

**BRIDGE
SUMMARY**

Bridge No.	PROJECT NO	SITE NUMBER	COUNTY	LOCATION	TYPE	EXISTING CONDITION
SBD-13-1a	51830.2.13.54	100-01-00432	Yancey	5354 Jackscreek Rd, Burnsville	50 ft span	Existing bridge gone
SBD-13-1b	51830.2.13.42	011-01-e8aa7	Buncombe	11 Softwind Trail, Candler	30 ft span	Temp pipes are being used as crossing

North Carolina Emergency Management – Private Roads and Bridges
Site Information Form

Site Number: 011-01-e8aa7

Site Address: 11 Softwind Trail, Candler, NC

GPS Coordinates: 35.4913, -82.7464

County: Buncombe

Bridge Type: Steel I-beam with timber decking

Span Length: 30 feet

Bridge Width: 12'-0" Clear Width

Substructure Type: Spread Footing with a 3' anticipated stem wall height

Geotechnical Information: Spread Footing will bear on rock. See Standard Bridge Plans for Notes

Additional Notes: _____

Timber bridge railing not required.

Wing walls not required.

The existing bridge is in place and must be removed prior to the start of construction.

The stream contains no debris or obstructions requiring removal.

BRIDGE SURVEY & HYDRAULIC DESIGN REPORT

NC DEPARTMENT OF EMERGENCY MANAGEMENT
PRIVATE ROADS AND BRIDGES PROGRAM

Site Number 011-01-e8aa7 Latitude 35.49130 Longitude -82.7464
 County Buncombe Address 11 Softwinds Trail
 City Candler, NC Zip Code 28715
 Recommended Structure 1 @ 30' Steel Girder Bridge with Spread Footing
 Recommended Width of Roadway _____ Skew _____
 Recommended Location is (A) Upstream, Downstream) of Existing Crossing _____
 Temporary Crossing _____



I hereby certify that I have reviewed the existing hydraulic conveyance at this site which was a 5' HDPE existing pipe & a 48" CMP, with the proposed conveyance provided by the proposed 30.0 ft span bridge.

The proposed bridge low chord for the bridge shall be set in accordance with the FEMA Disaster Specific Guidance for the Replacement of Private Roads and Bridges issued on 14 February 2025, "to provide bridge/culvert design plans certified (sealed, signed, and dated) by a Professional Engineer licensed in the State of North Carolina demonstrating that the newly designed and installed private bridge/culvert provides conveyance greater than or equal to the original destroyed crossing".

This certification demonstrates that the newly designed and installed private bridge/culvert provides conveyance greater than or equal to the original destroyed crossing. This is based on the best available data provided from post storm evaluations. Portions of the existing structures may have been destroyed, removed, modified or shifted from their original location or elevation.

Designed by _____ Date _____
 Assisted by _____
 Signed by: **Matthew D Foster** 12/10/2025 5:40:09 PM EST
 License No: C-3097
 Reviewed by _____ Date _____



SITE DATA

Drainage Area _____ Source _____
 River Basin _____ Character _____
 Stream Classification (e.g., Trout, High Quality Water) _____
 Debris Potential: Low Moderate High
 Existing Structure - Source of Available Data NCEM Private Roads and Bridges Inspection Team
 Existing Structure - Description 1 @ 60" HDPE, 1 @ 48" CMP
 Estimated Waterway Opening 32.2 ft²
 Design Control Elev _____ ft Source _____
 Gage Station No _____ Period of Records _____
 Max Discharge _____ cfs Date _____ Frequency _____
Historical Flood Information:
 Date _____ Elev _____ ft Est Freq _____ yr Source _____ Period of Knowledge _____ yrs
 Historical Scour Info: General _____ ft Contraction _____ ft Local _____ ft
 Channel Slope _____ ft/ft Source _____ Normal Water Surface Elev _____ ft
 Manning's n: Left OB _____ Channel _____ Right OB _____ Source _____
 No FEMA Study *
 (site is 200 ft +/- US from the beginning of the Warren Creek LDS)
 Flood Study / Status _____
 Flood Study _____ With _____ Without _____
 100-yr Discharge 1710* cfs WS Elev: Floodway N/A ft River Station US 1864

DESIGN DATA

Hydrological Method _____
 Hydraulic Design Method Disaster Specific Guidance for the Replacement of Private Roads and Bridges 2/14/2025

Floods Evaluated	Frequency (year)	Discharge (cfs)	Elevation (ft)	Backwater (ft)	Bridge Opening Velocity (fps)

Waterway Opening Provided Below: Design WS Elev _____ sf 100-yr WS Elev _____ sf Total 63.7 sf
 Average Channel Velocity (Design) _____ fps Average Overbank Velocity (Design) _____ fps
 Computed Scour: General _____ ft Contraction _____ ft Local _____ ft

INFORMATION TO BE SHOWN ON PLANS

HYDRAULIC DATA	
DESIGN DISCHARGE	= 761 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= _____
DRAINAGE AREA	= 3.62 SQ. MI.
BASIC DISCHARGE (Q100)	= 1170 C.F.S.
BASIC HIGH WATER ELEVATION	= _____
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= _____ C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= _____ YRS.
OVERTOPPING FLOOD ELEVATION	= _____
*NOTE LOCATION OF OVERTOPPING	
WS EL. Taken @ River Station ?	

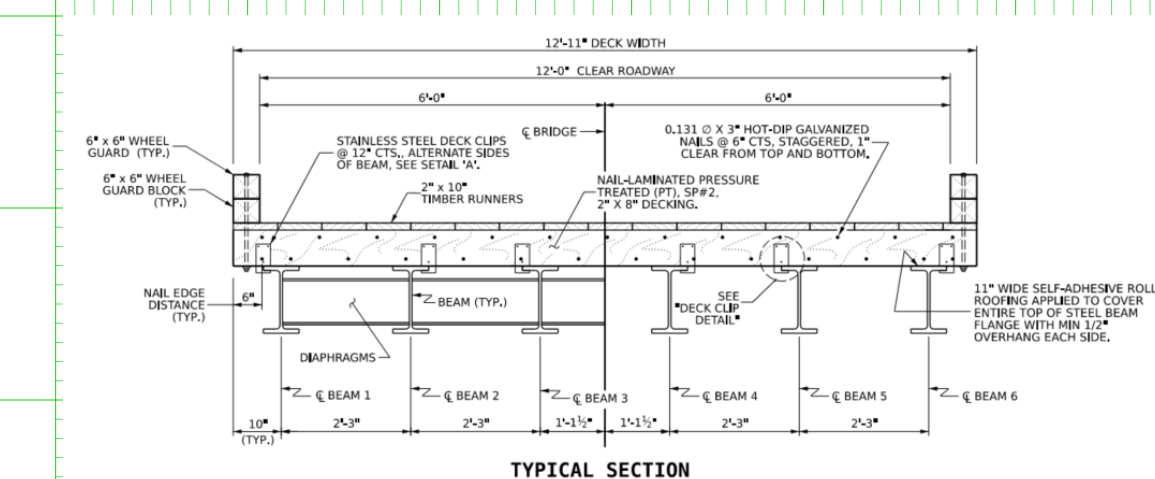
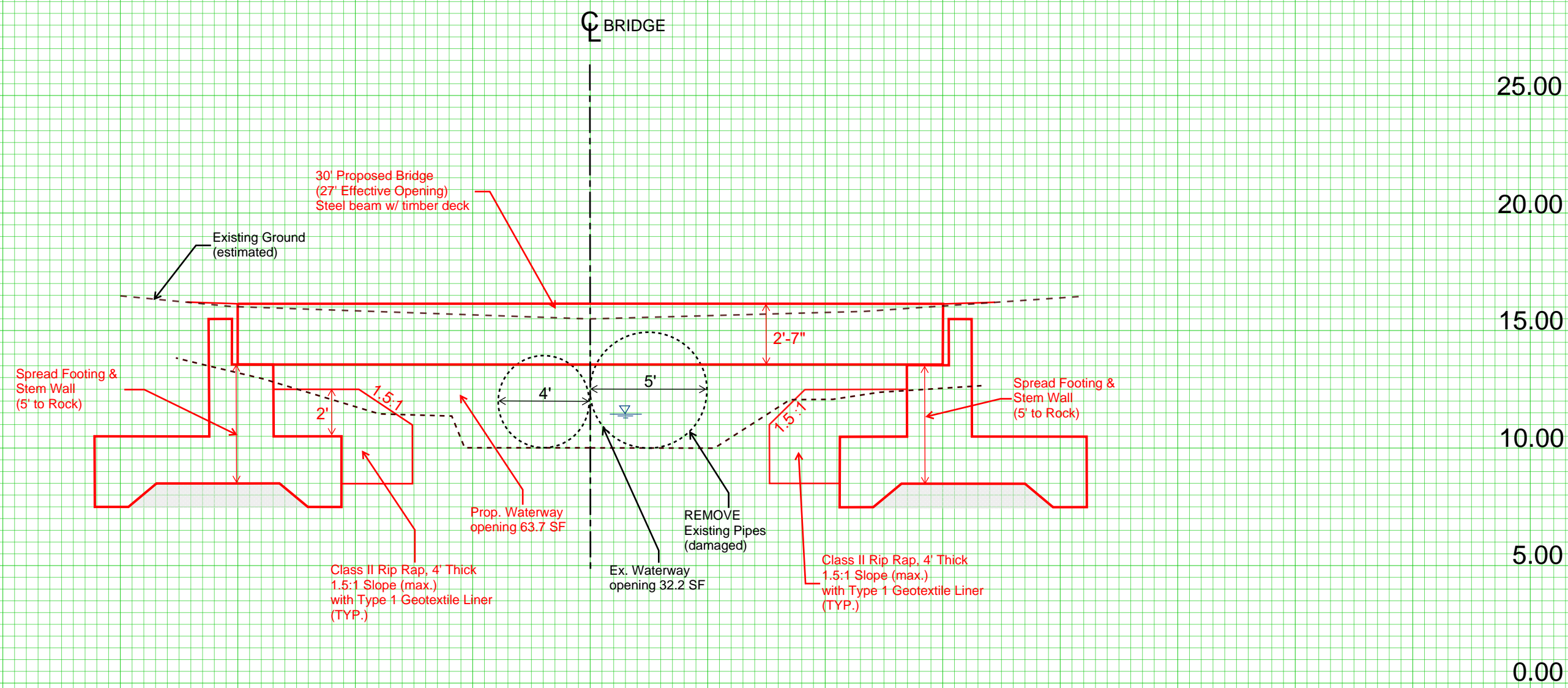
ADDITIONAL INFORMATION AND COMPUTATIONS

Emergency Vehicle Access Possible?	No
Number of Homes Confirmed	Yes
Number of Homes	2
Churches Confirmed	Yes
Number of Churches	0
Schools Confirmed	Yes
Number of Schools	0
Recreational/Business Areas Confirmed	Yes
Number of Recreational/Business Areas	0
General Description	Existing bridge completely washed away. Temporarily fixed with 60 inch HDPE an two 15" HDPE. Recommend 50 foot rail car bridge
Overall Condition	Collapse
Condition Other	
Site Repair Status	Temporary Repair
Condition Description	Existing bridge completely washed away. Temporarily fixed with 60 inch HDPE an two 15" HDPE. 48" CMP
Expected Level of Effort	Full Redesign
Other Level of Effort	
Horizontal Curve	No
Number of Travel Lanes (LOS)	1
Inclination	No
Roadway Divider	No
Road/Bridge Width (ft)	10.00
Span/Gap Estimate (ft)	30.00
Surface to Water (ft)	4.00
Utility/Mechanical	No
Utility Types	
Pipe Needs Sizing	No

This site not technically in a FEMA study area. The site is 200 ft +/- US from the beginning of the Warren Creek LDS. The FEMA model was used to develop a channel section to inform the pre-storm geometry in determining the hydraulic conveyance.

21" W21X48 beam
 + 8" Deck
 + 2" Runner
 = 31" (2'-7" structure depth)

10+00 10+05 10+10 10+15 10+20 10+25 10+30 10+35 10+40 10+45 10+50 10+55 10+60 10+65 10+70



Stationing and elevations shown are relative to the site. Based on an assumed datum. No survey grade field work was performed.

North Carolina Emergency Management – Private Roads and Bridges
Site Information Form

Site Number: 100-01-00432

Site Address: 5354 Jackscreek Rd., Burnsville, NC

GPS Coordinates: 35.9656, -82.3079

County: Yancey

Bridge Type: Steel I-beam with timber decking

Span Length: 50 feet

Bridge Width: 12'-0" Clear Width

Substructure Type: Concrete Cap on Drilled in Piles

Geotechnical Information: See Standard Bridge Plans for Notes

Additional Notes: _____

Timber bridge railing not required.

Wing walls not required.

No existing bridge in place.

The stream contains no debris or obstructions requiring removal.

BRIDGE SURVEY & HYDRAULIC DESIGN REPORT

NC DEPARTMENT OF EMERGENCY MANAGEMENT
PRIVATE ROADS AND BRIDGES PROGRAM

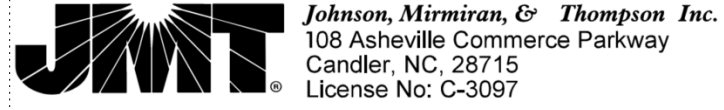
Site Number 100-01-00432 Latitude 35.96560 Longitude -82.30790
County YANCEY Address 5354 Jacks Creek Rd.
City Burnsville, NC Zip Code 28714
Recommended Structure 1 @ 50' Steel Girder Bridge with 2'-6" Pier Caps

Recommended Width of Roadway _____ Skew _____
Recommended Location is (A) Upstream, Downstream) of Existing Crossing _____
Temporary Crossing _____



I hereby certify that I have reviewed the existing hydraulic conveyance at this site which was a 27 ft existing bridge with the proposed conveyance provided by the proposed 37 ft. span bridge.
The proposed bridge low chord for the bridge shall be set in accordance with the FEMA Disaster Specific Guidance for the Replacement of Private Roads and Bridges issued on 14 February 2025, "to provide bridge/culvert design plans certified (sealed, signed, and dated) by a Professional Engineer licensed in the State of North Carolina demonstrating that the newly designed and installed private bridge/culvert provides conveyance greater than or equal to the original destroyed crossing".
This certification demonstrates that the newly designed and installed private bridge/culvert provides conveyance greater than or equal to the original destroyed crossing. This is based on the best available data provided from post storm evaluations. Portions of the existing structures may have been destroyed, removed, modified or shifted from their original location or elevation.

Designed by _____
Assisted by _____
Date _____
Signed by: **Matthew D Foster** 12/5/2025 | 10:56:08 AM EST
Reviewed by _____ Date _____



SITE DATA

Drainage Area _____ Source _____
River Basin _____ Character _____
Stream Classification (e.g., Trout, High Quality Water) _____
Debris Potential: Low Moderate High
Existing Structure - Source of Available Data NCEM Private Roads and Bridges Inspection Team
Existing Structure - Description 1 @ 27' steel beams and timber deck (damaged by Helene)
Estimated Waterway Opening **95.3** ft²
Design Control Elev _____ ft Source _____

Gage Station No _____ Period of Records _____
Max Discharge _____ cfs Date _____ Frequency _____
Historical Flood Information:
Date _____ Elev _____ ft Est Freq _____ yr Source _____ Period of Knowledge _____ yrs
Historical Scour Info: General _____ ft Contraction _____ ft Local _____ ft
Channel Slope _____ ft/ft Source _____ Normal Water Surface Elev _____ ft
Manning's n: Left OB _____ Channel _____ Right OB _____ Source _____

Flood Study / Status Jacks Creek, LDS
Flood Study _____
100-yr Discharge 4420 cfs WS Elev: With Floodway 2532.59 ft Without Floodway 2531.62 ft River Station 27759.10

DESIGN DATA

Hydrological Method _____
Hydraulic Design Method Disaster Specific Guidance for the Replacement of Private Roads and Bridges 2/14/2025
Floods Evaluated _____ Frequency (year) _____ Discharge (cfs) _____ Elevation (ft) _____ Backwater (ft) _____ Bridge Opening Velocity (fps) _____
Waterway Opening Provided Below: Design WS Elev _____ sf 100-yr WS Elev _____ sf Total **132.4** sf
Average Channel Velocity (Design) _____ fps Average Overbank Velocity (Design) _____ fps
Computed Scour: General _____ ft Contraction _____ ft Local _____ ft

INFORMATION TO BE SHOWN ON PLANS

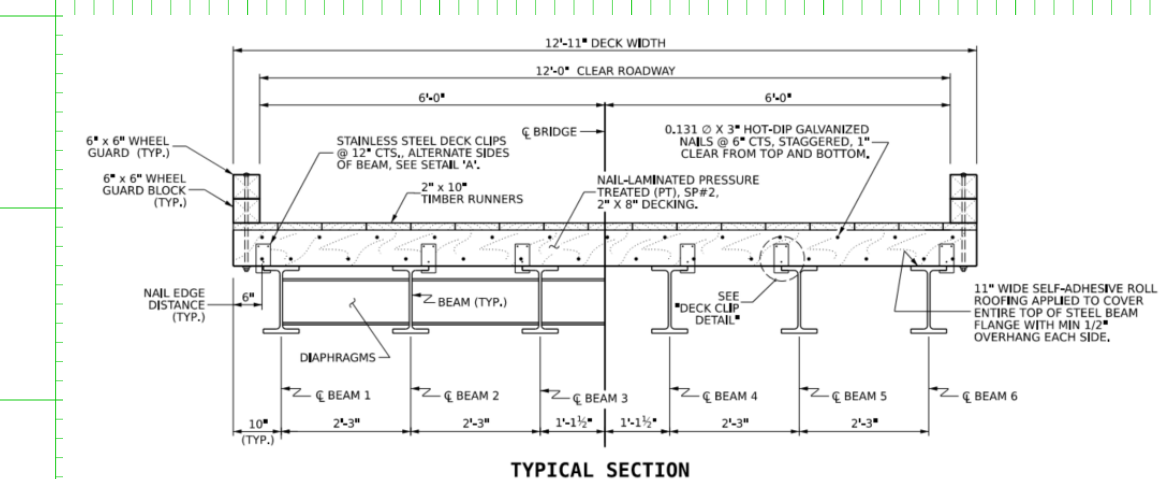
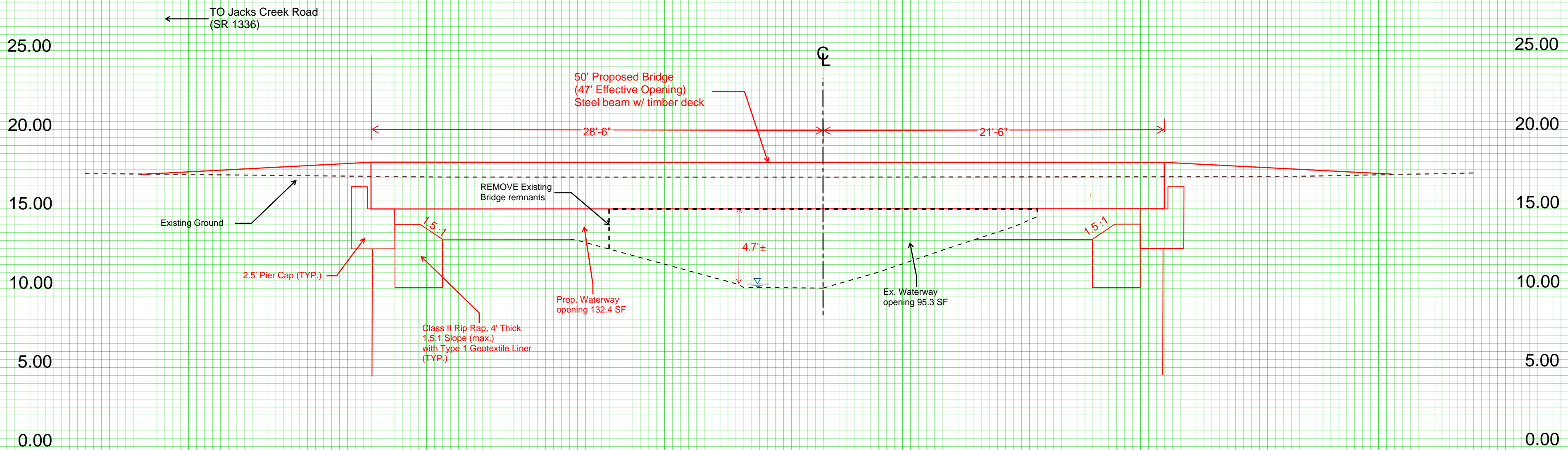
HYDRAULIC DATA	
DESIGN DISCHARGE	= 1650 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= _____
DRAINAGE AREA	= 9.64 SQ. MI.
BASIC DISCHARGE (Q100)	= 2480 C.F.S.
BASIC HIGH WATER ELEVATION	= _____
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= _____ C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= _____ YRS.
OVERTOPPING FLOOD ELEVATION	= _____
*NOTE LOCATION OF OVERTOPPING	
WS EL. Taken @ River Station ?	

ADDITIONAL INFORMATION AND COMPUTATIONS

Emergency Vehicle Access Possible?	No
Number of Homes Confirmed	Yes
Number of Homes	3
Churches Confirmed	No
Number of Churches	0
Schools Confirmed	No
Number of Schools	0
Recreational/Business Areas Confirmed	No
Number of Recreational/Business Areas	0
General Description	need new bridge bridge recommended raical 50 feet L
Overall Condition	Other
Condition Other	bridge missing , no bridge
Site Repair Status	No Repair
Condition Description	no bridge
Expected Level of Effort	Full Redesign
Other Level of Effort	
Horizontal Curve	No
Number of Travel Lanes (LOS)	1
Inclination	No
Roadway Divider	No
Road/Bridge Width (ft)	10.00
Span/Gap Estimate (ft)	50.00
Surface to Water (ft)	3.00
Utility/Mechanical	No
Utility Types	
Pipe Needs Sizing	No

24" W24X104 beam
+ 8" Deck
+ 2" Runner
= 34" (2'-10" structure depth)

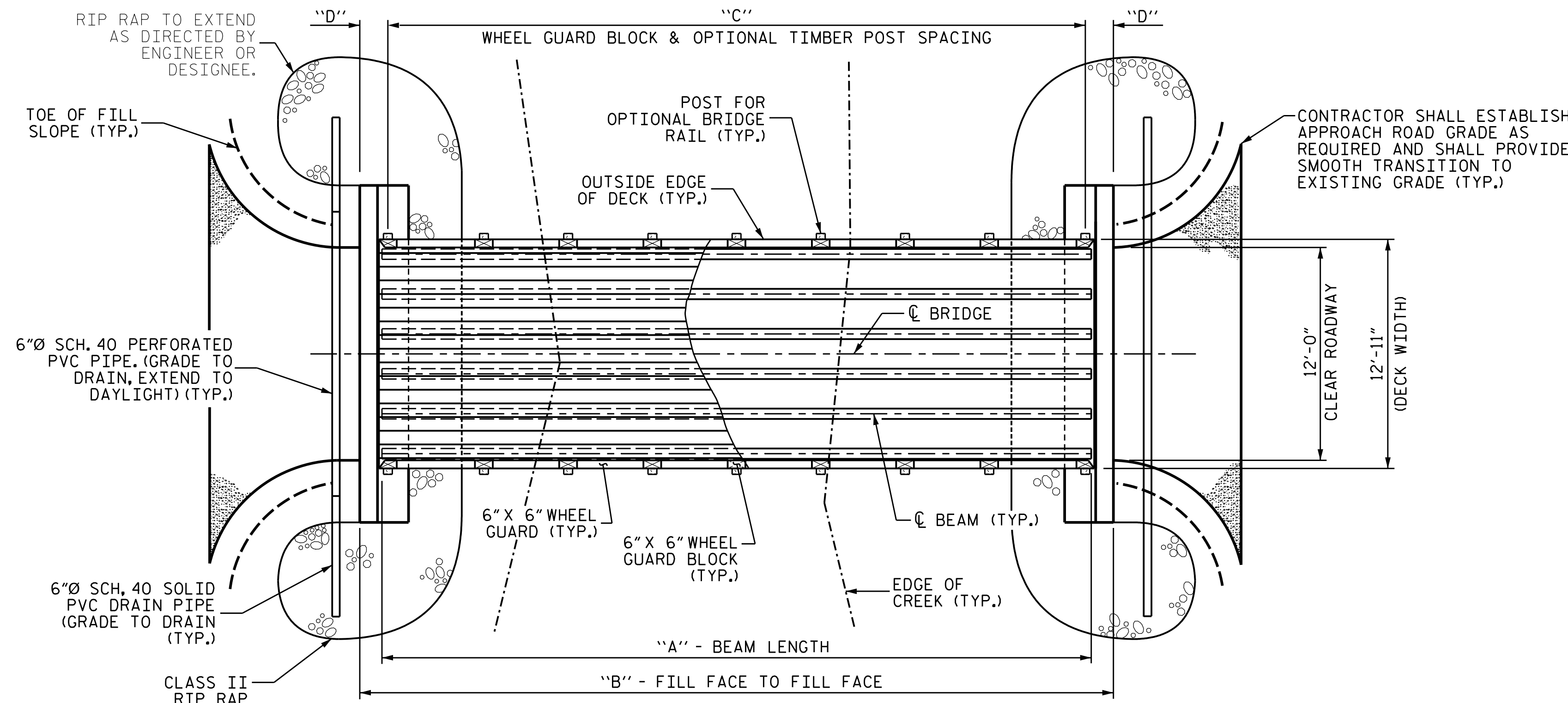
9+95 10+00 10+05 10+10 10+15 10+20 10+25 10+30 10+35 10+40 10+45 10+50 10+55 10+60 10+65 10+70



Stationing and elevations shown are relative to the site. Based on an assumed datum. No survey grade field work was performed.

NOTES

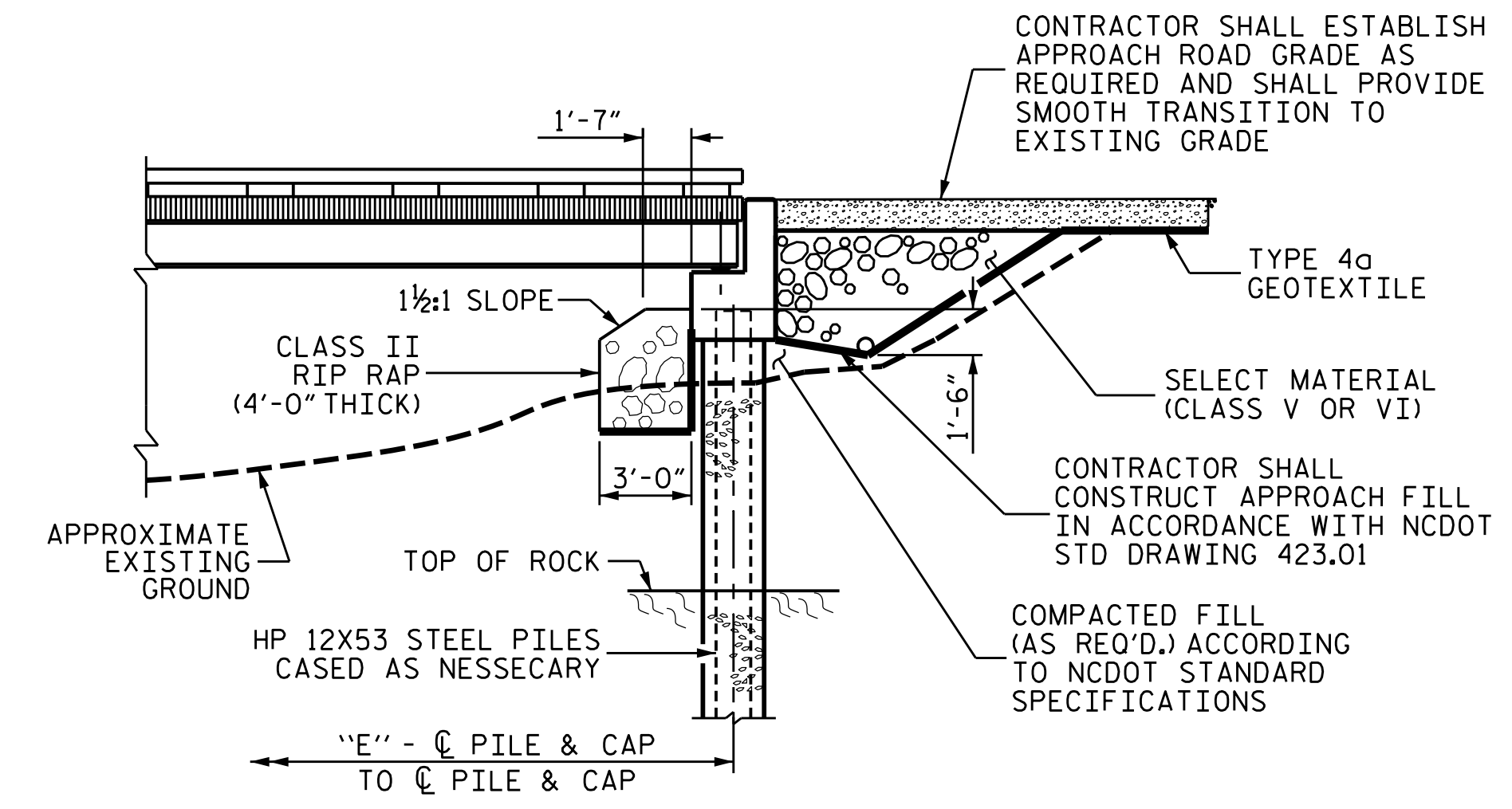
FOR OPTIONAL TIMBER BRIDGE RAIL DETAILS, SEE "OPTIONAL TIMBER BRIDGE RAIL" SHEET.
 CONTRACTOR SHALL LOCATE THE EXPANSION BEARING ON THE "UPHILL" END OF THE BRIDGE. THERE WILL BE ONLY ONE EXPANSION BEARING PER BRIDGE.
 CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES, AS REQUIRED ACCORDING TO NCDOT STANDARD SPECIFICATIONS AND THE CONTRACT DOCUMENTS.
 THE CONTRACTOR SHALL SET THE LOW-CHORD ELEVATION OF THE BRIDGE BASED ON EXISTING SITE CONDITIONS AND IN COORDINATION WITH THE ENGINEER, SUCH THAT THE NEW CROSSING PROVIDES CONVEYANCE GREATER THAN OR EQUAL TO THE ORIGINAL DESTROYED CROSSING. THE CONTRACTOR SHALL REFER TO THE BSR WHEN SETTING THE LOW-CHORD ELEVATION OF THE BRIDGE. NO CONSTRUCTION ACTIVITIES SHALL COMMENCE UNTIL ALL PARTIES HAVE AGREED UPON THE LOW-CHORD ELEVATION AND THE DATED PERMIT APPLICATION IS APPROVED.



BRIDGE PLAN

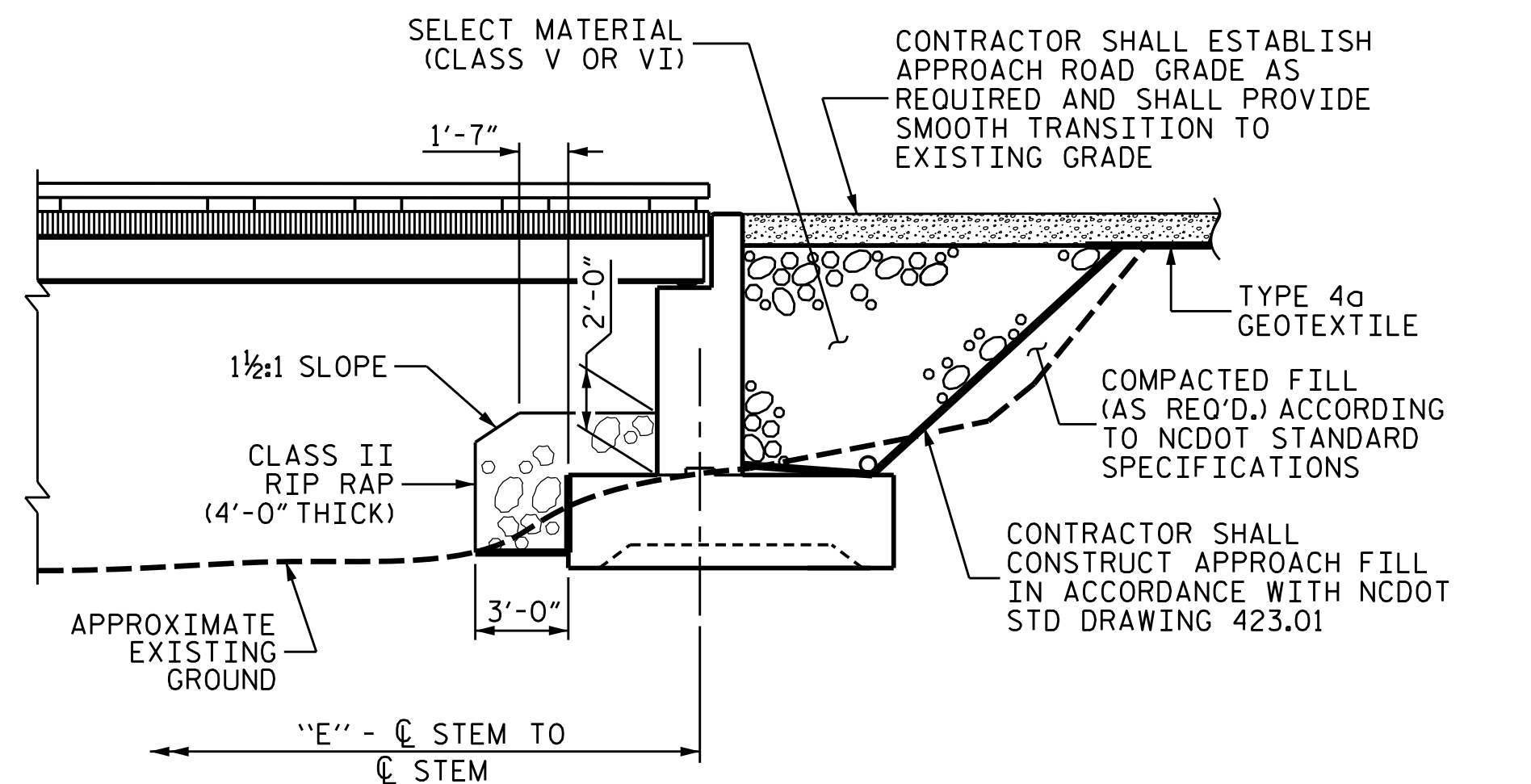
(FOUNDATION TYPE NOT SHOWN FOR CLARITY)

DIMENSIONS TABLE					
SPAN	A	B	C	D	E
20'-0"	20'-0"	22'-6"	4 SPA. @ 4'-6"	2'-3"	19'-9"
30'-0"	30'-0"	32'-6"	7 SPA. @ 4'-0"	2'-3"	29'-9"
40'-0"	40'-0"	42'-6"	9 SPA. @ 4'-3"	2'-1 1/2"	39'-9"
50'-0"	50'-0"	52'-6"	11 SPA. @ 4'-4"	2'-5"	49'-9"



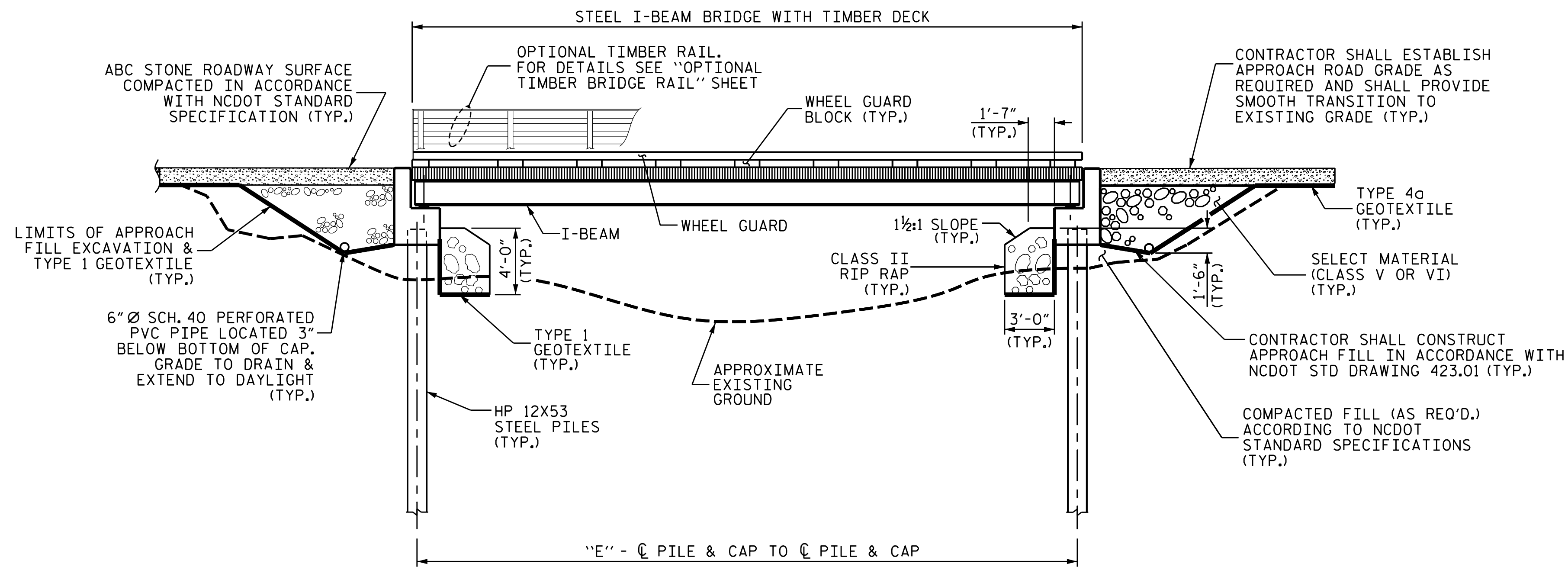
BRIDGE PARTIAL ELEVATION

(SHOWING DRILLED-IN 12X53 STEEL PILES FOUNDATION)



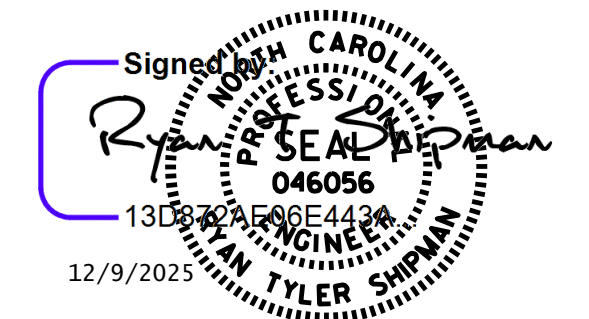
BRIDGE PARTIAL ELEVATION

(SHOWING SPREAD FOOTING FOUNDATION)



BRIDGE ELEVATION

(SHOWING DRIVEN 12X53 STEEL PILES FOUNDATION)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
PRIVATE DRIVEWAY BRIDGE STANDARDS
 SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK
GENERAL DRAWING

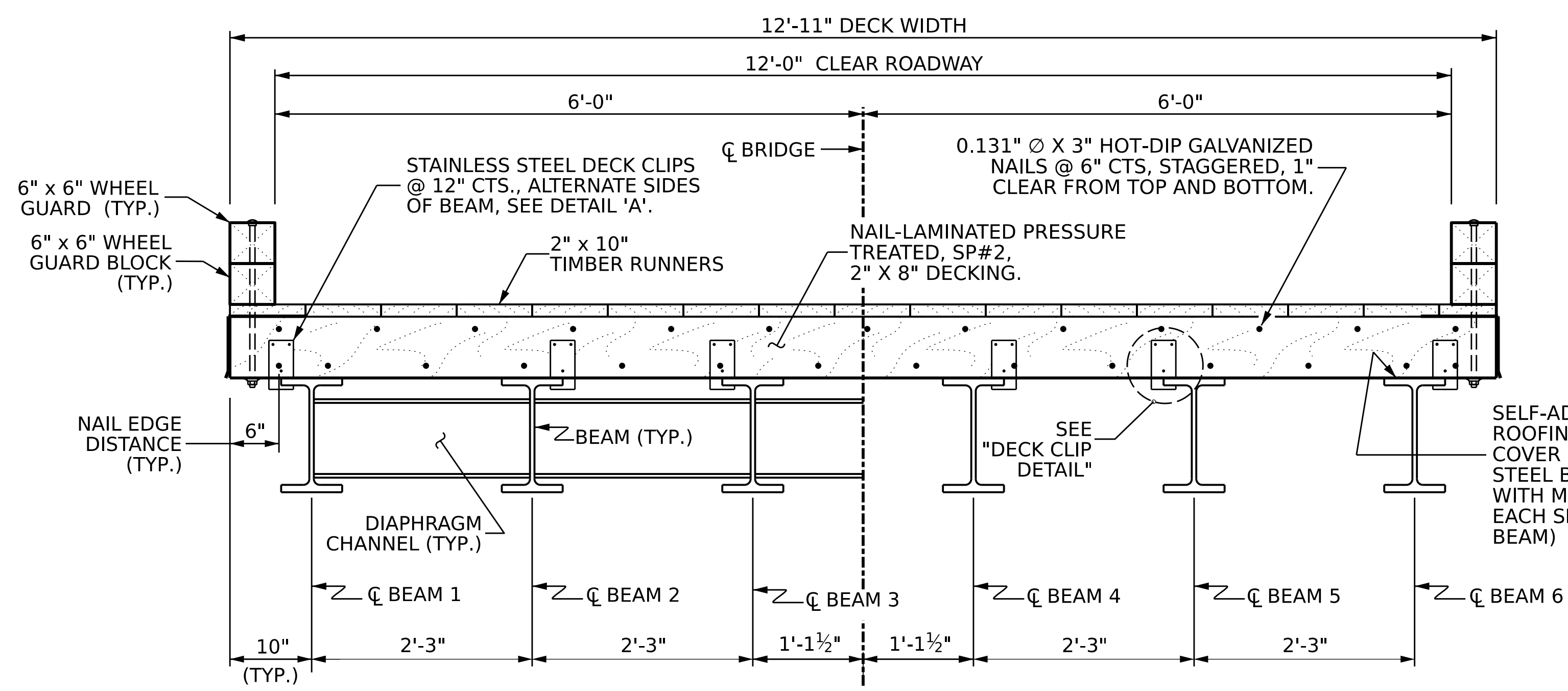
REVISIONS						SHEET NO. S-01
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 12
2			4			

JMT Johnson, Mirmiran, & Thompson Inc.
 108 Asheville Commerce Parkway
 Candler, NC, 28715
 License No: C-3097

DWN. BY: WDC DATE: 12/2025
 CHKD. BY: RTS DATE: 12/2025
 DES. EGR. OF RECORD: PCW DATE: 12/2025

W:\Projects\2025\25-00629\25-00629-001\Design\Structures\AC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\Drawings\I-Beam Bridge Plans\2. Standard Drawings\I-Beam Bridge Plans_20-50\00-51_General Drawings.dwg
 DATE: 12/9/2025
 TIME: 12:12:15

W:\Projects\2025\25-00629\25-00629-001\Design\Structures\NC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Plans\2 Standard Drawings\1-Beam Bridge Plans\20-50/002-S2_Typical Section.dwg
 DATE: 12/9/2025
 TIME: 12/9/2025



TYPICAL SECTION

MATERIALS TABLE				
SPAN	BEAM	DIAPHRAGM CHANNEL	DECK PLANK	DECKING SQ. FT.
20'-0"	W16X36	C12X20.7	2X8	263
30'-0"	W21X48	C12X20.7	2X8	392
40'-0"	W24X76	C12X20.7	2X8	521
50'-0"	W24X104	C12X20.7	2X8	650

NOTES

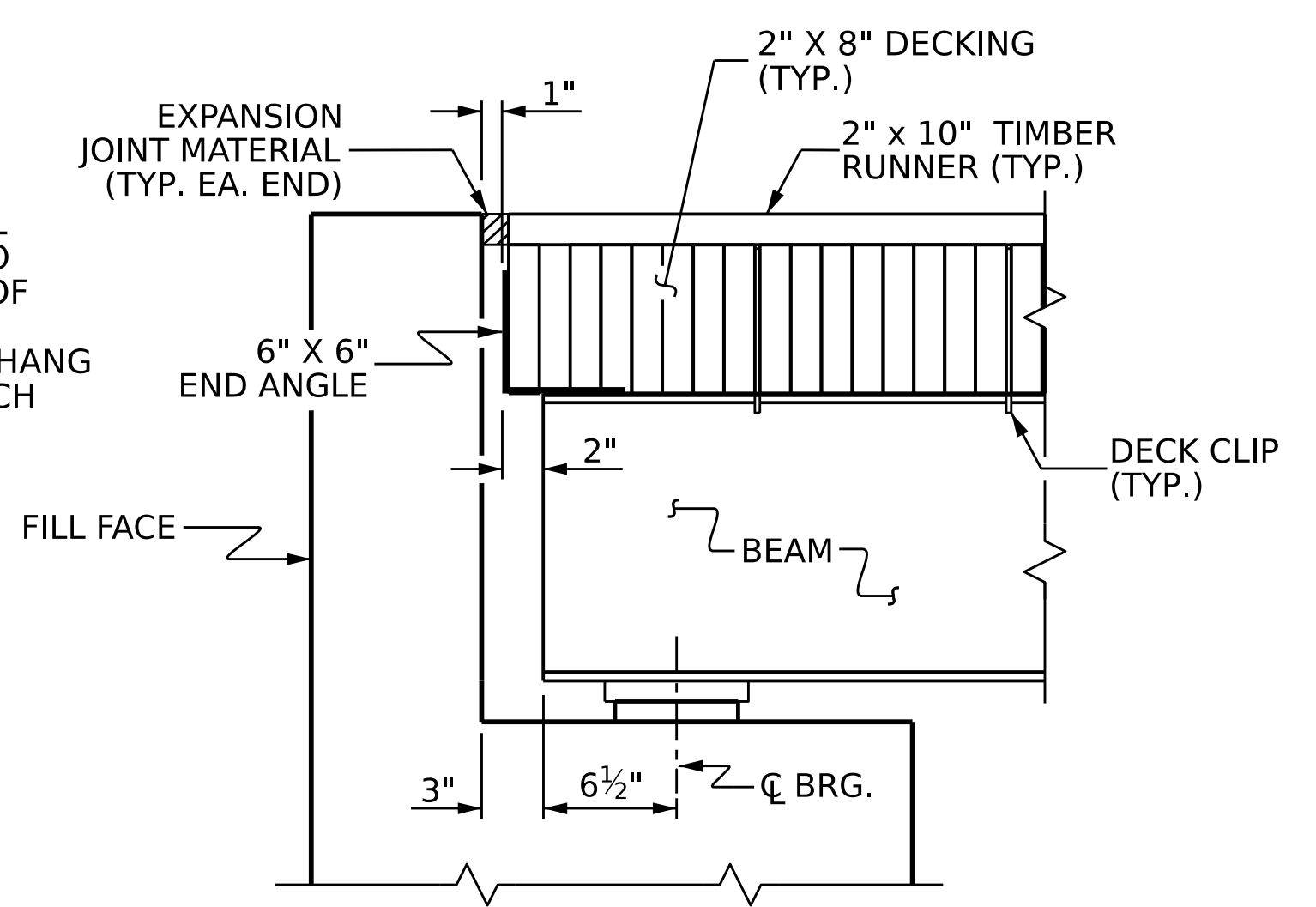
FOR TIMBER BRIDGE DECK SYSTEM DETAILS, SEE "PLAN OF SPAN" SHEET.

FOR OPTIONAL TIMBER RAILS, SEE "OPTIONAL TIMBER BRIDGE RAIL" SHEET.

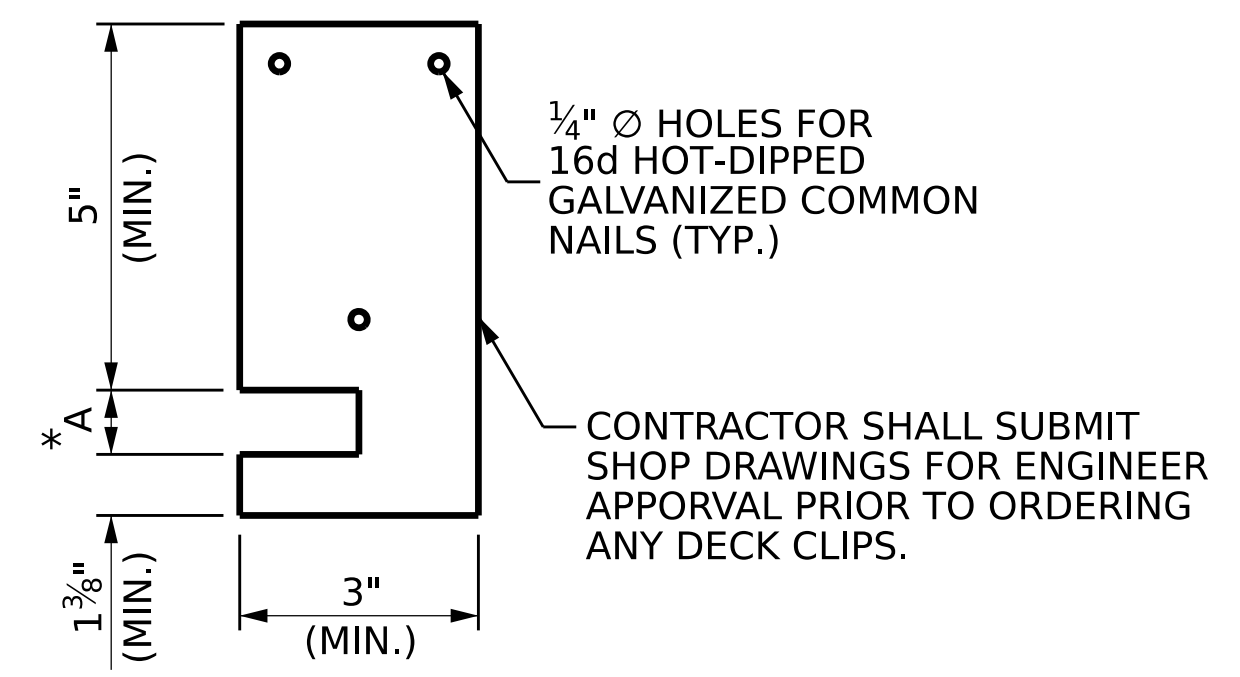
FOR BEAM AND DIAPHRAGM DETAILS, SEE "FRAMING PLAN & BEAM DETAILS" SHEET.

TREAT ALL DRILLED OR NEWLY EXPOSED HOLES IN TIMBER MEMBERS BY PUMPING WITH BITUMINOUS ASPHALT-BASED ROOFING CEMENT, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING HARDWARE.

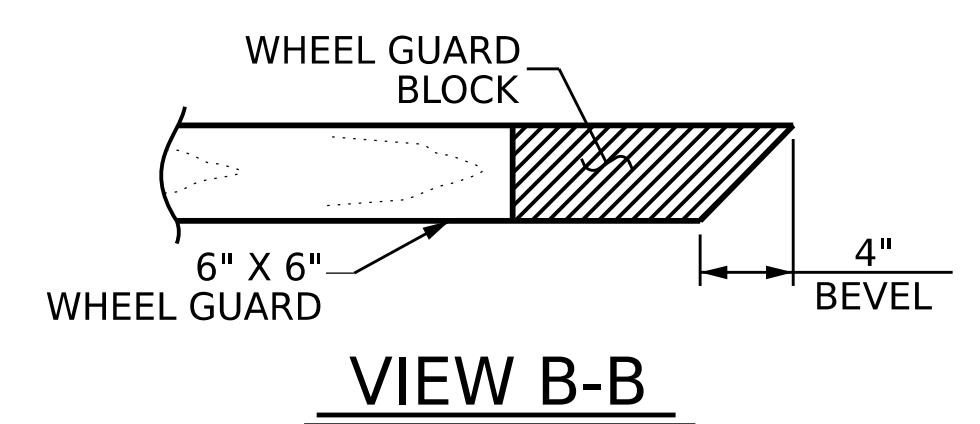
SEE "PLAN OF SPAN" SHEET FOR NUMBER OF WHEEL GUARDS AND WHEEL GUARD SPACING.



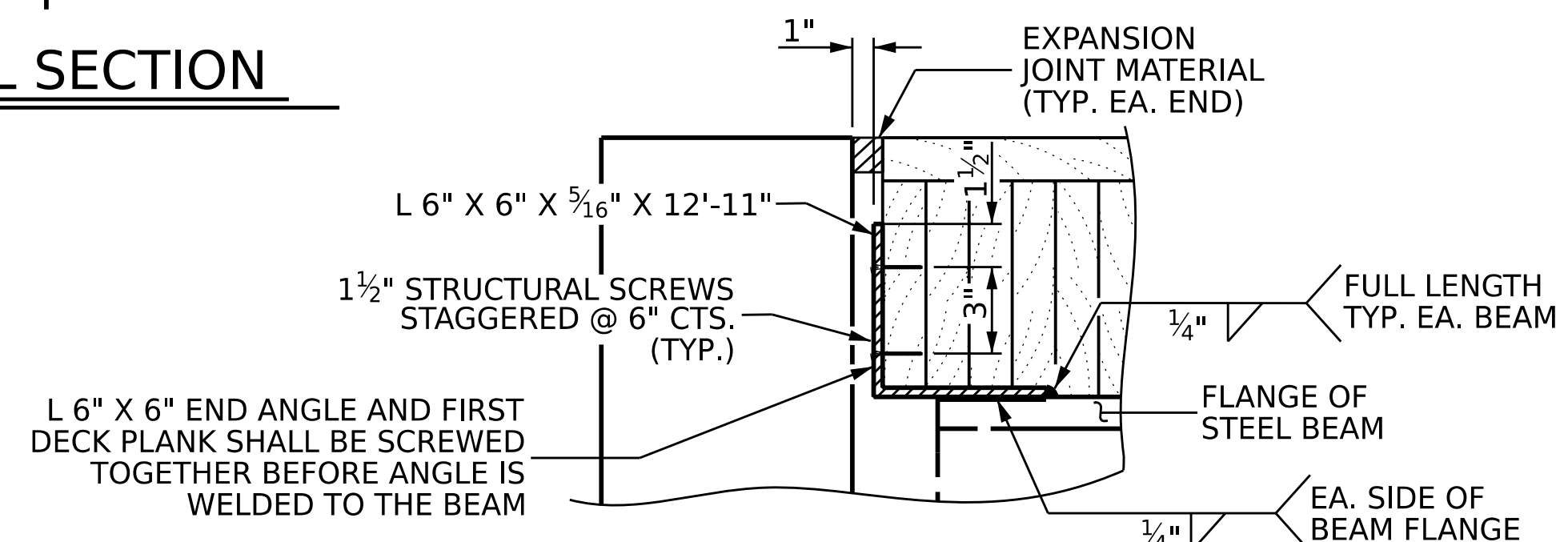
SECTION AT END BENT



DECK CLIP DETAIL



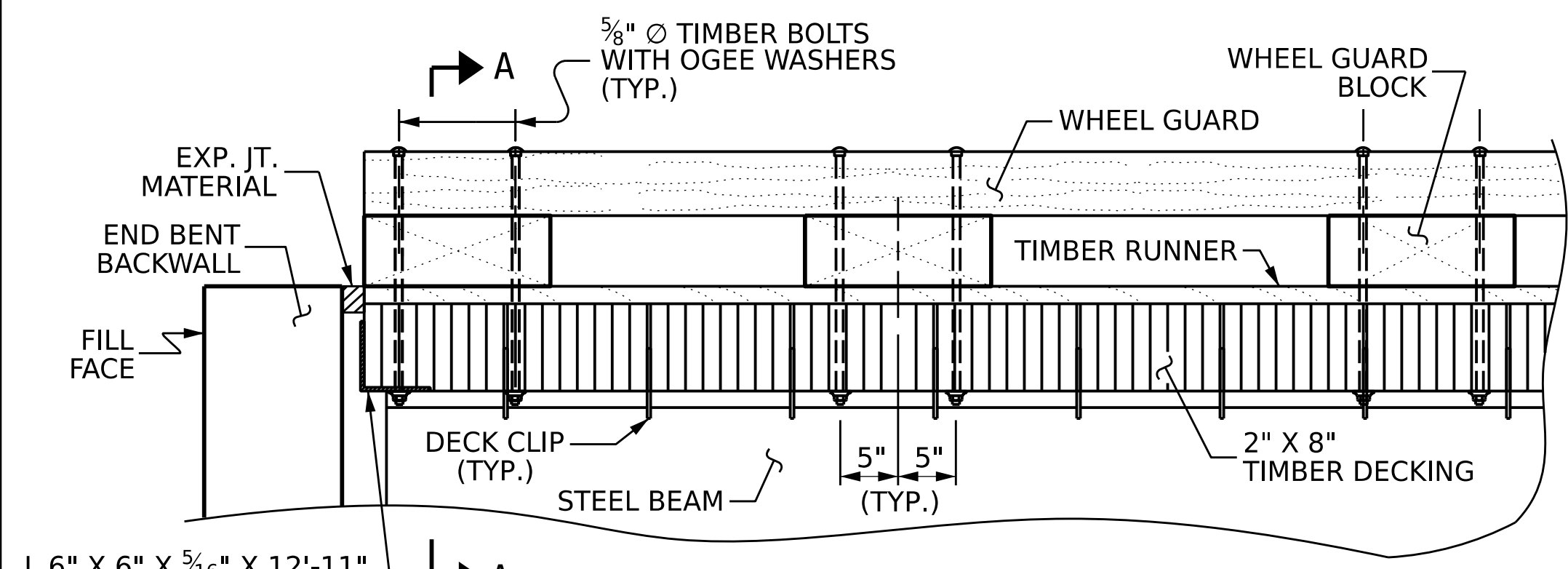
VIEW B-B



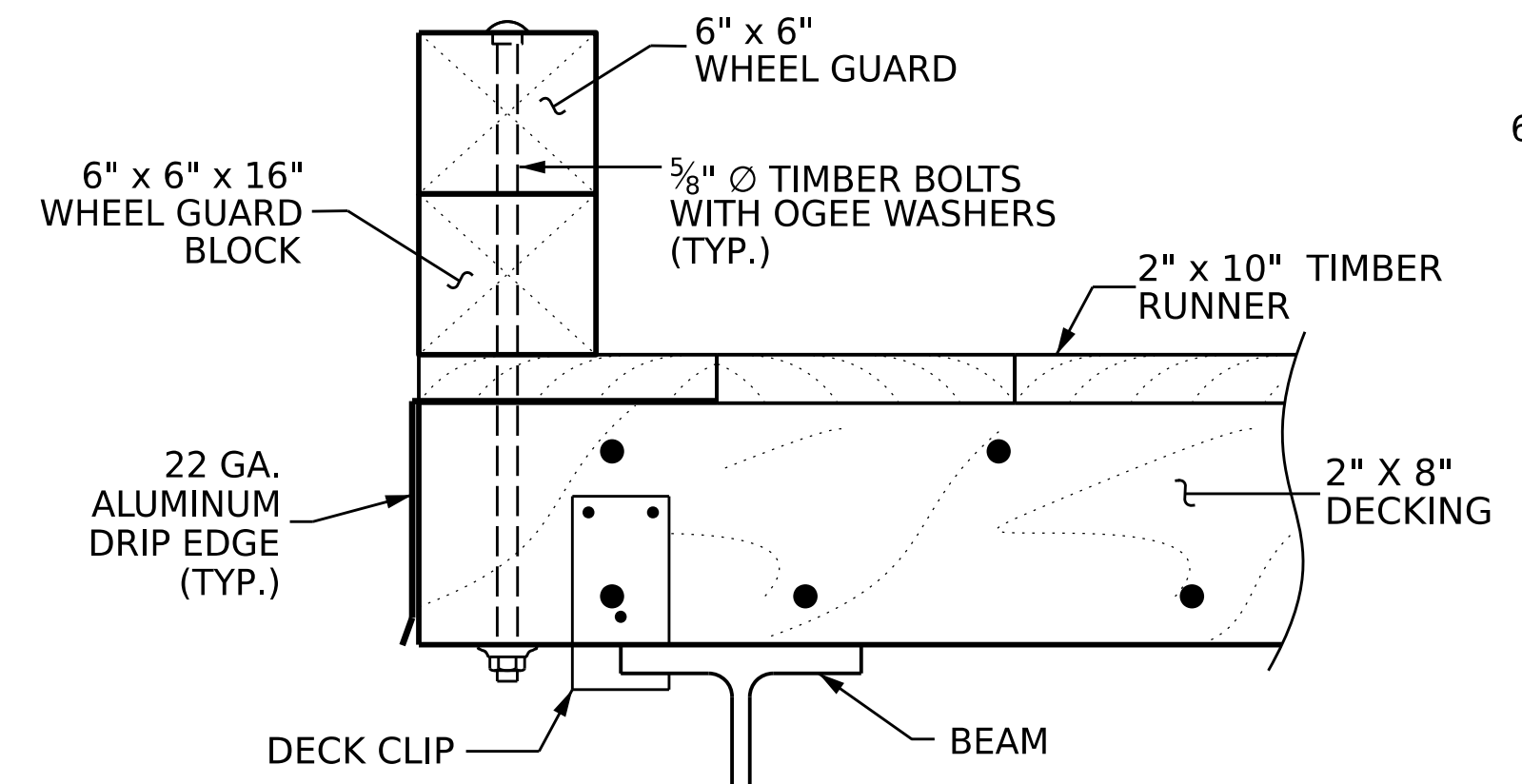
END ANGLE DETAIL

DECK CLIP DIMENSIONS		
SPAN	BEAM	*A
20'-0"	W16X36	1/2"
30'-0"	W21X48	1/2"
40'-0"	W24X76	3/4"
50'-0"	W24X104	13/16"

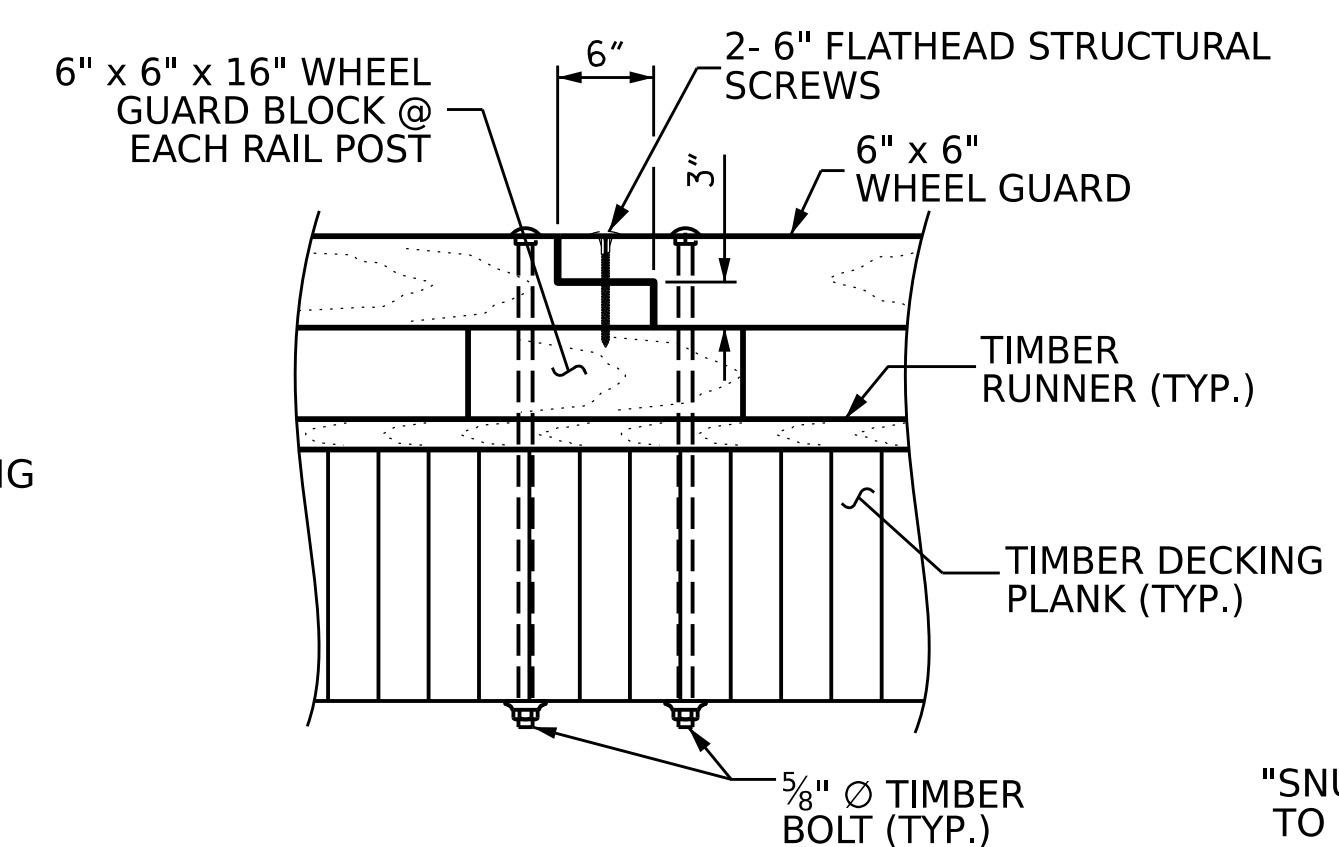
* DIMENSION A IS FOR INFORMATION ONLY. IT IS BASED ON THE FLANGE THICKNESS PLUS A 1/16" TOLERANCE. THE CONTRACTOR SHALL VERIFY THIS DIMENSION WITH DECK CLIP SUPPLIER. THE DECK CLIP SHALL HAVE A SNUG FIT TO THE BEAM FLANGE.



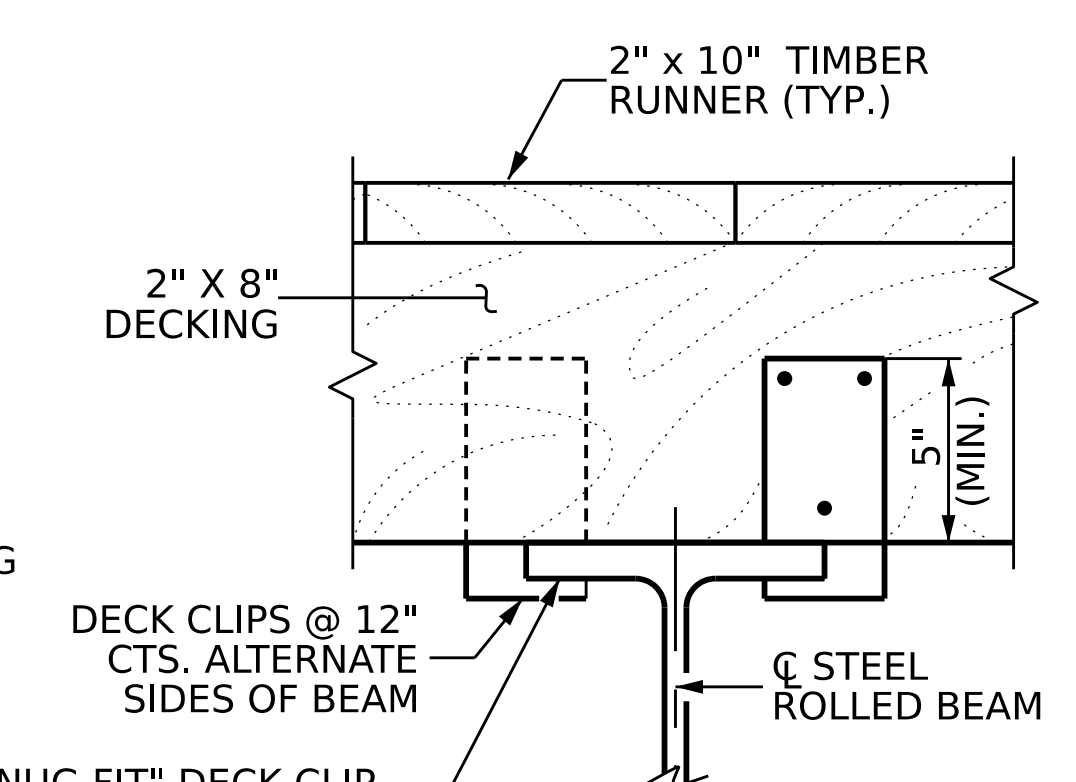
WHEEL GUARD DETAIL AT END BENTS



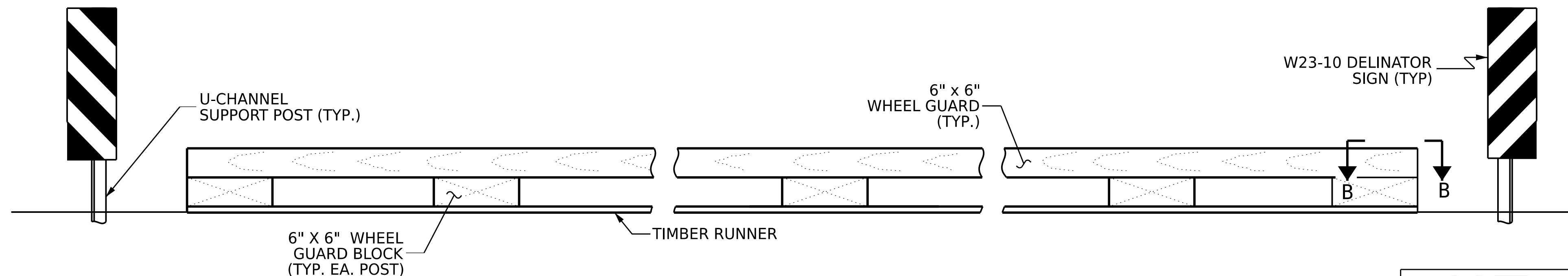
SECTION A-A



WHEEL GUARD SPLICE DETAIL



DETAIL 'A'



WHEEL GUARD ELEVATION

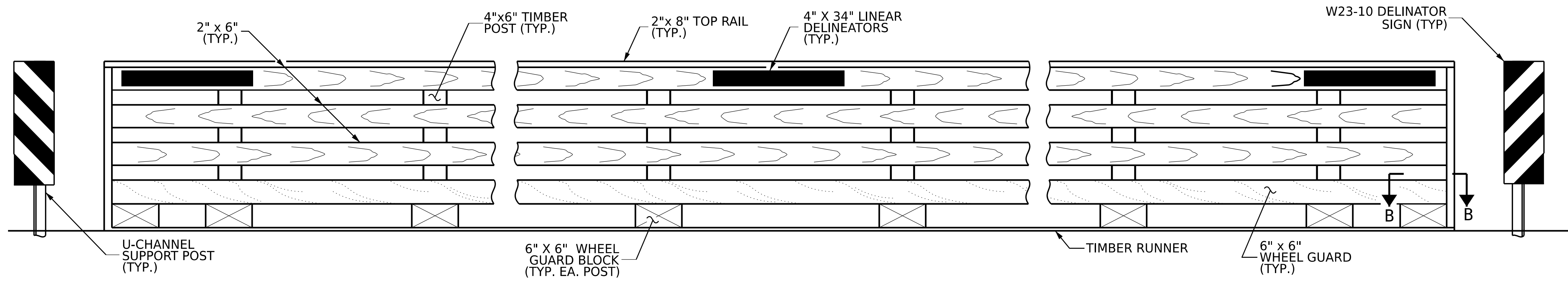
Signature: *Ryan A. Beaman*
 NORTH CAROLINA PROFESSIONAL ENGINEER
 046056
 13000 W. HUNTERS LANE
 TYLER, NORTH CAROLINA 27584
 12/9/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
**PRIVATE DRIVEWAY
 BRIDGE STANDARDS**
 SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK
**TYPICAL SECTION
 & RAIL DETAILS**

JMT Johnson, Mirmiran, & Thompson Inc. 108 Asheville Commerce Parkway Candler, NC, 28715 License No: C-3097	DWN. BY: WDC	DATE: 12/2025	NO.	BY:	DATE:	SHEET NO. S-02 TOTAL SHEETS 12
	CHKD. BY: RTS	DATE: 12/2025	1			
	DES. EGR. OF RECORD: PCW	DATE: 12/2025	2			

W:\Projects\2025\25-00629\25-00629-001\Drawings\Structures\NC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\I-Beam Bridge Plans\2-Standard Drawings\I-Beam Bridge Plans_20-50\003-S3 Optional Bridge Rail.dwg
 DATE: 12/19/2025
 TIME: 11:51:03 AM



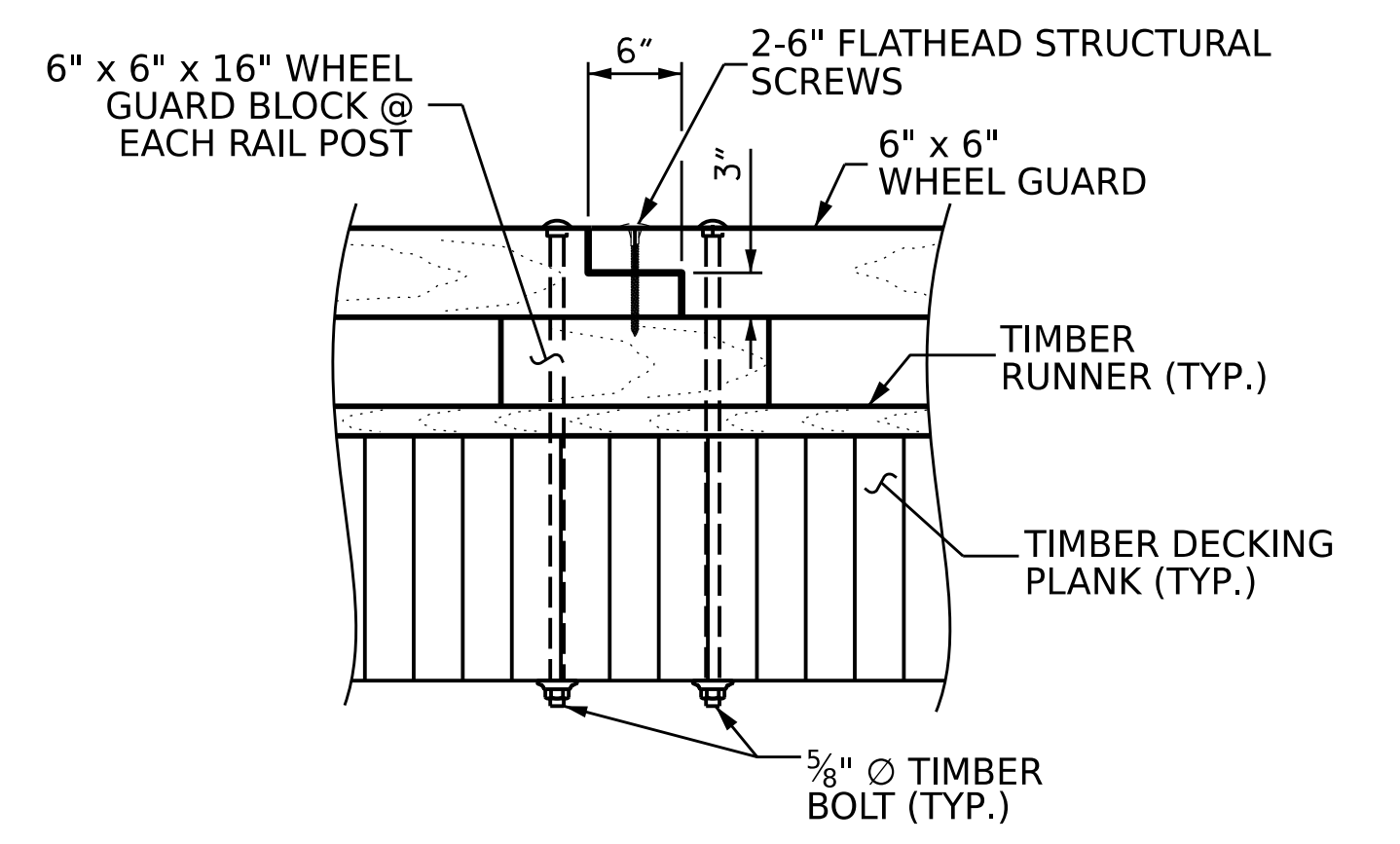
ELEVATION OF OPTIONAL BRIDGE RAIL

OPTIONAL BRIDGE RAIL NOTES

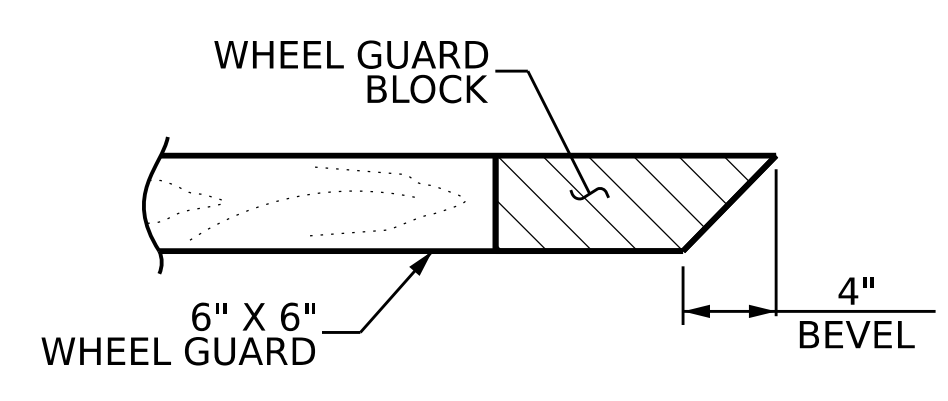
BRIDGE RAILS SHALL BE CONTINUOUS FROM END POST TO END POST WITH NO GAPS. RAIL LUMBER LENGTHS SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

TREAT ALL DRILLED OR NEWLY EXPOSED HOLES IN TIMBER MEMBERS BY PUMPING WITH BITUMINOUS ASPHALT-BASED ROOFING CEMENT, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING HARDWARE.

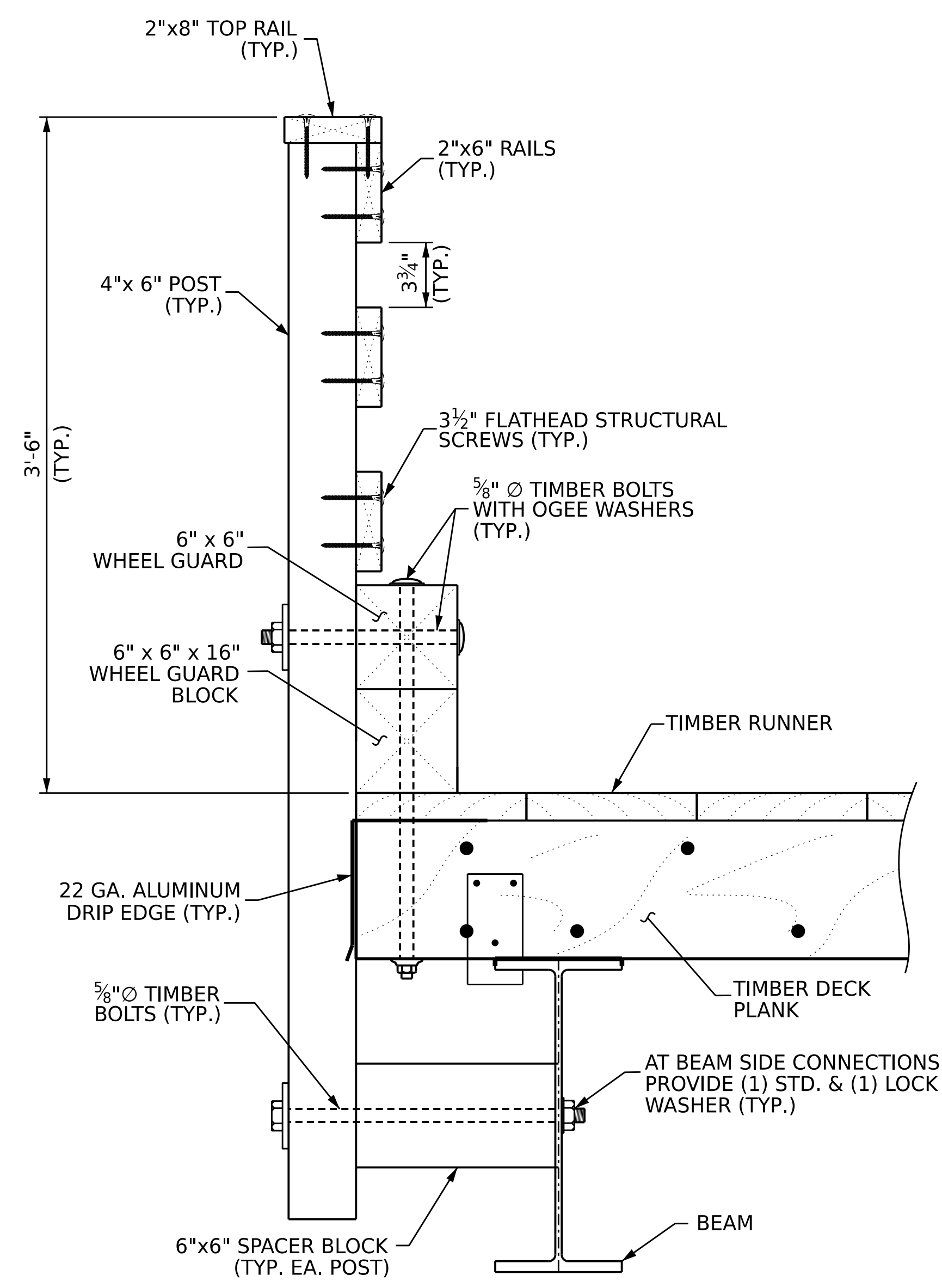
SEE "PLAN OF SPAN" SHEET FOR NUMBER OF POSTS AND POST SPACING.



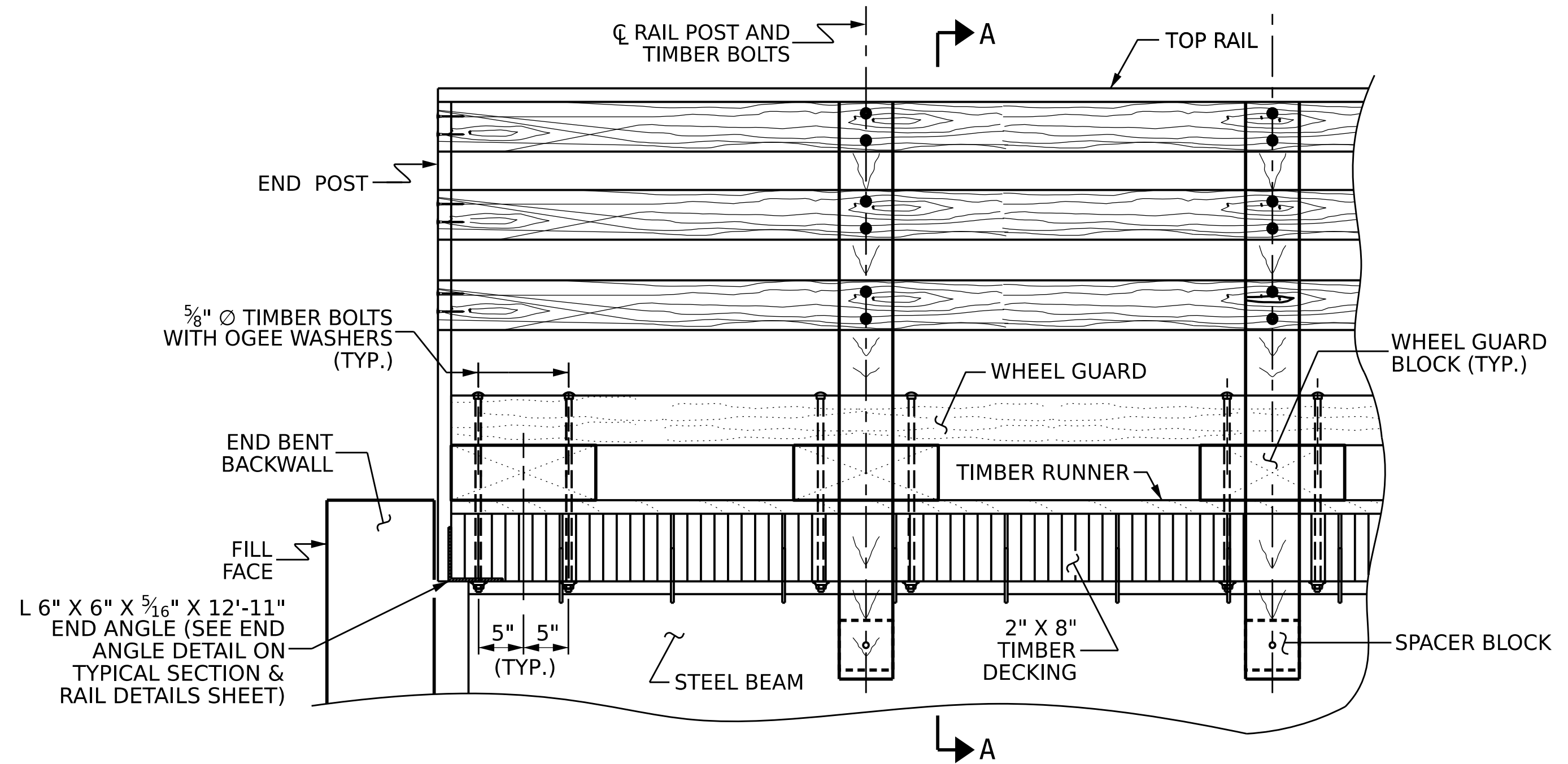
WHEEL GUARD SPLICE DETAIL



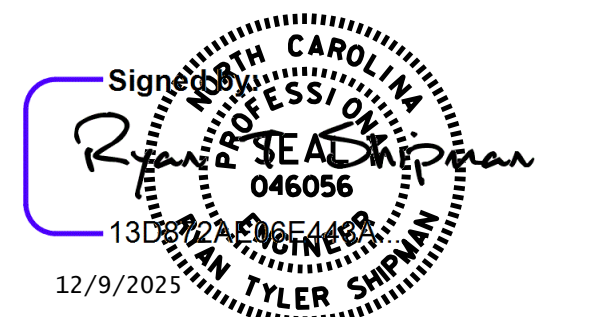
VIEW B-B



SECTION A-A



OPTIONAL RAIL DETAIL AT END BENTS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
PRIVATE DRIVEWAY
BRIDGE STANDARDS
 SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK
OPTIONAL TIMBER
BRIDGE RAIL

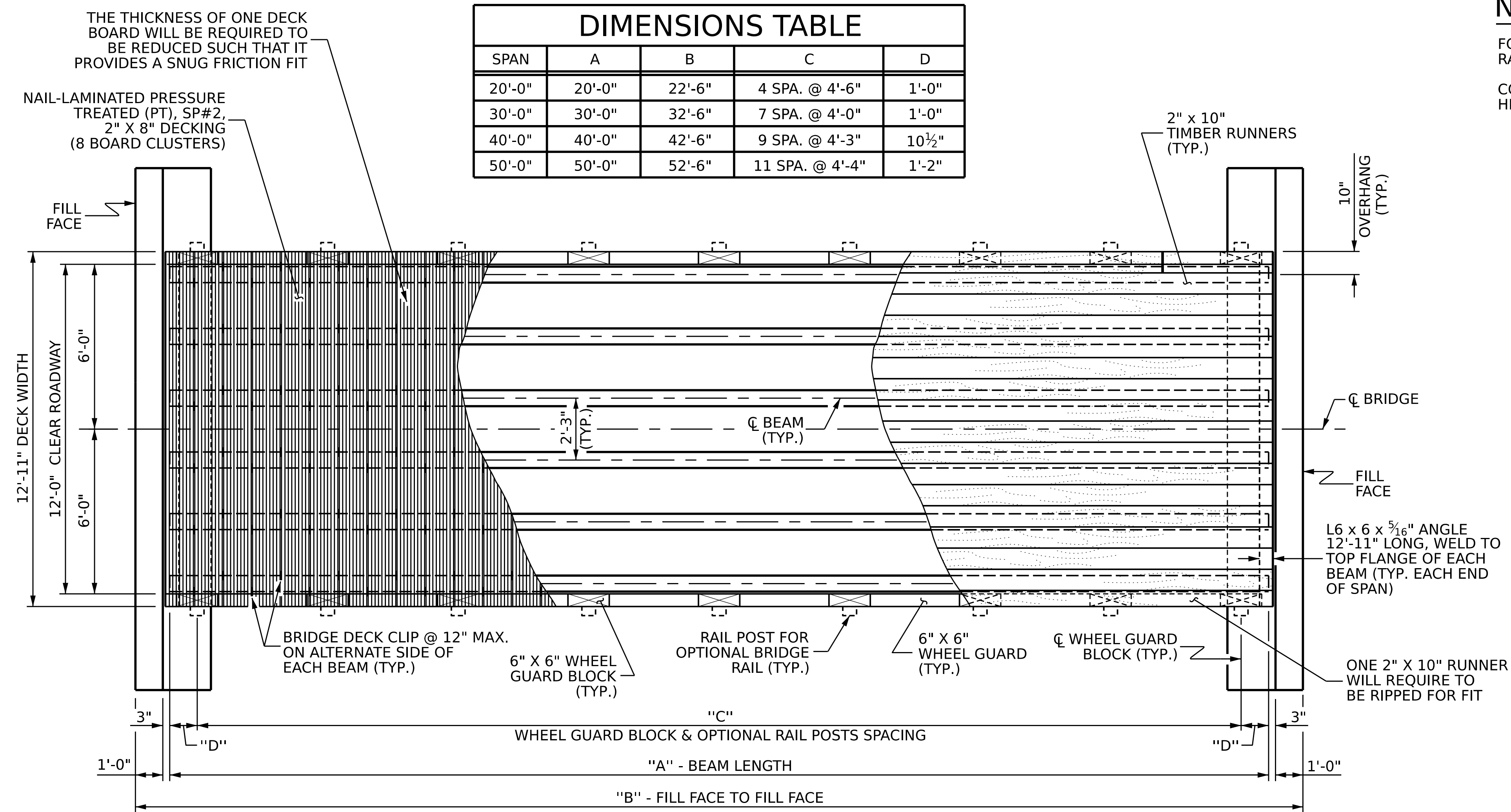
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-03
1			3			TOTAL SHEETS
2			4			12

Johnson, Mirmiran, & Thompson Inc.
 108 Asheville Commerce Parkway
 Candler, NC, 28715
 License No: C-3097

DWN. BY: WDC
 CHKD. BY: RTS
 DES. EGR. OF RECORD: PCW
 DATE: 12/2025
 DATE: 12/2025
 DATE: 12/2025

W:\Projects\2025\25-00629\25-00629-001\Design\Structures\NC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\Plan of Span\Plan of Span.dwg
 DATE: 12/19/2025
 TIME: 12:19:2025

DIMENSIONS TABLE				
SPAN	A	B	C	D
20'-0"	20'-0"	22'-6"	4 SPA. @ 4'-6"	1'-0"
30'-0"	30'-0"	32'-6"	7 SPA. @ 4'-0"	1'-0"
40'-0"	40'-0"	42'-6"	9 SPA. @ 4'-3"	10½"
50'-0"	50'-0"	52'-6"	11 SPA. @ 4'-4"	1'-2"



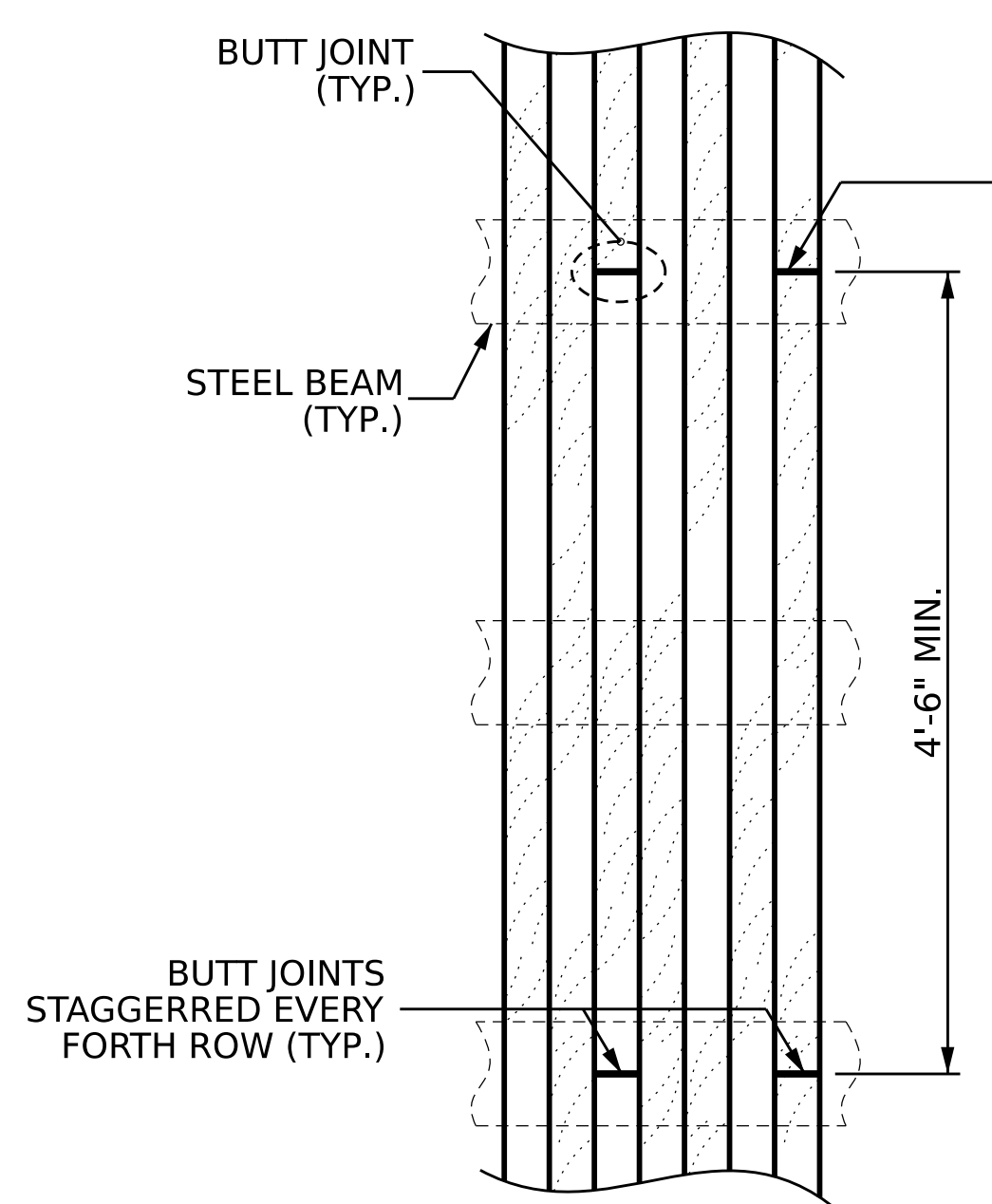
END BENT 1

DECK LAYOUT

END BENT 2

NOTES

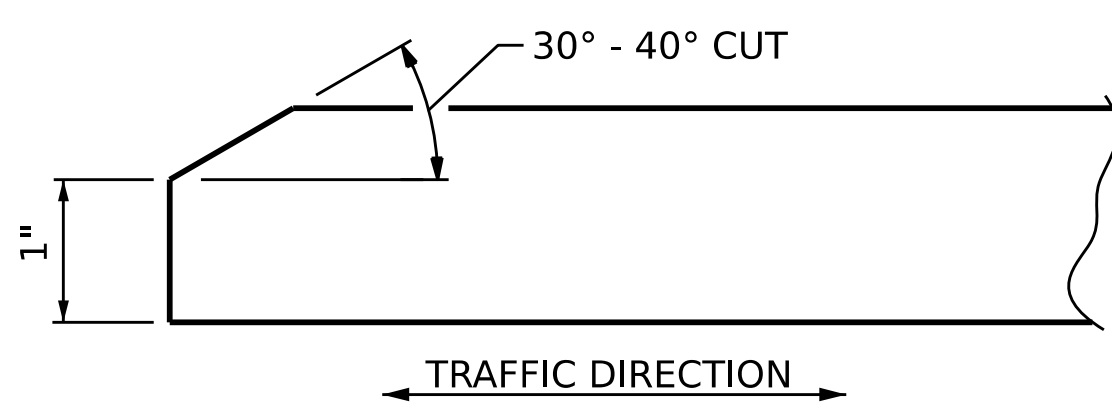
FOR ADDITIONAL NOTES, SEE "TYPICAL SECTION & RAIL DETAILS" SHEET, AND "GENERAL NOTES" SHEET.
 COUNTERSINK FLATHEAD STRUCTURAL TIMBER SCREW HEADS TO BE FLUSH WITH TIMBER SURFACE.



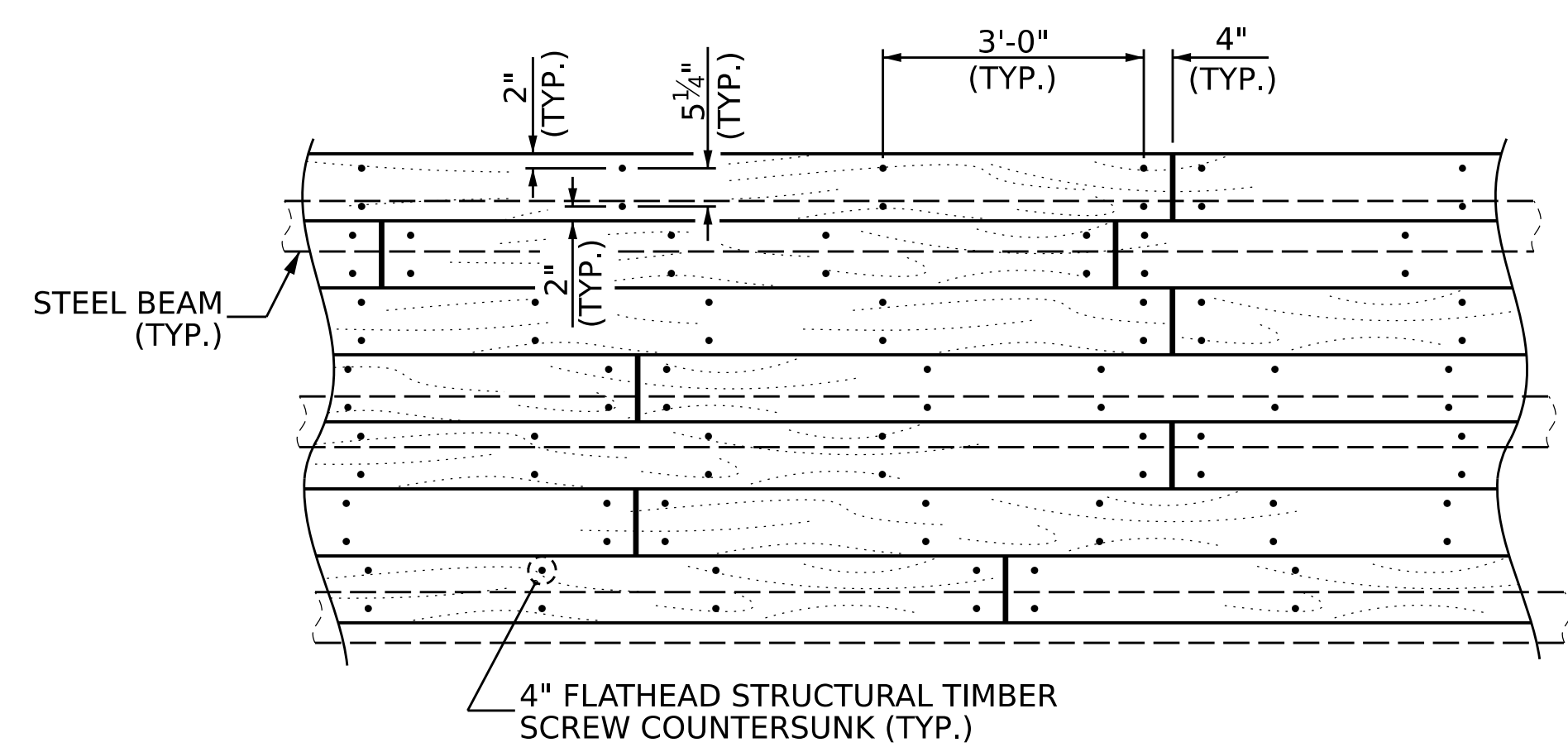
DECKING BOARD BUTT JOINT DETAIL

BUTT JOINTS SHALL BE OVER THE CENTERLINE OF A BEAM. JOINTS SHALL BE STAGGERED EVERY FOURTH DECK BOARD. NONE ALLOWED AT THE EXTERIOR BEAMS.

WHEN BUTT JOINTS ARE REQUIRED IN A PLANK RUN, DETAIL THE BUTT JOINTS OVER THE CENTERLINE OF THE BEAM



SIDE VIEW TIMBER RUNNER BEVEL DETAIL
 (TYP. AT EACH END OF BRIDGE)



TIMBER RUNNER BUTT JOINT DETAIL

Signed: *Ryan D. Sherman*
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL NO. 046056
 13000 W. WEAVER AVE.
 RALEIGH, NC 27617
 12/9/2025
 TYLER SHIPMAN

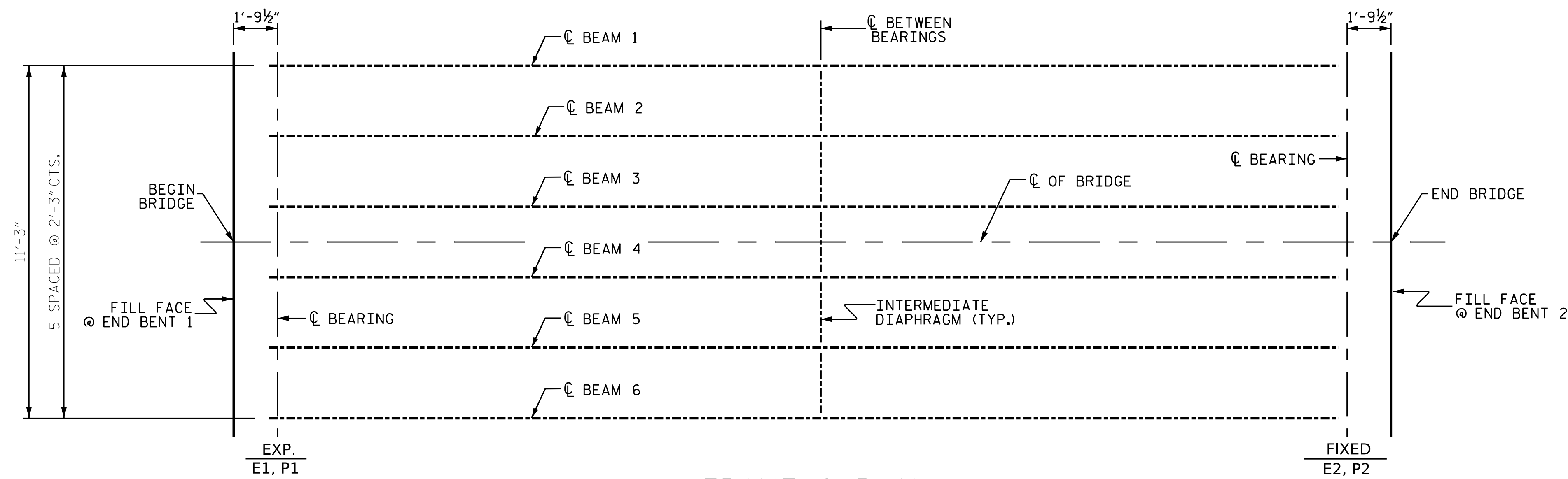
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
PRIVATE DRIVEWAY BRIDGE STANDARDS
 SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK
PLAN OF SPAN

JMT Johnson, Mirmiran, & Thompson Inc. 108 Asheville Commerce Parkway Candler, NC, 28715 License No: C-3097	DWN. BY: WDC	DATE: 12/2025	REVISIONS	SHEET NO. S-04
	CHKD. BY: RTS	DATE: 12/2025		
DES. EGR. OF RECORD: PCW	DATE: 12/2025	NO. BY: DATE:	NO. BY: DATE:	TOTAL SHEETS 12

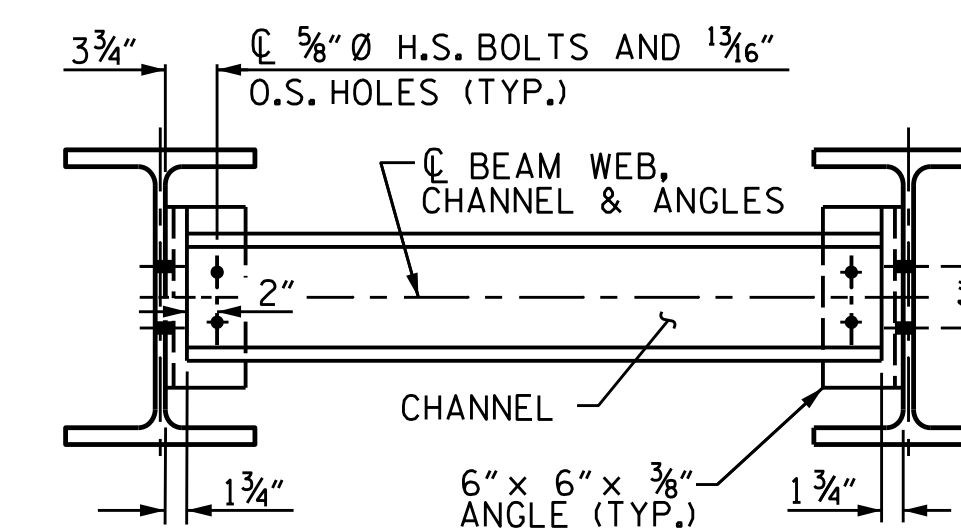
NOTES

- NO SALVAGED BEAMS SHALL BE USED, UNLESS OTHERWISE NOTED ON THE PLANS.
- NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.
- ALL STRUCTURAL STEEL FIELD CONNECTIONS SHALL BE $\frac{5}{8}$ " DIA. GALVANIZED HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.
- BEAMS SHALL BE PLACED PARALLEL TO THE CHORD.
- CONTRACTORS OPTION TO WELD CONNECTOR TO BEAM PRIOR TO SHOP COATING.
- SEE "GENERAL NOTES" SHEET FOR COATING.

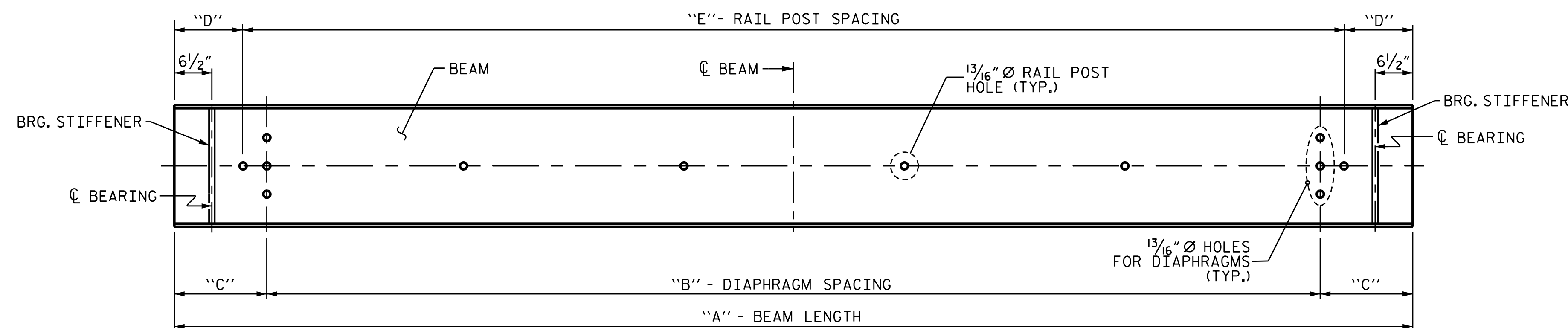


FRAMING PLAN

EXPANSION BEARING SHALL BE PLACED ON THE "UPHILL" END OF THE BRIDGE.

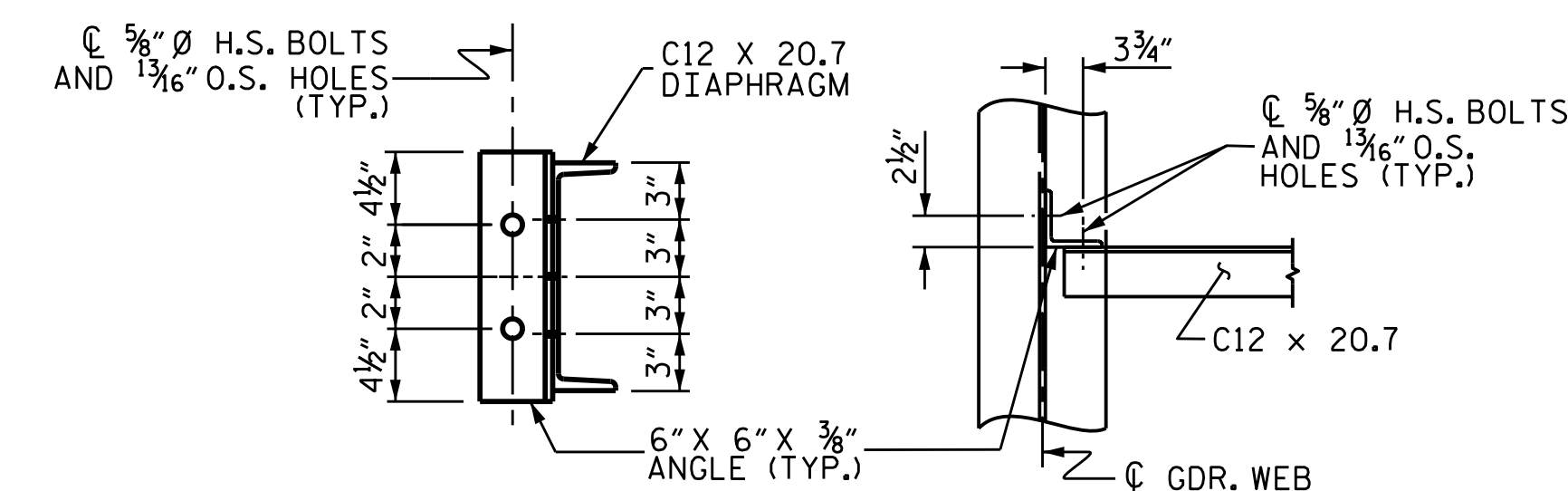


DIAPHRAGM DETAILS



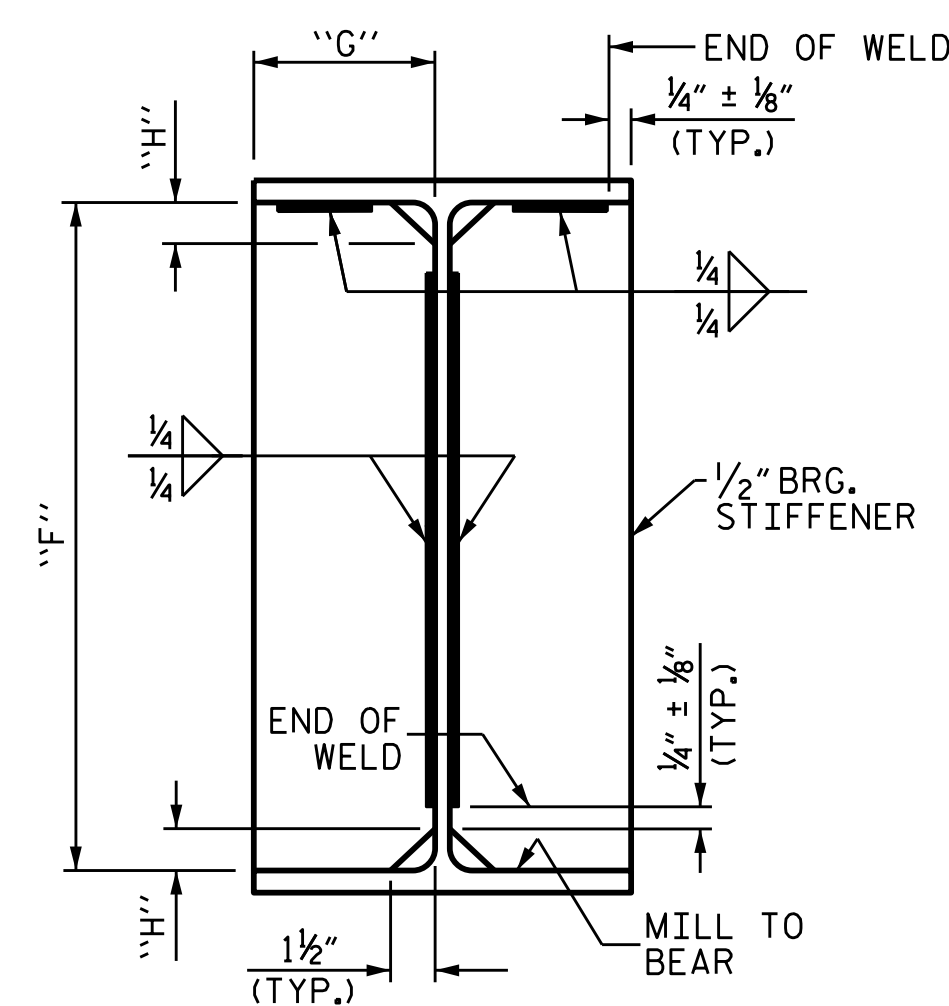
BEAM FLANGE ELEVATION

SHOWING DIAPHRAGM HOLES FOR ALL BEAMS, AND RAIL POST HOLES FOR EXTERIOR BEAMS.



ANGLE DETAILS

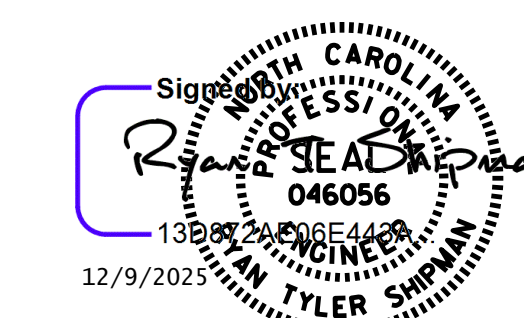
SPAN	BEAM	CHANNEL	A	B	C	D	E
20'-0"	W16X36	C12X20.7	20'-0"	2 SPA. @ 7'-0"	3'-0"	1'-0"	4 SPA. @ 4'-6"
30'-0"	W21X48	C12X20.7	30'-0"	2 SPA @ 12'-0"	3'-0"	1'-0"	7 SPA. @ 4'-0"
40'-0"	W24X76	C12X20.7	40'-0"	2 SPA. @ 17'-0"	3'-0"	10 1/2"	9 SPA. @ 4'-3"
50'-0"	W24X104	C12X20.7	50'-0"	2 SPA. @ 22'-0"	3'-0"	1'-2"	11 SPA. @ 4'-4"



STIFFENER DIMENSION

BEAM	F	G	H
W16X36	1'-3"	3 3/8"	2"
W21X48	1'-7 3/4"	3 7/8"	2 1/8"
W24X76	1'-10 9/16"	4 1/4"	2 7/16"
W24X104	1'-10 9/16"	6 3/8"	2 3/4"

SECTION VIEW - BRG. STIFFENER



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
**PRIVATE DRIVEWAY
BRIDGE STANDARDS**
SINGLE LANE STEEL BEAM BRIDGE
TIMBER DECK
**FRAMING PLAN &
BEAM DETAILS**

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

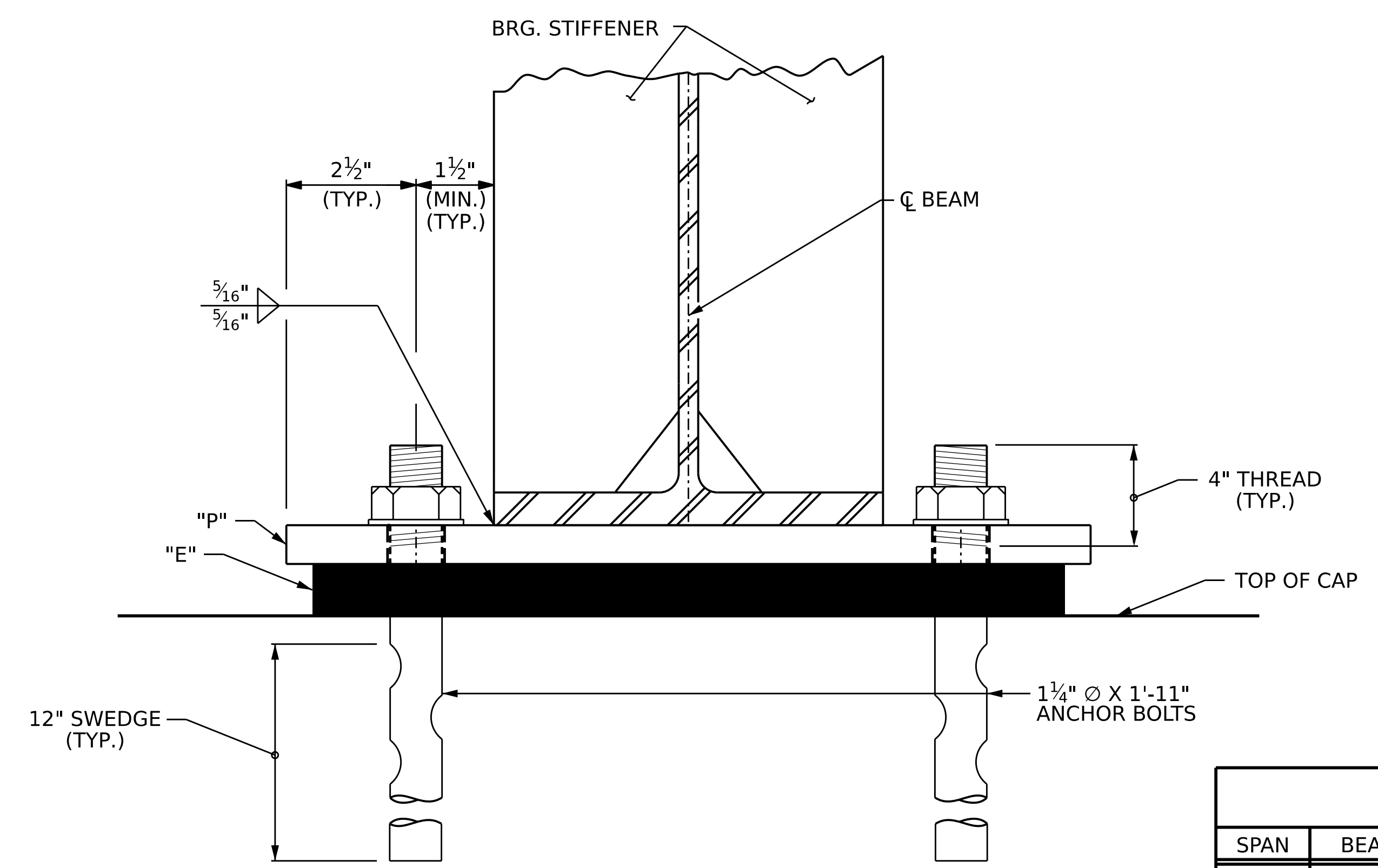
SHEET NO.
S-05
TOTAL SHEETS
12

JMT Johnson, Mirmiran, & Thompson Inc.
108 Asheville Commerce Parkway
Candler, NC, 28715
License No: C-3097

DWN. BY: WDC
CHKD. BY: RTS
DES. EGR. OF RECORD: PCW
DATE: 12/2025
DATE: 12/2025
DATE: 12/2025

W:\Projects\2025\25-00629\25-00629-001\Design\Structures\NC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\20-50\005-SL-Framing Plans.dwg
DATE: 12/9/2025
TIME: 11:51:00 AM

W:\Projects\2025\25-00629\25-00629-001\Design\Structures\AC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\56_Bearing_Details.dgn
 DATE: 12/9/2025
 TIME: 12:12:15



SECTION AT BEARING

DIMENSIONS TABLE						
SPAN	BEAM	FLANGE WIDTH	TYPE	A	B	C
20'-0"	W16X36	6.99"	I	10"	1'-2"	1'-3"
30'-0"	W21X48	8.14"	II	1'-0"	1'-4"	1'-5"
40'-0"	W24X76	9.0"	II	1'-0"	1'-4"	1'-5"
50'-0"	W24X104	12.75"	III	1'-4"	1'-8"	1'-9"

NOTES

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT ALL SUPPORTS, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 36.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS, AND WASHERS. SHOP INSPECTION IS REQUIRED.

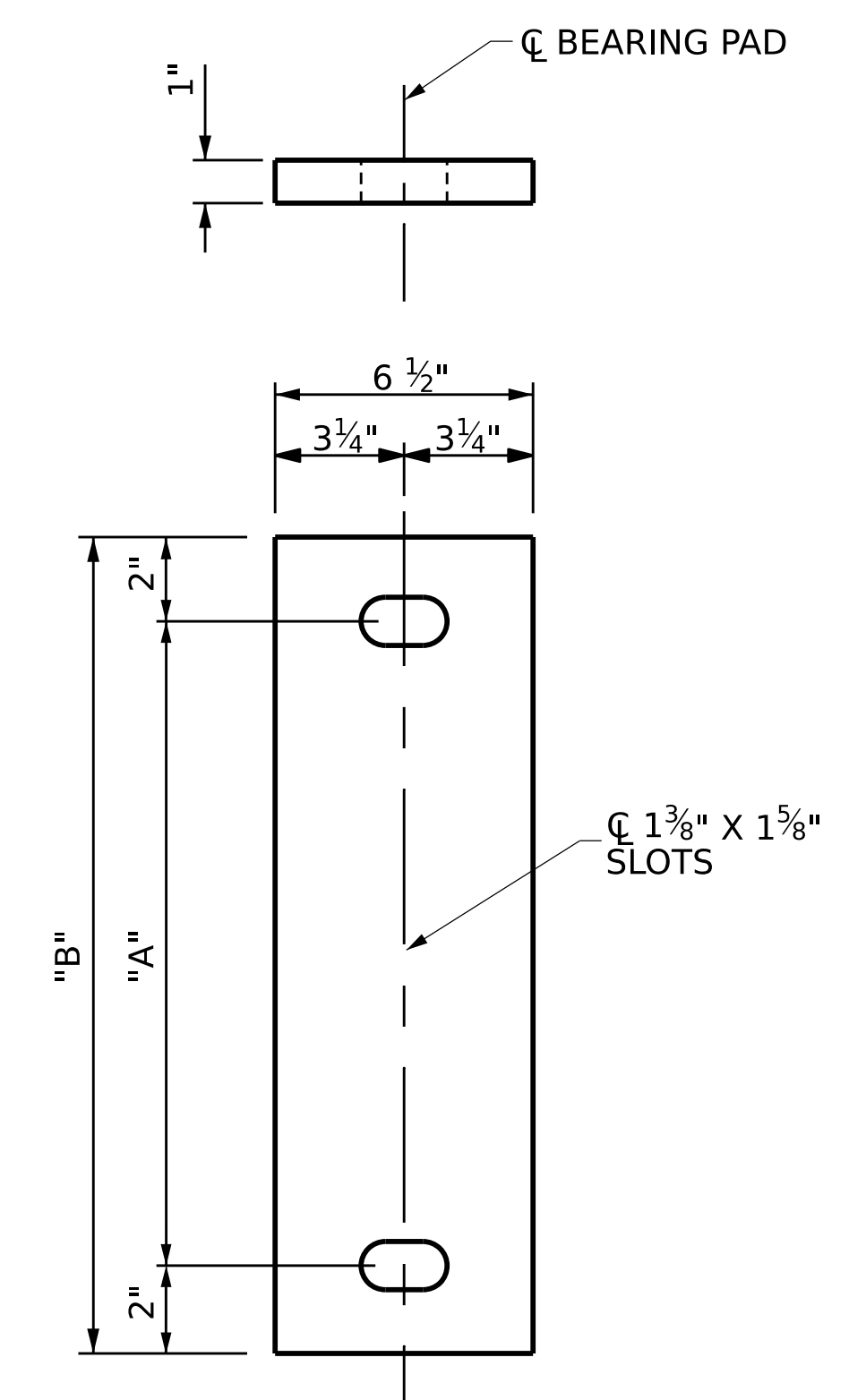
AT THE APPROVAL OF THE ENGINEER, SOLE PLATES AT THE EXPANSION END MAY BE FIELD WELDED.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300° F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

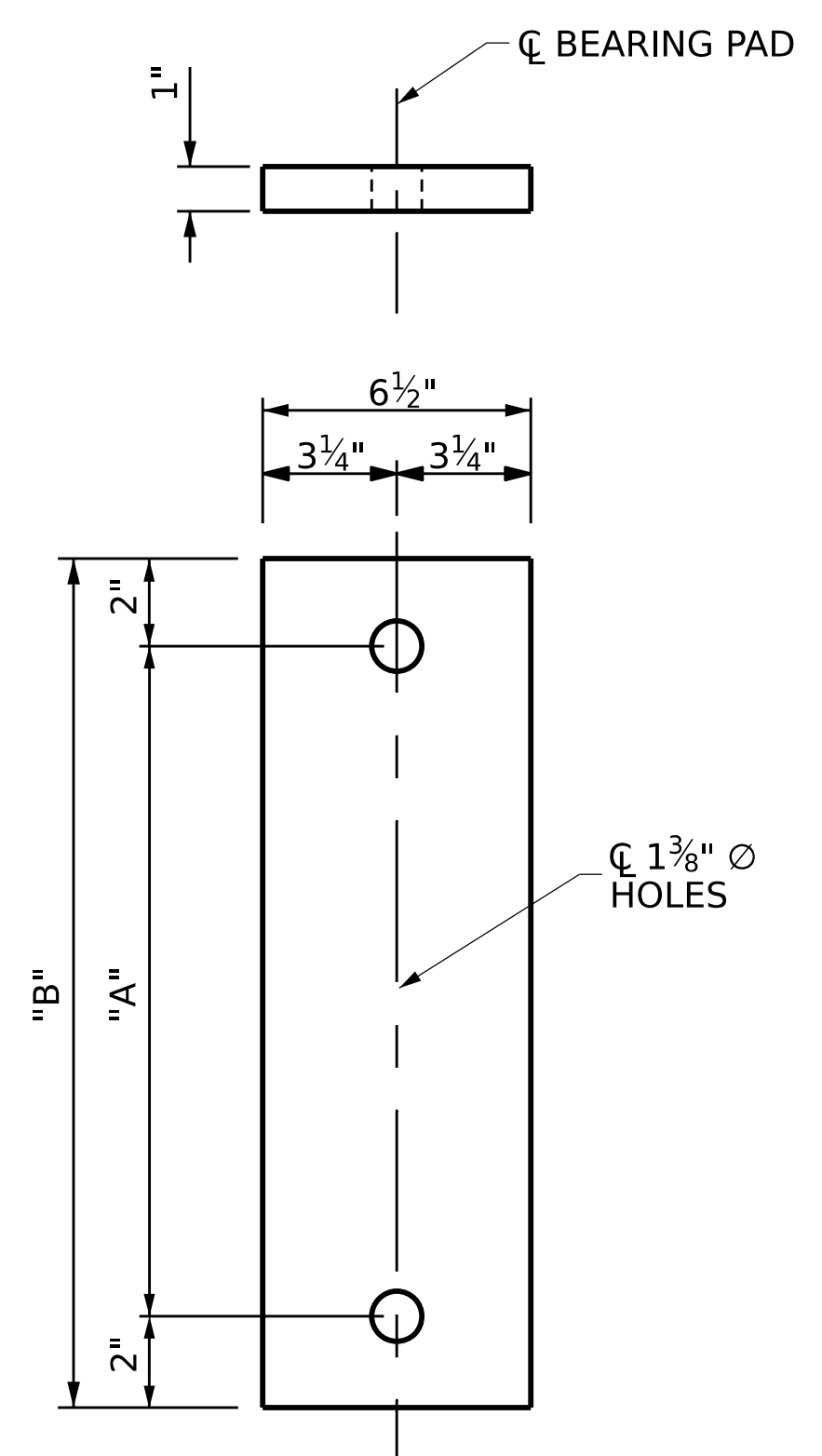
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

AT NO ADDITIONAL COST, THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CAST-IN-PLACE ANCHORS. LEVEL 1 FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ANCHOR BOLT IS 30 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

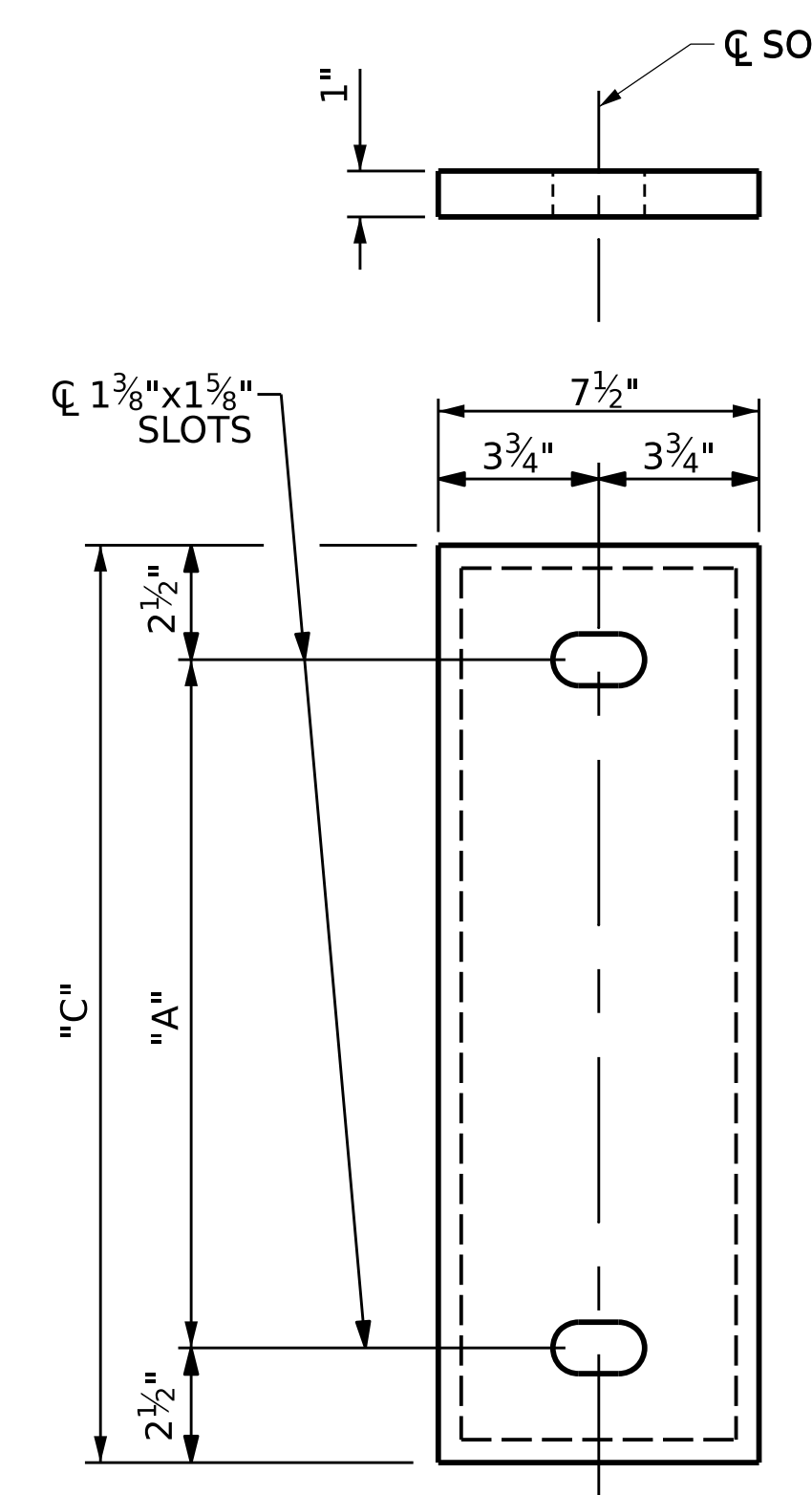
ADHESIVELY ANCHORED ANCHOR BOLTS SHALL BE THREADED FULL LENGTH.



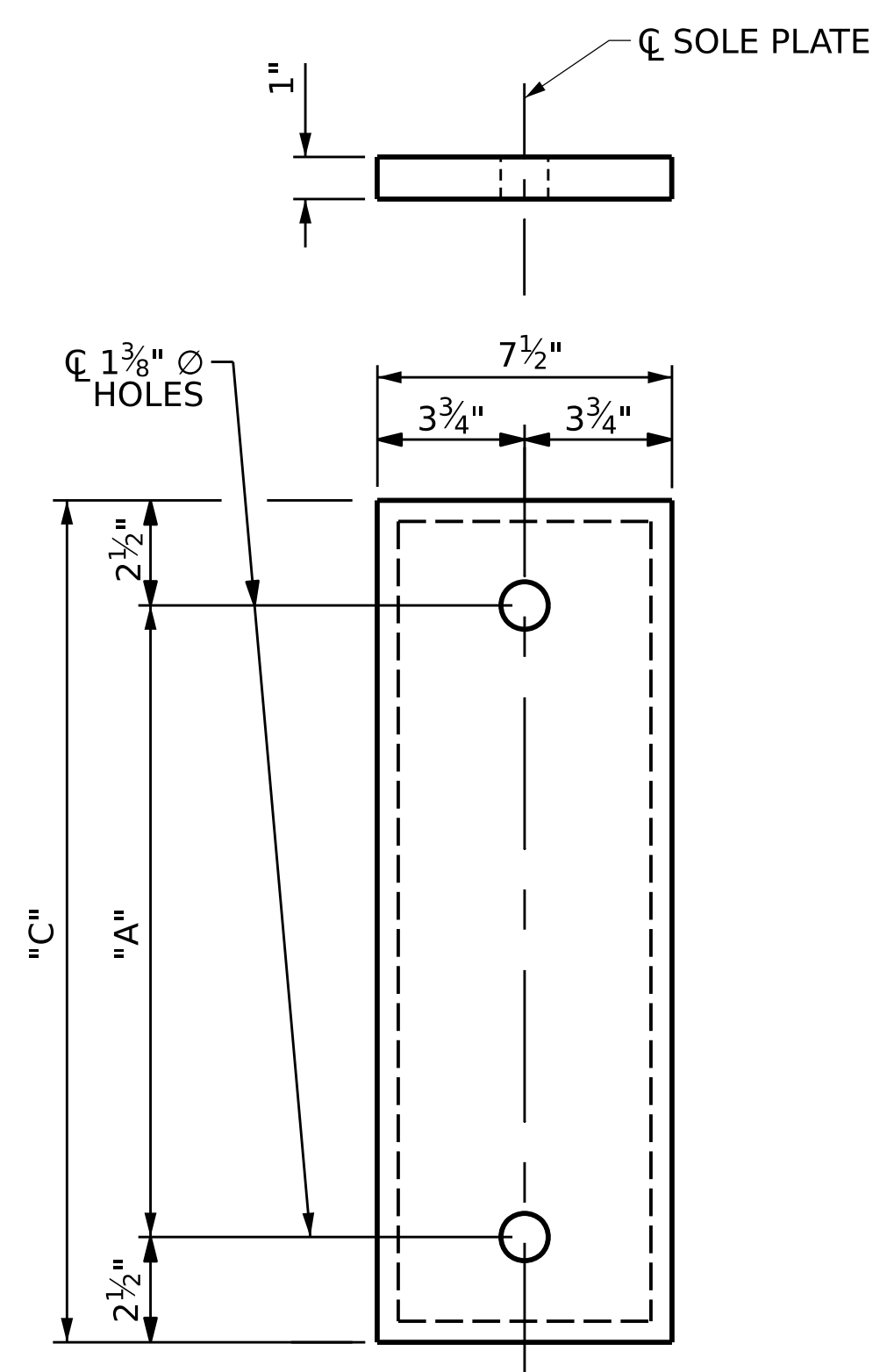
E1 ELASTOMERIC BEARING DETAILS
(6 REQ'D)
EXPANSION



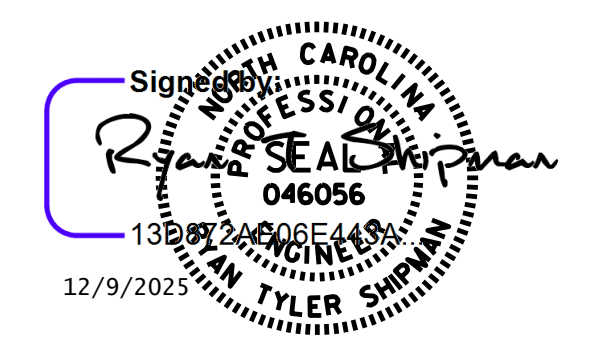
E2 ELASTOMERIC BEARING DETAILS
(6 REQ'D)
FIXED



P1 SOLE PLATE DETAILS
(6 REQ'D)
EXPANSION



P2 SOLE PLATE DETAILS
(6 REQ'D)
FIXED



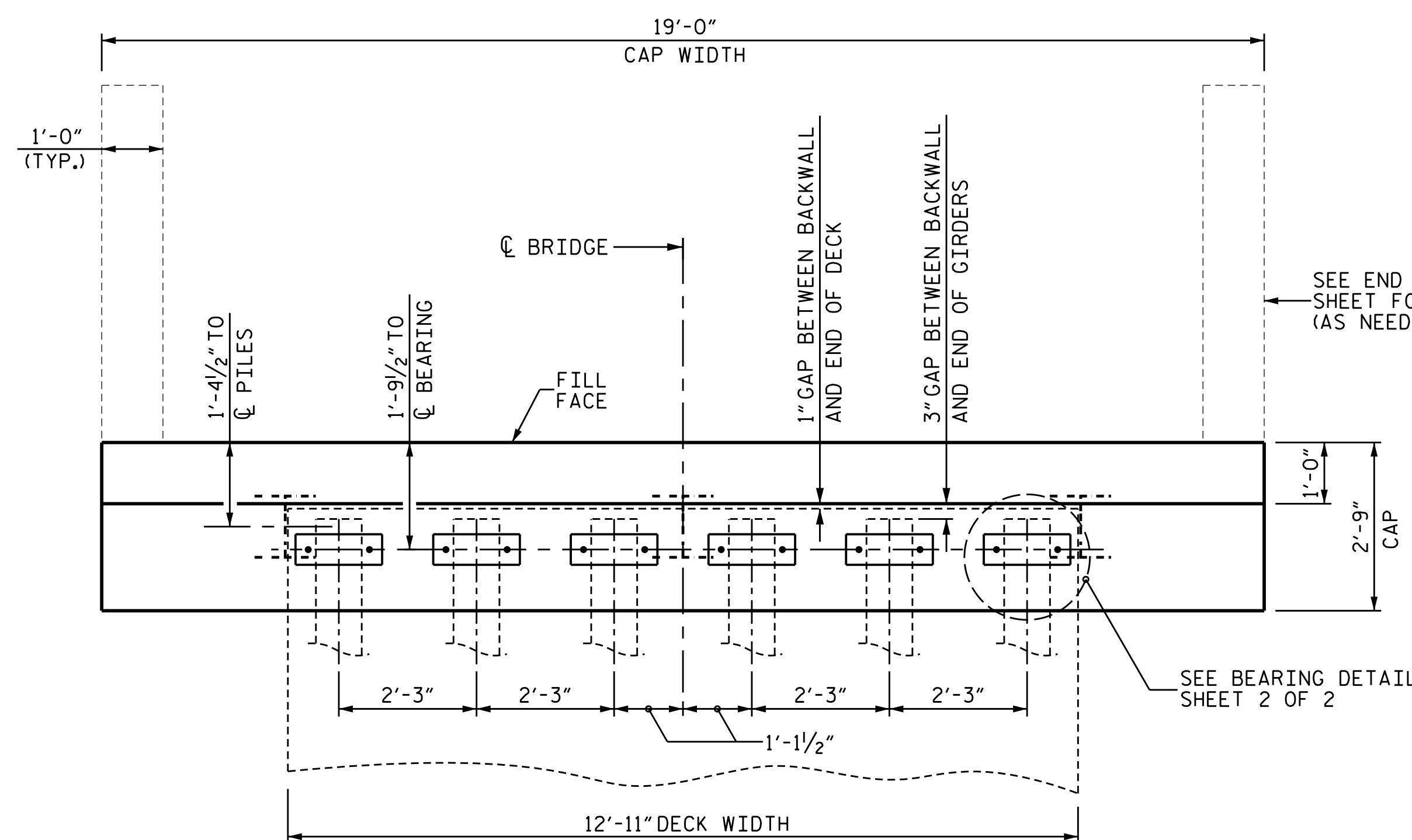
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
PRIVATE DRIVEWAY
BRIDGE STANDARDS
 SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK
BEARING DETAILS

JMT	Johnson, Mirmiran, & Thompson Inc. 108 Asheville Commerce Parkway Candler, NC, 28715 License No: C-3097		DWN. BY: WDC	DATE: 12/2025	SHEET NO. S-06
			CHKD. BY: RTS	DATE: 12/2025	
			DES. EGR. OF RECORD: PCW	DATE: 12/2025	

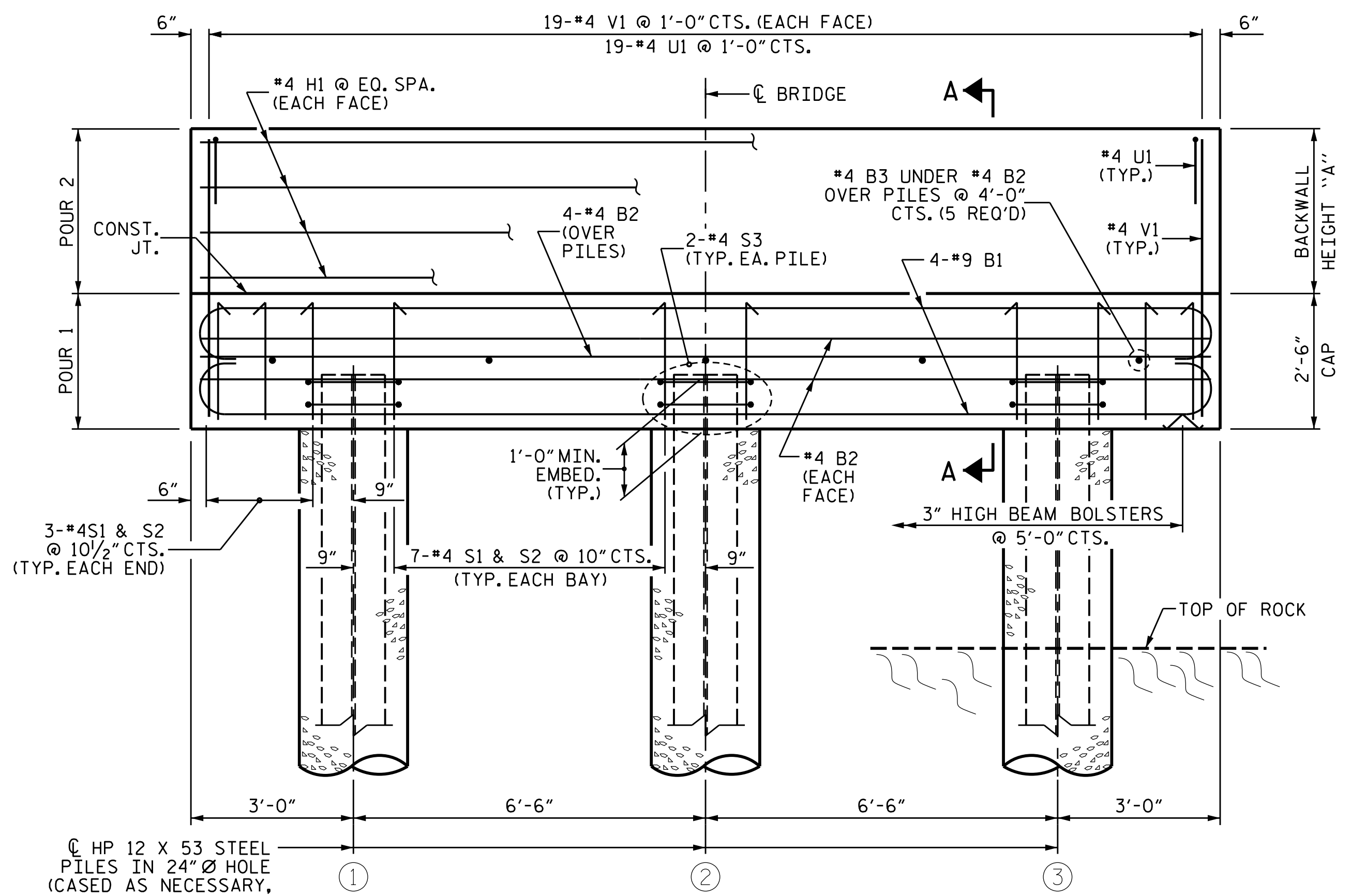
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

W:\Projects\2025\25-00529\25-00529-001\Design\Structures\AC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\End Bent Drilled-In Piles.dwg
 DATE: 12/9/2025
 TIME: 12/9/2025



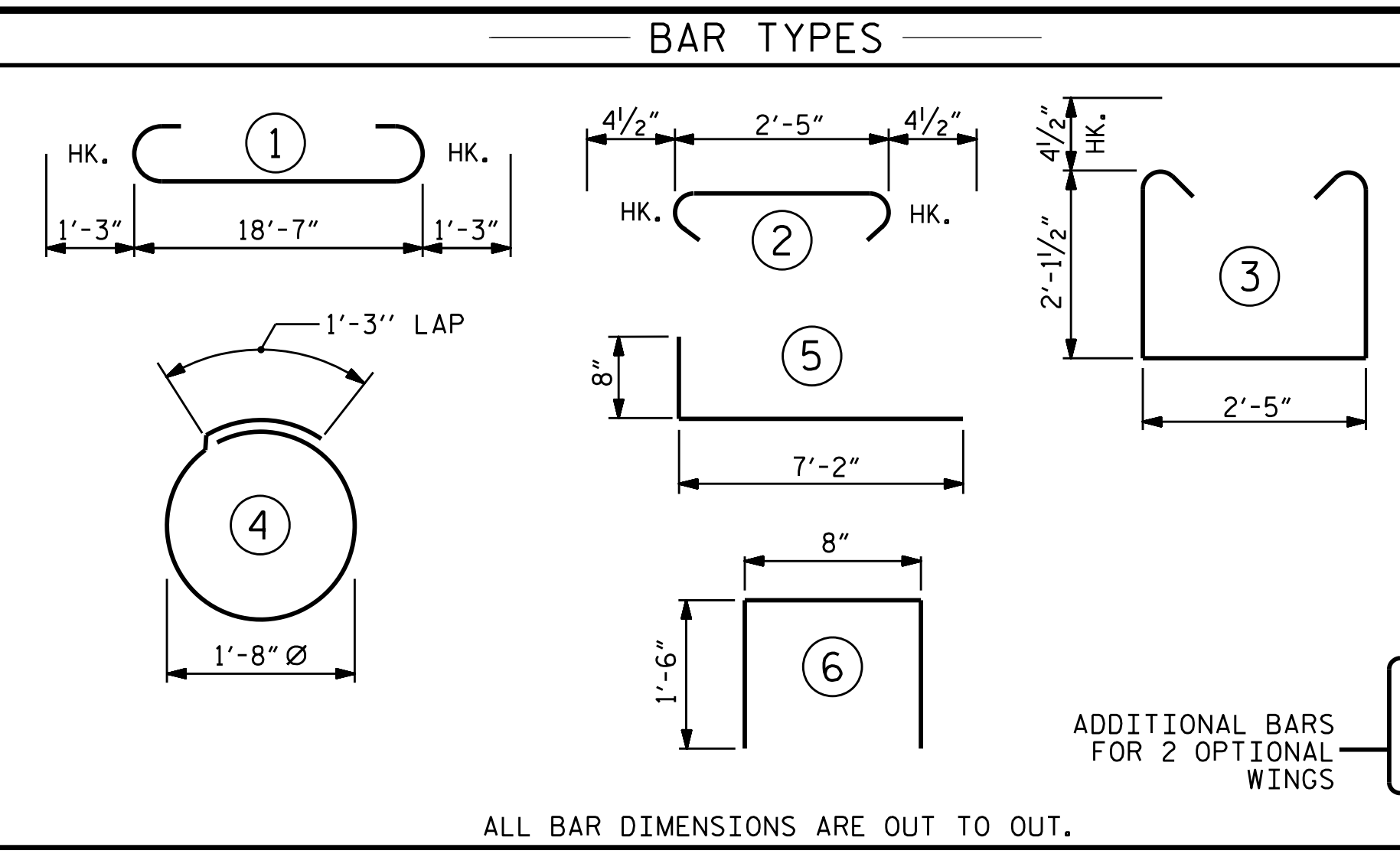
PLAN

BACKWALL DIM.		
SPAN	BEAM	A
20'-0"	W16X36	2'-2 ⁵ / ₈ "
30'-0"	W21X48	2'-7 ³ / ₈ "
40'-0"	W24X76	2'-10 ⁵ / ₈ "
50'-0"	W24X104	2'-10 ³ / ₄ "



ELEVATION

(OPTIONAL WINGS NOT SHOWN FOR CLARITY)



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#9	①	21'-1"	573	
B2	#4	STR	18'-8"	100	
B3	#4	STR	2'-5"	8	
H1	#4	STR	18'-8"	100	
U1	#4	⑥	3'-8"	47	
S1	#4	③	7'-5"	99	
S2	#4	②	3'-2"	42	
S3	#4	④	6'-6"	26	
V1	#4	STR	4'-5"	112	
H2	#4	⑤	7'-10"	147	
V2	#4	STR	3'-6"	131	
			W/O WINGS	WITH WINGS	
REINFORCING STEEL (FOR ONE END BENT) (LBS.)			1,107	1,385	
CLASS A CONCRETE (FOR ONE END BENT) (C.Y.)					
POUR 1			4.8	6.0	
POUR 2 *			1.7	2.8	
TOTAL			6.5	8.8	

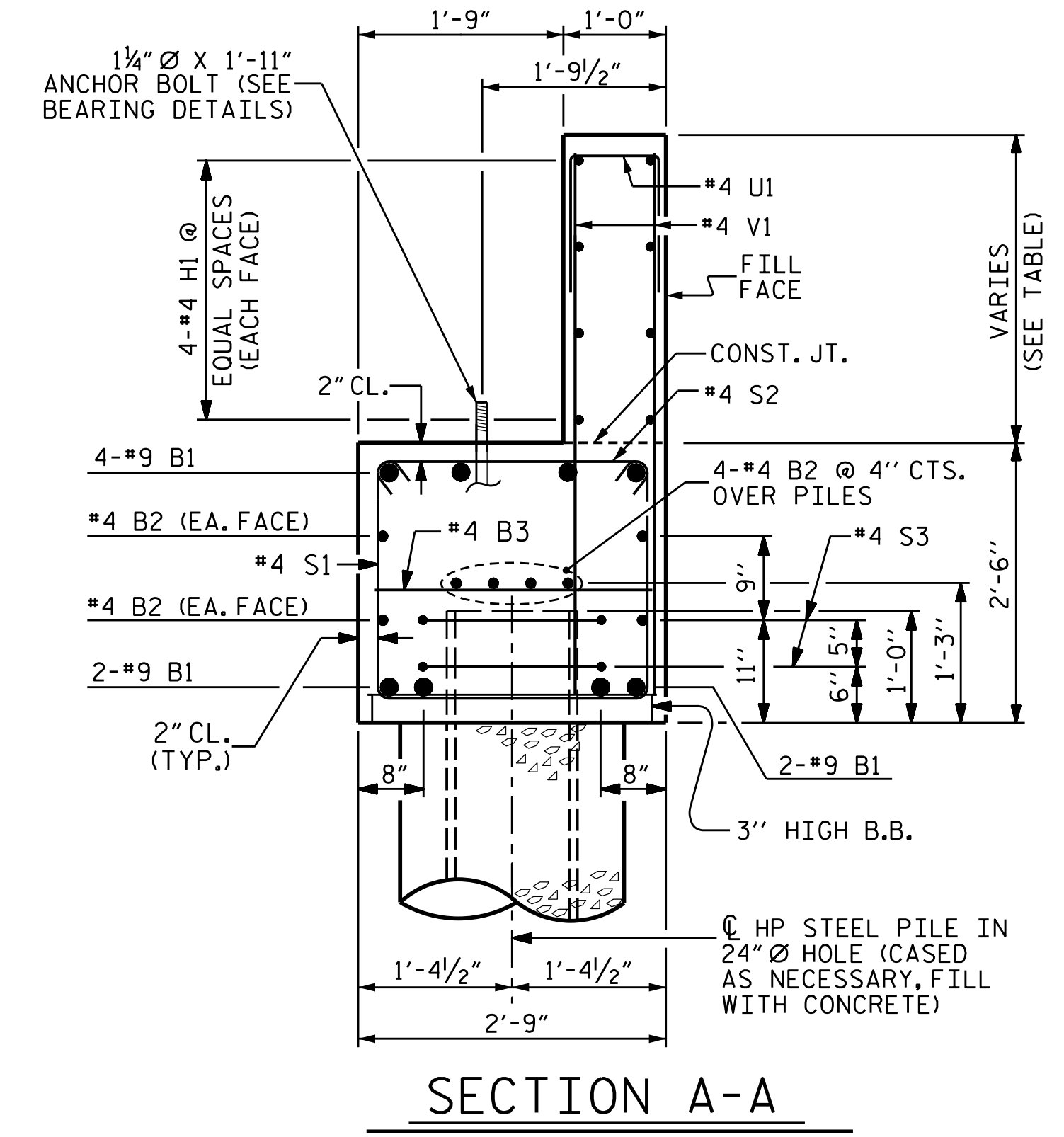
* BASED ON SHORTEST BACKWALL HEIGHT. UP TO 0.5 C.Y. EXTRA REQ'D FOR THE TALLER BACKWALLS

GENERAL NOTES

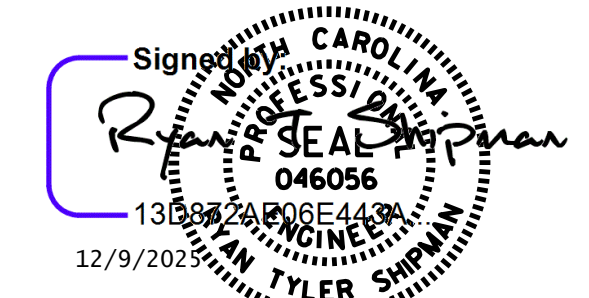
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- CONTRACTOR SHALL SLOPE TOP OF CAP TO MATCH LONGITUDINAL GRADE OF THE BRIDGE. SLOPES SHALL MATCH ON BOTH END BENT 1 AND END BENT 2 CAPS.
- WINGS MAY BE REQUIRED AT THE DIRECTION OF THE ENGINEER OR DESIGNEE.
- FOR OPTIONAL WINGS FOR END BENT, SEE SHEET 2 OF 2.
- FOR BEARING DETAILS, SEE SHEET 2 OF 2.
- FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.
- THE LENGTH OF THE "V" BARS ARE BASED ON THE SHORTEST BACKWALL CONFIGURATION. THESE BARS WILL HAVE EXTRA CLEARANCE AT THE BOTTOM OF THE CAP WHEN USING TALLER BACKWALLS.

**FOUNDATION NOTES
DRILLED-IN PILES**

- ROCK QUALITY DESIGNATION (ROD) GEOLOGICAL STRENGTH INDEX (GSI)
- INSTALL DRILLED-IN PILES IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.
- MINIMUM PILE PENETRATION OF 10-FT INTO NATURAL GROUND OR CHANNEL BOTTOM IS REQUIRED.
- MINIMUM ROCK SOCKET DEPTHS, UNLESS OTHERWISE INDICATED ON PROJECT SPECIFIC DATA SHEET:
 - 4' MINIMUM (ROD >70, GSI >50)
 - 6' MINIMUM (ROD 30-70, GSI 30-50)
 - 8' MINIMUM (ROD <30, GSI <30)
- REFER TO BORING LOGS FOR ROD AND GSI DATA.
- PILES SHALL BE SEATED IN THE BOTTOM OF THE EXCAVATION. PILE DRIVING IS NOT REQUIRED.
- BACKFILL WITH CONCRETE ONLY. DO NOT PROCEED WITH CONSTRUCTION ACTIVITIES UNTIL THE 28 DAY STRENGTH IS ACHIEVED.



SECTION A-A



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHEET 1 OF 2

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT

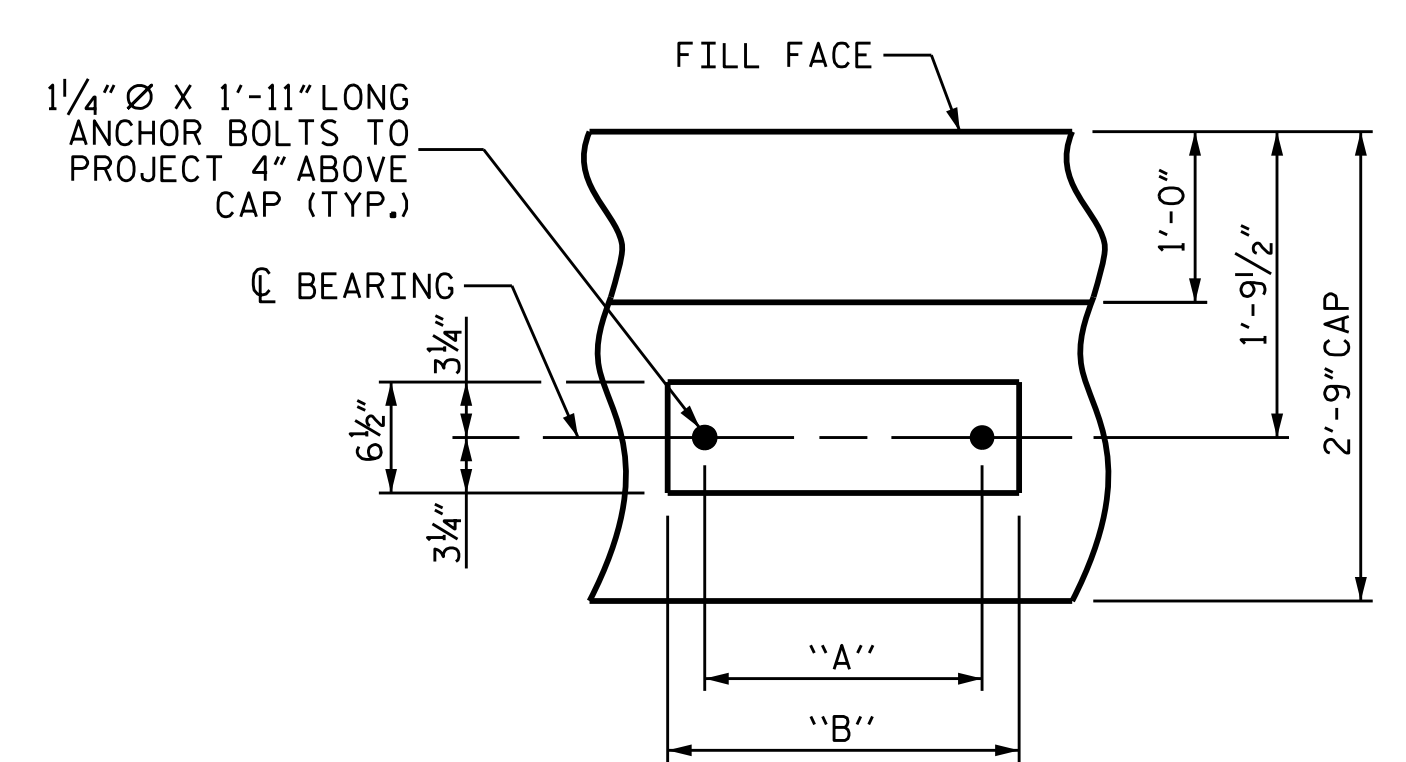
**PRIVATE DRIVEWAY
BRIDGE STANDARDS**

SINGLE LANE STEEL BEAM BRIDGE
TIMBER DECK

**END BENT
DRILLED-IN PILES**

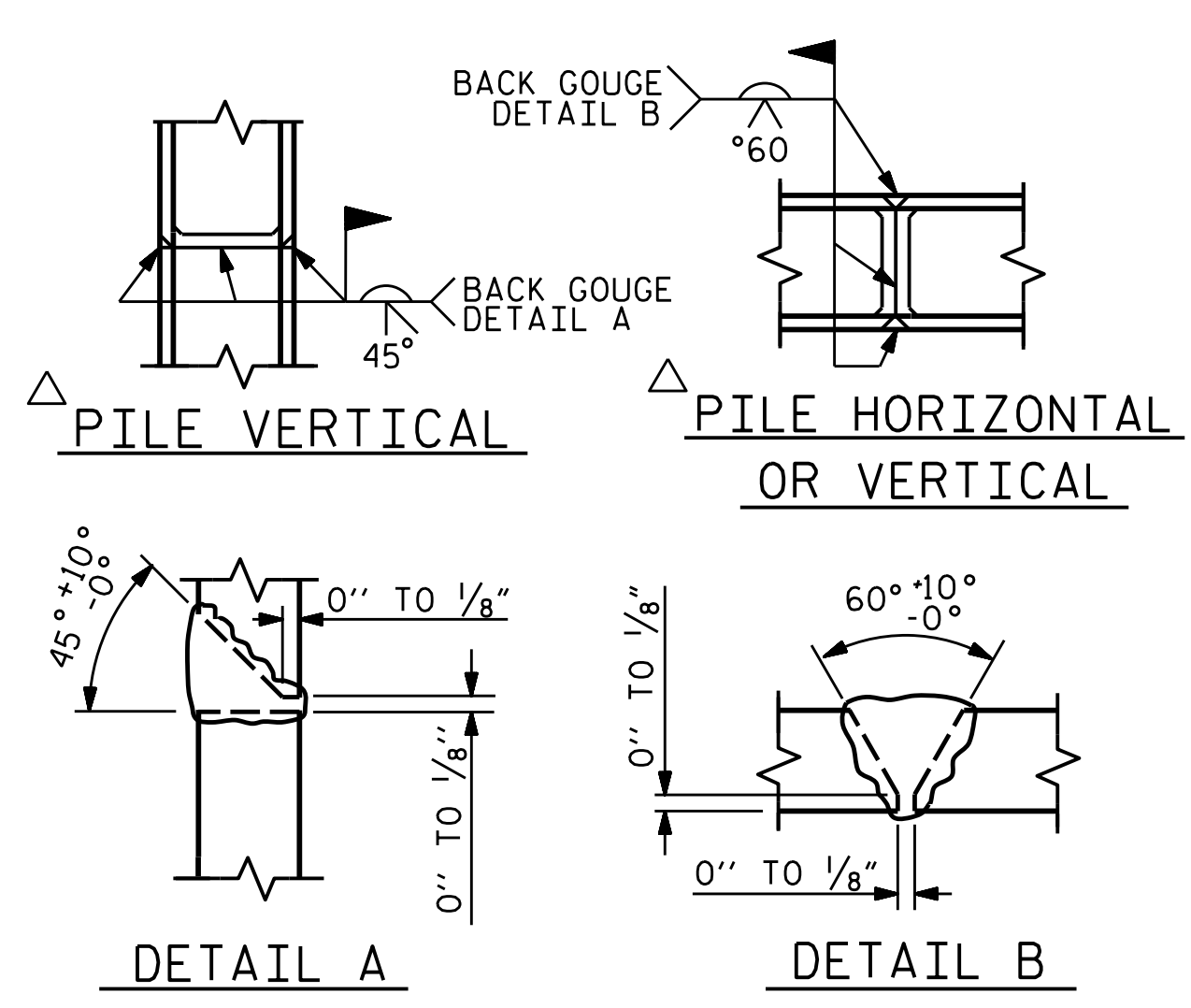
Johnson, Mirmiran, & Thompson Inc. 108 Asheville Commerce Parkway Candler, NC, 28715 License No: C-3097	DWN. BY: WDC CHKD. BY: RTS DES. EGR. OF RECORD: PCW	DATE: 12/2025 DATE: 12/2025 DATE: 12/2025	NO. 1 BY: [] DATE: []	NO. 2 BY: [] DATE: []	NO. 3 BY: [] DATE: []	NO. 4 BY: [] DATE: []	SHEET NO. S-08 TOTAL SHEETS 12
	REVISIONS						

W:\2025\0509\Projects\2025\25-00629\25-00629-001\Design\Structures\NC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\Wings\1-Beam Bridge Plans\2-Standard Drawings\1-Beam Bridge Plans\20-50\009-59_Optional Wings_Piles.dgn
 TIME: 12/19/2025

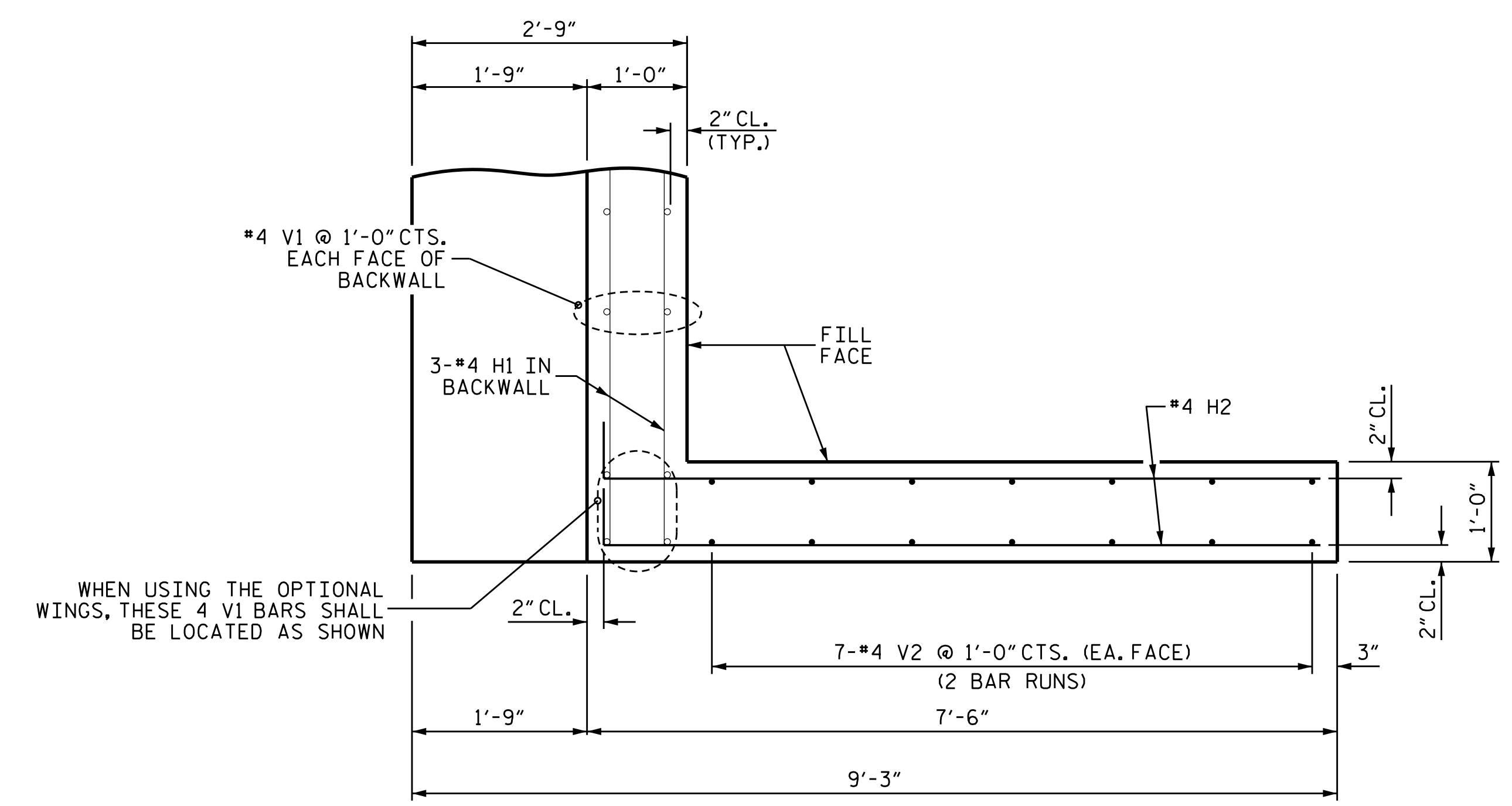


BEARING DETAIL
(TYP. EACH BEARING LOCATION)

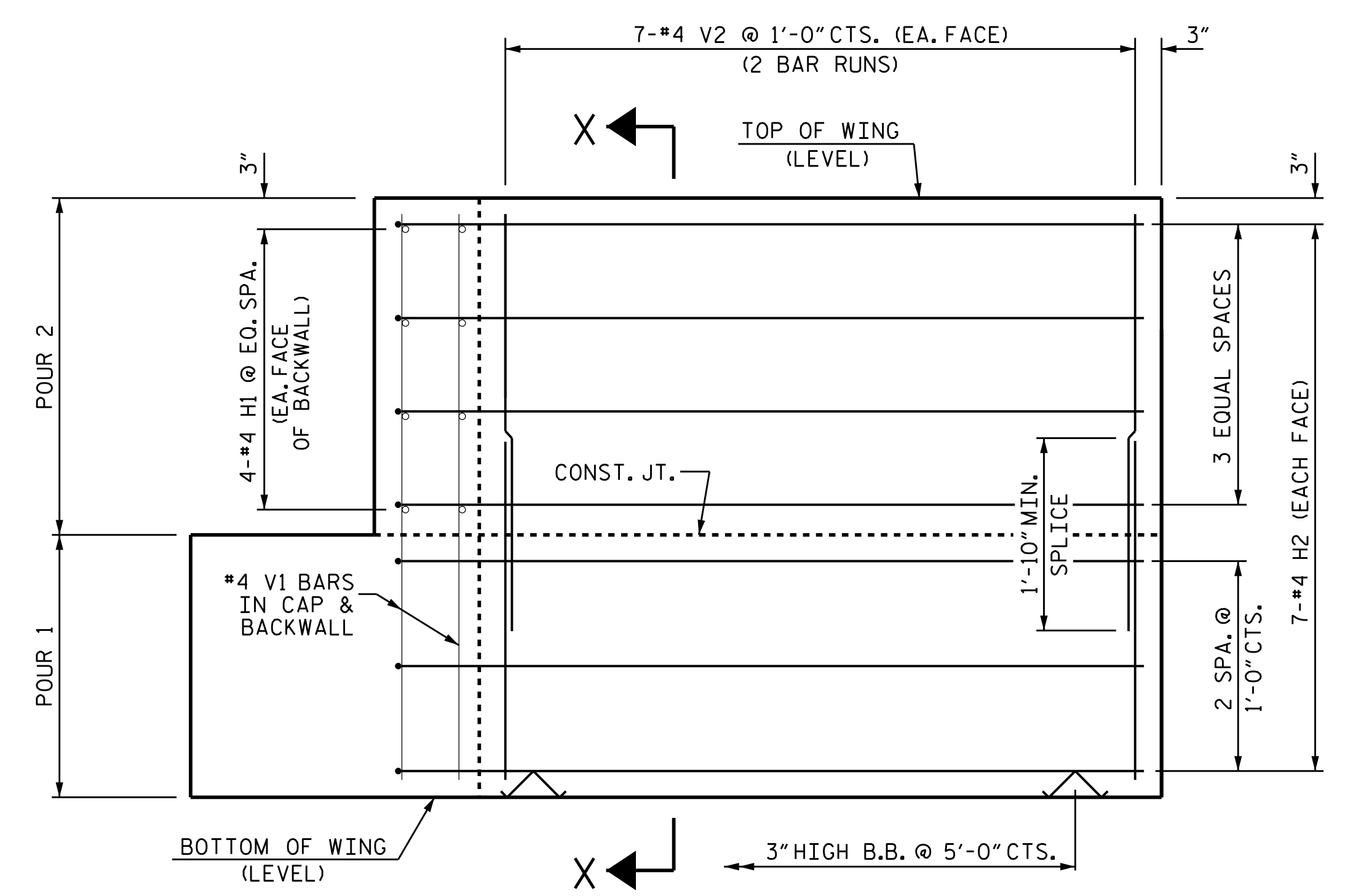
BEARING TABLE					
SPAN	BEAM	FLANGE WIDTH	TYPE	A	B
20'-0"	W16X36	6.99"	I	10"	1'-2"
30'-0"	W21X48	8.14"	II	1'-0"	1'-4"
40'-0"	W24X76	9.0"	II	1'-0"	1'-4"
50'-0"	W24X104	12.75"	III	1'-4"	1'-8"



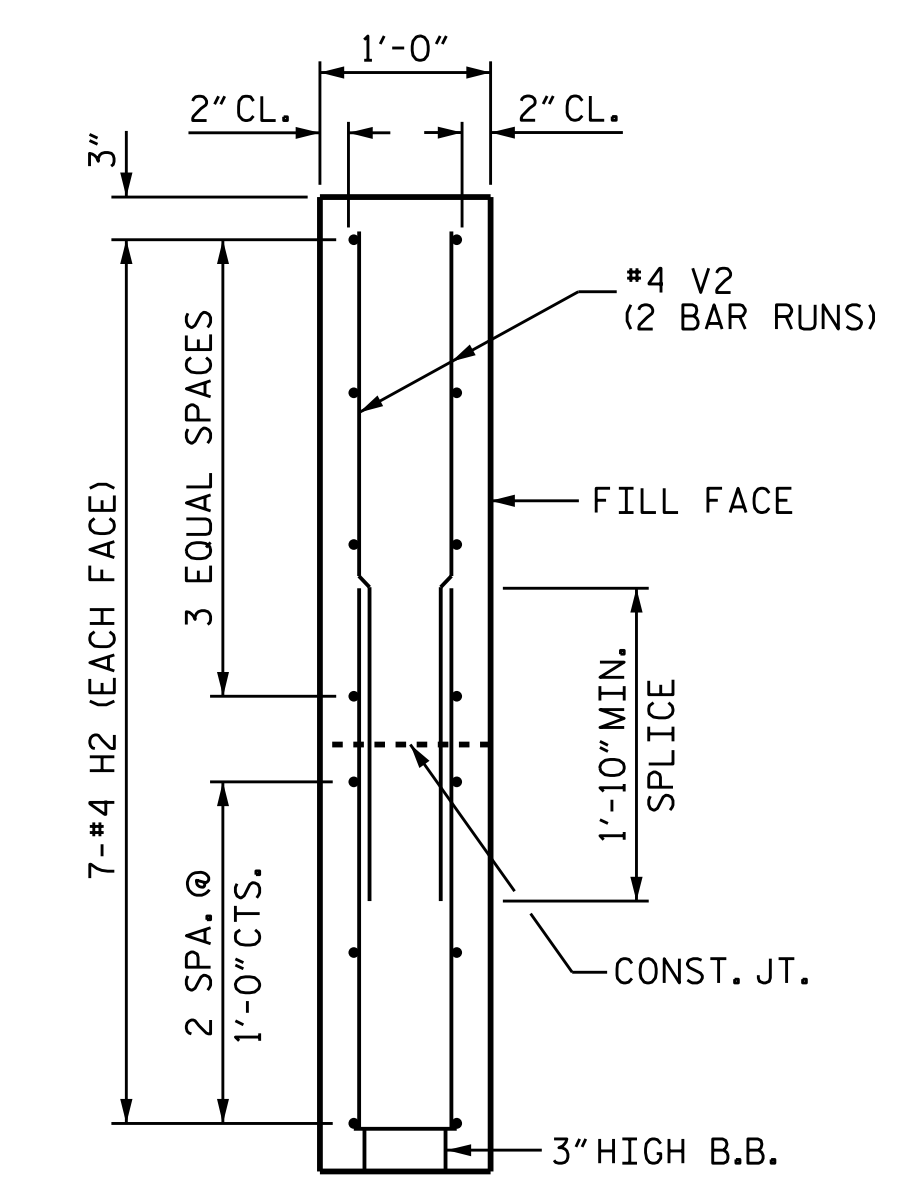
PILE SPLICE DETAILS
△ POSITION OF PILE DURING WELDING.



ELEVATION OF WING
(OPTIONAL)



PLAN OF WING
(OPTIONAL)



SECTION X-X
(OPTIONAL)

RIGHT SIDE WING SHOWN, LEFT SIDE WING SIMILAR.
WING HEIGHT DEPENDENT ON BACKWALL HEIGHT.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHEET 2 OF 2

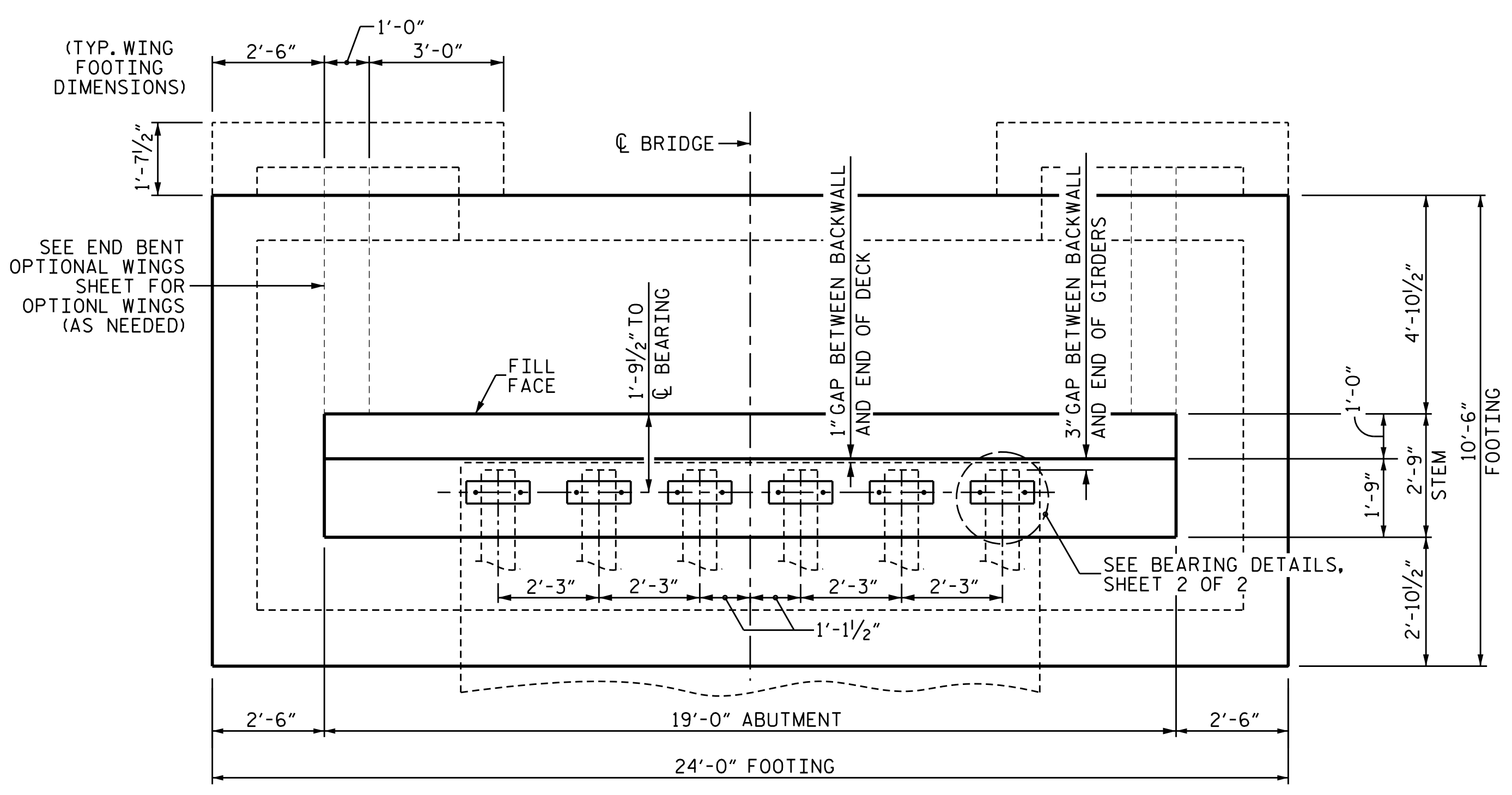
NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
PRIVATE DRIVEWAY BRIDGE STANDARDS
 SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK
OPTIONAL WINGS FOR DRIVEN OR DRILLED-IN PILES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-09
1			3			TOTAL SHEETS
2			4			12

Johnson, Mirmiran, & Thompson Inc.
 108 Asheville Commerce Parkway
 Candler, NC, 28715
 License No: C-3097

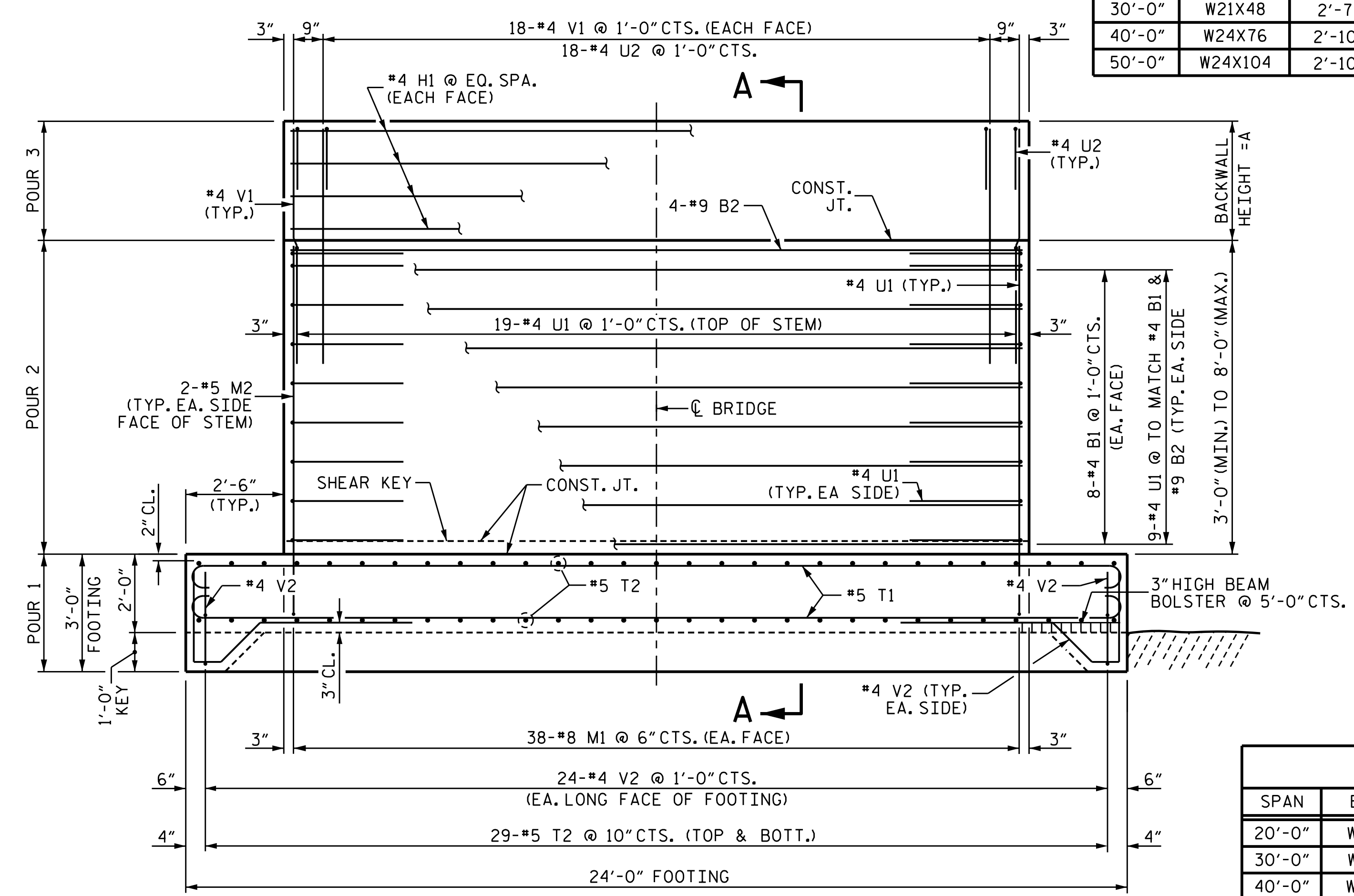
DWN. BY: WDC
 CHKD. BY: RTS
 DES. EGR. OF RECORD: PCW
 DATE: 12/2025
 DATE: 12/2025
 DATE: 12/2025

W:\Projects\2025\25-00629\25-00629-001\Documents\Projects\2025\25-00629\25-00629-001\Design\Structures\AC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\End Bent Spread Footing.dgn
 DATE: 12/19/2025
 TIME: 12:19:2025



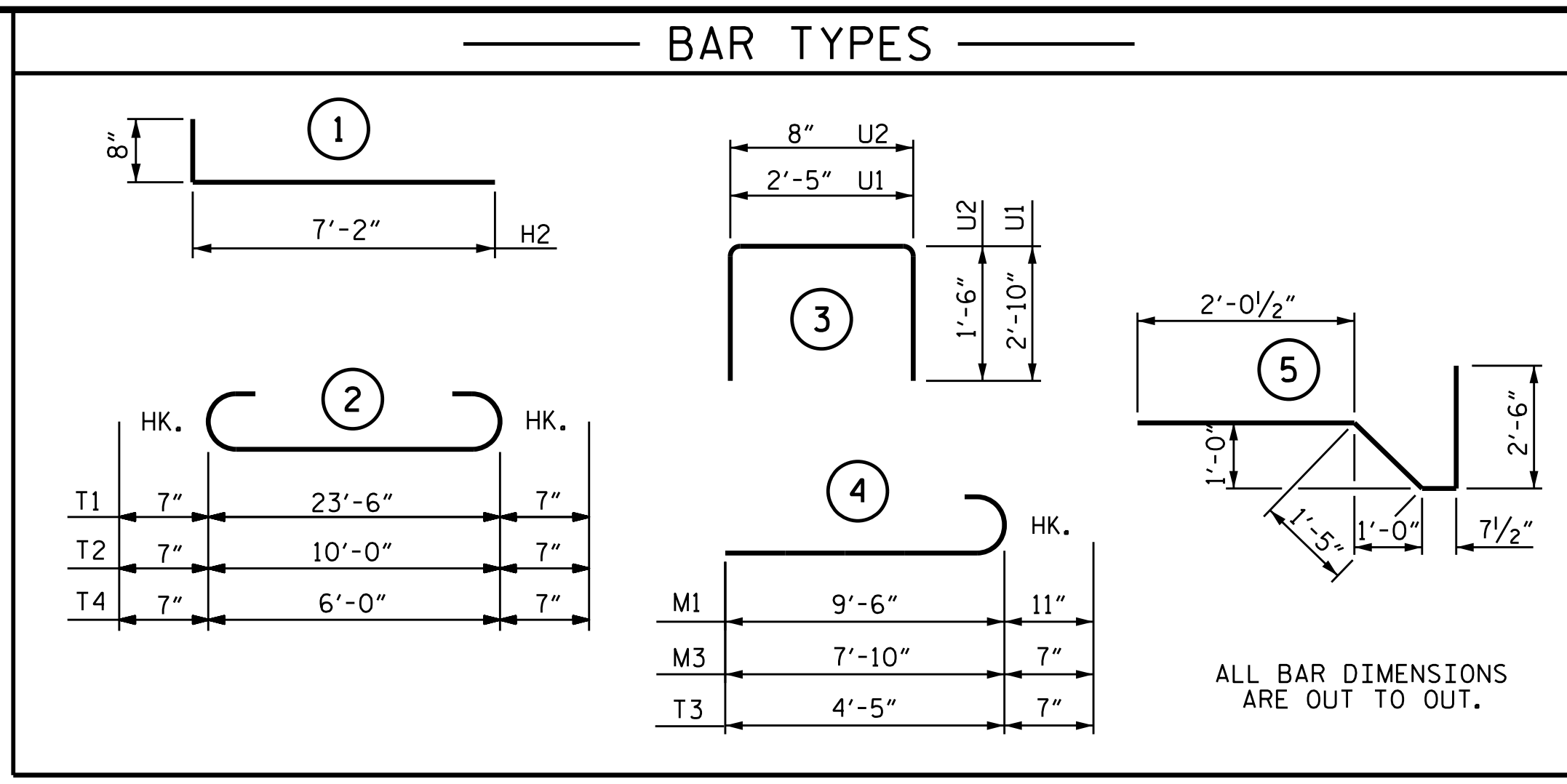
PLAN

BACKWALL DIM.		
SPAN	BEAM	A
20'-0"	W16X36	2'-2 3/4"
30'-0"	W21X48	2'-7 3/4"
40'-0"	W24X76	2'-10 5/8"
50'-0"	W24X104	2'-10 3/8"



ELEVATION

(OPTIONAL WINGS NOT SHOWN FOR CLARITY)

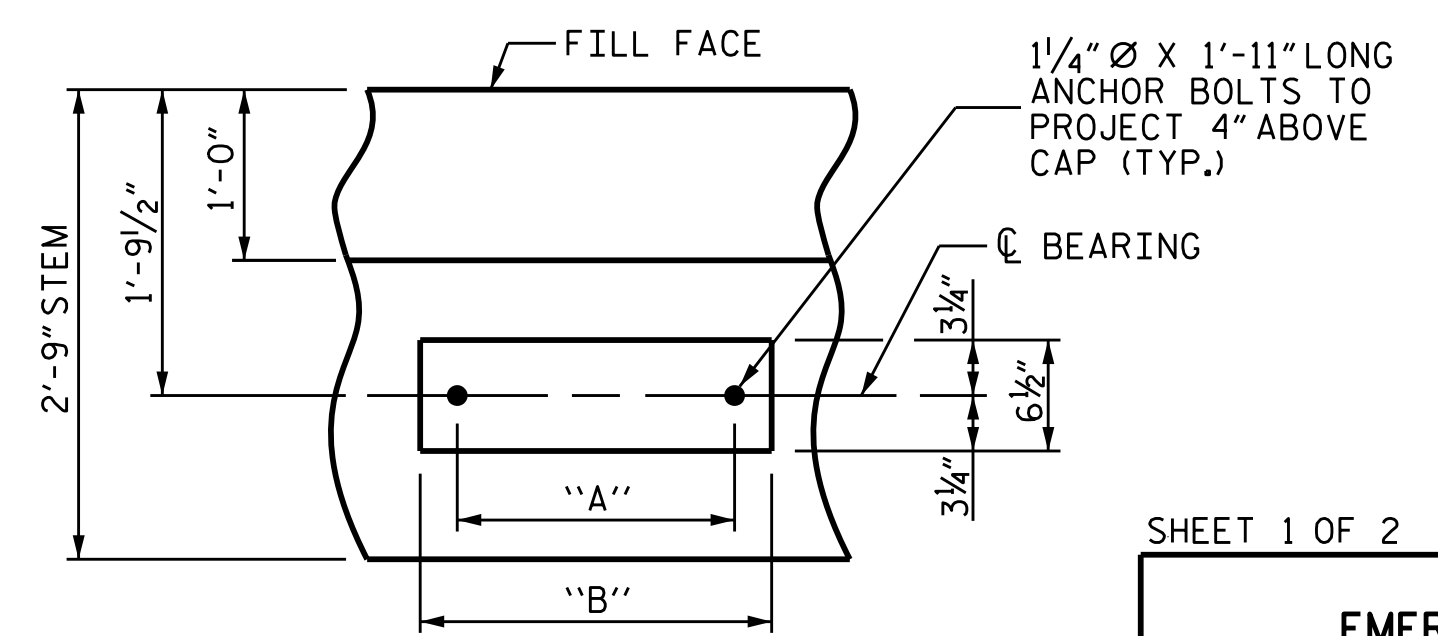


GENERAL NOTES

U1 BARS IN STEM MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONTRACTOR SHALL SLOPE TOP OF CAP TO MATCH LONGITUDINAL GRADE OF THE BRIDGE. SLOPES SHALL MATCH ON BOTH END BENT 1 AND END BENT 2 CAPS.
 WINGS MAY BE REQUIRED AT THE DIRECTION OF THE ENGINEER OR DESIGNEE.
 FOR OPTIONAL WINGS FOR END BENT, SEE SHEET 2 OF 2.
 FOR SECTION A-A, SEE SHEET 2 OF 2.

FOUNDATION NOTES

SPREAD FOOTING
 FOUNDATION EXCAVATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH SECTION 410 OF THE SPECIFICATIONS.
 A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA SHALL OBSERVE THE BEARING SURFACE AND CONFIRM THE FOOTING IS CONSTRUCTED ON ROCK. THE ENGINEER SHALL PROVIDE A LETTER VERIFYING ACCEPTANCE OF THE BEARING SURFACE.
 CLEAN ALL ROCK OF LOOSE MATERIAL AND CUT TO A FIRM SURFACE, AS DIRECTED BY THE ENGINEER AND FILL WITH CONCRETE, MORTAR OR GROUT. LEAVE ROCK SURFACE IN A ROUGH CONDITION.
 BEARING SURFACE MUST RESIST A MAXIMUM APPLIED BEARING PRESSURE OF 3.0 TSF.
 KEY IN FOOTINGS AT LEAST 1 FT INTO ROCK.



BEARING DETAIL

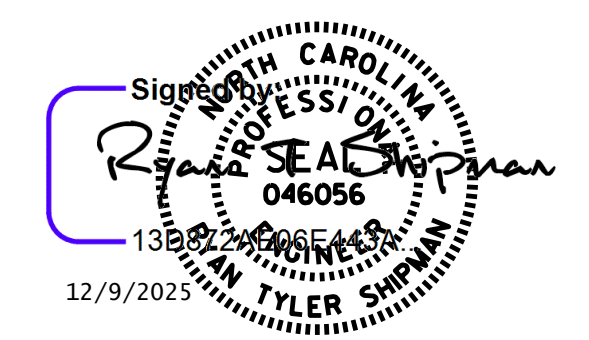
(TYP. EACH BEARING LOCATION)

BEARING TABLE						
SPAN	BEAM	FLANGE WIDTH	TYPE	A	B	
20'-0"	W16X36	6.99"	I	10"	1'-2"	
30'-0"	W21X48	8.14"	II	1'-0"	1'-4"	
40'-0"	W24X76	9.0"	II	1'-0"	1'-4"	
50'-0"	W24X104	12.75"	III	1'-4"	1'-8"	

** BILL OF MATERIAL FOR ONE END BENT						
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	16	#4	STR	18'-8"	200	
B2	4	#9	STR	18'-8"	254	
M1	76	#8	④	10'-5"	2,114	
M2	4	#5	STR	7'-6"	31	
T1	26	#5	②	24'-8"	669	
T2	58	#5	②	7'-6"	31	
H1	8	#4	STR	18'-8"	100	
U1	37	#4	③	8'-1"	200	
U2	20	#4	③	3'-8"	49	
V1	40	#4	STR	6'-0"	160	
V2	70	#4	⑤	6'-7"	308	
H2	52	#4	①	7'-10"	272	
M3	40	#5	④	8'-5"	351	
M4	40	#5	STR	7'-10"	327	
T3	32	#5	④	5'-0"	167	
T4	8	#5	②	7'-2"	60	
V2	22	#4	⑤	6'-7"	97	
				REINFORCING STEEL (W/O WINGS)	4761 LBS.	
				REINFORCING STEEL (WITH WINGS)	6035 LBS.	
CLASS A CONCRETE BREAKDOWN						
POUR #1 FOOTING				22.5 C.Y.		
POUR #2 END BENT STEM				15.5 C.Y.		
POUR #3 BACKWALL				1.6 C.Y.		
WINGWALLS (OPTIONAL)				7.5 C.Y.		
TOTAL CLASS A CONCRETE (W/O WINGS)				39.6 C.Y.		
TOTAL CLASS A CONCRETE (WITH WINGS)				47.1 CY		

ADDITIONAL BARS FOR 2 OPTIONAL WINGS WITH FOOTINGS

** THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE QUANTITIES AND REINFORCING BARS SHOWN IN THE BILL OF MATERIAL ARE BASED ON AN 8'-0" MAXIMUM STEM WALL HEIGHT. THE CONTRACTOR IS RESPONSIBLE FOR THE FINAL QUANTITIES BASED ON THE ACTUAL STEM WALL HEIGHT.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHEET 1 OF 2

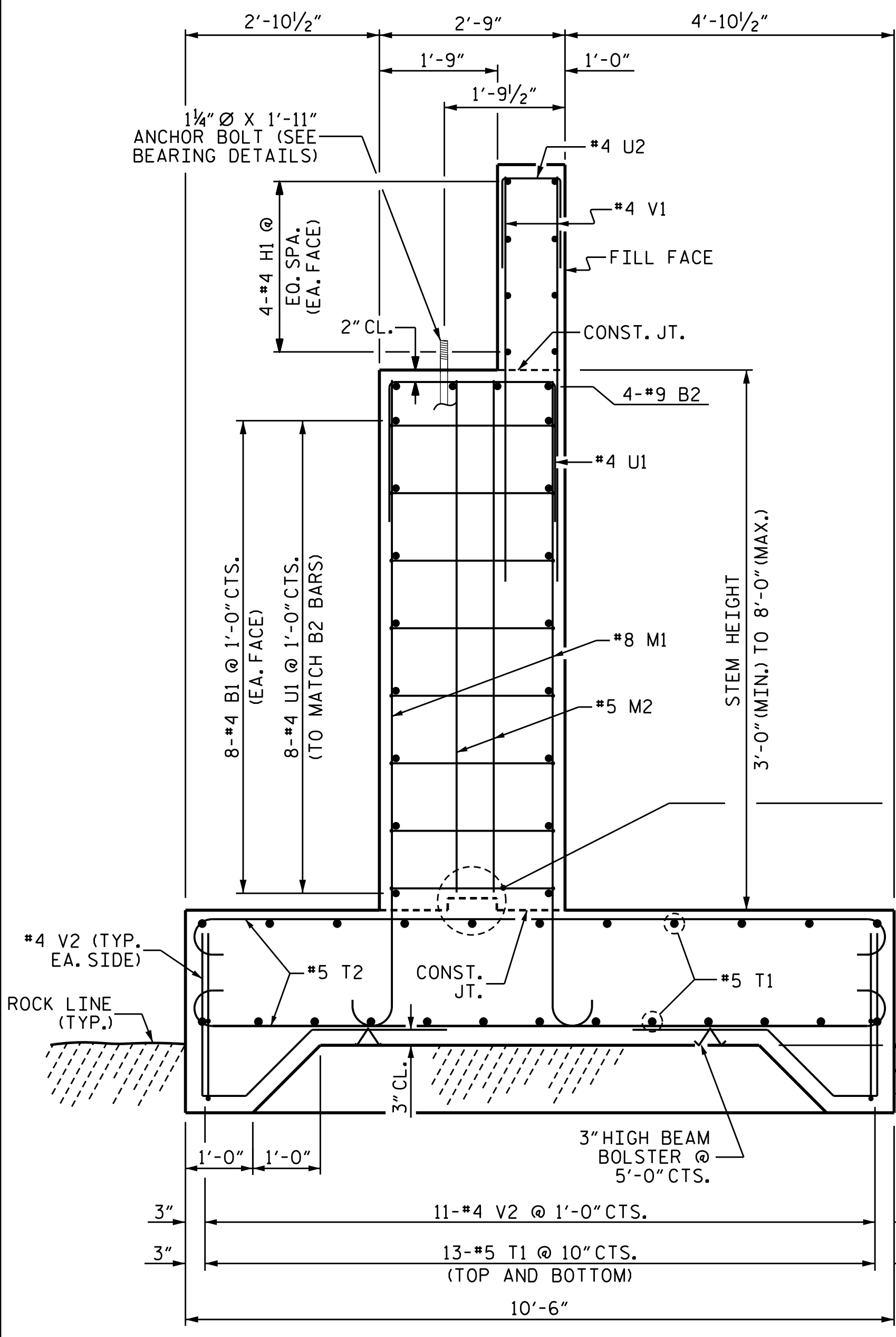
NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT
PRIVATE DRIVEWAY BRIDGE STANDARDS
 SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK
END BENT
 SPREAD FOOTING

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS 12
2			4			

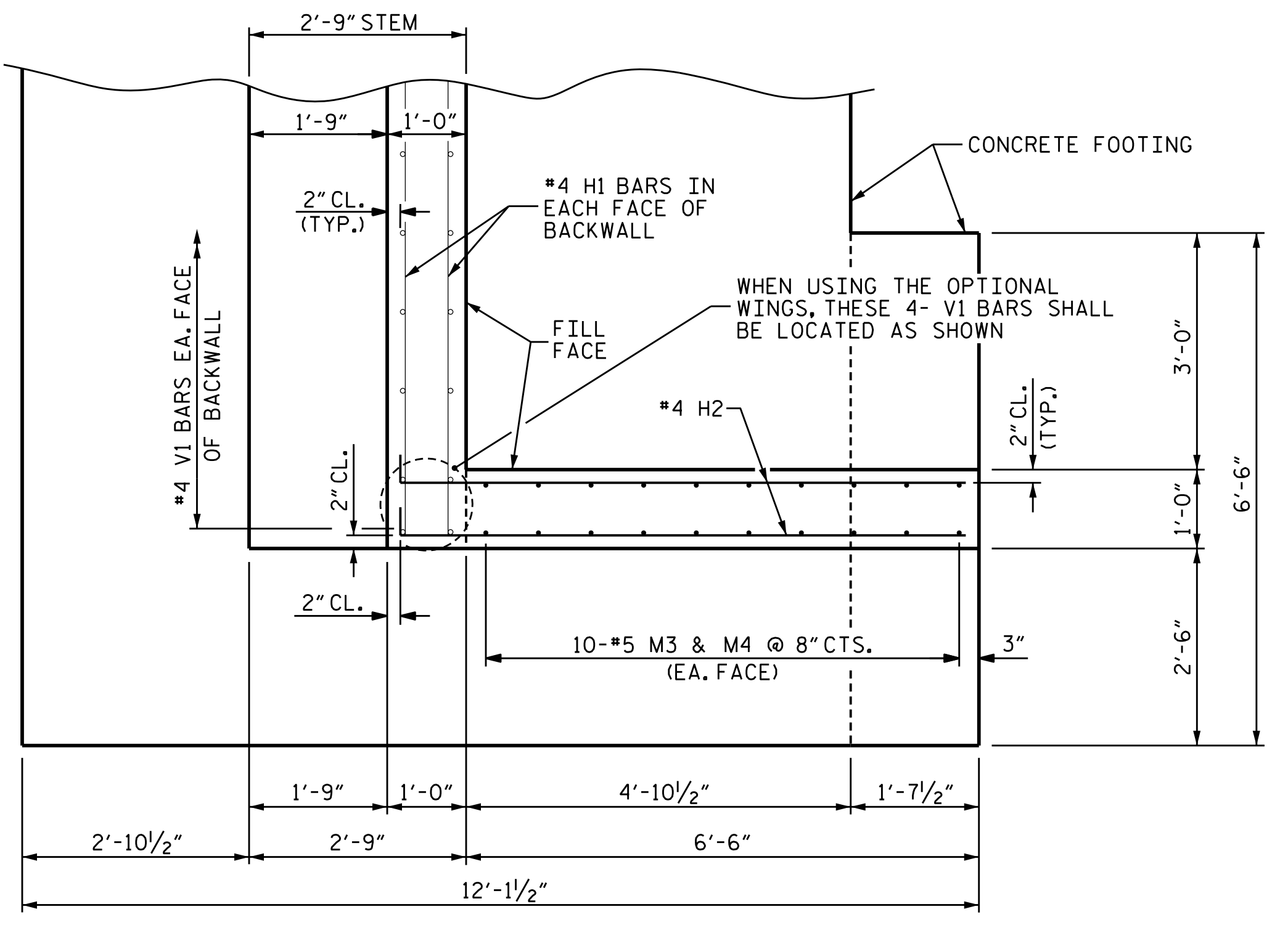
Johnson, Mirmiran, & Thompson Inc.
 108 Asheville Commerce Parkway
 Candler, NC, 28715
 License No: C-3097

DWN. BY: WDC
 CHKD. BY: RTS
 DES. EGR. OF RECORD: PCW
 DATE: 12/2025
 DATE: 12/2025
 DATE: 12/2025

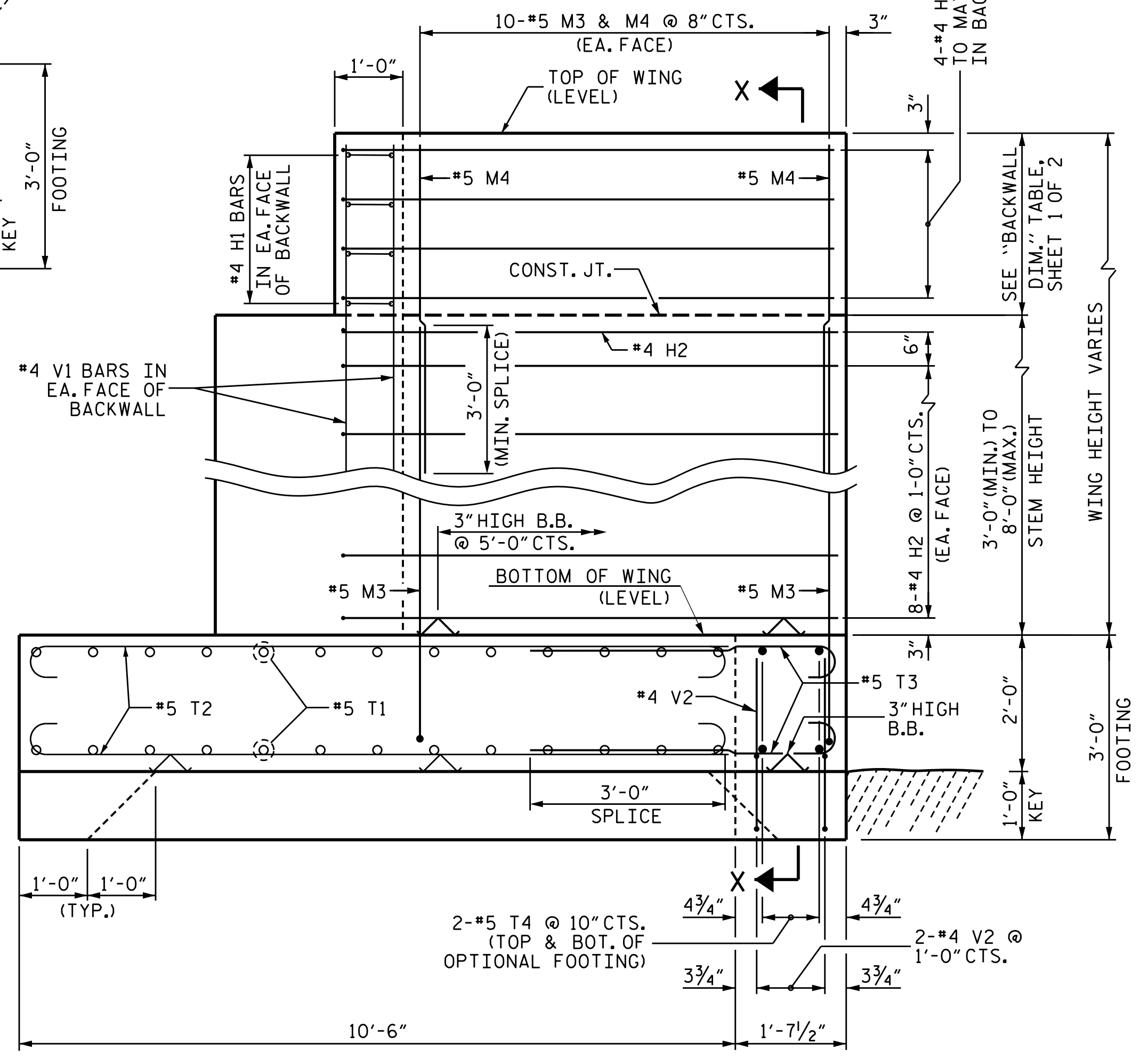
W:\Projects\2025\25-00629\25-00629-001\Design\Structures\AC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Standards\2025-00629-001-01-Optional Wings-Footing.dgn
 DATE: 12/9/2025
 TIME: 12:51:03 PM



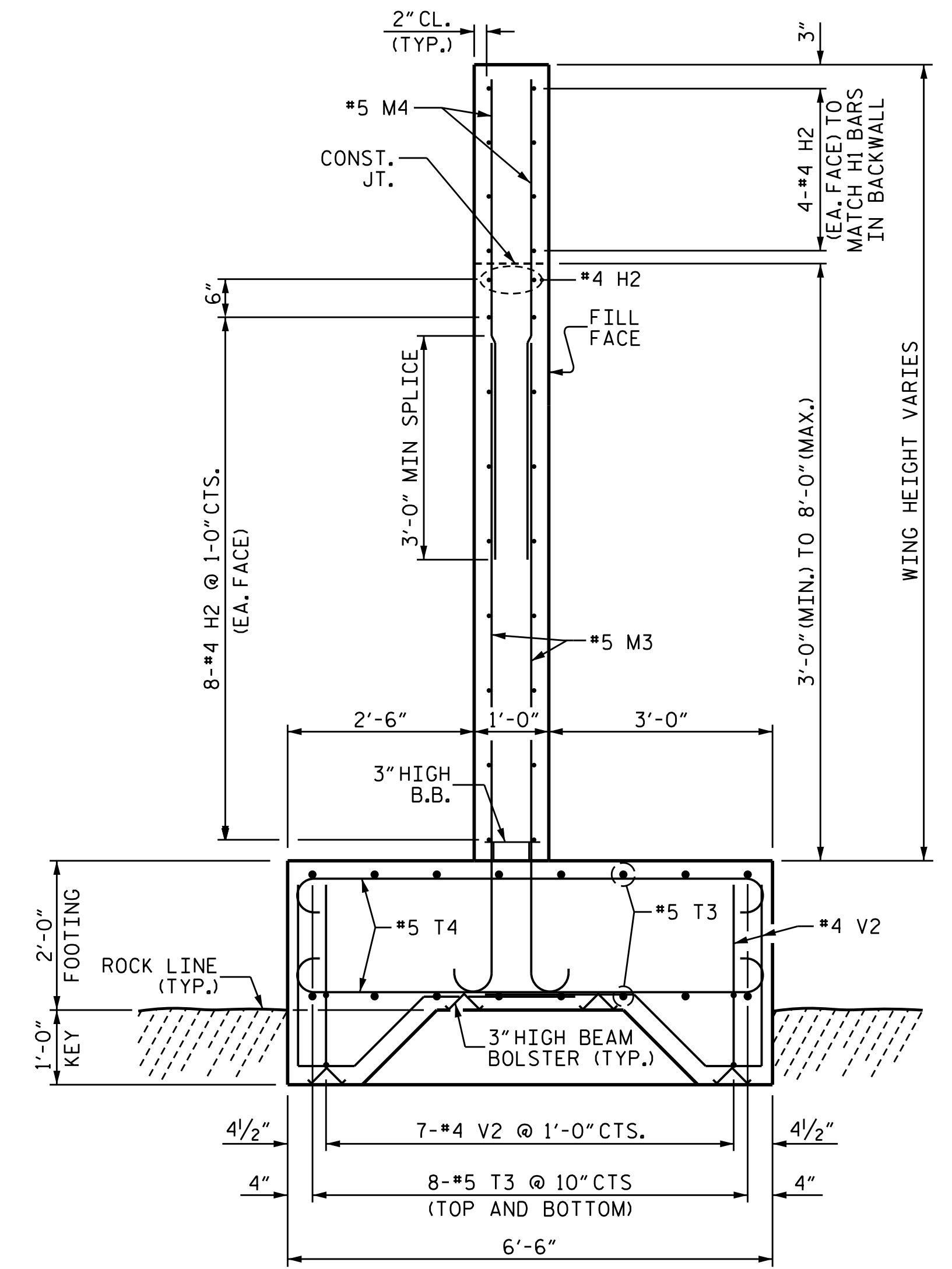
SECTION A-A



PLAN OF WING (OPTIONAL)



ELEVATION OF WING (OPTIONAL)



SECTION X-X (OPTIONAL)

Signed: *Ronald A. Seader*
 PROFESSIONAL ENGINEER
 No. 046055
 State of North Carolina
 1305 W. TAYLOR STREET
 RALEIGH, NC 27601
 12/9/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHEET 2 OF 2

NORTH CAROLINA OFFICE OF
EMERGENCY MANAGEMENT

**PRIVATE DRIVEWAY
 BRIDGE STANDARDS**

SINGLE LANE STEEL BEAM BRIDGE
 TIMBER DECK

**END BENT
 OPTIONAL WINGS & FOOTINGS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			12

JMT Johnson, Mirmiran, & Thompson Inc.
 108 Asheville Commerce Parkway
 Candler, NC, 28715
 License No: C-3097

DWN. BY: WDC
 CHKD. BY: RTS
 DES. EGR. OF RECORD: PCW
 DATE: 12/2025
 DATE: 12/2025
 DATE: 12/2025

STRUCTURAL STEEL / HARDWARE NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50 AND PAINTED IN ACCORDANCE WITH SYSTEM 1 OF THE STRUCTURAL STEEL SHOP COATING PROGRAM AND ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

COATING APPLICATION FOR ALL STRUCTURAL STEEL SHALL NOT BE PERFORMED UNTIL SHOP FABRICATION INCLUDING CUTTING, DRILLING AND WELDING HAS BEEN COMPLETED.

ALL HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATION, UNLESS OTHERWISE NOTED ON THE PLANS.

DO NOT DRIVE LAG/STRUCTURAL SCREWS WITH A HAMMER, SCREW OR TORQUE LAG/STRUCTURAL SCREWS.

SCREWS SHALL PROVIDE SUFFICIENT LENGTH SO THAT SCREW SHANK WILL PENETRATE RECEIVING MEMBERS.

REPAIR ANY DAMAGED GALVANIZED SURFACES IN ACCORDANCE WITH STANDARD SPECIFICATION ARTICLE 1076-7.

REPAIR ANY DAMAGED PAINTED SURFACES IN ACCORDANCE WITH SECTION 422 OF THE STANDARD SPECIFICATIONS

TIMBER / LUMBER NOTES:

ALL TIMBER AND LUMBER MEMBERS SHALL BE TREATED SOUTHERN PINE AND CONFORM TO SECTION 1082 OF THE STANDARD SPECIFICATIONS.

ALL TIMBER DIMENSIONS SHOWN ON THE PLANS ARE NOMINAL DIMENSIONS.

PRE-DRILL HOLES IN TIMBER AND LUMBER MEMBERS ACCEPTING BOLTS TO ELIMINATE SPLITTING.

1

CORROSION PROTECTION:

~~IF END BENTS ARE IN NEAR PROXIMITY TO THE WATER, ALL STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS.~~

~~IF END BENTS ARE NOT IN NEAR PROXIMITY TO THE WATER, ALL STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OF THE STRUCTURAL STEEL COATINGS PROGRAM AND SECTION 442-8 OF THE NCDOT STANDARD SPECIFICATIONS.~~

DESIGN LOADS:

LIVE LOAD:

TRUCK LOAD:

THIS BRIDGE WAS DESIGNED FOR:

HS20
GVWR = 72,000 LBS
NUMBER OF AXLES: 3
AXLE WEIGHTS:
GAWR FRONT = 8,000 LBS
GAWR INTERMEDIATE = 32,000 LBS
GAWR REAR = 32,000 LBS

EV2

GVWR = 57,500 LBS

NUMBER OF AXLES: 2

AXLE WEIGHTS:

GAWR FRONT = 24,000 LBS
GAWR REAR = 33,500 LBS

EV3

GVWR = 86,000 LBS

NUMBER OF AXLES: 3

AXLE WEIGHTS:

GAWR FRONT = 24,000 LBS
GAWR INTERMEDIATE = 31,000 LBS
GAWR REAR = 31,000 LBS

LIVE LOAD FACTORS:

HS-20 = 1.75

EV2 = 1.3

EV3 = 1.3

LIVE LOAD FACTORS LOAD RATING:

HS-20 = 1.35

EV2 = 1.0

EV3 = 1.0

MULTIPLE PRESENCE FACTOR:

MPF = 1.0

LANE LOAD:

NO LANE LOAD WAS APPLIED.

IMPACT:

DYNAMIC IMPACT FOR WOOD/TIMBER COMPONENTS IS ZERO. DYNAMIC IMPACT FACTOR FOR ALL OTHER COMPONENTS IS 33%.

DEAD LOADS:

WEARING SURFACES SHALL NOT BE ALLOWED.

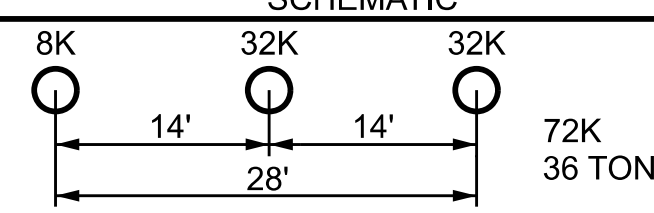
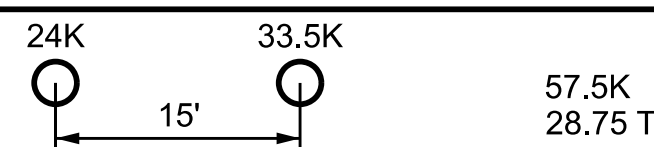
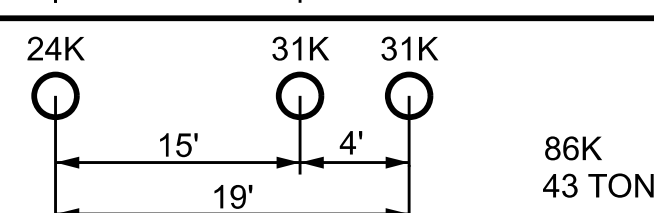
WEIGHT OF TIMBER = 40 PCF.

DESIGN ASSUMPTIONS/PARAMETERS:

SUPERSTRUCTURE WILL BE SIX LINES OF I-BEAMS.

BRIDGE IS SINGLE SPAN.

BRIDGE WIDTH = 12'-11" OUT TO OUT.

REF.#	DESIGN VEHICLES	
	SCHEMATIC	
HS-20		72K 36 TON
EV2		57.5K 28.75 TON
EV3		86K 43 TONS

GENERAL NOTES:

THIS BRIDGE IS DESIGNED IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) "STRUCTURES MANAGEMENT UNIT MANUAL", DATED 6/15/23, AND THE AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 9th EDITION.

THESE DRAWINGS ARE INTENDED ONLY FOR USAGE IN THE INSTALLATION OF SINGLE SPAN I-BEAM BRIDGES FOR PRIVATE DRIVEWAYS IN COUNTIES AS LISTED IN THE CONTRACT DOCUMENTS BY NORTH CAROLINA OFFICE OF EMERGENCY MANAGEMENT IN RESPONSE TO THE DAMAGE CAUSED BY HURRICANE HELENE.

BRIDGE CONSTRUCTION, WORKMANSHIP, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE NCDOT "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", 2024 EDITION.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

IT IS ASSUMED THAT THERE ARE NO UTILITY CONFLICTS. THE CONTRACTOR SHALL INVESTIGATE THE PRESENCE OF UTILITIES BEFORE COMMENCING WORK.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

CONTRACTOR SHALL SET BRIDGE ELEVATIONS SUCH THAT WATER WILL DRAIN AND NOT POND ON THE BRIDGE DECK AND MINIMUM LONGITUDINAL GRADE SHALL BE 0.5% AND MAXIMUM GRADE SHALL BE 6%.

WORK ON END BENTS SHALL NOT BE STARTED UNTIL APPROACH ROCK EMBANKMENT AND CORE MATERIAL IN THE AREA OF END BENT PILES HAVE BEEN PLACED.

THIS BRIDGE HAS BEEN DESIGNED FOR ADTT < 100.

MATERIAL PROPERTIES:

CONCRETE: MINIMUM COMPRESSIVE STRENGTH, f_c = 3,000 psi (CLASS A)

STRUCTURAL STEEL: AASHTO M270, GRADE 50.

WELDS: SMAW, 70 KSI ELECTRODES PER NCDOT STANDARD SPECIFICATIONS.

ANCHOR BOLTS: ASTM F1554, GRADE 55.

BOLTS/NUTS/WASHER: ALL BOLTS/NUTS/WASHER SHALL BE ASTM F3125, GRADE A325 AND SHALL BE GALVANIZED.

TIMBER: ALL TIMBER & DIMENSIONAL LUMBER SHALL BE NO. 2 VISUALLY GRADED, MIXED SOUTHERN PINE WITH REFERENCE DESIGN VALUES OF: F_{bo} = .925 ksi AND F_{vo} = 0.175 ksi OR GREATER.

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS WITH A SHEAR MODULUS OF 0.110 KSI.

Signature: Ryan Seal
Professional Engineer
No. 046056
1300 ZWINGERS
TYLER, NORTH CAROLINA
1/28/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA OFFICE OF EMERGENCY MANAGEMENT
PRIVATE DRIVEWAY BRIDGE STANDARDS
SINGLE LANE STEEL BEAM BRIDGE
TIMBER DECK
GENERAL NOTES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1	RTS	1-28-26	3			TOTAL SHEETS 12
2			4			

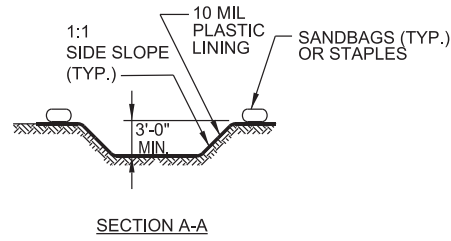
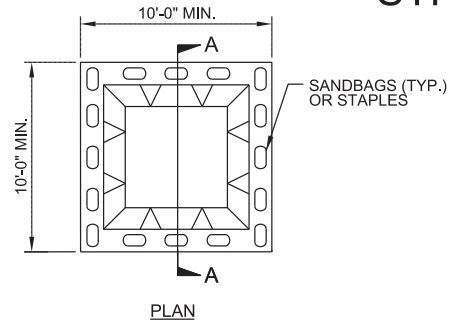
JMT Johnson, Mirmiran, & Thompson Inc.
108 Asheville Commerce Parkway
Candler, NC, 28715
License No: C-3097

DWN. BY: WDC DATE: 12/2025
CHKD. BY: RTS DATE: 12/2025
DES. EGR. OF RECORD: PCW DATE: 12/2025

W:\Projects\2025\25-00629\25-00629-001\Design\Structures\AC FRB-Steel Beam with Timber Deck Standards\Single Lane Steel Beam with Timber Deck Plans\2 Standard Drawings\I-Beam Bridge Plans_20-50/012-512_General Notes.dgn
 DATE: 1/28/2026
 TIME: 11:28:23 AM

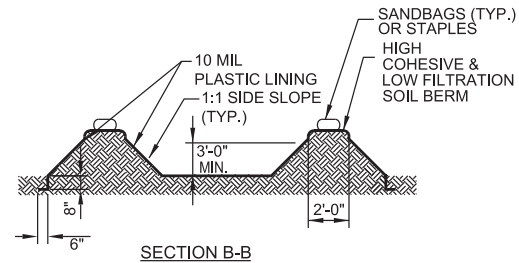
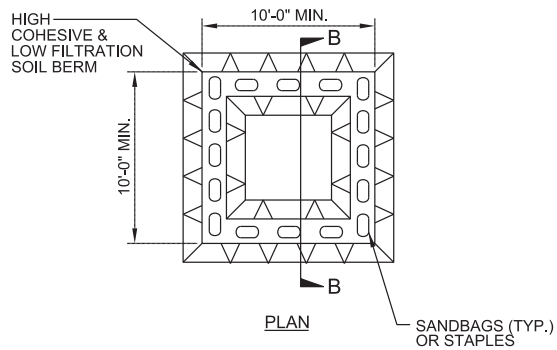
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER

PROJECT REFERENCE NO. <i>PRB</i>	SHEET NO. <i>EC-2</i>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
<i>PRB</i>	<i>EC-2</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES