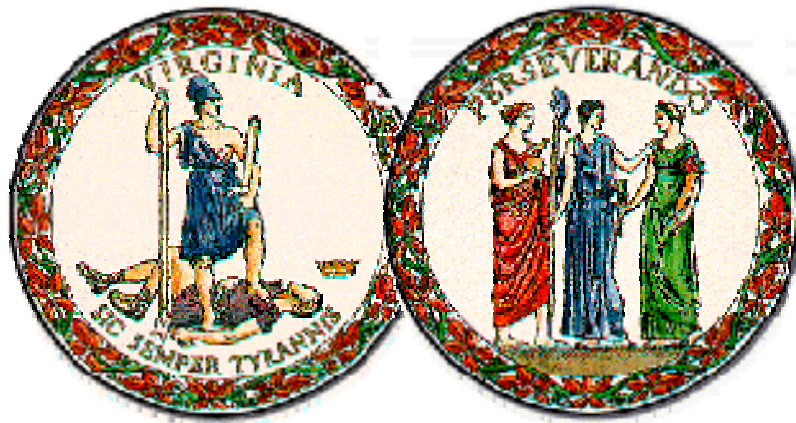


**VOLUME V – PART 7**

**STEEL PLATE GIRDER  
STANDARDS**



**VIRGINIA DEPARTMENT OF  
TRANSPORTATION**



# 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 7  
Steel Plate Girder Standards

## MEMORANDUM

**TO:** Holders of Volume V – Part 7: Steel Plate Girder 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:

None

## REVISIONS:

<u>File Number</u>	<u>Description of changes(s)</u>
All standard sheets	All standard sheets have been revised to reflect the border for sealing and signing of plans.
SGDET1B-1	Minor drafting correction.
SGDET1B-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGDET1BC-1	Minor drafting correction.
SGDET1BC-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.

**REVISIONS:**

<u>File Number</u>	<u>Description of changes(s)</u>
SGCAM2-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGDLD2-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGCAM2C-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGDLD2C-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGCAM3-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGDLD3-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGCAM3C-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGDLD3C-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGCAM4-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGDLD4A-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGCAM4AC-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.
SGDLD4AC-2	NOTES TO DESIGNER: Added $\frac{1}{8}$ " increment on values.

**RETAIN THIS MEMO IN FRONT OF INDEX TO VOLUME V – PART 7**

/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

July 11, 2008

**SUBJECT:** Manual of the Structure and Bridge Division  
Volume V – Part 7  
Steel Plate Girder Standards

## MEMORANDUM

**TO:** Holders of Volume V – Part 7, Steel Plate Girder Standards

All of the standard sheets in this series have been revised. Two blocks for the P.E. stamp have been added to the lower left hand corner and the copyright date has been changed to 2008. Some details have been rearranged to provide space for the P.E. stamps.

**NOTE: Standard sheets are not required to be sealed and signed at this time.**

## VOIDED STANDARDS:

None

## NEW ISSUES:

<u>File Number</u>	<u>Description</u>
INSTR-2 and -3	Added instructions for external users for accessing MicroStation (.dgn) files and cell library (sg.cel) and for printing manual.

## REVISIONS:

<u>File Number</u>	<u>Description of changes(s)</u>
TOC-1 thru -3	Added -DGN link to each standard file. Table of contents updated. Added -CEL link for cell library.
INSTR-1	Falcon location is changed.

Page 2  
July 11, 2008

**RETAIN THIS MEMO IN FRONT OF INDEX TO VOLUME V – PART 7**

/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

August 31, 2007

## MEMORANDUM

**TO:** Holders of Manual

**SUBJECT:** Manual of the Structure and Bridge Division  
Volume V – Part 7  
Steel Plate Girder Standards

All of the standards in the Manual of the Structure and Bridge Division Volume V – Part 7 have been revised including the NOTES TO DESIGNER. Major revisions include updating the standards to the drafting requirements of the office practice (Manual of the Structure and Bridge Division, Volume V – Part 2, Chapter 1) and conversion to MicroStation V8. Due to the numerous changes, many editorial in nature, not all of the specific changes are listed under REVISIONS. Only the major revisions will be noted. The cell library (sg.cel) has also been revised. The CELLS-series sheets have been totally reformatted.

### **VOIDED STANDARDS:**

None

### **NEW ISSUES:**

None

### **REVISIONS:**

As noted in the introduction, only the major changes are noted below:

SGDET-series for simple and continuous spans:

Girder Detail, Tables and Notes: Added location of permissible bolted field splice and stud shear connectors spacings at/near the splice area. Cross frame connector plate: Requires plate size designation.

CELLS        As noted in the introduction, the cell library (sg.cel) has been revised. The sheets have been totally reformatted. The sheets are now in 8 ½" x 11" format and include an index listing the cells in alphabetical order with a cross reference to the file number for easier location.

**RETAIN THIS MEMO IN FRONT OF INDEX  
TO VOLUME V – PART 7**

/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

**CHARLES D. NOTTINGHAM**  
COMMISSIONER

**MALCOLM T. KERLEY**  
STATE STRUCTURE AND BRIDGE ENGINEER

May 16, 2001

Manual of the Structure and Bridge Division  
Volume V – Part 7  
Steel Plate Girder Standards

### MEMORANDUM

**TO:** Holders of Volume V – Part 7

### NEW ISSUE:

The Manual of the Structure and Bridge Division, Volume V – Part 7 --- Steel Plate Girder Standards, is being reissued with the date of May 16, 2001 (05-16-01).

### REVISIONS:

This reissue of the steel plate girder standards incorporates the new border sheet and includes an update on drafting and detailing corrections, specification updates, and numerous other corrections/revisions. Standards with a previous date of May 16, 2001 (05-16-01) issue have been placed in a VOIDED file for archival purposes.

**RETAIN THIS MEMO IN FRONT OF INDEX TO VOLUME V – PART 7.**

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

For: Malcolm T. Kerley, P.E.  
State Structure and Bridge Engineer

Attachments

**VOLUME V – PART 7  
STEEL PLATE GIRDER STANDARDS**

**TABLE OF CONTENTS**

FILE NO.	TITLE	DATE
<b>TABLE OF CONTENTS &amp; GENERAL INSTRUCTIONS</b>		
TOC-1	Table of Contents.....	29May2009
TOC-2	Table of Contents – cont'd .....	29May2009
TOC-3	Table of Contents – cont'd .....	29May2009
TOC-4	Table of Contents – cont'd .....	29May2009
INSTR-1	General Instructions.....	11Jul2008
INSTR-2	External Users: File Access Instructions.....	11Jul2008
INSTR-3	External Users: File Access Instructions.....	11Jul2008

**BOLTED SPLICE DETAILS**

*SGBSPL	-1 Bolted Splice Details.....	29May2009
	-2 Notes to Designer .....	31Aug2007
	-DGN MicroStation Drawing File	

**SIMPLE SPAN(S) - STRAIGHT**

*SGDET1A	-1 Girder Details, sheet 1 of 2.....	29May2009
	-2 Notes to Designer .....	31Aug2007
	-DGN MicroStation Drawing File	
*SGDET1B	-1 Girder Details, sheet 2 of 2.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	

**SIMPLE SPAN(S) – TRAPEZOIDAL OR CURVED**

*SGDET1AC-1	Girder Details, sheet 1 of 2.....	29May2009
	-2 Notes to Designer .....	31Aug2007
	-DGN MicroStation Drawing File	
*SGDET1BC-1	Girder Details, sheet 2 of 2.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	

\*Indicates 11 x 17 sheet; all others are 8½ x 11.

**VOLUME V – PART 7  
STEEL PLATE GIRDER STANDARDS**

**TABLE OF CONTENTS (cont'd)**

FILE NO.	TITLE	DATE
<b>2 – SPAN CONTINUOUS - STRAIGHT</b>		
*SGDET2	-1 Girder Details .....	29May2009
	-2 Notes to Designer .....	31Aug2007
	-DGN MicroStation Drawing File	
*SGCAM2	-1 Camber Diagram.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	
*SGDLD2	-1 Dead Load Deflection Diagram.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	
<b>2 – SPAN CONTINUOUS – TRAPEZOIDAL OR CURVED</b>		
*SGDET2C	-1 Girder Details .....	29May2009
	-2 Notes to Designer .....	31Aug2007
	-DGN MicroStation Drawing File	
*SGCAM2C	-1 Camber Diagram.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	
*SGDLD2C	-1 Dead Load Deflection Diagram.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	
<b>3 – SPAN CONTINUOUS - STRAIGHT</b>		
*SGDET3	-1 Girder Details .....	29May2009
	-2 Notes to Designer .....	31Aug2007
	-DGN MicroStation Drawing File	
*SGCAM3	-1 Camber Diagram.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	
*SGDLD3	-1 Dead Load Deflection Diagram.....	29May2009
	-2 Notes to Designer .....	29May2009
	-DGN MicroStation Drawing File	

\*Indicates 11 x 17 sheet; all others are 8½ x 11.

**VOLUME V – PART 7  
STEEL PLATE GIRDER STANDARDS**

**TABLE OF CONTENTS (cont'd)**

FILE NO.	TITLE	DATE
<b>3 – SPAN CONTINUOUS - TRAPEZOIDAL OR CURVED</b>		
*SGDET3C -1	Girder Details .....	29May2009
-2	Notes to Designer .....	31Aug2007
-DGN	MicroStation Drawing File	
*SGCAM3C -1	Camber Diagram.....	29May2009
-2	Notes to Designer .....	29May2009
-DGN	MicroStation Drawing File	
*SGDLD3C -1	Dead Load Deflection Diagram.....	29May2009
-2	Notes to Designer .....	29May2009
-DGN	MicroStation Drawing File	
<b>4 – SPAN CONTINUOUS – STRAIGHT</b>		
*SGDET4A -1	Girder Details, sheet 1 of 2 .....	29May2009
-2	Notes to Designer .....	31Aug2007
-DGN	MicroStation Drawing File	
*SGDET4B -1	Girder Details, sheet 2 of 2 .....	29May2009
-2	Notes to Designer .....	31Aug2007
-DGN	MicroStation Drawing File	
*SGCAM4 -1	Camber Diagram, sheet 1 of 2.....	29May2009
-2	Notes to Designer .....	29May2009
-DGN	MicroStation Drawing File	
*SGDLD4A -1	Dead Load Deflection Diagram, sheet 1 of 2.....	29May2009
-2	Notes to Designer .....	29May2009
-DGN	MicroStation Drawing File	
*SGDLD4B -1	Dead Load Deflection Diagram, sheet 2 of 2.....	29May2009
-2	Notes to Designer .....	31Aug2007
-DGN	MicroStation Drawing File	

\*Indicates 11 x 17 sheet; all others are 8½ x 11.

**VOLUME V – PART 7  
STEEL PLATE GIRDER STANDARDS**

**TABLE OF CONTENTS (cont'd)**

FILE NO.	TITLE	DATE
<b>4 – SPAN CONTINUOUS - TRAPEZOIDAL OR CURVED</b>		
*SGDET4AC-1	Girder Details, sheet 1 of 2 .....	29May2009
-2	Notes to Designer .....	31Aug2007
-DGN	MicroStation Drawing File	
*SGDET4BC-1	Girder Details, sheet 2 of 2 .....	29May2009
-2	Notes to Designer .....	31Aug2007
-DGN	MicroStation Drawing File	
*SGCAM4C-1	Camber Diagram, sheet 1 of 2.....	29May2009
-2	Notes to Designer .....	29May2009
-DGN	MicroStation Drawing File	
*SGDLD4AC-1	Dead Load Deflection Diagram, sheet 1 of 2.....	29May2009
-2	Notes to Designer .....	29May2009
-DGN	MicroStation Drawing File	
*SGDLD4BC-1	Dead Load Deflection Diagram, sheet 2 of 2.....	29May2009
-2	Notes to Designer .....	31Aug2007
-DGN	MicroStation Drawing File	

**CELLS FOR STEEL PLATE GIRDER STANDARDS**

SGCELLIND-1	Index of Cells .....	31Aug2007
SGCELLS -1	Cells .....	31Aug2007
-2	Cells .....	31Aug2007
-3	Cells .....	31Aug2007
-4	Cells .....	31Aug2007
-5	Cells .....	31Aug2007
-6	Cells .....	31Aug2007
-7	Cells .....	31Aug2007
-8	Cells .....	31Aug2007
-9	Cells .....	31Aug2007
-10	Cells .....	31Aug2007
-11	Cells .....	31Aug2007
-12	Cells .....	31Aug2007
-13	Cells .....	31Aug2007
-14	Cells .....	31Aug2007
-CEL	MicroStation Cell Library	

\*Indicates 11 x 17 sheet; all others are 8½ x 11.

## MANUAL OF THE STRUCTURE AND BRIDGE DIVISION

### VOLUME V – PART 7 STEEL PLATE GIRDER STANDARDS

The steel plate girder standards (SG-series) include standard sheets for girder details, camber diagram and dead load deflection diagram for straight and curved girders for simple and continuous spans (2, 3 and 4 spans). Also included are miscellaneous details and bolted splice details with uniform and staggered bolt patterns.

By filling in the sizes of plates (flanges and webs), lengths, stud shear connector spacings, weld size(s), ranges for tension flanges, deflections, etc. the designer can complete the basic plate girder details for inclusion into a set of bridge plans. Active points have been provided to help fill in the tables with the user command "btbl" (fill-in table). Use center top justification.

The tables found on the standards provide for a number of design data. If any of the data is not used, the designer should enter a long dash to indicate that particular piece of data was not left blank by error. For straight girders, there is room only for data for a single girder --- each separate span should have a separate sheet --- the title block can then be modified for example to indicate "GIRDER DETAILS – SPAN a". For straight, trapezoidal spans and curved girder spans, there is room for up to six girders of data. If more girders are used the table can be easily expanded. Remember that the bottom line is of a different weight.

The CADD standard beam detail sheets are located in Falcon [...\PROJECTS\br-stand\sbr\sg] 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 SGDET1A is drawing sgdet1a.dgn.

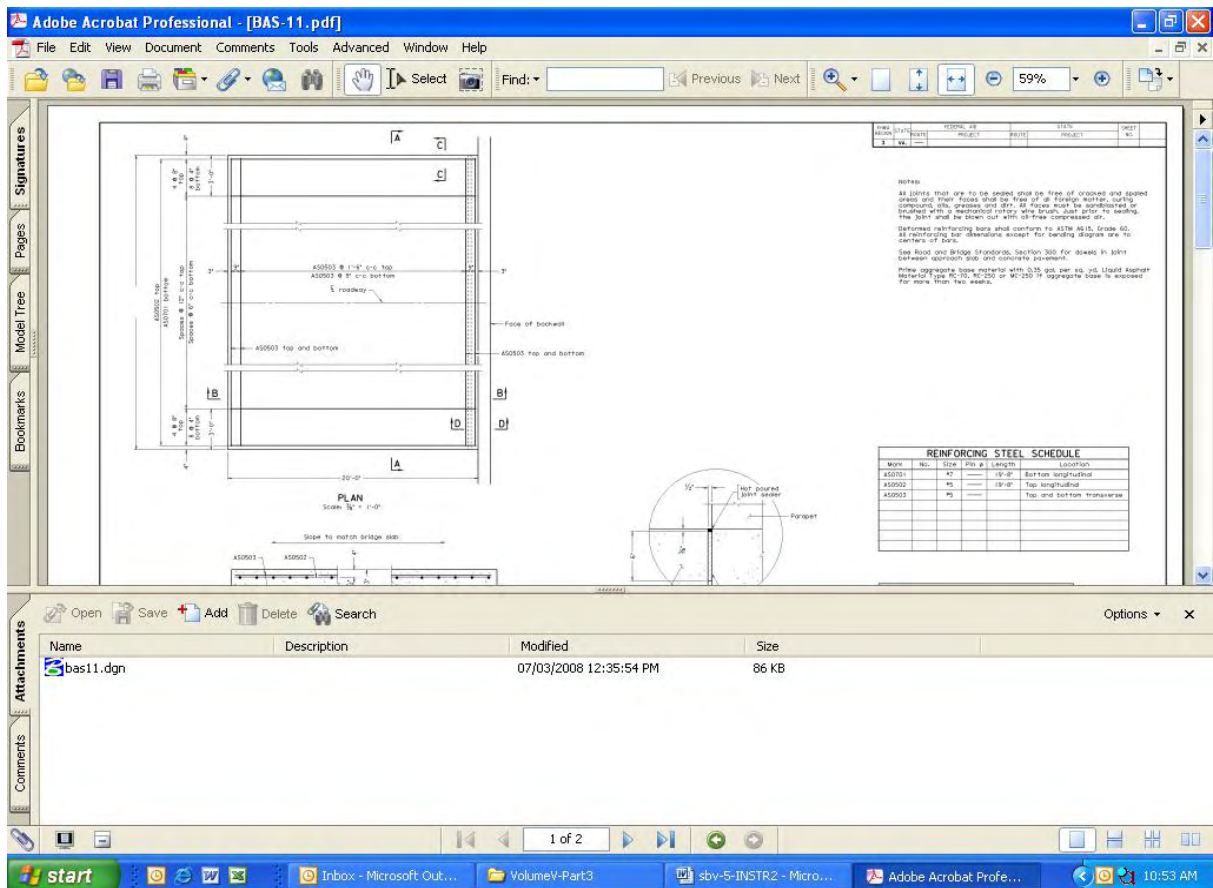
A cell library (sg.cel) is included with the standards to allow the designer to modify/replace details on the standard sheets. The SGCELLS-series sheets included herein depict the cells found in the cell library along with the name of the cell, an image of the cell, a description of the cell and the origin of cell. The origin of 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 get a drop-down listing of available cell libraries.

# MANUAL OF THE STRUCTURE AND BRIDGE DIVISION

## VOLUME V – PART 7 STEEL PLATE GIRDER 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, the following menu will appear:



Users may then save the file to their computer.

## STEEL PLATE GIRDER STANDARDS EXTERNAL DGN FILE ACCESS INSTRUCTIONS

VOL. V - PART 7  
DATE: 11Jul2008  
SHEET 2 of 3  
FILE NO. INSTR-2

# MANUAL OF THE STRUCTURE AND BRIDGE DIVISION

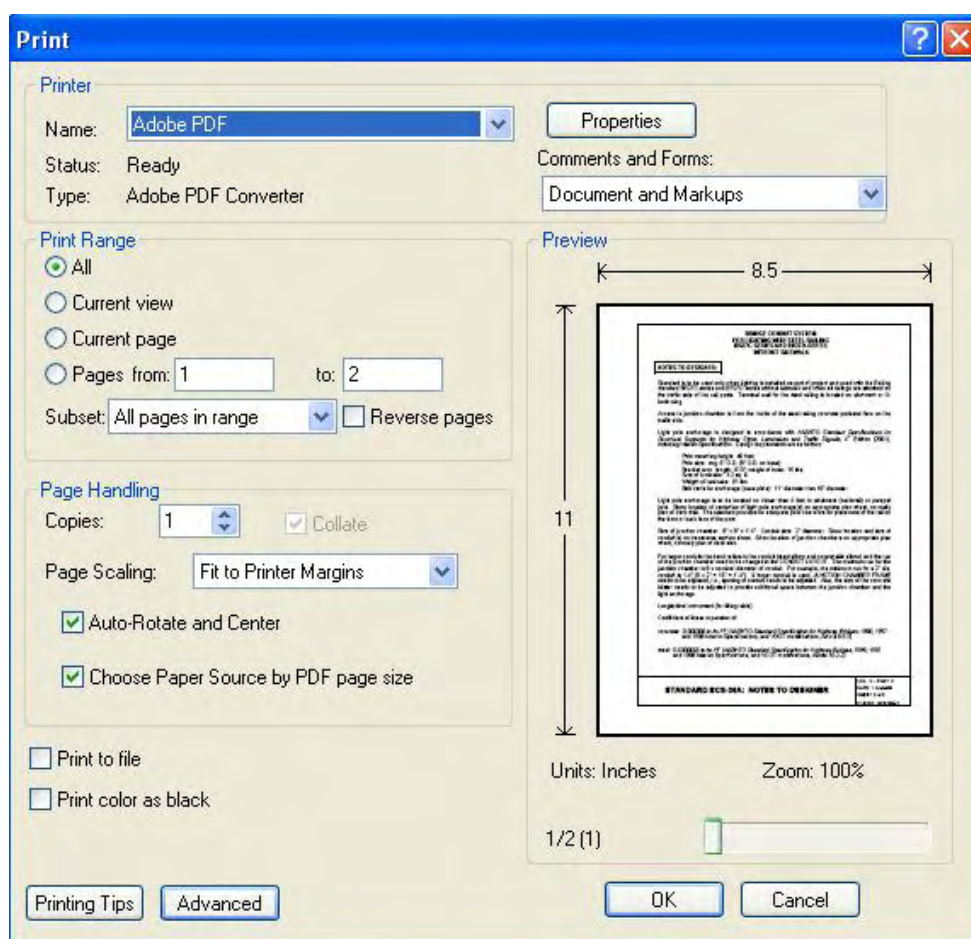
## VOLUME V – PART 7 STEEL PLATE GIRDER STANDARDS

For accessing the cell library, click on CEL link in the table of contents.

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).