


## Calculation Cover Sheet

Project <b>S-2764 SALTSTONE VAULT NR. 1</b>		Calculation Number <b>C-CLC-7 00016</b>	Project Number <b>S-2764</b>	
Title <b>STRUCTURAL ANALYSIS OF SALTSTONE VAULT (U).</b>		Functional Classification <b>P.S.</b>	Sheet 1 of <b>82</b>	
		Discipline <b>C/S/A</b>		
<input type="checkbox"/> Preliminary <input checked="" type="checkbox"/> Committed <input type="checkbox"/> Confirmed				
Computer Program No. <b>DEMARC 146M4-9</b> <input type="checkbox"/> N/A		Version/Release No. <b>Version 16.</b>		
Purpose and Objective <p><b>THE PURPOSE OF THIS ANALYSIS IS TO INVESTIGATE THE CAUSE OF EXCESSIVE DEFORMATIONS OF THE NORTH WALL OF SALTSTONE VAULT NR. 1.</b></p>				
Summary of Conclusion <p><b>REFER TO SECTION 8. CONCLUSIONS.</b></p>				
<b>Revisions</b>				
Rev No.	Revision Description			
<b>0</b>	<b>INITIAL ISSUE</b>			
<b>Sign Off</b>				
Rev No.	Originator (Print) Sign/Date	Verification/ Checking Method	Verifier/Checker (Print) Sign/Date	Manager (Print) Sign/Date
<b>0</b>	<b>PETER REINHARDT</b> <i>Peter Reinhardt</i>	<b>6.24.94</b> <b>IRC</b>	<b>DIANA YEN</b> <i>Diana Yen</i> <b>6/26/94</b>	<b>SKT R. Palam</b> <b>6/27/94</b>
Classification <p style="text-align: center;"><b>UNCLASSIFIED.</b></p>				
<b>ENGINEERING DOC. CONTROL - SRS</b>  <b>00250740</b>				

## Calculation Sheet



 <b>SRS</b> SAVANNAH RIVER SITE		Project S-2764 SALTSTONE VAULT NR 1.				Calculation No. C-CLC-2-00016			
		Subject STRUCTURAL INVESTIGATION OF NORTH WALL (U)							
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0	P. REINHARDT	6.24.94	BYm	6/24/94					

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0	P. REINHART	6/24/94	D. Yarn	6/26/94					

1. PURPOSE.

The purpose of this analysis is to determine the state of stress and strain present in the north wall of Saltstone Vault Nr. 1.


This includes determining the most probable loading and load distribution supported by the wall, consistent with the deflections measured on the structure by a Surveyor crew. These measurements indicate an outward deflection of the upper edge of the wall at the centerline of approx. 4.5 inches.

In addition, a prediction of the maximum horizontal deflection of the top center of the wall is to be made for the condition when a possible stability problem of the wall could become eminent.

2. BACKGROUND.

Vault Nr. 1 was designed and built from 1926 thru 1928. It consists of a reinforced concrete box open at the top, ~600 Ft long by 100 Ft wide, divided into six (6) cells 100x100 Ft. Overall height is 27 Ft including the 24 inch base slab. Exterior and interior walls are 18 inches thick. There is a complete expansion joint at mid length. All walls and the base slab are reinforced with two layers of reinforcement in each direction on each face. The Vault is presently situated above ground. Once completely filled with saltstone a permanent concrete roof slab is to be installed and the structure is to be covered with 8 Ft of an engineered soil cap to completely bury the Vault.

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Design strength of the concrete is 4000psi @ 28 days. Reinforcing steel is ASTM A 615 Grade 60.

The vault features a movable roof structure which covers two (2) adjacent cells. This structure is mounted on rails on top of the longitudinal walls, and can be translated longitudinally over the cells which are being filled with saltstone slurry.


In March 1994 cell A (north cell) was completely filled with saltstone to within 12 inches of the top of the wall. A 6 inch clean grout cover was poured over the hardened saltstone. This layer enclosed a 4" waterstop installed horizontally over the entire perimeter of the cell wall. Over this clean grout layer, a lightly reinforced concrete slab was installed, min. thickness of 6 inches at the walls, sloping from the center to the walls to provide drainage. (Refer to Drawing C-CCZ-0010, Rev. 0)

This topping slab (design strength 3000 psi @ 90 days) is the interim roof of the cell, the joint detail with the wall is shown on drawing C-CC-Z-0010, Rev. 0.

During an inspection of the topping slab days after the pour a separation of the joint between the walls and the topping slab of approx. 3/4 inch was observed. It was attributed to shrinkage of the topping slab, and the gap was filled with non-shrink grout.

On or about June 6, 1994 a significant widening of the joint between the walls and the topping slab was observed and reported. This triggered the present investigation. The north wall showed a maximum gap between the topping slab and the wall of about 6 inches. East and West walls had a gap of approximately 4.5 inches maximum.

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0	P. REINHARDT	6/24/94	D. Yen	4/2/95					

A 6 Ft long rod was inserted and lowered into the north wall gap without hitting obstructions. Water was encountered at 5'-11" from the top of the wall.

### 3. ASSUMPTIONS AND METHODOLOGY.

- 3.1 The joint detail between the topping slab and the wall was not an impermeable seal against water gaining access between the wall and the saltstone monolith. A small gap is assumed to exist (larger than capillary) due to shrinkage of the saltstone, in particular the upper layers. The saltstone slurry was poured in 6 to 8 inch lifts, and is assumed widely cracked.
- 3.2 Temperature due to saltstone hydration is not considered a major contributor because:
- Heat of hydration is relatively low for saltstone (about 130 °F).
  - The saltstone slurry was placed in small lifts, allowing for adequate heat dissipation.
- 3.3 Comparing observations from cell B (which is now also filled with saltstone but still under the movable roof and therefore no access of rainwater) no evidence of excessive deformations is detected. It is therefore assumed that the presence of rainwater is the determining factor for the large deformations.
- Water in the gap can cause pressure buildup on the wall in the following two ways, or a combination thereof:

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0	P. REINHARDT	6/24/94	L. J. ...	6/28/94						

- Hydrostatic pressure on part height or full height of the wall.
- Reaction of the water with the hardened saltstone causing it to expand and, since confined, exerting pressure on the wall.  
(This assumption was subsequently dropped, because on June 15, 1994 a 26 ft long rod was lowered into the north wall gap reaching the bottom slab without obstruction).


A finite element computer model of the three external walls of cell A was developed, using the STAAD III Software package. Boundary conditions chosen used full restraint of the wall at the lower edge (joint with the base slab) and at the juncture with cell B.

The full fixidity assumption at the base is justified by the saltstone weight acting on the base slab, effectively clamping the slab and not allowing significant rotations to take place. Similar considerations can be made for rotations between cells A and B for the east and west walls.

Four load cases were modelled acting on the wall:

- Hydrostatic pressure for a water level of approximately 5'-0" from the top of the wall. (Corresponds to observed water level).
- Hydrostatic pressure for a water level to the top of the wall (full height = maximum load).

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3. A virtual uniform load of 1000 psf over a height of approx. 10 ft from the bottom of the wall.

4. A virtual uniform load of 1000 psf over a height of approx. 15 ft from the bottom of the wall.


Note: Load cases 3 and 4 were intended for evaluating grout expansion pressures. They were not used.

Computer analysis results are based on non-cracked full section moments of inertia. The output deformation values are to be adjusted using manually calculated cracked section moments of inertia, using the Branson formula (Equation 9-7) given in ACI 318-89.

To predict the maximum deflection at the top center of the north wall which will produce a plastic hinge at that location, two different, simplified approaches were used:

1. Linear extrapolation of the computer output data with introduction of fully cracked section properties.
2. Considering the upper 5.0 ft of the wall as a horizontal beam subjected to a uniformly distributed horizontal load. This beam, under full hydrostatic load, has already reached plastic moment capacity at the supports (ref. to computer output).

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The analysis consists in calculating the total horizontal deflection required to form a third plastic hinge at the center of the beam, therefore forming a mechanism.

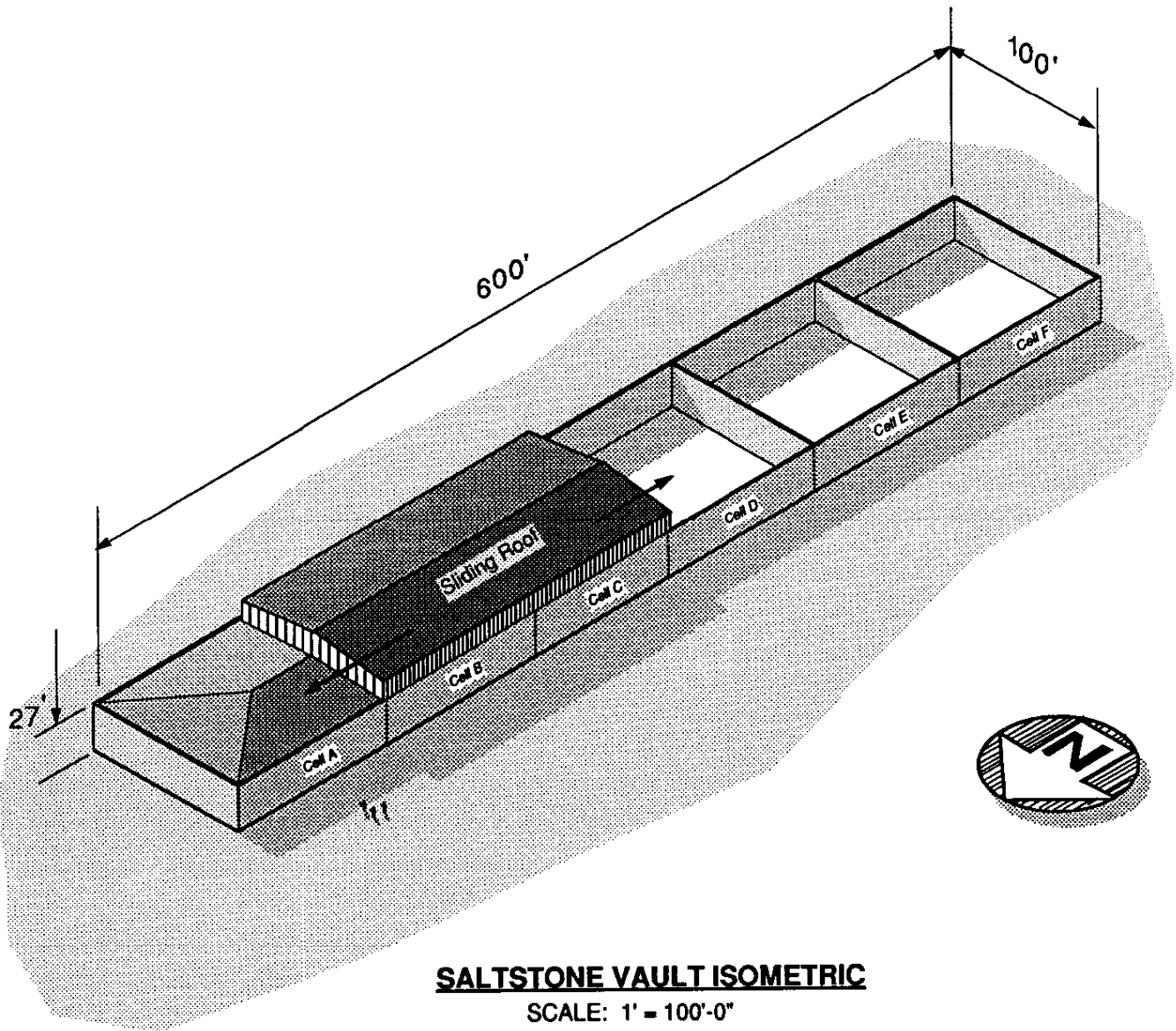
It should be noted that this deflection does not represent a collapse situation, due to the large redundancy inherent to the plate itself, and the load redistribution taking place under elasto-plastic conditions.

It is realized that this is an approximate analysis at best. But a more exacting non-linear elasto-plastic analysis of the wall is considered too time consuming due to its complexity at this time, when an approximate but quick result is essential.




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0	P. REINHARDT	6/24/94	DYm	6/24/94					


#### 4. REFERENCES :

- ACI 318 - 89 Building Code Requirements for Reinforced Concrete.
- "REINFORCED CONCRETE DESIGN" Fourth Edition by C.K. Wang and C.G. Salomon.
- Drawings :

W 780 622 REV. 1  
 W 780 623 REV. 1  
 W 780 625 REV. 6  
 W 780 626 REV. 2

C-CC-Z 0010 REV. 0


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### 5. CALCULATIONS

- 5.1 MOMENT CAPACITY OF 5 FT. HORIZONTAL STRIP.
- 5.2 CRACKED MOMENT OF INERTIA FOR HORIZONTAL STRIP.
- 5.3 MOMENT CAPACITY OF 5 FT. VERTICAL STRIP.
- 5.4 CRACKED MOMENT OF INERTIA FOR VERTICAL STRIP.
- 5.5 LARGEST CALCULATED HORIZ. DEFLECTION OF WALL UNDER HYDROSTATIC LOAD.
- 5.6 MAX. NORTH WALL DEFLECTION TO FORM A PLASTIC HINGE @ CENTER.

## Calculation Sheet

		Project S-2764 SALISTONE VAULT NR. 1				Calculation No. C-CLC-3-00016			
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0	P. REINHARDT	6.24.94	D. Yen	6/24/94					

### 5.1 MOMENT CAPACITY OF A 5 FT WIDE HORIZONTAL STRIP

$$f'_c = 4000 \text{ psi}$$

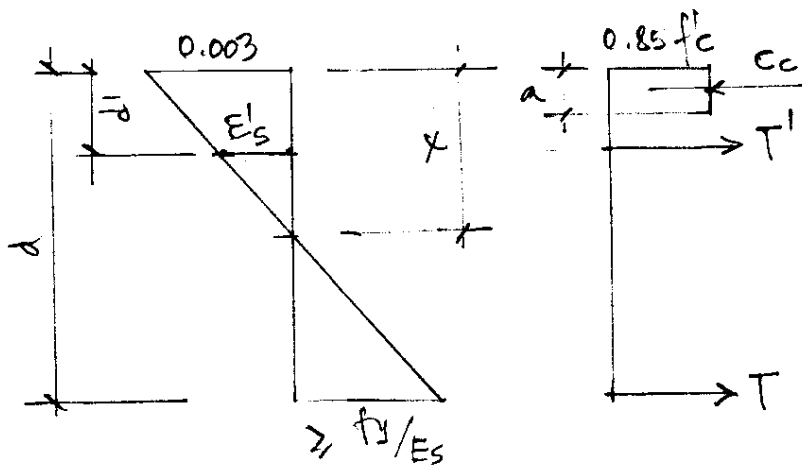
$$A_s = A'_s = 5\#7 @ 12" \text{ cc} = 3.00 \text{ in}^2$$

$$d = 60"$$

$$d' = 3 + \frac{9}{8} + \frac{7}{16} = 4.56" \quad ; \quad \lambda = 18 - 4.56 = 13.44"$$

FIND NEUTRAL AXIS LOCATION BY SUMMING HORIZ. FORCES:

$$0.85 \times 4 \times 60 \times 0.85 \times X + \left[ \frac{X - 4.56}{X} \times 0.003 \times 29000 - 0.85 \times 4 \right] \times 3 = 3 \times 60 = 180 \rightarrow \text{Solve for } X \rightarrow \underline{X = 2.4236"}$$



$$a = 0.85 \times 2.4236 = \underline{2.06"}$$

$$C_c = 0.85 \times 4 \times 60 \times 2.06 = \underline{420.26 \text{ k}}$$

$$E'_s = \frac{X - d'}{X} \times 0.003 = \frac{2.4236 - 4.56}{2.4236} \times 0.003 = -0.002644 \text{ (tension)}$$

$$> E_y = 60/29000 = 0.00207 \text{ but } < 0.0035 \text{ ok}$$


THEREFORE TAKING MOMENTS W.R.T.  $C_c$ :

$$M_{CAP} = \frac{0.9}{12} \times 60 \times 3 \times \left( \lambda - \frac{a}{2} + d' - \frac{a}{2} \right) =$$

$$= 0.075 \times 180 \times (13.44 + 4.56 - 2.06) = \underline{215.2 \text{ k}}$$

(COMP. STEEL INCLUDED)

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NEGLECTING THE EFFECT OF COMPRESSION STEEL:

$$a = \frac{3 \times 60}{0.85 \times 4 \times 60} = 0.882^4$$

$$M_{CAP} = \frac{0.9}{12} \left[ 3 \times 60 \times \left( 13.44 - \frac{0.882}{2} \right) \right] = 175.5 \text{ k.}$$

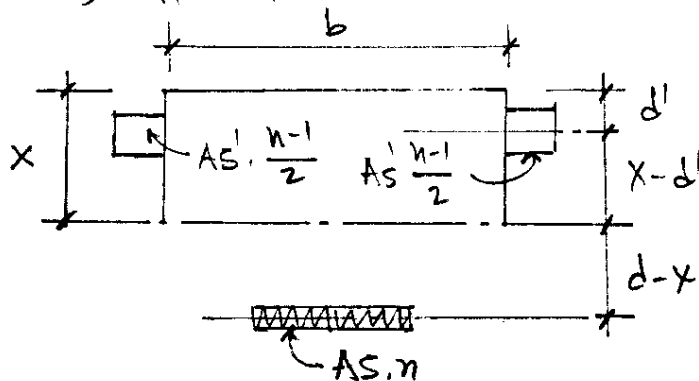
(EXCL. COMP. STEEL  
→ CONSERVAT.)

## Calculation Sheet

 <b>SRS</b> SAVANNAH RIVER SITE		Project <b>S-2764 SALTSTONE VAULT NR. 1</b>				Calculation No. <b>C-CLC-2-00016</b>			
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0	P. REINHARDT	6.24.94	24m	6/24/94					

### 5.2 DETERMINE CRACKED MOMENT OF INERTIA FOR 5'-0 WIDE HORIZONTAL STRIP:

a.) TRANSFORMED AREA:



$$\begin{aligned}
 A_S &= 3.00 \text{ in}^2 \\
 A'_S &= 3.00 \text{ in}^2 \\
 b &= 60 \text{ in} \\
 d &= 13.44 \text{ in} \\
 d' &= 4.56 \text{ in}
 \end{aligned}$$

$$n = \frac{E_S}{E_C} = \frac{29000}{3605} = 8.04$$

Find Neutral Axis:

$$\frac{b \cdot x^2}{2} + A'_S (n-1) (X-d') = A_S \cdot n \cdot (d-x)$$


$$\begin{aligned}
 \therefore \frac{b \cdot x^2}{2} + A'_S (n-1) \cdot X + A_S \cdot n \cdot x &= A_S \cdot n \cdot d + A'_S \cdot (n-1) \cdot d' \\
 30 \cdot x^2 + 3 \times (7.04 + 8.04) x &= 3 \times 8.04 \times 13.44 + 3 \times 7.04 \times 4.56 = 420.48
 \end{aligned}$$

$$\begin{aligned}
 x &= \frac{-45.24}{60} \pm \frac{1}{60} \sqrt{(45.24)^2 + 4 \times 30 \times 420.48} = \\
 &= -0.754 \pm 3.819 = 3.065''
 \end{aligned}$$

$$\begin{aligned}
 I_{TR} &= \frac{3.065^3}{4} \times 60 + 3 \times 7.04 \times (3.065 - 4.56)^2 + 3 \times 8.04 \times (13.44 - 3.065)^2 \\
 &+ \frac{3.065^3}{12} \times 60 = 3219.4 \text{ in}^4
 \end{aligned}$$

$$M_{CR} = 7.5 \sqrt{4000} \times \frac{18^2 \times 60}{6} \times \frac{1}{12,000} = 128.1 \text{ k}$$

## Calculation Sheet

 <b>SRS</b> SAVANNAH RIVER SITE		Project S-2764 SALTSTONE VAULT NR. 1				Calculation No. C-DC-2-00016			
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0	P. REINHARDT	6.24.94	D. Y. m	6/26/94					

$$\left(\frac{M_{CR}}{M_{CAP}}\right)^3 = \left(\frac{128.1}{215.2}\right)^3 = 0.2109$$

$$I_g = \frac{18^3 \times 60}{12} = 29,160 \text{ in}^4$$

$$\begin{aligned} \rightarrow I_{eff} &= 0.2109 \times 29,160 + (1 - 0.2109) \times 3219.4 = \\ &= 6,150.4 + 2,540.4 = \underline{8,690.8 \text{ in}^4} \end{aligned}$$

(Eff. Mom. Inert. incl. Comp. Steel)

Eff. Moment of Inertia neglecting compression steel:


$$M_{CAP} = 175.5 \text{ K}$$

$$\left(\frac{M_{CR}}{M_{CAP}}\right)^3 = \left(\frac{128.1}{175.5}\right)^3 = 0.3889$$

$$\begin{aligned} \rightarrow I_{eff} &= 0.3889 \times 29,160 + (1 - 0.3889) \times 3219.4 = \\ &= 11,339.8 + 1,967.4 = \underline{13,307.2 \text{ in}^4} \end{aligned}$$

(Eff. Mom. Inert. neglect'g compr. Steel.)

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0	P. REINHARDT	6.24.94	DYM	6/26/94					

## 5.3 MOMENT CAPACITY OF A 5 FT WIDE VERTICAL STRIP.

$$f'_c = 4000 \text{ psi}$$

$$A_s = A'_s = 5 \#9 @ 12" \text{ cc} = 5.00 \text{ in}^2$$

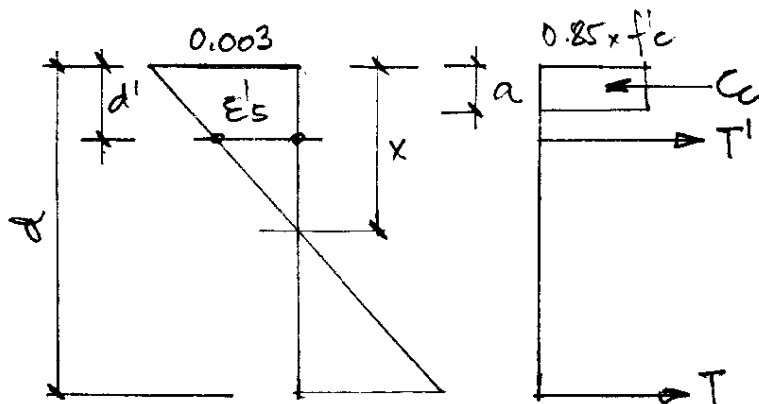
$$b = 60"$$

$$d' = 3 + \frac{9}{16} = 3.56" ; d = 18 - 3.56 = 14.44"$$

FIND NEUTRAL AXIS LOCATION BY SUMMING HORIZ. FORCES:

$$0.25 \times 4 \times 60 \times 0.85 \times X + \left[ \frac{X - d'}{X} \times 0.003 \times 29000 - 4 \times 0.85 \right] \times 5 = 5 \times 60$$

$$\text{SOLVE FOR } X \rightarrow \underline{X = 2.678"}$$



$$a = 0.85 \times 2.678 = \underline{2.277"}$$

$$C_c = 0.85 \times 4 \times 60 \times 2.277 = \underline{464.4 \text{ K}}$$

$$\begin{aligned} E'_s &= \frac{X - d'}{X} \times 0.003 \\ &= \frac{2.678 - 3.56}{2.678} \times 0.003 \\ &= -0.000987 \text{ (tension, } < E'_g = 0.00207) \end{aligned}$$

$$f'_s = 29000 \times 0.000987 = \underline{28.63 \text{ Ksi}}$$


TAKING MOMENTS W.R.T.  $C_c$

$$\begin{aligned} M_{CAP} &= \frac{0.9}{12} \cdot \left[ 5 \times 60 \times \left( 14.44 - \frac{2.277}{2} \right) + 5 \times 28.63 \times \left( 3.56 - \frac{2.277}{2} \right) \right] = \\ &= 0.075 \times (300 \times 12.302 + 143.2 \times 2.422) = \underline{325.3 \text{ K}} \end{aligned}$$

(COMP. STEEL INCLUDED)



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0	P. REINHARDT	6.24.94	DYen	6/24/94					


NEGLECTING THE EFFECT OF COMPRESSION STEEL:

$$a = \frac{5 \times 60}{0.85 \times 4 \times 60} = 1.471''$$

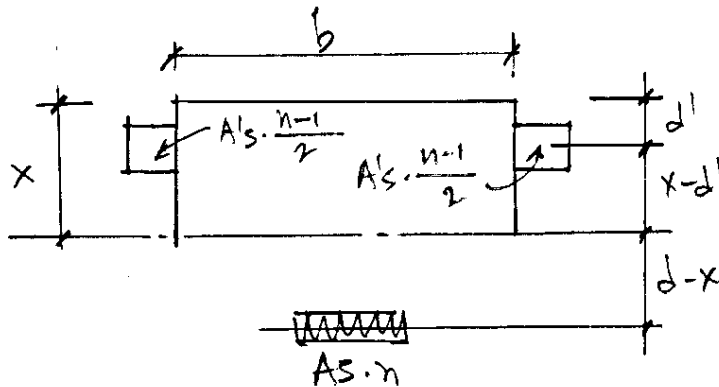
$$M_{CAP} = \frac{0.9}{12} \cdot \left[ 5 \times 60 \times \left( 14.44 - \frac{1.471}{2} \right) \right] = \underline{308.5^{11K}}$$

(EXCL. COMPRESS. STEEL  
→ CONSERV.)

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0	P. REINHARDT	6.24.94	stem	6/26/94					

5.4 DETERMINE CRACKED MOMENT OF INERTIA FOR 5'-0" WIDE VERTICAL STRIP:



$$\begin{aligned}
 A_s &= 5.00 \text{ in}^2 \\
 A's &= 5.00 \text{ in}^2 \\
 b &= 60'' \\
 d &= 14.44'' \\
 d' &= 3.56''
 \end{aligned}$$

$$n = \frac{29000}{3605} = 8.04$$

Find Neutral Axis:

$$x^2 \cdot \frac{b}{2} + A's (n-1) x + A_s \cdot n \cdot x = A_s \cdot n \cdot d + A's \cdot (n-1) \cdot d'$$

$$30 x^2 + 5 \left( 7.04 + 8.04 \right) x = 5 \times 8.04 \times 14.44 + 5 \times 7.04 \times 3.56 = 705.8$$


$$\begin{aligned}
 x &= \frac{-75.40}{60} \pm \frac{1}{60} \sqrt{(75.4)^2 + 4 \times 30 \times 705.8} \\
 &= -1.257 \pm 5.011 = 3.754''
 \end{aligned}$$

$$\begin{aligned}
 I_{TR} &= \frac{3.754^3}{4} \times 60 + 5 \times 7.04 (3.754 - 3.56)^2 + 5 \times 8.04 (14.44 - 3.754)^2 \\
 &\quad + \frac{3.754^3}{12} \times 60 = 5,649.9 \text{ in}^4
 \end{aligned}$$

$$M_{CR} = 7.5 \sqrt{4000} \times \frac{18^2 \times 60}{b} \times \frac{1}{12000} = 128.1 \text{ K}$$

$$\left( \frac{M_{CR}}{M_{CAP}} \right)^3 = \left( \frac{128.1}{325.3} \right)^3 = 0.0611$$

## Calculation Sheet

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0	P. REINHARDT	6.24.94	DYm	6/26/94					

$$I_g = \frac{18^3 \times 60}{12} = 29160 \text{ in}^4$$

$$\begin{aligned} \rightarrow I_{eff.} &= 0.0611 \times 29160 + (1 - 0.0611) \times 5649.9 = \\ &= 1,781.7 + 5,304.7 = \underline{7,086.4 \text{ in}^4} \end{aligned}$$

(Eff. Mom. Inertia incl. compr. steel)

Effective Moment of Inertia neglecting compression steel:


$$M_{cap.} = 308.5 \text{ K}$$

$$\left( \frac{M_{cr}}{M_{cap.}} \right)^3 = \left( \frac{128.1}{308.5} \right)^3 = 0.0716$$

$$\begin{aligned} \rightarrow I_{eff.} &= 0.0716 \times 29160 + (1 - 0.0716) \times 5649.9 = \\ &= 2,087.9 + 5,245.4 = \underline{7,333.3 \text{ in}^4} \end{aligned}$$

(Eff. Mom. Inertia neglecting compr. steel.)

## Calculation Sheet

 <b>SRS</b> SAVANNAH RIVER SITE		Project S-2764 SALTSTONE VAULT NR. 1				Calculation No. C-CLC-2-00016			
		Subject STRUCTURAL INVESTIGATION OF NORTH WALL (U)						Sheet No. 20	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6.24.94	DPm	6/26/94					

### 5.5 CALCULATE LARGEST DEFLECTION @ TOP CENTER OF NORTH WALL UNDER HYDROSTATIC LOAD.

#### a. LOAD CASE 2 - FULL HYDROSTATIC LOAD.

From Computer output -- Node Nr. 186 = Top center of north wall.

X-translation = horizontal deflection = 1.5"  
(Uncracked Section).

Average Cracked Section  $I_{eff.} = \frac{1}{2} (I_{eff. hor} + I_{eff. vert.})$

$$I_{eff. ave} = \frac{1}{2} (8690.3 + 7086.4) = \underline{7,888.4 \text{ in}^4} \quad (\text{APPROX})$$

Adjusted max. deflection (cracked section) :

$$\Delta_2 = 1.5 \times \frac{29160}{7888.4} = \underline{5.5"} \quad (\text{for full hydrostatic load}).$$

#### b. LOAD CASE 1 - 20.8' HYDROSTATIC LOAD :


X-translation from output = 0.703"  
(Uncracked Section)

Adjusted max. deflection (cracked section) :

$$\Delta_1 = 0.703 \times \frac{29160}{7888.4} = \underline{2.6"} \quad (20.8 \text{ ft hydro-static load}).$$

(Note : See "Discussion of Results" for interpretation of the above calculated deflections.)

## Calculation Sheet

		Project S-2764 SALTSTONE VAULT NR. 1.				Calculation No. E-CLC-2-00016			
		Subject STRUCTURAL INVESTIGATION OF NORTH WALL (V)						Sheet No. 21	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6.24.94	DYen	6/26/94					

### 5.6 DETERMINE MAXIMUM DEFLECTION @ TOP CENTER OF NORTH WALL TO FORM A PLASTIC HINGE AT THAT LOCATION :

A.) Use linear extrapolation from computer output.

Element Nr. 150 :

This element is at top center of the north wall.  
 $M_y$  (from computer output) = moment about y-axis causing stresses in horizontal direction.)

$$M_y (\text{load case 2}) = 15.66 \text{ k/ft} = 15.66 \times 5.0 = \underline{78.3 \text{ k}}$$

$$M_y \text{ capacity} = \underline{175.5 \text{ k}} \text{ (w/o Comp. Steel)} \leftarrow \text{USE (CONS.)}$$

$$= \underline{215.2 \text{ k}} \text{ (with Comp. Steel)}$$


$$\Delta = 1.5 \times \frac{29160}{10320.3} \times \frac{175.5}{78.3} = \underline{9.5''} \text{ (Using ave. } I_{\text{eff}} \text{ *)}$$

$$\Delta = 1.5 \times \frac{29160}{13307.2} \times \frac{175.5}{78.3} = \underline{7.4''} \text{ (Using horiz. } I_{\text{eff}} \text{)}$$

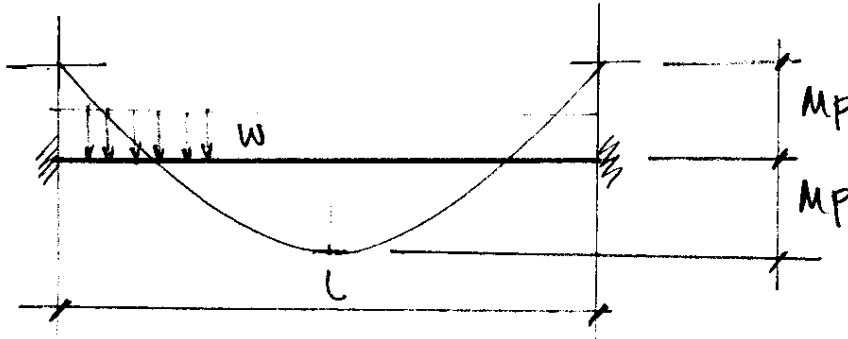
$$(*) I_{\text{eff. ave}} = \frac{1}{2} (7333.3 + 13307.2) = 10,320.3 \text{ in}^4 \text{ (for } M_{\text{cap}} = 175.5 \text{ k)}$$

B.) Calculate max. deflection considering a 60" wide horizontal beam. This beam will deflect horizontally under a uniform horizontal load until a mechanism is developed, e.g. three plastic hinges are formed at the ends and in the center.

## Calculation Sheet

 <b>SRS</b> SAVANNAH RIVER SITE	Project	S-2764 SALSTONE VAULT NR. 1	Calculation No.	C-CLC-Z-00016
	Subject	STRUCTURAL INVESTIGATION OF NORTH WALL(U)		Sheet No.
			22	

Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6.24.94	DYan	6/28/94					



$$\frac{w \cdot L^2}{8} = 2 M_p \therefore M_p = \frac{w L^2}{16}$$

$\delta_1$  = deflect. of simple beam under unif. loading,

$$\delta_1 = \frac{5 \times w \cdot L^4}{384 \times E \cdot I}$$

$\delta_2$  = deflected. of simple beam subjected to two equal and opposing end moments  $M_p$

$$\delta_2 = -\frac{1}{2} \times \frac{L^2}{4} \times \frac{M_p}{EI} = -M_p \cdot \frac{L^2}{8EI}$$

$$\delta = \text{Total deflect. @ } \frac{L}{2} = \delta_1 + \delta_2 = \frac{5 w L^4}{384 EI} - M_p \cdot \frac{L^2}{8EI}$$

$$\delta = \frac{5}{24} M_p \frac{L^2}{EI} - \frac{1}{8} \cdot M_p \cdot \frac{L^2}{EI} = \frac{1}{12} M_p \cdot \frac{L^2}{EI}$$

$$\text{FOR: } M_p = 175.5 \text{ k} \times 12 = 2106 \text{ k}$$


$$L = 100' \times 12 = 1200''$$

$$I_{eff} = 13307.2 \text{ in}^4$$

$$E_c = 3605 \text{ KSI}$$

$$\rightarrow \delta \approx \frac{2106 \times 1200^2}{12 \times 3605 \times 13307.2} = \underline{\underline{5.3''}}$$

## Calculation Sheet

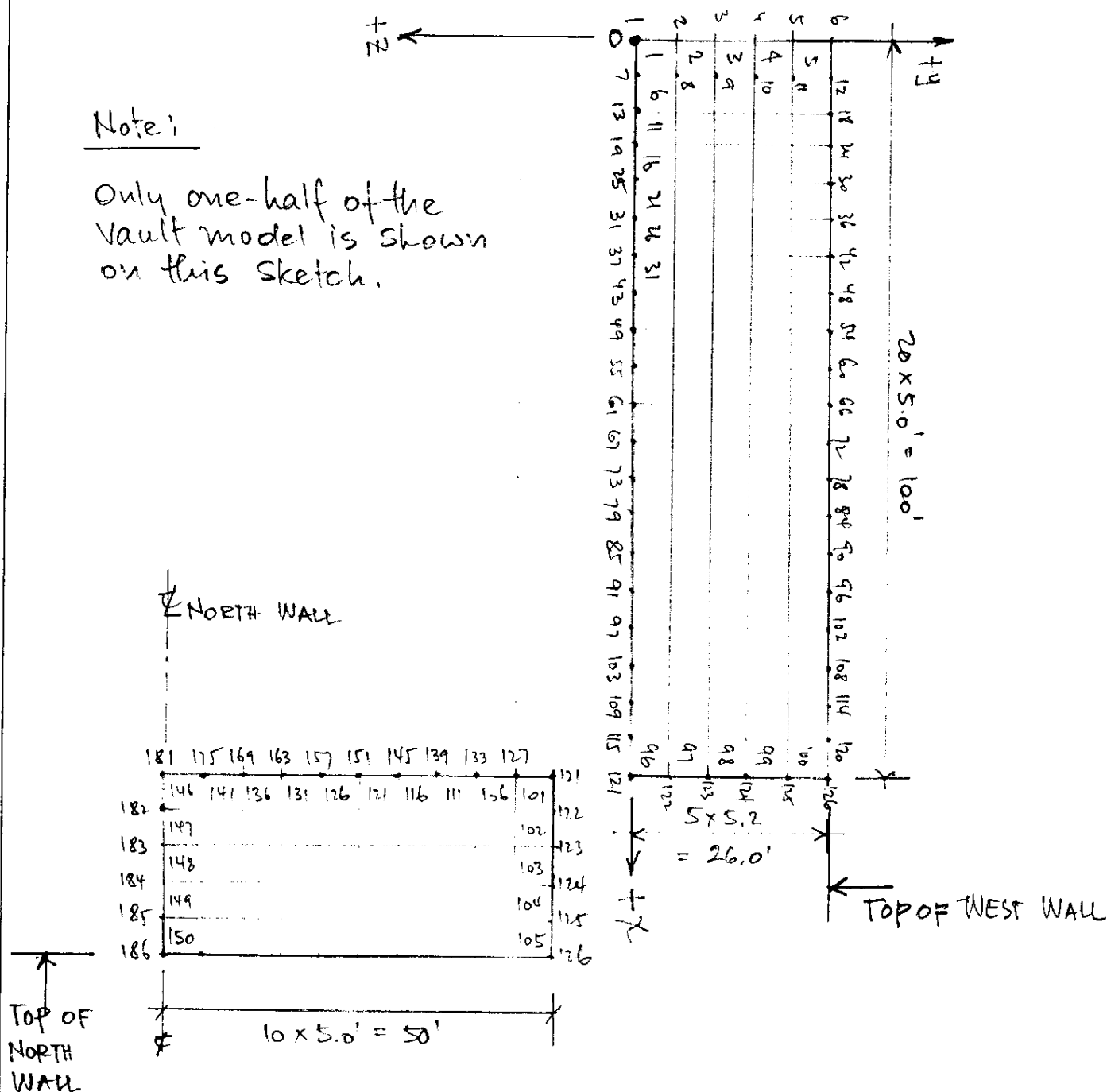
	Project				Calculation No.				
	S-2764 SALTSTONE VAULT NR. 1.				C-CLC-2-00016				
Subject				Sheet No.					
STRUCTURAL INVESTIGATION OF NORTH WALL (U)				23					
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6.24.94	DYen	6/24/94					

### 6. INPUT DEVELOPMENT FOR STAAD III.


#### FINITE ELEMENT MODEL OF NORTH, EAST AND WEST WALLS OF CELL "A" - SALTSTONE VAULT NR. 1.

Note:

Only one-half of the Vault model is shown on this sketch.

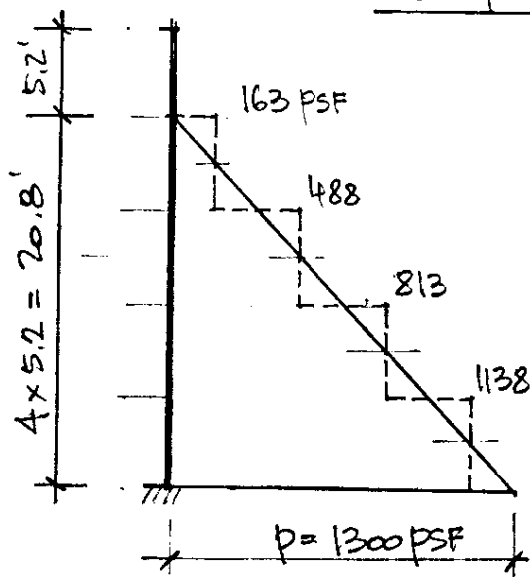


## Calculation Sheet

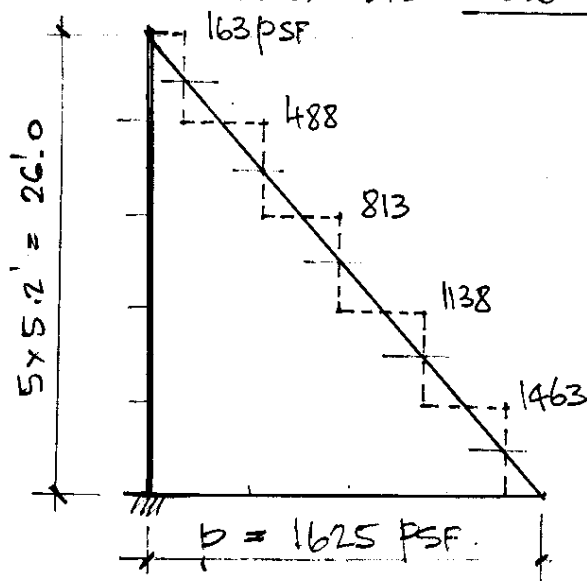
		Project S-2764 SALTSTONE VAULT NR. 1				Calculation No. C-CLC-2-000'6			
		Subject STRUCTURAL INVESTIGATION OF NORTH WALL(V)				Sheet No. 24			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6.26.94	DYan	6/26/94					

LOAD CASESCASE 1 :

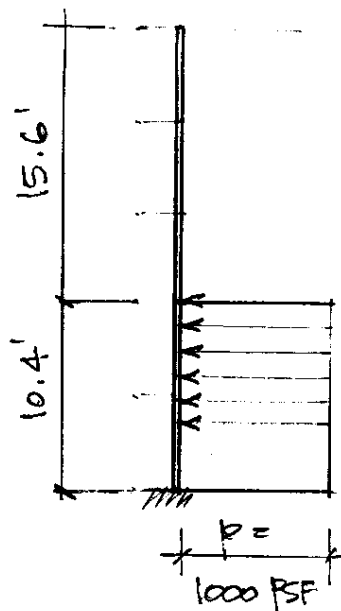
$$20.8 \times 62.5 = \underline{1300 \text{ PSF}}$$

CASE 2 :

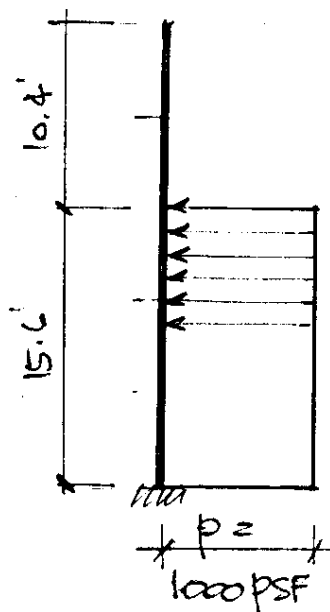
$$26.0 \times 62.5 = \underline{1625 \text{ PSF}}$$

CASE 3 :

(Virtual Load)


CASE 4 :

(Virtual Load)





## Calculation Sheet


 <b>SRS</b> SAVANNAH RIVER SITE		Project S-2764 SALTSTONE VAULT NR. 1				Calculation No. C-CLC-2-00016			
		Subject STRUCTURAL INVESTIGATION OF NORTH WALL (U)						Sheet No. 25	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6.24.94	DYan	6/28/94					

## 7. DISCUSSION OF RESULTS:

Two results were derived in the foregoing analysis:

- 7.1 Introducing cracked section properties and extrapolating linearly the elastic deformations of the computer output, an attempt is made to support the maximum measured deflection of the north wall of 4.5 inches.
  - Using full height hydrostatic pressure (load case 2) and an average cracked moment of inertia of horizontal and vertical directions (both directions contribute to the stiffness of the plate), a deflection of 5.5 inches is obtained. Under full height hydrostatic pressure some regions of the plate are in the plastic range, hence the elastic linear extrapolation will give smaller values than an elasto-plastic analysis. On the other hand not all regions of the plate will have cracked, therefore the rigidity of the plate is actually larger than assumed in this analysis, hence real deformations are likely to be somewhat smaller due to this effect. At any rate, if the wall was exposed to full height hydrostatic pressure at any time, the total deflection will contain an elastic (recoverable) and a plastic (non-recoverable) component.
  - Using the partial height hydrostatic pressure, which resembles the water height when the deflection measurement was taken, a 2.6 inch deflection is calculated. Similar considerations as given above apply to this load case 1.
- Under the probable assumption that the wall was first under full height pressure, which then decreased to the part height pressure of load case 1, the per-

## Calculation Sheet

 <b>SRS</b> SAVANNAH RIVER SITE		Project S-2764 SALSTONE VAULT NR. 1				Calculation No. C-CLC-2-00016			
		Subject STRUCTURAL INVESTIGATION OF NORTH WALL(V)				Sheet No. 26			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHART	6.24.94	D. Yew	6/26/94					

manent deformation of load case 2 (full height) remained in the wall and an elastic recovery took place corresponding to the reduction of load from case 2 to case 1.

This elastic recovery is conservatively estimated as:

$$\Delta_{\text{recov.}} = \frac{1}{2}(5.5 - 2.6) = 1.4 \text{ inches}$$

Thus the remaining deformation for the partial height pressure is  $\Delta = 5.5 - 1.4 = \underline{4.1 \text{ inches}}$ , which compares to the measured value within  $\pm 10\%$ .


7.2 Determination of a conservative estimate of the horizontal deflection on top of the wall which will produce a third plastic hinge at the center of the wall. To be on the conservative side, the effect of the compression reinforcement was neglected, using the moment capacity of the section with tensile reinforcement only.

This has a twofold effect:

- Since the capacity is reduced, a smaller deflection will be required to reach the moment.
- A smaller moment capacity will - by nature of the Branden equation - result in higher values of  $I_{\text{effective}}$ , again reducing the resulting deflection.

The above, together with the considerations in section 7.1, support the conclusion that the deflection range of 5.3' to 7.4' is conservative in predicting the formation of a plastic hinge at top center of the north wall.

## Calculation Sheet

 <b>SRS</b> SAVANNAH RIVER SITE		Project S-2764 SALTSTONE VAULT NR. 1				Calculation No. C-CLC-2-00016			
		Subject STRUCTURAL INVESTIGATION OF NORTH WALL(V)				Sheet No. 27			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6.24.94	D. Y. m	6/24/94					

## 8. CONCLUSIONS:

The foregoing analysis and discussion of results lead to the following conclusions:


8.1 The pressure exerted on the wall by a hydrostatic water head of full wall height will cause deflections and cracking patterns as measured and observed on the north wall of Vault Nr. 1.

8.2 The total horizontal deflection required to form a third plastic hinge at the top center of the wall is conservatively estimated between 5.3 and 7.4 inches.

It is to be noted that the formation of a third plastic hinge at the top of the wall is not a collapse situation. The load will be redistributed in the plate mobilizing the inherent redundancy of plate elements. The above deflections are considered conservative for reasons expressed in the discussion of results. A non-linear elasto-plastic analysis would show larger deflections, but is considered unnecessary - not at least for it's complexity - for the present situation. It should also be noted, that the load case full hydrostatic pressure is self-limiting, since additional water will simply overflow.

8.3 As of June 23, 1994 holes have been drilled at the base of the wall to drain the water out. In the process, the north wall deflection recovery measured at top center of the wall is about 1.5 in. This also validates the conclusions drawn above.

## Calculation Sheet

 <b>SRS</b> SAVANNAH RIVER SITE	Project <u>S-2764 SALTSTONE VAULT NR. 1</u>					Calculation No. <u>C-CLC-2-00016</u>			
	Subject <u>STRUCTURAL INVESTIGATION OF NORTH WALL (U)</u>								Sheet No. <u>28</u>
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	P. REINHARDT	6/24/94	D. Jan	6/24/94					

### 9. APPENDIX "A" & "B"

"A": STAAD III INPUT AND  
 "B": SELECTED OUTPUT.

(SOFTWARE : STAAD III / ISDS - VER. 16)

### APPENDIX "C" :

STAAD III STRESS CONTOURS.

# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1  
 Subject: Structural Investigation of North Wall (U)

Calc. No. C-CLC-Z-00016 Rev.0  
 Page A1 of A1

## STAAD III Input file Tank4

STAAD SPACE FINITE ELEMENT MODEL OF TANK  
 UNITS FEET KIPS  
 JOINT COORDINATES  
 1 0. 0. 0. 6 0. 26. 0.  
 REPEAT 20 5. 0. 0.  
 REPEAT 20 0. 0. 5.  
 REPEAT 20 -5. 0. 0.  
 ELEMENT INCIDENCES  
 1 1 2 8 7 TO 5 1 1  
 REPEAT 59 5 6  
 UNIT INCHES  
 ELEMENT PROPERTIES  
 1 TO 300 TH 18.0  
 CONSTANTS  
 E 3605. ALL  
 DEN 0.0000868 ALL  
 SUPPORTS  
 1 TO 361 BY 6 2 TO 6 362 TO 366 FIXED  
 UNIT FEET  
 LOAD 1  
 ELEMENT LOAD  
 1 TO 296 BY 5 PR 1.138  
 2 TO 297 BY 5 PR 0.813  
 3 TO 298 BY 5 PR 0.488  
 4 TO 299 BY 5 PR 0.163  
 LOAD 2  
 ELEMENT LOAD  
 1 TO 296 BY 5 PR 1.463  
 2 TO 297 BY 5 PR 1.138  
 3 TO 298 BY 5 PR 0.813  
 4 TO 299 BY 5 PR 0.488  
 5 TO 300 BY 5 PR 0.163  
 LOAD 3  
 ELEMENT LOAD  
 1 TO 296 BY 5 PR 1.00  
 2 TO 297 BY 5 PR 1.00  
 LOAD 4  
 ELEMENT LOAD  
 1 TO 296 BY 5 PR 1.00  
 2 TO 297 BY 5 PR 1.00  
 3 TO 298 BY 5 PR 1.00  
 PERFORM ANALYSIS  
 UNIT INCH KIPS  
 PRINT ALL  
 PRINT ANALYSIS RESULTS  
 PRINT REACTIONS ALL  
 PRINT JOINT DISPLACEMENTS ALL  
 PRINT ELEMENT FORCES ALL  
 PRINT MEMBER STRESS  
 PLOT BENDING FILE  
 PLOT DISPLACEMENT ALL  
 PLOT STRESSES ALL  
 FINISH

ORIG  
 DATE

CHECK  
 DATE

$$150 \text{ pcf} = .0000868 \text{ ksi} \checkmark$$

$$\frac{L_1}{L_2} = \frac{11.38}{19} = 0.599$$

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (U)

Page B1 of B 51

Selected Output from Tank4.anl

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 14

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
1	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
2	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
3	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
4	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
5	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
6	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
7	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
8	1	.00001	.00001	-.00827	-.00019	.00020	.00000
	2	.00002	.00001	-.01093	-.00029	.00030	.00000
	3	.00001	.00000	-.00631	-.00012	.00014	.00000
	4	.00001	.00001	-.01029	-.00025	.00026	.00000
9	1	.00002	.00001	-.02000	-.00015	.00056	.00000
	2	.00003	.00001	-.03282	-.00033	.00094	.00000
	3	.00001	.00000	-.01183	-.00005	.00032	.00000
	4	.00002	.00001	-.02629	-.00020	.00073	.00000
10	1	.00002	.00001	-.02832	-.00011	.00083	.00000
	2	.00004	.00001	-.05384	-.00030	.00159	.00000
	3	.00001	.00000	-.01324	-.00001	.00039	.00000
	4	.00003	.00001	-.03653	-.00012	.00106	.00000
11	1	.00003	.00000	-.03542	-.00011	.00106	.00000
	2	.00005	.00000	-.07444	-.00032	.00223	.00000
	3	.00001	.00000	-.01472	-.00003	.00044	.00000
	4	.00003	.00000	-.04395	-.00012	.00132	.00000
12	1	.00003	-.00001	-.03955	.00003	.00122	.00000
	2	.00005	-.00001	-.08975	-.00004	.00267	.00000
	3	.00001	.00000	-.01523	.00003	.00048	.00000
	4	.00003	-.00001	-.04795	.00006	.00149	.00000

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 15

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
13	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
14	1	.00002	.00001	-.02226	-.00056	.00021	.00000
	2	.00004	.00002	-.03276	-.00092	.00036	.00000
	3	.00001	.00000	-.01480	-.00034	.00012	.00000
	4	.00003	.00001	-.02834	-.00073	.00028	.00000
15	1	.00004	.00001	-.05798	-.00054	.00068	.00000
	2	.00007	.00002	-.10001	-.00115	.00123	.00000
	3	.00002	.00001	-.03206	-.00020	.00035	.00000
	4	.00005	.00001	-.07524	-.00070	.00087	.00000
16	1	.00005	.00001	-.08829	-.00043	.00110	.00000
	2	.00009	.00002	-.17040	-.00109	.00216	.00000
	3	.00002	.00000	-.04119	-.00011	.00051	.00000
	4	.00006	.00001	-.11281	-.00050	.00140	.00000
17	1	.00005	.00000	-.11382	-.00039	.00150	.00000
	2	.00010	.00000	-.23765	-.00105	.00312	.00000
	3	.00003	.00000	-.04799	-.00011	.00064	.00000
	4	.00007	.00000	-.14170	-.00043	.00187	.00000

CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (U)

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18	1	.00006	-.00001	-.13703	-.00035	.00179	.00000
	2	.00011	-.00001	-.30158	-.00098	.00393	.00000
	3	.00003	.00000	-.05449	-.00009	.00073	.00000
	4	.00007	-.00001	-.16769	-.00039	.00221	.00000
19	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
20	1	.00003	.00001	-.03531	-.00093	.00018	.00000
	2	.00006	.00002	-.05601	-.00158	.00034	.00000
	3	.00001	.00000	-.02160	-.00052	.00009	.00000
	4	.00004	.00001	-.04507	-.00120	.00024	.00000
21	1	.00006	.00001	-.09746	-.00100	.00063	.00000
	2	.00011	.00002	-.17417	-.00207	.00121	.00000
	3	.00003	.00001	-.05139	-.00040	.00030	.00000
	4	.00007	.00002	-.12559	-.00128	.00080	.00000
22	1	.00007	.00001	-.15538	-.00086	.00110	.00000
	2	.00014	.00002	-.30361	-.00205	.00219	.00000
	3	.00004	.00001	-.07166	-.00027	.00049	.00000
	4	.00009	.00001	-.19750	-.00103	.00138	.00000
23	1	.00009	.00000	-.20597	-.00078	.00157	.00000
	2	.00016	.00001	-.42867	-.00197	.00325	.00000
	3	.00004	.00000	-.08743	-.00024	.00067	.00000
	4	.00011	.00001	-.25666	-.00090	.00195	.00000
24	1	.00009	.00000	-.25448	-.00078	.00190	.00000
	2	.00017	-.00001	-.55214	-.00199	.00402	.00000
	3	.00004	.00000	-.10288	-.00025	.00079	.00000
	4	.00011	-.00001	-.31290	-.00091	.00236	.00000

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 16

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
25	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
26	1	.00004	.00001	-.04614	-.00124	.00015	.00000
	2	.00008	.00002	-.07673	-.00219	.00029	.00000
	3	.00002	.00001	-.02676	-.00067	.00007	.00000
	4	.00005	.00001	-.05884	-.00160	.00019	.00000
27	1	.00008	.00002	-.13232	-.00143	.00053	.00000
	2	.00015	.00003	-.24249	-.00296	.00105	.00000
	3	.00004	.00001	-.06751	-.00060	.00024	.00000
	4	.00010	.00002	-.16968	-.00182	.00067	.00000
28	1	.00010	.00001	-.21781	-.00130	.00096	.00000
	2	.00020	.00002	-.42969	-.00300	.00196	.00000
	3	.00005	.00001	-.09937	-.00045	.00042	.00000
	4	.00013	.00002	-.27592	-.00157	.00121	.00000
29	1	.00012	.00001	-.29518	-.00120	.00143	.00000
	2	.00023	.00001	-.61372	-.00292	.00297	.00000
	3	.00006	.00000	-.12560	-.00041	.00061	.00000
	4	.00015	.00001	-.36793	-.00142	.00178	.00000
30	1	.00012	.00000	-.37031	-.00122	.00176	.00000
	2	.00024	-.00001	-.79699	-.00299	.00370	.00000
	3	.00008	.00000	-.15117	-.00042	.00074	.00000
	4	.00016	.00000	-.45656	-.00144	.00219	.00000
31	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
32	1	.00005	.00001	-.05463	-.00149	.00011	.00000
	2	.00010	.00003	-.09361	-.00269	.00023	.00000
	3	.00003	.00001	-.03061	-.00078	.00005	.00000
	4	.00007	.00002	-.06955	-.00191	.00014	.00000
33	1	.00010	.00002	-.16081	-.00181	.00042	.00000
	2	.00019	.00003	-.29979	-.00372	.00085	.00000
	3	.00005	.00001	-.08021	-.00076	.00018	.00000
	4	.00013	.00002	-.20551	-.00229	.00052	.00000
34	1	.00014	.00002	-.27076	-.00170	.00079	.00000
	2	.00026	.00003	-.53801	-.00385	.00162	.00000
	3	.00007	.00001	-.12244	-.00062	.00034	.00000
	4	.00017	.00002	-.34222	-.00208	.00099	.00000
35	1	.00016	.00001	-.37308	-.00160	.00120	.00000
	2	.00030	.00001	-.77572	-.00378	.00250	.00000
	3	.00008	.00000	-.15879	-.00056	.00051	.00000
	4	.00020	.00001	-.46502	-.00190	.00149	.00000
36	1	.00016	.00000	-.47303	-.00163	.00150	.00000
	2	.00032	-.00001	-1.01327	-.00387	.00314	.00000
	3	.00008	.00000	-.19418	-.00058	.00063	.00000
	4	.00021	.00000	-.58411	-.00194	.00186	.00000

FINITE ELEMENT MODEL OF TANK

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CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (v)

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JOINT DISPLACEMENT (INCH RADIANS)      STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
37	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
38	1	.00007	.00002	-.06101	-.00168	.00008	.00000
	2	.00013	.00003	-.10657	-.00308	.00017	.00000
	3	.00003	.00001	-.03341	-.00087	.00004	.00000
	4	.00009	.00002	-.07756	-.00215	.00010	.00000
39	1	.00013	.00002	-.18285	-.00210	.00031	.00000
	2	.00025	.00004	-.34485	-.00434	.00065	.00000
	3	.00006	.00001	-.08981	-.00089	.00014	.00000
	4	.00016	.00003	-.23312	-.00266	.00039	.00000
40	1	.00017	.00002	-.31286	-.00204	.00061	.00000
	2	.00033	.00004	-.62493	-.00457	.00126	.00000
	3	.00008	.00001	-.14055	-.00076	.00026	.00000
	4	.00022	.00002	-.39481	-.00249	.00076	.00000
41	1	.00020	.00001	-.43637	-.00194	.00094	.00000
	2	.00039	.00002	-.90775	-.00452	.00197	.00000
	3	.00010	.00000	-.18563	-.00070	.00040	.00000
	4	.00026	.00001	-.54384	-.00232	.00117	.00000
42	1	.00021	.00000	-.55752	-.00197	.00119	.00000
	2	.00040	.00000	-.11907	-.00460	.00249	.00000
	3	.00010	.00000	-.22959	-.00072	.00050	.00000
	4	.00027	.00000	-.68907	-.00236	.00147	.00000
43	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
44	1	.00009	.00002	-.06558	-.00182	.00006	.00000
	2	.00017	.00004	-.11598	-.00337	.00012	.00000
	3	.00004	.00001	-.03538	-.00093	.00002	.00000
	4	.00011	.00002	-.08327	-.00233	.00007	.00000
45	1	.00016	.00003	-.19899	-.00233	.00022	.00000
	2	.00031	.00005	-.37821	-.00480	.00046	.00000
	3	.00008	.00001	-.09674	-.00098	.00009	.00000
	4	.00020	.00003	-.25328	-.00294	.00028	.00000
46	1	.00022	.00002	-.34433	-.00230	.00044	.00000
	2	.00042	.00004	-.69031	-.00511	.00091	.00000
	3	.00010	.00001	-.15395	-.00087	.00019	.00000
	4	.00028	.00003	-.43405	-.00282	.00054	.00000
47	1	.00025	.00001	-.48445	-.00221	.00069	.00000
	2	.00049	.00002	-.10083	-.00509	.00144	.00000
	3	.00012	.00001	-.20592	-.00081	.00029	.00000
	4	.00032	.00002	-.60366	-.00266	.00085	.00000
48	1	.00027	.00000	-.62229	-.00223	.00087	.00000
	2	.00051	.00000	-.13272	-.00517	.00183	.00000
	3	.00013	.00000	-.25672	-.00082	.00037	.00000
	4	.00034	.00000	-.76954	-.00269	.00108	.00000

FINITE ELEMENT MODEL OF TANK

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JOINT DISPLACEMENT (INCH RADIANS)      STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
49	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
50	1	.00011	.00002	-.06863	-.00192	.00004	.00000
	2	.00021	.00004	-.12231	-.00356	.00007	.00000
	3	.00005	.00001	-.03668	-.00097	.00002	.00000
	4	.00014	.00003	-.08707	-.00244	.00004	.00000
51	1	.00020	.00003	-.20993	-.00248	.00014	.00000
	2	.00038	.00006	-.40095	-.00512	.00029	.00000
	3	.00010	.00001	-.10139	-.00105	.00006	.00000
	4	.00025	.00004	-.26692	-.00313	.00018	.00000
52	1	.00027	.00003	-.36595	-.00249	.00028	.00000
	2	.00052	.00005	-.73544	-.00550	.00059	.00000
	3	.00013	.00001	-.16310	-.00094	.00012	.00000
	4	.00034	.00003	-.46097	-.00305	.00035	.00000
53	1	.00032	.00002	-.51786	-.00240	.00045	.00000
	2	.00060	.00003	-.10784	-.00549	.00094	.00000
	3	.00015	.00001	-.21998	-.00089	.00019	.00000
	4	.00040	.00002	-.64523	-.00289	.00056	.00000
54	1	.00033	.00000	-.66763	-.00242	.00057	.00000
	2	.00063	.00000	-.14226	-.00558	.00120	.00001
	3	.00016	.00000	-.27568	-.00090	.00024	.00000
	4	.00042	.00000	-.82586	-.00292	.00071	.00000
55	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000



## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (U)

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56	1	.00013	.00003	-.07037	-.00197	.00002	.00000
	2	.00025	.00005	-.12594	-.00367	.00004	.00000
	3	.00006	.00001	-.03741	-.00099	.00001	.00000
	4	.00017	.00003	-.08924	-.00251	.00002	.00000
57	1	.00024	.00004	-.21624	-.00257	.00007	.00000
	2	.00047	.00007	-.41414	-.00531	.00014	.00000
	3	.00012	.00002	-.10406	-.00108	.00003	.00000
	4	.00031	.00005	-.27478	-.00324	.00009	.00000
58	1	.00033	.00003	-.37855	-.00260	.00014	.00000
	2	.00064	.00007	-.76183	-.00573	.00029	.00000
	3	.00016	.00002	-.16841	-.00099	.00006	.00000
	4	.00042	.00004	-.47665	-.00318	.00017	.00000
59	1	.00039	.00002	-.53750	-.00251	.00022	.00000
	2	.00074	.00004	-1.11965	-.00574	.00046	.00000
	3	.00019	.00001	-.22821	-.00094	.00009	.00000
	4	.00049	.00002	-.66963	-.00304	.00027	.00000
60	1	.00041	.00000	-.69438	-.00254	.00028	.00000
	2	.00078	.00000	-1.47907	-.00582	.00059	.00001
	3	.00020	.00000	-.28686	-.00095	.00012	.00000
	4	.00052	.00000	-.85909	-.00306	.00035	.00000

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 19

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
61	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
62	1	.00016	.00003	-.07094	-.00199	.00000	.00000
	2	.00031	.00006	-.12714	-.00371	.00000	.00000
	3	.00008	.00001	-.03765	-.00100	.00000	.00000
	4	.00020	.00004	-.08995	-.00253	.00000	.00000
63	1	.00030	.00005	-.21832	-.00260	.00000	.00000
	2	.00057	.00009	-.41849	-.00537	.00000	.00000
	3	.00014	.00002	-.10494	-.00110	.00000	.00000
	4	.00038	.00006	-.27737	-.00328	.00000	.00000
64	1	.00041	.00004	-.38272	-.00263	.00000	.00000
	2	.00078	.00009	-.77058	-.00581	.00000	.00000
	3	.00019	.00002	-.17016	-.00100	.00000	.00000
	4	.00051	.00005	-.48184	-.00323	.00000	.00000
65	1	.00048	.00002	-.54402	-.00255	.00000	.00000
	2	.00091	.00005	-1.13338	-.00582	.00000	.00001
	3	.00023	.00001	-.23094	-.00096	.00000	.00000
	4	.00060	.00003	-.67774	-.00308	.00000	.00000
66	1	.00050	.00000	-.70330	-.00257	.00000	.00000
	2	.00096	.00001	-1.49787	-.00590	.00000	.00001
	3	.00024	.00000	-.29058	-.00096	.00000	.00000
	4	.00063	.00000	-.87016	-.00311	.00000	.00001
67	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
68	1	.00019	.00004	-.07039	-.00197	-.00002	.00000
	2	.00037	.00008	-.12598	-.00367	-.00004	.00000
	3	.00009	.00002	-.03742	-.00099	-.00001	.00000
	4	.00024	.00005	-.08926	-.00251	-.00002	.00000
69	1	.00036	.00005	-.21631	-.00257	.00007	.00000
	2	.00070	.00011	-.41427	-.00531	.00014	.00000
	3	.00017	.00002	-.10408	-.00108	.00003	.00000
	4	.00045	.00007	-.27486	-.00325	-.00008	.00000
70	1	.00049	.00005	-.37868	-.00260	-.00014	.00000
	2	.00095	.00011	-.76211	-.00573	-.00028	.00000
	3	.00024	.00002	-.16846	-.00099	-.00006	.00000
	4	.00062	.00006	-.47681	-.00318	-.00017	.00000
71	1	.00058	.00003	-.53770	-.00252	-.00022	.00000
	2	.00112	.00007	-1.12010	-.00574	-.00045	.00001
	3	.00028	.00001	-.22828	-.00094	-.00009	.00000
	4	.00074	.00004	-.66988	-.00304	-.00027	.00000
72	1	.00062	.00000	-.69467	-.00254	-.00028	.00001
	2	.00117	.00002	-1.47969	-.00582	-.00058	.00001
	3	.00030	.00000	-.28696	-.00095	-.00012	.00000
	4	.00078	.00000	-.85944	-.00307	-.00034	.00001

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 20

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
73	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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Subject: Structural Investigation of North Wall (U)

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74	4	.00000	.00000	.00000	.00000	.00000	.00000
	1	.00023	.00004	-.06867	-.00192	-.00004	.00000
	2	.00044	.00009	-.12238	-.00356	-.00007	.00000
	3	.00011	.00002	-.03669	-.00097	-.00002	.00000
75	4	.00029	.00005	-.08711	-.00244	-.00004	.00000
	1	.00043	.00006	-.21006	-.00248	-.00014	.00000
	2	.00084	.00014	-.40122	-.00513	-.00029	.00000
	3	.00021	.00002	-.10144	-.00105	-.00006	.00000
76	4	.00055	.00008	-.26708	-.00314	-.00017	.00000
	1	.00050	.00006	-.36622	-.00249	-.00028	.00000
	2	.00116	.00014	-.73602	-.00551	-.00058	.00001
	3	.00029	.00002	-.16320	-.00094	-.00012	.00000
77	4	.00076	.00007	-.46130	-.00305	-.00035	.00000
	1	.00071	.00003	-.51829	-.00240	-.00044	.00000
	2	.00137	.00009	-1.07934	-.00550	-.00093	.00001
	3	.00034	.00001	-.22014	-.00089	-.00019	.00000
78	4	.00090	.00004	-.64575	-.00290	-.00055	.00001
	1	.00076	.00000	-.66822	-.00243	-.00056	.00001
	2	.00145	.00002	-1.42399	-.00558	-.00119	.00001
	3	.00037	-.00001	-.27590	-.00090	-.00024	.00000
79	4	.00096	-.00001	-.82658	-.00293	-.00070	.00001
	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
80	4	.00000	.00000	.00000	.00000	.00000	.00000
	1	.00027	.00005	-.06564	-.00182	-.00006	.00000
	2	.00052	.00011	-.11610	-.00337	-.00012	.00000
	3	.00013	.00002	-.03540	-.00093	-.00002	.00000
81	4	.00034	.00006	-.08334	-.00233	-.00007	.00000
	1	.00052	.00007	-.19921	-.00233	-.00022	.00000
	2	.00100	.00016	-.37865	-.00481	-.00046	.00000
	3	.00025	.00002	-.09682	-.00098	-.00009	.00000
82	4	.00066	.00009	-.25355	-.00294	-.00028	.00000
	1	.00073	.00006	-.34476	-.00231	-.00043	.00000
	2	.00140	.00016	-.69122	-.00512	-.00090	.00001
	3	.00035	.00002	-.15412	-.00087	-.00018	.00000
83	4	.00092	.00008	-.43458	-.00282	-.00054	.00000
	1	.00087	.00003	-.48513	-.00221	-.00068	.00001
	2	.00168	.00011	-1.00979	-.00510	-.00143	.00001
	3	.00042	.00000	-.20618	-.00081	-.00029	.00000
84	4	.00110	.00004	-.60450	-.00266	-.00085	.00001
	1	.00094	-.00001	-.62323	-.00224	-.00087	.00001
	2	.00179	.00003	-1.32928	-.00518	-.00182	.00001
	3	.00045	-.00002	-.25707	-.00083	-.00036	.00000
	4	.00118	-.00002	-.77068	-.00269	-.00108	.00001

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 21

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
85	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
86	1	.00032	.00005	-.06110	-.00169	-.00008	.00000
	2	.00060	.00012	-.10674	-.00309	-.00017	.00000
	3	.00016	.00002	-.03344	-.00087	-.00004	.00000
	4	.00041	.00006	-.07766	-.00216	-.00010	.00000
87	1	.00062	.00007	-.18317	-.00211	-.00031	.00000
	2	.00118	.00018	-.34549	-.00434	-.00064	.00000
	3	.00030	.00002	-.08994	-.00089	-.00014	.00000
	4	.00078	.00009	-.23351	-.00267	-.00039	.00000
88	1	.00088	.00006	-.31350	-.00205	-.00060	.00000
	2	.00168	.00018	-.62623	-.00458	-.00125	.00001
	3	.00042	.00001	-.14080	-.00076	-.00026	.00000
	4	.00111	.00007	-.39560	-.00250	-.00075	.00001
89	1	.00106	.00002	-.43736	-.00195	-.00094	.00001
	2	.00205	.00012	-.90983	-.00453	-.00196	.00001
	3	.00051	-.00001	-.18601	-.00070	-.00040	.00000
	4	.00134	.00002	-.54505	-.00233	-.00116	.00001
90	1	.00115	-.00003	-.55885	-.00197	-.00118	.00001
	2	.00222	.00001	-1.19385	-.00462	-.00248	.00002
	3	.00056	-.00004	-.23010	-.00072	-.00050	.00000
	4	.00146	-.00005	-.69070	-.00237	-.00147	.00001
91	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
92	1	.00038	.00005	-.05476	-.00150	-.00011	.00000
	2	.00069	.00012	-.09385	-.00270	-.00023	.00000
	3	.00019	.00002	-.03066	-.00078	-.00005	.00000
	4	.00048	.00006	-.06971	-.00192	-.00014	.00000
93	1	.00074	.00006	-.16126	-.00181	-.00042	.00000
	2	.00138	.00018	-.30065	-.00373	-.00084	.00000
	3	.00037	.00001	-.08040	-.00076	-.00018	.00000
	4	.00094	.00007	-.20608	-.00230	-.00052	.00000

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1Calculation Number C-CLC-Z-00016 Rev. 0Subject: Structural Investigation of North Wall (U)Page B6 of B 51

94	1	.00105	.00004	-.27165	-.00171	-.00078	.00001
	2	.00202	.00017	-.53977	-.00387	-.00161	.00001
	3	.00051	-.00001	-.12281	-.00062	-.00034	.00000
	4	.00133	.00004	-.34333	-.00208	-.00098	.00001
95	1	.00129	-.00001	-.37443	-.00161	-.00119	.00001
	2	.00251	.00009	-.77851	-.00380	-.00248	.00001
	3	.00061	-.00004	-.15933	-.00057	-.00051	.00000
	4	.00163	-.00003	-.46668	-.00191	-.00148	.00001
96	1	.00143	-.00008	-.47483	-.00163	-.00149	.00001
	2	.00277	-.00005	-1.01713	-.00389	-.00313	.00002
	3	.00068	-.00008	-.19487	-.00058	-.00063	.00001
	4	.00180	-.00012	-.58631	-.00195	-.00185	.00001

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 22

JOINT DISPLACEMENT (INCH RADIAN) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
97	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
98	1	.00045	.00004	-.04633	-.00125	-.00015	.00000
	2	.00078	.00010	-.07703	-.00220	-.00029	.00000
	3	.00024	.00001	-.02685	-.00067	-.00007	.00000
	4	.00057	.00005	-.05908	-.00160	-.00018	.00000
99	1	.00088	.00003	-.13297	-.00144	-.00052	.00000
	2	.00162	.00014	-.24361	-.00297	-.00105	.00001
	3	.00045	-.00001	-.06780	-.00060	-.00024	.00000
	4	.00113	.00003	-.17050	-.00183	-.00066	.00000
100	1	.00127	-.00001	-.21902	-.00131	-.00096	.00001
	2	.00242	.00010	-.43199	-.00302	-.00195	.00001
	3	.00062	-.00005	-.09988	-.00045	-.00042	.00000
	4	.00161	-.00003	-.27744	-.00159	-.00120	.00001
101	1	.00157	-.00008	-.29696	-.00121	-.00142	.00001
	2	.00307	-.00001	-.61734	-.00294	-.00295	.00002
	3	.00074	-.00009	-.12633	-.00041	-.00061	.00001
	4	.00198	-.00012	-.37013	-.00143	-.00177	.00001
102	1	.00176	-.00017	-.37263	-.00123	-.00175	.00001
	2	.00347	-.00019	-.80195	-.00301	-.00368	.00002
	3	.00082	-.00013	-.15207	-.00042	-.00073	.00001
	4	.00221	-.00024	-.45939	-.00145	-.00218	.00002
103	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
104	1	.00053	.00001	-.03559	-.00094	-.00018	.00000
	2	.00087	.00004	-.05635	-.00160	-.00034	.00000
	3	.00031	.00000	-.02174	-.00053	-.00009	.00000
	4	.00068	.00001	-.04543	-.00121	-.00023	.00000
105	1	.00106	-.00003	-.09837	-.00101	-.00062	.00000
	2	.00188	.00002	-.17556	-.00210	-.00120	.00001
	3	.00057	-.00005	-.05183	-.00041	-.00029	.00000
	4	.00136	-.00005	-.12676	-.00129	-.00079	.00000
106	1	.00154	-.00012	-.15699	-.00087	-.00109	.00001
	2	.00289	-.00008	-.30653	-.00207	-.00218	.00001
	3	.00076	-.00011	-.07238	-.00027	-.00049	.00000
	4	.00195	-.00016	-.19953	-.00104	-.00137	.00001
107	1	.00190	-.00022	-.20822	-.00079	-.00156	.00001
	2	.00375	-.00026	-.43321	-.00200	-.00323	.00002
	3	.00088	-.00016	-.08837	-.00025	-.00067	.00001
	4	.00238	-.00030	-.25945	-.00091	-.00194	.00001
108	1	.00215	-.00033	-.25732	-.00079	-.00189	.00001
	2	.00434	-.00048	-.55826	-.00202	-.00400	.00003
	3	.00097	-.00021	-.10400	-.00025	-.00079	.00001
	4	.00269	-.00044	-.31637	-.00092	-.00235	.00002

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 23

JOINT DISPLACEMENT (INCH RADIAN) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
109	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
110	1	.00064	-.00005	-.02269	-.00058	-.00021	.00000
	2	.00096	-.00010	-.03306	-.00093	-.00036	.00000
	3	.00040	-.00002	-.01505	-.00034	-.00012	.00000
	4	.00082	-.00005	-.02890	-.00075	-.00027	.00000
111	1	.00131	-.00016	-.05925	-.00056	-.00067	.00000
	2	.00220	-.00025	-.10168	-.00118	-.00122	.00001
	3	.00073	-.00010	-.03274	-.00021	-.00034	.00000

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (v)

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112	4	.00169	-.00020	-.07689	-.00072	-.00086	.00000
	1	.00187	-.00032	-.09034	-.00044	-.00110	.00001
	2	.00347	-.00048	-.17403	-.00112	-.00215	.00001
	3	.00093	-.00020	-.04215	-.00011	-.00050	.00001
113	4	.00239	-.00041	-.11542	-.00052	-.00139	.00001
	1	.00228	-.00045	-.11651	-.00040	-.00149	.00001
	2	.00457	-.00072	-.24309	-.00108	-.00310	.00002
	3	.00103	-.00025	-.04913	-.00011	-.00064	.00001
114	4	.00286	-.00058	-.14504	-.00044	-.00186	.00002
	1	.00259	-.00059	-.14034	-.00036	-.00178	.00001
	2	.00540	-.00104	-.30883	-.00101	-.00381	.00003
	3	.00111	-.00030	-.05579	-.00010	-.00073	.00001
115	4	.00321	-.00075	-.17172	-.00040	-.00220	.00002
	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
116	4	.00000	.00000	.00000	.00000	.00000	.00000
	1	.00078	-.00017	-.00900	-.00021	-.00020	.00000
	2	.00105	-.00039	-.01112	-.00031	-.00028	.00000
	3	.00055	-.00006	-.00682	-.00014	-.00013	.00000
117	4	.00100	-.00021	-.01123	-.00027	-.00026	.00000
	1	.00168	-.00043	-.02175	-.00017	-.00055	.00000
	2	.00267	-.00084	-.03526	-.00037	-.00092	.00000
	3	.00100	-.00022	-.01287	-.00005	-.00031	.00000
118	4	.00219	-.00052	-.02858	-.00022	-.00071	.00000
	1	.00226	-.00063	-.03076	-.00012	-.00082	.00001
	2	.00414	-.00123	-.05822	-.00033	-.00158	.00001
	3	.00112	-.00031	-.01443	-.00002	-.00039	.00001
119	4	.00292	-.00079	-.03968	-.00013	-.00106	.00001
	1	.00271	-.00079	-.03848	-.00012	-.00106	.00002
	2	.00551	-.00158	-.08073	-.00036	-.00221	.00003
	3	.00119	-.00035	-.01601	-.00003	-.00044	.00001
120	4	.00339	-.00099	-.04775	-.00013	-.00132	.00002
	1	.00302	-.00086	-.04300	.00002	-.00122	.00001
	2	.00655	-.00180	-.09749	-.00009	-.00268	.00002
	3	.00123	-.00037	-.01658	.00003	-.00049	.00001
	4	.00369	-.00106	-.05212	.00004	-.00150	.00002

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 24

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
121	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
122	1	.00108	-.00082	-.00103	-.00002	.00000	-.00002
	2	.00128	-.00142	-.00119	-.00002	.00000	-.00002
	3	.00084	-.00046	-.00082	-.00001	.00000	-.00001
	4	.00133	-.00105	-.00127	-.00002	.00000	-.00002
123	1	.00211	-.00099	-.00203	.00000	.00000	.00000
	2	.00327	-.00211	-.00311	-.00001	.00000	-.00001
	3	.00132	-.00039	-.00127	.00000	.00000	.00000
	4	.00280	-.00126	-.00269	-.00001	.00000	-.00001
124	1	.00270	-.00105	-.00259	.00000	.00000	.00000
	2	.00494	-.00244	-.00472	.00000	.00000	.00000
	3	.00131	-.00035	-.00125	.00001	.00000	.00001
	4	.00352	-.00125	-.00337	.00001	.00000	.00001
125	1	.00313	-.00112	-.00300	.00000	.00000	.00000
	2	.00646	-.00273	-.00620	.00000	.00000	.00000
	3	.00134	-.00039	-.00127	.00000	.00000	.00000
	4	.00389	-.00131	-.00372	.00001	.00000	.00001
126	1	.00280	-.00061	-.00266	.00007	.00000	.00007
	2	.00643	-.00171	-.00615	.00014	.00000	.00015
	3	.00109	-.00018	-.00102	.00003	.00000	.00003
	4	.00337	-.00068	-.00319	.00009	.00000	.00009
127	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
128	1	.00902	-.00017	-.00073	.00000	.00020	-.00021
	2	.01116	-.00039	-.00096	.00000	.00028	-.00031
	3	.00683	-.00006	-.00053	.00000	.00013	-.00014
	4	.01125	-.00020	-.00094	.00000	.00025	-.00027
129	1	.02181	-.00043	-.00159	.00000	.00055	-.00017
	2	.03537	-.00083	-.00250	.00000	.00092	-.00037
	3	.01290	-.00022	-.00096	.00000	.00031	-.00005
	4	.02865	-.00052	-.00208	.00000	.00071	-.00022
130	1	.03084	-.00063	-.00214	.00001	.00082	-.00012
	2	.05838	-.00123	-.00392	.00001	.00157	-.00033
	3	.01447	-.00031	-.00107	.00001	.00039	-.00002
	4	.03978	-.00079	-.00277	.00001	.00105	-.00013
131	1	.03858	-.00079	-.00257	.00001	.00106	-.00012
	2	.08094	-.00158	-.00525	.00003	.00221	-.00036
	3	.01606	-.00035	-.00112	.00001	.00044	-.00003
	4	.04788	-.00098	-.00321	.00002	.00131	-.00013

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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Subject: Structural Investigation of North Wall (U)

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132	1	.04312	-.00086	-.00287	.00001	.00122	.00002
	2	.09772	-.00180	-.00627	.00002	.00267	-.00009
	3	.01663	-.00037	-.00116	.00001	.00049	.00003
	4	.05226	-.00106	-.00350	.00002	.00150	.00004

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 25

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
133	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
134	1	.02270	-.00004	-.00059	.00000	.00021	-.00058
	2	.03308	-.00009	-.00087	.00000	.00036	-.00093
	3	.01506	-.00002	-.00038	.00000	.00012	-.00034
	4	.02891	-.00005	-.00076	.00000	.00027	-.00075
135	1	.05928	-.00015	-.00121	.00000	.00067	-.00056
	2	.10175	-.00024	-.00202	.00001	.00122	-.00118
	3	.03276	-.00010	-.00069	.00000	.00034	-.00021
	4	.07693	-.00019	-.00157	.00000	.00086	-.00072
136	1	.09040	-.00031	-.00174	.00001	.00110	-.00064
	2	.17415	-.00048	-.00323	.00001	.00215	-.00112
	3	.04218	-.00019	-.00087	.00001	.00050	-.00011
	4	.11549	-.00040	-.00223	.00001	.00139	-.00052
137	1	.11659	-.00044	-.00214	.00001	.00149	-.00040
	2	.24325	-.00072	-.00429	.00002	.00310	-.00108
	3	.04917	-.00025	-.00096	.00001	.00064	-.00011
	4	.14514	-.00058	-.00268	.00002	.00186	-.00044
138	1	.14044	-.00059	-.00244	.00001	.00178	-.00036
	2	.30904	-.00104	-.00510	.00002	.00381	-.00101
	3	.05584	-.00030	-.00104	.00001	.00073	-.00010
	4	.17184	-.00075	-.00302	.00001	.00220	-.00040
139	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
140	1	.03559	.00002	-.00048	.00000	.00018	-.00094
	2	.05636	.00005	-.00077	.00000	.00034	-.00160
	3	.02175	.00000	-.00028	.00000	.00009	-.00053
	4	.04544	.00002	-.00061	.00000	.00023	-.00121
141	1	.09839	-.00003	-.00096	.00000	.00062	-.00101
	2	.17561	.00003	-.00168	.00001	.00120	-.00210
	3	.05184	-.00004	-.00052	.00000	.00029	-.00041
	4	.12679	-.00004	-.00124	.00000	.00079	-.00129
142	1	.15703	-.00011	-.00140	.00001	.00109	-.00087
	2	.30663	-.00007	-.00263	.00001	.00218	-.00207
	3	.07240	-.00010	-.00069	.00000	.00049	-.00027
	4	.19958	-.00016	-.00178	.00001	.00137	-.00104
143	1	.20829	-.00022	-.00174	.00001	.00156	-.00079
	2	.43336	-.00025	-.00345	.00002	.00323	-.00200
	3	.08840	-.00016	-.00080	.00001	.00067	-.00025
	4	.25953	-.00030	-.00218	.00001	.00194	-.00091
144	1	.25741	-.00033	-.00199	.00001	.00189	-.00079
	2	.55845	-.00048	-.00402	.00003	.00400	-.00202
	3	.10403	-.00021	-.00089	.00001	.00079	-.00025
	4	.31648	-.00044	-.00248	.00001	.00235	-.00092

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 26

JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
145	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
146	1	.04634	.00005	-.00038	.00000	.00015	-.00125
	2	.07704	.00012	-.00067	.00000	.00029	-.00220
	3	.02685	.00001	-.00021	.00000	.00007	-.00067
	4	.05909	.00005	-.00049	.00000	.00018	-.00160
147	1	.13299	.00004	-.00077	.00000	.00052	-.00144
	2	.24365	.00016	-.00140	.00000	.00105	-.00297
	3	.06780	-.00001	-.00040	.00000	.00024	-.00060
	4	.17053	.00004	-.00098	.00000	.00066	-.00184
148	1	.21906	.00000	-.00112	.00001	.00096	-.00131
	2	.43208	.00012	-.00212	.00001	.00195	-.00302
	3	.09990	-.00004	-.00054	.00000	.00042	-.00045
	4	.27749	-.00002	-.00141	.00001	.00120	-.00159
149	1	.29703	-.00008	-.00139	.00001	.00142	-.00121
	2	.61749	.00000	-.00273	.00001	.00295	-.00294
	3	.12635	-.00009	-.00065	.00000	.00061	-.00041

## CALCULATION SHEET

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150	4	.37021	-.00012	-.00175	.00001	.00177	-.00143
	1	.37273	-.00017	-.00157	.00001	.00175	-.00123
	2	.80216	-.00019	-.00311	.00002	.00368	-.00301
	3	.15210	-.00013	-.00073	.00001	.00073	-.00042
151	4	.45951	-.00024	-.00198	.00001	.00218	-.00146
	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
152	4	.00000	.00000	.00000	.00000	.00000	.00000
	1	.05477	.00006	-.00031	.00000	.00011	-.00150
	2	.09386	.00014	-.00056	.00000	.00023	-.00270
	3	.03066	.00002	-.00016	.00000	.00005	-.00078
153	4	.06972	.00007	-.00039	.00000	.00014	-.00192
	1	.16128	.00008	-.00061	.00000	.00042	-.00181
	2	.30070	.00021	-.00114	.00000	.00085	-.00373
	3	.08041	.00001	-.00031	.00000	.00018	-.00076
154	4	.20611	.00009	-.00077	.00000	.00052	-.00230
	1	.27170	.00005	-.00088	.00000	.00078	-.00171
	2	.53988	.00019	-.00168	.00001	.00161	-.00387
	3	.12282	-.00001	-.00042	.00000	.00034	-.00062
155	4	.34338	.00005	-.00111	.00001	.00098	-.00208
	1	.37451	.00000	-.00109	.00001	.00119	-.00161
	2	.77869	.00010	-.00212	.00001	.00248	-.00380
	3	.15936	-.00004	-.00051	.00000	.00051	-.00057
156	4	.46677	-.00002	-.00137	.00001	.00148	-.00191
	1	.47494	-.00008	-.00121	.00001	.00149	-.00163
	2	1.01738	-.00005	-.00236	.00002	.00313	-.00389
	3	.19491	-.00008	-.00057	.00000	.00063	-.00058
	4	.58644	-.00012	-.00153	.00001	.00185	-.00195

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 27

JOINT DISPLACEMENT (INCH RADIANS)      STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
157	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
158	1	.06111	.00006	-.00024	.00000	.00008	-.00169
	2	.10676	.00015	-.00045	.00000	.00017	-.00309
	3	.03344	.00002	-.00012	.00000	.00004	-.00097
	4	.07767	.00008	-.00030	.00000	.00010	-.00216
159	1	.18319	.00009	-.00047	.00000	.00031	-.00211
	2	.34554	.00022	-.00089	.00000	.00064	-.00435
	3	.08995	.00003	-.00023	.00000	.00014	-.00089
	4	.23354	.00011	-.00059	.00000	.00039	-.00267
160	1	.31355	.00008	-.00067	.00000	.00060	-.00205
	2	.62636	.00021	-.00129	.00001	.00125	-.00458
	3	.14082	.00001	-.00032	.00000	.00026	-.00076
	4	.39566	.00009	-.00085	.00000	.00075	-.00250
161	1	.43745	.00003	-.00083	.00001	.00094	-.00195
	2	.91006	.00013	-.00160	.00001	.00196	-.00453
	3	.18604	-.00001	-.00039	.00000	.00040	-.00070
	4	.54516	.00003	-.00104	.00001	.00117	-.00233
162	1	.55899	-.00003	-.00091	.00001	.00118	-.00197
	2	1.19417	.00001	-.00174	.00001	.00248	-.00462
	3	.23014	-.00004	-.00044	.00000	.00050	-.00072
	4	.69086	-.00005	-.00114	.00001	.00147	-.00237
163	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
164	1	.06565	.00007	-.00018	.00000	.00006	-.00182
	2	.11612	.00014	-.00034	.00000	.00012	-.00337
	3	.03540	.00003	-.00009	.00000	.00002	-.00093
	4	.08335	.00008	-.00022	.00000	.00007	-.00233
165	1	.19924	.00009	-.00034	.00000	.00022	-.00233
	2	.37872	.00021	-.00066	.00000	.00046	-.00481
	3	.09683	.00003	-.00017	.00000	.00009	-.00098
	4	.25358	.00011	-.00043	.00000	.00028	-.00295
166	1	.34483	.00008	-.00049	.00000	.00043	-.00231
	2	.69140	.00020	-.00094	.00000	.00090	-.00512
	3	.15414	.00003	-.00023	.00000	.00018	-.00087
	4	.43466	.00010	-.00061	.00000	.00054	-.00282
167	1	.48525	.00004	-.00059	.00000	.00068	-.00221
	2	1.01009	.00013	-.00114	.00001	.00143	-.00510
	3	.20622	.00001	-.00028	.00000	.00029	-.00081
	4	.60465	.00005	-.00075	.00000	.00085	-.00266
168	1	.62340	-.00001	-.00064	.00001	.00087	-.00224
	2	1.32970	.00002	-.00123	.00001	.00182	-.00519
	3	.25713	-.00002	-.00031	.00000	.00036	-.00083
	4	.77089	-.00002	-.00081	.00001	.00108	-.00270

FINITE ELEMENT MODEL OF TANK

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# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (u)

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JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
169	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
170	1	.06868	.00006	-.00012	.00000	.00004	-.00192
	2	.12241	.00013	-.00022	.00000	.00007	-.00356
	3	.03669	.00003	-.00006	.00000	.00002	-.00097
	4	.08713	.00008	-.00015	.00000	.00004	-.00244
171	1	.21010	.00009	-.00022	.00000	.00014	-.00248
	2	.40133	.00019	-.00043	.00000	.00029	-.00513
	3	.10145	.00004	-.00011	.00000	.00006	-.00105
	4	.26713	.00011	-.00028	.00000	.00017	-.00314
172	1	.36631	.00008	-.00032	.00000	.00028	-.00249
	2	.73625	.00018	-.00061	.00000	.00058	-.00551
	3	.16323	.00003	-.00015	.00000	.00012	-.00094
	4	.46142	.00010	-.00040	.00000	.00035	-.00305
173	1	.51846	.00005	-.00038	.00000	.00044	-.00240
	2	1.07974	.00012	-.00074	.00000	.00093	-.00550
	3	.22019	.00001	-.00018	.00000	.00019	-.00089
	4	.64595	.00006	-.00048	.00000	.00055	-.00290
174	1	.66846	.00000	-.00041	.00000	.00057	-.00243
	2	1.42455	.00002	-.00078	.00001	.00119	-.00559
	3	.27598	-.00001	-.00020	.00000	.00024	-.00090
	4	.82687	-.00001	-.00052	.00000	.00070	-.00293
175	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
176	1	.07040	.00006	-.00006	.00000	.00002	-.00197
	2	.12601	.00013	-.00011	.00000	.00004	-.00367
	3	.03742	.00003	-.00003	.00000	.00001	-.00099
	4	.08928	.00008	-.00007	.00000	.00002	-.00251
177	1	.21637	.00009	-.00011	.00000	.00007	-.00257
	2	.41442	.00018	-.00021	.00000	.00014	-.00531
	3	.10410	.00004	-.00005	.00000	.00003	-.00108
	4	.27493	.00011	-.00014	.00000	.00008	-.00325
178	1	.37882	.00008	-.00016	.00000	.00014	-.00260
	2	.76243	.00017	-.00030	.00000	.00028	-.00574
	3	.16850	.00003	-.00007	.00000	.00006	-.00099
	4	.47697	.00010	-.00020	.00000	.00017	-.00318
179	1	.53793	.00005	-.00019	.00000	.00022	-.00252
	2	1.12064	.00011	-.00036	.00000	.00046	-.00574
	3	.22836	.00002	-.00009	.00000	.00009	-.00094
	4	.67016	.00006	-.00024	.00000	.00027	-.00304
180	1	.69500	.00009	-.00020	.00000	.00028	-.00254
	2	1.48046	.00002	-.00038	.00000	.00059	-.00582
	3	.28707	-.00001	-.00010	.00000	.00012	-.00095
	4	.85983	.00000	-.00025	.00000	.00035	-.00307

FINITE ELEMENT MODEL OF TANK

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JOINT DISPLACEMENT (INCH RADIANS) STRUCTURE TYPE = SPACE

JOINT	LOAD	X-TRANS	Y-TRANS	Z-TRANS	X-ROTAN	Y-ROTAN	Z-ROTAN
181	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000
	4	.00000	.00000	.00000	.00000	.00000	.00000
182	1	.07096	.00006	.00000	.00000	.00000	-.00199
	2	.12719	.00012	.00000	.00000	.00000	-.00371
	3	.03766	.00003	.00000	.00000	.00000	-.00100
	4	.08998	.00008	.00000	.00000	.00000	-.00253
183	1	.21841	.00009	.00000	.00000	.00000	-.00260
	2	.41869	.00018	.00000	.00000	.00000	-.00538
	3	.10496	.00004	.00000	.00000	.00000	-.00110
	4	.27748	.00011	.00000	.00000	.00000	-.00328
184	1	.38291	.00008	.00000	.00000	.00000	-.00263
	2	.77102	.00017	.00000	.00000	.00000	-.00581
	3	.17023	.00003	.00000	.00000	.00000	-.00100
	4	.48207	.00010	.00000	.00000	.00000	-.00323
185	1	.54434	.00005	.00000	.00000	.00000	-.00256
	2	1.13411	.00011	.00000	.00000	.00000	-.00582
	3	.23105	.00002	.00000	.00000	.00000	-.00096
	4	.67812	.00006	.00000	.00000	.00000	-.00309
186	1	.70375	.00000	.00000	.00000	.00000	-.00258
	2	1.49890	.00002	.00000	.00000	.00000	-.00590
	3	.29073	.00000	.00000	.00000	.00000	-.00097
	4	.87070	.00000	.00000	.00000	.00000	-.00311
187	1	.00000	.00000	.00000	.00000	.00000	.00000
	2	.00000	.00000	.00000	.00000	.00000	.00000
	3	.00000	.00000	.00000	.00000	.00000	.00000

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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Subject: Structural Investigation of North Wall (v)

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	4	.00000	.00000	.00000	.00000	.00000	.00000
188	1	.07040	.00006	.00006	.00000	-.00002	-.00197
	2	.12601	.00013	.00011	.00000	-.00004	-.00367
	3	.03742	.00003	.00003	.00000	-.00001	-.00099
	4	.08928	.00008	.00007	.00000	-.00002	-.00251
189	1	.21637	.00009	.00011	.00000	-.00007	-.00257
	2	.41442	.00018	.00021	.00000	-.00014	-.00531
	3	.10410	.00004	.00005	.00000	-.00003	-.00108
	4	.27493	.00011	.00014	.00000	-.00008	-.00325
190	1	.37882	.00008	.00016	.00000	-.00014	-.00260
	2	.76243	.00017	.00030	.00000	-.00028	-.00574
	3	.16850	.00003	.00007	.00000	-.00006	-.00099
	4	.47697	.00010	.00020	.00000	-.00017	-.00318
191	1	.53793	.00005	.00019	.00000	-.00022	-.00252
	2	1.12064	.00011	.00036	.00000	-.00046	-.00574
	3	.22836	.00002	.00009	.00000	-.00009	-.00094
	4	.67016	.00006	.00024	.00000	-.00027	-.00304
192	1	.69500	.00000	.00020	.00000	-.00028	-.00254
	2	1.48046	.00002	.00038	.00000	-.00059	-.00582
	3	.28707	-.00001	.00010	.00000	-.00012	-.00095
	4	.85983	.00000	.00025	.00000	-.00035	-.00307

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 82

ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	GX	QY FX	MX FY	MY FGY	MAX
1	1	.00	.00	-3.64	-3.90	-2.26
			.00	.00	.00	
TOP :	SMAX=	-.03	SMIN=	-.11	TMAX=	.04
BOTT:	SMAX=	.11	SMIN=	.03	TMAX=	.04
	2	-.01	-.01	-5.48	-5.68	-3.35
			.00	.00	.00	
TOP :	SMAX=	-.04	SMIN=	-.16	TMAX=	.06
BOTT:	SMAX=	.17	SMIN=	.04	TMAX=	.06
	3	.00	.00	-2.39	-2.64	-1.50
			.00	.00	.00	
TOP :	SMAX=	-.02	SMIN=	-.07	TMAX=	.03
BOTT:	SMAX=	.07	SMIN=	.02	TMAX=	.03
	4	.00	.00	-4.74	-5.02	-2.93
			.00	.00	.00	
TOP :	SMAX=	-.04	SMIN=	-.14	TMAX=	.05
BOTT:	SMAX=	.15	SMIN=	.04	TMAX=	.05
2	1	-.01	.02	-2.38	-11.73	-3.97
			.00	.00	.00	
TOP :	SMAX=	-.02	SMIN=	-.24	TMAX=	.11
BOTT:	SMAX=	.25	SMIN=	.02	TMAX=	.11
	2	-.02	.02	-5.45	-19.39	-7.25
			.00	.00	.00	
TOP :	SMAX=	-.04	SMIN=	-.41	TMAX=	.19
BOTT:	SMAX=	.42	SMIN=	.04	TMAX=	.19
	3	-.01	.02	-.61	-6.82	-1.98
			.00	.00	.00	
TOP :	SMAX=	.00	SMIN=	-.14	TMAX=	.07
BOTT:	SMAX=	.14	SMIN=	.00	TMAX=	.07
	4	-.01	.02	-3.14	-15.21	-5.22
			.00	.00	.00	
TOP :	SMAX=	-.02	SMIN=	-.32	TMAX=	.15
BOTT:	SMAX=	.32	SMIN=	.02	TMAX=	.15
3	1	-.01	.02	-4.74	-21.42	-3.02
			.00	.00	.00	
TOP :	SMAX=	-.08	SMIN=	-.41	TMAX=	.16
BOTT:	SMAX=	.41	SMIN=	.08	TMAX=	.16
	2	-.02	.03	-9.30	-39.18	-7.31
			.00	.00	.00	
TOP :	SMAX=	-.14	SMIN=	-.75	TMAX=	.31
BOTT:	SMAX=	.76	SMIN=	.14	TMAX=	.31
	3	.00	.01	-2.29	-10.90	-.76
			.00	.00	.00	
TOP :	SMAX=	-.04	SMIN=	-.20	TMAX=	.08
BOTT:	SMAX=	.20	SMIN=	.04	TMAX=	.08
	4	-.01	.03	-5.71	-27.51	-3.75
			.00	.00	.00	
TOP :	SMAX=	-.09	SMIN=	-.52	TMAX=	.21
BOTT:	SMAX=	.52	SMIN=	.09	TMAX=	.21

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH



# CALCULATION SHEET

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MTY
4	1	-.01	.02	-7.41	-29.45	-2.57
			.00	.00	.00	
	TOP : SMAX=	-.13	SMIN=	-.55	TMAX=	.21 ANGLE= -6.6
	BOTT: SMAX=	.55	SMIN=	.13	TMAX=	.21 ANGLE= -6.6
	2	-.02	.04	-15.21	-59.46	-7.22
			.00	.00	.00	
	TOP : SMAX=	-.26	SMIN=	-1.12	TMAX=	.43 ANGLE= -9.1
	BOTT: SMAX=	1.13	SMIN=	.26	TMAX=	.43 ANGLE= -9.0
	3	.00	.01	-3.44	-13.04	-.54
			.00	.00	.00	
	TOP : SMAX=	-.06	SMIN=	-.24	TMAX=	.09 ANGLE= -3.2
	BOTT: SMAX=	.24	SMIN=	.06	TMAX=	.09 ANGLE= -3.2
	4	-.01	.03	-9.25	-37.10	-2.82
			.00	.00	.00	
	TOP : SMAX=	-.17	SMIN=	-.69	TMAX=	.26 ANGLE= -5.7
	BOTT: SMAX=	.69	SMIN=	.17	TMAX=	.26 ANGLE= -5.7
5	1	.00	.03	-6.71	-34.93	-1.30
			.00	.00	.00	
	TOP : SMAX=	-.12	SMIN=	-.65	TMAX=	.26 ANGLE= -2.6
	BOTT: SMAX=	.65	SMIN=	.12	TMAX=	.26 ANGLE= -2.6
	2	-.01	.06	-14.83	-75.14	-4.57
			.00	.00	.00	
	TOP : SMAX=	-.27	SMIN=	-1.39	TMAX=	.56 ANGLE= -4.3
	BOTT: SMAX=	1.40	SMIN=	.27	TMAX=	.57 ANGLE= -4.3
	3	.00	.01	-2.70	-14.23	-.19
			.00	.00	.00	
	TOP : SMAX=	-.05	SMIN=	-.26	TMAX=	.11 ANGLE= -.9
	BOTT: SMAX=	.26	SMIN=	.05	TMAX=	.11 ANGLE= -.9
	4	.00	.03	-8.30	-43.10	-1.26
			.00	.00	.00	
	TOP : SMAX=	-.15	SMIN=	-.80	TMAX=	.32 ANGLE= -2.1
	BOTT: SMAX=	.80	SMIN=	.15	TMAX=	.32 ANGLE= -2.1
6	1	.02	-.01	-11.31	-2.97	-4.54
			.00	.00	.00	
	TOP : SMAX=	-.02	SMIN=	-.25	TMAX=	.11 ANGLE= 23.6
	BOTT: SMAX=	.25	SMIN=	.02	TMAX=	.11 ANGLE= 23.8
	2	.01	-.02	-18.30	-5.50	-7.34
			.00	.00	.00	
	TOP : SMAX=	-.04	SMIN=	-.40	TMAX=	.18 ANGLE= 24.4
	BOTT: SMAX=	.40	SMIN=	.04	TMAX=	.18 ANGLE= 24.5
	3	.02	-.01	-6.80	-1.41	-2.71
			.00	.00	.00	
	TOP : SMAX=	-.01	SMIN=	-.15	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.15	SMIN=	.01	TMAX=	.07 ANGLE= 90.0
	4	.02	-.02	-14.72	-3.88	-5.86
			.00	.00	.00	
	TOP : SMAX=	-.02	SMIN=	-.32	TMAX=	.15 ANGLE= 23.5
	BOTT: SMAX=	.32	SMIN=	.02	TMAX=	.15 ANGLE= 23.7

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MTY
7	1	.00	.01	.40	-1.75	-9.05
			.00	.00	.00	
	TOP : SMAX=	.16	SMIN=	-.18	TMAX=	.17 ANGLE= 90.0
	BOTT: SMAX=	.18	SMIN=	-.16	TMAX=	.17 ANGLE= 90.0
	2	.01	.00	-5.48	-6.52	-16.93
			.00	.00	.00	
	TOP : SMAX=	.20	SMIN=	-.42	TMAX=	.31 ANGLE= 90.0
	BOTT: SMAX=	.43	SMIN=	-.20	TMAX=	.31 ANGLE= 90.0
	3	.00	.01	3.12	.66	-4.43
			.00	.00	.00	
	TOP : SMAX=	.12	SMIN=	-.05	TMAX=	.09 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.12	TMAX=	.09 ANGLE= 90.0
	4	.01	.01	.51	-2.13	-11.68
			.00	.00	.00	
	TOP : SMAX=	.20	SMIN=	-.23	TMAX=	.22 ANGLE= 90.0
	BOTT: SMAX=	.23	SMIN=	-.20	TMAX=	.22 ANGLE= 90.0
8	1	-.01	.01	.80	-5.54	-8.12
			.00	.00	.00	
	TOP : SMAX=	.12	SMIN=	-.20	TMAX=	.16 ANGLE= -34.4
	BOTT: SMAX=	.21	SMIN=	-.12	TMAX=	.16 ANGLE= -34.3
	2	-.01	.02	-2.05	-13.19	-18.30

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TOP :	SMAX=	.21	SMIN=	.00	TMAX=	.00	ANGLE=	-36.6
BOTT:	SMAX=	.50	SMIN=	-.49	TMAX=	.35	ANGLE=	-36.5
3		-.01	.01	1.31	-1.82			-2.81
TOP :	SMAX=	.06	SMIN=	-.06	TMAX=	.06	ANGLE=	90.0
BOTT:	SMAX=	.06	SMIN=	-.05	TMAX=	.06	ANGLE=	90.0
4		-.01	.02	2.37	-6.39			-10.09
TOP :	SMAX=	.17	SMIN=	-.24	TMAX=	.20	ANGLE=	-33.3
BOTT:	SMAX=	.24	SMIN=	-.17	TMAX=	.20	ANGLE=	-33.2
9	1	-.01	.01	-2.18	-10.96			-7.06
TOP :	SMAX=	.03	SMIN=	-.27	TMAX=	.15	ANGLE=	-29.2
BOTT:	SMAX=	.28	SMIN=	-.03	TMAX=	.15	ANGLE=	-29.0
2		-.01	.02	-5.49	-22.82			-17.88
TOP :	SMAX=	.11	SMIN=	-.63	TMAX=	.37	ANGLE=	-32.2
BOTT:	SMAX=	.63	SMIN=	-.11	TMAX=	.37	ANGLE=	-32.0
3		.00	.01	-1.39	-4.93			-2.05
TOP :	SMAX=	-.01	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0
BOTT:	SMAX=	.11	SMIN=	.01	TMAX=	.05	ANGLE=	90.0
4		-.01	.02	-2.34	-13.52			-8.21
TOP :	SMAX=	.04	SMIN=	-.33	TMAX=	.18	ANGLE=	-28.0
BOTT:	SMAX=	.33	SMIN=	-.04	TMAX=	.18	ANGLE=	-27.8

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 85

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
10	1	.00	.02	-1.16	-15.05	-6.34
TOP :	SMAX=	.02	SMIN=	-.32	TMAX=	.17
BOTT:	SMAX=	.33	SMIN=	-.02	TMAX=	.17
2		.00	.05	-2.70	-30.61	-16.23
TOP :	SMAX=	.09	SMIN=	-.70	TMAX=	.40
BOTT:	SMAX=	.71	SMIN=	-.09	TMAX=	.40
3		.00	.01	-.61	-6.65	-1.98
TOP :	SMAX=	.00	SMIN=	-.13	TMAX=	.07
BOTT:	SMAX=	.13	SMIN=	.00	TMAX=	.07
4		.00	.03	-1.62	-18.95	-7.30
TOP :	SMAX=	.02	SMIN=	-.40	TMAX=	.21
BOTT:	SMAX=	.40	SMIN=	-.02	TMAX=	.21
11	1	.03	-.01	-22.22	-5.12	-4.37
TOP :	SMAX=	-.08	SMIN=	-.43	TMAX=	.18
BOTT:	SMAX=	.43	SMIN=	.08	TMAX=	.18
2		.03	-.02	-37.37	-9.09	-7.83
TOP :	SMAX=	-.13	SMIN=	-.73	TMAX=	.30
BOTT:	SMAX=	.73	SMIN=	.13	TMAX=	.30
3		.03	-.01	-12.74	-2.77	-2.27
TOP :	SMAX=	-.04	SMIN=	-.24	TMAX=	.10
BOTT:	SMAX=	.25	SMIN=	.04	TMAX=	.10
4		.04	-.02	-28.75	-6.59	-5.60
TOP :	SMAX=	-.10	SMIN=	-.56	TMAX=	.23
BOTT:	SMAX=	.56	SMIN=	.10	TMAX=	.23
12	1	.01	.00	-.45	1.01	-9.88
TOP :	SMAX=	.19	SMIN=	-.18	TMAX=	.18
BOTT:	SMAX=	.18	SMIN=	-.19	TMAX=	.18
2		.02	.00	-10.64	-2.11	-19.05
TOP :	SMAX=	.24	SMIN=	-.48	TMAX=	.36
BOTT:	SMAX=	.48	SMIN=	-.24	TMAX=	.36
3		.00	.00	4.04	2.11	-4.68
TOP :	SMAX=	.15	SMIN=	-.03	TMAX=	.09
BOTT:	SMAX=	.03	SMIN=	-.15	TMAX=	.09
4		.02	.00	-.36	1.50	-12.55
TOP :	SMAX=	.24	SMIN=	-.22	TMAX=	.23
BOTT:	SMAX=	.22	SMIN=	-.24	TMAX=	.23

## CALCULATION SHEET

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FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FXY	MTY
13	1	.00	.01 .00	4.00 .00	1.81 .00	-10.18
	TOP : SMAX=	.24	SMIN=	-.13	TMAX=	.19 ANGLE= 90.0
	BOTT: SMAX=	.14	SMIN=	-.24	TMAX=	.19 ANGLE= 90.0
	2	.00	.01 .00	1.19 .00	.20 .00	-21.75
	TOP : SMAX=	.42	SMIN=	-.39	TMAX=	.40 ANGLE= 90.0
	BOTT: SMAX=	.39	SMIN=	-.42	TMAX=	.40 ANGLE= 90.0
	3	-.01	.00 .00	3.70 .00	1.85 .00	-4.12
	TOP : SMAX=	.13	SMIN=	-.03	TMAX=	.08 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.13	TMAX=	.08 ANGLE= 90.0
	4	.00	.01 .00	7.09 .00	3.05 .00	-12.66
	TOP : SMAX=	.33	SMIN=	-.14	TMAX=	.24 ANGLE= 90.0
	BOTT: SMAX=	.15	SMIN=	-.33	TMAX=	.24 ANGLE= 90.0
14	1	.20	.01 .00	1.60 .00	-.43 .00	-9.64
	TOP : SMAX=	.19	SMIN=	-.17	TMAX=	.18 ANGLE= 90.0
	BOTT: SMAX=	.17	SMIN=	-.19	TMAX=	.18 ANGLE= 90.0
	2	.00	.01 .00	1.06 .00	-2.02 .00	-22.21
	TOP : SMAX=	.40	SMIN=	-.42	TMAX=	.41 ANGLE= 90.0
	BOTT: SMAX=	.42	SMIN=	-.40	TMAX=	.41 ANGLE= 90.0
	3	.00	.00 .00	.34 .00	-.11 .00	-3.46
	TOP : SMAX=	.07	SMIN=	-.06	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	.06	SMIN=	-.07	TMAX=	.06 ANGLE= 90.0
	4	-.01	.01 .00	2.75 .00	-.22 .00	-11.65
	TOP : SMAX=	.24	SMIN=	-.19	TMAX=	.22 ANGLE= 90.0
	BOTT: SMAX=	.20	SMIN=	-.24	TMAX=	.22 ANGLE= 90.0
15	1	.00	.02 .00	-.09 .00	-2.61 .00	-8.33
	TOP : SMAX=	.13	SMIN=	-.18	TMAX=	.16 ANGLE= 90.0
	BOTT: SMAX=	.18	SMIN=	-.13	TMAX=	.16 ANGLE= 90.0
	2	.00	.04 .00	-.49 .00	-4.80 .00	-19.60
	TOP : SMAX=	.32	SMIN=	-.41	TMAX=	.36 ANGLE= 90.0
	BOTT: SMAX=	.42	SMIN=	-.31	TMAX=	.37 ANGLE= 90.0
	3	.00	.01 .00	-.22 .00	-1.34 .00	-2.94
	TOP : SMAX=	.04	SMIN=	-.07	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.04	TMAX=	.06 ANGLE= 90.0
	4	.00	.02 .00	-.29 .00	-3.42 .00	-9.96
	TOP : SMAX=	.15	SMIN=	-.22	TMAX=	.19 ANGLE= 90.0
	BOTT: SMAX=	.22	SMIN=	-.15	TMAX=	.19 ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 87

ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FXY	MTY
16	1	.04	-.01 .00	-32.35 .00	-7.54 .00	-3.70
	TOP : SMAX=	-.13	SMIN=	-.61	TMAX=	.24 ANGLE= 8.2
	BOTT: SMAX=	.61	SMIN=	.13	TMAX=	.24 ANGLE= 8.4
	2	.04	-.02 .00	-56.29 .00	-13.28 .00	-7.07
	TOP : SMAX=	-.22	SMIN=	-1.06	TMAX=	.42 ANGLE= 9.0
	BOTT: SMAX=	1.07	SMIN=	.23	TMAX=	.42 ANGLE= 9.2
	3	.03	-.01 .00	-17.74 .00	-4.09 .00	-1.76
	TOP : SMAX=	-.07	SMIN=	-.33	TMAX=	.13 ANGLE= 7.1
	BOTT: SMAX=	.33	SMIN=	.07	TMAX=	.13 ANGLE= 7.3
	4	.05	-.01 .00	-41.66 .00	-9.69 .00	-4.70
	TOP : SMAX=	-.17	SMIN=	-.78	TMAX=	.31 ANGLE= 8.1

# CALCULATION SHEET

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	BOTT:	SMAX=	.79	SMIN=	.17	TMAX=	.31	ANGLE=	8.3
17	1		.02	.00		-3.37	1.16		-9.00
				.00		.00	.00		
	TOP :	SMAX=	.15	SMIN=	-.19	TMAX=	.17	ANGLE=	90.0
	BOTT:	SMAX=	.19	SMIN=	-.15	TMAX=	.17	ANGLE=	90.0
	2		.03	-.01		-17.99	-1.41		-17.85
				.00		.00	.00		
	TOP :	SMAX=	.19	SMIN=	-.54	TMAX=	.36	ANGLE=	32.4
	BOTT:	SMAX=	.55	SMIN=	-.18	TMAX=	.37	ANGLE=	32.6
	3		.01	.00		3.19	2.00		-4.10
				.00		.00	.00		
	TOP :	SMAX=	.12	SMIN=	-.03	TMAX=	.08	ANGLE=	90.0
	BOTT:	SMAX=	.03	SMIN=	-.12	TMAX=	.08	ANGLE=	90.0
	4		.02	.00		-3.89	1.67		-11.36
				.00		.00	.00		
	TOP :	SMAX=	.20	SMIN=	-.24	TMAX=	.22	ANGLE=	38.0
	BOTT:	SMAX=	.24	SMIN=	-.20	TMAX=	.22	ANGLE=	38.2
18	1		.00	.00		5.00	4.63		-10.19
				.00		.00	.00		
	TOP :	SMAX=	.28	SMIN=	-.10	TMAX=	.19	ANGLE=	90.0
	BOTT:	SMAX=	.10	SMIN=	-.28	TMAX=	.19	ANGLE=	90.0
	2		.01	.00		1.29	6.04		-21.35
				.00		.00	.00		
	TOP :	SMAX=	.47	SMIN=	-.33	TMAX=	.40	ANGLE=	90.0
	BOTT:	SMAX=	.33	SMIN=	-.46	TMAX=	.40	ANGLE=	90.0
	3		.00	.00		4.73	3.04		-4.29
				.00		.00	.00		
	TOP :	SMAX=	.15	SMIN=	-.01	TMAX=	.08	ANGLE=	90.0
	BOTT:	SMAX=	.01	SMIN=	-.15	TMAX=	.08	ANGLE=	90.0
	4		.30	.00		8.67	6.59		-12.69
				.00		.00	.00		
	TOP :	SMAX=	.38	SMIN=	-.09	TMAX=	.24	ANGLE=	90.0
	BOTT:	SMAX=	.10	SMIN=	-.38	TMAX=	.24	ANGLE=	90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 88

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FXY	MX MY		
19	1	.00	.00	3.71	4.87	-10.29		
			.00	.00	.00			
TOP :	SMAx=	.27	SMIN=	-.11	TMAx=	.19	ANGLE=	90.0
BOTT:	SMAx=	.11	SMIN=	-.27	TMAx=	.19	ANGLE=	90.0
2		.00	.00	4.28	8.60	-22.67		
			.00	.00	.00			
TOP :	SMAx=	.54	SMIN=	-.30	TMAx=	.42	ANGLE=	90.0
BOTT:	SMAx=	.30	SMIN=	-.54	TMAx=	.42	ANGLE=	90.0
3		.00	.00	1.51	2.26	-4.02		
			.00	.00	.00			
TOP :	SMAx=	.11	SMIN=	-.04	TMAx=	.07	ANGLE=	90.0
BOTT:	SMAx=	.04	SMIN=	-.11	TMAx=	.07	ANGLE=	90.0
4		-.01	.00	5.63	6.43	-12.61		
			.00	.00	.00			
TOP :	SMAx=	.35	SMIN=	-.12	TMAx=	.23	ANGLE=	90.0
BOTT:	SMAx=	.12	SMIN=	-.34	TMAx=	.23	ANGLE=	90.0
20	1	.00	.02	.75	4.26	-8.81		
			.00	.00	.00			
TOP :	SMAx=	.21	SMIN=	-.12	TMAx=	.17	ANGLE=	90.0
BOTT:	SMAx=	.12	SMIN=	-.21	TMAx=	.17	ANGLE=	90.0
2		.00	.03	1.02	8.98	-19.78		
			.00	.00	.00			
TOP :	SMAx=	.47	SMIN=	-.28	TMAx=	.37	ANGLE=	39.2
BOTT:	SMAx=	.28	SMIN=	-.46	TMAx=	.37	ANGLE=	39.5
3		.00	.01	.17	1.72	-3.35		
			.00	.00	.00			
TOP :	SMAx=	.08	SMIN=	-.05	TMAx=	.06	ANGLE=	90.0
BOTT:	SMAx=	.05	SMIN=	-.08	TMAx=	.06	ANGLE=	90.0
4		.00	.02	.82	5.23	-10.72		
			.00	.00	.00			
TOP :	SMAx=	.26	SMIN=	-.15	TMAx=	.20	ANGLE=	90.0
BOTT:	SMAx=	.15	SMIN=	-.26	TMAx=	.20	ANGLE=	90.0
21	1	.04	-.01	-40.81	-9.69	-2.92		
			.00	.00	.00			
TOP :	SMAx=	-.17	SMIN=	-.76	TMAx=	.29	ANGLE=	5.2
BOTT:	SMAx=	.76	SMIN=	.17	TMAx=	.29	ANGLE=	5.4
2		.05	-.02	-72.83	-17.31	-5.81		
			.00	.00	.00			
TOP :	SMAx=	-.31	SMIN=	-1.36	TMAx=	.52	ANGLE=	5.8
BOTT:	SMAx=	1.36	SMIN=	.31	TMAx=	.53	ANGLE=	6.0
3		.03	.00	-21.66	-5.15	-1.32		

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      .00      .00      .00
TOP : SMAX= -.09 SMIN= -.40 TMAX= .15 ANGLE= 4.5
BOTT: SMAX= .40 SMIN= .09 TMAX= .15 ANGLE= 4.7
      4      .05      -.01      -52.36      -12.43      -3.69
      .00
TOP : SMAX= -.22 SMIN= -.97 TMAX= .38 ANGLE= 5.1
BOTT: SMAX= .98 SMIN= .22 TMAX= .38 ANGLE= 5.3

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FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 89

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MOY
22	1	.02	.00	-6.97	.37	-7.50
			.00	.00	.00	
	TOP : SMAX=	.09	SMIN=	-.21	TMAX=	.15 ANGLE= 31.8
	BOTT: SMAX=	.22	SMIN=	-.09	TMAX=	.16 ANGLE= 32.1
	2	.04	-.01	-25.87	-2.62	-15.17
			.00	.00	.00	
	TOP : SMAX=	.09	SMIN=	-.61	TMAX=	.35 ANGLE= 26.1
	BOTT: SMAX=	.62	SMIN=	-.09	TMAX=	.35 ANGLE= 26.4
	3	.01	.00	1.77	1.52	-3.32
			.00	.00	.00	
	TOP : SMAX=	.09	SMIN=	-.03	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.09	TMAX=	.06 ANGLE= 90.0
	4	.33	.00	-8.33	.64	-9.41
			.00	.00	.00	
	TOP : SMAX=	.12	SMIN=	-.26	TMAX=	.19 ANGLE= 32.1
	BOTT: SMAX=	.27	SMIN=	-.12	TMAX=	.19 ANGLE= 32.4
23	1	.00	.00	4.62	5.33	-9.05
			.00	.00	.00	
	TOP : SMAX=	.26	SMIN=	-.07	TMAX=	.17 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.26	TMAX=	.17 ANGLE= 90.0
	2	.01	.00	-.55	7.76	-18.87
			.00	.00	.00	
	TOP : SMAX=	.43	SMIN=	-.29	TMAX=	.36 ANGLE= 38.7
	BOTT: SMAX=	.29	SMIN=	-.42	TMAX=	.36 ANGLE= 38.9
	3	.00	.00	4.87	3.24	-3.84
			.00	.00	.00	
	TOP : SMAX=	.15	SMIN=	.00	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.15	TMAX=	.07 ANGLE= 90.0
	4	.01	.00	8.37	7.42	-11.28
			.00	.00	.00	
	TOP : SMAX=	.36	SMIN=	-.06	TMAX=	.21 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.35	TMAX=	.21 ANGLE= 90.0
24	1	.00	.00	4.62	7.06	-9.58
			.00	.00	.00	
	TOP : SMAX=	.29	SMIN=	-.07	TMAX=	.18 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.29	TMAX=	.18 ANGLE= 90.0
	2	.00	.00	5.39	13.13	-20.63
			.00	.00	.00	
	TOP : SMAX=	.56	SMIN=	-.21	TMAX=	.39 ANGLE= 39.5
	BOTT: SMAX=	.22	SMIN=	-.56	TMAX=	.39 ANGLE= 39.8
	3	.00	.00	2.11	3.20	-3.88
			.00	.00	.00	
	TOP : SMAX=	.12	SMIN=	-.02	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.12	TMAX=	.07 ANGLE= 90.0
	4	.00	.00	6.92	9.17	-11.82
			.00	.00	.00	
	TOP : SMAX=	.37	SMIN=	-.07	TMAX=	.22 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.37	TMAX=	.22 ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 90

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MOY
25	1	.00	.01	1.19	7.50	-8.22
			.00	.00	.00	
	TOP : SMAX=	.24	SMIN=	-.08	TMAX=	.16 ANGLE= 34.3
	BOTT: SMAX=	.08	SMIN=	-.24	TMAX=	.16 ANGLE= 34.7
	2	.00	.03	1.73	15.45	-17.97
			.00	.00	.00	
	TOP : SMAX=	.52	SMIN=	-.20	TMAX=	.36 ANGLE= 34.4
	BOTT: SMAX=	.20	SMIN=	-.51	TMAX=	.36 ANGLE= 34.7

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CALCULATION SHEET

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	3	.00	.00	.41	3.17	-3.26
			.00	.00	.00	
TOP :	SMAX=	.10	SMIN=	-.03	TMAX=	.07
BOTT:	SMAX=	.03	SMIN=	-.10	TMAX=	.07
	4	.00	.01	1.42	9.31	-10.09
			.00	.00	.00	
TOP :	SMAX=	.30	SMIN=	-.10	TMAX=	.20
BOTT:	SMAX=	.10	SMIN=	-.30	TMAX=	.20
	26	.05	-.01	-47.45	-11.42	-2.21
			.00	.00	.00	
TOP :	SMAX=	-.21	SMIN=	-.88	TMAX=	.34
BOTT:	SMAX=	.88	SMIN=	.21	TMAX=	.34
	2	.06	-.01	-86.17	-20.70	-4.49
			.00	.00	.00	
TOP :	SMAX=	-.38	SMIN=	-1.60	TMAX=	.61
BOTT:	SMAX=	1.60	SMIN=	.38	TMAX=	.61
	3	.04	.00	-24.62	-5.95	-.97
			.00	.00	.00	
TOP :	SMAX=	-.11	SMIN=	-.46	TMAX=	.17
BOTT:	SMAX=	.46	SMIN=	.11	TMAX=	.17
	4	.06	-.01	-60.71	-14.62	-2.77
			.00	.00	.00	
TOP :	SMAX=	-.27	SMIN=	-1.13	TMAX=	.43
BOTT:	SMAX=	1.13	SMIN=	.27	TMAX=	.43
	27	.02	.00	-10.44	-.66	-5.88
			.00	.00	.00	
TOP :	SMAX=	.04	SMIN=	-.24	TMAX=	.14
BOTT:	SMAX=	.25	SMIN=	-.04	TMAX=	.14
	2	.04	-.01	-33.20	-4.51	-12.05
			.00	.00	.00	
TOP :	SMAX=	.00	SMIN=	-.69	TMAX=	.35
BOTT:	SMAX=	.70	SMIN=	.00	TMAX=	.35
	3	.01	.00	.33	1.00	-2.55
			.00	.00	.00	
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.05
BOTT:	SMAX=	.04	SMIN=	-.06	TMAX=	.05
	4	.03	.00	-12.62	-.68	-7.36
			.00	.00	.00	
TOP :	SMAX=	.05	SMIN=	-.30	TMAX=	.17
BOTT:	SMAX=	.30	SMIN=	-.05	TMAX=	.18

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 91

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	CX	QY FX	MX FY	MY FGY	MY
	28	.01	.00	3.56	5.05	-7.43
			.00	.00	.00	
TOP :	SMAX=	.22	SMIN=	-.06	TMAX=	.14
BOTT:	SMAX=	.06	SMIN=	-.22	TMAX=	.14
	2	.02	.00	-3.26	7.43	-15.49
			.00	.00	.00	
TOP :	SMAX=	.34	SMIN=	-.26	TMAX=	.30
BOTT:	SMAX=	.27	SMIN=	-.34	TMAX=	.30
	3	.00	.00	4.57	3.03	-3.15
			.00	.00	.00	
TOP :	SMAX=	.13	SMIN=	.01	TMAX=	.06
BOTT:	SMAX=	-.01	SMIN=	-.13	TMAX=	.06
	4	.01	.00	7.14	7.04	-9.25
			.00	.00	.00	
TOP :	SMAX=	.30	SMIN=	-.04	TMAX=	.17
BOTT:	SMAX=	.04	SMIN=	-.30	TMAX=	.17
	29	.00	.00	4.80	7.59	-8.14
			.00	.00	.00	
TOP :	SMAX=	.27	SMIN=	-.04	TMAX=	.15
BOTT:	SMAX=	.04	SMIN=	-.27	TMAX=	.15
	2	.00	.00	5.27	14.33	-17.34
			.00	.00	.00	
TOP :	SMAX=	.52	SMIN=	-.15	TMAX=	.33
BOTT:	SMAX=	.15	SMIN=	-.51	TMAX=	.33
	3	.00	.00	2.31	3.39	-3.35
			.00	.00	.00	
TOP :	SMAX=	.12	SMIN=	-.01	TMAX=	.06
BOTT:	SMAX=	.01	SMIN=	-.12	TMAX=	.06
	4	.00	.00	7.23	9.82	-10.08
			.00	.00	.00	
TOP :	SMAX=	.35	SMIN=	-.03	TMAX=	.19
BOTT:	SMAX=	.03	SMIN=	-.34	TMAX=	.19
	30	.00	.01	1.38	8.62	-7.02
			.00	.00	.00	

# CALCULATION SHEET

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TOP :	SMAX=	.24	SMIN=	-.05	TMAX=	.15	ANGLE=	31.1
BOTT:	SMAX=	.05	SMIN=	-.24	TMAX=	.15	ANGLE=	31.6
2		.00	.02		1.99	17.71		-15.12
			.00		.01	.00		
TOP :	SMAX=	.50	SMIN=	-.13	TMAX=	.32	ANGLE=	31.0
BOTT:	SMAX=	.14	SMIN=	-.49	TMAX=	.31	ANGLE=	31.5
3		.00	.00		.53	3.66		-2.84
			.00		.00	.00		
TOP :	SMAX=	.10	SMIN=	-.02	TMAX=	.06	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.10	TMAX=	.06	ANGLE=	90.0
4		.00	.01		1.68	10.72		-8.66
			.00		.00	.00		
TOP :	SMAX=	.30	SMIN=	-.06	TMAX=	.18	ANGLE=	31.0
BOTT:	SMAX=	.07	SMIN=	-.29	TMAX=	.18	ANGLE=	31.5

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 92

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY		
31	1	.05	.00	-52.40	-12.73	-1.59		
			.00	.00	.00			
TOP :	SMAX=	-.23	SMIN=	-.97	TMAX=	.37	ANGLE=	2.2
BOTT:	SMAX=	.97	SMIN=	.24	TMAX=	.37	ANGLE=	2.4
2		.06	-.01	-96.30	-23.34	-3.27		
			.00	.00	.00			
TOP :	SMAX=	-.43	SMIN=	-1.78	TMAX=	.68	ANGLE=	2.4
BOTT:	SMAX=	1.79	SMIN=	.43	TMAX=	.68	ANGLE=	2.7
3		.04	.00	-26.78	-6.53	-1.69		
			.00	.00	.00			
TOP :	SMAX=	-.12	SMIN=	-.50	TMAX=	.19	ANGLE=	1.8
BOTT:	SMAX=	.50	SMIN=	.12	TMAX=	.19	ANGLE=	2.1
4		.06	-.01	-66.91	-16.26	-1.99		
			.00	.00	.00			
TOP :	SMAX=	-.30	SMIN=	-1.24	TMAX=	.47	ANGLE=	2.1
BOTT:	SMAX=	1.24	SMIN=	.30	TMAX=	.47	ANGLE=	2.4
32	1	.02	.00	-13.37	-1.63	-4.35		
			.00	.00	.00			
TOP :	SMAX=	.00	SMIN=	-.27	TMAX=	.13	ANGLE=	17.9
BOTT:	SMAX=	.28	SMIN=	.00	TMAX=	.14	ANGLE=	18.6
2		.04	-.01	-39.35	-6.39	-8.99		
			.00	.00	.00			
TOP :	SMAX=	-.07	SMIN=	-.77	TMAX=	.35	ANGLE=	14.0
BOTT:	SMAX=	.77	SMIN=	.08	TMAX=	.35	ANGLE=	14.6
3		.01	.00	-.90	.54	-1.86		
			.00	.00	.00			
TOP :	SMAX=	.03	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0
BOTT:	SMAX=	.04	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0
4		.03	.00	-16.27	-1.91	-5.43		
			.00	.00	.00			
TOP :	SMAX=	.00	SMIN=	-.33	TMAX=	.17	ANGLE=	18.2
BOTT:	SMAX=	.34	SMIN=	.00	TMAX=	.17	ANGLE=	18.9
33	1	.01	.00	2.32	4.42	-5.67		
			.00	.00	.00			
TOP :	SMAX=	.17	SMIN=	-.04	TMAX=	.11	ANGLE=	90.0
BOTT:	SMAX=	.05	SMIN=	-.17	TMAX=	.11	ANGLE=	90.0
2		.02	.00	-6.08	6.27	-11.86		
			.00	.00	.00			
TOP :	SMAX=	.25	SMIN=	-.24	TMAX=	.25	ANGLE=	30.9
BOTT:	SMAX=	.25	SMIN=	-.25	TMAX=	.25	ANGLE=	31.6
3		.00	.00	4.11	2.71	-2.40		
			.00	.00	.00			
TOP :	SMAX=	.11	SMIN=	.02	TMAX=	.05	ANGLE=	90.0
BOTT:	SMAX=	-.02	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0
4		.01	.00	5.65	6.22	-7.06		
			.00	.00	.00			
TOP :	SMAX=	.24	SMIN=	-.02	TMAX=	.13	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.24	TMAX=	.13	ANGLE=	90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 93

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
34	1	.00	.00	4.58	7.35	-6.38

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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Subject: Structural Investigation of North Wall (5)

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			.00	.00	.00	
TOP :	SMAX=	.23	SMIN=	-.01	TMAX=	.12 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	-.23	TMAX=	.12 ANGLE= 90.0
2		.01	.00	4.56	13.93	-13.53
			.00	.01	.00	
TOP :	SMAX=	.44	SMIN=	-.09	TMAX=	.26 ANGLE= 35.1
BOTT:	SMAX=	.10	SMIN=	-.43	TMAX=	.27 ANGLE= 35.8
3		.00	.00	2.29	3.25	-2.65
			.00	.00	.00	
TOP :	SMAX=	.10	SMIN=	.00	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.00	SMIN=	-.10	TMAX=	.05 ANGLE= 90.0
4		.00	.00	7.01	9.50	-7.91
			.00	.00	.00	
TOP :	SMAX=	.30	SMIN=	.01	TMAX=	.15 ANGLE= 90.0
BOTT:	SMAX=	.00	SMIN=	-.30	TMAX=	.15 ANGLE= 90.0
35	1	.00	.01	1.42	8.66	-5.54
			.00	.00	.00	
TOP :	SMAX=	.22	SMIN=	-.03	TMAX=	.12 ANGLE= 28.1
BOTT:	SMAX=	.03	SMIN=	-.21	TMAX=	.12 ANGLE= 28.8
2		.00	.01	1.98	17.82	-11.83
			.00	.01	.00	
TOP :	SMAX=	.45	SMIN=	-.08	TMAX=	.26 ANGLE= 27.8
BOTT:	SMAX=	.08	SMIN=	-.44	TMAX=	.26 ANGLE= 28.4
3		.00	.00	.57	3.66	-2.27
			.00	.00	.00	
TOP :	SMAX=	.09	SMIN=	-.01	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	-.09	TMAX=	.05 ANGLE= 90.0
4		.00	.01	1.75	10.77	-6.85
			.00	.00	.00	
TOP :	SMAX=	.27	SMIN=	-.03	TMAX=	.15 ANGLE= 27.9
BOTT:	SMAX=	.04	SMIN=	-.26	TMAX=	.15 ANGLE= 28.7
36	1	.05	.00	-55.89	-13.66	-1.06
			.00	.00	.00	
TOP :	SMAX=	-.25	SMIN=	-1.03	TMAX=	.39 ANGLE= 1.3
BOTT:	SMAX=	1.04	SMIN=	.25	TMAX=	.39 ANGLE= 1.6
2		.06	-.01	-103.50	-25.24	-2.21
			.00	.00	.00	
TOP :	SMAX=	-.46	SMIN=	-1.91	TMAX=	.73 ANGLE= 1.4
BOTT:	SMAX=	1.92	SMIN=	.47	TMAX=	.73 ANGLE= 1.8
3		.04	.00	-28.27	-6.93	-.45
			.00	.00	.00	
TOP :	SMAX=	-.13	SMIN=	-.52	TMAX=	.20 ANGLE= 1.1
BOTT:	SMAX=	.52	SMIN=	.13	TMAX=	.20 ANGLE= 1.4
4		.06	.00	-71.26	-17.43	-1.33
			.00	.00	.00	
TOP :	SMAX=	-.32	SMIN=	-1.32	TMAX=	.50 ANGLE= 1.2
BOTT:	SMAX=	1.32	SMIN=	.32	TMAX=	.50 ANGLE= 1.6

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 94

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
37	1	.02	.00	-15.62	-2.41	-2.96
			.00	.00	.00	
TOP :	SMAX=	-.03	SMIN=	-.30	TMAX=	.13 ANGLE= 11.6
BOTT:	SMAX=	.30	SMIN=	.03	TMAX=	.13 ANGLE= 12.5
2		.05	.00	-44.06	-7.95	-6.17
			.00	.00	.00	
TOP :	SMAX=	-.13	SMIN=	-.83	TMAX=	.35 ANGLE= 9.1
BOTT:	SMAX=	.84	SMIN=	.13	TMAX=	.35 ANGLE= 9.8
3		.01	.00	-1.85	.18	-1.26
			.00	.00	.00	
TOP :	SMAX=	.01	SMIN=	-.04	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
4		.03	.00	-19.07	-2.90	-3.69
			.00	.00	.00	
TOP :	SMAX=	-.04	SMIN=	-.37	TMAX=	.16 ANGLE= 11.8
BOTT:	SMAX=	.37	SMIN=	.04	TMAX=	.17 ANGLE= 12.7
38	1	.01	.00	1.22	3.76	-3.96
			.00	.00	.00	
TOP :	SMAX=	.12	SMIN=	-.03	TMAX=	.08 ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.12	TMAX=	.08 ANGLE= 90.0
2		.02	.00	-8.51	5.00	-8.29
			.00	.01	.00	
TOP :	SMAX=	.17	SMIN=	-.23	TMAX=	.20 ANGLE= 24.9
BOTT:	SMAX=	.23	SMIN=	-.16	TMAX=	.20 ANGLE= 25.9
3		.00	.00	3.67	2.40	-1.67
			.00	.00	.00	
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.09	TMAX=	.03 ANGLE= 90.0



# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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4	.01	.00	4.29	5.39	-4.92
		.00	.00	.00	
TOP :	SMAX=	.18	SMIN=	.00	TMAX=
BOTT:	SMAX=	.01	SMIN=	-.18	TMAX=
39	1	.00	.00	4.24	6.84
		.00	.00	.00	.00
TOP :	SMAX=	.19	SMIN=	.02	TMAX=
BOTT:	SMAX=	-.01	SMIN=	-.19	TMAX=
2	.01	.00	3.71	12.96	-9.59
		.00	.01	.00	
TOP :	SMAX=	.35	SMIN=	-.04	TMAX=
BOTT:	SMAX=	.05	SMIN=	-.35	TMAX=
3	.00	.00	2.18	3.01	-1.88
		.00	.00	.00	
TOP :	SMAX=	.08	SMIN=	.01	TMAX=
BOTT:	SMAX=	-.01	SMIN=	-.08	TMAX=
4	.00	.00	6.60	8.86	-5.63
		.00	.00	.00	
TOP :	SMAX=	.25	SMIN=	.04	TMAX=
BOTT:	SMAX=	-.03	SMIN=	-.25	TMAX=

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 95

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MX MY
40	1	.00	.00	1.39	8.27	-3.95
			.00	.00	.00	
TOP :	SMAX=	.19	SMIN=	-.01	TMAX=	.10
BOTT:	SMAX=	.01	SMIN=	-.18	TMAX=	.10
2	.00	.01	1.87	17.07	-8.41	
		.00	.01	.01	.00	
TOP :	SMAX=	.39	SMIN=	-.03	TMAX=	.21
BOTT:	SMAX=	.04	SMIN=	-.38	TMAX=	.21
3	.00	.00	.57	3.49	-1.63	
		.00	.00	.00	.00	
TOP :	SMAX=	.08	SMIN=	.00	TMAX=	.04
BOTT:	SMAX=	.00	SMIN=	-.08	TMAX=	.04
4	.00	.01	1.71	10.29	-4.89	
		.00	.00	.00	.00	
TOP :	SMAX=	.24	SMIN=	-.01	TMAX=	.12
BOTT:	SMAX=	.01	SMIN=	-.23	TMAX=	.12
41	1	.05	.00	-58.09	-14.25	-.61
			.00	.00	.00	
TOP :	SMAX=	-.26	SMIN=	-1.07	TMAX=	.41
BOTT:	SMAX=	1.08	SMIN=	.26	TMAX=	.41
2	.06	.00	-108.08	-26.46	-1.27	
		.00	.00	.01	.00	
TOP :	SMAX=	-.49	SMIN=	-2.00	TMAX=	.76
BOTT:	SMAX=	2.01	SMIN=	.49	TMAX=	.76
3	.04	.00	-29.21	-7.19	-.26	
		.00	.00	.00	.00	
TOP :	SMAX=	-.13	SMIN=	-.54	TMAX=	.20
BOTT:	SMAX=	.54	SMIN=	.13	TMAX=	.20
4	.06	.00	-74.01	-18.17	-.76	
		.00	.00	.00	.00	
TOP :	SMAX=	-.33	SMIN=	-1.37	TMAX=	.52
BOTT:	SMAX=	1.37	SMIN=	.34	TMAX=	.52
42	1	.03	.00	-17.12	-2.95	-1.72
			.00	.00	.00	
TOP :	SMAX=	-.05	SMIN=	-.32	TMAX=	.14
BOTT:	SMAX=	.32	SMIN=	.05	TMAX=	.14
2	.05	.00	-47.20	-9.04	-3.59	
		.00	.00	.00	.00	
TOP :	SMAX=	-.16	SMIN=	-.88	TMAX=	.36
BOTT:	SMAX=	.88	SMIN=	.16	TMAX=	.36
3	.01	.00	-2.48	-.05	-.73	
		.00	.00	.00	.00	
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.03
BOTT:	SMAX=	.05	SMIN=	.00	TMAX=	.03
4	.04	.00	-20.93	-3.57	-2.14	
		.00	.00	.00	.00	
TOP :	SMAX=	-.06	SMIN=	-.39	TMAX=	.17
BOTT:	SMAX=	.39	SMIN=	.06	TMAX=	.17

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 96

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

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## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall ( U )

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MAX
43	1	.01	.00	.40	3.25	-2.33
			.00	.00	.00	
	TOP : SMAX=	.09	SMIN=	-.01	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.08	TMAX=	.05 ANGLE= 90.0
	2	.02	.00	-10.25	4.00	-4.89
			.00	.01	.00	
	TOP : SMAX=	.11	SMIN=	-.21	TMAX=	.16 ANGLE= 16.4
	BOTT: SMAX=	.22	SMIN=	-.10	TMAX=	.16 ANGLE= 18.1
	3	.00	.00	3.34	2.17	-.98
			.00	.00	.00	
	TOP : SMAX=	.07	SMIN=	.03	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.07	TMAX=	.02 ANGLE= 90.0
	4	.01	.00	3.28	4.75	-2.90
			.00	.00	.00	
	TOP : SMAX=	.13	SMIN=	.02	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.13	TMAX=	.06 ANGLE= 90.0
44	1	.00	.00	3.93	6.38	-2.70
			.00	.00	.00	
	TOP : SMAX=	.15	SMIN=	.04	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	-.04	SMIN=	-.15	TMAX=	.06 ANGLE= 90.0
	2	.01	.00	3.01	12.05	-5.71
			.00	.01	.00	
	TOP : SMAX=	.28	SMIN=	.01	TMAX=	.14 ANGLE= 24.9
	BOTT: SMAX=	.00	SMIN=	-.27	TMAX=	.13 ANGLE= 26.8
	3	.00	.00	2.07	2.79	-1.12
			.00	.00	.00	
	TOP : SMAX=	.07	SMIN=	.02	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.07	TMAX=	.02 ANGLE= 90.0
	4	.00	.00	6.23	8.28	-3.35
			.00	.01	.00	
	TOP : SMAX=	.20	SMIN=	.07	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	-.07	SMIN=	-.20	TMAX=	.07 ANGLE= 90.0
45	1	.00	.00	1.34	7.85	-2.36
			.00	.00	.00	
	TOP : SMAX=	.16	SMIN=	.01	TMAX=	.08 ANGLE= 17.3
	BOTT: SMAX=	-.01	SMIN=	-.16	TMAX=	.07 ANGLE= 18.7
	2	.00	.01	1.75	16.22	-5.01
			.00	.01	.00	
	TOP : SMAX=	.34	SMIN=	.00	TMAX=	.17 ANGLE= 16.8
	BOTT: SMAX=	.00	SMIN=	-.32	TMAX=	.16 ANGLE= 17.9
	3	.00	.00	.55	3.29	-.98
			.00	.00	.00	
	TOP : SMAX=	.07	SMIN=	.00	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.06	TMAX=	.03 ANGLE= 90.0
	4	.00	.00	1.66	9.75	-2.93
			.00	.01	.00	
	TOP : SMAX=	.20	SMIN=	.01	TMAX=	.09 ANGLE= 17.3
	BOTT: SMAX=	-.01	SMIN=	-.19	TMAX=	.09 ANGLE= 18.6

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 97

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MAX
46	1	.05	.00	-59.16	-14.54	-.20
			.00	.00	.00	
	TOP : SMAX=	-.27	SMIN=	-1.09	TMAX=	.41 ANGLE= .0
	BOTT: SMAX=	1.10	SMIN=	.27	TMAX=	.41 ANGLE= .5
	2	.06	.00	-110.31	-27.06	-.42
			.00	.00	.01	
	TOP : SMAX=	-.50	SMIN=	-2.04	TMAX=	.77 ANGLE= .0
	BOTT: SMAX=	2.05	SMIN=	.50	TMAX=	.77 ANGLE= .5
	3	.04	.00	-29.66	-7.31	-.08
			.00	.00	.00	
	TOP : SMAX=	-.13	SMIN=	-.55	TMAX=	.21 ANGLE= .0
	BOTT: SMAX=	.55	SMIN=	.14	TMAX=	.21 ANGLE= .4
	4	.06	.00	-75.34	-18.53	-.25
			.00	.00	.00	
	TOP : SMAX=	-.34	SMIN=	-1.39	TMAX=	.53 ANGLE= .0
	BOTT: SMAX=	1.40	SMIN=	.34	TMAX=	.53 ANGLE= .5
47	1	.03	.00	-17.87	-3.22	-.57
			.00	.00	.00	
	TOP : SMAX=	-.06	SMIN=	-.33	TMAX=	.14 ANGLE= 1.6
	BOTT: SMAX=	.33	SMIN=	.06	TMAX=	.14 ANGLE= 2.9
	2	.05	.00	-48.78	-9.59	-1.19

CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (U)

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			.00	.01	.01		
TOP :	SMAX=	-.17	SMIN=	-.90	TMAX=	.36	ANGLE= 1.3
BOTT:	SMAX=	.91	SMIN=	.18	TMAX=	.36	ANGLE= 2.2
3		.01	.00	-2.80	-.17	-.24	
			.00	.00	.00		
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.02	ANGLE= 90.0
BOTT:	SMAX=	.05	SMIN=	.00	TMAX=	.02	ANGLE= 90.0
4		.04	.00	-21.87	-3.92	-.71	
			.00	.00	.00		
TOP :	SMAX=	-.07	SMIN=	-.40	TMAX=	.17	ANGLE= 1.6
BOTT:	SMAX=	.41	SMIN=	.08	TMAX=	.17	ANGLE= 2.9
48	1	.01	.00	-.02	2.98	-.78	
			.00	.00	.00		
TOP :	SMAX=	.06	SMIN=	.00	TMAX=	.03	ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	-.06	TMAX=	.03	ANGLE= 90.0
2		.02	.00	-11.17	3.46	-1.63	
			.00	.01	.00		
TOP :	SMAX=	.07	SMIN=	-.21	TMAX=	.14	ANGLE= 5.2
BOTT:	SMAX=	.21	SMIN=	-.06	TMAX=	.14	ANGLE= 7.4
3		.00	.00	3.16	2.05	-.32	
			.00	.00	.00		
TOP :	SMAX=	.06	SMIN=	.04	TMAX=	.01	ANGLE= 90.0
BOTT:	SMAX=	-.03	SMIN=	-.06	TMAX=	.01	ANGLE= 90.0
4		.01	.00	2.76	4.41	-.96	
			.00	.01	.00		
TOP :	SMAX=	.09	SMIN=	.05	TMAX=	.02	ANGLE= 90.0
BOTT:	SMAX=	-.04	SMIN=	-.09	TMAX=	.02	ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 98

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FBY	MBY
49	1	.00	.00	3.75	6.12	-.90
			.00	.01	.00	
TOP :	SMAX=	.12	SMIN=	.07	TMAX=	.03
BOTT:	SMAX=	-.06	SMIN=	-.12	TMAX=	.03
2		.01	.00	2.61	11.52	-1.91
			.00	.01	.00	
TOP :	SMAX=	.23	SMIN=	.04	TMAX=	.09
BOTT:	SMAX=	-.04	SMIN=	-.21	TMAX=	.09
3		.00	.00	2.00	2.67	-.38
			.00	.00	.00	
TOP :	SMAX=	.05	SMIN=	.03	TMAX=	.01
BOTT:	SMAX=	-.03	SMIN=	-.05	TMAX=	.01
4		.00	.00	6.01	7.94	-1.12
			.00	.01	.00	
TOP :	SMAX=	.16	SMIN=	.10	TMAX=	.03
BOTT:	SMAX=	-.10	SMIN=	-.15	TMAX=	.03
50	1	.00	.00	1.31	7.59	-.79
			.00	.01	.00	
TOP :	SMAX=	.15	SMIN=	.02	TMAX=	.06
BOTT:	SMAX=	-.02	SMIN=	-.14	TMAX=	.06
2		.00	.00	1.68	15.70	-1.68
			.00	.01	.00	
TOP :	SMAX=	.30	SMIN=	.03	TMAX=	.14
BOTT:	SMAX=	-.03	SMIN=	-.28	TMAX=	.13
3		.00	.00	.54	3.17	-.33
			.00	.00	.00	
TOP :	SMAX=	.06	SMIN=	.01	TMAX=	.03
BOTT:	SMAX=	-.01	SMIN=	-.06	TMAX=	.02
4		.00	.00	1.62	9.43	-.98
			.00	.01	.00	
TOP :	SMAX=	.18	SMIN=	.03	TMAX=	.08
BOTT:	SMAX=	-.03	SMIN=	-.17	TMAX=	.07
51	1	.05	.00	-59.17	-14.54	.19
			.00	.00	.00	
TOP :	SMAX=	-.27	SMIN=	-1.09	TMAX=	.41
BOTT:	SMAX=	1.10	SMIN=	.27	TMAX=	.41
2		.06	.00	-110.33	-27.06	.41
			.00	.00	.01	
TOP :	SMAX=	-.50	SMIN=	-2.04	TMAX=	.77
BOTT:	SMAX=	2.05	SMIN=	.50	TMAX=	.77
3		.04	.00	-29.66	-7.31	.08
			.00	.00	.00	
TOP :	SMAX=	-.13	SMIN=	-.55	TMAX=	.21
BOTT:	SMAX=	.55	SMIN=	.14	TMAX=	.21
4		.06	.00	-75.35	-18.53	.24
			.00	.00	.01	
TOP :	SMAX=	-.34	SMIN=	-1.39	TMAX=	.53
BOTT:	SMAX=	1.40	SMIN=	.35	TMAX=	.53

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 6

Subject: Structural Investigation of North Wall (U)

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FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
52	1	.03	.00	-17.88	-3.23	.55
			.00	.00	.00	
	TOP : SMAX=	-.06	SMIN=	-.33	TMAX=	.14
	BOTT: SMAX=	.33	SMIN=	.06	TMAX=	.14
	2	.05	.00	-48.79	-9.60	1.15
			.00	.01	.01	
	TOP : SMAX=	-.17	SMIN=	-.90	TMAX=	.37
	BOTT: SMAX=	.91	SMIN=	.18	TMAX=	.36
	3	.01	.00	-2.80	-.18	.23
			.00	.00	.00	
	TOP : SMAX=	.00	SMIN=	-.05	TMAX=	.03
	BOTT: SMAX=	.05	SMIN=	.00	TMAX=	.02
	4	.04	.00	-21.88	-3.92	.69
			.00	.00	.00	
	TOP : SMAX=	-.07	SMIN=	-.40	TMAX=	.17
	BOTT: SMAX=	.41	SMIN=	.08	TMAX=	.17
53	1	.01	.00	-.03	2.98	.75
			.00	.00	.00	
	TOP : SMAX=	.06	SMIN=	.00	TMAX=	.03
	BOTT: SMAX=	.00	SMIN=	-.05	TMAX=	.03
	2	.02	.00	-11.18	3.45	1.58
			.00	.01	.01	
	TOP : SMAX=	.08	SMIN=	-.21	TMAX=	.14
	BOTT: SMAX=	.21	SMIN=	-.06	TMAX=	.13
	3	.00	.00	3.16	2.05	.32
			.00	.00	.00	
	TOP : SMAX=	.06	SMIN=	.04	TMAX=	.01
	BOTT: SMAX=	-.03	SMIN=	-.06	TMAX=	.01
	4	.01	.00	2.75	4.40	.93
			.00	.01	.00	
	TOP : SMAX=	.10	SMIN=	.04	TMAX=	.03
	BOTT: SMAX=	-.04	SMIN=	-.08	TMAX=	.02
54	1	.00	.00	3.75	6.11	.87
			.00	.01	.00	
	TOP : SMAX=	.13	SMIN=	.06	TMAX=	.03
	BOTT: SMAX=	-.06	SMIN=	-.11	TMAX=	.02
	2	.01	.00	2.61	11.52	1.85
			.00	.01	.00	
	TOP : SMAX=	.23	SMIN=	.04	TMAX=	.10
	BOTT: SMAX=	-.04	SMIN=	-.21	TMAX=	.08
	3	.00	.00	2.00	2.67	.36
			.00	.00	.00	
	TOP : SMAX=	.06	SMIN=	.03	TMAX=	.01
	BOTT: SMAX=	-.03	SMIN=	-.05	TMAX=	.01
	4	.00	.00	6.01	7.94	1.09
			.00	.01	.00	
	TOP : SMAX=	.16	SMIN=	.10	TMAX=	.03
	BOTT: SMAX=	-.10	SMIN=	-.15	TMAX=	.02

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 100

ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
55	1	.00	.00	1.31	7.58	.77
			.00	.01	.00	
	TOP : SMAX=	.15	SMIN=	.02	TMAX=	.06
	BOTT: SMAX=	-.02	SMIN=	-.14	TMAX=	.06
	2	.00	.00	1.68	15.69	1.62
			.00	.01	.00	
	TOP : SMAX=	.31	SMIN=	.03	TMAX=	.14
	BOTT: SMAX=	-.03	SMIN=	-.28	TMAX=	.13
	3	.00	.00	.54	3.17	.32
			.00	.00	.00	
	TOP : SMAX=	.06	SMIN=	.01	TMAX=	.03
	BOTT: SMAX=	-.01	SMIN=	-.06	TMAX=	.02
	4	.00	.00	1.62	9.42	.95
			.00	.01	.00	
	TOP : SMAX=	.19	SMIN=	.03	TMAX=	.08

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1  
 Subject: Structural Investigation of North Wall

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	BOTT:	SMAX=	-.03	SMIN=	-.17	TMAX=	.07	ANGLE=	-6.9
56	1	.05	.00			-58.11	-14.26	.60	
			.00			.00	.00		
	TOP :	SMAX=	-.26	SMIN=	-1.07	TMAX=	.41	ANGLE=	-1.1
	BOTT:	SMAX=	1.08	SMIN=	.27	TMAX=	.41	ANGLE=	-1.4
	2	.06	.00			-108.13	-26.47	1.26	
			.01			.00	.01		
	TOP :	SMAX=	-.49	SMIN=	-2.00	TMAX=	.76	ANGLE=	-1.2
	BOTT:	SMAX=	2.01	SMIN=	.49	TMAX=	.76	ANGLE=	-1.5
	3	.04	.00			-29.22	-7.19	.26	
			.00			.00	.00		
	TOP :	SMAX=	-.13	SMIN=	-.54	TMAX=	.20	ANGLE=	-1.0
	BOTT:	SMAX=	.54	SMIN=	.13	TMAX=	.20	ANGLE=	-.3
	4	.06	.00			-74.04	-18.17	.75	
			.00			.00	.01		
	TOP :	SMAX=	-.33	SMIN=	-1.37	TMAX=	.52	ANGLE=	-1.1
	BOTT:	SMAX=	1.37	SMIN=	.34	TMAX=	.52	ANGLE=	-.4
57	1	.03	.00			-17.14	-2.96	1.70	
			.00			.00	.00		
	TOP :	SMAX=	-.05	SMIN=	-.32	TMAX=	.14	ANGLE=	-7.6
	BOTT:	SMAX=	.32	SMIN=	.06	TMAX=	.13	ANGLE=	-5.8
	2	.05	.00			-47.25	-9.05	3.55	
			.00			.01	.01		
	TOP :	SMAX=	-.15	SMIN=	-.88	TMAX=	.36	ANGLE=	-5.9
	BOTT:	SMAX=	.88	SMIN=	.17	TMAX=	.36	ANGLE=	-4.6
	3	.01	.00			-2.49	-.06	.72	
			.00			.00	.00		
	TOP :	SMAX=	.01	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0
	BOTT:	SMAX=	.05	SMIN=	.00	TMAX=	.02	ANGLE=	90.0
	4	.04	.00			-20.96	-3.58	2.12	
			.00			.00	.01		
	TOP :	SMAX=	-.06	SMIN=	-.39	TMAX=	.17	ANGLE=	-7.7
	BOTT:	SMAX=	.39	SMIN=	.07	TMAX=	.16	ANGLE=	-5.9

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 101

ELEMENT FORCES FORCE/LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MAX		
58	1	.01	.00	.39	3.24	2.30		
			.00	.01	.00			
TOP :	SMAX=	.09	SMIN=	-.02	TMAX=	.05	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.08	TMAX=	.05	ANGLE=	90.0
2		.02	.00	-10.28	3.99	4.83		
			.00	.01	.01			
TOP :	SMAX=	.12	SMIN=	-.22	TMAX=	.17	ANGLE=	-17.7
BOTT:	SMAX=	.22	SMIN=	-.09	TMAX=	.15	ANGLE=	-16.4
3		.00	.00	3.33	2.17	.97		
			.00	.00	.00			
TOP :	SMAX=	.07	SMIN=	.03	TMAX=	.02	ANGLE=	90.0
BOTT:	SMAX=	-.03	SMIN=	-.07	TMAX=	.02	ANGLE=	90.0
4		.01	.00	3.27	4.74	2.86		
			.00	.01	.00			
TOP :	SMAX=	.14	SMIN=	.02	TMAX=	.06	ANGLE=	90.0
BOTT:	SMAX=	-.02	SMIN=	-.12	TMAX=	.05	ANGLE=	90.0
59	1	.00	.00	3.92	6.37	2.67		
			.00	.01	.00			
TOP :	SMAX=	.16	SMIN=	.04	TMAX=	.06	ANGLE=	90.0
BOTT:	SMAX=	-.04	SMIN=	-.14	TMAX=	.05	ANGLE=	90.0
2		.01	.00	2.99	12.03	5.64		
			.00	.01	.00			
TOP :	SMAX=	.29	SMIN=	.00	TMAX=	.14	ANGLE=	-25.2
BOTT:	SMAX=	-.01	SMIN=	-.26	TMAX=	.13	ANGLE=	-26.1
3		.00	.00	2.07	2.79	1.11		
			.00	.00	.00			
TOP :	SMAX=	.07	SMIN=	.02	TMAX=	.02	ANGLE=	90.0
BOTT:	SMAX=	-.02	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0
4		.00	.00	6.22	8.26	3.31		
			.00	.01	.00			
TOP :	SMAX=	.21	SMIN=	.07	TMAX=	.07	ANGLE=	90.0
BOTT:	SMAX=	-.07	SMIN=	-.19	TMAX=	.06	ANGLE=	90.0
60	1	.00	.00	1.34	7.83	2.33		
			.00	.01	.00			
TOP :	SMAX=	.17	SMIN=	.01	TMAX=	.08	ANGLE=	-17.2
BOTT:	SMAX=	-.01	SMIN=	-.15	TMAX=	.07	ANGLE=	-18.5
2		.00	-.01	1.75	16.19	4.95		
			.00	.02	.00			
TOP :	SMAX=	.34	SMIN=	.00	TMAX=	.17	ANGLE=	-16.7
BOTT:	SMAX=	.00	SMIN=	-.31	TMAX=	.15	ANGLE=	-17.8
3		.00	.00	.55	3.28	.97		

# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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TOP :	SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	.00	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0
	4	.00	.00	1.66	9.74	2.89		
			.00	.01	.00			
TOP :	SMAX=	.21	SMIN=	.01	TMAX=	.10	ANGLE=	-17.2
BOTT:	SMAX=	-.01	SMIN=	-.19	TMAX=	.09	ANGLE=	-18.5

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 102

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FGY	MAX
61	1	.05	.00	-55.93	-13.67	1.06
			.00	.00	.01	
TOP :	SMAX=	-.25	SMIN=	-1.03	TMAX=	.39 ANGLE= -1.9
BOTT:	SMAX=	1.04	SMIN=	.26	TMAX=	.39 ANGLE= -1.0
	2	.06	.01	-103.59	-25.26	2.19
			.01	.00	.01	
TOP :	SMAX=	-.46	SMIN=	-1.91	TMAX=	.73 ANGLE= -2.1
BOTT:	SMAX=	1.93	SMIN=	.47	TMAX=	.73 ANGLE= -1.2
	3	.04	.00	-28.29	-6.94	.45
			.00	.00	.00	
TOP :	SMAX=	-.13	SMIN=	-.52	TMAX=	.20 ANGLE= -1.6
BOTT:	SMAX=	.53	SMIN=	.13	TMAX=	.20 ANGLE= -.8
	4	.06	.00	-71.32	-17.44	1.32
			.00	.00	.01	
TOP :	SMAX=	-.32	SMIN=	-1.32	TMAX=	.50 ANGLE= -1.8
BOTT:	SMAX=	1.32	SMIN=	.33	TMAX=	.50 ANGLE= -1.0
62	1	.32	.00	-15.65	-2.43	2.94
			.00	.00	.01	
TOP :	SMAX=	-.03	SMIN=	-.30	TMAX=	.14 ANGLE= -12.9
BOTT:	SMAX=	.30	SMIN=	.04	TMAX=	.13 ANGLE= -11.0
	2	.35	.00	-44.13	-7.97	6.12
			.00	.01	.01	
TOP :	SMAX=	-.12	SMIN=	-.83	TMAX=	.36 ANGLE= -10.1
BOTT:	SMAX=	.84	SMIN=	.14	TMAX=	.35 ANGLE= -8.6
	3	.01	.00	-1.86	.18	1.25
			.00	.00	.00	
TOP :	SMAX=	.02	SMIN=	-.05	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	.04	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	4	.03	.00	-19.11	-2.92	3.67
			.00	.01	.01	
TOP :	SMAX=	-.03	SMIN=	-.37	TMAX=	.17 ANGLE= -13.1
BOTT:	SMAX=	.37	SMIN=	.05	TMAX=	.16 ANGLE= -11.2
63	1	.01	.00	1.19	3.74	3.93
			.00	.01	.00	
TOP :	SMAX=	.13	SMIN=	-.03	TMAX=	.08 ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.11	TMAX=	.07 ANGLE= 90.0
	2	.02	.00	-8.56	4.97	8.23
			.00	.01	.01	
TOP :	SMAX=	.18	SMIN=	-.23	TMAX=	.21 ANGLE= -25.5
BOTT:	SMAX=	.23	SMIN=	-.15	TMAX=	.19 ANGLE= -25.0
	3	.00	.00	3.66	2.40	1.65
			.00	.00	.00	
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.09	TMAX=	.03 ANGLE= 90.0
	4	.01	.00	4.26	5.37	4.89
			.00	.01	.01	
TOP :	SMAX=	.19	SMIN=	.00	TMAX=	.10 ANGLE= 90.0
BOTT:	SMAX=	.00	SMIN=	-.17	TMAX=	.09 ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 103

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FGY	MAX
64	1	.00	.00	4.23	6.82	4.50
			.00	.01	.00	
TOP :	SMAX=	.20	SMIN=	.02	TMAX=	.09 ANGLE= 90.0
BOTT:	SMAX=	-.01	SMIN=	-.18	TMAX=	.08 ANGLE= 90.0
	2	.01	.00	3.69	12.93	9.52
			.00	.02	.01	
TOP :	SMAX=	.37	SMIN=	-.04	TMAX=	.21 ANGLE= -31.4
BOTT:	SMAX=	.04	SMIN=	-.33	TMAX=	.19 ANGLE= -32.7

# CALCULATION SHEET

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	3	.00	.00	2.18	3.00	1.87
			.00	.00		
TOP :	SMAX=	.09	SMIN=	.01	TMAX=	.04
BOTT:	SMAX=	-.01	SMIN=	-.08	TMAX=	.03
	4	.00	.00	6.59	8.83	5.58
			.00	.01	.00	
TOP :	SMAX=	.26	SMIN=	.04	TMAX=	.11
BOTT:	SMAX=	-.04	SMIN=	-.24	TMAX=	.10
	65	1	.00	.00	1.39	8.25
			.00	.01	.00	3.92
TOP :	SMAX=	.20	SMIN=	-.01	TMAX=	.10
BOTT:	SMAX=	.01	SMIN=	-.18	TMAX=	.09
	2	.00	-.01	1.87	17.03	8.34
			.00	.02	.00	
TOP :	SMAX=	.40	SMIN=	-.03	TMAX=	.22
BOTT:	SMAX=	.04	SMIN=	-.37	TMAX=	.20
	3	.00	.00	.56	3.47	1.62
			.00	.00	.00	
TOP :	SMAX=	.08	SMIN=	.00	TMAX=	.04
BOTT:	SMAX=	.00	SMIN=	-.07	TMAX=	.04
	4	.00	-.01	1.71	10.26	4.86
			.00	.01	.00	
TOP :	SMAX=	.24	SMIN=	-.01	TMAX=	.13
BOTT:	SMAX=	.01	SMIN=	-.22	TMAX=	.11
	66	1	.05	.00	-52.47	-12.75
			.00	.00	.01	1.58
TOP :	SMAX=	-.23	SMIN=	-.97	TMAX=	.37
BOTT:	SMAX=	.98	SMIN=	.24	TMAX=	.37
	2	.06	.01	-96.44	-23.37	3.26
			.01	.00	.01	
TOP :	SMAX=	-.42	SMIN=	-1.78	TMAX=	.68
BOTT:	SMAX=	1.80	SMIN=	.44	TMAX=	.68
	3	.04	.00	-26.80	-6.54	.68
			.00	.00	.00	
TOP :	SMAX=	-.12	SMIN=	-.50	TMAX=	.19
BOTT:	SMAX=	.50	SMIN=	.12	TMAX=	.19
	4	.06	.01	-67.00	-16.29	1.98
			.00	.00	.01	
TOP :	SMAX=	-.30	SMIN=	-1.24	TMAX=	.47
BOTT:	SMAX=	1.25	SMIN=	.30	TMAX=	.47

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 104

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FBY	MBY
67	1	.02	.00	-13.42	-1.65	4.32
			.00	.01	.01	
TOP :	SMAX=	.00	SMIN=	-.28	TMAX=	.14
BOTT:	SMAX=	.27	SMIN=	.01	TMAX=	.13
	2	.05	.01	-39.46	-6.43	8.94
			.01	.01	.01	
TOP :	SMAX=	-.06	SMIN=	-.77	TMAX=	.36
BOTT:	SMAX=	.77	SMIN=	.09	TMAX=	.34
	3	.01	.00	-.92	.53	1.85
			.00	.00	.00	
TOP :	SMAX=	.04	SMIN=	-.04	TMAX=	.04
BOTT:	SMAX=	.04	SMIN=	-.03	TMAX=	.03
	4	.03	.00	-16.33	-1.94	5.39
			.00	.01	.01	
TOP :	SMAX=	.01	SMIN=	-.34	TMAX=	.17
BOTT:	SMAX=	.33	SMIN=	.01	TMAX=	.16
	68	1	.01	.00	2.29	4.39
			.00	.01	.01	5.64
TOP :	SMAX=	.18	SMIN=	-.05	TMAX=	.11
BOTT:	SMAX=	.04	SMIN=	-.16	TMAX=	.10
	2	.02	.00	-6.15	6.23	11.79
			.00	.02	.01	
TOP :	SMAX=	.27	SMIN=	-.25	TMAX=	.26
BOTT:	SMAX=	.24	SMIN=	-.23	TMAX=	.23
	3	.00	.00	4.10	2.70	2.38
			.00	.00	.00	
TOP :	SMAX=	.11	SMIN=	.02	TMAX=	.05
BOTT:	SMAX=	-.02	SMIN=	-.11	TMAX=	.04
	4	.01	.00	5.61	6.19	7.02
			.00	.01	.01	
TOP :	SMAX=	.25	SMIN=	-.02	TMAX=	.14
BOTT:	SMAX=	.02	SMIN=	-.23	TMAX=	.12
	69	1	.00	.00	4.57	7.32
			.00	.01	.00	6.34

# CALCULATION SHEET

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TOP :	SMAX=	.24	SMIN=	-.01	TMAX=	.12	ANGLE=	90.0
BOTT:	SMAX=	.01	SMIN=	-.22	TMAX=	.12	ANGLE=	90.0
2		.01	.00		4.53	13.88		13.44
			.00		.02	.01		
TOP :	SMAX=	.46	SMIN=	-.09	TMAX=	.27	ANGLE=	-34.7
BOTT:	SMAX=	.09	SMIN=	-.41	TMAX=	.25	ANGLE=	-36.1
3		.00	.00		2.29	3.23		2.63
			.00		.00	.00		
TOP :	SMAX=	.11	SMIN=	.00	TMAX=	.05	ANGLE=	90.0
BOTT:	SMAX=	.00	SMIN=	-.10	TMAX=	.05	ANGLE=	90.0
4		.00	.00		6.99	9.46		7.86
			.00		.01	.00		
TOP :	SMAX=	.31	SMIN=	.01	TMAX=	.15	ANGLE=	90.0
BOTT:	SMAX=	.00	SMIN=	-.29	TMAX=	.14	ANGLE=	90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 105

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY	
70	1	.00	-.01	1.42	8.63	5.50	
			.00	.01	.00		
TOP :	SMAX=	.23	SMIN=	-.03	TMAX=	.13	ANGLE= -27.4
BOTT:	SMAX=	.03	SMIN=	-.20	TMAX=	.12	ANGLE= -29.5
2		.00	-.01	1.97	17.77	11.75	
			.00	.02	.00		
TOP :	SMAX=	.47	SMIN=	-.08	TMAX=	.27	ANGLE= -27.2
BOTT:	SMAX=	.08	SMIN=	-.42	TMAX=	.25	ANGLE= -29.0
3		.00	.00	.57	3.65	2.26	
			.00	.01	.00		
TOP :	SMAX=	.09	SMIN=	-.01	TMAX=	.05	ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	-.08	TMAX=	.05	ANGLE= 90.0
4		.00	-.01	1.74	10.74	6.81	
			.00	.02	.00		
TOP :	SMAX=	.28	SMIN=	-.03	TMAX=	.16	ANGLE= -27.3
BOTT:	SMAX=	.04	SMIN=	-.25	TMAX=	.15	ANGLE= -29.4
71	1	.05	.01	-47.55	-11.45	2.20	
			.00	.00	.01		
TOP :	SMAX=	-.21	SMIN=	-.88	TMAX=	.34	ANGLE= -4.2
BOTT:	SMAX=	.89	SMIN=	.21	TMAX=	.34	ANGLE= -2.8
2		.06	.01	-86.36	-20.75	4.47	
			.01	.00	.02		
TOP :	SMAX=	-.37	SMIN=	-1.60	TMAX=	.61	ANGLE= -4.6
BOTT:	SMAX=	1.61	SMIN=	.39	TMAX=	.61	ANGLE= -3.2
3		.04	.00	-24.66	-5.96	.96	
			.00	.00	.00		
TOP :	SMAX=	-.11	SMIN=	-.46	TMAX=	.17	ANGLE= -3.6
BOTT:	SMAX=	.46	SMIN=	.11	TMAX=	.17	ANGLE= -2.3
4		.06	.01	-60.83	-14.65	2.75	
			.00	.00	.01		
TOP :	SMAX=	-.26	SMIN=	-1.13	TMAX=	.43	ANGLE= -4.1
BOTT:	SMAX=	1.13	SMIN=	.27	TMAX=	.43	ANGLE= -2.7
72	1	.02	.00	-10.50	-.69	5.84	
			.00	.01	.01		
TOP :	SMAX=	.05	SMIN=	-.25	TMAX=	.15	ANGLE= -25.6
BOTT:	SMAX=	.24	SMIN=	-.03	TMAX=	.13	ANGLE= -24.2
2		.04	.01	-33.34	-4.55	11.99	
			.01	.01	.01		
TOP :	SMAX=	.02	SMIN=	-.70	TMAX=	.36	ANGLE= -20.7
BOTT:	SMAX=	.70	SMIN=	.02	TMAX=	.34	ANGLE= -19.1
3		.01	.00	.31	.98	2.53	
			.00	.00	.00		
TOP :	SMAX=	.06	SMIN=	-.04	TMAX=	.05	ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE= 90.0
4		.03	.00	-12.71	-.72	7.31	
			.00	.01	.01		
TOP :	SMAX=	.06	SMIN=	-.30	TMAX=	.18	ANGLE= -26.0
BOTT:	SMAX=	.30	SMIN=	-.04	TMAX=	.17	ANGLE= -24.6

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 106

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
73	1	.01	.00	3.53	5.02	7.38



## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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**Subject: Structural Investigation of North Wall (u)**

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TOP :	SMAX=	.23	SMIN=	-.06	TMAX=	.14	ANGLE=	90.0
BOTT:	SMAX=	.06	SMIN=	-.20	TMAX=	.13	ANGLE=	90.0
2		.02	.00		-3.35	7.38		15.41
			.00		.02	.01		
TOP :	SMAX=	.36	SMIN=	-.27	TMAX=	.32	ANGLE=	-35.2
BOTT:	SMAX=	.26	SMIN=	-.31	TMAX=	.29	ANGLE=	-35.6
3		.00	.00		4.55	3.02		3.13
			.00		.00	.00		
TOP :	SMAX=	.13	SMIN=	.01	TMAX=	.06	ANGLE=	90.0
BOTT:	SMAX=	-.01	SMIN=	-.13	TMAX=	.06	ANGLE=	90.0
4		.01	.00		7.10	6.99		9.19
			.00		.01	.01		
TOP :	SMAX=	.32	SMIN=	-.04	TMAX=	.18	ANGLE=	90.0
BOTT:	SMAX=	.04	SMIN=	-.29	TMAX=	.16	ANGLE=	90.0
74	1	.00	.00		4.78	7.56		8.10
			.00		.01	.00		
TOP :	SMAX=	.28	SMIN=	-.04	TMAX=	.16	ANGLE=	90.0
BOTT:	SMAX=	.04	SMIN=	-.25	TMAX=	.15	ANGLE=	90.0
2		.00	.00		5.23	14.28		17.24
			.00		.02	.01		
TOP :	SMAX=	.54	SMIN=	-.15	TMAX=	.34	ANGLE=	-36.9
BOTT:	SMAX=	.15	SMIN=	-.49	TMAX=	.32	ANGLE=	-38.4
3		.00	.00		2.31	3.37		3.34
			.00		.01	.00		
TOP :	SMAX=	.12	SMIN=	-.01	TMAX=	.06	ANGLE=	90.0
BOTT:	SMAX=	.01	SMIN=	-.11	TMAX=	.06	ANGLE=	90.0
4		.00	.00		7.22	9.78		10.03
			.00		.02	.01		
TOP :	SMAX=	.36	SMIN=	-.03	TMAX=	.19	ANGLE=	90.0
BOTT:	SMAX=	.03	SMIN=	-.33	TMAX=	.18	ANGLE=	90.0
75	1	.00	-.01		1.38	8.59		6.99
			.00		.02	.00		
TOP :	SMAX=	.25	SMIN=	-.05	TMAX=	.15	ANGLE=	-30.2
BOTT:	SMAX=	.06	SMIN=	-.23	TMAX=	.14	ANGLE=	-32.6
2		.00	-.02		1.98	17.65		15.04
			.00		.03	.00		
TOP :	SMAX=	.52	SMIN=	-.13	TMAX=	.32	ANGLE=	-30.2
BOTT:	SMAX=	.14	SMIN=	-.47	TMAX=	.30	ANGLE=	-32.3
3		.00	.00		.53	3.64		2.83
			.00		.01	.00		
TOP :	SMAX=	.10	SMIN=	-.02	TMAX=	.06	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.09	TMAX=	.06	ANGLE=	90.0
4		.00	-.01		1.68	10.68		8.62
			.00		.02	.00		
TOP :	SMAX=	.31	SMIN=	-.06	TMAX=	.19	ANGLE=	-30.1
BOTT:	SMAX=	.07	SMIN=	-.28	TMAX=	.17	ANGLE=	-32.5

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 107

ELEMENT FORCES      FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MX MY
76	1	.04	.01 .00	-40.96 .00	-9.74 .01	2.90
TOP :	SMAx=	-.17	SMIN=	-.76	TMAx=	.30
BOTT:	SMAx=	.77	SMIN=	.18	TMAx=	.29
2		.05	.02 .01	-73.08 .00	-17.37 .02	5.79
TOP :	SMAx=	-.30	SMIN=	-1.36	TMAx=	.53
BOTT:	SMAx=	1.37	SMIN=	.32	TMAx=	.53
3		.03	.00 .00	-21.73 .00	-5.17 .00	1.31
TOP :	SMAx=	-.09	SMIN=	-.40	TMAx=	.16
BOTT:	SMAx=	.40	SMIN=	.10	TMAx=	.15
4		.05	.01 .00	-52.55 .00	-12.49 .01	3.66
TOP :	SMAx=	-.22	SMIN=	-.98	TMAx=	.38
BOTT:	SMAx=	.98	SMIN=	.23	TMAx=	.38
77	1	.02	.00 .00	-7.06 .01	.33 .01	7.45
TOP :	SMAx=	.11	SMIN=	-.22	TMAx=	.16
BOTT:	SMAx=	.21	SMIN=	-.08	TMAx=	.15
2		.04	.01 .01	-26.06 .01	-2.68 .02	15.09
TOP :	SMAx=	.11	SMIN=	-.63	TMAx=	.37
BOTT:	SMAx=	.61	SMIN=	-.06	TMAx=	.34
3		.01	.00 .00	1.74 .00	1.49 .00	3.29
TOP :	SMAx=	.10	SMIN=	-.03	TMAx=	.07
BOTT:	SMAx=	.03	SMIN=	-.08	TMAx=	.06

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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4	.03	.00	-8.43	.59	9.35
		.00	.01	.01	
TOP : SMAX=	.14	SMIN=	-.27	TMAX=	.20
BOTT: SMAX=	.26	SMIN=	-.10	TMAX=	.18
				ANGLE=	-32.4
				ANGLE=	-31.9
78 1	.00	.00	4.58	5.29	9.00
		.00	.01	.01	
TOP : SMAX=	.27	SMIN=	-.08	TMAX=	.17
BOTT: SMAX=	.07	SMIN=	-.25	TMAX=	.16
				ANGLE=	90.0
				ANGLE=	90.0
2	.01	.00	-6.6	7.71	18.77
		.00	.02	.02	
TOP : SMAX=	.45	SMIN=	-.30	TMAX=	.37
BOTT: SMAX=	.29	SMIN=	-.39	TMAX=	.34
				ANGLE=	-38.3
				ANGLE=	-39.1
3	.00	.00	4.86	3.21	3.82
		.00	.01	.00	
TOP : SMAX=	.15	SMIN=	.00	TMAX=	.07
BOTT: SMAX=	.00	SMIN=	-.14	TMAX=	.07
				ANGLE=	90.0
				ANGLE=	90.0
4	.01	.00	8.34	7.37	11.22
		.00	.01	.01	
TOP : SMAX=	.37	SMIN=	-.06	TMAX=	.22
BOTT: SMAX=	.06	SMIN=	-.34	TMAX=	.20
				ANGLE=	90.0
				ANGLE=	90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 108

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
79 1	.00	.00	4.62	7.03	9.54	
		.00	.01	.00		
TOP : SMAX=	.30	SMIN=	-.07	TMAX=	.18	ANGLE= 90.0
BOTT: SMAX=	.07	SMIN=	-.27	TMAX=	.17	ANGLE= 90.0
2	.00	.00	5.35	13.08	20.52	
		.00	.03	.01		
TOP : SMAX=	.59	SMIN=	-.21	TMAX=	.40	ANGLE= -38.8
BOTT: SMAX=	.22	SMIN=	-.53	TMAX=	.37	ANGLE= -40.6
3	.00	.00	2.11	3.18	3.87	
		.00	.01	.00		
TOP : SMAX=	.13	SMIN=	-.02	TMAX=	.07	ANGLE= 90.0
BOTT: SMAX=	.02	SMIN=	-.12	TMAX=	.07	ANGLE= 90.0
4	.00	.00	6.93	9.13	11.78	
		.00	.02	.01		
TOP : SMAX=	.38	SMIN=	-.07	TMAX=	.23	ANGLE= 90.0
BOTT: SMAX=	.07	SMIN=	-.35	TMAX=	.21	ANGLE= 90.0
80 1	.00	-.01	1.19	7.47	8.19	
		.00	.02	.00		
TOP : SMAX=	.26	SMIN=	-.08	TMAX=	.17	ANGLE= -33.2
BOTT: SMAX=	.09	SMIN=	-.23	TMAX=	.16	ANGLE= 90.0
2	.00	-.03	1.73	15.39	17.88	
		.00	.04	.00		
TOP : SMAX=	.54	SMIN=	-.19	TMAX=	.37	ANGLE= -33.3
BOTT: SMAX=	.20	SMIN=	-.48	TMAX=	.34	ANGLE= -35.9
3	.00	.00	.41	3.16	3.25	
		.00	.01	.00		
TOP : SMAX=	.10	SMIN=	-.03	TMAX=	.07	ANGLE= 90.0
BOTT: SMAX=	.03	SMIN=	-.09	TMAX=	.06	ANGLE= 90.0
4	.00	-.01	1.42	9.28	10.06	
		.00	.02	.00		
TOP : SMAX=	.32	SMIN=	-.10	TMAX=	.21	ANGLE= -33.0
BOTT: SMAX=	.11	SMIN=	-.28	TMAX=	.19	ANGLE= -35.8
81 1	.04	.01	-32.56	-7.61	3.66	
		.00	.00	.01		
TOP : SMAX=	-.12	SMIN=	-.61	TMAX=	.24	ANGLE= -9.4
BOTT: SMAX=	.61	SMIN=	.14	TMAX=	.24	ANGLE= -6.9
2	.04	.02	-56.59	-13.34	7.06	
		.01	.00	.02		
TOP : SMAX=	-.22	SMIN=	-1.07	TMAX=	.43	ANGLE= -10.2
BOTT: SMAX=	1.07	SMIN=	.24	TMAX=	.42	ANGLE= -7.8
3	.03	.01	-17.84	-4.13	1.74	
		.00	.00	.01		
TOP : SMAX=	-.07	SMIN=	-.34	TMAX=	.13	ANGLE= -8.4
BOTT: SMAX=	.33	SMIN=	.08	TMAX=	.13	ANGLE= -5.8
4	.05	.01	-41.93	-9.78	4.65	
		.00	.00	.01		
TOP : SMAX=	-.16	SMIN=	-.79	TMAX=	.31	ANGLE= -9.3
BOTT: SMAX=	.79	SMIN=	.18	TMAX=	.31	ANGLE= -6.8

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 109

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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Subject: Structural Investigation of North Wall (u)

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FXY	MAX
82	1	.02	.00	-3.47	1.11	8.94
			.00	.01	.01	
TOP :	SMAx=	.16	SMIN=	-.20	TMAX=	.18 ANGLE= 90.0
BOTT:	SMAx=	.19	SMIN=	-.13	TMAX=	.16 ANGLE= 90.0
	2	.03	.00	-18.25	-1.46	17.76
			.00	.01	.02	
TOP :	SMAx=	.21	SMIN=	-.56	TMAX=	.38 ANGLE= -32.7
BOTT:	SMAx=	.53	SMIN=	-.15	TMAX=	.34 ANGLE= -32.0
	3	.01	.00	3.15	1.96	4.06
			.00	.01	.00	
TOP :	SMAx=	.13	SMIN=	-.03	TMAX=	.08 ANGLE= 90.0
BOTT:	SMAx=	.03	SMIN=	-.12	TMAX=	.07 ANGLE= 90.0
	4	.02	.00	-4.01	1.60	11.28
			.00	.01	.01	
TOP :	SMAx=	.21	SMIN=	-.25	TMAX=	.23 ANGLE= -37.8
BOTT:	SMAx=	.23	SMIN=	-.17	TMAX=	.20 ANGLE= 90.0
83	1	.00	.00	4.98	4.59	10.14
			.00	.01	.01	
TOP :	SMAx=	.29	SMIN=	-.10	TMAX=	.20 ANGLE= 90.0
BOTT:	SMAx=	.10	SMIN=	-.26	TMAX=	.18 ANGLE= 90.0
	2	.01	.00	1.16	5.98	21.22
			.00	.02	.02	
TOP :	SMAx=	.49	SMIN=	-.34	TMAX=	.41 ANGLE= -41.2
BOTT:	SMAx=	.32	SMIN=	-.43	TMAX=	.38 ANGLE= 90.0
	3	.00	.00	4.74	3.01	4.27
			.00	.01	.00	
TOP :	SMAx=	.16	SMIN=	-.01	TMAX=	.08 ANGLE= 90.0
BOTT:	SMAx=	.01	SMIN=	-.15	TMAX=	.08 ANGLE= 90.0
	4	.00	.00	8.66	6.53	12.63
			.00	.02	.01	
TOP :	SMAx=	.39	SMIN=	-.10	TMAX=	.24 ANGLE= 90.0
BOTT:	SMAx=	.09	SMIN=	-.36	TMAX=	.23 ANGLE= 90.0
84	1	.00	.00	3.72	4.85	10.26
			.00	.02	.00	
TOP :	SMAx=	.28	SMIN=	-.11	TMAX=	.20 ANGLE= 90.0
BOTT:	SMAx=	.11	SMIN=	-.26	TMAX=	.19 ANGLE= 90.0
	2	.00	.00	4.26	8.55	22.55
			.00	.03	.01	
TOP :	SMAx=	.57	SMIN=	-.30	TMAX=	.43 ANGLE= -41.2
BOTT:	SMAx=	.30	SMIN=	-.51	TMAX=	.41 ANGLE= 90.0
	3	.00	.00	1.52	2.25	4.01
			.00	.01	.00	
TOP :	SMAx=	.11	SMIN=	-.04	TMAX=	.08 ANGLE= 90.0
BOTT:	SMAx=	.04	SMIN=	-.10	TMAX=	.07 ANGLE= 90.0
	4	-.01	.00	5.65	6.41	12.58
			.00	.02	.01	
TOP :	SMAx=	.36	SMIN=	-.12	TMAX=	.24 ANGLE= 90.0
BOTT:	SMAx=	.13	SMIN=	-.33	TMAX=	.23 ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 110

ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FXY	MAX
85	1	.00	-.02	.75	4.26	8.79
			.00	.02	.00	
TOP :	SMAx=	.23	SMIN=	-.11	TMAX=	.17 ANGLE= 90.0
BOTT:	SMAx=	.13	SMIN=	-.20	TMAX=	.16 ANGLE= 90.0
	2	.00	-.03	1.03	8.96	19.69
			.00	.05	.00	
TOP :	SMAx=	.50	SMIN=	-.27	TMAX=	.38 ANGLE= -37.7
BOTT:	SMAx=	.29	SMIN=	-.43	TMAX=	.36 ANGLE= -41.0
	3	.00	-.01	.17	1.72	3.35
			.00	.01	.00	
TOP :	SMAx=	.09	SMIN=	-.04	TMAX=	.06 ANGLE= 90.0
BOTT:	SMAx=	.05	SMIN=	-.08	TMAX=	.06 ANGLE= 90.0
	4	.00	-.02	.84	5.24	10.70
			.00	.03	.00	
TOP :	SMAx=	.28	SMIN=	-.14	TMAX=	.21 ANGLE= -37.4
BOTT:	SMAx=	.16	SMIN=	-.24	TMAX=	.20 ANGLE= 90.0
86	1	.03	.01	-22.53	-5.22	4.32
			.00	.00	.01	
TOP :	SMAx=	-.07	SMIN=	-.44	TMAX=	.19 ANGLE= -14.9
BOTT:	SMAx=	.43	SMIN=	.09	TMAX=	.17 ANGLE= -11.5
	2	.03	.02	-37.71	-9.14	7.84

# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1  
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			.00	.00	.02	
TOP :	SMAX=	-.12	SMIN=	-.75	TMAX=	.31
BOTT:	SMAX=	.73	SMIN=	.14	TMAX=	.29
		.03	.01	-12.91	-2.83	2.23
			.00	.00	.01	
TOP :	SMAX=	-.04	SMIN=	-.25	TMAX=	.11
BOTT:	SMAX=	.24	SMIN=	.05	TMAX=	.10
		.04	.02	-29.14	-6.72	5.54
			.00	.00	.02	
TOP :	SMAX=	-.09	SMIN=	-.57	TMAX=	.24
BOTT:	SMAX=	.56	SMIN=	.11	TMAX=	.22
						ANGLE= -15.9
						ANGLE= -12.8
						ANGLE= -13.8
						ANGLE= -10.0
						ANGLE= -14.8
						ANGLE= -11.3
87	1	.01	.00	-.52	.94	9.80
			.00	.01	.01	
TOP :	SMAX=	.20	SMIN=	-.19	TMAX=	.19
BOTT:	SMAX=	.17	SMIN=	-.17	TMAX=	.17
		.02	.00	-11.06	-2.20	18.92
			.00	.01	.02	
TOP :	SMAX=	.26	SMIN=	-.50	TMAX=	.38
BOTT:	SMAX=	.47	SMIN=	-.21	TMAX=	.34
		.00	.00	4.03	2.06	4.63
			.00	.01	.01	
TOP :	SMAX=	.15	SMIN=	-.03	TMAX=	.09
BOTT:	SMAX=	.03	SMIN=	-.14	TMAX=	.08
		.02	.00	-.45	1.41	12.45
			.00	.01	.02	
TOP :	SMAX=	.26	SMIN=	-.23	TMAX=	.25
BOTT:	SMAX=	.21	SMIN=	-.22	TMAX=	.22
						ANGLE= 90.0
						ANGLE= 90.0
						ANGLE= 90.0
						ANGLE= 90.0
						ANGLE= 90.0
						ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
88	1	.00	-.01	4.03	1.78	10.16
			.00	.02	.01	
TOP :	SMAX=	.26	SMIN=	-.14	TMAX=	.20
BOTT:	SMAX=	.14	SMIN=	-.23	TMAX=	.18
		.00	-.01	1.12	.13	21.60
			.00	.03	.02	
TOP :	SMAX=	.44	SMIN=	-.40	TMAX=	.42
BOTT:	SMAX=	.38	SMIN=	-.38	TMAX=	.38
		.00	.00	3.74	1.83	4.12
			.00	.01	.00	
TOP :	SMAX=	.14	SMIN=	-.02	TMAX=	.08
BOTT:	SMAX=	.03	SMIN=	-.12	TMAX=	.08
		.00	-.01	7.15	3.01	12.63
			.00	.02	.01	
TOP :	SMAX=	.35	SMIN=	-.14	TMAX=	.25
BOTT:	SMAX=	.14	SMIN=	-.31	TMAX=	.23
						ANGLE= 90.0
						ANGLE= 38.5
89	1	.00	-.01	1.65	-.40	9.65
			.00	.02	.00	
TOP :	SMAX=	.20	SMIN=	-.16	TMAX=	.18
BOTT:	SMAX=	.18	SMIN=	-.18	TMAX=	.18
		.00	-.01	1.11	-2.01	22.16
			.00	.04	.01	
TOP :	SMAX=	.43	SMIN=	-.41	TMAX=	.42
BOTT:	SMAX=	.43	SMIN=	-.37	TMAX=	.40
		.00	.00	.37	-.10	3.48
			.00	.01	.00	
TOP :	SMAX=	.07	SMIN=	-.06	TMAX=	.06
BOTT:	SMAX=	.07	SMIN=	-.06	TMAX=	.06
		-.01	-.01	2.83	-.19	11.67
			.00	.03	.00	
TOP :	SMAX=	.26	SMIN=	-.18	TMAX=	.22
BOTT:	SMAX=	.20	SMIN=	-.23	TMAX=	.22
						ANGLE= 90.0
						ANGLE= 90.0
90	1	.00	-.02	-.07	-2.56	8.34
			.00	.02	.00	
TOP :	SMAX=	.14	SMIN=	-.17	TMAX=	.16
BOTT:	SMAX=	.19	SMIN=	-.12	TMAX=	.16
		.00	-.04	-.45	-4.75	19.56
			.00	.05	.00	
TOP :	SMAX=	.35	SMIN=	-.39	TMAX=	.37
BOTT:	SMAX=	.44	SMIN=	-.29	TMAX=	.36
		.00	-.01	-.21	-1.32	2.95
			.00	.01	.00	
TOP :	SMAX=	.04	SMIN=	-.06	TMAX=	.05
BOTT:	SMAX=	.08	SMIN=	-.04	TMAX=	.06
		.00	-.02	-.26	-3.36	9.98
			.00	.03	.00	
TOP :	SMAX=	.17	SMIN=	-.21	TMAX=	.19
BOTT:	SMAX=	.24	SMIN=	-.14	TMAX=	.19
						ANGLE= 90.0
						ANGLE= 90.0

## CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1Calculation Number C-CLC-Z-00016 Rev. 0Subject: Structural Investigation of North Wall (5)Page B32 of B 51

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 112

ELEMENT FORCES      FORCE, LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
91	1	.02	.01	-11.79	-3.13	4.44
			-.01	.00	.01	
TOP :	SMAX=	-.01	SMIN=	-.27	TMAX=	.13
BOTT:	SMAX=	.24	SMIN=	.04	TMAX=	.10
	2	.01	.02	-18.90	-5.86	7.22
			-.01	.00	.02	
TOP :	SMAX=	-.04	SMIN=	-.44	TMAX=	.20
BOTT:	SMAX=	.38	SMIN=	.06	TMAX=	.16
	3	.02	.01	-7.10	-1.53	2.63
			.00	.00	.01	
TOP :	SMAX=	.00	SMIN=	-.16	TMAX=	.08
BOTT:	SMAX=	.14	SMIN=	.02	TMAX=	.06
	4	.02	.02	-15.34	-4.08	5.73
			-.01	.00	.02	
TOP :	SMAX=	-.02	SMIN=	-.35	TMAX=	.17
BOTT:	SMAX=	.31	SMIN=	.05	TMAX=	.13
92	1	.00	-.01	.42	-1.82	8.96
			-.01	.01	.01	
TOP :	SMAX=	.17	SMIN=	-.19	TMAX=	.18
BOTT:	SMAX=	.17	SMIN=	-.14	TMAX=	.16
	2	.01	-.01	-6.07	-7.05	16.74
			-.01	.01	.02	
TOP :	SMAX=	.21	SMIN=	-.45	TMAX=	.33
BOTT:	SMAX=	.41	SMIN=	-.17	TMAX=	.29
	3	.00	-.01	3.22	.62	4.38
			.00	.01	.01	
TOP :	SMAX=	.13	SMIN=	-.05	TMAX=	.09
BOTT:	SMAX=	.05	SMIN=	-.11	TMAX=	.08
	4	.01	-.01	.54	-2.21	11.55
			-.01	.02	.02	
TOP :	SMAX=	.22	SMIN=	-.24	TMAX=	.23
BOTT:	SMAX=	.22	SMIN=	-.18	TMAX=	.20
93	1	-.01	-.01	.90	-5.49	8.12
			.00	.02	.01	
TOP :	SMAX=	.13	SMIN=	-.20	TMAX=	.16
BOTT:	SMAX=	.21	SMIN=	-.11	TMAX=	.16
	2	-.01	-.02	-2.00	-13.30	18.22
			-.01	.03	.02	
TOP :	SMAX=	.23	SMIN=	-.49	TMAX=	.36
BOTT:	SMAX=	.50	SMIN=	-.19	TMAX=	.35
	3	-.01	-.01	1.40	-1.79	2.85
			.00	.01	.00	
TOP :	SMAX=	.06	SMIN=	-.06	TMAX=	.06
BOTT:	SMAX=	.07	SMIN=	-.05	TMAX=	.06
	4	-.01	-.02	2.54	-6.33	10.09
			-.01	.03	.01	
TOP :	SMAX=	.18	SMIN=	-.23	TMAX=	.21
BOTT:	SMAX=	.25	SMIN=	-.16	TMAX=	.20

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 113

ELEMENT FORCES      FORCE, LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
94	1	-.01	-.01	-2.13	-10.89	7.05
			.00	.03	.00	
TOP :	SMAX=	.04	SMIN=	-.26	TMAX=	.15
BOTT:	SMAX=	.29	SMIN=	-.03	TMAX=	.16
	2	-.01	-.02	-5.43	-22.75	17.80
			-.01	.05	.01	
TOP :	SMAX=	.12	SMIN=	-.60	TMAX=	.36
BOTT:	SMAX=	.65	SMIN=	-.09	TMAX=	.37
	3	.00	-.01	-1.37	-4.88	2.06
			.00	.01	.00	
TOP :	SMAX=	-.01	SMIN=	-.10	TMAX=	.05
BOTT:	SMAX=	.12	SMIN=	.01	TMAX=	.05
	4	-.01	-.02	-2.25	-13.42	8.21
			.00	.03	.00	
TOP :	SMAX=	.04	SMIN=	-.31	TMAX=	.18

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## CALCULATION SHEET

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	BOTT:	SMAX=	.35	SMIN=	-.03	TMAX=	.19	ANGLE=	25.6
95	1	.00	-.02	.00	-1.19	-14.86	6.33		
	TOP :	SMAX=	.03	SMIN=	-.30	TMAX=	.16	ANGLE=	22.8
	BOTT:	SMAX=	.34	SMIN=	-.02	TMAX=	.18	ANGLE=	20.2
	2	.00	-.05	.00	-2.79	-30.23	16.14		
	TOP :	SMAX=	.10	SMIN=	-.65	TMAX=	.38	ANGLE=	26.6
	BOTT:	SMAX=	.75	SMIN=	-.07	TMAX=	.41	ANGLE=	23.1
	3	.00	-.01	.00	-.63	-6.57	1.98		
	TOP :	SMAX=	.00	SMIN=	-.12	TMAX=	.06	ANGLE=	17.6
	BOTT:	SMAX=	.14	SMIN=	.00	TMAX=	.07	ANGLE=	16.2
	4	.00	-.03	.00	-1.66	-18.71	7.30		
	TOP :	SMAX=	.02	SMIN=	-.37	TMAX=	.20	ANGLE=	21.5
	BOTT:	SMAX=	.42	SMIN=	-.02	TMAX=	.22	ANGLE=	19.2
96	1	.00	.00	-.02	-4.14	-3.93	2.24		
	TOP :	SMAX=	-.03	SMIN=	-.15	TMAX=	.06	ANGLE=	90.0
	BOTT:	SMAX=	.09	SMIN=	.03	TMAX=	.03	ANGLE=	90.0
	2	-.01	.01	-.05	-6.08	-5.65	3.31		
	TOP :	SMAX=	-.06	SMIN=	-.22	TMAX=	.08	ANGLE=	90.0
	BOTT:	SMAX=	.13	SMIN=	.03	TMAX=	.05	ANGLE=	90.0
	3	.00	.00	-.01	-2.73	-2.64	1.47		
	TOP :	SMAX=	-.01	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0
	BOTT:	SMAX=	.06	SMIN=	.03	TMAX=	.02	ANGLE=	90.0
	4	.00	.00	-.03	-5.41	-5.07	2.90		
	TOP :	SMAX=	-.04	SMIN=	-.19	TMAX=	.07	ANGLE=	90.0
	BOTT:	SMAX=	.12	SMIN=	.04	TMAX=	.04	ANGLE=	90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 114

ELEMENT FORCES      FORCE,LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MX MY
97	1	-.01	-.02	-2.06	-11.43	4.05
	TOP :	SMAX=	-.01	.02	.01	
	BOTT:	SMAX=	.25	-.23	.11	ANGLE= 24.8
	2	-.02	-.01	.01	.12	ANGLE= 16.6
	TOP :	SMAX=	-.05	-.41	.18	ANGLE= 28.1
	BOTT:	SMAX=	.41	.03	.19	ANGLE= 19.8
	3	-.01	-.02	-.23	-6.54	2.02
	TOP :	SMAX=	.01	.02	.00	
	BOTT:	SMAX=	.15	-.12	.06	ANGLE= 90.0
	4	-.01	-.02	.00	.08	ANGLE= 12.9
	TOP :	SMAX=	-.01	-.03	-.14	ANGLE= 25.1
	BOTT:	SMAX=	.33	.01	.16	ANGLE= 16.6
98	1	-.01	-.02	-4.53	-21.17	3.21
	TOP :	SMAX=	-.07	.03	.00	
	BOTT:	SMAX=	.43	-.38	.15	ANGLE= 11.8
	2	-.02	-.03	.07	.18	ANGLE= 9.4
	TOP :	SMAX=	-.14	-.72	.29	ANGLE= 15.4
	BOTT:	SMAX=	.79	.12	.33	ANGLE= 12.1
	3	.00	-.01	-.21	-10.73	.88
	TOP :	SMAX=	-.04	.02	.00	
	BOTT:	SMAX=	.22	-.18	.07	ANGLE= 5.9
	4	-.01	-.03	.04	.09	ANGLE= 5.8
	TOP :	SMAX=	-.08	-.48	.20	ANGLE= 11.3
	BOTT:	SMAX=	.55	.09	.23	ANGLE= 9.0
99	1	-.01	-.02	-7.37	-29.29	2.75
	TOP :	SMAX=	-.13	.02	.00	
	BOTT:	SMAX=	.57	-.53	.20	ANGLE= 7.6
	2	-.02	-.04	.13	.22	ANGLE= 6.5
	TOP :	SMAX=	-.26	-.15	.41	ANGLE= 10.4
	BOTT:	SMAX=	1.16	.26	.45	ANGLE= 8.7
	3	.00	-.01	-.34	-12.99	.63

# CALCULATION SHEET

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TOP :	SMAX=	-.06	SMIN=	-.23	TMAX=	.09	ANGLE=	3.9
BOTT:	SMAX=	.25	SMIN=	.06	TMAX=	.09	ANGLE=	3.6
4		-.01	-.03		-9.18	-36.89		3.05
			.00		.03	.00		
TOP :	SMAX=	-.16	SMIN=	-.66	TMAX=	.25	ANGLE=	6.6
BOTT:	SMAX=	.72	SMIN=	.17	TMAX=	.28	ANGLE=	5.9

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 115

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MAX
100	1	.00	-.02	-5.80	-34.70	1.96
			.00	.03	.00	
TOP :	SMAX=	-.11	SMIN=	-.62	TMAX=	.26
BOTT:	SMAX=	.67	SMIN=	.10	TMAX=	.28
2		.00	-.06	-12.83	-74.59	6.01
			.00	.07	.00	
TOP :	SMAX=	-.23	SMIN=	-1.32	TMAX=	.55
BOTT:	SMAX=	1.46	SMIN=	.22	TMAX=	.62
3		.00	-.01	-2.35	-14.15	.45
			.00	.01	.00	
TOP :	SMAX=	-.04	SMIN=	-.25	TMAX=	.11
BOTT:	SMAX=	.27	SMIN=	.04	TMAX=	.11
4		.00	-.03	-7.22	-42.83	2.07
			.00	.03	.00	
TOP :	SMAX=	-.13	SMIN=	-.76	TMAX=	.32
BOTT:	SMAX=	.83	SMIN=	.13	TMAX=	.35
101	1	.00	.00	-4.16	-3.94	-2.24
			-.02	.00	-.01	
TOP :	SMAX=	-.03	SMIN=	-.14	TMAX=	.06
BOTT:	SMAX=	.09	SMIN=	.03	TMAX=	.03
2		-.01	-.01	-6.11	-5.67	-3.30
			-.05	-.01	-.01	
TOP :	SMAX=	-.06	SMIN=	-.22	TMAX=	.08
BOTT:	SMAX=	.13	SMIN=	.03	TMAX=	.05
3		.00	.00	-2.74	-2.65	-1.47
			-.01	.00	-.01	
TOP :	SMAX=	-.02	SMIN=	-.09	TMAX=	.04
BOTT:	SMAX=	.06	SMIN=	.03	TMAX=	.02
4		.00	.00	-5.43	-5.08	-2.90
			-.03	.00	-.02	
TOP :	SMAX=	-.04	SMIN=	-.19	TMAX=	.07
BOTT:	SMAX=	.12	SMIN=	.04	TMAX=	.04
102	1	-.01	.02	-2.06	-11.43	-4.05
			-.01	.02	-.01	
TOP :	SMAX=	-.01	SMIN=	-.23	TMAX=	.11
BOTT:	SMAX=	.26	SMIN=	.01	TMAX=	.12
2		-.02	.01	-5.45	-18.96	-7.40
			-.03	.02	-.01	
TOP :	SMAX=	-.05	SMIN=	-.41	TMAX=	.18
BOTT:	SMAX=	.42	SMIN=	.03	TMAX=	.19
3		-.01	.02	-.23	-6.55	-2.02
			.00	.02	.00	
TOP :	SMAX=	.01	SMIN=	-.11	TMAX=	.06
BOTT:	SMAX=	.15	SMIN=	.00	TMAX=	.08
4		-.01	.02	-2.76	-14.83	-5.30
			-.01	.03	-.01	
TOP :	SMAX=	-.01	SMIN=	-.30	TMAX=	.14
BOTT:	SMAX=	.33	SMIN=	.01	TMAX=	.16

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MAX
103	1	-.01	.02	-4.52	-21.17	-3.21
			.00	.03	.00	
TOP :	SMAX=	-.07	SMIN=	-.38	TMAX=	.15
BOTT:	SMAX=	.43	SMIN=	.07	TMAX=	.18
2		-.02	.03	-8.94	-38.69	-7.70
			-.01	.04	-.01	
TOP :	SMAX=	-.14	SMIN=	-.72	TMAX=	.29
BOTT:	SMAX=	.79	SMIN=	.12	TMAX=	.33

# CALCULATION SHEET

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	3	.00	.01	-2.17	-10.74	-.88
			.00	.02	.00	
TOP :	SMAX=	-.04	SMIN=	-.18	TMAX=	.07 ANGLE= -5.7
BOTT:	SMAX=	.22	SMIN=	.04	TMAX=	.09 ANGLE= -5.9
	4	-.01	.03	-5.33	-27.15	-3.99
			.00	.04	.00	
TOP :	SMAX=	-.08	SMIN=	-.48	TMAX=	.20 ANGLE= -11.2
BOTT:	SMAX=	.55	SMIN=	.09	TMAX=	.23 ANGLE= -9.1
104	1	-.01	.02	-7.37	-29.30	-2.75
			.00	.02	.00	
TOP :	SMAX=	-.13	SMIN=	-.53	TMAX=	.20 ANGLE= -7.5
BOTT:	SMAX=	.57	SMIN=	.13	TMAX=	.22 ANGLE= -6.6
	2	-.02	.04	-15.14	-59.12	-7.60
			.00	.05	.00	
TOP :	SMAX=	-.26	SMIN=	-1.07	TMAX=	.41 ANGLE= -10.4
BOTT:	SMAX=	1.16	SMIN=	.26	TMAX=	.45 ANGLE= -8.8
	3	.00	.01	-3.47	-12.99	-.63
			.00	.01	.00	
TOP :	SMAX=	-.06	SMIN=	-.23	TMAX=	.09 ANGLE= -3.8
BOTT:	SMAX=	.25	SMIN=	.06	TMAX=	.09 ANGLE= -3.7
	4	-.01	.03	-9.18	-36.89	-3.06
			.00	.03	.00	
TOP :	SMAX=	-.16	SMIN=	-.66	TMAX=	.25 ANGLE= -6.5
BOTT:	SMAX=	.72	SMIN=	.17	TMAX=	.28 ANGLE= -5.9
105	1	.00	.02	-5.80	-34.71	-1.97
			.00	.03	.00	
TOP :	SMAX=	-.11	SMIN=	-.62	TMAX=	.26 ANGLE= -3.9
BOTT:	SMAX=	.67	SMIN=	.10	TMAX=	.28 ANGLE= -3.8
	2	.00	.06	-12.82	-74.60	-6.02
			.00	.07	.00	
TOP :	SMAX=	-.23	SMIN=	-1.32	TMAX=	.55 ANGLE= -5.8
BOTT:	SMAX=	1.46	SMIN=	.22	TMAX=	.62 ANGLE= -5.3
	3	.00	.01	-2.34	-14.15	-.45
			.00	.01	.00	
TOP :	SMAX=	-.04	SMIN=	-.25	TMAX=	.11 ANGLE= -2.1
BOTT:	SMAX=	.27	SMIN=	.04	TMAX=	.11 ANGLE= -2.3
	4	.00	.03	-7.21	-42.84	-2.08
			.00	.03	.00	
TOP :	SMAX=	-.13	SMIN=	-.76	TMAX=	.32 ANGLE= -3.3
BOTT:	SMAX=	.83	SMIN=	.13	TMAX=	.35 ANGLE= -3.3

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 117

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
106	1	.02	-.01	-11.80	-3.14	-4.44
			-.01	.00	-.01	
TOP :	SMAX=	-.01	SMIN=	-.27	TMAX=	.13 ANGLE= 24.4
BOTT:	SMAX=	.24	SMIN=	.03	TMAX=	.10 ANGLE= 21.0
	2	.01	-.02	-18.92	-5.87	-7.22
			-.01	.00	-.02	
TOP :	SMAX=	-.04	SMIN=	-.43	TMAX=	.20 ANGLE= 25.0
BOTT:	SMAX=	.39	SMIN=	.06	TMAX=	.16 ANGLE= 22.7
	3	.02	-.01	-7.11	-1.53	-2.63
			.00	.00	-.01	
TOP :	SMAX=	.00	SMIN=	-.16	TMAX=	.08 ANGLE= 23.6
BOTT:	SMAX=	.14	SMIN=	.02	TMAX=	.06 ANGLE= 90.0
	4	.02	-.02	-15.36	-4.09	-5.73
			-.01	.00	-.02	
TOP :	SMAX=	-.02	SMIN=	-.35	TMAX=	.17 ANGLE= 24.3
BOTT:	SMAX=	.31	SMIN=	.05	TMAX=	.13 ANGLE= 20.8
107	1	.00	.01	.42	-1.82	-8.95
			-.01	.01	-.01	
TOP :	SMAX=	.17	SMIN=	-.19	TMAX=	.18 ANGLE= 90.0
BOTT:	SMAX=	.17	SMIN=	-.14	TMAX=	.16 ANGLE= 90.0
	2	.01	.01	-6.08	-7.06	-16.73
			-.01	.01	-.02	
TOP :	SMAX=	.21	SMIN=	-.45	TMAX=	.33 ANGLE= 90.0
BOTT:	SMAX=	.41	SMIN=	-.17	TMAX=	.29 ANGLE= 90.0
	3	.00	.01	3.22	.61	-4.38
			.00	.01	-.01	
TOP :	SMAX=	.13	SMIN=	-.05	TMAX=	.09 ANGLE= 90.0
BOTT:	SMAX=	.05	SMIN=	-.11	TMAX=	.08 ANGLE= 90.0
	4	.01	.01	.53	-2.21	-11.54
			-.01	.02	-.02	
TOP :	SMAX=	.22	SMIN=	-.24	TMAX=	.23 ANGLE= 90.0
BOTT:	SMAX=	.22	SMIN=	-.18	TMAX=	.20 ANGLE= 90.0
108	1	-.01	.01	.90	-5.50	-8.12
			.00	.02	-.01	



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TOP : SMAX= .13 SMIN= -.20 TMAX= .16 ANGLE= 90.0
BOTT: SMAX= .21 SMIN= -.11 TMAX= .16 ANGLE= -31.7
2      -.01      .02      -2.00      -13.31      -18.21
      -.01      .03      -.01
TOP : SMAX= .23 SMIN= -.49 TMAX= .36 ANGLE= -38.4
BOTT: SMAX= .50 SMIN= -.19 TMAX= .35 ANGLE= -34.3
3      -.01      .01      1.40      -1.79      -2.85
      .00      .01      .00
TOP : SMAX= .06 SMIN= -.06 TMAX= .06 ANGLE= 90.0
BOTT: SMAX= .07 SMIN= -.05 TMAX= .06 ANGLE= 90.0
4      -.01      .02      2.54      -6.34      -10.08
      -.01      .03      -.01
TOP : SMAX= .18 SMIN= -.23 TMAX= .20 ANGLE= -35.9
BOTT: SMAX= .25 SMIN= -.16 TMAX= .21 ANGLE= -30.4

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FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 118

ELEMENT FORCES      FORCE,LENGTH UNITS= KIPS INCH

-----  
 FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
109	1	-.01	.01	-2.13	-10.89	-7.05
			.00	.03	.00	
	TOP : SMAX=	.04	SMIN=	-.26	TMAX=	.15 ANGLE= -31.6
	BOTT: SMAX=	.29	SMIN=	-.03	TMAX=	.16 ANGLE= -26.8
	2	-.01	.02	-5.42	-22.76	-17.80
			-.01	.05	-.01	
	TOP : SMAX=	.12	SMIN=	-.60	TMAX=	.36 ANGLE= -34.3
	BOTT: SMAX=	.66	SMIN=	-.09	TMAX=	.37 ANGLE= -29.8
	3	.00	.01	-1.37	-4.89	-2.06
			.00	.01	.00	
	TOP : SMAX=	-.01	SMIN=	-.10	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.12	SMIN=	.01	TMAX=	.05 ANGLE= 90.0
	4	-.01	.02	-2.24	-13.43	-8.21
			.00	.03	.00	
	TOP : SMAX=	.04	SMIN=	-.31	TMAX=	.18 ANGLE= -30.4
	BOTT: SMAX=	.35	SMIN=	-.03	TMAX=	.19 ANGLE= -25.6
110	1	.00	.02	-1.19	-14.86	-6.33
			.00	.03	.00	
	TOP : SMAX=	.03	SMIN=	-.30	TMAX=	.16 ANGLE= -22.8
	BOTT: SMAX=	.34	SMIN=	-.02	TMAX=	.18 ANGLE= -20.1
	2	.00	.05	-2.79	-30.23	-16.15
			.00	.06	.00	
	TOP : SMAX=	.10	SMIN=	-.65	TMAX=	.38 ANGLE= -26.7
	BOTT: SMAX=	.75	SMIN=	-.07	TMAX=	.41 ANGLE= -23.1
	3	.00	.01	-.63	-6.57	-1.98
			.00	.01	.00	
	TOP : SMAX=	.00	SMIN=	-.12	TMAX=	.06 ANGLE= -17.6
	BOTT: SMAX=	.14	SMIN=	.00	TMAX=	.07 ANGLE= -16.2
	4	.00	.03	-1.66	-18.71	-7.30
			.00	.03	.00	
	TOP : SMAX=	.02	SMIN=	-.37	TMAX=	.20 ANGLE= -21.5
	BOTT: SMAX=	.42	SMIN=	-.02	TMAX=	.22 ANGLE= -19.2
111	1	.03	-.01	-22.53	-5.22	-4.32
			.00	.00	-.01	
	TOP : SMAX=	-.07	SMIN=	-.44	TMAX=	.19 ANGLE= 14.8
	BOTT: SMAX=	.43	SMIN=	.09	TMAX=	.17 ANGLE= 11.7
	2	.03	-.02	-37.73	-9.14	-7.84
			.00	.00	-.02	
	TOP : SMAX=	-.12	SMIN=	-.74	TMAX=	.31 ANGLE= 15.7
	BOTT: SMAX=	.73	SMIN=	.14	TMAX=	.29 ANGLE= 13.0
	3	.03	-.01	-12.91	-2.83	-2.23
			.00	.00	-.01	
	TOP : SMAX=	-.04	SMIN=	-.25	TMAX=	.11 ANGLE= 13.6
	BOTT: SMAX=	.25	SMIN=	.05	TMAX=	.10 ANGLE= 10.1
	4	.04	-.02	-29.15	-6.72	-5.54
			.00	.00	-.02	
	TOP : SMAX=	-.09	SMIN=	-.57	TMAX=	.24 ANGLE= 14.7
	BOTT: SMAX=	.56	SMIN=	.11	TMAX=	.22 ANGLE= 11.5

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES      FORCE,LENGTH UNITS= KIPS INCH

-----  
 FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MGY
112	1	.01	.00	-.53	.94	-9.80

# CALCULATION SHEET

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			.00	.01	-.01		
TOP :	SMAX=	.20	SMIN=	-.19	TMAX=	.19	ANGLE= 90.0
BOTT:	SMAX=	.17	SMIN=	-.17	TMAX=	.17	ANGLE= 90.0
2		.02	.00	-11.07	-2.20	-18.92	
			.00	.01	-.02		
TOP :	SMAX=	.26	SMIN=	-.50	TMAX=	.38	ANGLE= 38.2
BOTT:	SMAX=	.47	SMIN=	-.21	TMAX=	.34	ANGLE= 38.7
3		.00	.00	4.03	2.06	-4.63	
			.00	.01	-.01		
TOP :	SMAX=	.15	SMIN=	-.03	TMAX=	.09	ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.14	TMAX=	.08	ANGLE= 90.0
4		.02	.00	-.46	1.41	-12.45	
			.00	.01	-.01		
TOP :	SMAX=	.26	SMIN=	-.23	TMAX=	.25	ANGLE= 90.0
BOTT:	SMAX=	.21	SMIN=	-.22	TMAX=	.22	ANGLE= 90.0
113	1	.00	.01	4.03	1.77	-10.16	
			.00	.02	-.01		
TOP :	SMAX=	.26	SMIN=	-.13	TMAX=	.20	ANGLE= 90.0
BOTT:	SMAX=	.14	SMIN=	-.23	TMAX=	.18	ANGLE= 90.0
2		.00	.01	1.11	.12	-21.60	
			.00	.03	-.02		
TOP :	SMAX=	.44	SMIN=	-.39	TMAX=	.42	ANGLE= 90.0
BOTT:	SMAX=	.39	SMIN=	-.38	TMAX=	.38	ANGLE= 90.0
3		.00	.00	3.74	1.83	-4.12	
			.00	.01	.00		
TOP :	SMAX=	.14	SMIN=	-.02	TMAX=	.08	ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.13	TMAX=	.08	ANGLE= 90.0
4		.00	.01	7.14	3.01	-12.63	
			.00	.02	-.01		
TOP :	SMAX=	.35	SMIN=	-.14	TMAX=	.24	ANGLE= 90.0
BOTT:	SMAX=	.15	SMIN=	-.32	TMAX=	.23	ANGLE= -38.5
114	1	.00	.01	1.65	-.40	-9.65	
			.00	.02	.00		
TOP :	SMAX=	.20	SMIN=	-.16	TMAX=	.18	ANGLE= 90.0
BOTT:	SMAX=	.18	SMIN=	-.18	TMAX=	.18	ANGLE= 90.0
2		.00	.01	1.11	-2.02	-22.17	
			.00	.04	-.01		
TOP :	SMAX=	.43	SMIN=	-.41	TMAX=	.42	ANGLE= 90.0
BOTT:	SMAX=	.43	SMIN=	-.37	TMAX=	.40	ANGLE= -41.3
3		.00	.00	.37	-.10	-3.48	
			.00	.01	.00		
TOP :	SMAX=	.07	SMIN=	-.06	TMAX=	.06	ANGLE= 90.0
BOTT:	SMAX=	.07	SMIN=	-.06	TMAX=	.07	ANGLE= 90.0
4		-.01	.01	2.83	-.19	-11.67	
			.00	.03	.00		
TOP :	SMAX=	.26	SMIN=	-.18	TMAX=	.22	ANGLE= 90.0
BOTT:	SMAX=	.21	SMIN=	-.23	TMAX=	.22	ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 120

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MX
115	1	.00	.02	-.07	-2.57	-8.34
			.00	.02	.00	
TOP :	SMAX=	.14	SMIN=	-.17	TMAX=	.16
BOTT:	SMAX=	.19	SMIN=	-.12	TMAX=	.16
2		.00	.04	-.45	-4.76	-19.56
			.00	.06	.00	
TOP :	SMAX=	.35	SMIN=	-.39	TMAX=	.37
BOTT:	SMAX=	.44	SMIN=	-.29	TMAX=	.36
3		.00	.01	-.21	-1.32	-2.95
			.00	.01	.00	
TOP :	SMAX=	.04	SMIN=	-.06	TMAX=	.05
BOTT:	SMAX=	.08	SMIN=	-.04	TMAX=	.06
4		.00	.02	-.26	-3.37	-9.98
			.00	.03	.00	
TOP :	SMAX=	.17	SMIN=	-.20	TMAX=	.19
BOTT:	SMAX=	.24	SMIN=	-.14	TMAX=	.19
116	1	.04	-.01	-32.57	-7.61	-3.66
			.00	.00	-.01	
TOP :	SMAX=	-.12	SMIN=	-.61	TMAX=	.24
BOTT:	SMAX=	.61	SMIN=	.14	TMAX=	.24
2		.04	-.02	-56.60	-13.35	-7.06
			.01	.00	-.02	
TOP :	SMAX=	-.22	SMIN=	-1.07	TMAX=	.43
BOTT:	SMAX=	1.07	SMIN=	.24	TMAX=	.42
3		.03	-.01	-17.85	-4.13	-1.74
			.00	.00	-.01	
TOP :	SMAX=	-.07	SMIN=	-.34	TMAX=	.13
BOTT:	SMAX=	.33	SMIN=	.08	TMAX=	.13

# CALCULATION SHEET

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4	.05	-.01	-41.94	-9.78	-4.65
		.00	.00	-.01	
TOP : SMAX=	-.16	SMIN=	-.79	TMAX=	.31
BOTT: SMAX=	.79	SMIN=	.18	TMAX=	.31
117 1	.02	.00	-3.48	1.10	-8.94
		.00	.01	-.01	
TOP : SMAX=	.16	SMIN=	-.20	TMAX=	.18
BOTT: SMAX=	.19	SMIN=	-.13	TMAX=	.16
2	.03	.00	-18.26	-1.47	-17.76
		.00	.01	-.02	
TOP : SMAX=	.21	SMIN=	-.56	TMAX=	.38
BOTT: SMAX=	.54	SMIN=	-.16	TMAX=	.35
3	.01	.00	3.15	1.96	-4.06
		.00	.01	.00	
TOP : SMAX=	.13	SMIN=	-.03	TMAX=	.08
BOTT: SMAX=	.03	SMIN=	-.12	TMAX=	.07
4	.02	.00	-4.02	1.59	-11.27
		.00	.01	-.01	
TOP : SMAX=	.21	SMIN=	-.24	TMAX=	.23
BOTT: SMAX=	.23	SMIN=	-.17	TMAX=	.20

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 121

ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/TRICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FKY	MX MY
118 1	.00	.00	.00	4.98	4.59	-10.14
				.01	-.01	
TOP : SMAX=	.29	SMIN=	-.10	TMAX=	.19	ANGLE= 90.0
BOTT: SMAX=	.10	SMIN=	-.26	TMAX=	.18	ANGLE= 90.0
2	.01	.00	.00	1.15	5.97	-21.22
				.02	-.02	
TOP : SMAX=	.49	SMIN=	-.33	TMAX=	.41	ANGLE= 41.1
BOTT: SMAX=	.33	SMIN=	-.43	TMAX=	.38	ANGLE= 90.0
3	.00	.00	.00	4.74	3.01	-4.27
				.01	.00	
TOP : SMAX=	.16	SMIN=	-.01	TMAX=	.08	ANGLE= 90.0
BOTT: SMAX=	.01	SMIN=	-.15	TMAX=	.08	ANGLE= 90.0
4	.10	.00	.00	8.66	6.53	-12.63
				.02	-.01	
TOP : SMAX=	.39	SMIN=	-.09	TMAX=	.24	ANGLE= 90.0
BOTT: SMAX=	.10	SMIN=	-.36	TMAX=	.23	ANGLE= 90.0
119 1	.00	.00	.00	3.72	4.84	-10.26
				.02	.00	
TOP : SMAX=	.28	SMIN=	-.11	TMAX=	.20	ANGLE= 90.0
BOTT: SMAX=	.12	SMIN=	-.26	TMAX=	.19	ANGLE= 90.0
2	.00	.00	.00	4.25	8.54	-22.55
				.04	-.01	
TOP : SMAX=	.57	SMIN=	-.30	TMAX=	.43	ANGLE= 41.1
BOTT: SMAX=	.31	SMIN=	-.51	TMAX=	.41	ANGLE= 90.0
3	.00	.00	.00	1.52	2.25	-4.01
				.01	.00	
TOP : SMAX=	.11	SMIN=	-.04	TMAX=	.08	ANGLE= 90.0
BOTT: SMAX=	.04	SMIN=	-.10	TMAX=	.07	ANGLE= 90.0
4	-.01	.00	.00	5.65	6.40	-12.58
				.02	.00	
TOP : SMAX=	.36	SMIN=	-.12	TMAX=	.24	ANGLE= 90.0
BOTT: SMAX=	.13	SMIN=	-.33	TMAX=	.23	ANGLE= 90.0
120 1	.00	.02	.00	.75	4.26	-8.79
				.02	.00	
TOP : SMAX=	.23	SMIN=	-.11	TMAX=	.17	ANGLE= 90.0
BOTT: SMAX=	.13	SMIN=	-.20	TMAX=	.16	ANGLE= 90.0
2	.00	.03	.00	1.03	8.95	-19.70
				.05	.00	
TOP : SMAX=	.50	SMIN=	-.27	TMAX=	.38	ANGLE= 37.6
BOTT: SMAX=	.30	SMIN=	-.43	TMAX=	.36	ANGLE= 90.0
3	.00	.01	.00	.17	1.72	-3.35
				.01	.00	
TOP : SMAX=	.09	SMIN=	-.04	TMAX=	.06	ANGLE= 90.0
BOTT: SMAX=	.05	SMIN=	-.08	TMAX=	.06	ANGLE= 90.0
4	.00	.02	.00	.83	5.23	-10.70
				.03	.00	
TOP : SMAX=	.28	SMIN=	-.14	TMAX=	.21	ANGLE= 37.3
BOTT: SMAX=	.16	SMIN=	-.24	TMAX=	.20	ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE, LENGTH UNITS= KIPS INCH

# CALCULATION SHEET

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MTY
121	1	.04	-.01 .00	-40.96 .00	-9.74 -.01	-2.90
	TOP : SMAX=	-.17	SMIN=	-.76	TMAX=	ANGLE= 6.0
	BOTT: SMAX=	.77	SMIN=	.18	TMAX=	ANGLE= 4.5
	2	.05	-.02 .01	-73.09 .01	-17.37 -.01	-5.79
	TOP : SMAX=	-.30	SMIN=	-1.36	TMAX=	ANGLE= 6.6
	BOTT: SMAX=	1.37	SMIN=	.32	TMAX=	ANGLE= 5.1
	3	.03	.00 .00	-21.73 .00	-5.17 .00	-1.31
	TOP : SMAX=	-.09	SMIN=	-.40	TMAX=	ANGLE= 5.3
	BOTT: SMAX=	.41	SMIN=	.10	TMAX=	ANGLE= 3.7
	4	.05	-.01 .00	-52.55 .00	-12.49 -.01	-3.66
	TOP : SMAX=	-.22	SMIN=	-.98	TMAX=	ANGLE= 5.9
	BOTT: SMAX=	.98	SMIN=	.23	TMAX=	ANGLE= 4.4
122	1	.02	.00 .00	-7.06 .01	.33 -.01	-7.45
	TOP : SMAX=	.10	SMIN=	-.22	TMAX=	ANGLE= 31.9
	BOTT: SMAX=	.21	SMIN=	-.08	TMAX=	ANGLE= 31.7
	2	.04	-.01 .01	-26.07 .01	-2.68 -.01	-15.09
	TOP : SMAX=	.11	SMIN=	-.62	TMAX=	ANGLE= 26.6
	BOTT: SMAX=	.62	SMIN=	-.06	TMAX=	ANGLE= 25.6
	3	.01	.00 .00	1.74 .00	1.49 .00	-3.29
	TOP : SMAX=	.10	SMIN=	-.03	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.09	TMAX=	ANGLE= 90.0
	4	.03	.00 .00	-8.44 .01	.58 -.01	-9.35
	TOP : SMAX=	.14	SMIN=	-.27	TMAX=	ANGLE= 32.2
	BOTT: SMAX=	.26	SMIN=	-.10	TMAX=	ANGLE= 32.0
123	1	.00	.00 .00	4.58 .01	5.29 -.01	-9.00
	TOP : SMAX=	.27	SMIN=	-.08	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.25	TMAX=	ANGLE= 90.0
	2	.01	.00 .00	-.67 .02	7.70 -.01	-18.77
	TOP : SMAX=	.45	SMIN=	-.29	TMAX=	ANGLE= 38.2
	BOTT: SMAX=	.29	SMIN=	-.39	TMAX=	ANGLE= 39.2
	3	.00	.00 .00	4.86 .01	3.21 .00	-3.82
	TOP : SMAX=	.15	SMIN=	.00	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.14	TMAX=	ANGLE= 90.0
	4	.01	.00 .00	8.33 .02	7.36 -.01	-11.22
	TOP : SMAX=	.37	SMIN=	-.06	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.06	SMIN=	-.34	TMAX=	ANGLE= 90.0

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 123

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MTY
124	1	.00	.00 .00	4.62 .02	7.02 .00	-9.54
	TOP : SMAX=	.30	SMIN=	-.07	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.27	TMAX=	ANGLE= 90.0
	2	.00	.00 .00	5.34 .03	13.07 -.01	-20.52
	TOP : SMAX=	.59	SMIN=	-.21	TMAX=	ANGLE= 38.7
	BOTT: SMAX=	.22	SMIN=	-.53	TMAX=	ANGLE= 40.7
	3	.00	.00 .00	2.11 .01	3.18 .00	-3.87
	TOP : SMAX=	.13	SMIN=	-.02	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.12	TMAX=	ANGLE= 90.0
	4	.00	.00 .00	6.92 .02	9.12 .00	-11.78
	TOP : SMAX=	.38	SMIN=	-.07	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.35	TMAX=	ANGLE= 90.0
125	1	.00	.01 .00	1.19 .02	7.47 .00	-8.19
	TOP : SMAX=	.26	SMIN=	-.08	TMAX=	ANGLE= 33.0
	BOTT: SMAX=	.09	SMIN=	-.23	TMAX=	ANGLE= 90.0
	2	.00	.03	1.72	15.38	-17.88

# CALCULATION SHEET

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TOP :	SMAX=	.55	SMIN=	-.19	TMAX=	.37	ANGLE=	33.2
BOTT:	SMAX=	.21	SMIN=	-.48	TMAX=	.34	ANGLE=	36.0
3		.00	.00	.41	3.15	-3.25		
TOP :	SMAX=	.10	SMIN=	-.03	TMAX=	.07	ANGLE=	90.0
BOTT:	SMAX=	.03	SMIN=	-.09	TMAX=	.06	ANGLE=	90.0
4		.00	.01	1.42	9.28	-10.06		
TOP :	SMAX=	.32	SMIN=	-.10	TMAX=	.21	ANGLE=	32.8
BOTT:	SMAX=	.11	SMIN=	-.28	TMAX=	.19	ANGLE=	35.9
126	1	.05	-.01	-47.55	-11.45	-2.20		
TOP :	SMAX=	-.21	SMIN=	-.88	TMAX=	.34	ANGLE=	4.0
BOTT:	SMAX=	.89	SMIN=	.21	TMAX=	.34	ANGLE=	2.9
2		.06	-.01	-86.37	-20.75	-4.47		
TOP :	SMAX=	-.37	SMIN=	-1.60	TMAX=	.61	ANGLE=	4.4
BOTT:	SMAX=	1.61	SMIN=	.39	TMAX=	.61	ANGLE=	3.3
3		.04	.00	-24.66	-5.96	-.96		
TOP :	SMAX=	-.11	SMIN=	-.46	TMAX=	.17	ANGLE=	3.5
BOTT:	SMAX=	.46	SMIN=	.11	TMAX=	.17	ANGLE=	2.4
4		.06	-.01	-60.84	-14.65	-2.75		
TOP :	SMAX=	-.26	SMIN=	-1.13	TMAX=	.43	ANGLE=	3.9
BOTT:	SMAX=	1.13	SMIN=	.27	TMAX=	.43	ANGLE=	2.9

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 124

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY	MX	MY	MXY
			FX	FY	FX	
127	1	.02	.00	-10.51	-.69	-5.84
TOP :	SMAX=	.05	SMIN=	-.25	TMAX=	.15
BOTT:	SMAX=	.24	SMIN=	-.03	TMAX=	.14
2		.04	-.01	-33.35	-4.56	-11.99
TOP :	SMAX=	.02	SMIN=	-.70	TMAX=	.36
BOTT:	SMAX=	.70	SMIN=	.02	TMAX=	.34
3		.01	.00	.30	.98	-2.54
TOP :	SMAX=	.06	SMIN=	-.04	TMAX=	.05
BOTT:	SMAX=	.03	SMIN=	-.05	TMAX=	.04
4		.03	.00	-12.71	-.72	-7.31
TOP :	SMAX=	.06	SMIN=	-.30	TMAX=	.18
BOTT:	SMAX=	.30	SMIN=	-.04	TMAX=	.17
128	1	.01	.00	3.52	5.01	-7.39
TOP :	SMAX=	.23	SMIN=	-.06	TMAX=	.14
BOTT:	SMAX=	.06	SMIN=	-.20	TMAX=	.13
2		.02	.00	-3.37	7.37	-15.41
TOP :	SMAX=	.36	SMIN=	-.27	TMAX=	.32
BOTT:	SMAX=	.26	SMIN=	-.31	TMAX=	.29
3		.00	.00	4.55	3.02	-3.13
TOP :	SMAX=	.13	SMIN=	.01	TMAX=	.06
BOTT:	SMAX=	-.01	SMIN=	-.13	TMAX=	.06
4		.01	.00	7.10	6.99	-9.20
TOP :	SMAX=	.31	SMIN=	-.04	TMAX=	.18
BOTT:	SMAX=	.04	SMIN=	-.29	TMAX=	.16
129	1	.00	.00	4.78	7.56	-8.10
TOP :	SMAX=	.28	SMIN=	-.04	TMAX=	.16
BOTT:	SMAX=	.04	SMIN=	-.25	TMAX=	.15
2		.00	.00	5.22	14.27	-17.25
TOP :	SMAX=	.54	SMIN=	-.15	TMAX=	.34
BOTT:	SMAX=	.15	SMIN=	-.48	TMAX=	.32
3		.00	.00	2.31	3.37	-3.34
TOP :	SMAX=	.12	SMIN=	-.01	TMAX=	.06
BOTT:	SMAX=	.01	SMIN=	-.11	TMAX=	.06
4		.00	.00	7.21	9.77	-10.03
TOP :	SMAX=	.36	SMIN=	-.03	TMAX=	.19
BOTT:	SMAX=	.03	SMIN=	-.33	TMAX=	.18

# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Subject: Structural Investigation of North Wall (U)

Calculation Number C-CLC-Z-00016 Rev. 0

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FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MTY
130	1	.00	.01 .00	1.38 .02	8.58 .00	-6.99
	TOP : SMAX=	.25	SMIN=	-.05	TMAX=	.15
	BOTT: SMAX=	.06	SMIN=	-.22	TMAX=	.14
	2	.00	.02 .00	1.97 .03	17.64 .00	-15.05
	TOP : SMAX=	.52	SMIN=	-.13	TMAX=	.33
	BOTT: SMAX=	.14	SMIN=	-.47	TMAX=	.30
	3	.00	.00 .00	.53 .01	3.64 .00	-2.83
	TOP : SMAX=	.10	SMIN=	-.02	TMAX=	.06
	BOTT: SMAX=	.02	SMIN=	-.09	TMAX=	.06
	4	.00	.01 .00	1.68 .02	10.68 .00	-8.63
	TOP : SMAX=	.31	SMIN=	-.06	TMAX=	.19
	BOTT: SMAX=	.07	SMIN=	-.28	TMAX=	.17
131	1	.05	.00 .00	-52.48 .00	-12.75 .00	-1.58
	TOP : SMAX=	-.23	SMIN=	-.97	TMAX=	.37
	BOTT: SMAX=	.98	SMIN=	.24	TMAX=	.37
	2	.06	-.01 .01	-96.45 .01	-23.38 -.01	-3.26
	TOP : SMAX=	-.42	SMIN=	-1.78	TMAX=	.68
	BOTT: SMAX=	1.80	SMIN=	.44	TMAX=	.68
	3	.04	.00 .00	-26.81 .00	-6.54 .00	-1.68
	TOP : SMAX=	-.12	SMIN=	-.50	TMAX=	.19
	BOTT: SMAX=	.50	SMIN=	.12	TMAX=	.19
	4	.06	-.01 .01	-67.01 .00	-16.29 -.01	-1.98
	TOP : SMAX=	-.30	SMIN=	-1.24	TMAX=	.47
	BOTT: SMAX=	1.25	SMIN=	.30	TMAX=	.47
132	1	.02	.00 .00	-13.43 .01	-1.65 .00	-4.32
	TOP : SMAX=	.00	SMIN=	-.27	TMAX=	.14
	BOTT: SMAX=	.28	SMIN=	.01	TMAX=	.13
	2	.05	-.01 .01	-39.48 .01	-6.43 -.01	-8.95
	TOP : SMAX=	-.06	SMIN=	-.77	TMAX=	.35
	BOTT: SMAX=	.78	SMIN=	.09	TMAX=	.34
	3	.01	.00 .00	-.93 .00	.53 .00	-1.85
	TOP : SMAX=	.04	SMIN=	-.04	TMAX=	.04
	BOTT: SMAX=	.04	SMIN=	-.03	TMAX=	.03
	4	.03	.00 .00	-16.34 .01	-1.94 -.01	-5.39
	TOP : SMAX=	.01	SMIN=	-.34	TMAX=	.17
	BOTT: SMAX=	.34	SMIN=	.01	TMAX=	.16

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MTY
133	1	.01	.00 .00	2.29 .01	4.39 .00	-5.64
	TOP : SMAX=	.18	SMIN=	-.04	TMAX=	.11
	BOTT: SMAX=	.05	SMIN=	-.16	TMAX=	.10
	2	.02	.00 .00	-6.16 .02	6.22 -.01	-11.80
	TOP : SMAX=	.27	SMIN=	-.25	TMAX=	.26
	BOTT: SMAX=	.25	SMIN=	-.23	TMAX=	.24
	3	.00	.00 .00	4.10 .00	2.70 .00	-2.38
	TOP : SMAX=	.11	SMIN=	.02	TMAX=	.05
	BOTT: SMAX=	-.02	SMIN=	-.11	TMAX=	.05
	4	.01	.00 .00	5.60 .01	6.18 .00	-7.02
	TOP : SMAX=	.25	SMIN=	-.02	TMAX=	.14

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		BOTT: SMAX=	.02	SMIN=	-.23	TMAX=	.13	ANGLE=	90.0
134	1		.00	.00		4.56	7.31	-6.35	
		TOP: SMAX=	.24	SMIN=	-.01	TMAX=	.12	ANGLE=	90.0
		BOTT: SMAX=	.01	SMIN=	-.22	TMAX=	.12	ANGLE=	90.0
	2		.01	.00		4.52	13.87	-13.45	
		TOP: SMAX=	.46	SMIN=	-.09	TMAX=	.27	ANGLE=	34.5
		BOTT: SMAX=	.10	SMIN=	-.41	TMAX=	.25	ANGLE=	36.4
	3		.00	.00		2.29	3.23	-2.63	
		TOP: SMAX=	.11	SMIN=	.00	TMAX=	.05	ANGLE=	90.0
		BOTT: SMAX=	.00	SMIN=	-.10	TMAX=	.05	ANGLE=	90.0
	4		.00	.00		6.99	9.46	-7.87	
		TOP: SMAX=	.31	SMIN=	.01	TMAX=	.15	ANGLE=	90.0
		BOTT: SMAX=	.00	SMIN=	-.29	TMAX=	.14	ANGLE=	90.0
135	1		.00	.01		1.42	8.62	-5.51	
		TOP: SMAX=	.23	SMIN=	-.03	TMAX=	.13	ANGLE=	27.1
		BOTT: SMAX=	.03	SMIN=	-.20	TMAX=	.12	ANGLE=	29.8
	2		.00	.01		1.97	17.75	-11.76	
		TOP: SMAX=	.47	SMIN=	-.08	TMAX=	.27	ANGLE=	26.9
		BOTT: SMAX=	.08	SMIN=	-.42	TMAX=	.25	ANGLE=	29.3
	3		.00	.00		.57	3.65	-2.26	
		TOP: SMAX=	.10	SMIN=	-.01	TMAX=	.05	ANGLE=	90.0
		BOTT: SMAX=	.01	SMIN=	-.08	TMAX=	.05	ANGLE=	90.0
	4		.00	.01		1.74	10.73	-6.81	
		TOP: SMAX=	.28	SMIN=	-.03	TMAX=	.16	ANGLE=	27.0
		BOTT: SMAX=	.04	SMIN=	-.25	TMAX=	.15	ANGLE=	29.7

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 127

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY	MX	MY	MX	MY	MX	MY
			FX	FY	FX				
136	1	.05	.00	-55.94	-13.68	-1.06			
			.00	.00	.00				
		TOP: SMAX=	-.25	SMIN=	-1.03	TMAX=	.39	ANGLE=	1.7
		BOTT: SMAX=	1.04	SMIN=	.26	TMAX=	.39	ANGLE=	1.2
	2	.06	-.01	-103.61	-25.27	-2.20			
			.01	.01	-.01				
		TOP: SMAX=	-.46	SMIN=	-1.91	TMAX=	.73	ANGLE=	1.9
		BOTT: SMAX=	1.93	SMIN=	.47	TMAX=	.73	ANGLE=	1.3
	3	.04	.00	-28.29	-6.94	-.45			
			.00	.00	.00				
		TOP: SMAX=	-.13	SMIN=	-.52	TMAX=	.20	ANGLE=	1.4
		BOTT: SMAX=	.53	SMIN=	.13	TMAX=	.20	ANGLE=	1.0
	4	.06	.00	-71.33	-17.44	-1.32			
			.01	.00	.00				
		TOP: SMAX=	-.32	SMIN=	-1.32	TMAX=	.50	ANGLE=	1.6
		BOTT: SMAX=	1.33	SMIN=	.33	TMAX=	.50	ANGLE=	1.2
137	1	.02	.00	-15.66	-2.43	-2.95			
			.00	.01	.00				
		TOP: SMAX=	-.03	SMIN=	-.30	TMAX=	.14	ANGLE=	12.5
		BOTT: SMAX=	.30	SMIN=	.04	TMAX=	.13	ANGLE=	11.5
	2	.05	.00	-44.15	-7.98	-6.13			
			.01	.01	-.01				
		TOP: SMAX=	-.12	SMIN=	-.83	TMAX=	.36	ANGLE=	9.8
		BOTT: SMAX=	.84	SMIN=	.14	TMAX=	.35	ANGLE=	8.9
	3	.01	.00	-1.87	.18	-1.25			
			.00	.00	.00				
		TOP: SMAX=	.02	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0
		BOTT: SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0
	4	.03	.00	-19.12	-2.92	-3.67			
			.00	.01	.00				
		TOP: SMAX=	-.03	SMIN=	-.37	TMAX=	.17	ANGLE=	12.7
		BOTT: SMAX=	.37	SMIN=	.05	TMAX=	.16	ANGLE=	11.7
138	1	.01	.00	1.18	3.74	-3.93			
			.00	.01	.00				
		TOP: SMAX=	.13	SMIN=	-.03	TMAX=	.08	ANGLE=	90.0
		BOTT: SMAX=	.03	SMIN=	-.11	TMAX=	.07	ANGLE=	90.0
	2	.02	.00	-8.58	4.96	-8.24			
			.00	.02	-.01				
		TOP: SMAX=	.18	SMIN=	-.23	TMAX=	.21	ANGLE=	25.1
		BOTT: SMAX=	.23	SMIN=	-.14	TMAX=	.19	ANGLE=	25.6
	3	.00	.00	3.66	2.39	-1.66			

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TOP : SMAX= .09 SMIN= .00 TMAX= .03 ANGLE= 90.0
BOTT: SMAX= -.02 SMIN= -.09 TMAX= .03 ANGLE= 90.0
      4      .01      .00      4.25      5.36      -4.89
      .00      .01      .00
TOP : SMAX= .19 SMIN= .00 TMAX= .10 ANGLE= 90.0
BOTT: SMAX= .01 SMIN= -.17 TMAX= .09 ANGLE= 90.0

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FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 128

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FGY	MTY
139	1	.00	.00	4.22	6.82	-4.51
			.00	.01	.00	
	TOP : SMAX=	.20	SMIN=	.02	TMAX=	.09 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.18	TMAX=	.08 ANGLE= 90.0
	2	.01	.00	3.67	12.91	-9.53
			.00	.02	.00	
	TOP : SMAX=	.37	SMIN=	-.04	TMAX=	.20 ANGLE= 31.0
	BOTT: SMAX=	.05	SMIN=	-.33	TMAX=	.19 ANGLE= 33.3
	3	.00	.00	2.18	3.00	-1.87
			.00	.01	.00	
	TOP : SMAX=	.09	SMIN=	.01	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
	4	.00	.00	6.58	8.83	-5.59
			.00	.01	.00	
	TOP : SMAX=	.26	SMIN=	.04	TMAX=	.11 ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.24	TMAX=	.10 ANGLE= 90.0
140	1	.00	.00	1.38	8.24	-3.93
			.00	.01	.00	
	TOP : SMAX=	.20	SMIN=	-.01	TMAX=	.10 ANGLE= 23.2
	BOTT: SMAX=	.01	SMIN=	-.17	TMAX=	.09 ANGLE= 25.9
	2	.00	.01	1.86	17.01	-8.35
			.00	.03	.00	
	TOP : SMAX=	.41	SMIN=	-.03	TMAX=	.22 ANGLE= 22.8
	BOTT: SMAX=	.04	SMIN=	-.36	TMAX=	.20 ANGLE= 25.1
	3	.00	.00	.56	3.47	-1.62
			.00	.01	.00	
	TOP : SMAX=	.08	SMIN=	.00	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.07	TMAX=	.04 ANGLE= 90.0
	4	.00	.01	1.71	10.25	-4.86
			.00	.02	.00	
	TOP : SMAX=	.25	SMIN=	-.01	TMAX=	.13 ANGLE= 23.1
	BOTT: SMAX=	.01	SMIN=	-.22	TMAX=	.11 ANGLE= 25.8
141	1	.05	.00	-58.13	-14.26	-1.60
			.00	.00	.00	
	TOP : SMAX=	-.26	SMIN=	-1.07	TMAX=	.41 ANGLE= .9
	BOTT: SMAX=	1.08	SMIN=	.27	TMAX=	.41 ANGLE= .6
	2	.06	.00	-108.16	-26.48	-1.26
			.01	.01	.00	
	TOP : SMAX=	-.48	SMIN=	-1.99	TMAX=	.76 ANGLE= 1.0
	BOTT: SMAX=	2.01	SMIN=	.50	TMAX=	.76 ANGLE= .7
	3	.04	.00	-29.22	-7.19	-.26
			.00	.00	.00	
	TOP : SMAX=	-.13	SMIN=	-.54	TMAX=	.20 ANGLE= .8
	BOTT: SMAX=	.54	SMIN=	.13	TMAX=	.20 ANGLE= .5
	4	.06	.00	-74.06	-18.18	-.75
			.01	.00	.00	
	TOP : SMAX=	-.33	SMIN=	-1.37	TMAX=	.52 ANGLE= .9
	BOTT: SMAX=	1.38	SMIN=	.34	TMAX=	.52 ANGLE= .6

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 129

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FY	MX FY	MY FGY	MTY
142	1	.03	.00	-17.15	-2.96	-1.71
			.00	.01	.00	
	TOP : SMAX=	-.04	SMIN=	-.32	TMAX=	.14 ANGLE= 7.1
	BOTT: SMAX=	.32	SMIN=	.06	TMAX=	.13 ANGLE= 6.4
	2	.05	.00	-47.28	-9.06	-3.56
			.01	.01	.00	
	TOP : SMAX=	-.15	SMIN=	-.88	TMAX=	.36 ANGLE= 5.5
	BOTT: SMAX=	.89	SMIN=	.17	TMAX=	.36 ANGLE= 5.0



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	3	.01	.00	-2.50	-.06	-.72
			.00	.00	.00	
TOP :	SMAX=	.01	SMIN=	-.05	TMAX=	.03
BOTT:	SMAX=	.05	SMIN=	.00	TMAX=	.03
	4	.04	.00	-20.97	-3.59	-2.12
			.00	.01	.00	
TOP :	SMAX=	-.05	SMIN=	-.39	TMAX=	.17
BOTT:	SMAX=	.40	SMIN=	.07	TMAX=	.16
	143	1	.01	.00	.38	3.23
			.00	.01	.00	-2.31
TOP :	SMAX=	.09	SMIN=	-.01	TMAX=	.05
BOTT:	SMAX=	.02	SMIN=	-.08	TMAX=	.05
	2	.02	.00	-10.31	3.97	-4.85
			.00	.02	.00	
TOP :	SMAX=	.12	SMIN=	-.22	TMAX=	.17
BOTT:	SMAX=	.22	SMIN=	-.08	TMAX=	.15
	3	.00	.00	3.33	2.16	-.97
			.00	.00	.00	
TOP :	SMAX=	.07	SMIN=	.03	TMAX=	.02
BOTT:	SMAX=	-.03	SMIN=	-.07	TMAX=	.02
	4	.01	.00	3.25	4.73	-2.87
			.00	.01	.00	
TOP :	SMAX=	.14	SMIN=	.02	TMAX=	.06
BOTT:	SMAX=	-.02	SMIN=	-.12	TMAX=	.05
	144	1	.00	.00	3.91	6.36
			.00	.01	.00	-2.68
TOP :	SMAX=	.16	SMIN=	.04	TMAX=	.06
BOTT:	SMAX=	-.04	SMIN=	-.14	TMAX=	.05
	2	.01	.00	2.97	12.01	-5.66
			.00	.02	.00	
TOP :	SMAX=	.29	SMIN=	.01	TMAX=	.14
BOTT:	SMAX=	.00	SMIN=	-.25	TMAX=	.13
	3	.00	.00	2.06	2.79	-1.12
			.00	.01	.00	
TOP :	SMAX=	.07	SMIN=	.02	TMAX=	.02
BOTT:	SMAX=	-.02	SMIN=	-.06	TMAX=	.02
	4	.00	.00	6.21	8.25	-3.33
			.00	.01	.00	
TOP :	SMAX=	.21	SMIN=	.07	TMAX=	.07
BOTT:	SMAX=	-.07	SMIN=	-.19	TMAX=	.06

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 130

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FGY	MX MY
145	1	.00	.00	1.34	7.82	-2.34
			.00	.01	.00	
TOP :	SMAX=	.17	SMIN=	.01	TMAX=	.08
BOTT:	SMAX=	-.01	SMIN=	-.15	TMAX=	.07
	2	.00	.01	1.74	16.17	-4.97
			.00	.02	.00	
TOP :	SMAX=	.35	SMIN=	.01	TMAX=	.17
BOTT:	SMAX=	.00	SMIN=	-.31	TMAX=	.15
	3	.00	.00	.55	3.28	-.97
			.00	.01	.00	
TOP :	SMAX=	.07	SMIN=	.00	TMAX=	.03
BOTT:	SMAX=	.00	SMIN=	-.06	TMAX=	.03
	4	.00	.00	1.65	9.72	-2.90
			.00	.02	.00	
TOP :	SMAX=	.21	SMIN=	.01	TMAX=	.10
BOTT:	SMAX=	-.01	SMIN=	-.18	TMAX=	.09
	146	1	.05	.00	-59.19	-14.55
			.00	.00	.00	-.20
TOP :	SMAX=	-.27	SMIN=	-1.09	TMAX=	.41
BOTT:	SMAX=	1.10	SMIN=	.27	TMAX=	.41
	2	.06	.00	-110.37	-27.07	-.41
			.01	.01	.00	
TOP :	SMAX=	-.50	SMIN=	-2.04	TMAX=	.77
BOTT:	SMAX=	2.05	SMIN=	.51	TMAX=	.77
	3	.04	.00	-29.67	-7.31	-.08
			.00	.00	.00	
TOP :	SMAX=	-.13	SMIN=	-.55	TMAX=	.21
BOTT:	SMAX=	.55	SMIN=	.14	TMAX=	.21
	4	.06	.00	-75.38	-18.53	-.24
			.01	.00	.00	
TOP :	SMAX=	-.34	SMIN=	-1.39	TMAX=	.53
BOTT:	SMAX=	1.40	SMIN=	.35	TMAX=	.53
	147	1	.03	.00	-17.90	-3.23
			.00	.01	.00	-.56

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TOP :	SMAX=	-.05	SMIN=	-.33	TMAX=	.14	ANGLE=	2.3
BOTT:	SMAX=	.33	SMIN=	.07	TMAX=	.13	ANGLE=	2.1
2		.05	.00		-48.84	-9.61		-1.17
			.01		.01	.00		
TOP :	SMAX=	-.17	SMIN=	-.90	TMAX=	.37	ANGLE=	1.8
BOTT:	SMAX=	.91	SMIN=	.19	TMAX=	.36	ANGLE=	1.6
3		.01	.00		-2.81	-.18		-.24
			.00		.00	.00		
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=	90.0
4		.04	.00		-21.90	-3.93		-.69
			.00		.01	.00		
TOP :	SMAX=	-.06	SMIN=	-.40	TMAX=	.17	ANGLE=	2.3
BOTT:	SMAX=	.41	SMIN=	.08	TMAX=	.16	ANGLE=	2.1

FINITE ELEMENT MODEL OF TANK

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ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MTY
148	1	.01	.00	-.04	2.97	-.76
			.00	.01	.00	
TOP :	SMAX=	.07	SMIN=	.00	TMAX=	.03
BOTT:	SMAX=	.01	SMIN=	-.05	TMAX=	.03
2		.02	.00	-11.21	3.43	-1.60
			.00	.02	.00	
TOP :	SMAX=	.08	SMIN=	-.21	TMAX=	.15
BOTT:	SMAX=	.21	SMIN=	-.05	TMAX=	.13
3		.00	.00	3.16	2.04	-.32
			.00	.00	.00	
TOP :	SMAX=	.06	SMIN=	.04	TMAX=	.01
BOTT:	SMAX=	-.03	SMIN=	-.06	TMAX=	.01
4		.01	.00	2.73	4.39	-.95
			.00	.01	.00	
TOP :	SMAX=	.10	SMIN=	.05	TMAX=	.03
BOTT:	SMAX=	-.04	SMIN=	-.08	TMAX=	.02
149	1	.00	.00	3.74	6.10	-.89
			.00	.01	.00	
TOP :	SMAX=	.13	SMIN=	.07	TMAX=	.03
BOTT:	SMAX=	-.06	SMIN=	-.11	TMAX=	.02
2		.01	.00	2.59	11.49	-1.88
			.00	.02	.00	
TOP :	SMAX=	.24	SMIN=	.04	TMAX=	.10
BOTT:	SMAX=	-.04	SMIN=	-.20	TMAX=	.08
3		.00	.00	2.00	2.67	-.37
			.00	.01	.00	
TOP :	SMAX=	.06	SMIN=	.03	TMAX=	.01
BOTT:	SMAX=	-.03	SMIN=	-.05	TMAX=	.01
4		.00	.00	6.00	7.92	-1.10
			.00	.01	.00	
TOP :	SMAX=	.17	SMIN=	.10	TMAX=	.03
BOTT:	SMAX=	-.10	SMIN=	-.14	TMAX=	.02
150	1	.00	.00	1.30	7.57	-.78
			.00	.01	.00	
TOP :	SMAX=	.15	SMIN=	.02	TMAX=	.07
BOTT:	SMAX=	-.02	SMIN=	-.13	TMAX=	.05
2		.00	.00	1.67	15.66	-1.65
			.00	.02	.00	
TOP :	SMAX=	.32	SMIN=	.03	TMAX=	.14
BOTT:	SMAX=	-.03	SMIN=	-.27	TMAX=	.12
3		.00	.00	.54	3.17	-.32
			.00	.01	.00	
TOP :	SMAX=	.07	SMIN=	.01	TMAX=	.03
BOTT:	SMAX=	-.01	SMIN=	-.05	TMAX=	.02
4		.00	.00	1.62	9.40	-.96
			.00	.01	.00	
TOP :	SMAX=	.19	SMIN=	.03	TMAX=	.08
BOTT:	SMAX=	-.03	SMIN=	-.16	TMAX=	.07

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 132

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FXY	MTY
151	1	.05	.00	-59.19	-14.55	.20

# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

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			.00	.00	.00	
TOP :	SMAX=	-.27	SMIN=	-1.09	TMAX=	.41
BOTT:	SMAX=	1.10	SMIN=	.27	TMAX=	.41
2		.06	.00	-110.37	-27.07	.41
			.01	.01	.00	
TOP :	SMAX=	-.50	SMIN=	-2.04	TMAX=	.77
BOTT:	SMAX=	2.05	SMIN=	.51	TMAX=	.77
3		.04	.00	-29.67	-7.31	.08
			.00	.00	.00	
TOP :	SMAX=	-.13	SMIN=	-.55	TMAX=	.21
BOTT:	SMAX=	.55	SMIN=	.14	TMAX=	.21
4		.06	.00	-75.38	-18.53	.24
			.01	.00	.00	
TOP :	SMAX=	-.34	SMIN=	-1.39	TMAX=	.53
BOTT:	SMAX=	1.40	SMIN=	.35	TMAX=	.53
152	1	.03	.00	-17.90	-3.23	.56
			.00	.01	.00	
TOP :	SMAX=	-.05	SMIN=	-.33	TMAX=	.14
BOTT:	SMAX=	.33	SMIN=	.07	TMAX=	.13
2		.05	.00	-48.84	-9.61	1.17
			.01	.01	.00	
TOP :	SMAX=	-.17	SMIN=	-.90	TMAX=	.37
BOTT:	SMAX=	.91	SMIN=	.19	TMAX=	.36
3		.01	.00	-2.81	-.18	.24
			.00	.00	.00	
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.03
BOTT:	SMAX=	.05	SMIN=	.01	TMAX=	.02
4		.04	.00	-21.90	-3.93	.69
			.00	.01	.00	
TOP :	SMAX=	-.06	SMIN=	-.40	TMAX=	.17
BOTT:	SMAX=	.41	SMIN=	.08	TMAX=	.16
153	1	.01	.00	-.04	2.97	.76
			.00	.01	.00	
TOP :	SMAX=	.07	SMIN=	.00	TMAX=	.03
BOTT:	SMAX=	.01	SMIN=	-.05	TMAX=	.03
2		.02	.00	-11.21	3.43	1.60
			.00	.02	.00	
TOP :	SMAX=	.08	SMIN=	-.21	TMAX=	.15
BOTT:	SMAX=	.21	SMIN=	-.05	TMAX=	.13
3		.00	.00	3.16	2.04	.32
			.00	.00	.00	
TOP :	SMAX=	.06	SMIN=	.04	TMAX=	.01
BOTT:	SMAX=	-.03	SMIN=	-.06	TMAX=	.01
4		.01	.00	2.73	4.39	.95
			.00	.01	.00	
TOP :	SMAX=	.10	SMIN=	.05	TMAX=	.03
BOTT:	SMAX=	-.04	SMIN=	-.08	TMAX=	.02

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 133

ELEMENT FORCES FORCE,LENGTH UNITS= KIPS INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX	QY FX	MX FY	MY FKY	MX MY
154	1	.00	.00	3.74	6.10	.89
			.00	.01	.00	
TOP :	SMAX=	.13	SMIN=	.07	TMAX=	.03
BOTT:	SMAX=	-.06	SMIN=	-.11	TMAX=	.02
2		.01	.00	2.59	11.49	1.88
			.00	.02	.00	
TOP :	SMAX=	.24	SMIN=	.04	TMAX=	.10
BOTT:	SMAX=	-.04	SMIN=	-.20	TMAX=	.08
3		.00	.00	2.00	2.67	.37
			.00	.01	.00	
TOP :	SMAX=	.06	SMIN=	.03	TMAX=	.01
BOTT:	SMAX=	-.03	SMIN=	-.05	TMAX=	.01
4		.00	.00	6.00	7.92	1.10
			.00	.01	.00	
TOP :	SMAX=	.17	SMIN=	.10	TMAX=	.03
BOTT:	SMAX=	-.10	SMIN=	-.14	TMAX=	.02
155	1	.00	.00	1.30	7.57	.78
			.00	.01	.00	
TOP :	SMAX=	.15	SMIN=	.02	TMAX=	.07
BOTT:	SMAX=	-.02	SMIN=	-.13	TMAX=	.05
2		.00	.00	1.67	15.66	1.65
			.00	.02	.00	
TOP :	SMAX=	.32	SMIN=	.03	TMAX=	.14
BOTT:	SMAX=	-.03	SMIN=	-.27	TMAX=	.12
3		.00	.00	.54	3.17	.32
			.00	.01	.00	
TOP :	SMAX=	.07	SMIN=	.01	TMAX=	.03
BOTT:	SMAX=	-.01	SMIN=	-.05	TMAX=	.02

# CALCULATION SHEET

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	4	.30	.00	1.62	9.40	.96			
			.00	.01	.00				
	TOP :	SMAX=	.19	SMIN=	.03	TMAX=	.08	ANGLE=	-6.4
	BOTT:	SMAX=	-.03	SMIN=	-.16	TMAX=	.07	ANGLE=	-7.6
156	1	.35	.00	-58.13	-14.26	.60			
			.00	.00	.00				
	TOP :	SMAX=	-.26	SMIN=	-1.07	TMAX=	.41	ANGLE=	-.9
	BOTT:	SMAX=	1.08	SMIN=	.27	TMAX=	.41	ANGLE=	-.6
	2	.06	.00	-108.16	-26.48	1.26			
			.01	.01	.00				
	TOP :	SMAX=	-.48	SMIN=	-1.99	TMAX=	.76	ANGLE=	-1.0
	BOTT:	SMAX=	2.01	SMIN=	.50	TMAX=	.76	ANGLE=	-.7
	3	.04	.00	-29.22	-7.19	.26			
			.00	.00	.00				
	TOP :	SMAX=	-.13	SMIN=	-.54	TMAX=	.20	ANGLE=	-.8
	BOTT:	SMAX=	.54	SMIN=	.13	TMAX=	.20	ANGLE=	-.5
	4	.06	.00	-74.06	-18.18	.75			
			.01	.00	.00				
	TOP :	SMAX=	-.33	SMIN=	-1.37	TMAX=	.52	ANGLE=	-.9
	BOTT:	SMAX=	1.38	SMIN=	.34	TMAX=	.52	ANGLE=	-.6

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 45

SUPPORT REACTIONS -UNIT KIPS INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
1	1	-.26	-.22	3.07	66.40	-71.30	.66
	2	-.49	-.43	.23	23.93	-30.42	1.26
	3	-.12	-.11	5.34	89.11	-92.58	.31
	4	-.32	-.28	-.01	62.24	-68.37	.83
7	1	-.34	-.56	18.70	693.74	-78.40	-.75
	2	-.65	-1.07	5.14	779.57	6.54	-1.42
	3	-.16	-.27	20.53	586.58	-106.16	-.37
	4	-.43	-.70	16.09	834.55	-77.28	-.95
13	1	-.55	-.75	42.12	1854.16	20.49	-.40
	2	-1.05	-1.43	22.85	2407.64	91.55	-.71
	3	-.26	-.36	39.13	1382.31	-.01	-.21
	4	-.69	-.94	45.24	2302.93	25.54	-.51
19	1	-.81	-.88	54.22	2835.22	53.26	-.55
	2	-1.55	-1.68	41.03	4055.50	107.88	-.97
	3	-.39	-.42	46.00	1919.27	24.11	-.30
	4	-1.02	-1.11	60.97	3565.78	66.85	-.70
25	1	-1.10	-1.01	61.07	3601.45	59.03	-.78
	2	-2.12	-1.94	53.91	5494.94	116.44	-1.37
	3	-.53	-.49	49.26	2292.23	27.25	-.43
	4	-1.39	-1.28	69.76	4542.82	74.45	-1.00
31	1	-1.44	-1.18	64.93	4177.49	52.93	-1.05
	2	-2.77	-2.27	61.71	6631.76	106.15	-1.83
	3	-.69	-.57	50.95	2555.17	23.78	-.57
	4	-1.82	-1.49	74.63	5270.67	66.54	-1.34
37	1	-1.84	-1.39	67.10	4597.61	42.88	-1.35
	2	-3.54	-2.68	66.26	7482.79	87.23	-2.35
	3	-.88	-.66	51.85	2740.24	18.85	-.74
	4	-2.32	-1.75	77.35	5798.35	53.75	-1.72
43	1	-2.29	-1.65	68.29	4892.12	31.79	-1.72
	2	-4.44	-3.19	68.79	8088.54	65.32	-2.98
	3	-1.09	-.78	52.33	2867.27	13.77	-.95
	4	-2.89	-2.07	78.82	6166.77	39.76	-2.19
49	1	-2.83	-1.96	68.90	5085.27	20.84	-2.16
	2	-5.49	-3.83	70.12	8489.56	43.09	-3.75
	3	-1.34	-.92	52.57	2949.50	8.94	-1.19
	4	-3.57	-2.47	79.57	6407.78	26.02	-2.75
55	1	-3.45	-2.34	69.18	5194.44	10.31	-2.70
	2	-6.71	-4.62	70.74	8717.46	21.40	-4.72
	3	-1.63	-1.08	52.68	2995.61	4.40	-1.47
	4	-4.35	-2.94	79.92	6543.78	12.86	-3.42
61	1	-4.17	-2.78	69.26	5229.99	.09	-3.32
	2	-8.13	-5.57	70.92	8791.90	.18	-5.91
	3	-1.97	-1.26	52.71	3010.54	.03	-1.78
	4	-5.26	-3.48	80.02	6588.02	.10	-4.19
67	1	-5.00	-3.27	69.18	5195.39	-10.14	-4.02
	2	-9.73	-6.66	70.74	8719.53	-21.04	-7.34
	3	-2.36	-1.44	52.68	2995.94	-4.33	-2.10
	4	-6.30	-4.08	79.92	6544.93	-12.64	-5.04
73	1	-5.94	-3.77	68.90	5087.32	-20.64	-4.72
	2	-11.51	-7.83	70.12	8493.91	-42.70	-8.93

FINITE ELEMENT MODEL OF TANK

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SUPPORT REACTIONS -UNIT KIPS INCH STRUCTURE TYPE = SPACE

JOINT LOAD FORCE-X FORCE-Y FORCE-Z MOM-X MOM-Y MOM Z

## CALCULATION SHEET

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	3	-2.82	-1.62	52.57	2950.24	-8.86	-2.38
	4	-7.48	-4.69	79.57	6410.27	-25.77	-5.85
79	1	-6.98	-4.23	68.29	4895.55	-31.55	-5.27
	2	-13.40	-8.95	68.80	8095.60	-64.89	-10.45
	3	-3.37	-1.76	52.33	2868.56	-13.66	-2.53
	4	-8.81	-5.24	78.82	6170.98	-39.45	-6.41
85	1	-8.15	-4.53	67.11	4602.95	-42.58	-5.37
	2	-15.31	-9.74	66.28	7493.17	-86.76	-11.35
	3	-4.04	-1.83	51.85	2742.35	-18.70	-2.41
	4	-10.33	-5.60	77.35	5804.97	-53.37	-6.34
91	1	-9.46	-4.51	64.94	4185.56	-52.56	-4.58
	2	-17.10	-9.71	61.75	6646.04	-105.61	-10.63
	3	-4.92	-1.82	50.95	2558.59	-23.58	-1.85
	4	-12.06	-5.59	74.65	5280.84	-66.05	-5.08
97	1	-10.96	-3.92	61.10	3613.69	-58.56	-2.12
	2	-18.59	-8.07	53.97	5513.12	-115.78	-6.26
	3	-6.12	-1.69	49.27	2297.93	-26.96	-5.54
	4	-14.10	-4.93	69.80	4558.47	-73.84	-1.78
103	1	-12.68	-2.33	54.31	2854.50	-52.92	3.35
	2	-19.51	-3.49	41.04	4073.80	-105.63	5.18
	3	-7.83	-1.43	46.04	1929.51	-23.90	2.13
	4	-16.46	-3.14	61.09	3590.86	-66.42	4.92
109	1	-14.50	1.44	42.34	1886.66	-20.67	16.73
	2	-19.17	6.87	20.96	2387.87	-62.80	32.39
	3	-10.32	-1.82	39.28	1403.10	-5.58	8.61
	4	-18.71	1.38	45.54	2345.41	-25.69	20.80
115	1	-12.22	14.35	20.25	766.27	63.40	88.47
	2	-12.61	33.55	-4.47	796.35	-29.85	140.07
	3	-10.20	4.55	21.84	642.87	93.19	54.11
	4	-14.81	18.31	17.91	923.64	61.61	113.42
121	1	-14.25	48.24	13.56	-17.27	-6.64	-14.19
	2	-5.96	80.22	4.64	-182.54	-1.22	-176.62
	3	-12.76	28.24	12.43	52.78	-3.31	54.26
	4	-14.29	60.74	13.42	-38.56	-1.81	-34.67
127	1	-20.30	14.21	10.99	87.54	-62.57	768.44
	2	4.39	33.30	10.26	138.24	31.43	800.53
	3	-21.86	4.49	9.61	53.68	-92.79	643.92
	4	-17.96	18.14	13.26	112.25	-60.57	926.38
133	1	-42.33	1.14	13.19	16.51	20.58	1887.26
	2	-20.95	6.30	16.67	31.90	62.62	2389.06
	3	-39.28	-1.96	9.70	8.52	.53	1403.37
	4	-45.53	1.00	17.07	20.52	25.57	2346.16
139	1	-54.31	-2.79	11.25	3.60	52.91	2854.87
	2	-41.03	-4.37	16.77	5.57	105.62	4074.58
	3	-46.04	-1.65	7.14	2.29	23.90	1929.67
	4	-61.09	-3.72	14.66	5.24	66.41	3591.32
145	1	-61.10	-4.57	9.35	-1.50	58.56	3613.94
	2	-53.97	-9.32	15.51	-5.20	115.78	5513.70
	3	-49.27	-2.00	5.35	-1.19	26.96	2298.02
	4	-69.80	-5.75	12.08	-1.98	73.83	4558.78

FINITE ELEMENT MODEL OF TANK

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SUPPORT REACTIONS -UNIT KIPS INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM-Z
151	1	-64.94	-5.37	7.62	-3.61	52.56	4185.81
	2	-61.75	-11.36	13.57	-8.96	105.63	6646.64
	3	-50.95	-2.23	4.04	-1.31	23.58	2558.67
	4	-74.64	-6.67	9.74	-3.85	66.06	5281.13
157	1	-67.11	-5.63	6.01	-4.05	42.60	4603.24
	2	-66.27	-11.86	11.19	-9.07	86.80	7493.91
	3	-51.85	-2.36	3.02	-1.68	18.71	2742.44
	4	-77.35	-6.99	7.63	-4.66	53.39	5805.31
163	1	-68.28	-5.61	4.47	-3.56	31.58	4895.94
	2	-68.79	-11.64	8.55	-7.49	64.96	8096.62
	3	-52.33	-2.41	2.17	-1.58	13.67	2868.67
	4	-78.81	-6.99	5.65	-4.23	39.49	6171.44
169	1	-68.89	-5.49	2.96	-2.56	20.68	5087.89
	2	-70.11	-11.21	5.75	-5.18	42.80	8495.34
	3	-52.57	-2.42	1.41	-1.19	8.87	2950.40
	4	-79.57	-6.86	3.73	-3.10	25.82	6410.94
175	1	-69.17	-5.38	1.48	-1.32	10.20	5196.22
	2	-70.73	-10.85	2.89	-2.62	21.17	8721.58
	3	-52.68	-2.41	.69	-1.63	4.35	2996.19
	4	-79.91	-6.73	1.86	-1.62	12.72	6545.91
181	1	-69.25	-5.34	.00	.00	.00	5231.20
	2	-70.91	-10.71	.00	.00	.00	8794.81
	3	-52.71	-2.41	.00	.00	.00	3010.92
	4	-80.01	-6.68	.00	.00	.00	6589.46
187	1	-69.17	-5.38	-1.48	1.32	-10.20	5196.22
	2	-70.73	-10.85	-2.89	2.62	-21.17	8721.58
	3	-52.68	-2.41	-.69	.63	-4.35	2996.19
	4	-79.91	-6.73	-1.86	1.62	-12.72	6545.91
193	1	-68.89	-5.49	-2.96	2.56	-20.68	5087.89
	2	-70.11	-11.21	-5.75	5.18	-42.80	8495.34

# CALCULATION SHEET

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	3	-52.57	-2.42	-1.41	1.19	-8.87	2950.40
	4	-79.57	-6.86	-3.73	3.10	-25.82	6410.94
199	1	-68.28	-5.61	-4.47	3.56	-31.58	4895.94
	2	-68.79	-11.64	-8.55	7.49	-64.96	8096.62
	3	-52.33	-2.41	-2.17	1.58	-13.67	2868.67
	4	-78.81	-6.99	-5.65	4.23	-39.49	6171.44
205	1	-67.11	-5.63	-6.01	4.05	-42.60	4603.24
	2	-66.27	-11.86	-11.19	9.07	-86.80	7493.91
	3	-51.85	-2.36	-3.02	1.68	-18.71	2742.44
	4	-77.35	-6.99	-7.63	4.66	-53.39	5805.31
211	1	-64.94	-5.37	-7.62	3.61	-52.56	4185.81
	2	-61.75	-11.36	-13.57	8.96	-105.63	6646.64
	3	-50.95	-2.23	-4.04	1.31	-23.58	2558.67
	4	-74.64	-6.67	-9.74	3.85	-66.06	5281.12
217	1	-61.10	-4.57	-9.35	1.50	-58.56	3613.94
	2	-53.97	-9.32	-15.51	5.20	-115.78	5513.71
	3	-49.27	-2.00	-5.35	.19	-26.96	2298.02
	4	-69.80	-5.75	-12.08	.98	-73.83	4558.78
223	1	-54.31	-2.79	-11.25	-3.60	-52.91	2854.87
	2	-41.03	-4.37	-16.77	-5.57	-105.62	4074.58

FINITE ELEMENT MODEL OF TANK

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SUPPORT REACTIONS -UNIT KIPS INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
	3	-46.04	-1.65	-7.14	-2.29	-23.90	1929.67
	4	-61.09	-3.72	-14.66	-5.24	-66.41	3591.32
229	1	-42.33	1.14	-13.19	-16.51	-20.58	1887.26
	2	-20.95	6.30	-16.67	-31.90	-62.62	2389.06
	3	-39.28	-.96	-9.70	-8.52	-.53	1403.37
	4	-45.53	1.00	-17.07	-20.52	-25.57	2346.16
235	1	-20.30	14.21	-10.99	-87.54	62.57	768.44
	2	4.39	33.30	-10.26	-138.24	-31.43	800.53
	3	-21.86	4.49	-9.61	-53.68	92.79	643.92
	4	-17.96	18.14	-13.26	-112.25	60.57	926.38
241	1	-14.25	48.24	-13.56	17.27	.64	-14.19
	2	-5.96	80.22	-4.64	182.54	1.22	-176.62
	3	-12.76	28.24	-12.43	-52.78	.31	54.26
	4	-14.29	60.74	-13.42	38.56	.81	-34.67
247	1	-12.22	14.35	-20.25	-766.27	-63.40	88.47
	2	-12.61	33.55	4.47	-796.36	29.85	140.07
	3	-10.20	4.55	-21.84	-642.87	-93.19	54.11
	4	-14.81	18.31	-17.91	-923.64	-61.61	113.42
253	1	-14.50	1.44	-42.34	-1886.66	20.67	16.73
	2	-19.17	6.87	-20.96	-2387.88	62.80	32.39
	3	-10.32	-.82	-39.28	-1403.10	.58	8.61
	4	-18.71	1.38	-45.54	-2345.41	25.69	20.80
259	1	-12.68	-2.33	-54.31	-2854.50	52.92	3.35
	2	-19.51	-3.49	-41.04	-4073.80	105.63	5.18
	3	-7.83	-1.43	-46.04	-1929.51	23.90	2.13
	4	-16.46	-3.14	-61.10	-3590.86	66.42	4.92
265	1	-10.96	-3.92	-61.10	-3613.69	58.56	-2.12
	2	-18.59	-8.07	-53.97	-5513.12	115.78	-6.26
	3	-6.12	-1.69	-49.27	-2297.92	26.96	-.54
	4	-14.10	-4.93	-69.80	-4558.47	73.84	-1.78
271	1	-9.46	-4.51	-64.94	-4185.56	52.56	-4.58
	2	-17.10	-9.71	-61.75	-6646.04	105.61	-10.63
	3	-4.92	-1.82	-50.95	-2558.59	23.58	-1.85
	4	-12.06	-5.59	-74.65	-5280.84	66.05	-5.08
277	1	-8.15	-4.53	-67.11	-4602.95	42.58	-5.37
	2	-15.31	-9.74	-66.28	-7493.17	86.76	-11.35
	3	-4.04	-1.83	-51.85	-2742.35	18.70	-2.41
	4	-10.33	-5.60	-77.35	-5804.96	53.37	-6.34
283	1	-6.98	-4.23	-68.29	-4895.55	31.55	-5.27
	2	-13.40	-8.95	-68.80	-8095.60	64.89	-10.45
	3	-3.37	-1.76	-52.33	-2868.56	13.66	-2.53
	4	-8.81	-5.24	-78.82	-6170.98	39.45	-6.41
289	1	-5.94	-3.77	-68.90	-5087.31	20.64	-4.72
	2	-11.51	-7.83	-70.12	-8493.89	42.70	-8.93
	3	-2.82	-1.62	-52.57	-2950.24	8.86	-2.38
	4	-7.48	-4.69	-79.57	-6410.27	25.77	-5.85
295	1	-5.00	-3.27	-69.18	-5195.39	10.14	-4.02
	2	-9.73	-6.66	-70.74	-8719.50	21.03	-7.34
	3	-2.36	-1.44	-52.68	-2995.94	4.33	-2.10
	4	-6.30	-4.08	-79.92	-6544.93	12.64	-5.04

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 49

SUPPORT REACTIONS -UNIT KIPS INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
301	1	-4.17	-2.78	-69.26	-5229.99	-.09	-3.32

# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (V)

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	2	-8.13	-5.57	-70.92	-8791.83	-1.19	-5.91
	3	-1.97	-1.26	-52.71	-3010.54	-1.03	-1.78
	4	-5.26	-3.48	-80.02	-6588.02	-1.10	-4.19
307	1	-3.45	-2.34	-69.18	-5194.44	-10.31	-2.70
	2	-6.71	-4.62	-70.74	-8717.32	-21.42	-4.72
	3	-1.63	-1.08	-52.68	-2995.61	-4.40	-1.47
	4	-4.35	-2.94	-79.92	-6543.78	-12.86	-3.42
313	1	-2.83	-1.96	-68.90	-5085.27	-20.84	-2.16
	2	-5.49	-3.83	-70.12	-8489.27	-43.12	-3.75
	3	-1.34	-.92	-52.57	-2949.50	-8.94	-1.19
	4	-3.57	-2.47	-79.57	-6407.78	-26.02	-2.75
319	1	-2.29	-1.65	-68.29	-4892.12	-31.79	-1.72
	2	-4.44	-3.19	-68.79	-8087.99	-65.38	-2.98
	3	-1.09	-.78	-52.33	-2867.27	-13.77	-.95
	4	-2.89	-2.07	-78.82	-6166.76	-39.76	-2.19
325	1	-1.84	-1.39	-67.10	-4597.61	-42.88	-1.35
	2	-3.54	-2.68	-66.26	-7481.71		
-87.33	-2.35						
	3	-.88	-.66	-51.85	-2740.24	-18.85	-.74
	4	-2.32	-1.75	-77.35	-5798.34	-53.75	-1.72
331	1	-1.44	-1.18	-64.93	-4177.48	-52.93	-1.05
	2	-2.77	-2.27	-61.71	-6629.45	-106.26	-1.83
	3	-.69	-.57	-50.95	-2555.17	-23.78	-.57
	4	-1.82	-1.49	-74.63	-5270.67	-66.54	-1.34
337	1	-1.10	-1.01	-61.07	-3601.45	-59.03	-.78
	2	-2.12	-1.94	-53.89	-5489.56	-116.54	-1.37
	3	-.53	-.49	-49.26	-2292.23	-27.25	-.43
	4	-1.39	-1.28	-69.76	-4542.82	-74.45	-1.00
343	1	-.81	-.88	-54.22	-2835.21	-53.26	-.55
	2	-1.55	-1.68	-40.86	-4040.12	-106.14	-.97
	3	-.39	-.42	-46.00	-1919.27	-24.11	-.30
	4	-1.02	-1.11	-60.97	-3565.79	-66.85	-.70
349	1	-.55	-.75	-42.12	-1854.16	-20.49	-.40
	2	-1.05	-1.43	-20.69	-2339.29	-63.57	-.71
	3	-.26	-.36	-39.13	-1382.31	.01	-.21
	4	-.69	-.94	-45.24	-2302.93	-25.54	-.51
355	1	-.34	-.56	-18.70	-693.74	78.40	-.75
	2	-.65	-1.07	6.07	-710.17	-15.73	-1.42
	3	-.16	-.27	-20.53	-586.58	106.16	-.37
	4	-.43	-.70	-16.09	-834.55	77.28	-.95
361	1	-.26	-.22	-3.07	-66.40	71.30	.66
	2	-.49	-.43	10.43	11.13	-4.47	1.26
	3	-.12	-.11	-5.34	-89.11	92.58	.31
	4	-.32	-.28	.01	-62.24	68.37	.83
2	1	-.78	-.26	17.37	87.70	-714.74	2.43
	2	-1.49	-.51	15.90	70.79	-919.33	4.68
	3	-.38	-.13	20.59	90.84	-563.15	1.16
	4	-.98	-.33	18.66	122.90	-907.17	3.06
3	1	-1.23	-.27	31.93	-56.54	-1703.30	1.48
	2	-2.35	-.51	40.75	-46.58	-2681.98	2.88

FINITE ELEMENT MODEL OF TANK

-- PAGE NO. 50

SUPPORT REACTIONS -UNIT KIPS INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
	3	-.59	-.13	24.84	-79.95	-1055.84	.70
	4	-1.55	-.34	44.85	-41.70	-2238.15	1.87
4	1	-1.53	-.19	28.78	-85.98	-2303.41	.56
	2	-2.94	-.35	49.67	-127.07	-4311.05	1.12
	3	-.74	-.09	12.30	-64.81	-1100.86	.25
	4	-1.94	-.23	40.31	-130.93	-2990.54	.71
5	1	-1.72	-.03	30.48	-21.63	-2822.71	-.41
	2	-3.30	-.06	68.82	38.86	-5996.04	-.72
	3	-.83	-.02	10.55	-11.56	-1147.17	-.22
	4	-2.18	-.04	36.18	-48.63	-3500.13	-.52
6	1	-1.00	.17	15.74	-441.62	-1519.66	-9.27
	2	-1.91	.32	43.15	-1043.28	-3439.85	-17.74
	3	-.48	.08	4.72	-159.56	-583.34	-4.48
	4	-1.26	.21	17.65	-522.60	-1837.33	-11.71
362	1	-.78	-.26	-17.37	-87.70	714.74	2.43
	2	-1.49	-.51	-4.35	-61.48	842.20	4.68
	3	-.38	-.13	-20.59	-90.84	563.15	1.16
	4	-.98	-.33	-18.66	-122.90	907.17	3.06
363	1	-1.23	-.27	-31.93	56.54	1703.30	1.48
	2	-2.35	-.51	-38.59	16.39	2613.86	2.88
	3	-.59	-.13	-24.84	79.95	1055.84	.70
	4	-1.55	-.34	-44.85	41.70	2238.15	1.87
364	1	-1.53	-.19	-28.78	85.98	2303.41	.56
	2	-2.94	-.35	-49.53	125.65	4296.39	1.12
	3	-.74	-.09	-12.30	64.81	1100.86	.25
	4	-1.94	-.23	-40.31	130.93	2990.53	.71
365	1	-1.72	-.03	-30.48	21.63	2822.71	-.41
	2	-3.30	-.06	-68.81	-39.25	5990.94	-.72
	3	-.83	-.02	-10.55	11.56	1147.17	-.22
	4	-2.18	-.04	-36.18	48.63	3500.13	-.52
366	1	-1.00	.17	-15.74	441.62	1519.66	-9.27

Significant w/ 363 & 364

Significant w/ 363 & 364

# CALCULATION SHEET

Project: S-2764 Saltstone Vault Number 1

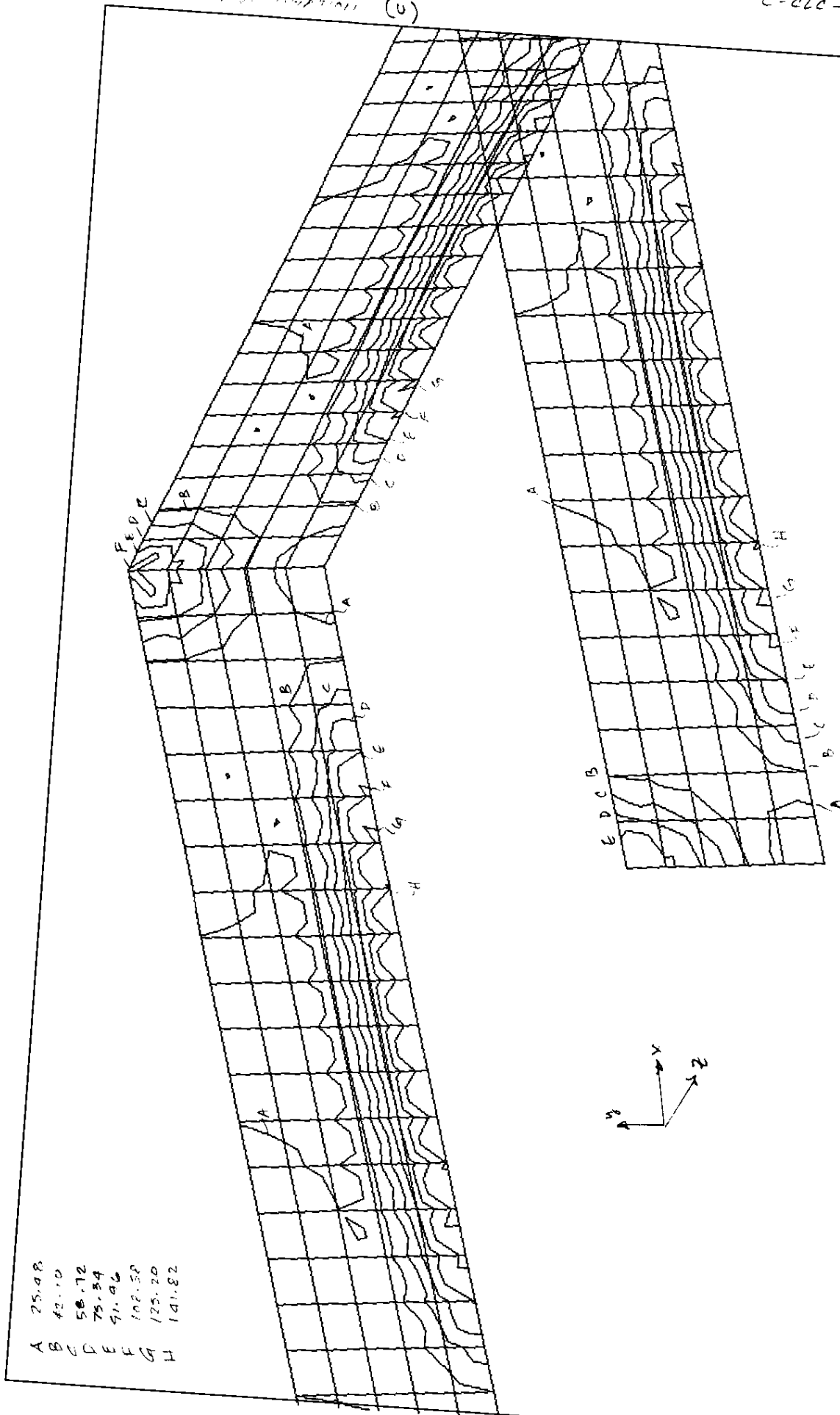
Calculation Number C-CLC-Z-00016 Rev. 0

Subject: Structural Investigation of North Wall (v)

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-	2	-1.91	.32	-43.18	1043.20	3438.87	-17.74
	3	-.48	.08	-4.72	159.56	583.33	-4.48
	4	-1.26	.21	-17.65	522.60	1837.33	-11.71





UNITS FEET / INCHES

LOAD CASE 1  
STRESS CONTOURS

