



March 9, 2011

Ms. Catherine Glidden
Environmental Protection Specialist
Section of Environmental Analysis
Surface Transportation Board
395 E. Street, SW
Washington, D.C. 20423

Dear Cathy:

In January 2010, DM&E presented for your approval the revised *Proposal for the Identification and Evaluation of Deeply Buried Archaeological Sites along the DM&E Powder River Basin Expansion Project New Build Segment in Wyoming and South Dakota* (Proposal). The Proposal presented a sampling strategy to identify deeply buried archaeological sites in culturally sensitive construction areas subject to cutting below the present ground surface. The Proposal excluded areas where project construction required the placement of fill material over the existing surface to achieve the necessary grade elevation. This strategy for deep site testing was consistent with procedural clarifications presented to the agency representatives during a meeting held in December 2008. At that time, the exclusion of fill areas from deep site testing was presented by STB and DM&E, and discussed with the attendees. Only the Wyoming SHPO expressed a concern that deeply buried and previously unidentified sites would be made inaccessible to future research. DM&E and STB noted the ACHP's position that burial of sites situated below the depth of project effects did not merit Section 106 review.

Subsequently, with STB's issuance of the Proposal to the tribes and cooperating agencies for review and comment, the Wyoming and South Dakota SHPOs and Forest Service expressed their concerns that deeply buried sites may be damaged by the overlying weight of the trains, rail elements and embankments despite assurances to the contrary in the Proposal. Other reviewing parties did not comment.

On April 21, 2010, DM&E and HDR met with STB, LBG, the SHPOs, and Forest Service to discuss the proposal. The Wyoming and South Dakota SHPOs and Forest Service reiterated their concern regarding the proposal's exclusion of areas targeted for placement of fill materials over the present surface for embankment construction. During that meeting, DM&E presented technical information and citations in support of its position that the downward pressure of the trains, rail elements and embankments along the New Build route in fill zones would not impose compressive pressures that would threaten deeply buried archaeological properties or warrant testing to identify deeply buried sites in fill areas. However, STB directed DM&E to conduct an engineering analysis of potential effects associated with soil compaction before the STB would decide whether the identification of deeply buried sites in fill areas was necessary.

HDR has now completed an analysis of four engineering cross sections along the New Build segment (See enclosed memo of February 2, 2011). The engineering analysis was performed by

Steve Olson, a senior geotechnical engineer with 27 years of experience in the industry. The four engineering cross sections depict a range of anticipated embankment heights and widths to provide a reliable estimate of the range of compressive pressures that can be anticipated along the route. The selected cross sections included embankments measuring 70, 35 and 25 feet high, and a shallow embankment measuring 2 feet high (See enclosed cross sections). Pressures were calculated at grade (present surface) and at depths of 2, 10 and 50 feet below grade, and included the weight of the train and rail elements. The results of this analysis indicate that generally the higher the embankment, the higher the pounds per square inch (psi) that will be exerted at and below grade level. However, pressure at grade level below even the highest embankment (Station 11698+39) is less than 60 psi, and at the lowest embankment (Station 7975+46) is less than 30 psi. With increasing depth below surface, the downward pressure will decrease at rates dependent largely on the height of the embankment.

This analysis is confined to the engineer's calculations regarding the downward pressure exerted under specified conditions. It does not attempt to estimate the potential effects that the calculated forces may have on the conditions of artifacts or on the informational values of any cultural deposits that may occur below the current grade. Such estimates are beyond the expertise of geotechnical engineers. However, several studies designed to assess potential damage associated with archaeological site burial under fill have been conducted (e.g., Ardito 1993, Mathewson 1989, Ebeid 1989, Garfinkel and Lister 1983, Thorne 1989, and others). Although these studies examine the effects of burying surface or near-surface sites, they indicate that artifacts buried under fill material below existing grade are not damaged by compaction, and would be subject to chemical alteration only with dramatic increases or decreases in soil moisture content (saturation or desiccation) that would be inconsistent with engineering requirements involved in railroad construction.

One study (Garfinkel and Lister 1983) addressed variables particularly pertinent to the Project. Their study examined the effects of burying archaeological artifacts below a 75 feet high embankment, and reported that no damage was attributable to site burial or the downward pressures exerted by the overlying fill, other than some observed bending (but not breakage) of charcoal fragments. The Project does not anticipate embankments greater than about 70 feet, and the majority will be considerably less. If the downward pressure of a 75 feet high embankment causes no discernable damage to the integrity of archaeological remains situated beneath it and if downward pressures decrease with decreasing height of the embankment, as is shown by the attached engineering analysis, then the downward pressures exerted on buried archaeological sites beneath the Project fill areas pose no threat regardless of the height of the embankment.

The National Park Service (NPS) relied on these and similar studies in reaching their conclusions that:

Compression from the weight of the machinery necessary to place the fill should not pose a problem since relatively heavy equipment exerts only a small amount of vertical pressure per square inch. As the depth of the fill increases, the pressure exerted by any equipment crossing the site is further dissipated. Vibrations that might cause settling of the matrix are similarly reduced and dampened as the depth of the fill increases.

Consideration should be given to damage to upper levels of the site that may result from the grinding action of heavy equipment traffic (NPS Technical Brief #5, 1989).

The NPS Technical Brief #5 focused on the potential effects of burying known surface sites. The Proposal, however, applies to fill areas which exhibit no surface evidence of archaeological remains based on the results of archaeological surveys previously conducted for this Project. Any unidentified subsurface sites in these areas would be deep enough so as to exhibit no evidence of their presence at the surface or in observed subsurface exposures examined during those surveys. Consequently, the limited threat of damage to shallow sites as assessed in the studies leading to NPS's conclusions are even further minimized by the depth of natural overburden buffering these threats to subsurface sites situated beneath the fill areas of the Project.

Based on the engineering analysis provided by Olson, and on the results of the archaeological literature review, DM&E concludes that the qualities which may contribute to the significance of any subsurface archaeological sites beneath the fill areas are not threatened by the downward pressures exerted by the overlying train operations, railroad elements and embankments. Consequently, the vertical APE in fill areas is shallow and does not extend below the level of scarification disturbance anticipated for construction activities, or about eight inches below the present surface. DM&E believes that no further efforts are warranted to locate subsurface archaeological sites through exploratory deep testing measures within areas targeted for placement of fill over the existing surface along the New Build segment of the Project. DM&E believes that further revisions of the Proposal are not warranted, and that STB's acceptance of this clarification should bring the matter to closure.

Sincerely,



Herb M. Jones
U.S. Director, State and Local Government Affairs

References Cited

Robert M. Thorne

1989 Intentional Site Burial: A Technique to Protect Against Natural or Mechanical Loss. Archaeological Assistance Program, Technical Brief No.5. U.S. Department of the Interior, NPS.

Ardito, Tony

1993 Reducing the Effects of Heavy Equipment Compaction on Buried Archaeological Sites. Bulletin of the Archaeological Society of Connecticut. Vol. 56.

Mathewson, Christopher C., Tania Gonzalez, and James S. Eblen

1992 Burial as a Method of Archaeological Site Protection. Contract Report EL-92-1, U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS.

Ebeid, Dr. Zakaria M.

1989 Laboratory Experiments to Study the Effects of Compaction and Pressure on Artifacts in Archaeological Sites. Archaeological Sites Protection and Preservation Notebook. Technical Notes. September 1989, U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS.

Garfinkel, Alan P. and Bobby L. Lister

1983 Effects of High Embankment Construction on Archaeological Materials. Transportation Laboratory, California Department of Transportation, Sacramento, CA.

Enclosures:

Osborn's Engineering Analysis Memo

Cross Sections

Plan maps

April 14, 2010 Points for Discussion

See Also

Rose, Jerry G., PE

(nd.) Test Measurements and Performance Evaluations of In-Service Railway Asphalt Trackbeds.

To:	Alan Stanfill		
From:	Steve Olson	Project:	Cultural Site – DM&E Railroad
cc:			
Date:	2-2-2011	Job No:	132507

Re: Embankment / Train Loads on Existing Ground

The primary purpose of the task is to calculate the loads on the existing ground surface and several feet below the surface due to the weight of the planned embankment and train surcharge loads. You have provided four cross-sections for analysis, station 11698+39, station 8416+95, station 8162+09, and station 7975+46. In general, the cross sections include a very high embankment with a track and siding (11698+39), a high embankment with a single track (8416+95), a wide embankment with a single track (8162+09), and a very shallow embankment with a single track (7975+46).

Loads on the existing soil were calculated using Boussinesq pressure theory for the embankment and train loads. The embankment soil density was assumed to be 120 pounds per cubic foot. The train load was assumed to be Coopers E-80 configuration at 80,000 lbs/ft of track. The E-80 loads include impact where required.

The pressures were calculated at the existing ground surface, a depth of 2 feet, a depth of 10 feet, and a depth of 50 feet below the ground surface at each of the four sections.

The following table indicates the calculated results:

Ground Pressures Due to Embankment and Train Loads				
Depth below Ground Surface	Station 11698+39	Station 8416+95	Station 8162+09	Station 7975+46
At grade	58.33 psi	29.17 psi	22.40 psi	28.06 psi
2 feet	58.22 psi	29.11 psi	22.01 psi	20.06 psi
10 feet	58.10 psi	28.70 psi	20.76 psi	7.12 psi
50 feet	52.50 psi	22.40 psi	20.50 psi	0.73 psi

There are primarily three phenomena that are shown in the results. They are the effects of high embankments, wide embankments, and train loads.

The results suggest the highest at-grade pressure is under the highest (70 ft) embankment located at station 11698+39 with a pressure at 58 psi. The next highest pressure is beneath the 35 feet high embankment (station 8416+95) at 29 psi. However, a similar at-grade pressure of 28 psi was calculated at the very shallow embankment (station 7975+46) primarily due the train loads. The location of the lowest contact pressure was 22 psi at station 8162+09, the wide 25 feet high embankment section. For the most part, higher loads will be realized at locations with greater embankment heights.

The second phenomenon is the effect of the wide embankment. The calculated contact pressure at the wide embankment (station 8162+09) was the lowest mostly because the embankment isn't as high as station 11698+39 and Station 8416+95. However, because of the embankment width the pressure is not dissipated as much with depth. The pressure at 50 feet shows station 8162+09 is only 2 psi less than the contact pressure at grade. However the higher embankments at station 11698+39 and 8416+95 show 6 and 7 psi less pressure at 50 feet, respectively. The load of the wider embankment is penetrated deeper into the ground.

Finally, the effect of the train load is dissipated more with depth than the embankment load. Pressures very similar to the at-grade pressure were calculated at the 2 feet depth (within 0.40 psi), with the exception of the shallow embankment (station 7579+46). At station 7579+46, the pressure was 6 psi less at 2 feet and by a depth of 10 feet was over 20 psi less than at the ground surface. The results suggest the wider embankment loads are transferred deeper into the ground than the relatively thin strip load of the train. In fact at the higher embankments (35 feet or greater) all of the train load is consumed within the embankment and does not have an affect on the existing ground surface.

Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 11698+39, high embank, 2 - tracks	Page:	1	of:	1
Job #:	132507	No:			

Location

Boring Number	Section A-A
Station	11698+39

Embankment Dimensions

Crest Width (2b)	48.00 ft
1/2 Crest Width (b)	24.00 ft
Top of Embankment Elevation	3460.00 ft
Embankment Height (h)	70.00 ft
Water Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a_w)	140.00 ft
Land Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a_l)	140.00 ft

Embankment Load

Soil Density	120 lb/ft ³
Embankment Load (p)	4.200 tsf
Water Level Depth	16.0 ft

Pressure at Ground Surface

Embankment Pressure	4.200 tsf		Embankment Pressure	58.33 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	4.200 tsf		Total Pressure	58.33 psi	

Pressure at

	2 ft				
$a_w / z_1 =$	70				
$a_l / z_1 =$	70				
$b / z_1 =$	12				
$I_w =$	0.499	Figure 6, Navfac 7.1-170			
$I_l =$	0.499	Figure 6, Navfac 7.1-170			
Embankment Pressure	4.192 tsf		Embankment Pressure	58.22 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	4.192 tsf		Total Pressure	58.22 psi	

Pressure at

	10 ft				
$a_w / z_1 =$	14				
$a_l / z_1 =$	14				
$b / z_1 =$	2.4				
$I_w =$	0.498	Figure 6, Navfac 7.1-170			
$I_l =$	0.498	Figure 6, Navfac 7.1-170			
Embankment Pressure	4.183 tsf		Embankment Pressure	58.10 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	4.183 tsf		Total Pressure	58.10 psi	

Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 11698+39, high embank, 2 - tracks	Page:	1	of:	1
Job #:	132507	No:			

Pressure at

	50 ft				
$a_w / z_1 =$	2.8				
$a_l / z_1 =$	2.8				
$b / z_1 =$	0.48				
$l_w =$	0.45	Figure 6, Navfacs 7.1-170			
$l_l =$	0.45	Figure 6, Navfacs 7.1-170			
Embankment Pressure	3.780 tsf		Embankment Pressure	52.50 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	3.780 tsf		Total Pressure	52.50 psi	

Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 8416+95, high embank, 1 - track	Page:	1	of:	1
Job #:	132507	No:			

Location

Boring Number	Section C-C
Station	8416+95

Embankment Dimensions

Crest Width (2b)	32.00 ft
1/2 Crest Width (b)	16.00 ft
Top of Embankment Elevation	2990.00 ft
Embankment Height (h)	35.00 ft
Water Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a_w)	70.00 ft
Land Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a_l)	70.00 ft

Embankment Load

Soil Density	120 lb/ft ³
Embankment Load (p)	2.100 tsf
Water Level Depth	16.0 ft

Pressure at Ground Surface

Embankment Pressure	2.100 tsf		Embankment Pressure	29.17 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	2.100 tsf		Total Pressure	29.17 psi	

Pressure at

	2 ft				
$a_w / z_1 =$	35				
$a_l / z_1 =$	35				
$b / z_1 =$	8				
$I_w =$	0.499	Figure 6, Navfacs 7.1-170			
$I_l =$	0.499	Figure 6, Navfacs 7.1-170			
Embankment Pressure	2.096 tsf		Embankment Pressure	29.11 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	2.096 tsf		Total Pressure	29.11 psi	

Pressure at

	10 ft				
$a_w / z_1 =$	7				
$a_l / z_1 =$	7				
$b / z_1 =$	1.6				
$I_w =$	0.492	Figure 6, Navfacs 7.1-170			
$I_l =$	0.492	Figure 6, Navfacs 7.1-170			
Embankment Pressure	2.066 tsf		Embankment Pressure	28.70 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	2.066 tsf		Total Pressure	28.70 psi	

Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 8416+95, high embank, 1 - track	Page:	1	of:	1
Job #:	132507	No:			

Pressure at

	50 ft				
$a_w / z_1 =$	1.4				
$a_l / z_1 =$	1.4				
$b / z_1 =$	0.32				
$I_w =$	0.384	Figure 6, Navfacs 7.1-170			
$I_l =$	0.384	Figure 6, Navfacs 7.1-170			
Embankment Pressure	1.613 tsf		Embankment Pressure	22.40 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	1.613 tsf		Total Pressure	22.40 psi	

Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 8162+09, wide embank, 1 - track	Page:	1	of:	1
Job #:	132507	No:			

Location

Boring Number	Section A-A
Station	8162+09

Embankment Dimensions

Crest Width (2b)	250.00 ft
1/2 Crest Width (b)	125.00 ft
Top of Embankment Elevation	3025.00 ft
Embankment Height (h)	25.00 ft
Water Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a_w)	50.00 ft
Land Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a_l)	50.00 ft

Embankment Load

Soil Density	120 lb/ft ³
Embankment Load (p)	1.500 tsf
Water Level Depth	16.0 ft

Pressure at Ground Surface

Embankment Pressure	1.500 tsf		Embankment Pressure	20.83 psi	93%
Cooper E80 Pressure	1.57 psi	Table 2-7	Cooper E80 Pressure	1.57 psi	7%
Total Pressure	1.613 tsf		Total Pressure	22.40 psi	

Pressure at

	2 ft				
$a_w / z_1 =$	25				
$a_l / z_1 =$	25				
$b / z_1 =$	62.5				
$I_w =$	0.499	Figure 6, Navfacs 7.1-170			
$I_l =$	0.499	Figure 6, Navfacs 7.1-170			
Embankment Pressure	1.497 tsf		Embankment Pressure	20.79 psi	94%
Cooper E80 Pressure	1.22 psi	Table 2-7	Cooper E80 Pressure	1.22 psi	6%
Total Pressure	1.584 tsf		Total Pressure	22.01 psi	

Pressure at

	10 ft				
$a_w / z_1 =$	5				
$a_l / z_1 =$	5				
$b / z_1 =$	12.5				
$I_w =$	0.498	Figure 6, Navfacs 7.1-170			
$I_l =$	0.498	Figure 6, Navfacs 7.1-170			
Embankment Pressure	1.494 tsf		Embankment Pressure	20.75 psi	100%
Cooper E80 Pressure	0.01 psi	Table 2-7	Cooper E80 Pressure	0.01 psi	0%
Total Pressure	1.495 tsf		Total Pressure	20.76 psi	

Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 8162+09, wide embank, 1 - track	Page:	1	of:	1
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Pressure at

$$a_w / z_1 =$$

50 ft

1

$$a_l / z_1 =$$

1

$$b / z_1 =$$

2.5

$$I_w =$$

0.492

Figure 6, Navfacs 7.1-170

$$I_l =$$

0.492

Figure 6, Navfacs 7.1-170

Embankment Pressure

1.476 tsf

Embankment Pressure

20.50 psi

100%

Cooper E80 Pressure

0.00 psi

Table 2-7

Cooper E80 Pressure

0.00 psi

0%

Total Pressure

1.476 tsf

Total Pressure

20.50 psi

Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 7975+46, shallow embank	Page:	1	of:	1
Job #:	132507	No:			

Location

Boring Number	Section C-C
Station	7975+46

Embankment Dimensions

Crest Width (2b)	32.00 ft
1/2 Crest Width (b)	16.00 ft
Top of Embankment Elevation	2850.00 ft
Embankment Height (h)	2.00 ft
Water Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a _w)	4.00 ft
Land Side Slope Ratio	2.00 Horizontal ft/ Vertical ft
Water Side Width (a _l)	4.00 ft

Embankment Load

Soil Density	120 lb/ft ³
Embankment Load (p)	0.120 tsf
Water Level Depth	16.0 ft

Pressure at Ground Surface

Embankment Pressure	0.120 tsf		Embankment Pressure	1.67 psi	6%
Cooper E80 Pressure	26.39 psi	Table 2-7	Cooper E80 Pressure	26.39 psi	94%
Total Pressure	2.020 tsf		Total Pressure	28.06 psi	

Pressure at

	2 ft				
a _w / z ₁ =	2				
a _l / z ₁ =	2				
b / z ₁ =	8				
I _w =	0.499	Figure 6, Navfacs 7.1-170			
I _l =	0.499	Figure 6, Navfacs 7.1-170			
Embankment Pressure	0.120 tsf		Embankment Pressure	1.66 psi	8%
Cooper E80 Pressure	18.40 psi	Table 2-7	Cooper E80 Pressure	18.40 psi	92%
Total Pressure	1.445 tsf		Total Pressure	20.06 psi	

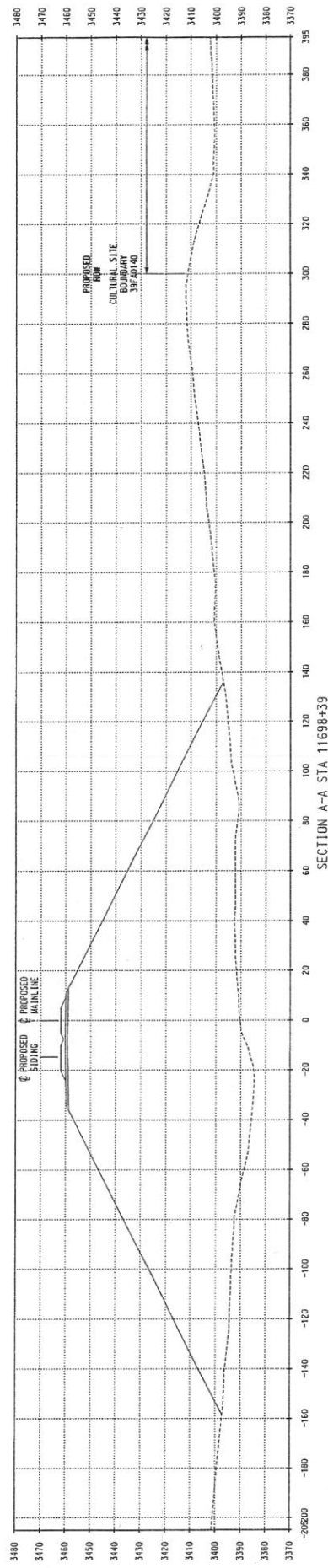
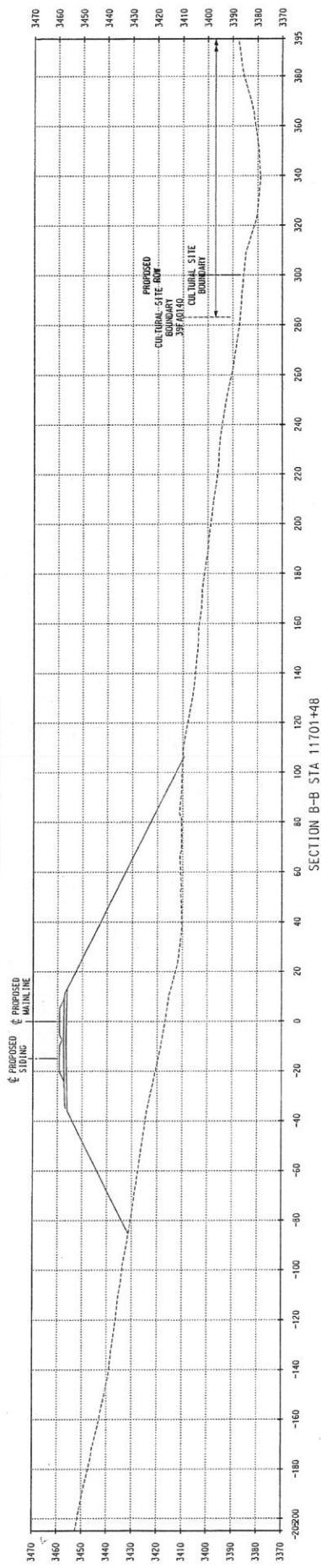
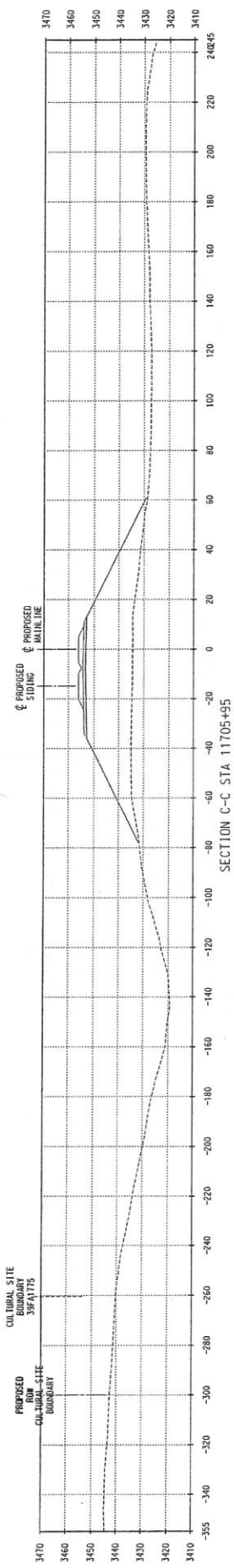
Pressure at

	10 ft				
a _w / z ₁ =	0.4				
a _l / z ₁ =	0.4				
b / z ₁ =	1.6				
I _w =	0.469	Figure 6, Navfacs 7.1-170			
I _l =	0.469	Figure 6, Navfacs 7.1-170			
Embankment Pressure	0.113 tsf		Embankment Pressure	1.56 psi	22%
Cooper E80 Pressure	5.56 psi	Table 2-7	Cooper E80 Pressure	5.56 psi	78%
Total Pressure	0.513 tsf		Total Pressure	7.12 psi	

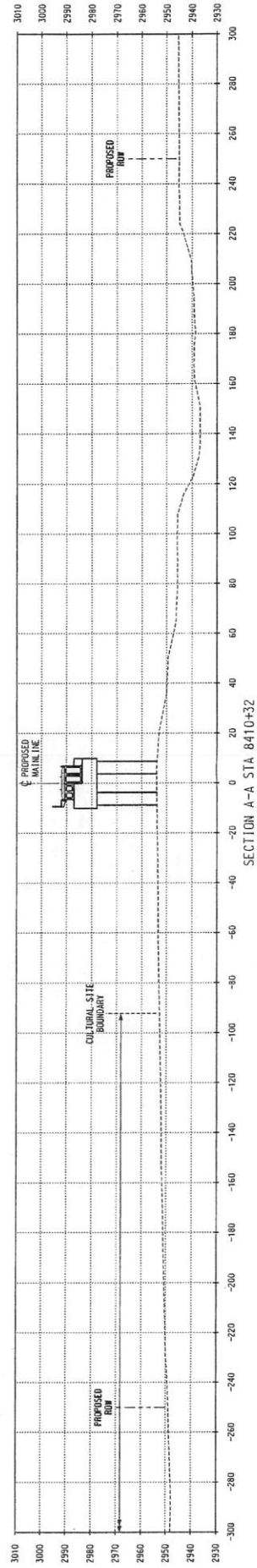
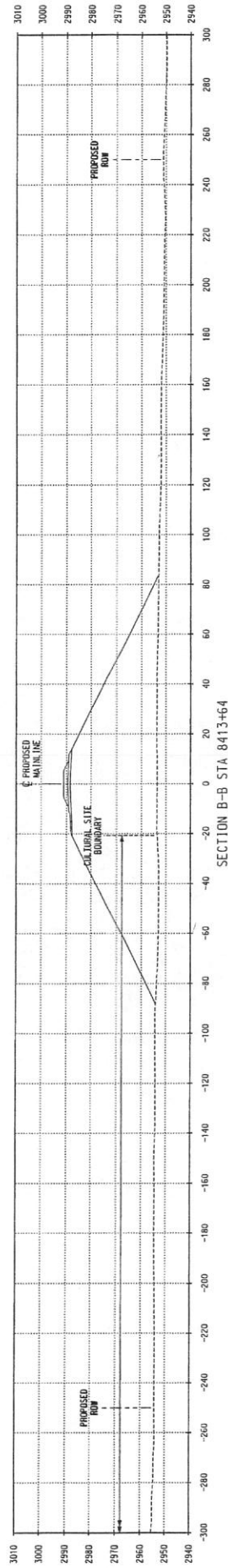
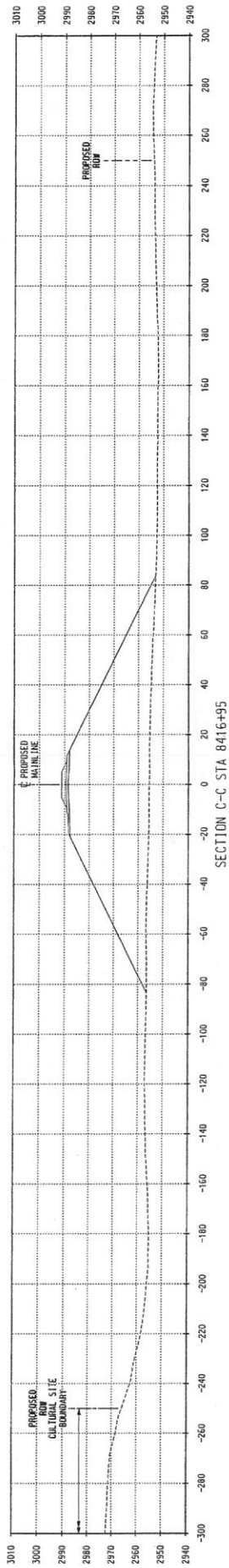
Project:	Cultural site - DM&E RR	Computed:	SJO	Date:	2/1/11
Subject:	Embankment / Train Loads on ground	Checked:		Date:	
Task:	Station 7975+46, shallow embank	Page:	1	of:	1
Job #:	132507	No:			

Pressure at

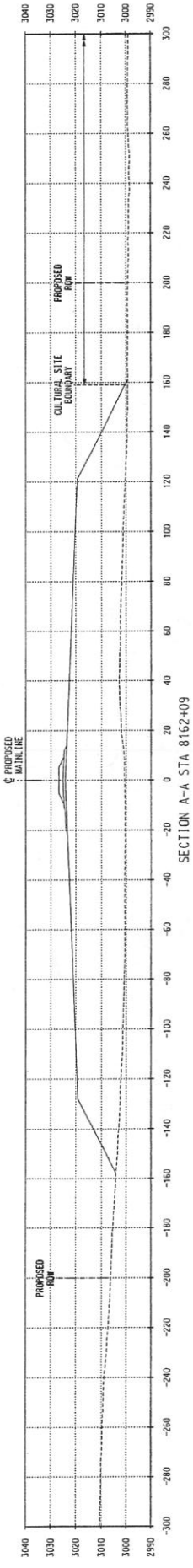
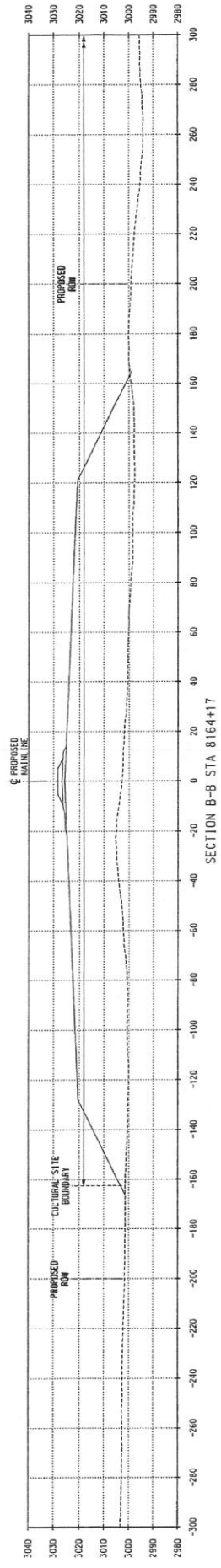
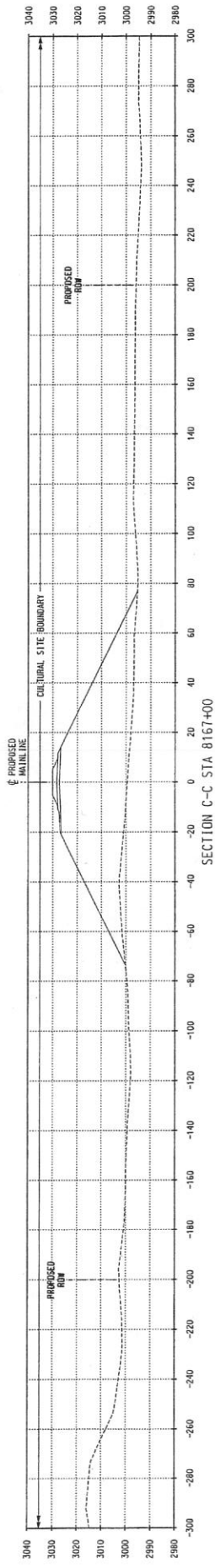
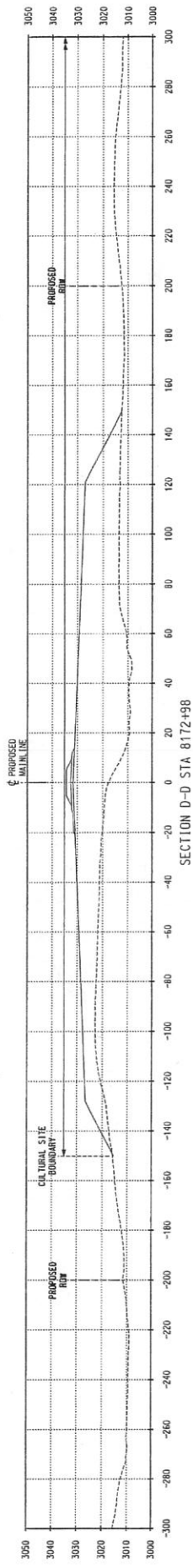
	50 ft				
$a_w / z_1 =$	0.08				
$a_l / z_1 =$	0.08				
$b / z_1 =$	0.32				
$I_w =$	0.22	Figure 6, Navfacs 7.1-170			
$I_l =$	0.22	Figure 6, Navfacs 7.1-170			
Embankment Pressure	0.053 tsf		Embankment Pressure	0.73 psi	100%
Cooper E80 Pressure	0.00 psi	Table 2-7	Cooper E80 Pressure	0.00 psi	0%
Total Pressure	0.053 tsf		Total Pressure	0.73 psi	



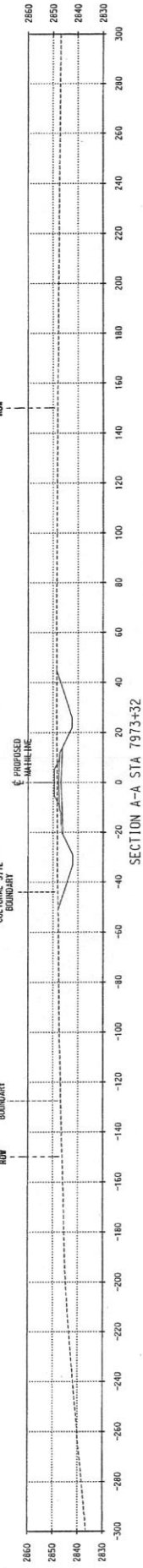
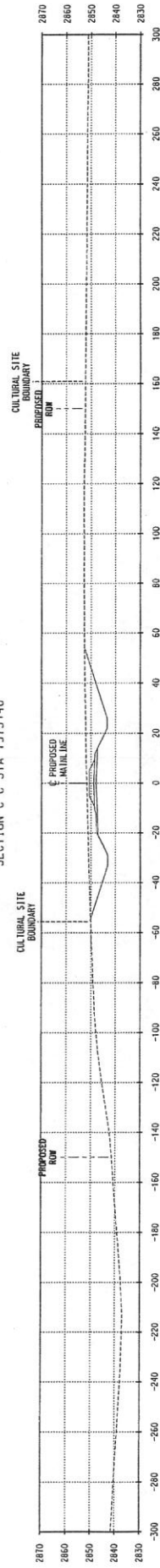
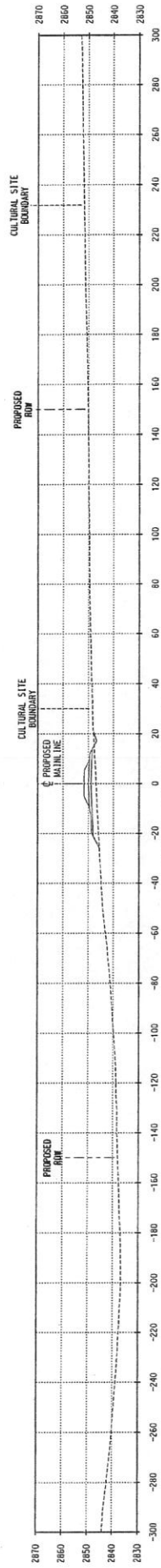
NO.	DATE	REVISIONS	PRELIMINARY NOT FOR CONSTRUCTION DM&E DAKOTA, MINNESOTA & EASTERN RAILROAD	CHECKED BY: WTH DESIGNED BY: WTH SCALE: AS NOTED TIE/PAE: AS NOTED DATE: OCT 2008 DRAWN BY: JTB/AJR	PROJECT DESCRIPTION SECOND 3 MP 7000-17705.4 PARCEL NO. 39F075 CROSS SECTIONS SITE NO. 39F A0140, 39F A1775 & 39F A1773	LOCATION: SOUTH DAKOTA DRAWING TITLE: CULTURAL SITE CROSS SECTIONS SITE NO. 39F A0140, 39F A1775 & 39F A1773	SUBMITTER: NEW BUILD SHEET NO.: 2 of 3



NO.		DATE	REVISIONS	PRELIMINARY NOT FOR CONSTRUCTION	DM&E DAKOTA, MINNESOTA & EASTERN RAILROAD	CHECKED BY: TNA/MTM		FILE NAME:	PROJECT DESCRIPTION:		LOCATION:		SUBDIVISION:			
						DESIGNED BY: TIE/PAC	SCALE:	AS NOTED	SEGMENT 2 NEW		DRAWING TITLE: CULTURAL SITE CROSS SECTIONS		SOUTH DAKOTA		NEW BUILD	
						DRAIN BY: JTB/JAR	DATE:	OCT 2008	PARCEL NO. 565050						SHEET NO.: 2 OF 2	



NO.		DATE	REVISIONS	PRELIMINARY NOT FOR CONSTRUCTION		 DM&E DAKOTA, MINNESOTA & EASTERN RAILROAD		PROJECT DESCRIPTION SEGMENT 2 MP 8 PARCEL NO. 580507 & 5053015		LOCATION SOUTH DAKOTA DRAWING TITLE CULTURAL SITE CROSS SECTIONS SITE NO. 39CU1864		SUBDIVISION NEW BUILD SHEET NO. 2 of 3	
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DATE	REVISIONS	PRELIMINARY NOT FOR CONSTRUCTION	 DAKOTA, MINNESOTA & EASTERN RAILROAD	PROJECT DESCRIPTION EXHIBIT 2 UP STATE ST. 1 PARCEL NO. 305013	FILE NAME: SCALE: AS NOTED DATE: OCT 2008	LOCATION: DRAWING TITLE: CULTURAL SITE CROSS SECTIONS SITE NO. 39CU1926	SOUTH DAKOTA	SUBDIVISION: NEW BUILD SHEET NO.: 2 of 2