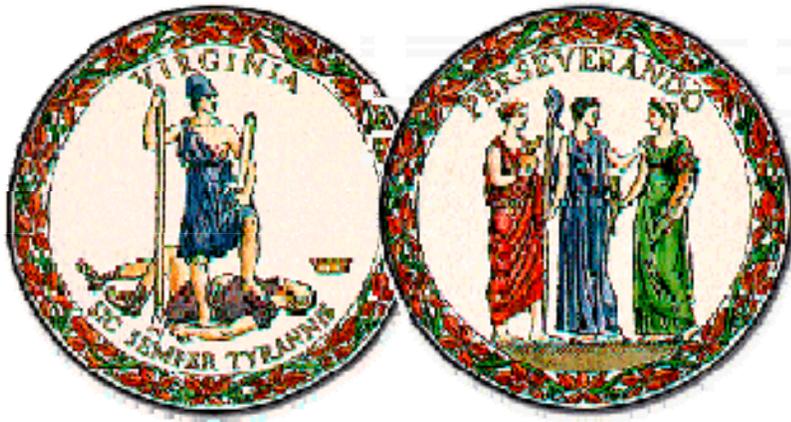


MANUAL OF THE STRUCTURE AND BRIDGE DIVISION

PART 8

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE STANDARDS



**VIRGINIA DEPARTMENT OF
TRANSPORTATION**

VDOT GOVERNANCE DOCUMENT

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

OWNING DIVISION: Structure and Bridge

DATE OF ISSUANCE: 3/10/2015



COMMONWEALTH of VIRGINIA

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

Charles A. Kilpatrick, P.E.
COMMISSIONER

March 10, 2015

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

MEMORANDUM

TO: Holders of Manual

VOIDED:

None

NEW ISSUES:

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

REVISIONS:

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

REVISIONS:(cont'd)

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

REVISIONS:(cont'd)

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

RETAIN THIS MEMO IN FRONT OF INDEX TO PART 8

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

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



COMMONWEALTH of VIRGINIA

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

Gregory A. Whirley
COMMISSIONER

August 30, 2012

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

MEMORANDUM

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

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

VOIDED:

None

NEW ISSUES:

None

REVISIONS:

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

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

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



COMMONWEALTH of VIRGINIA

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

David S. Ekern, P.E.
COMMISSIONER

September 12, 2008

MEMORANDUM

TO: Holders of Manual

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

NEW ISSUE:

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

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

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

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

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

TABLE OF CONTENTS

FILE NO.	TITLE	DATE
TABLE OF CONTENTS, INSTRUCTIONS AND BEAM TABLES		
SS8TOC -1	Table of Contents	10Mar2015
SS8TOC -2	Table of Contents	10Mar2015
SS8INSTR -1	General Instructions	10Mar2015
SS8INSTR -2	General Instructions	10Mar2015
SS8INSTR -3	External Users: File Access Instructions.....	10Mar2015
SS8INSTR -4	External Users: File Access Instructions.....	10Mar2015
SS8INSTR -5	Instructions on Use of Beam Tables	10Mar2015
SS8INSTR -6	Beam Table: Face-to-Face of Rails < 20'-0"	10Mar2015
SS8INSTR -7	Beam Table: Face-to-Face of Rails ≥ 20'-0"	10Mar2015
SS8INSTR -8	Instructions on Use of Alternate Beam Tables.....	10Mar2015
SS8INSTR -9	Alternate Beam Table: Face-to-Face of Rails < 20'-0"	10Mar2015
SS8INSTR -10	Alternate Beam Table: Face-to-Face of Rails ≥ 20'-0"	10Mar2015
SS8INSTR -11	Dead Load Reaction	10Mar2015
SS8INSTR -12	Camber.....	10Mar2015

STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE

* SS8-1	-1	Title Sheet	10Mar2015
	-2	Notes to Designer	10Mar2015
	-3	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-2	-1	General Details.....	10Mar2015
	-2	Notes to Designer	10Mar2015
	-3	Notes to Designer	10Mar2015
	-4	Notes to Designer	10Mar2015
	-5	Notes to Designer	10Mar2015
	-6	Notes to Designer	10Mar2015
	-7	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3A	-1	Railing and Diaphragm Connection Details (With Curb – WP).....	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3B	-1	Railing and Diaphragm Connection Details (With Curb - BA).....	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3C	-1	Railing and Diaphragm Connection Details (Without Curb - WP)..	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	
* SS8-3D	-1	Railing and Diaphragm Connection Details (Without Curb – BA)..	10Mar2015
	-2	Notes to Designer	10Mar2015
	-DGN	MicroStation Drawing File	

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

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

TABLE OF CONTENTS

FILE NO.	TITLE	DATE
STEEL BEAM WITH TIMBER DECK SUPERSTRUCTURE (cont'd)		
* SS8-4	-1 Timber Attachment Details.....	10Mar2015
	-2 Notes to Designer	10Mar2015
	-DGN MicroStation Drawing File	
* SS8-5A	-1 Railing Termination Details (With Curb).....	10Mar2015
	-2 Notes to Designer	10Mar2015
	-DGN MicroStation Drawing File	
* SS8-5B	-1 Railing Terminations Details (Without Curb).....	10Mar2015
	-2 Notes to Designer	10Mar2015
	-DGN MicroStation Drawing File	
* SS8-5C	-1 Railing Termination Details (With Curb) – Obtuse Corner	10Mar2015
	-2 Notes to Designer	10Mar2015
	-DGN MicroStation Drawing File	
* SS8-5D	-1 Railing Terminations Details (Without Curb) – Obtuse Corner	10Mar2015
	-2 Notes to Designer	10Mar2015
	-DGN MicroStation Drawing File	
* SS8-6A	-1 Curb Details.....	10Mar2015
	-2 Notes to Designer	10Mar2015
	-DGN MicroStation Drawing File	
* SS8-6B	-1 Curb Details (With Filler Plates).....	10Mar2015
	-2 Notes to Designer	10Mar2015
	-DGN MicroStation Drawing File	

CELL LIBRARY: SS8.CEL

CELLINDEX -1	Index of Cells.....	10Mar2015
CELLINDEX -2	Index of Cells.....	10Mar2015
CELLINDEX -3	Index of Cells.....	10Mar2015
CELLINDEX -4	Index of Cells.....	10Mar2015
CELLINDEX -5	Index of Cells.....	10Mar2015
SS8CELLS-1 to -90	Cells	10Mar2015
-CEL	MicroStation Cell Library	

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

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

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

GENERAL INSTRUCTIONS:

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

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

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

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

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

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

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

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

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

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

PART 8
DATE: 10Mar2015
SHEET 1 of 12
FILE NO. SS8INSTR-1

GENERAL INSTRUCTIONS (cont.'d):

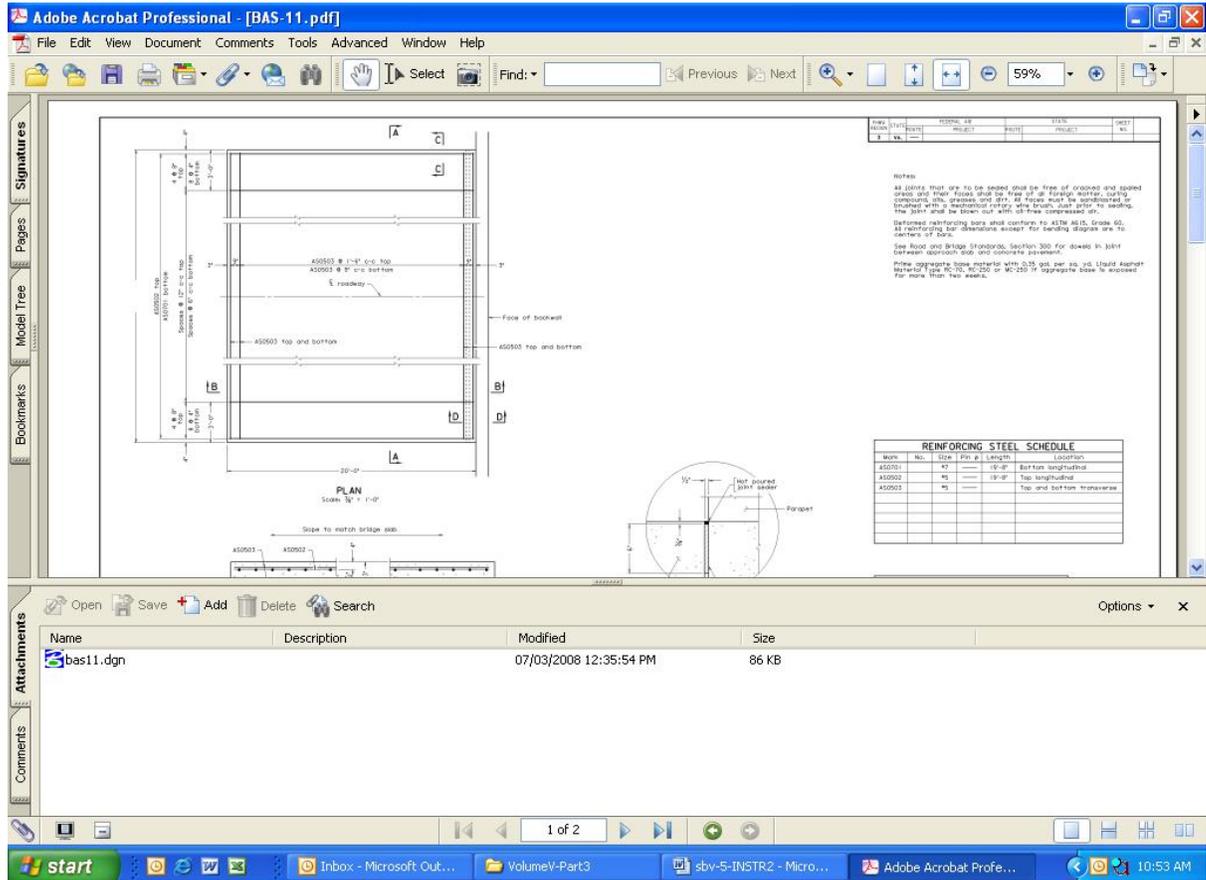
The CADD standard detail sheets are located in Falcon [...\PROJECTS\br-stand\sbr\ss8] directory (central office environment). The drawing file name for the standard sheet corresponds with the file number (name of standard sheet) as listed in the Table of Contents (minus the dash). For example, standard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

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

EXTERNAL USERS: FILE ACCESS INSTRUCTIONS:

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

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



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



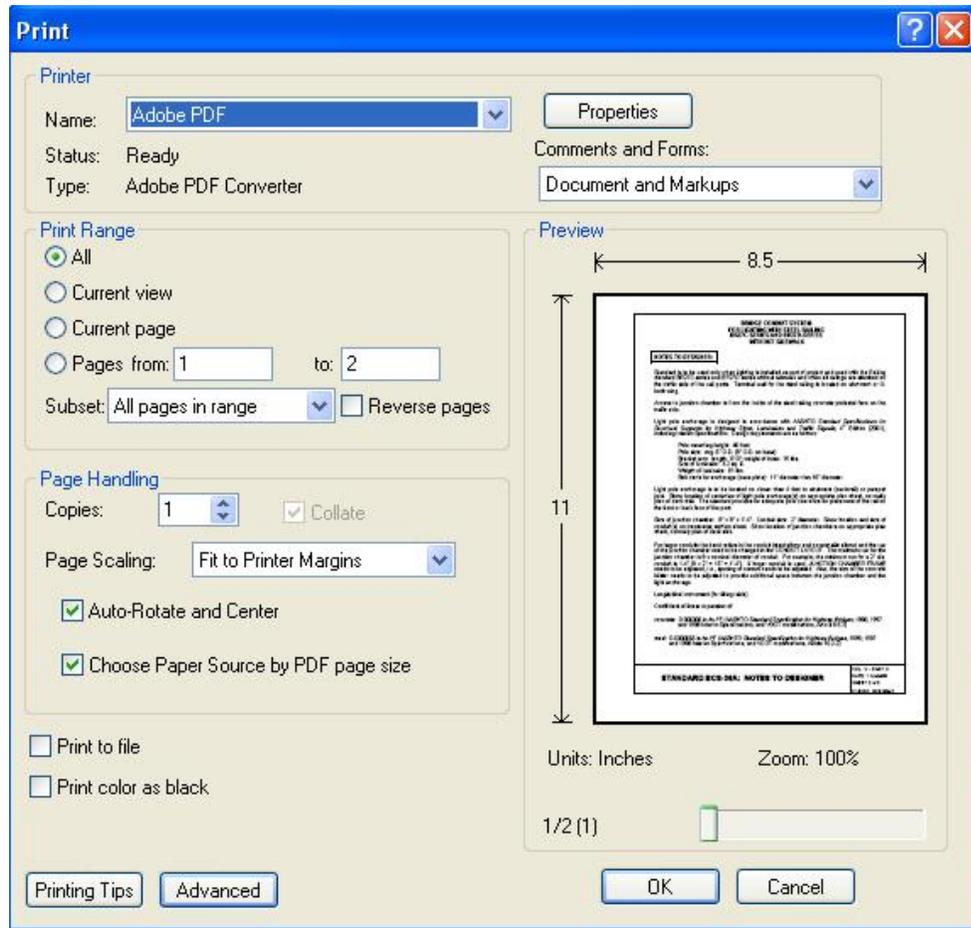
Users may then save the file(s) to their computer.

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

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

[Full manual no links](#)

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



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

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

INSTRUCTIONS ON USE OF BEAM TABLES:

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

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

To obtain the required beam size:

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

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

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

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

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

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

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

Strength controls

Deflection controls

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

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

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

Strength controls

Deflection controls

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

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

INSTRUCTIONS ON USE OF ALTERNATE BEAM TABLES:

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

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

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

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

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

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

1. Following the instructions on File No. SS8INSTR-5, 10 beams with 9 spaces at 2'-2" was selected and a W24x55 section was derived using the appropriate beam table.
2. However, the available shelf height is only sufficient for a beam depth up to 18". Using the alternate beam table for the same face-to-face of rail width, beam spacing, number of beams and beam length originally selected, a section modulus of 98.3 in³ and a moment of inertia of 707 in⁴ is required.
3. With a section modulus of 98.3 in³ and a moment of inertia of 890 in⁴, a W18x55 may be used.

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

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

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

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

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

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

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

DEAD LOAD REACTION:

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

$$\begin{aligned} \text{DLb} &= \text{DL reaction of rolled beam (kips)} \\ &= w \times L / 2 \end{aligned}$$

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

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

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

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

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

Where: w = beam weight per foot (klf)

L = beam length (feet)

S = beam spacing (feet)

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

CAMBER:

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

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

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

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

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