

# VOLUME V – PART 8

## STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS



VIRGINIA DEPARTMENT OF  
TRANSPORTATION

**VOID**



# 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:

<u>File Number</u>	<u>Description of change(s)</u>
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.

Page 2  
August 30, 2012

**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:

<u>File Number</u>	<u>Description of change(s)</u>
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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.

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

<u>File Number</u>	<u>Description</u>
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None

## REVISIONS:

<u>File Number</u>	<u>Description of changes(s)</u>
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SS8-1	Title sheet border revised to agree with new FSHT cell.
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Page 2  
May 29, 2009

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

/original signed/  
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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  
VOLUME V – PART 8**

**TABLE OF CONTENTS**

FILE NO.	TITLE	DATE
<b>TABLE OF CONTENTS, INSTRUCTIONS AND BEAM TABLES</b>		
SS8TOC	-1 Table of Contents .....	30Aug2012
SS8TOC	-2 Table of Contents .....	14Jun2010
SS8INSTR	-1 General Instructions .....	30Aug2012
SS8INSTR	-2 General Instructions .....	30Aug2012
SS8INSTR	-3 External Users: File Access Instructions.....	30Aug2012
SS8INSTR	-4 External Users: File Access Instructions.....	30Aug2012
SS8INSTR	-5 Instructions on Use of Beam Tables .....	30Aug2012
SS8INSTR	-6 Beam Table: Face-to-Face of Rails < 20'-0" .....	30Aug2012
SS8INSTR	-7 Beam Table: Face-to-Face of Rails ≥ 20'-0" .....	30Aug2012
SS8INSTR	-8 Dead Load Reaction .....	30Aug2012
SS8INSTR	-9 Camber.....	30Aug2012

**STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE**

* SS8-1	-1 Title Sheet .....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-2	-1 General Details.....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-3 Notes to Designer .....	14Jun2010
	-4 Notes to Designer .....	12Sep2008
	-5 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-3A	-1 Railing and Diaphragm Connection Details (With Curb – WP).....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-3B	-1 Railing and Diaphragm Connection Details (With Curb - BA).....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-3C	-1 Railing and Diaphragm Connection Details (Without Curb - WP)..	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-3D	-1 Railing and Diaphragm Connection Details (Without Curb – BA)..	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-4	-1 Timber Attachment Details.....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-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  
VOLUME V – PART 8**

**TABLE OF CONTENTS**

FILE NO.	TITLE	DATE
<b>STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE (cont'd)</b>		
* SS8-5A	-1 Railing Termination Details (With Curb).....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-5B	-1 Railing Terminations Details (Without Curb).....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	
* SS8-6	-1 Curb Details.....	14Jun2010
	-2 Notes to Designer .....	12Sep2008
	-DGN MicroStation Drawing File	

**CELL LIBRARY: SS8.CEL**

CELLINDEX -1	Index of Cells.....	12Sep2008
CELLINDEX -2	Index of Cells.....	12Sep2008
CELLINDEX -3	Index of Cells.....	12Sep2008
CELLINDEX -4	Index of Cells.....	12Sep2008
CELLINDEX -5	Index of Cells.....	12Sep2008
SS8CELLS-1 to -90	Cells .....	12Sep2008
	-CEL MicroStation Cell Library	

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

**VIRGINIA DEPARTMENT OF TRANSPORTATION  
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION**

**VOLUME V – PART 8  
SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS**

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 File Nos. 02.02, 02.04 and 02.05 of the Manual of the Structure and Bridge Division Volume V – Part 2 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 -2 of the Manual of the Structure and Bridge Division, Volume V - Part 2 and as specified herein.

If a 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. Completing items on the standard that are indicated in the NOTES TO DESIGNER are not considered to be modifications. Changes/modifications beyond these item(s) must be requested to the State Structure and Bridge Engineer as a design waiver using the Form LD-448 unless noted as a design exception in the Manual of the Structure and Bridge Division, Volume V – Part 2. Design exception must be requested to the State Structure and Bridge Engineer using Form LD-440.

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.

**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS  
GENERAL INSTRUCTIONS**

VOL. V - PART 8  
DATE: 30Aug2012  
SHEET 1 of 9  
FILE NO. SS8INSTR-1

**VIRGINIA DEPARTMENT OF TRANSPORTATION  
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION**

**VOLUME V – PART 8  
SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS**

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.

**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS  
GENERAL INSTRUCTIONS**

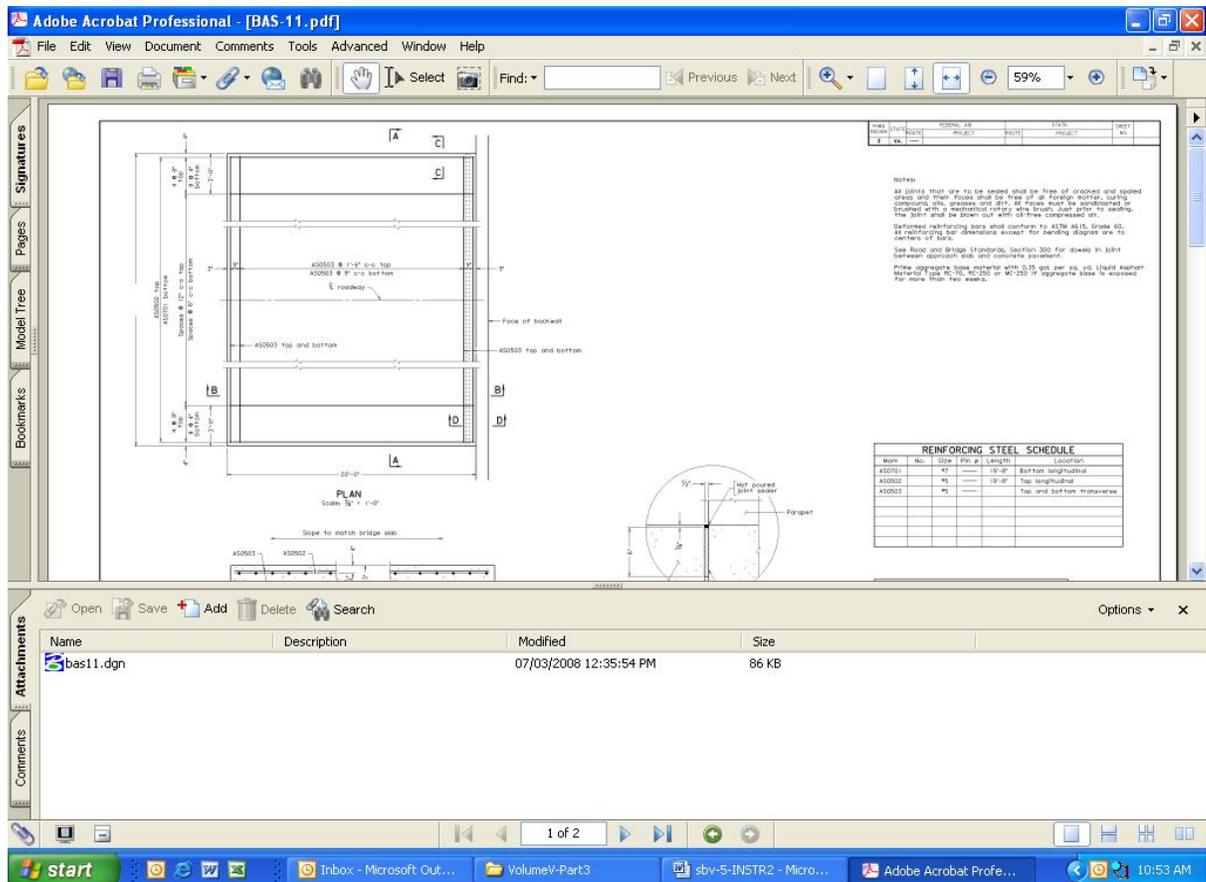
VOL. V - PART 8  
DATE: 30Aug2012  
SHEET 2 of 9  
FILE NO. SS8INSTR-2

**VIRGINIA DEPARTMENT OF TRANSPORTATION  
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION**

**VOLUME V – PART 8  
SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS**

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.

**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS  
EXTERNAL USERS: FILE ACCESS INSTRUCTIONS**

VOL. V - PART 8  
DATE: 30Aug2012  
SHEET 3 of 9  
FILE NO. SS8INSTR-3

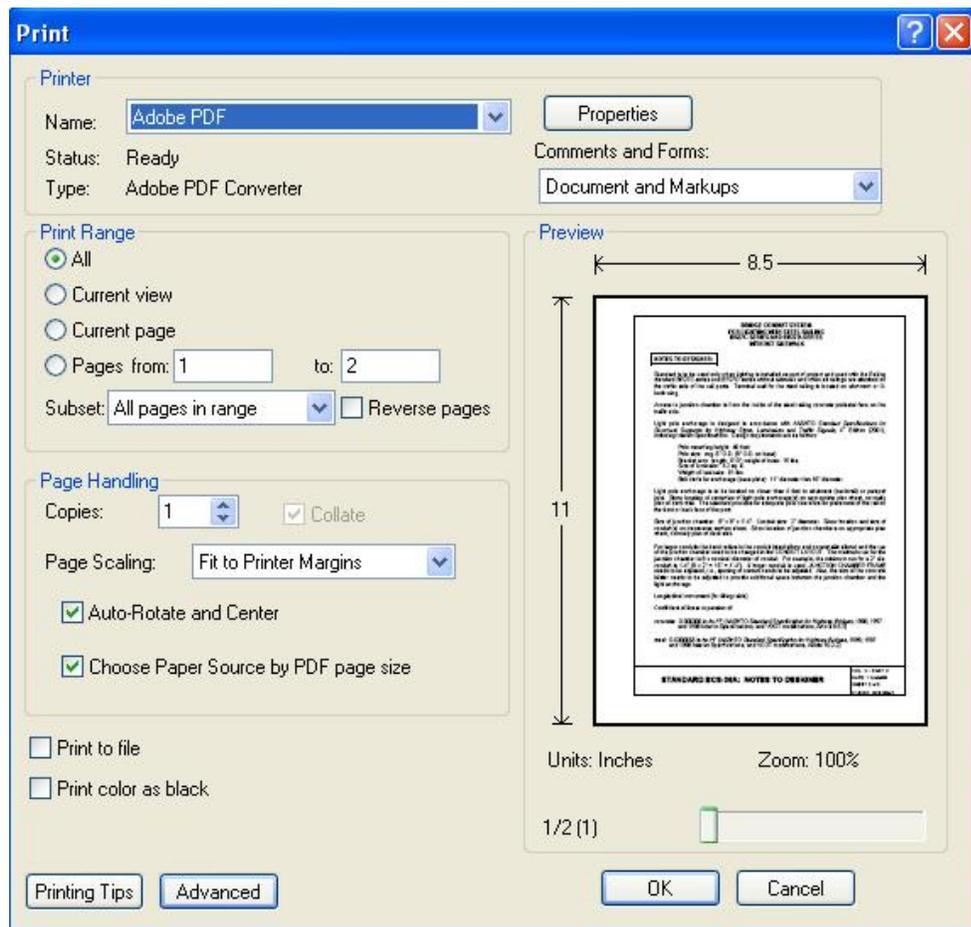
VIRGINIA DEPARTMENT OF TRANSPORTATION  
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION

VOLUME V – PART 8  
SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS

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).

**VIRGINIA DEPARTMENT OF TRANSPORTATION  
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION**

**VOLUME V – PART 8  
SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS**

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 span length designated. Design is based on: timber floor at 50 pcf, 3" asphalt overlay at 37 pcf and 2" future wearing surface at 25 pcf.

Table 1 is used when face-to-face of rail width is less than twenty feet. 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 twenty feet. 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-5 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.

**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS  
INSTRUCTIONS ON USE OF BEAM TABLES**

VOL. V - PART 8  
DATE: 30Aug2012  
SHEET 5 of 9  
FILE NO. SS8INSTR-5

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	W18x40	W18x40	W18x40	27'-0"
28'-0"	W18x40	W18x40	W18x40	W18x40	W18x40	W18x40	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	W21x44	W21x44	W21x44	30'-0"
31'-0"	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	W21x50	W21x50	W21x50	31'-0"
32'-0"	W21x44	W21x44	W21x44	W21x44	W21x44	W21x44	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	W24x55	W24x55	W24x55	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	W24x62	W24x62	W24x62	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	W24x68	W27x84	W24x76	W24x76	49'-0"
50'-0"	W24x76	W24x76	W24x68	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	W27x84	W27x84	56'-0"
57'-0"	W27x84	W27x84	W27x84	W27x94	W27x84	W27x84	W27x94	W27x84	W27x84	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	W30x108	W30x108	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"**

VOL. V - PART 8  
DATE: 30Aug2012  
SHEET 6 of 9  
FILE NO. SS8INSTR-6

**FACE-TO-FACE OF RAILS  $\geq 20'-0"$**

Beam Length	FACE-TO-FACE OF RAILS $\geq 20'-0"$									Beam Length
	1'-8" $\leq$ Beam Spa. $\leq$ 1'-10"			1'-10" $<$ Beam Spa. $\leq$ 2'-0"			2'-0" $<$ Beam Spa. $\leq$ 2'-2"			
	Number of Beams			Number of Beams			Number of Beams			
	12 - 14	15 - 16	$\geq$ 17	11 - 13	14 - 15	$\geq$ 16	11 - 12	13 - 14	$\geq$ 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	W18x35	W18x35	W18x35	W18x40	W18x40	W18x40	27'-0"
28'-0"	W18x35	W18x35	W18x35	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	W21x44	W21x44	W21x44	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	W21x50	W21x50	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	39'-0"
40'-0"	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	W24x55	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	W24x55	W24x55	W24x62	W24x62	W24x62	W24x68	W24x68	W24x68	44'-0"
45'-0"	W24x62	W24x62	W24x62	W24x68	W24x62	W24x62	W24x68	W24x68	W24x68	45'-0"
46'-0"	W24x68	W24x62	W24x62	W24x68	W24x68	W24x68	W24x76	W24x68	W24x68	46'-0"
47'-0"	W24x68	W24x62	W24x62	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	W24x68	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	W27x94	63'-0"
64'-0"	W30x99	W27x94	W27x84	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	W27x94	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  $\geq 20'-0"$**

VOL. V - PART 8  
 DATE: 30Aug2012  
 SHEET 7 of 9  
 FILE NO. SS8INSTR-7

**VIRGINIA DEPARTMENT OF TRANSPORTATION  
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION**

**VOLUME V – PART 8  
SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS**

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)  
=  $w \times L / 2$

DLd = approximate DL reaction of diaphragms (kips)  
=  $L \times 0.012 \text{ klf} / 2$

DLr1 = approximate reaction of railing with curb distributed over three beams (kips)  
=  $L \times 0.035 \text{ klf} / 2$

DLr2 = approximate reaction of railing without curb distributed over three beams (kips)  
=  $L \times 0.022 \text{ klf} / 2$

DLm = DL reaction of timber planks, 3" asphalt overlay and future wearing surface (kips)  
=  $L \times Y \times (0.020 \text{ ksf} + 0.037 \text{ ksf} + 0.025 \text{ ksf}) / 2$

TDL = Total DL reaction per beam (kips)  
=  $DLb + DLd + (DLr1 \text{ or } DLr2) + DLm$

Where:  $w$  = beam weight per foot (klf)

$L$  = beam length (feet)

$Y$  = beam spacing (feet)

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

**VIRGINIA DEPARTMENT OF TRANSPORTATION  
MANUAL OF THE STRUCTURE AND BRIDGE DIVISION**

**VOLUME V – PART 8  
SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS**

**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		STATE	SHEET
ROUTE	PROJECT		ROUTE	PROJECT
VA.				NO.
NBIS Number:			UPC No.	
Federal Oversight Code:			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 is illegal. Violators will be prosecuted to the full extent of 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, 4th Edition, 2007; 2008 Interim Specifications; 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, May 2005 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



COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION  
PROPOSED BRIDGE ON

Recommended for Approval: \_\_\_\_\_ Date \_\_\_\_\_  
State Structure and Bridge Engineer

Approved: \_\_\_\_\_ Date \_\_\_\_\_  
Chief Engineer

No.	Description	Date
REVISIONS		
For Table of Revisions, see Sheet 2.		

SS801.dgn

06-14-2010

SS8-1

VDOT S&B DIVISION RICHMOND, VA STRUCTURAL ENGINEER	
PLANS BY:	
COORDINATED:	
SUPERVISED:	
DESIGNED:	
DRAWN:	
CHECKED:	

**SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD  
TITLE SHEET**

**NOTES TO DESIGNER:**

Include standards SS8-2, SS8-3A, SS8-4, SS8-5A and SS8-6 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 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.

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 Vol. V – Part 2, File Nos. 02.03-1 thru -6 for additional information. Add estimated quantities or provide in tabular format on sheet.

PLAN:

Add plan view.

DEVELOPED SECTION ALONG:

Add view. Complete title.

**STANDARD SS8-1: NOTES TO DESIGNER**

VOL. V - PART 8  
DATE: 12Sep2008  
SHEET 2 of 2  
FILE NO. SS8-1-2

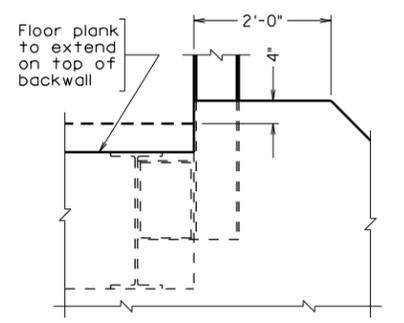
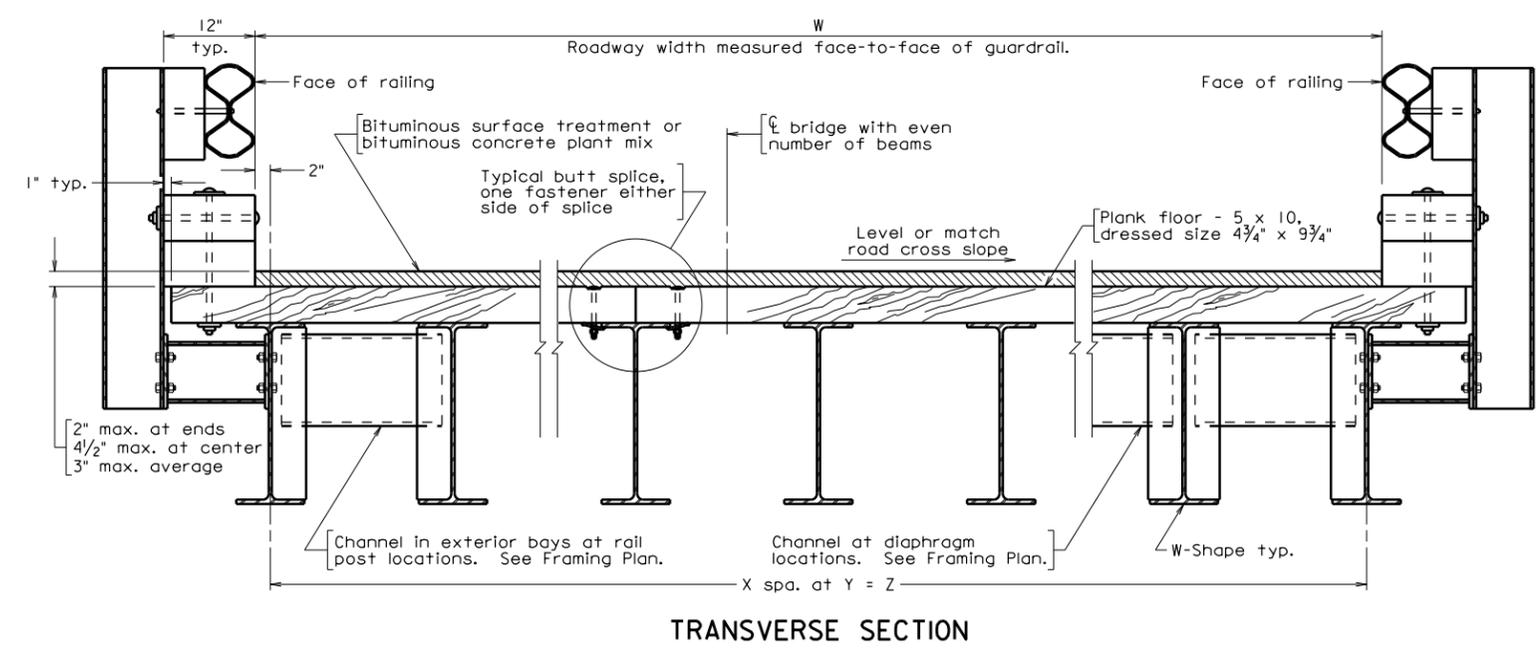
STATE	FEDERAL AID		STATE	SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.
VA.				

VARIABLE	VALUE
Skew $\Delta$	.
L	.
R	.
S	.
T	.
U	.
V	.
W	.
X	.
Y	.
Z	.
W-Shape	.
A	.
C	.
D	.
E	.
F	.
G	.
B	.

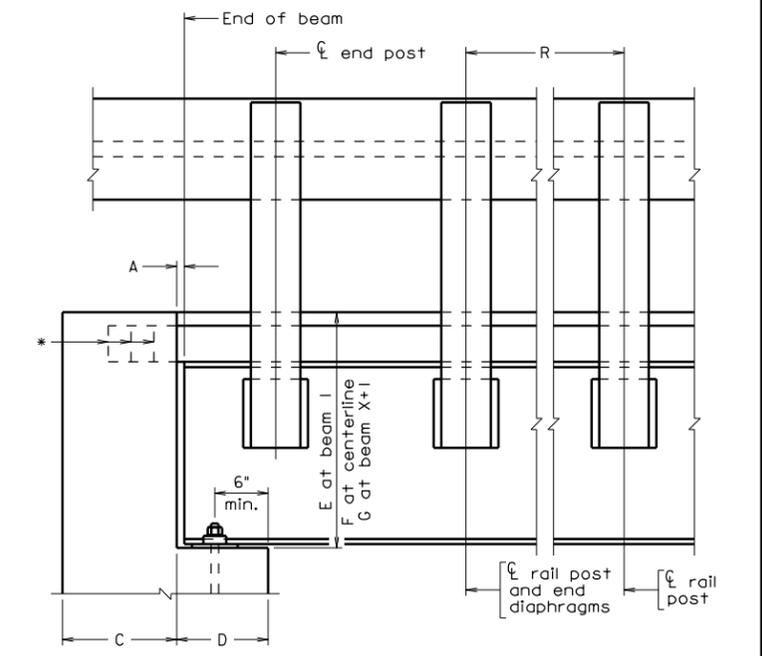
Notes:

For skews > 24° and ≤ 30°, adjust 12" and 2'-1" spacing of end posts in obtuse corners to 1'-3" and 1'-10" respectively from end of beam. For skews > 30°, omit end posts in obtuse corners. For skews > 58°, 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.

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.

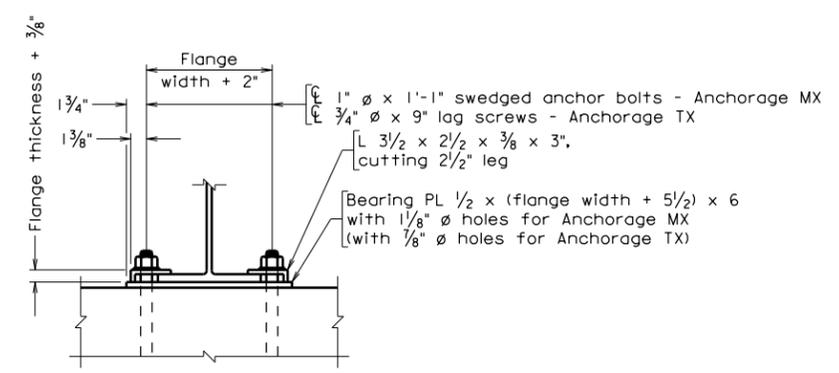


\*Use 3" floor strips to cover gap between floor plank and backwall. Nail each strip to adjacent strip with 50d nails, 18" on centers. Otherwise, insert minimum number of timber planks with width not less than 6" near middle of span to cover gap. Alternate width planks shall not be adjacent to each other.



PART SIDE ELEVATION  
Wearing surface not shown

FRAMING PLAN



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

SS802.dgn

06-14-2010

SS8-2

Sealed and Signed by:  
Julius F.J. Volgyi Jr.  
Lic. No. 010487  
On the date of  
June 14, 2010

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

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COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION				
STRUCTURE AND BRIDGE DIVISION				
STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE GENERAL DETAILS				
No.	Description	Date	Designed: .....	Date
	Revisions		Drawn: .....	Plan No.
			Checked: .....	Sheet No.
				SS8-2

**SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD  
GENERAL DETAILS**

**NOTES TO DESIGNER:**

Include standards SS8-1, SS8-3A, SS8-4, SS8-5A and SS8-6 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 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.

The designer shall insure 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. For single span bridges, using the cells places 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.

**STANDARD SS8-2: NOTES TO DESIGNER**

VOL. V - PART 8  
DATE: 12Sep2008  
SHEET 2 of 5  
FILE NO. SS8-2-2

**SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD  
GENERAL DETAILS**

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

VARIABLE TABLE: Dimensions entered shall be rounded to the nearest  $\frac{1}{8}$ ".

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	$Y * \text{TAN}(\text{Skew}) / 2$  $Y * \text{TAN}(\text{Skew})$ for bridges with skew $\leq 9^\circ$ 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; $1\frac{1}{4}$ " minimum $> 60$ feet)
C	Abutment seat 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)

**STANDARD SS8-2: NOTES TO DESIGNER**

VOL. V - PART 8  
DATE: 14Jun2010  
SHEET 3 of 5  
FILE NO. SS8-2-3

**SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD  
GENERAL 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.

**SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD  
GENERAL DETAILS**

**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.

DETAILS AT ABUTMENT:

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

OTHER DETAILS REQUIRED:

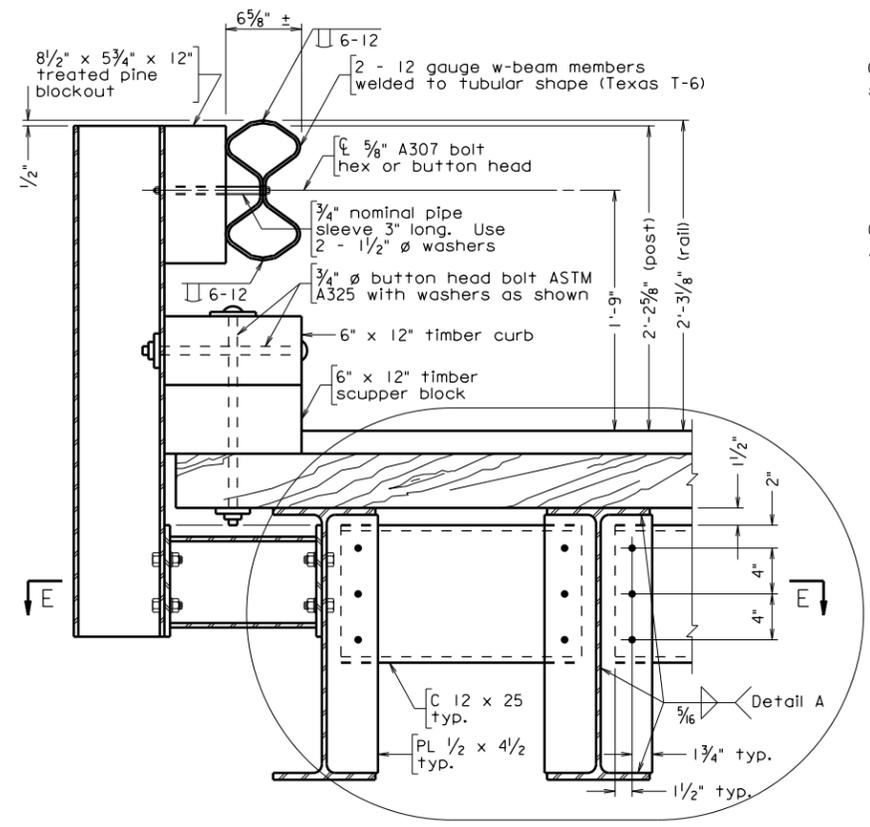
For skewed bridges, add a Typical Anchor Bolt Layout detail.\*

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

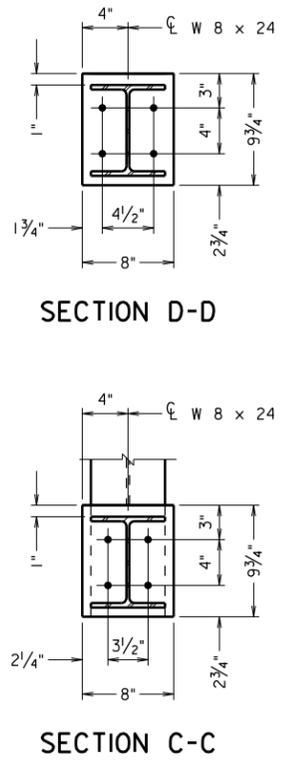
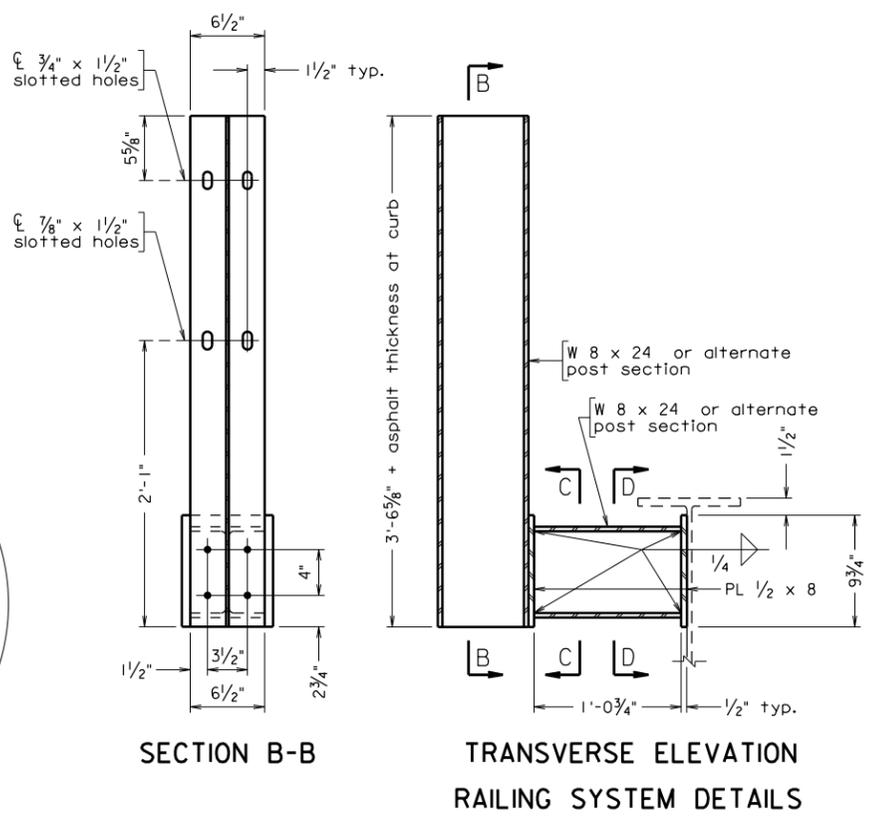
If skew and available seat width require clipping the flanges and/or bearing/sole plate, provide clip details.\*

\* 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.

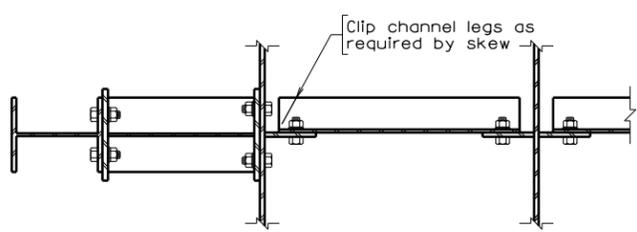
STATE	FEDERAL AID	STATE	SHEET
ROUTE	PROJECT	ROUTE	PROJECT
VA.			NO.



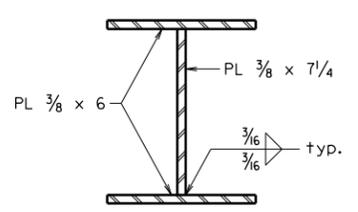
**RAILING AND DIAPHRAGM CONNECTION DETAILS**  
 For beam depths  $\leq 16"$  or  $> 24"$ , see Alternate Diaphragm Detail.  
 Use PL  $1/2 \times 6$  on end diaphragms on bridges with skew angles greater than  $20^\circ$ .



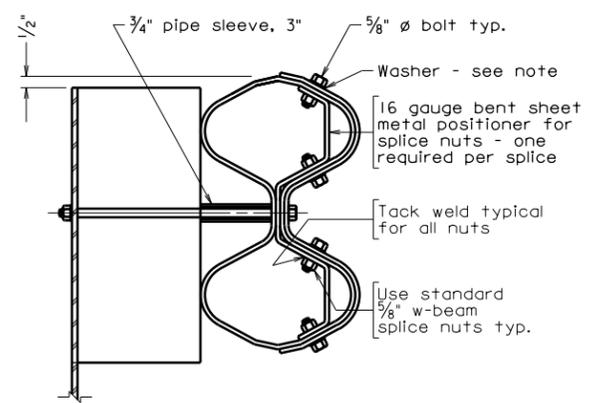
Notes:  
 All connections shall be made with  $7/8"$   $\phi$  high strength ASTM A325 bolts unless otherwise specified.  
 Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is 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  $1 3/4" \times 3" \times 7/16"$  plate washer or a 2" diameter washer.  
 For curb details, see sheet .



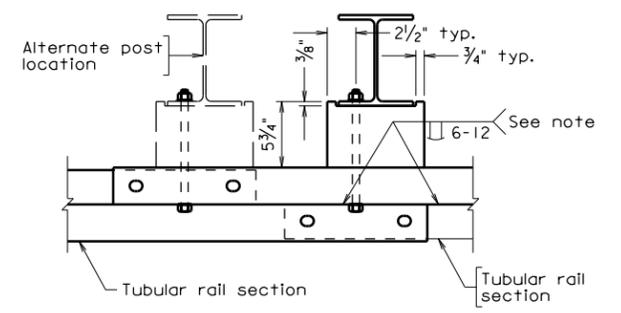
SECTION E-E



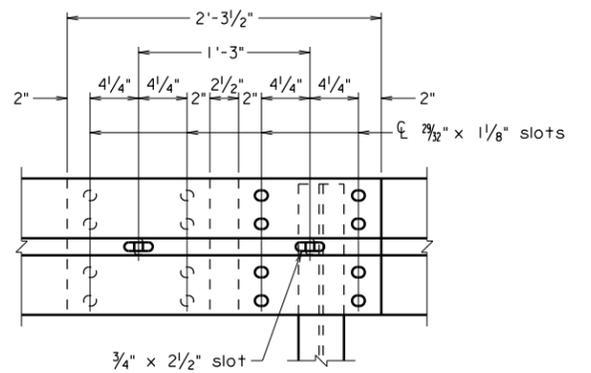
ALTERNATE POST SECTION



SPLICE DETAIL

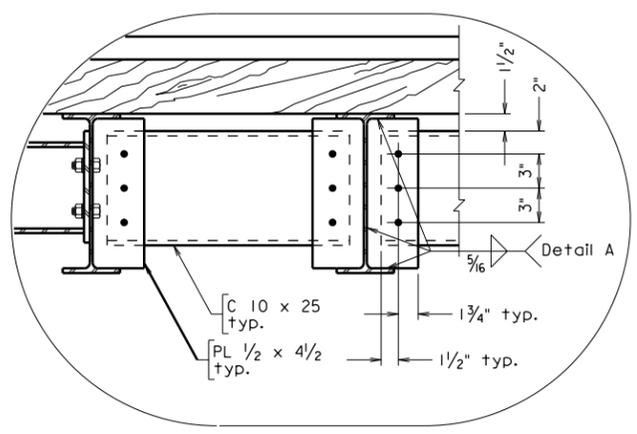


PLAN

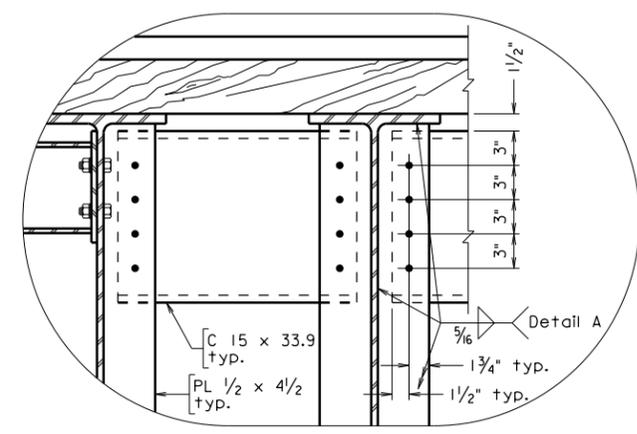


ELEVATION

TUBULAR RAIL SPLICE AND BLOCKOUT DETAILS

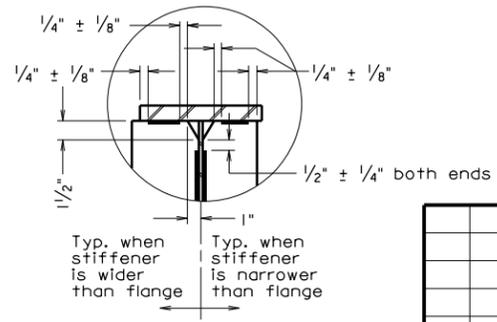


DIAPHRAGM DETAIL FOR BEAM DEPTH  $\leq 16"$



DIAPHRAGM DETAIL FOR BEAM DEPTH  $> 24"$

ALTERNATE DIAPHRAGM DETAILS



DETAIL A

Not to scale

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SS803A.dgn

06-14-2010

SS8-3A

Sealed and Signed by:  
 Julius F.J. Volgyi Jr.  
 Lic. No. 010487  
 On the date of  
 June 14, 2010

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

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE RAILING AND DIAPHRAGM DETAILS			
No.	Description	Date	Designed: S&B DIV Drawn: S&B DIV Checked: S&B DIV
Revisions		Date	Plan No. Sheet No.
			SS8-3A

**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 SS8-6 in the plans when using this standard.

The designer shall insure 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.



**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 SS8-6 in the plans when using this standard.

The designer shall insure 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:**

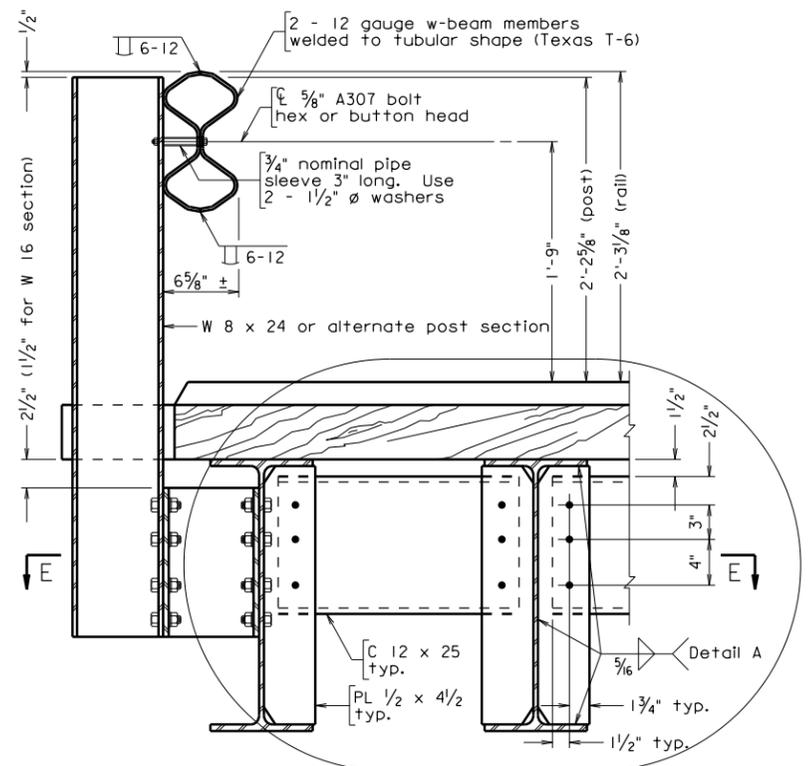
NOTES:

Add sheet number to "For curb details, see sheet ."

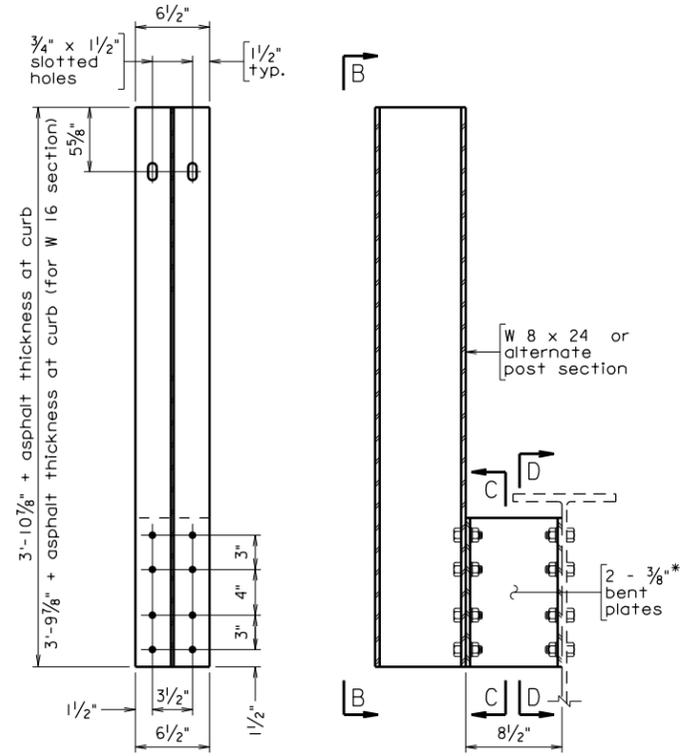
OTHER DETAILS REQUIRED:

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.

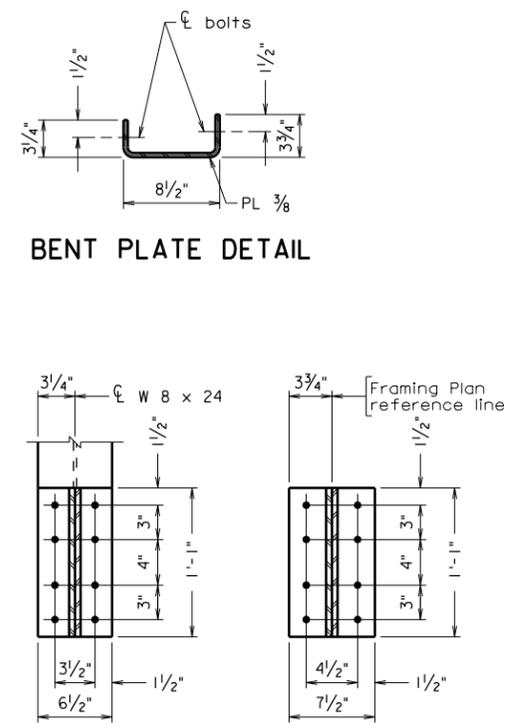
STATE	FEDERAL AID		STATE	SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.
VA.				



**RAILING AND DIAPHRAGM CONNECTION DETAILS**  
 For beam depths = 16" or > 24", see Alternate Diaphragm Detail.  
 Use PL 1/2 x 6 on end diaphragms on bridges with skew angles greater than 20°.

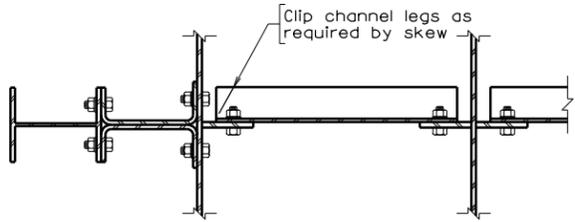


**SECTION B-B TRANSVERSE ELEVATION**  
**RAILING SYSTEM DETAILS**

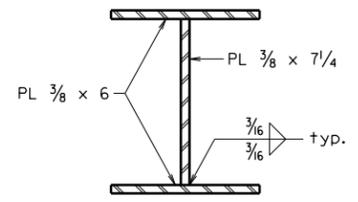


**BENT PLATE DETAIL**  
**SECTION C-C SECTION D-D**

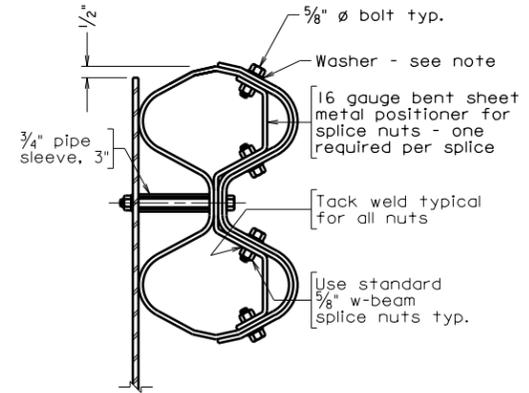
Notes:  
 All connections shall be made with 7/8" ø high strength ASTM A325 bolts unless otherwise specified.  
 Tubular w-beam rail member is to be fabricated from standard 25" nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also acceptable. 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.  
 \*One W 8 x 48 1'-1" in length with holes positioned as shown from centerline of web may be used in place of 2 - 3/8" bent plates.



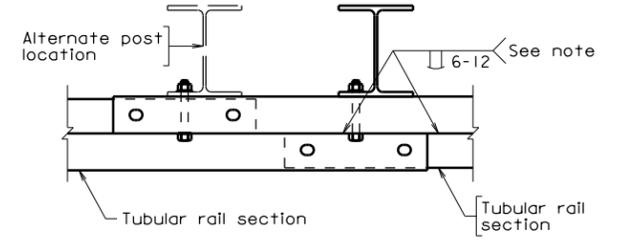
**SECTION E-E**



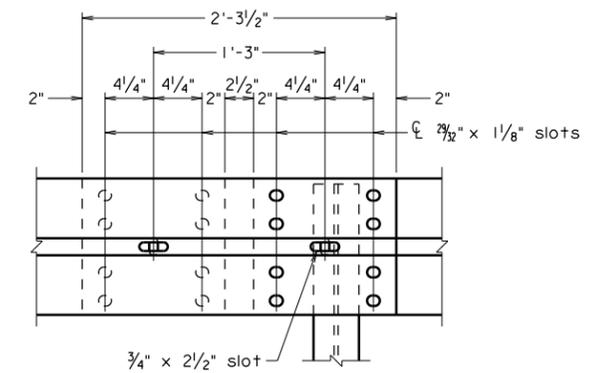
**ALTERNATE POST SECTION**



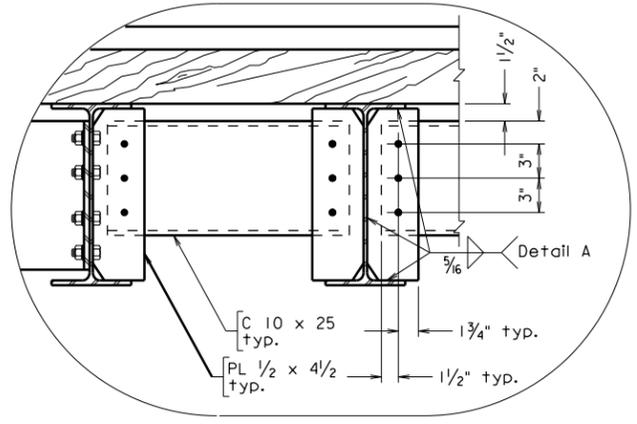
**SPLICE DETAIL**



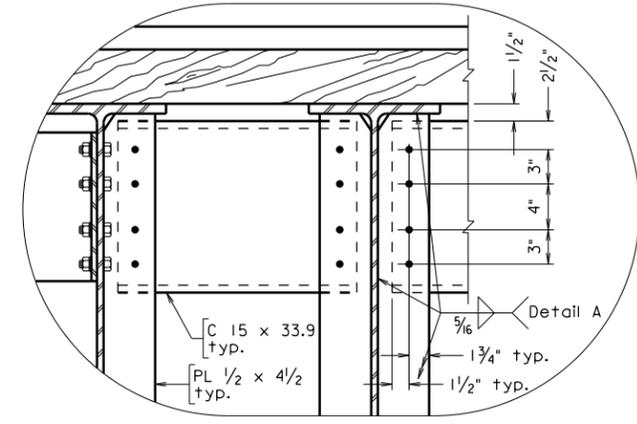
**PLAN**



**ELEVATION**  
**TUBULAR RAIL SPLICE DETAILS**

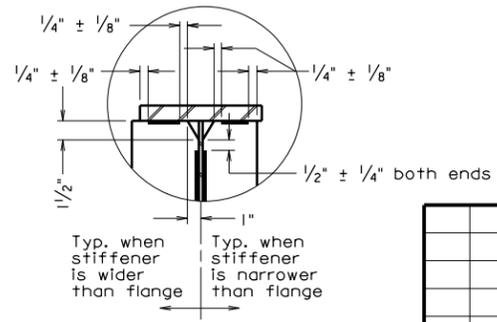


**DIAPHRAGM DETAIL FOR BEAM DEPTH = 16"**



**DIAPHRAGM DETAIL FOR BEAM DEPTH > 24"**

**ALTERNATE DIAPHRAGM DETAILS**



**DETAIL A**

Not to scale

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SS803C.dgn

06-14-2010

SS8-3C

Sealed and Signed by:  
 Julius F.J. Volgyi Jr.,  
 Lic. No. 010487  
 On the date of  
 June 14, 2010

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

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE RAILING AND DIAPHRAGM DETAILS			
No.	Description	Date	Designed: S&B DIV Drawn: S&B DIV Checked: S&B DIV
Revisions		Date	Plan No. Sheet No.
			SS8-3C

**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.

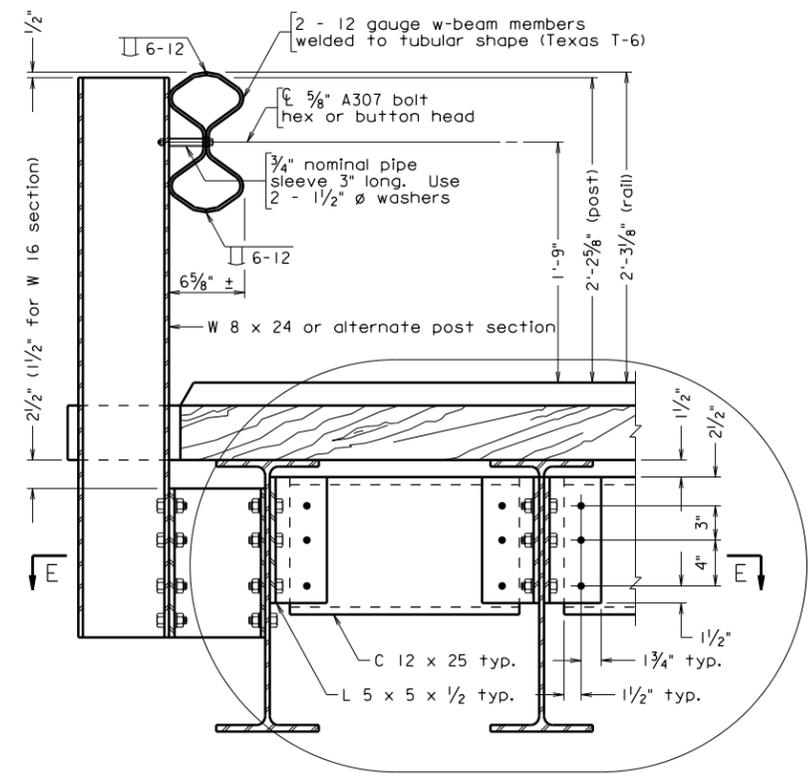
The designer shall insure that the depth of the beam used is sufficient to make the railing and diaphragm connections. The railing connection to the beam web will fit between the flanges of all W16 sections.

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

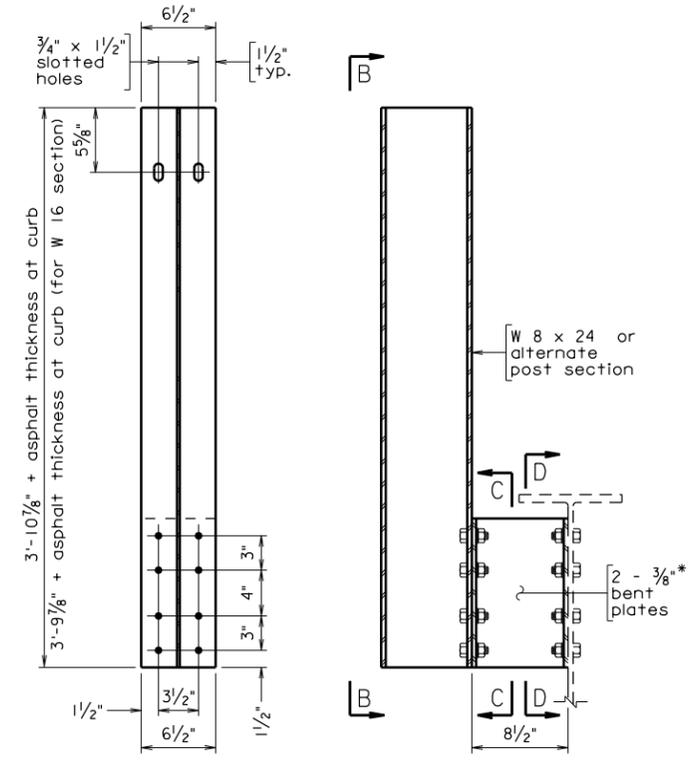
OTHER DETAILS REQUIRED:

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.

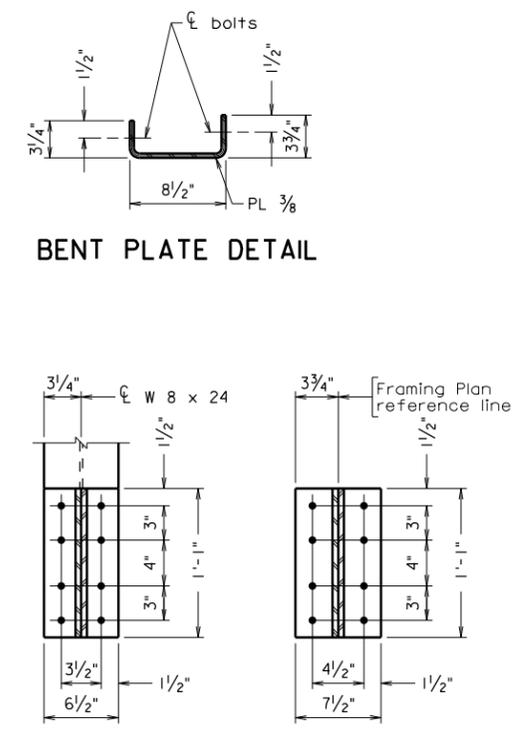
STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.			



**RAILING AND DIAPHRAGM CONNECTION DETAILS**  
For beam depths = 16" or > 24", see Alternate Diaphragm Detail.

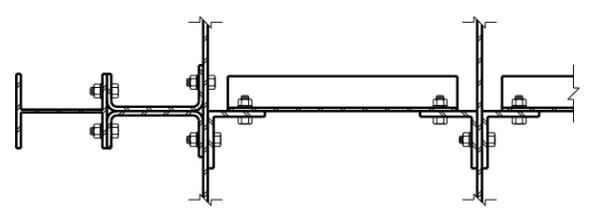


**SECTION B-B TRANSVERSE ELEVATION**

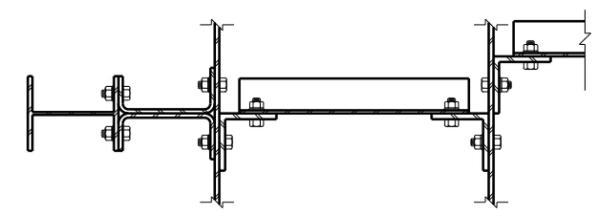


**BENT PLATE DETAIL SECTION C-C SECTION D-D**

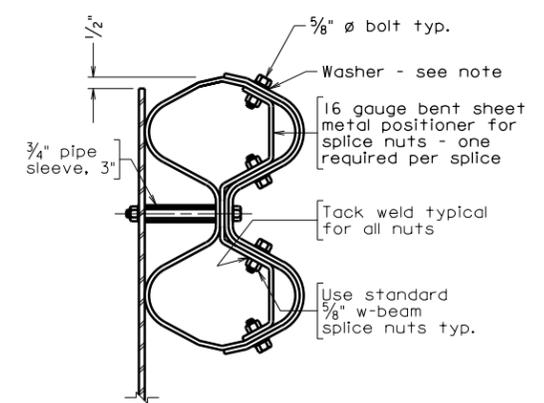
Notes:  
All connections shall be made with 7/8"  $\phi$  high strength ASTM A325 bolts unless otherwise specified.  
Tubular w-beam rail member is to be fabricated from standard 25' nominal w-beam sections. Top and bottom seams shall be butt welded 6" at 12" spacing. Continuous seam welding is also 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.  
\*One W 8 x 48 1'-1" in length with holes positioned as shown from centerline of web may be used in place of 2 - 3/8" bent plates.



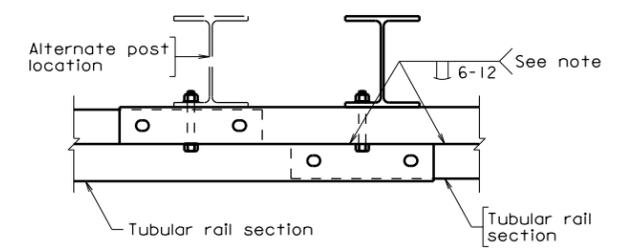
**SECTION E-E**



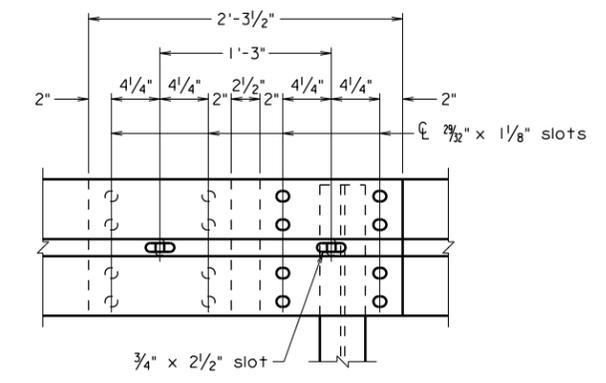
**SECTION E-E SKEWED > 9 DEGREES**



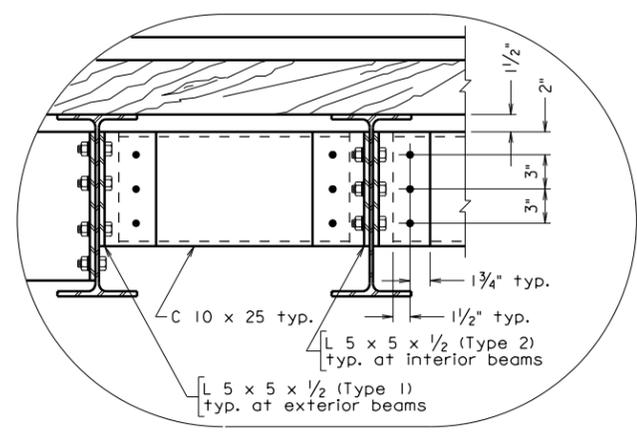
**SPLICE DETAIL**



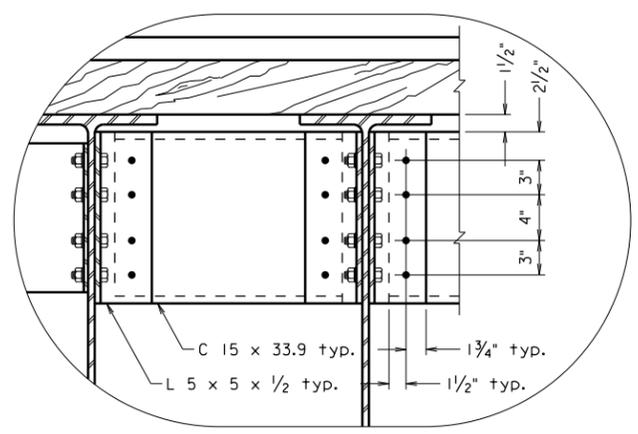
**PLAN**



**ELEVATION TUBULAR RAIL SPLICE DETAILS**

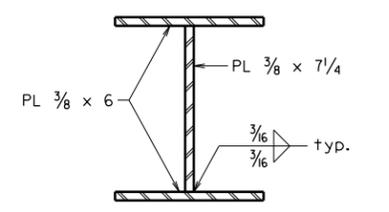


**DIAPHRAGM DETAIL FOR BEAM DEPTH = 16"**



**DIAPHRAGM DETAIL FOR BEAM DEPTH > 24"**

**ALTERNATE DIAPHRAGM DETAILS**



**ALTERNATE POST SECTION**

Not to scale

© 2010, Commonwealth of Virginia

SS8-3D  
06-14-2010  
SS8-3D

Sealed and Signed by:  
Julius F.J. Volgyi Jr.  
Lic. No. 010487  
On the date of  
June 14, 2010

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

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION					
STRUCTURE AND BRIDGE DIVISION					
STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE RAILING AND DIAPHRAGM DETAILS					
No.	Description	Date	Designed: S&B DIV	Date	Plan No.
			Drawn: S&B DIV		SS8-3D
			Checked: S&B DIV		
Revisions					

**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.

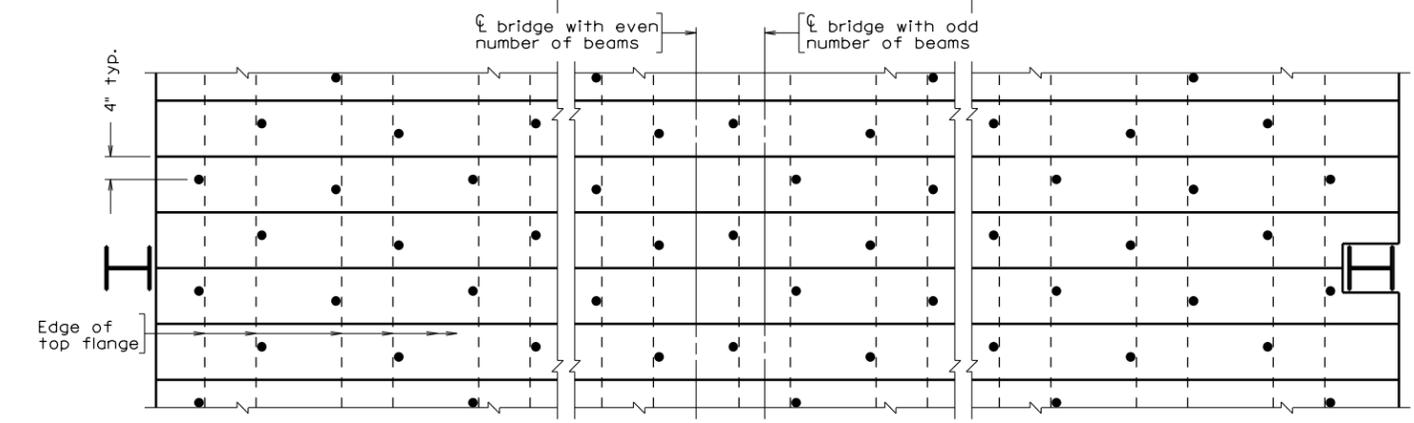
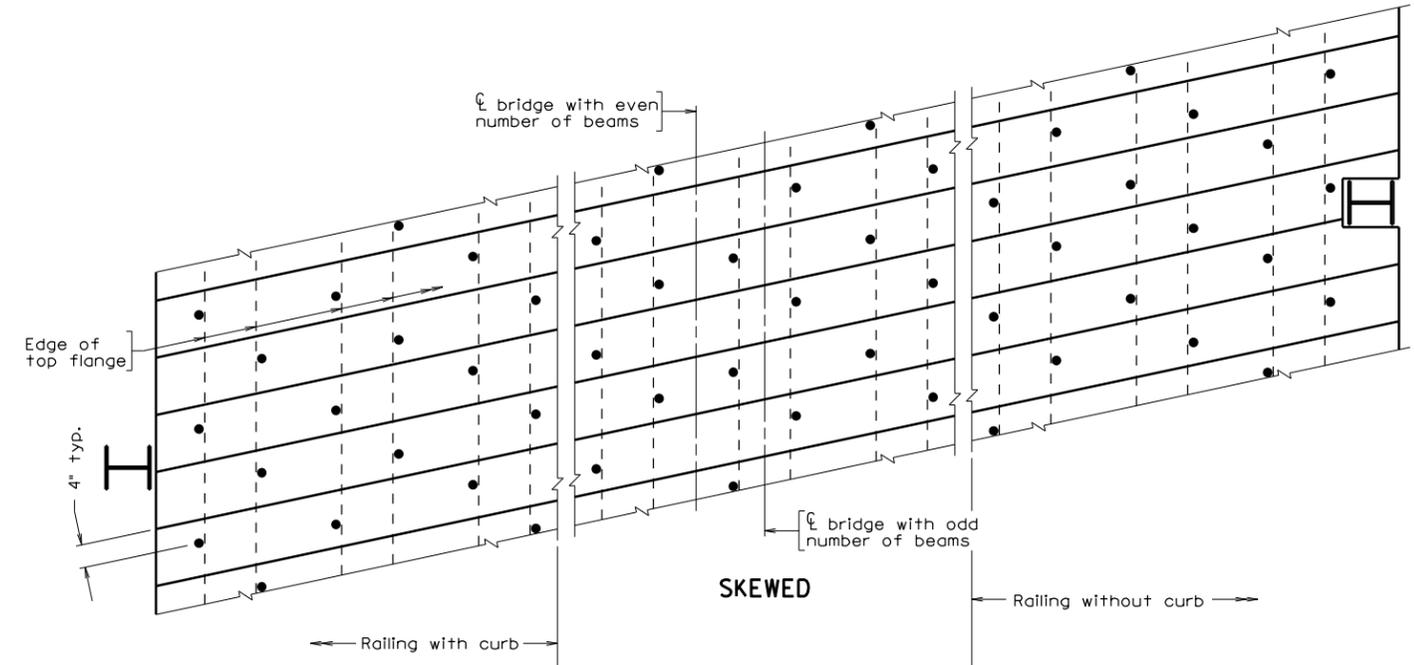
The designer shall insure that the depth of the beam used is sufficient to make the railing and diaphragm connections. The railing connection to the beam web will fit between the flanges of all W16 sections.

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

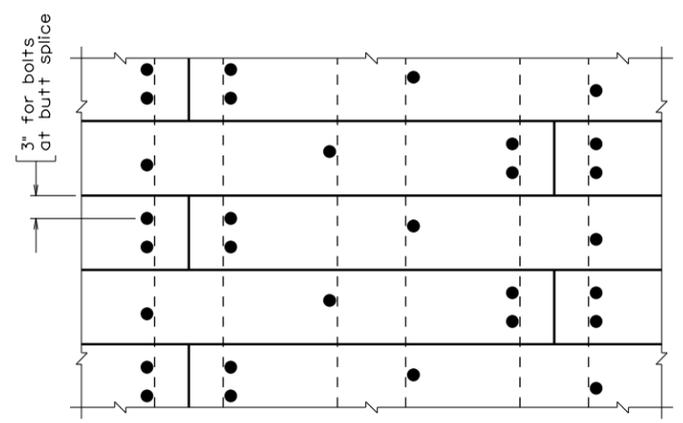
OTHER DETAILS REQUIRED:

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.

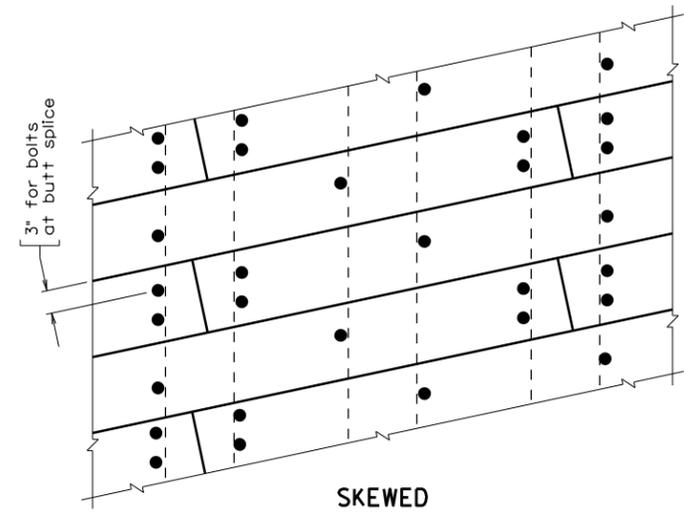
STATE	FEDERAL AID		STATE	SHEET
ROUTE	PROJECT	ROUTE	PROJECT	NO.
VA.				



NO SKEW  
PLANK FLOOR PART PLAN



NO SKEW



SKEWED

BUTT SPLICE PLAN

Notes:

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

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.

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.

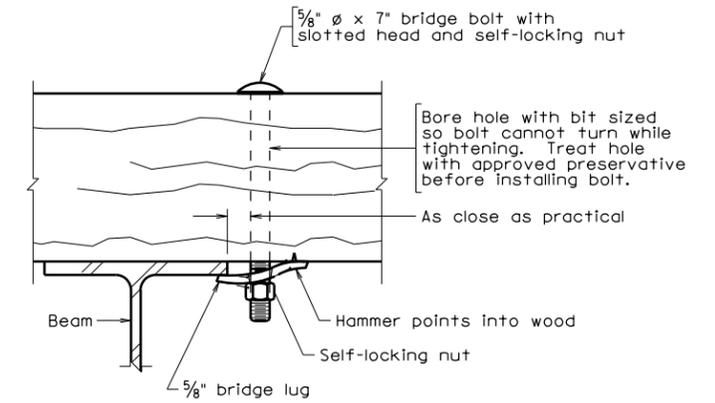
One square nut with bridge lock nut may be used in lieu of each self locking nut.

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.

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.

Waterproofing membrane:

Prior to curb installation or surfacing the deck, sheets of Rubberoid Torch Smooth material (36" wide x 33.6" in length x 1/8" thick) or similar material shall be heated slightly on the bottom side as they are rolled out per manufacturer's recommendations. Each run shall lap 3" to 4" with the adjacent run and secured to the timbers using 1/4" roofing nails. Extend the material over the beam ends approximately 1" below the bottom edge of the deck. Heat the top side along the lapped areas and ends after the material is secured. When timber lagging is used, the waterproofing material shall be extended over the lagging as shown in the Part Side Elevation on sheet 2.



TIMBER ATTACHMENT DETAIL

SS804.dgn

06-14-2010

Sealed and Signed by:  
Julius F.J. Volgyi Jr.,  
Lic. No. 010487  
On the date of  
June 14, 2010

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

SS8-4

VDOT S&B DIVISION  
RICHMOND, VA  
STRUCTURAL ENGINEER

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COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE TIMBER ATTACHMENT DETAILS			
No.	Description	Date	Designed: S&B DIV Drawn: S&B DIV Checked: S&B DIV
Revisions		Date	Plan No. Sheet No.
			SS8-4

**SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARD  
TIMBER ATTACHMENT DETAILS**

**NOTES TO DESIGNER:**

Include standards SS8-1, SS8-2, SS8-3A, SS8-5A and SS8-6 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 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.

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

None

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

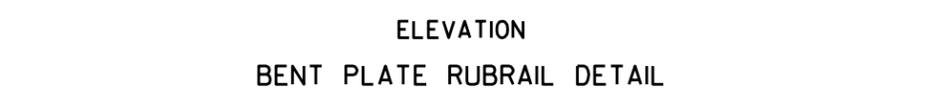
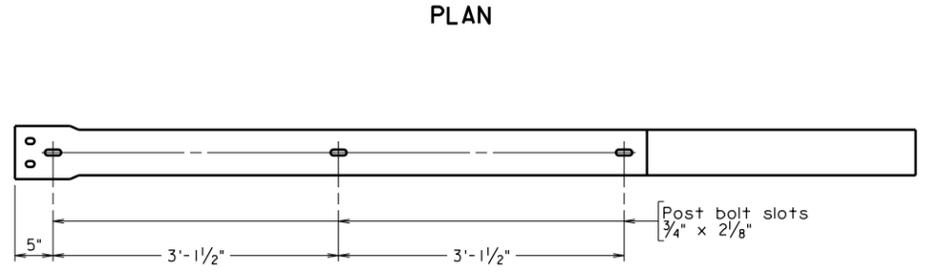
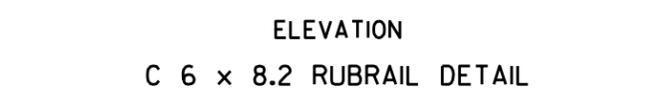
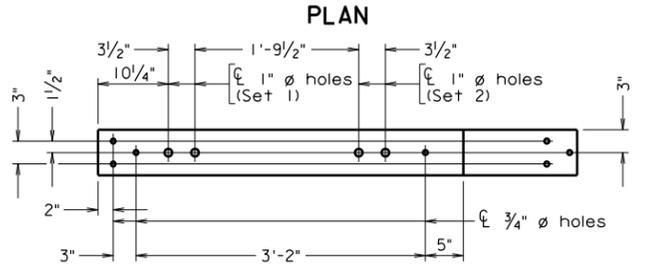
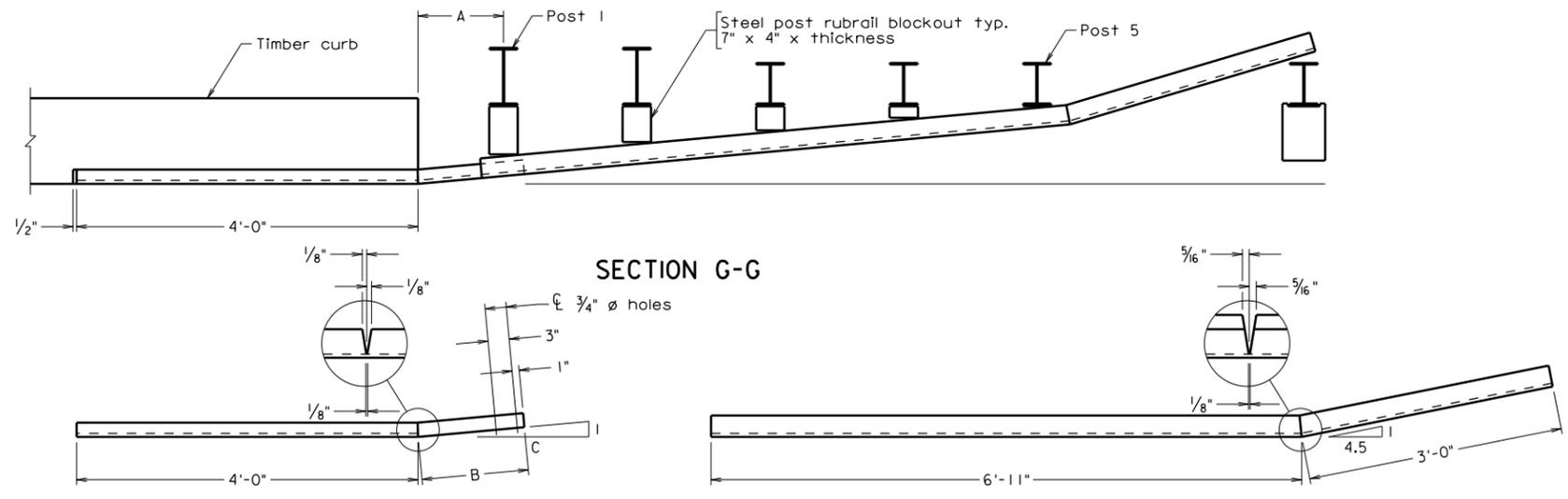
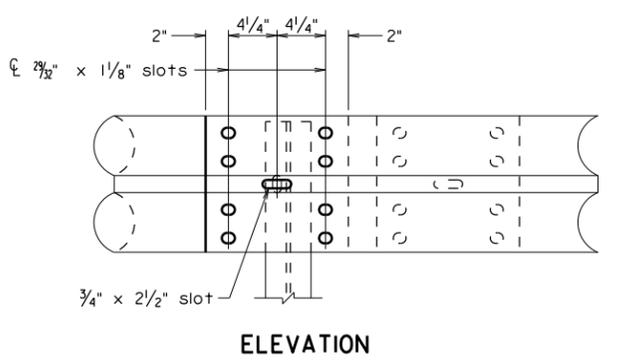
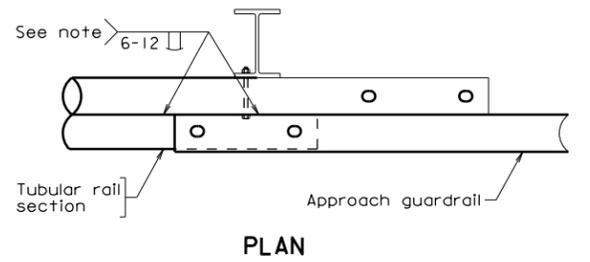
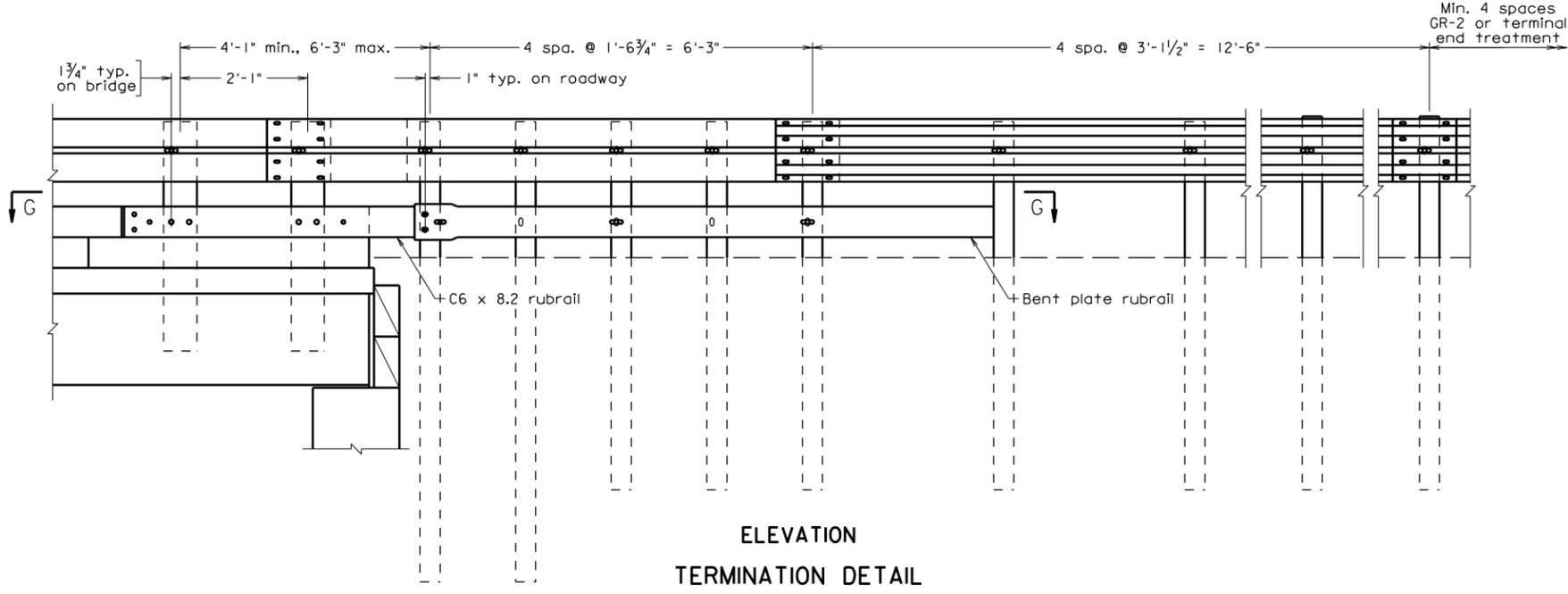
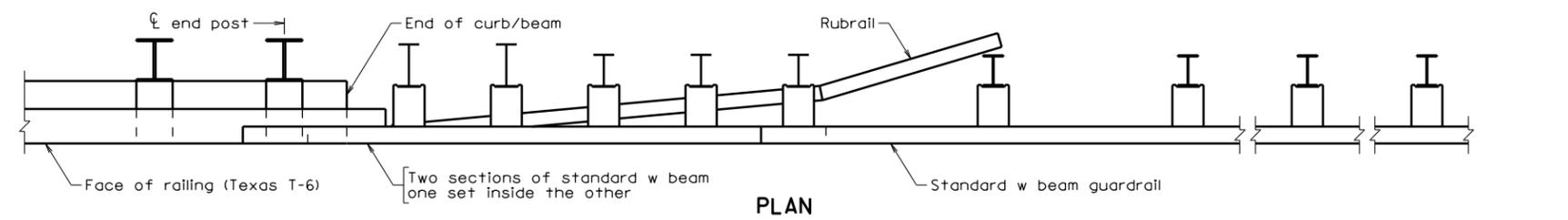
Notes:

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 - 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.

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.

For skews > 24° and ≤ 30°, shift 1" ∅ holes (Set 1) in rubrail 3" further from end at obtuse bridge corners. For skews > 30°, omit 1" ∅ holes (Set 1) at obtuse bridge corners. For skews > 58°, verify position of 1" ∅ holes (Set 2) prior to drilling. For clarification of obtuse bridge corners and to verify position of holes, see Framing Plan on sheet .



VARIABLE DIMENSIONS BASED ON POST OFFSET

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

COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

STEEL BEAM WITH TIMBER  
DECK SUPERSTRUCTURE  
TERMINATION DETAILS

No.	Description	Date	Designed: S&BDIV	Date	Plan No.	Sheet No.
	Revisions		Drawn: S&BDIV		SS8-5A	
			Checked: S&BDIV			

SS805A.dgn

06-14-2010

SS8-5A

Sealed and Signed by:  
Julius F.J. Volgyi Jr.,  
Lic. No. 010487  
On the date of  
June 14, 2010

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

VDOT S&B DIVISION  
RICHMOND, VA  
STRUCTURAL ENGINEER

Not to scale

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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 SS8-6 in the plans when using this standard.

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.

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

NOTES:

In last note, add sheet number to "For clarification of obtuse bridge corners and to verify position of holes, see Framing Plan on sheet ."

VARIABLE DIMENSIONS BASED ON POST OFFSET:

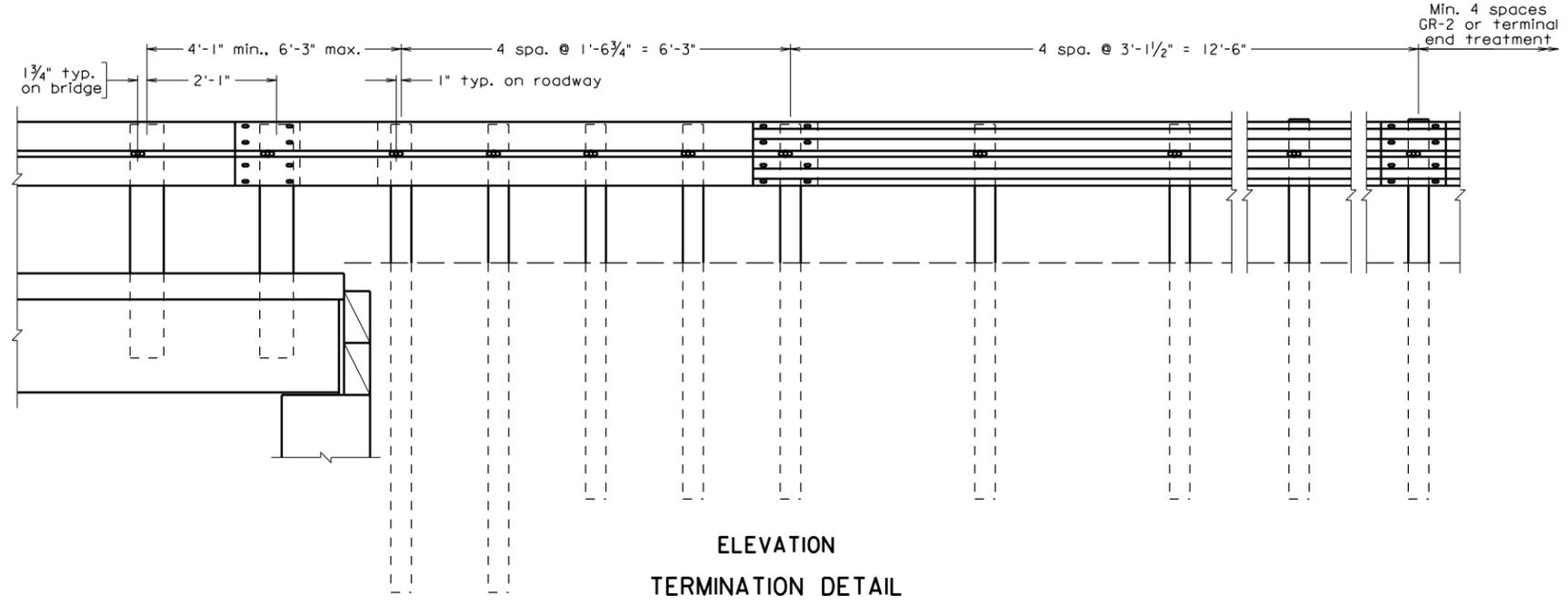
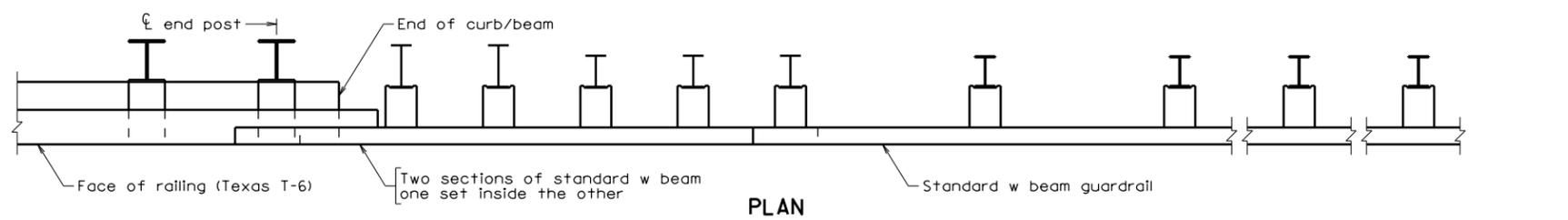
Fill in the table based on the actual distance between the end of curb/beam and the first roadway post, dimension "A", using the chart below. Interpolate between values. Use 1/8" increments. If dimension "A" varies depending on location, use multiple lines indicating each location (eg., Abut. A - LOCL). 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	6 <sup>3</sup> / <sub>4</sub> "	5 <sup>1</sup> / <sub>8</sub> "	3 <sup>3</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>4</sub> "
1'-6"	1'-9"	12	6 <sup>3</sup> / <sub>8</sub> "	4 <sup>7</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>4</sub> "
2'-0"	2'-3"	13	6"	4 <sup>5</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>4</sub> "
2'-6"	2'-9"	13.5	5 <sup>5</sup> / <sub>8</sub> "	4 <sup>1</sup> / <sub>4</sub> "	2 <sup>7</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>2</sub> "
3'-0"	3'-3"	14.5	5 <sup>3</sup> / <sub>8</sub> "	4 <sup>1</sup> / <sub>8</sub> "	2 <sup>7</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>2</sub> "
3'-6"	3'-9"	15	5 <sup>1</sup> / <sub>8</sub> "	3 <sup>7</sup> / <sub>8</sub> "	2 <sup>5</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>8</sub> "
4'-0"	4'-3"	16	4 <sup>7</sup> / <sub>8</sub> "	3 <sup>3</sup> / <sub>4</sub> "	2 <sup>5</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>8</sub> "

**STANDARD SS8-5A: NOTES TO DESIGNER**

VOL. V - PART 8  
DATE: 12Sep2008  
SHEET 2 of 2  
FILE NO. SS8-5A-2

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

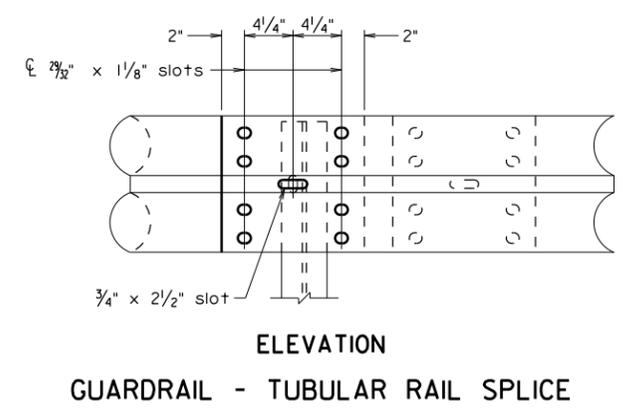
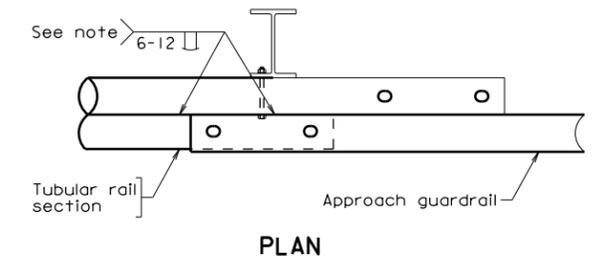


Notes:

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 - 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 7/16" 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 rail where railing will not be carried beyond bridge length.



SS805B.dgn

06-14-2010

SS8-5B

Sealed and Signed by:  
Julius F.J. Volgyi Jr.  
Lic. No. 010487  
On the date of  
June 14, 2010

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

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COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE TERMINATION DETAILS			
No.	Description	Date	Designed: S&B DIV Drawn: S&B DIV Checked: S&B DIV
	Revisions		Date Plan No. Sheet No.
			SS8-5B

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

**NOTES TO DESIGNER:**

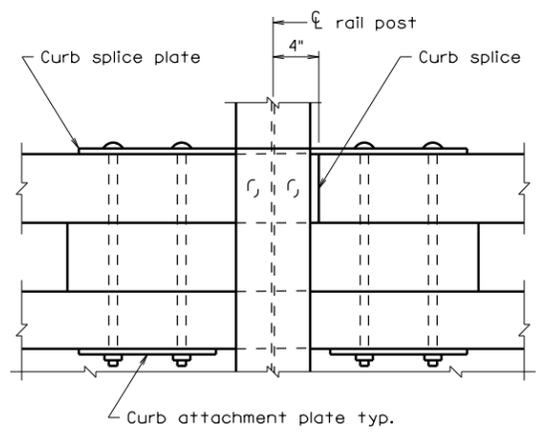
Include standards SS8-1, SS8-2, SS8-3C and SS8-4 in the plans when using this standard.

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:**

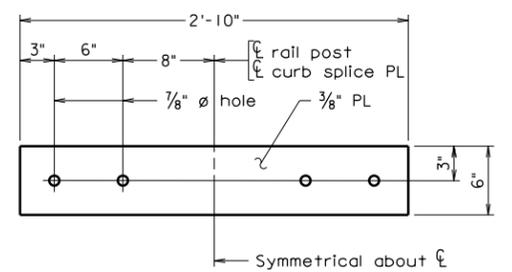
None

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

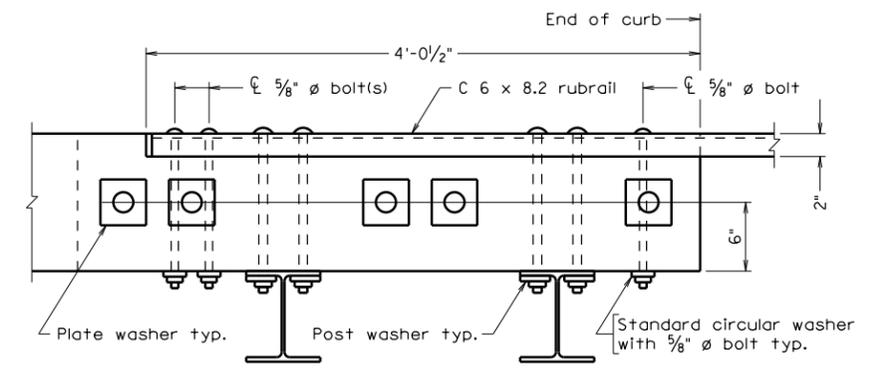


**CURB SPLICE DETAIL**

See Elevation at Interior Rail Post for additional details

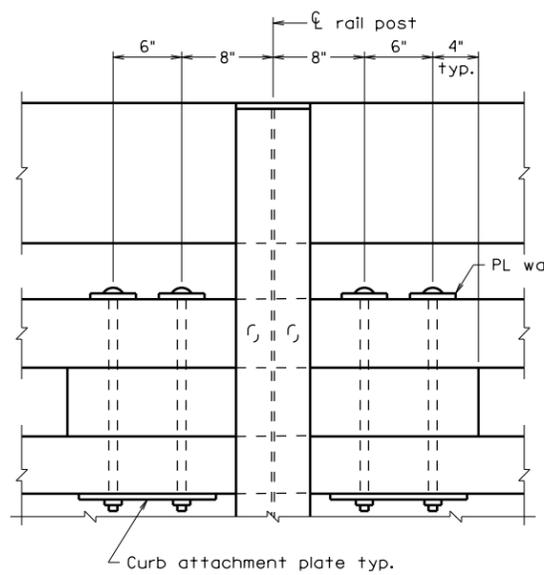


**CURB SPLICE PLATE**

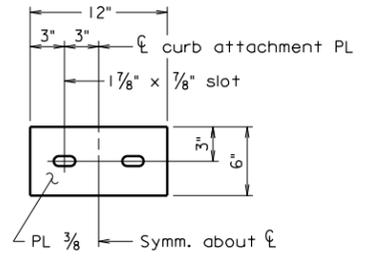


**SECTION A-A**

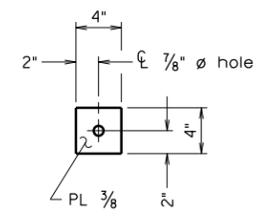
Notes:  
 Asphalt overlay and timber plank end breaks not shown in elevation views and Curb Splice Detail for clarity.  
 All timber curb connections shall be made with 3/4"  $\phi$  button head bolts ASTM A325 unless noted otherwise.



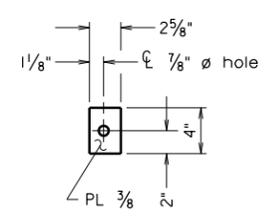
**ELEVATION AT INTERIOR RAIL POST**



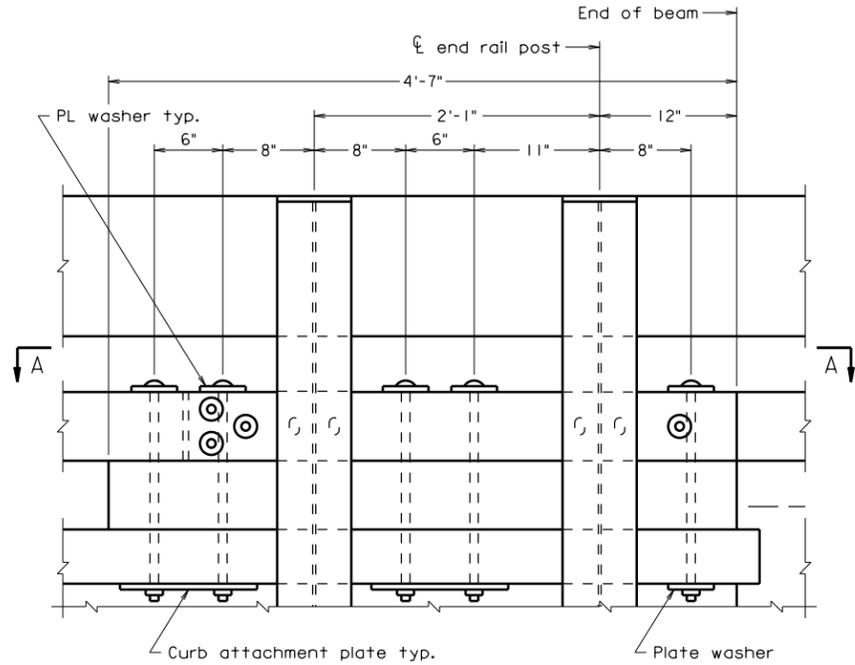
**CURB ATTACHMENT PLATE**



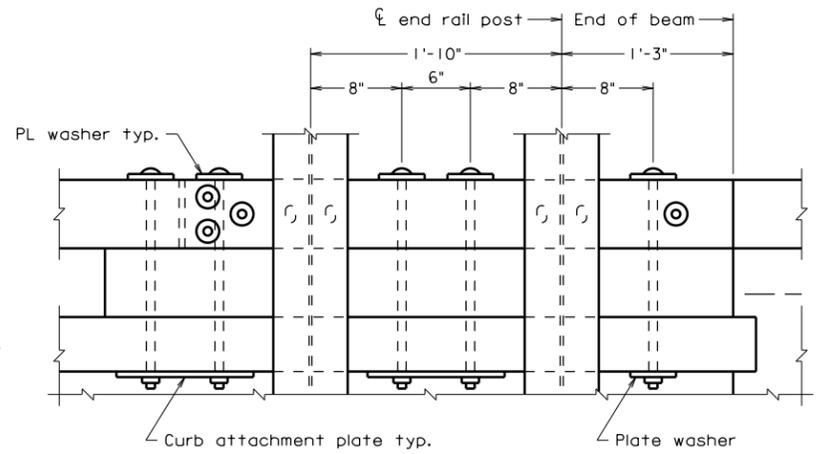
**PLATE WASHER**



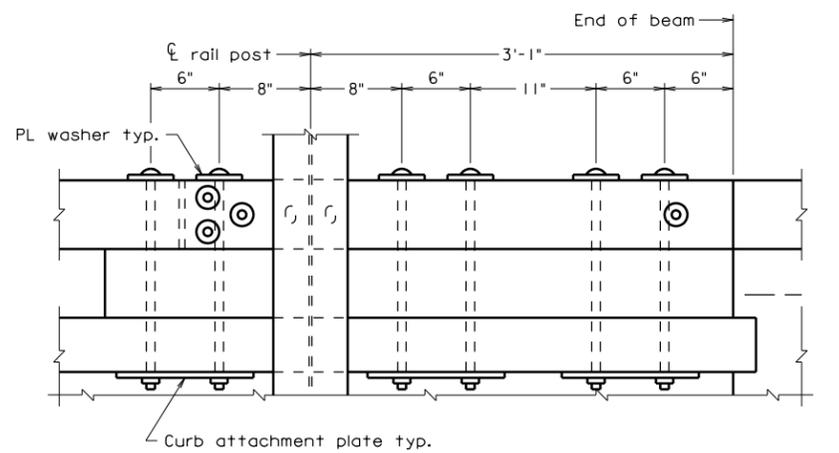
**POST WASHER**



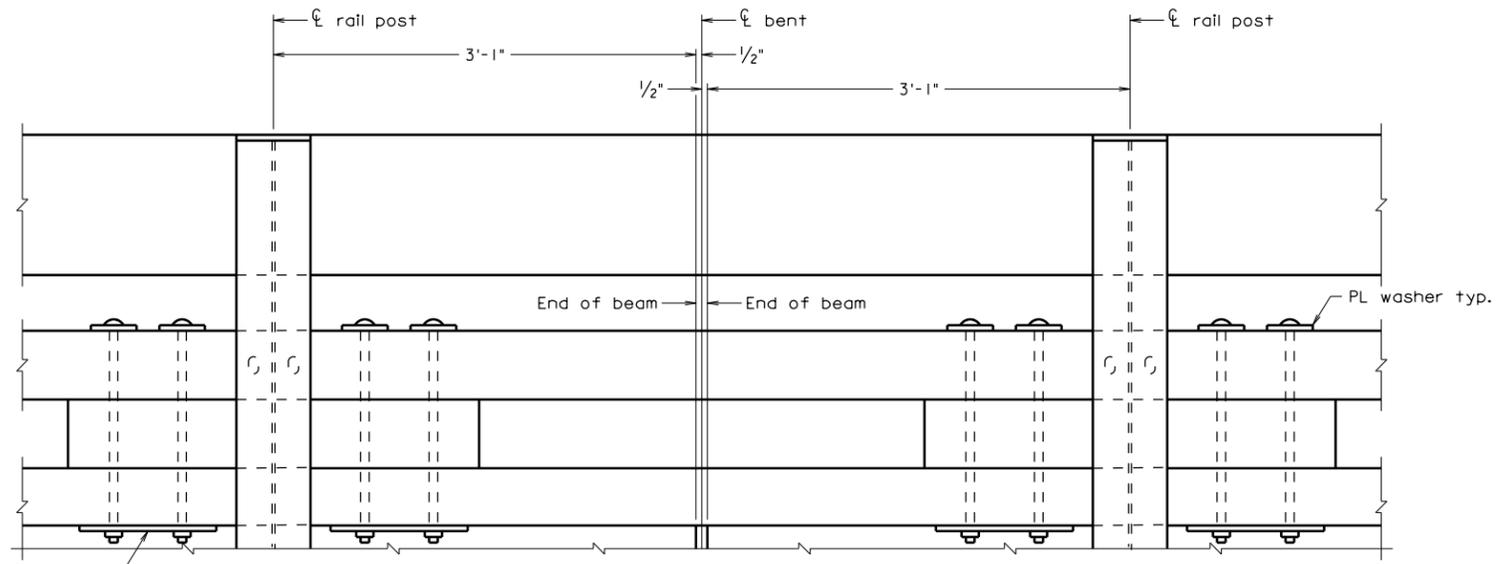
**ELEVATION AT ABUTMENT**



**ABUTMENT ELEVATION IN OBTUSE CORNERS WHERE 24° < SKEW ≤ 30°**  
 See Elevation at Abutment for additional details



**ABUTMENT ELEVATION IN OBTUSE CORNERS WHERE 30° < SKEW ≤ 58°**  
 See Elevation at Abutment for additional details



**ELEVATION AT BENT**

See Elevation at Interior Rail Post for additional details

SS806.dgn

06-14-2010

Sealed and Signed by:  
 Julius F.J. Volgyi Jr.,  
 Lic. No. 010487  
 On the date of  
 June 14, 2010

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

SS8-6

VDOT S&B DIVISION  
 RICHMOND, VA  
 STRUCTURAL ENGINEER

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COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
<b>STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE CURB DETAILS</b>			
No.	Description	Date	Revisions
Designed: S&B DIV.		Date	
Drawn: S&B DIV.		Plan No.	
Checked: S&B DIV.		Sheet No.	
		<b>SS8-6</b>	

**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.

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.

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

None

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

**INDEX OF CELLS**

<b>CELL NAME</b>	<b>FILE NO.</b>	<b>DATE</b>
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BAA02 .....	SS8CELLS-1 .....	12Sep2008
BAA03 .....	SS8CELLS-2 .....	12Sep2008
BAA04 .....	SS8CELLS-2 .....	12Sep2008
BAA05 .....	SS8CELLS-3 .....	12Sep2008
BAA06 .....	SS8CELLS-3 .....	12Sep2008
BAA07 .....	SS8CELLS-4 .....	12Sep2008
BAA08 .....	SS8CELLS-4 .....	12Sep2008
BAA09 .....	SS8CELLS-5 .....	12Sep2008
BAA10 .....	SS8CELLS-5 .....	12Sep2008
BAL01 .....	SS8CELLS-6 .....	12Sep2008
BAL02 .....	SS8CELLS-6 .....	12Sep2008
BAL03 .....	SS8CELLS-7 .....	12Sep2008
BAL04 .....	SS8CELLS-7 .....	12Sep2008
BAL05 .....	SS8CELLS-8 .....	12Sep2008
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BAL07 .....	SS8CELLS-9 .....	12Sep2008
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BAR08 .....	SS8CELLS-19 .....	12Sep2008
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BAR10 .....	SS8CELLS-20 .....	12Sep2008

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

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BTL20.....	SS8CELLS-40 .....	12Sep2008

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

**INDEX OF CELLS (cont'd)**

<b>CELL NAME</b>	<b>FILE NO.</b>	<b>DATE</b>
BTR01 .....	SS8CELLS-41 .....	12Sep2008
BTR02 .....	SS8CELLS-41 .....	12Sep2008
BTR03 .....	SS8CELLS-42 .....	12Sep2008
BTR04 .....	SS8CELLS-42 .....	12Sep2008
BTR05 .....	SS8CELLS-43 .....	12Sep2008
BTR06 .....	SS8CELLS-43 .....	12Sep2008
BTR07 .....	SS8CELLS-44 .....	12Sep2008
BTR08 .....	SS8CELLS-44 .....	12Sep2008
BTR09 .....	SS8CELLS-45 .....	12Sep2008
BTR10 .....	SS8CELLS-45 .....	12Sep2008
BTR11 .....	SS8CELLS-46 .....	12Sep2008
BTR12 .....	SS8CELLS-46 .....	12Sep2008
BTR13 .....	SS8CELLS-47 .....	12Sep2008
BTR14 .....	SS8CELLS-47 .....	12Sep2008
BTR15 .....	SS8CELLS-48 .....	12Sep2008
BTR16 .....	SS8CELLS-48 .....	12Sep2008
BTR17 .....	SS8CELLS-49 .....	12Sep2008
BTR18 .....	SS8CELLS-49 .....	12Sep2008
BTR19 .....	SS8CELLS-50 .....	12Sep2008
BTR20 .....	SS8CELLS-50 .....	12Sep2008
BZAB1 .....	SS8CELLS-51 .....	12Sep2008
BZAB2 .....	SS8CELLS-51 .....	12Sep2008
BZAE1 .....	SS8CELLS-51 .....	12Sep2008
BZAE2 .....	SS8CELLS-52 .....	12Sep2008
BZPB1 .....	SS8CELLS-52 .....	12Sep2008
ELC1B .....	SS8CELLS-53 .....	12Sep2008
ELC1E .....	SS8CELLS-53 .....	12Sep2008
ELC2B .....	SS8CELLS-54 .....	12Sep2008
ELC2E .....	SS8CELLS-54 .....	12Sep2008
ELCV1 .....	SS8CELLS-55 .....	12Sep2008
ELTB1 .....	SS8CELLS-55 .....	12Sep2008
ELTB2 .....	SS8CELLS-56 .....	12Sep2008
TSB1E .....	SS8CELLS-57 .....	12Sep2008
TSB1O .....	SS8CELLS-57 .....	12Sep2008
TSB2E .....	SS8CELLS-58 .....	12Sep2008
TSB2O .....	SS8CELLS-58 .....	12Sep2008
TSW1E .....	SS8CELLS-59 .....	12Sep2008
TSW1O .....	SS8CELLS-59 .....	12Sep2008
TSW2E .....	SS8CELLS-60 .....	12Sep2008
TSW2O .....	SS8CELLS-60 .....	12Sep2008

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

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WPA01 .....	SS8CELLS-61 .....	12Sep2008
WPA02 .....	SS8CELLS-61 .....	12Sep2008
WPA03 .....	SS8CELLS-62 .....	12Sep2008
WPA04 .....	SS8CELLS-62 .....	12Sep2008
WPA05 .....	SS8CELLS-63 .....	12Sep2008
WPA06 .....	SS8CELLS-63 .....	12Sep2008
WPA07 .....	SS8CELLS-64 .....	12Sep2008
WPA08 .....	SS8CELLS-64 .....	12Sep2008
WPA09 .....	SS8CELLS-65 .....	12Sep2008
WPA10 .....	SS8CELLS-65 .....	12Sep2008
WPL01 .....	SS8CELLS-66 .....	12Sep2008
WPL02 .....	SS8CELLS-66 .....	12Sep2008
WPL03 .....	SS8CELLS-67 .....	12Sep2008
WPL04 .....	SS8CELLS-67 .....	12Sep2008
WPL05 .....	SS8CELLS-68 .....	12Sep2008
WPL06 .....	SS8CELLS-68 .....	12Sep2008
WPL07 .....	SS8CELLS-69 .....	12Sep2008
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WPL09 .....	SS8CELLS-70 .....	12Sep2008
WPL10 .....	SS8CELLS-70 .....	12Sep2008
WPR01 .....	SS8CELLS-71 .....	12Sep2008
WPR02 .....	SS8CELLS-71 .....	12Sep2008
WPR03 .....	SS8CELLS-72 .....	12Sep2008
WPR04 .....	SS8CELLS-72 .....	12Sep2008
WPR05 .....	SS8CELLS-73 .....	12Sep2008
WPR06 .....	SS8CELLS-73 .....	12Sep2008
WPR07 .....	SS8CELLS-74 .....	12Sep2008
WPR08 .....	SS8CELLS-74 .....	12Sep2008
WPR09 .....	SS8CELLS-75 .....	12Sep2008
WPR10 .....	SS8CELLS-75 .....	12Sep2008
WTA01 .....	SS8CELLS-76 .....	12Sep2008
WTA02 .....	SS8CELLS-76 .....	12Sep2008
WTA03 .....	SS8CELLS-77 .....	12Sep2008
WTA04 .....	SS8CELLS-77 .....	12Sep2008
WTA05 .....	SS8CELLS-78 .....	12Sep2008
WTA06 .....	SS8CELLS-78 .....	12Sep2008
WTA07 .....	SS8CELLS-79 .....	12Sep2008
WTA08 .....	SS8CELLS-79 .....	12Sep2008
WTA09 .....	SS8CELLS-80 .....	12Sep2008
WTA10 .....	SS8CELLS-80 .....	12Sep2008

**SS-8 STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS  
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<b>CELL NAME</b>	<b>FILE NO.</b>	<b>DATE</b>
WTL01.....	SS8CELLS-81 .....	12Sep2008
WTL02.....	SS8CELLS-81 .....	12Sep2008
WTL03.....	SS8CELLS-82 .....	12Sep2008
WTL04.....	SS8CELLS-82 .....	12Sep2008
WTL05.....	SS8CELLS-83 .....	12Sep2008
WTL06.....	SS8CELLS-83 .....	12Sep2008
WTL07.....	SS8CELLS-84 .....	12Sep2008
WTL08.....	SS8CELLS-84 .....	12Sep2008
WTL09.....	SS8CELLS-85 .....	12Sep2008
WTL10.....	SS8CELLS-85 .....	12Sep2008
WTR01.....	SS8CELLS-86 .....	12Sep2008
WTR02.....	SS8CELLS-86 .....	12Sep2008
WTR03.....	SS8CELLS-87 .....	12Sep2008
WTR04.....	SS8CELLS-87 .....	12Sep2008
WTR05.....	SS8CELLS-88 .....	12Sep2008
WTR06.....	SS8CELLS-88 .....	12Sep2008
WTR07.....	SS8CELLS-89 .....	12Sep2008
WTR08.....	SS8CELLS-89 .....	12Sep2008
WTR09.....	SS8CELLS-90 .....	12Sep2008
WTR10.....	SS8CELLS-90 .....	12Sep2008

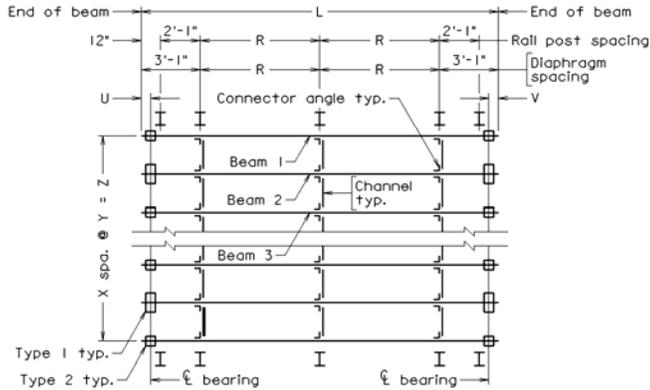
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**CELL NAME**

**CELL DESCRIPTION**

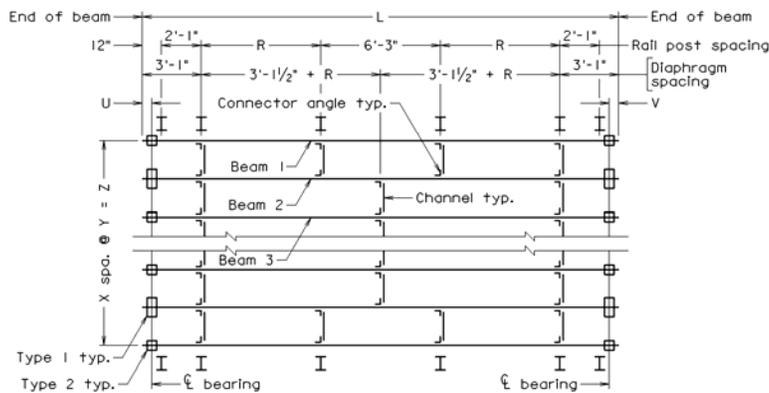
**BAA01**

Framing plan with 0° skew and bolted angles  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**BAA02**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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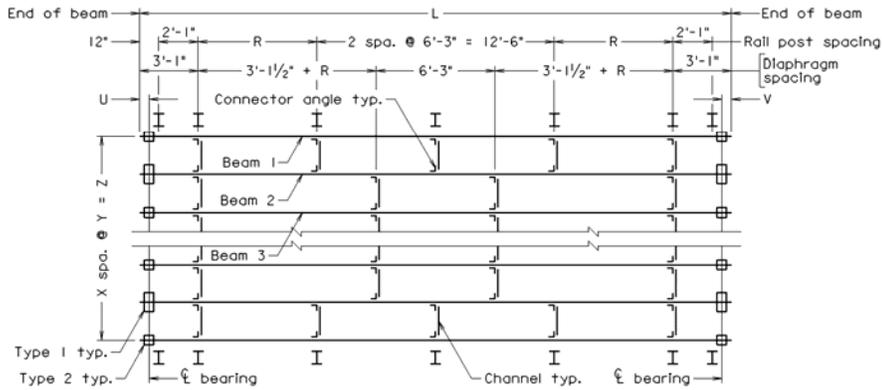
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CELL NAME

CELL DESCRIPTION

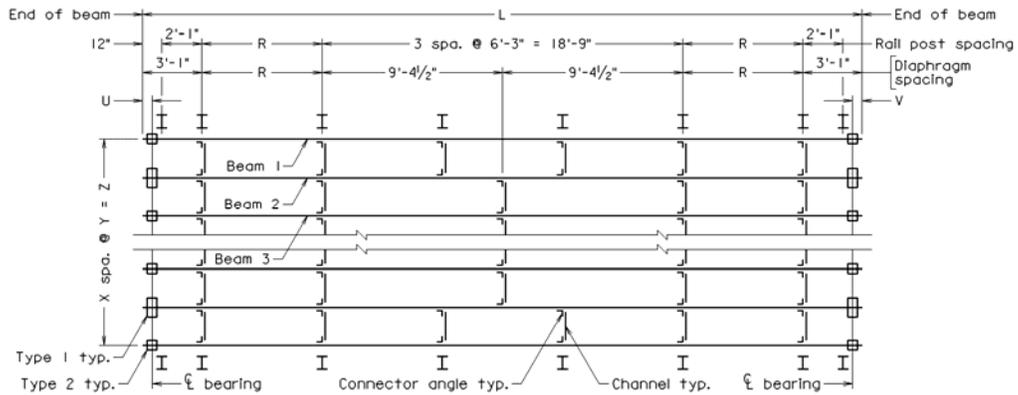
**BAA03**

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



**BAA04**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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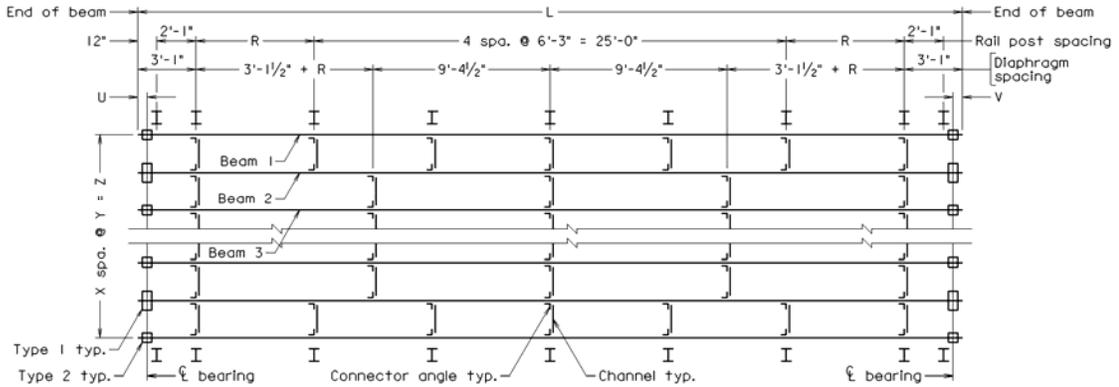
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**CELL NAME**

**CELL DESCRIPTION**

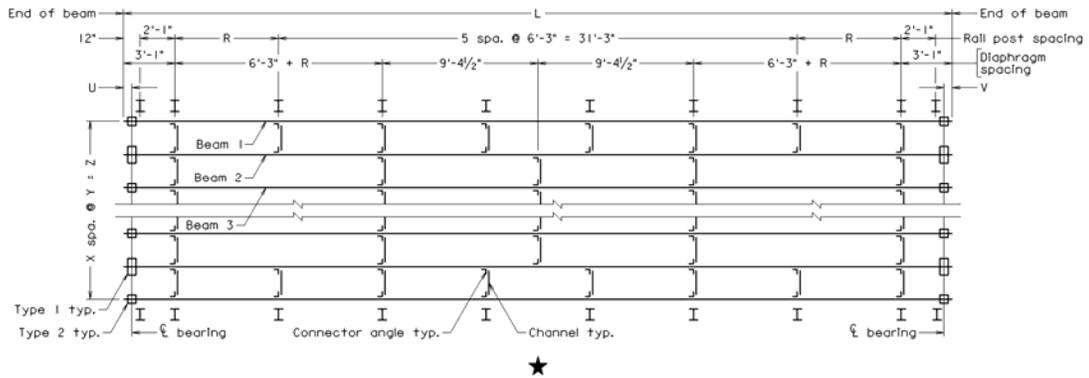
**BAA05**

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



**BAA06**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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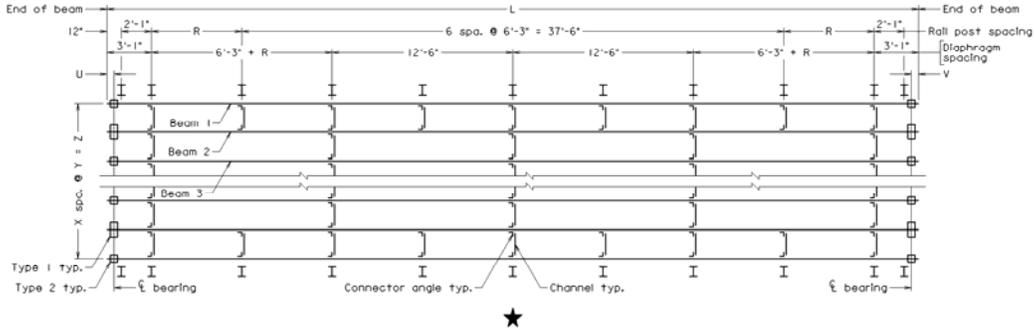
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CELL NAME

CELL DESCRIPTION

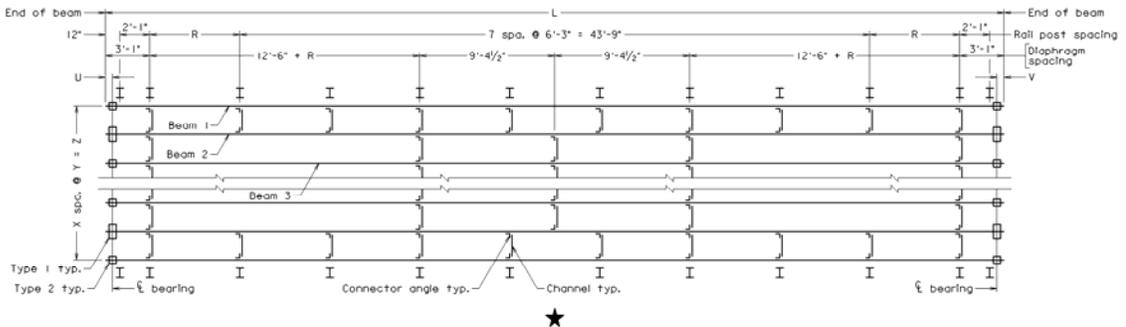
**BAA07**

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



**BAA08**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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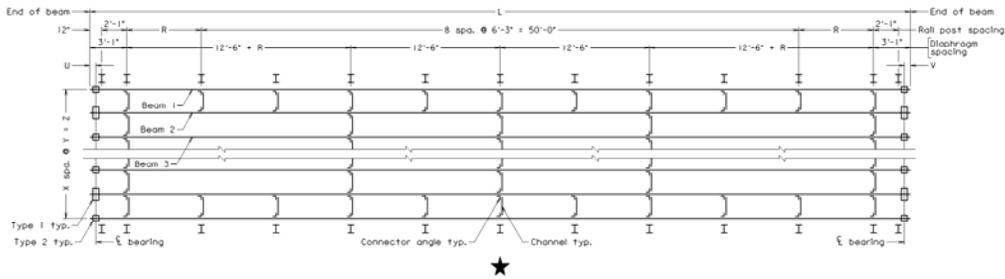
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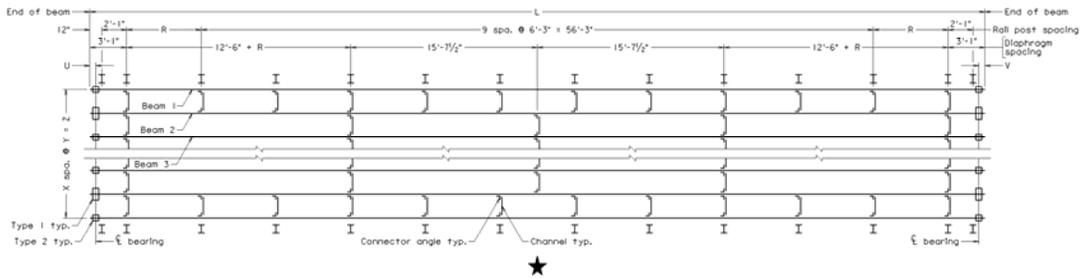
**BAA09**

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



**BAA10**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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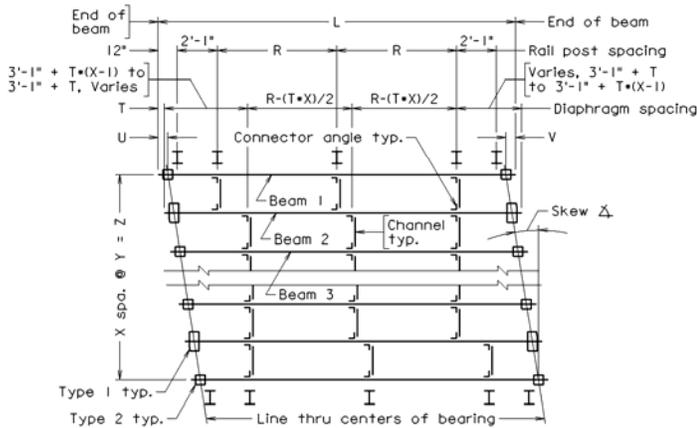
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CELL NAME

CELL DESCRIPTION

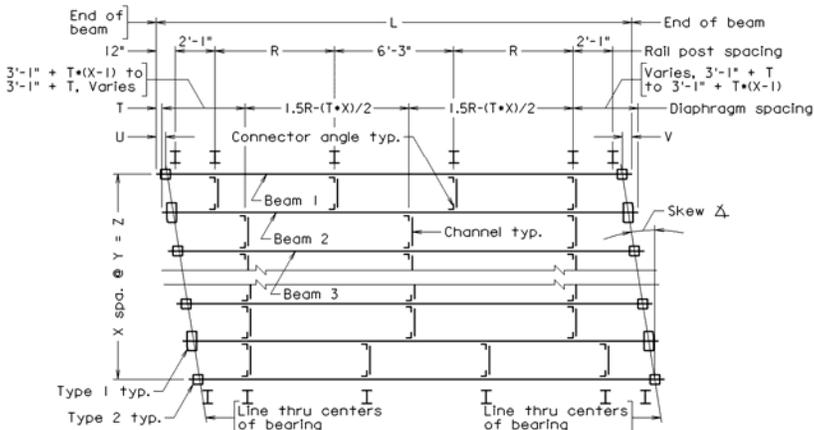
**BAL01**

Framing plan with left hand skew  $\leq 9^\circ$   
and bolted angles  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**BAL02**

Framing plan with left hand skew  $\leq 9^\circ$   
and bolted angles  
( $18'-8'' < L \leq 24'-11''$ )  
(approx. 0.40 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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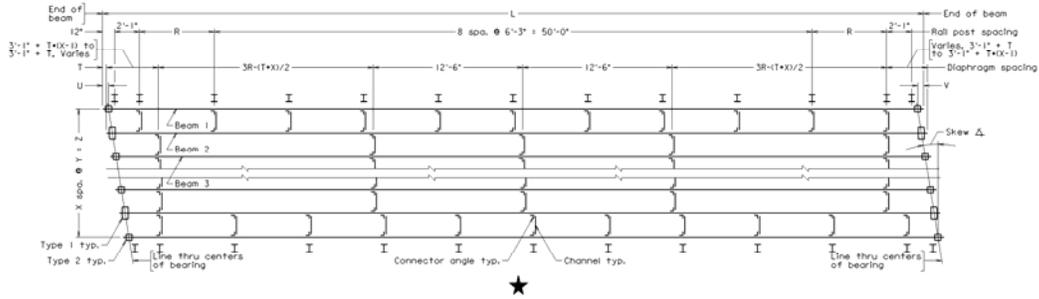
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**CELL NAME**

**CELL DESCRIPTION**

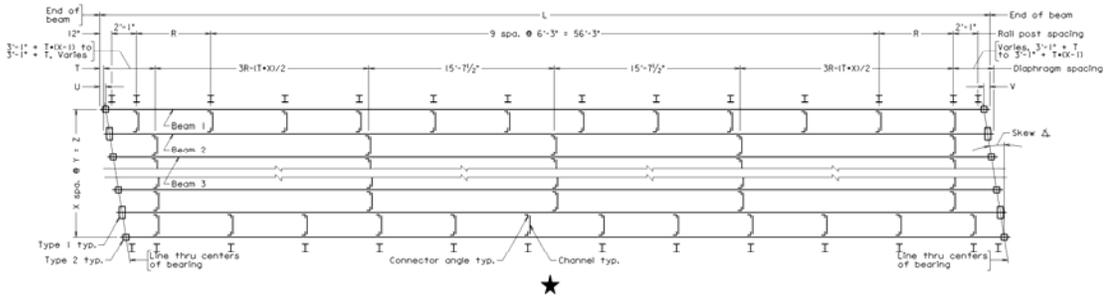
**BAL09**

Framing plan with left hand skew  $\leq 9^\circ$   
and bolted angles  
( $62'-5" < L \leq 68'-8"$ )  
(approx. 0.25 of actual cell size)



**BAL10**

Framing plan with left hand skew  $\leq 9^\circ$   
and bolted angles  
( $68'-8" < L \leq 74'-11"$ )  
(approx. 0.25 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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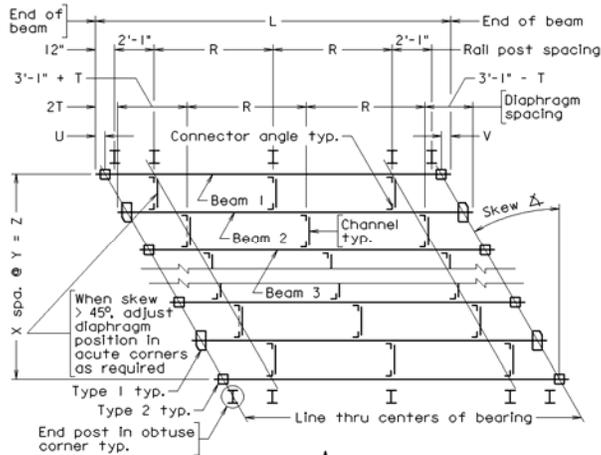
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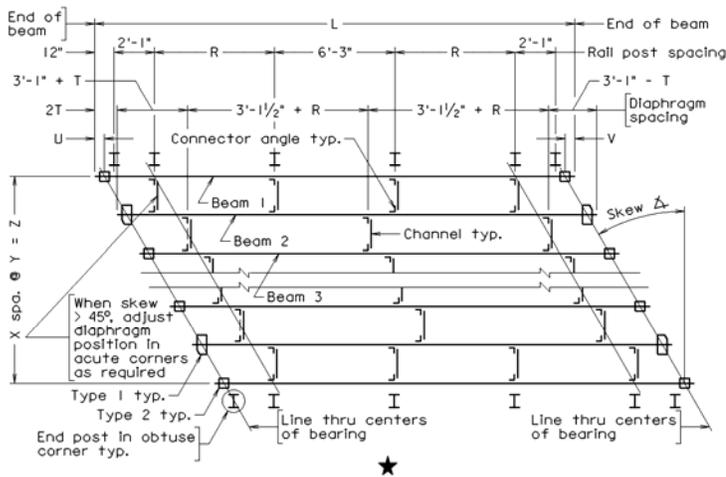
**BAL11**

Framing plan with left hand skew  $> 9^\circ$   
and bolted angles  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**BAL12**

Framing plan with left hand skew  $> 9^\circ$   
and bolted angles  
( $18'-8'' < L \leq 24'-11''$ )  
(approx. 0.40 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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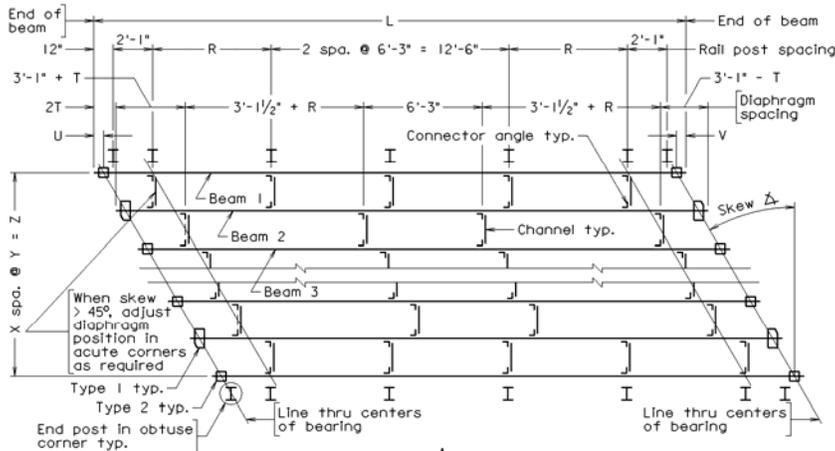
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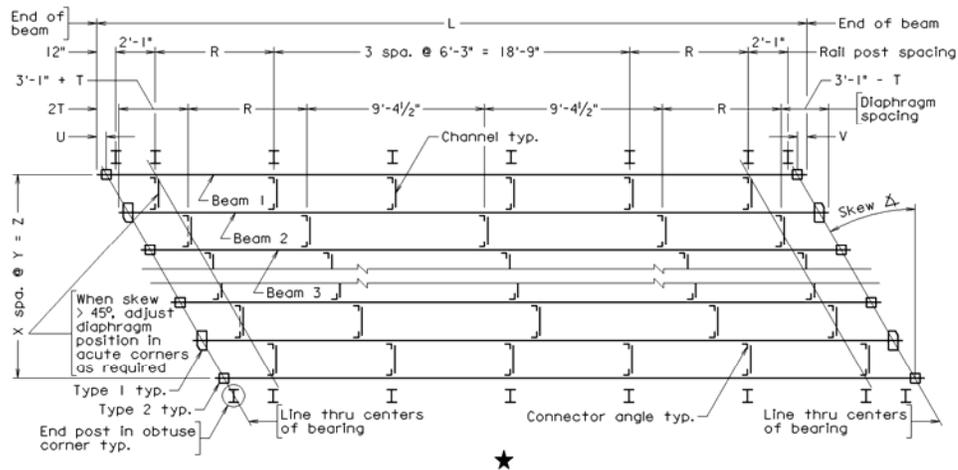
**BAL13**

Framing plan with left hand skew  $> 9^\circ$   
and bolted angles  
( $24'-11" < L \leq 31'-2"$ )  
(approx. 0.40 of actual cell size)



**BAL14**

Framing plan with left hand skew  $> 9^\circ$   
and bolted angles  
( $31'-2" < L \leq 37'-5"$ )  
(approx. 0.40 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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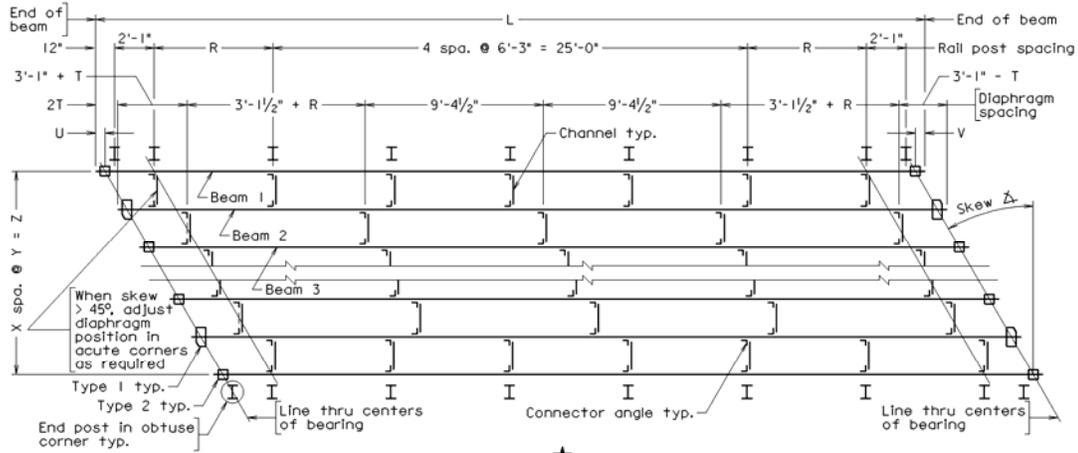
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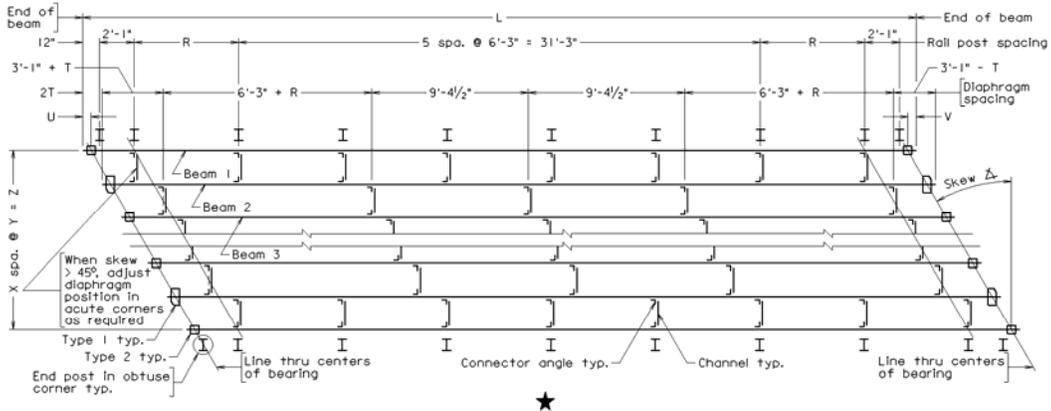
**BAL15**

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



**BAL16**

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



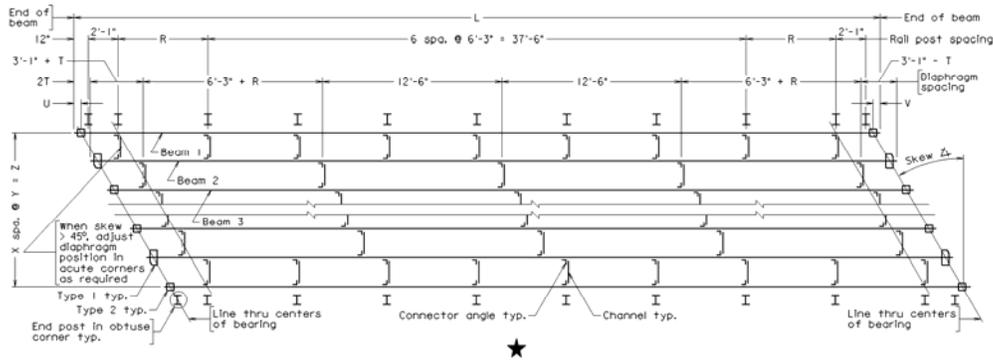
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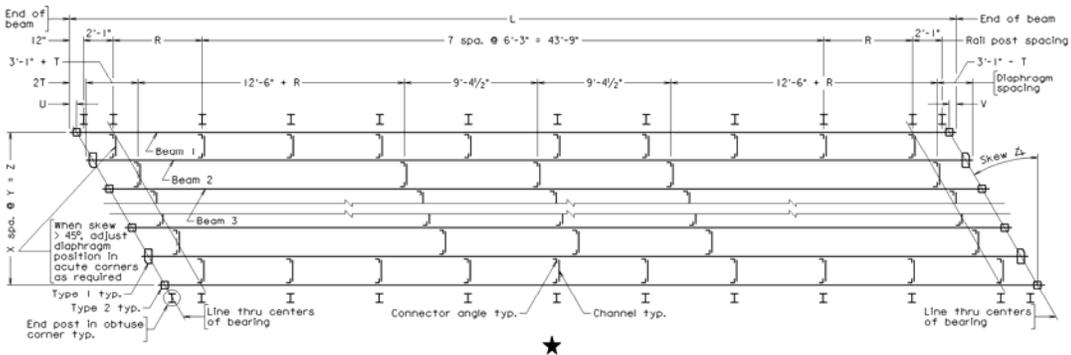
**BAL17**

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



**BAL18**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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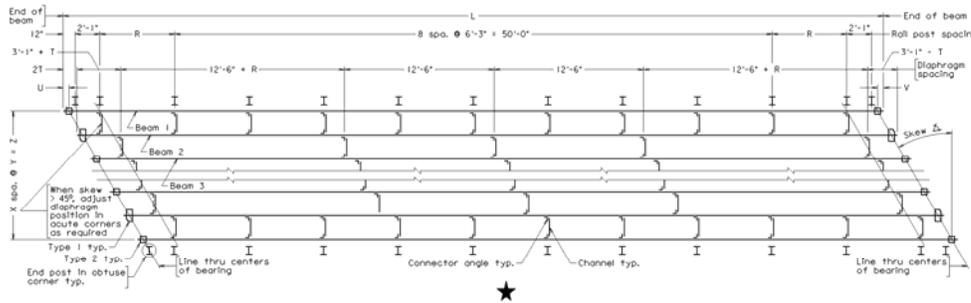
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**CELL DESCRIPTION**

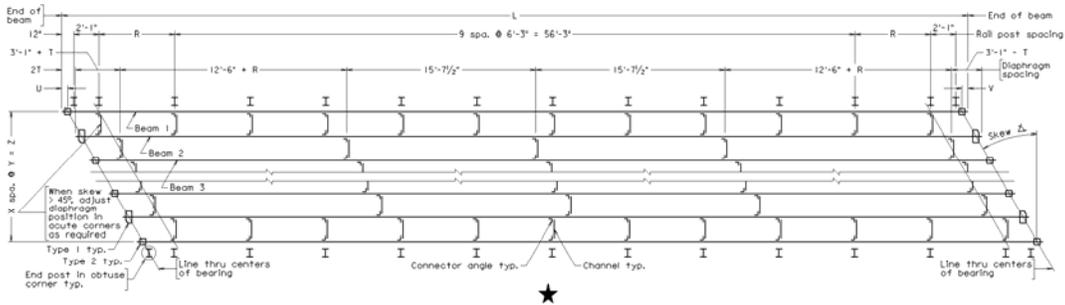
**BAL19**

Framing plan with left hand skew  $> 9^\circ$   
and bolted angles  
( $62'-5'' < L \leq 68'-8''$ )  
(approx. 0.25 of actual cell size)



**BAL20**

Framing plan with left hand skew  $> 9^\circ$   
and bolted angles  
( $68'-8'' < L \leq 74'-11''$ )  
(approx. 0.25 of actual cell size)



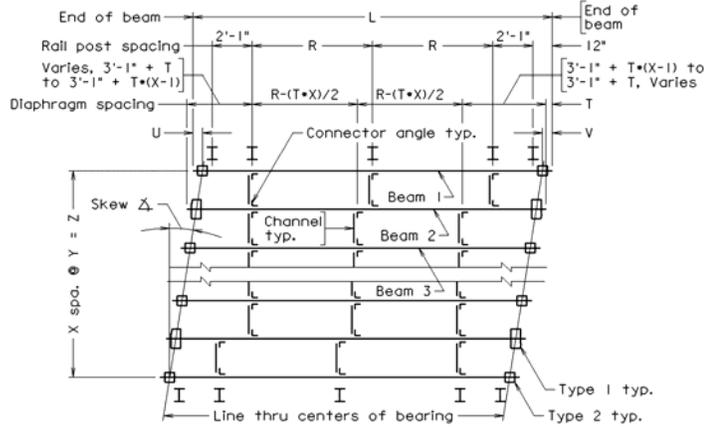
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**CELL NAME**

**CELL DESCRIPTION**

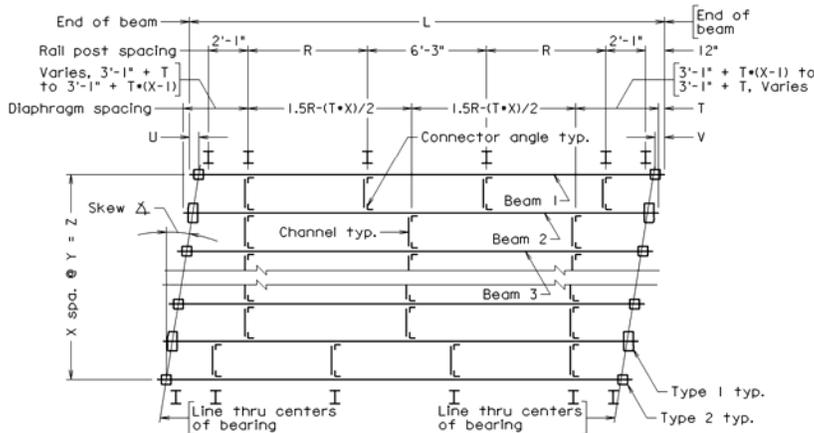
**BAR01**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**BAR02**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
( $18'-8'' < L \leq 24'-11''$ )  
(approx. 0.40 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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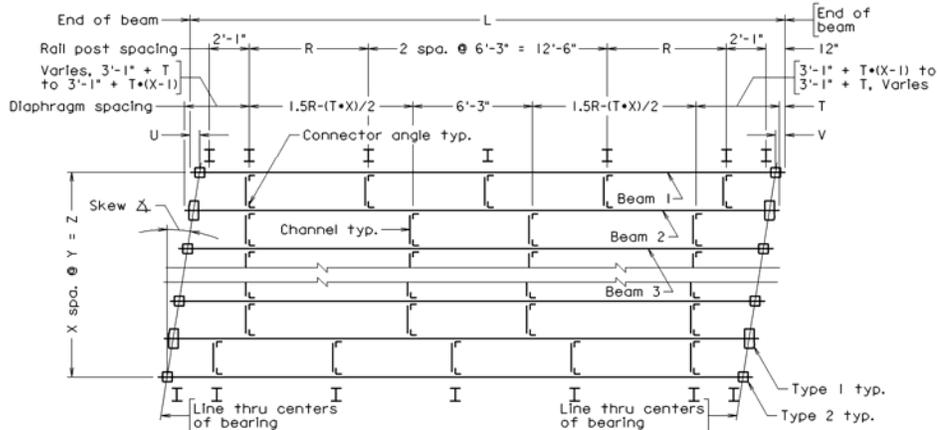
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CELL DESCRIPTION

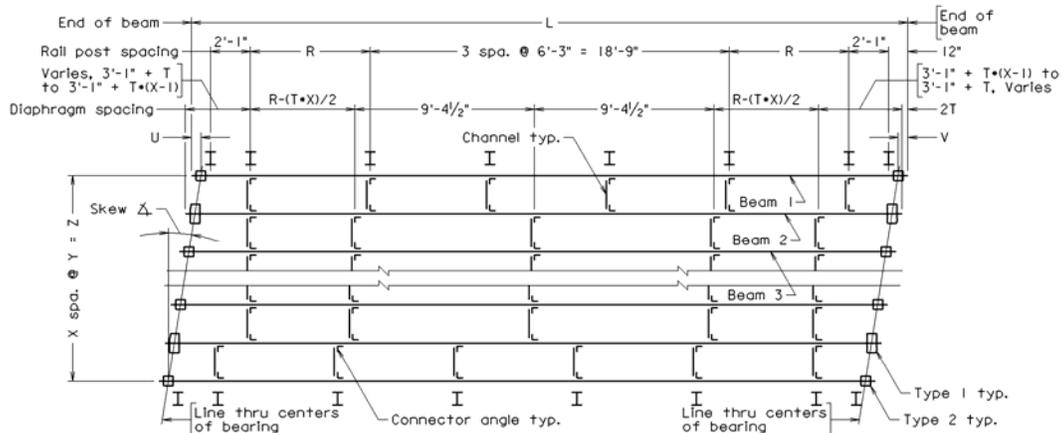
**BAR03**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
(24'-11" < L  $\leq$  31'-2")  
(approx. 0.40 of actual cell size)



**BAR04**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
(31'-2" < L  $\leq$  37'-5")  
(approx. 0.40 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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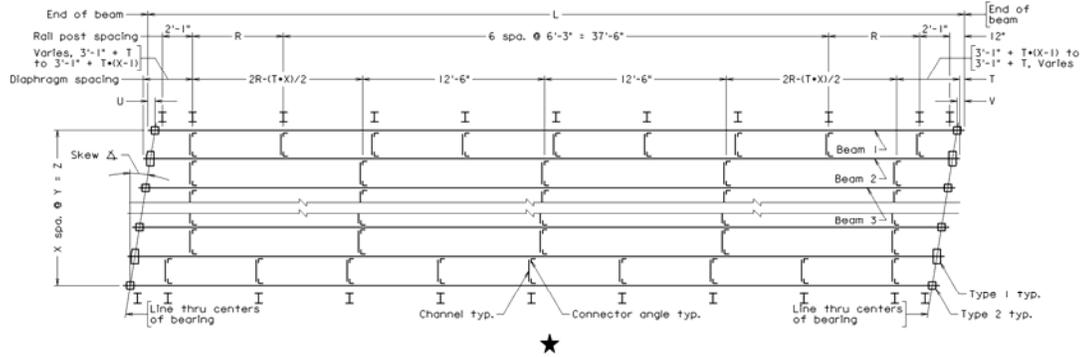
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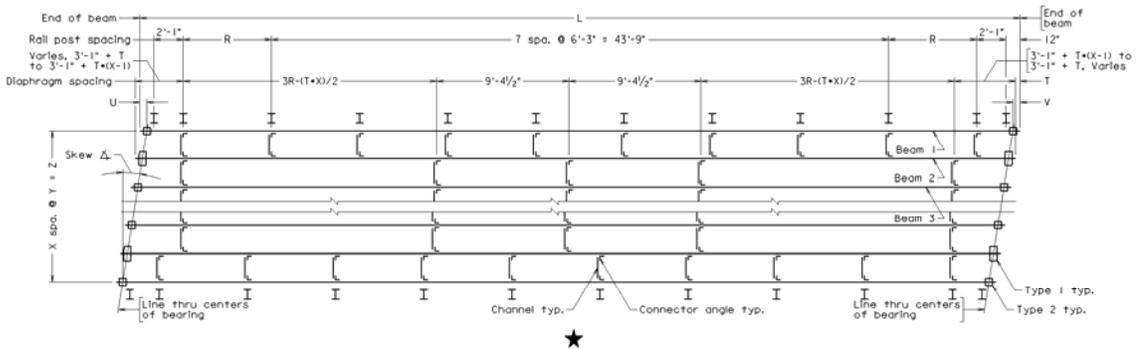
**BAR07**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
( $49'-11" < L \leq 56'-2"$ )  
(approx. 0.30 of actual cell size)



**BAR08**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
( $56'-2" < L \leq 62'-5"$ )  
(approx. 0.30 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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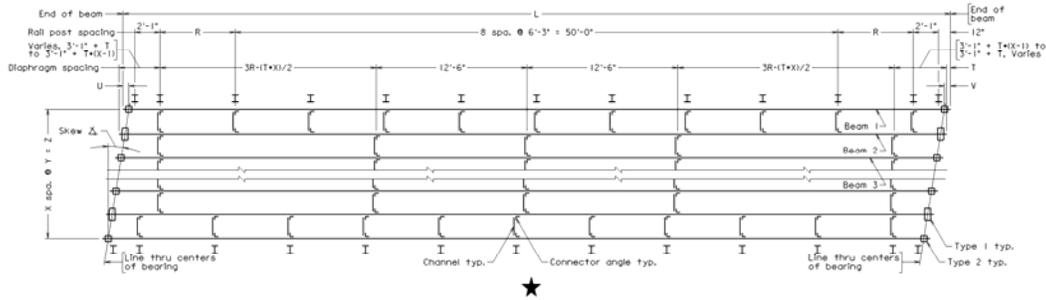
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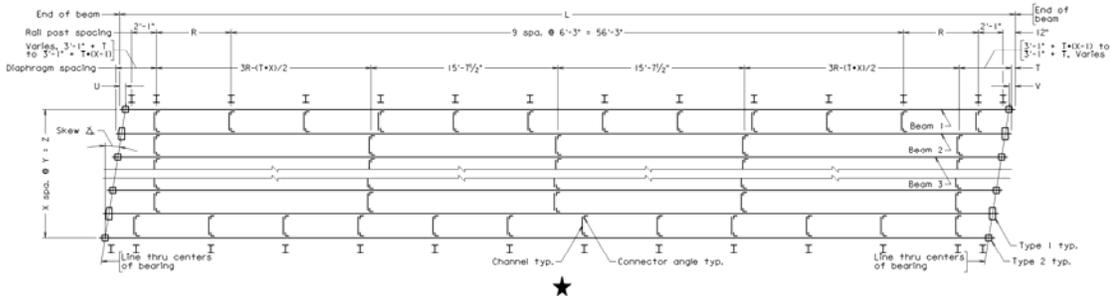
**BAR09**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
( $62'-5'' < L \leq 68'-8''$ )  
(approx. 0.25 of actual cell size)



**BAR10**

Framing plan with right hand skew  $\leq 9^\circ$   
and bolted angles  
( $68'-8'' < L \leq 74'-11''$ )  
(approx. 0.25 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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FILE NO. SS8CELLS-20

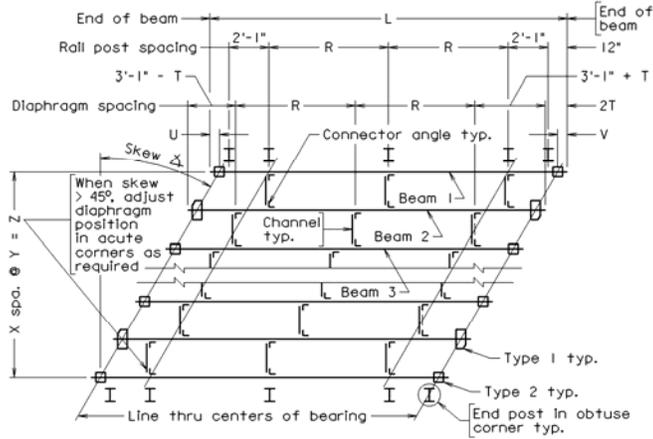
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

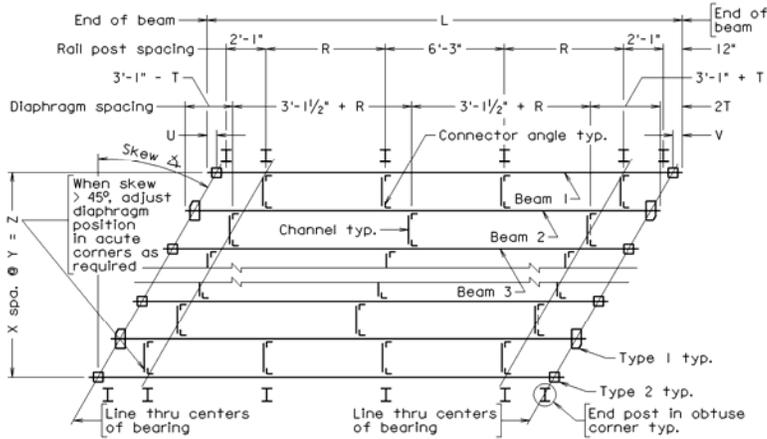
**BAR11**

Framing plan with right hand skew  $> 9^\circ$   
 and bolted angles  
 ( $L \leq 18'-8''$ )  
 (approx. 0.40 of actual cell size)



**BAR12**

Framing plan with right hand skew  $> 9^\circ$   
 and bolted angles  
 ( $18'-8'' < L \leq 24'-11''$ )  
 (approx. 0.40 of actual cell size)



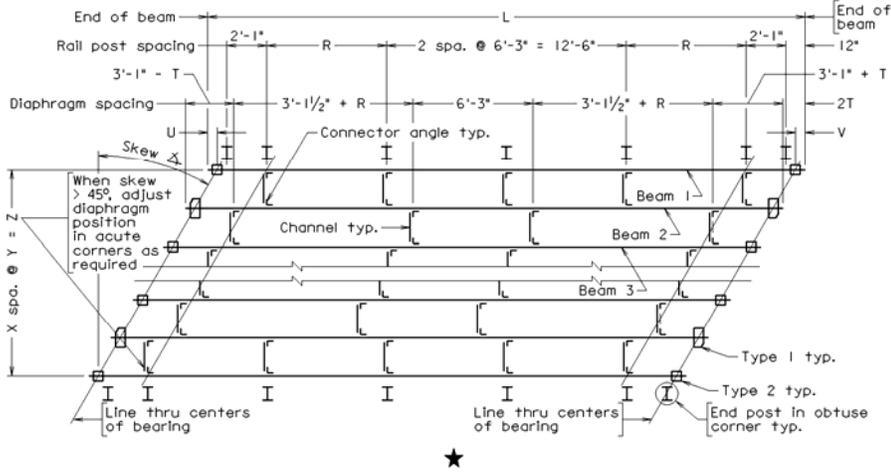
CELL

CELL NAME

CELL DESCRIPTION

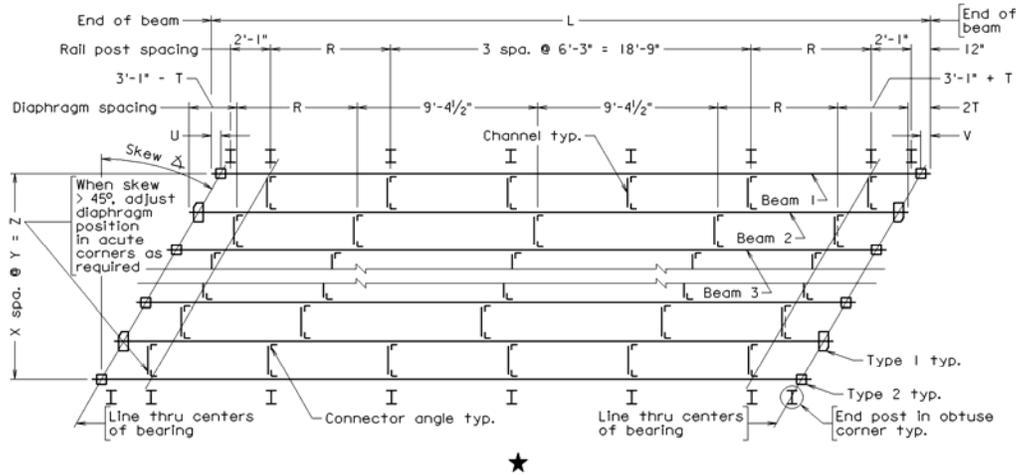
**BAR13**

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



**BAR14**

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



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

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FILE NO. SS8CELLS-22

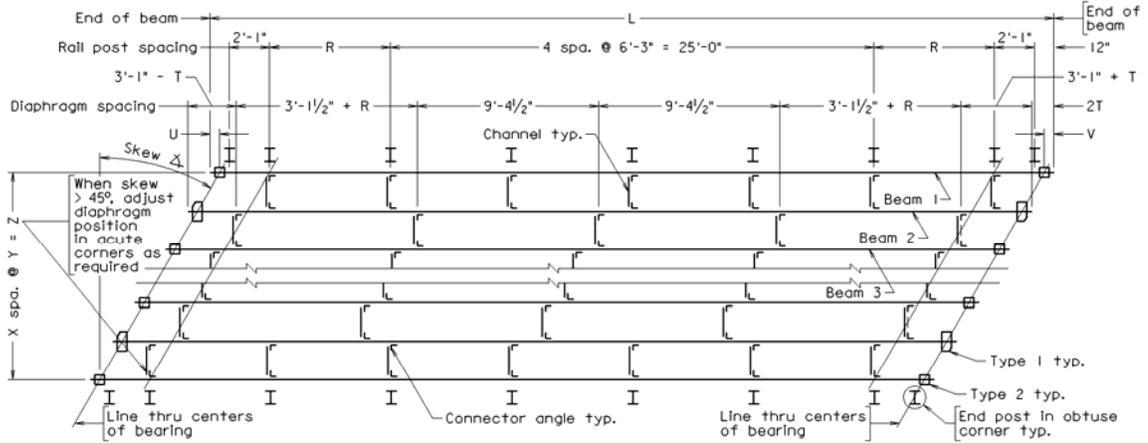
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CELL NAME

CELL DESCRIPTION

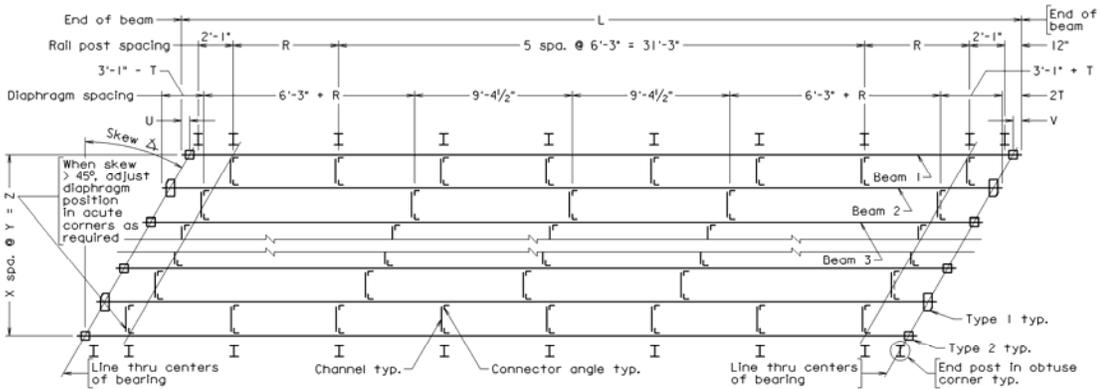
**BAR15**

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



**BAR16**

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



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

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FILE NO. SS8CELLS-23

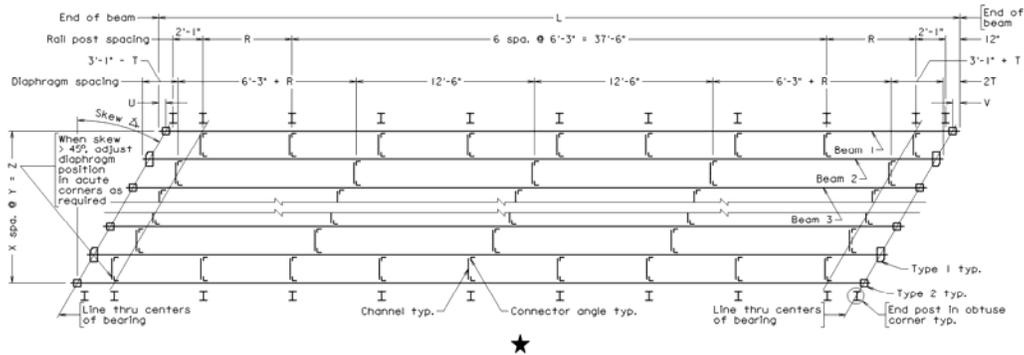
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**CELL NAME**

**CELL DESCRIPTION**

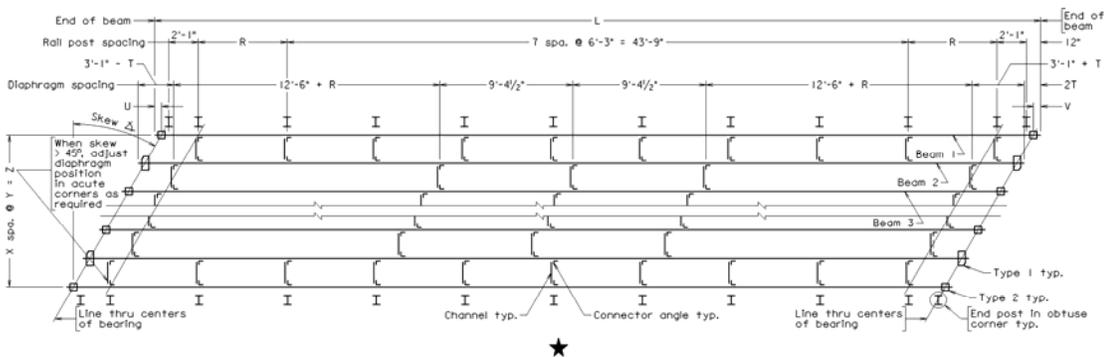
**BAR17**

Framing plan with right hand skew  $> 9^\circ$   
and bolted angles  
( $49'-11" < L \leq 56'-2"$ )  
(approx. 0.30 of actual cell size)



**BAR18**

Framing plan with right hand skew  $> 9^\circ$   
and bolted angles  
( $56'-2" < L \leq 62'-5"$ )  
(approx. 0.30 of actual cell size)



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

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FILE NO. SS8CELLS-24

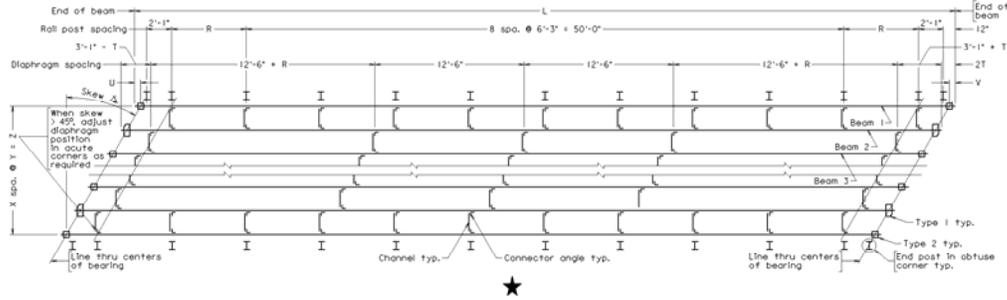
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**CELL NAME**

**CELL DESCRIPTION**

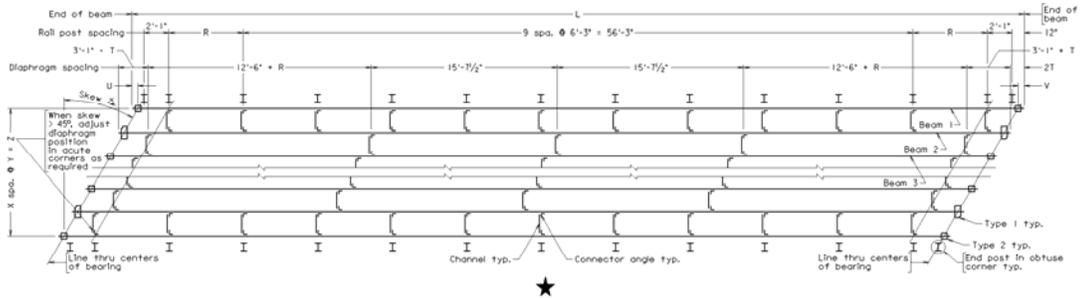
**BAR19**

Framing plan with right hand skew  $> 9^\circ$   
and bolted angles  
( $62'-5'' < L \leq 68'-8''$ )  
(approx. 0.25 of actual cell size)



**BAR20**

Framing plan with right hand skew  $> 9^\circ$   
and bolted angles  
( $68'-8'' < L \leq 74'-11''$ )  
(approx. 0.25 of actual cell size)



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

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FILE NO. SS8CELLS-25

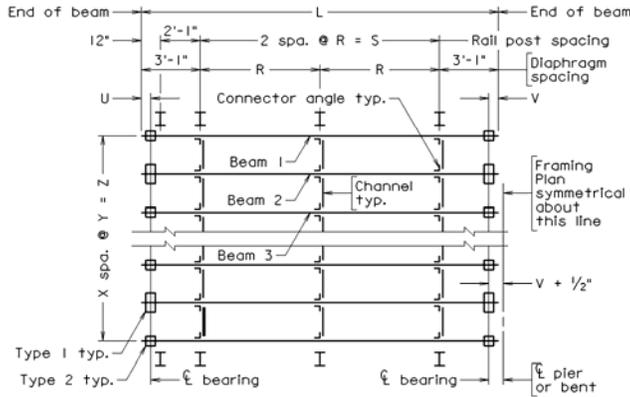
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**CELL NAME**

**CELL DESCRIPTION**

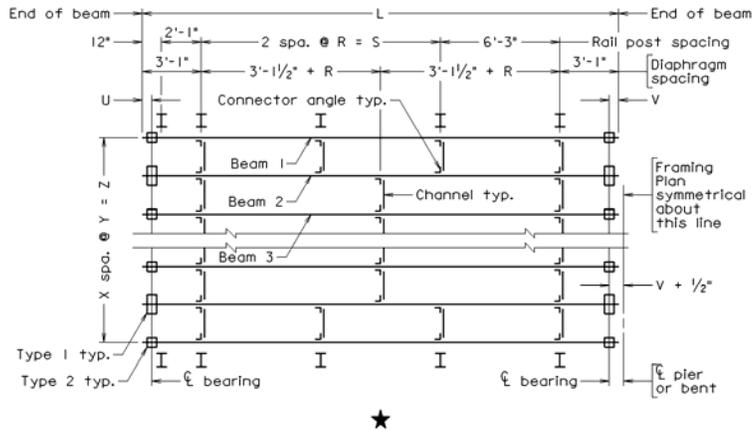
**BTA01**

Two-span framing plan with 0° skew and bolted angles  
 ( $L \leq 18'-8''$ )  
 (approx. 0.40 of actual cell size)



**BTA02**

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





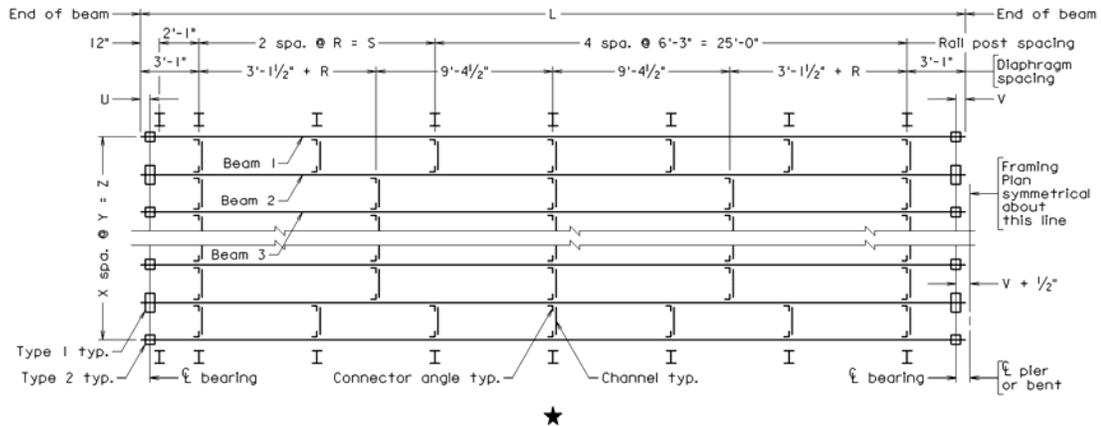
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**CELL NAME**

**CELL DESCRIPTION**

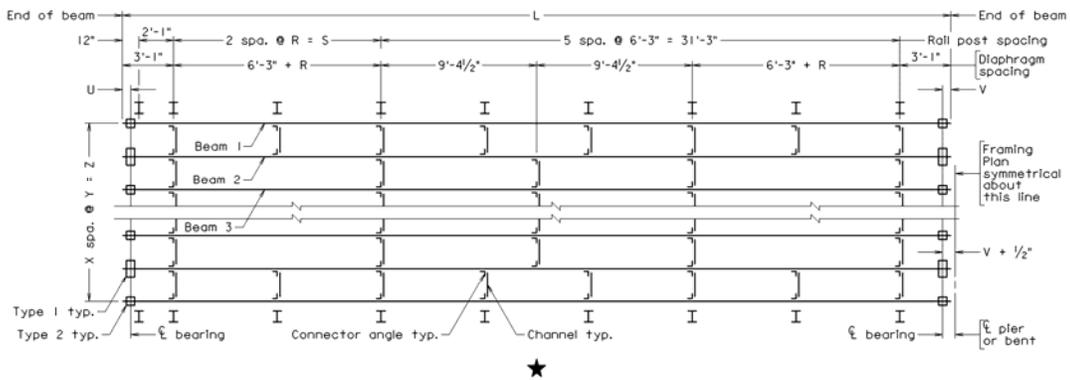
**BTA05**

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



**BTA06**

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



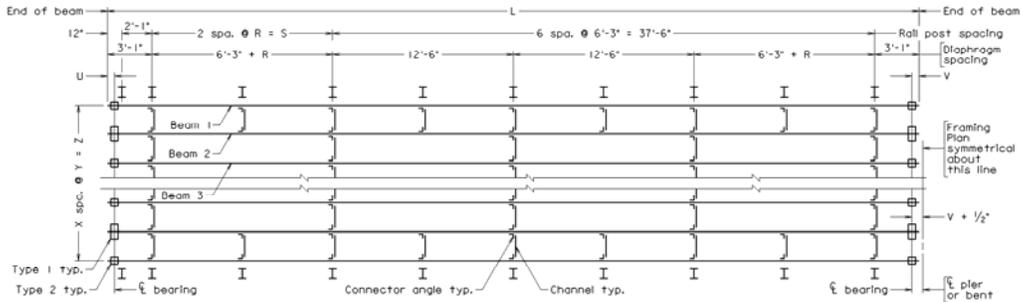
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CELL NAME

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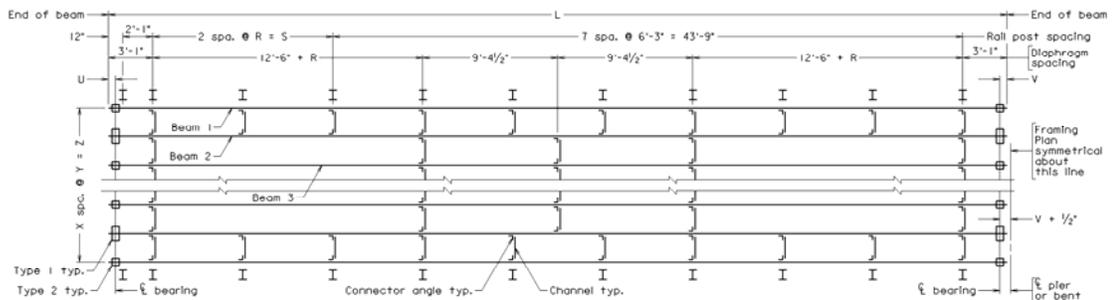
**BTA07**

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



**BTA08**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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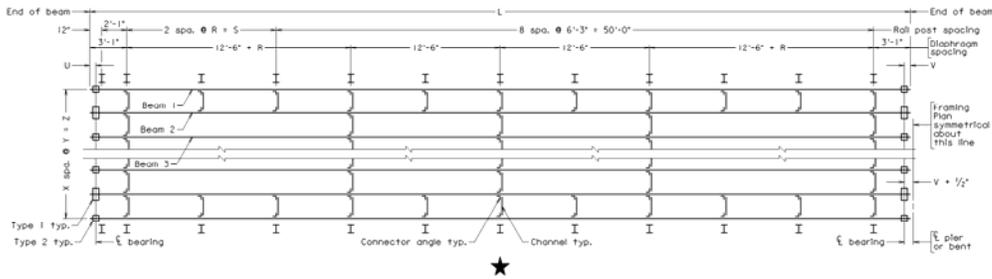
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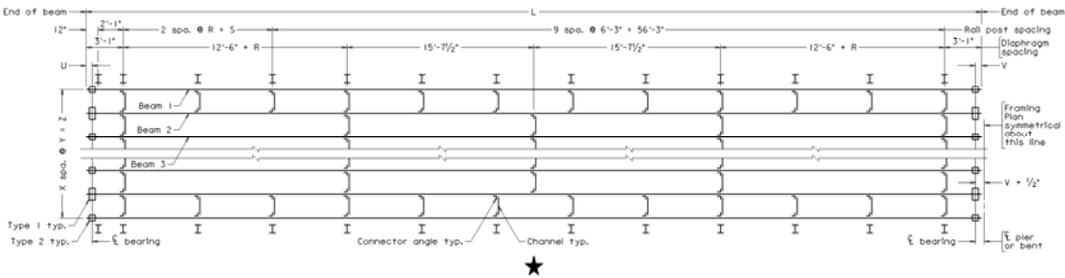
**BTA09**

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)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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FILE NO. SS8CELLS-30

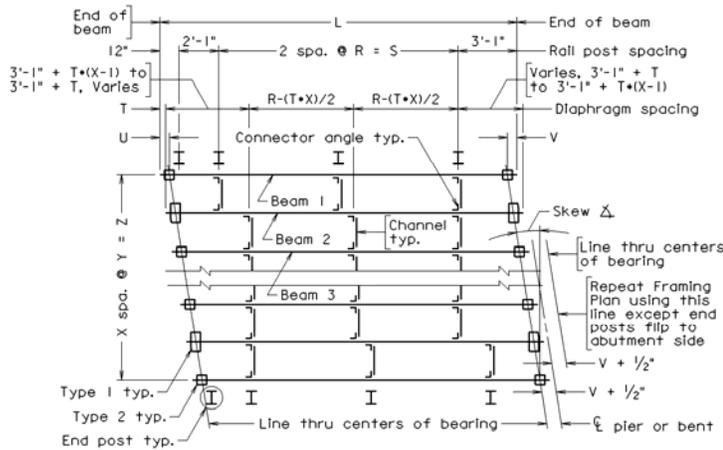
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CELL NAME

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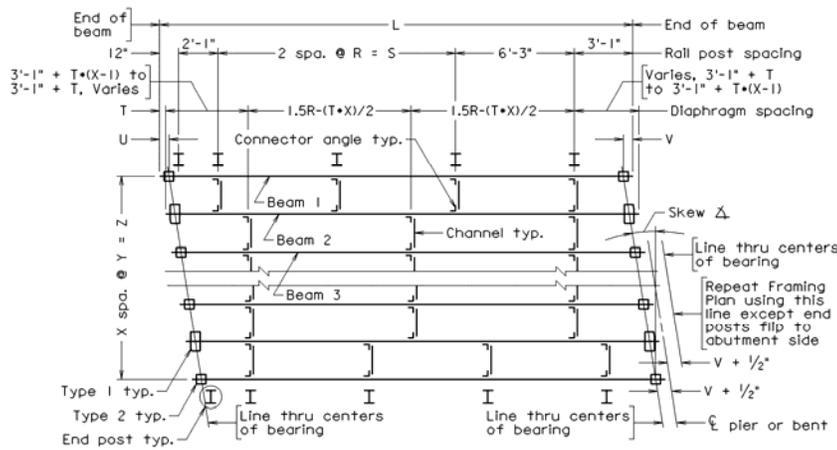
**BTL01**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**BTL02**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $18'-8'' < L \leq 24'-11''$ )  
(approx. 0.40 of actual cell size)



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

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FILE NO. SS8CELLS-31

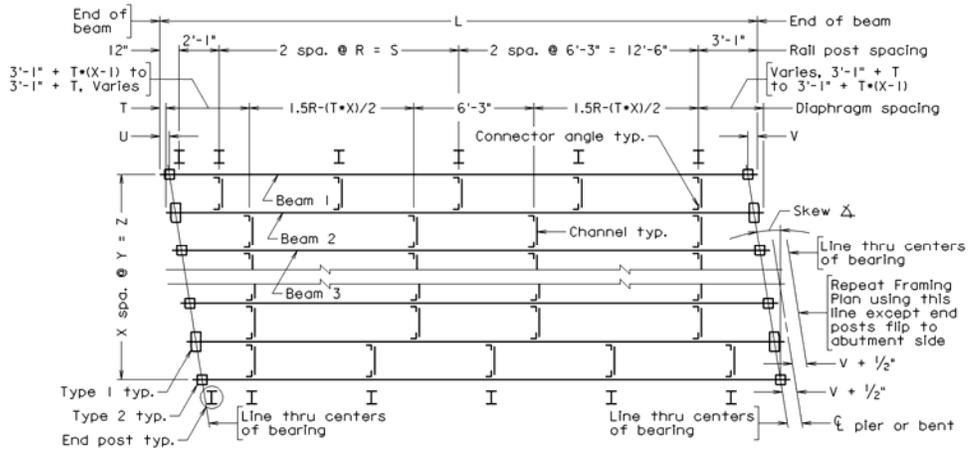
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CELL NAME

CELL DESCRIPTION

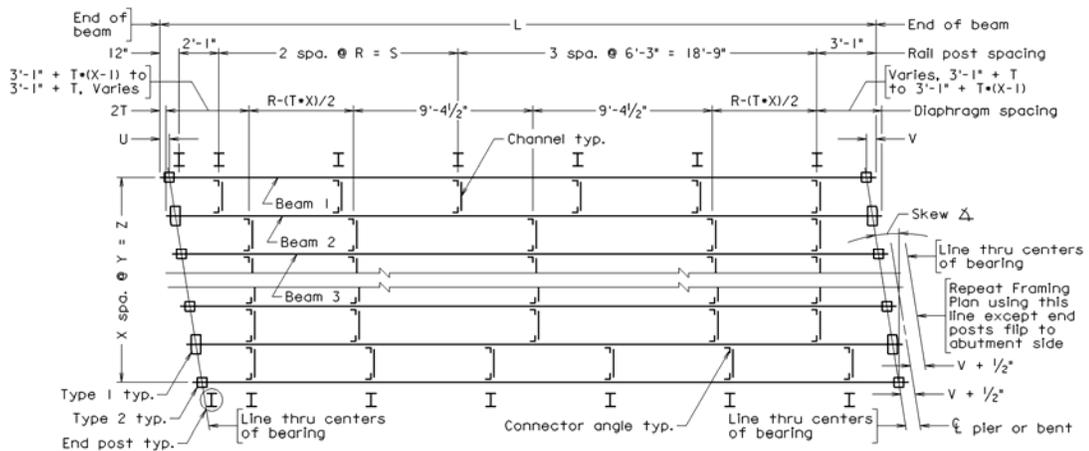
**BTL03**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $24'-11'' < L \leq 31'-2''$ )  
(approx. 0.40 of actual cell size)



**BTL04**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $31'-2'' < L \leq 37'-5''$ )  
(approx. 0.40 of actual cell size)



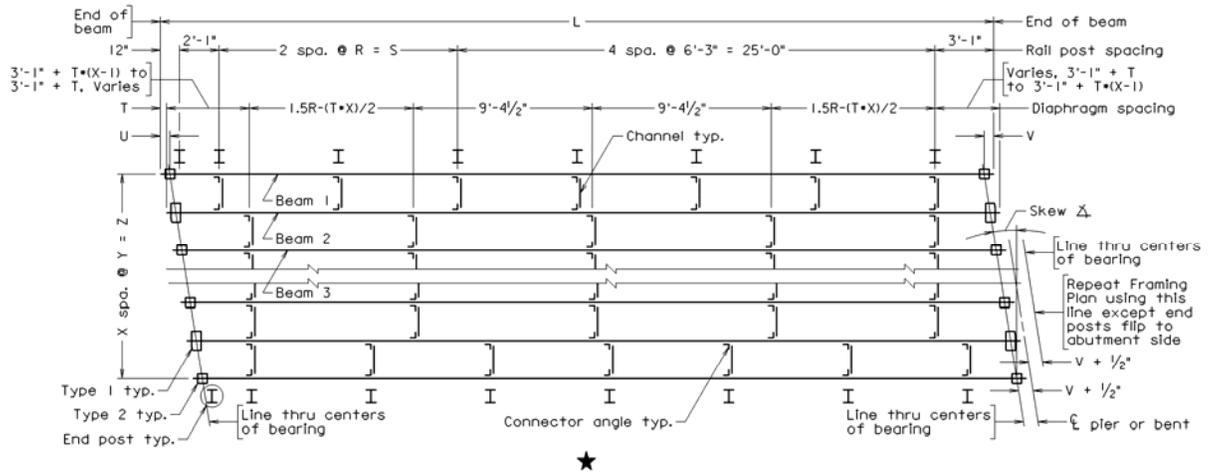
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CELL NAME

CELL DESCRIPTION

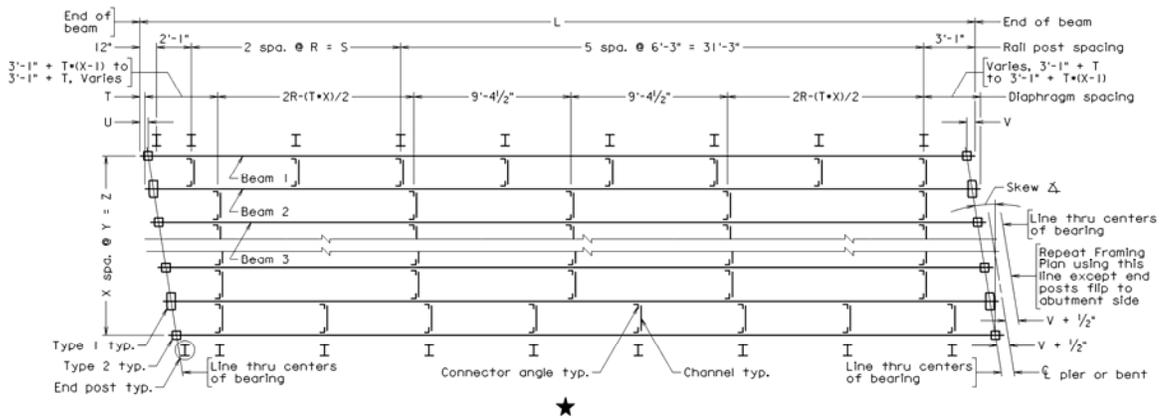
**BTL05**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $37'-5'' < L \leq 43'-8''$ )  
(approx. 0.40 of actual cell size)



**BTL06**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $43'-8'' < L \leq 49'-11''$ )  
(approx. 0.35 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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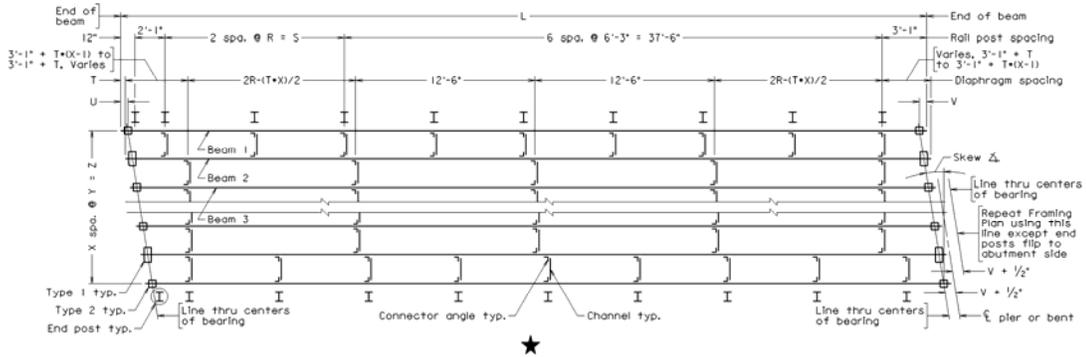
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**CELL NAME**

**CELL DESCRIPTION**

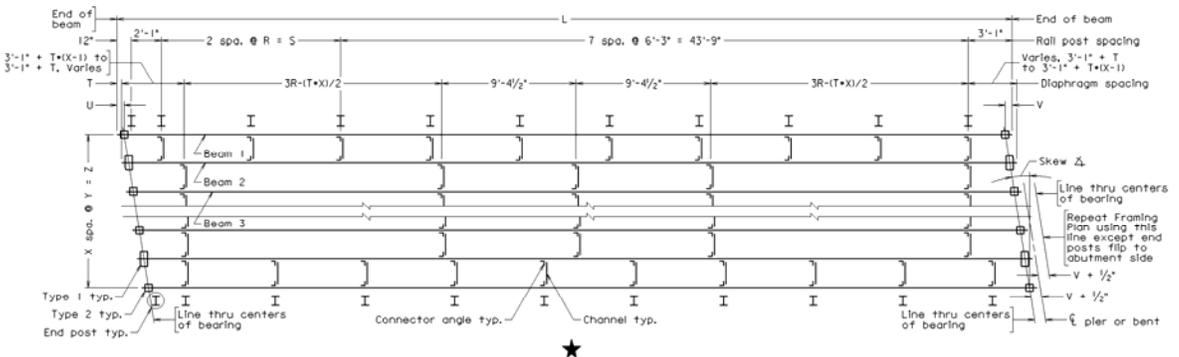
**BTL07**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $49'-11'' < L \leq 56'-2''$ )  
(approx. 0.30 of actual cell size)



**BTL08**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $56'-2'' < L \leq 62'-5''$ )  
(approx. 0.30 of actual cell size)



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

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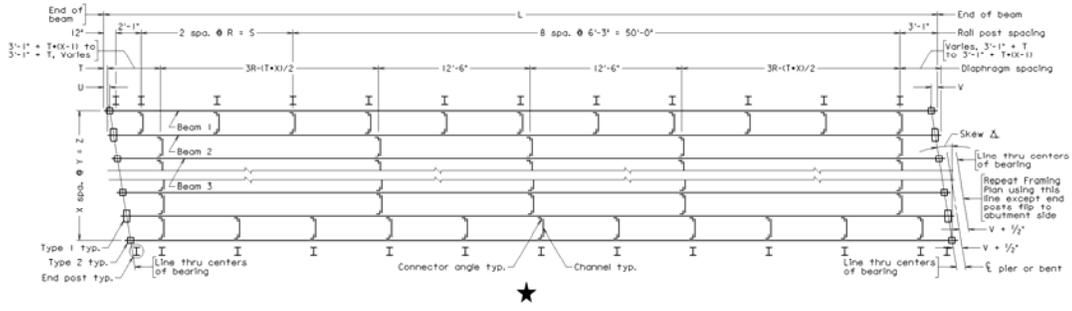
CELL

CELL NAME

CELL DESCRIPTION

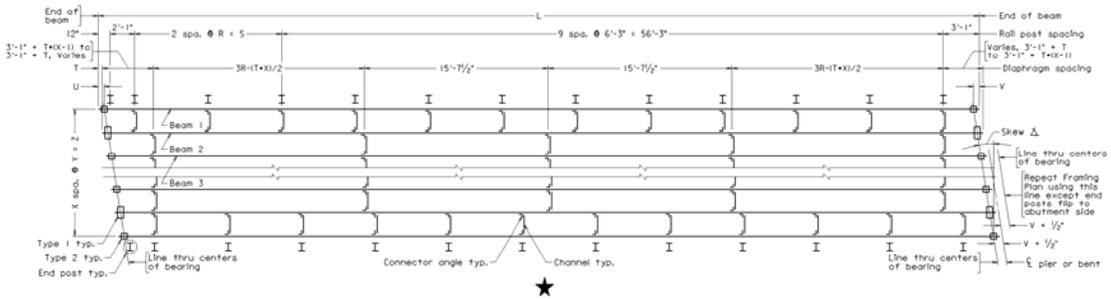
**BTL09**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $62'-5'' < L \leq 68'-8''$ )  
(approx. 0.25 of actual cell size)



**BTL10**

Two-span framing plan with left hand skew  $\leq 9^\circ$  and bolted angles  
( $68'-8'' < L \leq 74'-11''$ )  
(approx. 0.25 of actual cell size)



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

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FILE NO. SS8CELLS-35

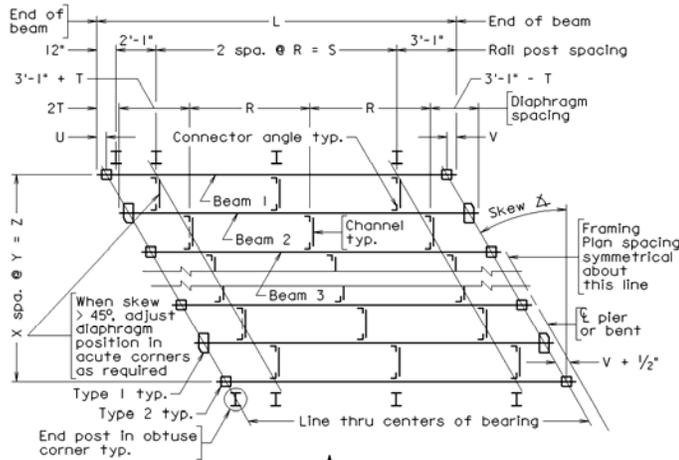
CELL

CELL NAME

CELL DESCRIPTION

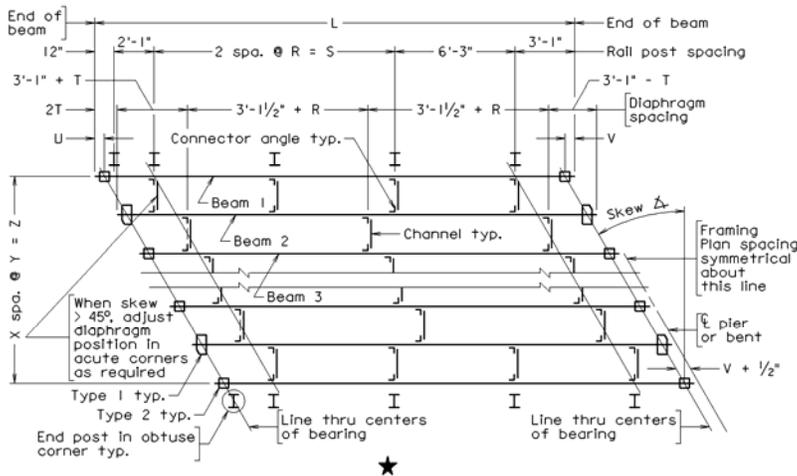
**BTL11**

Two-span framing plan with left hand skew  $> 9^\circ$  and bolted angles  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**BTL12**

Two-span framing plan with left hand skew  $> 9^\circ$  and bolted angles  
( $18'-8'' < L \leq 24'-11''$ )  
(approx. 0.40 of actual cell size)



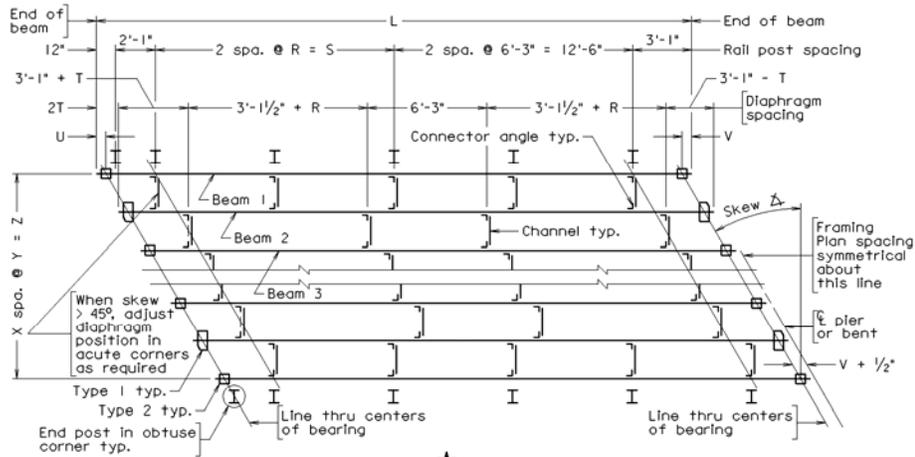
CELL

CELL NAME

CELL DESCRIPTION

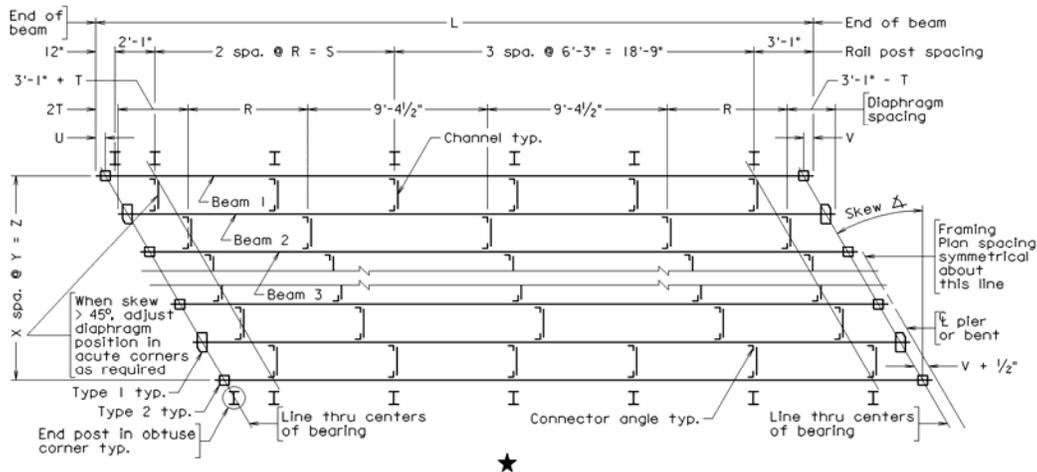
**BTL13**

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



**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)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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FILE NO. SS8CELLS-37

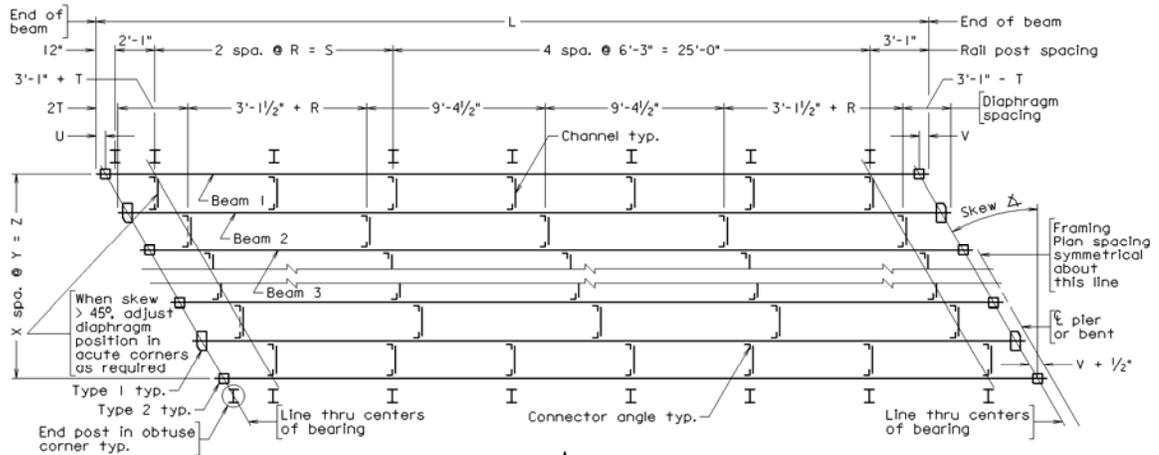
CELL

CELL NAME

CELL DESCRIPTION

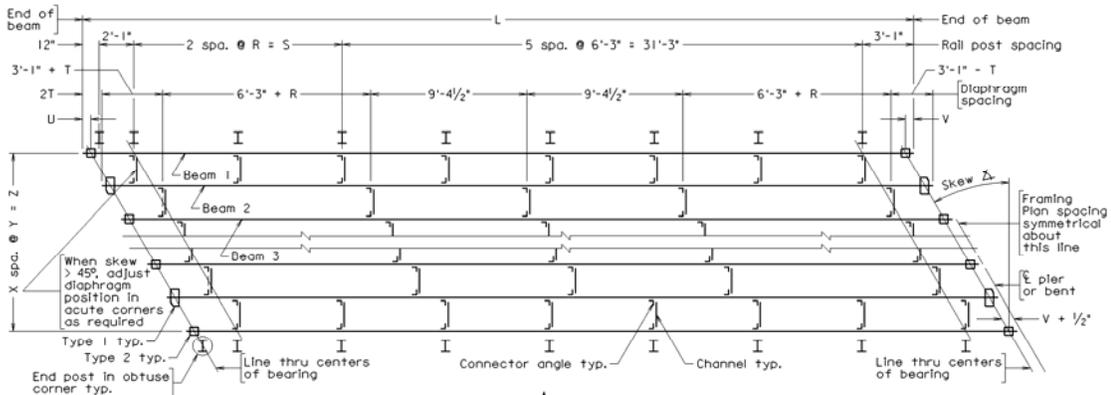
**BTL15**

Two-span framing plan with left hand skew  $> 9^\circ$  and bolted angles  
( $37'-5" < L \leq 43'-8"$ )  
(approx. 0.40 of actual cell size)



**BTL16**

Two-span framing plan with left hand skew  $> 9^\circ$  and bolted angles  
( $43'-8" < L \leq 49'-11"$ )  
(approx. 0.35 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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FILE NO. SS8CELLS-38

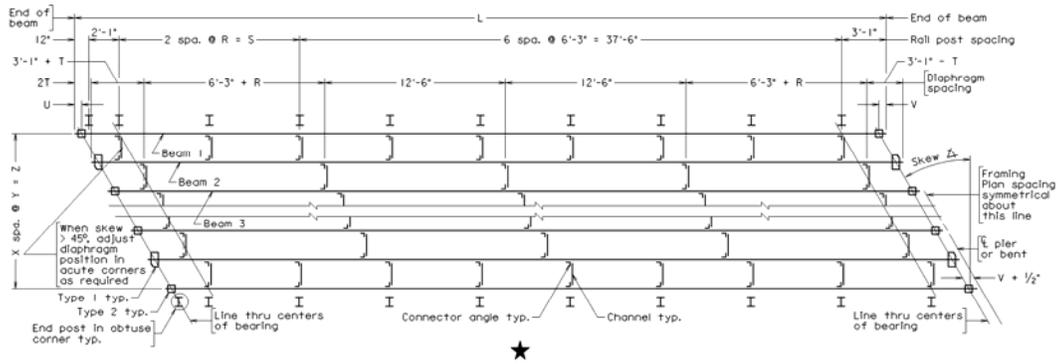
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CELL NAME

CELL DESCRIPTION

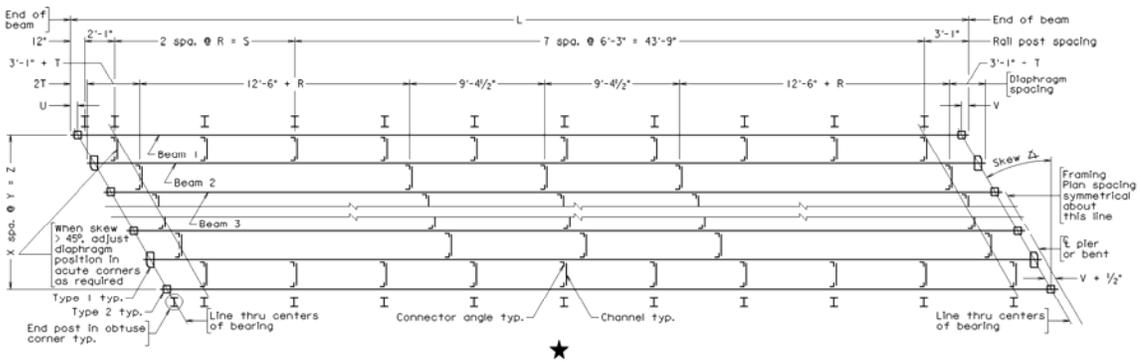
**BTL17**

Two-span framing plan with left hand skew  $> 9^\circ$  and bolted angles  
( $49'-11'' < L \leq 56'-2''$ )  
(approx. 0.30 of actual cell size)



**BTL18**

Two-span framing plan with left hand skew  $> 9^\circ$  and bolted angles  
( $56'-2'' < L \leq 62'-5''$ )  
(approx. 0.30 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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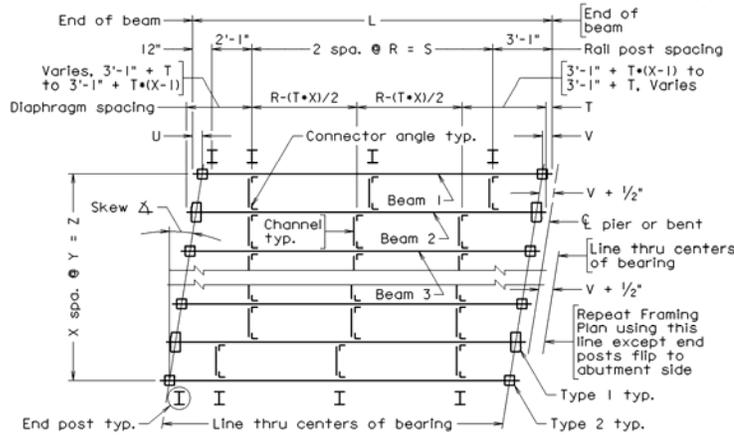
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**CELL NAME**

**CELL DESCRIPTION**

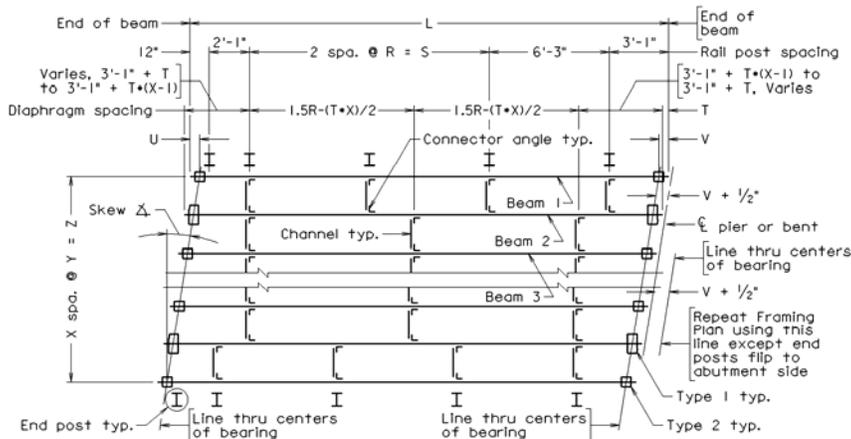
**BTR01**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles ( $L \leq 18'-8''$ ) (approx. 0.40 of actual cell size)



**BTR02**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles ( $18'-8'' < L \leq 24'-11''$ ) (approx. 0.40 of actual cell size)



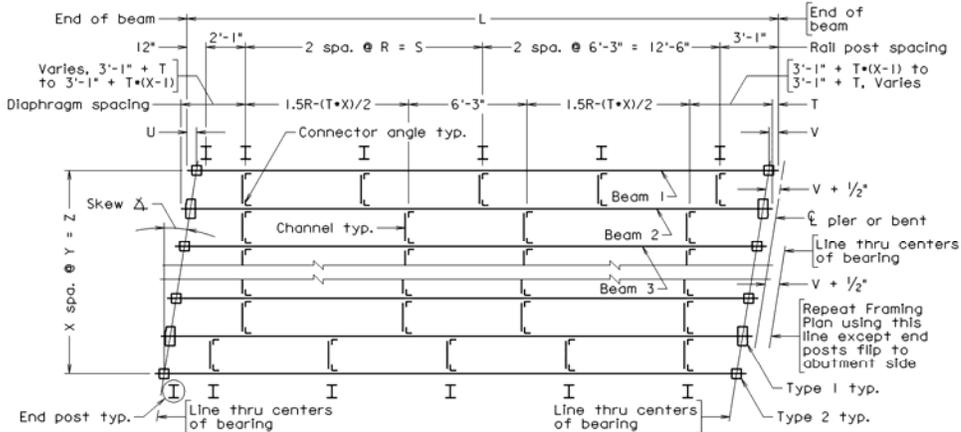
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CELL NAME

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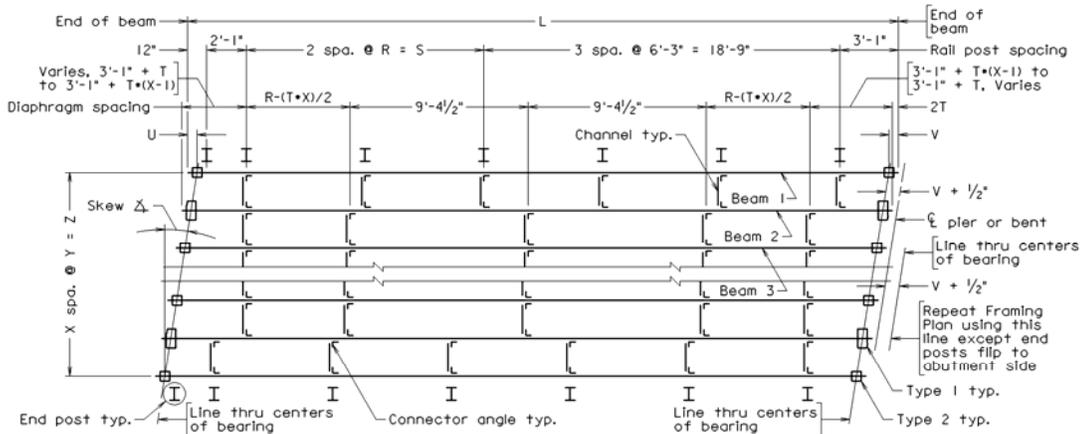
**BTR03**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $24'-11'' < L \leq 31'-2''$ )  
(approx. 0.40 of actual cell size)



**BTR04**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $31'-2'' < L \leq 37'-5''$ )  
(approx. 0.40 of actual cell size)



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

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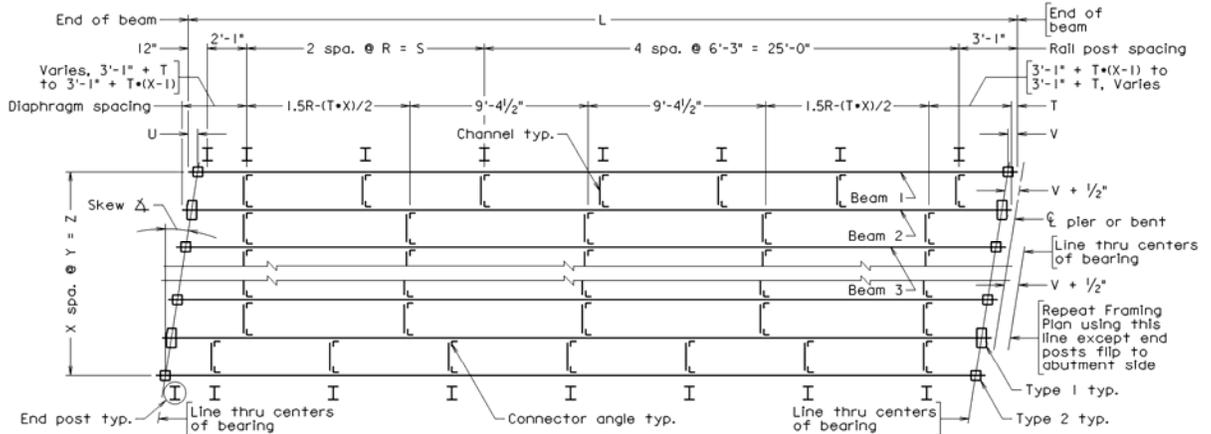
CELL

CELL NAME

CELL DESCRIPTION

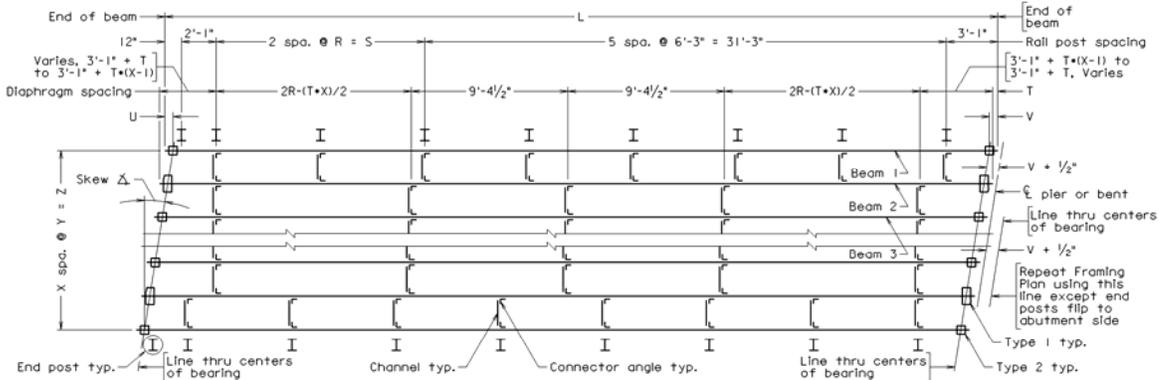
**BTR05**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $37'-5" < L \leq 43'-8"$ )  
(approx. 0.40 of actual cell size)



**BTR06**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $43'-8" < L \leq 49'-11"$ )  
(approx. 0.35 of actual cell size)



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

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FILE NO. SS8CELLS-43

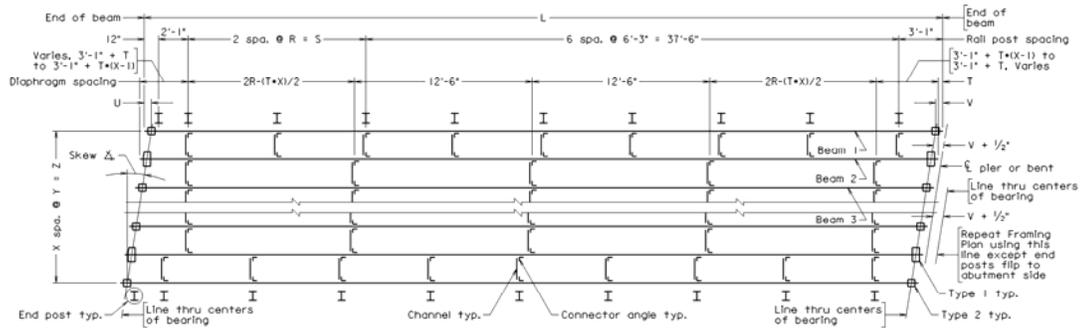
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CELL NAME

CELL DESCRIPTION

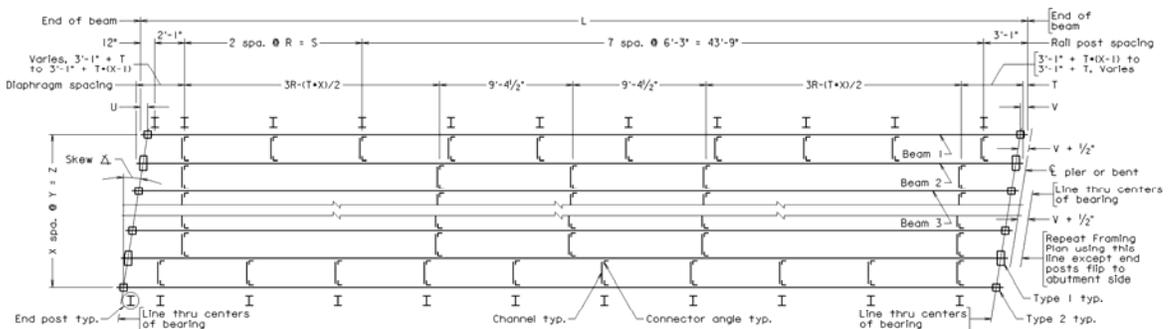
**BTR07**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $49'-11'' < L \leq 56'-2''$ )  
(approx. 0.30 of actual cell size)



**BTR08**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $56'-2'' < L \leq 62'-5''$ )  
(approx. 0.30 of actual cell size)



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

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FILE NO. SS8CELLS-44

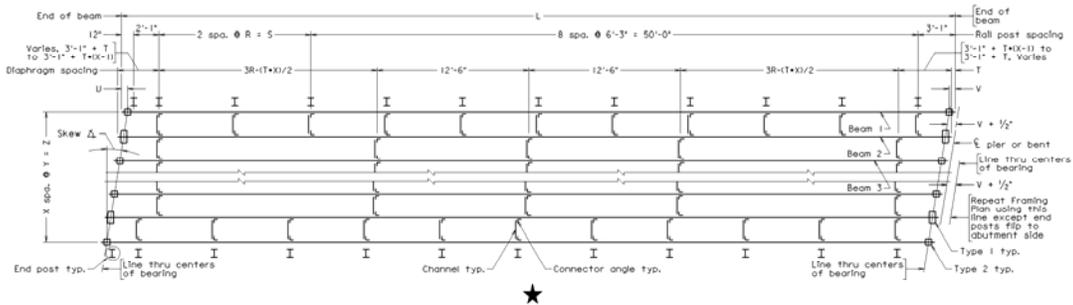
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CELL NAME

CELL DESCRIPTION

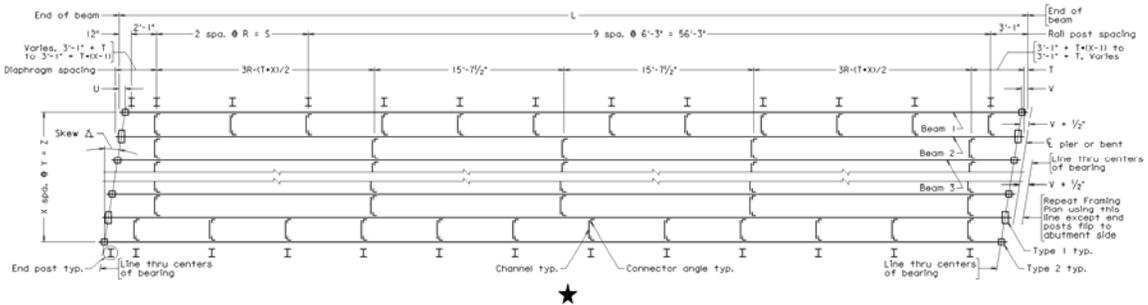
**BTR09**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $62'-5'' < L \leq 68'-8''$ )  
(approx. 0.25 of actual cell size)



**BTR10**

Two-span framing plan with right hand skew  $\leq 9^\circ$  and bolted angles  
( $68'-8'' < L \leq 74'-11''$ )  
(approx. 0.25 of actual cell size)



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

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FILE NO. SS8CELLS-45

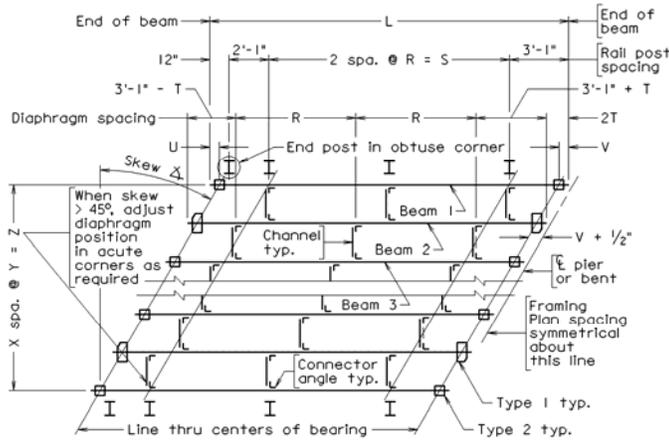
CELL

CELL NAME

CELL DESCRIPTION

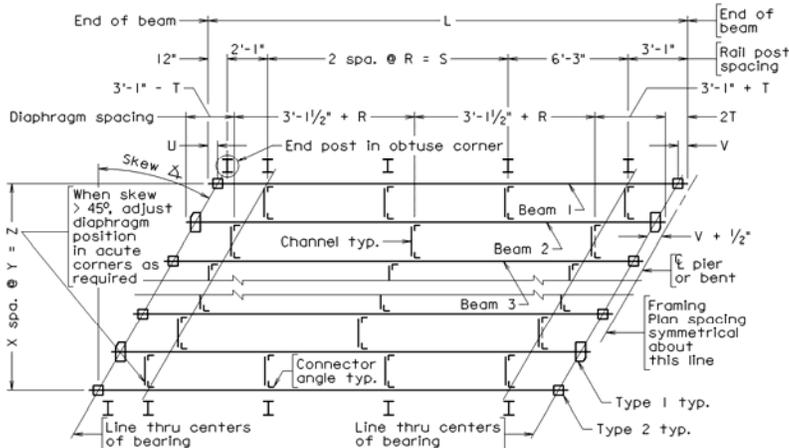
**BTR11**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**BTR12**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $18'-8'' < L \leq 24'-11''$ )  
(approx. 0.40 of actual cell size)



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

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FILE NO. SS8CELLS-46

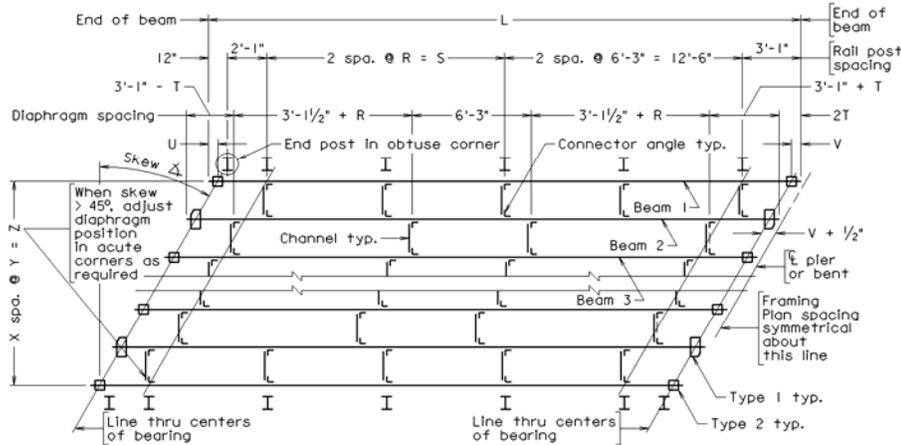
CELL

CELL NAME

CELL DESCRIPTION

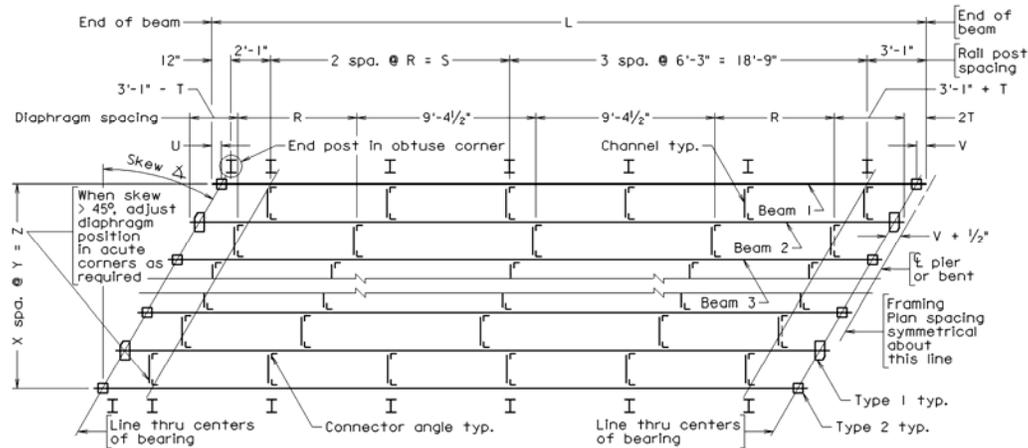
**BTR13**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $24'-11'' < L \leq 31'-2''$ )  
(approx. 0.40 of actual cell size)



**BTR14**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $31'-2'' < L \leq 37'-5''$ )  
(approx. 0.40 of actual cell size)



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

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FILE NO. SS8CELLS-47

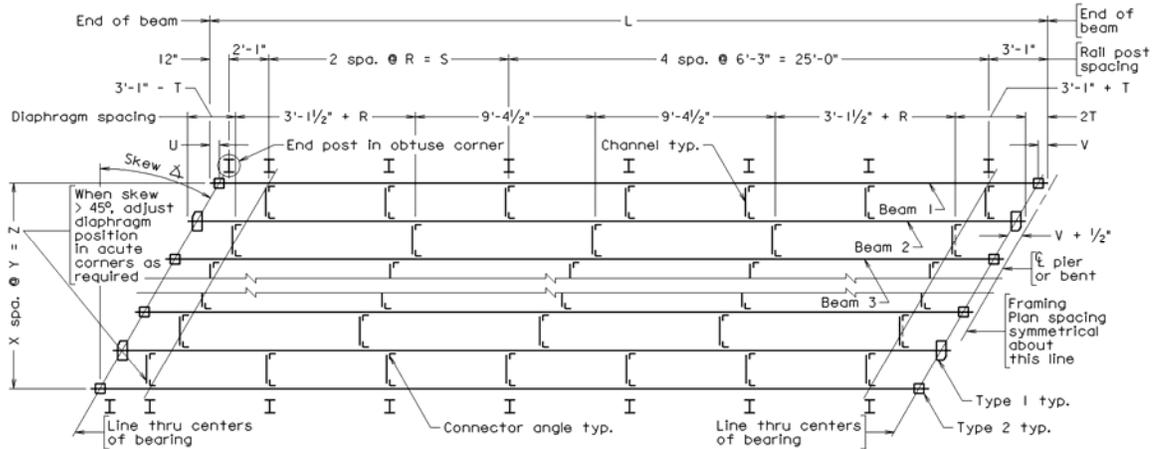
CELL

CELL NAME

CELL DESCRIPTION

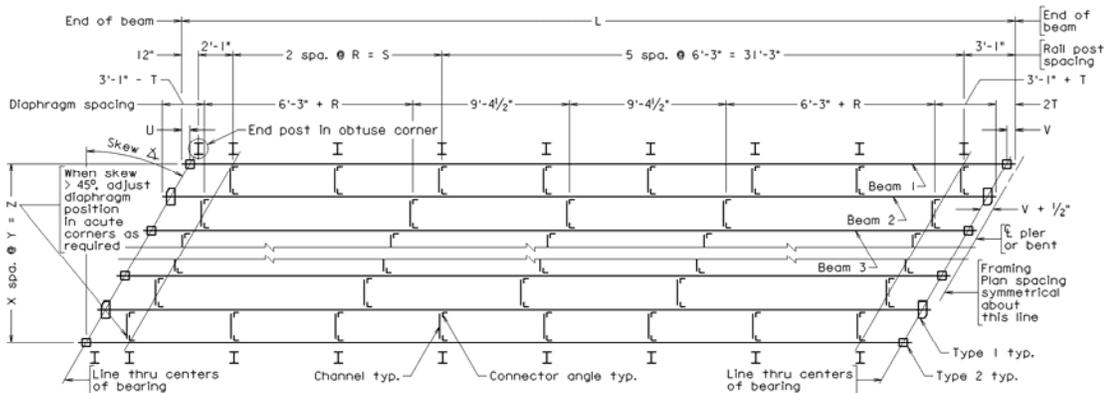
**BTR15**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $37'-5'' < L \leq 43'-8''$ )  
(approx. 0.40 of actual cell size)



**BTR16**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $43'-8'' < L \leq 49'-11''$ )  
(approx. 0.35 of actual cell size)



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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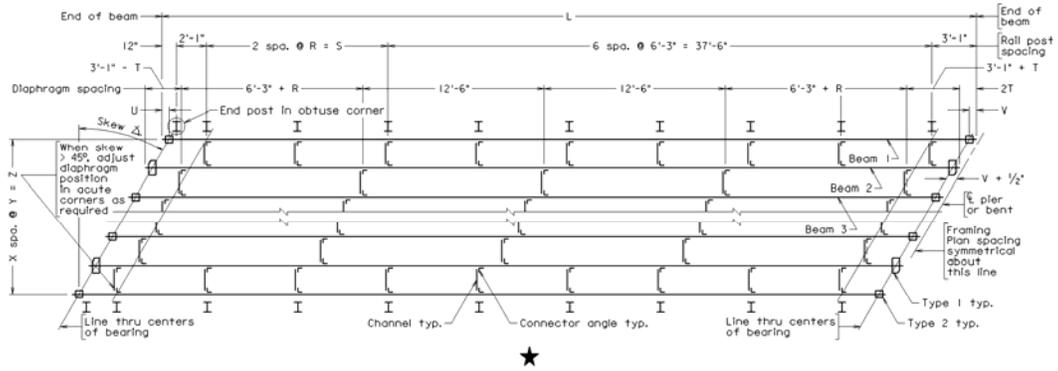
CELL

CELL NAME

CELL DESCRIPTION

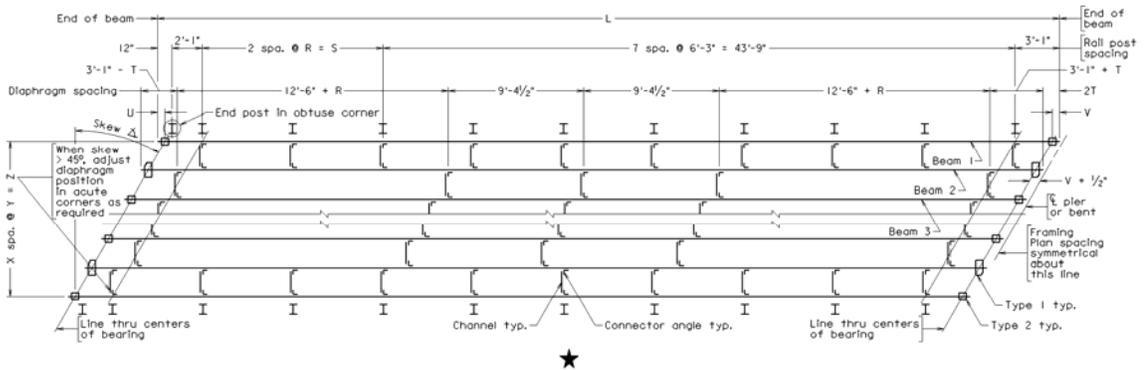
**BTR17**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $49'-11'' < L \leq 56'-2''$ )  
(approx. 0.30 of actual cell size)



**BTR18**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
( $56'-2'' < L \leq 62'-5''$ )  
(approx. 0.30 of actual cell size)



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

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FILE NO. SS8CELLS-49

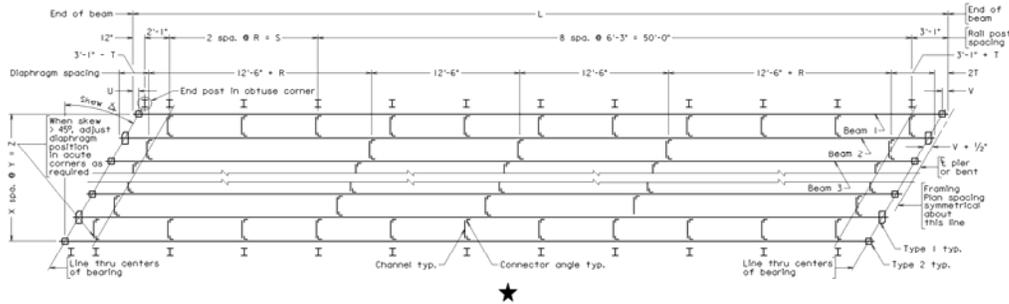
CELL

CELL NAME

CELL DESCRIPTION

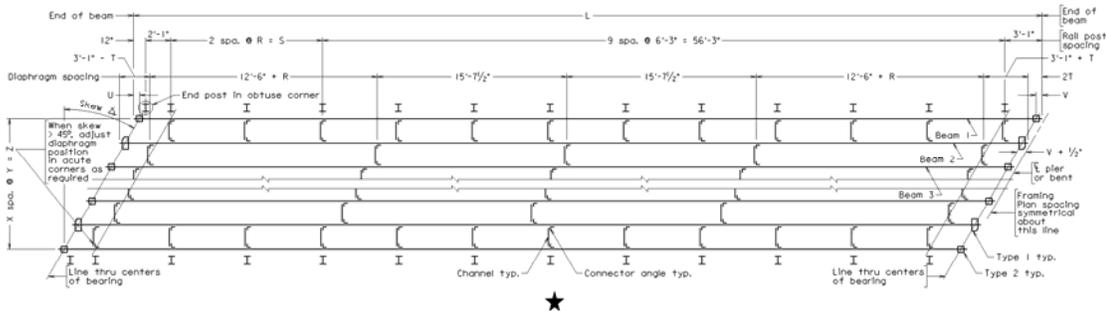
**BTR19**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
 $(62'-5" < L \leq 68'-8")$   
(approx. 0.25 of actual cell size)



**BTR20**

Two-span framing plan with right hand skew  $> 9^\circ$  and bolted angles  
 $(68'-8" < L \leq 74'-11")$   
(approx. 0.25 of actual cell size)



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

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FILE NO. SS8CELLS-50

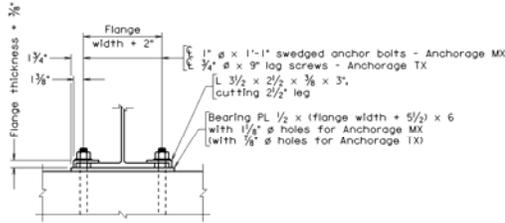
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

**BZAB1**

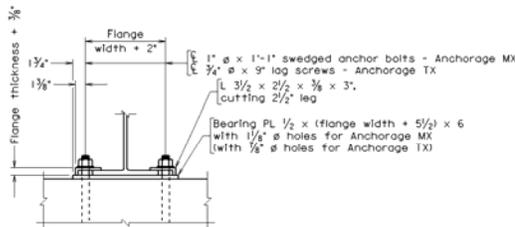
Bearing detail, bearing plate,  $L \leq 60'-0''$ , anchor bolts required at all locations (approx. 0.30 of actual cell size)



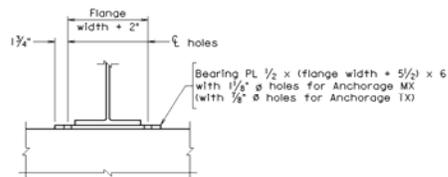
**TYPE 1 AND 2 BEARING DETAIL**  
 Timber Abutment Anchor TX  
 Typical Masonry Anchor MX

**BZAB2**

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



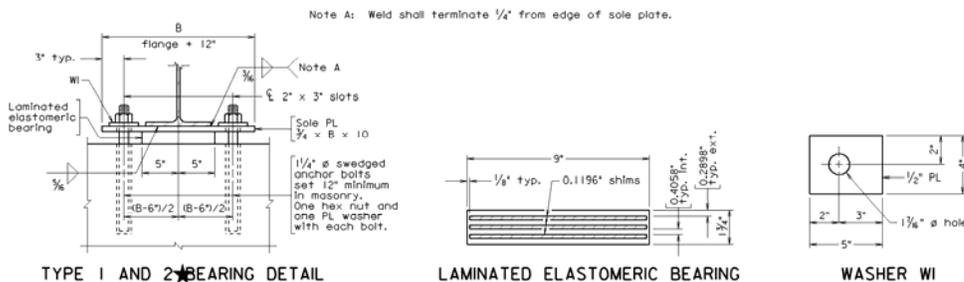
**TYPE 1 BEARING DETAIL**  
 Timber Abutment Anchor TX  
 Typical Masonry Anchor MX



**TYPE 2 BEARING DETAIL**  
 Timber Abutment Anchor TX  
 Typical Masonry Anchor 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**

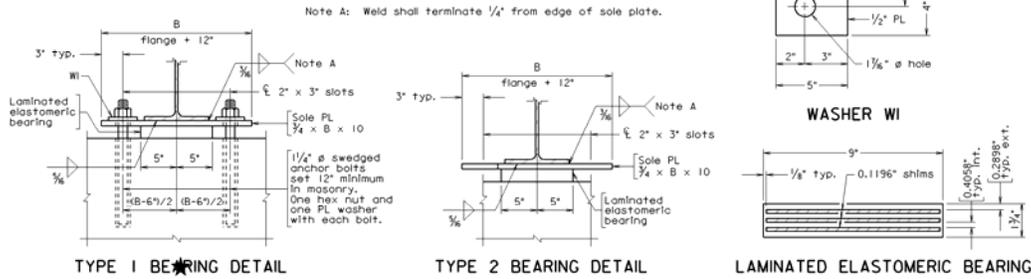
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

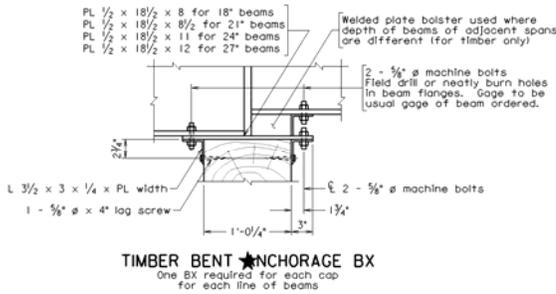
**BZAE2**

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,  $L \leq 60'-0''$ , anchor bolts required at all locations (approx. 0.30 of actual cell size)



**CELL**

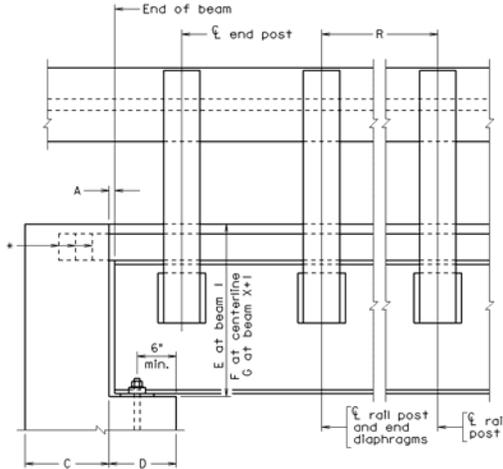
**CELL NAME**

**CELL DESCRIPTION**

**ELC1B**

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

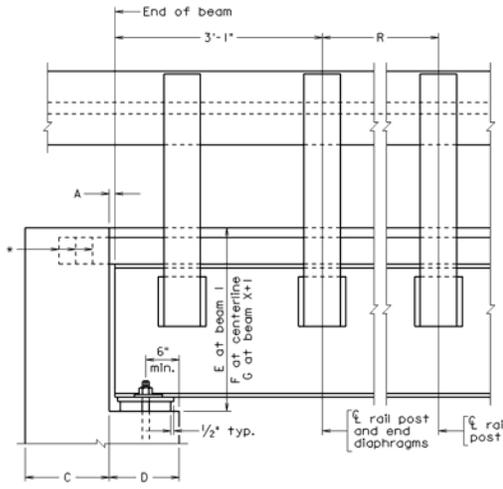
\*Use 3" floor strips to cover gap between floor plank and backwall. Nail each strip to adjacent strip with 50d nails, 18" on centers. Otherwise, insert minimum number of timber planks with width not less than 6" near middle of span to cover gap. Alternate width planks shall not be adjacent to each other.



**ELC1E**

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

\*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.



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS  
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**CELL**

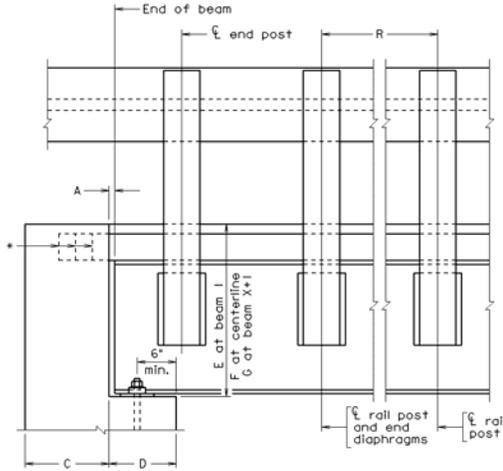
**CELL NAME**

**CELL DESCRIPTION**

**ELC2B**

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

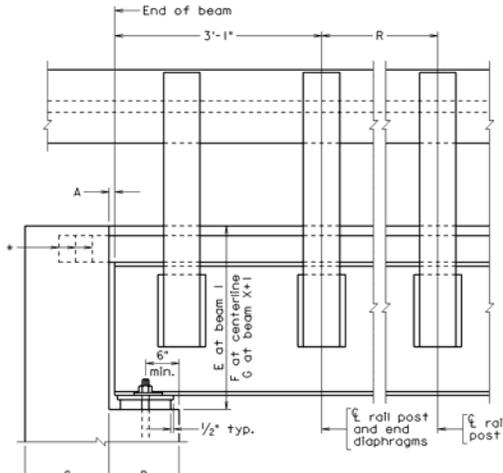
\*Use 3" floor strips to cover gap between floor plank and backwall. Nail each strip to adjacent strip with 50d nails, 18" on centers. Otherwise, insert minimum number of timber planks with width not less than 6" near middle of span to cover gap. Alternate width planks shall not be adjacent to each other.



**ELC2E**

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

\*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.



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS  
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CELLS**

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CELL

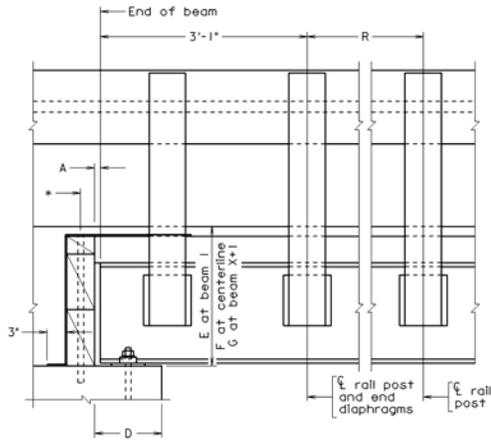
CELL NAME

CELL DESCRIPTION

ELTB2

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

\*Drill  $\frac{1}{2}$ "  $\phi$  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.



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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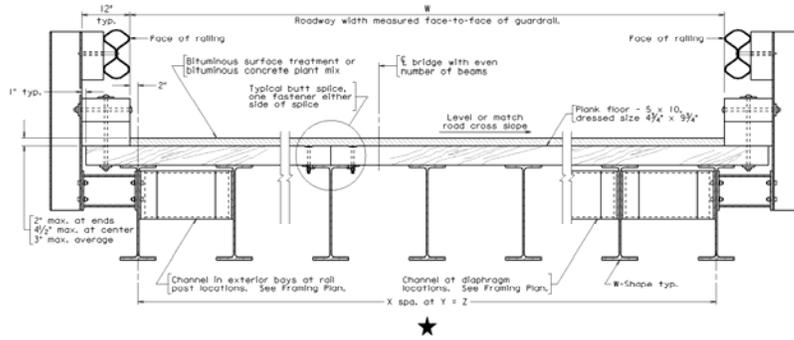
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

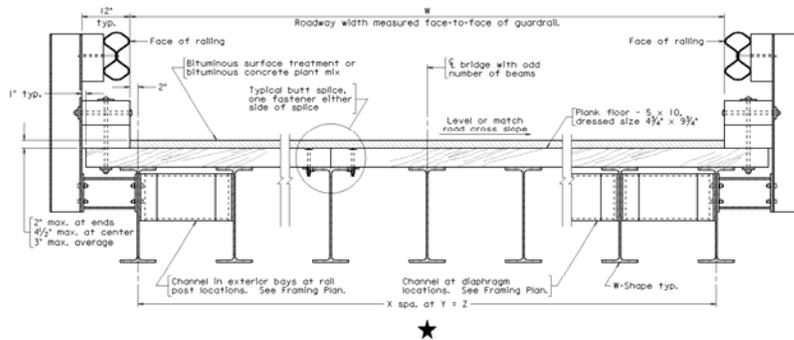
**TSB1E**

Transverse section, bolted angles used in diaphragm connection, railing with curb, even number of beams (approx. 0.25 of actual cell size)



**TSB1O**

Transverse section, bolted angles used in diaphragm connection, railing with curb, odd number of beams (approx. 0.25 of actual cell size)



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

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FILE NO. SS8CELLS-57

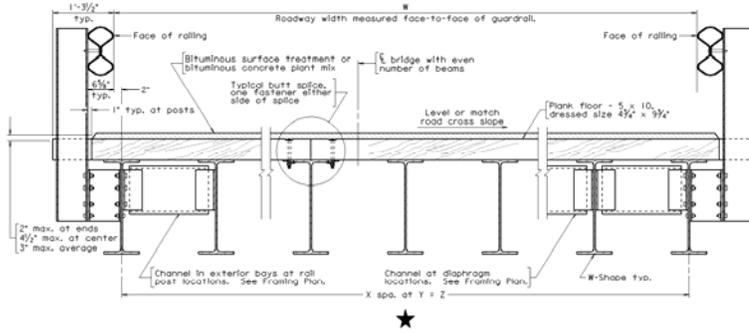
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

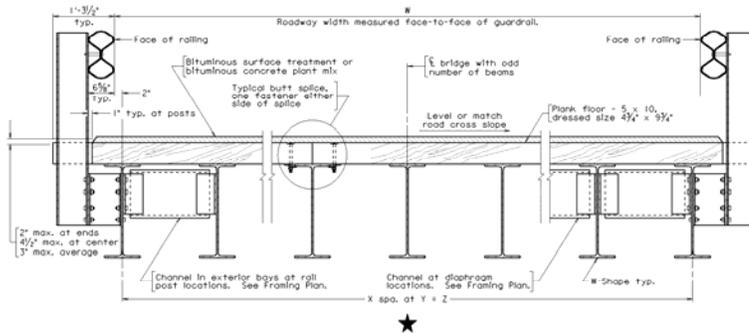
**TSB2E**

Transverse section, bolted angles used in diaphragm connection, railing without curb, even number of beams (approx. 0.25 of actual cell size)



**TSB2O**

Transverse section, bolted angles used in diaphragm connection, railing without curb, odd number of beams (approx. 0.25 of actual cell size)



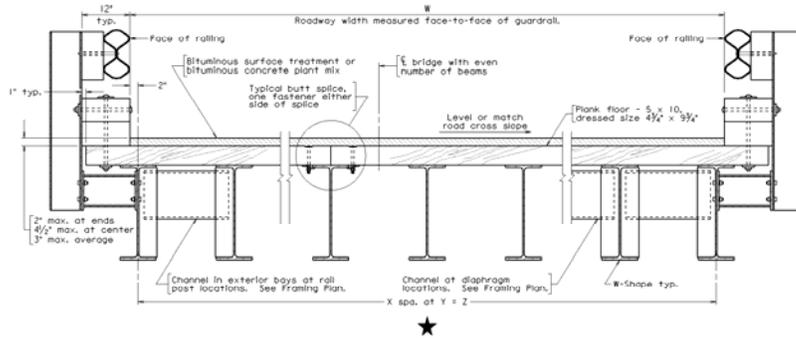
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

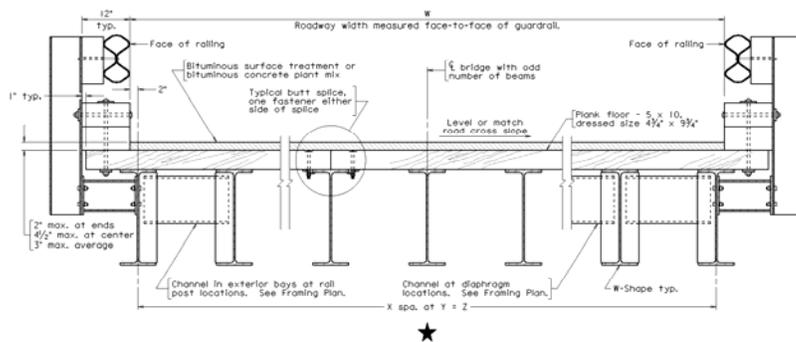
**TSW1E**

Transverse section, welded plates used in diaphragm connection, railing with curb, even number of beams (approx. 0.25 of actual cell size)



**TSW1O**

Transverse section, welded plates used in diaphragm connection, railing with curb, odd number of beams (approx. 0.25 of actual cell size)



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

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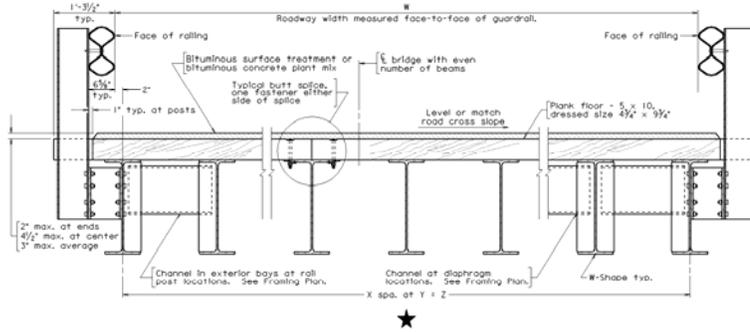
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

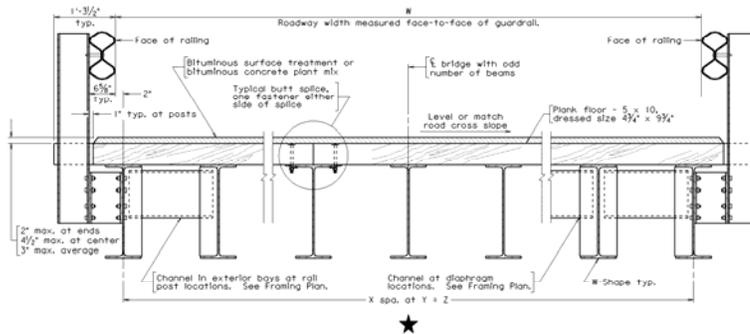
**TSW2E**

Transverse section, welded plates used in diaphragm connection, railing without curb, even number of beams (approx. 0.25 of actual cell size)



**TSW2O**

Transverse section, welded plates used in diaphragm connection, railing without curb, odd number of beams (approx. 0.25 of actual cell size)



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

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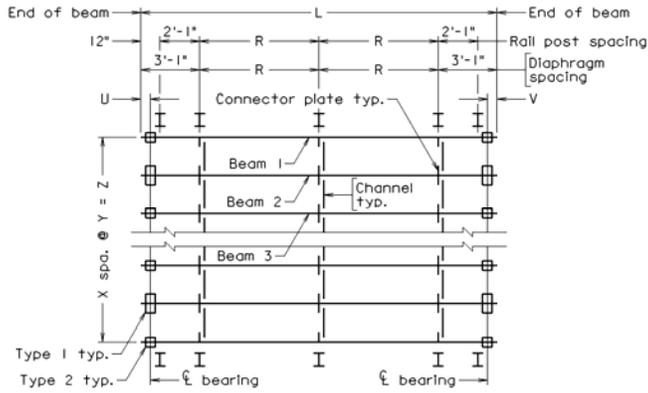
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

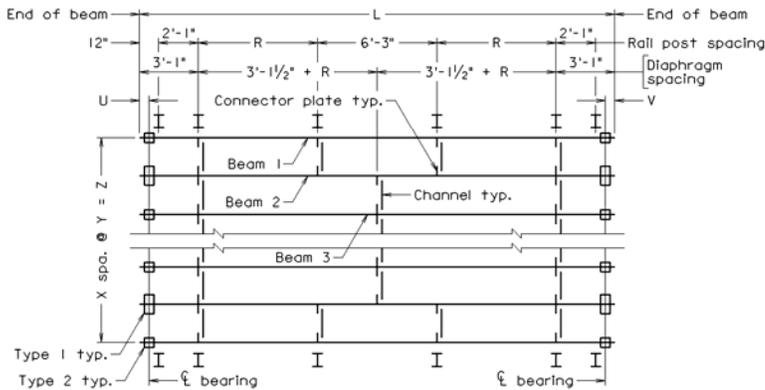
**WPA01**

Framing plan with 0° skew and welded connector plates  
 ( $L \leq 18'-8''$ )  
 (approx. 0.40 of actual cell size)



**WPA02**

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



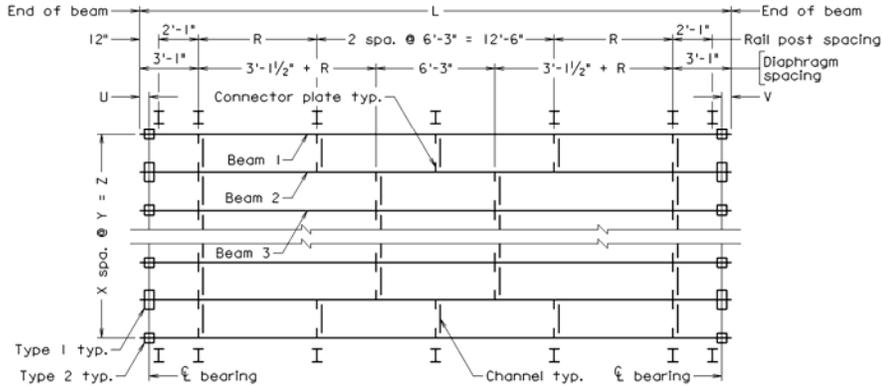
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

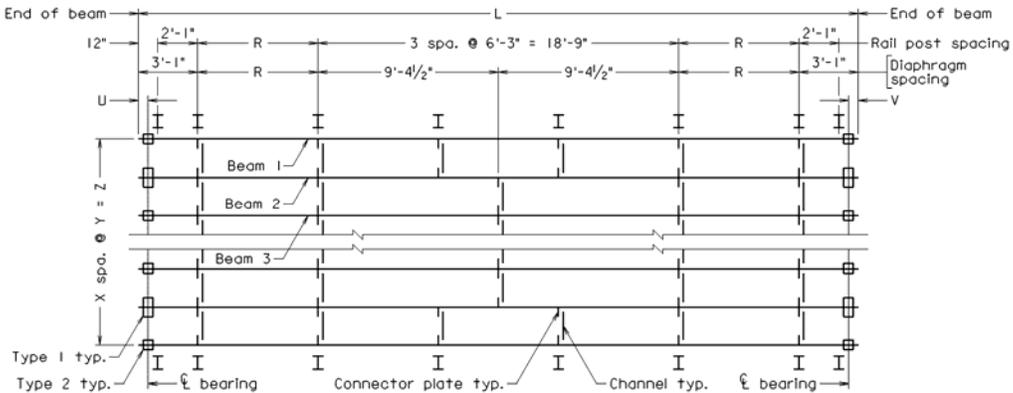
**WPA03**

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



**WPA04**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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FILE NO. SS8CELLS-62

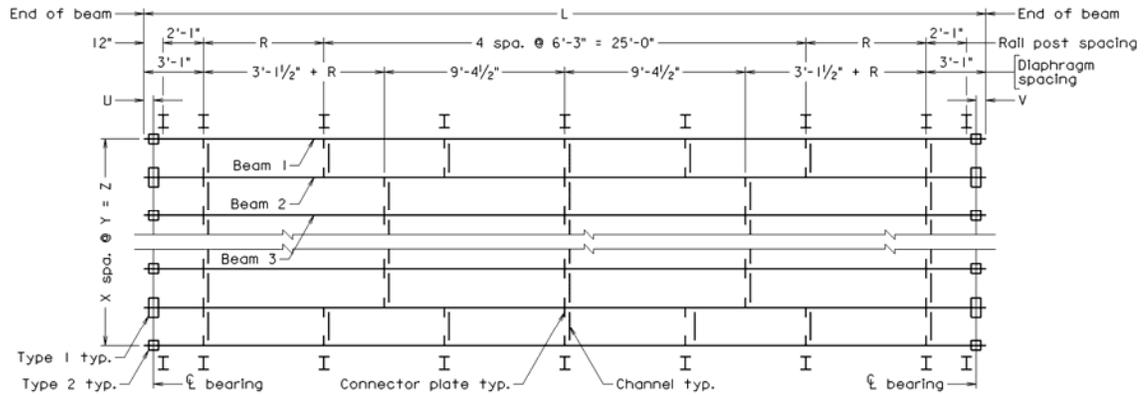
CELL

CELL NAME

CELL DESCRIPTION

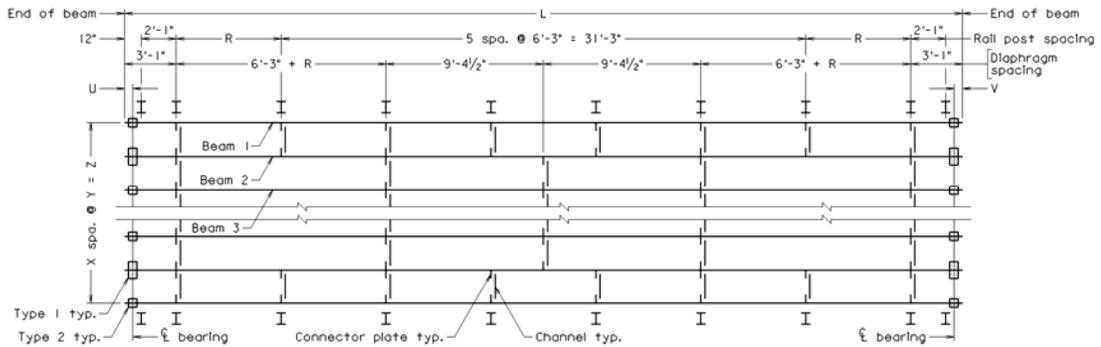
WPA05

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



WPA06

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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FILE NO. SS8CELLS-63

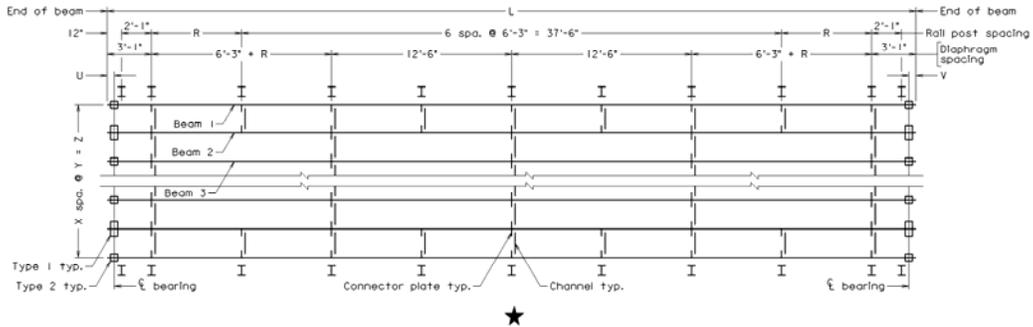
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

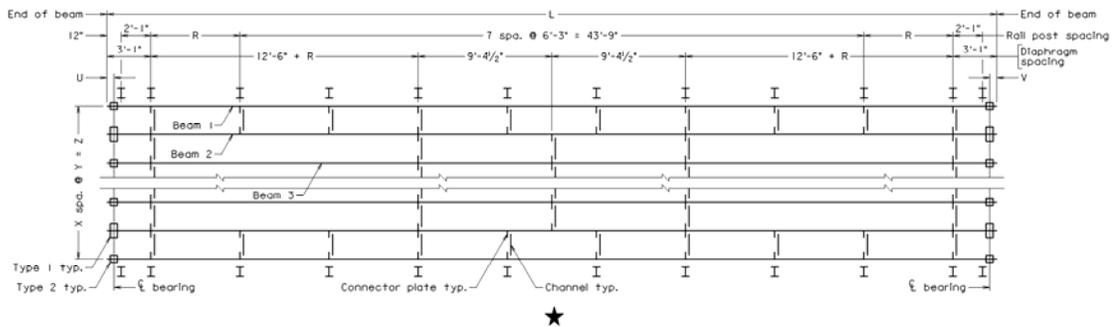
**WPA07**

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



**WPA08**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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FILE NO. SS8CELLS-64

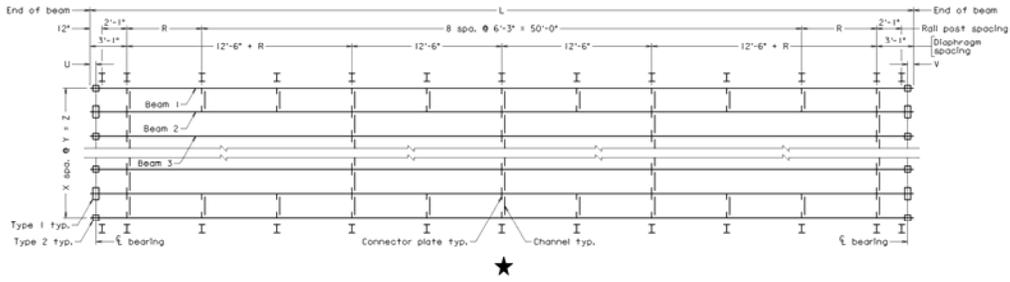
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

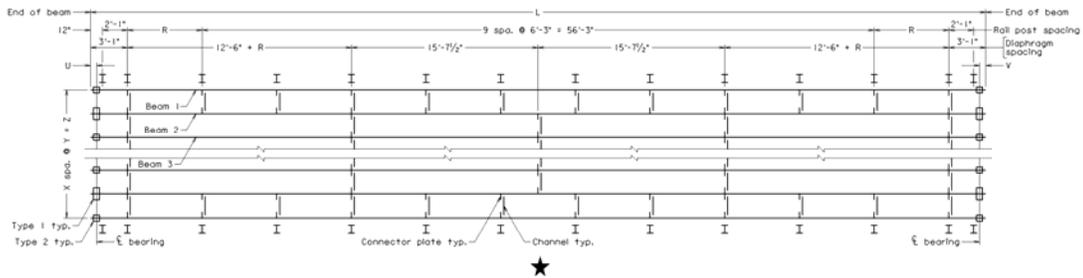
**WPA09**

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



**WPA10**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
**CELL LIBRARY: SS8.CEL**  
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FILE NO. SS8CELLS-65

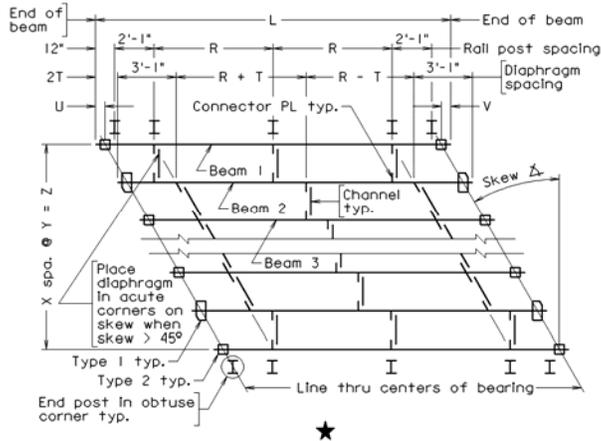
CELL

CELL NAME

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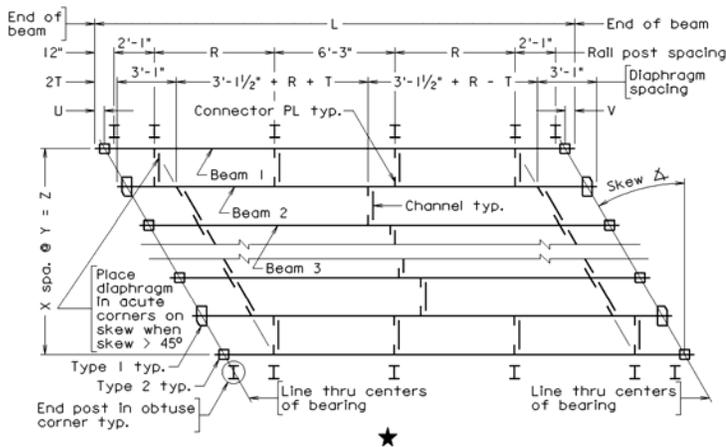
WPL01

Framing plan with left hand skew and welded connector plates  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



WPL02

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



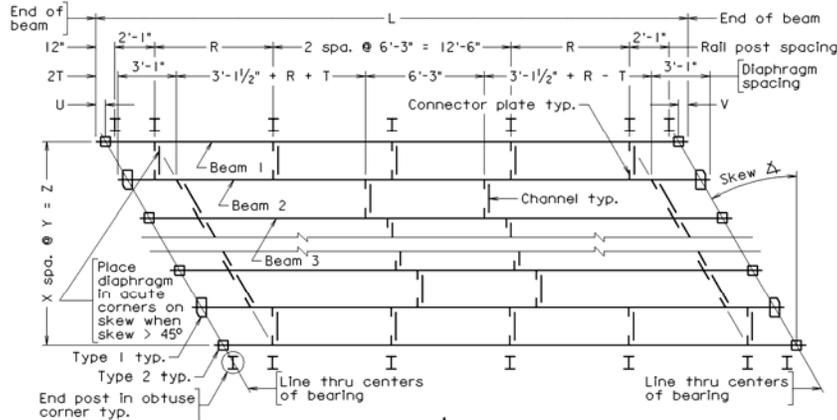
CELL

CELL NAME

CELL DESCRIPTION

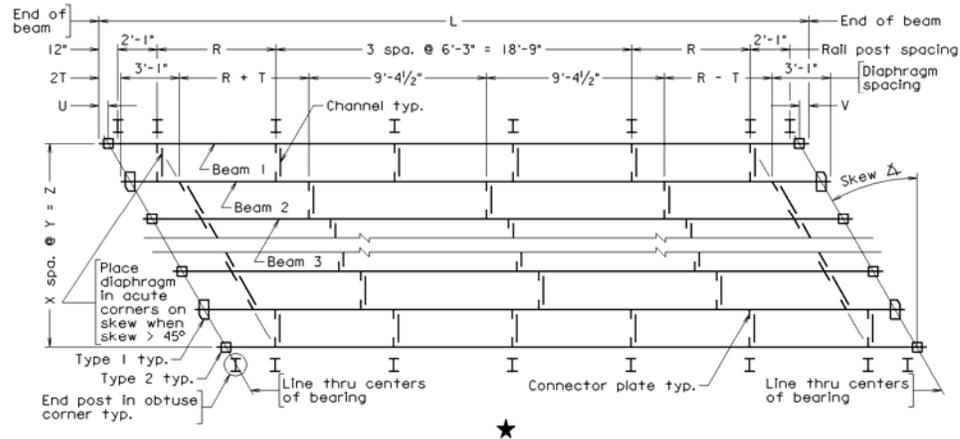
WPL03

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



WPL04

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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FILE NO. SS8CELLS-67

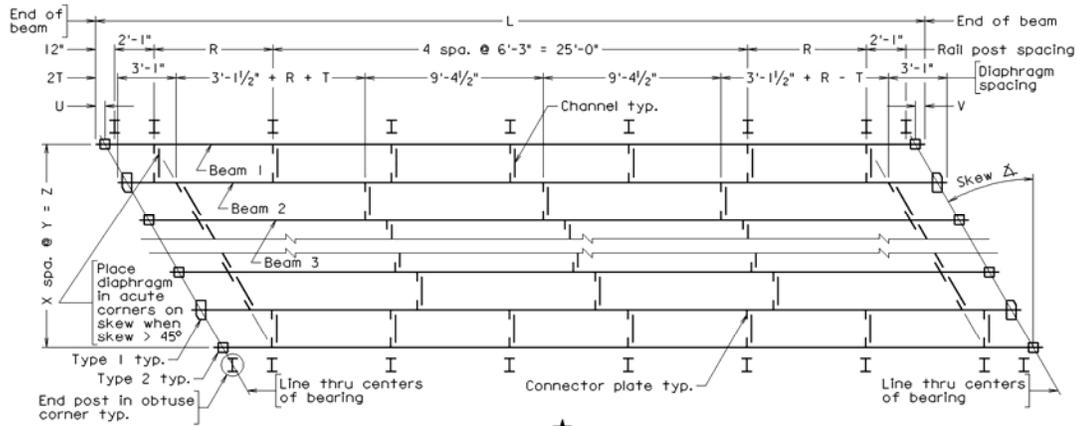
CELL

CELL NAME

CELL DESCRIPTION

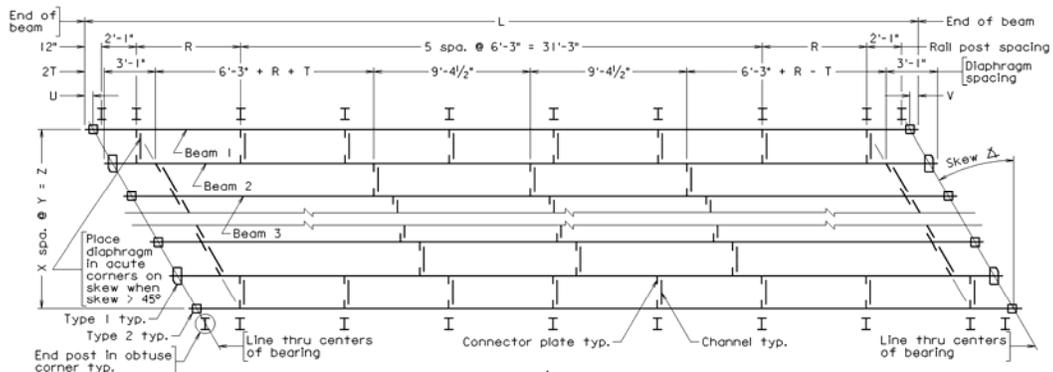
WPL05

Framing plan with left hand skew and welded connector plates  
( $37'-5" < L \leq 43'-8"$ )  
(approx. 0.40 of actual cell size)



WPL06

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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FILE NO. SS8CELLS-68



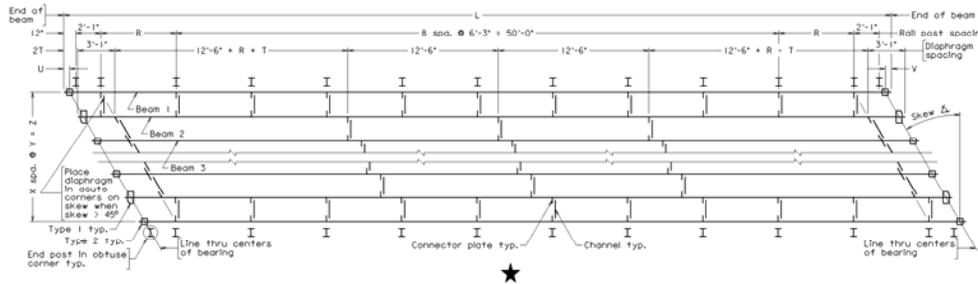
CELL

CELL NAME

CELL DESCRIPTION

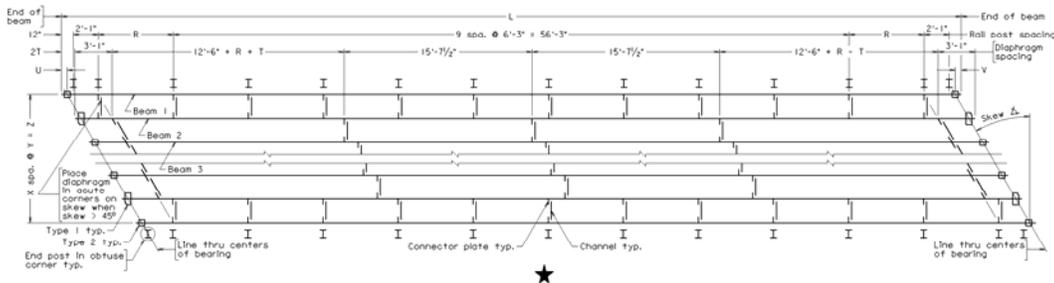
WPL09

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



WPL10

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



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

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DATE: 12Sep2008  
SHEET 70 of 90  
FILE NO. SS8CELLS-70

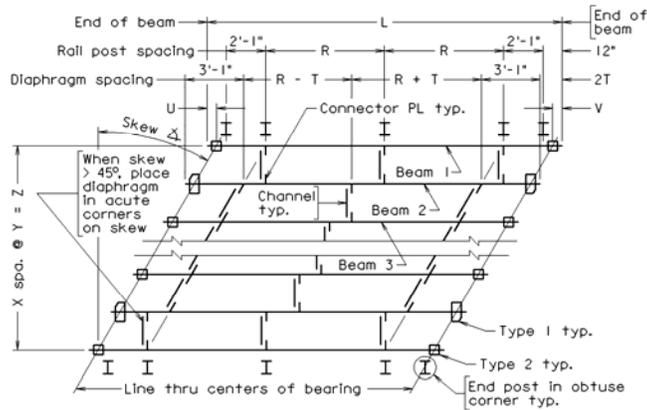
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**CELL NAME**

**CELL DESCRIPTION**

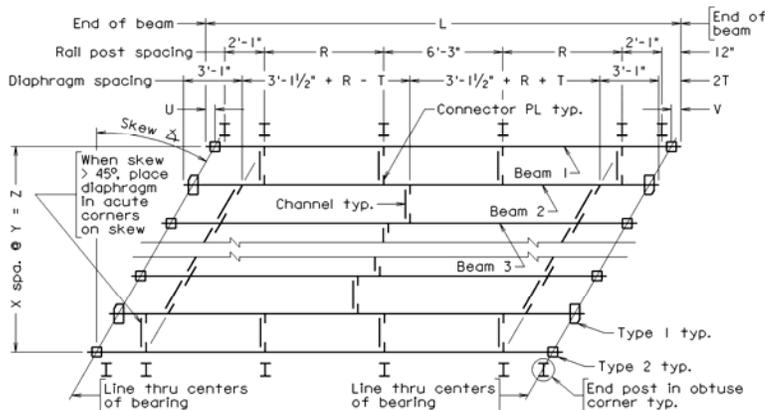
**WPR01**

Framing plan with right hand skew and welded connector plates  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**WPR02**

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



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

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DATE: 12Sep2008  
SHEET 71 of 90  
FILE NO. SS8CELLS-71

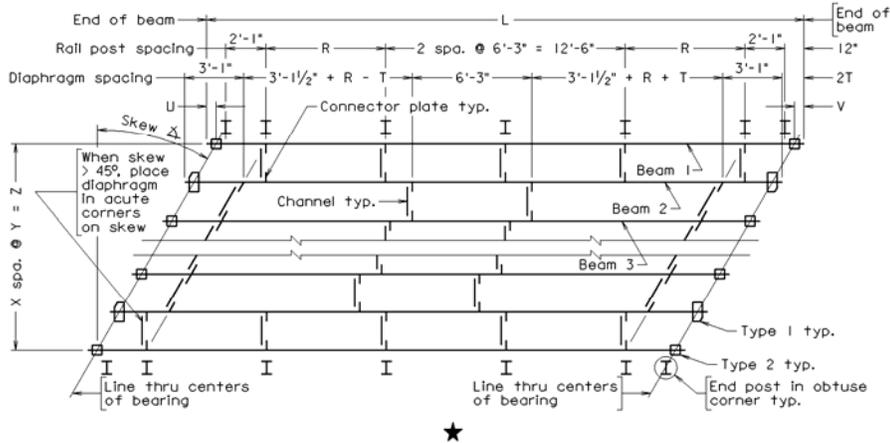
CELL

CELL NAME

CELL DESCRIPTION

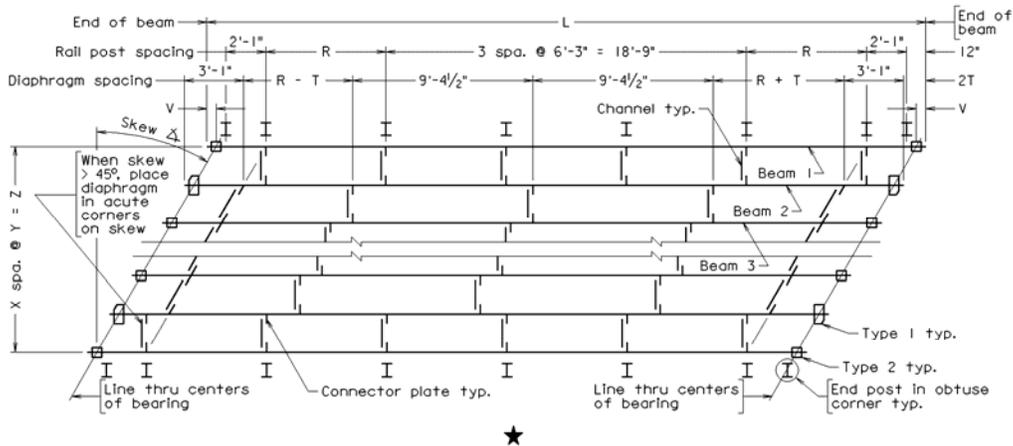
WPR03

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



WPR04

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



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

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DATE: 12Sep2008  
SHEET 72 of 90  
FILE NO. SS8CELLS-72

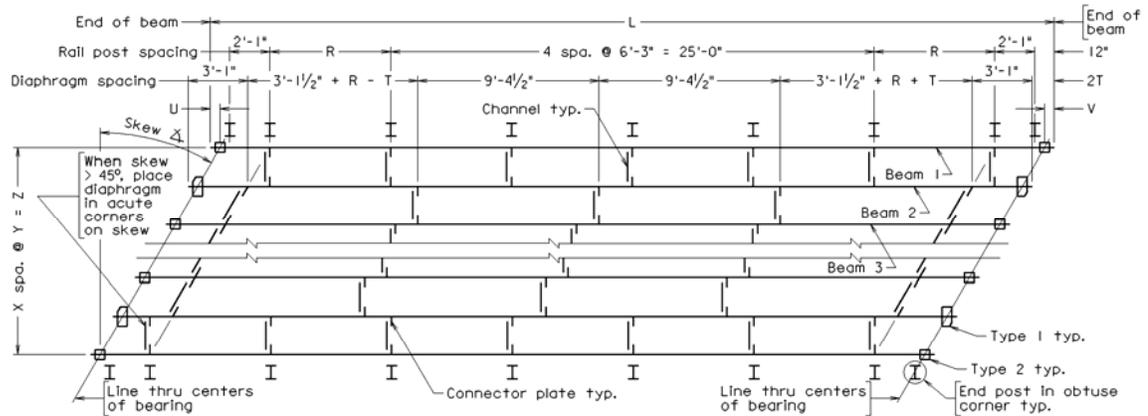
CELL

CELL NAME

CELL DESCRIPTION

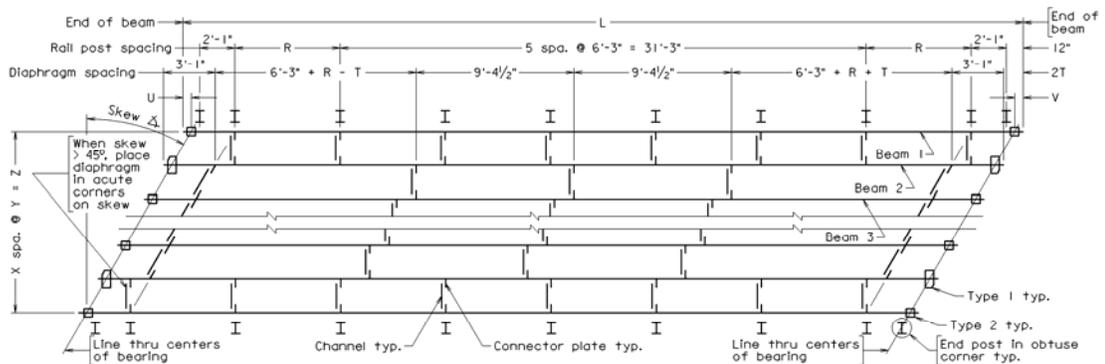
WPR05

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



WPR06

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



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

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DATE: 12Sep2008  
SHEET 73 of 90  
FILE NO. SS8CELLS-73

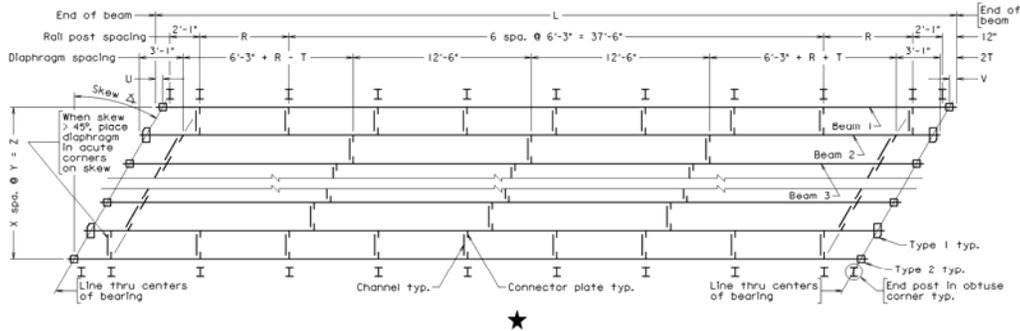
CELL

CELL NAME

CELL DESCRIPTION

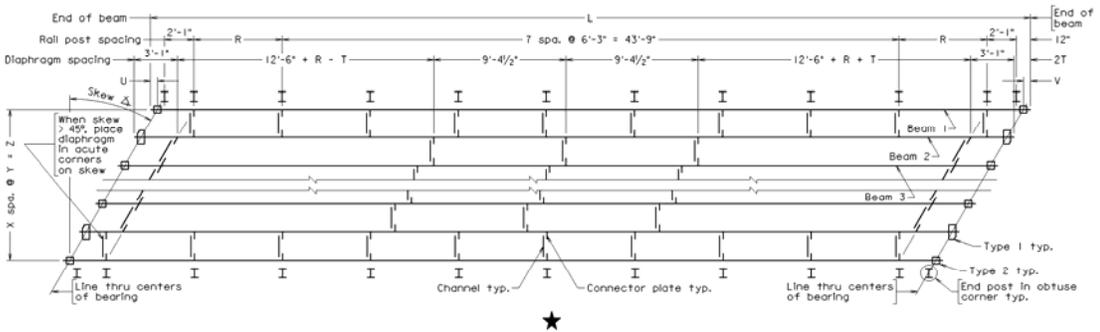
WPR07

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



WPR08

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



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

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DATE: 12Sep2008  
SHEET 74 of 90  
FILE NO. SS8CELLS-74

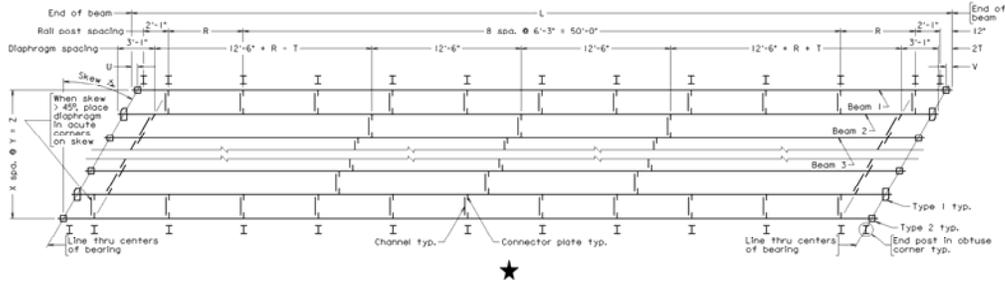
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

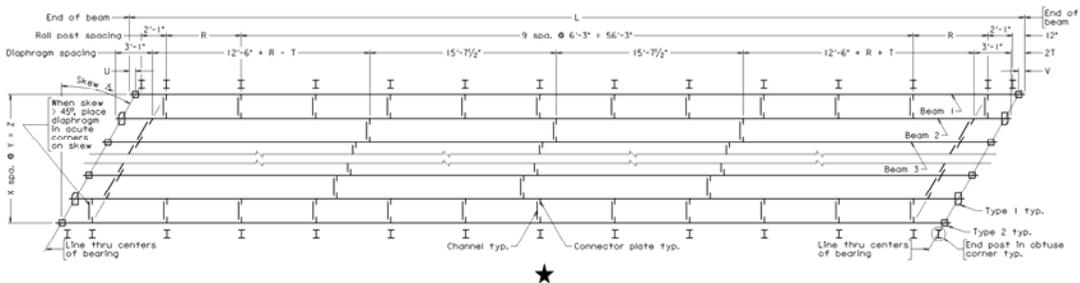
**WPR09**

Framing plan with right hand skew and welded connector plates  
( $62'-5" < L \leq 68'-8"$ )  
(approx. 0.25 of actual cell size)



**WPR10**

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



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

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DATE: 12Sep2008  
SHEET 75 of 90  
FILE NO. SS8CELLS-75

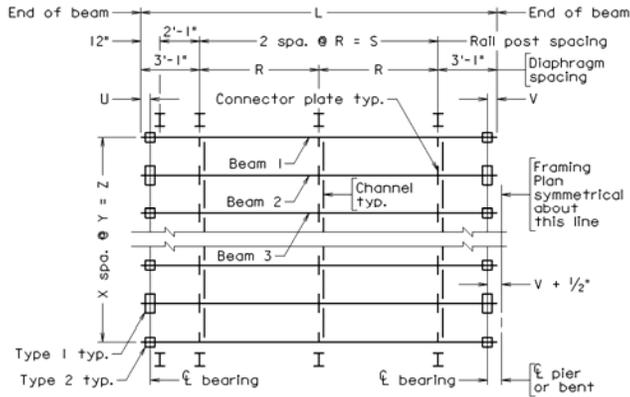
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

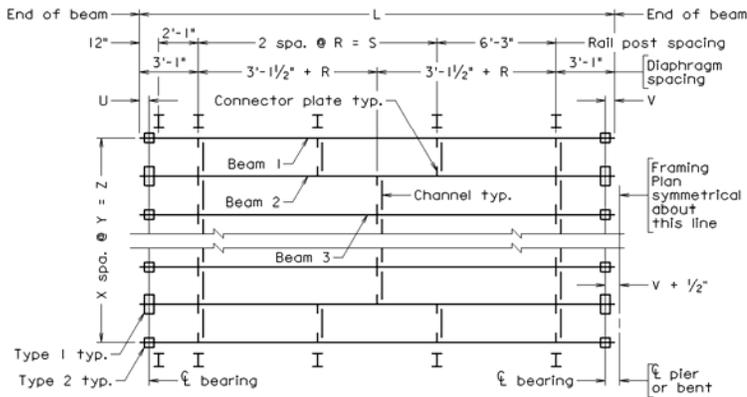
**WTA01**

Two-span framing plan with 0° skew and welded connector plates  
 ( $L \leq 18'-8''$ )  
 (approx. 0.40 of actual cell size)



**WTA02**

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



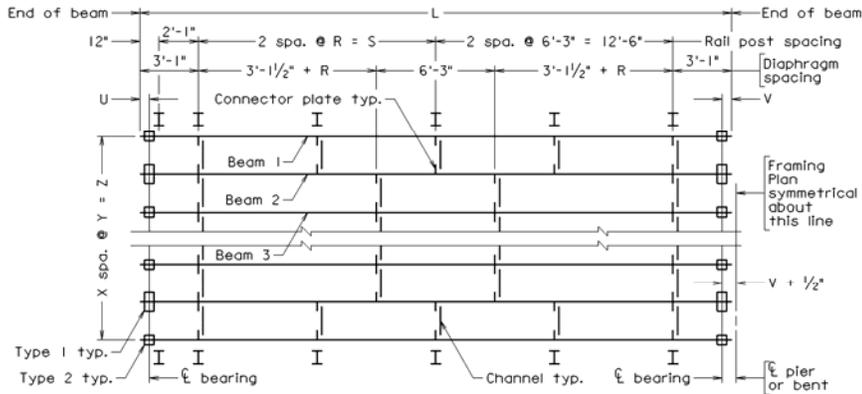
**CELL**

**CELL NAME**

**CELL DESCRIPTION**

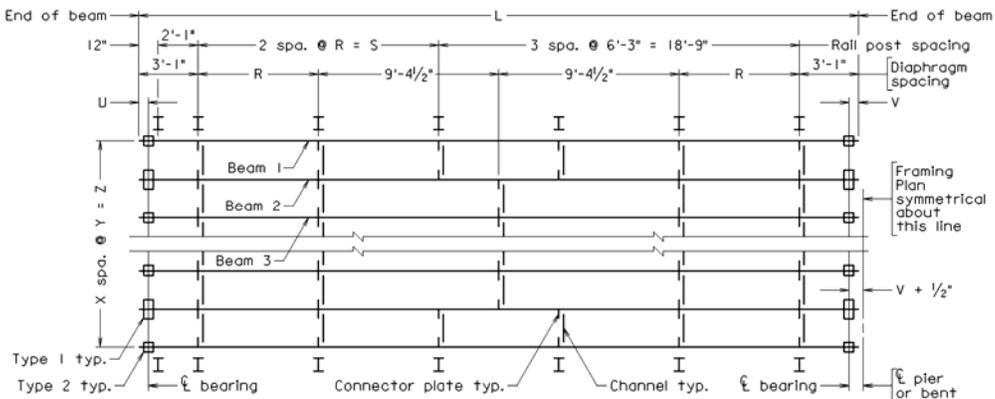
**WTA03**

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



**WTA04**

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



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

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FILE NO. SS8CELLS-77

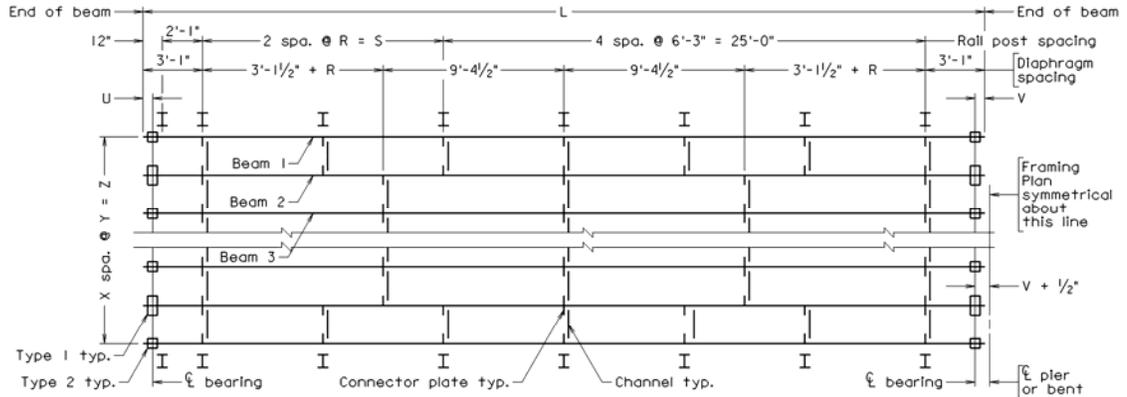
CELL

CELL NAME

CELL DESCRIPTION

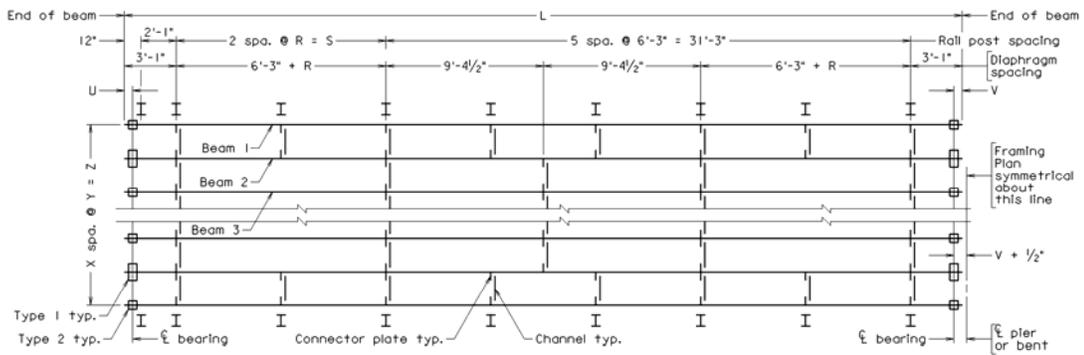
**WTA05**

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



**WTA06**

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



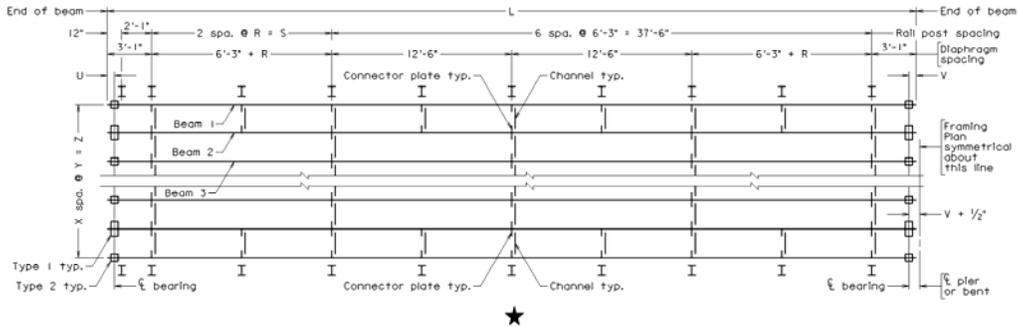
CELL

CELL NAME

CELL DESCRIPTION

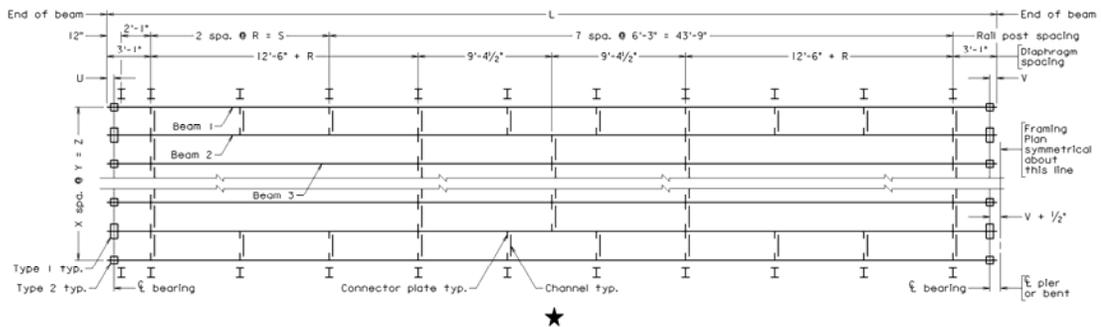
WTA07

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



WTA08

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



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

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FILE NO. SS8CELLS-79

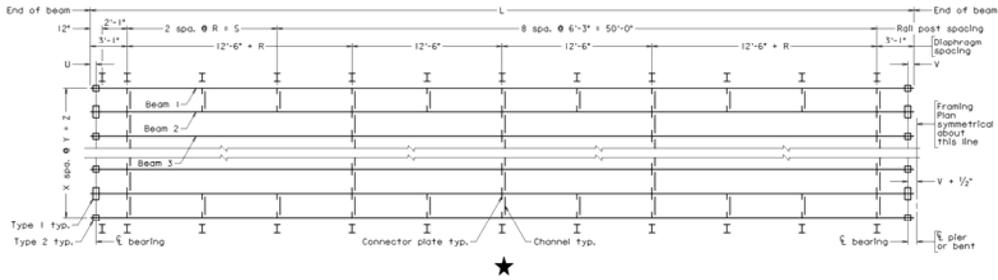
CELL

CELL NAME

CELL DESCRIPTION

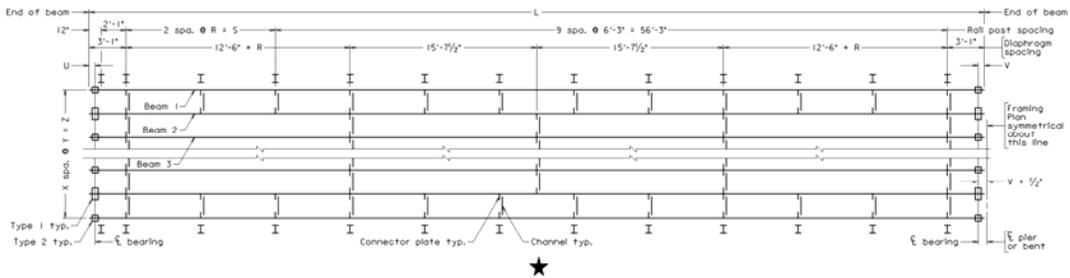
WTA09

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



WTA10

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



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

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DATE: 12Sep2008  
SHEET 80 of 90  
FILE NO. SS8CELLS-80

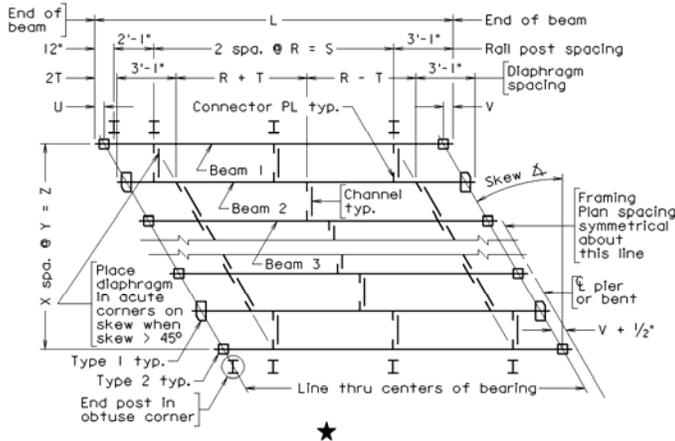
CELL

CELL NAME

CELL DESCRIPTION

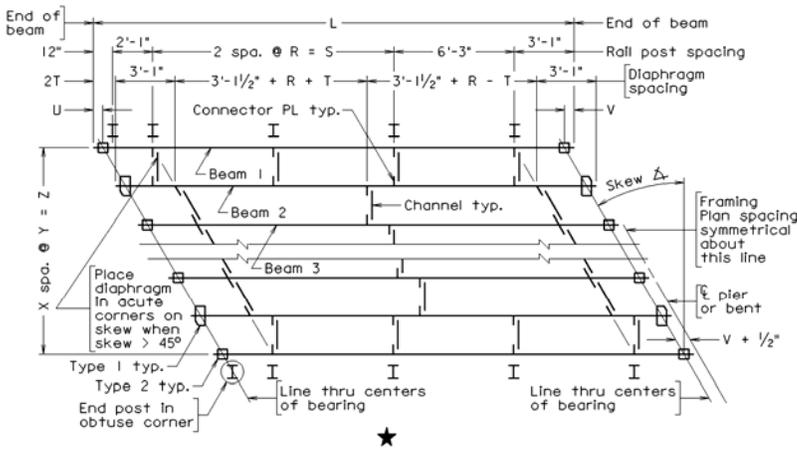
WTL01

Two-span framing plan with left hand skew and welded connector plates  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



WTL02

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



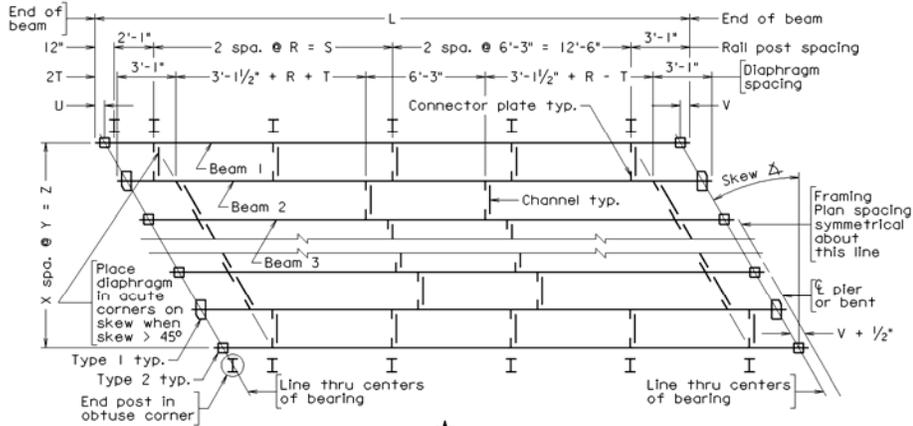
CELL

CELL NAME

CELL DESCRIPTION

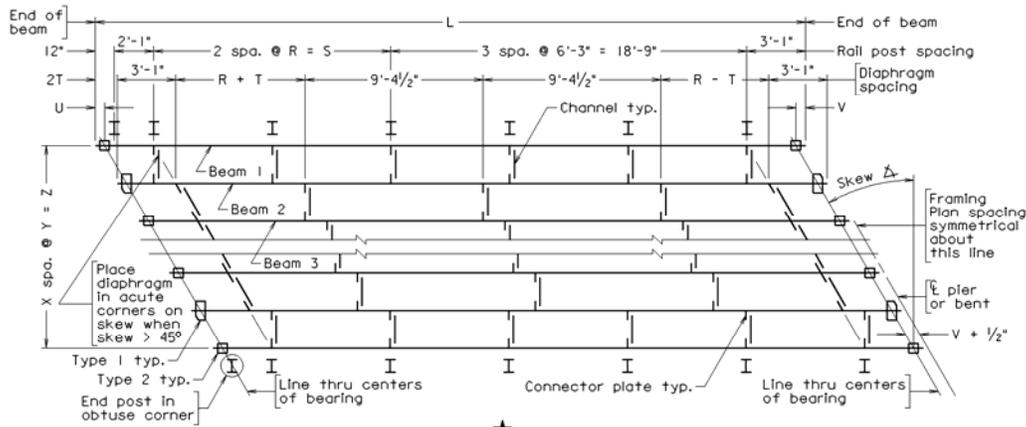
WTL03

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



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)



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

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SHEET 82 of 90  
FILE NO. SS8CELLS-82

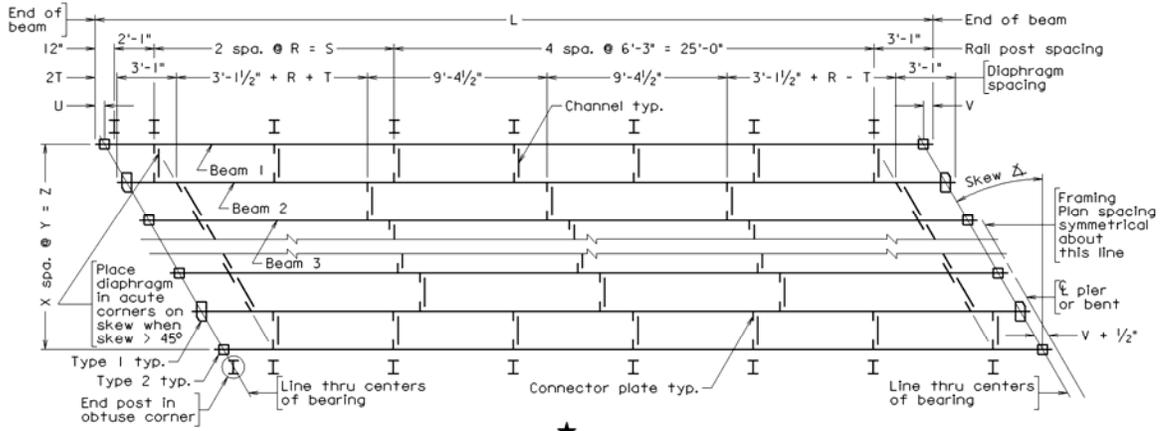
CELL

CELL NAME

CELL DESCRIPTION

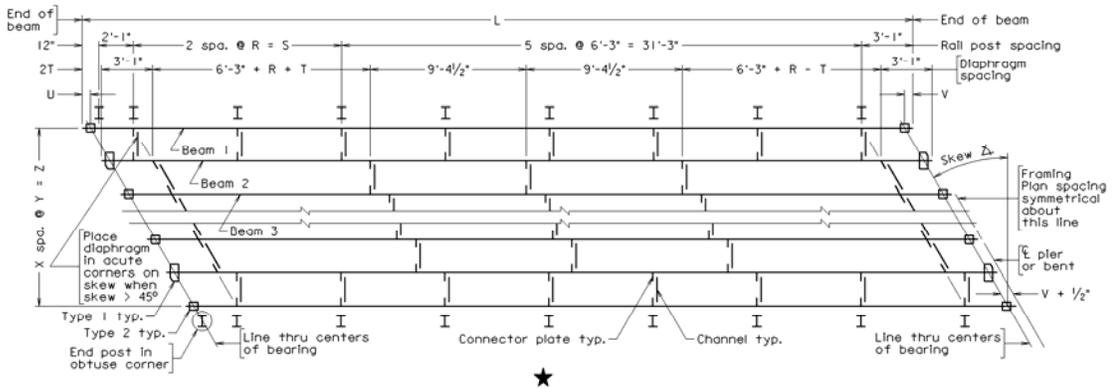
WTL05

Two-span framing plan with left hand skew and welded connector plates  
( $37'-5" < L \leq 43'-8"$ )  
(approx. 0.40 of actual cell size)



WTL06

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



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

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FILE NO. SS8CELLS-83



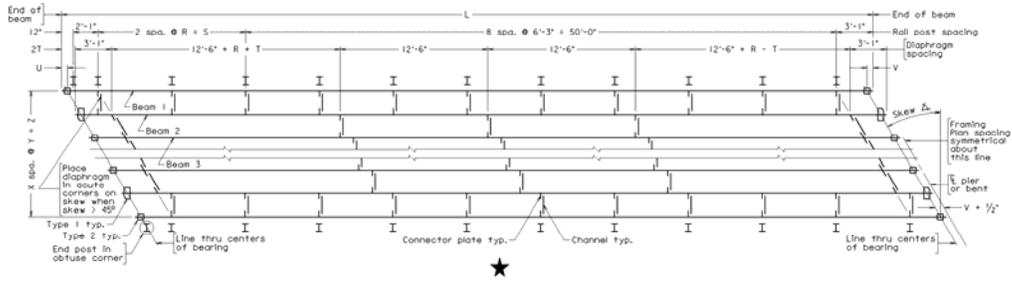
CELL

CELL NAME

CELL DESCRIPTION

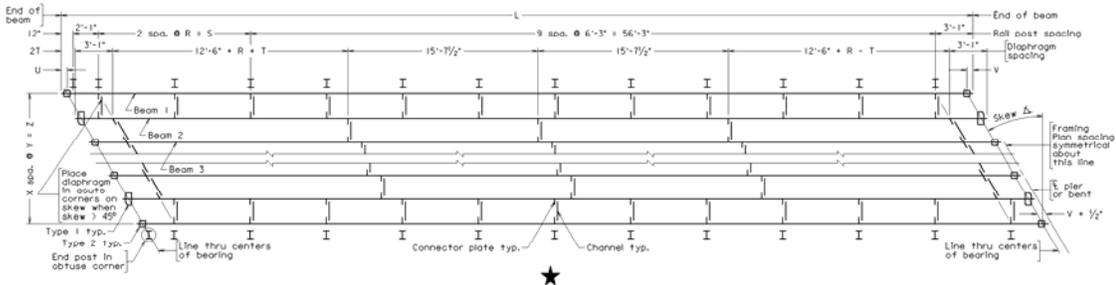
WTL09

Two-span framing plan with left hand skew and welded connector plates  
( $62'-5" < L \leq 68'-8"$ )  
(approx. 0.25 of actual cell size)



WTL10

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



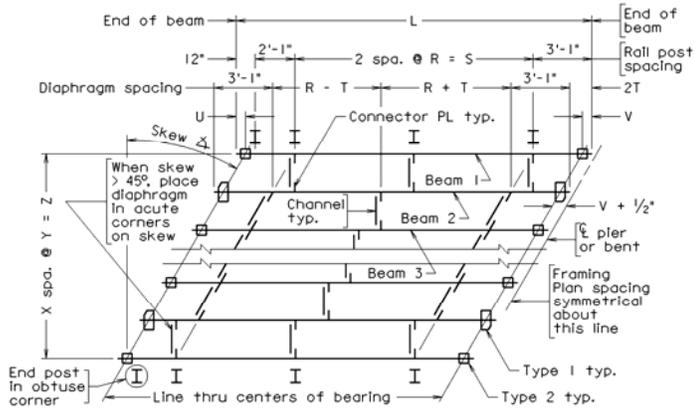
CELL

CELL NAME

CELL DESCRIPTION

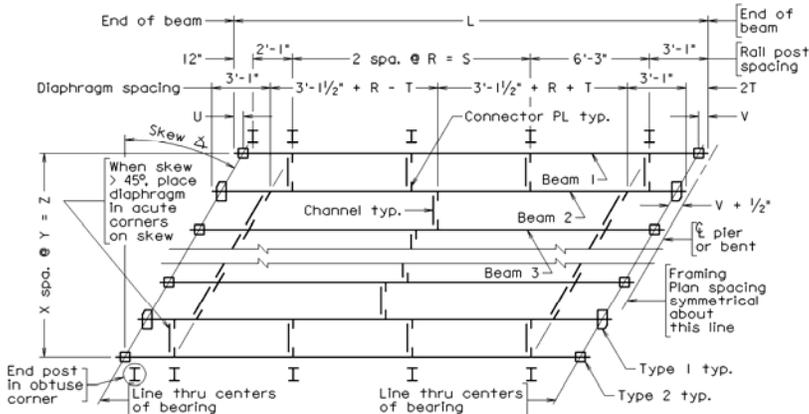
**WTR01**

Two-span framing plan with right hand skew and welded connector plates  
( $L \leq 18'-8''$ )  
(approx. 0.40 of actual cell size)



**WTR02**

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



**SS-8 STEEL BEAM WITH TIMBER DECK STANDARDS**  
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**CELLS**

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FILE NO. SS8CELLS-86



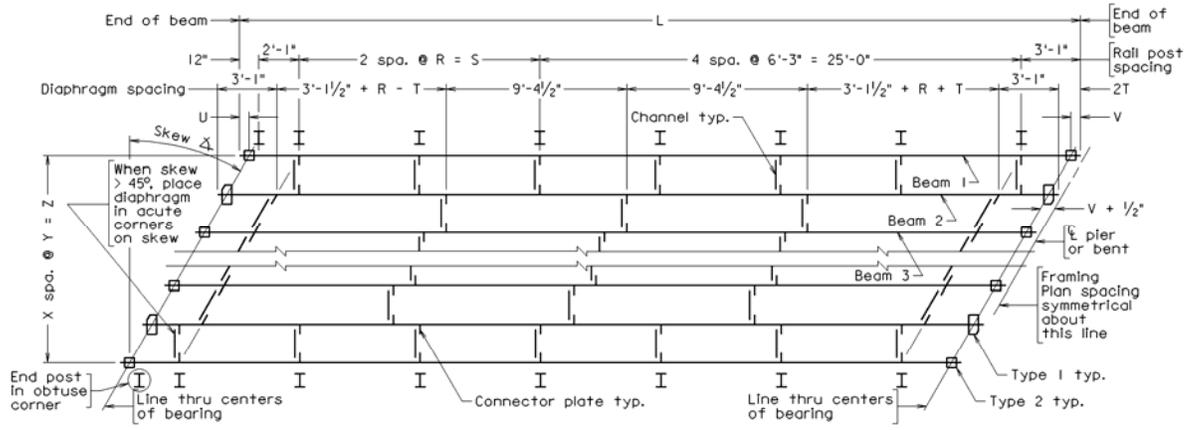
CELL

CELL NAME

CELL DESCRIPTION

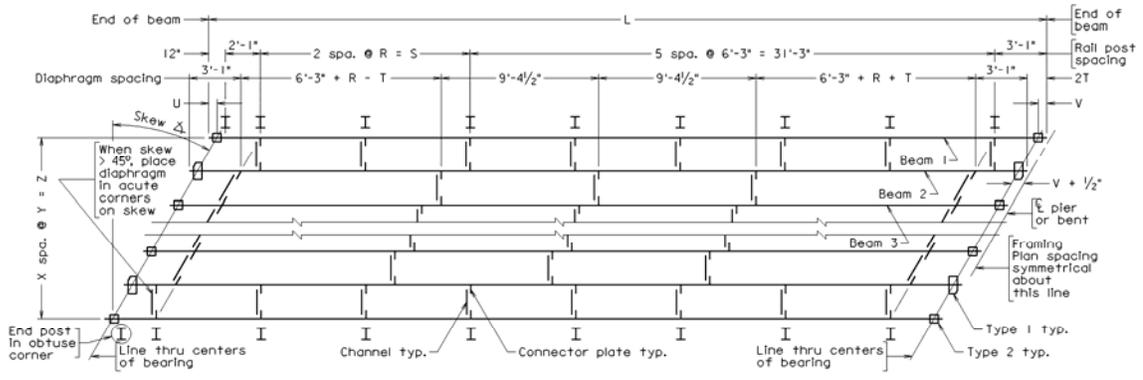
WTR05

Two-span framing plan with right hand skew and welded connector plates  
( $37'-5" < L \leq 43'-8"$ )  
(approx. 0.40 of actual cell size)



WTR06

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



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

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FILE NO. SS8CELLS-88

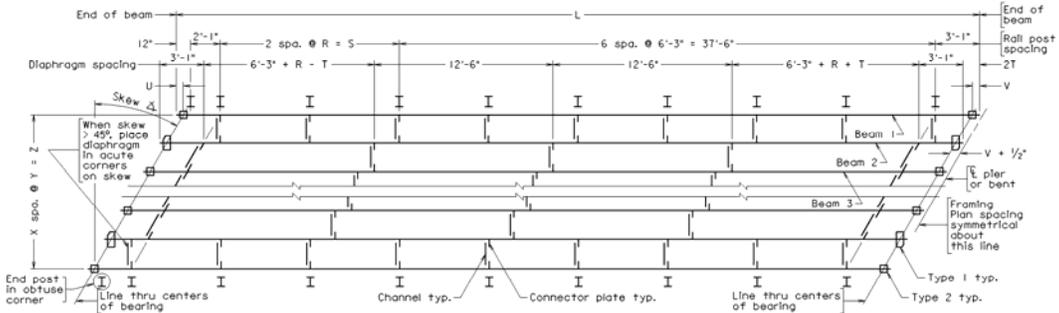
CELL

CELL NAME

CELL DESCRIPTION

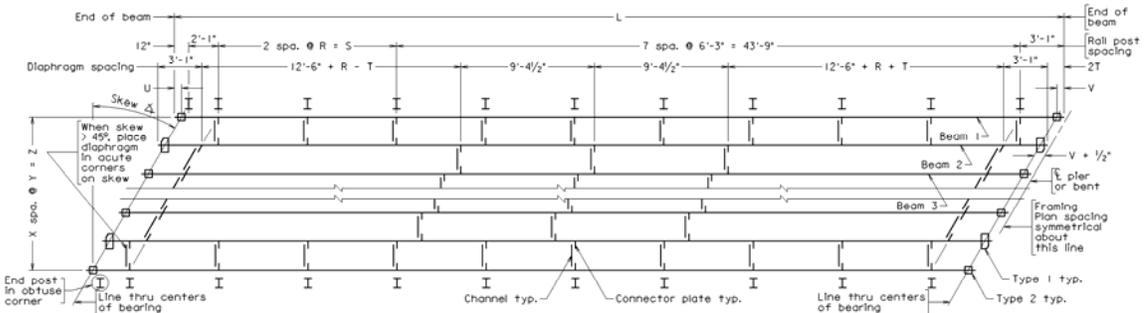
WTR07

Two-span framing plan with right hand skew and welded connector plates  
( $49'-11" < L \leq 56'-2"$ )  
(approx. 0.30 of actual cell size)



WTR08

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



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

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DATE: 12Sep2008  
SHEET 89 of 90  
FILE NO. SS8CELLS-89

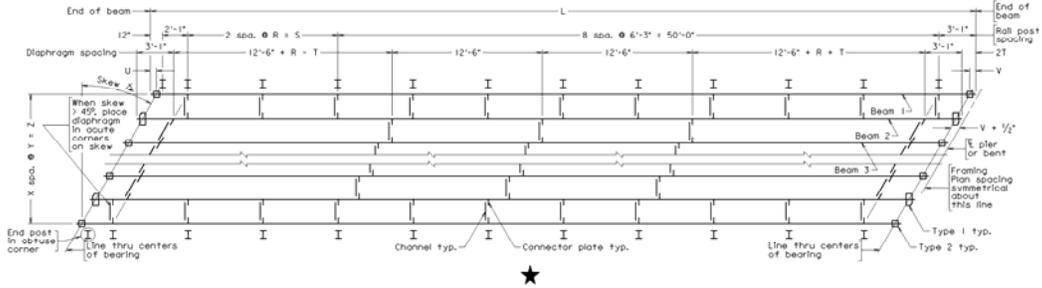
CELL

CELL NAME

CELL DESCRIPTION

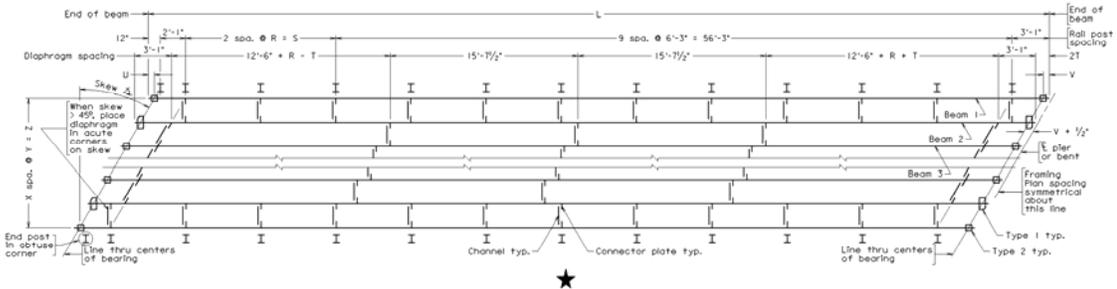
WTR09

Two-span framing plan with right hand skew and welded connector plates  
( $62'-5'' < L \leq 68'-8''$ )  
(approx. 0.25 of actual cell size)



WTR10

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



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

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FILE NO. SS8CELLS-90