

THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY

February 13, 2020

DESIGN BULLETIN No. 20-01

SUBJECT: Sign Structure Base Sheets and Standard Drawings Revisions

The following revisions to the Illinois Tollway Base Sheets 720 OHS and Standard Drawings Section F Sign Structures have been implemented facilitating construction, safety of structure and protection of driving public.

The 720 OHS Base Sheets and Standard Drawing Section F Sign Structure have been revised per the following (attached are examples of the changes shown in 729 OHS Sheets 1 and 3 and 730 OHS Sheets 1, 3 and 4 of Base Sheets):

Handhole Openings: During gantry construction, difficulties were identified with pulling cable around the splices because the LCS (Lane Control Signs) were pre-assembled on the beam prior to gantry installation. Base Sheets and Standard Drawings have been revised adding and modifying new handhole openings on each side of splices along the horizontal beam for ease of construction and feeding of cables.

Splice Bolt Tightening: Maintenance had identified loose bolts in the splice plates on multiple gantry warning structures over live traffic. Base Sheets and Standard Drawings have been revised adding procedure notes for proper bolt tightening after initial snug tight has been achieved at splices.

Base Plate Anchors: During inspection of base plate anchors, loose nuts were identified on multiple overhead sign structures. Base Sheets and Standard Drawings have been revised adding procedure notes for proper installation of double nuts to be used instead of one nut shown in the previous details.

The affected Base Sheets and Standards are as per below.

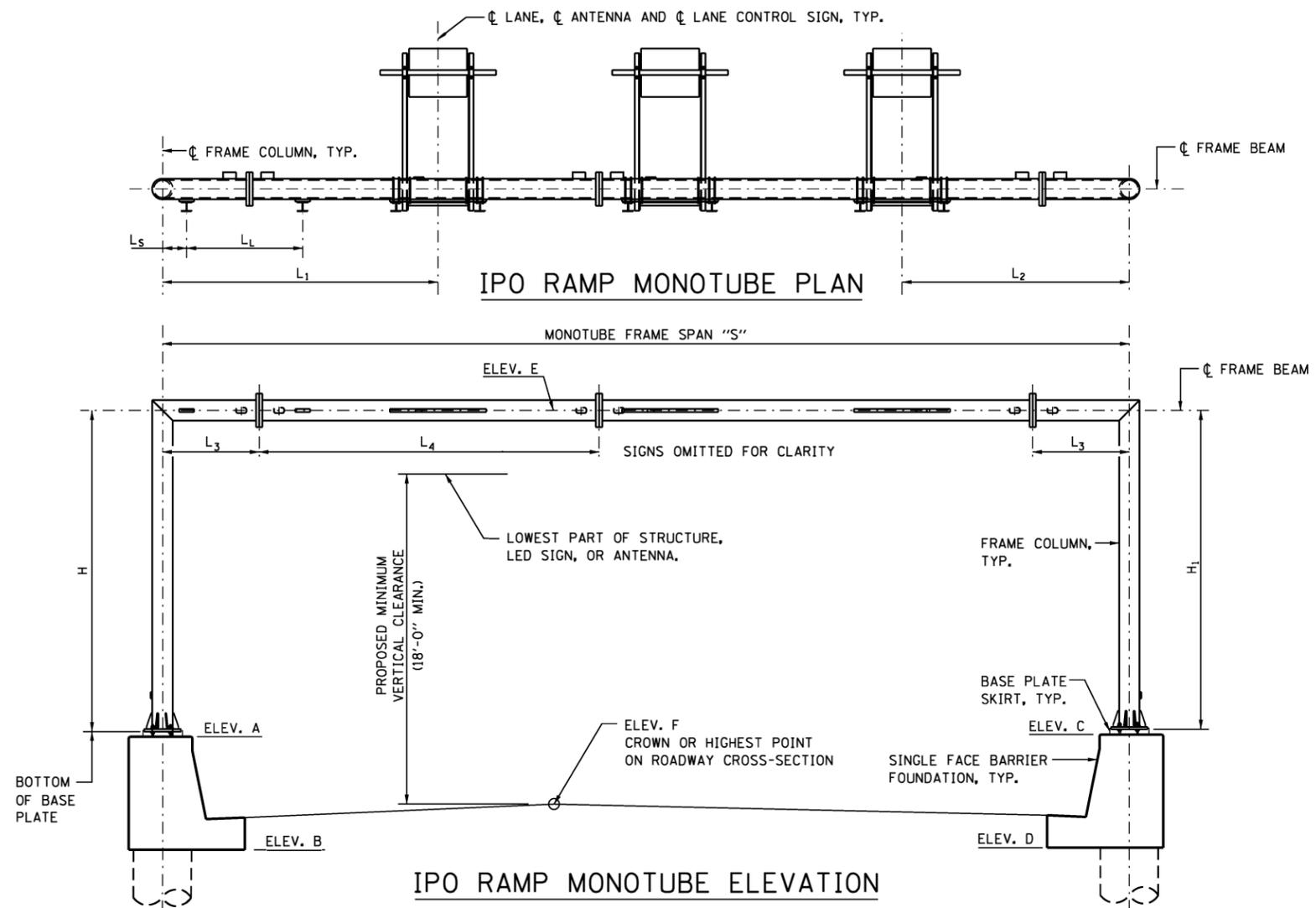
<u>Base Sheets:</u>		<u>Standard Drawings:</u>	
M-OHS-720	M-OHS-726	F1-09	F15-03
M-OHS-721	M-OHS-727	F4-10	F16-02
M-OHS-722	M-OHS-729	F13-04	F17-04
M-OHS-723	M-OHS-730	F14-04	
M-OHS-725			

Design Section Engineers (DSE) are hereby directed to incorporate this design bulletin into all contracts currently under design, currently being advertised and all future contracts. DSEs shall use the revised drawings with new handhole details, bolt tightening procedure notes and anchor bolt installation of double nuts. These details will be included in the next release of Illinois Tollway Base Sheets and Standard Drawings. In the meantime, DSEs should request Microstation files for their use.



Paul D. Kovacs, P.E.
Chief Engineering Officer

02/24/2020
Date



NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET

REPLACE THIS "NOTE TO DESIGNER" WITH SITE GROUNDING ELECTRODE SYSTEM DETAIL.

SEE THE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE.

SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED. (REFERENCE BASE SHEET M-ITS-1101)

TOTAL BILL OF MATERIAL			
PAY ITEM	DESCRIPTION	UNIT	TOTAL
	OVERHEAD SIGN STRUCTURE, CASH-IPO RAMP MONOTUBE TYPE (STEEL)	FOOT	
	FOUNDATION FOR OVERHEAD SIGN STRUCTURE, RAMP MONOTUBE TYPE	CU. YD.	
	CONCRETE STRUCTURES	CU. YD.	
	REINFORCEMENT BARS, EPOXY COATED	POUND	
	PROTECTIVE COAT	SQ. YD.	

SUMMARY																					
STRUCTURE NUMBER	STATION	SPAN "S" (FT.)	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	PROPOSED MINIMUM VERTICAL CLEARANCE	SHEET 2 OF STANDARD F16						SHEET 6 OF STANDARD F16	FOUNDATION FOR OVERHEAD SIGN STRUCTURE		SINGLE FACE BARRIER	REINFORCEMENT BARS, EPOXY COATED (POUNDS)	PROTECTIVE COAT (SQ. YD.)
										Ls	Ll	L1	L2	L3	L4	H	H1	"C"	CLASS S1 CONCRETE (CU. YD.)		
										TOTAL											

NOTE:
WORK THIS SHEET WITH STANDARD F16

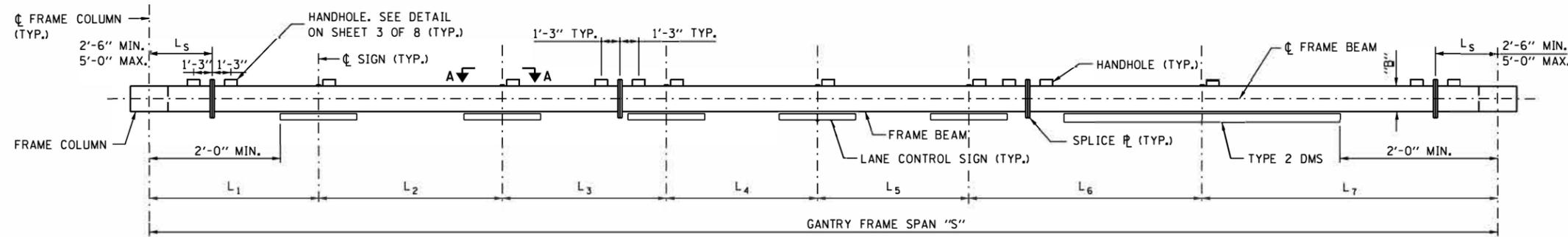
M-OHS-727

OVERHEAD SIGN STRUCTURE
MONOTUBE TYPE (STEEL)
CASH-IPO RAMP
SUMMARY AND TOTAL
BILL OF MATERIAL

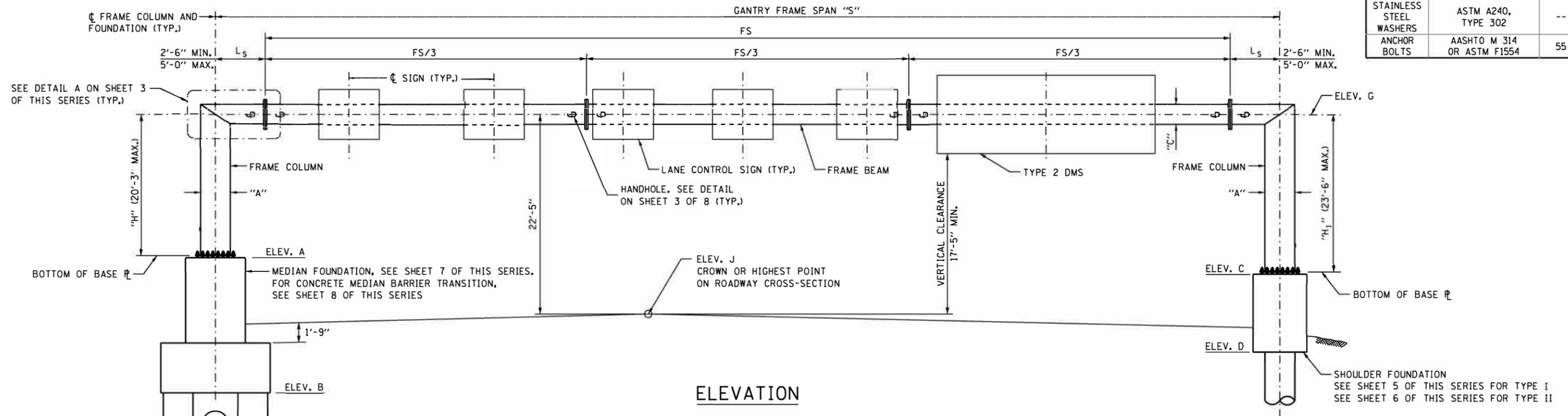
DATE
2-13-2020

MATERIAL SPECIFICATIONS FOR STRUCTURAL STEEL AND FASTENERS

ELEMENT OF STRUCTURE	SPECIFICATION	F _y (KSI)	F _u (KSI)
STRUCTURAL STEEL TUBE FRAME (HSS)	ASTM A618 GRADE III	50	62
STRUCTURAL STEEL TUBE MOUNTING BEAMS (HSS)	ASTM A500 GRADE B	46	58
STEEL SHAPES	ASTM A709 GRADE 50	50	65
STEEL PLATES	ASTM A572 GR. 50 OR ASTM A709 GR. 50	50	65
STEEL BOLTS	ASTM 325 TYPE 1	--	105
SIGN BRACKET RODS	ASTM A307	--	60
LOCK NUTS	ASTM A194 GR. 8F OR ASTM A194 GR. 2H	--	--
NUTS	ASTM A563 GRADE DH	--	--
STEEL WASHERS	ASTM F436	--	--
STAINLESS STEEL WASHERS	ASTM A240, TYPE 302	--	--
ANCHOR BOLTS	AASHTO M 314 OR ASTM F1554	55	75



PLAN



ELEVATION

NOTES:

- SEE SHEET 2 OF THIS SERIES FOR VIEW A-A AND DESIGN SUMMARY TABLE.
- CAMBER IS PROVIDED AT MIDSPAN OF STRUCTURE.
- PRIOR TO FABRICATING GANTRY FRAME, THE CONTRACTOR SHALL VERIFY LOCATIONS OF LANE CONTROL SIGNS AND TYPE 2 DMS WITH ENGINEER. (DIMENSIONS L₁ THROUGH L₇)
- FRAME SPAN SHALL BE IN THE CONFIGURATION SHOWN WITH 2 COLUMNS AND 3 FIELD SECTIONS.
- PRIOR TO FABRICATING GANTRY FRAME, THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF EACH FOUNDATION, ANCHOR BOLTS AND DETAILS AFFECTING GANTRY FRAME FABRICATION AND CONSTRUCTION. NOTIFY THE ENGINEER OF ANY VARIATIONS FROM CONTRACT PLANS AND MAKE NECESSARY APPROVED ADJUSTMENTS. SUCH VARIATIONS DO NOT CONSTITUTE ADDITIONAL COMPENSATION FOR CHANGE IN SCOPE OF WORK. CONTRACTOR WILL BE PAID FOR THE ACTUAL QUANTITY FURNISHED AT THE UNIT PRICE BID FOR THE WORK.
- WHEN REQUIRED FOR ADJUSTMENT, A MAX. OF TWO 1/4" SHIM PLATES SHALL BE PROVIDED AT EACH FIELD SPLICE LOCATION IN BETWEEN SPLICE PLATES.

NOTE TO DESIGNER:

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PROVIDE APPROPRIATE PROTECTION FOR SHOULDER FOUNDATION.

USE SHOULDER FOUNDATION WITH SAFETY SHAPE WHEN FOUNDATION IS PLACED ADJACENT TO THE ROADWAY. USE SHOULDER FOUNDATION WITH VERTICAL FACE WHEN FOUNDATION IS PLACED OUTSIDE CLEAR ZONE OR BEHIND GUARDRAIL.

PROVIDE SITE GROUNDING ELECTRODE SYSTEM DETAIL ACCORDING TO THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 734.

REFERENCE BASE SHEET M-ITS-1101.

DIFFERENCE BETWEEN ELEV. A AND ELEV. C SHOULD NOT EXCEED 5'-0".

TOTAL BILL OF MATERIAL

PAY ITEM	ITEM	UNIT	TOTAL
	FOUNDATION FOR ITS GANTRY FRAME	CU YD	
	ITS GANTRY FRAME (STEEL), SPANS LESS THAN OR EQUAL TO 110'	FOOT	
	ITS GANTRY FRAME (STEEL), SPANS GREATER THAN 110' AND LESS THAN OR EQUAL TO 130'	FOOT	
	ITS GANTRY FRAME (STEEL), SPANS GREATER THAN 130' AND LESS THAN OR EQUAL TO 150'	FOOT	
	JUNCTION BOX, STAINLESS STEEL, ATTACHED TO STRUCTURE, 12"x12"x6"	EACH	
	REINFORCEMENT BARS, EPOXY COATED	POUND	
	PROTECTIVE COAT	SQ YD	

STRUCTURAL STEEL TUBE (HSS) FRAME TABLE

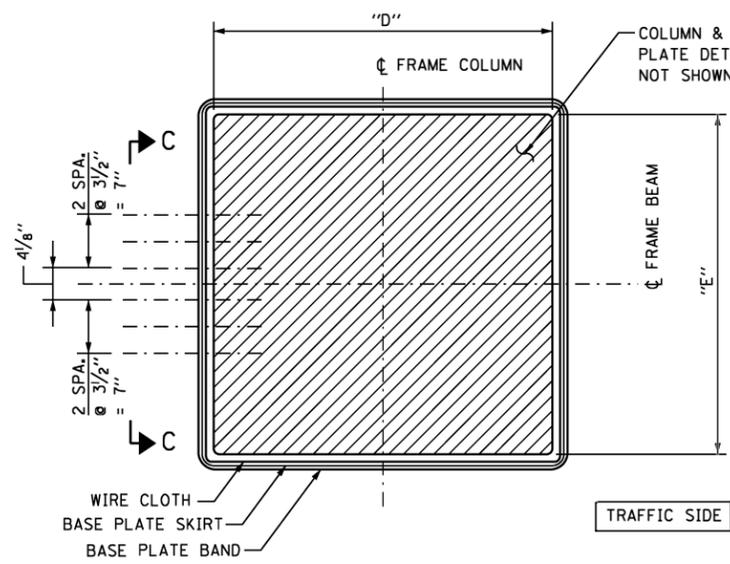
SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER	"A"	"B"	"C"
<=110'	HSS 28x24x0.625	HSS 28x24x0.500	3/2"	2'-0"	2'-4"	2'-0"
110'<"S"<=130'	HSS 28x28x0.625	HSS 28x24x0.625	5"	2'-4"	2'-4"	2'-0"
130'<"S"<=150'	HSS 30x30x0.625	HSS 30x30x0.625	5/2"	2'-6"	2'-6"	2'-6"

BASE DRAWING M-OHS-729
SHEET 1 OF 8

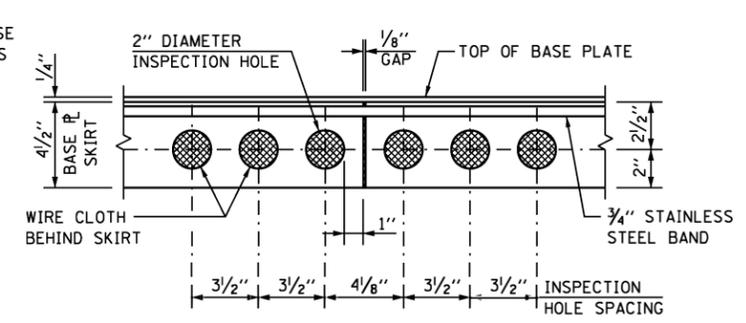


OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
SINGLE SPAN
STRUCTURE DETAILS

DATE
2-13-2020



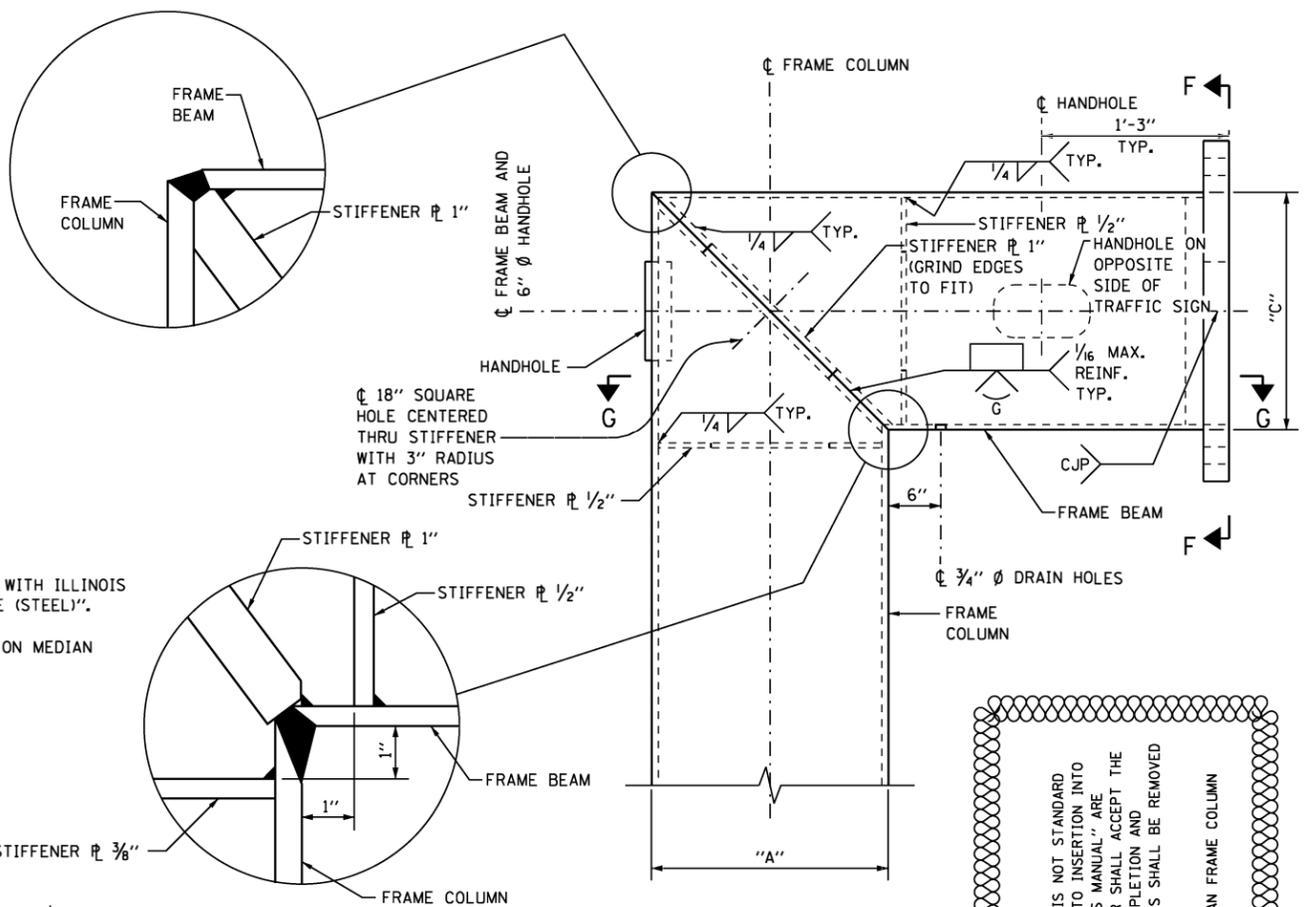
COLUMN BASE PLATE PLAN
SEE NOTE 5



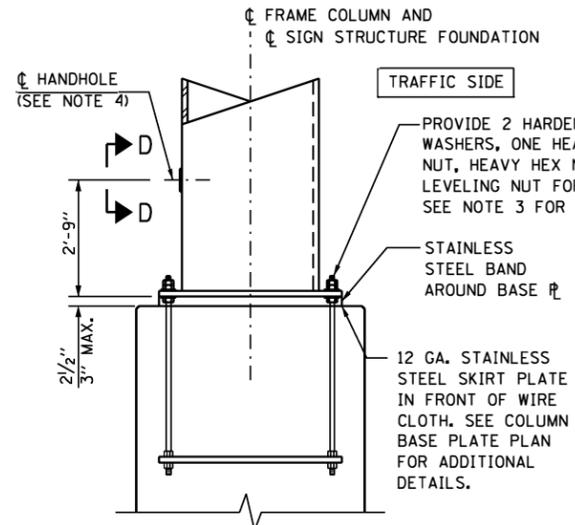
VIEW C-C (BASE PLATE SKIRT)

NOTE:

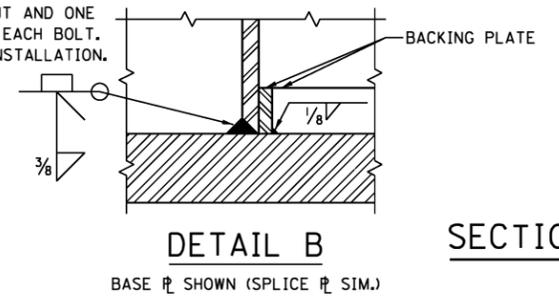
1. SEE SHEET 1 OF THIS SERIES FOR DIMENSIONS "A", "B" AND "C".
2. SEE SHEET 2 OF THIS SERIES FOR DIMENSIONS "D" AND "E".
3. INSTALLATION AND INSPECTION OF SPLICE BOLTS AND ANCHOR BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".
4. SHOULDER FOUNDATION SHOWN. VERIFY HANDHOLE AND INSPECTION HOLES PLACEMENT ON MEDIAN FRAME COLUMN WITH THE ENGINEER.



DETAIL A

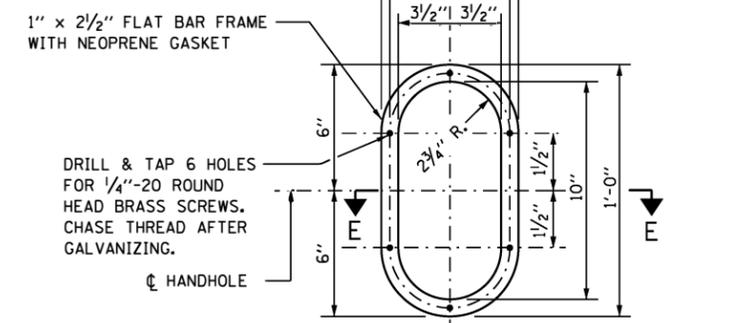


COLUMN BASE
REINFORCING NOT SHOWN

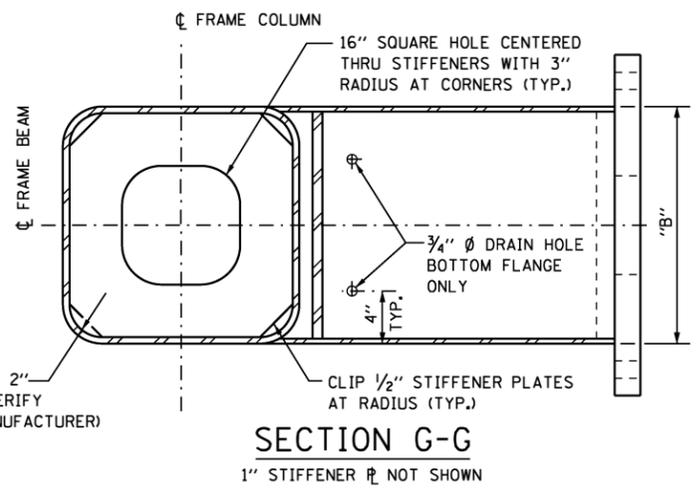


DETAIL B
BASE PLATE SHOWN (SPLICE PLATE SIM.)

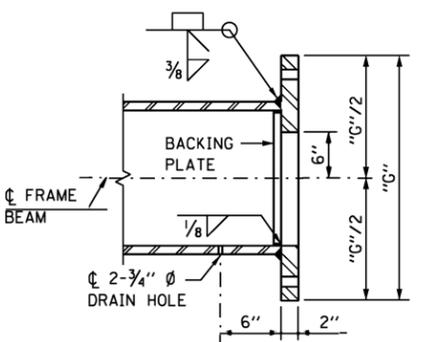
SECTION E-E



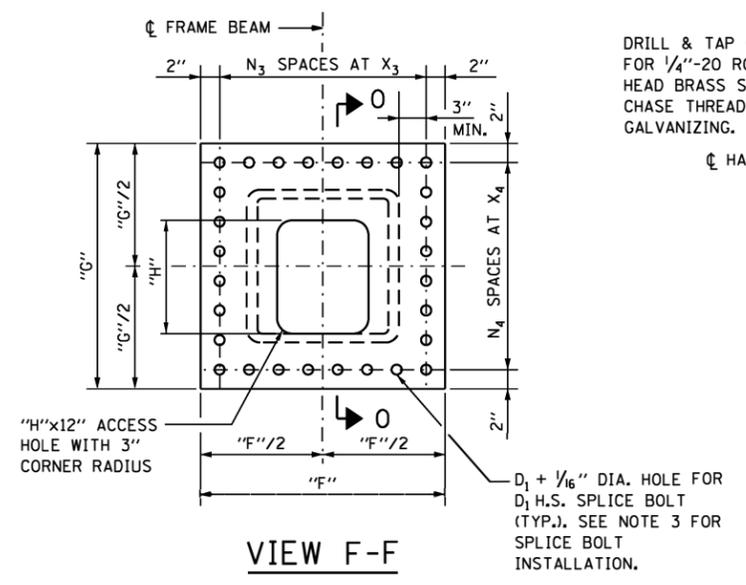
VIEW D-D
HANDHOLE DETAIL



SECTION G-G
1" STIFFENER PLATE NOT SHOWN



SECTION O-O
SPLICE PLATE DETAIL



VIEW F-F

NOTE TO DESIGNER:
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VERIFY HANDHOLE AND INSPECTION HOLES PLACEMENT ON MEDIAN FRAME COLUMN WITH ILLINOIS TOLLWAY ITS.

SPLICE PLATE TABLE

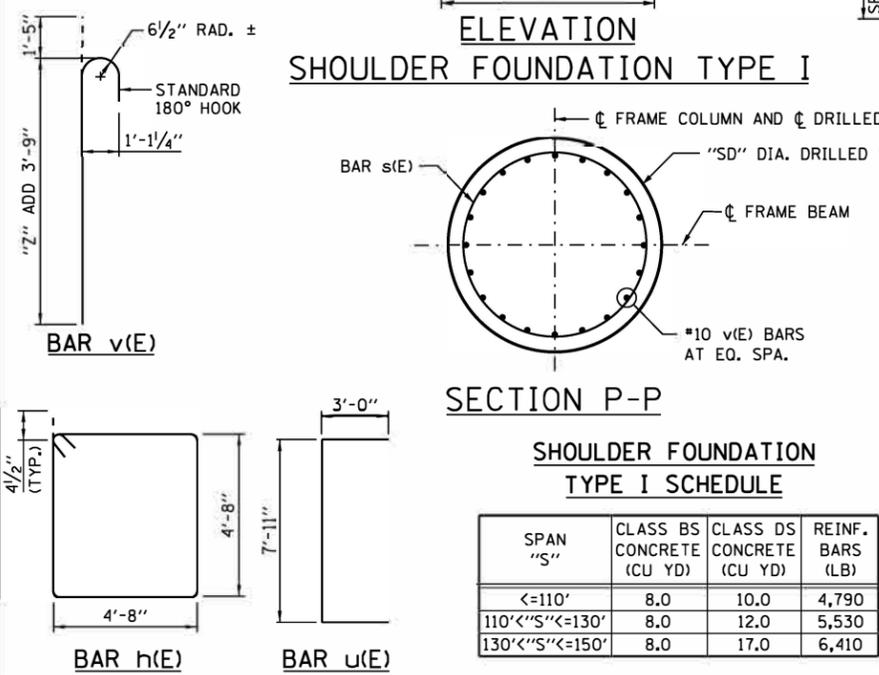
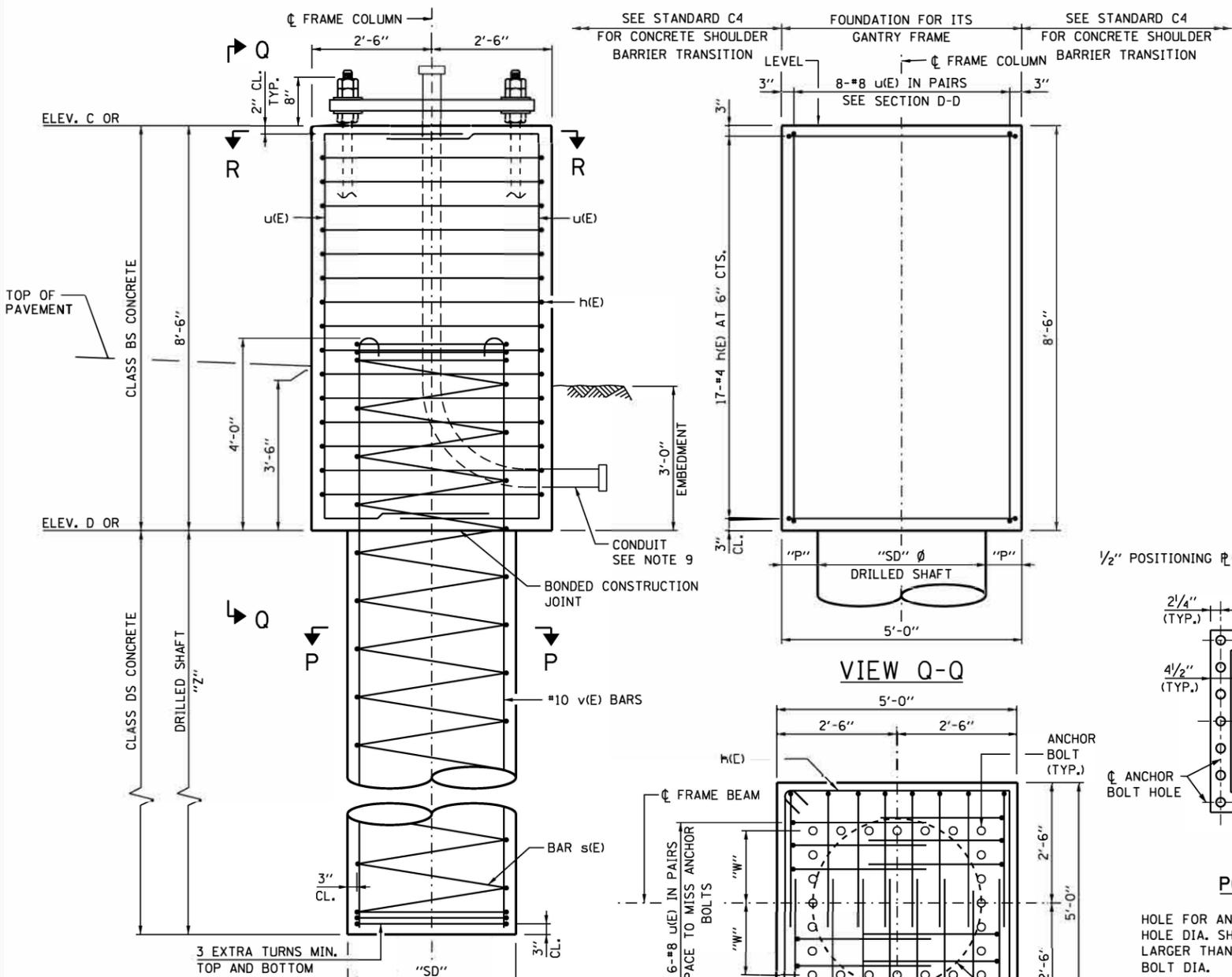
SPAN "S"	"F"	"G"	"H"	"J"	N ₃	X ₃	N ₄	X ₄	SPLICE BOLT DIAMETER (D ₁)	NO. SPLICE BOLT
<=110'	3'-1"	2'-8 1/2"	1'-6"	2 1/4"	6	5 1/2"	6	4 3/4"	1"	24
110'<"S"<=130'	3'-0 1/2"	2'-10"	1'-6"	2 1/4"	5	6 1/2"	5	6"	1 1/4"	20
130'<"S"<=150'	3'-4"	3'-4"	1'-9"	2 3/8"	6	6"	6	6"	1 1/4"	24

BASE DRAWING M-OHS-729
SHEET 3 OF 8



**OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
SINGLE SPAN
STRUCTURE DETAILS**

DATE
2-13-2020



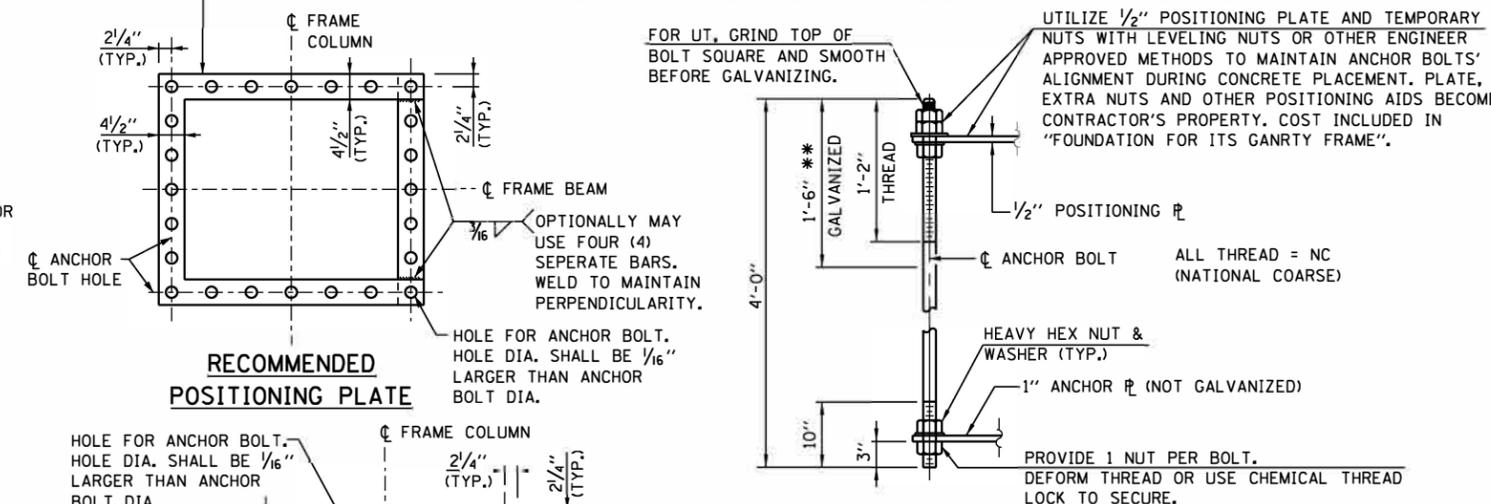
SHOULDER FOUNDATION TYPE I SCHEDULE

SPAN "S"	CLASS BS CONCRETE (CU YD)	CLASS DS CONCRETE (CU YD)	REINF. BARS (LB)
<=110'	8.0	10.0	4,790
110'<"S"<=130'	8.0	12.0	5,530
130'<"S"<=150'	8.0	17.0	6,410

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- NOTES:**
1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
 2. ALL MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS FOR THE FOUNDATIONS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
 3. CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
 4. BACKFILL SHALL BE PLACED PER SECTION 502 OF THE IDOT STANDARD SPECIFICATION AND PRIOR TO ERECTION OF GANTRY FRAME.
 5. PROVIDE NORMAL SURFACE FINISH, FOLLOWED BY PROTECTIVE COAT APPLICATION ON ALL CONCRETE SURFACES ABOVE ELEV. D. COST INCLUDED IN THE COST OF "FOUNDATION FOR ITS GANTRY FRAME".
 6. ALL REINFORCEMENT BAR DESIGNATED (E) SHALL BE EPOXY COATED. REINFORCEMENT BAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND ANCHOR BOLTS.
 7. FURNISHING AND INSTALLING ALL CONDUIT, FITTINGS AND GROUNDING SYSTEM ARE INCLUDED IN THE COST OF "FOUNDATION FOR ITS GANTRY FRAME".
 8. NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 1'-0" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING MAY NOT BE LEFT IN PLACE WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT AT NO ADDITIONAL COST.
 9. COORDINATE STAINLESS STEEL RIGID CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.

NOTE TO DESIGNER:
 DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. REMOVE THIS "NOTE TO DESIGNER" PRIOR TO INSERTION INTO THE PLAN SET.



ANCHOR BOLT DETAIL
 ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 OR ASTM F1554 GRADE 55 AND MEET CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F. GALVANIZE UPPER 18" PER AASHTO M 232. NO WELDING SHALL BE PERMITTED ON ANCHOR BOLTS.
 ** 18" IS MINIMUM TO BE GALVANIZED. ENTIRE BOLT MAY BE GALVANIZED AT CONTRACTOR'S OPTION.

REINFORCEMENT BAR SCHEDULE FOR ONE FOUNDATION

SPAN "S"	BAR	NO.	SIZE	LENGTH	SHAPE
<=110'	h(E)	17	#4	19'-5"	□
	s(E)	1	#4	31'-9"	▧
	v(E)	20	#10	33'-2"	▧
	u(E)	28	#8	13'-11"	▧
110'<"S"<=130'	h(E)	17	#4	19'-5"	□
	s(E)	1	#6	31'-9"	▧
	v(E)	20	#10	37'-2"	▧
130'<"S"<=150'	h(E)	17	#4	19'-5"	□
	s(E)	1	#6	38'-9"	▧
	v(E)	22	#10	40'-2"	▧
	u(E)	28	#8	13'-11"	▧

* THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL.

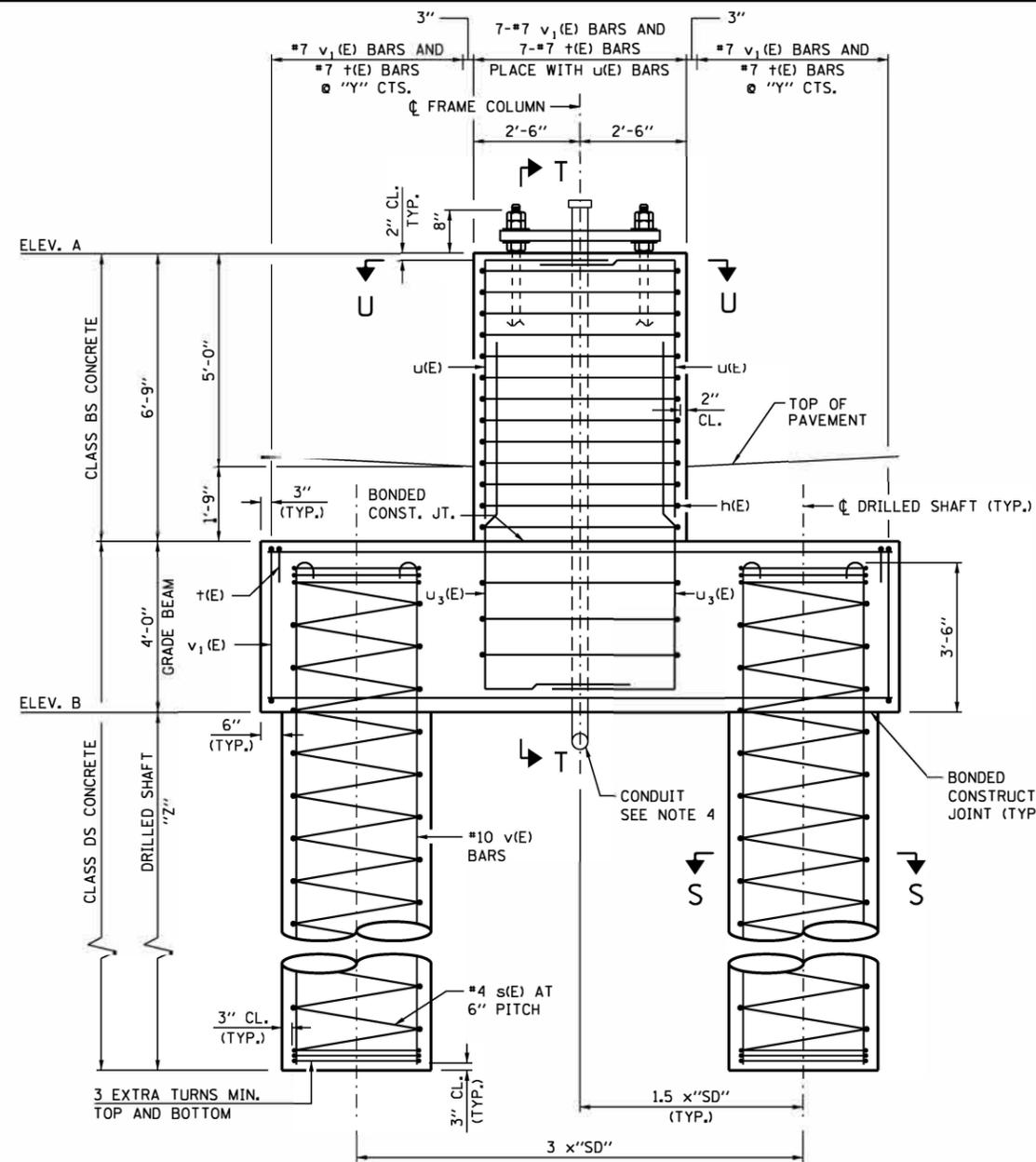
SHOULDER FOUNDATION TYPE I TABLE

SPAN "S"	"W"	"X"	"Z"	"SD"	"P"	BAR s(E) PITCH	NO. ANCHOR BOLT
<=110'	1'-5/2"	1'-4"	28'-0"	3'-6"	9"	6"	18
110'<"S"<=130'	1'-6"	1'-5/2"	32'-0"	3'-6"	9"	6"	22
130'<"S"<=150'	1'-6"	1'-6 3/4"	35'-0"	4'-0"	6"	6"	22

BASE DRAWING M-OHS-729
 SHEET 5 OF 8

OVERHEAD SIGN STRUCTURE
 ITS GANTRY FRAME (STEEL)
 SINGLE SPAN
 STRUCTURE DETAILS

DATE
 2-13-2020

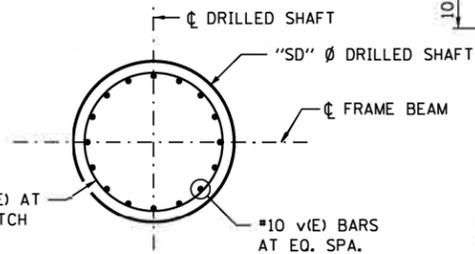


ELEVATION
MEDIAN FOUNDATION

REINFORCEMENT BAR SCHEDULE
FOR ONE FOUNDATION

MAX. SPAN "S ₁ " OR "S ₂ "	BAR	NO.	SIZE	LENGTH	SHAPE
<=110'	h ₁ (E)	6	#6	12'-8"	
	p(E)	12	#8	12'-8"	
	t(E)	23	#7	6'-2"	
	s(E)	2	#4	33'-3"	
	v(E)	32	#10	34'-8"	
	v ₁ (E)	23	#7	13'-4"	
110'<"S"<=130'	h ₁ (E)	6	#6	14'-8"	
	p(E)	12	#8	14'-8"	
	t(E)	27	#7	6'-2"	
	s(E)	2	#4	31'-3"	
	v(E)	32	#10	32'-8"	
	v ₁ (E)	27	#7	13'-4"	
130'<"S"<=150'	h ₁ (E)	6	#6	14'-8"	
	p(E)	12	#8	14'-8"	
	t(E)	31	#7	6'-2"	
	s(E)	2	#4	31'-3"	
	v(E)	40	#10	32'-8"	
	v ₁ (E)	31	#7	13'-4"	

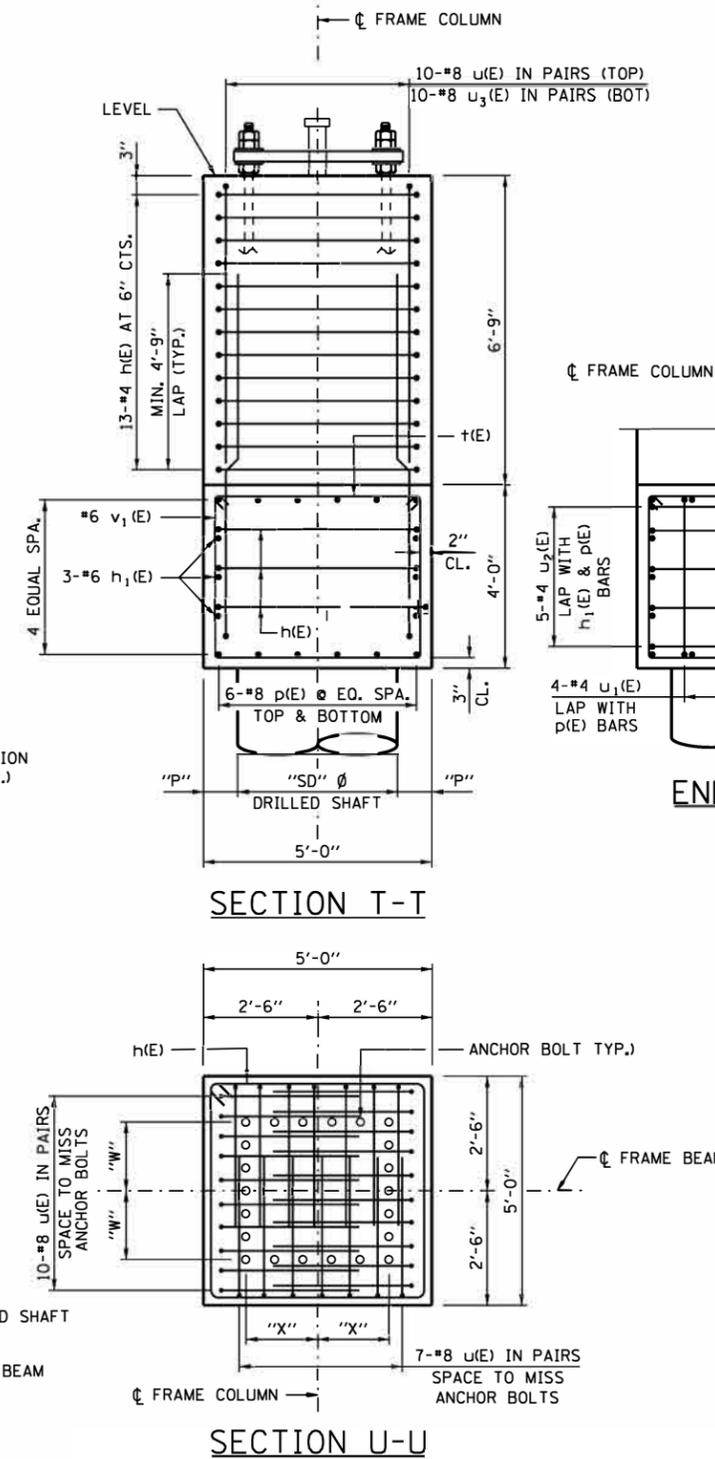
* THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL.



SECTION S-S

REINFORCEMENT BAR SCHEDULE
FOR ONE FOUNDATION

BAR	NO.	SIZE	LENGTH	SHAPE
h(E)	16	#4	19'-1"	
u(E)	34	#8	9'-7"	
u ₁ (E)	8	#4	4'-11"	
u ₂ (E)	10	#4	5'-10"	
u ₃ (E)	34	#8	11'-4"	



SECTION T-T

SECTION U-U

NOTE TO DESIGNER:

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NOTES:

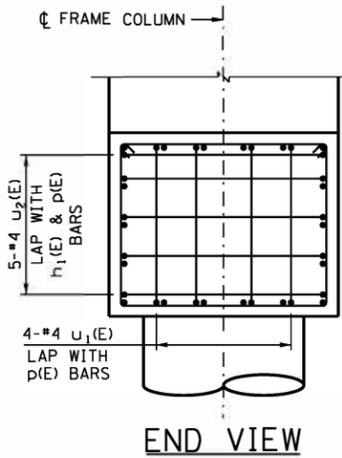
- SEE SHEET 5 OF THIS SERIES FOR FOUNDATION NOTES, DESIGN CRITERIA, ANCHOR BOLT DETAIL AND ANCHOR PLATE DETAIL.
- PROVIDE NORMAL SURFACE FINISH, FOLLOWED BY PROTECTIVE COAT APPLICATION ON ALL CONCRETE SURFACES ABOVE TOP OF GRADE BEAM. COST INCLUDED IN THE COST OF "FOUNDATION FOR ITS GANTRY FRAME".
- SEE SHEET 8 OF THIS SERIES FOR CONCRETE MEDIAN BARRIER TRANSITION. COST OF BARRIER TRANSITION INCLUDED IN COST OF "CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-F".
- COORDINATE STAINLESS STEEL RIGID CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.
- PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CONCRETE CRASHWALL.

NOTE TO DESIGNER:

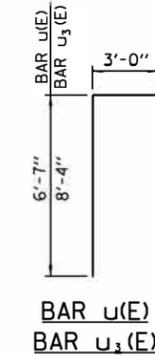
DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWING AS NECESSARY. REMOVE THIS "NOTE TO DESIGNER" PRIOR TO INSERTION INTO THE PLAN SET.

MEDIAN FOUNDATION TABLE

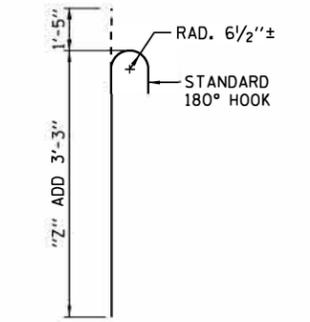
SPAN "S"	"Z"	"SD"	"P"	"W"	"X"	"Y"	NO. ANCHOR BOLT
<=110'	30'-0"	3'-0"	1'-0"	1'-5/2"	1'-4"	6"	18
110'<"S"<=130'	28'-0"	3'-6"	9"	1'-6"	1'-5/2"	6"	22
130'<"S"<=150'	28'-0"	3'-6"	9"	1'-6"	1'-6 3/4"	5"	22



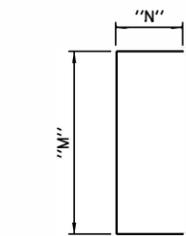
END VIEW



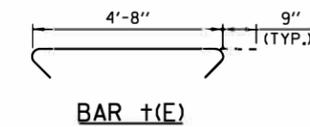
BAR u₁(E)
BAR u₂(E)



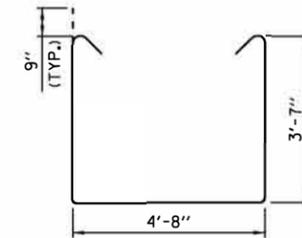
BAR v₁(E)



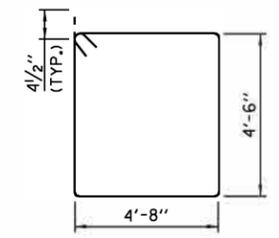
BAR u₁(E)
BAR u₂(E)



BAR t(E)



BAR v₁(E)



BAR h(E)

MEDIAN FOUNDATION SCHEDULE

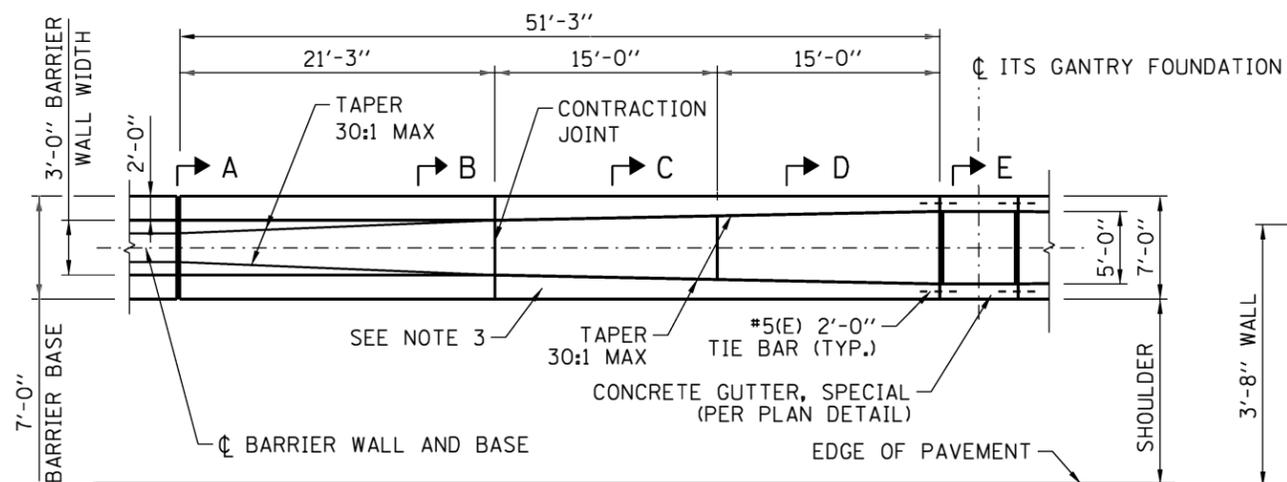
SPAN "S"	CLASS BS CONCRETE (CU YD)	CLASS DS CONCRETE (CU YD)	REINF. BARS (LB)	PROTECTIVE COAT (SQ YD)
<=110'	7.0	26.0	9,120	9
110'<"S"<=130'	7.0	32.0	9,190	9
130'<"S"<=150'	7.0	32.0	10,480	9

BASE DRAWING M-OHS-729
SHEET 7 OF 8

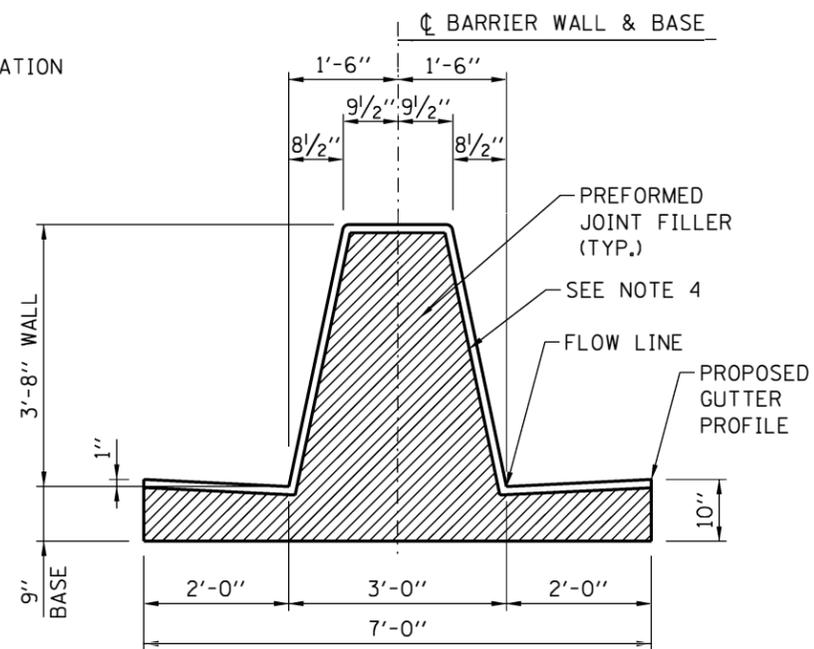


OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
SINGLE SPAN
STRUCTURE DETAILS

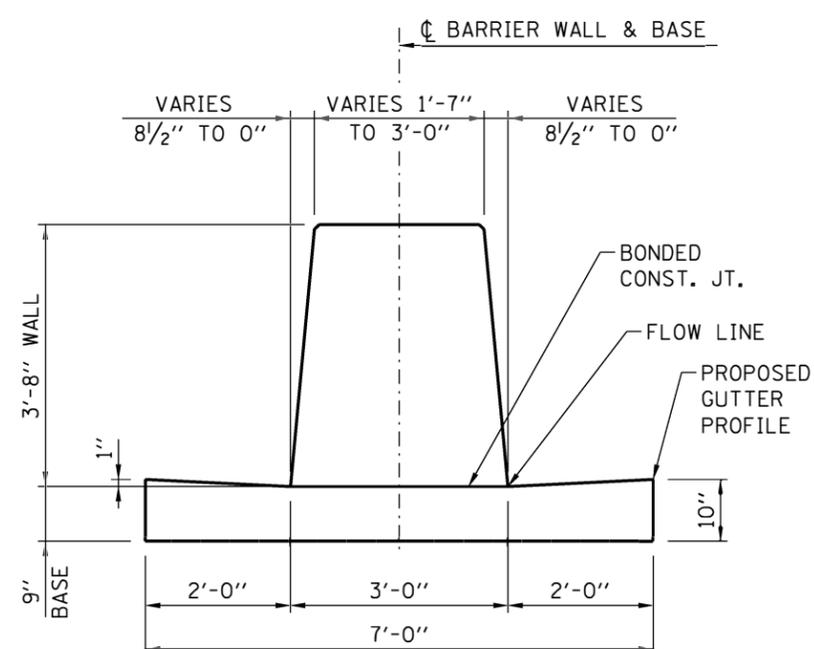
DATE
2-13-2020



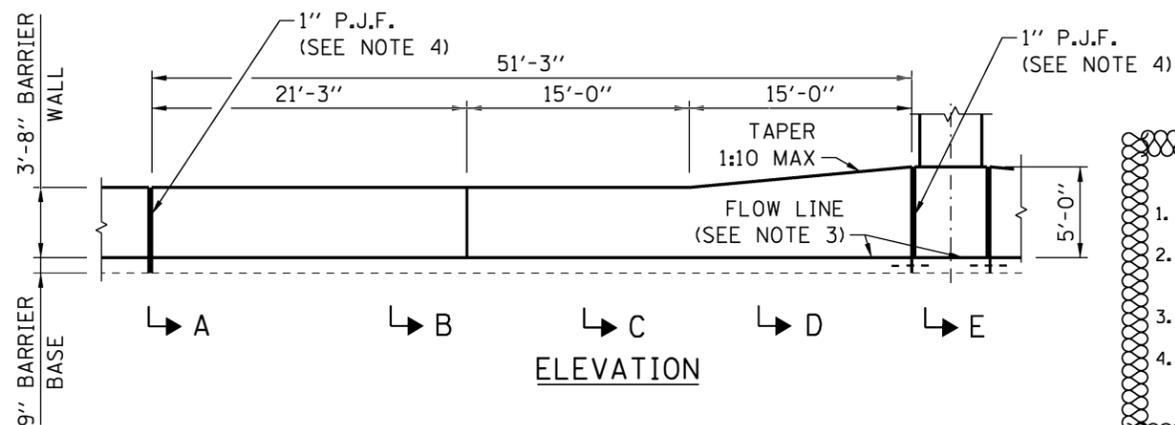
PLAN



SECTION A-A



SECTION B-B



ELEVATION

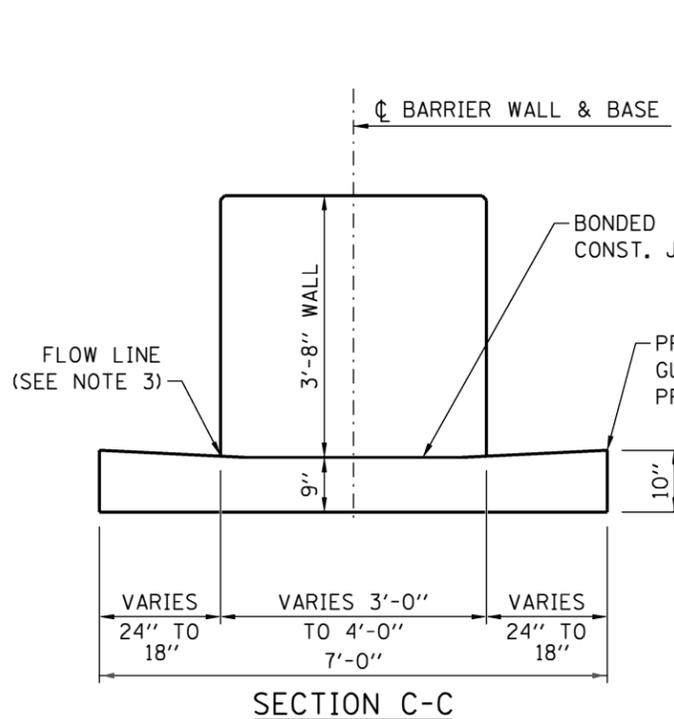
NOTE TO DESIGNER:

1. WITHIN SECTION B-B, THE GUTTER PORTION OF THE BARRIER BASE REMAINS 2'-0"; THEREFORE, STANDARD TYPE 20A F&G SHALL BE USED.
2. WITHIN SECTION C-C & D-D, THE GUTTER PORTION OF THE BARRIER BASE IS LESS THAN 2'-0"; THEREFORE, NON-ILLINOIS TOLLWAY STD. F&G SHALL BE USED.
3. WITHIN SECTION B-B & C-C, THE BARRIER HEIGHT REMAINS 44", THIS ALLOWS THE PLACEMENT OF LIGHT POLE FOUNDATIONS WITHIN THIS AREA.
4. WITHIN SECTION D-D, THE BARRIER HEIGHT IS INCREASING FROM 44" TO 60", THE LIGHT POLE FOUNDATIONS SHALL NOT BE PLACED WITHIN THIS AREA.

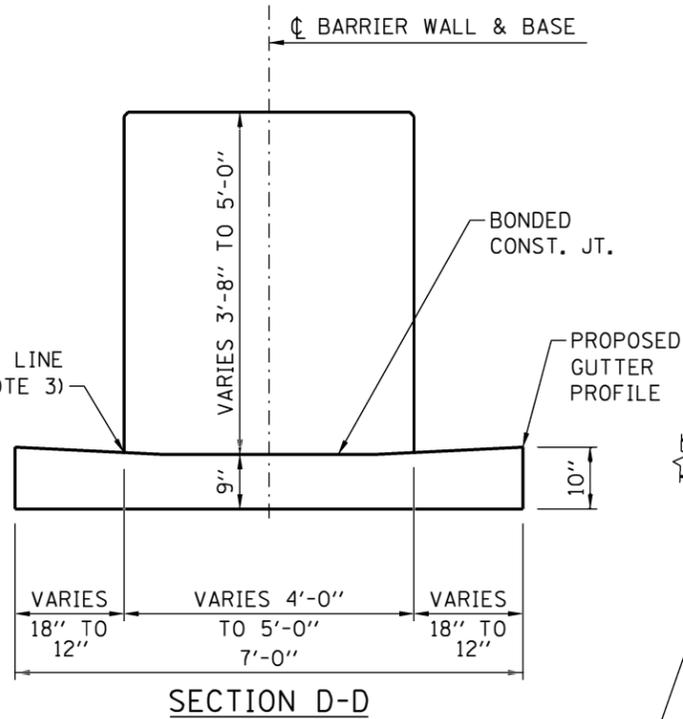
NOTES:

1. 2" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL AND IN THE CONCRETE BARRIER BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM JOINT SPACING SHALL BE 30'.
2. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE BY SAWING.
3. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.
4. PROVIDE NON-STAINING GRAY ONE COMPONENT NON-SAG ELASTOMETRIC GUN GRADE POLYURETHANE SEALANT WITH BACKER ROD.

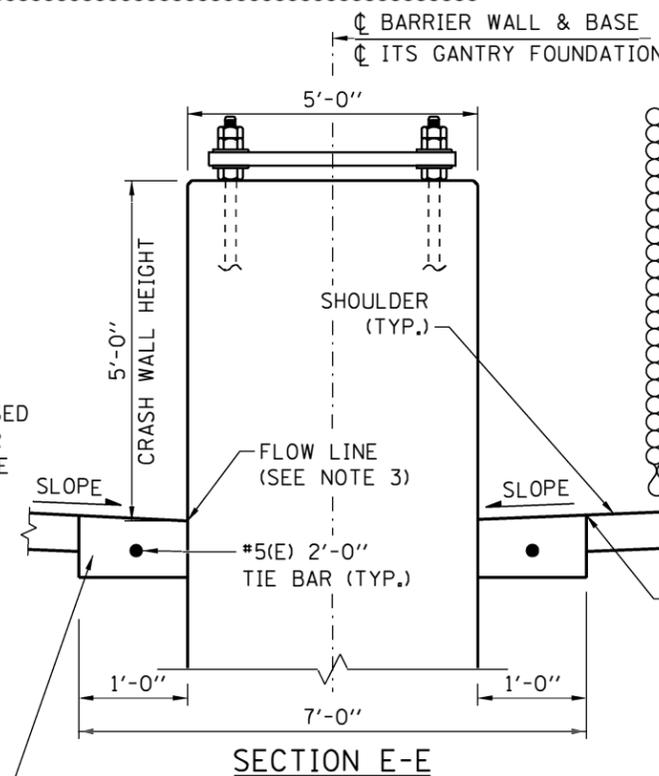
CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT ITS GANTRY



SECTION C-C



SECTION D-D



SECTION E-E

NOTE TO DESIGNER:

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DSE TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWING AS NECESSARY.

BASE DRAWING M-OHS-729
SHEET 8 OF 8



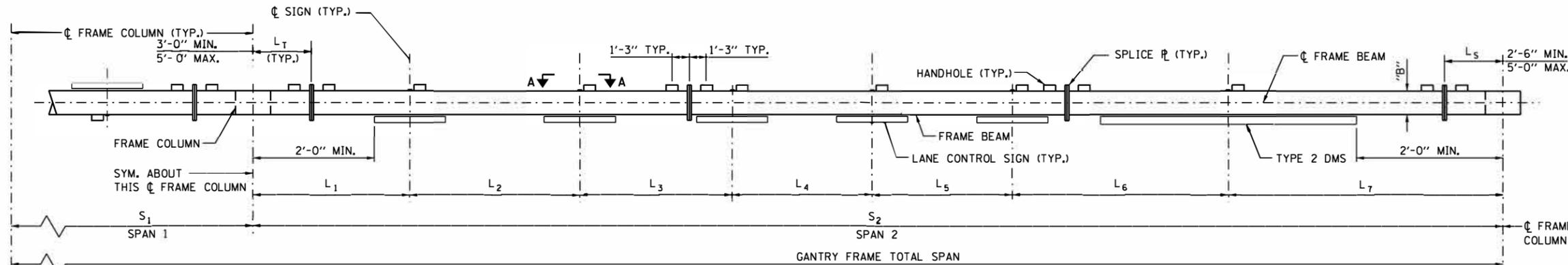
OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
SINGLE SPAN
STRUCTURE DETAILS

DATE
2-13-2020

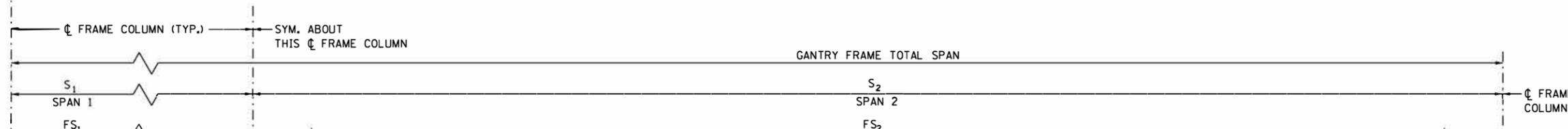
CONC. GUTTER, SPECIAL,
(PER PLAN DETAIL)

MATERIAL SPECIFICATIONS FOR STRUCTURAL STEEL AND FASTENERS

ELEMENT OF STRUCTURE	SPECIFICATION	F _y (KSI)	F _u (KSI)
STRUCTURAL STEEL TUBE FRAME (HSS)	ASTM A618 GRADE III	50	62
STRUCTURAL STEEL TUBE MOUNTING BEAMS (HSS)	ASTM A500 GRADE B	46	58
STEEL SHAPES	ASTM A709 GRADE 50	50	65
STEEL PLATES	ASTM A572 GR. 50 OR ASTM A709 GR. 50	50	65
STEEL BOLTS	ASTM 325 TYPE 1	--	105
SIGN BRACKET RODS	ASTM A307	--	60
LOCK NUTS	ASTM A194 GR. 8F OR ASTM A194 GR. 2H	--	--
NUTS	ASTM A563 GRADE DH	--	--
STEEL WASHERS	ASTM F436	--	--
STAINLESS STEEL WASHERS	ASTM A240, TYPE 302	--	--
ANCHOR BOLTS	AASHTO M 314 OR ASTM F1554	55	75



PLAN



ELEVATION
LOOKING UPSTATION

SEE DETAIL A ON SHEET 3 OF THIS SERIES (TYP.) (OPPOSITE SIDE SHOWN)

CAMBER TABLE

SPAN "S ₁ " OR "S ₂ "	CAMBER
<=110'	3/4"
110'<"S"<=130'	4/2"
130'<"S"<=150'	5"

NOTES:

- SEE SHEET 2 OF THIS SERIES FOR VIEW A-A AND DESIGN SUMMARY TABLE.
- CAMBER IS PROVIDED AT MIDSPAN OF EACH SPAN OF STRUCTURE.
- PRIOR TO FABRICATING GANTRY FRAME, THE CONTRACTOR SHALL VERIFY LOCATIONS OF LANE CONTROL SIGNS AND TYPE 2 DMS WITH ENGINEER. (DIMENSIONS L₁ THROUGH L₇)
- FRAME SPAN SHALL BE IN THE CONFIGURATION SHOWN WITH 3 COLUMNS AND 6 FIELD SECTIONS.
- PRIOR TO FABRICATING GANTRY FRAME, THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF EACH FOUNDATION, ANCHOR BOLTS AND DETAILS AFFECTING GANTRY FRAME FABRICATION AND CONSTRUCTION. NOTIFY THE ENGINEER OF ANY VARIATIONS FROM CONTRACT PLANS AND MAKE NECESSARY APPROVED ADJUSTMENTS. SUCH VARIATIONS DO NOT CONSTITUTE ADDITIONAL COMPENSATION FOR CHANGE IN SCOPE OF WORK. CONTRACTOR WILL BE PAID FOR THE ACTUAL QUANTITY FURNISHED AT THE UNIT PRICE BID FOR THE WORK.
- WHEN REQUIRED FOR ADJUSTMENT, A MAX. OF TWO 1/4" SHIM PLATES SHALL BE PROVIDED AT EACH FIELD SPLICE LOCATION IN BETWEEN SPLICE PLATES.

NOTE TO DESIGNER:

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PROVIDE APPROPRIATE PROTECTION FOR SHOULDER FOUNDATION.

USE SHOULDER FOUNDATION WITH SAFETY SHAPE WHEN FOUNDATION IS PLACED ADJACENT TO ROADWAY. USE SHOULDER FOUNDATION WITH VERTICAL FACE WHEN FOUNDATION IS PLACED OUTSIDE CLEAR ZONE OR BEHIND GUARDRAIL.

PROVIDE SITE GROUNDING ELECTRODE SYSTEM DETAIL ACCORDING TO THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 734.

REFERENCE BASE SHEET M-ITS-1101.

PAY ITEM FOR ITS GANTRY FRAME SHALL BE BASED ON THE LONGER SPAN LENGTH. DIFFERENCE BETWEEN ELEV. A AND ELEV. C (OR ELEV. E) SHALL NOT EXCEED 5'-0".

TOTAL BILL OF MATERIAL

PAY ITEM	ITEM	UNIT	TOTAL
	FOUNDATION FOR ITS GANTRY FRAME	CU YD	
	ITS GANTRY FRAME (STEEL), SPANS LESS THAN OR EQUAL TO 110'	FOOT	
	ITS GANTRY FRAME (STEEL), SPANS GREATER THAN 110' AND LESS THAN OR EQUAL TO 130'	FOOT	
	ITS GANTRY FRAME (STEEL), SPANS GREATER THAN 130' AND LESS THAN OR EQUAL TO 150'	FOOT	
	JUNCTION BOX, STAINLESS STEEL, ATTACHED TO STRUCTURE, 12"x12"x6"	EACH	
	REINFORCEMENT BARS, EPOXY COATED	POUND	
	PROTECTIVE COAT	SQ YD	

STRUCTURAL STEEL TUBE (HSS) FRAME TABLE

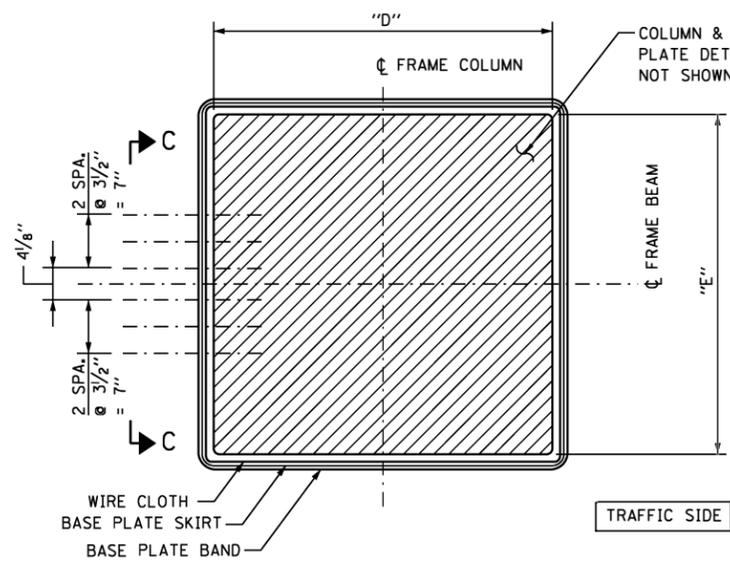
MAX. SPAN "S ₁ " OR "S ₂ "	FRAME COLUMN	FRAME BEAM	"A"	"B"	"C"
<=110'	HSS 28x24x0.625	HSS 28x24x0.500	2'-0"	2'-4"	2'-0"
110'<"S"<=130'	HSS 28x28x0.625	HSS 28x24x0.625	2'-4"	2'-4"	2'-0"
130'<"S"<=150'	HSS 30x30x0.625	HSS 30x30x0.625	2'-6"	2'-6"	2'-6"

BASE DRAWING M-OHS-730
SHEET 1 OF 9



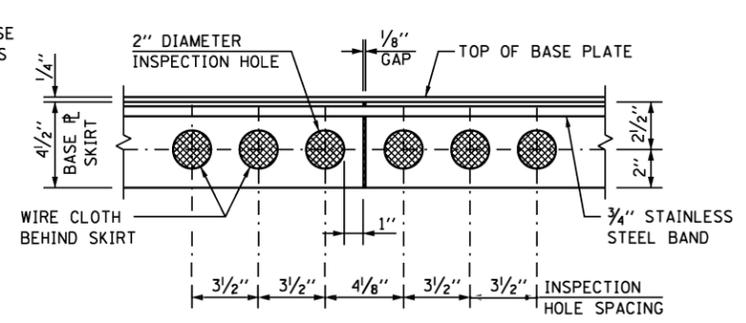
OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
TWO-SPAN
STRUCTURE DETAILS

DATE
2-13-2020



COLUMN BASE PLATE PLAN

SEE NOTE 5

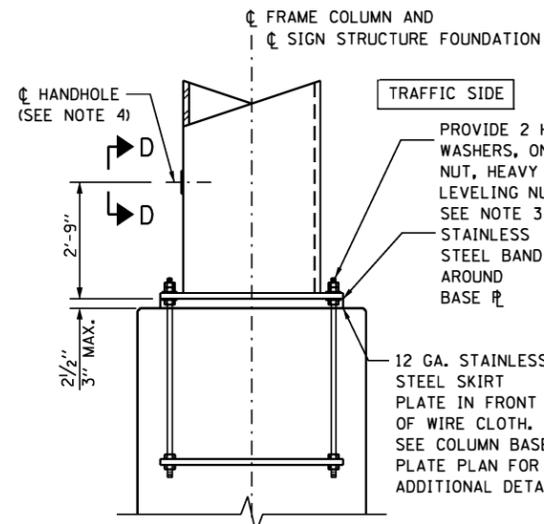


VIEW C-C (BASE PLATE SKIRT)

NOTE TO DESIGNER:
VERIFY HANDHOLE AND INSPECTION HOLES PLACEMENT ON MEDIAN FRAME COLUMN WITH ILLINOIS TOLLWAY ITS.

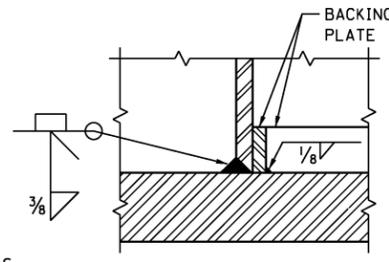
NOTE:

1. SEE SHEET 1 OF THIS SERIES FOR DIMENSIONS "A", "B" AND "C".
2. SEE SHEET 2 OF THIS SERIES FOR DIMENSIONS "D" AND "E".
3. INSTALLATION AND INSPECTION OF SPLICE BOLTS AND ANCHOR BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".
4. SHOULDER FOUNDATION SHOWN. VERIFY HANDHOLE AND INSPECTION HOLES PLACEMENT ON MEDIAN FRAME COLUMN WITH THE ENGINEER.



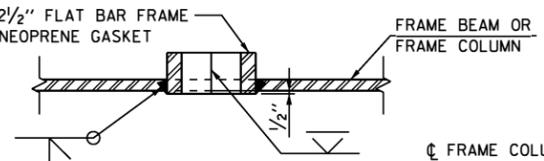
COLUMN BASE

REINFORCING NOT SHOWN

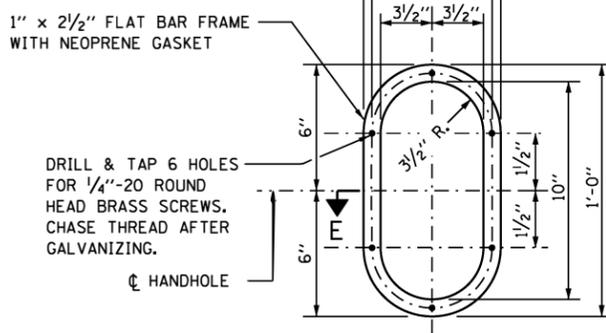


DETAIL B

BASE PLATE SHOWN (SPLICE PLATE SIM.)



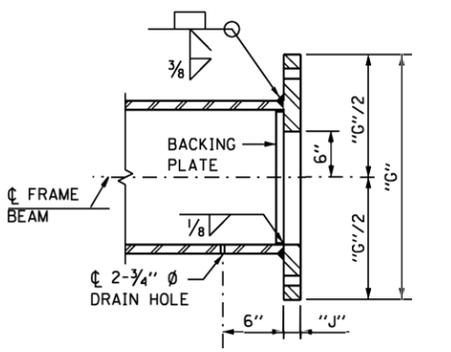
SECTION E-E



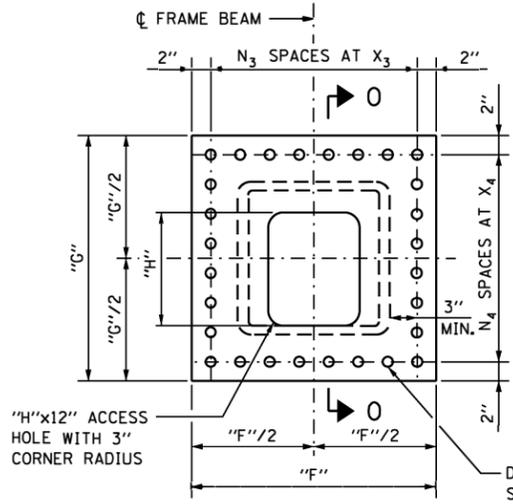
**VIEW D-D
HANDHOLE DETAIL**

SPLICE PLATE TABLE

MAX. SPAN "S ₁ " OR "S ₂ "	"F"	"G"	"H"	"J"	N ₃	X ₃	N ₄	X ₄	SPLICE BOLT DIAMETER (D ₁)	NO. SPLICE BOLT
<=110'	3'-1"	2'-8 1/2"	1'-6"	2 1/4"	6	5 1/2"	6	4 3/4"	1"	24
110' <"S" <=130'	3'-0 1/2"	2'-10"	1'-6"	2 1/4"	5	6 1/2"	5	6"	1 1/4"	20
130' <"S" <=150'	3'-4"	3'-4"	1'-9"	2 3/8"	6	6"	6	6"	1 1/4"	24

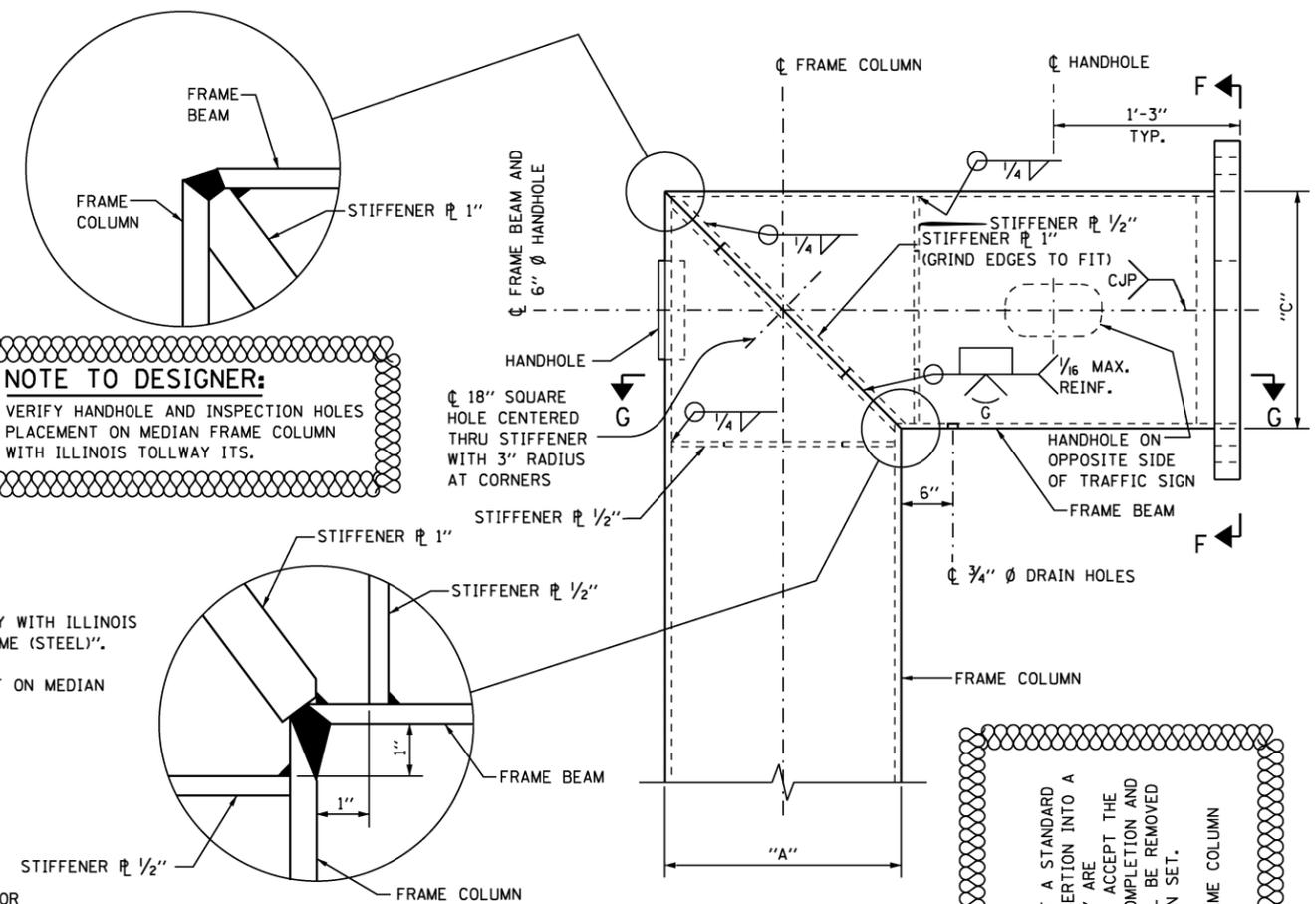


**SECTION O-O
SPLICE PLATE DETAIL**

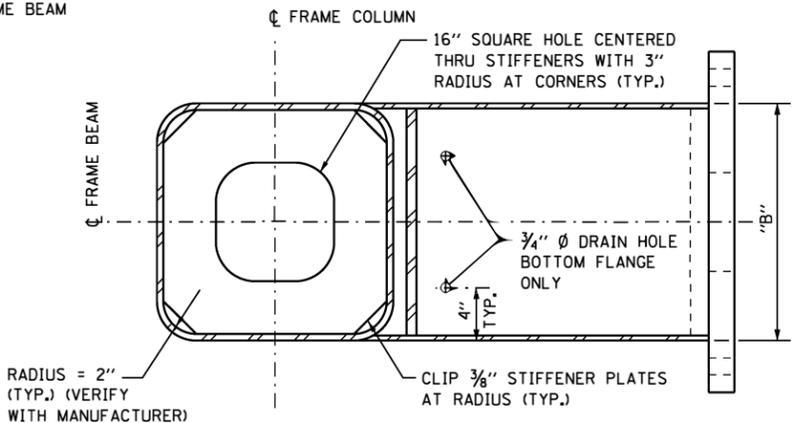


SECTION F-F

D₁ + 1/16" DIA. HOLE FOR D₁ H.S. SPLICE BOLT (TYP.). SEE NOTE 3 FOR SPLICE BOLT INSTALLATION.



DETAIL A



SECTION G-G

1" STIFFENER PLATE NOT SHOWN

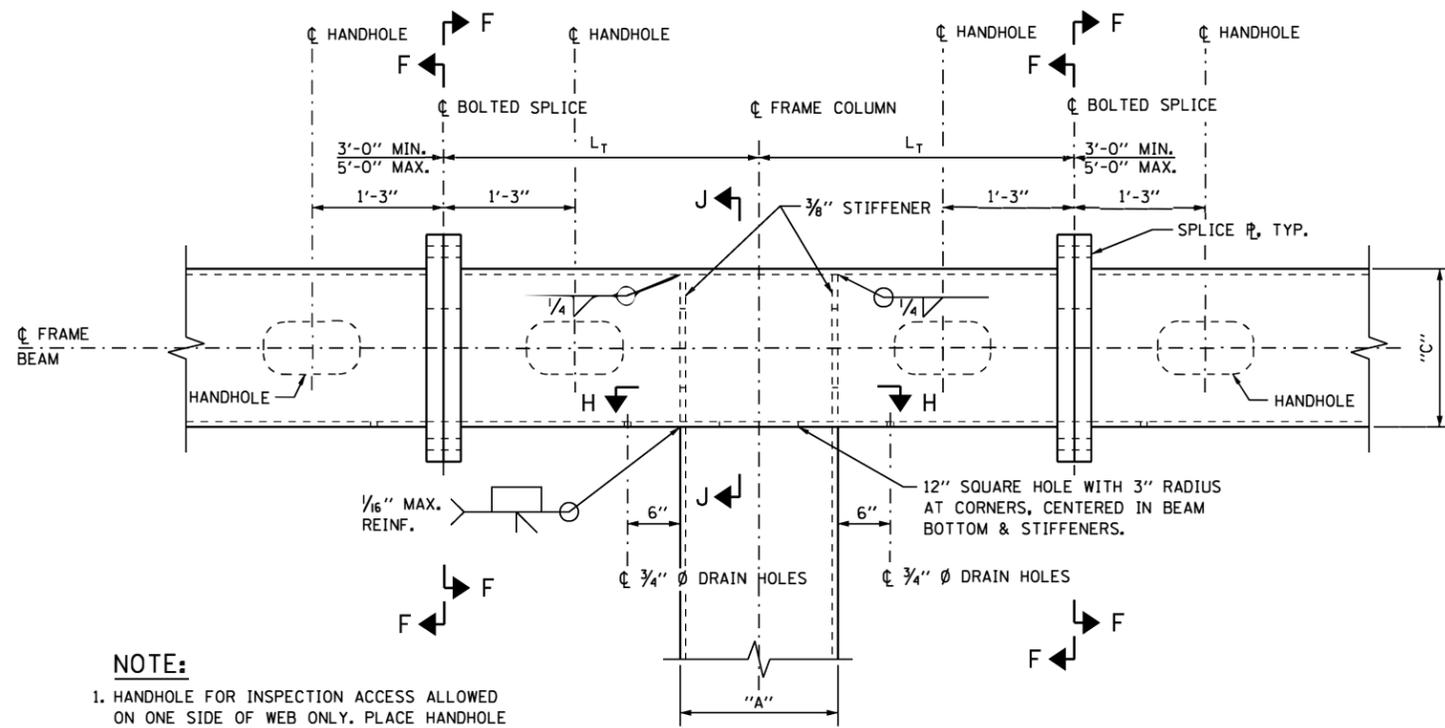
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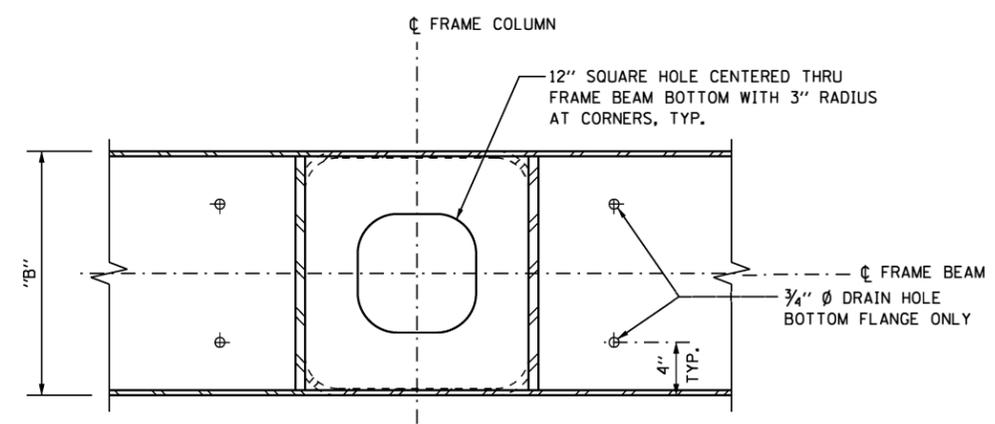
OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
TWO-SPAN
STRUCTURE DETAILS

DATE
2-13-2020

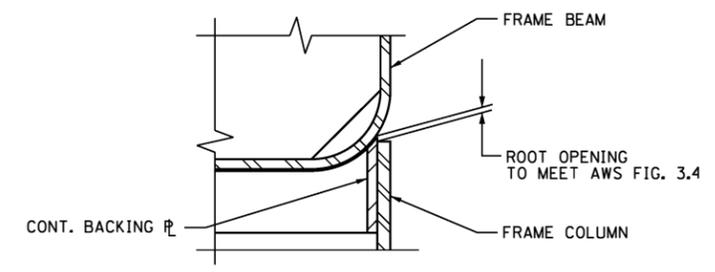


- NOTE:**
- HANDHOLE FOR INSPECTION ACCESS ALLOWED ON ONE SIDE OF WEB ONLY. PLACE HANDHOLE ON SAME SIDE AS OTHER HANDHOLES.
 - SEE SHEET 1 OF THIS SERIES FOR DIMENSIONS "A", "B" AND "C".
 - SEE SHEET 3 OF THIS SERIES FOR SECTION F-F.

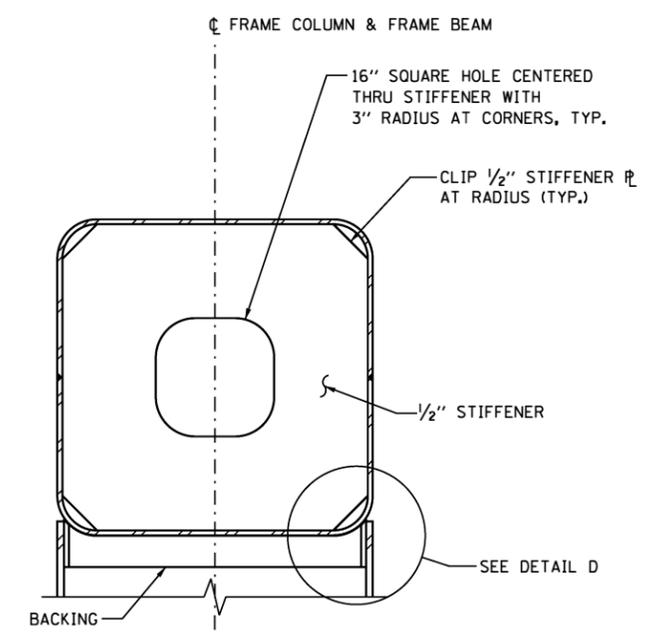
DETAIL C



SECTION H-H



DETAIL D



SECTION J-J

AWS FIG. 3.6 MAY BE USED AT THE FABRICATOR'S OPTION.

WELDING SHALL NOT BEGIN UNTIL THE ENGINEER HAS INSPECTED AND APPROVED FIT-UP OF THE JOINT.

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BASE DRAWING M-OHS-730
SHEET 4 OF 9



OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
TWO-SPAN
STRUCTURE DETAILS

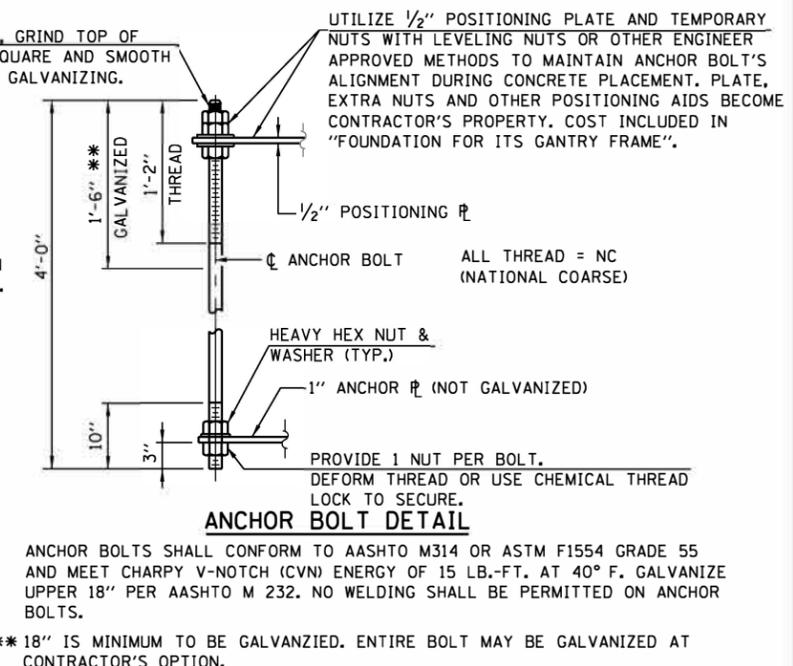
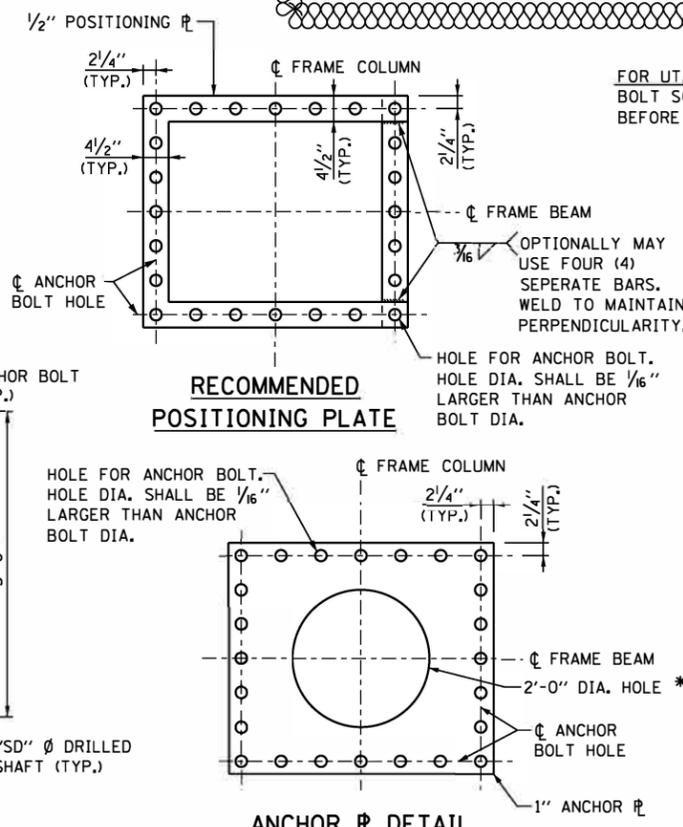
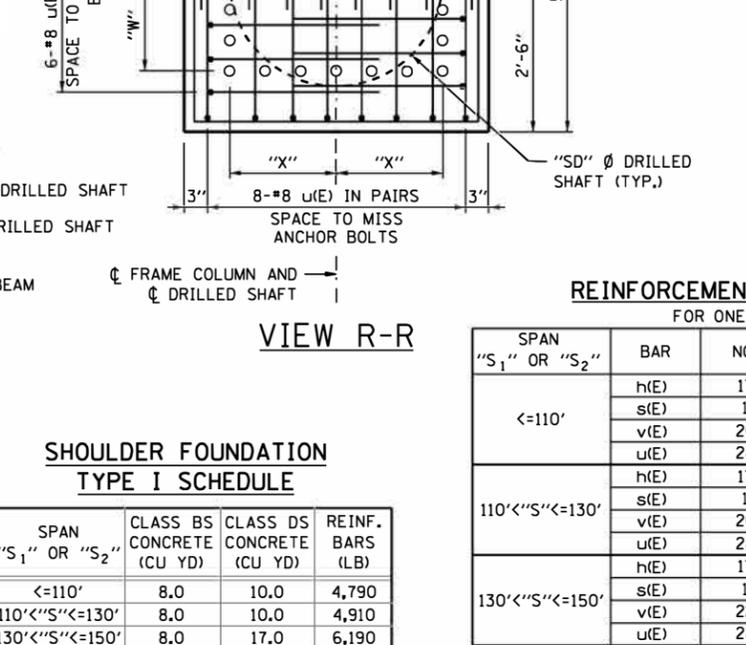
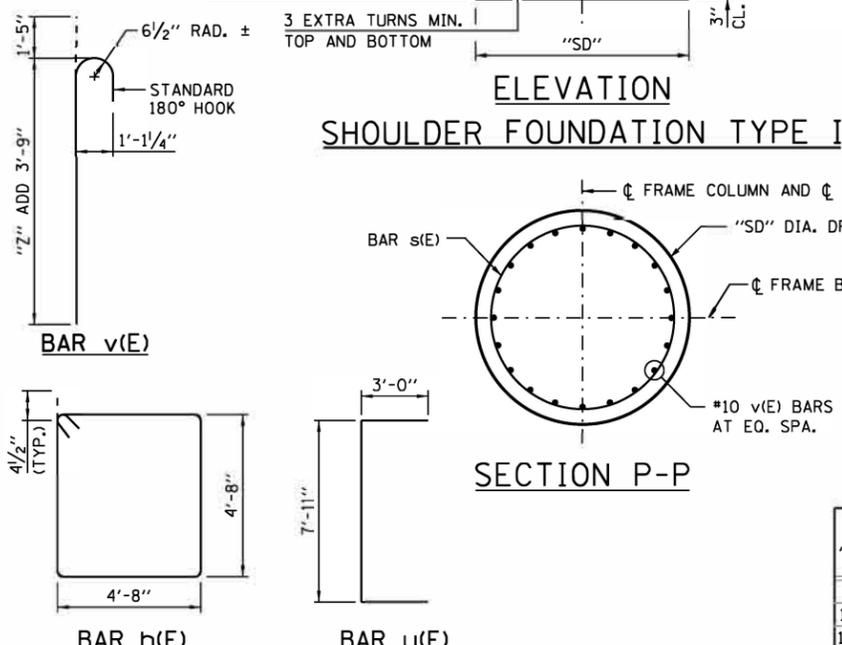
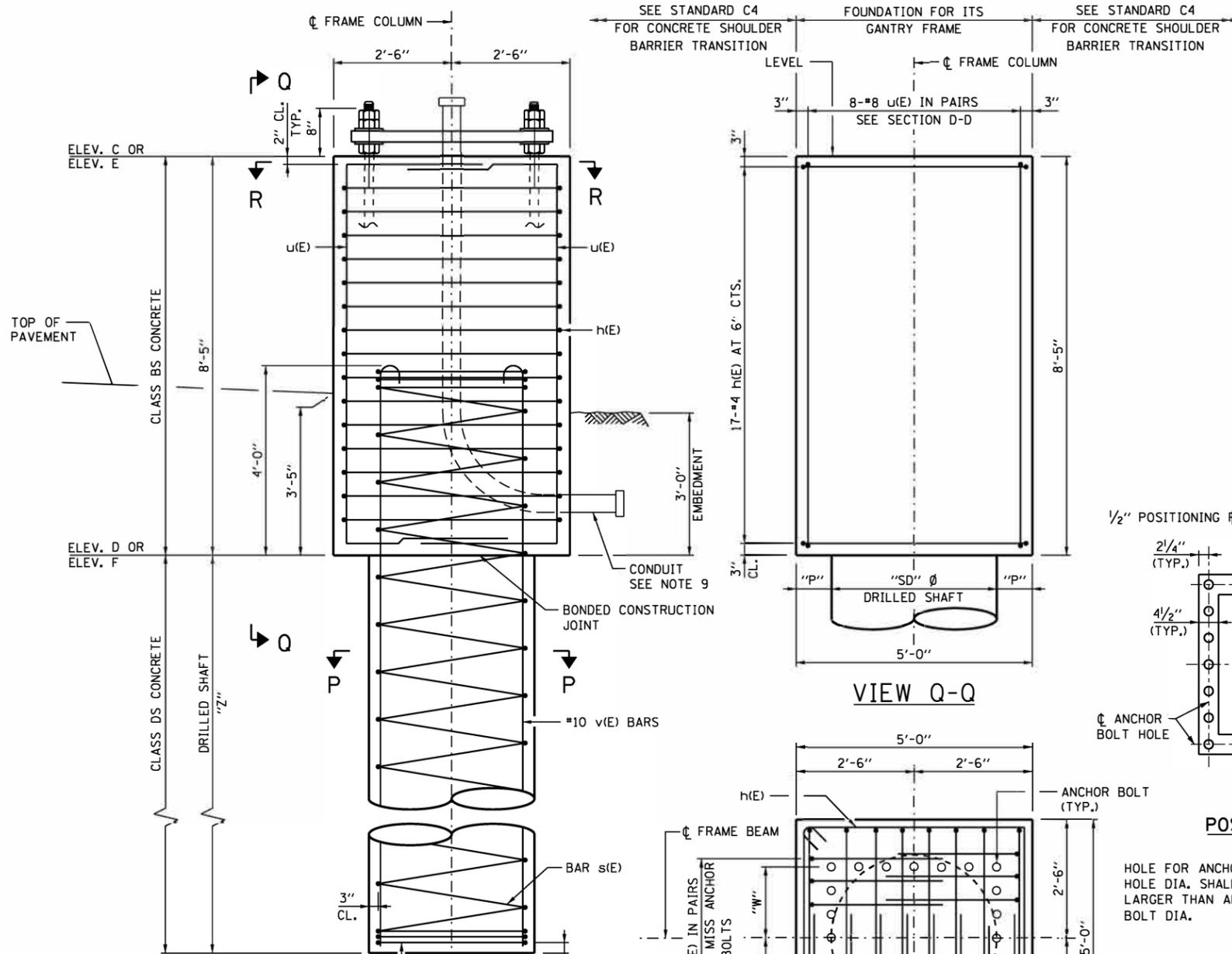
DATE
2-13-2020

NOTES:

1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
2. ALL MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS FOR THE FOUNDATIONS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
3. CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
4. BACKFILL SHALL BE PLACED PER SECTION 502 OF THE IDOT STANDARD SPECIFICATION AND PRIOR TO ERECTION OF GANTRY FRAME.
5. PROVIDE NORMAL SURFACE FINISH, FOLLOWED BY PROTECTIVE COAT APPLICATION ON ALL CONCRETE SURFACES ABOVE ELEV. D (OR ELEV. F), COST INCLUDED IN THE COST OF "FOUNDATION FOR ITS GANTRY FRAME".
6. ALL REINFORCEMENT BAR DESIGNATED (E) SHALL BE EPOXY COATED. REINFORCEMENT BAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND ANCHOR BOLTS.
7. FURNISHING AND INSTALLING ALL CONDUIT, FITTINGS AND GROUNDING SYSTEM ARE INCLUDED IN THE COST OF "FOUNDATION FOR ITS GANTRY FRAME".
8. NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 1'-0" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING MAY NOT BE LEFT IN PLACE WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT AT NO ADDITIONAL COST.
9. COORDINATE STAINLESS STEEL RIGID CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.

NOTE TO DESIGNER:

DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWING AS NECESSARY. REMOVE THIS "NOTE TO DESIGNER" PRIOR TO INSERTION INTO THE PLAN SET.



SHOULDER FOUNDATION TYPE I TABLE

SPAN "S ₁ " OR "S ₂ "	"W"	"X"	"Z"	"SD"	"P"	BAR s(E) PITCH	NO. ANCHOR BOLT
<=110'	1'-5 1/2"	1'-4"	28'-0"	3'-6"	9"	6"	18
110'<"S"<=130'	1'-6"	1'-5 1/2"	28'-0"	3'-6"	9"	5"	22
130'<"S"<=150'	1'-6"	1'-6 3/4"	35'-0"	4'-0"	6"	5"	22

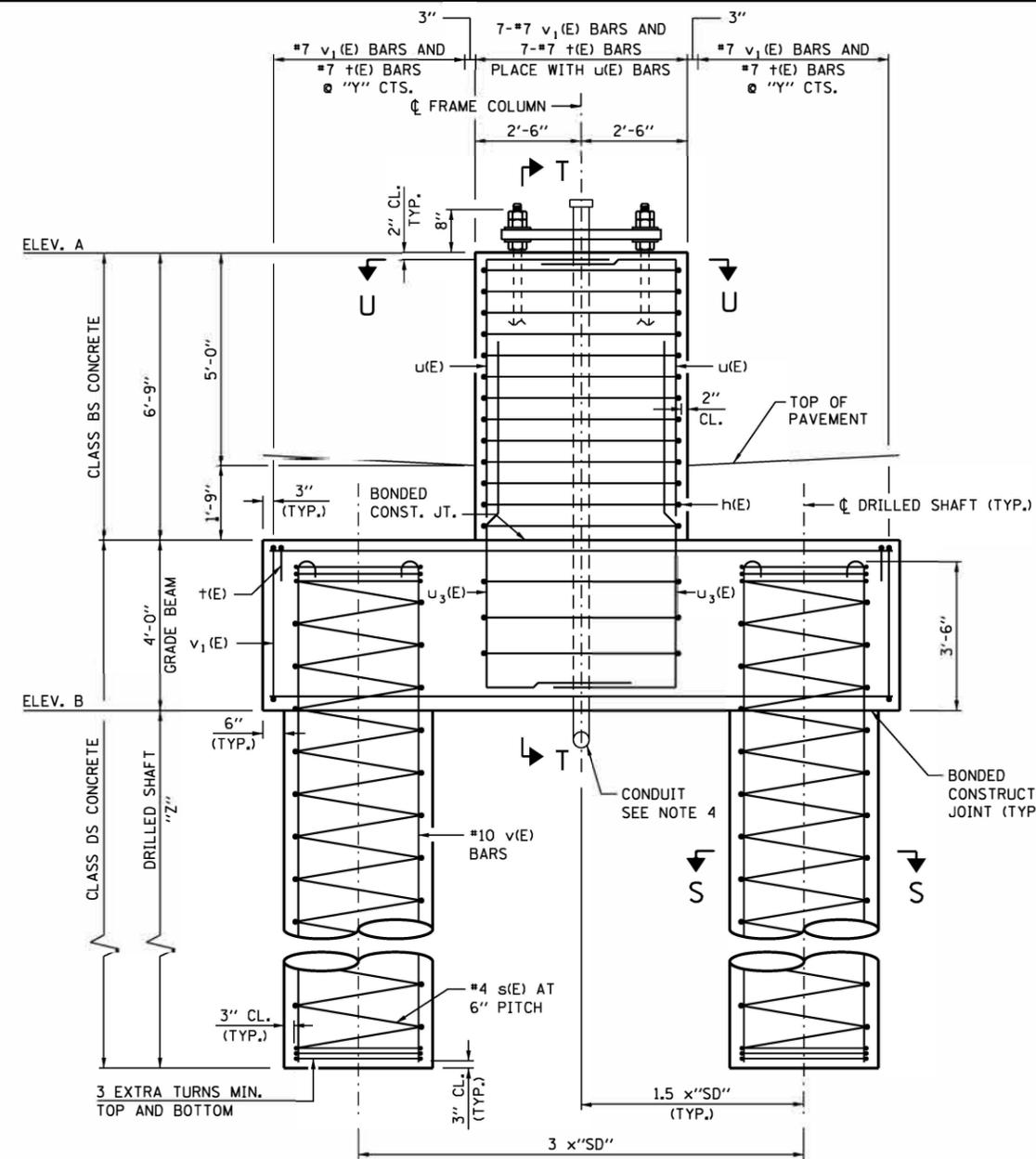
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BASE DRAWING M-OHS-730
 SHEET 6 OF 9

OVERHEAD SIGN STRUCTURE
 ITS GANTRY FRAME (STEEL)
 TWO-SPAN
 STRUCTURE DETAILS

DATE
 2-13-2020

* THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL.

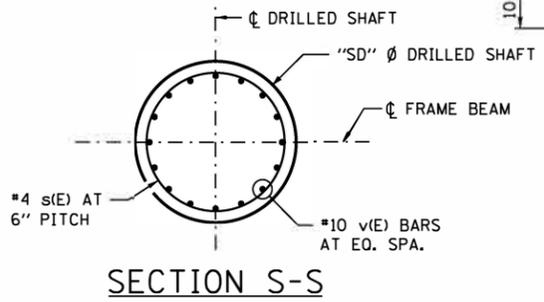


ELEVATION
MEDIAN FOUNDATION

REINFORCEMENT BAR SCHEDULE
FOR ONE FOUNDATION

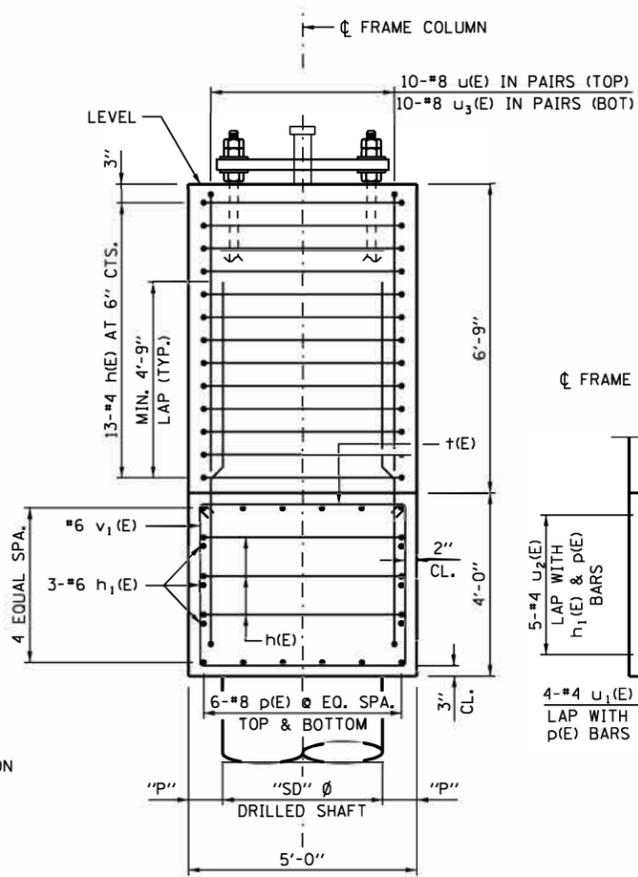
MAX. SPAN "S ₁ " OR "S ₂ "	BAR	NO.	SIZE	LENGTH	SHAPE
"S" <= 110'	h ₁ (E)	6	#6	12'-8"	
	p(E)	12	#8	12'-8"	
	t(E)	23	#7	6'-2"	
	s(E)	2	#4	33'-3"	
	v(E)	32	#10	34'-8"	
	v ₁ (E)	23	#7	13'-4"	
110' < "S" <= 130'	h ₁ (E)	6	#6	14'-8"	
	p(E)	12	#8	14'-8"	
	t(E)	27	#7	6'-2"	
	s(E)	2	#4	31'-3"	
	v(E)	32	#10	32'-8"	
	v ₁ (E)	27	#7	13'-4"	
130' < "S" <= 150'	h ₁ (E)	6	#6	14'-8"	
	p(E)	12	#8	14'-8"	
	t(E)	31	#7	6'-2"	
	s(E)	2	#4	31'-3"	
	v(E)	40	#10	32'-8"	
	v ₁ (E)	31	#7	13'-4"	

* THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL.

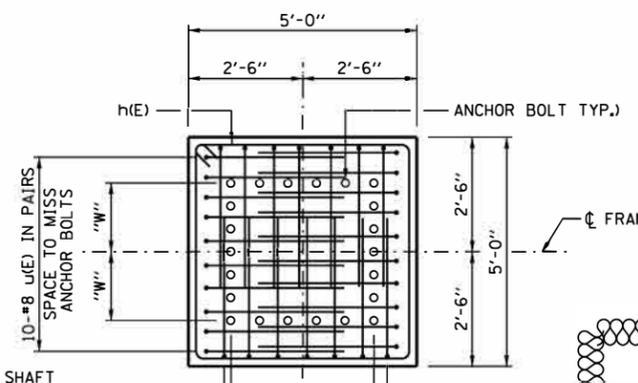


REINFORCEMENT BAR SCHEDULE
FOR ONE FOUNDATION

BAR	NO.	SIZE	LENGTH	SHAPE
h(E)	16	#4	19'-1"	□
u(E)	34	#8	9'-7"	□
u ₁ (E)	8	#4	4'-11"	□
u ₂ (E)	10	#4	5'-10"	□
u ₃ (E)	34	#8	11'-4"	□



SECTION T-T



SECTION U-U

MEDIAN FOUNDATION SCHEDULE

MAX. SPAN "S ₁ " OR "S ₂ "	CLASS BS CONCRETE (CU YD)	CLASS DS CONCRETE (CU YD)	REINF. BARS (LB)	PROTECTIVE COAT (SQ YD)
<= 110'	7.0	26.0	9,120	9
110' < "S" <= 130'	7.0	32.0	9,190	9
130' < "S" <= 150'	7.0	32.0	10,480	9

MEDIAN FOUNDATION TABLE

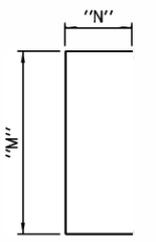
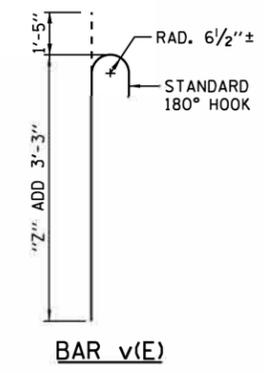
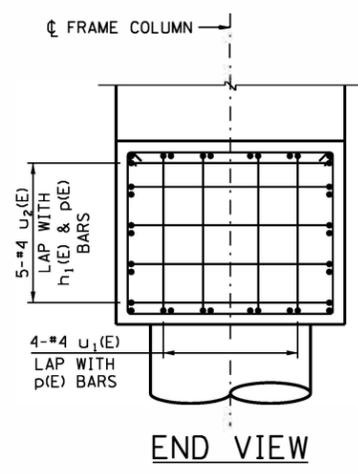
MAX. SPAN "S ₁ " OR "S ₂ "	"Z"	"SD"	"P"	"W"	"X"	"Y"	NO. ANCHOR BOLT
<= 110'	30'-0"	3'-0"	1'-0"	1'-5/2"	1'-4"	6"	18
110' < "S" <= 130'	28'-0"	3'-6"	9"	1'-6"	1'-5/2"	6"	22
130' < "S" <= 150'	28'-0"	3'-6"	9"	1'-6"	1'-6 3/4"	5"	22

NOTES:

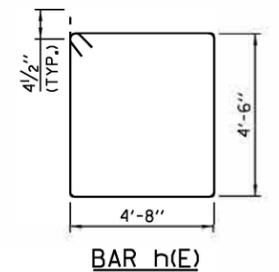
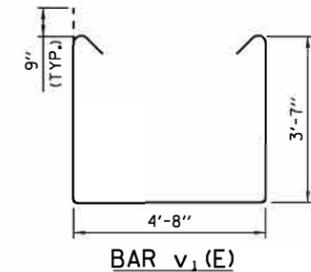
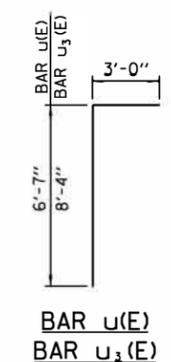
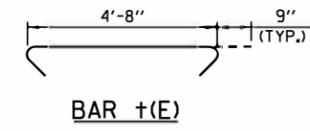
- SEE SHEET 6 OF THIS SERIES FOR FOUNDATION NOTES, DESIGN CRITERIA, ANCHOR BOLT DETAIL AND ANCHOR PLATE DETAIL.
- PROVIDE NORMAL SURFACE FINISH, FOLLOWED BY PROTECTIVE COAT APPLICATION ON ALL CONCRETE SURFACES ABOVE TOP OF GRADE BEAM. COST INCLUDED IN THE COST OF "FOUNDATION FOR ITS GANTRY FRAME".
- SEE SHEET 9 OF THIS SERIES FOR CONCRETE MEDIAN BARRIER TRANSITION. COST OF BARRIER TRANSITION INCLUDED IN COST OF "CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-F".
- COORDINATE STAINLESS STEEL RIGID CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.
- PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CONCRETE CRASHWALL.

NOTE TO DESIGNER:

DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWING AS NECESSARY. REMOVE THIS "NOTE TO DESIGNER" PRIOR TO INSERTION INTO THE PLAN SET.



BAR	"M"	"N"
u ₁ (E)	3'-7"	8"
u ₂ (E)	4'-6"	8"

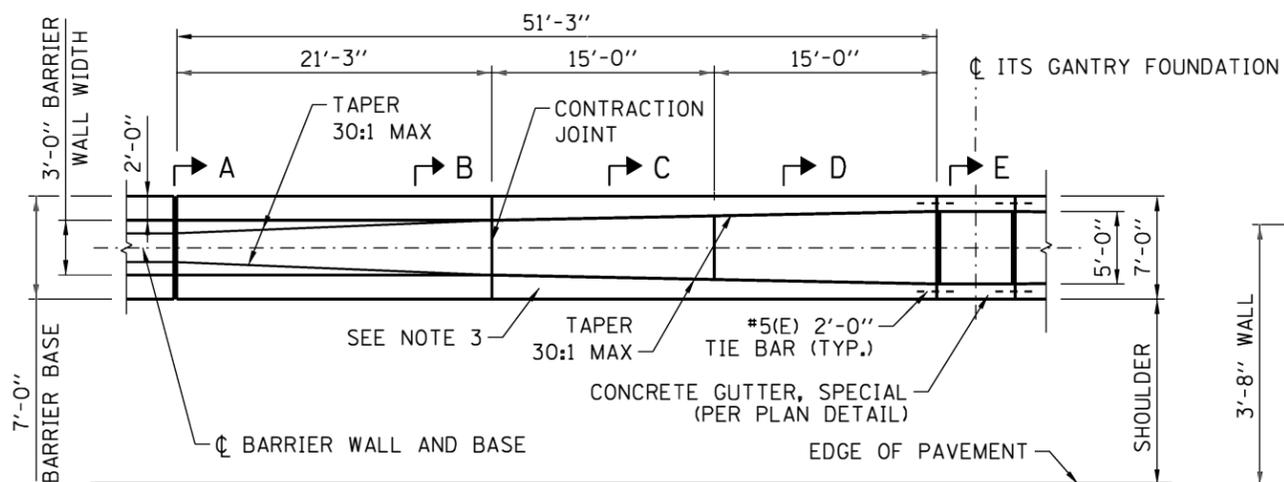


NOTE TO DESIGNER:

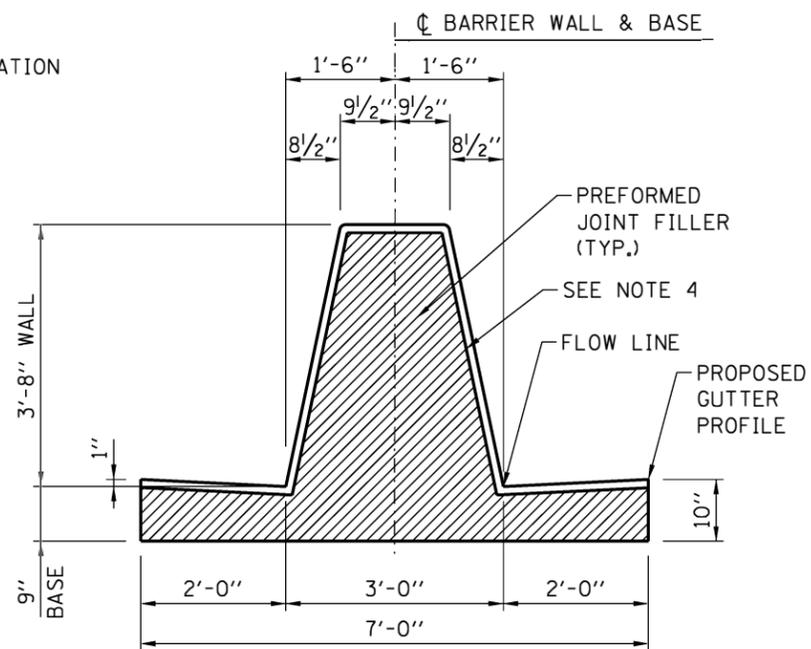
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS BASE DRAWING UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWING AS NECESSARY.

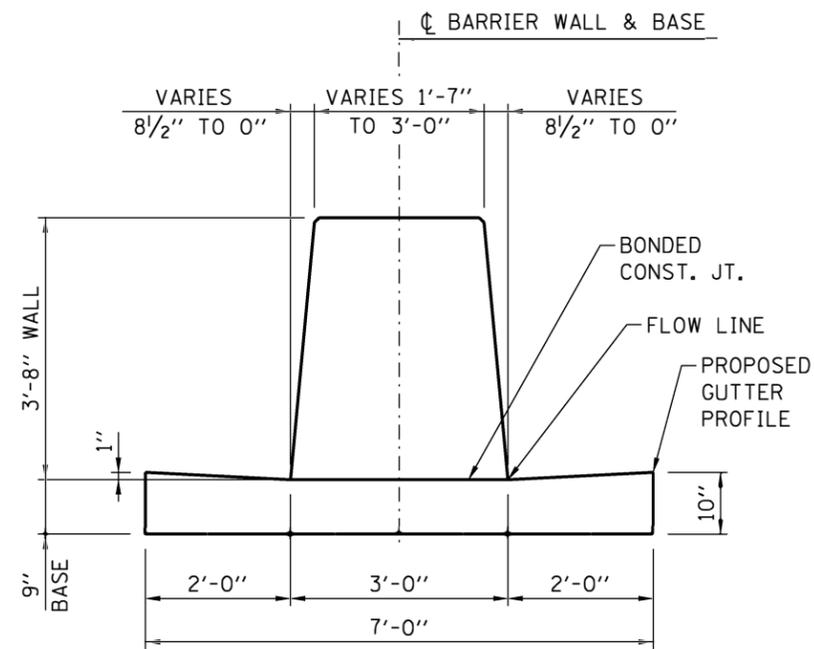




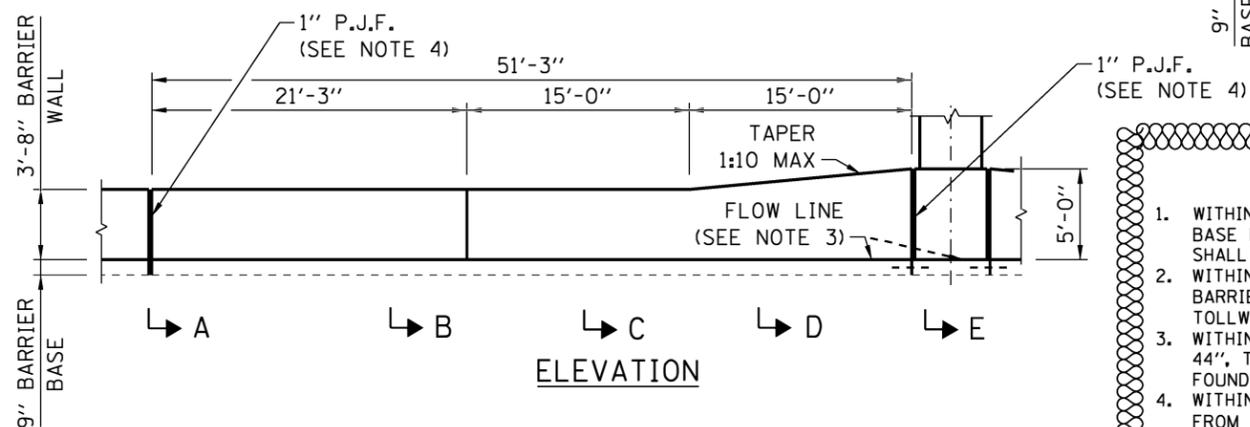
PLAN



SECTION A-A



SECTION B-B



ELEVATION

NOTE TO DESIGNER:

1. WITHIN SECTION B-B, THE GUTTER PORTION OF THE BARRIER BASE REMAINS 2'-0"; THEREFORE, STANDARD TYPE 20A F&G SHALL BE USED.
2. WITHIN SECTION C-C & D-D, THE GUTTER PORTION OF THE BARRIER BASE IS LESS THAN 2'-0"; THEREFORE, NON-ILLINOIS TOLLWAY STD. F&G SHALL BE USED.
3. WITHIN SECTION B-B & C-C, THE BARRIER HEIGHT REMAINS 44", THIS ALLOWS THE PLACEMENT OF LIGHT POLE FOUNDATIONS WITHIN THIS AREA.
4. WITHIN SECTION D-D, THE BARRIER HEIGHT IS INCREASING FROM 44" TO 60", THE LIGHT POLE FOUNDATIONS SHALL NOT BE PLACED WITHIN THIS AREA.

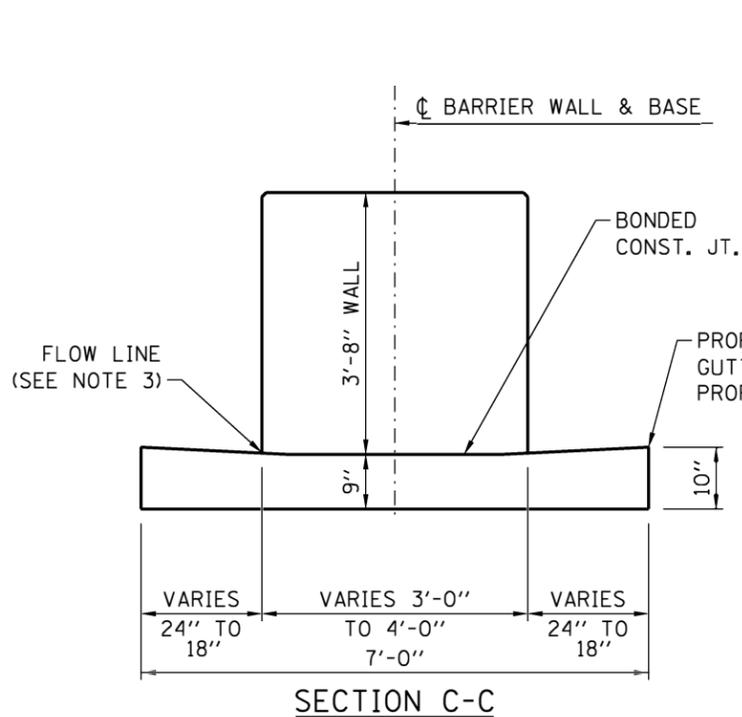
NOTE TO DESIGNER:

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS BASE DRAWING UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

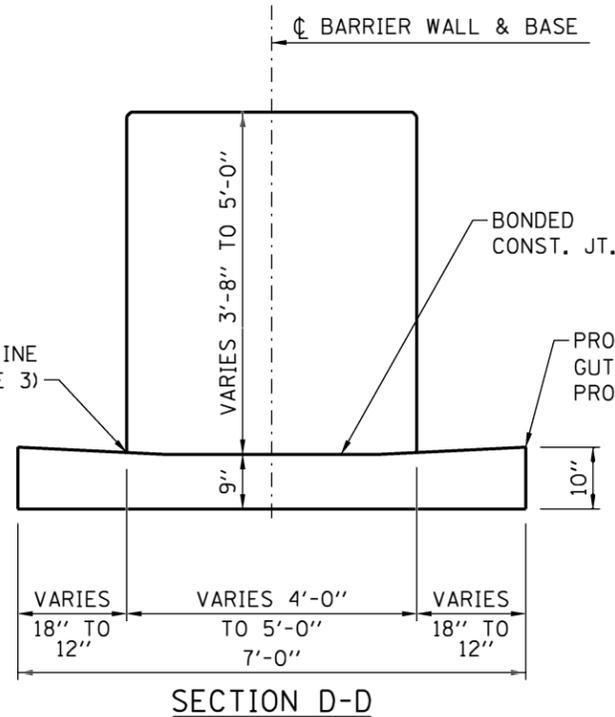
NOTES:

1. 2" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL AND IN THE CONCRETE BARRIER BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM JOINT SPACING SHALL BE 30'.
2. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE BY SAWING.
3. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.
4. PROVIDE NON-STAINING GRAY ONE COMPONENT NON-SAG ELASTOMETRIC GUN GRADE POLYURETHANE SEALANT WITH BACKER ROD.

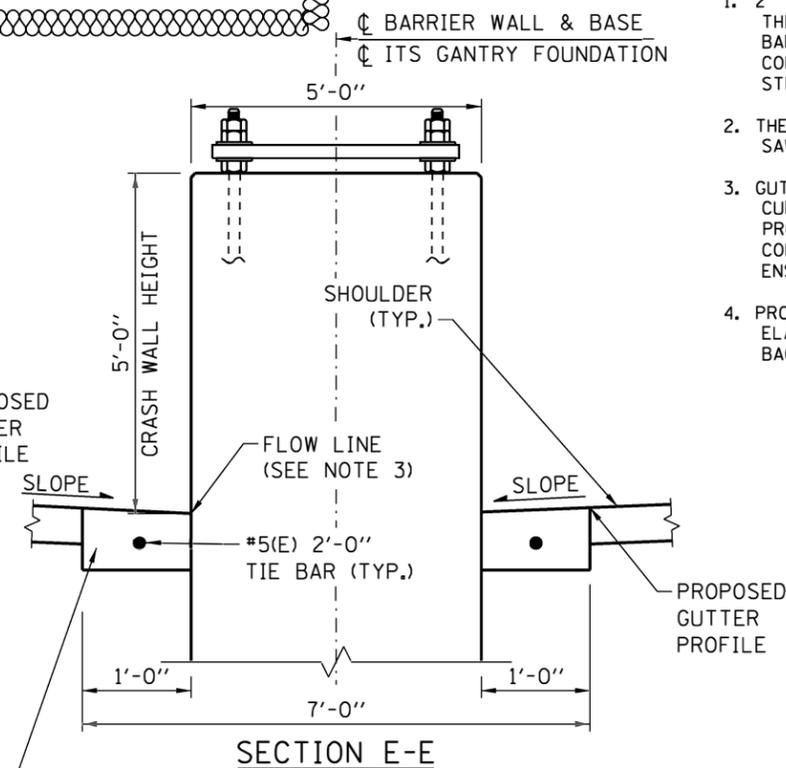
CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT ITS GANTRY



SECTION C-C



SECTION D-D



SECTION E-E

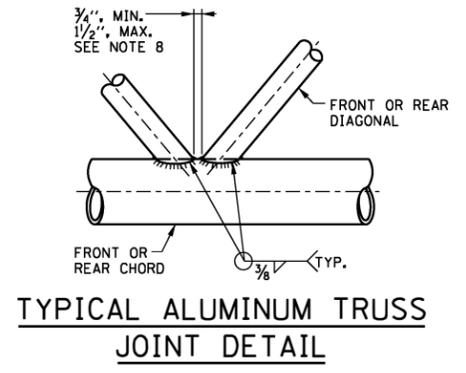
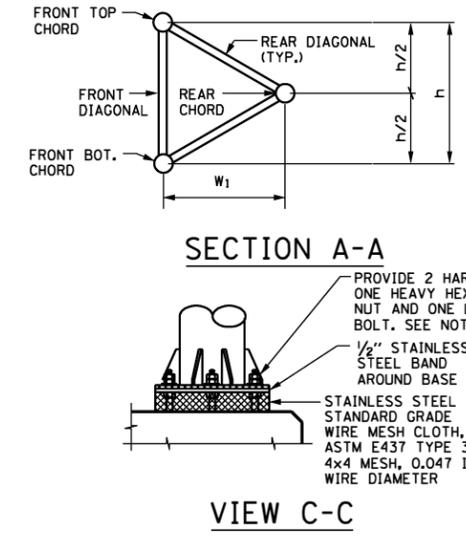
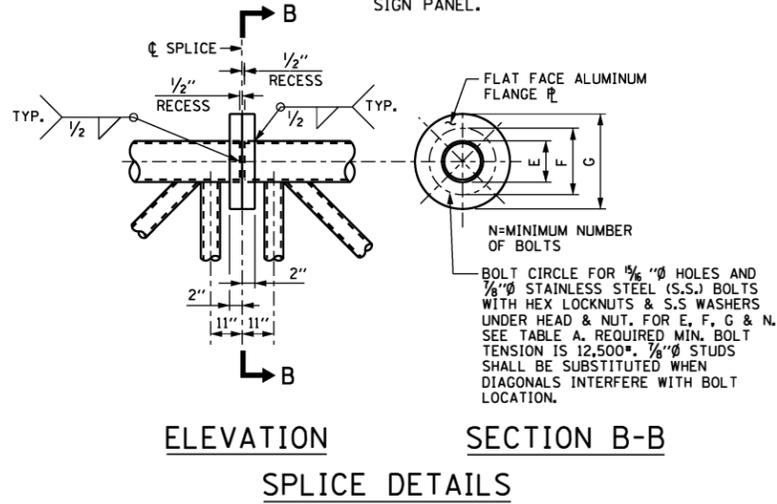
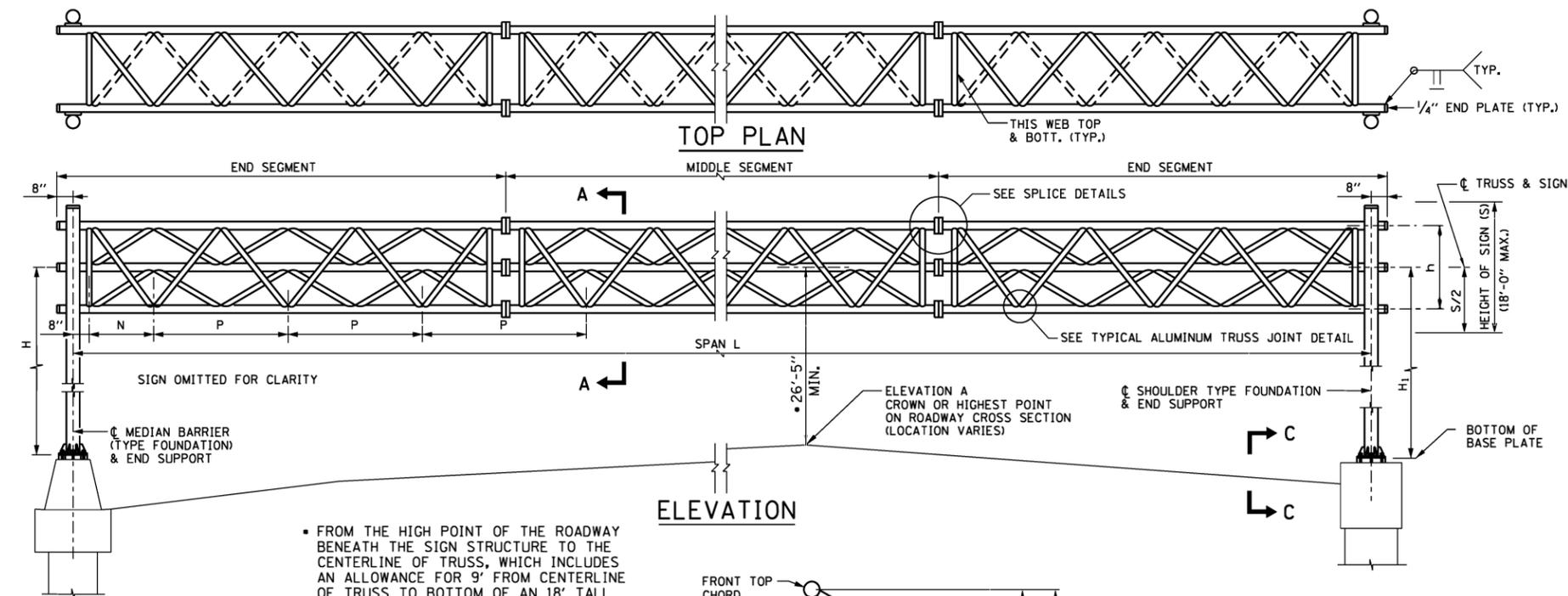
CONC. GUTTER, SPECIAL, (PER PLAN DETAIL)

BASE DRAWING M-OHS-730
SHEET 9 OF 9



OVERHEAD SIGN STRUCTURE
ITS GANTRY FRAME (STEEL)
TWO-SPAN
STRUCTURE DETAILS

DATE
2-13-2020



- GENERAL NOTES:**
- WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURES SPAN TYPE SUMMARY AND TOTAL BILL OF MATERIAL.
 - AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
 - SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN SIGN PANELS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL PERMANENT SIGNS ARE INSTALLED.
 - TRUSS SEGMENTS SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.
 - ONLY SIGN PANELS ARE PERMITTED TO BE MOUNTED ON THIS TRUSS.

- DESIGN SPECIFICATIONS:**
- 2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 6TH EDITION.

- CONSTRUCTION SPECIFICATIONS:**
- ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

- LOADING:**
- BOTH END SUPPORTS ARE DESIGNED FOR 60% OF THE TOTAL LOAD.
 - WIND LOADING SHALL BE A MINIMUM OF 35 PSF ON SIGN PANELS AND 10 PSF ON GROSS AREAS DEFINED BY THE PERIMETER OF TRUSS MEMBERS NOT COVERED BY SIGN PANEL AREAS.
 - THE AASHTO GROUP II AND III ALLOWABLE STRESS SHALL BE 133% (ALLOWABLE STRESS DESIGN).

- FABRICATION NOTES:**
- NO SPLICES SHALL BE LOCATED WITHIN 0.1xL OF THE CENTERLINE OF THE SPAN.
 - MATERIALS: ALUMINUM SHALL CONFORM TO ASTM B221, ALLOY 6061 TEMPER T6. ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53 GRADE B OR A106 GRADE B. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO AASHTO M270 GR. 36 OR GR. 50. STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304, OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE COLUMN SHALL HAVE A MINIMUM LONGITUDINAL CHARTY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F. (ZONE 2) BEFORE GALVANIZING.
 - WELDING: ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 AND D1.2 STRUCTURAL WELDING CODES (STEEL AND ALUMINUM) AND THE IDOT STANDARD SPECIFICATIONS. ALUMINUM WELD FILLER SHALL BE ALLOY 5556.
 - FASTENERS FOR ALUMINUM TRUSSES: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCK NUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193, GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCK NUTS. BOLTS AND LOCK NUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCK NUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCK NUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04 (F)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
 - U-BOLTS: U-BOLTS SHALL BE PRODUCED FROM ASTM A276 TYPE 304, 304L, 316 OR 316L, CONDITION A, COLD FINISHED STAINLESS STEEL, OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER. ALL NUTS FOR U-BOLTS SHALL BE LOCK NUTS EQUIVALENT TO ASTM A307 WITH NYLON OR STEEL INSERTS AND HOT DIP GALVANIZED PER AASHTO M232. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240, TYPE 302 OR 304, IS REQUIRED UNDER EACH U-BOLT LOCK NUT.
 - GALVANIZING: ALL STEEL GRATING, PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED.
 - SEE TABLE "SIGN STRUCTURE MEMBER SCHEDULE" FOR "W" AND "W₁".
 - DIAGONALS SHALL BE DETAILED TO MINIMIZE OFFSET FOR THEORETICAL PANEL POINT AND PROVIDE 3/4 TO 1/2 INCH CLEARANCE BETWEEN DIAGONALS AND PROVIDE CLEARANCE FOR U-BOLT CONNECTIONS OF SIGNS OR WALKWAY BRACKETS.
 - FOR ANY DESIGN SPAN LENGTH THAT FALL BETWEEN TWO CONSECUTIVE SPANS, PROVIDED IN COLUMN 2 OF TABLE "SIGN STRUCTURE MEMBER SCHEDULE", THE LARGER DESIGN SPAN LENGTH SHALL BE USED (I.E. FOR A 92' SPAN LENGTH FALLING BETWEEN 90' AND 95' DESIGN SPAN LENGTHS IN TABLE, THE 95' DESIGN SPAN LENGTH TRUSS AND POST DETAILS SHALL BE USED).

SIGN STRUCTURE MEMBER SCHEDULE														
TRUSS NO.	DIMENSIONS					ALUMINUM TRUSS*				STEEL END SUPPORT				
	TRUSS SPAN L	P	N	h	W ₁	MAXIMUM ALLOWABLE SIGN PANEL AREA	DL (TRUSS) DEFLECTION	MIDDLE SEGMENT OR END SEGMENT				PIPE COLUMN (NOMINAL DIAMETER)		
								CHORD (O.D.)		DIAGONAL (O.D.)		10" X.X.S. (104.13#/FT.)		12" X.X.S. (125.49#/FT.)
FRONT	REAR	FRONT	REAR	H OR H ₁	H OR H ₁									
T-80	80'-0"	9'-0"	3'-4"	4'-6"	3'-10 3/4"	900 S.F.	1"	5 1/2" φ x 1/2"	5 1/2" φ x 1/2"	2 1/2" φ x 1/4"	2 1/2" φ x 1/4"	5'-9"	32'-0" (MAX)	38'-0" (MAX)
T-85	85'-0"	9'-6"	3'-10"	4'-9"	4'-1 3/8"	955 S.F.	1 1/16"	6 7/8" φ x 1/2"	6 7/8" φ x 1/2"	3" φ x 1/4"	3" φ x 1/4"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-90	90'-0"	10'-0"	4'-4"	5'-0"	4'-4"	1010 S.F.	1 1/8"	6 7/8" φ x 1/2"	6 7/8" φ x 1/2"	3" φ x 1/4"	3" φ x 1/4"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-95	95'-0"	10'-6"	4'-10"	5'-3"	4'-6 5/8"	1065 S.F.	1 3/16"	6 7/8" φ x 1/2"	6 7/8" φ x 1/2"	3" φ x 1/4"	3" φ x 1/4"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-100	100'-0"	11'-4"	4'-0"	5'-8"	4'-10 7/8"	1125 S.F.	1 1/4"	7" φ x 1/2"	7" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-105	105'-0"	12'-0"	3'-10"	6'-0"	5'-2 3/8"	1180 S.F.	1 3/16"	7" φ x 1/2"	7" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-110	110'-0"	12'-6"	4'-4"	6'-3"	5'-5"	1200 S.F.	1 3/8"	7" φ x 1/2"	7" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-115	115'-0"	13'-0"	4'-10"	6'-6"	5'-7 3/8"	1200 S.F.	1 1/2"	7 1/2" φ x 1/2"	7 1/2" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	10'-2"	34'-0" (MAX)	40'-0" (MAX)
T-120	120'-0"	13'-8"	4'-8"	6'-10"	5'-11"	1200 S.F.	1 3/8"	7 1/2" φ x 1/2"	7 1/2" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	10'-2"	34'-0" (MAX)	40'-0" (MAX)
T-130	130'-0"	15'-0"	4'-4"	7'-6"	6'-5 3/8"	1200 S.F.	1 3/8"	9" φ x 1/2"	9" φ x 1/2"	4" φ x 1/4"	4" φ x 1/4"	10'-2"	NOT APPLICABLE	40'-0" (MAX)
T-140	140'-0"	16'-3"	4'-4"	8'-2"	7'-0 3/8"	1200 S.F.	1 1/16"	10" φ x 1/2"	10" φ x 1/2"	4" φ x 1/4"	4" φ x 1/4"	10'-2"	NOT APPLICABLE	40'-0" (MAX)
T-150	150'-0"	17'-6"	4'-4"	8'-10"	7'-7 3/4"	1200 S.F.	1 3/16"	11" φ x 1/2"	11" φ x 1/2"	4 1/2" φ x 1/4"	4 1/2" φ x 1/4"	10'-2"	NOT APPLICABLE	40'-0" (MAX)

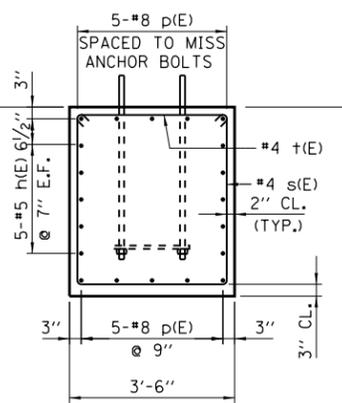
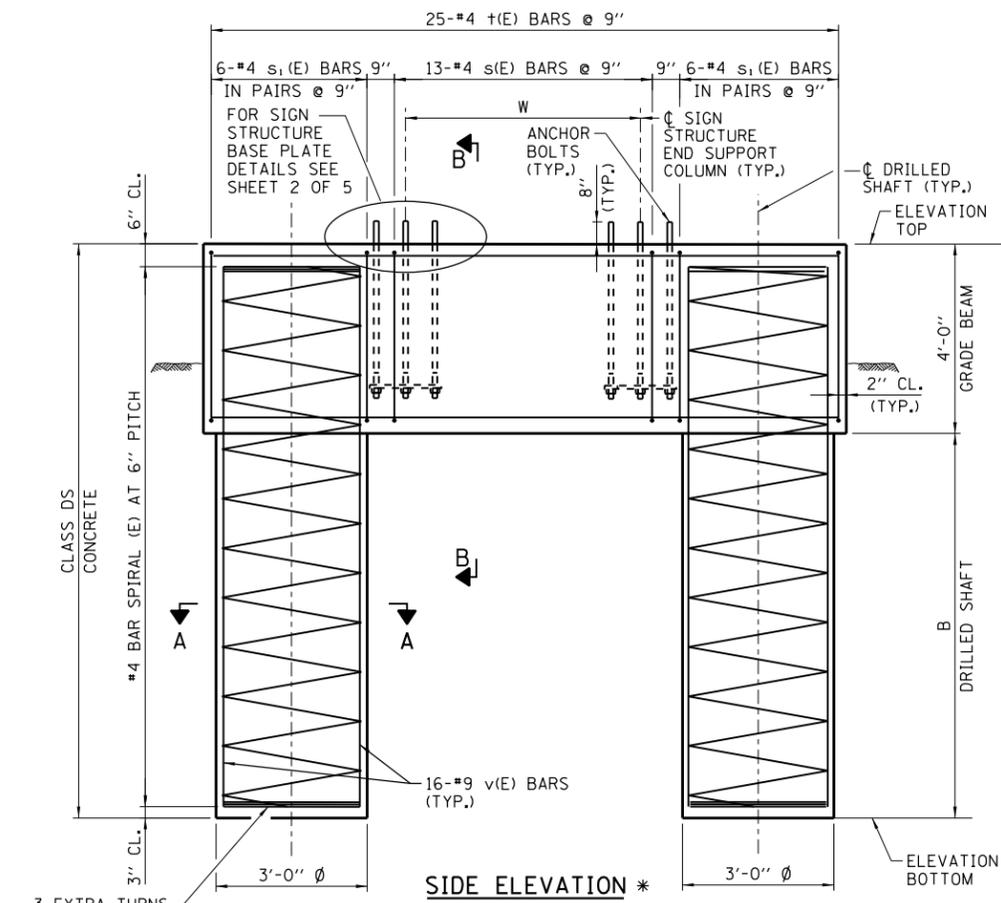
CAMBER	
SPAN IN FEET	CAMBER IN INCHES
80 THRU 95	1 1/2"
96 THRU 110	1 3/8"
111 THRU 120	1 7/8"
121 THRU 130	1 7/8"
131 THRU 140	2"
141 THRU 150	2 1/8"

TABLE A			
CHORD O.D.	E	F	N
5/2" φ	10"	13"	8
6 7/8" φ & 7" φ	11 1/2"	14 1/2"	10
7 1/2" φ	12 1/2"	15 1/2"	12
9" φ	13 1/2"	16 1/2"	14
10" φ	15 1/2"	18 1/2"	16
11" φ	17 1/2"	20 1/2"	18

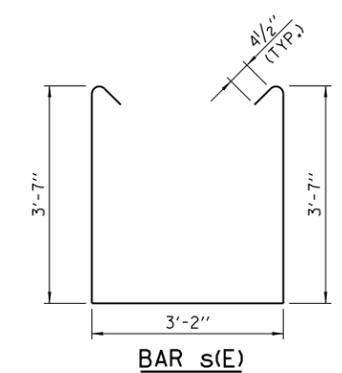
DATE	REVISIONS
7-01-2014	REVISED FOUNDATION CONCRETE.
3-11-2015	REVISED NOTES.
3-31-2016	REVISED FOUNDATION NOTE AND REVISED BASE PLATE DIMENSIONS.
3-31-2017	COLUMN MEMBER ADJUSTMENTS AND FOUNDATION REINFORCEMENT.
3-01-2018	REVISED VER. CLEARANCE, AND ADDED NOTE
3-01-2019	UPDATE BARRIER SHAPE, CHANGED GRADE BEAM TO CLASS SI CONCRETE, REVISED +1(E) BAR IN BAR LIST
	ADDED NOTE 9 FOR DESIGN SPAN LENGTH
2-13-2020	ADDED WASHER & NUTS CALLOUT-VIEW C-C.

- NOTES:**
- XXS DENOTES DOUBLE EXTRA STRONG PIPE.
 - A PAIR OF MAIN PIPE COLUMN SIZES FOR EACH SUPPORT SHALL BE SELECTED INDEPENDENTLY BASED ON SPECIFIC NEEDS.

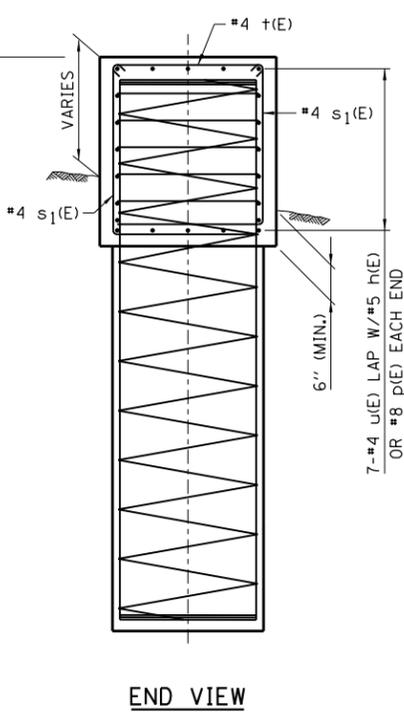
APPROVED: *Paul Kovacs* DATE 2-07-2012
CHIEF ENGINEERING OFFICER



SECTION B-B
* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY



BAR s (E)

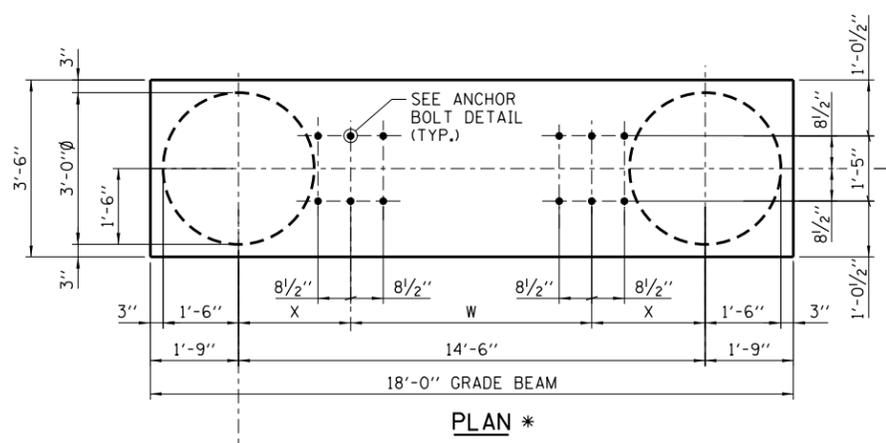


END VIEW

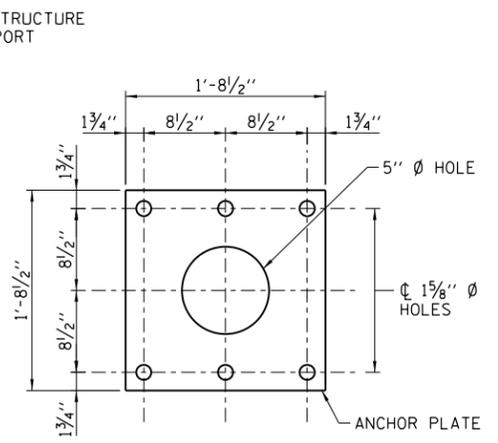
NOTES:

1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (OU) > 1.25 TON/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE FOUNDATION DIMENSIONS SHOWN SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
2. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M314 OR ASTM F1554 GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. ALL OTHER MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
3. CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
4. BACKFILL SHALL BE PLACED PER SECTION 502 OF THE IDOT STANDARD SPECIFICATION AND PRIOR TO ERECTION OF SUPPORT COLUMN.
5. A NORMAL SURFACE FINISH FOLLOWED BY A CONCRETE SEALER APPLICATION WILL BE REQUIRED ON CONCRETE SURFACES ABOVE THE LOWEST ELEVATION 6" BELOW FINISHED GROUND LINE.
6. ALL REBAR DESIGNATED (E) SHALL BE EPOXY COATED. REBAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND ANCHOR BOLTS.
7. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON THE PLANS.
8. NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 6" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING SHALL NOT BE LEFT IN PLACE BELOW THE ELEVATION WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT IF DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
9. IF NECESSARY TO INCREASE STEEL END SUPPORT HEIGHT ABOVE THE LIMITATIONS SHOWN IN SIGN STRUCTURE MEMBER SCHEDULE ON SHEET 1 OF THIS SERIES, GRADE BEAM DEPTH SHALL BE INCREASED UP TO 6'-0" WITHOUT CHANGES TO THE DRILLED SHAFT DESIGN. GRADE BEAM REINFORCEMENT, CONCRETE VOLUME AND LENGTH OF ANCHOR BOLTS SHALL BE REVISED ACCORDINGLY.

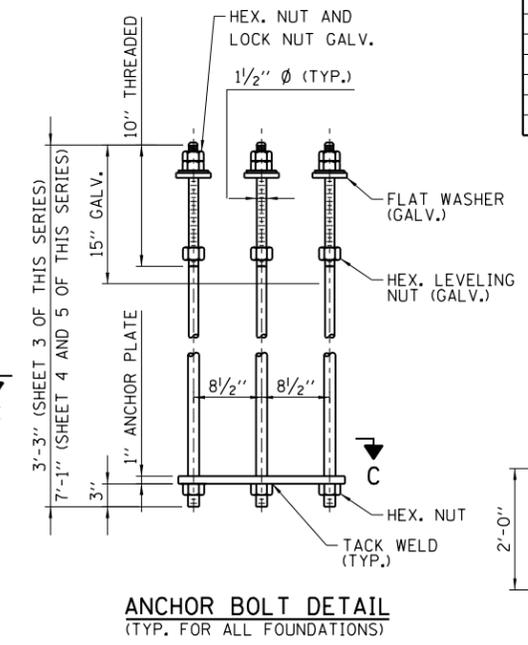
DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS (OU > 1.25 TON/SQ. FT.)					
TRUSS No.	W	X	B	CLASS DS CONC. CY	REINF. BARS POUND
T-80	5'-9"	4'-4 1/2"	40'-0"	30.3	6650
T-85	6'-7"	3'-11 1/2"	50'-0"	35.5	7940
T-90	6'-7"	3'-11 1/2"	50'-0"	35.5	7940
T-95	6'-7"	3'-11 1/2"	50'-0"	35.5	7940
T-100	7'-5"	3'-6 1/2"	50'-0"	35.5	7940
T-105	7'-5"	3'-6 1/2"	50'-0"	35.5	7940
T-110	7'-5"	3'-6 1/2"	50'-0"	35.5	7940
T-115	10'-2"	2'-2"	50'-0"	35.5	7940
T-120	10'-2"	2'-2"	50'-0"	35.5	7940
T-130	10'-2"	2'-2"	55'-0"	38.1	8590
T-140	10'-2"	2'-2"	55'-0"	38.1	8590
T-150	10'-2"	2'-2"	55'-0"	38.1	8590



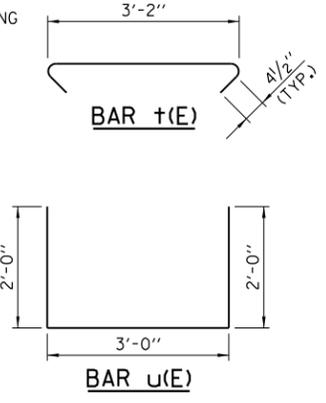
PLAN *



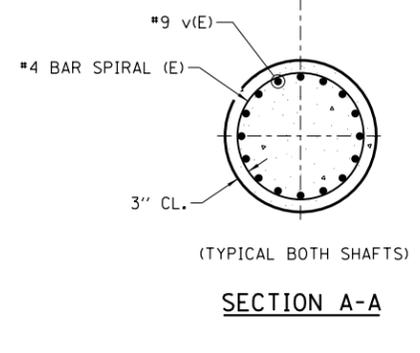
SECTION C-C



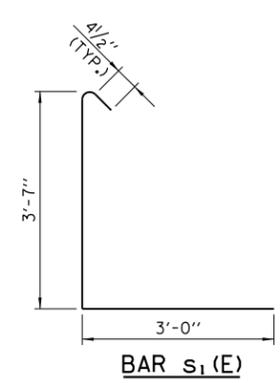
ANCHOR BOLT DETAIL (TYP. FOR ALL FOUNDATIONS)



BAR u (E)



SECTION A-A



BAR s1 (E)

BAR LIST - EACH FOUNDATION (2 SHAFT AND 1 GRADE BEAM)

BAR	NUMBER	SIZE	LENGTH	SHAPE
h (E)	10	#5	17'-8"	—
p (E)	10	#8	17'-8"	—
s (E)	13	#4	11'-1"	U
s1 (E)	24	#4	6'-11 1/2"	U
+ (E)	25	#4	3'-11"	—
u (E)	14	#4	7'-0"	U
v (E)	32	#9	B ADD 3'-3"	—

* #4 BAR SPIRAL (E) - SEE SIDE ELEVATION

APPROVED: *Paul Kovacs* DATE 2-7-2012
CHIEF ENGINEERING OFFICER

SHEET 3 OF 5

OVERHEAD SIGN STRUCTURE
SPAN TYPE
STRUCTURE DETAILS
STANDARD F1-10

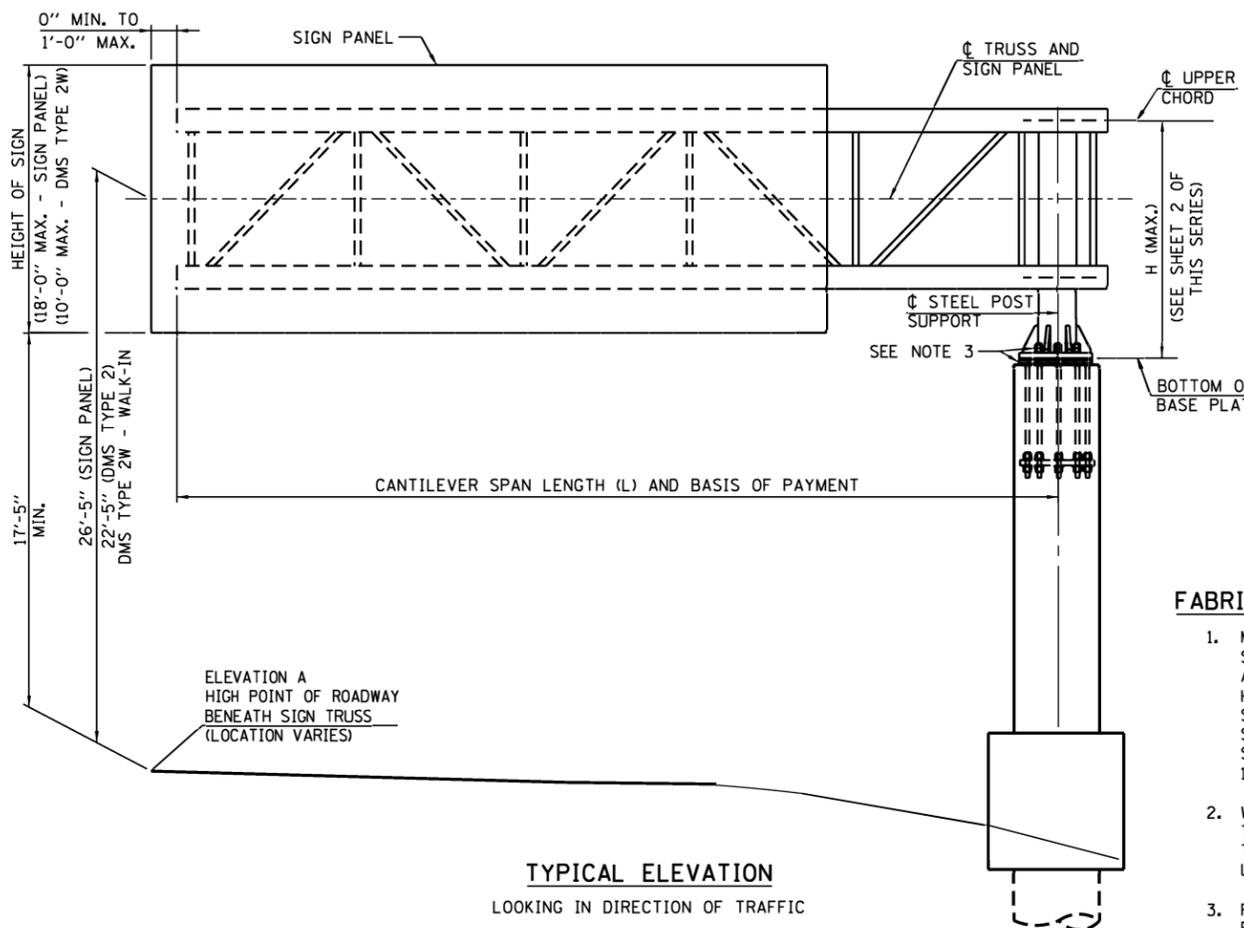
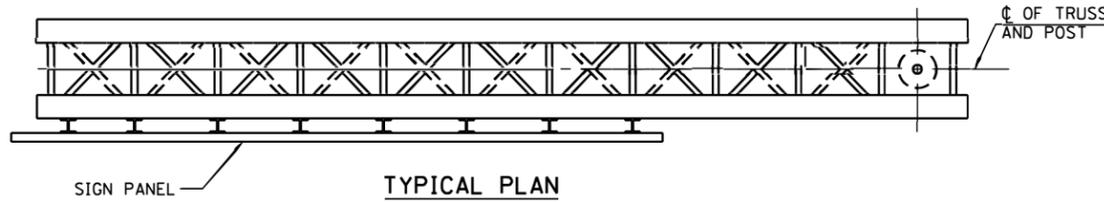
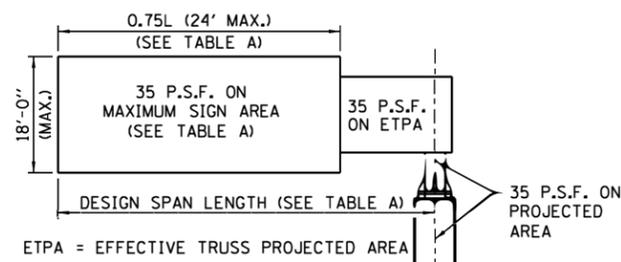


TABLE A: MAXIMUM LIMITS FOR SIGNS

TRUSS TYPE	DESIGN SPAN LENGTH (FT.)	MAXIMUM SIGN AREA (SQ. FT.)	MAXIMUM SIGN LENGTH (FT.)
20-D	20	270	15
25-D	25	338	18.75
30-D	30	405	22.5
35-D	35	432	24
40-D	40	432	24
45-D	45	432	24
50-D	50	432	24



DESIGN WIND LOADING DIAGRAM

FABRICATION NOTES:

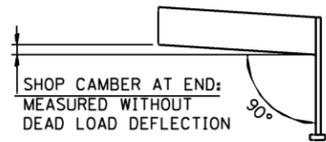
- MATERIALS: FOR MATERIAL SPECIFICATIONS FOR CANTILEVER SIGN STRUCTURES, SEE TABLE B. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO AASHTO M270 GR. 50, STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304 OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE STEEL POST SHALL HAVE A MINIMUM LONGITUDINAL CHARNY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F (ZONE 2) BEFORE GALVANIZING.
- WELDING: ALL MATERIALS, WELDING PROCEDURES AND INSPECTION USED FOR THE CANTILEVER OVERHEAD SIGN STRUCTURE SHALL CONFORM TO AWS D1.1-10 FOR TUBULAR, CYCLICALLY LOADED STRUCTURES. ADDITIONALLY, ALL WELDED MATERIALS USED SHALL BE PREQUALIFIED FOR USE WITH WPS AS PER AWS D1.1-10, TABLE 3.1.
- FASTENERS FOR STEEL TRUSSES: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449. ASTM A193 GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(F)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
- U-BOLTS: U-BOLTS SHALL BE PRODUCED FROM ASTM A276 TYPE 304, 304L, 316 OR 316L, CONDITION A, COLD FINISHED STAINLESS STEEL, OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER. ALL NUTS FOR U-BOLTS SHALL BE LOCKNUTS EQUIVALENT TO ASTM A307 WITH NYLON OR STEEL INSERTS AND HOT DIP GALVANIZED PER AASHTO M232. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240, TYPE 302 OR 304, IS REQUIRED UNDER EACH U-BOLT LOCKNUT.
- GALVANIZING: ALL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED. ALL FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 OR M232 AS APPROPRIATE FOR THE PRODUCT (EXCEPT STAINLESS STEEL FASTENERS).

TABLE B: MATERIAL SPECIFICATIONS FOR STRUCTURAL STEEL AND FASTENERS

ELEMENT OF STRUCTURE	SPECIFICATION	MINIMUM YIELD STRENGTH (K.S.I.)	MINIMUM ULTIMATE STRENGTH (K.S.I.)
STRUCTURAL STEEL TUBE	ASTM A500 GRADE B	46	58
STRUCTURAL STEEL POST AND PIPE	API 5L GRADE B OR X42 OR X52	35	52
	ASTM A106 GRADE B	35	60
	ASTM A53, TYPE E OR S, GRADE B	35	60
STEEL BAR AND STEEL PLATES	ASTM A572 GRADE 50	50	65
STAINLESS STEEL BOLTS	ASTM A193, CLASS 1, GRADE B8	30	75
STRUCTURAL STEEL BOLTS	ASTM 325 TYPE 1	--	105
STAINLESS STEEL LOCKNUTS	ASTM A194 GRADE 8F ASTM A194 GRADE 2H	--	--
NUTS	ASTM A563 GRADE DH	--	--
STEEL WASHERS	ASTM F436	--	--
STAINLESS STEEL WASHERS	ASTM A240, TYPE 302	--	--
STEEL ANCHOR BOLTS	AASHTO M314 OR ASTM F1554	55	75

SHOP CAMBER TABLE

CANTILEVER LENGTH (L)	SHOP CAMBER AT END
20'	1 1/2"
25'	1 1/2"
30'	2"
35'	2 1/2"
40'	2 1/2"
45'	3"
50'	3 1/2"



CAMBER DIAGRAM (FOR FABRICATION ONLY)

GENERAL NOTES:

- WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE CANTILEVER TYPE SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
- AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
- SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN SIGN PANELS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL PERMANENT SIGNS ARE INSTALLED.
- TRUSSES SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.
- ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 STRUCTURE WELDING CODE AND THE STANDARD SPECIFICATIONS.
- ALL STEEL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111.
- PROVIDE RUBBED SURFACE FINISH FOLLOWED BY CONCRETE SEALER APPLICATION ON ENTIRE SURFACE OF CONCRETE COLUMN AND NORMAL SURFACE FINISH ON GRADE BEAM, EXCEPT BOTTOM SURFACE.
- REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- DMS TYPE 2W - WALK-IN IS PERMITTED TO BE INSTALLED ON CANTILEVER TRUSS. DO NOT INSTALL SIGN PANEL IN CONJUNCTION WITH PERMISSIBLE SIGN SIZE AND WEIGHT.

CONSTRUCTION SPECIFICATIONS:

- ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

LOADING:

- ALL CANTILEVER TRUSSES ARE DESIGNED FOR AN 18'-0" DEEP SIGN PANEL OVER 75% OF THE ARM LENGTH, WITH A MAXIMUM PANEL WIDTH OF 24'-0".
- ALL CANTILEVER TRUSSES ARE DESIGNED FOR 35 PSF WIND PRESSURE ON TRUSS MEMBERS AND SIGN PANEL.
- THE AASHTO GROUP II AND III ALLOWABLE STRESS SHALL BE 133% (ALLOWABLE STRESS DESIGN).

DESIGN SPECIFICATIONS:

THESE STRUCTURES ARE DESIGNED TO SATISFY THE 2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, SIXTH EDITION.

CONCRETE COLUMN, GRADE BEAM AND DRILLED SHAFT ARE DESIGNED IN ACCORDANCE WITH THE 2012 EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (INCLUDING THE 2013 INTERIM REVISIONS).

DESIGN UNIT STRESSES FOR REINFORCED CONCRETE:

CLASS SI CONCRETE	f'c = 3,500 P.S.I.
CLASS DS CONCRETE	f'c = 4,000 P.S.I.
REINFORCING STEEL	fy = 60,000 P.S.I.

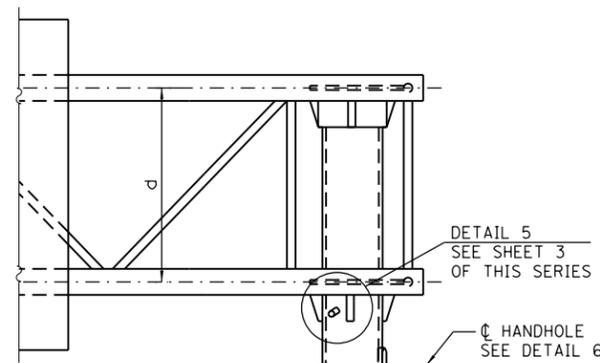
DATE	REVISIONS
12-12-2013	REVISED TABLES AND NOTES
2-07-2014	REVISED STEEL POST TO CONCRETE
3-31-2014	ADDED DMS TYPE II
7-01-2014	ADDED DIMENSIONS AND REVISED NOTES
3-11-2015	ADDED DIMENSIONS AND REVISED NOTES
3-31-2016	REVISED FOUNDATION NOTE
3-31-2017	ADDED WALKWAY GRATING DETAILS
3-01-2018	ADDED VERTICAL CLEARANCE
3-01-2019	UPDATED BARRIER SHAPE
2-13-2020	UPDATED TABLE C. ANCHOR BOLT DETAIL



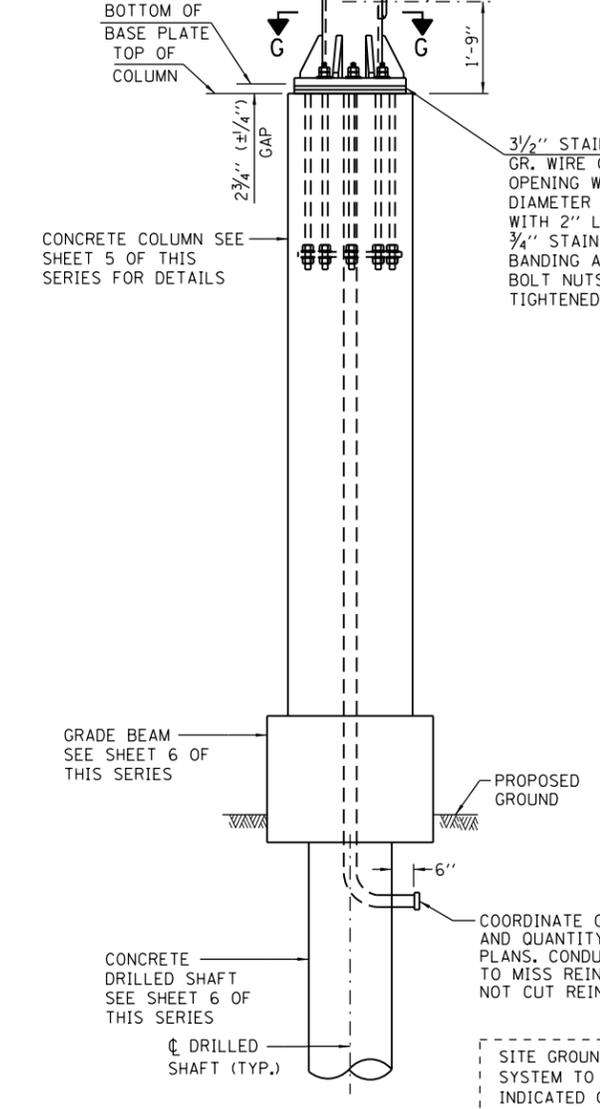
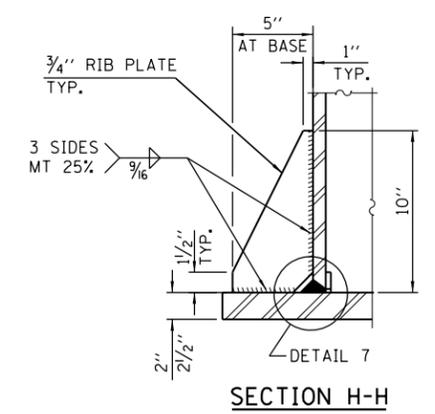
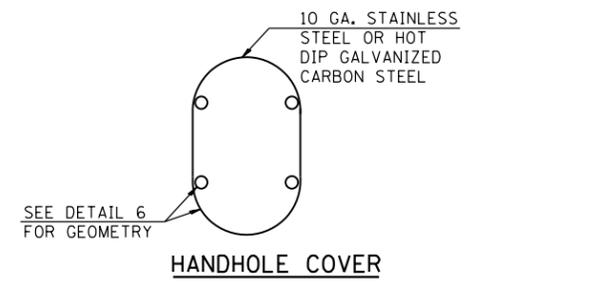
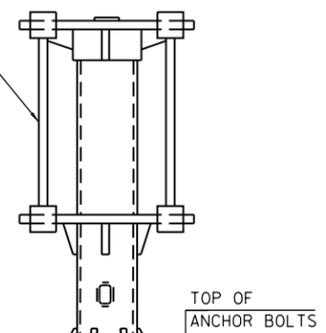
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

STANDARD F4-11

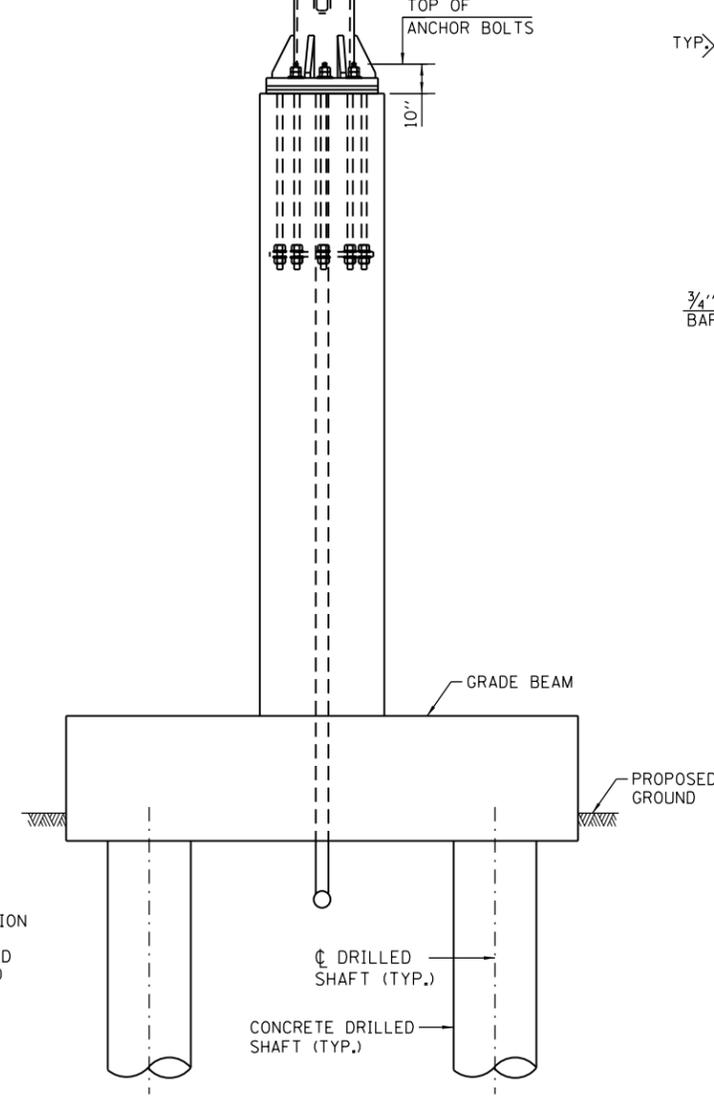
APPROVED: *Paul Kovacs* DATE 3-31-2014
CHIEF ENGINEERING OFFICER



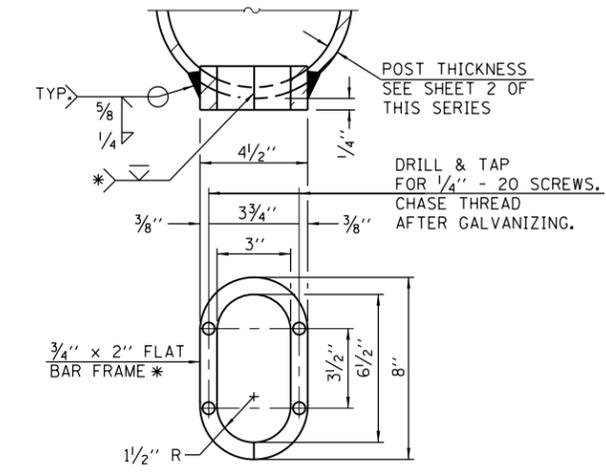
ALL METALLIC MEMBERS ATTACHED TO THE CANTILEVER STEEL POST STRUCTURE SHALL BE BONDED TOGETHER BY MEANS OF A COPPER BONDING JUMPER TO CREATE A CONTINUOUS LOW IMPEDANCE PATH TO THE SITE GROUNDING ELECTRODE SYSTEM.



FRONT ELEVATION



SIDE ELEVATION

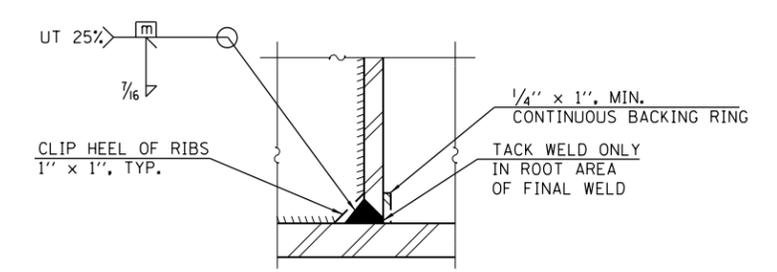


PROVIDE 8" x 4 1/2" COVER. OUTSIDE CORNERS = 2 1/4" RADIUS. PROVIDE 4-5/16" Ø HOLES IN COVER FOR 1/4" - 20 ROUND HEAD HOT DIP GALVANIZED OR STAINLESS STEEL MACHINE SCREWS. (SEE COVER DETAILS.)

DETAIL 6

* BENT BARS MAY BE BUTT WELDED TOP AND BOTTOM OR BOTTOM ONLY. IN LIEU OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT FROM 2" PLATE (ROLLING DIRECTION VERTICAL). ALL CUT FACES TO BE GROUND TO ANSI ROUGHNESS OF 500 µIN OR LESS.

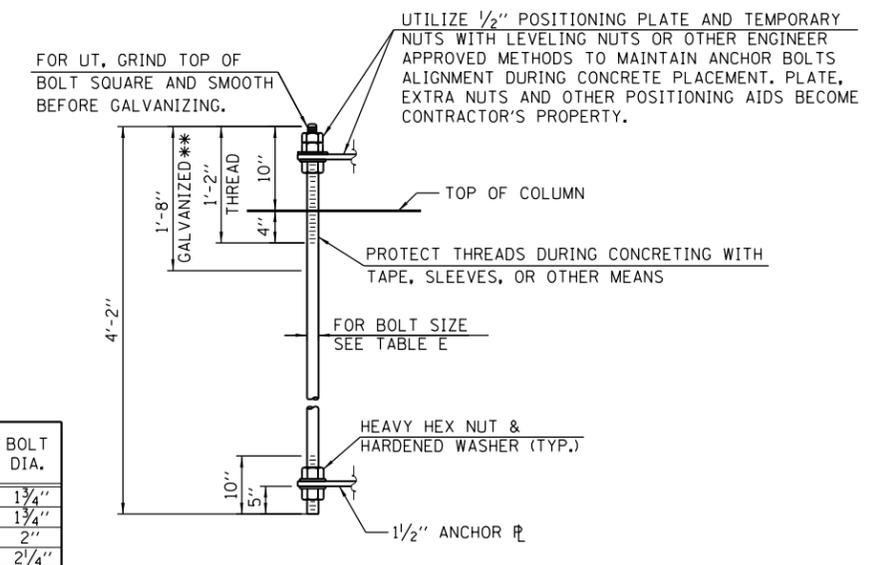
* * 18" IS MINIMUM TO BE GALVANIZED. ENTIRE BOLT MAY BE GALVANIZED AT CONTRACTOR'S OPTION.



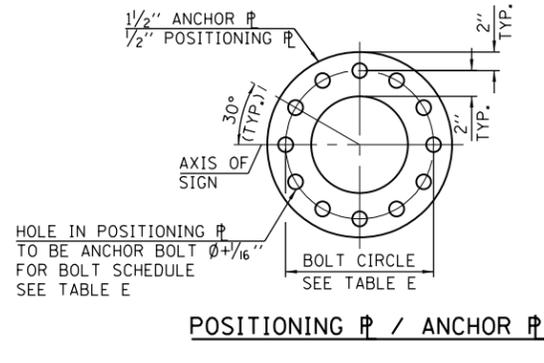
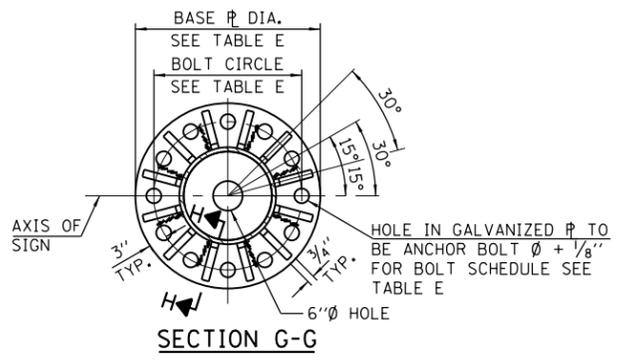
DETAIL 7 (TYPICAL RIB)

TABLE E: BASE PLATE DETAIL

SPAN LENGTH (L)	POST OUTSIDE DIAMETER	BASE PLATE		BOLT CIRCLE	BOLT DIA.
		DIAMETER	THICKNESS		
< 20'	18"	30"	2"	24"	1 3/4"
21'-30'	18"	30"	2"	24"	1 3/4"
31'-40'	24"	36"	2 1/2"	30"	2"
41'-50'	24"	36"	2 1/2"	30"	2 1/4"



ANCHOR BOLT DETAIL



NOTE:

ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 OR ASTM F1554 AND MEET CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 10° F. BEFORE GALVANIZING. GALVANIZE THE UPPER 18" (MINIMUM **) AND ASSOCIATED M291, GRADE A, C OR DH HEAVY HEX NUTS, HEAVY HEX LOCK NUTS AND HARDENED WASHERS PER AASHTO M293. NO WELDING SHALL BE PERMITTED ON BOLTS. PROVIDE AN UNFINISHED NUT AT BOTTOM, A HEXAGON LOCKNUT, HEXAGON NUT AND WASHER ABOVE BASE PLATE AND A LEVELING NUT AND WASHER BELOW BASE PLATE. NUTS SHALL EACH BE TIGHTENED WITH 200 LB.-FT. MINIMUM TORQUE AGAINST BASE PLATE. BEFORE OR AFTER THREADING, BUT BEFORE GALVANIZING, EACH ANCHOR BOLT SHALL BE ULTRASONICALLY TESTED (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORDANCE WITH ANSI GUIDELINES, USING A STRAIGHT BEAM, 1/2" Ø 3.5 MHZ. TRANSDUCER, TO ENSURE NO REJECTABLE FLAWS EXIST IN THE UPPER 18" (TENSION CRITERIA).

Paul Kovacs
APPROVED... DATE 3-31-2014
CHIEF ENGINEERING OFFICER



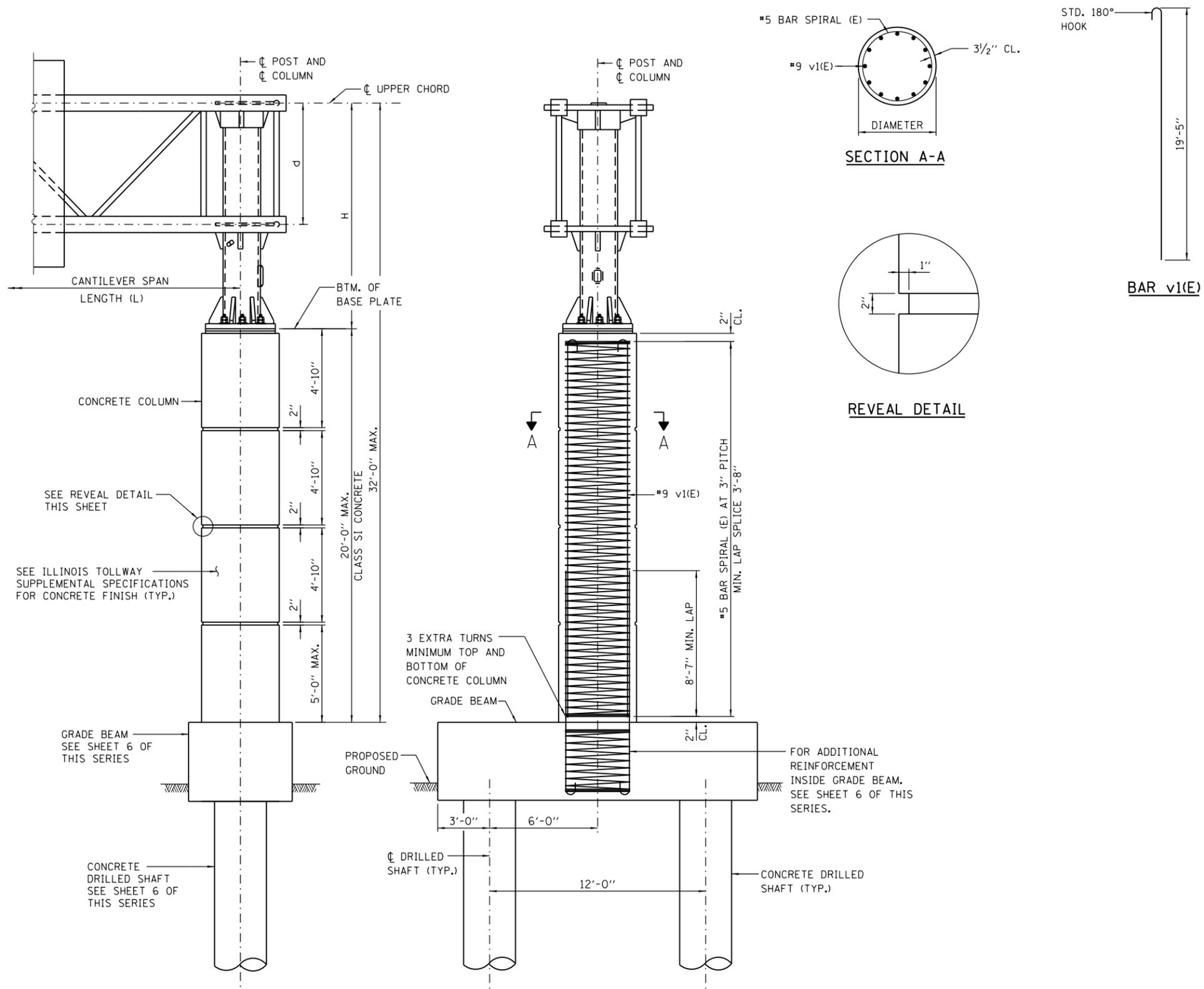


TABLE F: CONCRETE COLUMN DESIGN TABLE

SPAN LENGTH (L)	STEEL POST DIAMETER	CONCRETE COLUMN			
		DIAMETER	VERTICAL BAR v1(E)	CLASS SI CONC. CU. YD.*	REINF. BARS POUND *
< = 20'	18"	3'-6"	16-#9	7.1	1,910
21'-30'	18"	3'-6"	16-#9	7.1	1,910
31'-40'	24"	4'-0"	20-#9	9.2	2,330
41'-50'	24"	4'-0"	20-#9	9.2	2,330

* CONCRETE VOLUME AND REBAR WEIGHT ARE DETERMINED FOR 20'-0" CONCRETE COLUMN HEIGHT. ADJUST CONCRETE VOLUME AND REBAR WEIGHT ACCORDINGLY IF CONCRETE COLUMN HEIGHT IS LESS THAN 20'-0".

FRONT ELEVATION

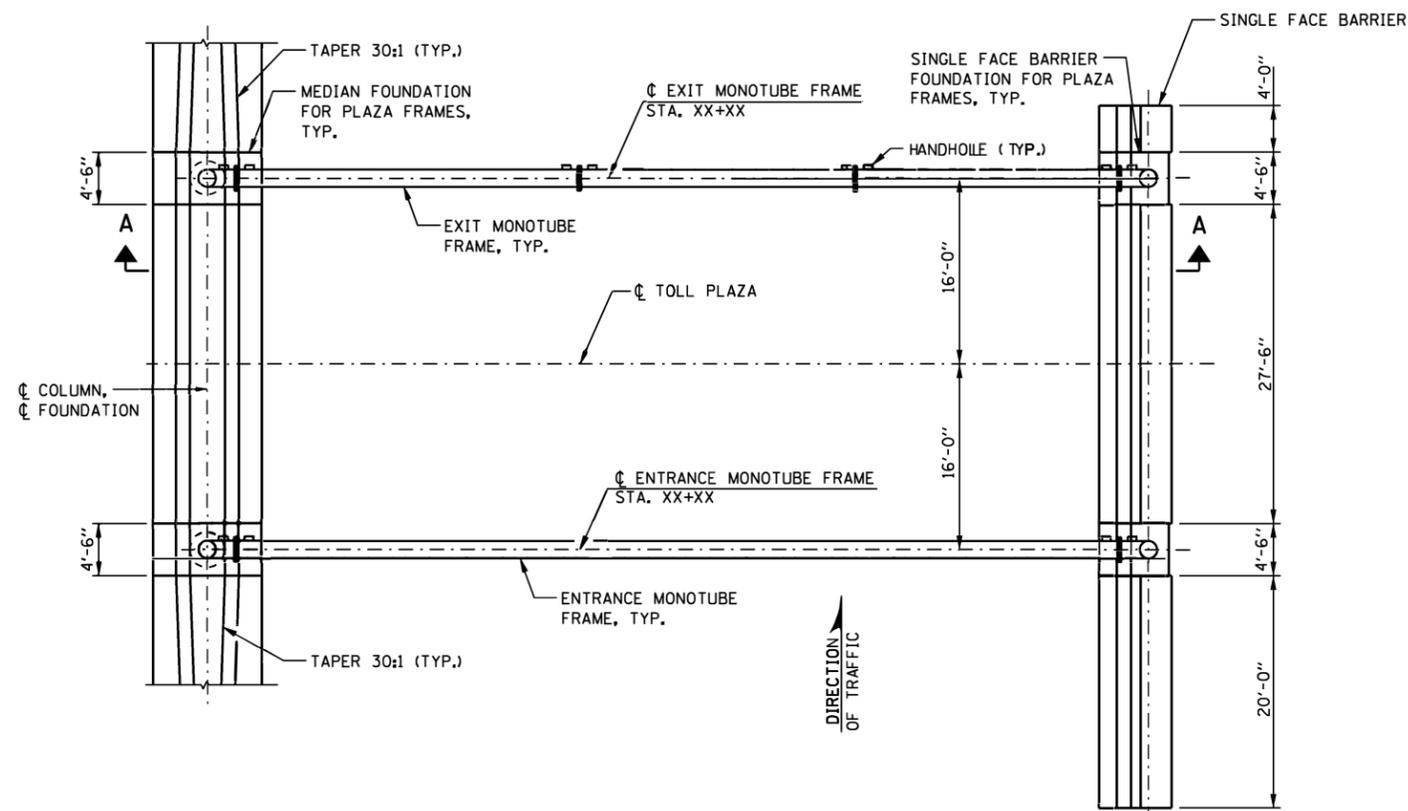
SIDE ELEVATION

SECTION A-A

REVEAL DETAIL



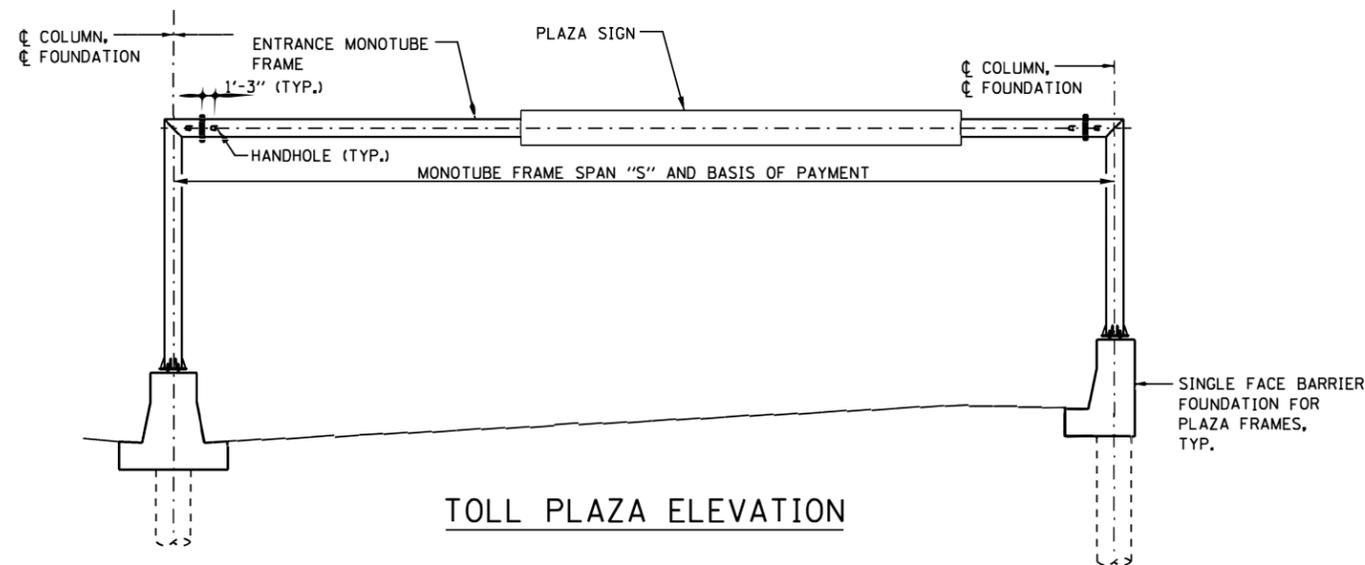
Paul Kovacs
APPROVED..... DATE 3-31-2014.
CHIEF ENGINEERING OFFICER



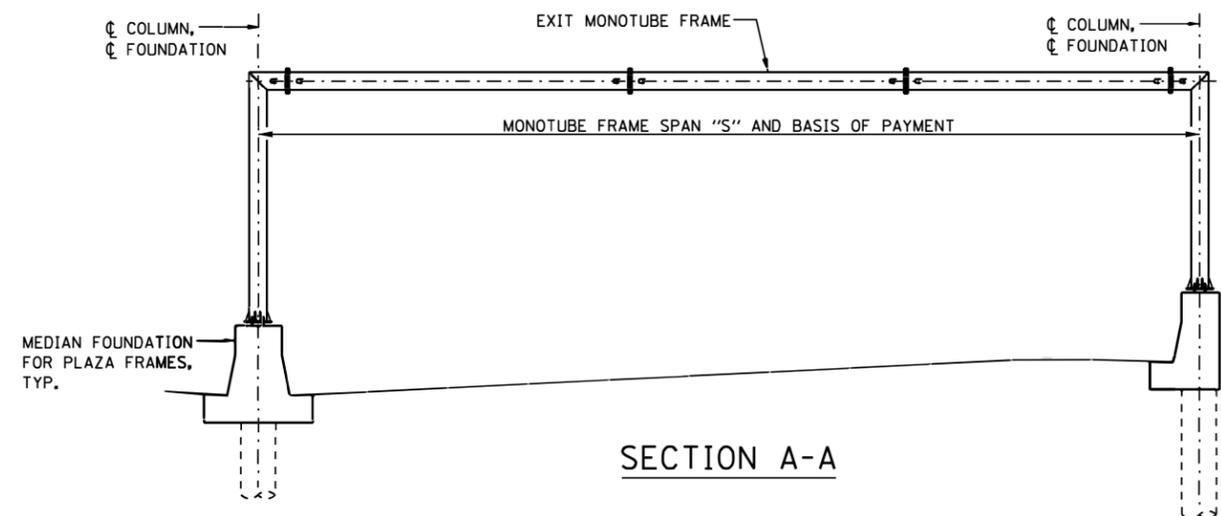
TOLL PLAZA PLAN

NOTES:

1. SEE PLANS FOR SIGN SIZE AND LOCATION.
2. MAXIMUM PLAZA SIGN AREA IS 108 SQ. FT.
MAXIMUM PLAZA SIGN LENGTH IS 36 FT.



TOLL PLAZA ELEVATION



SECTION A-A

DATE	REVISIONS
7-01-2014	ADDED GROUNDING DETAILS.
3-11-2015	ADDED MEDIAN AND NOTES.
3-31-2016	REVISED FOUNDATION NOTE.
3-01-2018	REVISED SIGN STRUCTURE
3-01-2019	UPDATED CONSTANT SLOPE BARRIER, REINFORCING DETAILS AND QUANTITIES
5-24-2019	UPDATED SHOULDER BARRIER DETAILS AND QUANTITIES FOR 3'-8"
2-13-2020	ADDED HANDHOLES, INSTALLATION & INSPECTION NOTES OF ANCHOR BOLT & SPLICES

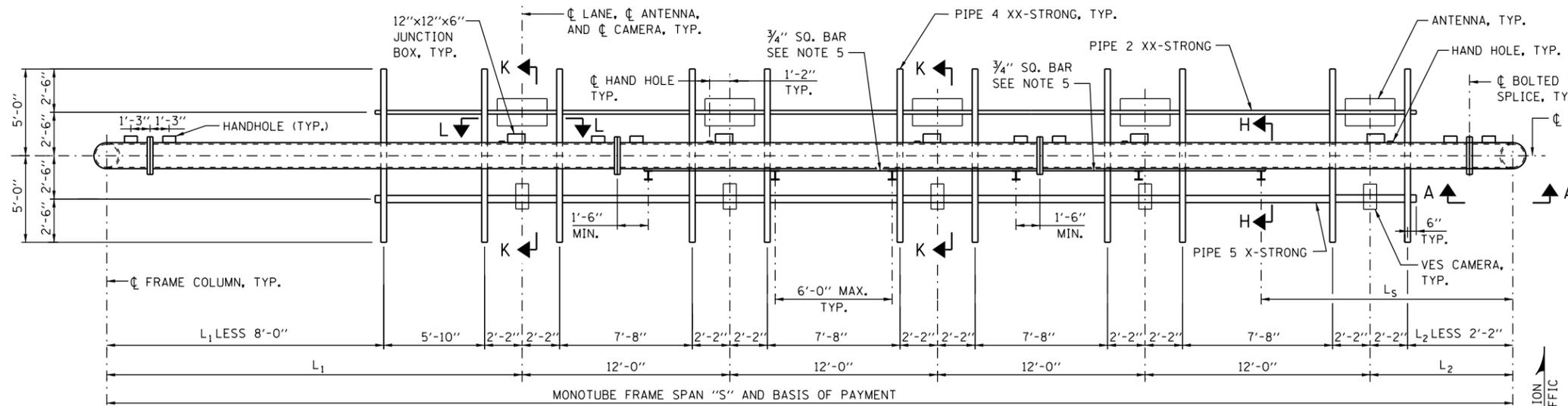


OVERHEAD SIGN STRUCTURE
MONOTUBE TYPE (STEEL)
MAINLINE STRUCTURE DETAILS

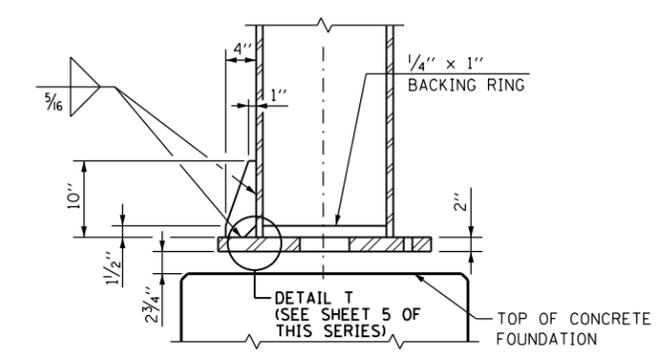
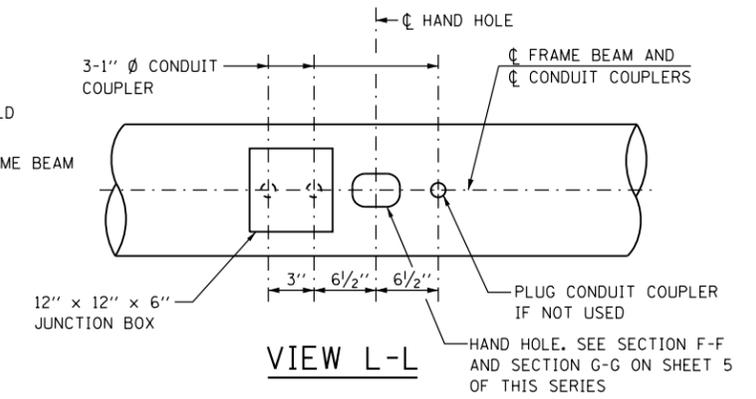
STANDARD F13-06

APPROVED.....

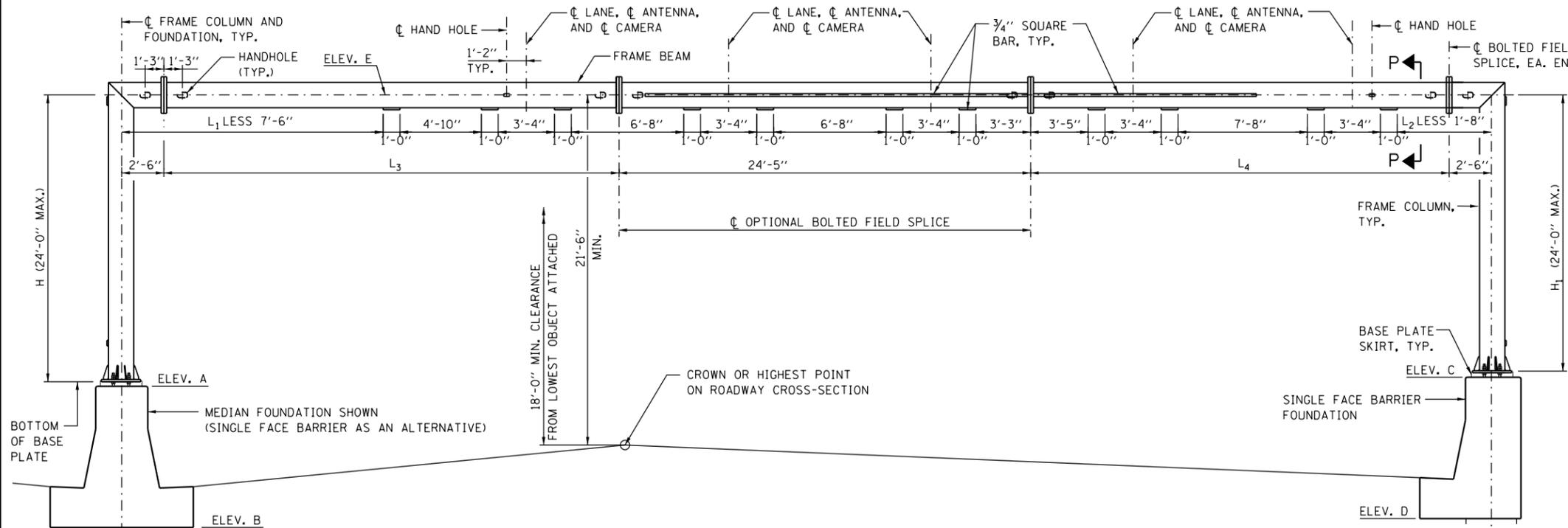
 CHIEF ENGINEERING OFFICER DATE 3-31-2014



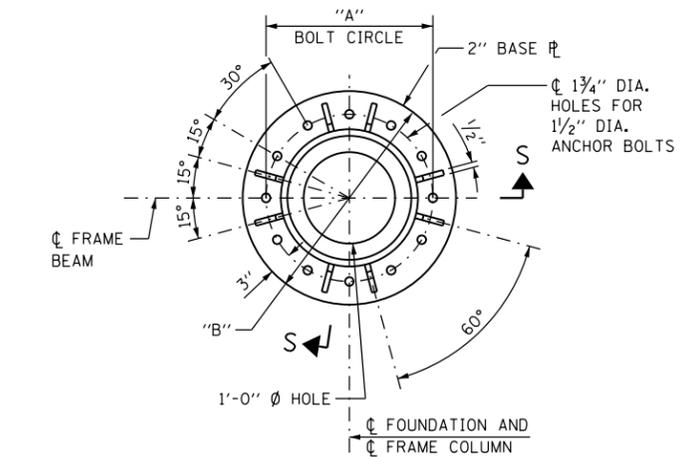
ENTRANCE MONOTUBE PLAN



SECTION S-S



ENTRANCE MONOTUBE ELEVATION



BASE PLATE PLAN MONOTUBE FRAMES

NOTES:

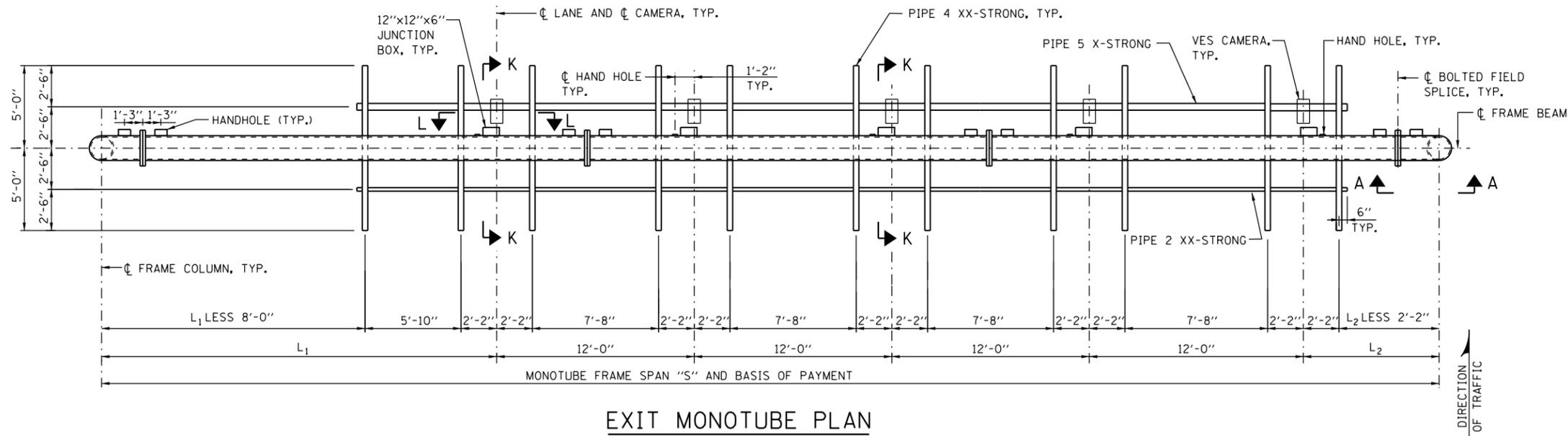
- FOUNDATIONS FOR PLAZA FRAMES ARE SHOWN ON SHEETS 6 AND 7 OF THIS SERIES.
- FOR SECTIONS A-A, H-H, K-K, BASE PLATE SKIRT AND HAND HOLE DETAILS, SEE SHEET 5 OF THIS SERIES.
- FOR SECTION P-P SEE SHEET 4 OF THIS SERIES.
- PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
- DISCONTINUE 3/4" SQUARE BAR TO ALLOW 1/2" Ø U-BOLT INSTALLATION.
- WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURES ENTRANCE MONOTUBE TYPE (STEEL) MAINLINE SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

MONOTUBE FRAME TABLE

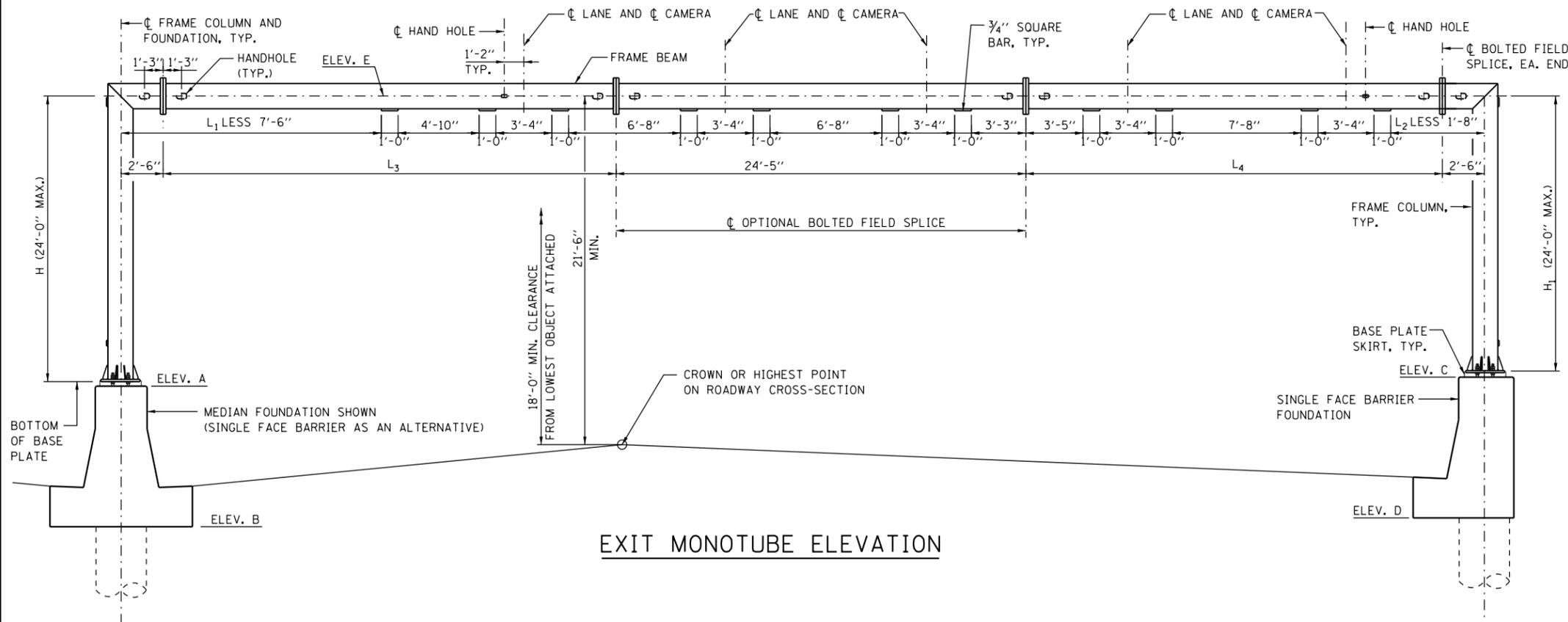
TYPE	SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER	"A"	"B"
I	≤70'	HSS 16x0.500	HSS 16x0.500	2 3/4"	1'-8"	2'-2"
II	71'-80'	HSS 18x0.500	HSS 18x0.500	4"	1'-10"	2'-4"
III	81'-90'	HSS 18x0.500	HSS 18x0.500	4 1/2"	1'-10"	2'-4"

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EXIT MONOTUBE PLAN

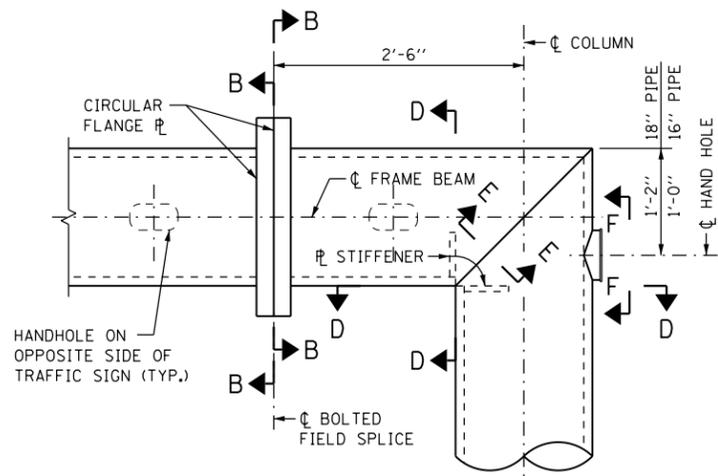


EXIT MONOTUBE ELEVATION

NOTES:

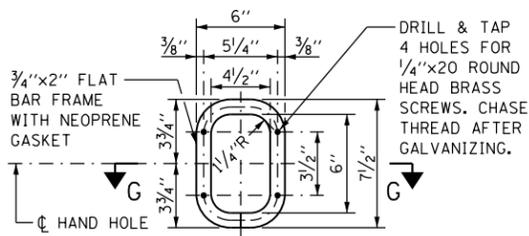
1. SEE SHEET 2 OF THIS SERIES FOR MONOTUBE FRAME TABLE, VIEW L-L, BASE PLATE DETAIL, AND ADDITIONAL NOTES.
2. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURES EXIT MONOTUBE TYPE (STEEL) SUMMARY AND TOTAL BILL OF MATERIAL SHEET.





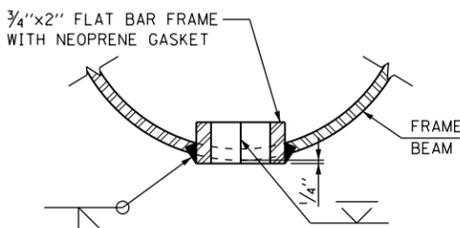
SECTION A-A

(SEE SHEET 1 OF THIS SERIES FOR LOCATION)



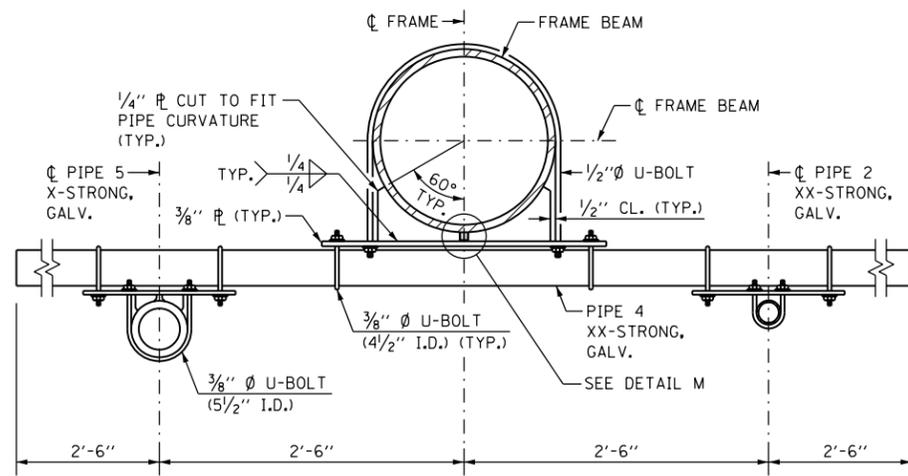
SECTION F-F

PROVIDE 6" x 7 1/2" #10 GA. COVER. ROUND CORNERS TO 2" RADIUS. PROVIDE FOUR 3/8" Ø HOLES.

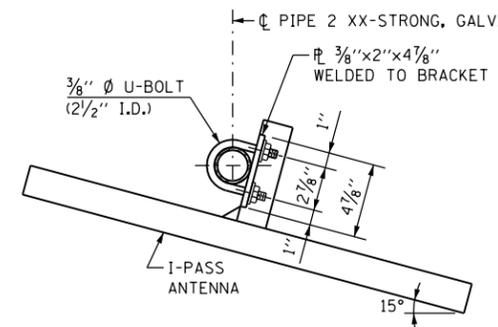


SECTION G-G

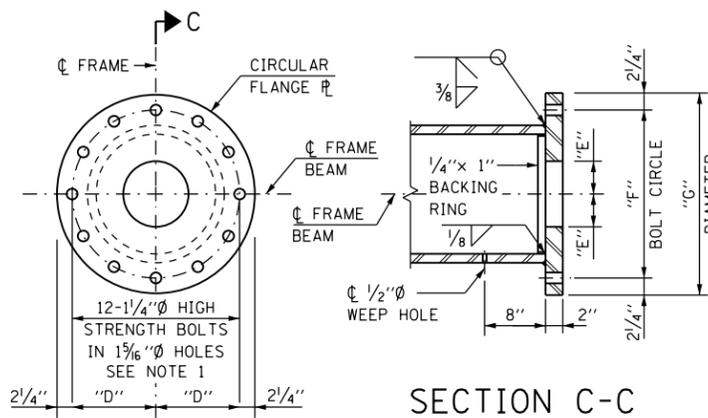
FRAME BEAM	"D"	"E"	"F"	"G"
HSS 16x0.500	10"	6"	1'-8"	2'-0 1/2"
HSS 18x0.500	11"	6"	1'-10"	2'-2 1/2"



SECTION K-K

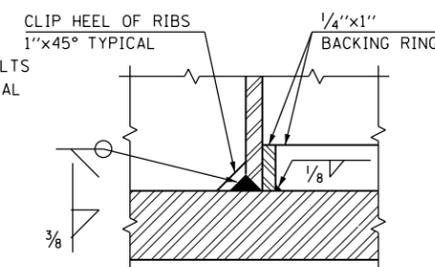


ANTENNA HANGER

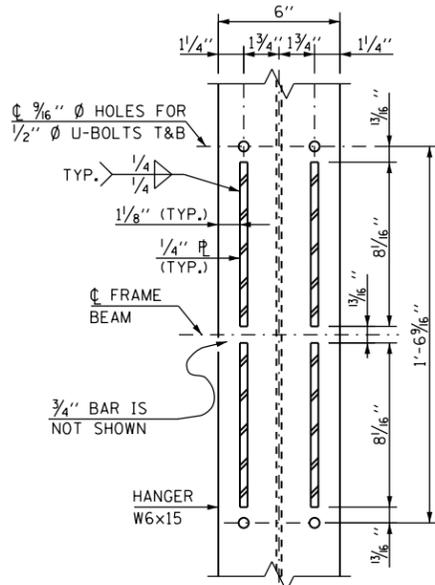


SECTION C-C

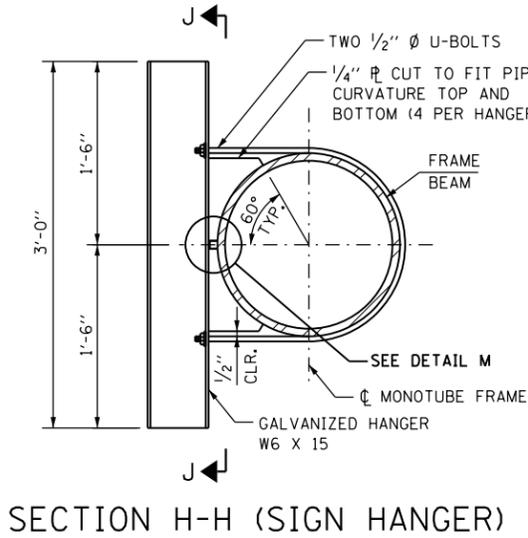
NOTE 1: INSTALLATION AND INSPECTION OF SPLICE BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".



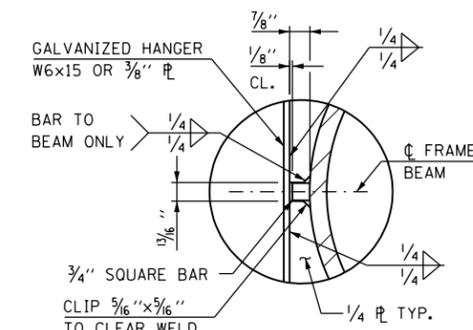
DETAIL T



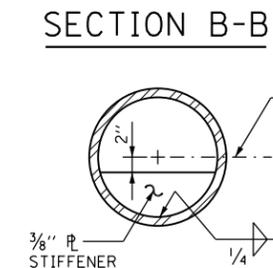
SECTION J-J



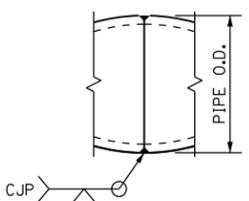
SECTION H-H (SIGN HANGER)



DETAIL M

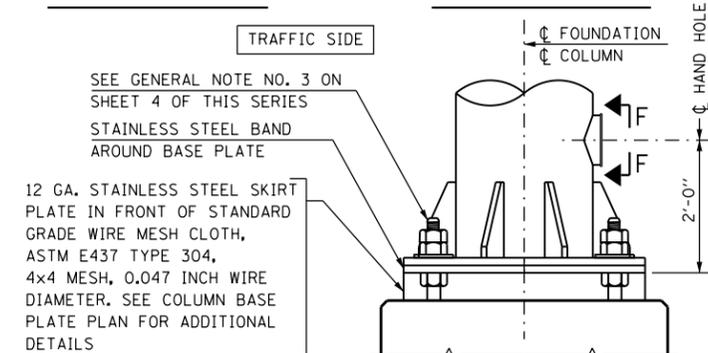


SECTION B-B

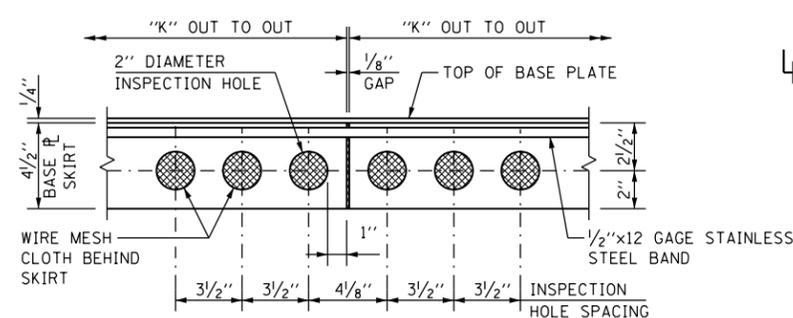


SECTION E-E

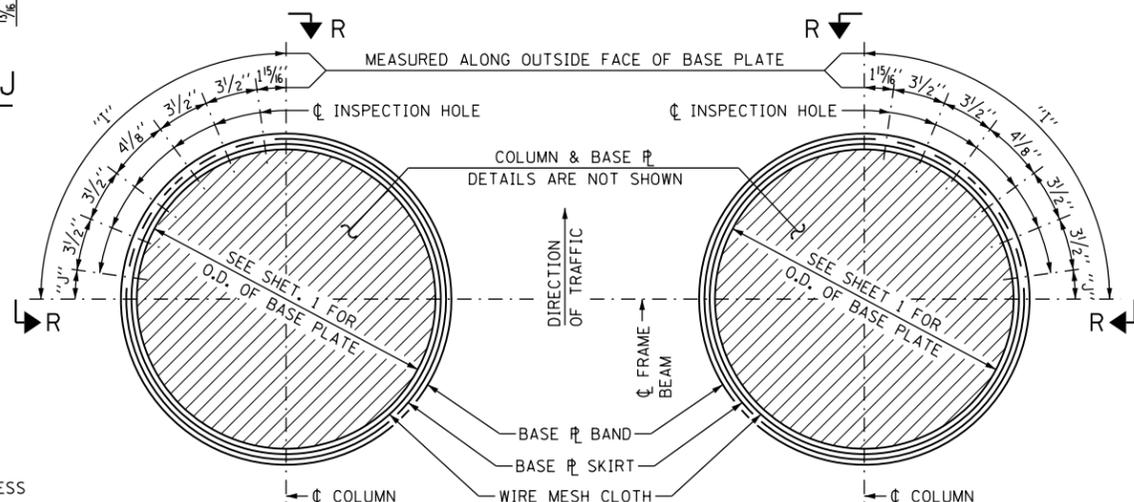
SECTION D-D



COLUMN BASE



VIEW R-R (BASE PLATE SKIRT)



LEFT BASE PLATE

RIGHT BASE PLATE

COLUMN BASE PLATE PLAN

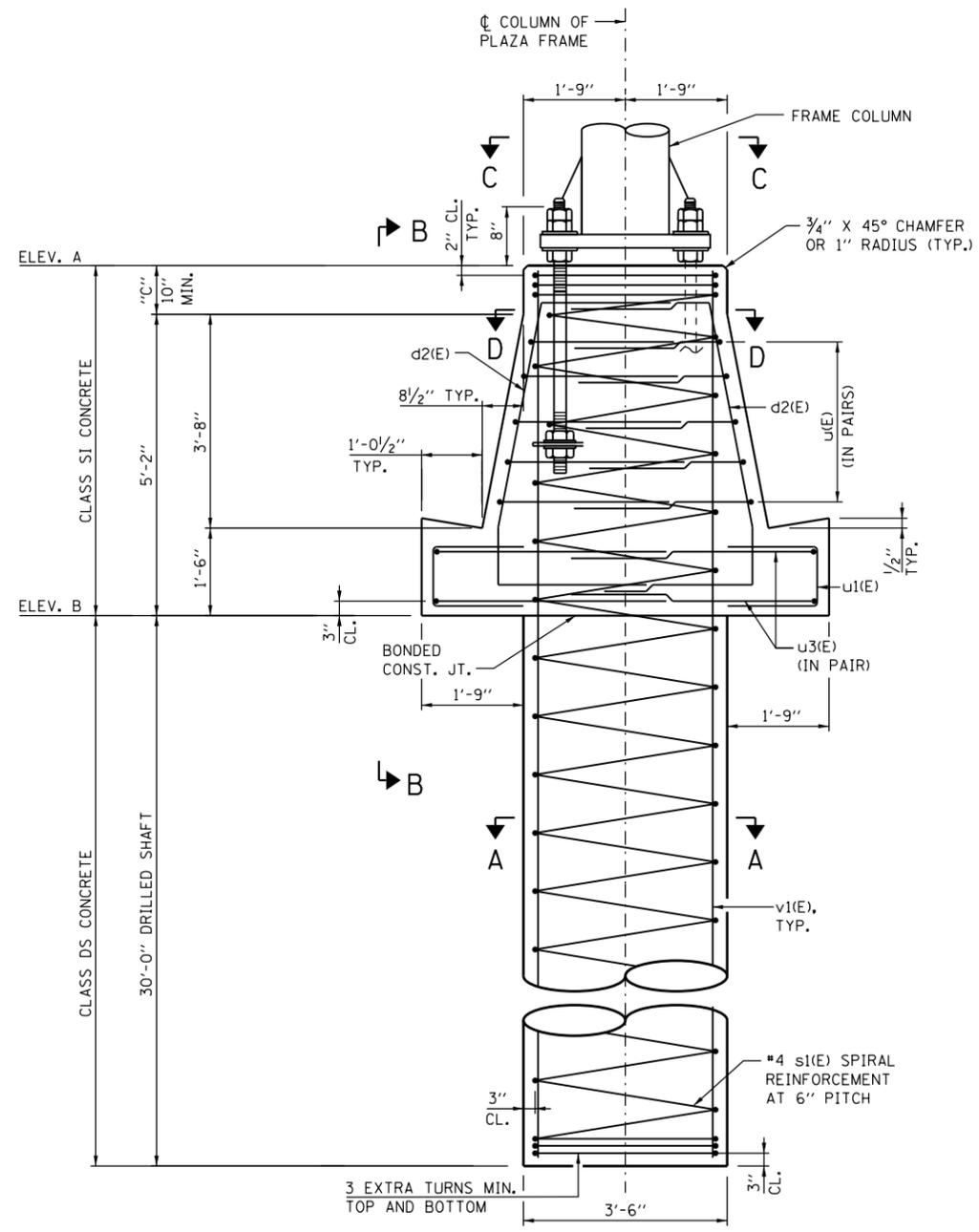
FRAME COLUMN	"I"	"J"	"K"
HSS 16x0.500	1'-8 7/16"	3/8"	6'-9 9/16"
HSS 18x0.500	1'-10"	1 1/8"	7'-3 7/8"

OVERHEAD SIGN STRUCTURE
MONOTUBE TYPE (STEEL)
MAINLINE STRUCTURE DETAILS

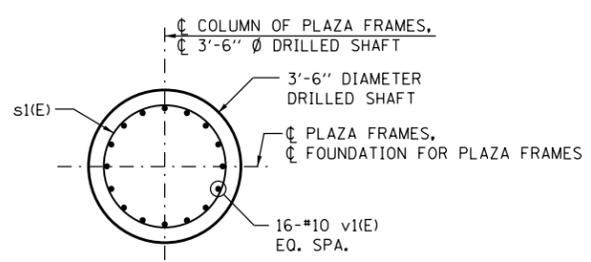
STANDARD F13-06

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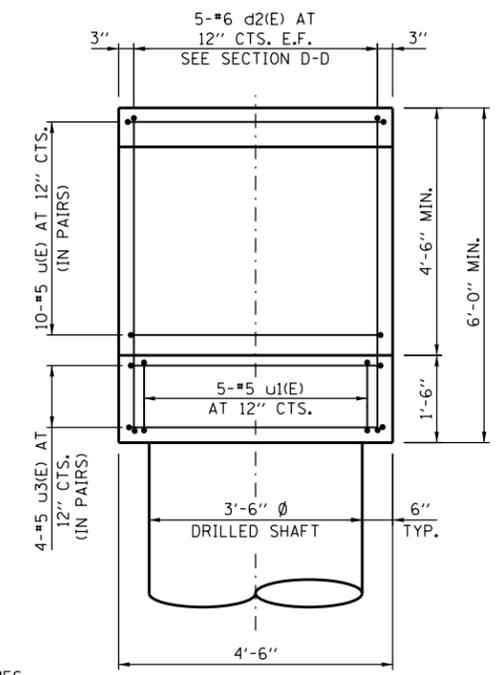




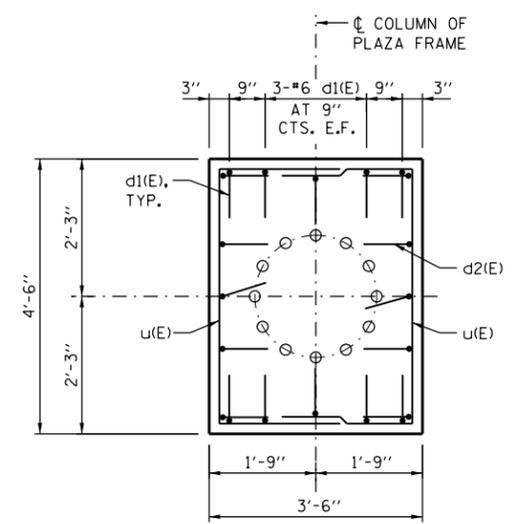
MEDIAN FOUNDATION FOR PLAZA FRAMES



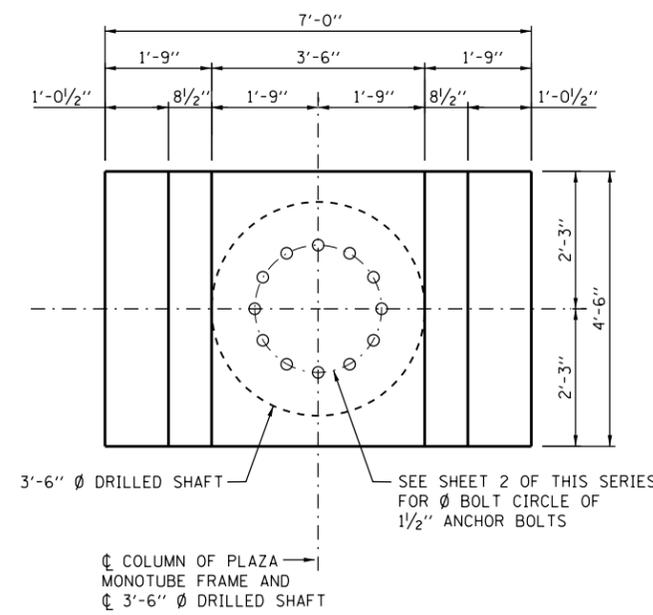
SECTION A-A



VIEW B-B



SECTION D-D



VIEW C-C

NOTES:

1. ANCHOR BOLT ASSEMBLY DETAIL, ANCHOR PLATE DETAIL AND BAR BENDING DIAGRAMS AND QUANTITIES ARE SHOWN ON SHEET 6 OF THIS SERIES.
2. SEE SHEET 6 OF THIS SERIES FOR ADDITIONAL NOTES.
3. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON THE PLANS.

LEGEND:

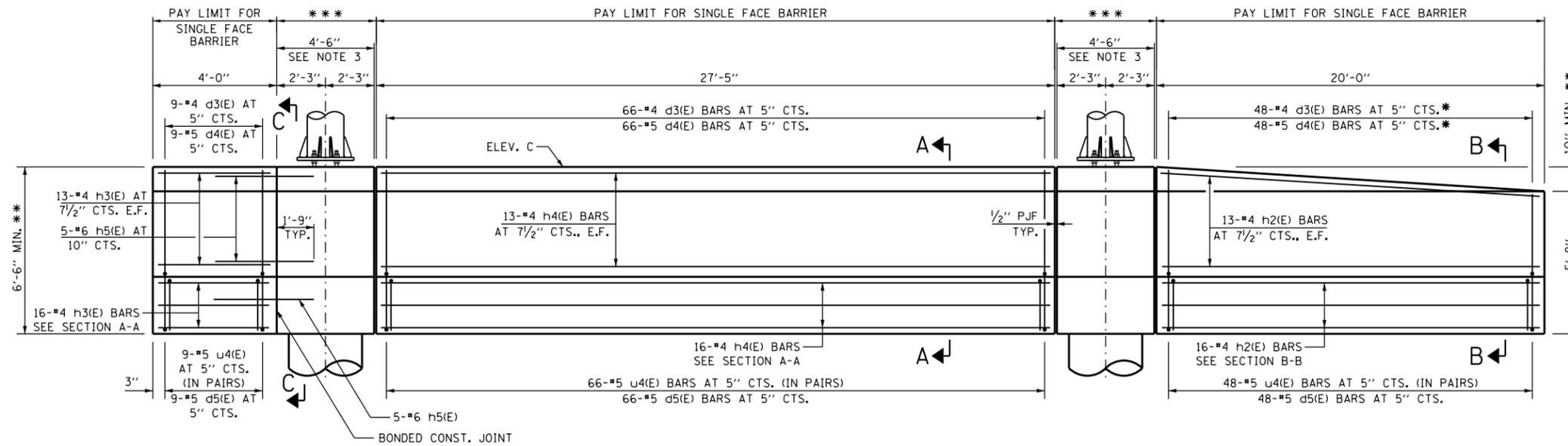
E.F. - EACH FACE
CTS. - CENTERS

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OVERHEAD SIGN STRUCTURE
MONOTUBE TYPE (STEEL)
MAINLINE STRUCTURE DETAILS

STANDARD F13-06



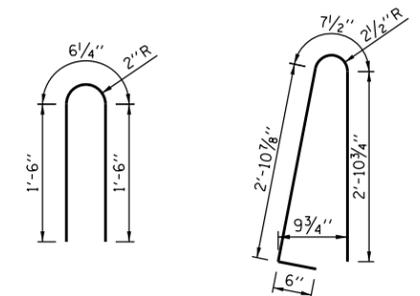
SINGLE FACE BARRIER ELEVATION

INSIDE FACE BARRIER IS SHOWN

- * CUT IN FIELD AS REQUIRED TO FIT TAPER
- ** BASED ON DIMENSION "C" = 10'
- *** PAY LIMIT FOR FOUNDATION FOR OVERHEAD SIGN STRUCTURE

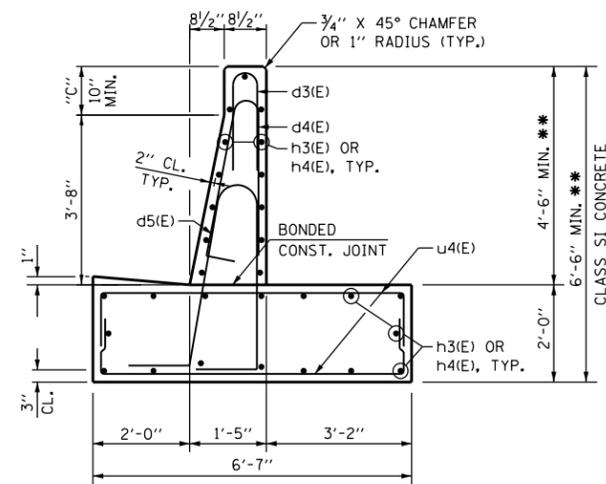
BAR LIST - ONE BARRIER

BAR	NO.	SIZE	LENGTH	SHAPE
d3(E)	123	#4	3'-7"	U
d4(E)	123	#5	7'-0"	U
d5(E)	123	#5	9'-10"	U
h2(E)	29	#4	19'-7"	I
h3(E)	29	#4	2'-8"	I
h4(E)	29	#4	27'-1"	I
h5(E)	10	#6	3'-9"	I
u4(E)	246	#5	9'-3"	L

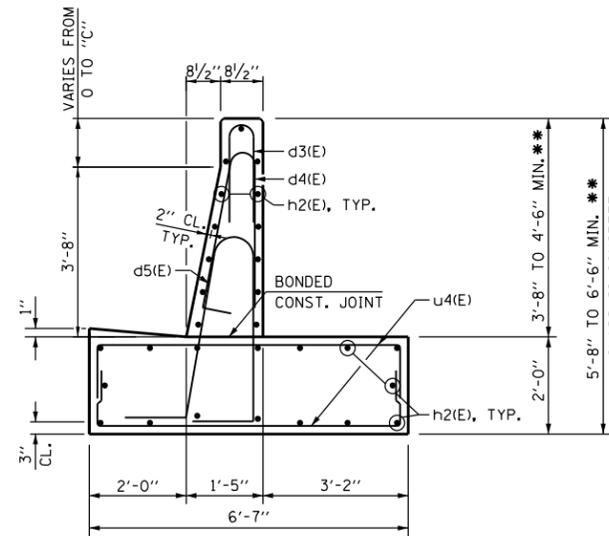


BAR d3(E)

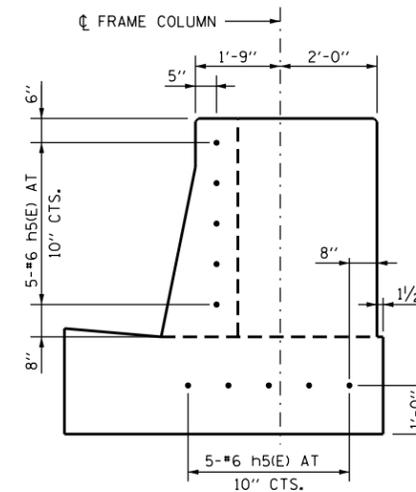
BAR d4(E)



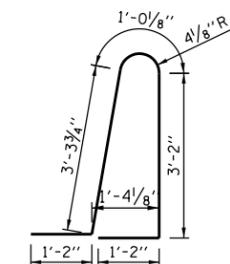
SECTION A-A



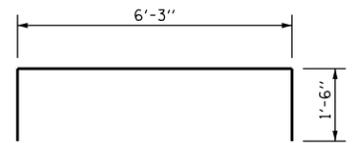
SECTION B-B



SECTION C-C



BAR d5(E)



BAR u4(E)

ESTIMATED QUANTITY

(FOR ONE SINGLE FACE BARRIER)

ITEM	UNIT	TOTAL
CONCRETE STRUCTURES	CU. YD.	33.6
REINFORCEMENT BARS, EPOXY COATED	POUND	5,840
PROTECTIVE COAT	SQ. YD.	40.7

NOTES:

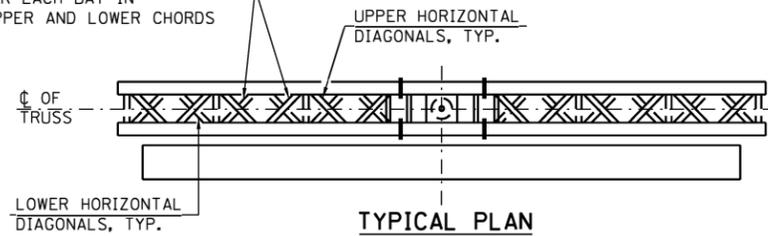
1. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER, TOP FACE OF THE GUTTER AND TO THE ENTRANCE SIDE FACE (AT THE BEGINNING OF THE PLAZA PAVEMENT) FOR THE FULL HEIGHT OF THE BARRIER.
2. FOR LOCATION OF ELECTRICAL JUNCTION BOXES ON THE WALL, SEE ELECTRICAL DETAIL SHEETS.
3. FOR SINGLE FACE BARRIER FOUNDATION DETAILS FOR PLAZA FRAMES SEE SHEET 6 OF THIS SERIES.
4. QUANTITIES FOR SINGLE FACE BARRIER ARE DETERMINED USING "C" = 10". IF DIMENSION "C" IS GREATER THAN 10", ADJUST QUANTITIES ACCORDINGLY.



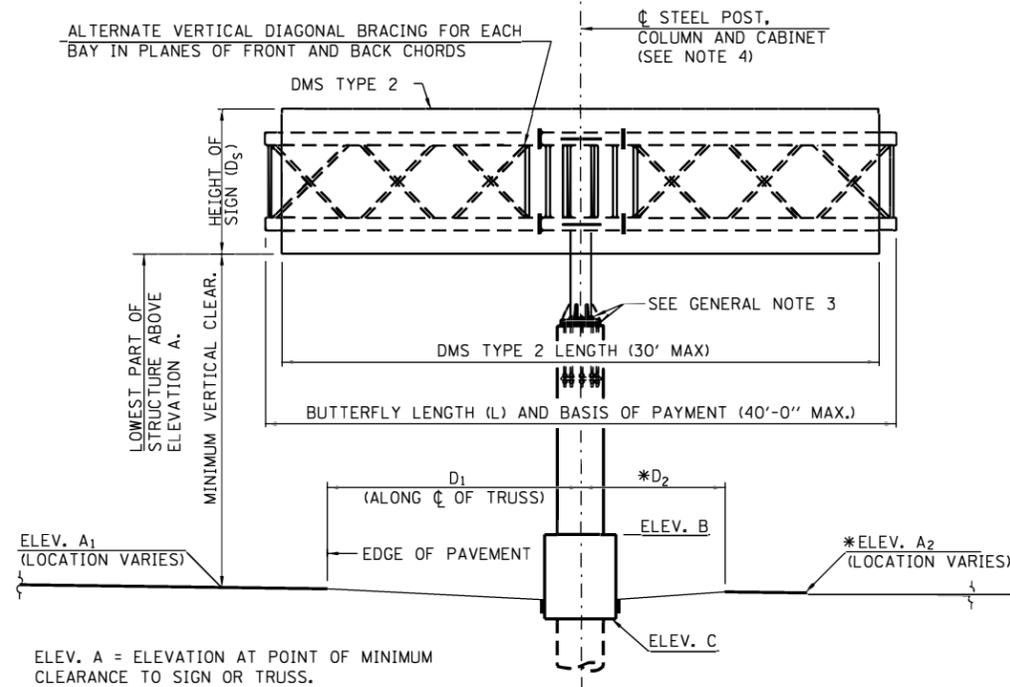
Paul Kovacs

APPROVED..... DATE 3-31-2014.
CHIEF ENGINEERING OFFICER

ALTERNATE DIRECTION OF HORIZONTAL DIAGONALS FOR EACH BAY IN PLANES OF UPPER AND LOWER CHORDS



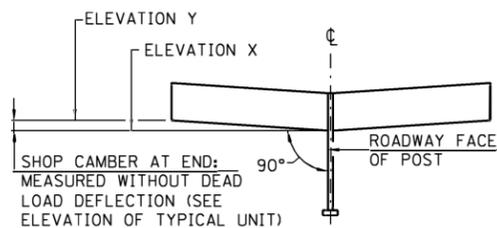
ALTERNATE VERTICAL DIAGONAL BRACING FOR EACH BAY IN PLANES OF FRONT AND BACK CHORDS



* ELEVATION A₂ AND DIMENSION D₂ NOT USED WHEN BUTTERFLY STRUCTURE IS MOUNTED ON RIGHT SIDE OF THE SHOULDER.

SHOP CAMBER TABLE

UNIT LENGTH L ₁ OR L ₂	SHOP CAMBER AT END
15'	1/4"
20'	1/2"
25'	3/4"

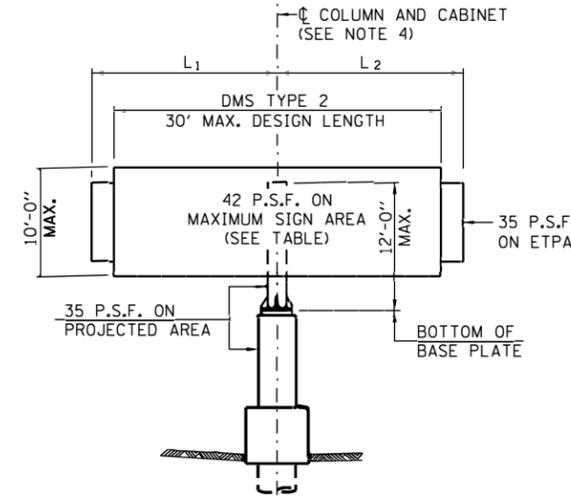


CAMBER DIAGRAM
(FOR FABRICATION ONLY)

APPROVED: *Paul Kovacs* DATE 3-31-2014.
CHIEF ENGINEERING OFFICER

DMS TYPE 2 TABLE

TRUSS MOUNTING	MAXIMUM TOTAL AREA	MAXIMUM ALLOWABLE WEIGHT
ONE FACE	300 SQ. FT.	5000 LB. - CENTERED ON STRUCTURE
TWO FACE	300 SQ. FT.	6000 LB. - CENTERED ON STRUCTURE



DESIGN WIND LOADING DIAGRAM
ETPA = EFFECTIVE TRUSS PROJECTED AREA

FABRICATION NOTES:

- MATERIALS:** ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53 GRADE B OR ASTM A106 GRADE B OR API 5L GRADE X42 OR API 5L GRADE X52. ALL STRUCTURAL STEEL TUBE SHALL CONFORM TO ASTM A500 GRADE B. ALL STRUCTURAL STEEL PLATES AND SHAPE SHALL CONFORM TO AASHTO M270 GRADE 50 (M183 OR M223 GRADE 50). STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304, OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE COLUMN SHALL HAVE A MINIMUM LONGITUDINAL CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F (ZONE 2) BEFORE GALVANIZING.
- WELDING:** ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 STRUCTURAL WELDING CODE AND THE STANDARD SPECIFICATIONS.
- FASTENERS:** HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193, GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(f)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
- U-BOLTS & EYEBOLTS:** U-BOLTS AND EYEBOLTS SHALL BE PRODUCED FROM ASTM A276 TYPE 304, 304L, 316 OR 316L, CONDITION A, COLD FINISHED STAINLESS STEEL, OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER. ALL NUTS FOR U-BOLTS AND EYEBOLTS SHALL BE LOCK NUTS EQUIVALENT TO ASTM A307 WITH NYLON OR STEEL INSERTS AND HOT DIP GALVANIZED PER AASHTO M232. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240, TYPE 302 OR 304, IS REQUIRED UNDER EACH U-BOLT AND EYEBOLT LOCKNUT.
- GALVANIZING:** ALL STEEL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED.
- ANCHOR BOLTS:** SHALL CONFORM TO AASHTO M314 OR ASTM F1554 GRADE 55.

GENERAL NOTES:

- WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE BUTTERFLY TYPE (STEEL) SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
- AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND BOTTOM LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
- CENTERLINE DMS TYPE 2 SHALL BE LOCATED AT CENTERLINE OF COLUMN.
- SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN DMS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE VIBRATIONS AND OSCILLATIONS, CONSIDERATION SHOULD BE GIVEN TO ATTACHING TEMPORARY BLANK SIGN PANELS TO THE STRUCTURE.
- TRUSSES SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THIS MAY REQUIRE ROPES BETWEEN HORIZONTALS AND DIAGONALS OR ENERGY DISSIPATING (ELASTIC) TIES TO THE VEHICLE. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.
- PROVIDE RUBBED SURFACE FINISH FOLLOWED BY CONCRETE SEALER APPLICATION ON ENTIRE SURFACE OF CONCRETE COLUMN AND ALL SURFACES OF CRASHWALL, EXCEPT BOTTOM SURFACE.
- REINFORCEMENT BARS: REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- PARAMETERS SHOWN ARE BASIS FOR THIS STANDARD. INSTALLATION NOT WITHIN DIMENSIONAL LIMITS SHOWN REQUIRE SPECIAL ANALYSIS FOR ALL COMPONENTS.
- IT IS PERMISSIBLE TO MOUNT TWO DMS TYPE 2 ON THE BUTTERFLY TRUSS, ONE ON EACH FACE OF THE TRUSS. THE TOTAL COMBINED DEPTH OF DMS TYPE 2 SHALL NOT EXCEED 4'-4" AND THE TOTAL COMBINED WEIGHT SHALL NOT EXCEED 6000 LB. CENTER THE DMS TYPE 2 ON ϕ STEEL POST. DO NOT INSTALL SIGN PANEL IN CONJUNCTION WITH DMS TYPE 2 SIGN CABINETS ON ONE FACE OF THE TRUSS. A SIGN PANEL ON ONE FACE AND DMS TYPE 2 ON THE OTHER IS PERMITTED.

CONSTRUCTION SPECIFICATIONS:

- ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 AND 734 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

LOADING:

- 90 M.P.H. WIND VELOCITY. WIND LOADING: 42 P.S.F. NORMAL TO DMS TYPE 2 CABINET AREA AND 35 P.S.F. NORMAL TO TRUSS ELEMENTS NOT BEHIND SIGN LOADING DIAGRAM.
- THE AASHTO GROUP II AND III ALLOWABLE STRESS SHALL BE 133% (ALLOWABLE STRESS DESIGN).

DESIGN SPECIFICATIONS:

THESE STRUCTURES ARE DESIGNED TO SATISFY THE 2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SIXTH EDITION.

CONCRETE COLUMN, CRASHWALL AND DRILLED SHAFT ARE DESIGNED IN ACCORDANCE WITH THE 2012 EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (INCLUDING THE 2013 INTERIM REVISIONS).

DESIGN UNIT STRESSES FOR REINFORCED CONCRETE:

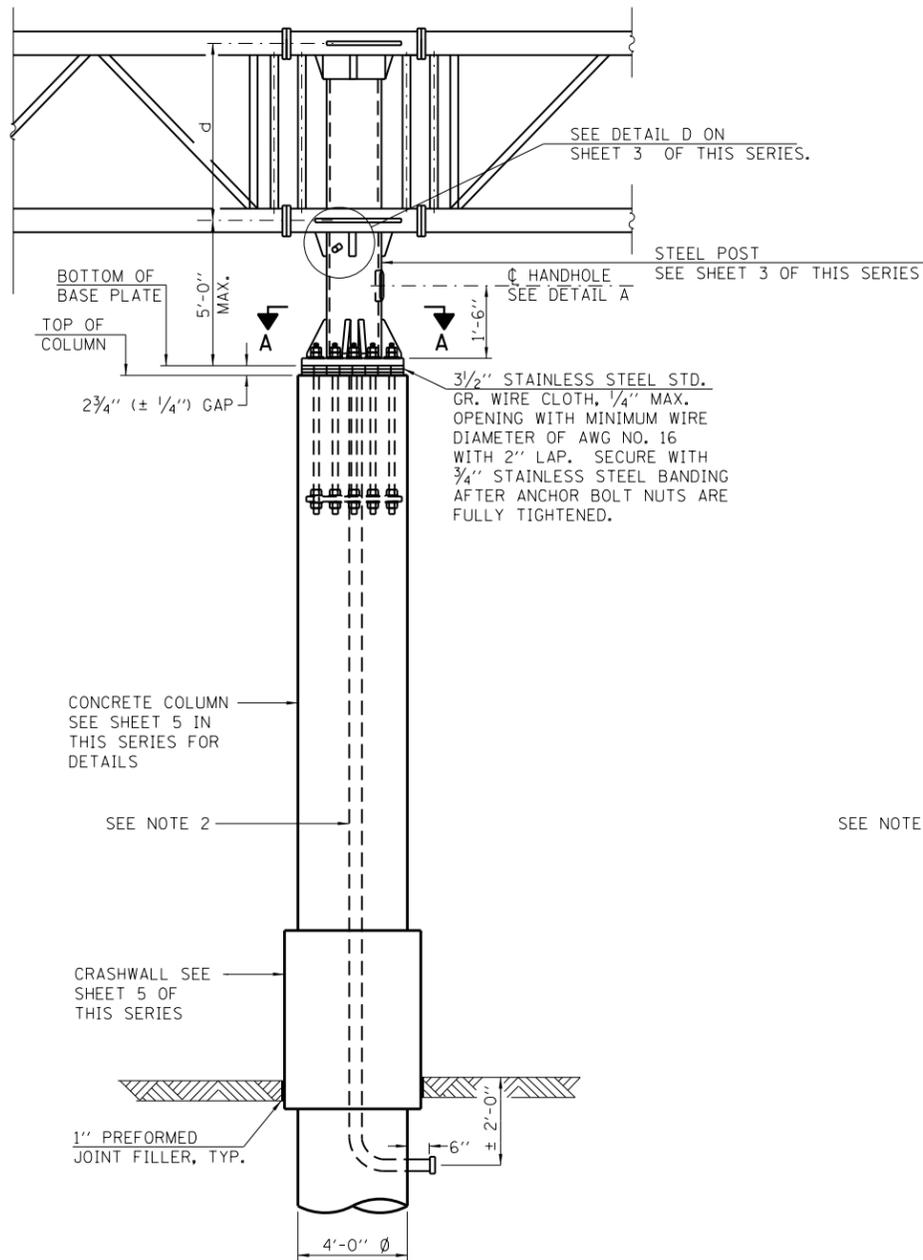
CLASS SI CONCRETE: $f'_c = 3,500$ P.S.I.
CLASS DS CONCRETE: $f'_c = 4,000$ P.S.I.
REINFORCING STEEL: $f_y = 60,000$ P.S.I.

DATE	REVISIONS
7-01-2014	REVISED NOTES
3-11-2015	REVISED NOTES
3-31-2016	ADDED FOUNDATION NOTE AND REMOVED WALKWAY GRATING
3-01-2018	REVISED SIGN STRUCTURE
3-01-2019	REVISED NOTE TO APPLY PROTECTIVE COAT TO THE PERIMETER OF THE COLUMN
2-13-2020	UPDATED CRASH WALL HEIGHT. ADDED HEAVY HEX NUT TO ANCHORS



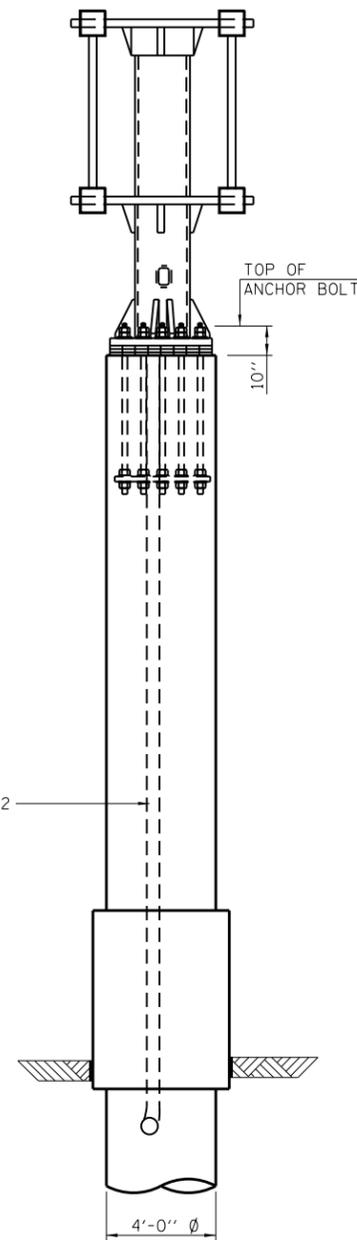
OVERHEAD SIGN STRUCTURE
BUTTERFLY TYPE
STRUCTURE DETAILS

STANDARD F14-05

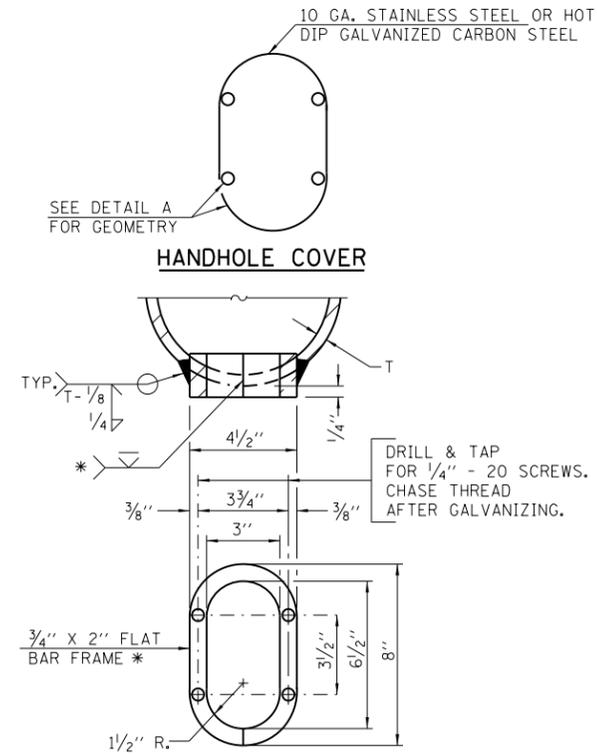


FRONT ELEVATION

SEE SHEET 5 OF THIS SERIES FOR FOUNDATION DETAILS.
(DMS TYPE 2 SIGN CABINET NOT SHOWN FOR CLARITY)



SIDE ELEVATION

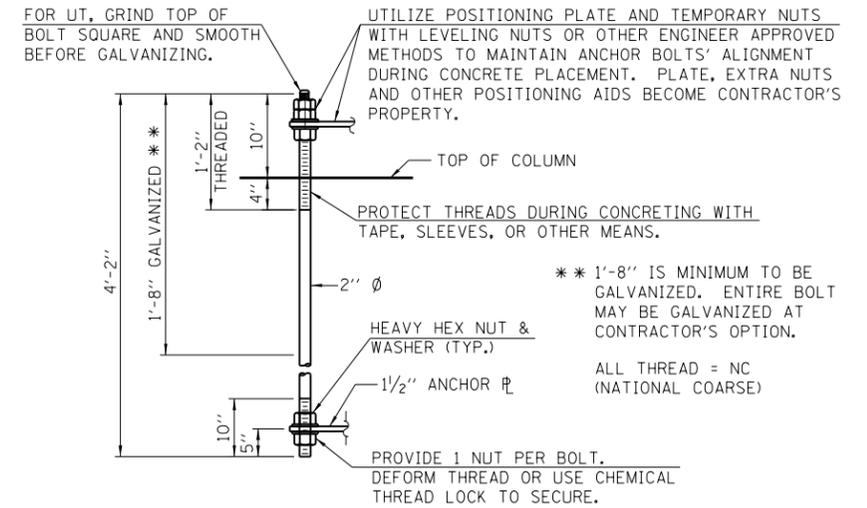


DETAIL A

* BENT BARS MAY BE BUTT WELDED TOP AND BOTTOM OR BOTTOM ONLY. IN LIEU OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT FROM 2" PLATE (ROLLING DIRECTION VERTICAL). ALL CUT FACES TO BE GROUND TO ANSI ROUGHNESS OF 500 μin OR LESS.

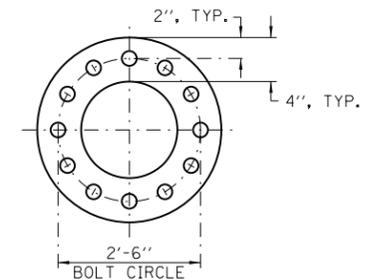
NOTE:

1. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON PLANS.
2. SEE PLAN SHEETS FOR TYPE, SIZE AND NUMBER OF CONDUITS.

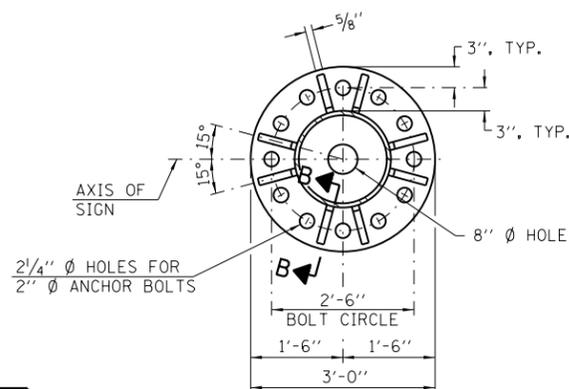


ANCHOR BOLT DETAIL

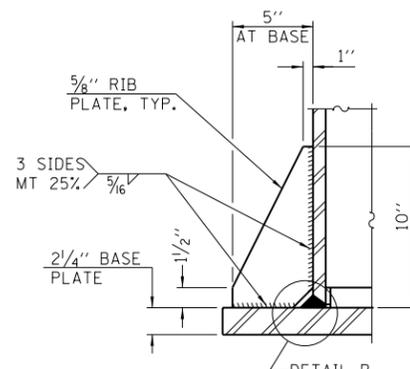
ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 OR ASTM F1554 GRADE 55. GALVANIZE THE UPPER 1'-8" (MINIMUM (**)) AND ASSOCIATED AASHTO M291, GRADE A, C OR DH HEAVY HEX NUTS AND HARDENED WASHERS PER AASHTO M232. NO WELDING SHALL BE PERMITTED ON BOLTS. PROVIDE A NUT AT BOTTOM, A HEXAGON LOCKNUT AND WASHER ABOVE BASE PLATE AND A LEVELING NUT AND WASHER BELOW BASE PLATE. NUTS SHALL EACH BE TIGHTENED WITH 200 LB.-FT. MINIMUM TORQUE AGAINST BASE PLATE. BEFORE OR AFTER THREADING, BUT BEFORE GALVANIZING, EACH ANCHOR BOLT SHALL BE ULTRASONICALLY TESTED (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORD WITH ANSI GUIDELINES, TO ENSURE NO REJECTABLE FLAWS EXIST IN THE UPPER 18" (TENSION CRITERIA).



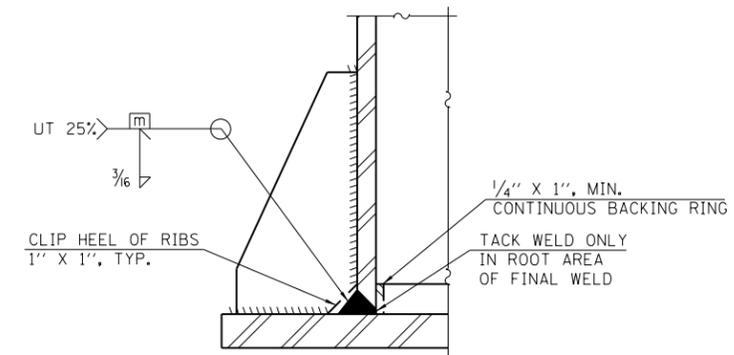
POSITIONING PLATE/ANCHOR BOLT



SECTION A-A



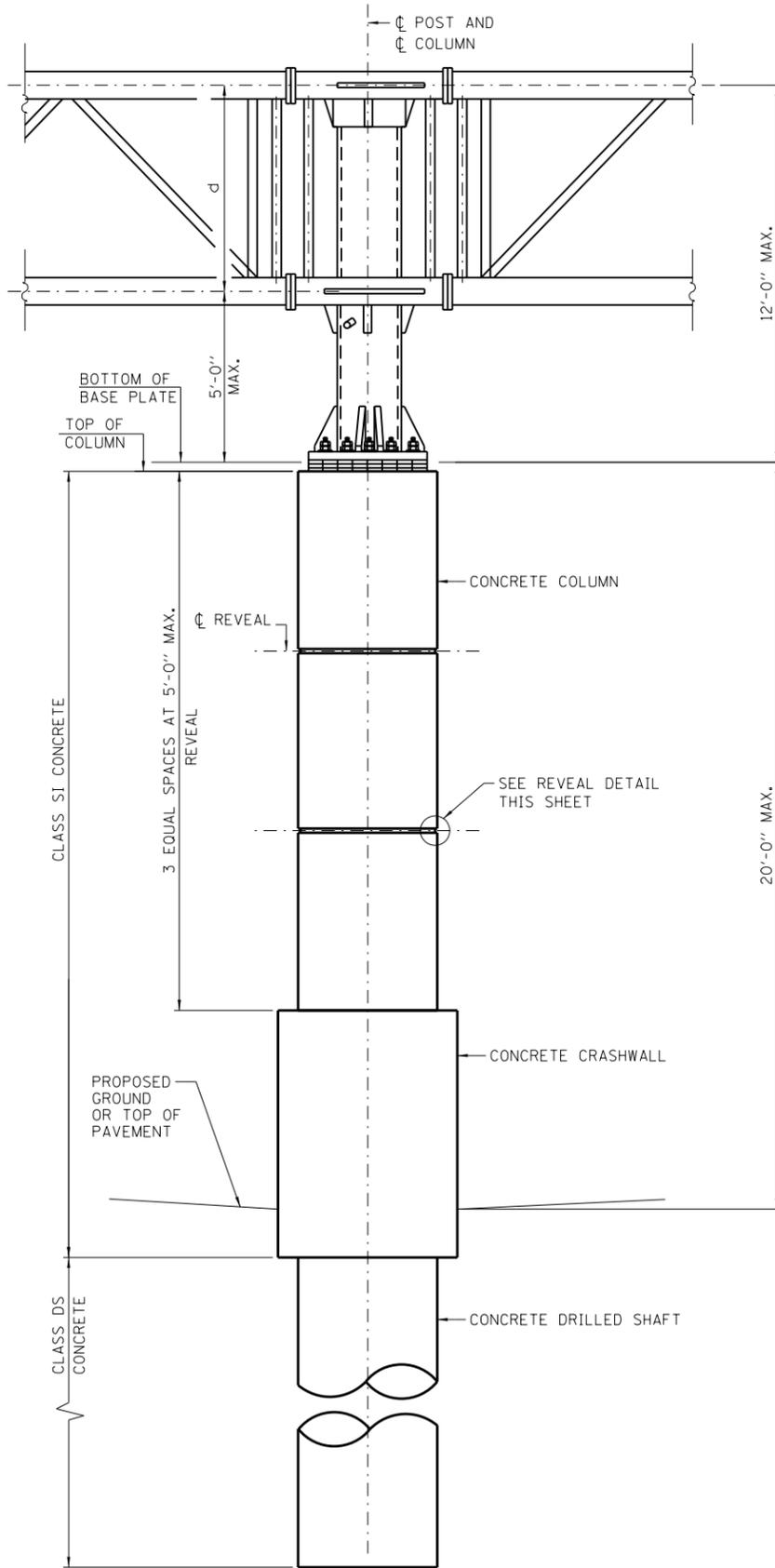
SECTION B-B



**DETAIL B
(TYPICAL RIB)**

APPROVED... DATE 3-31-2014.
CHIEF ENGINEERING OFFICER





FRONT ELEVATION
DMS TYPE 2 NOT SHOWN FOR CLARITY

BILL OF MATERIAL-EACH FOUNDATION

CLASS S1 CONC. CY	CLASS DS CONC. CY	REBAR POUNDS	PROTECTIVE COAT SQ. YD.
12.9	11.7	4,790	6.0

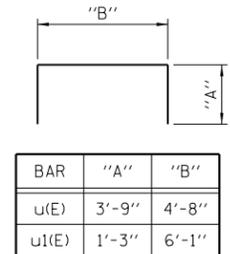
NOTES:

1. COLUMN CONCRETE VOLUME AND BAR s1(E) LENGTH ARE COMPUTED BASED ON 15'-0" COLUMN HEIGHT. IF COLUMN HEIGHT IS NOT EQUAL 15'-0", QUANTITIES SHALL BE CALCULATED BASED ON ACTUAL COLUMN HEIGHT.
2. PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CRASHWALL AND PERIMETER OF THE COLUMN.

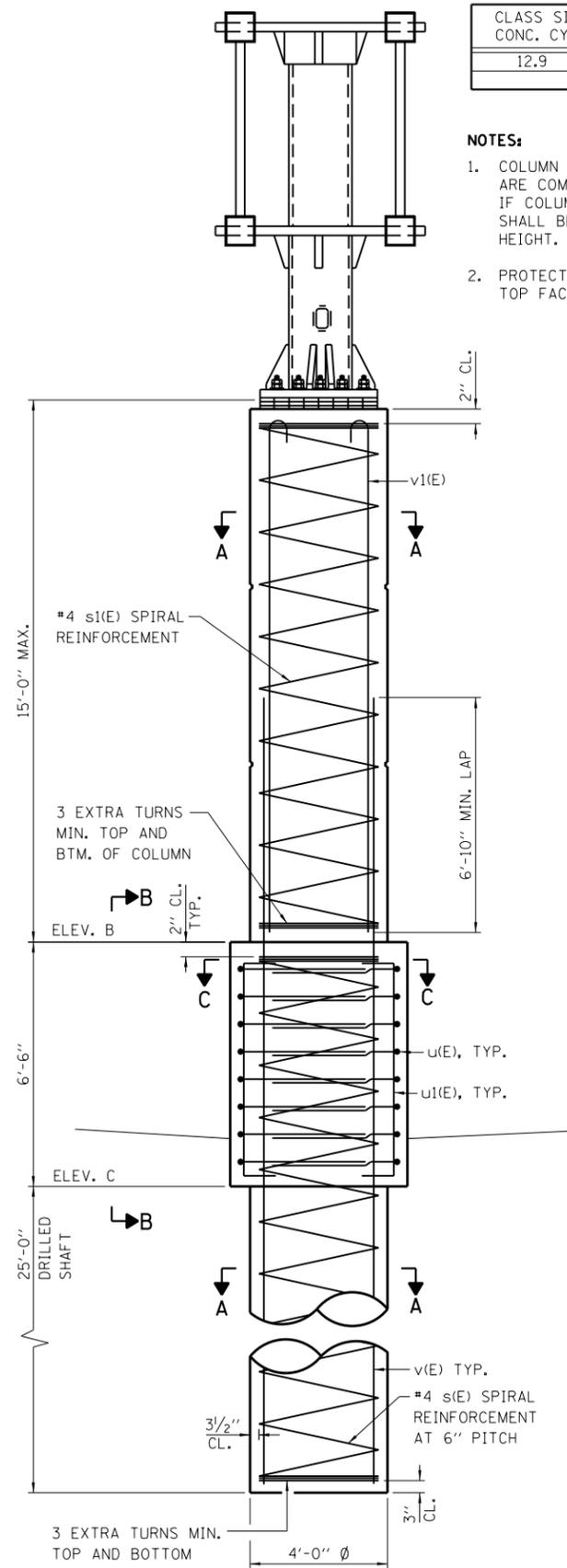
BAR LIST-EACH FOUNDATION
(COLUMN, CRASHWALL AND DRILLED SHAFT)

BAR	NUMBER	SIZE	LENGTH	SHAPE
v(E)	20	#9	38'-3"	
v1(E)	20	#9	15'-8"	
s(E)	1	#4	31'-1"	
s1(E)	1	#4	14'-5"	
u(E)	12	#5	12'-2"	U
u1(E)	18	#5	8'-7"	U

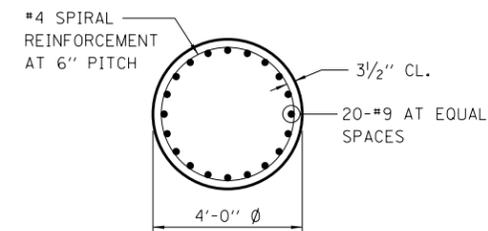
* THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL



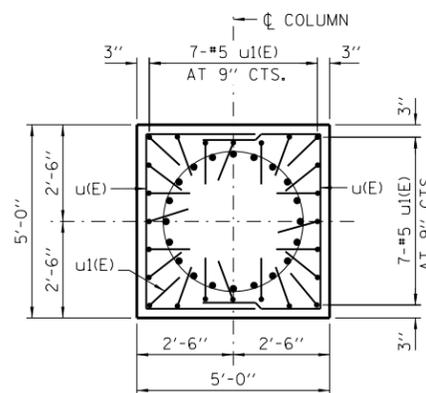
BAR u(E), u1(E)



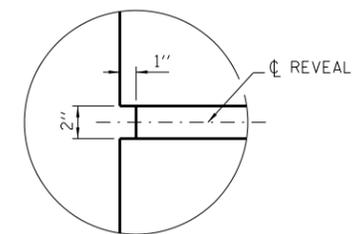
SIDE ELEVATION



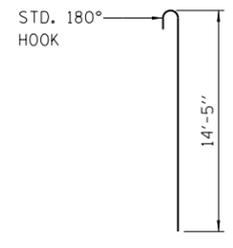
SECTION A-A



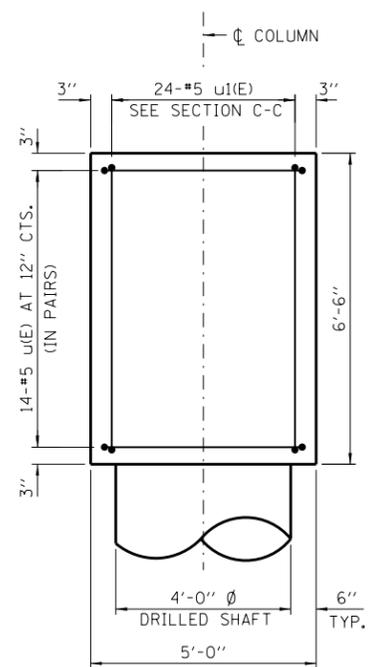
SECTION C-C



REVEAL DETAIL



BAR v1(E)

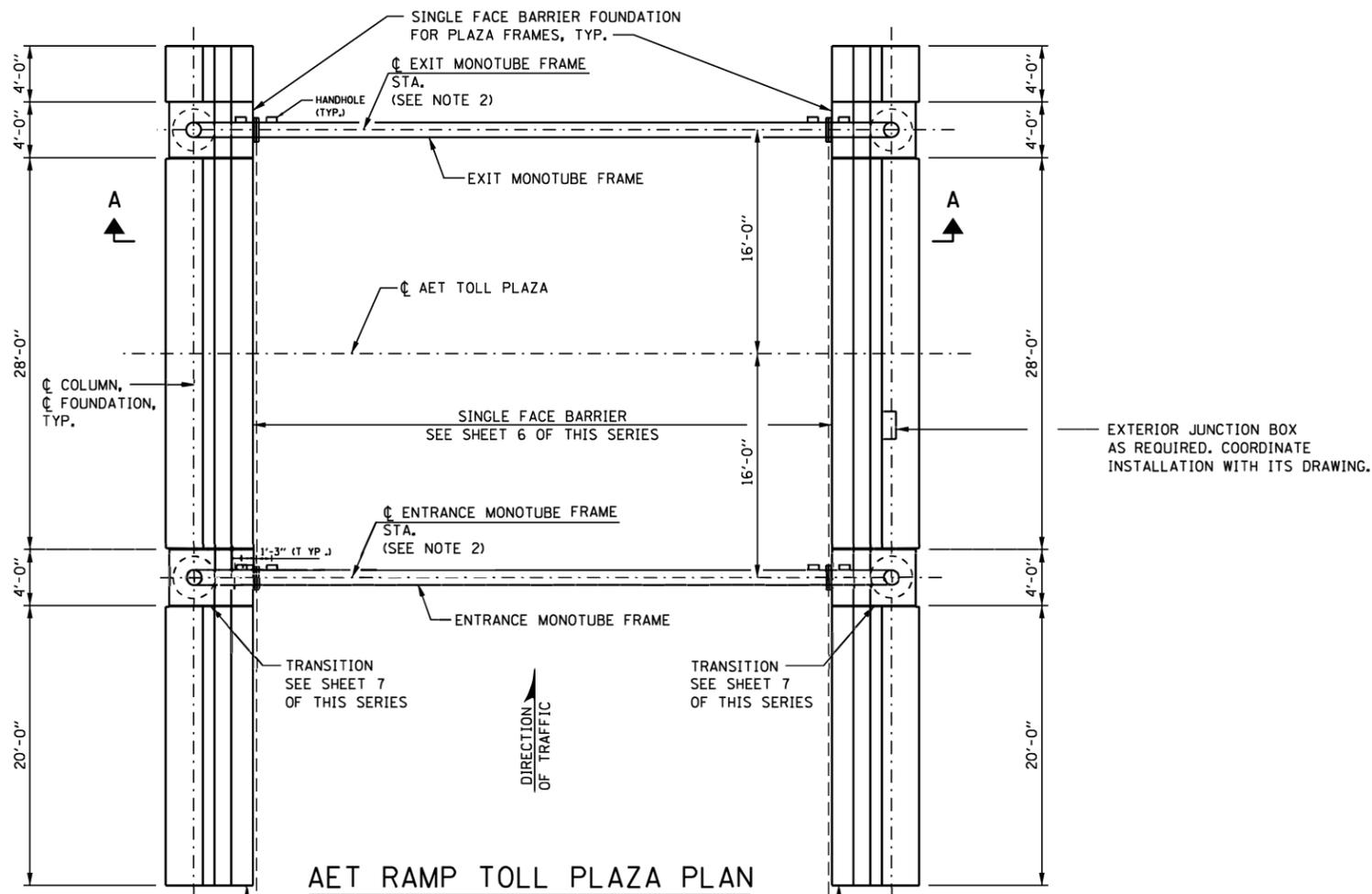


SECTION B-B

FOUNDATIONS:

THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.





SIGN TABLE

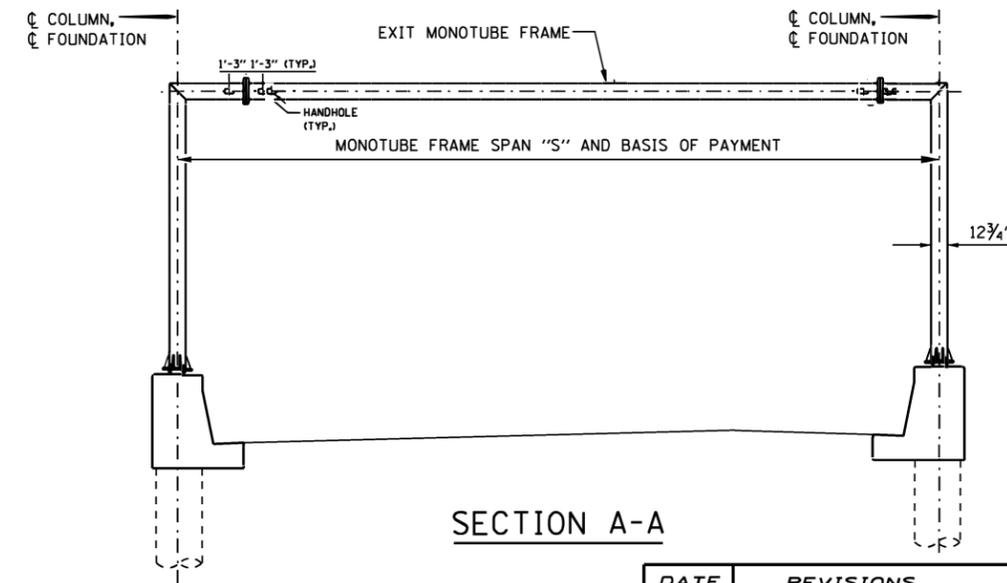
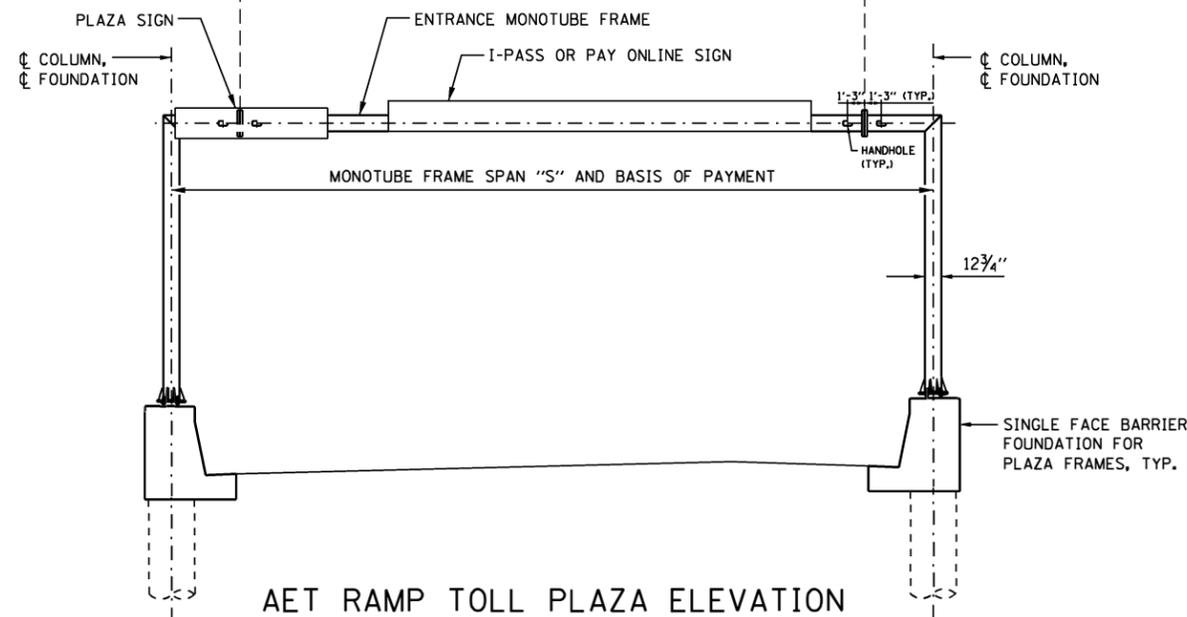
SIGN	MAXIMUM AREA	MAXIMUM LENGTH
PLAZA SIGN	24 S.F.	8'-0"
I-PASS OR PAY ONLINE SIGN	60 S.F.	20'-0"

NOTE:

- SEE CONTRACT PLANS FOR SIGN SIZE AND LOCATION.
- PROVIDE ENTRANCE AND EXIT MONOTUBE FRAME STATIONS IN CONTRACT PLANS.

PROVIDE ATTENUATOR, BARRIER WALL OR GUARDRAIL TERMINAL AS SHOWN ON PLANS

PROVIDE ATTENUATOR, BARRIER WALL OR GUARDRAIL TERMINAL AS SHOWN ON PLANS



SECTION A-A

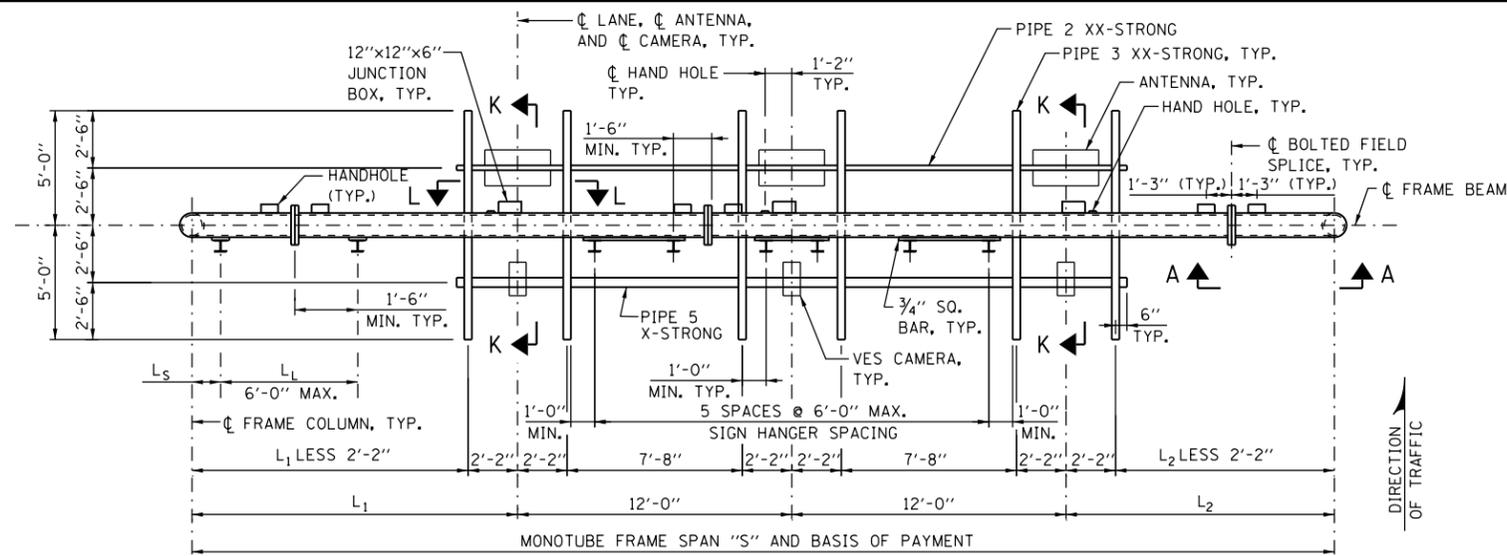
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014

DATE	REVISIONS
3-31-2016	REVISED FOUNDATION NOTE
3-31-2017	REVISED I-PASS ONLY SIGN
3-01-2019	UPDATED CONSTANT SLOPE BARRIER, REINFORCING DETAILS AND QUANTITIES
5-24-2019	UPDATED SHOULDER BARRIER DETAILS AND QUANTITIES FOR 3'-8"
2-13-2020	ADDED HANDHOLE, INSTALLATION & INSPECTION OF SPLICE & ANCHORS

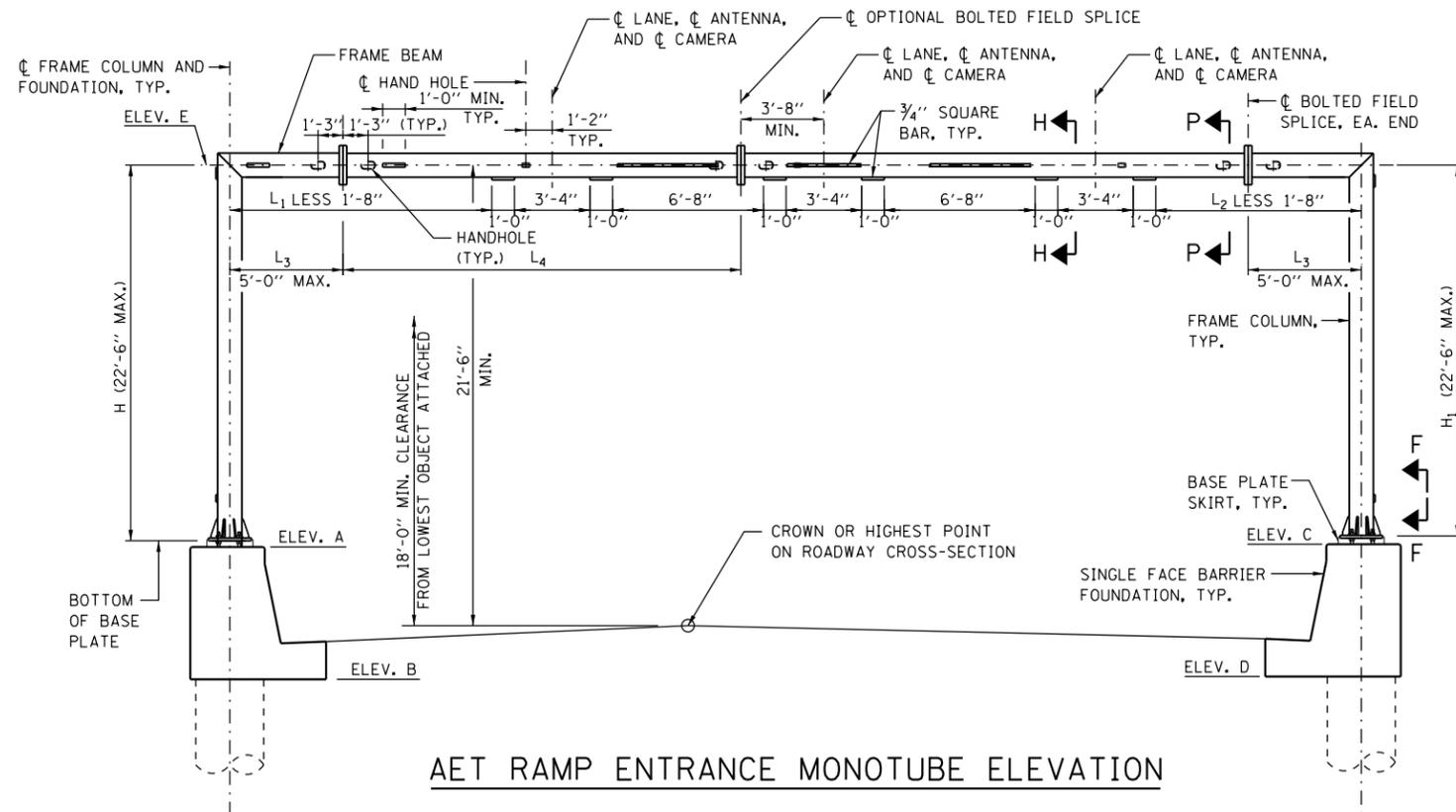


OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

STANDARD F15-05



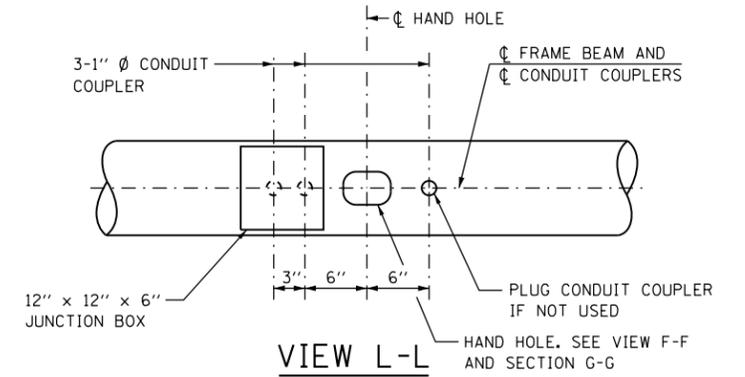
AET RAMP ENTRANCE MONOTUBE PLAN



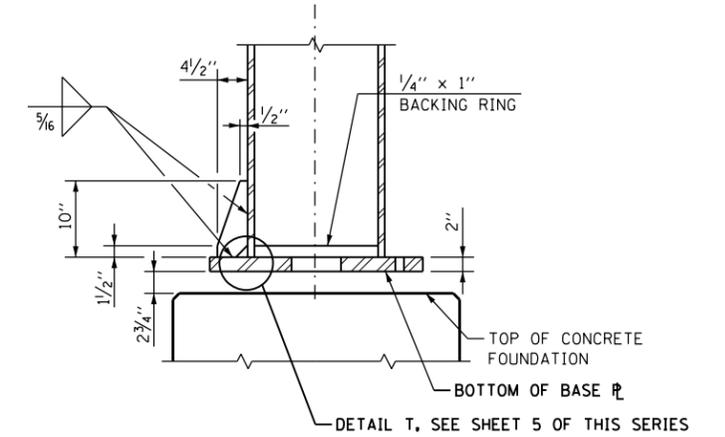
AET RAMP ENTRANCE MONOTUBE ELEVATION

NOTES:

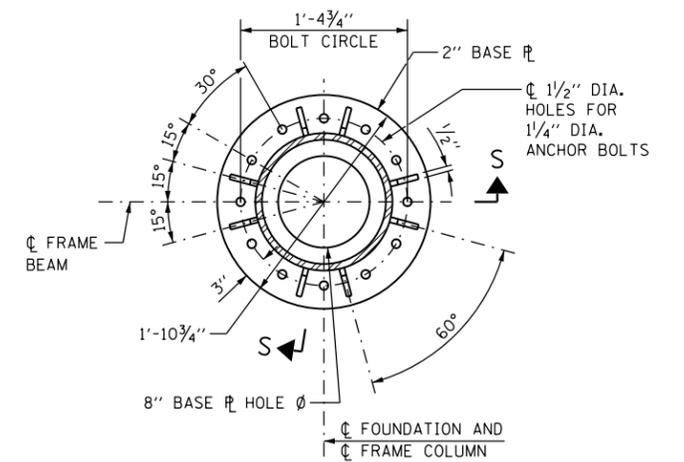
1. FOUNDATIONS FOR MONOTUBE FRAMES ARE SHOWN ON SHEET 6 OF THIS SERIES.
2. SEE SHEET 5 OF THIS SERIES FOR SECTIONS A-A, G-G, H-H, K-K, VIEW F-F AND BASE PLATE SKIRT.
3. SEE SHEET 4 OF THIS SERIES FOR SECTION P-P.
4. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
5. LOCATE OPTIONAL BOLTED FIELD SPLICE NEAR MIDSPAN.
6. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL SHEET.



VIEW L-L



SECTION S-S



**BASE PLATE PLAN
ENTRANCE AND EXIT MONOTUBE**

ENTRANCE MONOTUBE FRAME TABLE

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
50' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	1 3/4"

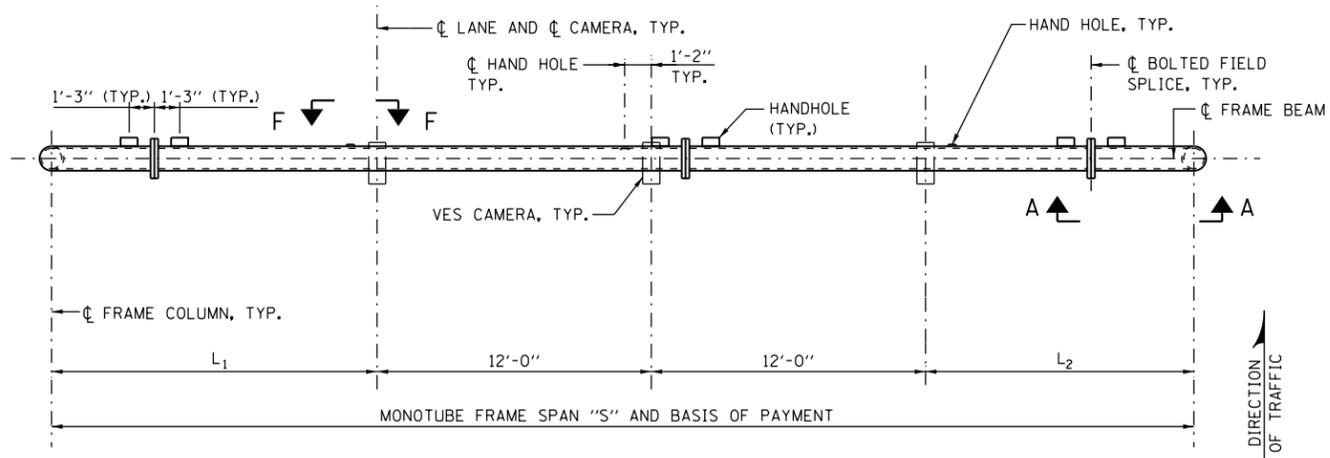
SEE ILLINOIS TOLLWAY STANDARD DRAWING F13 FOR SPANS GREATER THAN 50'.



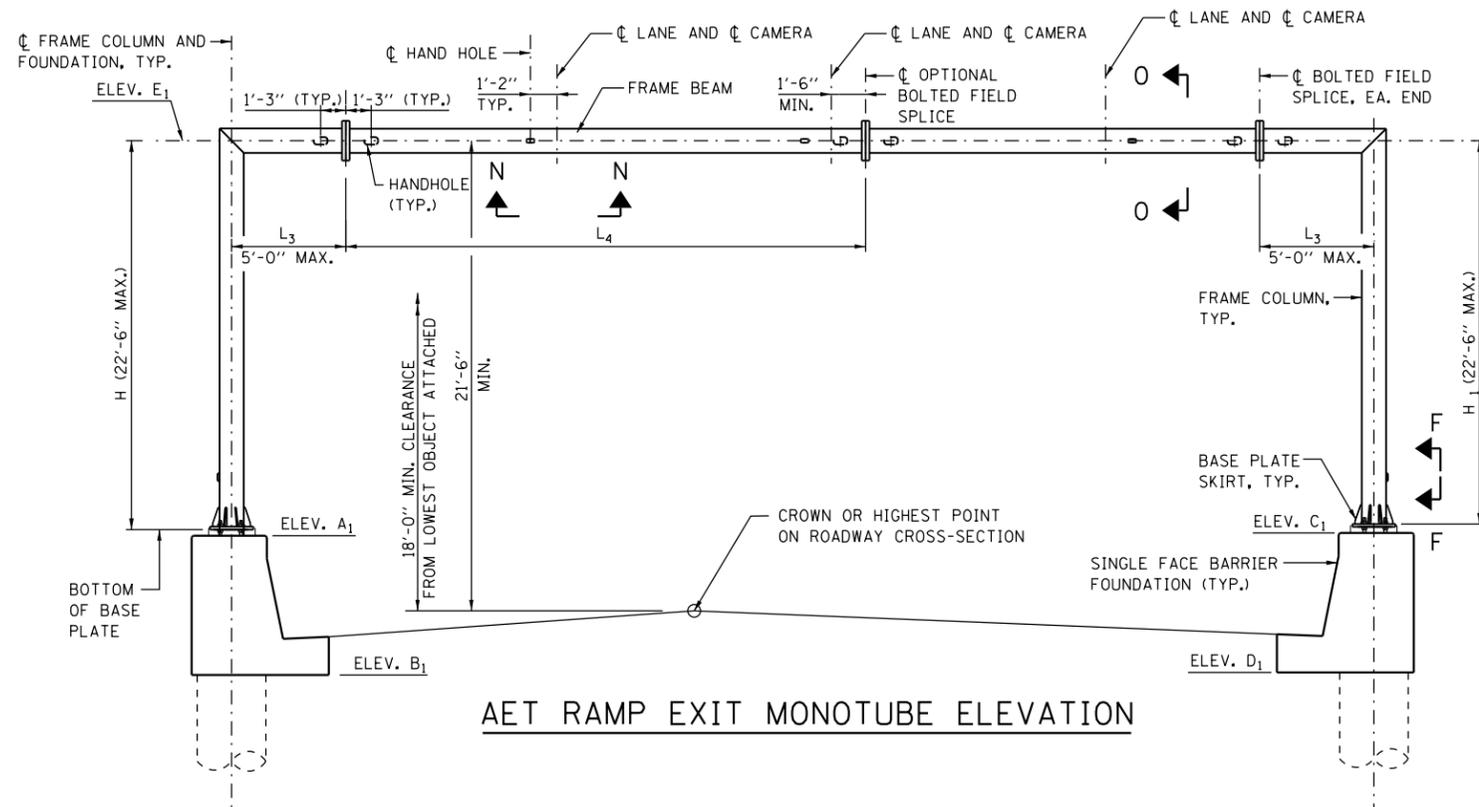
OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

STANDARD F15-05

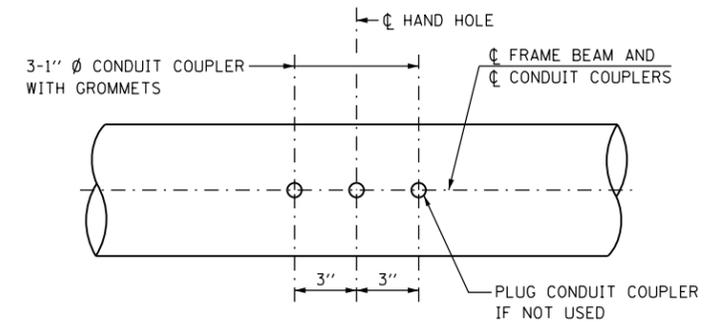
APPROVED: *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014



AET RAMP EXIT MONOTUBE PLAN



AET RAMP EXIT MONOTUBE ELEVATION



VIEW N-N (CONDUIT COUPLER DETAIL)

EXIT MONOTUBE FRAME TABLE

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
50' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	1 3/4"

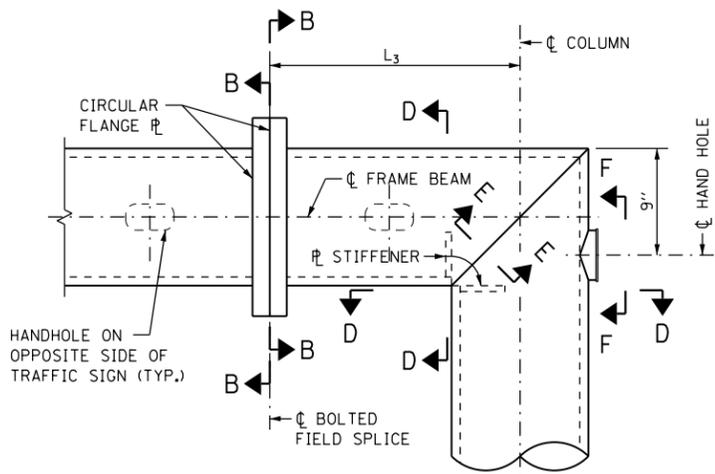
SEE STANDARD F13 FOR SPANS GREATER THAN 50'.

NOTES:

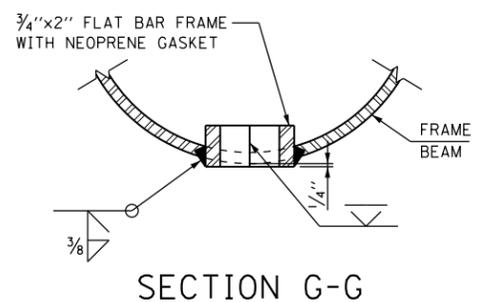
1. SEE SHEET 2 OF THIS SERIES FOR SECTION S-S, BASE PLAN AND ADDITIONAL NOTES.
2. SEE SHEET 4 OF THIS SERIES FOR SECTION O-O.
3. SEE SHEET 5 OF THIS SERIES FOR SECTIONS A-A AND G-G, AND BASE PLATE SKIRT.
4. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE EXIT MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

APPROVED.....
Paul Kovacs
 CHIEF ENGINEER
 DATE 10-14-2014

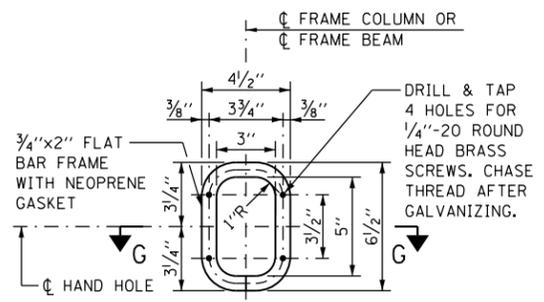




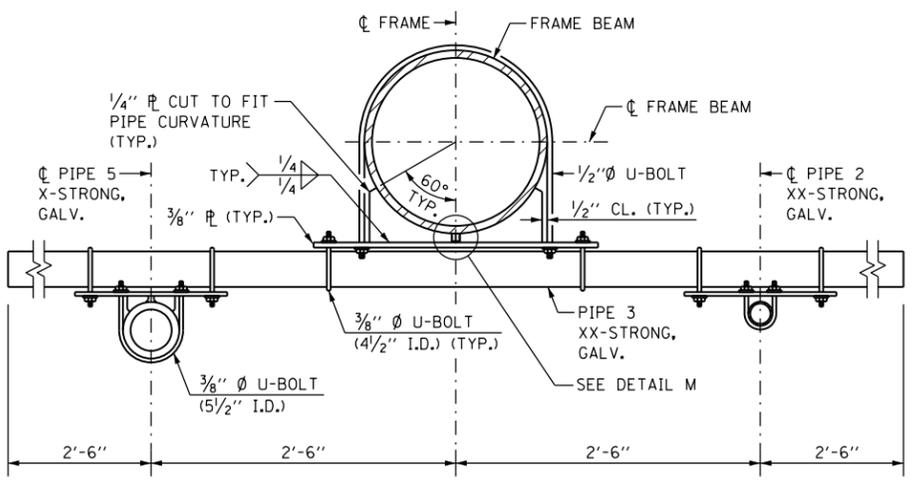
SECTION A-A
(SEE SHEETS 2 AND 3 OF THIS SERIES FOR LOCATION)



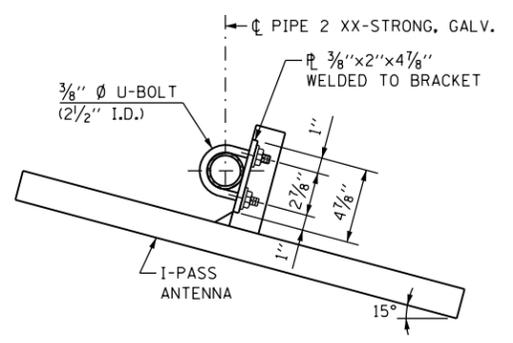
SECTION G-G



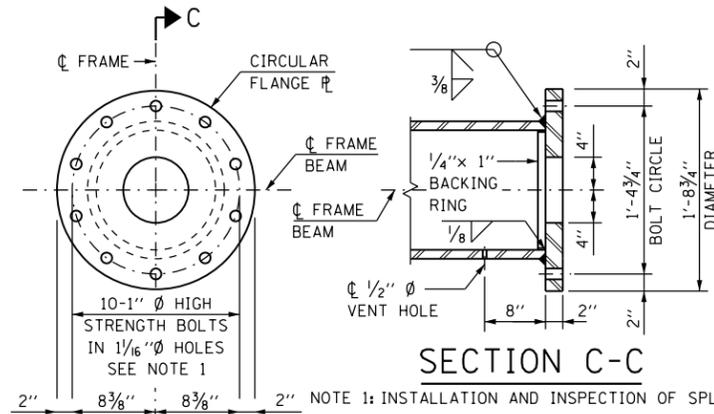
VIEW F-F



SECTION K-K



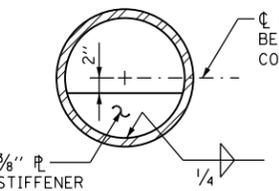
ANTENNA HANGER



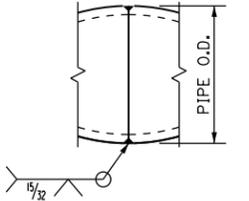
SECTION C-C

NOTE 1: INSTALLATION AND INSPECTION OF SPICE BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELEGT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".

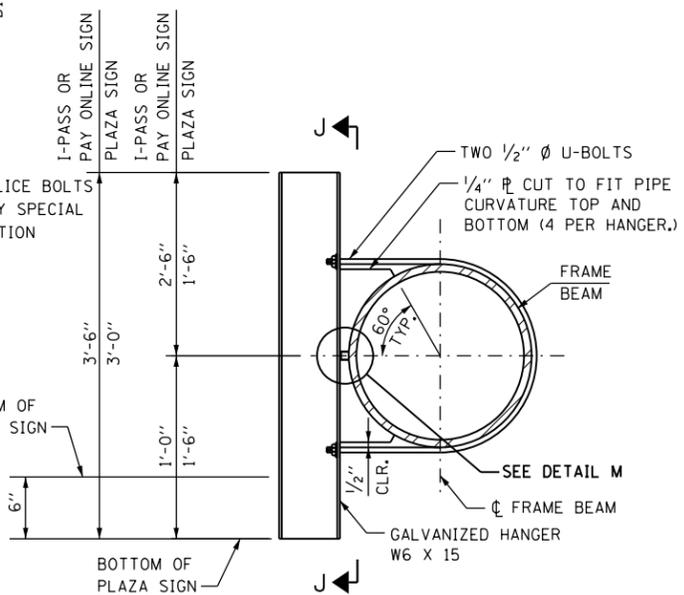
SECTION B-B



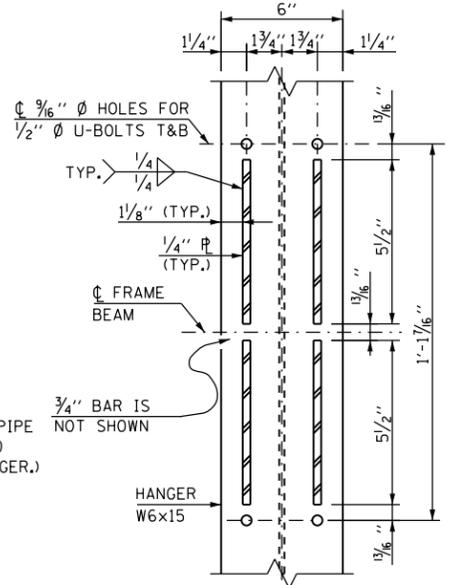
SECTION D-D



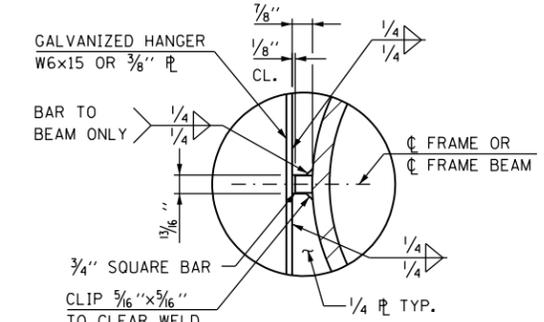
SECTION E-E



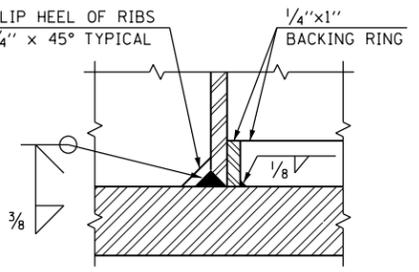
SECTION H-H (SIGN HANGER)



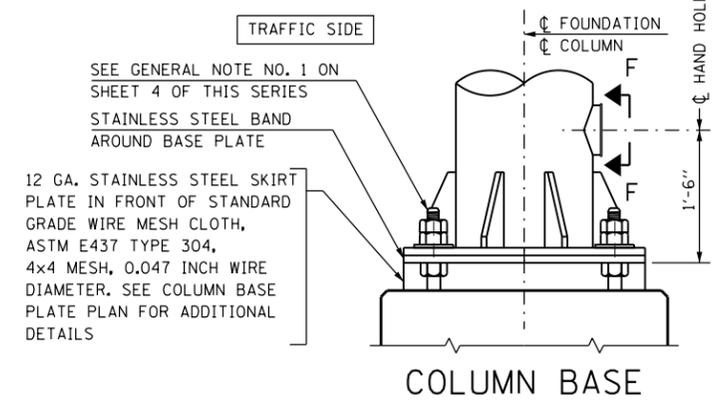
SECTION J-J



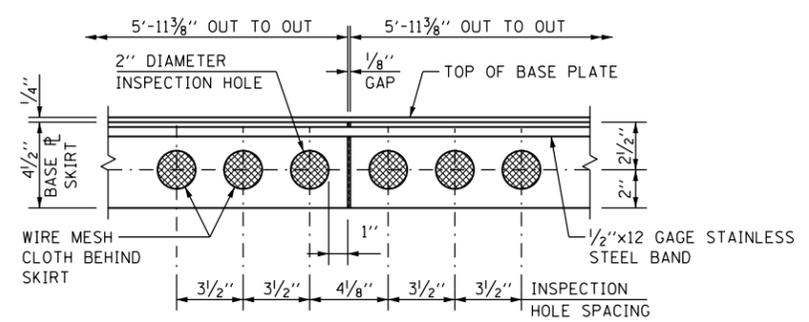
DETAIL M



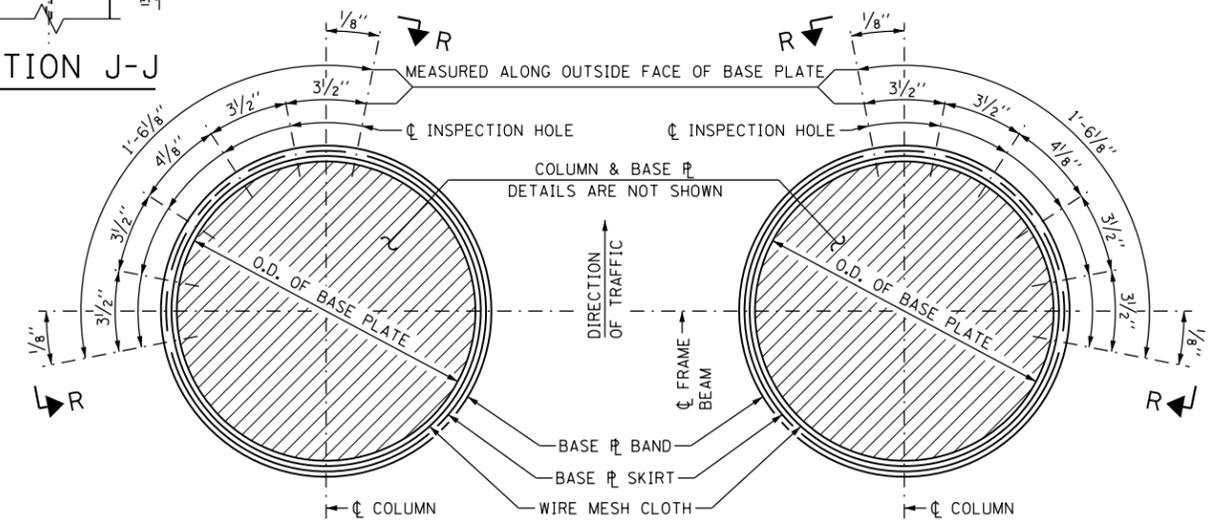
DETAIL T



COLUMN BASE



VIEW R-R (BASE PLATE SKIRT)

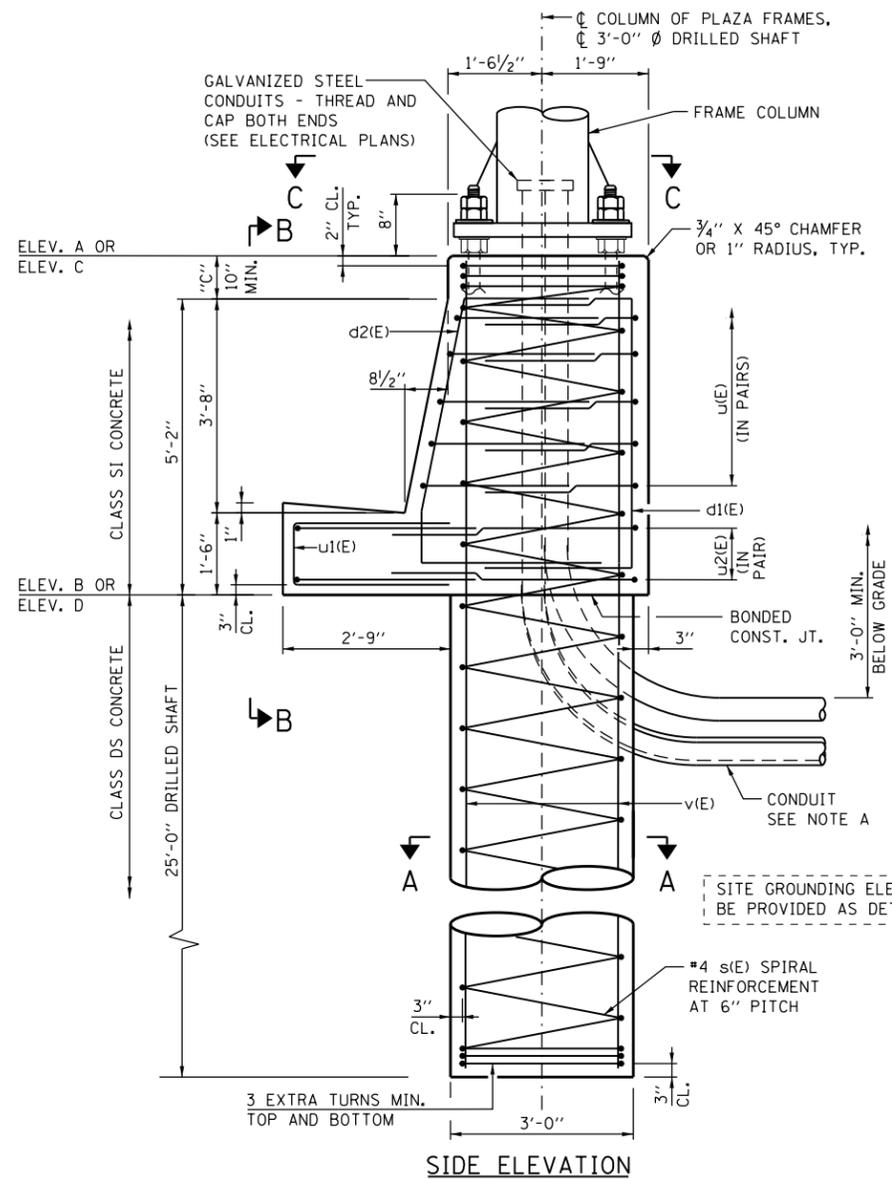


LEFT BASE PLATE

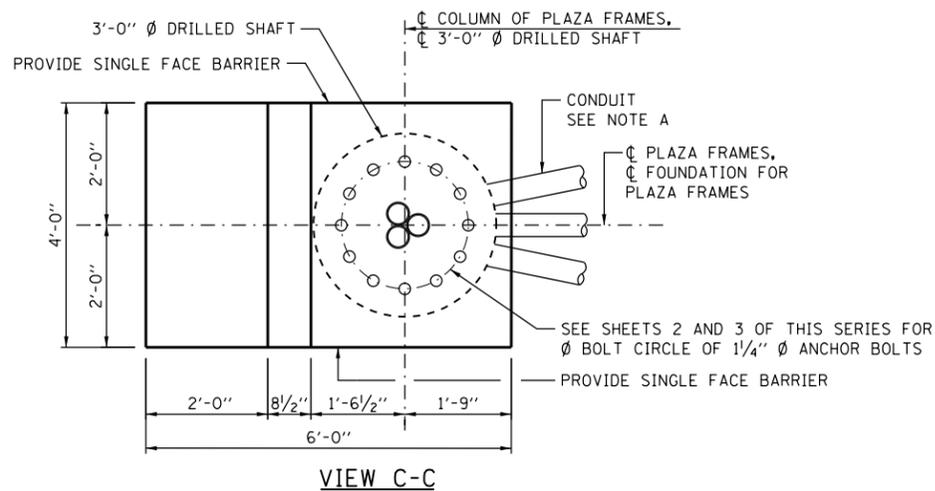
RIGHT BASE PLATE

COLUMN BASE PLATE PLAN

NOTE: SEE SHEET 2 OF THIS SERIES FOR BASE PLATE OUTSIDE DIAMETER.

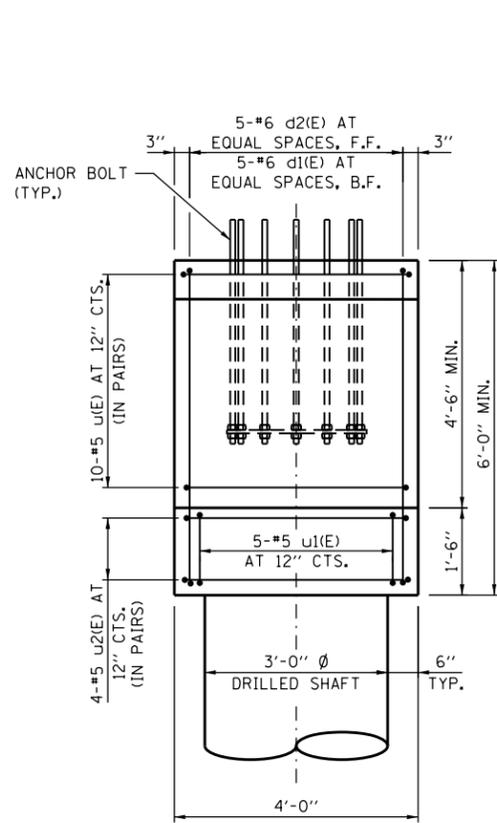


SIDE ELEVATION

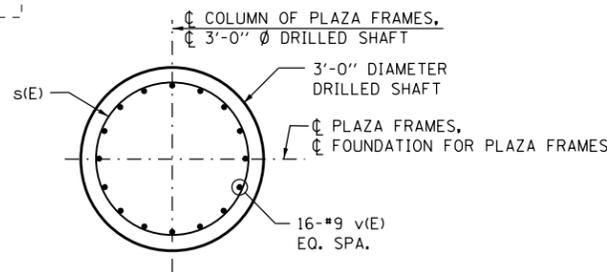


VIEW C-C

SINGLE FACE BARRIER FOUNDATION FOR PLAZA FRAMES



VIEW B-B



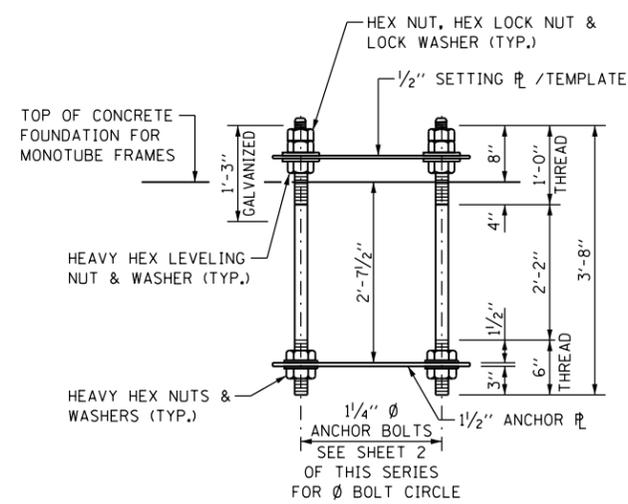
SECTION A-A

- NOTE A:**
- COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. PROVIDE CONDUIT COUPLERS AS REQUIRED.
 - CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.
- NOTE B:**
- PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP OF GUTTER

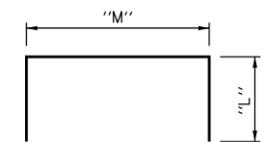
FOUNDATION NOTE:

THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

LEGEND:
 F.F. - FRONT FACE
 B.F. - BACK FACE
 CTS. - CENTERS

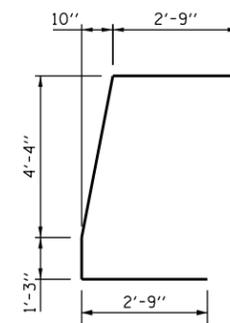


ANCHOR BOLT ASSEMBLY



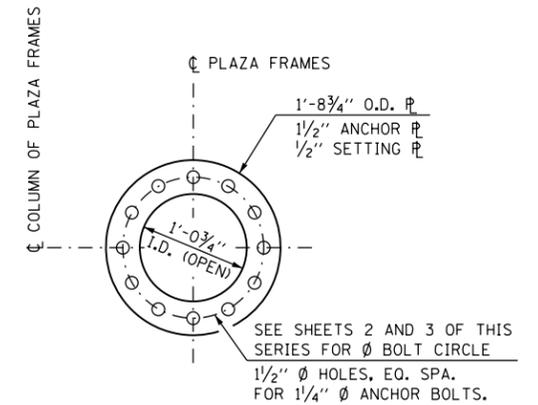
BAR	"L"	"M"
d1(E)	2'-9"	5'-7"
u1(E)	2'-9"	3'-8"
u1(E)	3'-3"	1'-1"
u2(E)	3'-10"	3'-8"

BARS d1(E), u1(E), u2(E)



BAR d2(E)

FRAME COLUMN	ANCHOR BOLT
HSS 12.75x0.500	12



ANCHOR PL / SETTING PL

BAR LIST-ONE FOUNDATION

BAR	NO.	SIZE	LENGTH	SHAPE
d1(E)	5	#6	11'-1"	U
d2(E)	5	#6	11'-2"	U
s(E)	1	#4	30'-7"	WWW
v(E)	16	#9	30'-7"	—
u1(E)	10	#5	9'-2"	U
u1(E)	5	#5	7'-7"	U
u2(E)	4	#5	11'-4"	U

- * THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL, COMPUTED USING "C" = 10". ADJUST LENGTH ACCORDINGLY IF "C" IS GREATER THAN 10".
- ** BAR LENGTH IS COMPUTED USING "C" = 10". ADJUST BAR LENGTH ACCORDINGLY IF "C" IS GREATER THAN 10".

ESTIMATED QUANTITY

ITEM	UNIT	SINGLE FACE BARRIER FDN.
CLASS SI CONCRETE	CU. YD.	3.8
CLASS DS CONCRETE	CU. YD.	6.6
REINFORCEMENT BARS, EPOXY COAT	POUND	2,360
PROTECTIVE COAT	SQ. YD.	4.4

NOTE:
 QUANTITIES FOR SINGLE FACE BARRIER FOUNDATION ARE DETERMINED USING "C" = 10". IF DIMENSION "C" IS GREATER THAN 10", ADJUST QUANTITIES ACCORDINGLY.

APPROVED... *Paul Kovacs* ... DATE 10-14-2014.
 CHIEF ENGINEER



OVERHEAD SIGN STRUCTURE
 MONOTUBE TYPE (STEEL)
 STRUCTURE DETAILS
 FOR AET RAMP

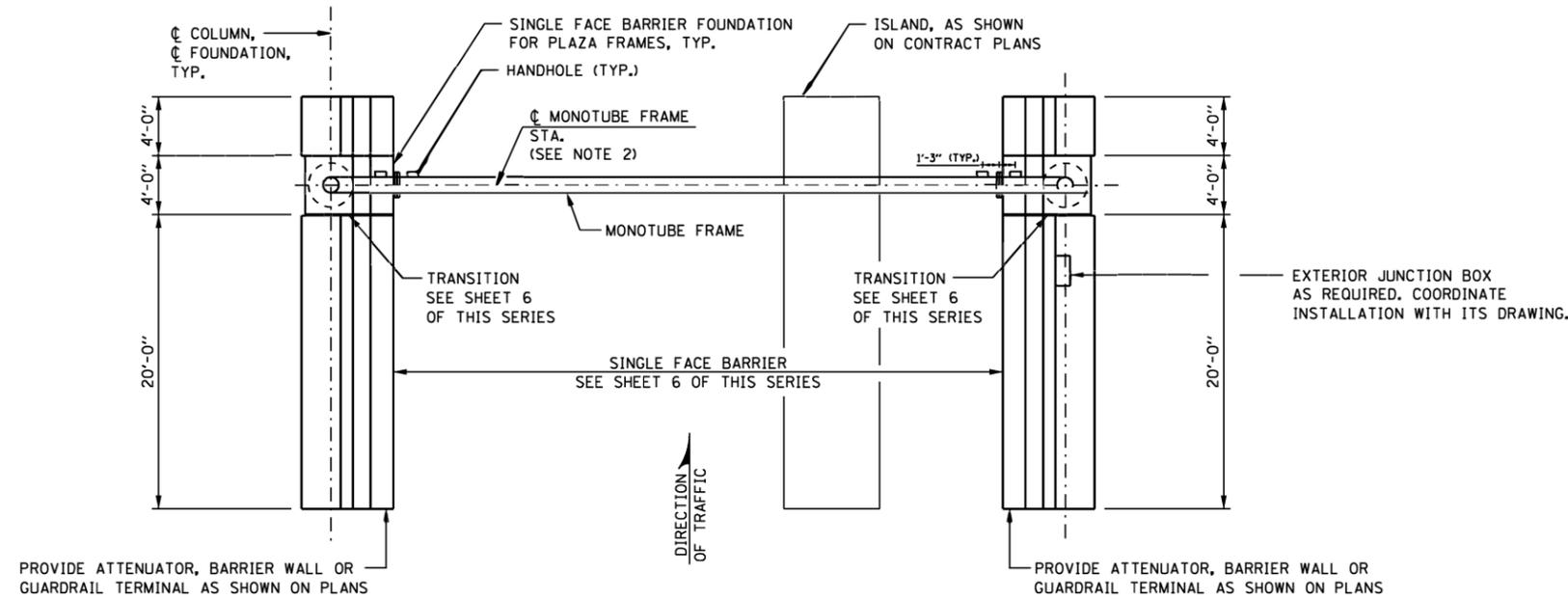
STANDARD F15-05

SIGN TABLE

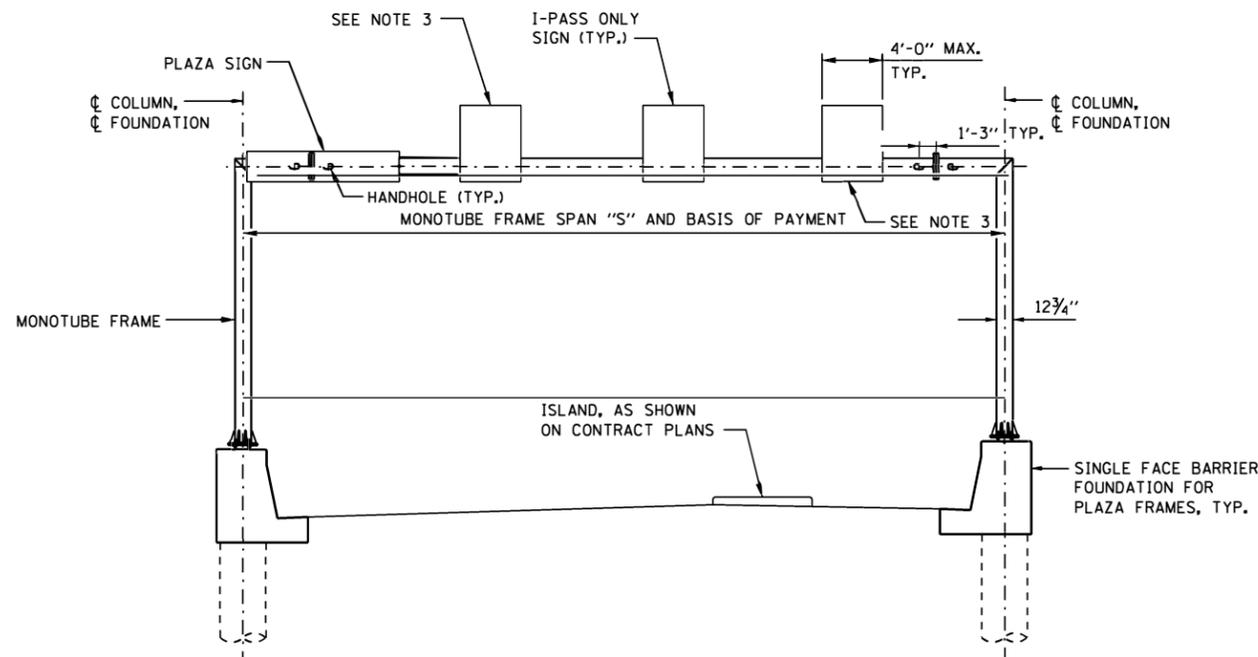
SIGN	MAXIMUM AREA	MAXIMUM LENGTH
PLAZA SIGN	24 S.F.	8'-0"
I-PASS ONLY SIGN	20 S.F.	4'-0"
CASH ONLY SIGN	20 S.F.	4'-0"

NOTE:

1. SEE CONTRACT PLANS FOR SIGN SIZE AND LOCATION.
2. PROVIDE MONOTUBE FRAME STATION IN CONTRACT PLANS.
3. CASH ONLY SIGN OR I-PASS ONLY SIGN. SEE CONTRACT PLANS FOR SIGN PLACEMENT.



CASH-IPO RAMP TOLL PLAZA PLAN



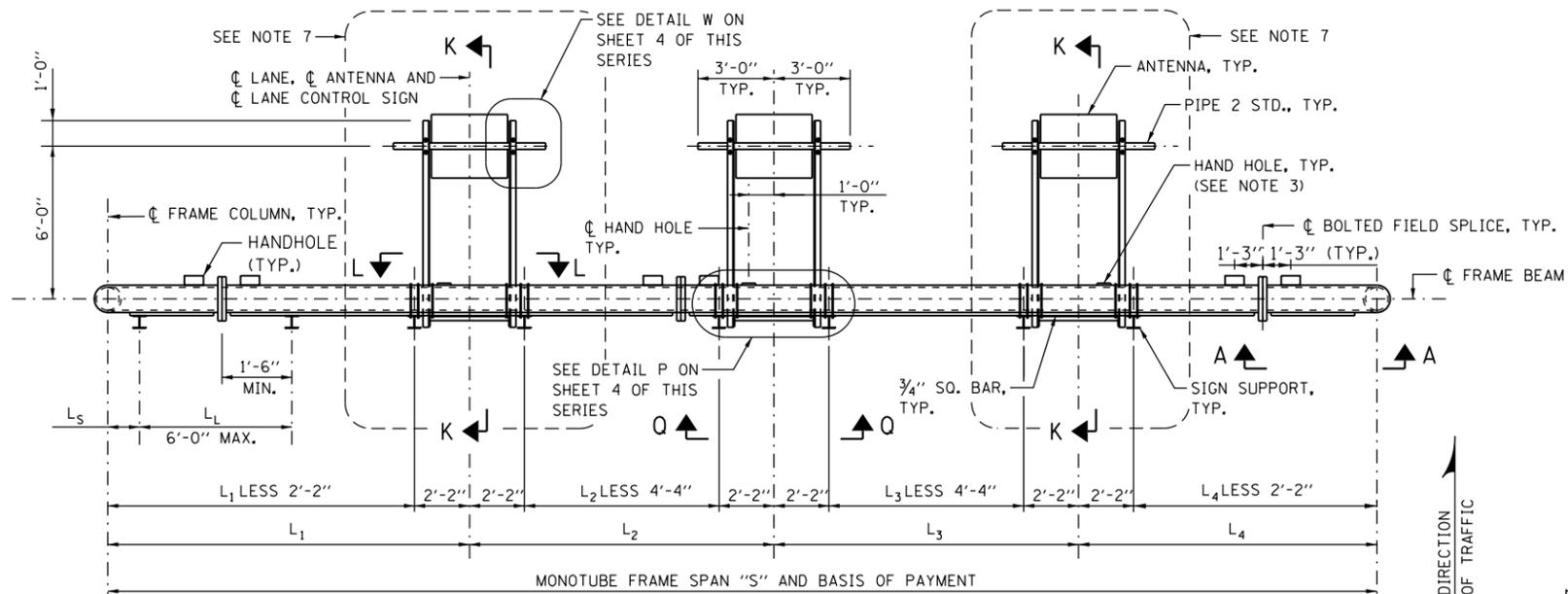
CASH-IPO RAMP TOLL PLAZA ELEVATION

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014

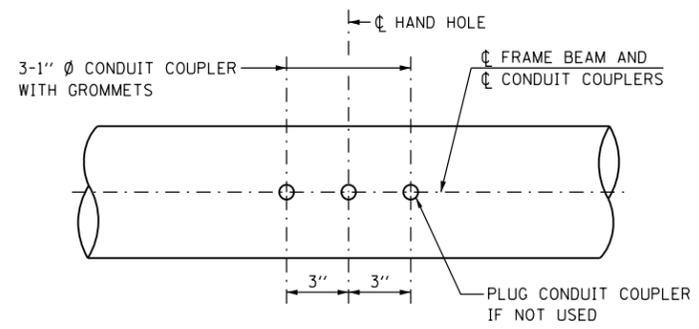
DATE	REVISIONS
3-31-2016	REVISED FOUNDATION NOTE.
3-01-2019	UPDATED CONSTANT SLOPE BARRIER, REINFORCING DETAILS AND QUANTITIES
5-24-2019	UPDATED SHOULDER BARRIER DETAILS AND QUANTITIES FOR 3'-8"
2-13-2020	ADDED HANDHOLES, INSTALLATION & INSPECTION OF SPLICE & ANCHORS
	UPDATED BARRIER DETAILS



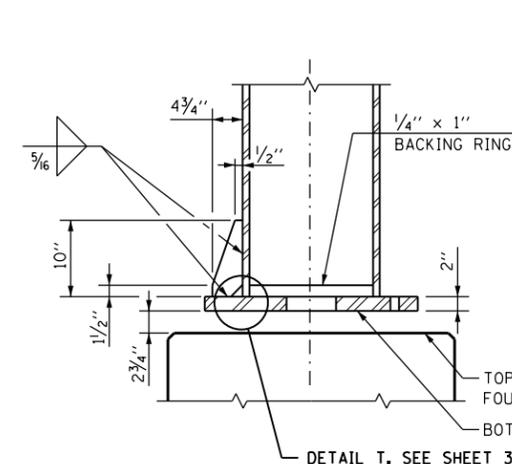
OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR CASH-IPO RAMP STANDARD F16-04



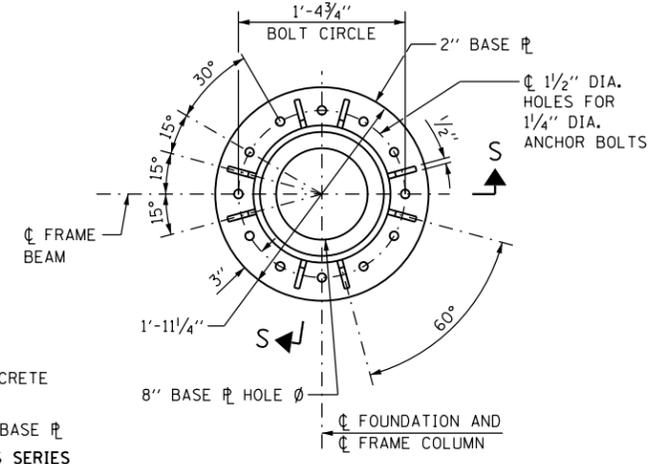
CASH-IPO RAMP MONOTUBE PLAN



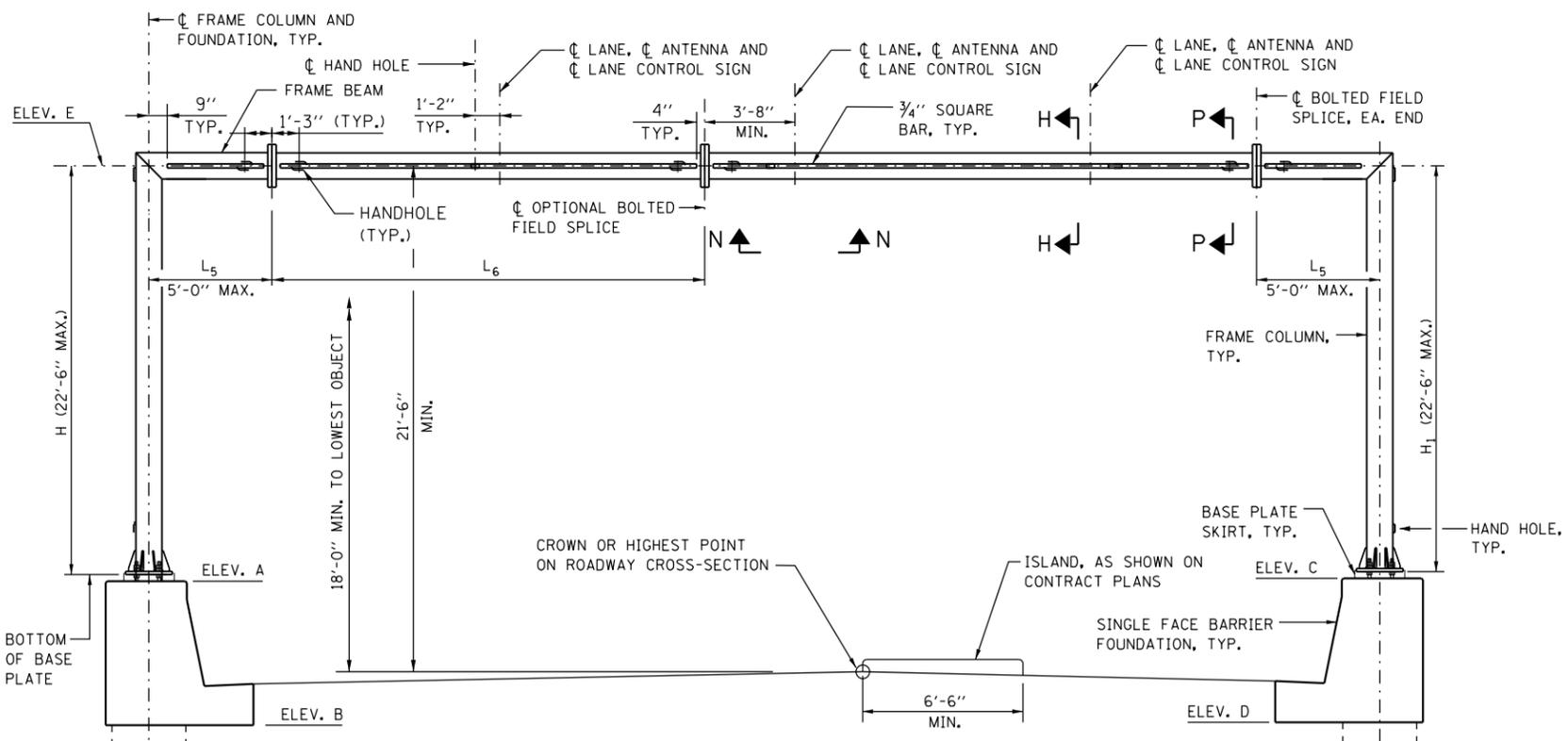
VIEW N-N (CONDUIT COUPLER DETAIL)



SECTION S-S



BASE PLATE PLAN MONOTUBE FRAME



CASH-IPO RAMP MONOTUBE ELEVATION

MONOTUBE FRAME TABLE

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
60' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	2 1/2"

SEE STANDARD F13 FOR SPANS GREATER THAN 60'

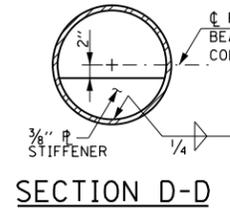
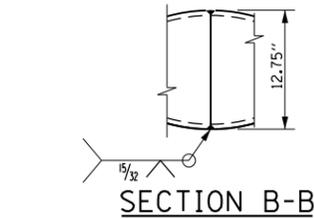
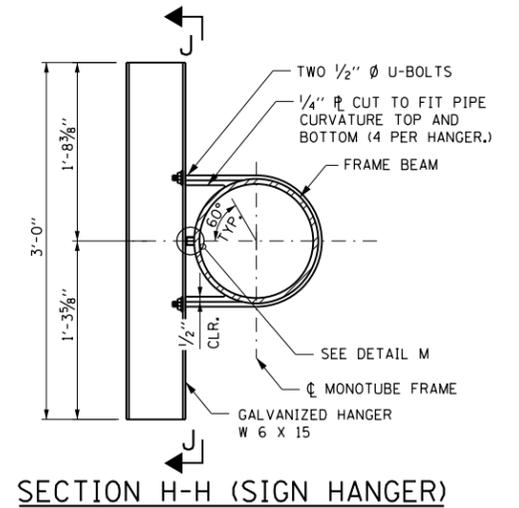
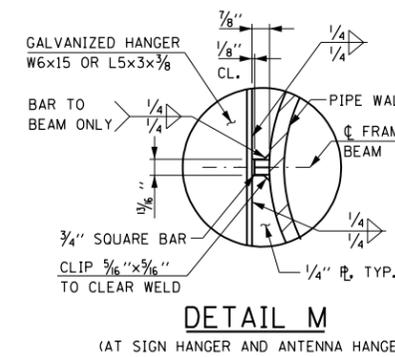
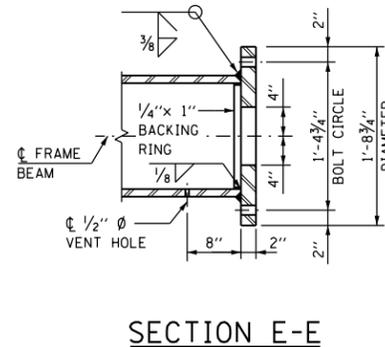
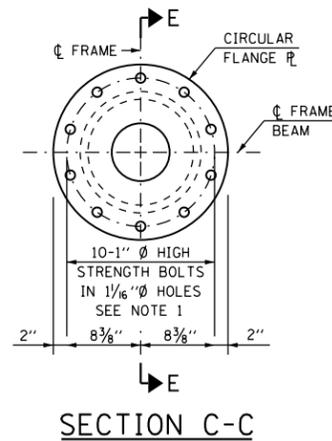
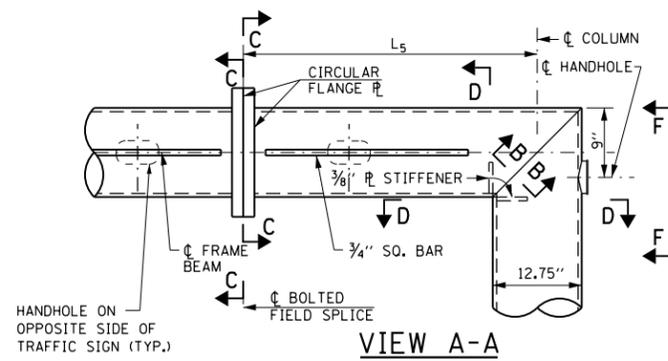
NOTES:

1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) CASH-IPO RAMP, SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
2. FOUNDATION FOR MONOTUBE FRAME IS SHOWN ON SHEET 5 OF THIS SERIES.
3. SEE SHEET 4 OF THIS SERIES FOR SECTIONS G-G, H-H AND K-K, VIEWS A-A AND O-O, AND HAND HOLE DETAILS.
4. SEE SHEET 3 OF THIS SERIES FOR SECTION P-P AND BASE PLATE SKIRT.
5. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
6. LOCATE OPTIONAL BOLTED FIELD SPLICE NEAR MIDSPAN.
7. OMIT ANTENNA AND ANTENNA MOUNTING ASSEMBLY ABOVE CASH ONLY LANE.

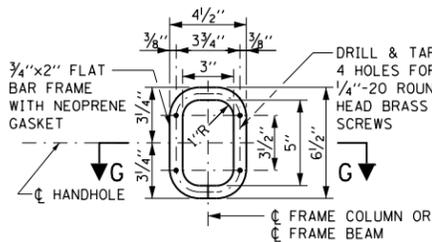


OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR CASH-IPO RAMP STANDARD F16-04

Paul Kovacs
APPROVED... CHIEF ENGINEER... DATE 10-14-2014

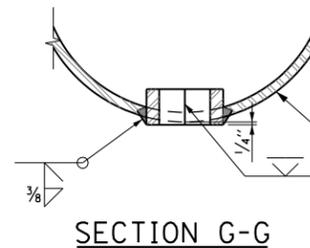


NOTE 1: INSTALLATION AND INSPECTION OF SPLICE BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELEGENANT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".

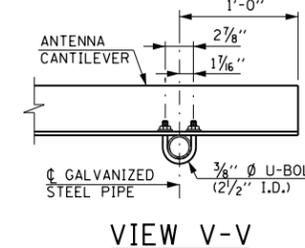


PROVIDE 6 1/2" x 4 1/2" #10 GA. COVER. ROUND CORNERS TO 1 3/4" RADIUS. PROVIDE FOUR 3/8" DIA HOLES.

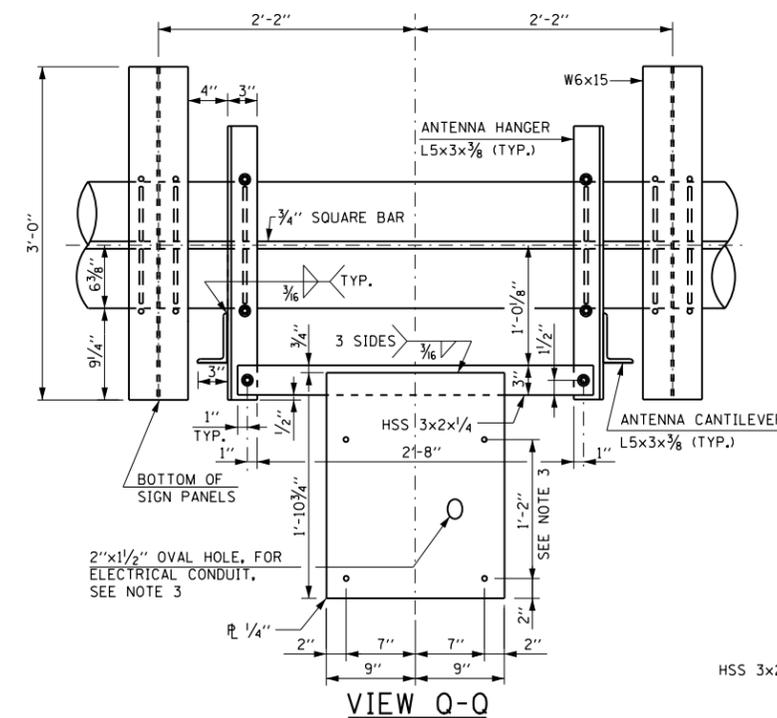
VIEW F-F (HAND HOLE DETAIL)



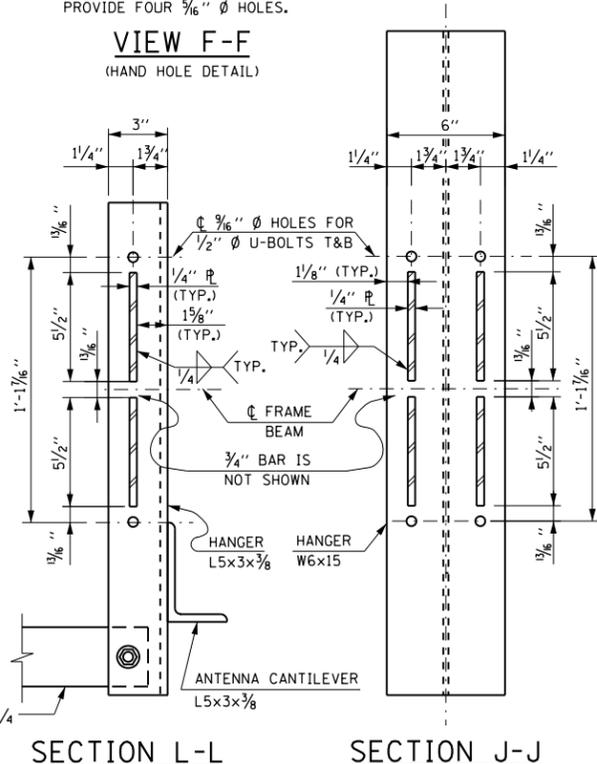
SECTION G-G



VIEW V-V

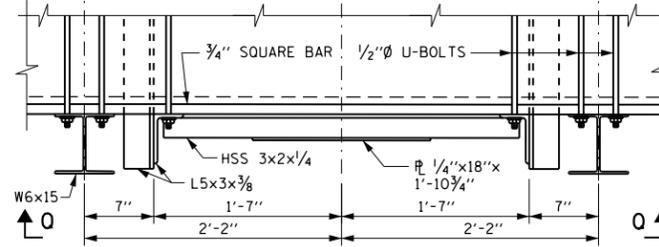


VIEW Q-Q

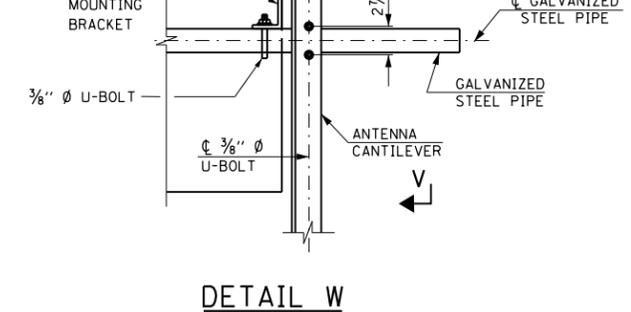


SECTION L-L

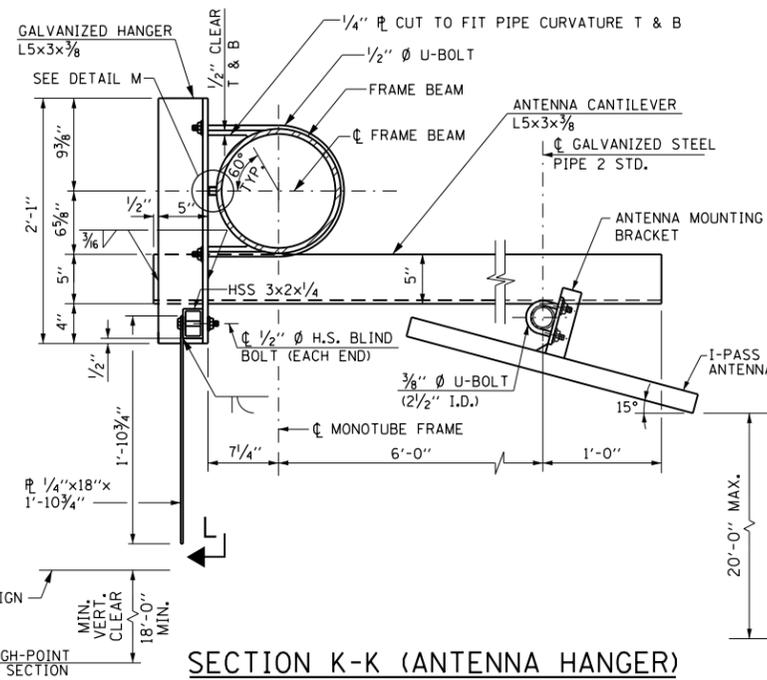
SECTION J-J



DETAIL P



DETAIL W



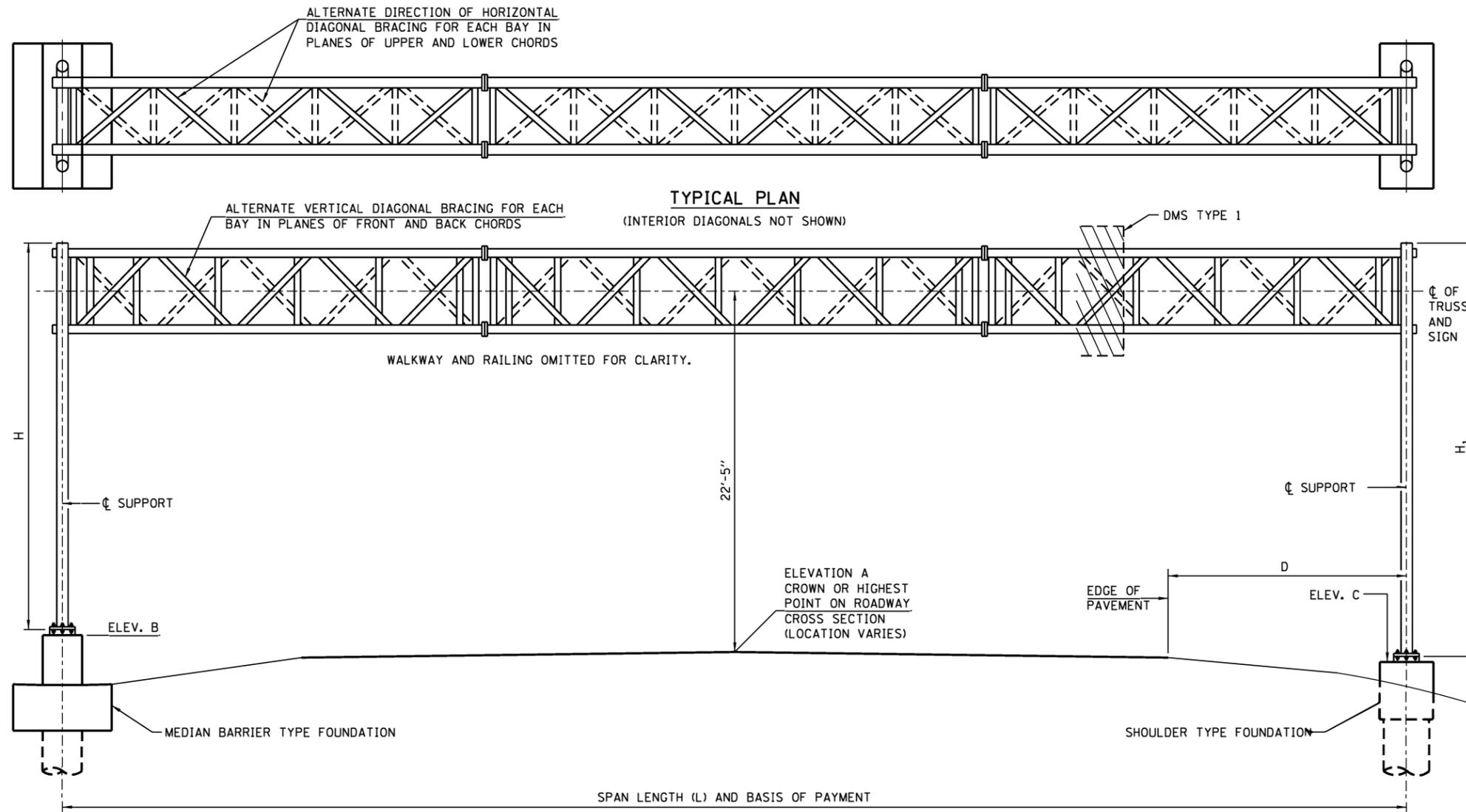
SECTION K-K (ANTENNA HANGER)

(SEE SHEET 3 OF THIS SERIES FOR ALTERNATE AVI MOUNTING DETAIL)

NOTES:

- SIGN AND SIGN HANGER ARE OMITTED FROM VIEW A-A FOR CLARITY.
- FOR DETAILS OF ATTACHMENT BETWEEN HANGER AND SIGN PANELS, SEE ILLINOIS TOLLWAY STANDARD DRAWING F10.
- CONTRACTOR SHALL VERIFY LOCATION AND SIZE OF HOLES WITH LANE CONTROL SIGNAL PRIOR TO FABRICATION OF 1/4" PLATE.
- T&B DENOTE TOP AND BOTTOM.
- PROVIDE ANTENNA MOUNTING BRACKET ACCORDING TO ANTENNA MANUFACTURER'S RECOMMENDATION.
- SEE SHEET 2 OF THIS SERIES FOR HANDHOLE LOCATIONS.





GENERAL NOTES:

1. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) SUMMARY AND BILL OF MATERIAL SHEET.
2. AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
3. SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN DMS IS NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL DMS IS INSTALLED.
4. TRUSS UNITS SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSS UNITS.
5. ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 STRUCTURE WELDING CODE AND THE STANDARD SPECIFICATIONS.
6. INSTALLATIONS NOT WITHIN DIMENSIONAL LIMITS SHOWN REQUIRE SPECIAL ANALYSIS FOR ALL COMPONENTS.
7. ONE DMS TYPE 1 IS PERMITTED TO BE MOUNTED ON A SPAN TRUSS. DO NOT MOUNT SIGN PANELS ON THIS TRUSS.

FABRICATION NOTES:

1. MATERIALS: SEE MATERIAL SPECIFICATIONS TABLE FOR MATERIAL SPECIFICATIONS FOR OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL). STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304 OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE STEEL POST SHALL HAVE A MINIMUM LONGITUDINAL CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40°F (ZONE 2) BEFORE GALVANIZING.
2. WELDING: ALL MATERIALS, WELDING PROCEDURES AND INSPECTION USED FOR THE SPAN TYPE OVERHEAD SIGN STRUCTURE SHALL CONFORM TO AWS D1.1-10 FOR TUBULAR, CYCLICALLY LOADED STRUCTURES. ADDITIONALLY, ALL WELDED MATERIALS USED SHALL BE PREQUALIFIED FOR USE WITH WPS PER AWS D1.1-10, TABLE 3.1.
3. FASTENERS FOR STEEL TRUSSES: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193 GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(f)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
4. U-BOLTS: U-BOLTS SHALL BE PRODUCED FROM ASTM A193 GRADE B8 OR B8M, OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER. ALL NUTS FOR U-BOLTS SHALL BE LOCKNUTS EQUIVALENT TO ASTM A307 WITH NYLON OR STEEL INSERTS AND HOT DIP GALVANIZED PER AASHTO M232. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240, TYPE 302 OR 304, IS REQUIRED UNDER EACH U-BOLT LOCKNUT.
5. STEEL GRATING: STEEL BARS FOR GRATING ELEMENTS SHALL CONFORM TO ASTM A36 OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER.
6. GALVANIZING: ALL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED. ALL FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 OR M232 AS APPROPRIATE FOR THE PRODUCT (EXCEPT STAINLESS STEEL FASTENERS).

CONSTRUCTION SPECIFICATIONS:

1. ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST STANDARD SPECIFICATIONS.

LOADING:

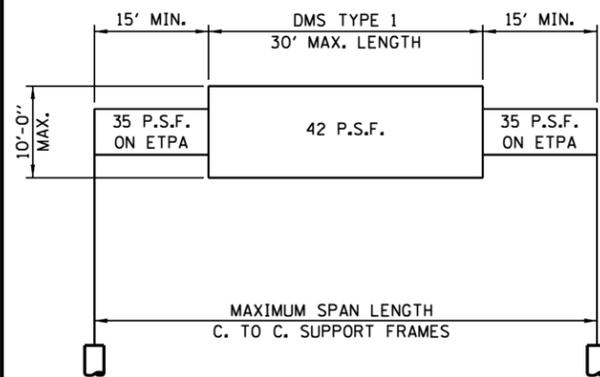
1. SPAN TYPE (STEEL) TRUSS ARE DESIGNED FOR A 10'-0" DEEP DMS, WITH A MAXIMUM LENGTH OF 30'-0" AND A MAXIMUM THICKNESS OF 4'-2".
2. SPAN TYPE (STEEL) TRUSS ARE DESIGNED FOR 40 PSF WIND PRESSURE ON TRUSS MEMBERS AND 56 PSF ON DMS.
3. WALKWAY LOADING SHALL INCLUDE DEAD LOAD PLUS 500 LBS. CONCENTRATED LIVE LOAD.

DESIGN SPECIFICATIONS:

THESE STRUCTURES ARE DESIGNED TO SATISFY THE 2015 AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, FIRST EDITION WITH INTERIMS.

TYPICAL ELEVATION
(LOOKING AT FACE OF SIGN)

ELEV. A = ELEVATION AT POINT OF MINIMUM CLEARANCE TO DMS, WALKWAY SUPPORT OR TRUSS.



DESIGN WIND LOADING DIAGRAM

ETPA = EFFECTIVE TRUSS PROJECTED AREA.
MAXIMUM DMS WEIGHT = 5000 LBS.

MATERIAL SPECIFICATIONS TABLE FOR STRUCTURAL STEEL AND FASTENERS

ELEMENT OF STRUCTURE	SPECIFICATION	MINIMUM YIELD STRENGTH (K.S.I.)	MINIMUM ULTIMATE STRENGTH (K.S.I.)
HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500 GRADE B	42	58
STRUCTURAL STEEL PIPE	ASTM A53, TYPE E OR S, GRADE B	35	60
STRUCTURAL STEEL BAR, PLATES AND SHAPES	ASTM A572 GRADE 50	50	65
STAINLESS STEEL BOLTS	ASTM A193 GRADE B8 OR B8M	30	75
STRUCTURAL STEEL BOLTS	ASTM 325, TYPE 1	--	105
STAINLESS STEEL LOCKNUTS	ASTM A194 GRADE 8F ASTM A194 GRADE 2H	--	--
NUTS	ASTM A563 GRADE DH	--	--
STEEL WASHERS	ASTM F436	--	--
STAINLESS STEEL WASHERS	ASTM A240, TYPE 302	--	--
STEEL ANCHOR BOLTS	AASHTO M314 OR ASTM F1554	105	125



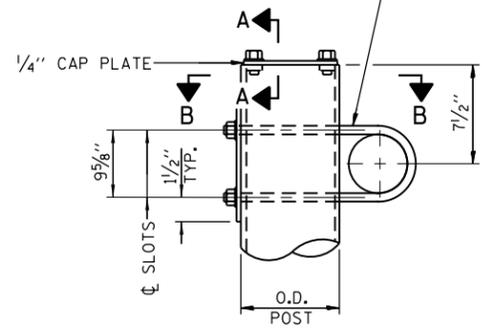
OVERHEAD SIGN STRUCTURE
SPAN TYPE (STEEL)
STRUCTURE DETAILS

STANDARD F17-05

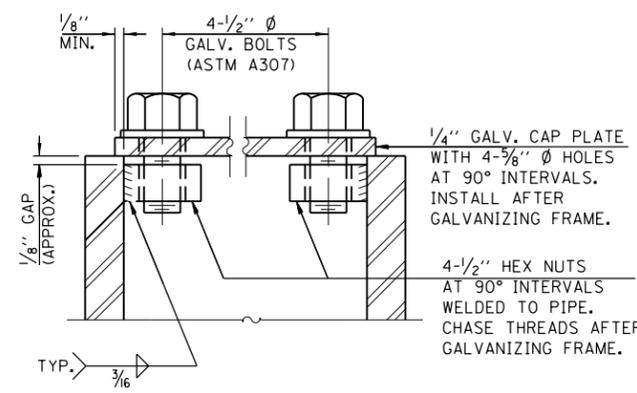
DATE	REVISIONS
3-31-2016	REVISED FOUNDATION NOTE.
3-31-2017	FOUNDATION REINFORCEMENT UPDATE
3-01-2018	REVISED SIGN STRUCTURE
3-01-2019	UPDATE BARRIER SHAPE, HEIGHT AND TRANSITION LENGTH
2-13-2020	UPDATE CRASHWALL HEIGHT ADDED HEAVY HEX NUT TO ANCHORS

APPROVED: *Paul Kovacs* DATE 5-20-2014.
CHIEF ENGINEERING OFFICER

3/4" Ø U-BOLT.
PROVIDE TWO WASHERS AND TWO
HEXAGON LOCKNUTS. (4)
1/8" X 2" SLOTS ON Ø POST.
(4 SLOTS REQUIRED PER PIPE)

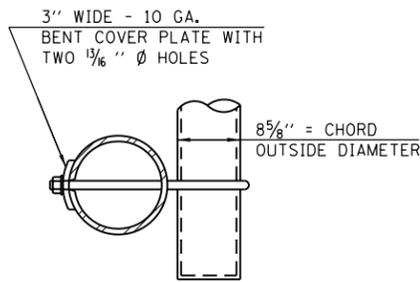


DETAIL A



SECTION A-A

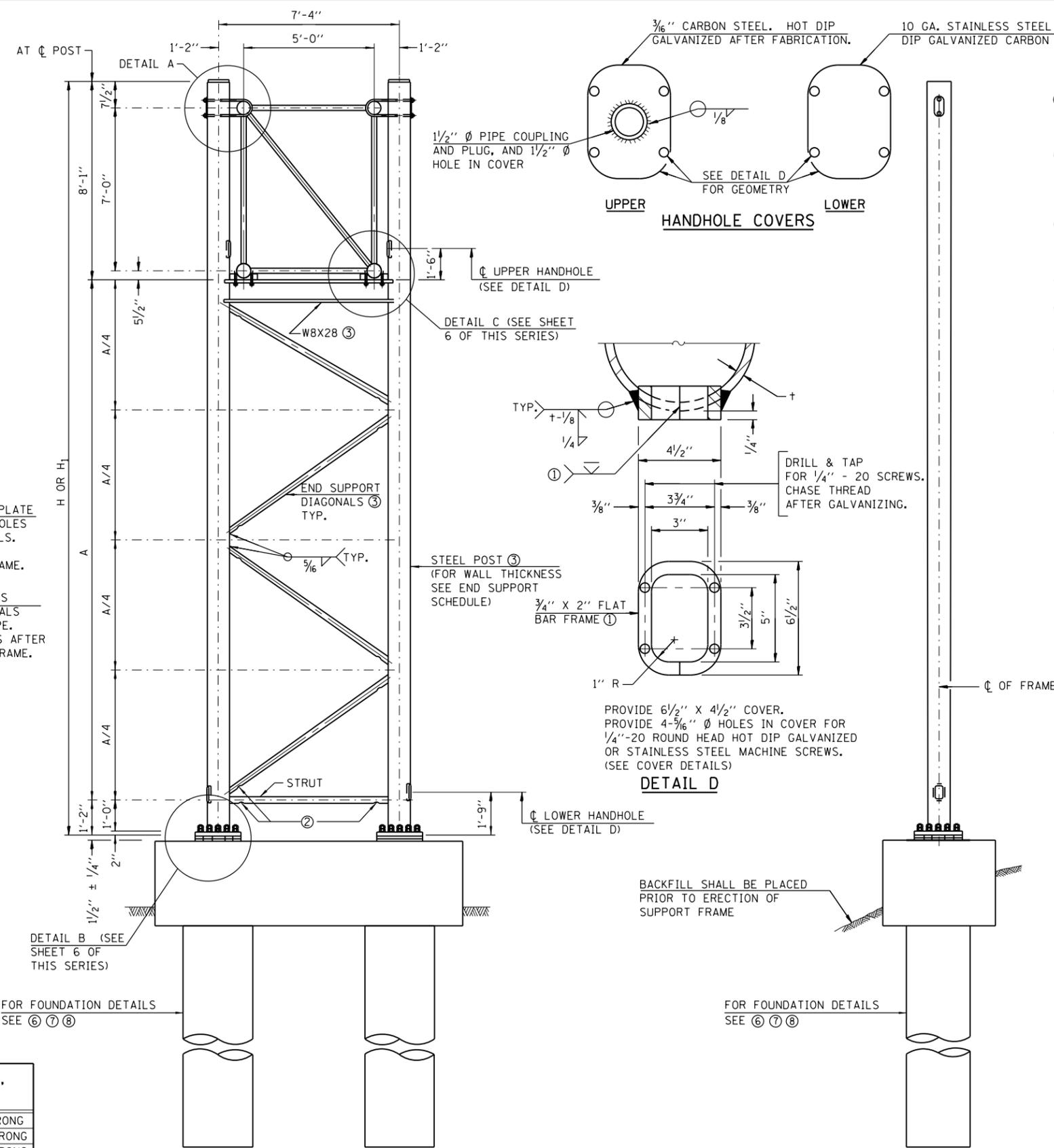
AS AN ALTERNATE TO BOLTS, MAY USE GALVANIZED
DRIVE-FIT CAPS INSTALLED AFTER GALVANIZING FRAME.



SECTION B-B

END SUPPORT SCHEDULE

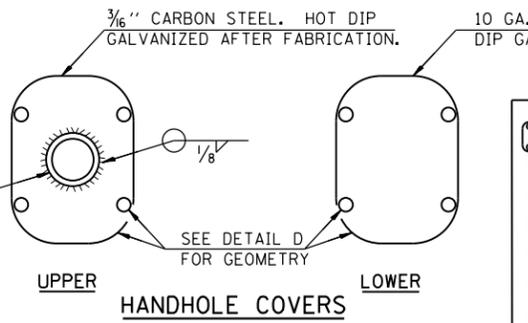
DESIGN TRUSS TYPE	H OR H ₁	+	POSTS	DIAGONALS, STRUT
120-S	34' MAX.	1/2"	HSS 12.75x0.500	PIPE 5 X-STRONG
130-S	34' MAX.	1/2"	HSS 14x0.500	PIPE 5 XX-STRONG
140-S	34' MAX.	1/2"	HSS 14x0.500	PIPE 5 XX-STRONG
150-S	36' MAX.	1/2"	HSS 16x0.500	PIPE 5 XX-STRONG
160-S	36' MAX.	1/2"	HSS 16x0.500	PIPE 5 XX-STRONG



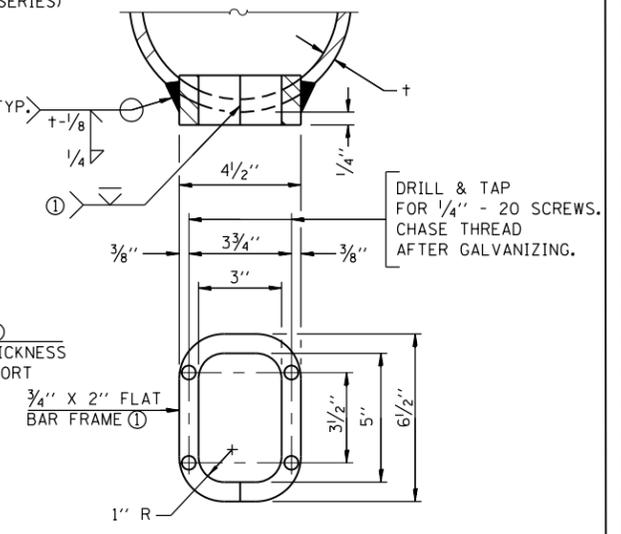
SIDE ELEVATION

END ELEVATION

END SUPPORT DETAILS



UPPER
HANDHOLE COVERS
LOWER



DETAIL D

NOTES:

- ① IN LIEU OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT FROM 2" PLATE (ROLLING DIRECTION VERTICAL). ALL CUT FACES TO BE GROUND TO ANSI ROUGHNESS OF 500 µIN OR LESS.
- ② GALVANIZING VENT HOLES OF ADEQUATE SIZE SHALL BE PROVIDED ON UNDERSIDE AT EACH END OF BRACING PIPES. ALTERNATELY, HOLES MAY BE PROVIDED IN WALL OF PIPE COLUMN. ALL VENT HOLES SHALL BE DRILLED AND DE-BURRED, TYP.
- ③ STEEL PIPE, PLATE, CARBON STEEL HANDHOLE COVERS AND ROLLED SECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. PAINTING IS NOT PERMITTED. SEE SHEET 1 OF THIS SERIES.
- ④ SEE GENERAL NOTES FOR FASTENERS.
- ⑤ NONSTANDARD APPLICATIONS SHALL HAVE DIMENSIONS VERIFIED OR AMENDED AS APPROPRIATE.
- ⑥ SEE SHEET 7 OF THIS SERIES FOR SHOULDER TYPE FOUNDATION DETAILS.
- ⑦ SEE SHEET 8 OF THIS SERIES FOR MEDIAN BARRIER TYPE FOUNDATION DETAILS.
- ⑧ SEE SHEET 9 OF THIS SERIES FOR MEDIAN BARRIER TYPE FOUNDATION DETAILS WHEN EXISTING UTILITY IS PRESENT.

BACKFILL SHALL BE PLACED
PRIOR TO ERECTION OF
SUPPORT FRAME

FOR FOUNDATION DETAILS
SEE ⑥ ⑦ ⑧

FOR FOUNDATION DETAILS
SEE ⑥ ⑦ ⑧



INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL) (Illinois Tollway)

Effective: March 11, 2015

Revised: February 13, 2020

Description. This work shall consist of fabricating, furnishing and erecting beams, columns, and hardware including supports, on previously prepared foundations for Intelligent Transportation Systems (ITS) Gantry Frames (Steel) according to the details and locations shown in the Plans. This work shall conform to Sections 505 of the Standard Specifications and Section 733 of the Illinois Tollway Supplemental Specifications except as modified herein.

Materials.

- (a) Structural Steel Tube (HSS)
Structural steel tubing for frame members of ITS Gantry Frames (Steel) shall conform to the requirements of ASTM A618 Grade III, and Charpy V-Notch impact testing requirements, Zone 2, unless noted otherwise. Structural steel tubing for mounting beams shall meet the requirements of ASTM A500 Grade B.
- (b) Structural Steel Shapes
Structural steel shapes shall conform to the requirements of ASTM A709 Grade 50 (AASHTO M 270 Grade 50), unless noted otherwise.
- (c) Splice Plate and Base Plate
Splice plate and base plate shall conform to the requirements of ASTM A709 Grade 50 (AASHTO M 270 Grade 50) or ASTM A572 Grade 50.
- (d) Charpy V-Notch Impact Testing
Notch toughness of all structural steel members and plates greater than 0.5 inch thick shall conform to Zone 2 requirements of AASHTO M 270 Supplementary Requirement S5 (ASTM A709 Supplementary Requirement S83).
- (e) Bolts, Lock Nuts and Washers
All bolts, except anchor bolts, shall conform to the requirements of ASTM A325, Type 1 (AASHTO M164). Heavy hex nuts for high strength steel bolts and high strength anchor bolts shall conform to ASTM A563 (AASHTO M291), Grade DH with Supplementary Requirements "S1" and "S2". Washers shall conform to ASTM F436 (AASHTO M293).

CONSTRUCTION REQUIREMENTS

Drawings. Shop Drawings for each ITS Gantry shall be prepared and submitted for review and approval in accordance with Article 505.03 of the Standard Specifications after the Contractor has documented the location and orientation of the anchor bolts at all proposed supports.

Fabrication. The requirements of Article 505.04 of the Standard Specifications shall apply, except as modified below.

- (a) Welding
 - (1) Welding shall conform to Article 505.04(q) of the Standard Specifications.

- (2) All welding shall be done to minimize distortion. Permissible Structural Steel Tube (HSS) dimension variations for outside dimensions, wall thickness, length, straightness, squareness of sides and twist shall be in accordance with Section 8 of ASTM A618 for frame members and Section 11 of ASTM A500 for mounting beams.
- (3) Longitudinal seam welds on Structural Steel Tube (HSS) shall be complete joint penetration welds.
- (4) Backing plates of complete penetration welds shall have a minimum thickness of ¼”.

(b) Galvanizing

- (1) Hot dip galvanized structural steel tubing, splice plates, base plates, misc. structural steel and plates in accordance with AASHTO M 111 and ASTM A385. Galvanize after welding, fabrication and drilling all holes.
- (2) All bolts, nuts, lock nuts and washers shall be galvanized in accordance with the hot-dipped process conforming to AASHTO M 232, Class C.
- (3) The fabricator shall provide relief holes for galvanizing as required by the galvanizer. The location of the holes shall have the approval of the Engineer.
- (4) Zinc-coated nuts shall be tapped oversize according to the requirements of AASHTO M 291 and shall meet the supplementary requirements of S1.1 through S1.2.1 of the same specifications for lubricant and testing. The lubricant shall be tinted to produce a distinct contrast with the nut.
- (5) Do not galvanize stainless steel parts.
- (6) Damage to the galvanized surfaces shall be sufficient cause for rejection.

Erection. Erection of structural steel for the ITS Gantry Frame (Steel) shall conform to the applicable provisions of Articles 733.05(a) and 733.05(b) of the Illinois Tollway Supplemental Specifications except as modified below.

(h) ITS Gantry Frames. The erection and maintenance of traffic procedure for ITS gantry frames shall be in accordance with the maintenance of traffic plans, and Special Provisions and applicable provisions of Section 701 of the Illinois Tollway Supplemental Specifications, unless otherwise authorized by the Illinois Tollway.

1. The end supports with their welded base plates shall be mounted over the anchor bolts on the concrete foundation, partially plumbed, and temporary secured. After the erection of the beams and while beams are supported by the crane, the uprights shall be fully plumbed and brought to final alignments by means of leveling nuts on the anchor bolts. Install washer and first nut and tightened per IDOT Standard Specification for Road and Bridge Construction Article 505.04(f)(2)d Turn-of-the-Nut method however only 1/8 turn past snug tight is required. Tightening shall be performed in a star pattern. Installation and Inspection shall comply with this specification.

All nuts shall be paint marked for inspection. After inspection is performed and passed, a second heavy hex lock nut shall be tightened down onto the first nut to snug tight only.

2. Splice flange bolts shall be tightened per IDOT Standard Specification Article 505.04(f)(2)d Turn-of-the-Nut Method. Installation and inspection shall comply with this specification. Tightening shall be performed in a star pattern. The inspection verification data shall be provided to the Engineer. All turned nuts or heads shall be paint marked for visual inspection.
3. The installation of bolts and other attachment devices shall be as required in the Plan details for each design and type of frame to be erected.
4. Enclose the void between the base plate and the foundation with wire cloth according to Article 733.08 of the Supplemental Specifications.

The requirements of Article 505.08 of the Standard Specifications shall apply, except that Article 505.08(a) shall be replaced with the following:

- a) The Contractor shall verify that the substructure is within allowable tolerances for lines and elevations, properly finished, and anchor rods are set in the correct pattern and orientation, are the correct size, and are plumb with the specified extension and thread length above the top of concrete.
Gantries and support structures shall not be placed on the foundation until concrete foundation including the pile caps has reached 100 percent of the characteristic 28-day strength and at least 14 days old.

Method of Measurement. For single span ITS Gantry Frame (Steel), this work will be measured for payment in feet of horizontal span length measured from centerline column to centerline column of the frames installed in place.

For two span ITS Gantry Frame (Steel), this work will be measured for payment in feet of horizontal span length measured from centerline of outside column to centerline of outside column of the frames installed in place.

Basis of Payment. This work will be paid at the contract unit price per foot, for ITS GANTRY FRAME (STEEL), of the specified span range, complete and accepted, and measured as specified.

Foundations for will be paid for separately.

Pay Item Number	Designation	Unit of Measure
JT740110	ITS GANTRY FRAME (STEEL), SPANS LESS THAN OR EQUAL TO 110'	FOOT
JT740130	ITS GANTRY FRAME (STEEL), SPANS GREATER THAN 110' AND LESS THAN OR EQUAL TO 130'	FOOT
JT740150	ITS GANTRY FRAME (STEEL), SPANS GREATER THAN 130' AND LESS THAN OR EQUAL TO 150'	FOOT