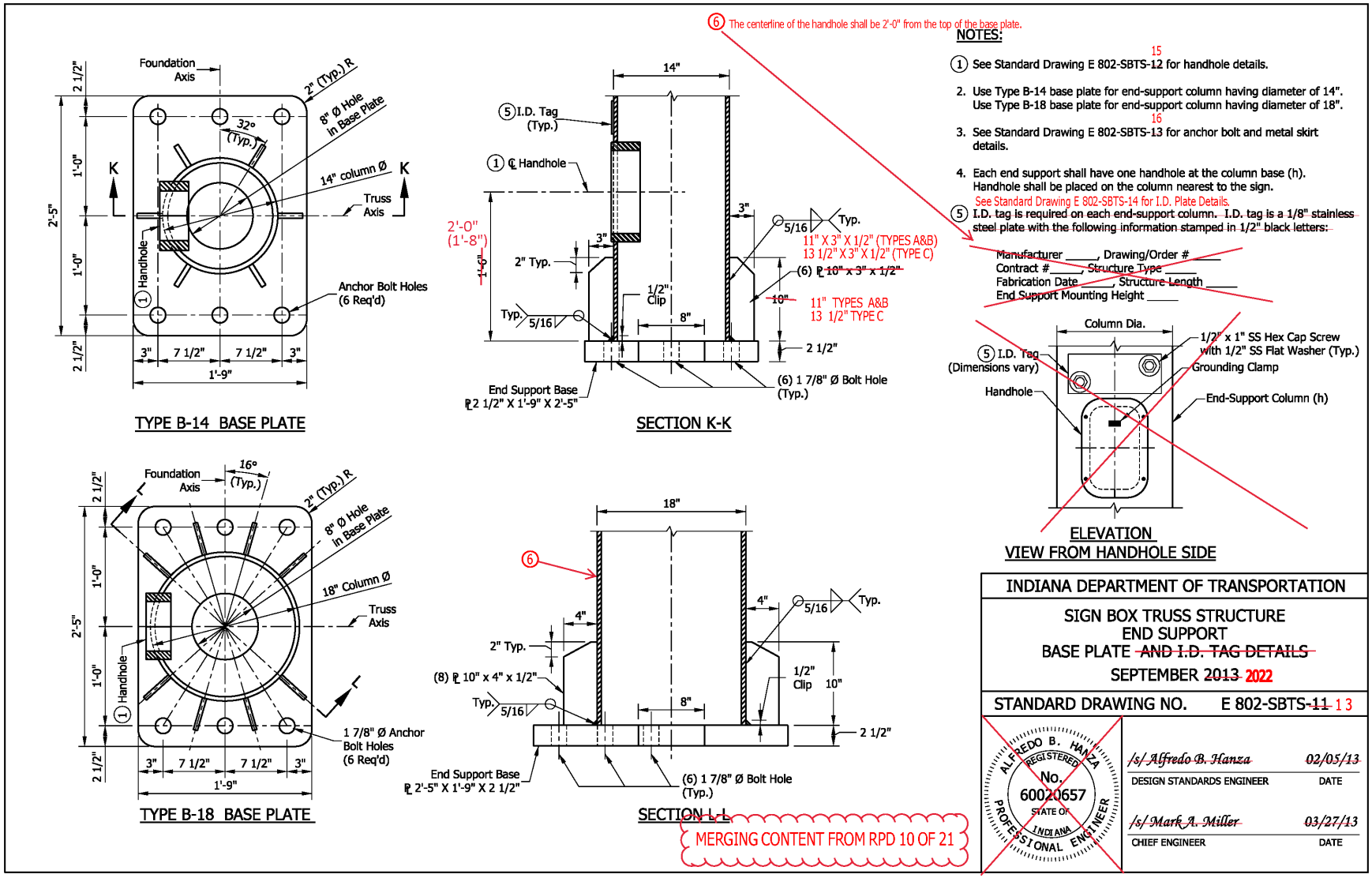
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



MERGING RPD WITH 802-SBTS-12

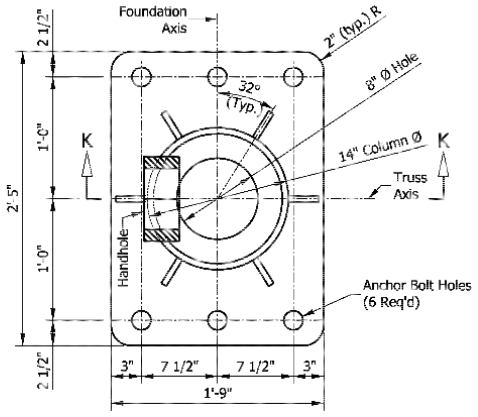
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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

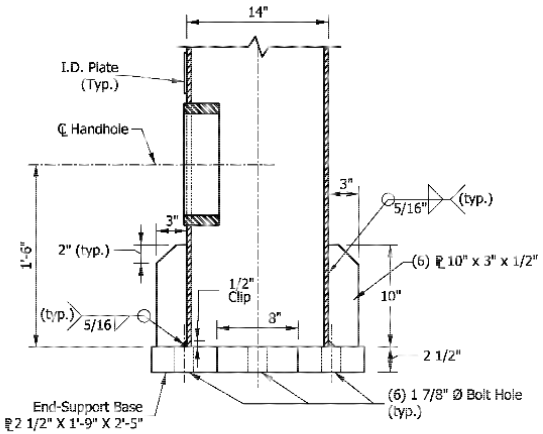


REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

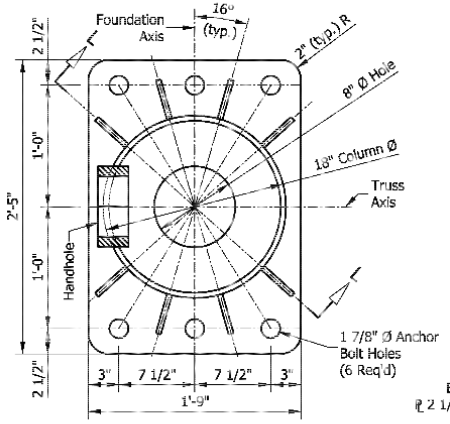
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



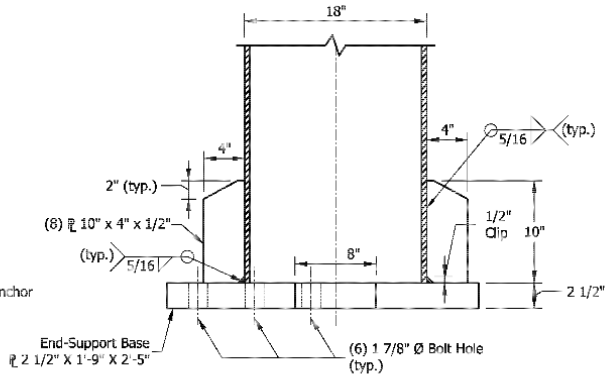
TYPE B-14 BASE PLATE



SECTION K-K



TYPE B-18 BASE PLATE



SECTION L-L

NOTES:

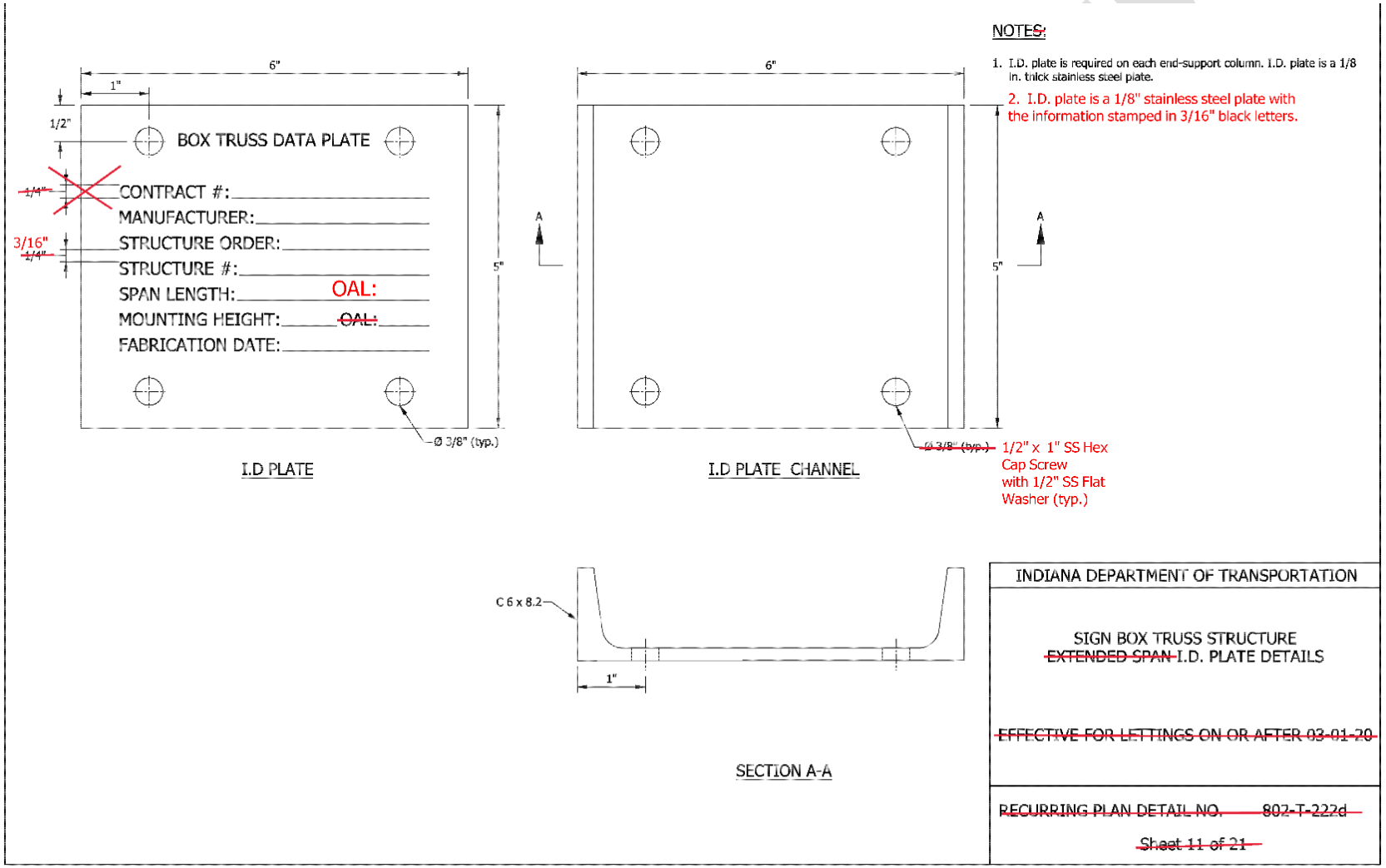
1. ~~Type B-14 base plate for end-support column diameter of 14 in.~~
   Type B-18 base plate for end-support column diameter of 18 in.

INDIANA DEPARTMENT OF TRANSPORTATION
SIGN BOX TRUSS STRUCTURE EXTENDED SPAN END-SUPPORT BASE PLATE
EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20
RECURRING PLAN DETAIL NO. 802-T-222d Sheet 10 of 21

MERGING RPD WITH 802-SBTS-13

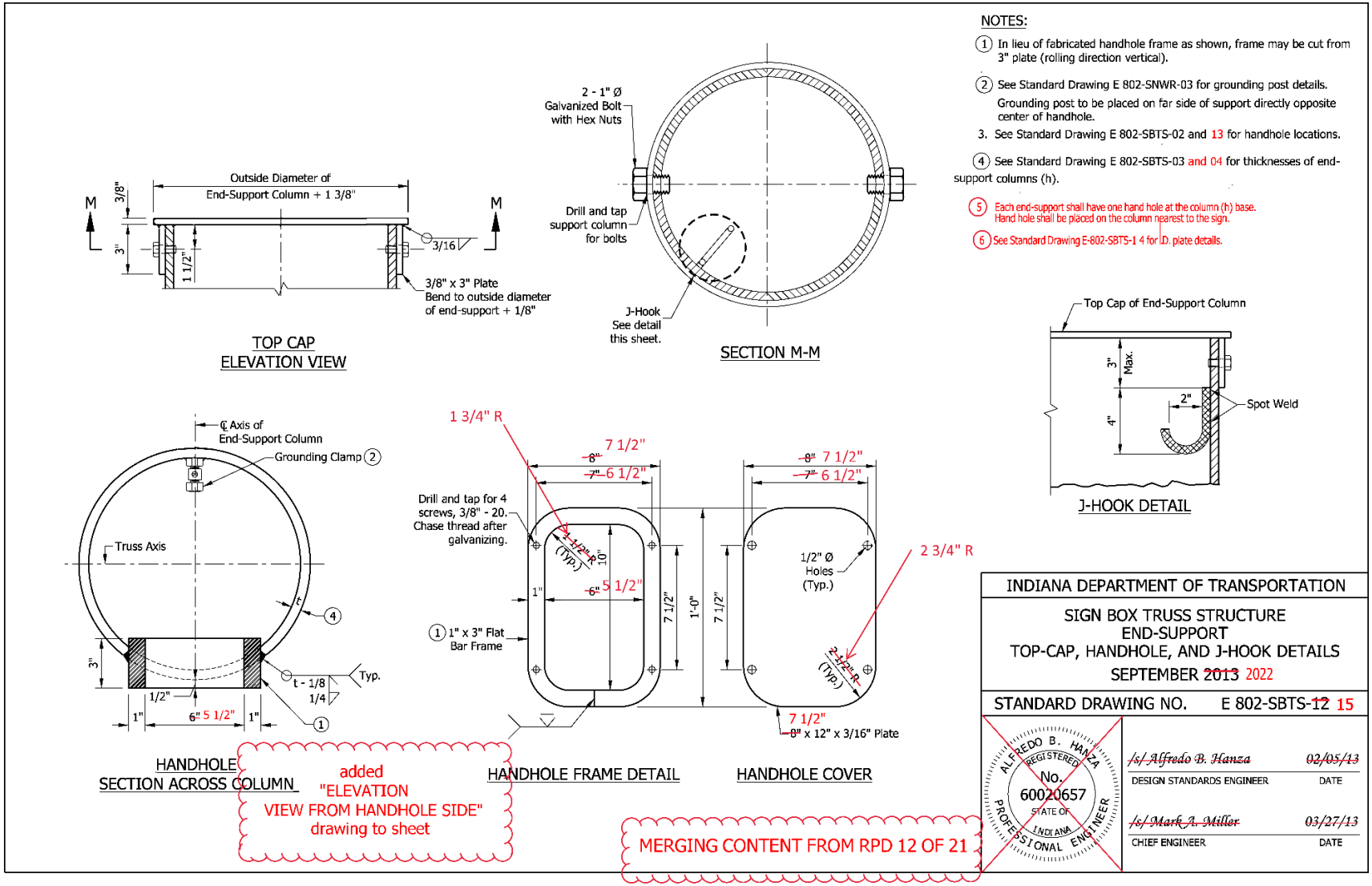
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



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

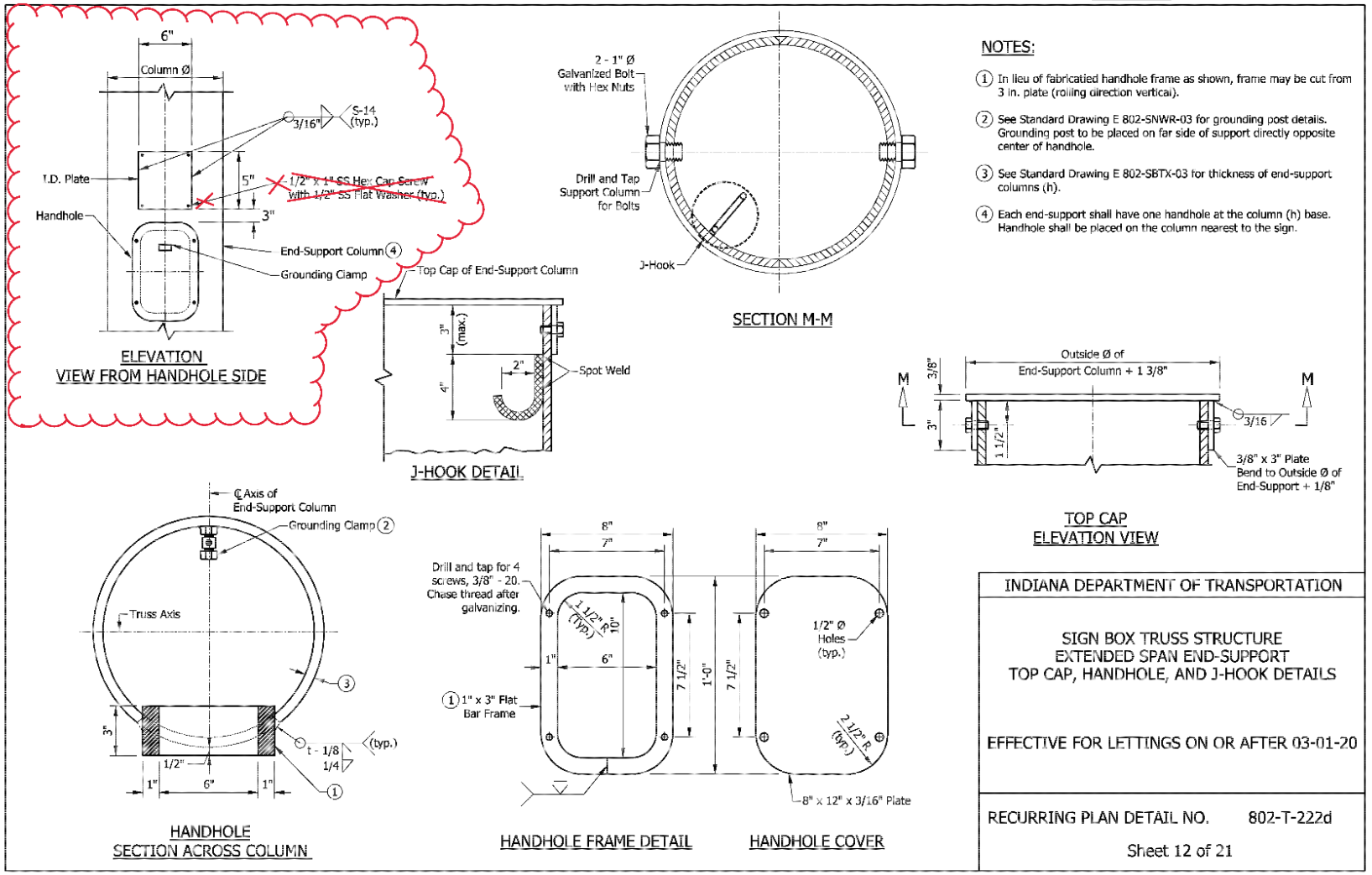
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



Item No. 3 (2022 SS) (contd.)
Mr. Boruff
Date: 7/15/21

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

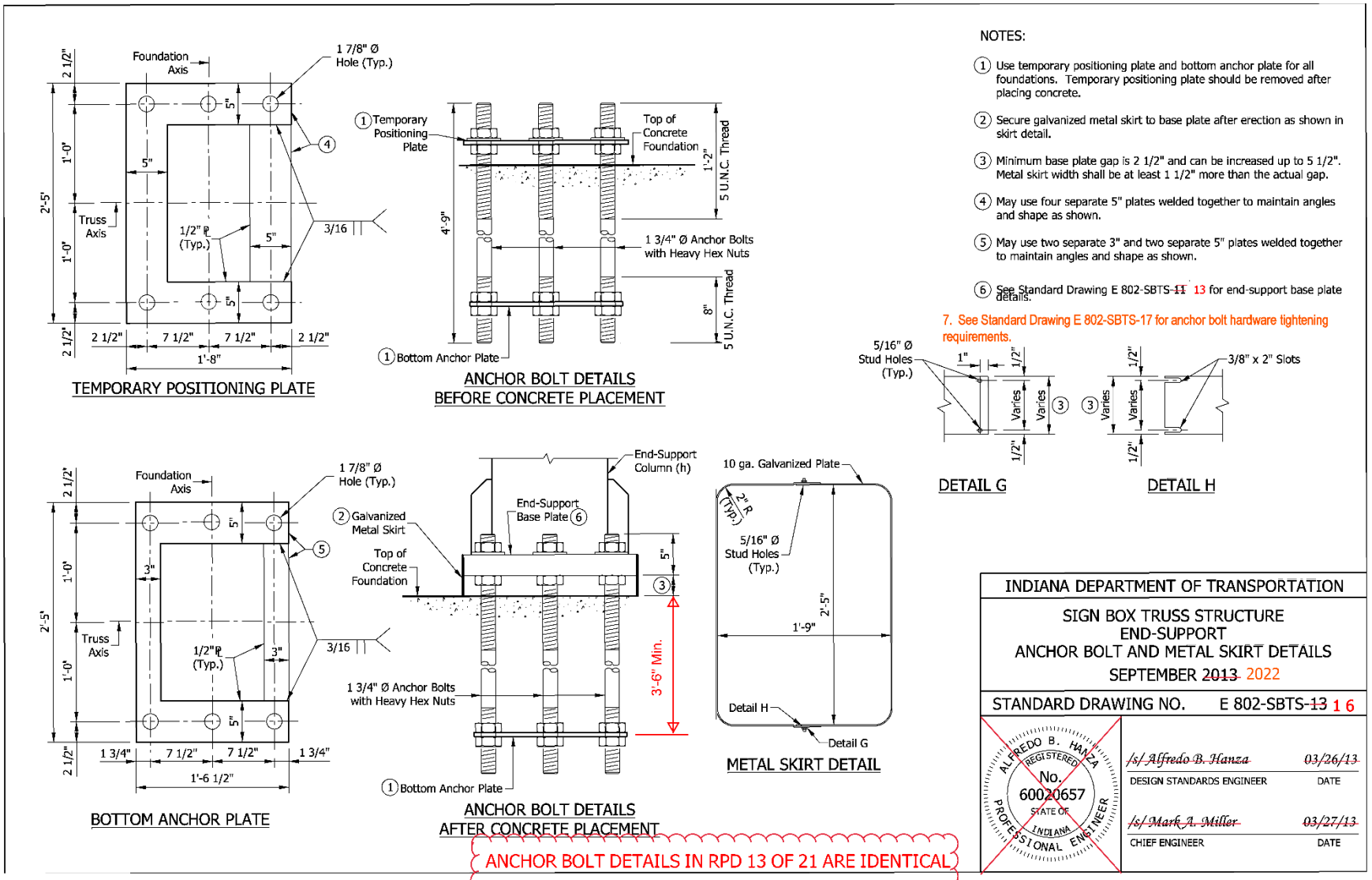
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



MERGING CONTENT WITH 802-SBTS-15

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

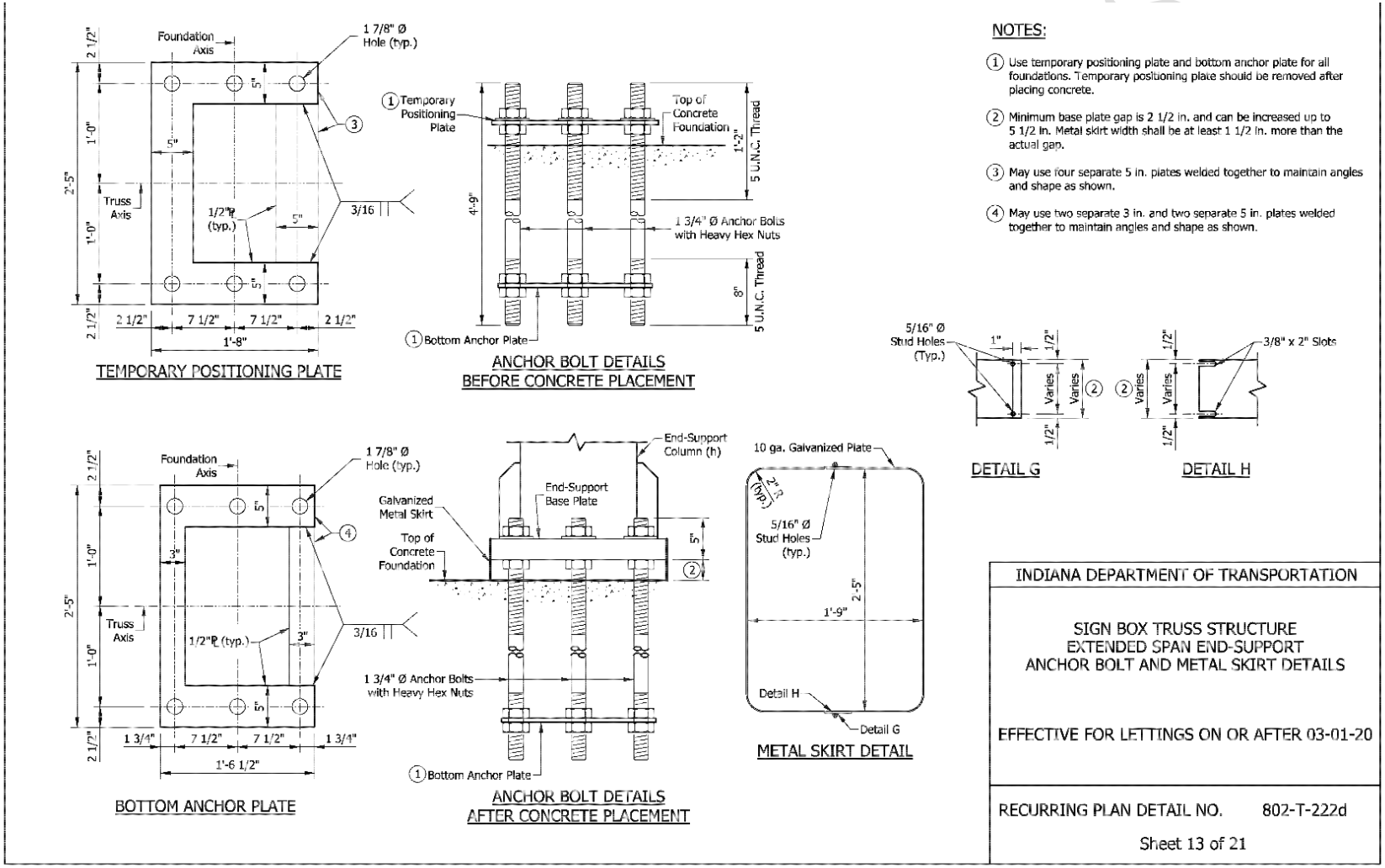
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



ANCHOR BOLT DETAILS IN RPD 13 OF 21 ARE IDENTICAL

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

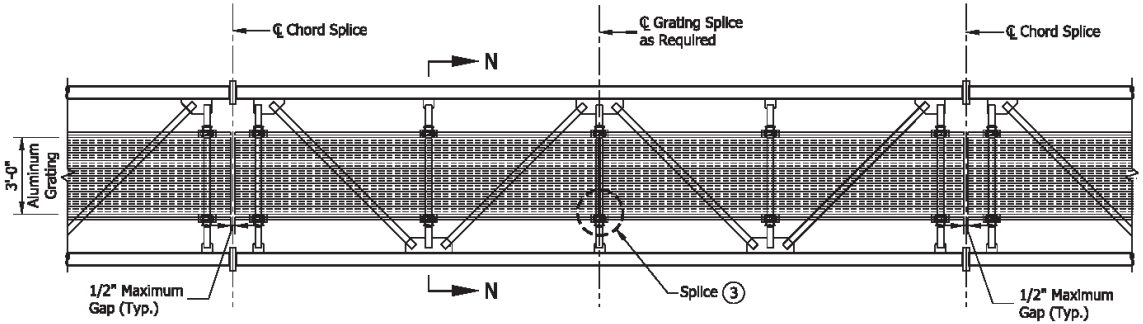
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



MERGING CONTENT WITH 802-SBTS-16

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

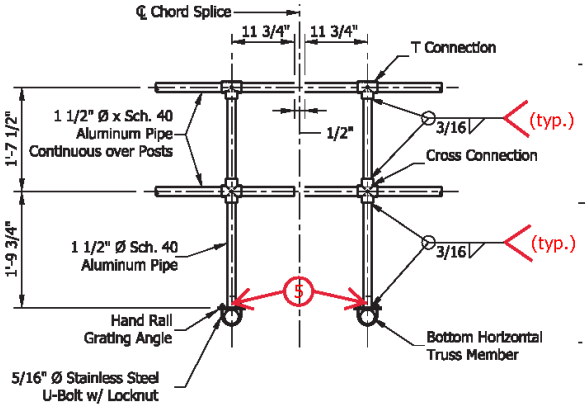
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



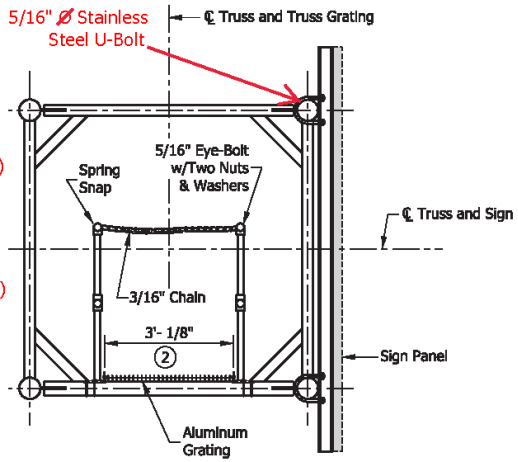
WALKWAY GRATING PLAN

NOTES:

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". Moment of Inertia, I_x = 1.382 in^4. A different grating of equal strength may be used upon approval.
2. 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 typical interior walkway grating splice detail.
4. Interior walkway grating shall run the full length, center-to-center, of end-support truss members plus 9" at each end.
5. For drain hole details see Standard Drawing E 802-SBTS-23.



TYPICAL HANDRAIL DETAIL



SECTION N-N

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
INTERIOR WALKWAY GRATING DETAILS

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~14~~18

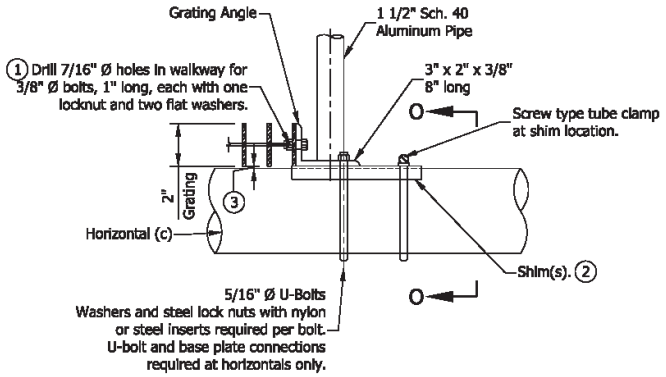
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

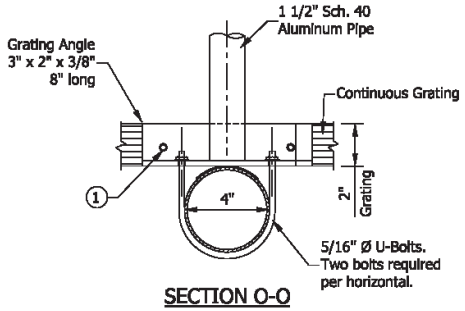
/s/ Mark A Miller 03/27/13
CHIEF ENGINEER DATE

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

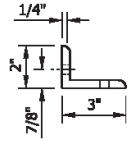
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)

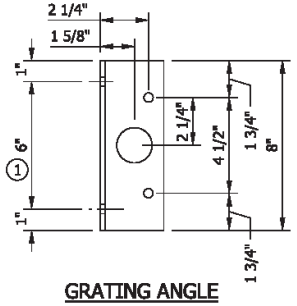


GRATNG SUPPORT DETAIL

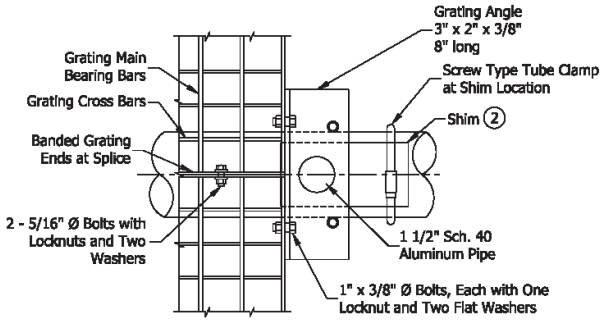


SECTION O-O





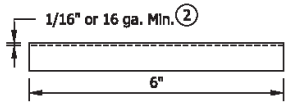
GRATING ANGLE



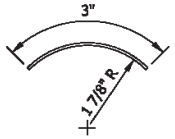
GRATING SPLICE DETAIL

NOTES:

1. Drilling of holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
2. Shims may be placed as shown, if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
3. Tube-to-grating gap may vary from 0 to 1/2" max. to align walkway, allow for camber.



ELEVATION



END VIEW

SHIM DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
INTERIOR WALKWAY GRATING DETAILS

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~15~~ 19

ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

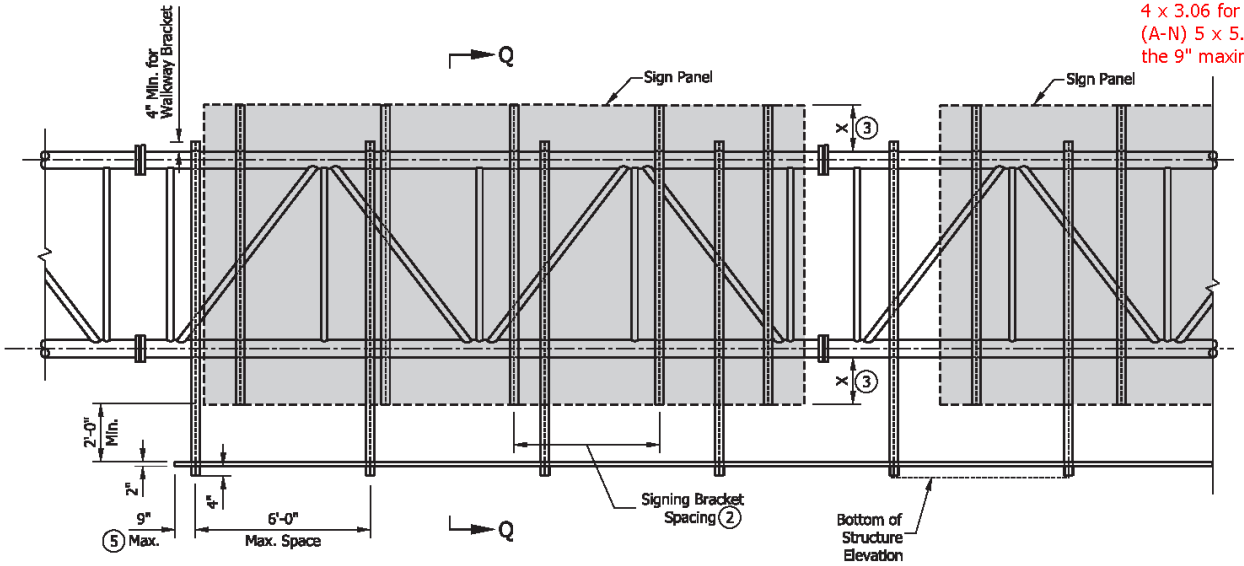
~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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

NOTES:

1. For location and data for sign panels, see plan details cross section.
2. Signs ~~> 7' in height,~~ bracket spacing 5' max.
   ~~Signs ≤ 7' in height, bracket spacing 7' max.~~
3. Dimension X depends on the height of the sign. Sign is to be centered vertically on truss.
4. See Standard Drawing E 802-SBTS ~~17~~ 21 for Plan, and E 802-SBTS ~~18~~ 22 for Section Q-Q.
5. ~~Sign shall be installed on truss with independent brackets WF (A-N) 4 x 3.06. Lighting walkway may be extended to comply with the 9" maximum unsupported grating.~~
   Sign shall be installed on truss with independent brackets WF (A-N) 4 x 3.06 for signs ≤ 18' in height. For signs > 18' and ≤ 25' use WF (A-N) 5 x 5.36. Lighting walkway may be extended to comply with the 9" maximum unsupported grating.



TYPICAL FRONT ELEVATION
~~(Lights & handrail omitted for clarity)~~
(Lighting walkway and handrail provided only when specified in the plans)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~16~~ 20

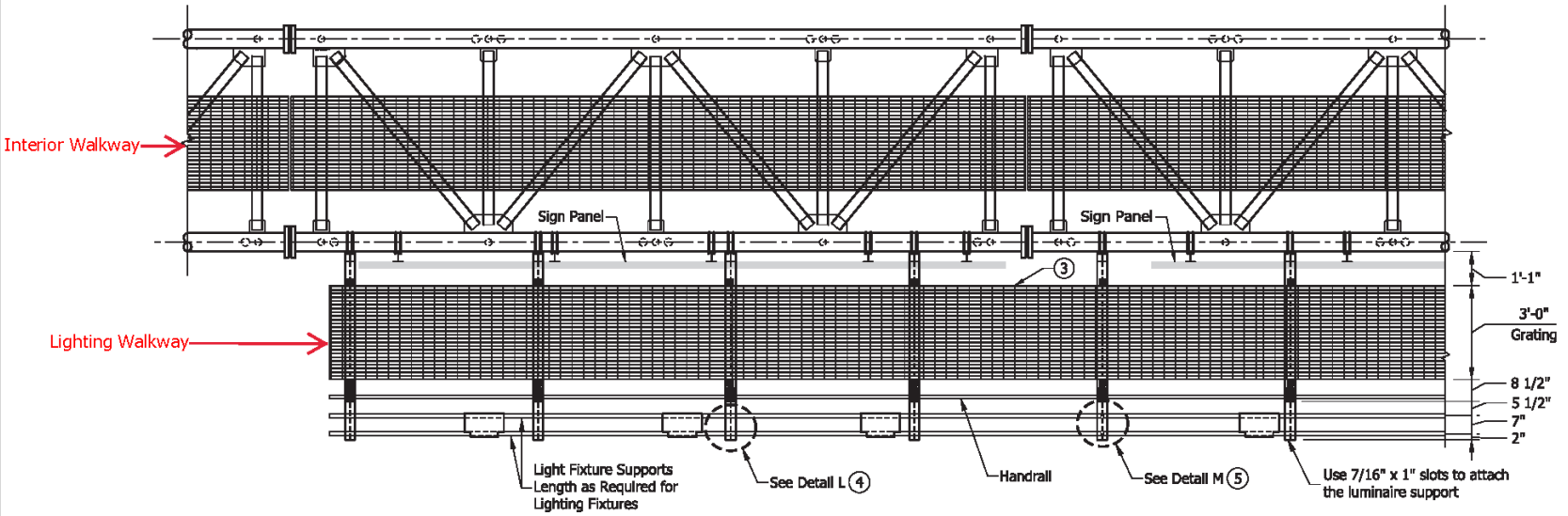
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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



PLAN

(Lighting walkway provided only when specified on the plan)

NOTES:

1. Handrail and grating shall span a minimum of 3 brackets.
2. Grating splice located on center of L-bracket only. See Standard Drawing E 802-SBTS-~~21~~ 25, Detail M.

(3) Lighting walkway gratings are extruded I-bars 2" x 1/4" spaced at 1 3/16" center-to-center. Cross bars shall have a maximum gap of 4". Moment of Inertia, I_x = 1.382 in^4. A different grating of equal strength may be used upon approval.

(4) See Standard Drawing E 802-SBTS-~~21,~~ 25, Detail L.

(5) See Standard Drawing E 802-SBTS-~~21,~~ 25, Detail M.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~17~~ 21

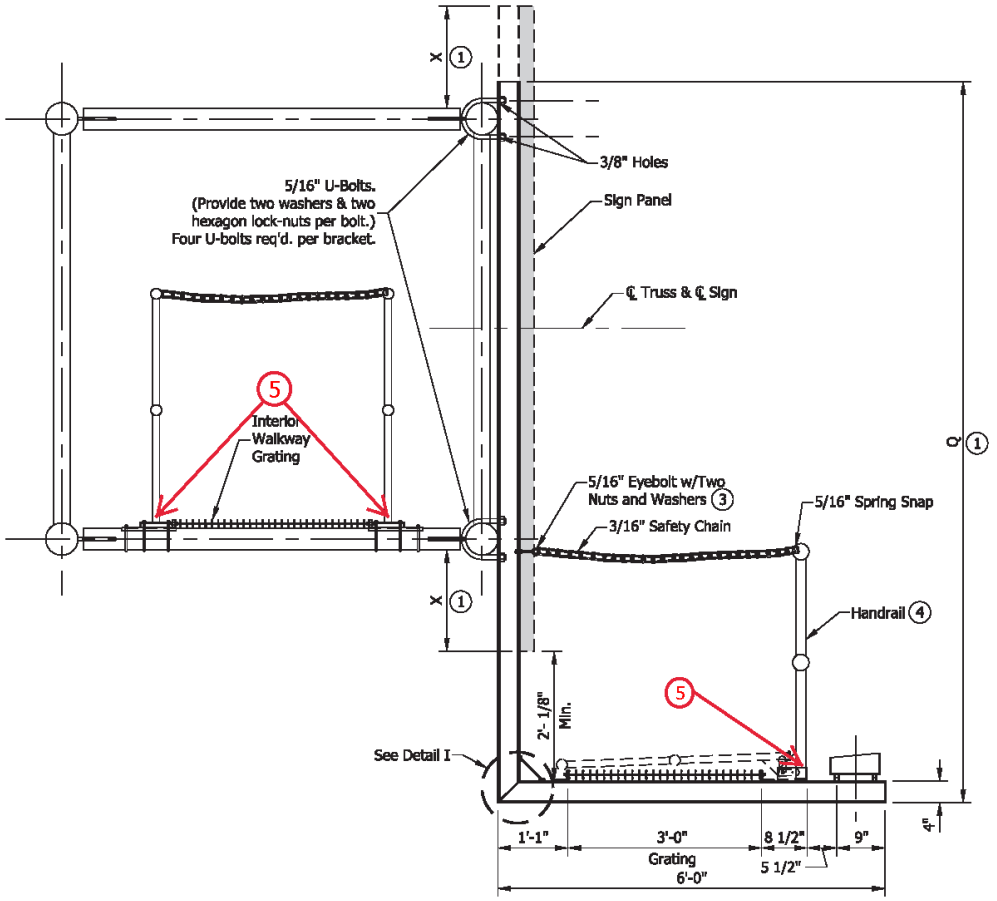
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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

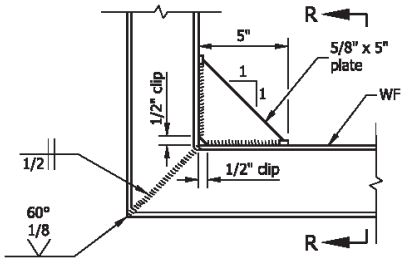


SECTION Q-Q

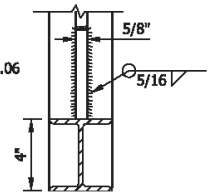
(Lighting walkway provided only when specified on plan)

NOTES:

1. Dimensions X and Q to be determined by Contractor to fit signs.
2. Sign panel shall be placed symmetrically about centerline of truss.
3. Eyebolt shall be attached to web of bracket at approximate elevation of upper handrail pipe.
4. See Standard Drawing E 802-SBTS-19 for handrail details. interior walkway.
5. Drain hole, See Standard Drawing E 802-SBTS-23



DETAIL I



SECTION R-R

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY PROFILE

SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~18~~22

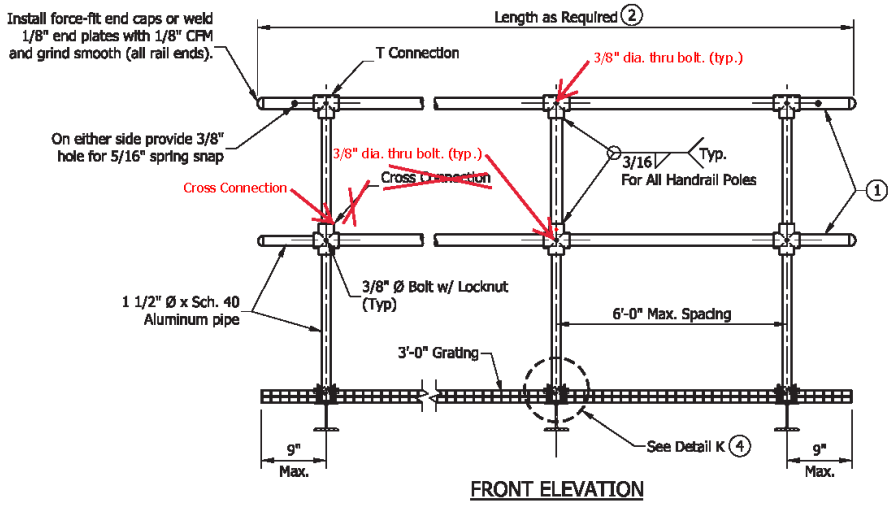
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

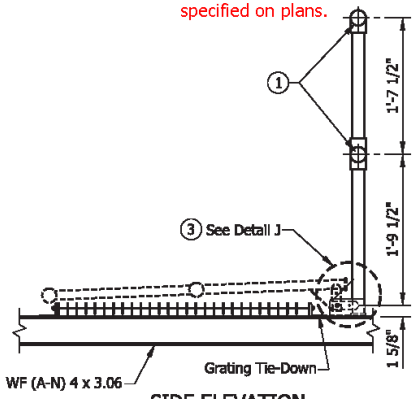
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



FRONT ELEVATION

NOTES:

1. Horizontal rail member shall be continuous through fitting. Manufacturer shall provide 7/16" holes for fitting 3/8" bolt. Field drill 7/16" hole in horizontal rail member. Attach handrail with 3/8" bolt, washer, and locknut.
2. Rail and grating shall span a minimum of three brackets.
3. See Standard Drawing E 802-SBTS-~~20~~ 24 for Detail J.
4. See Standard Drawing E 802-SBTS-~~20~~ 24 for Detail K.
5. Lighting walkway and handrail provided only when specified on plans.



SIDE ELEVATION

ADDED NEW HANDRAIL DRAIN HOLES DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY AND
HANDRAIL ASSEMBLY
SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~19~~23

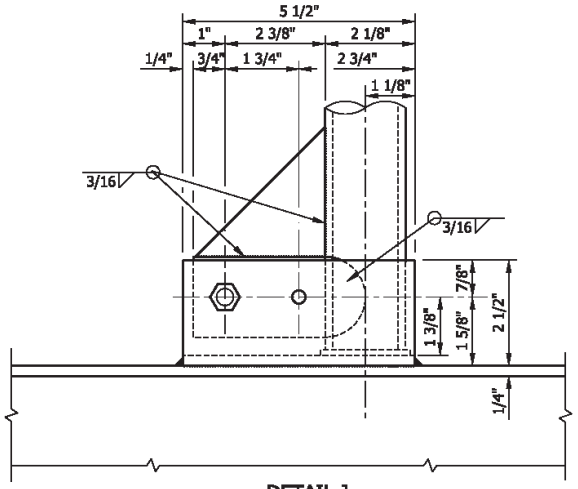
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

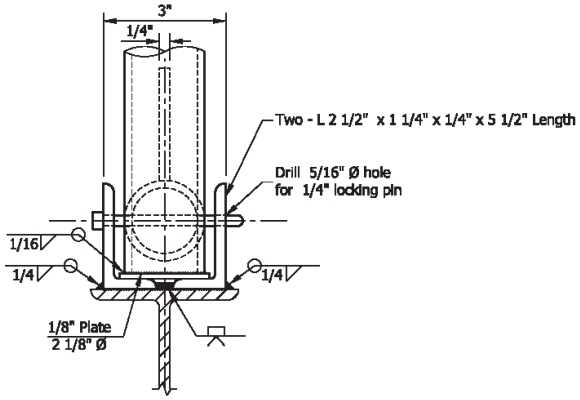
~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

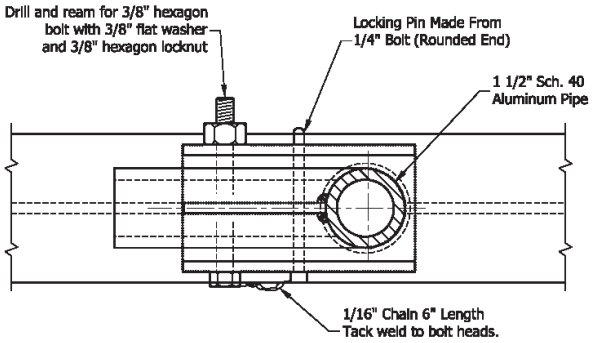
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



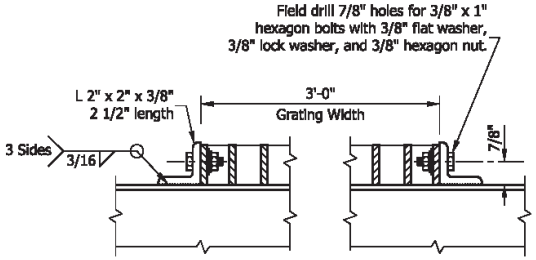
DETAIL J
SIDE ELEVATION



DETAIL K
FRONT ELEVATION



PLAN
DETAILS OF HANDRAIL HINGE



GRATING TIE DOWN
(Two req'd per walkway bracket)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY, HANDRAIL HINGE, AND
GRATING DETAILS
SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~20~~24

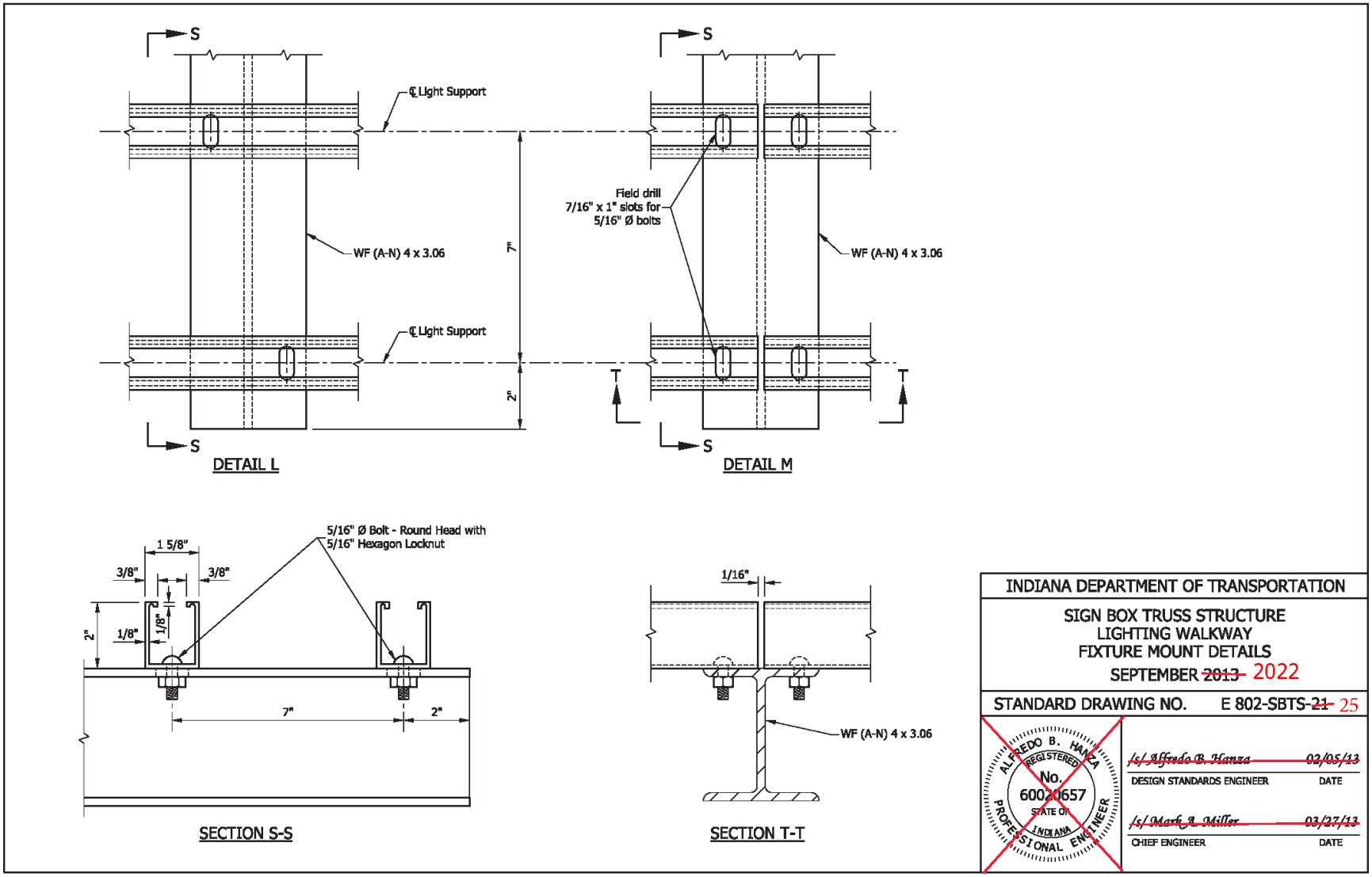
ALFREDO B. HANZA
REGISTERED
No.
600220657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~03/26/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

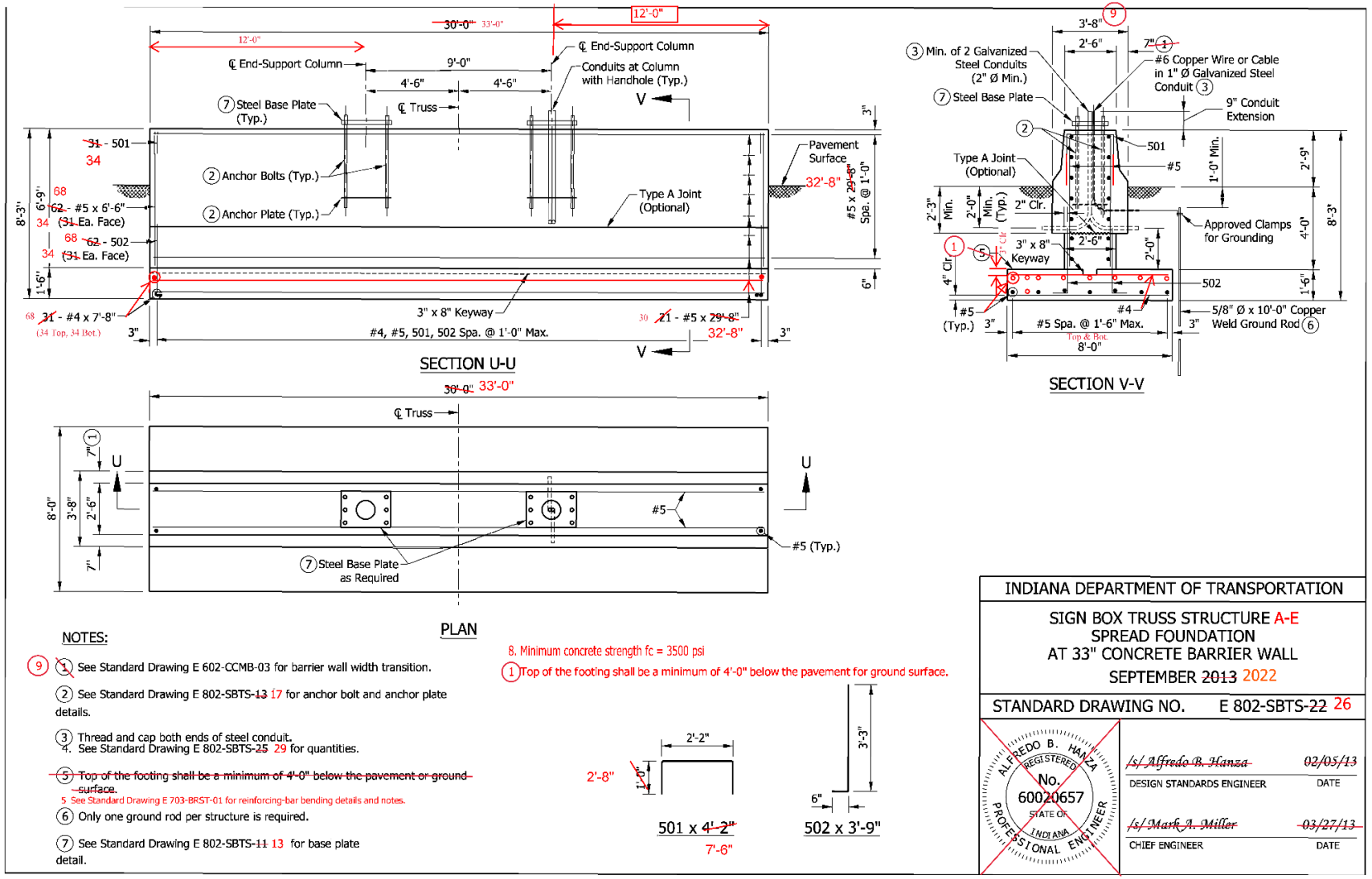
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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)



NOTES:

9 1 See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

2 See Standard Drawing E 802-SBTS-~~13~~ 17 for anchor bolt and anchor plate details.

3 Thread and cap both ends of steel conduit.

4. See Standard Drawing E 802-SBTS-~~25~~ 29 for quantities.

~~5 Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.~~

5 See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

6 Only one ground rod per structure is required.

7 See Standard Drawing E 802-SBTS-~~11~~ 13 for base plate detail.

8. Minimum concrete strength fc = 3500 psi

1 Top of the footing shall be a minimum of 4'-0" below the pavement for ground surface.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
SPREAD FOUNDATION
AT 33" CONCRETE BARRIER WALL
SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~22~~ 26

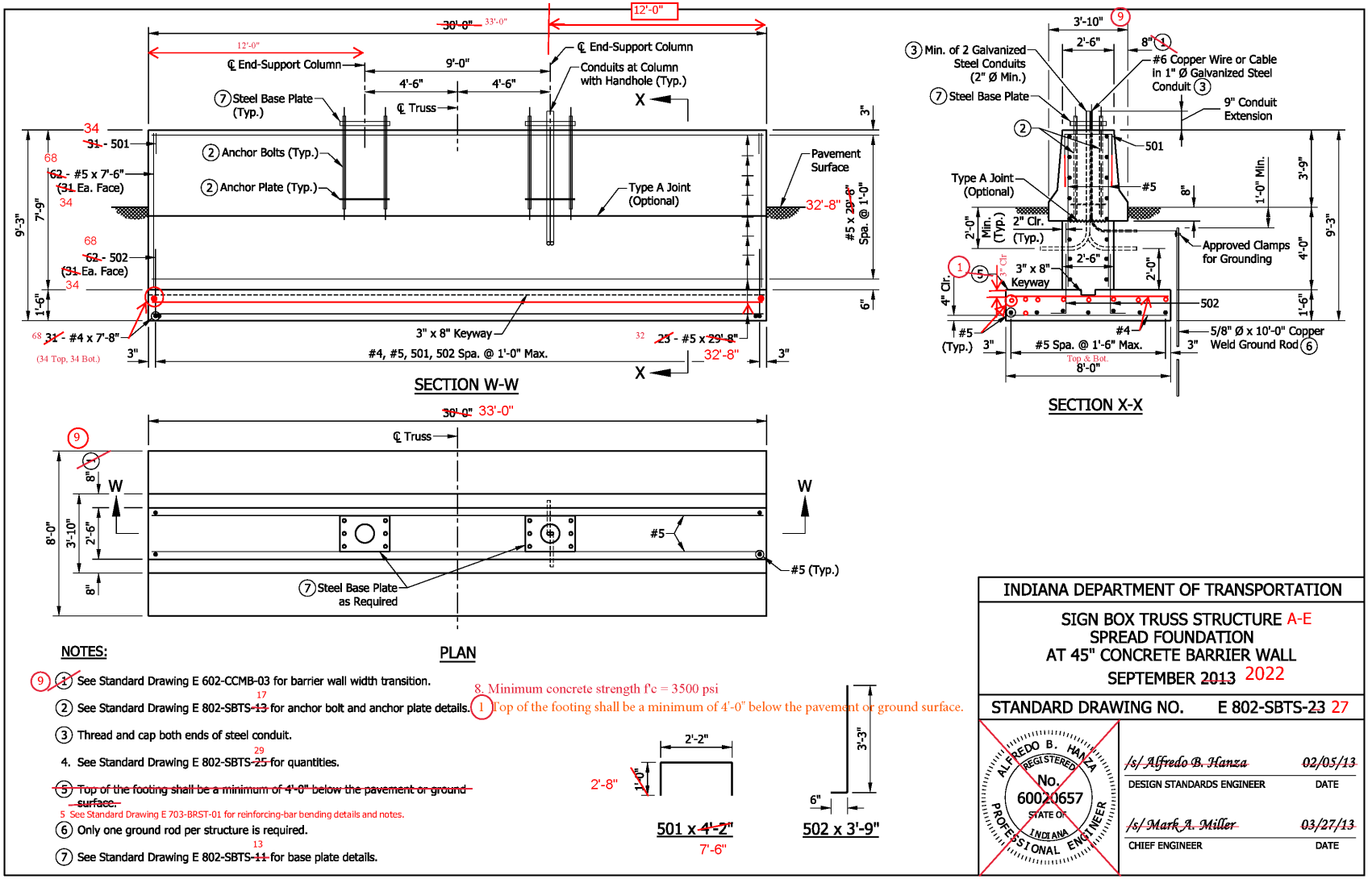
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

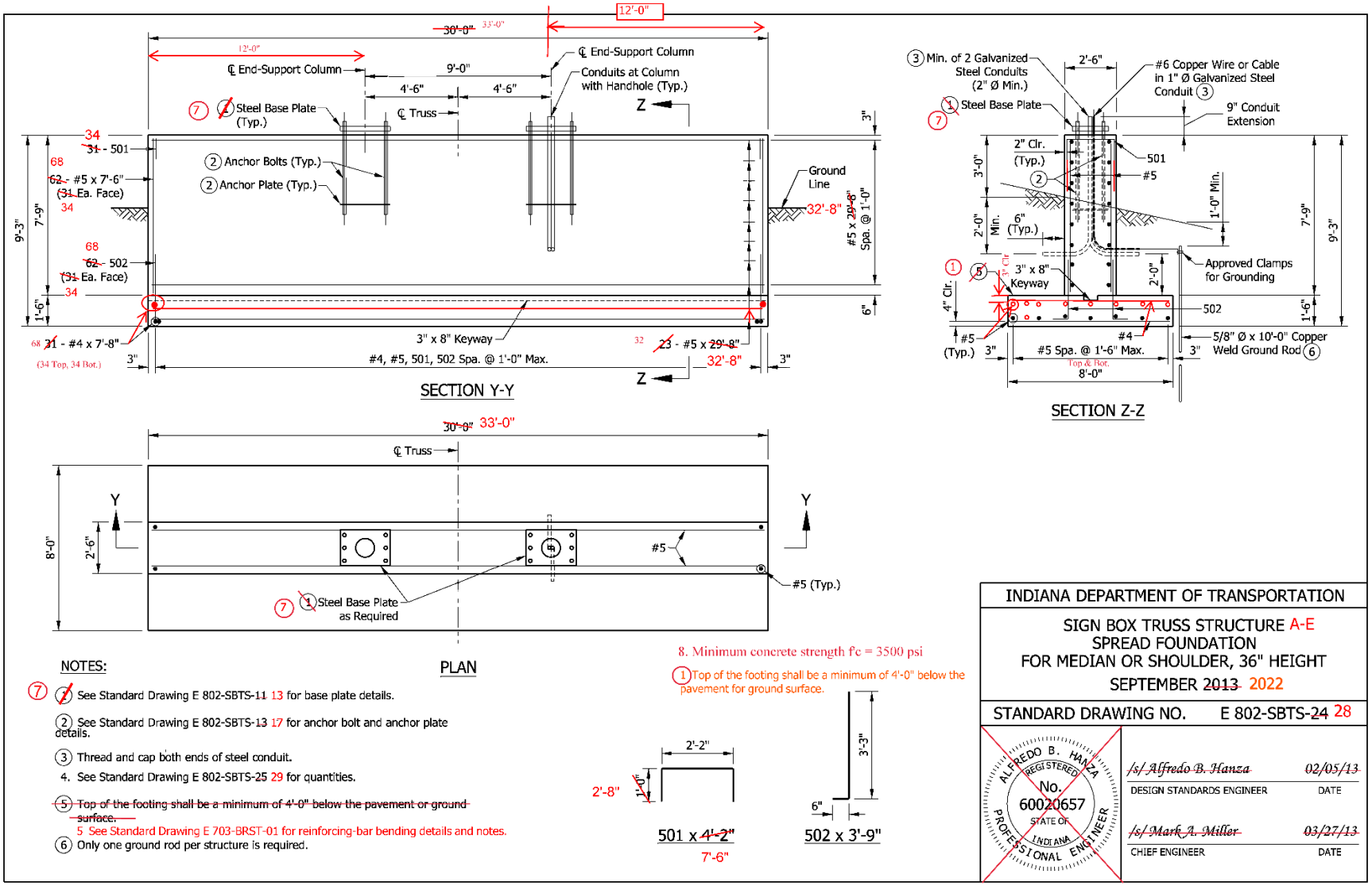
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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)



NOTES:

7 2 See Standard Drawing E 802-SBTS-11 13 for base plate details.

2 See Standard Drawing E 802-SBTS-13 17 for anchor bolt and anchor plate details.

3 Thread and cap both ends of steel conduit.

4. See Standard Drawing E 802-SBTS-25 29 for quantities.

~~5 Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.~~

5 See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

6 Only one ground rod per structure is required.

8. Minimum concrete strength f'c = 3500 psi

1 Top of the footing shall be a minimum of 4'-0" below the pavement for ground surface.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
SPREAD FOUNDATION
FOR MEDIAN OR SHOULDER, 36" HEIGHT
SEPTEMBER ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~24~~ 28

ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

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

SPREAD FOUNDATION AT 33" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	~~31~~ 34	~~4' 2"~~	~~7'-6"~~
502	~~62~~ 68	3'-9"	
#5	~~62~~ 68	6'-6"	
#5	~~21~~ 30	~~29'-8"~~	2015
Total #5		32'-8"	~~1447~~ LBS
#4	~~31~~ 68	7'-8"	348
Total #4			~~159~~ LBS
Total Epoxy-Coated Reinforcing Bars			~~1606~~ 2363 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			~~35.8~~ 39.8 CYS
MISCELLANEOUS			
Surface Seal			~~27.6~~ SYS

30.4

SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	~~31~~ 34	~~4' 2"~~	~~7'-6"~~
502	~~62~~ 68	3'-9"	
#5	~~62~~ 68	7'-6"	
#5	~~23~~ 32	~~29' 8"~~	2154
Total #5		32'-8"	~~1574~~ LBS
#4	~~31~~ 68	7'-8"	348
Total #4			~~159~~ LBS
Total Epoxy-Coated Reinforcing Bars			~~1733~~ 2502 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			~~37.6~~ 41.4 CYS
MISCELLANEOUS			
Surface Seal			~~34.3~~ SYS

37.8

SPREAD FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	~~31~~ 34	~~4' 2"~~	~~7'-6"~~
502	~~62~~ 68	3'-9"	
#5	~~62~~ 68	7'-6"	
#5	~~23~~ 32	~~29' 8"~~	2154
Total #5		32'-8"	~~1574~~ LBS
#4	~~31~~ 68	7'-8"	348
Total #4			~~159~~ LBS
Total Epoxy-Coated Reinforcing Bars			~~1733~~ 2502 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			~~34.9~~ 38.4 CYS
MISCELLANEOUS			
Surface Seal			~~28.3~~ SYS

35.8

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 ~~2013~~ 2022

STANDARD DRAWING NO. E 802-SBTS-~~25~~ 29

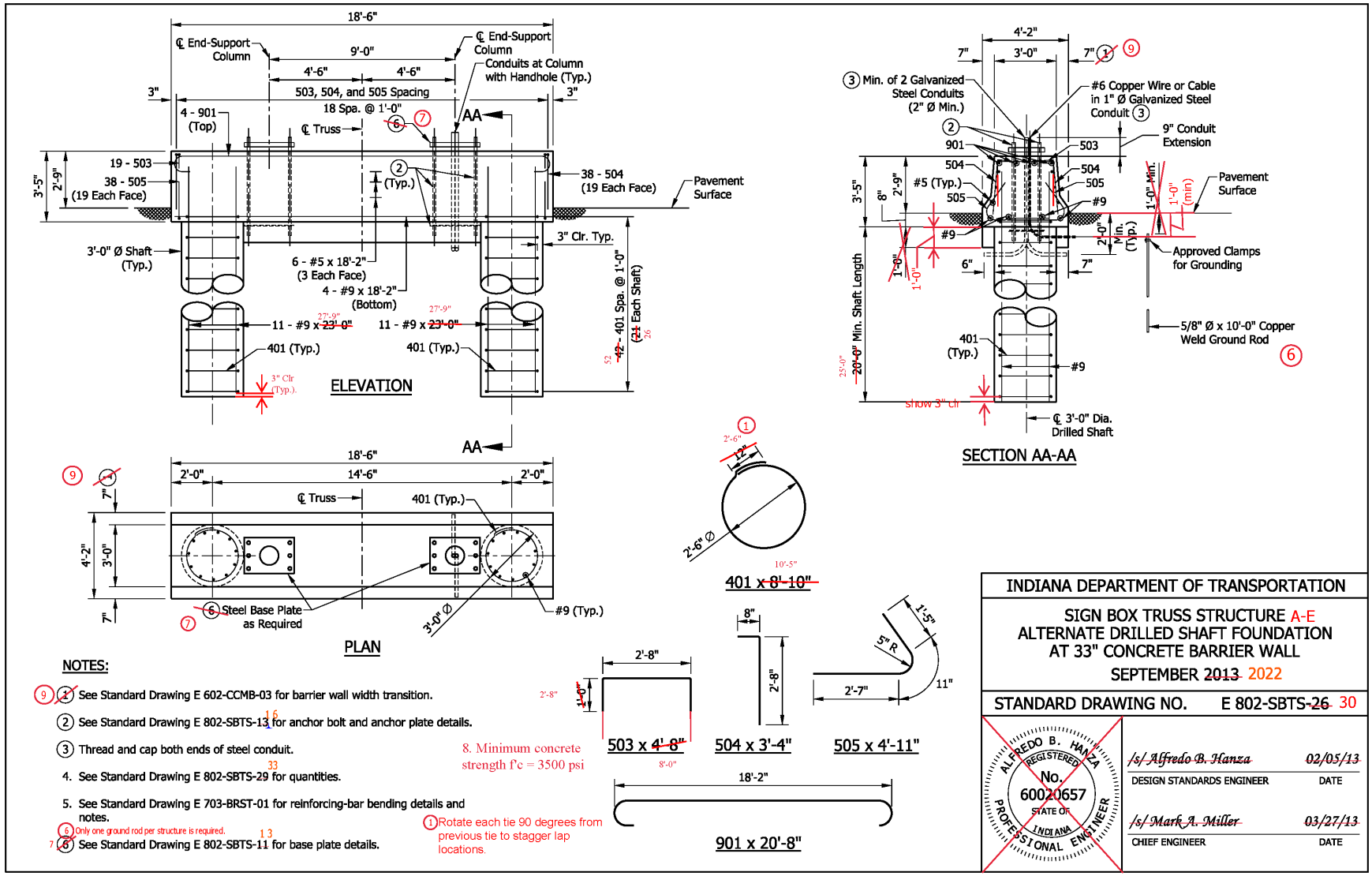
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ *~~02/05/13~~*
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ *~~03/27/13~~*
CHIEF ENGINEER DATE

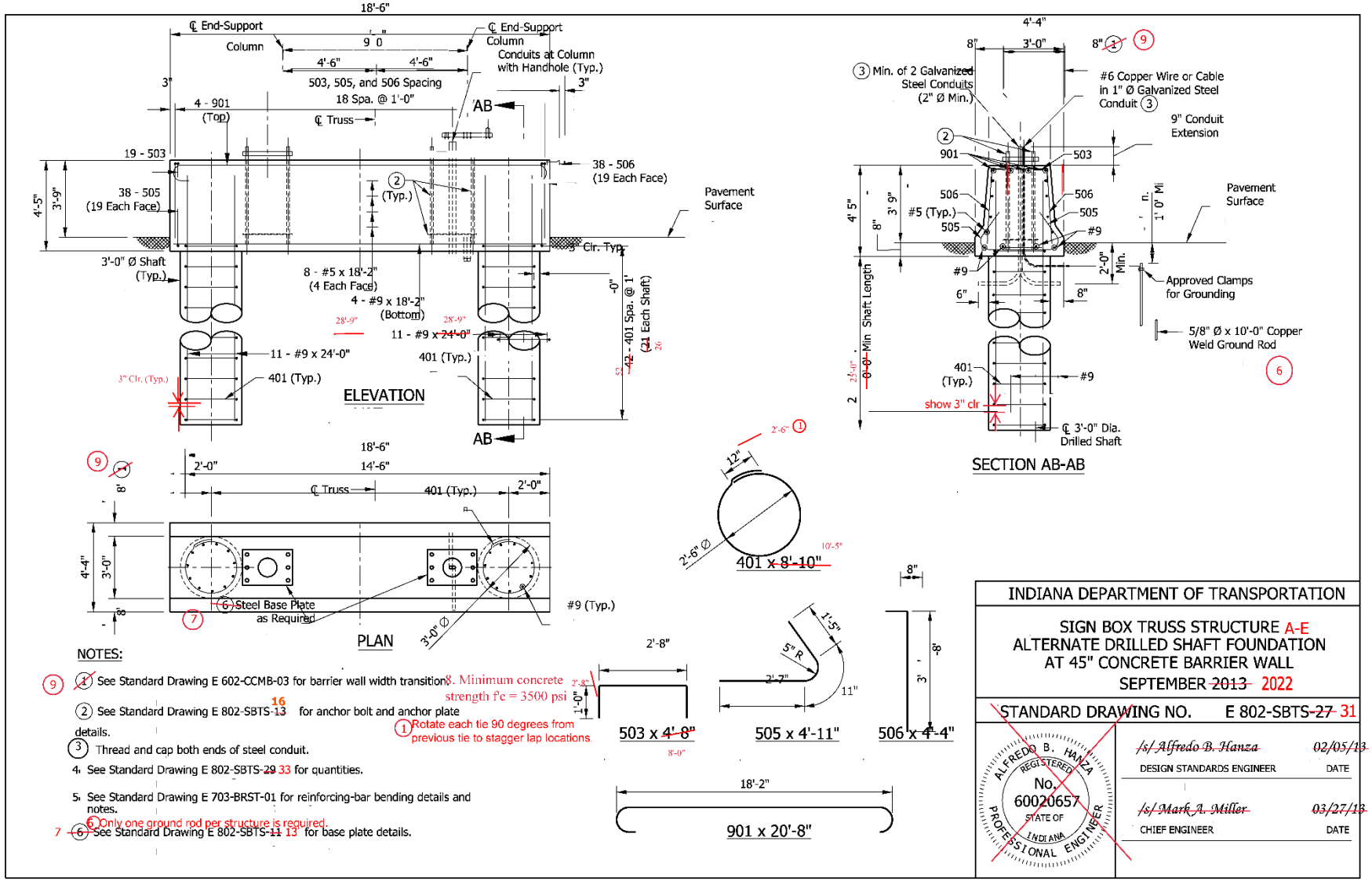
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



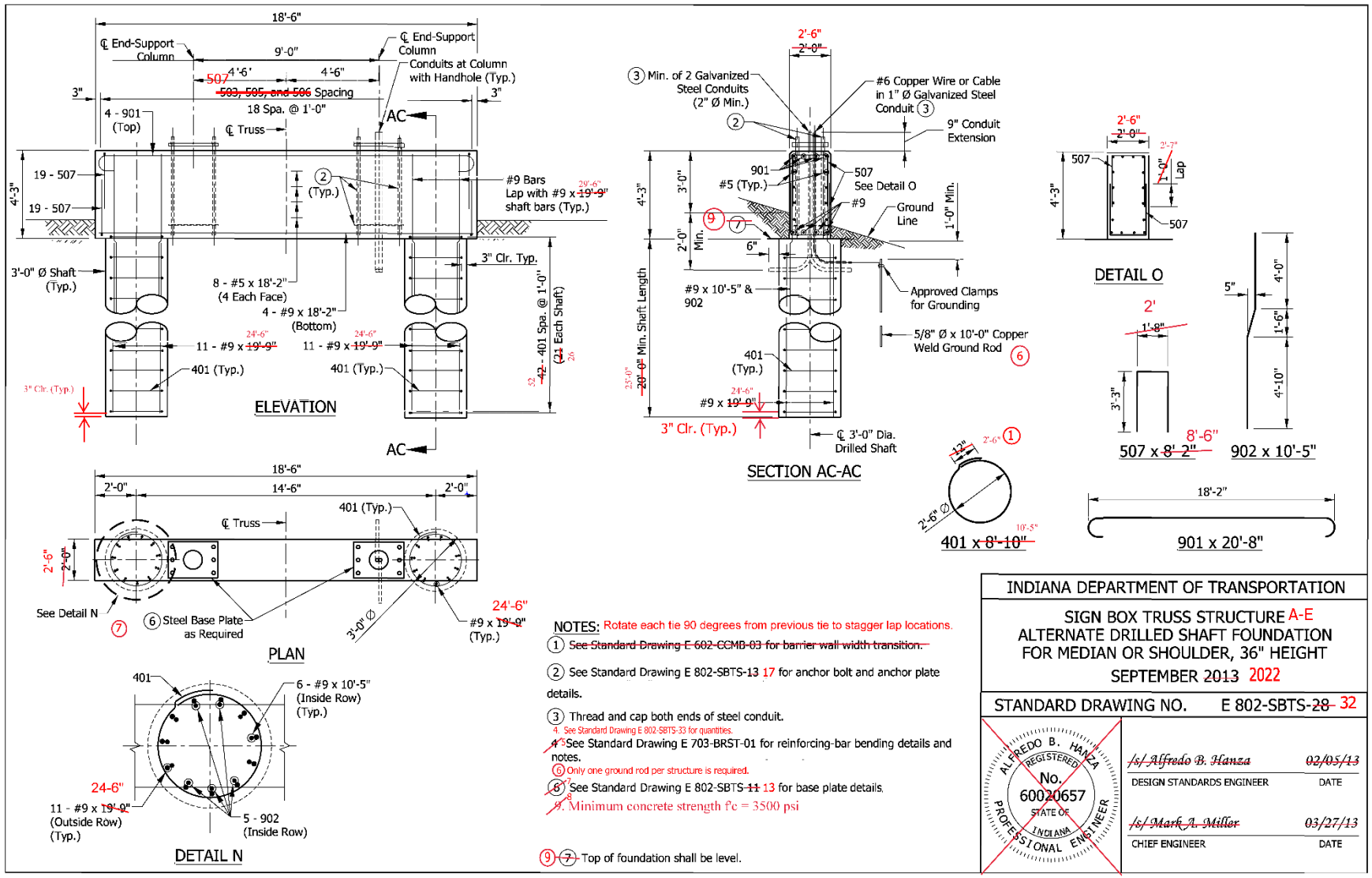
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



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)

ALTERNATE DRILLED SHAFT FOUNDATION AT 33" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
#9	4	18'-2"	
#9	22	~~23'-0"~~ 27'-9"	~~2249~~ 2604 LBS
Total #9			
503	19	~~4'-8"~~	8'-0"
504	38	3'-4"	
505	38	4'-11"	
#5	6	18'-2"	599
Total #5			~~533~~ LBS
401	~~42~~ 52	~~8'-10"~~ 10'-5"	362
Total #4			~~248~~ LBS
Total Epoxy-Coated Reinforcing Bars			~~3030~~ 3565 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			~~20.0~~ 23.1 CYS
MISCELLANEOUS			
Surface Seal			~~17.6~~ 18.1 SYS

ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
#9	4	18'-2"	
#9	22	~~24'-0"~~ 28'-9"	~~2323~~ 2679 LBS
Total #9			
503	19	~~4'-8"~~	8'-0"
505	38	4'-11"	
506	38	4'-4"	
#5	8	18'-2"	677
Total #5			~~611~~ LBS
401	~~42~~ 52	~~8'-10"~~ 10'-5"	362
Total #4			~~248~~ LBS
Total Epoxy-Coated Reinforcing Bars			~~3182~~ 3718 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			~~20.8~~ 23.9 CYS
MISCELLANEOUS			
Surface Seal			~~21.7~~ 22.2 SYS

ALTERNATE DRILLED SHAFT FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING 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	~~19'-9"~~ 24'-6"	3140 ~~2785~~ LBS
Total #9			
507	38	8'-2"	
#5	8	18'-2"	
Total #5			~~475 LBS~~ 488 LBS
401	~~42~~ 52	~~8'-10"~~ 10'-5"	362
Total #4			~~248~~ LBS
Total Epoxy-Coated Reinforcing Bars			~~3508 LBS~~ 3990 LBS
CONCRETE, CLASS A			
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-~~29~~ 33

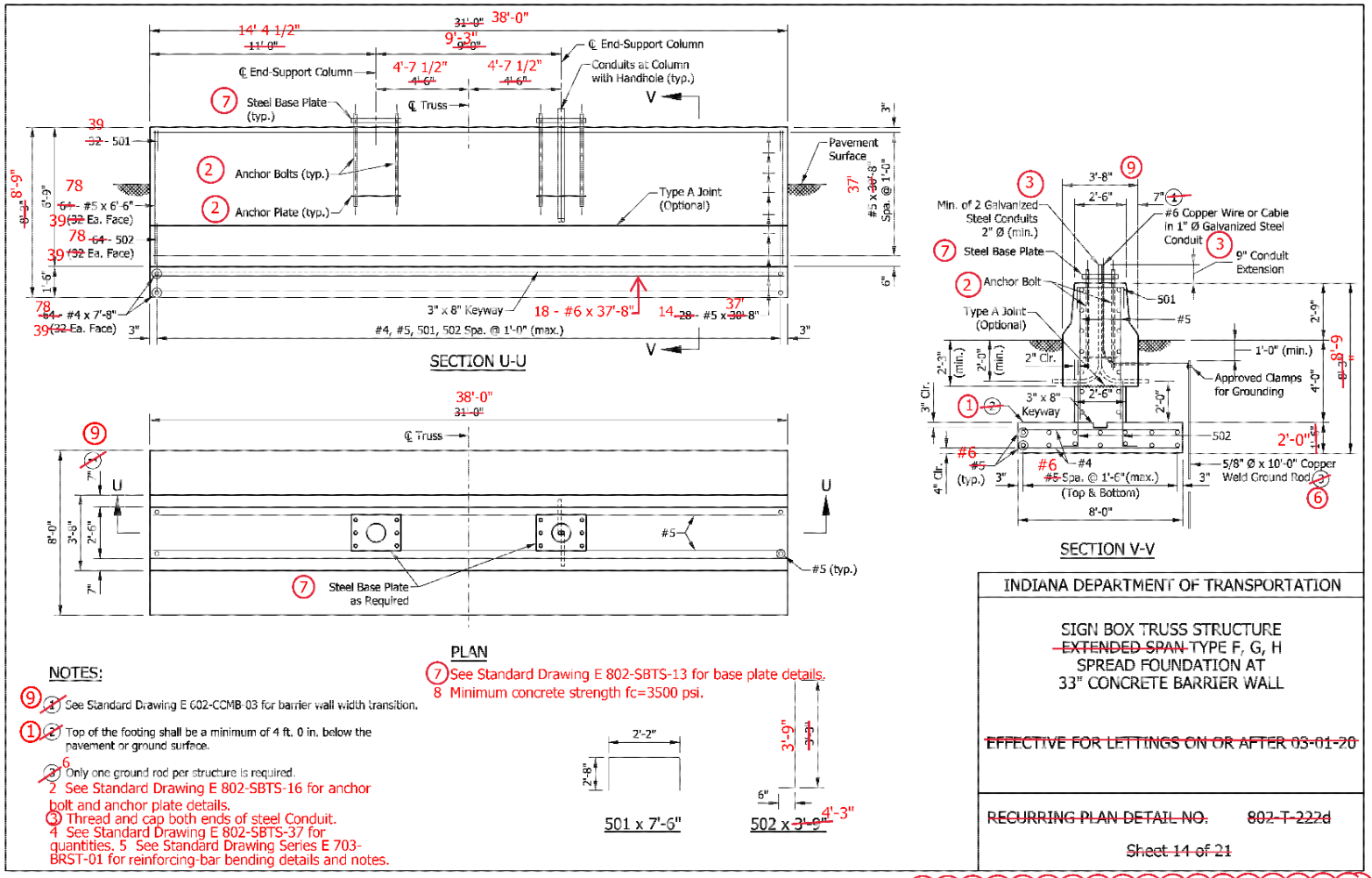
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

~~/s/ Alfredo B. Hanza~~ ~~02/05/13~~
DESIGN STANDARDS ENGINEER DATE

~~/s/ Mark A. Miller~~ ~~03/27/13~~
CHIEF ENGINEER DATE

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

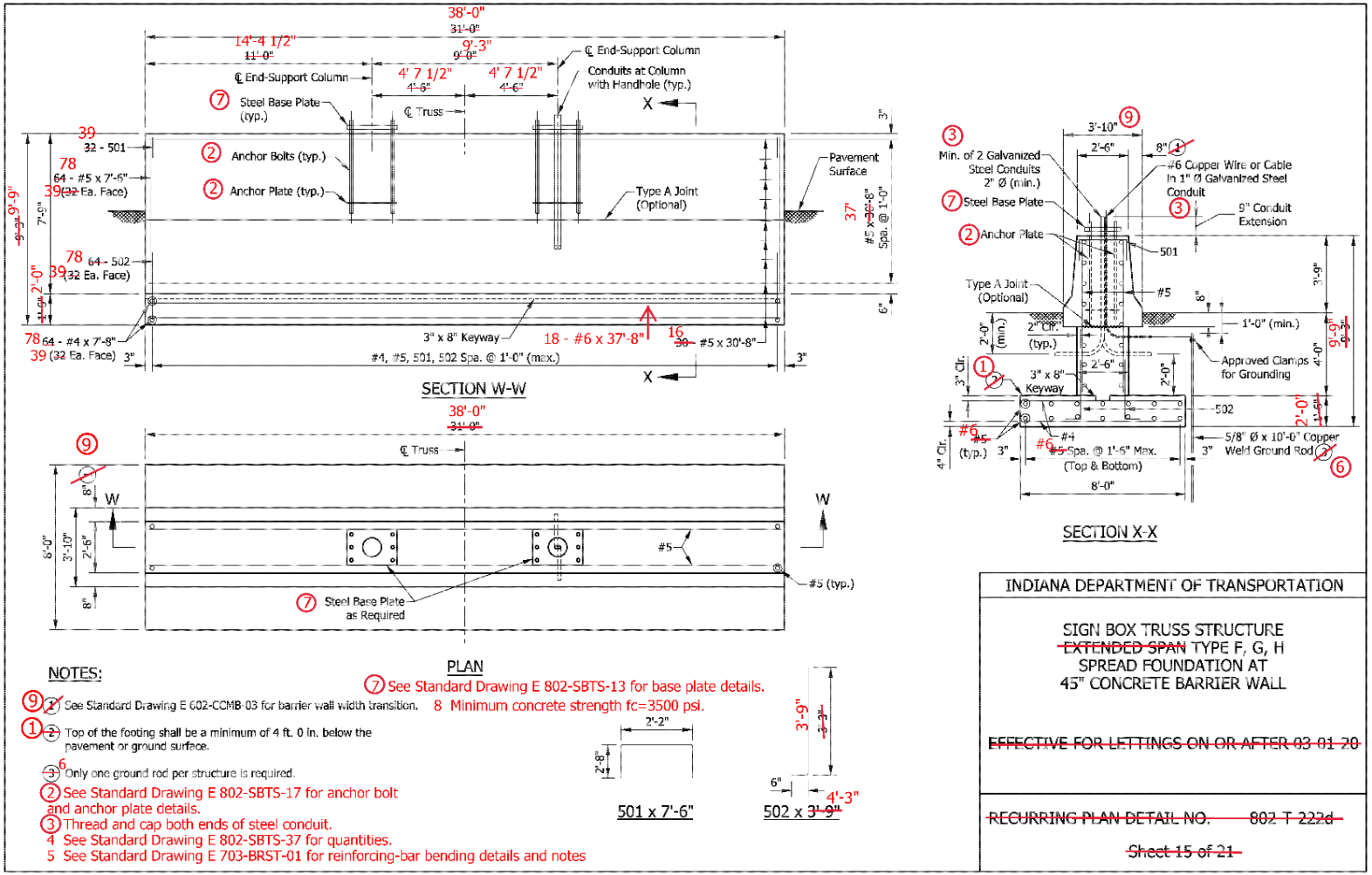
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



RPD 14 OF 21 BECOMES 802 SBTS-34

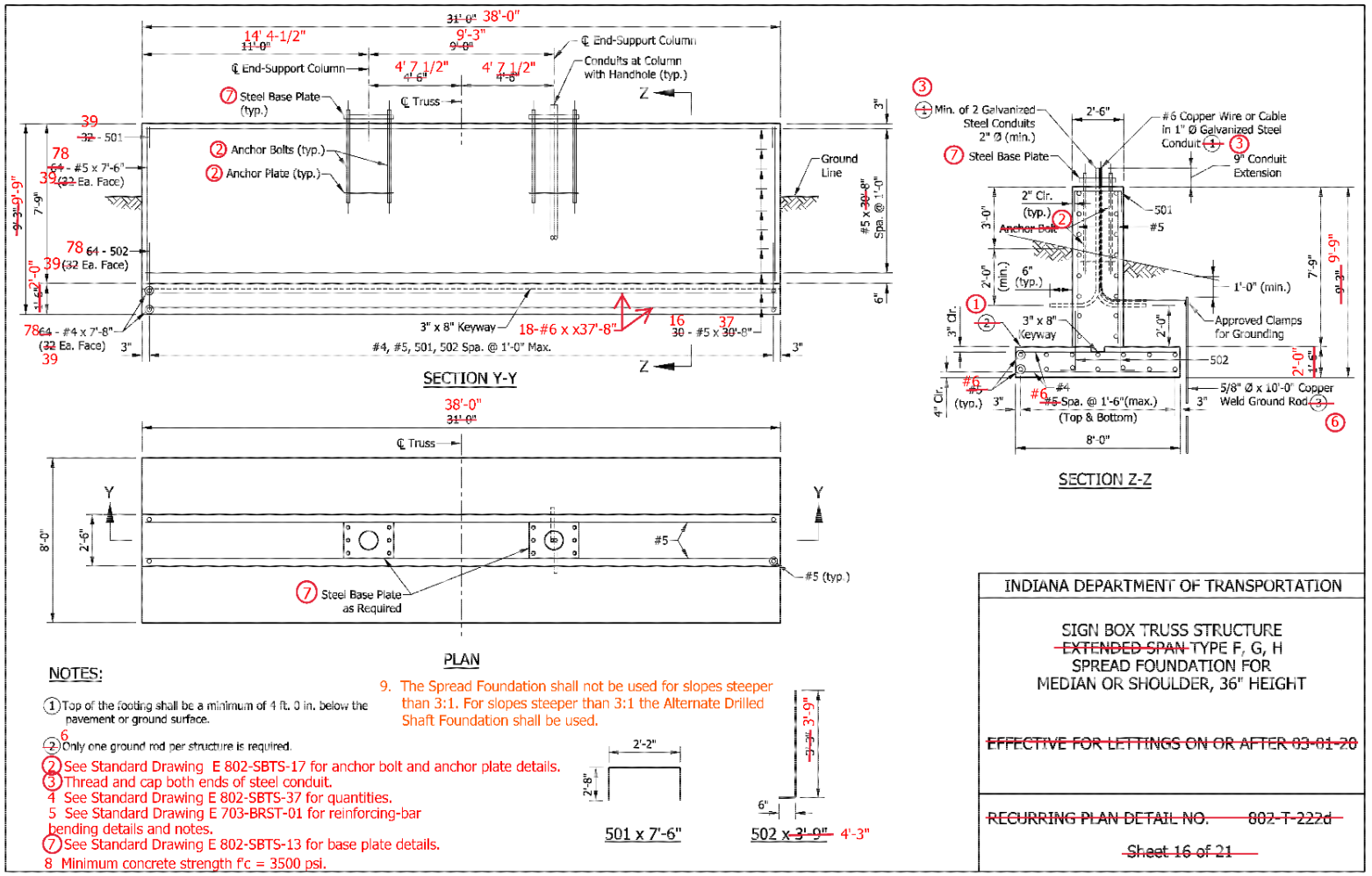
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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)



NOTES:

1. Top of the footing shall be a minimum of 4 ft. 0 in. below the pavement or ground surface.
2. Only one ground rod per structure is required.
2. See Standard Drawing E 802-SBTS-17 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-37 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c = 3500 psi.
9. The Spread Foundation shall not be used for slopes steeper than 3:1. For slopes steeper than 3:1 the Alternate Drilled Shaft Foundation shall be used.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
~~EXTENDED SPAN~~ TYPE F, G, H
SPREAD FOUNDATION FOR
MEDIAN OR SHOULDER, 36" HEIGHT

~~EFFECTIVE FOR LETTINGS ON OR AFTER 03-01-20~~

~~RECURRING PLAN DETAIL NO.~~ 802-T-222d

~~Sheet 16 of 21~~

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)

#6	18	37'-8"	
Total #6			1018 LBS

SPREAD FOUNDATION
AT 33" CONCRETE BARRIER WALL

EPOXY-COATED REINFORCING BARS

MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	~~32~~ 39	7'-6"	
502	~~64~~ 78	~~3'-9"~~ 4'-3"	
#5	~~64~~ 78	~~6'-6"~~ 6'-6"	
#5	~~28~~ 14	~~30'-8"~~ 37'-8"	
Total #5			~~1730~~ 1830 LBS
#4	~~64~~ 78	7'-8"	
Total #4			399 ~~328~~ LBS
Total Epoxy-Coated Reinforcing Bars			3147 ~~2158~~ LBS
CONCRETE, CLASS A			
Total Concrete, Class A			51.4 ~~37.0~~ CYS
MISCELLANEOUS			
Surface Seal			35.0 ~~28.5~~ SYS

#6	18	37'-8"	
Total #6			1018 LBS

SPREAD FOUNDATION
AT 45" CONCRETE BARRIER WALL

EPOXY-COATED REINFORCING BARS

MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
~~501~~	~~32~~ 39	7'-6"	
~~502~~	~~64~~ 78	~~3'-9"~~ 4'-3"	
#5	~~64~~ 78	7'-6"	
~~#5~~	~~30~~ 16	~~30'-8"~~ 37'-8"	
Total #5			1890 ~~1961~~ LBS
#4	~~64~~ 78	7'-8"	
Total #4			399 ~~328~~ LBS
Total Epoxy-Coated Reinforcing Bars			3307 ~~2289~~ LBS
CONCRETE, CLASS A			
Total Concrete, Class A			53.3 ~~38.9~~ CYS
MISCELLANEOUS			
Surface Seal			43.4 ~~35.4~~ SYS

#6	18	37'-8"	
Total #6			1018 LBS

SPREAD FOUNDATION
FOR MEDIAN OR SHOULDER, 36" HEIGHT

EPOXY-COATED REINFORCING BARS

MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	~~32~~ 39	7'-6" 7'-6"	
502	~~64~~ 78	~~3'-9"~~ 4'-3"	
#5	~~64~~ 78	7'-6" 7'-6"	
#5	~~30~~ 16	~~30'-8"~~ 37'-8"	
Total #5			~~1961~~ LBS 1890 LBS
#4	~~64~~ 78	7'-8"	
Total #4			399 ~~328~~ LBS
Total Epoxy-Coated Reinforcing Bars			~~2289~~ LBS 3307
CONCRETE, CLASS A			
Total Concrete, Class A			49.8 ~~36.1~~ CYS
MISCELLANEOUS			
Surface Seal			41.2 ~~29.2~~ SYS

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~~

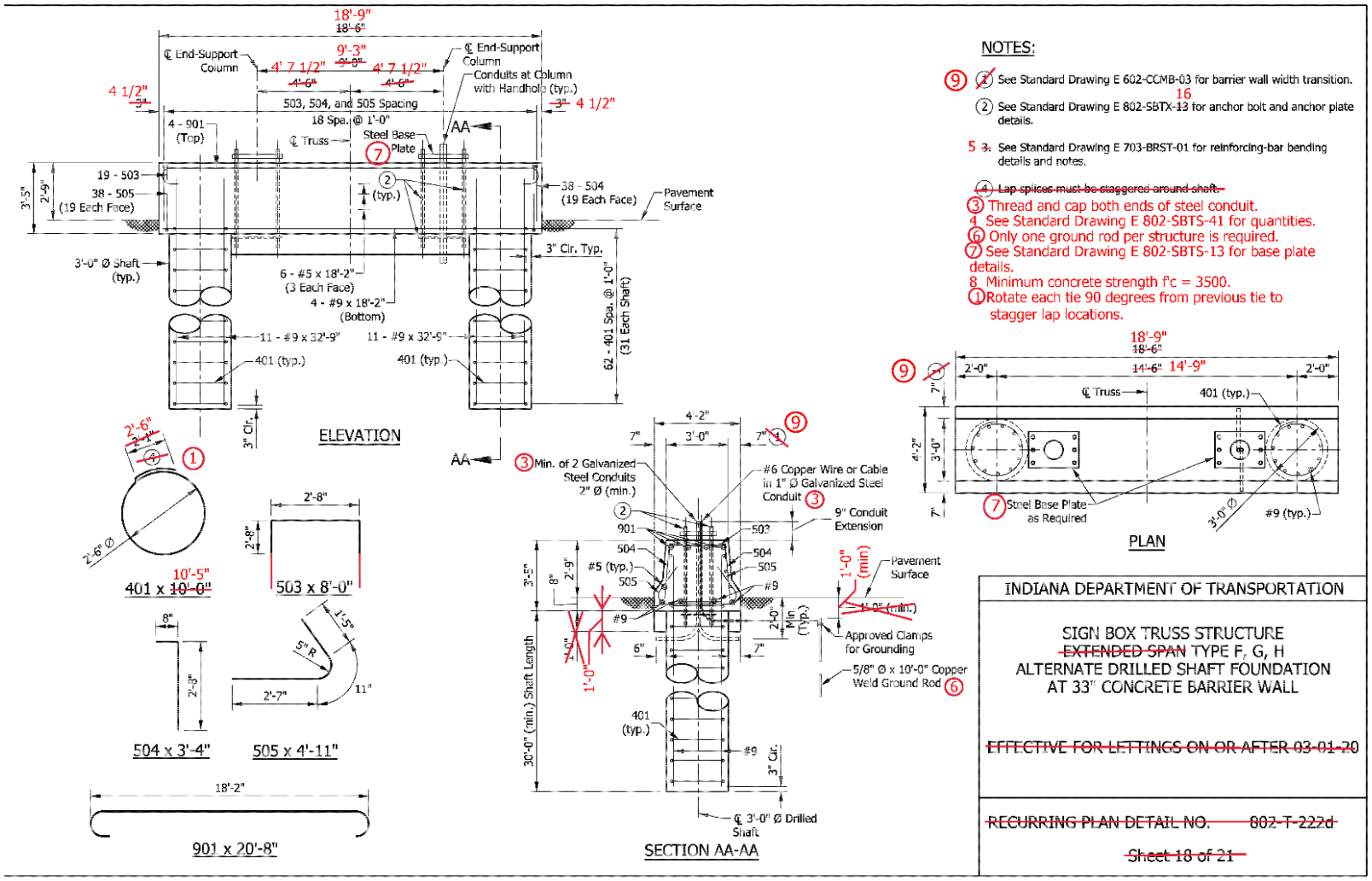
~~RECURRING PLAN DETAIL NO.~~ ~~802-T-222d~~

~~Sheet 17 of 21~~

RPD 17 OF 21 BECOMES 802 SBTS-37

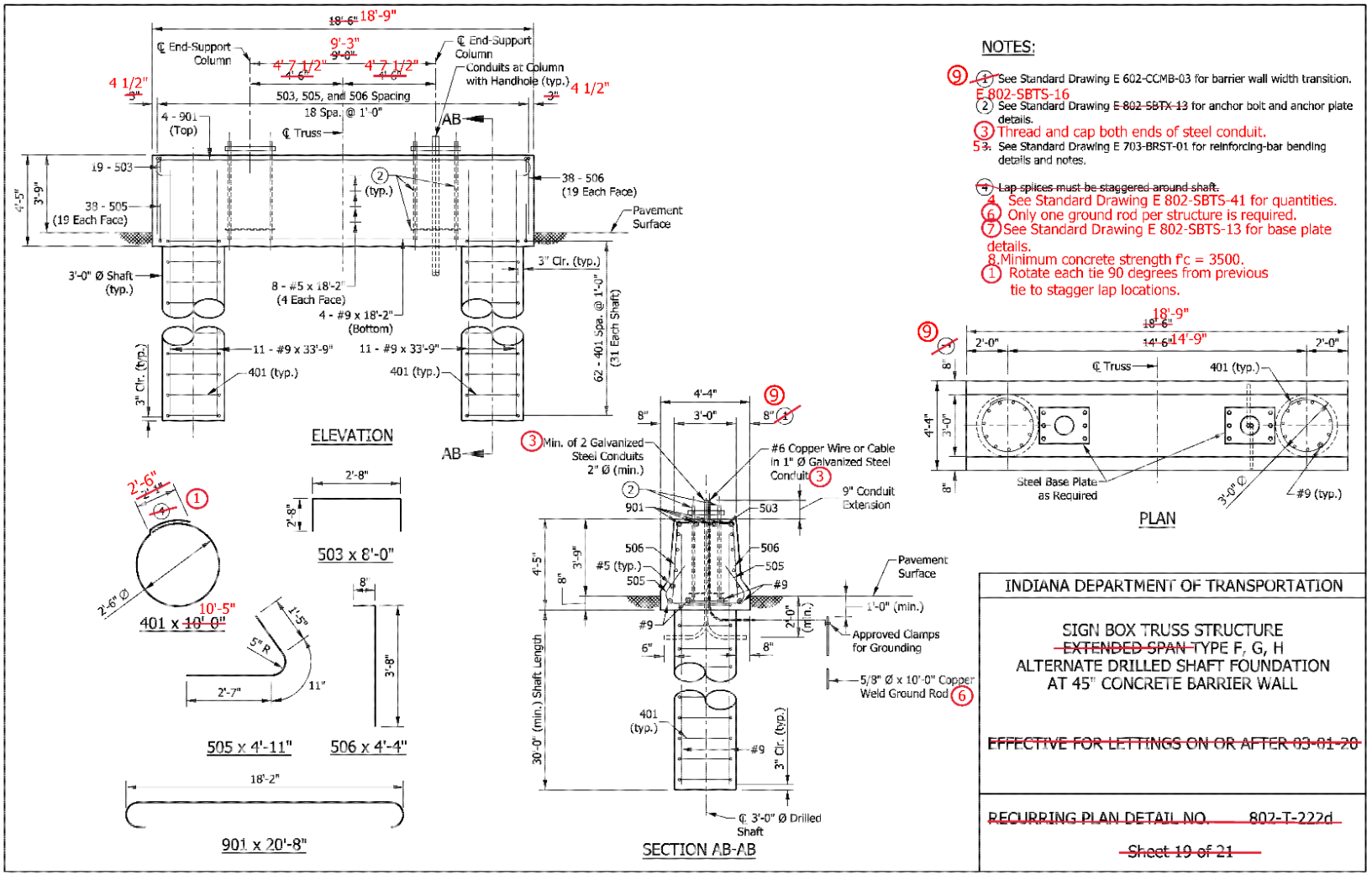
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



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

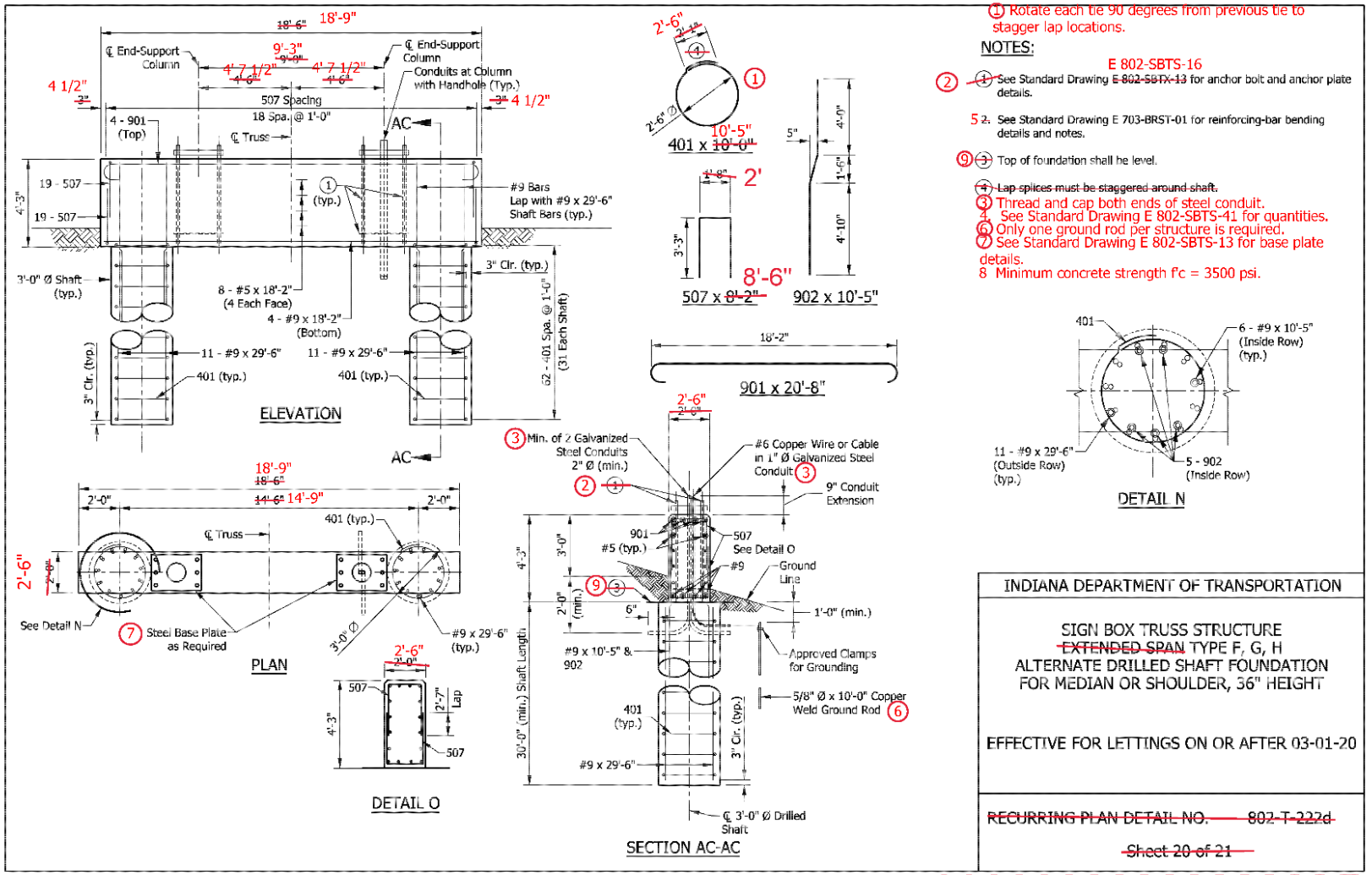
E 802-SBTS series, RPD 802-T-222d (WITH MARKUPS)



RPD 19 OF 21 BECOMES 802 SBTS-39

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

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



RPD 20 OF 21 BECOMES 802 SBTS-40

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-COATED REINFORCING 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	6	18'-2"	
Total #5			599 LBS
401	62	10'-5" ~~10'-0"~~	
Total #4			431 ~~415~~ LBS
Total Epoxy-Coated Reinforcing Bars			4008 ~~3992~~ LBS
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-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			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" ~~10'-0"~~	
Total #4			431 ~~415~~ LBS
Total Epoxy-Coated Reinforcing Bars			4161 ~~4145~~ LBS
CONCRETE, CLASS A			
Total Concrete, Class A			26.5 ~~26.0~~ CYS
MISCELLANEOUS			
Surface Seal			22.2 ~~21.7~~ SYS

ALTERNATE DRILLED SHAFT FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING 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" ~~10'-0"~~	
Total #4			431 ~~415~~ LBS
Total Epoxy-Coated Reinforcing Bars			4433 ~~4404~~ LBS
CONCRETE, CLASS A			
Total Concrete, Class A			23.1 ~~21.5~~ CYS
MISCELLANEOUS			
Surface Seal			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~~

~~Sheet 21 of 21~~

RPD 21 OF 21 BECOMES 802 SBTS-41

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

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

INDEX	
SHEET NO.	SUBJECT
1	Sign Box Structure Drawing Index
2	Plan & Elevation
3	A-E Truss Sections in isometric views, Table with Member Sizes
4	F-H Truss Sections in isometric views, Table with Member Sizes
5	Table of Dimensions, Spans 34' thru 81'
6	Table of Dimensions, Spans 82' thru 130' and Camber
7	Table of Dimensions, Spans 131' thru 154' and Camber
8	Chord Connections and Weld Details
9	Flange, Chord End Plate, and Wire Outlet Details
10	End Support Upper Chord Connection Details
11	End Support Lower Chord Connection Details
12	End Support Lower Chord Connection details, Alternate HSS Beam
13	End Support and Base Plate
14	I.D. Plate Details
15	End Support Top Cap, Handhole, and J-Hook Details
16	End Support Anchor Bolt and Metal Skirt Details
17	End Support Anchor Bolt Hardware Tightening
18	Interior Walkway Grating & Handrail Details
19	Interior Walkway Grating Details
20	Lighting Walkway Elevation
21	Lighting Walkway Plan
22	Lighting Walkway Profile
23	Lighting Walkway and Handrail Assembly
24	Lighting Walkway, Handrail Hinge, and Grating Details
25	Lighting Walkway Fixture Mount Details
26	A-E Spread Foundation at 33" Concrete Barrier Wall
27	A-E Spread Foundation at 45" Concrete Barrier Wall
28	A-E Spread Foundation for Median or Shoulder, 36" Height
29	A-E Spread Foundations Quantities
30	A-E Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall
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 Foundations Quantities
34	F,G,H Spread Foundation at 33" Concrete Barrier Wall
35	F,G,H Spread Foundation at 45" Concrete Barrier Wall
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 45" Concrete Barrier Wall
40	F,G,H Alternate Drilled Shaft Foundation for Median or Shoulder, 36" Height
41	F,G,H Alternate Drilled Shaft Foundations Quantities

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
DRAWING INDEX & GENERAL NOTES

SEPTEMBER 2022

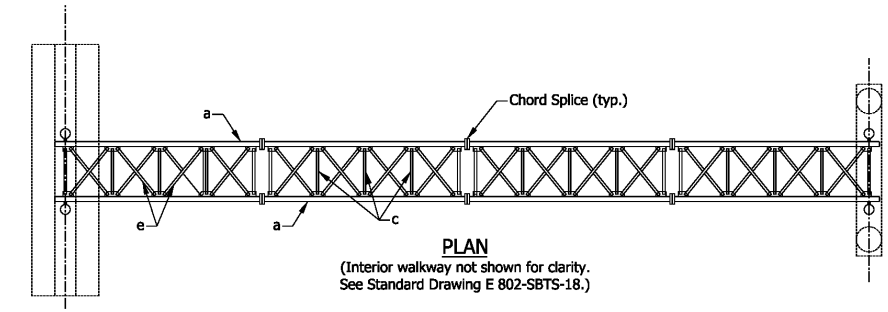
STANDARD DRAWING NO. E 802-SBTS-01

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



PLAN
(Interior walkway not shown for clarity.
See Standard Drawing E 802-SBTS-18.)

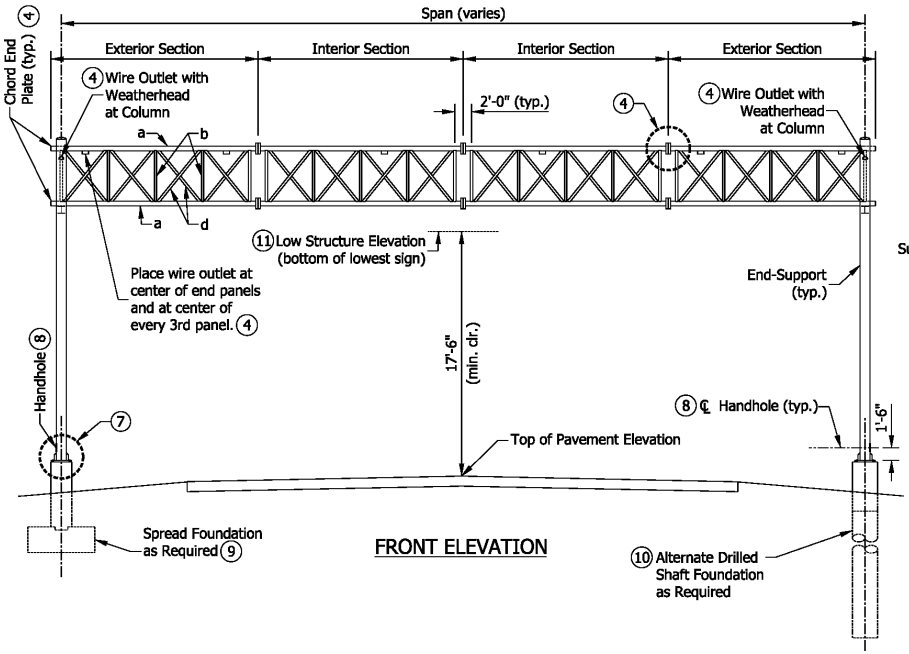
LEGEND

TRUSS MEMBERS
a - Chords
b - Verticals
c - Horizontals
d - Vertical Diagonals
e - Horizontal Diagonals

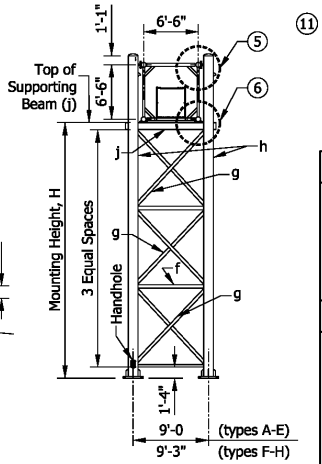
END-SUPPORT MEMBERS
f - Horizontals
g - Diagonals
h - Columns
j - Supporting Beam

NOTES:

1. See Standard Drawings E 802-SBTS-03 and 04 for member sizes.
2. Maximum deviation of any chord from a straight line in any section shall be 1/8" for box truss to be a maximum of 3/8" out of a straight line over the entire length of the structure in the vertical plane.
3. All truss members are aluminum. End-support members are steel. Walkways, bearing elements, and wire outlet are aluminum.
4. See Standard Drawings E 802-SBTS-08 and 09 for connection flange, chord end plate, and wire outlet details.
5. See Standard Drawing E 802-SBTS-10 for upper chord connection details and E 802-SBTS-15 for the top cap and J hook details.
6. See Standard Drawing E 802-SBTS-11 for lower chord connection details. See Standard Drawing E 802-SBTS-12 for alternate HSS beam and saddle shim detail.
7. See Standard Drawing E 802-SBTS-13 for base plate detail and Standard Drawing E-802-SBTS-16 for anchor bolts and skirt details.
8. See Standard Drawing E 802-SBTS-15 for handhole details.
9. See Standard Drawings E 802-SBTS-26 through 29 and 34 through 37 for spread foundations.
10. See Standard Drawings E 802-SBTS-30 through 33 and 38 through 41 for alternate drilled shaft foundations.
11. The 17'-6" minimum clearance shall be to the lighting walkway if provided.



FRONT ELEVATION

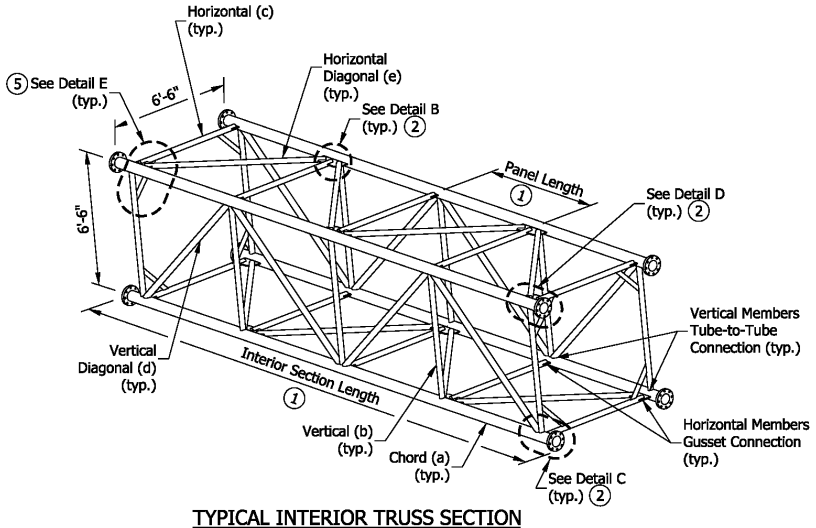


END-SUPPORT

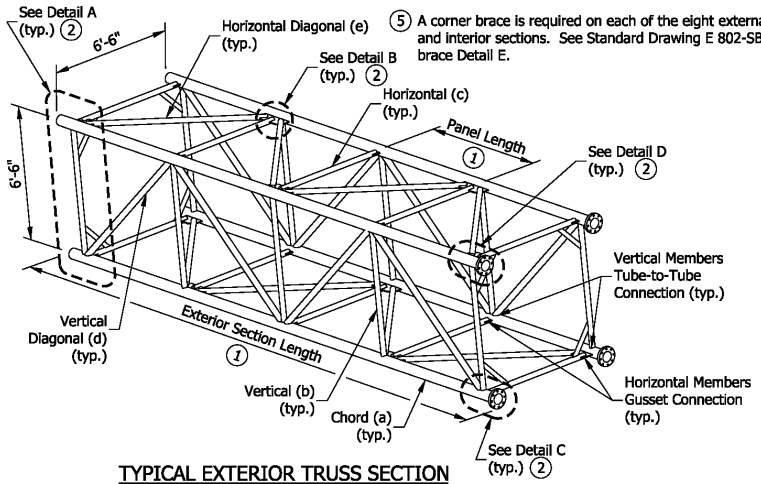
INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE PLAN & ELEVATION SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-02	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

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



TYPICAL INTERIOR TRUSS SECTION



TYPICAL EXTERIOR TRUSS SECTION

NOTES:

1. Number of panels and sections varies. See table on Standard Drawings E 802-SBTS - 05 and 06 for recommended dimensions.
2. See Standard Drawing E 802-SBTS-08 for welded connections and Details.
3. See Standard Drawing E 802-SBTS-02 for Legend.
4. Truss members shall be aluminum. End-support members shall be steel. Steel pipe diameters shown in table are nominal pipe size.
5. A corner brace is required on each of the eight external corners of exterior and interior sections. See Standard Drawing E 802-SBTS-08 for corner brace Detail E.

TRUSS TYPE	MAX. SIGN AREA	MAX. SPAN	MAX. MOUNTING HEIGHT	TRUSS MEMBERS, ALUMINUM										END-SUPPORT MEMBERS, STEEL						
				CHORD		VERTICAL		HORIZONTAL		VERTICAL DIAGONAL		HORIZONTAL DIAGONAL		HORIZONTAL		DIAGONAL		COLUMN		SUPPORTING BEAM
			H	a		b		c		d		e		f		g		h		j
				DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	
	SQ. FT.	FT.	FT.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
A	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	
B	700	100	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	0.322	14.00	0.500	W 8 x 58 or HSS 8" x 8" x 1/2"
C	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	
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	
E	800	130	28'-6"	7.00	0.500	3.00	0.375	4.00	0.250	3.00	0.500	4.00	0.500	5.00	0.375	8.00	0.593	18.00	0.562	W 10 x 68 or HSS 10" x 10" x 1/2"

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
TRUSS SECTIONS IN ISOMETRIC VIEWS,
TABLE WITH MEMBER SIZES
SEPTEMBER 2022

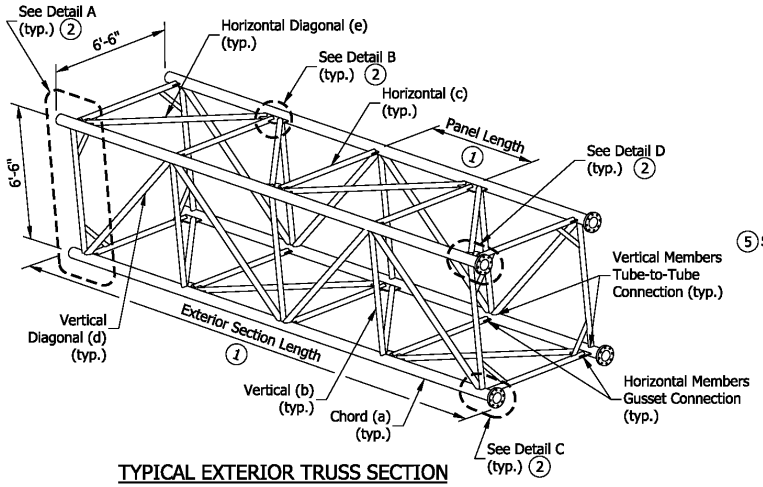
STANDARD DRAWING NO. E 802-SBTS-03

DESIGN STANDARDS ENGINEER DATE

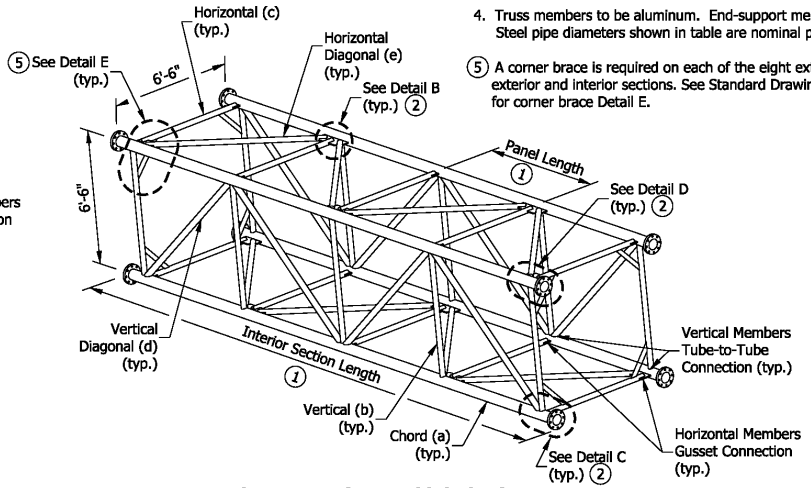
CHIEF ENGINEER DATE

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

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



TYPICAL EXTERIOR TRUSS SECTION



TYPICAL INTERIOR TRUSS SECTION

NOTES:

1. Number of panels and sections varies. See table on Standard Drawings E 802-SBTS-05, 06, & 07 for recommended dimensions.
2. See Standard Drawing E 802-SBTS-08 for welded connections and details.
3. See Standard Drawing E 802-SBTS-02 for Legend.
4. Truss members to be aluminum. End-support members to be steel. Steel pipe diameters shown in table are nominal pipe size.
5. A corner brace is required on each of the eight external corners of exterior and interior sections. See Standard Drawing E 802-SBTS-08 for corner brace Detail E.

TRUSS TYPE	MAX. SIGN AREA	MAX. SPAN	MAX. MOUNTING HEIGHT	TRUSS MEMBERS, ALUMINUM										END-SUPPORT MEMBERS, STEEL						
				CHORD		VERTICAL		HORIZONTAL		VERTICAL DIAGONAL		HORIZONTAL DIAGONAL		HORIZONTAL		DIAGONAL		COLUMN		SUPPORTING BEAM
			H	a		b		c		d		e		f		g		h		j
				DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	
	SQ. FT.	FT.	FT.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
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	W 10 x 68 or HSS 10" x 10" x 1/2"
G	1200	142	28'-6"	9.00	0.500	4.00	0.375	4.00	0.375	4.00	0.500	4.00	0.500	5.00	0.375	8.00	0.593	18.00	0.562	
H	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	

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE F-H
TRUSS SECTIONS IN ISOMETRIC VIEWS,
TABLE WITH MEMBER SIZES
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-SBTS-04

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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

DIMENSIONS FOR SIGN BOX TRUSSES (34' THRU 81')

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	SECTION LENGTH
34	1	6	6"	5'-6"	35'-6"	0			
35	1	6	6"	5'-8"	36'-6"	0			
36	2	3	6"	5'-6"	18'-9"	0			
37	2	3	6"	5'-8"	19'-3"	0			
38	2	3	6"	5'-10"	19'-9"	0			
39	2	3	6"	6'-0"	20'-3"	0			
40	2	3	6"	6'-2"	20'-9"	0			
41	2	3	6"	6'-4"	21'-3"	0			
42	2	3	6"	6'-6"	21'-9"	0			
43	2	4	6"	5'-0"	22'-3"	0			
44	2	4	6"	5'-1 1/2"	22'-9"	0			
45	2	4	6"	5'-3"	23'-3"	0			
46	2	4	6"	5'-4 1/2"	23'-9"	0			
47	2	4	6"	5'-6"	24'-3"	0			
48	2	4	6"	5'-7 1/2"	24'-9"	0			
49	2	4	6"	5'-9"	25'-3"	0			
50	2	4	6"	5'-10 1/2"	25'-9"	0			
51	2	4	6"	6'-0"	26'-3"	0			
52	2	4	6"	6'-1 1/2"	26'-9"	0			
53	2	4	6"	6'-3"	27'-3"	0			
54	2	4	6"	6'-4 1/2"	27'-9"	0			
55	2	4	6"	6'-6"	28'-3"	0			
56	2	5	5 1/4"	5'-3 3/4"	28'-9"	0			
57	2	5	6 1/4"	5'-4 3/4"	29'-3"	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'- 8 1/2"	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			
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			
68	2	5	6"	6'-6"	34'-9"	0			
69	2	4	6"	5'-4"	23'-7"	1	4	5'-4"	23'-4"
70	2	4	6"	5'-5"	23'-11"	1	4	5'-5"	23'-8"
71	2	4	6"	5'-6"	24'-3"	1	4	5'-6"	24'-0"
72	2	4	6"	5'-7"	24'-7"	1	4	5'-7"	24'-4"
73	2	4	6"	5'-8"	24'-11"	1	4	5'-8"	24'-8"
74	2	4	6"	5"-9"	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"
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"

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".
2. 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, while maintaining the maximum section length at 36'-6".
4. See Standard Drawing E 802-SBTS-06 for required camber.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
TABLE OF DIMENSIONS
SPANS 34' THRU 81'
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-SBTS-05

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

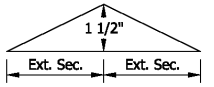
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

DIMENSIONS FOR SIGN BOX TRUSSES (82' THRU 130')

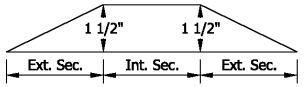
SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8"
83	2	4	6"	6'-6"	28'-3"	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"	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'-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 3/4"
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 1/2"
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"
130	2	5	6 1/2"	6'-1 3/4"	33'-0 1/4"	2	5	6'-1 3/4"	32'-8 3/4"

NOTES:

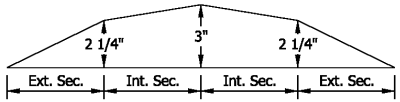
1. All panels on a truss shall be the same length. The minimum panel length is 5'-0" and the maximum is 6'-6".
2. Camber diagrams for truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
3. See Standard Drawing E 802-SBTS-05 for additional notes.



CAMBER DIAGRAM (2-Section Truss)



CAMBER DIAGRAM (3-Section Truss)



CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
TABLE OF DIMENSIONS
SPANS 82' THRU 130' AND CAMBER
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-SBTS-06

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

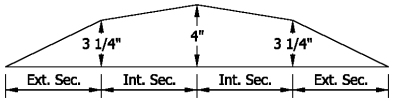
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

DIMENSIONS FOR SIGN BOX TRUSSES (131' THRU 154')

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	SECTION LENGTH
131	2	5	6 1/4"	6'-2 3/8"	33'-3 1/8"	2	5	6'-2 3/8"	32'-11 7/8"
132	2	5	6"	6'-3"	33'-6"	2	5	6'-3"	33'-3"
133	2	5	7"	6'-3 1/2"	33'-9 1/2"	2	5	6'-3 1/2"	33'-5 1/2"
134	2	5	6 3/4"	6'-4 1/8"	34'-0 3/8"	2	5	6'-4 1/8"	33'-8 5/8"
135	2	5	6 1/2"	6'-4 3/4"	34'-3 1/4"	2	5	6'-4 3/4"	33'-11 3/4"
136	2	5	6 1/4"	6'-5 3/8"	34'-6 1/8"	2	5	6'-5 3/8"	34'-2 7/8"
137	2	5	6"	6'-6"	34'-9"	2	5	6'-6"	34'-6"
138	2	6	6 7/8"	5'-11 3/8"	38'-0 1/8"	2	5	5'-11 3/8"	31'-8 7/8"
139	2	6	7 3/8"	5'-11 7/8"	38'-3 5/8"	2	5	5'-11 7/8"	31'-11 3/8"
140	2	6	6 1/2"	6'-0 1/2"	38'-6 1/2"	2	5	6'-0 1/2"	32'-2 1/2"
141	2	6	7"	6'-1"	38'-10"	2	5	6'-1"	32'-5"
142	2	6	6 1/8"	6'-1 5/8"	39'-0 7/8"	2	5	6'-1 5/8"	32'-8 1/8"
143	2	6	6 5/8"	6'-2 1/8"	39'-4 3/8"	2	5	6'-2 1/8"	32'-10 5/8"
144	2	6	7 1/8"	6'-2 5/8"	39'-7 7/8"	2	5	6'-2 5/8"	33'-1 1/8"
145	2	6	6 1/4"	6'-3 1/4"	39'-10 3/4"	2	5	6'-3 1/4"	33'-4 1/4"
146	2	6	6 3/4"	6'-3 3/4"	40'-2 1/4"	2	5	6'-3 3/4"	33'-6 3/4"
147	2	6	5 7/8"	6'-4 3/8"	40'-5 1/8"	2	5	6'-4 3/8"	33'-9 7/8"
148	2	6	6 3/8"	6'-4 7/8"	40'-8 5/8"	2	5	6'-4 7/8"	34'-0 3/8"
149	2	6	6 7/8"	6'-5 3/8"	41'-0 1/8"	2	5	6'-5 3/8"	34'-2 7/8"
150	2	6	7 1/2"	5'-11 3/8"	38'-0 3/4"	2	6	5'-11 3/8"	37'-8 1/4"
151	2	6	7 1/2"	5'-11 7/8"	38'-3 3/4"	2	6	5'-11 7/8"	37'-11 1/4"
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'-6"
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".
2. 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.
4. 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.



CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
TABLE OF DIMENSIONS
SPANS 131' THRU 154' AND CAMBER
SEPTEMBER 2022

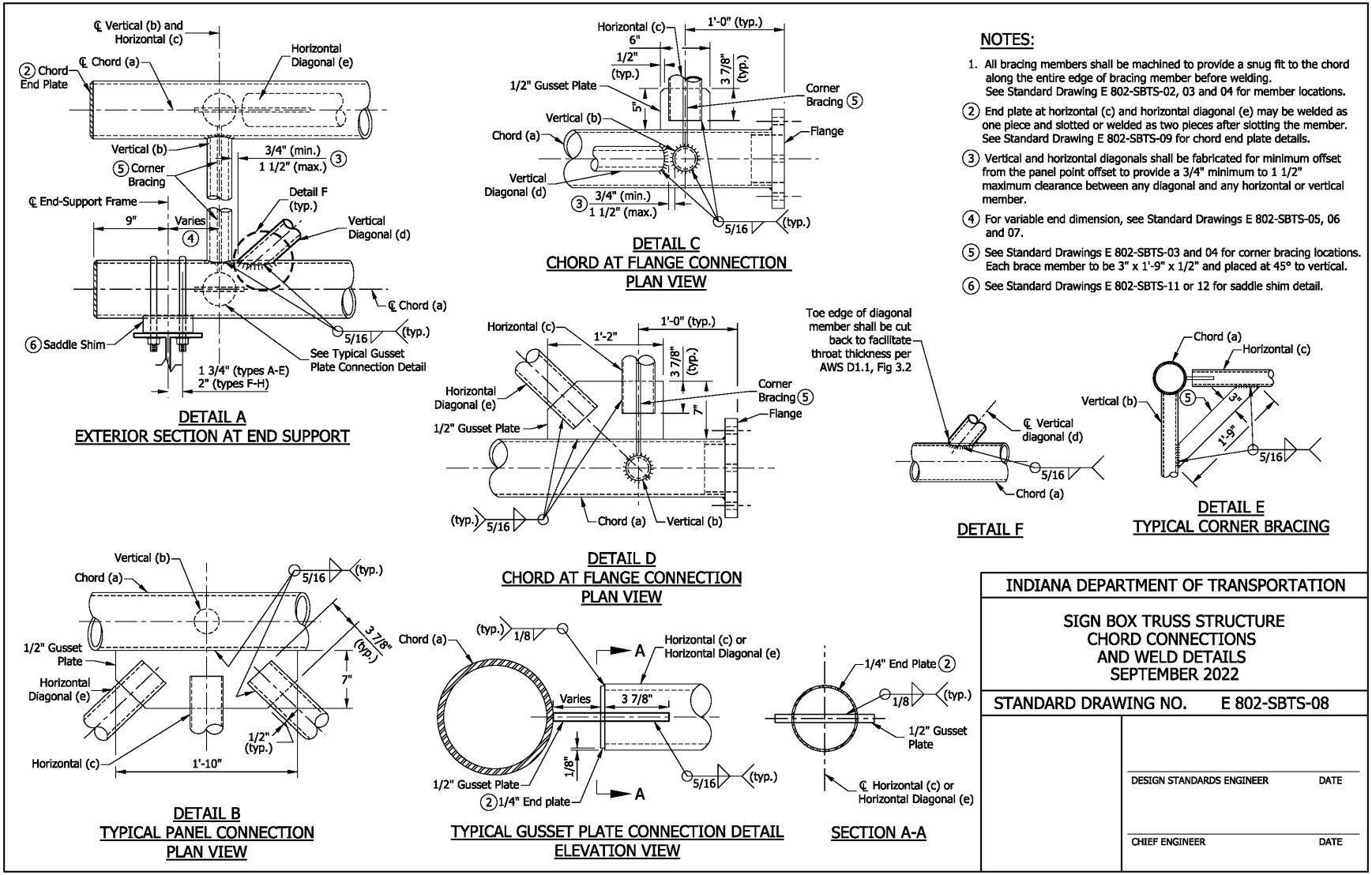
STANDARD DRAWING NO. E 802-SBTS-07

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

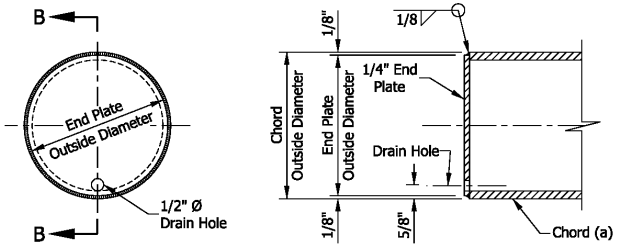
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



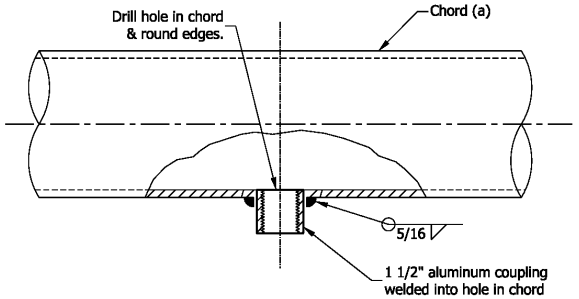
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



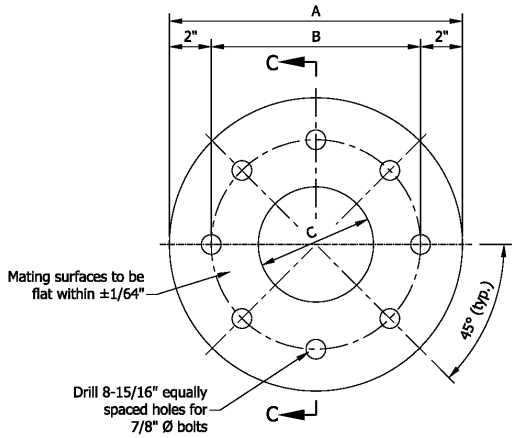
END VIEW SECTION B-B

CHORD END PLATE DETAILS

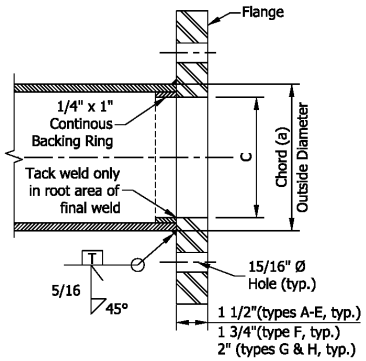


WIRE OUTLET DETAIL

TABLE OF FLANGE DIMENSIONS					
TRUSS TYPE	TRUSS CHORD O.D. x THK.	BOLT SIZE	DIMENSION		
			A	B	C
A & B	6 1/2" x 3/8"	7/8"	14"	10"	5 1/4"
C & D	7" x 3/8"	7/8"	14"	10"	5 3/4"
E	7" x 1/2"	7/8"	14"	10"	5 1/2"
F	7 1/2" x 1/2"	7/8"	14 1/2"	10 1/2"	6"
G	9" x 1/2"	7/8"	16"	12"	7 1/2"
H	10" x 1/2"	7/8"	17"	13"	8 1/2"



END VIEW



SECTION C-C

FLANGE DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
FLANGE, CHORD END PLATE, AND WIRE
OUTLET DETAILS
SEPTEMBER 2022

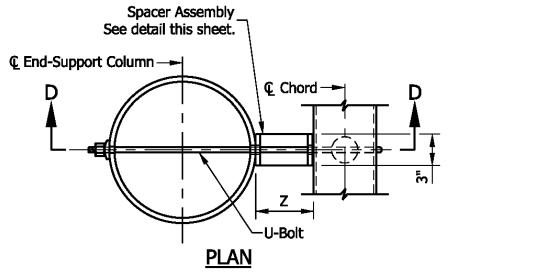
STANDARD DRAWING NO. E 802-SBTS-09

DESIGN STANDARDS ENGINEER DATE

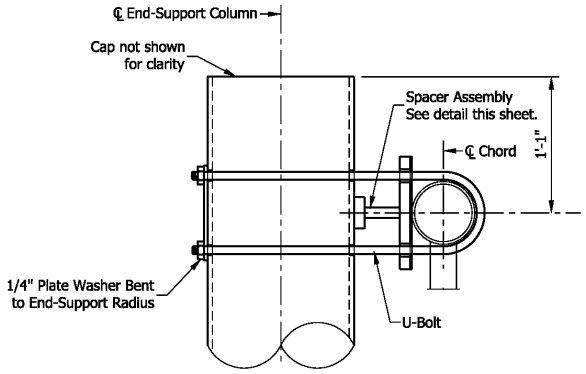
CHIEF ENGINEER DATE

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

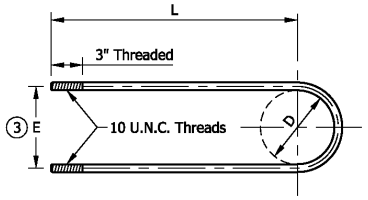
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



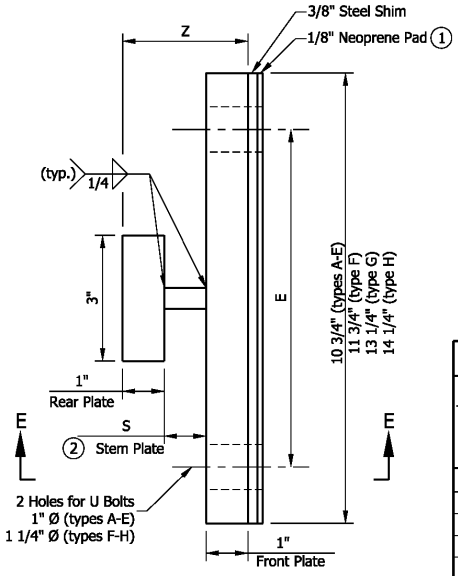
PLAN



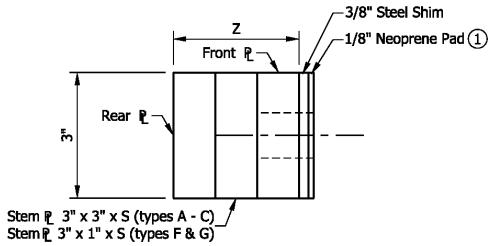
SECTION D-D
UPPER CHORD CONNECTION DETAILS



STAINLESS STEEL U-BOLT DETAIL
3/4" (dia.) for truss types A-E
1" (dia.) for truss types F-H



ELEVATION
END SUPPORT SPACER ASSEMBLY DETAIL



SECTION E-E

NOTES:

① Provide isolation from steel-dissimilar metal as required.

② For truss types D, E, and H Stem plate is not required. Fillet weld front and rear plates together.

③ Dimension E is equal to the diameter of chord (a) plus 1 1/4".

SPACER ASSEMBLY DIMENSIONS

TRUSS TYPE	END-SUPPORT COLUMN SIZE (h)	CHORD (a)	Ø OF U-BOLT BEND	E	Z	L	S
	O.D. IN.	O.D. IN.	(D) IN.	IN.	IN.	IN.	IN.
A	14	6 1/2	6 9/16	7 1/2	4 1/4	24	2 1/4"
B	14	6 1/2	6 9/16	7 1/2	4 1/4	24	2 1/4"
C	14	7	7 1/16	8	4	24	2"
D	18	7	7 1/16	8	2	26	-
E	18	7	7 1/16	8	2	26	-
F	18	7 1/2	7 9/16	8 3/4	3 1/4	27 1/2	1 1/4
G	18	9	9 1/16	10 1/4	2 1/2	27 1/2	1/2
H	18	10	10 1/16	11 1/4	2	27 1/2	-

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
END-SUPPORT UPPER CHORD
CONNECTION DETAILS
SEPTEMBER 2022

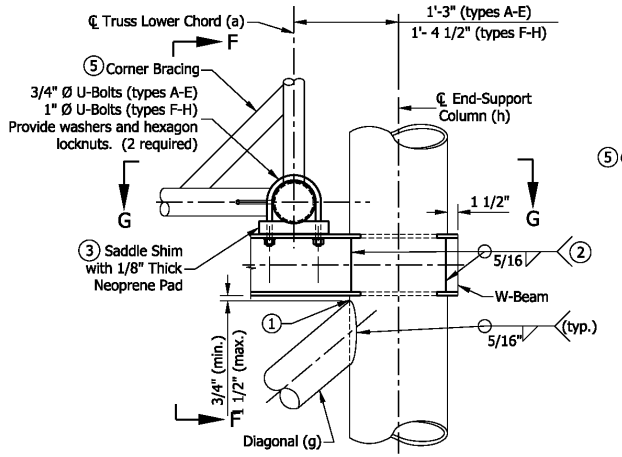
STANDARD DRAWING NO. E 802-SBTS-10

DESIGN STANDARDS ENGINEER DATE

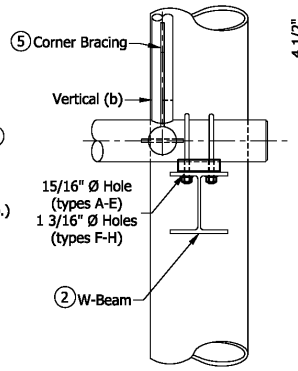
CHIEF ENGINEER DATE

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

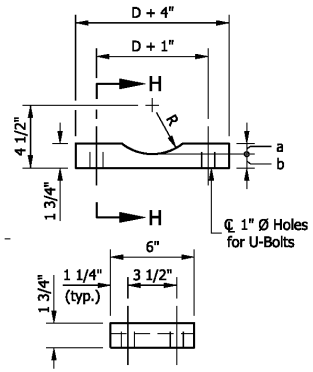
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



LOWER CHORD CONNECTION DETAIL



SECTION F-F



SECTION H-H (type A-E)
SADDLE SHIM DETAIL

NOTES:

① Toe edge of diagonal member shall be cut back to facilitate throat thickness. See Standard Drawing E 802-SBTS-08 Detail F for toe-edge detail.

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 of column to be checked for proper alignment prior to cutting.

③ Provide neoprene pads at all chord-to-W-beam bearing surfaces.

4. See Standard Drawings E 802-SBTS-03 and 04 for end-support member sizes.

⑤ A corner brace is required on each of the eight external corners of exterior and interior sections. Each brace shall be 1'-9" x 3" x 1/2". See Standard Drawing E 802-SBTS-08 for corner bracing Detail E.

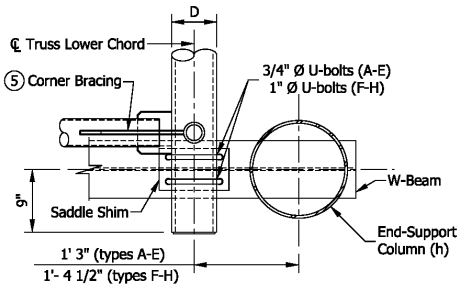
6. See Standard Drawing E 802-SBTS-12 for HSS square-beam as an alternate to truss supporting W-beam.

⑦ For truss type H, Horizontal (f) will overlap Diagonals (g). Trim Horizontal (f) for welding to Diagonals (g).

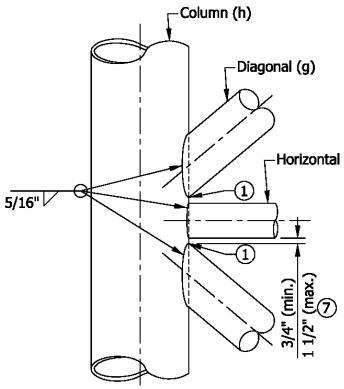
TRUSS TYPE	D	a	b
A & B	6 1/2"	17/32"	1 7/32"
C - E	7"	25/32"	31/32"
F	7 1/2"	25/32"	31/32"
G	9"	25/32"	31/32"
H	10"	25/32"	31/32"

R = D/2 + 1/32" R + b = 4 1/2" (type A-E)

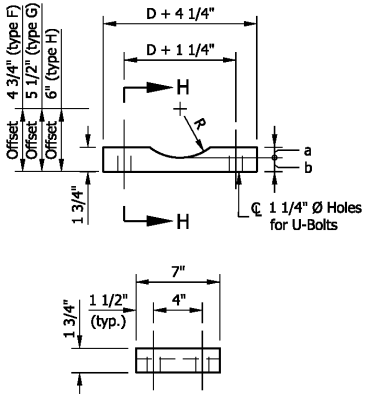
D = Outside Diameter of Chord(a). R + b = Offset (type F-H)



SECTION G-G



ELEVATION (END-SUPPORT)
TYPICAL BRACING MEMBERS CONNECTION



SECTION H-H (type F-H)
SADDLE SHIM DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
END-SUPPORT LOWER CHORD
CONNECTION DETAILS
SEPTEMBER 2022

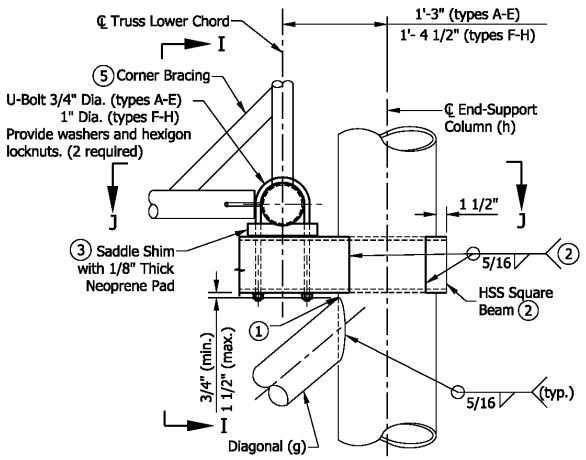
STANDARD DRAWING NO. E 802-SBTS-11

DESIGN STANDARDS ENGINEER DATE

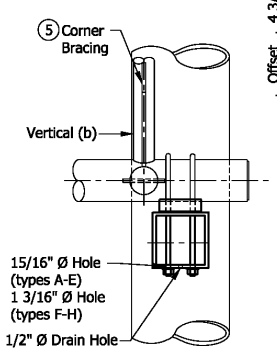
CHIEF ENGINEER DATE

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

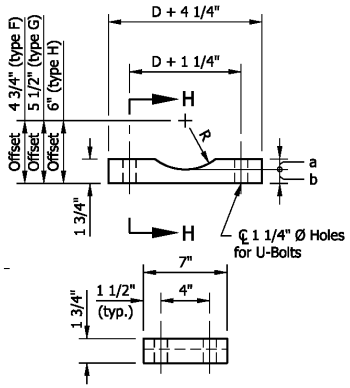
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



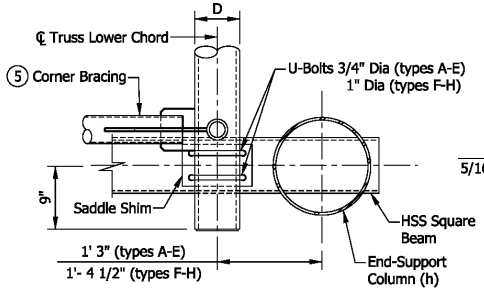
LOWER CHORD CONNECTION DETAIL



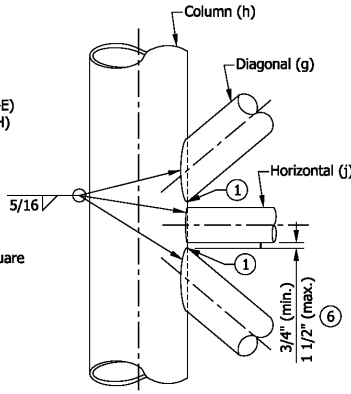
SECTION I-I



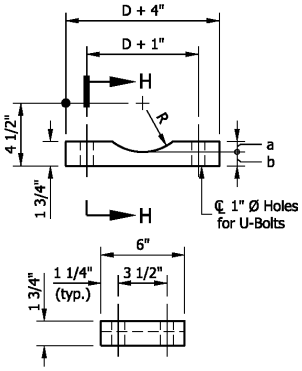
SECTION H-H (type F-H)
SADDLE SHIM DETAIL



SECTION J-J



ELEVATION (END-SUPPORT)
TYPICAL BRACING MEMBERS CONNECTION



SECTION H-H (type A-E)
SADDLE SHIM DETAIL

NOTES:

1. Toe edge of diagonal member shall be cut back to facilitate throat thickness. See Standard Drawing E 802-SBTS-08 Detail F for toe-edge detail.
2. Cut holes in end support columns for square beams to pass through. Holes to have 1/8" maximum clearance to square beam. Holes in opposite sides of column to be checked for proper alignment prior to cutting.
3. Provide neoprene pads at all chord-to-square-beam bearing surfaces.
4. See Standard Drawings E 802-SBTS-03 and 04 for end support member sizes.
5. A corner brace is required on each of the eight external corners of exterior and interior sections. Each brace shall be 1'-9" x 3" x 1/2". See Standard Drawing E 802-SBTS-08 for corner bracing Detail E.
6. For Truss type H, Horizontal (f) will overlap Diagonals (g). Trim Horizontal (f) for welding to Diagonals (g).

TRUSS TYPE	D	a	b
A & B	6 1/2"	17/32"	1 7/32"
C - E	7"	25/32"	31/32"
F	7 1/2"	25/32"	31/32"
G	9"	25/32"	31/32"
H	10"	25/32"	31/32"

R = D/2 + 1/32"
D = Outside Diameter of Chord(a).
R + b = 4 1/2" (type A-E)
R + b = Offset (type F-H)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
END SUPPORT LOWER CHORD CONNECTION DETAILS, ALTERNATE HSS BEAM
SEPTEMBER 2022

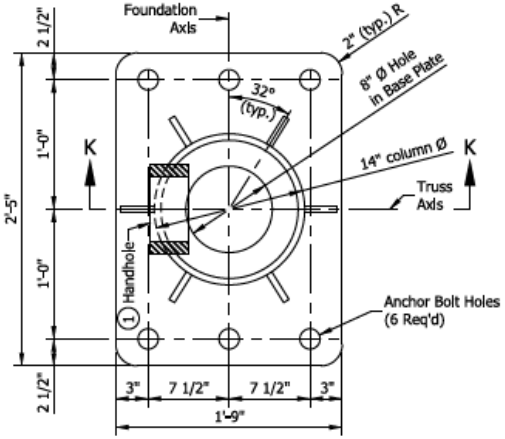
STANDARD DRAWING NO. E 802-SBTS-12

DESIGN STANDARDS ENGINEER DATE

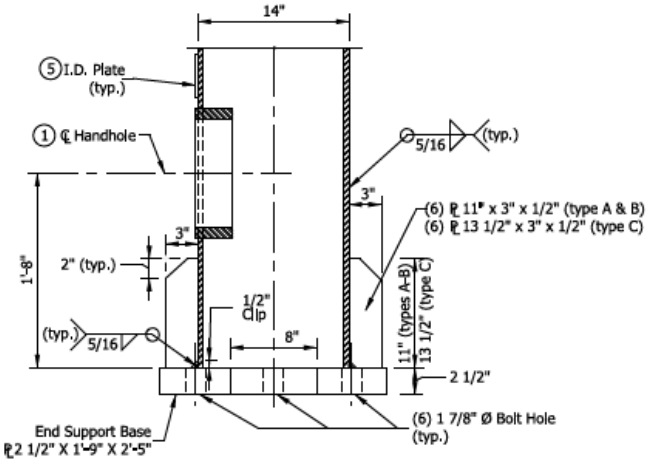
CHIEF ENGINEER DATE

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

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



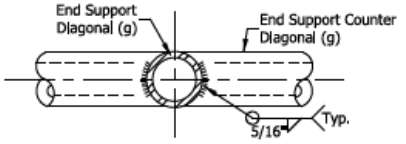
TYPE B-14 BASE PLATE DETAIL



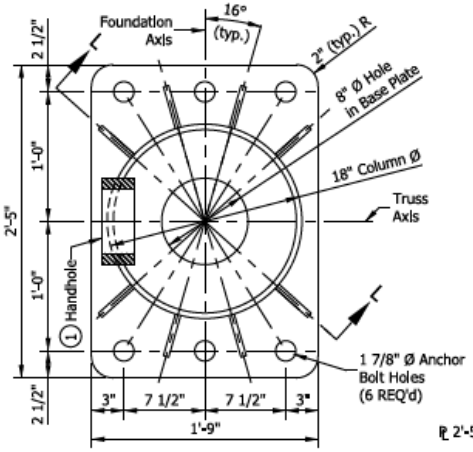
SECTION K-K

NOTES:

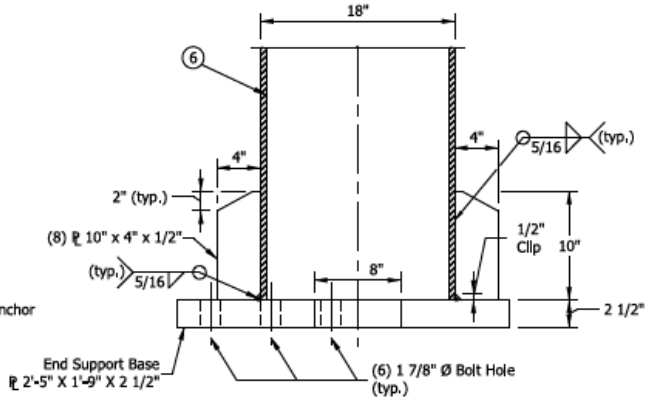
1. See Standard Drawing E 802-SBTS-15 for handhole details.
2. Type B-14 base plate shall be used for end-support column with a 14" diameter. Type B-18 base plate shall be used for end-support column with a 18 diameter.
3. See Standard Drawing E 802-SBTS-16 for anchor bolt and metal skirt details.
4. Each end support shall have one handhole at the column base (h). Handhole shall be placed on the column nearest to the sign.
5. See Standard Drawing E 802-SBTS-14 for I.D. Plate Details.
6. The centerline of the handhole shall be 2'-0" from the top of the base plate.



END SUPPORT DIAGONAL CROSSING DETAIL



TYPE B-18 BASE PLATE DETAIL



SECTION L-L

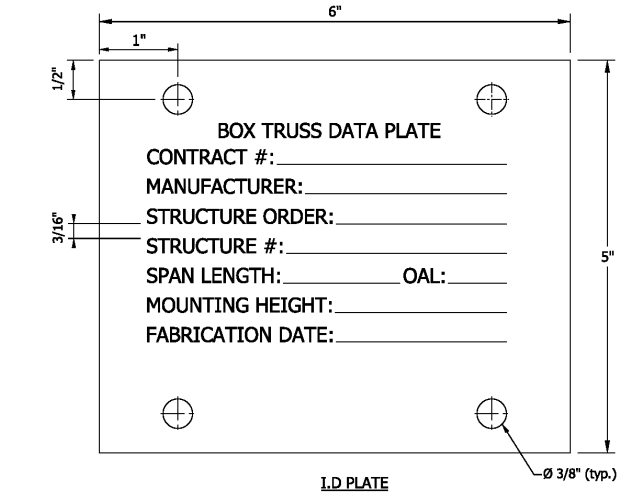
INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE END SUPPORT AND BASE PLATE SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-13	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

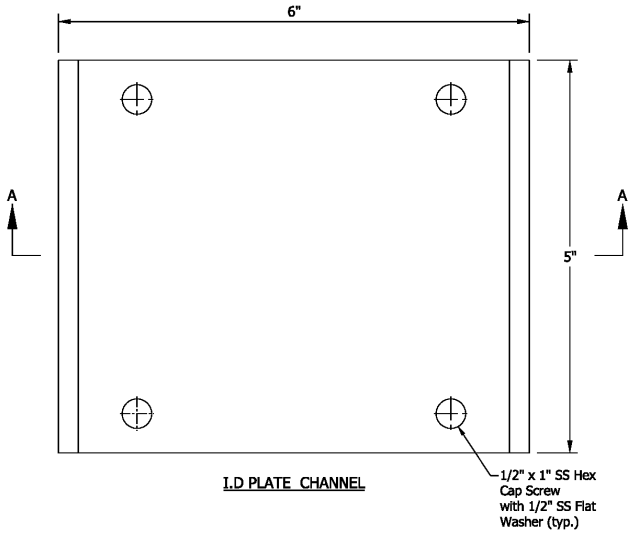
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

NOTE:

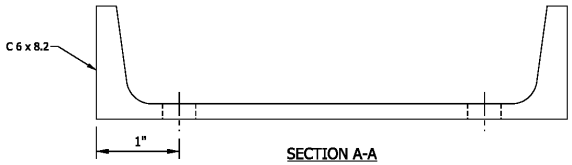
1. I.D. plate is required on each end-support column.
2. I.D. plate is a 1/8" stainless steel plate with the information stamped in 3/16" black letters.



I.D PLATE



I.D PLATE CHANNEL

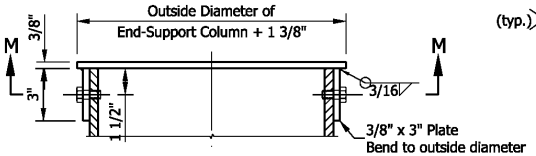


SECTION A-A

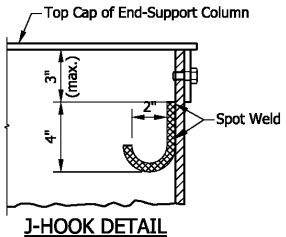
INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE I.D. PLATE DETALS SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-14	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

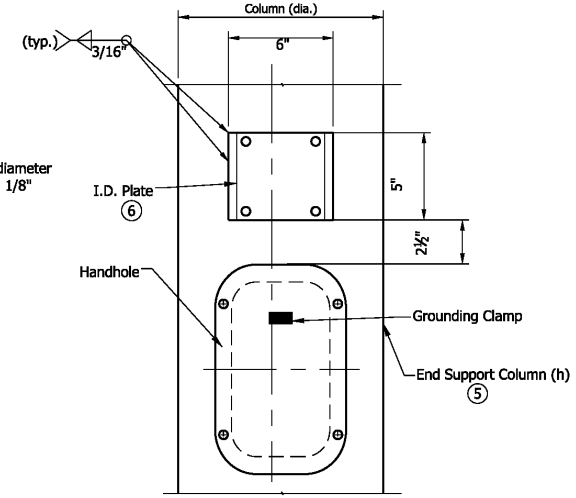
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



TOP CAP
ELEVATION VIEW



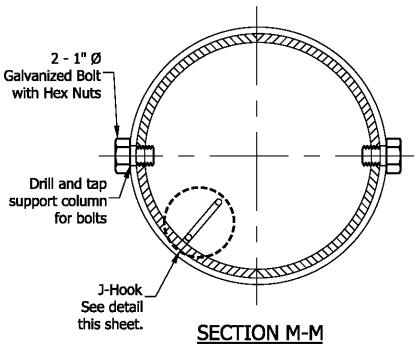
J-HOOK DETAIL



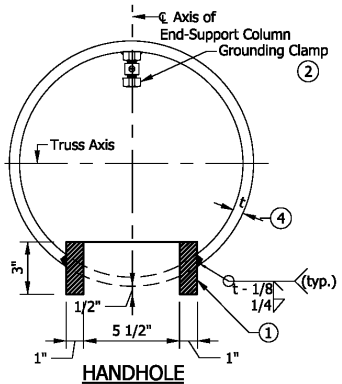
ELEVATION
VIEW FROM HANDHOLE SIDE

NOTES:

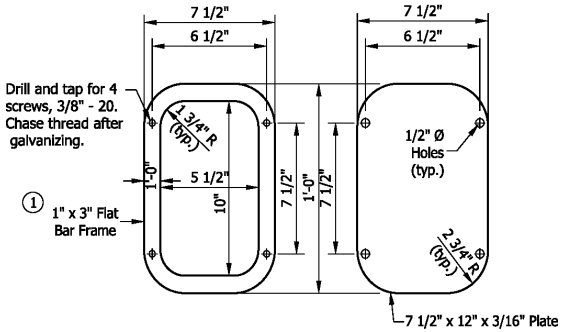
1. In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
2. See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post to be placed on far side of support directly opposite center of handhole.
3. See Standard Drawings E 802-SBTS-02 and 13 for handhole locations.
4. See Standard Drawings E 802-SBTS-03 and 04 for thicknesses of end-support columns (h).
5. Each end-support shall have one hand hole at the column (h) base. Hand hole shall be placed on the column nearest to the sign.
6. See Standard Drawing E 802-SBTS-14 for I.D. plate details.



SECTION M-M



HANDHOLE
SECTION ACROSS COLUMN



HANDHOLE FRAME DETAIL HANDHOLE COVER

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
END-SUPPORT
TOP-CAP, HANDHOLE, AND J-HOOK DETAILS
SEPTEMBER 2022

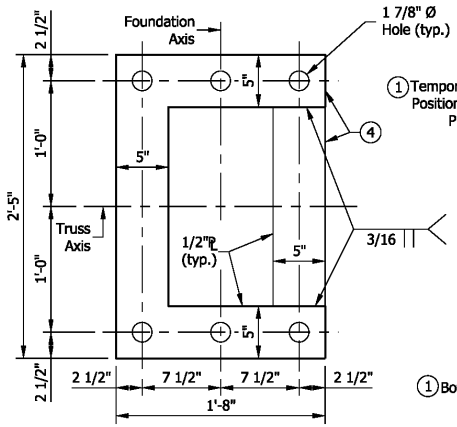
STANDARD DRAWING NO. E 802-SBTS-15

DESIGN STANDARDS ENGINEER DATE

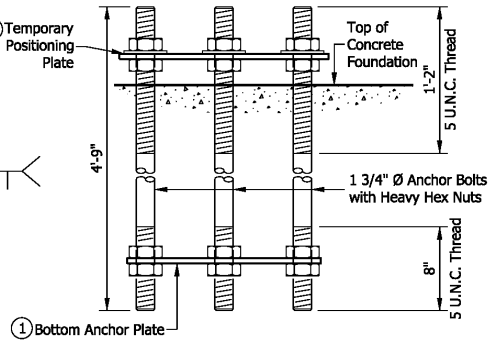
CHIEF ENGINEER DATE

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

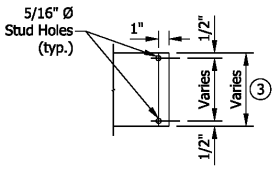
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



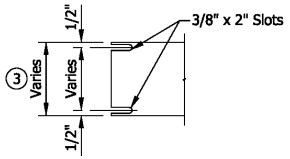
TEMPORARY POSITIONING PLATE



ANCHOR BOLT DETAILS
BEFORE CONCRETE PLACEMENT



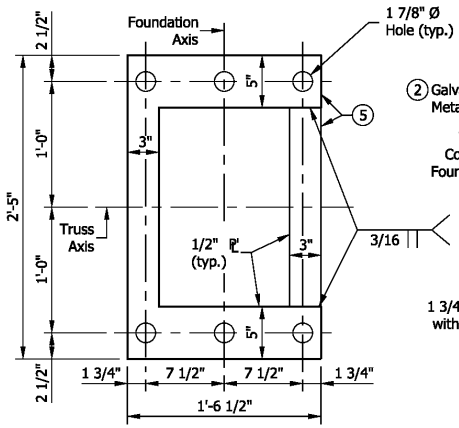
DETAIL G



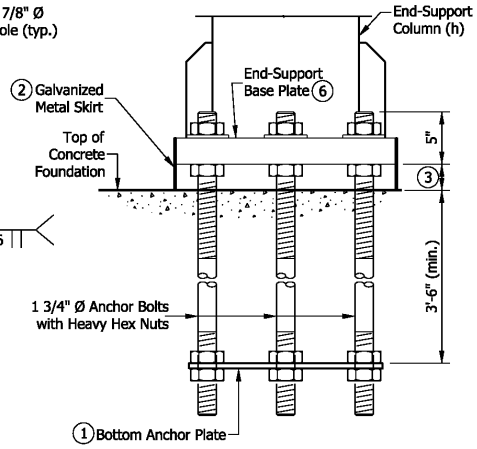
DETAIL H

NOTES:

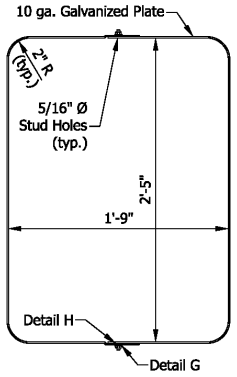
1. Use temporary positioning plate and bottom anchor plate for all foundations. Temporary positioning plate should be removed after placing concrete.
2. Secure galvanized metal skirt to base plate after erection as shown in skirt detail.
3. Minimum base plate gap is 2 1/2" and can be increased up to 5 1/2". Metal skirt width shall be at least 1 1/2" more than the actual gap.
4. May use four separate 5" plates welded together to maintain angles and shape as shown.
5. May use two separate 3" and two separate 5" plates welded together to maintain angles and shape as shown.
6. See Standard Drawings E 802-SBTS-13 for end-support base plate details.
7. See Standard Drawing E 802-SBTS-17 for anchor bolt hardware tightening requirements.



BOTTOM ANCHOR PLATE



ANCHOR BOLT DETAILS
AFTER CONCRETE PLACEMENT



METAL SKIRT DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
END-SUPPORT
ANCHOR BOLT AND METAL SKIRT DETAILS
SEPTEMBER 2022

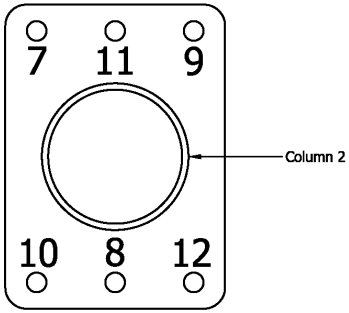
STANDARD DRAWING NO. E 802-SBTS-16

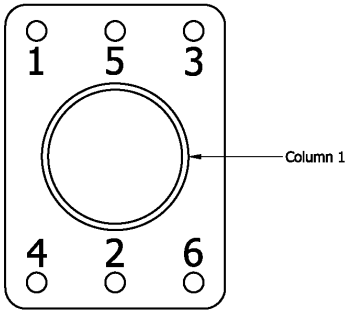
DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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





STAR PATTERN
TIGHTENING SEQUENCE
DETAIL "A"

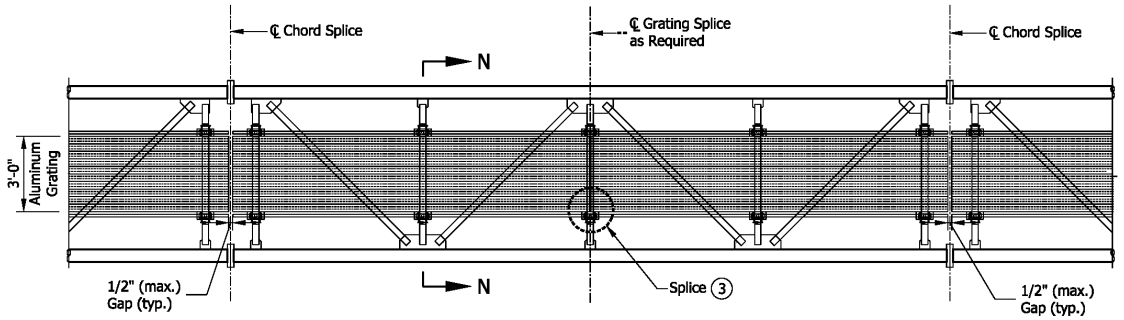
NOTES:

1. Anchor bolts shall be clean and not damaged or out of plumb.
2. Threaded portion of anchor bolts shall be lubricated within 24 hours of tightening; approved lubricant shall be used and shall be applied in accordance with lubricant manufacturers recommendations.
3. Bottom of leveling nuts shall be less than 1 3/4" from the foundation (unless stated otherwise on the plans).
4. While holding the leveling nuts with a wrench, the top nuts shall be snug tightened (brought into full contact with the base plate). Then the leveling nuts shall be snug-tightened. Then the top nuts and base plate shall be marked and the nuts further tightened (pre-tensioned) by a minimum 1/12 turn.
5. No sooner than 10 minutes after the installation of the truss on the end bents, top and leveling nuts shall be retightened as needed.
6. All tightening shall be done in the order shown in detail "A"

INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE END SUPPORT ANCHOR BOLT HARDWARE TIGHTENING SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-17	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

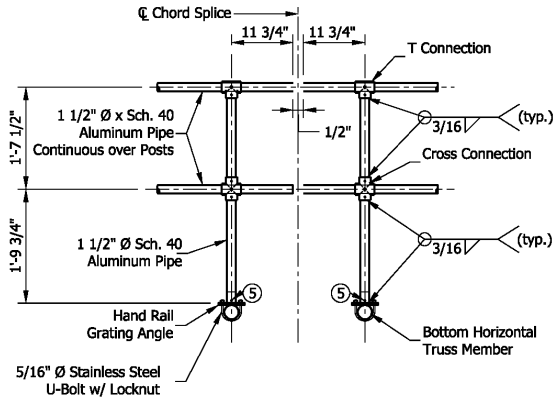
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



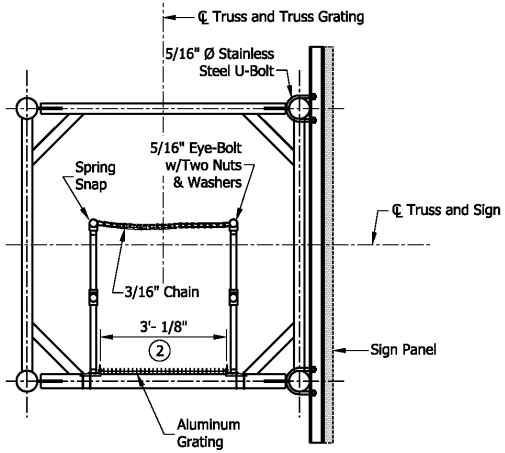
WALKWAY GRATING PLAN

NOTES:

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". Moment of Inertia, I_x = 1.382 in^4. A different grating of equal strength may be used upon approval.
2. 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-18 for typical interior walkway grating splice detail.
4. Interior walkway grating shall run the full length, center-to-center, of end-support truss members plus 9" at each end.
5. For drain hole details see Standard Drawing E 802-SBTS-23.



TYPICAL HANDRAIL DETAIL

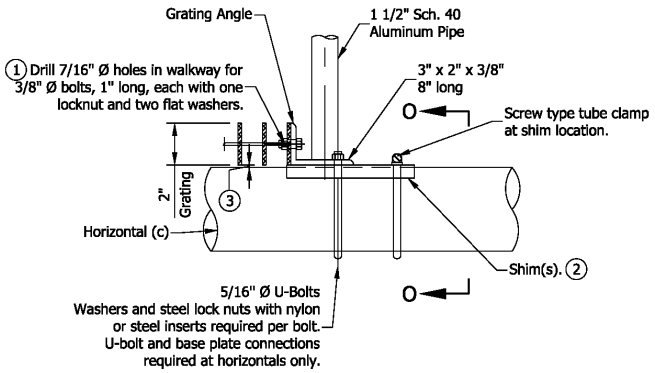


SECTION N-N

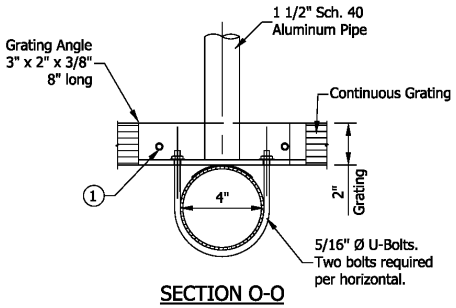
INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE INTERIOR WALKWAY GRATING & HANDRAIL DETAILS SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-18	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

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



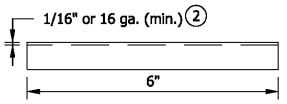
GRATNG SUPPORT DETAIL



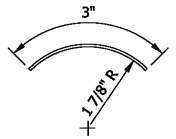
SECTION O-O

NOTES:

1. Drilling of holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
2. Shims may be placed as shown, if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
3. Tube-to-grating gap may vary from 0 to 1/2" max. to align walkway, allow for camber.

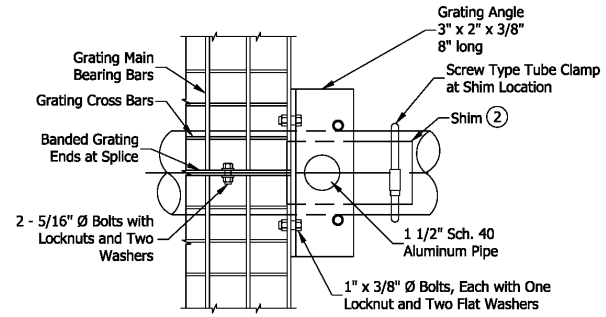


ELEVATION

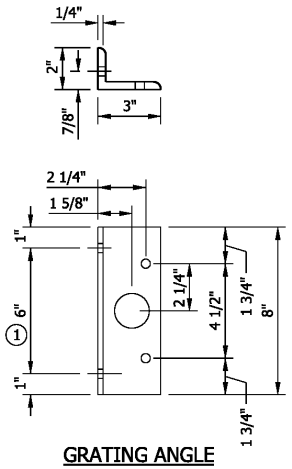


END VIEW

SHIM DETAIL



GRATING SPLICE DETAIL

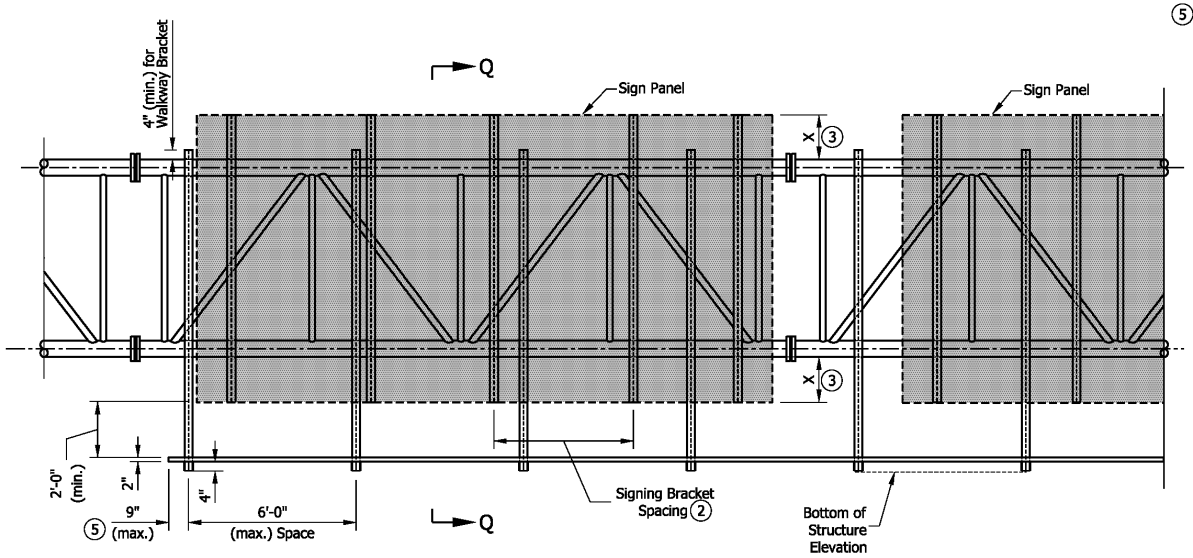


GRATING ANGLE

INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE INTERIOR WALKWAY GRATING DETAILS SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-19	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

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



TYPICAL FRONT ELEVATION
(Lighting walkway and handrail provided only when specified in the plans)

NOTES:

1. For location and data for sign panels, see plan details cross section.
2. ② Sign bracket spacing 5' max.
3. ③ Dimension X depends on the height of the sign. Sign is to be centered vertically on truss.
4. See Standard Drawing E 802-SBTS-21 for Plan, and E 802-SBTS-22 for Section Q-Q.
5. ⑤ Sign shall be installed on truss with independent brackets WF (A-N) 4 x 3.06 for signs ≤ 18' in height. For signs > 18' and ≤ 25' use WF (A-N) 5 x 5.36. Lighting walkway may be extended to comply with the 9" maximum unsupported grating.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY ELEVATION

SEPTEMBER 2022

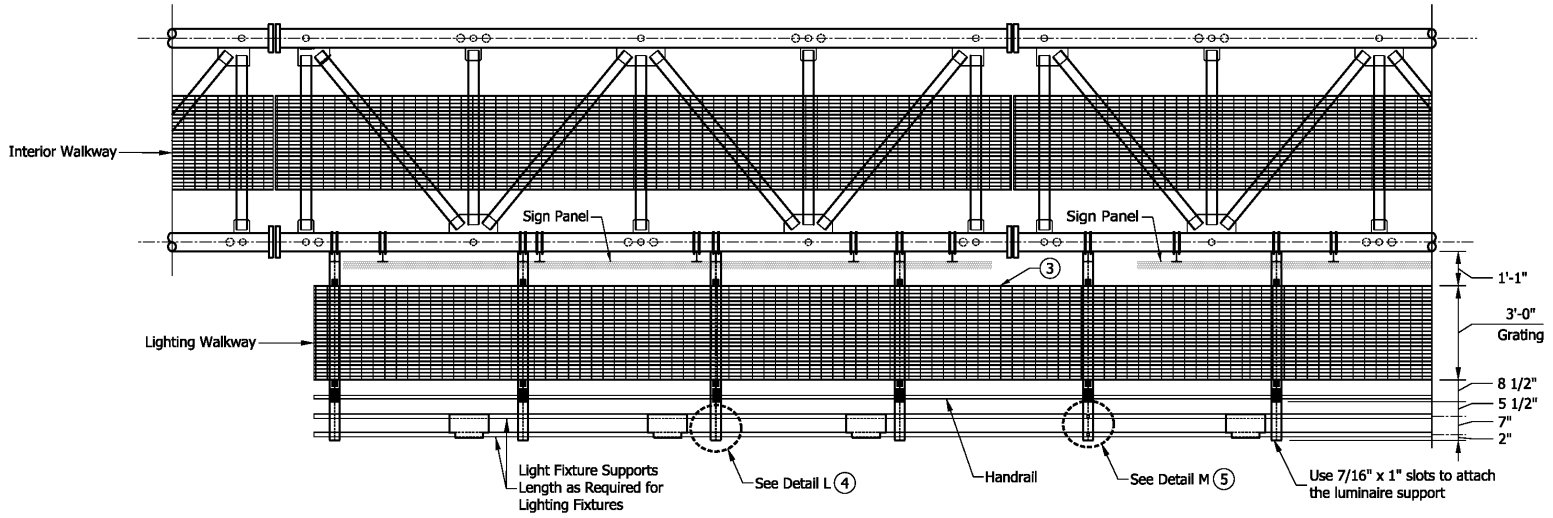
STANDARD DRAWING NO. E 802-SBTS-20

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



PLAN

(Lighting walkway provided only when specified on the plan)

NOTES:

1. Handrail and grating shall span a minimum of 3 brackets.
2. Grating splice located on center of L-bracket only. See Standard Drawing E 802-SBTS-25, Detail M.

(3) Lighting walkway gratings are extruded I-bars 2" x 1/4" spaced at 1 3/16" center-to-center. Cross bars shall have a maximum gap of 4". Moment of Inertia, I_x = 1.382 in^4. A different grating of equal strength may be used upon approval.

(4) See Standard Drawing E 802-SBTS-25, Detail L.

(5) See Standard Drawing E 802-SBTS-25, Detail M.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY PLAN

SEPTEMBER 2022

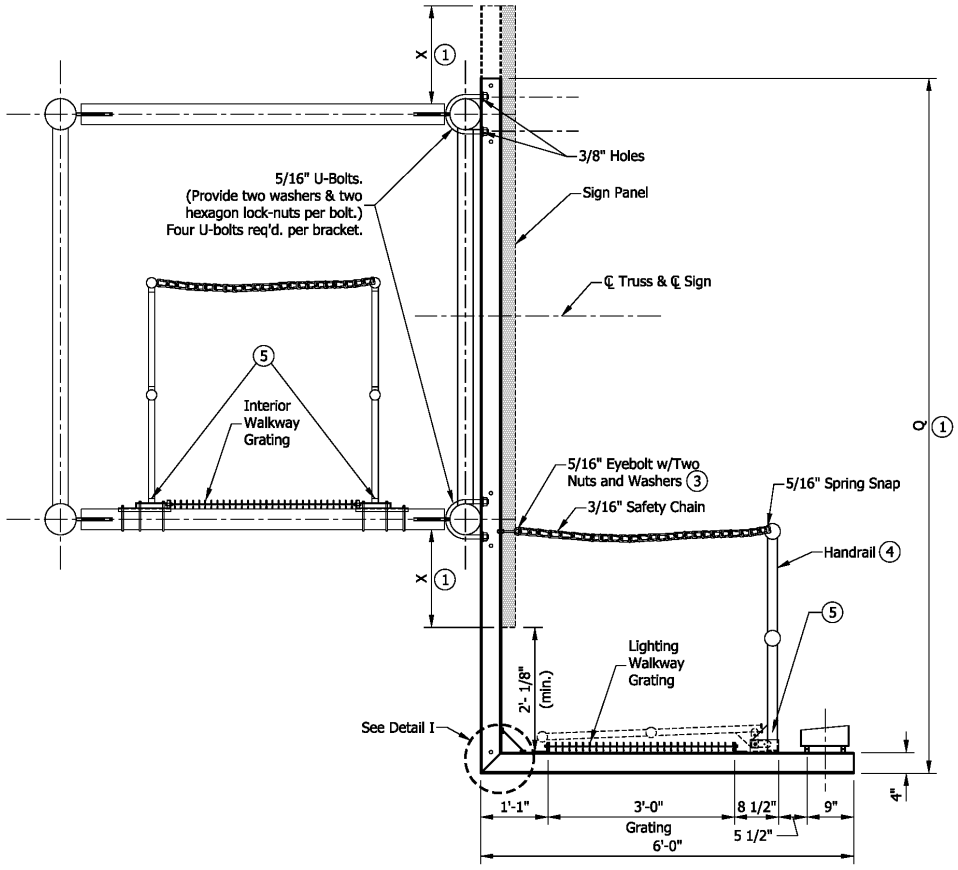
STANDARD DRAWING NO. E 802-SBTS-21

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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

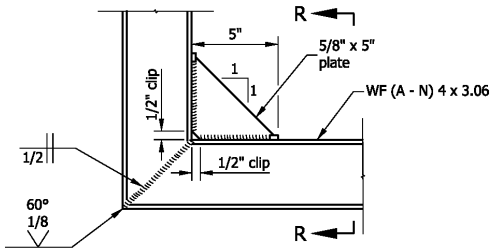


SECTION Q-Q

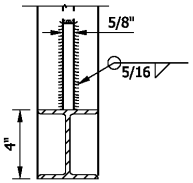
(Lighting walkway provided only when specified on plan)

NOTES:

1. Dimensions X and Q to be determined by Contractor to fit signs.
2. Sign panel shall be placed symmetrically about centerline of truss.
3. Eyebolt shall be attached to web of bracket at approximate elevation of upper handrail pipe.
4. See Standard Drawing E 802-SBTS-23 for handrail details interior walkway.
5. Drain hole, See Standard Drawing E 802-SBTS-23



DETAIL I

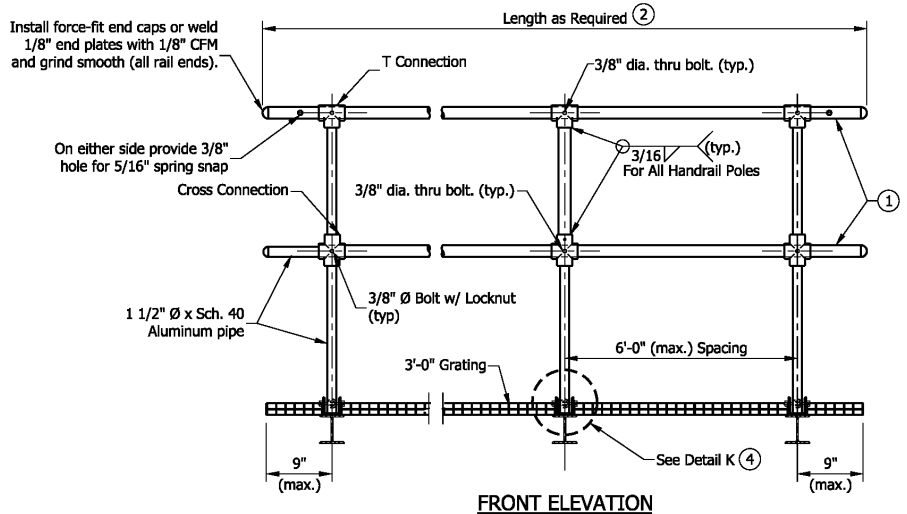


SECTION R-R

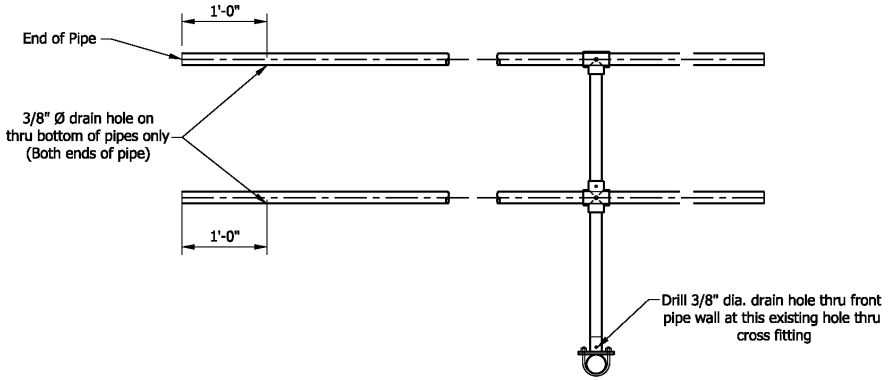
INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE LIGHTING WALKWAY PROFILE SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-22	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

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



FRONT ELEVATION



HANDRAIL DRAIN HOLES DETAIL

NOTES:

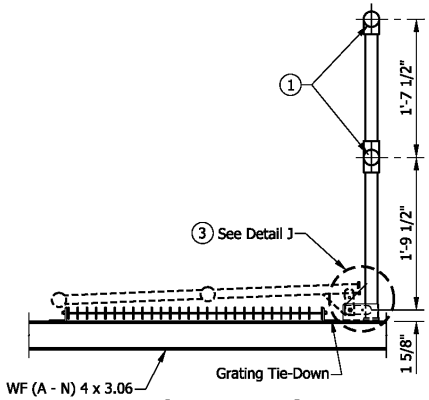
(1) Horizontal rail member shall be continuous through fitting. Manufacturer shall provide 7/16" holes for fitting 3/8" bolt. Field drill 7/16" hole in horizontal rail member. Attach handrail with 3/8" bolt, washer, and locknut.

(2) Rail and grating shall span a minimum of three brackets.

(3) See Standard Drawing E 802-SBTS-24 for Detail J.

(4) See Standard Drawing E 802-SBTS-24 for Detail K.

5 Lighting walkway and handrail provided only when specified on plans.



SIDE ELEVATION

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY AND
HANDRAIL ASSEMBLY
SEPTEMBER 2022

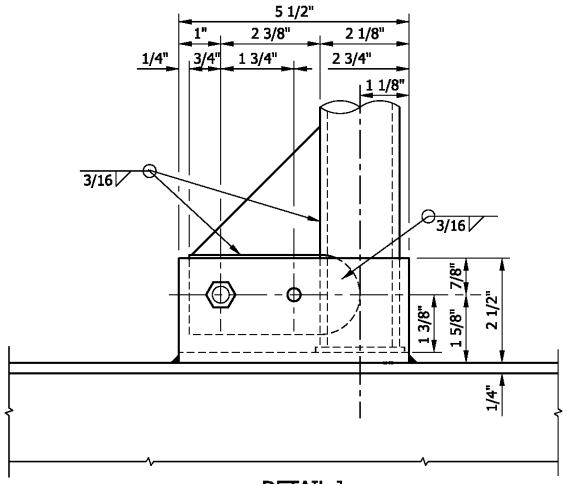
STANDARD DRAWING NO. E 802-SBTS-23

DESIGN STANDARDS ENGINEER DATE

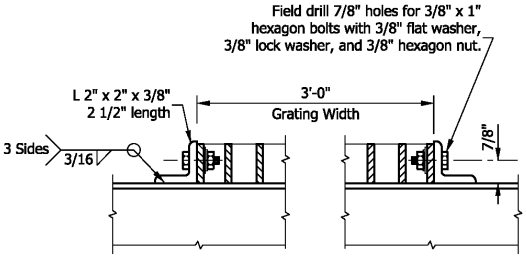
CHIEF ENGINEER DATE

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

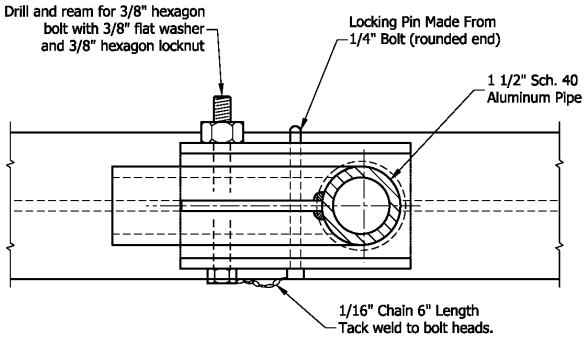
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



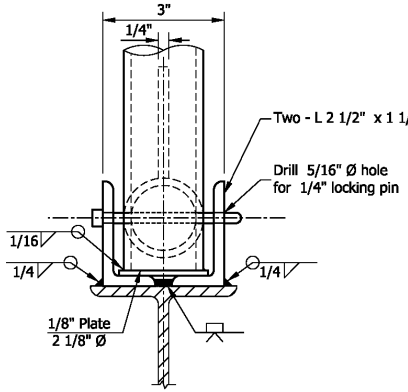
DETAIL J
SIDE ELEVATION



GRATING TIE DOWN
(Two req'd per walkway bracket)



PLAN
DETAILS OF HANDRAIL HINGE

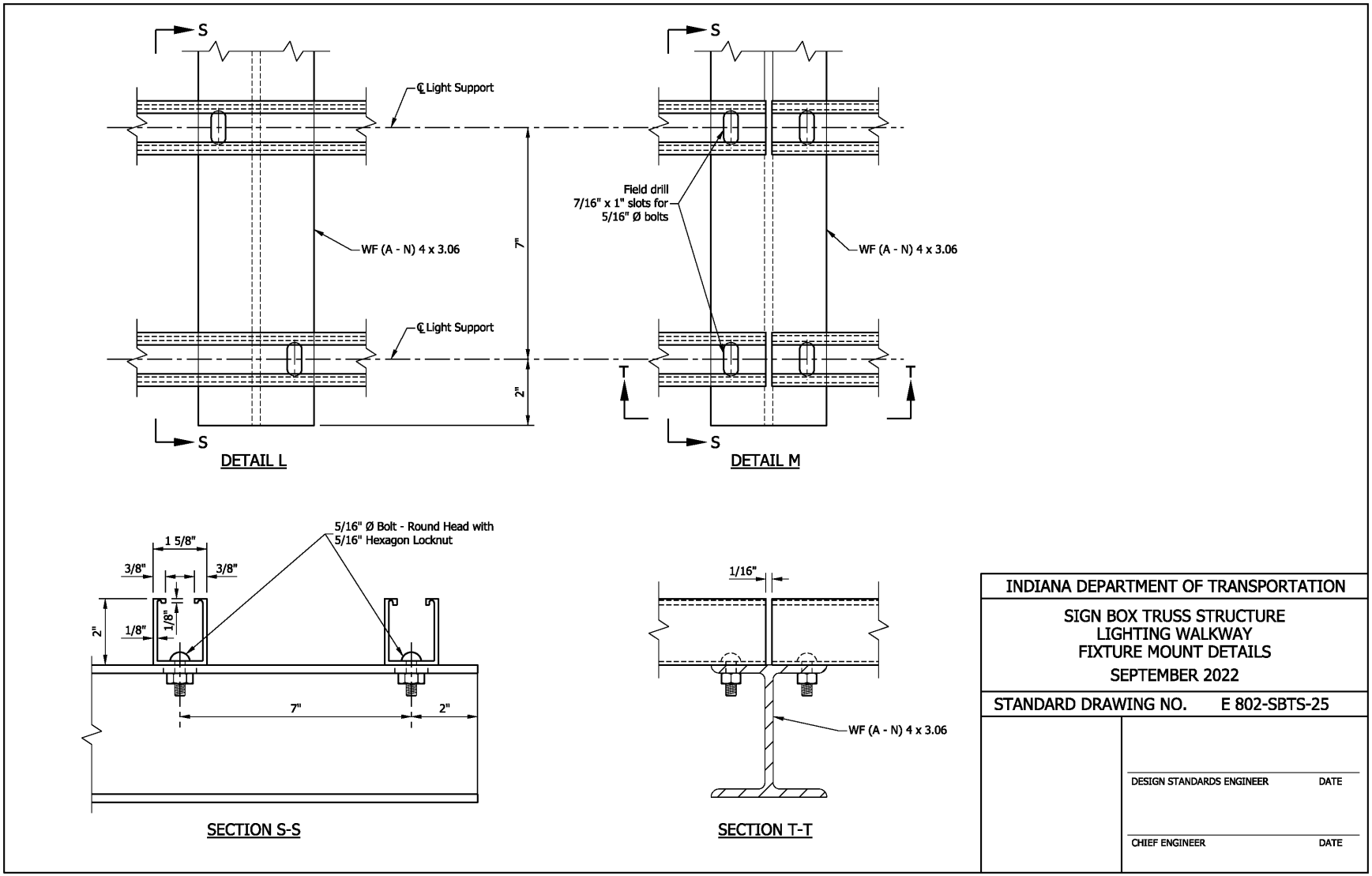


DETAIL K
FRONT ELEVATION

INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE LIGHTING WALKWAY, HANDRAIL HINGE, AND GRATING DETAILS SEPTEMBER 2022	
STANDARD DRAWING NO. E 802-SBTS-24	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

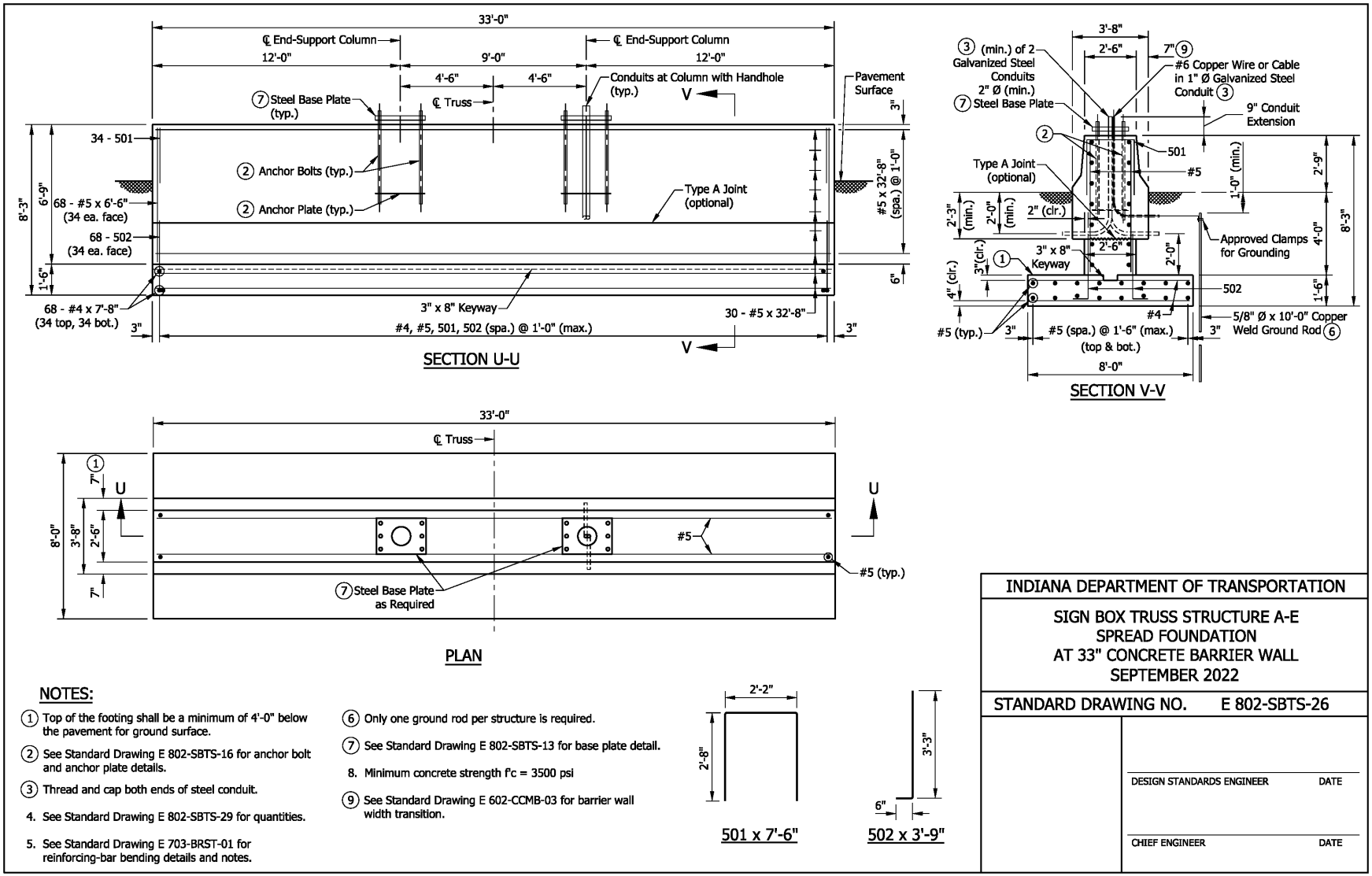
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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



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

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



NOTES:

1. Top of the footing shall be a minimum of 4'-0" below the pavement for ground surface.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-29 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate detail.
8. Minimum concrete strength f'c = 3500 psi
9. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
SPREAD FOUNDATION
AT 33" CONCRETE BARRIER WALL
SEPTEMBER 2022

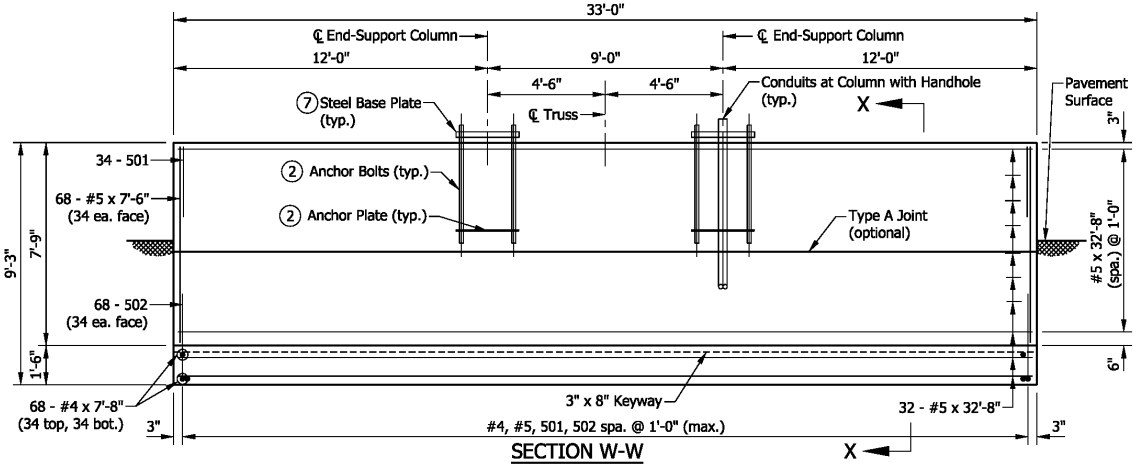
STANDARD DRAWING NO. E 802-SBTS-26

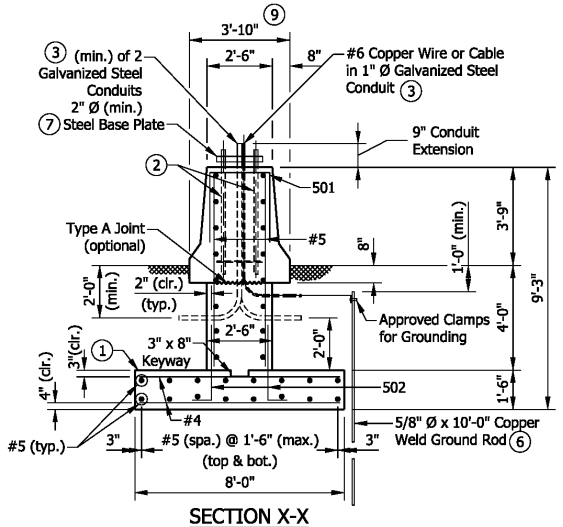
DESIGN STANDARDS ENGINEER DATE

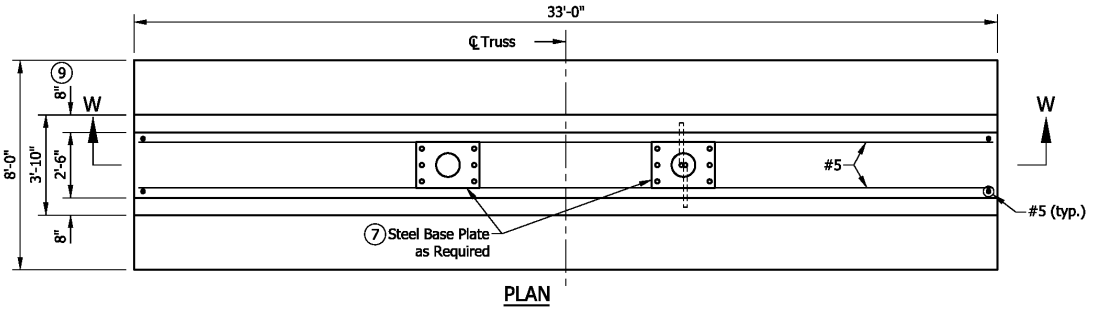
CHIEF ENGINEER DATE

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

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







NOTES:

① Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.

② See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.

③ Thread and cap both ends of steel conduit.

4. See Standard Drawing E 802-SBTS-29 for quantities.

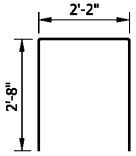
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

⑥ Only one ground rod per structure is required.

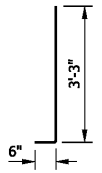
⑦ See Standard Drawing E 802-SBTS-13 for base plate details.

8. Minimum concrete strength f'c = 3500 psi.

⑨ See Standard Drawing E 602-CCMB-03 for barrier wall width transition.



501 x 7'-6"



502 x 3'-9"

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
SPREAD FOUNDATION
AT 45" CONCRETE BARRIER WALL
SEPTEMBER 2022

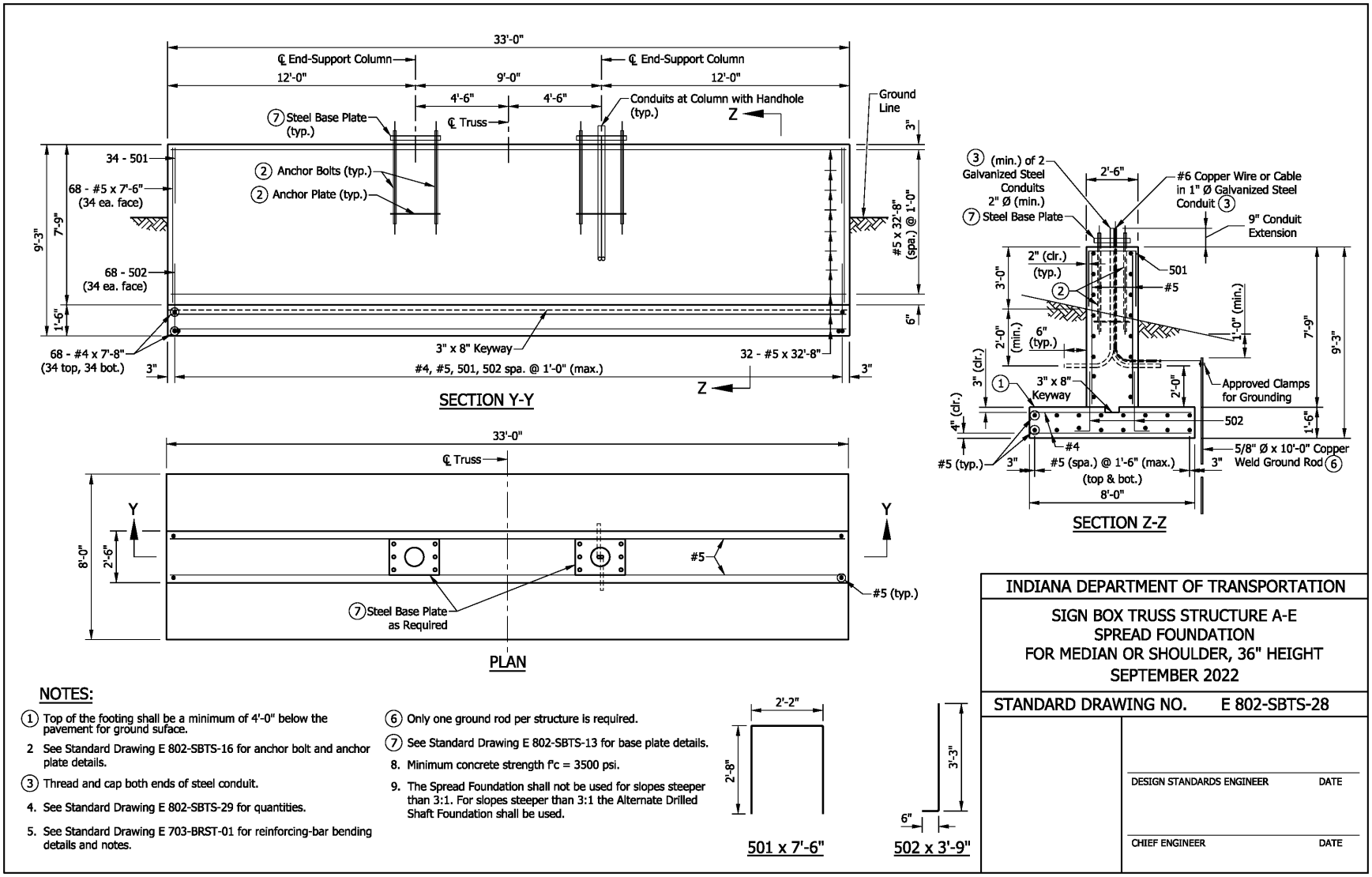
STANDARD DRAWING NO. E 802-SBTS-27

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



NOTES:

1. Top of the footing shall be a minimum of 4'-0" below the pavement for ground suface.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-29 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c = 3500 psi.
9. The Spread Foundation shall not be used for slopes steeper than 3:1. For slopes steeper than 3:1 the Alternate Drilled Shaft Foundation shall be used.

501 x 7'-6"

502 x 3'-9"

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			
EPOXY-COATED REINFORCING 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-Coated Reinforcing Bars			2363 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			39.8 CYS
MISCELLANEOUS			
Surface Seal			30.4 SYS

SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
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-Coated Reinforcing Bars			2502 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			41.4 CYS
MISCELLANEOUS			
Surface Seal			37.8 SYS

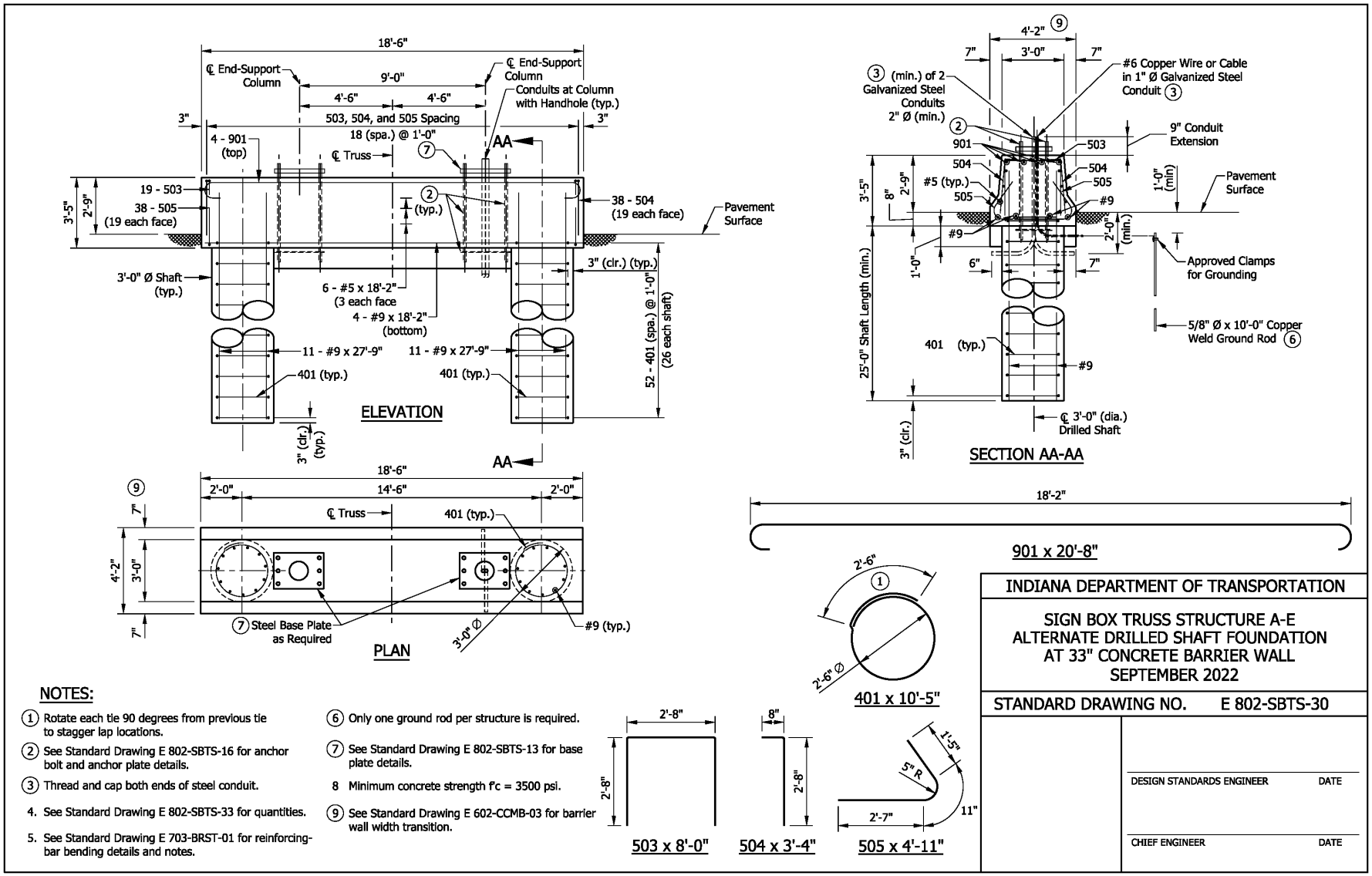
SPREAD FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	34	7'-6"	
502	68	3'-9"	
#5	68	7'-6"	
#5	32	32'-8"	
Total #5			2154 LBS
#4	68	7'-8"	
Total #4			348 LBS
Total Epoxy-Coated Reinforcing Bars			2502 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			38.4 CYS
MISCELLANEOUS			
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 STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

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

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



NOTES:

1. Rotate each tie 90 degrees from previous tie to stagger lap locations.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-33 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c = 3500 psi.
9. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
ALTERNATE DRILLED SHAFT FOUNDATION
AT 33" CONCRETE BARRIER WALL
SEPTEMBER 2022

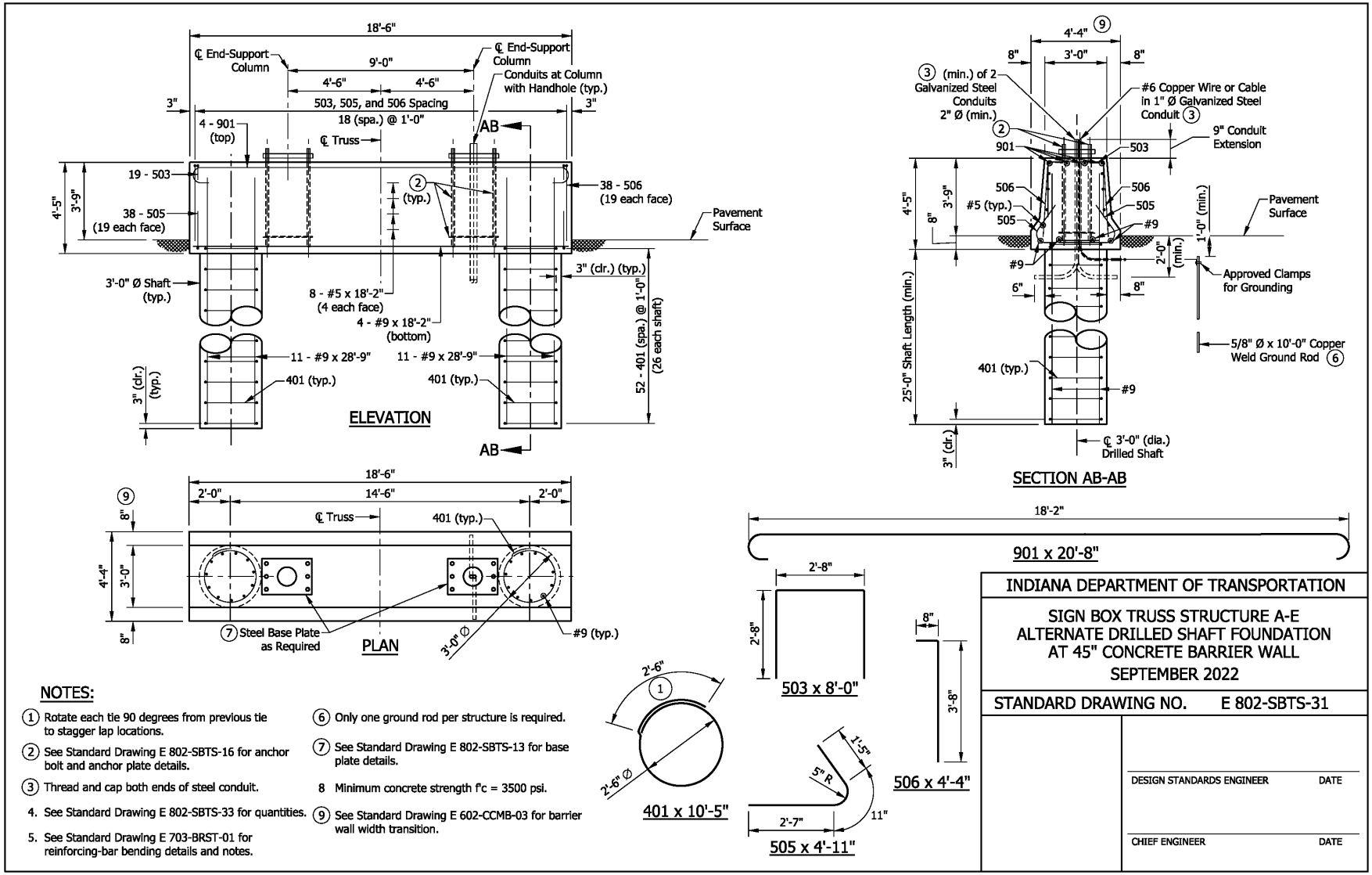
STANDARD DRAWING NO. E 802-SBTS-30

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



NOTES:

1. Rotate each tie 90 degrees from previous tie to stagger lap locations.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-33 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c = 3500 psi.
9. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
ALTERNATE DRILLED SHAFT FOUNDATION
AT 45" CONCRETE BARRIER WALL
SEPTEMBER 2022

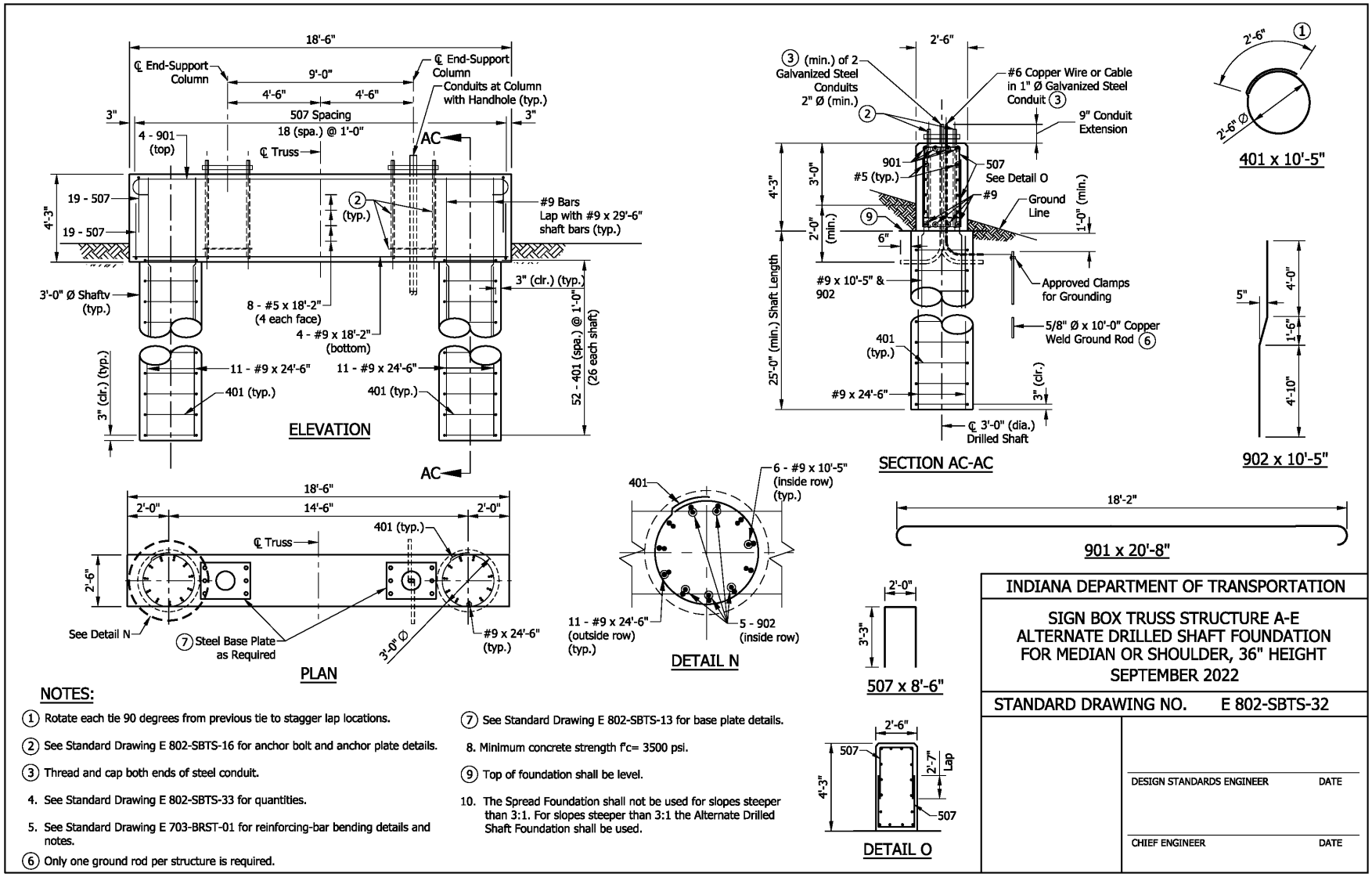
STANDARD DRAWING NO. E 802-SBTS-31

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



NOTES:

1. Rotate each tie 90 degrees from previous tie to stagger lap locations.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-33 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c= 3500 psi.
9. Top of foundation shall be level.
10. The Spread Foundation shall not be used for slopes steeper than 3:1. For slopes steeper than 3:1 the Alternate Drilled Shaft Foundation shall be used.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE A-E
ALTERNATE DRILLED SHAFT FOUNDATION
FOR MEDIAN OR SHOULDER, 36" HEIGHT
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-SBTS-32

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF 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 Reinforcing Bars			3565
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-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

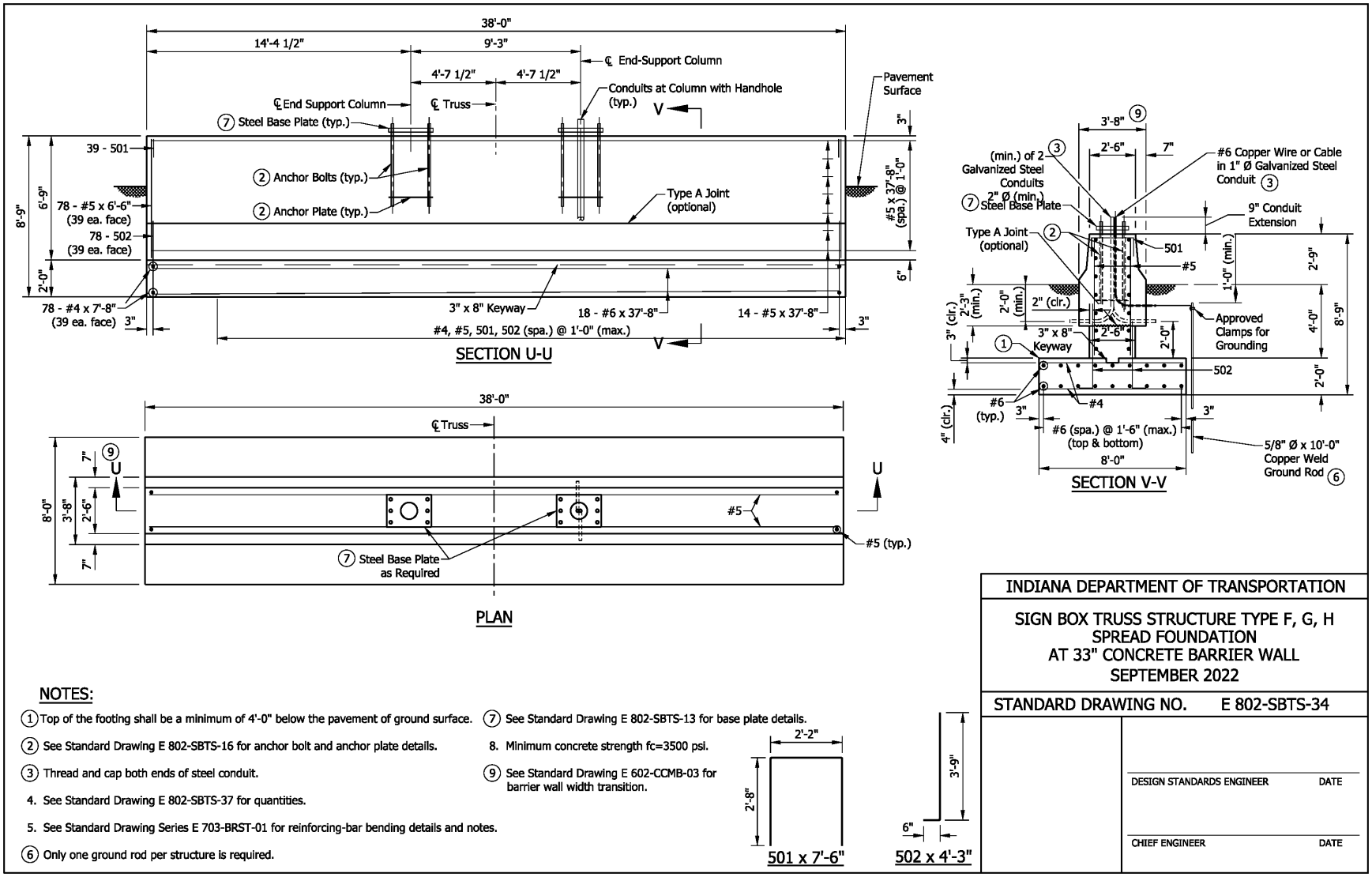
ALTERNATE DRILLED SHAFT FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
902	10	10'-5"	
#9	4	18'-2"	
#9	12	10'-5"	
#9	22	24'-6"	
Total #9			3140 LBS
507	38	8'-6"	
#5	8	18'-2"	
Total #5			488 LBS
401	52	10'-5"	
Total #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 STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

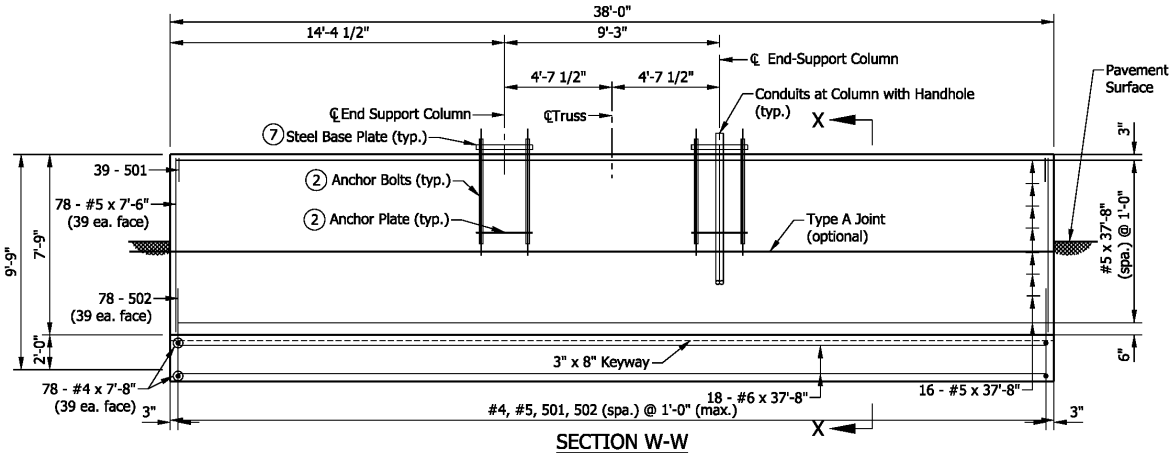
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

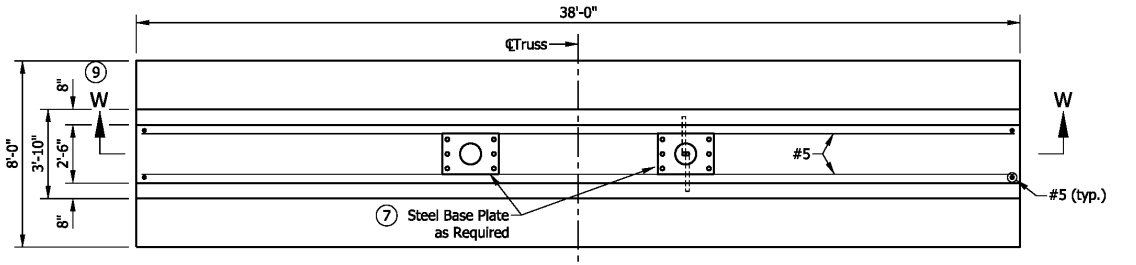
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)

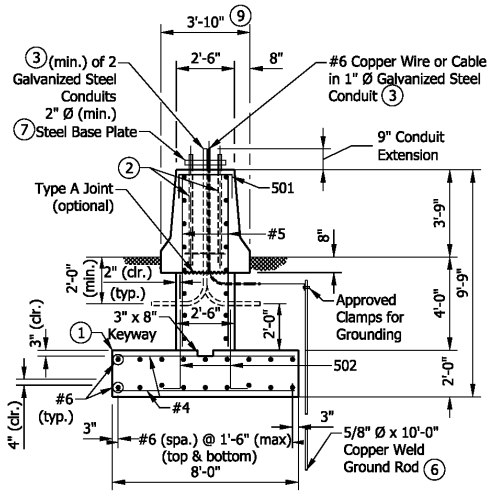


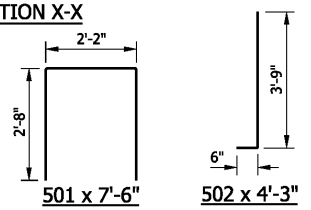
REVISION TO STANDARD SPECIFICATIONS, RECURRING PLAN DETAILS (RPD), AND STANDARD DRAWINGS

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









NOTES:

1. Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-37 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength fc=3500 psi.
9. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE TYPE F, G, H
SPREAD FOUNDATION
AT 45" CONCRETE BARRIER WALL
SEPTEMBER 2022

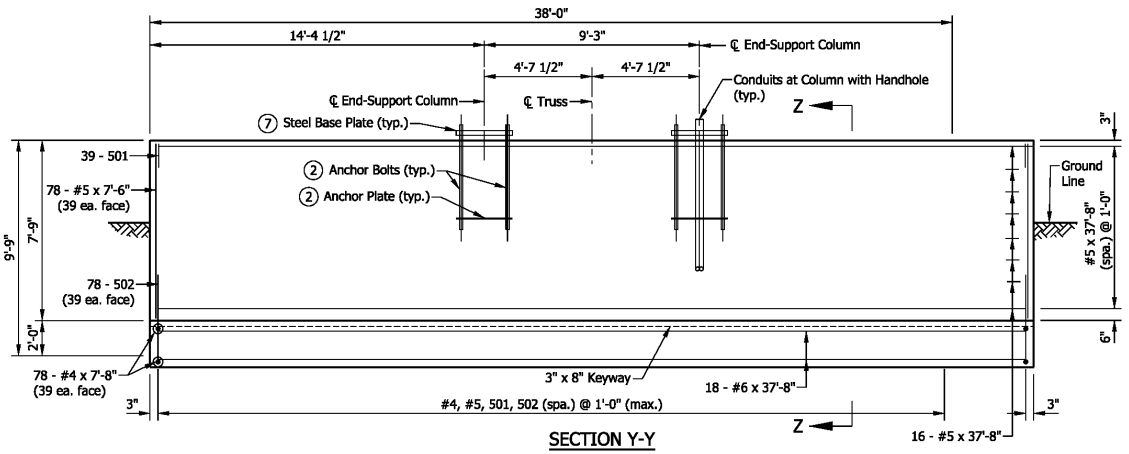
STANDARD DRAWING NO. E 802-SBTS-35

DESIGN STANDARDS ENGINEER DATE

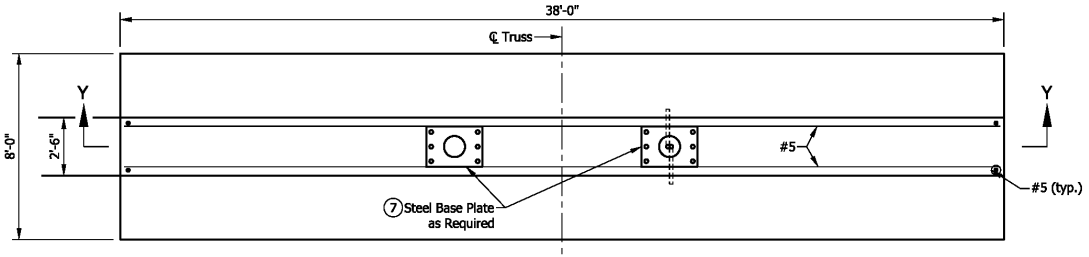
CHIEF ENGINEER DATE

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

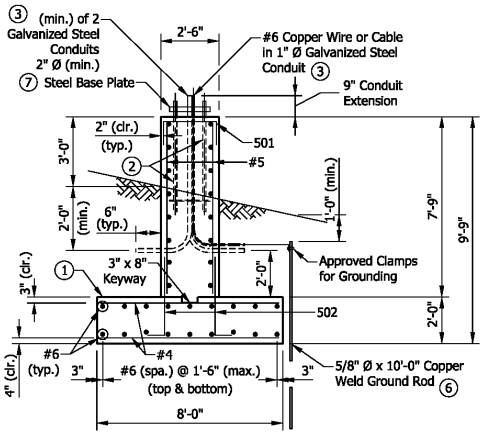
E 802-SBTS series (PROPOSED DRAFT -01 thru -41)



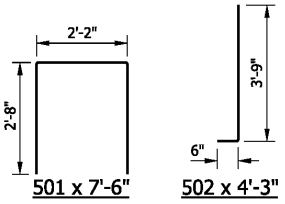
SECTION Y-Y



PLAN



SECTION Z-Z



NOTES:

① Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.

② See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.

③ Thread and cap both ends of steel conduit.

4. See Standard Drawing E 802-SBTS-37 for quantities.

5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

⑥ Only one ground rod per structure is required.

7. See Standard Drawing E 802-SBTS-13 for base plate details.

⑧ Minimum concrete strength f'c = 3500 psi.

9. The Spread Foundation shall not be used for slopes steeper than 3:1. For slopes steeper than 3:1 the Alternate Drilled Shaft Foundation shall be used.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE TYPE F, G, H
SPREAD FOUNDATION
FOR MEDIAN OR SHOULDER, 36" HEIGHT
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-SBTS-36

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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			
EPOXY-COATED REINFORCING 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 Reinforcing Bars			3147 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			51.4 CYS
MISCELLANEOUS			
Surface Seal			35.0 SYS

SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING 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
MISCELLANEOUS			
Surface Seal			43.4 SYS

SPREAD FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING 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			49.8 CYS
MISCELLANEOUS			
Surface Seal			41.2 SYS

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE TYPE F, G, H
SPREAD FOUNDATIONS
QUANTITIES
SEPTEMBER 2022

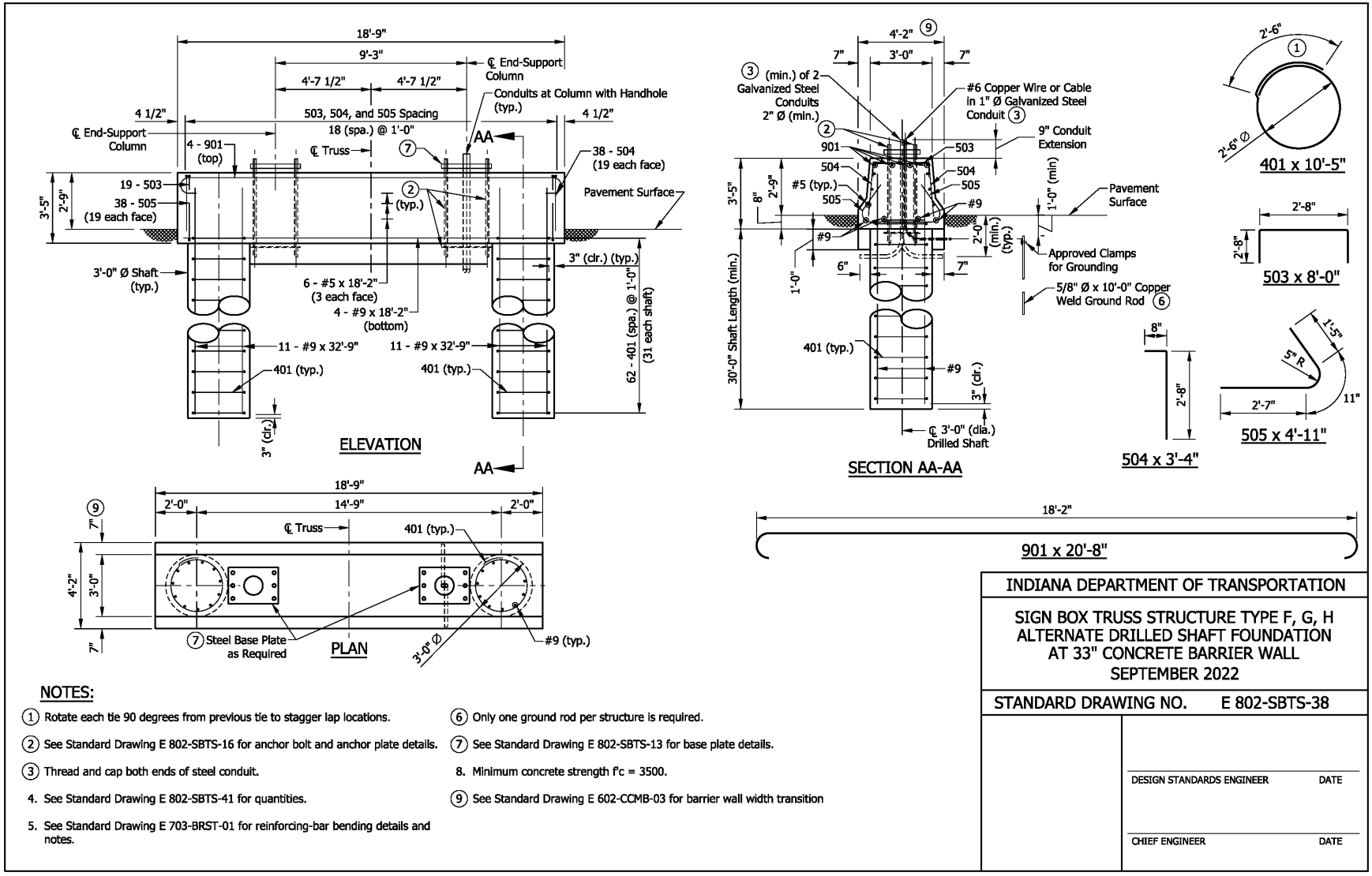
STANDARD DRAWING NO. E 802-SBTS-37

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



NOTES:

1. Rotate each tie 90 degrees from previous tie to stagger lap locations.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-41 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c = 3500.
9. See Standard Drawing E 602-CCMB-03 for barrier wall width transition

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE TYPE F, G, H
ALTERNATE DRILLED SHAFT FOUNDATION
AT 33" CONCRETE BARRIER WALL
SEPTEMBER 2022

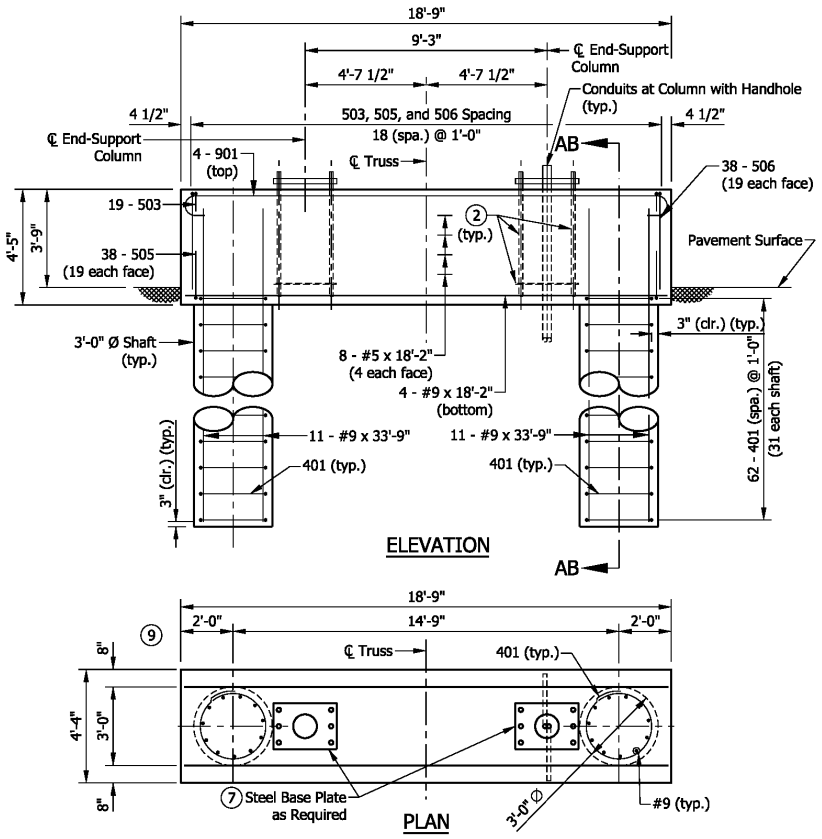
STANDARD DRAWING NO. E 802-SBTS-38

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



NOTES:

1. Rotate each tie 90 degrees from previous tie to stagger lap locations.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-41 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c = 3500.
9. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE TYPE F, G, H
ALTERNATE DRILLED SHAFT FOUNDATION
AT 45" CONCRETE BARRIER WALL
SEPTEMBER 2022

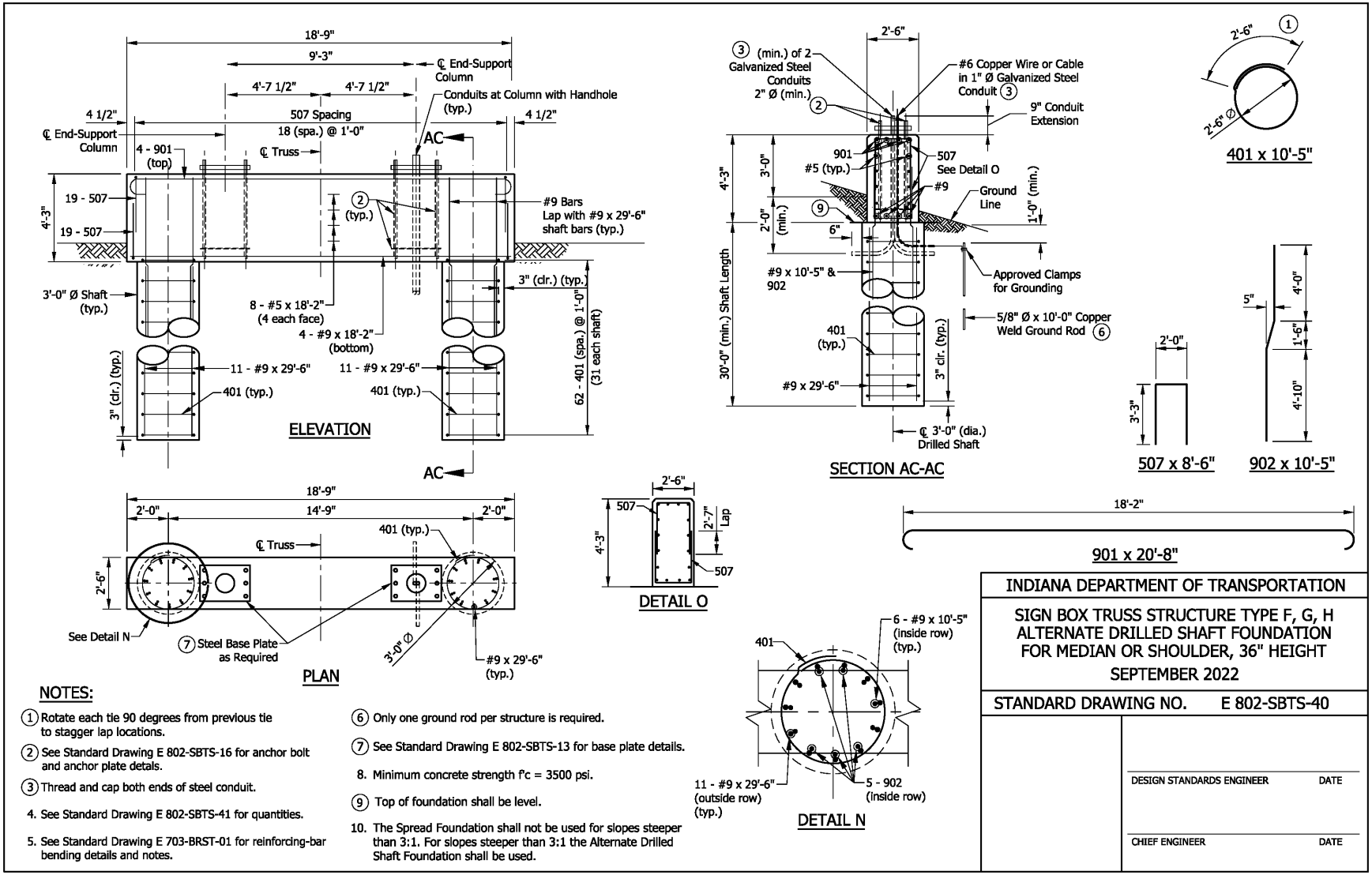
STANDARD DRAWING NO. E 802-SBTS-39

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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

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



NOTES:

1. Rotate each tie 90 degrees from previous tie to stagger lap locations.
2. See Standard Drawing E 802-SBTS-16 for anchor bolt and anchor plate details.
3. Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-41 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
6. Only one ground rod per structure is required.
7. See Standard Drawing E 802-SBTS-13 for base plate details.
8. Minimum concrete strength f'c = 3500 psi.
9. Top of foundation shall be level.
10. The Spread Foundation shall not be used for slopes steeper than 3:1. For slopes steeper than 3:1 the Alternate Drilled Shaft Foundation shall be used.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE TYPE F, G, H
ALTERNATE DRILLED SHAFT FOUNDATION
FOR MEDIAN OR SHOULDER, 36" HEIGHT
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-SBTS-40

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

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" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING 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	6	18'-2"	
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 CYS
MISCELLANEOUS			
Surface Seal			18.0 SYS

ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL			
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			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 Reinforcing Bars			4161 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			26.5 CYS
MISCELLANEOUS			
Surface Seal			22.2 SYS

ALTERNATE DRILLED SHAFT FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING 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'-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 CYS
MISCELLANEOUS			
Surface Seal			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 Ayes: 8 Nays: 0 FHWA Approval: YES	Action: ___ Passed as Submitted _X_ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 802.07 pg 891 - 893; 910.19 pg 1074 - 1078. Recurring Plan Details affected: 802-T-222d Standard Drawing affected: E 802-SBTS Design Manual Sections affected: 502-4 GIFE Sections cross-references: NONE	_X_ 2024 Standard Specifications ___ Revise Pay Items List ___ Create RSP (No. 802-T-230) Effective: December 1, 2021 RSP Sunset Date: 2024 SS book ___ Revise RSP (No.___) Effective: RSP Sunset Date: _X_ Standard Drawings Effective: September 1, 2022 _X_ Create RPD (No. 802-T-230d) Effective: March 1, 2022 ___ 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

Mr. Reilman
Date: 7/15/21

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

Will this proposal reduce operational costs or maintenance effort? 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

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

REVISION TO STANDARD SPECIFICATIONS

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 directed~~*Structure 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 ~~ground~~water. 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

REVISION TO STANDARD SPECIFICATIONS

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

~~*Commercial and private drive pipes*~~*Type 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 Require~~d~~*ing* ~~to Be~~ Mandrel Teste~~d~~*ing*	
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

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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 wrap~~*for* 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

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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

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715.13 Method of Measurements
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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, 715.14 pg 746	X	2024 Standard Specifications
	___	Revise Pay Items List
	X	Create RSP (No. 715-R-732) Effective: December 1, 2021 RSP Sunset Date: 2024 SS book
Recurring Special Provision affected: NONE (proposed to create new)		
	___	Revise RSP (No.___) Effective: RSP Sunset Date:
Standard Drawing affected: NONE		
Design Manual Sections affected: NONE	___	Standard Drawing Effective:
	___	Create RPD (No. ___) Effective:
GIFE Sections cross-references: 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.

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

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? No
Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? Yes

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

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

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No
Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO 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:

Loss on Ignition, LOI, max. %	~~3~~4
Autoclave Expansion or Contraction, max. %	0.5
Fineness: Amount retained when wet-sieved on No. 325 (45 µm) sieve, max. %	30

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