

STONE & WEBSTER ENGINEERING CORPORATION

CALCULATION TITLE PAGE

CLIENT & PROJECT: Private Fuel Storage, LLC-Private Fuel Storage Facility				PAGE 1 OF 20		
CALCULATION TITLE (Indicative of Objective): Preliminary Design of Culverts along the 3-mile Long East-West Railroad Embankment for a 100-year Flood				QA CATEGORY <input checked="" type="checkbox"/> <input type="checkbox"/> - I Nuclear Safety Related <input checked="" type="checkbox"/> - II <input type="checkbox"/> - III <input type="checkbox"/> - Non-Safety Related <input type="checkbox"/> - <input type="checkbox"/> - Fossil/Industrial Plant		
CALCULATION IDENTIFICATION NUMBER						
J.O. or W.O. NO.	DIVISION & GROUP	CURRENT CALC NO.	OPTIONAL TASK CODE	OPTIONAL WORK PACKAGE NO.		
0599602	G(B)	19		345V		
APPROVALS - SIGNATURE & DATE						
PREPARER(S)/DATE(S)	REVIEWER(S)/DATE(S)	INDEPENDENT REVIEWER(S)/DATES(S)	REV. NO. OR NEW CALC. NO.	SUPERCEDES CALC. NO. OR REV. NO.	CONFIRMATION REQUIRED <input checked="" type="checkbox"/>	
George H.C. Liang 08/31/99 <i>George H.C. Liang</i>	Van Nan Zeng 09/01/99 <i>Van Nan Zeng</i>		Original Issue		YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>
DISTRIBUTION						
GROUP	NAME & LOCATION	COPY SENT	GROUP	NAME & LOCATION	COPY SENT	
Records Mgmt	Records Center	<input type="checkbox"/>				
Fire File		<input checked="" type="checkbox"/>				
Project File		<input type="checkbox"/>				

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER				PAGE 2 Of 20
PROJECT OR W.O NUMBER	DIVISION AND GROUP	CALCULATION NUMBER	OPTIONAL TASK CODE	
0599602	G(B)	19	345V	

RECORD OF CHANGES

Rev No.	Description of Changes	Pages Revised	Pages Added	Pages Replaced
0	Original Issue	N/A	N/A	N/A

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER				PAGE 3 Of 20
OR W.O NUMBER	DIVISION AND GROUP	CALCULATION NUMBER	OPTIONAL TASK CODE	
0599602	G(B)	19	345V	

TABLE OF CONTENTS

COVER PAGE.....	1
RECORD OF CHANGE.....	2
TABLE OF CONTENTS.....	3
1, Objectives	4
2, References.....	4
3, Description	5
4, Hydraulic Models and Input data.....	5
5, Result of Calculation.....	7
Attachment 1, Hydraulic Report.....	12

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER				PAGE 4 Of 20
OR W.O NUMBER	DIVISION AND GROUP	CALCULATION NUMBER	OPTIONAL TASK CODE	
0599602	G(B)	19	345V	

1, Objectives

The objective of this calculation is to design culverts under the 3-mile long east-west railroad embankment for a 100-year flood.

The 100-year flood used to design the culverts is based on the results presented in Calculation No. G(B)-16, Rev. 1 (Ref. 3).

2, References

1. U.S.Army Corps of Engineers, Hydrologic Center, "HEC-RAS, River Analysis System", 1997.
2. Calculation 05996.01-G(B)-10, Rev 0, "HEC-RAS Micro Computer Version 1.2 Software Test", May 20, 1997.
3. Calculation 0599603-G(B)-16, Rev. 1, "PFSF Flood analysis at 3-mile-long Rail Spur".

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER				PAGE 5 Of 20
OR W.O NUMBER	DIVISION AND GROUP	CALCULATION NUMBER	OPTIONAL TASK CODE	
0599602	G(B)	19	345V	

3, Description

The culverts are designed to pass the 100-year flood flow determined in Ref. 3. A new hydraulic model is derived from the hydraulic model used in Ref.3, to include the culverts in place. The peak flow for the 100-year flood at 3-mile long rail spur crossing was calculated to be 1,400 cfs (Ref. 3)

The HEC-RAS program (Ref. 1 and Ref. 2) is used to compute the hydraulics and the culvert design

4, Hydraulic Models and Input data

Figure 1 shows the hydraulic model used in the design and analysis. Comparing to the flow in the natural floodway, the embankments change the flow pattern in the vicinity of the railroad crossing. Consequently, Cross-sections C and D are drawn parallel to the embankment.

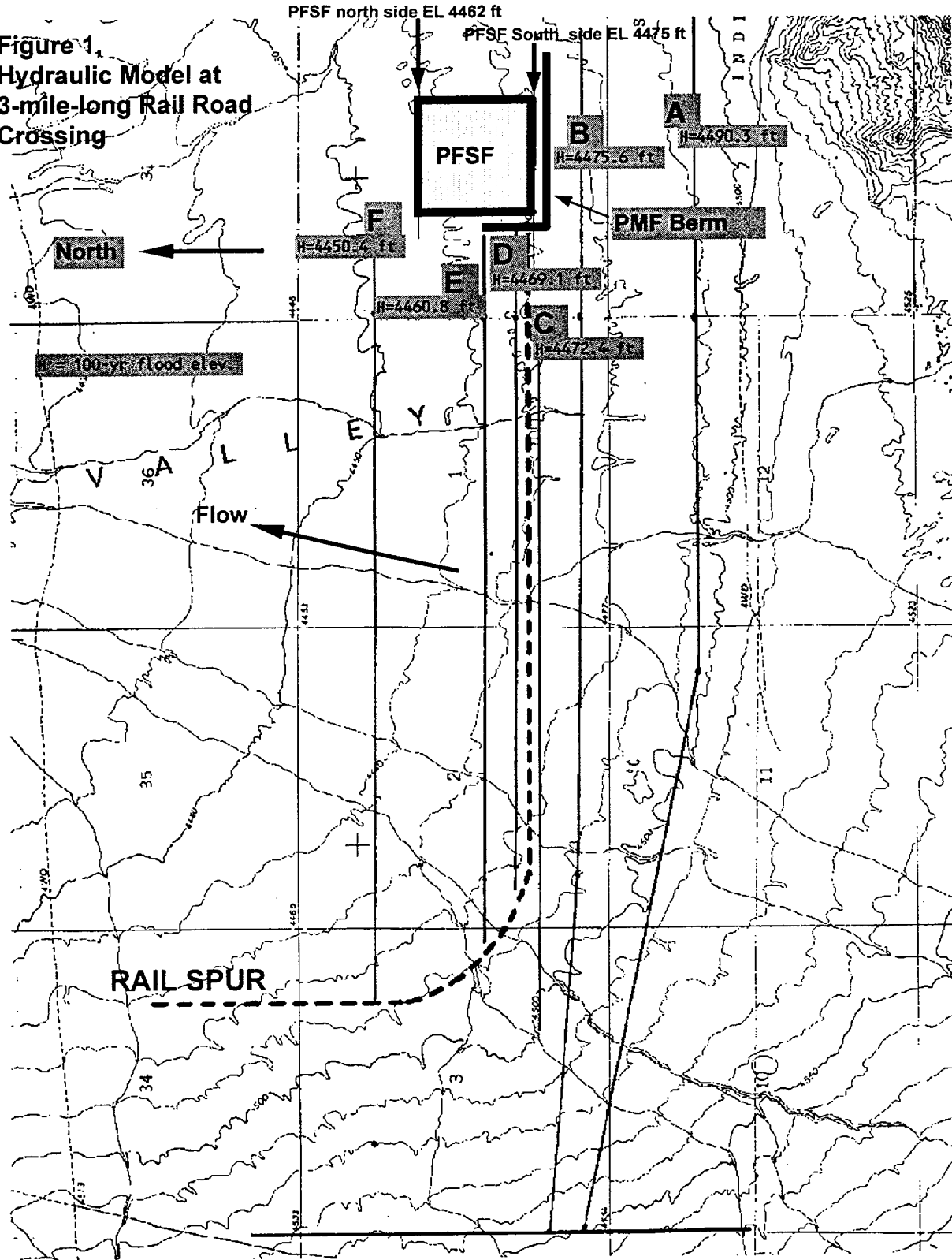
Input parameters to the program are basically the same as in Ref. 3., except the embankment and culvert related data. These are included in the attachments of this calculation.

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER

OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	PAGE 6 Of 20
--------------------------	----------------------------	--------------------------	----------------------------	-----------------

**Figure 1,
Hydraulic Model at
3-mile-long Rail Road
Crossing**



**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER				PAGE 7 Of 20
OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

5, Result of Calculation

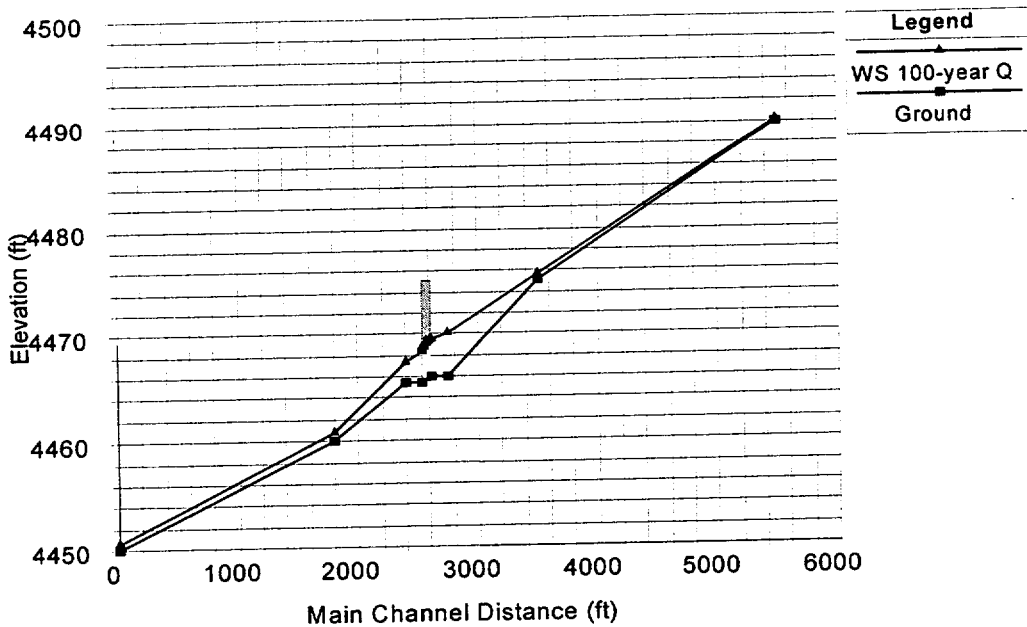
Design Flow Rate = 100-year peak runoff = 1,400 cfs
Culvert headwater elevatio = 4470.10 ft
Culvert tail water elevation = 4467.47 ft

Summary of Culverts

HEC-RAS Station	Railroad Station	Culvert	Length (ft)	Gage #	Inlet invert Elevation (ft)	Outlet invert Elevation (ft)	Cover * (ft)
8820	1326+20	15 - 48" CMP	88	10	4466.0	4465.5	3.8
5150	1289+50	6 - 36" CMP	88	10	4467.0	4466.5	3.8
5550	1293+50	2 - 36" CMP	88	10	4468.0	4467.5	2.8
7720	1315+20	6 - 36" CMP	88	10	4468.0	4467.5	2.8
10440	1342+40	6 - 36" CMP	88	10	4468.0	4467.5	2.8

- Note : * Assume Top of Rail elevation = 4475 ft, and bottom of the tie is 1.2 below.
- At Cross-sections C and D which define the rail embankments, HEC-RAS station 0 = Railroad Station 1238+00

Water Surface Profile

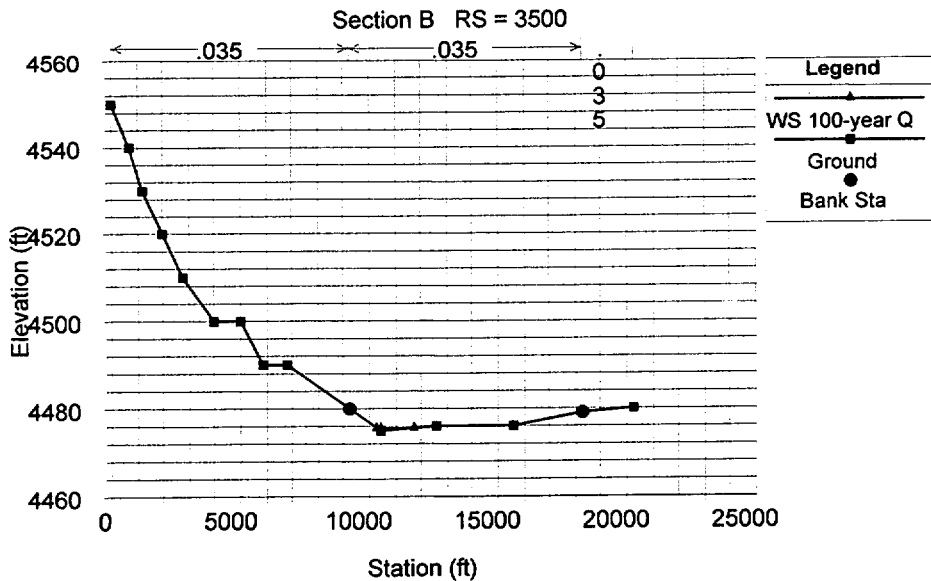
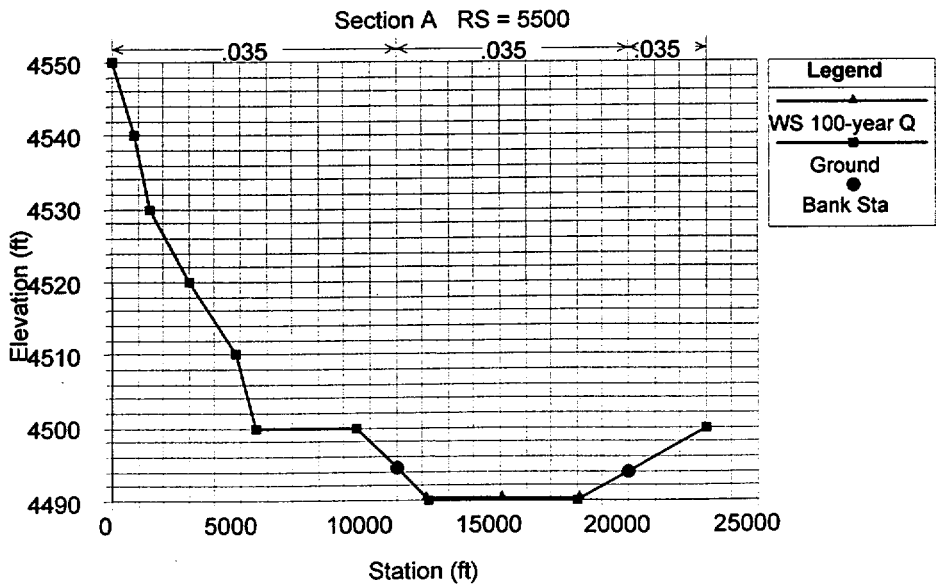


STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER

OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	PAGE 8 Of 20
--------------------------	----------------------------	--------------------------	----------------------------	-----------------

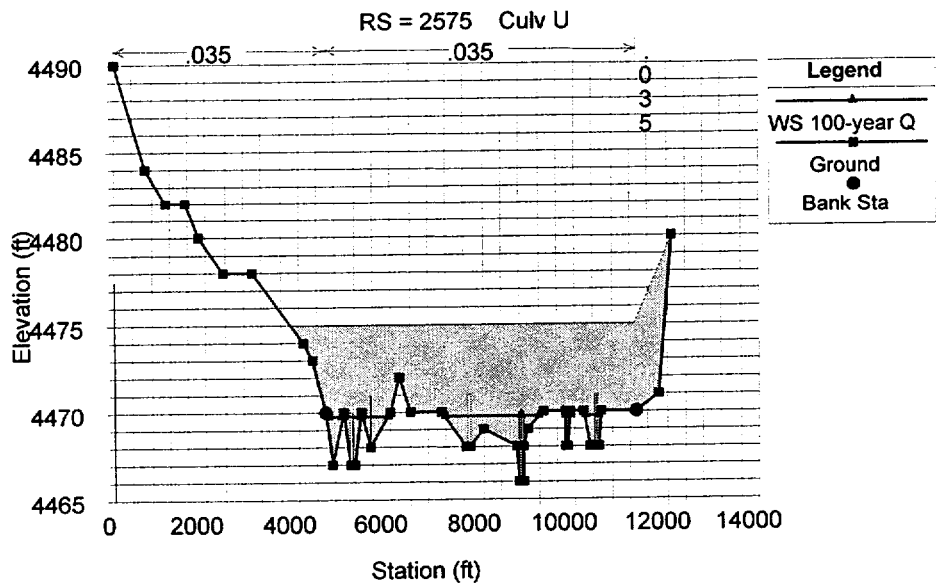
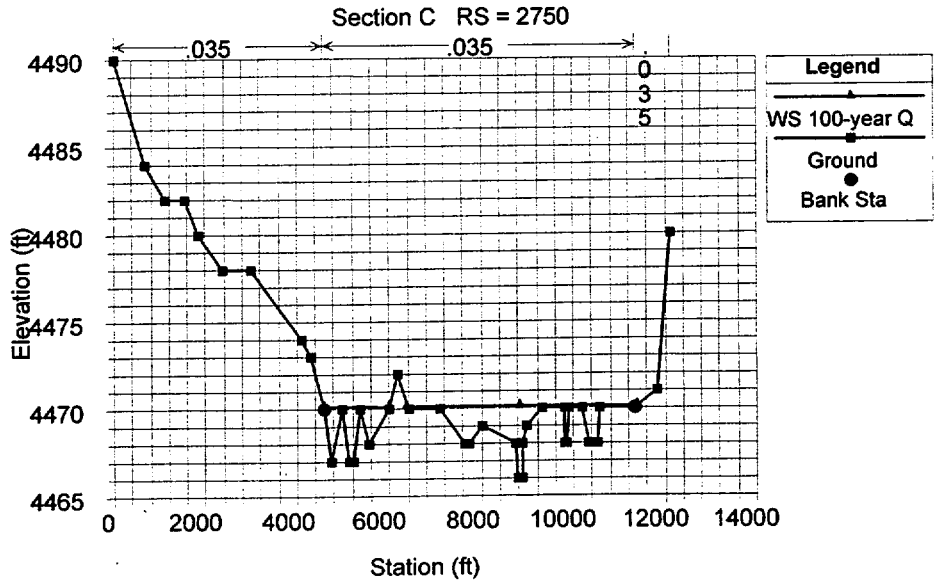
Floodway Cross Sections



STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER

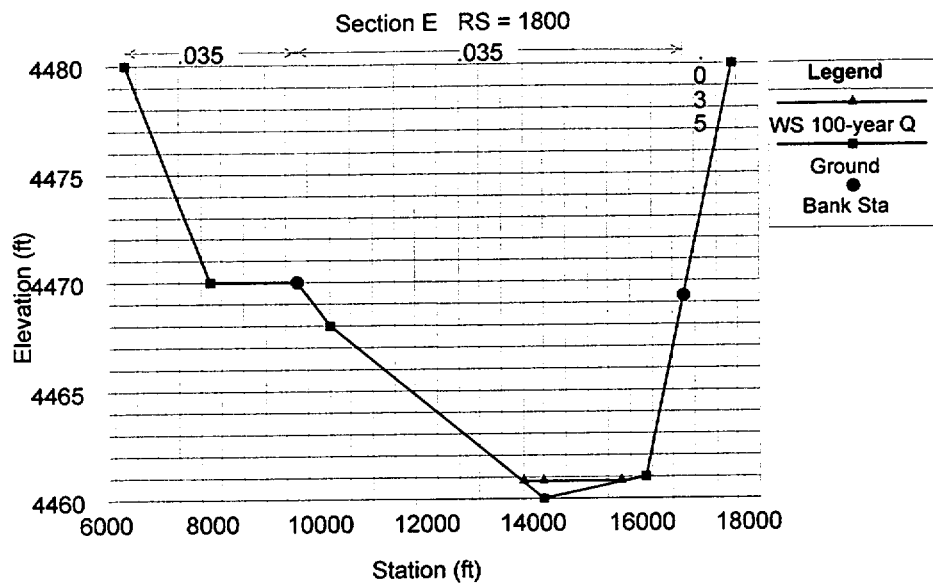
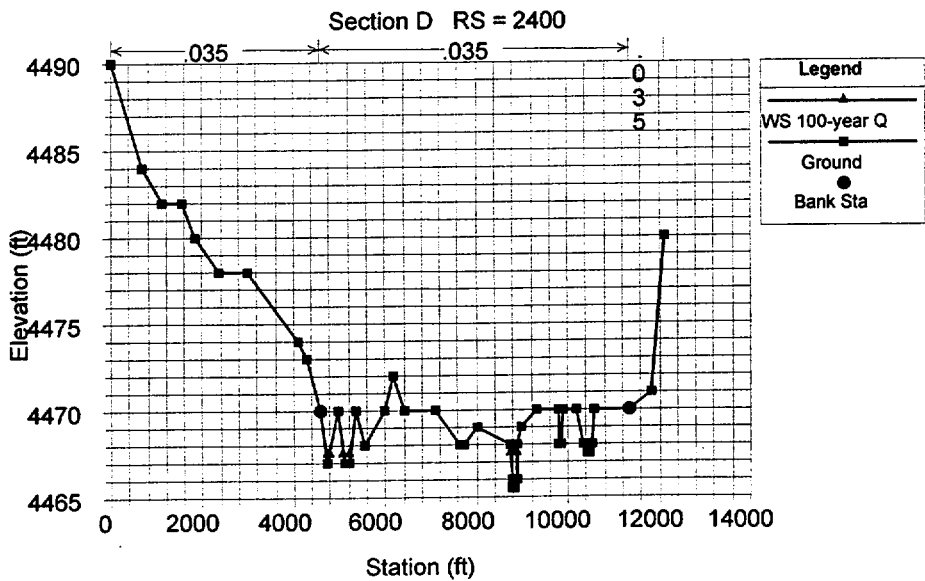
I.O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	PAGE 9 Of 20
-------------------------------	----------------------------	--------------------------	----------------------------	-----------------



STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER

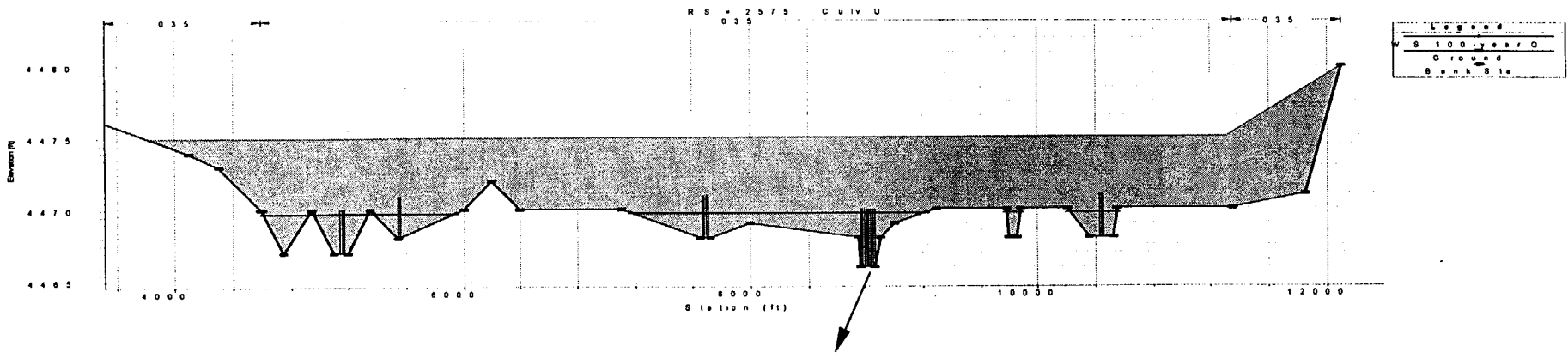
OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	PAGE 10 Of 20
--------------------------	----------------------------	--------------------------	----------------------------	------------------



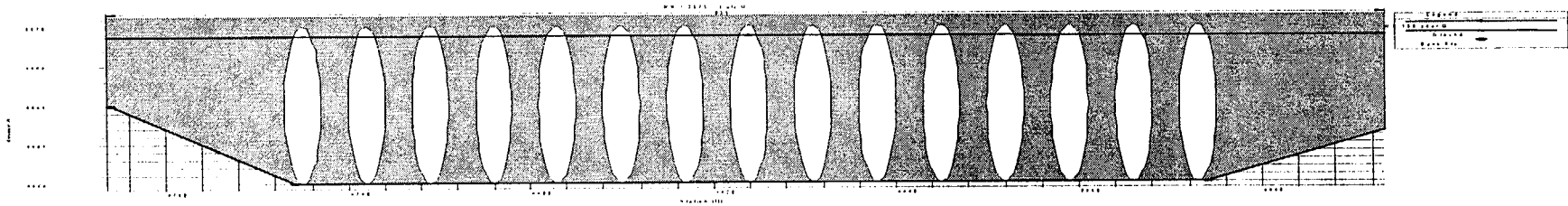
CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER		NUMBER		PAGE 11 of 20
J.O. OR NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

Cross Sec. looking downstream shows Rail Embankment and Culverts



Culvert Group of 15 -4 ft-φ CMP at Railroad Station 1326+20 (centerline of the group).



**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER				PAGE NO 12 Of 20
O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

Attachment 1, Hydraulic Report

HEC-RAS Version 2.0 April 1997
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```

X   X XXXXXX   XXXX   XXXX   XX   XXXX
X   X X       X   X   X X   X X   X
X   X X       X   X   X X   X X   X
XXXXXXXX XXXX   X       XXX XXXX   XXXXXX   XXXX
X   X X       X   X   X X   X X   X
X   X X       X   X   X X   X X   X
X   X XXXXXX   XXXX   X   X   X   X   XXXXX
  
```

PROJECT DATA
Project Title: RR
Project File : rr.prj
Run Date and Time: 8/31/99 9:33:24 AM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : c:\pfsf_cul\railroad\rr.p01

Geometry Title: RailRoad Creeks with Rail embankment
Geometry File : c:\pfsf_cul\railroad\rr.g01

Flow Title : Flow 01
Flow File : c:\pfsf_cul\railroad\rr.f01

Plan Summary Information:
Number of: Cross Sections = 6 Multiple Openings = 0
 Culverts = 1 Inline Weirs = 0
 Bridges = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Flow 01
Flow File : c:\pfsf_cul\railroad\rr.f01

Flow Data (cfs)

```

*****
* River            Reach            RS            *    100-year Q *
* RailRoad        Creeks            5500        *            1400 *
*****
  
```

**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER				PAGE NO 13 Of 20
J.O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

```

Boundary Conditions
*****
*****
* River          Reach      Profile      *          Upstream
Downstream      *
*****
* Railroad       Creeks      100-year Q   *          Normal S =
0.0042 *
*****
*****
  
```

GEOMETRY DATA

Geometry Title: Railroad Creeks with Rail embankment
 Geometry File : c:\pfsf_cul\railroad\rr.g01

CROSS SECTION RIVER: Railroad
 REACH: Creeks RS: 5500

INPUT

Description: Section A

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4550	900	4540	1500	4530	3000	4520	4800	4510
5600	4500	9500	4500	11000	4494.444	12200	4490	18000	4490
20000	4494	23000	4500						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	11000	.035	20000	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	11000	20000		2000	2000	2000	.1 .3

CROSS SECTION OUTPUT Profile #100-year Q

* W.S. Elev (ft)	* 4490.22	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.02	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 4490.23	* Reach Len. (ft)	* 2000.00	* 2000.00	* 2000.00
* Crit W.S. (ft)	* 4490.12	* Flow Area (sq ft)		* 1266.78	
* E.G. Slope (ft/ft)	* 0.005349	* Area (sq ft)		* 1266.78	
* Q Total (cfs)	* 1400.00	* Flow (cfs)		* 1400.00	
* Top Width (ft)	* 5965.81	* Top Width (ft)		* 5965.81	
* Vel Total (ft/s)	* 1.11	* Avg. Vel. (ft/s)		* 1.11	
* Max Chl Dpth (ft)	* 0.22	* Hydr. Depth (ft)		* 0.21	
* Conv. Total (cfs)	* 19141.7	* Conv. (cfs)		* 19141.7	
* Length Wtd. (ft)	* 2000.00	* Wetted Per. (ft)		* 5965.81	
* Min Ch El (ft)	* 4490.00	* Shear (lb/sq ft)		* 0.07	
* Alpha	* 1.00	* Stream Power (lb/ft s)		* 0.08	
* Frctn Loss (ft)	* 14.46	* Cum Volume (acre-ft)		* 145.15	
* C & E Loss (ft)	* 0.01	* Cum SA (acres)		* 330.47	

Warning - The energy equation could not be balanced within the specified number of iterations.
 The program selected the water surface that had the least amount of error between
 computed and assumed values.
 Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
 than 0.7 or greater than 1.4. This may indicate the need for additional cross
 sections.
 Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
 section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Railroad
 REACH: Creeks RS: 3500

INPUT

**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER					PAGE NO 14 Of 20
J.O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V		

Description: Section B

Station Elevation Data num= 15									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4550	700	4540	1200	4530	2000	4520	2800	4510
4000	4500	5000	4500	5900	4490	6800	4490	9200	4480
10400	4475	12600	4476	15600	4476	18300	4479	20300	4480

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	9200	.035	18300	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	9200	18300		750	750	.1	.3

CROSS SECTION OUTPUT Profile #100-year Q

* W.S. Elev (ft)	* 4475.60	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.15	* Wt. n-Val.	*	* 0.035	*
* E.G. Elev (ft)	* 4475.76	* Reach Len. (ft)	* 750.00	* 750.00	* 750.00
* Crit W.S. (ft)	* 4475.60	* Flow Area (sq ft)	*	* 445.80	*
* E.G. Slope (ft/ft)	* 0.026976	* Area (sq ft)	*	* 445.80	*
* Q Total (cfs)	* 1400.00	* Flow (cfs)	*	* 1400.00	*
* Top Width (ft)	* 1474.96	* Top Width (ft)	*	* 1474.96	*
* Vel Total (ft/s)	* 3.14	* Avg. Vel. (ft/s)	*	* 3.14	*
* Max Chl Dpth (ft)	* 0.60	* Hydr. Depth (ft)	*	* 0.30	*
* Conv. Total (cfs)	* 8524.0	* Conv. (cfs)	*	* 8524.0	*
* Length Wtd. (ft)	* 750.00	* Wetted Per. (ft)	*	* 1474.96	*
* Min Ch El (ft)	* 4475.00	* Shear (lb/sq ft)	*	* 0.51	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.60	*
* Frctn Loss (ft)	* 0.08	* Cum Volume (acre-ft)	*	* 105.83	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 159.66	*

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth.

This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: RailRoad
REACH: Creeks RS: 2750

INPUT

Description: Section C

Station Elevation Data num= 40									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4490	700	4484	1100	4482	1550	4482	1850	4480
2350	4478	3000	4478	4100	4474	4300	4473	4600	4470
4750	4467	4950	4470	5100	4467	5200	4467	5350	4470
5550	4468	6000	4470	6200	4472	6400	4470	7100	4470
7650	4468	7720	4468	8000	4469	8750	4468	8770	4466
8870	4466	8900	4468	9000	4469	9300	4470	9780	4470
9800	4468	9850	4468	9880	4470	10200	4470	10350	4468
10530	4468	10550	4470	11350	4470	11850	4471	12100	4480

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	4600	.035	11350	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
-----------	------	-------	----------	--------------	-------	--------------	--------

**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER				PAGE NO 15 Of 20
J.O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

4600 11350 350 350 350 .1 .3

CROSS SECTION OUTPUT Profile #100-year Q

```

*****
* W.S. Elev (ft) * 4469.78 * Element * Left OB * Channel * Right OB *
* Vel Head (ft) * 0.00 * Wt. n-Val. * * * 0.035 *
* E.G. Elev (ft) * 4469.79 * Reach Len. (ft) * 350.00 * 350.00 * 350.00 *
* Crit W.S. (ft) * 4467.57 * Flow Area (sq ft) * * * 4842.65 *
* E.G. Slope (ft/ft) * 0.000033 * Area (sq ft) * * * 4842.65 *
* Q Total (cfs) * 1400.00 * Flow (cfs) * * * 1400.00 *
* Top Width (ft) * 3784.66 * Top Width (ft) * * * 3784.66 *
* Vel Total (ft/s) * 0.29 * Avg. Vel. (ft/s) * * * 0.29 *
* Max Chl Dpth (ft) * 3.78 * Hydr. Depth (ft) * * * 1.28 *
* Conv. Total (cfs) * 242291.9 * Conv. (cfs) * * * 242291.9 *
* Length Wtd. (ft) * 350.00 * Wetted Per. (ft) * * * 3785.21 *
* Min Ch El (ft) * 4466.00 * Shear (lb/sq ft) * * * 0.00 *
* Alpha * 1.00 * Stream Power (lb/ft s) * * * 0.00 *
* Frctn Loss (ft) * * * Cum Volume (acre-ft) * * * 60.31 *
* C & E Loss (ft) * * * Cum SA (acres) * * * 114.38 *
*****

```

CULVERT RIVER: RailRoad
REACH: Creeks RS: 2575

INPUT
Description:
Distance from Upstream XS = 145
Deck/Roadway Width = 60
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates

num= 3

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	4475	11300	4475	0	12100	4480	0		

Upstream Bridge Cross Section Data
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4490	700	4484	1100	4482	1550	4482	1850	4480
2350	4478	3000	4478	4100	4474	4300	4473	4600	4470
4750	4467	4950	4470	5100	4467	5200	4467	5350	4470
5550	4468	6000	4470	6200	4472	6400	4470	7100	4470
7650	4468	7720	4468	8000	4469	8750	4468	8770	4466
8870	4466	8900	4468	9000	4469	9300	4470	9780	4470
9800	4468	9850	4468	9880	4470	10200	4470	10350	4468
10530	4468	10550	4470	11350	4470	11850	4471	12100	4480

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	4600	.035	11350	.035

Bank Sta: Left Right Coeff Contr. Expan.
4600 11350 .1 .3

Downstream Deck/Roadway Coordinates
num= 3

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	4475	11300	4475	0	12100	4480	0		

Downstream Bridge Cross Section Data
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4490	700	4484	1100	4482	1550	4482	1850	4480
2350	4478	3000	4478	4100	4474	4300	4473	4600	4470
4750	4467	4950	4470	5100	4467	5200	4467	5350	4470
5550	4468	6000	4470	6200	4472	6400	4470	7100	4470
7650	4468	7720	4468	8000	4469	8750	4468	8770	4466
8784	4465.5	8856	4465.5	8870	4466	8900	4468	9000	4469

**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER				PAGE NO 16 Of 20
J.O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

9300	4470	9780	4470	9800	4468	9850	4468	9880	4470
10200	4470	10350	4468	10444	4467.5	10456	4467.5	10530	4468
10550	4470	11350	4470	11850	4471	12100	4480		

Manning's n Values num= 3

Sta n Val	Sta n Val	Sta n Val	Sta n Val
*****	*****	*****	*****
0 .035	4600 .035	11350 .035	

Bank Sta: Left	Right	Coeff Contr.	Expan.
4600	11350	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 6

Culvert Name	Shape	Rise	Span
Culvert #3	Circular	3	
FHWA Chart # 2 - Corrugated Metal Pipe Culvert			
FHWA Scale # 3 - Pipe projecting from fill			
Solution Criteria = Highest U.S. EG			
Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef Exit Loss Coef
131	88	.026	.5 1

Number of Barrels = 6
Upstream Elevation = 4467
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
5135	5141	5147	5153	5159	5165

Downstream Elevation = 4466.5

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
5135	5141	5147	5153	5159	5165

Culvert Name	Shape	Rise	Span
Culvert #4	Circular	3	
FHWA Chart # 2 - Corrugated Metal Pipe Culvert			
FHWA Scale # 3 - Pipe projecting from fill			
Solution Criteria = Highest U.S. EG			
Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef Exit Loss Coef
131	88	.026	.5 1

Number of Barrels = 2
Upstream Elevation = 4467
Centerline Stations

Sta.	Sta.
5547	5553

Downstream Elevation = 4466.5

Centerline Stations

Sta.	Sta.
5547	5553

Culvert Name	Shape	Rise	Span
Culvert #5	Circular	3	
FHWA Chart # 2 - Corrugated Metal Pipe Culvert			
FHWA Scale # 3 - Pipe projecting from fill			
Solution Criteria = Highest U.S. EG			
Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef Exit Loss Coef
131	88	.026	.5 1

Number of Barrels = 6
Upstream Elevation = 4467
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
7670	7676	7682	7688	7694	7700

Downstream Elevation = 4466.5

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
7670	7676	7682	7688	7694	7700

**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER				PAGE NO 17 Of 20
J.O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

Culvert Name Shape Rise Span
 Culvert #1 Circular 4
 FHWA Chart # 2 - Corrugated Metal Pipe Culvert
 FHWA Scale # 3 - Pipe projecting from fill
 Solution Criteria = Highest U.S. EG
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef
 131 88 .026 .5 1
 Number of Barrels = 10
 Upstream Elevation = 4466
 Centerline Stations
 Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta.
 8771 8778 8785 8792 8799 8806 8813 8820 8827 8834
 Downstream Elevation = 4465.5
 Centerline Stations
 Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta.
 8771 8778 8785 8792 8799 8806 8813 8820 8827 8834

Culvert Name Shape Rise Span
 Culvert #2 Circular 4
 FHWA Chart # 2 - Corrugated Metal Pipe Culvert
 FHWA Scale # 3 - Pipe projecting from fill
 Solution Criteria = Highest U.S. EG
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef
 131 88 .026 .5 1
 Number of Barrels = 5
 Upstream Elevation = 4466
 Centerline Stations
 Sta. Sta. Sta. Sta. Sta.
 8841 8848 8855 8862 8869
 Downstream Elevation = 4465.5
 Centerline Stations
 Sta. Sta. Sta. Sta. Sta.
 8841 8848 8855 8862 8869

Culvert Name Shape Rise Span
 Culvert #6 Circular 3
 FHWA Chart # 2 - Corrugated Metal Pipe Culvert
 FHWA Scale # 3 - Pipe projecting from fill
 Solution Criteria = Highest U.S. EG
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef
 131 88 .026 .5 1
 Number of Barrels = 6
 Upstream Elevation = 4467
 Centerline Stations
 Sta. Sta. Sta. Sta. Sta. Sta.
 10425 10431 10437 10443 10449 10455
 Downstream Elevation = 4466.5
 Centerline Stations
 Sta. Sta. Sta. Sta. Sta. Sta.
 10425 10431 10437 10443 10449 10455

CROSS SECTION RIVER: RailRoad
 REACH: Creeks RS: 2400

INPUT
 Description: Section D
 Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4490	700	4484	1100	4482	1550	4482	1850	4480
2350	4478	3000	4478	4100	4474	4300	4473	4600	4470
4750	4467	4950	4470	5100	4467	5200	4467	5350	4470
5550	4468	6000	4470	6200	4472	6400	4470	7100	4470
7650	4468	7720	4468	8000	4469	8750	4468	8770	4466
8784	4465.5	8856	4465.5	8870	4466	8900	4468	9000	4469
9300	4470	9780	4470	9800	4468	9850	4468	9880	4470
10200	4470	10350	4468	10444	4467.5	10456	4467.5	10530	4468
10550	4470	11350	4470	11850	4471	12100	4480		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	4600	.035	11350	.035

**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER

J.O. OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	PAGE NO 18 Of 20
--------------------------------------	-----------------------------------	---------------------------------	-----------------------------------	----------------------------

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 4600 11350 600 600 600 .1 .3

CROSS SECTION OUTPUT Profile #100-year Q

 * W.S. Elev (ft) * 4467.47 * Element * Left OB * Channel * Right OB *
 * Vel Head (ft) * 0.37 * Wt. n-Val. * * * 0.035 * *
 * E.G. Elev (ft) * 4467.84 * Reach Len. (ft) * 600.00 * 600.00 * 600.00 *
 * Crit W.S. (ft) * 4467.41 * Flow Area (sq ft) * * * 287.02 * *
 * E.G. Slope (ft/ft) * 0.016420 * Area (sq ft) * * * 287.02 * *
 * Q Total (cfs) * 1400.00 * Flow (cfs) * * * 1400.00 * *
 * Top Width (ft) * 337.93 * Top Width (ft) * * * 337.93 * *
 * Vel Total (ft/s) * 4.88 * Avg. Vel. (ft/s) * * * 4.88 * *
 * Max Chl Dpth (ft) * 1.97 * Hydr. Depth (ft) * * * 0.85 * *
 * Conv. Total (cfs) * 10925.5 * Conv. (cfs) * * * 10925.5 * *
 * Length Wtd. (ft) * 600.00 * Wetted Per. (ft) * * * 338.09 * *
 * Min Ch El (ft) * 4465.50 * Shear (lb/sq ft) * * * 0.87 * *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * * 4.24 * *
 * Frctn Loss (ft) * 6.93 * Cum Volume (acre-ft) * * * 39.70 * *
 * C & E Loss (ft) * 0.09 * Cum SA (acres) * * * 97.82 * *

Warning - Divided flow computed for this cross-section.
 Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: RailRoad
 REACH: Creeks RS: 1800

INPUT

Description: Section E
 Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
6200	4480	7800	4470	9400	4470	10000	4468	14000	4460
15900	4461	16600	4469.313	17500	4480				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
6200	.035	9400	.035	16600	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 9400 16600 1800 1800 1800 .1 .3

CROSS SECTION OUTPUT Profile #100-year Q

 * W.S. Elev (ft) * 4460.75 * Element * Left OB * Channel * Right OB *
 * Vel Head (ft) * 0.07 * Wt. n-Val. * * * 0.035 * *
 * E.G. Elev (ft) * 4460.82 * Reach Len. (ft) * 1800.00 * 1800.00 * 1800.00 *
 * Crit W.S. (ft) * 4460.60 * Flow Area (sq ft) * * * 682.93 * *
 * E.G. Slope (ft/ft) * 0.008555 * Area (sq ft) * * * 682.93 * *
 * Q Total (cfs) * 1400.00 * Flow (cfs) * * * 1400.00 * *
 * Top Width (ft) * 1810.55 * Top Width (ft) * * * 1810.55 * *
 * Vel Total (ft/s) * 2.05 * Avg. Vel. (ft/s) * * * 2.05 * *
 * Max Chl Dpth (ft) * 0.75 * Hydr. Depth (ft) * * * 0.38 * *
 * Conv. Total (cfs) * 15136.2 * Conv. (cfs) * * * 15136.2 * *
 * Length Wtd. (ft) * 1800.00 * Wetted Per. (ft) * * * 1810.55 * *
 * Min Ch El (ft) * 4460.00 * Shear (lb/sq ft) * * * 0.20 * *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * * 0.41 * *
 * Frctn Loss (ft) * 10.28 * Cum Volume (acre-ft) * * * 33.02 * *
 * C & E Loss (ft) * 0.01 * Cum SA (acres) * * * 83.02 * *

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: RailRoad
 REACH: Creeks RS: 0

INPUT

Description: Section F

**STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET**

CALCULATION IDENTIFICATION NUMBER				PAGE NO 19 Of 20
OR W.O NUMBER 0599602	DIVISION AND GROUP G(B)	CALCULATION NUMBER 19	OPTIONAL TASK CODE 345V	

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4540	3000	4500	3800	4490	4700	4480	5900	4470
7500	4460	8000	4460	11000	4455	14000	4450	15500	4450
18000	4453	20000	4457.118	21400	4460				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	11000	.035	20000	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
11000	20000	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #100-year Q

* W.S. Elev (ft)	* 4450.49	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.04	* Wt. n-Val.	* *	* 0.035	* *
* E.G. Elev (ft)	* 4450.53	* Reach Len. (ft)	* *	* *	* *
* Crit W.S. (ft)	* 4450.28	* Flow Area (sq ft)	* *	* 915.12	* *
* E.G. Slope (ft/ft)	* 0.004201	* Area (sq ft)	* *	* 915.12	* *
* Q Total (cfs)	* 1400.00	* Flow (cfs)	* *	* 1400.00	* *
* Top Width (ft)	* 2207.57	* Top Width (ft)	* *	* 2207.57	* *
* Vel Total (ft/s)	* 1.53	* Avg. Vel. (ft/s)	* *	* 1.53	* *
* Max Chl Dpth (ft)	* 0.49	* Hydr. Depth (ft)	* *	* 0.41	* *
* Conv. Total (cfs)	* 21599.9	* Conv. (cfs)	* *	* 21599.9	* *
* Length Wtd. (ft)	* *	* Wetted Per. (ft)	* *	* 2207.57	* *
* Min Ch El (ft)	* 4450.00	* Shear (lb/sq ft)	* *	* 0.11	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* *	* 0.17	* *
* Frctn Loss (ft)	* *	* Cum Volume (acre-ft)	* *	* *	* *
* C & E Loss (ft)	* *	* Cum SA (acres)	* *	* *	* *

Profile Output Table - Bridge Only

* Reach	* River Sta	* E.G. US.	* Min El	* Prs	* BR Open Area	* Prs O WS	* Q Total	* Min
Top Rd	Q Weir	Delta EG	(ft)	(ft)	(sq ft)	(ft)	(cfs)	
(ft)	(cfs)	(ft)						

OVERSIZE DOCUMENT PAGE(S) PULLED

SEE APERTURE CARD FILES

APERTURE CARD/PAPER COPY AVAILABLE THROUGH NRC FILE CENTER

NUMBER OF OVERSIZE PAGES FILMED ON APERTURE CARD(S) 21

ACCESSION NUMBERS OF OVERSIZE PAGES:

<u>9909230140</u>	<u>9909230157</u>	<u>9909230169</u>
<u>143</u>	<u>160</u>	<u>170</u>
<u>146</u>	<u>162</u>	<u>171</u>
<u>148</u>	<u>164</u>	<u>172</u>
<u>151</u>	<u>165</u>	<u>173</u>
<u>153</u>	<u>166</u>	
<u>155</u>	<u>167</u>	
<u>156</u>	<u>168</u>	

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-30-A:
PFSF RAILROAD LINE VICINITY
MAP AND DRAWING INDEX**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-30-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-1

9909230140

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-31-A:
PFSF UNION-PACIFIC
MAINLINE/PFSF SIDING PLAN
AND PROFILE**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-31-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-2

9909230143

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-32-A:
PFSF UNION-PACIFIC
MAINLINE/PFSF SECTIONS &
DETAILS**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-32-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-3

9909230146

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-33-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 1**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-33-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-4

9909230148

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-34-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 2**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-34-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-5

9909230151

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-35-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 3**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-35-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-6

9909230153

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-36-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 4**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-36-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-7

9909230155

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-37-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 5**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-37-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-8

9909230156

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-38-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 6**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-38-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-9

9909230157

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-39-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 7**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-39-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-10

9909230160

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-40-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 8**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-40-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-11

9909230162

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-41-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 9**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-41-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-12

9909230164

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-42-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 10**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-42-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-13

9909230165

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-43-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 11**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-43-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-14

9909230166

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-44-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 12**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-44-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-15

9909230167

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-45-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 13**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-45-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-16

9909230168

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**05996-DY-46-A:
PFSF RAILROAD LINE PLAN &
PROFILE - SHEET 14**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:**

05996-DY-46-A

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-17

9909230169

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-47-A:
PFSF RAILROAD LINE OLD U.S.
40 INTERSECTION PLAN**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-47-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-18

9909230170

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-48-A:
PFSF RAILROAD LINE JEEP
TRAIL INTERSECTION PLAN AND
PROFILE**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-48-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-19

9909230171

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-49-A:
PFSF RAILROAD LINE CULVERT
SECTIONS AND DETAILS SHEET 1**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-49-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-20

9909230172

**THIS PAGE IS AN
OVERSIZED DRAWING
THAT CAN BE VIEWED AT
THE RECORD TITLED:
05996-DY-50-A:
PFSF RAILROAD LINE CULVERT
SECTIONS AND DETAILS SHEET 2**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DRAWING NUMBER:
05996-DY-50-A**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-21

9909230173