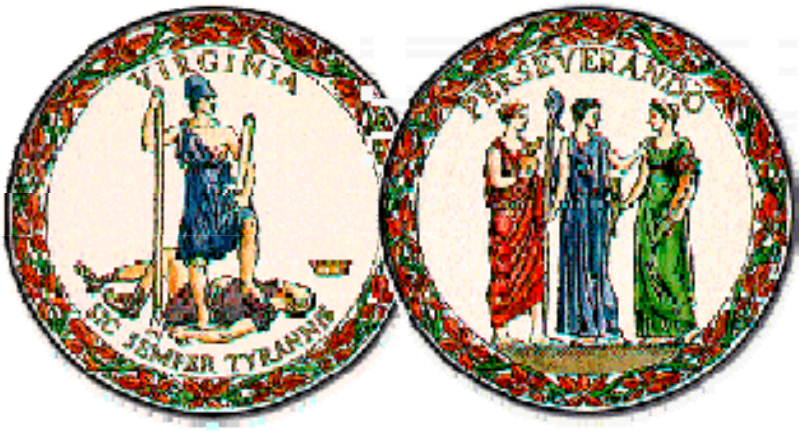
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION

PART 8

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS



VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT GOVERNANCE DOCUMENT

VDOT Manual of the Structure and Bridge Division: Part 08: Steel Beam with Timber Deck Superstructure Standards

OWNING DIVISION: Structure and Bridge

DATE OF ISSUANCE: 3/10/2015

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

Charles A. Kilpatrick, P.E.
COMMISSIONER

March 10, 2015

SUBJECT: Manual of the Structure and Bridge Division – Part 8
SS-8 Steel Beam with Timber Deck Superstructure Standards

MEMORANDUM

TO: Holders of Manual

VOIDED:

None

NEW ISSUES:

File Number	Description of change(s)
SS8-5C	Railing termination details (with curb) for obtuse corner
SS8-5C-2	
SS8-5D	Railing termination details (without curb) for obtuse corner
SS8-5D-2	
SS8-6B	Curb details where filler plate required due to beam flange width
SS8-6B-2	

REVISIONS:

File Number	Description of change(s)
All Files	Removed "Vol. V" from Title Blocks.
SS8TOC-1 and -2	Revised dates and added additional sheet information.
SS8INSTR-1 thru -11	Modified page headers.
SS8INSTR-1	Updated modification requirements.
SS8INSTR-5	Clarified length used in tables and updated File No. reference.
SS8INSTR-6 and -7	Revised beam tables.
SS8INSTR-8 thru -10	Inserted instructions for and alternate beam tables.
SS8INSTR-11	Moved Dead Load Reaction content to sheet 11.
SS8INSTR-12	Moved Camber content to sheet 12.

REVISIONS:(cont'd)

File Number	Description of change(s)
SS8-1	Updated specification and manual references. Revised signature lines in Title Block.
SS8-1-2	Updated inclusion instructions for new standards issued. Removed Volume V reference. Moved Developed Section Along to second sheet and added Title Block content.
SS8-2	Updated skew note moving post adjustment instructions to Notes to Designer and expanding content. Revised dressed dimensions for plank flooring and typical butt splice note in Transverse Section.
SS8-2-2	Updated inclusion instructions for new standards issued.
SS8-2-3	Updated variable "C" definition.
SS8-2-5	Added instructions for rail and end posts in obtuse corners and for diaphragms in acute corners to the Framing Plan section. Moved content to additional sheets and added instructions on Notes.
SS8-3A	Revised existing diaphragm connection details for partial depth connector plates. Added Detail for Diaphragm Line Adjacent to Bearing. Revised button head bolt designation through timber curbing. Revised bolt spacing in Section D-D, railing post length and distances between top of web and post to web connection. Revised diaphragm bolt spacing for beam section depths larger than W24. Added typical dimensions to Section E-E and adjusted channel clip callout leader lines.
SS8-3A-2	Updated standard set instructions for newly issued standards.
SS8-3B	Revised button head bolt designation through timber curbing. Revised bolt spacing in Section D-D, railing post length and distances between top of web and post to web connection. Revised diaphragm bolt spacing for beam section depths larger than W24. Revised diaphragm connection angle lengths for all W shapes. Added typical dimensions to Section E-E.
SS8-3B-2	Updated standard set instructions for newly issued standards.
SS8-3C	Revised existing diaphragm connection details for partial depth connector plates. Added Detail for Diaphragm Line Adjacent to Bearing. Removed alternate web to post connection section note. Revised web to post connection details and railing post length. Revised diaphragm bolt spacing for W18 to W24 beams. Added typical dimensions to Section E-E and adjusted channel clip callout leader lines.
SS8-3C-2	Updated standard set instructions for newly issued standards.
SS8-3D	Removed alternate web to post connection section note. Revised web to post connection details and railing post length. Revised diaphragm bolt spacing for W18 to W24 beams. Revised diaphragm connection angle lengths for all W shapes. Added typical dimensions to Section E-E.
SS8-3D-2	Updated standard set instructions for newly issued standards.

REVISIONS:(cont'd)

File Number	Description of change(s)
SS8-4	Added Bridge Lug Detail and Waterproofing Detail and expanded related notes. Prohibited butt splicing for plank lengths ≤ 32 feet. Authorized District Bridge Engineer to determine when placing planks perpendicular on skewed bridges is beneficial.
SS8-4-2	Updated standard set instructions for newly issued standards.
SS8-5A	Added brackets to and revised final note involving skew. Removed "Set" nomenclature from Elevation view of C6x8.2 Rubrail Detail.
SS8-5A-2	Updated standard set instructions for newly issued standards. Replaced previous instructions for Notes.
SS8-5B	Deleted final sentence in third note and added bracketed note. Removed erroneous curb line and callout from Plan view of Termination Detail.
SS8-5B-2	Updated standard set instructions for newly issued standards. Added instructions for Notes.
SS8-6A	Changed standard name from SS8-6 to SS8-6A. Revised skew angles in Abutment Elevations in Obtuse Corners. Revised button head bolt ASTM designation. Added note to indicate which details to use based on skew, corner and situation. Added callout for two bolts per rail post to Section A-A.
SS8-6A-2	Changed standard name from SS8-6-2 to SS8-6A-2. Updated standard set instructions for newly issued standards.
CELLINDEX-1 thru -5	Added category header to cell groups and individual descriptions to each cell.
SS8CELLS-57 thru -60	Updated Transverse Section cells per revisions made to standard sheets and adjusted scale.

RETAIN THIS MEMO IN FRONT OF INDEX TO PART 8

/original signed/
Prasad Nallapaneni, P.E.
Assistant State Structure and Bridge Engineer

For: Kendal R. Walus, P.E.
State Structure and Bridge Engineer

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

Gregory A. Whirley
COMMISSIONER

August 30, 2012

SUBJECT: Manual of the Structure and Bridge Division
Volume V – Part 8
Steel Beam with Timber Deck Superstructure Standards

MEMORANDUM

TO: Holders of Volume V – Part 8: Steel Beam with Timber Deck Superstructure Standards

The revision is intended to clarify modifications to standards. Design waivers/exceptions are required when changes to the standards are made.

VOIDED:

None

NEW ISSUES:

None

REVISIONS:

File Number	Description of change(s)
SS8TOC-1	Revised date of sheet; added additional page, SS8INSTR-2.
SS8INSTR-1	Revised modification policy; moved last two paragraphs to new page.
SS8INSTR-2	Added paragraphs from previous page.
SS8INSTR-3 thru -8	Revised page numbers.

RETAIN THIS MEMO IN FRONT OF INDEX TO VOLUME V – PART 8

/original signed/
Julius F. J. Völgyi, Jr., P.E.
Assistant State Structure and Bridge Engineer

For: Kendal R. Walus, P.E.
State Structure and Bridge Engineer

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

Gregory A. Whirley
Acting COMMISSIONER

June 14, 2010

SUBJECT: Manual of the Structure and Bridge Division
Volume V – Part 8
Steel Beam with Timber Deck Superstructure Standards

MEMORANDUM

TO: Holders of Volume V – Part 8: Steel Beam with Timber Deck Superstructure Standards

VOIDED:

None

NEW ISSUES:

File Number	Description of change(s)
None	

REVISIONS:

Note: For all standards, the block with FHWA Region 3 and block in the upper right corner for Special Provisions/Copied Notes has been deleted . The copyright date has been changed to 2010.

File Number	Description of change(s)
SS8TOC-1 and -2	Revised dates of applicable sheets.
SS8INSTR-7	Changed variable for beam spacing to “Y”.
SS8-2-3	Revised description for variable “S”.

RETAIN THIS MEMO IN FRONT OF INDEX TO VOLUME V – PART 8

/original signed/
Julius F. J. Völgyi, Jr., P.E.
Assistant State Structure and Bridge Engineer

For: Kendal R. Walus, P.E.
State Structure and Bridge Engineer

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

David S. Ekern, P.E.
COMMISSIONER

May 29, 2009

SUBJECT: Manual of the Structure and Bridge Division
Volume V – Part 8
SS-8 Steel Beam with Timber Deck Superstructure Standards

MEMORANDUM

TO: Holders of Volume V – Part 8, SS-8 Steel Beam with Timber Deck Superstructure Standards

NOTE: Effective with the December Advertisement, Standards shall be sealed and signed in accordance with Volume V – Part 2, File No. 01.16.1 thru 01.16.7.

VOIDED STANDARDS:

None

NEW ISSUES:

File Number	Description
None	

REVISIONS:

File Number	Description of changes(s)
SS8-1	Title sheet border revised to agree with new FSHT cell.

RETAIN THIS MEMO IN FRONT OF INDEX TO VOLUME V – PART 8

/original signed/
Julius F. J. Völgyi, Jr., P.E.
Assistant State Structure and Bridge Engineer

For: Kendal R. Walus, P.E.
State Structure and Bridge Engineer

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

David S. Ekern, P.E.
COMMISSIONER

September 12, 2008

MEMORANDUM

TO: Holders of Manual

SUBJECT: Manual of the Structure and Bridge Division
Volume V – Part 8 – SS-8 Steel Beam with Timber Deck Superstructure Standards

NEW ISSUE:

Manual of the Structure and Bridge Division, Volume V – Part 8 – SS-8 Steel Beam with Timber Deck Superstructure Standards is a new issue replacing the SS-7 Standard Steel Beam – Timber Deck Bridges standard which was last revised in 1987 and is currently VOIDED. The SS-8 standards include standards for a complete set of plans including title sheet. General, railing and diaphragm connection, timber attachment, railing termination and curb details (when applicable) are included. Cells are available to customize the general details to fit the particular details of the bridge. Details are provided compatible with face-to-face of rail widths greater than or equal to 12 feet, beam lengths up to approximately 75 feet and any skew angle.

RETAIN THIS MEMO IN FRONT OF INDEX TO VOLUME V – PART 8.

/original signed/
Julius F. J. Völgyi, Jr., P.E.
Assistant State Structure and Bridge Engineer

For: Kendal R. Walus, P.E.
State Structure and Bridge Engineer

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION – PART 8

TABLE OF CONTENTS

FILE NO.		TITLE	DATE
		TABLE OF CONTENTS, INSTRUCTIONS AND BEAM TABLES	
SS8TOC	-1	Table of Contents	10Mar2015
SS8TOC	-2	Table of Contents	10Mar2015
SS8INSTR	-1	General Instructions	10Mar2015
SS8INSTR	-2	General Instructions	10Mar2015
SS8INSTR	-3	External Users: File Access Instructions	10Mar2015
SS8INSTR	-4	External Users: File Access Instructions	10Mar2015
SS8INSTR	-5	Instructions on Use of Beam Tables	10Mar2015
SS8INSTR	-6	Beam Table: Face-to-Face of Rails < 20'-0"	10Mar2015
SS8INSTR	-7	Beam Table: Face-to-Face of Rails ≥ 20'-0"	10Mar2015
SS8INSTR	-8	Instructions on Use of Alternate Beam Tables	10Mar2015
SS8INSTR	-9	Alternate Beam Table: Face-to-Face of Rails < 20'-0"	10Mar2015
SS8INSTR	-10	Alternate Beam Table: Face-to-Face of Rails ≥ 20'-0"	10Mar2015
SS8INSTR	-11	Dead Load Reaction	10Mar2015
SS8INSTR	-12	Camber	10Mar2015
		STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE	
* SS8-1	-1	Title Sheet	10Mar2015
	-2	Notes to Designer	10Mar2015
	-3	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-2	-1	General Details	10Mar2015
	-2	Notes to Designer	10Mar2015
	-3	Notes to Designer	10Mar2015
	-4	Notes to Designer	10Mar2015
	-5	Notes to Designer	10Mar2015
	-6	Notes to Designer	10Mar2015
	-7	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3A	-1	Railing and Diaphragm Connection Details (With Curb – WP)	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3B	-1	Railing and Diaphragm Connection Details (With Curb - BA)	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3C	-1	Railing and Diaphragm Connection Details (Without Curb - WP)	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3D	-1	Railing and Diaphragm Connection Details (Without Curb – BA)	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	

* Indicates 11 x 17 sheet; all others are 8 ½ x 11.

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION – PART 8

TABLE OF CONTENTS

FILE NO.		TITLE	DATE
		STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE (cont'd)	
* SS8-4	-1	Timber Attachment Details	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-5A	-1	Railing Termination Details (With Curb)	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-5B	-1	Railing Terminations Details (Without Curb)	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-5C	-1	Railing Termination Details (With Curb) – Obtuse Corner	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-5D	-1	Railing Terminations Details (Without Curb) – Obtuse Corner	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-6A	-1	Curb Details	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-6B	-1	Curb Details (With Filler Plates)	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
		CELL LIBRARY: SS8.CEL	
CELLINDEX	-1	Index of Cells	10Mar2015
CELLINDEX	-2	Index of Cells	10Mar2015
CELLINDEX	-3	Index of Cells	10Mar2015
CELLINDEX	-4	Index of Cells	10Mar2015
CELLINDEX	-5	Index of Cells	10Mar2015
SS8CELLS	-1 to -90	Cells	10Mar2015
	-CEL	MicroStation Cell Library	

* Indicates 11 x 17 sheet; all others are 8 ½ x 11.

GENERAL INSTRUCTIONS:

The steel beam with timber deck superstructure standards shall only be used on low volume roads (ADT $\leq$ 750) where the design speed does not exceed 45 mph. The superstructure consists of timber flooring bolted non-composite to rolled beams. Historically, State forces have fabricated, constructed and maintained the majority of bridges utilizing this type of superstructure.

The standard is intended to use a beam spacing of 2'-0" where roadway width may vary in increments of 2'-0" by adding or deleting lines of beams. Limitations due to existing abutment width may require a slight variation in beam spacing to obtain the required roadway width. Beam tables with beam lengths up to 74'-11" are provided in this section along with instructions on their use.

The railing systems detailed in the standards use a crash tested railing, but not for this particular application. A design exception has been approved by the State Structure and Bridge Engineer for use with this standard. FHWA approval is required for use of the rail system on Federal Oversight projects.

The standards are in plan set format with a title sheet followed by interior sheets. A plan number is required. Refer to notes to designer for specific comments on each standard sheet.

The designer must check abutment and pier locations to ensure: sufficient depth for superstructure, sufficient width to accommodate bearing details and all minimum dimensions and clearances are met for existing and new substructures. Substructure details need to be added to complete a set of plans.

For SS8-1, completion of the project block, title block and lower left corner shall be in accordance with the requirements of Section Nos. 02.02, 02.04 and 02.05 of Part 2 of this manual and as specified herein. For the remaining standard sheets, completion of the project block, title block and lower left corner shall be in accordance with the requirements of File Nos. 04.04-1 thru -3 of Part 2 of this manual and as specified herein.

If the standard sheet is modified by the designer, the letters, "MOD.", (without quotes) shall be added behind the standard designation in the lower left portion of the border, e.g., SS8-2 MOD. Minor modifications do not require approval (except for those proposed by Concessionaire/ Design-Builder where emailed approval by the District Structure and Bridge Engineer documented to the project design file is required for any modifications). See Part 1 of this manual, File No. Pre.02-6 for definition of minor modification.

Modifications not considered minor as defined in File No. Pre.02-6 require email approval by the District Structure and Bridge Engineer documented to the project design file unless a design exception is required.

In general, in the title block (lower right hand corner of sheet) Designed, Drawn and Checked are blank and need to be filled in with the appropriate initials. For standard sheets without any design or detailing requirements, Designed, Drawn and Checked are filled in with "S&B Div". If the design or details are modified, these fields should be filled in with initials as appropriate.

GENERAL INSTRUCTIONS (cont.'d):

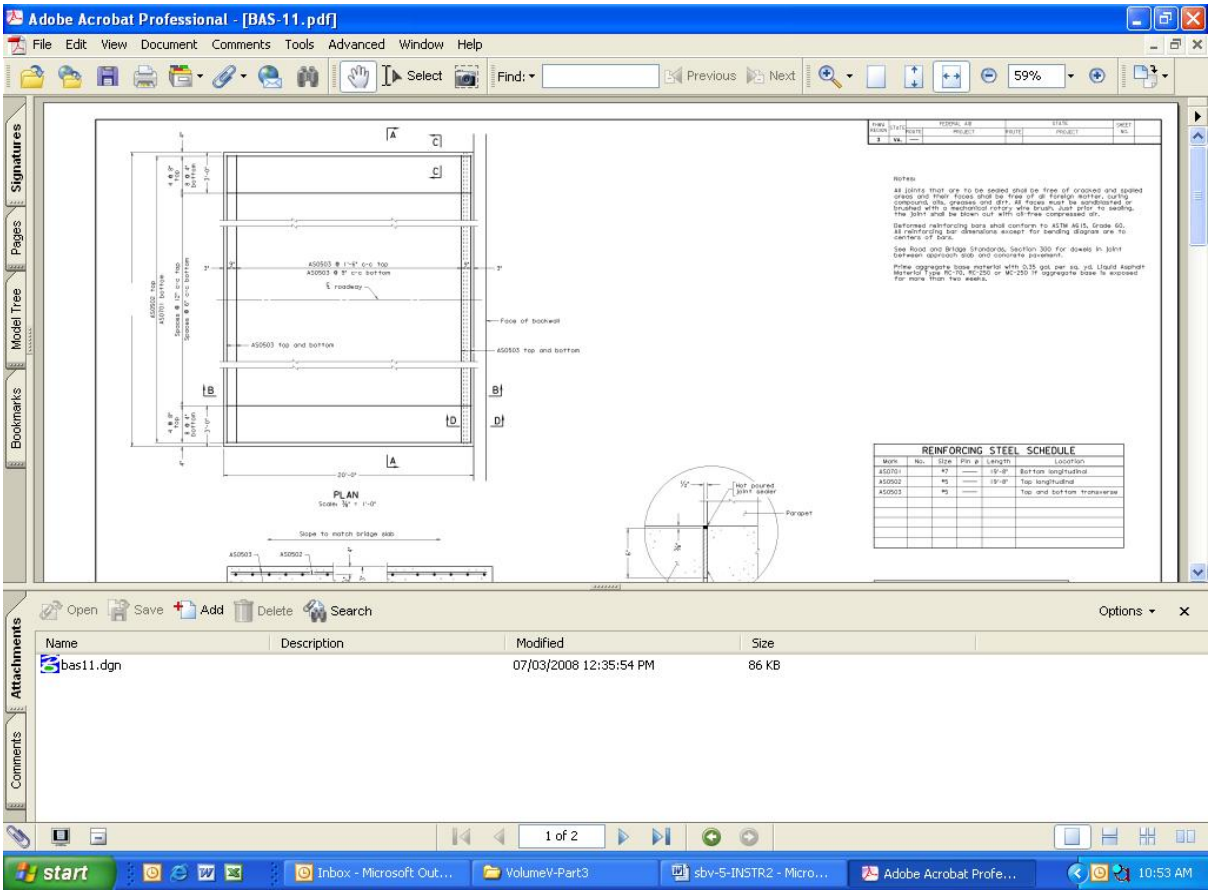
The CADD standard detail sheets are located in Falcon […\PROJECTS\br-stand\sbr\ss8] directory (central office environment). The drawing file name for the standard sheet corresponds with the file number (name of standard sheet) as listed in the Table of Contents (minus the dash). For example, standard SS8-2 is drawing ss82.dgn.

A cell library (ss8.cel) is included with the standards to allow the designer to add the required details on the standard sheets. The SS8CELLS sheets depict the cells found in the cell library along with the name of the cell, an image of the cell, a description of the cell and the origin of cell. The origin of the cell is indicated by a star ★. To attach the cell library, use the pull down menu in MicroStation under ELEMENT – CELLS and select FILE to obtain a drop-down listing of the available cell libraries.

EXTERNAL USERS: FILE ACCESS INSTRUCTIONS:

For external users, the CADD standard detail sheets are attached to the PDF files for each drawing located on VDOT's Structure and Bridge Division website. The user will need Adobe Reader version 7.0 or higher to be able to access the files. Either click on the DGN link in the table of contents or click on the attachment tab in the PDF file for each standard sheet.

Using either method, the screen will appear similar to that shown below.



By left clicking on the icon(s), the following menu will appear:

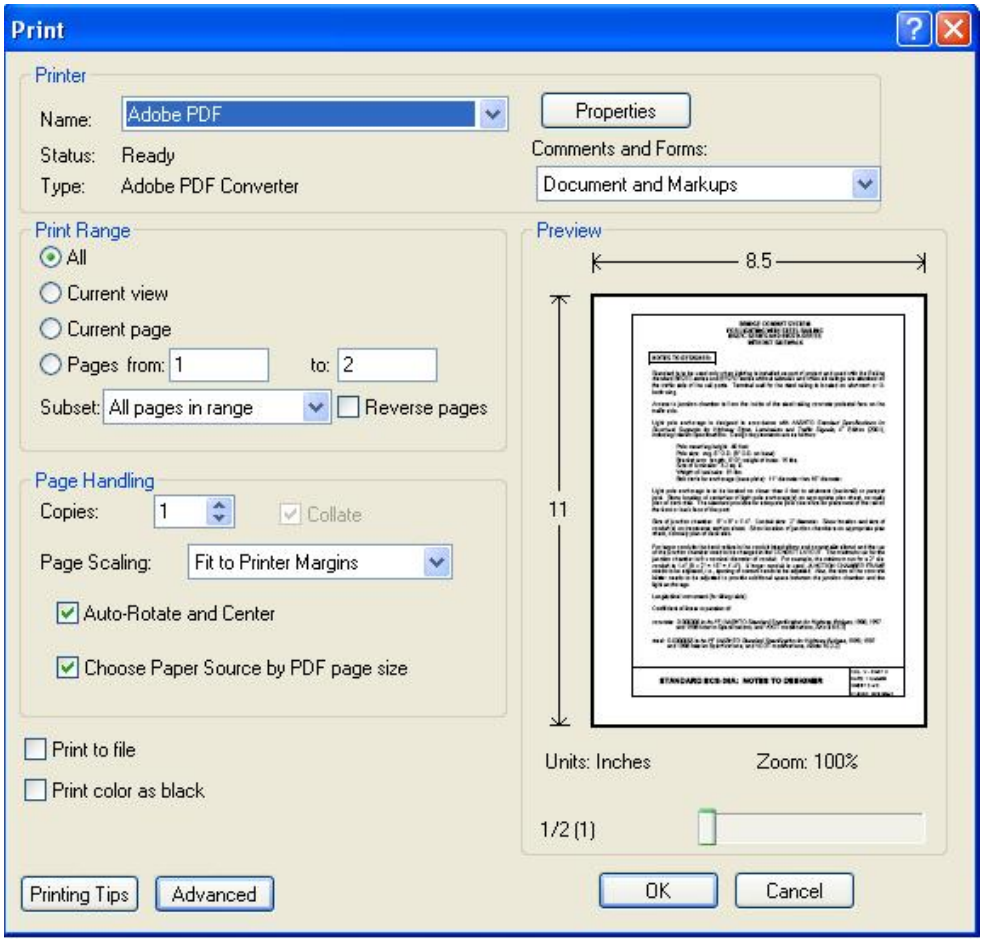
Users may then save the file(s) to their computer.

EXTERNAL USERS: FILE ACCESS INSTRUCTIONS (cont.'d):

To simplify printing of this manual, a PDF of the complete manual in one PDF file with no links may be accessed by clicking on the link below.

Full manual no links

If the printer has both 8 ½ x 11 and 11 x 17 paper sizes available, the drawings and notes to designer may be printed on the correct paper size by placing a check next to the item "Choose Paper Source by PDF page size" as shown in the dialog below:



If the printer only has 8 ½ x 11 paper, the drawings will default to the reduced paper size.

Depending on the printer margins, the 11 x 17 drawing(s) may not be true half-size drawing(s).

INSTRUCTIONS ON USE OF BEAM TABLES:

The beam tables on the following two sheets provide the required W-shape for the face-to-face of rail width, beam spacing, number of beams and length (end of beam to end of beam) designated. Design is based on: timber floor at 50 pcf, 3" asphalt overlay at 37 psf and 2" future wearing surface at 25 psf.

Table 1 is used when face-to-face of rail width is less than 20'-0". Design is for one lane of traffic. The beam sections denoted adhere to LRFD strength and optional live load deflection criteria. Table 2 is used when face-to-face of rail width is greater than or equal to 20'-0". Design is for two or more lanes of live load. The beam sections denoted adhere to AASHTO LRFD strength criteria. The optional live load deflection criteria is met for the largest number of beams in each column.

To obtain the required beam size:

1. Pick the appropriate table based on face-to-face of rail dimension.
2. Divide the face-to-face of rail dimension by 2 (feet). Round up/down to the nearest integer. This will provide the number of spaces.
3. Divide the face-to-face of rail dimension by the integer number to obtain the beam spacing. In the table, there are three ranges of beam spacing shown. If the spacing does not fall within any of the ranges, return to step 2 and round in the opposite direction.
4. Determine the appropriate column for the applicable range and number of beams.
5. Scroll down the column to the row of the required beam length rounded up to the nearest foot if between values. Read the beam size.

Example: Beam length set at 61'-9" and face-to-face of rail computed (set) at 19'-6".

1. Use the beam table on File No. SS8INSTR-6 since 19'-6" < 20'-0".
2. 19.50' / 2' per space = 9.75 spaces. In this instance, round up to 10 spaces.
3. 19.50' / 10 beam spaces = 1.95' which falls within one of the beam spacing ranges.
4. Find the column for: 1'-10" $\leq$ x $\leq$ 2'-0", number of beams = 10 spaces + 1 = 11 beams.
5. Scroll down the column to the row corresponding to the beam length rounded up to 62' and pick W 27 x 94 from the table.

The beam tables may be used without further calculation only if the Framing Plan cell corresponding to the beam length is used with no modifications to the diaphragm spacing. The beams are not composite with the deck. Allowable compressive stress in the top flange is dependent on the unbraced length. Any deviation from the diaphragm spacing shown in the framing plan cells will require independent beam calculations.

The Framing Plan cells are based on the maximum railing post spacing of 6'-3". Where possible, the diaphragm spacing coincides with the rail post spacing.

Available shelf height or hydraulic opening may dictate the use of a shallower beam section than found in the table. Both beam tables indicate whether strength or deflection controls the design. Where strength controls, a shallower section having an equivalent or greater section modulus may be used in place of the specified section. Where deflection controls, a shallower section having an equivalent or greater moment of inertia may be used in place of the specified section. Independent beam calculations are not required, but the designer must ensure the section is of sufficient depth to make the railing and diaphragm connections.

FACE-TO-FACE OF RAILS < 20'-0"										
Beam Length	1'-8" ≤ Beam Spa. ≤ 1'-10"			1'-10" < Beam Spa. ≤ 2'-0"			2'-0" < Beam Spa. ≤ 2'-2"			Beam Length
	Number of beams			Number of beams			Number of beams			
	8	9	10 - 12	7	8	9 - 11	7	8	9 - 10	
15'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	15'-0"
16'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	16'-0"
17'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	17'-0"
18'-0"	W14x26	W14x26	W14x26	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	18'-0"
19'-0"	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	19'-0"
20'-0"	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	20'-0"
21'-0"	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W16x36	W16x36	W16x36	21'-0"
22'-0"	W14x30	W14x30	W14x30	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	22'-0"
23'-0"	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	23'-0"
24'-0"	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	24'-0"
25'-0"	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W18x40	W18x40	W18x40	25'-0"
26'-0"	W16x36	W16x36	W16x36	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	26'-0"
27'-0"	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	W21x44	W21x44	W21x44	27'-0"
28'-0"	W18x40	W18x40	W18x40	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	28'-0"
29'-0"	W18x40	W18x40	W18x40	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	29'-0"
30'-0"	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	30'-0"
31'-0"	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	31'-0"
32'-0"	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	W21x50	W21x50	W21x50	32'-0"
33'-0"	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	W21x50	W21x50	W21x50	33'-0"
34'-0"	W21x50	W21x50	W21x50	W21x50	W21x50	W21x50	W24x55	W24x55	W24x55	34'-0"
35'-0"	W21x50	W21x50	W21x50	W21x50	W21x50	W21x50	W24x55	W24x55	W24x55	35'-0"
36'-0"	W21x50	W21x50	W21x50	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	36'-0"
37'-0"	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	37'-0"
38'-0"	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	38'-0"
39'-0"	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	39'-0"
40'-0"	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	W24x62	W24x62	W24x62	40'-0"
41'-0"	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	41'-0"
42'-0"	W24x62	W24x62	W24x62	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	42'-0"
43'-0"	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	43'-0"
44'-0"	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	44'-0"
45'-0"	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	45'-0"
46'-0"	W24x68	W24x68	W24x68	W24x76	W24x68	W24x68	W24x76	W24x68	W24x68	46'-0"
47'-0"	W24x68	W24x68	W24x68	W24x76	W24x68	W24x68	W24x76	W24x76	W24x76	47'-0"
48'-0"	W24x76	W24x68	W24x68	W27x84	W24x76	W24x68	W27x84	W24x76	W24x76	48'-0"
49'-0"	W24x76	W24x68	W24x68	W27x84	W24x76	W24x76	W27x84	W24x76	W24x76	49'-0"
50'-0"	W24x76	W24x76	W24x76	W27x84	W24x76	W24x76	W27x84	W27x84	W27x84	50'-0"
51'-0"	W27x84	W24x76	W24x76	W27x84	W27x84	W24x76	W27x84	W27x84	W27x84	51'-0"
52'-0"	W27x84	W24x76	W24x76	W27x84	W27x84	W27x84	W27x84	W27x84	W27x84	52'-0"
53'-0"	W27x84	W27x84	W24x76	W27x84	W27x84	W27x84	W27x84	W27x84	W27x84	53'-0"
54'-0"	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	W27x94	W27x84	W27x84	54'-0"
55'-0"	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	W27x94	W27x84	W27x84	55'-0"
56'-0"	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	W27x94	W27x94	W27x94	56'-0"
57'-0"	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	W27x94	W27x94	W27x94	57'-0"
58'-0"	W27x94	W27x84	W27x84	W30x99	W27x94	W27x84	W30x99	W27x94	W27x94	58'-0"
59'-0"	W27x94	W27x84	W27x84	W30x99	W27x94	W27x84	W30x99	W27x94	W27x94	59'-0"
60'-0"	W27x94	W27x84	W27x84	W30x99	W27x94	W27x94	W30x99	W27x94	W27x94	60'-0"
61'-0"	W30x99	W27x94	W27x84	W30x99	W30x99	W27x94	W30x99	W30x99	W27x94	61'-0"
62'-0"	W30x99	W27x94	W27x84	W30x99	W30x99	W27x94	W30x99	W30x99	W30x99	62'-0"
63'-0"	W30x99	W27x94	W27x94	W30x108	W30x99	W30x99	W30x108	W30x99	W30x99	63'-0"
64'-0"	W30x99	W30x99	W27x94	W30x108	W30x99	W30x99	W30x108	W30x108	W30x108	64'-0"
65'-0"	W30x99	W30x99	W27x94	W30x108	W30x99	W30x99	W30x108	W30x108	W30x108	65'-0"
66'-0"	W30x99	W30x99	W30x99	W33x118	W30x99	W30x99	W33x118	W30x108	W30x108	66'-0"
67'-0"	W30x108	W30x99	W30x99	W33x118	W30x108	W30x108	W33x118	W30x108	W30x108	67'-0"
68'-0"	W30x108	W30x99	W30x99	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	68'-0"
69'-0"	W30x108	W30x108	W30x108	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	69'-0"
70'-0"	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	70'-0"
71'-0"	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	71'-0"
72'-0"	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	72'-0"
73'-0"	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	73'-0"
74'-0"	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	W33x130	W33x130	W33x130	74'-0"
74'-11"	W33x118	W33x118	W33x118	W33x130	W33x118	W33x118	W33x130	W33x130	W33x130	74'-11"

Strength controls

Deflection controls

SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
BEAM TABLE: FACE-TO-FACE OF RAILS < 20'-0"

PART 8
DATE: 10Mar2015
SHEET 6 of 12
FILE NO. SS8INSTR-6

FACE-TO-FACE OF RAILS ≥ 20'-0"										
Beam Length	1'-8" ≤ Beam Spa. ≤ 1'-10"			1'-10" < Beam Spa. ≤ 2'-0"			2'-0" < Beam Spa. ≤ 2'-2"			Beam Length
	Number of Beams			Number of Beams			Number of Beams			
	12 - 14	15 - 16	>= 17	11 - 13	14 -15	>= 16	11 - 12	13 - 14	>= 15	
15'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	15'-0"
16'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	16'-0"
17'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	17'-0"
18'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	18'-0"
19'-0"	W14x26	W14x26	W14x26	W14x26	W14x26	W14x26	W14x30	W14x30	W14x30	19'-0"
20'-0"	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	20'-0"
21'-0"	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	21'-0"
22'-0"	W14x30	W14x30	W14x30	W14x30	W14x30	W14x30	W16x36	W16x36	W16x36	22'-0"
23'-0"	W14x30	W14x30	W14x30	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	23'-0"
24'-0"	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	24'-0"
25'-0"	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	25'-0"
26'-0"	W16x36	W16x36	W16x36	W16x36	W16x36	W16x36	W18x40	W18x40	W18x40	26'-0"
27'-0"	W16x36	W16x36	W16x36	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	27'-0"
28'-0"	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	28'-0"
29'-0"	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	W21x44	W21x44	W21x44	29'-0"
30'-0"	W18x40	W18x40	W18x40	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	30'-0"
31'-0"	W18x40	W18x40	W18x40	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	31'-0"
32'-0"	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	32'-0"
33'-0"	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	33'-0"
34'-0"	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	W21x50	W21x50	W21x50	34'-0"
35'-0"	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	W21x50	W21x50	W21x50	35'-0"
36'-0"	W21x50	W21x50	W21x50	W21x50	W21x50	W21x50	W24x55	W24x55	W24x55	36'-0"
37'-0"	W21x50	W21x50	W21x50	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	37'-0"
38'-0"	W24x55	W21x50	W21x50	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	38'-0"
39'-0"	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	39'-0"
40'-0"	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	40'-0"
41'-0"	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	41'-0"
42'-0"	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	W24x62	W24x62	W24x62	42'-0"
43'-0"	W24x55	W24x55	W24x55	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	43'-0"
44'-0"	W24x62	W24x62	W24x62	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	44'-0"
45'-0"	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	45'-0"
46'-0"	W24x68	W24x62	W24x62	W24x68	W24x68	W24x68	W24x76	W24x68	W24x68	46'-0"
47'-0"	W24x68	W24x68	W24x68	W24x68	W24x68	W24x68	W24x76	W24x68	W24x68	47'-0"
48'-0"	W24x68	W24x68	W24x68	W24x76	W24x68	W24x68	W24x76	W24x68	W24x68	48'-0"
49'-0"	W24x76	W24x68	W24x68	W24x76	W24x68	W24x68	W27x84	W24x76	W24x68	49'-0"
50'-0"	W24x76	W24x68	W24x68	W27x84	W24x76	W24x68	W27x84	W24x76	W24x76	50'-0"
51'-0"	W24x76	W24x68	W24x68	W27x84	W24x76	W24x76	W27x84	W24x76	W24x76	51'-0"
52'-0"	W27x84	W24x76	W24x68	W27x84	W24x76	W24x76	W27x84	W27x84	W27x84	52'-0"
53'-0"	W27x84	W24x76	W24x76	W27x84	W27x84	W24x76	W27x84	W27x84	W27x84	53'-0"
54'-0"	W27x84	W24x76	W24x76	W27x84	W27x84	W27x84	W27x84	W27x84	W27x84	54'-0"
55'-0"	W27x84	W27x84	W24x76	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	55'-0"
56'-0"	W27x84	W27x84	W24x76	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	56'-0"
57'-0"	W27x84	W27x84	W24x76	W27x94	W27x84	W27x84	W27x94	W27x84	W27x84	57'-0"
58'-0"	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	W30x99	W27x84	W27x84	58'-0"
59'-0"	W27x94	W27x84	W27x84	W27x94	W27x84	W27x84	W30x99	W27x94	W27x84	59'-0"
60'-0"	W27x94	W27x84	W27x84	W30x99	W27x84	W27x84	W30x99	W27x94	W27x84	60'-0"
61'-0"	W27x94	W27x84	W27x84	W30x99	W27x94	W27x84	W30x99	W27x94	W27x94	61'-0"
62'-0"	W30x99	W27x94	W27x84	W30x99	W27x94	W27x94	W30x99	W30x99	W27x94	62'-0"
63'-0"	W30x99	W27x94	W27x84	W30x99	W27x94	W27x94	W30x99	W30x99	W30x99	63'-0"
64'-0"	W30x99	W27x94	W27x94	W30x99	W30x99	W27x94	W30x108	W30x99	W30x99	64'-0"
65'-0"	W30x99	W27x94	W27x94	W30x99	W30x99	W27x94	W30x108	W30x99	W30x99	65'-0"
66'-0"	W30x99	W30x99	W27x94	W30x108	W30x99	W30x99	W30x108	W30x99	W30x99	66'-0"
67'-0"	W30x99	W30x99	W27x94	W30x108	W30x99	W30x99	W33x118	W30x108	W30x108	67'-0"
68'-0"	W30x108	W30x99	W30x99	W30x108	W30x99	W30x99	W33x118	W30x108	W30x108	68'-0"
69'-0"	W30x108	W30x99	W30x99	W33x118	W30x108	W30x108	W33x118	W30x108	W30x108	69'-0"
70'-0"	W30x108	W30x99	W30x99	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	70'-0"
71'-0"	W30x108	W30x99	W30x99	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	71'-0"
72'-0"	W33x118	W30x108	W30x108	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	72'-0"
73'-0"	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	73'-0"
74'-0"	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	74'-0"
74'-11"	W33x118	W30x108	W30x108	W33x118	W33x118	W33x118	W33x118	W33x118	W33x118	74'-11"

Strength controls

Deflection controls

SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
BEAM TABLE: FACE TO FACE OF RAILS ≥ 20'-0"

PART 8
DATE: 10Mar2015
SHEET 7 of 12
FILE NO. SS8INSTR-7

INSTRUCTIONS ON USE OF ALTERNATE BEAM TABLES:

When the available shelf height or hydraulic opening dictates the use of a shallower beam section than derived using the beam tables on File No. SS8INSTR-6 or -7, the alternate beam tables found on the following two sheets may be used. The alternate beam tables provide the required section modulus and moment of inertia for the face-to-face of rail width, beam spacing, number of beams and length (end of beam to end of beam designated).

Note that the standard railing details with curb do not fit within the web of a beam smaller than a W12 nor fit within the web of a W12 beam larger than a W12x35. The designer must ensure the section is of sufficient depth to make the railing (with/without curb) and diaphragm connections.

The designs used in the alternate beam tables use the same criteria as those in the beam tables.

To obtain the required beam size using the Alternate Beam Table:

1. Follow the steps provided on File No. SS8INSTR-5 to obtain the required beam size using the Beam Table on File No. SS8INSTR-6 or -7.
2. Where the available shelf height or hydraulic opening dictates the use of a shallower section, use the Alternate Beam Table on File No. SS8INSTR-9 or -10 to determine the required section modulus and moment of inertia using the same face-to-face of rail width, beam spacing, number of beams and beam length originally selected.
3. Select a beam with a larger section modulus and moment of inertia that fits the available space.

Example: Beam length set at 34’-0” and face-to-face of rail computed (set) at 19’-6”.

1. Following the instructions on File No. SS8INSTR-5, 10 beams with 9 spaces at 2’-2” was selected and a W24x55 section was derived using the appropriate beam table.
2. However, the available shelf height is only sufficient for a beam depth up to 18”. Using the alternate beam table for the same face-to-face of rail width, beam spacing, number of beams and beam length originally selected, a section modulus of 98.3 in^3 and a moment of inertia of 707 in^4 is required.
3. With a section modulus of 98.3 in^3 and a moment of inertia of 890 in^4, a W18x55 may be used.

The alternate beam tables may be used only if the Framing Plan cell corresponding to the beam length is used with no modifications to the diaphragm spacing. The beams are not composite with the deck. Allowable compressive stress in the top flange is dependent on the unbraced length. Any deviation from the diaphragm spacing shown in the framing plan cells will require independent beam calculations.

FACE-TO-FACE OF RAILS < 20'-0"													
Beam	1'-8" ≤ Beam Spa. ≤ 1'-10"				1'-10" < Beam Spa. ≤ 2'-0"				2'-0" < Beam Spa. ≤ 2'-2"				Beam
Length	Sxx	Ixx (Number of Beams)			Sxx	Ixx (Number of Beams)			Sxx	Ixx (Number of Beams)			Length
		8	9	10 - 12		7	8	9 - 11		7	8	9 - 10	
15'-0"	29.0	93	83	75	29.0	107	93	83	29.0	107	93	83	15'-0"
16'-0"	29.0	107	95	86	29.0	122	107	95	33.4	122	107	95	16'-0"
17'-0"	33.4	122	108	97	33.4	139	122	108	33.4	139	122	108	17'-0"
18'-0"	33.4	137	122	110	38.4	157	137	122	38.4	157	137	122	18'-0"
19'-0"	38.4	154	137	123	38.4	176	154	137	38.6	176	154	137	19'-0"
20'-0"	38.6	172	153	137	38.6	196	172	153	42.0	196	172	153	20'-0"
21'-0"	38.6	190	169	152	42.0	217	190	169	48.6	217	190	169	21'-0"
22'-0"	42.0	210	186	168	48.6	240	210	186	48.6	240	210	186	22'-0"
23'-0"	48.6	240	213	192	48.6	274	240	213	54.6	274	240	213	23'-0"
24'-0"	48.6	280	249	224	54.6	320	280	249	56.5	320	280	249	24'-0"
25'-0"	54.6	323	287	258	56.5	369	323	287	62.7	369	323	287	25'-0"
26'-0"	56.5	367	326	294	62.7	419	367	326	64.7	419	367	326	26'-0"
27'-0"	62.7	413	368	331	62.7	473	413	368	70.3	473	413	368	27'-0"
28'-0"	64.7	462	411	370	70.3	528	462	411	72.7	528	462	411	28'-0"
29'-0"	64.7	513	456	410	70.3	586	513	456	77.8	586	513	456	29'-0"
30'-0"	70.3	565	502	452	77.8	646	565	502	88.9	646	565	502	30'-0"
31'-0"	72.7	620	551	496	81.0	708	620	551	88.9	708	620	551	31'-0"
32'-0"	72.7	676	601	541	88.9	773	676	601	88.9	773	676	601	32'-0"
33'-0"	81.0	735	653	588	88.9	840	735	653	88.9	840	735	653	33'-0"
34'-0"	88.9	796	707	636	88.9	909	796	707	98.3	909	796	707	34'-0"
35'-0"	88.9	858	763	687	98.3	981	858	763	98.3	981	858	763	35'-0"
36'-0"	88.9	923	820	738	98.3	1054	923	820	108	1054	923	820	36'-0"
37'-0"	98.3	989	879	791	108	1130	989	879	114	1130	989	879	37'-0"
38'-0"	98.3	1058	940	846	108	1209	1058	940	117	1209	1058	940	38'-0"
39'-0"	108	1128	1003	902	114	1289	1128	1003	127	1289	1128	1003	39'-0"
40'-0"	108	1200	1067	960	117	1372	1200	1067	127	1372	1200	1067	40'-0"
41'-0"	114	1275	1133	1020	127	1457	1275	1133	140	1457	1275	1133	41'-0"
42'-0"	127	1351	1201	1081	127	1544	1351	1201	140	1544	1351	1201	42'-0"
43'-0"	127	1429	1270	1143	140	1633	1429	1270	140	1633	1429	1270	43'-0"
44'-0"	127	1517	1348	1213	140	1733	1517	1348	151	1733	1517	1348	44'-0"
45'-0"	140	1607	1428	1285	140	1836	1607	1428	151	1836	1607	1428	45'-0"
46'-0"	140	1699	1510	1359	151	1942	1699	1510	154	1942	1699	1510	46'-0"
47'-0"	140	1794	1594	1435	151	2050	1794	1594	171	2050	1794	1594	47'-0"
48'-0"	151	1891	1681	1513	154	2161	1891	1681	171	2161	1891	1681	48'-0"
49'-0"	151	1990	1769	1592	171	2274	1990	1769	176	2274	1990	1769	49'-0"
50'-0"	171	2091	1859	1673	176	2390	2091	1859	192	2390	2091	1859	50'-0"
51'-0"	171	2195	1951	1756	176	2508	2195	1951	196	2508	2195	1951	51'-0"
52'-0"	176	2301	2045	1840	192	2629	2301	2045	196	2629	2301	2045	52'-0"
53'-0"	176	2409	2141	1927	196	2753	2409	2141	213	2753	2409	2141	53'-0"
54'-0"	192	2519	2239	2015	196	2879	2519	2239	213	2879	2519	2239	54'-0"
55'-0"	196	2631	2339	2105	213	3007	2631	2339	213	3007	2631	2339	55'-0"
56'-0"	196	2746	2441	2197	213	3138	2746	2441	227	3138	2746	2441	56'-0"
57'-0"	196	2863	2545	2290	213	3272	2863	2545	243	3272	2863	2545	57'-0"
58'-0"	213	2982	2651	2386	213	3408	2982	2651	243	3408	2982	2651	58'-0"
59'-0"	213	3103	2759	2483	213	3547	3103	2759	243	3547	3103	2759	59'-0"
60'-0"	213	3227	2868	2581	243	3688	3227	2868	243	3688	3227	2868	60'-0"
61'-0"	213	3353	2980	2682	243	3831	3353	2980	243	3831	3353	2980	61'-0"
62'-0"	213	3480	3094	2784	243	3978	3480	3094	258	3978	3480	3094	62'-0"
63'-0"	243	3611	3209	2888	267	4126	3611	3209	267	4126	3611	3209	63'-0"
64'-0"	243	3743	3327	2994	267	4277	3743	3327	291	4277	3743	3327	64'-0"
65'-0"	243	3877	3446	3102	267	4431	3877	3446	291	4431	3877	3446	65'-0"
66'-0"	267	4014	3568	3211	269	4587	4014	3568	299	4587	4014	3568	66'-0"
67'-0"	267	4153	3691	3322	299	4746	4153	3691	299	4746	4153	3691	67'-0"
68'-0"	267	4294	3817	3435	299	4907	4294	3817	329	4907	4294	3817	68'-0"
69'-0"	291	4437	3944	3550	329	5071	4437	3944	329	5071	4437	3944	69'-0"
70'-0"	299	4582	4073	3666	329	5237	4582	4073	345	5237	4582	4073	70'-0"
71'-0"	299	4730	4204	3784	329	5405	4730	4204	355	5405	4730	4204	71'-0"
72'-0"	329	4879	4337	3904	329	5577	4879	4337	355	5577	4879	4337	72'-0"
73'-0"	329	5031	4472	4025	345	5750	5031	4472	359	5750	5031	4472	73'-0"
74'-0"	329	5185	4609	4148	355	5926	5185	4609	371	5926	5185	4609	74'-0"
74'-11"	329	5329	4736	4263	355	6090	5329	4736	380	6090	5329	4736	74'-11"

SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
ALT. BEAM TABLE: FACE TO FACE OF RAILS < 20'-0"

PART 8
DATE: 10Mar2015
SHEET 9 of 12
FILE NO. SS8INSTR-9

FACE-TO-FACE OF RAILS ≥ 20'-0"													
Beam Length	1'-8" ≤ Beam Spa. ≤ 1'-10"				1'-10" < Beam Spa. ≤ 2'-0"				2'-0" < Beam Spa. ≤ 2'-2"				Beam Length
	Sxx	Ixx (Number of Beams)			Sxx	Ixx (Number of Beams)			Sxx	Ixx (Number of Beams)			
		12 - 14	15 - 16	>= 17		11 - 13	14 -15	>= 16		11 - 12	13 - 14	>= 15	
15'-0"	25.4	89	78	73	25.4	96	83	78	29.0	104	89	83	15'-0"
16'-0"	29.0	102	89	84	29.0	110	95	89	29.0	119	102	95	16'-0"
17'-0"	29.0	116	101	95	29.0	125	108	101	33.4	135	116	108	17'-0"
18'-0"	33.4	131	115	108	33.4	141	122	115	33.4	153	131	122	18'-0"
19'-0"	33.4	147	128	121	33.4	158	137	128	38.4	171	147	137	19'-0"
20'-0"	38.4	163	143	135	38.4	176	153	143	38.6	191	163	153	20'-0"
21'-0"	38.4	181	158	149	38.6	195	169	158	42.0	211	181	169	21'-0"
22'-0"	38.6	200	175	164	42.0	215	186	175	48.6	233	200	186	22'-0"
23'-0"	42.0	229	200	188	48.6	246	213	200	48.6	267	229	213	23'-0"
24'-0"	48.6	267	234	220	48.6	287	249	234	54.6	311	267	249	24'-0"
25'-0"	48.6	307	269	253	54.6	331	287	269	56.5	358	307	287	25'-0"
26'-0"	54.6	349	306	288	56.5	376	326	306	62.7	408	349	326	26'-0"
27'-0"	54.6	394	345	324	62.7	424	368	345	62.7	459	394	368	27'-0"
28'-0"	57.6	440	385	362	62.7	474	411	385	68.4	513	440	411	28'-0"
29'-0"	62.7	488	427	402	62.7	526	456	427	70.3	570	488	456	29'-0"
30'-0"	62.7	538	471	443	70.3	580	502	471	72.7	628	538	502	30'-0"
31'-0"	64.7	590	516	486	72.7	636	551	516	78.8	689	590	551	31'-0"
32'-0"	72.7	644	564	531	72.7	694	601	564	81.0	752	644	601	32'-0"
33'-0"	72.7	700	613	576	81.0	754	653	613	88.9	817	700	653	33'-0"
34'-0"	78.8	758	663	624	88.9	816	707	663	88.9	884	758	707	34'-0"
35'-0"	81.6	817	715	673	88.9	880	763	715	88.9	953	817	763	35'-0"
36'-0"	88.9	879	769	724	88.9	946	820	769	98.3	1025	879	820	36'-0"
37'-0"	88.9	942	824	776	98.3	1015	879	824	98.3	1099	942	879	37'-0"
38'-0"	94.5	1007	881	829	98.3	1085	940	881	108	1175	1007	940	38'-0"
39'-0"	98.3	1074	940	885	108	1157	1003	940	114	1253	1074	1003	39'-0"
40'-0"	108	1143	1000	941	111	1231	1067	1000	117	1334	1143	1067	40'-0"
41'-0"	111	1214	1062	1000	114	1307	1133	1062	127	1416	1214	1133	41'-0"
42'-0"	111	1287	1126	1059	127	1385	1201	1126	127	1501	1287	1201	42'-0"
43'-0"	114	1361	1191	1121	127	1466	1270	1191	140	1588	1361	1270	43'-0"
44'-0"	127	1445	1264	1190	127	1556	1348	1264	140	1685	1445	1348	44'-0"
45'-0"	127	1530	1339	1260	140	1648	1428	1339	140	1785	1530	1428	45'-0"
46'-0"	127	1618	1416	1333	140	1743	1510	1416	151	1888	1618	1510	46'-0"
47'-0"	140	1708	1495	1407	151	1840	1594	1495	151	1993	1708	1594	47'-0"
48'-0"	140	1801	1576	1483	151	1939	1681	1576	154	2101	1801	1681	48'-0"
49'-0"	151	1895	1658	1561	154	2041	1769	1658	154	2211	1895	1769	49'-0"
50'-0"	154	1992	1743	1640	154	2145	1859	1743	176	2323	1992	1859	50'-0"
51'-0"	154	2090	1829	1721	171	2251	1951	1829	176	2439	2090	1951	51'-0"
52'-0"	154	2191	1917	1804	176	2360	2045	1917	192	2556	2191	2045	52'-0"
53'-0"	171	2294	2007	1889	176	2470	2141	2007	196	2676	2294	2141	53'-0"
54'-0"	176	2399	2099	1976	196	2583	2239	2099	196	2799	2399	2239	54'-0"
55'-0"	176	2506	2193	2064	196	2699	2339	2193	213	2924	2506	2339	55'-0"
56'-0"	196	2615	2288	2154	196	2816	2441	2288	213	3051	2615	2441	56'-0"
57'-0"	196	2727	2386	2245	213	2936	2545	2386	213	3181	2727	2545	57'-0"
58'-0"	196	2840	2485	2339	213	3058	2651	2485	213	3313	2840	2651	58'-0"
59'-0"	213	2956	2586	2434	213	3183	2759	2586	213	3448	2956	2759	59'-0"
60'-0"	213	3073	2689	2531	213	3310	2868	2689	243	3585	3073	2868	60'-0"
61'-0"	213	3193	2794	2629	213	3439	2980	2794	243	3725	3193	2980	61'-0"
62'-0"	213	3315	2900	2730	243	3570	3094	2900	243	3867	3315	3094	62'-0"
63'-0"	213	3439	3009	2832	243	3703	3209	3009	245	4012	3439	3209	63'-0"
64'-0"	243	3565	3119	2936	243	3839	3327	3119	267	4159	3565	3327	64'-0"
65'-0"	243	3693	3231	3041	243	3977	3446	3231	267	4308	3693	3446	65'-0"
66'-0"	243	3823	3345	3148	245	4117	3568	3345	267	4460	3823	3568	66'-0"
67'-0"	243	3955	3461	3257	267	4259	3691	3461	299	4614	3955	3691	67'-0"
68'-0"	245	4089	3578	3368	267	4404	3817	3578	299	4771	4089	3817	68'-0"
69'-0"	267	4226	3697	3480	299	4551	3944	3697	299	4930	4226	3944	69'-0"
70'-0"	267	4364	3819	3594	299	4700	4073	3819	329	5091	4364	4073	70'-0"
71'-0"	269	4505	3941	3710	299	4851	4204	3941	329	5255	4505	4204	71'-0"
72'-0"	299	4647	4066	3827	329	5005	4337	4066	329	5422	4647	4337	72'-0"
73'-0"	299	4792	4193	3946	329	5160	4472	4193	345	5590	4792	4472	73'-0"
74'-0"	299	4938	4321	4067	329	5318	4609	4321	355	5762	4938	4609	74'-0"
74'-11"	299	5075	4440	4179	329	5465	4736	4440	355	5921	5075	4736	74'-11"

SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
ALT. BEAM TABLE: FACE TO FACE OF RAILS ≥ 20'-0"

PART 8
DATE: 10Mar2015
SHEET 10 of 12
FILE NO. SS8INSTR-10

DEAD LOAD REACTION:

For substructure design, use the following equations to determine the approximate dead load (DL) reaction for each beam:

DLb = DL reaction of rolled beam (kips)
= w x L / 2

DLd = approximate DL reaction of diaphragms (kips)
= L x 0.012 klf / 2

DLr1 = approximate reaction of railing with curb distributed over three beams (kips)
= L x 0.035 klf / 2

DLr2 = approximate reaction of railing without curb distributed over three beams (kips)
= L x 0.022 klf / 2

DLm = DL reaction of timber planks, 3” asphalt overlay and future wearing surface (kips)
= L x S x (0.020 ksf + 0.037 ksf + 0.025 ksf) / 2

TDL = Total DL reaction per beam (kips)
= DLb + DLd + (DLr1 or DLr2) + DLm

Where: w = beam weight per foot (klf)

L = beam length (feet)

S = beam spacing (feet)

Do not use the unit weights listed above for estimating quantities.

CAMBER:

The General Notes specify mill camber up and camber diagrams are not necessary. Dead load deflection for beam lengths up to 41 feet are negligible and camber shall not be specified. For spans greater than 41 feet, camber values may be specified at the discretion of the Engineer. Note that beam camber can increase or decrease due to galvanization.

When camber is specified, the effects of vertical alignment (i.e., hump or sag vertical curvature) should be considered and combined with the approximate dead load deflection values in the chart below:

Beam length L	Midspan	1/4 point
41' < L ≤ 47'	3/8"	1/4"
47' < L ≤ 54'	1/2"	3/8"
54' < L ≤ 58'	5/8"	1/2"
58' < L ≤ 62'	3/4"	1/2"
62' < L ≤ 70'	7/8"	5/8"
70' < L ≤ 73'	1"	3/4"
73' < L	1 1/8"	3/4"

Camber diagrams shall not be used. Place the following note on standard sheet SS8-2:

Beams shall be cambered __" at the midpoint and __" at quarter points.

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

NBIS Number: N/A

Federal Oversight Code:

UPC No.

FHWA Construction and Scour Code:

DESIGN EXCEPTION(S):

GENERAL NOTES:

The original approved sheet, including original signatures is filed in the VDOT Central Office. Any misuse of electronic files, including scanned signatures, is illegal. Violators will be prosecuted to the full extent of the applicable laws.

Width: '- " face-to-face of rails.

Span layout: ft. steel rolled beam spans.

Capacity: HL-93 loading.

Drainage area: sq. mi.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2007.

Design: AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014; and VDOT Modifications.

These plans are incomplete unless accompanied by the Supplemental Specifications and Special Provisions included in the contract documents.

This project is to be constructed in accordance with the Virginia Department of Transportation Work Area Protection Manual, June 2011 and latest revisions.

All timber shall be Dense Select Structural Southern Pine and preservative treated in accordance with the Specifications.

All structural steel, including bearings, shall be ASTM A709 Grade 50 and shall be hot dipped galvanized.

Rolled beams may be supplied in accordance with ASTM A992 with supplemental test S5 for Charpy V-Notch impact testing. Test values shall meet the requirements given in ASTM A709 for zone 2.

Mill camber shall be placed up.

Bridge No. of existing bridge is . Plan No. is .

(Insert applicable foundation note)

B. M.:

PLAN

DEVELOPED SECTION ALONG

VDOT

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

PROPOSED BRIDGE ON

SS8-1 03-10-2015 SS801.dgn

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

PLANS BY:	
COORDINATED:	
SUPERVISED:	
DESIGNED:	
DRAWN:	
CHECKED:	

No.	Description	Date

REVISIONS

For Table of Revisions, see Sheet 2.

Recommended for Approval: _____ District Structure and Bridge Engineer Date

Approved: _____ District Maintenance Engineer Date

Date: _____

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NOTES TO DESIGNER:

Include standards SS8-2, SS8-3A, SS8-4, SS8-5A and SS8-6A in the plans when using this standard on projects utilizing railing with curb. Substitute standard SS8-3B for SS8-3A in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging. Substitute standard SS8-6B for SS8-6A where beam flange width would interfere with curb attachment plates.

Include standards SS8-2, SS8-3C, SS8-4 and SS8-5B in the plans when using this standard on projects utilizing railing without curb. Substitute standard SS8-3D for SS8-3C in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs. Include standard SS8-5D where skew is greater than 28° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

The following notes apply to State Force work:

Shop plans must include an erection diagram, shipping bill and must show purchase order number.

Requisitions should give complete information as to “Destination” and “Charge to” as well as the following: beam lengths, roadway width, anchorage and skew.

Numerous spans may be listed on one requisition provided all spans are to be shipped to the same destination. If separate prices are desired on any particular span(s), it should be so stated.

To facilitate distribution of steel when two or more bridges are shipped together, each bridge shall be given a mark which must appear on each item shipped in addition to the regular shop plan symbols.

Structural steel order will include all bolts and anchorages indicated.

Residencies shall not procure bridges using any part of these standards in an Administrative Services Division, ASD, contract without review from the District Structure and Bridge office.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

GENERAL NOTES:

Modify the text to complete the missing fields in the General Notes. Add additional notes applicable to project. See Part 2 of this manual, File Nos. 02.03-1 thru -6 for additional information. Add estimated quantities or provide in tabular format on sheet.

PLAN:

Add plan view.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD (cont'd):

DEVELOPED SECTION ALONG:

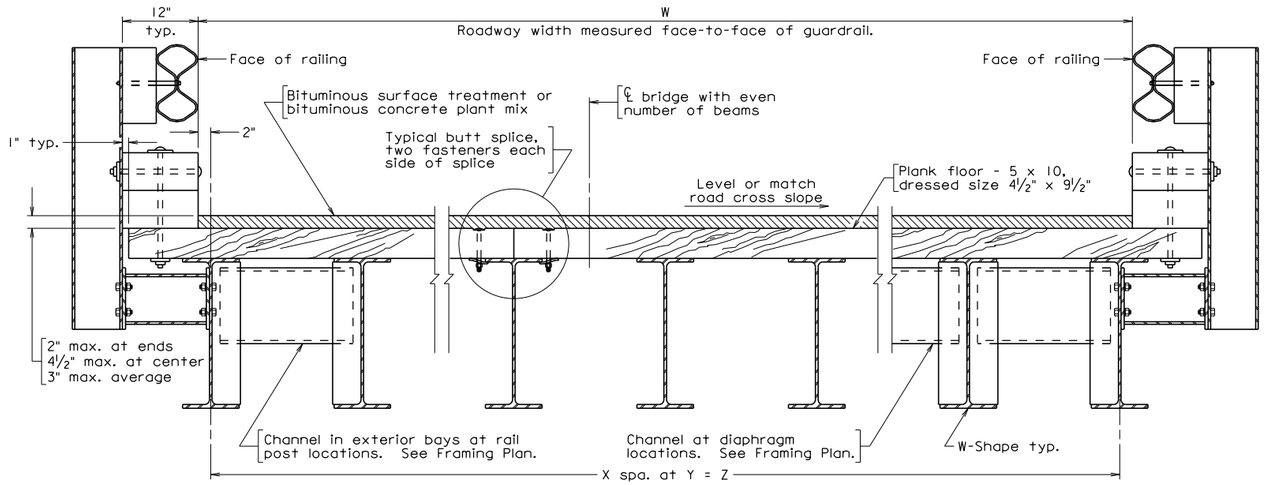
Add view. Complete title.

TITLE BLOCK:

The signature lines shown are for Tier 1 projects to be constructed by State Forces with State Maintenance Funds.

For other Tier 1 projects using these standards, drop the sheet status and delete the signature lines. Add the cell PDD4 from the bdetails1.cel library using the right bottom corner of the Title sheet for the cell snap point per File No. 02.04-11 of Part 2 of this manual.

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				



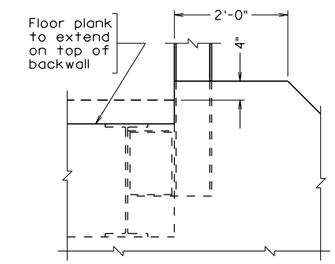
TRANSVERSE SECTION

VARIABLE	VALUE
Skew ∆	·
L	·
R	·
S	·
T	·
U	·
V	·
W	·
X	·
Y	·
Z	·
W-Shape	·
A	·
C	·
D	·
E	·
F	·
G	·
B	·

Notes:

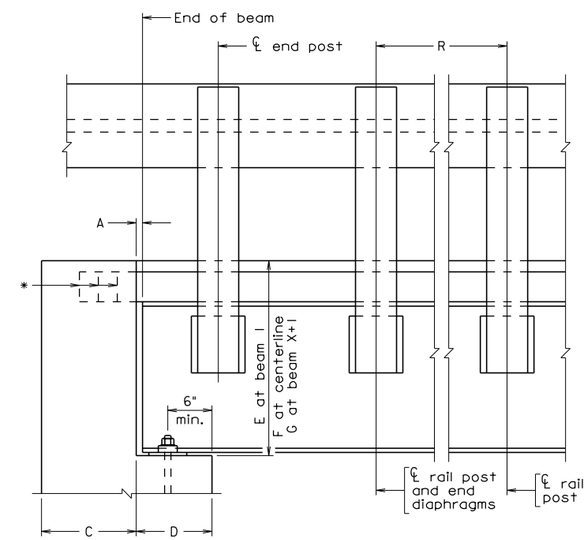
For Type 1 and 2 bearings, alternate locations as shown toward the bridge centerline. Where existing abutment conditions prevent placing anchor bolts at locations designated, Type 1 and 2 locations may be interchanged as long as the number of anchor bolts required remains the same.

[For skews > 22°, check whether Framing Plan requires adjustments in obtuse corners due to conflicts with abutment, backwall and/or lagging. For skews > 51°, check whether diaphragm in acute corners requires adjustment to connect to first interior beam. See Notes to Designer.]



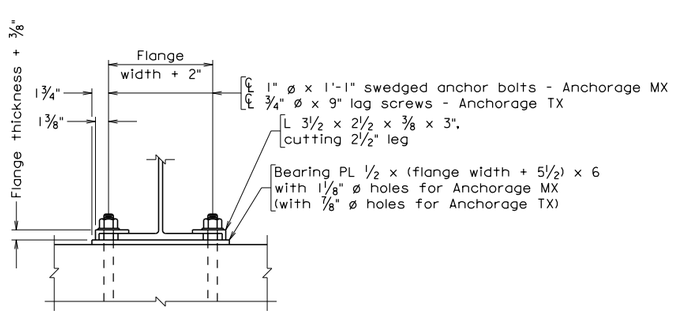
DETAILS AT ABUTMENT

*Use 3" floor strips to cover gap between floor plank and backwall. Nail each strip to adjacent strip with 50d nails, 18" on centers. Otherwise, insert minimum number of timber planks with width not less than 6" near middle of span to cover gap. Alternate width planks shall not be adjacent to each other.



PART SIDE ELEVATION
Wearing surface not shown

FRAMING PLAN



TYPE 1 AND 2 BEARING DETAIL
Timber Abutment Anchorage TX
Typical Masonry Anchorage MX

Not to scale

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SS802.dgn

03-10-2015

SS8-2

Sealed and Signed by:
Prasad L. Nallaponeni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE GENERAL DETAILS

Designed:	Date	Plan No.	Sheet No.
Drawn:		SS8-2	
Checked:			

NOTES TO DESIGNER:

Include standards SS8-1, SS8-3A, SS8-4, SS8-5A and SS8-6A in the plans when using this standard on projects utilizing railing with curb. Substitute standard SS8-3B for SS8-3A in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging. Substitute standard SS8-6B for SS8-6A where beam flange width would interfere with curb attachment plates.

Include standards SS8-1, SS8-3C, SS8-4 and SS8-5B in the plans when using this standard on projects utilizing railing without curb. Substitute standard SS8-3D for SS8-3C in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs. Include standard SS8-5D where skew is greater than 28° and end posts would conflict with the abutment, backwall and/or lagging.

The designer shall ensure that the pier cap and/or abutment seats are sufficient for the bearings designated.

When high water elevation is less than 2 feet below the lowest seat elevation, anchor bolts or lag screws are required at all bearing locations. When high water elevation is 2 feet or more below the lowest seat elevation, anchor bolts or lag screws are required at every other bearing location.

For spans greater than 60 feet, elastomeric bearings are designed for the maximum span length in the beam tables and full temperature range assuming a fixed bearing location at one end. However, for single span bridges, the cells place an expansion bearing at both ends. The change in pad height when designing both bearings as expansion is insignificant as rotations control. For beam spacing < 2’-0”, check whether sole plates overlap and adjust details where necessary.

For spans greater than 60 feet, the Timber Bent Anchorage Detail shall not be used. A fixed bearing allowing rotation should be detailed considering the bent/pier geometry. However, the elastomeric pad used at the abutment may be used at the bent/pier without further calculation.

Cells for completing the standard sheet are located in SS8.cel library.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

BEARING DETAILS:

For beam lengths less than or equal to 60 feet, replace the default Bearing Details with cell BZAB2 when anchor bolts are not required at every location. For beam lengths greater than 60 feet, replace the default Bearing Details with BZAE1 or BZAE2 for anchor bolts required or not required at every location. Add cell BZPB1 for timber bents with span lengths less than or equal to 60 feet.

Add the following notes to the sheet:

Material: Elastomer – 50 durometer hardness.
Shim – ASTM A36 or A1011 mild steel.

Elastomeric bearings shall be molded as a single unit.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD (cont'd):

VARIABLE TABLE: Dimensions entered shall be rounded to the nearest $^{1}/_{8}$".

Fill in table for the following:

Skew	Skew angle between line perpendicular to centerline of bridge and line thru centers of bearing
L	Total beam length from end-to-end of beam
R	Rail post spacing (6'-3" maximum)
S	Total length of variable spaced rail posts near abutments of two-span bridges (enter "N/A" in table for single span bridge)
T	Y * TAN(Skew) / 2
	Y * TAN(Skew) for bridges with skew $\leq$ 9° using bolted angle connections
U	Distance between end of beam and line thru centers of bearing
V	Distance between end of beam and line thru centers of bearing
W	Distance face-to-face of rail/guardrail
X	Number of beam spaces
Y	Beam spacing
Z	Total out-to-out spacing of beams
W-shape	Beam size from table
A	Clear distance from face of backwall to end of beam (1" minimum where L $\leq$ 60 feet; $1^{1}/_{4}$" minimum > 60 feet)
C	Abutment backwall width
D	Seat width (12" minimum with bearing plate; 1'-1" for elastomeric bearing)
E	Distance from top of seat to finished grade at outside beam left of bridge centerline
F	Distance from top of seat to finished grade at bridge centerline
G	Distance from top of seat to finished grade at outside beam right of bridge centerline
B	Sole plate width for elastomeric Bearing Detail (enter "N/A" in table when variable is not used in bearing details)

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD (cont'd):

TRANSVERSE SECTION:

Centerline of roadway is assumed to be centerline of bridge.

The default Transverse Section is shown for railing with curb and diaphragm connection plates welded to the girder webs for an even number of beams. For an odd number of beams, replace the default Transverse Section with cell TSW1O. When angles bolted to the beam webs are used to make the connection, replace the default Transverse Section with cell TSB1E or TSB1O for even or odd number of beams respectively.

For railing without curb, replace the default Transverse Section with cell TSW2E or TSW2O with diaphragm connection plates welded to the beam webs for even or odd number of beams respectively. When angles bolted to the beam webs are used to make the connection, replace the default Transverse Section with cell TSB2E or TSB2O for even or odd number of beams respectively.

Use the existing title as the origin point for placing the Transverse Section cell. Leave it in place when removing the rest of the existing detail.

PART SIDE ELEVATION:

The default Part Side Elevation shown is for railing with curb, concrete/masonry backwall and beam lengths less than or equal to 60 feet. For beam lengths greater than 60 feet, replace the default Part Side Elevation with cell ELC1E. For railing without curb, replace the default Part Side Elevation with cell ELC2B or ELC2E for beam lengths less than or equal to 60 feet or greater than 60 feet respectively. Use cell ELCV1 when there is insufficient seat width and anchor bolts are drilled into backwall.

When timber lagging is used, replace the default Part Side Elevation with cell ELTB1 or ELTB2 for lagging supported behind or drilled into substructure respectively.

FRAMING PLAN:

The cell library contains Framing Plan cells for both welded plates and bolted angles for the diaphragm attachment to the beam webs. In both cases, six cell series are available for the range of beam lengths covered by this standard (i.e., without skew, with left hand skew and with right hand skew for both single span and two-span symmetrical bridges).

For welded plates, the cell series are WPAxx, WPLxx and WPRxx for no skew, with left hand skew and right hand skew respectively. For two-span symmetrical bridges, the cell series are WTAxx, WTLxx and WTRxx.

For bolted angles, the cell series are BAAxx, BALxx and BARxx for single span bridges and BTAxx, BTLxx and BTRxx for two-span symmetrical bridges.

See the cell description for the applicable span lengths for each cell.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD (cont'd):

FRAMING PLAN (cont'd):

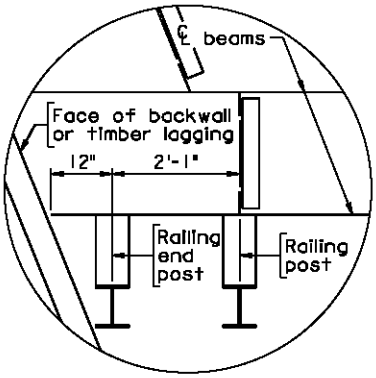
Place the appropriate cell from the cell library. Use the existing title as the origin point for placing the Framing Plan cell.

For two-span bridges with different beam lengths either side of the bent/pier, move the Framing Plan details to a separate sheet. Place the two-span Framing Plan cells for both beam lengths on the sheet. Flip the second span cell so the skews are relative to each other and adjust text. Remove the "Framing Plan (spacing) symmetrical" or "Repeat Framing Plan" callout from both Framing Plans.

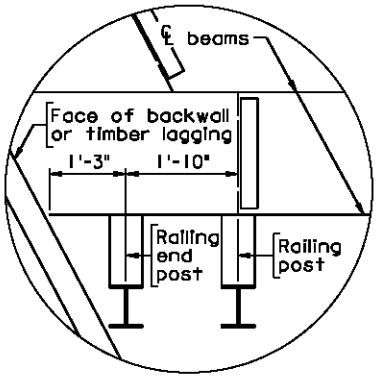
For multiple-span bridges, move the Framing Plan details to a separate sheet. Place the two-span Framing Plan cells for both beam lengths in the exterior spans on the sheet. Flip the second span cell so the skews are relative to each other and adjust text. Remove the "Framing Plan (spacing) symmetrical" or "Repeat Framing Plan" callout from both Framing Plans. Place the Framing Plan corresponding to the interior span between the exterior spans.

For railing with curb (Standards SS8-3A or -3B), where skew > 22° degrees **and** end posts in obtuse corners **conflict** with the abutment, backwall and/or lagging, make the following changes:

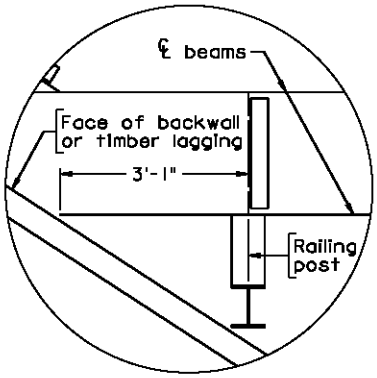
- For skews > 22° and < 28°, adjust 12" and 2'-1" spacing of end posts in obtuse corners to 1'-3" and 1'-10 respectively from the end of beam.
- For skews > 28°, omit end posts in obtuse corners. For skews > 57°, check 3'-1" dimension to rail post in obtuse corner against abutment details and adjust abutment details or 3'-1" dimension accordingly to ensure sufficient room to place post.



22 DEGREE SKEW
Railing with curb



28 DEGREE SKEW
Railing with curb



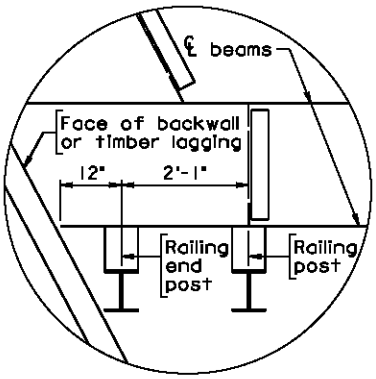
57 DEGREE SKEW
Railing with curb

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD (cont'd):

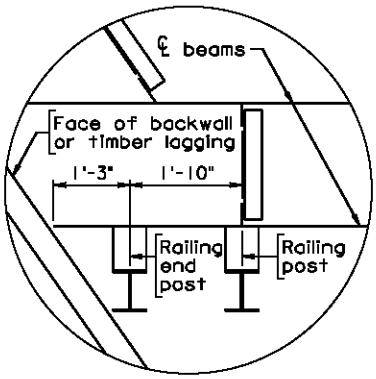
FRAMING PLAN (cont'd):

For railing without curb (Standards SS8-3C or -3D), where skew > 28° degrees **and** end posts in obtuse corners **conflict** with the abutment, backwall and/or lagging, make the following changes:

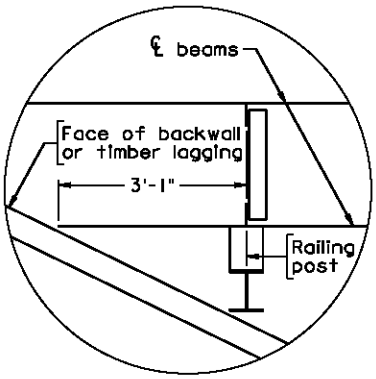
- For skews > 28° and < 35°, adjust 12" and 2'-1" spacing of end posts in obtuse corners to 1'-3" and 1'-10 respectively from the end of beam.
- For skews > 35°, omit end posts in obtuse corners. For skews > 64°, check 3'-1" dimension to rail post in obtuse corner against abutment details and adjust abutment details or 3'-1" dimension accordingly to ensure sufficient room to place post.



28 DEGREE SKEW
Railing without curb

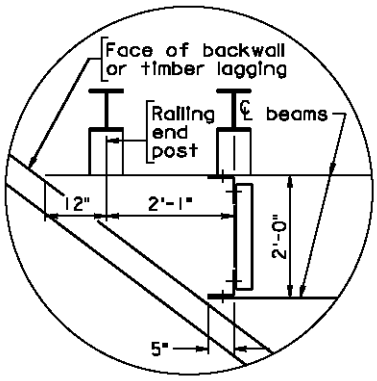


35 DEGREE SKEW
Railing without curb

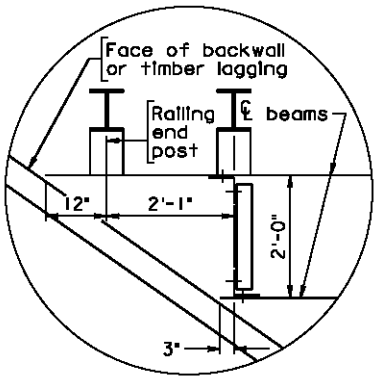


64 DEGREE SKEW
Railing without curb

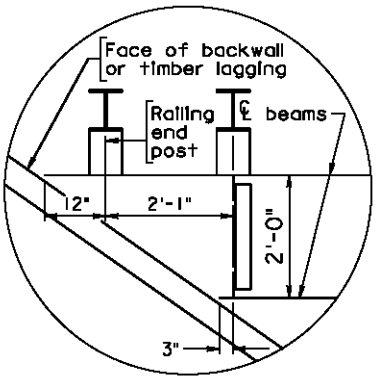
Where skew > 51°, the diaphragm in acute corners may require adjustment to connect to the first interior beam. See File No. SS8-5C-2 or SS8-5D-2 for additional information.



53 DEGREE SKEW
Acute Corner - Bolted Angles



55 DEGREE SKEW
Acute Corner - Bolted Angles



55 DEGREE SKEW
Acute Corner - Welded Plates

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD (cont'd):

DETAILS AT ABUTMENT:

Remove this detail from the standard sheet when timber lagging is used.

OTHER DETAILS REQUIRED:

For skewed bridges, add a Typical Anchor Bolt Layout detail.*****

For bents/piers with beam lengths greater than 60 feet on either side, provide bearing/anchorage details.*****

If skew and available seat width require clipping the flanges and/or bearing/sole plate, provide clip details.*****

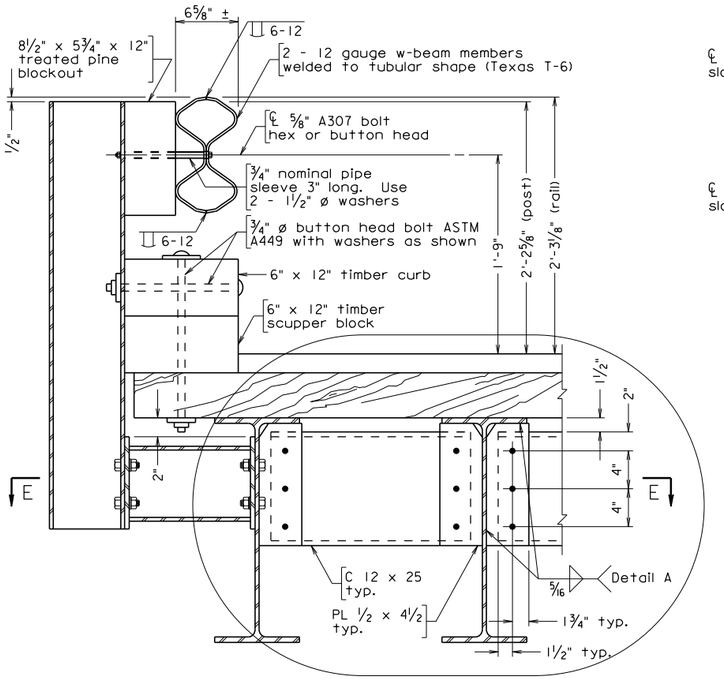
***** Provide details on this sheet if there is sufficient room. Otherwise, place details on standard sheet SS8-3 or -3A with a note on this sheet referencing the sheet location.

NOTES:

Where skew $\leq$ 22° or skew > 22° and end posts in obtuse corners **do not conflic**t with the abutment, backwall and/or lagging, remove the bracketed note from the standard.

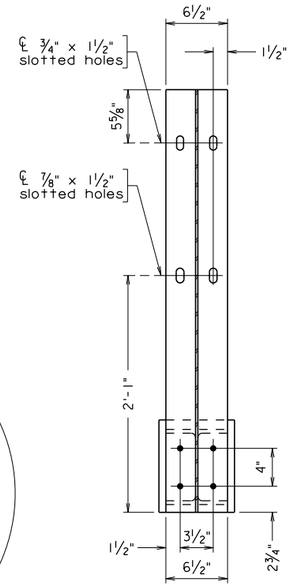
Where skew > 22° degrees and end posts in obtuse corners **conflict** with the abutment, backwall and/or lagging, remove the bracketed note from the standard after making changes detailed under FRAMING PLAN.

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

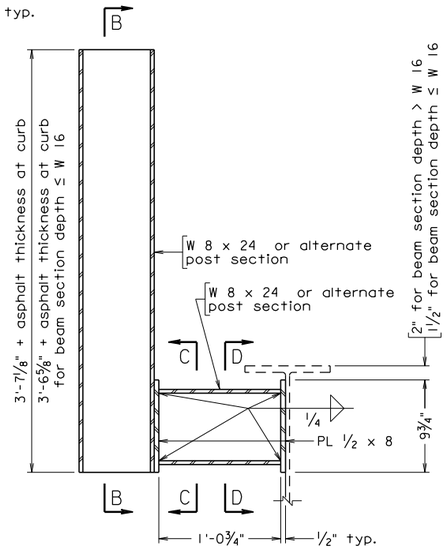


RAILING AND DIAPHRAGM CONNECTION DETAILS

For beam section depths ≤ W 16 or > W 24, see Alternate Diaphragm Detail. Use PL 1/2 x 6 on end diaphragms on bridges with skew angles greater than 20°.

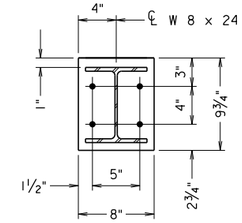


SECTION B-B

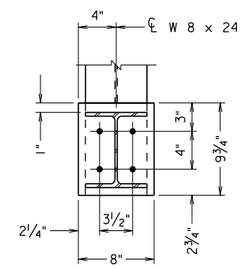


TRANSVERSE ELEVATION

RAILING SYSTEM DETAILS



SECTION D-D



SECTION C-C

Notes:

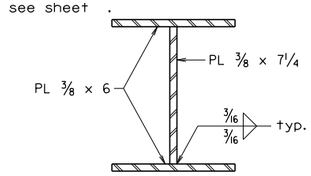
All connections shall be made with 7/8" ø high strength ASTM A325 bolts unless otherwise specified.

Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. Welds shall be chipped and cleaned and the complete 25' tubular member shall be galvanized after fabrication. For tubular rail splice additional post mounting slots are to be made in each member 1'-3" from the standard slots at 6'-3" centers.

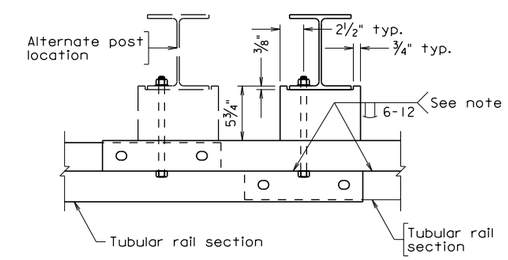
8 - 5/8" splice nuts shall be tack welded to a bent sheet metal positioner as shown. Other suitable positioning methods or devices may be substituted. The completed splice shall have 16 bolts. Each bolt will include a 1 3/4" x 3" x 3/16" plate washer or a 2" diameter washer.

All connector PL's along diaphragm line immediately adjacent to each bearing shall be full depth and welded to bottom flange as shown.

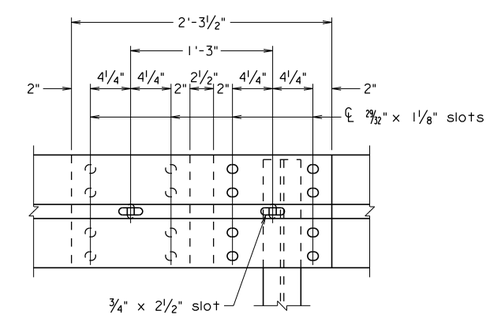
For curb details, see sheet .



ALTERNATE POST SECTION

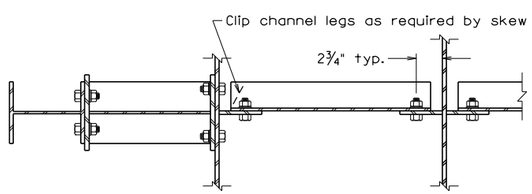


PLAN

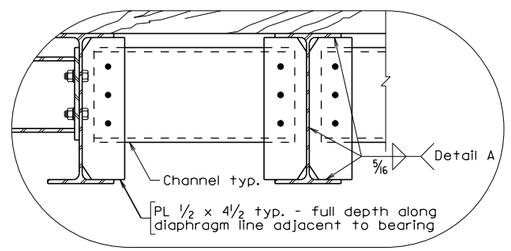


ELEVATION

TUBULAR RAIL SPLICE AND BLOCKOUT DETAILS

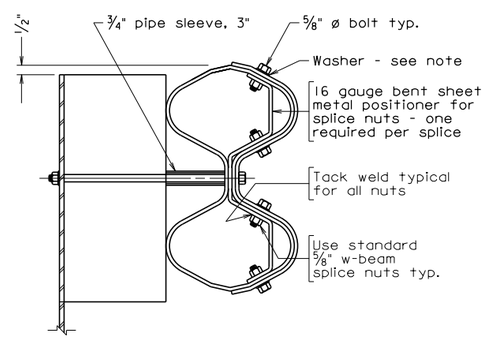


SECTION E-E

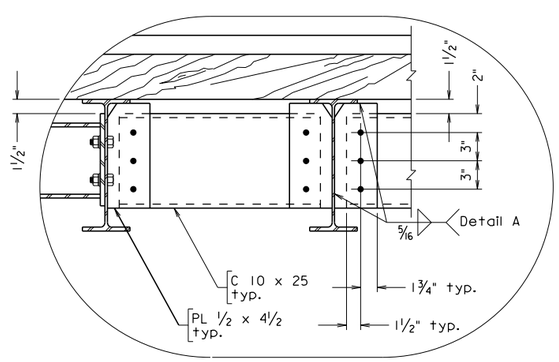


DETAIL FOR DIAPHRAGM LINE ADJACENT TO BEARING

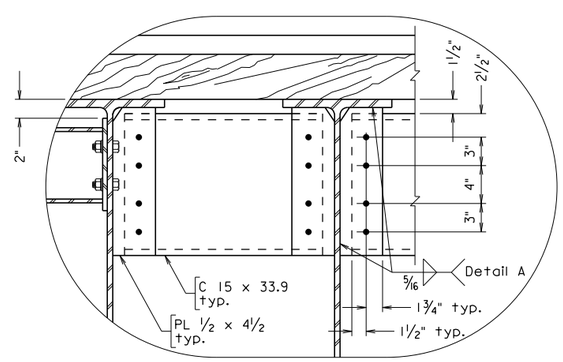
Shown for beam depths = 16", generic to all depths. Use PL 1/2 x 6 on end diaphragms on bridges with skew angles greater than 20°.



SPLICE DETAIL

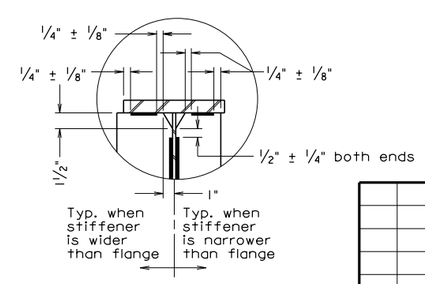


DIAPHRAGM DETAIL FOR BEAM SECTION DEPTH ≤ W 16



DIAPHRAGM DETAIL FOR BEAM SECTION DEPTH > W 24

ALTERNATE DIAPHRAGM DETAILS



DETAIL A

Not to scale

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No.	Description	Date

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE RAILING AND DIAPHRAGM DETAILS

Designed: S&BDIV	Date	Plan No.	Sheet No.
Drawn: S&BDIV		SS8-3A	
Checked: S&BDIV			

SS8-3A

03-10-2015

SS803A.dgn

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD
RAILING AND DIAPHRAGM CONNECTION DETAILS (WITH CURB – WP)

NOTES TO DESIGNER:

Use this standard when using railing with curb and welded plates connect the diaphragm channels to the beam webs.

Include standards SS8-1, SS8-2, SS8-4, SS8-5A and SS8-6A in the plans when using this standard. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging. Substitute standard SS8-6B for SS8-6A where beam flange width would interfere with curb attachment plates.

The designer shall ensure that the depth of the beam used is sufficient to make the railing and diaphragm connections. The railing connection to the beam web will fit between the flanges of some W12 sections.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

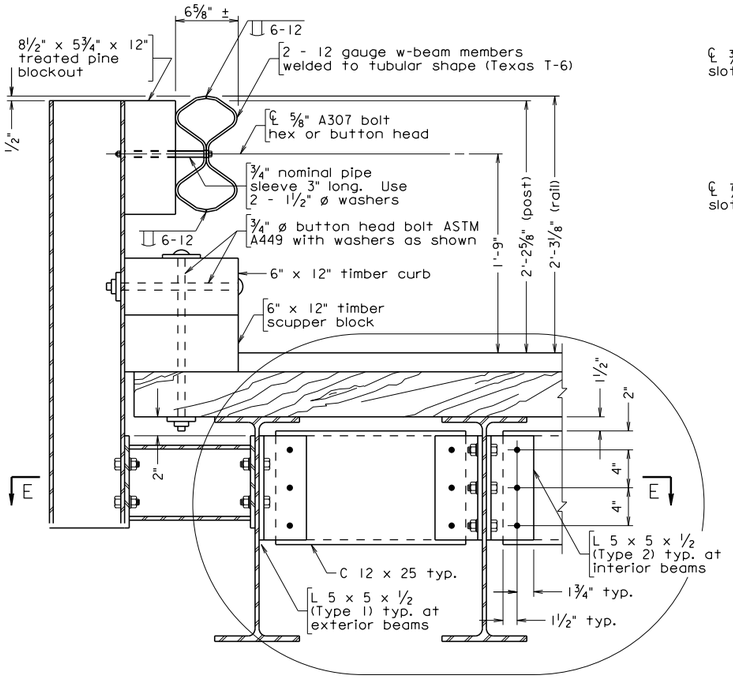
NOTES:

Add sheet number to “For curb details, see sheet .”

OTHER DETAILS REQUIRED:

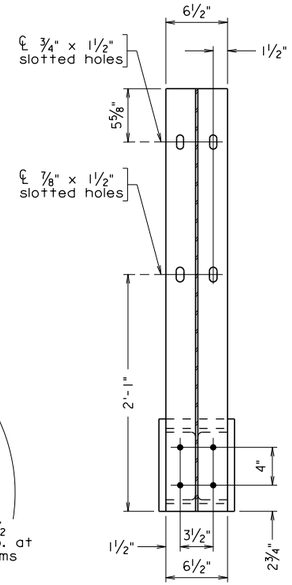
Add the additional detail(s) described in File No. SS8-2-5 that will not fit on standard sheet SS8-2 by removing Diaphragm Detail(s) for beam depths not used. Follow the instructions found in File No. SS8INSTR-1 for a standard sheet modified by the designer. If there is insufficient space for all the additional details, leave this sheet unmodified and place the additional details on a separate sheet.

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

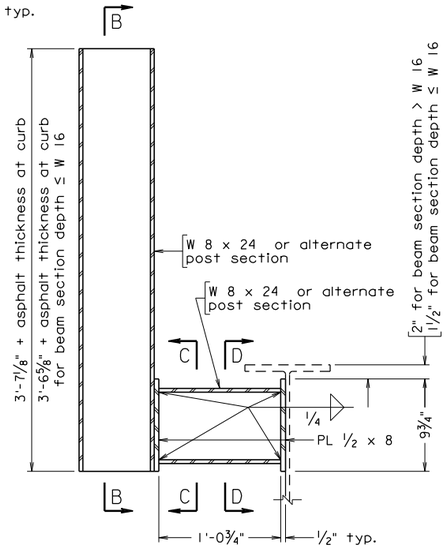


RAILING AND DIAPHRAGM CONNECTION DETAILS

For beam section depths ≤ W 16 or > W 24, see Alternate Diaphragm Detail.

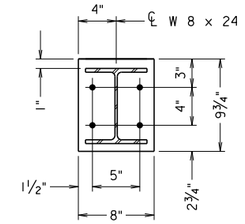


SECTION B-B

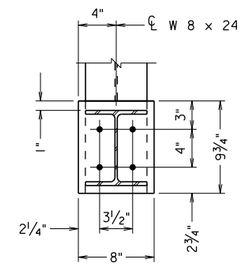


TRANSVERSE ELEVATION

RAILING SYSTEM DETAILS



SECTION D-D



SECTION C-C

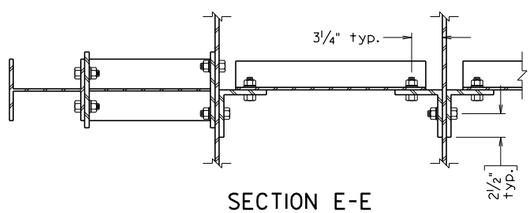
Notes:

All connections shall be made with ⅞" ø high strength ASTM A325 bolts unless otherwise specified.

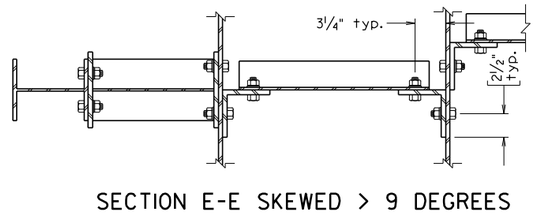
Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. Welds shall be chipped and cleaned and the complete 25' tubular member shall be galvanized after fabrication. For tubular rail splice additional post mounting slots are to be made in each member 1'-3" from the standard slots at 6'-3" centers.

8 - ⅝" splice nuts shall be tack welded to a bent sheet metal positioner as shown. Other suitable positioning methods or devices may be substituted. The completed splice shall have 16 bolts. Each bolt will include a 1¾" x 3" x 5/16" plate washer or a 2" diameter washer.

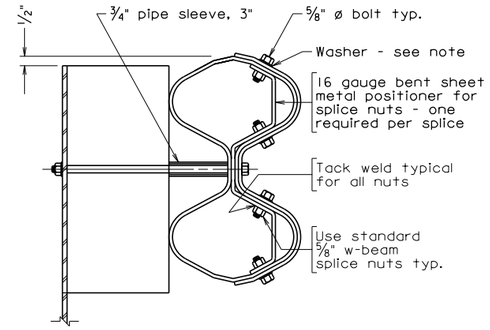
For curb details, see sheet .



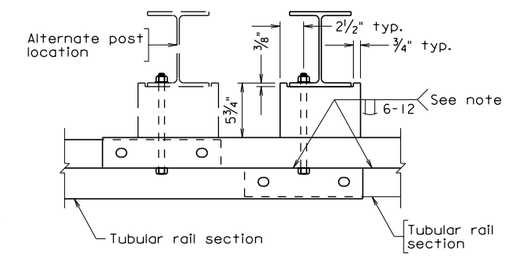
SECTION E-E



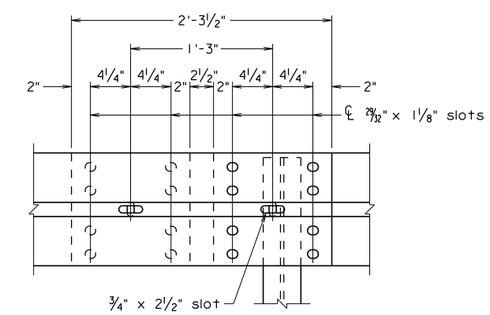
SECTION E-E SKEWED > 9 DEGREES



SPLICE DETAIL

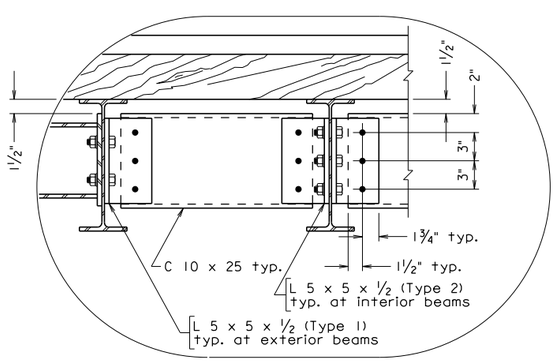


PLAN

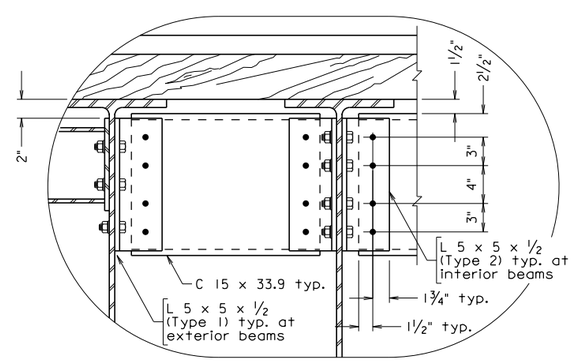


ELEVATION

TUBULAR RAIL SPLICE AND BLOCKOUT DETAILS

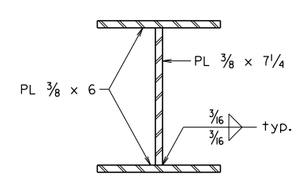


DIAPHRAGM DETAIL FOR BEAM SECTION DEPTH ≤ W 16



DIAPHRAGM DETAIL FOR BEAM SECTION DEPTH > W 24

ALTERNATE DIAPHRAGM DETAILS



ALTERNATE POST SECTION

Not to scale

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No.	Description	Date

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE RAILING AND DIAPHRAGM DETAILS

Designed: S&BDIV	Date	Plan No.	Sheet No.
Drawn: S&BDIV		SS8-3B	
Checked: S&BDIV			

SS8-3B

03-10-2015

SS803B.dgn

Sealed and Signed by: Prasad L. Nallapaneni Lic. No. 033003 On the date of March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD
RAILING AND DIAPHRAGM CONNECTION DETAILS (WITH CURB - BA)

NOTES TO DESIGNER:

Use this standard when using railing with curb and bolted angles connect the diaphragm channels to the beam webs.

Include standards SS8-1, SS8-2, SS8-4, SS8-5A and SS8-6A in the plans when using this standard. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging. Substitute standard SS8-6B for SS8-6A where beam flange width would interfere with curb attachment plates.

The designer shall ensure that the depth of the beam used is sufficient to make the railing and diaphragm connections. The railing connection to the beam web will fit between the flanges of some W12 sections.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

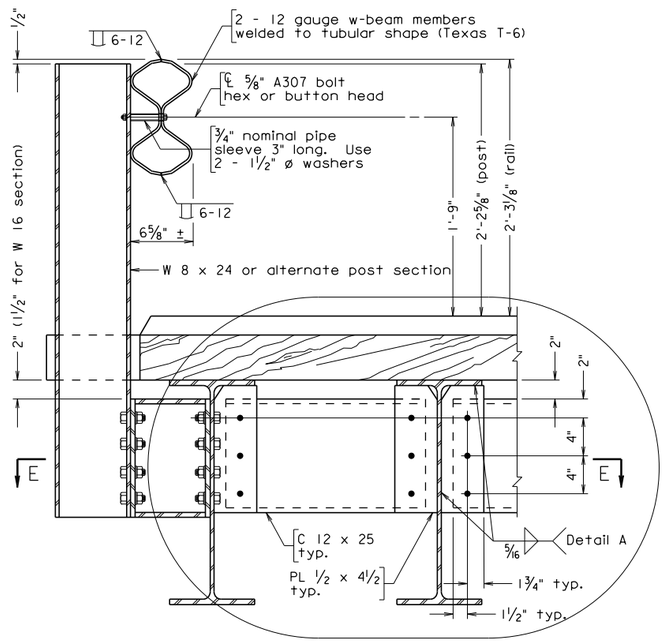
NOTES:

Add sheet number to “For curb details, see sheet .”

OTHER DETAILS REQUIRED:

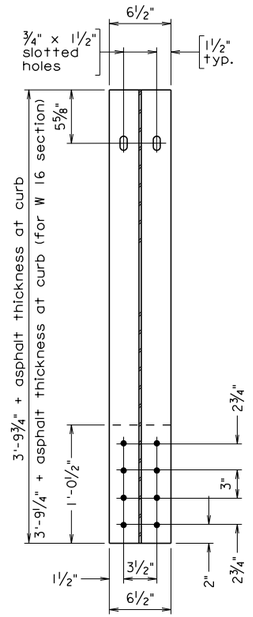
Add the additional detail(s) described in File No. SS8-2-5 that will not fit on standard sheet SS8-2 by removing Diaphragm Detail(s) for beam depths not used. Follow the instructions found in File No. SS8INSTR-1 for a standard sheet modified by the designer. If there is insufficient space for all the additional details, leave this sheet unmodified and place the additional details on a separate sheet.

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

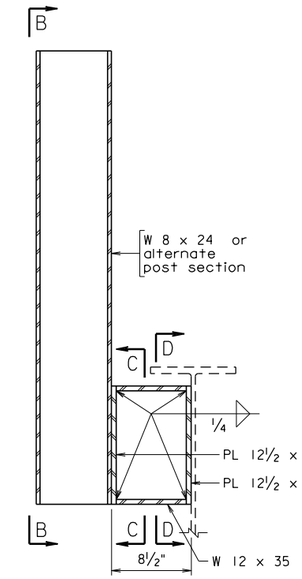


RAILING AND DIAPHRAGM CONNECTION DETAILS

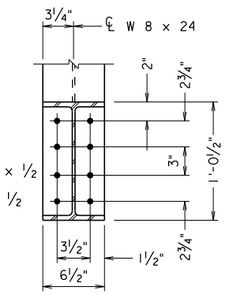
For beam section = W 16 or > W 24, see Alternate Diaphragm Detail.
Use PL 1/2 x 6 on end diaphragms on bridges
with skew angles greater than 20°.



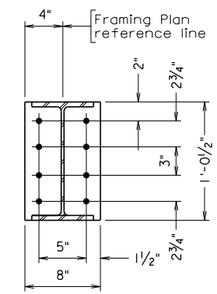
SECTION B-B



TRANSVERSE ELEVATION



SECTION C-C



SECTION D-D

RAILING SYSTEM DETAILS

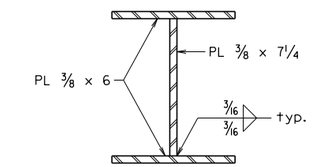
Notes:

All connections shall be made with 7/8" ø high strength ASTM A325 bolts unless otherwise specified.

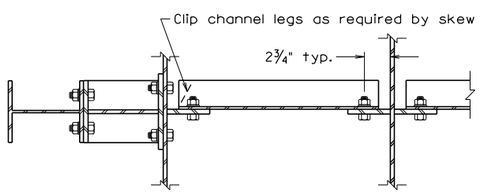
Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. Welds shall be chipped and cleaned and the complete 25' tubular member shall be galvanized after fabrication. For tubular rail splice additional post mounting slots are to be made in each member 1'-3" from the standard slots at 6'-3" centers.

8 - 5/8" splice nuts shall be tack welded to a bent sheet metal positioner as shown. Other suitable positioning methods or devices may be substituted. The completed splice shall have 16 bolts. Each bolt will include a 1 3/4" x 3" x 3/16" plate washer or a 2" diameter washer.

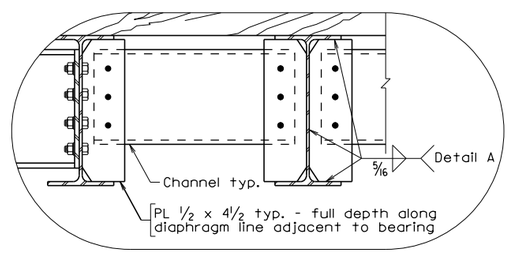
All connector PL's along diaphragm line immediately adjacent to each bearing shall be full depth and welded to bottom flange as shown.



ALTERNATE POST SECTION

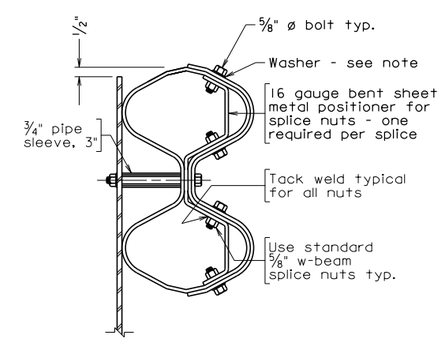


SECTION E-E

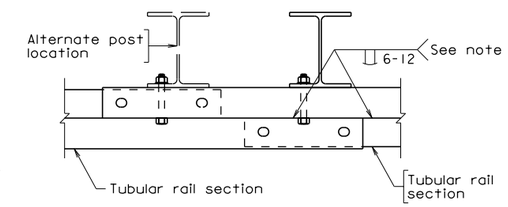


DETAIL FOR DIAPHRAGM LINE ADJACENT TO BEARING

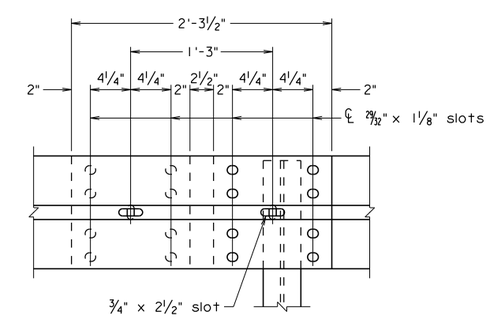
Shown for beam depths = 16", generic to all depths. Use PL 1/2 x 6 on end diaphragms on bridges with skew angles greater than 20°.



SPLICE DETAIL

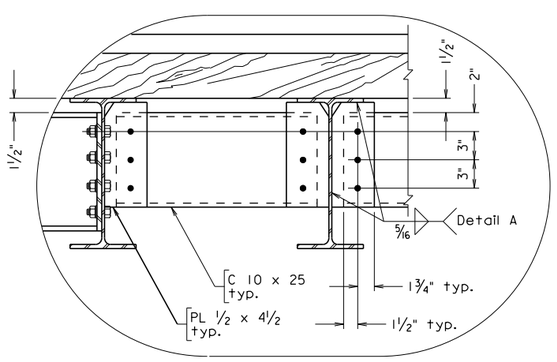


PLAN

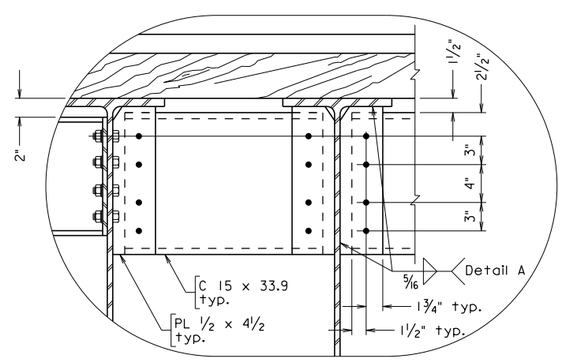


ELEVATION

TUBULAR RAIL SPLICE DETAILS

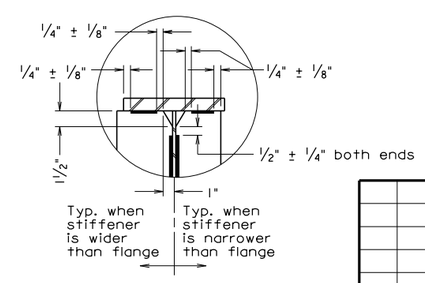


DIAPHRAGM DETAIL FOR W 16 BEAM SECTION



DIAPHRAGM DETAIL FOR BEAM SECTION DEPTH > W 24

ALTERNATE DIAPHRAGM DETAILS



DETAIL A

Not to scale

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SS803C.dgn

03-10-2015

SS8-3C

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE RAILING AND DIAPHRAGM DETAILS

Designed: S&BDIV	Date	Plan No.	Sheet No.
Drawn: S&BDIV		SS8-3C	
Checked: S&BDIV			

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD
RAILING AND DIAPHRAGM CONNECTION DETAILS (WITHOUT CURB – WP)

NOTES TO DESIGNER:

Use this standard when using railing without curb and welded plates connect the diaphragm channels to the beam webs.

Include standards SS8-1, SS8-2, SS8-4 and SS8-5B in the plans when using this standard. Include standard SS8-5D where skew is greater than 28° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

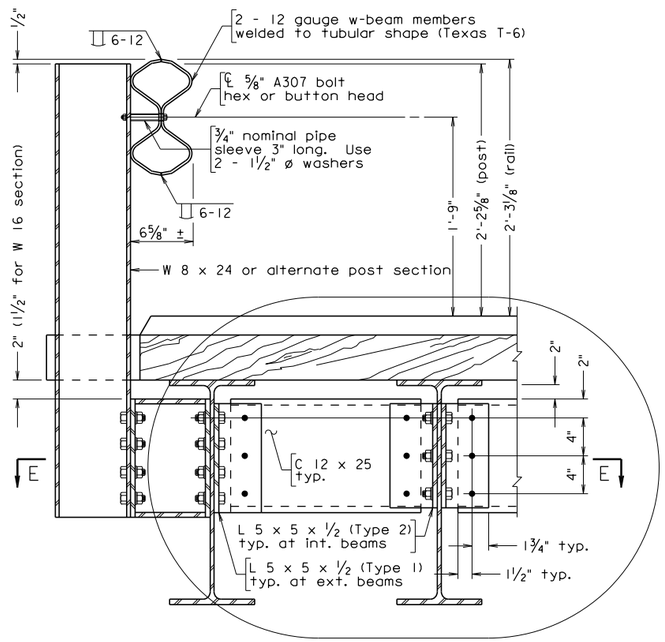
The designer shall ensure that the depth of the beam used is sufficient to make the railing and diaphragm connections. The railing connection to the beam web will fit between the flanges of all W16 sections.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

OTHER DETAILS REQUIRED:

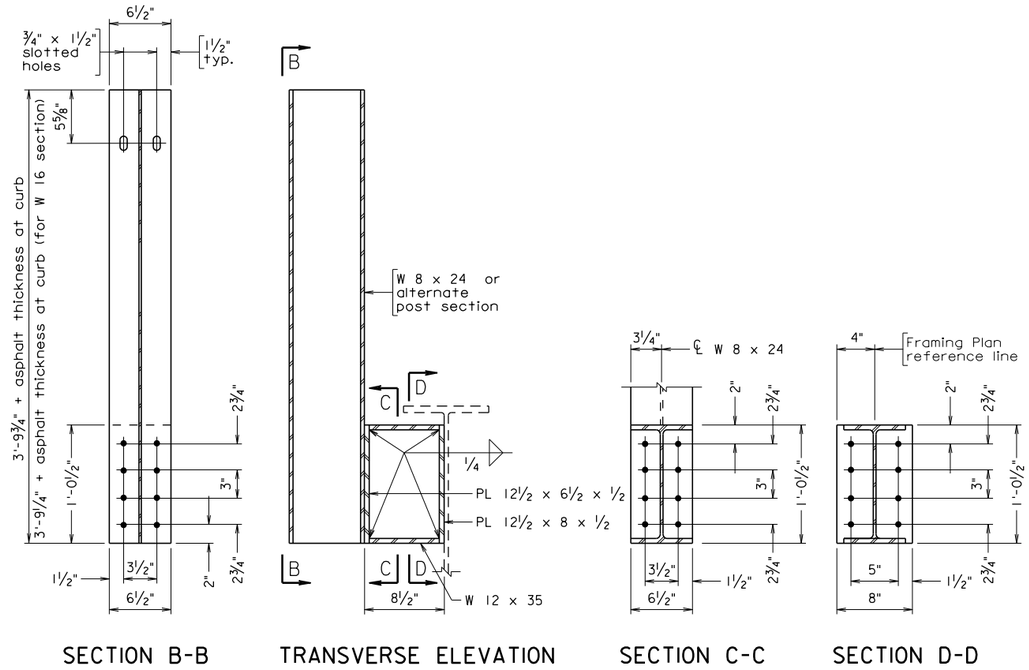
Add the additional detail(s) described in File No. SS8-2-5 that will not fit on standard sheet SS8-2 by removing Diaphragm Detail(s) for beam depths not used. Follow the instructions found in File No. SS8INSTR-1 for a standard sheet modified by the designer. If there is insufficient space for all the additional details, leave this sheet unmodified and place the additional details on a separate sheet.

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				



RAILING AND DIAPHRAGM CONNECTION DETAILS

For beam section = W 16 or > W 24, see Alternate Diaphragm Detail.



SECTION B-B TRANSVERSE ELEVATION SECTION C-C SECTION D-D

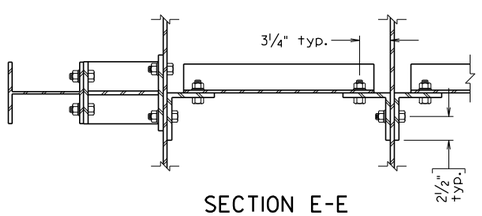
RAILING SYSTEM DETAILS

Notes:

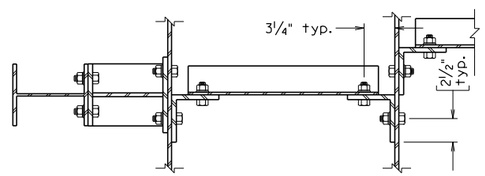
All connections shall be made with 7/8" ø high strength ASTM A325 bolts unless otherwise specified.

Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. Welds shall be chipped and cleaned and the complete 25' tubular member shall be galvanized after fabrication. For tubular rail splice additional post mounting slots are to be made in each member 1'-3" from the standard slots at 6'-3" centers.

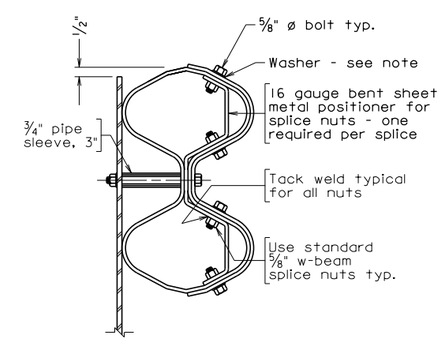
8 - 5/8" splice nuts shall be tack welded to a bent sheet metal positioner as shown. Other suitable positioning methods or devices may be substituted. The completed splice shall have 16 bolts. Each bolt will include a 1 3/4" x 3" x 3/16" plate washer or a 2" diameter washer.



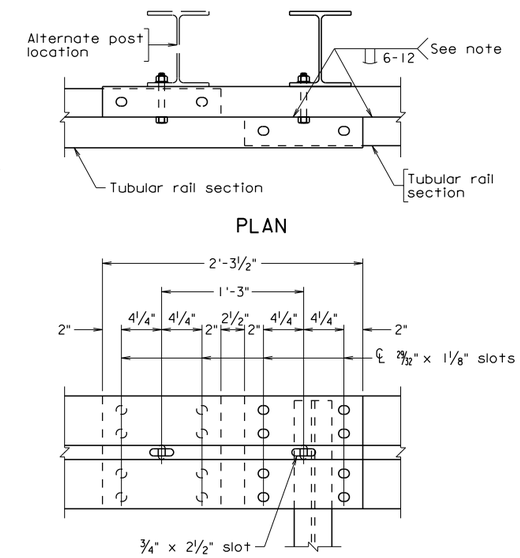
SECTION E-E



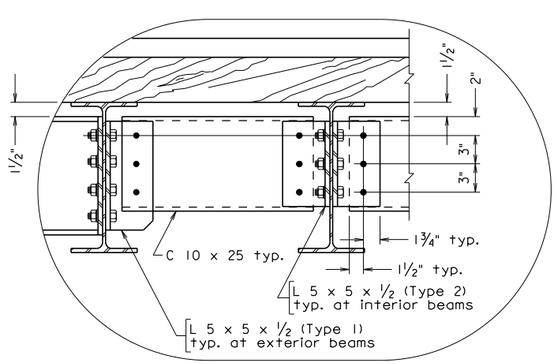
SECTION E-E SKEWED > 9 DEGREES



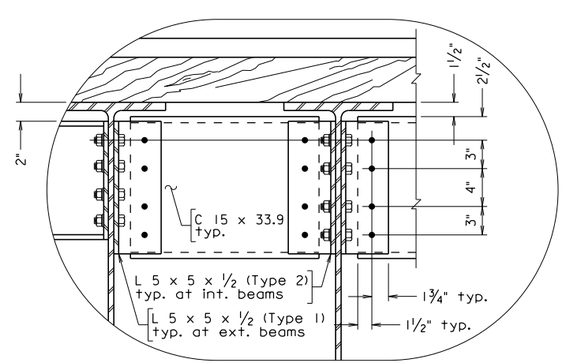
SPLICE DETAIL



TUBULAR RAIL SPLICE DETAILS

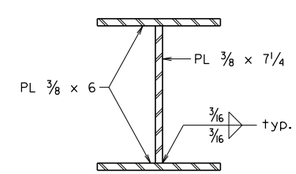


DIAPHRAGM DETAIL FOR W 16 BEAM SECTION



DIAPHRAGM DETAIL FOR BEAM SECTION DEPTH > W 24

ALTERNATE DIAPHRAGM DETAILS



ALTERNATE POST SECTION

Not to scale

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SS8030.dgn

03-10-2015

SS8-3D

Sealed and Signed by: Prasad L. Nallapaneni Lic. No. 033003 On the date of March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION RICHMOND, VA STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE RAILING AND DIAPHRAGM DETAILS

Designed: S&BDIV S&BDIV
Drawn: S&BDIV
Checked: S&BDIV

Date | Plan No. SS8-3D | Sheet No.

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD
RAILING AND DIAPHRAGM CONNECTION DETAILS (WITHOUT CURB - BA)

NOTES TO DESIGNER:

Use this standard when using railing without curb and bolted angles connect the diaphragm channels to the beam webs.

Include standards SS8-1, SS8-2, SS8-4 and SS8-5B in the plans when using this standard. Include standard SS8-5D where skew is greater than 28° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

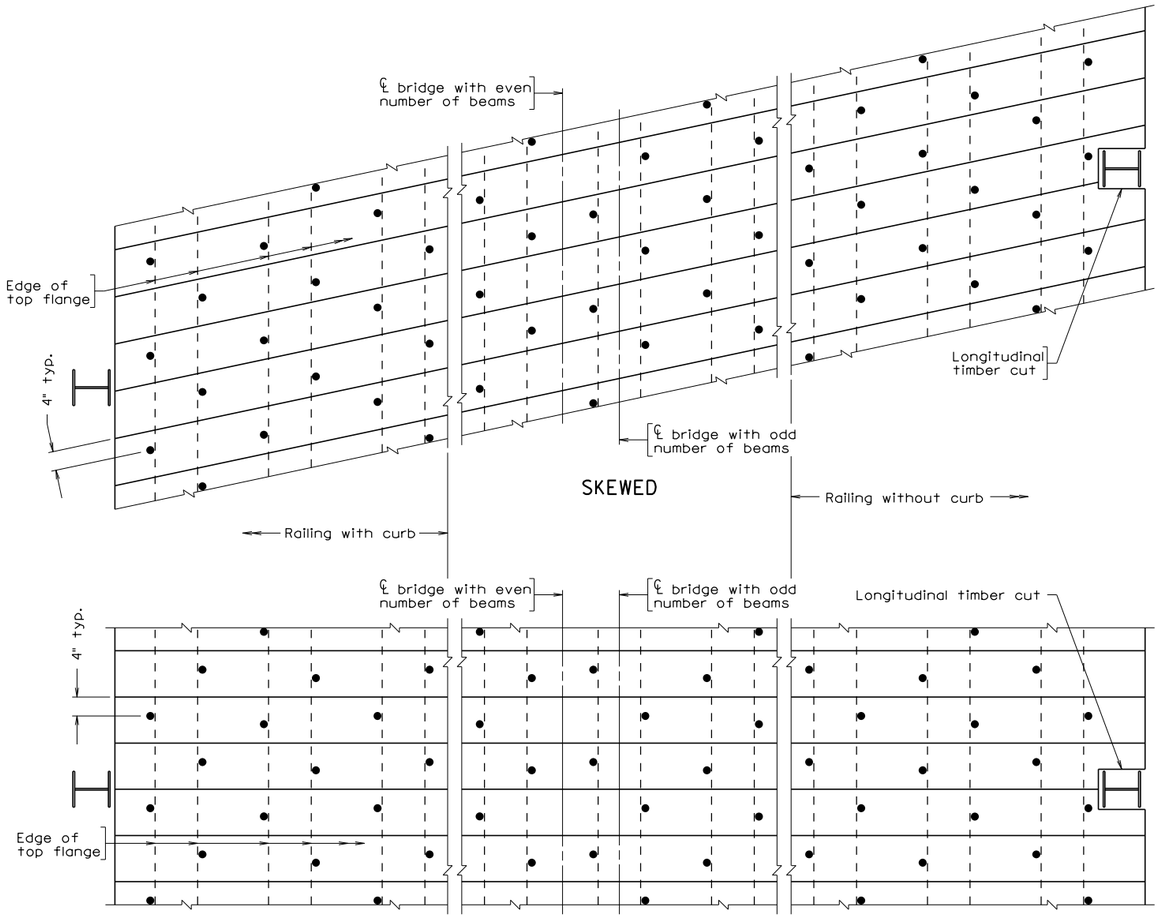
The designer shall ensure that the depth of the beam used is sufficient to make the railing and diaphragm connections. The railing connection to the beam web will fit between the flanges of all W16 sections.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

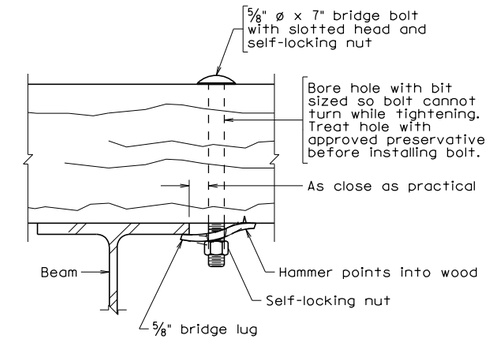
OTHER DETAILS REQUIRED:

Add the additional detail(s) described in File No. SS8-2-5 that will not fit on standard sheet SS8-2 by removing Diaphragm Detail(s) for beam depths not used. Follow the instructions found in File No. SS8INSTR-1 for a standard sheet modified by the designer. If there is insufficient space for all the additional details, leave this sheet unmodified and place the additional details on a separate sheet.

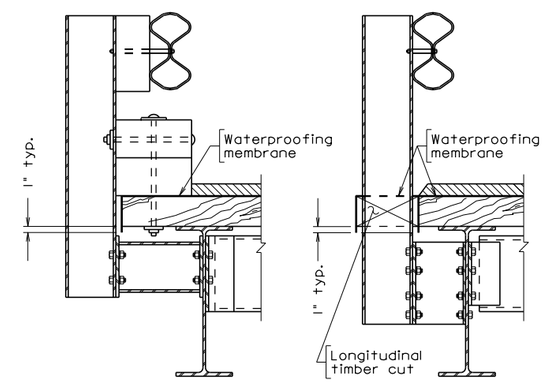
STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				



PLANK FLOOR PART PLAN

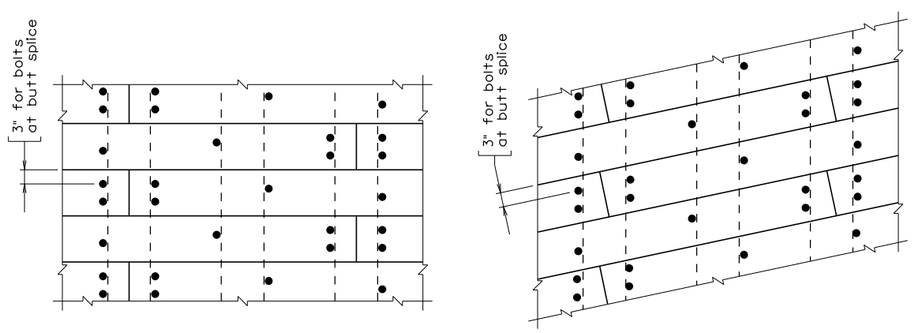


TIMBER ATTACHMENT DETAIL



WITH CURB WITHOUT CURB

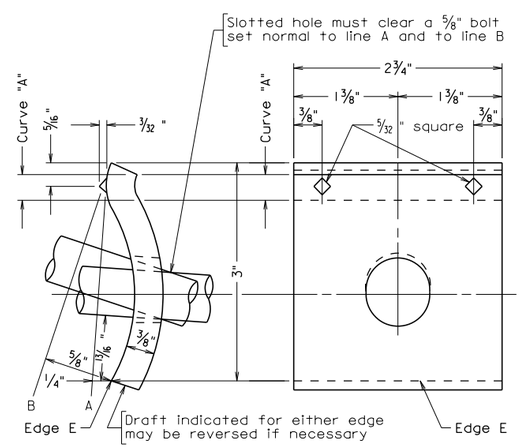
WATERPROOFING DETAIL



NO SKEW SKEWED

BUTT SPLICE PLAN

See Notes



BRIDGE LUG DETAIL

Not to scale

Notes:

All timber shall be preservative treated in accordance with the Specifications.

Where bridge width results in plank lengths less than or equal to 32 feet, the planks shall not be butt spliced (i.e. shall be continuous). Where bridge width results in plank lengths greater than 32 feet, butt splicing of alternate planks will be permitted only on the centerline of beams provided each piece of timber is continuous across a minimum of five beam spaces. Butt splicing of adjacent planks on the same beam will not be permitted.

If skewed, the flooring shall be laid parallel to the substructure and the post supports shall be placed square to the beams. When the flooring is laid on skew, the ends shall be trimmed parallel to the beams and the cut ends treated with a wood preservative prior to installing waterproofing. The District Bridge Engineer may direct flooring to be placed perpendicular to the beams where the reduction in plank length from the skewed layout would eliminate the need for butt splicing.

In order to obtain the necessary stiffening of the beams, alternate the floor fasteners from the inside edge to the outside edge of the beam flange on adjacent planks.

Use the center beam (or beam space if an even number of beams) as the change over point to the opposite edge of the beam flange for the floor fasteners on any one plank.

The essential anti-rattle results can be obtained only by exercising extreme care in correctly locating the hole with respect to the edge of the beam flange and properly tightening the nut. Retightening may be necessary.

Bolts shall conform to the requirements of ASTM A307 in accordance with Section 226.02(g) of the Specifications. Bolts shall be dome head (slotted) having a head diameter of 2½" and a head thickness of 5/16" with four (4) fins located directly under the head.

Bridge Lugs are to be made by forging from steel and shall conform to the requirements of ASTM A668, Class D, in accordance with Section 225.02(a) of the Specifications. Draft as necessary in forging is permissible in the hole and on all edges of the lug. Parallel elements in curved surface "A" shall be parallel to edge "E".

Nuts shall conform to the requirements of ASTM A563 and shall be self-locking. One square nut with bridge lock nut may be used in lieu of each self locking nut.

Bolts, Bridge Lugs, and Nuts shall be galvanized in accordance with the Section 233 of the Specifications. Galvanizing for the Bolts and Nuts shall conform to the requirements of ASTM A153. Galvanizing for the Bridge Lugs shall conform to the requirements of ASTM A123.

Waterproofing membrane and overlay:

The timber deck shall be protected with a waterproofing membrane and overlay.

Prior to curb installation or surfacing the deck, sheets of Rubberoid Torch Smooth material, CertainTeed Flintlastic Modified Bitumen or similar material shall be heated slightly on the bottom side as they are rolled out using a propane torch. The flame shall be applied uniformly across the exposed back surface of the membrane and the lap area of the previously installed run until the compound exhibits a slight sheen. Each run shall lap 3" to 4" with the adjacent run and secured to the timbers using 1¼" roofing nails. Unless otherwise directed by the District Bridge Engineer, extend the material over the beam ends approximately 1" below the bottom edge of the deck as seen in the WaterProofing Detail and adhere additional pieces of waterproofing membrane to the sides of timber planks where longitudinal cuts are made to clear rail posts. After the material is secured, heat the top side along the lapped areas and ends. Check all seams for full and uniform adhesion. Un-adhered seams shall be lifted with a heated trowel and resealed by lightly torching the seam area except where the heat from the overlay will be sufficient to adhere the material as with a bitumen plant mix.

PETROTAC or similar self adhering products may also be used when approved by the District Bridge Engineer.

When timber lagging is used, extend the waterproofing material over the lagging as shown in the Part Side Elevation on sheet 2.

The overlay can be a bituminous concrete plant mix or a bituminous surface treatment. Exercise caution prior to the overlay placement. Whether paving with a motor grader or other equipment, drastic turns of the front wheel can cause tears in or wrinkle the material. Slight adjustments in direction will limit the possibility of damage.

SS804.dgn

03-10-2015

SS8-4

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE TIMBER ATTACHMENT DETAILS

Designed: S&BDIV
Drawn: S&BDIV
Checked: S&BDIV

Date

Plan No. SS8-4

Sheet No.

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NOTES TO DESIGNER:

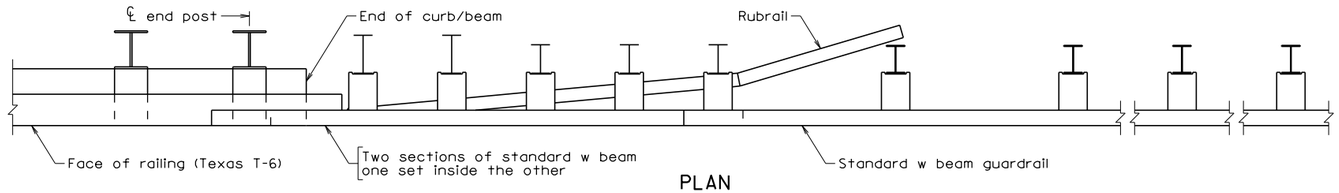
Include standards SS8-1, SS8-2, SS8-3A, SS8-5A and SS8-6A in the plans when using this standard on projects utilizing railing with curb. Substitute standard SS8-3B for SS8-3A in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging. Substitute standard SS8-6B for SS8-6A where beam flange width would interfere with curb attachment plates.

Include standards SS8-1, SS8-2, SS8-3C and SS8-5B in the plans when using this standard on projects utilizing railing without curb. Substitute standard SS8-3D for SS8-3C in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs. Include standard SS8-5D where skew is greater than 28° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

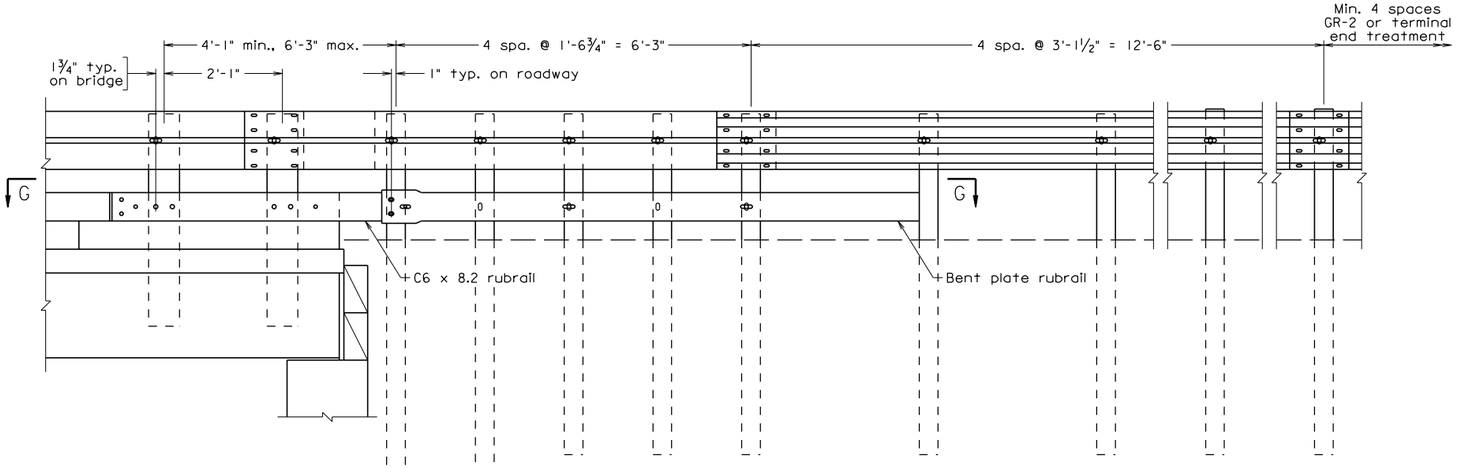
ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

None

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

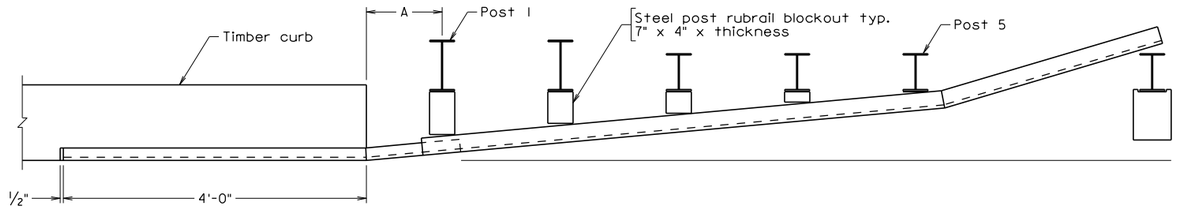


PLAN

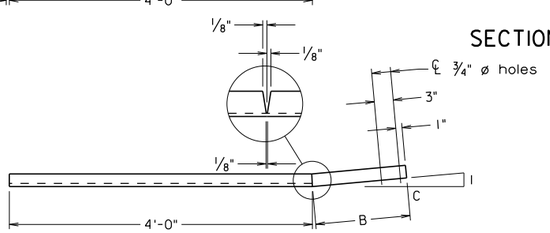


ELEVATION

TERMINATION DETAIL



SECTION G-G



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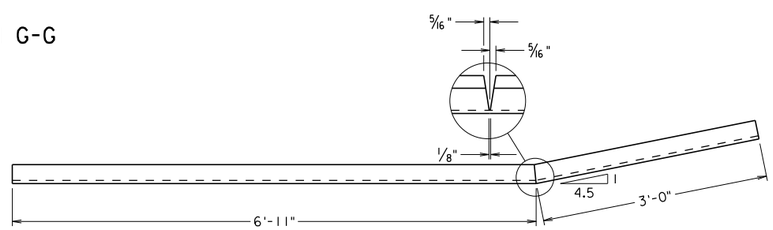
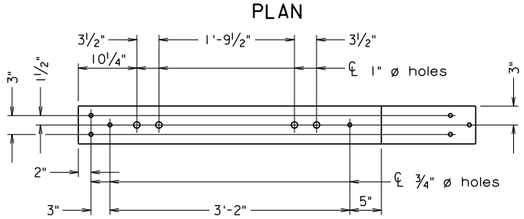
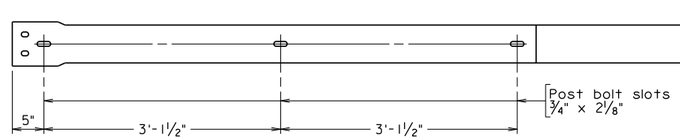


PLAN



ELEVATION

C 6 x 8.2 RUBRAIL DETAIL



ELEVATION

BENT PLATE RUBRAIL DETAIL

Not to scale

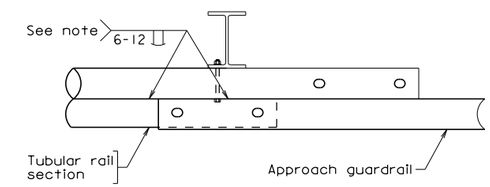
Notes:

Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. Welds shall be chipped and cleaned and the complete 25' tubular member shall be galvanized after fabrication. For tubular rail splice additional post mounting slots are to be made in each member 1'-3" from the standard slots at 6'-3" centers.

8 - ⅝" splice nuts shall be tack welded to a bent sheet metal positioner as shown. Other suitable positioning methods or devices may be substituted. The completed splice shall have 16 bolts. Each bolt will include a 1¾" x 3" x 3/16" plate washer or a 2" diameter washer.

Refer to Road and Bridge Standards, Section 500, for all details not shown. When railing cannot be terminated as per the Road and Bridge Standards, contact the Location and Design Special Design Section to obtain recommendations. Do not notch timber curb for rubrail when railing will not be carried beyond bridge length.

[The TERMINATION DETAIL and C 6 X 8.2 RUBRAIL DETAIL are shown at acute bridge corners. For details at obtuse bridge corners, see applicable details on sheet .]



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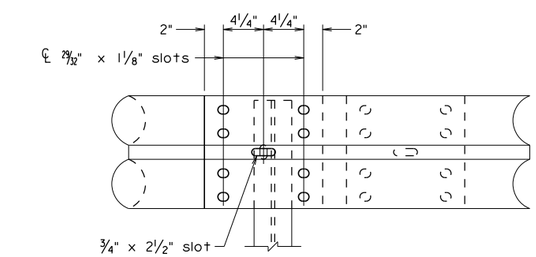

ELEVATION

GUARDRAIL - TUBULAR RAIL SPLICE

VARIABLE DIMENSIONS BASED ON POST OFFSET

Location	A	C 6 x 8.2 B	C 6 x 8.2 C	Rubrail Blockout Thickness Post 1	Post 2	Post 3	Post 4

SS805A.dgn

03-10-2015

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

SS8-5A

No.	Description	Date

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE TERMINATION DETAILS

Designed: S&BDIV
Drawn: S&BDIV
Checked: S&BDIV

Date

Plan No. SS8-5A

Sheet No.

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SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD
RAILING TERMINATION DETAILS

NOTES TO DESIGNER:

Include standards SS8-1, SS8-2, SS8-3A, SS8-4 and SS8-6A in the plans when using this standard. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

Substitute standard SS8-3B for SS8-3A in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs.

Substitute standard SS8-6B for SS8-6A where beam flange width would interfere with curb attachment plates.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

NOTES:

Where skew ≤ 22° or skew > 22° and end posts in obtuse corners **do not conflic**t with the abutment, backwall and/or lagging, remove the bracketed note from the standard.

Where skew > 22° degrees and end posts in obtuse corners **conflict** with the abutment, backwall and/or lagging, remove the brackets from the note and add the sheet number to "For details at obtuse bridge corners, see applicable details on sheet ."

VARIABLE DIMENSIONS BASED ON POST OFFSET:

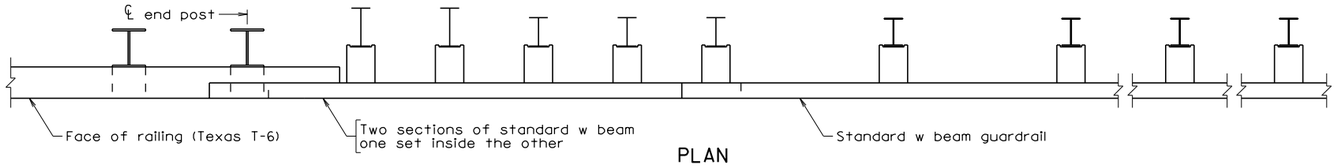
Fill in the table based on the actual distance between the end of curb/beam and the first roadway post, dimension "A", using the chart below. Interpolate between values. Use $^{1}/_{8}$" increments. If dimension "A" varies depending on location, use multiple lines indicating each location (eg., Abut. A - LOCL). If dimension does not vary, indicate "All".

VARIABLE DIMENSIONS BASED ON POST OFFSET						
	C 6 x 8.2		Rubrail Blockout Thickness			
A	B	C	Post 1	Post 2	Post 3	Post 4
12"	1'-3"	11	6¾"	5⅛"	3⅜"	1¾"
1'-6"	1'-9"	12	6⅜"	4⅞"	3¼"	1¾"
2'-0"	2'-3"	13	6"	4⅝"	3⅛"	1¾"
2'-6"	2'-9"	13.5	5⅝"	4¼"	2⅞"	1½"
3'-0"	3'-3"	14.5	5⅜"	4⅛"	2⅞"	1½"
3'-6"	3'-9"	15	5⅛"	3⅞"	2⅝"	1⅜"
4'-0"	4'-3"	16	4⅞"	3¾"	2⅝"	1⅜"

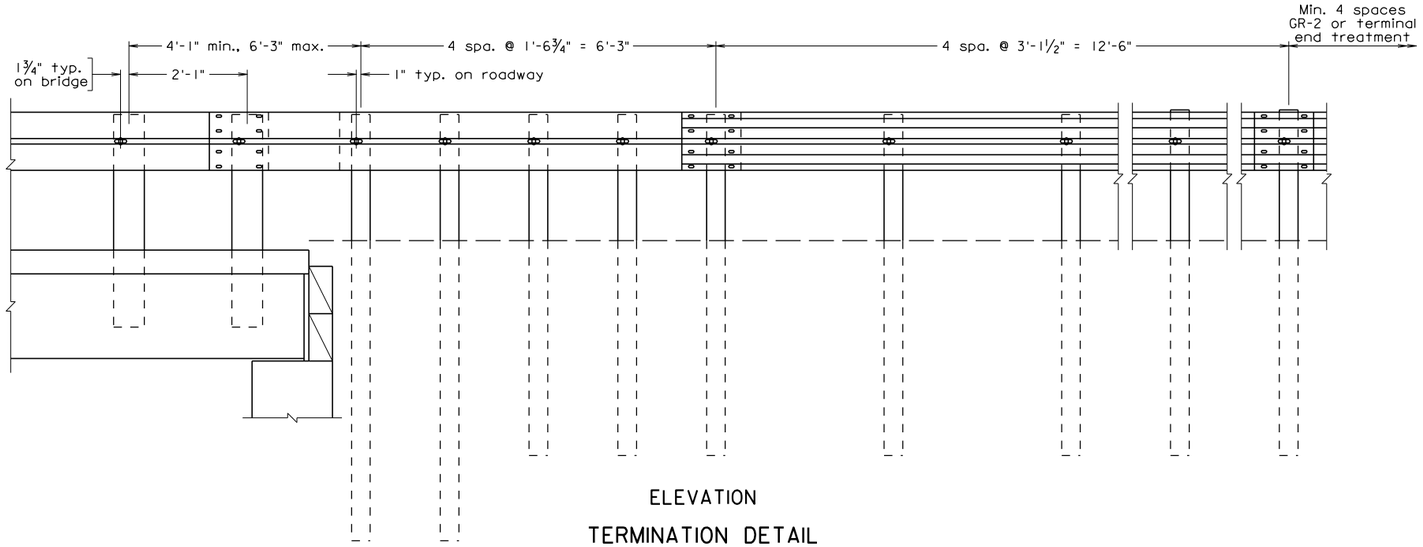
STANDARD SS8-5A: NOTES TO DESIGNER

PART 8
DATE: 10Mar2015
SHEET 2 of 2
FILE NO. SS8-5A-2

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				



PLAN



ELEVATION

TERMINATION DETAIL

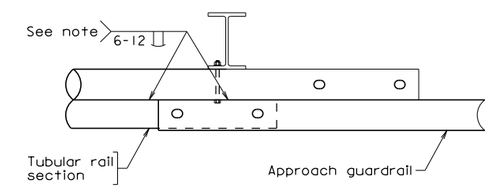
Notes:

Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. Welds shall be chipped and cleaned and the complete 25' tubular member shall be galvanized after fabrication. For tubular rail splice additional post mounting slots are to be made in each member 1'-3" from the standard slots at 6'-3" centers.

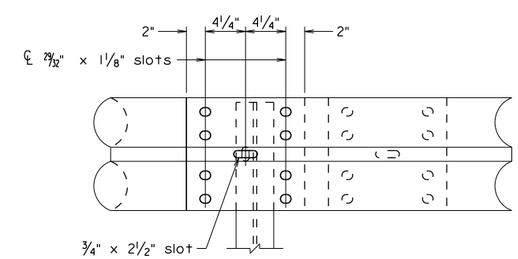
8 - ⅝" splice nuts shall be tack welded to a bent sheet metal positioner as shown. Other suitable positioning methods or devices may be substituted. The completed splice shall have 16 bolts. Each bolt will include a 1¾" x 3" x 3/16" plate washer or a 2" diameter washer.

Refer to Road and Bridge Standards, Section 500, for all details not shown. When railing cannot be terminated as per the Road and Bridge Standards, contact the Location and Design Special Design Section to obtain recommendations.

[The details provided are shown at acute bridge corners. For details at obtuse bridge corners, see applicable details on sheet .]



PLAN



ELEVATION

GUARDRAIL - TUBULAR RAIL SPLICE

SS805B.dgn

03-10-2015

SS8-5B

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

Not to scale

© 2015, Commonwealth of Virginia

No.	Description	Date

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE TERMINATION DETAILS

Designed: S&BDIV
Drawn: S&BDIV
Checked: S&BDIV

Date

Plan No. SS8-5B

Sheet No.

NOTES TO DESIGNER:

Include standards SS8-1, SS8-2, SS8-3C and SS8-4 in the plans when using this standard. Include standard SS8-5D where skew is greater than 28° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

Substitute standard SS8-3D for SS8-3C in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs.

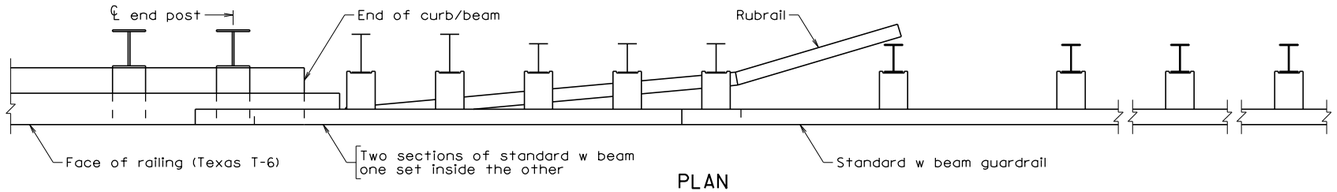
ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

NOTES:

Where skew ≤ 28° or skew > 28° and end posts in obtuse corners **do not conflic**t with the abutment, backwall and/or lagging, remove the bracketed note from the standard.

Where skew > 28° degrees and end posts in obtuse corners **conflict** with the abutment, backwall and/or lagging, remove the brackets from the note and add the sheet number to “For details at obtuse bridge corners, see applicable details on sheet .”

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				



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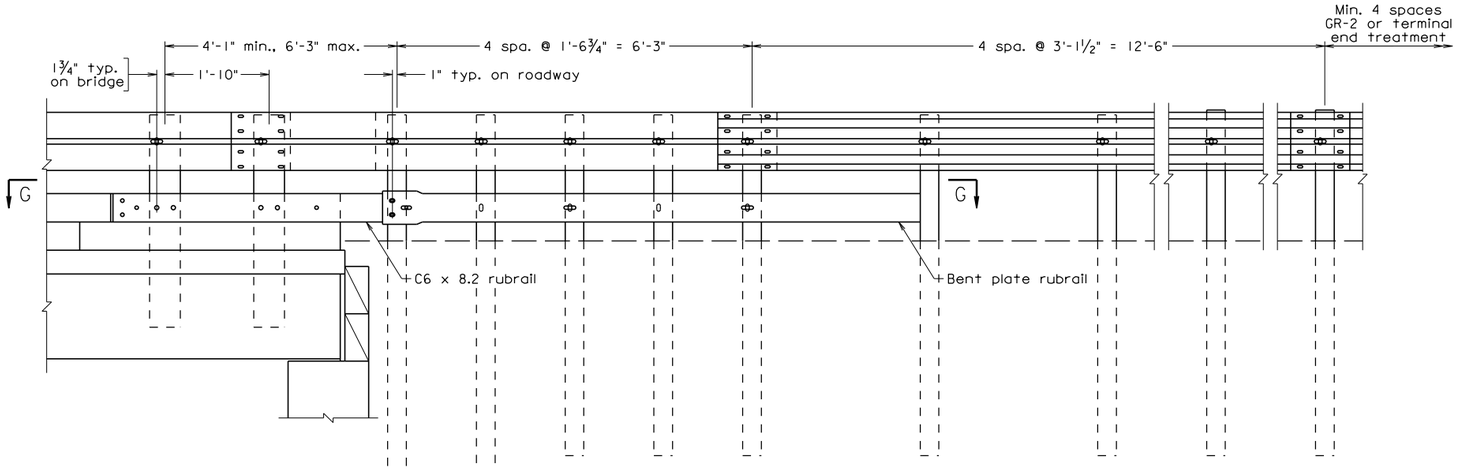
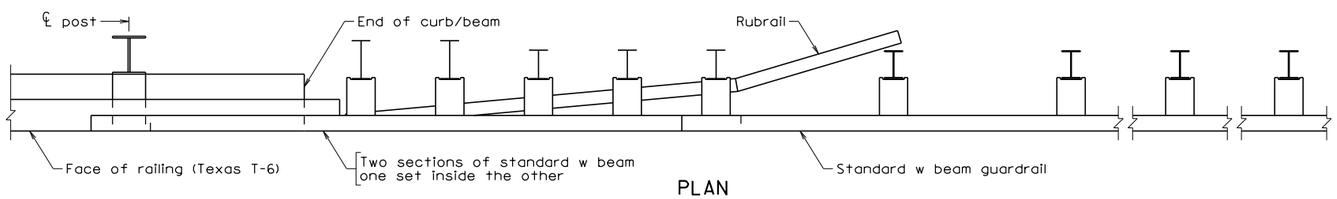
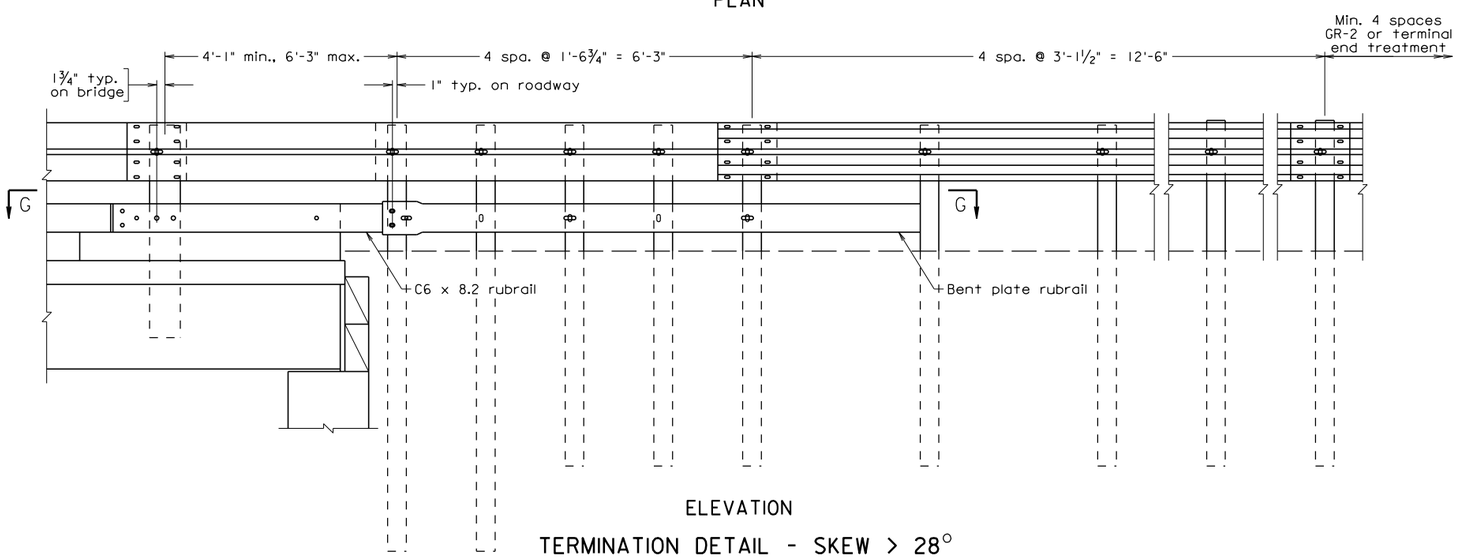


ELEVATION

TERMINATION DETAIL - 22° < SKEW ≤ 28°



PLAN

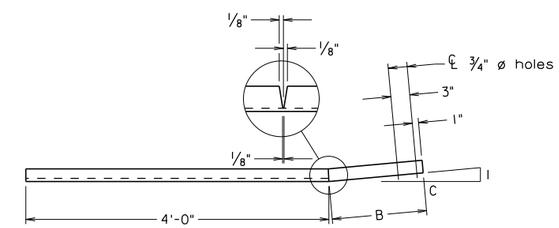


ELEVATION

TERMINATION DETAIL - SKEW > 28°

Notes:

Details provided on this sheet are at obtuse bridge corners. For SECTION G-G, BENT PLATE RUBRAIL DETAIL, GUARDRAIL - TUBULAR RAIL SPLICE, VARIABLE DIMENSIONS BASED ON POST OFFSET table and notes, see sheet .



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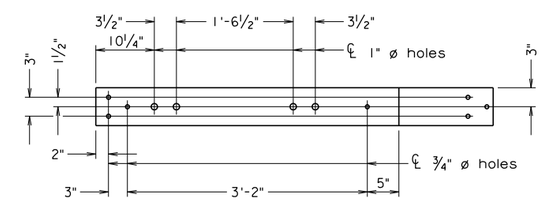
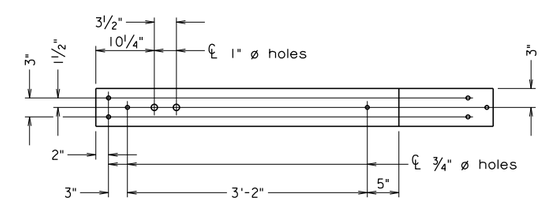


ELEVATION - 22° < SKEW ≤ 28°



ELEVATION - SKEW > 28°

C 6 x 8.2 RUBRAIL DETAIL

Not to scale

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SS805C.dgn

03-10-2015

SS8-5C

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE
TERM. DETAILS - OBTUSE CORNER

Designed: S&BDIV	Date	Plan No.	Sheet No.
Drawn: S&BDIV		SS8-5C	
Checked: S&BDIV			

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD
RAILING TERMINATION DETAILS

NOTES TO DESIGNER:

Include standards SS8-1, SS8-2, SS8-3A, SS8-4, SS8-5A and SS8-6A in the plans when using this standard. Use this standard only where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging. Where skew ≤ 22° or skew > 22° and end posts in obtuse corners **do not conflic**t with the abutment, backwall and/or lagging, do not include this standard in the plan set and remove the bracketed note from standard SS8-5A.

Substitute standard SS8-3B for SS8-3A in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs.

Substitute standard SS8-6B for SS8-6A where beam flange width would interfere with curb attachment plates.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

Where skew > 57° degrees, the Designer shall check the 3'-1" dimension to rail post in obtuse corner against the abutment details and adjust abutment details or 3'-1" dimension accordingly to ensure sufficient room to place post and verify position of 1" ø holes in rubrail prior to drilling.

NOTES:

Add the sheet number to the reference note.

VARIABLE DIMENSIONS BASED ON POST OFFSET:

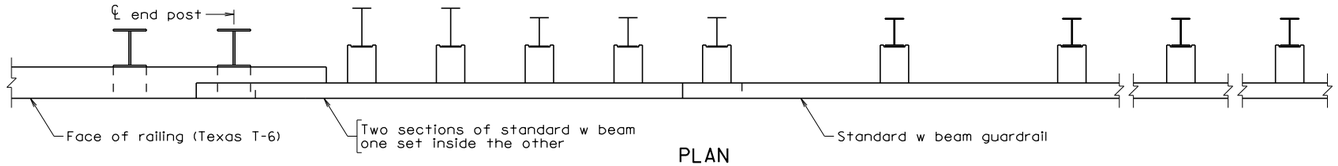
Fill in the table on standard SS8-5A based on the actual distance between the end of curb/beam and the first roadway post, dimension "A", using the chart below. Interpolate between values. Use $^{1}/_{8}$" increments. If dimension "A" varies depending on location, use multiple lines indicating each location (eg., Abut. A - LOCL). If dimension does not vary, indicate "All".

VARIABLE DIMENSIONS BASED ON POST OFFSET						
	C 6 x 8.2		Rubrail Blockout Thickness			
A	B	C	Post 1	Post 2	Post 3	Post 4
12"	1'-3"	11	6¾"	5⅛"	3⅜"	1¾"
1'-6"	1'-9"	12	6⅜"	4⅞"	3¼"	1¾"
2'-0"	2'-3"	13	6"	4⅝"	3⅛"	1¾"
2'-6"	2'-9"	13.5	5⅝"	4¼"	2⅞"	1½"
3'-0"	3'-3"	14.5	5⅜"	4⅛"	2⅞"	1½"
3'-6"	3'-9"	15	5⅛"	3⅞"	2⅝"	1⅜"
4'-0"	4'-3"	16	4⅞"	3¾"	2⅝"	1⅜"

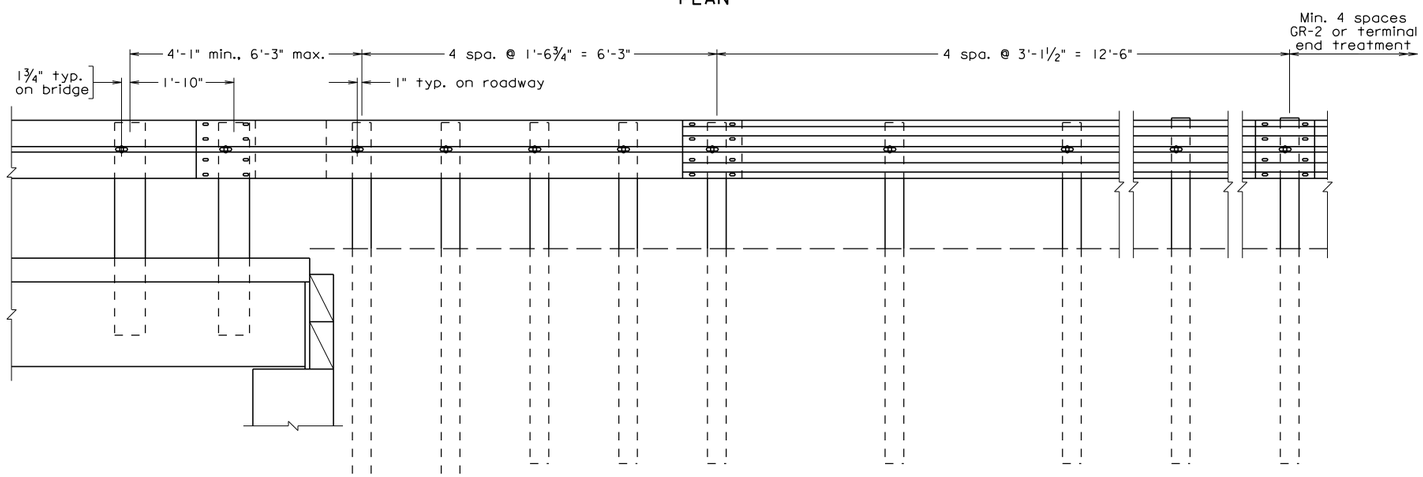
STANDARD SS8-5C: NOTES TO DESIGNER

PART 8
DATE: 10Mar2015
SHEET 2 of 2
FILE NO. SS8-5C-2

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

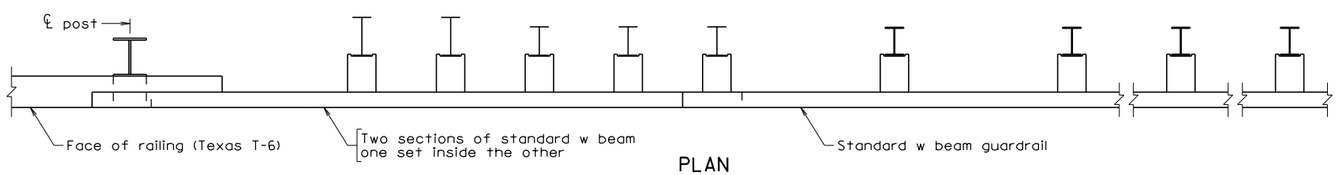


PLAN

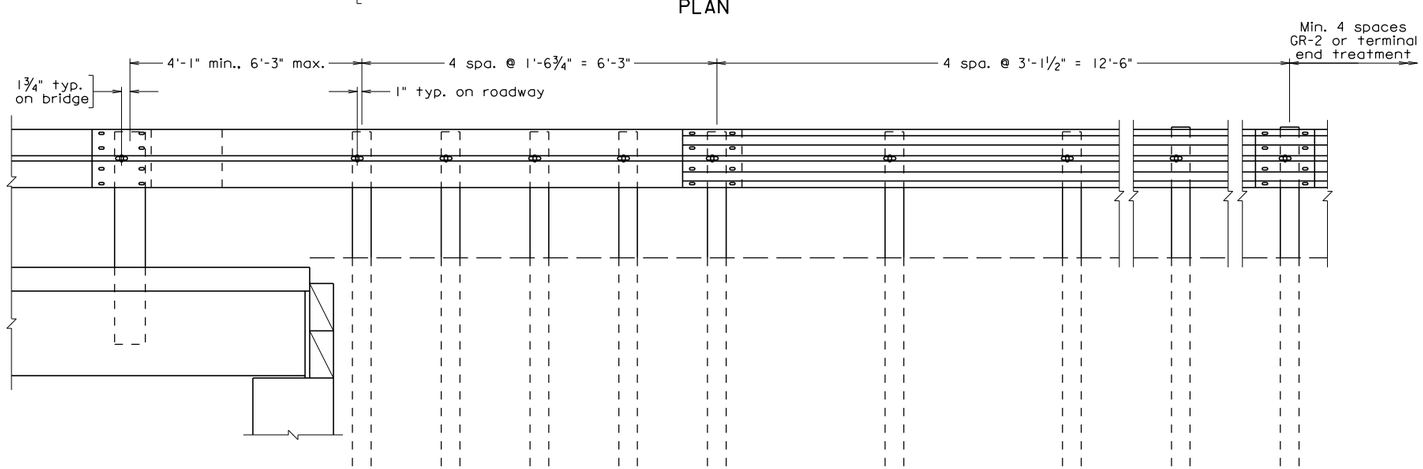


ELEVATION

TERMINATION DETAIL 28° < SKEW ≤ 35°



PLAN



ELEVATION

TERMINATION DETAIL - SKEW > 35°

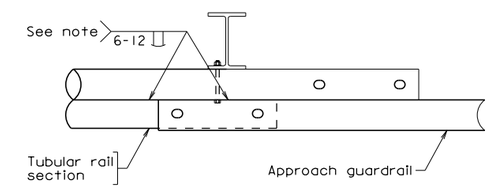
Notes:

Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. Welds shall be chipped and cleaned and the complete 25' tubular member shall be galvanized after fabrication. For tubular rail splice additional post mounting slots are to be made in each member 1'-3" from the standard slots at 6'-3" centers.

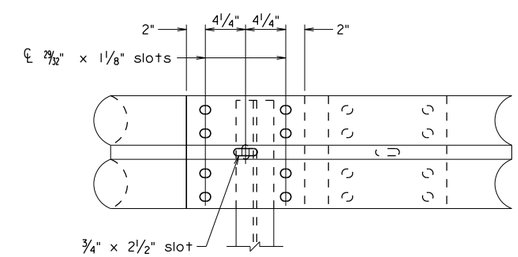
8 - ⅝" splice nuts shall be tack welded to a bent sheet metal positioner as shown. Other suitable positioning methods or devices may be substituted. The completed splice shall have 16 bolts. Each bolt will include a 1¾" x 3" x 3/16" plate washer or a 2" diameter washer.

Refer to Road and Bridge Standards, Section 500, for all details not shown. When railing cannot be terminated as per the Road and Bridge Standards, contact the Location and Design Special Design Section to obtain recommendations.

The details provided are shown at obtuse bridge corners. For details at acute bridge corners, see sheet .



PLAN



ELEVATION

GUARDRAIL - TUBULAR RAIL SPLICE

SS805D.dgn

03-10-2015

SS8-5D

Sealed and Signed by:
Prasad L. Nallaponeni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

Not to scale

© 2015, Commonwealth of Virginia

No.	Description	Date

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE
TERM. DETAILS - OBTUSE CORNER

Designed: S&BDIV	Date	Plan No.	Sheet No.
Drawn: S&BDIV		SS8-5D	
Checked: S&BDIV			

NOTES TO DESIGNER:

Include standards SS8-1, SS8-2, SS8-3C, SS8-4 and SS8-5B in the plans when using this standard. Include standard SS8-5D where skew is greater than 28° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging. Where skew ≤ 28° or skew > 28° and end posts in obtuse corners **do not conflic**t with the abutment, backwall and/or lagging, do not include this standard in the plan set and remove the bracketed note from standard SS8-5B..

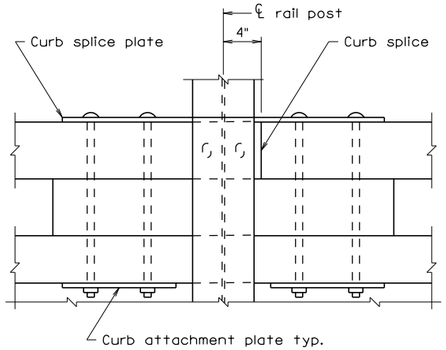
Substitute standard SS8-3D for SS8-3C in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

NOTES:

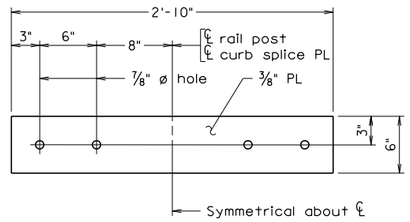
Add the sheet number for reference to acute corner details.

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

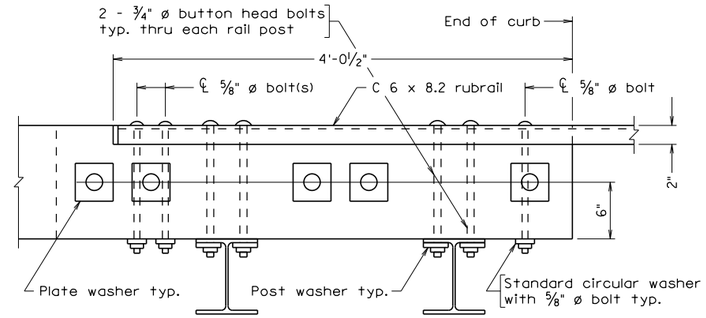


CURB SPLICE DETAIL

See Elevation at Interior Rail Post for additional details



CURB SPLICE PLATE



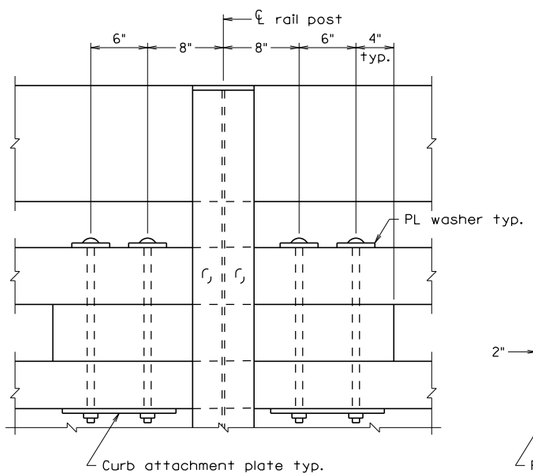
SECTION A-A

Notes:

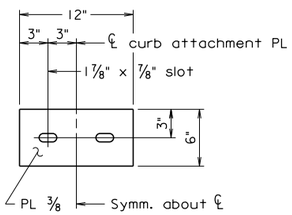
Asphalt overlay and timber plank end breaks not shown in elevation views and Curb Splice Detail for clarity.

All timber curb connections shall be made with 3/4" ø button head bolts ASTM A449 unless noted otherwise.

Where skew > 22° and end posts in obtuse corners would conflict with the abutment/backwall, use Abutment Elevation in Obtuse Corners detail for applicable skew. Otherwise, use Elevation at Abutment detail including cases where skew > 22° and end posts in obtuse corners do not conflict with the abutment/backwall.



ELEVATION AT INTERIOR RAIL POST



CURB ATTACHMENT PLATE

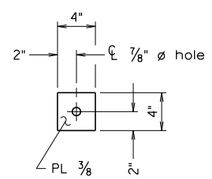
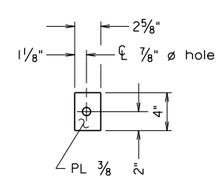
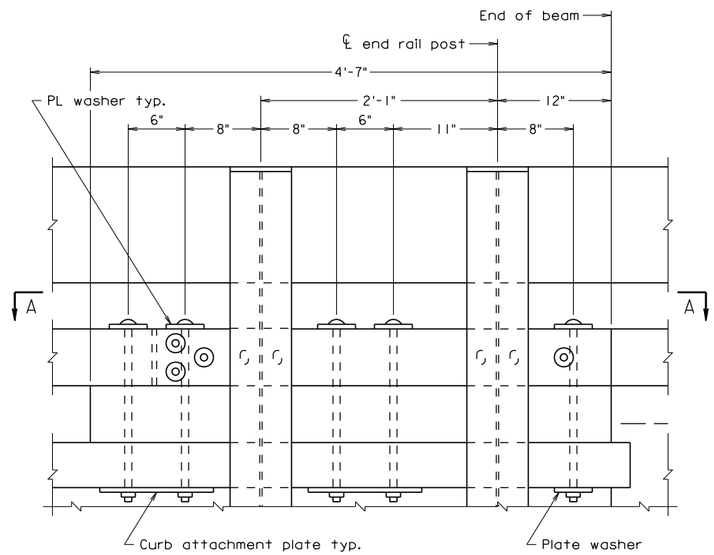


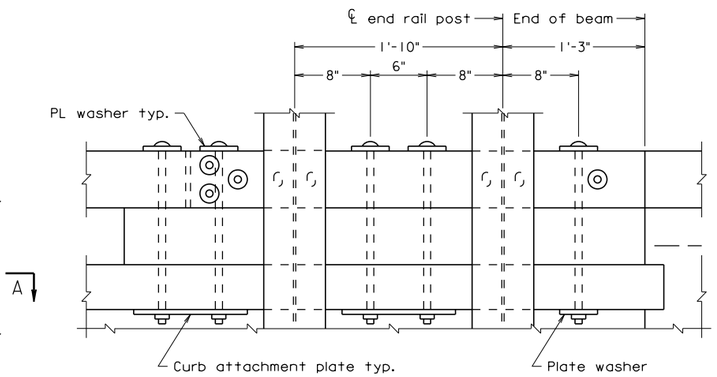
PLATE WASHER



POST WASHER

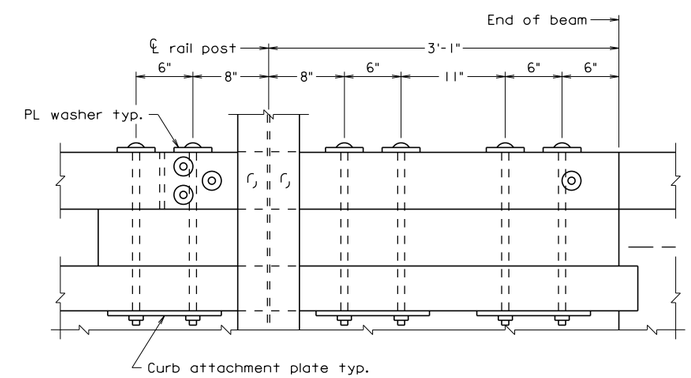


ELEVATION AT ABUTMENT



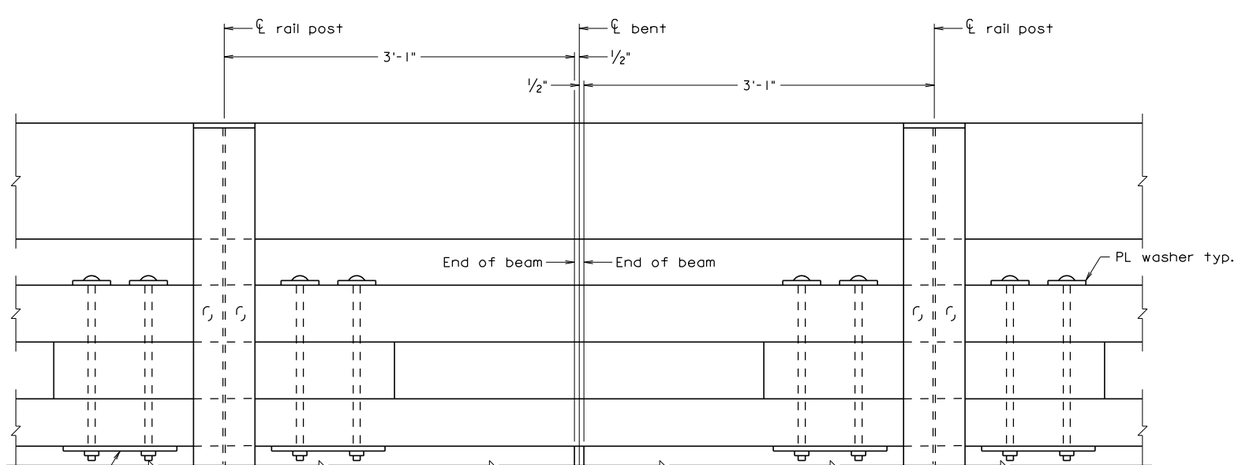
ABUTMENT ELEVATION IN OBTUSE CORNERS WHERE 22° < SKEW ≤ 28°

See Elevation at Abutment for additional details



ABUTMENT ELEVATION IN OBTUSE CORNERS WHERE 28° < SKEW ≤ 57°

See Elevation at Abutment for additional details



ELEVATION AT BENT

See Elevation at Interior Rail Post for additional details

Not to scale

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SS806A.dgn

03-10-2015

SS8-6A

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

No.	Description	Date

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE CURB DETAILS

Designed: S&BDIV
Drawn: S&BDIV
Checked: S&BDIV

Date

Plan No. SS8-6A

Sheet No.

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD
CURB DETAILS

NOTES TO DESIGNER:

Include standards SS8-1, SS8-2, SS8-3A, SS8-4 and SS8-5A in the plans when using this standard. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

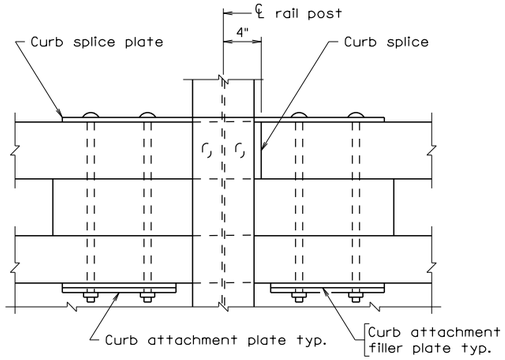
Substitute standard SS8-3B for SS8-3A in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs.

Substitute standard SS8-6B in place of this standard where beam flange width would interfere with curb attachment plates. As holes drilled through the timber curbs and deck will likely not be precisely vertical, clearance calculations should not be based on exact theoretical position. In general, where beam flange width exceeds 9", standard SS8-6B should be used.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

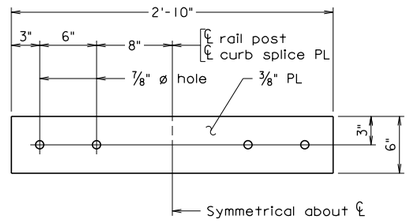
None

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—				

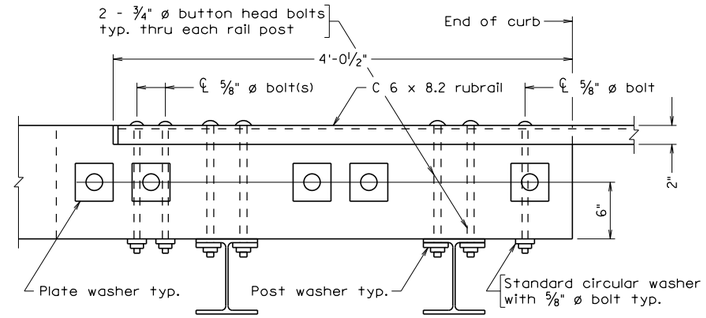


CURB SPLICE DETAIL

See Elevation at Interior Rail Post for additional details



CURB SPLICE PLATE



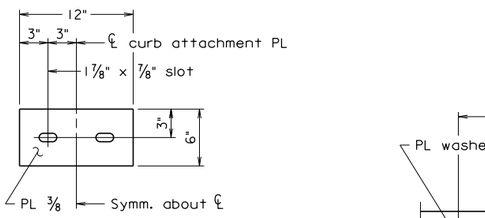
SECTION A-A

Notes:

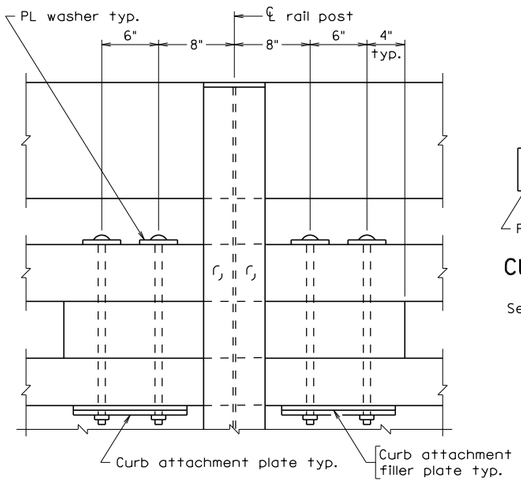
Asphalt overlay and timber plank end breaks not shown in elevation views and Curb Splice Detail for clarity.

All timber curb connections shall be made with 3/4" ø button head bolts ASTM A449 unless noted otherwise.

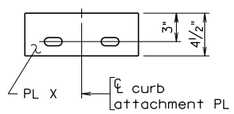
Where skew > 22° and end posts in obtuse corners would conflict with the abutment/backwall, use Abutment Elevation in Obtuse Corners detail for applicable skew. Otherwise, use Elevation at Abutment detail including cases where skew > 22° and end posts in obtuse corners do not conflict with the abutment/backwall.



CURB ATTACHMENT PLATE

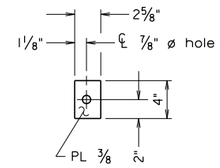


ELEVATION AT INTERIOR RAIL POST

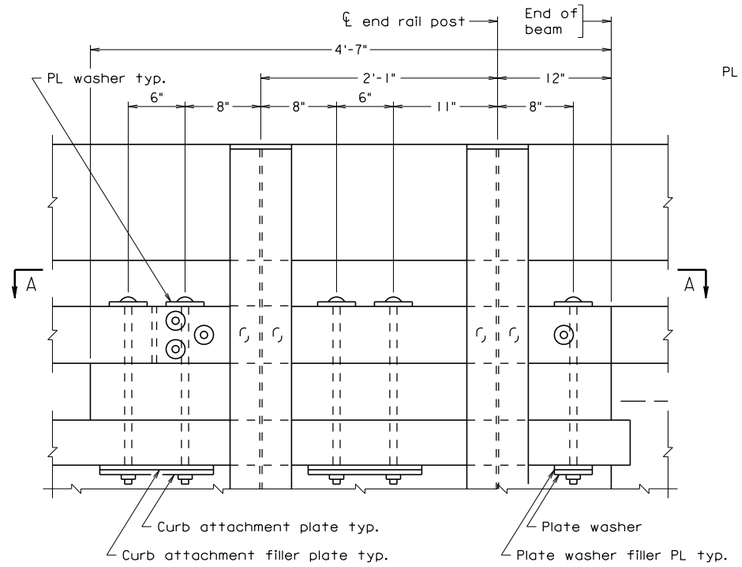


CURB ATTACHMENT FILLER PLATE

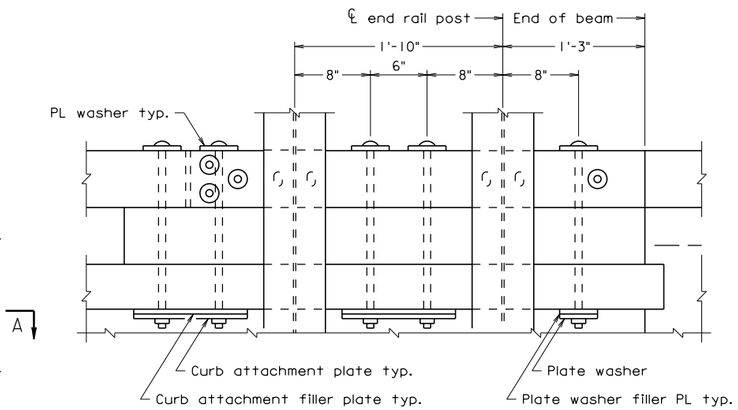
See Curb Attachment Plate for details not shown



POST WASHER

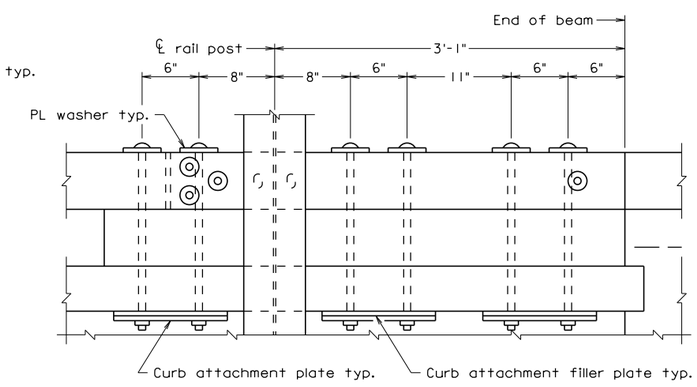


ELEVATION AT ABUTMENT



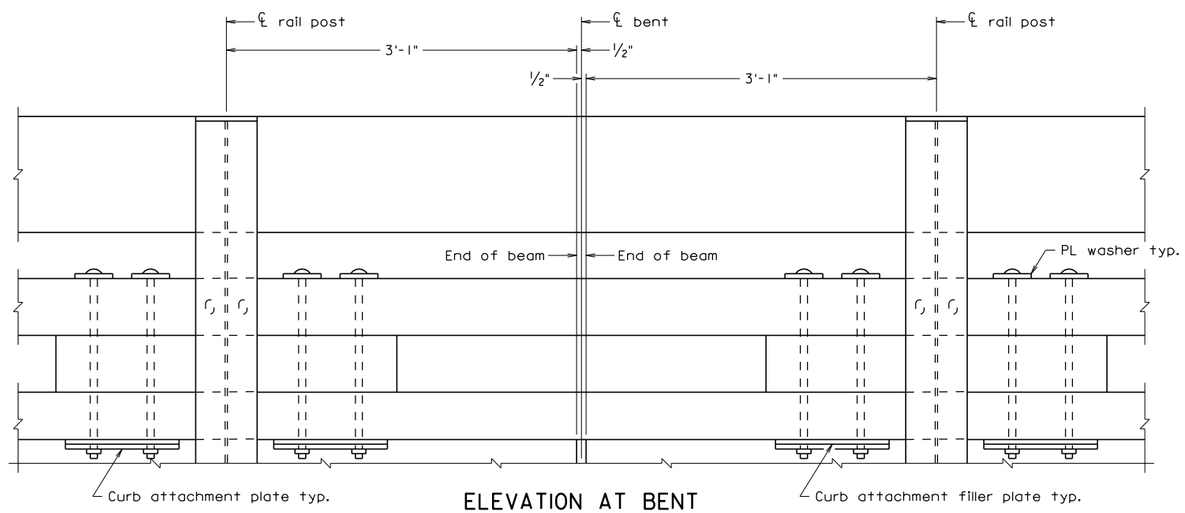
ABUTMENT ELEVATION IN OBTUSE CORNERS WHERE 22° < SKEW ≤ 28°

See Elevation at Abutment for additional details



ABUTMENT ELEVATION IN OBTUSE CORNERS WHERE 28° < SKEW ≤ 57°

See Elevation at Abutment for additional details



ELEVATION AT BENT

See Elevation at Interior Rail Post for additional details

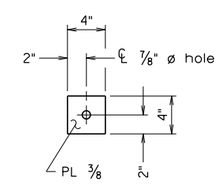


PLATE WASHER

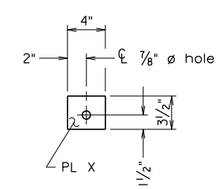


PLATE WASHER FILLER PLATE

Not to scale

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SS806B.dgn

03-10-2015

SS8-6B

Sealed and Signed by:
Prasad L. Nallapaneni
Lic. No. 033003
On the date of
March 10, 2015

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE CURB DETAILS

Designed: S&BDIV
Drawn: S&BDIV
Checked: S&BDIV

Date

Plan No. SS8-6B

Sheet No.

NOTES TO DESIGNER:

Include standards SS8-1, SS8-2, SS8-3A, SS8-4 and SS8-5A in the plans when using this standard. Include standard SS8-5C where skew is greater than 22° and end posts in obtuse corners would conflict with the abutment, backwall and/or lagging.

Substitute standard SS8-3B for SS8-3A in the plans when bolted angles are used in lieu of welded plates to connect the diaphragm channels to the beam webs.

Substitute standard SS8-6A in place of this standard where beam flange width does not interfere with curb attachment plates.

As holes drilled through the timber curbs and deck will likely not be precisely vertical, clearance calculations should not be based on exact theoretical position. In general, where beam flange width exceeds 12", the details on this standard will likely conflict with the curb attachment plate position.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

Curb attachment plates are detailed wider than plate washers. Where curb attachment filler plates are needed, but not plate washer filler plates, remove the PLATE WASHER FILLER PLATE detail and remove the plate washer filler plate and callout from the ELEVATION AT ABUTMENT and ABUTMENT ELEVATION IN OBTUSE CORNERS WHERE 22° < SKEW $\leq$ 28° details.

CURB ATTACHMENT FILLER PLATE DETAIL:

Replace the "X" with the filler plate thickness matching the flange thickness rounded to the nearest 1/8" increment.

PLATE WASHER FILLER PLATE DETAIL:

Replace the "X" with the filler plate thickness matching the flange thickness rounded to the nearest 1/8" increment.

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS
CELL LIBRARY: SS8.CEL

INDEX OF CELLS

CELL NAME	FILE NO.	DESCRIPTION	DATE
Framing Plan – Bolted Angles with 0° Skew			
BAA01	SS8CELLS-1	Beam Length ≤ 18’-8”	12Sep2008
BAA02	SS8CELLS-1	18’-8” < Beam Length ≤ 24’-11”	12Sep2008
BAA03	SS8CELLS-2	24’-11” < Beam Length ≤ 31’-2”	12Sep2008
BAA04	SS8CELLS-2	31’-2” < Beam Length ≤ 37’-5”	12Sep2008
BAA05	SS8CELLS-3	37’-5” < Beam Length ≤ 43’-8”	12Sep2008
BAA06	SS8CELLS-3	43’-8” < Beam Length ≤ 49’-11”	12Sep2008
BAA07	SS8CELLS-4	49’-11” < Beam Length ≤ 56’-2”	12Sep2008
BAA08	SS8CELLS-4	56’-2” < Beam Length ≤ 62’-5”	12Sep2008
BAA09	SS8CELLS-5	62’-5” < Beam Length ≤ 68’-8”	12Sep2008
BAA10	SS8CELLS-5	68’-8” < Beam Length ≤ 74’-11”	12Sep2008
Framing Plan – Bolted Angles with Left Hand Skew ≤ 9°			
BAL01	SS8CELLS-6	Beam Length ≤ 18’-8”	12Sep2008
BAL02	SS8CELLS-6	18’-8” < Beam Length ≤ 24’-11”	12Sep2008
BAL03	SS8CELLS-7	24’-11” < Beam Length ≤ 31’-2”	12Sep2008
BAL04	SS8CELLS-7	31’-2” < Beam Length ≤ 37’-5”	12Sep2008
BAL05	SS8CELLS-8	37’-5” < Beam Length ≤ 43’-8”	12Sep2008
BAL06	SS8CELLS-8	43’-8” < Beam Length ≤ 49’-11”	12Sep2008
BAL07	SS8CELLS-9	49’-11” < Beam Length ≤ 56’-2”	12Sep2008
BAL08	SS8CELLS-9	56’-2” < Beam Length ≤ 62’-5”	12Sep2008
BAL09	SS8CELLS-10	62’-5” < Beam Length ≤ 68’-8”	12Sep2008
BAL10	SS8CELLS-10	68’-8” < Beam Length ≤ 74’-11”	12Sep2008
Framing Plan - Bolted Angles with Left Hand Skew > 9°			
BAL11	SS8CELLS-11	Beam Length ≤ 18’-8”	12Sep2008
BAL12	SS8CELLS-11	18’-8” < Beam Length ≤ 24’-11”	12Sep2008
BAL13	SS8CELSL-12	24’-11” < Beam Length ≤ 31’-2”	12Sep2008
BAL14	SS8CELLS-12	31’-2” < Beam Length ≤ 37’-5”	12Sep2008
BAL15	SS8CELLS-13	37’-5” < Beam Length ≤ 43’-8”	12Sep2008
BAL16	SS8CELLS-13	43’-8” < Beam Length ≤ 49’-11”	12Sep2008
BAL17	SS8CELLS-14	49’-11” < Beam Length ≤ 56’-2”	12Sep2008
BAL18	SS8CELLS-14	56’-2” < Beam Length ≤ 62’-5”	12Sep2008
BAL19	SS8CELLS-15	62’-5” < Beam Length ≤ 68’-8”	12Sep2008
BAL20	SS8CELLS-15	68’-8” < Beam Length ≤ 74’-11”	12Sep2008
Framing Plan – Bolted Angles with Right Hand Skew ≤ 9°			
BAR01	SS8CELLS-16	Beam Length ≤ 18’-8”	12Sep2008
BAR02	SS8CELLS-16	18’-8” < Beam Length ≤ 24’-11”	12Sep2008
BAR03	SS8CELLS-17	24’-11” < Beam Length ≤ 31’-2”	12Sep2008
BAR04	SS8CELLS-17	31’-2” < Beam Length ≤ 37’-5”	12Sep2008
BAR05	SS8CELLS-18	37’-5” < Beam Length ≤ 43’-8”	12Sep2008
BAR06	SS8CELLS-18	43’-8” < Beam Length ≤ 49’-11”	12Sep2008
BAR07	SS8CELLS-19	49’-11” < Beam Length ≤ 56’-2”	12Sep2008
BAR08	SS8CELLS-19	56’-2” < Beam Length ≤ 62’-5”	12Sep2008
BAR09	SS8CELLS-20	62’-5” < Beam Length ≤ 68’-8”	12Sep2008
BAR10	SS8CELLS-20	68’-8” < Beam Length ≤ 74’-11”	12Sep2008

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS
CELL LIBRARY: SS8.CEL

INDEX OF CELLS (cont'd)

CELL NAME	FILE NO.	DESCRIPTION	DATE
Framing Plan - Bolted Angles with Right Hand Skew > 9°			
BAR11	SS8CELLS-21	Beam Length ≤ 18'-8"	12Sep2008
BAR12	SS8CELLS-21	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
BAR13	SS8CELLS-22	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
BAR14	SS8CELLS-22	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
BAR15	SS8CELLS-23	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
BAR16	SS8CELLS-23	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
BAR17	SS8CELLS-24	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
BAR18	SS8CELLS-24	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
BAR19	SS8CELLS-25	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
BAR20	SS8CELLS-25	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Two-Span with Bolted Angles and 0° Skew			
BTA01	SS8CELLS-26	Beam Length ≤ 18'-8"	12Sep2008
BTA02	SS8CELLS-26	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
BTA03	SS8CELLS-27	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
BTA04	SS8CELLS-27	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
BTA05	SS8CELLS-28	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
BTA06	SS8CELLS-28	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
BTA07	SS8CELLS-29	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
BTA08	SS8CELLS-29	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
BTA09	SS8CELLS-30	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
BTA10	SS8CELLS-30	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Two-Span with Bolted Angles and Left Hand Skew ≤ 9°			
BTL01	SS8CELLS-31	Beam Length ≤ 18'-8"	12Sep2008
BTL02	SS8CELLS-31	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
BTL03	SS8CELLS-32	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
BTL04	SS8CELLS-32	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
BTL05	SS8CELLS-33	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
BTL06	SS8CELLS-33	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
BTL07	SS8CELLS-34	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
BTL08	SS8CELLS-34	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
BTL09	SS8CELLS-35	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
BTL10	SS8CELLS-35	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Two-Span with Bolted Angles and Left Hand Skew > 9°			
BTL11	SS8CELLS-36	Beam Length ≤ 18'-8"	12Sep2008
BTL12	SS8CELLS-36	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
BTL13	SS8CELSL-37	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
BTL14	SS8CELLS-37	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
BTL15	SS8CELLS-38	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
BTL16	SS8CELLS-38	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
BTL17	SS8CELLS-39	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
BTL18	SS8CELLS-39	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
BTL19	SS8CELLS-40	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
BTL20	SS8CELLS-40	68'-8" < Beam Length ≤ 74'-11"	12Sep2008

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS
CELL LIBRARY: SS8.CEL

INDEX OF CELLS (cont'd)

CELL NAME	FILE NO.	DESCRIPTION	DATE
Framing Plan – Two-Span with Bolted Angles and Right Hand Skew ≤ 9°			
BTR01	SS8CELLS-41	Beam Length ≤ 18'-8"	12Sep2008
BTR02	SS8CELLS-41	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
BTR03	SS8CELLS-42	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
BTR04	SS8CELLS-42	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
BTR05	SS8CELLS-43	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
BTR06	SS8CELLS-43	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
BTR07	SS8CELLS-44	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
BTR08	SS8CELLS-44	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
BTR09	SS8CELLS-45	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
BTR10	SS8CELLS-45	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Two-Span with Bolted Angles and Right Hand Skew > 9°			
BTR11	SS8CELLS-46	Beam Length ≤ 18'-8"	12Sep2008
BTR12	SS8CELLS-46	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
BTR13	SS8CELLS-47	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
BTR14	SS8CELLS-47	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
BTR15	SS8CELLS-48	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
BTR16	SS8CELLS-48	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
BTR17	SS8CELLS-49	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
BTR18	SS8CELLS-49	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
BTR19	SS8CELLS-50	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
BTR20	SS8CELLS-50	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Bearing Details			
BZAB1	SS8CELLS-51	L ≤ 60'; anchor bolts at each location	12Sep2008
BZAB2	SS8CELLS-51	L ≤ 60'; A.B.'s at every other location	12Sep2008
BZAE1	SS8CELLS-51	L > 60'; anchor bolts at each location	12Sep2008
BZAE2	SS8CELLS-52	L > 60'; A.B.'s at every other location	12Sep2008
BZPB1	SS8CELLS-52	Timber bent	12Sep2008
Part Elevations			
ELC1B	SS8CELLS-53	Backwall w/ curb & bearing PL	12Sep2008
ELC1E	SS8CELLS-53	Backwall w/ curb & elastomeric bearing	12Sep2008
ELC2B	SS8CELLS-54	Backwall w/o curb & bearing PL	12Sep2008
ELC2E	SS8CELLS-54	Backwall w/o curb and elast. bearing	12Sep2008
ELCV1	SS8CELLS-55	Backwall w/ insufficient seat width	12Sep2008
ELTB1	SS8CELLS-55	Timber lagging behind abutment	12Sep2008
ELTB2	SS8CELLS-56	Timber lagging on abutment	12Sep2008

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS
CELL LIBRARY: SS8.CEL

INDEX OF CELLS (cont'd)

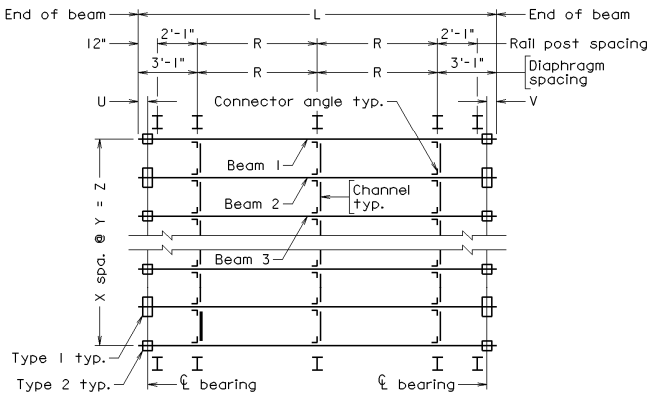
CELL NAME	FILE NO.	DESCRIPTION	DATE
Transverse Sections			
TSB1E	SS8CELLS-57	Bolted angles w/ curb & even beam #	10Mar2015
TSB1O	SS8CELLS-57	Bolted angles w/ curb & odd beam #	10Mar2015
TSB2E	SS8CELLS-58	B.A.'s w/o curb & even beam #	10Mar2015
TSB2O	SS8CELLS-58	B.A.'s w/o curb & odd beam #	10Mar2015
TSW1E	SS8CELLS-59	Welded PL's w/ curb & even beam #	10Mar2015
TSW1O	SS8CELLS-59	Welded PL's w/ curb & odd beam #	10Mar2015
TSW2E	SS8CELLS-60	Welded PL's w/o curb & even beam #	10Mar2015
TSW2O	SS8CELLS-60	Welded PL's w/o curb & odd beam #	10Mar2015
Framing Plan – Welded Plates with 0° Skew			
WPA01	SS8CELLS-61	Beam Length ≤ 18'-8"	12Sep2008
WPA02	SS8CELLS-61	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
WPA03	SS8CELLS-62	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
WPA04	SS8CELLS-62	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
WPA05	SS8CELLS-63	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
WPA06	SS8CELLS-63	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
WPA07	SS8CELLS-64	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
WPA08	SS8CELLS-64	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
WPA09	SS8CELLS-65	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
WPA10	SS8CELLS-65	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Welded Plates with Left Hand Skew			
WPL01	SS8CELLS-66	Beam Length ≤ 18'-8"	12Sep2008
WPL02	SS8CELLS-66	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
WPL03	SS8CELLS-67	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
WPL04	SS8CELLS-67	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
WPL05	SS8CELLS-68	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
WPL06	SS8CELLS-68	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
WPL07	SS8CELLS-69	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
WPL08	SS8CELLS-69	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
WPL09	SS8CELLS-70	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
WPL10	SS8CELLS-70	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Welded Plates with Right Hand Skew			
WPR01	SS8CELLS-71	Beam Length ≤ 18'-8"	12Sep2008
WPR02	SS8CELLS-71	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
WPR03	SS8CELLS-72	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
WPR04	SS8CELLS-72	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
WPR05	SS8CELLS-73	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
WPR06	SS8CELLS-73	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
WPR07	SS8CELLS-74	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
WPR08	SS8CELLS-74	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
WPR09	SS8CELLS-75	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
WPR10	SS8CELLS-75	68'-8" < Beam Length ≤ 74'-11"	12Sep2008

SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS
CELL LIBRARY: SS8.CEL

INDEX OF CELLS (cont'd)

CELL NAME	FILE NO.	DESCRIPTION	DATE
Framing Plan – Two-Span with Welded Plates and 0° Skew			
WTA01	SS8CELLS-76	Beam Length ≤ 18'-8"	12Sep2008
WTA02	SS8CELLS-76	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
WTA03	SS8CELLS-77	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
WTA04	SS8CELLS-77	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
WTA05	SS8CELLS-78	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
WTA06	SS8CELLS-78	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
WTA07	SS8CELLS-79	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
WTA08	SS8CELLS-79	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
WTA09	SS8CELLS-80	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
WTA10	SS8CELLS-80	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Two-Span with Welded Plates and Left Hand Skew			
WTL01	SS8CELLS-81	Beam Length ≤ 18'-8"	12Sep2008
WTL02	SS8CELLS-81	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
WTL03	SS8CELLS-82	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
WTL04	SS8CELLS-82	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
WTL05	SS8CELLS-83	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
WTL06	SS8CELLS-83	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
WTL07	SS8CELLS-84	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
WTL08	SS8CELLS-84	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
WTL09	SS8CELLS-85	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
WTL10	SS8CELLS-85	68'-8" < Beam Length ≤ 74'-11"	12Sep2008
Framing Plan – Two-Span with Welded Plates and Right Hand Skew			
WTR01	SS8CELLS-86	Beam Length ≤ 18'-8"	12Sep2008
WTR02	SS8CELLS-86	18'-8" < Beam Length ≤ 24'-11"	12Sep2008
WTR03	SS8CELLS-87	24'-11" < Beam Length ≤ 31'-2"	12Sep2008
WTR04	SS8CELLS-87	31'-2" < Beam Length ≤ 37'-5"	12Sep2008
WTR05	SS8CELLS-88	37'-5" < Beam Length ≤ 43'-8"	12Sep2008
WTR06	SS8CELLS-88	43'-8" < Beam Length ≤ 49'-11"	12Sep2008
WTR07	SS8CELLS-89	49'-11" < Beam Length ≤ 56'-2"	12Sep2008
WTR08	SS8CELLS-89	56'-2" < Beam Length ≤ 62'-5"	12Sep2008
WTR09	SS8CELLS-90	62'-5" < Beam Length ≤ 68'-8"	12Sep2008
WTR10	SS8CELLS-90	68'-8" < Beam Length ≤ 74'-11"	12Sep2008

CELL	CELL NAME	CELL DESCRIPTION
	BAA01	Framing plan with 0° skew and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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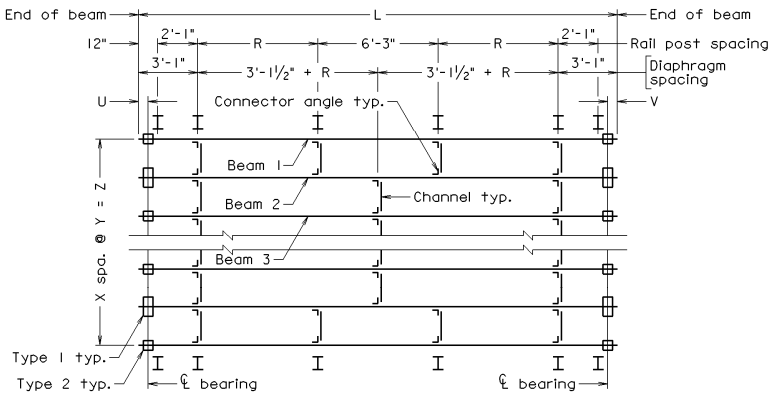
	BAA02	Framing plan with 0° skew and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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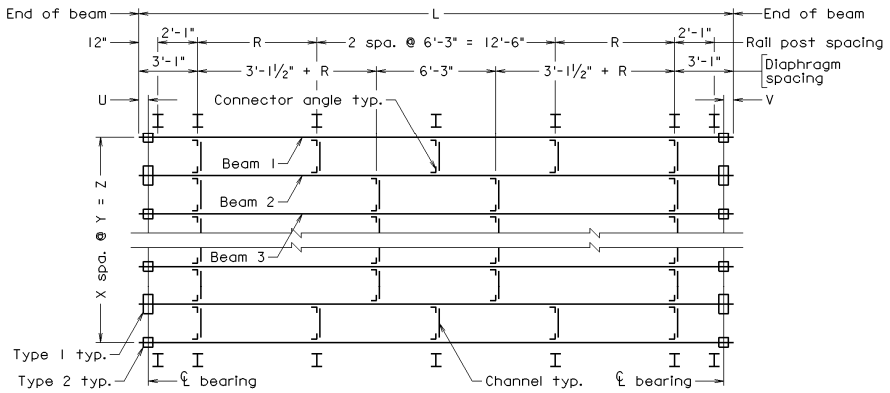
CELL	CELL NAME	CELL DESCRIPTION
	BAA03	Framing plan with 0° skew and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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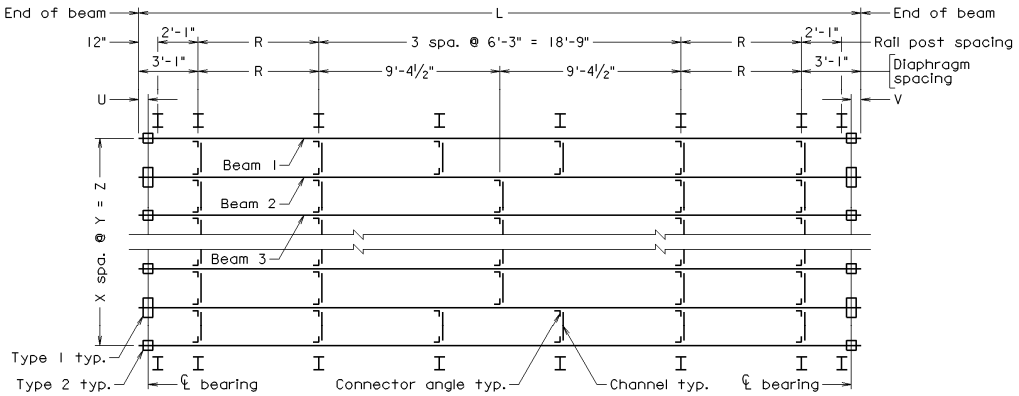
	BAA04	Framing plan with 0° skew and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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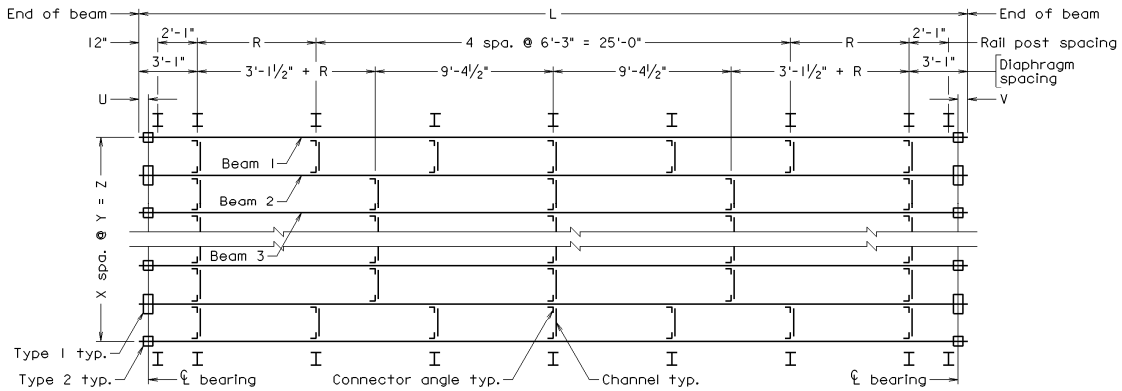
CELL	CELL NAME	CELL DESCRIPTION
	BAA05	Framing plan with 0° skew and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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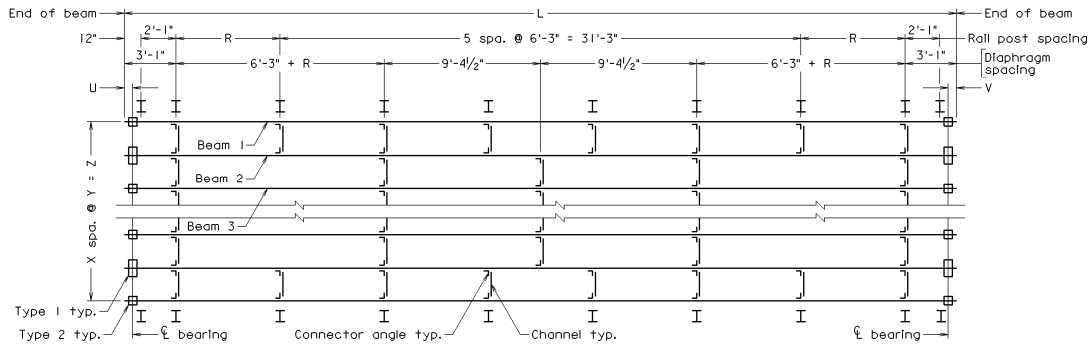
	BAA06	Framing plan with 0° skew and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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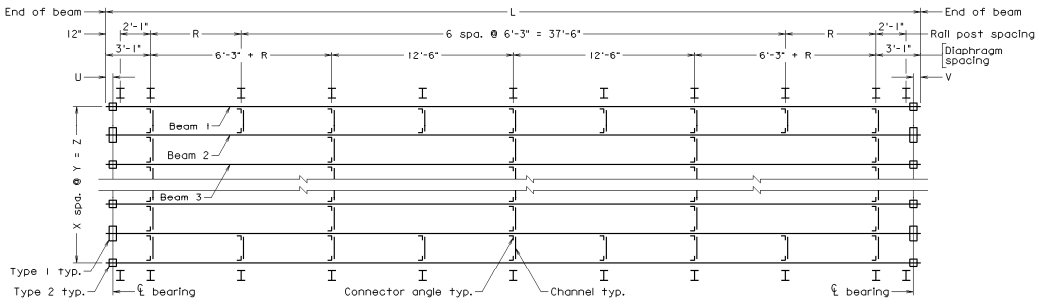
CELL	CELL NAME	CELL DESCRIPTION
	BAA07	Framing plan with 0° skew and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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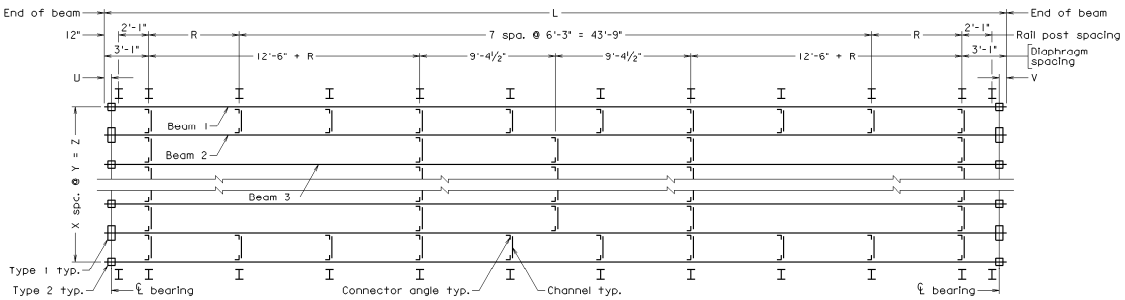
	BAA08	Framing plan with 0° skew and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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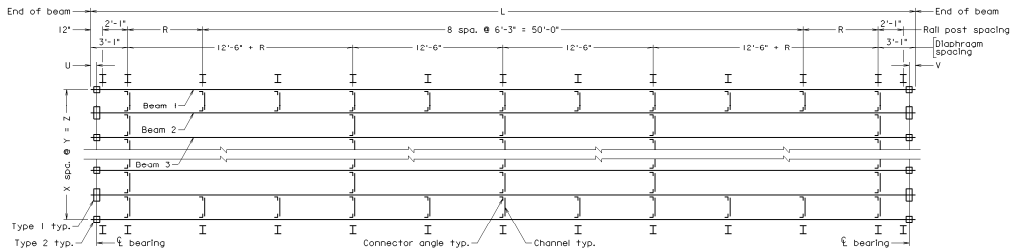
CELL	CELL NAME	CELL DESCRIPTION
	BAA09	Framing plan with 0° skew and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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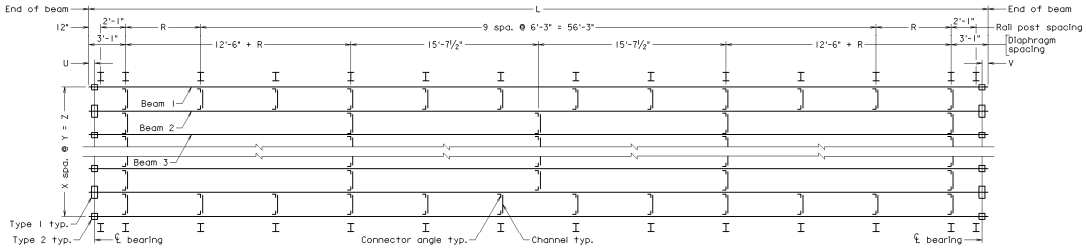
	BAA10	Framing plan with 0° skew and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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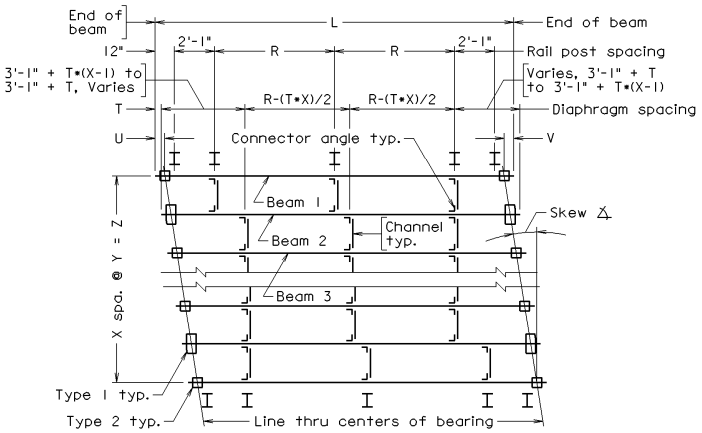
CELL	CELL NAME	CELL DESCRIPTION
	BAL01	Framing plan with left hand skew ≤ 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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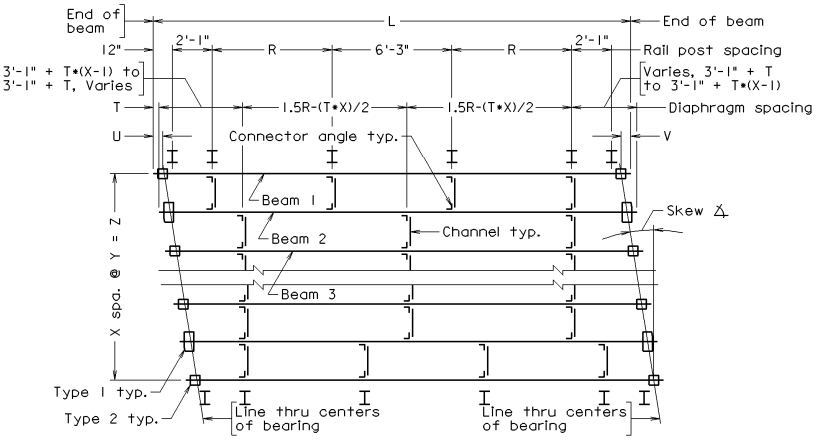
	BAL02	Framing plan with left hand skew ≤ 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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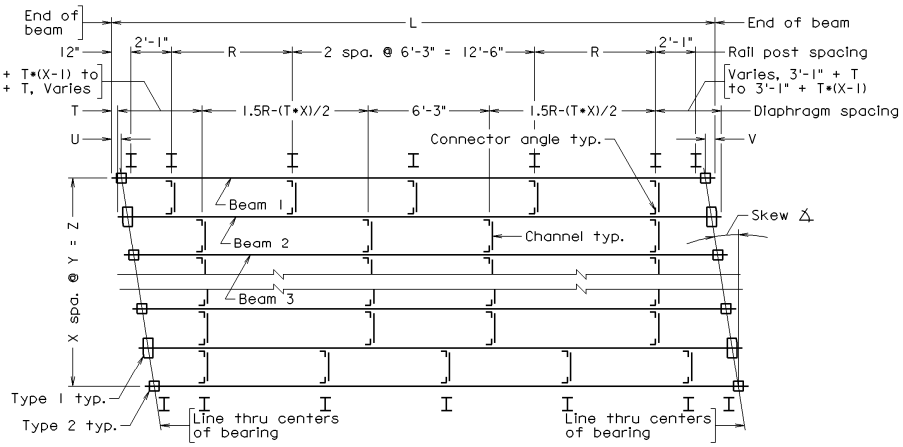
CELL	CELL NAME	CELL DESCRIPTION
	BAL03	Framing plan with left hand skew ≤ 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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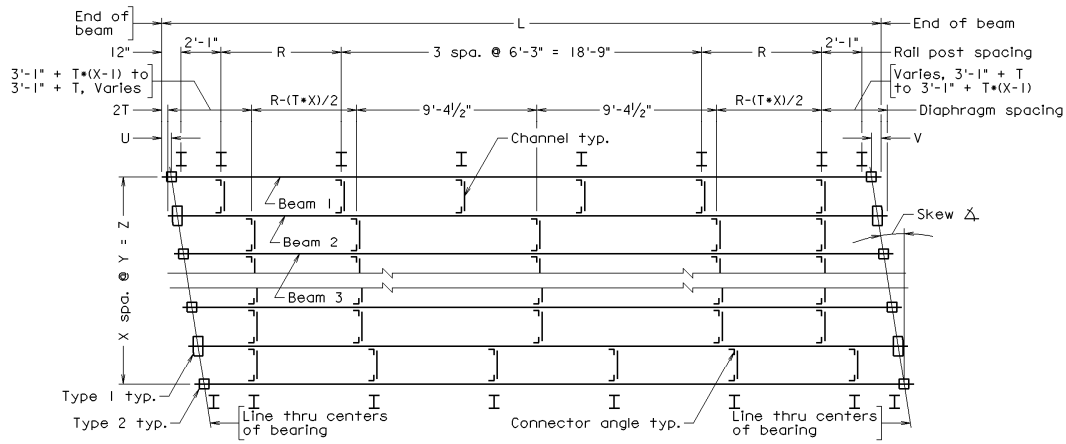
	BAL04	Framing plan with left hand skew ≤ 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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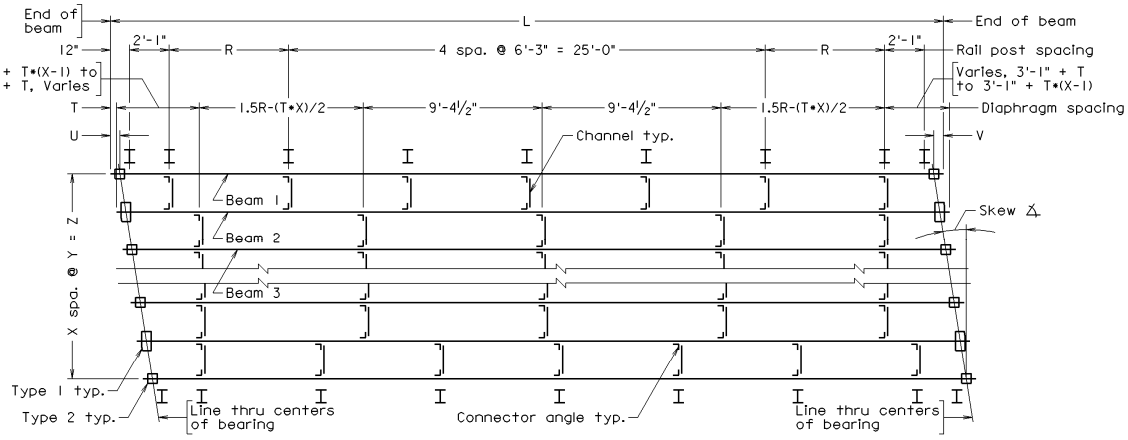
CELL	CELL NAME	CELL DESCRIPTION
	BAL05	Framing plan with left hand skew ≤ 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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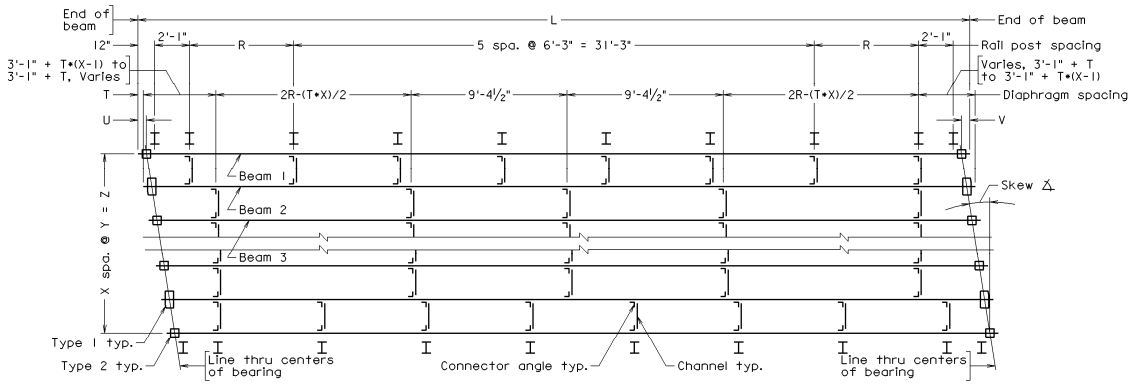
	BAL06	Framing plan with left hand skew ≤ 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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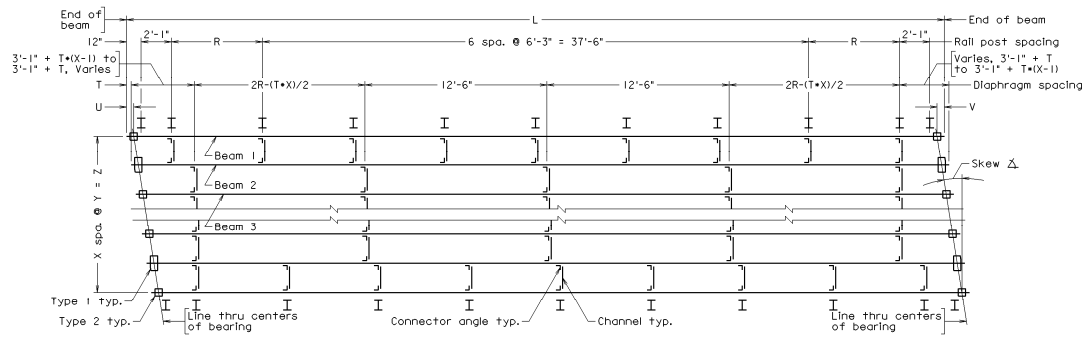
CELL	CELL NAME	CELL DESCRIPTION
	BAL07	Framing plan with left hand skew ≤ 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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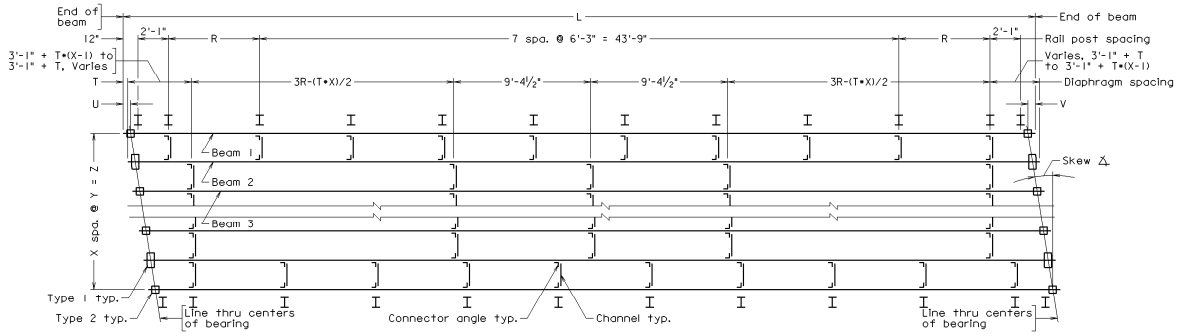
	BAL08	Framing plan with left hand skew ≤ 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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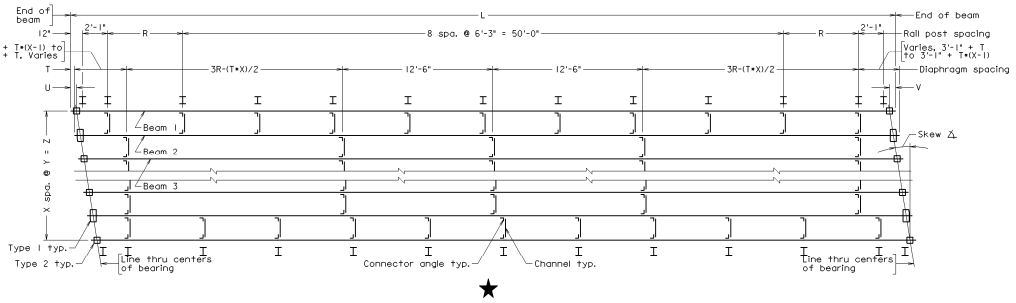
CELL	CELL NAME	CELL DESCRIPTION
	BAL09	Framing plan with left hand skew ≤ 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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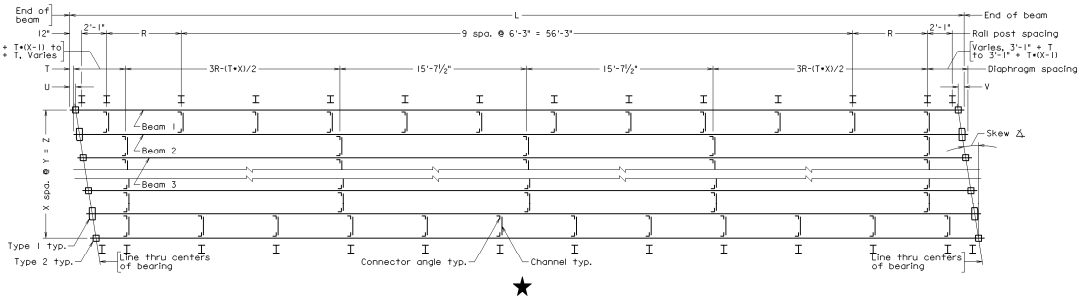
	BAL10	Framing plan with left hand skew ≤ 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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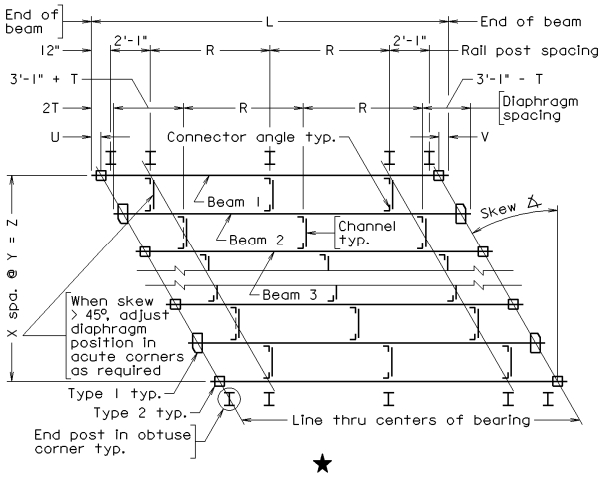
CELL	CELL NAME	CELL DESCRIPTION
	BAL11	Framing plan with left hand skew > 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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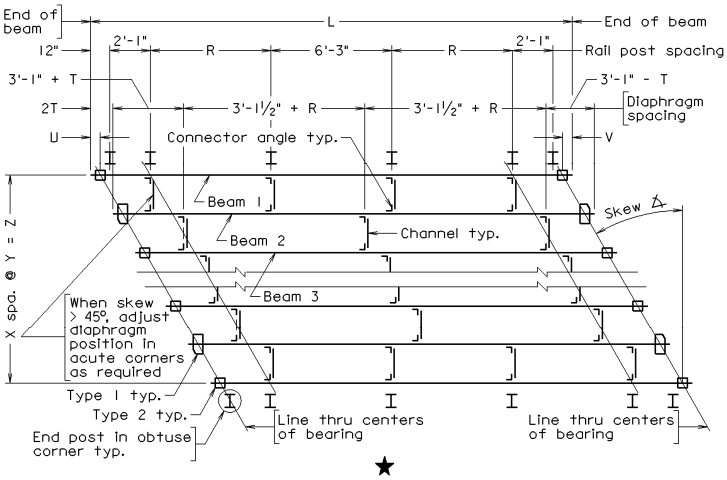
	BAL12	Framing plan with left hand skew > 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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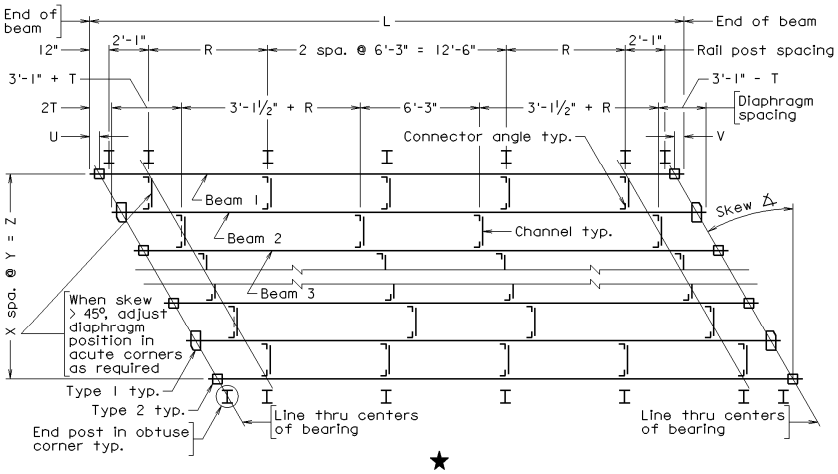
CELL	CELL NAME	CELL DESCRIPTION
	BAL13	Framing plan with left hand skew > 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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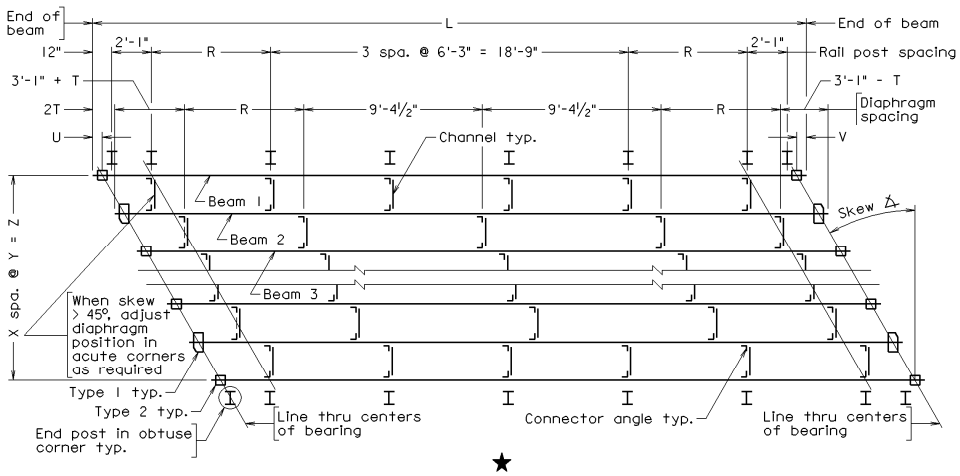
	BAL14	Framing plan with left hand skew > 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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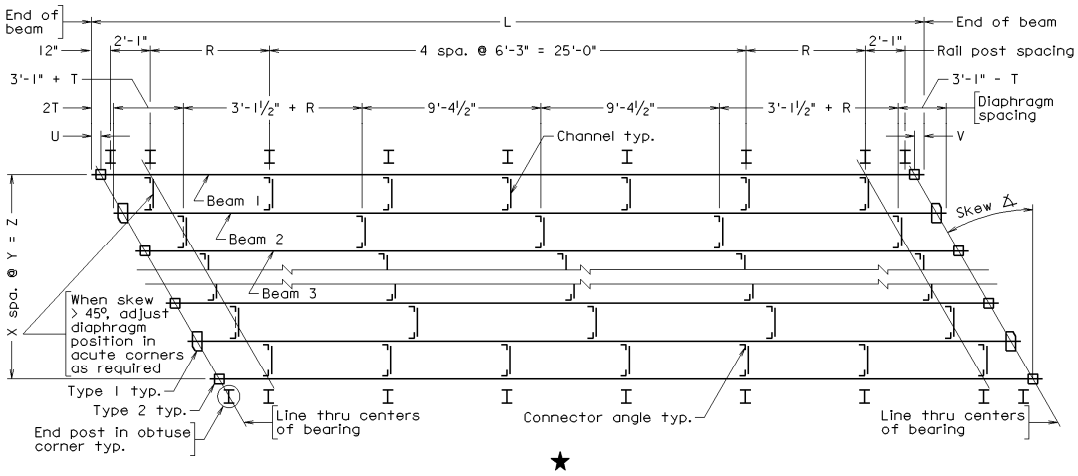
SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS **CELL LIBRARY: SS8.CEL** **CELLS**	PART 8 DATE: 12Sep2008 SHEET 12 of 90 FILE NO. SS8CELLS-12

CELL	CELL NAME	CELL DESCRIPTION
	BAL15	Framing plan with left hand skew > 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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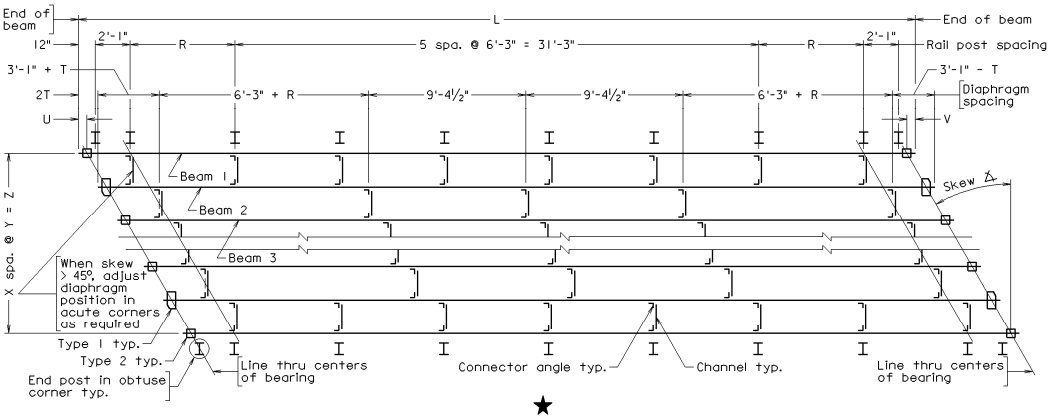
	BAL16	Framing plan with left hand skew > 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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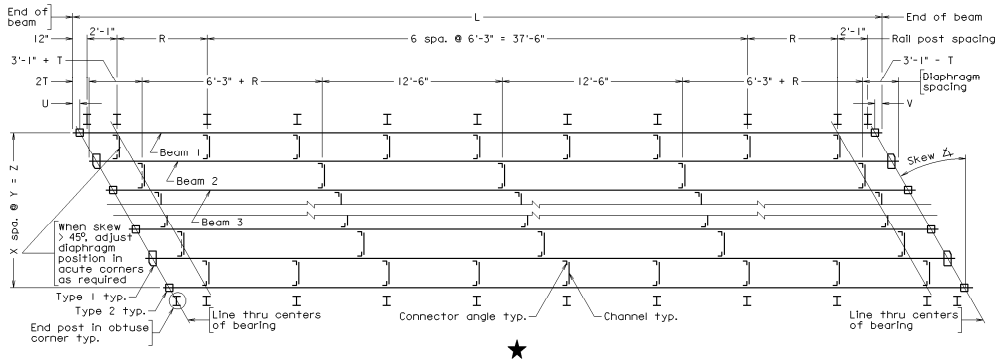
CELL	CELL NAME	CELL DESCRIPTION
	BAL17	Framing plan with left hand skew > 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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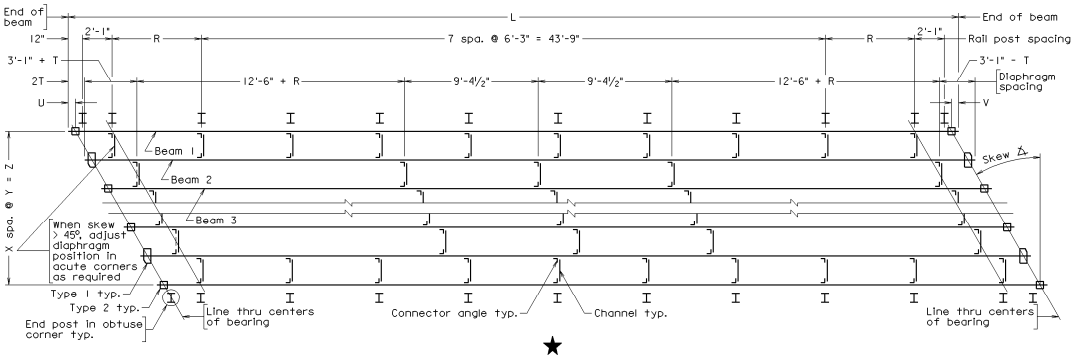
	BAL18	Framing plan with left hand skew > 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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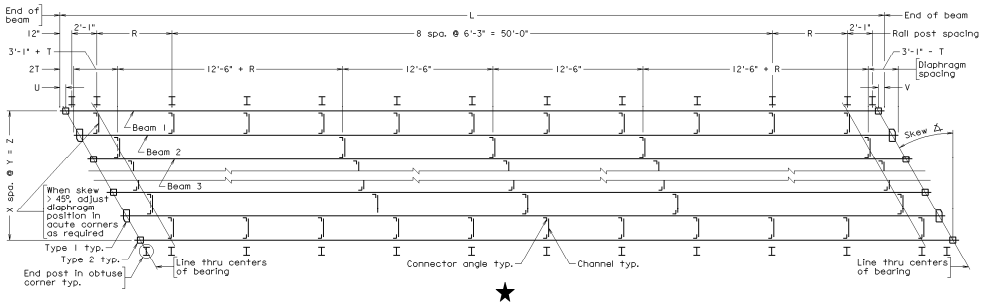
CELL	CELL NAME	CELL DESCRIPTION
	BAL19	Framing plan with left hand skew > 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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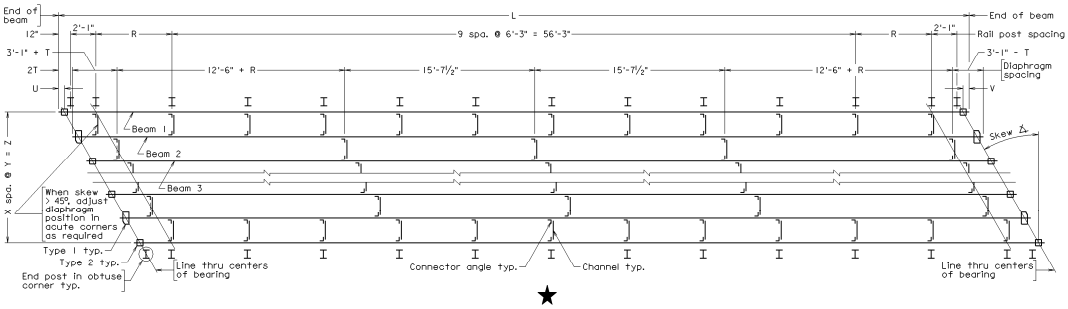
	BAL20	Framing plan with left hand skew > 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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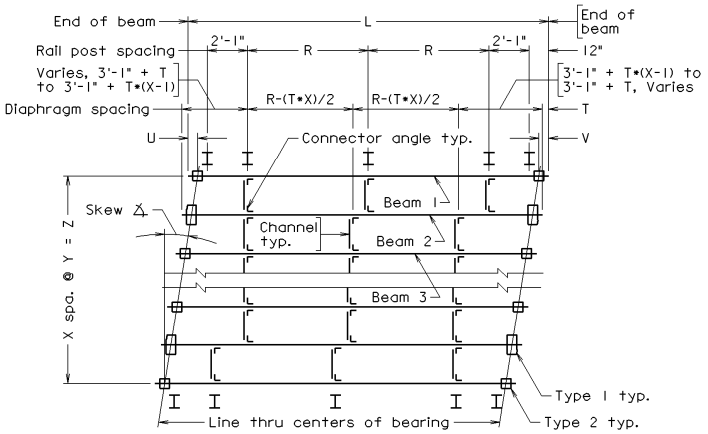
CELL	CELL NAME	CELL DESCRIPTION
	BAR01	Framing plan with right hand skew ≤ 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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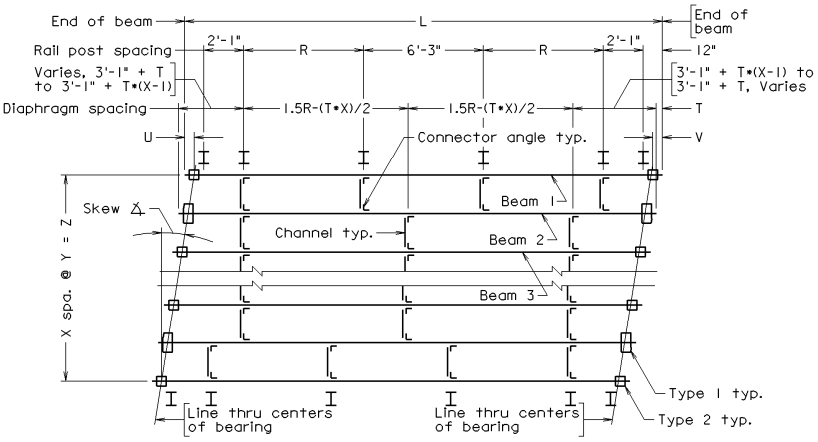
	BAR02	Framing plan with right hand skew ≤ 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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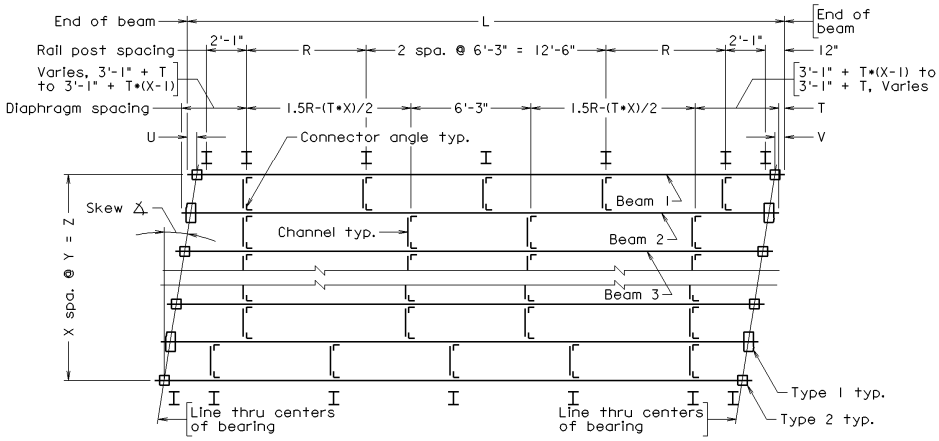
CELL	CELL NAME	CELL DESCRIPTION
	BAR03	Framing plan with right hand skew ≤ 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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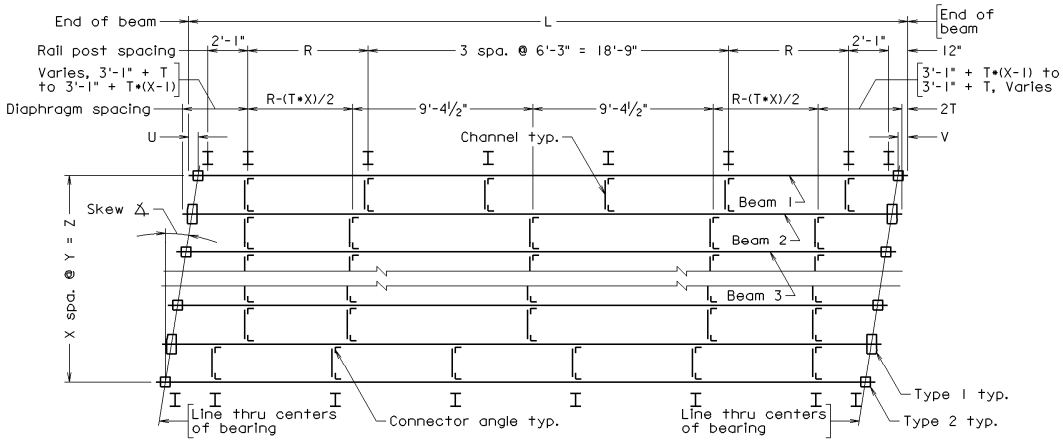
	BAR04	Framing plan with right hand skew ≤ 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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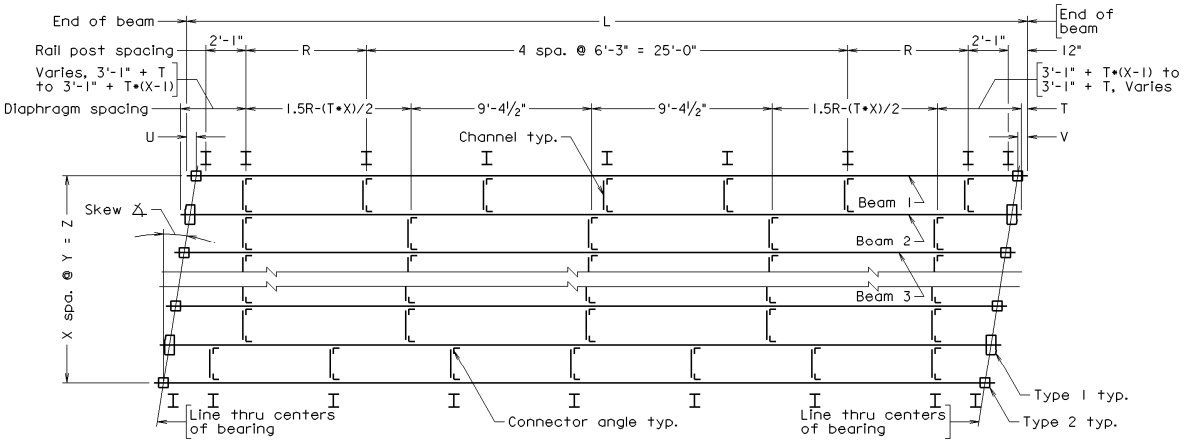
CELL	CELL NAME	CELL DESCRIPTION
	BAR05	Framing plan with right hand skew ≤ 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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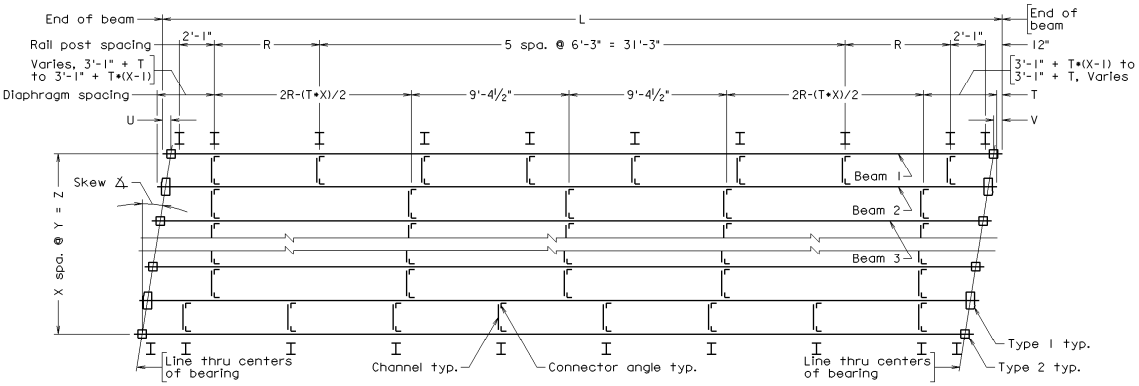
	BAR06	Framing plan with right hand skew ≤ 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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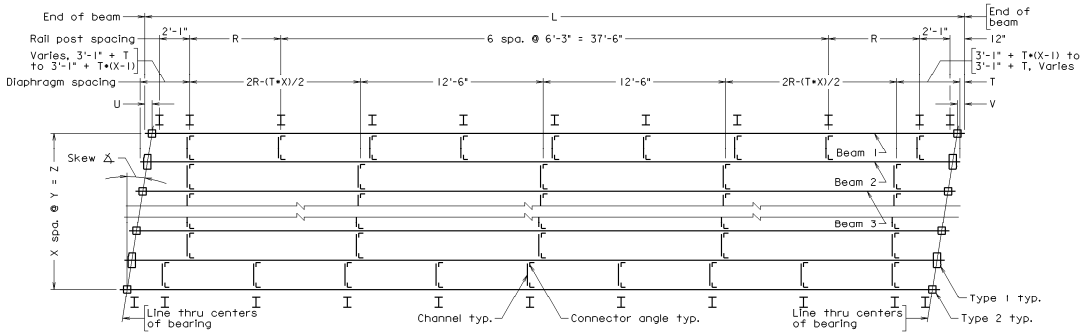
CELL	CELL NAME	CELL DESCRIPTION
	BAR07	Framing plan with right hand skew ≤ 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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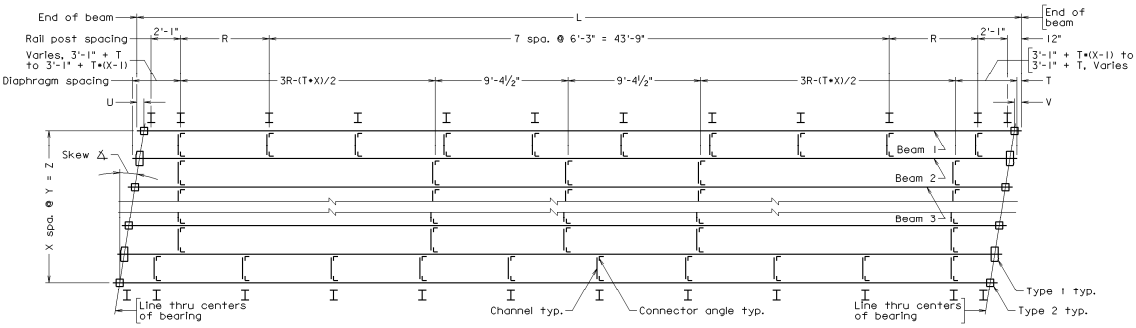
	BAR08	Framing plan with right hand skew ≤ 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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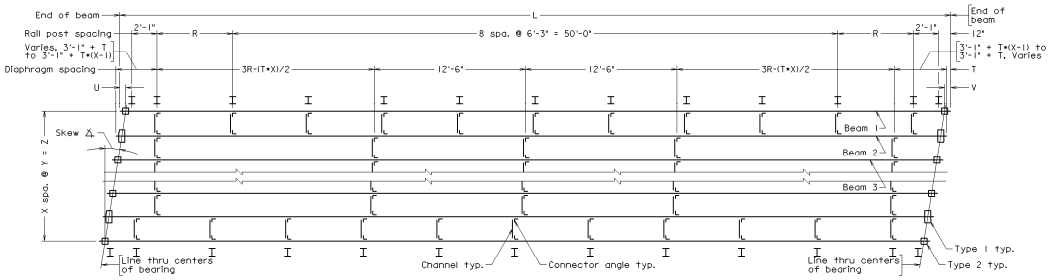
CELL	CELL NAME	CELL DESCRIPTION
	BAR09	Framing plan with right hand skew ≤ 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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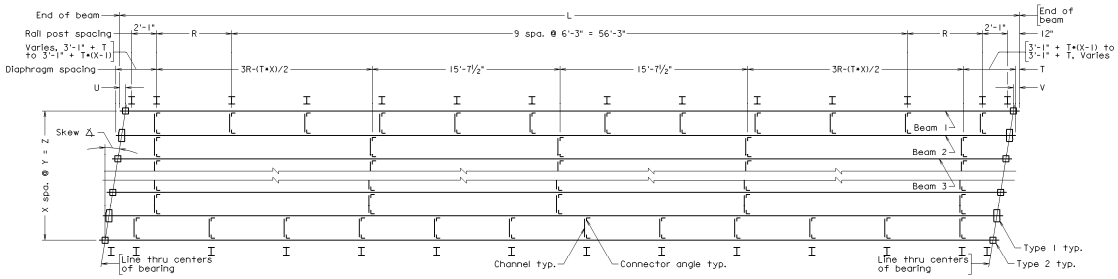
	BAR10	Framing plan with right hand skew ≤ 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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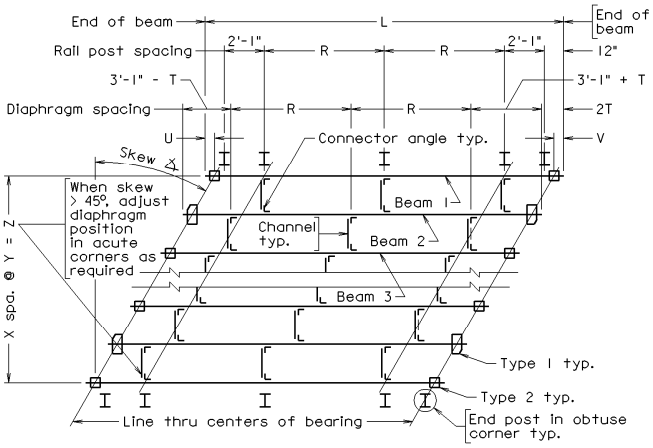
CELL	CELL NAME	CELL DESCRIPTION
	BAR11	Framing plan with right hand skew > 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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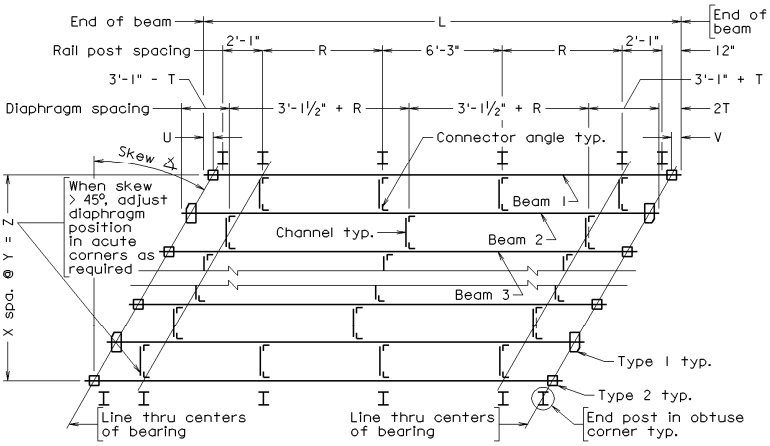
	BAR12	Framing plan with right hand skew > 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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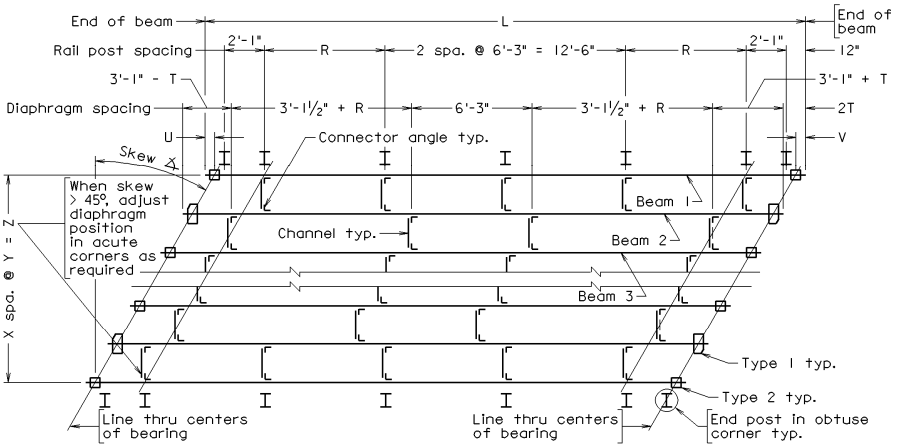
CELL	CELL NAME	CELL DESCRIPTION
	BAR13	Framing plan with right hand skew > 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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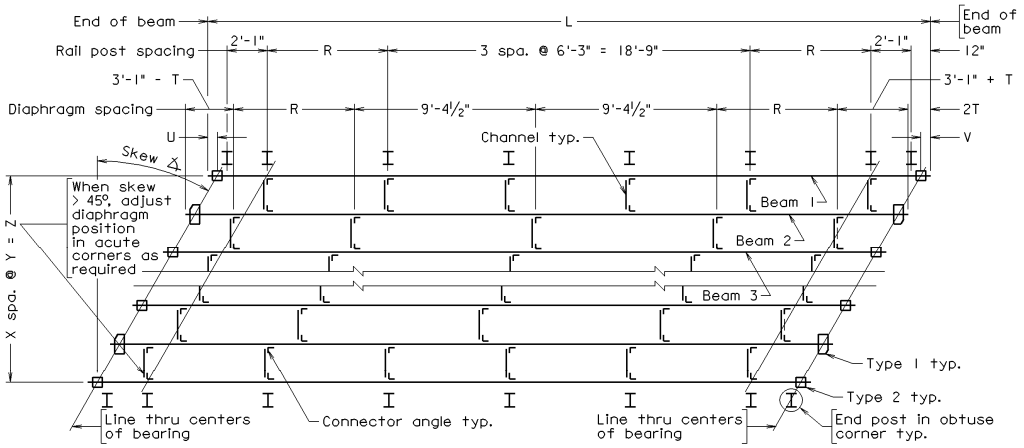
	BAR14	Framing plan with right hand skew > 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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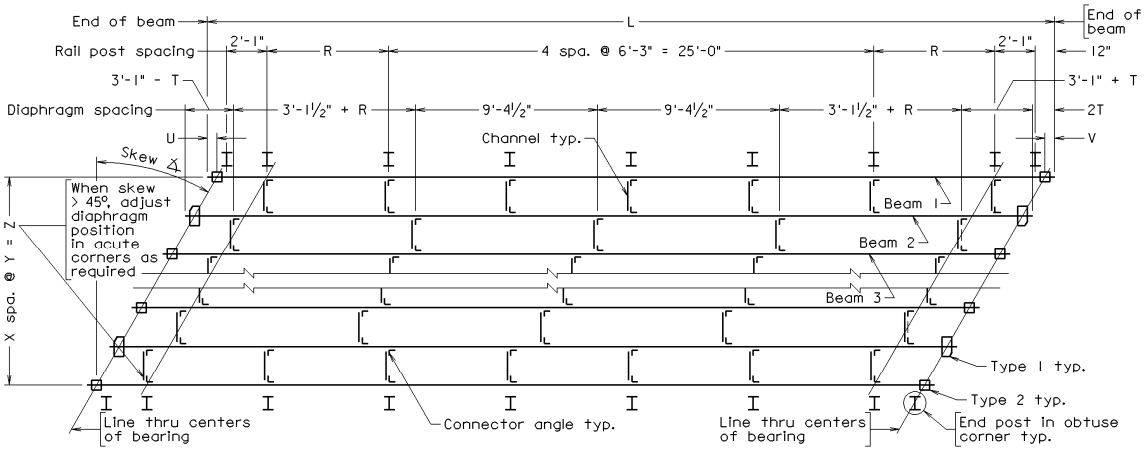
CELL	CELL NAME	CELL DESCRIPTION
	BAR15	Framing plan with right hand skew > 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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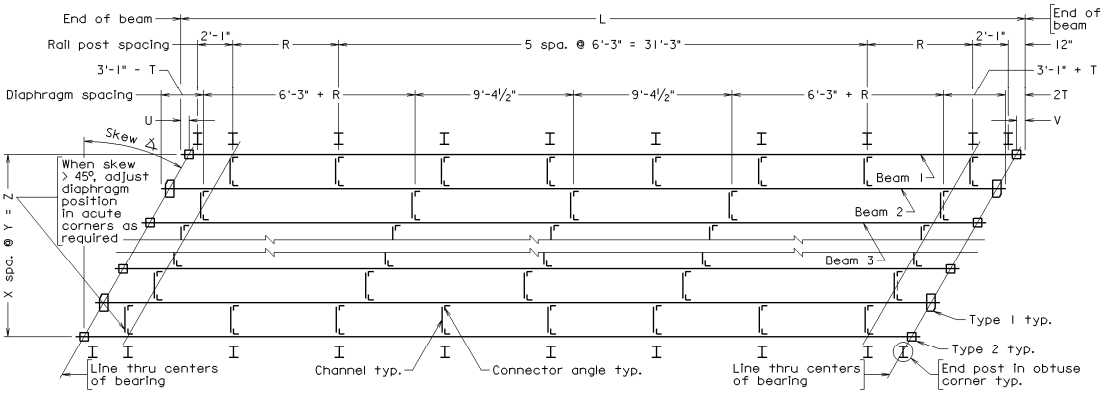
	BAR16	Framing plan with right hand skew > 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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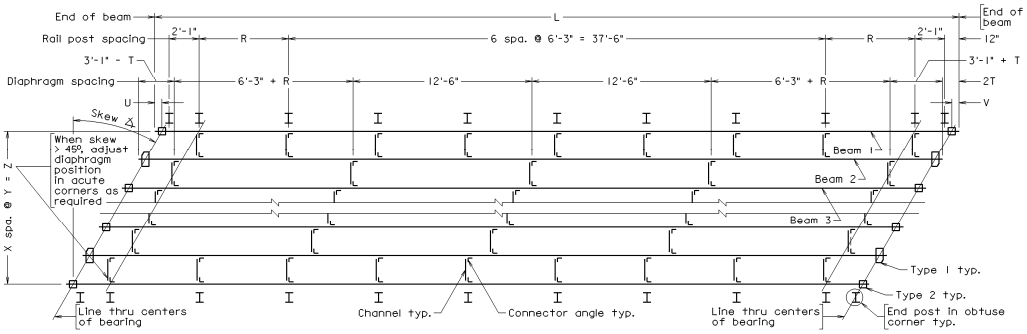
CELL	CELL NAME	CELL DESCRIPTION
	BAR17	Framing plan with right hand skew > 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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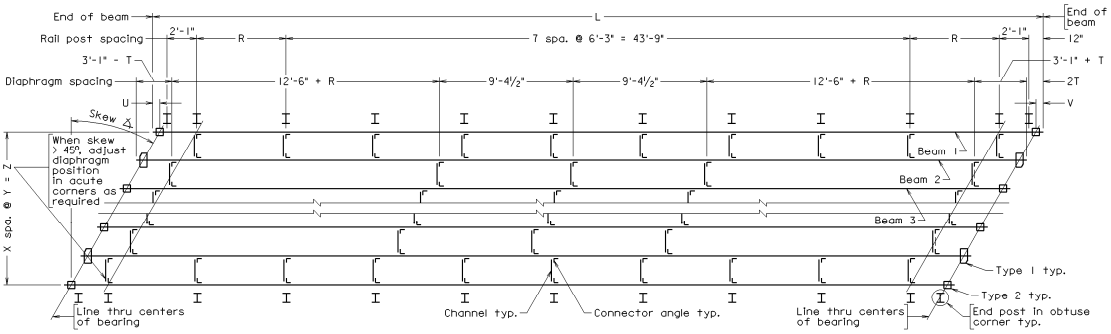
	BAR18	Framing plan with right hand skew > 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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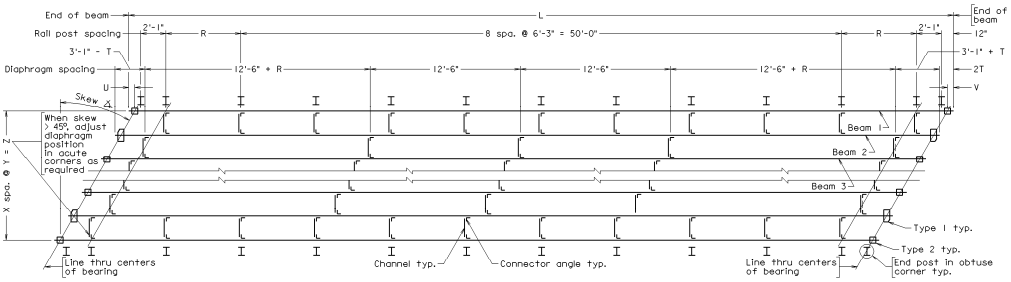
CELL	CELL NAME	CELL DESCRIPTION
	BAR19	Framing plan with right hand skew > 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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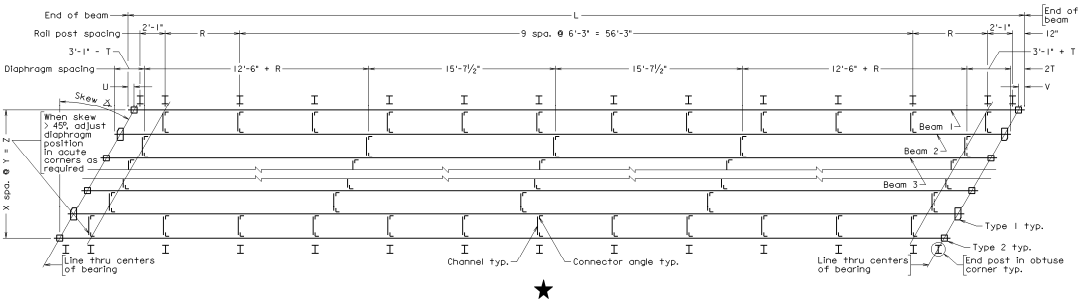
	BAR20	Framing plan with right hand skew > 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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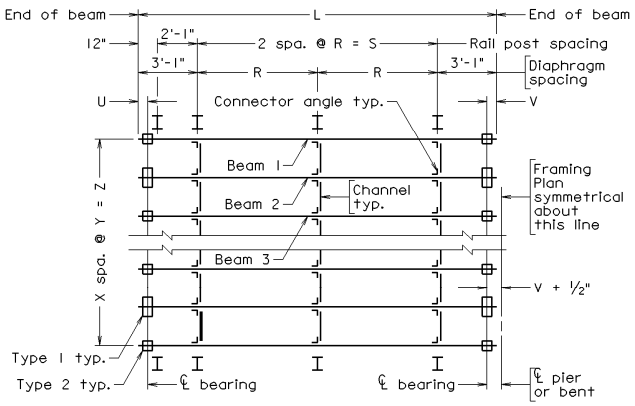
CELL	CELL NAME	CELL DESCRIPTION
	BTA01	Two-span framing plan with 0° skew and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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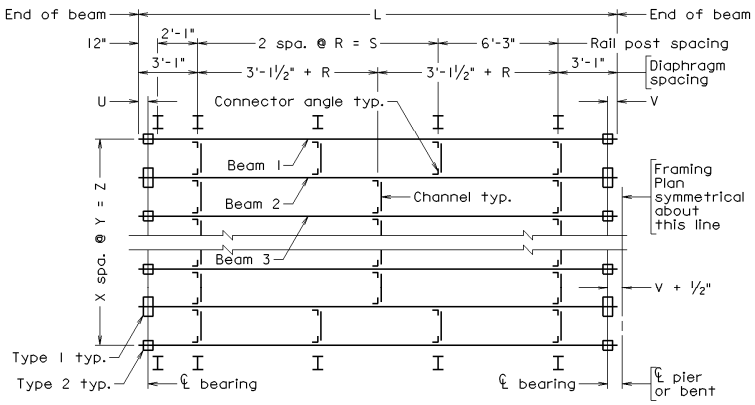
	BTA02	Two-span framing plan with 0° skew and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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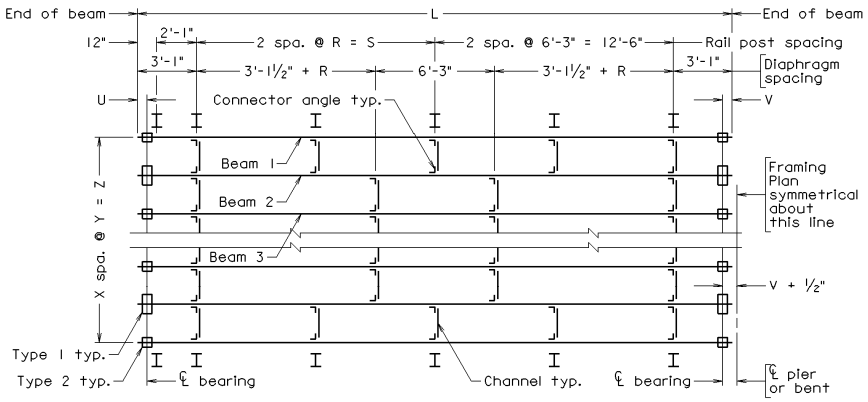
CELL	CELL NAME	CELL DESCRIPTION
	BTA03	Two-span framing plan with 0° skew and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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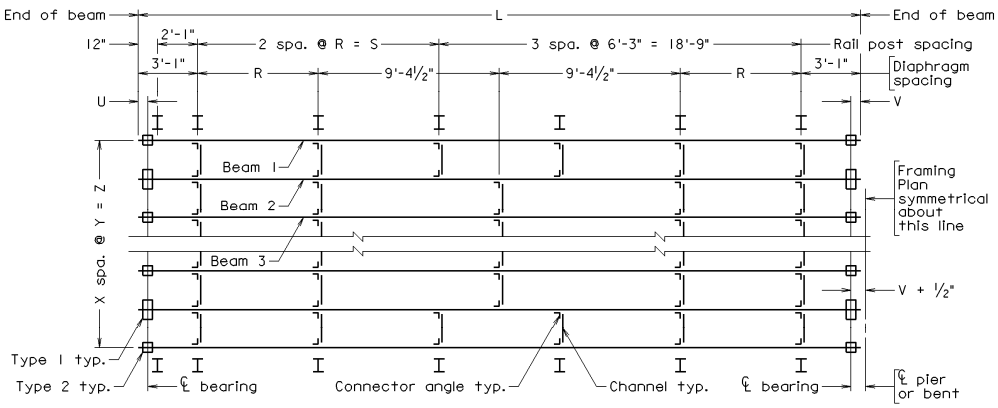
	BTA04	Two-span framing plan with 0° skew and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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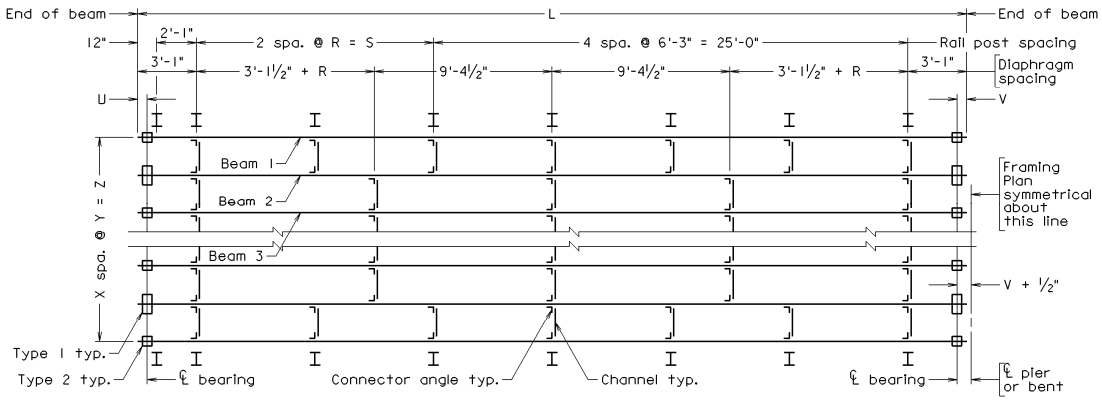
CELL	CELL NAME	CELL DESCRIPTION
	BTA05	Two-span framing plan with 0° skew and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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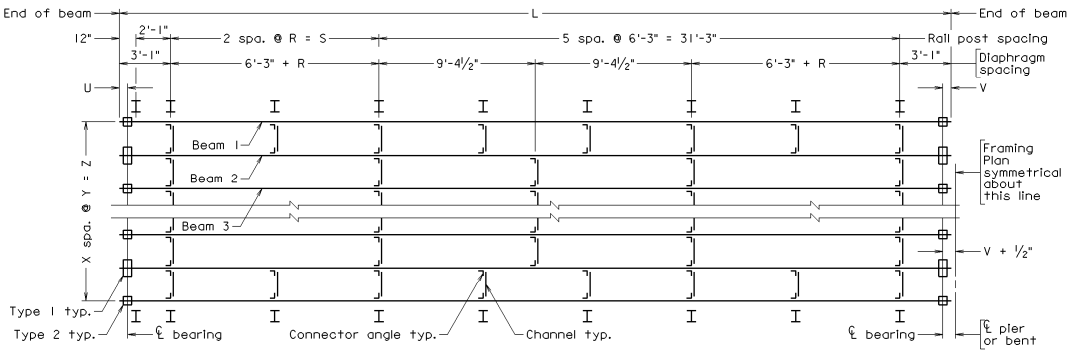
	BTA06	Two-span framing plan with 0° skew and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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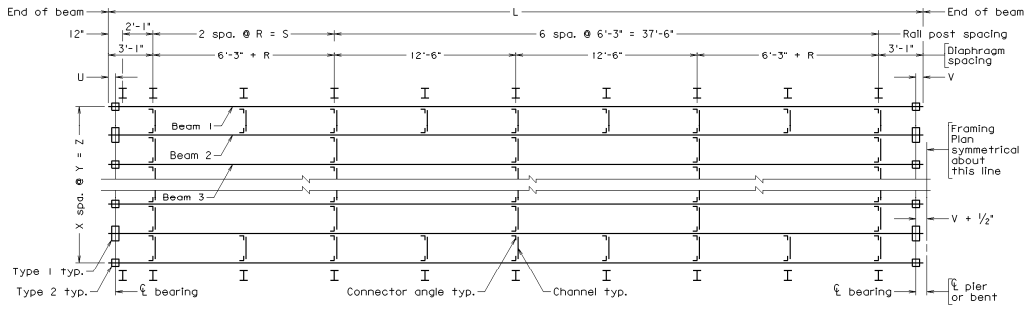
CELL	CELL NAME	CELL DESCRIPTION
	BTA07	Two-span framing plan with 0° skew and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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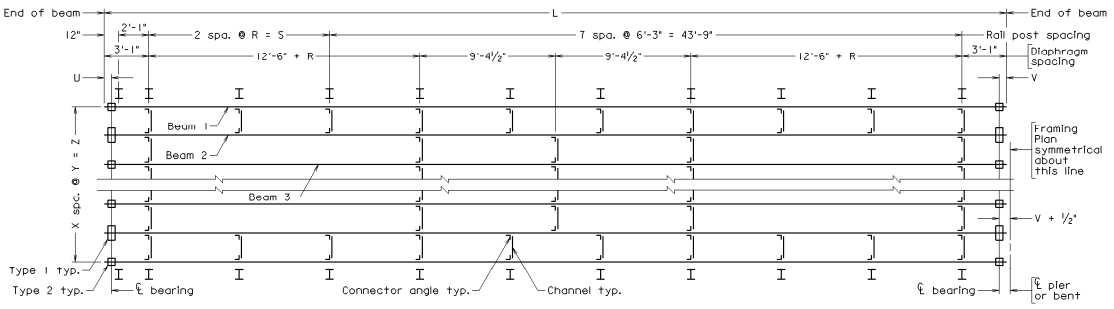
	BTA08	Two-span framing plan with 0° skew and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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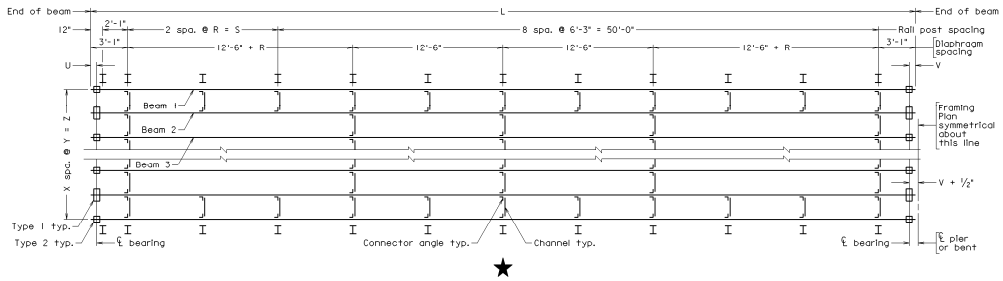
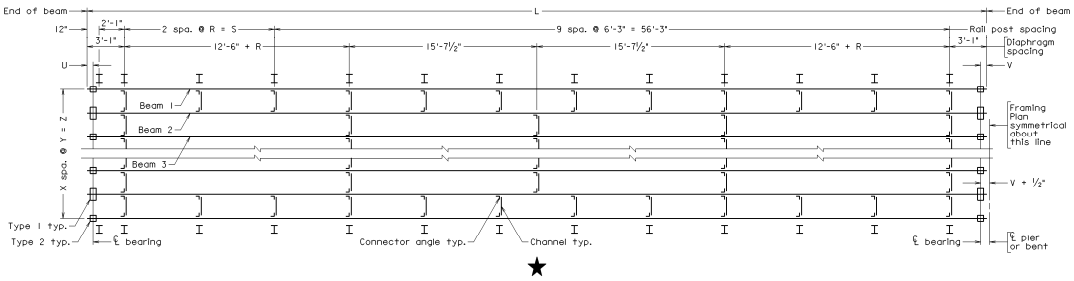
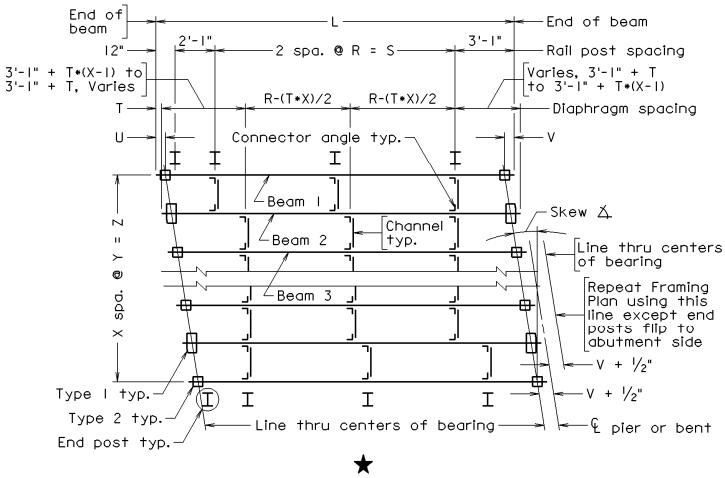
CELL	CELL NAME	CELL DESCRIPTION
	BTA09	Two-span framing plan with 0° skew and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



	BTA10	Two-span framing plan with 0° skew and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



CELL	CELL NAME	CELL DESCRIPTION
	BTL01	Two-span framing plan with left hand skew ≤ 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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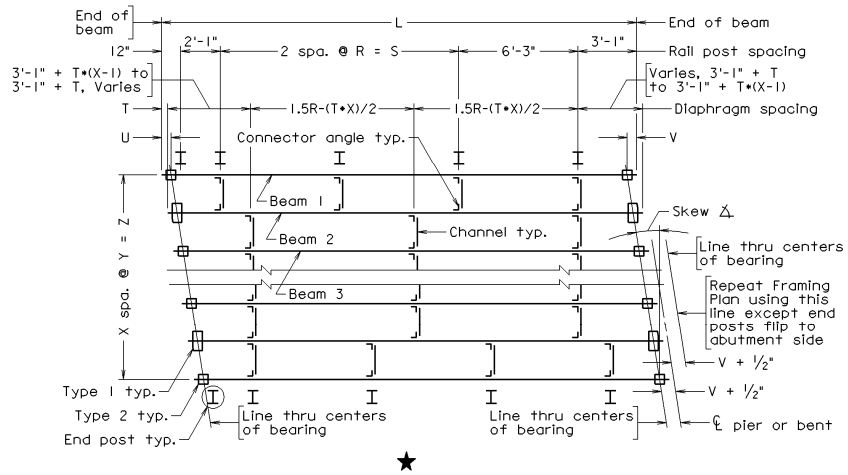
	BTL02	Two-span framing plan with left hand skew ≤ 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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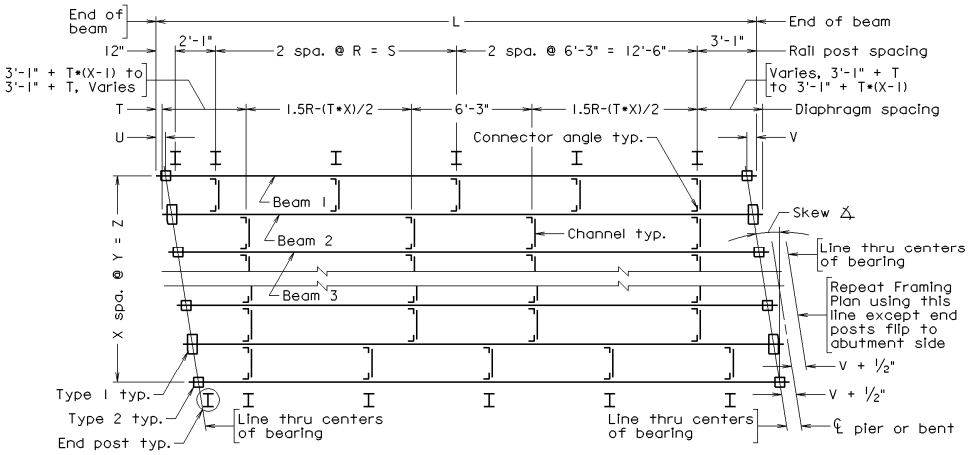
CELL	CELL NAME	CELL DESCRIPTION
	BTL03	Two-span framing plan with left hand skew ≤ 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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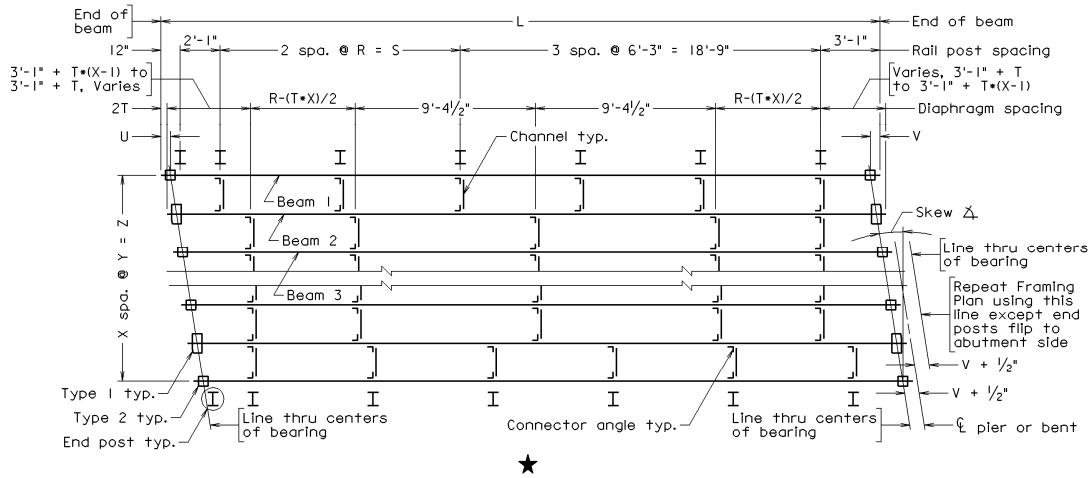
	BTL04	Two-span framing plan with left hand skew ≤ 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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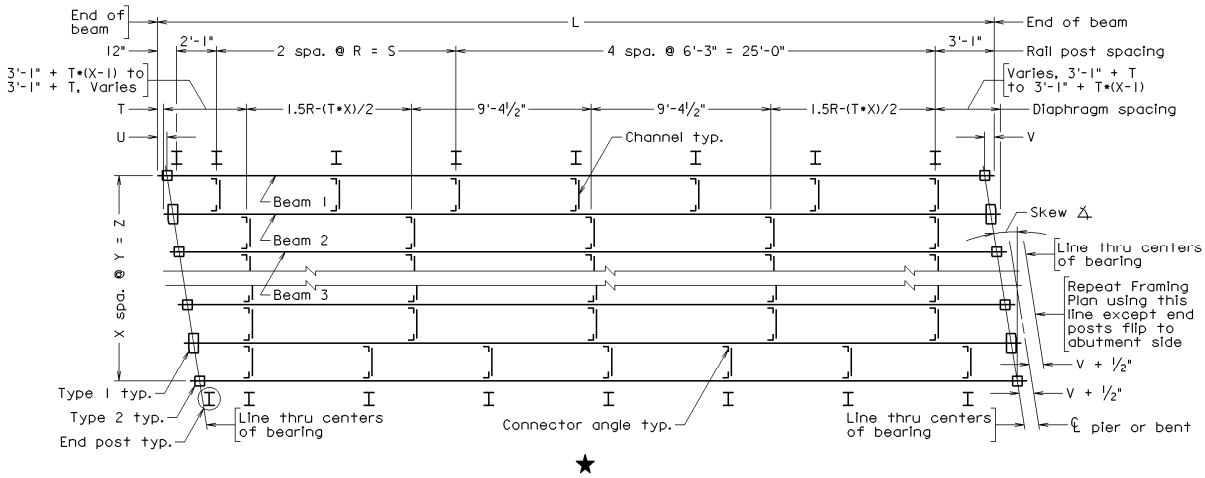
CELL	CELL NAME	CELL DESCRIPTION
	BTL05	Two-span framing plan with left hand skew ≤ 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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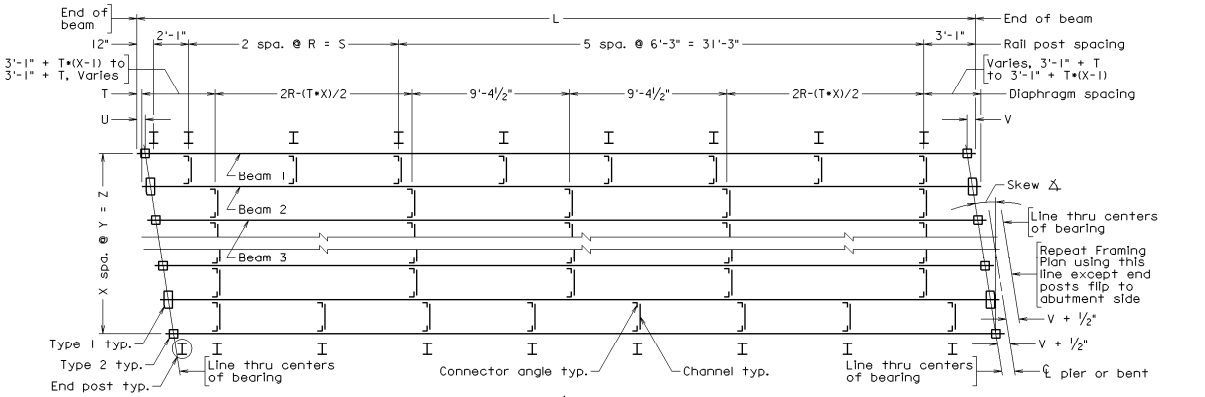
	BTL06	Two-span framing plan with left hand skew ≤ 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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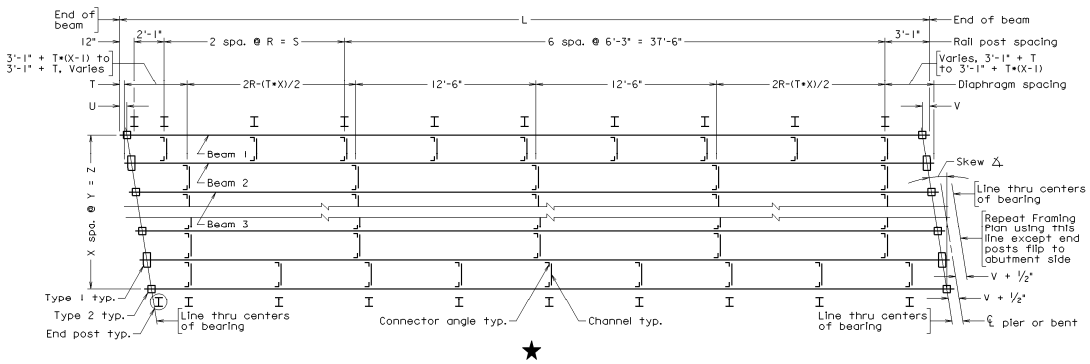
CELL	CELL NAME	CELL DESCRIPTION
	BTL07	Two-span framing plan with left hand skew ≤ 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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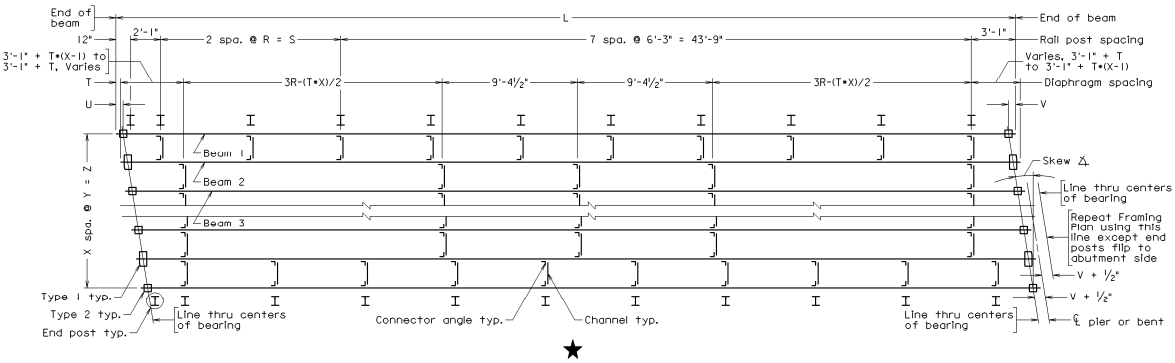
	BTL08	Two-span framing plan with left hand skew ≤ 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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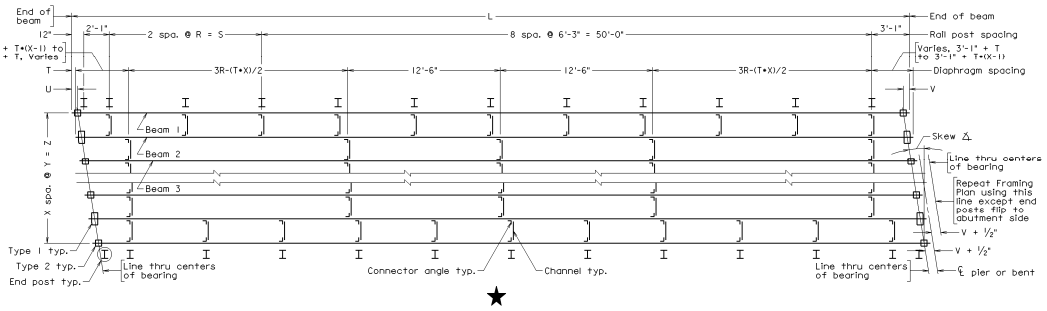
CELL	CELL NAME	CELL DESCRIPTION
	BTL09	Two-span framing plan with left hand skew ≤ 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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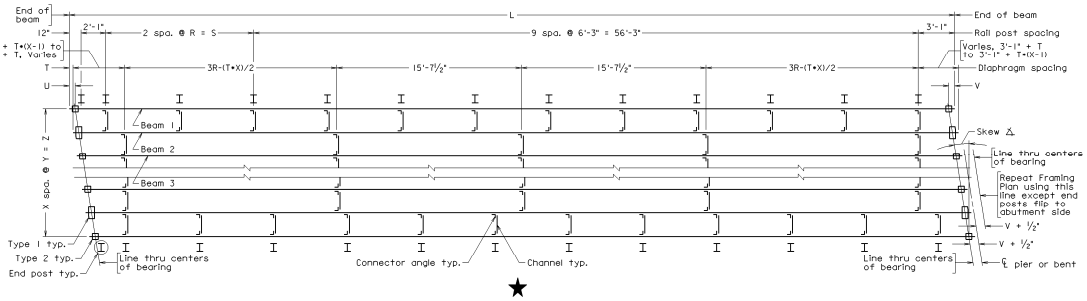
	BTL10	Two-span framing plan with left hand skew ≤ 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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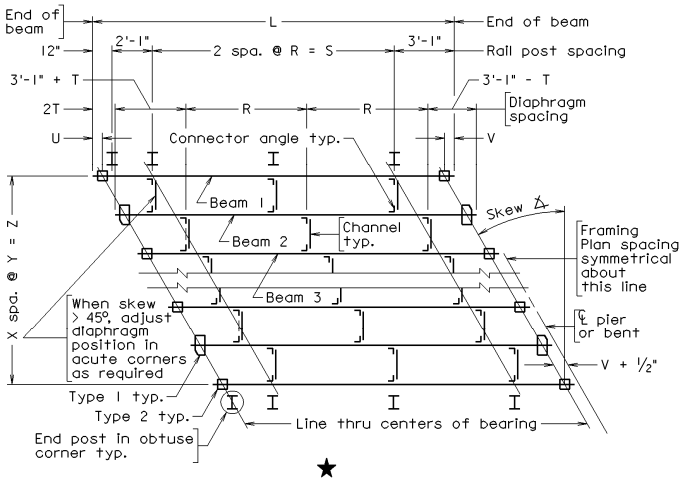
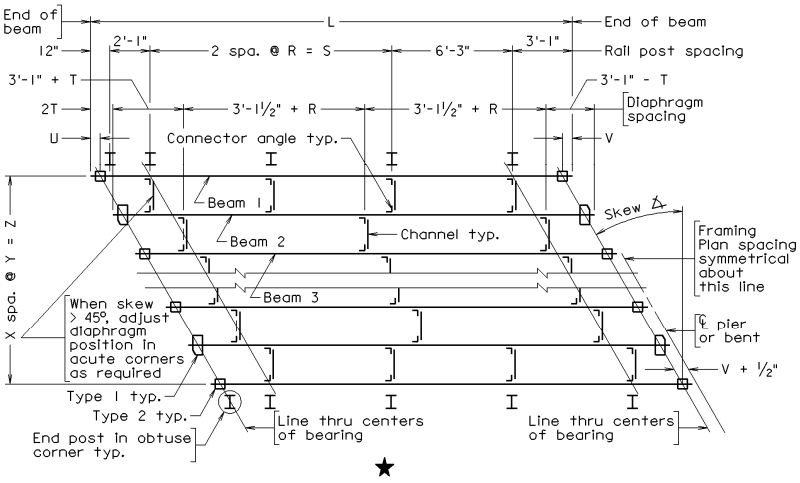
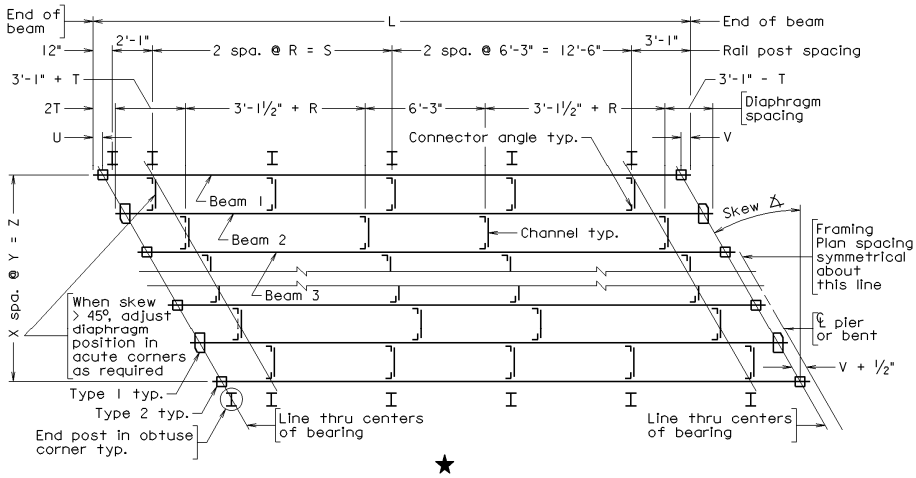
CELL	CELL NAME	CELL DESCRIPTION
	BTL11	Two-span framing plan with left hand skew > 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



	BTL12	Two-span framing plan with left hand skew > 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



CELL	CELL NAME	CELL DESCRIPTION
	BTL13	Two-span framing plan with left hand skew > 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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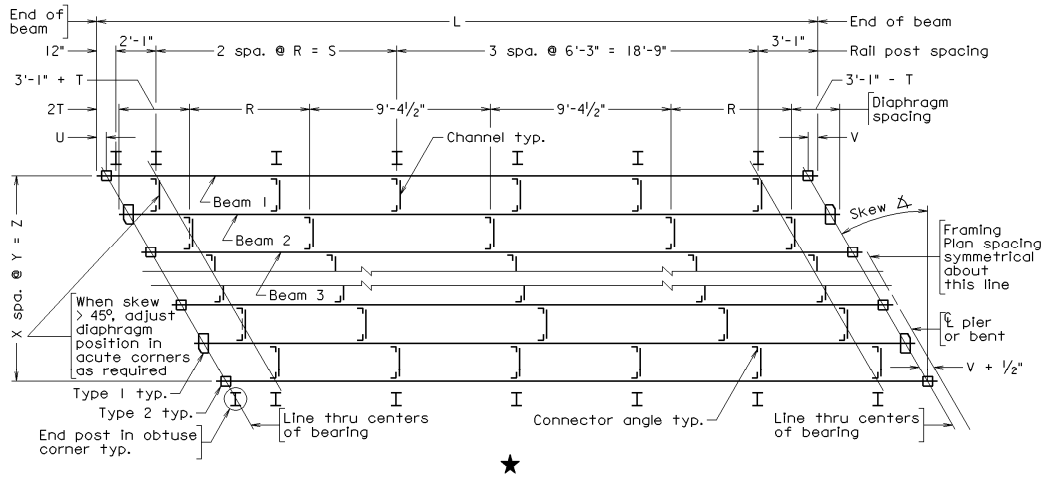
	BTL14	Two-span framing plan with left hand skew > 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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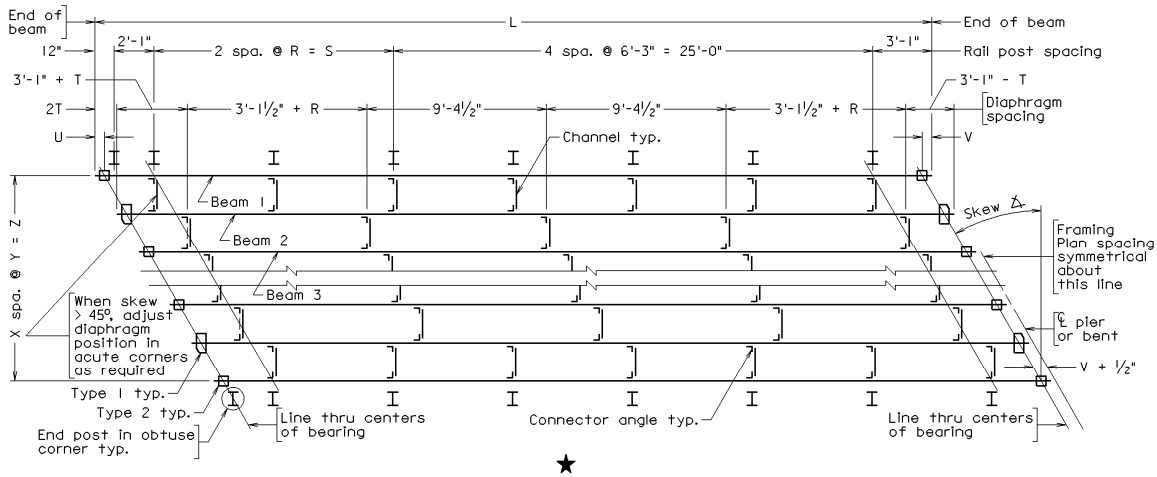
CELL	CELL NAME	CELL DESCRIPTION
	BTL15	Two-span framing plan with left hand skew > 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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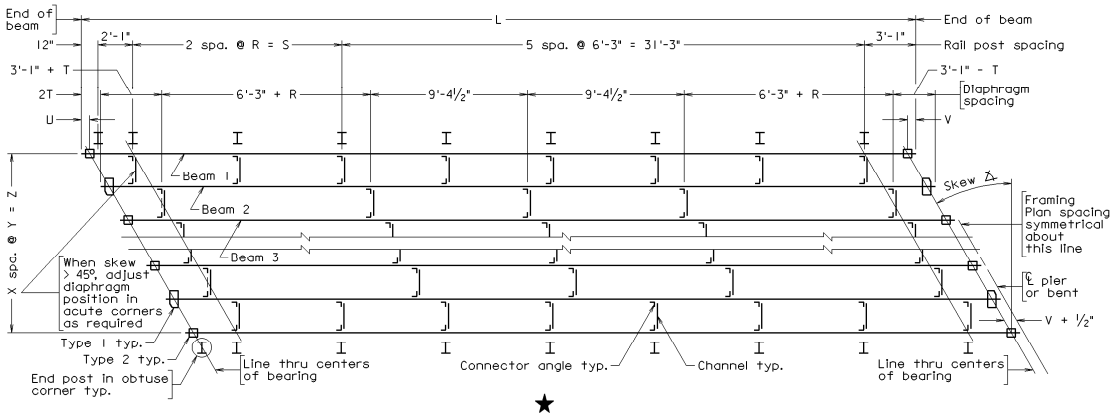
	BTL16	Two-span framing plan with left hand skew > 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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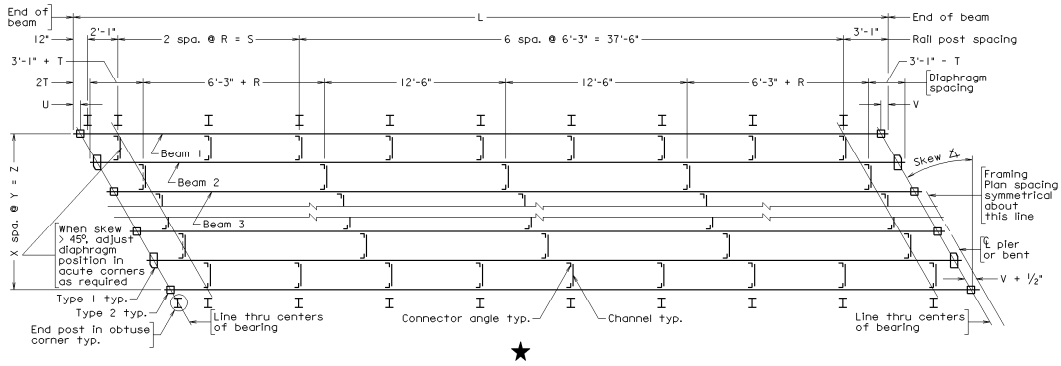
SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
CELL LIBRARY: SS8.CEL
CELLS

CELL	CELL NAME	CELL DESCRIPTION
	BTL17	Two-span framing plan with left hand skew > 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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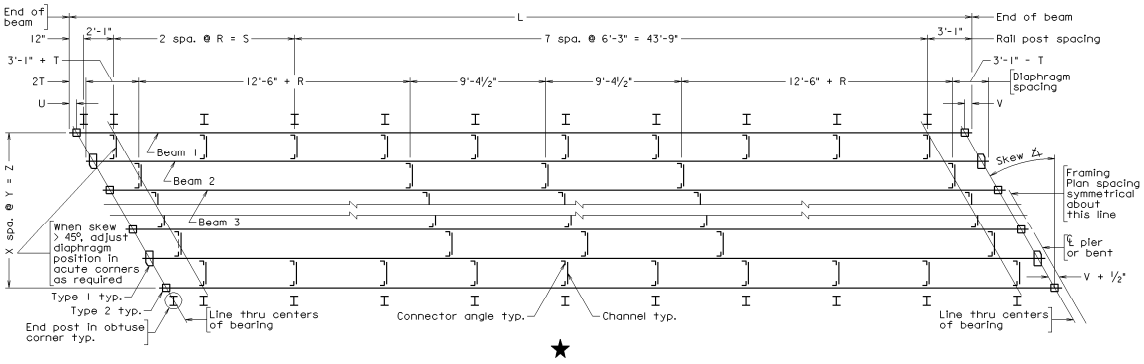
	BTL18	Two-span framing plan with left hand skew > 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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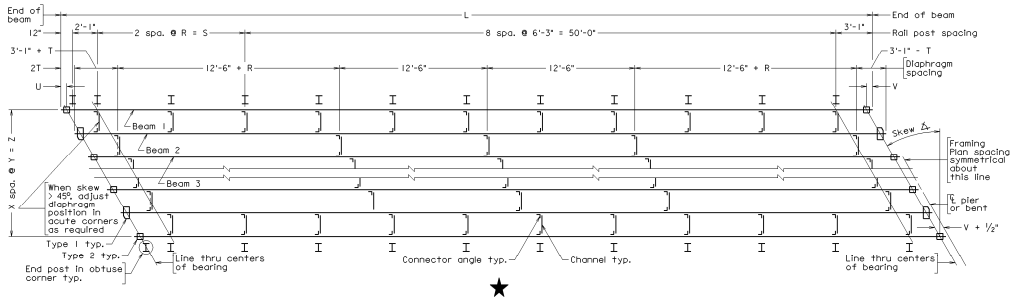
CELL	CELL NAME	CELL DESCRIPTION
	BTL19	Two-span framing plan with left hand skew > 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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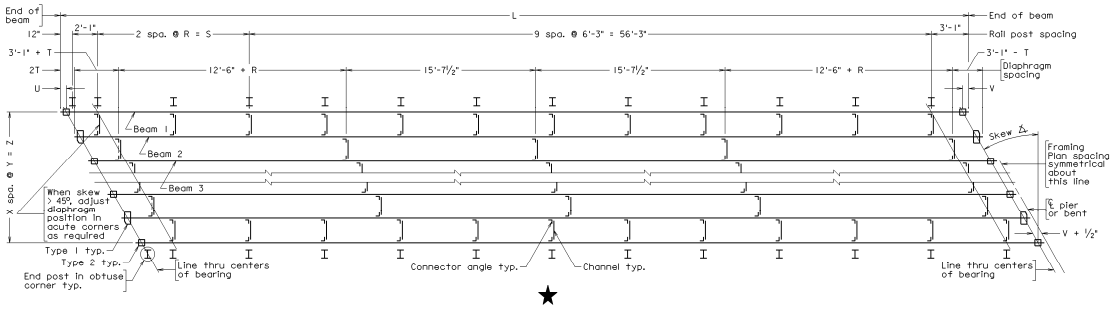
	BTL20	Two-span framing plan with left hand skew > 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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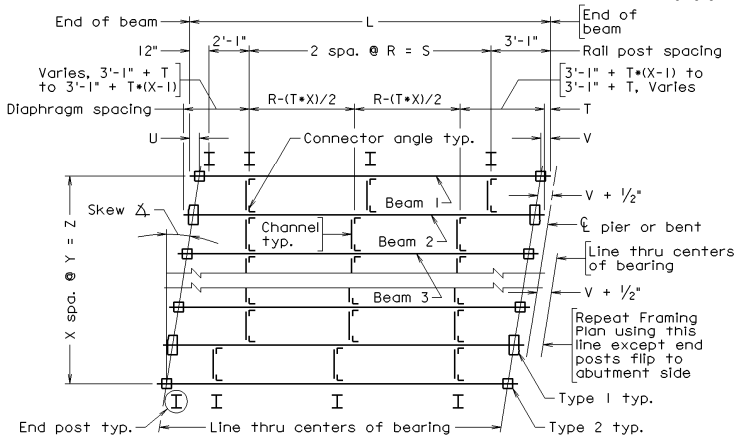
CELL	CELL NAME	CELL DESCRIPTION
	BTR01	Two-span framing plan with right hand skew ≤ 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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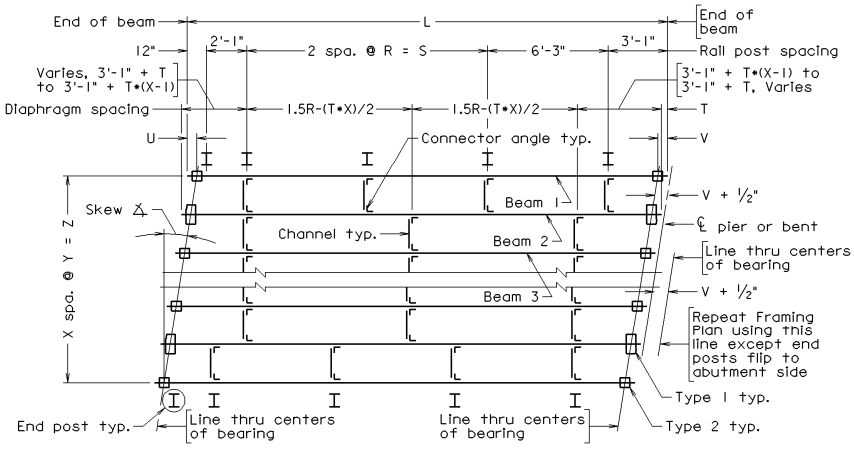
	BTR02	Two-span framing plan with right hand skew ≤ 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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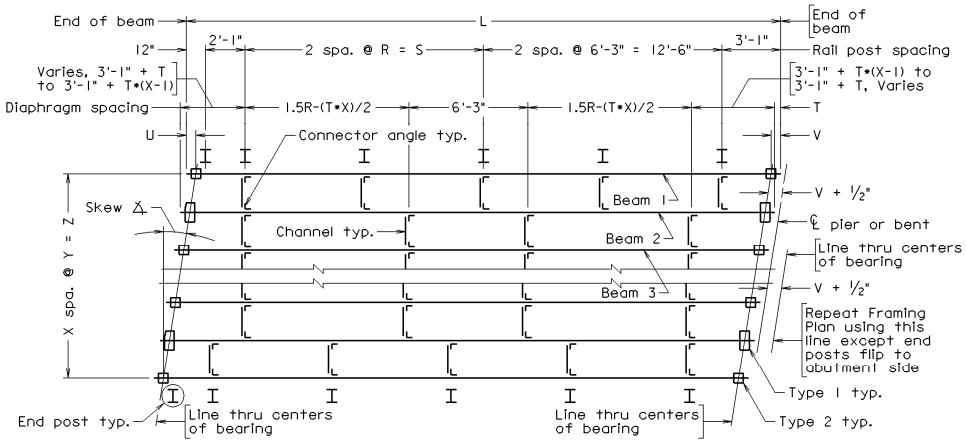
SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
CELL LIBRARY: SS8.CEL
CELLS

CELL	CELL NAME	CELL DESCRIPTION
	BTR03	Two-span framing plan with right hand skew ≤ 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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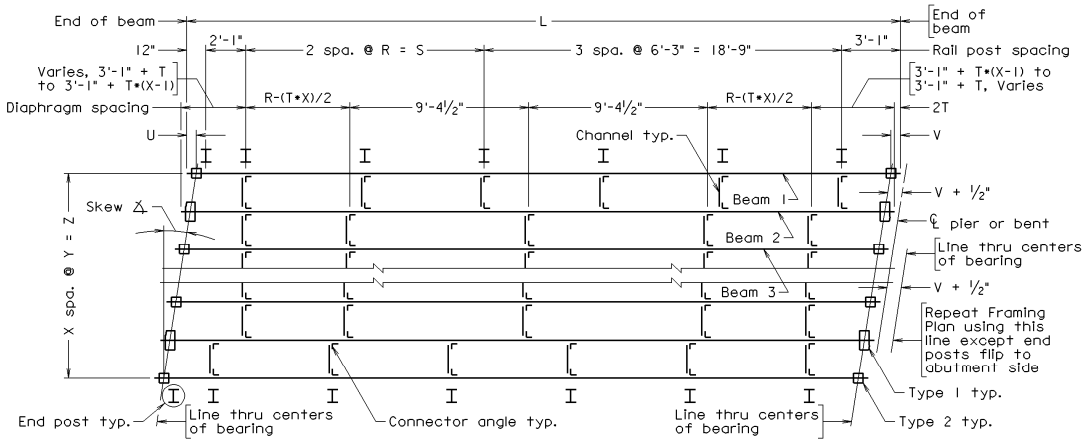
	BTR04	Two-span framing plan with right hand skew ≤ 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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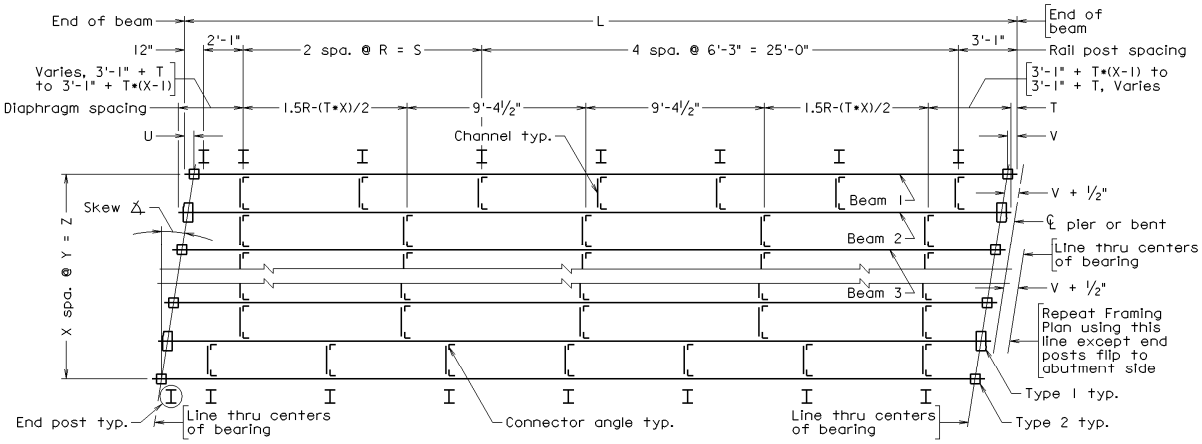
CELL	CELL NAME	CELL DESCRIPTION
	BTR05	Two-span framing plan with right hand skew ≤ 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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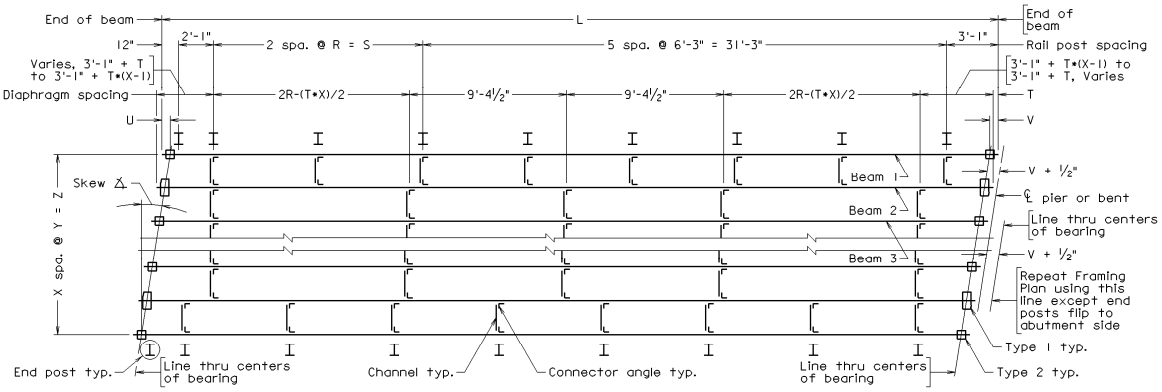
	BTR06	Two-span framing plan with right hand skew ≤ 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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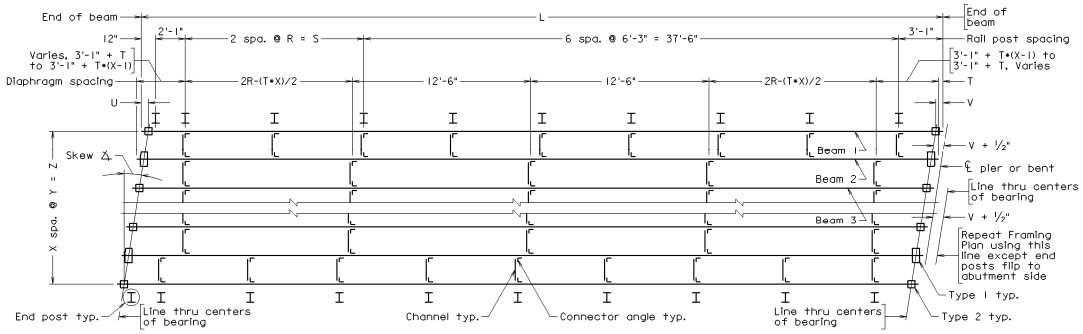
CELL	CELL NAME	CELL DESCRIPTION
	BTR07	Two-span framing plan with right hand skew ≤ 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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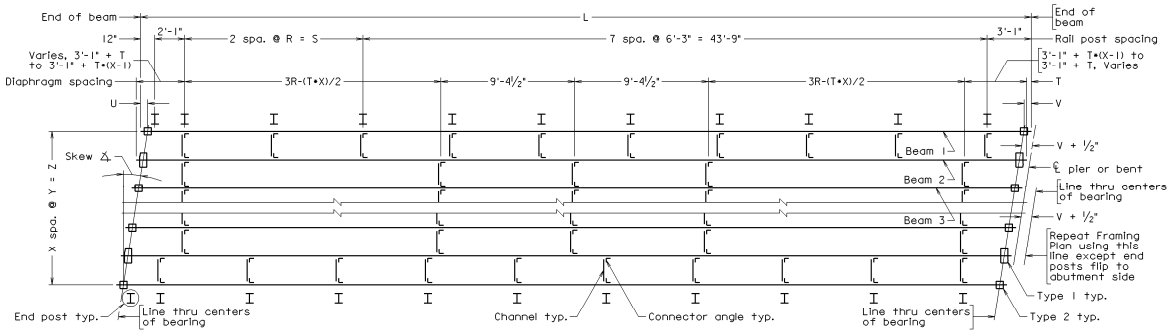
	BTR08	Two-span framing plan with right hand skew ≤ 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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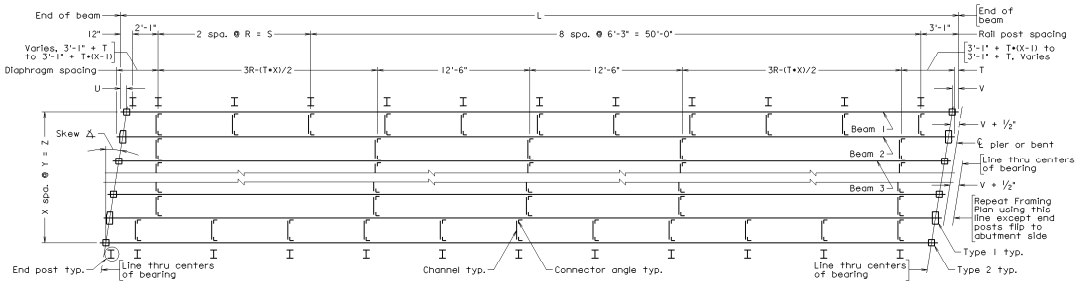
CELL	CELL NAME	CELL DESCRIPTION
	BTR09	Two-span framing plan with right hand skew ≤ 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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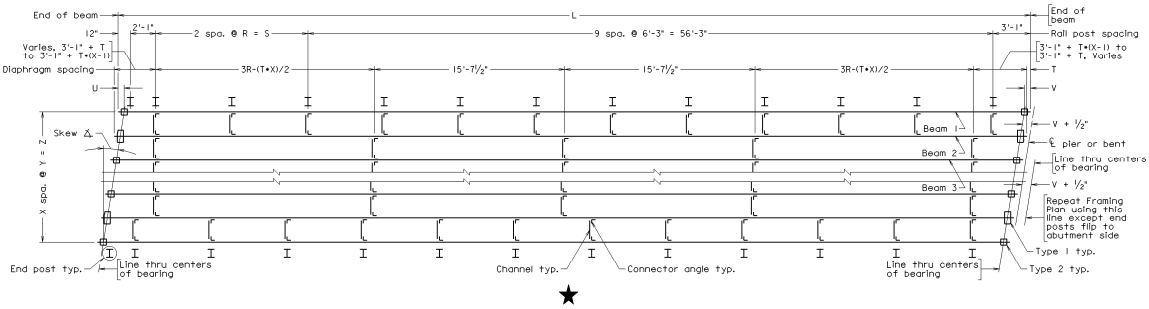
	BTR10	Two-span framing plan with right hand skew ≤ 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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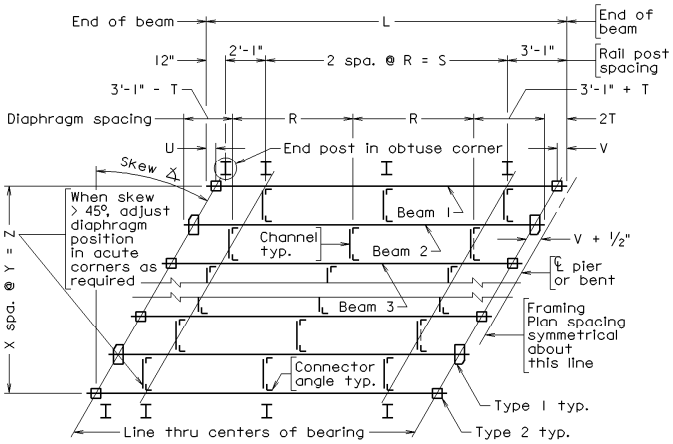
CELL	CELL NAME	CELL DESCRIPTION
	BTR11	Two-span framing plan with right hand skew > 9° and bolted angles (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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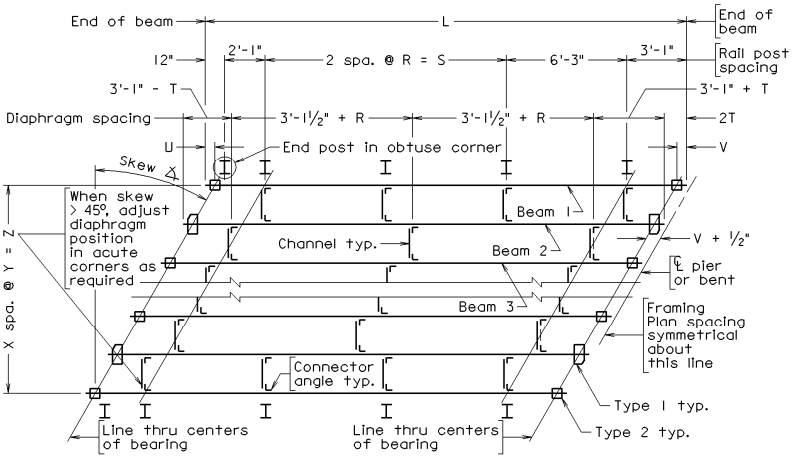
	BTR12	Two-span framing plan with right hand skew > 9° and bolted angles (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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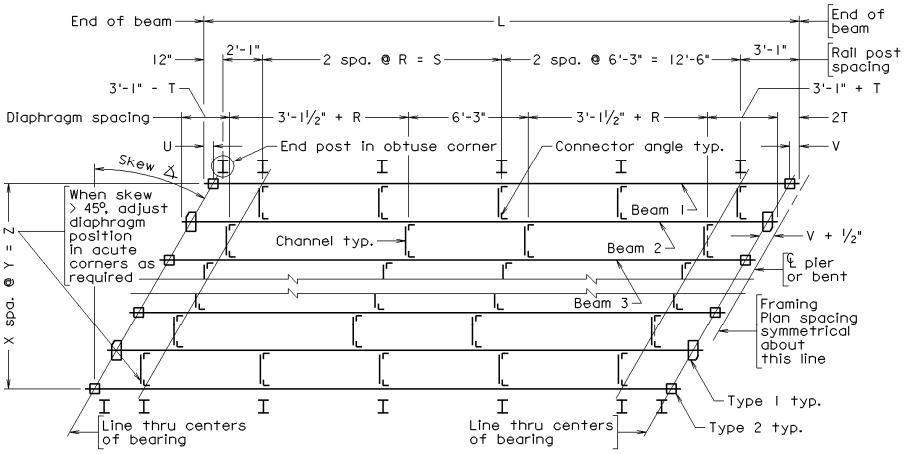
CELL	CELL NAME	CELL DESCRIPTION
	BTR13	Two-span framing plan with right hand skew > 9° and bolted angles (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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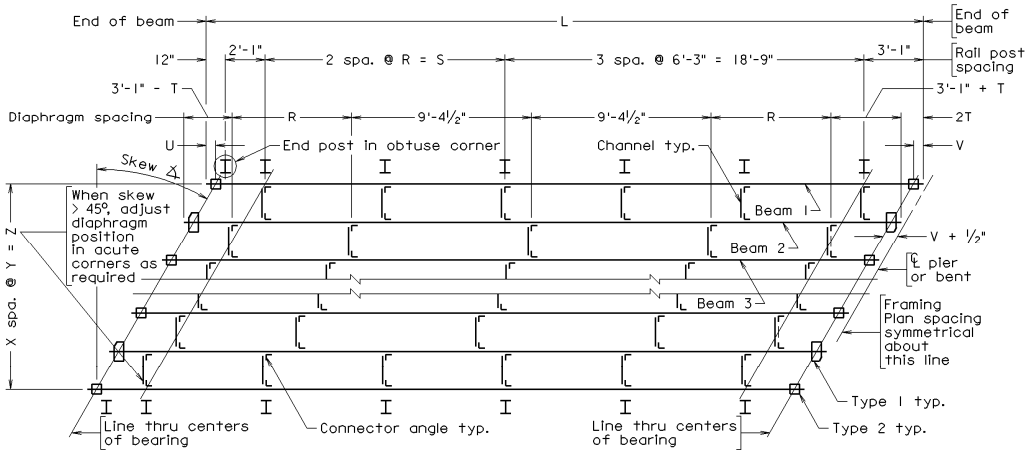
	BTR14	Two-span framing plan with right hand skew > 9° and bolted angles (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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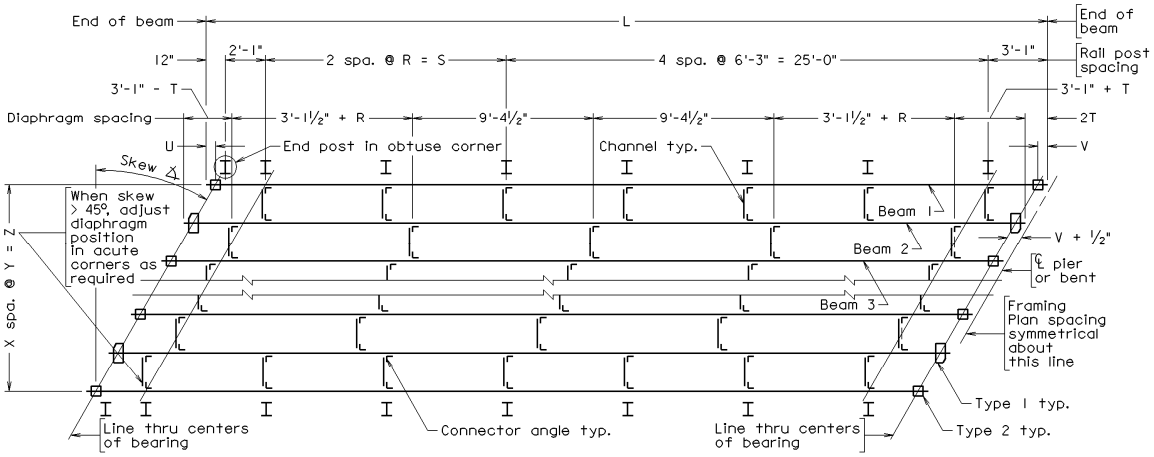
CELL	CELL NAME	CELL DESCRIPTION
	BTR15	Two-span framing plan with right hand skew > 9° and bolted angles (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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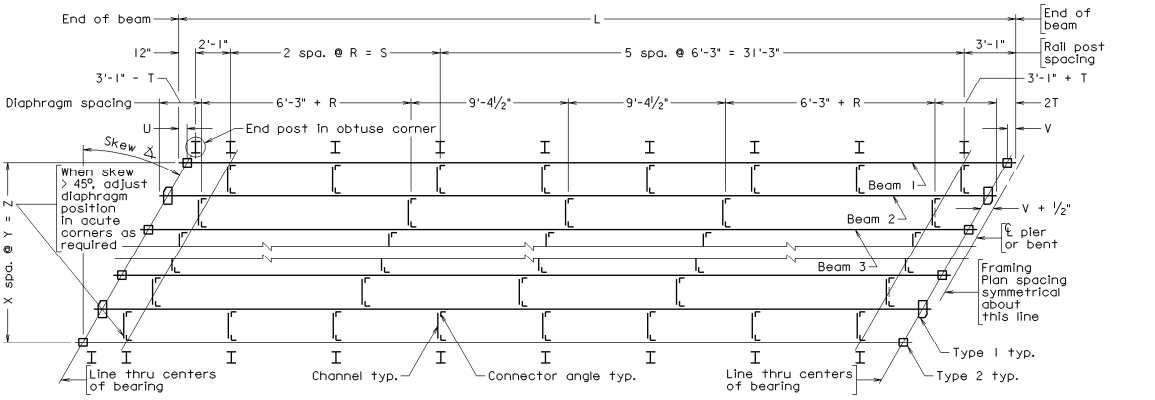
	BTR16	Two-span framing plan with right hand skew > 9° and bolted angles (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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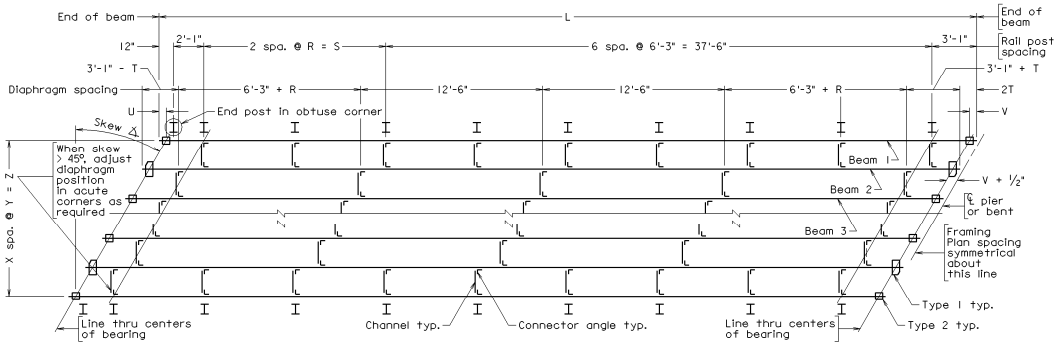
CELL	CELL NAME	CELL DESCRIPTION
	BTR17	Two-span framing plan with right hand skew > 9° and bolted angles (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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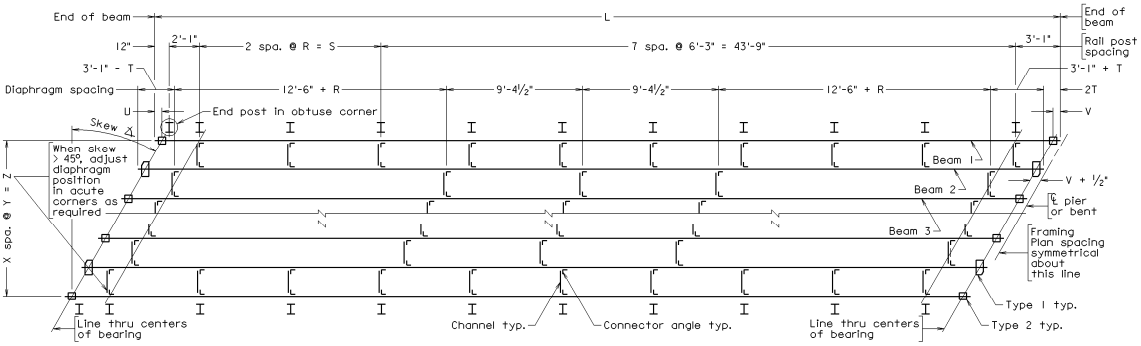
	BTR18	Two-span framing plan with right hand skew > 9° and bolted angles (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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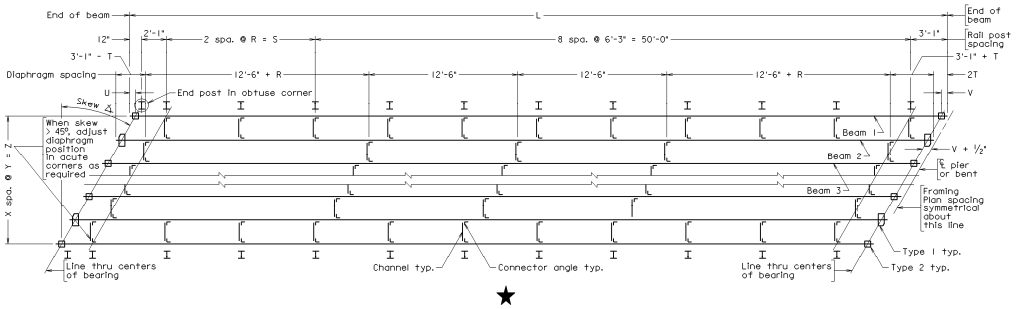
CELL	CELL NAME	CELL DESCRIPTION
	BTR19	Two-span framing plan with right hand skew > 9° and bolted angles (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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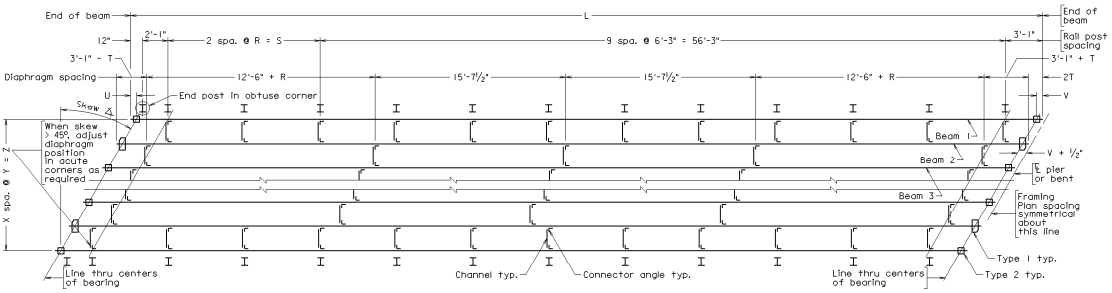
	BTR20	Two-span framing plan with right hand skew > 9° and bolted angles (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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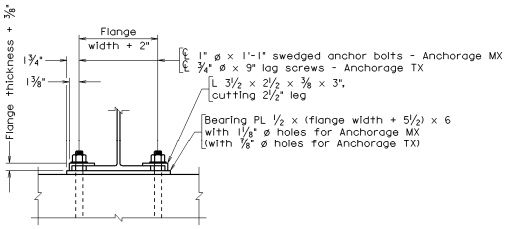
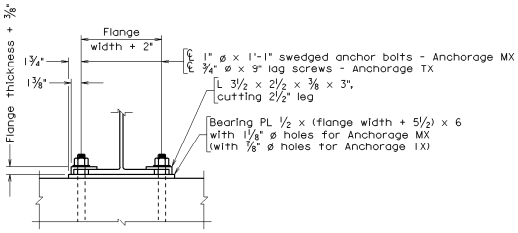
CELL	CELL NAME	CELL DESCRIPTION
	BZAB1	Bearing detail, bearing plate, L ≤ 60'-0", anchor bolts required at all locations (approx. 0.30 of actual cell size)

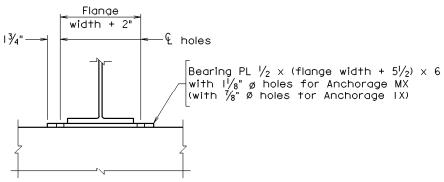


TYPE 1 AND 2 BEARING DETAIL
Timber Abutment Anchorage TX
Typical Masonry ★ Anchorage MX

	BZAB2	Bearing detail, bearing plate, L ≤ 60'-0", anchor bolts not required at all locations (approx. 0.30 of actual cell size)

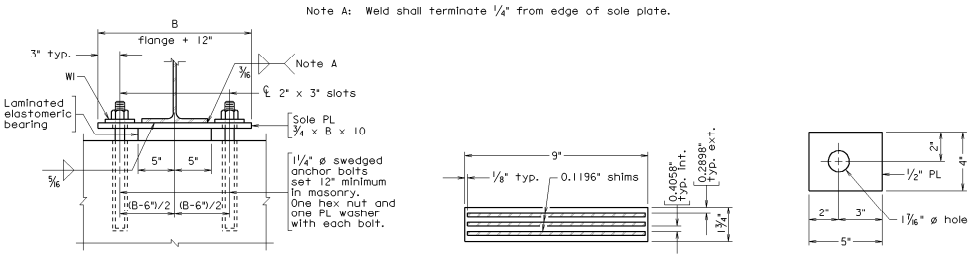


TYPE 1 BEARING DETAIL
Timber Abutment Anchorage TX
Typical Masonry ★ Anchorage MX



TYPE 2 BEARING DETAIL
Timber Abutment Anchorage TX
Typical Masonry Anchorage MX

	BZAE1	Bearing detail, elastomeric, L > 60'-0", anchor bolts required at all locations (approx. 0.30 of actual cell size)



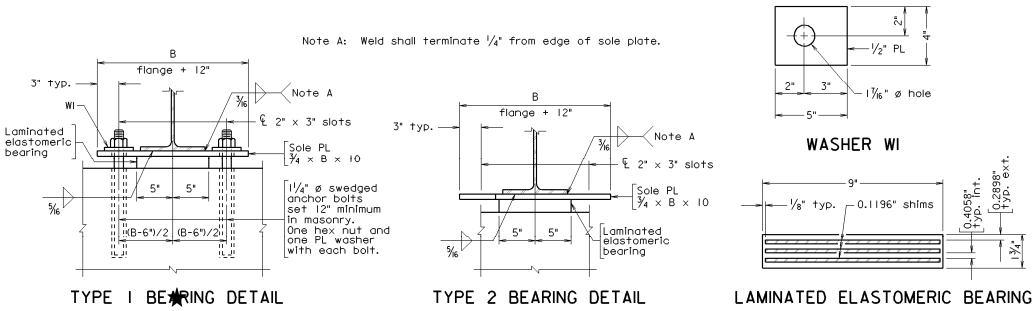
TYPE 1 AND 2 ★ BEARING DETAIL

LAMINATED ELASTOMERIC BEARING

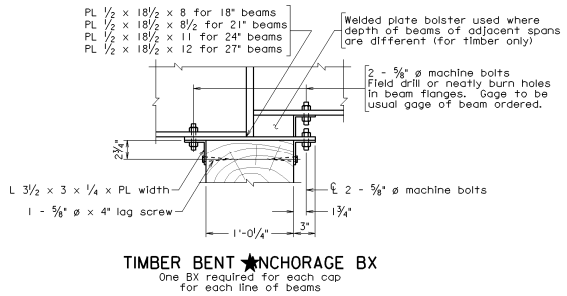
WASHER WI

SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
CELL LIBRARY: SS8.CEL
CELLS

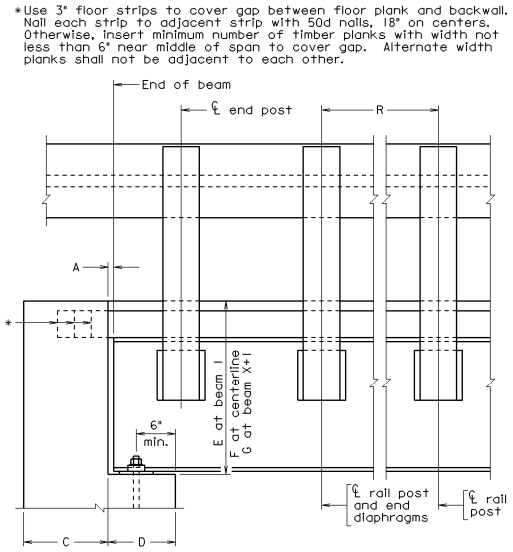
CELL	CELL NAME	CELL DESCRIPTION
	BZAE2	Bearing detail, elastomeric, L > 60'-0", anchor bolts not required at all locations (approx. 0.30 of actual cell size)



	BZPB1	Bearing detail, timber bent, bearing plate, L ≤ 60'-0", anchor bolts required at all locations (approx. 0.30 of actual cell size)



CELL	CELL NAME	CELL DESCRIPTION
	ELC1B	Part elevation with concrete backwall, railing with curb and bearing plate (approx. 0.35 of actual cell size)



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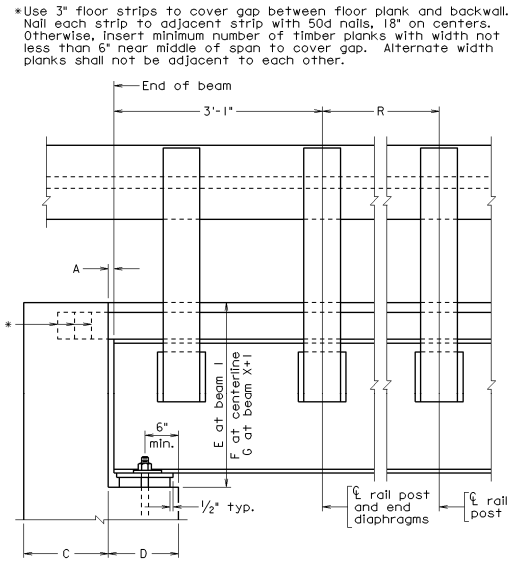
	ELC1E	Part elevation with concrete backwall, railing with curb and elastomeric bearing (approx. 0.35 of actual cell size)



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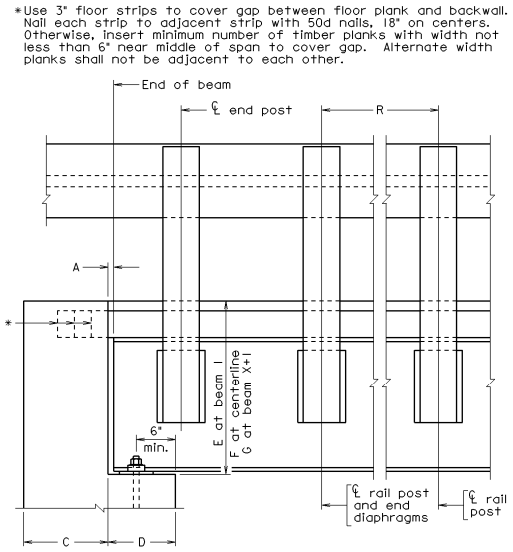
CELL	CELL NAME	CELL DESCRIPTION
	ELC2B	Part elevation with concrete backwall, railing without curb and bearing plate (approx. 0.35 of actual cell size)



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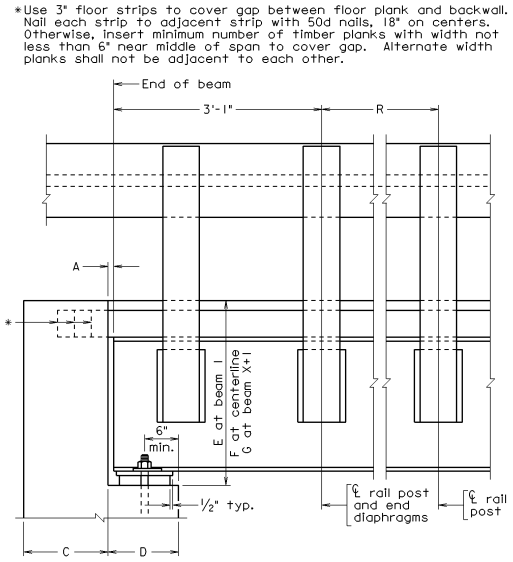
	ELC2E	Part elevation with concrete backwall, railing w/o curb and elastomeric bearing (approx. 0.35 of actual cell size)



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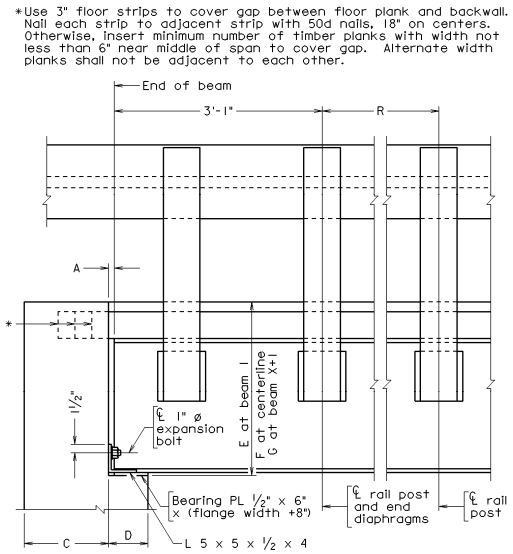
CELL	CELL NAME	CELL DESCRIPTION
	ELCV1	Part elevation with concrete backwall, railing with curb, bearing plate and insufficient seat width for anchor bolts (approx. 0.35 of actual cell size)



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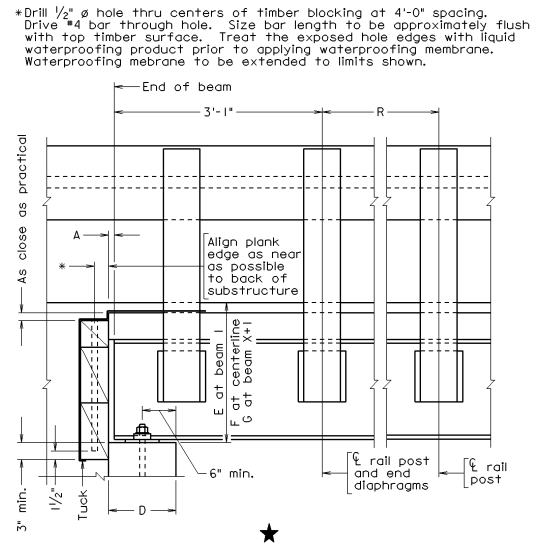
	ELTB1	Part elevation with timber lagging behind abutment, railing with curb and bearing plate (approx. 0.35 of actual cell size)



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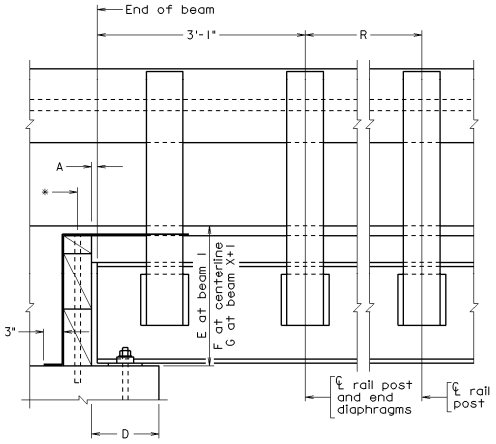
CELL	CELL NAME	CELL DESCRIPTION
	ELTB2	Part elevation with timber fastened to abutment, railing with curb and bearing plate (approx. 0.35 of actual cell size)

*Drill ½" ø hole thru centers of timber blocking and approximately 3" into substructure at 4'-0" spacing. Drive #4 bar through hole. Size bar length to be approximately flush with top timber surface. Treat the exposed hole edges with liquid waterproofing product prior to applying waterproofing membrane. Waterproofing membrane to be extended to limits shown.



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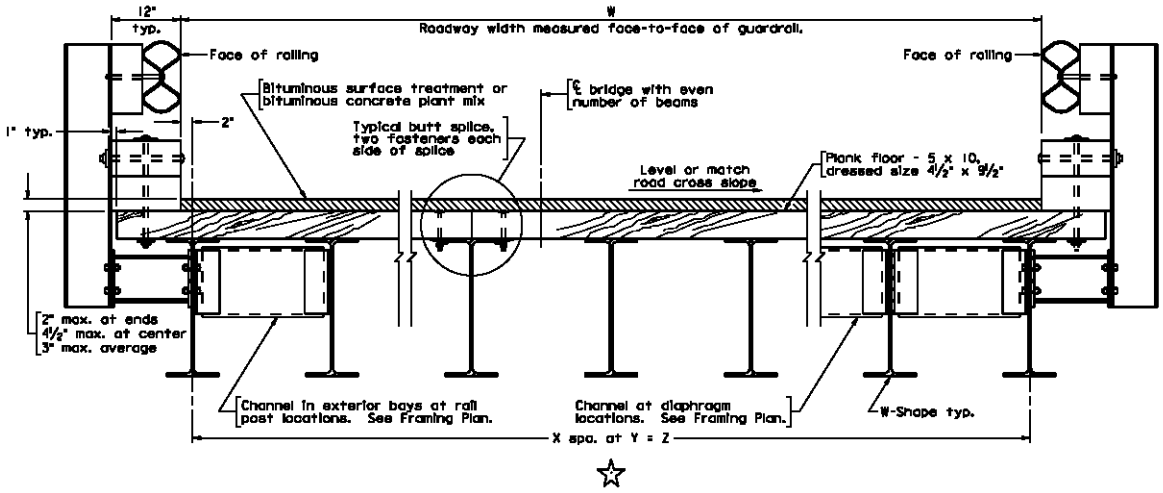
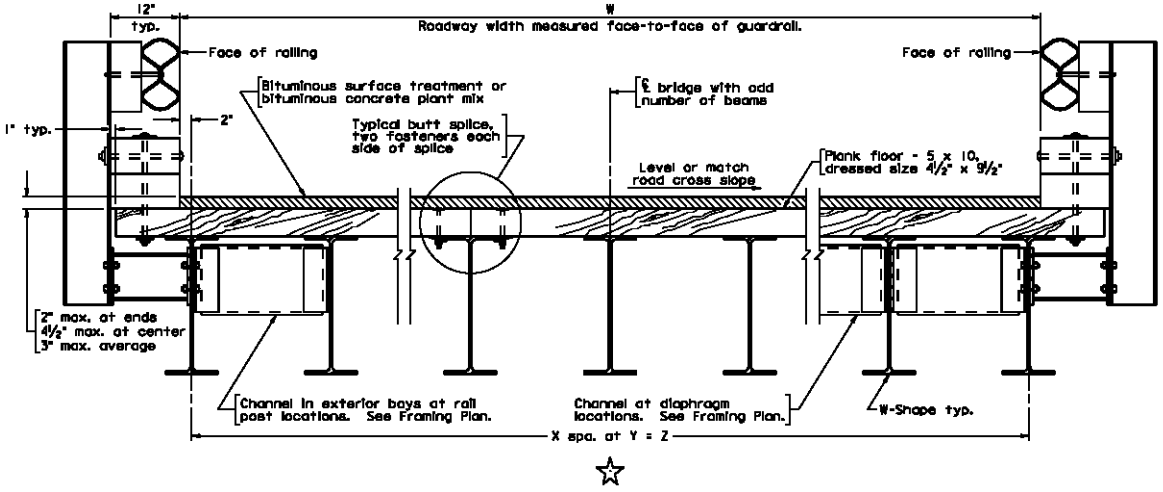
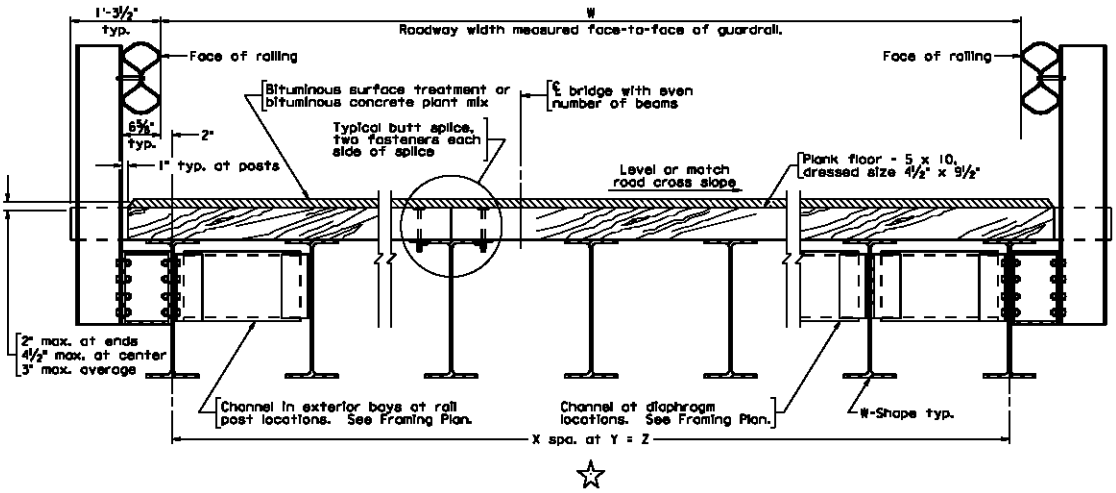
CELL	CELL NAME	CELL DESCRIPTION
	TSB1E	Transverse section, bolted angles used in diaphragm connection, railing with curb, even number of beams (approx. 0.35 of actual cell size)



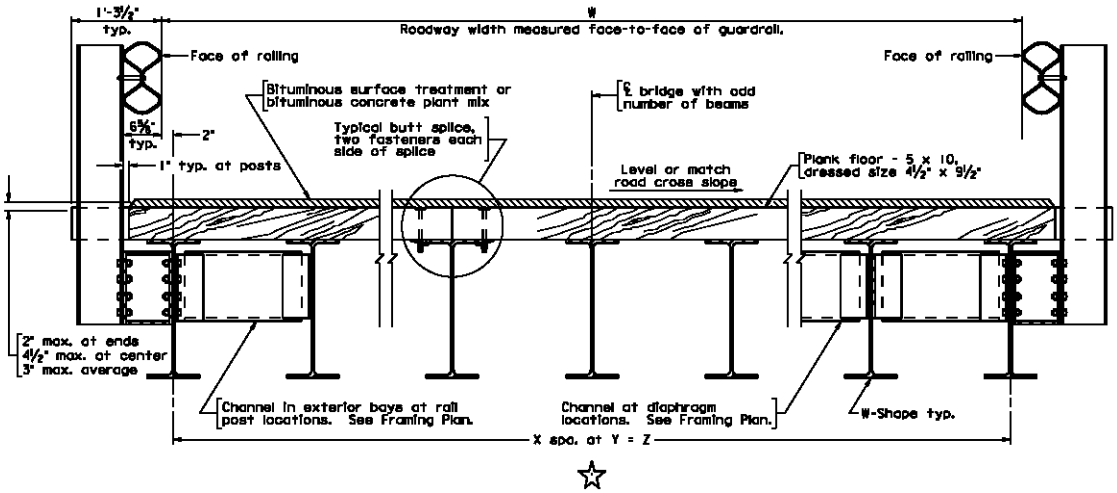
	TSB1O	Transverse section, bolted angles used in diaphragm connection, railing with curb, odd number of beams (approx. 0.35 of actual cell size)



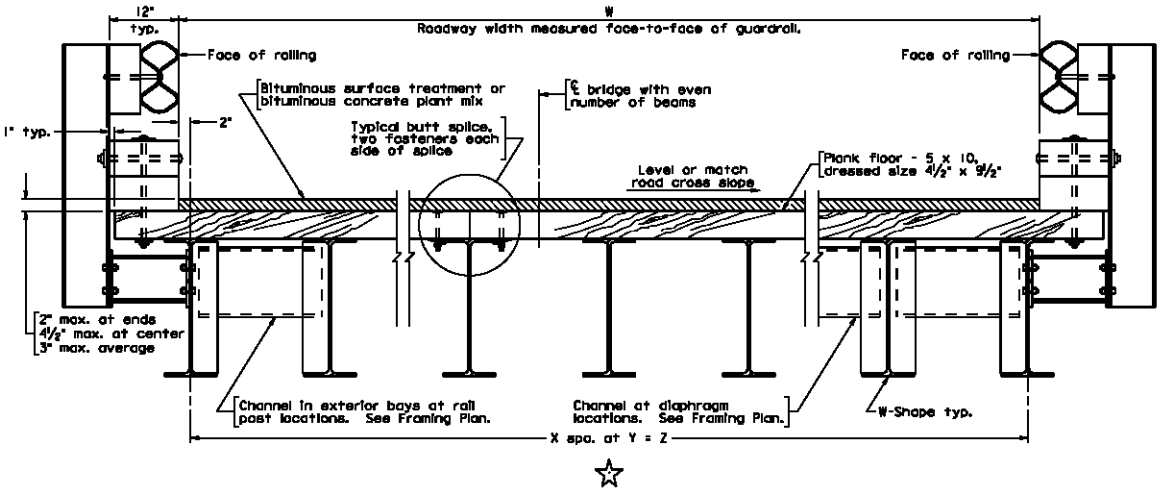
CELL	CELL NAME	CELL DESCRIPTION
	TSB2E	Transverse section, bolted angles used in diaphragm connection, railing without curb, even number of beams (approx. 0.35 of actual cell size)



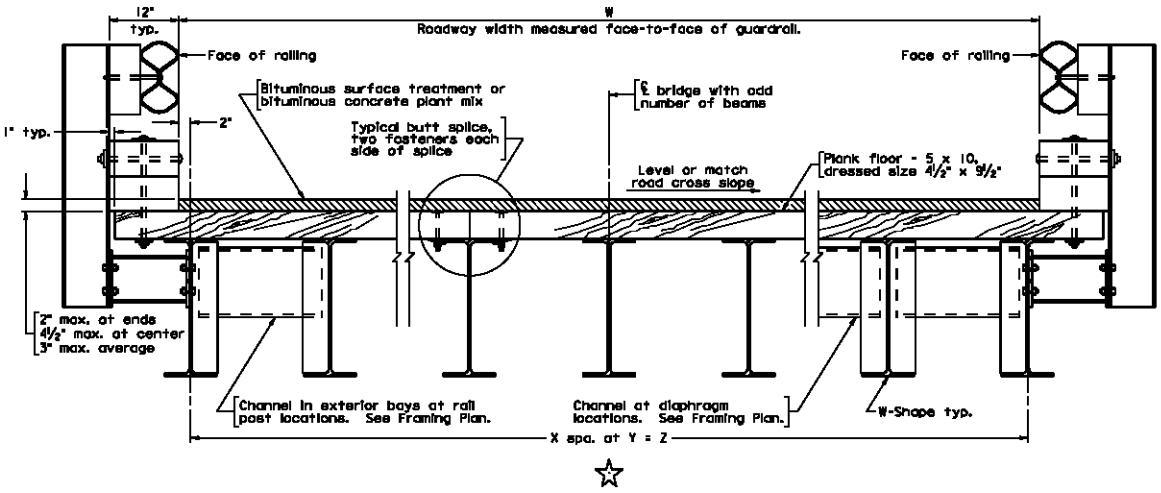
	TSB2O	Transverse section, bolted angles used in diaphragm connection, railing without curb, odd number of beams (approx. 0.35 of actual cell size)



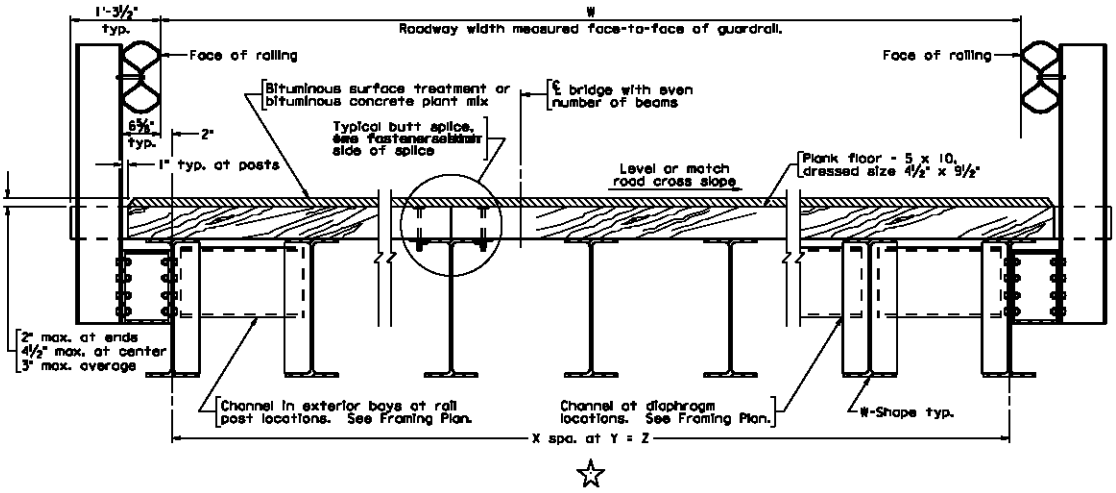
CELL	CELL NAME	CELL DESCRIPTION
	TSW1E	Transverse section, welded plates used in diaphragm connection, railing with curb, even number of beams (approx. 0.35 of actual cell size)



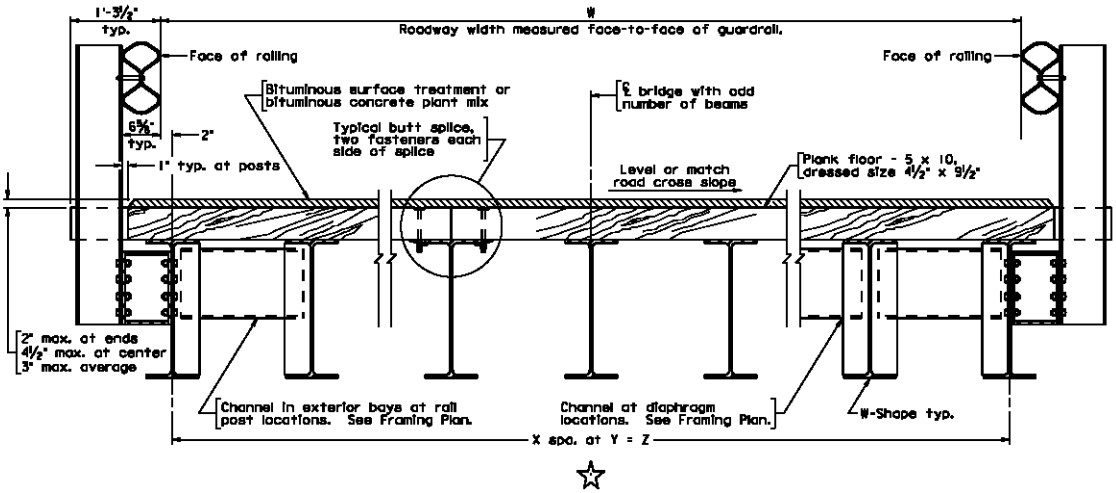
	TSW1O	Transverse section, welded plates used in diaphragm connection, railing with curb, odd number of beams (approx. 0.35 of actual cell size)



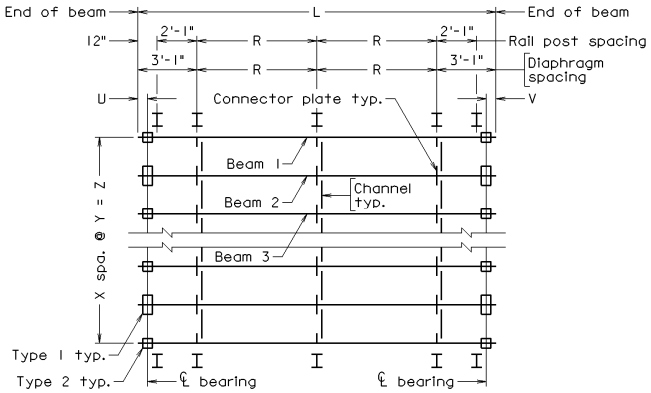
CELL	CELL NAME	CELL DESCRIPTION
	TSW2E	Transverse section, welded plates used in diaphragm connection, railing without curb, even number of beams (approx. 0.35 of actual cell size)



	TSW2O	Transverse section, welded plates used in diaphragm connection, railing without curb, odd number of beams (approx. 0.35 of actual cell size)



CELL	CELL NAME	CELL DESCRIPTION
	WPA01	Framing plan with 0° skew and welded connector plates (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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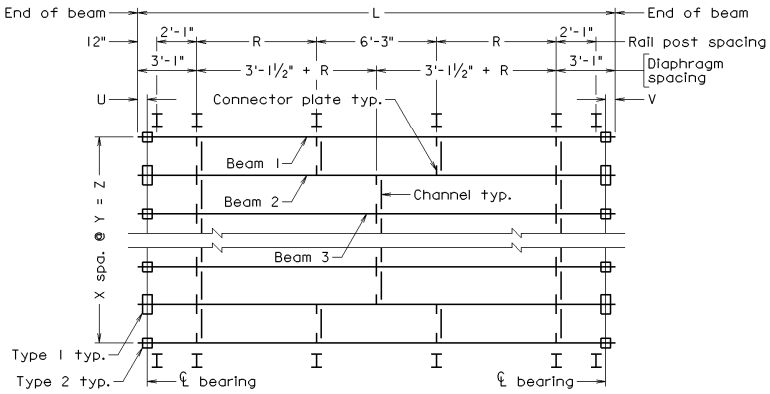
	WPA02	Framing plan with 0° skew and welded connector plates (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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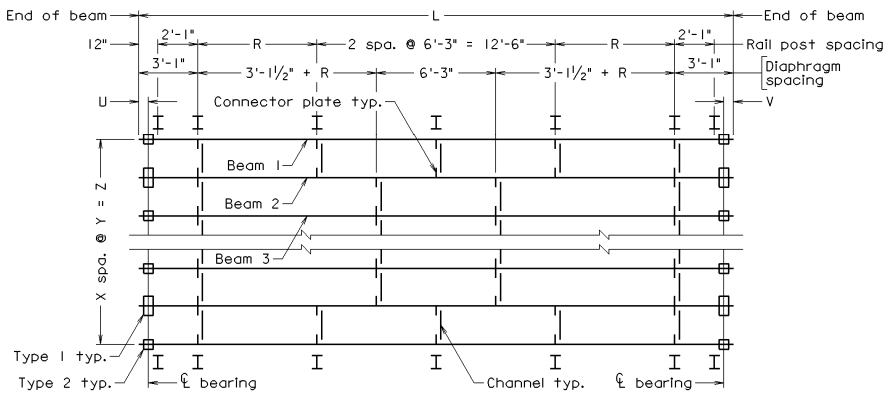
CELL	CELL NAME	CELL DESCRIPTION
	WPA03	Framing plan with 0° skew and welded connector plates (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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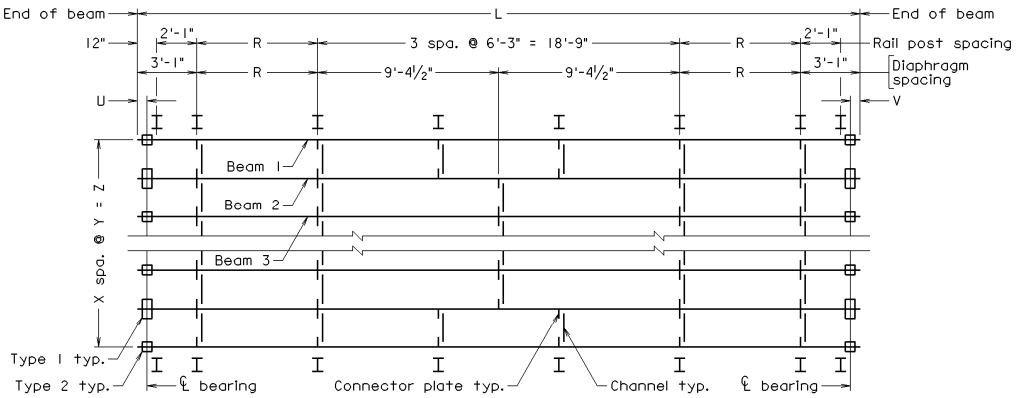
	WPA04	Framing plan with 0° skew and welded connector plates (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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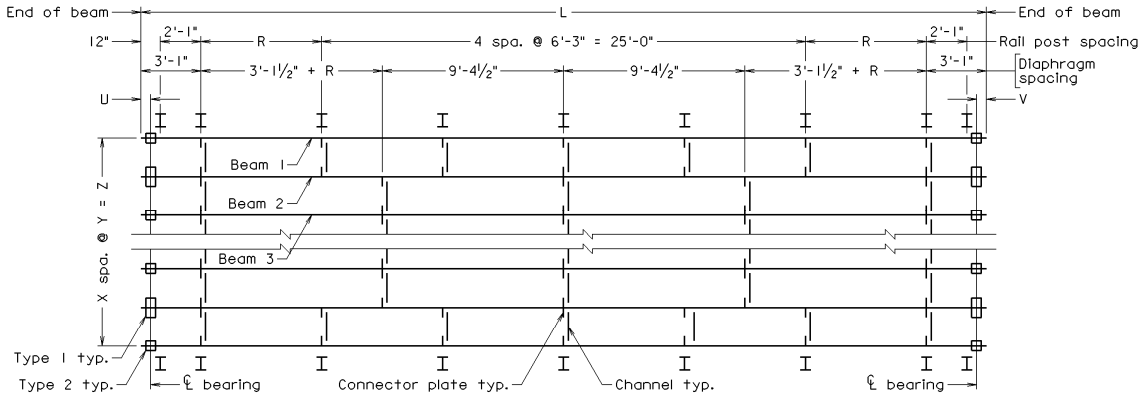
CELL	CELL NAME	CELL DESCRIPTION
	WPA05	Framing plan with 0° skew and welded connector plates (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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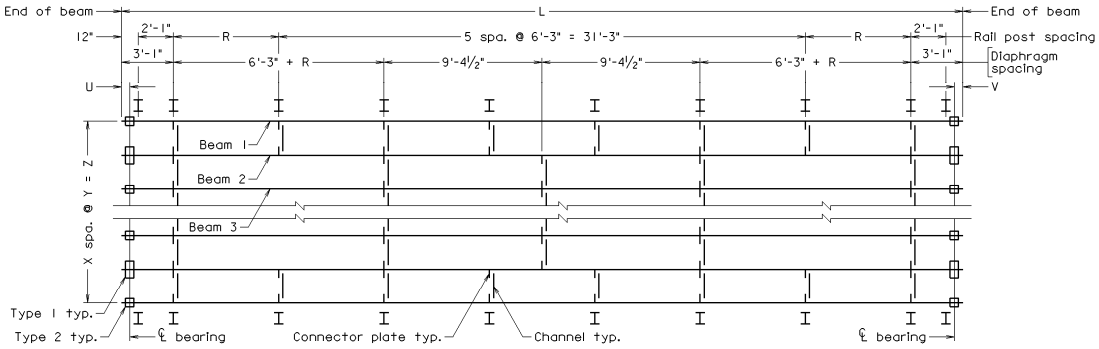
	WPA06	Framing plan with 0° skew and welded connector plates (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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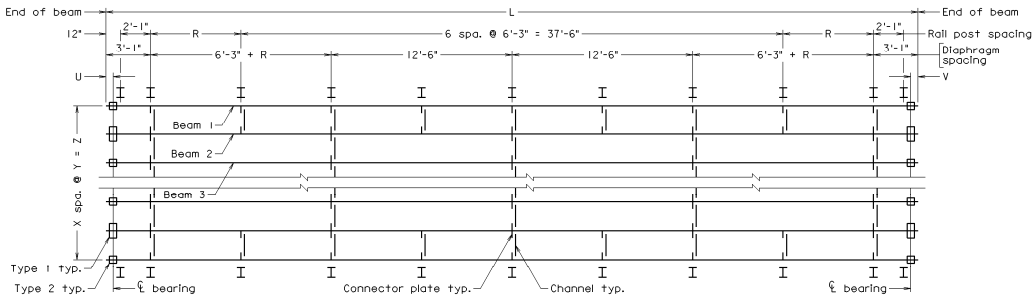
CELL	CELL NAME	CELL DESCRIPTION
	WPA07	Framing plan with 0° skew and welded connector plates (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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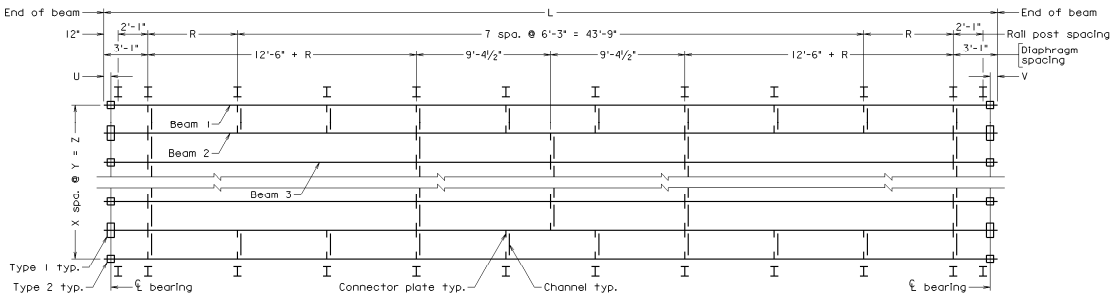
	WPA08	Framing plan with 0° skew and welded connector plates (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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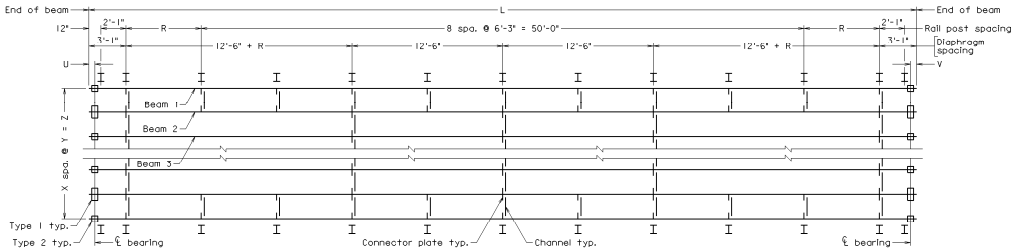
CELL	CELL NAME	CELL DESCRIPTION
	WPA09	Framing plan with 0° skew and welded connector plates (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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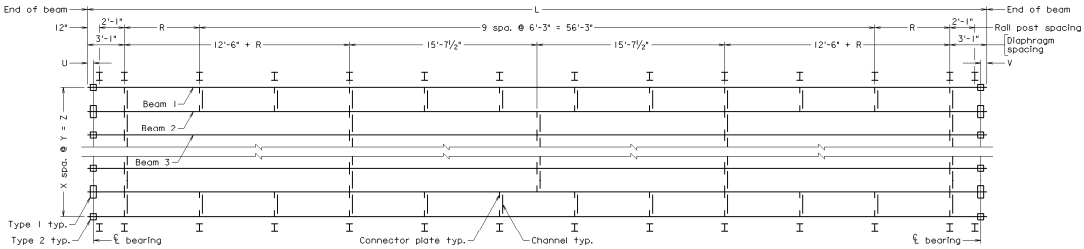
	WPA10	Framing plan with 0° skew and welded connector plates (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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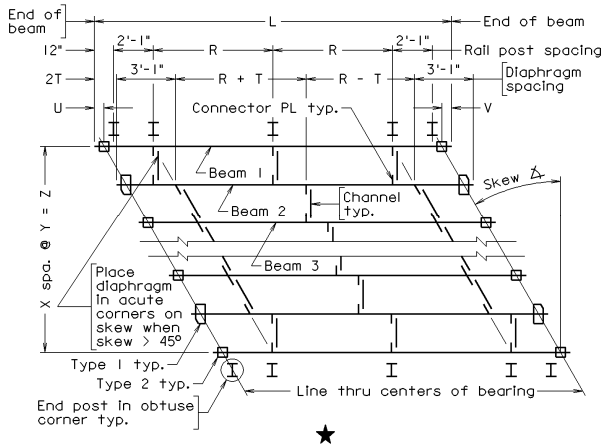
CELL	CELL NAME	CELL DESCRIPTION
	WPL01	Framing plan with left hand skew and welded connector plates (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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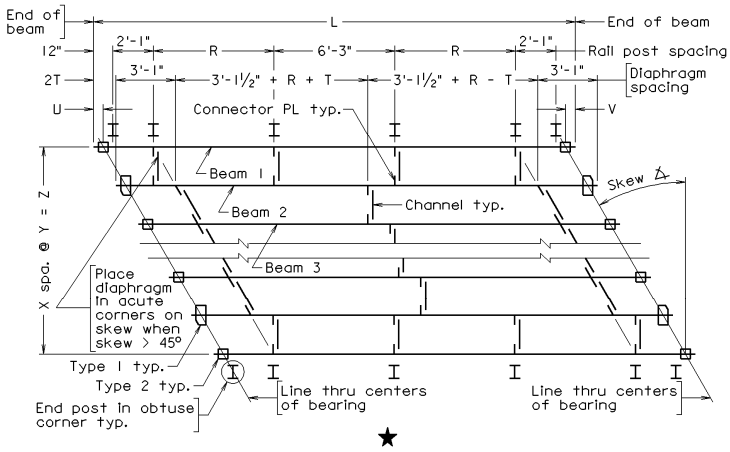
	WPL02	Framing plan with left hand skew and welded connector plates (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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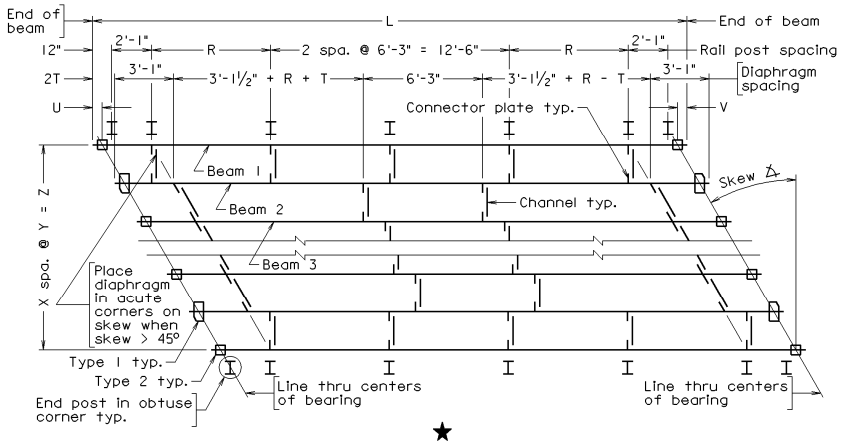
CELL	CELL NAME	CELL DESCRIPTION
	WPL03	Framing plan with left hand skew and welded connector plates (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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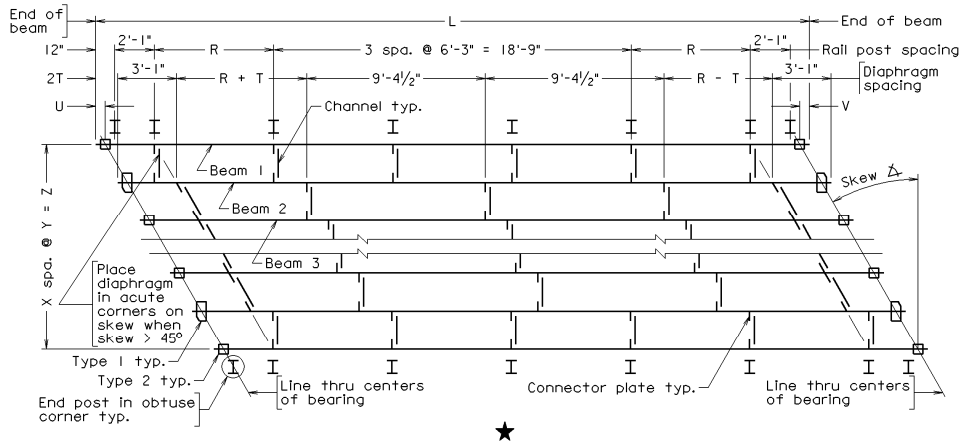
	WPL04	Framing plan with left hand skew and welded connector plates (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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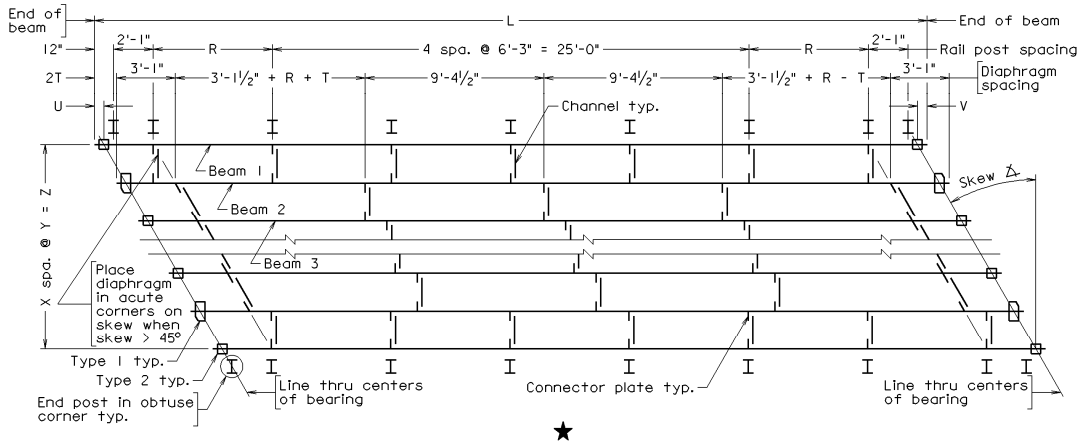
CELL	CELL NAME	CELL DESCRIPTION
	WPL05	Framing plan with left hand skew and welded connector plates (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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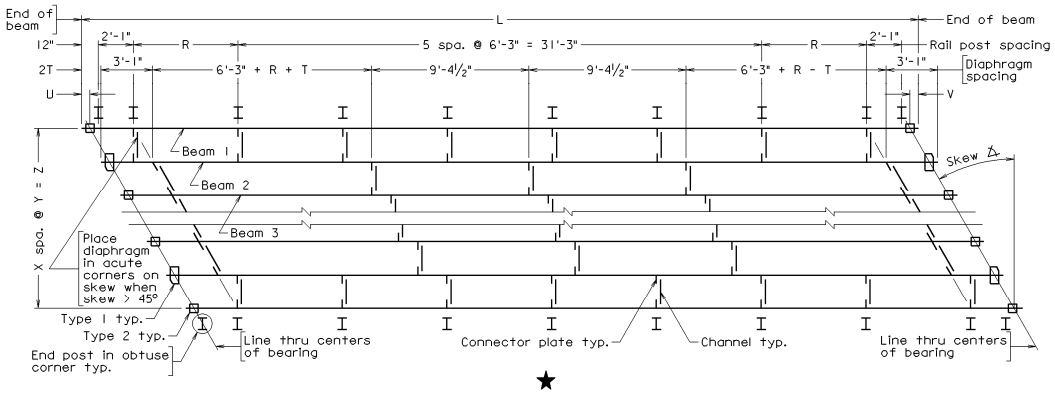
	WPL06	Framing plan with left hand skew and welded connector plates (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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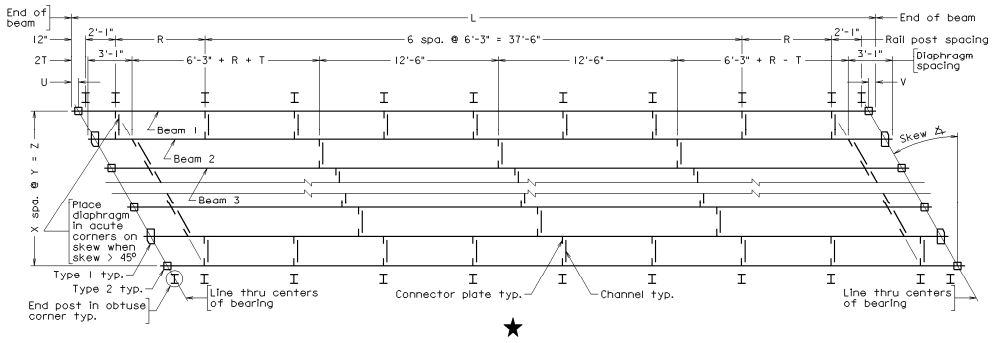
CELL	CELL NAME	CELL DESCRIPTION
	WPL07	Framing plan with left hand skew and welded connector plates (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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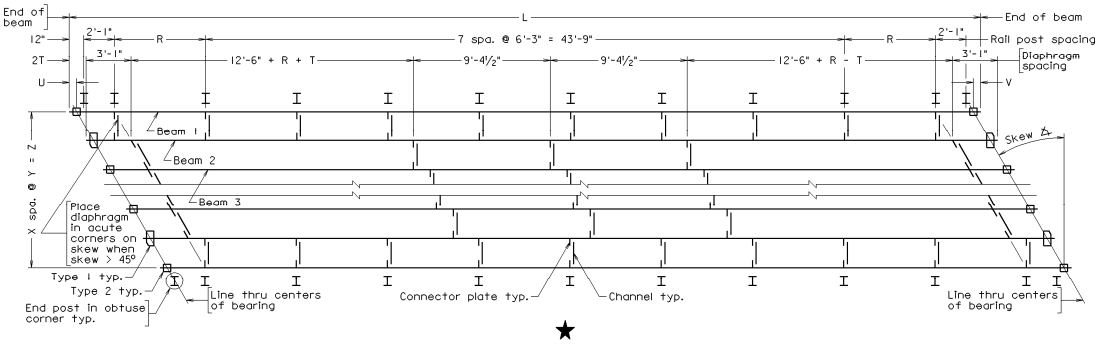
	WPL08	Framing plan with left hand skew and welded connector plates (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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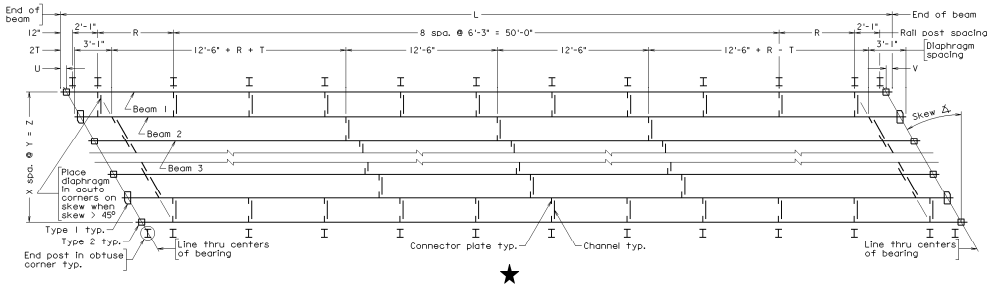
CELL	CELL NAME	CELL DESCRIPTION
	WPL09	Framing plan with left hand skew and welded connector plates (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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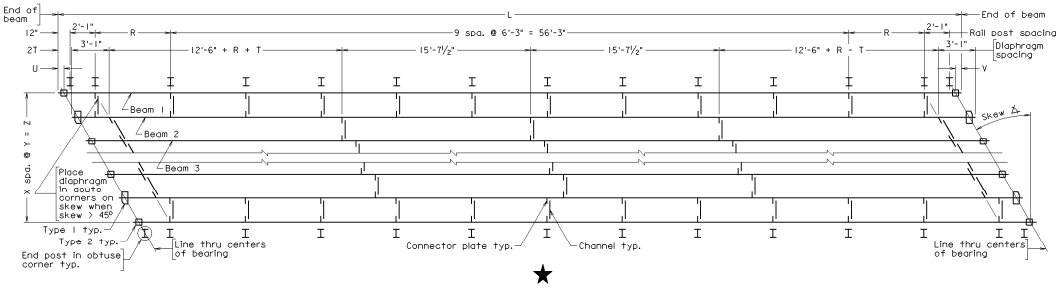
	WPL10	Framing plan with left hand skew and welded connector plates (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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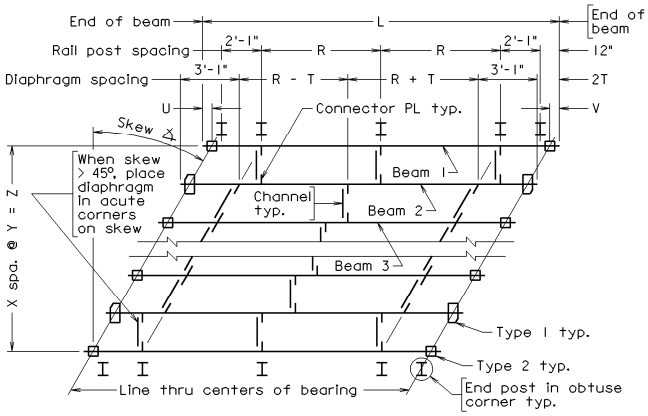
CELL	CELL NAME	CELL DESCRIPTION
	WPR01	Framing plan with right hand skew and welded connector plates (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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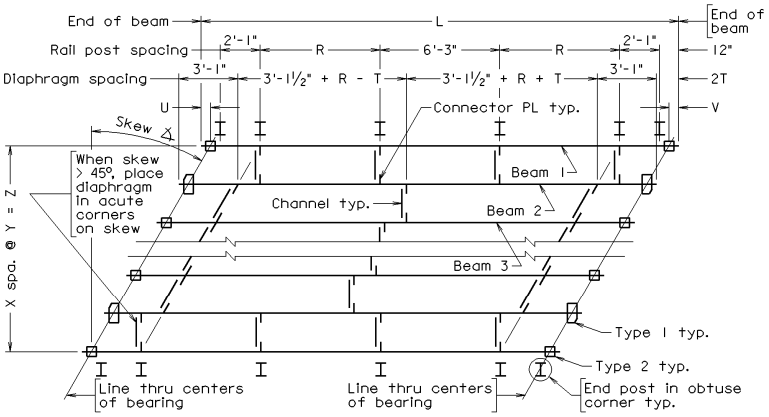
	WPR02	Framing plan with right hand skew and welded connector plates (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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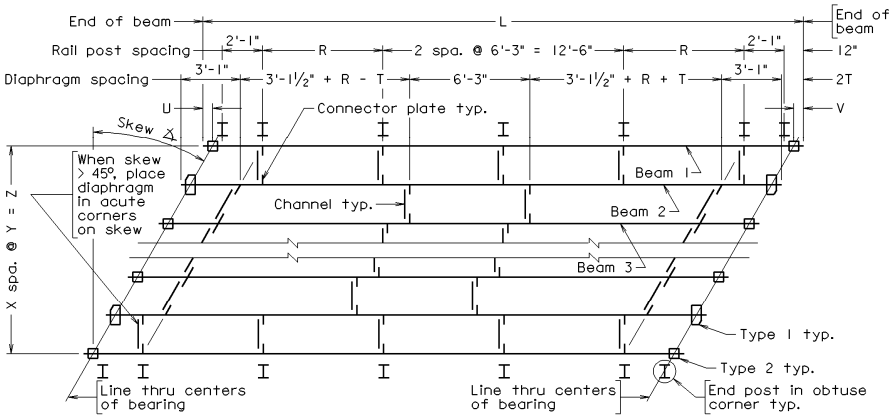
CELL	CELL NAME	CELL DESCRIPTION
	WPR03	Framing plan with right hand skew and welded connector plates (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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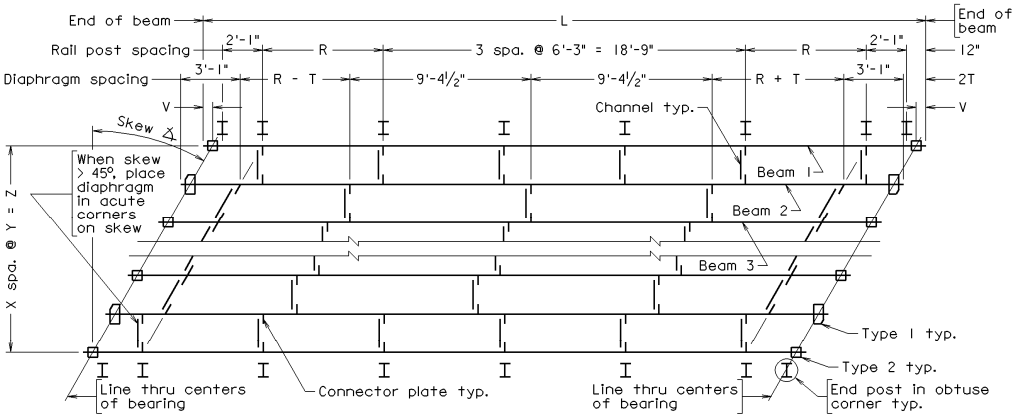
	WPR04	Framing plan with right hand skew and welded connector plates (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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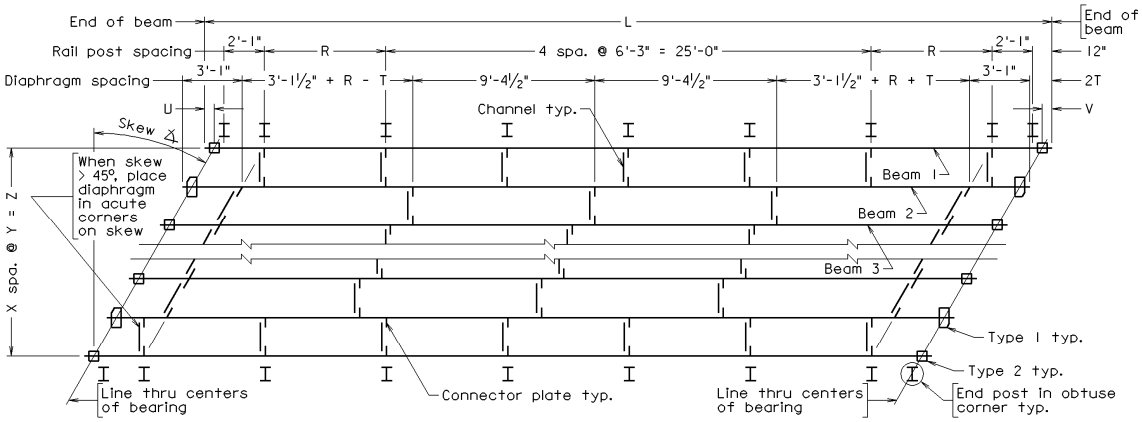
SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
CELL LIBRARY: SS8.CEL
CELLS

CELL	CELL NAME	CELL DESCRIPTION
	WPR05	Framing plan with right hand skew and welded connector plates (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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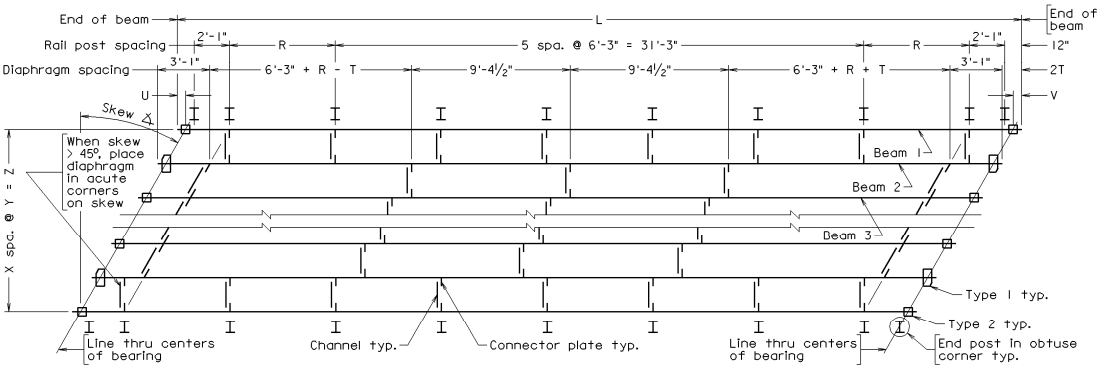
	WPR06	Framing plan with right hand skew and welded connector plates (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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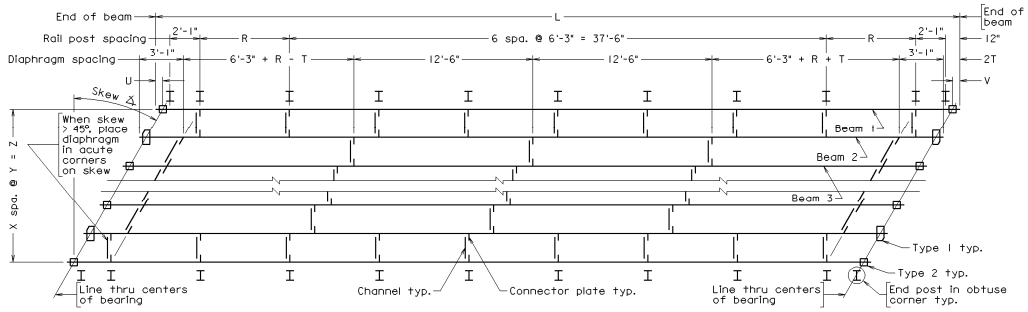
CELL	CELL NAME	CELL DESCRIPTION
	WPR07	Framing plan with right hand skew and welded connector plates (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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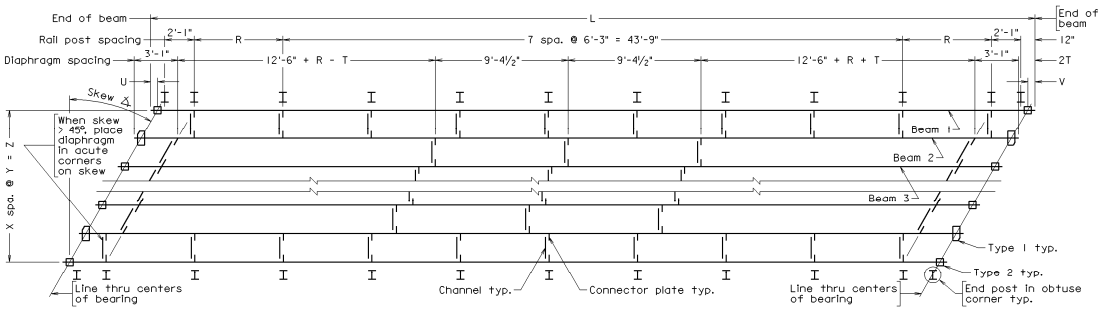
	WPR08	Framing plan with right hand skew and welded connector plates (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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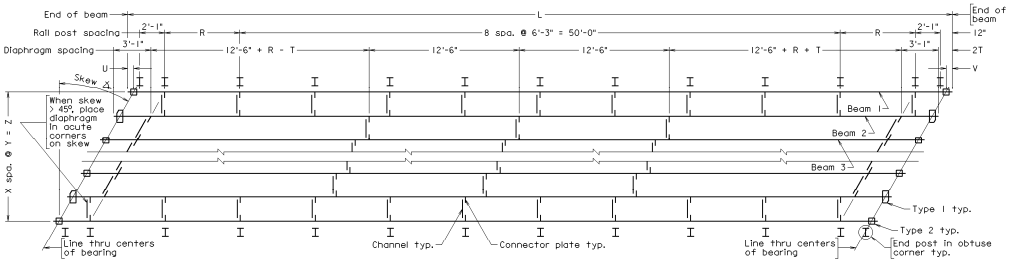
CELL	CELL NAME	CELL DESCRIPTION
	WPR09	Framing plan with right hand skew and welded connector plates (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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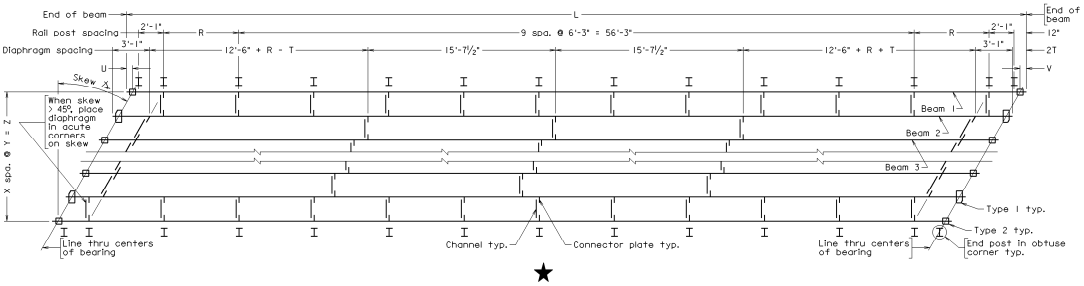
	WPR10	Framing plan with right hand skew and welded connector plates (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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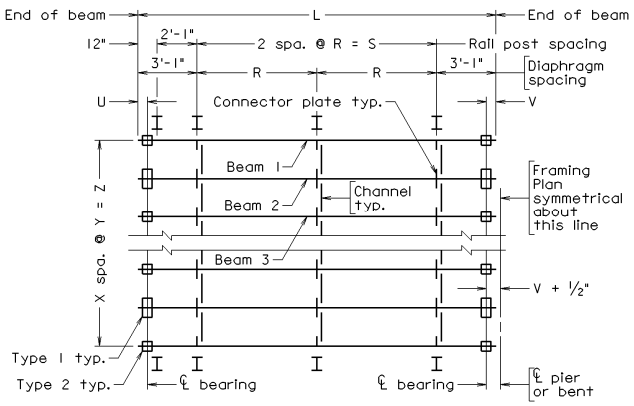
CELL	CELL NAME	CELL DESCRIPTION
	WTA01	Two-span framing plan with 0° skew and welded connector plates (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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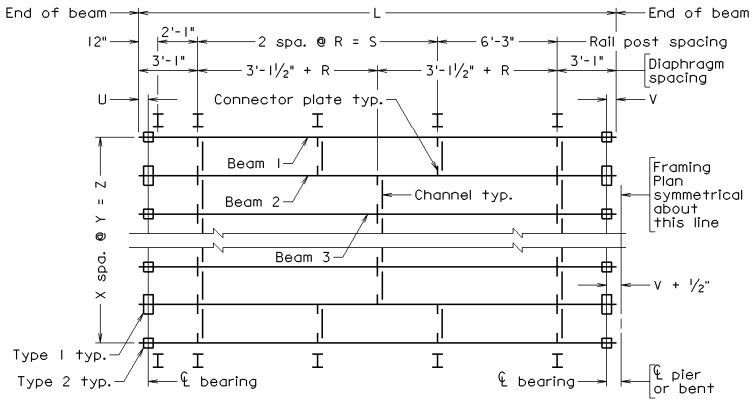
	WTA02	Two-span framing plan with 0° skew and welded connector plates (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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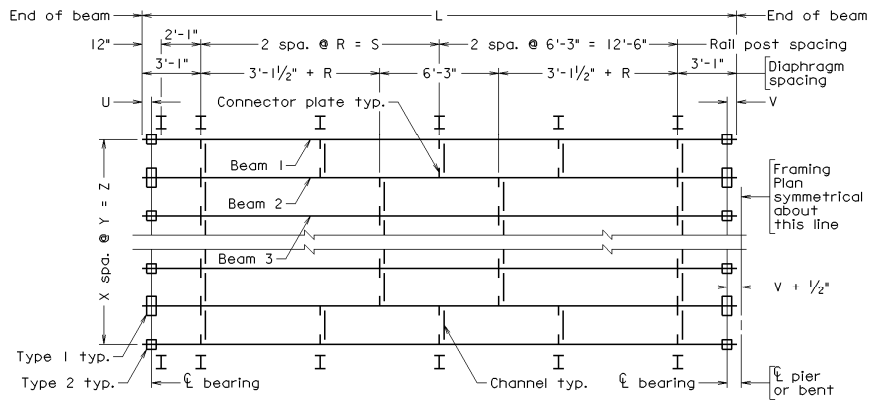
CELL	CELL NAME	CELL DESCRIPTION
	WTA03	Two-span framing plan with 0° skew and welded connector plates (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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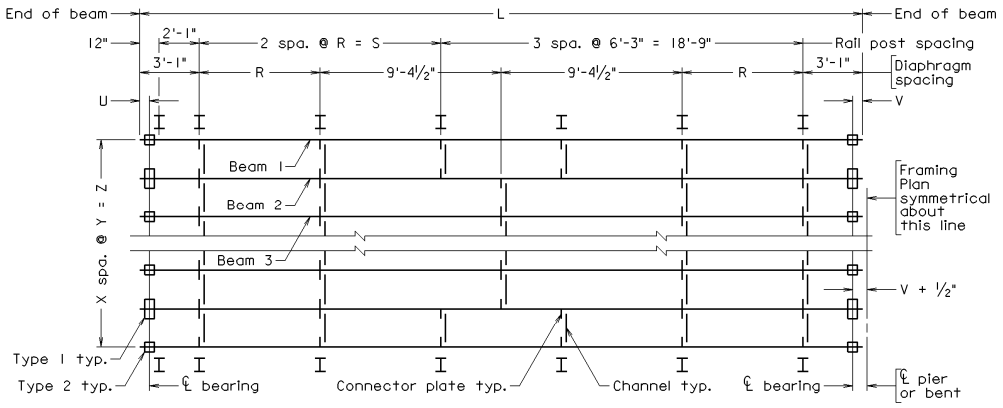
	WTA04	Two-span framing plan with 0° skew and welded connector plates (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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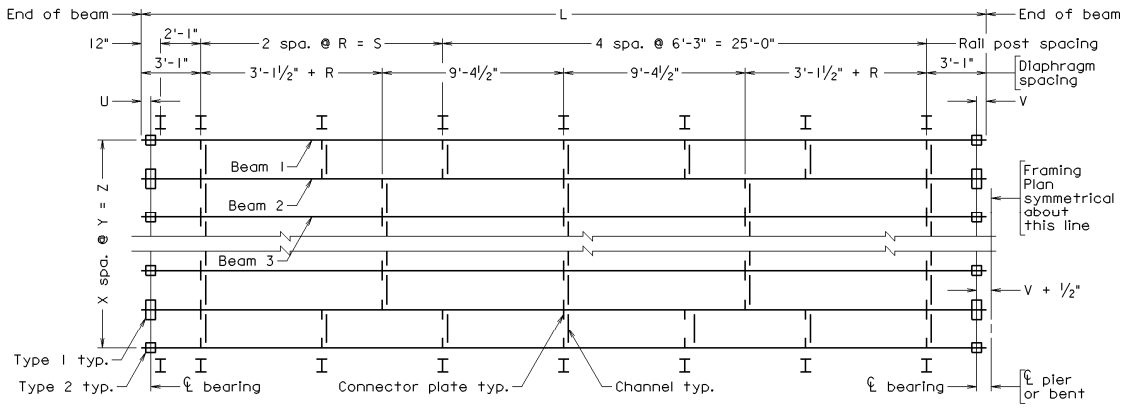
CELL	CELL NAME	CELL DESCRIPTION
	WTA05	Two-span framing plan with 0° skew and welded connector plates (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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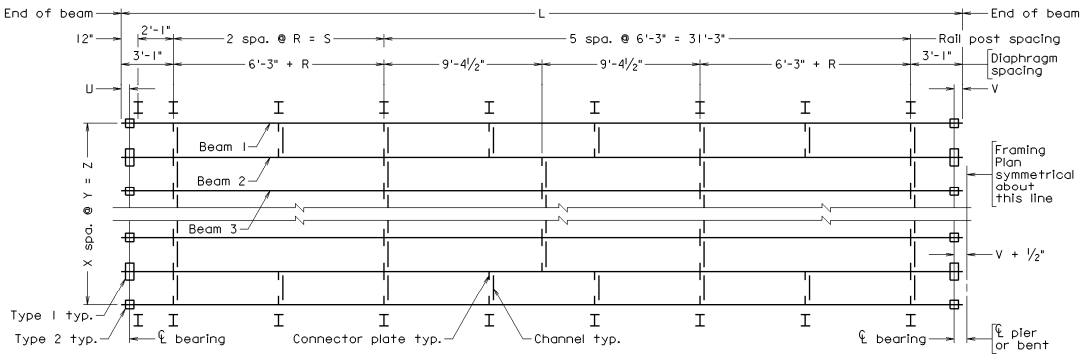
	WTA06	Two-span framing plan with 0° skew and welded connector plates (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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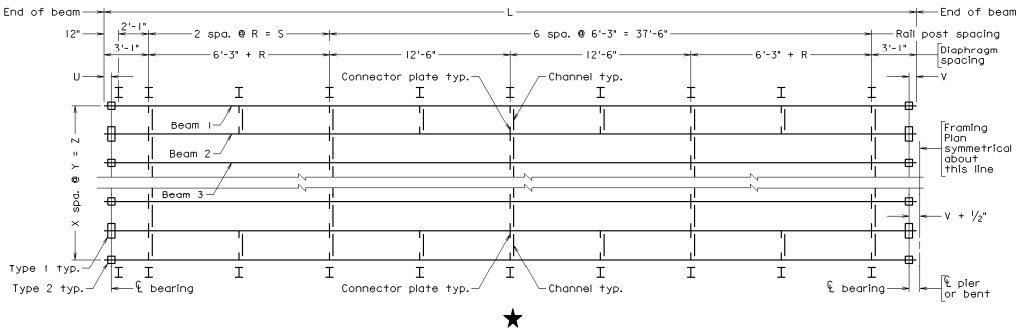
CELL	CELL NAME	CELL DESCRIPTION
	WTA07	Two-span framing plan with 0° skew and welded connector plates (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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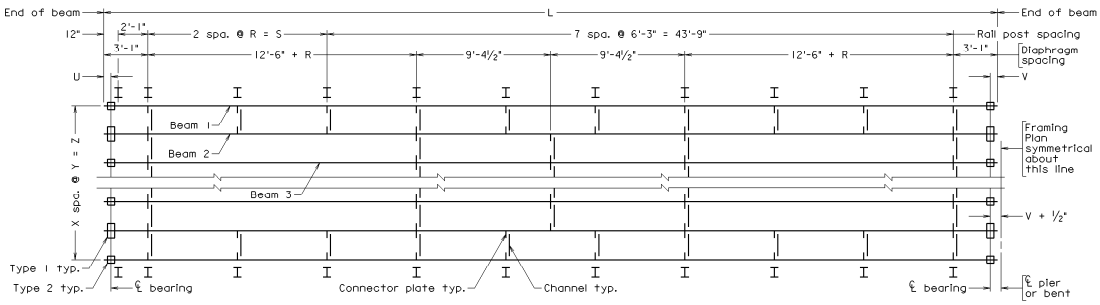
	WTA08	Framing plan with 0° skew and welded connector plates (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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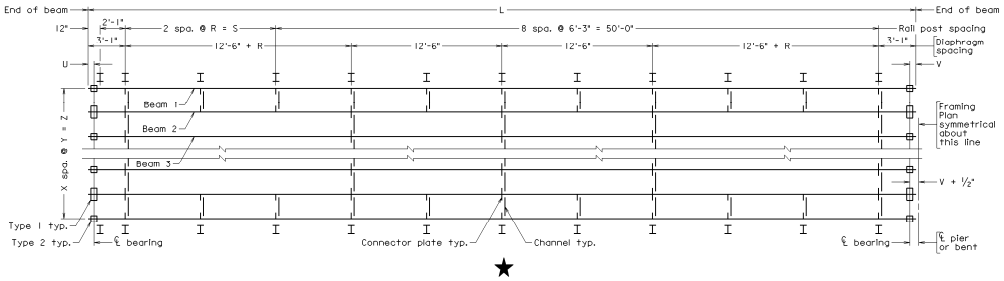
CELL	CELL NAME	CELL DESCRIPTION
	WTA09	Two-span framing plan with 0° skew and welded connector plates (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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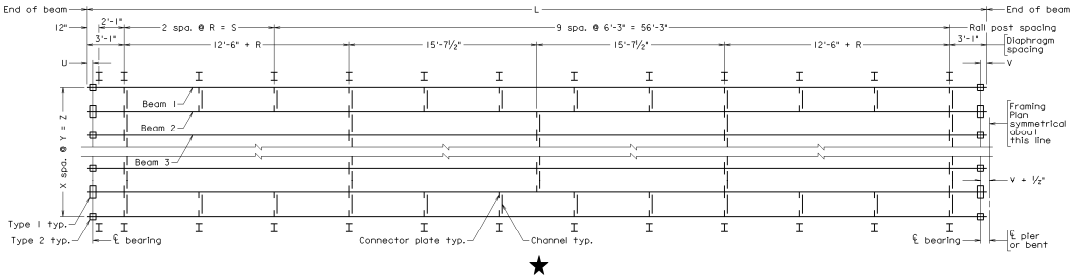
	WTA10	Two-span framing plan with 0° skew and welded connector plates (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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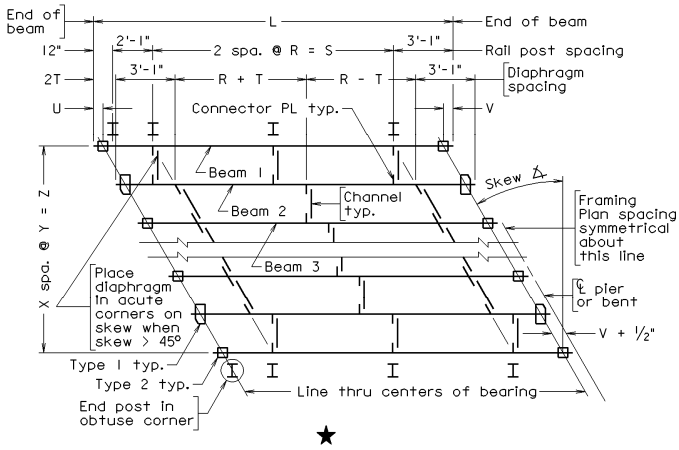
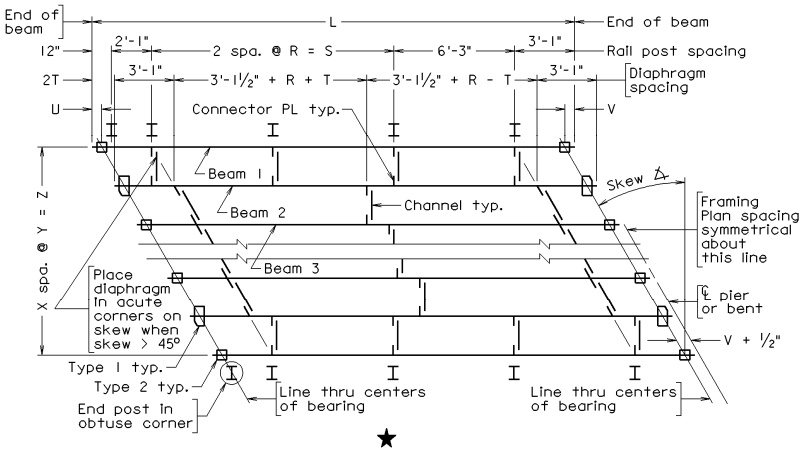
SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS **CELL LIBRARY: SS8.CEL** **CELLS**	PART 8 DATE: 12Sep2008 SHEET 80 of 90 FILE NO. SS8CELLS-80

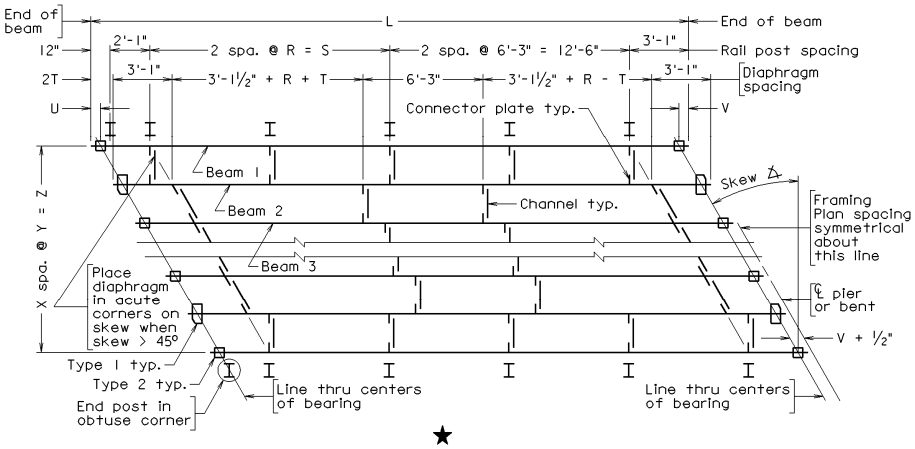
CELL	CELL NAME	CELL DESCRIPTION
	WTL01	Two-span framing plan with left hand skew and welded connector plates (L ≤ 18'-8") (approx. 0.40 of actual cell size)



	WTL02	Two-span framing plan with left hand skew and welded connector plates (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



CELL	CELL NAME	CELL DESCRIPTION
	WTL03	Two-span framing plan with left hand skew and welded connector plates (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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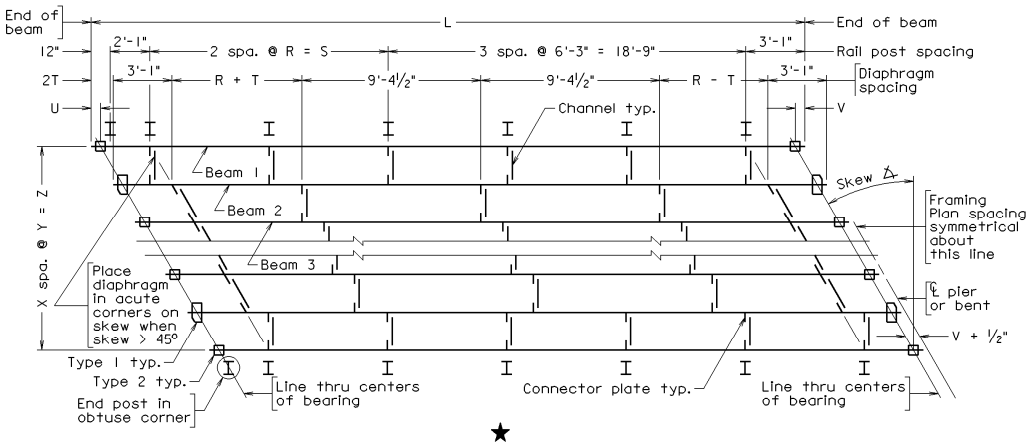
	WTL04	Two-span framing plan with left hand skew and welded connector plates (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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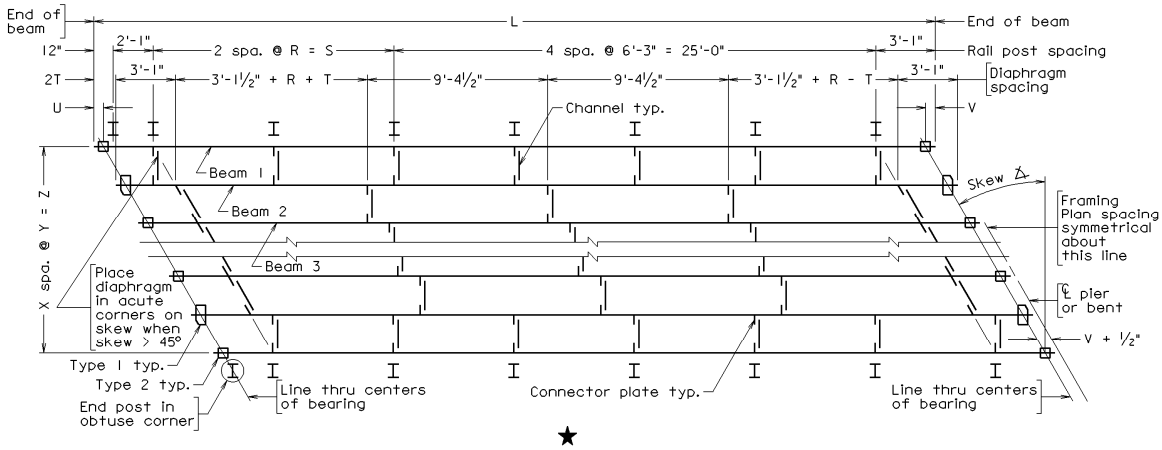
CELL	CELL NAME	CELL DESCRIPTION
	WTL05	Two-span framing plan with left hand skew and welded connector plates (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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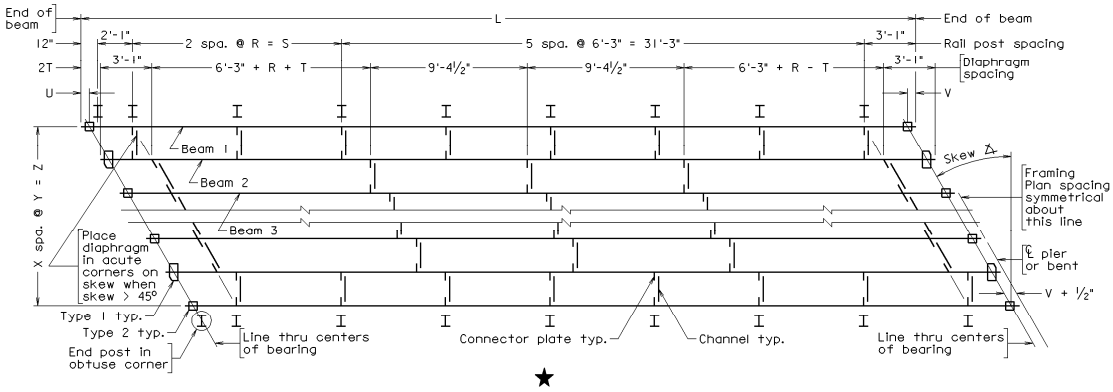
	WTL06	Two-span framing plan with left hand skew and welded connector plates (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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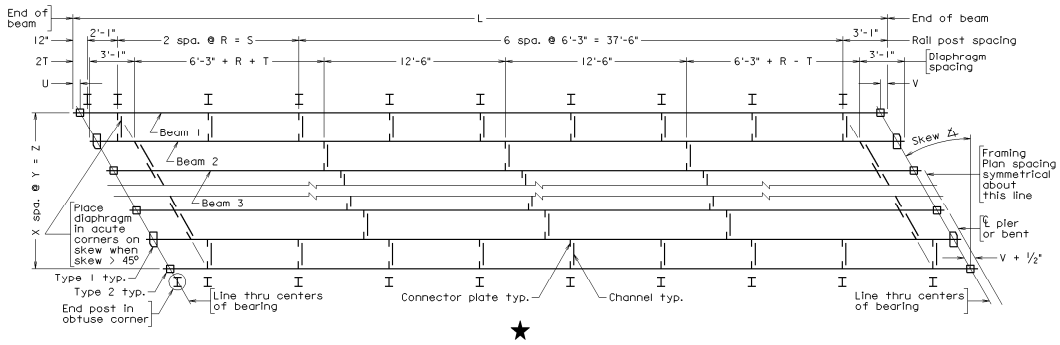
CELL	CELL NAME	CELL DESCRIPTION
	WTL07	Two-span framing plan with left hand skew and welded connector plates (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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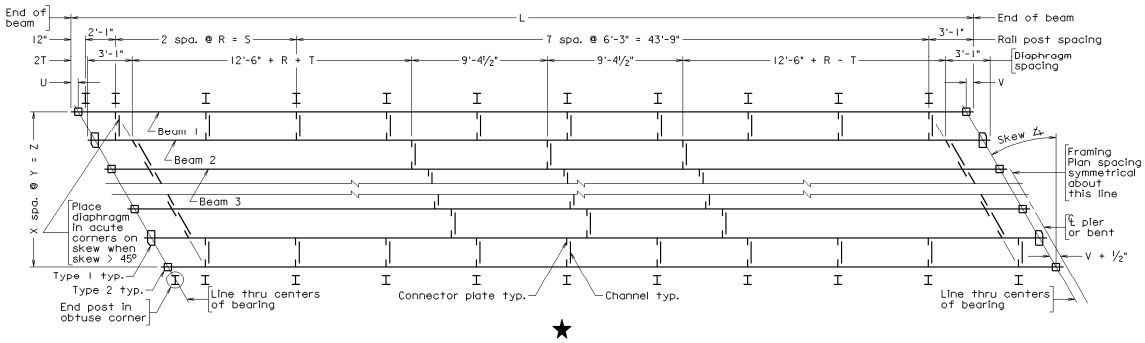
	WTL08	Two-span framing plan with left hand skew and welded connector plates (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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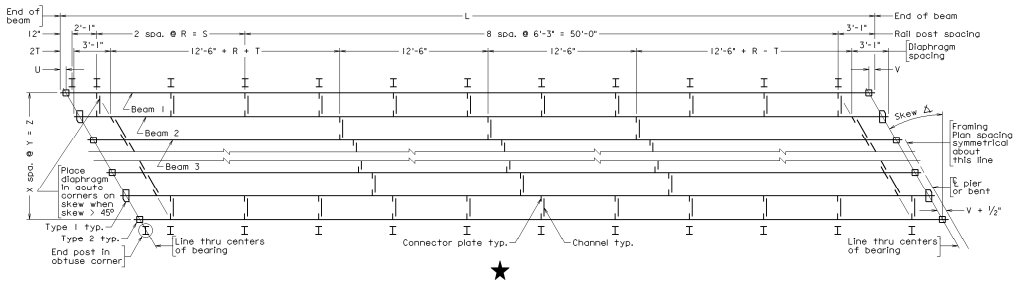
CELL	CELL NAME	CELL DESCRIPTION
	WTL09	Two-span framing plan with left hand skew and welded connector plates (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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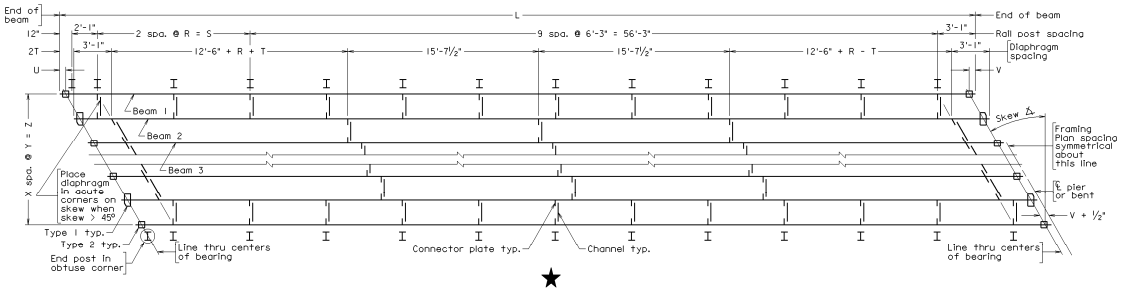
	WTL10	Two-span framing plan with left hand skew and welded connector plates (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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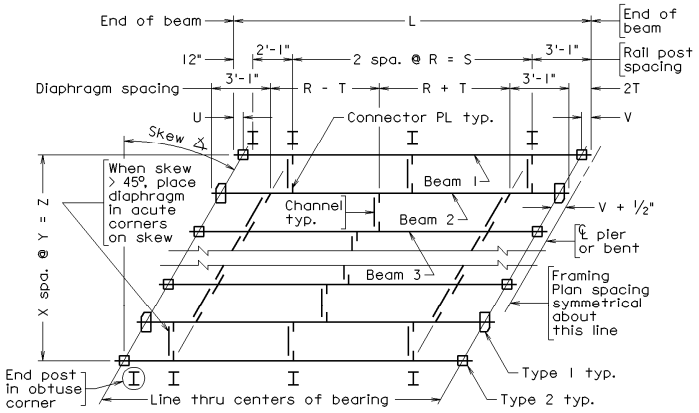
CELL	CELL NAME	CELL DESCRIPTION
	WTR01	Two-span framing plan with right hand skew and welded connector plates (L ≤ 18'-8") (approx. 0.40 of actual cell size)



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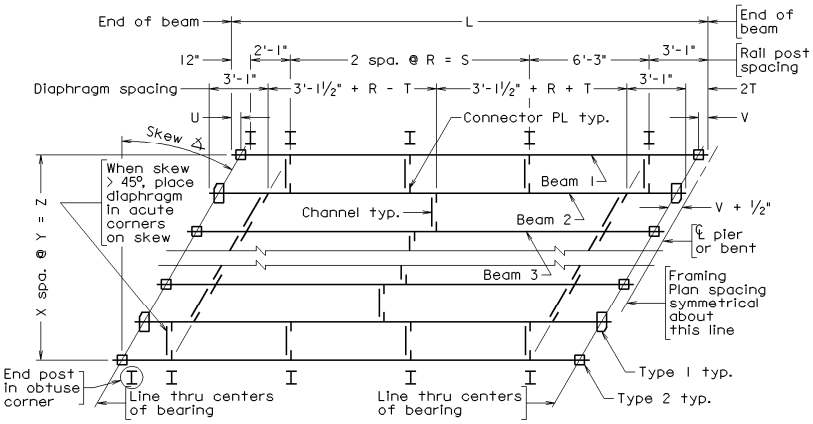
	WTR02	Two-span framing plan with right hand skew and welded connector plates (18'-8" < L ≤ 24'-11") (approx. 0.40 of actual cell size)



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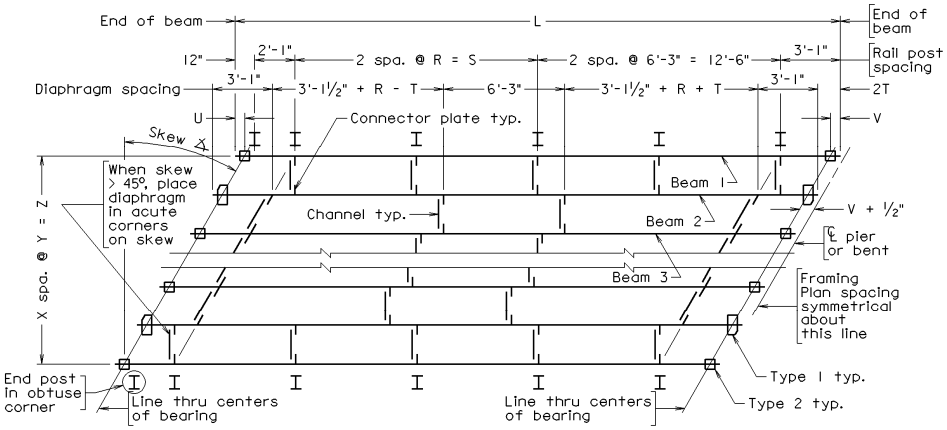
SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS
CELL LIBRARY: SS8.CEL
CELLS

CELL	CELL NAME	CELL DESCRIPTION
	WTR03	Two-span framing plan with right hand skew and welded connector plates (24'-11" < L ≤ 31'-2") (approx. 0.40 of actual cell size)



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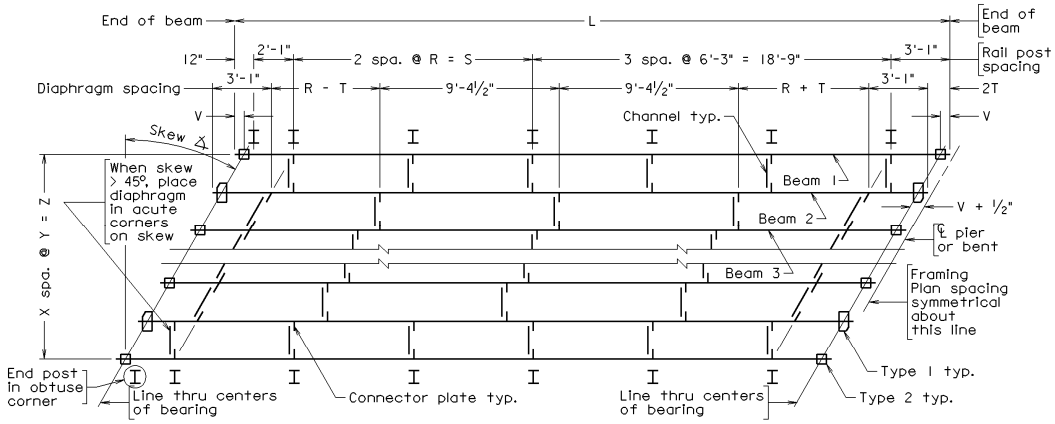
	WTR04	Two-span framing plan with right hand skew and welded connector plates (31'-2" < L ≤ 37'-5") (approx. 0.40 of actual cell size)



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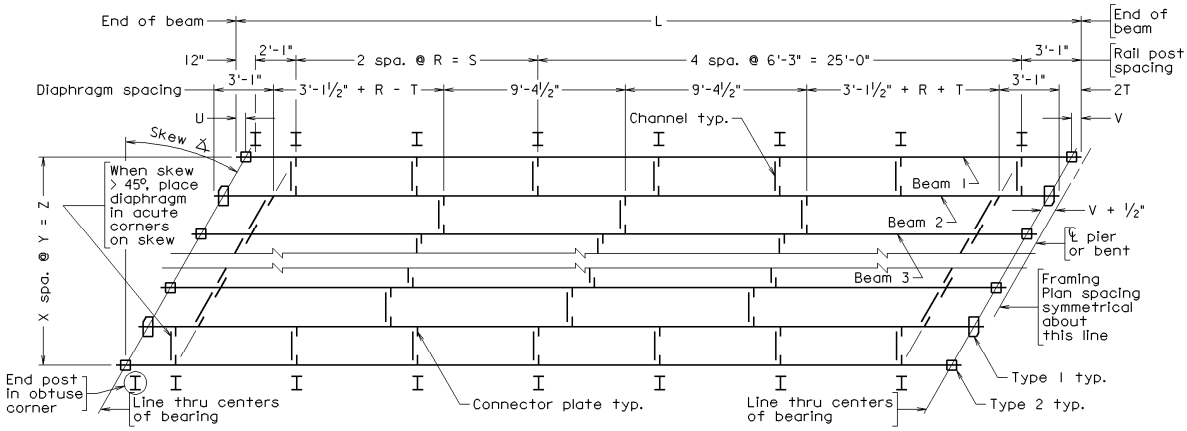
SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS **CELL LIBRARY: SS8.CEL** **CELLS**	PART 8 DATE: 12Sep2008 SHEET 87 of 90 FILE NO. SS8CELLS-87

CELL	CELL NAME	CELL DESCRIPTION
	WTR05	Two-span framing plan with right hand skew and welded connector plates (37'-5" < L ≤ 43'-8") (approx. 0.40 of actual cell size)



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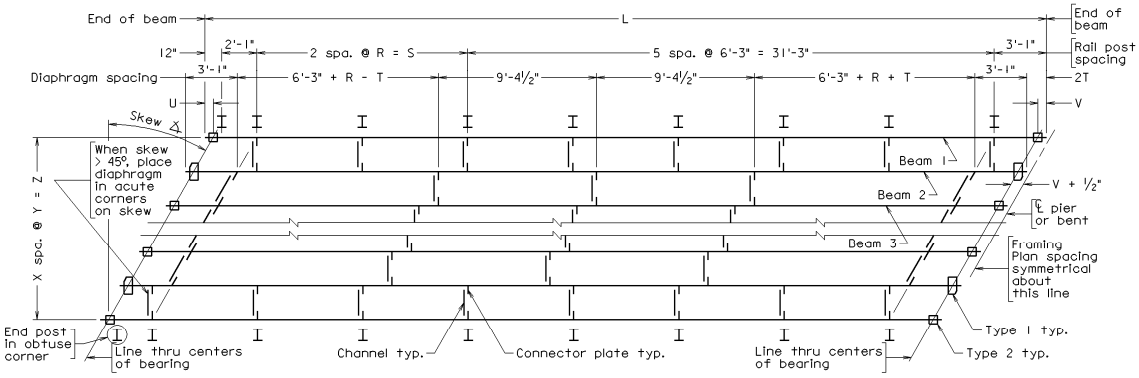
	WTR06	Two-span framing plan with right hand skew and welded connector plates (43'-8" < L ≤ 49'-11") (approx. 0.35 of actual cell size)



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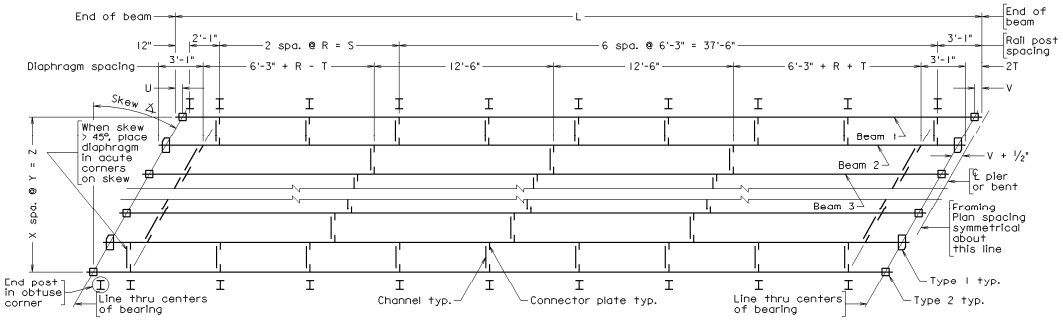
CELL	CELL NAME	CELL DESCRIPTION
	WTR07	Two-span framing plan with right hand skew and welded connector plates (49'-11" < L ≤ 56'-2") (approx. 0.30 of actual cell size)



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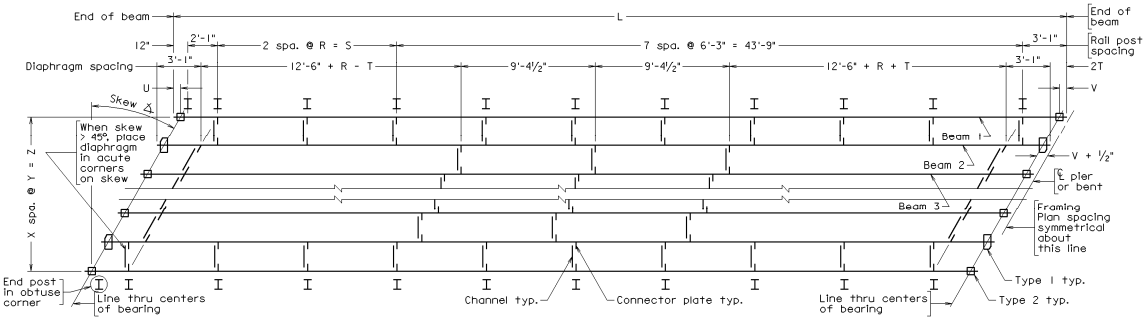
	WTR08	Two-span framing plan with right hand skew and welded connector plates (56'-2" < L ≤ 62'-5") (approx. 0.30 of actual cell size)



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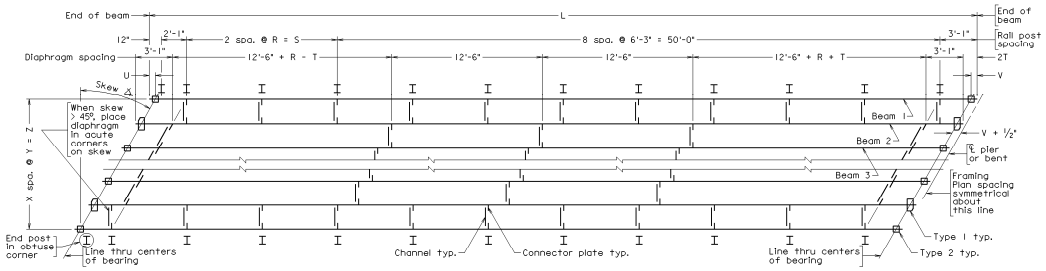
CELL	CELL NAME	CELL DESCRIPTION
	WTR09	Two-span framing plan with right hand skew and welded connector plates (62'-5" < L ≤ 68'-8") (approx. 0.25 of actual cell size)



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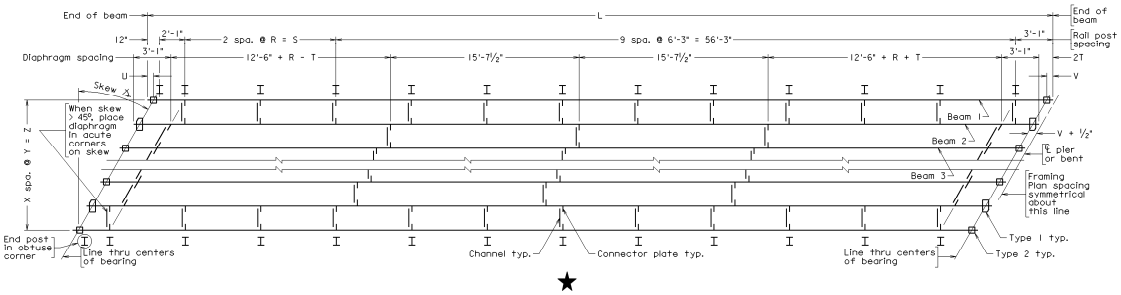
	WTR10	Two-span framing plan with right hand skew and welded connector plates (68'-8" < L ≤ 74'-11") (approx. 0.25 of actual cell size)



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