Calculation Cover Sheet

Project	Calculation Number	Project Number
Saltstone Vault Performance Assessment	T-CLC-Z-00006	N/A
Title Saltstone Vault Structural Degradation Prediction	Functional Classification PS	Sheet 1 of 615
	Discipline Structural Mechanics	

☐ Preliminary ☒ Confirmed

Computer Program: ANSYS NA ☐ Version/Release: 7.0

Purpose and Objective

This calculation predicts the performance of the Saltstone Vault Number 4 over time, considering static settlement and the effects of earthquakes. A statistical approach combined with non-linear structural analysis is used. The objective is to estimate structural cracking and associated statistical uncertainty during the next 10,000 years.

Summary of Conclusion

See page 21

Revisions

Rev. No.	Revision Description
0	Original Issue

Rev. No.	Originator (Print) Sign/Date	Verification/Checking Method	Verifier/Checker (Print) Sign/Date	Manager (Print) Sign/Date
0	W. L. Peregoy W L Peregoy 7/9/03	Document Review of FE Analysis	Roger Farish [signature] 7/10/03	Greg Mertz [signature] for GM 7.10.03
0		Independent Review of Statistical Analysis	Greg Mertz [signature] 7/10/3 Sect 1-7, 8.3, A-D, H	FRED LOCEFF [signature] 7.10.2003

Design Authority - (Print) NA	Signature	Date
Release to Outside Agency - (Print) NA	Signature	Date
Security Classification of the Calculation Unclassified		

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Open Items

None.

1 INTRODUCTION AND SCOPE

Saltstone Vault Number 4 is a rectangular monolith 200-ft. wide by 600-ft. long by 27-ft. high. It is constructed of reinforced concrete with a 2-ft. base slab and 1 ½-ft. thick walls. The roof is nominally 6-in. thick, but is not considered as a structural element. Its purpose is for weather protection only.

The vault is filled with a saltstone grout mix that solidifies to form a weak concrete.

Prediction of structural cracking with time in this calculation is used in conjunction with groundwater flow modeling (by others) to estimate the potential leaching of radiological and chemical contaminants over time. The calculation is intended to cover times up to 10,000 years from the present. Since the time frame is so long, there are significant probabilities of large earthquakes that exceed those normally considered for production support facilities.

In its final configuration, the vault is completely filled with saltstone covered by clean grout and surrounded with soil backfill. Inertial loading of the vault itself does not induce significant structural stress since it is a monolithic structure. The only structural mechanism that causes cracking is settlement of the foundation soil.

This calculation covers cracks induced by settlement of the ground beneath the vault. There are two types of settlement: first, static settlement over time caused by the initial response of the soil to the loading imposed by the vaults and the consolidation of the soil layers, and second, differential settlement of local areas under the vault caused by earthquakes. The cracking caused by the static settlement is induced by a dishing effect that produces a curvature at the base of the vault. The differential settlement also causes a curvature, but over a small area. Geotechnical investigations did not find liquefaction potential and soft zones that could cause larger and more extensive settlements during a seismic event.

This calculation is based on the vault geometry as of January 1, 2003. Changes in configuration after that date are not considered. The cracks observed during and after filling the cells in the vault are assumed to be 100% repaired. Cracks caused by degradation of materials, weathering, chemical reactions, etc. are addressed elsewhere.

A typical cross section of the vault is shown in Figure 1. The locations of construction joints and the locations assumed for earthquake induced differential settlements are shown on this figure. Note that this cross section represents half of the overall vault. The vault is symmetrical at its center and the two halves are separated by a 3in expansion joint.

The analysis is performed in three parts:

<u>Static Settlement Model.</u> An axisymmetric model is run with appropriate soil properties to determine the static settlement pattern over time. Soil properties are based on actual settlement recorded for the Defense Waste Processing Facility (DWPF).

<u>Structural Model.</u> A structural model of the vault, including the structural concrete and saltstone, determines the extent of cracking for both static and earthquake induced settlements. Location, extent, and magnitude of differential settlement are considered as parameters.

Statistical Model. The relationships of extent of cracking to the input parameters is determined from the results of multiple structural analyses. A Monte Carlo analysis utilizing these relationships is performed to determine the behavior of the vault over time.

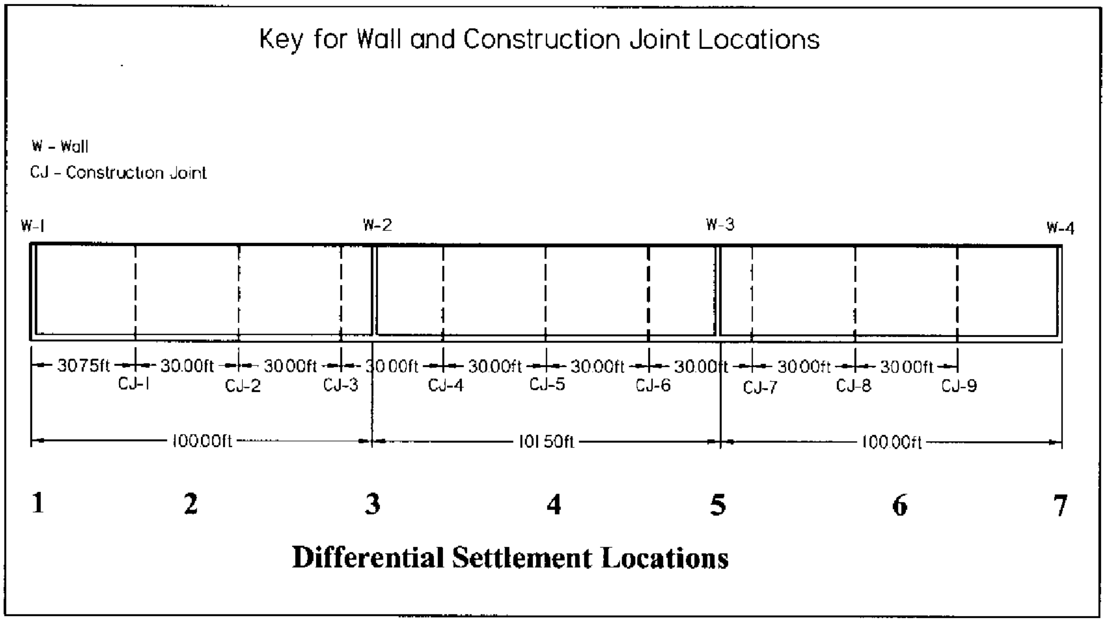

Figure 1. Typical Vault No. 4 Cross Section

2 INPUT

2.1 Drawings

The following drawings are used for the structural data in this calculation:

C-CC-Z-0011, through 14.	Saltstone Vault #4 Roof
W828992, 993, and 999	Saltstone Vault #4 Concrete and Steel

2.2 Materials

Concrete: Concrete strength is taken as 4000 pounds per square inch (psi) and steel reinforcement is assumed to be Grade 60 (yield strength = 60,000psi).

Saltstone: Structural properties are taken from WSRC-TR-2003-00082. Relevant pages are included in Appendix A.

Soil: Appendix B contains the soil data and DWPF settlement data used in the analysis.

Vault Cover: The soil cover for Vault No. 4 is taken from The Revision 2 Closure Cap Configuration Report issued on 04/02/2003 by Mark Phifer. This report is included as Appendix C.

3 METHODOLOGY

The calculation is performed in three parts as noted in Section 1. A description of each of these parts follows.

3.1 Axisymmetric Analysis

3.1.1 Purpose of Analysis

A 2-D axisymmetric non-linear analysis is performed on the soil beneath Vault No. 4. The intent of this analysis is to train the properties of the soil with the DWPF data to obtain representative settlement displacements for Vault No. 4. The displacements are used in the structural model of the vault.

3.1.2 Model Details

The model is prepared with initial soil properties based on the shear wave velocities from Site Geotechnical Services (SGS) reports (References 7.3, 7.4, and 7.5). Relevant sections of these reports are included in Appendix B.

Settlement is the result of short-term elastic response of the soil layers beneath the structure and long-term secondary soil consolidation. Non-linear elements using elastic properties and kinematic hardening creep behavior are used to model the initial elastic response and the secondary consolidation, respectively.

The lateral extent of the model is sufficient to obtain horizontal boundary conditions that do not affect the area beneath the load application. The overall depth of the model is controlled by bedrock location at elevation -700-ft. The finite element mesh size is increased as a function of distance from the load application. A fine mesh is not needed in areas where the stress gradients are small.

Initial properties for the soil layers are calculated from the shear wave velocity data as discussed above. The initial properties are used as a starting point to verify that the model is working correctly and converging properly.

3.1.3 DWPF Load Analysis

SGS has calculated the DWPF construction load sequence for correlation with settlement monument data. The load application data and monument settlement readings are taken from Reference 7.3 and included in Appendix B.

Following the analysis with the calculated initial properties, the elastic and creep properties are varied until a displacement pattern is obtained that matches actual settlements. The relative relationships of properties from layer to layer are maintained.

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Figure 2 shows the actual settlements measured for the DWPF and the settlement of the axisymmetric model at node 9 (120 ft. from centerline) for the DWPF load application. Node 9 was chosen because it is about midway between the model center and the edge of the DWPF. Three cases were run, representing a high , low and mean settlement. These three cases are shown as the dashed lines in Figure 2.

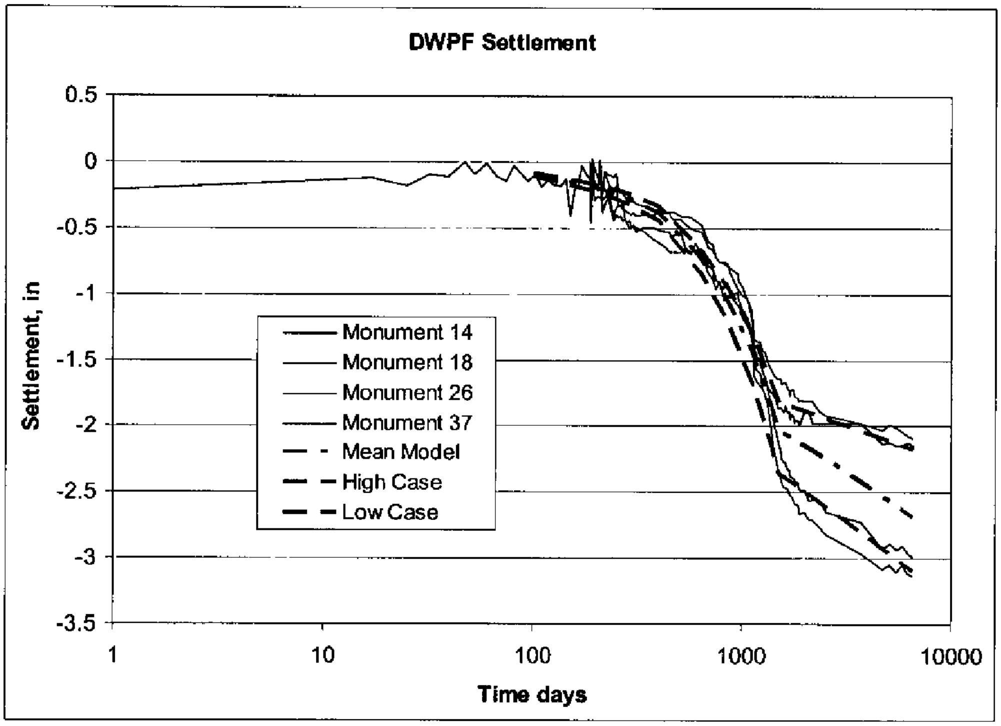

Figure 2. Comparison of DWPF Settlement with Axisymmetric Model Results

A stress contour plot for vertical normal stress and the deformed shape is shown in Figure 3. Note that the vertical scale is greatly exaggerated. The maximum displacement occurs at the model centerline (DMX) and is 0.24-ft. or 2.9-in. at a time of 6500 days.

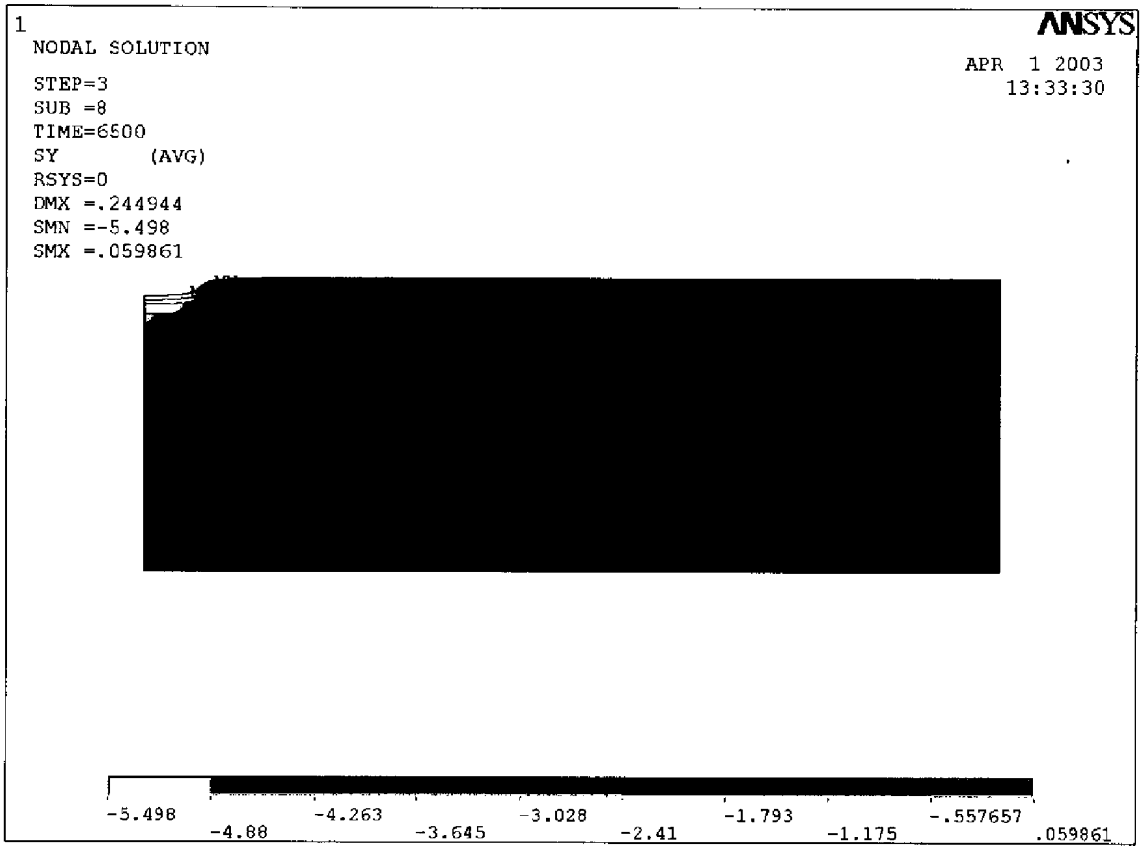

Figure 3. DWPF Non-linear Soil Model Results. This plot shows vertical stress plotted as contours on an exaggerated deformed shape.

3.1.4 Vault No. 4 Load Analysis

The result of the analysis for DWPF loads is a soil model that is representative of elastic and non-linear consolidation behavior of the underlying strata. To use this model to predict long-term static settlement of Vault No. 4, loads are calculated from the proposed closure cap cover plan detailed in Appendix C and applied as surface pressures. The calculated surface pressures vary from 0 to 7.3 kips per square foot (ksf).

Figure 4 shows the response of the model to the vault loads at a time of 10,000 years. The maximum soil pressure is 6.6 ksf. For Vault No. 4 the maximum displacement (DMX) is 0.61-ft., or 7.3-in. A comparison of Figure 4 and Figure 3 shows that the stress at bedrock for vault loads is significantly higher than the stress caused by DWPF loads. This difference does

not affect the results since the bedrock is stiffer than the overlying strata and its long term consolidation is judged to be negligible.

The calculated displacements are in agreement with geotechnical predictions of initial and long-term settlement. (reference 7.7, attached in Appendix D)

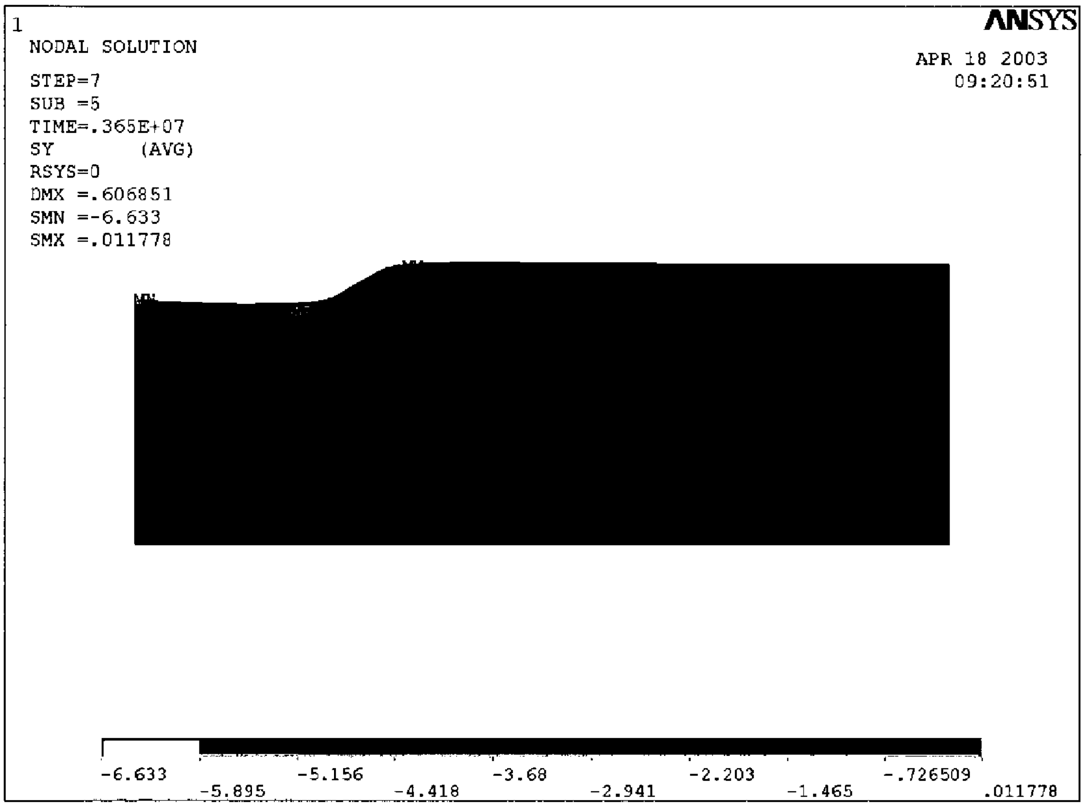

Figure 4. Non-linear Soil Model Results for Vault No. 4.

3.2 Structural Analysis

3.2.1 Purpose of Analysis

Once the settlement displacements over time are obtained from the axisymmetric model, the next step is to determine the effects of both static settlement and earthquake induced differential settlement. The intent is to relate cracking in the vault to settlement and to determine the influence of variations in parameters, such as material properties, settlement

rate, magnitude and extent of differential settlement, etc. These parameters are discussed in detail later.

3.2.2 Model Description

The structural analysis is performed with a 2-D plane strain model. The choice of a 2-D model is based on a preliminary comparison between 2-D and 3-D models presented in Appendix G. The study showed that stress and strains in the 2-D model are slightly higher than the 3-D model, but only by 5% or less.

An important aspect of the vault construction is that there are construction joints on 30-ft. centers in the base slab and walls. These joints are considered as discontinuities that are locations for crack initiation. The saltstone grout mix is almost an order of magnitude weaker than the structural concrete. It is therefore assumed that the cracks in the grout would tend to follow the pattern initiated by cracking in the structural concrete slab and walls.

The construction joints effectively subdivide the structure into blocks. Because of their aspect ratios (30-ft. wide and 27–ft. tall), the blocks have low bending stress between the joints for the static and differential displacements. If the blocks were larger, say 100-ft., there would be a potential for cracking between joints. There are also joints between the saltstone and the concrete walls. There is no bond assumed between at these joints.

The structural model uses non-linear contact elements for the joints between the walls and the saltstone and at the construction joint locations in the base slab. Crack propagation in the saltstone is modeled with non-linear elements that are elastic under compressive load and have a small elastic tensile strength. When the tensile strength is exceeded, the capacity of the element is zero.

The interface between the soil and the vault is represented by soil spring elements whose properties are based on the soil bulk modulus. These elements are simple unidirectional springs. The displacement boundary conditions are imposed on the structure through these springs to simulate the actual soil behavior in distributing the settlement to the structure. Since displacements are applied to nodal points, applying the displacements directly to the structure would give artificially high results, unless an extremely fine mesh is used.

Figure 5 shows a plot of the model used for the structural analysis. The non-linear interface elements do not appear in graphical representations since they have zero length.

Some of the structural model properties were considered parametrically as shown in Table 1. These properties are bulk modulus for the soil and Young's modulus and cracking strain for saltstone.

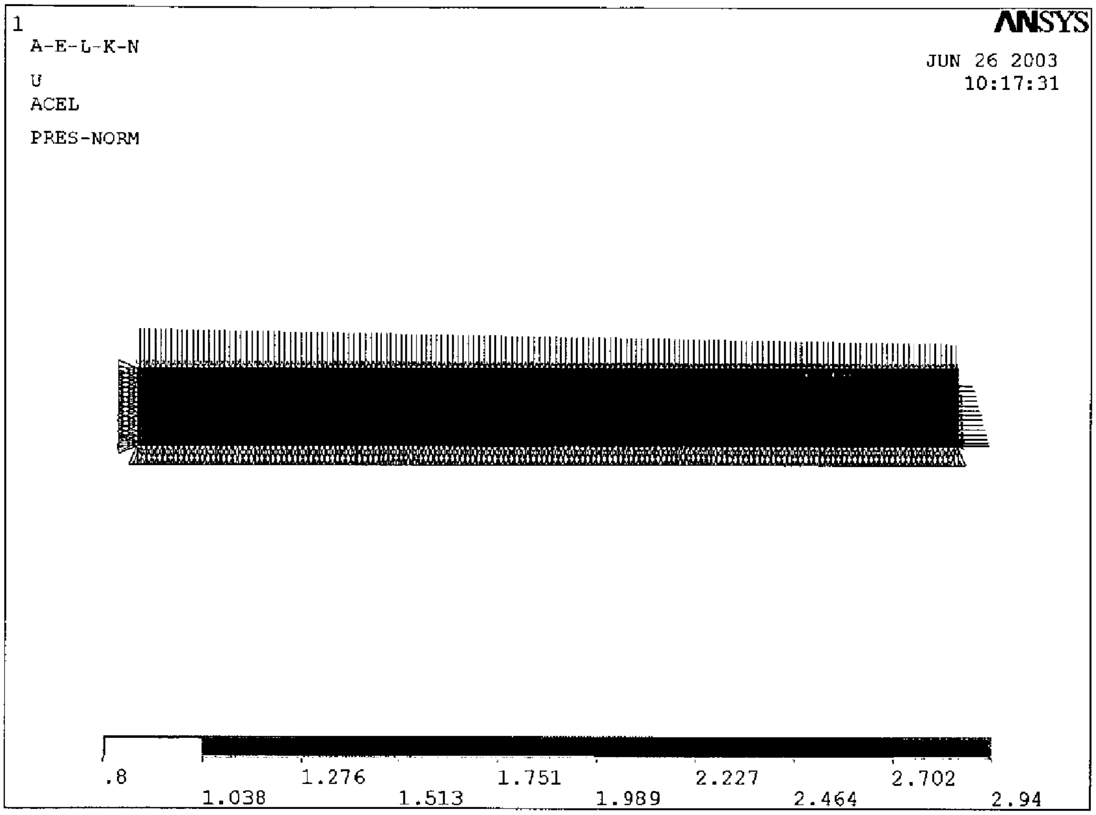

Figure 5. Structural Model. Applied pressures and boundary conditions are shown. The self weight of the structure is applied as a gravity load.

3.2.3 Static Settlement Analysis

The static settlement displacements from the axisymmetric model are applied to the structural model. The model is run by stepping through time with the displacements changed at discrete points in time corresponding to the axisymmetric model results. Since the mesh size is different for the structural model, displacements are linearly interpolated between nodal points of the axisymmetric model. The displacements from the axisymmetric model and the interpolations are shown graphically in Figure 8.

The static settlement rate is varied between the mean, high, and low cases discussed in Section 3.1.3. The settlement rate is used as a variable parameter in the statistical analysis and is given in Table 1.

Table 1. Parameters used in the Structural Analyses

Parameter Basic Parameters	Units	Mean	1 sigma	Coefficient of variation
Soil Bulk Modulus	kcf	30	15	0.5
Grout Compressive Strength	psi	524	196.8	0.38
Grout Modulus	ksf	2.05E+05	dependent on sqrt(Comp. Strength)	
Grout Cracking Strain	in/in	1.21E-04	dependent on sqrt(Comp. Strength)	
Static Settlement	ft	1.0607	0.53	0.5
Earthquake Parameters				
Differential Settlement				
Magnitude, PC-3	in	0.75	N/A	N/A
Magnitude, PC-4	in	2.75	N/A	N/A
Surface Extent	ft	62	31	0.5
Location	N/A	1 of 7	N/A	Uniform Distribution

3.2.4 Differential Settlement Analysis

The major effect of an earthquake on a monolithic structure of this type is to cause settlement beneath the structure. Differential settlement causes structural deformations that can lead to cracking. In the time span being analyzed, there is a likelihood of the occurrence of significant earthquakes.

To quantify the effects of differential settlement, there are three parameters of interest. First, the magnitude of settlement is related to the size of the event. The settlement magnitude for PC-3 and PC-4 events have been calculated by SGS (Reference 7.7 and Appendix D). These values are 0.75 inches for PC-3 and 2.75 inches for PC-4.

The second parameter is the extent of settlement. In reference 7.1, SGS shows the depth to the major earthquake induced settlement to be about 62-ft. for boring ZCP-27. This is the only boring that shows a fairly significant settlement of the six borings listed. Because of this observation, the settlement is treated as a point source with a 2:1 vertical cone of influence. The result of this assumption is a settlement diameter of 62-ft. at the surface. The settlement shape is a standard normal curve per Reference 7.2.

The third parameter is the location of the settlement with respect to the structure. Seven locations for potential differential settlement during earthquakes are chosen for the analysis. These locations are evenly spaced at 50-ft. intervals as shown on Figure 1.

The differential settlements are superimposed on the static settlements at specific times. The times chosen for the differential settlements are 100, 1000, and 5000 years.

The parameters for the differential settlement analysis are also shown in Table 1.

3.2.5 Structural Analysis Results Format

The results of multiple finite element analyses are summarized on spreadsheets by graphing nodal displacements at the construction joints and at the saltstone-concrete interface. The displacement patterns at the cracks are noted to be predominately linear. The cross sectional area for each crack is calculated by the length times the width divided by 2.

A typical plot of the finite element model deformed shape is shown on Figure 6. Note that the deformed shape plot is highly exaggerated. A corresponding plot showing the crack size vs. height is shown as Figure 7. Figure 7 is produced by plotting

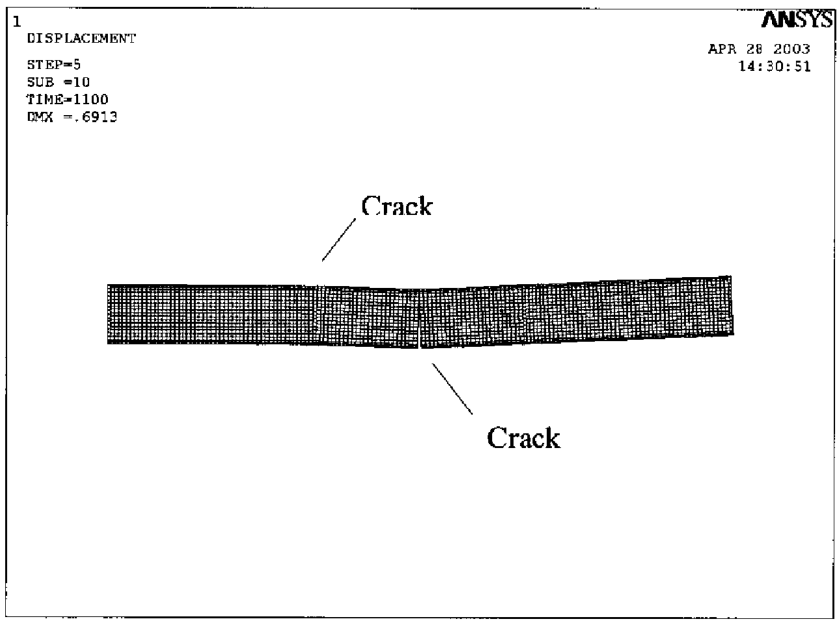

Figure 6. Typical Deformed Shape Plot. Differential settlement is at location 4 with PC-4 magnitude. All parameters are mean values.

For example, for the crack at construction joint 5 shown in Figure 7, the width is about 1.15 inches and the length is about 27 ft. The calculated area is $1.15 \times 27 \times 12/2 = 186 \text{ in}^2$.

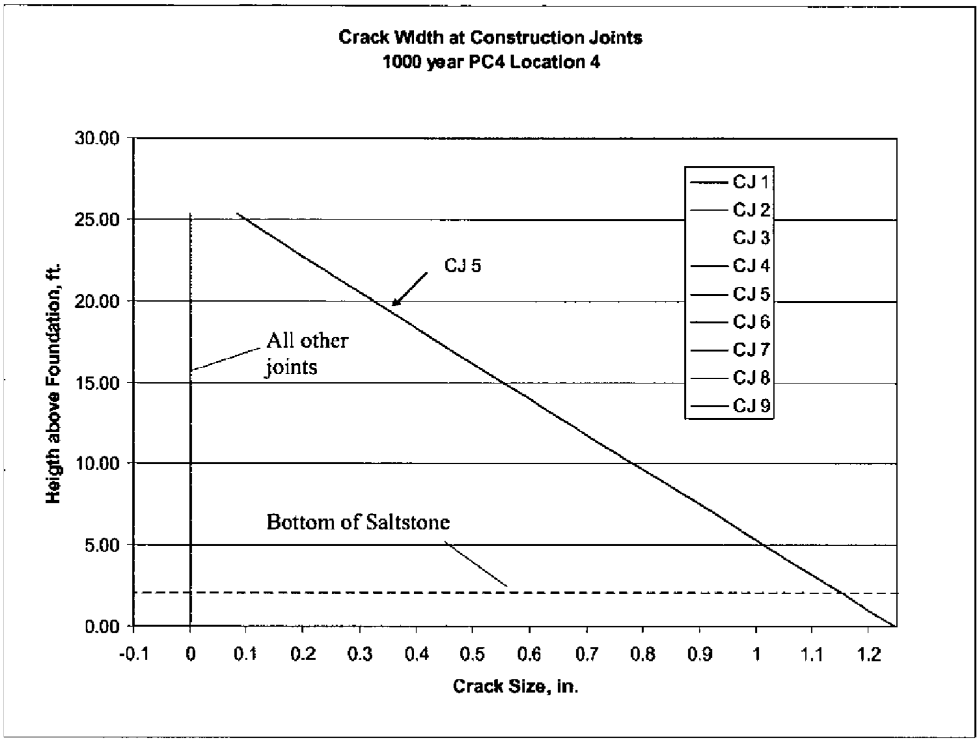

Figure 7. Typical Plot of Crack Size at CJ 5.

3.3 Statistical Analysis

3.3.1 Purpose

The structural analysis generates multiple results for the various parameters discussed above. The results are generated by varying each parameter independently while holding the others at their mean values. To arrive at a statistical result that reflects crack sizes with respect to time, a Monte Carlo analysis is performed.

3.3.2 Reduction of Structural Data

The first step in this process is to reduce the structural data to a form usable for the iterative analysis. Spreadsheet compilations of the structural data relate observed cracks to the parameters. Observed cracks were expressed in terms of cross sectional area for the two types observed: Cracks open at the top at the joint between the walls and the grout, and cracks open at the bottom at the construction joint locations.

There were some cases noted where there were multiple cracks. In these cases the data was simplified by adding the crack areas. The two basic premises in calculating crack areas are

that static and differential settlement cracks were considered as independent and once a crack opens it remains open. The latter premise is discussed further in Section 4.

The results of the data reduction is a series of mathematical relationships that relate crack size to each of the parameters in Table 1.

3.3.3 Monte Carlo Analysis

Once the relationships between the parameters and the resulting crack areas are established, the next step is to apply statistical distributions to the data. In general, normal, or truncated normal distributions were used. The data was mapped onto these distributions.

The analysis is an iterative process where random numbers are used to set parameters for each iteration in accordance with the mapped distributions. Each iteration establishes values for saltstone modulus and cracking strain, soil bulk modulus, and static settlement rate. Once these parameters are set, the analysis is stepped through 10,000 years in 10 year increments.

As the analysis proceeds through the time steps, a random number generator is used to determine if a seismic event occurs, and if so, the magnitude of differential settlement associated with the event.

If an event occurs, random number generators are used to establish the location and extent of settlement.

The results of the Monte Carlo are a relationship between crack area and time with a statistical distribution. The model is iterated until a low convergence criterion in terms of percentage variation of mean and standard deviation of the results is met. The results are calculated at times of 100, 500, 1000, 2500, 5000, and 10000 years.

3.3.4 Calculation of Crack Size

The output of most interest for flow modeling is the crack width. To determine representive crack widths from the crack areas, a comparison is made between the statistical analysis results and the plots of the structural analysis cracks (see Figure 7). Empirical relationships are established that relate the areas and dimensions of the cracks.

4 ASSUMPTIONS

4.1 The starting point for this calculation is that the vault is in an as designed condition with all repairs complete.

4.2 Since the soil profiles for the Saltstone Vault area and the DWPF are similar, and the facilities are in close proximity on the site, the settlement data for the DWPF are considered applicable to the Saltstone Vault.

4.3 The static settlement for the DWPF is modeled by adjusting non-linear creep and linear elastic response in the axisymmetric model until a representative settlement curve is obtained as shown in Figure 2. This curve is considered the mean. The high and low settlement measurements of the DWPF are assumed to be a one sigma variation each way.

4.4 The loading used for soil cover considers the current information for the entire vault area. The vault area is projected to contain 15 vaults. Appendix G presents the results of various trial load combinations. The loading configuration that caused the greatest static displacement curvature is the inclusion of Vaults No. 1 through 12, but the exclusion of 13 through 15.

4.5 Since the vault is symmetric about its centerline in the long direction, only one half of the vault is used in the structural analysis. However, the loads are not entirely axisymmetric about the Vault No. 4 centerline when considering the effects of the other proposed vaults. The static load case is slightly conservative since the half of the vault with the greatest static settlement curvature is used as shown in Appendix G.

4.6 Assumptions regarding the coefficients of variation of the input to the analysis are explained in the body of the calculation.

4.7 As discussed in Section 3.2, the structural behavior of the model is controlled by preexisting construction joints spaced on 30-ft. centers. Since these joints represent discontinuities in the structure, they provide locations for crack initiation. Because of the length of time considered in this analysis, the waterstop and reinforcing dowels are considered to be ineffective in reducing the cracking or leakage through the joints. These joints are also assumed to control the saltstone cracking in that cracks in the much weaker saltstone will tend to follow the joints in the concrete floor and walls.

4.8 The reinforcing dowels in the structure tying the construction joints would initially provide some resistance to crack propagation. However, the displacements of the underlying soil are permanent, so the reinforcing bars are not credited since corrosion is likely given the long time spans in this analysis.

4.9 The 2-D model does not consider the effects of cracking initiated by longitudinal construction joints. However, the assumption of 2-D behavior is conservative in that the joint is considered to extend through the width of the structure. If one assumes that a mean differential settlement with radius of 31 ft. occurs at the conjunction of a longitudinal and a transverse construction joint, the result could be a crack in each joint of approximately 62-ft. for a total of 124-ft. The model is conservative in that a transverse crack would be 200-ft. in length across the transverse section.

4.10 The loads applied to the structural model are the same loads that are applied to the axisymmetric model. This is done to ensure that there is a consistent load application for the differential settlement case. The static results are checked and the absolute displacements at the base of the structure are found to be about 16% conservative with vault loads included. The actual conservatism is somewhat less, since static settlement cracking is induced by curvature rather than absolute displacement.

4.11 There are certain conditions where a differential displacement tends to close a previously opened crack. Credit is not taken for closing cracks since, in the time frame under consideration, they would eventually fill in with solids and not be capable of closing.

4.12 There is no credit taken for increase in concrete or saltstone compressive strength with time. This is a known effect in concrete, but there is not enough data for saltstone. Since the time span of this calculation is so long, there is no basis for either an increase or decrease of strength with time, so the initial strength is used.

5 RESULTS

5.1 Axisymmetric Analysis

The results from the axisymmetric analysis for DWPF loading are shown on Figure 2. This shows the comparison between actual settlements measured over 10 years and the settlement calculated from the model.

The results from the same model for the vault loads are shown on Figure 8. The mean settlement rate is shown. The symbols represent the discrete settlement points calculated in the axisymmetric model at the various times noted on the legend. The lines connecting the symbols represent displacements interpolated for the finer mesh in the structural model.

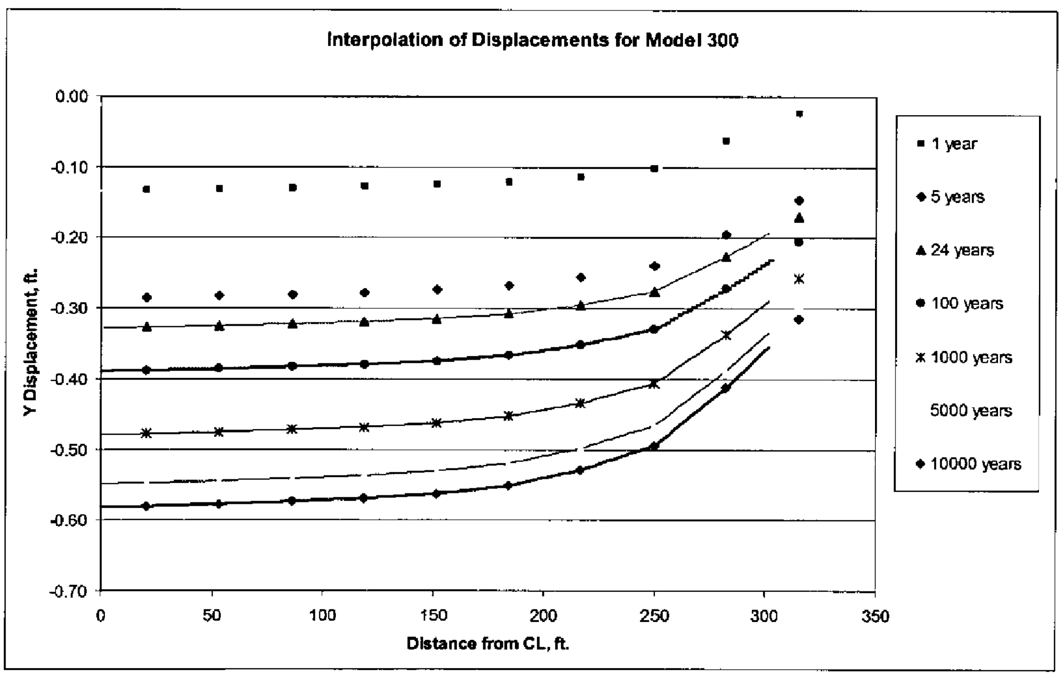

Figure 8. Settlements for Vault 4 from Axisymmetric Model. Symbols show model results and the connecting lines are interpolations for application to the structural model.

5.2 Structural Analysis

The results of the structural analysis are given in Appendix E. The plots shown indicate the formation of a cracks by the relative displacements between pairs of nodes on each end or surface of the non-linear elements.

A typical plot is shown in Figure 7. The plots are produced by exporting the ANSYS displacement results into EXCEL and plotting the relative displacements between the pairs of nodes associated with the construction joint locations and the saltstone-concrete interfaces. Appendix E shows results for the parameters listed in Table 1. Each parameter is varied independently while the others are held at their mean values.

5.3 Statistical Analysis

The results of the statistical analysis are shown in Figures 9 and 10. These figures represent the two types of cracks observed. The relationship of crack area and width and length is given Table 2.

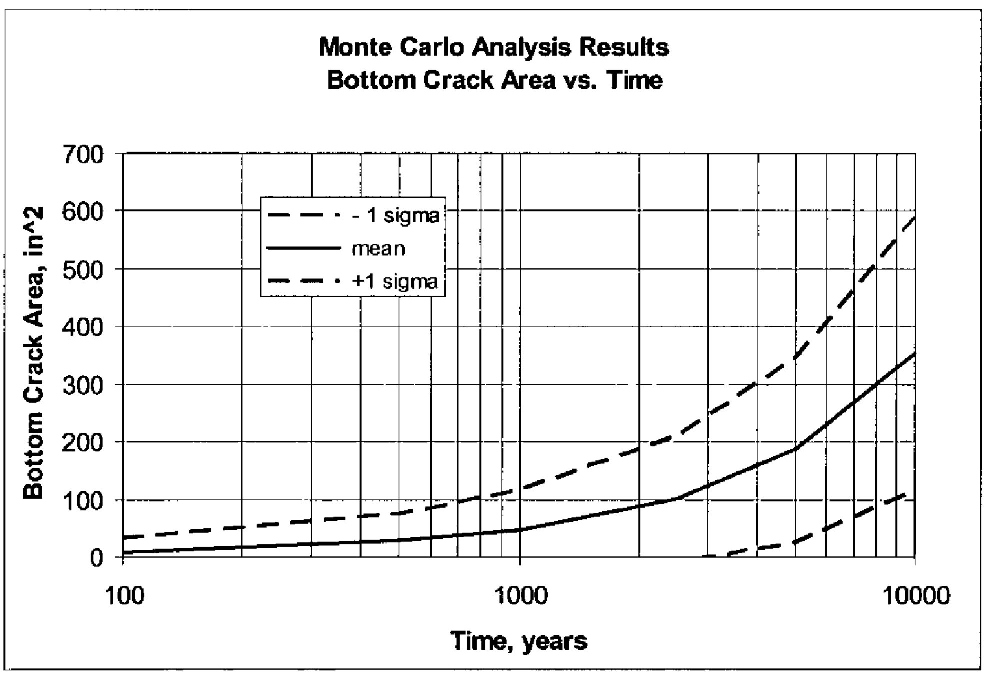

Figure 9. Cracks Open at Bottom

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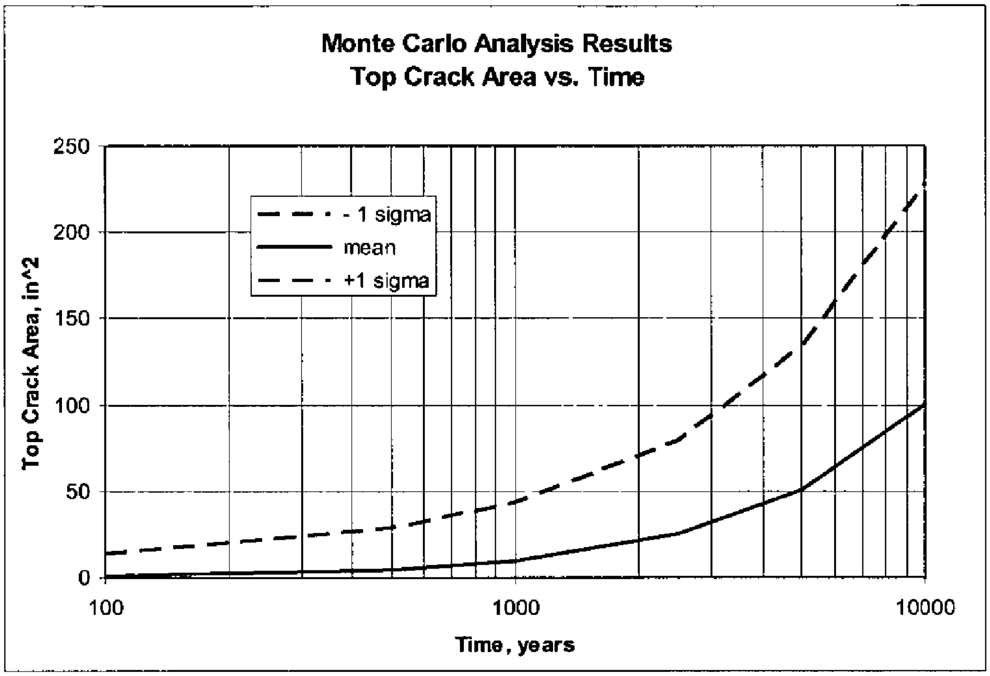


Figure 10. Cracks Open at Top

Table 2. Summary of crack areas and sizes for specific time intervals.

Cracks Open at Bottom

			Mean Crack Size		+1 sigma Crack Size	
			Length	Width	Length	Width
Time	Mean	+1 sigma	ft.	in.	ft.	in.
100	8.48	33.02	24.30	0.06	25.74	0.21
500	27.39	75.60	25.42	0.18	27.00	0.47
1000	47.87	116.88	26.54	0.30	27.00	0.72
2500	101.50	211.98	27.00	0.63	27.00	1.31
5000	186.53	347.05	27.00	1.15	27.00	2.14
10000	353.26	588.72	27.00	2.18	27.00	3.63

Cracks Open at Top

			Mean Crack Size		+1 sigma Crack Size	
			Length	Width	Length	Width
Time	Mean	+1 sigma	ft.	in.	ft.	in.
100	1.14	14.02	27	0.01	27	0.09
500	4.70	28.80	27	0.03	27	0.18
1000	10.00	43.86	27	0.06	27	0.27
2500	25.21	79.94	27	0.16	27	0.49
5000	50.78	133.98	27	0.31	27	0.83
10000	100.55	227.80	27	0.62	27	1.41

6 CONCLUSIONS

The results of the analysis predict the vault cracking over time as required by the calculation objective. The statistics provide the standard deviation and 95% confidence level for use in the flow net analysis and overall probabilistic evaluation of vault performance. The results are slightly biased towards a conservative estimate of crack size.

7 REFERENCES

7.1 K-CLC-Z-00001, "Liquefaction Potential for Saltstone Disposal FacilityVault No. 4", 8/22/2002.

7.2 K-CLC-H-00154, "Differential Settlement for CLWR-TEF Product Transfer Trench", Feb. 2000.

7.3 WSRC-TR-00072, Rev. 0, "Geotechnical Assessment Report for Defense Waste Processing Facility", February, 1995.

7.4 K-CLC-G-00060, Rev. 0, "General SRS Strain Compatible Soil Properties for 1886 Charleston Earthquake", October 1998.

7.5 K-CLC-H-00134, "Application of SRS Site-wide PC-3 Spectra to the Tritium Extraction Facility", June, 1998.

7.6 K-ESR-S-00002, Rev. 0, "Settlement of Defense Waste Processing Facility Vitrification Building", September 1998.

7.7 Memorandum FSS-GED-2003-00005, "Geotechnical Input for Saltstone Vault No. 4 Structural Analysis", May 1, 2003.

8 BODY OF CALCULATION

8.1 2-D Axisymmetric Soil Model

The first model uses information from SGS to determine static settlements of the soil beneath the vault. The SGS data in Appendix B forms the basis for the model properties. An ANSYS 2-d axisymmetric model is used.

Initial Elastic Properties for Soil Column

$$\nu(h) := \begin{cases} 0.31 & \text{if } h \le 25ft \\ \left[-\left(\frac{0.07}{550}\right)\cdot\frac{h}{ft} + 0.49\right] & \text{if } 25ft < h \le 550ft \\ \left[-\left(\frac{0.02}{550}\right)\cdot\frac{h}{ft} + 0.44\right] & \text{if } h > 550ft \end{cases}$$

$pcf := lb\cdot ft^{-3}$

$kip := 1000lb$

$ksi := kip\cdot in^{-2}$

$ksf := kip\cdot ft^{-2}$

$kcf := kip\cdot ft^{-3}$

$fps := ft\cdot sec^{-1}$

$tsf := ton\cdot ft^{-2}$

$psi := lb\cdot in^{-2}$

$h_0 := 270ft$

$year := 365.25\cdot day$

$\gamma_c := 0.15kcf$

$\gamma_s := 0.12kcf$

$\gamma_g := 0.1061kcf$

$$\gamma(h) := (0.0131\cdot h + 120\cdot ft)lb\cdot ft^{-4} \qquad \rho(h) := \frac{\gamma(h)}{g}$$

$$G(v_s, h) := \frac{v_s^2\cdot\gamma(h)}{g}$$

$R := 0.10$ Static modulus reduction factor (Massarach, 2002)

$$E(v_s, h) := R\cdot G(v_s, h)\cdot 2\cdot(1 + \nu(h))$$

Layer 1 250 ft msl to 270 ft.

$h_1 := 270ft$ $\qquad v_s := 1200\frac{ft}{sec}$

$h_2 := 250ft$

$h := h_0 - \frac{h_1 + h_2}{2}$ $\qquad h = 10ft$

$G(v_s, h) = 5.377\times 10^3 ksf$ $\qquad \nu(h) = 0.31$

$E(v_s, h) = 1.409\times 10^3 ksf$ $\qquad \gamma(h) = 120.131\,pcf$ $\qquad \rho(h) = 3.734\times 10^{-3}\frac{kip\cdot sec^2}{ft^4}$

Layer 2 230 ft msl to 250 ft.

$h_1 := 250ft$ $\qquad v_s := 1100\frac{ft}{sec}$

$h_2 := 230ft$

$h := h_0 - \frac{h_1 + h_2}{2}$ $\qquad h = 30ft$

$G(v_s, h) = 4.528\times 10^3 ksf$ $\qquad \nu(h) = 0.486$

$E(v_s, h) = 1.346\times 10^3 ksf$ $\qquad \gamma(h) = 120.393\,pcf$ $\qquad \rho(h) = 3.742\times 10^{-3}\frac{kip\cdot sec^2}{ft^4}$

Layer 3 190 ft msl to 230 ft.

$h_1 := 230ft$ $\quad v_s := 900\frac{ft}{sec}$

$h_2 := 190ft$

$h := h_0 - \frac{h_1 + h_2}{2}$ $\quad h = 60\,ft$

$G(v_s, h) = 3.041 \times 10^3\,ksf$ $\quad \nu(h) = 0.482$

$E(v_s, h) = 901.532\,ksf$ $\quad \gamma(h) = 120.786\,pcf$ $\quad \rho(h) = 3.754 \times 10^{-3}\,\frac{kip \cdot sec^2}{ft^4}$

Layer 4 140 ft msl to 190 ft.

$h_1 := 190ft$ $\quad v_s := 1400\frac{ft}{sec}$

$h_2 := 140ft$

$h := h_0 - \frac{h_1 + h_2}{2}$ $\quad h = 105\,ft$

$G(v_s, h) = 7.394 \times 10^3\,ksf$ $\quad \nu(h) = 0.477$

$E(v_s, h) = 2.184 \times 10^3\,ksf$ $\quad \gamma(h) = 121.376\,pcf$ $\quad \rho(h) = 3.772 \times 10^{-3}\,\frac{kip \cdot sec^2}{ft^4}$

Layer 5 20ft msl to 140 ft.

$h_1 := 140ft$ $\quad h_2 := 20ft$ $\quad h := h_0 - \frac{h_1 + h_2}{2}$ $\quad h = 190\,ft$

$h_{top} := h_0 - h_1$ $\quad h_{bot} := h_0 + 100ft$ $\quad h_{top} = 130\,ft$ $\quad h_{bot} = 370\,ft$

$v_s := \frac{h - h_{top}}{h_{bot} - h_{top}} \cdot (2000fps - 1600fps) + 1600fps$ $\quad v_s = 1.7 \times 10^3\,fps$

$G(v_s, h) = 1.1 \times 10^4\,ksf$ $\quad \nu(h) = 0.466$

$E(v_s, h) = 3.226 \times 10^3\,ksf$ $\quad \gamma(h) = 122.489\,pcf$ $\quad \rho(h) = 3.807 \times 10^{-3}\,\frac{kip \cdot sec^2}{ft^4}$

Layer 6 -100 ft msl to 20 ft.

$h_1 := 20ft$ $\quad v_s := 2000\frac{ft}{sec}$

$h_2 := -100ft$

$h := h_0 - \frac{h_1 + h_2}{2}$ $\quad h = 310\,ft$

$G(v_s, h) = 1.542 \times 10^4\,ksf$ $\quad \nu(h) = 0.451$

$E(v_s, h) = 4.475 \times 10^3\,ksf$ $\quad \gamma(h) = 124.061\,pcf$ $\quad \rho(h) = 3.856 \times 10^{-3}\,\frac{kip \cdot sec^2}{ft^4}$

Layer 7 -300 ft msl to -100 ft.

$h_1 := -100\text{ft}$ $\quad v_s := 0.25(2700\text{fps} - 2000\text{fps}) + 2000\text{fps}$ $\quad v_s = 2.175 \times 10^3\ \text{fps}$

$h_2 := -300\text{ft}$

$h := h_0 - \dfrac{h_1 + h_2}{2}$ $\quad h = 470\,\text{ft}$

$G(v_s, h) = 1.855 \times 10^4\ \text{ksf}$

$E(v_s, h) = 5.306 \times 10^3\ \text{ksf}$ $\quad \nu(h) = 0.43$ $\quad \gamma(h) = 126.157\,\text{pcf}$ $\quad \rho(h) = 3.921 \times 10^{-3}\ \dfrac{\text{kip}\cdot\text{sec}^2}{\text{ft}^4}$

Layer 8 -500 ft msl to -300 ft.

$h_1 := -300\text{ft}$

$h_2 := -500\text{ft}$ $\quad v_s := 0.75(2700\text{fps} - 2000\text{fps}) + 2000\text{fps}$ $\quad v_s = 2.525 \times 10^3\ \text{fps}$

$h := h_0 - \dfrac{h_1 + h_2}{2}$ $\quad h = 670\,\text{ft}$

$G(v_s, h) = 2.552 \times 10^4\ \text{ksf}$

$E(v_s, h) = 7.225 \times 10^3\ \text{ksf}$ $\quad \nu(h) = 0.416$ $\quad \gamma(h) = 128.777\,\text{pcf}$ $\quad \rho(h) = 4.003 \times 10^{-3}\ \dfrac{\text{kip}\cdot\text{sec}^2}{\text{ft}^4}$

Layer 9 -500 ft msl to -700 ft.

$h_1 := -500\text{ft}$ $\quad v_s := 2700\dfrac{\text{ft}}{\text{sec}}$

$h_2 := -700\text{ft}$

$h := h_0 - \dfrac{h_1 + h_2}{2}$ $\quad h = 870\,\text{ft}$

$G(v_s, h) = 2.977 \times 10^4\ \text{ksf}$

$E(v_s, h) = 8.386 \times 10^3\ \text{ksf}$ $\quad \nu(h) = 0.408$ $\quad \gamma(h) = 131.397\,\text{pcf}$ $\quad \rho(h) = 4.084 \times 10^{-3}\ \dfrac{\text{kip}\cdot\text{sec}^2}{\text{ft}^4}$

Equivalent Load for Axisymmetric Model

DWPF Load per WSRC-TR-00072

$w_0 := 2.7 tsf$

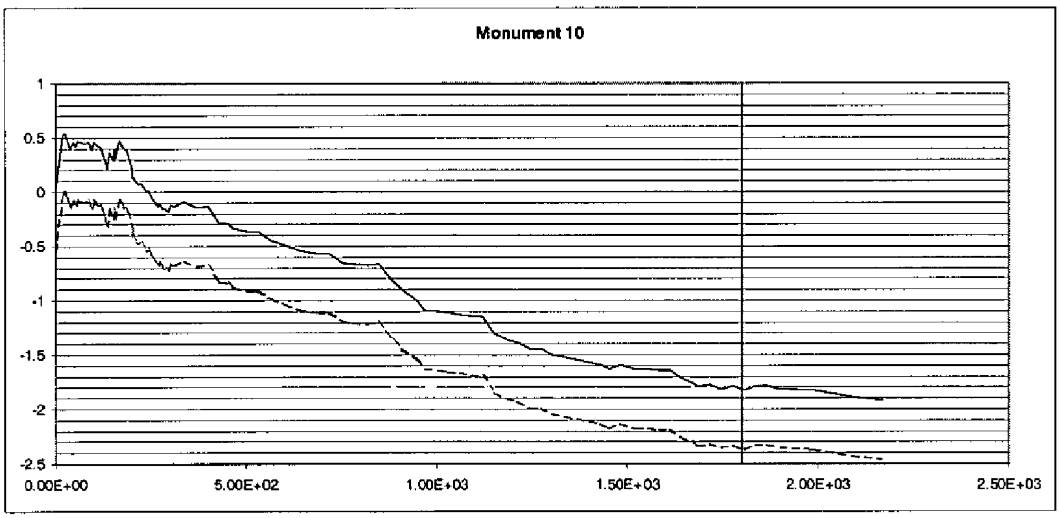
$w_0 = 5.4 ksf$

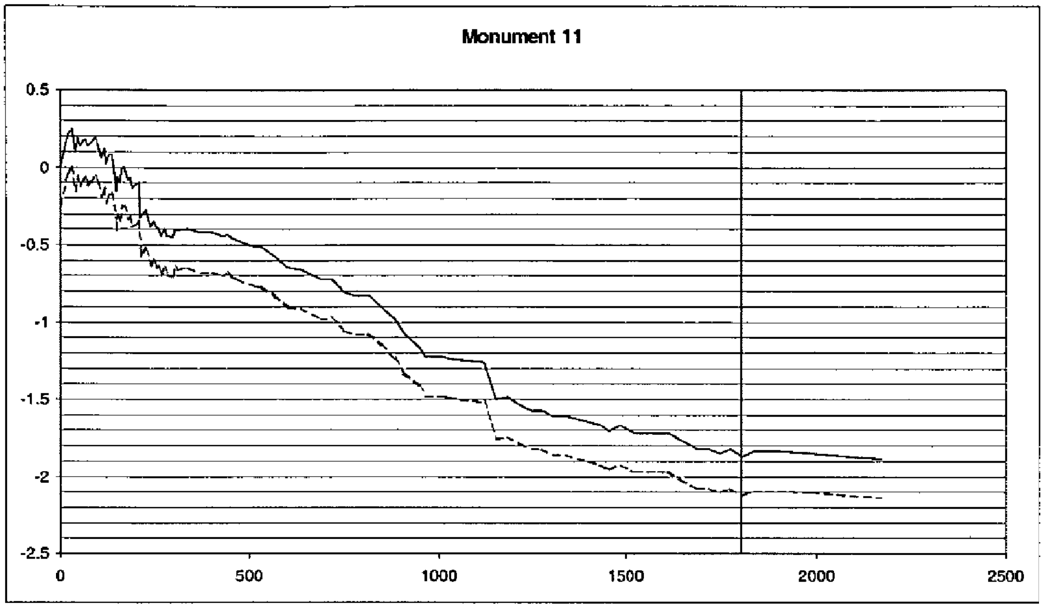
Settlement Data

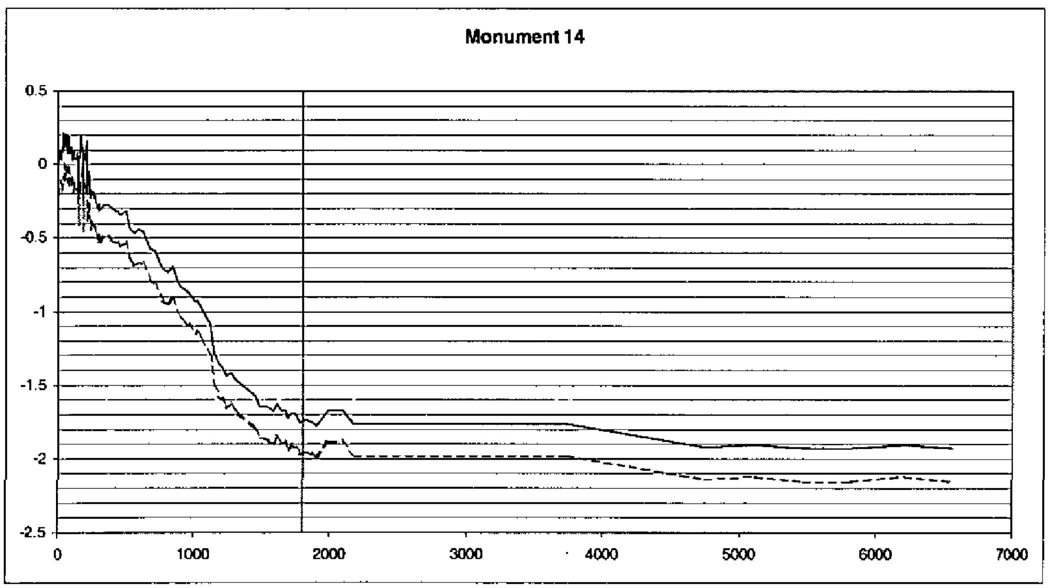
Estimate of Load

Date	Days	Load, tsf
5/2/1984	0	0
1/1/1985	346	0.5
1/1/1988	1341	2.7

Use 1800 days to estimate elastic response. Monument records for 10,11, and 14 are relevant for this period. Correct readings for iniial heave.







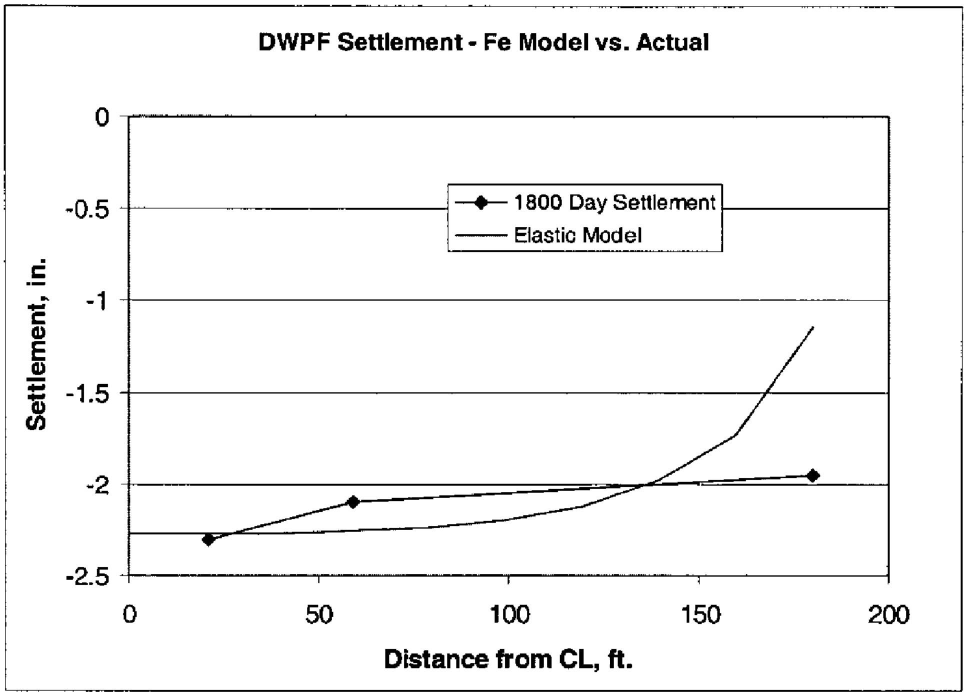
Elastic Settlement at 1800 days

Monument	Distance ft	Net Settlement in
10	21	-2.3
11	59	-2.1
14	180	-1.95

Elastic Model

First run ANSYS model in linear elastic static mode to find best properties for initial (1800 day) settlement. Use E=C1/k and Poisson's ratio from geotech report.

Results from elastic model with k=4:



Model name "ssv7.db"

Inelastic (Creep) Model

Long Term Settlement - from EXCEL

Average 14 and 26
Intercept 2.214565
Slope -0.2959

$a := -0.2959 \cdot in$

$b := 2.2146in$

Calculate initial creep coefficients:

$\delta_y(t) := a \cdot \ln(t) + b$

$t_1 := 10year \qquad t := \frac{t_1}{day} \qquad t = 3.652 \times 10^3$

$\delta_y(t) = -0.213\,in$

$t_1 := 1000year \qquad t := \frac{t_1}{day} \qquad t = 3.652 \times 10^5$

$\delta_y(t) = -1.575\,in$

$t_1 := 10000year \qquad t := \frac{t_1}{day} \qquad t = 3.652 \times 10^6$

$\delta_y(t) = -2.257\,in$

Average Stress

$\sigma := 2ksf$

$C_1 := \frac{a}{L \cdot \sigma}$

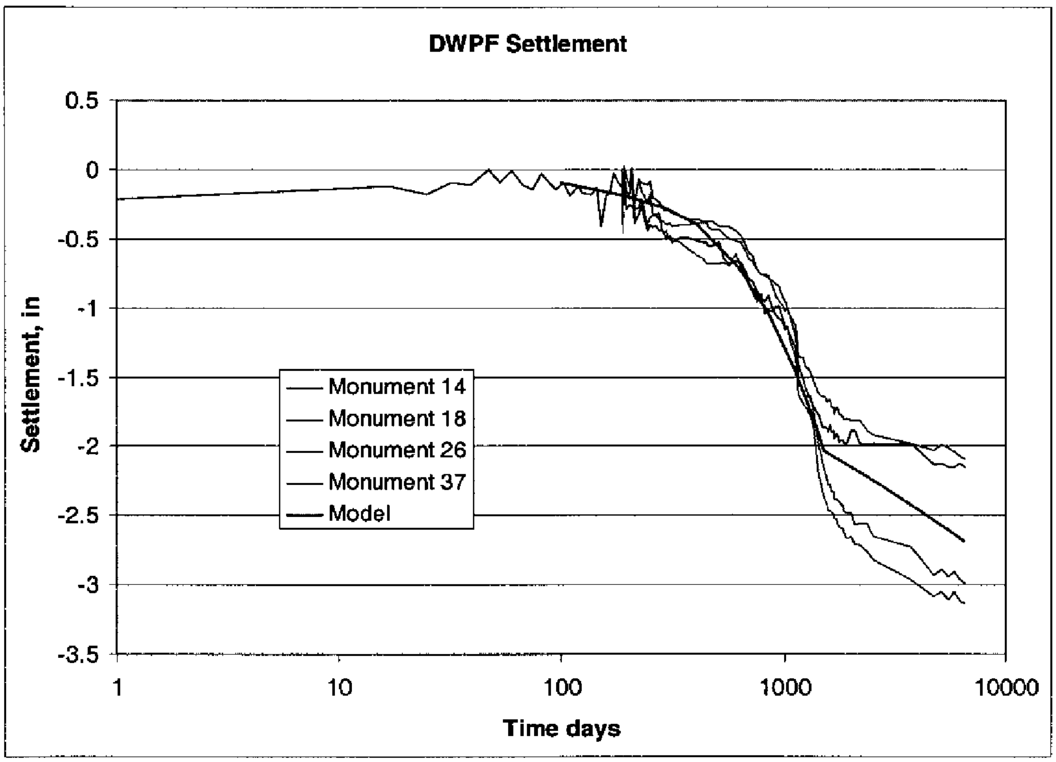
$$L := \begin{pmatrix} 20 \\ 20 \\ 20 \\ 25 \\ 40 \\ 60 \\ 100 \\ 200 \\ 200 \end{pmatrix} ft$$

$$C_1 = \begin{pmatrix} -6.165 \times 10^{-4} \\ -6.165 \times 10^{-4} \\ -6.165 \times 10^{-4} \\ -4.932 \times 10^{-4} \\ -3.082 \times 10^{-4} \\ -2.055 \times 10^{-4} \\ -1.233 \times 10^{-4} \\ -6.165 \times 10^{-5} \\ -6.165 \times 10^{-5} \end{pmatrix} \frac{ft^2}{kip}$$

ANSYS Kinemetric time hardening model 2: $d\varepsilon_{cr}/dt = C_1\sigma^{C2}t^{C3}e^{-C4/T}$

Try combinations of C1, C2 and C3 to fit data. C4 = 0 since temperature is not a variable.
Also modify k for elastic modulus. C3 = -1.0 per Site Geotechnical Services.

Results for Node 9



ANSYS File "ssv7pprop"

OSR 19-189 (6-11-91)

Calculation Sheet

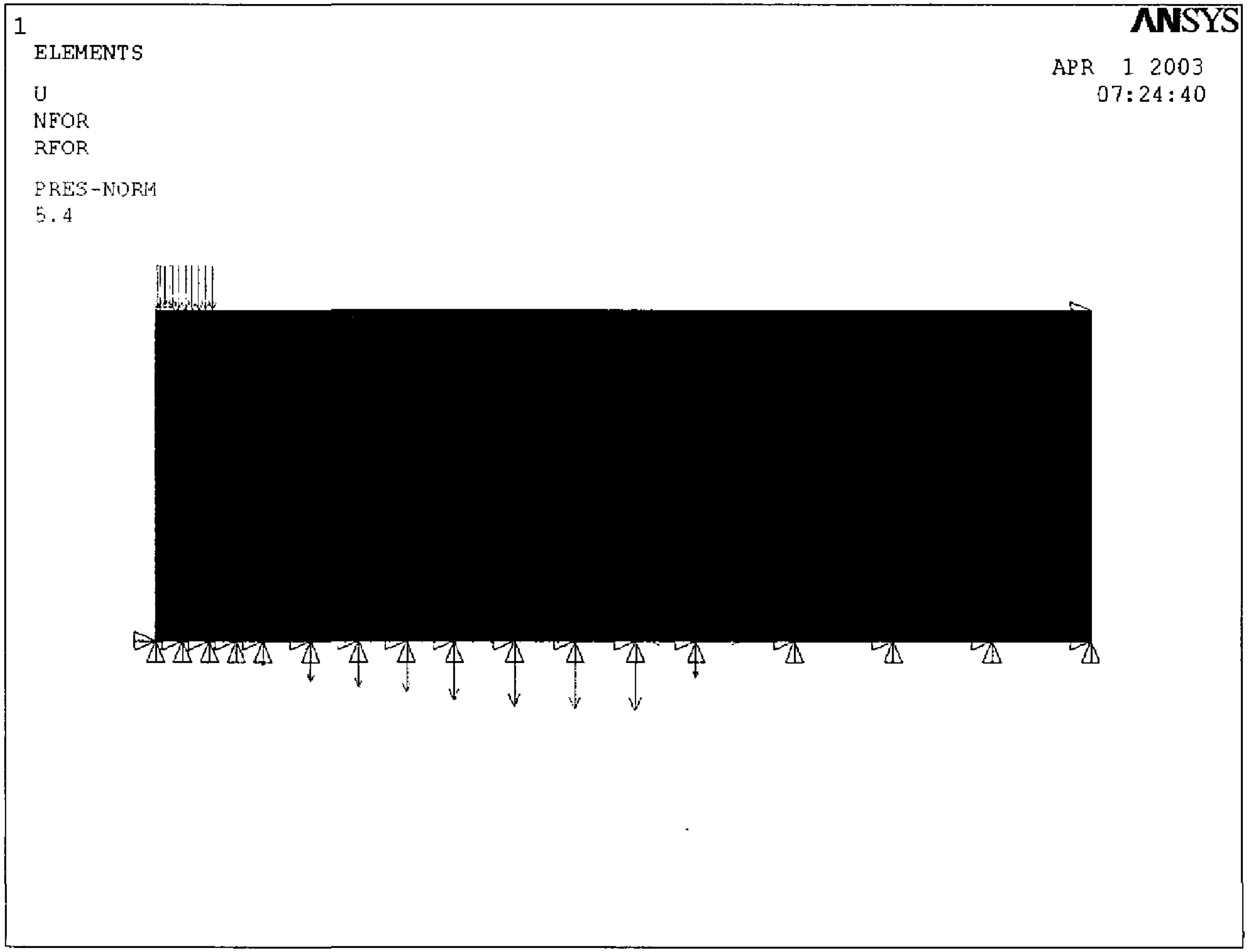
SRS	Project: See Cover			Calculation No.: T-CLC-Z-00006					
	Subject: " "							Sheet No.: 31	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WCP	7/9/03	DR	7/10/03					

CASE E0 - DWPF Elastic

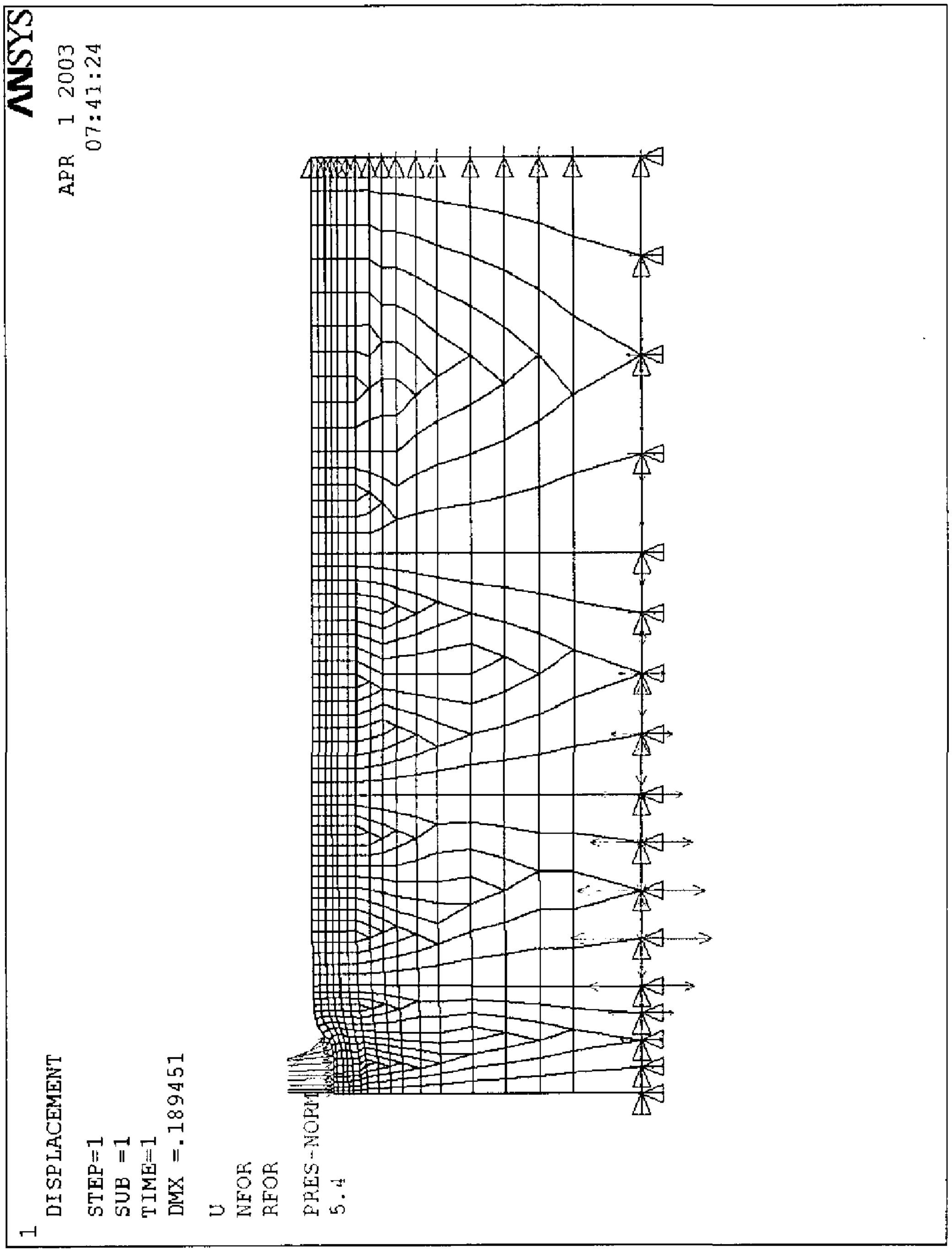
File SSV 70

2D - Axisymmetric

Model 1 - 2d Axisymmetric - DWPF Loads
Case E0 - Applied Loads

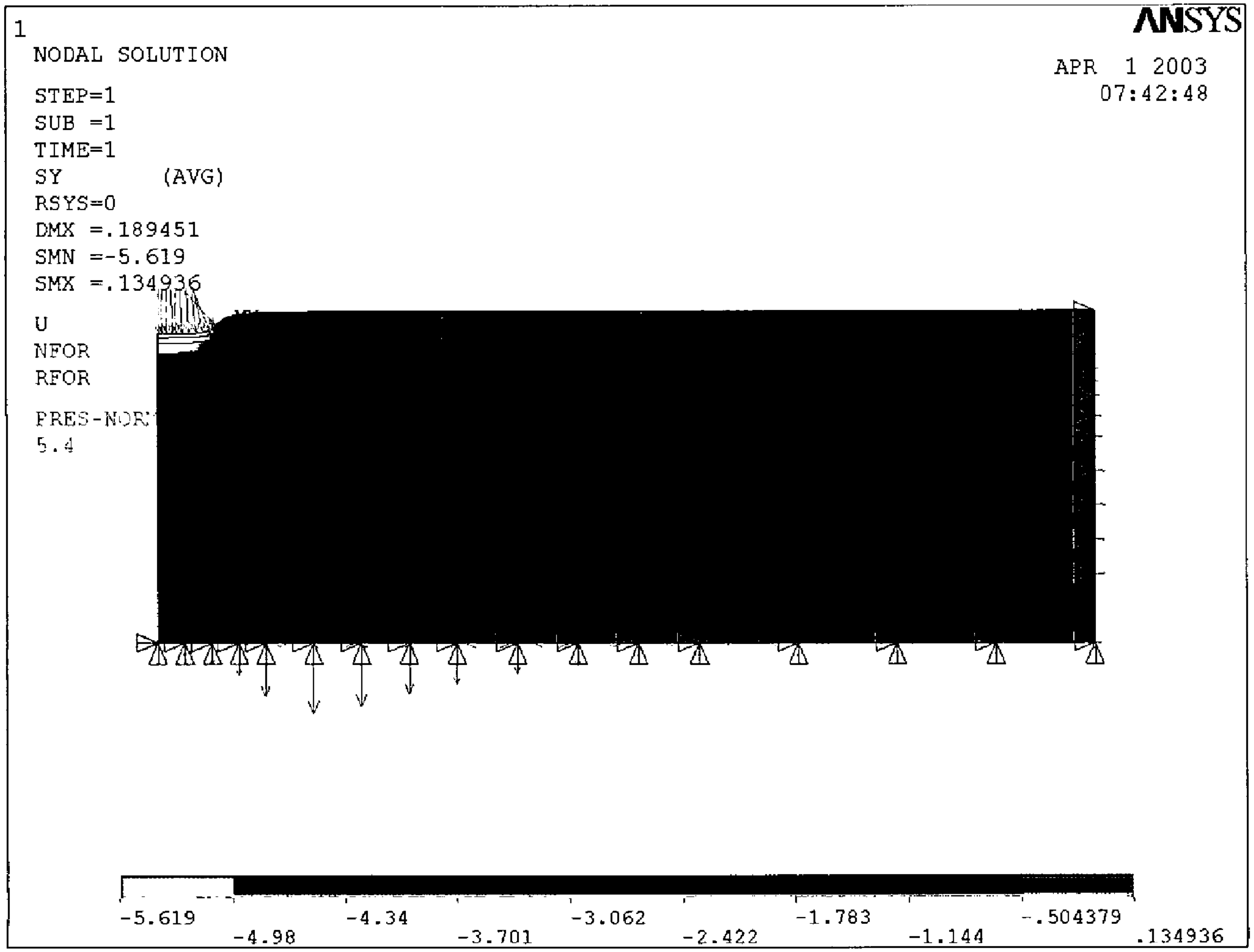


Model 1 - 2d Axisymmetric - DWPF Loads
Case E0 - Elastic Deformation



Model 1 - 2D Axisymmetric - DWPF Loads
Case E0 - Vertical Stress σ_y

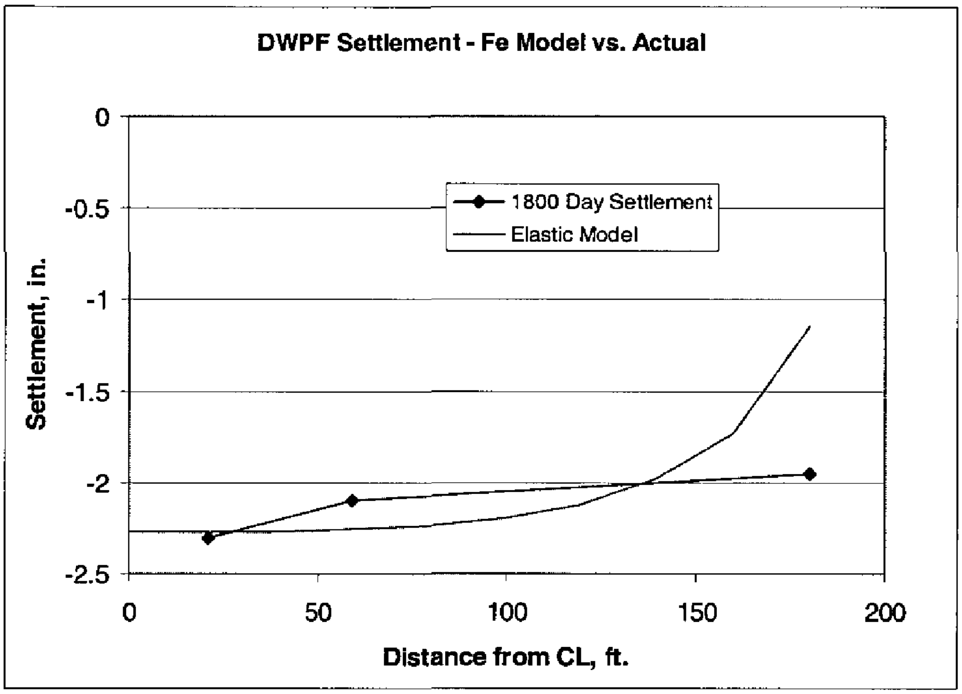
Units - kips, feet



Elastic Model

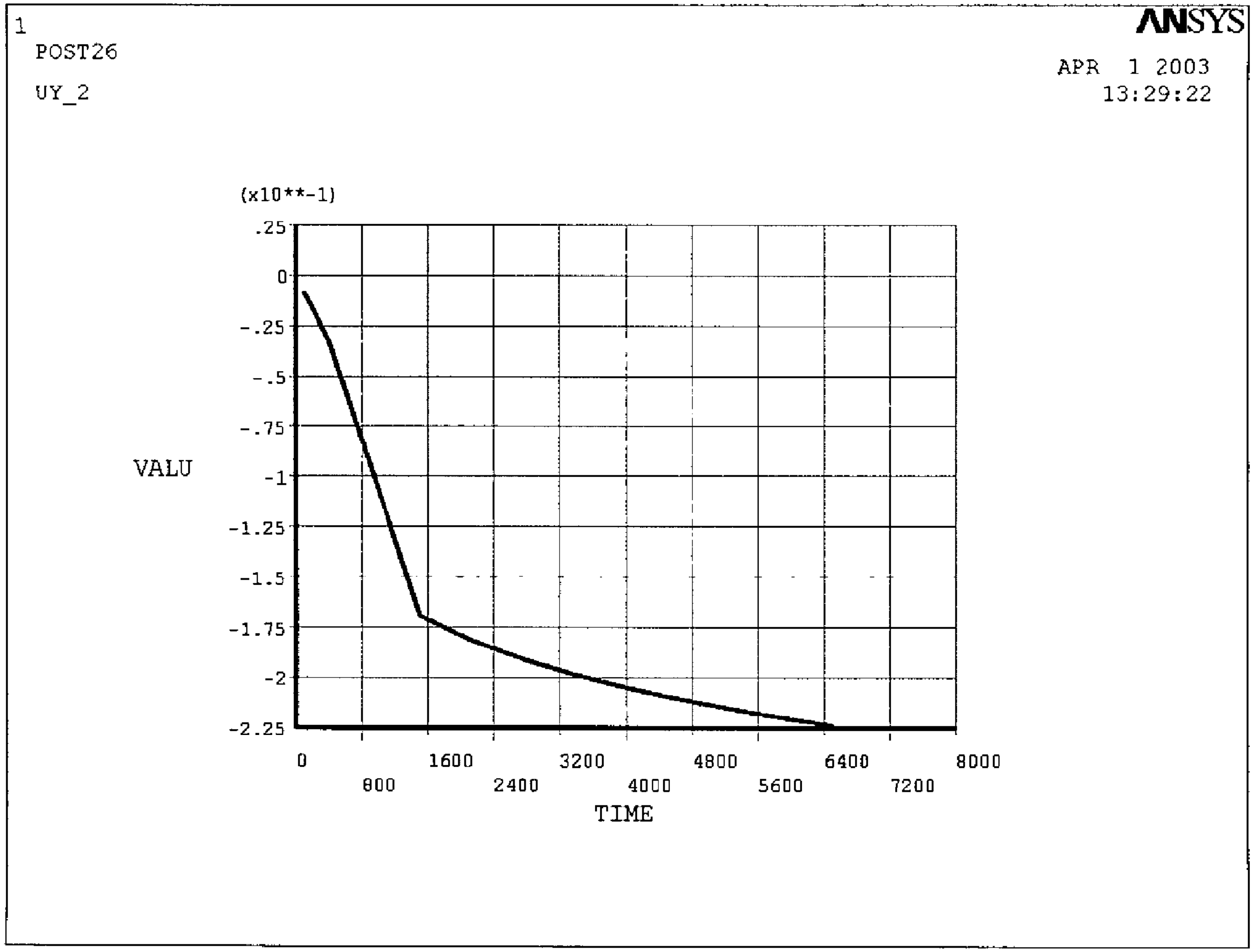
First run ANSYS model in linear elastic static mode to find best properties for initial (1800 day) settlement. Use E=C1/k and Poisson's ratio from geotech report.

Results from elastic model with k=4:

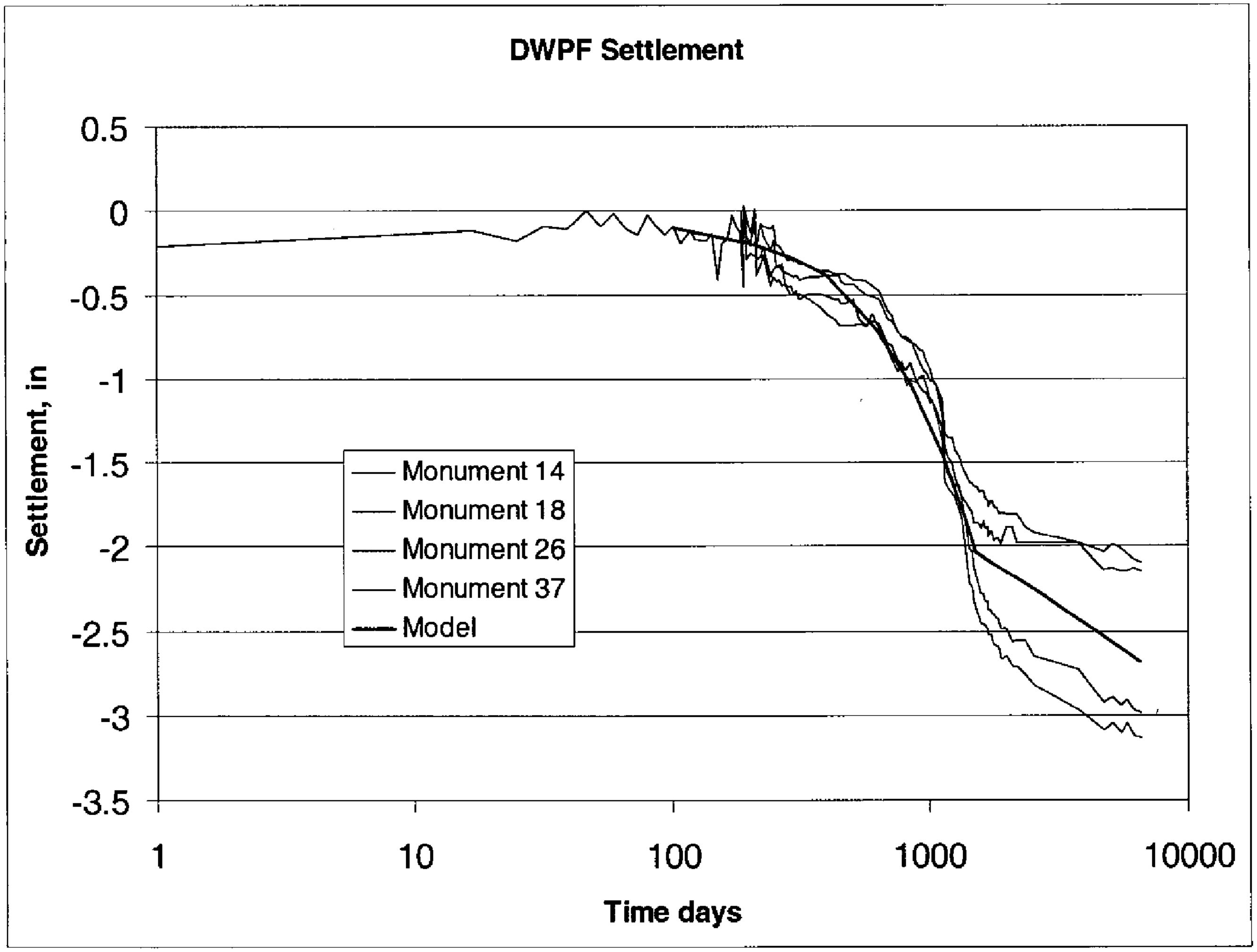


Model name "ssv7.db"

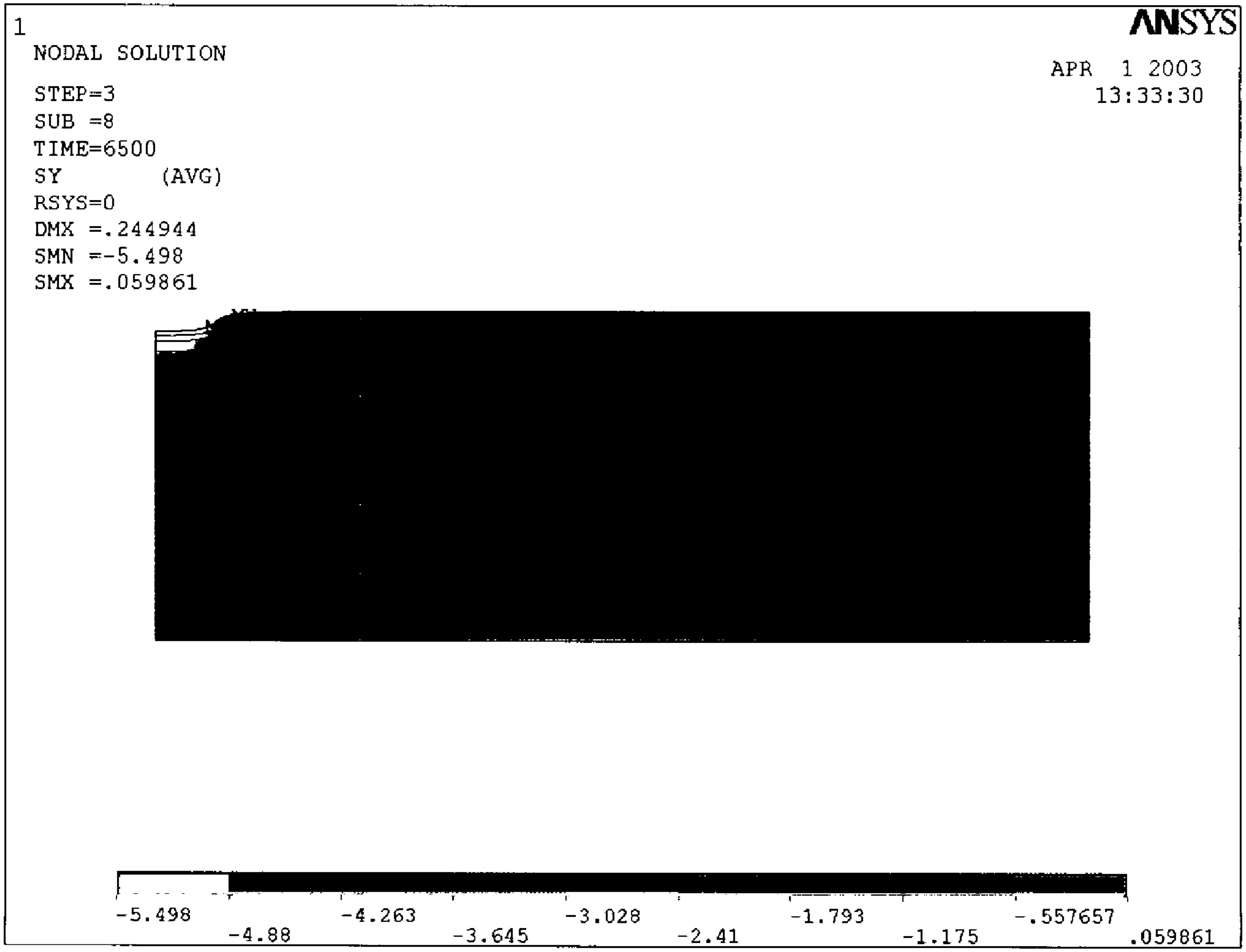
Model 1 - 2D Axisymmetric Creep
Case P0 - DWPF Loads
Settlement at Node 9



Model 1 - 2D Axisymmetric Creep
Case P0 - DWPF Loads
Settlement at Node 9



Model 1 - 2D Axisymmetric Creep - DWPF Loads
Stress σ_y at 6500 Days



OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover					Calculation No.: T-CLC-Z-00006			
	Subject: " "					Sheet No.: 39			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WLP	7/9/03	DJ	7/10/03					

Case P1 2D AXISYMMETRIC

Loading - All vaults exc. 13, 14, 15

Tapered Load

file SSV70

OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover						Calculation No.: T-CLC-Z-00006	
	Subject: " "						Sheet No.: 40	

Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	wrp	7/9/03		7/10/03					

Load application to model

Step 1 apply a small load to start convergence

Step 2 apply the vault 4 load over one year - weight only
$w = 3.19$ ksf uniform

Step 3 apply final load over 5 years.

Step 4 allow to creep over 10,000 years

Model SSV7

file load SSV7.p1

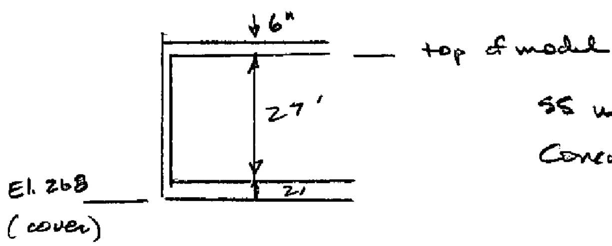
Calculation Sheet

SRS	Project: See Cover			Calculation No.: T-CLC-Z-00006	
	Subject: " "			Sheet No.: 41	

Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WLP	7/9/03	[signature]	7/10/03					

Cover weight calculation

Top of model - El. 298' for cover calc.



SS weight = 106 pcf
Concrete = 150 pcf

W concrete (200 x 300')

$$w = 0.15[(2)(301.5)(201.5)+3(301.5)(1.5)(27)+6(98.5)(27)(1.5)]$$
$$w = 27310 \text{ k}$$
$$p_c = 0.450 \text{ k/ft}^2$$

saltstone
$$w = 0.106(27)(6)(98.5)^2 = 166,607 \text{ k}$$

$$p_{ss} = 2.74 \text{ k/ft}^2$$

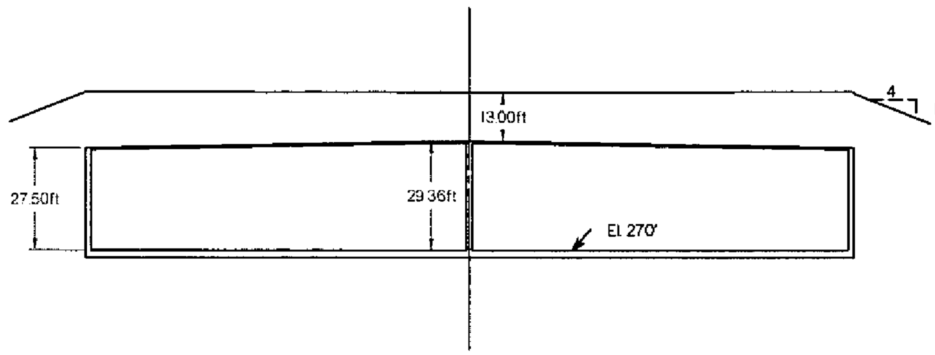
Assume wt of roof and sloped concrete fill is covered in soil weight of 120 pcf.

Calculate cover weight based on top elev. of 295'

$$p = (\text{Surface el} - 295)(0.12 \text{ kcf})$$

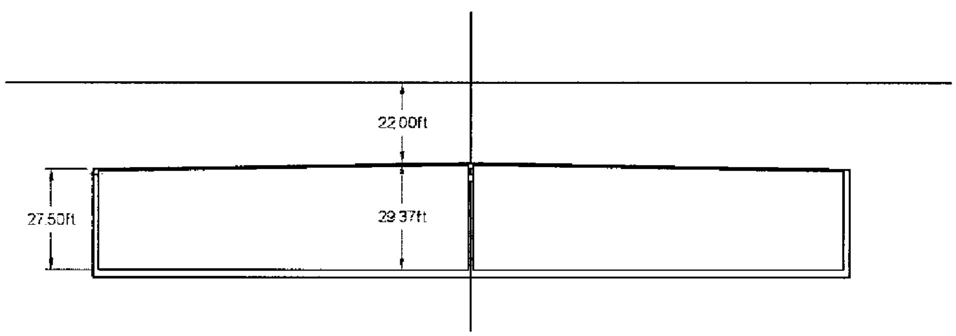
Cover weight shown on contour plot

Effect of Sloping Cover - Axisymmetric Load Case



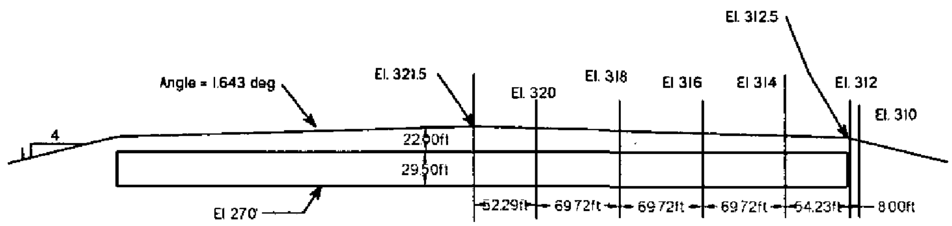
Minimum Cover per M. Phifer 4-02-2003

Vault Dimensions per C-CC-Z-0013 Rev. 3



Maximum Cover per M. Phifer 4-02-2003

Vault Dimensions per C-CC-Z-0013 Rev. 3



Cover - Longitudinal Section at CL

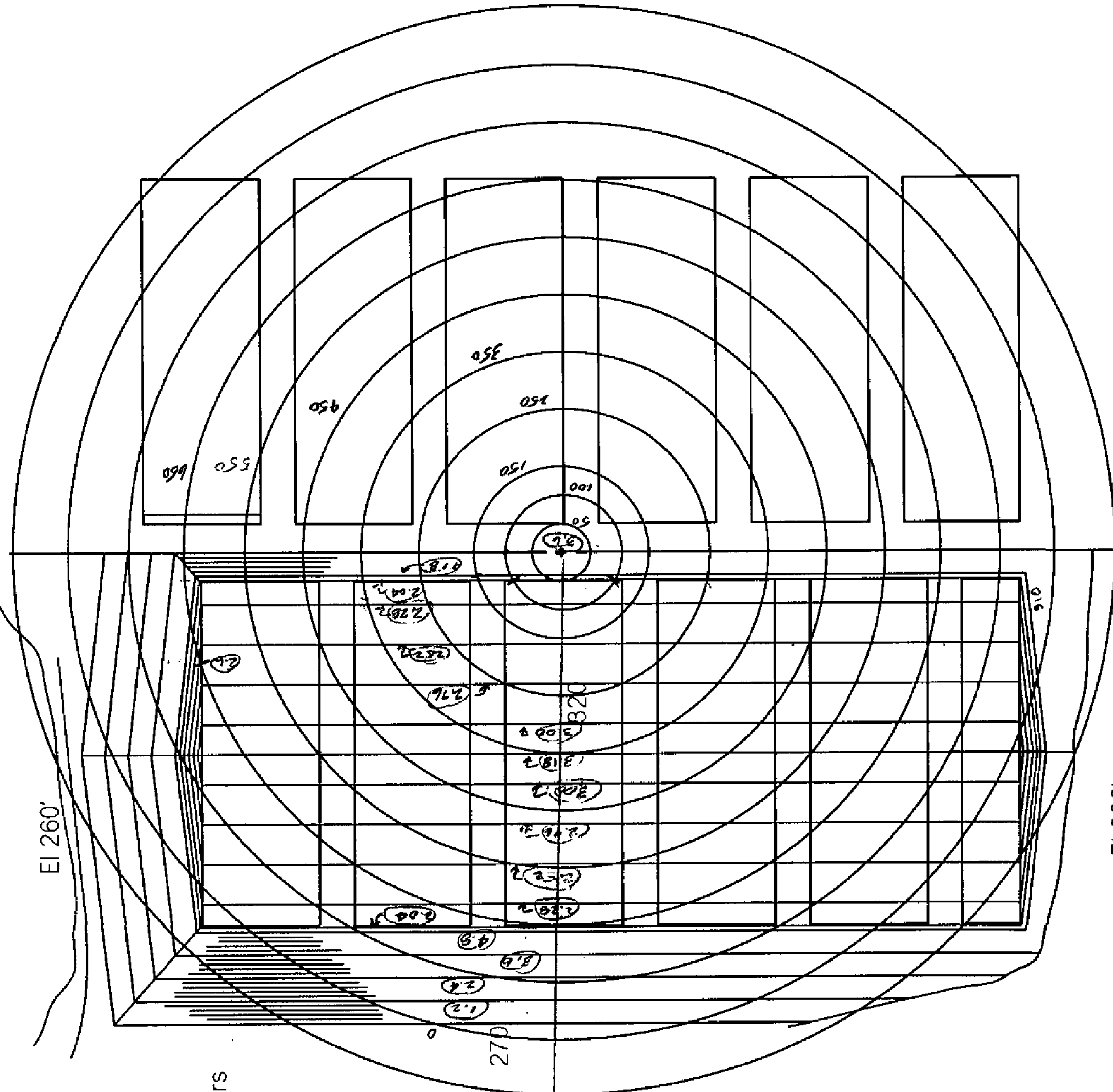
Similar to Case 3 (All vaults except 13, 14, and 15)

Apply Loads to 2D Axisymmetric Model and resulting displacements to Model 3 - 3D Structural Model.

Crack Criteria

$f_{tc} = 45.537\,\text{ksf}$ $\qquad \varepsilon_{tc} := \dfrac{f_{tc}}{E_c}$ $\qquad \varepsilon_{tc} = 8.696 \times 10^{-5}$

$f_{tg} = 16.1\,\text{ksf}$ $\qquad \varepsilon_{tg} := \dfrac{f_{tg}}{E_g}$ $\qquad \varepsilon_{tg} = 7.861 \times 10^{-5}$



Red - 10' Contours

Assumed
1/4 symmetry

1" = 250'

soil γ = 120 pcf

TOV: El. 299.5

Pressure Distribution for Sloping Cover

Radius 0

Dis	Press.,ksf
All	3.6

Radius 50

Dis	Press.,ksf
All	4.2

Radius 150

Dis	Press.,ksf	avg	Wt avg
0	2.04		
662.5		2.16	1431
	2.28		
125		2.39	298.75
	2.5		
787.5			1729.75
		Average	2.20

Radius 250

Distance	Press.,ksf	avg	Wt avg
	2.04		
47		2.16	101.52
	2.28		
78		2.4	187.2
	2.52		
117		2.64	308.88
	2.76		
94		2.78	261.32
	2.8		
336			858.92
		Average	2.56

Radius 350

Distance	Press.,ksf	avg	Wt avg
	2.04		
47		2.16	101.52
	2.28		
78		2.4	187.2
	2.52		
86		2.64	227.04
	2.76		
109		2.88	313.92
	3		
188		3.09	580.92
	3.18		
508			1410.6
		Average	2.78

Radius 450

Distance	Press.,ksf	avg	Wt avg
	2.04		
47		2.16	101.52
	2.28		
78		2.4	187.2
	2.52		
78		2.64	205.92
	2.76		
94		2.88	270.72
	3		
78		3.09	241.02
	3.18		
94		3.09	290.46
	3		
188		2.8	526.4
	6		
657			1823.24
		Average	2.78

Radius 550

Distance	Press.,ksf	avg	Wt avg
	2.04		
47		2.16	101.52
	2.28		
78		2.4	187.2
	2.52		
78		2.64	205.92
	2.76		
78		2.88	224.64
	3		
63		3.09	194.67
	3.18		
63		3.09	194.67
	3		
117		2.88	336.96
	2.76		
219		2.64	578.16
	2.52		
70		2.51	175.7
	2.5		
743			2199.44
		Average	2.96

Radius 650

Distance	Press.,ksf	avg	Wt avg
	2.6		
47		2.68	125.96
	2.76		
78		2.88	224.64
	3		
62.5		3.09	193.125
	3.18		
62.5		3.09	193.125
	3		
94		2.88	270.72
	2.76		
188		2.64	496.32
	2.52		
219		2.28	499.32
	2.04		
751			2003.21
		Average	2.67

Slope from 4.8 to 0 in 160 ft.

Pressure from Weight of Vault Model

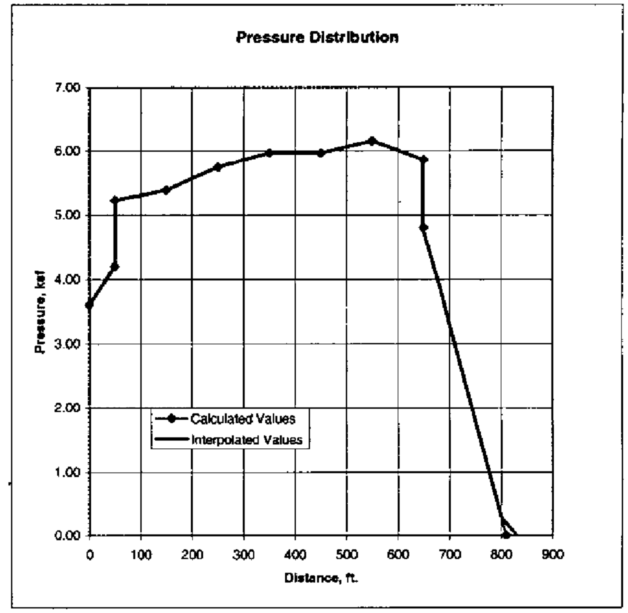
prw 3.19

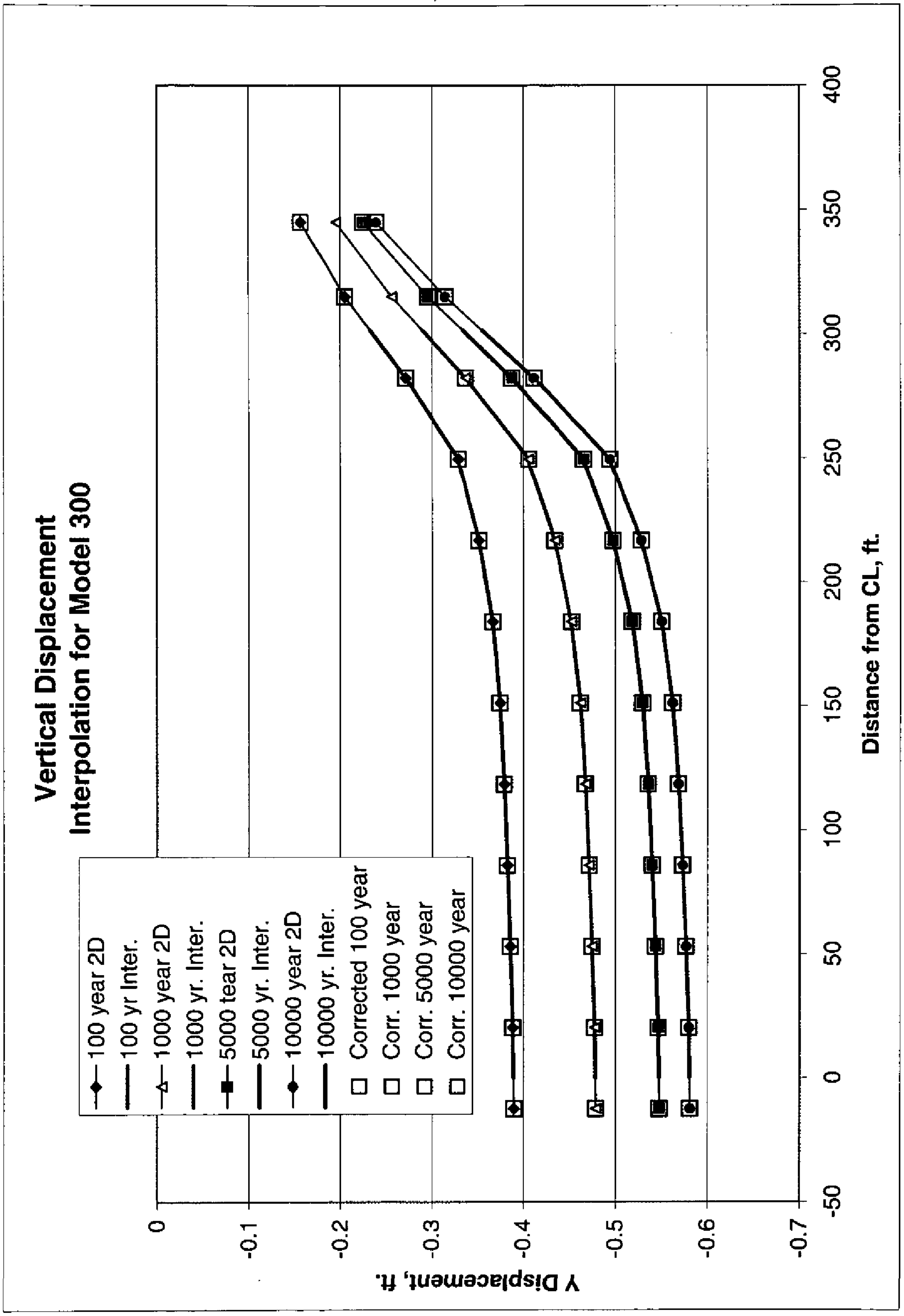
Results

Distance	Pressure	Pressure Wt. Inc.
0	3.6	3.60
50	4.2	4.20
50	2.04	5.23
150	2.20	5.39
250	2.56	5.75
350	2.78	5.97
450	2.78	5.97
550	2.96	6.15
650	2.67	5.86
650	4.80	4.80
810	0.00	0.00

Node	Distance	Pressure
1	0	3.60
2	10	3.72
3	21	3.85
4	35.5	4.03
5	50	4.20
5	50	5.23
6	59	5.24
7	79.1666667	5.28
8	99.3333333	5.31
9	119.5	5.34
10	139.666667	5.37
11	159.833333	5.42
12	180	5.49
13	200	5.57
14	220	5.64
15	240	5.71
16	260	5.77
17	280	5.81
18	300	5.86
19	320	5.90
20	352.7273	5.97
21	385.4545	5.97
22	418.1818	5.97
23	450.9091	5.97
24	483.6364	6.03
25	516.3636	6.09
26	549.0909	6.15
27	581.8182	6.06
28	614.5455	5.96
29	647.2727	5.87
29	647.2727	4.80
30	680	3.90
31	710	3.00
32	740	2.10
33	770	1.20
34	800	0.30
35	830	0.00

Element	Nodes			
1	1	2	57	56
2	2	3	58	57
3	3	4	59	58
4	4	5	60	59
5	5	6	61	60
6	6	7	62	61
7	7	8	63	62
8	8	9	64	63
9	9	10	65	64
10	10	11	66	65
11	11	12	67	66
12	12	13	68	67
13	13	14	69	68
14	14	15	70	69
15	15	16	71	70
16	16	17	72	71
17	17	18	73	72
18	18	19	74	73
19	19	20	75	74
20	20	21	76	75
21	21	22	77	76
22	22	23	78	77
23	23	24	79	78
24	24	25	80	79
26	25	26	81	80
27	26	27	82	81
28	27	28	83	82
29	28	29	84	83
30	29	30	85	84
31	30	31	86	85
32	31	32	87	86
33	32	33	88	87
34	33	34	89	88
35	34	35	90	89
36	35	36	91	90
37	36	37	92	91
38	37	38	93	92
39	38	39	94	93
40	39	40	95	94
41	40	41	96	95
42	41	42	97	96



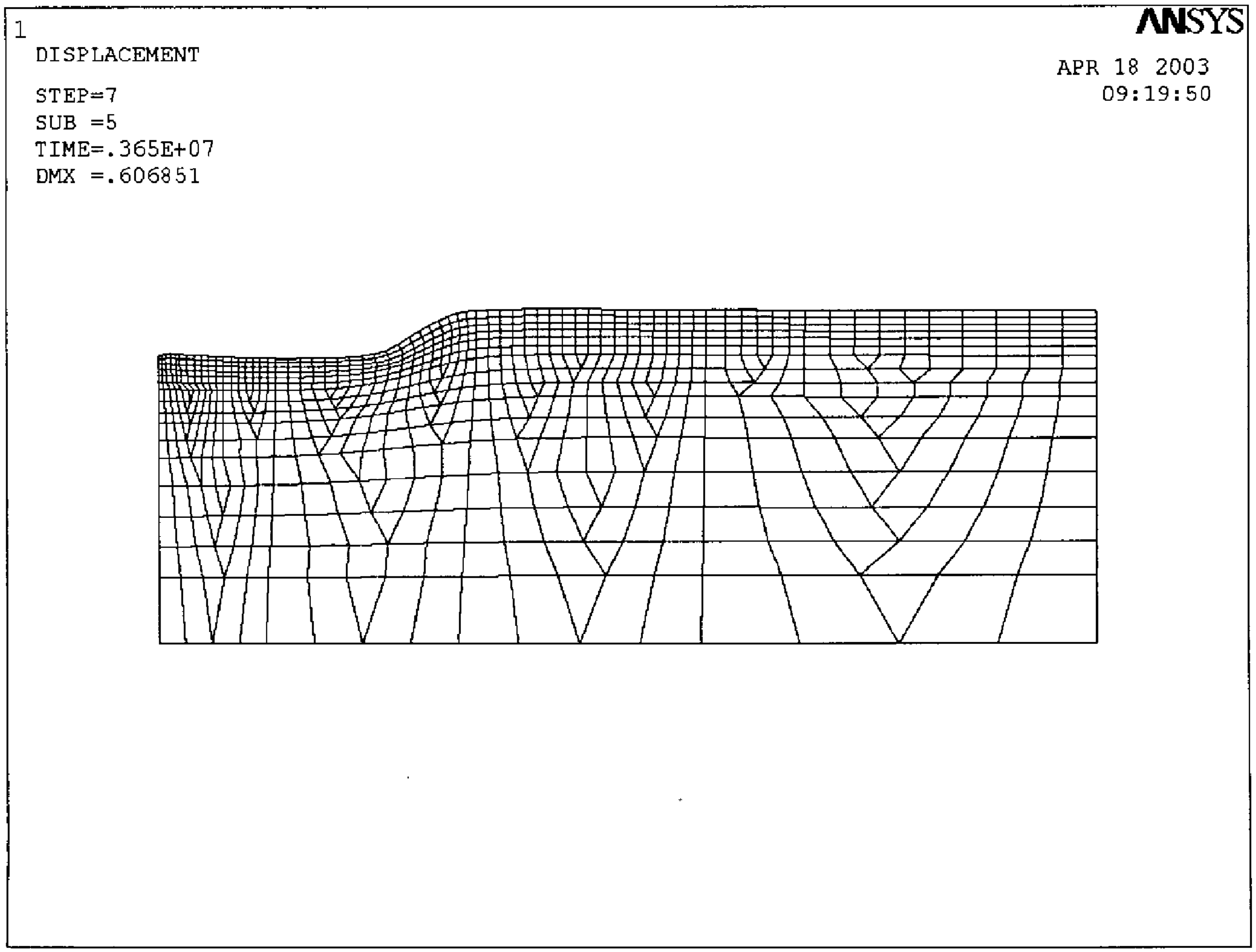

Vertical Displacement
Interpolation for Model 300
Y Displacement, ft.
Distance from CL, ft.
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-50
0
50
100
150
200
250
300
350
400
100 year 2D
100 yr Inter.
1000 year 2D
1000 yr. Inter.
5000 tear 2D
5000 yr. Inter.
10000 year 2D
10000 yr. Inter.
Corrected 100 year
Corr. 1000 year
Corr. 5000 year
Corr. 10000 year

Load application file for Vault Loading

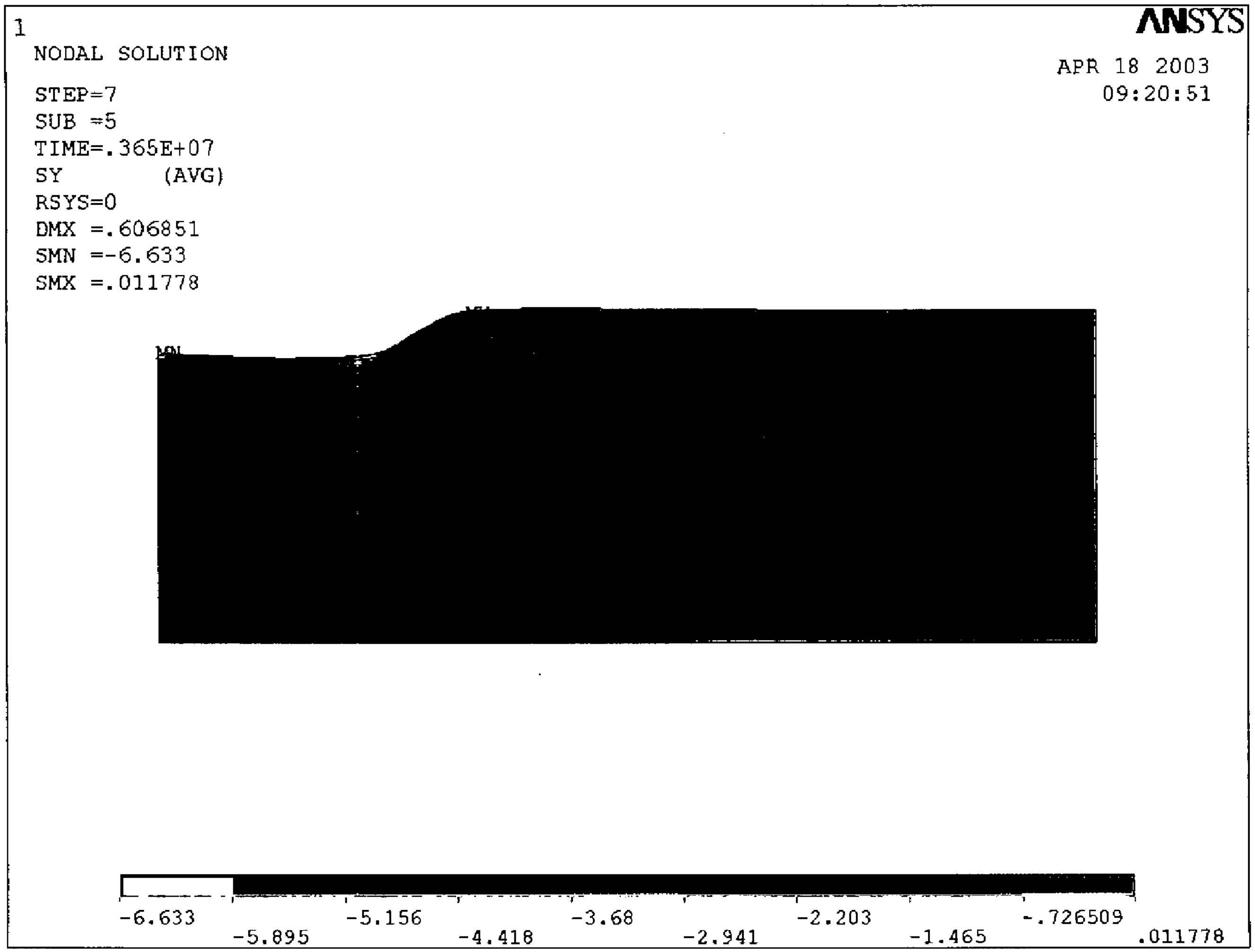
```
ANTYPE,0
OUTRES,ALL,ALL
RATE,1
SFEDELE,ALL,ALL,ALL
NSUBST,1,1,1
TIME,10
FLST,2,24,2,ORDE,4
FITEM,2,5
FITEM,2,-24
FITEM,2,26
FITEM,2,-29
/GO
!*
SFE,P51X,1,PRES, ,0.1, , ,
/STATUS,SOLU
SOLVE
NSUBST,12,24,12
TIME,364
FLST,2,24,2,ORDE,4
FITEM,2,5
FITEM,2,-24
FITEM,2,26
FITEM,2,-29
/GO
!*
SFE,P51X,1,PRES, ,3.19, , ,
/STATUS,SOLU
SOLVE
NSUBST,12,24,12
TIME,1825
SFE,1,1,PRES, ,7.3,6.68, ,
SFE,2,1,PRES, ,6.68,6.0, ,
SFE,3,1,PRES, ,6.0,5.1, ,
SFE,4,1,PRES, ,5.1,4.2, ,
SFE,5,1,PRES, ,5.23,5.24, ,
SFE,6,1,PRES, ,5.24,5.28, ,
SFE,7,1,PRES, ,5.28,5.31, ,
SFE,8,1,PRES, ,5.31,5.34, ,
SFE,9,1,PRES, ,5.34,5.37, ,
SFE,10,1,PRES, ,5.37,5.42, ,
SFE,11,1,PRES, ,5.42,5.49, ,
SFE,12,1,PRES, ,5.49,5.57, ,
SFE,13,1,PRES, ,5.57,5.64, ,
SFE,14,1,PRES, ,5.64,5.71, ,
SFE,15,1,PRES, ,5.71,5.77, ,
SFE,16,1,PRES, ,5.77,5.81, ,
SFE,17,1,PRES, ,5.81,5.86, ,
SFE,18,1,PRES, ,5.86,5.90 , ,
SFE,19,1,PRES, ,5.90,5.97 , ,
SFE,20,1,PRES, ,5.97, , ,
SFE,21,1,PRES, ,5.97, , ,
SFE,22,1,PRES, ,5.97, , ,
SFE,23,1,PRES, ,5.97,6.03, ,
SFE,24,1,PRES, ,6.03,6.09, ,
SFE,26,1,PRES, ,6.09,6.15, ,
SFE,27,1,PRES, ,6.15,6.06, ,
SFE,28,1,PRES, ,6.06,5.96, ,
SFE,29,1,PRES, ,5.96,5.87, ,
SFE,30,1,PRES, ,4.80,3.90, ,
SFE,31,1,PRES, ,3.90,3.00, ,
SFE,32,1,PRES, ,3.00,2.10, ,
SFE,33,1,PRES, ,2.10,1.20, ,
SFE,34,1,PRES, ,1.20,0.30, ,
```

```
SFE,35,1,PRES, ,0.30,0.00, ,
/STATUS,SOLU
SOLVE
NSUBST,5,20,5
TIME,36525
/STATUS,SOLU
SOLVE
NSUBST,5,20,5
TIME,365250
/STATUS,SOLU
SOLVE
NSUBST,5,20,5
TIME,1.8263e6
/STATUS,SOLU
SOLVE
NSUBST,5,20,5
TIME,3.653e6
/STATUS,SOLU
SOLVE
```

Model 70 - 2D Axisymmetric Creep
Case P1 – Loads from all Vaults
Deformed Shape at 10,000 years



Model 70 - 2D Axisymmetric Creep
Case P1 – Loads from all Vaults
Stress σ_y at 10,000 years



OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover						Calculation No.: T-CLC-Z-00006		
	Subject: " "							Sheet No. 52	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WRP	7/10/03		7/10/03					

8.2 Structural Model ~~2-D Plane Strain Model (MODEL 300)~~

2D - plane strain

Contact surfaces at construction joints and concrete - saltstone interface

COMBIN 37 elements used to simulate grout cracking

COMBIN 14 elements used for soil springs.

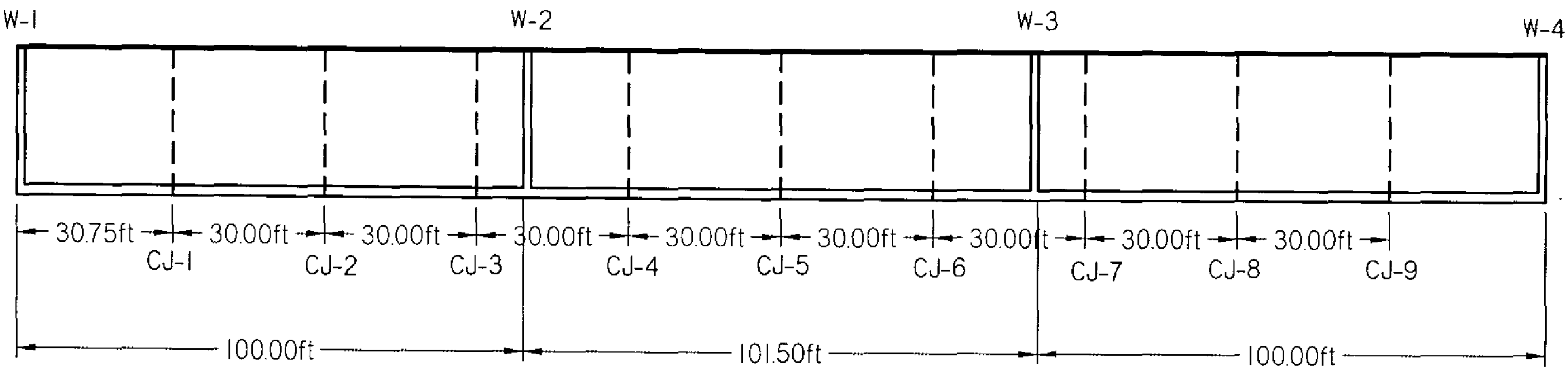
A single model was used for all parametric analyses. Properties and boundary conditions were varied for each run.

Pressure and self weight were fixed for all runs. The following parameters were varied:

1. Displacement boundary condition - changed with time and differential settlement.
2. Soil springs - bulk modulus varied
3. Grout modulus
4. Grout cracking strain

Key for Wall and Construction Joint Locations

W - Wall
CJ - Construction Joint



OSR 19-189 (6-11-91)

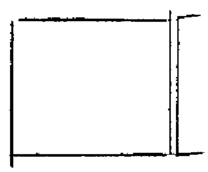
Calculation Sheet

SRS	Project: See Cover	Calculation No.: T-CLC-Z-00006
	Subject: " "	Sheet No. 54

Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WRP	7/8/03	[signature]	7/10/03					

CONSTRUCTION JOINTS - walls & slabs 30' c-c

Shrinkage effect



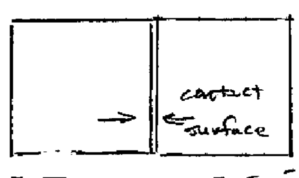
Estimate crack size

$\epsilon_{sh} = -4.7 \times 10^{-4}$ *

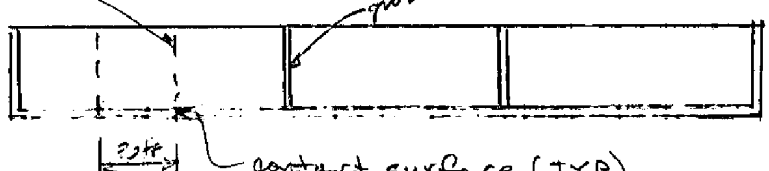
$\Delta = -4.7 \times 10^{-4} \times 12 \times 30 = 0.13$ in

Assume waterstop hardens w/ age and is not effective over time span being considered. Shrinkage will aid in initiation of cracking

Apply static displacement to precracked 2-D plane strain model.



MODEL 100 SSU100



* Assume 500#/CY, w/c = 0.5 - no air

$\epsilon_{sh} \approx 3.5 \times 10^{-4}$

Bu Rec Concrete Manual, 8th Ed, 1975

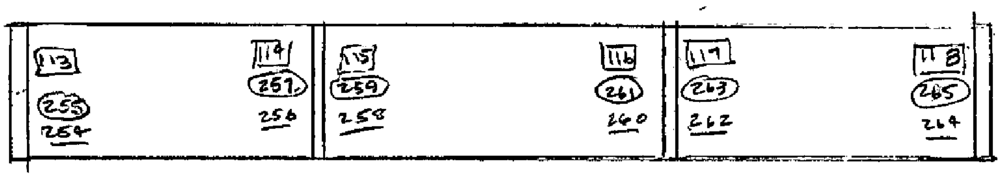
OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover					Calculation No. T-CLC-Z-00006			
	Subject: " "					Sheet No. 55			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WVP	7/9/03	[signature]	7/10/03					

MODEL DATA for Contact Surfaces

GROUT - CONCRETE CONTACT



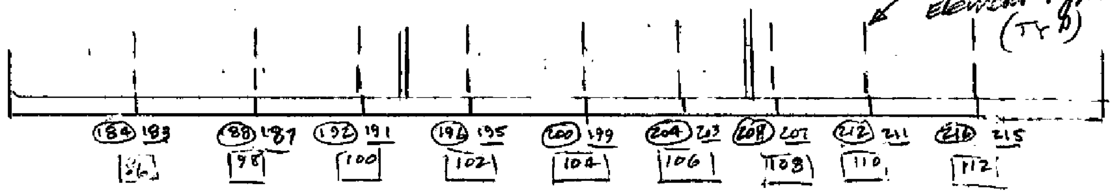
Boxed numbers are real constant pairs
Circled numbers are CONTA 172 element type
Underlined numbers are TARGE 169 element type

Grout cracking - 30 ft. contacts

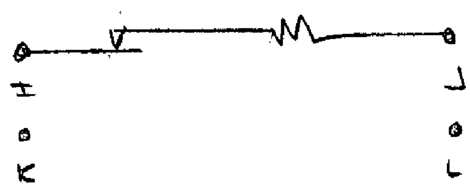
OFFSET = $1.49 \times 10^{-4} \times 30$ ft. = 4.47×10^{-3} ft.

BASE SLAB & GROUT
Symmetric contact, no offset

COMBIN 37
RC Set 2 & 3
Element Type 2
(TYP)

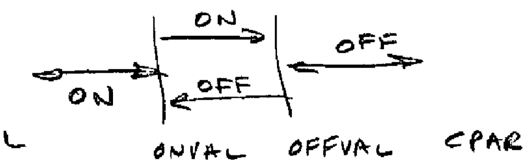


use of COMBIN 37 element



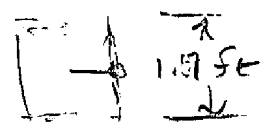
CPAR = $UX_K - UX_L$

KEYOPT (1) = 0 Control on UK - UL
KEYOPT (2) = 0
KEYOPT (3) = 0 UX Displ.
KEYOPT (4) = 0 } overlapping OFFVAL > ONVAL
KEYOPT (5) = 1 } on either off
KEYOPT (6) = 0 USE STIF
KEYOPT (9) = 0 use RV MOD



Real Constants

ONVAL = 0.0
OFFVAL = 0.0001206
STIF = 3.42E5
FSLIDE = 0.001
START = 0



E = 2.048E5 ksf.
K = $2.048 \times 10^5 \times 1.67$ = 3.42E5 k/ft.

Max tensile force

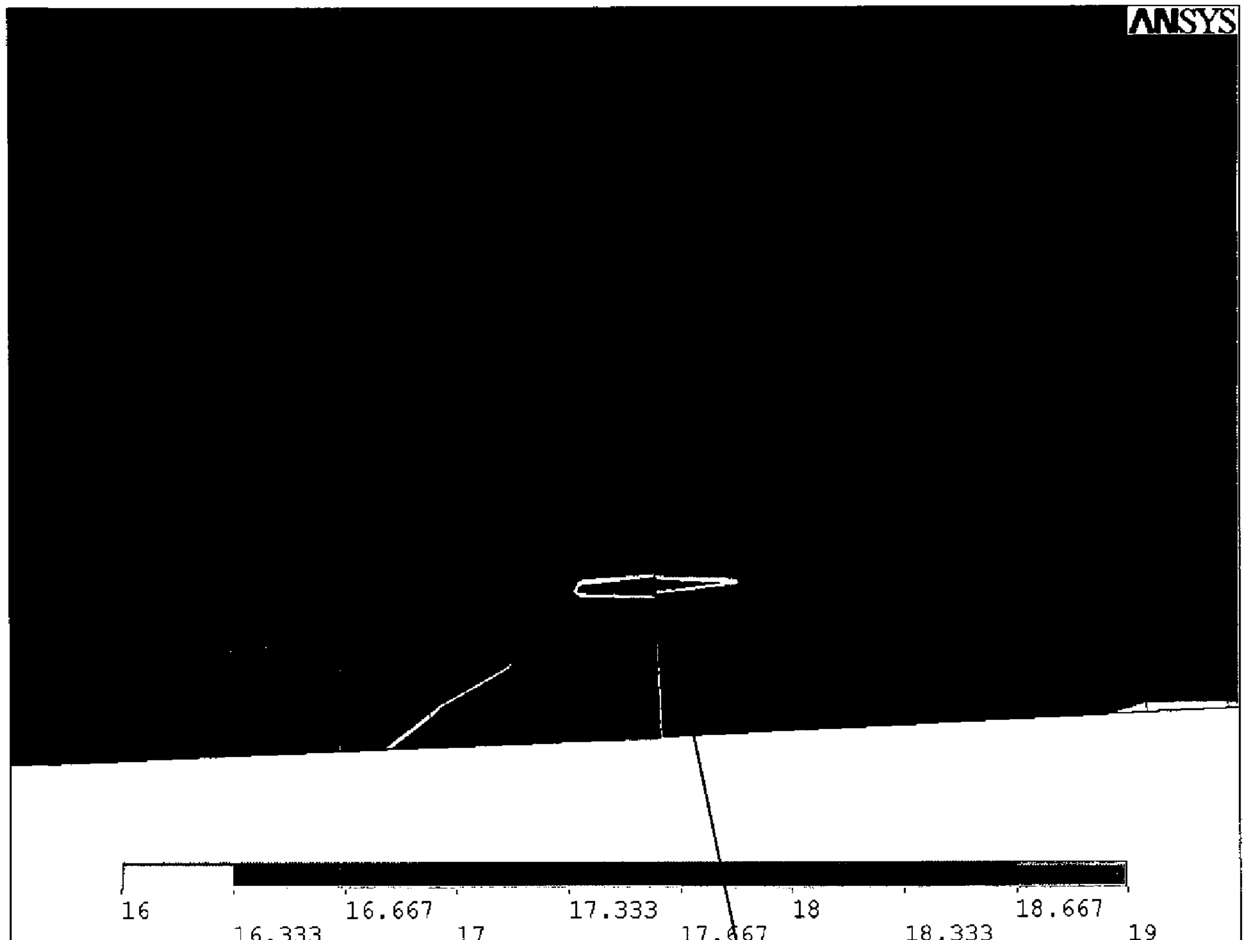
$$f_t = 7.5\sqrt{f'_c} = 7.5\sqrt{524} = 172 \text{ psi} = 24.7 \text{ ksf}$$

for 1.67 ft F = 24.7 × 1.67 = 41.2 kips/ft.

$$\delta_{cr} = \frac{41.2 \times 1 ft}{3.42E5} = 1.206 \times 10^{-4} ft.$$

Assume tensile stress is concentrated in 1 ft length – observation of contour plots (see next page)

Model 300 - Non-Linear Plane Strain [File ssv300]
Horizontal Stress



Joint 7 Tensile Stress Just before Cracking

OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover					Calculation No. T-CLC-B-00006			
	Subject: " "					Sheet No. 58			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WVP	7/9/03	[illegible]	7/10/03					

Results from model show max tensile stress is about 18-19 ksf when cracking occurs. This is in line with the ACI 318 code reduction for lightweight concrete in Section 22.5.6.

$$f_t = 0.75 \times 24.7 \text{ ksf} = 18.5 \text{ ksf}$$

Therefore use 1.2×10^{-4} ft. as the mean parameter for the COMBIN 37 element.

Variability – $f_g' = 524$ psi mean.

Ref. WSRC-TR-2003-00082 1/28/2003

Have 5 values of 28 day strength

$f_g' = 488, 388, 471, 642, 633$

$\bar{x} = 524.4$ psi

$\sigma_x = 98.4$ psi

$E = 2.048 \times 10^5$ ksf mean

Independently vary tensile strength and Young's modulus by $\sqrt{f_g'}$ – ACI-318 code provides these values for concrete as functions of $\sqrt{f_c'}$.

OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover						Calculation No.: T-CLC-Z-00006		
	Subject: " "							Sheet No.: 59	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WRP	7/9/03	DJ	7/10/03					

Since grout is known subjectively to vary considerably in properties, and only 5 recent data points are available, use 2σ for variance

$$\text{high ratio} = \left[\frac{524.4 + 2(98.4)}{524.4}\right]^{1/2} = 1.17 \qquad C_V = \frac{2(98.4)}{524.4}$$

$$\text{low ratio} = \left[\frac{524.4 - 2(98.4)}{524.4}\right]^{1/2} = 0.790 \qquad C_V = 0.38$$

Vary two parameters -

1.) Tensile strength

COMBIN 37 OFF VAL = 8.52×10^{-5} low
1.206×10^{-4} mean
1.411×10^{-4} high

2.) Grout stiffness

MATERIAL 2 E = 1.619×10^{5} low
2.098×10^{5} mean
2.396×10^{5} high

COMBIN 37 ESTIF = 2.70 E5 low
3.42 E5 mean
4.00 E5 high

OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover				Calculation No.: T-CLC-Z-00006				
	Subject: " "							Sheet No.: 60	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WLP	7/3/03	[illegible]	7/10/03					

TOP LOAD

varies from 24.5 to 15.5 ft.

$p_1 = 24.5 \times 0.120 = 2.94$ ksf

$p_2 = 15.5 \cdot 0.120 = 1.86$ ksf

decrease linearly from center to edge

Model height above base slab = 27'

T-CLC-Z-00006, Rev. 0

61

Displacement interpolation Model 70 ⇒ Model 300
File: model 300.xls

Soil Node Coordinates Calculated Displacements

NODE	X	1 year	5 years	24 years	100 years	1000 years	5000 years	10000 years
30001	0.000	-0.134	-0.286	-0.328	-0.389	-0.478	-0.547	-0.581
30002	1.5	-0.134	-0.286	-0.328	-0.389	-0.478	-0.547	-0.581
51012	3.45	-0.134	-0.286	-0.328	-0.389	-0.478	-0.547	-0.581
51013	5.4	-0.134	-0.286	-0.328	-0.389	-0.478	-0.547	-0.581
51014	7.35	-0.134	-0.286	-0.327	-0.389	-0.478	-0.547	-0.580
51015	9.3	-0.134	-0.286	-0.327	-0.389	-0.478	-0.547	-0.580
51016	11.25	-0.134	-0.285	-0.327	-0.389	-0.478	-0.547	-0.580
51017	13.2	-0.134	-0.285	-0.327	-0.389	-0.478	-0.547	-0.580
51018	15.15	-0.134	-0.285	-0.327	-0.389	-0.478	-0.547	-0.580
51019	17.1	-0.134	-0.285	-0.327	-0.389	-0.478	-0.547	-0.580
51020	19.05	-0.134	-0.285	-0.327	-0.389	-0.478	-0.547	-0.580
51021	21	-0.133	-0.285	-0.327	-0.388	-0.478	-0.547	-0.580
51022	22.95	-0.133	-0.285	-0.327	-0.388	-0.477	-0.547	-0.580
51023	24.9	-0.133	-0.285	-0.327	-0.388	-0.477	-0.546	-0.580
51024	26.85	-0.133	-0.285	-0.326	-0.388	-0.477	-0.546	-0.579
51025	28.8	-0.133	-0.284	-0.326	-0.388	-0.477	-0.546	-0.579
50633	30.750	-0.133	-0.284	-0.326	-0.388	-0.477	-0.546	-0.579
51011	30.75	-0.133	-0.284	-0.326	-0.388	-0.477	-0.546	-0.579
50635	32.75	-0.133	-0.284	-0.326	-0.387	-0.477	-0.546	-0.579
50636	34.750	-0.133	-0.284	-0.326	-0.387	-0.476	-0.545	-0.579
50637	36.750	-0.133	-0.284	-0.326	-0.387	-0.476	-0.545	-0.578
50638	38.750	-0.133	-0.284	-0.326	-0.387	-0.476	-0.545	-0.578
50639	40.750	-0.132	-0.284	-0.325	-0.387	-0.476	-0.545	-0.578
50640	42.75	-0.132	-0.283	-0.325	-0.387	-0.476	-0.545	-0.578
50641	44.750	-0.132	-0.283	-0.325	-0.387	-0.476	-0.545	-0.578
50642	46.750	-0.132	-0.283	-0.325	-0.386	-0.475	-0.544	-0.578
50643	48.750	-0.132	-0.283	-0.325	-0.386	-0.475	-0.544	-0.577
50644	50.750	-0.132	-0.283	-0.325	-0.386	-0.475	-0.544	-0.577
50645	52.75	-0.132	-0.283	-0.324	-0.386	-0.475	-0.544	-0.577
50646	54.750	-0.132	-0.283	-0.324	-0.386	-0.475	-0.544	-0.577
50647	56.750	-0.131	-0.282	-0.324	-0.386	-0.474	-0.543	-0.577
50648	58.750	-0.131	-0.282	-0.324	-0.385	-0.474	-0.543	-0.576
50634	60.750	-0.131	-0.282	-0.324	-0.385	-0.474	-0.543	-0.576
50681	60.750	-0.131	-0.282	-0.324	-0.385	-0.474	-0.543	-0.576
50683	62.750	-0.131	-0.282	-0.324	-0.385	-0.474	-0.543	-0.576
50684	64.750	-0.131	-0.282	-0.323	-0.385	-0.474	-0.542	-0.576
50685	66.75	-0.131	-0.282	-0.323	-0.385	-0.473	-0.542	-0.575
50686	68.750	-0.131	-0.281	-0.323	-0.384	-0.473	-0.542	-0.575
50687	70.750	-0.131	-0.281	-0.323	-0.384	-0.473	-0.542	-0.575
50688	72.75	-0.130	-0.281	-0.323	-0.384	-0.473	-0.542	-0.575
50689	74.750	-0.130	-0.281	-0.323	-0.384	-0.473	-0.541	-0.575
50690	76.750	-0.130	-0.281	-0.322	-0.384	-0.472	-0.541	-0.574
50691	78.750	-0.130	-0.281	-0.322	-0.384	-0.472	-0.541	-0.574
50692	80.750	-0.130	-0.281	-0.322	-0.383	-0.472	-0.541	-0.574
50693	82.750	-0.130	-0.280	-0.322	-0.383	-0.472	-0.541	-0.574
50694	84.750	-0.130	-0.280	-0.322	-0.383	-0.472	-0.540	-0.573
50695	86.750	-0.130	-0.280	-0.322	-0.383	-0.471	-0.540	-0.573
50696	88.750	-0.129	-0.280	-0.321	-0.383	-0.471	-0.540	-0.573
50682	90.75	-0.129	-0.280	-0.321	-0.382	-0.471	-0.540	-0.573
51056	90.75	-0.129	-0.280	-0.321	-0.382	-0.471	-0.540	-0.573
51060	92.600	-0.129	-0.280	-0.321	-0.382	-0.471	-0.539	-0.572
51059	94.45	-0.129	-0.279	-0.321	-0.382	-0.471	-0.539	-0.572
51058	96.300	-0.129	-0.279	-0.321	-0.382	-0.470	-0.539	-0.572
51057	98.150	-0.129	-0.279	-0.321	-0.382	-0.470	-0.539	-0.572
30211	100.000	-0.129	-0.279	-0.320	-0.381	-0.470	-0.538	-0.571
30178	101.500	-0.128	-0.279	-0.320	-0.381	-0.470	-0.538	-0.571
50604	103.425	-0.128	-0.279	-0.320	-0.381	-0.469	-0.538	-0.571
50605	105.350	-0.128	-0.278	-0.320	-0.381	-0.469	-0.538	-0.571

Y displacement, ft.

Node	Distance		1 year	5 years	24 years	100 years	1000 years	5000 years	10000 years
1	0	-365	-0.07452	-0.26014	-0.30033	-0.35941	-0.44481	-0.51092	-0.54272
2	10	-355	-0.07566	-0.25824	-0.29798	-0.35640	-0.44085	-0.50623	-0.53767
3	21	-344	-0.07915	-0.25544	-0.29441	-0.35171	-0.43454	-0.49867	-0.52952
4	35.5	-329.5	-0.08741	-0.25267	-0.29052	-0.34618	-0.42667	-0.48900	-0.51897
5	50	-315	-0.10682	-0.25965	-0.29735	-0.35279	-0.43301	-0.49514	-0.52502
6	59	-306	-0.11943	-0.26551	-0.30334	-0.35899	-0.43953	-0.50192	-0.53194
7	79.16667	-285.833	-0.13121	-0.27071	-0.30868	-0.36455	-0.44544	-0.50811	-0.53826
8	99.33333	-265.667	-0.13602	-0.27347	-0.31163	-0.36778	-0.44908	-0.51208	-0.54239
9	119.5	-245.5	-0.13810	-0.27537	-0.31373	-0.37021	-0.45197	-0.51533	-0.54582
10	139.6667	-225.333	-0.13892	-0.27697	-0.31560	-0.37246	-0.45480	-0.51861	-0.54931
11	159.8333	-205.167	-0.13915	-0.27852	-0.31748	-0.37481	-0.45783	-0.52217	-0.55313
12	180	-185	-0.13911	-0.28015	-0.31947	-0.37736	-0.46118	-0.52614	-0.55740
13	200	-165	-0.13893	-0.28175	-0.32147	-0.37994	-0.46461	-0.53023	-0.56181
14	220	-145	-0.13867	-0.28325	-0.32337	-0.38242	-0.46793	-0.53421	-0.56610
15	240	-125	-0.13834	-0.28454	-0.32503	-0.38463	-0.47095	-0.53784	-0.57003
16	260	-105	-0.13794	-0.28556	-0.32638	-0.38646	-0.47348	-0.54092	-0.57337
17	280	-85	-0.13746	-0.28632	-0.32744	-0.38796	-0.47561	-0.54354	-0.57623
18	300	-65	-0.13691	-0.28680	-0.32815	-0.38904	-0.47721	-0.54555	-0.57844
19	320	-45	-0.13627	-0.28711	-0.32869	-0.38992	-0.47858	-0.54731	-0.58038
20	352.7273	-12.2727	-0.13503	-0.28653	-0.32830	-0.38979	-0.47884	-0.54787	-0.58109
21	385.4545	20.4545	-0.13352	-0.28509	-0.32691	-0.38847	-0.47763	-0.54675	-0.58001
22	418.1818	53.1818	-0.13173	-0.28275	-0.32445	-0.38585	-0.47479	-0.54373	-0.57691
23	450.9091	85.9091	-0.12960	-0.28012	-0.32169	-0.38288	-0.47152	-0.54023	-0.57330
24	483.6364	118.6364	-0.12718	-0.27716	-0.31853	-0.37943	-0.46763	-0.53599	-0.56888
25	516.3636	151.3636	-0.12424	-0.27329	-0.31429	-0.37465	-0.46204	-0.52977	-0.56236
26	549.0909	184.0909	-0.12080	-0.26726	-0.30747	-0.36666	-0.45233	-0.51872	-0.55066
27	581.8182	216.8182	-0.11406	-0.25621	-0.29483	-0.35166	-0.43390	-0.49760	-0.52824
28	614.5455	249.5455	-0.10238	-0.23942	-0.27566	-0.32895	-0.40604	-0.46574	-0.49445
29	647.2727	282.2727	-0.06274	-0.19550	-0.22633	-0.27163	-0.33706	-0.38769	-0.41203
30	680	315	-0.02418	-0.14556	-0.16971	-0.20515	-0.25627	-0.29577	-0.31475

Calculation at axis of symmetry

		Y						
	Distance	1 year	5 years	24 years	100 years	1000 years	5000 years	10000 years
	-12.273	-0.13503	-0.28653	-0.32830	-0.38979	-0.47884	-0.54787	-0.58109
	20.455	-0.13352	-0.28509	-0.32691	-0.38847	-0.47763	-0.54675	-0.58001
	Angle	4.61E-05	4.4E-05	4.25E-05	4.033E-05	3.7E-05	3.42E-05	3.3E-05

X Displacement

Node	Height	1 year	5 years	24 years	100 years	1000 years	5000 years	10000 years
10708	29.00	-0.00134	-0.00128	-0.00123	-0.00117	-0.00107	-0.00099	-0.00096
10722	27.20	-0.00125	-0.00120	-0.00116	-0.00110	-0.00101	-0.00093	-0.00090
10721	25.40	-0.00117	-0.00112	-0.00108	-0.00102	-0.00094	-0.00087	-0.00084
10720	23.60	-0.00109	-0.00104	-0.00100	-0.00095	-0.00087	-0.00081	-0.00078
10719	21.80	-0.00101	-0.00096	-0.00093	-0.00088	-0.00081	-0.00075	-0.00072
10718	20.00	-0.00092	-0.00088	-0.00085	-0.00081	-0.00074	-0.00068	-0.00066
10717	18.20	-0.00084	-0.00080	-0.00077	-0.00073	-0.00067	-0.00062	-0.00060
10716	16.40	-0.00076	-0.00072	-0.00070	-0.00066	-0.00061	-0.00056	-0.00054
10715	14.60	-0.00067	-0.00064	-0.00062	-0.00059	-0.00054	-0.00050	-0.00048
10714	12.80	-0.00059	-0.00056	-0.00054	-0.00052	-0.00047	-0.00044	-0.00042
10713	11.00	-0.00051	-0.00048	-0.00047	-0.00044	-0.00041	-0.00038	-0.00036
10712	9.20	-0.00042	-0.00040	-0.00039	-0.00037	-0.00034	-0.00031	-0.00030
10711	7.40	-0.00034	-0.00033	-0.00031	-0.00030	-0.00027	-0.00025	-0.00024
10710	5.60	-0.00026	-0.00025	-0.00024	-0.00023	-0.00021	-0.00019	-0.00018
10709	3.80	-0.00018	-0.00017	-0.00016	-0.00015	-0.00014	-0.00013	-0.00013
5	2.00	-0.00009	-0.00009	-0.00008	-0.00008	-0.00007	-0.00007	-0.00007
6	1.00	-0.00005	-0.00004	-0.00004	-0.00004	-0.00004	-0.00003	-0.00003

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50606	107.275	-0.128	-0.278	-0.320	-0.381	-0.469	-0.537	-0.570	1	0.00	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
50607	109.200	-0.128	-0.278	-0.319	-0.380	-0.469	-0.537	-0.570									
50608	111.125	-0.128	-0.278	-0.319	-0.380	-0.469	-0.537	-0.570									
50609	113.05	-0.128	-0.278	-0.319	-0.380	-0.468	-0.537	-0.570									
50610	114.975	-0.127	-0.277	-0.319	-0.380	-0.468	-0.536	-0.569									
50611	116.900	-0.127	-0.277	-0.319	-0.380	-0.468	-0.536	-0.569									
50612	118.825	-0.127	-0.277	-0.319	-0.379	-0.468	-0.536	-0.569									
50603	120.750	-0.127	-0.277	-0.318	-0.379	-0.467	-0.536	-0.568									
50744	120.750	-0.127	-0.277	-0.318	-0.379	-0.467	-0.536	-0.568									
50746	122.750	-0.127	-0.277	-0.318	-0.379	-0.467	-0.535	-0.568									
50747	124.750	-0.127	-0.276	-0.318	-0.379	-0.467	-0.535	-0.568									
50748	126.75	-0.126	-0.276	-0.317	-0.378	-0.466	-0.534	-0.567									
50749	128.750	-0.126	-0.276	-0.317	-0.378	-0.466	-0.534	-0.567									
50750	130.750	-0.126	-0.276	-0.317	-0.378	-0.466	-0.534	-0.566									
50751	132.750	-0.126	-0.275	-0.317	-0.377	-0.465	-0.533	-0.566									
50752	134.750	-0.126	-0.275	-0.316	-0.377	-0.465	-0.533	-0.566									
50753	136.750	-0.126	-0.275	-0.316	-0.377	-0.465	-0.533	-0.565									
50754	138.750	-0.125	-0.275	-0.316	-0.376	-0.464	-0.532	-0.565									
50755	140.750	-0.125	-0.275	-0.316	-0.376	-0.464	-0.532	-0.564									
50756	142.750	-0.125	-0.274	-0.315	-0.376	-0.464	-0.531	-0.564									
50757	144.750	-0.125	-0.274	-0.315	-0.376	-0.463	-0.531	-0.564									
50758	146.75	-0.125	-0.274	-0.315	-0.375	-0.463	-0.531	-0.563									
50759	148.750	-0.124	-0.274	-0.315	-0.375	-0.462	-0.530	-0.563									
50745	150.750	-0.124	-0.273	-0.314	-0.375	-0.462	-0.530	-0.562									
50792	150.750	-0.124	-0.273	-0.314	-0.375	-0.462	-0.530	-0.562									
50794	152.750	-0.124	-0.273	-0.314	-0.374	-0.462	-0.529	-0.562									
50795	154.75	-0.124	-0.273	-0.314	-0.374	-0.461	-0.529	-0.561									
50796	156.750	-0.124	-0.272	-0.313	-0.373	-0.460	-0.528	-0.560									
50797	158.75	-0.123	-0.272	-0.313	-0.373	-0.460	-0.527	-0.560									
50798	160.750	-0.123	-0.272	-0.312	-0.372	-0.459	-0.527	-0.559									
50799	162.750	-0.123	-0.271	-0.312	-0.372	-0.459	-0.526	-0.558									
50800	164.75	-0.123	-0.271	-0.312	-0.371	-0.458	-0.525	-0.558									
50801	166.750	-0.123	-0.270	-0.311	-0.371	-0.457	-0.525	-0.557									
50802	168.750	-0.122	-0.270	-0.311	-0.370	-0.457	-0.524	-0.556									
50803	170.75	-0.122	-0.270	-0.310	-0.370	-0.456	-0.523	-0.555									
50804	172.750	-0.122	-0.269	-0.310	-0.369	-0.456	-0.523	-0.555									
50805	174.750	-0.122	-0.269	-0.309	-0.369	-0.455	-0.522	-0.554									
50806	176.75	-0.122	-0.269	-0.309	-0.368	-0.455	-0.521	-0.553									
50807	178.750	-0.121	-0.268	-0.309	-0.368	-0.454	-0.521	-0.553									
50793	180.750	-0.121	-0.268	-0.308	-0.367	-0.453	-0.520	-0.552									
50840	180.750	-0.121	-0.268	-0.308	-0.367	-0.453	-0.520	-0.552									
50841	182.675	-0.121	-0.268	-0.308	-0.367	-0.453	-0.519	-0.551									
50842	184.600	-0.121	-0.267	-0.307	-0.366	-0.452	-0.518	-0.550									
50843	186.525	-0.120	-0.266	-0.307	-0.366	-0.451	-0.517	-0.549									
50844	188.45	-0.120	-0.266	-0.306	-0.365	-0.450	-0.516	-0.548									
50845	190.375	-0.120	-0.265	-0.305	-0.364	-0.449	-0.515	-0.546									
50846	192.300	-0.119	-0.264	-0.304	-0.363	-0.448	-0.513	-0.545									
50847	194.225	-0.119	-0.264	-0.304	-0.362	-0.447	-0.512	-0.544									
50848	196.150	-0.118	-0.263	-0.303	-0.361	-0.446	-0.511	-0.542									
50849	198.075	-0.118	-0.263	-0.302	-0.360	-0.444	-0.510	-0.541									
30214	200	-0.118	-0.262	-0.301	-0.359	-0.443	-0.508	-0.540									
30215	201.500	-0.117	-0.261	-0.301	-0.359	-0.443	-0.507	-0.539									
50730	203.350	-0.117	-0.261	-0.300	-0.358	-0.441	-0.506	-0.537									
50731	205.200	-0.116	-0.260	-0.299	-0.357	-0.440	-0.505	-0.536									
50732	207.050	-0.116	-0.260	-0.299	-0.356	-0.439	-0.504	-0.535									
50733	208.9	-0.116	-0.259	-0.298	-0.355	-0.438	-0.503	-0.534									
50729	210.750	-0.115	-0.258	-0.297	-0.354	-0.437	-0.502	-0.532									
50870	210.750	-0.115	-0.258	-0.297	-0.354	-0.437	-0.502	-0.532									
50872	212.750	-0.115	-0.258	-0.296	-0.354	-0.436	-0.500	-0.531									
50873	214.75	-0.115	-0.257	-0.296	-0.353	-0.435	-0.499	-0.530									
50874	216.75	-0.114	-0.256	-0.295	-0.352	-0.434	-0.498	-0.528									

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50875	218.750	-0.113	-0.255	-0.294	-0.350	-0.432	-0.496	-0.526
50876	220.750	-0.113	-0.254	-0.293	-0.349	-0.431	-0.494	-0.524
50877	222.750	-0.112	-0.253	-0.291	-0.348	-0.429	-0.492	-0.522
50878	224.750	-0.111	-0.252	-0.290	-0.346	-0.427	-0.490	-0.520
50879	226.75	-0.111	-0.251	-0.289	-0.345	-0.425	-0.488	-0.518
50880	228.750	-0.110	-0.250	-0.288	-0.343	-0.424	-0.486	-0.516
50881	230.75	-0.109	-0.249	-0.287	-0.342	-0.422	-0.484	-0.514
50882	232.750	-0.108	-0.248	-0.285	-0.341	-0.420	-0.482	-0.512
50883	234.750	-0.108	-0.247	-0.284	-0.339	-0.419	-0.480	-0.510
50884	236.750	-0.107	-0.246	-0.283	-0.338	-0.417	-0.478	-0.508
50885	238.750	-0.106	-0.245	-0.282	-0.336	-0.415	-0.476	-0.506
50871	240.750	-0.106	-0.244	-0.281	-0.335	-0.414	-0.474	-0.504
50918	240.75	-0.106	-0.244	-0.281	-0.335	-0.414	-0.474	-0.504
50920	242.750	-0.105	-0.243	-0.280	-0.334	-0.412	-0.472	-0.501
50921	244.750	-0.104	-0.242	-0.278	-0.332	-0.410	-0.470	-0.499
50922	246.750	-0.103	-0.241	-0.277	-0.331	-0.408	-0.468	-0.497
50923	248.75	-0.103	-0.240	-0.276	-0.330	-0.407	-0.467	-0.495
50924	250.750	-0.101	-0.238	-0.274	-0.327	-0.404	-0.463	-0.491
50925	252.750	-0.098	-0.235	-0.271	-0.323	-0.399	-0.458	-0.486
50926	254.75	-0.096	-0.232	-0.268	-0.320	-0.395	-0.453	-0.481
50927	256.750	-0.094	-0.230	-0.265	-0.316	-0.391	-0.449	-0.476
50928	258.750	-0.091	-0.227	-0.262	-0.313	-0.387	-0.444	-0.471
50929	260.750	-0.089	-0.224	-0.259	-0.309	-0.382	-0.439	-0.466
50930	262.750	-0.086	-0.222	-0.256	-0.306	-0.378	-0.434	-0.461
50931	264.750	-0.084	-0.219	-0.253	-0.302	-0.374	-0.429	-0.456
50932	266.750	-0.082	-0.216	-0.250	-0.299	-0.370	-0.425	-0.451
50933	268.750	-0.079	-0.214	-0.247	-0.295	-0.366	-0.420	-0.446
50919	270.750	-0.077	-0.211	-0.244	-0.292	-0.361	-0.415	-0.441
50966	270.75	-0.077	-0.211	-0.244	-0.292	-0.361	-0.415	-0.441
50967	272.700	-0.074	-0.208	-0.241	-0.288	-0.357	-0.411	-0.436
50968	274.650	-0.072	-0.206	-0.238	-0.285	-0.353	-0.406	-0.431
50969	276.600	-0.070	-0.203	-0.235	-0.282	-0.349	-0.401	-0.426
50970	278.550	-0.067	-0.200	-0.232	-0.278	-0.345	-0.397	-0.421
50971	280.5	-0.065	-0.198	-0.229	-0.275	-0.341	-0.392	-0.416
50972	282.450	-0.063	-0.195	-0.226	-0.271	-0.337	-0.387	-0.412
50973	284.400	-0.060	-0.192	-0.223	-0.267	-0.332	-0.382	-0.406
50974	286.350	-0.058	-0.189	-0.219	-0.263	-0.327	-0.376	-0.400
50975	288.300	-0.056	-0.186	-0.216	-0.259	-0.322	-0.371	-0.394
50976	290.250	-0.053	-0.183	-0.213	-0.255	-0.317	-0.365	-0.388
50977	292.200	-0.051	-0.180	-0.209	-0.251	-0.313	-0.360	-0.383
50978	294.150	-0.049	-0.177	-0.206	-0.248	-0.308	-0.354	-0.377
50979	296.100	-0.046	-0.174	-0.202	-0.244	-0.303	-0.349	-0.371
50980	298.05	-0.044	-0.171	-0.199	-0.240	-0.298	-0.343	-0.365
30361	300.000	-0.042	-0.168	-0.196	-0.236	-0.293	-0.338	-0.359
30362	301.500	-0.040	-0.166	-0.193	-0.233	-0.290	-0.334	-0.355

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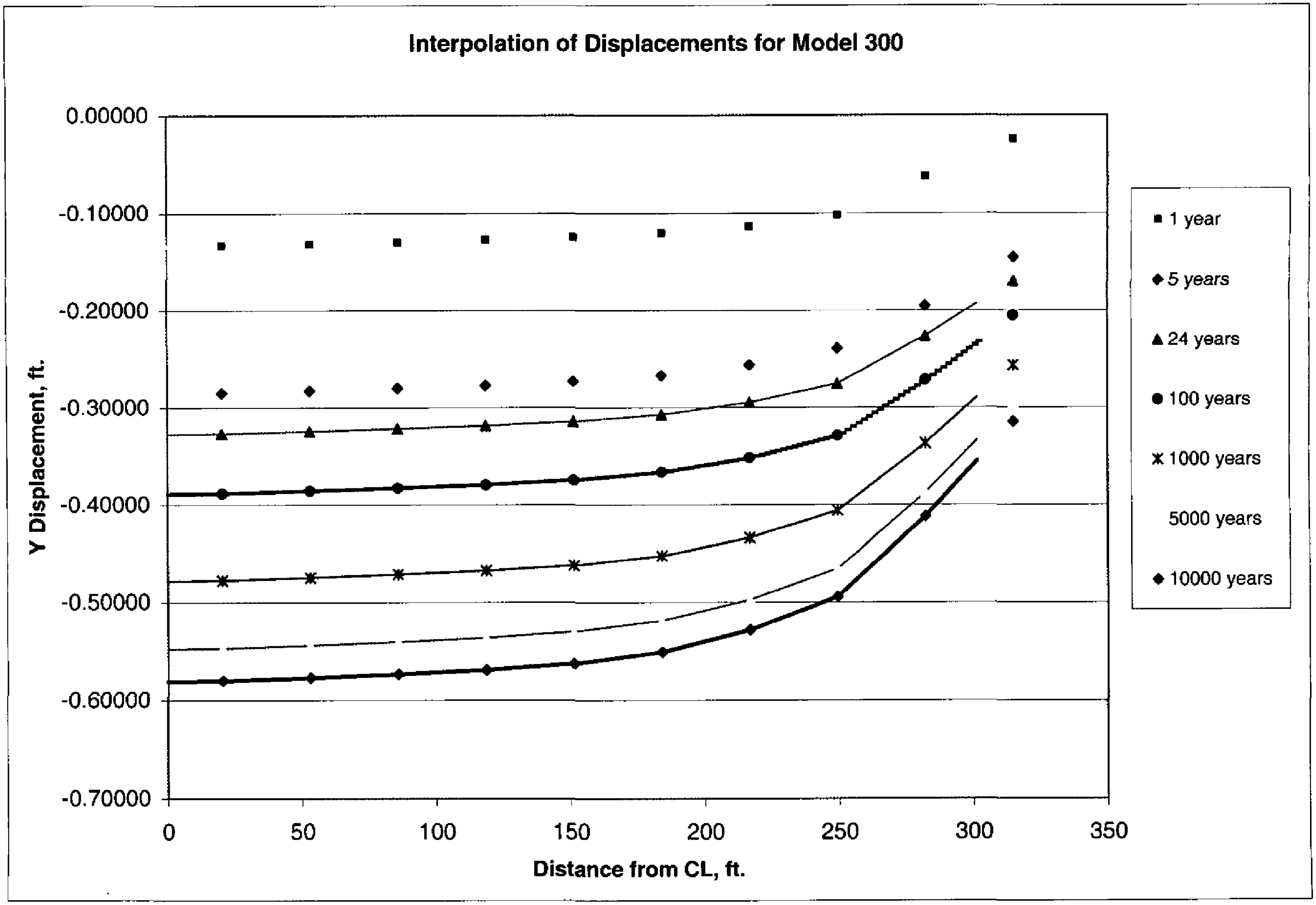


1	51122	51393	3	52336	53561	5	53082	51633	7	52008	52126	9	52575	52842
	51121	51392		52335	53560		53081	51632		52007	52125		52574	52841
	51120	51391		52334	53559		53080	51631		52006	52124		52573	52840
	51119	51390		52333	53558		53079	51630		52005	52123		52572	52839
	51118	51389		52332	53557		53078	51629		52004	52122		52571	52838
	51117	51388		52331	53556		53077	51628		52003	52121		52570	52837
	51116	51387		52330	53555		53076	51627		52002	52120		52569	52836
	51115	51386		52329	53554		53075	51626		52001	52119		52568	52835
	51114	51385		52328	53553		53074	51625		52000	52118		52567	52834
	51113	51384		52327	53552		53073	51624		51999	52117		52566	52833
	51112	51383		52326	53551		53072	51623		51998	52116		52565	52832
	51111	51382		52325	53550		53071	51622		51997	52115		52564	52831
	51110	51381		52324	53549		53070	51621		51996	52114		52563	52830
	51109	51380		52323	53548		53069	51620		51995	52113		52562	52829
	21026	20651		20697	21061		20760	20810		20734	20888		20934	20981

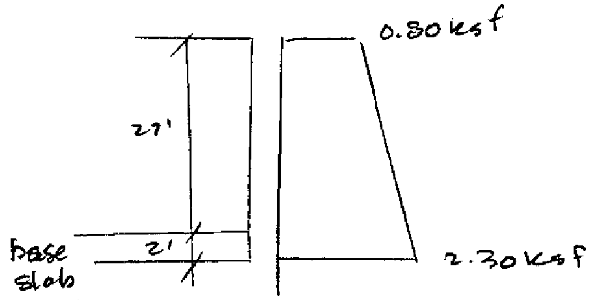
2	51365	52364	4	53321	53111	6	51604	51867	8	52098	52603
	51364	52363		53320	53110		51603	51866		52097	52602
	51363	52362		53319	53109		51602	51865		52096	52601
	51362	52361		53318	53108		51601			52095	52600
	51361	52360		53317	53107		51600	51863		52094	52599
	51360	52359		53316	53106		51599	51862		52093	52598
	51359	52358		53315	53105		51598	51861		52092	52597
	51358	52357		53314	53104		51597	51860		52091	52596
	51357	52356		53313	53103		51596	51859		52090	52595
	51356	52355		53312	53102		51595	51858		52089	52594
	51355	52354		53311	53101		51594	51857		52088	52593
	51354	52353		53310	53100		51593	51856		52087	52592
	51353	52352		53309	53099		51592	51855		52086	52591
	51352	52351		53308	53098		51591	51854		52085	52590
	20649	20699		20613	20762		20808	20850		20886	20936

Nodes @ construction joints

Pressure on End Wall

Ko	0.43	
dens	0.12	kcf

Distance from Surface ft	Pressure ksf
15.50	0.80
17.30	0.89
19.10	0.99
20.90	1.08
22.70	1.17
24.50	1.26
26.30	1.36
28.10	1.45
29.90	1.54
31.70	1.64
33.50	1.73
35.30	1.82
37.10	1.91
38.90	2.01
40.70	2.10
42.50	2.19
43.50	2.24
44.50	2.30



OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover						Calculation No.: T-CLC-Z-00006		
	Subject: " "							Sheet No.: 67	
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WVP	7/9/03	[illegible]	7/10/03					

With the soil nodes displaced to the long term displacements, apply the top loading. The soil displacement pattern will provide a constraint on total base slab deformation, while top load will cause representative internal stress in the model, particularly for differential displacements.

Two cases are provided:

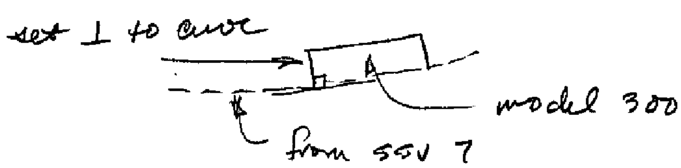
Case 1 soil displacements only.
Case 2 top load only
Case 3 top load and soil displacements

Notes:

1.) The model cracks at construction joint 7 when the displacements increase from the 1000 yr. pattern to the 5000 year pattern. The crack size is the same for cases 1 and 3.

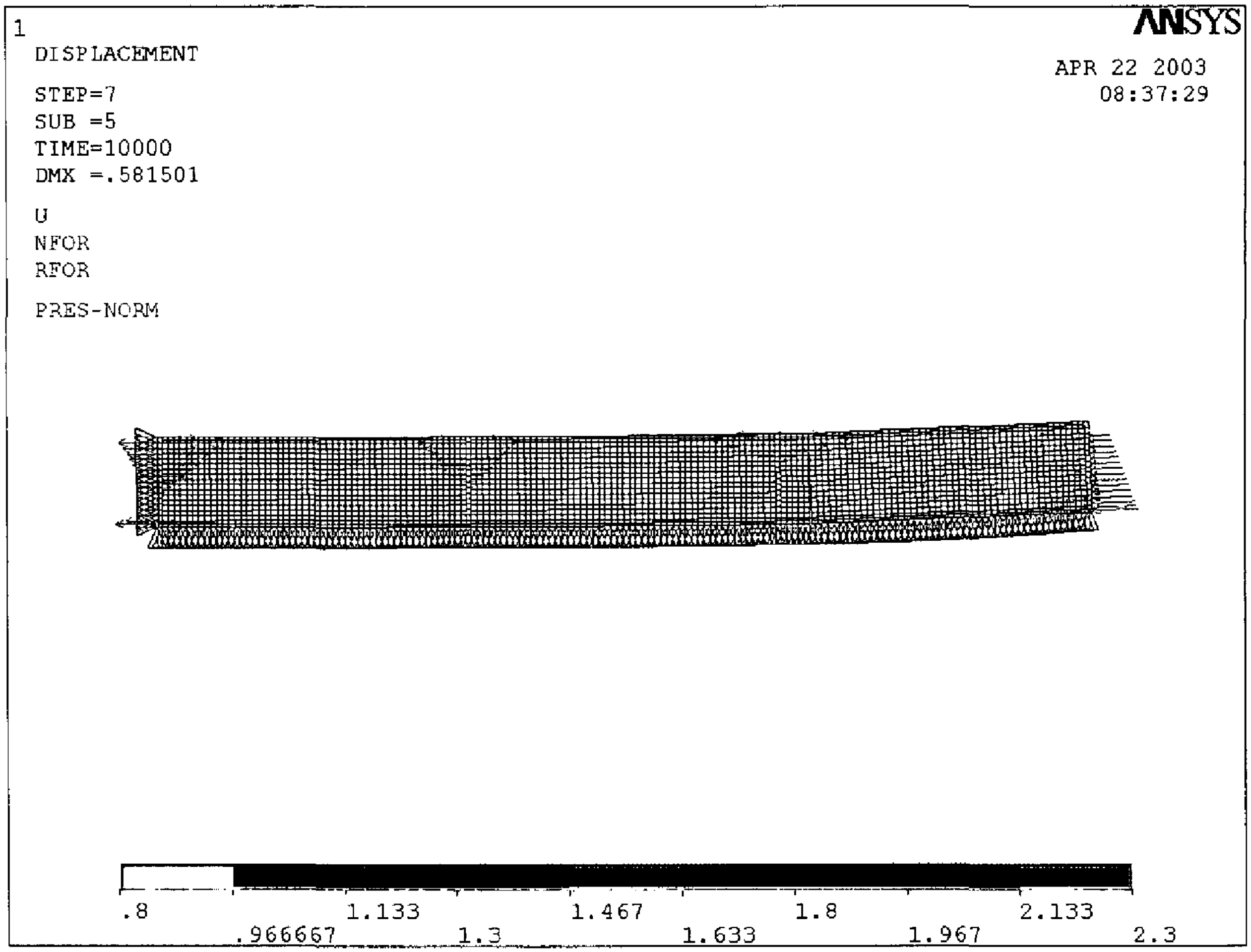
2.) The max δ increased by only 0.10 ft. (16%) between Case 1 and 3. This is not significant in terms of the nature of the overall analysis. The max. displacement is 8.1 in. which is in the range predicted by SGS. (7 to 9 in, verbal per meeting of 03/31/03).

Assumption - the use of a vertical plane as the symmetric boundary condition introduces an artificially high rigidity for the displacements. Use a plane perpendicular to the soil curvature instead



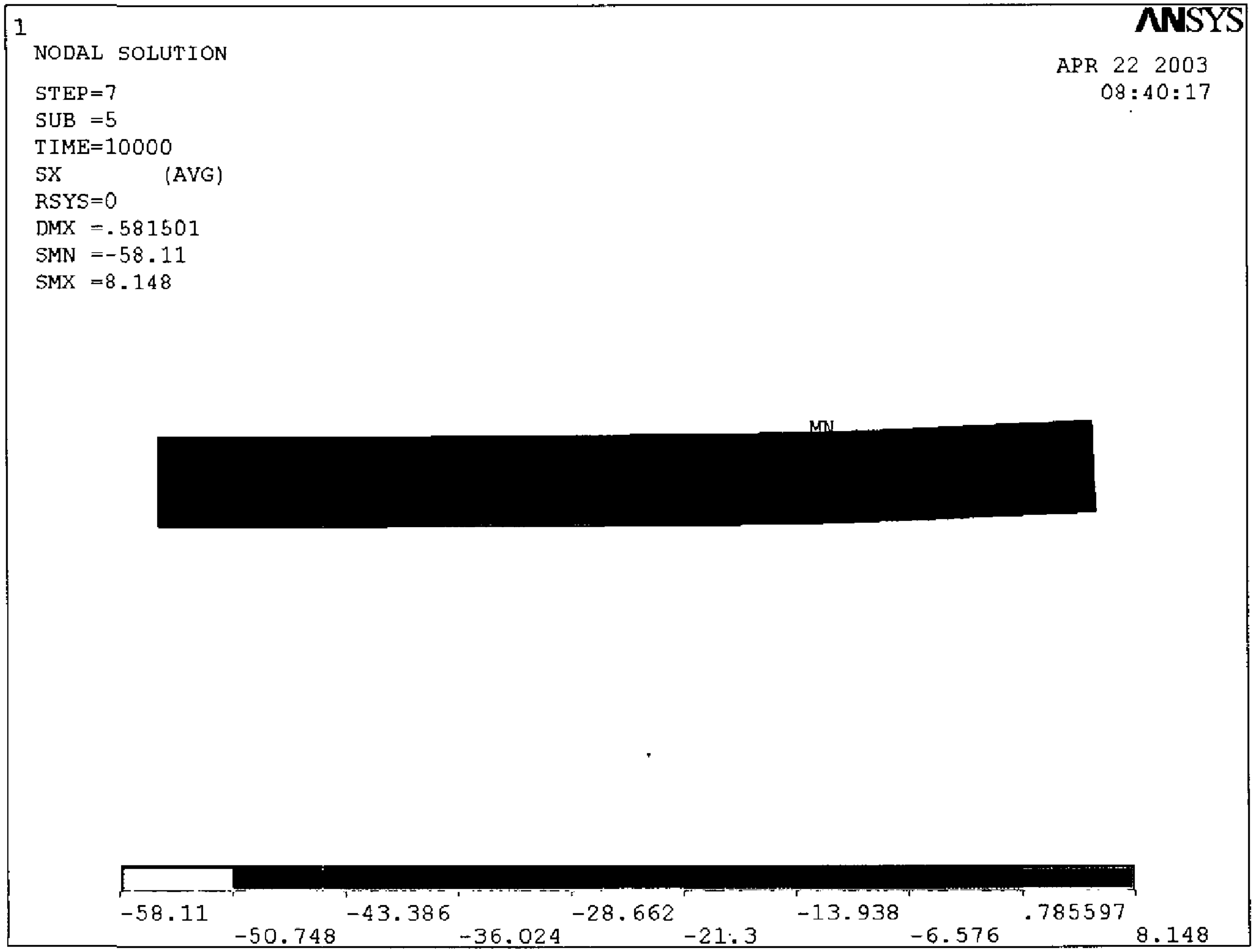
T-CLC-B-00006, Rev. 0

Model 300 – Non-linear Plane Strain
Case 1 – No Top Pressure



Deformed Shape

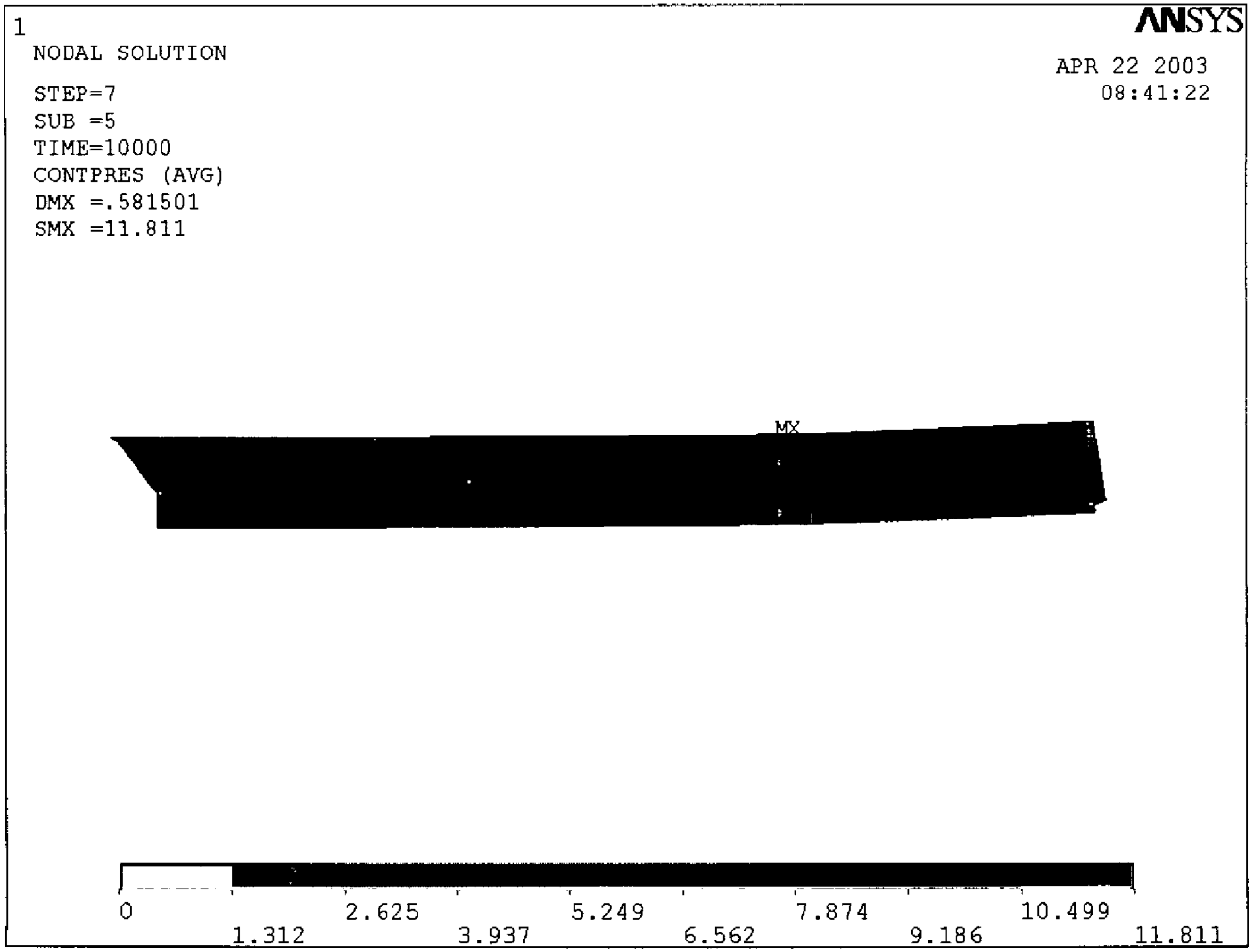
Model 300 – Non-linear Plane Strain
Case 1 – No Top Pressure



Horizontal Stress σ_x

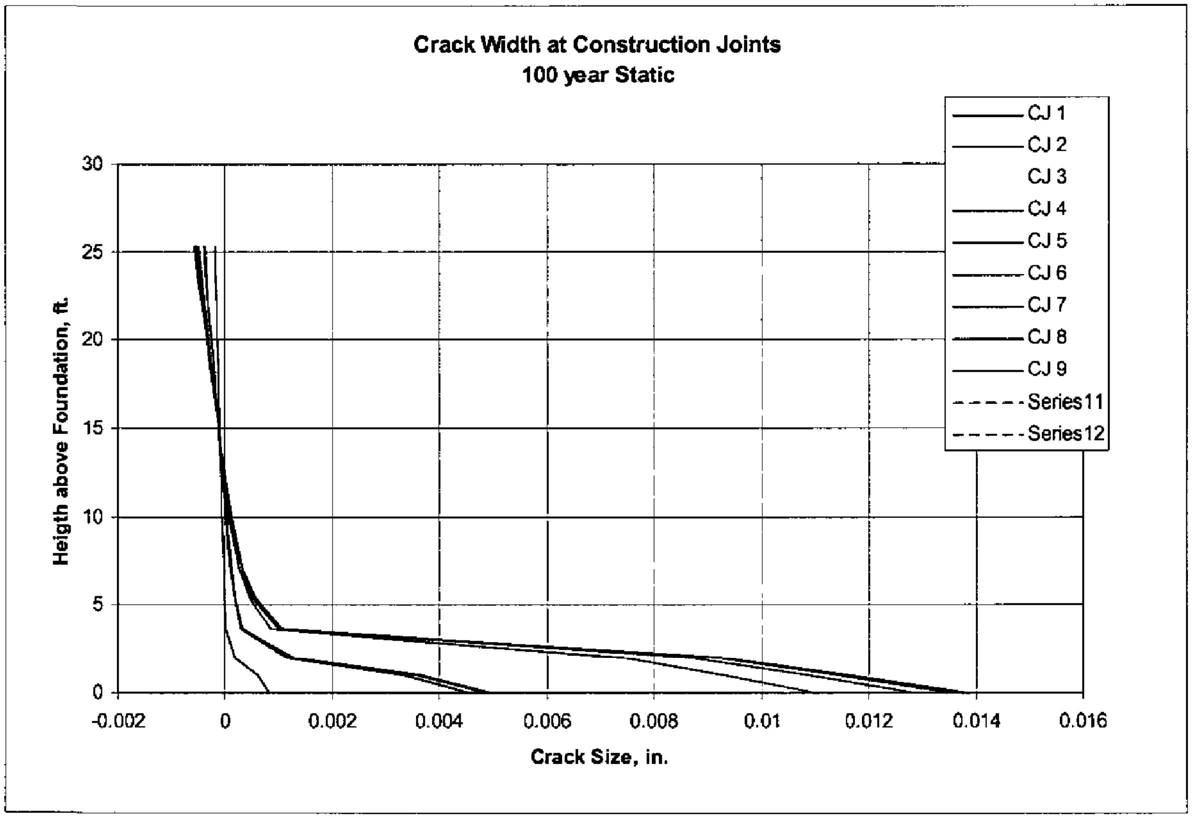
T-CLC-2-00006, Rev.0

Model 300 – Non-linear Plane Strain
Case 1 – No Top Pressure



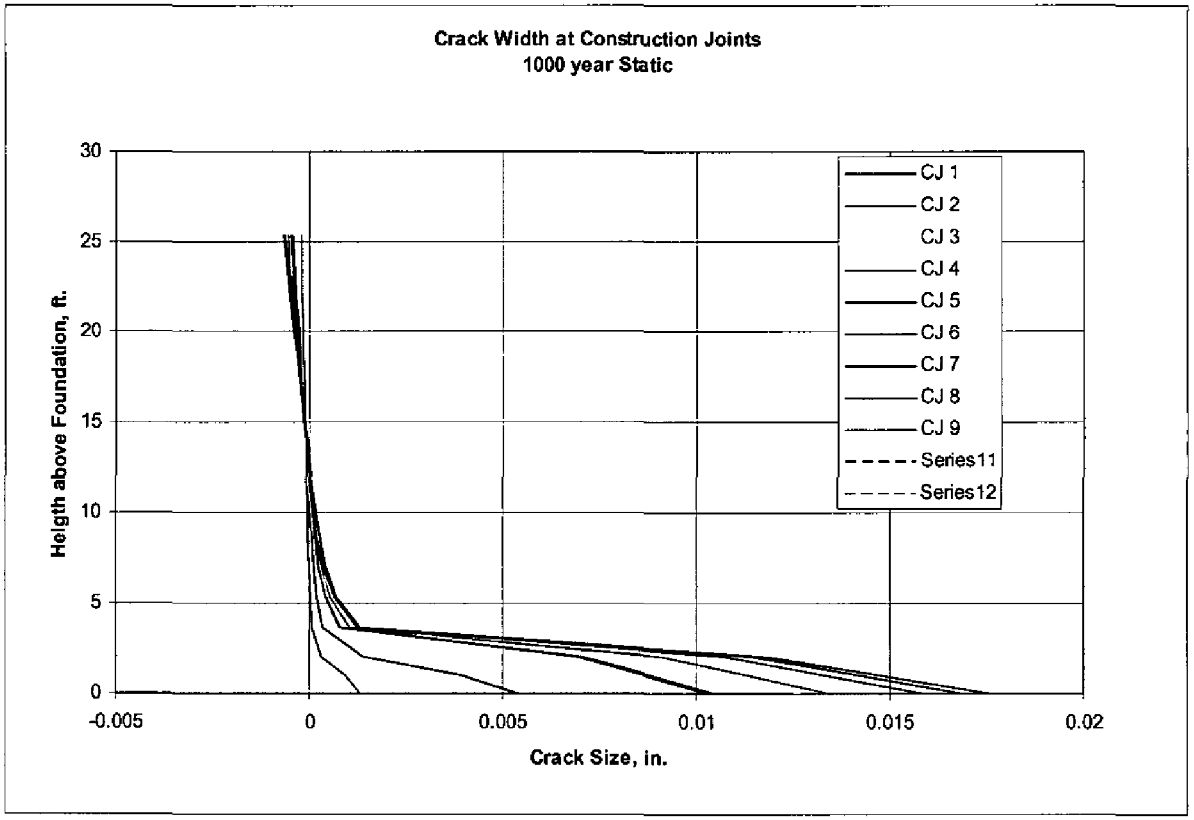
Contact Pressure

Model 300 – Non-linear Plane Strain
Case 1 – No Top Pressure

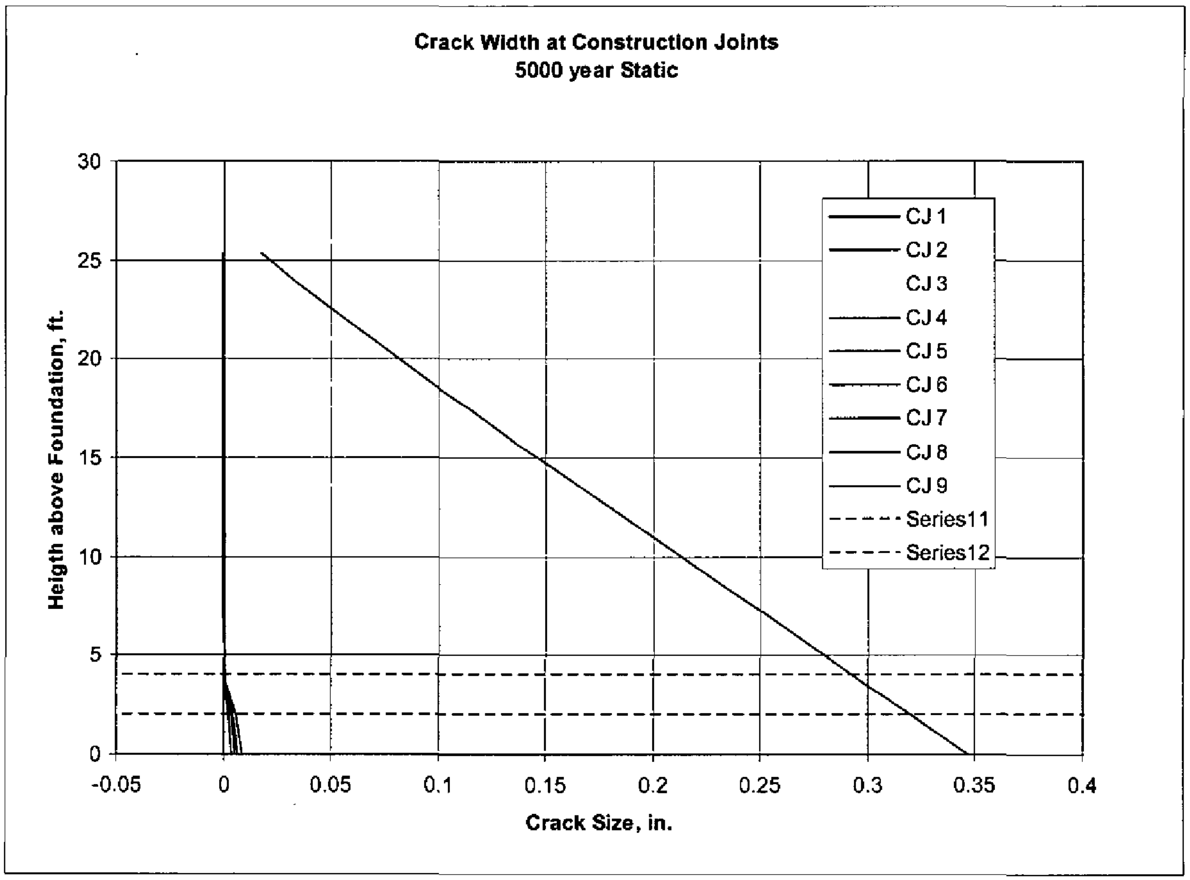


T-CLC-Z-00006, Rev. 0

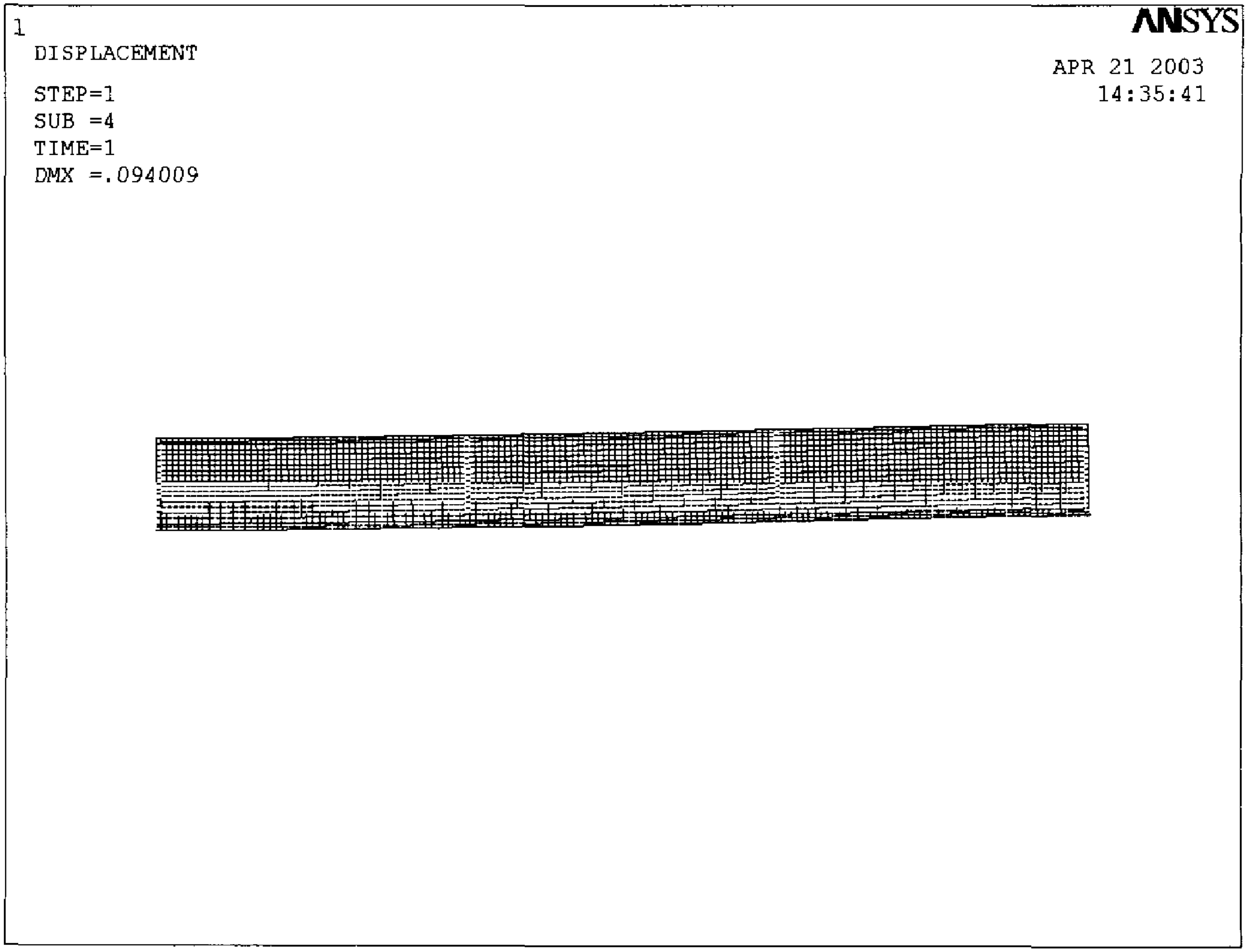
Model 300 – Non-linear Plane Strain
Case 1 – No Top Pressure



Model 300 – Non-linear Plane Strain
Case 1 – No Top Pressure



Model 300 – Non-linear Plane Strain
Case 2 –Top Pressure, No Soil Displacements

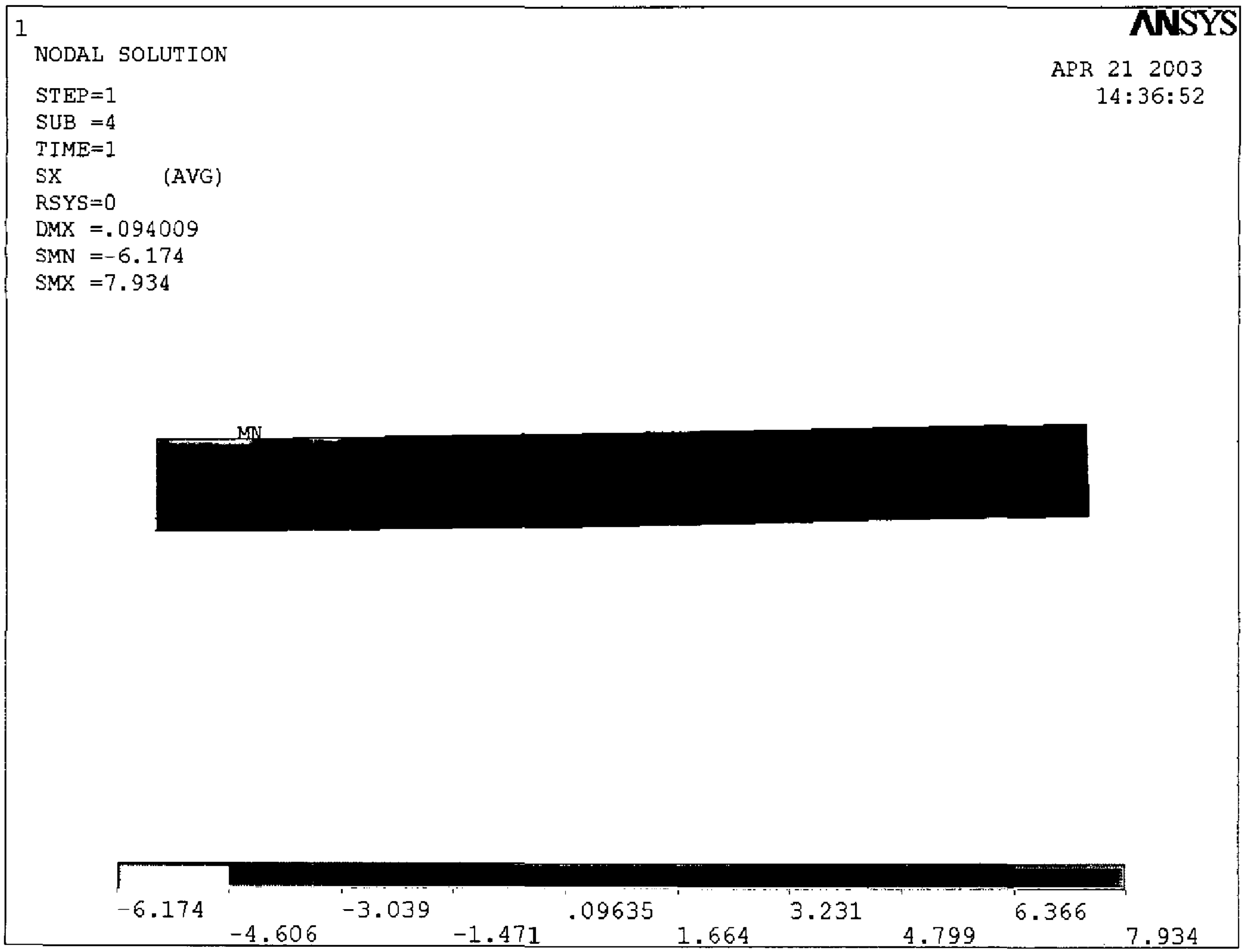


Deformed Shape

T-CLC-Z-00006, Rev. 0

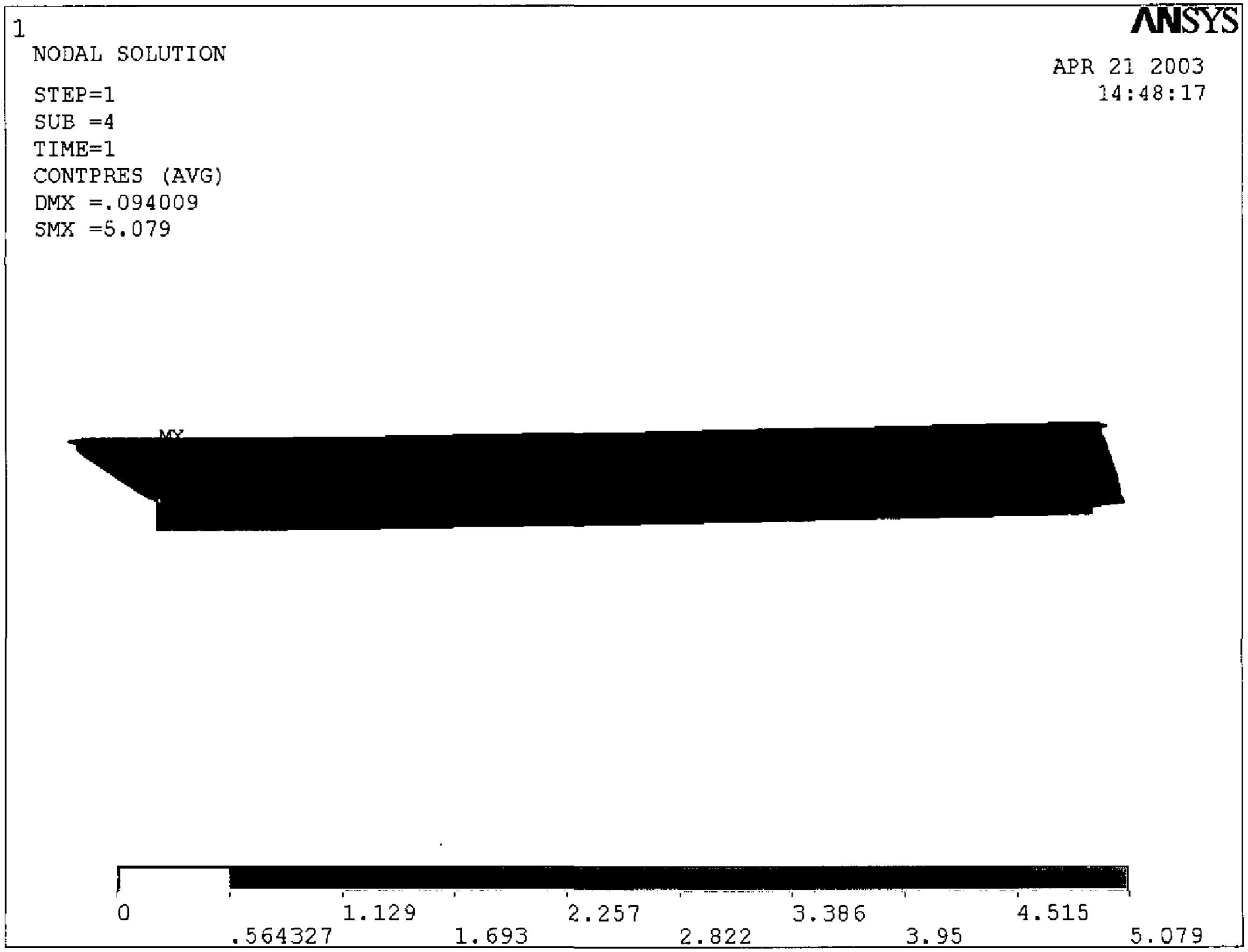
T-CLC-Z-00001, Rev. 0

Model 300 – Non-linear Plane Strain
Case 2 –Top Pressure, No Soil Displacements



Horizontal Stress σ_x

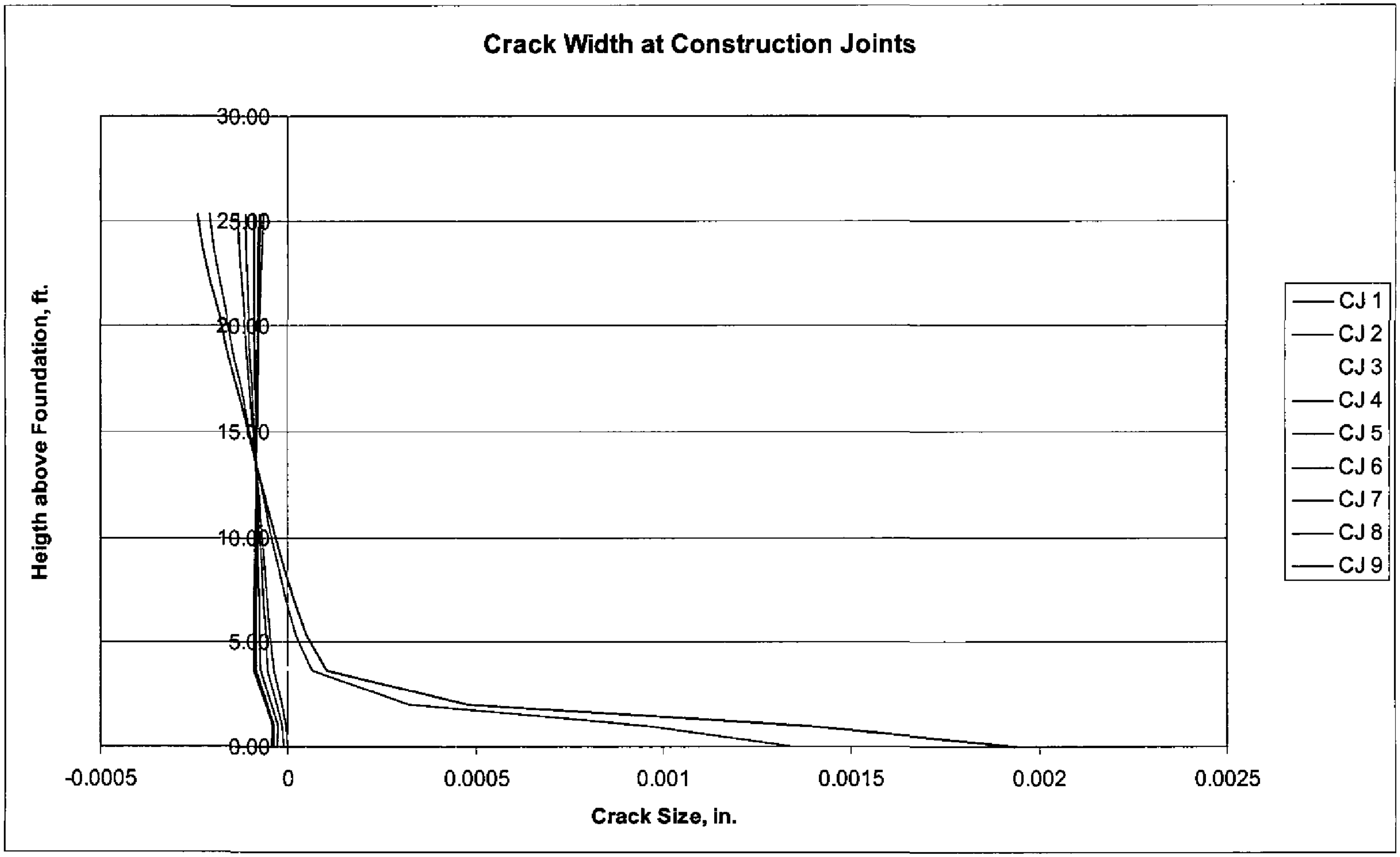
Model 300 – Non-linear Plane Strain
Case 2 –Top Pressure, No Soil Displacements



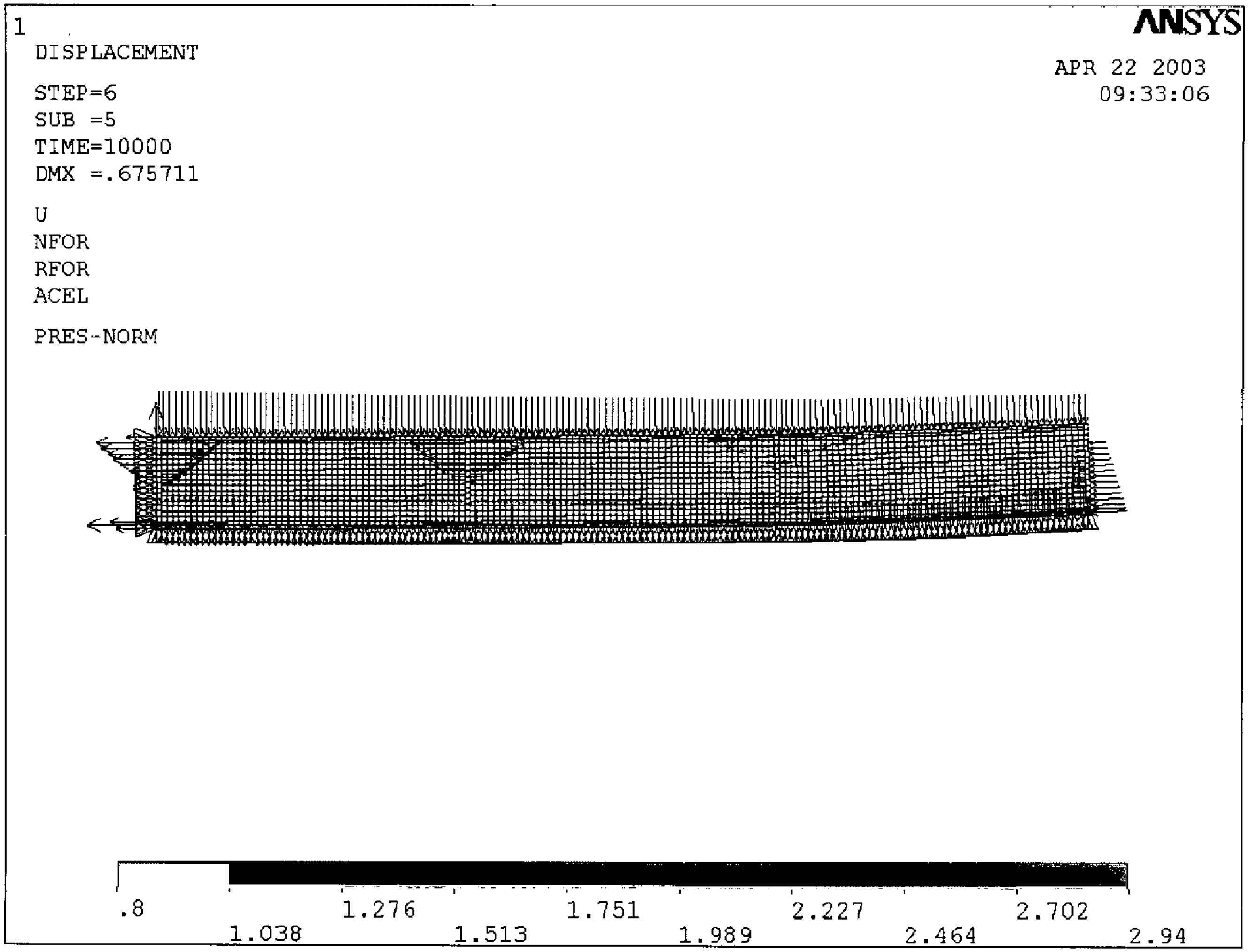
Contact Pressure

T-CLC-Z-00006, Rev. 0

Model 300 – Non-linear Plane Strain
Case 2 –Top Pressure, No Soil Displacements

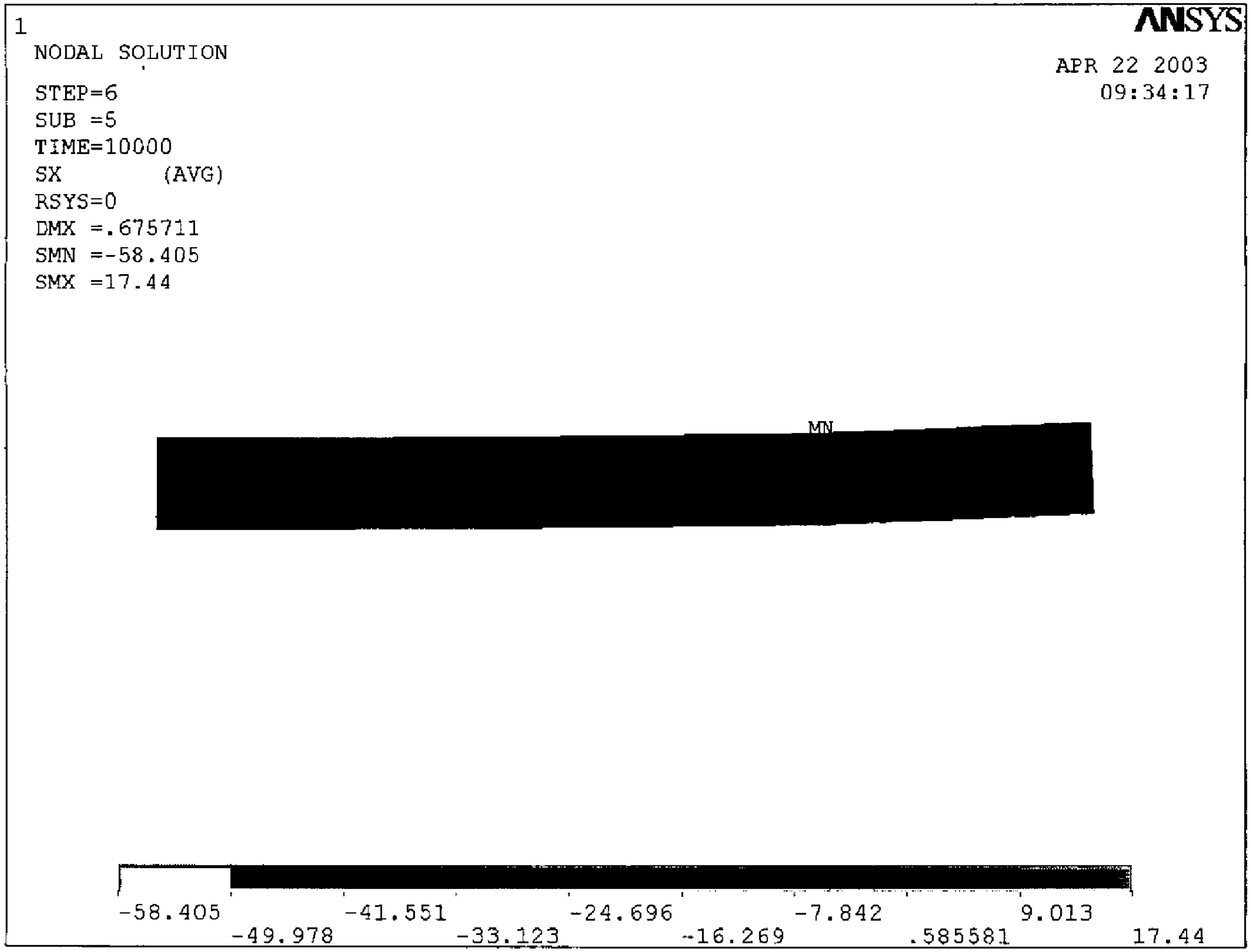


Model 300 – Non-linear Plane Strain
Case 3 –Top Pressure and Soil Static Displacements



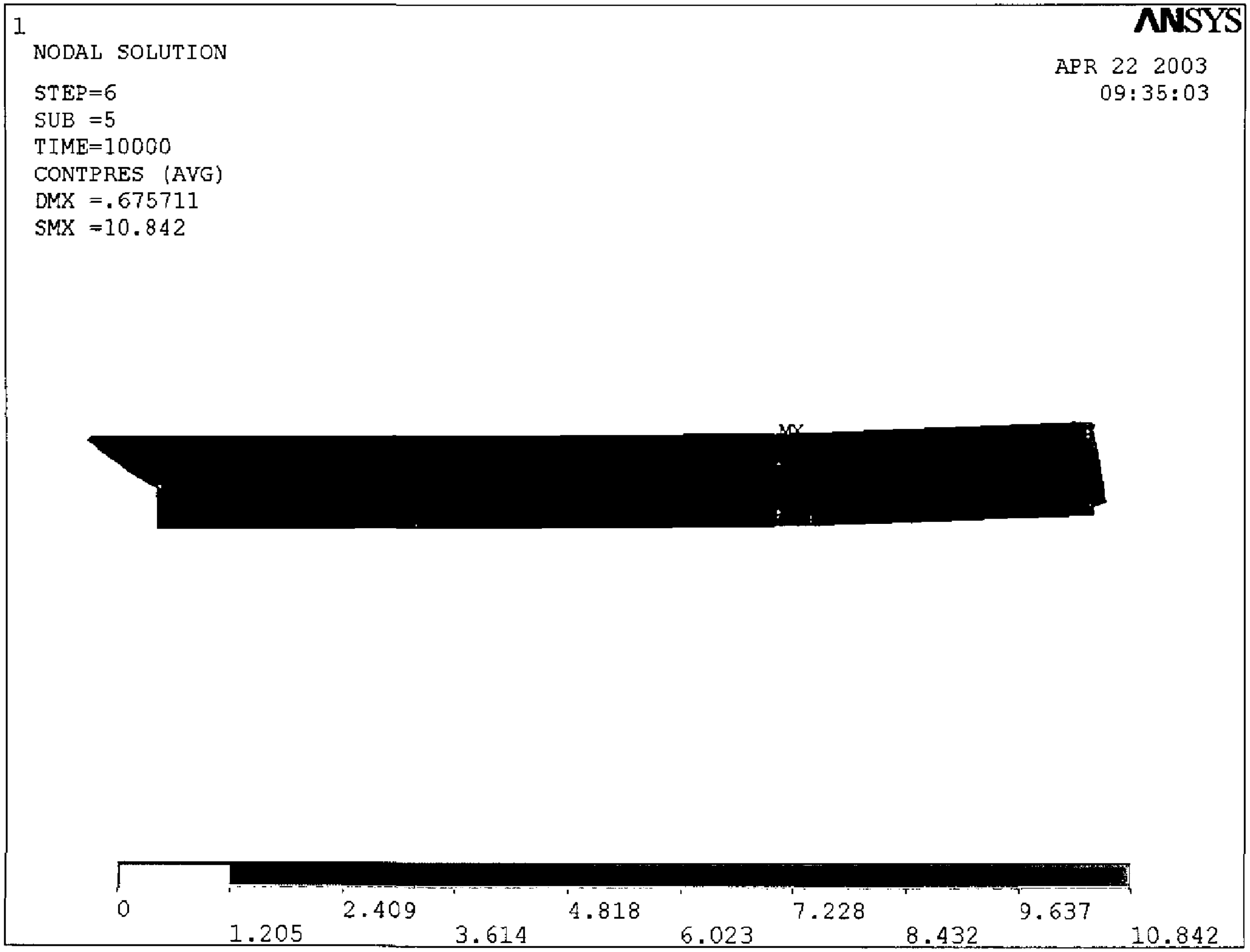
Deformed Shape

Model 300 – Non-linear Plane Strain
Case 3 –Top Pressure and Soil Static Displacements



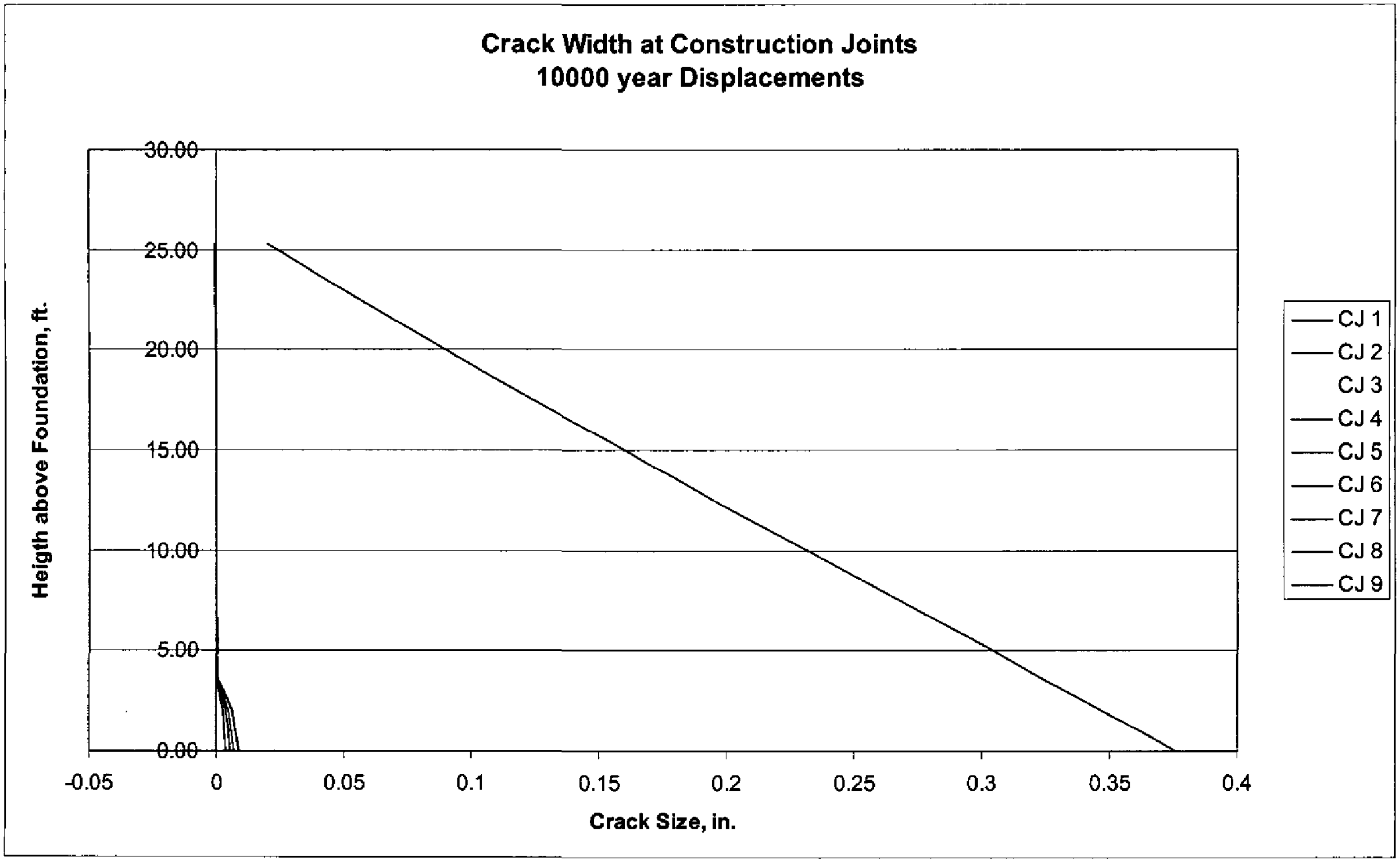
Horizontal Stress σ_x

Model 300 – Non-linear Plane Strain
Case 3 –Top Pressure and Soil Static Displacements

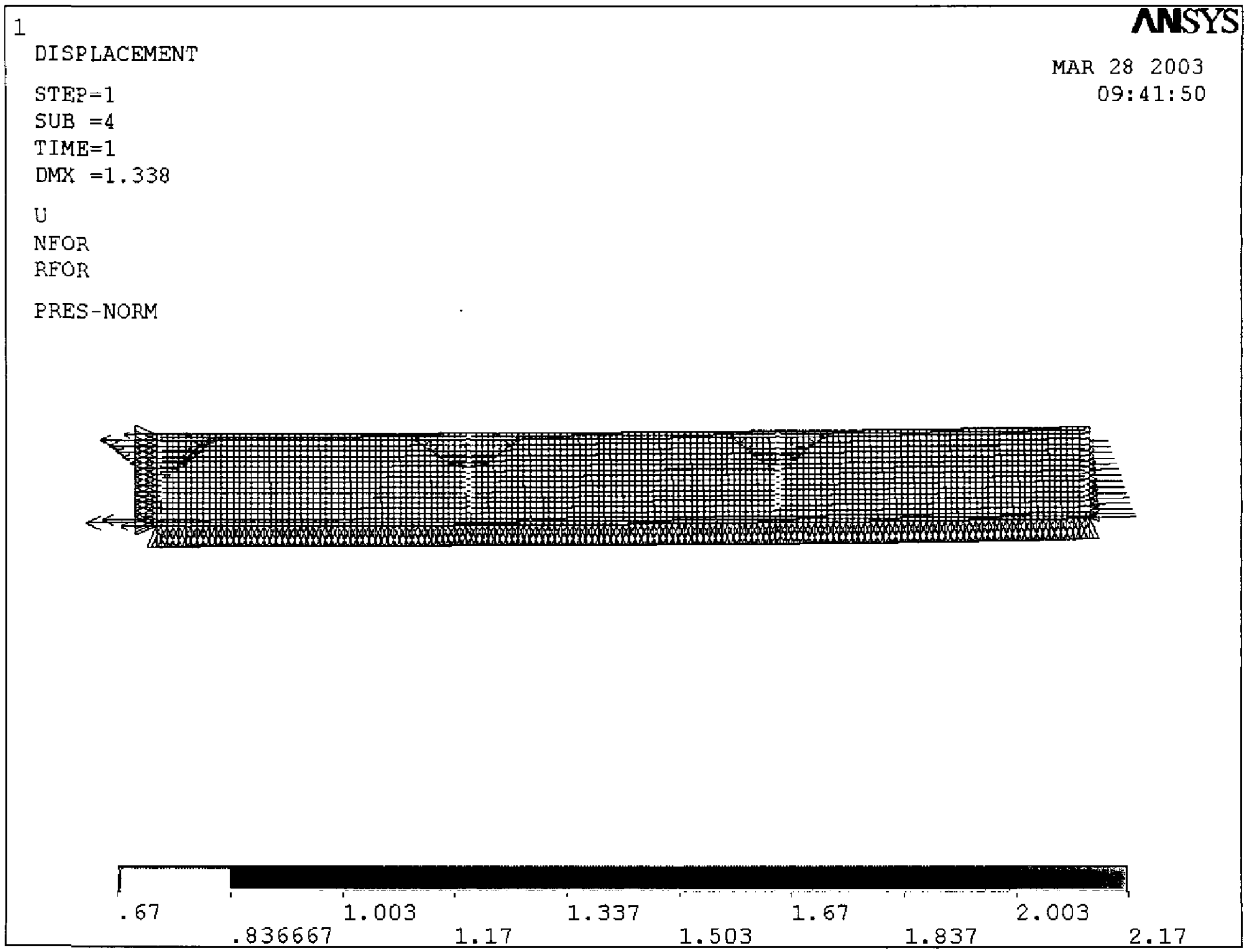


Contact Pressure

Model 300 – Non-linear Plane Strain
Case 3 –Top Pressure and Soil Static Displacements



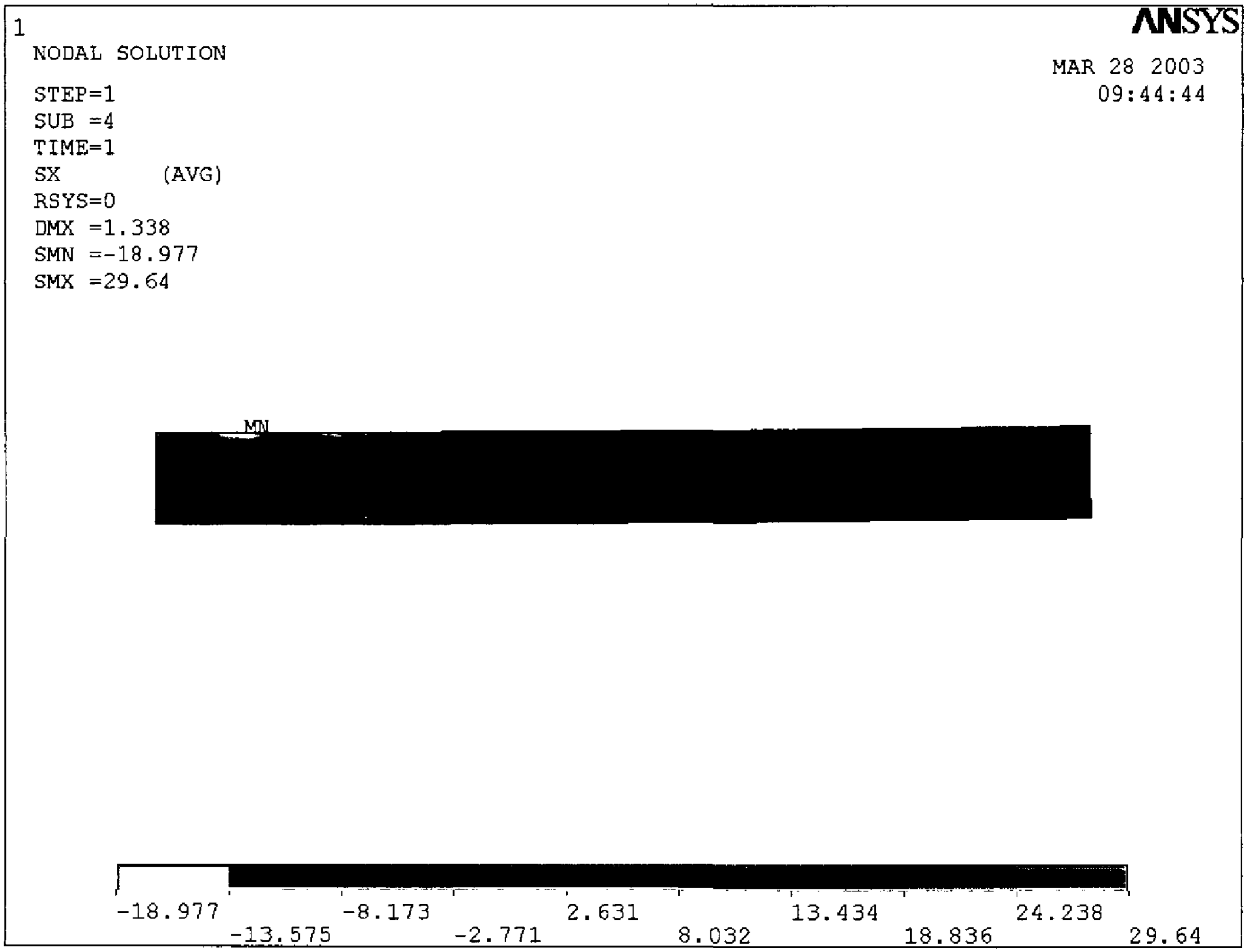
Model 300 - Non-Linear Plane Strain [File ssv300]
10000 Year Static Settlement



Deformed Shape – Reactions, Applied Boundary Conditions

T-CLC-Z-00006, Rev. 0

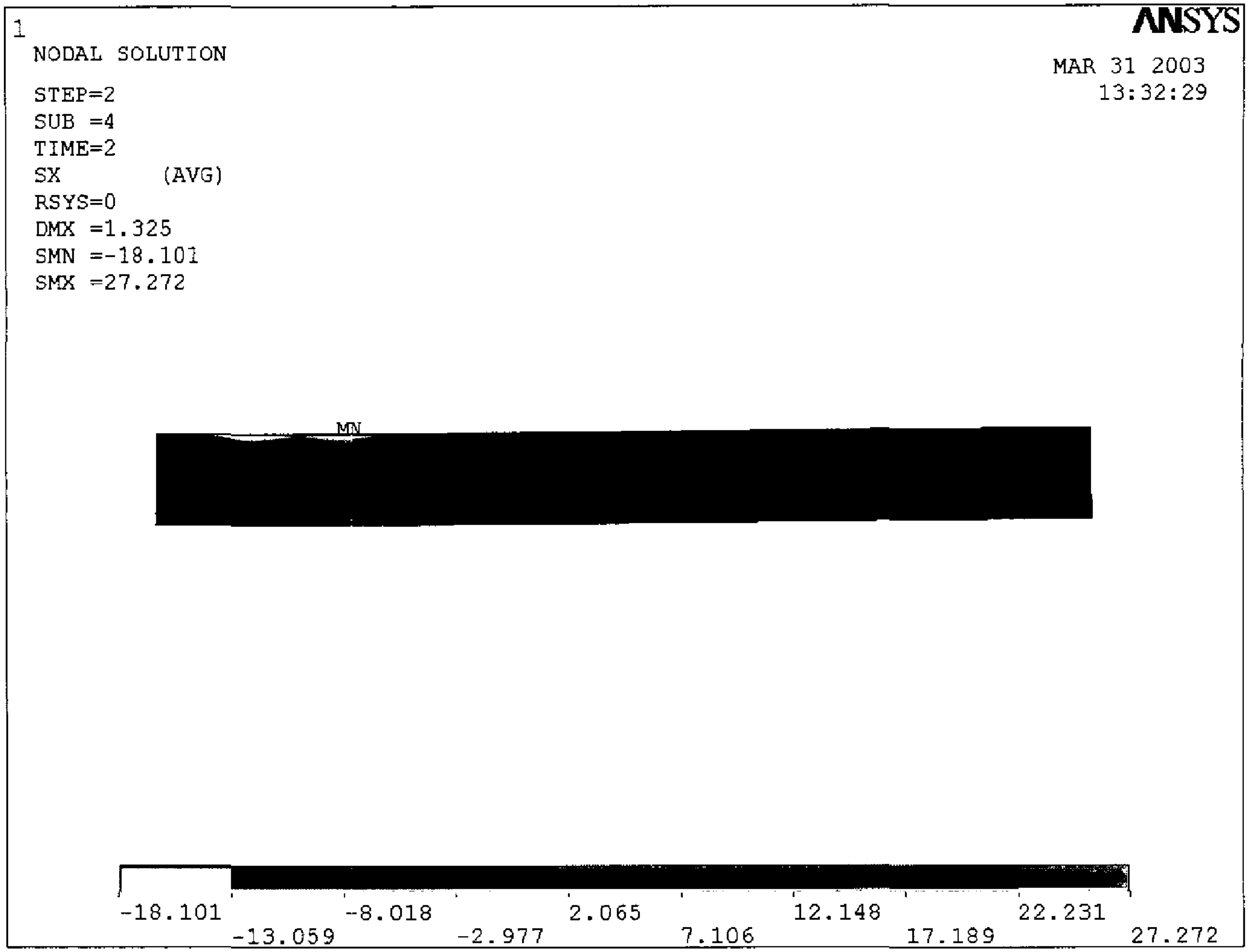
Model 300 - Non-Linear Plane Strain [File ssv300]
10000 Year Static Settlement



Horizontal Stress σ_x

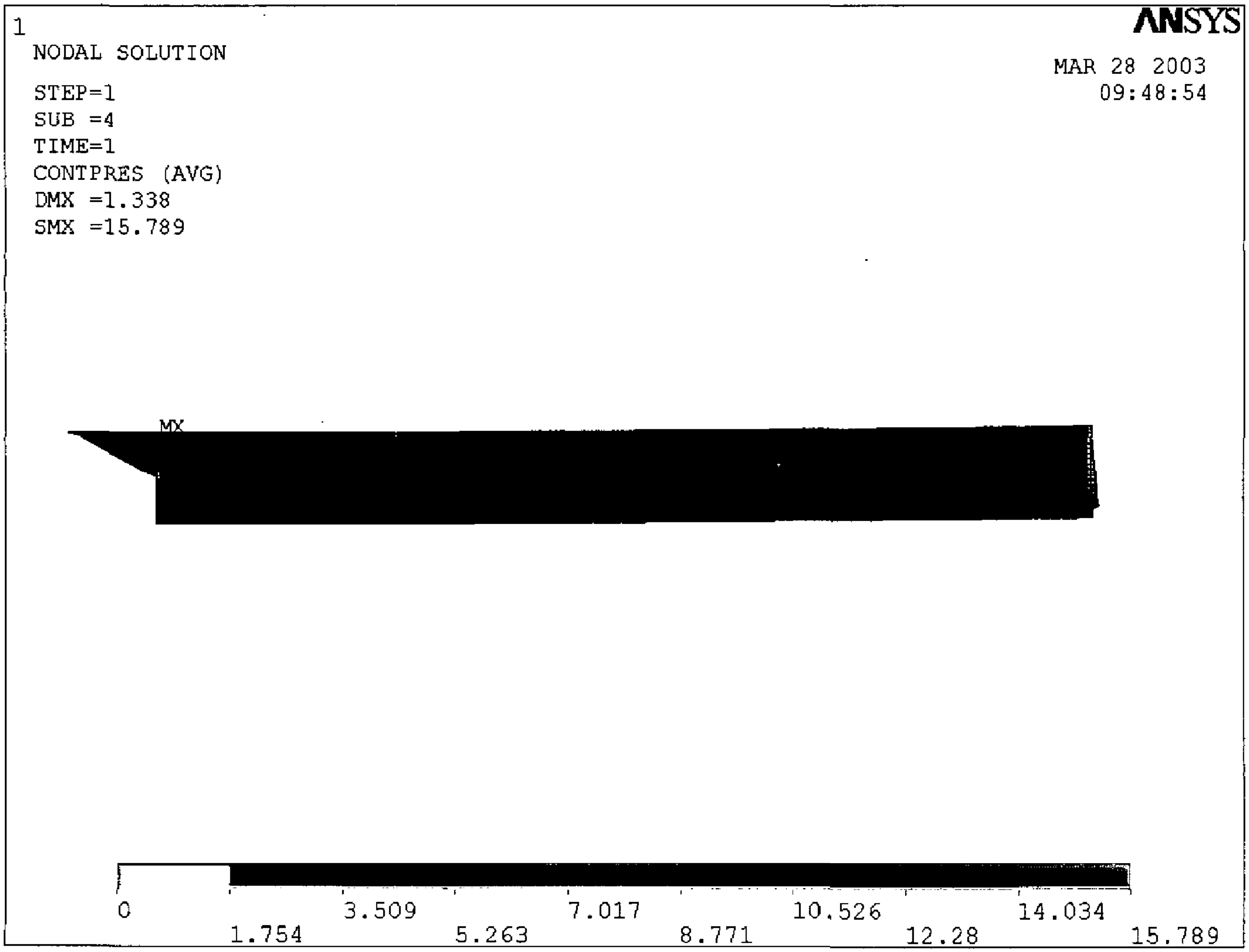
T-CLC-Z-00006, Rev.0

Model 300 - Non-Linear Plane Strain [File ssv300]
Case 3 – Top Load & Weight, then 10000 yr. Creep



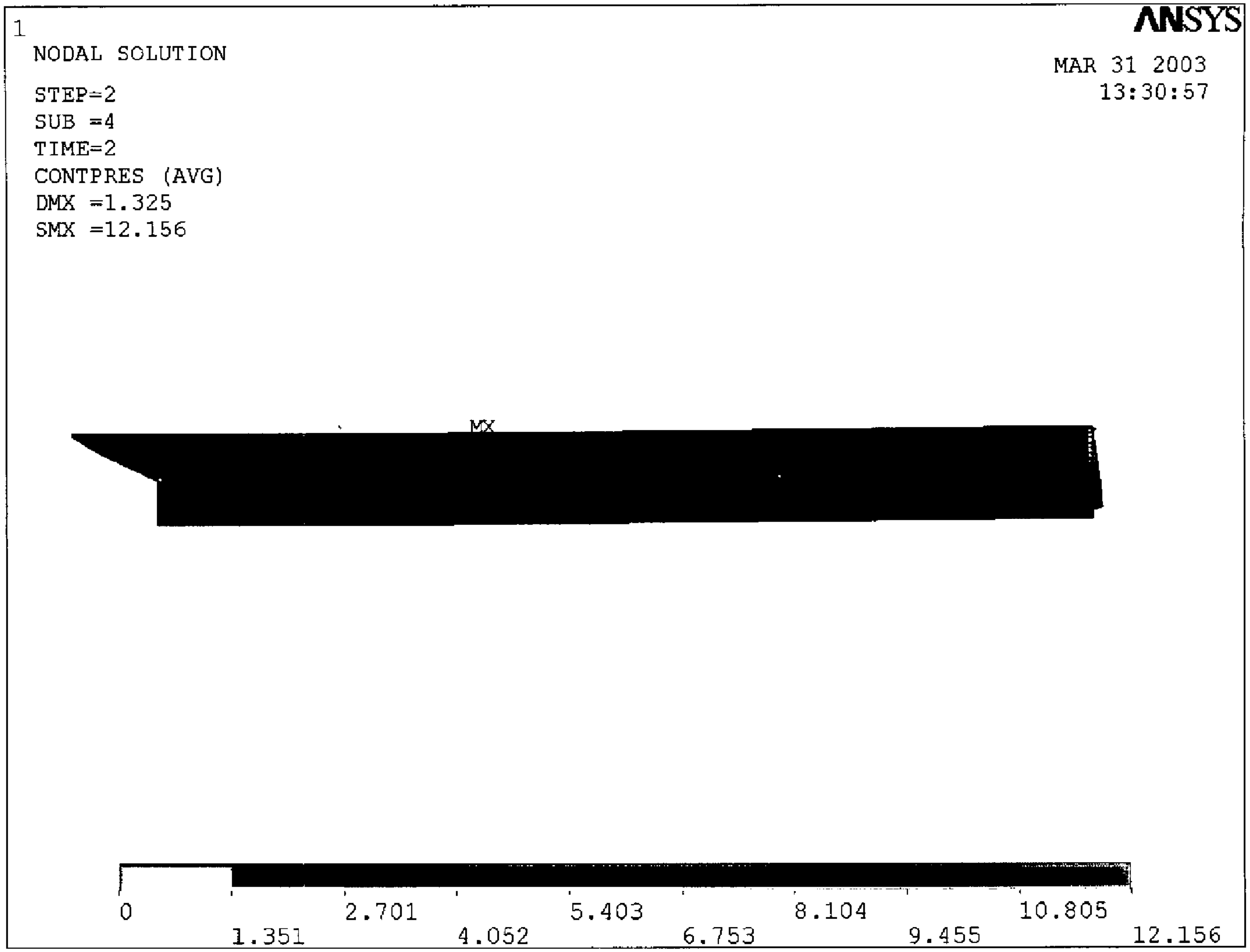
Horizontal Stress σ_x

Model 300 - Non-Linear Plane Strain [File ssv300]
10000 Year Static Settlement



Contact Pressure between Saltstone and Walls

Model 300 - Non-Linear Plane Strain [File ssv300]
Case 3 – Top Load & Weight, then 10000 yr. Creep



Contact Pressure

T-CLC-Z-00006, Rev. 0

OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover	Calculation No.: T-CLC-Z-00006
	Subject: " "	Sheet No. 87

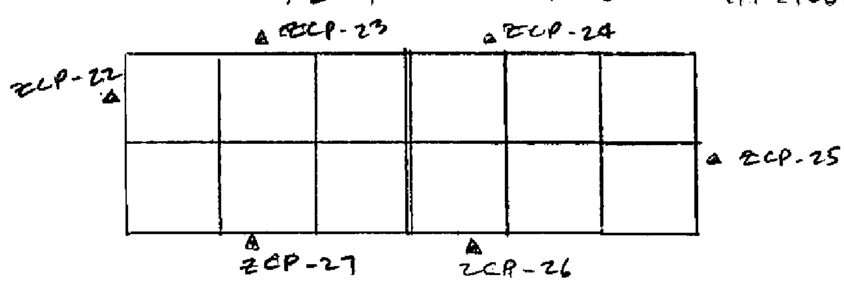
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WLP	7/9/03	[signature]	7/10/03					

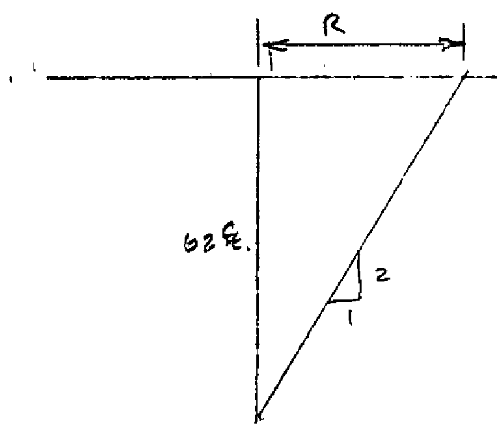
DIFFERENTIAL SETTLEMENTS

ref. Calcs. K-CLC-Z-00001, 00004

Depth to settlement (boring ZCP-27)
sheet 102
start elev. 230' } avg. 208 ft - depth = 62 ft.
max elev 185'

Max δ for PC-3 is 0.75 in
PC-4 2.75 in locations are approximate





R = 31 ft. mean

D = 62 ft. mean

Variation of D

min = 30' (const. Jt. spacing)

Cv = 1

mean + 1 σ = 124'

Calculation Sheet

SRS	Project: See Cover						Calculation No.: T-CLC-Z-00006		
	Subject: " "						Sheet No.: 88		
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WRP	7/9/03							

Settlement curve

ref: K-CLC-H-00150, "Differential Settlement for CLWR-TEF Product Transfer Trench", Feb, 2000. (Reference 7.2)

Settlement follows a Gaussian distribution with R = 2.5 σ

$$\phi_N(t) = \frac{1}{\sqrt{2\pi}} e^{-t^2/2} \quad \text{where } t = \frac{x-\mu}{\sigma}$$

r = x − μ = distance from center of displacement field

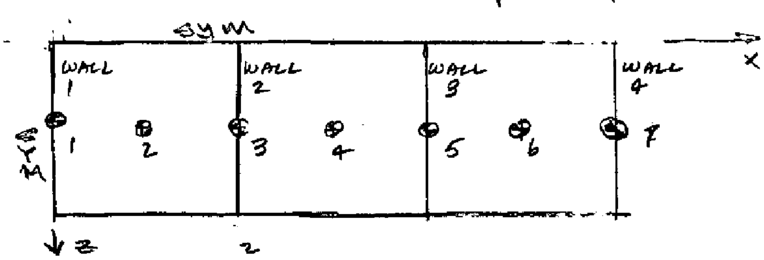
@ r = 0 $\phi_N(t) = 0.3989$

@ r = 2.5 σ = 31 ft. t = 2.5 $\phi_N = 0.0175$

Write EXCEL spreadsheet to apply displacements on model — file: ssv-diff settlement.xls

Parameters δ_{max}, depth to displacement, Location of center of displacement field

LOCATIONS CHOSEN — equal probability



Add diff. displ to Static case — apply at top of soil

T-CLC-Z-00006, Rev. 0

Center of Displacement		
Xc	50.75	ft
Depth to Displacement		
D	62	ft
Maximum Diff Displ		
delmax	0.75	in

Units are feet

sigma =D/2/2.5

NODE	X	t	Phi	Phi(norm)	Y diff	Static 100 years	1000 years	5000 years	Differential 100 years	1000 years	5000 years
30001	=VLOOKUP(A12,$AD$2:$AE$165,2,FALSE)	=ABS(B12-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C12^2)/2)	=D12/MAX(D$12:D$467)	=E12*delmax/12	=STATIC!F6	=STATIC!G6	=STATIC!H6	=G12-$F12	=H12-$F12	=I12-$F12
30002	=VLOOKUP(A13,$AD$2:$AE$165,2,FALSE)	=ABS(B13-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C13^2)/2)	=D13/MAX(D$12:D$467)	=E13*delmax/12	=STATIC!F7	=STATIC!G7	=STATIC!H7	=G13-$F13	=H13-$F13	=I13-$F13
51012	=VLOOKUP(A14,$AD$2:$AE$165,2,FALSE)	=ABS(B14-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C14^2)/2)	=D14/MAX(D$12:D$467)	=E14*delmax/12	=STATIC!F8	=STATIC!G8	=STATIC!H8	=G14-$F14	=H14-$F14	=I14-$F14
51013	=VLOOKUP(A15,$AD$2:$AE$165,2,FALSE)	=ABS(B15-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C15^2)/2)	=D15/MAX(D$12:D$467)	=E15*delmax/12	=STATIC!F9	=STATIC!G9	=STATIC!H9	=G15-$F15	=H15-$F15	=I15-$F15
51014	=VLOOKUP(A16,$AD$2:$AE$165,2,FALSE)	=ABS(B16-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C16^2)/2)	=D16/MAX(D$12:D$467)	=E16*delmax/12	=STATIC!F10	=STATIC!G10	=STATIC!H10	=G16-$F16	=H16-$F16	=I16-$F16
51015	=VLOOKUP(A17,$AD$2:$AE$165,2,FALSE)	=ABS(B17-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C17^2)/2)	=D17/MAX(D$12:D$467)	=E17*delmax/12	=STATIC!F11	=STATIC!G11	=STATIC!H11	=G17-$F17	=H17-$F17	=I17-$F17
51016	=VLOOKUP(A18,$AD$2:$AE$165,2,FALSE)	=ABS(B18-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C18^2)/2)	=D18/MAX(D$12:D$467)	=E18*delmax/12	=STATIC!F12	=STATIC!G12	=STATIC!H12	=G18-$F18	=H18-$F18	=I18-$F18
51017	=VLOOKUP(A19,$AD$2:$AE$165,2,FALSE)	=ABS(B19-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C19^2)/2)	=D19/MAX(D$12:D$467)	=E19*delmax/12	=STATIC!F13	=STATIC!G13	=STATIC!H13	=G19-$F19	=H19-$F19	=I19-$F19
51018	=VLOOKUP(A20,$AD$2:$AE$165,2,FALSE)	=ABS(B20-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C20^2)/2)	=D20/MAX(D$12:D$467)	=E20*delmax/12	=STATIC!F14	=STATIC!G14	=STATIC!H14	=G20-$F20	=H20-$F20	=I20-$F20
51019	=VLOOKUP(A21,$AD$2:$AE$165,2,FALSE)	=ABS(B21-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C21^2)/2)	=D21/MAX(D$12:D$467)	=E21*delmax/12	=STATIC!F15	=STATIC!G15	=STATIC!H15	=G21-$F21	=H21-$F21	=I21-$F21
51020	=VLOOKUP(A22,$AD$2:$AE$165,2,FALSE)	=ABS(B22-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C22^2)/2)	=D22/MAX(D$12:D$467)	=E22*delmax/12	=STATIC!F16	=STATIC!G16	=STATIC!H16	=G22-$F22	=H22-$F22	=I22-$F22
51021	=VLOOKUP(A23,$AD$2:$AE$165,2,FALSE)	=ABS(B23-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C23^2)/2)	=D23/MAX(D$12:D$467)	=E23*delmax/12	=STATIC!F17	=STATIC!G17	=STATIC!H17	=G23-$F23	=H23-$F23	=I23-$F23
51022	=VLOOKUP(A24,$AD$2:$AE$165,2,FALSE)	=ABS(B24-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C24^2)/2)	=D24/MAX(D$12:D$467)	=E24*delmax/12	=STATIC!F18	=STATIC!G18	=STATIC!H18	=G24-$F24	=H24-$F24	=I24-$F24
51023	=VLOOKUP(A25,$AD$2:$AE$165,2,FALSE)	=ABS(B25-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C25^2)/2)	=D25/MAX(D$12:D$467)	=E25*delmax/12	=STATIC!F19	=STATIC!G19	=STATIC!H19	=G25-$F25	=H25-$F25	=I25-$F25
51024	=VLOOKUP(A26,$AD$2:$AE$165,2,FALSE)	=ABS(B26-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C26^2)/2)	=D26/MAX(D$12:D$467)	=E26*delmax/12	=STATIC!F20	=STATIC!G20	=STATIC!H20	=G26-$F26	=H26-$F26	=I26-$F26
51025	=VLOOKUP(A27,$AD$2:$AE$165,2,FALSE)	=ABS(B27-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C27^2)/2)	=D27/MAX(D$12:D$467)	=E27*delmax/12	=STATIC!F21	=STATIC!G21	=STATIC!H21	=G27-$F27	=H27-$F27	=I27-$F27
50633	=VLOOKUP(A28,$AD$2:$AE$165,2,FALSE)	=ABS(B28-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C28^2)/2)	=D28/MAX(D$12:D$467)	=E28*delmax/12	=STATIC!F22	=STATIC!G22	=STATIC!H22	=G28-$F28	=H28-$F28	=I28-$F28
51011	=VLOOKUP(A29,$AD$2:$AE$165,2,FALSE)	=ABS(B29-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C29^2)/2)	=D29/MAX(D$12:D$467)	=E29*delmax/12	=STATIC!F23	=STATIC!G23	=STATIC!H23	=G29-$F29	=H29-$F29	=I29-$F29
50635	=VLOOKUP(A30,$AD$2:$AE$165,2,FALSE)	=ABS(B30-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C30^2)/2)	=D30/MAX(D$12:D$467)	=E30*delmax/12	=STATIC!F24	=STATIC!G24	=STATIC!H24	=G30-$F30	=H30-$F30	=I30-$F30
50636	=VLOOKUP(A31,$AD$2:$AE$165,2,FALSE)	=ABS(B31-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C31^2)/2)	=D31/MAX(D$12:D$467)	=E31*delmax/12	=STATIC!F25	=STATIC!G25	=STATIC!H25	=G31-$F31	=H31-$F31	=I31-$F31
50637	=VLOOKUP(A32,$AD$2:$AE$165,2,FALSE)	=ABS(B32-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C32^2)/2)	=D32/MAX(D$12:D$467)	=E32*delmax/12	=STATIC!F26	=STATIC!G26	=STATIC!H26	=G32-$F32	=H32-$F32	=I32-$F32
50638	=VLOOKUP(A33,$AD$2:$AE$165,2,FALSE)	=ABS(B33-Xc)/sigma	=1/(SQRT(2*PI()))*EXP(-(C33^2)/2)	=D33/MAX(D$12:D$467)	=E33*delmax/12	=STATIC!F27	=STATIC!G27	=STATIC!H27	=G33-$F33	=H33-$F33	=I33-$F33

EXCEL formulae for differential displacement calculations

T-CLC-Z-00006, Rev. 0

DIFFERENTIAL DISPLACEMENT CALCULATION

Center of Displacement	
Xc	250.75 ft
Depth to Displacement	
D	62 ft
Maximum Diff Displ	
delmax	2.75 in

⟸ INPUT

sigma 12.4

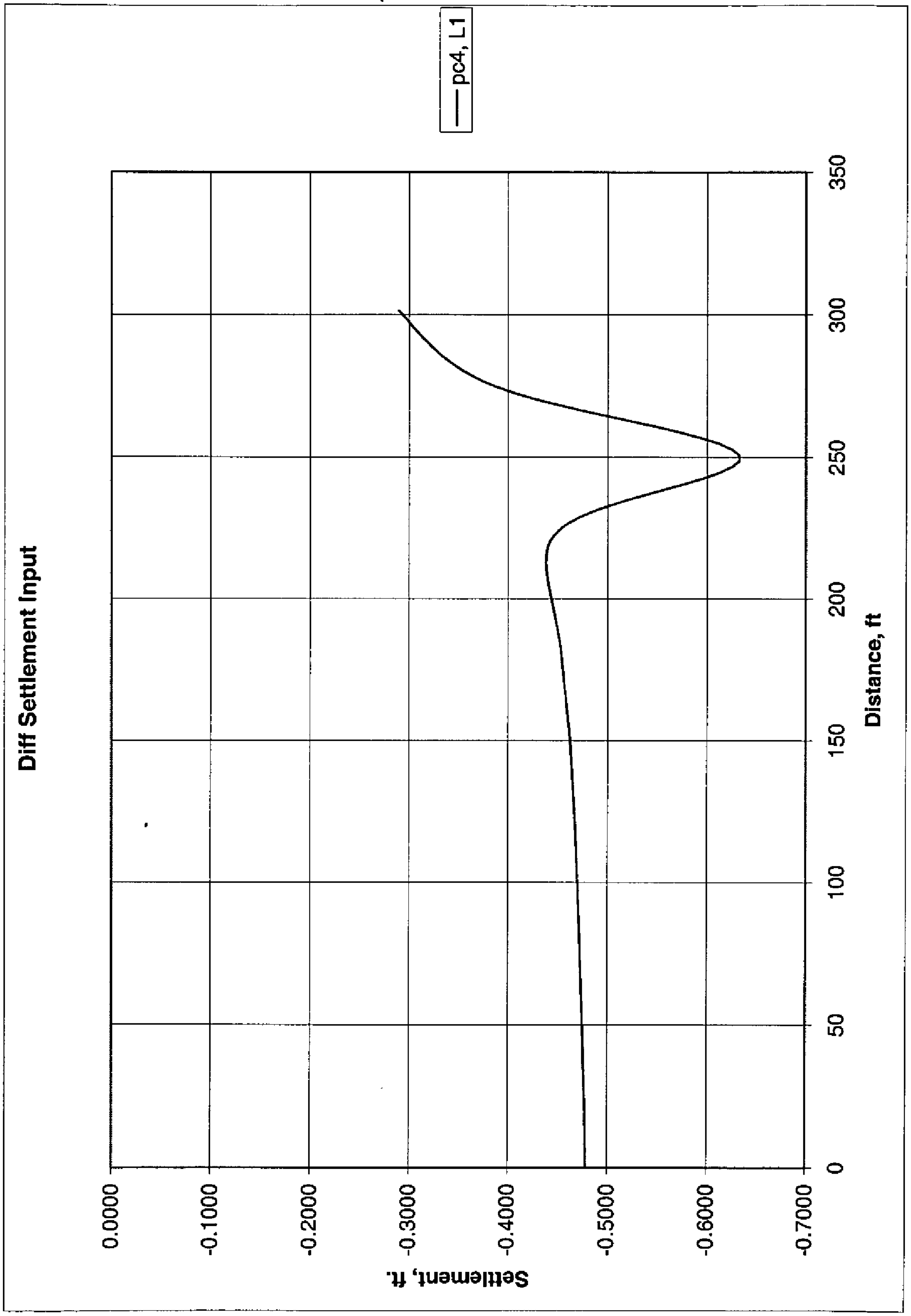
Differential – Apply to Model 300

ssv 300

NODE	X	t	Phi	Phi(norm)	Y diff	Static 100 years	1000 years	5000 years	Differential 100 years	1000 years	5000 years
30001	0	20.222	0.000	0.000	0.0000	-0.389	-0.47839	-0.54745	-0.3893	-0.4784	-0.5475
30002	1.5	20.101	0.000	0.000	0.0000	-0.389	-0.47833	-0.5474	-0.3892	-0.4783	-0.5474
51012	3.45	19.944	0.000	0.000	0.0000	-0.389	-0.47826	-0.54733	-0.3892	-0.4783	-0.5473
51013	5.4	19.786	0.000	0.000	0.0000	-0.389	-0.47819	-0.54727	-0.3891	-0.4782	-0.5473
51014	7.35	19.629	0.000	0.000	0.0000	-0.389	-0.47811	-0.5472	-0.3890	-0.4781	-0.5472
51015	9.3	19.472	0.000	0.000	0.0000	-0.389	-0.47804	-0.54713	-0.3889	-0.4780	-0.5471
51016	11.25	19.315	0.000	0.000	0.0000	-0.389	-0.47797	-0.54706	-0.3888	-0.4780	-0.5471
51017	13.2	19.157	0.000	0.000	0.0000	-0.389	-0.4779	-0.547	-0.3888	-0.4779	-0.5470
51018	15.15	19.000	0.000	0.000	0.0000	-0.389	-0.47783	-0.54693	-0.3887	-0.4778	-0.5469
51019	17.1	18.843	0.000	0.000	0.0000	-0.389	-0.47775	-0.54686	-0.3886	-0.4778	-0.5469
51020	19.05	18.685	0.000	0.000	0.0000	-0.389	-0.47768	-0.5468	-0.3885	-0.4777	-0.5468
51021	21	18.528	0.000	0.000	0.0000	-0.388	-0.47758	-0.5467	-0.3884	-0.4776	-0.5467
51022	22.95	18.371	0.000	0.000	0.0000	-0.388	-0.47741	-0.54652	-0.3883	-0.4774	-0.5465
51023	24.9	18.214	0.000	0.000	0.0000	-0.388	-0.47724	-0.54634	-0.3881	-0.4772	-0.5463
51024	26.85	18.056	0.000	0.000	0.0000	-0.388	-0.47708	-0.54616	-0.3880	-0.4771	-0.5462
51025	28.8	17.899	0.000	0.000	0.0000	-0.388	-0.47691	-0.54598	-0.3878	-0.4769	-0.5460
50633	30.75	17.742	0.000	0.000	0.0000	-0.388	-0.47674	-0.5458	-0.3876	-0.4767	-0.5458
51011	30.75	17.742	0.000	0.000	0.0000	-0.388	-0.47674	-0.5458	-0.3876	-0.4767	-0.5458
50635	32.75	17.581	0.000	0.000	0.0000	-0.387	-0.47656	-0.54562	-0.3875	-0.4766	-0.5456
50636	34.75	17.419	0.000	0.000	0.0000	-0.387	-0.47639	-0.54543	-0.3873	-0.4764	-0.5454
50637	36.75	17.258	0.000	0.000	0.0000	-0.387	-0.47622	-0.54525	-0.3872	-0.4762	-0.5452
50638	38.75	17.097	0.000	0.000	0.0000	-0.387	-0.47604	-0.54506	-0.3870	-0.4760	-0.5451
50639	40.75	16.935	0.000	0.000	0.0000	-0.387	-0.47587	-0.54488	-0.3868	-0.4759	-0.5449
50640	42.75	16.774	0.000	0.000	0.0000	-0.387	-0.4757	-0.54469	-0.3867	-0.4757	-0.5447
50641	44.75	16.613	0.000	0.000	0.0000	-0.387	-0.47552	-0.54451	-0.3865	-0.4755	-0.5445
50642	46.75	16.452	0.000	0.000	0.0000	-0.386	-0.47535	-0.54432	-0.3864	-0.4753	-0.5443
50643	48.75	16.290	0.000	0.000	0.0000	-0.386	-0.47517	-0.54414	-0.3862	-0.4752	-0.5441
50644	50.75	16.129	0.000	0.000	0.0000	-0.386	-0.475	-0.54395	-0.3860	-0.4750	-0.5440
50645	52.75	15.968	0.000	0.000	0.0000	-0.386	-0.47483	-0.54377	-0.3859	-0.4748	-0.5438
50646	54.75	15.806	0.000	0.000	0.0000	-0.386	-0.47463	-0.54356	-0.3857	-0.4746	-0.5436
50647	56.75	15.645	0.000	0.000	0.0000	-0.386	-0.47443	-0.54335	-0.3855	-0.4744	-0.5433
50648	58.75	15.484	0.000	0.000	0.0000	-0.385	-0.47423	-0.54313	-0.3853	-0.4742	-0.5431
50634	60.75	15.323	0.000	0.000	0.0000	-0.385	-0.47403	-0.54292	-0.3852	-0.4740	-0.5429
50681	60.75	15.323	0.000	0.000	0.0000	-0.385	-0.47403	-0.54292	-0.3852	-0.4740	-0.5429
50683	62.75	15.161	0.000	0.000	0.0000	-0.385	-0.47383	-0.54271	-0.3850	-0.4738	-0.5427
50684	64.75	15.000	0.000	0.000	0.0000	-0.385	-0.47363	-0.54249	-0.3848	-0.4736	-0.5425
50685	66.75	14.839	0.000	0.000	0.0000	-0.385	-0.47343	-0.54228	-0.3846	-0.4734	-0.5423
50686	68.75	14.677	0.000	0.000	0.0000	-0.384	-0.47323	-0.54207	-0.3844	-0.4732	-0.5421
50687	70.75	14.516	0.000	0.000	0.0000	-0.384	-0.47303	-0.54185	-0.3843	-0.4730	-0.5419
50688	72.75	14.355	0.000	0.000	0.0000	-0.384	-0.47283	-0.54164	-0.3841	-0.4728	-0.5416
50689	74.75	14.194	0.000	0.000	0.0000	-0.384	-0.47263	-0.54142	-0.3839	-0.4726	-0.5414
50690	76.75	14.032	0.000	0.000	0.0000	-0.384	-0.47244	-0.54121	-0.3837	-0.4724	-0.5412
50691	78.75	13.871	0.000	0.000	0.0000	-0.384	-0.47224	-0.541	-0.3835	-0.4722	-0.5410
50692	80.75	13.710	0.000	0.000	0.0000	-0.383	-0.47204	-0.54078	-0.3833	-0.4720	-0.5408
50693	82.75	13.548	0.000	0.000	0.0000	-0.383	-0.47184	-0.54057	-0.3832	-0.4718	-0.5406
50694	84.75	13.387	0.000	0.000	0.0000	-0.383	-0.47164	-0.54035	-0.3830	-0.4716	-0.5404
50695	86.75	13.226	0.000	0.000	0.0000	-0.383	-0.47142	-0.54012	-0.3828	-0.4714	-0.5401
50696	88.75	13.065	0.000	0.000	0.0000	-0.383	-0.47118	-0.53986	-0.3826	-0.4712	-0.5399
50682	90.75	12.903	0.000	0.000	0.0000	-0.382	-0.47094	-0.5396	-0.3824	-0.4709	-0.5396
51056	90.75	12.903	0.000	0.000	0.0000	-0.382	-0.47094	-0.5396	-0.3824	-0.4709	-0.5396
51060	92.6	12.754	0.000	0.000	0.0000	-0.382	-0.47072	-0.53936	-0.3822	-0.4707	-0.5394
51059	94.45	12.605	0.000	0.000	0.0000	-0.382	-0.4705	-0.53912	-0.3820	-0.4705	-0.5391
51058	96.3	12.456	0.000	0.000	0.0000	-0.382	-0.47028	-0.53888	-0.3818	-0.4703	-0.5389
51057	98.15	12.306	0.000	0.000	0.0000	-0.382	-0.47007	-0.53864	-0.3816	-0.4701	-0.5386
30211	100	12.157	0.000	0.000	0.0000	-0.381	-0.46985	-0.5384	-0.3814	-0.4698	-0.5384
30178	101.5	12.036	0.000	0.000	0.0000	-0.381	-0.46967	-0.53821	-0.3812	-0.4697	-0.5382
50604	103.425	11.881	0.000	0.000	0.0000	-0.381	-0.46944	-0.53796	-0.3810	-0.4694	-0.5380

50605	105.35	11.726	0.000	0.000	0.0000	-0.381	-0.46921	-0.53771	-0.3808	-0.4692	-0.5377
50606	107.275	11.571	0.000	0.000	0.0000	-0.381	-0.46898	-0.53746	-0.3806	-0.4690	-0.5375
50607	109.2	11.415	0.000	0.000	0.0000	-0.380	-0.46875	-0.53721	-0.3804	-0.4688	-0.5372
50608	111.125	11.260	0.000	0.000	0.0000	-0.380	-0.46852	-0.53696	-0.3802	-0.4685	-0.5370
50609	113.05	11.105	0.000	0.000	0.0000	-0.380	-0.46829	-0.53671	-0.3800	-0.4683	-0.5367
50610	114.975	10.950	0.000	0.000	0.0000	-0.380	-0.46807	-0.53646	-0.3798	-0.4681	-0.5365
50611	116.9	10.794	0.000	0.000	0.0000	-0.380	-0.46784	-0.53621	-0.3796	-0.4678	-0.5362
50612	118.825	10.639	0.000	0.000	0.0000	-0.379	-0.4676	-0.53595	-0.3794	-0.4676	-0.5360
50603	120.75	10.484	0.000	0.000	0.0000	-0.379	-0.46727	-0.53559	-0.3791	-0.4673	-0.5356
50744	120.75	10.484	0.000	0.000	0.0000	-0.379	-0.46727	-0.53559	-0.3791	-0.4673	-0.5356
50746	122.75	10.323	0.000	0.000	0.0000	-0.379	-0.46693	-0.53521	-0.3788	-0.4669	-0.5352
50747	124.75	10.161	0.000	0.000	0.0000	-0.379	-0.46659	-0.53483	-0.3785	-0.4666	-0.5348
50748	126.75	10.000	0.000	0.000	0.0000	-0.378	-0.46624	-0.53445	-0.3782	-0.4662	-0.5344
50749	128.75	9.839	0.000	0.000	0.0000	-0.378	-0.4659	-0.53407	-0.3780	-0.4659	-0.5341
50750	130.75	9.677	0.000	0.000	0.0000	-0.378	-0.46556	-0.53369	-0.3777	-0.4656	-0.5337
50751	132.75	9.516	0.000	0.000	0.0000	-0.377	-0.46522	-0.53331	-0.3774	-0.4652	-0.5333
50752	134.75	9.355	0.000	0.000	0.0000	-0.377	-0.46488	-0.53293	-0.3771	-0.4649	-0.5329
50753	136.75	9.194	0.000	0.000	0.0000	-0.377	-0.46454	-0.53255	-0.3768	-0.4645	-0.5325
50754	138.75	9.032	0.000	0.000	0.0000	-0.376	-0.46419	-0.53217	-0.3765	-0.4642	-0.5322
50755	140.75	8.871	0.000	0.000	0.0000	-0.376	-0.46385	-0.53179	-0.3762	-0.4639	-0.5318
50756	142.75	8.710	0.000	0.000	0.0000	-0.376	-0.46351	-0.53141	-0.3759	-0.4635	-0.5314
50757	144.75	8.548	0.000	0.000	0.0000	-0.376	-0.46317	-0.53103	-0.3756	-0.4632	-0.5310
50758	146.75	8.387	0.000	0.000	0.0000	-0.375	-0.46283	-0.53065	-0.3753	-0.4628	-0.5306
50759	148.75	8.226	0.000	0.000	0.0000	-0.375	-0.46249	-0.53027	-0.3750	-0.4625	-0.5303
50745	150.75	8.065	0.000	0.000	0.0000	-0.375	-0.46214	-0.52989	-0.3747	-0.4621	-0.5299
50792	150.75	8.065	0.000	0.000	0.0000	-0.375	-0.46214	-0.52989	-0.3747	-0.4621	-0.5299
50794	152.75	7.903	0.000	0.000	0.0000	-0.374	-0.46163	-0.5293	-0.3743	-0.4616	-0.5293
50795	154.75	7.742	0.000	0.000	0.0000	-0.374	-0.46104	-0.52863	-0.3738	-0.4610	-0.5286
50796	156.75	7.581	0.000	0.000	0.0000	-0.373	-0.46044	-0.52795	-0.3733	-0.4604	-0.5280
50797	158.75	7.419	0.000	0.000	0.0000	-0.373	-0.45985	-0.52728	-0.3728	-0.4598	-0.5273
50798	160.75	7.258	0.000	0.000	0.0000	-0.372	-0.45926	-0.5266	-0.3724	-0.4593	-0.5266
50799	162.75	7.097	0.000	0.000	0.0000	-0.372	-0.45866	-0.52593	-0.3719	-0.4587	-0.5259
50800	164.75	6.935	0.000	0.000	0.0000	-0.371	-0.45807	-0.52525	-0.3714	-0.4581	-0.5253
50801	166.75	6.774	0.000	0.000	0.0000	-0.371	-0.45747	-0.52457	-0.3709	-0.4575	-0.5246
50802	168.75	6.613	0.000	0.000	0.0000	-0.370	-0.45688	-0.5239	-0.3704	-0.4569	-0.5239
50803	170.75	6.452	0.000	0.000	0.0000	-0.370	-0.45629	-0.52322	-0.3699	-0.4563	-0.5232
50804	172.75	6.290	0.000	0.000	0.0000	-0.369	-0.45569	-0.52255	-0.3694	-0.4557	-0.5225
50805	174.75	6.129	0.000	0.000	0.0000	-0.369	-0.4551	-0.52187	-0.3689	-0.4551	-0.5219
50806	176.75	5.968	0.000	0.000	0.0000	-0.368	-0.45451	-0.5212	-0.3685	-0.4545	-0.5212
50807	178.75	5.806	0.000	0.000	0.0000	-0.368	-0.45391	-0.52052	-0.3680	-0.4539	-0.5205
50793	180.75	5.645	0.000	0.000	0.0000	-0.367	-0.45332	-0.51985	-0.3675	-0.4533	-0.5198
50840	180.75	5.645	0.000	0.000	0.0000	-0.367	-0.45332	-0.51985	-0.3675	-0.4533	-0.5198
50841	182.675	5.490	0.000	0.000	0.0000	-0.367	-0.45275	-0.5192	-0.3670	-0.4528	-0.5192
50842	184.6	5.335	0.000	0.000	0.0000	-0.366	-0.45204	-0.51839	-0.3664	-0.4520	-0.5184
50843	186.525	5.179	0.000	0.000	0.0000	-0.366	-0.45096	-0.51715	-0.3655	-0.4510	-0.5171
50844	188.45	5.024	0.000	0.000	0.0000	-0.365	-0.44988	-0.51591	-0.3647	-0.4499	-0.5159
50845	190.375	4.869	0.000	0.000	0.0000	-0.364	-0.44879	-0.51466	-0.3638	-0.4488	-0.5147
50846	192.3	4.714	0.000	0.000	0.0000	-0.363	-0.44771	-0.51342	-0.3629	-0.4477	-0.5134
50847	194.225	4.558	0.000	0.000	0.0000	-0.362	-0.44662	-0.51218	-0.3620	-0.4466	-0.5122
50848	196.15	4.403	0.000	0.000	0.0000	-0.361	-0.44554	-0.51094	-0.3611	-0.4456	-0.5110
50849	198.075	4.248	0.000	0.000	0.0000	-0.360	-0.44446	-0.5097	-0.3603	-0.4445	-0.5097
30214	200	4.093	0.000	0.000	0.0001	-0.359	-0.44337	-0.50845	-0.3594	-0.4434	-0.5085
30215	201.5	3.972	0.000	0.000	0.0001	-0.359	-0.44253	-0.50749	-0.3588	-0.4426	-0.5076
50730	203.35	3.823	0.000	0.001	0.0002	-0.358	-0.44148	-0.50629	-0.3580	-0.4416	-0.5064
50731	205.2	3.673	0.000	0.001	0.0003	-0.357	-0.44044	-0.5051	-0.3573	-0.4407	-0.5054
50732	207.05	3.524	0.001	0.002	0.0005	-0.356	-0.4394	-0.5039	-0.3566	-0.4399	-0.5044
50733	208.9	3.375	0.001	0.003	0.0008	-0.355	-0.43836	-0.50271	-0.3561	-0.4391	-0.5035
50729	210.75	3.226	0.002	0.006	0.0013	-0.354	-0.43732	-0.50152	-0.3557	-0.4386	-0.5028
50870	210.75	3.226	0.002	0.006	0.0013	-0.354	-0.43732	-0.50152	-0.3557	-0.4386	-0.5028
50872	212.75	3.065	0.004	0.009	0.0021	-0.354	-0.43619	-0.50023	-0.3556	-0.4383	-0.5023
50873	214.75	2.903	0.006	0.015	0.0034	-0.353	-0.43506	-0.49893	-0.3560	-0.4385	-0.5023
50874	216.75	2.742	0.009	0.023	0.0053	-0.352	-0.43394	-0.49764	-0.3570	-0.4393	-0.5030
50875	218.75	2.581	0.014	0.036	0.0082	-0.350	-0.43226	-0.49572	-0.3585	-0.4405	-0.5039
50876	220.75	2.419	0.021	0.054	0.0123	-0.349	-0.43055	-0.49377	-0.3612	-0.4428	-0.5061
50877	222.75	2.258	0.031	0.078	0.0179	-0.348	-0.42885	-0.49183	-0.3654	-0.4468	-0.5097
50878	224.75	2.097	0.044	0.111	0.0254	-0.346	-0.42715	-0.48988	-0.3716	-0.4526	-0.5153
50879	226.75	1.935	0.061	0.154	0.0352	-0.345	-0.42545	-0.48793	-0.3800	-0.4607	-0.5231
50880	228.75	1.774	0.083	0.207	0.0475	-0.343	-0.42374	-0.48598	-0.3909	-0.4712	-0.5335

50881	230.75	1.613	0.109	0.272	0.0624	-0.342	-0.42204	-0.48404	-0.4044	-0.4844	-0.5464
50882	232.75	1.452	0.139	0.349	0.0799	-0.341	-0.42034	-0.48209	-0.4205	-0.5002	-0.5620
50883	234.75	1.290	0.174	0.435	0.0997	-0.339	-0.41864	-0.48014	-0.4389	-0.5183	-0.5798
50884	236.75	1.129	0.211	0.529	0.1212	-0.338	-0.41693	-0.4782	-0.4590	-0.5381	-0.5994
50885	238.75	0.968	0.250	0.626	0.1435	-0.336	-0.41523	-0.47625	-0.4799	-0.5587	-0.6197
50871	240.75	0.806	0.288	0.722	0.1655	-0.335	-0.41353	-0.4743	-0.5006	-0.5791	-0.6399
50918	240.75	0.806	0.288	0.722	0.1655	-0.335	-0.41353	-0.4743	-0.5006	-0.5791	-0.6399
50920	242.75	0.645	0.324	0.812	0.1861	-0.334	-0.41182	-0.47236	-0.5198	-0.5979	-0.6585
50921	244.75	0.484	0.355	0.890	0.2038	-0.332	-0.41012	-0.47041	-0.5361	-0.6140	-0.6743
50922	246.75	0.323	0.379	0.949	0.2175	-0.331	-0.40842	-0.46846	-0.5484	-0.6260	-0.6860
50923	248.75	0.161	0.394	0.987	0.2262	-0.330	-0.40672	-0.46651	-0.5557	-0.6329	-0.6927
50924	250.75	0.000	0.399	1.000	0.2292	-0.327	-0.4035	-0.46287	-0.5560	-0.6327	-0.6920
50925	252.75	0.161	0.394	0.987	0.2262	-0.323	-0.39929	-0.4581	-0.5495	-0.6255	-0.6843
50926	254.75	0.323	0.379	0.949	0.2175	-0.320	-0.39507	-0.45333	-0.5374	-0.6126	-0.6709
50927	256.75	0.484	0.355	0.890	0.2038	-0.316	-0.39085	-0.44856	-0.5202	-0.5947	-0.6524
50928	258.75	0.645	0.324	0.812	0.1861	-0.313	-0.38664	-0.44379	-0.4989	-0.5727	-0.6299
50929	260.75	0.806	0.288	0.722	0.1655	-0.309	-0.38242	-0.43902	-0.4749	-0.5480	-0.6046
50930	262.75	0.968	0.250	0.626	0.1435	-0.306	-0.37821	-0.43425	-0.4493	-0.5217	-0.5777
50931	264.75	1.129	0.211	0.529	0.1212	-0.302	-0.37399	-0.42948	-0.4235	-0.4952	-0.5506
50932	266.75	1.290	0.174	0.435	0.0997	-0.299	-0.36978	-0.42471	-0.3985	-0.4695	-0.5244
50933	268.75	1.452	0.139	0.349	0.0799	-0.295	-0.36556	-0.41994	-0.3752	-0.4455	-0.4998
50919	270.75	1.613	0.109	0.272	0.0624	-0.292	-0.36135	-0.41517	-0.3542	-0.4238	-0.4776
50966	270.75	1.613	0.109	0.272	0.0624	-0.292	-0.36135	-0.41517	-0.3542	-0.4238	-0.4776
50967	272.7	1.770	0.083	0.209	0.0478	-0.288	-0.35724	-0.41052	-0.3362	-0.4051	-0.4584
50968	274.65	1.927	0.062	0.156	0.0358	-0.285	-0.35313	-0.40587	-0.3207	-0.3889	-0.4416
50969	276.6	2.085	0.045	0.114	0.0261	-0.282	-0.34902	-0.40122	-0.3077	-0.3751	-0.4273
50970	278.55	2.242	0.032	0.081	0.0186	-0.278	-0.34491	-0.39657	-0.2967	-0.3635	-0.4151
50971	280.5	2.399	0.022	0.056	0.0129	-0.275	-0.3408	-0.39192	-0.2876	-0.3537	-0.4048
50972	282.45	2.556	0.015	0.038	0.0087	-0.271	-0.33662	-0.38719	-0.2800	-0.3454	-0.3959
50973	284.4	2.714	0.010	0.025	0.0058	-0.267	-0.33181	-0.38172	-0.2731	-0.3376	-0.3875
50974	286.35	2.871	0.006	0.016	0.0037	-0.263	-0.32699	-0.37624	-0.2671	-0.3307	-0.3800
50975	288.3	3.028	0.004	0.010	0.0023	-0.259	-0.32218	-0.37076	-0.2617	-0.3245	-0.3731
50976	290.25	3.185	0.002	0.006	0.0014	-0.255	-0.31737	-0.36528	-0.2569	-0.3188	-0.3667
50977	292.2	3.343	0.001	0.004	0.0009	-0.251	-0.31255	-0.35981	-0.2523	-0.3134	-0.3607
50978	294.15	3.500	0.001	0.002	0.0005	-0.248	-0.30774	-0.35433	-0.2480	-0.3082	-0.3548
50979	296.1	3.657	0.000	0.001	0.0003	-0.244	-0.30293	-0.34885	-0.2438	-0.3032	-0.3491
50980	298.05	3.815	0.000	0.001	0.0002	-0.240	-0.29811	-0.34338	-0.2397	-0.2983	-0.3435
30361	300	3.972	0.000	0.000	0.0001	-0.236	-0.2933	-0.3379	-0.2357	-0.2934	-0.3380
30362	301.5	4.093	0.000	0.000	0.0001	-0.233	-0.2896	-0.33369	-0.2326	-0.2896	-0.3337


Diff Settlement Input
Settlement, ft.
Distance, ft
0.0000
-0.1000
-0.2000
-0.3000
-0.4000
-0.5000
-0.6000
-0.7000
0
50
100
150
200
250
300
350
pc4, L1

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adisp sequence.txt

```
ANTYPE,0
TIME,1
/INPUT,'D1','txt','D:\Ansys Files\Run Files\Model 300\',, 0
/STATUS,SOLU
SOLVE
!*
TIME,24
/INPUT,'D24','txt','D:\Ansys Files\Run Files\Model 300\',, 0
/STATUS,SOLU
SOLVE
!*
TIME,100
/INPUT,'D100','txt','D:\Ansys Files\Run Files\Model 300\',, 0
/STATUS,SOLU
SOLVE
!*
TIME,1000
/INPUT,'D1000','txt','D:\Ansys Files\Run Files\Model 300\',, 0
/STATUS,SOLU
SOLVE
!*
TIME,5000
/INPUT,'D5000','txt','D:\Ansys Files\Run Files\Model 300\',, 0
/STATUS,SOLU
SOLVE
!*
!TIME,10000
!/INPUT,'d10000','txt','D:\Ansys Files\Run Files\Model 300\',, 0
!/STATUS,SOLU
!SOLVE
!FINISH
```

STATIC LOAD APPLICATION (5000 yrs.)

Input for file ssu 300.db

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D5000a.txt

```
D,30001,,-0.3893,,,,UY,,,,,
D,30002,,-0.3892,,,,UY,,,,,
D,51012,,-0.3892,,,,UY,,,,,
D,51013,,-0.3891,,,,UY,,,,,
D,51014,,-0.3890,,,,UY,,,,,
D,51015,,-0.3889,,,,UY,,,,,
D,51016,,-0.3888,,,,UY,,,,,
D,51017,,-0.3888,,,,UY,,,,,
D,51018,,-0.3887,,,,UY,,,,,
D,51019,,-0.3886,,,,UY,,,,,
D,51020,,-0.3885,,,,UY,,,,,
D,51021,,-0.3884,,,,UY,,,,,
D,51022,,-0.3883,,,,UY,,,,,
D,51023,,-0.3881,,,,UY,,,,,
D,51024,,-0.3880,,,,UY,,,,,
D,51025,,-0.3878,,,,UY,,,,,
D,50633,,-0.3876,,,,UY,,,,,
D,51011,,-0.3876,,,,UY,,,,,
D,50635,,-0.3875,,,,UY,,,,,
D,50636,,-0.3873,,,,UY,,,,,
D,50637,,-0.3872,,,,UY,,,,,
D,50638,,-0.3870,,,,UY,,,,,
D,50639,,-0.3868,,,,UY,,,,,
D,50640,,-0.3867,,,,UY,,,,,
D,50641,,-0.3865,,,,UY,,,,,
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D,50643,,-0.3862,,,,UY,,,,,
D,50644,,-0.3860,,,,UY,,,,,
D,50645,,-0.3859,,,,UY,,,,,
D,50646,,-0.3857,,,,UY,,,,,
D,50647,,-0.3855,,,,UY,,,,,
D,50648,,-0.3853,,,,UY,,,,,
D,50634,,-0.3852,,,,UY,,,,,
D,50681,,-0.3852,,,,UY,,,,,
D,50683,,-0.3850,,,,UY,,,,,
D,50684,,-0.3848,,,,UY,,,,,
D,50685,,-0.3846,,,,UY,,,,,
D,50686,,-0.3844,,,,UY,,,,,
D,50687,,-0.3843,,,,UY,,,,,
D,50688,,-0.3841,,,,UY,,,,,
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D,50690,,-0.3837,,,,UY,,,,,
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D,50692,,-0.3833,,,,UY,,,,,
D,50693,,-0.3832,,,,UY,,,,,
D,50694,,-0.3830,,,,UY,,,,,
D,50695,,-0.3828,,,,UY,,,,,
D,50696,,-0.3826,,,,UY,,,,,
D,50682,,-0.3824,,,,UY,,,,,
D,51056,,-0.3824,,,,UY,,,,,
D,51060,,-0.3822,,,,UY,,,,,
D,51059,,-0.3820,,,,UY,,,,,
D,51058,,-0.3818,,,,UY,,,,,
D,51057,,-0.3816,,,,UY,,,,,
D,30211,,-0.3814,,,,UY,,,,,
D,30178,,-0.3812,,,,UY,,,,,
D,50604,,-0.3810,,,,UY,,,,,
D,50605,,-0.3808,,,,UY,,,,,
D,50606,,-0.3806,,,,UY,,,,,
D,50607,,-0.3804,,,,UY,,,,,
D,50608,,-0.3802,,,,UY,,,,,
D,50609,,-0.3800,,,,UY,,,,,
D,50610,,-0.3798,,,,UY,,,,,
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Differential Displacement File applied as load step after static load application

```
D,50611,,-0.3796,,,,UY,,,,,
D,50612,,-0.3794,,,,UY,,,,,
D,50603,,-0.3791,,,,UY,,,,,
D,50744,,-0.3791,,,,UY,,,,,
D,50746,,-0.3788,,,,UY,,,,,
D,50747,,-0.3785,,,,UY,,,,,
D,50748,,-0.3782,,,,UY,,,,,
D,50749,,-0.3780,,,,UY,,,,,
D,50750,,-0.3777,,,,UY,,,,,
D,50751,,-0.3774,,,,UY,,,,,
D,50752,,-0.3771,,,,UY,,,,,
D,50753,,-0.3768,,,,UY,,,,,
D,50754,,-0.3765,,,,UY,,,,,
D,50755,,-0.3762,,,,UY,,,,,
D,50756,,-0.3759,,,,UY,,,,,
D,50757,,-0.3756,,,,UY,,,,,
D,50758,,-0.3753,,,,UY,,,,,
D,50759,,-0.3750,,,,UY,,,,,
D,50745,,-0.3747,,,,UY,,,,,
D,50792,,-0.3747,,,,UY,,,,,
D,50794,,-0.3743,,,,UY,,,,,
D,50795,,-0.3738,,,,UY,,,,,
D,50796,,-0.3733,,,,UY,,,,,
D,50797,,-0.3728,,,,UY,,,,,
D,50798,,-0.3724,,,,UY,,,,,
D,50799,,-0.3719,,,,UY,,,,,
D,50800,,-0.3714,,,,UY,,,,,
D,50801,,-0.3709,,,,UY,,,,,
D,50802,,-0.3704,,,,UY,,,,,
D,50803,,-0.3699,,,,UY,,,,,
D,50804,,-0.3694,,,,UY,,,,,
D,50805,,-0.3689,,,,UY,,,,,
D,50806,,-0.3685,,,,UY,,,,,
D,50807,,-0.3680,,,,UY,,,,,
D,50793,,-0.3675,,,,UY,,,,,
D,50840,,-0.3675,,,,UY,,,,,
D,50841,,-0.3670,,,,UY,,,,,
D,50842,,-0.3664,,,,UY,,,,,
D,50843,,-0.3655,,,,UY,,,,,
D,50844,,-0.3647,,,,UY,,,,,
D,50845,,-0.3638,,,,UY,,,,,
D,50846,,-0.3629,,,,UY,,,,,
D,50847,,-0.3620,,,,UY,,,,,
D,50848,,-0.3611,,,,UY,,,,,
D,50849,,-0.3603,,,,UY,,,,,
D,30214,,-0.3594,,,,UY,,,,,
D,30215,,-0.3588,,,,UY,,,,,
D,50730,,-0.3580,,,,UY,,,,,
D,50731,,-0.3573,,,,UY,,,,,
D,50732,,-0.3566,,,,UY,,,,,
D,50733,,-0.3561,,,,UY,,,,,
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D,50874,,-0.3570,,,,UY,,,,,
D,50875,,-0.3585,,,,UY,,,,,
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D,50877,,-0.3654,,,,UY,,,,,
D,50878,,-0.3716,,,,UY,,,,,
D,50879,,-0.3800,,,,UY,,,,,
D,50880,,-0.3909,,,,UY,,,,,
D,50881,,-0.4044,,,,UY,,,,,
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D,50882,,-0.4205,,,,UY,,,,,
D,50883,,-0.4389,,,,UY,,,,,
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D,50921,,-0.5361,,,,UY,,,,,
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D,50928,,-0.4989,,,,UY,,,,,
D,50929,,-0.4749,,,,UY,,,,,
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D,50931,,-0.4235,,,,UY,,,,,
D,50932,,-0.3985,,,,UY,,,,,
D,50933,,-0.3752,,,,UY,,,,,
D,50919,,-0.3542,,,,UY,,,,,
D,50966,,-0.3542,,,,UY,,,,,
D,50967,,-0.3362,,,,UY,,,,,
D,50968,,-0.3207,,,,UY,,,,,
D,50969,,-0.3077,,,,UY,,,,,
D,50970,,-0.2967,,,,UY,,,,,
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D,50980,,-0.2397,,,,UY,,,,,
D,30361,,-0.2357,,,,UY,,,,,
D,30362,,-0.2326,,,,UY,,,,,
```

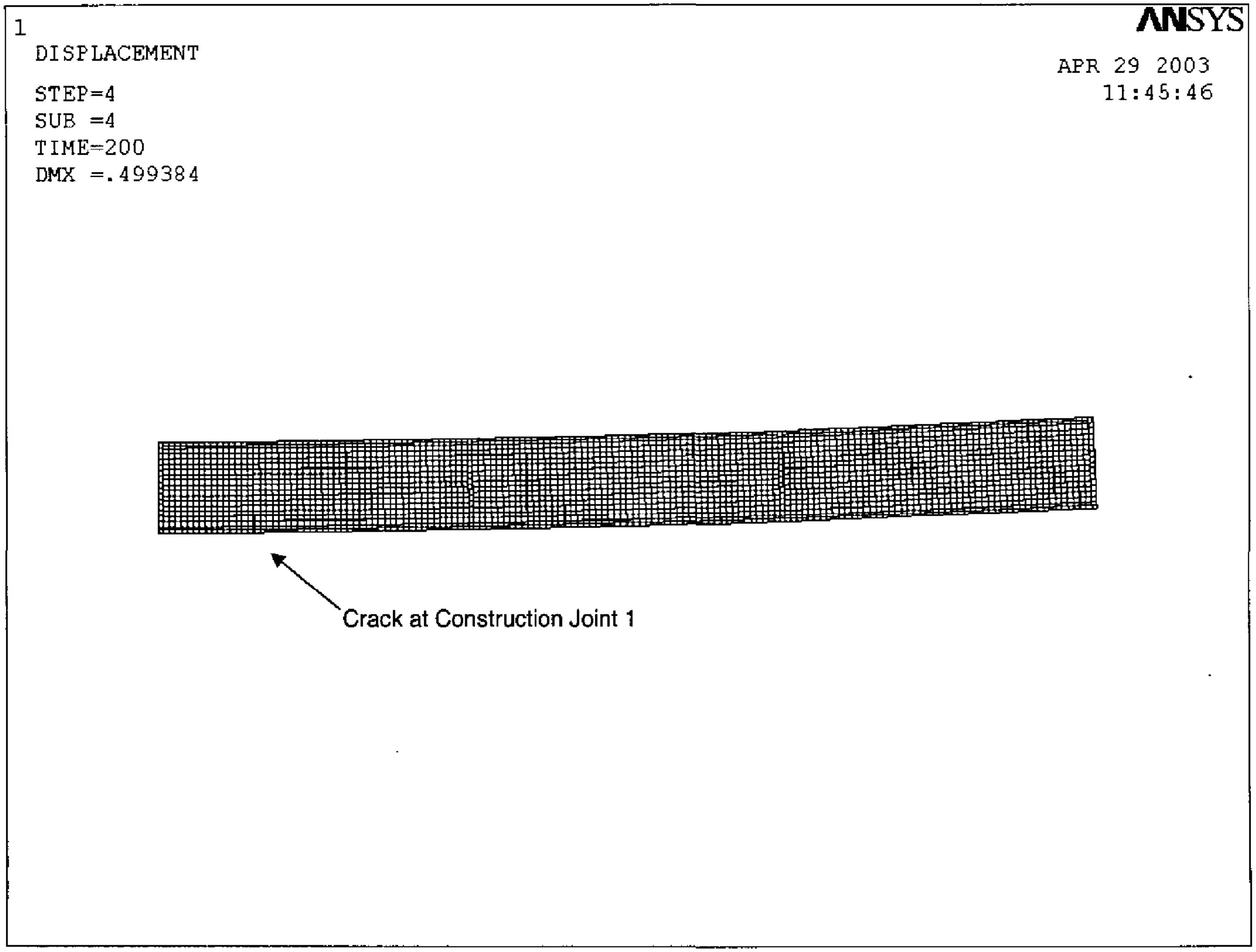
Differential Settlement Results:

The following plots show the differing crack patterns that result from the mean case for differential settlements. Seven locations were chosen for settlement. The plots show results for three different times, 100, 1000, and 10000 years and two levels of settlement, 0.75 in. (PC-3) and 2.75 in. (PC-4).

In addition, two cases were run where there were two concurrent settlement locations. The results from the double settlements, however, resulted in no additional cracking above that caused by a single settlement. Therefore, only single settlements will be considered in this analysis.

These deformed shape plots graphically show the behavior of the vault. The deformation scale has been greatly exaggerated in all cases. To plot the cracks in a form usable for further evaluation, EXCEL spreadsheets were used to calculate relative displacements on each side of control joints and saltstone/concrete contacts. Appendix E contains plots of these locations for all the basic parametric variations. There are a small number of plots that are not shown that were used to obtain data that was needed to provide additional data points for later use in the Monte Carlo analysis.

PC3 Location 1 – 100 years
(Displacements magnified by 50)



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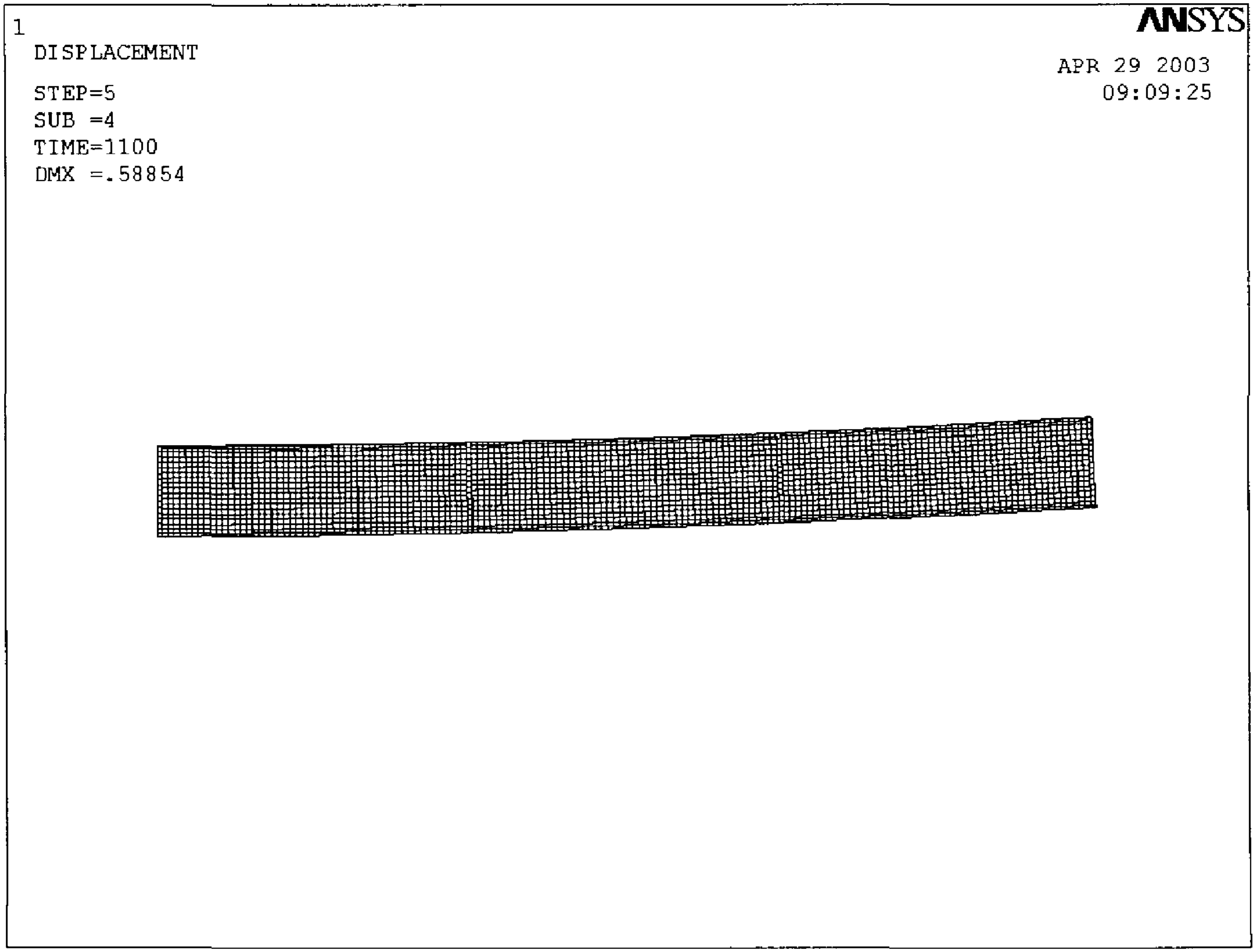
PC3 Location 1 – 1000 years
(Displacements magnified by 50)



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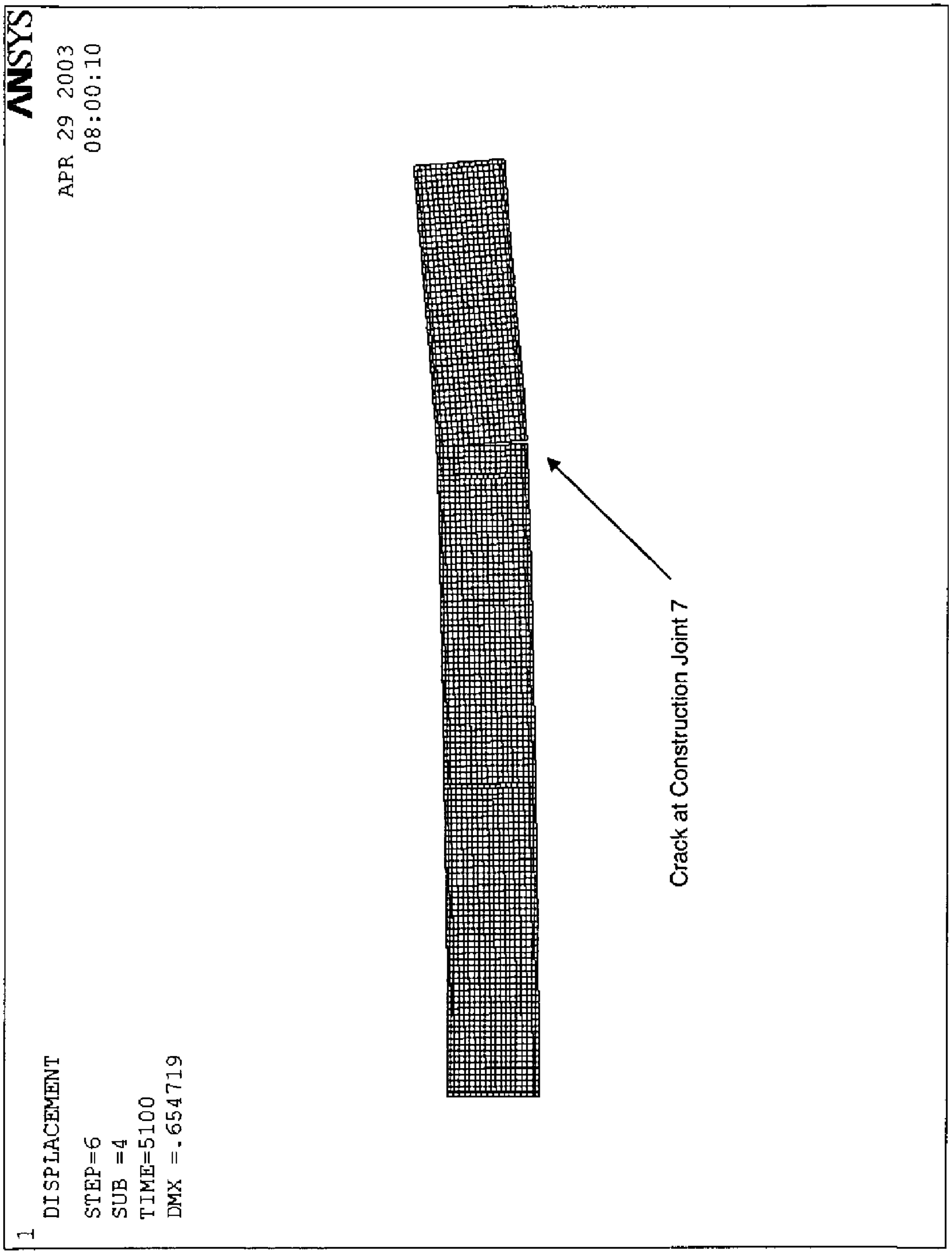
PC3 Location 1 – 5000 years
(Displacements magnified by 50)



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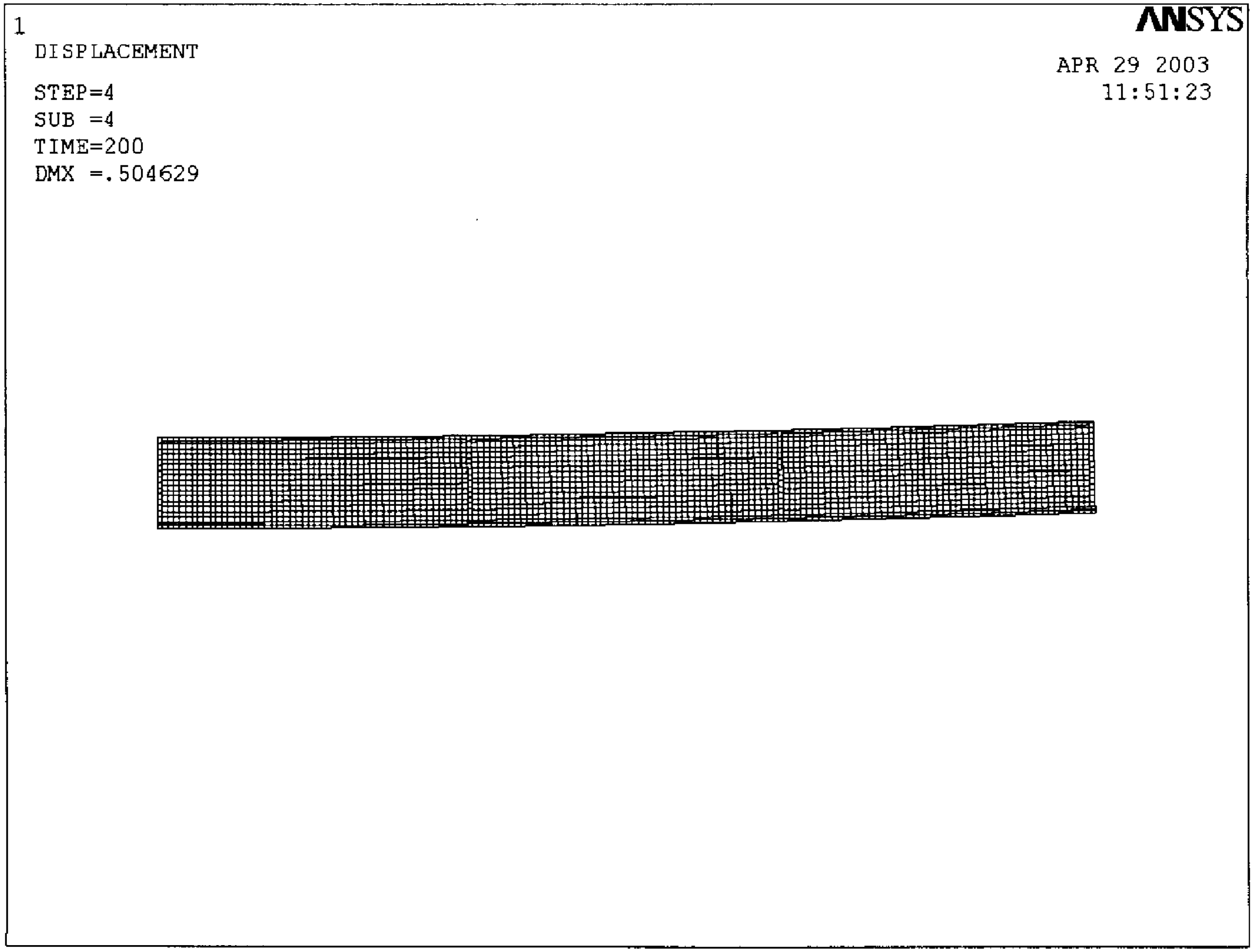
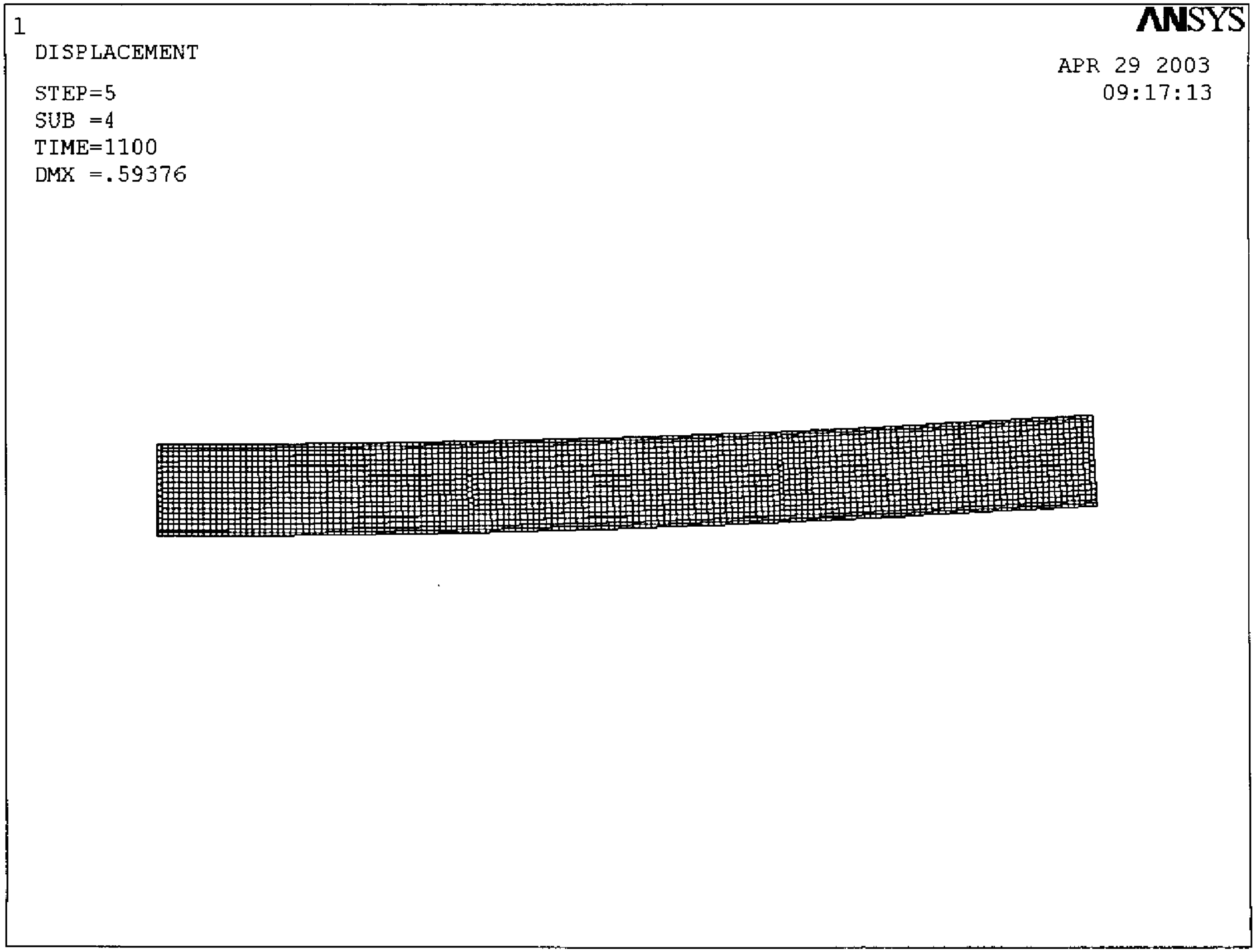
PC3 Location 2 – 100 years
(Displacements magnified by 50)



PC3 Location 2 – 1000 years
(Displacements magnified by 50)



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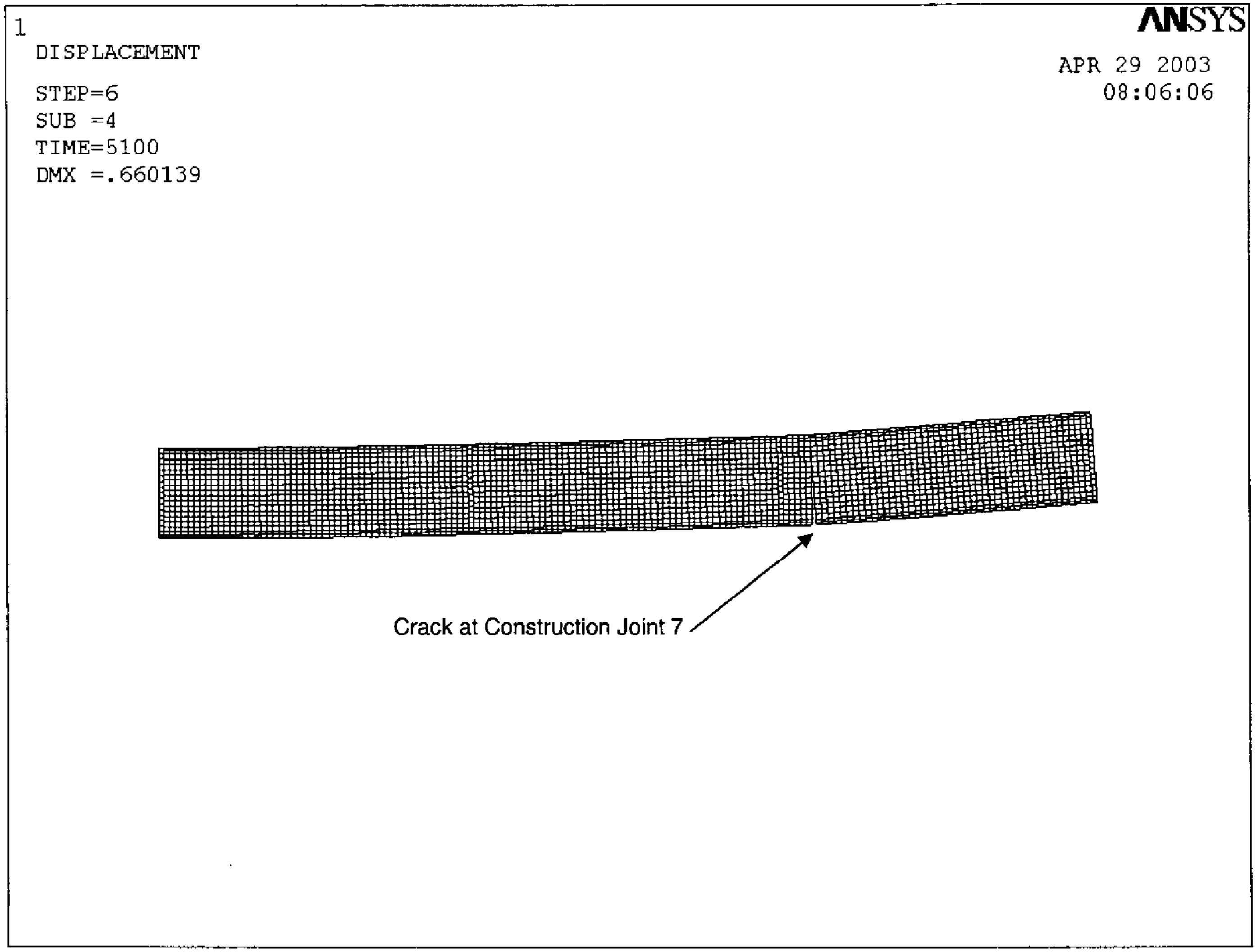
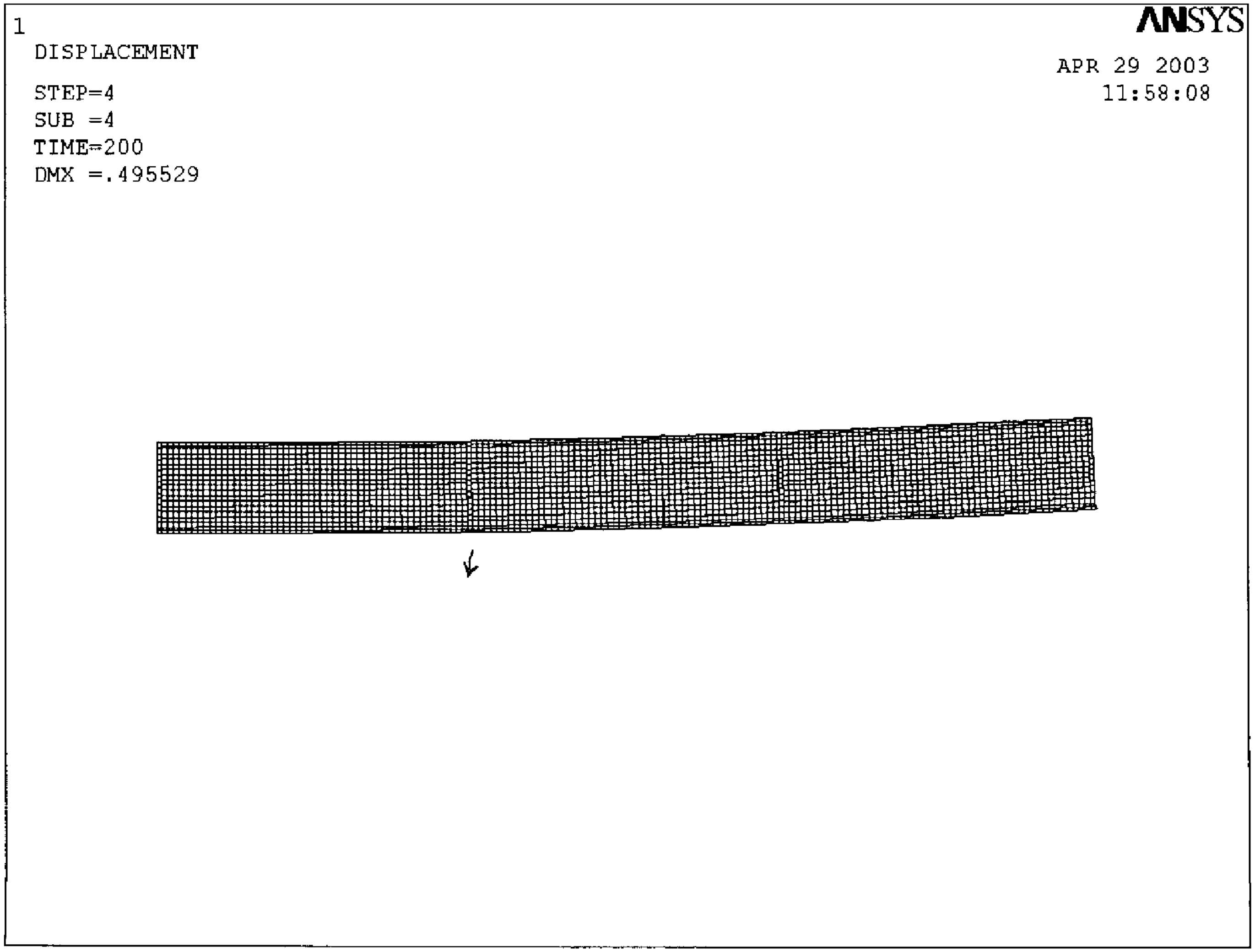
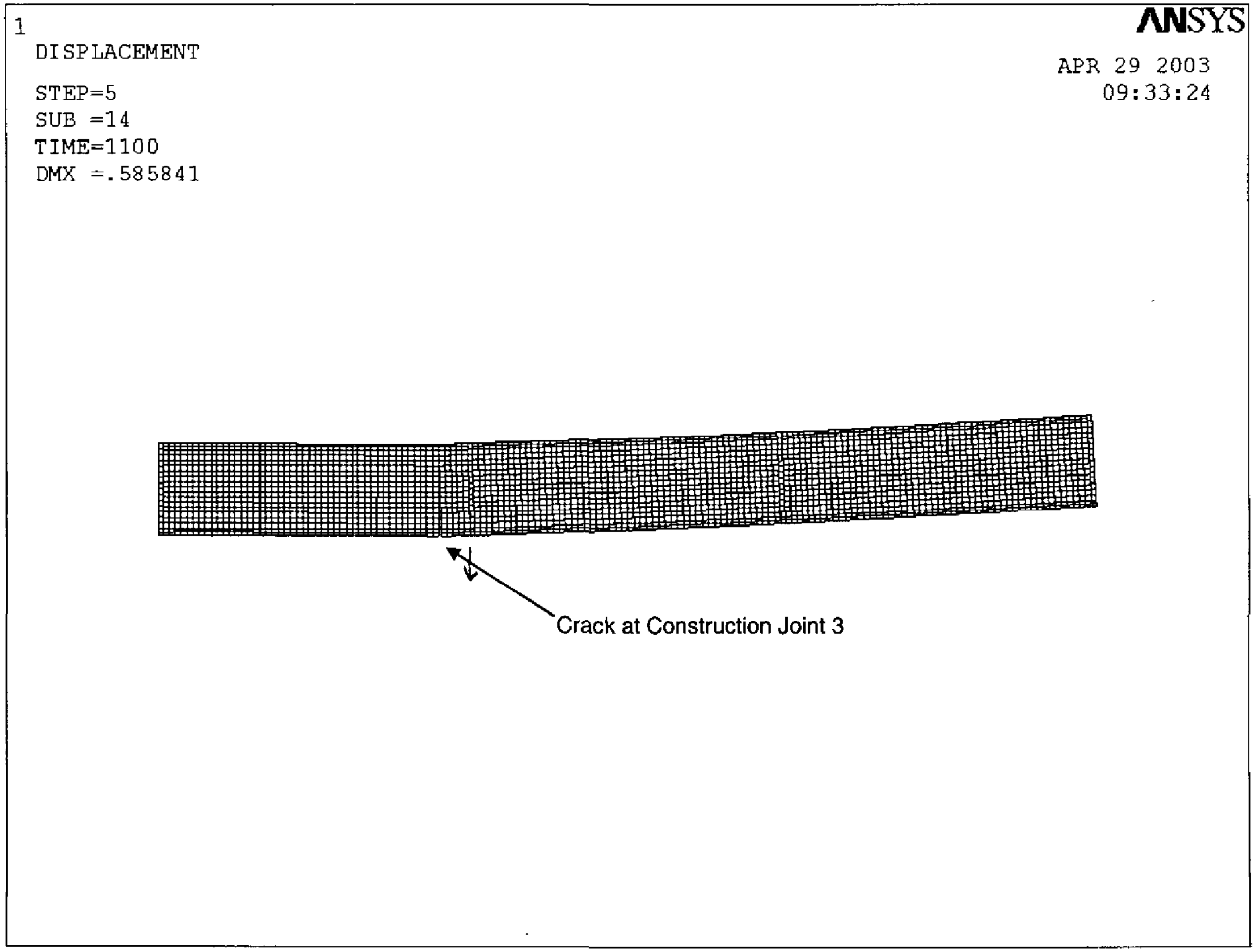
PC3 Location 2 – 5000 years
(Displacements magnified by 50)



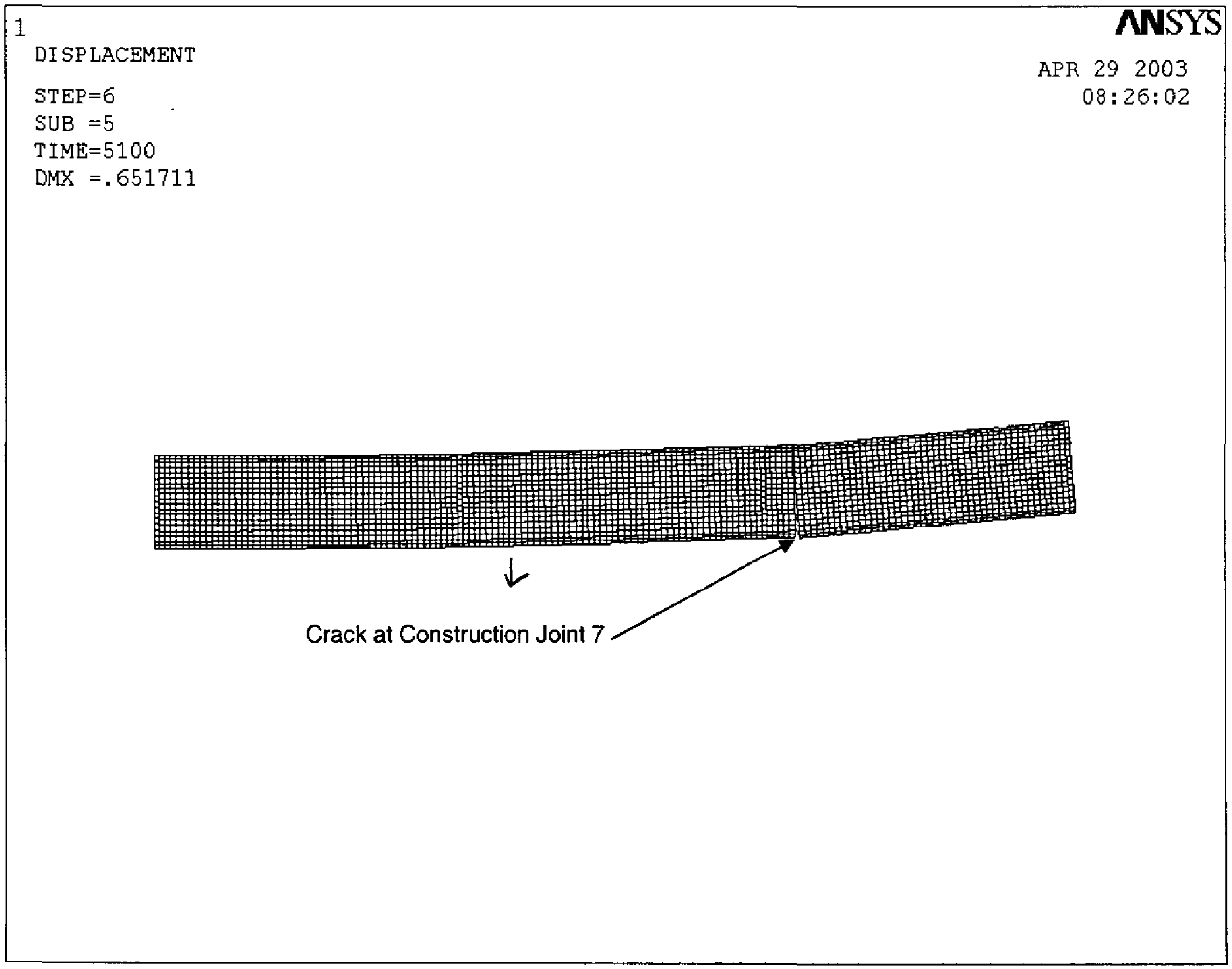
PC3 Location 3 – 100 years
(Displacements magnified by 50)



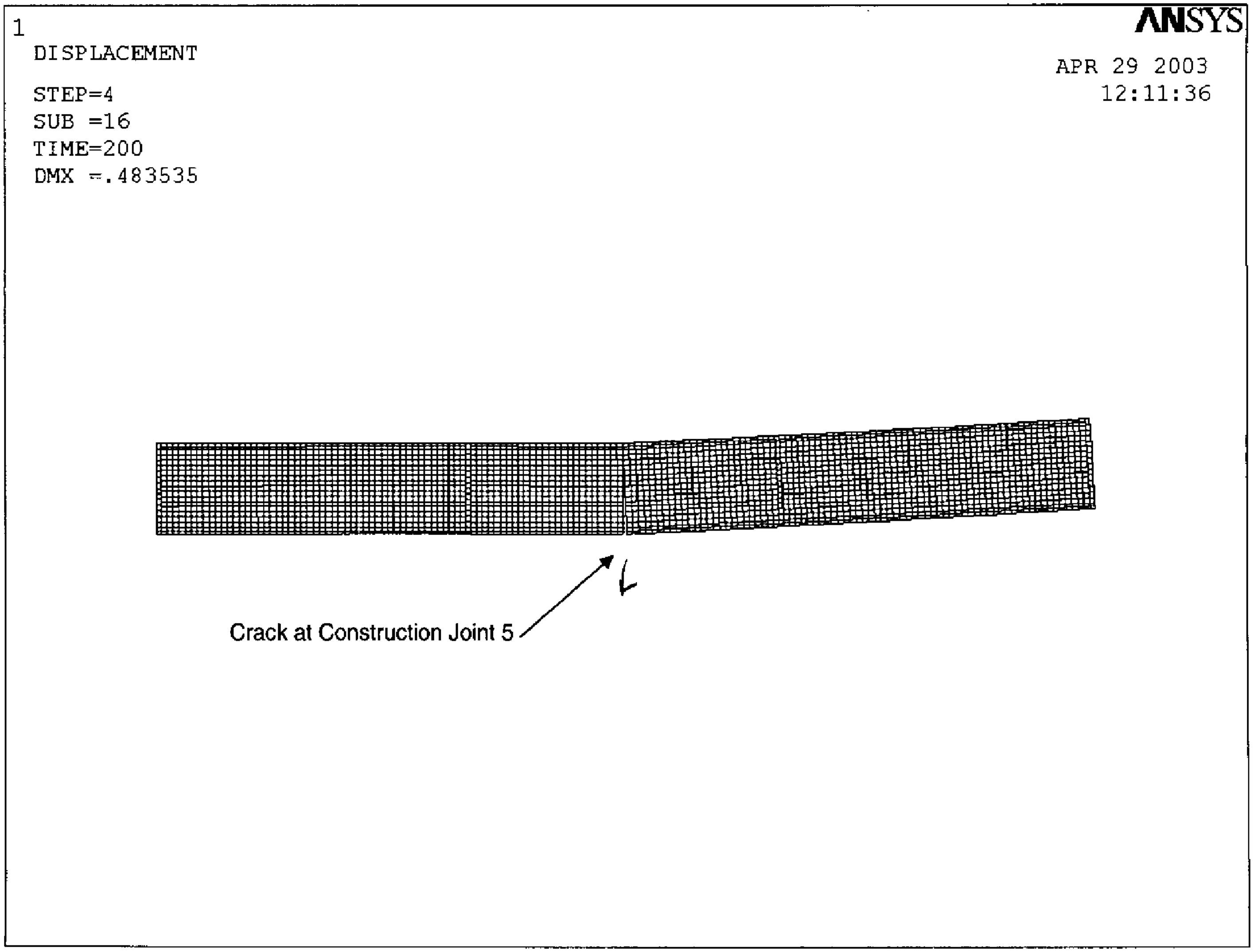
PC3 Location 3 – 1000 years
(Displacements magnified by 50)



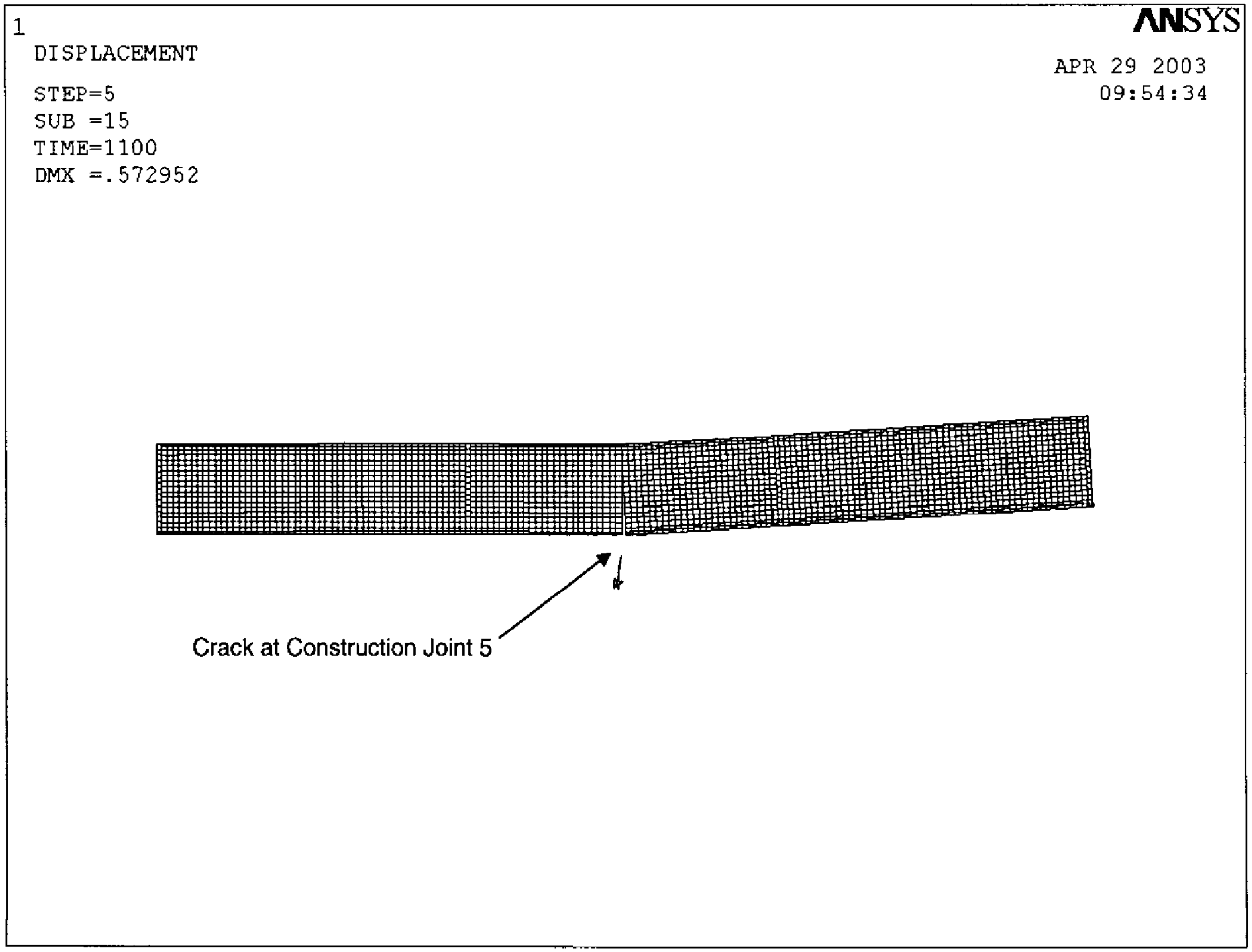
PC3 Location 3 – 5000 years
(Displacements magnified by 50)



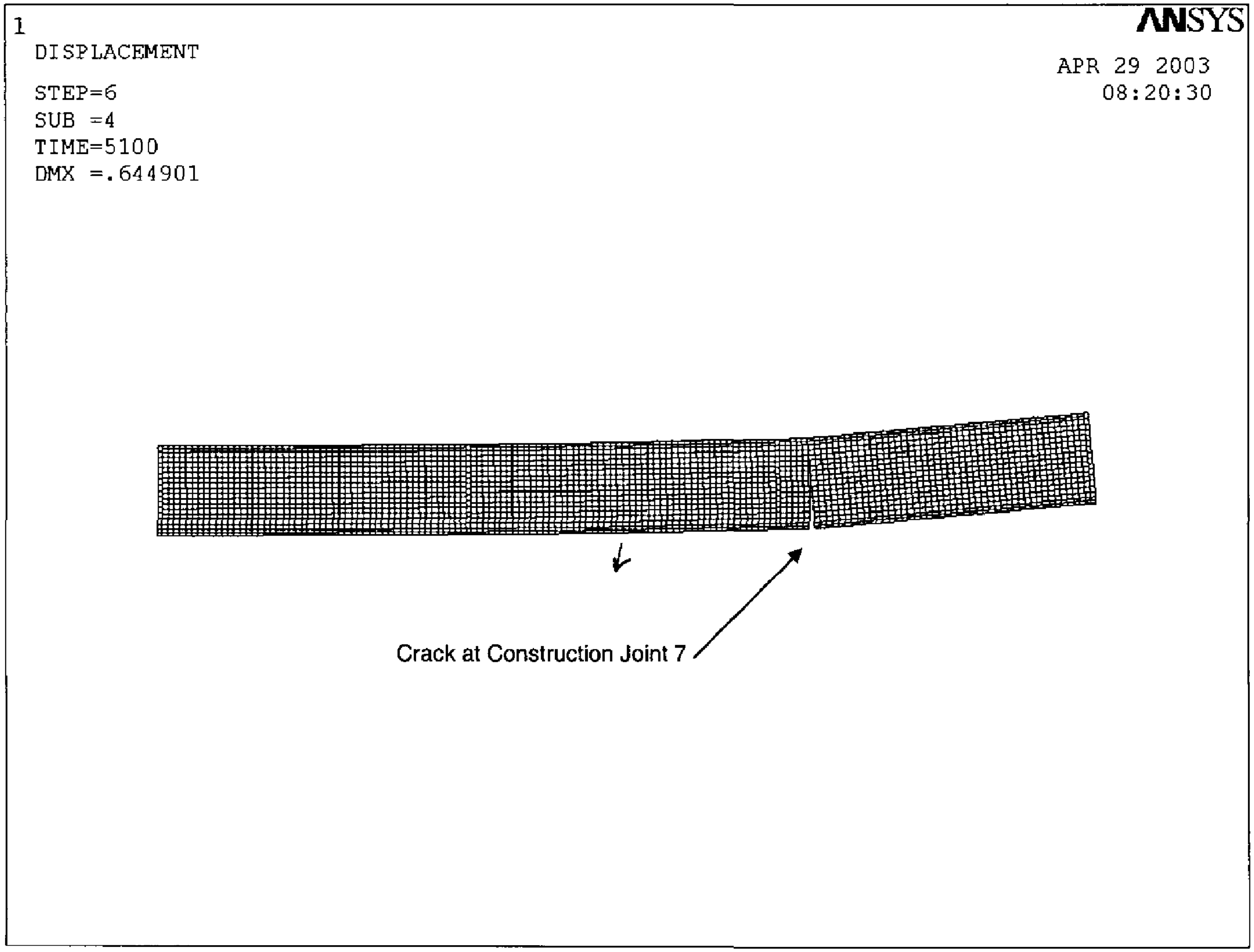
PC3 Location 4 – 100 years
(Displacements magnified by 50)



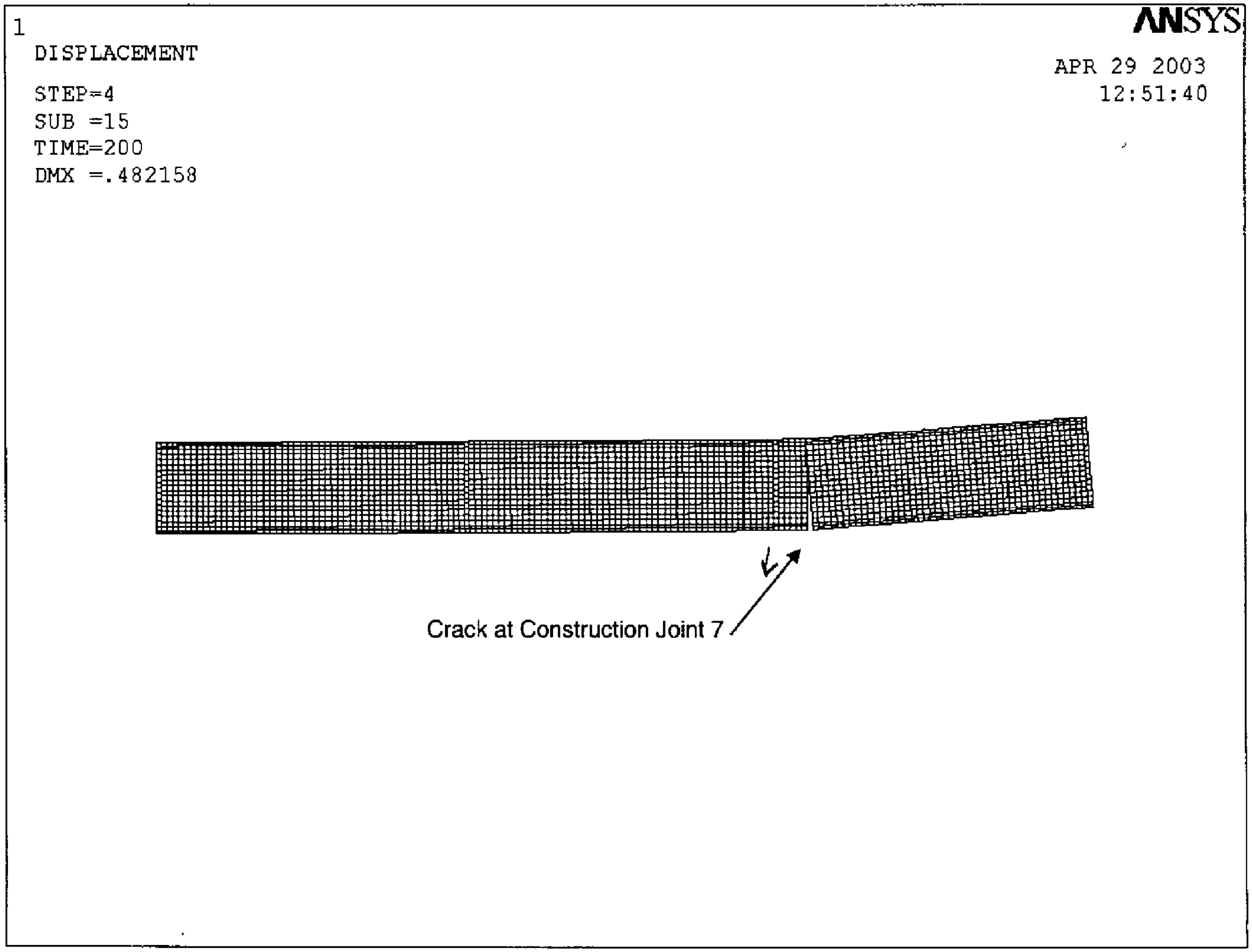
PC3 Location 4 – 1000 years
(Displacements magnified by 50)



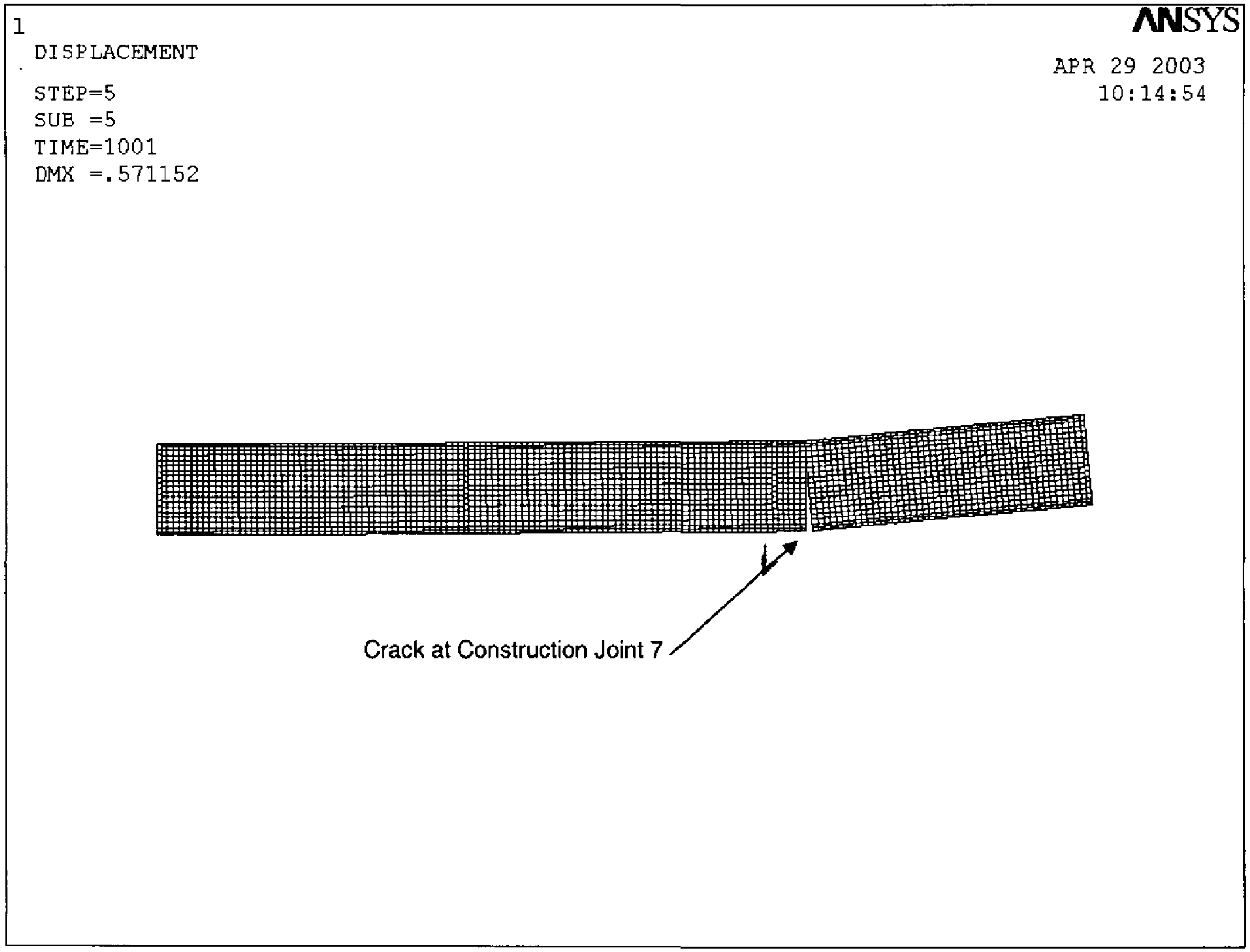
PC3 Location 4 – 5000 years
(Displacements magnified by 50)



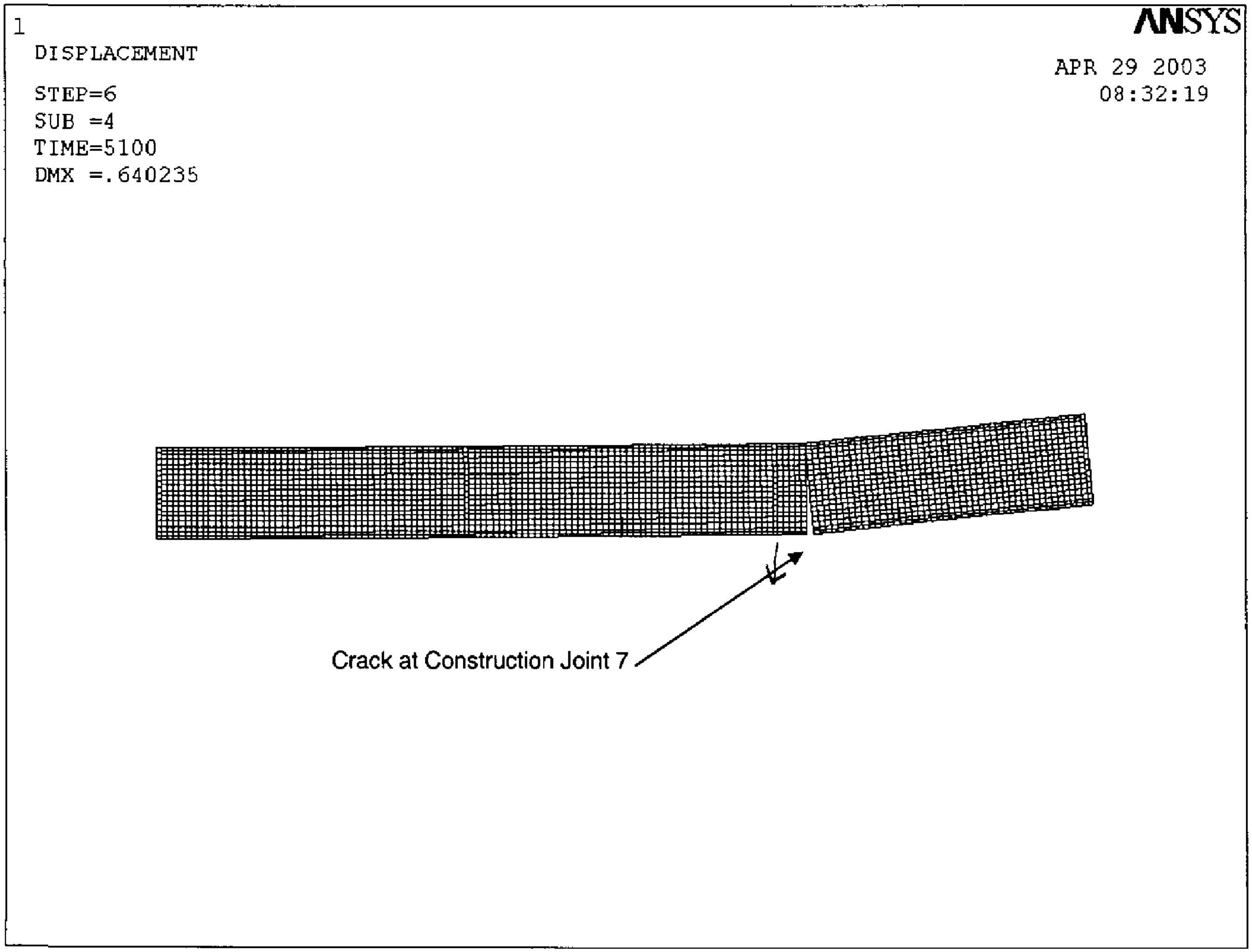
PC3 Location 5 – 100 years
(Displacements magnified by 50)



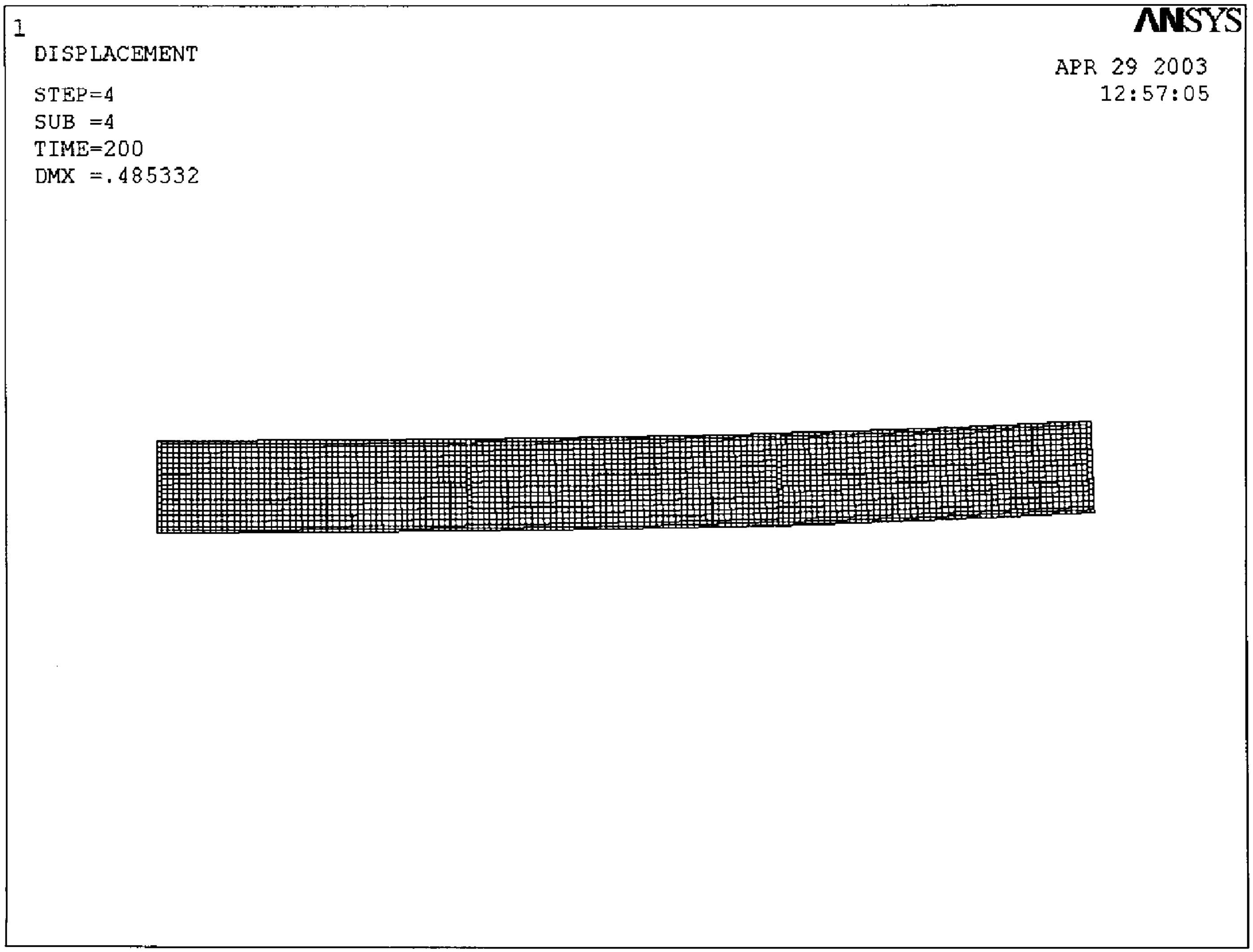
PC3 Location 5 – 1000 years
(Displacements magnified by 50)



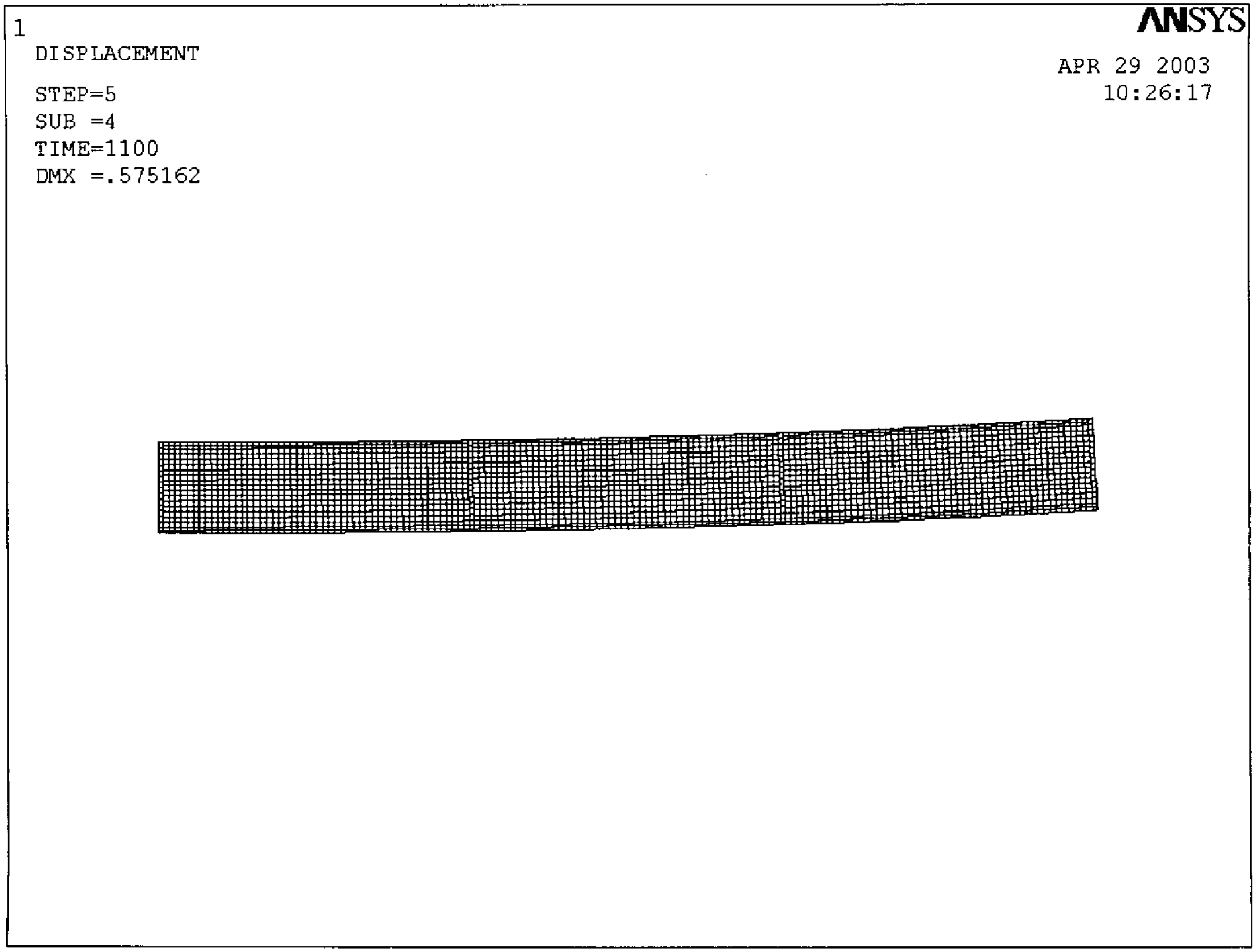
PC3 Location 5 – 5000 years
(Displacements magnified by 50)



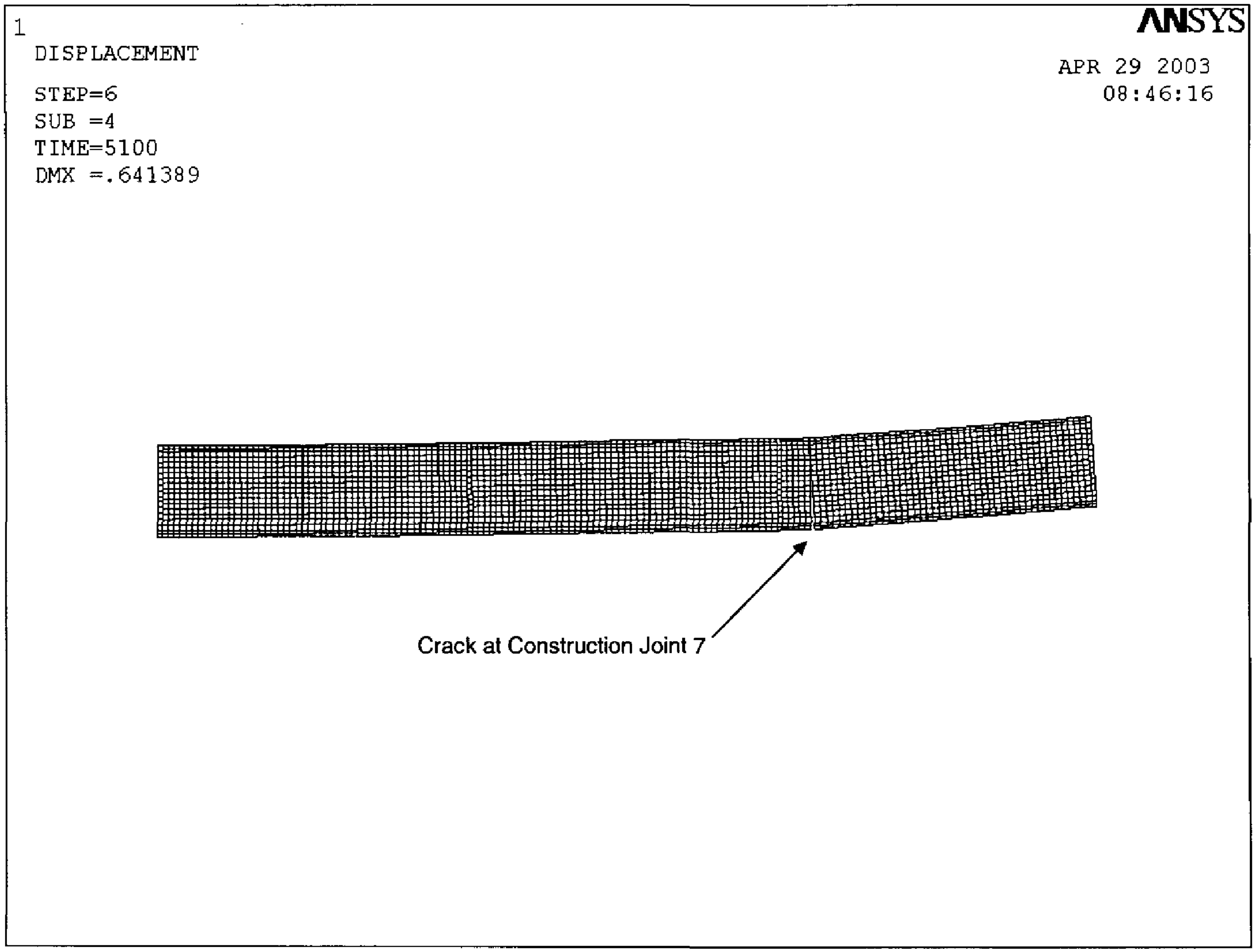
PC3 Location 6 – 100 years
(Displacements magnified by 50)



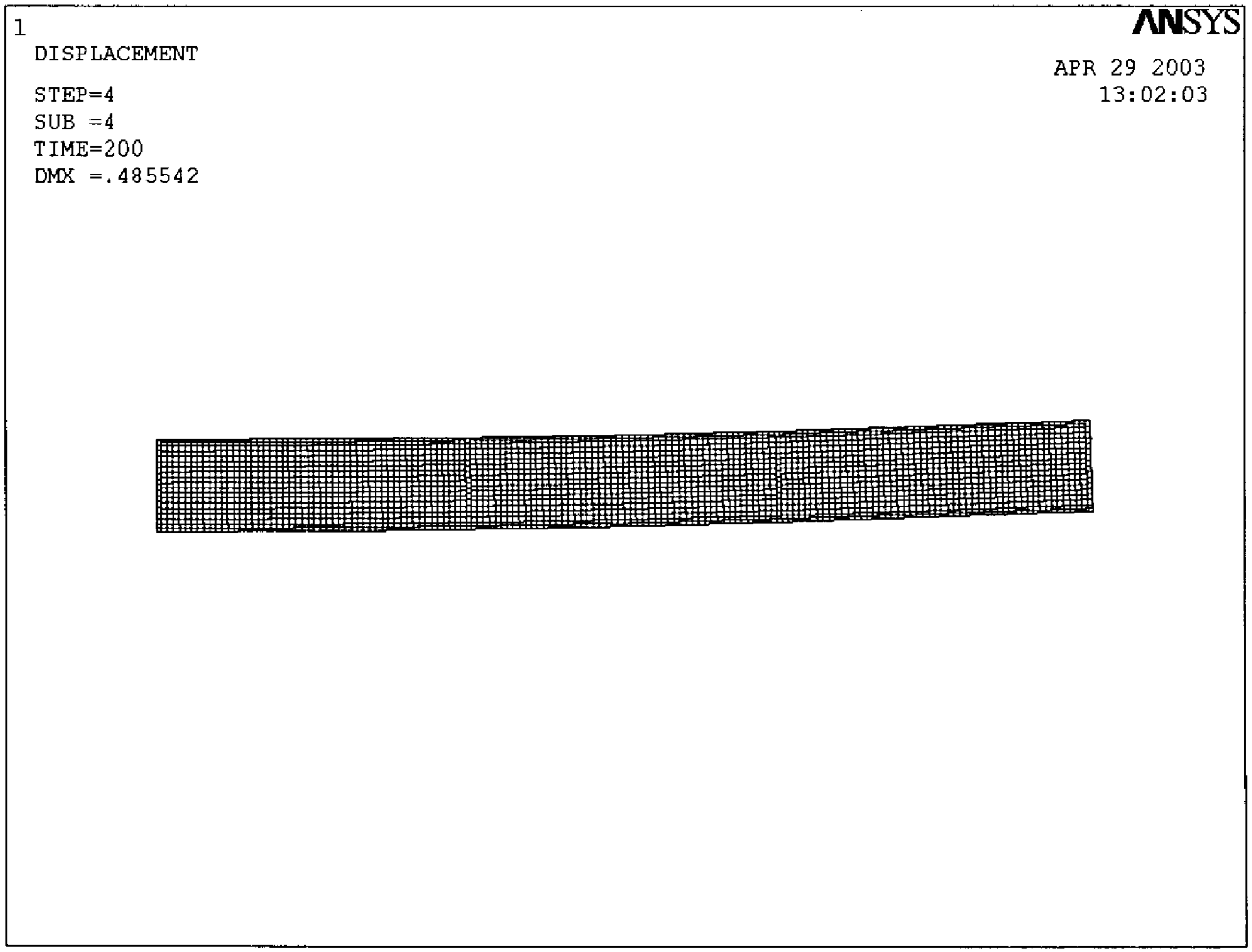
PC3 Location 6 – 1000 years
(Displacements magnified by 50)



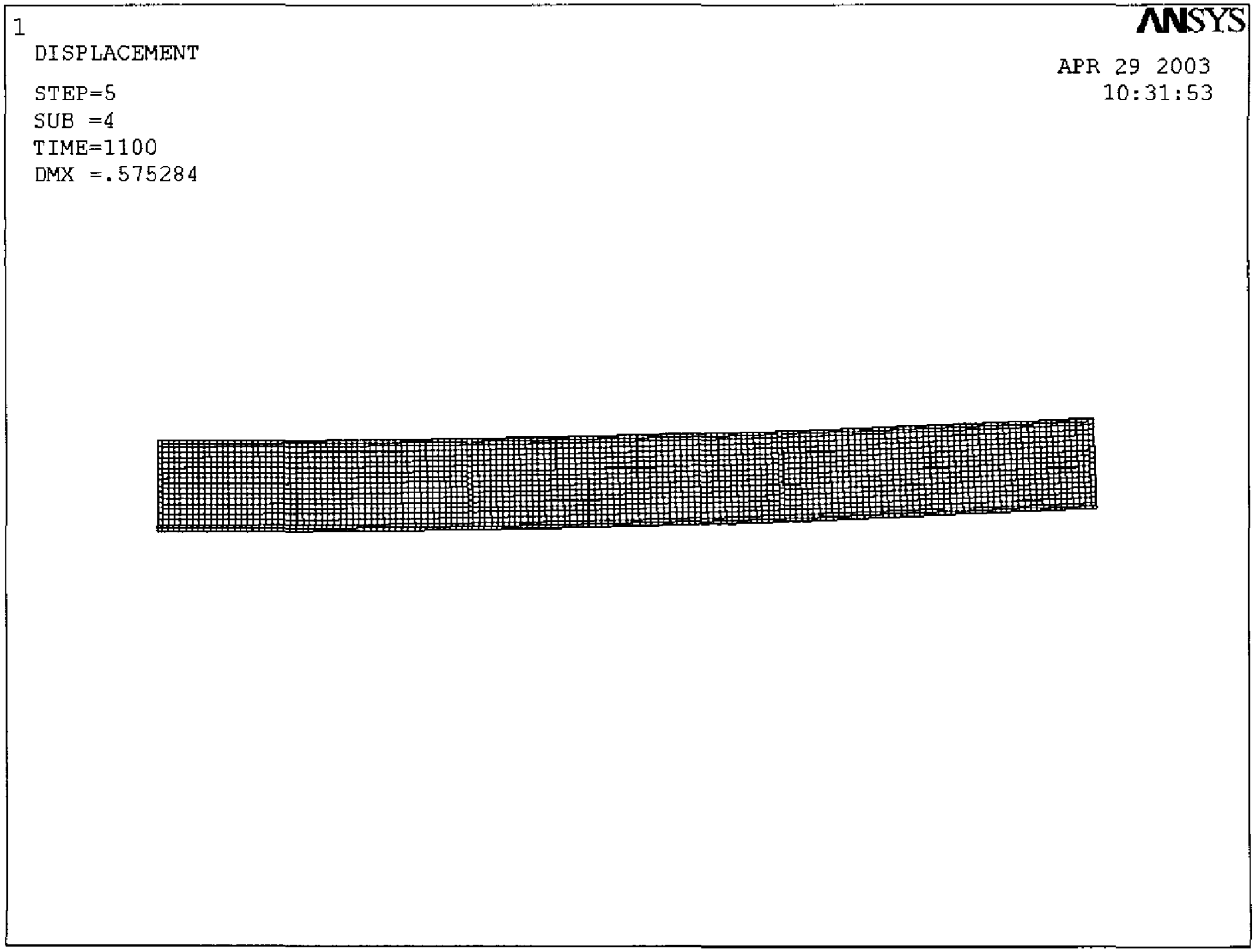
PC3 Location 6 – 5000 years
(Displacements magnified by 50)



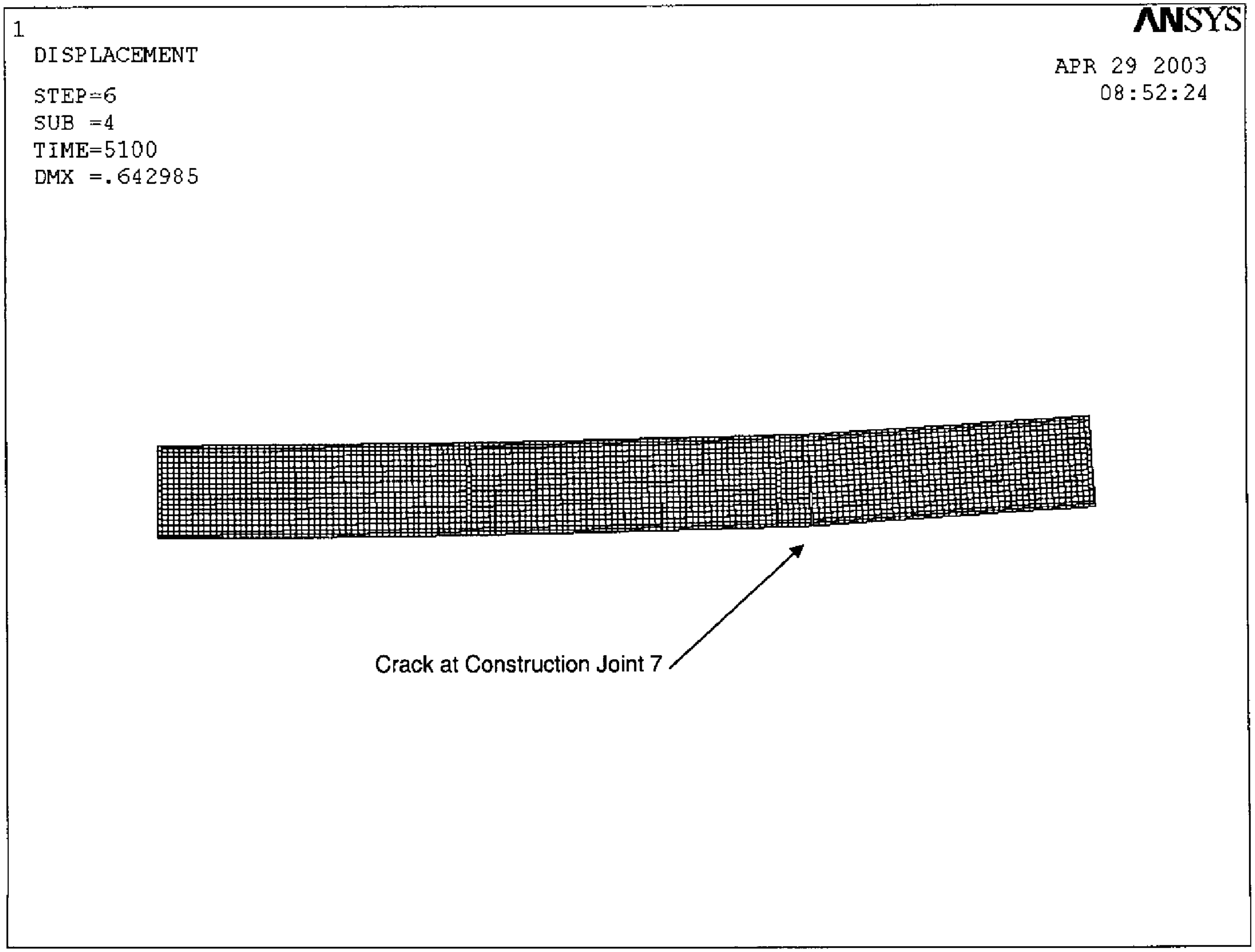
PC3 Location 7 – 100 years
(Displacements magnified by 50)



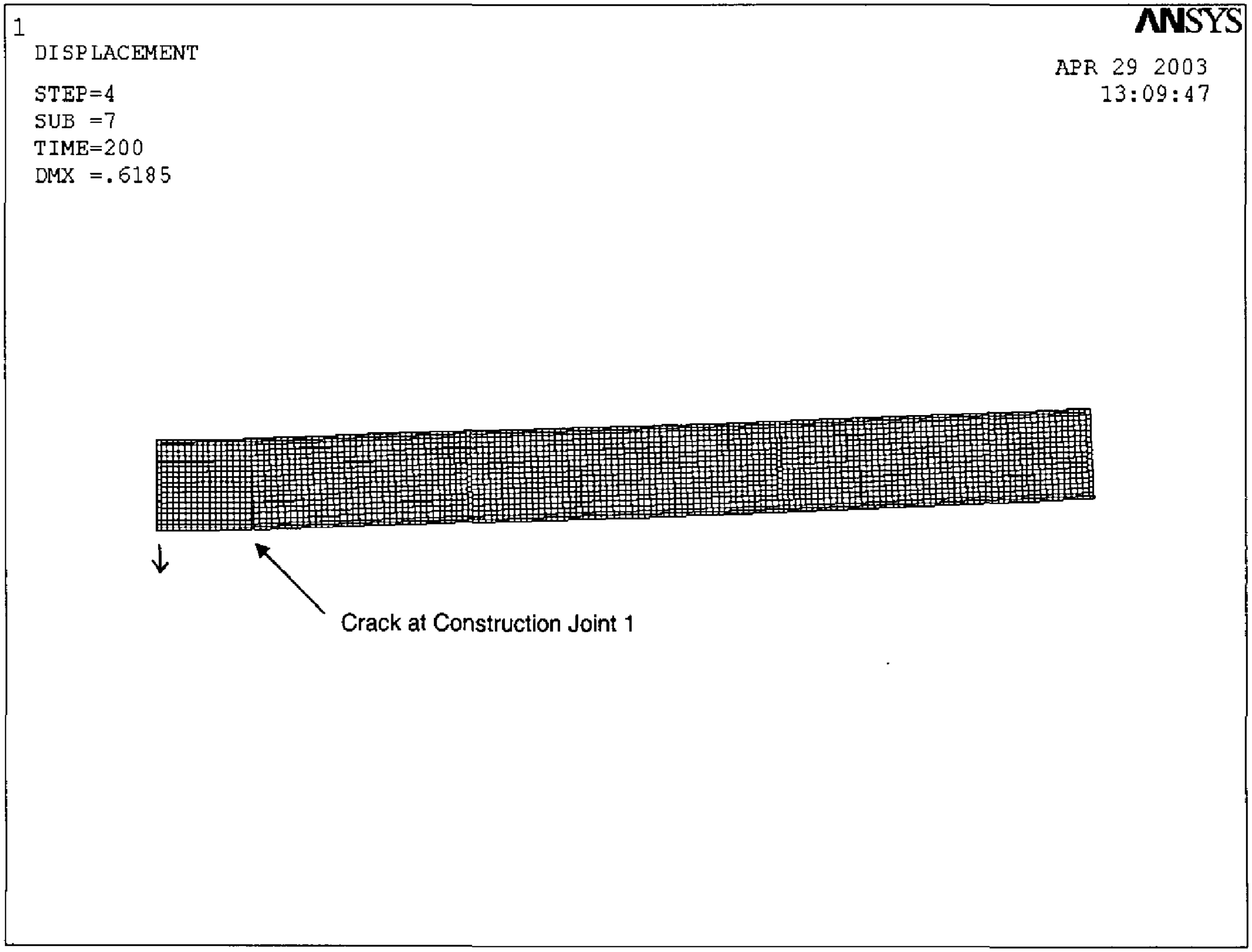
PC3 Location 7 – 1000 years
(Displacements magnified by 50)



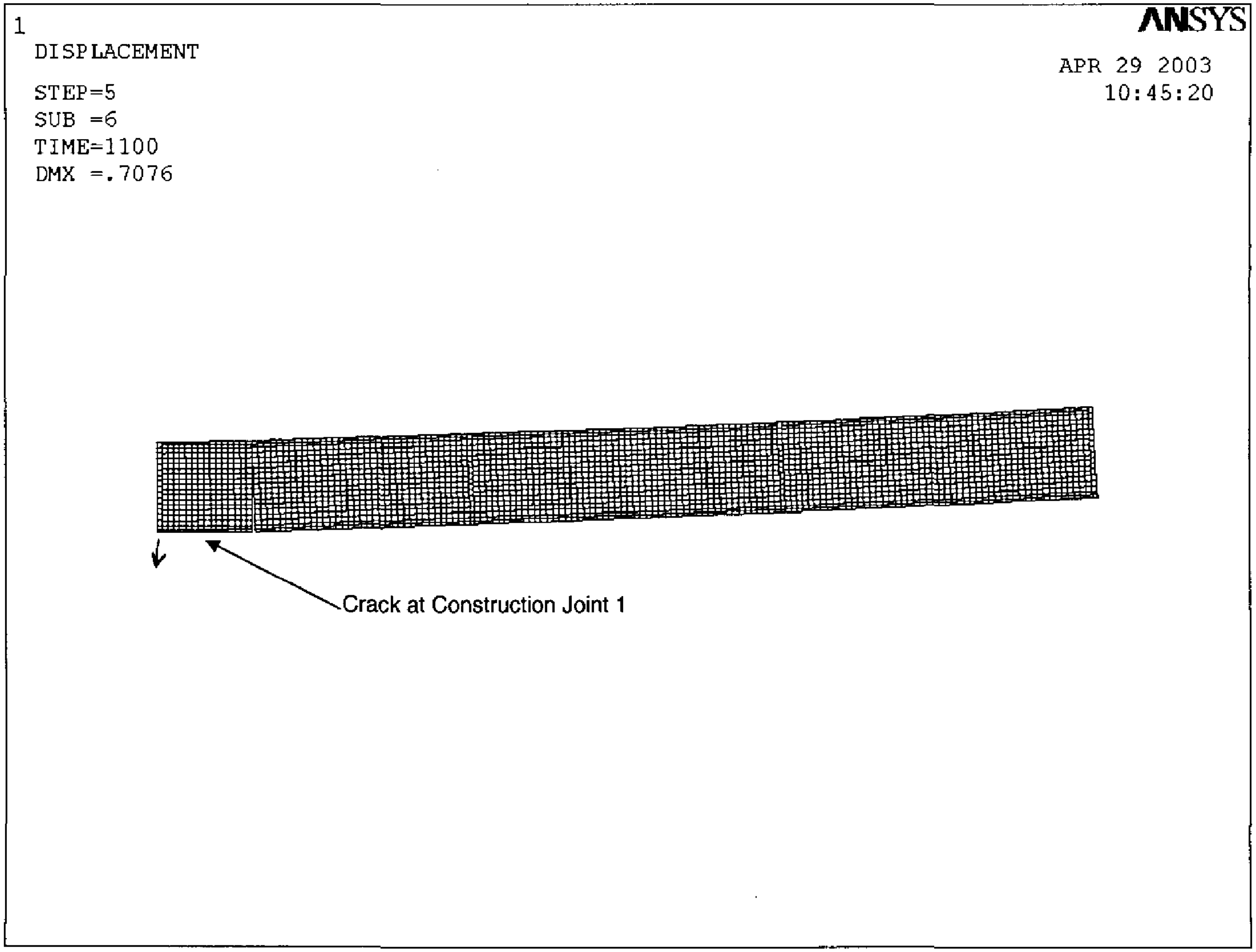
PC3 Location 7 – 5000 years
(Displacements magnified by 50)



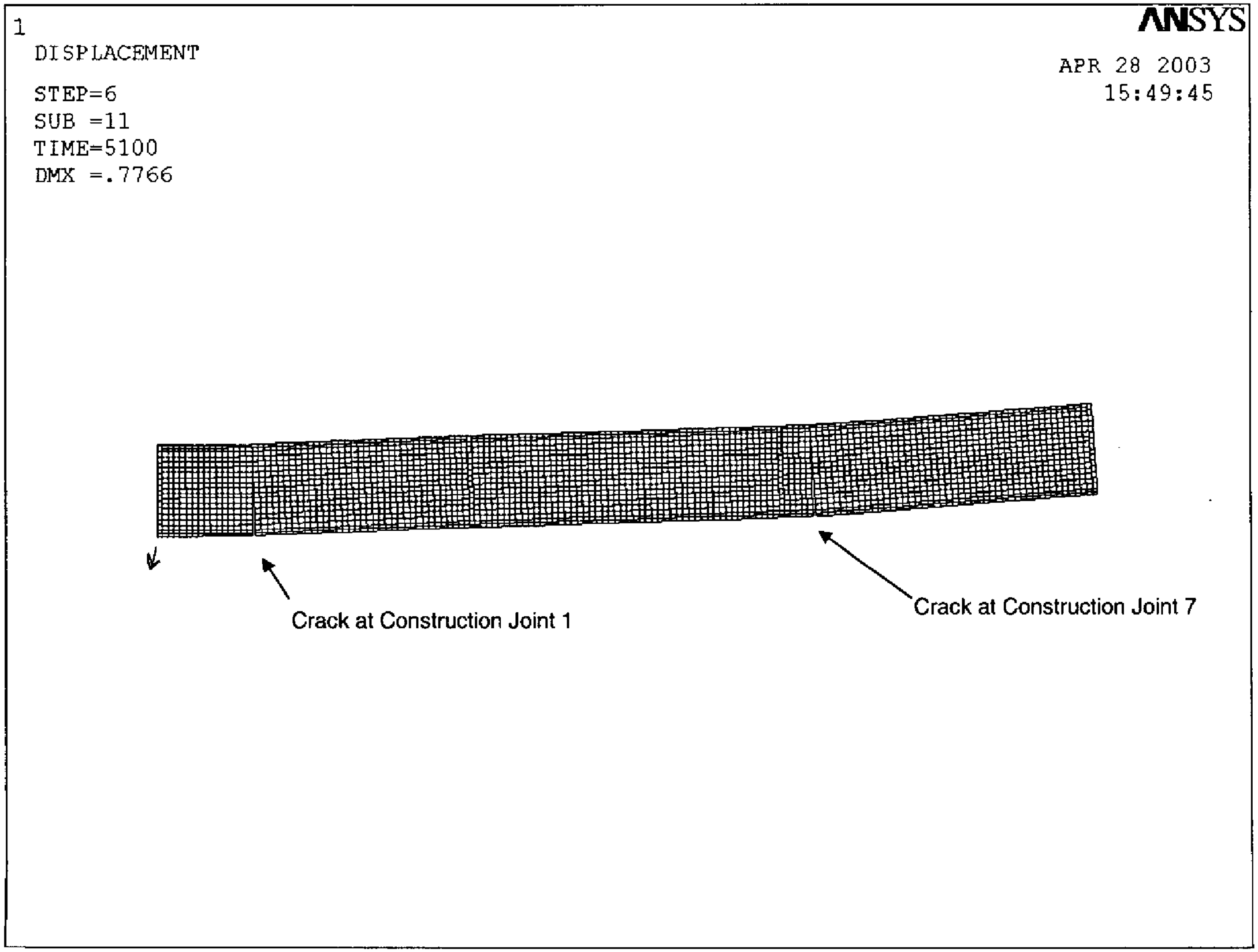
PC4 Location 1 – 100 years
(Displacements magnified by 50)



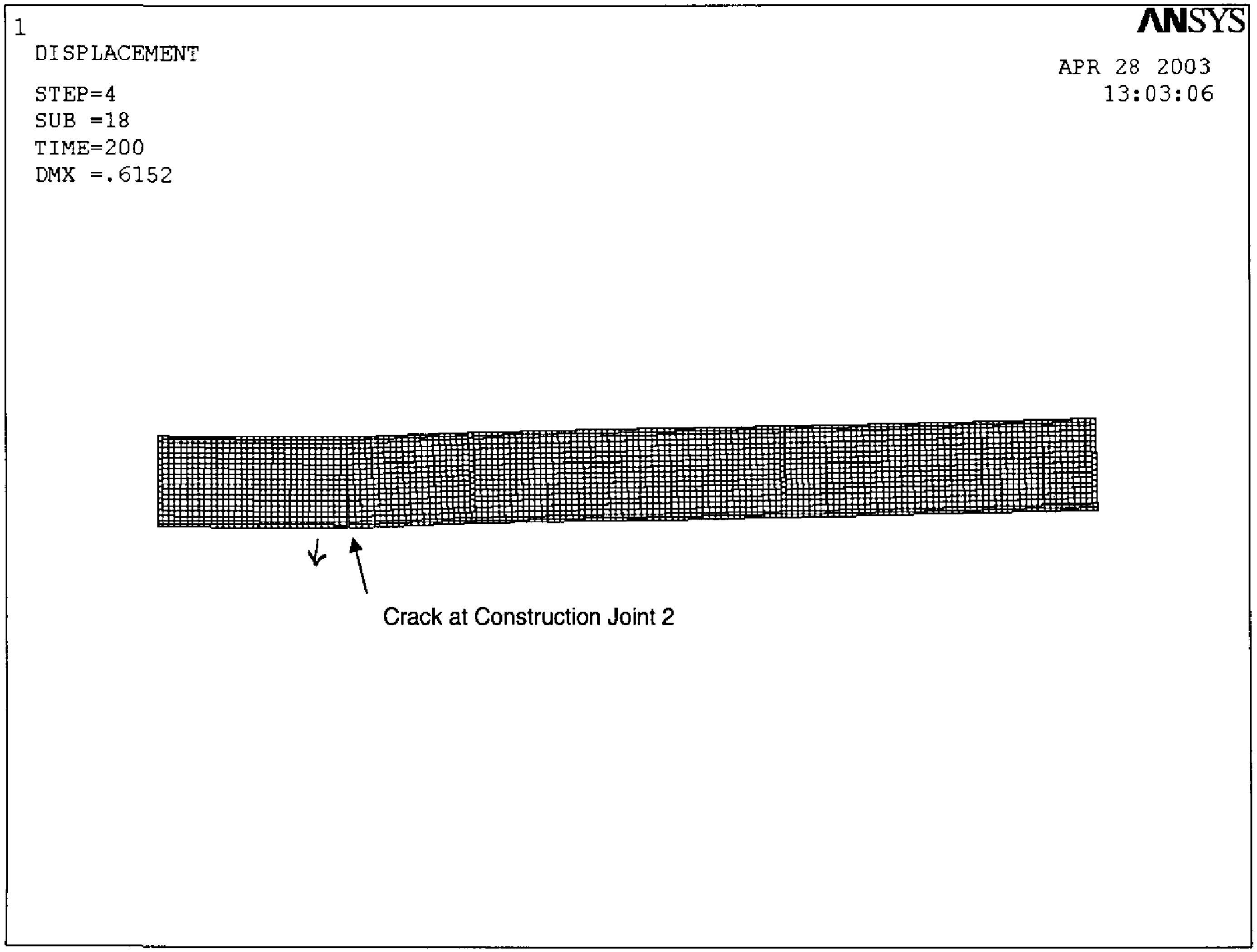
PC4 Location 1 – 1000 years
(Displacements magnified by 50)



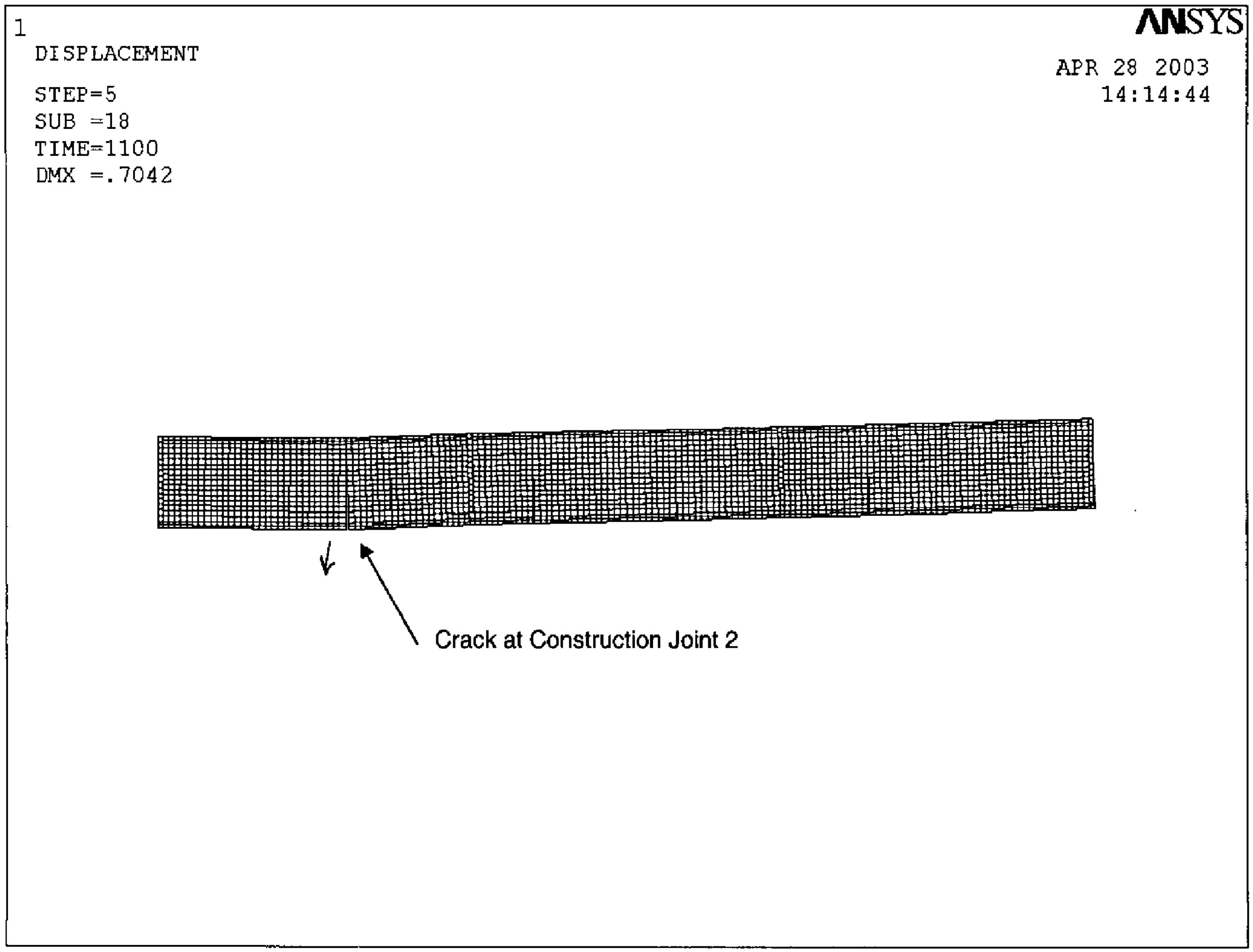
PC4 Location 1 – 5000 years
(Displacements magnified by 50)



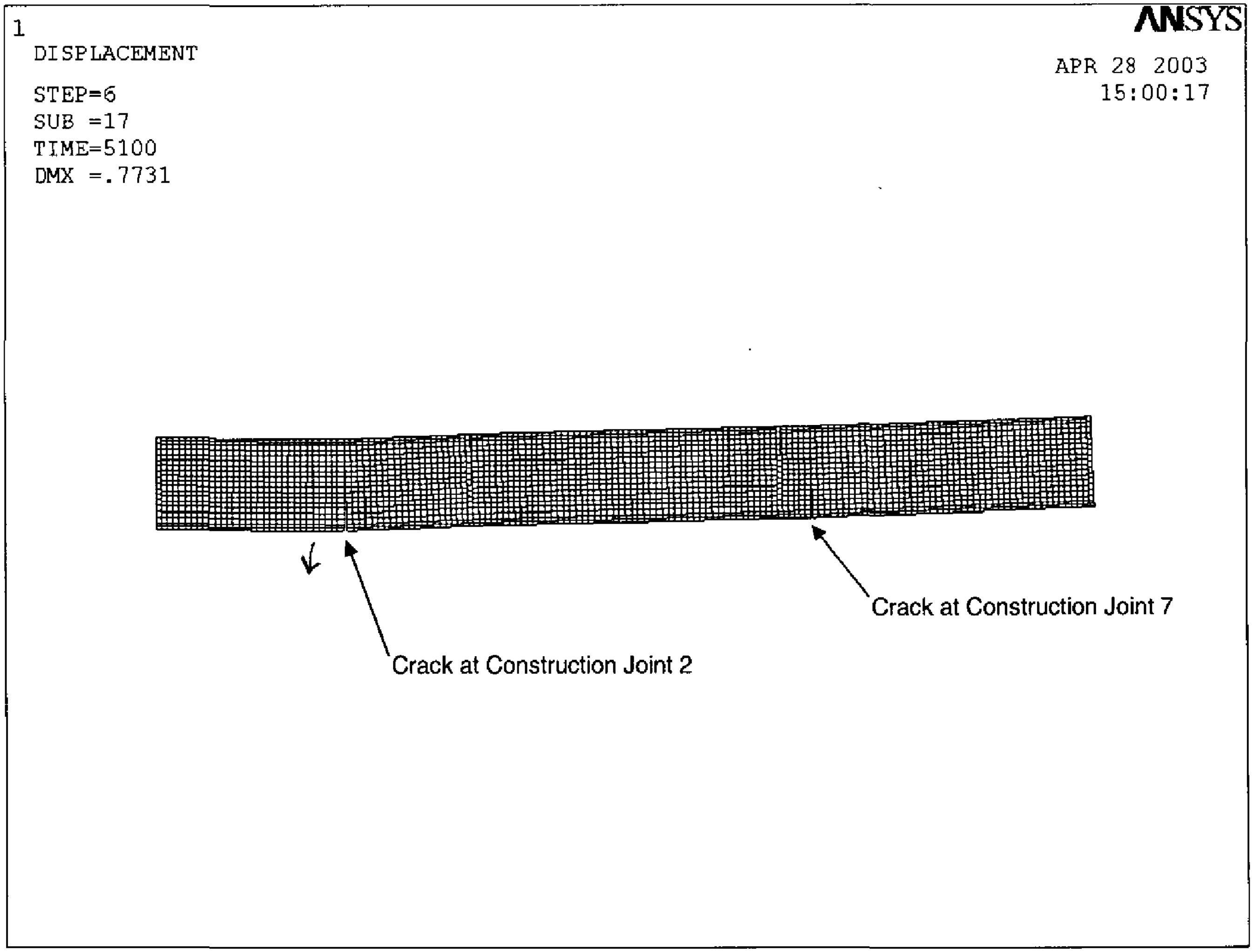
PC4 Location 2 – 100 years
(Displacements magnified by 25)



PC4 Location 2 – 1000 years
(Displacements magnified by 25)



PC4 Location 2 – 5000 years
(Displacements magnified by 25)



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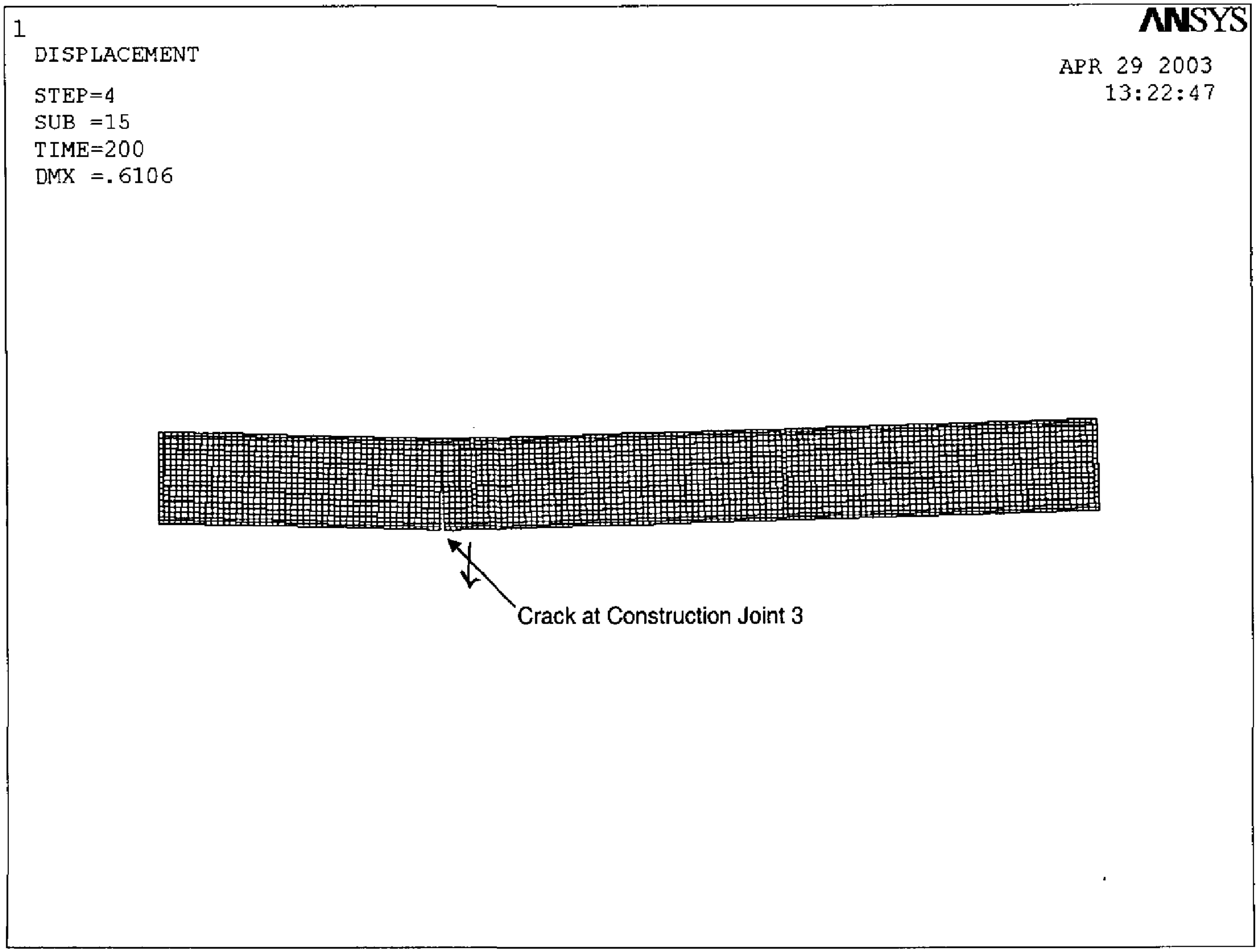
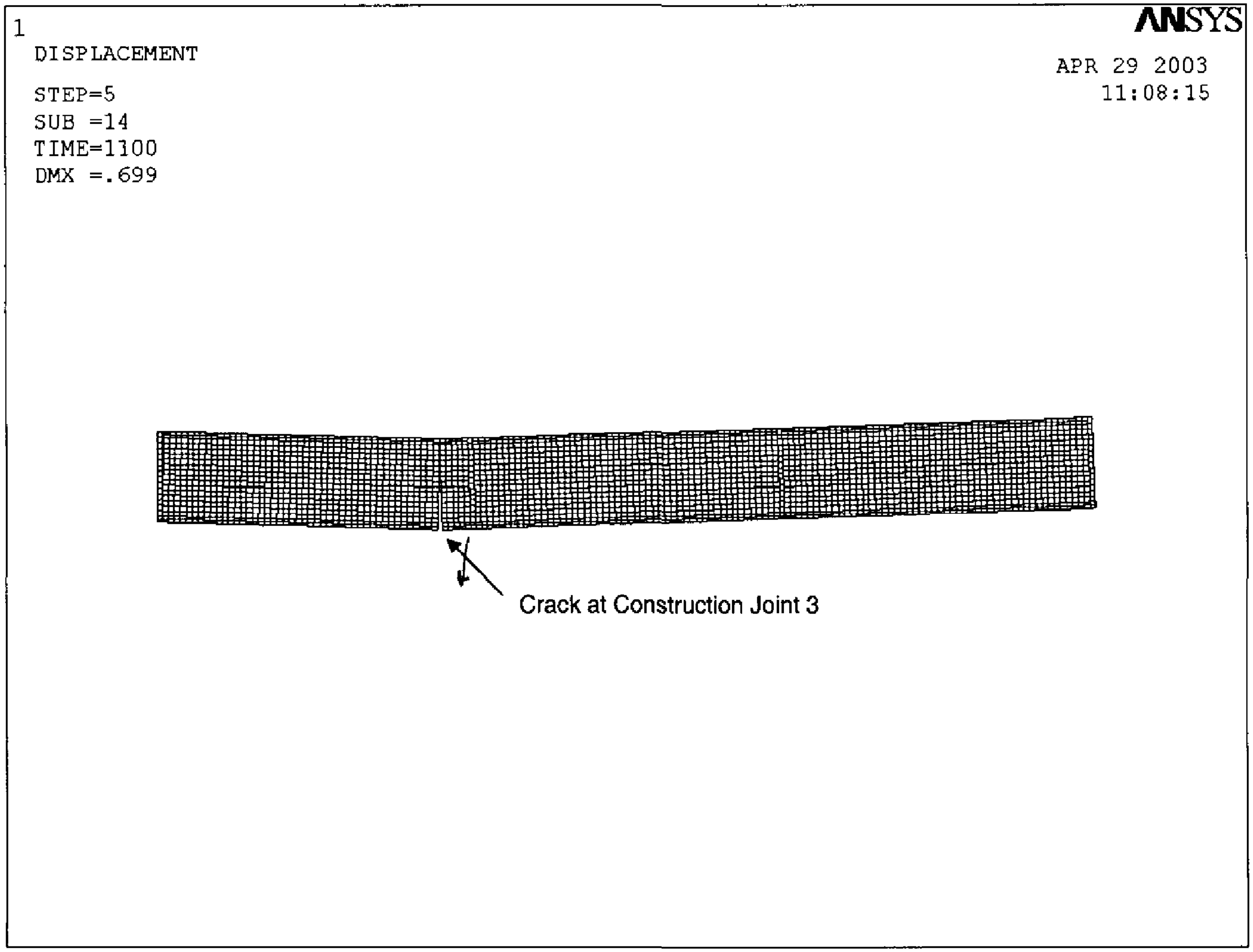
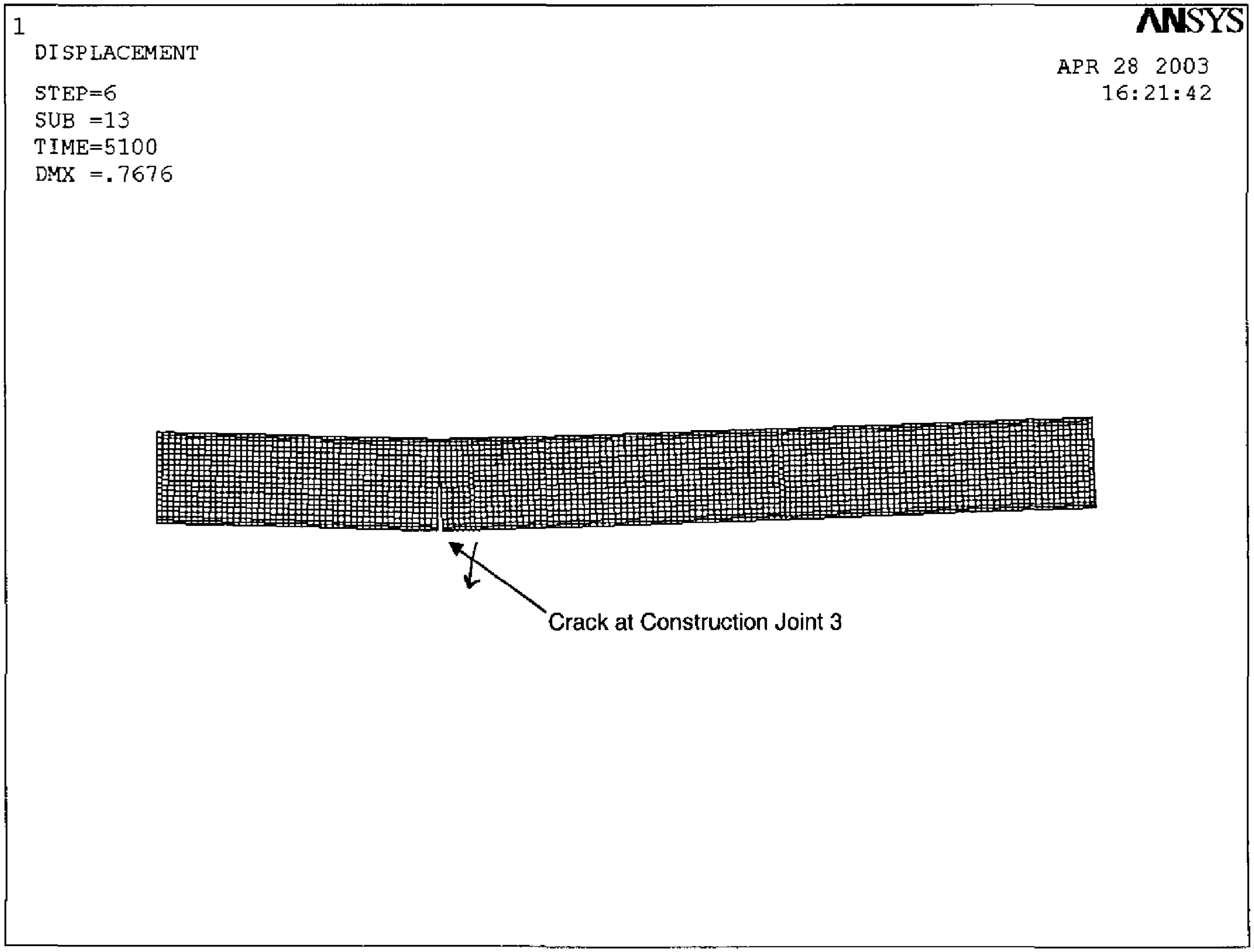
PC4 Location 3 – 100 years
(Displacements magnified by 25)



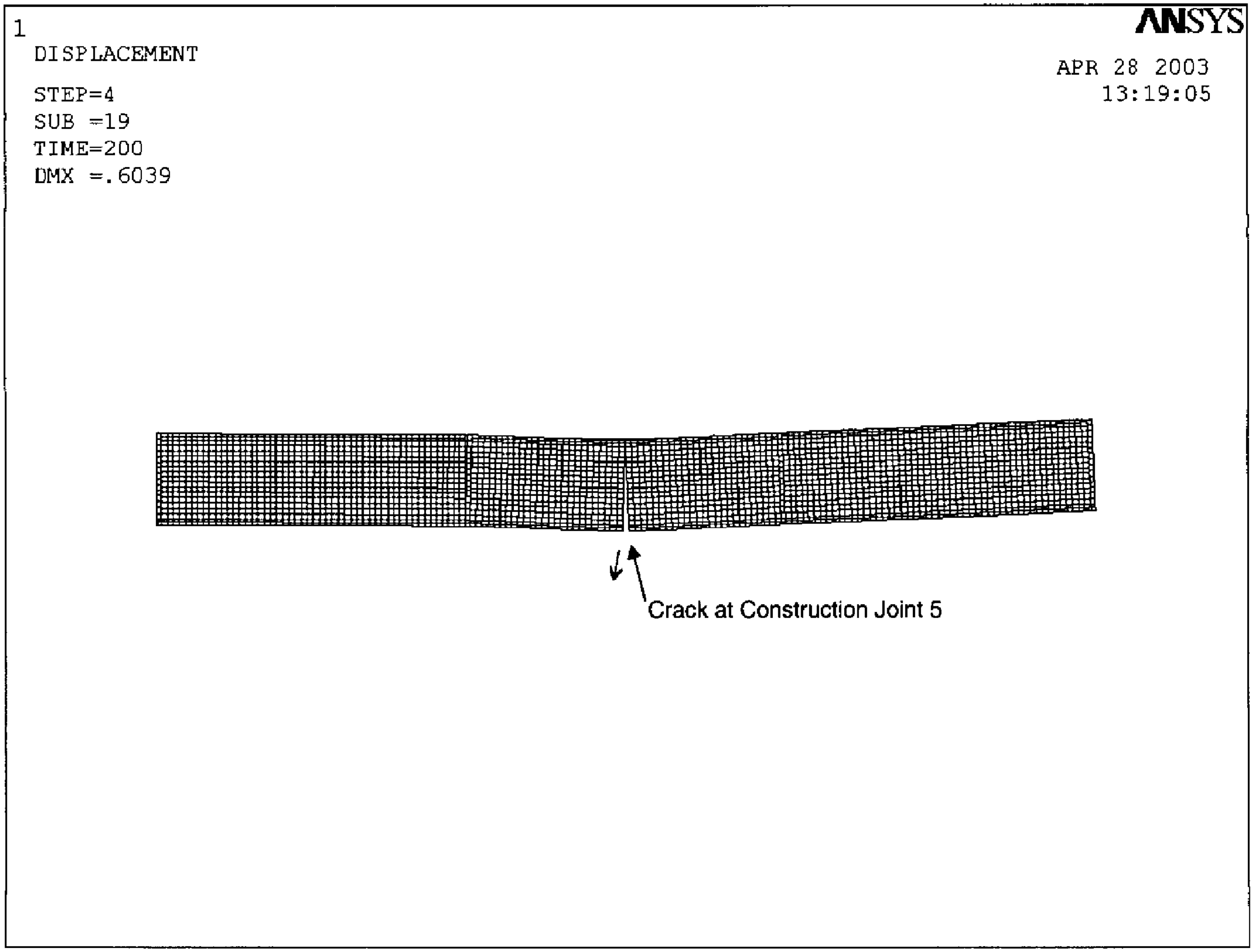
PC4 Location 3 – 1000 years
(Displacements magnified by 25)



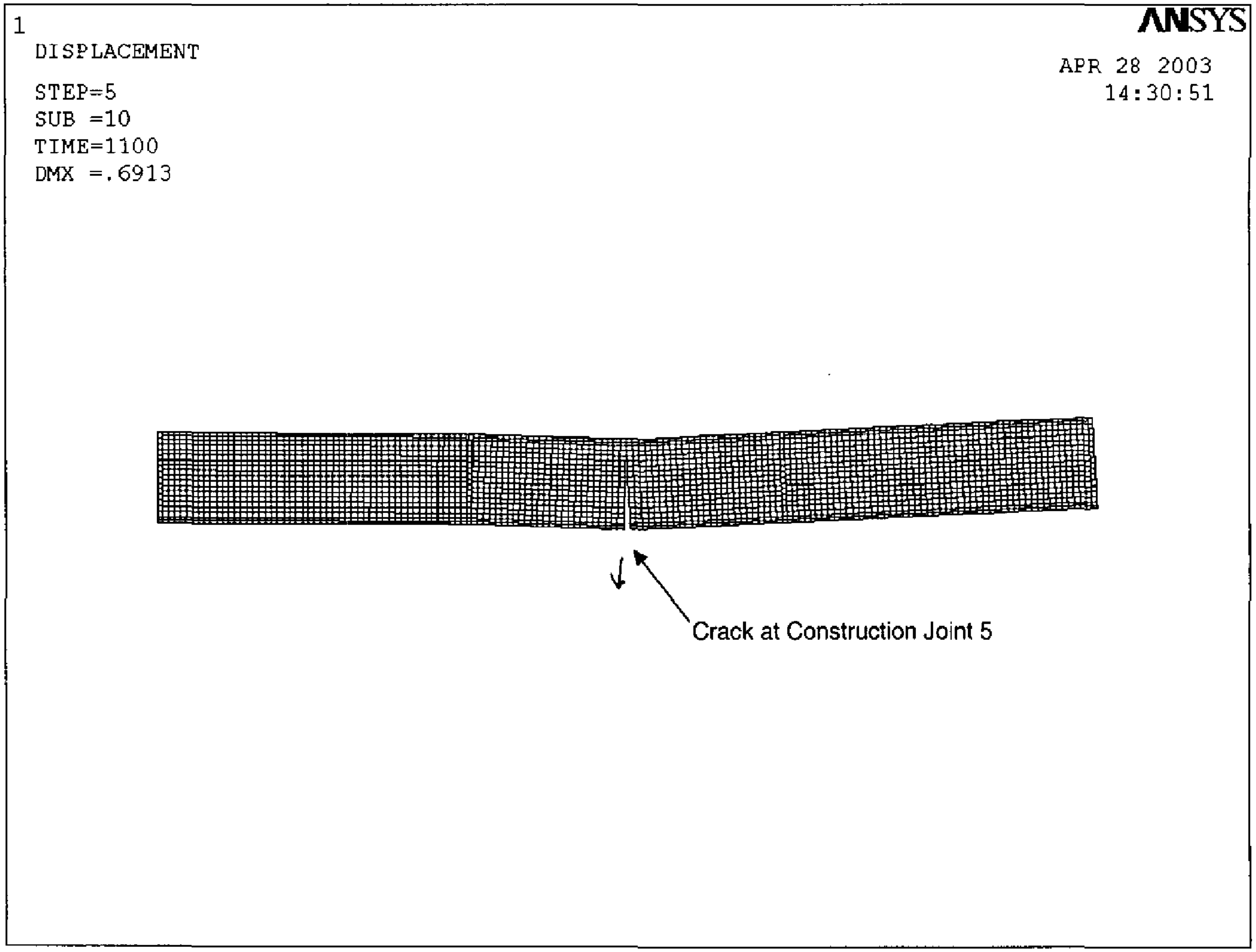
PC4 Location 3 – 5000 years
(Displacements magnified by 25)



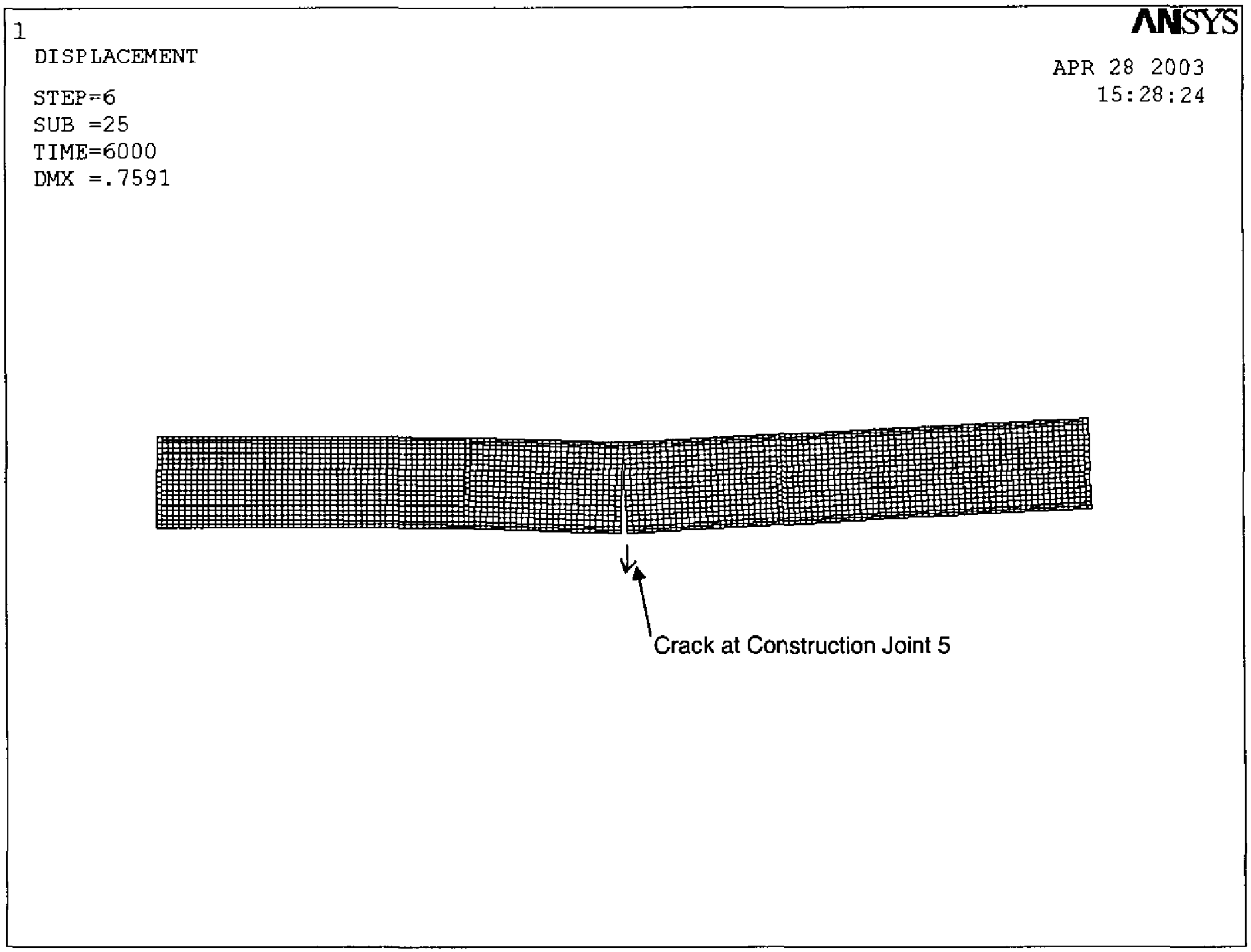
PC4 Location 4 – 100 years
(Displacements magnified by 25)



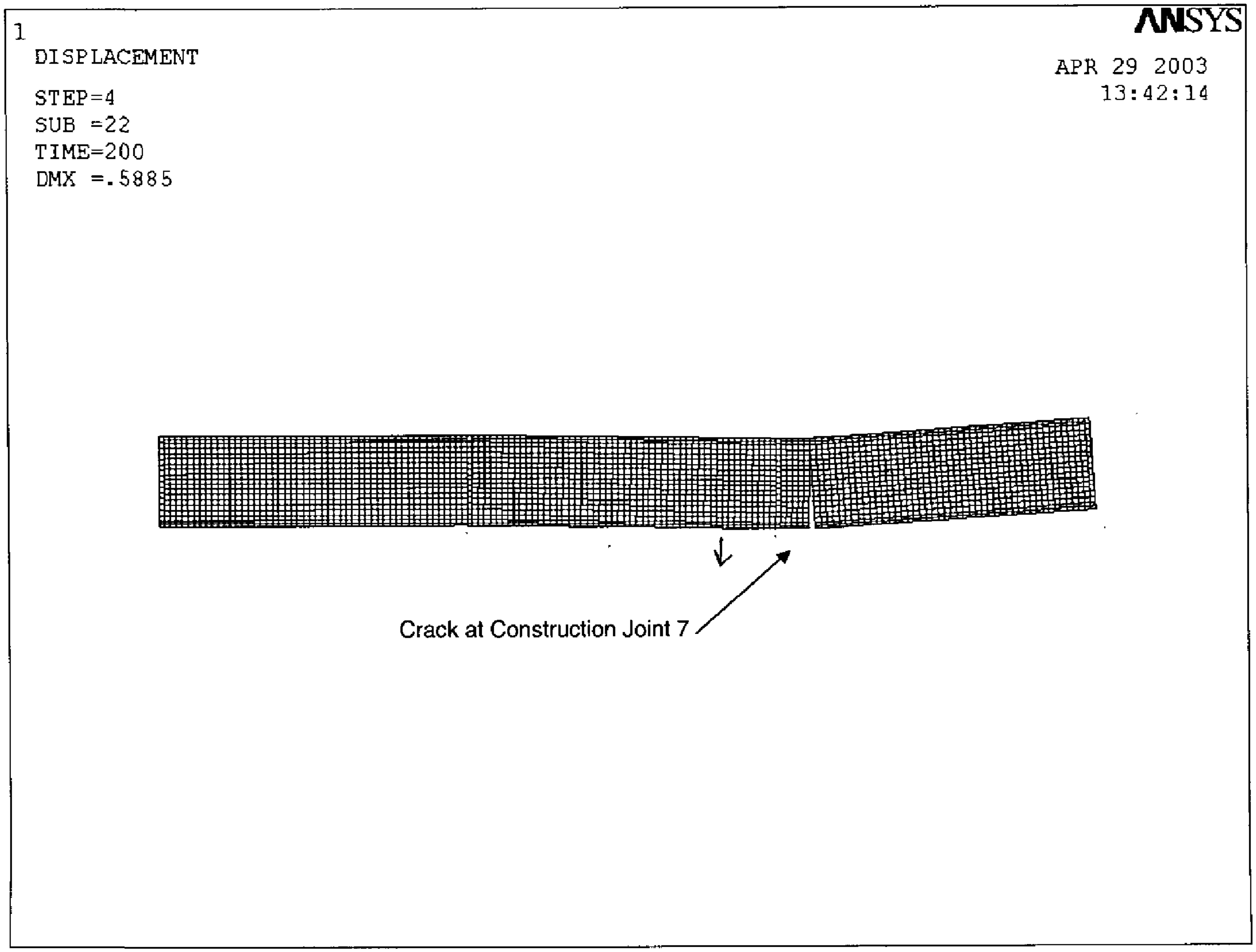
PC4 Location 4 – 1000 years
(Displacements magnified by 25)



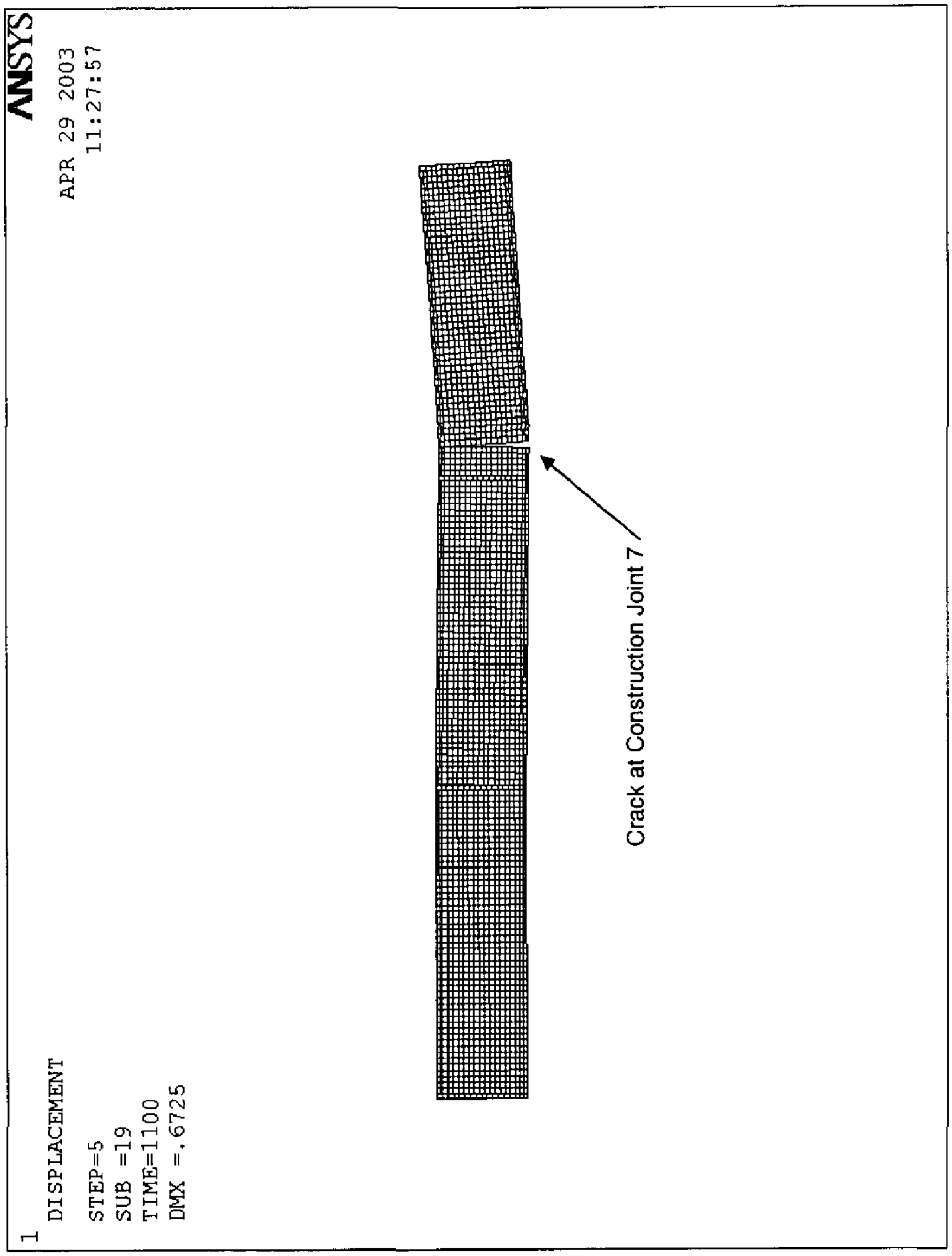
PC4 Location 4 – 5000 years
(Displacements magnified by 25)



PC4 Location 5 – 100 years
(Displacements magnified by 25)

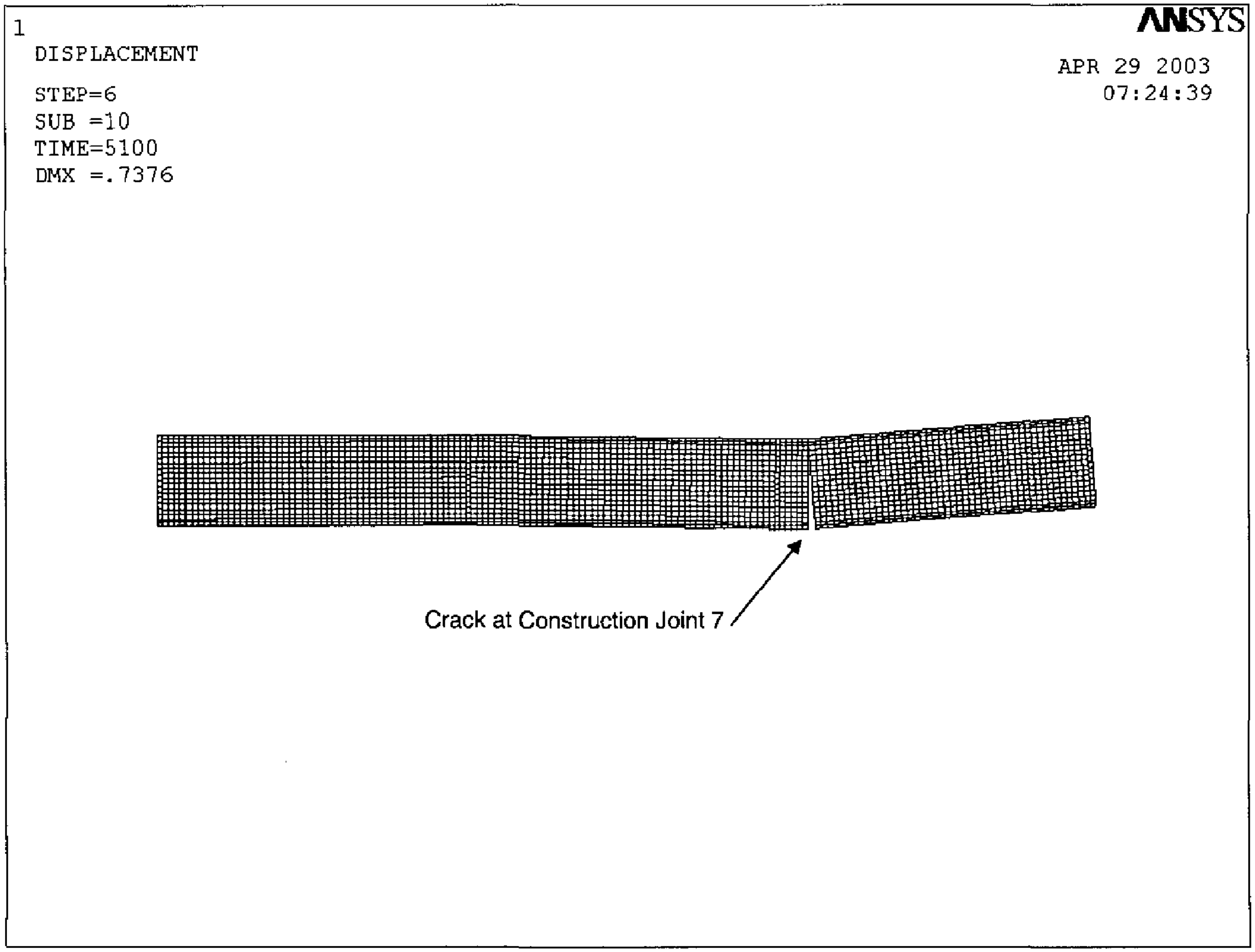


PC4 Location 5 – 1000 years
(Displacements magnified by 25)



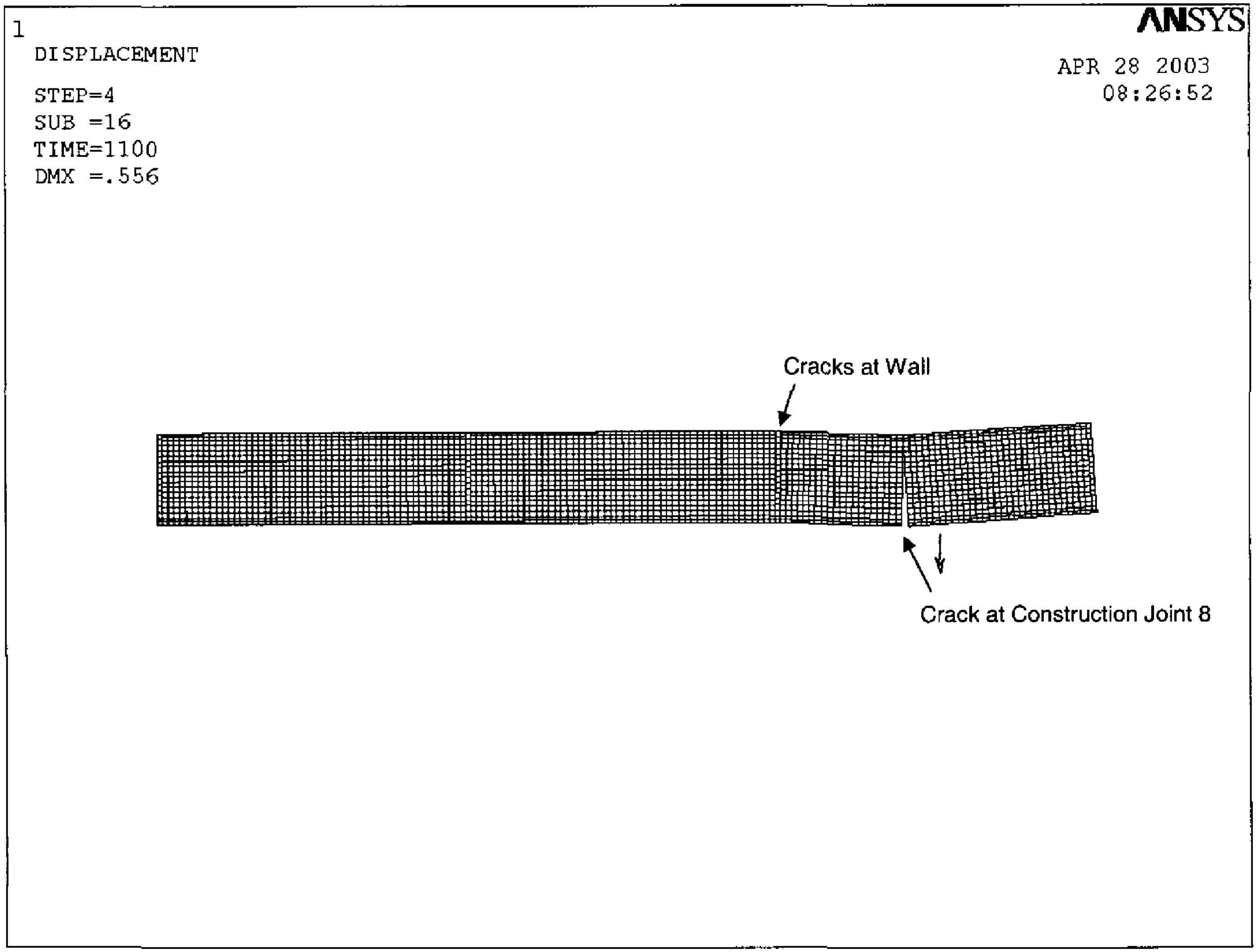
T-CLC-Z-00006, Rev.0

PC4 Location 5 – 5000 years
(Displacements magnified by 25)

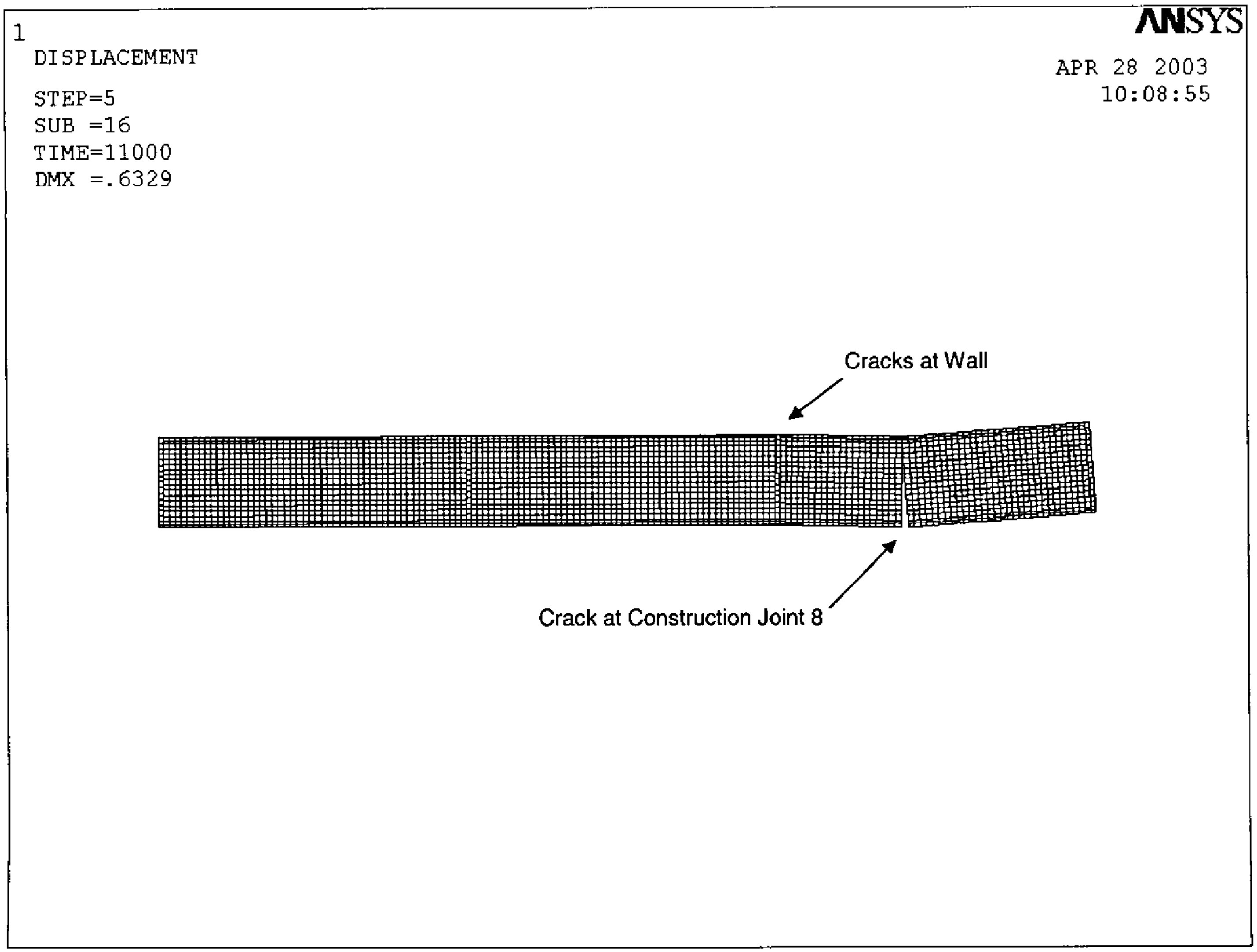


T-CLL-2-00006, Rev. 0

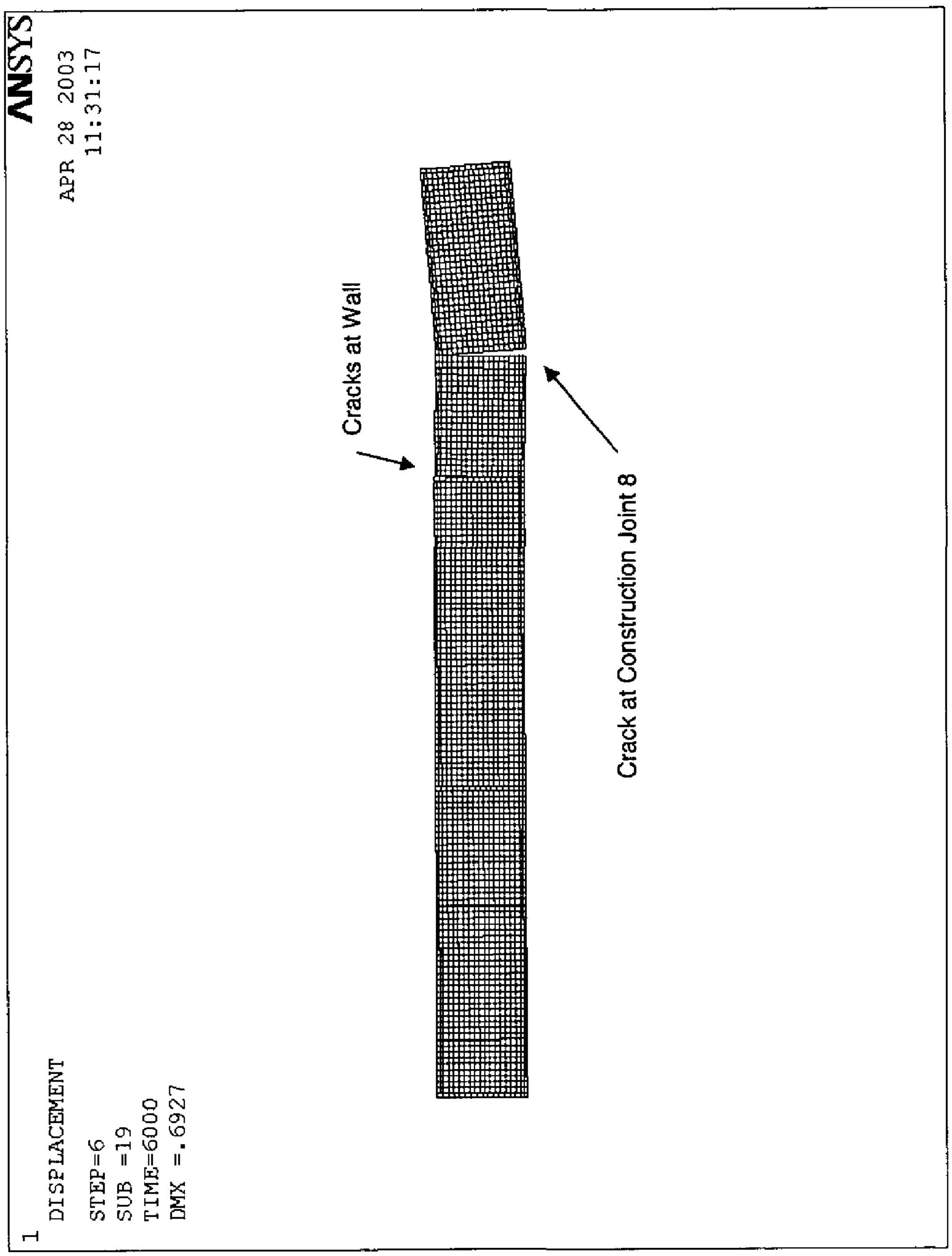
PC4 Location 6 – 100 years
(Displacements magnified by 25)



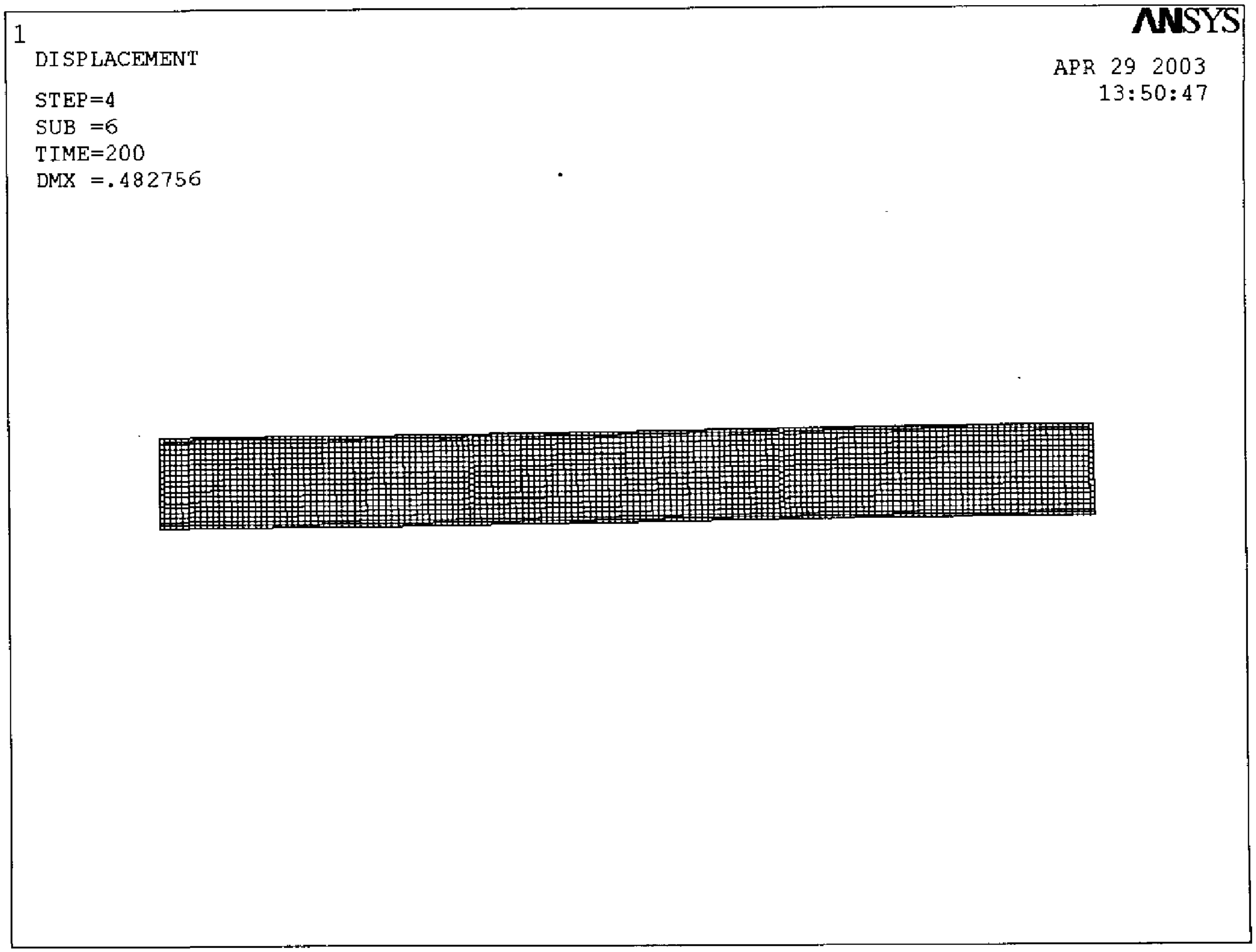
PC4 Location 6 – 1000 years
(Displacements magnified by 25)



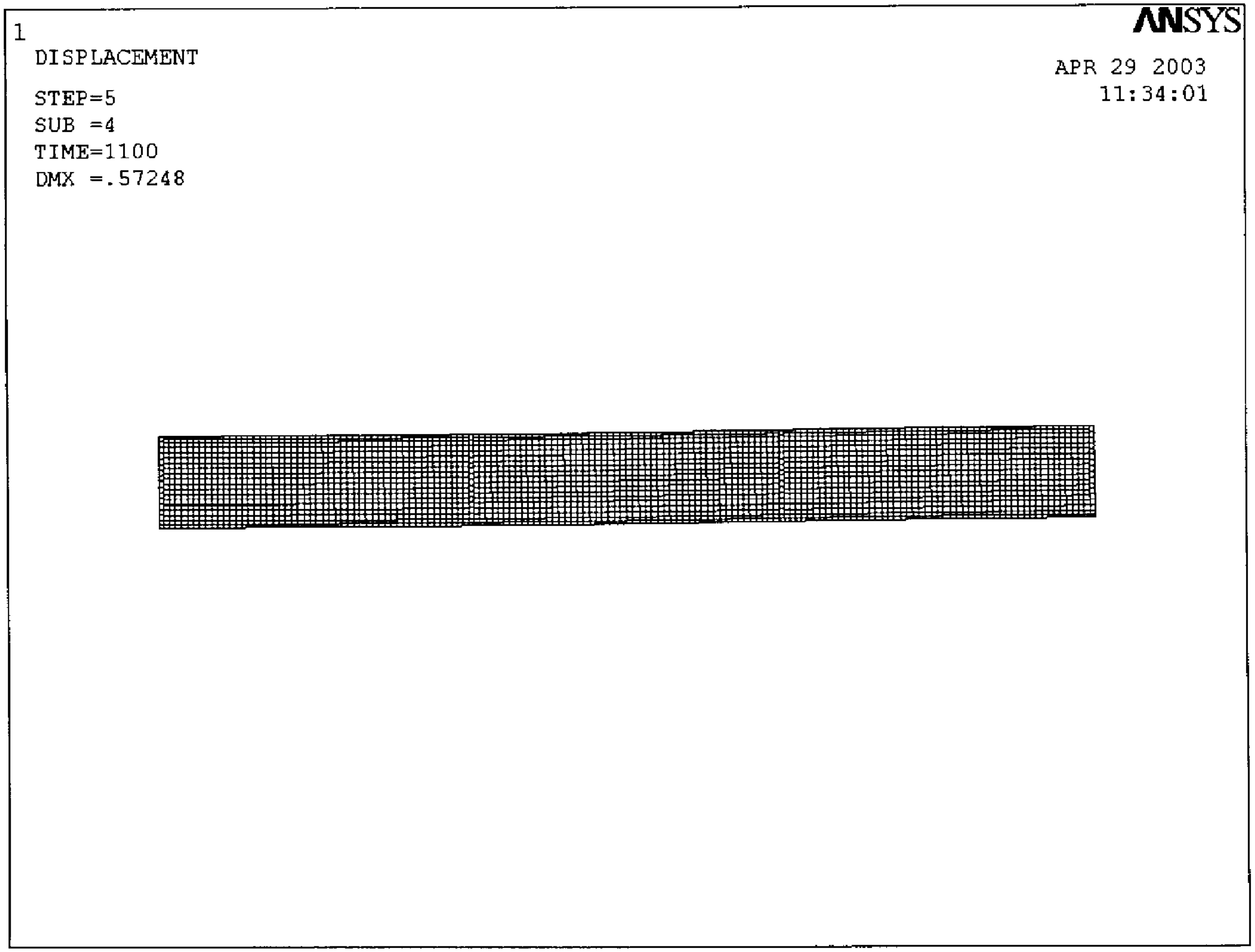
PC4 Location 6 – 5000 years
(Displacements magnified by 25)



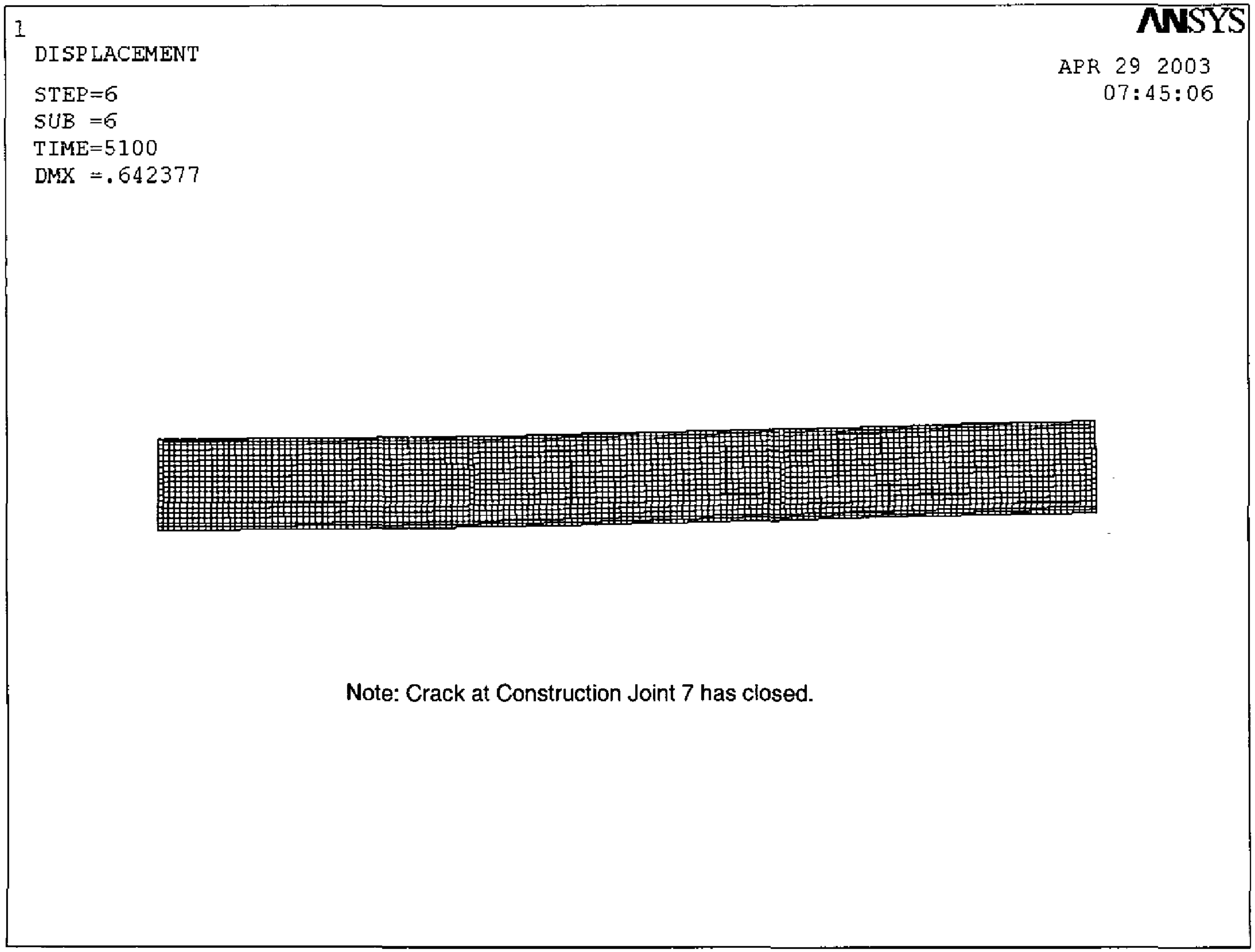
PC4 Location 7 – 1000 years
(Displacements magnified by 50)



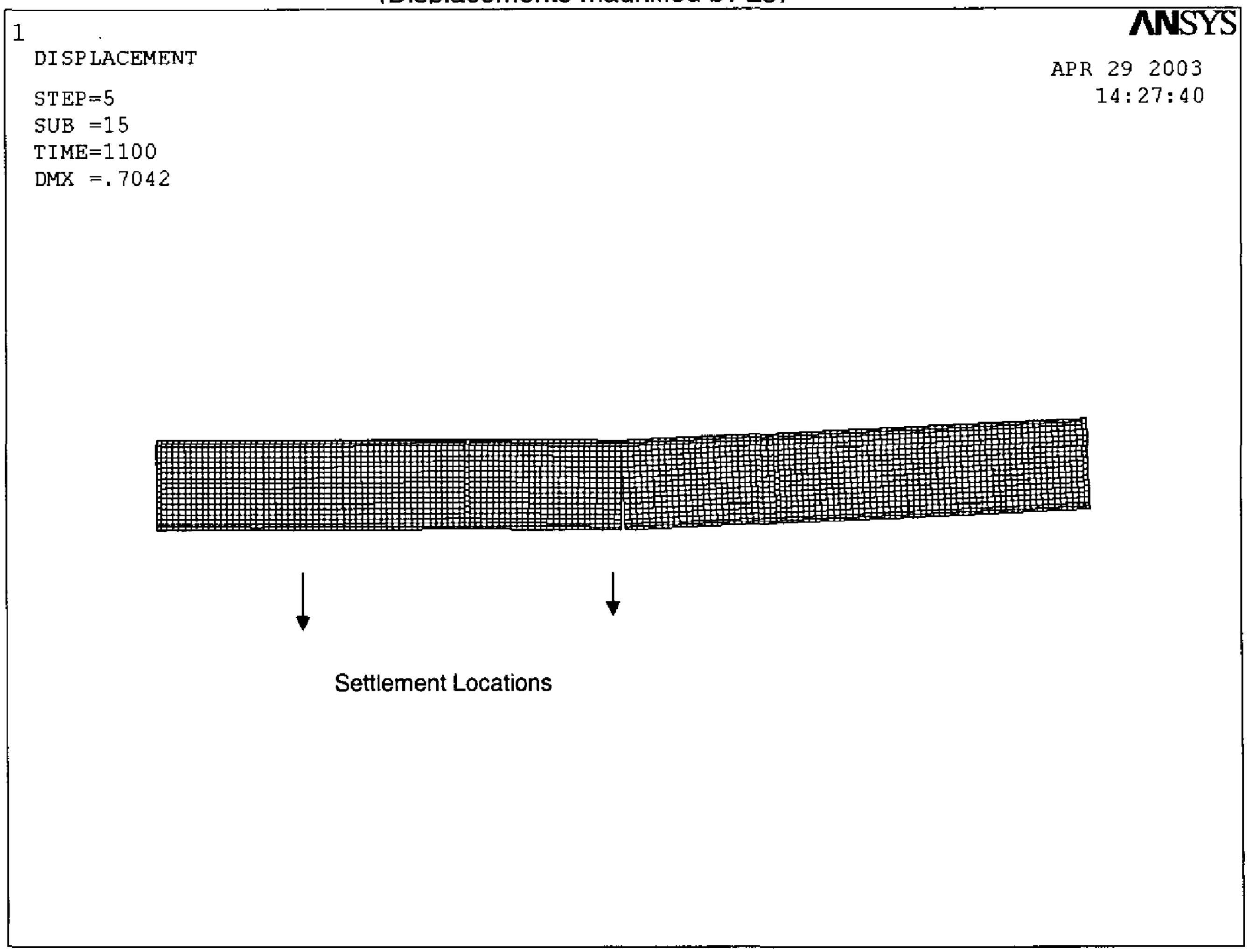
PC4 Location 7 – 1000 years
(Displacements magnified by 50)



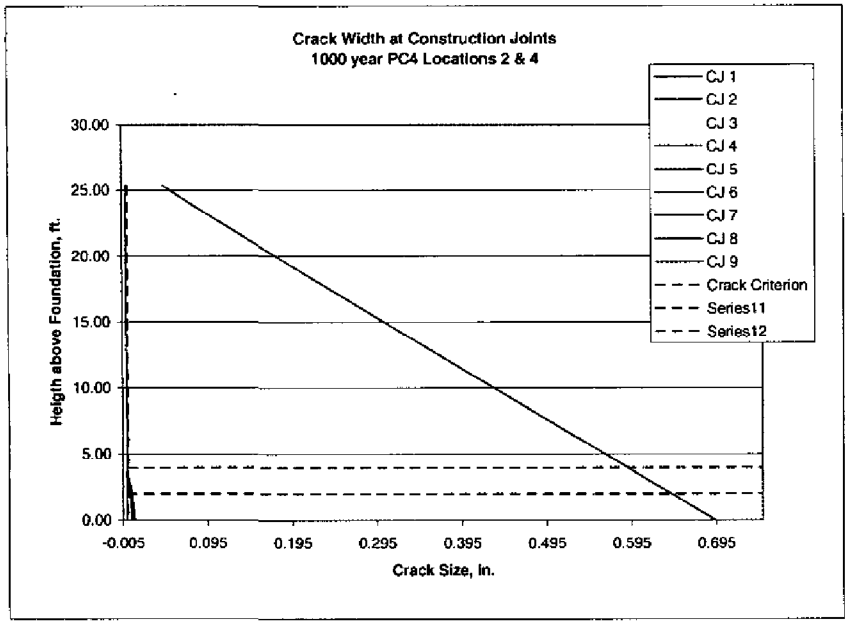
PC4 Location 7 – 5000 years
(Displacements magnified by 50)

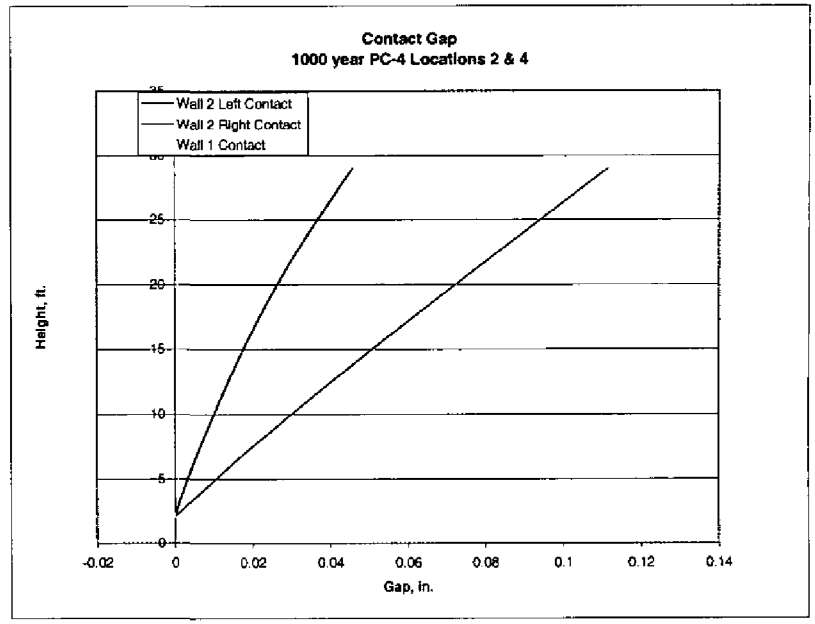


PC4 Locations 2 & 4 -- 1000 years
(Displacements magnified by 25)

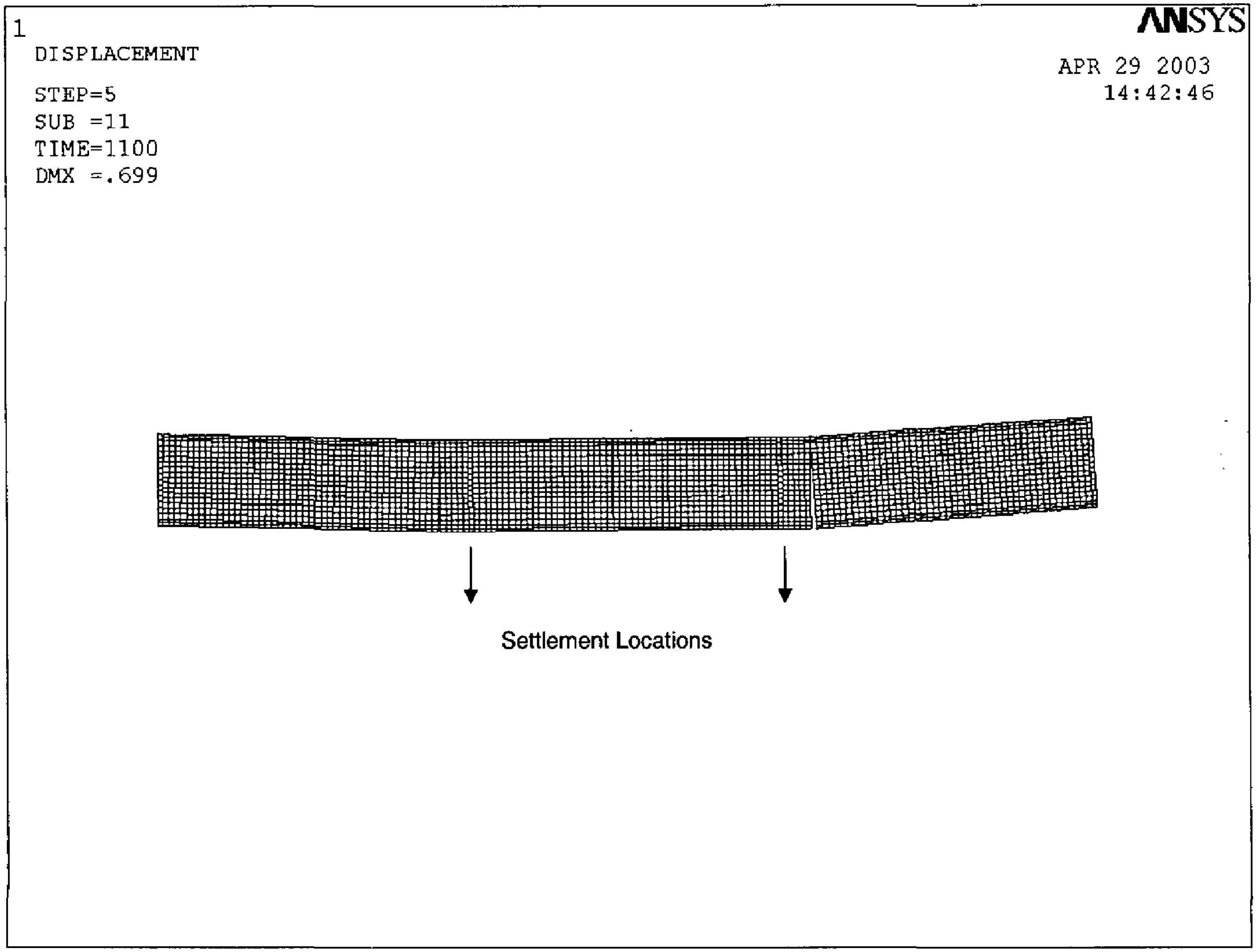


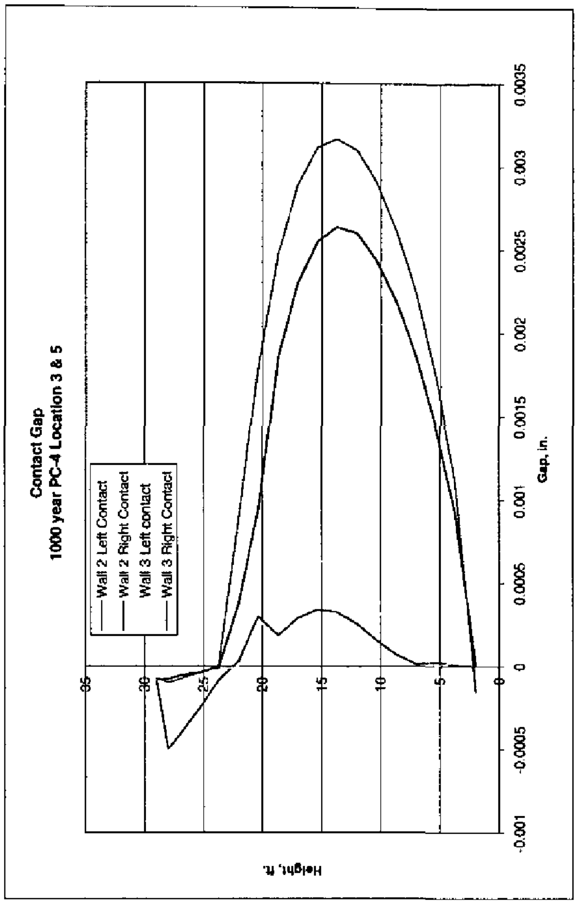
t-CLC-Z-00006, Rev. 0

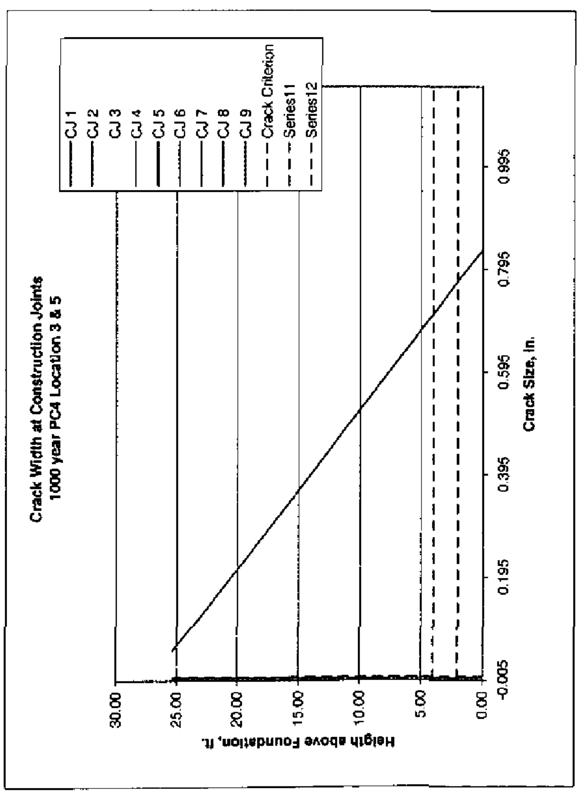




PC4 Locations 3 & 5 – 1000 years
(Displacements magnified by 25)



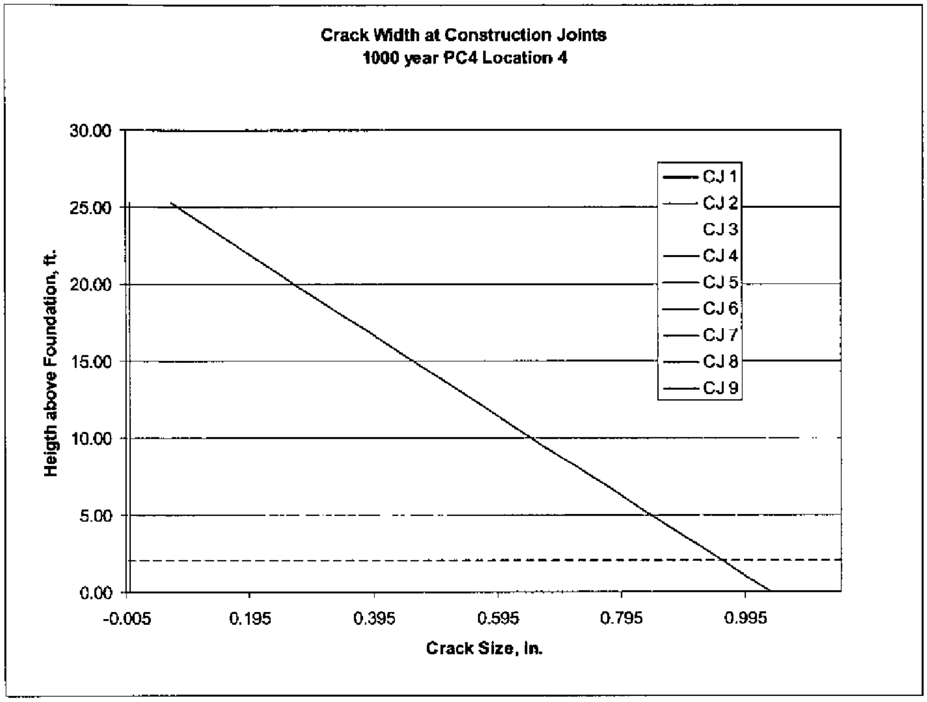

Contact Gap
1000 year PC-4 Location 3 & 5
Wall 2 Left Contact
Wall 2 Right Contact
Wall 3 Left contact
Wall 3 Right Contact
Height, ft.
Gap, in.
35
30
25
20
15
10
5
0
-0.001
-0.0005
0
0.0005
0.001
0.0015
0.002
0.0025
0.003
0.0035


Crack Width at Construction Joints
1000 year PC4 Location 3 & 5
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion
Series11
Series12
Heigth above Foundation, ft.
Crack Size, in.
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-0.005
0.195
0.395
0.595
0.795
0.995

Examples of Crack Area Calculations

Example 1. PC-4, Mean Properties, Location 4, Extent = 62 ft. Time = 1000 years

Bottom Crack

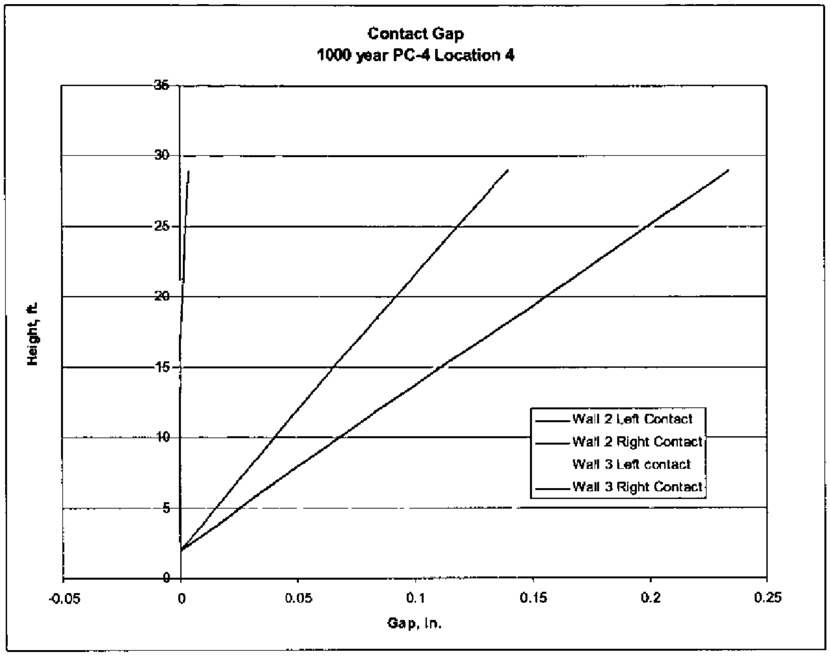


A single crack with a width of 0.959" (measured at the bottom of the saltstone) and a length of abo 27 ft. occurs. The crack area is calculated as a triangle closed at the top.

$\text{Len} := 27\text{ft} \qquad \text{Wid} := 0.96\text{in}$

$\text{Area} := \frac{1}{2}\cdot\text{Len}\cdot\text{Wid} \qquad \text{Area} = 155.52\,\text{in}^2$

Top Cracks



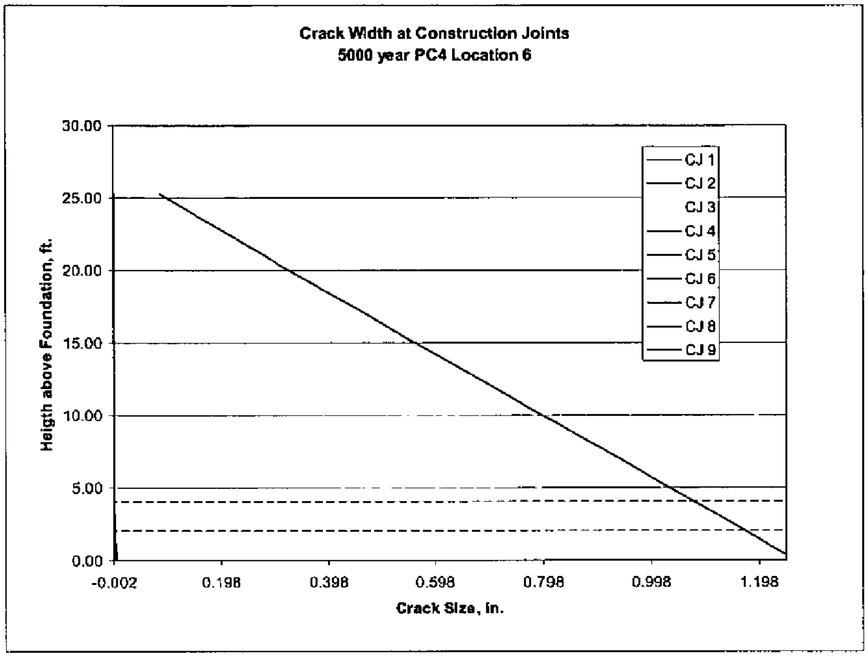
In this case, two cracks occur at wall 2. The widths are 0.140" and 0.234". The length is 27 ft.

$$\text{Wid} := 0.14\text{in} + 0.23\text{in}$$

$$\text{Area} := \frac{1}{2}\cdot\text{Len}\cdot\text{Wid} \qquad \text{Area} = 59.94\,\text{in}^2$$

Example 2. PC -4, Low Saltstone Modulus, Location 6, Extent = 62 ft. Time = 5000 years

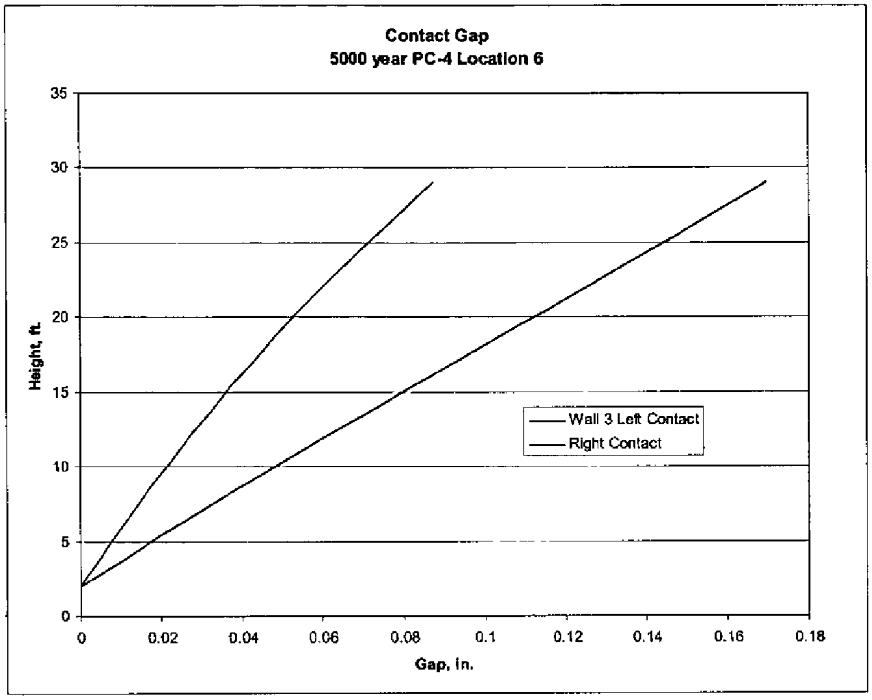
Bottom Cracks



$\text{Len} := 27\text{ft}$ $\quad\quad$ $\text{Wid} := 1.17\text{in}$

$\text{Area} := \frac{1}{2}\cdot\text{Len}\cdot\text{Wid}$ $\quad\quad$ $\text{Area} = 189.54\,\text{in}^2$

Top Cracks



$W1 := 0.087in$ $W2 := 0.170in$

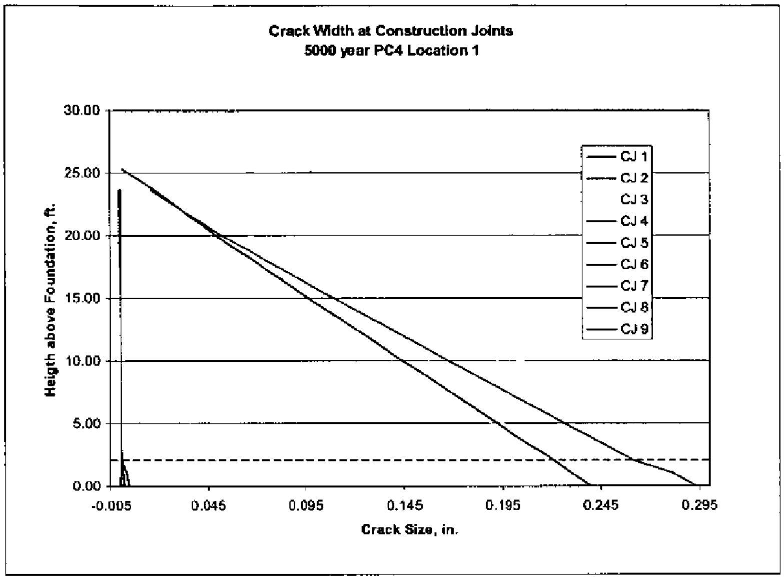
$Wid := W1 + W2$

$Len := 27ft$

$$Area := \frac{1}{2} \cdot Len \cdot Wid \qquad Area = 41.634\,in^2$$

Example 3. PC -4, High Soil Modulus, Location 1, Extent = 124 ft. Time = 5000 years

Bottom Cracks

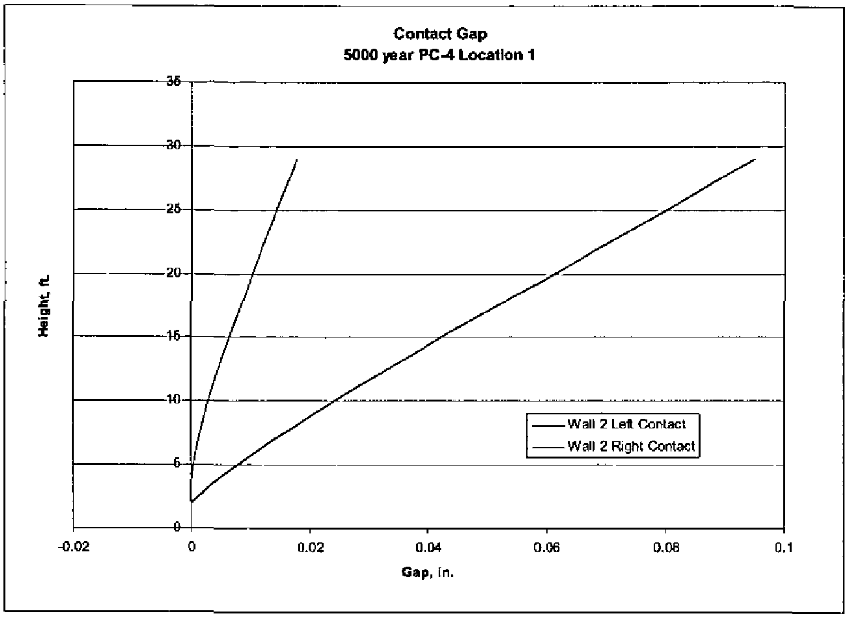


Note that cracks occur at both joints 1 and 7. The crack at joint 7 is caused by static settlement and is accounted for separately.

$\text{Wid} := 0.221\,\text{in} \qquad \text{Len} := 25\,\text{ft}$

$\text{Area} := \frac{1}{2} \cdot \text{Len} \cdot \text{Wid} \qquad \text{Area} = 33.15\,\text{in}^2$

Top Cracks



$W1 := 0in$ $\qquad$ $W2 := 0.09in$

$Wid := W1 + W2$

$Len := 27ft$

$$Area := \frac{1}{2} \cdot Len \cdot Wid \qquad Area = 14.58\,in^2$$

Note. the crack at the right side of wall w is on the order of 0.02 inches and is not used. In general cracks of this magnitude were not used in the analysis since they did not add appreciably to the overall crack area. (Area = 2.3 in^2 in this case.)

1. Cracking Due to Static Settlement
1A. Vary Saltstone Modulus

Index	Saltstone Modulus	Time years	Settlement feet	Bottom Crack Area in^2	Time at Crack Initiation
1	1.619E+05	100	-0.387	0	
2	1.619E+05	1000	-0.482	39	700
3	1.619E+05	5000	-0.549	46.8	
4	2.048E+05	100	-0.387	0	
5	2.048E+05	1000	-0.482	0	
6	2.048E+05	5000	-0.549	49.92	3300
7	2.396E+05	100	-0.387	3.9	415
8	2.396E+05	1000	-0.482	43.68	1950
9	2.396E+05	5000	-0.549	51.48	
10	1.834E+05	5000	-0.549	48.67	
11	2.222E+05	5000	-0.549	50.86	4450
12	2.309E+05	5000	-0.549	51.17	5000
13	2.350E+05	10000	-0.578	55.54	5550
14	2.370E+05	10000	-0.578	55.69	5800
15	2.380E+05	1000	-0.482	43.06	370
16	2.390E+05	1000	-0.482	43.06	370
17	2.400E+05	1000	-0.482	43.06	415
18	2.420E+05	1000	-0.482	43.21	410
19	2.440E+05	1000	-0.482	43.21	400
20	2.45E+05	1000	-0.482	43.06	600
21	2.460E+05	10000	-0.578	56	7300
22	2.500E+05	10000	-0.578	56.16	8150

1 B.Vary Saltstone Cracking Strain

Index	Cracking Strain	Time years	Settlement feet	Bottom Crack Area in^2
23	7.540E-05	50	-0.358	0
24	7.540E-05	50	-0.358	20.25
25	7.540E-05	100	-0.387	25.05
26	7.540E-05	1000	-0.482	35.412
27	7.540E-05	5000	-0.549	42.588
28	8.500E-05	99	-0.387	0
29	8.500E-05	99	-0.387	21.75
30	8.500E-05	100	-0.387	24.9
31	8.500E-05	1000	-0.482	35.256
32	8.500E-05	5000	-0.549	42.588
33	9.800E-05	550	-0.458	0
34	9.800E-05	550	-0.458	28.05
35	9.800E-05	1000	-0.482	35.412
36	9.800E-05	5000	-0.549	42.744
37	1.206E-04	100	-0.387	0
38	1.206E-04	1000	-0.482	0
39	1.206E-04	3300	-0.532	0
40	1.206E-04	3300	-0.532	46.8
41	1.206E-04	5000	-0.549	49.92
42	1.309E-04	6150	-0.557	0
43	1.309E-04	6150	-0.557	51.012
44	1.309E-04	10000	-0.578	54.288
45	1.411E-04	100	-0.387	0
46	1.411E-04	1000	-0.482	0
47	1.411E-04	3300	-0.532	0
48	1.411E-04	3300	-0.532	0
49	1.411E-04	5000	-0.549	0

2. Differential Displacement at Location 1

2.A. Differential Displacement Magnitude

Index	Magnitude, in	Time years	Settlement feet	Bottom Crack Area in^2
50	1.5	100	-0.387	0
51	1.5	1000	-0.482	13.2
52	1.5	5000	-0.549	10.68
53	2	100	-0.387	16.56
54	2	1000	-0.482	20.286
55	2	5000	-0.549	20.1
56	2.75 (PC-4)	100	-0.387	24.48
57	2.75	1000	-0.482	29.4
58	2.75	5000	-0.549	30
59	2.75	5000	-0.549	31.5

2.B. Vary Settlement Extent

PC-4 Event

Index	Extent, ft.	Time years	Settlement feet	Bottom Crack Area in^2
60	62	100	-0.387	24.48
61	62	1000	-0.482	29.4
62	62	5000	-0.549	30
63	62	5000	-0.549	31.5
64	124	100	-0.387	73.32
65	124	1000	-0.482	73.32
66	124	5000	-0.549	78
67	124	5000	-0.549	34.5

2.C. Vary Saltstone Modulus

PC-4 Event

Index	Saltstone Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2
68	1.619E+05	100	-0.387	23.04
69	2.048E+05	100	-0.387	24.48
70	2.396E+05	100	-0.387	27
71	1.619E+05	1000	-0.482	27
72	2.048E+05	1000	-0.482	29.484
73	2.396E+05	1000	-0.482	30
74	1.619E+05	5000	-0.549	25.92
75	2.048E+05	5000	-0.549	28.5
76	2.396E+05	5000	-0.549	30

2.D Vary Saltstone Cracking Strain

Index	Event	Cracking Strain in/in	Time years	Settlement feet	Bottom Crack Area in^2
77	PC-3	7.540E-05	1000	-0.482	4.794
78	PC-3	7.540E-05	5000	-0.549	4.998
79	PC-4	7.540E-05	100	-0.387	28.5
80	PC-4	7.540E-05	1000	-0.482	28.5
81	PC-4	7.540E-05	5000	-0.549	30.45
82	PC-4	1.206E-04	100	-0.387	26.85
83	PC-4	1.206E-04	1000	-0.482	27.3
84	PC-4	1.206E-04	5000	-0.549	30
85	PC-4	1.411E-04	100	-0.387	23.904
86	PC-4	1.411E-04	1000	-0.482	27.3
87	PC-4	1.411E-04	5000	-0.549	28.2

2.E. Vary Soil Bulk Modulus

Index	Event	Soil Bulk Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
88	PC4	20	100	-0.387	27	
89	PC4	20	1000	-0.482	28.5	
90	PC4	20	5000	-0.549	30	
91	PC4	30	100	-0.387	25.5	
92	PC4	30	1000	-0.482	27	
93	PC4	30	5000	-0.549	30	
94	PC4	40	100	-0.387	29.232	
95	PC4	40	1000	-0.482	29.4	
96	PC4	40	5000	-0.549	33.15	
97	PC4	40	100	-0.387		8.28
98	PC4	40	1000	-0.482		16.2
99	PC4	40	5000	-0.549		14.58

3. Differential Displacement at Location 2
3.A. Differential Displacement Magnitude

Index	Magnitude, in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
100	2.75	100	-0.387	74.88	
101	2.75	1000	-0.482	73.32	
102	0.75	1000		0	
103	1.5	1000	-0.482	27.9	
104	2	1000	-0.482	33.9	
105	2.375	1000	-0.482	41.34	
106	2.5	1000	-0.482	52.26	
107	2.75	1000	-0.482	73.32	
108	2.75	5000	-0.549	76.44	
109	2.75	100	-0.387		43.74
110	1.5	1000	-0.482		0
111	2	1000	-0.482		0
112	2.375	1000	-0.482		0
113	2.5	1000	-0.482		12.63
114	2.75	1000	-0.482		37.26
115	2.75	5000	-0.549		40.5

3.B. Vary Settlement Extent
PC-4 Event

Index	Extent, ft.	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
116	62	100	-0.387	74.88	
117	62	1000	-0.482	73.32	
118	62	5000	-0.549	76.44	
119	62	100	-0.387		43.74
120	62	1000	-0.482		37.26
121	62	5000	-0.549		40.5
122	124	100	-0.387	120.204	
123	124	1000	-0.482	118.26	
124	124	5000	-0.549	116.64	
125	124	100	-0.387		76.63
126	124	1000	-0.482		68.04
127	124	5000	-0.549		63.18

3.C. Vary Saltstone Modulus
PC-4 Event

Index	Saltstone Modulus ksf	Time years	Settlement feet	Bottom Crack Area In^2	Top Crack Area In^2
128	1.619E+05	100	-0.387	80.68	
129	1.619E+05	1000	-0.482	81.49	
130	1.619E+05	5000	-0.549	81.65	
131	1.619E+05	100	-0.387		47.47
132	1.619E+05	1000	-0.482		46.98
133	1.619E+05	5000	-0.549		45.04
134	2.048E+05	100	-0.387	75.35	
135	2.048E+05	1000	-0.482	73.01	
136	2.048E+05	5000	-0.549	76.28	
137	2.048E+05	100	-0.387		43.74
138	2.048E+05	1000	-0.482		35.80
139	2.048E+05	5000	-0.549		41.80
140	2.396E+05	100	-0.387	76.14	
141	2.396E+05	1000	-0.482	76.14	
142	2.396E+05	5000	-0.549	77.76	
143	2.396E+05	100	-0.387		41.80
144	2.396E+05	1000	-0.482		40.50
145	2.396E+05	5000	-0.549		39.04

3.D Vary Saltstone Cracking Strain

Index	Event	Cracking Strain in/in	Time years	Settlement feet	Bottom Crack Area In^2	Top Crack Area In^2
146	PC-3	7.540E-05	100	-0.387	8.4	
147	PC-3	7.540E-05	1000	-0.482	8.76	
148	PC-3	7.540E-05	5000	-0.549	7.68	
149	PC-4	7.540E-05	100	-0.387	77.76	
150	PC-4	7.540E-05	1000	-0.482	76.14	
151	PC-4	7.540E-05	5000	-0.549	76.14	
152	PC-4	7.540E-05	100	-0.387		43.902
153	PC-4	7.540E-05	1000	-0.482		36.45
154	PC-4	7.540E-05	5000	-0.549		34.344
155	PC-4	1.206E-04	100	-0.387	77.76	
156	PC-4	1.206E-04	1000	-0.482	76.14	
157	PC-4	1.206E-04	5000	-0.549	79.38	
158	PC-4	1.206E-04	100	-0.387		43.74
159	PC-4	1.206E-04	1000	-0.482		35.802
160	PC-4	1.206E-04	5000	-0.549		41.796
161	PC-4	1.411E-04	100	-0.387	78.894	
162	PC-4	1.411E-04	1000	-0.482	75.654	
163	PC-4	1.411E-04	5000	-0.549	73.872	
164	PC-4	1.411E-04	100	-0.387		39.528
165	PC-4	1.411E-04	1000	-0.482		35.802
166	PC-4	1.411E-04	5000	-0.549		29.646

3.E. Vary Soil Bulk Modulus

Index	Event	Soil Bulk Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
167	PC3	20	5000	-0.549	24	
168	PC4	20	100	-0.387	43.68	
169	PC4	20	1000	-0.482	46.8	
170	PC4	20	5000	-0.549	48.36	
171	PC4	30	100	-0.387	77.76	
172	PC4	30	1000	-0.482	76.14	
173	PC4	30	5000	-0.549	79.38	
174	PC4	40	100	-0.387	126.36	
175	PC4	40	1000	-0.482	129.6	
176	PC4	40	5000	-0.549	129.6	
177	PC4	30	100	-0.387		43.74
178	PC4	30	1000	-0.482		37.26
179	PC4	30	5000	-0.549		40.5
180	PC4	40	100	-0.387		102.06
181	PC4	40	1000	-0.482		105.3
182	PC4	40	5000	-0.549		105.3

4. Differential Displacement at Location 3
4.A. Differential Displacement Magnitude

Index	Magnitude, in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
183	0.75	1000	-0.482	25.5	
184	0.75	5000	-0.549	45.24	
185	1.5	1000	-0.482	51.792	
186	2	1000	-0.482	65.985	
187	2.75	100	-0.387	105.3	
188	2.75	1000	-0.482	110.16	
189	2.75	5000	-0.549	115.02	
190	2.75	100	-0.387		53.46
191	2.75	1000	-0.482		55.08
192	2.75	5000	-0.549		55.08

4.B. Vary Settlement Extent
PC-4 Event

Index	Extent, ft.	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
193	62	1000	-0.482	25.5	
194	62	5000	-0.549	45.24	
195	124	100	-0.387	15.12	
196	124	1000	-0.482	45.24	
197	124	5000	-0.549	63	
198	62	100	-0.387	105.3	
199	62	1000	-0.482	110.16	
200	62	5000	-0.549	115.02	
201	62	100	-0.387		53.46
202	62	1000	-0.482		55.08
203	62	5000	-0.549		55.08
204	124	100	-0.387	174.96	
205	124	1000	-0.482	178.2	
206	124	5000	-0.549	177.9	
207	124	100	-0.387		119.88
208	124	1000	-0.482		108.54
209	124	5000	-0.549		103.68

4.C. Vary Saltstone Modulus

Index	Event	Saltstone Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
210	PC-3	1.619E+05	1000	-0.482	34.32	
211	PC-3	1.619E+05	5000	-0.549	51.624	
212	PC-3	2.048E+05	1000	-0.482	25.5	
213	PC-3	2.048E+05	5000	-0.549	45.24	
214	PC-3	2.396E+05	1000	-0.482	39	
215	PC-3	2.396E+05	5000	-0.549	45.24	
216	PC-4	1.619E+05	100	-0.387	103.68	
217	PC-4	1.619E+05	1000	-0.482	110.16	
218	PC-4	1.619E+05	5000	-0.549	115.02	
219	PC-4	2.048E+05	100	-0.387	105.3	
220	PC-4	2.048E+05	1000	-0.482	110.16	
221	PC-4	2.048E+05	5000	-0.549	115.02	
222	PC-4	2.396E+05	100	-0.387	103.68	
223	PC-4	2.396E+05	1000	-0.482	110.16	
224	PC-4	2.396E+05	5000	-0.549	115.02	
225	PC-4	1.619E+05	100	-0.387		52.812
226	PC-4	1.619E+05	1000	-0.482		54.27
227	PC-4	1.619E+05	5000	-0.549		55.242
228	PC-4	2.048E+05	100	-0.387		52.812
229	PC-4	2.048E+05	1000	-0.482		54.594
230	PC-4	2.048E+05	5000	-0.549		55.566
231	PC-4	2.396E+05	100	-0.387		52.974
232	PC-4	2.396E+05	1000	-0.482		54.594
233	PC-4	2.396E+05	5000	-0.549		55.566

4.D Vary Saltstone Cracking Strain

Index	Event	Cracking Strain in/in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
234	PC-3	7.540E-05	100	-0.387	14.4	
235	PC-3	7.540E-05	1000	-0.482	13.2	
236	PC-3	7.540E-05	5000	-0.549	17.28	
237	PC-3	1.206E-04	1000	-0.482	24	
238	PC-4	7.540E-05	100	-0.387	105.3	
239	PC-4	7.540E-05	1000	-0.482	110.16	
240	PC-4	7.540E-05	5000	-0.549	115.02	
241	PC-4	1.206E-04	100	-0.387	105.3	
242	PC-4	1.206E-04	1000	-0.482	110.16	
243	PC-4	1.206E-04	5000	-0.549	115.02	
244	PC-4	1.411E-04	100	-0.387	104.652	
245	PC-4	1.411E-04	1000	-0.482	110.808	
246	PC-4	1.411E-04	5000	-0.549	115.182	
247	PC-4	7.540E-05	100	-0.387		53.46
248	PC-4	7.540E-05	1000	-0.482		55.08
249	PC-4	7.540E-05	5000	-0.549		56.7
250	PC-4	1.206E-04	100	-0.387		53.46
251	PC-4	1.206E-04	1000	-0.482		55.08
252	PC-4	1.206E-04	5000	-0.549		55.08
253	PC-4	1.411E-04	100	-0.387		52.812
254	PC-4	1.411E-04	1000	-0.482		54.594
255	PC-4	1.411E-04	5000	-0.549		55.728

4.E. Vary Soil Bulk Modulus

Index	Event	Soil Bulk Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
256	PC3	20	1000	-0.482	29.64	
257	PC3	20	5000	-0.549	32.76	
258	PC3	30	1000	-0.482	24	
259	PC3	30	5000	-0.549	42.12	
260	PC3	40	100	-0.387	13.2	
261	PC3	40	1000	-0.482	35.88	
262	PC3	40	5000	-0.549	53.04	
263	PC4	20	100	-0.387	90.72	
264	PC4	20	1000	-0.482	97.2	
265	PC4	20	5000	-0.549	101.25	
266	PC4	30	100	-0.387	105.3	
267	PC4	30	1000	-0.482	110.16	
268	PC4	30	5000	-0.549	115.02	
269	PC4	40	100	-0.387	113.4	
270	PC4	40	1000	-0.482	119.88	
271	PC4	40	5000	-0.549	123.12	
272	PC4	20	100	-0.387		38.88
273	PC4	20	1000	-0.482		42.12
274	PC4	20	5000	-0.549		42.768
275	PC4	30	100	-0.387		53.46
276	PC4	30	1000	-0.482		55.08
277	PC4	30	5000	-0.549		55.08
278	PC4	40	100	-0.387		59.94
279	PC4	40	1000	-0.482		61.56
280	PC4	40	5000	-0.549		61.56

5. Differential Displacement at Location 4

5.A. Differential Displacement Magnitude

Index	Magnitude, in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
281	0.75	100	-0.387	42.12	
282	2	100	-0.387	102.222	
283	2.75	100	-0.387	147.42	
284	0.75	1000	-0.482	49.92	
285	2	1000	-0.482	111.78	
286	2.75	1000	-0.482	155.52	
287	0.75	5000	-0.549	56.16	
288	2	5000	-0.549	118.584	
289	2.75	5000	-0.549	162	
290	2	100	-0.387		29.16
291	2.75	100	-0.387		58.32
292	2	1000	-0.482		31.428
293	2.75	1000	-0.482		59.94
294	2	5000	-0.549		32.724
295	2.75	5000	-0.549		63.18

5.B. Vary Settlement Extent

Index	Event	Extent, ft.	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
296	PC-3	62	100	-0.387	42.12	
297	PC-3	62	1000	-0.482	49.92	
298	PC-3	62	5000	-0.549	56.16	
299	PC-3	124	100	-0.387	54.6	
300	PC-3	124	1000	-0.482	60.36	
301	PC-3	124	5000	-0.549	65.52	
302	PC-4	62	100	-0.387	147.42	
303	PC-4	62	1000	-0.482	155.52	
304	PC-4	62	5000	-0.549	162	
305	PC-4	124	100	-0.387	205.74	
306	PC-4	124	1000	-0.482	212.22	
307	PC-4	124	5000	-0.549	218.7	
308	PC-4	62	100	-0.387		58.32
309	PC-4	62	1000	-0.482		59.94
310	PC-4	62	5000	-0.549		63.18
311	PC-4	124	100	-0.387		95.58
312	PC-4	124	1000	-0.482		93.96
313	PC-4	124	5000	-0.549		97.2

5.C. Vary Saltstone Modulus

Index	Event	Saltstone Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
314	PC-3	1.619E+05	100	-0.387	37.5	
315	PC-3	1.619E+05	1000	-0.482	43.68	
316	PC-3	1.619E+05	5000	-0.549	53.04	
317	PC-3	2.048E+05	100	-0.387	42.12	
318	PC-3	2.048E+05	1000	-0.482	49.92	
319	PC-3	2.048E+05	5000	-0.549	56.16	
320	PC-3	2.396E+05	100	-0.387	39	
321	PC-3	2.396E+05	1000	-0.482	49.92	
322	PC-3	2.396E+05	5000	-0.549	59.28	
323	PC-4	1.619E+05	100	-0.387	150.66	
324	PC-4	1.619E+05	1000	-0.482	157.14	
325	PC-4	1.619E+05	5000	-0.549	163.62	
326	PC-4	2.048E+05	100	-0.387	147.42	
327	PC-4	2.048E+05	1000	-0.482	155.52	
328	PC-4	2.048E+05	5000	-0.549	162	
329	PC-4	2.396E+05	100	-0.387	144.18	
330	PC-4	2.396E+05	1000	-0.482	153.9	
331	PC-4	2.396E+05	5000	-0.549	160.38	
332	PC-4	1.619E+05	100	-0.387		61.236
333	PC-4	1.619E+05	1000	-0.482		62.694
334	PC-4	1.619E+05	5000	-0.549		64.314
335	PC-4	2.048E+05	100	-0.387		58.32
336	PC-4	2.048E+05	1000	-0.482		59.94
337	PC-4	2.048E+05	5000	-0.549		63.18
338	PC-4	2.396E+05	100	-0.387		56.7
339	PC-4	2.396E+05	1000	-0.482		58.32
340	PC-4	2.396E+05	5000	-0.549		59.94

5.D Vary Saltstone Cracking Strain

Index	Event	Cracking Strain in/in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
341	PC-3	7.540E-05	100	-0.387	40.56	
342	PC-3	7.540E-05	1000	-0.482	49.92	
343	PC-3	7.540E-05	5000	-0.549	53.04	
344	PC-3	1.206E-04	100	-0.387	38.532	
345	PC-3	1.206E-04	1000	-0.482	49.92	
346	PC-3	1.206E-04	5000	-0.549	56.16	
347	PC-3	1.411E-04	100	-0.387	42.12	
348	PC-3	1.411E-04	1000	-0.482	49.92	
349	PC-3	1.411E-04	5000	-0.549	56.16	
350	PC-4	7.540E-05	100	-0.387	147.42	
351	PC-4	7.540E-05	1000	-0.482	155.52	
352	PC-4	7.540E-05	5000	-0.549	162	
353	PC-4	1.206E-04	100	-0.387	147.42	
354	PC-4	1.206E-04	1000	-0.482	155.52	
355	PC-4	1.206E-04	5000	-0.549	162	
356	PC-4	1.411E-04	100	-0.387	147.096	
357	PC-4	1.411E-04	1000	-0.482	155.358	
358	PC-4	1.411E-04	5000	-0.549	162	
359	PC-4	7.540E-05	100	-0.387		58.32
360	PC-4	7.540E-05	1000	-0.482		59.94
361	PC-4	7.540E-05	5000	-0.549		61.236
362	PC-4	1.206E-04	100	-0.387		58.32
363	PC-4	1.206E-04	1000	-0.482		60.588
364	PC-4	1.206E-04	5000	-0.549		61.884
365	PC-4	1.411E-04	100	-0.387		58.806
366	PC-4	1.411E-04	1000	-0.482		60.426
367	PC-4	1.411E-04	5000	-0.549		62.046

5.E. Vary Soil Bulk Modulus

Index	Event	Soil Bulk Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
368	PC3	20	100	-0.387	33	
369	PC3	20	1000	-0.482	45.24	
370	PC3	20	5000	-0.549	54.6	
371	PC3	30	100	-0.387	42.12	
372	PC3	30	1000	-0.482	46.8	
373	PC3	30	5000	-0.549	56.16	
374	PC3	40	100	-0.387	42.12	
375	PC3	40	1000	-0.482	40.56	
376	PC3	40	5000	-0.549	59.94	
377	PC4	20	100	-0.387	115.02	
378	PC4	20	1000	-0.482	124.74	
379	PC4	20	5000	-0.549	131.22	
380	PC4	30	100	-0.387	147.42	
381	PC4	30	1000	-0.482	155.52	
382	PC4	30	5000	-0.549	162	
383	PC4	40	100	-0.387	186.3	
384	PC4	40	1000	-0.482	186.3	
385	PC4	40	5000	-0.549	187.92	
386	PC4	20	100	-0.387		21.06
387	PC4	20	1000	-0.482		22.68
388	PC4	20	5000	-0.549		22.68
389	PC4	30	100	-0.387		58.32
390	PC4	30	1000	-0.482		59.94
391	PC4	30	5000	-0.549		63.18
392	PC4	40	100	-0.387		113.4
393	PC4	40	1000	-0.482		100.44
394	PC4	40	5000	-0.549		82.62

6. Differential Displacement at Location 5

6.A. Differential Displacement Magnitude

Index	Magnitude, in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
395	0.75	100	-0.387	60.84	
396	2.75	100	-0.387	157.14	
397	0.75	1000	-0.482	71.76	
398	1.5	1000	-0.482	105.462	
399	2	1000	-0.482	129.438	
400	2.75	1000	-0.482	168.48	
401	0.75	5000	-0.549	81.12	
402	2.75	5000	-0.549	176.58	
403	2.75	100	-0.387		21.06
404	1.5	1000	-0.482		0
405	2	1000	-0.482		8.085
406	2.75	1000	-0.482		19.44
407	2.75	5000	-0.549		17.82

6.B. Vary Settlement Extent

Index	Event	Extent, ft.	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
408	PC-3	62	100	-0.387	60.84	
409	PC-3	62	1000	-0.482	71.76	
410	PC-3	62	5000	-0.549	81.12	
411	PC-3	124	100	-0.387	76.284	
412	PC-3	124	1000	-0.482	87.36	
413	PC-3	124	5000	-0.549	96.72	
414	PC-4	62	100	-0.387	157.14	
415	PC-4	62	1000	-0.482	168.48	
416	PC-4	62	5000	-0.549	176.58	
417	PC-4	124	100	-0.387	234.9	
418	PC-4	124	1000	-0.482	239.76	
419	PC-4	124	5000	-0.549	254.34	
420	PC-4	62	100	-0.387		21.06
421	PC-4	62	1000	-0.482		19.44
422	PC-4	62	5000	-0.549		17.82
423	PC-4	124	100	-0.387		64.8
424	PC-4	124	1000	-0.482		64.8
425	PC-4	124	5000	-0.549		59.94

6.C. Vary Saltstone Modulus

Index	Event	Saltstone Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
426	PC-3	1.619E+05	100	-0.387	61.56	
427	PC-3	1.619E+05	1000	-0.482	72.9	
428	PC-3	1.619E+05	5000	-0.549	82.62	
429	PC-3	2.048E+05	100	-0.387	60.84	
430	PC-3	2.048E+05	1000	-0.482	74.52	
431	PC-3	2.048E+05	5000	-0.549	84.24	
432	PC-3	2.396E+05	100	-0.387	60.84	
433	PC-3	2.396E+05	1000	-0.482	74.52	
434	PC-3	2.396E+05	5000	-0.549	84.24	
435	PC-4	1.619E+05	100	-0.387	157.14	
436	PC-4	1.619E+05	1000	-0.482	168.48	
437	PC-4	1.619E+05	5000	-0.549	176.58	
438	PC-4	2.048E+05	100	-0.387	157.14	
439	PC-4	2.048E+05	1000	-0.482	168.48	
440	PC-4	2.048E+05	5000	-0.549	176.58	
441	PC-4	2.396E+05	100	-0.387	155.52	
442	PC-4	2.396E+05	1000	-0.482	173.34	
443	PC-4	2.396E+05	5000	-0.549	174.96	
444	PC-4	1.619E+05	100	-0.387		27.378
445	PC-4	1.619E+05	1000	-0.482		25.272
446	PC-4	1.619E+05	5000	-0.549		23.328
447	PC-4	2.048E+05	100	-0.387		27.216
448	PC-4	2.048E+05	1000	-0.482		25.11
449	PC-4	2.048E+05	5000	-0.549		23.49
450	PC-4	2.396E+05	100	-0.387		26.892
451	PC-4	2.396E+05	1000	-0.482		24.624
452	PC-4	2.396E+05	5000	-0.549		23.166

6.D Vary Saltstone Cracking Strain

Index	Event	Cracking Strain in/in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
453	PC-3	7.540E-05	1000	-0.482	53.04	
454	PC-3	7.540E-05	5000	-0.549	60.84	
455	PC-3	1.206E-04	100	-0.387	60.84	
456	PC-3	1.206E-04	1000	-0.482	71.76	
457	PC-3	1.206E-04	5000	-0.549	82.62	
458	PC-3	1.411E-04	100	-0.387	60.84	
459	PC-3	1.411E-04	1000	-0.482	71.76	
460	PC-3	1.411E-04	5000	-0.549	84.24	
461	PC-4	7.540E-05	100	-0.387	157.14	
462	PC-4	7.540E-05	1000	-0.482	166.86	
463	PC-4	7.540E-05	5000	-0.549	176.58	
464	PC-4	1.206E-04	100	-0.387	157.14	
465	PC-4	1.206E-04	1000	-0.482	168.48	
466	PC-4	1.206E-04	5000	-0.549	176.58	
467	PC-4	1.411E-04	100	-0.387	156.816	
468	PC-4	1.411E-04	1000	-0.482	167.67	
469	PC-4	1.411E-04	5000	-0.549	176.256	
470	PC-4	7.540E-05	100	-0.387		27.054
471	PC-4	7.540E-05	1000	-0.482		24.948
472	PC-4	7.540E-05	5000	-0.549		23.328
473	PC-4	1.206E-04	100	-0.387		27.216
474	PC-4	1.206E-04	1000	-0.482		25.11
475	PC-4	1.206E-04	5000	-0.549		23.49
476	PC-4	1.411E-04	100	-0.387		27.216
477	PC-4	1.411E-04	1000	-0.482		25.11
478	PC-4	1.411E-04	5000	-0.549		23.49

6.E. Vary Soil Bulk Modulus

Index	Event	Soil Bulk Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
479	PC3	20	1000	-0.482	60.84	
480	PC3	20	5000	-0.549	57.72	
481	PC3	30	100	-0.387	56.16	
482	PC3	30	1000	-0.482	67.08	
483	PC3	30	5000	-0.549	74.88	
484	PC3	40	100	-0.387	65.52	
485	PC3	40	1000	-0.482	76.44	
486	PC3	40	5000	-0.549	84.24	
487	PC4	20	100	-0.387	132.6	
488	PC4	20	1000	-0.482	149.04	
489	PC4	20	5000	-0.549	157.14	
490	PC4	30	100	-0.387	157.14	
491	PC4	30	1000	-0.482	168.48	
492	PC4	30	5000	-0.549	176.58	
493	PC4	40	100	-0.387	166.86	
494	PC4	40	1000	-0.482	178.2	
495	PC4	40	5000	-0.549	186.3	
496	PC4	20	100	-0.387		10.5
497	PC4	20	1000	-0.482		10.5
498	PC4	20	5000	-0.549		7.5
499	PC4	30	100	-0.387		21.06
500	PC4	30	1000	-0.482		19.44
501	PC4	30	5000	-0.549		17.82
502	PC4	40	100	-0.387		27.54
503	PC4	40	1000	-0.482		25.92
504	PC4	40	5000	-0.549		25.92

7. Differential Displacement at Location 6

7.A. Differential Displacement Magnitude

Index	Magnitude, in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
505	1.5	1000	-0.482	0	
506	1.75	1000	-0.482	102.06	
507	2	1000	-0.482	110.97	
508	2.5	1000	-0.482	152.28	
509	2.75	1000	-0.482	176.58	
510	2.75	100	-0.387		50.22
511	2.5	1000	-0.482		26.73
512	2.75	1000	-0.482		43.74
513	2.75	5000	-0.549		37.26

7.B. Vary Settlement Extent

Index	Event	Extent, ft.	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
514	PC-3	62	5000	-0.549	48.36	
515	PC-3	124	5000	-0.549	46.8	
516	PC-4	62	100	-0.387	168.48	
517	PC-4	62	1000	-0.482	176.58	
518	PC-4	62	5000	-0.549	183.06	
519	PC-4	124	100	-0.387	205.74	
520	PC-4	124	1000	-0.482	215.46	
521	PC-4	124	5000	-0.549	221.94	
522	PC-4	62	100	-0.387		50.22
523	PC-4	62	1000	-0.482		43.74
524	PC-4	62	5000	-0.549		37.26
525	PC-4	124	100	-0.387		79.38
526	PC-4	124	1000	-0.482		74.52
527	PC-4	124	5000	-0.549		69.66

7.C. Vary Saltstone Modulus

Index	Event	Saltstone Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
528	PC-3	1.619E+05	1000	-0.482	36.192	
529	PC-3	1.619E+05	5000	-0.549	46.176	
530	PC-3	2.048E+05	5000	-0.549	48.36	
531	PC-3	2.396E+05	100	-0.387	3.51	
532	PC-3	2.396E+05	1000	-0.482	40.56	
533	PC-3	2.396E+05	5000	-0.549	49.92	
534	PC-4	1.619E+05	100	-0.387	174.96	
535	PC-4	1.619E+05	1000	-0.482	183.06	
536	PC-4	1.619E+05	5000	-0.549	189.54	
537	PC-4	2.048E+05	100	-0.387	168.48	
538	PC-4	2.048E+05	1000	-0.482	176.58	
539	PC-4	2.048E+05	5000	-0.549	183.06	
540	PC-4	2.396E+05	100	-0.387	162	
541	PC-4	2.396E+05	1000	-0.482	32.76	
542	PC-4	2.396E+05	5000	-0.549	42.12	
543	PC-4	1.619E+05	100	-0.387		53.946
544	PC-4	1.619E+05	1000	-0.482		48.438
545	PC-4	1.619E+05	5000	-0.549		41.634
546	PC-4	2.048E+05	100	-0.387		49.896
547	PC-4	2.048E+05	1000	-0.482		42.768
548	PC-4	2.048E+05	5000	-0.549		37.098
549	PC-4	2.396E+05	100	-0.387		46.656

7.D Vary Saltstone Cracking Strain

Index	Event	Cracking Strain in/in	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
550	PC-3	7.540E-05	100	-0.387	17.28	
551	PC-3	7.540E-05	1000	-0.482	27	
552	PC-3	7.540E-05	5000	-0.549	33	
553	PC-3	1.206E-04	5000	-0.549	48.36	
554	PC-4	7.540E-05	100	-0.387	168.48	
555	PC-4	7.540E-05	1000	-0.482	176.58	
556	PC-4	7.540E-05	5000	-0.549	183.06	
557	PC-4	1.206E-04	100	-0.387	168.48	
558	PC-4	1.206E-04	1000	-0.482	176.58	
559	PC-4	1.206E-04	5000	-0.549	183.06	
560	PC-4	1.411E-04	100	-0.387	168.156	
561	PC-4	1.411E-04	1000	-0.482	176.256	
562	PC-4	1.411E-04	5000	-0.549	175.968	
563	PC-4	7.540E-05	100	-0.387		49.67892
564	PC-4	7.540E-05	1000	-0.482		42.93
565	PC-4	7.540E-05	5000	-0.549		37.26
566	PC-4	1.206E-04	100	-0.387		49.896
567	PC-4	1.206E-04	1000	-0.482		42.768
568	PC-4	1.206E-04	5000	-0.549		37.098
569	PC-4	1.411E-04	100	-0.387		49.896
570	PC-4	1.411E-04	1000	-0.482		42.606
571	PC-4	1.411E-04	5000	-0.549		37.26

7.E. Vary Soil Bulk Modulus

Index	Event	Soil Bulk Modulus ksf	Time years	Settlement feet	Bottom Crack Area in^2	Top Crack Area in^2
572	PC3	30	5000	-0.549	48.36	
573	PC3	40	1000	-0.482	30	
574	PC3	40	5000	-0.549	51.48	
575	PC4	20	5000	-0.549	119.88	
576	PC4	30	100	-0.387	168.48	
577	PC4	30	1000	-0.482	176.58	
578	PC4	30	5000	-0.549	183.06	
579	PC4	40	100	-0.387	217.08	
580	PC4	40	1000	-0.482	225.18	
581	PC4	40	5000	-0.549	231.66	
582	PC4	30	100	-0.387		50.22
583	PC4	40	100	-0.387		82.62
584	PC4	30	1000	-0.482		43.74
585	PC4	40	1000	-0.482		76.14
586	PC4	30	5000	-0.549		37.26
587	PC4	40	5000	-0.549		69.66

8.3 ~~Monte Carlo Analysis~~ Statistical Model 7/16/08

To construct a model for Monte Carlo analysis, it is necessary to determine relationships between the variable parameters and resulting cracking of the vault. The base parameters used in the analysis are the following:

1. Static settlement rate
2. Grout modulus
3. Grout cracking strain
4. Soil bulk modulus

The structural analysis varied one parameter at a time while holding the others at their mean values. The variation of crack areas with the change in parameters was calculated using linear regression on the data from the finite element model runs.

These parameters remain fixed for each iteration as the model is stepped through time. During the time sequence, the occurrence of an earthquake is determined by a random number generator. The earthquake causes differential settlement that itself has variable parameters. These are as follows:

1. Location of settlement (one of seven locations, equal probability)
2. Magnitude (depends on Earthquake magnitude)
3. Extent (normal distribution)

The Monte Carlo analysis is run in the @RISK program, an EXCEL based overlay. @RISK is used for the base parameters and to control iterations, while an EXCEL macro is used to set the earthquake parameters and step through time.

There are two spreadsheets used for this analysis. The spreadsheet "Parameter Results.xls" is used to evaluate the data and set up relationships for the crack area to each parameter, and "Crack Workbook.xls" is used to run the Monte Carlo analysis.

The probability distributions and comparison of the model to the structural analysis data are shown in the following sections. The effects of varying the parameters over wide ranges are also shown. The following table provides an index to the model verification.

Probability Distributions for Statistical Analysis Parameters

8.3.1. Static Settlement Rate

1A. Check Data Fit

	Time, years						
Settlement	1	5	24	100	1000	5000	10000
Low	-0.12077	-0.24512	-0.26762	-0.3008	-0.34893	-0.38633	-0.40428
Mean	-0.13446	-0.28599	-0.32778	-0.3893	-0.47839	-0.54745	-0.58069
High	-0.15589	-0.33059	-0.37795	-0.44766	-0.54862	-0.62687	-0.66452

$\text{Time} := (1\ \ 5\ \ 24\ \ 100\ \ 1000\ \ 5000\ \ 10000)$ (Settlement in feet)

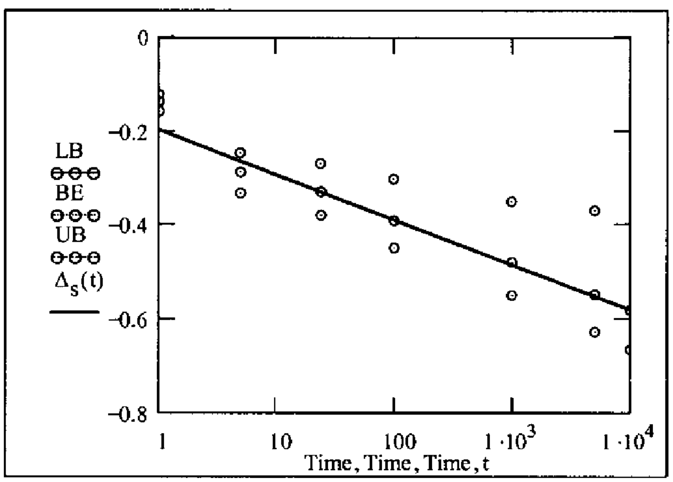
$\text{LB} := (-.12077\ \ -.24512\ \ -.26762\ \ -.3008\ \ -.34893\ \ -.36833\ \ -.40428)$

$\text{BE} := (-.13446\ \ -.28599\ \ -.32778\ \ -.3893\ \ -.47839\ \ -.54745\ \ -.58069)$

$\text{UB} := (-.15589\ \ -.33059\ \ -.37795\ \ -.44766\ \ -.54862\ \ -.62687\ \ -.66452)$

Mean Settlement is a function of log (time)

$\Delta_s(t) := -.09598 \cdot \log(t) - .196374$



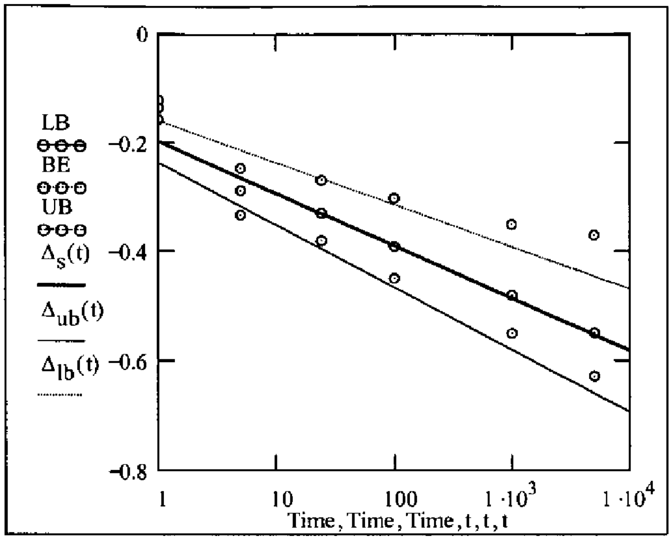
For a random variable X with a standard normal distribution μ=1.0607 and σ=0.53 truncated at 0.

Relationship of the range of data for each time is as follows:

$\mu := 1.0607 \qquad \sigma := 0.53$

$$\text{ratio}(X) := \frac{0.368X + 0.609}{0.368 \cdot \mu + 0.609}$$

$\Delta_{ub}(t) := \left[\text{ratio}(\mu + \sigma) \cdot (-.09598 \cdot \log(t) - .196374)\right] \qquad \Delta_{lb}(t) := \left[\text{ratio}(\mu - \sigma) \cdot (-.09598 \cdot \log(t) - .196374)\right]$



Data fit is acceptable and slightly conservative due to curve fit.

1B. Check validity of probability distribution.

The ratio is limited to 0.1 since settlement can't be positive and always has at least a small negative value. The effect of this is to truncate the distribution.

$$X_0 := \frac{0.1 - 0.609}{0.368} \qquad X_0 = -1.383$$

Calculate the area under the probability function.

$$f_d(x) := \frac{1}{\sigma\cdot\sqrt{2\cdot\pi}}\cdot e^{\frac{-1}{2}\cdot\left(\frac{x-\mu}{\sigma}\right)^2}$$

$$Y := \int_{X_0}^{\infty} f_d(x)\,dx \qquad Y = 1$$

Truncated distribution is valid.

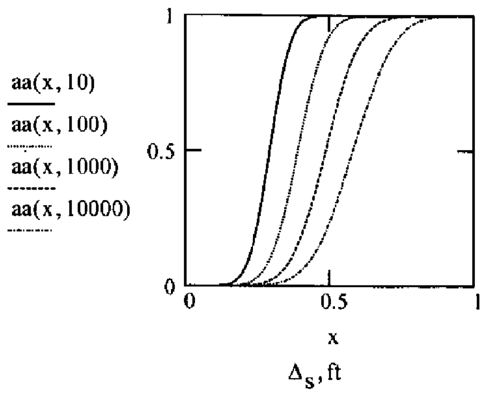
1c. Check the results for the range of probabilities

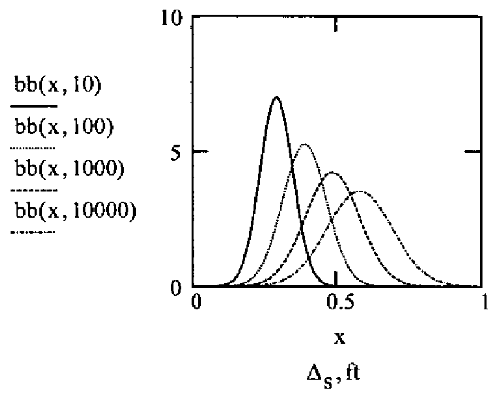
$$\Delta_s(t,X) := \max(\mathrm{ratio}(X), 0.1)\cdot(-.09598\cdot\log(t) - .196374)$$

$$r := \mathrm{ratio}(\mu+\sigma) - \mathrm{ratio}(\mu) \qquad r = 0.195$$

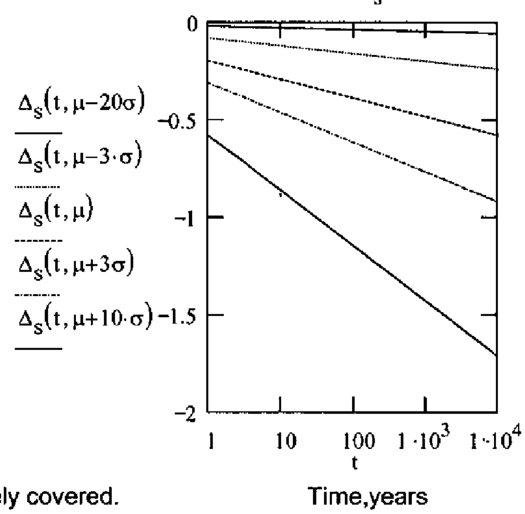
$$\mu s(t) := -.09598\cdot\log(t) - .196374$$

$$aa(x,t) := \mathrm{pnorm}(x, -\mu s(t), -r\,\mu s(t)) \qquad bb(x,t) := \mathrm{dnorm}(x, -\mu s(t), -r\,\mu s(t))$$





Note: settlement is expressed as positive for the Mathcad probability functions.



Range of probabilities is adequately covered.

8.3.2. Grout Modulus

2A Check Grout Modulus Distribution

Random Variable, X

Saltstone compressive strength is used as the basis for varying the modulus and cracking strain. ACI-318 bases the Young's modulus for concrete on the square root of the compressive strength.

$\mu_{cs} := 524.4$ $\qquad E_{gmed} := 2.048 \cdot 10^5$

$\sigma_{cs} := 196.8$

$C_v := \frac{\sigma_{cs}}{\mu_{cs}}$ $\qquad C_v = 0.375$ $\qquad r := 1.0187$ Truncation adjustment

$$X := \begin{pmatrix} -2.157 \\ -2 \\ -1.5 \\ -1 \\ -.5 \\ 0 \\ .5 \\ 1 \\ 2 \\ 3 \\ 4 \end{pmatrix}$$

$$\text{ratio}(X) := \left(1.0187 \cdot \sqrt{\frac{\overrightarrow{\left[\mu_{cs} + \sigma_{cs} \cdot (X) \right]}}{\mu_{cs}}} \right) \qquad E_{gm}(X) := E_{gmed} \cdot \text{ratio}(X)$$

Distribution is truncated at compressive strength = 100 psi minimum.

$X_0 := \frac{100 - \mu_{cs}}{\sigma_{cs}}$ $\qquad X_0 = -2.157$

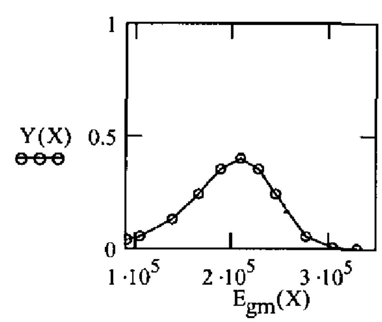
Mean Value $\qquad \mu_E := E_{gm}(0)$ $\qquad \mu_E = 2.086 \times 10^5$

$\sigma_{p1} := E_{gm}(1)$ $\qquad \sigma_{p1} = 2.447 \times 10^5$

$\sigma_{n1} := E_{gm}(-1)$ $\qquad \sigma_{n1} = 1.649 \times 10^5$

$Y(X) := \text{dnorm}(X, 0, 1)$

$E_{gm}(X) =$	$Y(X) =$
$9.106 \cdot 10^4$	0.039
$1.042 \cdot 10^5$	0.054
$1.379 \cdot 10^5$	0.13
$1.649 \cdot 10^5$	0.242
$1.88 \cdot 10^5$	0.352
$2.086 \cdot 10^5$	0.399
$2.274 \cdot 10^5$	0.352
$2.447 \cdot 10^5$	0.242
$2.76 \cdot 10^5$	0.054
$3.042 \cdot 10^5$	$4.432 \cdot 10^{-3}$
$3.299 \cdot 10^5$	$1.338 \cdot 10^{-4}$



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Distribution Appears OK

2B. Check Probability Sum

$\mu := 0$

$\sigma := 1$ $\qquad f_d(x) := \frac{1}{\sigma \cdot \sqrt{2 \cdot \pi}} \cdot e^{\frac{-1}{2} \cdot \left(\frac{x-\mu}{\sigma} \right)^2}$ $\qquad Y := \int_{X_0}^{\infty} f_d(x)\,dx$ $\qquad Y = 0.984$ $\qquad Y \cdot r = 1.003$

Close to 1 O.K.

2C. Range of Parameter Test

$$X := \begin{pmatrix} -5 \\ -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{pmatrix} \qquad E_{gm}(X) = \begin{array}{|r|} \hline 1.953i\cdot10^5 \\ \hline 1.477i\cdot10^5 \\ \hline 7.401i\cdot10^4 \\ \hline 1.042\cdot10^5 \\ \hline 1.649\cdot10^5 \\ \hline 2.086\cdot10^5 \\ \hline 2.447\cdot10^5 \\ \hline 2.76\cdot10^5 \\ \hline 3.042\cdot10^5 \\ \hline 3.299\cdot10^5 \\ \hline 3.538\cdot10^5 \\ \hline \end{array}$$

-3 to -5 not used.

8.3.3. Grout Cracking Strain

3A Check Grout Cracking Strain Distribution

Random Variable, X (assumed to be independent of modulus; correlation added later.

Saltstone Compressive Strength

$$\mu_{cs} := 524.4 \qquad \sigma_{cs} := 196.8 \qquad \varepsilon_{med} := 1.206\cdot 10^{-4}$$

$$X := \begin{pmatrix} -2.157 \\ -2 \\ -1.5 \\ -1 \\ -.5 \\ 0 \\ .5 \\ 1 \\ 2 \\ 3 \\ 4 \end{pmatrix}$$

$$\text{ratio}(X) := \left(1.0187\cdot\sqrt{\frac{\overrightarrow{\left[\mu_{cs}+\sigma_{cs}\cdot(X)\right]}}{\mu_{cs}}}\right) \qquad \varepsilon_{gm}(X) := \varepsilon_{med}\cdot \text{ratio}(X)$$

Distribution is truncated at compressive strength = 100 psi minimum.

$$X_0 := \frac{100-\mu_{cs}}{\sigma_{cs}} \qquad X_0 = -2.157$$

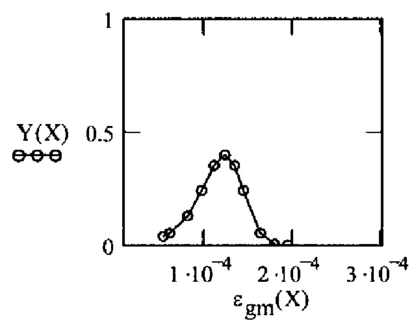
Mean Value $\mu_E := \varepsilon_{gm}(0)$ $\qquad \mu_E = 1.229\times 10^{-4}$

$\sigma_{p1} := \varepsilon_{gm}(1)$ $\qquad \sigma_{p1} = 1.441\times 10^{-4}$

$\sigma_{n1} := \varepsilon_{gm}(-1)$ $\qquad \sigma_{n1} = 9.71\times 10^{-5}$

$Y(X) := \text{dnorm}(X, 0, 1)$

$\varepsilon_{gm}(X) =$	$Y(X) =$
$5.362\cdot 10^{-5}$	0.039
$6.136\cdot 10^{-5}$	0.054
$8.122\cdot 10^{-5}$	0.13
$9.71\cdot 10^{-5}$	0.242
$1.107\cdot 10^{-4}$	0.352
$1.229\cdot 10^{-4}$	0.399
$1.339\cdot 10^{-4}$	0.352
$1.441\cdot 10^{-4}$	0.242
$1.625\cdot 10^{-4}$	0.054
$1.791\cdot 10^{-4}$	$4.432\cdot 10^{-3}$
$1.943\cdot 10^{-4}$	$1.338\cdot 10^{-4}$



3B. Check Probability Sum

Distribution Appears OK

$\mu := 0$

$\sigma := 1$

$$f_d(x) := \frac{1}{\sigma\cdot\sqrt{2\cdot\pi}}\cdot e^{\frac{-1}{2}\cdot\left(\frac{x-\mu}{\sigma}\right)^2} \qquad Y := \int_{X_0}^{\infty} f_d(x)\,dx \qquad Y = 0.984 \qquad Y\cdot r = 1.003$$

Close to 1 O.K.

3C. Range of Parameter Test

$$X := \begin{pmatrix} -5 \\ -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{pmatrix}$$

$\varepsilon_{gm}(X) =$

$1.15i \cdot 10^{-4}$
$8.697i \cdot 10^{-5}$
$4.358i \cdot 10^{-5}$
$6.136 \cdot 10^{-5}$
$9.71 \cdot 10^{-5}$
$1.229 \cdot 10^{-4}$
$1.441 \cdot 10^{-4}$
$1.625 \cdot 10^{-4}$
$1.791 \cdot 10^{-4}$
$1.943 \cdot 10^{-4}$
$2.084 \cdot 10^{-4}$

3D. Correlation of Cracking Strain and Modulus

It is very unlikely that the saltstone would have a high Young's modulus and low tensile strength since they are bc related to the compressive strength for concrete per ACI 318.

The EXCEL spreadsheet allows correlation of variables where -1.0 represents a 100% negative correlation, and 1.0 corresponds to a 100% positive correlation. In this instance, it is judged that there is a better than 50% but le than 100% correlation, so 0.75 is used to correlate modulus and tensile cracking strain.

8.3.4. Soil Bulk Modulus

4A Check Soil Bulk Modulus Strain Distribution

Random Variable, X

$$X := \begin{pmatrix} -1.6667 \\ -1.5 \\ -1 \\ -.75 \\ -.5 \\ 0 \\ .5 \\ 1 \\ 2 \\ 3 \\ 4 \end{pmatrix}$$

$\mu_s := 30$ $\sigma_s := 15$ $r := 1.0504$ $k := r \cdot 30$

$$ratio(X) := \frac{\overrightarrow{\left[\mu_s + \sigma_s \cdot (X)\right]}}{\mu_s} \qquad K_s(X) := k \cdot ratio(X)$$

Distribution is truncated at soil bulk modulus = 5kcf minimum.

Note that the FE model is done with k = 20, 30, and 40 kcf. A COV of 0.5 is used in the statistical analysis, while the 20, 30, 40 values are used in the FE analysis to establish the relationships with crack area.

$$X_0 := \frac{5 - \mu_s}{\sigma_s} \qquad X_0 = -1.667$$

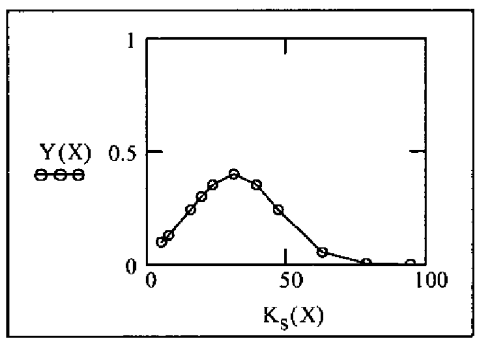
Mean Value $\mu_E := K_s(0)$ $\mu_E = 31.512$

$\sigma_{p1} := K_s(1)$ $\sigma_{p1} = 47.268$

$\sigma_{n1} := K_s(-1)$ $\sigma_{n1} = 15.756$

$Y(X) := dnorm(X, 0, 1)$

$K_s(X) =$	$Y(X) =$
5.251	0.099
7.878	0.13
15.756	0.242
19.695	0.301
23.634	0.352
31.512	0.399
39.39	0.352
47.268	0.242
63.024	0.054
78.78	$4.432 \cdot 10^{-3}$
94.536	$1.338 \cdot 10^{-4}$



Distribution Appears OK

4B. Check Probability Sum

$\mu := 0$

$\sigma := 1$

$$f_d(x) := \frac{1}{\sigma \cdot \sqrt{2 \cdot \pi}} \cdot e^{\frac{-1}{2} \cdot \left(\frac{x-\mu}{\sigma}\right)^2} \qquad Y := \left(\int_{X_0}^{\infty} f_d(x)\, dx\right) \cdot r \qquad Y = 1$$

$$\frac{1}{Y} = 1$$

4C. Range for Data Check (Truncate at 5kcf).

$$X := \begin{pmatrix} -5 \\ -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{pmatrix}$$

$K_s(X) =$

-47.268
-31.512
-15.756
0
15.756
31.512
47.268
63.024
78.78
94.536
110.292

8.3.5. Magnitude of Differential Settlement

PC-3 is 0.75 inches with annual probability of 1/2500 or 4E-3; PC-4 is 2.75 inches with annual probability of 1E-4. 10 year probabilities are 3.993E-3 and 1E-3, respectively.

Probability Calculation (DOE-1020, Appendix A)

$EP(n,p) := 1 - (1-p)^n$ n is time period, years EP is exceedance probability

p is annual probability of exceedance

$PC-3 \quad n := 10 \quad p := \frac{1}{2500} \quad EP(n,p) = 3.993 \times 10^{-3}$

$PC-4 \quad p := \frac{1}{10000} \quad EP(n,p) = 9.996 \times 10^{-4}$

Excel Formulation

minEP	6.71E-03	0	6.71E-03
Ap1	-0.3006	0.75	0.003993
Bp1	-2.173213448	2.75	1.00E-03
Ap2	-0.8	4	0.0001
Bp2	-0.8		

=IF(D29>minEP,0,IF(D29>Q19,(LOG($D$29)-Bp1_)/Ap1_,(LOG($D$29)-Bp2_)/Ap2_))

D29 is random variable representing 10 year probability

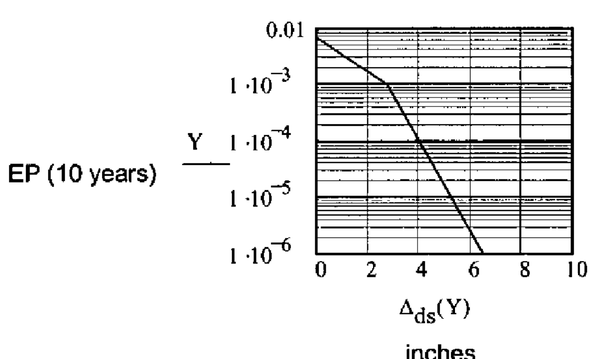
$EP_{min} := 6.71 \cdot 10^{-3} \quad a1 := -.3006 \quad a2 := -0.8$

$EP_{pc4} := 10^{-3} \quad b1 := -2.1732 \quad b2 := -0.8$

$$\Delta_{ds}(Y) := \text{if}\left[\left(Y \geq EP_{min}\right), 0, \text{if}\left(Y \geq EP_{pc4}, \frac{\log(Y) - b1}{a1}, \frac{\log(Y) - b2}{a2}\right)\right]$$

$\Delta_{ds}\left(EP_{min}\right) = 0 \quad \Delta_{ds}\left(10^{-3}\right) = 2.75 \quad \Delta_{ds}(.003993) = 0.75$

$Y := 10^{-6}, 10^{-5} .. 10^{-2}$

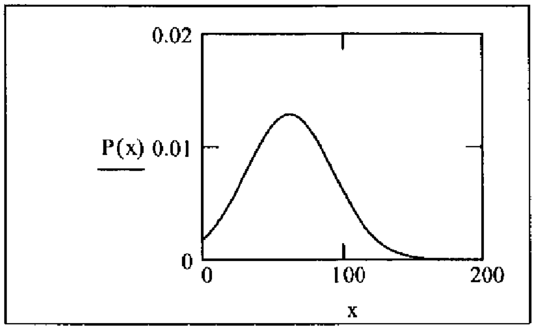


Curve matches the functions in the EXCEL spreadsheet.

8.3.6. Extent of Settlement

6A Check Distribution Truncate at 0 ft.

$P(x) := \mathrm{dnorm}(x, 62, 31)$ $r := 1.0235$



Distribution Appears OK

6B. Check Probability Sum

$\mu := 62$

$\sigma := 31$

$$f_d(x) := \frac{1}{\sigma\cdot\sqrt{2\cdot\pi}}\cdot e^{\frac{-1}{2}\cdot\left(\frac{x-\mu}{\sigma}\right)^2}$$

$$Y := \left(\int_0^{\infty} f_d(x)\,dx\right)\cdot r \qquad Y = 1$$

Extent is in feet.

6C. Range for Data Check

$$X := \begin{pmatrix} -5 \\ -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{pmatrix} \qquad V(X) := \mu + \sigma\cdot X \qquad V(X) = \begin{array}{|r|}\hline -93 \\ \hline -62 \\ \hline -31 \\ \hline 0 \\ \hline 31 \\ \hline 62 \\ \hline 93 \\ \hline 124 \\ \hline 155 \\ \hline 186 \\ \hline 217 \\ \hline \end{array}$$

8.3.7 Parameters Affecting Static Settlement

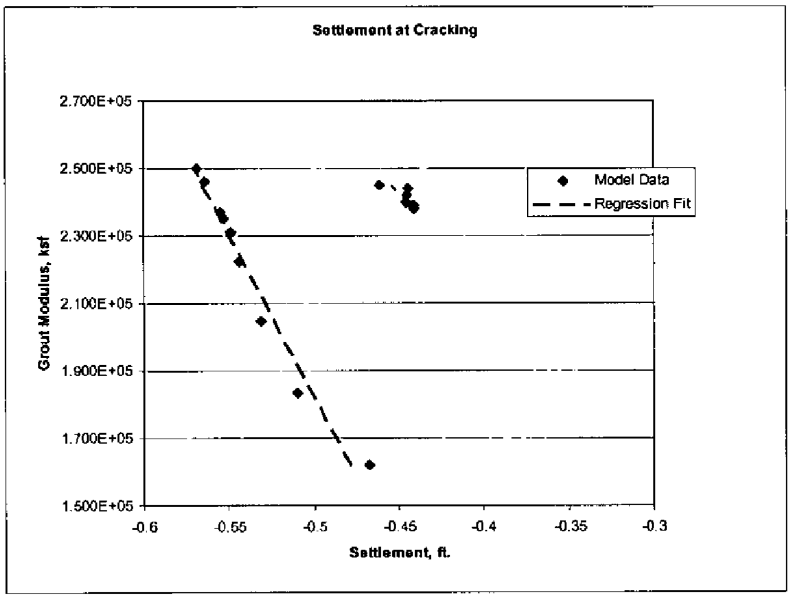
First calculate whether crack occurs.

The parameters that affect the occurrence of a crack are:

- The static settlement rate
- The saltstone modulus
- The saltstone cracking strain.

Note that the soil bulk modulus is directly related to the static settlement rate in that softer soil would have a higher settlement rate than stiffer soil. The static settlement occurs over a long period and over that period, the vault would tend to conform to the shape of the static settlement curve. The soil bulk modulus will therefore not be considered as a parameter to be varied for the static case but is accounted for by the static settlement rate..

Saltstone Modulus Effect



There is an anomaly in the data caused by the problem geometry. For a narrow range of saltstone modulus values, the vault tends to crack at a lower static settlement. This effect is demonstrated by numerous runs of the FE model. From linear regression analysis, the settlement at crack initiation is expressed as follows:

Eg - Grout Modulus, ksf

Δ_s -Static Settlement, ft

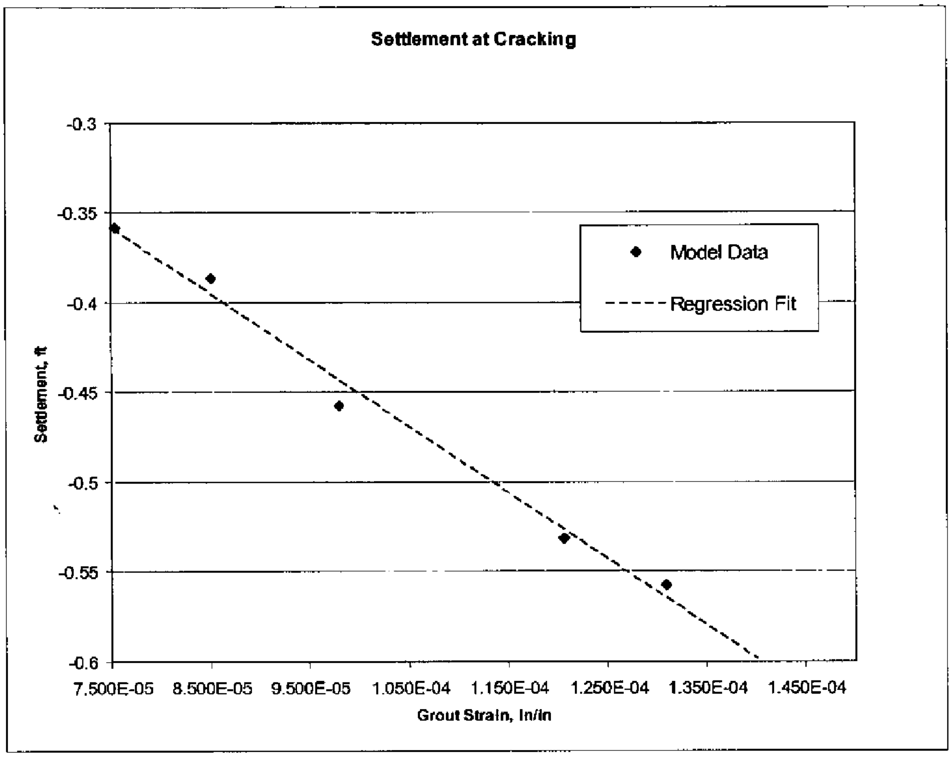
Δ_{co} - Settlement at Crack Initiation, ft. $\Delta_{co1}(E_g) := -1.05 \cdot 10^{-6} \cdot E_g - .3087$

For Eg between 238000 and 245000: $\Delta_{co2}(E_g) := -1.89 \cdot 10^{-6} \cdot E_g - .0103$

Examples $\Delta_{co1}(204800) = -0.524$

$\Delta_{co2}(240000) = -0.464$

Saltstone Cracking Strain Effect



The saltstone cracking strain also determines whether the vault will crack under static settlement. a linear regression of the FE model results gives the following relationship.

ε_{cr} - Saltstone Cracking Strain

$$\Delta_{co}(\varepsilon_{cr}) := -3698.5 \cdot \varepsilon_{cr} - 0.08113 \qquad \varepsilon_{crm} := 1.206 \cdot 10^{-4}$$

$$\text{ratio}(\varepsilon_{cr}) := \frac{\Delta_{co}(\varepsilon_{cr})}{\Delta_{co}(\varepsilon_{crm})}$$

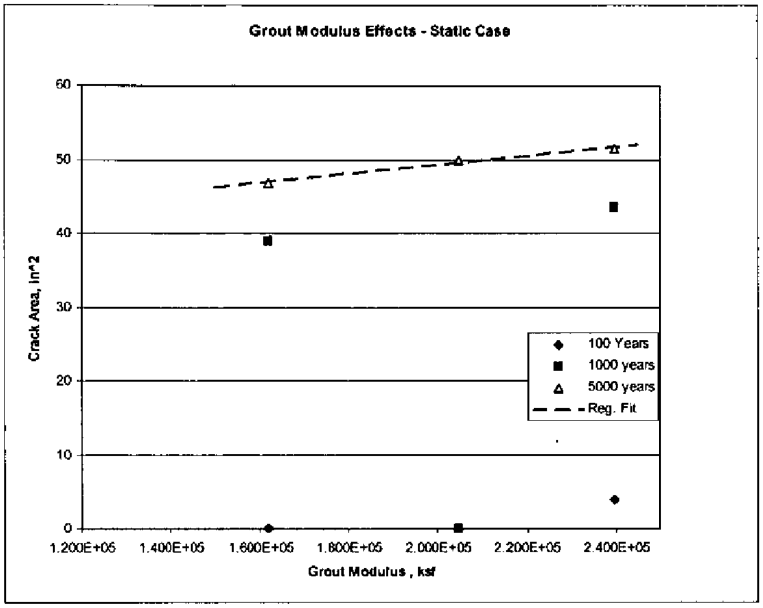
Examples $\varepsilon_{cr} := 1.05 \cdot 10^{-4}$ $\Delta_{co}(\varepsilon_{cr}) = -0.469$ $\text{ratio}(\varepsilon_{cr}) = 0.891$

$\varepsilon_{cr} := 1.3 \cdot 10^{-4}$ $\Delta_{co}(\varepsilon_{cr}) = -0.562$ $\text{ratio}(\varepsilon_{cr}) = 1.066$

The value for Δ_{co} calculated from the saltstone modulus is modified by this ratio.

Crack Area for Static Settlement Case

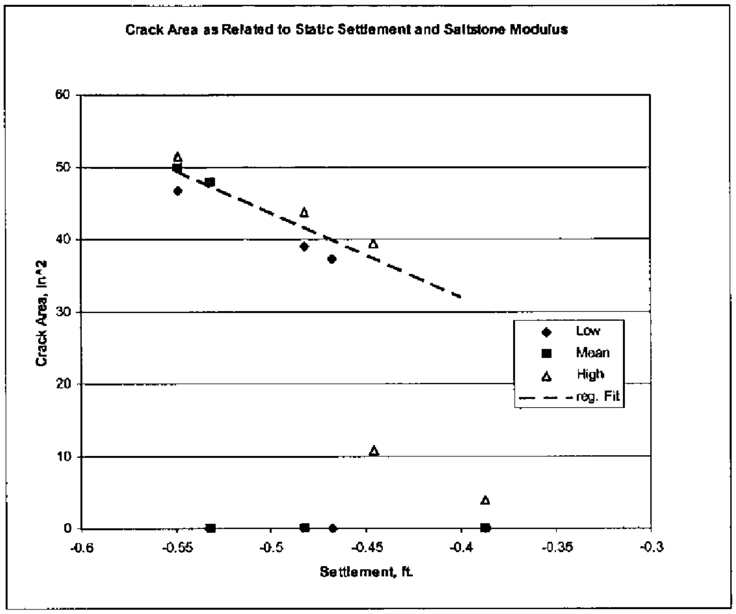
Once it has been determined that a crack occurs, the data from the 5000 year settlement case is used to determine crack area, and is modified by a factor dependent on the settlement at the specific time being considered.



Linear regression is used to relate the crack area to the grout modulus for the 5000 year data.

CA1 - Crack Area related to saltstone modulus

$$CA1(E_g) := 6.071 \cdot 10^{-5} \cdot E_g + 37.13$$



The crack area is related to the settlement also by linear regression:

CA2 - Crack Area related to settlement.

Since the first relationship was based on 5000 year settlement, the CA2 value is calculated as a modifier of the 5000 year value.

$\text{Slope} := -117.198$

$\Delta_{5000} := -0.549$ $\qquad$ $CA2(\Delta_{st}) := \text{Slope}\cdot(\Delta_{st} - \Delta_{5000})$

Examples

$E_g := 204800$ $\qquad$ $\Delta_{st} := -0.5$ $\qquad$ $CA1(E_g) = 49.563$

$CA2(\Delta_{st}) = -5.743$

$E_g := 245000$ $\qquad$ $\Delta_{st} := -0.6$ $\qquad$ $CA1(E_g) = 52.004$

$CA2(\Delta_{st}) = 5.977$

Overall Crack Area $\qquad$ $CA := CA1(E_g) + CA2(\Delta_{st})$

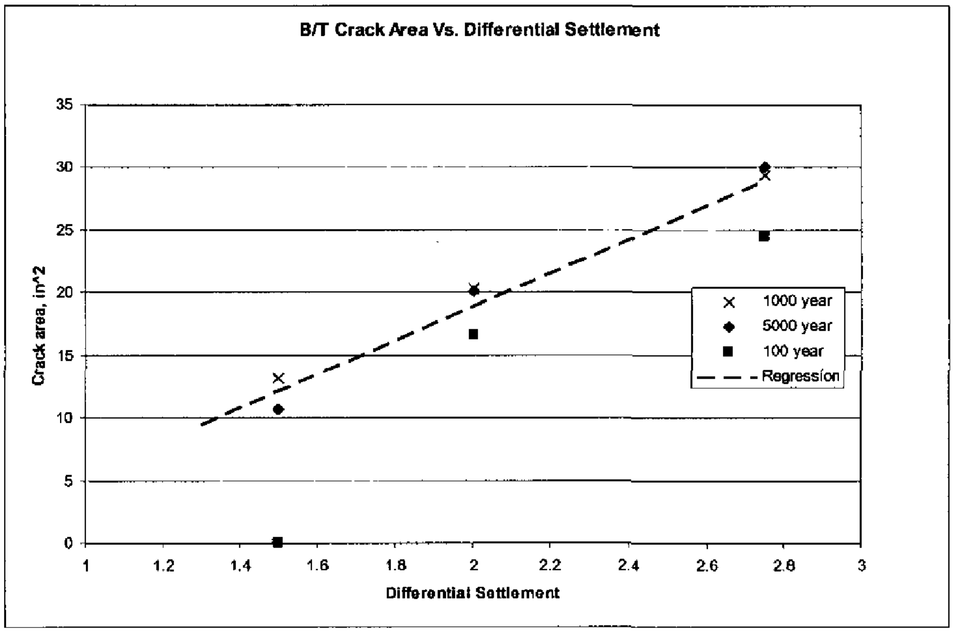
8.3.8 Differential Settlement at Location 1

The parameters affecting the formation of cracks due to differential settlement are:

- magnitude of settlement
- time of settlement with respect to the static settlement condition
- extent of settlement
- saltstone modulus
- saltstone cracking strain
- soil bulk modulus

Note: B/T cracks are cracks open at the bottom. T/B cracks are cracks open at the top.

<u>Settlement Magnitude</u>



The settlement is related to the magnitude by linear regression of the 1000 year data.

CA_{ds} - Crack Area due to differential settlement magnitude, in^2

Δ_d - Differential settlement, in.

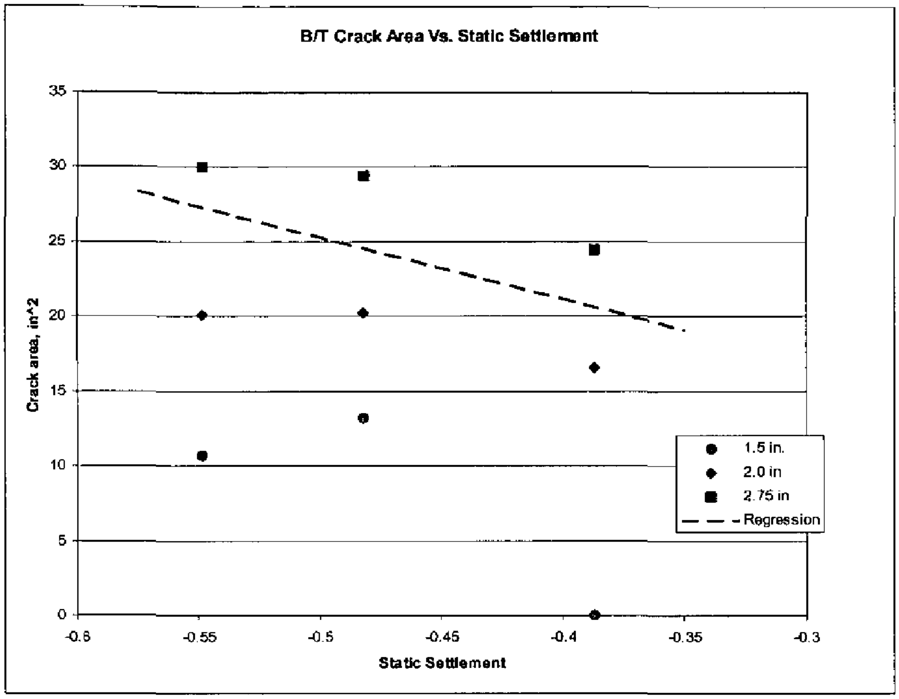
$$CA_{ds}(\Delta_d) := 13.44 \cdot \Delta_d - 8.073$$

Examples

$CA_{ds}(2) = 18.807$ $\quad\quad$ $CA_{ds}(1.25) = 8.727$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Effect of Static Settlement (time)



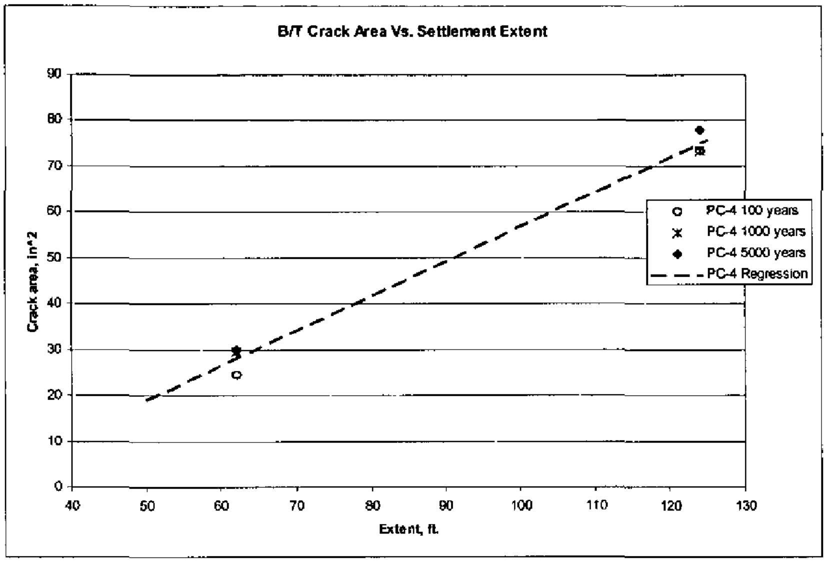
Data from the 2 in and 2.75 in differential settlements were used to find the slope change of the crack area as a function of static settlement. The relationship is as follows:

$\Delta_{1000} := -0.4823$ $\qquad CA_{ss}(\Delta_s) := -41.2249 \cdot (\Delta_s - \Delta_{1000})$

Examples $\qquad CA_{ss}(-.4) = -3.393 \qquad CA_{ss}(-.55) = 2.791$

This value is added to the crack area.

Effect of Extent of Settlement



The effect of settlement extent is assumed to be linear and is extrapolated for larger settlement areas. The expression for the relationship is:

Ex is settlement extent, ft. $Exm := 62$

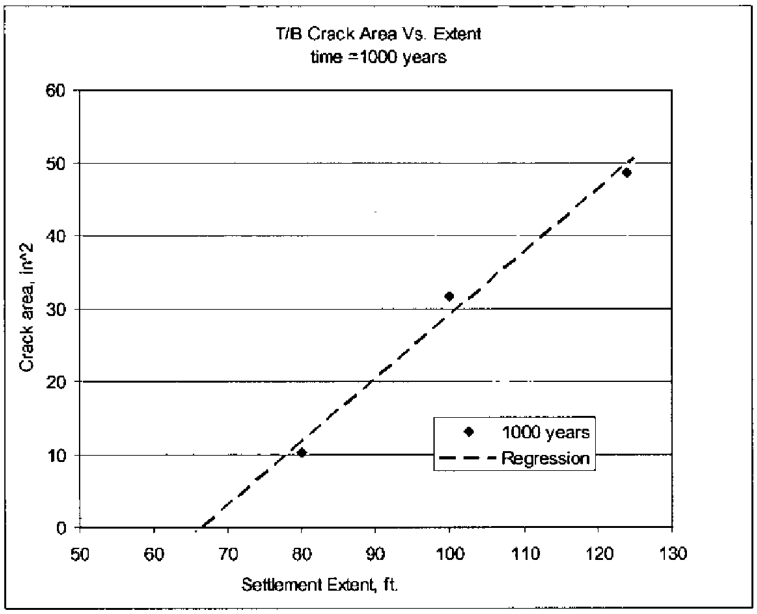
Exm is mean settlement extent

$$CA_{ext}(Ex) := 0.7568 \cdot (Ex - Exm)$$

Examples $CA_{ext}(40) = -16.65$ $CA_{ext}(140) = 59.03$

This value is added to the crack area.

There are also cracks open at the top for larger values of the extent parameter and for differential settlements greater than 2 in..

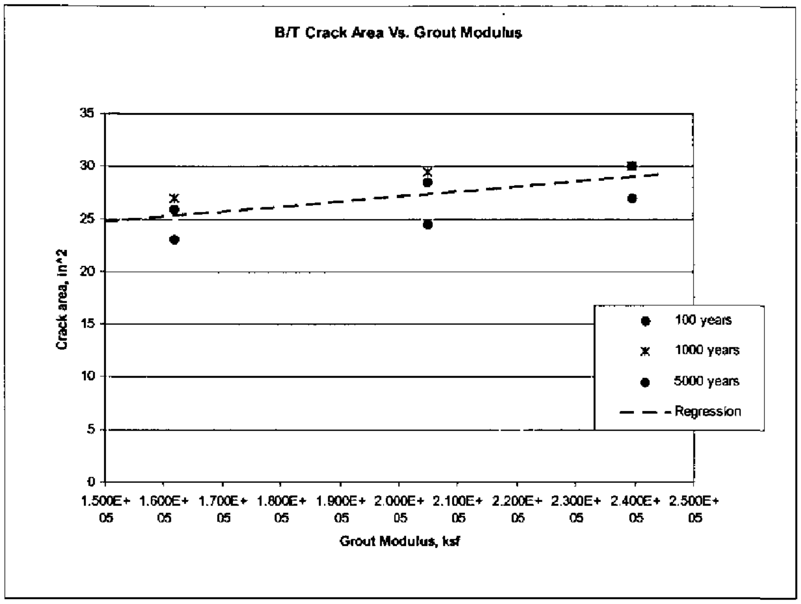


The relationship is expressed as follows:

$CA_{tex}(Ex) := 0.867\cdot(Ex) - 57.73$ for $\Delta_d > 2$in.

Examples $CA_{tex}(75) = 7.295$ $CA_{tex}(125) = 50.645$

Effect of Saltstone Modulus



The expression for the Saltstone modulus effect is derived similarly:

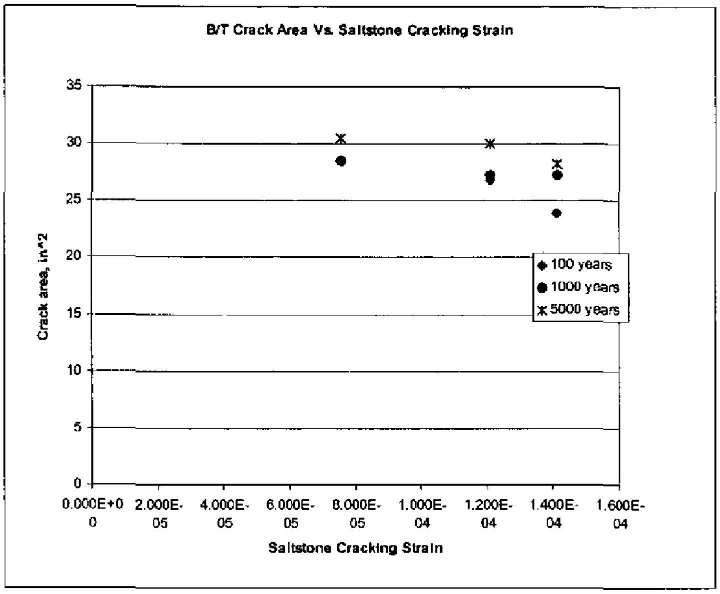
$E_{gm} := 2.048 \cdot 10^5$

$$CA_{gm}(E_g) := 4.75 \cdot 10^{-5} \cdot (E_g - E_{gm})$$

Examples $CA_{gm}(1.9 \cdot 10^5) = -0.703$ $CA_{gm}(2.5 \cdot 10^5) = 2.147$

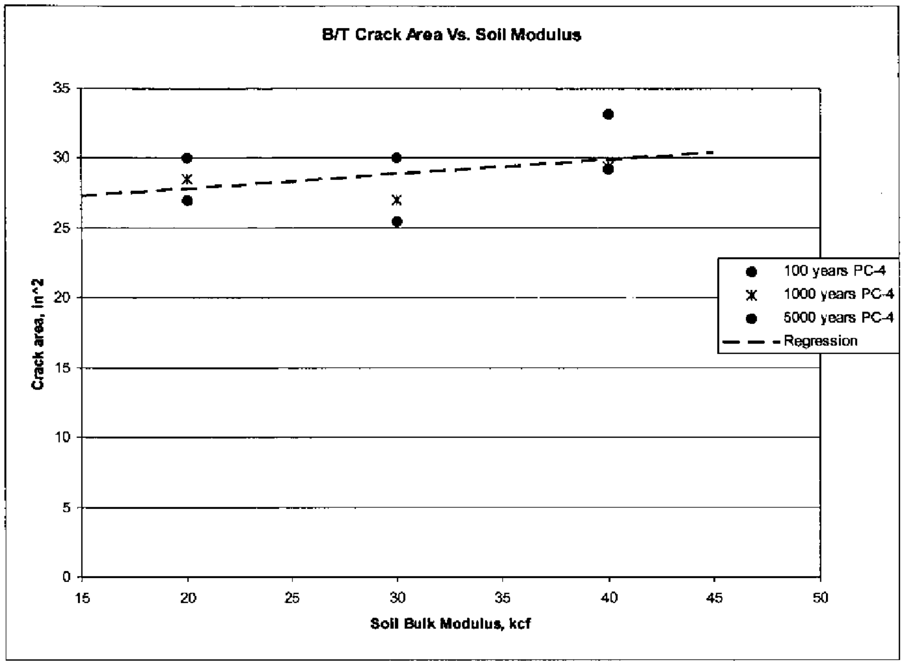
This value is added to the crack area.

Grout Cracking Strain Effect



No significant effect of saltstone cracking strain on crack area was noted.

Soil Bulk Modulus Effect



The expression for the soil bulk modulus effect is derived similarly:

$K_{sm} := 30$

$$CA_{sm}(K_s) := 0.1047 \cdot (K_s - K_{sm})$$

Examples $\quad CA_{sm}(25) = -0.523 \quad\quad CA_{sm}(45) = 1.571$

This value is added to the crack area.

Total Crack Area

Bottom Cracks $\quad CA_b := CA_{ds}(\Delta_d) + CA_{ss}(\Delta_s) + CA_{ext}(Ex) + CA_{gm}(E_g) + CA_{sm}(K_s)$

Top Cracks $\quad CAt := CA_{tex}(Ex)$

8.3.9 Differential Settlement at Location 2

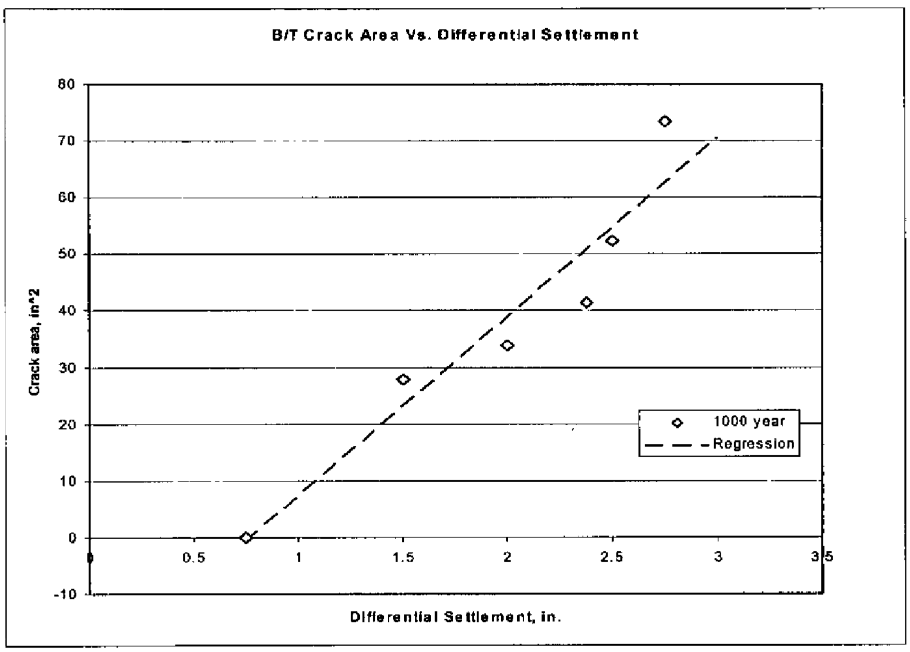
The parameters affecting the formation of cracks due to differential settlement are:

- magnitude of settlement
- time of settlement with respect to the static settlement condition
- extent of settlement
- saltstone modulus
- saltstone cracking strain
- soil bulk modulus

Note: B/T cracks are cracks open at the bottom. T/B cracks are cracks open at the top.

<u>Settlement Magnitude</u>

Bottom Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CA_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

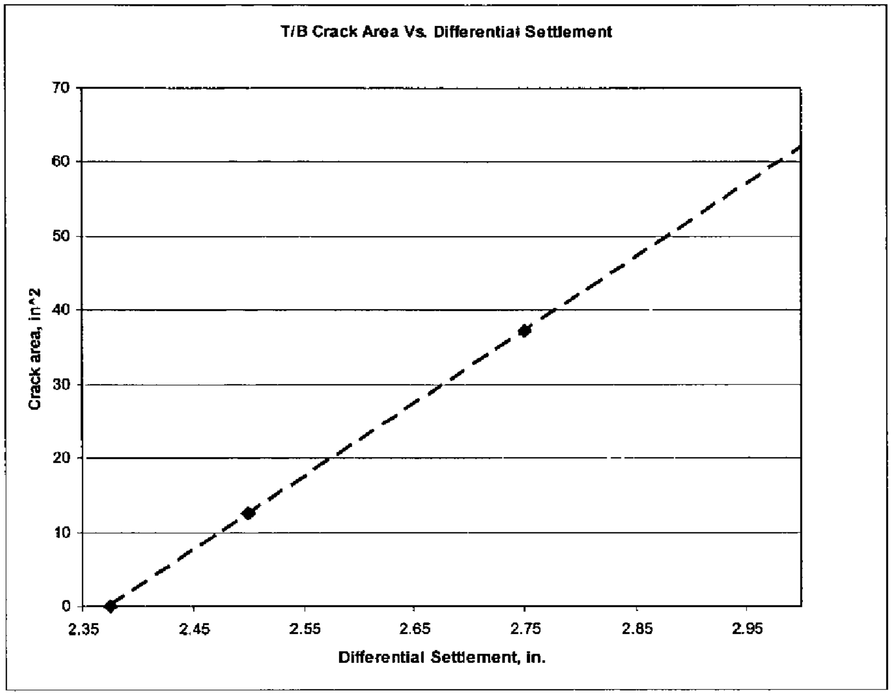
$$CA_{ds}(\Delta_d) := 31.645 \cdot \Delta_d - 24.512$$

Examples

$$CA_{ds}(2) = 38.778 \qquad CA_{ds}(1.25) = 15.044$$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Top Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CAt_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

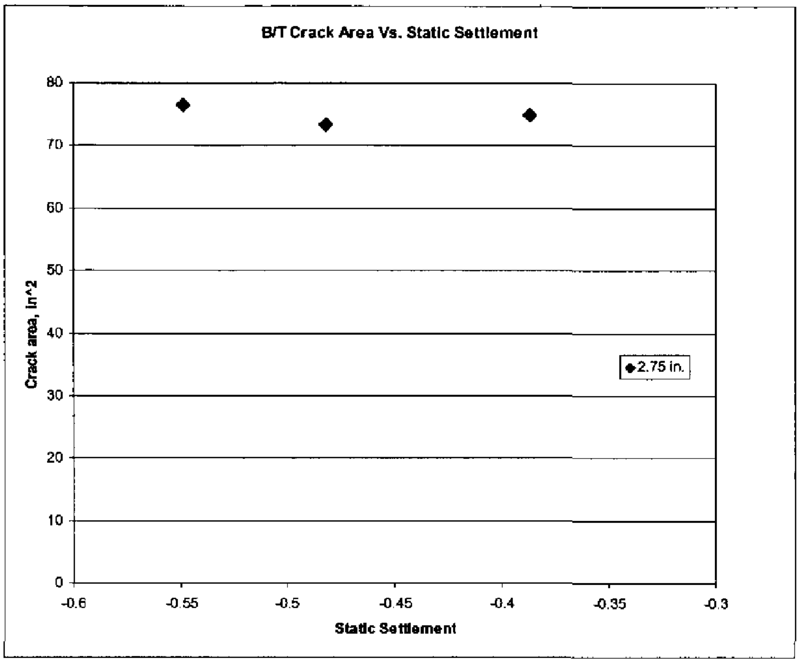
$$CA_{tds}(\Delta_d) := 99.24 \cdot \Delta_d - 235.605$$

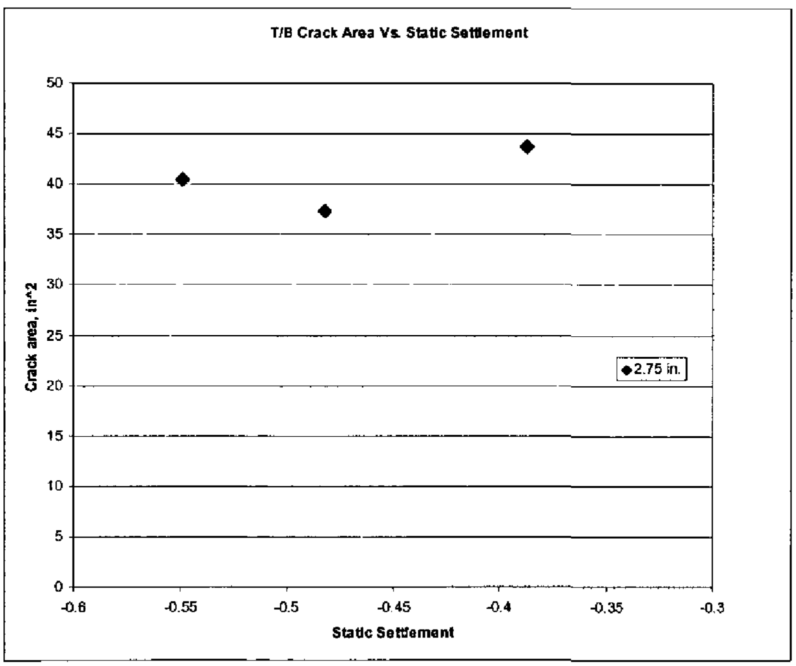
Examples

$CA_{tds}(2.4) = 2.571$ $CA_{tds}(2.8) = 42.267$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Effect of Static Settlement (time)

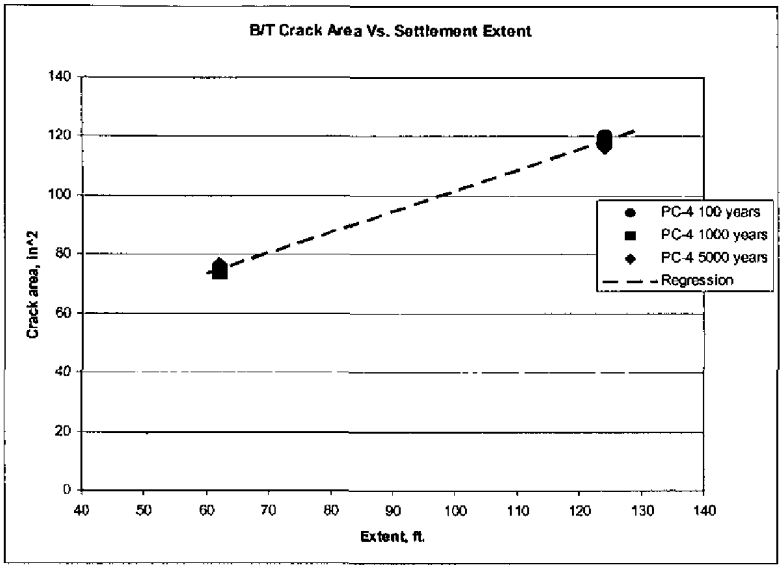




There were no trends noted for static settlement condition at the time of occurrence of the earthquake.

Effect of Extent of Settlement

Bottom Cracks



The effect of settlement extent is assumed to be linear and is extrapolated for larger settlement areas. The expression for the relationship is:

Ex is settlement extent, ft. $\quad Exm := 62$

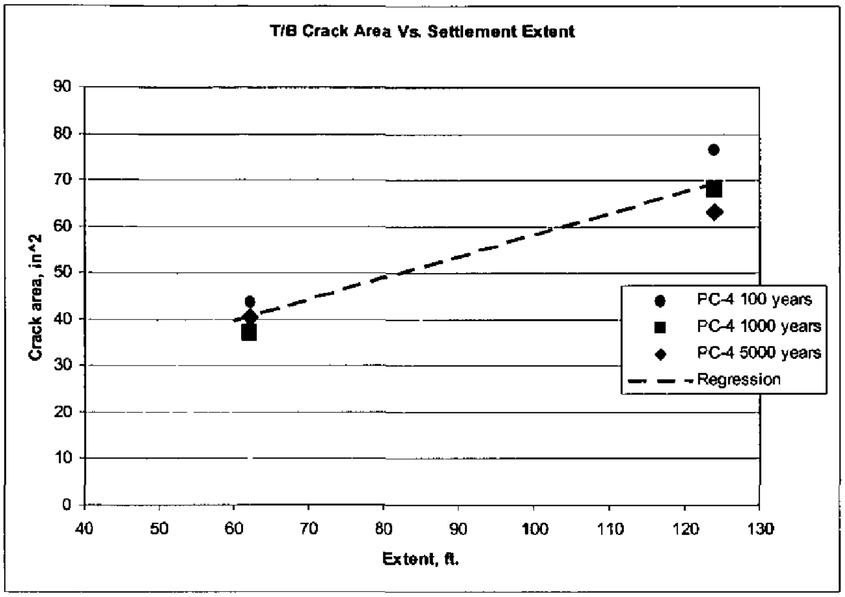
Exm is mean settlement extent

$$CA_{ext}(Ex) := .7014 \cdot (Ex - Exm)$$

Examples $\quad CA_{ext}(40) = -15.431 \qquad CA_{ext}(140) = 54.709$

This value is added to the crack area.

Top Cracks



The relationship is expressed as follows:

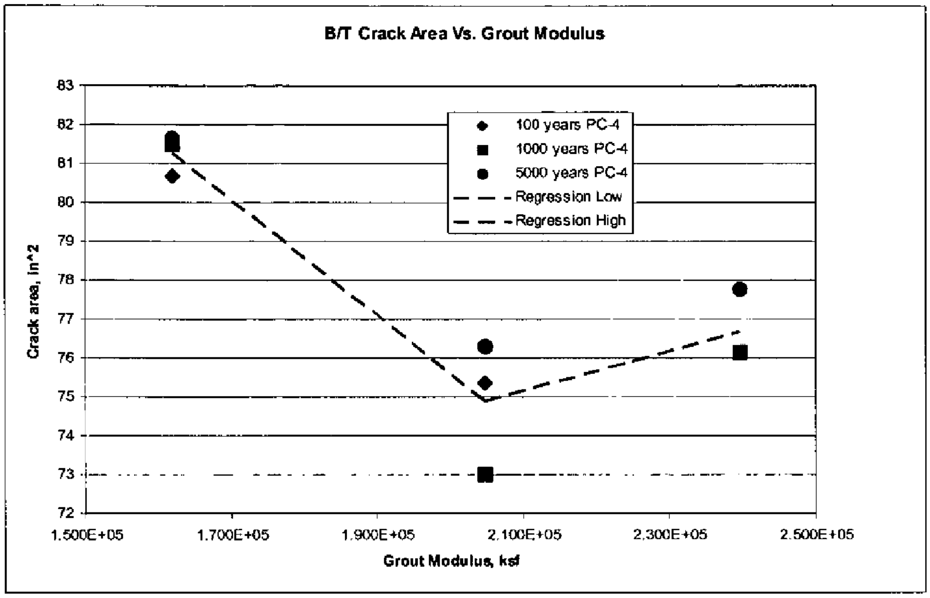
$$CA_{tex}(Ex) := 0.464\cdot(Ex - Exm)$$

Examples $CA_{tex}(55) = -3.248$ $CA_{tex}(125) = 29.232$

This value is added to the crack area.

Effect of Saltstone Modulus

Bottom Cracks



The data is fit with two lines.

$E_{gm} := 2.048 \cdot 10^5$

For $E_g <= E_{gm}$ $\quad CA_{1gm}(E_g) := -1.49 \cdot 10^{-4} \cdot (E_g - E_{gm})$

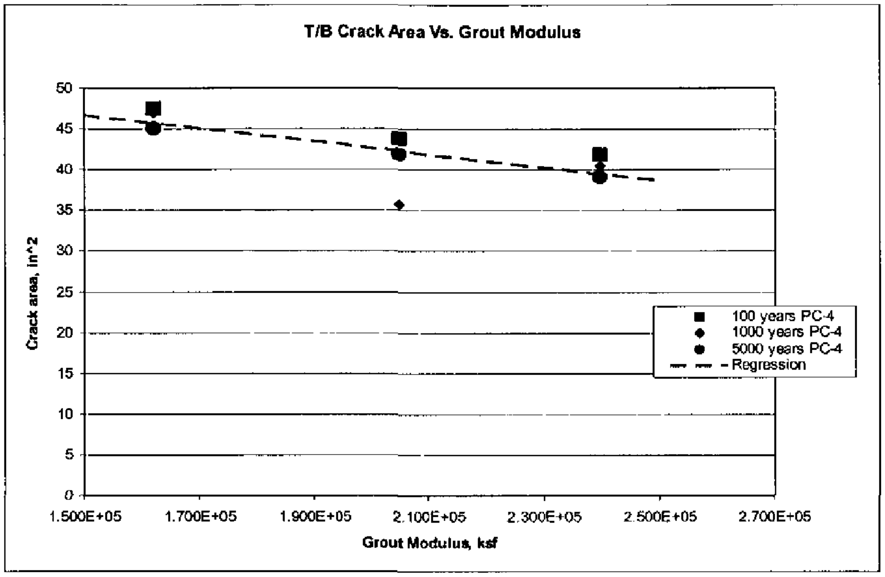
For $E_g > E_{gm}$

$$CA_{2gm}(E_g) := 5.17 \cdot 10^{-5} \cdot (E_g - E_{gm})$$

Examples $\quad CA_{1gm}(1.9 \cdot 10^5) = 2.205 \qquad CA_{2gm}(2.5 \cdot 10^5) = 2.337$

This value is added to the crack area.

Top Cracks



A linear regression fit gives the following expression

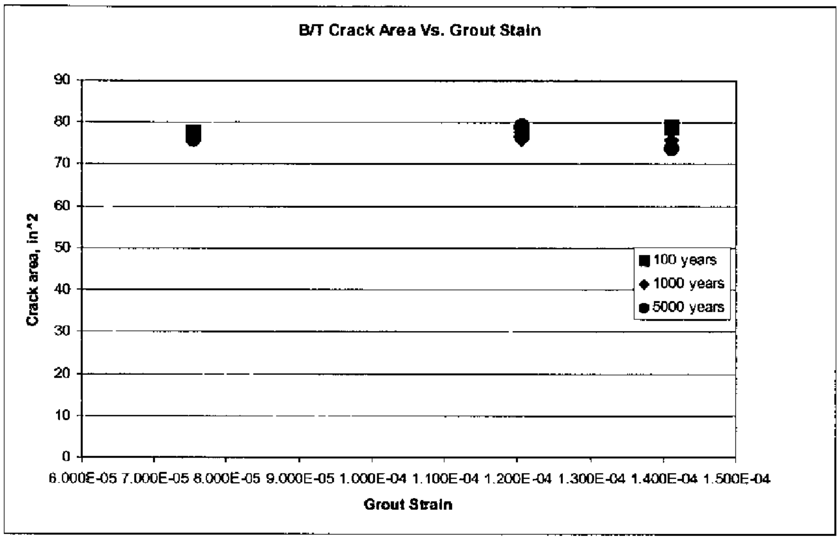
$$CA_{tgm}(E_g) := -8.025 \cdot 10^{-5} \cdot (E_g - E_{gm})$$

Examples $CA_{tgm}(1.9 \cdot 10^5) = 1.188$ $CA_{tgm}(2.5 \cdot 10^5) = -3.627$

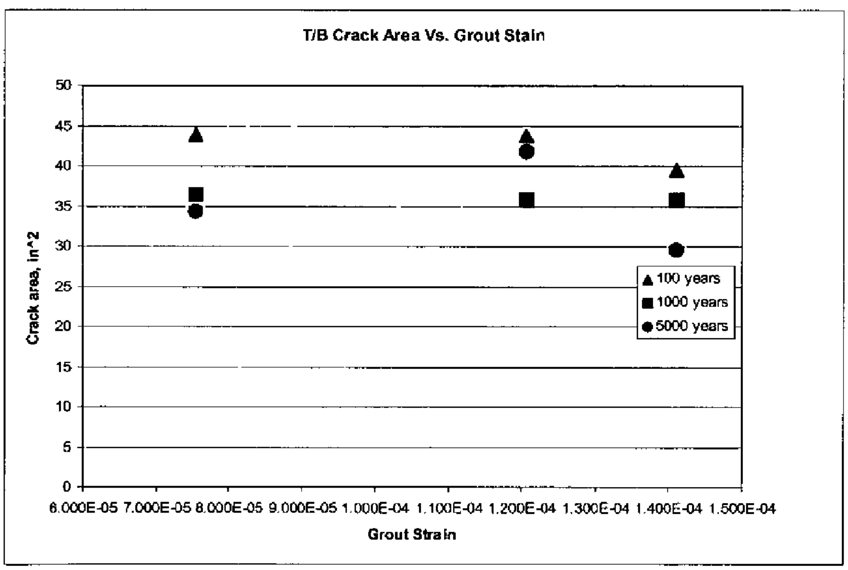
This value is added to the crack area.

<u>Grout Cracking Strain Effect</u>

Bottom Cracks



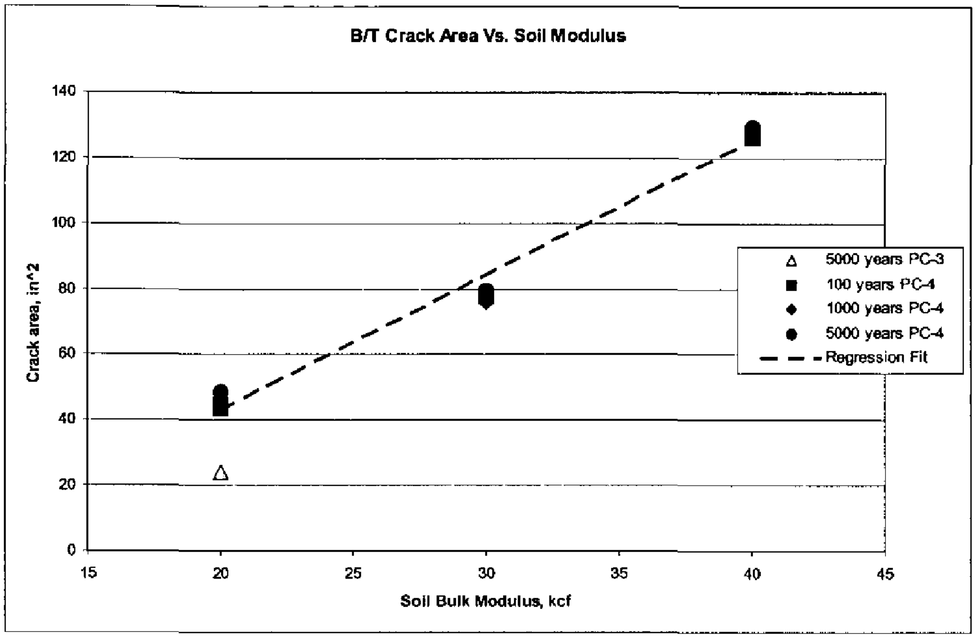
Top Cracks



No significant effect of saltstone cracking strain on crack area was noted.

Soil Bulk Modulus Effect

Bottom Cracks



The expression for the soil bulk modulus effect is derived similarly:

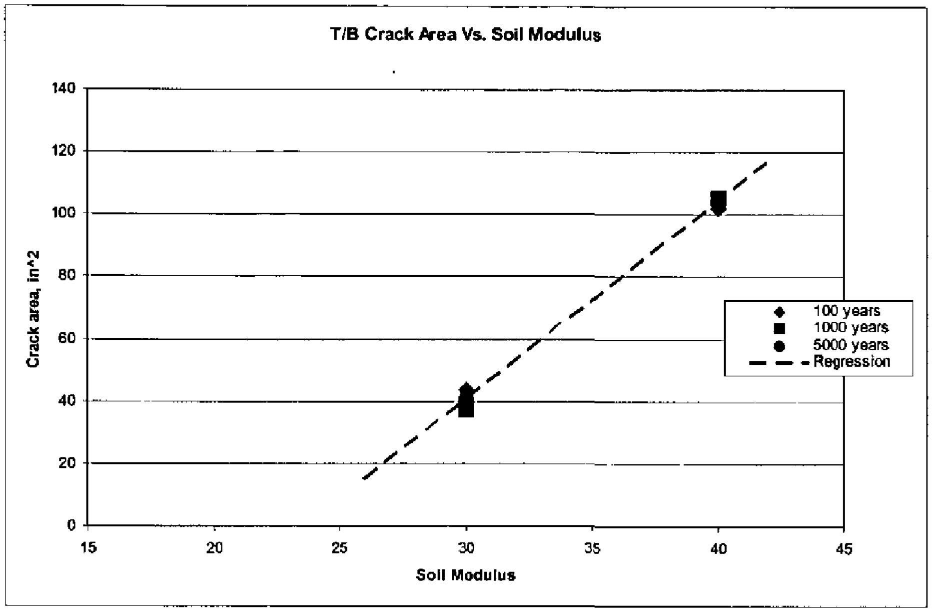
$K_{sm} := 30$

$$CA_{sm}(K_s) := 4.112 \cdot (K_s - K_{sm})$$

Examples $\quad CA_{sm}(25) = -20.56 \qquad CA_{sm}(45) = 61.68$

This value is added to the crack area.

Top Cracks



The expression for the effect on top crack area is derived similarly:

$K_{sm} := 30$

$$CA_{tsm}(K_s) := 6.372 \cdot (K_s - K_{sm})$$

Examples $CA_{tsm}(25) = -31.86$ $CA_{tsm}(45) = 95.58$

This value is added to the crack area.

<u>Total Crack Area</u>

Bottom Cracks $CA_b := CA_{ds}(\Delta_d) + CA_{ext}(Ex) + CA_{gm.}(E_g) + CA_{sm}(K_s)$

CA_{gm} is either CA_{1gm} or CA_{2gm}

Top Cracks $CAt := CA_{tds}(\Delta_d) + CA_{tex}(Ex) + CA_{tgm}(E_g) + CA_{tsm}(K_s)$

8.3.10 Differential Settlement at Location 3

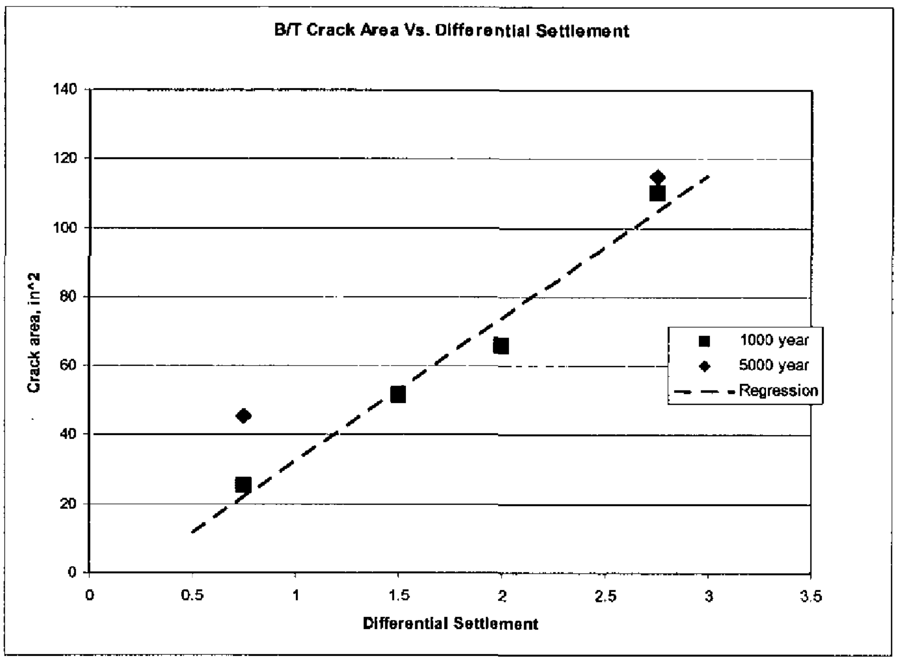
The parameters affecting the formation of cracks due to differential settlement are:

- magnitude of settlement
- time of settlement with respect to the static settlement condition
- extent of settlement
- saltstone modulus
- saltstone cracking strain
- soil bulk modulus

Note: B/T cracks are cracks open at the bottom. T/B cracks are cracks open at the top.

Settlement Magnitude

Bottom Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CA_{ds} - Crack Area due to differential settlement magnitude, in^2

Δ_d - Differential settlement, in.

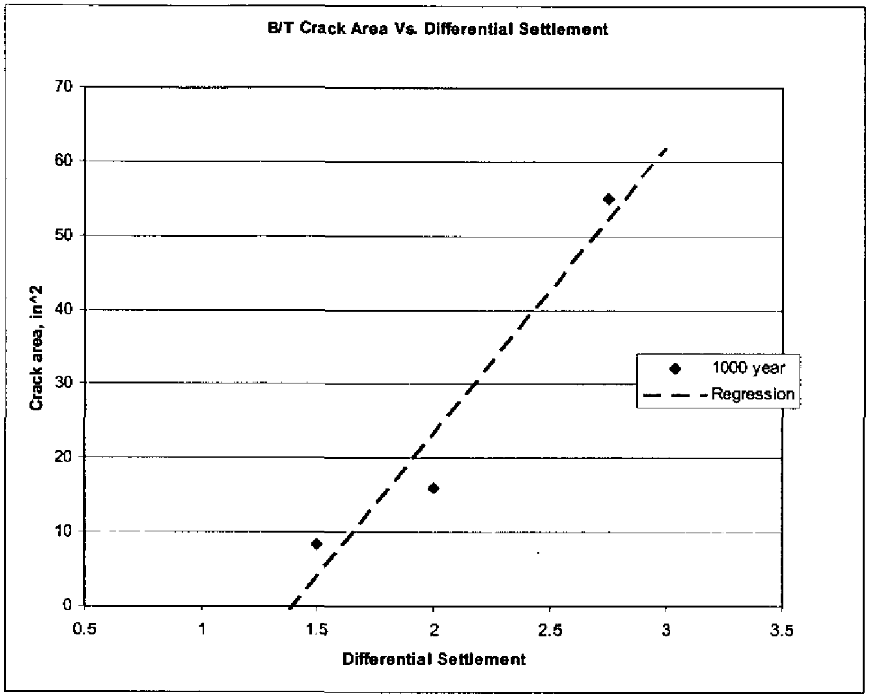
$$CA_{ds}(\Delta_d) := 41.51 \cdot \Delta_d - 9.28$$

Examples

$CA_{ds}(2) = 73.74$ $\qquad$ $CA_{ds}(1.25) = 42.607$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Top Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CAt_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

$$CA_{tds}(\Delta_d) := 38.61 \cdot \Delta_d - 53.97$$

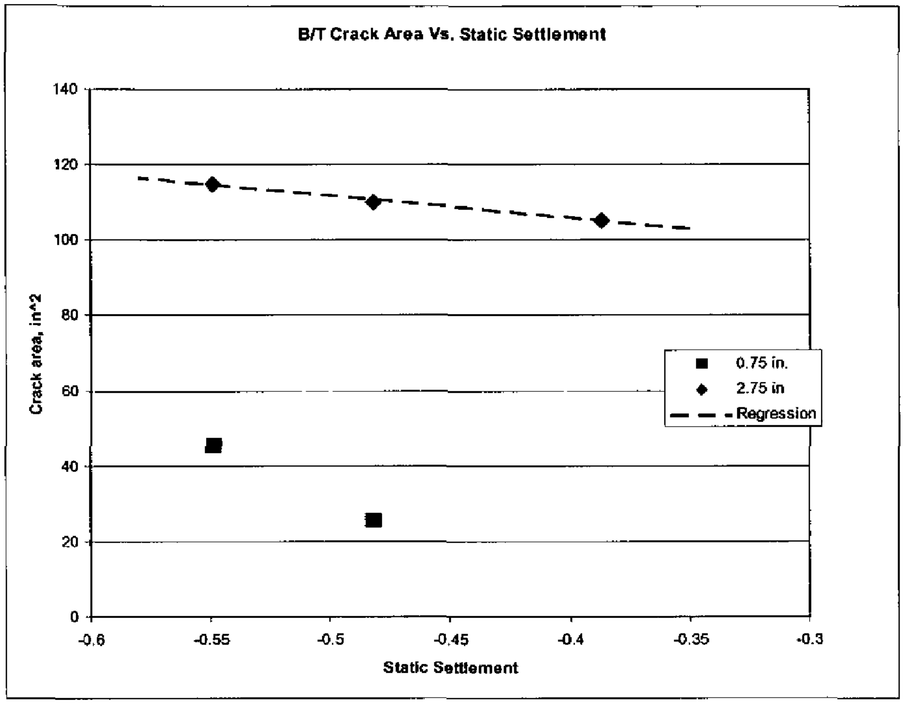
Examples

$CA_{tds}(2.4) = 38.694$ $\qquad$ $CA_{tds}(2.8) = 54.138$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Effect of Static Settlement (time)

Bottom Cracks



PC-4 data is used to adjust the crack area for the static settlement effect on the earthquake differential settlement.

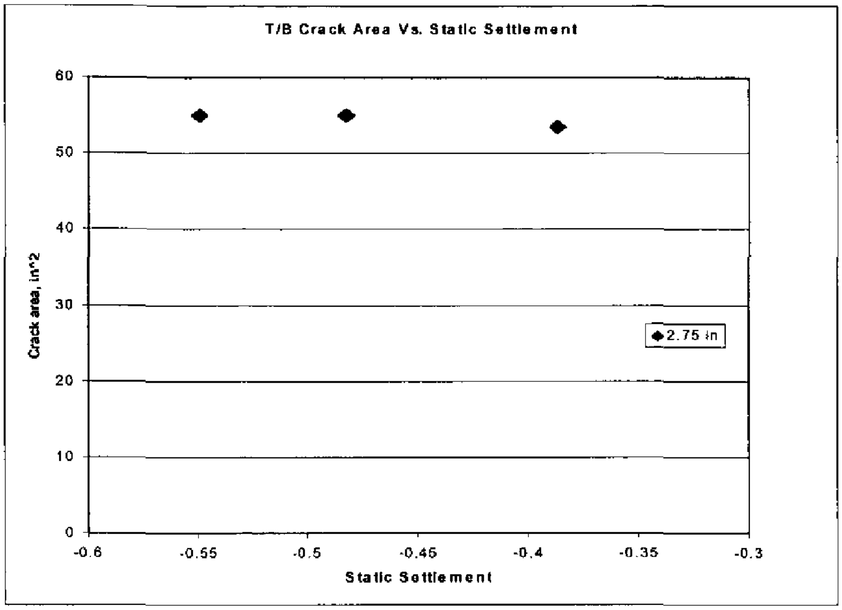
Δ_{1000} is static settlement at 1000 years, ft. $\Delta_{1000} := -.4823$

Δ_s is static settlement, ft. $CA_{ss}(\Delta_s) := -59.41 \cdot (\Delta_s - \Delta_{1000})$

Examples $CA_{ss}(-.4) = -4.889$ $CA_{ss}(-.6) = 6.993$

This value is added to the crack area

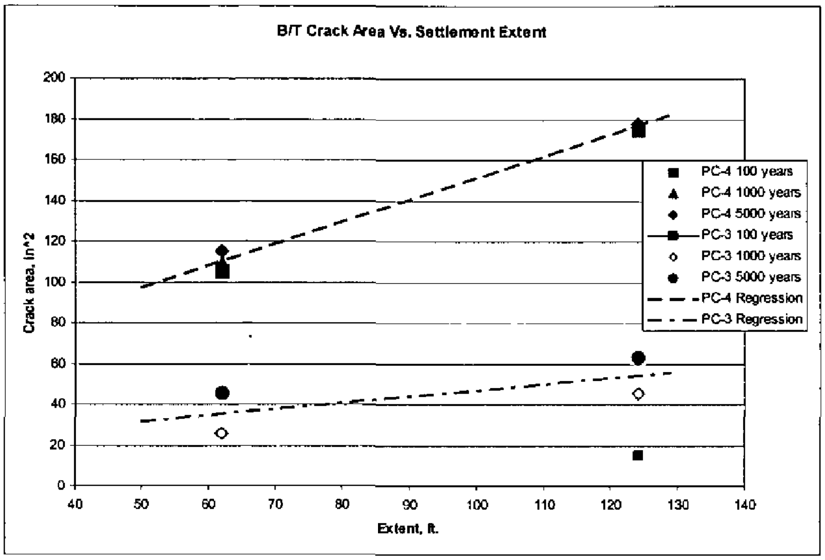
Top Cracks



There were no trends noted for static settlement condition at the time of occurrence of the earthquakethat affect the top crack area.

Effect of Extent of Settlement

Bottom Cracks



$Exm := 62$

The slope of the data regression fit is greater for the PC-4 than the PC-3 data. Assume a linear variation of the slope.

$S_{pc3} := 0.3024$ $\quad S_{pc4} := 1.0784$ $\quad A_{sl} := .5$ $\quad B_{sl} := .5$

Given

$$S_{pc3} = A_{sl} \cdot 0.75 + B_{sl}$$

$$S_{pc4} = A_{sl} \cdot 2.75 + B_{sl}$$

$AA := \mathrm{Find}(A_{sl}, B_{sl})$ $\quad AA = \begin{pmatrix} 0.388 \\ 0.011 \end{pmatrix}$

$Sl(\Delta_d) := 0.388 \cdot \Delta_d + 0.011$

$CA_{ex}(Ex, \Delta_d) := Sl(\Delta_d) \cdot (Ex - Exm)$

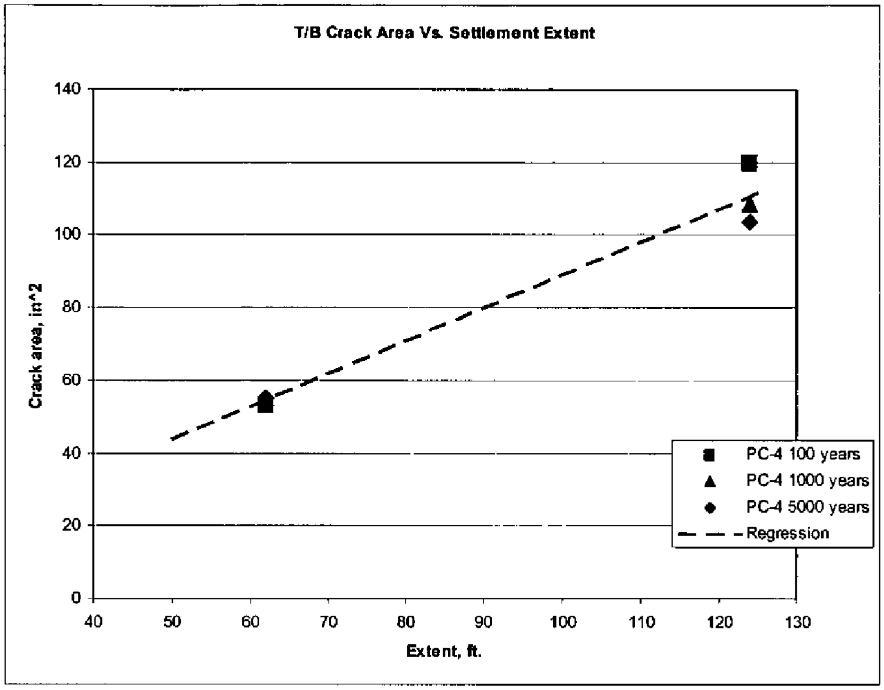
Ex is settlement extent, ft.

Exm is mean settlement extent

Examples $\quad CA_{ex}(40, 2) = -17.314$ $\quad CA_{ex}(140, 1.5) = 46.254$

This value is added to the crack area.

Top Cracks



The relationship is expressed as follows:

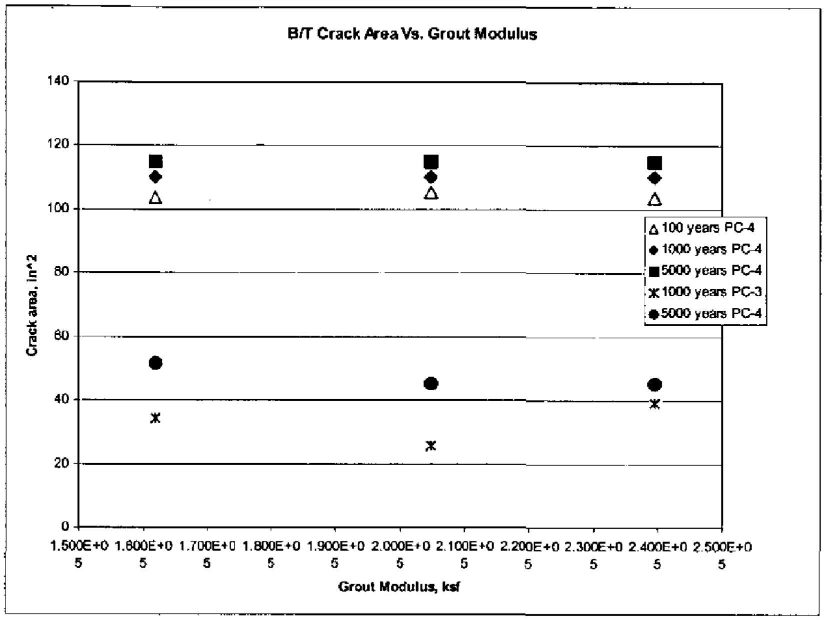
$$CA_{tex}(Ex) := 0.9058\cdot(Ex - Exm)$$

Examples $CA_{tex}(55) = -6.341$ $CA_{tex}(125) = 57.065$

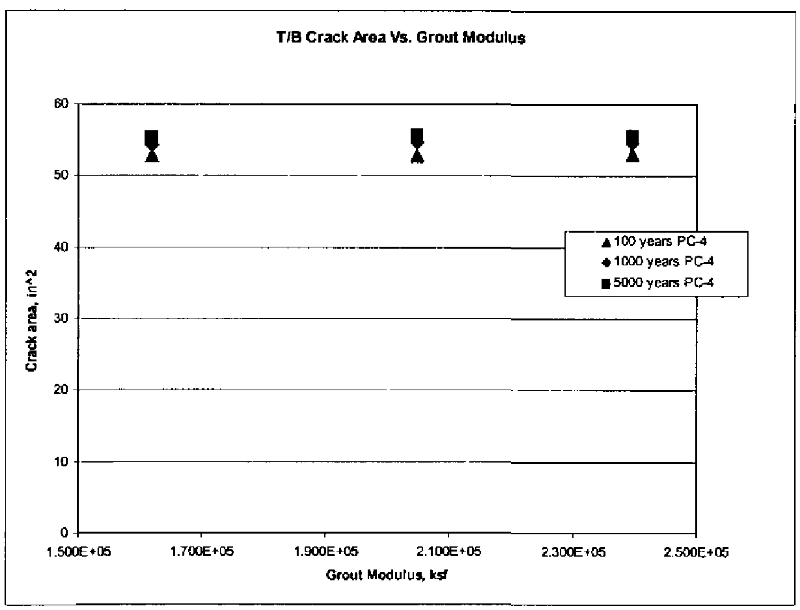
This value is added to the crack area.

Effect of Saltstone Modulus

Bottom Cracks



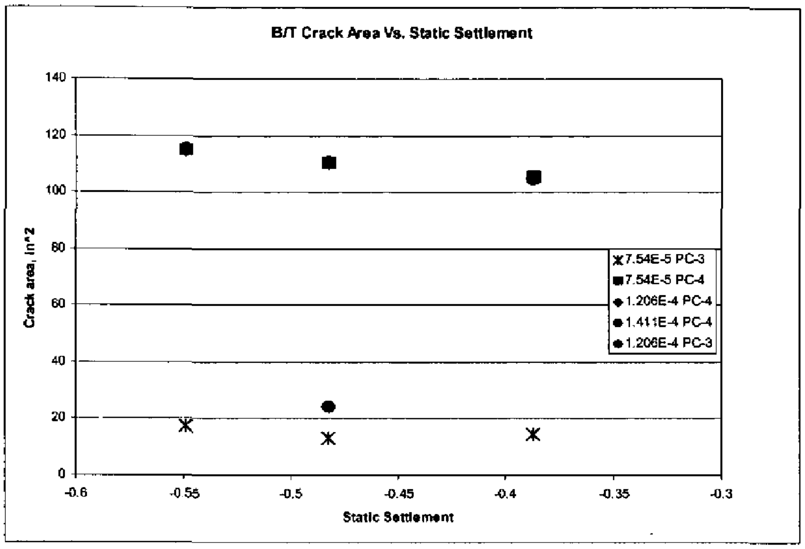
Top Cracks



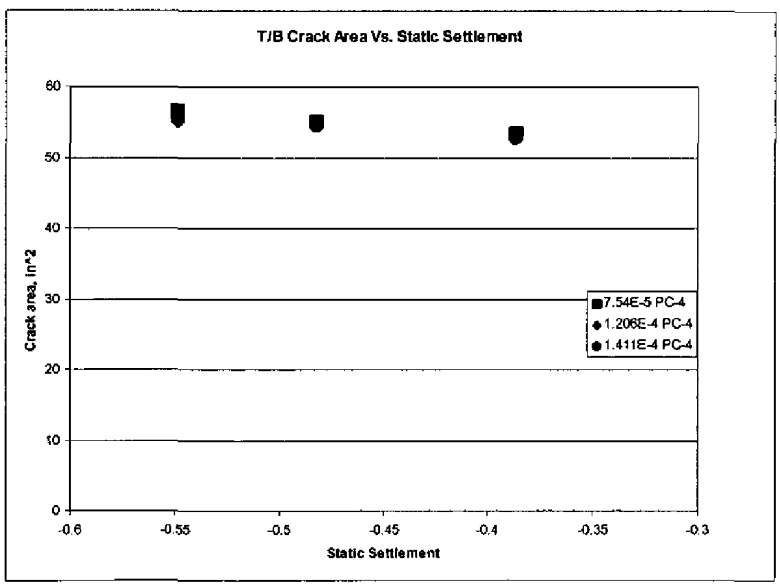
No trends in the data were noted for Saltstone Modulus Effects.

Grout Cracking Strain Effect

Bottom Cracks



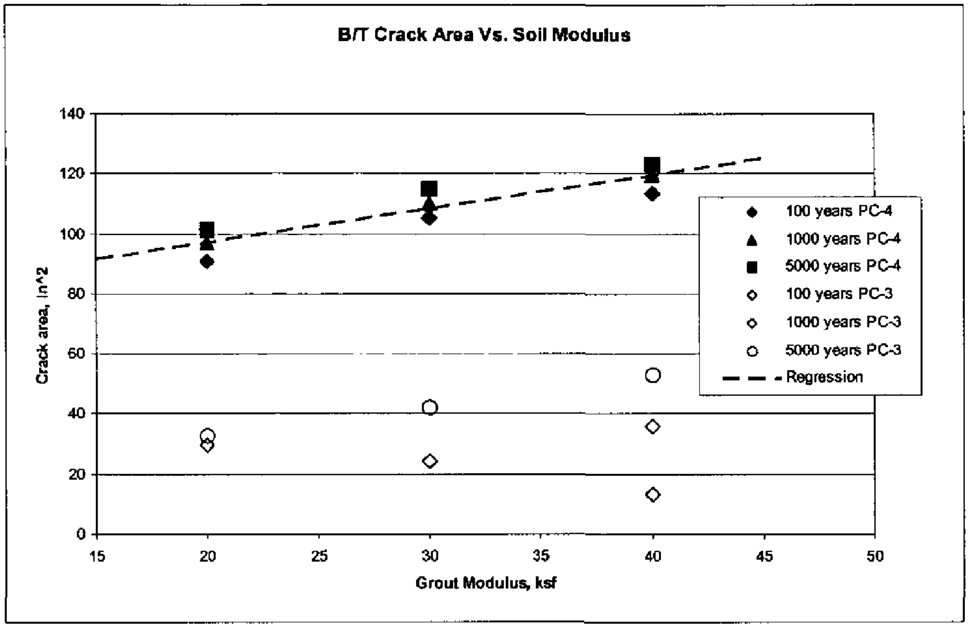
Top Cracks



No significant effect of saltstone cracking strain on crack area was noted.

Soil Bulk Modulus Effect

Bottom Cracks



The PC-4 data was used to establish an expression for the soil bulk modulus effect by linear regression. The PC-3 data has a similar slope:

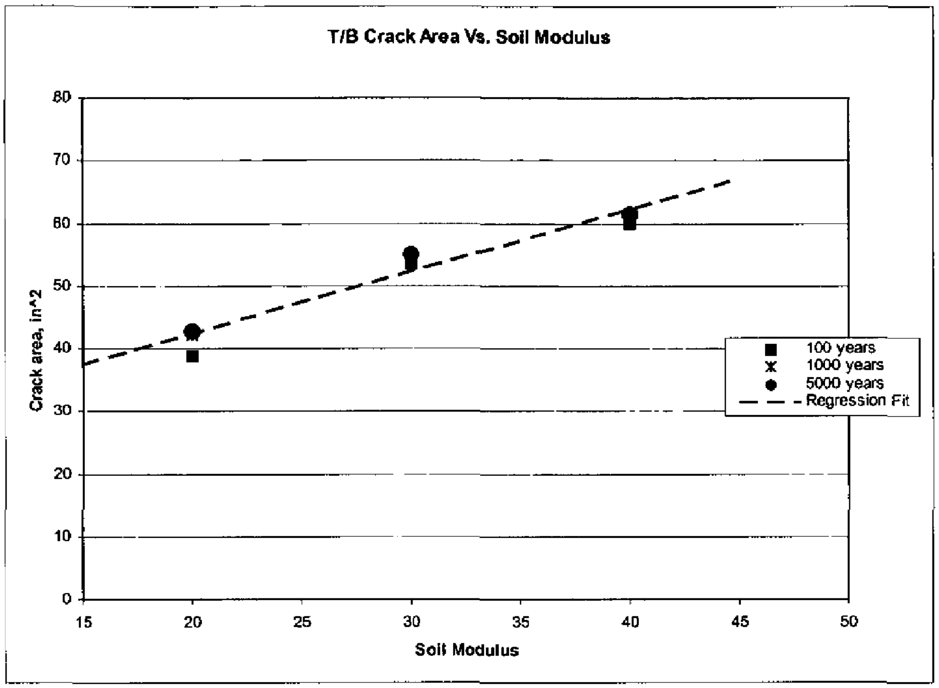
$K_{sm} := 30$

$$CA_{sm}(K_s) := 1.1205 \cdot (K_s - K_{sm})$$

Examples $CA_{sm}(25) = -5.603$ $CA_{sm}(45) = 16.808$

This value is added to the crack area.

Top Cracks



The expression for the effect on top crack area is derived similarly:

$K_{sm} := 30$

$$CA_{tsm}(K_s) := 0.9882 \cdot (K_s - K_{sm})$$

Examples $\quad CA_{tsm}(25) = -4.941 \qquad CA_{tsm}(45) = 14.823$

This value is added to the crack area.

<u>Total Crack Area</u>

Bottom Cracks $\quad CA_b := CA_{ds}(\Delta_d) + CA_{ss}(\Delta_s) + CA_{ex}(Ext, \Delta_d) + CA_{sm}(K_s)$

Top Cracks $\quad CA_t := CA_{tds}(\Delta_d) + CA_{tex}(Ex) + CA_{tsm}(K_s)$

8.3.11 Differential Settlement at Location 4

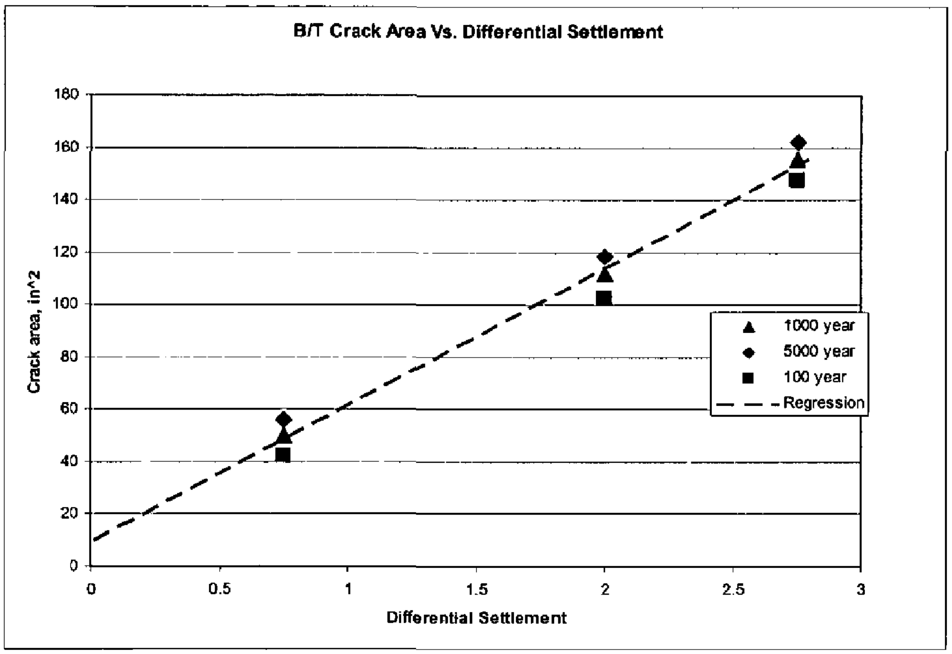
The parameters affecting the formation of cracks due to differential settlement are:

- magnitude of settlement
- time of settlement with respect to the static settlement condition
- extent of settlement
- saltstone modulus
- saltstone cracking strain
- soil bulk modulus

Note: B/T cracks are cracks open at the bottom. T/B cracks are cracks open at the top.

Settlement Magnitude

Bottom Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CA_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

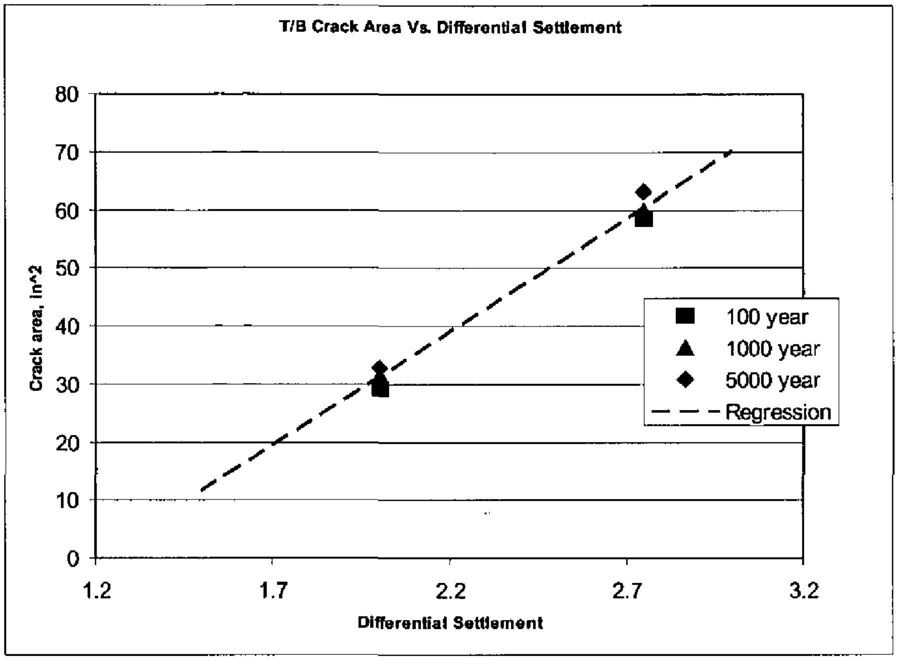
$$CA_{ds}(\Delta_d) := 52.4206 \cdot \Delta_d + 8.9763$$

Examples

$CA_{ds}(2) = 113.817$ $\qquad$ $CA_{ds}(1.25) = 74.502$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Top Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CAt_{ds} - Crack Area due to differential settlement magnitude, in^2

Δ_d - Differential settlement, in.

$$CA_{tds}(\Delta_d) := 39.168 \cdot \Delta_d - 47.232$$

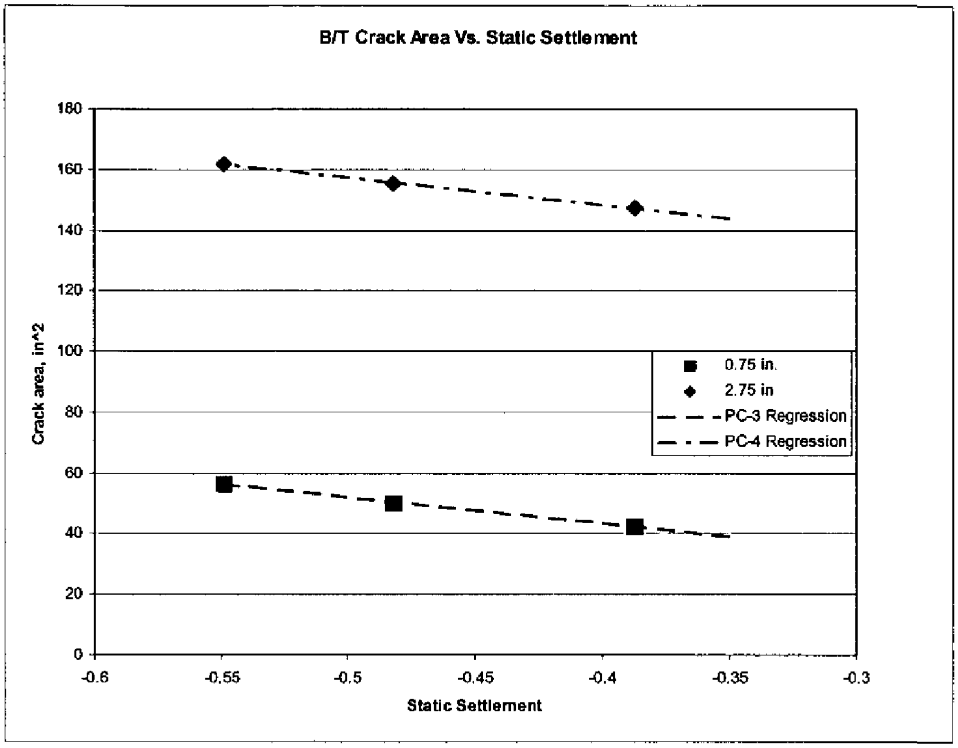
Examples

$$CA_{tds}(2.4) = 46.771 \qquad CA_{tds}(2.8) = 62.438$$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Effect of Static Settlement (time)

Bottom Cracks



Average slope of the linear regression for PC-3 and PC-4 is used to calculate crack area.

$S_{pc3} := -86.38942$ $\quad S_{pc4} := -89.7028$ $\quad Sl := \dfrac{S_{pc3} + S_{pc4}}{2}$

$Sl = -88.046$

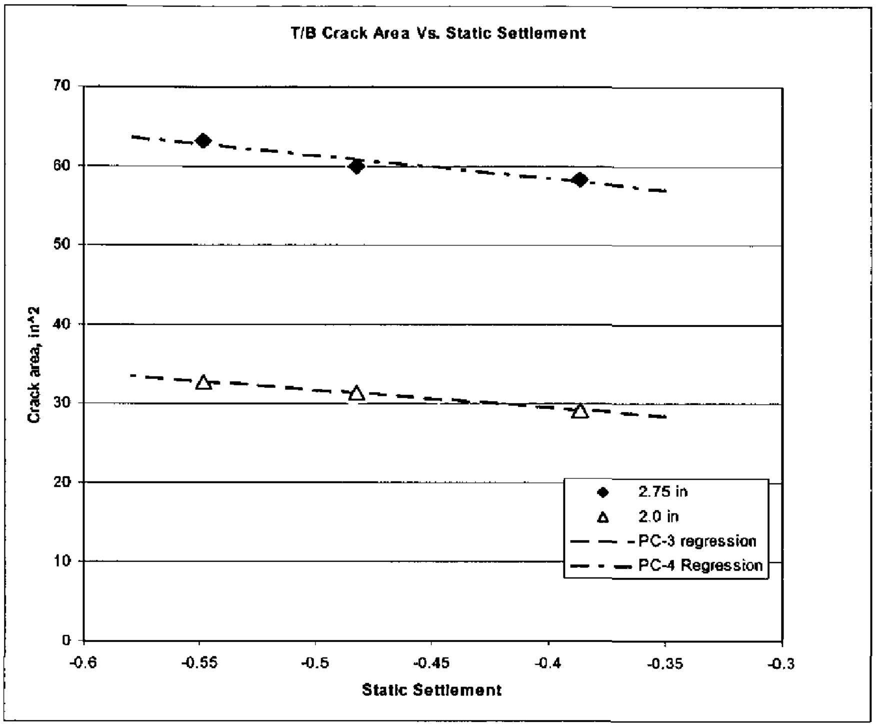
$\Delta_{1000} := -.4823$

$CA_{ss}(\Delta_s) := Sl \cdot (\Delta_s - \Delta_{1000})$

Examples $\quad CA_{ss}(-.4) = -7.246$ $\quad CA_{ss}(-.6) = 10.363$

This value is added to the crack area

Top Cracks



Average slope of the linear regression for PC-3 and PC-4 is used to calculate crack area.

$S_{pc3} := -22.15328$ $\quad S_{pc4} := -29.12115$ $\quad SI := \dfrac{S_{pc3} + S_{pc4}}{2}$

$SI = -25.637$

$\Delta_{1000} := -.4823$

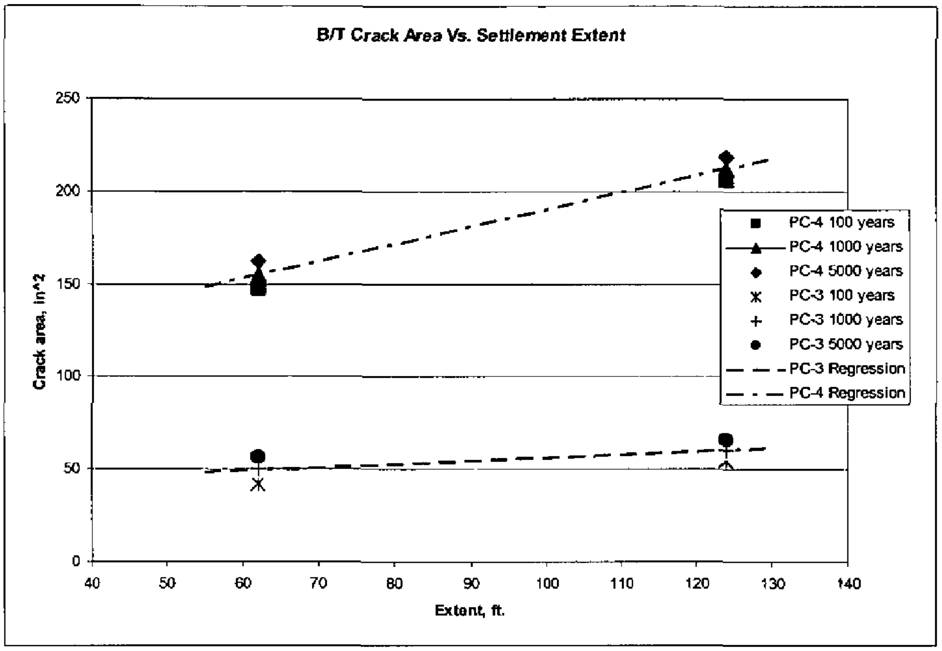
$CA_{tss}(\Delta_s) := SI \cdot (\Delta_s - \Delta_{1000})$

Examples $\quad CA_{tss}(-.4) = -2.11$ $\quad CA_{tss}(-.6) = 3.018$

This value is added to the crack area

Effect of Extent of Settlement

Bottom Cracks



$Exm := 62$

The slope of the data regression fit is greater for the PC-4 than the PC-3 data. Assume a linear variation of the slope.

$S_{pc3} := 0.17354$ $\qquad S_{pc4} := 0.92323$ $\qquad A_{sl} := .5$ $\qquad B_{sl} := .5$

Given

$$S_{pc3} = A_{sl} \cdot 0.75 + B_{sl}$$

$$S_{pc4} = A_{sl} \cdot 2.75 + B_{sl}$$

$$AA := \mathrm{Find}(A_{sl}, B_{sl}) \qquad AA = \begin{pmatrix} 0.375 \\ -0.108 \end{pmatrix}$$

$$Sl(\Delta_d) := 0.375 \cdot \Delta_d - 0.108$$

Ex is settlement extent, ft.

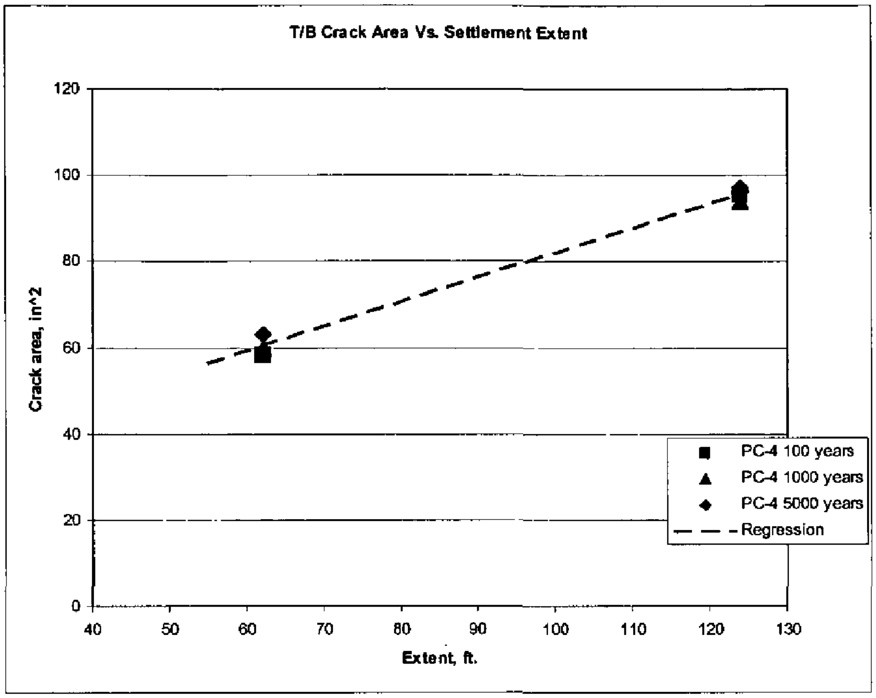
$$CA_{ex}(Ex, \Delta_d) := Sl(\Delta_d) \cdot (Ex - Exm)$$

Exm is mean settlement extent

Examples $\qquad CA_{ex}(40, 2) = -14.124 \qquad CA_{ex}(140, 1.5) = 35.451$

This value is added to the crack area.

Top Cracks



The relationship is expressed as follows:

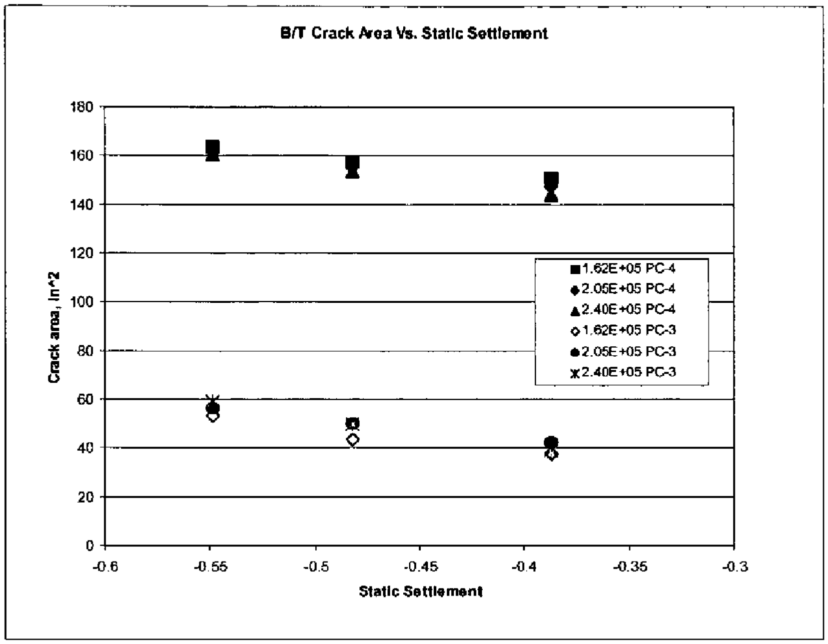
$$CA_{tex}(Ex) := 0.566\cdot(Ex - Exm)$$

Examples $CA_{tex}(55) = -3.962$ $CA_{tex}(125) = 35.658$

This value is added to the crack area.

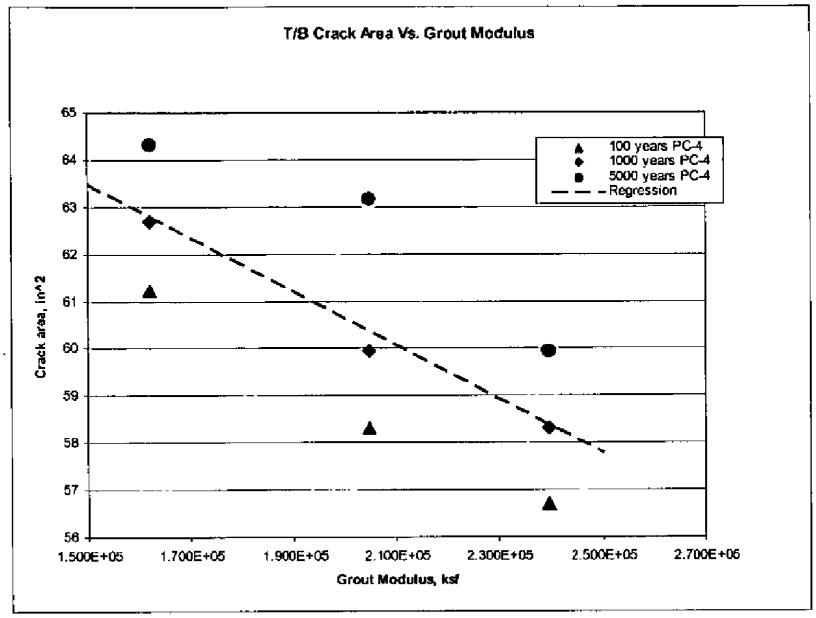
Effect of Saltstone Modulus

Bottom Cracks



No trends in the data were noted for Saltstone Modulus effects with respect to bottom cracks.

Top Cracks



Linear regression was used to compute the slope of the change in crack area for top cracks with respect to Saltstone modulus

$E_{gm} := 2.048 \cdot 10^{5}$

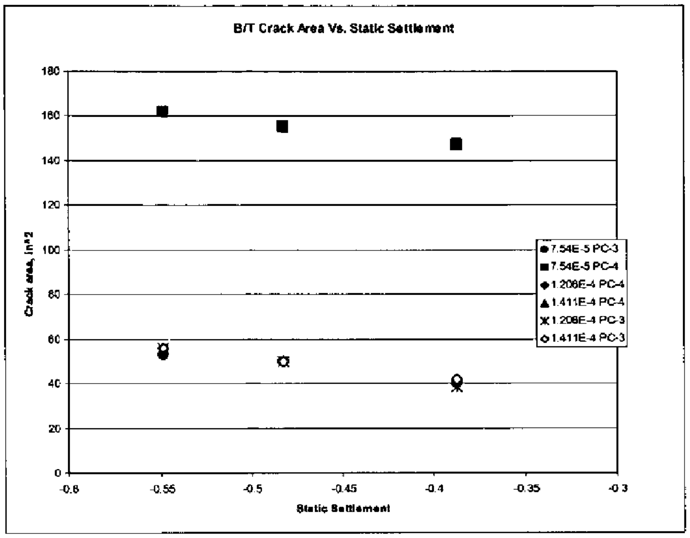
$CA_{tgm}(E_g) := -5.6831 \cdot 10^{-5} \cdot (E_g - E_{gm})$

Examples $CA_{tgm}(2.5 \cdot 10^{5}) = -2.569$ $CA_{tgm}(1.9 \cdot 10^{5}) = 0.841$

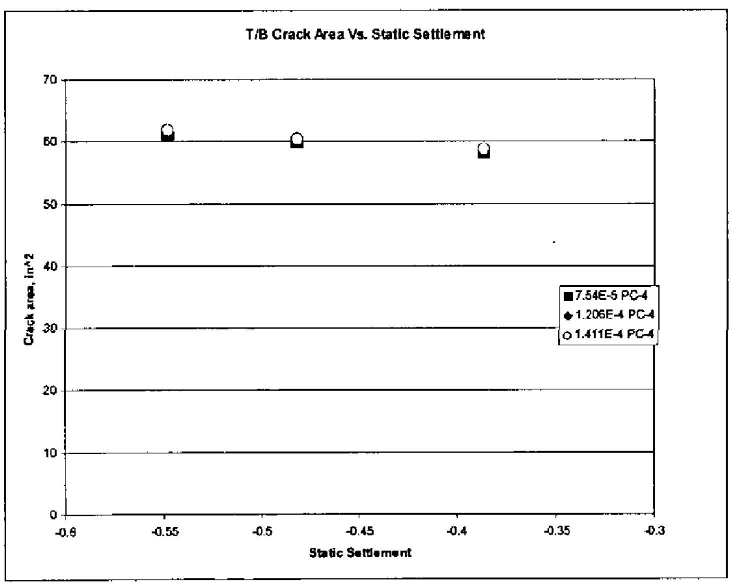
This value is added to the crack area.

<u>Grout Cracking Strain Effect</u>

Bottom Cracks



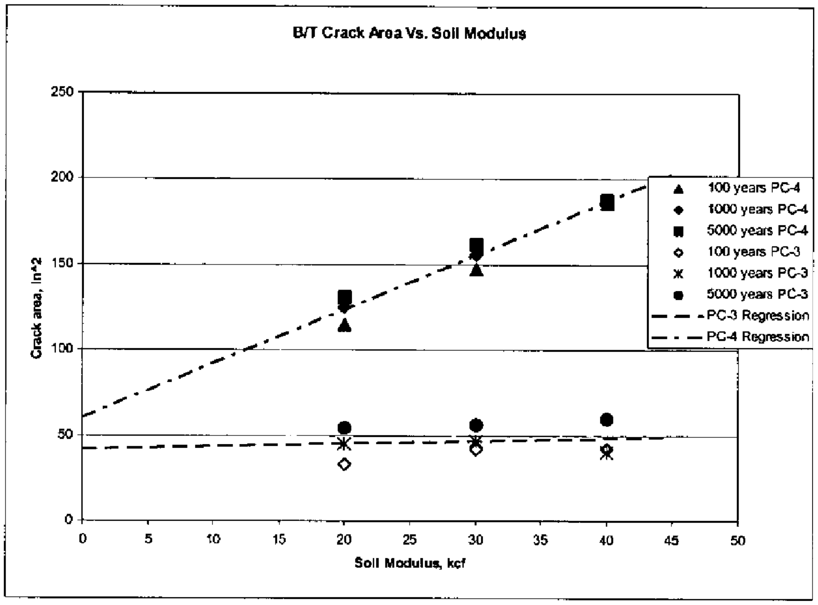
Top Cracks



No significant effect of saltstone cracking strain on crack area was noted.

Soil Bulk Modulus Effect

Bottom Cracks



$K_{sm} := 30$

The slope of the data regression fit is greater for the PC-4 than the PC-3 data. Assume a linear variation of the slope.

$S_{pc3} := 0.163$ $\quad S_{pc4} := 3.159$ $\quad A_{sl} := .5$ $\quad B_{sl} := .5$

Given

$$S_{pc3} = A_{sl} \cdot 0.75 + B_{sl}$$

$$S_{pc4} = A_{sl} \cdot 2.75 + B_{sl}$$

$$AA := \mathrm{Find}(A_{sl}, B_{sl}) \qquad AA = \begin{pmatrix} 1.498 \\ -0.96 \end{pmatrix}$$

$$Sl(\Delta_d) := 1.498 \cdot \Delta_d - 0.96$$

K_s is soil bulk modulus, kcf

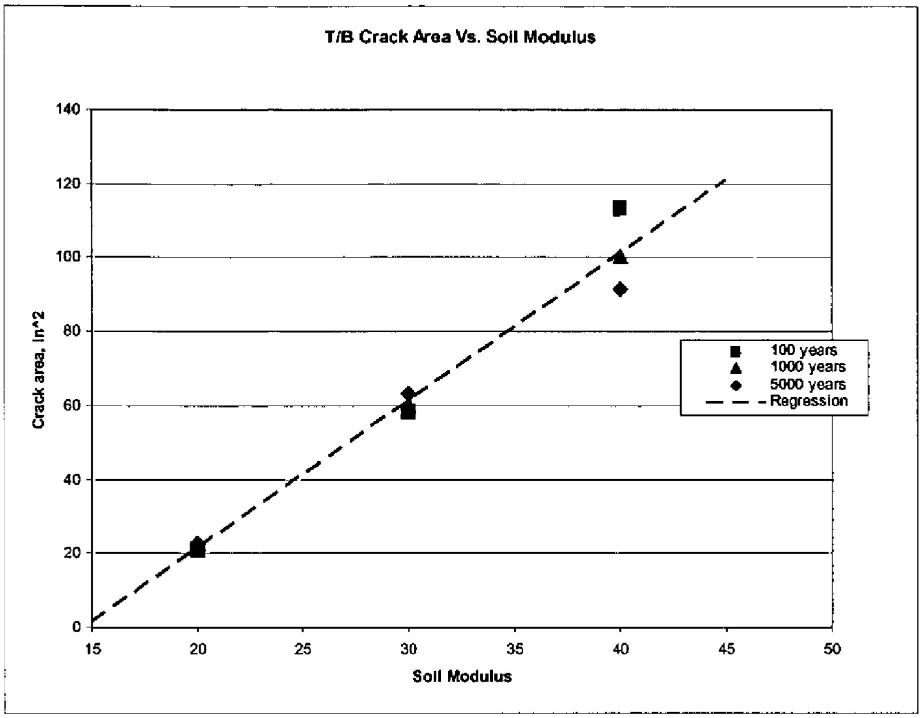
$$CA_{sm}(K_s, \Delta_d) := Sl(\Delta_d) \cdot (K_s - K_{sm})$$

K_{sm} is mean soil bulk modulus

Examples $\quad CA_{sm}(20, 2) = -20.36 \qquad CA_{sm}(45, 1.5) = 19.305$

This value is added to the crack area.

Top Cracks



The expression for the effect on top crack area is based on the PC-4 data.

$K_{sm} := 30$

$$CA_{tsm}(K_s) := 3.9822 \cdot (K_s - K_{sm})$$

Examples $\quad CA_{tsm}(25) = -19.911 \qquad CA_{tsm}(45) = 59.733$

This value is added to the crack area.

<u>Total Crack Area</u>

Bottom Cracks $\quad CA_b := CA_{ds}(\Delta_d) + CA_{ss}(\Delta_s) + CA_{ex}(Ext, \Delta_d) + CA_{sm}(K_s, \Delta_d)$

Top Cracks $\quad CA_t := CA_{tds}(\Delta_d) + CA_{tss}(\Delta_s) + CA_{tex}(Ex) + CA_{tgm}(E_g) + CA_{tsm}(K_s)$

8.3.12 Differential Settlement at Location 5

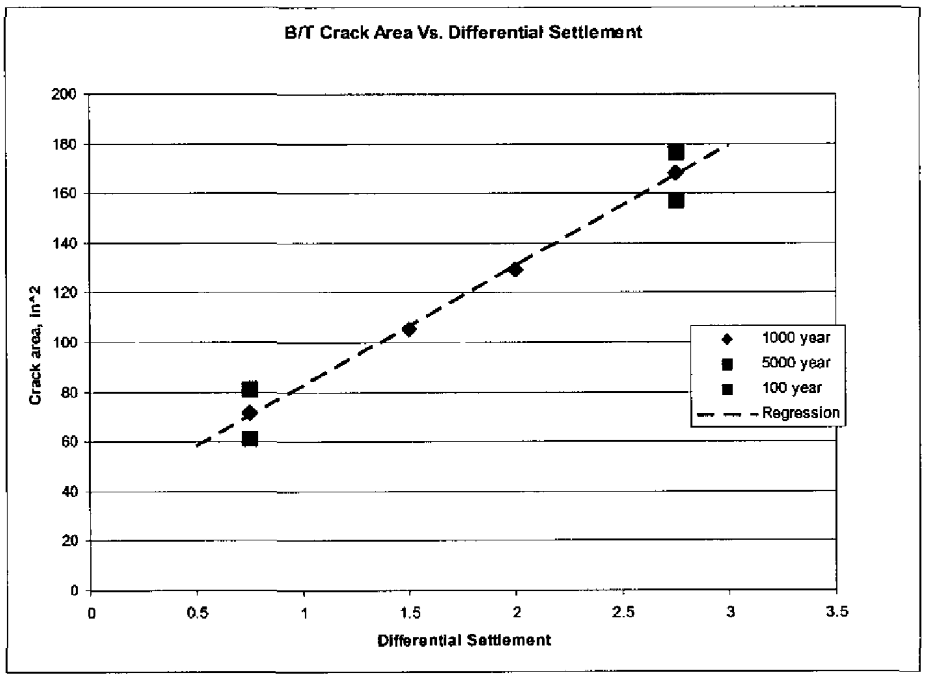
The parameters affecting the formation of cracks due to differential settlement are:

- magnitude of settlement
- time of settlement with respect to the static settlement condition
- extent of settlement
- saltstone modulus
- saltstone cracking strain
- soil bulk modulus

Note: B/T cracks are cracks open at the bottom. T/B cracks are cracks open at the top.

<u>Settlement Magnitude</u>

Bottom Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CA_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

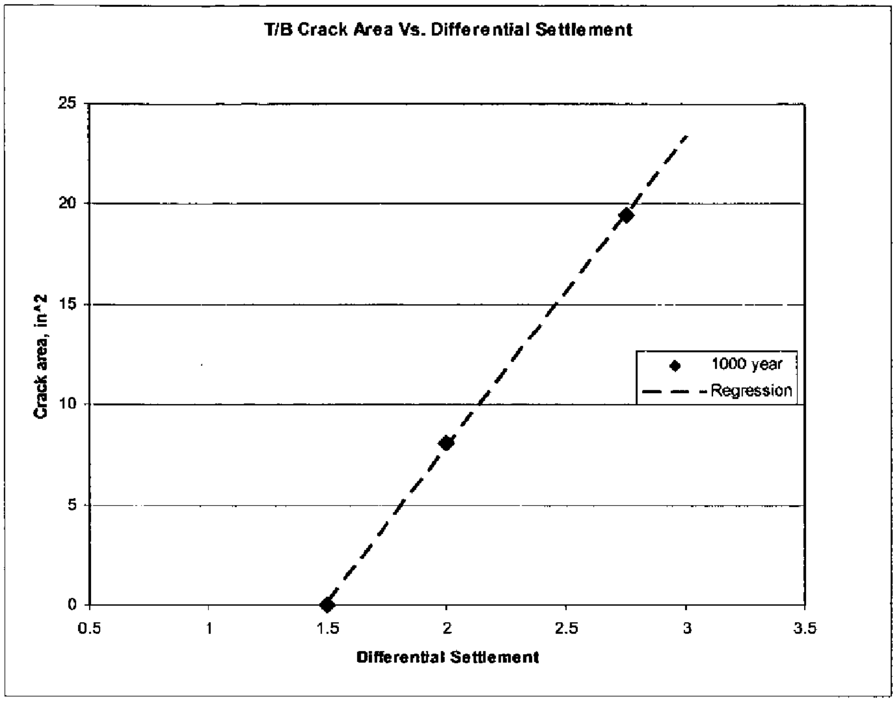
$$CA_{ds}(\Delta_d) := 48.336 \cdot \Delta_d + 34.197$$

Examples

$CA_{ds}(2) = 130.869$ $\qquad$ $CA_{ds}(1.25) = 94.617$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Top Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data.

CAt_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

$$CA_{tds}(\Delta_d) := 15.519 \cdot \Delta_d - 23.1572$$

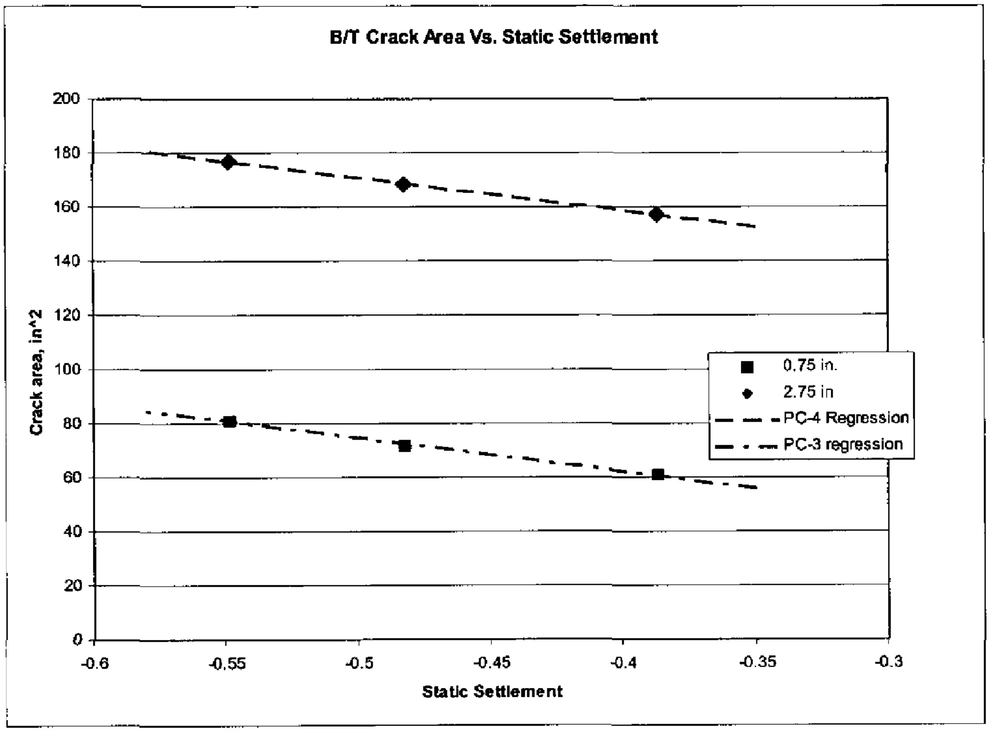
Examples

$CA_{tds}(2.4) = 14.088$ $\quad\quad$ $CA_{tds}(2.8) = 20.296$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Effect of Static Settlement (time)

Bottom Cracks



Average slope of the linear regression for PC-3 and PC-4 is used to calculate crack area.

$S_{pc3} := -124.521$ $\quad S_{pc4} := -119.994$ $\quad Sl := \dfrac{S_{pc3} + S_{pc4}}{2}$

$Sl = -122.257$

$\Delta_{1000} := -.4823$

$$CA_{ss}(\Delta_s) := Sl \cdot (\Delta_s - \Delta_{1000})$$

Examples $\quad CA_{ss}(-.4) = -10.062$ $\quad CA_{ss}(-.6) = 14.39$

This value is added to the crack area

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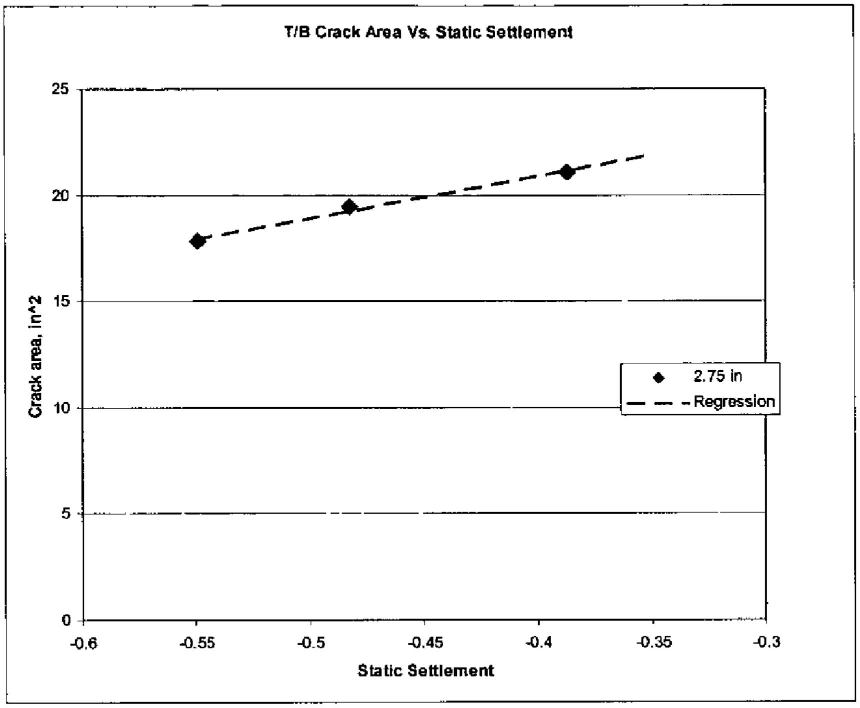
Top Cracks



Slope of the linear regression for PC-4 is used to calculate crack area.

$S_{pc4} := 19.804$

$\Delta_{1000} := -.4823$

$CA_{tss}(\Delta_s) := S_{pc4} \cdot (\Delta_s - \Delta_{1000})$

Examples

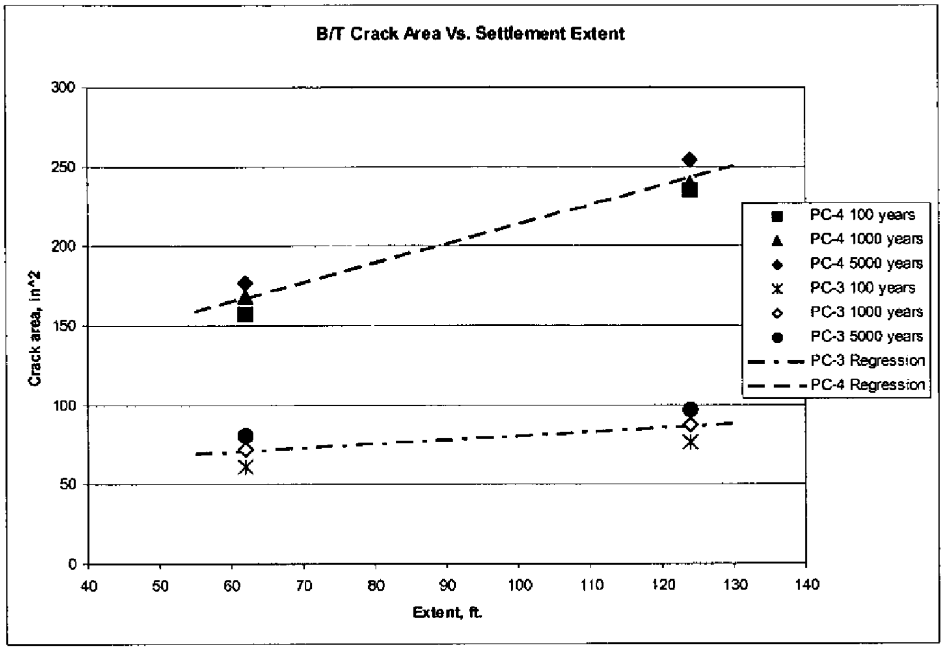
$CA_{tss}(-.4) = 1.63$

$CA_{tss}(-.6) = -2.331$

This value is added to the crack area

Effect of Extent of Settlement

Bottom Cracks



$Exm := 62$

The slope of the data regression fit is greater for the PC-4 than the PC-3 data. Assume a linear variation of the slope.

$S_{pc3} := 0.25077$ $\quad S_{pc4} := 1.21936$ $\quad A_{sl} := .5$ $\quad B_{sl} := .5$

Given

$$S_{pc3} = A_{sl} \cdot 0.75 + B_{sl}$$

$$S_{pc4} = A_{sl} \cdot 2.75 + B_{sl}$$

$$AA := \text{Find}(A_{sl}, B_{sl}) \qquad AA = \begin{pmatrix} 0.484 \\ -0.112 \end{pmatrix}$$

$$Sl(\Delta_d) := 0.484 \cdot \Delta_d - 0.112$$

Ex is settlement extent, ft.

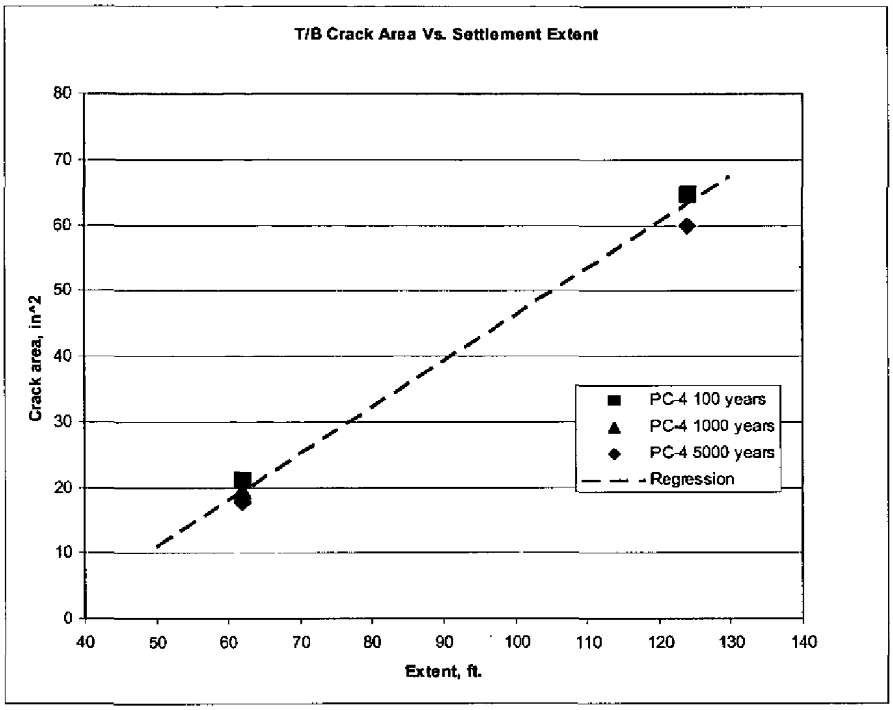
$$CA_{ex}(Ex, \Delta_d) := Sl(\Delta_d) \cdot (Ex - Exm)$$

Exm is mean settlement extent

Examples $\quad CA_{ex}(40, 1) = -8.184 \qquad CA_{ex}(140, 2.5) = 85.644$

This value is added to the crack area.

Top Cracks



The relationship is expressed as follows:

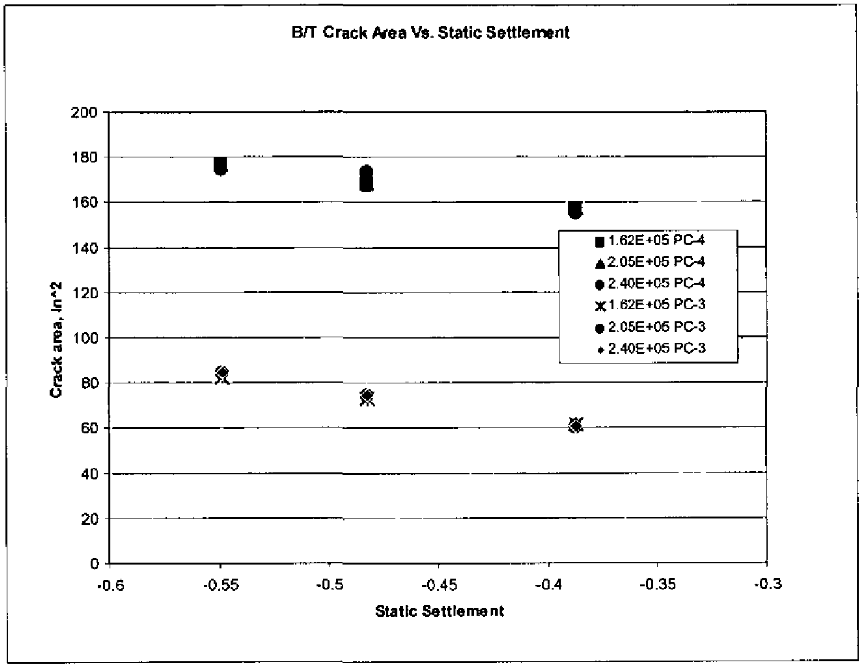
$$CA_{tex}(Ex) := 0.7055 \cdot (Ex - Exm)$$

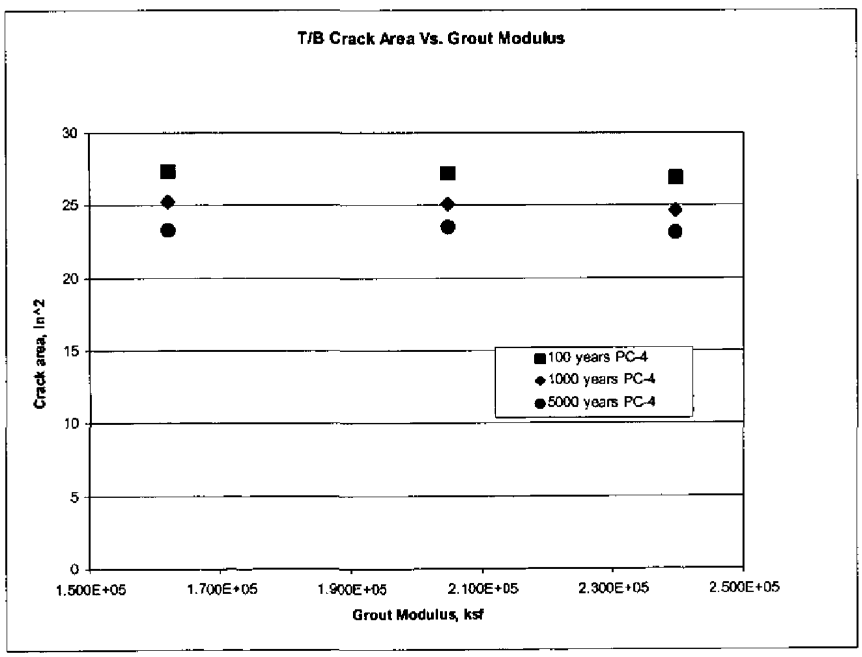
Examples $\quad CA_{tex}(55) = -4.939 \quad CA_{tex}(125) = 44.447$

This value is added to the crack area.

Effect of Saltstone Modulus

Bottom Cracks

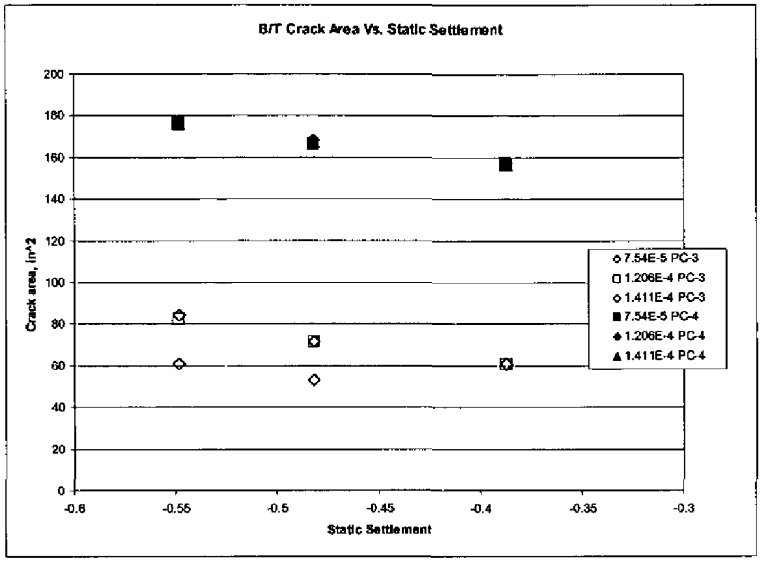




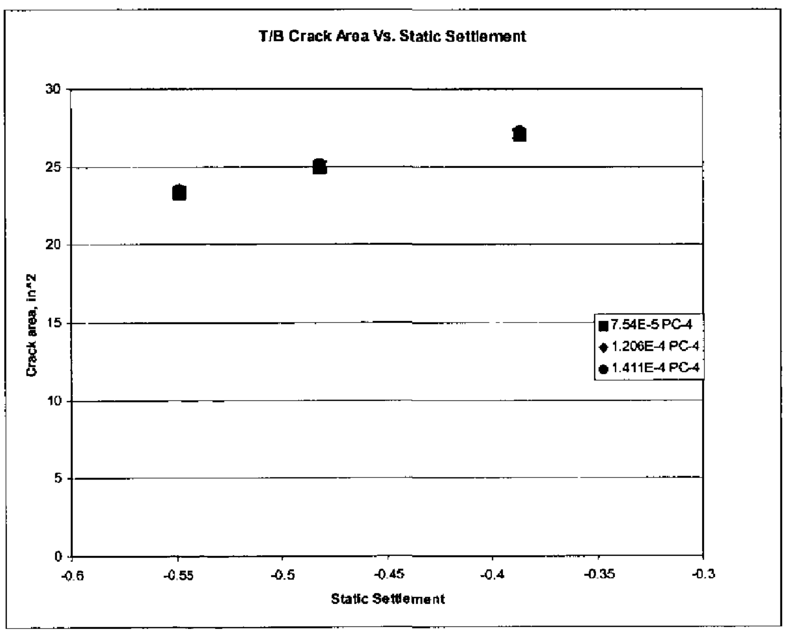
No trends in the data were noted for Saltstone Modulus effects with respect to bottom cracks.

Grout Cracking Strain Effect

Bottom Cracks



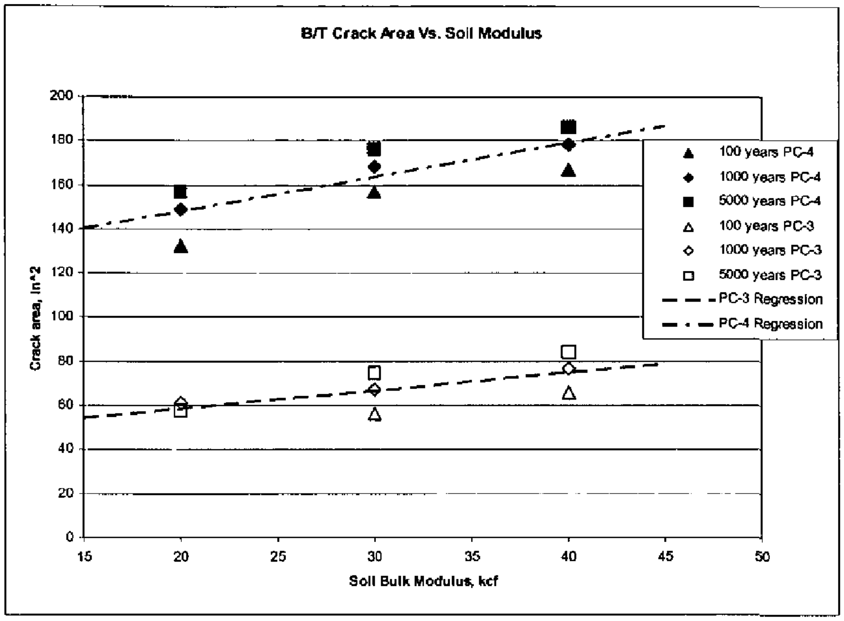
Top Cracks



No significant effect of saltstone cracking strain on crack area was noted.

Soil Bulk Modulus Effect

Bottom Cracks



$K_{sm} := 30$

The slope of the data regression fit is greater for the PC-4 than the PC-3 data. Assume a linear variation of the slope.

$S_{pc3} := 0.816$ $\quad S_{pc4} := 1.543$ $\quad A_{sl} := .5$ $\quad B_{sl} := .5$

Given

$$S_{pc3} = A_{sl} \cdot 0.75 + B_{sl}$$

$$S_{pc4} = A_{sl} \cdot 2.75 + B_{sl}$$

$$AA := \mathrm{Find}(A_{sl}, B_{sl}) \qquad AA = \begin{pmatrix} 0.364 \\ 0.543 \end{pmatrix}$$

$$Sl(\Delta_d) := .364 \cdot \Delta_d + .543$$

K_s is soil bulk modulus, kcf

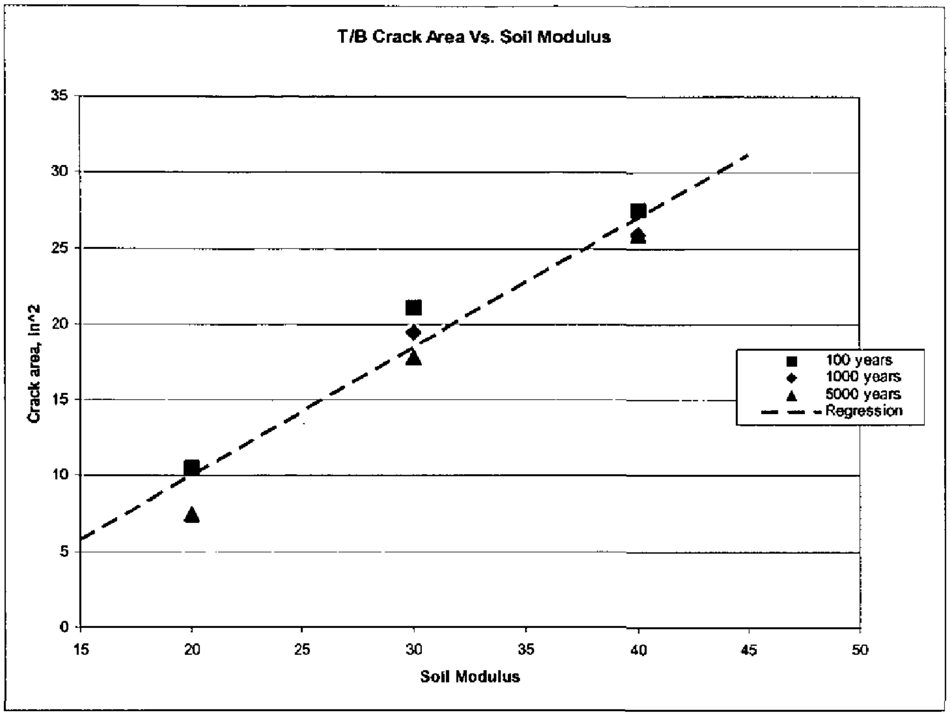
$$CA_{sm}(K_s, \Delta_d) := Sl(\Delta_d) \cdot (K_s - K_{sm})$$

K_{sm} is mean soil modulus

Examples $\quad CA_{sm}(20, 2) = -12.71 \qquad CA_{sm}(45, 1.5) = 16.335$

This value is added to the crack area.

Top Cracks



The expression for the effect on top crack area is based on the PC-4 data.

$K_{sm} := 30$

$$CA_{tsm}(K_s) := 0.848 \cdot (K_s - K_{sm})$$

Examples $\quad CA_{tsm}(25) = -4.24 \quad\quad CA_{tsm}(45) = 12.72$

This value is added to the crack area.

Total Crack Area

Bottom Cracks $\quad CA_b := CA_{ds}(\Delta_d) + CA_{ss}(\Delta_s) + CA_{ex}(Ext, \Delta_d) + CA_{sm}(K_s, \Delta_d)$

Top Cracks $\quad CA_t := CA_{tds}(\Delta_d) + CA_{tss}(\Delta_s) + CA_{tex}(Ex) + CA_{tsm}(K_s)$

8.3.13 Differential Settlement at Location 6

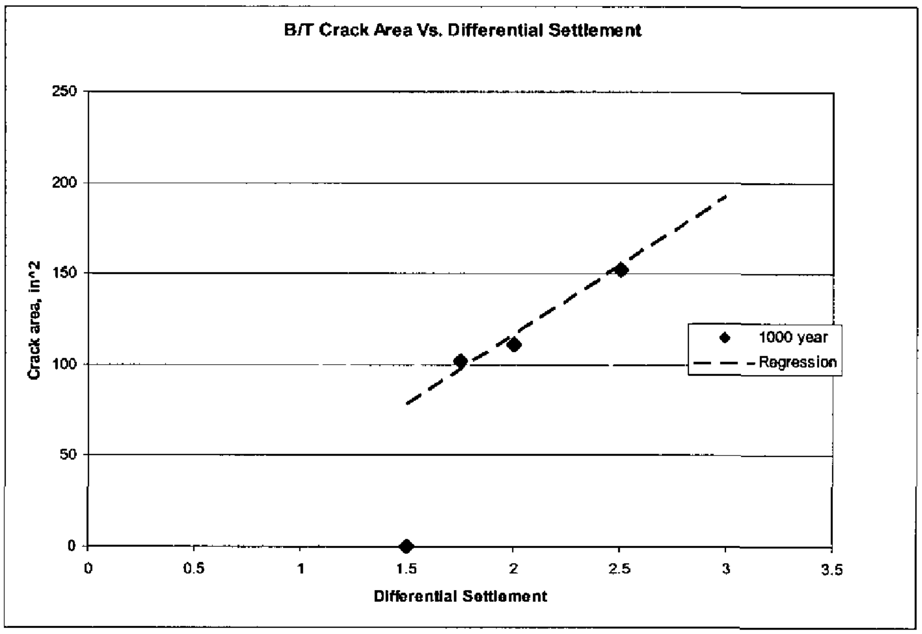
The parameters affecting the formation of cracks due to differential settlement are:

- magnitude of settlement
- time of settlement with respect to the static settlement condition
- extent of settlement
- saltstone modulus
- saltstone cracking strain
- soil bulk modulus

Note: B/T cracks are cracks open at the bottom. T/B cracks are cracks open at the top.

Settlement Magnitude

Bottom Cracks



The settlement is related to the magnitude by linear regression of the 1000 year data. The regression is truncated at 1.5 in differential settlement

CA_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

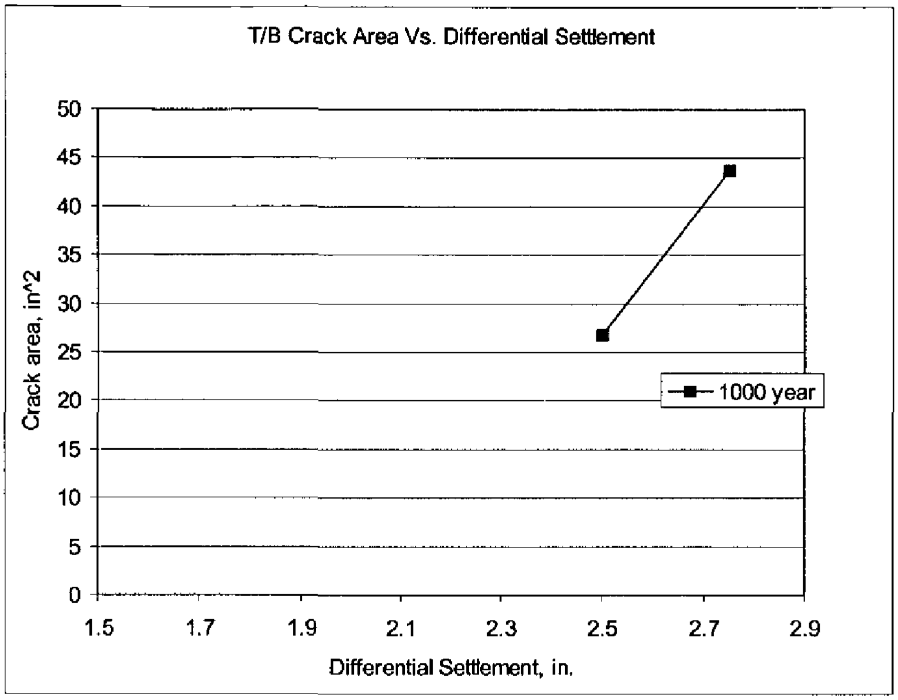
$$CA_{ds}(\Delta_d) := 76.14 \cdot \Delta_d - 35.8425$$

Examples

$$CA_{ds}(2.5) = 154.507 \qquad CA_{ds}(1.75) = 97.403$$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Top Cracks



The settlement is related to the magnitude by the 1000 year data. Data is truncated at crack area = 0.

CAt_{ds} - Crack Area due to differential settlement magnitude

Δ_d - Differential settlement, in.

$$CA_{tds}(\Delta_d) := 68.04 \cdot \Delta_d - 143.37$$

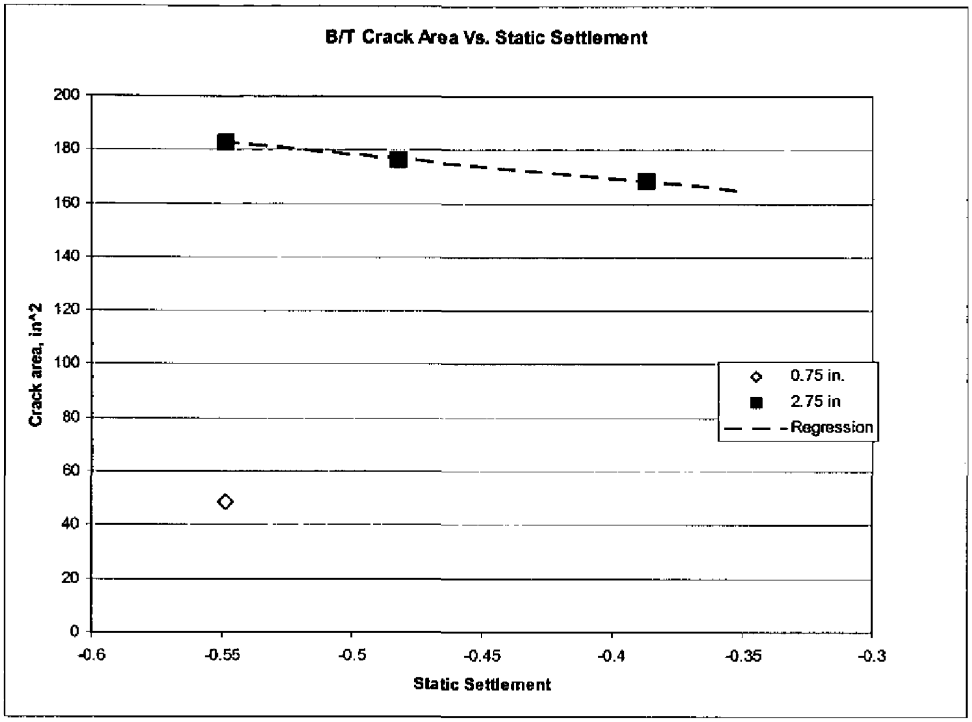
Examples

$$CA_{tds}(2.2) = 6.318 \qquad CA_{tds}(2.8) = 47.142$$

Settlements larger than PC-4 (2.75 in.) are linearly extrapolated.

Effect of Static Settlement (time)

Bottom Cracks



Linear regression for PC-4 is used to calculate crack area.

$S_{pc4} := -89.703$

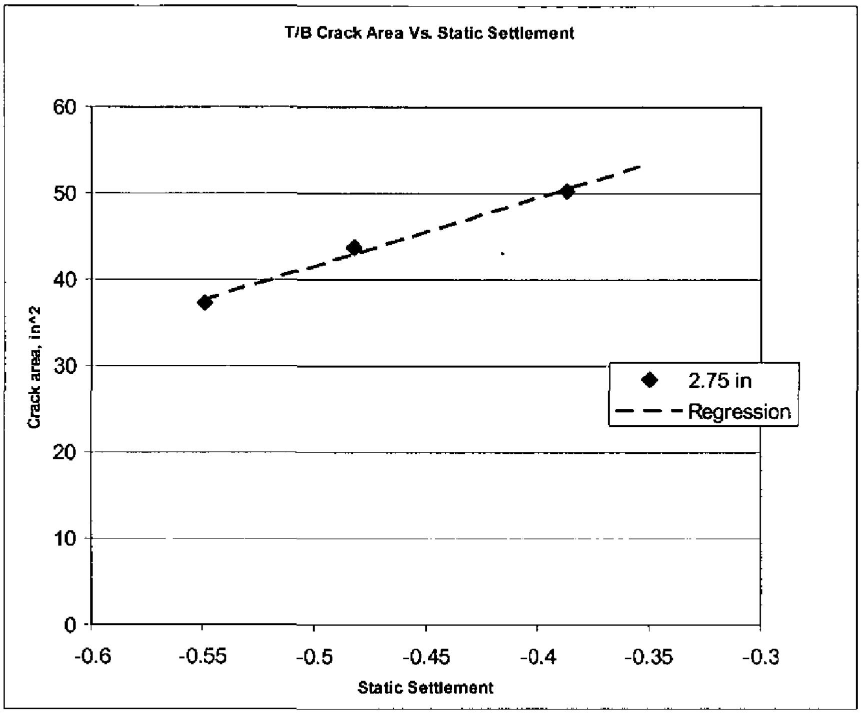
$\Delta_{1000} := -.4823$

$CA_{ss}(\Delta_s) := S_{pc4} \cdot (\Delta_s - \Delta_{1000})$

Examples $CA_{ss}(-.4) = -7.383$ $CA_{ss}(-.6) = 10.558$

This value is added to the crack area

Top Cracks



Slope of the linear regression for PC-4 is used to calculate crack area.

$S_{pc4} := 79.216$

$\Delta_{1000} := -.4823$

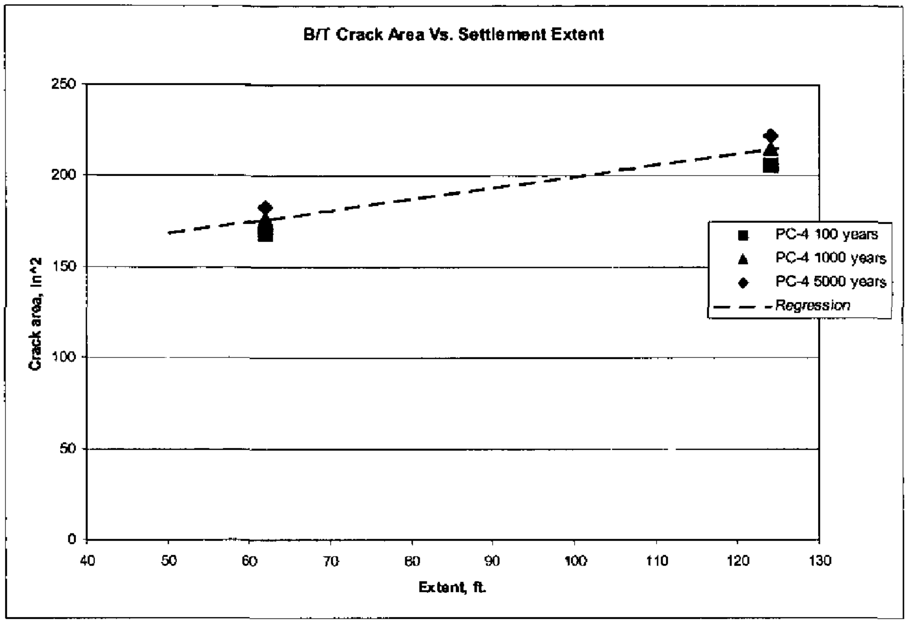
$CA_{tss}(\Delta_s) := S_{pc4} \cdot (\Delta_s - \Delta_{1000})$

Examples $CA_{tss}(-.4) = 6.519$ $CA_{tss}(-.6) = -9.324$

This value is added to the crack area

Effect of Extent of Settlement

Bottom Cracks



Linear regression is used for the PC-4 data to calculate change in crack area.

$Exm := 62$

$S_{pc4} := 0.6184$

$CA_{ex}(Ex) := S_{pc4} \cdot (Ex - Exm)$

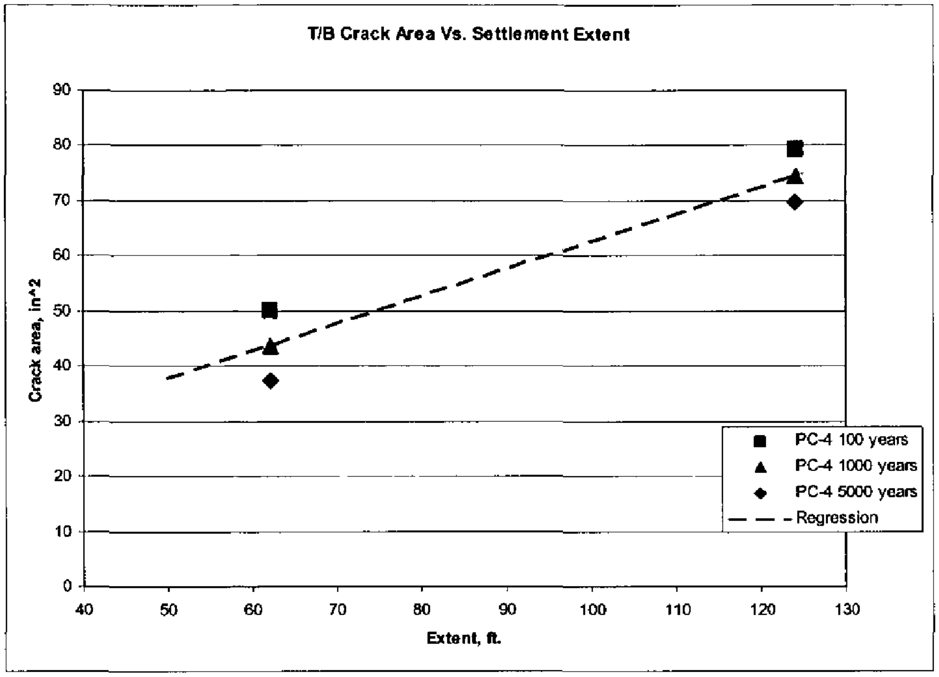
Ex is settlement extent, ft.

Exm is mean settlement extent

Examples $CA_{ex}(40) = -13.605$ $CA_{ex}(140) = 48.235$

This value is added to the crack area.

Top Cracks



The relationship is expressed as follows:

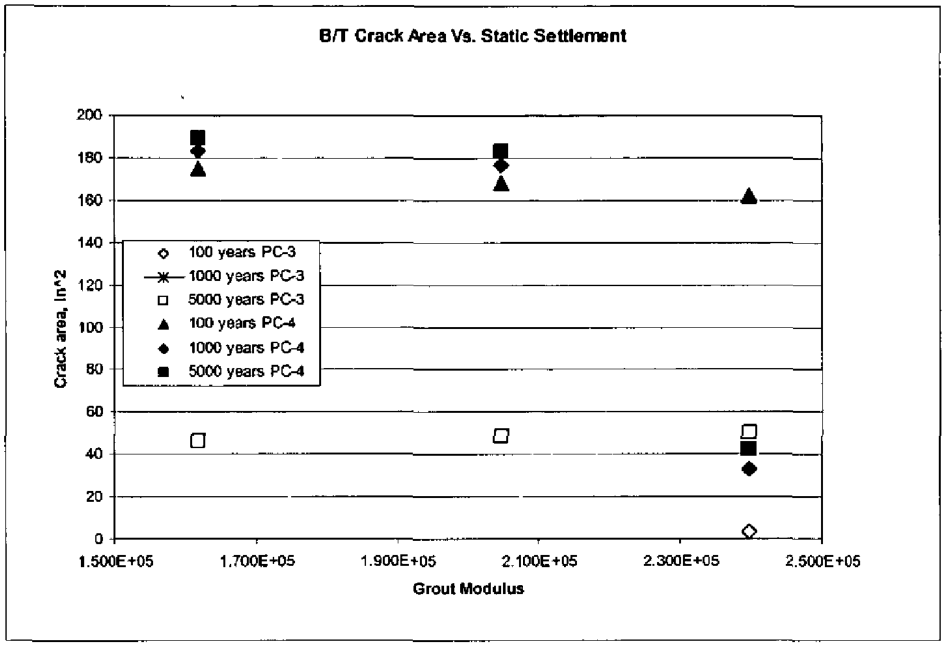
$$CA_{tex}(Ex) := 0.4964 \cdot (Ex - Exm)$$

Examples $CA_{tex}(55) = -3.475$ $CA_{tex}(125) = 31.273$

This value is added to the crack area.

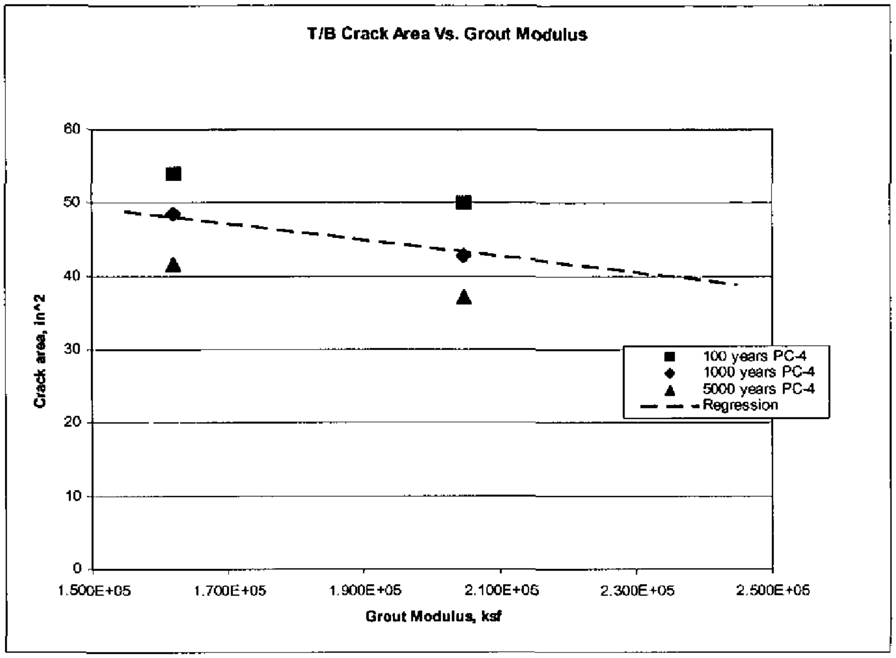
Effect of Saltstone Modulus

Bottom Cracks



There is an anomalous effect for high saltstone modulus. This is related to the anomalous cracking caused by the static settlement as noted previously, since the differential settlements are input to the model in combination with the static settlements. In addition, the crack caused by differential settlement at location 6 is at the same joint (7) as that caused by the static settlement. Otherwise no significant trends are noted.

Top Cracks



A linear regression is used to calculate change in crack area with saltstone modulus.

$S_{pc4} := -1.1077 \cdot 10^{-4}$ $\qquad E_{gm} := 2.048 \cdot 10^{5}$

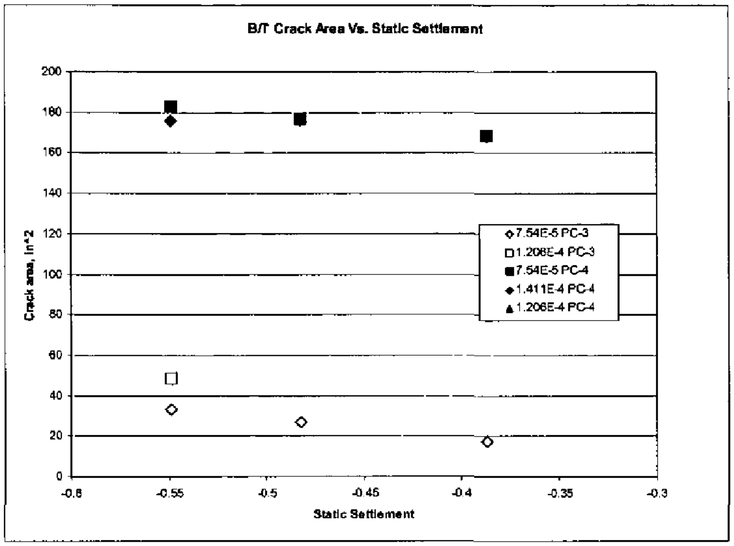
$CA_{tgm}(E_g) := S_{pc4} \cdot (E_g - E_{gm})$

Examples $\qquad CA_{tgm}(1.9 \cdot 10^{5}) = 1.639 \qquad CA_{tgm}(2.4 \cdot 10^{5}) = -3.899$

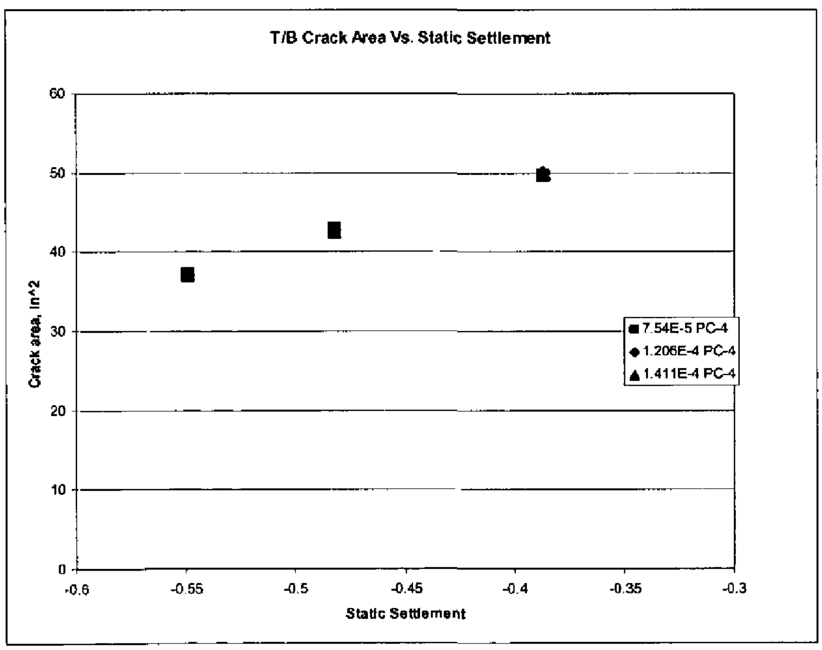
Value is added to the crack area.

Grout Cracking Strain Effect

Bottom Cracks



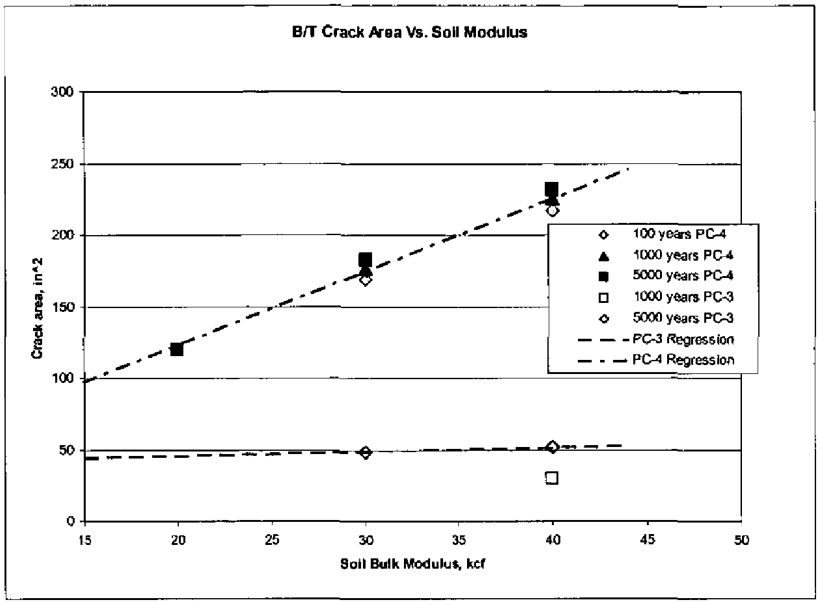
Top Cracks



No significant effect of saltstone cracking strain on crack area is noted.

Soil Bulk Modulus Effect

Bottom Cracks



$K_{sm} := 30$

The slope of the data regression fit is greater for the PC-4 than the PC-3 data. Assume a linear variation of the slope.

$S_{pc3} := 0.312$ $\quad S_{pc4} := 5.1435$ $\quad A_{sl} := .5$ $\quad B_{sl} := .5$

Given

$$S_{pc3} = A_{sl} \cdot 0.75 + B_{sl}$$

$$S_{pc4} = A_{sl} \cdot 2.75 + B_{sl}$$

$$AA := \mathrm{Find}(A_{sl}, B_{sl}) \qquad AA = \begin{pmatrix} 2.416 \\ -1.5 \end{pmatrix}$$

$$Sl(\Delta_d) := 2.416 \cdot \Delta_d - 1.5$$

K_s is soil bulk modulus, kcf

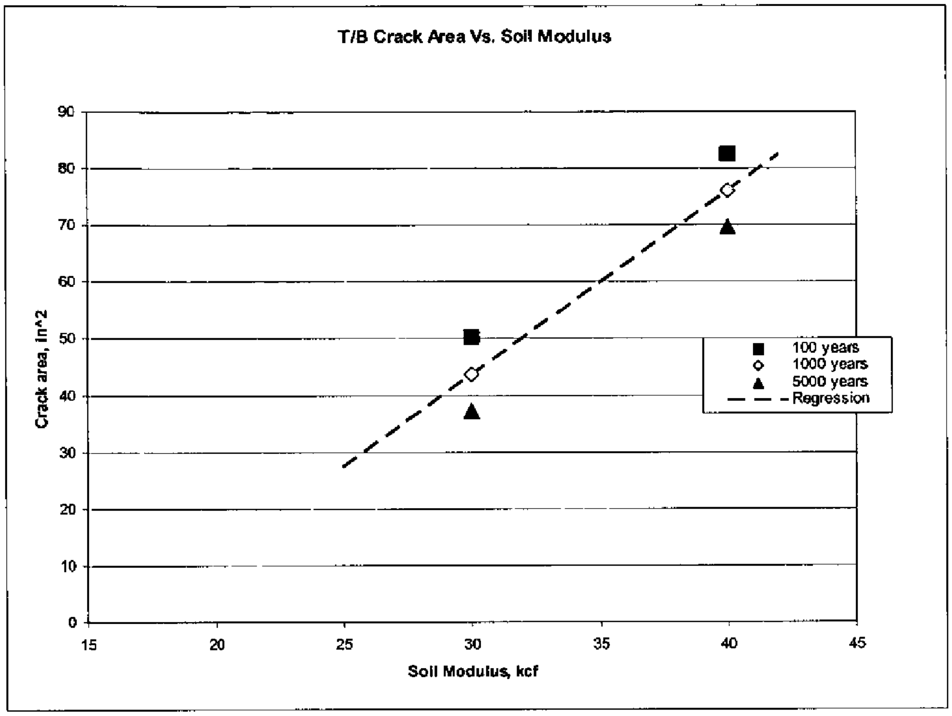
$$CA_{sm}(K_s, \Delta_d) := Sl(\Delta_d) \cdot (K_s - K_{sm})$$

K_{sm} is mean soil bulk modulus, kcf

Examples $\quad CA_{sm}(20, 1.5) = -21.24 \qquad CA_{sm}(45, 2) = 49.98$

This value is added to the crack area.

Top Cracks



The expression for the effect on top crack area is based on the PC-4 data.

$K_{sm} := 30$

$$CA_{tsm}(K_s) := 3.24 \cdot (K_s - K_{sm})$$

Examples $\quad CA_{tsm}(25) = -16.2 \quad\quad CA_{tsm}(45) = 48.6$

This value is added to the crack area.

Total Crack Area

Bottom Cracks $\quad CA_b := CA_{ds}(\Delta_d) + CA_{ss}(\Delta_s) + CA_{ex}(Ext, \Delta_d) + CA_{sm}(K_s, \Delta_d)$

Top Cracks $\quad CA_t := CA_{tds}(\Delta_d) + CA_{tss}(\Delta_s) + CA_{tb}(Ex) + CA_{tgm}(E_g) + CA_{tsm}(K_s)$

Section 8.3.14 Data Check

Note: There is a slight variation in the data due to the graphical take-offs of the crack widths and lengths. This variation is insignificant in terms of standard deviations.

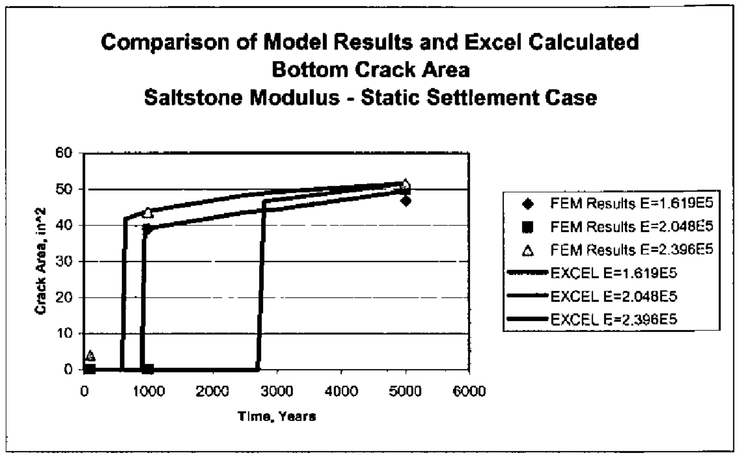
Comparison of Model Results with Excel Calculated Crack Areas

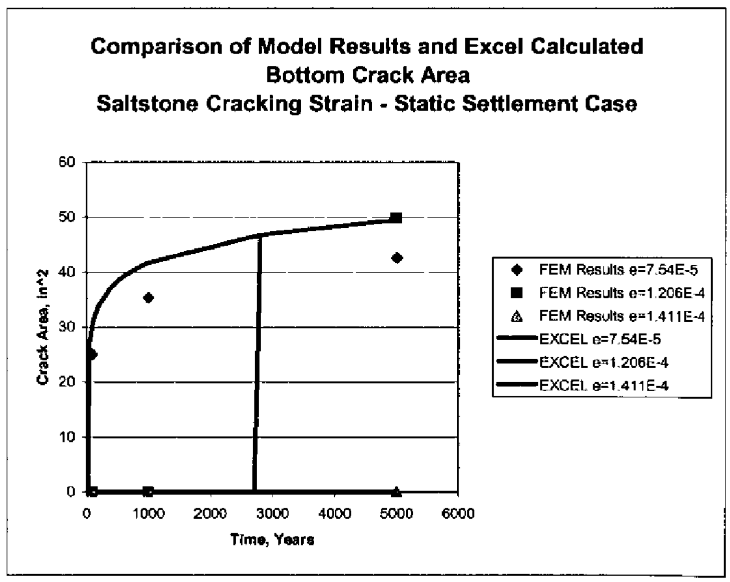
Bottom Cracks from Static Settlement

Time	Crack Areas - FE Model Results		
Grout Mod	1.62E+05	2.05E+05	2.40E+05
Time			
100	0	0	3.9
1000	39	0	43.65
5000	46.8	49.92	51.48
Grout Strain	7.54E-05	1.21E-04	1.41E-04
Time			
100	25.05	0	0
1000	35.4	0	0
5000	42.6	49.92	0

	Crack Areas EXCEL Workbook		
Grout Mod	1.62E+05	2.05E+05	2.40E+05
Time			
100	0	0	0
500	0	0	0
600	0	0	0
650	0	0	41.78
700	0	0	42.14
800	0	0	42.79
900	0	0	43.36
950	39.9	0	43.62
1000	39.16	0	43.95
2500	43.6	0	48.31
2700	43.97	0	48.69
2800	44.15	46.75	48.86
3000	44.48	47.09	49.2
5000	49.56	51.75	51.68

	Crack Areas EXCEL Workbook		
Grout Strain	7.54E-05	1.21E-04	1.41E-04
Time			
25	0	0	0
50	27.23	0	0
100	30.61	0	0
125	31.67	0	0
150	32.55	0	0
200	33.95	0	0
400	37.31	0	0
500	38.4	0	0
600	39.28	0	0
650	39.66	0	0
950	41.51	0	0
1000	41.76	0	0
2700	46.58	0	0
2800	46.75	46.75	0
3000	47.09	47.09	0
5000	49.56	49.56	0



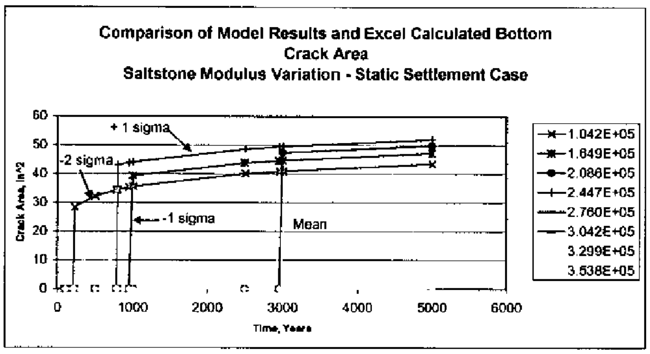


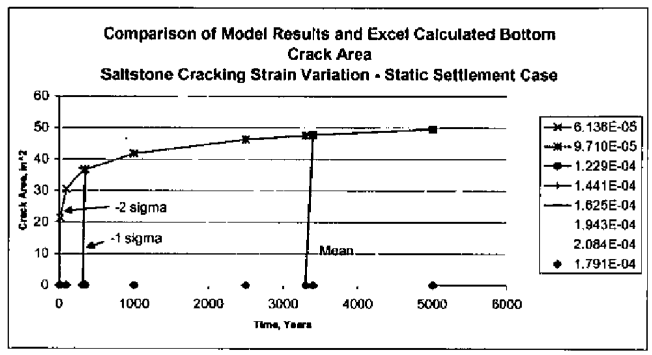
Saltstone Modulus

Saltstone Modulus		Time, years 100	200	225	500	775	800	950	1000	2500	2950	3000	5000
-5 sigma	N/A												
-4 sigma	N/A												
-3 sigma	N/A												
-2 sigma	1.042E+05	0	0	28.41	32.29	34.41	34.57	35.4	35.657	40.097	40.9	40.98	43.457
-1 sigma	1.649E+05	0	0	0	0	0	0	0	39.34	43.782	44.58	44.66	47.142
mean	2.086E+05	0	0	0	0	0	0	0	0	0	0	47.32	49.795
+1 sigma	2.447E+05	0	0	0	0	0	43.1	43.93	44.186	48.627	49.43	49.51	51.986
+2 sigma	2.760E+05	0	0	0	0	0	0	0	0	0	0	0	0
+3 sigma	3.042E+05	0	0	0	0	0	0	0	0	0	0	0	0
+4 sigma	3.299E+05	0	0	0	0	0	0	0	0	0	0	0	0
+5 sigma	3.538E+05	0	0	0	0	0	0	0	0	0	0	0	0

Saltstone Cracking Strain

Saltstone Cracking Strain		Time, years 10	15	100	325	350	1000	2500	3300	3400	5000
-5 sigma	N/A										
-4 sigma	N/A										
-3 sigma	N/A										
-2 sigma	6.136E-05	0	21.39	30.59	36.31	36.67	41.76	46.2	47.55	47.69	49.56
-1 sigma	9.710E-05	0	0	0	0	36.67	41.76	46.2	47.55	47.69	49.56
mean	1.229E-04	0	0	0	0	0	0	0	0	47.69	49.56
+1 sigma	1.441E-04	0	0	0	0	0	0	0	0	0	0
+2 sigma	1.625E-04	0	0	0	0	0	0	0	0	0	0
+3 sigma	1.791E-04	0	0	0	0	0	0	0	0	0	0
+4 sigma	1.943E-04	0	0	0	0	0	0	0	0	0	0
+5 sigma	2.084E-04	0	0	0	0	0	0	0	0	0	0





Data Check

Note: There is a slight variation in the data due to the graphical take-offs of the crack widths and lengths. This variation is insignificant in terms of standard deviations.

Comparison of Model Results with Excel Calculated Crack Areas

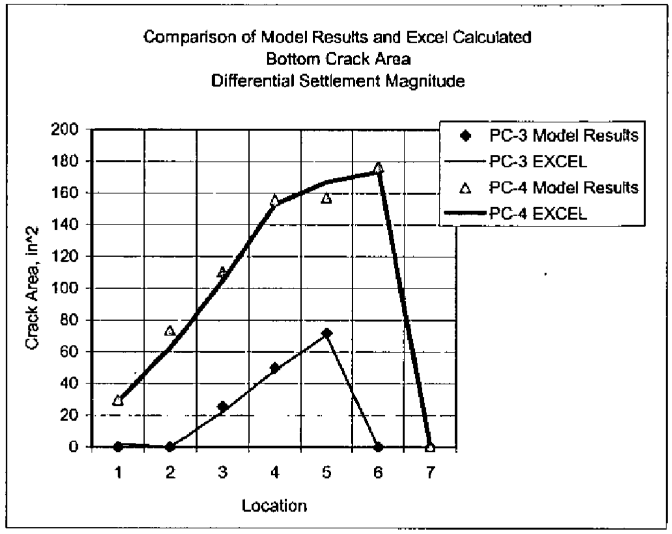
Crack Area as Related to Differential Settlement Magnitude

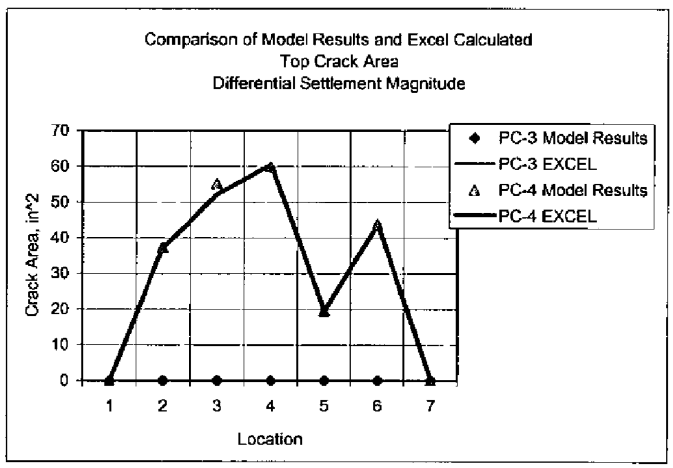
PC-3 0.75 in. @ 1000 years

Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	0	0	2.01	0.00
2	0	0	0.00	0
3	25.5	0	21.85	0
4	49.92	0	48.29	0
5	71.76	0	70.45	0
6	0	0	0.00	0
7	0	0	0	0

PC-4 2.75 in. @ 1000 years

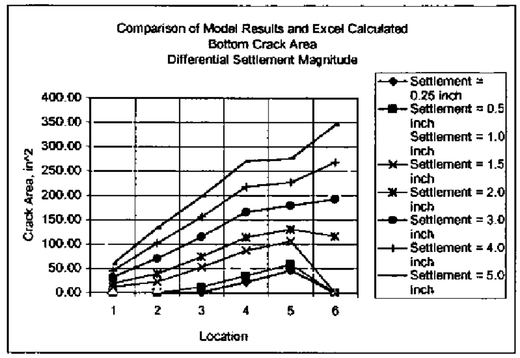
Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	29.48	0	28.89	0.00
2	73.32	37.26	62.51	37.30
3	110.16	55.08	104.87	52.21
4	155.52	59.94	153.13	60.49
5	157.14	19.44	167.13	19.48
6	176.58	43.74	173.54	43.74
7	0	0	0.00	0.00

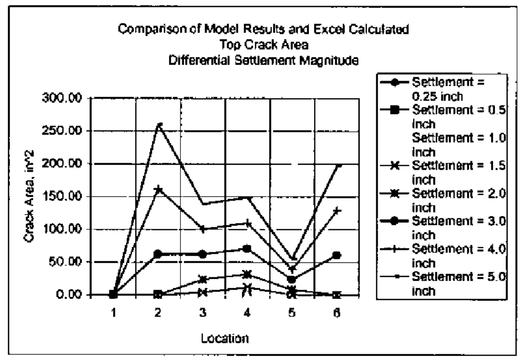




Check Range of Parameter
mean properties - 1000 years

Bottom Cracks		Settlement						
Location	**0.25**	**0.5**	**1**	**1.5**	**2**	**3**	**4**	**5**
1	0.00	0.00	5.37	12.09	18.81	32.25	45.69	59.13
2	0.00	0.00	7.13	22.96	38.78	70.42	102.07	133.72
3	1.10	11.47	32.23	52.98	73.74	115.25	156.76	198.27
4	22.08	35.19	61.40	87.61	113.82	166.24	218.66	271.08
5	46.28	58.37	82.54	106.71	130.88	179.22	227.56	275.90
6	0.00	0.00	0.00	0.00	116.44	192.56	268.72	344.86
Top Cracks								
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	62.11	161.35	260.59
3	0.00	0.00	0.00	3.95	23.25	61.86	100.47	139.08
4	0.00	0.00	0.00	11.52	31.11	70.26	109.45	148.62
5	0.00	0.00	0.00	0.08	7.84	23.36	38.88	54.40
6	0.00	0.00	0.00	0.00	0.00	60.75	128.79	196.83





Data Check

Note: There is a slight variation in the data due to the graphical take-offs of the crack widths and lengths. This variation is insignificant in terms of standard deviations.

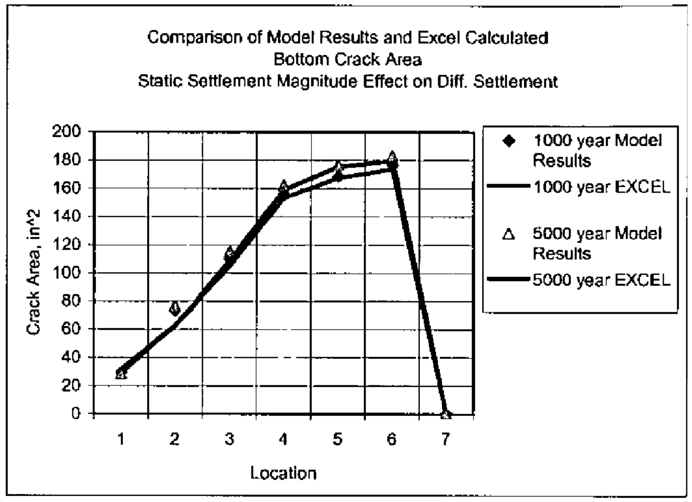
Comparison of Model Results with Excel Calculated Crack Areas
Crack Area (caused by differential settlement) as Related to Static Settlement Magnitude

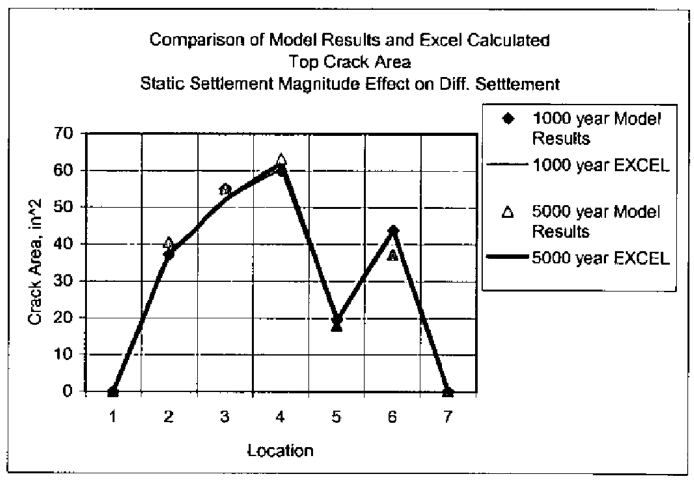
PC-4 2.75 in. @ 1000 years

Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	29.49	0	28.89	0.00
2	73.32	37.26	62.51	37.30
3	110.16	55.08	104.87	52.21
4	155.52	59.91	153.13	60.49
5	168.48	19.44	167.13	19.48
6	176.58	43.74	173.54	43.74
7	0	0	0.00	0.00

PC-4 2.75 in. @ 5000 years

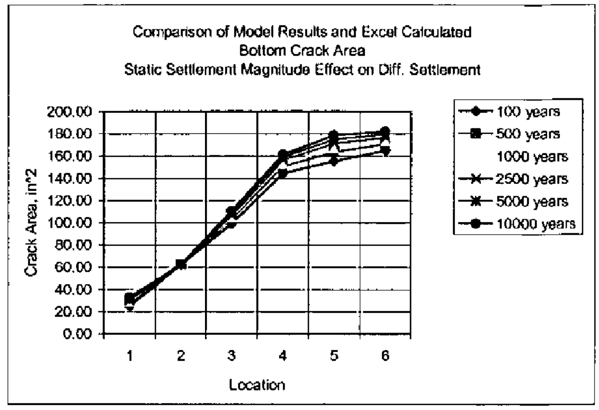
Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	28.5	0	31.63	0.00
2	76.44	40.5	62.51	37.30
3	115.02	55.08	108.83	52.21
4	162	63.18	159.00	62.20
5	176.56	17.82	175.28	19.48
6	183.06	37.23	179.52	43.74
7	0	0	0.00	0.00

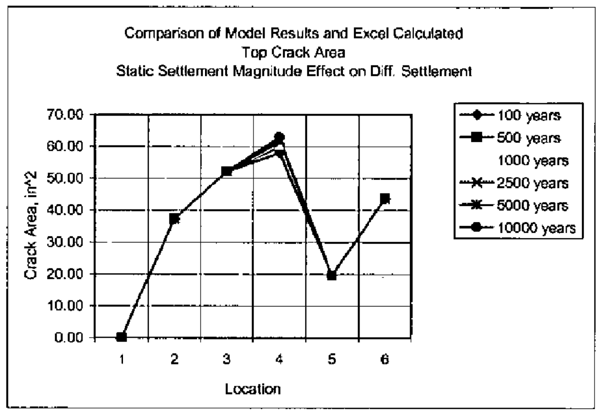




Check Range of Parameter
Mean properties - PC-4 EQ

Bottom Cracks		**Time**				
Location	**100**	**500**	**1000**	**2500**	**5000**	**10000**
1	24.96	27.70	28.89	30.45	31.63	32.82
2	62.51	62.51	62.51	62.51	62.51	62.51
3	99.21	103.17	104.87	107.13	108.83	110.53
4	144.74	150.61	153.13	156.47	159.00	161.52
5	155.48	163.63	167.13	171.77	175.28	178.79
6	165.00	170.97	173.54	176.95	179.52	182.09
Top Cracks						
1	0.00	0.00	0.00	0.00	0.00	0.00
2	37.30	37.30	37.30	37.30	37.30	37.30
3	52.21	52.21	52.21	52.21	52.21	52.21
4	58.04	59.75	60.49	61.46	62.20	62.93
5	19.48	19.48	19.48	19.48	19.48	19.48
6	43.74	43.74	43.74	43.74	43.74	43.74





Data Check

Note: There is a slight variation in the data due to the graphical take-offs of the crack widths and lengths. This variation is insignificant in terms of standard deviations.

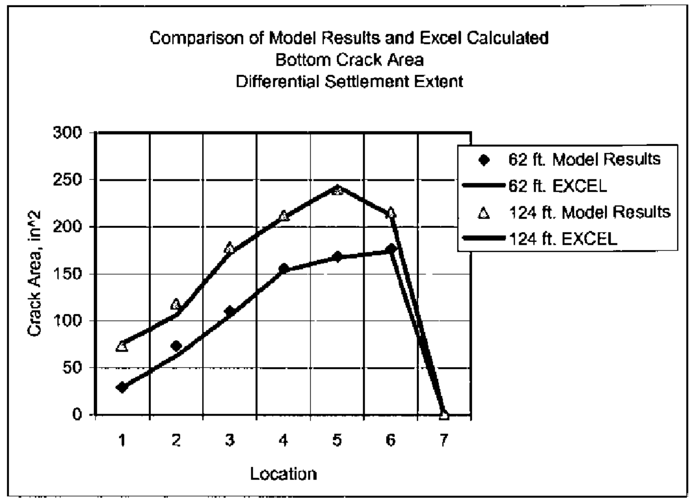
Comparison of Model Results with Excel Calculated Crack Areas
Crack Area as Related to Differential Settlement Extent
PC-4 2.75 in. @ 1000 years

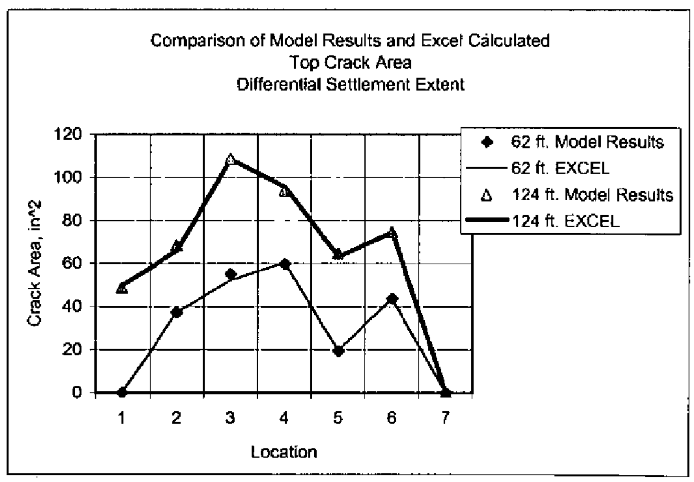
Extent = 62 ft.

Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	29.4	0	28.89	0.00
2	73.32	37.26	62.51	37.30
3	110.16	55.08	104.87	52.21
4	155.52	59.91	153.13	60.49
5	168.48	19.44	167.13	19.48
6	176.58	43.74	173.54	43.74
7	0	0	0.00	0.00

Extent = 124 ft.

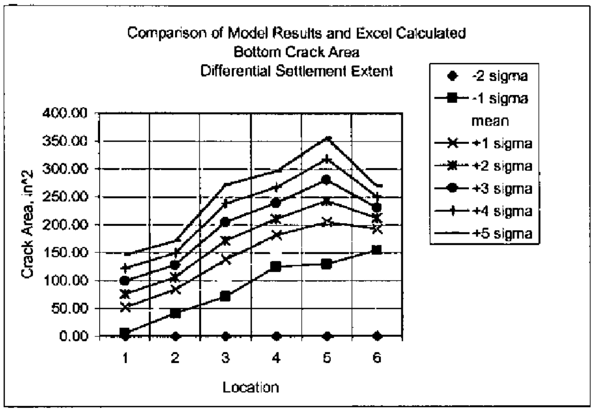
Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	73.32	48.6	75.81	49.78
2	118.26	68.4	105.98	66.07
3	178.2	108.54	171.71	108.37
4	212.22	93.96	210.40	95.58
5	239.76	64.8	242.71	63.19
6	215.46	74.52	211.89	74.49
7	0	0	0.00	0.00

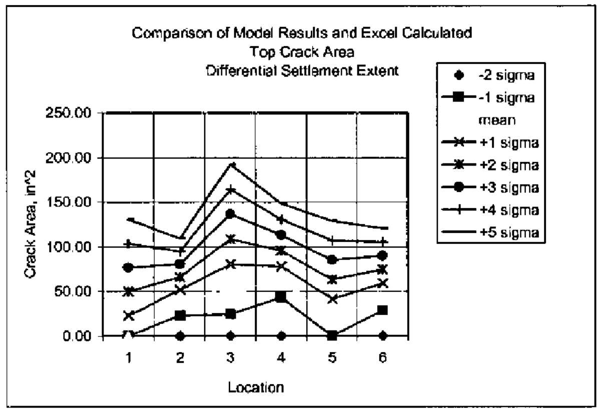




Check Range of Parameter
Mean properties - 1000 years, PC-4 EQ

Bottom Cracks			Extent of Settlement								
Location	**-5 sigma**	**-4 sigma**	**-3 sigma**	**-2 sigma**	**-1 sigma**	**mean**	**+1 sigma**	**+2 sigma**	**+3 sigma**	**+4 sigma**	**+5 sigma**
	-93	**-62**	**-31**	**0**	**31**	**62**	**93**	**124**	**155**	**186**	**217**
1	N/A	N/A	N/A	0.00	5.43	28.89	52.35	75.81	99.27	122.73	146.19
2	N/A	N/A	N/A	0.00	40.78	62.51	84.24	105.98	127.71	149.44	171.17
3	N/A	N/A	N/A	0.00	71.45	104.87	138.29	171.71	205.13	238.54	271.96
4	N/A	N/A	N/A	0.00	124.50	153.13	181.77	210.40	239.03	267.67	296.30
5	N/A	N/A	N/A	0.00	129.35	167.13	204.92	242.71	280.50	318.29	356.08
6	N/A	N/A	N/A	0.00	154.37	173.54	192.72	211.89	231.06	250.23	269.40
Top Cracks											
1	N/A	N/A	N/A	0.00	0.00	0.00	22.90	49.78	76.66	103.53	130.41
2	N/A	N/A	N/A	0.00	22.92	37.30	51.68	66.07	80.45	94.84	109.22
3	N/A	N/A	N/A	0.00	24.13	52.21	80.29	108.37	136.45	164.53	192.61
4	N/A	N/A	N/A	0.00	42.94	60.49	78.03	95.58	113.13	130.67	148.22
5	N/A	N/A	N/A	0.00	0.00	19.48	41.34	63.19	85.05	106.90	128.76
6	N/A	N/A	N/A	0.00	28.36	43.74	59.12	74.49	89.87	105.24	120.62





Calculation Continuation Sheet

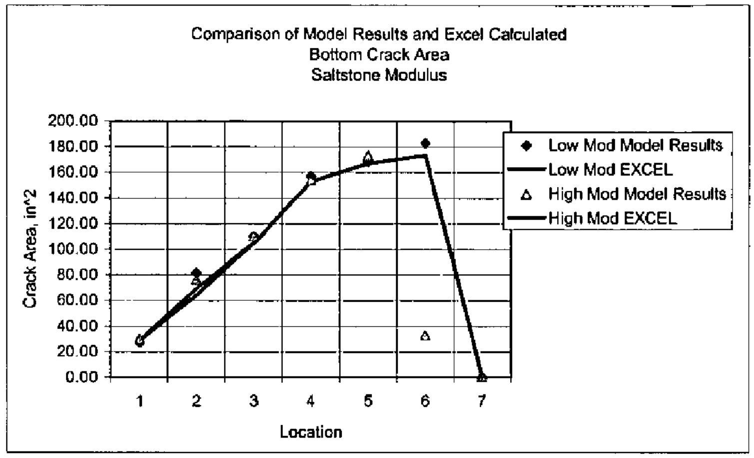
Data Check

Note: There is a slight variation in the data due to the graphical take-offs of the crack widths and lengths. This variation is insignificant in terms of standard deviations.

Comparison of Model Results with Excel Calculated Crack Areas
Crack Area as Related to Saltstone Modulus
PC-4 2.75 in. @ 1000 years

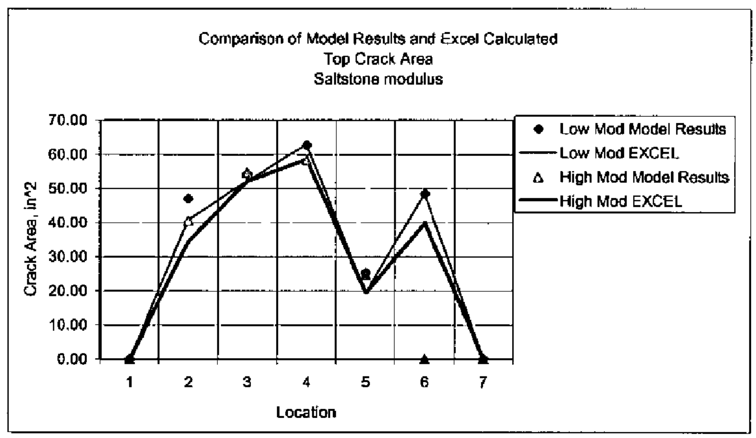
Low 1.619E5

Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	27.00	0.00	28.89	0.00
2	81.49	46.98	68.91	40.74
3	110.16	54.27	104.87	52.21
4	157.14	62.69	153.13	62.93
5	168.48	25.27	167.13	19.48
6	183.06	48.44	173.54	48.49
7	0.00	0.00	0.00	0.00



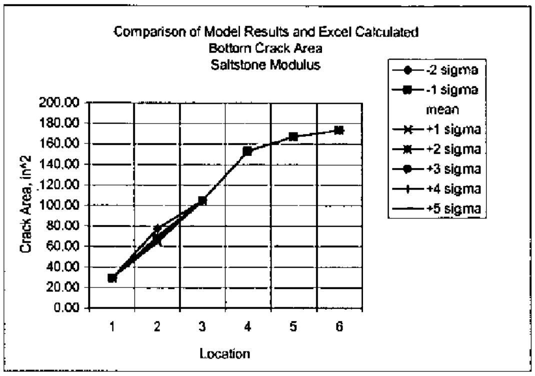
High 2.396E5

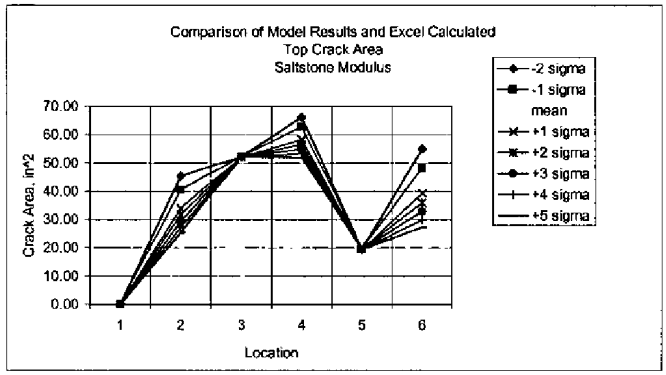
Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	30	0	28.89	0.00
2	76.14	40.5	64.31	34.51
3	110.16	54.59	104.87	52.21
4	153.9	58.32	153.13	58.51
5	173.34	24.62	167.13	19.48
6	32.76	0	173.54	39.88
7	0	0	0.00	0.00



Check Range of Parameter
Mean properties - 1000 years, PC-4 EQ, 62 ft.

Bottom Cracks			**Saltstone Modulus**								
Location	**-5 sigma**	**-4 sigma**	**-3 sigma**	**-2 sigma**	**-1 sigma**	**mean**	**+1 sigma**	**+2 sigma**	**+3 sigma**	**+4 sigma**	**+5 sigma**
	N/A	**N/A**	**N/A**	**1.04E+05**	**1.65E+05**	**2.09E+05**	**2.45E+05**	**2.76E+05**	**3.04E+05**	**3.30E+05**	**3.54E+05**
1	N/A	N/A	N/A	28.89	28.89	28.89	28.89	28.89	28.89	28.89	28.89
2	N/A	N/A	N/A	77.50	68.46	62.71	64.58	66.20	67.65	68.98	70.22
3	N/A	N/A	N/A	104.87	104.87	104.87	104.87	104.87	104.87	104.87	104.87
4	N/A	N/A	N/A	153.13	153.13	153.13	153.13	153.13	153.13	153.13	153.13
5	N/A	N/A	N/A	167.13	167.13	167.13	167.13	167.13	167.13	167.13	167.13
6	N/A	N/A	N/A	173.54	173.54	173.54	173.54	173.54	173.54	173.54	173.54
Top Cracks											
1	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	N/A	N/A	N/A	45.37	40.50	37.00	34.10	31.59	29.32	27.26	25.34
3	N/A	N/A	N/A	52.21	52.21	52.21	52.21	52.21	52.21	52.21	52.21
4	N/A	N/A	N/A	66.20	62.75	60.27	58.22	56.44	54.84	53.38	52.02
5	N/A	N/A	N/A	19.48	19.48	19.48	19.48	19.48	19.48	19.48	19.48
6	N/A	N/A	N/A	54.89	48.16	43.32	39.32	35.85	32.73	29.88	27.23





Data Check

Note: There is a slight variation in the data due to the graphical take-offs of the crack widths and lengths. This variation is insignificant in terms of standard deviations.

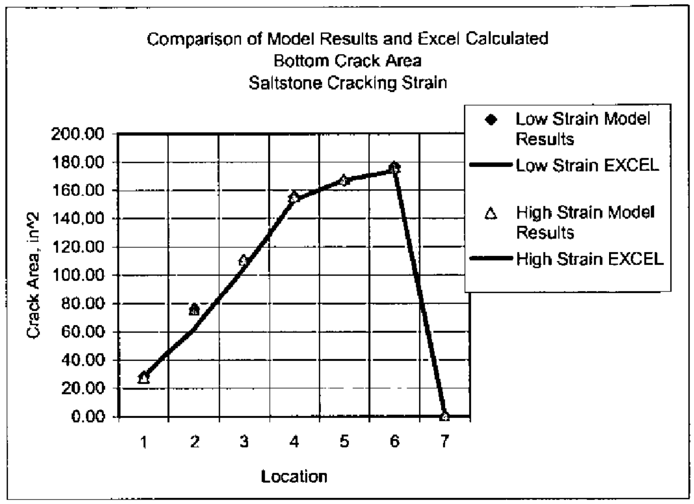
Comparison of Model Results with Excel Calculated Crack Areas
Crack Area as Related to Saltstone Cracking Strain
PC-4 2.75 in. @ 1000 years

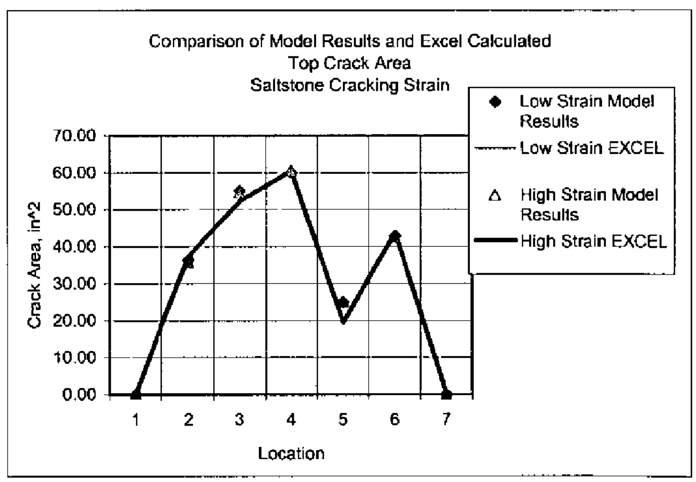
Low 7.54E-5

Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	28.50	0.00	28.89	0.00
2	76.14	36.45	62.51	37.30
3	110.16	55.08	104.87	52.21
4	155.52	59.94	153.13	60.49
5	166.83	24.95	167.13	19.48
6	176.58	42.93	173.54	43.74
7	0.00	0.00	0.00	0.00

High 1.411E-4

Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	27.3	0	28.89	0.00
2	75.65	35.8	62.51	37.30
3	110.81	54.59	104.87	52.21
4	155.36	60.43	153.13	60.49
5	167.67	25.11	167.13	19.48
6	176.26	42.61	173.54	43.74
7	0	0	0.00	0.00





Check Range of Parameter
Mean properties - 1000 years, PC-3 EQ, 62 ft.

Bottom Cracks			**Saltstone Cracking Strain**								
Location	**-5 sigma**	**-4 sigma**	**-3 sigma**	**-2 sigma**	**-1 sigma**	**mean**	**+1 sigma**	**+2 sigma**	**+3 sigma**	**+4 sigma**	**+5 sigma**
	N/A	**N/A**	**N/A**	**6.14E-05**	**9.71E-05**	**1.23E-04**	**1.44E-04**	**1.63E-04**	**1.79E-04**	**1.94E-04**	**2.08E-04**
1	N/A	N/A	N/A	28.89	28.89	28.89	28.89	28.89	28.89	28.89	28.89
2	N/A	N/A	N/A	62.51	62.51	62.51	62.51	62.51	62.51	62.51	62.51
3	N/A	N/A	N/A	104.87	104.87	104.87	104.87	104.87	104.87	104.87	104.87
4	N/A	N/A	N/A	153.13	153.13	153.13	153.13	153.13	153.13	153.13	153.13
5	N/A	N/A	N/A	167.13	167.13	167.13	167.13	167.13	167.13	167.13	167.13
6	N/A	N/A	N/A	173.54	173.54	173.54	173.54	173.54	173.54	173.54	173.54
Top Cracks											
1	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	N/A	N/A	N/A	37.30	37.30	37.30	37.30	37.30	37.30	37.30	37.30
3	N/A	N/A	N/A	52.21	52.21	52.21	52.21	52.21	52.21	52.21	52.21
4	N/A	N/A	N/A	60.49	60.49	60.49	60.49	60.49	60.49	60.49	60.49
5	N/A	N/A	N/A	19.48	19.48	19.48	19.48	19.48	19.48	19.48	19.48
6	N/A	N/A	N/A	43.74	43.74	43.74	43.74	43.74	43.74	43.74	43.74

No effect of Grout Cracking Strain on Crack Area caused by Differential Settlement

Data Check

Note: There is a slight variation in the data due to the graphical take-offs of the crack widths and lengths. This variation is insignificant in terms of standard deviations.

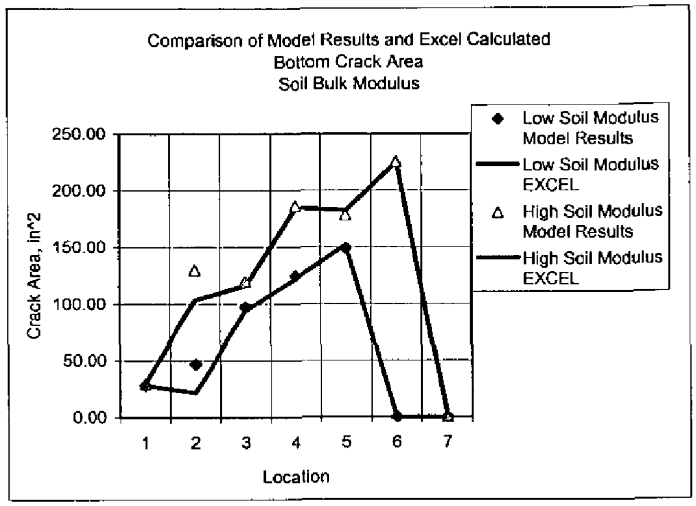
Comparison of Model Results with Excel Calculated Crack Areas
Crack Area as Related to Soil Bulk Modulus
PC-4 2.75 in. @ 1000 years

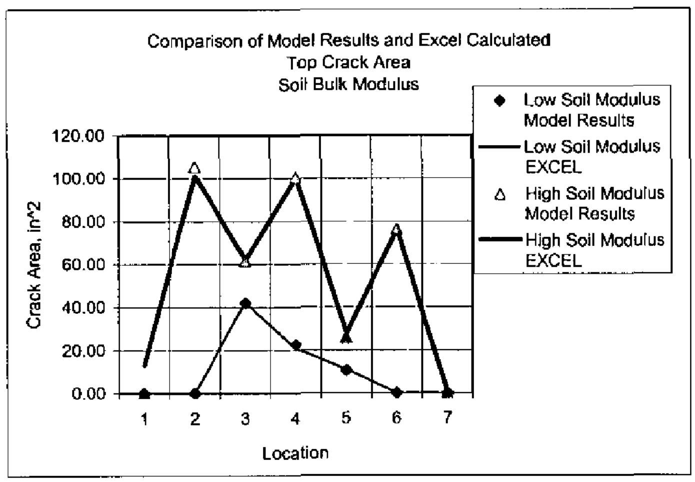
Low 20 kcf

Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	28.50	0.00	27.84	0.00
2	46.80	0.00	21.39	0.00
3	97.20	42.12	93.67	42.33
4	124.74	22.68	121.55	20.67
5	149.04	10.50	151.69	11.00
6	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00

High 40 kcf

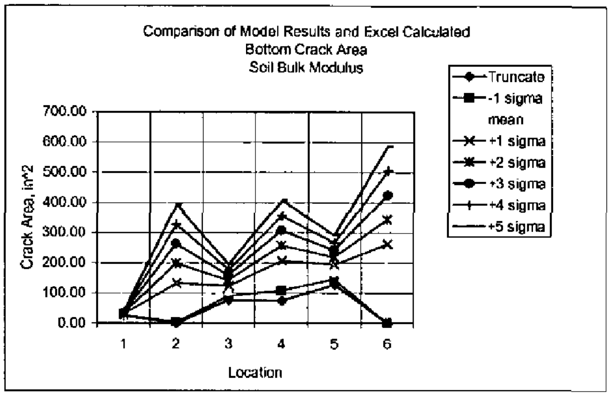
Location of Settlement	Crack Areas From FE Model Results		Crack Areas From EXCEL	
	Bottom	Top	Bottom	Top
1	29.4	0	29.93	13.00
2	129.6	105.3	103.63	101.02
3	119.88	61.56	116.08	62.09
4	186.3	100.44	184.72	100.31
5	178.2	25.92	182.57	27.96
6	225.18	76.14	224.98	76.14
7	0	0	0.00	0.00

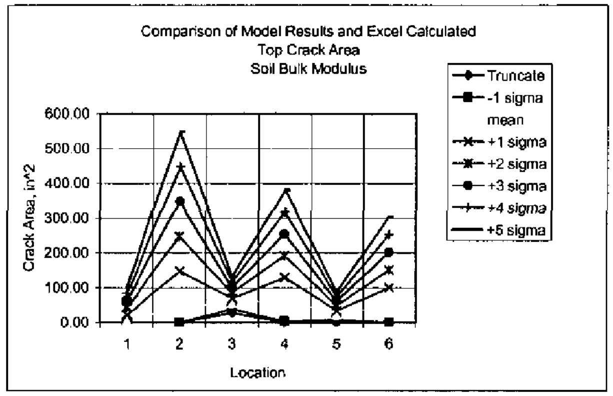




Check Range of Parameter
Mean properties - 1000 years, PC-3 EQ, 62 ft.

Bottom Cracks			**Saltstone Cracking Strain**					
Location	**Truncate**	**-1 sigma**	**mean**	**+1 sigma**	**+2 sigma**	**+3 sigma**	**+4 sigma**	**+5 sigma**
	5	**15.756**	**31.512**	**47.268**	**63.024**	**78.78**	**94.536**	**110.292**
1	26.27	27.40	29.05	30.69	32.34	33.99	35.64	37.29
2	0.00	3.95	68.73	133.52	198.31	263.10	327.89	392.68
3	76.86	88.91	106.57	124.22	141.88	159.53	177.18	194.84
4	74.17	108.15	157.91	207.68	257.44	307.21	356.97	406.74
5	128.53	145.14	169.47	193.80	218.12	242.45	266.78	291.11
6	0.00	0.00	181.32	262.37	343.42	424.47	505.52	586.57
Top Cracks								
1	0.00	0.00	1.97	22.45	42.93	63.41	83.90	104.38
2	0.00	0.00	46.93	147.33	247.73	348.13	448.52	548.92
3	27.50	38.13	53.70	69.27	84.84	100.41	115.98	131.55
4	0.00	3.76	66.51	129.25	192.00	254.74	317.48	380.23
5	0.00	7.40	20.76	34.12	47.48	60.85	74.21	87.57
6	0.00	0.00	48.64	99.69	150.74	201.79	252.84	303.89





8.3.16. Sensitivity Study for Differential Settlement Magnitude.

The geotechnical data for differential settlement consists of two data points. There is a settlement of 0.75 inches for a PC-3 event with an annual recurrence interval of 2500 years, and a settlement of 2.75 inches for a PC-4 event with a 10,000 year annual recurrence. Seismic probability curves are generally expressed as log functions. For this study, the differential settlement is expressed as a linear function of the log of probability. The analysis uses 10 year time steps so the annual probabilities are converted into probabilities of occurrence in a ten year interval.

Per DOE-1020, Appendix A:

$EP = 1-(1-p)^n$ where EP is exceedence probability during a period of n years,

and p is the annual probability of occurrence.

The 10 year probability of exceedence is 3.993×10^{-3} for PC-3 and 1×10^{-3} for PC-4.

The opinion of the SGS is that, since the settlement zones are small, settlement would decrease relatively for larger events until some threshold is reached for an incredible event that would cause massive subsidence of the region.

The slope of the probability curve after PC-4 is reduced to account for this effect. A value of 4 inches for a 10^{-5} event was judged appropriate to anchor the curve. To verify that this choice would have little effect on the analysis results, a sensitivity study was run where the increased slope was compared to a constant slope. The following page shows the results of this study.

At 10,000 years, the mean increased by 9% for bottom cracks and by 28% for top cracks. However, because of the large uncertainties in this analysis, these variations are well within a +1 sigma band for the increased slope assumption.

Case 1 - No decrease in differential settlement for extreme events

Bottom Cracks

Time	-1 sigma	Mean	+1 sigma
	Crack Area, in^2		
100	-29.54	11.36	52.26
500	-35.44	32.80	101.04
1000	-36.26	55.00	146.26
2500	-15.58	108.69	232.97
5000	22.87	198.80	374.72
10000	117.13	379.59	642.04

Top Cracks

Time	-1 sigma	Mean	+1 sigma
	Crack Area, in^2		
100	-39.20	3.07	45.34
500	-42.10	8.29	58.68
1000	-49.49	15.84	81.16
2500	-61.13	36.11	133.35
5000	-55.53	67.65	190.83
10000	-37.40	128.96	295.32

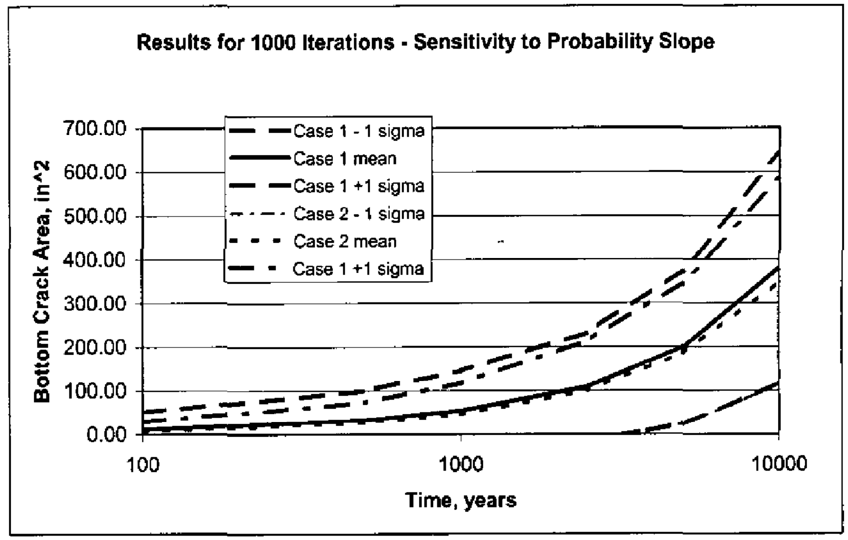
Case 2 - Decreased Slope for Extreme Events

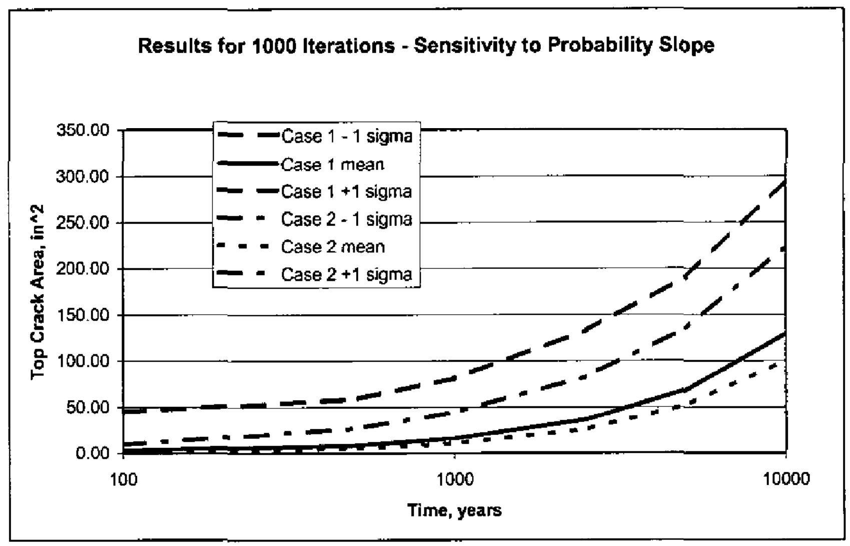
Bottom Cracks

Time	-1 sigma	Mean	+1 sigma
	Crack Area, in^2		
100	-13.02	7.69	28.39
500	-19.20	27.57	74.34
1000	-22.72	47.19	117.10
2500	-12.36	100.36	213.08
5000	22.80	184.80	346.80
10000	113.27	348.72	584.17

Top Cracks

Time	-1 sigma	Mean	+1 sigma
	Crack Area, in^2		
100	-7.21	0.99	9.19
500	-16.74	5.14	27.02
1000	-22.82	10.66	44.15
2500	-30.51	26.00	82.50
5000	-31.79	51.53	134.85
10000	-23.64	100.46	224.56





8.3.17 Results

A Monte Carlo analysis is performed in EXCEL. A copy of the EXCEL spreadsheets and Visual Basic program are found at the end of this section. The following pages show the analysis results and cumulative probability distributions for the analysis. The sharp rise at low probabilities is caused by the truncation of some of the parameters and by the lack of seismic events except at very low probabilities. The truncation effect is more pronounced for lower analysis times. Probability curves for 1000 and 10,000 years are shown.

The spreadsheet performs 6300 iterations until convergence is reached. The convergence criterion is that the mean, standard deviation and 95% values for the crack areas at the predefined times change by less than 1.5% for two successive periods of 100 iterations each. The next page shows the crack areas for bottom and top cracks plotted against time. The mean and standard deviation are provided.

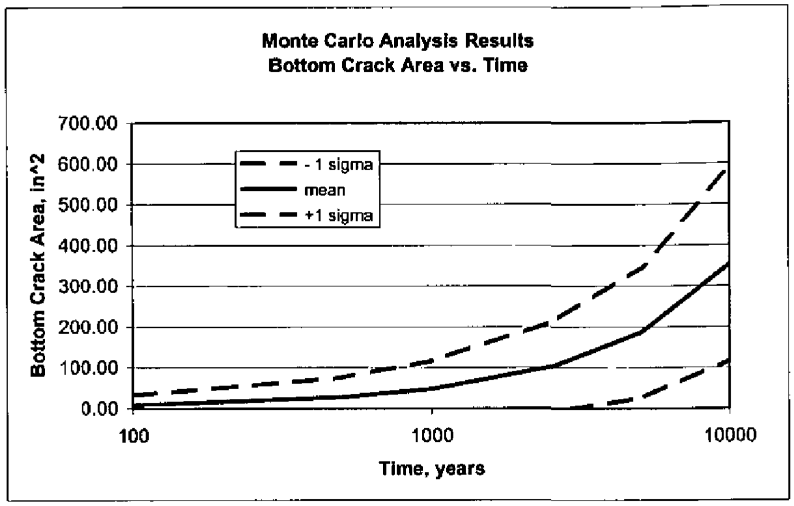
Monte Carlo Analysis - 6300 Iterations 1.5% Convergence (100 Iteration Interval)

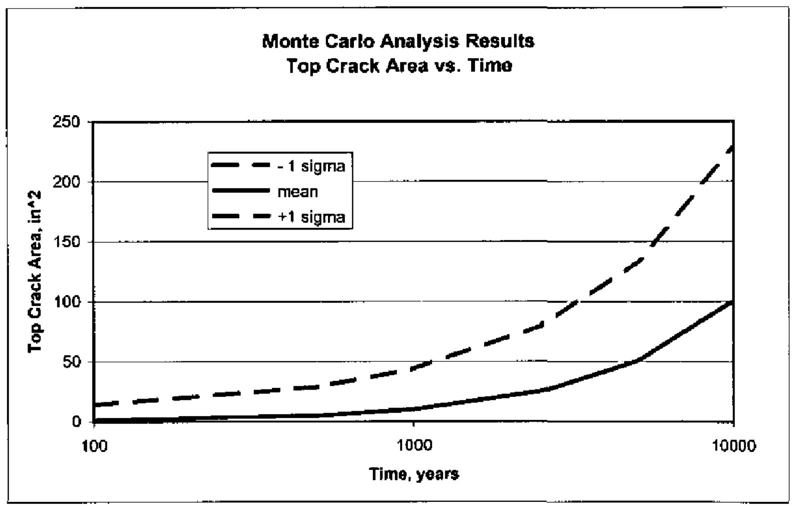
Bottom Cracks

	Crack Area, in^2			
Time	**-1 sigma**	**Mean**	**+1 sigma**	**95%**
100	-16.07	8.48	33.02	43.41
500	-20.81	27.39	75.60	120.00
1000	-21.14	47.87	116.88	193.94
2500	-8.98	101.50	211.98	323.95
5000	26.00	186.53	347.05	503.82
10000	117.80	353.26	588.72	803.26

Top Cracks

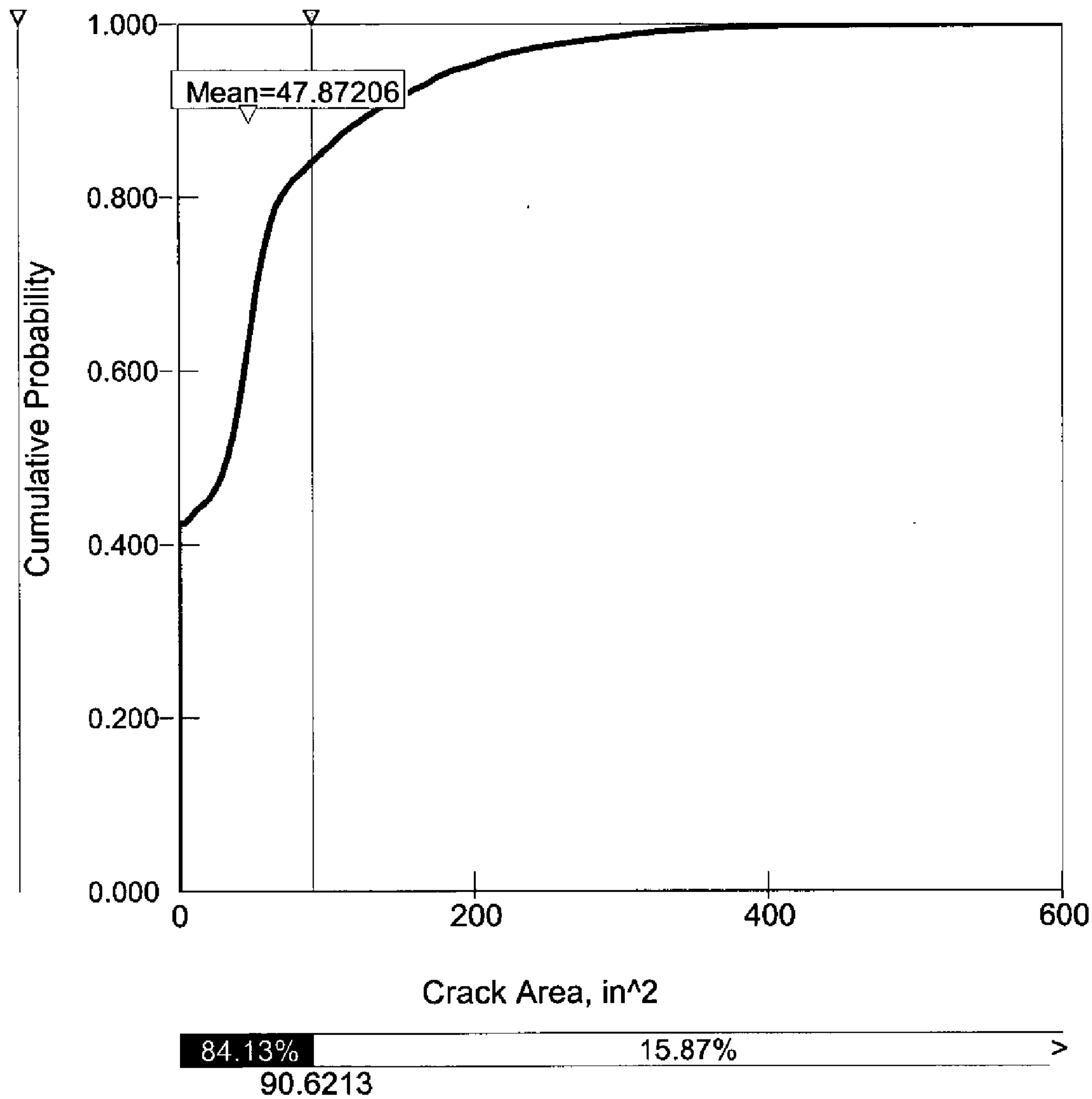
	Crack Area, in^2			
Time	**-1 sigma**	**Mean**	**+1 sigma**	**95%**
100	-11.7473	1.138347	14.02396	0
500	-19.3953	4.702576	28.80046	27.48173
1000	-23.8571	10.00278	43.86267	70.27372
2500	-29.5225	25.20769	79.93791	136.4661
5000	-32.4191	50.77802	133.9751	221.9252
10000	-26.6981	100.5485	227.7951	355.855



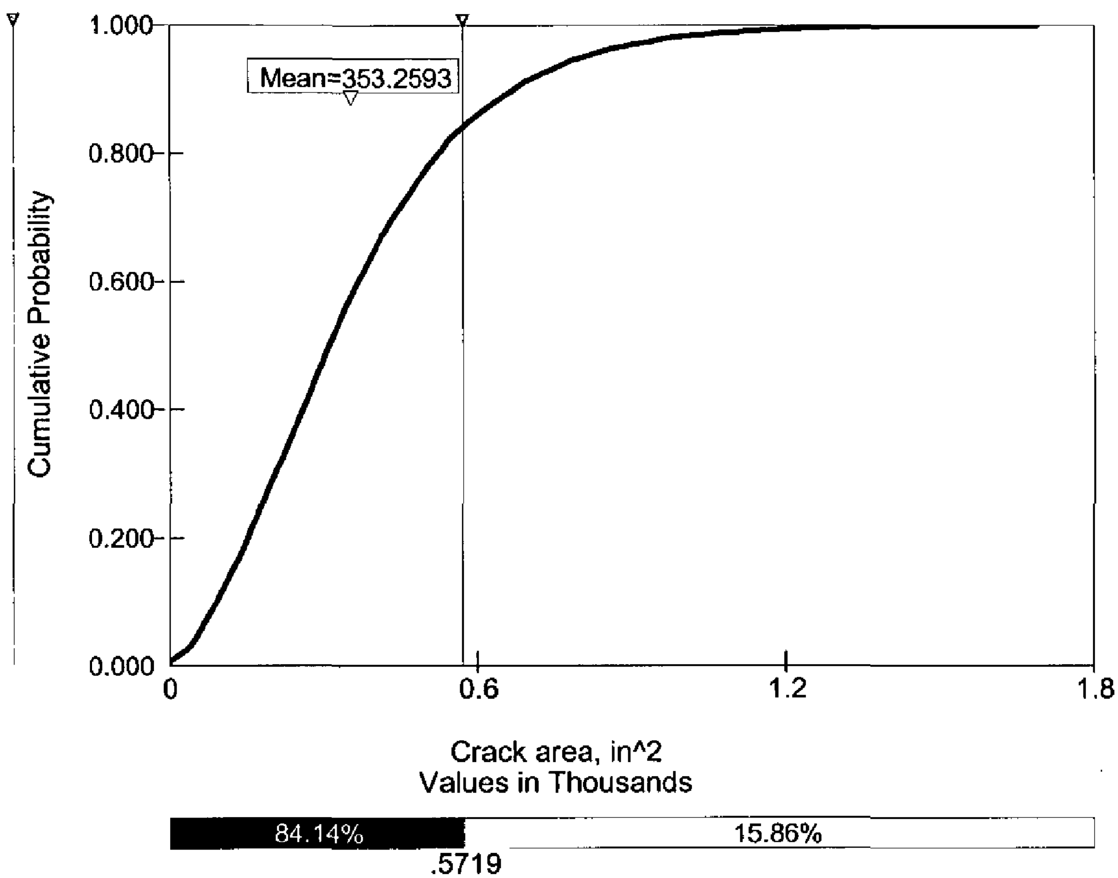


T-CLC-Z-00006, Rev. 0

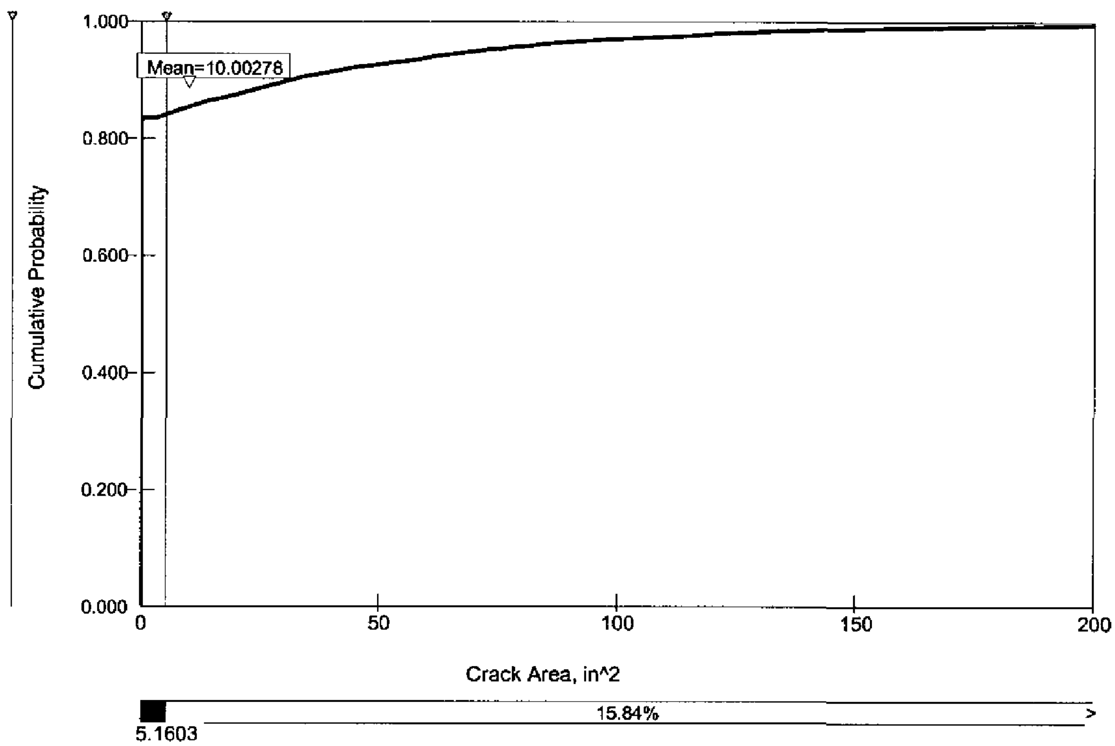
10000 year Cumulative Probability for Bottom Cracks

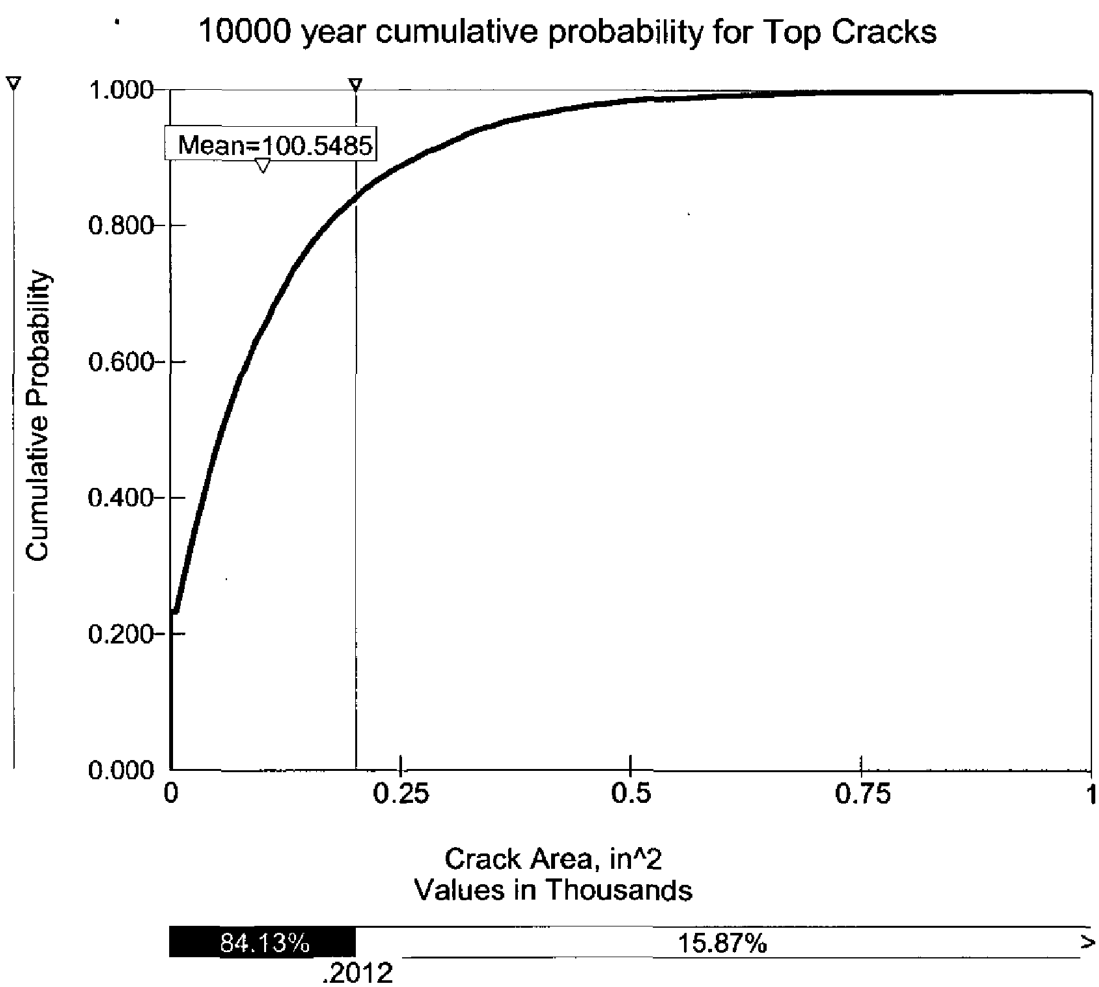


10000 year Cumulative Probability for Bottom Cracks



1000 year Cumulative Probability for Top Cracks




10000 year cumulative probability for Top Cracks
Mean=100.5485
1.000
0.800
0.600
0.400
0.200
0.000
Cumulative Probability
0
0.25
0.5
0.75
1
Crack Area, in^2
Values in Thousands
84.13%
15.87%
.2012

OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover			Calculation No. T-CLC-Z-00006	
	Subject: " "			Sheet No. 264	

Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WLP	7/9/03	GEM	7/10/03					

The following calculates the crack size based on crack area based on typical cracks observed in the FE Model

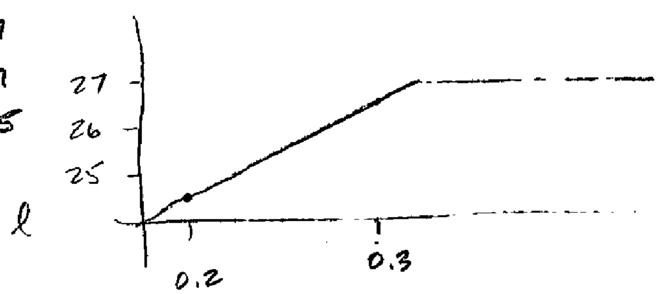
$$A = \frac{1}{2} w \times (h \times 12) = wh \times 6 \quad \text{(triangular crack assumed)}$$

TYPICAL CRACKS

w	h	Area
0.164	26	25.6
0.277	26	43.2
0.238	26	37.1
0.208	26	32.4
0.307	27	49.7
0.182	25	27.3
0.467	27	75.7
0.708	27	114.7
0.203	25	30.5

length & width are related

max length = 27' (small compression zone on top is necessary for equilibrium



$$l = 9.259 \times w + 23.758 \leq 27$$ where l = crack length, w = crack width

$$A = w(l)(6)$$

$$= w(9.259w + 23.758)6$$

$$= 55.554w^2 + 142.548w$$

$$0 = 55.554w^2 + 142.548w - A$$

$$w = \frac{-142.55 \pm \sqrt{20320 + 222.22A}}{111.11}$$

OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover	Calculation No.: T-CLC-Z-00006
	Subject: – –	Sheet No.: 265

Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WVP	7/9/03	GEM	7/10/03					

for $w < 0.349$

$$w = \frac{\sqrt{20320 + 222.22A}}{111.11} - 1.283$$

for $l = 27$, $w = 0.350$

for $w \geq 0.350$

$$w = \frac{A}{27 \times 6} = \frac{A}{162} = 0.349 \qquad A = 56.70$$

Results

for $A < 56.70$, $w = \frac{1}{111.11}(20920 + 222.22A)^{1/2} - 1.283$

for $A \geq 56.70$, $w = \frac{A}{162}$

Cracks open @ top

$l = 27$ ft.

$$w = \frac{A}{162}$$

@Risk Controls

Eg Dist.	0	Grout Modulus Distribution
Geps dist.	0	Grout Cracking Strain Distribution
Ksn dust.	0	Soil Bulk Modulus Distribution
Static Dist.	1.0607	Static Settlement Rate Distribution

Parameters		
Eg	2.09E+05 ksf	Grout Modulus
eps	1.23E-04	Grout Strain
sbm	31.512 kcf	Soil Bulk Modulus

Time Intervals
Time, years
100
500
1000
2500
5000
10000

Time Interval	10
Time Counter	10000
Static Settlement	-0.5776

Random Variable	0.159399434
Differential Settlement	0

Location	
Random #	0.376994771
Location	3

Extent	
Random #	0.673166243
Extent	77.69

Values Sent to Worksheets	
Static Sett.	-0.578
Diff. Sett.	0.000
Extent	77.69

Returned From Worksheets

	B/T	T/B
Static	53.15853267	NA
Location 1	0.00	0.00
Location 2	0.00	0.00
Location 3	0.00	0.00
Location 4	0.00	0.00
Location 5	0.00	0.00
Location 6	0.00	0.00
Location 7	0.00	0.00

Grout Modulus	
Grout Mod	*2.09E+05*
Ratio2	1.0187
Csmean	524.4
Cssig	196.8
Egmean	2.05E+05

Grout Cracking Strain	
Cr. Strain	**0.000122855**
Ratio3	1.0187
Cepsm	1.21E-04

Settlement Rate

Time, years	Mean Settlement ft.	Actual Settlement ft.
100	-0.3870	**-0.3870**
500	-0.4536	**-0.4536**
1000	-0.4823	**-0.4823**
2500	-0.5202	**-0.5202**
5000	-0.5489	**-0.5489**
10000	-0.5776	**-0.5776**

At	-0.095298
Bt	-0.196374
Ratio1	0.999993785
Aq	0.368413272
Bq	0.609217827

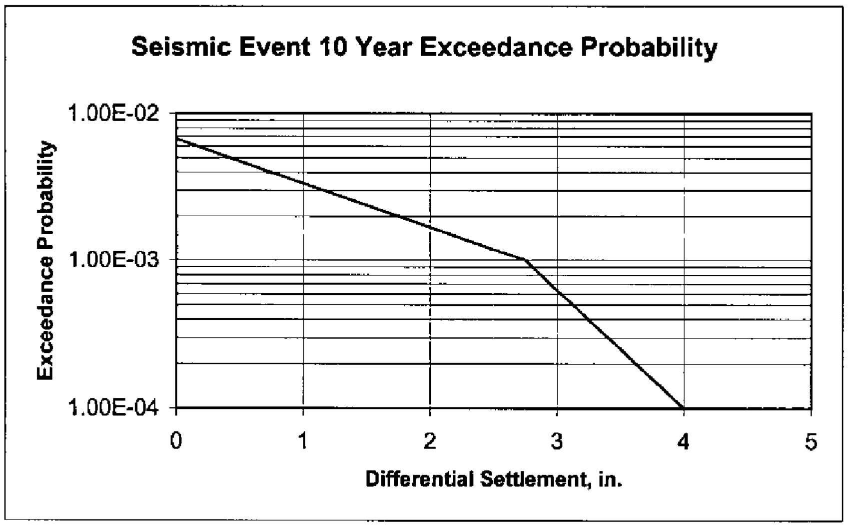
Crack Area

Time	*Static* Settlement	*Static* B/T	EQ B/T	EQ T/B	Total EQ B/T	Total B/T	Total T/B
100	-0.3870	33.18386668	0	0	0	33.18386668	0
500	-0.4536	*41.99867809*	*0*	0	0	41.99867809	0
1000	-0.4823	45.79501073	0	0.00	0	45.79501073	0
2500	-0.5202	50.8134895	283.6083938	120.90	283.6083938	334.4218833	120.8985509
5000	-0.5489	54.60982213	119.0195724	40.07	402.6279662	457.2377883	160.9714423
10000	-0.5776	58.40615477	11.57381676	0.00	414.201783	472.6079377	160.9714423

266

Soil Modulus	
Soil Mod	**31.512**
Ratio4	1.0504
Ksmsig	15
Ksmmean	30

		minEP	6.71E-03
0	6.71E-03	Ap1	-0.3006
0.75	0.003993	Bp1	-2.173213448
2.75	1.00E-03	Ap2	-0.8
4	0.0001	Bp2	-0.8



B/T Crack Areas

100	500	1000	2500	5000	10000
33.18386668	41.99867809	45.79501073	334.4218833	457.2377883	472.6079377

T/B Crack Aresa

100	500	1000	2500	5000	10000
0	0	0	120.8985509	160.9714423	160.9714423

Eg	Cr Strain	Soil Mod	Sett Rate
208629.76	0.000122855	31.512	0.999993785

@Risk Controls

Eg Dist.	=RiskNormal(0,1,RiskName("Eg Dist."),RiskCorrmat('Crack workbook.xls'!Risk35Matrix,1,))	Grout Modulus Distribution
Geps dist.	= RiskNormal(0, 1,RiskName("Geps dist."),RiskCorrmat('Crack workbook.xls'!Risk35Matrix, 2,))	Grout Cracking Strain Distribution
Ksn dust.	= RiskNormal(0, 1,RiskName("Ksn dist."))	Soil Bulk Modulus Distribution
Static Dist.	= RiskNormal(1.0607, 0.53,RiskName("Static Dist."))	Static Settlement Rate Distribution

Parameters			
Eg	=J10	ksf	Grout Modulus
eps	=M10		Grout Strain
sbm	=P10	kcf	Soil Bulk Modulus

Time Intervals
Time, years
100
500
1000
2500
5000
10000

Time Interval	10
Time Counter	10000
Static Settlement	=MIN(Ratio1*(At*LOG(B26)+Bt),0)

Random Variable	=RAND()
Differential Settlement	=IF(D29>minEP,0,IF(D29>Q19,(LOG($D$29)-Bp1_)/Ap1_,(LOG($D$29)-Bp2_)/Ap2_))

Location	
Random #	=RAND()
Location	=MIN(INT(7*B33)+1,7)

Extent	
Random #	=RAND()
Extent	=1.0235*MAX(NORMINV(B37,62.31),0)

Values Sent to Worksheets	
Static Sett.	=B27
Diff. Sett.	=D30
Extent	=B38

Returned From Worksheets

	B/T	T/B
Static	=Static!F3	NA
Location 1	='Location 1'!B12	='Location 1'!C12
Location 2	='Location 2'!B12	='Location 2'!C12
Location 3	='Location 3'!B12	='Location 3'!C12
Location 4	='Location 4'!B12	='Location 4'!C12
Location 5	='Location 5'!B12	='Location 5'!C12
Location 6	='Location 6'!B12	='Location 6'!C12
Location 7	0	0

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Grout Modulus	
Grout Mod	**=J14*Ratio2**
Ratio2	=1.0187*SQRT((MAX(Csmean+Cssig*B4,100))/Csmean)
Csmean	524.4
Cssig	196.8
Egmean	204800

Grout Cracking Strain	
Cr. Strain	**=Cepsm*Ratio3**
Ratio3	=1.0187*SQRT((MAX(Csmean+Cssig*B5,100))/Csmean)
Cepsm	0.0001206

Settlement Rate

Time, years	Mean Settlement ft.	Actual Settlement ft.
=A18	=At*LOG(A18)+Bt	**=J21*Ratio1**
=A19	=At*LOG(A19)+Bt	**=J22*Ratio1**
=A20	=At*LOG(A20)+Bt	**=J23*Ratio1**
=A21	=At*LOG(A21)+Bt	**=J24*Ratio1**
=A22	=At*LOG(A22)+Bt	**=J25*Ratio1**
=A23	=At*LOG(A23)+Bt	**=J26*Ratio1**

At	-0.095298
Bt	-0.196374
Ratio1	=MAX(Aq*B7+Bq,0.1)
Aq	0.368413272300143
Bq	0.609217826945147

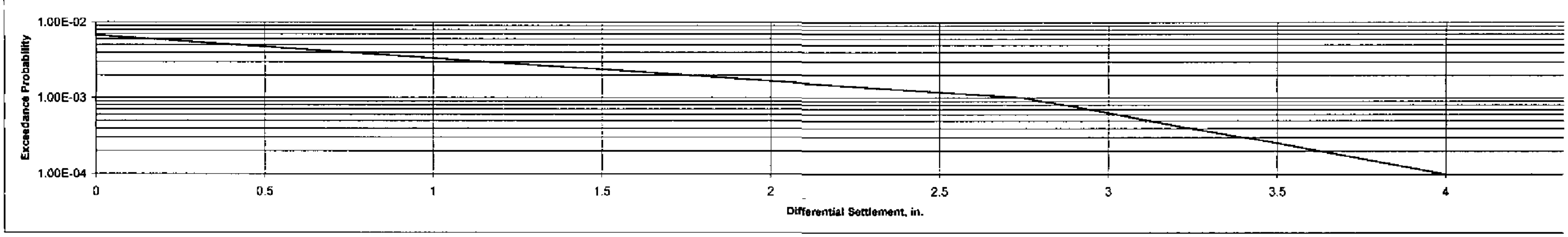
Crack Area

Time	Static Settlement	Static B/T	EQ B/T	EQ T/B	Total EQ B/T	Total B/T	Total T/B
=A18	=VLOOKUP(F49,$I$21:$K$26,3,FALSE)	33.1838666829987	0	0	=I49	=K49+H49	=J49
=A19	=VLOOKUP(F50,$I$21:$K$26,3,FALSE)	41.998678090079	0	0	=K49+I50	=K50+H50	=M49+J50
=A20	=VLOOKUP(F51,$I$21:$K$26,3,FALSE)	45.7950107269465	0	0	=K50+I51	=K51+H51	=M50+J51
=A21	=VLOOKUP(F52,$I$21:$K$26,3,FALSE)	50.8134894971594	283.608393767213	120.898550852065	=K51+I52	=K52+H52	=M51+J52
=A22	=VLOOKUP(F53,$I$21:$K$26,3,FALSE)	54.6098221340268	119.01957243813	40.0728914651702	=K52+I53	=K53+H53	=M52+J53
=A23	=VLOOKUP(F54,$I$21:$K$26,3,FALSE)	58.4061547708943	11.5738167 60892	0	=K53+I54	=K54+H54	=M53+J54

Soil Modulus	
Soil Mod	=MAX(P11*Ksmmean,5)
Ratio4	=1.0504*(Ksmmean+Ksmsig*B6)/Ksmmean
Ksmsig	15
Ksmmean	30

0	=10^(LOG(Q18)-(P18-P17)*(LOG(Q19)-LOG(Q18))/(P19-P18))	minEP	=Q17
0.75	0.003963	Ap1	-0.3008
2.75	0.001	Bp1	=LOG(Q17)
4	0.0001	Ap2	-0.8
		Bp2	-0.8

Seismic Event 10 Year Exceedance Probability



B/T Crack Areas

=F49	=F50	=F51	=F52	=F53	=F54
=RiskOutput("T/B / B/T Crack Areas","Range 1",1) + L49	=RiskOutput("T/B","Range 1",2) + L50	=RiskOutput("T/B","Range 1",3) + L51	=RiskOutput("T/B","Range 1",4) + L52	=RiskOutput("T/B / Bp2","Range 1",5) + L53	=RiskOutput("T/B","Range 1",6) + L54

T/B Crack Areas

=F49	=F50	=F51	=F52	=F53	=F54
=RiskOutput("Location 4 / T/B Crack Areas","Range 2",1) + M49	=RiskOutput("Location 4","Range 2",2) + M50	=RiskOutput("Location 4","Range 2",3) + M51	=RiskOutput("Location 4","Range 2",4) + M52	=RiskOutput("Location 4 / Bp2","Range 2",5) + M53	=RiskOutput("Location 4","Range 2",6) + M54

Eg	Cr Strain	Soil Mod	Sett Rate
=RiskOutput("Location 7 / Eg","Range 3",1) + Eg	=RiskOutput("Location 7 / Cr Strain","Range 3",2) + eps	=RiskOutput("Location 7 / Soil Mod","Range 3",3) + sbm	=RiskOutput("Location 7 / Sett Rate","Range 3",4) + Ratio1

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Input Data

del1	-0.5776	in
Eg	2.086E+05	ksf
eps	1.229E-04	
sbm	31.51	kcf

Out1	53.159	Crack Area

Grout Modulus Effect

Asc	6.07094E-05
Bsc	37.1306292
CAgm	49.796
del5000	-0.549
slope	-117.198
CAst	3.362

Crack Occurrence

Aco1	-1.05E-06
Bco1	-0.3087
Aco2	-1.89E-06
Bco2	-0.0103
Eg1	2.38E+05
Eg2	2.45E+05
delco	-0.536111548

Grout Strength Effect

Modifies time at which first crack occurs

Ags	-3698.5
Bgs	-0.08113
delm	-0.5271691
delgs	-0.535510031
ratio	1.015822117

Ai	6.74961E-05
Bi	-28.237
Intercept	-14.155
Ac	-129.730
Crack Area	60.772

Soil Bulk Modulus Effect

No effect since settlement rate and soil modulus are related

gsmean	0.0001206

ratio2	1

sbmmean	30

Input Data

del1	=Main!B42	in
Eg	=Main!Eg	ksf
eps	=Main!eps	
sbm	=Main!sbm	kcf

Grout Modulus Effect

Asc	0.0000607094052640978
Bsc	37.1306291961258
CAgm	=B10*Eg+B11
del5000	-0.548875032124479
slope	-117.1984
CAst	=slope*(del1-del5000)

Grout Strength Effect

Modifies time at which first crack occurs

Ags	-3698.5
Bgs	-0.08113
delm	=Ags*F31+Bgs
delgs	=Ags*eps+Bgs
ratio	=delgs/delm

Soil Bulk Modulus Effect

No effect since settlement rate and soil modulus are related

ratio2	1

Out1	=IF(delco<del1,0,CAgm+CAst)	Crack Area

Crack Occurrence

Aco1	-0.00000105
Bco1	-0.3087
Aco2	-0.00000189
Bco2	-0.0103
Eg1	238000
Eg2	245000
delco	=ratio*ratio2*(IF(OR(Eg<Eg1_,Eg>Eg2_),Aco1*Eg+Bco1,Aco2*Eg+Bco2))

Ai	0.0000674960720038472
Bi	-28.2368510515708
Intercept	=Eg*Ai+Bi
Ac	-129.73
Crack Area	=F25*del1+Intercept

gsmean	0.0001206
sbmmean	30

Input Data

del1	-0.57756241	ft.	Static Settlement				
gm	2.09E+05	ksf	Grout Modulus		Egmean	2.05E+05	
gs	1.23E-04		Grout Strain		Gsmean	1.21E-04	
sbm	31.512	kcf	Soil Bulk Modulus		Sbmmean	30	
sett	0	in	Settlement	1000	del1000	-0.4823	
extent	77.69	ft.	Extent		setmean	62	

	B/T	T/B
Crack Areas	0	0

B/T Cracks		**T/B Cracks**	
Magnitude			
CAr1	0		
Amag1	13.44		
Bmag1	-8.073		
Static Settlement			
CAst1	0		
Sst1	-41.225		
Extent of Settlement			
CAext1	0	**CAext2**	0
Sext	0.7568	Sext2	0.867
		Bext2	-57.73
Grout Modulus			
CAgm1	0		
Sgm	4.75E-05		
Grout Strength - No Appreciable Effect			
Soil Bulk Modulus			
CAsm1	0	**CAsm2**	0
Ssm1	0.1047		

T-CLC-Z-00006, Rev. 0

Input Data

del1	=Main!B42	ft.	Static Settlement	
gm	=Main!Eg	ksf	Grout Modulus	
gs	=Main!eps		Grout Strain	
sbm	=Main!sbm	kcf	Soil Bulk Modulus	
sett	=Main!B43	in	Settlement	1000
extent	=Main!B44	ft.	Extent	

Egmean	204800
Gsmean	0.0001206
Sbmmean	30
del1000	=At*LOG(F8)+Bt
setmean	62

	B/T	T/B
Crack Areas	=IF(extent>20,MAX(CAr1+CAst1+CAext1+CAgm1+CAsm1,0),0)	=IF(extent>20,MAX(CAext2+CAsm2,0),0)

B/T Cracks

Magnitude

CAr1	=IF(sett>0,Amag1*sett+Bmag1,0)
Amag1	13.44
Bmag1	-8.073

Static Settlement

CAst1	=IF(sett>0,Sst1*(del1-H8),0)
Sst1	-41.225

Extent of Settlement

CAext1	=IF(sett>0,Sext*(extent-setmean),0)
Sext	0.7568

Grout Modulus

CAgm1	=IF(sett>0,(gm-Egmean)*Sgm,0)
Sgm	0.00004748

Grout Strength - No Appreciable Effect

Soil Bulk Modulus

CAsm1	=IF(sett>0,(sbm-Sbmmean)*Ssm1,0)
Ssm1	0.1047

T/B Cracks

CAext2	=IF(sett>=2,MAX(Sext2*extent+Bext2,0),0)
Sext2	0.867
Bext2	-57.73
CAsm2	=IF(sett>2,MAX(1.3*(sbm-Sbmmean),0),0)

T-CLC-Z-00006, Rev. 0

Input Data

del1	-0.57756241	ft.	Static Settlement			
gm	2.09E+05	ksf	Grout Modulus		Egmean	2.05E+05
gs	1.23E-04		Grout Strain		Gsmean	1.21E-04
sbm	31.512	kcf	Soil Bulk Modulus		Sbmmean	30
sett	0	in	Settlement	1000	del1000	-0.4823
extent	77.69	ft.	Extent		setmean	62

	B/T	T/B
Crack Areas	0	0

B/T Cracks		**T/B Cracks**	
Magnitude			
CAr1	**0**	**CAr2**	**-235.61**
Amag1	31.65	Amag2	99.24
Bmag1	-24.51	Bmag2	-235.61
Extent of Settlement			
CAext1	**0**	**CAext2**	**0**
CAext11	0	CAext21	0
Sext	0.701	Sext2	0.464
Static Settlement			
No effect			
Grout Modulus			
CAgm1	**0**	**CAgm2**	**0**
Sgm11	-1.49E-04	Sgm2	-8.03E-05
Sgm12	5.17E-05		
Grout Strength - No Appreciable Effect			
Soil Bulk Modulus			
CAsm1	**0**	**CAsm2**	**0**
Ssm1	4.112	Ssm2	6.372

Input Data

del1	=Main!B42	ft.	Static Settlement			Egmean	204800
gm	=Main!Eg	ksf	Grout Modulus			Gsmean	0.0001206
gs	=Main!eps		Grout Strain			Sbmmean	30
sbm	=Main!sbm	kcf	Soil Bulk Modulus			del1000	=A*LOG(F8)+B
sett	=Main!B43	in	Settlement		1000	setmean	62
extent	=Main!B44	ft.	Extent				

	B/T	T/B
Crack Areas	=IF(extent>20,MAX(CAr1+CAext1+CAgm1+CAsm1,0),0)	=IF(extent>20,MA

B/T Cracks

Magnitude

CAr1	=IF(sett>0.75,Amag1*sett+Bmag1,0)	CAr2	=Amag2*sett+Bmag2
Amag1	31.646	Amag2	99.24
Bmag1	-24.51	Bmag2	-235.61

T/B Cracks

Extent of Settlement

CAext1	=IF(sett>1.5,IF(extent<=30,0,CAext11),0)	CAext2	=IF(CAr2>0,IF(extent-
CAext11	=IF(CAr1>0,(extent-setmean)*Sext,0)	CAext21	=IF(CAr1>0,(extent-se
Sext	0.701	Sext2	0.464

Static Settlement

No effect

Grout Modulus

CAgm1	=IF(sett>1.5,IF(gm>204800,Sgm12*(gm-Egmean),Sgm11*(gm-Egmean)),0)	CAgm2	=IF(CAr2>0,Sgm2*(gr
Sgm11	-0.000149	Sgm2	-0.00008025191610714
Sgm12	0.00005172		

Grout Strength - No Appreciable Effect

Soil Bulk Modulus

CAsm1	=IF(sett>1.5,(sbm-Sbmmean)*Ssm1,0)	CAsm2	=IF(sett>=2.75,(sbm-S
Ssm1	4.112	Ssm2	6.372

Input Data

del1	-0.57756241	ft.	Static Settlement
gm	2.09E+05	ksf	Grout Modulus
gs	1.23E-04		Grout Strain
sbm	31.512	kcf	Soil Bulk Modulus
sett	0	in	Settlement
extent	77.69	ft.	Extent

Egmean		2.05E+05
Gsmean		1.21E-04
Sbmmean		30
1000	del1000	-0.4823
setmean		62

	B/T	T/B
Crack Areas	0	0

B/T Cracks		**T/B Cracks**	
Magnitude			
CAr1	**0**	**CAr2**	**0**
Amag1	41.51	Amag2	38.61
Bmag1	-9.28	Bmag2	-53.97
Static Effect			
CAst1	**0**		
Sst1	-59.41		
Extent of Settlement			
CAext1	**0**	**CAext2**	**0**
Sext	0.388	Sext2	0.9058
Sbext	0.011		
Grout Modulus			
No significant effect			
Grout Strength			
No significant effect			
Soil Bulk Modulus			
CAsm1	**0**	**CAsm2**	**0**
Ssm1	1.1205	Ssm2	0.9882

T-GLL-B-00006, Rev.0

Input Data

del1	=Main!B42	ft.	Static Settlement	
gm	=Main!Eg	ksf	Grout Modulus	
gs	=Main!eps		Grout Strain	
sbm	=Main!sbm	kcf	Soil Bulk Modulus	
sett	=Main!B43	in	Settlement	1000
extent	=Main!B44	ft.	Extent	

Egmean	204800	
Gsmean	0.0001206	
Sbmmean	30	
del1000	=At*LOG(F8)+Bt	
setmean	62	

	B/T	T/B
Crack Areas	=IF(extent>20,MAX(CAr1+CAst1+CAext1+CAsm1,0),0)	=IF(extent>20,MAX(CAr2+CAext2+CAsm2,0),0)

B/T Cracks

Magnitude

CAr1	=IF(sett>0,Amag1*sett+Bmag1,0)
Amag1	41.51
Bmag1	-9.28

Static Effect

CAst1	=IF(sett>0,B26*(del1-del1000),0)
Sst1	-59.41

Extent of Settlement

CAext1	=IF(sett>0,IF(extent>20,(extent-setmean)*(Sext*sett+Sbext),0),0)
Sext	0.388
Sbext	*0.011*

Grout Modulus

No significant effect

Grout Strength

No significant effect

Soil Bulk Modulus

CAsm1	=IF(sett>0,(sbm-Sbmmean)*Ssm1,0)
Ssm1	1.1205

T/B Cracks

CAr2	=IF(sett>0,Amag2*sett+Bmag2,0)
Amag2	38.61
Bmag2	-53.97

CAext2	=IF(sett>0,IF(extent>30,(extent-setmean)*Sext2,0),0)
Sext2	0.9058

CAsm2	=IF(sett>0,(sbm-Sbmmean)*Ssm2,0)
Ssm2	0.9882

Input Data

del1	-0.57756241	ft.	Static Settlement			
gm	2.09E+05	ksf	Grout Modulus		Egmean	2.05E+05
gs	1.23E-04		Grout Strain		Gsmean	1.21E-04
sbm	31.512	kcf	Soil Bulk Modulus		Sbmmean	30
sett	0	in	Settlement	1000	del1000	-0.4823
extent	77.69	ft.	Extent		setmean	62

	B/T	T/B
Crack Areas	0	0

B/T Cracks		**T/B Cracks**	
Magnitude			
CAr1	0.00	**CAr2**	0.00
Amag1	52.42	Amag2	39.17
Bmag1	8.98	Bmag2	-47.23
Static Settlement			
CAsta1	0	**CAsta2**	0
Asta1	-88.04	Asta2	-25.637
Extent of Settlement			
CAext1	0	**CAext2**	0
Aext	0.375		
Bextr	-0.1076	Sext2	0.566
Sext	-0.1076		
Grout Modulus			
CAgm1	0	**CAgm2**	0
		Agm	-5.68E-05
Grout Strength - no significant effect			
Soil Bulk Modulus			
CAsm1	0	**CAsm2**	0
Asm	1.498	Asm2	3.9822
Bsm	-0.961		
Ssm	-0.961		

T-LLC-2-00006, Rev. 0

Input Data

del1	=Main!B42	ft.	Static Settlement	
gm	=Main!Eg	ksf	Grout Modulus	
gs	=Main!eps		Grout Strain	
sbm	=Main!sbm	kcf	Soil Bulk Modulus	
sett	=Main!B43	in	Settlement	1000
extent	=Main!B44	ft.	Extent	

Egmean	204800
Gsmean	0.0001206
Sbmmean	30
del1000	=At*LOG(F8)+Bt
setmean	62

	B/T	T/B
Crack Areas	=IF(extent>20,MAX(CAr1+CAsta1+CAext1+CAgm1+CAsm1,0),0)	=IF(extent>20,MAX(CAr2+CAsta2+CAext2+CAgm2+CAsm2,0),0)

B/T Cracks

Magnitude

CAr1 =IF(sett>0,Amag1*sett+Bmag1,0)

Amag1 52.42
Bmag1 8.98

Static Settlement

CAsta1 =IF(sett>0,(del1-del1000)*Asta1,0)

Asta1 -88.04

Extent of Settlement

CAext1 =IF(sett>0,Sext*(extent-setmean),0)
Aext 0.375
Bextr -0.1076
Sext =Aext*sett+Bextr

Grout Modulus

CAgm1 0

Grout Strength - no significant effect

Soil Bulk Modulus

CAsm1 =IF(sett>0,(sbm-Sbmmean)*Csm,0)
Asm 1.498
Bsm -0.961
Ssm =Asm*sett+Bsm

T/B Cracks

CAr2 =IF(sett>0,Amag2*sett+Bmag2,0)

Amag2 39.17
Bmag2 -47.23

CAsta2 =IF(sett>0,(del1-del1000)*Asta2,0)

Asta2 -25.637

CAext2 =IF(sett>0,Sext2*(extent-setmean),0)

Sext2 0.566

CAgm2 =IF(sett>0,(gm-Egmean)*Agm,0)

Agm -0.00005683

CAsm2 =IF(sett>0,(sbm-Sbmmean)*Asm2,0)
Asm2 3.9822

T-CLC-Z-00006, Rev 0

Input Data

del1	-0.57756241 ft.	Static Settlement				
gm	2.09E+05 ksf	Grout Modulus		Egmean	2.05E+05
gs	1.23E-04	Grout Strain		Gsmean	1.21E-04
sbm	31.512 kcf	Soil Bulk Modulus		Sbmmean	30
sett	0 in	Settlement	1000	del1000	-0.4823
extent	77.69 ft.	Extent		setmean	62

	B/T	T/B
Crack Areas	0	0

B/T Cracks		**T/B Cracks**	
Magnitude			
CAr1	0	**CAr2**	0
Amag1	48.34	Amag2	15.52
Bmag1	34.2	Bmag2	-23.2
Static Effect			
CAsat1	0	**CAsta2**	0
Ssta1	-122.257	Ssta2	19.8
Extent of Settlement			
CAext1	0	**CAext2**	0
Sext	0.484	Sext2	0.705
Sbext	-0.112		

Grout Modulus

No significant effect

Grout Strength

No significant effect

Soil Bulk Modulus

CAsm1	0	**CAsm2**	0
Ssm1	0.364	Ssm2	0.848
Sbsm1	0.543		

Input Data

del1	=Main!B42	ft.	Static Settlement	
gm	=Main!Eg	ksf	Grout Modulus	
gs	=Main!eps		Grout Strain	
sbm	=Main!sbm	kcf	Soil Bulk Modulus	
sett	=Main!B43	in	Settlement	1000
extent	=Main!B44	ft.	Extent	

Egmean	204800
Gsmean	0.0001206
Sbmmean	30
del1000	=At*LOG(F8)+Bt
setmean	62

	B/T	T/B
Crack Areas	=IF(extent>20,MAX(CAr1+CAsat1+CAext1+CAsm1,0),0)	=IF(extent>20,MAX(CAr2+CAext2+CAsm2,0),0)

B/T Cracks

Magnitude

CAr1	=IF(sett>0,Amag1*sett+Bmag1,0)
Amag1	48.34
Bmag1	34.2

Static Effect

CAsat1	=IF(sett>0,Ssta1*(del1-del1000),0)
Ssta1	-122.257

Extent of Settlement

CAext1	=IF(sett>0,(extent-setmean)*(Sext*sett+Sbext),0)
Sext	0.484
Sbext	-0.112

Grout Modulus

No significant effect

Grout Strength

No significant effect

Soil Bulk Modulus

CAsm1	=IF(sett>0,(sbm-Sbmmean)*(Ssm1*sett+Sbsm1),0)
Ssm1	0.364
Sbsm1	0.543

T/B Cracks

CAr2	=IF(sett>0,Amag2*sett+Bmag2,0)
Amag2	15.52
Bmag2	-23.2

CAsta2	=IF(sett>0,Ssta2*(del1-del1000),0)
Ssta2	19.8

CAext2	=IF(sett>0,IF(extent>20,(extent-setmean)*Sext2,0),0)
Sext2	0.705

CAsm2	=IF(sett>0,(sbm-Sbmmean)*Ssm2,0)
Ssm2	0.848

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Input Data

del1	-0.57756241	ft.	Static Settlement				
gm	2.09E+05	ksf	Grout Modulus			Egmean	2.05E+05
gs	1.23E-04		Grout Strain			Gsmean	1.21E-04
sbm	31.512	kcf	Soil Bulk Modulus			Sbmmean	30
sett	0	in	Settlement		1000	del1000	-0.4823
extent	77.69	ft.	Extent			setmean	62

	B/T	T/B
Crack Areas	0	0

B/T Cracks		**T/B Cracks**	
Magnitude			
CAr1	0	**CAr2**	0
Amag1	76.14	Amag2	68.04
Bmag1	-35.84	Bmag2	-143.37
Static Effect			
CAsat1	0	**CAsta2**	0
Ssta1	-89.7	Ssta2	79.22
Extent of Settlement			
CAext1	0	**CAext2**	0
Sext	0.6184	Sext2	0.496
Grout Modulus			
		CAgm2	0
		Sgm2	-1.11E-04
Grout Strength			
No significant effect			
Soil Bulk Modulus			
CAsm1	0	**CAsm2**	0
Ssm1	2.416	Ssm2	3.24
Sbsm1	-1.5		

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Input Data

del1	=Main!B42	ft	Static Settlement	
gm	=Main!Eg	ksf	Grout Modulus	
gs	=Main!eps		Grout Strain	
sbm	=Main!sbm	kcf	Soil Bulk Modulus	
sett	=Main!B43	in	Settlement	1000
extent	=Main!B44	ft	Extent	

Egmean	204800
Gsmean	0.0001206
Sbmmean	30
del1000	=Al*LOG(F8)+Bl
setmean	62

	B/T	T/B
Crack Areas	=IF(extent>20,IF(sbm>25,MAX(CAr1+CAext1+CAsat1+CAsm1,0),IF(del1<-0.483,MAX(CAr1+CAext1+CAsat1+CAsm1,0),0)),0)	=IF(extent>20,IF(sbm>25,MAX(CAr2+CAext2+CAgm2+CAsm2,0),0),0)

B/T Cracks

Magnitude

CAr1	=IF(sett>1.5,MAX(Amag1*sett+Bmag1,0),0)
Amag1	76.14
Bmag1	-35.84

Static Effect

CAsat1	=IF(sett>1.5,Ssta1*(del1-del1000),0)
Ssta1	-89.7

Extent of Settlement

CAext1	=IF(sett>1.5,IF(extent>30,(extent-setmean)*(Sext),0),0)
Sext	0.6164

Grout Modulus

Grout Strength

No significant effect

Soil Bulk Modulus

CAsm1	=IF(sett>1.5,(sbm-Sbmmean)*(Ssm1*sett+Sbsm1),0)
Ssm1	2.416
Sbsm1	-1.5

T/B Cracks

CAr2	=IF(sett>2,MAX(Amag2*sett+Bmag2,0),0)
Amag2	68.04
Bmag2	-143.37

CAsta2	=IF(sett>2,Ssta2*(del1-del1000),0)
Ssta2	79.22

CAext2	=IF(sett>2,IF(extent>30,(extent-setmean)*Sext2,0),0)
Sext2	0.496

CAgm2	=IF(sett>2,(gm-Egmean)*Sgm2,0)
Sgm2	-0.0001108

CAsm2	=IF(sett>2,(sbm-Sbmmean)*Ssm2,0)
Ssm2	3.24

T-CLC-Z-00006, Rev. 0

```
Sub Timestep()
'
' Timestep Macro
' Macro written 6/9/2003 by SRS
'
'
    'Set parameters for Risk Iteration

    Application.Calculation = xlCalculationManual
    ' Initialize cells for time stepping
    Cells(26, 2) = 0.001
    timerow = 49
    CABT = 0
    CATB = 0

                'cellcnt = 61
    'Initialize Crack Area cells

    For i = 49 To 54
    For j = 8 To 10
    Cells(i, j) = 0
    Next j
    Next i

    nstep = 10000 / Cells(25, 2)

    For ii = 1 To nstep
        If (ii = 1) Then tcount = Cells(25, 2)
        Cells(26, 2) = tcount
        Cells(27, 2).Calculate

        Cells(29, 4).Calculate
        Cells(30, 4).Calculate
        dsett = Cells(30, 4)
        If (dsett > 0) Then
            Range("B33:B44").Calculate
                'Rndm = Cells(29, 4)
            locate = Cells(34, 2)
                'Eg = Cells(10, 10)
                'Stra = Cells(10, 13)
                'Ks = Cells(10, 16)
                'Extent = Cells(38, 2)
            r1 = 49 + locate - 1

            Worksheets("Static").Calculate
            Worksheets("Location 1").Calculate
            Worksheets("Location 2").Calculate
            Worksheets("Location 3").Calculate
            Worksheets("Location 4").Calculate
            Worksheets("Location 5").Calculate
            Worksheets("Location 6").Calculate

            Range("B48:C55").Calculate

            CABT = Cells(r1, 2)
            CATB = Cells(r1, 3)

                'Cells(cellcnt, 1) = tcount
                'Cells(cellcnt, 2) = Rndm
                'Cells(cellcnt, 3) = Eg
                'Cells(cellcnt, 4) = Stra
                'Cells(cellcnt, 5) = Ks
                'Cells(cellcnt, 6) = dsett
                'Cells(cellcnt, 7) = locate
                'Cells(cellcnt, 8) = Extent
                'Cells(cellcnt, 9) = CABT
                'Cells(cellcnt, 10) = CATB
                'cellcnt = cellcnt + 1
```

T-CLC-Z-00006, Rev.0


```
    End If
    Cells(timerow, 9) = Cells(timerow, 9) + CABT
    Cells(timerow, 10) = Cells(timerow, 10) + CATB

    CABT = 0
    CATB = 0

    If (tcount >= Cells(timerow, 6)) Then
        Cells(42, 2).Calculate
        Worksheets("Static").Calculate
        Cells(48, 2).Calculate
        CAstat = Cells(48, 2)
        Cells(timerow, 8) = CAstat
        timerow = timerow + 1
    End If
    tcount = tcount + Cells(25, 2)
    Next ii
    Worksheets("Main").Calculate
End Sub
```

APPENDIX A

Saltstone Properties

analyses of the extracts will be performed by a SCDHEC certified laboratory, GEL, Inc. Charleston, SC.

Table 2-1. Ingredients and proportions of the Tank 23-Tank 50 Saltstone Samples.

Ingredient (Grams in sample/*Wt. % total mix*)	Mix 64	Mix 65	Mix 66	Mix 67	Mix 68	Mix 69	Mix 70
Cement	40 *6.25%*	40 *6.1%*	40 *5.8%*	40 *5.7%*	80 *6.0%*	80 *6.1%*	80 *6.1%*
Slag	180 *28.13%*	180 *27.6%*	180 *26.3%*	180 *25.6%*	360 *26.9%*	360 *27.5%*	360 *27.5%*
Fly Ash	180 *28.13%*	180 *27.6%*	180 *26.3%*	180 *25.6%*	360 *26.9%*	360 *27.5%*	360 *27.5%*
Salt Solution Hold Tank	--	--	--	--	--	--	110 *8.4%*
Tank 23 Solution	240 *37.5%*	252.6 *38.6%*	252.6 *36.9%*	302 *43%*	505.2 *37.8%*	505.2 *38.6%*	397 *30.4%*
Tank 50 Solids	--	--	29.8 *4.4%*	--	29.8 *2.2%*	3.75 *0.29%*	--
Daratard 17	--	1.4 *0.21%*	1.5 *0.22%*	0.7 *0.1%*	1.5 *0.11%*	1.5 *0.11%*	--
Tank 50 Solids in Tank 50 - Tank 23 Mixture (vol.%)	--	--	8	--	4	0.5	--
PreMix (wt%) Cement-slag-fly ash = 10, 45, 45 wt %	62.5	61.3	58.4	56.9	59.8	61.1	61.1
Water to premix ratio	0.570	0.599	0.599	0.717	0.599	0.599	0.601

3.0 RESULTS

Slurry processing results and compressive strength results for samples cured for 28 days are summarized in Table 3.1. Mix 64 was prepared without Daratard 17 set retarder. This sample gelled too quickly and was therefore unacceptable for processing in Z-Area. Daratard was added to Mix 65 to delay gelling. This was accomplished but the amount of set retarder in this mix was too high as indicated by the amount of standing water remaining after 3 day. The amount of Daratard set retarder was reduced in the subsequent mixes and acceptable processing properties (gel time, set time and standing water) were achieved.

Acceptable gel times are in the range of 30 to 120 minutes. Setting should occur within the first three days after mixing and acceptable formulations have zero standing water after three

days curing in a closed container. The compressive strength after curing for 28 days must be at least 200 psi.

Table 3-1. Summary of Processing Properties.

Property	Mix 64	Mix 65	Mix 66	Mix 67	Mix 68	Mix 69	Mix 70
Gel Time (minutes)	<5				>120	120	80
Set Time (days)	1	1	1-2	1-2	<1	<1	<1
Standing Water	0 @1 day	0 @ 3 days	1.5 vol. % @ 3 days	0 @ 3 days	0 @ 3 days	0 @ 3 days	0 @ 3 days
Compressive Strength after 28 days curing (psi)	--	--	488	388	471	642	633

4.0 CONCLUSIONS

Saltstone laboratory samples made with Tank 23 low-level waste solution containing up to 8 volume percent Tank 50 solids met the Z-Area processing and compressive strength requirements. The acceptable formulations were prepared with a premix blend of 10 wt. % cement, 45 wt. % slag, and 45 wt. % fly ash. The premix was mixed with the Tank 23, tank 23 – Tank 50 waste at a water to premix ratio of about 0.60. Due to the low salt content of the Tank 23 waste, Daratard 17, a set retarder is required to extend the gel time. A target formulation is provided in Table 4-1.

Table 4-1. Acceptable Tank 23 Solution-Tank 50 Solids Saltstone Formulation.

Ingredient (*Wt. % total mix*)		**Target Mix Tank 23 – Tank 50 Solids (wt.%)**
Premix Cement, Slag, Fly Ash 10, 45,45 wt.%	Cement	*5.8%*
	Slag	*26.3%*
	Fly Ash	*26.3%*
Tank 23 Solution		*36.9%*
Tank 50 Solids		*4.4%*
Daratard 17		*0.1%*
Tank 50 Solids in Tank 50 - Tank 23 Mixture (vol.%)		8 (0 to 8)
PreMix (wt%) Cement-slag-fly ash = 10, 45, 45 wt %		58.4
Water to premix ratio		0.60

(After Farmer, 1968.)

Classification	Rock	Description	Major Mineral Constituents
Massive	Hornfels	Microfine grained	Quartz
	Quartzite	Fine grained	Quartz
	Marble	Fine to coarse grained	Calcite or dolomite
Foliated	Slate	Microfine grained, laminated	Clay minerals, mica
	Phyllite	Soft, laminated	Mica, clay minerals
	Schist	Altered, hypabyssal rocks, coarse grained	Feldspars, quartz, mica
	Gneiss	Altered granite	Hornblende

TABLE 2.6 HARDNESS OF MINERALS.

Mohs' Scale	Standard Mineral	Chemical Composition	Field Test can be scratched with—
1	Talc	$Mg_3Si_4O_{10}(OH)_2$	Finger nails—easily
2	Gypsum	$CaSO_4 \cdot 2H_2O$	—with difficulty
3	Calcite	$CaCO_3$	Knife—easily
4	Fluorite	CaF_2	—with moderate pressure
5	Apatite	$Ca_5(PO_4)_3(OH, F, Cl)$	—with difficulty
6	Orthoclase	$KAlSi_3O_8$	—no longer
7	Quartz	SiO_2	Gives sparks with steel
8	Topaz	$Al_2SiO_4(OH, F)_2$	—
9	Corundum	Al_2O_3	—
10	Diamond	C	—

face layers have smaller crystals than the deeper ones. The higher the silica content of a magma the greater the rate of crystal growth under the same environmental conditions. The size of the individual crystals in rocks, as in metals, determines many important physical properties with an optimum effect usually at some intermediate size.

rocks is contributed by oxygen, silicon, and aluminum; five further elements (iron, calcium, sodium, potassium, and magnesium) make up about 16 percent. These elements form minerals of which more than 90 percent belong to a few groups as shown in Table 2.4. Table 2.5 gives a classification of metamorphic rock according to Farmer (1968). Table 2.6 presents the Mohs Hardness Scale for minerals together with simple field tests.

1. Properties of Rocks

The mechanical properties of rocks vary significantly within the same rock type and even within the same formation. Hence, tabulated data may serve only as general indicators of the expected range of properties. The actual properties of rock in situ must be determined by appropriate tests for any major projects. For purposes of general orientation, elasticity and strength properties are given in Table 2.7 for various rock types.

Other important properties of rocks and natural rock bodies are:

1. Permeability to water and effect of water on elastic and strength properties;
2. Creep of rocks under high stresses, and underlying rheologic properties;
3. Dynamic properties including acceptance, transmission and dispersion of seismic energy;
4. Thermal and electric capacities and transmission properties;
5. Response upon exposure to environmental conditions that differ physically and chemically from those of the original rock environment.

2. Properties and Engineering Classification of Shales

Shales predominate among the sedimentary rocks in the earth's crust; their properties vary from those of "solid" rock that must be blasted for excavation to those of soil-like materials that fall within the engineering definition of

TABLE 2.7 MECHANICAL PROPERTIES OF VARIOUS ROCKS.

Rock	Young's Modulus at Zero Load, 10^5 kg/cm²	Bulk Density, g/cm³	Porosity, Percent	Compressive Strength, kg/cm²	Tensile Strength, kg/cm²
Granite	2–6	2.6–2.7	0.5–1.5	1000–2500	70–250
Microgranite	3–8				
Syenite	6–8				
Diorite	7–10				
Dolerite	8–11	3.0–3.05	0.1–0.5	1800–3000	150–300
Gabbro	7–11	3.0–3.1	0.1–0.2	2000–3500	150–350
Basalt	6–10	2.8–2.9	0.1–1.0	1000–3000	150–300
Sandstone	0.5–8	2.0–2.6	5–25	1500–3000	100–300
Shale	1–3.5	2.0–2.4	10–30	200–1700	40–250
Mudstone	2–5			100–1000	20–100
Limestone	1–8	2.2–2.6	5–20	300–3500	50–250
Dolomite	4–8.4	2.5–2.6	1–5	800–2500	150–250
Coal	1–2			50–500	20–50
Quartzite		2.65	0.1–0.5	1500–3000	100–300
Gneiss		2.9–3.0	0.5–1.5	500–2000	50–200
Marble		2.6–2.7	0.5–2	1000–2500	70–200
Slate		2.6–2.7	0.1–0.5	1000–2000	70–200

Note: (1) For the igneous rocks listed above Poisson's ratio is approximately 0.25. (2) For a certain rock type, the strength normally increases with increase in density and increase in Young's modulus. (After Farmer, 1968.)

$f'_c = 500$ psi
$= 35$ kg/cm²
$\Downarrow$
$E = 1.E5$ kg/cm²
2.048E5 k/ft²

Winterkorn, Foundation Engineering Handbook, 1975

APPENDIX B

Soil Layer Properties
DWPF Settlement Data

OSR19-189(6-11-91)

Calculation Sheet

SRS Savannah River Site	Project: See Cover						Calculation No. T-CLC-Z-00006		
	Subject: " "						Sheet No. 292		
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WRP	7/9/03	GEM	7/10/3					

WSRC-TR-2002-00236

285 ft.

270 — Excavated

Upland 1 — $V_s = 1200$ fps, $\nu = 0.3$ — $\gamma = 0.0131h + 120$ (pcf)

250 — 245 — water table

Tobacco Road 2 — $V_s = 1100$

$\nu = -\left(\frac{0.07}{550}\right)h + 0.49$ above 550' depth

223 — Clay 3 — $V_s = 850$

213 — Dry Branch

$\nu = -\left(\frac{0.02}{550}\right)h + 0.44$ below 550' depth

h in ft.

Sands 3 — $V_s = 950$ (600 - 2000)

(K-CLC-G-00060)

188

180 — $V_s = 1200$

Santee/Tinker 4 — $V_s = 1600$

140 — Congaree aquifer — WSRC-RP-92-1360

130 — Warley Hill 5 — 20

-100 ft. — $V_s = 2000$ fps — -100

10"

-300 — 7

8

± ..

-500 ft. — $V_s = 2700$ fps

$$v_s = \sqrt{\frac{G}{\rho}}$$

$$v_p = \sqrt{\frac{\lambda + 2G}{\rho}}$$

where $\lambda = \frac{2\nu G}{1 - 2\nu}$

9

$V_s = 2700$ fps

-700 ft. — Bedrock — $V_s = 11000$ fps

K-CLC-H-00134 for deeper V_s (Figure 8)

SOIL PROFILE
Z AREA

OSR 19-189 (6-11-91)

Calculation Sheet

SRS

Project: See Cover

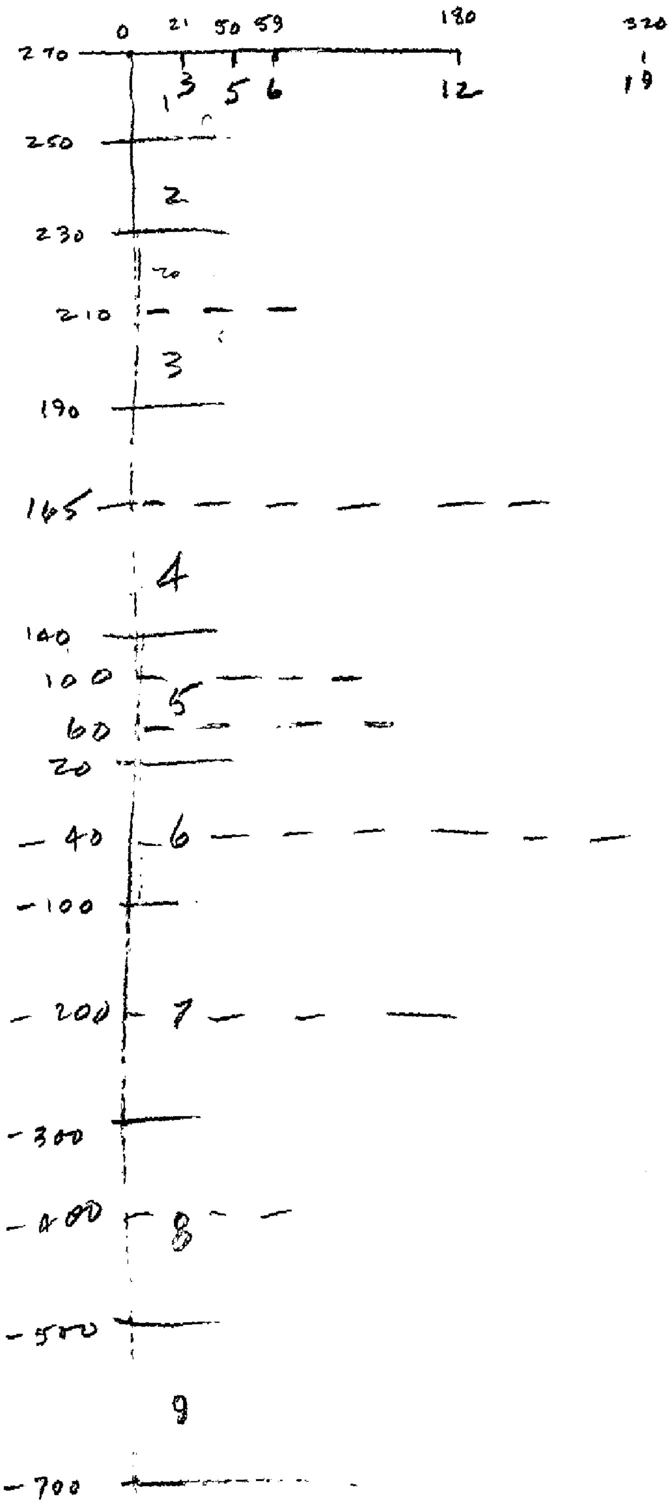
Calculation No.: T-CLC-Z-00006

Subject: " "

Sheet No.: 293

Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WVP	7/9/03	GEM	7/10/03					

MODELS ssvault 6, ssvle1



foundation explorations. In descending order, they are: Hawthorne, Barnwell, McBean, Congaree, and Ellenton Formations. New nomenclature has evolved for the various strata and are presented in Figure 2. Table 1 illustrates the relative positions of these strata at the DWPF site.

Table 1. Sedimentary Stratigraphy at the DWPF Site Based on Subsurface Exploration (Mueser, 1984a).

Stratum - old nomenclature (new nomenclature)	Soil Designation	Stratum Thickness (ft)	Stratum Elevation Range (ft, msl)	Geologic Soil Characterization
Hawthorne Formation (Altamaha Fm. - also Upland Unit)	S1	0 +	surficial unit above 275 ±	poorly sorted, sandy with frequent lenses of gravel, pebbly sand; and oxidized, massive clay.
Barnwell Formation (Tobacco Road Fm., Irwinton Sand Mbr., Tan Clay Mbr.)	S2a S2b	80 ±	275 to 195	interbedded, clayey sand and sand with thin layers and lenses of clay or silt.
Undifferentiated (Tan Clay Mbr. - included above)	C2	5 to 20	215 to 195	stiff, silty clay.
McBean Formation (Tinker Fm. and Santee Limestone)	S3a S3b S3c	70	195 ± to 125 ±	alternating layers of sand, some clay and sand with trace clay or silt; discontinuous calcareous sand in lower strata.
Undifferentiated (Green Clay)	M1	10 ±	140 to 130	discontinuous, compact silt.
Congaree Formation (same)	S4	100 ±	125 to 30	continuous, dense sand and silty sand.
Ellenton Formation	----	----	----	dense, sandy to clayey silt with some silty sand.

2.2 Geotechnical Characteristics of Soil at DWPF

SPT N-value profiles were prepared by D'Appolonia (1982a) for boreholes near the major facilities. The location of the borehole groups is shown in Figure 3 and the average ± 1 standard deviation profiles are given in Figure 4. Shear and compressional wave velocities for the DWPF soil profile are shown in Figure 5. Also, grain size distributions for soils in the Barnwell, McBean, Congaree, and Ellenton Formations are given in Figure 6. The geotechnical engineering characterization of the soils is given in Table 2.

Table 2. Geotechnical Engineering Characterization of Soil Strata at the DWPF Site (D'Appolonia, 1982a; Mueser, 1984a).

Soil Designation	Soil Description	Water Content (range, %)	SPT N-Value (bpf)
S1	**Clayey Sand, trace Gravel; or Sand, some Clay; organic Silt (see notes).**	**15 to 25**	**10 to 50 [20] (see notes)**
S2a	**Sand, trace Silt and Gravel; occasional Clay lenses.**	**12 to 26 [22]**	**4 to 50 (see notes)**
S2b	**Sand, trace Clay, occasional Silty Clay lenses.**	**15 to 28 [22]**	**8 to 45 (see notes)**
C2	**stiff, Silty Clay to Clayey Silt, trace Sand.**	**[53]**	**9 to 27**
S3a	**Sand, some Clay, trace shell fragments.**	**20 to 30 [23] U 25 to 35 [30] M,L (see notes)**	**10 to 40 U 10 to 60 M,L (see notes)**
S3b	**Sand, Trace Clay and Silt.**	**20 to 30 [25]**	**15 to > 100 [35]**
S3c	**Sand, some Silt, trace Clay**	**22 to 28 [25]**	**12 to 110 [40]**

Notes: average values, where available, are given in [brackets].

Stratum S1: organic Silt forms up to 20 ft thick lenses in depressions at ground surface. SPT N-values occasionally as low as 10 bpf in upper 5 ft of soil and as high as 50 bpf throughout possibly due to gravel.

Stratum S2a: typical SPT N-values range from 20 to 25 bpf. Five percent of N-values are below 10 bpf, but no loose, continuous layers were encountered.

Stratum S2b: seven percent of N-values below 8 bpf with continuous loose layer at about elevation 220 ft.

Stratum S3a: U, M, L denotes upper, middle, and lower portions of strata S3a, respectively. Isolated occurrences of SPT N-values as low as 2 bpf.

3.0 STRUCTURAL FAULTS AND SEISMICITY

3.1 Faulting at SRS

Subsurface mapping and seismic reflection surveys performed from 1988 to 1989 at SRS indicate a fault that displaces Cretaceous through Tertiary sediments with about 30 to 100 ft of vertical offset (WSRC, 1994a) (Figure 7). This fault, interpreted as a Cretaceous/Tertiary reactivation of earlier Mesozoic faulting, has been named the Pen Branch fault. The fault trends northwest across the site and closely parallels the fault that forms the northern boundary of the Dunbarton Basin. Based on deformation and sediment age, the fault is not capable (WSRC, 1994a).

Shallow faulting has been observed in the central area of SRS (F, H, and E-Areas). Current knowledge suggests these features are restricted generally to the Santee Formation and overlying sediments and generally do not extend with depth to basement (WSRC, 1994b). Based on profiles constructed from drilling and geophysical data, no capable faults were identified in the Cenozoic sediments at, or near, DWPF (duPont, 1982). Seismic reflection surveys indicate older faults with a maximum of about 50 ft of offset at the top of basement rock about 800 to 980 ft beneath the ground surface. However, reflecting horizons of Cretaceous age, and younger, are not displaced by these faults, which places a minimum age of about 80 to 85 million years before present (mybp) for these features (duPont, 1982).

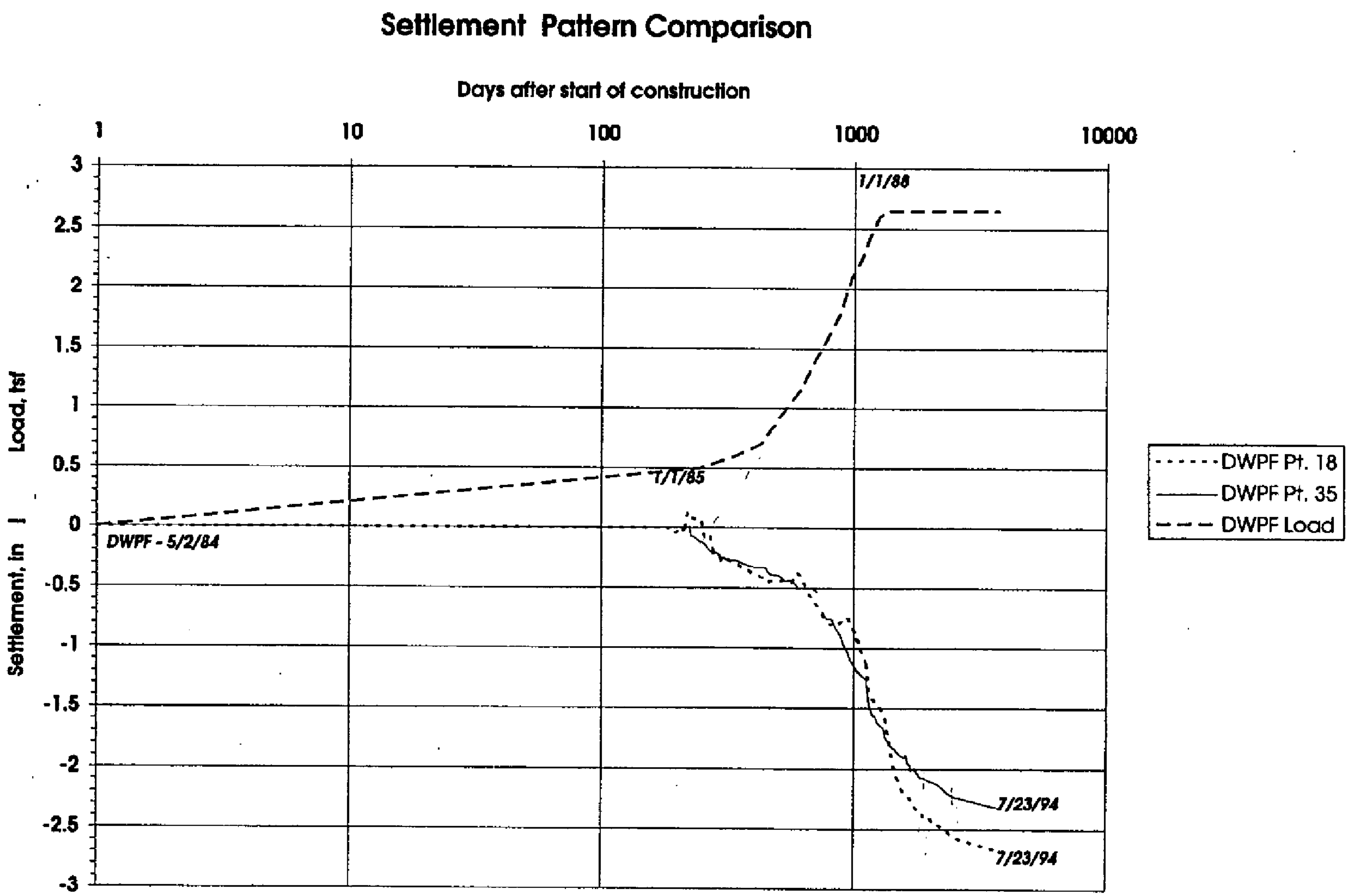


Figure 9. Settlement of DWPF During Construction.

T-LLC-Z-00006, Rev.0

Purpose

The purpose of this calculation is to provide a "best estimate" strain compatible soil profile for areas at the Savannah River Site having a soil column thickness between 800 and 1000 feet overlying crystaline bedrock. The best estimate profile includes shear wave velocities, damping ratios, Poisson's ratio and unit weights. The shear wave velocities and damping ratios are strain compatible values consistent with the Charleston event (50^{th} percentile) developed by Lee et al., 1997. The Accelerator Production of Tritium (APT) site falls into the 800-1000 feet soil column thickness range over crystaline bedrock.

Calculation Approach and Input

Strain Compatible Shear Wave Velocity and Damping Ratio

In March of 1997 the Site Geotechnical Services Department (SGS) issued "SRS Seismic Response Analysis and Design Basis Guidelines" (Lee et al., 1997). Work for this report involved review of existing geotechnical data and development of models representing the range of conditions expected at the SRS. The SRS was subdivided into areas based on the soil column thickness and bedrock type and a probabilistic model was developed and used to generate 30 soil profiles consistent with the SRS geotechnical data (Toro, 1997). This work is documented in reports and calculations (Lee et al., 1997; Toro, 1997; WSRC, 1997a,b,c,d).

For this calculation the 30 soil profiles representing soil column thickness between 800 and 1000 feet overlying crystaline bedrock were used. Specifically the strain compatible shear wave velocities and damping ratios from the median Charleston earthquake (M_w 7.3 and $\Delta\sigma$ = 150 bar) (WSRC, 1997d) were used. The results from these computer runs are averaged to get mean and log-mean strain compatible shear wave velocities and damping ratios consistent with the Charleston event. The data sets from the Charleston event come from the computer files listed in Table 1 and documented in WSRC, 1997d.

Poisson's Ratio

The "best estimate" Poisson's ratio is from shear/compression wave measurements. Poisson's ratio is calculated for each shear/compression wave set using Equation 1.

$$\mu = \frac{\left(V_p^2 - 2 \cdot V_s^2\right)}{\left(2 \cdot V_p^2 - 2 \cdot V_s^2\right)} \qquad \text{(Eq. 1)}$$

where: μ is Poisson's ratio

V_p is compression wave velocity

V_s is shear wave velocity

The shear/compression wave sets were measured at deep boreholes CFD-1, CFD-18, GCB-1, GCB-2, GCB-4, GCB-5, GCB-7, MMP-2A-SB, MMP-3-SB, and MMP-4-SB (Agbabian, 1992a,b; 1994; 1996a,b; 1997). The Poisson's ratio from the individual borings is plotted on Figure 1. The "best estimate" Poisson's ratio is based on Figure 1 and visual fitting of the data plotted.

Unit Weight

The "best estimate" unit weight is from geophysical bulk density logs recorded in deep borings at SRS. The bulk density logs were made using gamma-gamma cross sectional measurements, where the back scatter from the source is measured for discrete intervals. The density logging was performed at boreholes GCB-1, GCB-2, GCB-4, GCB-5, GCB-7, MMP-2A-SB, MMP-3-SB, MMP-4-SB, SSW-1, SSW-2, and SSW-3 (WSRC, 1998). Data from the individual bulk density logs is plotted on Figure 2. The "best estimate" unit weight is based on Figure 2 and visual fitting of the data plotted.

Computations and Results

Strain Compatible Shear Wave Velocity and Damping Ratio

Extracting the data from the RASCALS output files and the averaging was performed using a FORTRAN program VSDSTAT. The code for VSDSTAT is presented in Attachment A. The program VSDSTAT locates the strain compatible properties (i.e., shear wave velocity and damping ratio) in the RASCALS output file and computes the average for each layer assuming both a normal and log-normal distribution. Five VSDSTAT runs were performed, one for each of the source depth dependent Charleston (M_w 7.3 and $\Delta\sigma$ = 150 bar) data sets. The five data sets represent five earthquake source depths. Output files from the five VSDSTAT runs are presented in Attachment B. The averages from the five VSDSTAT runs are then copied into an EXCEL spreadsheet, weighted based on the depth distribution of seismicity in the southeastern U.S. (Lee et al., 1997), and the weighted average is computed. The five source depths and their weights are:

Depth (km)	Weight
4	0.1
10	0.3
15	0.2
20	0.2
25	0.2

The top depth for each layer and layer thickness are also given in the RASCALS output files. The top depth and layer thickness for each layer were copied to an EXCEL spreadsheet, the mid-layer depth was then calculated from the average layer top depths. Table 2 presents the top depths extracted from the RASCALS files and their averages. Table 3 presents the thickness of the layers from the RASCALS files and their averages.

Figures 3 and 4 present the Charleston 50th percentile strain compatible shear wave velocities from each of the five VSDSTST runs and the weighted average. Figure 3 assumes normal distribution and Figure 4 assumes log-normal distribution. Figures 5 and 6 present the Charleston 50th percentile strain compatible damping ratios from each of the five VSDSTST runs and the weighted average. Figure 5 assumes normal distribution and Figure 6 assumes log-normal distribution. Tables 4 and 5 contain the data plotted in Figures 3 and 4 and Tables 6 and 7 contain the data plotted in Figures 5 and 6.

Poisson's Ratio

The Poisson's ratio from the individual borings logs is plotted on Figure 1. Based on Figure 1 and literature values presented in Table 8, the "best estimate" Poisson's ratio is 0.3 above the water table. Below the water table Poisson's ratio can be described by Equations 2 and 3.

$$\mu = -\left(\frac{0.07}{550}\right)h + 0.49 \qquad \text{Water Table to 550 feet} \quad \text{(Eq. 2)}$$

$$\mu = -\left(\frac{0.02}{550}\right)h + 0.44 \qquad \text{550 feet and deeper} \quad \text{(Eq. 3)}$$

Where h is depth in feet, and
μ is Poisson's ratio.

Unit Weight

Data from the individual bulk density logs is plotted on Figure 2. Based on Figure 2, the "best estimate" soil unit weight (γ_{insitu}) as a function of depth described by Equation 4.

$$\gamma_{insitu} = 0.0131 \text{ x h} + 120 \qquad \text{Soils only – not rock} \quad \text{(Eq. 4)}$$

Where h is depth in feet, and
γ_{insitu} is insitu unit weight in pounds per cubic foot.

Assumptions

The relationships (Equations 2, 3 and 4) developed for Poisson's ratio and unit weight were visually fit. Variation from the visually fit relationships is expected. An estimated standard deviation for Poisson's ratio is approximately 0.03. An estimated standard deviation for the unit weight is 8 pounds per cubic foot.

Poisson's ratio determined in this calculation is a low-strain property. The shear wave velocities presented in Tables 4 and 5 and Figures 3 and 4 are strained values for the Charleston 50th percentile event. It is assumed that the low-strain Poisson's ratio can be used in conjunction with the Charleston 50th percentile shear wave values and equation 1 to determine Charleston 50th percentile strain compatible compression wave velocities.

The Shear wave velocity and damping data are assumed to be log-normally distributed and consequently the log-normal averages are considered the "best estimate". This assumption was checked by W-testing (Gilbert 1987) many of the data sets (a data set being the data for a given layer and earthquake source depth). Approximately 40 percent of the layers were tested at the alpha = 0.10 significance level. At the alpha = 0.10 significance level the null hypothesis (i.e., the data has a normal distribution) was accepted for 14 percent of the data sets and the null hypothesis was accepted for 89 percent of the log transformed data sets. Based on the W-testing the data are more likely log-normally distributed as opposed to normally distributed.

Conclusions

The purpose of this calculation is to provide a "best estimate" strain compatible soil profile for areas at the Savannah River Site having a soil column thickness between 800 and 1000 feet overlying crystaline bedrock. This includes strain compatible shear wave velocities and strain compatible damping ratios consistent with the Charleston event (50th percentile) developed by Lee et al., 1997. Also included are low-strain Poisson's ratio and unit weights. These properties are summarized in Table 9.

The recommended low-strain Poisson's ratio is 0.3 above the water table and 0.47 beneath the water table (see Table 9 footnotes). These values are reasonable for most problems where the upper soil profile (depth less than 200 feet) is of concern. These values compare well with other values used for previous work at SRS (WSRC 1991, 1995, 1996). If the model is sensitive to Poisson's ratio or unit weight, Equations 2, 3, and 4 can be used. However, parametric runs should be performed as variation from the visually fit relationships is expected.

The shear wave velocities presented in Table 9 and damping ratios are strained values for the Charleston 50th percentile event. It is assumed that the low-strain Poisson's ratio can be used in conjunction with the Table 9 shear wave values and Equation 1 to determine Charleston 50th percentile strain compatible compression wave velocities.

In this calculation, statistics for the strain compatible shear wave velocities and damping ratios were calculated assuming both normal and log-normal distributions. Based on W-testing the data appear to be log-normally distributed and the log-normal values are the recommended "best estimate". Table 9 presents the strain compatible shear wave velocities and damping ratios assuming log-normal distribution.

T-CLC-Z-00006, Rev. 0

Calculation No. K-CLC-G-00060	
Sheet No. 25	
Rev. 0	

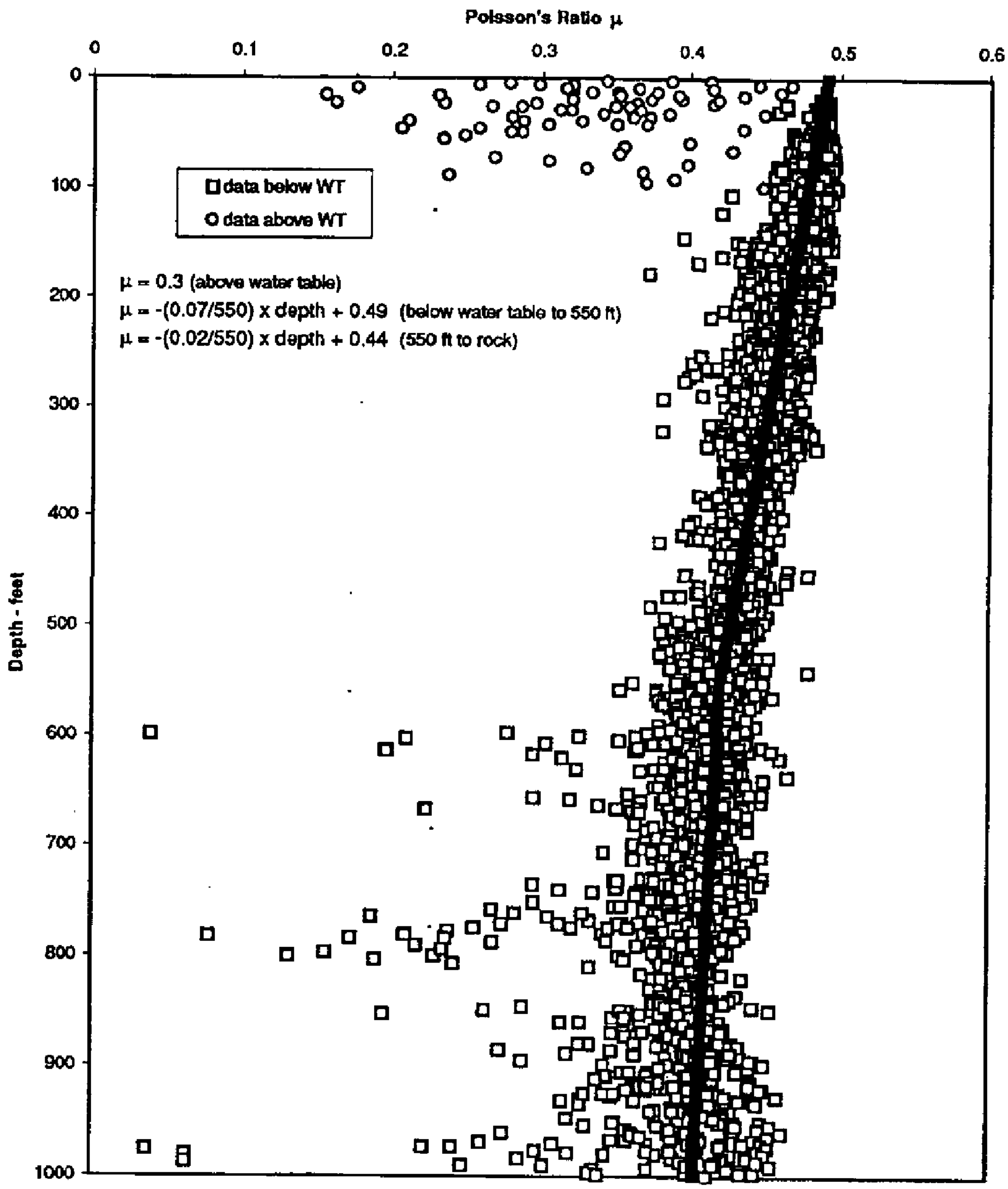
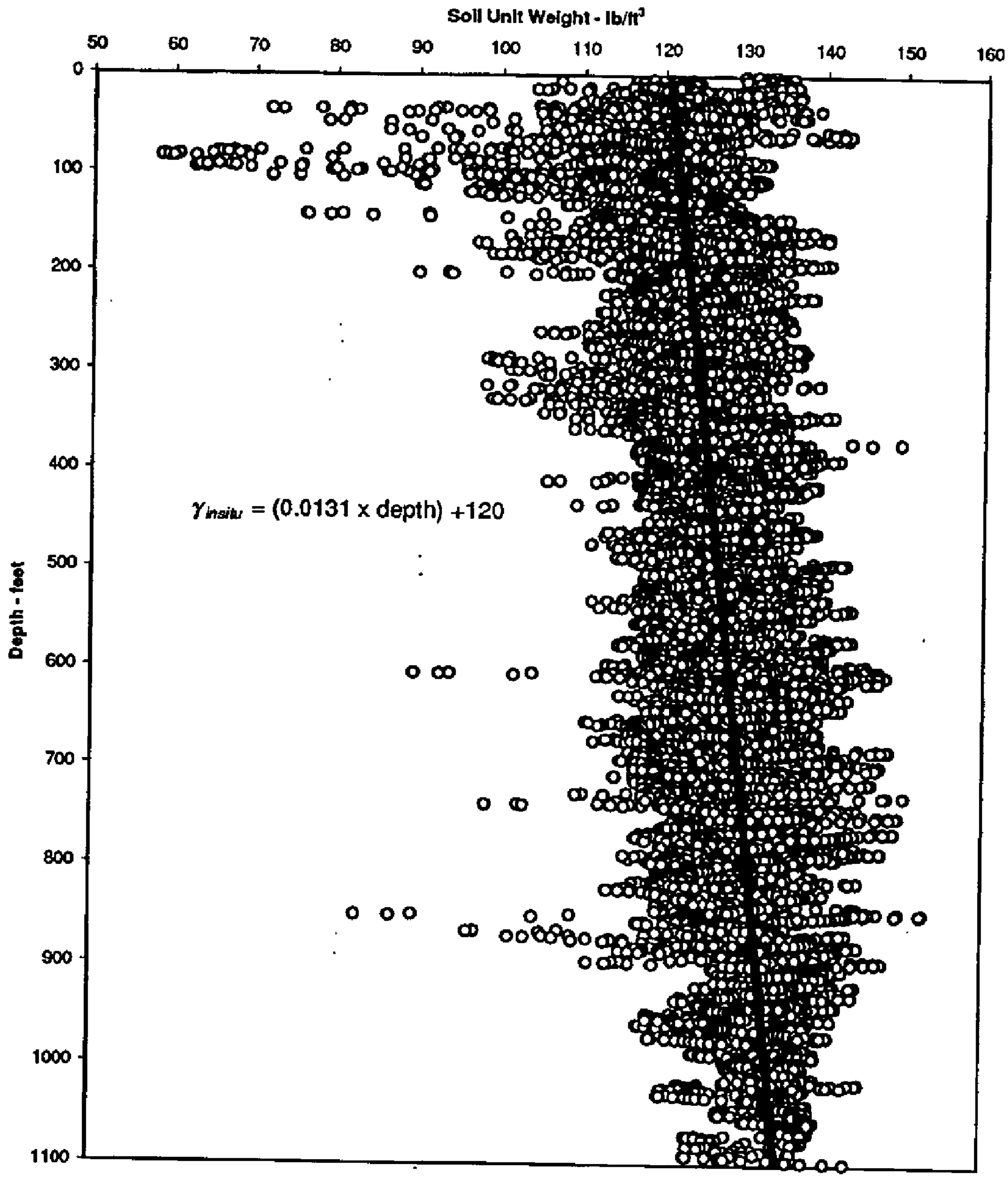


Figure 1. Poisson's Ratio Data for SRS Soils versus Depth and Visual Fit Relationships

T-CLC-Z-00006, Rev. 0

Calculation No. K-CLC-G-00060
Sheet No. 26
Rev. 0



densdat.xls

Figure 2. Insitu Unit Weight versus Depth for SRS Soils and Visual Fit Relationships

Calculation No. K-CLC-G-00060
Sheet No. 27
Rev. 0

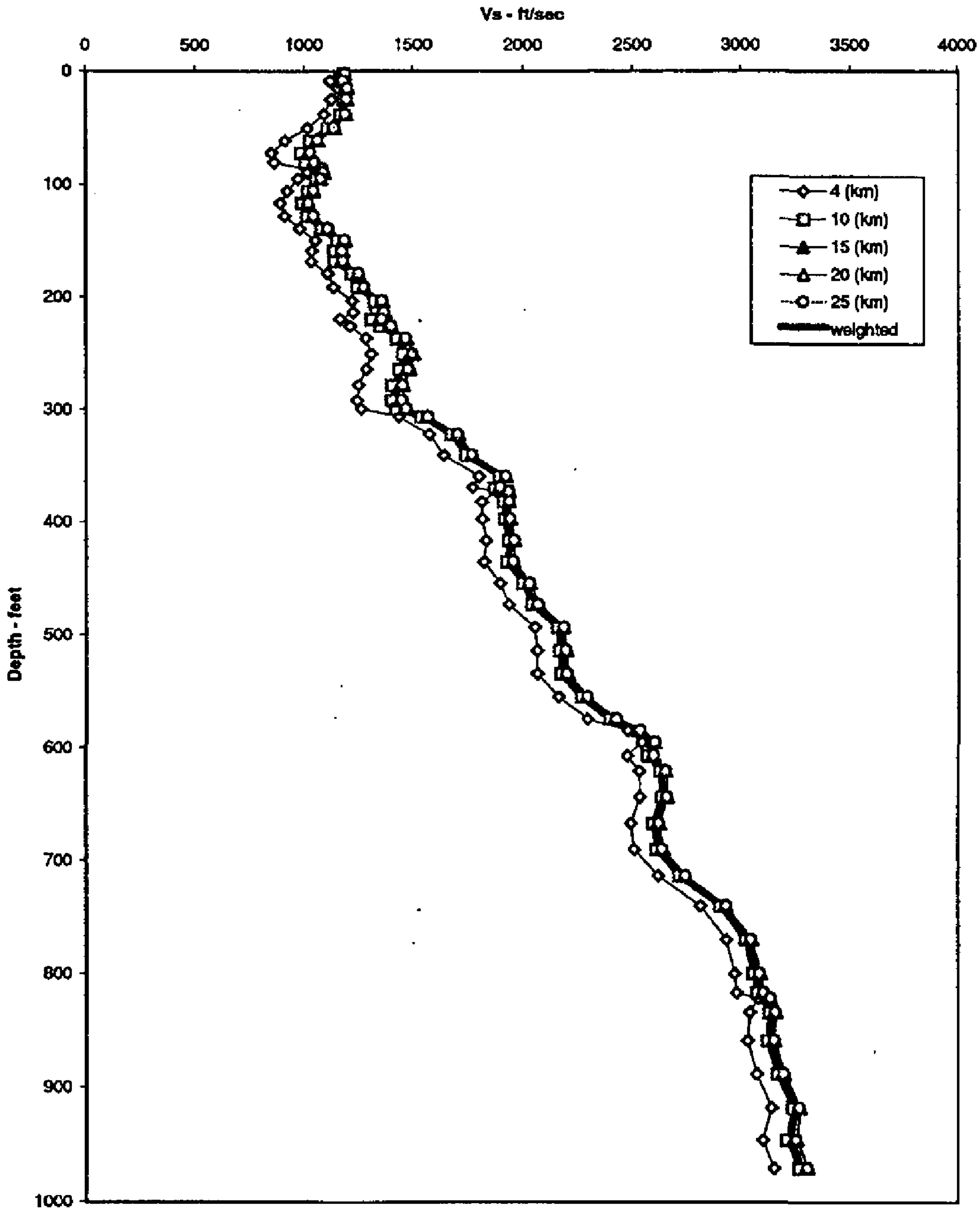
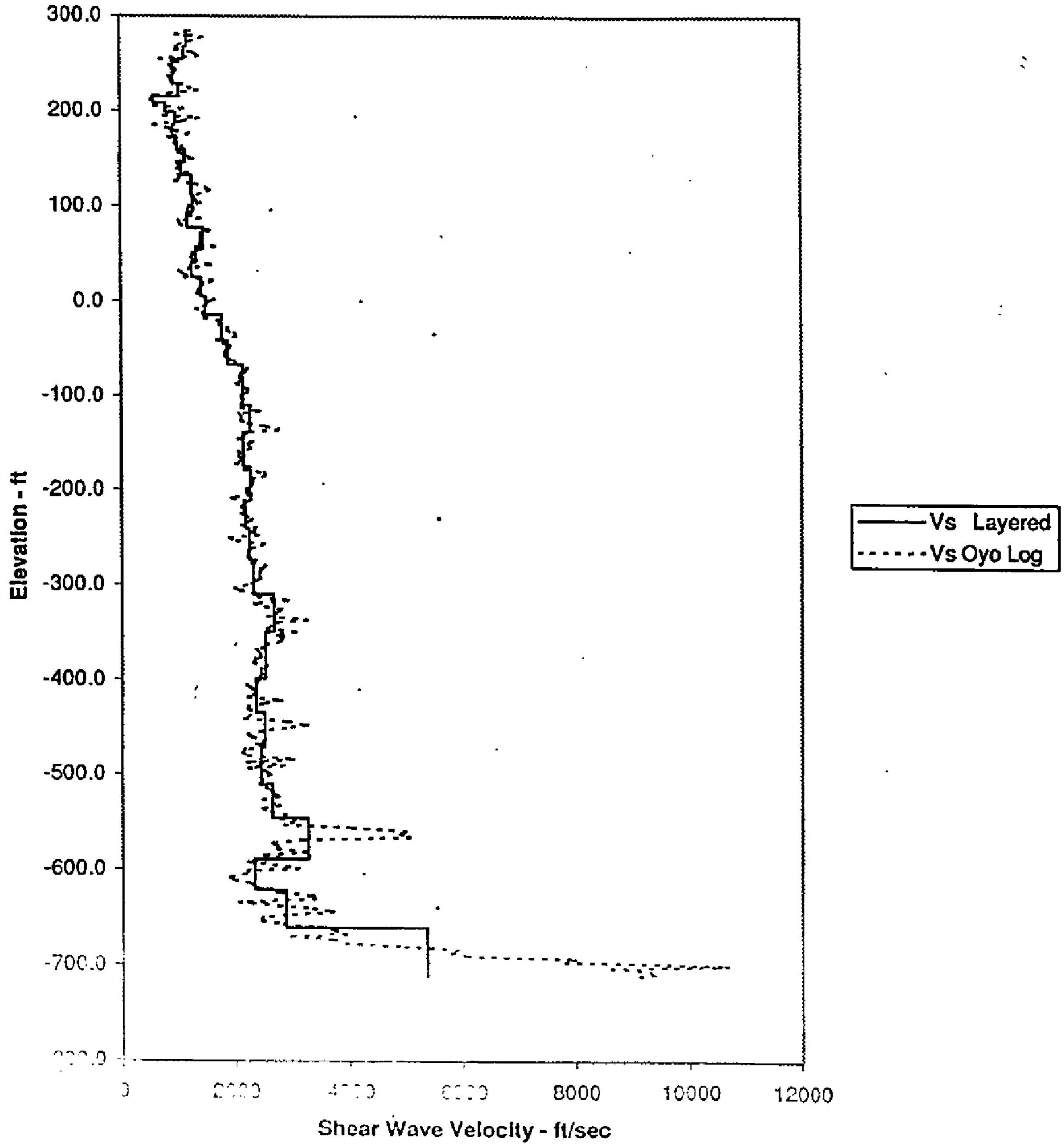


Figure 3. Charleston Source Depth Dependent Strain Compatible Shear Wave Velocity Averages (normal distribution) from VSDSTST Runs and the Weighted Average

Calculation No. K-CLC-H-00134
Sheet No. 15
Rev. 0

Shear Wave Velocities for Deep Boring MMP-2A-SB



Mmp-2sb.xls

Figure 8. Oyo Shear-wave Velocity Logger Survey of Borehole MMP-2A-SB Results and the LAYERSH Filter Interpretation
(from Agbabian Associates, 1994 and WSRC, 1996b)

OSR19-189(6-11-91)

Calculation Sheet

SRS SAVANNAH RIVER SITE	Project: See Comm				Calculation No. T-CLC-Z-00006				
	Subject: " "					Sheet No. 305			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	WLP	7/9/03	GEm	7/10/3					

DWPF MONUMENTS K-ESR-S-00002

dis from center

monument	dis.	monument	dis
10	21 ft.	5	38 ft.
15	26	28	45
11	59	4	44
16	67	25	99
37	113.5	26	176
14	180	18	190

Building is 117'-0" x 361'-6"

Table 2 Monument Coordinates

No.	North	East
1	74,045.25	64,616.35
2	[illegible]	[illegible]
3	74,065.00	64,576.00
4	73,946.25	64,662.00
5	73,946.25	64,603.00
6	73,884.25	64,662.00
7	73,824.00	64,662.00
8	73,758.75	64,662.00
9	73,725.50	64,693.00
10	73,882.00	64,629.50
11	73,823.75	64,629.50
12	73,761.00	64,627.50
13	73,728.50	64,627.50
14	73,727.50	64,591.00
15	73,884.25	64,603.00
16	73,824.00	64,603.00
17	73,758.75	64,603.00
18	74,084.00	64,693.00
19	74,059.00	64,693.00
20	74,004.00	64,693.00
21	73,953.00	64,693.00
22	73,884.00	64,693.00
23	73,817.00	64,693.00
24	73,805.00	64,693.00
25	74,005.00	64,662.00
26	74,087.00	64,638.00
27	74,005.75	64,629.50
28	73,951.75	64,622.50
29	74,087.00	64,608.00
31	74,005.00	64,603.00
33	74,004.00	64,558.00
34	73,950.00	64,576.00
35	73,887.00	64,576.00
36	73,817.00	64,576.00
37	73,793.00	64,576.00

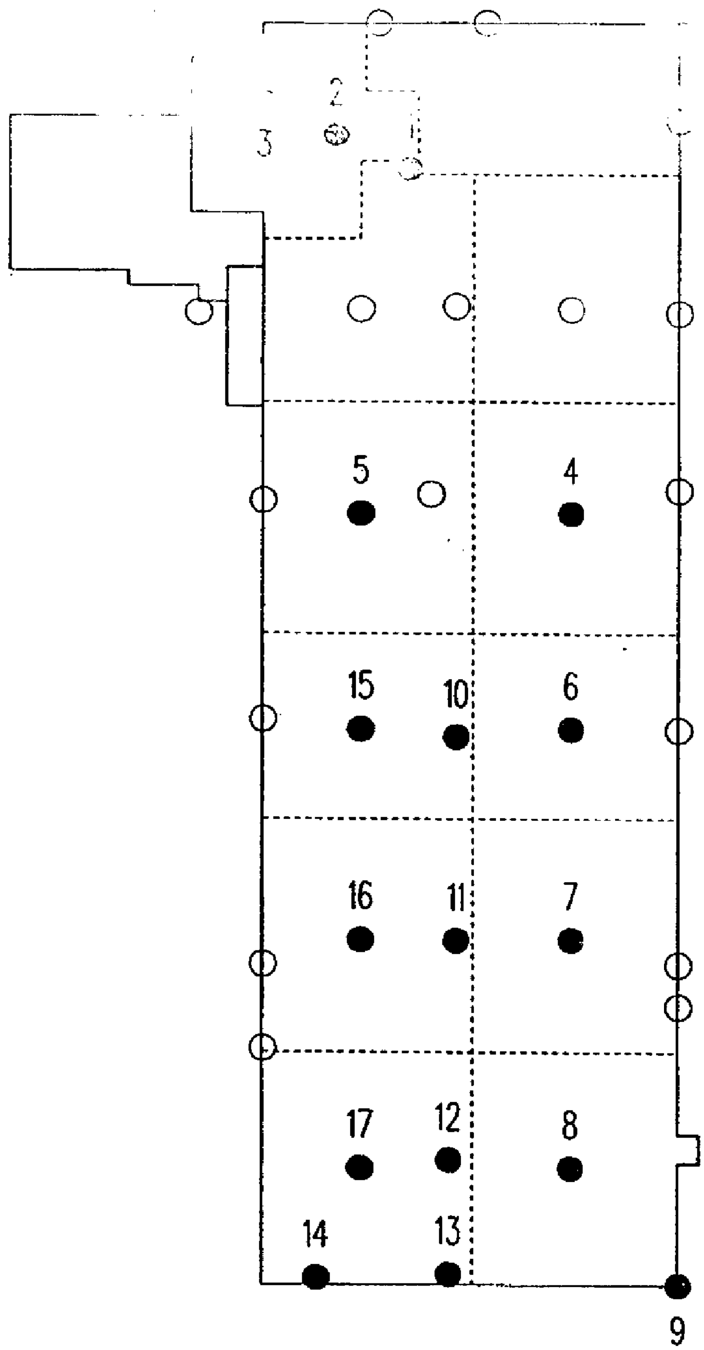


Figure 4 Locations of heave/settlement monuments during Stage A

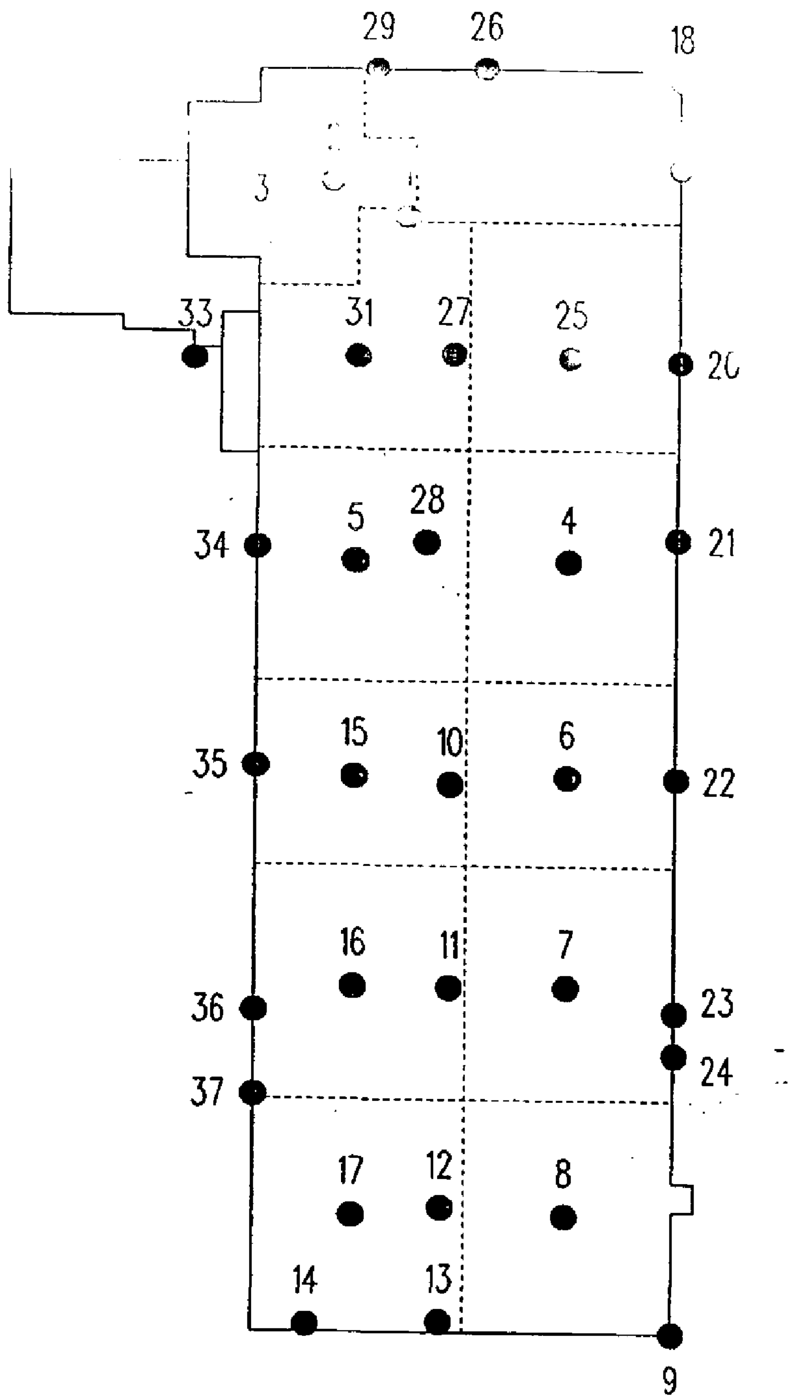


Figure 5 Locations of settlement monuments during Stage B

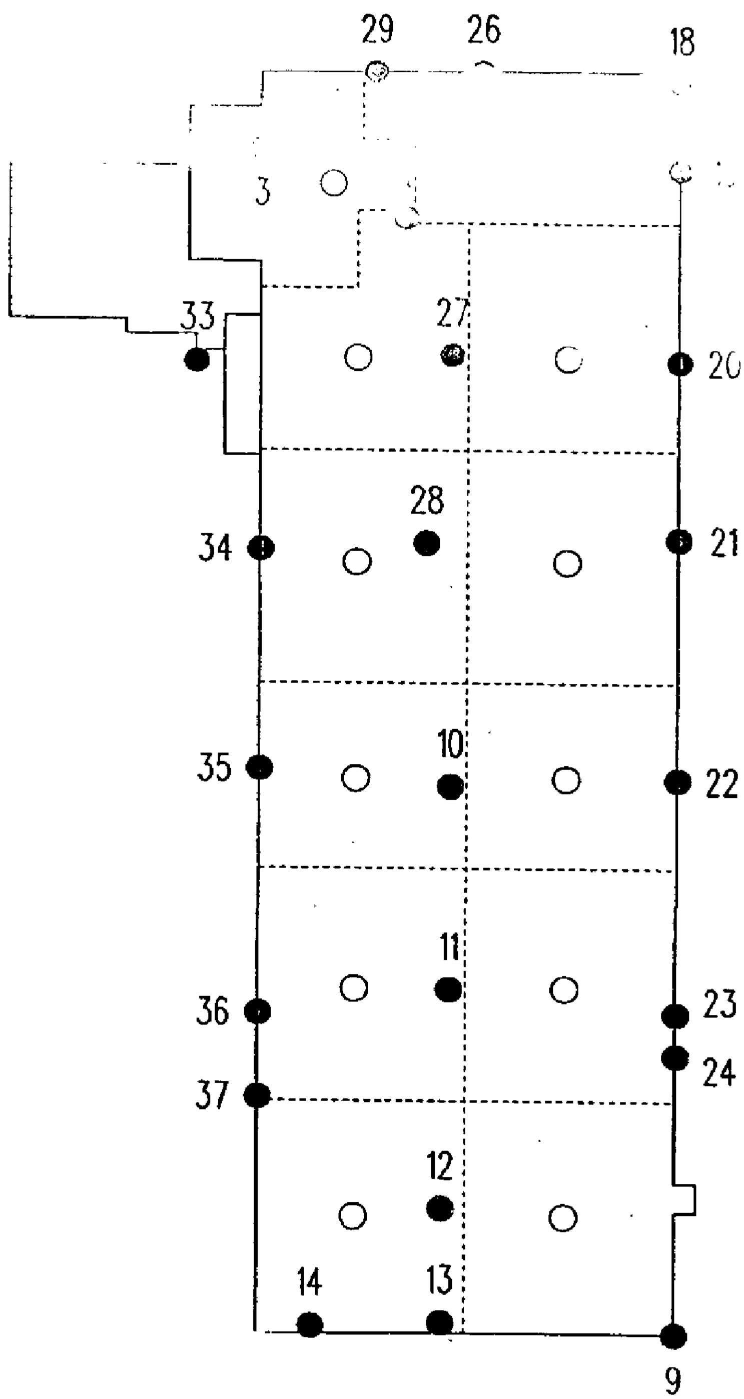


Figure 6 Locations of settlement monuments during Stage [illegible]

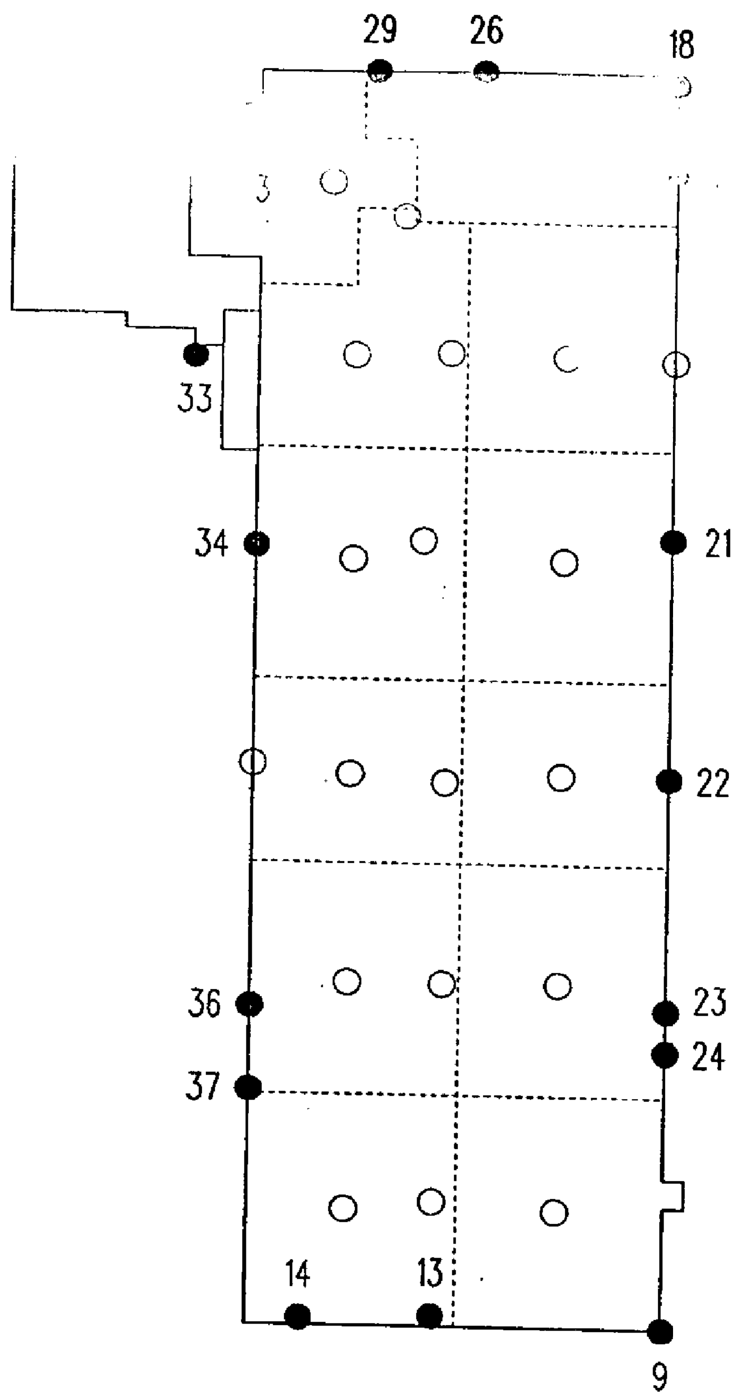


Figure 7 Locations of settlement monuments during Stage I

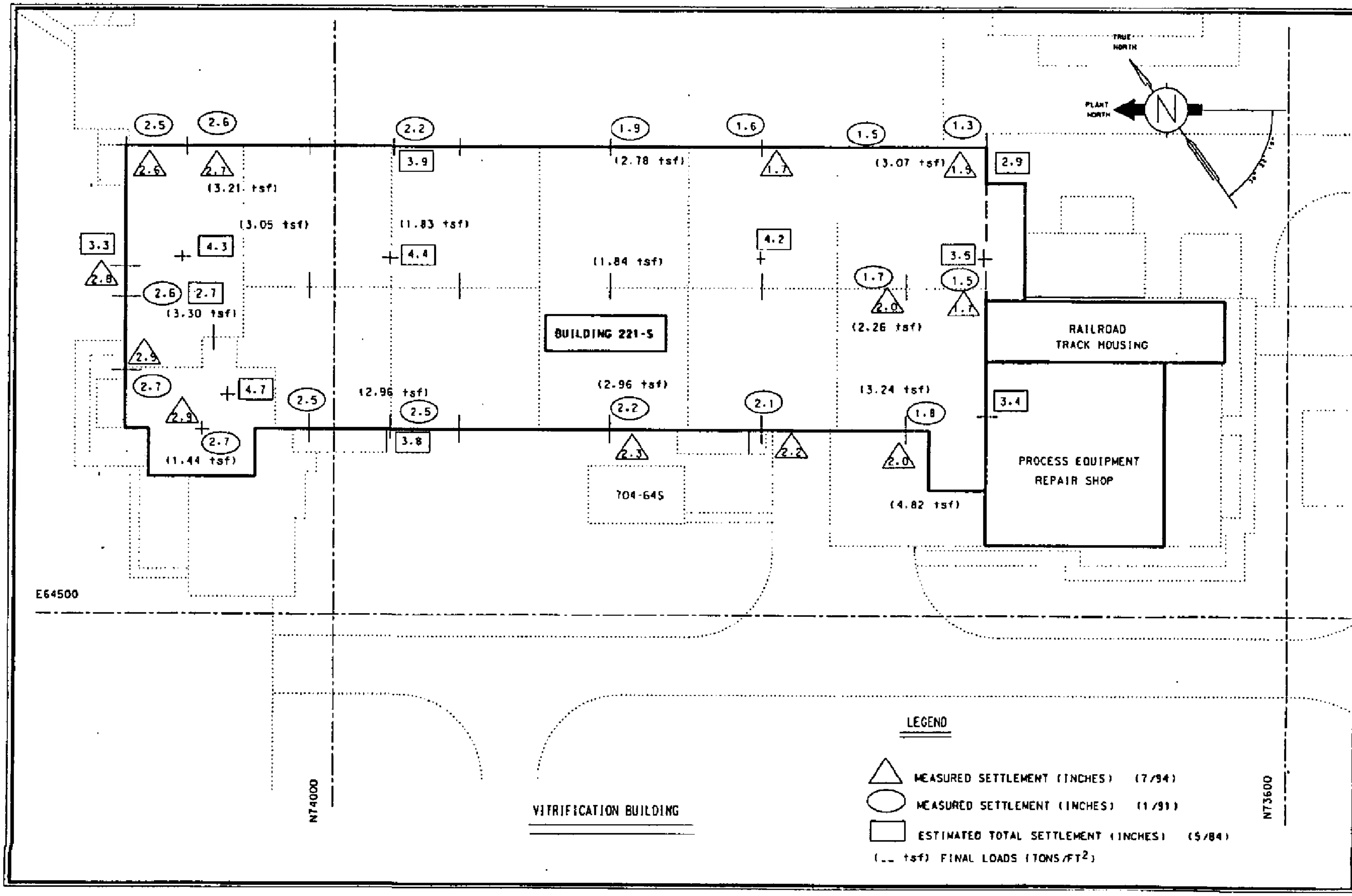


Figure 8. Plan View of Vitrification Building with Estimated and Actual Settlements.

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
		Monument Point 4			
May 1, 1984	1	267.208			0.00
May 17, 1984	17	267.224			0.19
May 25, 1984	25	267.234			0.31
May 31, 1984	31	267.229	270.391	3.162	0.25
June 1, 1984	32	270.383			0.16
June 8, 1984	39	270.383			0.16
June 16, 1984	47	270.386			0.19
June 22, 1984	53	270.382			0.14
June 29, 1984	60	270.384			0.17
July 6, 1984	67	270.383			0.15
July 13, 1984	74	270.382			0.14
July 20, 1984	81	270.384			0.17
July 27, 1984	88	270.380			0.12
August 2, 1984	94	270.383			0.16
August 10, 1984	102	270.385			0.18
August 17, 1984	109	270.381			0.13
August 27, 1984	119	270.385			0.18
August 31, 1984	123	270.386			0.19
September 7, 1984	130	270.377			0.08
September 14, 1984	137	270.368			-0.02
September 21, 1984	144	270.376			0.07
September 28, 1984	151	270.373			0.04
October 1, 1984	154	270.366	281.469	11.103	-0.05
October 3, 1984	156	281.478			0.06
October 5, 1984	158	281.464			-0.11
October 12, 1984	165	281.468			-0.06
October 18, 1984	171	281.467			-0.07
October 26, 1984	179	281.462			-0.13
November 2, 1984	186	281.455			-0.18
November 7, 1984	191	281.462			-0.13
November 20, 1984	204	281.453			-0.24
November 26, 1984	210	281.454			-0.23
November 30, 1984	214	281.445			-0.34
December 7, 1984	221	281.448			-0.30
December 14, 1984	228	281.446			-0.32
December 28, 1984	242	281.443			-0.36
January 4, 1985	249	281.443			-0.36
January 11, 1985	256	281.445			-0.34
January 18, 1985	263	281.443	281.412	-0.031	-0.36
January 25, 1985	270	281.408			-0.41
February 1, 1985	277	281.408			-0.41
February 8, 1985	284	281.409			-0.40
February 15, 1985	291	281.407			-0.42
February 22, 1985	298	281.406			-0.43
March 1, 1985	305	281.411			-0.37
March 8, 1985	312	281.410			-0.38

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (inches)
Monument Point 5					
May 1, 1984	1	266.929			0.00
May 17, 1984	17	266.948			0.23
May 25, 1984	25	266.954			0.30
May 31, 1984	31	266.949	270.378	3.429	0.24
June 1, 1984	32	270.368			0.12
June 8, 1984	39	270.372			0.17
June 16, 1984	47	270.373			0.18
June 22, 1984	53	270.367			0.11
June 29, 1984	60	270.370			0.14
July 6, 1984	67	270.368			0.12
July 13, 1984	74	270.366			0.10
July 20, 1984	81	270.366			0.10
July 27, 1984	88	270.367			0.11
August 2, 1984	94	270.367			0.11
August 10, 1984	102	270.369			0.13
August 17, 1984	109	270.365			0.09
August 27, 1984	119	270.368			0.12
August 31, 1984	123	270.366			0.11
September 7, 1984	130	270.362			0.05
September 14, 1984	137	270.355			-0.04
September 21, 1984	144	270.359			0.01
September 26, 1984	151	270.352			-0.07
October 1, 1984	154	270.347			-0.13
October 3, 1984	156	270.375			0.20
October 5, 1984	158	270.349			-0.11
October 12, 1984	165	270.359			0.01
October 18, 1984	171	270.358			0.00
October 26, 1984	179	270.354			-0.05
November 2, 1984	186	270.356			-0.02
November 7, 1984	191	270.354			-0.05
November 15, 1984	199	270.354	281.163	10.809	-0.05
November 20, 1984	204	281.159			-0.10
November 26, 1984	210	281.156			-0.01
November 30, 1984	214	281.151			-0.19
December 7, 1984	221	281.141			-0.31
December 14, 1984	228	281.149			-0.23
December 28, 1984	242	281.147			-0.24
January 4, 1985	249	281.147			-0.24
January 11, 1985	256	281.145			-0.26
January 18, 1985	263	281.142	280.811	-0.331	-0.30
January 25, 1985	270	280.806			-0.36
February 1, 1985	277	280.807			-0.35
February 8, 1985	284	280.807			-0.35
February 15, 1985	291	280.805			-0.37
February 22, 1985	298	280.803			-0.40
March 1, 1985	305	280.809			-0.32

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 10					
May 1, 1984	1	267.900			0.00
May 17, 1984	17	267.943			0.52
May 25, 1984	25	267.945			0.54
May 31, 1984	31	267.941	270.370	2.429	0.49
June 1, 1984	32	270.367			0.46
June 6, 1984	39	270.362			0.40
June 16, 1984	47	270.367			0.46
June 22, 1984	53	270.364			0.42
June 29, 1984	60	270.368			0.47
July 6, 1984	67	270.367			0.46
July 13, 1984	74	270.366			0.44
July 20, 1984	81	270.366			0.44
July 27, 1984	88	270.367			0.46
August 2, 1984	94	270.361			0.38
August 10, 1984	102	270.367			0.46
August 17, 1984	109	270.365			0.43
August 27, 1984	119	270.364			0.42
August 31, 1984	123	270.361			0.38
September 7, 1984	130	270.354			0.30
September 14, 1984	137	270.347			0.22
September 21, 1984	144	270.360			0.37
September 28, 1984	151	270.354			0.30
October 1, 1984	154	270.361			0.38
October 3, 1984	156	270.378			0.59
October 5, 1984	158	270.354			0.30
October 12, 1984	165	270.364			0.42
October 18, 1984	171	270.368			0.47
October 26, 1984	179	270.363			0.41
November 2, 1984	186	270.362			0.40
November 7, 1984	191	270.359			0.36
November 19, 1984	203	270.347	278.839	8.492	0.22
November 20, 1984	204	278.832			0.13
November 21, 1984	205	278.832			0.13
November 30, 1984	214	278.828			0.08
December 7, 1984	221	278.827			0.07
December 14, 1984	228	278.828			0.08
December 28, 1984	242	278.821			0.00
January 4, 1985	249	278.822			0.01
January 11, 1985	256	278.816			-0.06
January 18, 1985	263	278.813			-0.10
January 25, 1985	270	278.810	278.356	-0.454	-0.13
February 1, 1985	277	278.358			-0.11
February 8, 1985	284	278.354			-0.16
February 15, 1985	291	278.353			-0.17
February 22, 1985	298	278.352			-0.18
March 1, 1985	305	278.357			-0.12
March 8, 1985	312	278.356			-0.13
April 5, 1985	340	278.359			-0.10
May 8, 1985	373	278.355			-0.14
June 6, 1985	404	278.356	278.395	0.039	-0.13
July 3, 1985	429	278.382	281.754	3.372	-0.29
July 19, 1985	445	281.754			-0.29
July 29, 1985	455	281.753			-0.30
August 12, 1985	469	281.750			-0.34
September 18, 1985	506	281.747			-0.37
October 17, 1985	535	281.747			-0.37
November 18, 1985	567	281.741			-0.44

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Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (inches)
Monument Point 10 (continued)					
December 23, 1985	602	281.737			-0.49
January 28, 1986	638	281.733			-0.54
March 19, 1986	688	281.730			-0.58
April 18, 1986	718	281.730			-0.58
May 21, 1986	751	281.724			-0.65
June 19, 1986	780	281.723			-0.66
July 25, 1986	816	281.722			-0.67
August 26, 1986	848	231.723			-0.66
October 2, 1986	885	281.709			-0.83
October 28, 1986	911	281.702			-0.91
December 5, 1986	949	281.694			-1.01
December 22, 1986	966	281.687			-1.09
February 5, 1987	1,011	281.686			-1.10
February 23, 1987	1,029	281.685			-1.12
March 24, 1987	1,058	281.684			-1.13
May 26, 1987	1,121	281.682			-1.15
June 26, 1987	1,152	281.669			-1.31
July 27, 1987	1,183	281.665			-1.36
August 28, 1987	1,215	281.662			-1.39
September 28, 1987	1,246	281.657			-1.45
October 29, 1987	1,277	281.657	285.025	3.368	-1.45
November 25, 1987	1,304	285.021			-1.50
December 28, 1987	1,337	285.019			-1.52
March 31, 1988	1,431	285.013			-1.60
April 22, 1988	1,453	285.010			-1.63
May 23, 1988	1,484	285.013			-1.60
June 30, 1988	1,522	285.010			-1.63
August 1, 1988	1,554	285.010			-1.63
August 29, 1988	1,582	285.009			-1.64
September 29, 1988	1,613	285.009			-1.64
October 28, 1988	1,642	285.003			-1.72
November 28, 1988	1,673	284.999			-1.76
December 9, 1988	1,684	284.996			-1.80
January 9, 1989	1,715	284.998			-1.78
February 9, 1989	1,746	284.995			-1.81
March 9, 1989	1,774	284.997			-1.79
April 9, 1989	1,805	284.994			-1.82
May 9, 1989	1,835	284.997			-1.79
June 9, 1989	1,866	284.997			-1.79
July 9, 1989	1,896	284.995			-1.81
October 9, 1989	1,988	284.994			-1.82
January 17, 1990	2,088	294.989			-1.88
April 9, 1990	2,170	284.986			-1.92

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 11					
May 1, 1984	1	267.219			0.00
May 17, 1984	17	267.236			0.20
May 25, 1984	25	267.238			0.23
May 31, 1984	31	267.239	270.453	3.214	0.24
June 1, 1984	32	270.454			0.25
June 8, 1984	39	270.441			0.10
June 16, 1984	47	270.449			0.19
June 22, 1984	53	270.444			0.13
June 29, 1984	60	270.447			0.17
July 6, 1984	67	270.448			0.18
July 13, 1984	74	270.444			0.13
July 20, 1984	81	270.446			0.16
July 27, 1984	88	270.448			0.18
August 2, 1984	94	270.449			0.19
August 10, 1984	102	270.445			0.14
August 17, 1984	109	270.438			0.06
August 27, 1984	119	270.443			0.12
August 31, 1984	123	270.435			0.02
September 7, 1984	130	270.440			0.08
September 14, 1984	137	270.440	278.671	8.231	0.08
September 21, 1984	144	278.664			0.00
September 28, 1984	151	278.651			-0.16
October 1, 1984	154	278.659			-0.06
October 5, 1984	158	278.656			-0.10
October 12, 1984	165	278.664			0.00
October 18, 1984	171	278.664			0.00
October 24, 1984	177	278.653			-0.13
October 26, 1984	179	278.657			-0.08
November 2, 1984	186	278.658			-0.07
November 7, 1984	191	278.653			-0.13
November 20, 1984	204	278.655			-0.11
November 26, 1984	210	278.656			-0.10
November 30, 1984	214	278.637			-0.32
December 7, 1984	221	278.639			-0.30
December 14, 1984	228	278.641			-0.28
December 28, 1984	242	278.632			-0.38
January 4, 1985	249	278.635			-0.35
January 11, 1985	256	278.632			-0.38
January 18, 1985	263	278.631			-0.40
January 25, 1985	270	278.627	278.385	-0.242	-0.44
February 1, 1985	277	278.389			-0.40
February 8, 1985	284	278.385			-0.44
February 15, 1985	291	278.385			-0.44
February 22, 1985	298	278.384			-0.46
March 1, 1985	305	278.389			-0.40
March 8, 1985	312	278.388			-0.41
April 5, 1985	340	278.389			-0.40
May 8, 1985	373	278.387			-0.42
June 8, 1985	404	278.387	278.388	0.001	-0.42
July 3, 1985	429	278.386	281.631	3.245	-0.44
July 19, 1985	445	281.632			-0.43
July 29, 1985	455	281.630			-0.46
August 12, 1985	469	281.629			-0.47
September 18, 1985	506	281.626			-0.50
October 17, 1985	535	281.625			-0.52
November 18, 1985	567	281.620			-0.58
December 23, 1985	602	281.614			-0.65

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 11 (continued)					
January 28, 1986	638	281.613			-0.66
March 19, 1986	688	281.608			-0.72
April 18, 1986	718	281.608			-0.72
May 21, 1986	751	281.601			-0.80
June 19, 1986	780	281.599			-0.83
July 25, 1986	816	281.599			-0.83
August 26, 1986	848	281.593			-0.90
October 2, 1986	885	281.586			-0.98
October 28, 1986	911	281.578			-1.08
December 5, 1986	949	281.571			-1.16
December 22, 1986	966	281.566			-1.22
February 5, 1987	1,011	281.566			-1.22
February 23, 1987	1,029	281.565			-1.24
March 24, 1987	1,058	281.564			-1.25
May 26, 1987	1,121	281.563			-1.26
June 26, 1987	1,152	281.543			-1.50
July 27, 1987	1,183	281.544			-1.49
August 28, 1987	1,215	281.540			-1.54
September 28, 1987	1,246	281.537			-1.57
October 29, 1987	1,277	281.537	280.270	-1.267	-1.57
November 25, 1987	1,304	280.267			-1.61
December 28, 1987	1,337	280.267			-1.61
March 31, 1988	1,431	280.262			-1.67
April 22, 1988	1,453	280.259			-1.70
May 23, 1988	1,484	280.262			-1.67
June 30, 1988	1,522	280.258			-1.72
August 1, 1988	1,554	280.258			-1.72
August 29, 1988	1,582	280.258			-1.72
September 29, 1988	1,613	280.258			-1.72
October 28, 1988	1,642	280.254			-1.76
November 28, 1988	1,673	280.251			-1.80
December 9, 1988	1,684	280.249			-1.82
January 9, 1989	1,715	280.249			-1.82
February 9, 1989	1,746	280.247			-1.85
March 9, 1989	1,774	280.249			-1.82
April 9, 1989	1,805	280.245			-1.87
May 9, 1989	1,835	280.248			-1.84
June 9, 1989	1,866	280.248			-1.84
July 9, 1989	1,896	280.248			-1.84
October 9, 1989	1,988	280.247			-1.85
January 17, 1990	2,088	280.245			-1.87
April 9, 1990	2,170	280.244			-1.88

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
		Monument Point 14			
May 1, 1984	1	267.671			0.00
May 17, 1984	17	267.679			0.10
May 25, 1984	25	267.674			0.04
June 1, 1984	32	267.681	270.404	2.723	0.12
June 8, 1984	39	270.403			0.11
June 16, 1984	47	270.412			0.22
June 22, 1984	53	270.404			0.12
June 29, 1984	60	270.411			0.20
July 6, 1984	67	270.403			0.11
July 13, 1984	74	270.400			0.07
July 20, 1984	81	270.410			0.19
July 27, 1984	88	270.404			0.12
August 2, 1984	94	270.400			0.07
August 10, 1984	102	270.404			0.12
August 17, 1984	109	270.396			0.03
August 27, 1984	119	270.402			0.10
August 31, 1984	123	270.398			0.05
September 12, 1984	135	270.397			0.04
September 14, 1984	137	270.397			0.04
September 21, 1984	144	270.401			0.08
September 28, 1984	151	270.378			-0.19
October 5, 1984	158	270.396			0.02
October 12, 1984	165	270.398			0.05
October 18, 1984	171	270.410			0.19
October 26, 1984	179	270.404			0.12
November 2, 1984	186	270.401	281.664	11.263	0.08
November 6, 1984	190	281.637			-0.24
November 7, 1984	191	281.665			0.10
November 20, 1984	204	281.659			0.02
November 26, 1984	210	281.670			0.16
November 30, 1984	214	281.643			-0.17
December 7, 1984	221	281.648			-0.11
December 14, 1984	228	281.653			-0.05
December 28, 1984	242	281.638			-0.23
January 4, 1985	249	281.642			-0.18
January 11, 1985	256	281.640			-0.20
January 18, 1985	263	281.641			-0.19
January 25, 1985	270	281.638			-0.23
February 1, 1985	277	281.639			-0.22
February 8, 1985	284	281.636			-0.25
February 15, 1985	291	281.633			-0.29
February 22, 1985	298	281.634			-0.28
March 1, 1985	305	281.635			-0.26
March 8, 1985	312	281.631			-0.31
April 5, 1985	340	281.634			-0.28
May 8, 1985	373	281.634	287.892	6.258	-0.28
June 8, 1985	404	287.890	287.394	-0.496	-0.30
July 3, 1985	429	287.393			-0.31
July 19, 1985	445	287.393			-0.31
July 29, 1985	455	287.391			-0.34
August 12, 1985	469	287.391			-0.34
September 18, 1985	506	287.393	287.385	-0.008	-0.31
October 17, 1985	535	287.383			-0.34
November 18, 1985	567	287.380			-0.37
December 23, 1985	602	287.382			-0.35
January 28, 1986	638	287.381			-0.36
March 19, 1986	688	287.371			-0.48

Date	Days since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (inches)	Notes
		221-S	Monument	Point 14 (continued)		
April 18, 1986	718	287.370			-0.52	
May 21, 1986	751	287.363			-0.60	
June 19, 1986	780	287.360			-0.64	
July 25, 1986	816	287.358			-0.66	
August 26, 1986	848	287.361			-0.62	
October 2, 1986	885	287.353			-0.72	
October 28, 1986	911	287.350			-0.76	
December 5, 1986	949	287.347			-0.79	
December 22, 1986	966	287.346			-0.80	
February 5, 1987	1,011	287.341			-0.86	
February 23, 1987	1,029	287.342	286.498	-0.844	-0.85	
March 24, 1987	1,058	286.494			-0.90	
May 26, 1987	1,121	286.485			-1.01	
June 26, 1987	1,152	286.468	287.851	1.383	-1.21	
July 27, 1987	1,183	287.845			-1.28	
August 28, 1987	1,215	287.843			-1.31	
September 28, 1987	1,246	287.838			-1.37	
October 29, 1987	1,277	287.840			-1.34	
November 25, 1987	1,304	287.837			-1.38	
December 28, 1987	1,337	287.834			-1.42	
March 31, 1988	1,431	287.828			-1.49	
April 22, 1988	1,453	287.826			-1.51	
May 23, 1988	1,484	287.821			-1.57	
June 30, 1988	1,522	287.821			-1.57	
August 1, 1988	1,554	287.820			-1.58	
August 29, 1988	1,582	287.818			-1.61	
September 29, 1988	1,613	287.822			-1.56	
October 28, 1988	1,642	287.818			-1.61	
November 28, 1988	1,673	287.819			-1.60	
December 9, 1988	1,684	287.814			-1.66	
January 9, 1989	1,715	287.817			-1.62	
February 9, 1989	1,746	287.816			-1.63	
March 9, 1989	1,774	287.812			-1.68	
April 9, 1989	1,805	287.813			-1.67	
May 9, 1989	1,835	287.813			-1.67	
June 9, 1989	1,866	287.812			-1.68	
July 9, 1989	1,896	287.810			-1.70	
October 9, 1989	1,988	287.809			-1.72	
January 17, 1990	2,088	287.809			-1.72	
April 9, 1990	2,170	287.811			-1.69	
July 23, 1994	3,736	287.811			-1.69	
April 26, 1997	4,744	287.798			-1.85	
April 29, 1998	5,112	287.799			-1.84	
April 17, 1999	5,465	287.797			-1.86	
April 1, 2000	5,815	287.797			-1.86	
April 21, 2001	6,200	287.799			-1.84	
April 13, 2002	6,557	287.797			-1.86	

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 15					
May 1, 1984	1	266.897			0.00
May 17, 1984	17	266.920			0.28
May 25, 1984	25	266.920			0.28
May 31, 1984	31	266.919	270.453	3.534	0.26
June 1, 1984	32	270.444			0.16
June 8, 1984	39	270.439			0.10
June 16, 1984	47	270.445			0.17
June 22, 1984	53	270.439			0.10
June 29, 1984	60	270.443			0.14
July 6, 1984	67	270.443			0.14
July 13, 1984	74	270.438			0.08
July 20, 1984	81	270.440			0.11
July 27, 1984	88	270.450			0.23
August 2, 1984	94	270.435			0.05
August 10, 1984	102	270.442			0.13
August 17, 1984	109	270.439			0.10
August 27, 1984	119	270.442			0.13
August 31, 1984	123	270.434			0.04
September 7, 1984	130	270.428			-0.04
September 14, 1984	137	270.421			-0.12
September 21, 1984	144	270.432			0.01
September 28, 1984	151	270.427			-0.05
October 1, 1984	154	270.434			0.04
October 3, 1984	156	270.450			0.23
October 5, 1984	158	270.431			0.00
October 12, 1984	165	270.362			-0.83
October 18, 1984	171	270.432			0.01
October 26, 1984	179	270.435			0.05
November 2, 1984	186	270.436			0.06
November 7, 1984	191	270.435			0.05
November 20, 1984	204	270.426			-0.06
November 26, 1984	210	270.436			0.06
November 30, 1984	214	270.422			-0.11
December 7, 1984	221	270.420	281.036	10.616	-0.13
December 12, 1984	226	281.031			-0.19
December 14, 1984	228	281.031			-0.19
December 28, 1984	242	281.027			-0.24
January 4, 1985	249	281.025			-0.26
January 11, 1985	256	281.019			-0.34
January 18, 1985	263	281.017			-0.36
January 25, 1985	270	281.014	280.829	-0.185	-0.40
February 1, 1985	277	280.831			-0.37
February 8, 1985	284	280.831			-0.37
February 15, 1985	291	280.830			-0.38
February 22, 1985	298	280.826			-0.43
March 1, 1985	305	280.831			-0.37
March 8, 1985	312	280.830			-0.38

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 16					
May 1, 1984	1	266.701			0.00
May 17, 1984	17	266.719			0.22
May 25, 1984	25	266.717			0.19
May 30, 1984	30	266.714	270.406	3.692	0.16
June 1, 1984	32	270.400			0.08
June 8, 1984	39	270.389			-0.05
June 16, 1984	47	270.393			0.00
June 22, 1984	53	270.391			-0.02
June 29, 1984	60	270.397			0.05
July 6, 1984	67	270.394			0.01
July 13, 1984	74	270.392			-0.01
July 20, 1984	81	270.390			-0.04
July 27, 1984	88	270.401			0.10
August 2, 1984	94	270.395			0.02
August 10, 1984	102	270.392			-0.01
August 17, 1984	109	270.404			0.14
August 27, 1984	119	270.388			-0.06
August 31, 1984	123	270.384			-0.11
September 7, 1984	130	270.386			-0.08
September 14, 1984	137	270.386	281.051	10.665	-0.08
September 21, 1984	144	281.048			-0.12
September 28, 1984	151	281.030			-0.34
October 1, 1984	154	281.039			-0.23
October 5, 1984	158	281.036			-0.26
October 12, 1984	165	281.045			-0.16
October 18, 1984	171	281.046			-0.14
October 26, 1984	179	281.037			-0.25
November 2, 1984	186	281.037			-0.25
November 7, 1984	191	281.037			-0.25
November 20, 1984	204	281.033			-0.30
November 26, 1984	210	281.037			-0.25
November 30, 1984	214	281.020			-0.46
December 7, 1984	221	281.024			-0.41
December 14, 1984	228	281.025			-0.40
December 28, 1984	242	281.015			-0.52
January 4, 1985	249	281.019			-0.47
January 11, 1985	256	281.017			-0.49
January 18, 1985	263	281.015			-0.52
January 25, 1985	270	281.011	280.831	-0.180	-0.56
February 1, 1985	277	280.835			-0.52
February 8, 1985	284	280.832			-0.55
February 15, 1985	291	280.832			-0.55
February 22, 1985	298	280.831			-0.56
March 1, 1985	305	280.835			-0.52
March 8, 1985	312	280.834			-0.53

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 18					
November 8, 1984	192	279.553			0.00
November 12, 1984	196	279.529			-0.29
November 20, 1984	204	279.532			-0.25
November 26, 1984	210	279.530			-0.28
November 30, 1984	214	279.533			-0.24
December 7, 1984	221	279.547			-0.07
December 14, 1984	228	279.540			-0.16
December 28, 1984	242	279.533			-0.24
January 4, 1985	249	279.538			-0.18
January 11, 1985	256	279.525			-0.34
January 18, 1985	263	279.526			-0.32
January 25, 1985	270	279.527			-0.31
February 1, 1985	277	279.517			-0.43
February 8, 1985	284	279.515			-0.46
February 15, 1985	291	279.516			-0.44
February 22, 1985	298	279.512			-0.49
March 1, 1985	305	279.511			-0.50
March 8, 1985	312	279.512			-0.49
April 5, 1985	340	279.509			-0.53
May 8, 1985	373	279.505	284.896	5.391	-0.58
June 8, 1985	404	284.892	284.356	-0.536	-0.62
July 3, 1985	429	284.354			-0.65
July 19, 1985	445	284.351			-0.68
July 29, 1985	455	284.351			-0.68
August 12, 1985	469	284.351			-0.68
September 18, 1985	506	284.351	287.435	3.084	-0.68
October 17, 1985	535	287.436			-0.67
November 18, 1985	567	287.434			-0.70
December 23, 1985	602	287.441			-0.61
January 28, 1986	638	287.433			-0.71
March 19, 1986	688	287.422			-0.84
April 18, 1986	718	287.418			-0.89
May 21, 1986	751	287.412			-0.96
June 19, 1986	780	287.407			-1.02
July 25, 1986	816	287.405			-1.04
August 26, 1986	848	287.408			-1.00
October 2, 1986	885	287.406			-1.03
October 28, 1986	911	287.409			-1.00
December 5, 1986	949	287.410			-0.98
December 22, 1986	966	287.405			-1.04
February 5, 1987	1,011	287.398			-1.13
February 23, 1987	1,029	287.398			-1.13
March 24, 1987	1,058	287.390			-1.22
May 26, 1987	1,121	287.378			-1.37
June 26, 1987	1,152	287.357			-1.62
July 27, 1987	1,183	287.354			-1.66
August 28, 1987	1,215	287.351	288.836	1.485	-1.69
September 28, 1987	1,246	288.834			-1.72
October 29, 1987	1,277	288.831			-1.75
November 25, 1987	1,304	288.828			-1.79
December 28, 1987	1,337	288.823			-1.85
March 31, 1988	1,431	288.792			-2.22
April 22, 1988	1,453	288.790			-2.24
May 23, 1988	1,484	288.784			-2.32
June 30, 1988	1,522	288.778			-2.39
August 1, 1988	1,554	288.775			-2.42
August 29, 1988	1,582	288.772			-2.46

Date	Days since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (inches)	Notes
		221-S	Monument	Point 18 (continued)		
September 29, 1988	1,613	288.772			-2.46	
October 28, 1988	1,642	288.771			-2.47	
November 28, 1988	1,673	288.769			-2.50	
December 9, 1988	1,684	288.767			-2.52	
January 9, 1989	1,715	288.767			-2.52	
February 9, 1989	1,746	288.764			-2.56	
March 9, 1989	1,774	288.762			-2.58	
April 9, 1989	1,805	288.761			-2.59	
May 9, 1989	1,835	288.761			-2.59	
June 9, 1989	1,866	288.759			-2.62	
July 9, 1989	1,896	288.755			-2.66	
October 9, 1989	1,988	288.756			-2.65	
January 17, 1990	2,088	288.751			-2.71	
April 9, 1990	2,170	288.751			-2.71	
October 9, 1990	2,353	288.747			-2.76	
April 12, 1991	2,538	288.742			-2.82	
July 23, 1994	3,736	288.733			-2.93	
April 26, 1997	4,744	288.720			-3.08	
April 29, 1998	5,112	288.723			-3.05	
April 17, 1999	5,465	288.718	288.719	0.001	-3.11	based on historical curve
April 1, 2000	5,815	288.722			-3.06	
April 21, 2001	6,200	288.716			-3.13	
April 13, 2002	6,557	288.715			-3.15	

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 25					
December 12, 1984	226	281.381			0.00
December 14, 1984	228	281.381			0.00
December 28, 1984	242	281.367			-0.17
January 4, 1985	249	281.368			-0.16
January 11, 1985	256	281.361			-0.24
January 18, 1985	263	281.360			-0.25
January 25, 1985	270	281.357	280.848	-0.509	-0.29
February 1, 1985	277	280.850			-0.26
February 8, 1985	284	280.850			-0.26
February 15, 1985	291	280.849			-0.28
February 22, 1985	298	280.847			-0.30
March 1, 1985	305	280.851			-0.25
March 8, 1985	312	280.848			-0.29

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 26					
November 8, 1984	192	279.522			0.00
November 12, 1984	196	279.510			-0.14
November 20, 1984	204	279.504			-0.22
November 26, 1984	210	279.506			-0.19
November 30, 1984	214	279.502			-0.24
December 7, 1984	221	279.516			-0.07
December 14, 1984	228	279.514			-0.10
December 28, 1984	242	279.513			-0.11
January 4, 1985	249	279.515			-0.08
January 11, 1985	256	279.505			-0.20
January 18, 1985	263	279.504			-0.22
January 25, 1985	270	279.502			-0.24
February 1, 1985	277	279.500			-0.26
February 8, 1985	284	279.497			-0.30
February 15, 1985	291	279.498			-0.29
February 22, 1985	298	279.497			-0.30
March 1, 1985	305	279.497			-0.30
March 8, 1985	312	279.496			-0.31
April 5, 1985	340	279.494			-0.34
May 8, 1985	373	279.492	279.358	-0.134	-0.36
June 8, 1985	404	279.358	284.421	5.063	-0.36
July 3, 1985	429	284.420			-0.37
July 19, 1985	445	284.420			-0.37
August 12, 1985	469	284.420	287.389	2.969	-0.37
September 18, 1985	506	287.386			-0.41
October 17, 1985	535	287.386			-0.41
November 18, 1985	567	287.385			-0.42
December 23, 1985	602	287.383			-0.44
January 28, 1986	638	287.380			-0.48
March 19, 1986	688	287.370			-0.60
April 18, 1986	718	287.368			-0.62
May 21, 1986	751	287.360			-0.72
June 19, 1986	780	287.357			-0.76
July 25, 1986	816	287.356			-0.77
October 2, 1986	885	287.353			-0.80
October 28, 1986	911	287.351			-0.83
December 5, 1986	949	287.350			-0.84
December 22, 1986	966	287.345			-0.90
February 5, 1987	1,011	287.341			-0.95
February 23, 1987	1,029	287.337			-1.00
March 24, 1987	1,058	287.333			-1.04
May 26, 1987	1,121	287.319			-1.21
June 26, 1987	1,152	287.303			-1.40
July 27, 1987	1,183	287.298			-1.46
August 28, 1987	1,215	287.294			-1.51
September 28, 1987	1,246	287.288			-1.58
October 29, 1987	1,277	287.285			-1.62
November 25, 1987	1,304	287.283			-1.64
December 28, 1987	1,337	287.276			-1.73
March 31, 1988	1,431	287.252			-2.02
April 22, 1988	1,453	287.251			-2.03
May 23, 1988	1,484	287.244			-2.11
June 30, 1988	1,522	287.238			-2.18
August 1, 1988	1,554	287.233			-2.24
August 29, 1988	1,582	287.230			-2.28
September 29, 1988	1,613	287.230			-2.28
October 28, 1988	1,642	287.226			-2.33

Date	Days since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)	Notes
		221-S	Monument	Point 26 (continued)		
November 28, 1988	1,673	287.226			-2.38	
December 9, 1988	1,684	287.222			-2.42	
January 9, 1989	1,715	287.222			-2.42	
February 9, 1989	1,746	287.220			-2.45	
March 9, 1989	1,774	287.220			-2.45	
April 9, 1989	1,805	287.218			-2.47	
May 9, 1989	1,835	287.218			-2.47	
June 9, 1989	1,866	287.215			-2.51	
July 9, 1989	1,896	287.213			-2.53	
October 9, 1989	1,988	287.213			-2.53	
January 17, 1990	2,088	287.206			-2.62	
April 9, 1990	2,170	287.207			-2.60	
October 9, 1990	2,353	287.207			-2.60	
April 12, 1991	2,538	287.199			-2.70	
July 23, 1994	3,736	287.193			-2.77	
April 26, 1997	4,744	287.176			-2.98	
April 29, 1998	5,112	287.179			-2.94	
April 17, 1999	5,465	287.175			-2.99	
April 1, 2000	5,815	287.178			-2.96	
April 21, 2001	6,200	287.173			-3.01	
April 13, 2002	6,557	287.171			-3.03	

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (Inches)
Monument Point 28					
October 1, 1984	154	281.018			0.00
October 3, 1984	156	281.018			0.00
October 5, 1984	158	281.000			-0.22
October 12, 1984	165	281.006			-0.14
October 18, 1984	171	281.005			-0.16
October 26, 1984	179	281.001			-0.20
November 2, 1984	186	280.999			-0.23
November 7, 1984	191	281.001			-0.20
November 15, 1984	199	281.001			-0.20
November 20, 1984	204	280.991			-0.32
November 26, 1984	210	281.002			-0.19
November 30, 1984	214	280.990			-0.34
December 7, 1984	221	280.985			-0.40
December 14, 1984	228	280.988			-0.36
December 28, 1984	242	280.986			-0.38
January 4, 1985	249	280.986			-0.38
January 11, 1985	256	280.984			-0.41
January 18, 1985	263	280.982			-0.43
January 25, 1985	270	280.976	280.804	-0.172	-0.50
February 1, 1985	277	280.807			-0.47
February 8, 1985	284	280.807			-0.47
February 15, 1985	291	280.804			-0.50
February 22, 1985	298	280.804			-0.50
March 1, 1985	305	280.809			-0.44
March 8, 1985	312	280.807			-0.47
April 5, 1985	340	280.809			-0.44
May 8, 1985	373	280.810			-0.43
June 8, 1985	404	280.810	278.314	-2.496	-0.43
July 3, 1985	429	278.313	281.616	3.303	-0.44
July 19, 1985	445	281.618			-0.42
July 29, 1985	455	281.616			-0.44
August 12, 1985	469	281.613			-0.48
September 18, 1985	506	281.610			-0.52
October 17, 1985	535	281.609			-0.53
November 18, 1985	567	281.602			-0.61
December 23, 1985	602	281.598			-0.66
January 28, 1986	638	281.594			-0.71
March 19, 1986	688	281.592			-0.73
April 18, 1986	718	281.593			-0.72
May 21, 1986	751	281.586			-0.80
June 19, 1986	780	281.583			-0.84
July 25, 1986	816	281.587			-0.79
August 26, 1986	848	281.583			-0.84
October 2, 1986	885	281.572			-0.97
October 28, 1986	911	281.564			-1.07
December 5, 1986	949	281.556			-1.16
December 22, 1986	966	281.547			-1.27
February 5, 1987	1,011	281.547			-1.27
February 23, 1987	1,029	281.544			-1.31
March 24, 1987	1,058	281.543			-1.32
May 26, 1987	1,121	281.542			-1.33
June 26, 1987	1,152	281.529			-1.49
July 27, 1987	1,183	281.521			-1.58
August 28, 1987	1,215	281.517			-1.63
September 28, 1987	1,246	281.517	280.267	-1.250	-1.63
October 29, 1987	1,277	280.257			-1.75
November 25, 1987	1,304	280.252			-1.81

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (inches)
Monument Point 28 (coutinued)					
December 28, 1987	1,337	280.247			-1.87
March 31, 1988	1,431	280.237			-1.99
April 22, 1988	1,453	280.232			-2.05
May 23, 1988	1,484	280.236			-2.00
June 30, 1988	1,522	280.230			-2.08
August 1, 1988	1,554	280.234			-2.03
August 29, 1988	1,582	280.229			-2.09
September 29, 1988	1,613	280.229			-2.09
October 28, 1988	1,642	280.222			-2.17
November 28, 1988	1,673	280.220			-2.20
December 9, 1988	1,684	280.216			-2.24
January 9, 1989	1,715	280.217			-2.23
February 9, 1989	1,746	280.214			-2.27
March 9, 1989	1,774	280.215			-2.26
April 9, 1989	1,805	280.210			-2.32
May 9, 1989	1,835	280.213			-2.28
June 9, 1989	1,866	280.217			-2.23
July 9, 1989	1,896	280.213			-2.28
October 9, 1989	1,988	280.209			-2.33
January 17, 1990	2,088	280.204			-2.39
April 9, 1990	2,170	280.203			-2.40

Date	Day since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (inches)
Monument Point 37					
November 2, 1984	186	281.315			0.00
November 6, 1984	190	281.288			-0.32
November 7, 1984	191	281.317			0.02
November 20, 1984	204	281.304			-0.13
November 26, 1984	210	281.316			0.01
November 30, 1984	214	281.291			-0.29
December 7, 1984	221	281.292			-0.28
December 14, 1984	228	281.297			-0.22
December 28, 1984	242	281.282			-0.40
January 4, 1985	249	281.286			-0.35
January 11, 1985	256	281.287			-0.34
January 18, 1985	263	281.287			-0.34
January 25, 1985	270	281.285			-0.36
February 22, 1985	298	281.282			-0.40
March 1, 1985	305	281.283			-0.38
March 8, 1985	312	281.281			-0.41
April 5, 1985	340	281.282			-0.40
May 8, 1985	373	281.282	284.694	3.612	-0.40
June 8, 1985	404	284.805	287.404	2.509	-0.38
July 3, 1985	429	287.404			-0.38
July 19, 1985	445	287.404			-0.38
July 29, 1985	455	287.401			-0.42
August 12, 1985	469	287.400			-0.43
September 18, 1985	506	287.400			-0.43
October 17, 1985	535	287.397			-0.47
November 18, 1985	567	287.394			-0.50
December 23, 1985	602	287.393			-0.52
January 28, 1986	638	287.392			-0.53
March 19, 1986	688	287.382			-0.65
April 18, 1986	718	287.381			-0.66
May 21, 1986	751	287.376			-0.72
June 19, 1986	780	287.373			-0.76
July 25, 1986	816	287.373			-0.76
August 26, 1986	848	287.372			-0.77
October 2, 1986	885	287.365			-0.85
October 28, 1986	911	287.361			-0.90
December 5, 1986	949	287.357			-0.95
December 22, 1986	966	287.355			-0.97
February 5, 1987	1,011	287.351			-1.02
February 23, 1987	1,029	287.352			-1.01
March 24, 1987	1,058	287.349			-1.04
May 26, 1987	1,121	287.342			-1.13
June 26, 1987	1,152	287.325	288.788	1.463	-1.33
July 27, 1987	1,183	288.786			-1.36
August 28, 1987	1,215	288.786			-1.36
September 28, 1987	1,246	288.780			-1.43
October 29, 1987	1,277	288.779			-1.44
November 25, 1987	1,304	288.777			-1.46
December 28, 1987	1,337	288.772			-1.52
March 31, 1988	1,431	288.764			-1.62
April 22, 1988	1,453	288.763			-1.63
May 23, 1988	1,484	288.762			-1.64
June 30, 1988	1,522	288.762			-1.64
August 1, 1988	1,554	288.759			-1.68
August 29, 1988	1,582	288.760			-1.67
September 29, 1988	1,613	288.760			-1.67
October 28, 1988	1,642	288.756			-1.72

Date	Days since May 1, 1984	Monument elevation (feet MSL)	Transferred elevation (feet MSL)	Elevation difference (feet)	Settlement (inches)	Notes
		221-S	Monument	Point 37 (continued)		
November 28, 1988	1,673	288.755			-1.73	
December 9, 1988	1,684	288.752			-1.76	
January 9, 1989	1,715	288.755			-1.73	
February 9, 1989	1,746	288.755			-1.73	
March 9, 1989	1,774	288.752			-1.76	
April 9, 1989	1,805	288.751			-1.78	
May 9, 1989	1,835	288.750			-1.79	
June 9, 1989	1,866	288.748			-1.81	
July 9, 1989	1,896	288.749			-1.80	
October 9, 1989	1,988	288.748			-1.81	
January 17, 1990	2,088	288.748			-1.81	
April 9, 1990	2,170	288.748			-1.81	
October 9, 1990	2,353	288.742			-1.88	
April 12, 1991	2,538	288.739			-1.92	
July 23, 1994	3,736	288.734			-1.98	
April 26, 1997	4,744	288.730			-2.03	
April 29, 1998	5,112	288.733			-1.99	
April 17, 1999	5,465	288.731	288.729	-0.002	-2.02	based on point 14 & 35
April 1, 2000	5,815	288.731			-2.02	
April 21, 2001	6,200	288.728			-2.03	
April 13, 2002	6,557	288.727			-2.05	

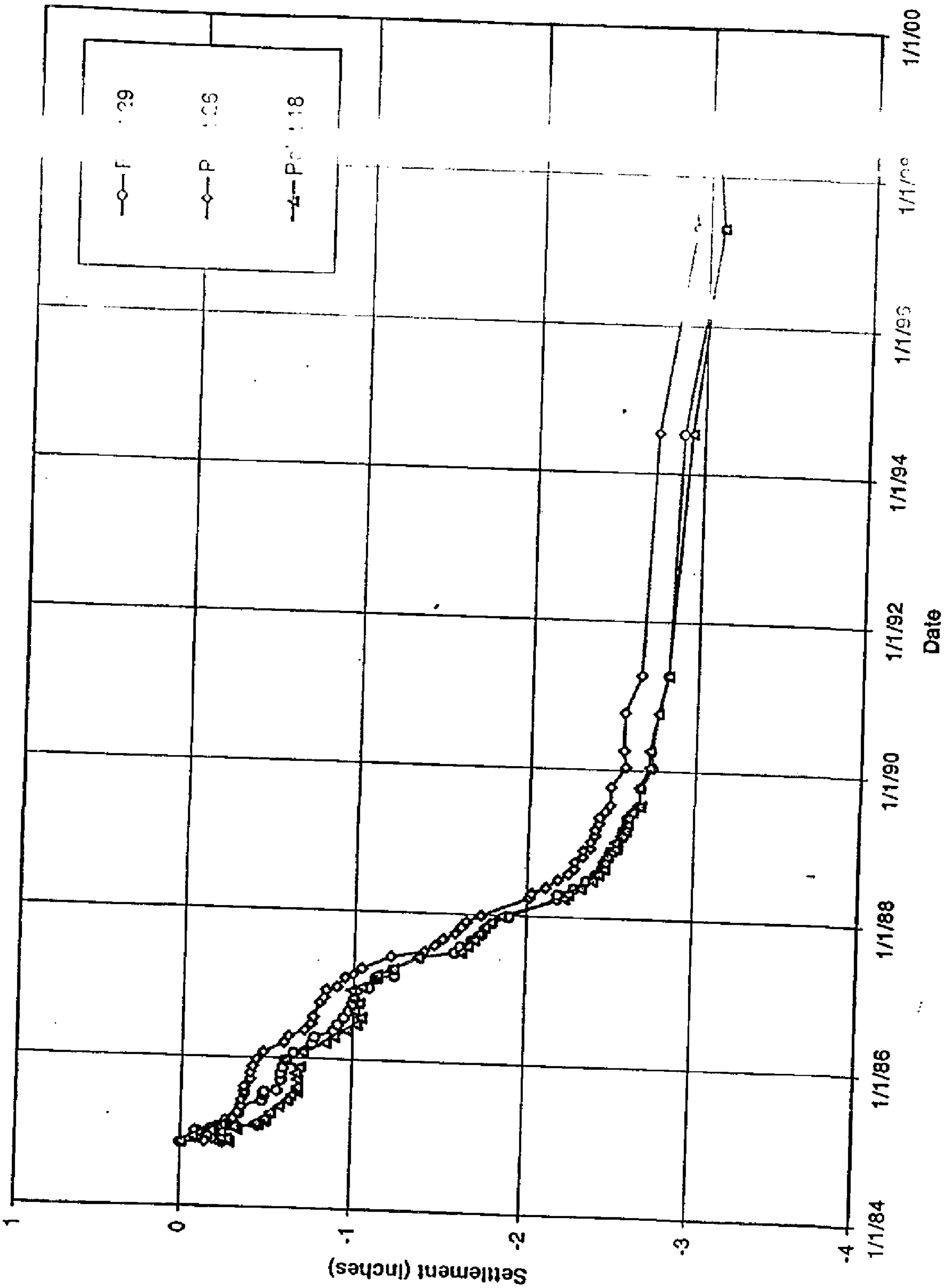


Figure 8 Settlement at the north end

T-CLC-Z-00006, Rev. 0

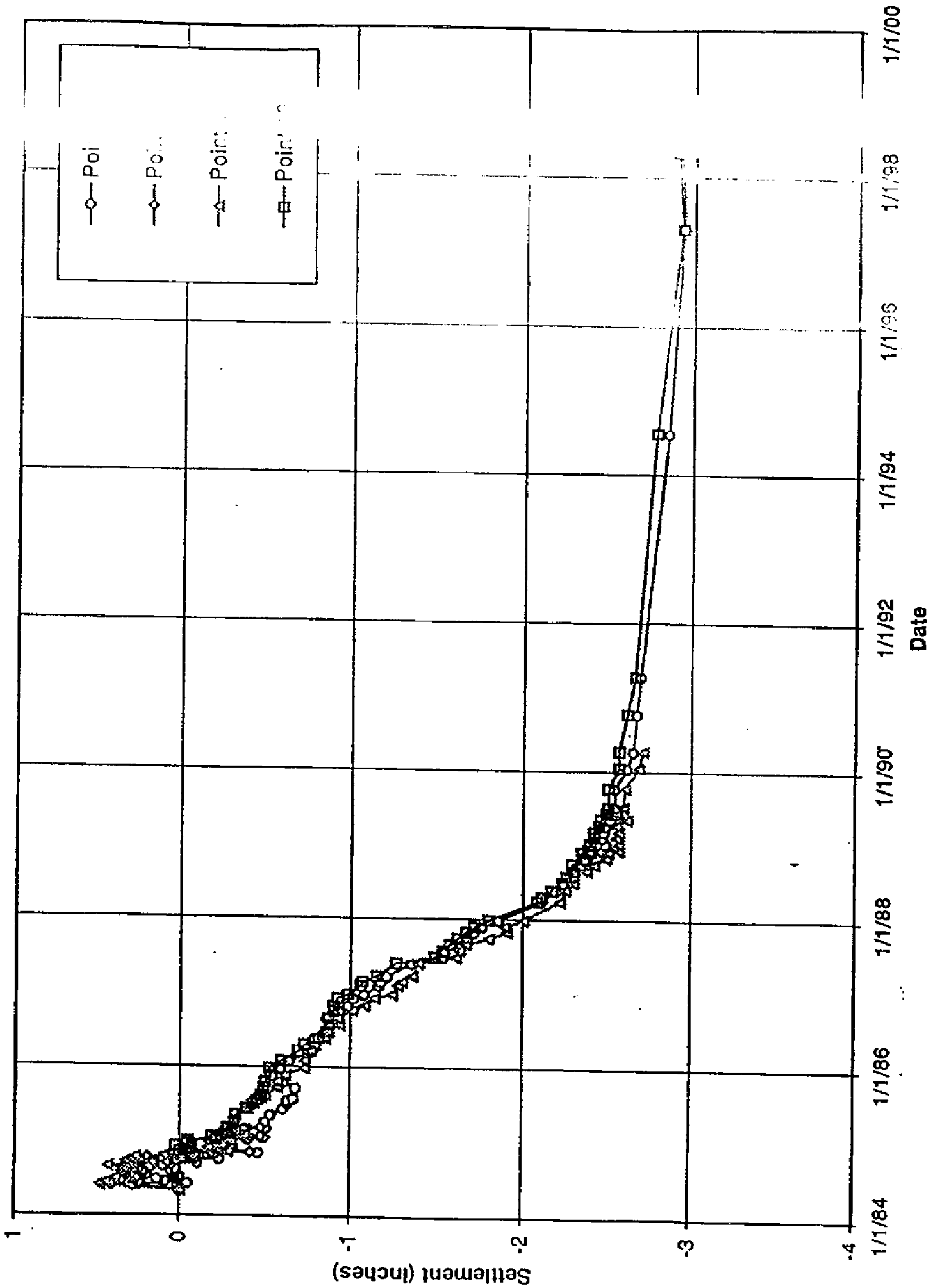


Figure 9 Settlement at 30 feet from the north end

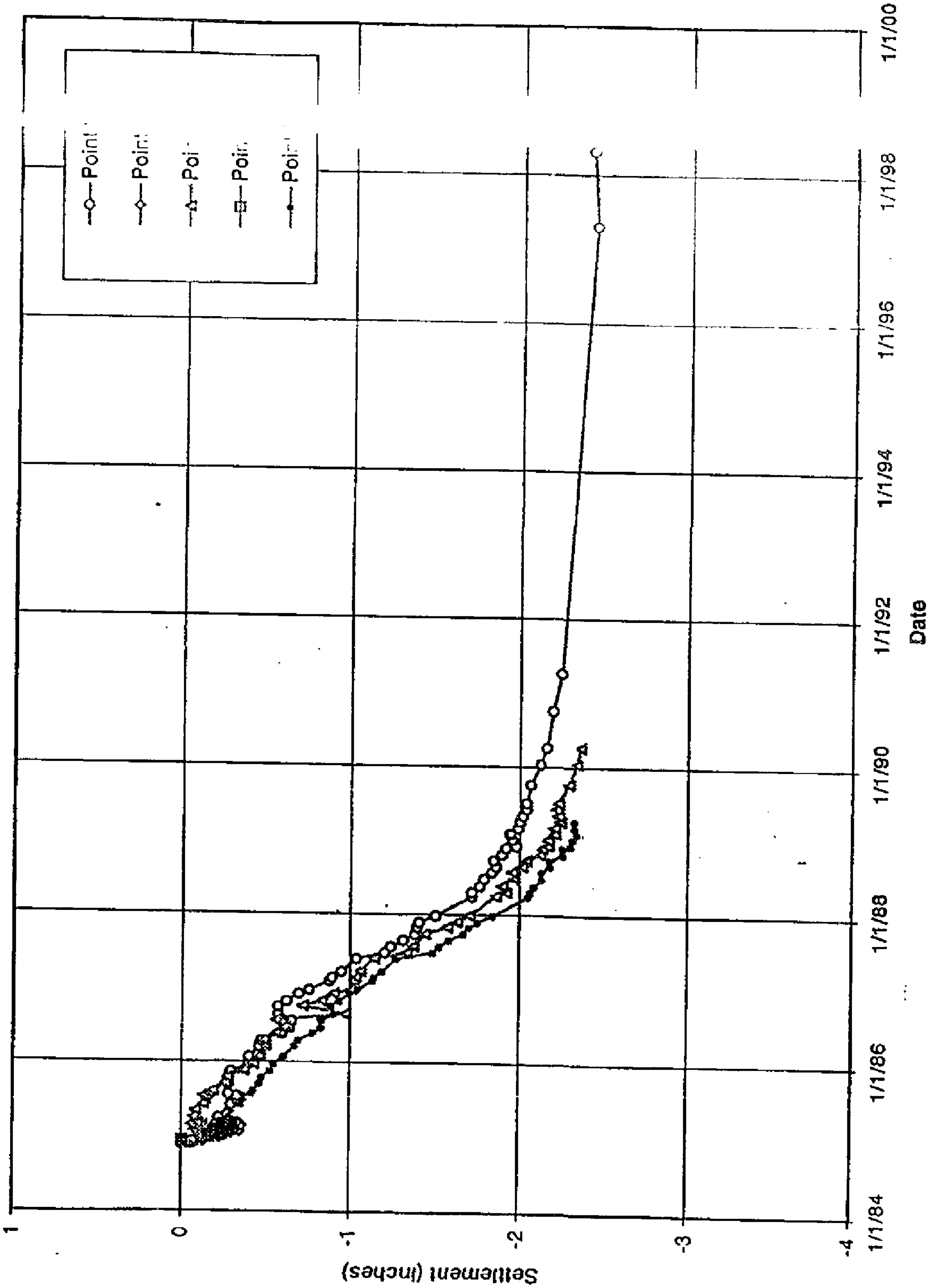


Figure 10 Settlement at 80 feet from the north end

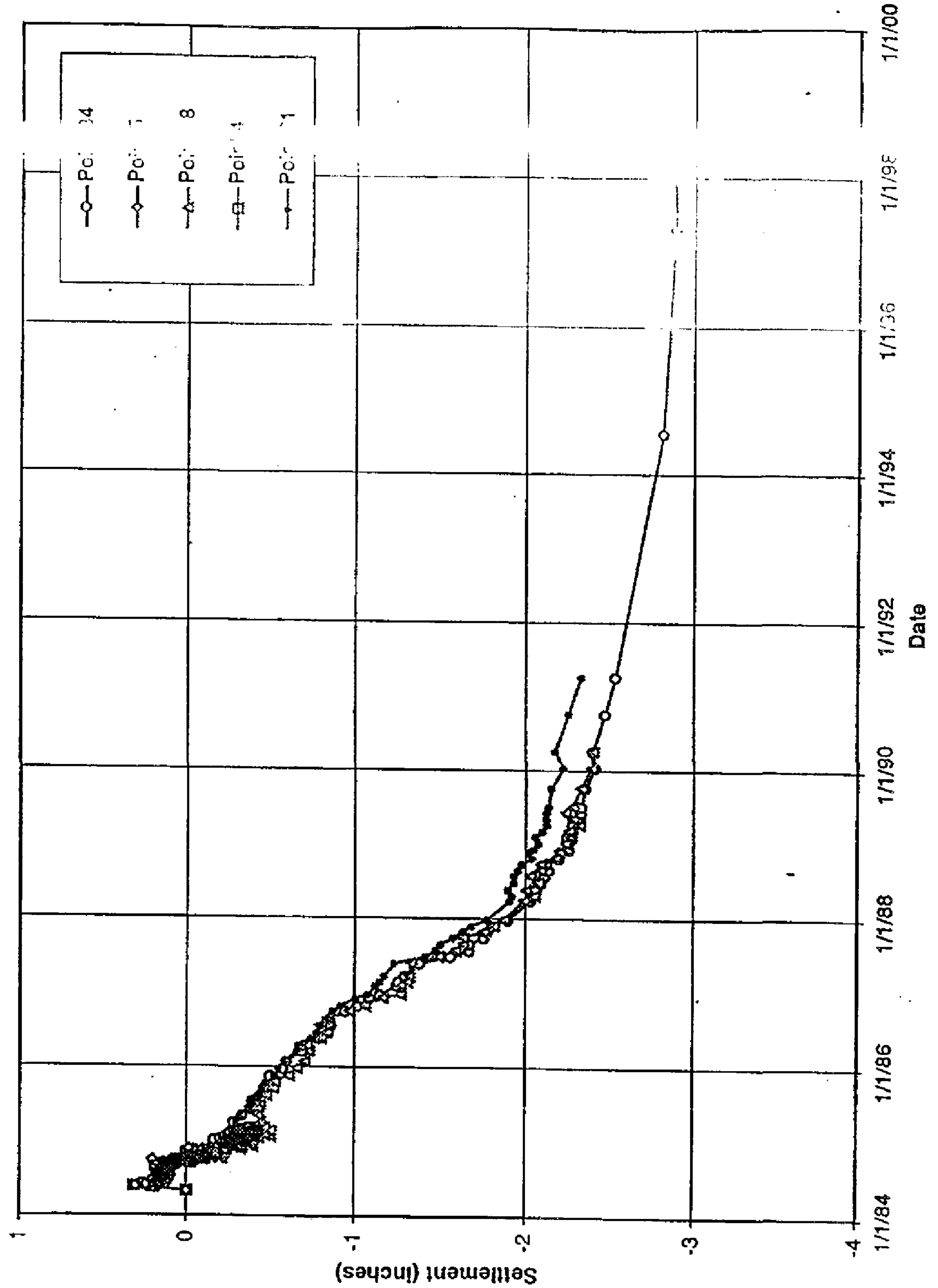


Figure 11 Settlement at 140 feet from the north end

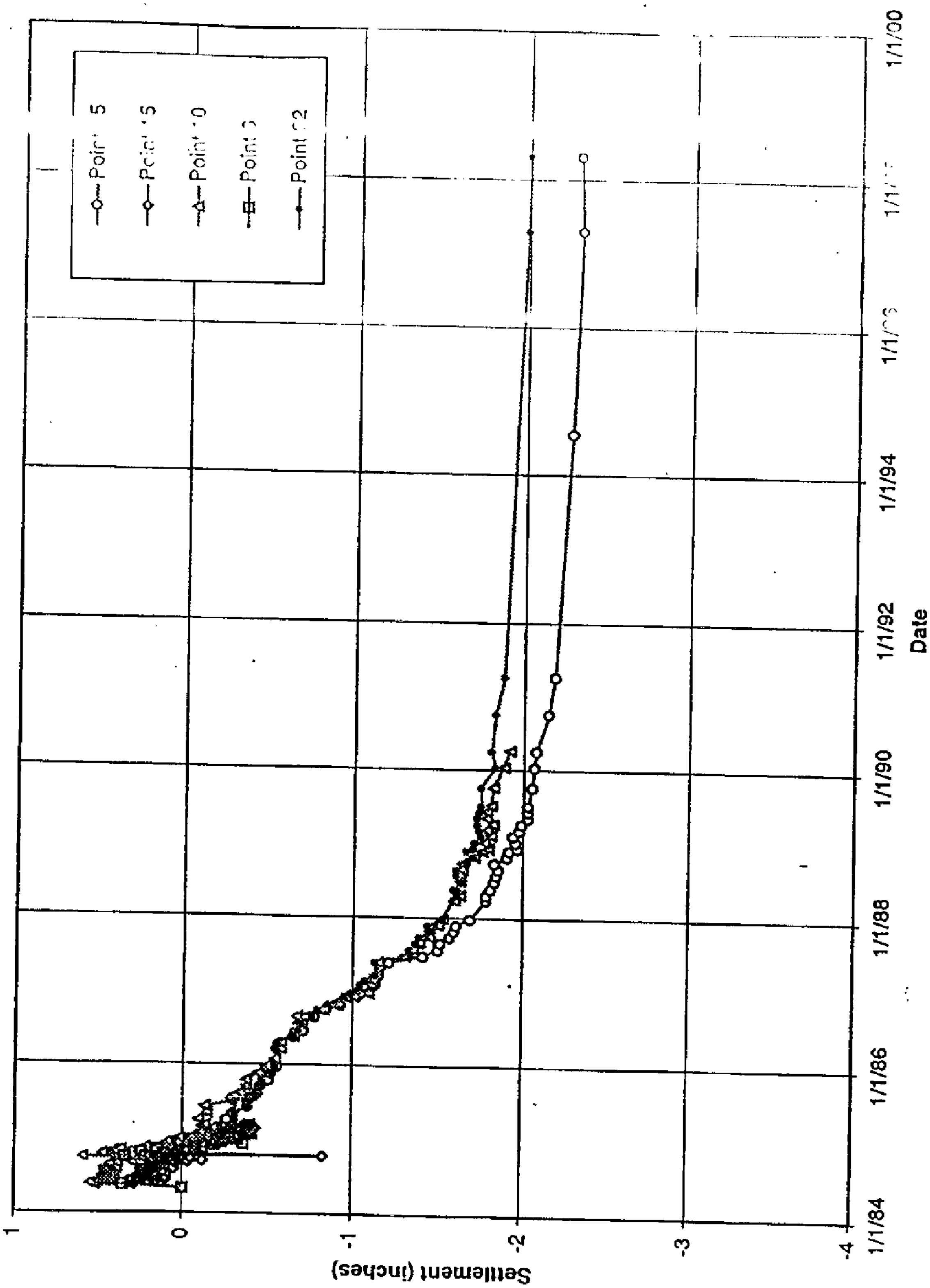


Figure 12 Settlement at 160 feet from the south end

APPENDIX C

Closure Cap Configuration

Saltstone Disposal Facility (SDF) Closure Cap Configuration
Vault Loading Information, Revision 2
Mark A. Phifer
April 2, 2003

This revision is based upon the closure cap, drainage system configuration shown in Figure 1, which was selected as the base case configuration during the April 2, 2003 Saltstone PA Core Team meeting.

A typical Saltstone vault is 600 ft long by 200 ft wide with an assumed distance of 50 ft between vaults in each row. The apex of the vault roof runs lengthwise (i.e. 600 ft) down its center, and the roof is sloped at 2 percent from the apex to the vault side, which results in a slope length of 100 ft over the vault itself. The vault roof slope and slope length will propagate upward from the vault roof to the first backfill layer overlaying the roof. This backfill layer will be used to change the direction of slope by 90 degrees, to produce the closure cap apex which runs widthwise (i.e. 200 ft) down its center, to increase the slope length to 300 ft, and to increase the slope to 3 percent over the vault itself. The slope and slope length of this backfill layer will propagate upward to the ground surface (WSRC 2000 and WSRC 2002a).

Table 1 provides the current Saltstone Disposal Facility (SDF) kaolin closure cap configuration (WSRC 2000; WSRC 2002a; WSRC 2002b) along with the replacement geosynthetic clay layer (GCL) closure cap configuration that will be used in the revised Performance Assessment. Only the replacement GCL closure cap will be considered further. Table 1 provides the thickness of each layer and the overall total minimum thickness. As indicated above the thickness of the first backfill layer overlaying the vault roof will vary to accommodate the 2 percent slope of the vault roof and the 3 percent slope of the closure cap top surface.

Table 2 and Figure 2, together, provide information on the variation in the first backfill layer's thickness relative to its position over the top of the vault. See Figure 2 for the location relative to the top of the vault, and Table 2 provides the thickness of the first backfill layer. This results in the total closure cap thicknesses over the vault as shown in Table 3. See Figure 2 for the location relative to the top of the vault

Table 4 provides recommended wet bulk densities for use in conjunction with the layer thicknesses to determine the soil loading on top of the Saltstone Vault. The geotextile fabric and GCL wet bulk densities are given in pounds per square foot, since both materials come in rolls which are unrolled in place during installation.

Figure 1

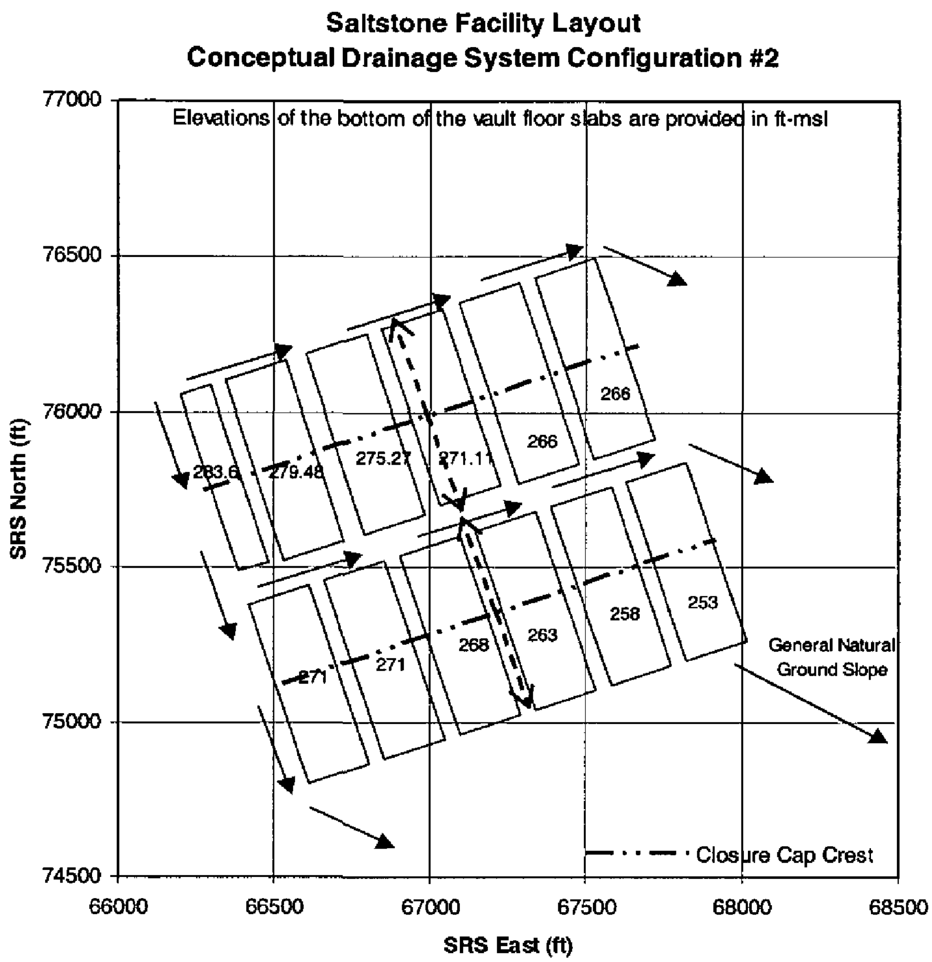

Saltstone Facility Layout
Conceptual Drainage System Configuration #2
Elevations of the bottom of the vault floor slabs are provided in ft-msl
283.6
279.48
275.27
271.11
266
266
271
271
268
263
258
253
General Natural Ground Slope
Closure Cap Crest
SRS North (ft)
SRS East (ft)
77000
76500
76000
75500
75000
74500
66000
66500
67000
67500
68000
68500

Table 1
Closure Cap Layer Thicknesses

Current Kaolin Closure Cap		Replacement GCL Closure Cap	
Layer	Thickness, feet (meters)	Layer	Thickness, feet (meters)
Topsoil	0.5 (0.15)	Topsoil	0.5 (0.15)
Backfill	2.5 (0.76)	Backfill	2.5 (0.76)
Drainage Layer	1 (0.3)	Erosion Barrier	1 (0.3)
Kaolin Layer	2.5 (0.76)	Drainage Layer [2]	1 (0.3)
Backfill (i.e. first backfill layer)	Variable thickness [1]; minimum: 1 (0.3)	GCL	0.0167 (0.005)
Drainage Layer	0.5 (0.15)	Backfill (i.e. first backfill layer)	variable thickness [1]; minimum: 7.467 (2.28)
Kaolin Layer	1.67 (0.5)	Drainage Layer [2]	0.5 (0.15)
Grout	3.33 (1.0)	GCL	0.0167 (0.005)
Total Minimum Thickness	13.0 (3.92)	Total Minimum Thickness	13.0 (3.92)

[1] See Table 2 and Figure 1
[2] A geotextile fabric will be placed above the drainage layers to prevent the infiltration of fines into the layer.

Table 2
Thickness of First Backfill Layer

Location Over Vault (see Figure 1)	First Backfill Layer Thickness, feet (meters)
1 & 3	9.467 (2.88)
2	7.467 (2.28)
4 & 6	18.467 (5.63)
5	16.467 (5.02)

Figure 2
Position Over Vault

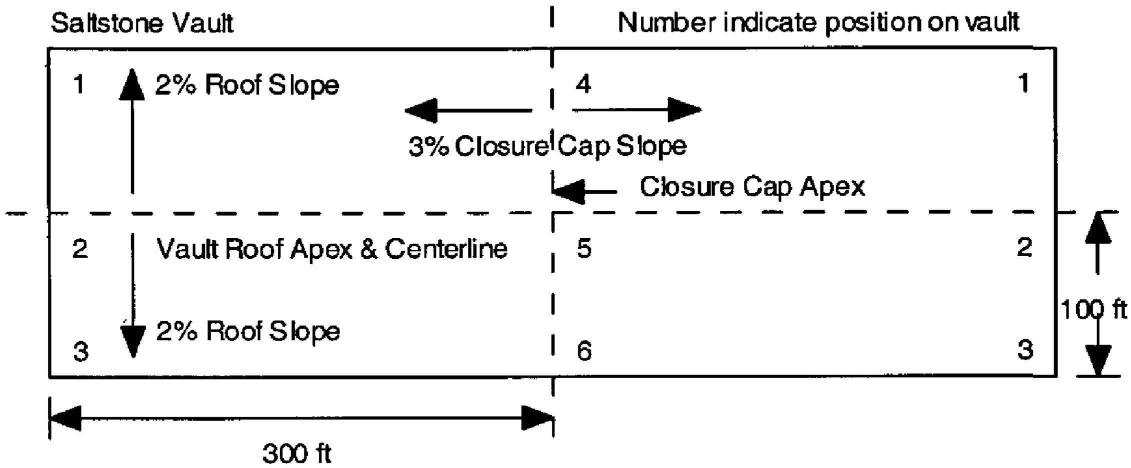


Table 3
Total Closure Cap Thickness

Location Over Vault (see Figure 1)	Total Closure Cap Thickness, feet (meters)
1 & 3	15.00 (4.57)
2	13.0 (3.92)
4 & 6	24.0 (7.32)
5	22.0 (6.70)

Table 4
Recommended Wet Bulk Densities
(Data derived from WSRC 2002c, WSRC 2002d, and)

Layer	Dry Bulk Density (pcf)	Volumetric Moisture Content [4] (V/V)	Gravimetric Moisture Content (M_w/M_s)	Wet Bulk Density (pcf)
Topsoil [1]	90	0.2757	0.1912	107.2
Backfill [1]	104	0.2982	0.1789	122.6
Erosion Barrier [2]	105	0.0941	0.0559	110.9
Geotextile Fabric [3]	-	-	-	0.07 psf
Drainage Layer [1]	105	0.1764	0.1048	116.0
GCL [3]	-	0.75	-	2 psf

[1] Derived from WSRC 2002c and WSRC 2002d
[2] Default Soil Texture Class # 21 (poorly graded gravel per the USCS) from EPA 1994

[3] Obtained from the following GSE web sites:

- www.gseworld.com/global/UnitedStates/Products/NonwovenGeotextile/index.htm for GSE Nonwoven Geotextile NW10
- www.gseworld.com/global/UnitedStates/Products/Bentofix/Index.htm for GSE Bentofix® NS

[4] Obtained from HELP Model Run of Saltstone Closure Cap per Table 1

References:

EPA 1994. The Hydrologic Evaluation of Landfill Performance (HELP) Model Engineering Documentation for Version 3, (EPA/600/R-94/168b). United States Environmental Protection Agency, Office of Research and Development, Washington, DC. September 1994.

WSRC 2000. *Closure Plan for the Z-Area Saltstone Disposal Facility (U)*, Rev. 0 (WSRC-RP-2000-00426). Westinghouse Savannah River Company, Aiken, South Carolina. September 29, 2000.

WSRC 2002a. *Saltstone Landfill Design Equivalency Demonstration (U)*, Rev. 0 (WSRC-TR-2002-00236). Westinghouse Savannah River Company, Aiken, South Carolina. August 30, 2002.

WSRC 2002b. *Special Analysis: Reevaluation of the Inadvertent Intruder, Groundwater, Air, and Radon Analyses for the Saltstone Disposal Facility*, Draft (WSRC-TR-2002-00456). Westinghouse Savannah River Company, Aiken, South Carolina. October 2002.

WSRC 2002c. *Closure Plan for the E-area Low-Level Waste Facility*, Rev. 2, (WSRC-RP-2000-00425). Westinghouse Savannah River Company, Aiken, SC 29808. September 2, 2002.

WSRC 2002d. Corrosion and Potential Subsidence Scenarios for Buried B-25 Waste Containers (U), (WSRC-TR-2002-00354). Westinghouse Savannah River Company, Aiken, SC 29808. September 2002.

APPENDIX D

SGS Geotechnical Data for Differential Settlement

T-CLC-Z-00006, Rev. 0

SRS
savannah river site

WESTINGHOUSE SAVANNAH RIVER COMPANY
INTEROFFICE MEMORANDUM

FIELD SUPPORT SERVICES
GEOTECHNICAL ENGINEERING DEPARTMENT

May 1, 2003 FSS-GED-2003-00005

TO: W. L. Peregoy, 730-1B-3078
G. E; Mertz, 730-1B-314

FROM: M. D. McHood, 730-2B-1070 MDM

GEOTECHNICAL INPUT FOR SALTSTONE VAULT NO. 4 STRUCTURAL ANALYSIS

Geotechnical Engineering has estimated dynamic settlement for Saltstone Vault No. 4 due to Performance Category 3 (PC3) and Performance Category 4 (PC4) earthquakes. Site specific geotechnical data used for the seismic evaluation includes six Seismic Piezocone Penetrometer (SCPTu) soundings performed in June of 2002. In addition, historical geotechnical data and reports were reviewed to provide estimated static settlement due to primary consolidation (within years of construction) and secondary consolidation (long term creep). This memo summarizes our work.

Dynamic settlement due to seismic loading is documented in calculation K-CLC-Z-0004. Both the PC3 and PC4 event were evaluated at six SCPTu locations around the perimeter of Vault No. 4. The six SCPTu were pushed to refusal (between elevations 185 and 160 ft msl). Standard Penetration Test data collected beneath Vault No. 4 show that the Santee Formation is very dense (top of Santee at approximately elevation 185 ft msl). Therefore, no softzone settlement is expected during a seismic event. Any dynamic settlement would be due to liquefaction or partial liquefaction. Calculated dynamic settlements (rounded to the nearest ¼ inch) at the six SCPTu locations are summarized below.

SCPTu ID	PC3 Settlement (inch)	PC4 Settlement (inch)
ZCP-22	½	3
ZCP-23	¼	1½
ZCP-24	½	2¼
ZCP-25	¼	1½
ZCP-26	½	2
ZCP-27	1	4

Settlement due to liquefaction and partial liquefaction for the PC3 (2,500 year) earthquake ranges from ¼ to 1 inch. Settlement due to liquefaction and partial liquefaction for the PC4 (10,000 year) earthquake ranges from 1½ to 4 inches. Differential dynamic settlement can be taken as the maximum minus the minimum for a given earthquake. The differential settlement is expected to occur over the width of the facility.

Static settlement due to primary consolidation was calculated by Mueser Rutledge Consulting Engineers (MRCE) in their report titled "Saltstone Disposal Z-Area Savannah River Plant," #6329, dated October 14, 1986. The MRCE static settlement calculations assume the vaults are filled with saltstone and capped with about 20 feet of feet of soil, resulting in a final vault subgrade loading of 3.2 tons per square foot. Static settlements vary between 4.3 inches at the center and 2.5 inches at the end of the short side.

Static settlement due to secondary consolidation is estimated based on data collected at the Defense Waste Processing Facility (DWPF). Average loading for DWPF is about 2.5 to 2.8 tons per square foot. The settlement summary report titled "Settlement of Defense Waste Processing Facility," Report No. K-ESR-S-00005, dated September 30, 2002 gives a current rate of settlement of ½ to 1 inch of settlement per log cycle of time (time in days). Based on the settlement data, the rate of settlement due to secondary consolidation, or current rate of settlement, started between 2,000 and 4,000 days. The settlement due to secondary consolidation at 10,000 years (3,650,000 days) would be about 3 log cycles [log(3,650,000 days) – log(3,650 days)], or 1½ to 3 inches. Settlement due to secondary consolidation is expected to be relatively even across the vault.

If you have any questions please call me at ext. 2-6949 or Mike Lewis at ext. 2-6847.

c: M. R. Lewis, 730-2B-116
GED Files, 730-2B-1102

T-CLC-Z-00006, Rev. 0

SRS savannah river site

DRAFT

WESTINGHOUSE SAVANNAH RIVER COMPANY
INTEROFFICE MEMORANDUM

FIELD SUPPORT SERVICES
GEOTECHNICAL ENGINEERING DEPARTMENT

April ??, 2003

FSS-GED-2003-DRAFT

TO: W. L. Peregoy, 730-1B-3078
G. E; Mertz, 730-1B-314

FROM: M. D. McHood, 730-2B-1070

GEOTECHNICAL INPUT FOR SALTSTONE VAULT NO. 4 STRUCTURAL ANALYSIS

Geotechnical Engineering has estimated dynamic settlement for Saltstone Vault No. 4 due to Performance Category 3 (PC3) and Performance Category 4 (PC4) earthquakes. Site specific geotechnical data used for the seismic evaluation includes six Seismic Piezocone Penetrometer (SCPTu) soundings performed in June of 2002. In addition, historical geotechnical data and reports were reviewed to provide estimated static settlement due to primary consolidation (within years of construction) and secondary consolidation (long term creep). This memo summarizes our work.

Dynamic settlement due to seismic loading is documented in calculation K-CLC-Z-0004. Both the PC3 and PC4 event were evaluated at six SCPTu locations around the perimeter of Vault No. 4. The six SCPTu were pushed to refusal (between elevations 185 and 160 ft msl). Standard Penetration Test data collected beneath Vault No. 4 show that the Santee Formation is very dense (top of Santee at approximately elevation 185 ft msl). Therefore, no softzone settlement is expected during a seismic event. Any dynamic settlement would be due to liquefaction or partial liquefaction. Calculated dynamic settlements at the six SCPTu locations are summarized below.

SCPTu ID	PC3 Settlement (inch)	PC4 Settlement (inch)
ZCP-22	0.60	3.04
ZCP-23	0.28	1.60
ZCP-24	0.41	2.33
ZCP-25	0.25	1.46
ZCP-26	0.38	1.99
ZCP-27	0.96	3.97

3.97 - 1.46 = 2.51
use 2 3/4"

0.96 - 0.25 = 0.71
use 3/4"

Settlement due to liquefaction and partial liquefaction for the PC3 (2,500 year) earthquake ranges from ¼ to 1 inch. Settlement due to liquefaction and partial liquefaction for the PC4 (10,000 year) earthquake ranges from 1½ to 4 inches. Differential dynamic settlement would be the maximum minus the minimum for a given earthquake. The differential settlement is expected to occur over the width of the facility.

Static settlement due to primary consolidation was calculated by Mueser Rutledge Consulting Engineers (MRCE) in their report titled "Saltstone Disposal Z-Area Savannah River Plant," #6329, dated October 14, 1986. The MRCE static settlement calculations assume the vaults are filled with saltstone and capped with about 20 feet of feet of soil, resulting in a final vault subgrade loading of 3.2 tons per square foot. Static settlements vary between 4.3 inches at the center and 2.5 inches at the end of the short side.

Static settlement due to secondary consolidation is estimated based on data collected at the Defense Waste Processing Facility (DWPF). Average loading for DWPF is about 2.5 to 2.8 tons per square foot. The settlement summary report titled "Settlement of Defense Waste Processing Facility," Report No. K-ESR-S-00005, dated September 30, 2002 gives a current rate of settlement of ½ to 1 inch of settlement per log cycle of time (time in days). Based on the settlement data, the rate of settlement due to secondary consolidation, or current rate of settlement, started between 2,000 and 4,000 days. The settlement due to secondary consolidation at 10,000 years (3,650,000 days) would be about 3 log cycles [log(3,650,000 days) – log(3,650 days)], or 1½ to 3 inches. Settlement due to secondary consolidation is expected to be relatively even across the vault.

If you have any questions please call me at ext. 2-6949 or Mike Lewis at ext. 2-6847.

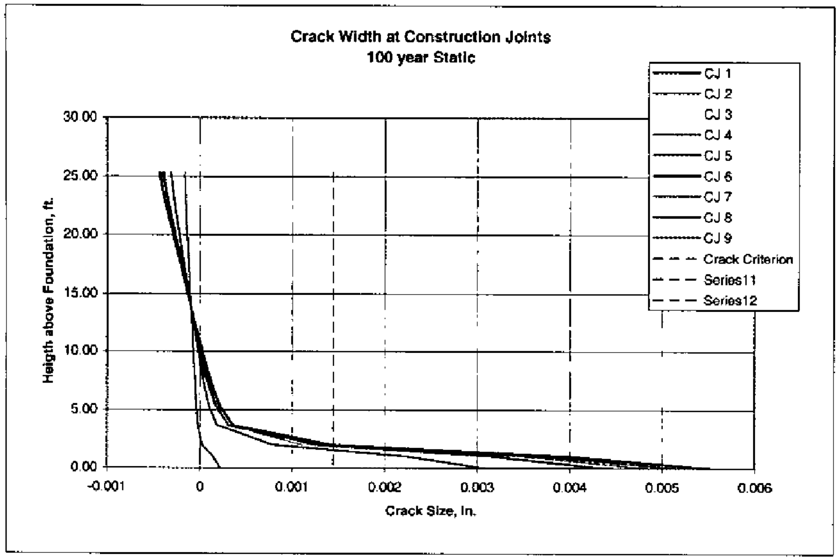
c: M. R. Lewis, 730-2B-116
GED Files, 730-2B-1102

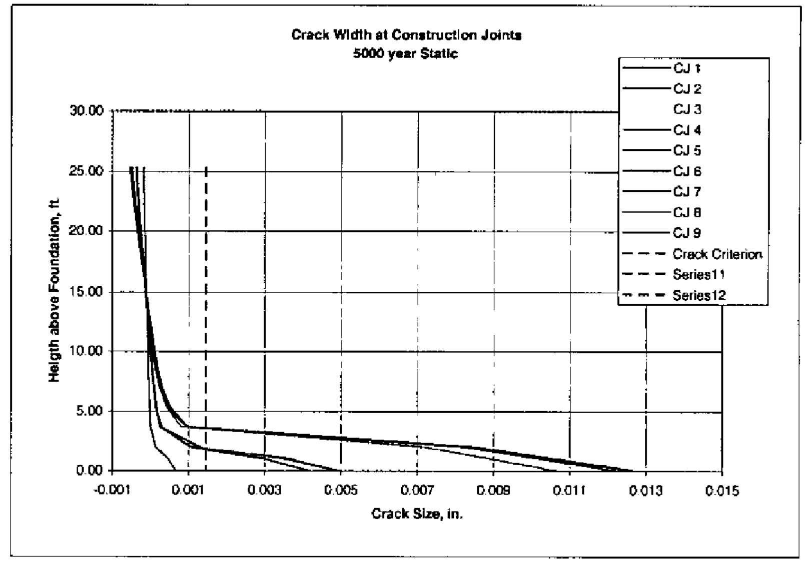
PC - 3 use 3/4"
PC - 4 use 2 3/4" (rounded up)

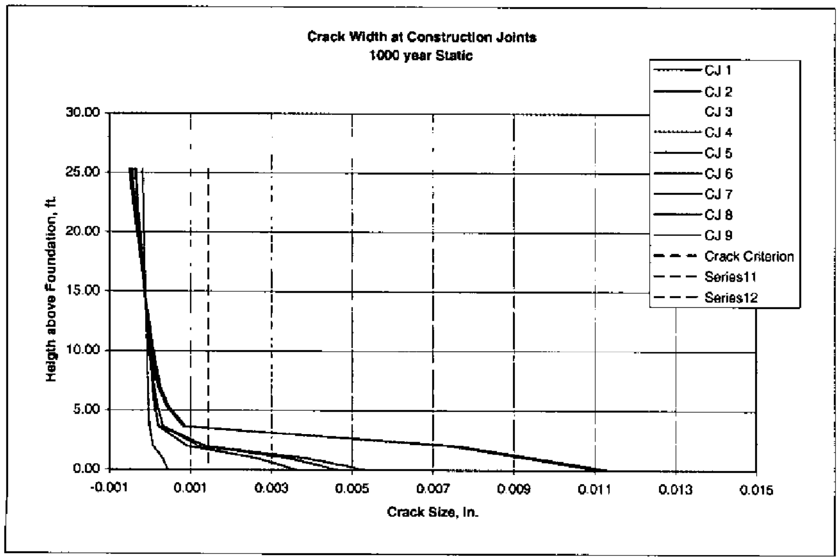
APPENDIX E

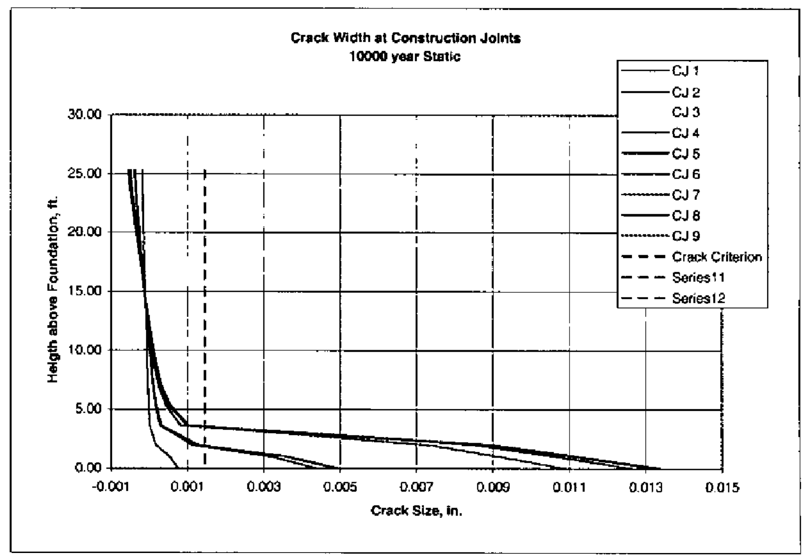
Structural Analysis Results

Static Settlement
Low Soil Creep Properties









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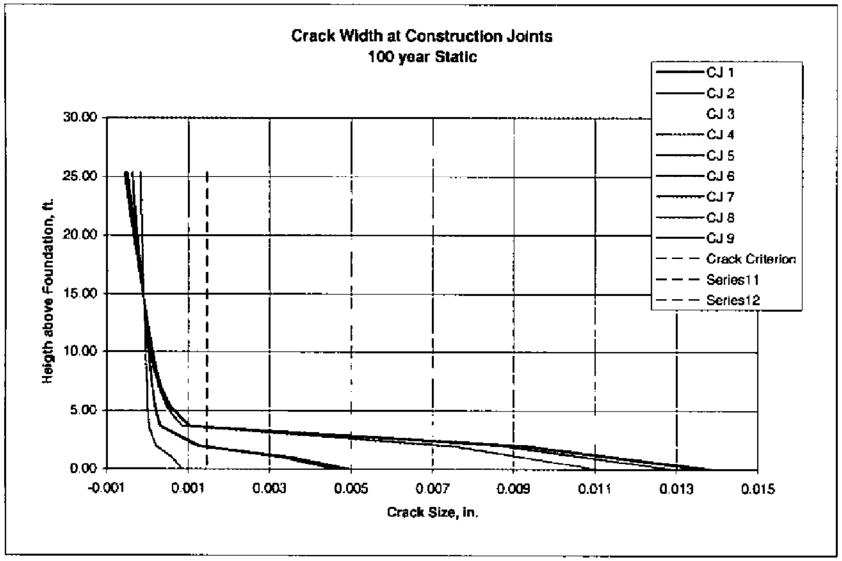
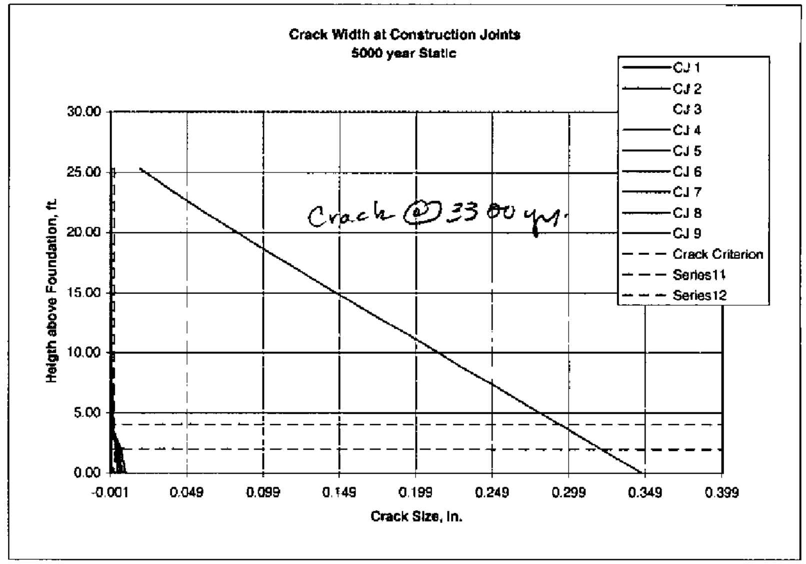
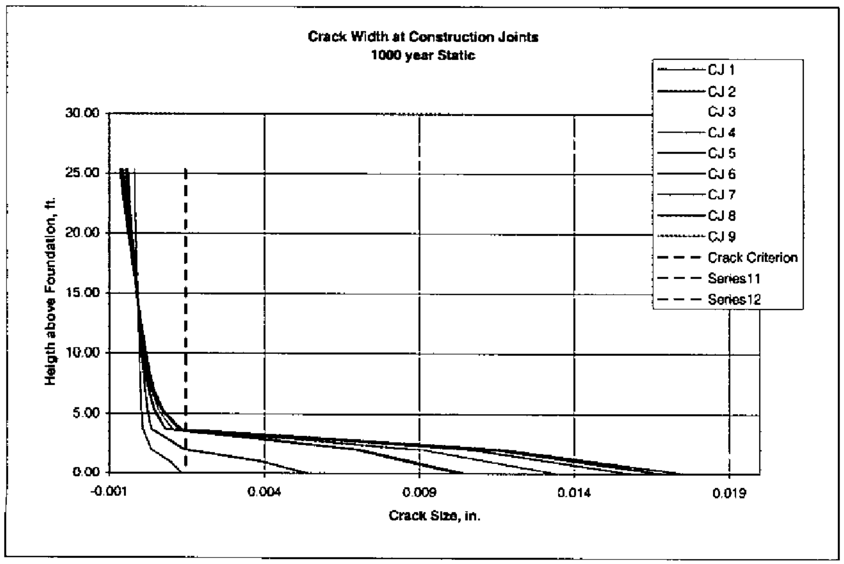
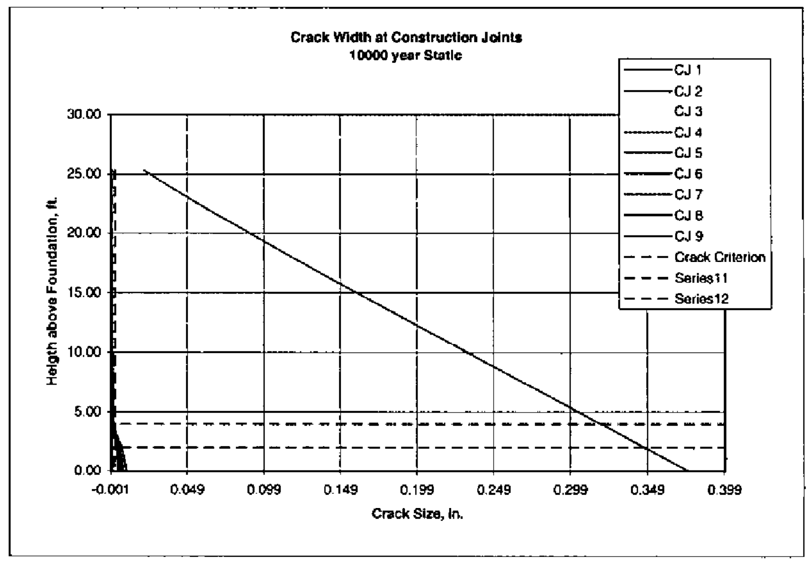
Static Settlement
Mean Soil Modulus

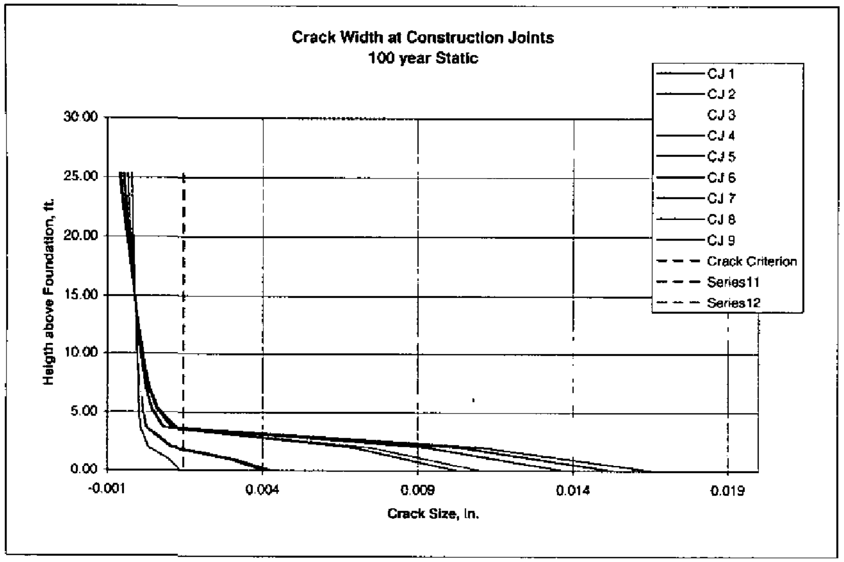


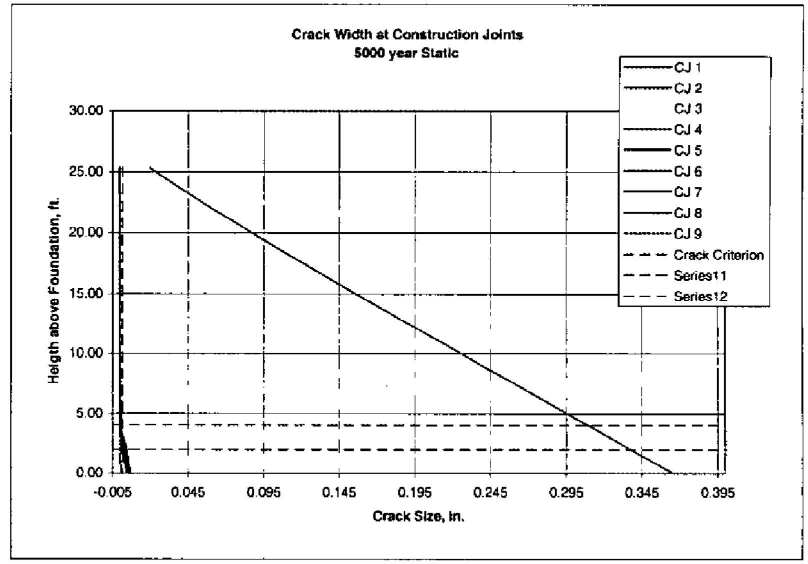


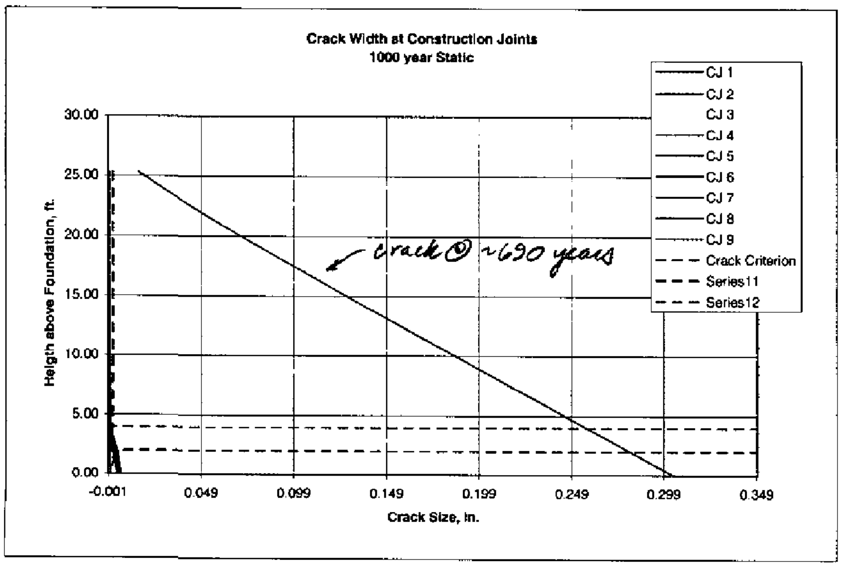


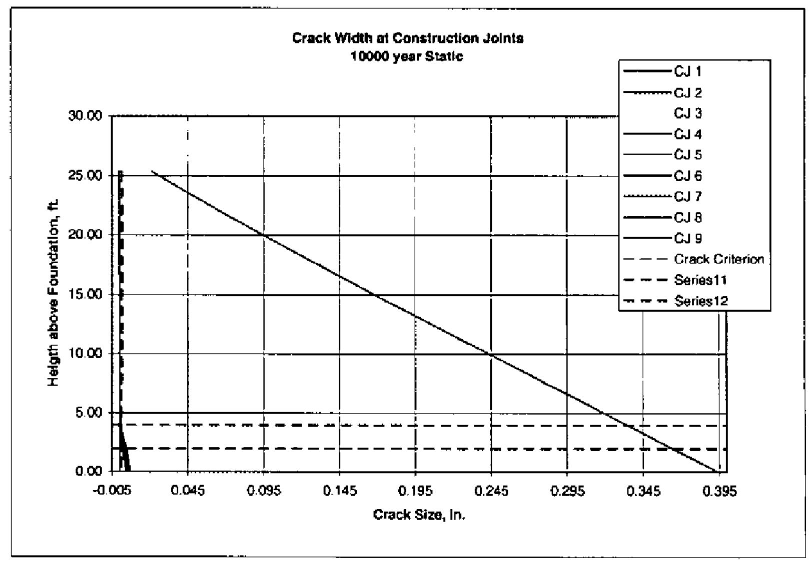


Static Settlement
High Soil Modulus

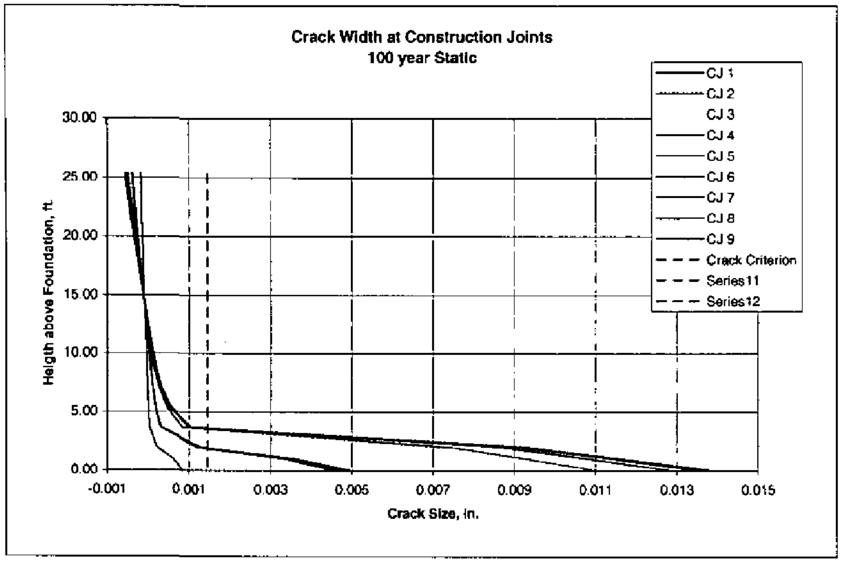


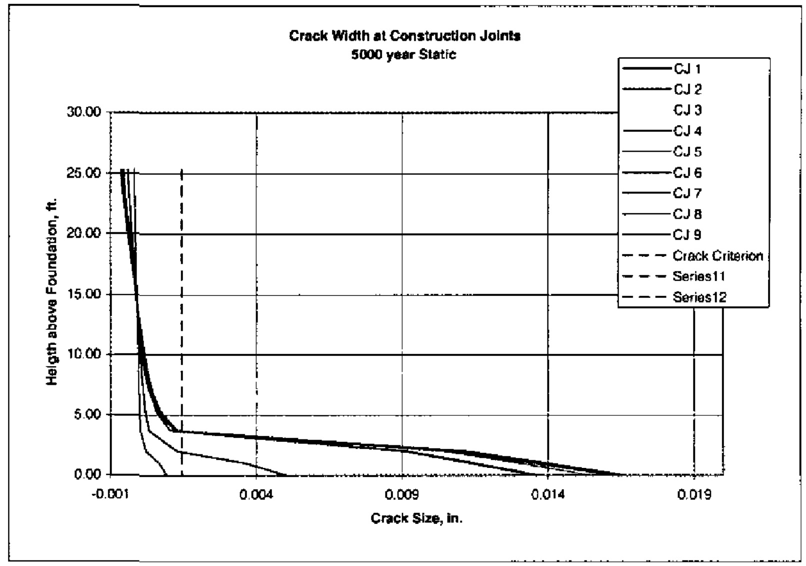


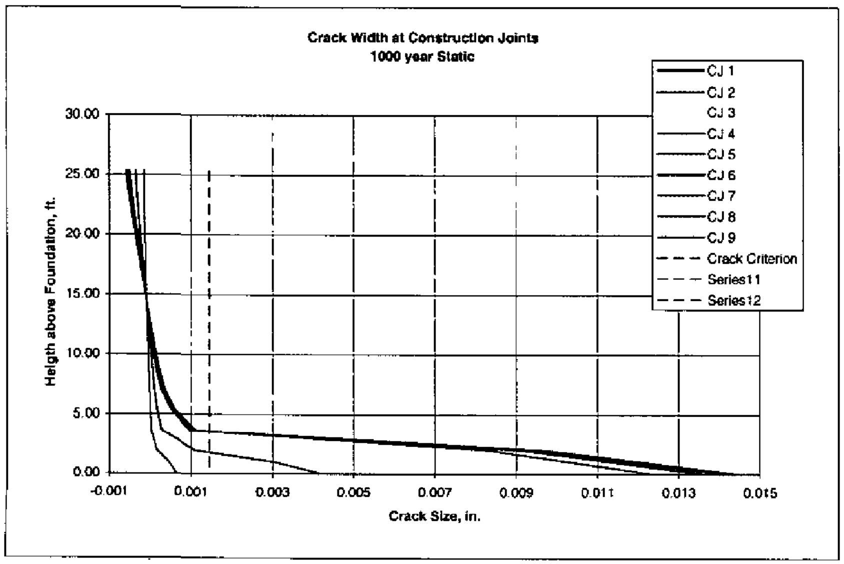


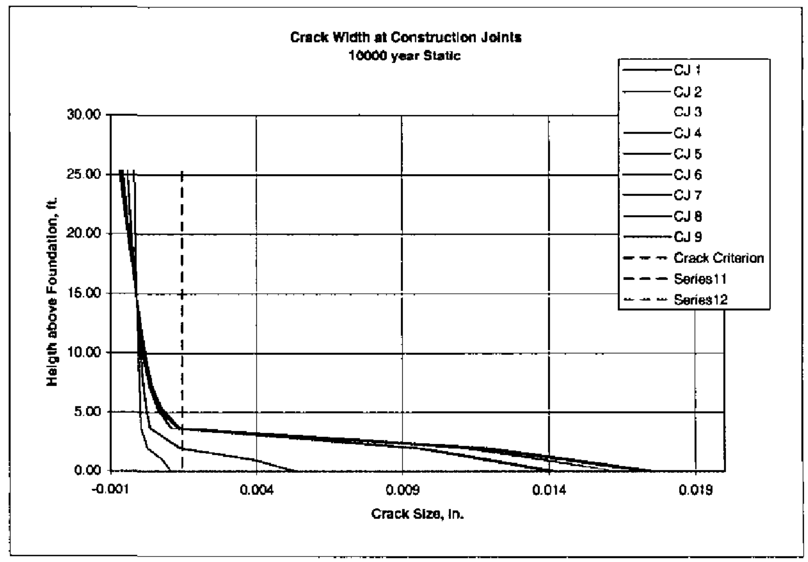


Static Settlement
Low Soil Modulus

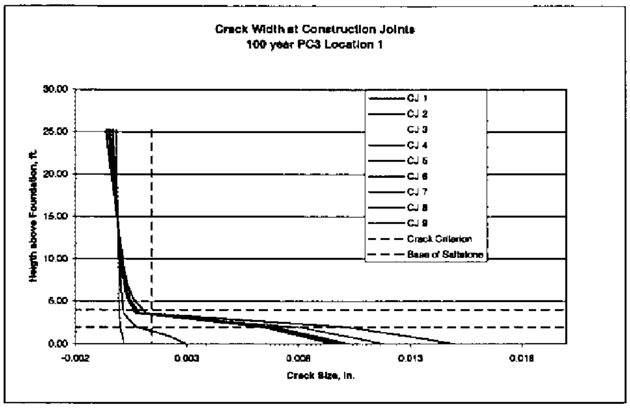


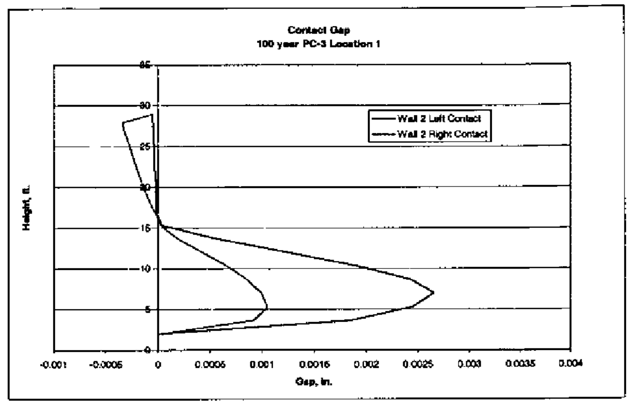


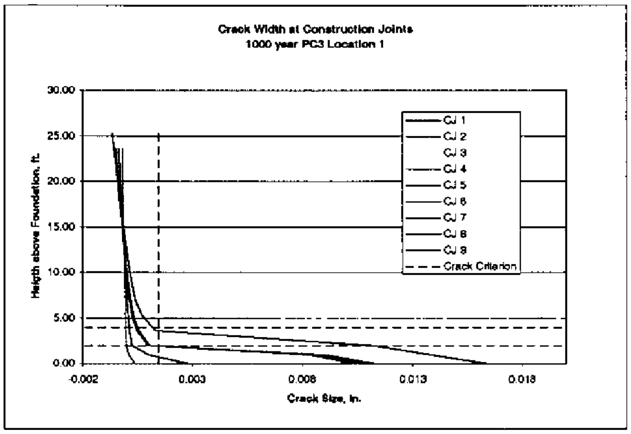


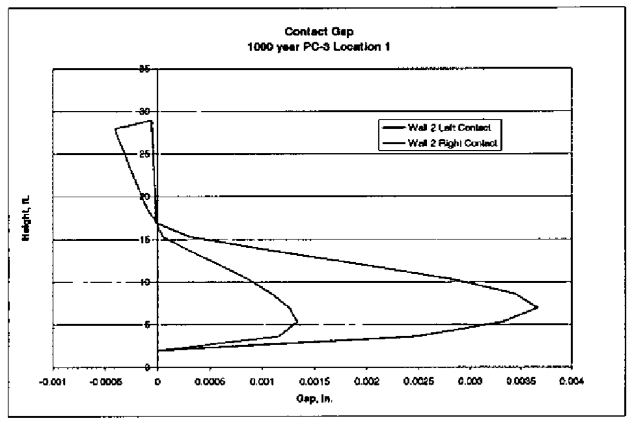


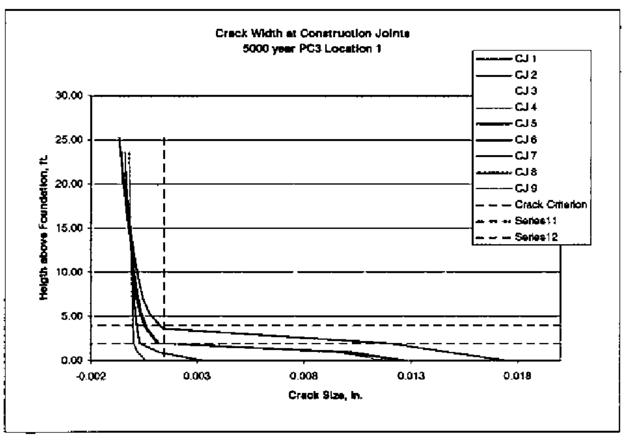
PC-3 Differential Settlement - Location 1
Low Soil

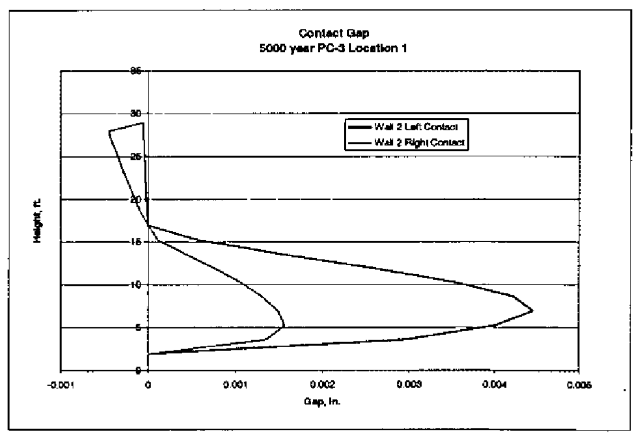




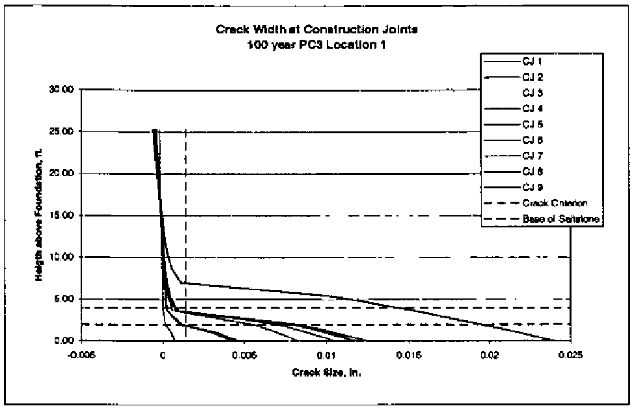


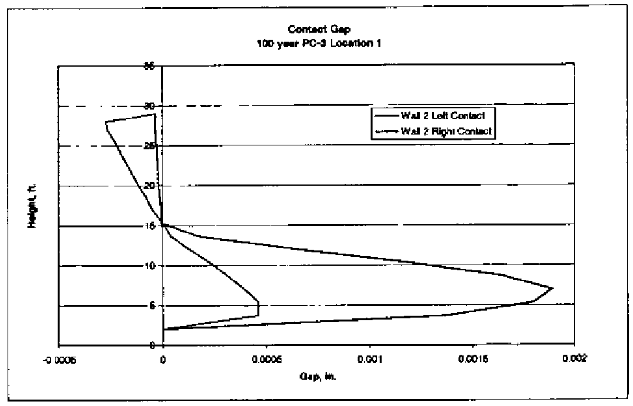


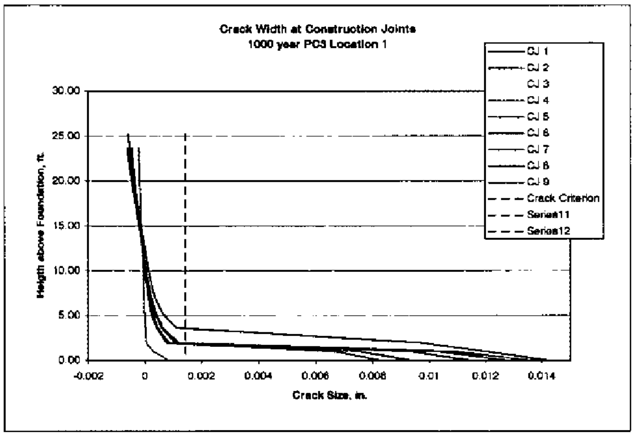


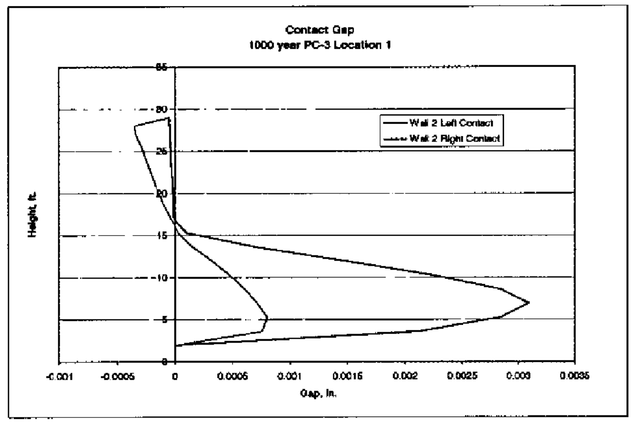


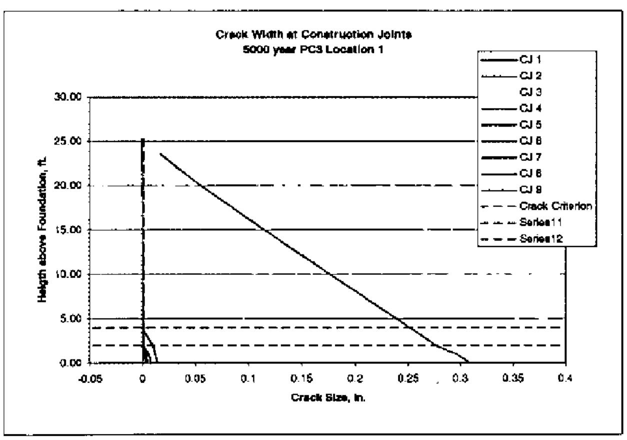
PC-3 Differential Settlement - Location 1
Mean Soil

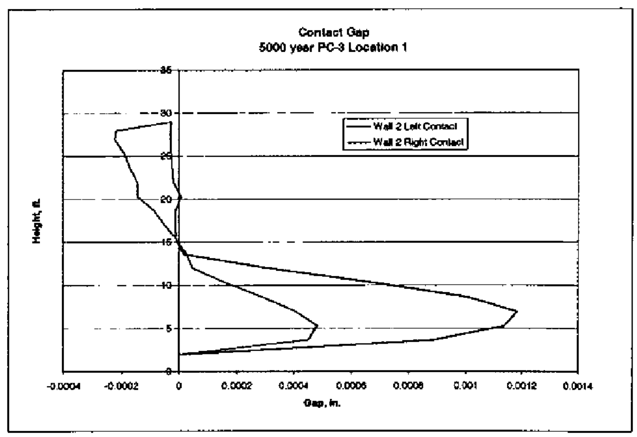












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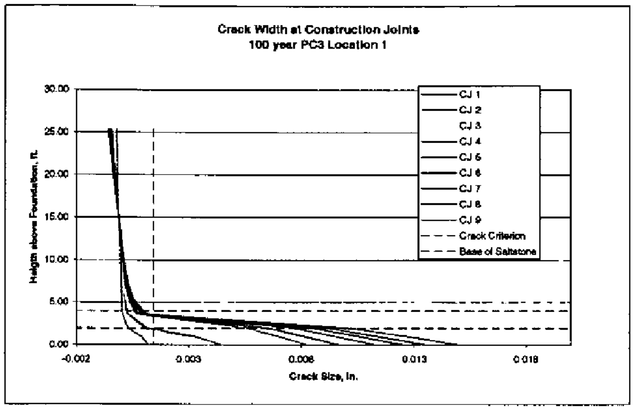
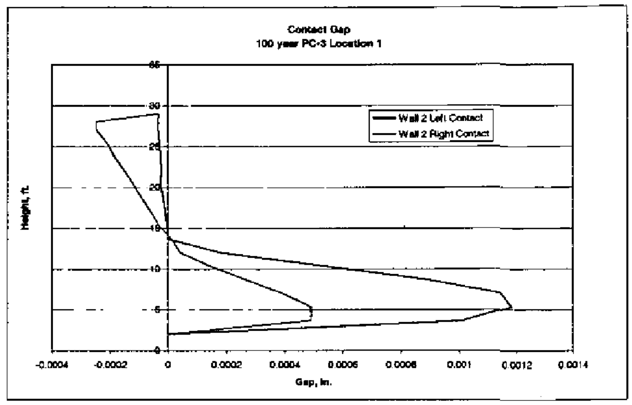
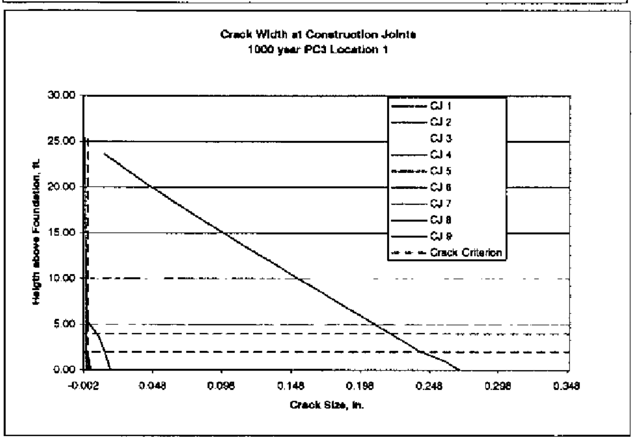
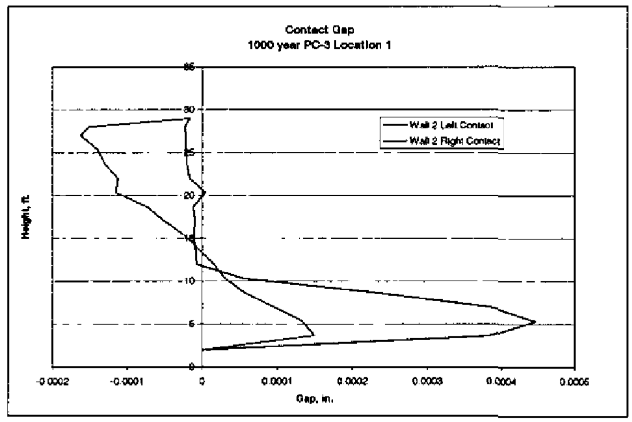
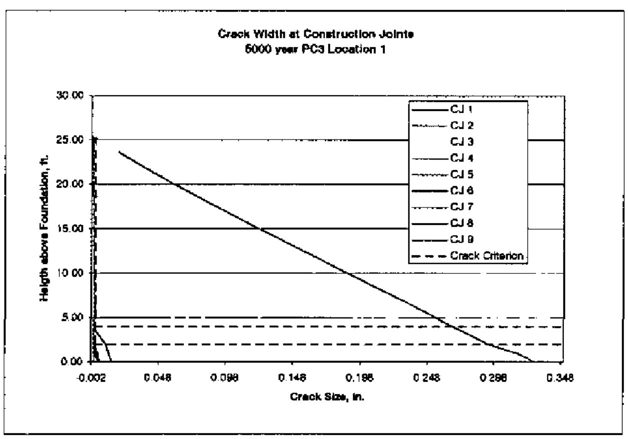
High Soil

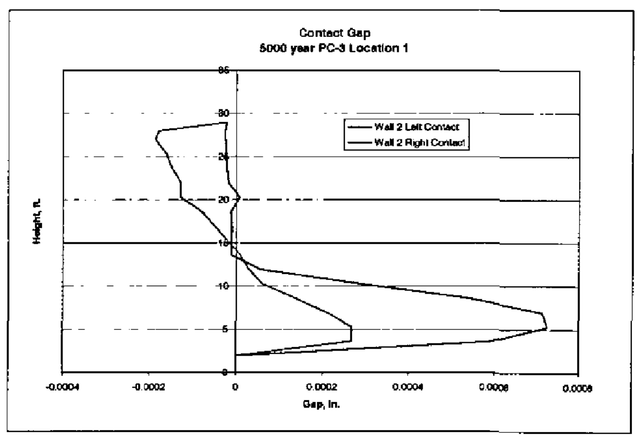












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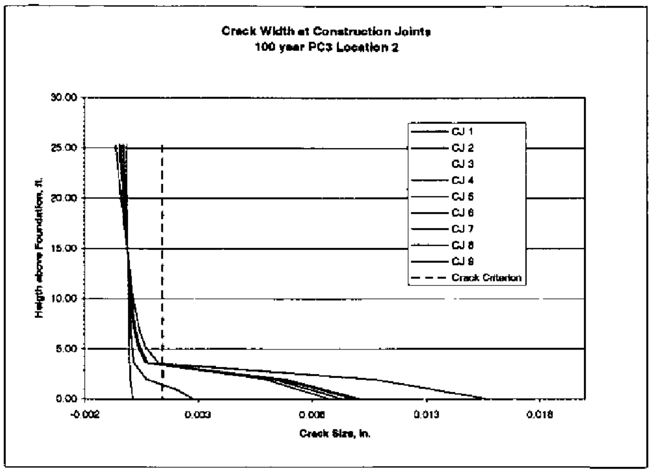
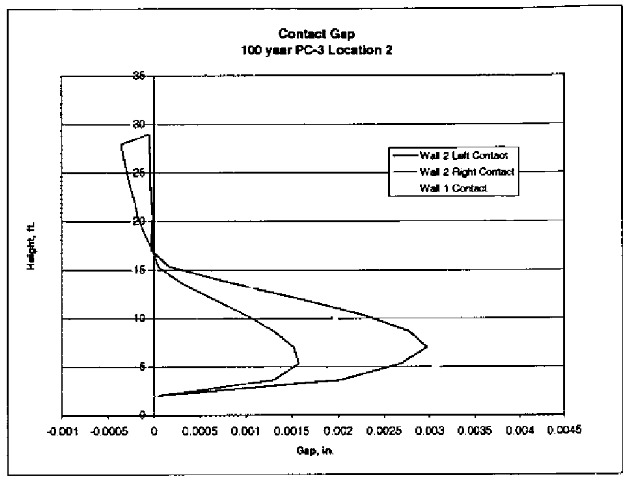
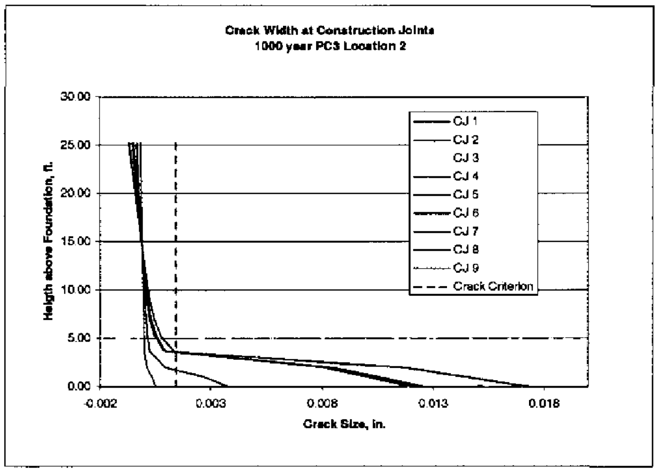
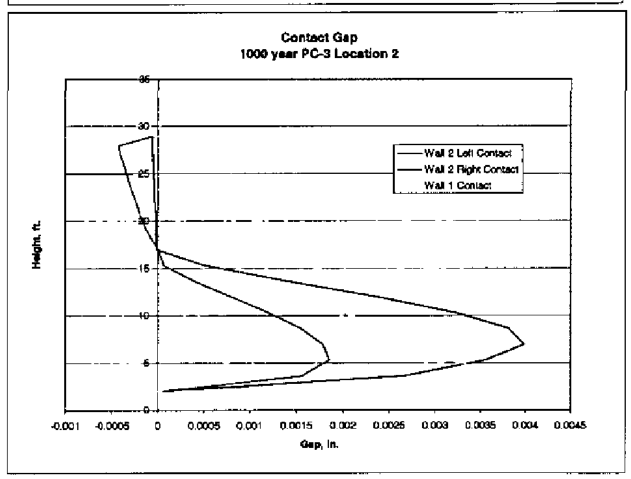
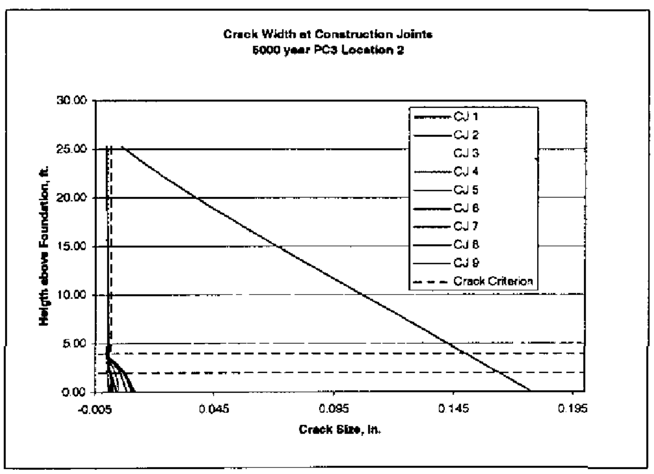
PC-3 Differential Settlement - Location 2
Low Soil

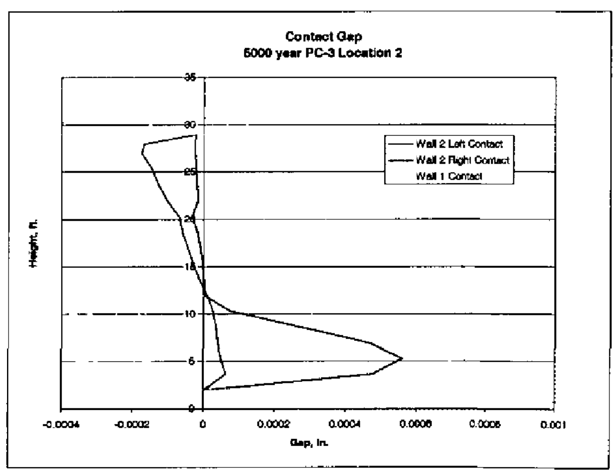




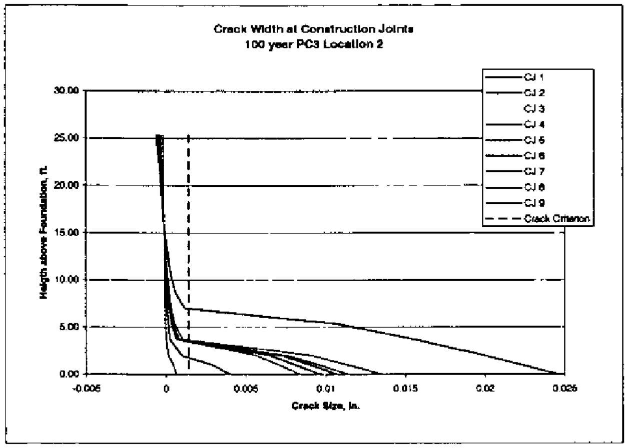


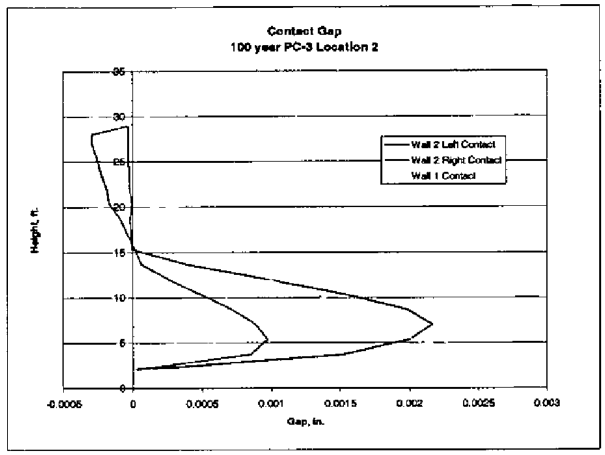


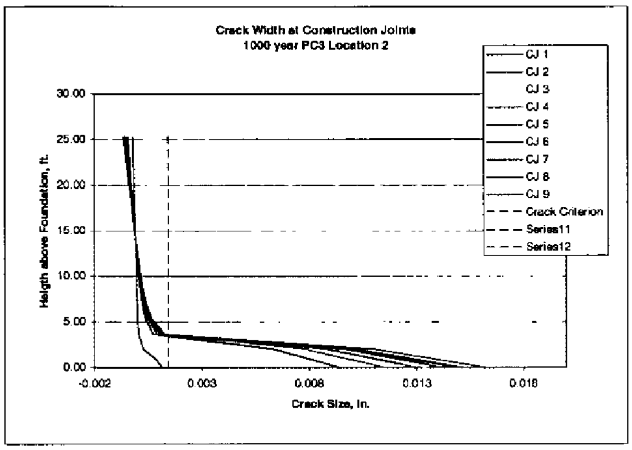


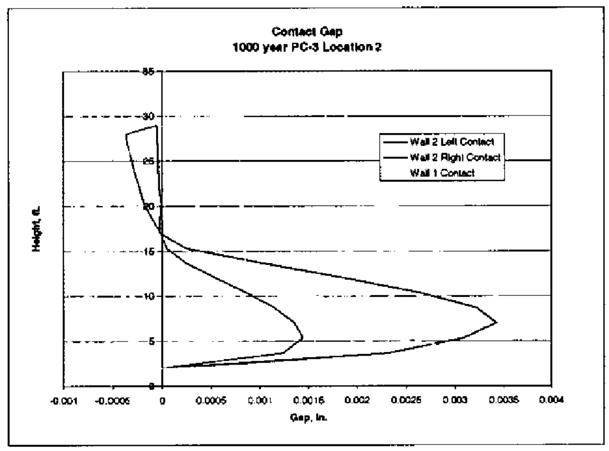


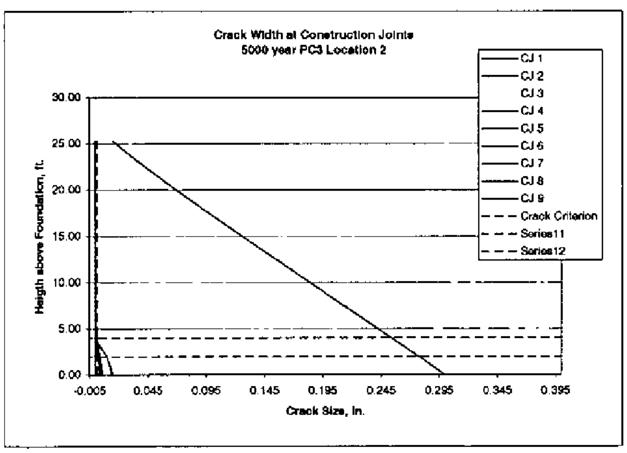
PC-3 Differential Settlement - Location 2
Mean Soil

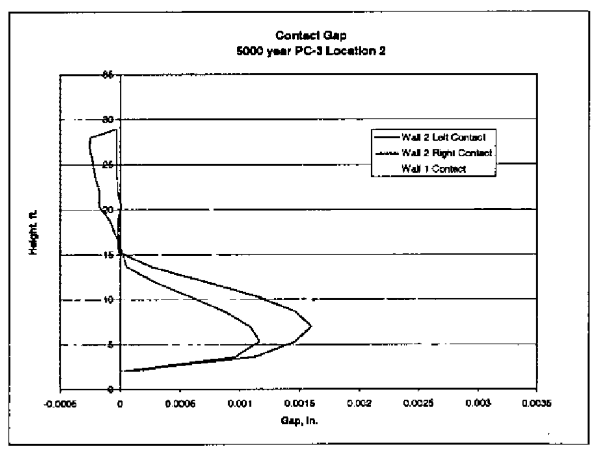




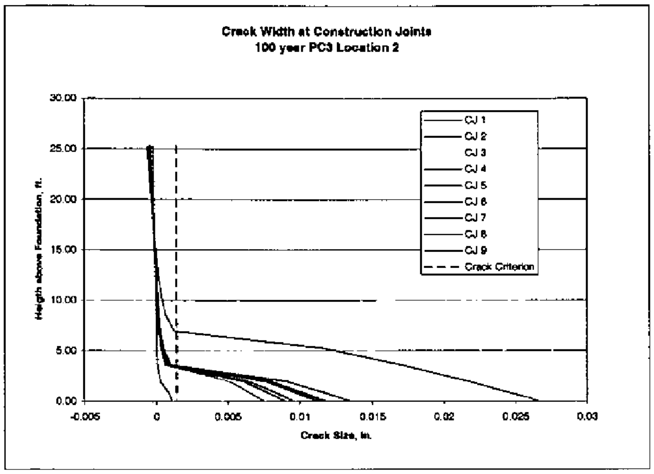


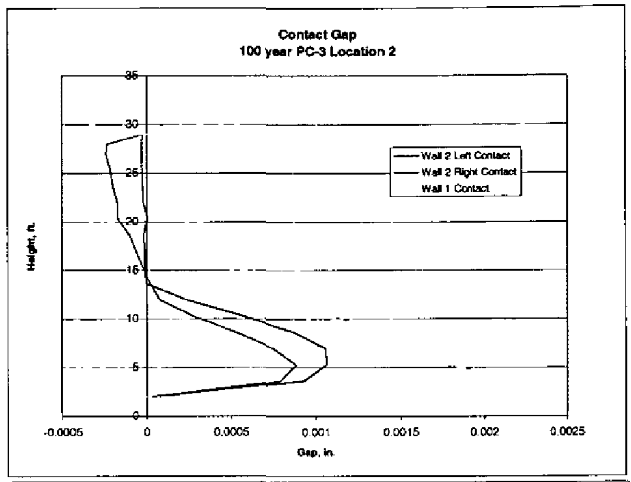


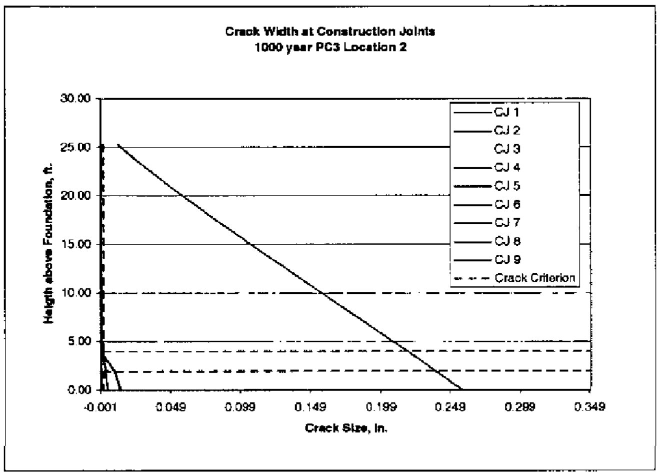


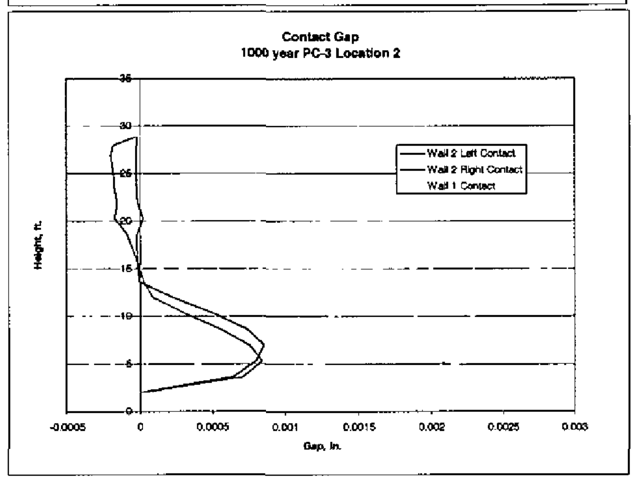


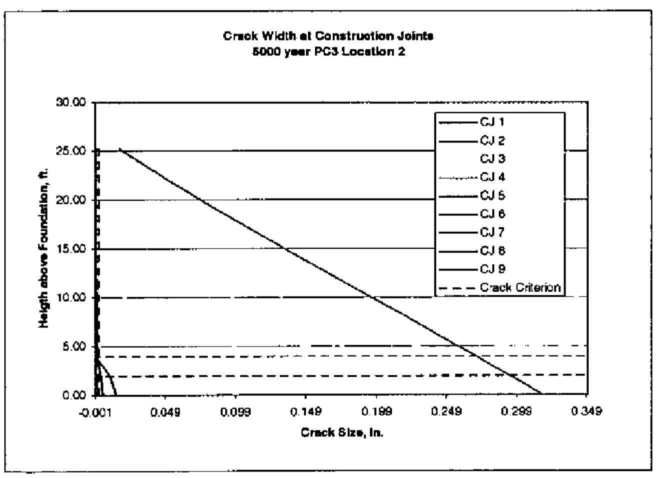
PC-3 Differential Settlement - Location 2
High Soil

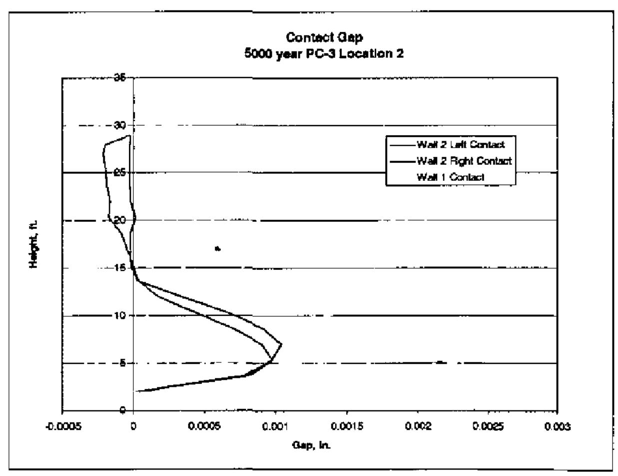




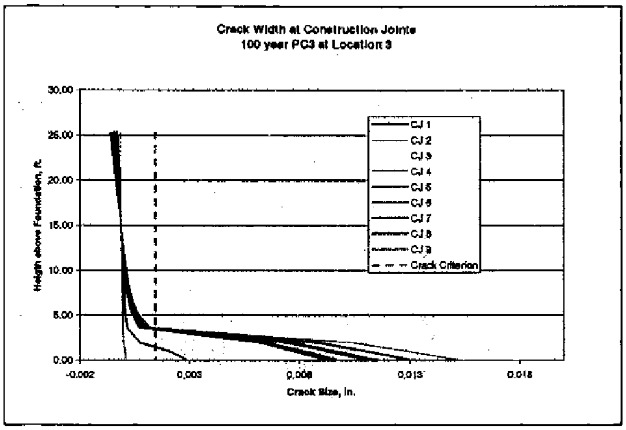


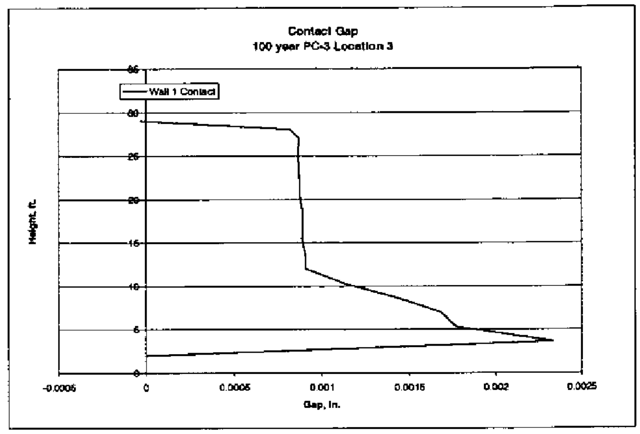


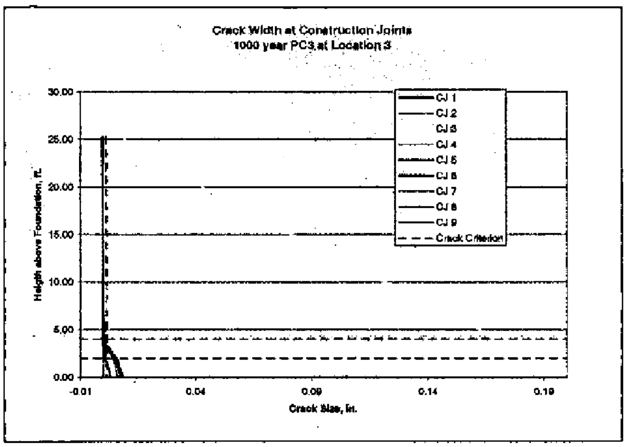


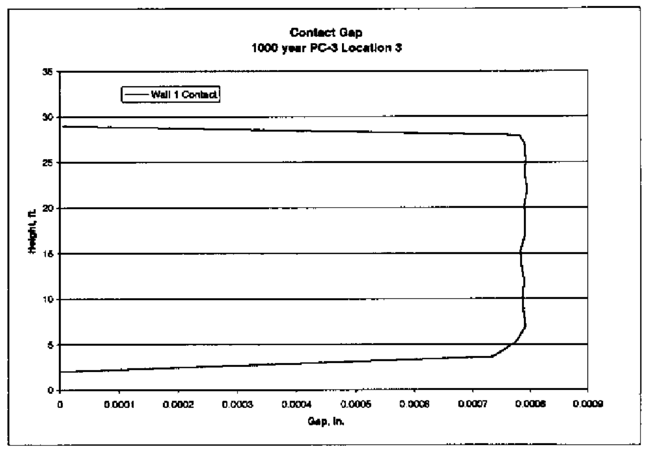


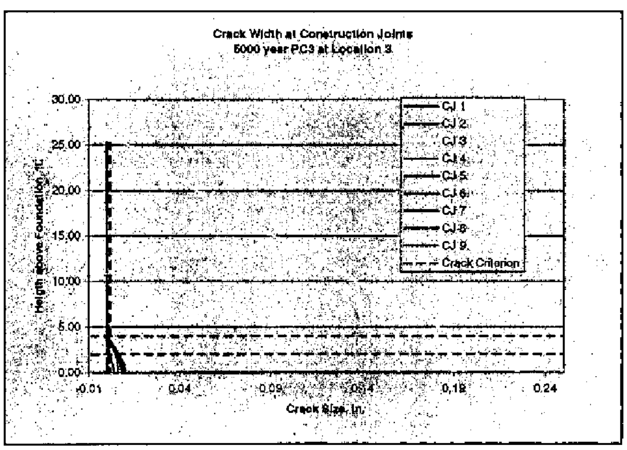
PC-3 Differential Settlement - Location 3
Low Soil

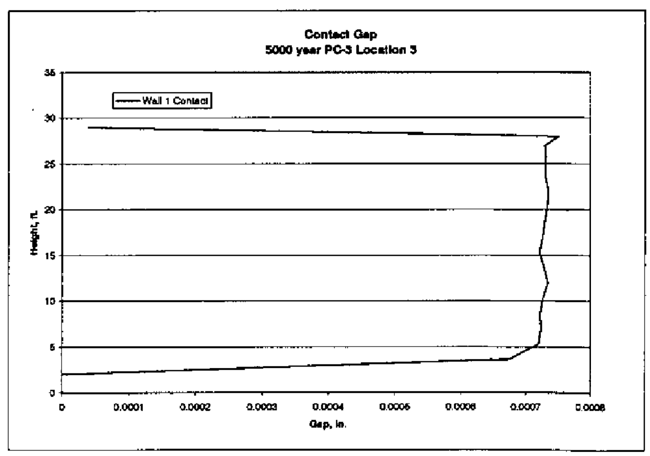












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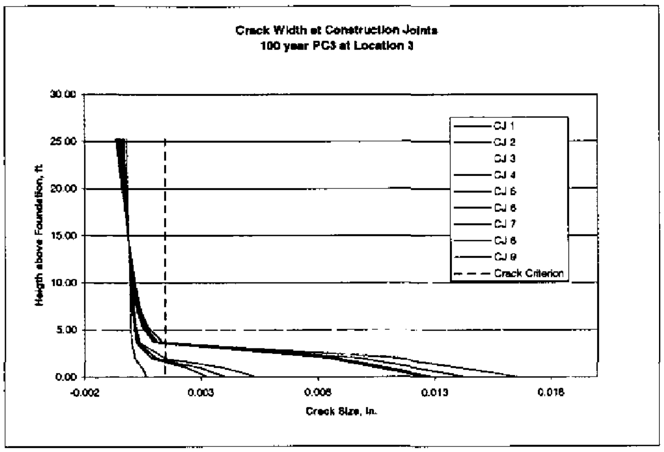
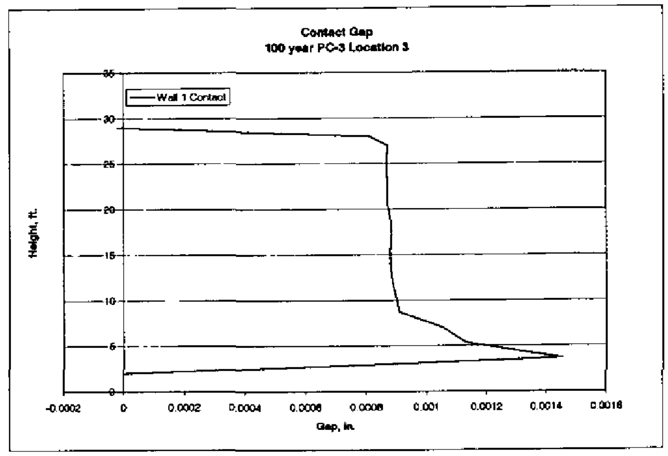
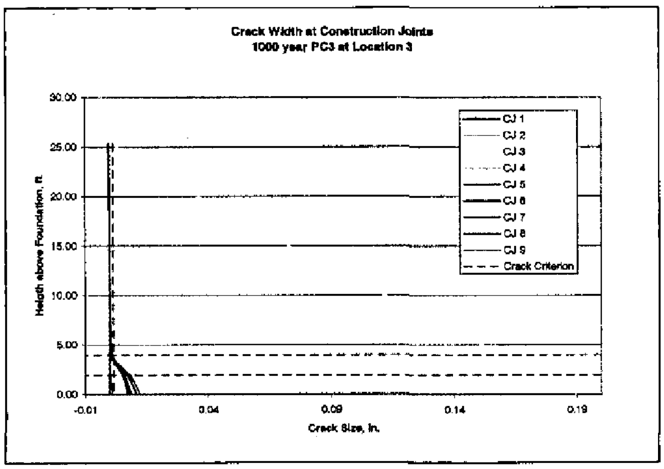
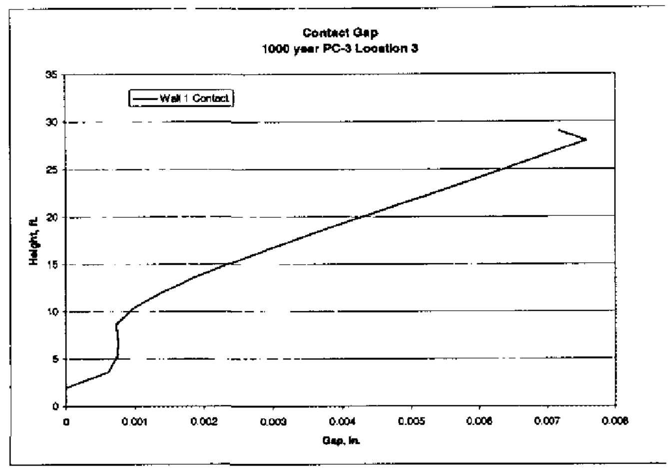
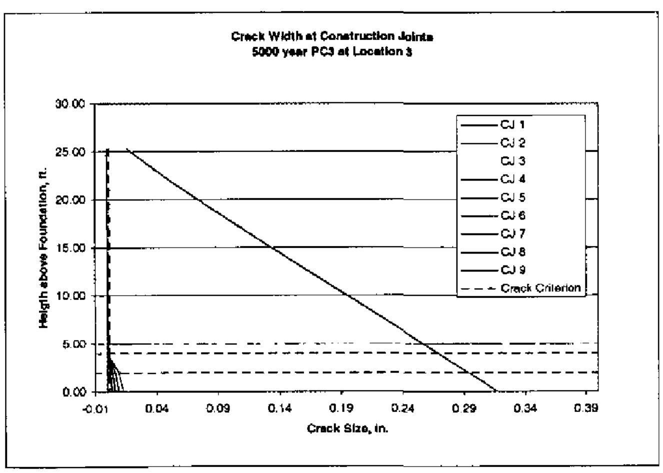
PC-3 Differential Settlement - Location 3
Mean Soil

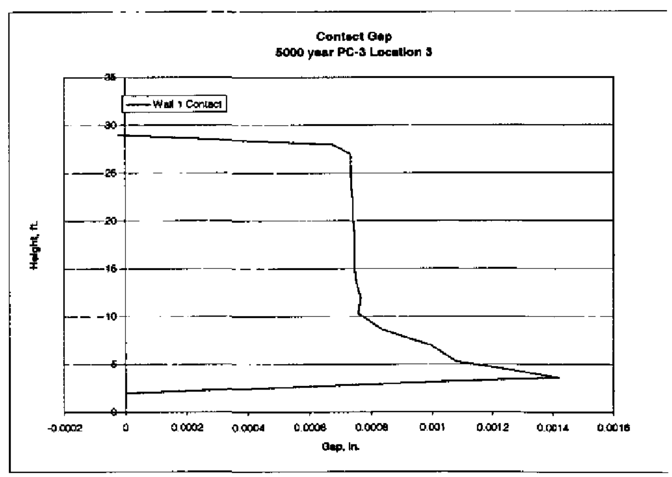












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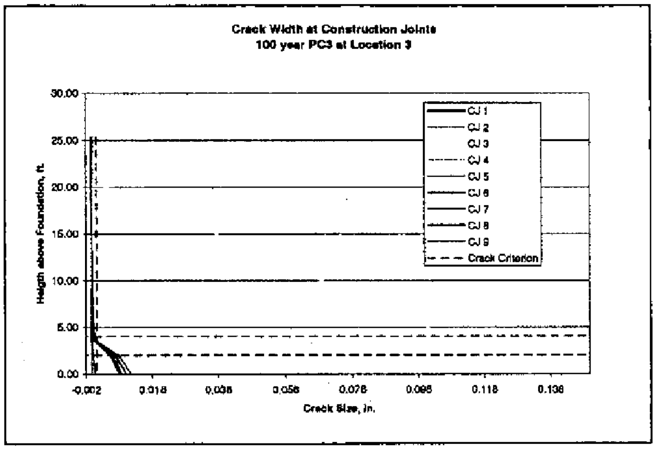
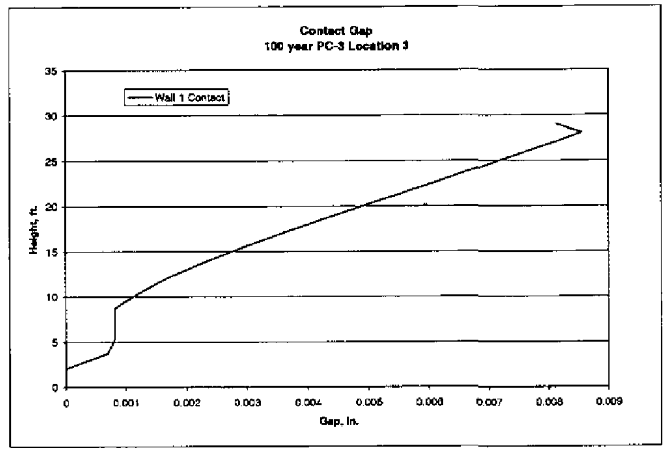
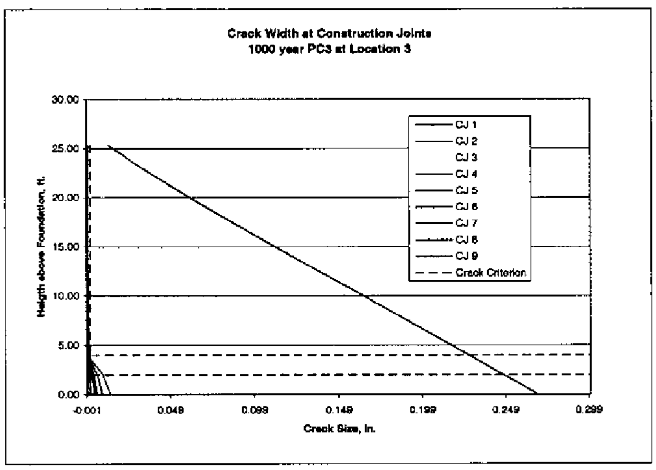
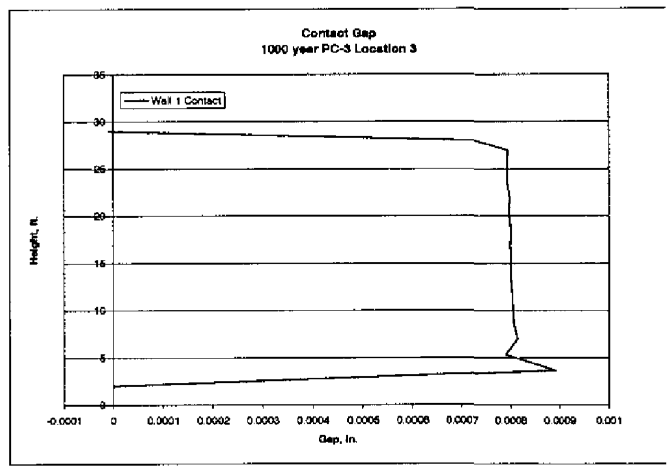
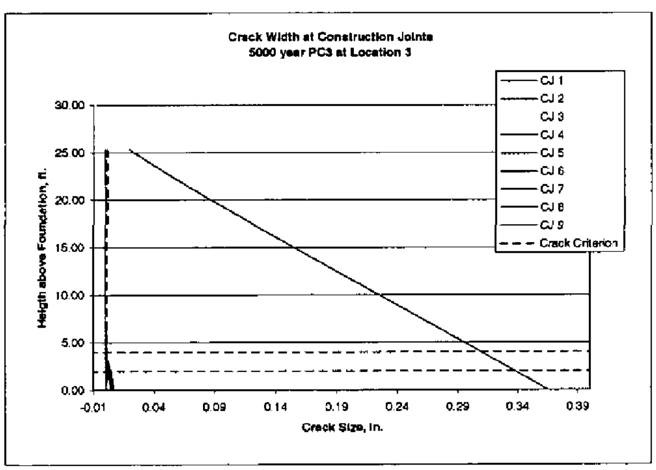
PC-3 Differential Settlement - Location 3
High Soil

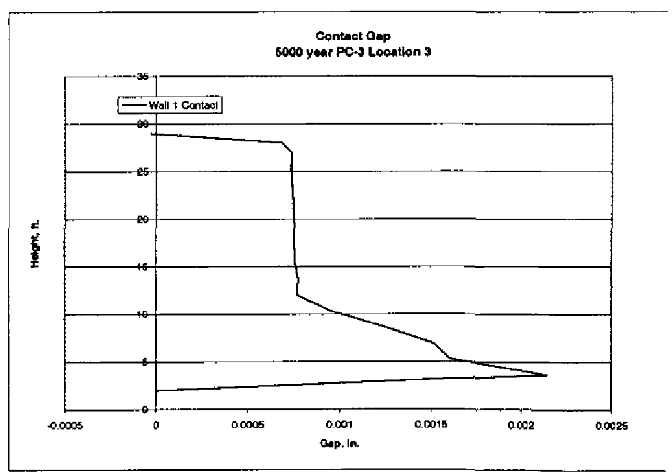




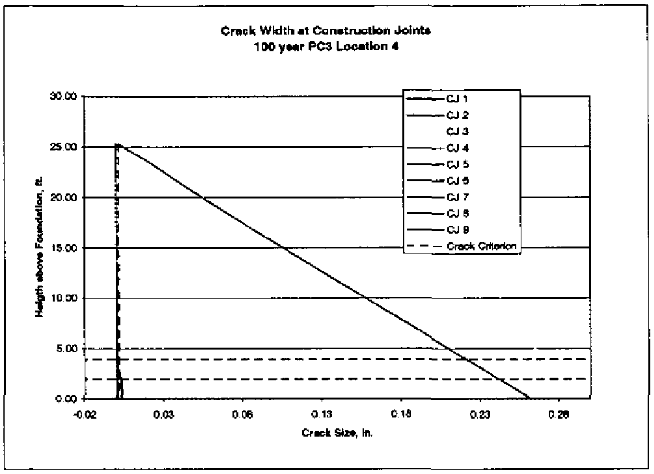


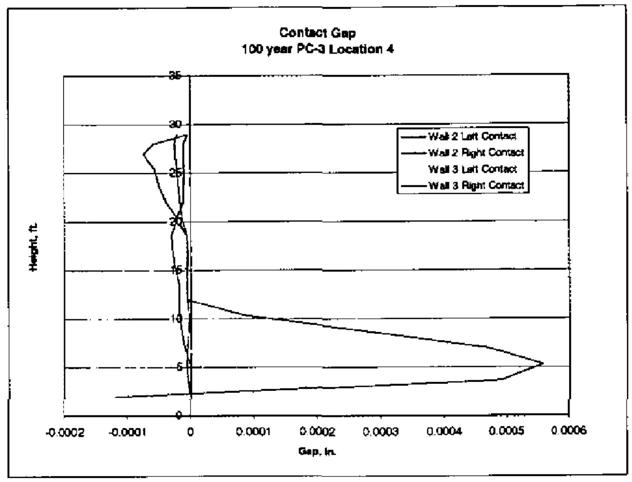


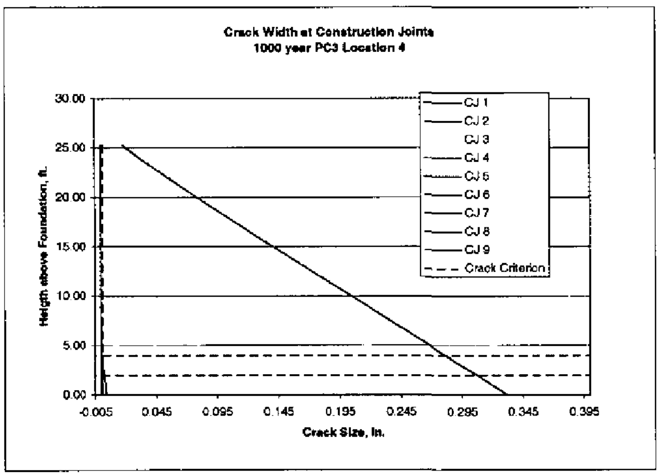


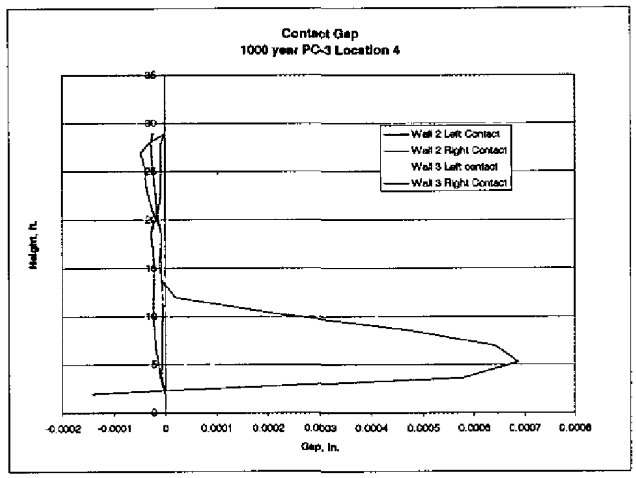


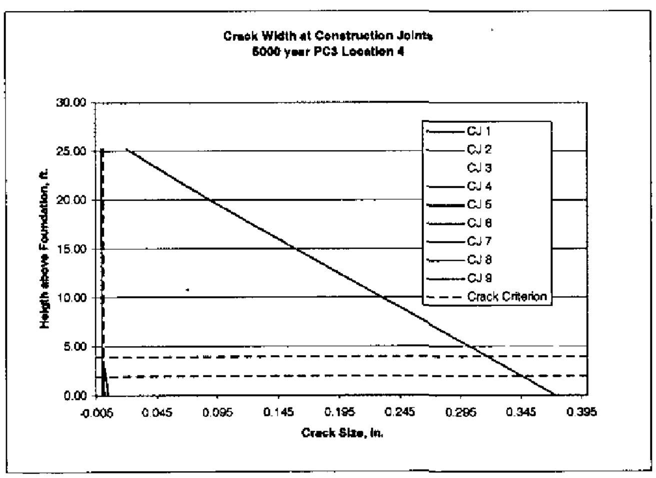
PC-3 Differential Settlement - Location 4
Low Soil

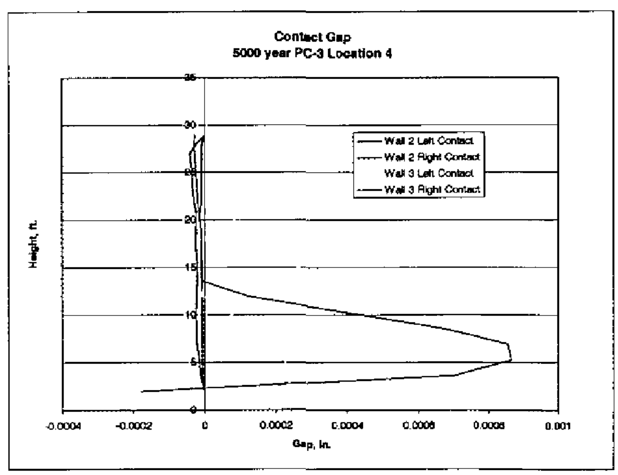












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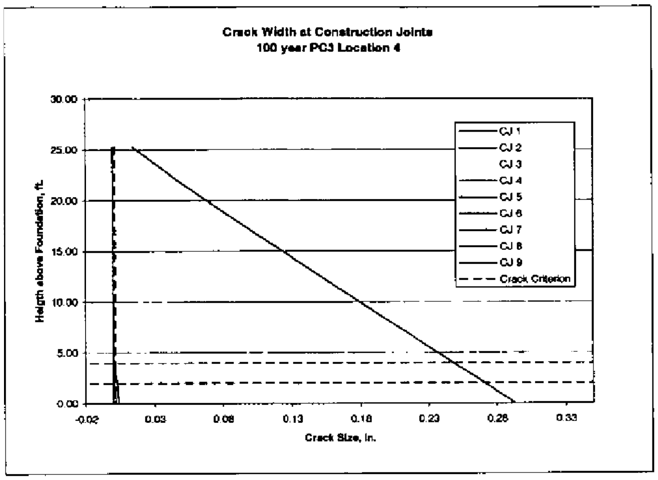
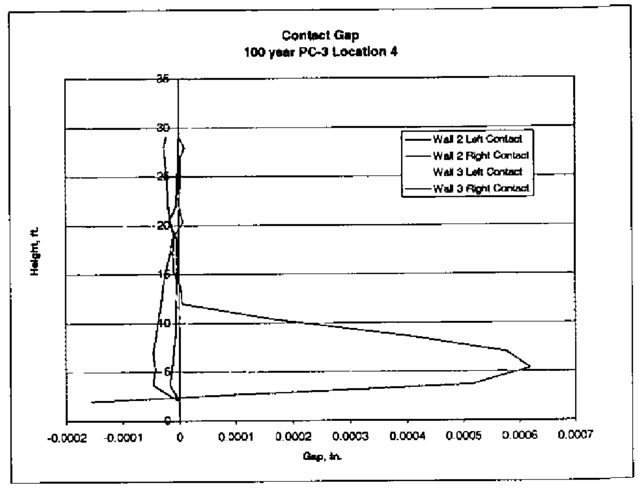
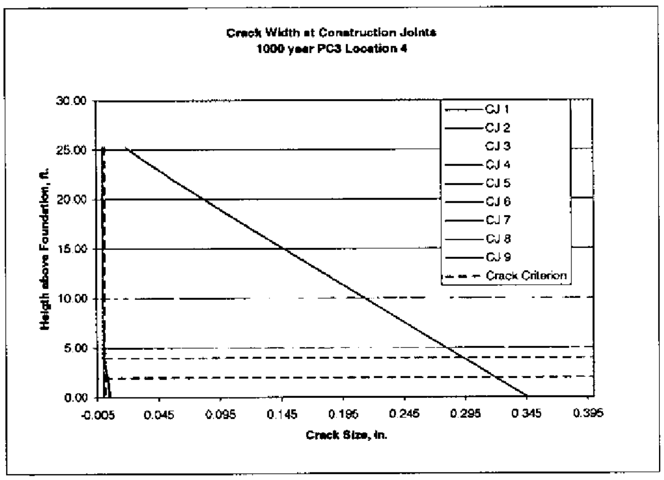
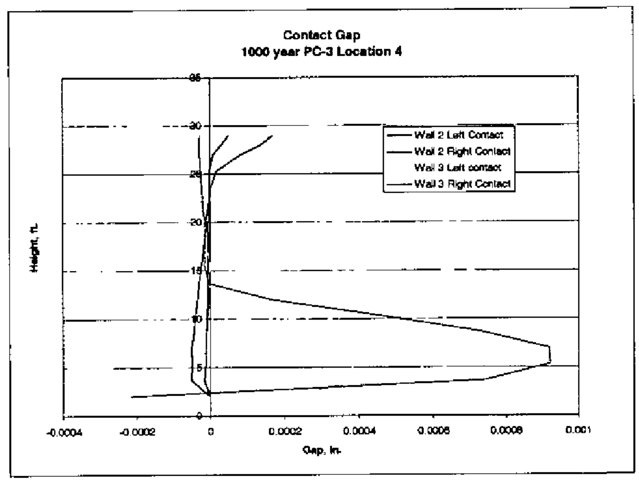
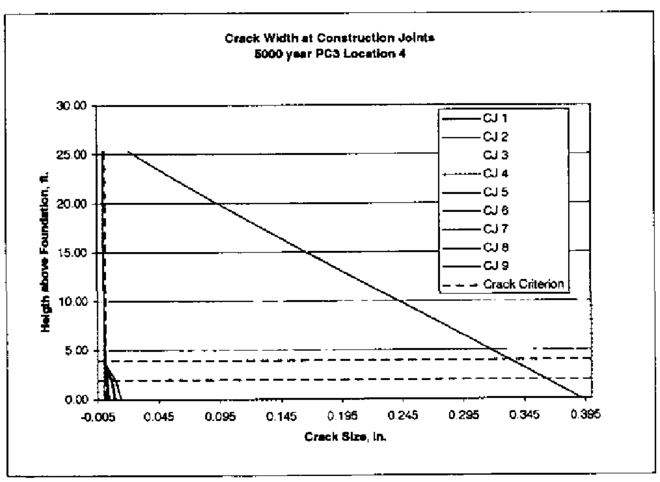
PC-3 Differential Settlement - Location 4
Mean Soil

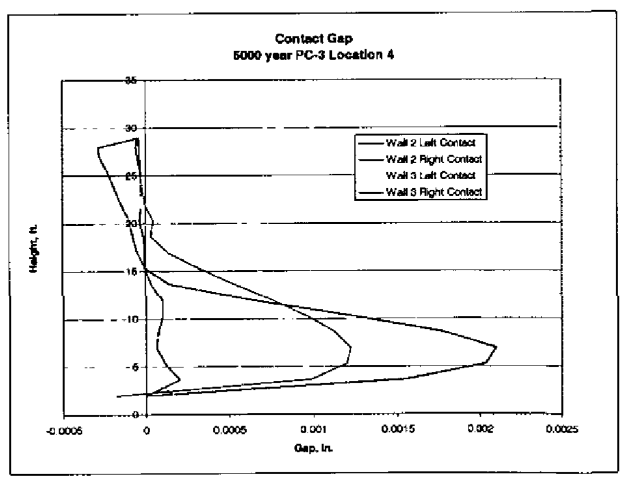












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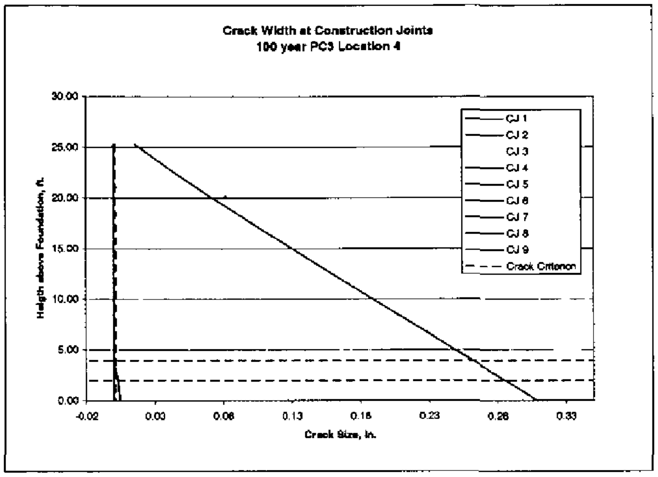
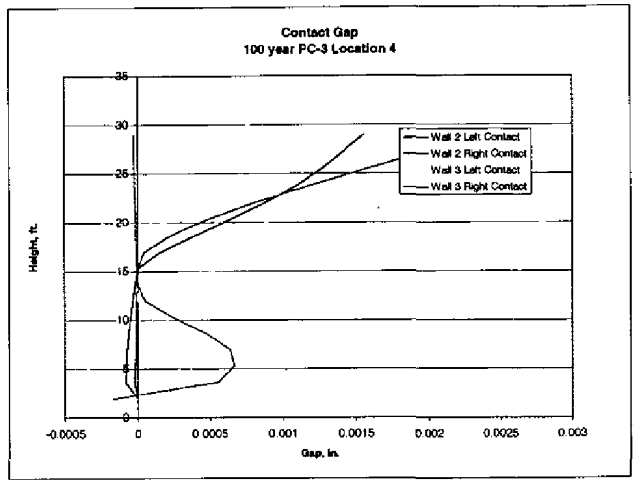
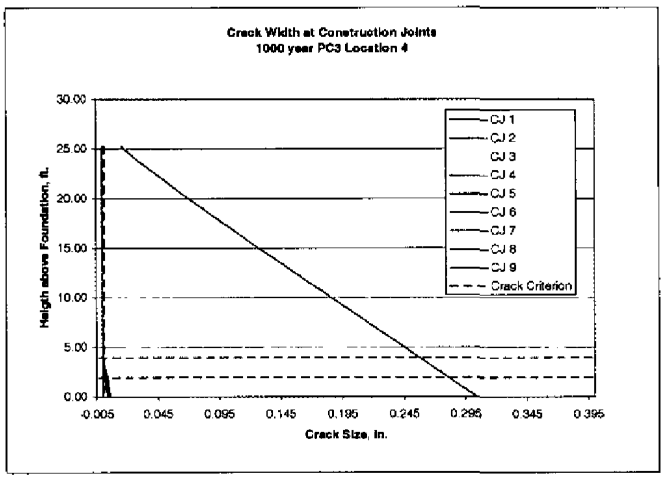
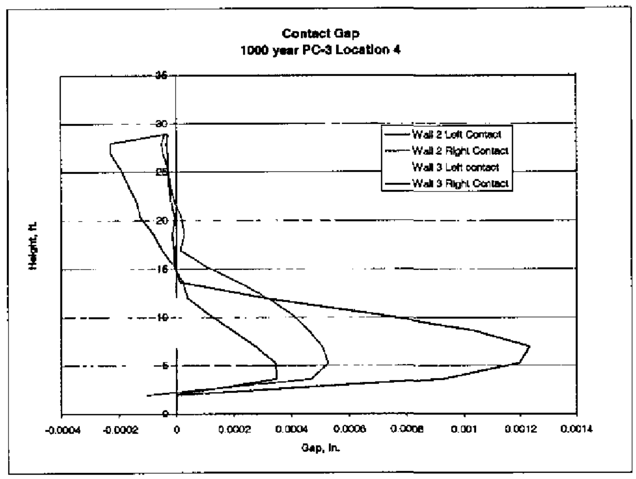
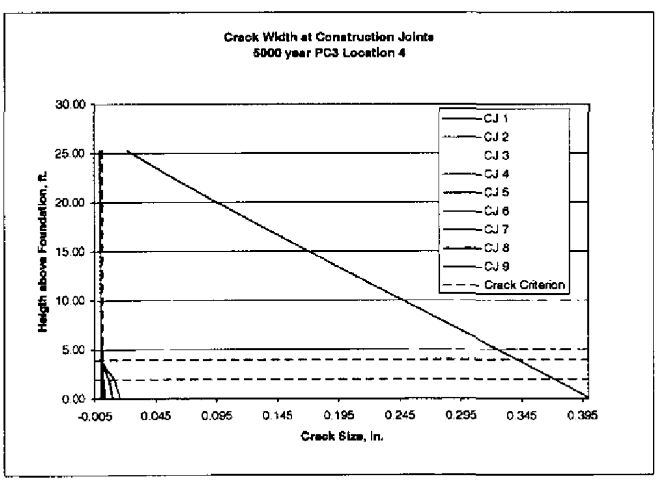
PC-3 Differential Settlement - Location 4
High Soil

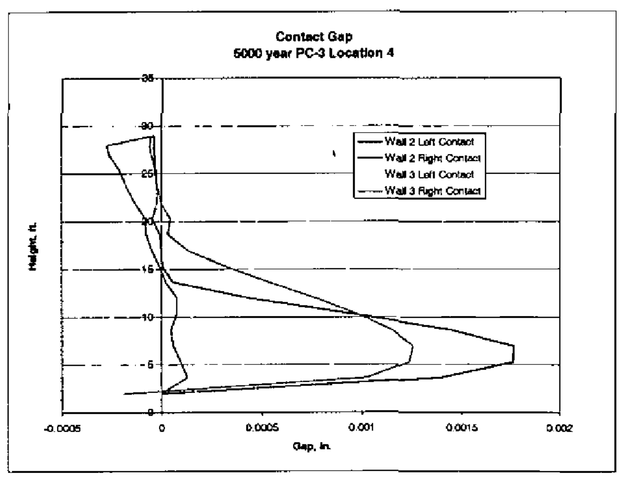




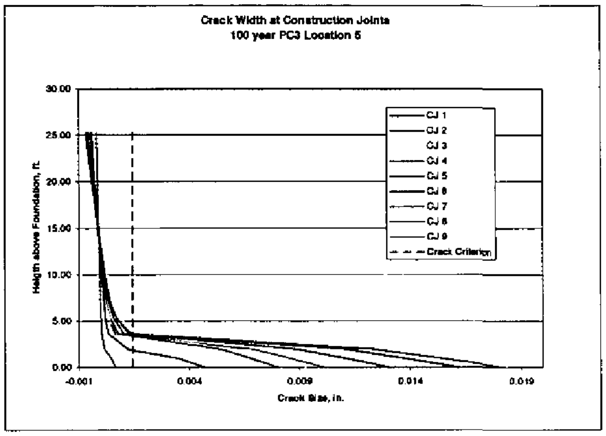


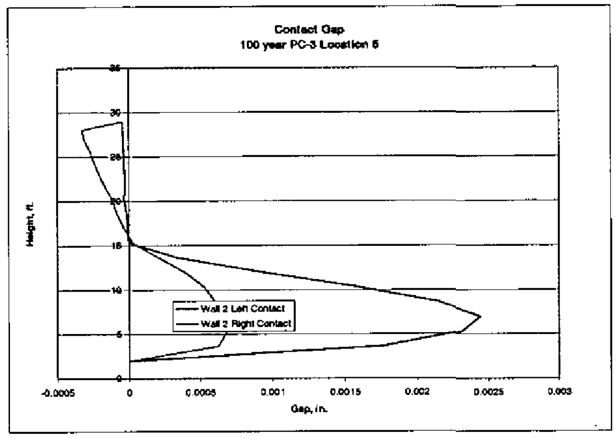


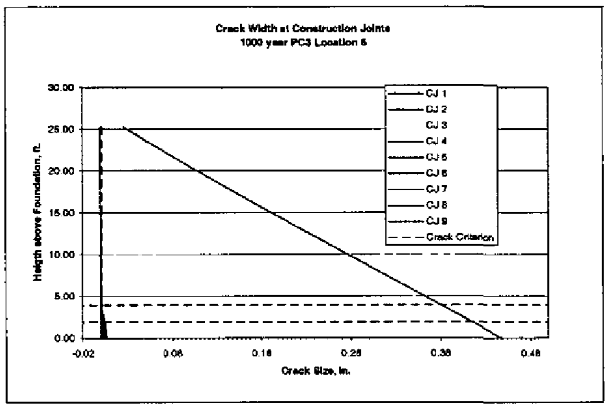


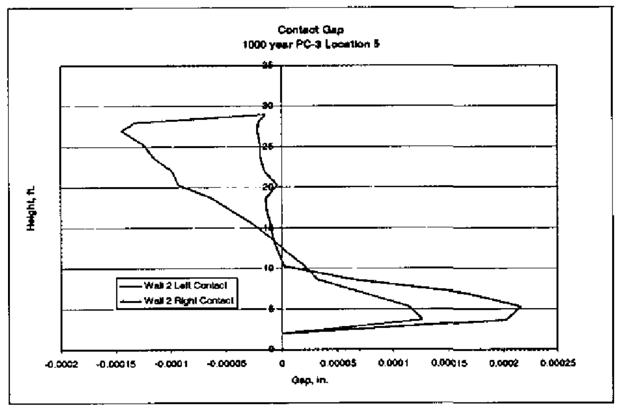


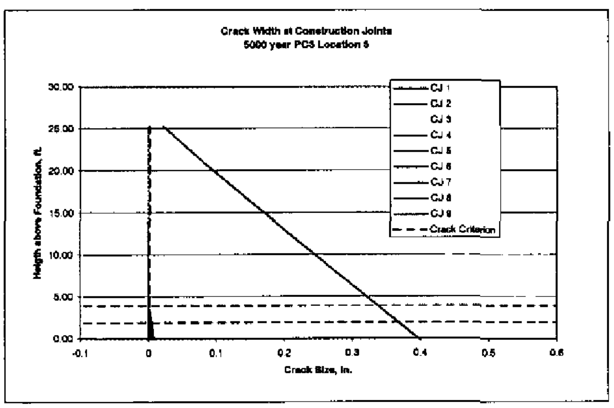
PC-3 Differential Settlement - Location 5
Low Soil

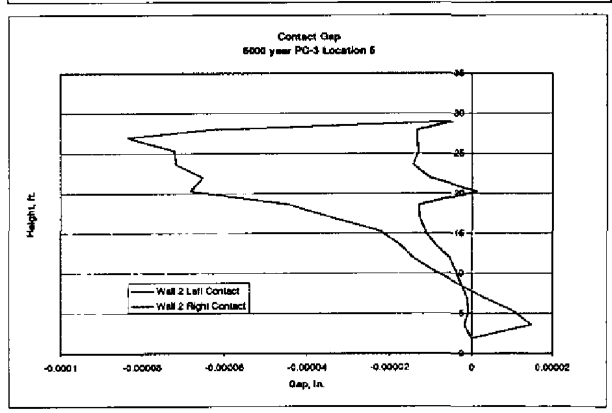




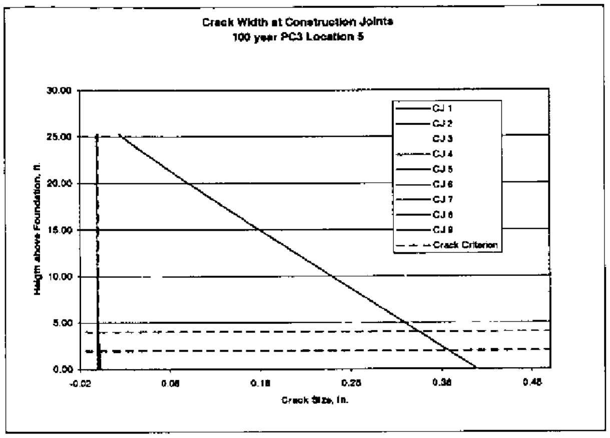


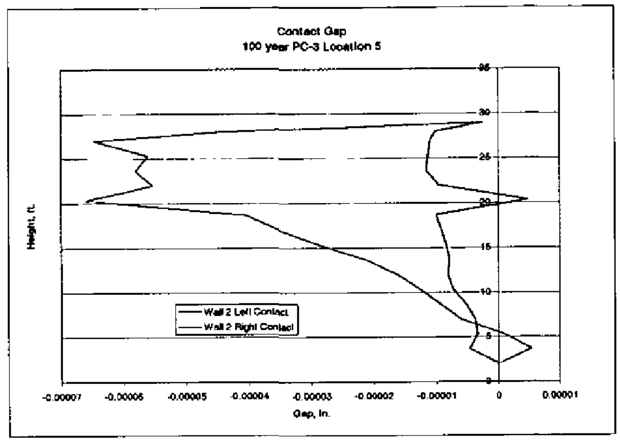


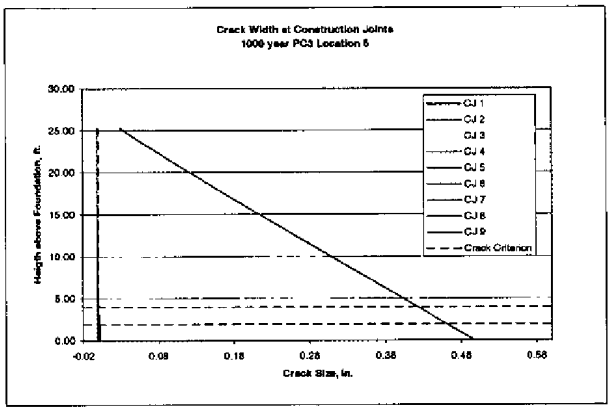


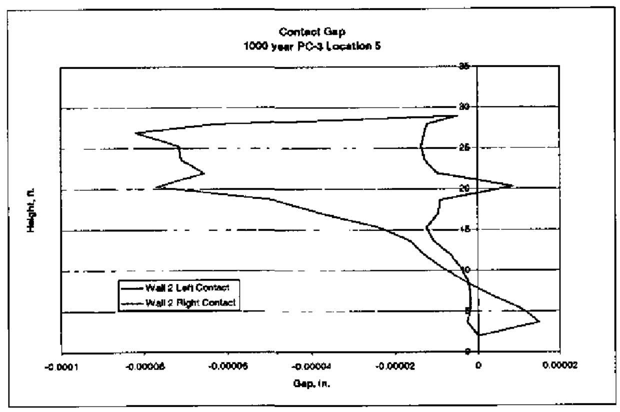


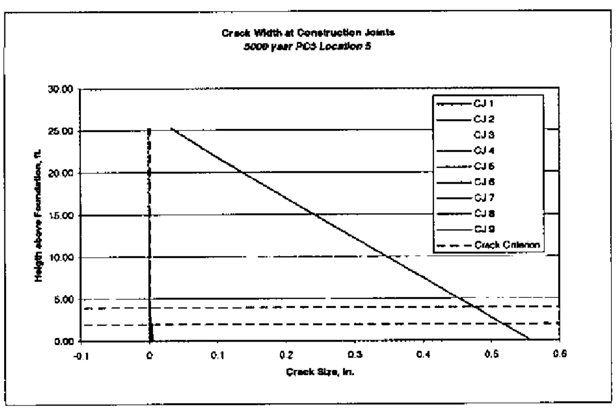
PC-3 Differential Settlement - Location 5
Mean Soil

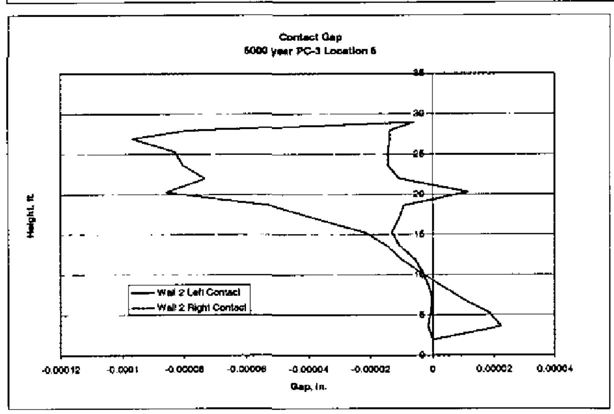












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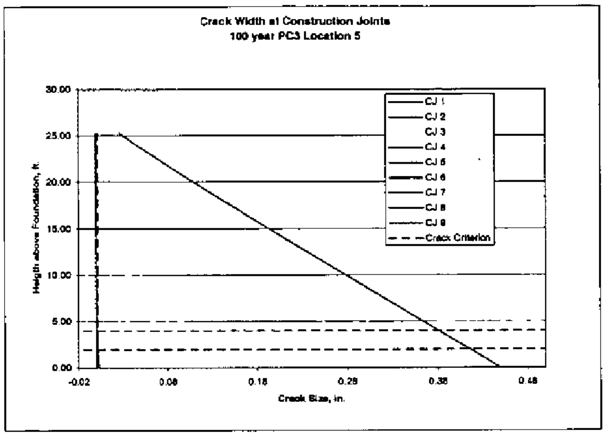
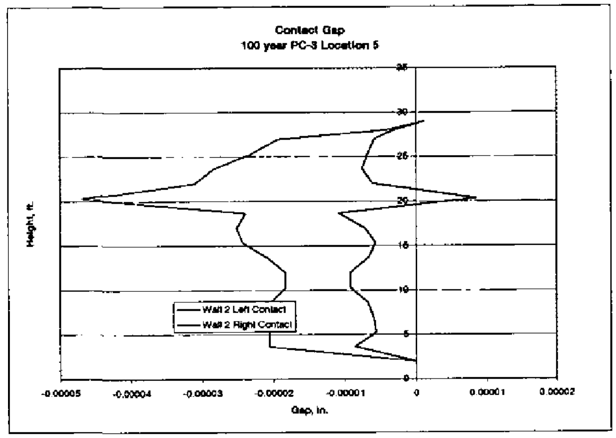
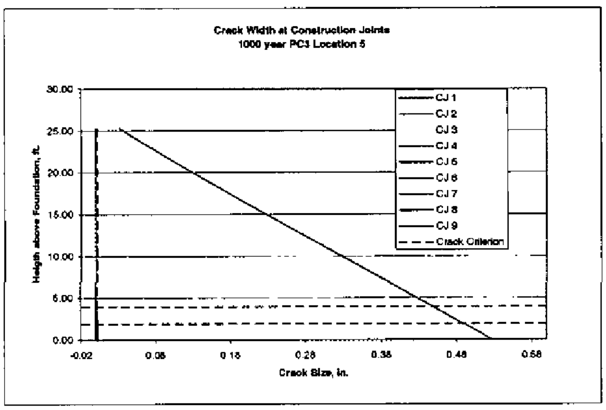
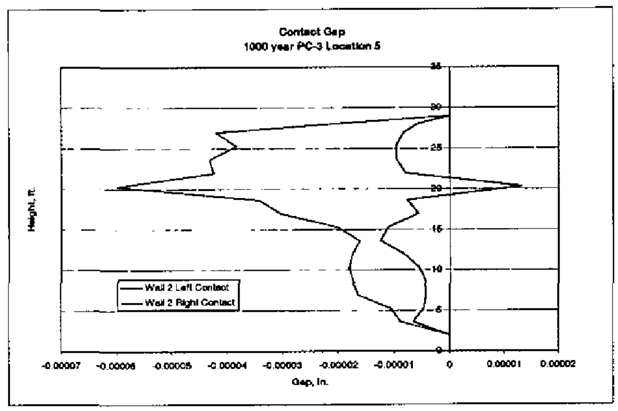
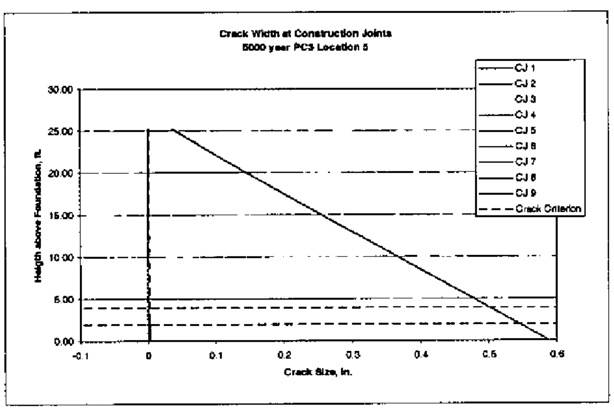
PC-3 Differential Settlement - Location 5
High Soil

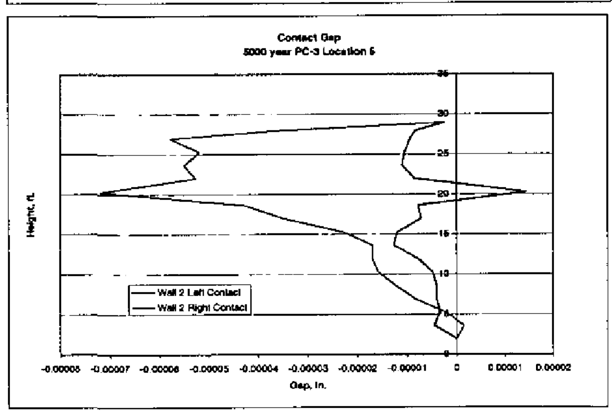












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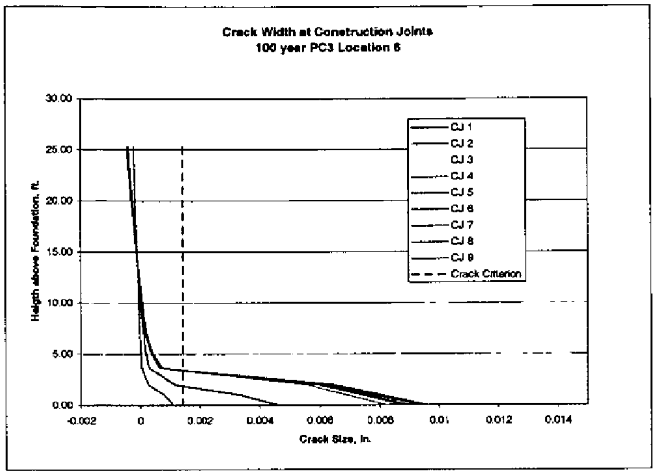
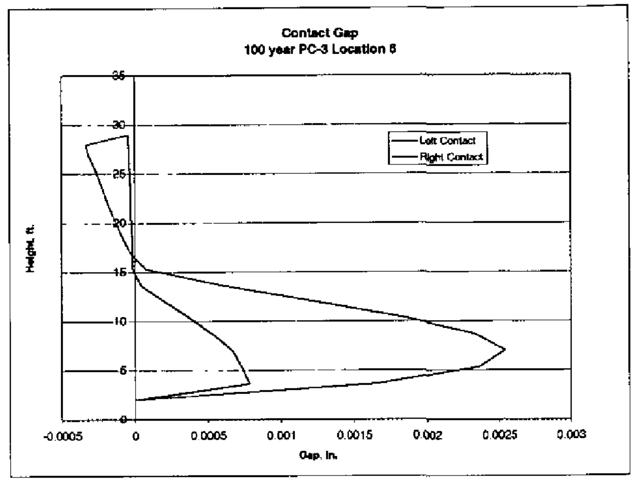
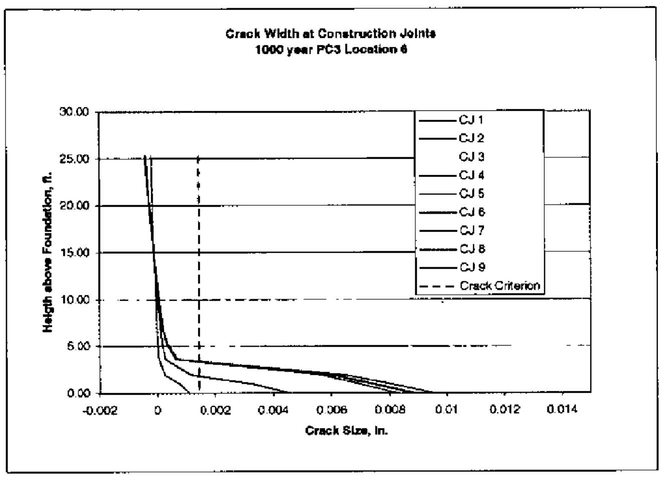
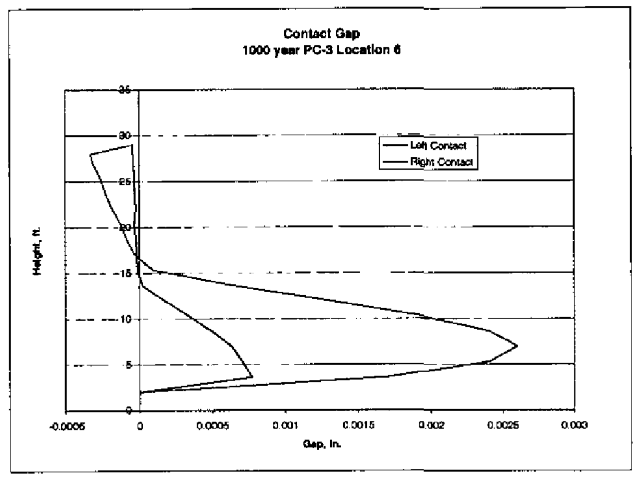
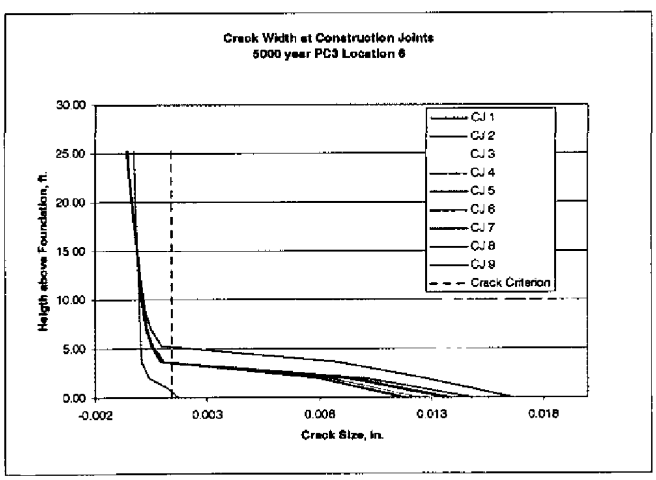
PC-3 Differential Settlement - Location 6
Low Soil

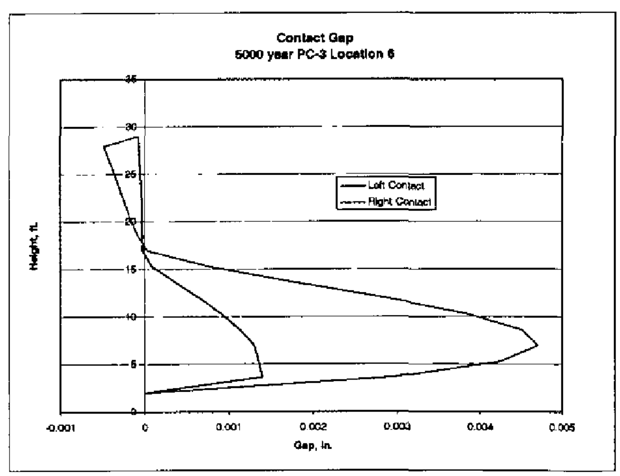




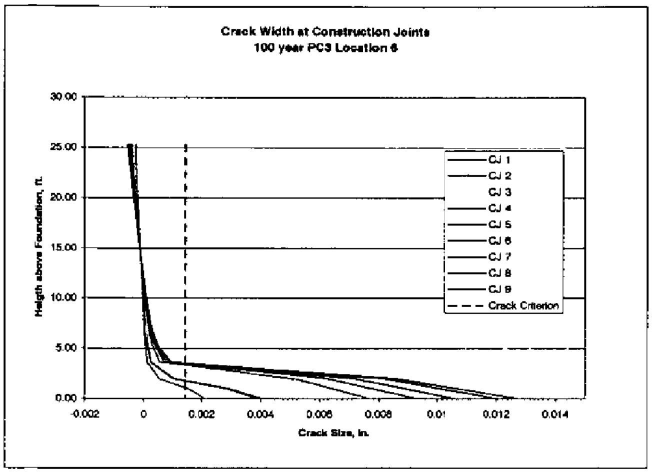


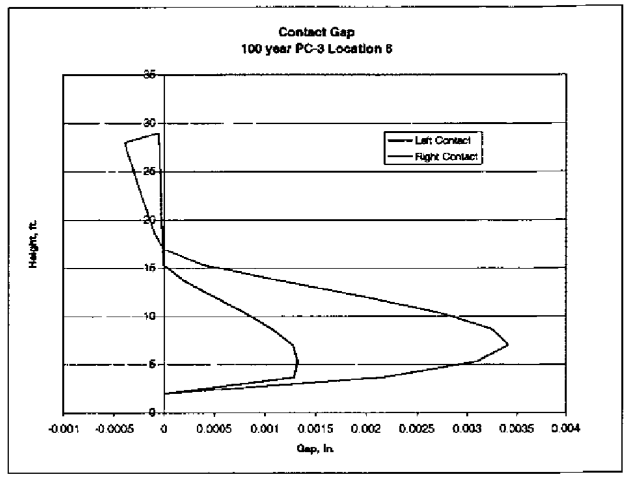


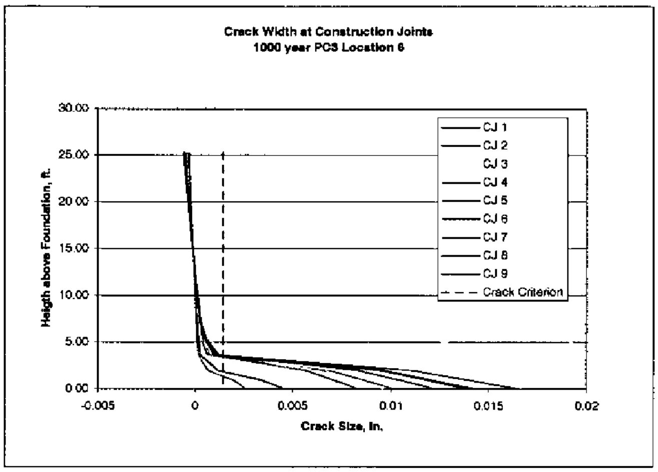


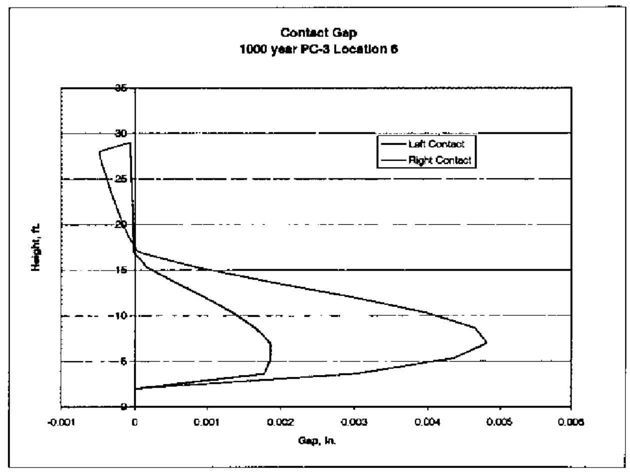


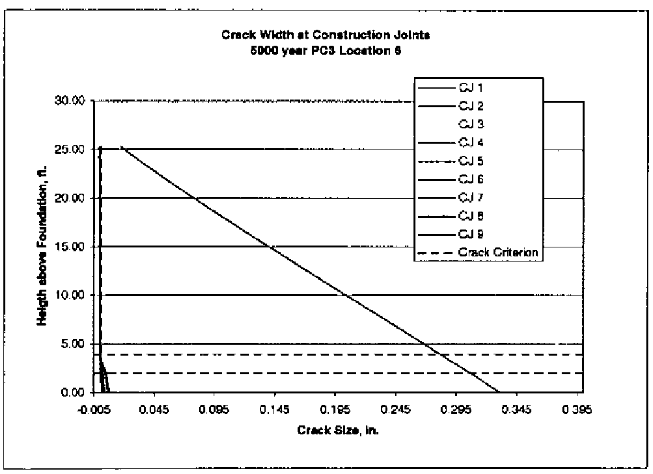
PC-3 Differential Settlement - Location 6
Mean Soil

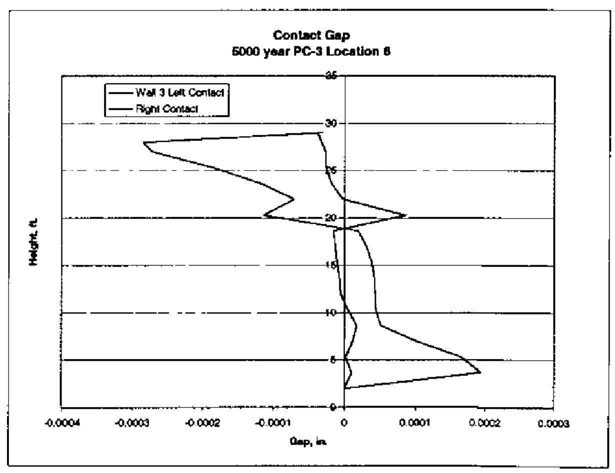




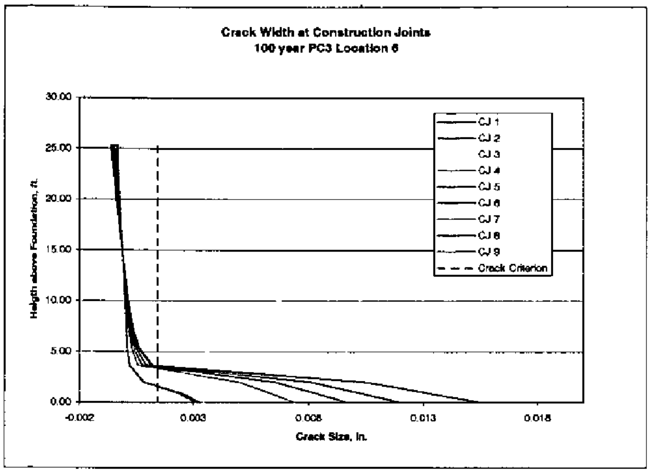


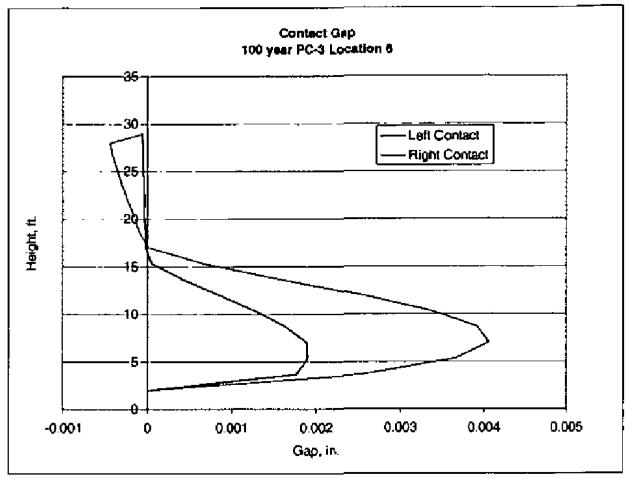


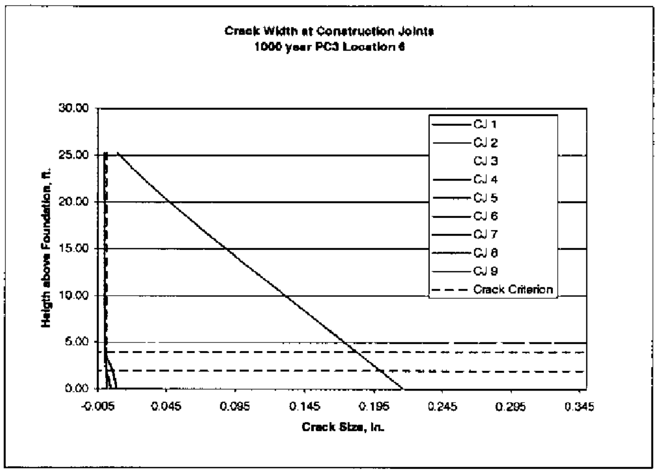


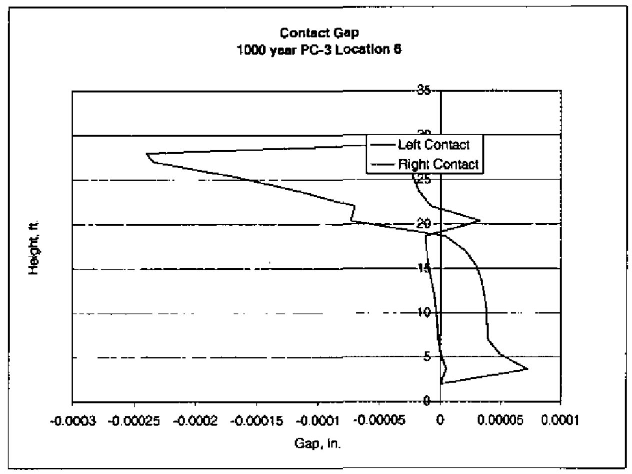


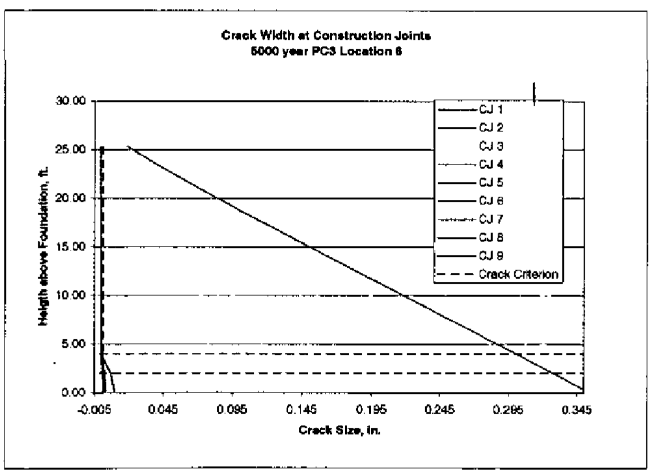
PC-3 Differential Settlement - Location 6
High Soil

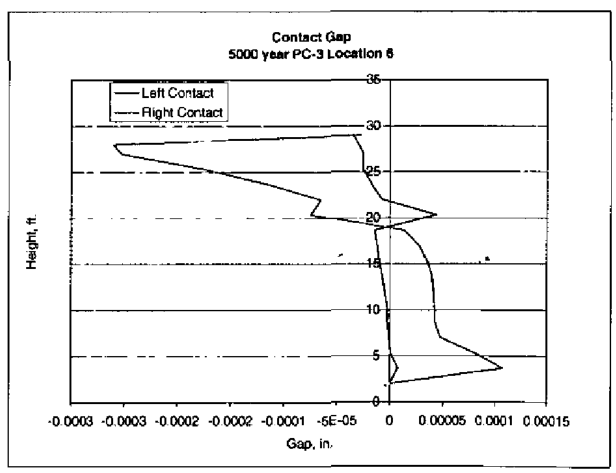












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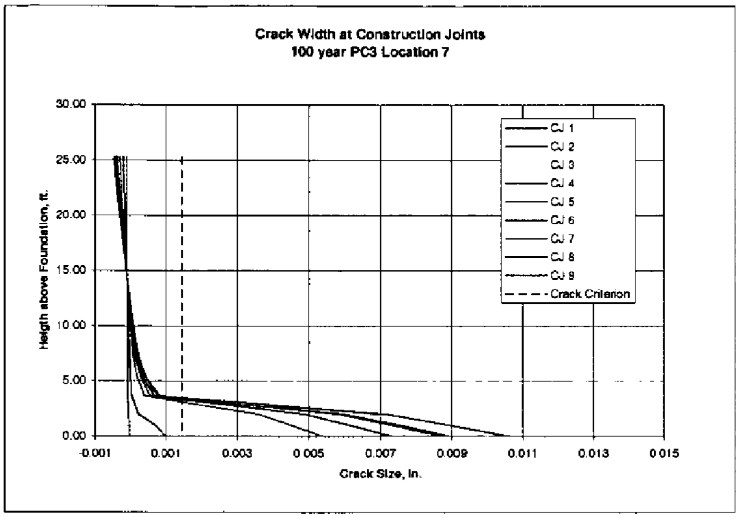
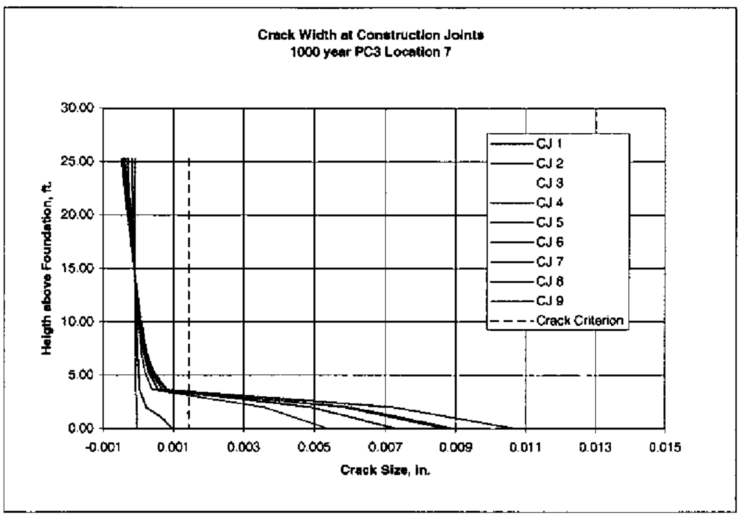
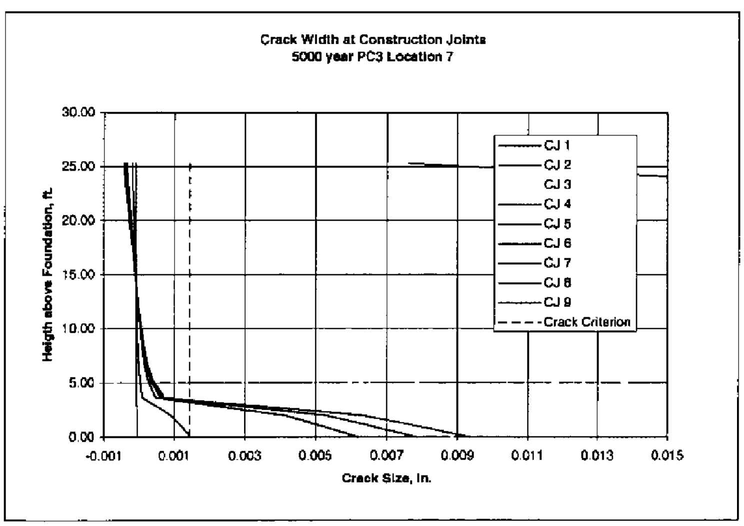
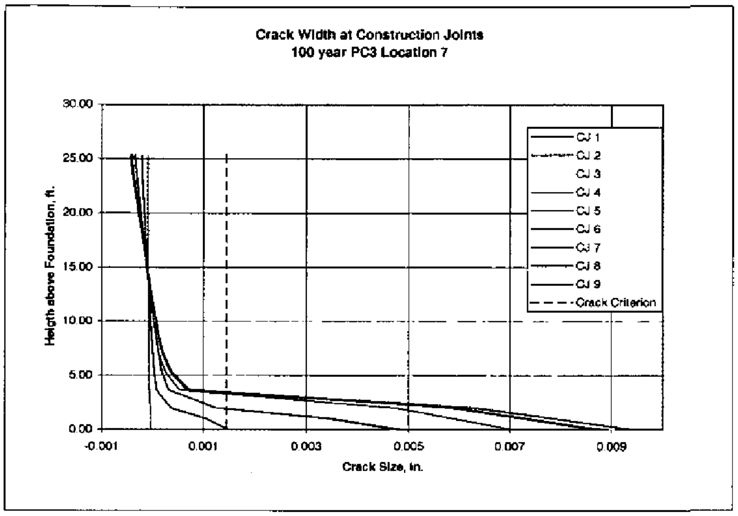
PC-3 Differential Settlement - Location 7
Low Soil

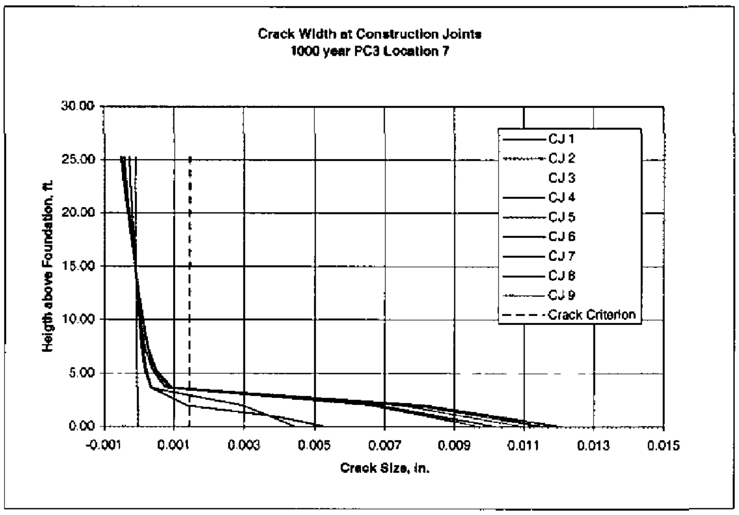


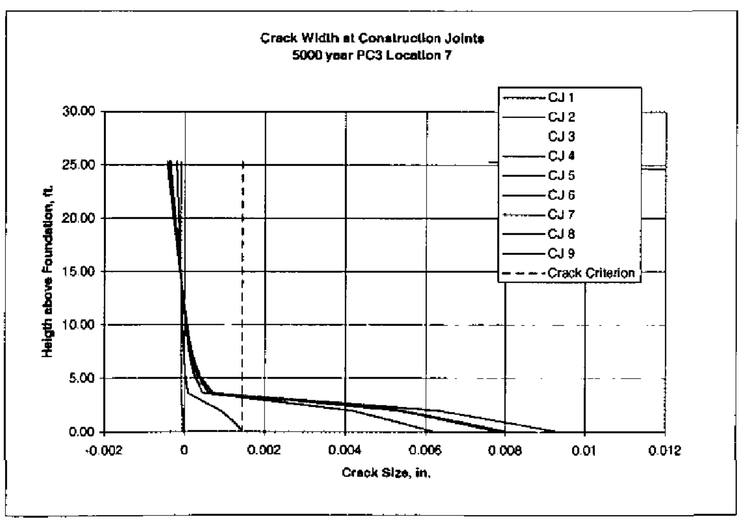




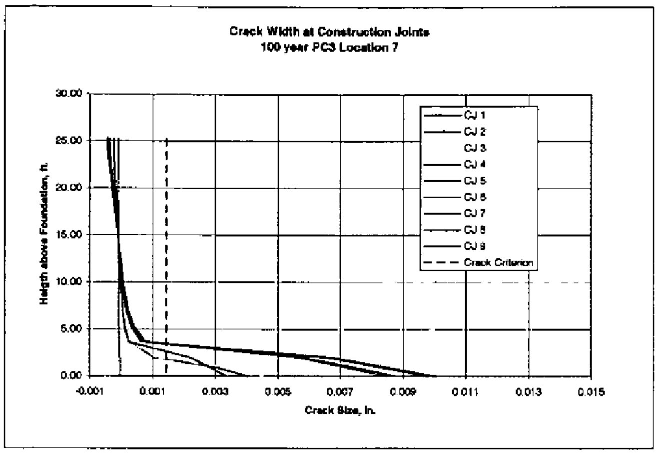
PC-3 Differential Settlement - Location 7
Mean Soil

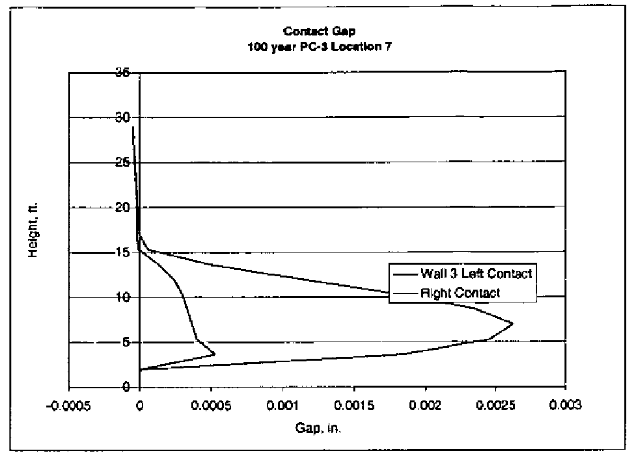


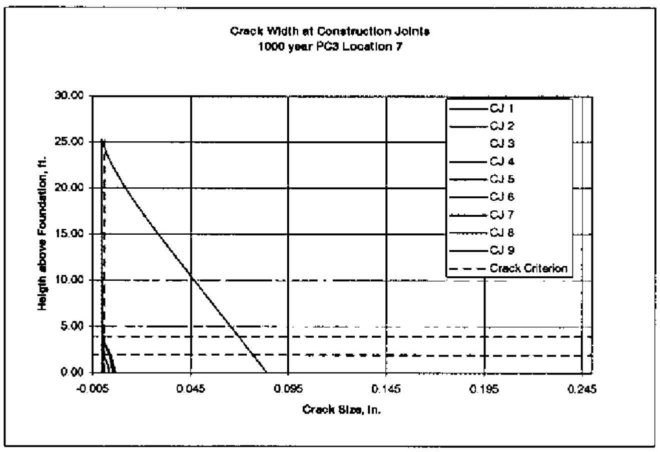


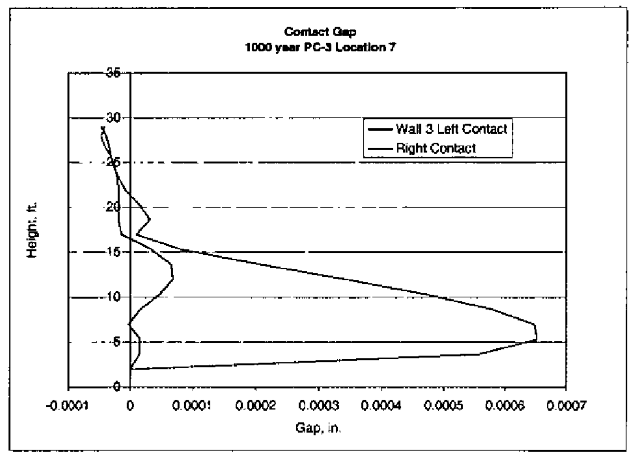


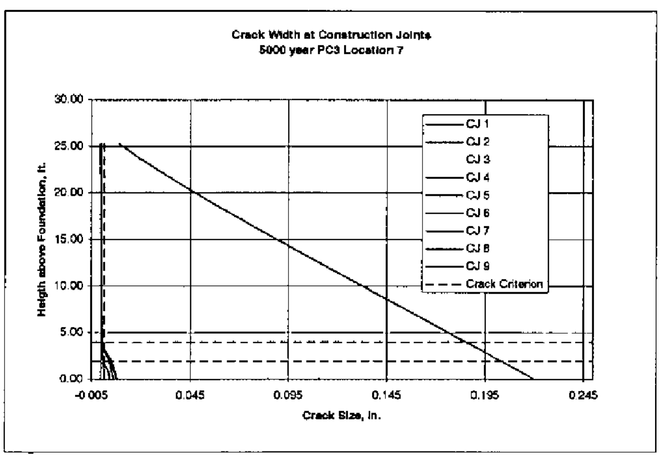
PC-3 Differential Settlement - Location 7
High Soil

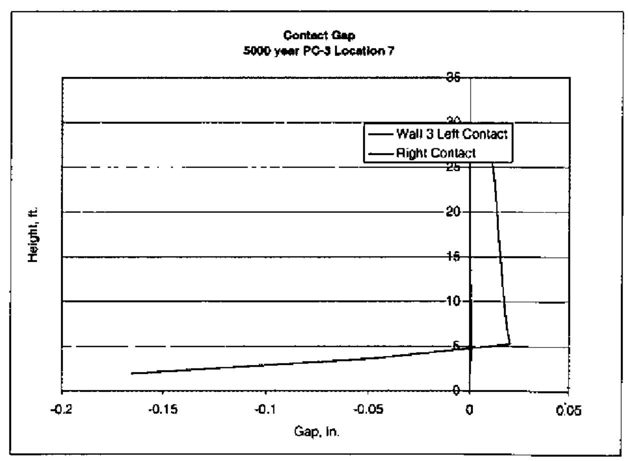




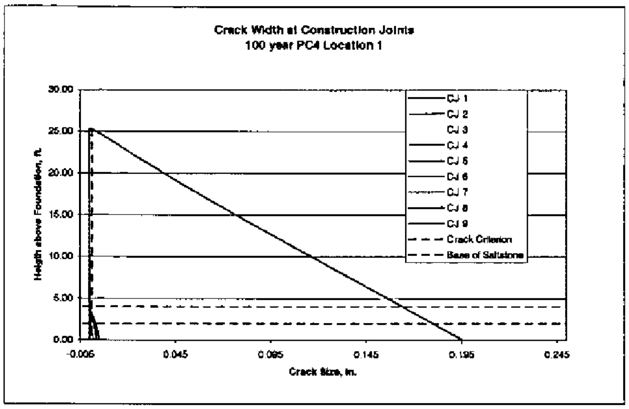


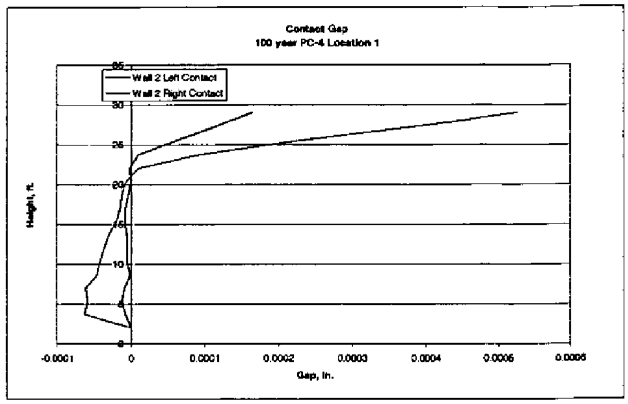


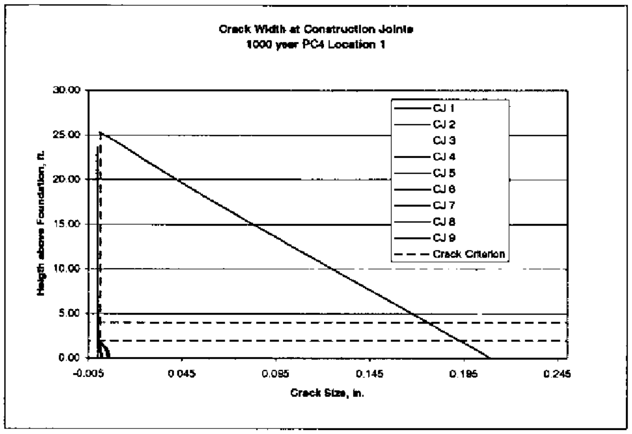


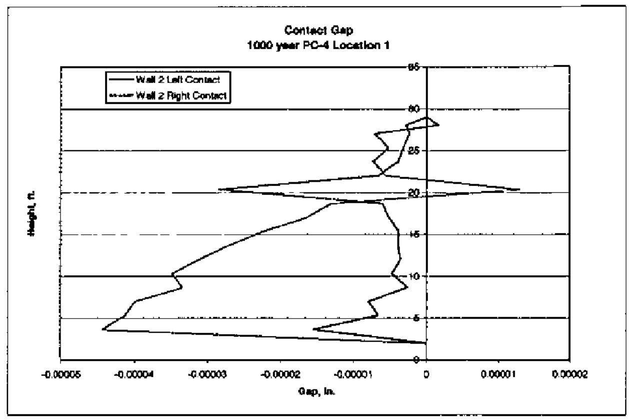


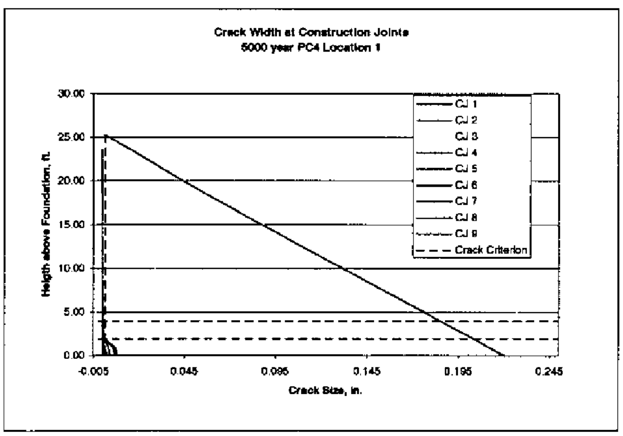
PC-4 Differential Settlement - Location 1
Low Soil

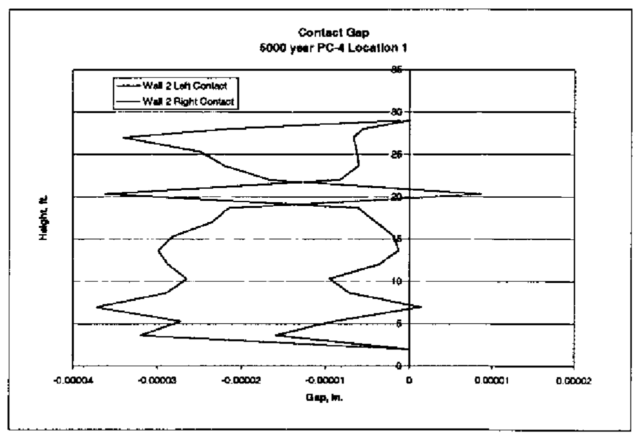




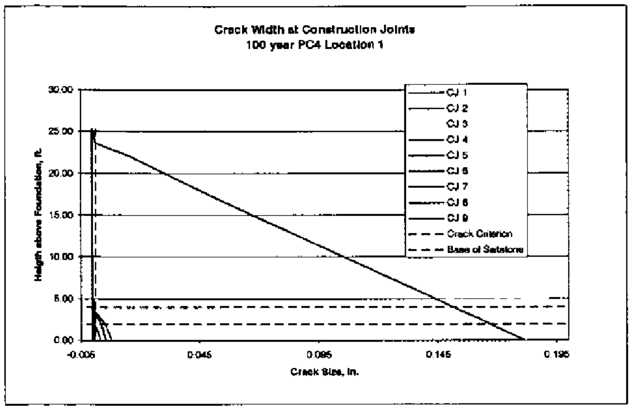


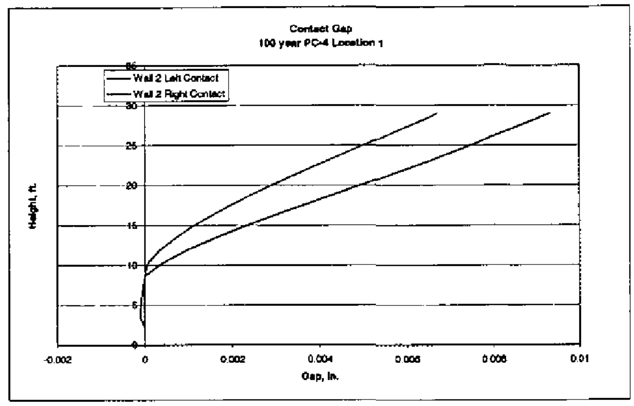


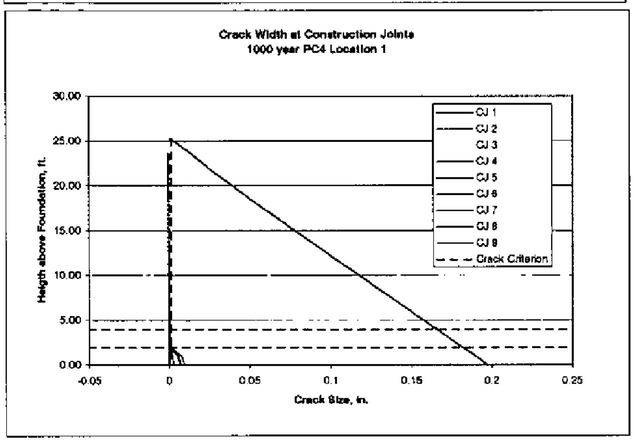


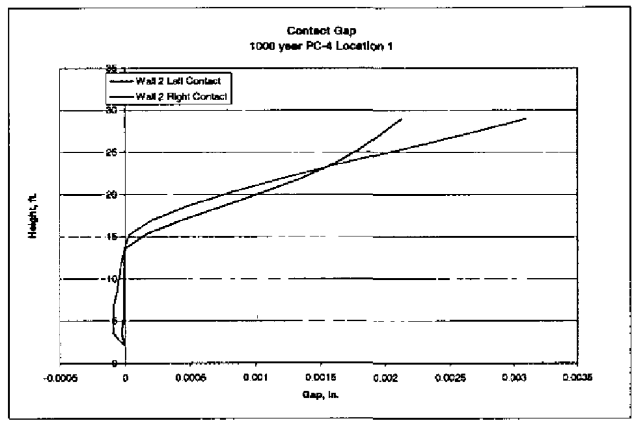


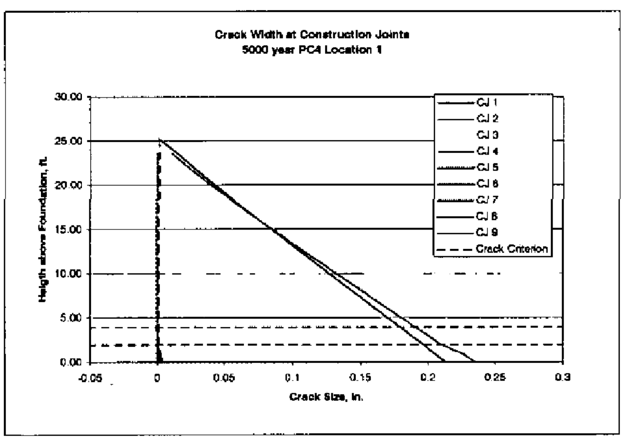
PC-4 Differential Settlement - Location 1
Mean Soil

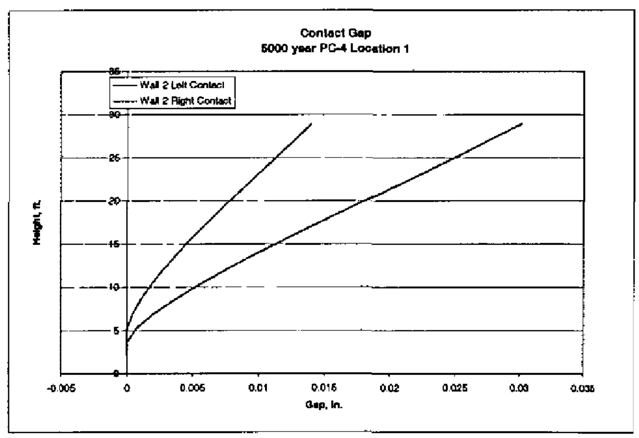












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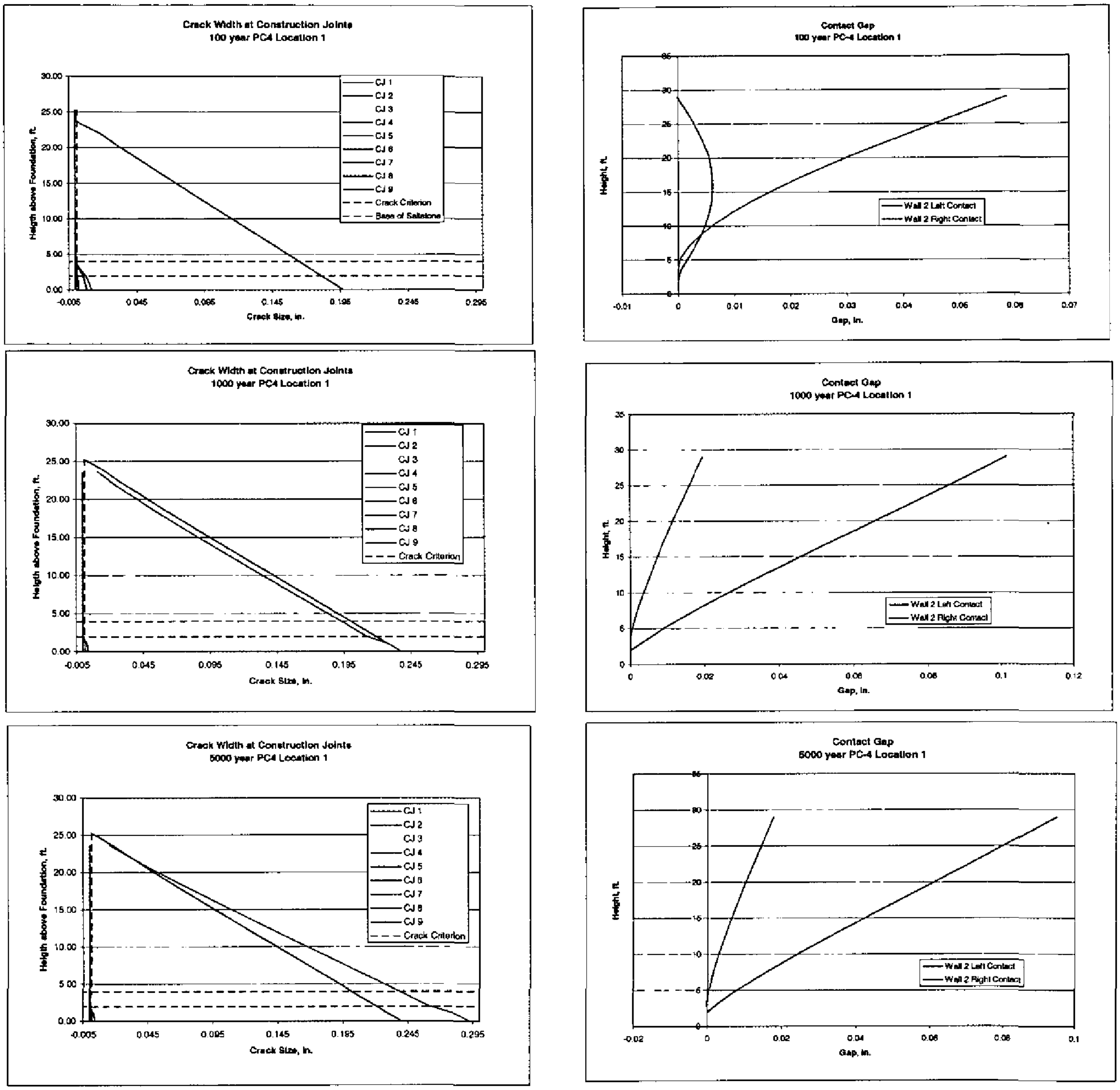
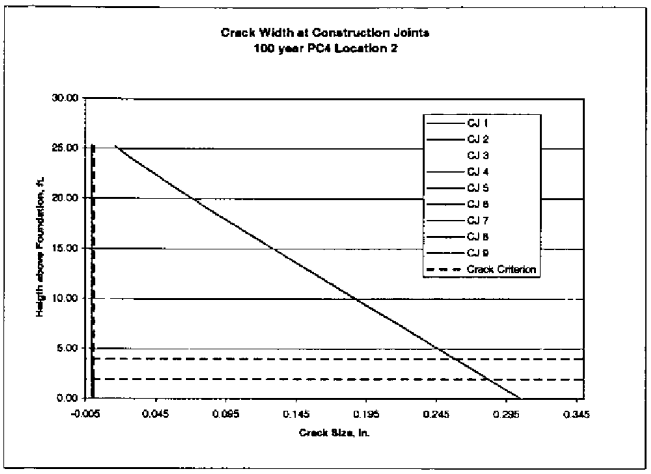
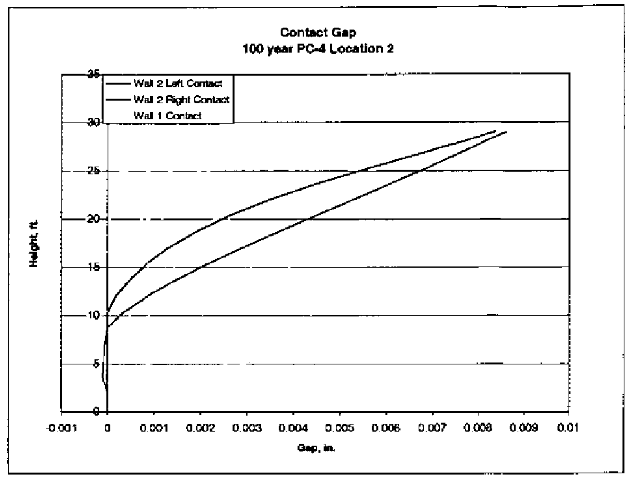
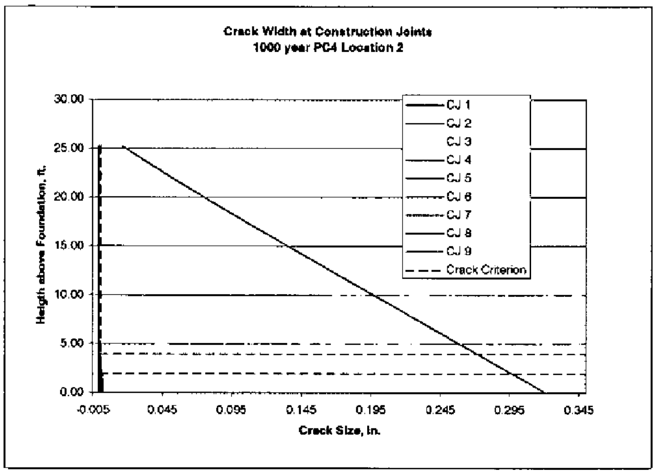
PC-4 Differential Settlement - Location 1
High Soil

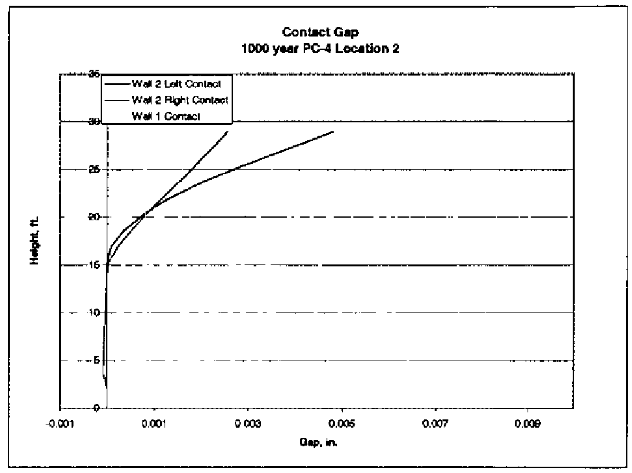


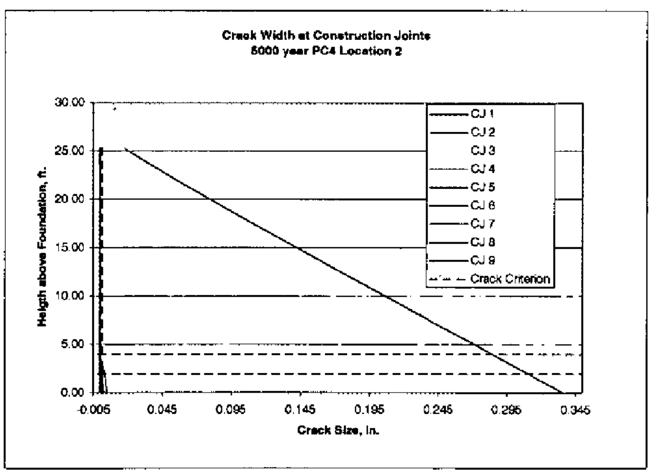
PC-4 Differential Settlement - Location 2
Low Soil

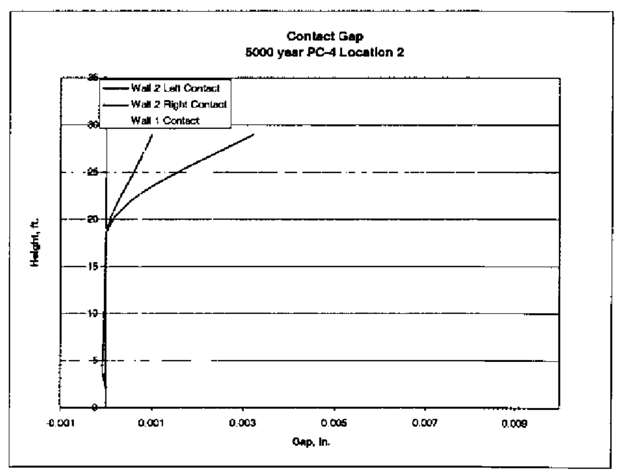




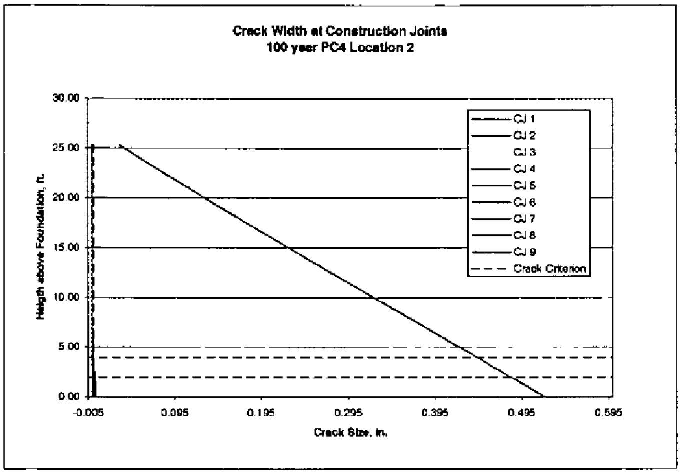


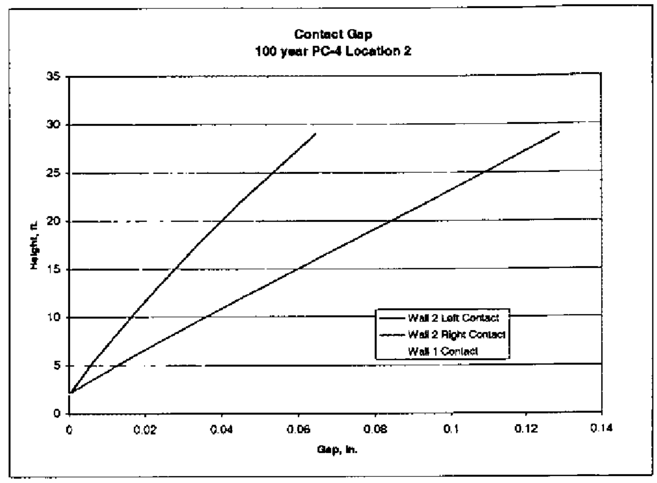


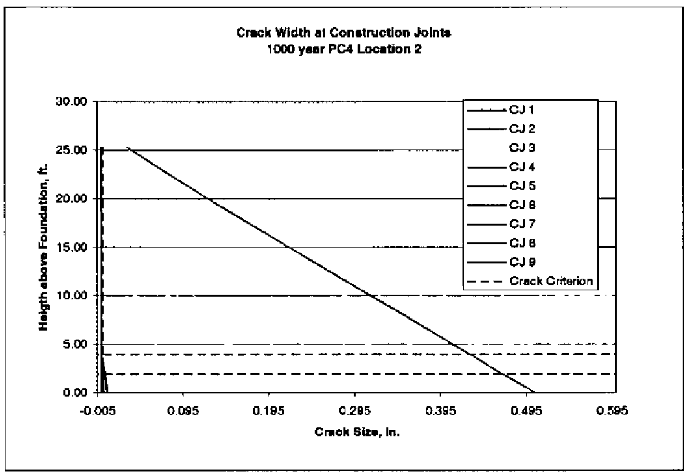


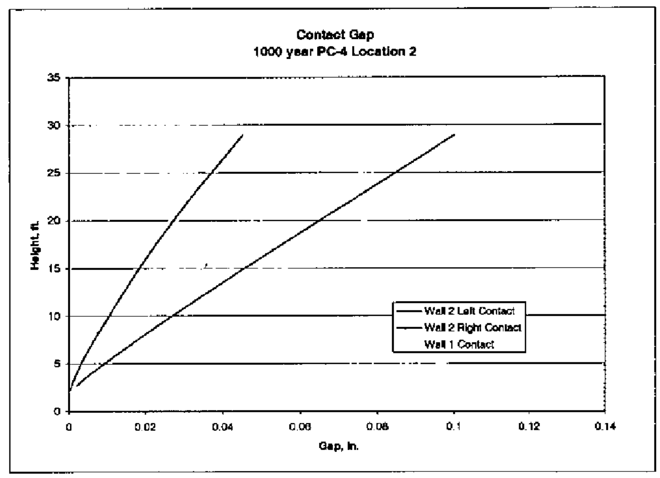


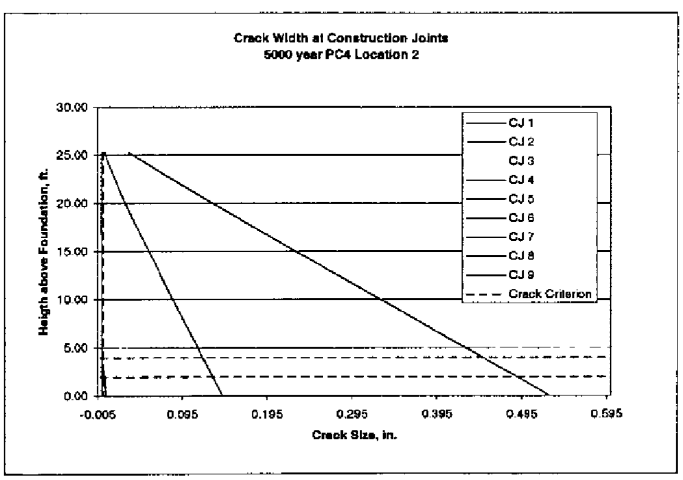
PC-4 Differential Settlement - Location 2
Mean Soil

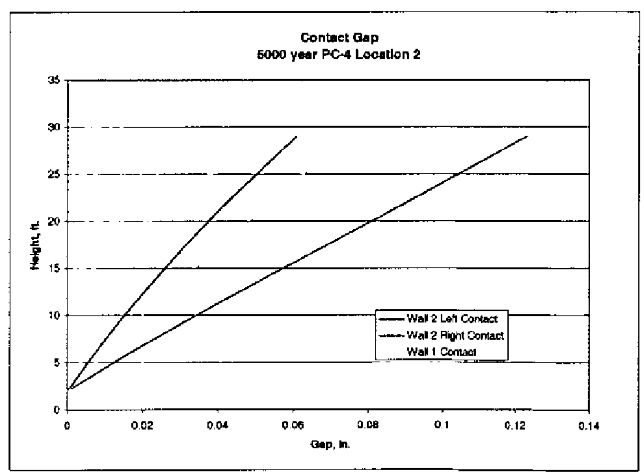












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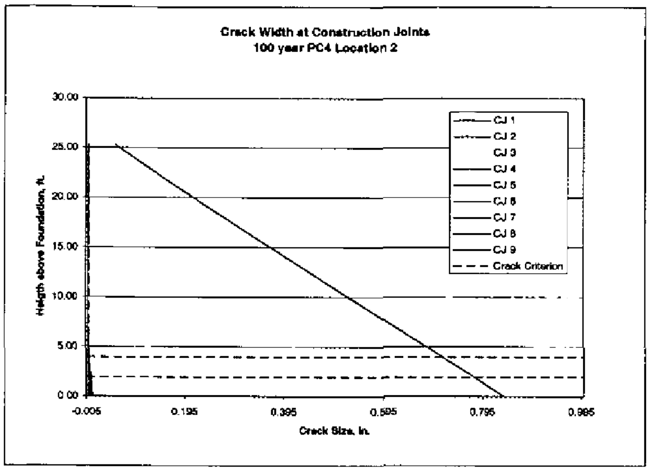
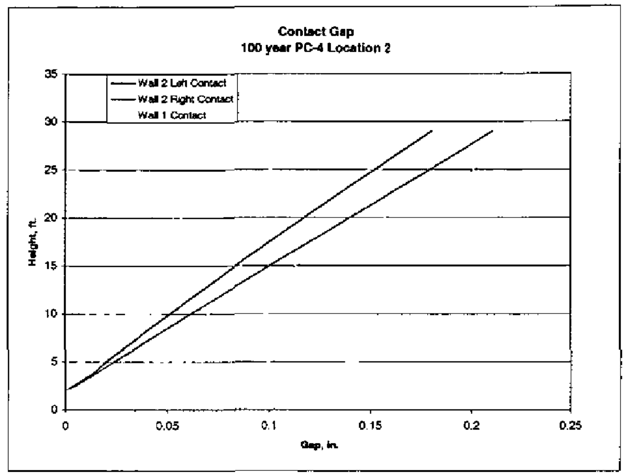
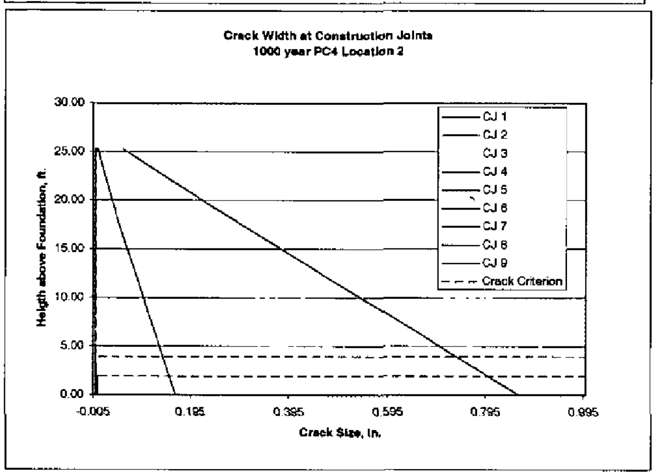
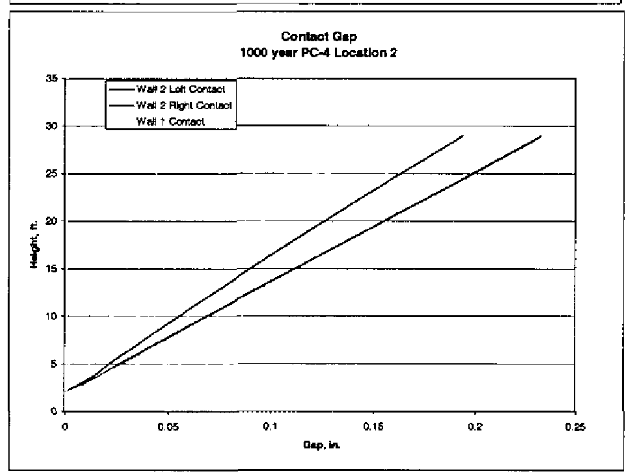
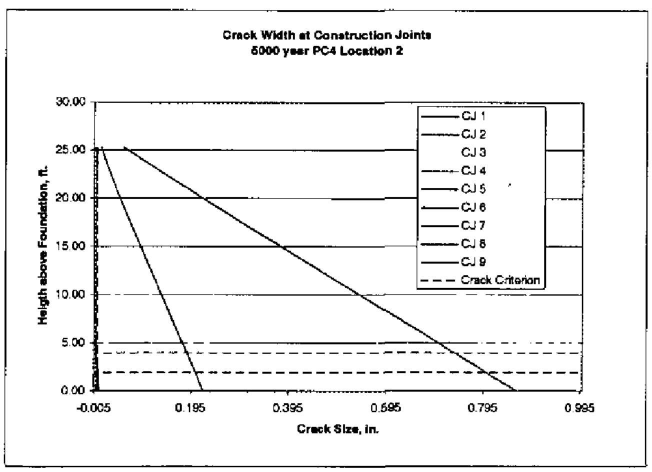
PC-4 Differential Settlement - Location 2
High Soil

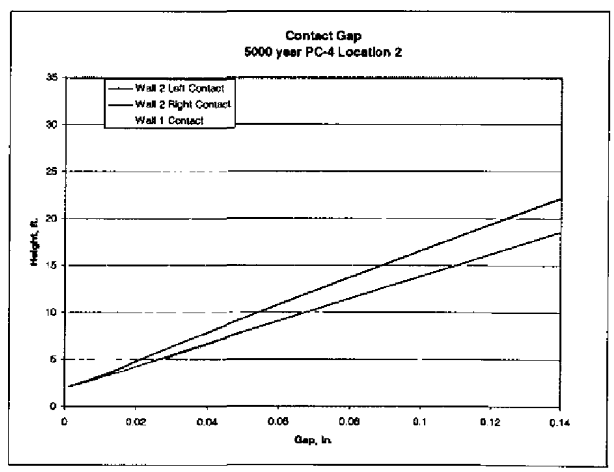




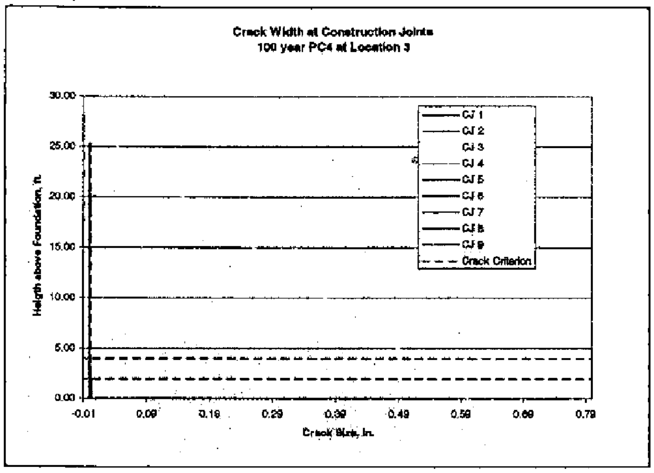


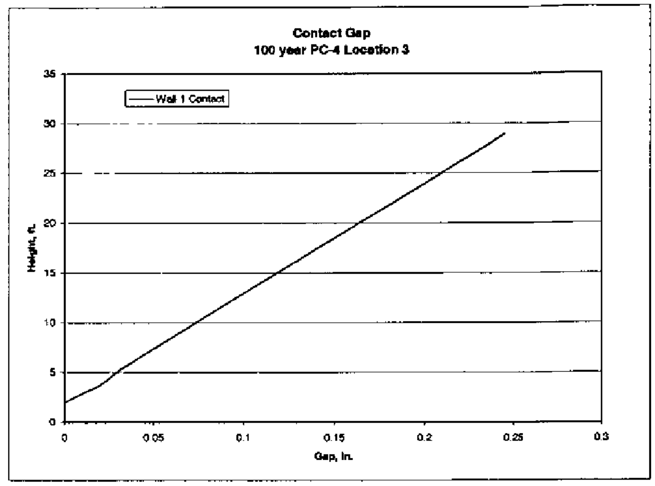


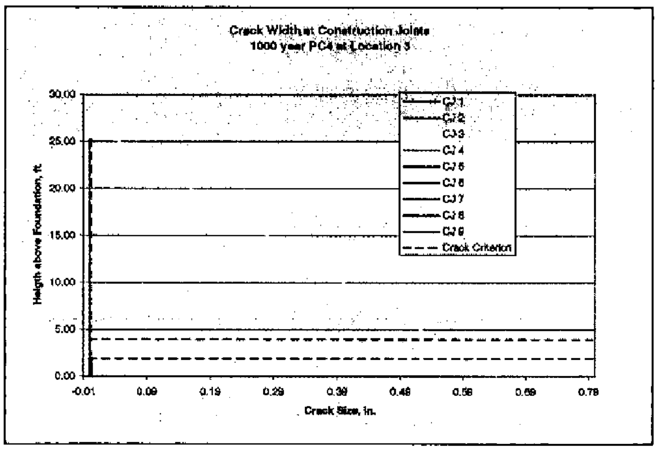


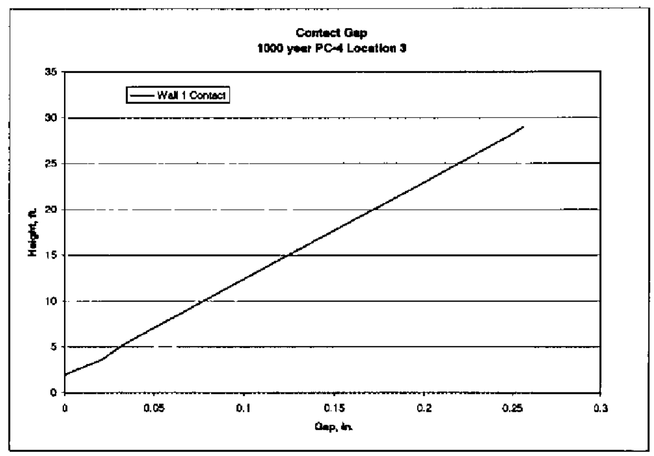


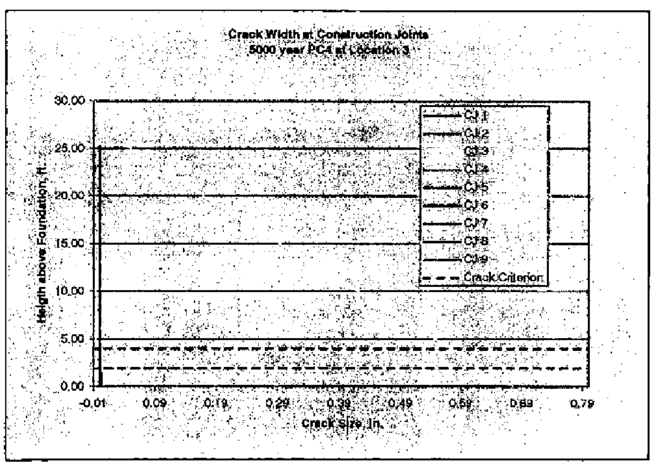
PC-4 Differential Settlement - Location 3
Low Soil

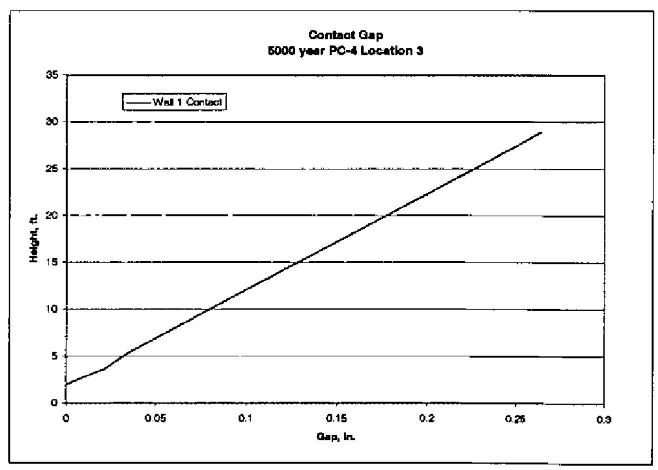












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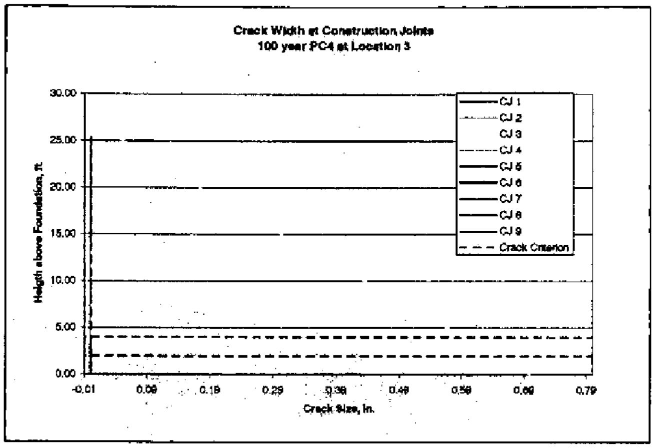
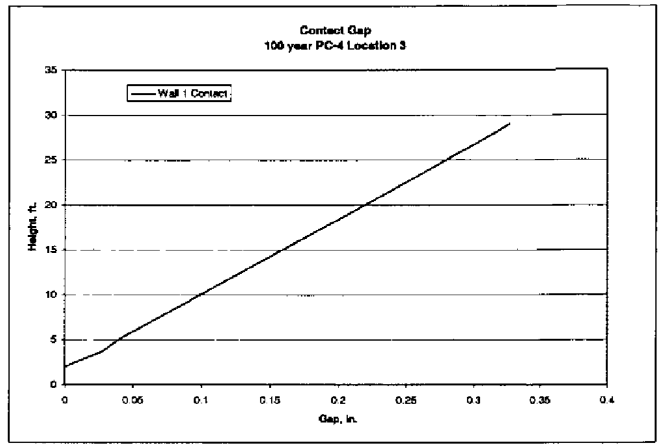
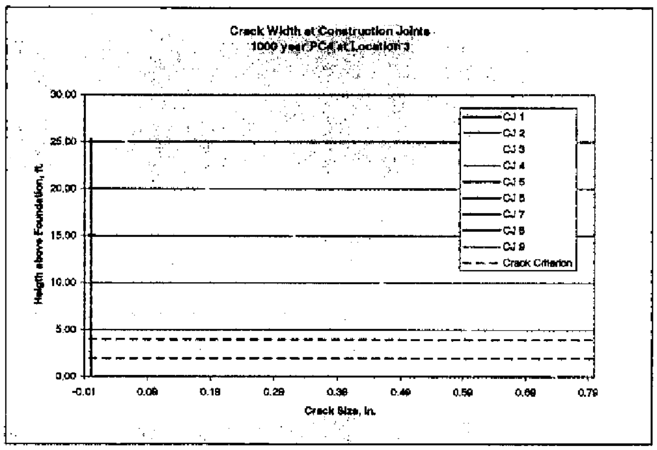
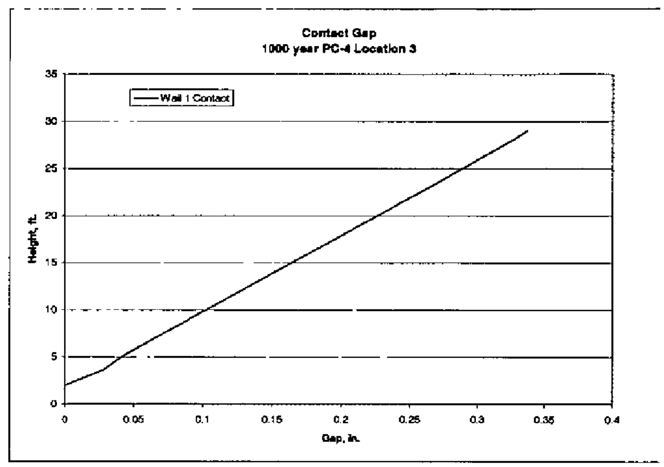
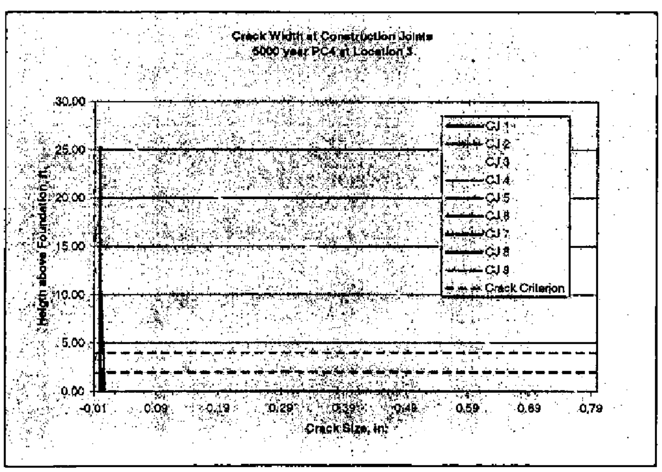
PC-4 Differential Settlement - Location 3
Mean Soil

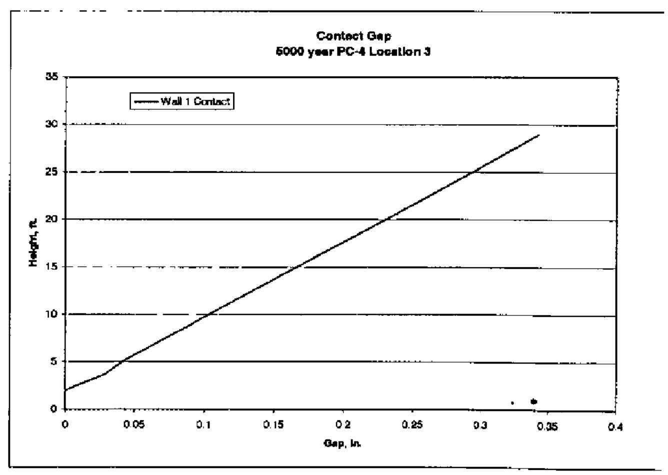




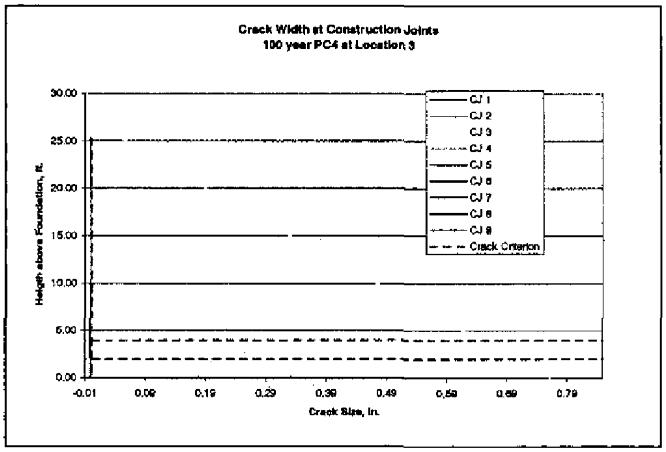


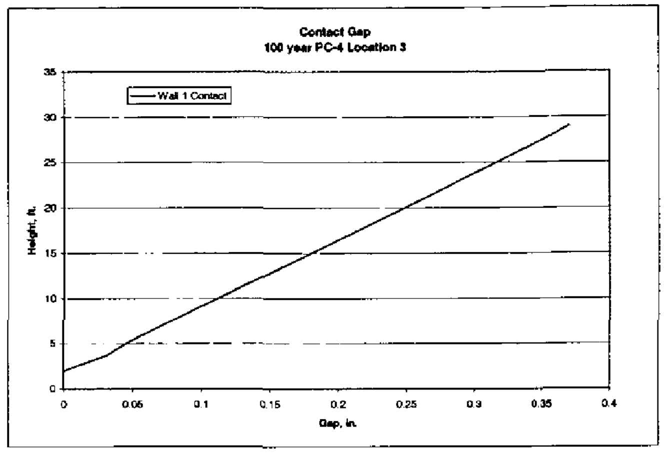


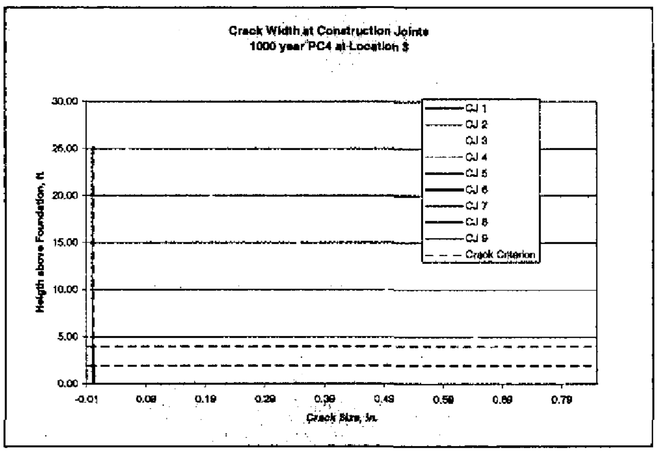


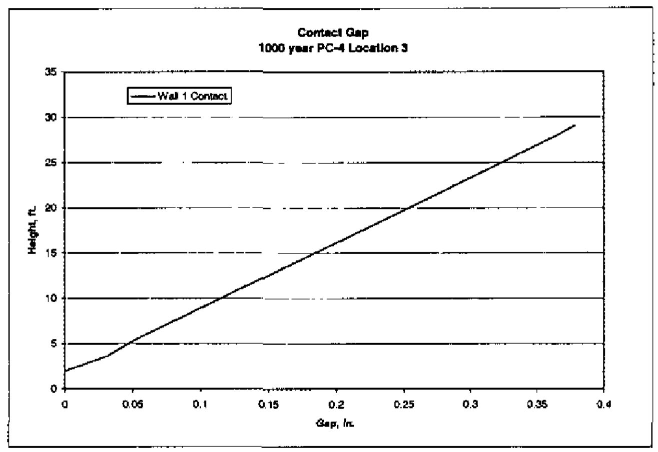


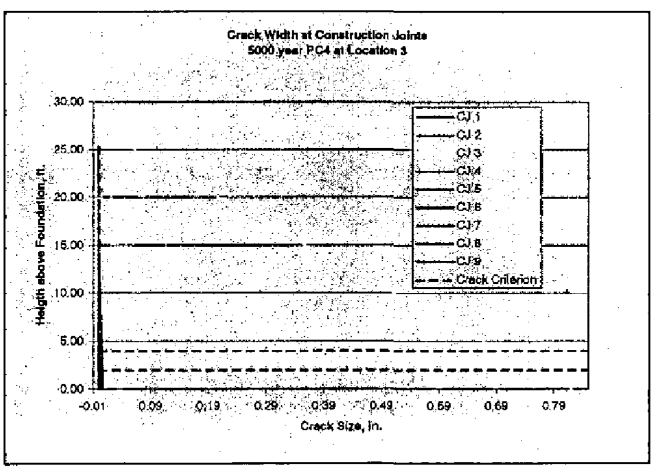
PC-4 Differential Settlement - Location 3
High Soil

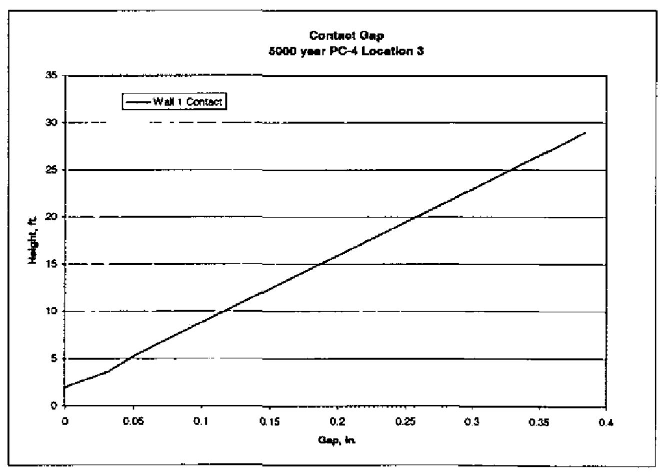




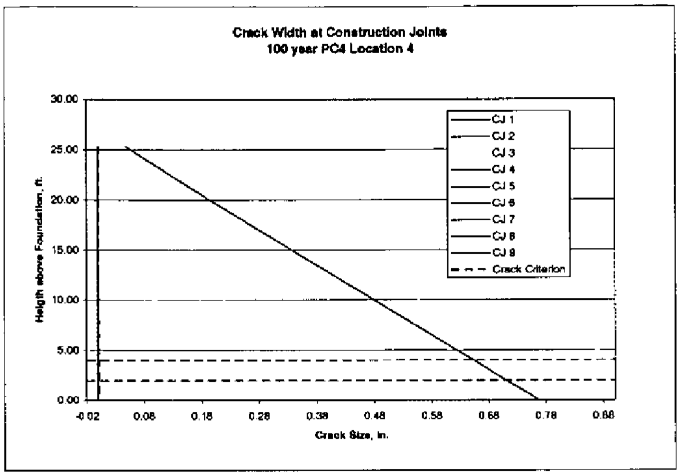


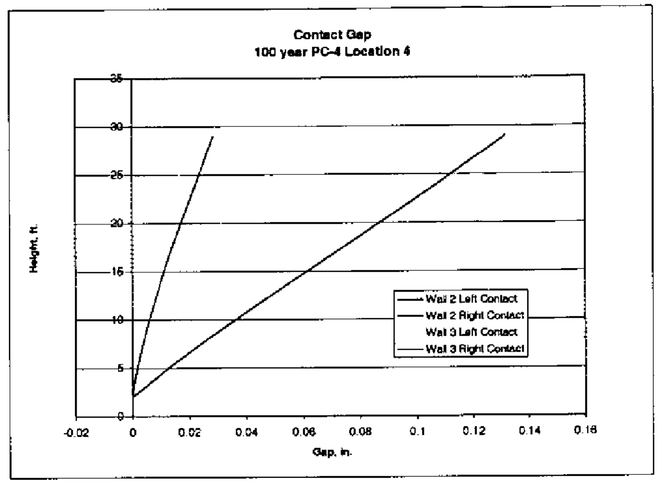


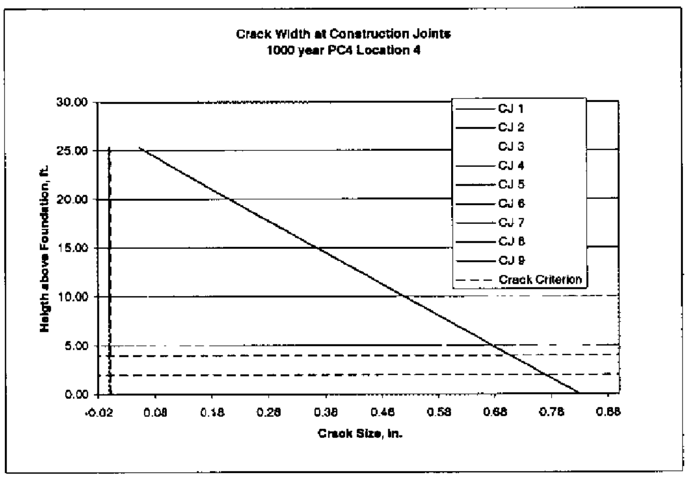


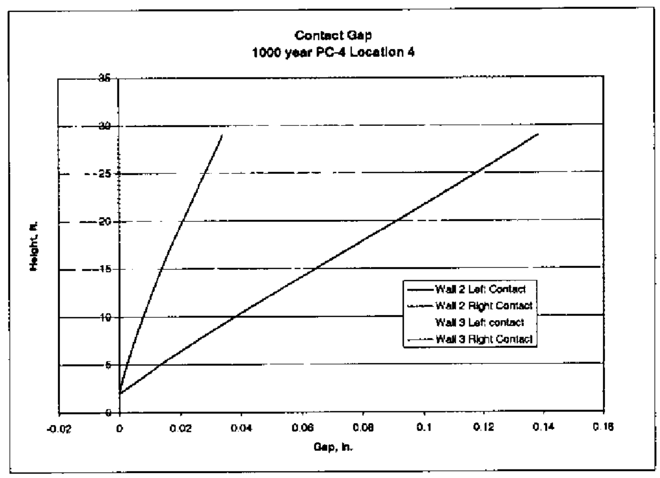


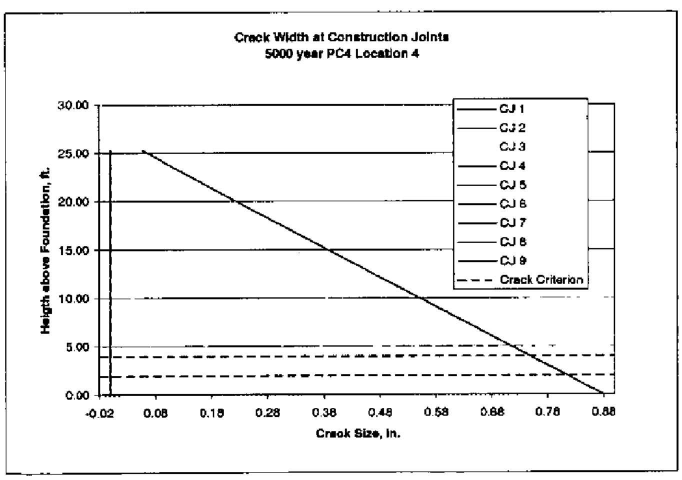
PC-4 Differential Settlement - Location 4
Low Soil

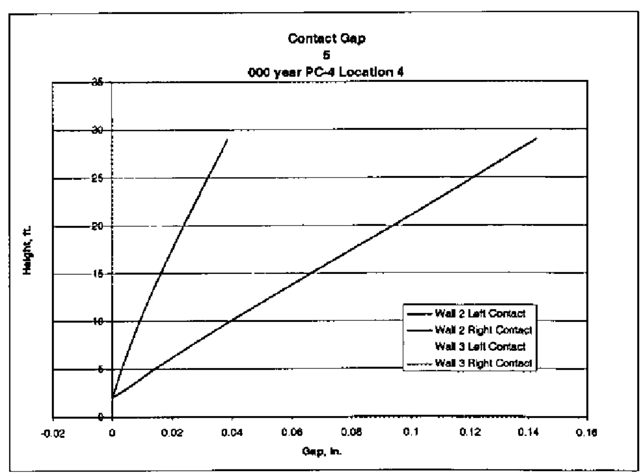












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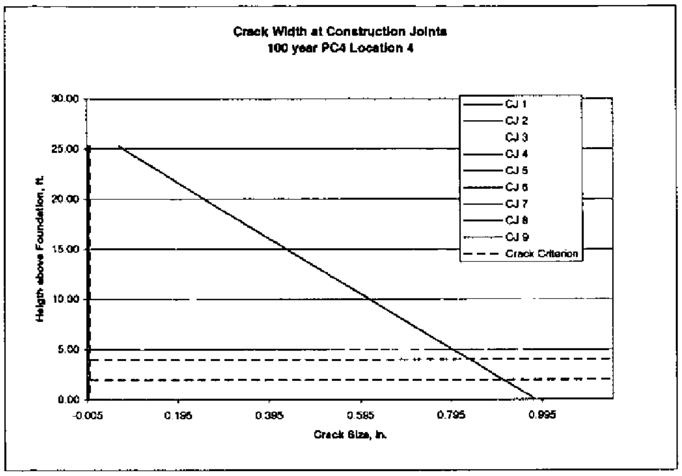
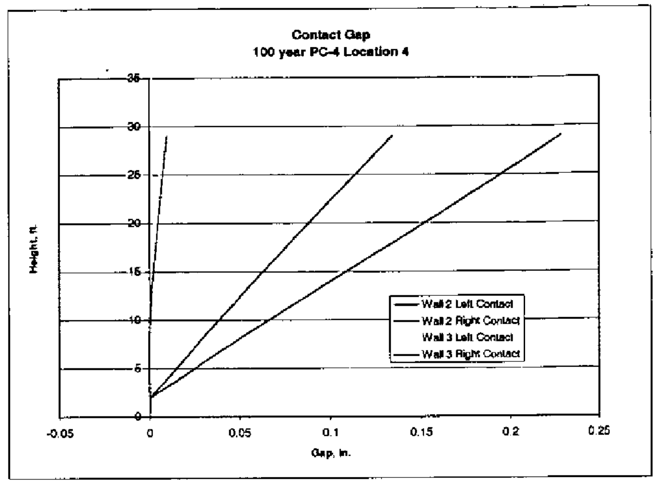
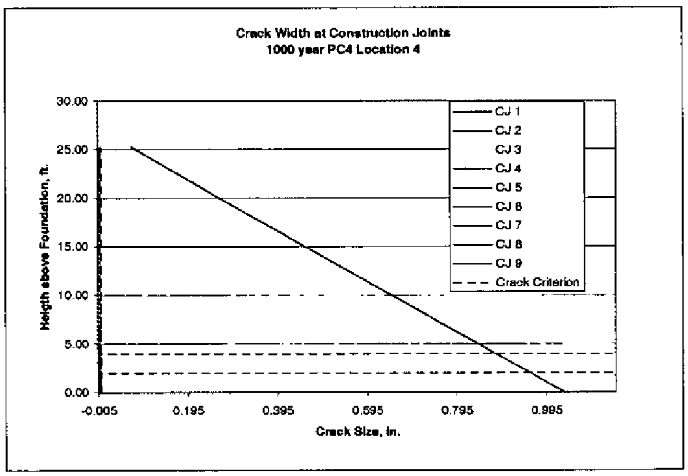
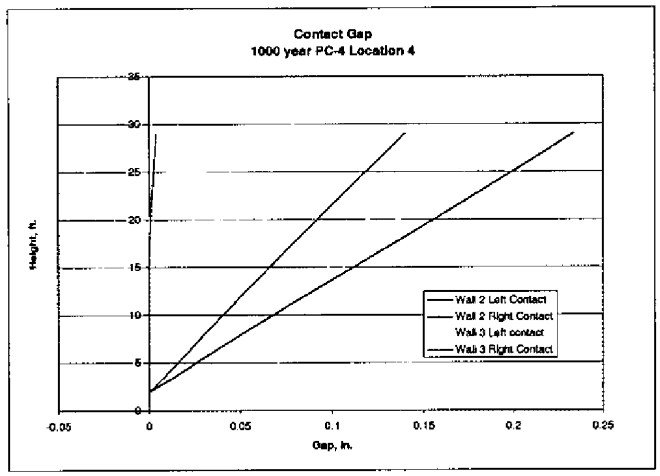
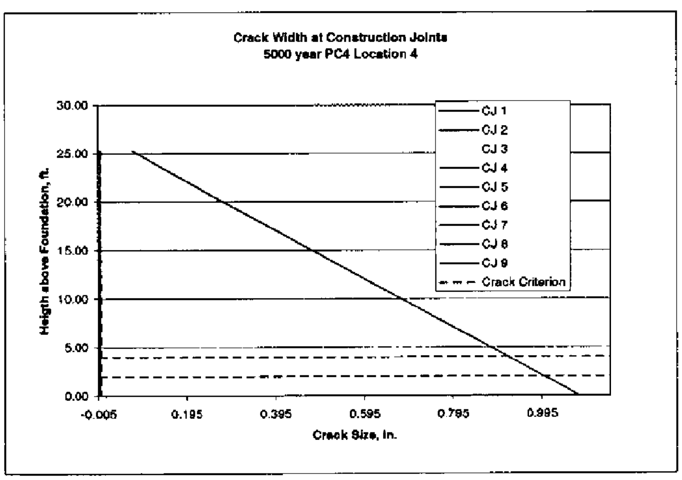
PC-4 Differential Settlement - Location 4
Mean Soil

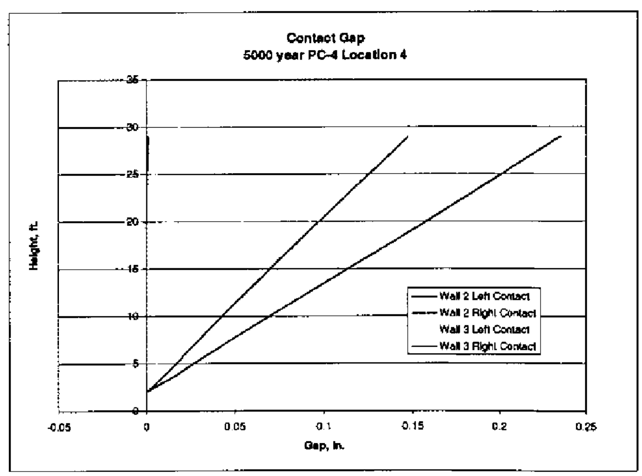












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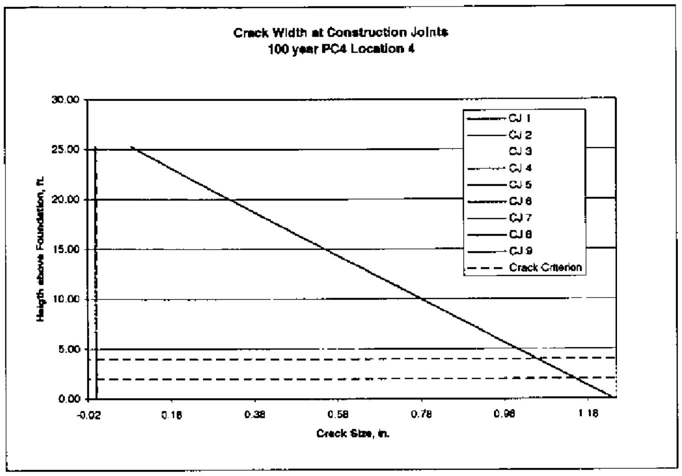
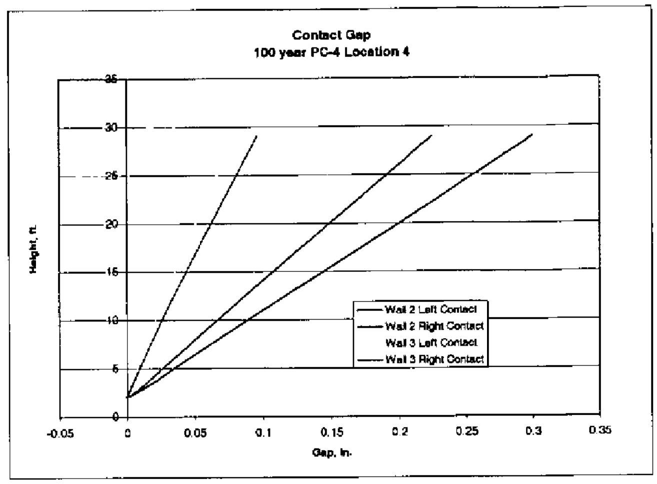
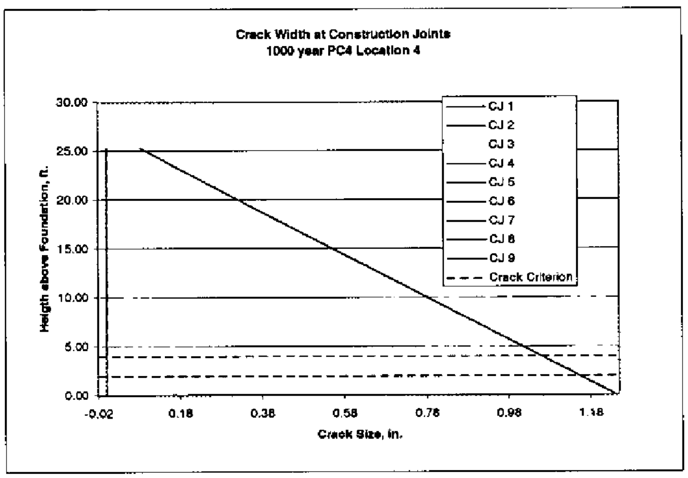
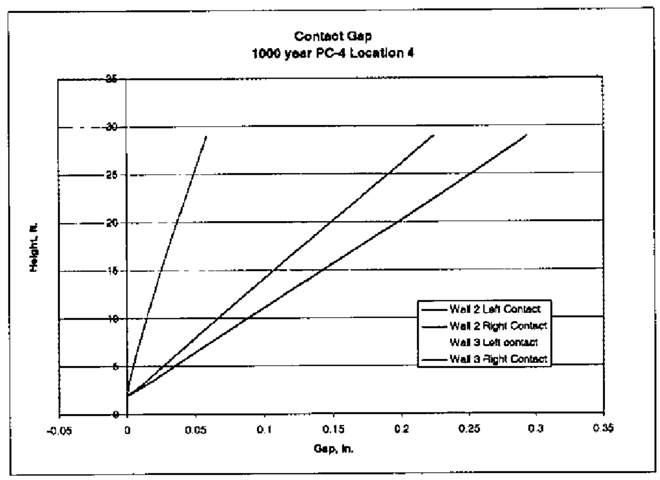
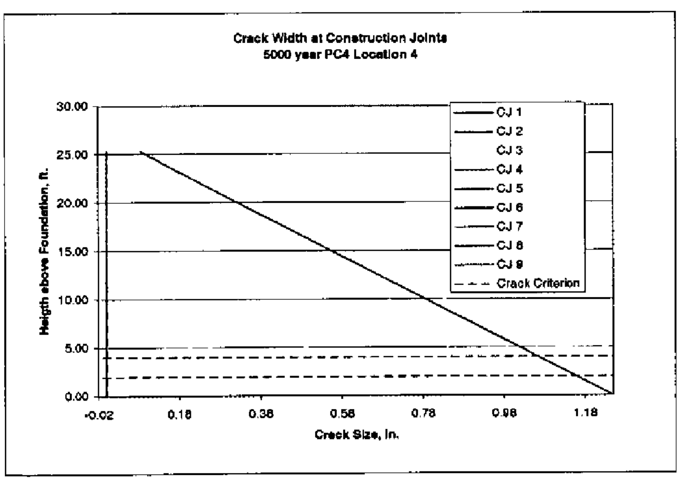
PC-4 Differential Settlement - Location 4
High Soil

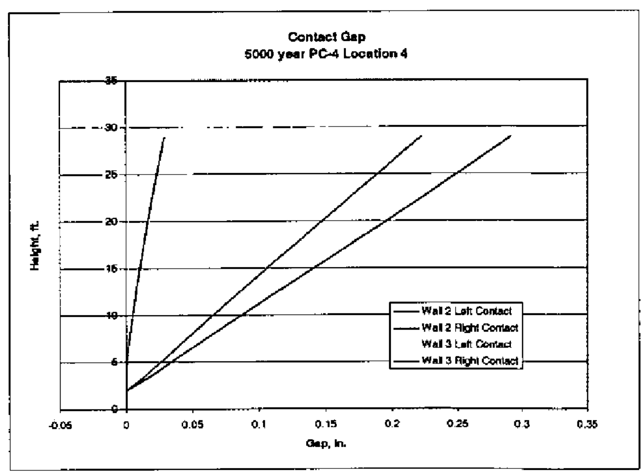




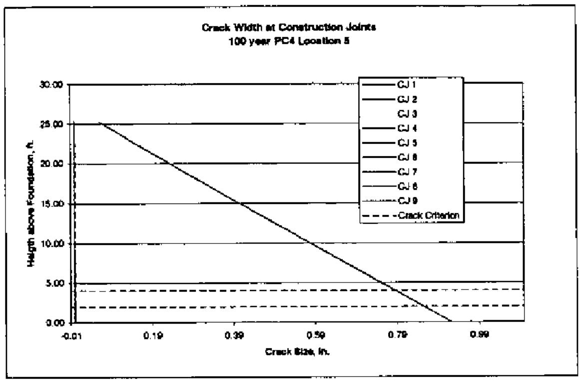


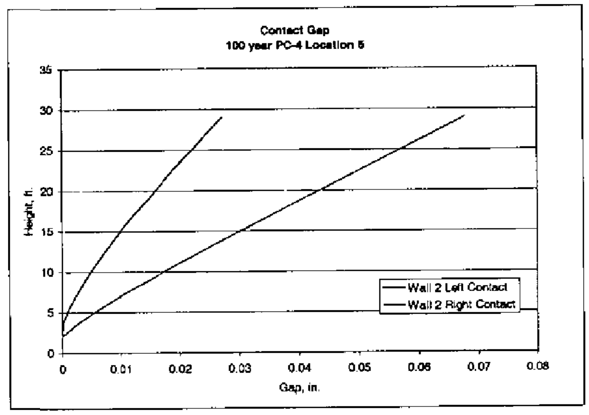


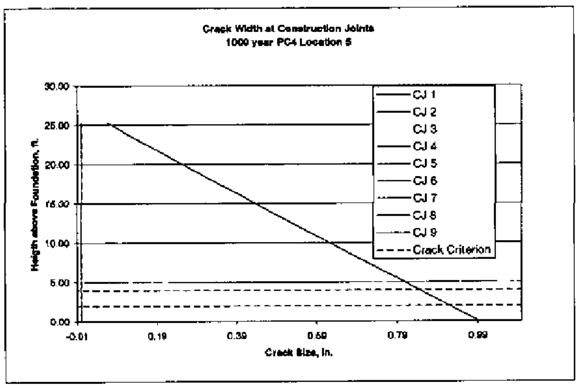


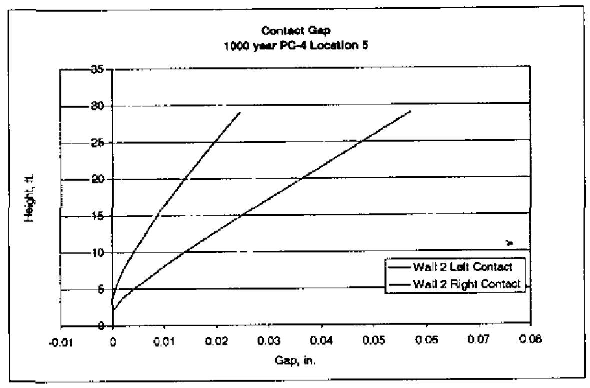


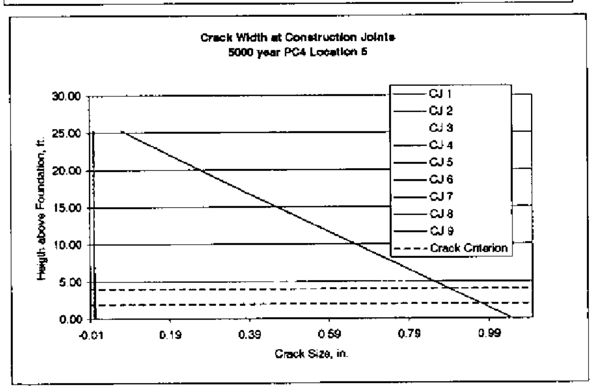
PC-4 Differential Settlement - Location 5
Low Soil

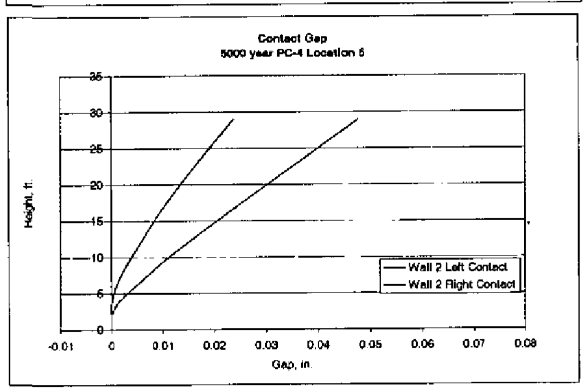




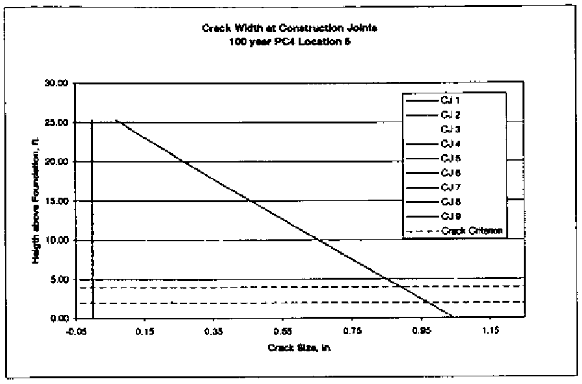


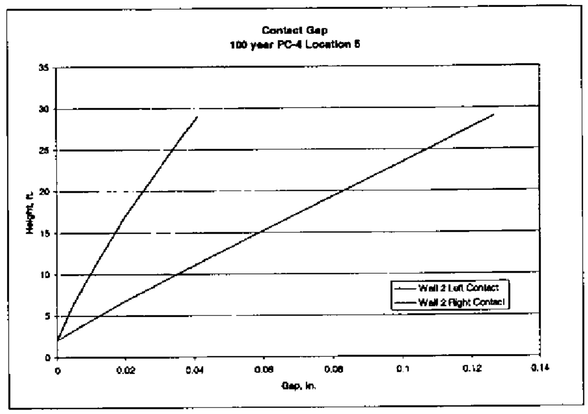


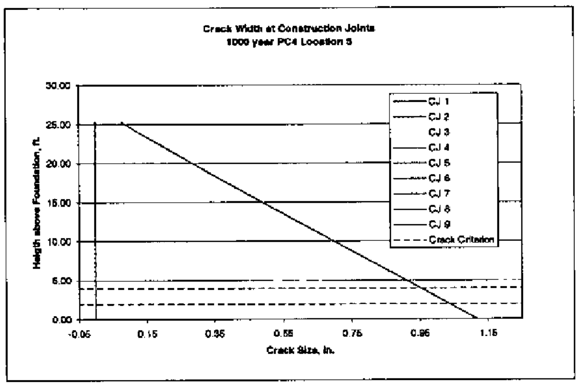


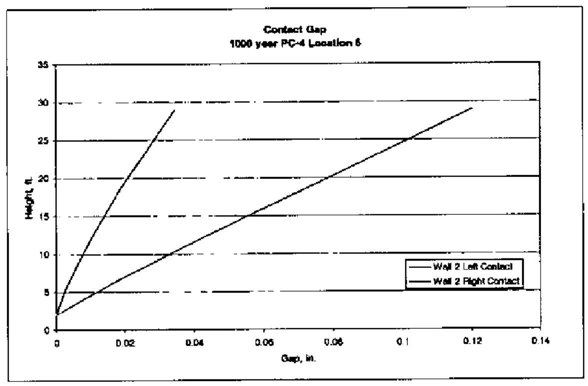


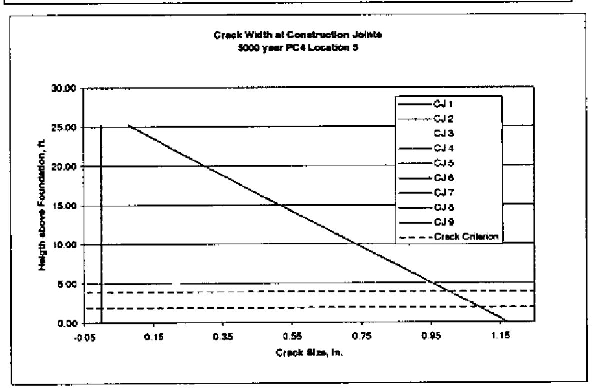
PC-4 Differential Settlement - Location 5
Mean Soil

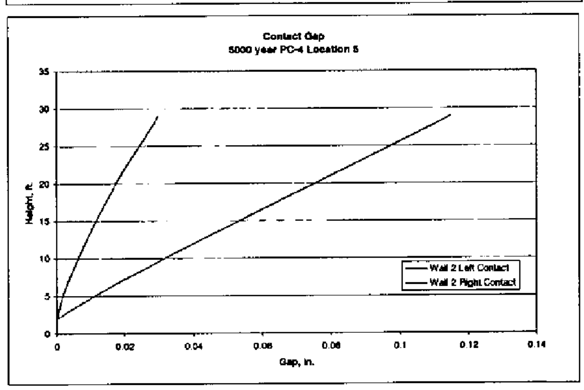




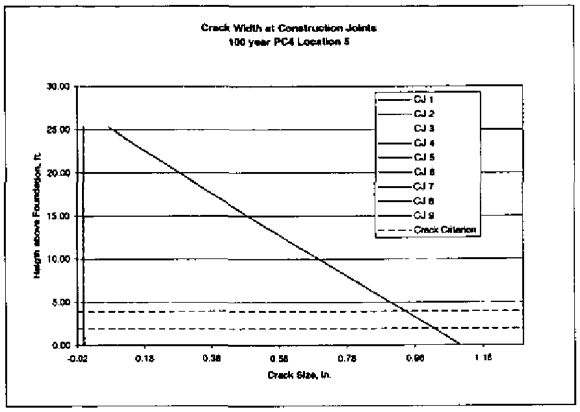


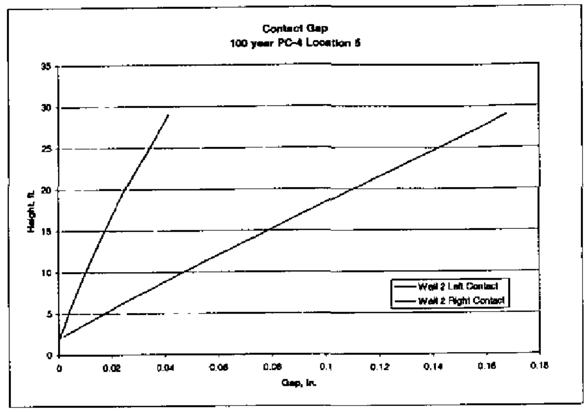


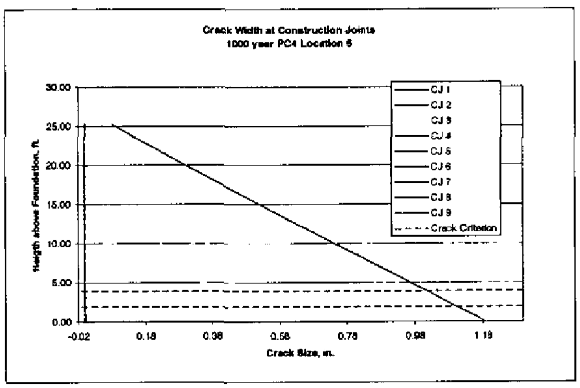


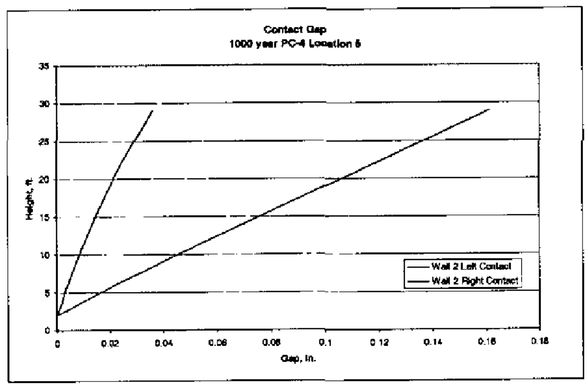


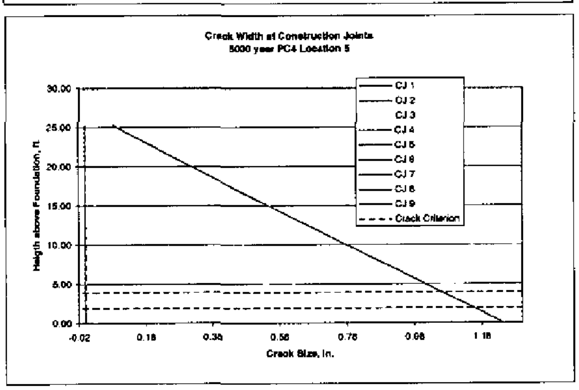
PC-4 Differential Settlement - Location 5
High Soil

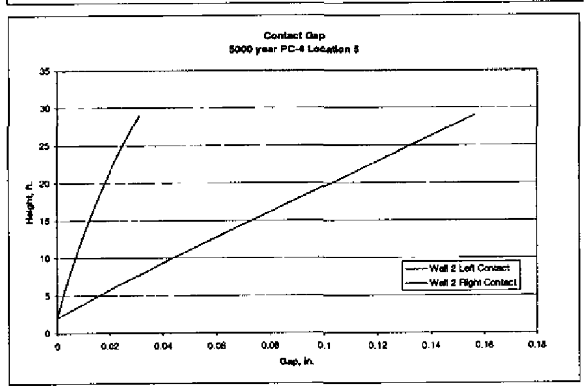




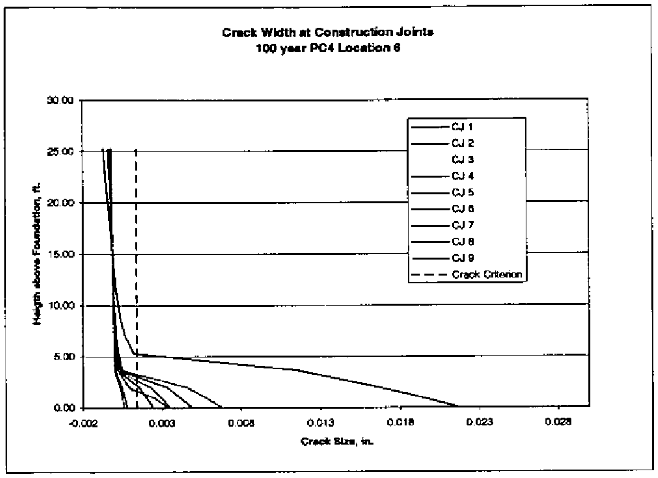


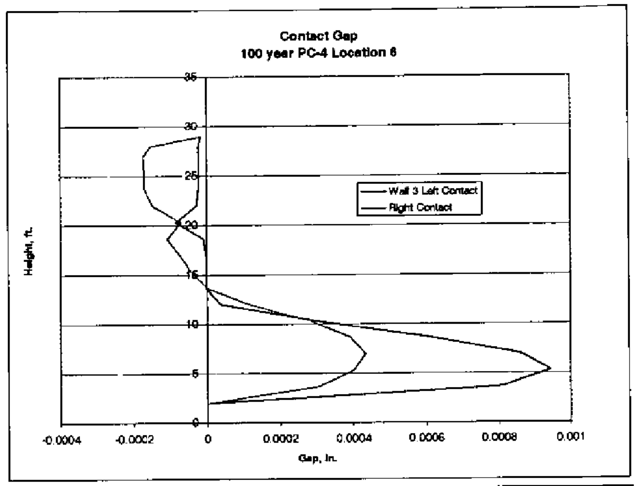


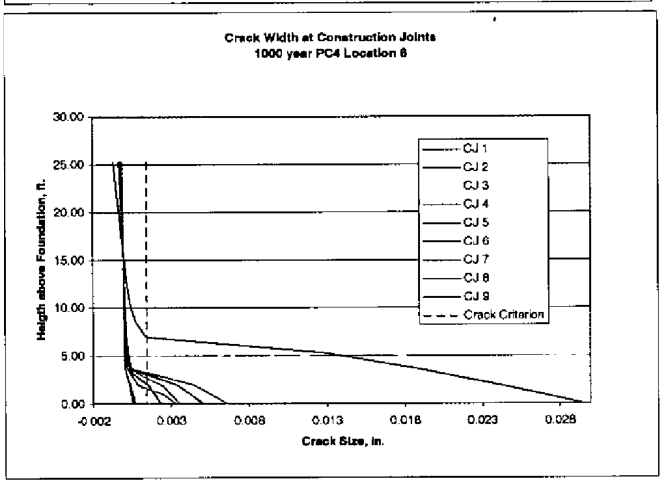


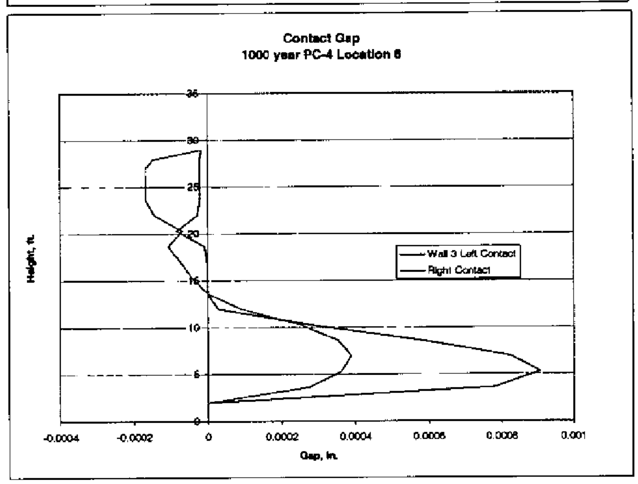


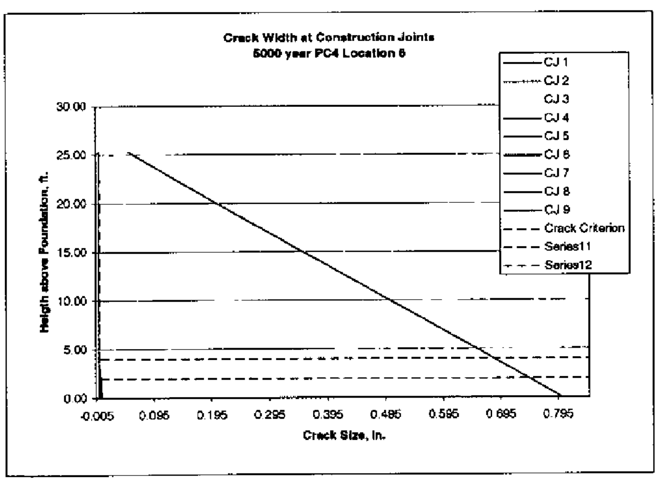
PC-4 Differential Settlement - Location 6
Low Soil

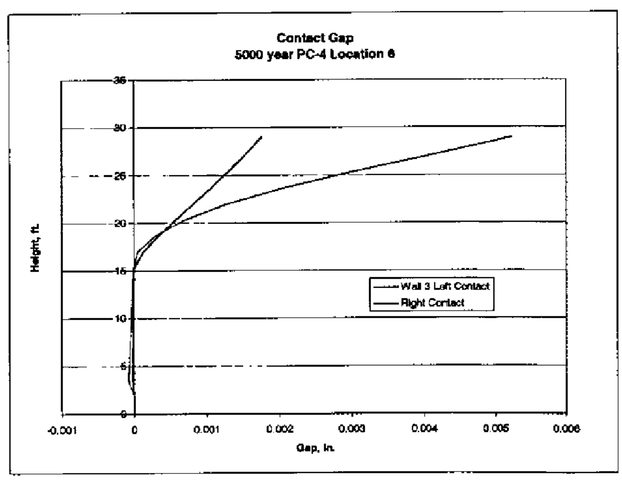












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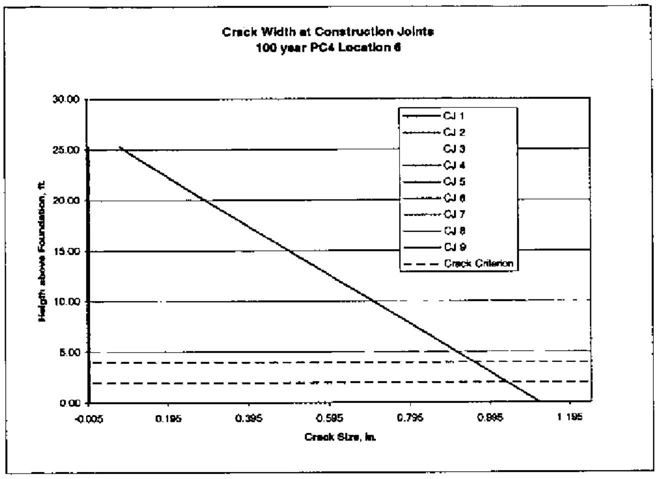
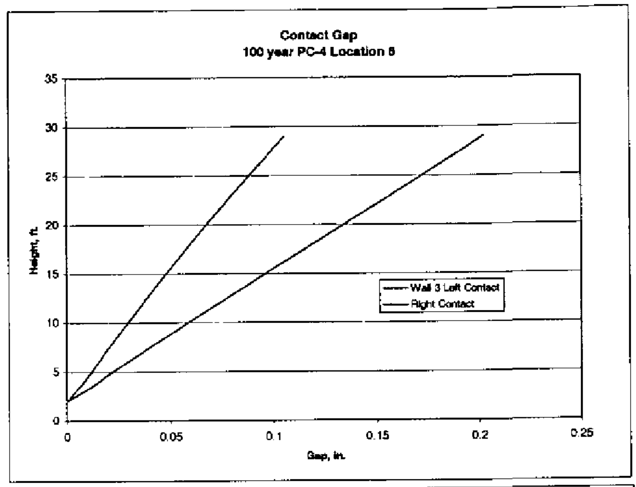
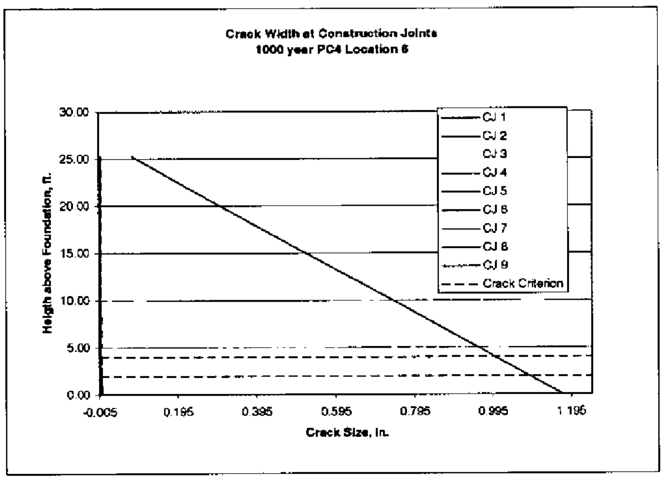
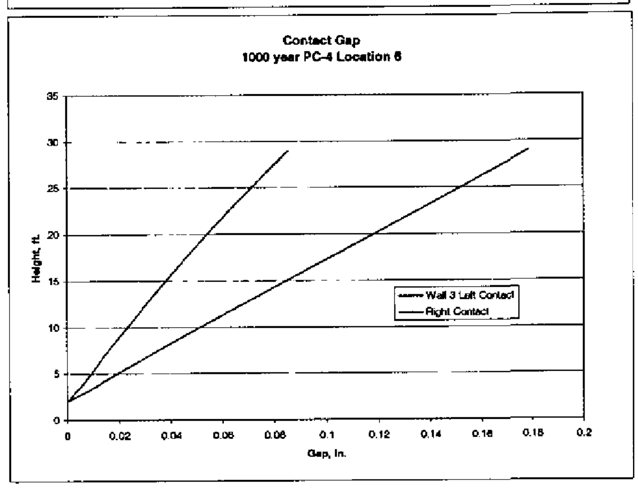
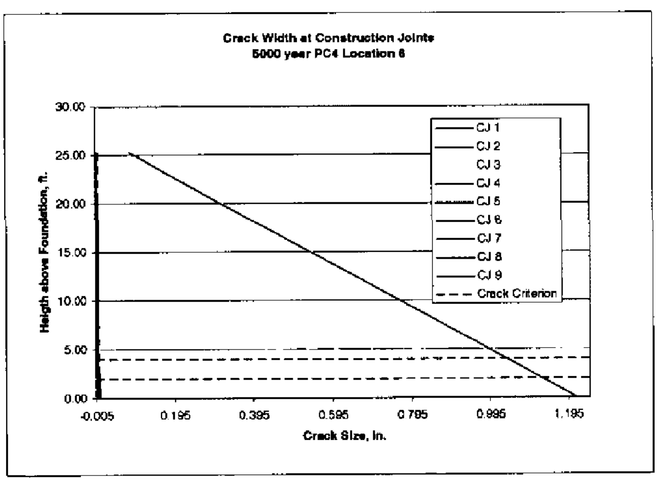
PC-4 Differential Settlement - Location 6
Mean Soil

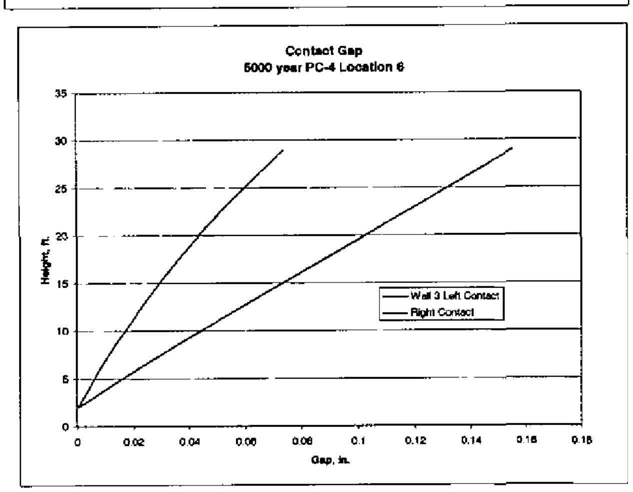












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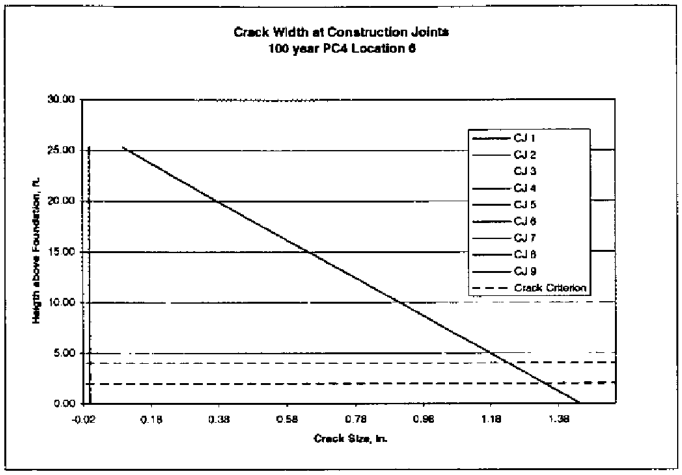
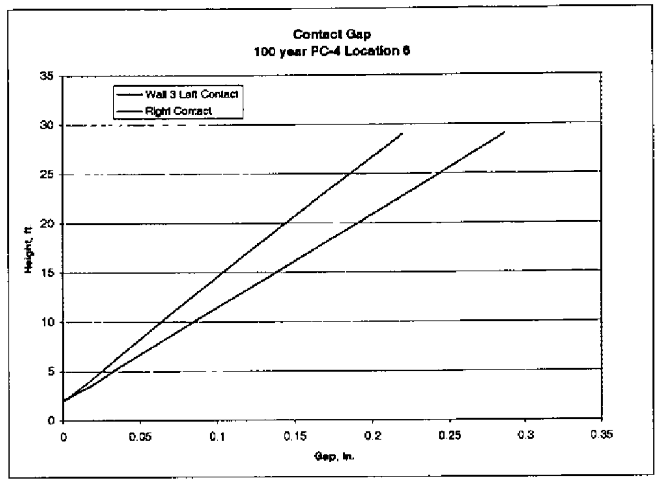
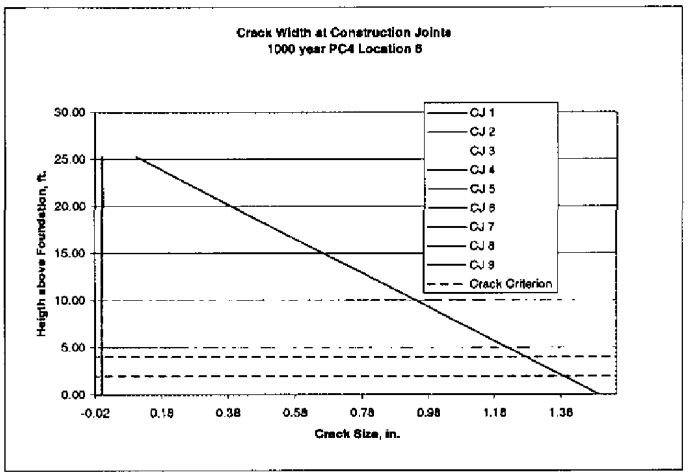
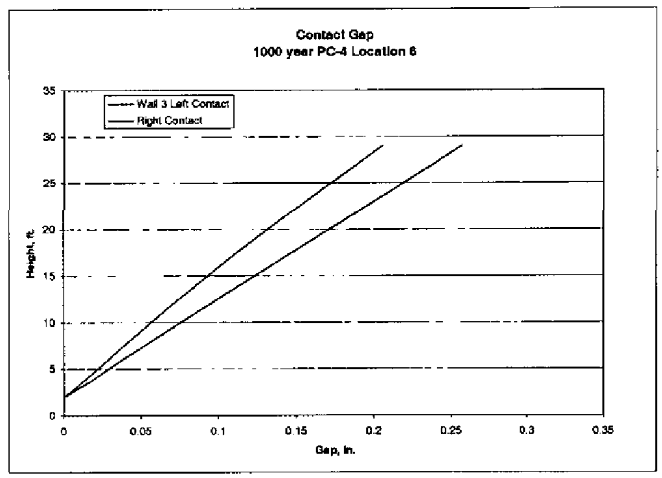
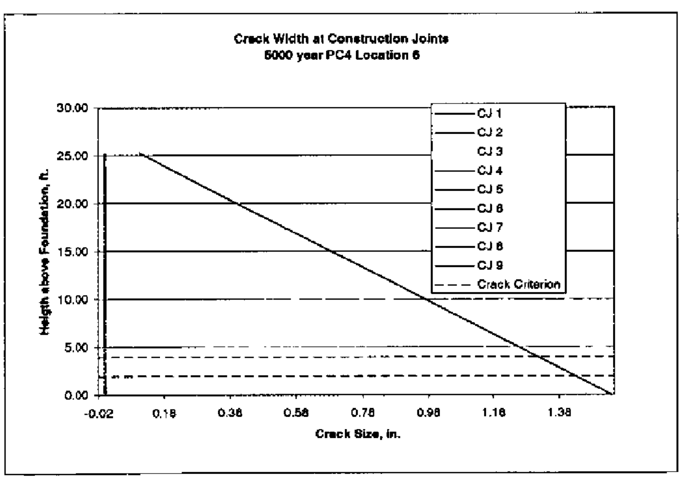
PC-4 Differential Settlement - Location 6
High Soil

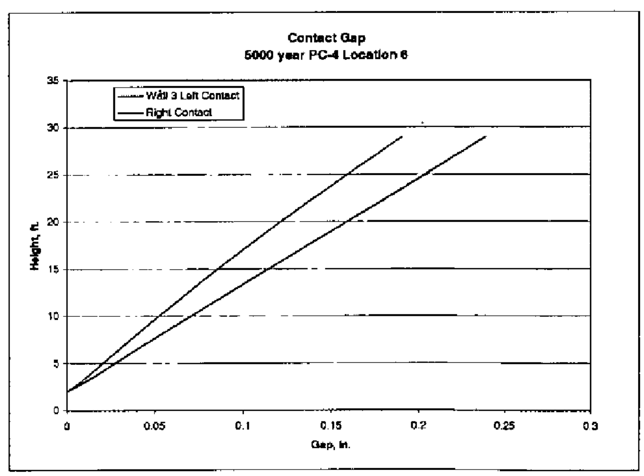












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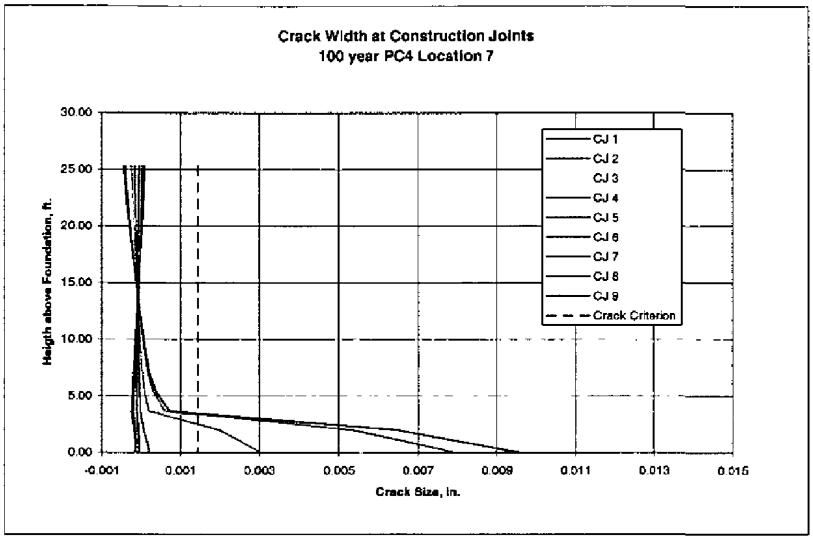
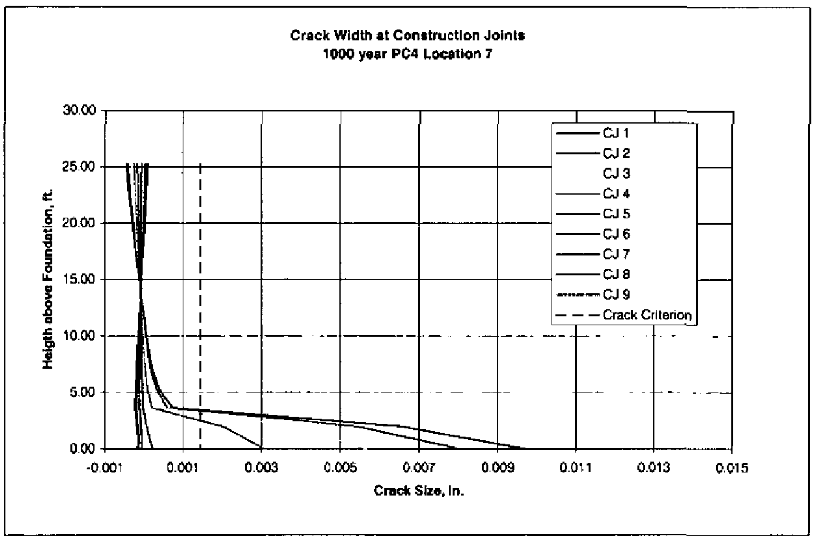
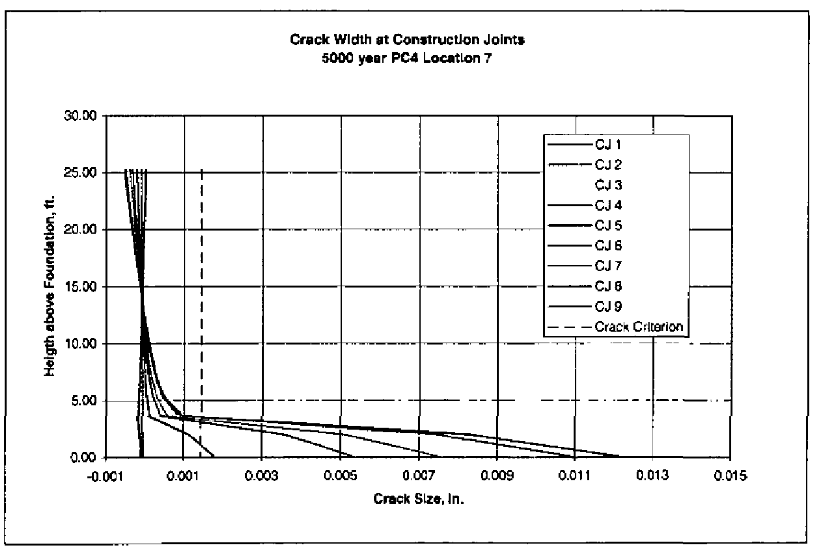
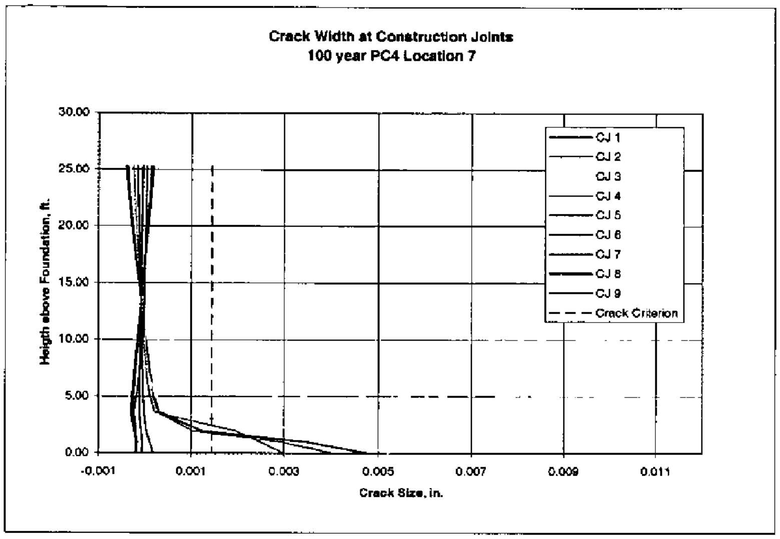
PC-4 Differential Settlement - Location 7
Low Soil

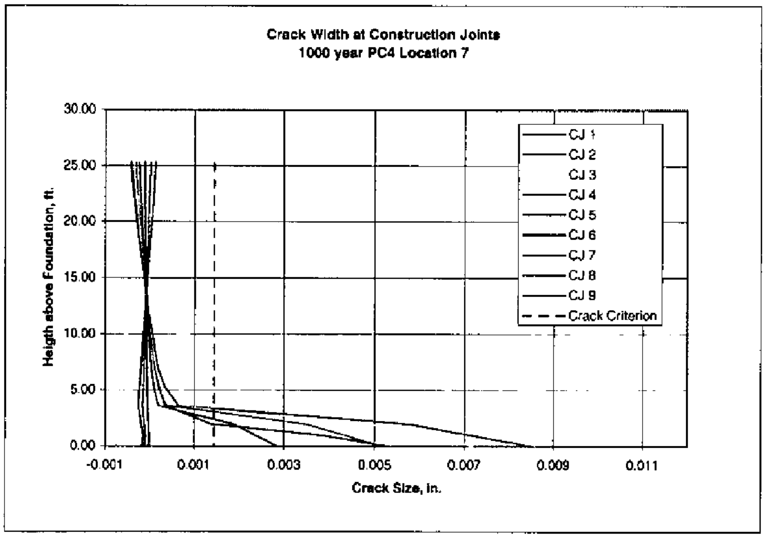


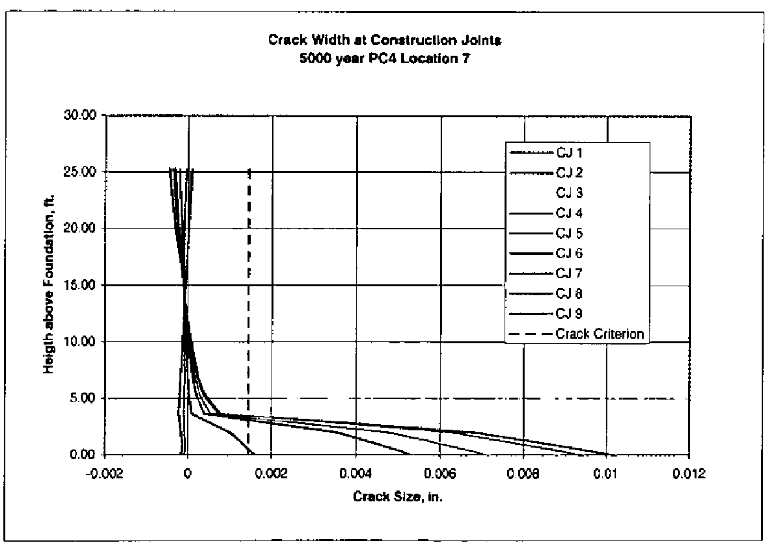




PC-4 Differential Settlement - Location 7
Mean Soil







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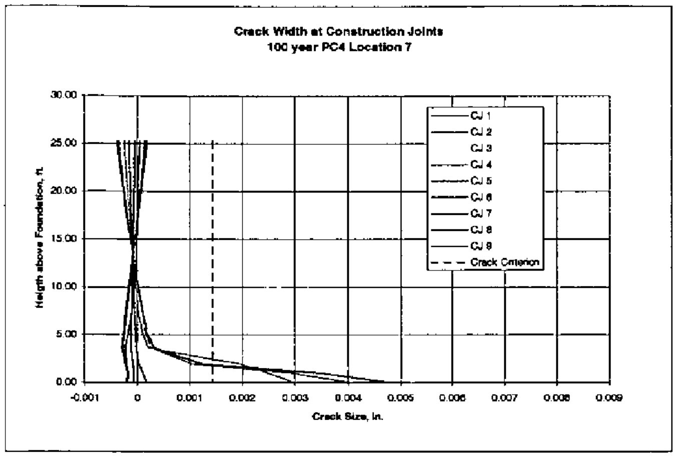
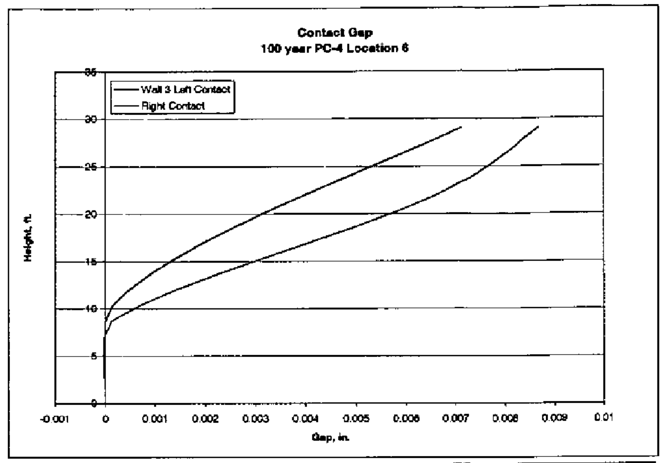
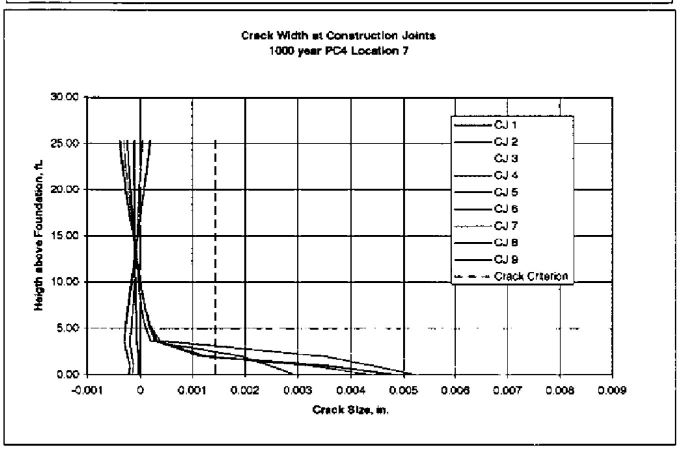
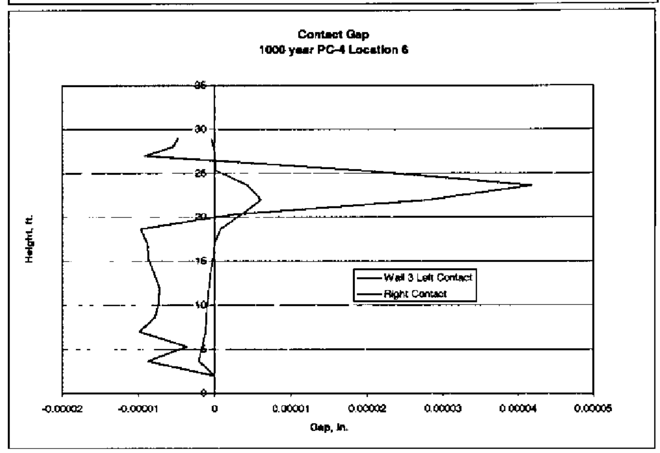
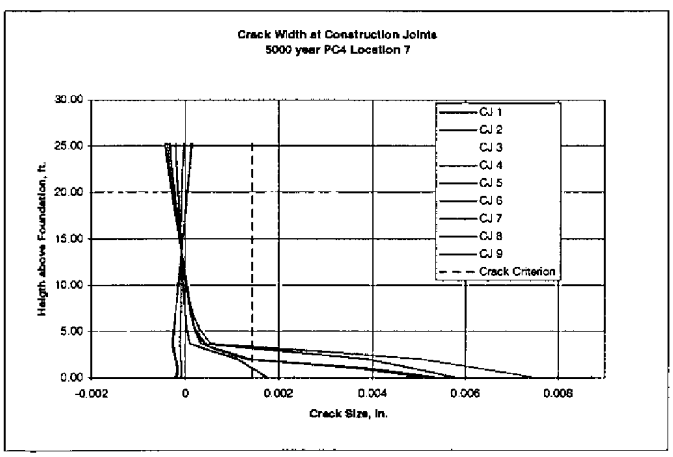
PC-4 Differential Settlement - Location 7
High Soil

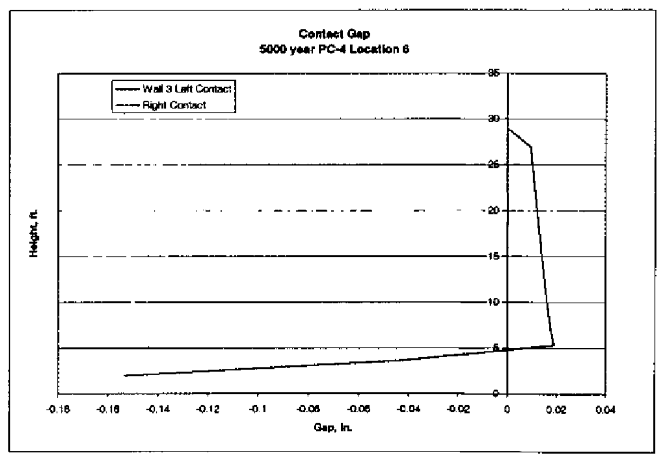




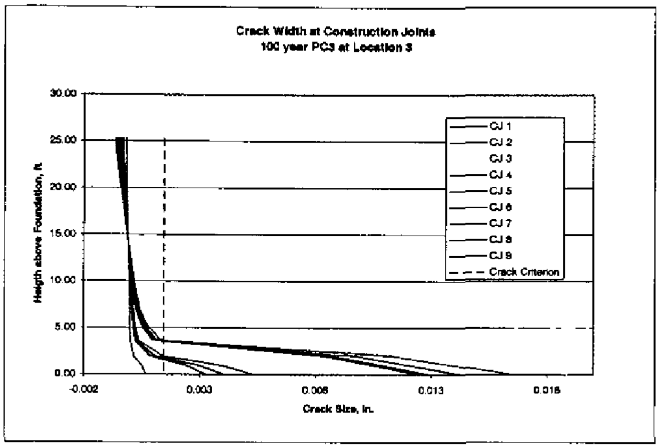


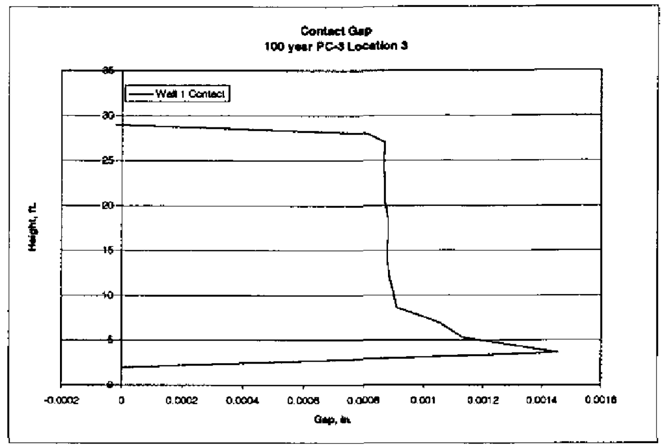


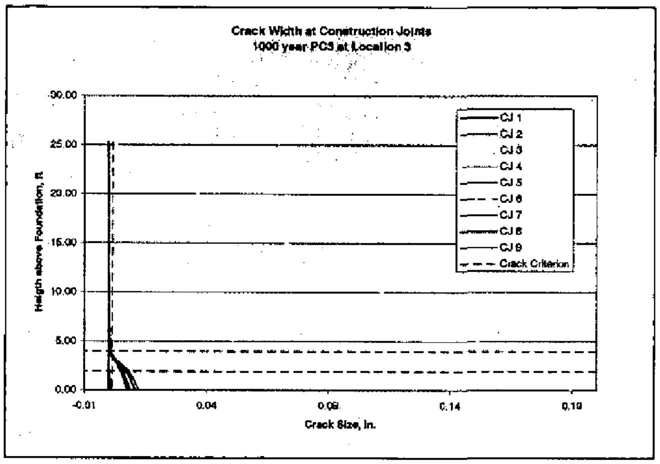


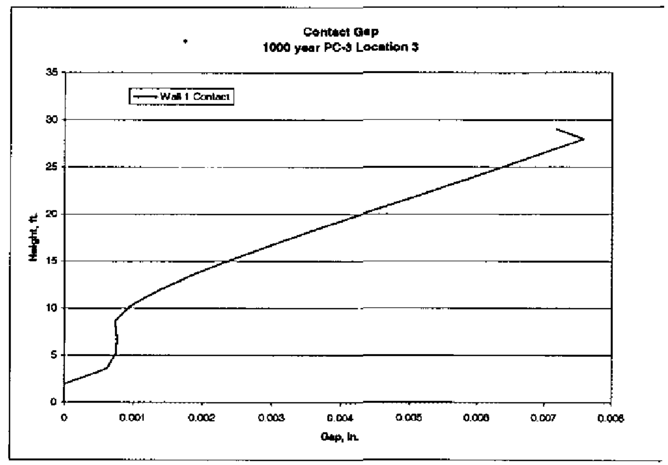


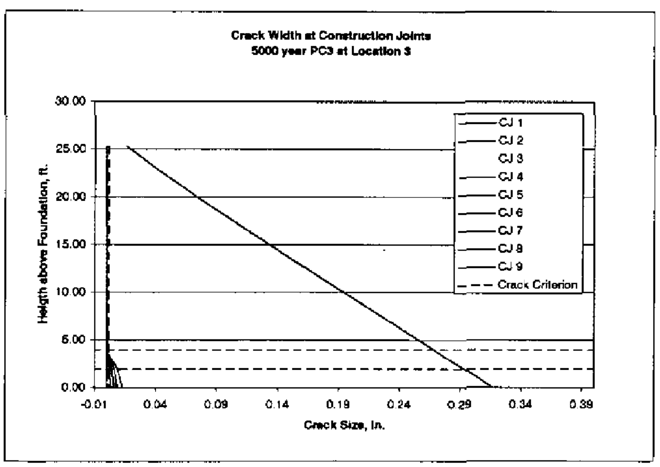
T-CLC-Z-00006, Rev. 0 PC-3 Differential Settlement - Location 3
R=62 ft.

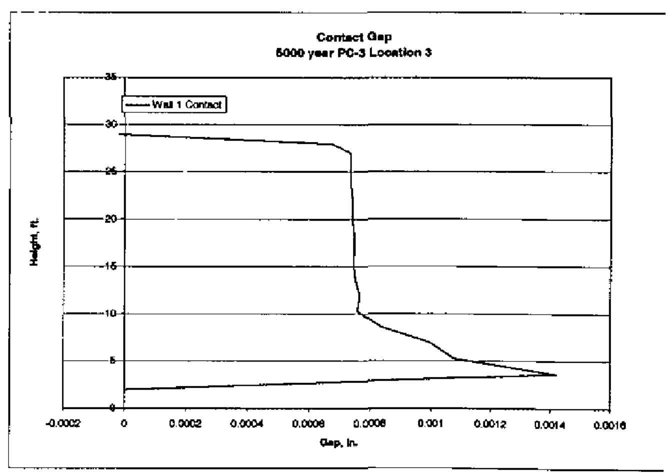


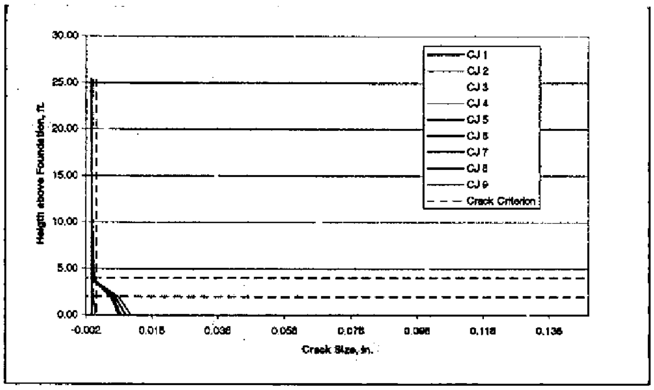


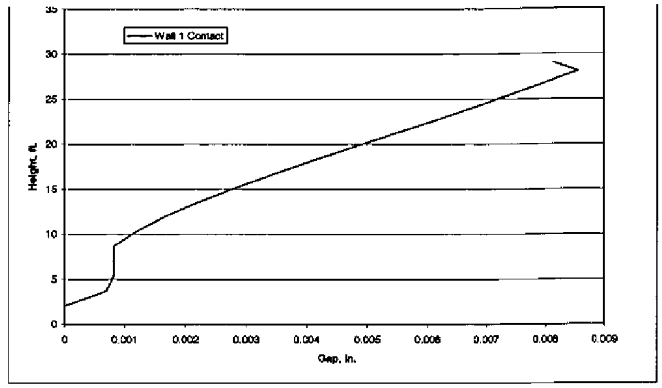


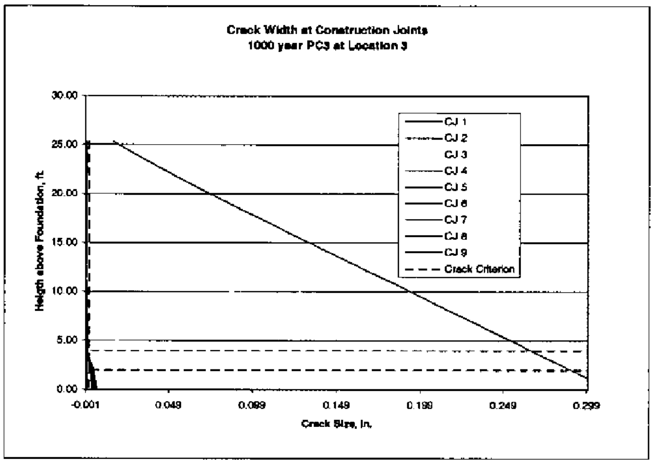


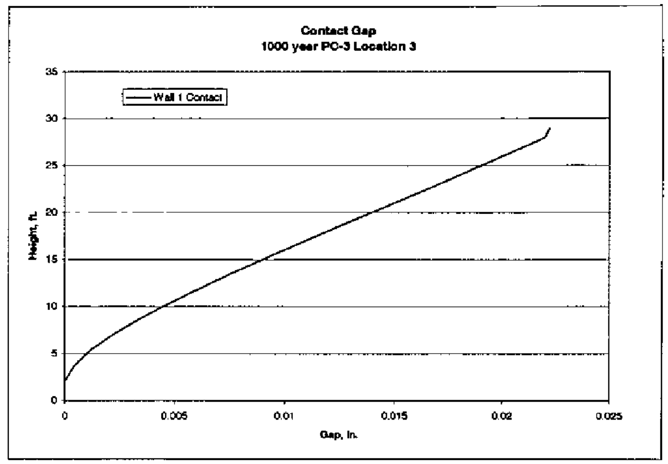


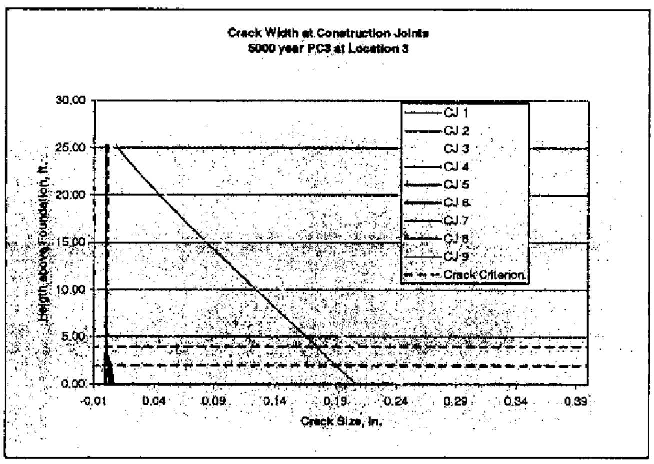


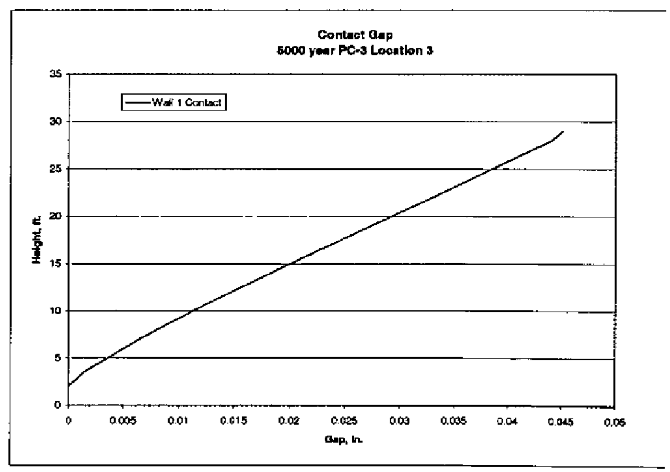

CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion
Heigth above Foundation, ft.
Crack Size, in.

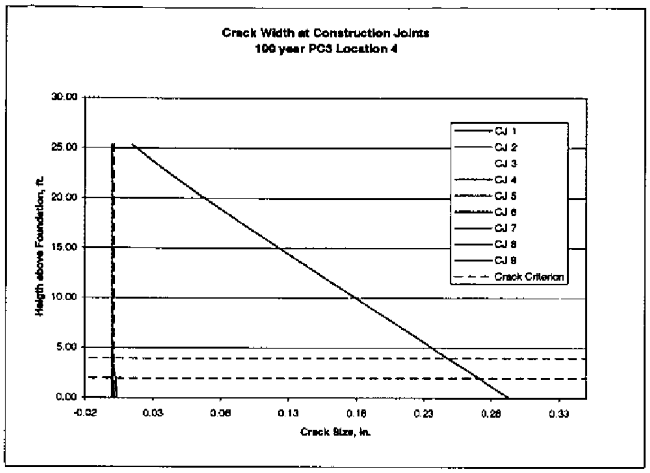

Wall 1 Contact
Height, ft.
Gap, in.

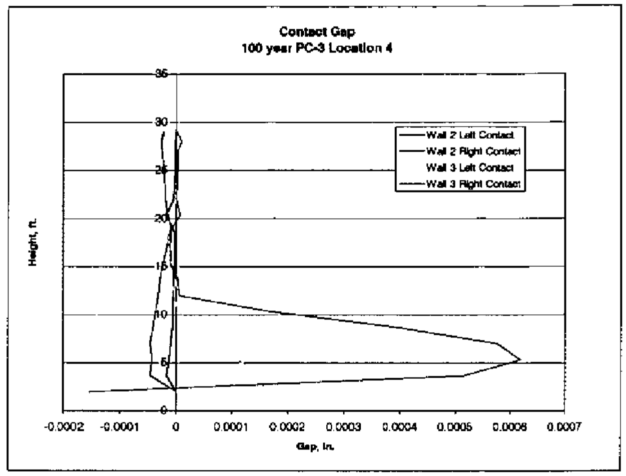

Crack Width at Construction Joints
1000 year PC3 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion
Heigth above Foundation, ft.
Crack Size, in.

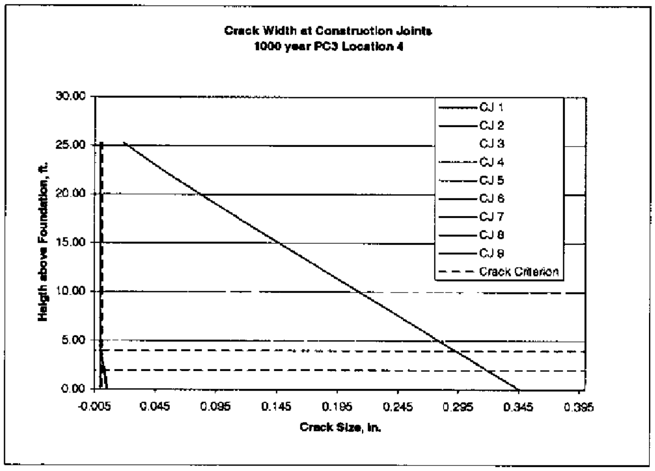

Contact Gap
1000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

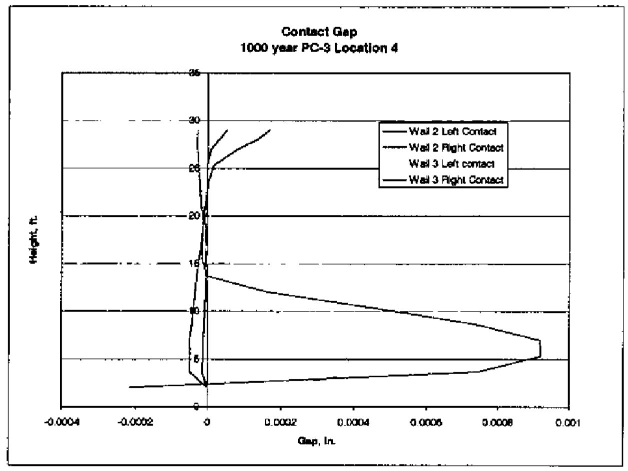

Crack Width at Construction Joints
5000 year PC3 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion
Heigth above Foundation, ft.
Crack Size, in.

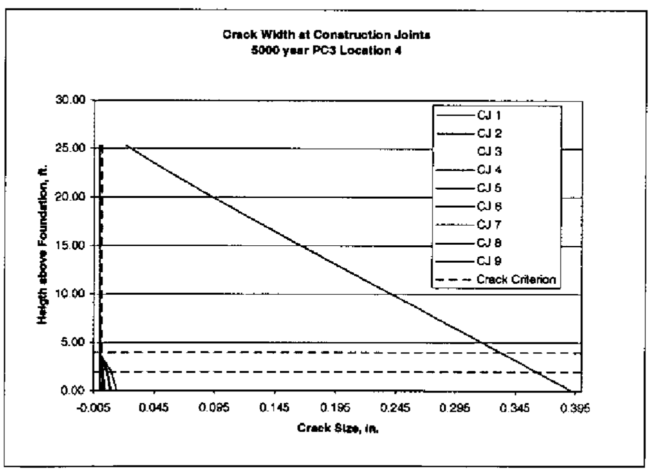

Contact Gap
5000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

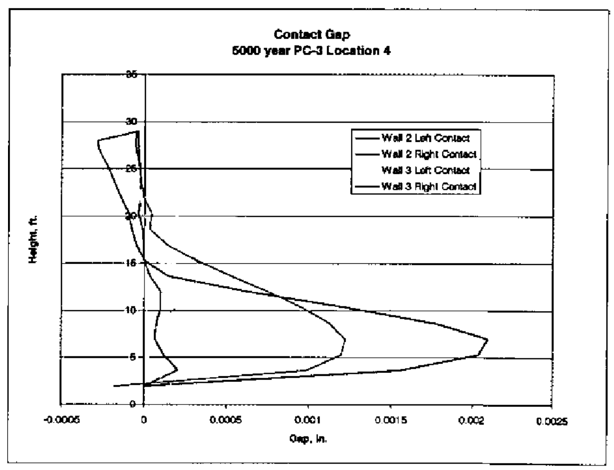

Crack Width at Construction Joints
100 year PC3 Location 4
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion


Contact Gap
100 year PC-3 Location 4
Height, ft.
Gap, in.
Wall 2 Left Contact
Wall 2 Right Contact
Wall 3 Left Contact
Wall 3 Right Contact


Crack Width at Construction Joints
1000 year PC3 Location 4
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion


Contact Gap
1000 year PC-3 Location 4
Height, ft.
Gap, in.
Wall 2 Left Contact
Wall 2 Right contact
Wall 3 Left contact
Wall 3 Right Contact


Crack Width at Construction Joints
5000 year PC3 Location 4
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion


Contact Gap
5000 year PC-3 Location 4
Height, ft.
Gap, in.
Wall 2 Left Contact
Wall 2 Right Contact
Wall 3 Left Contact
Wall 3 Right Contact

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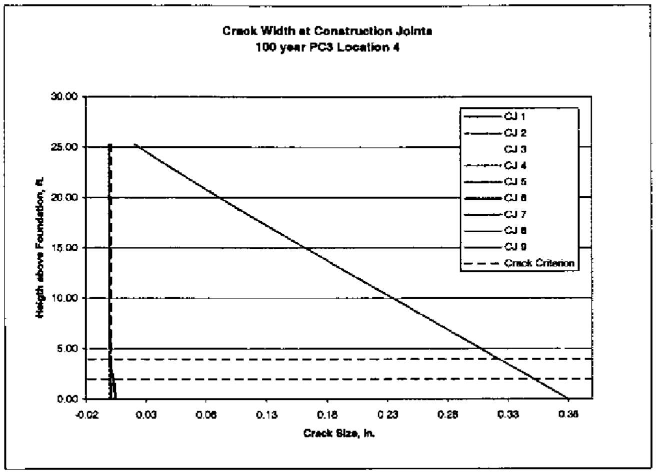
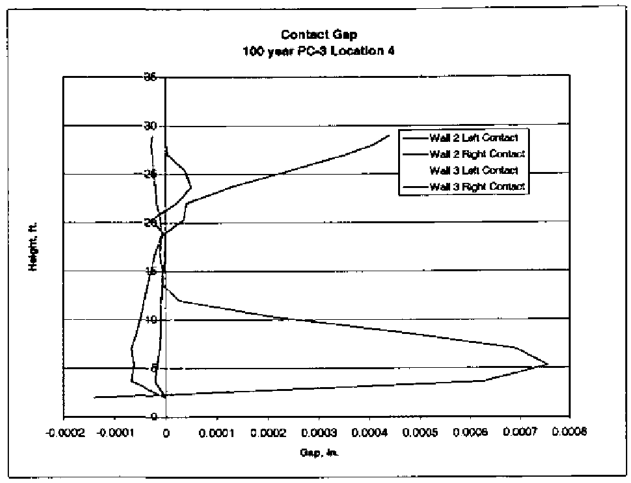
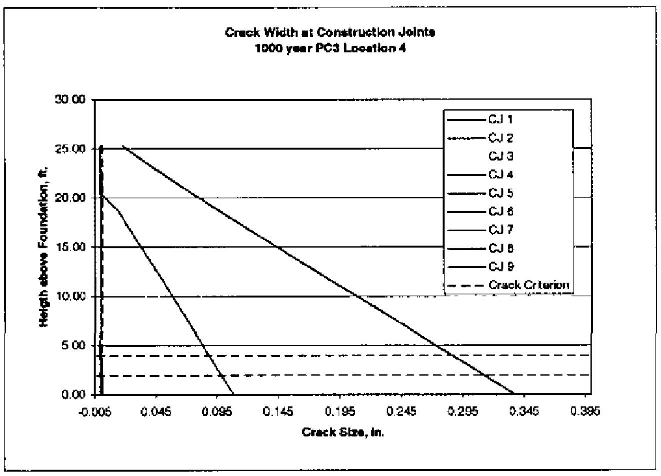
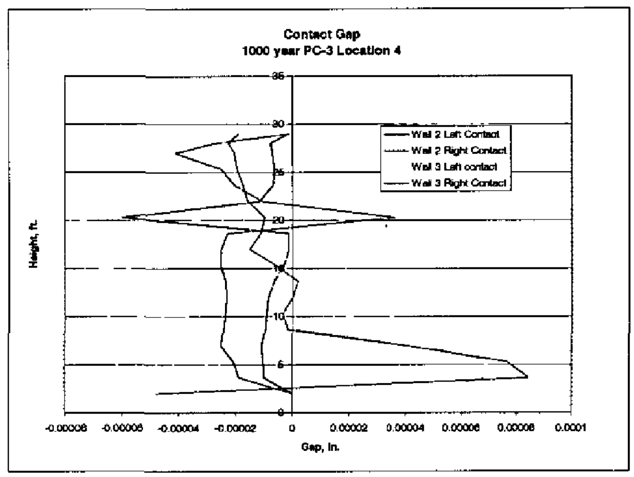
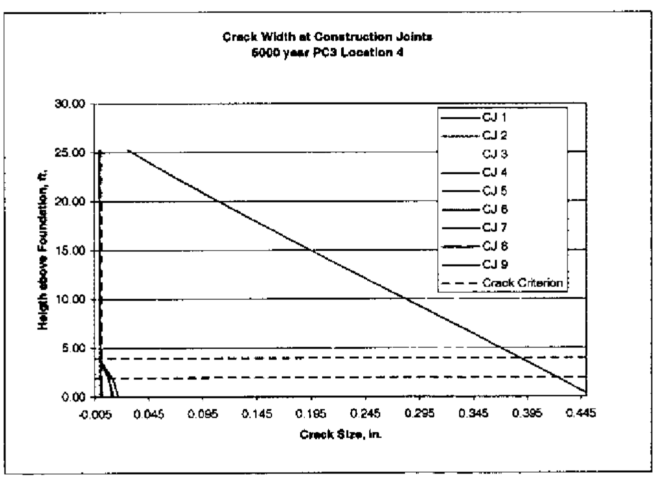
PC-3 Differential Settlement - Location 4
R = 124 ft.

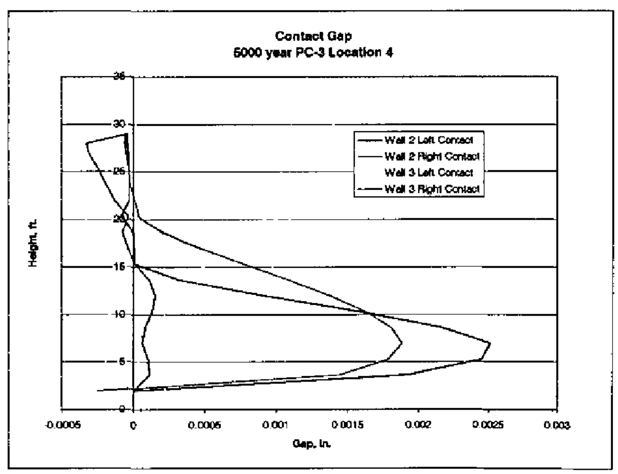












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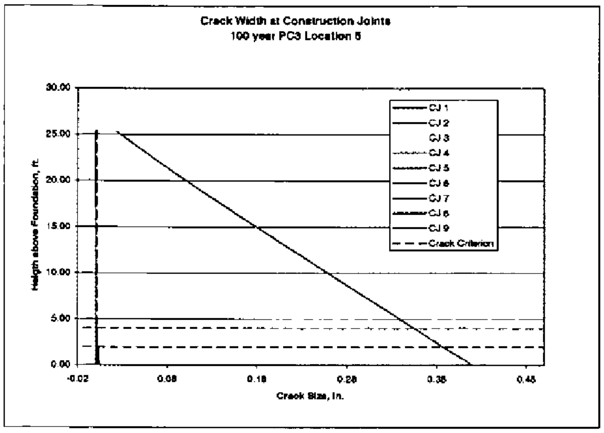
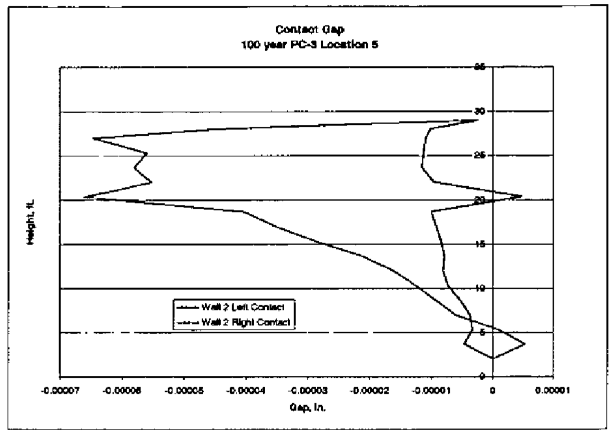
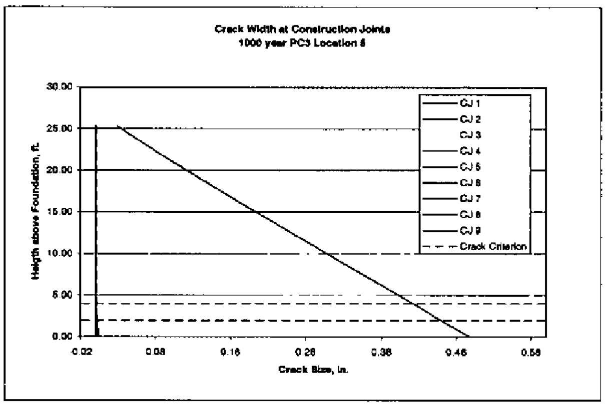
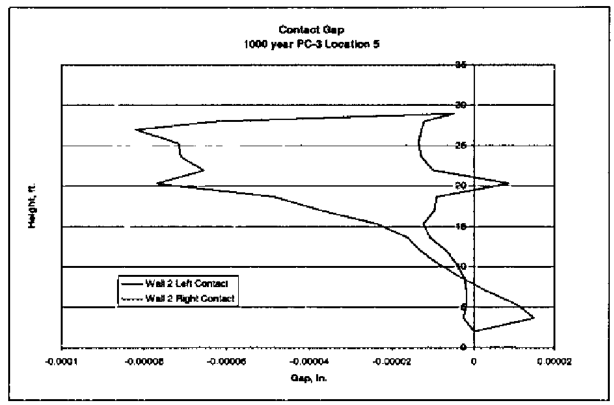
PC-3 Differential Settlement - Location 5

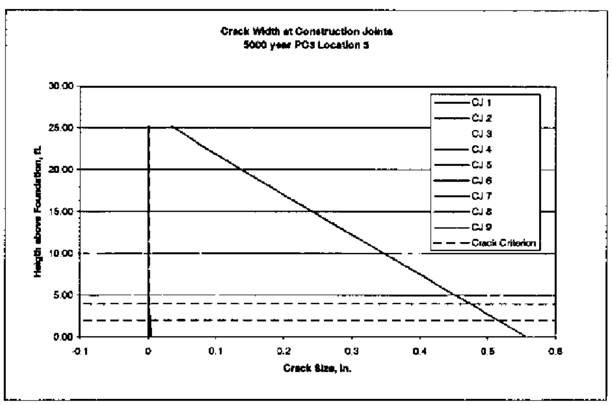
R = 62 ft.

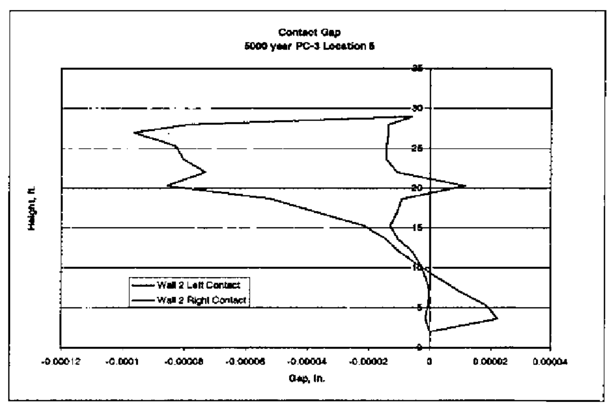












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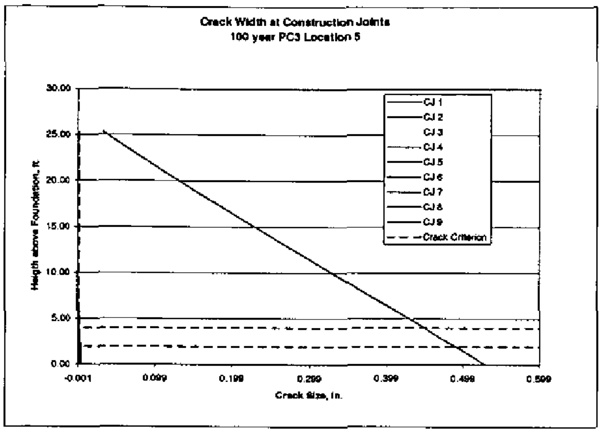
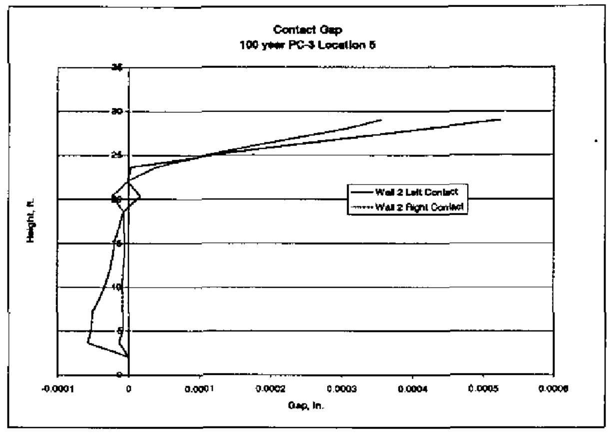
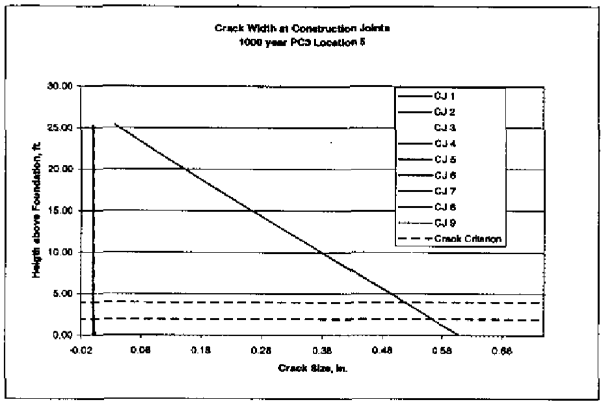
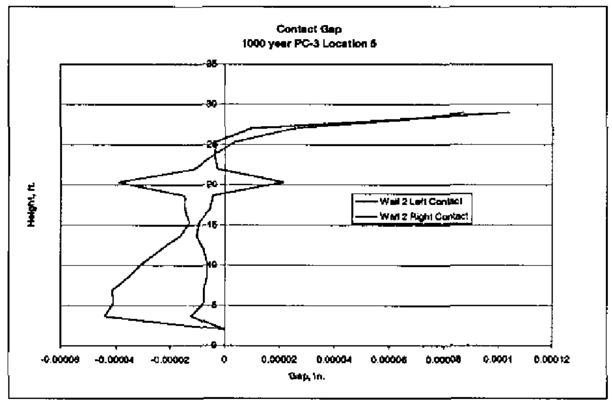
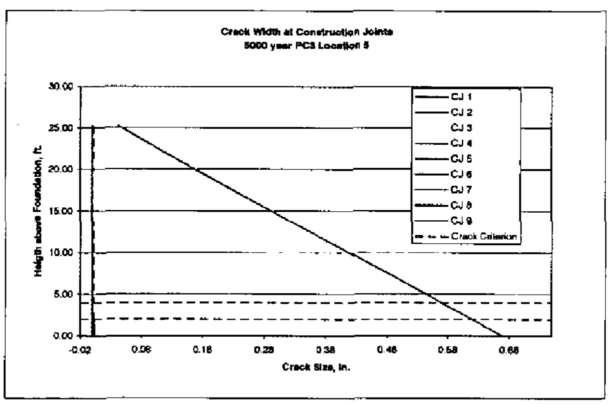
PC-3 Differential Settlement - Location 5
R = 124 ft.

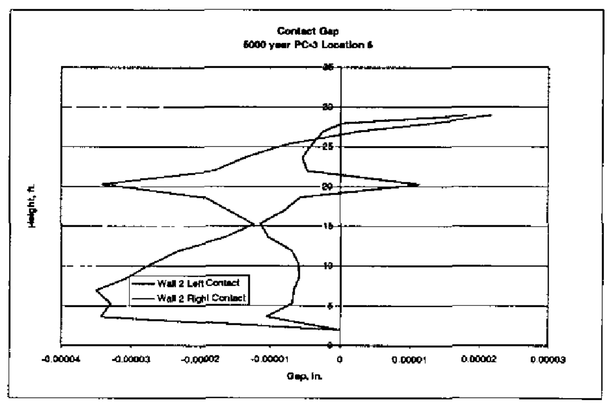




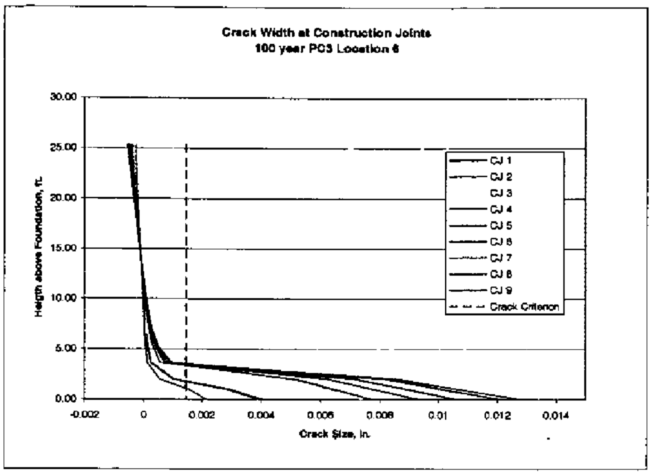


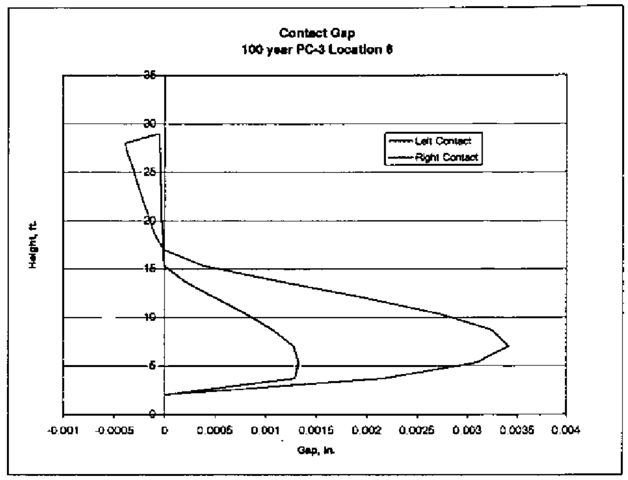


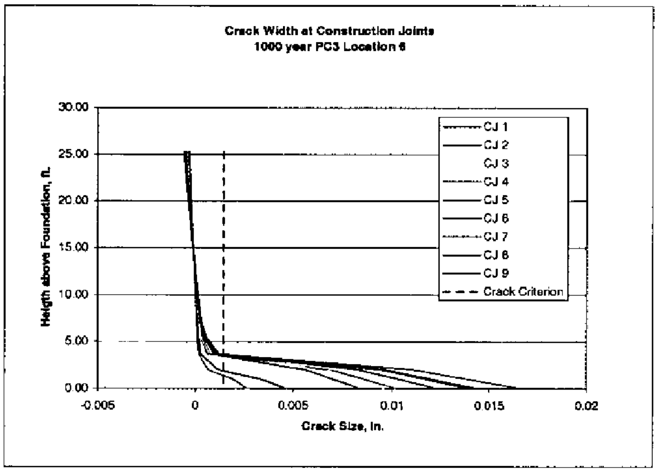


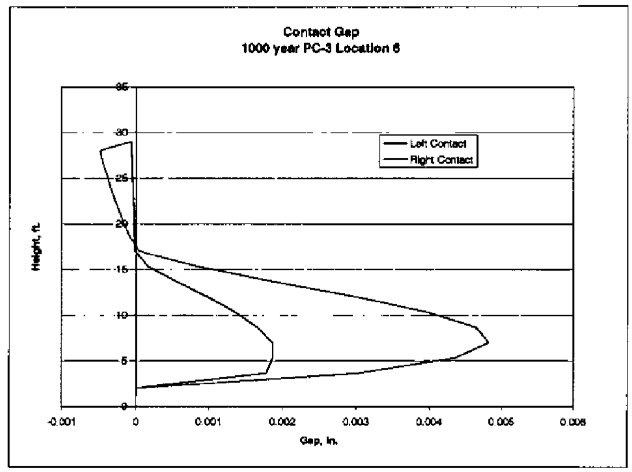


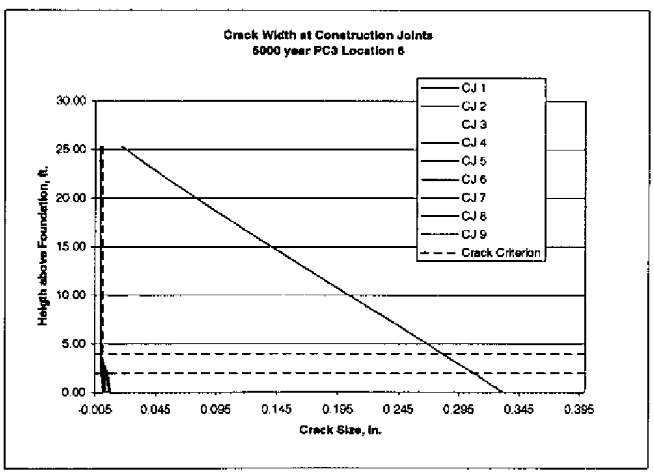
PC-3 Differential Settlement - Location 6
R = 62 ft.

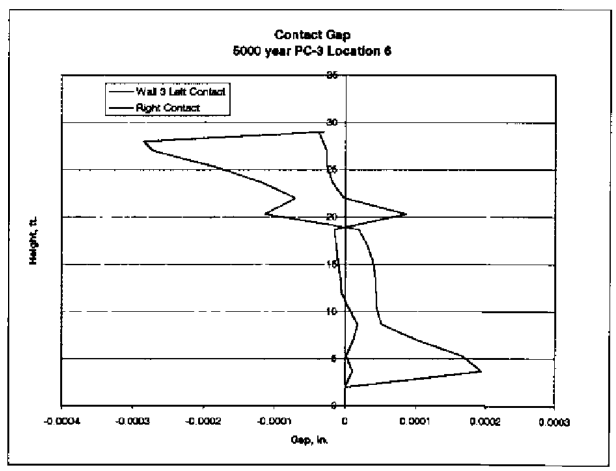




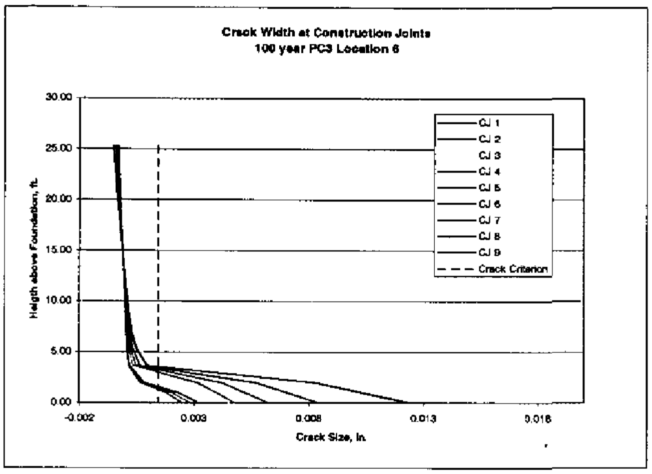


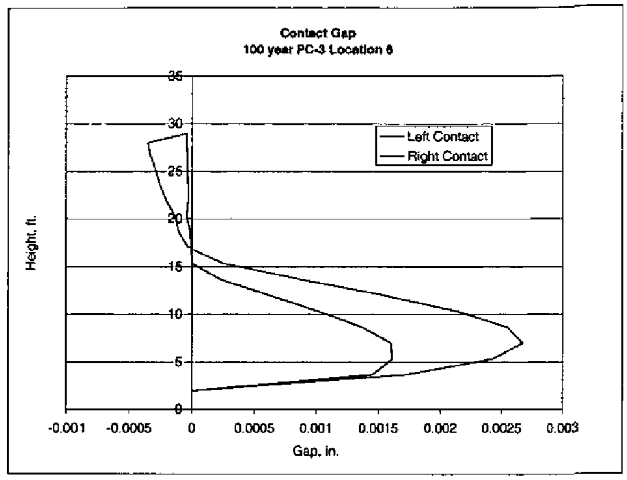


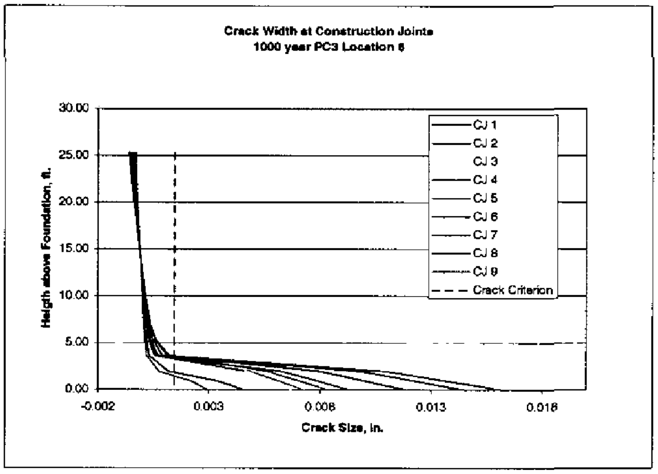


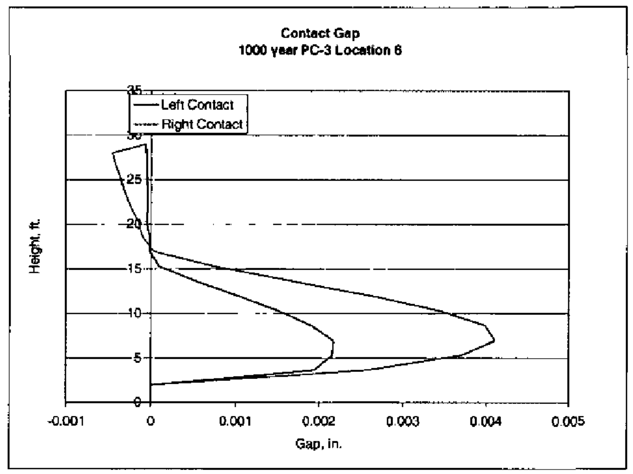


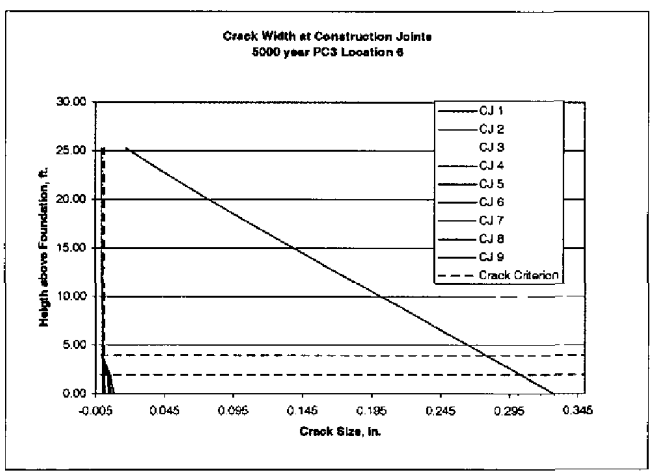
PC-3 Differential Settlement - Location 6
R = 124 ft.

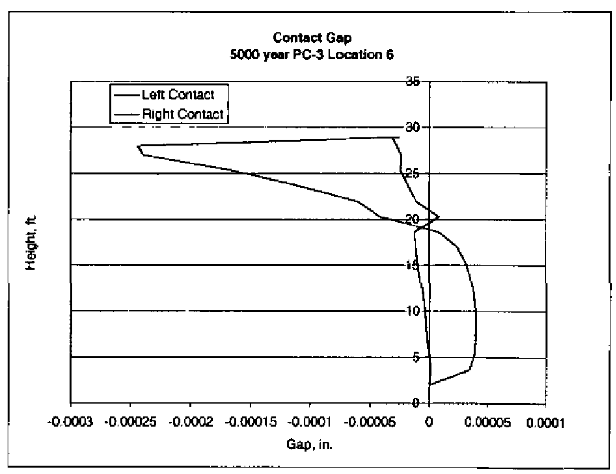












D:\Data Files\Calculations\Saltstone Vault\Parametric Studies\Model 300 PC-3 sett depth(2).xls

5/13/2003

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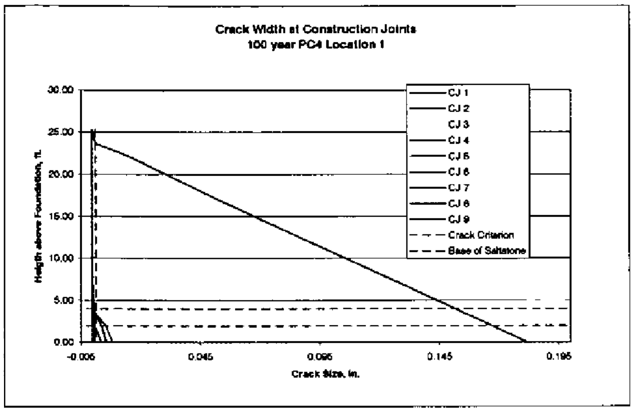
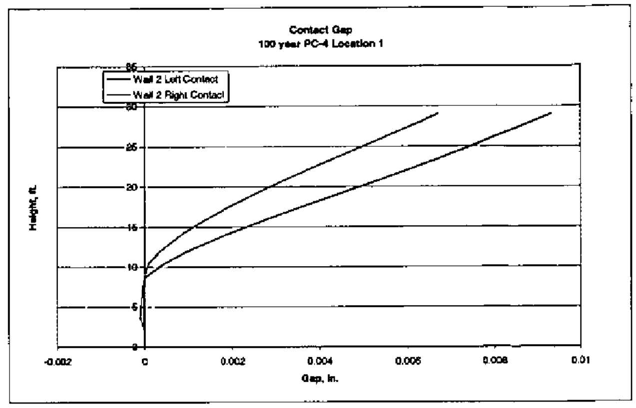
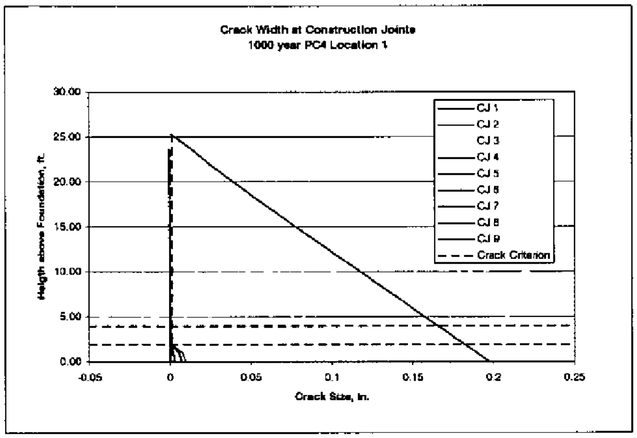
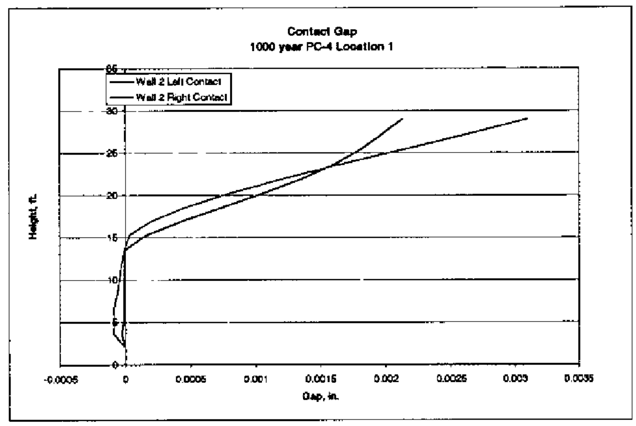
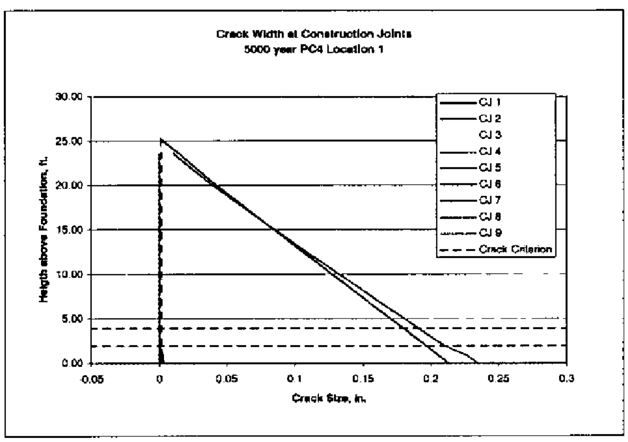
PC-4 Differential Settlement - Location 1
R = 62 ft.

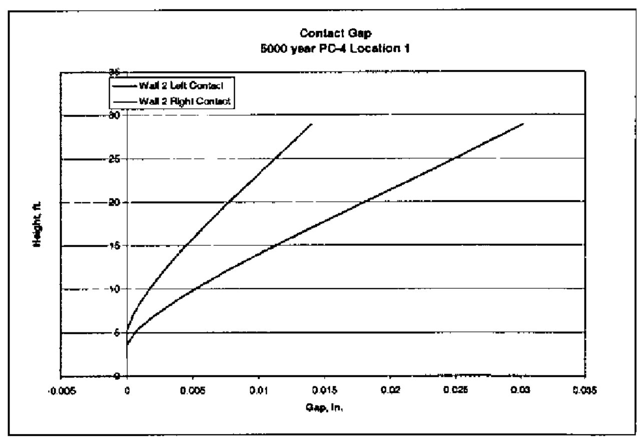






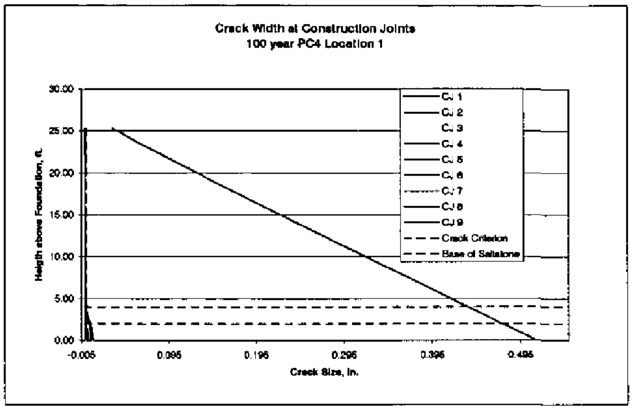


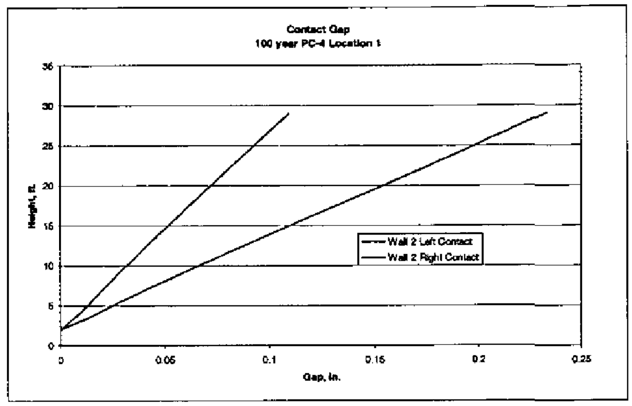


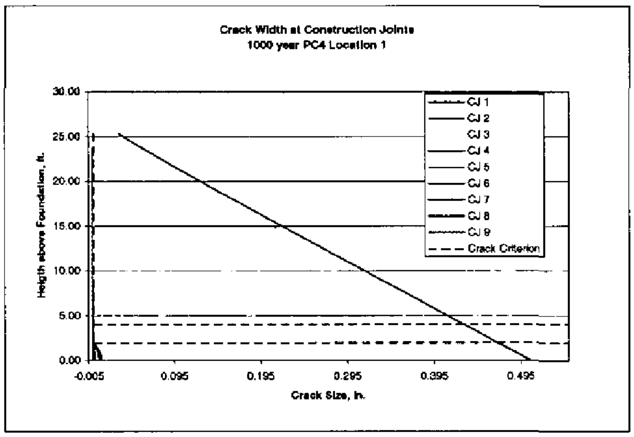


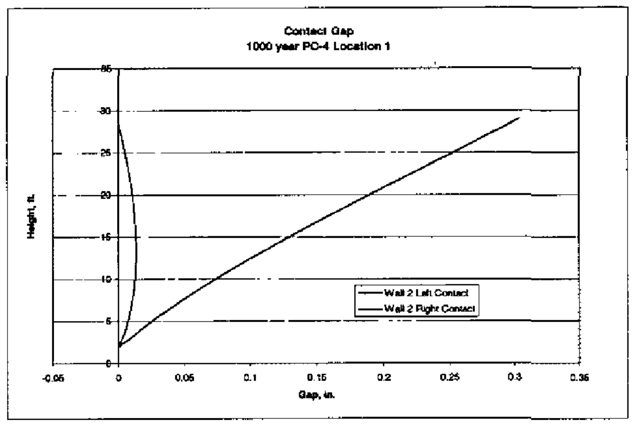
PC-4 Differential Settlement - Location 1

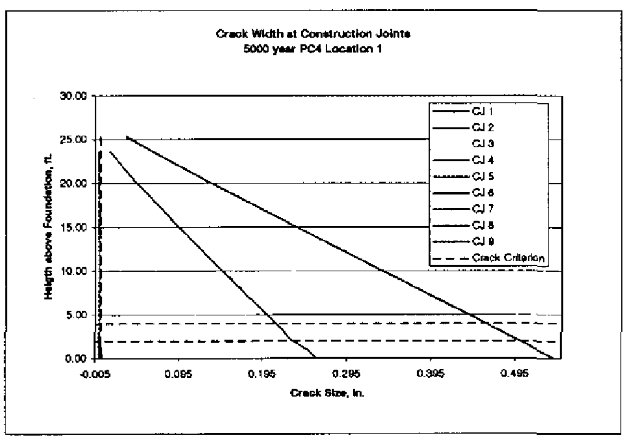
R = 124 ft.

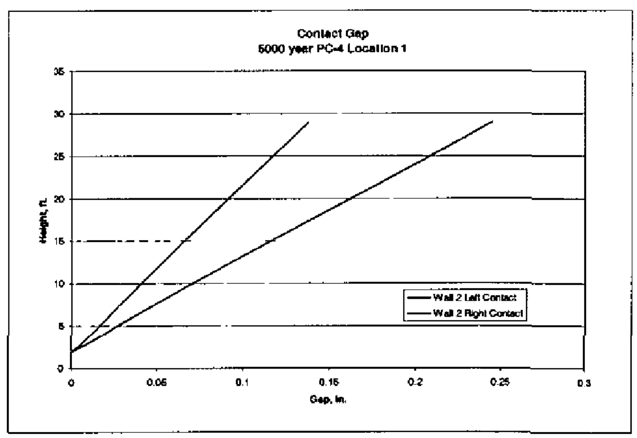












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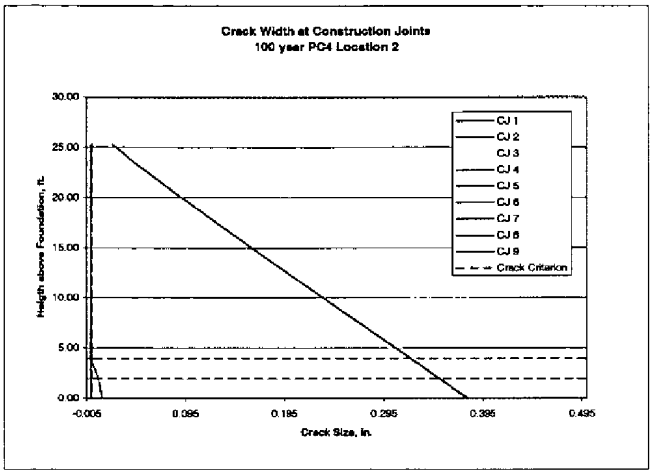
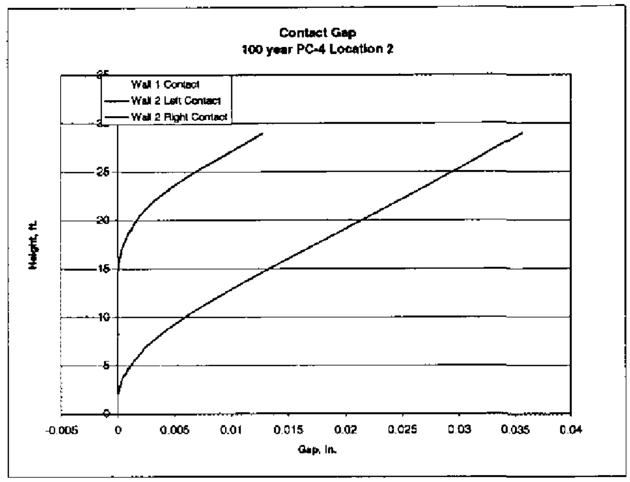
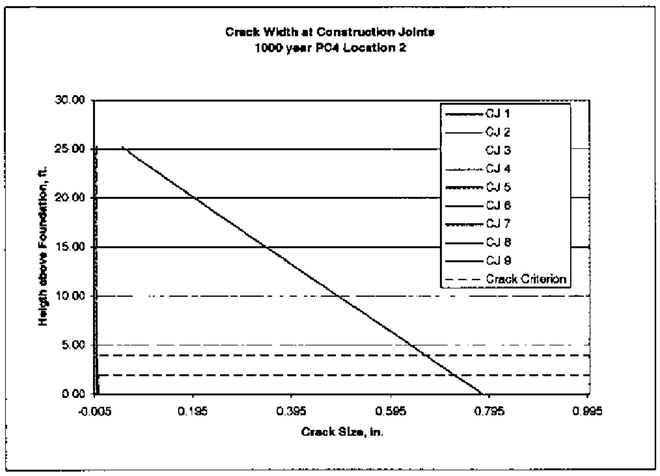
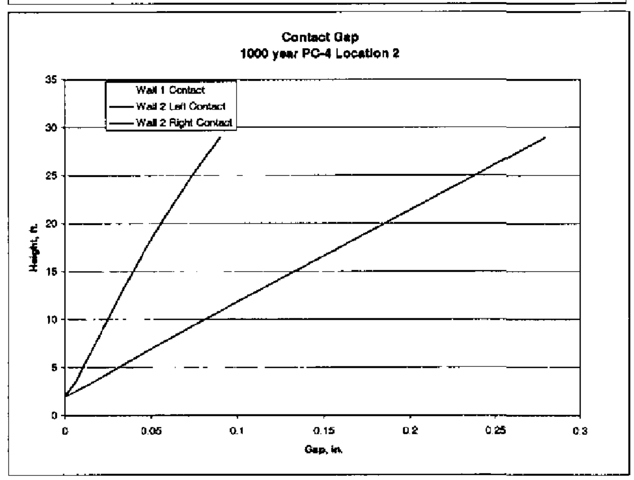
PC-4 Differential Settlement - Location 2

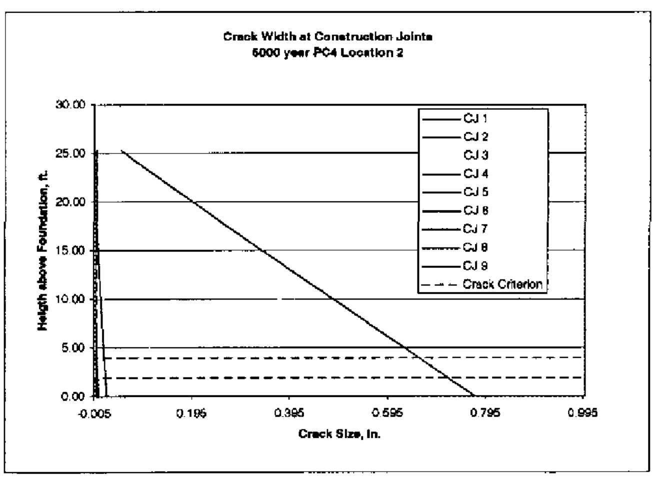
R = 124 ft.

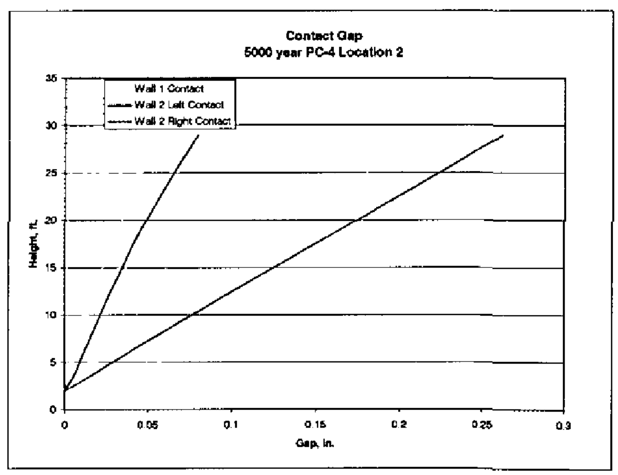












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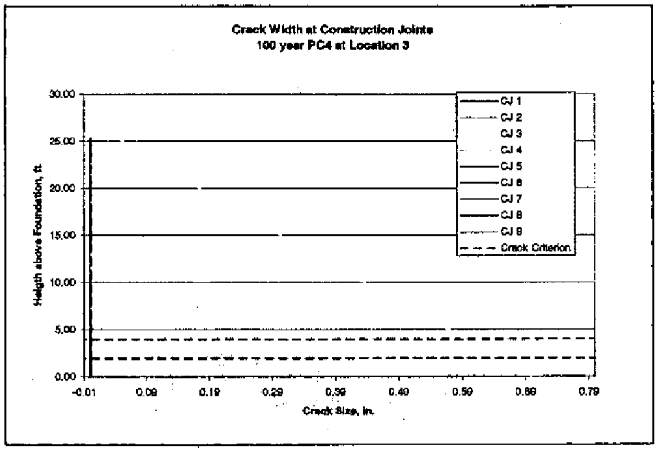
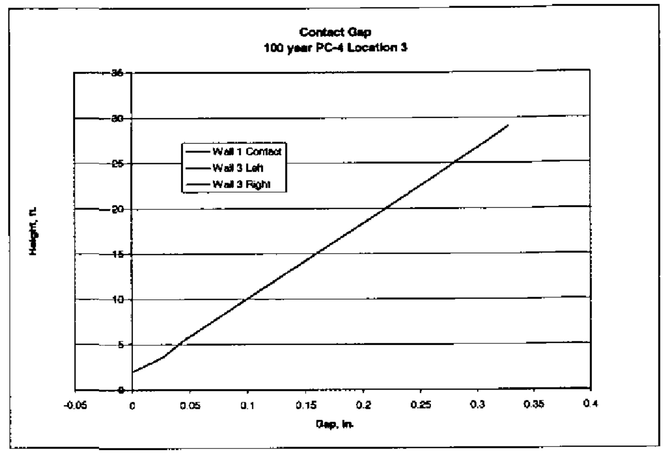
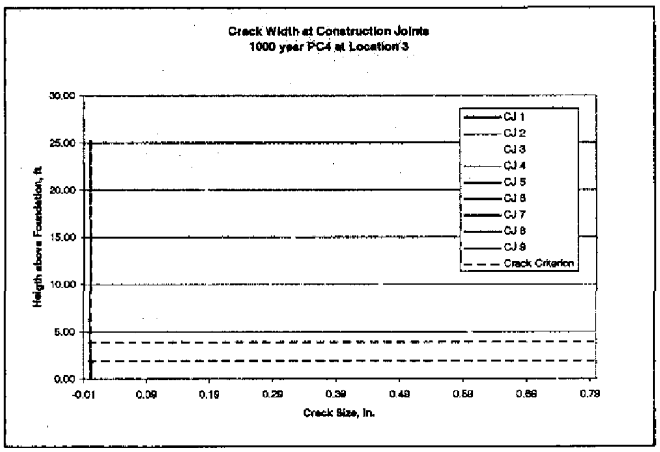
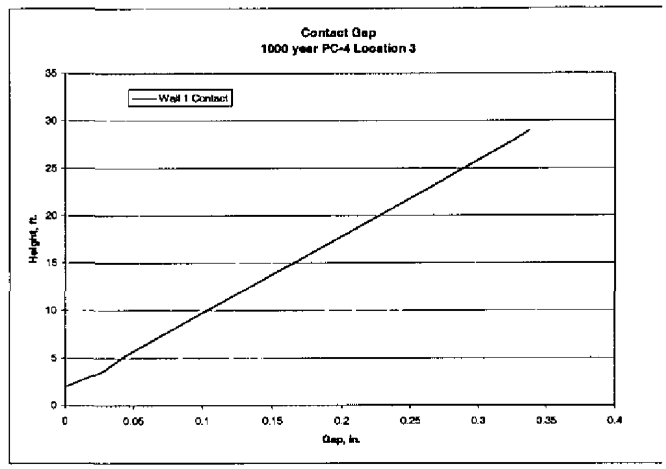
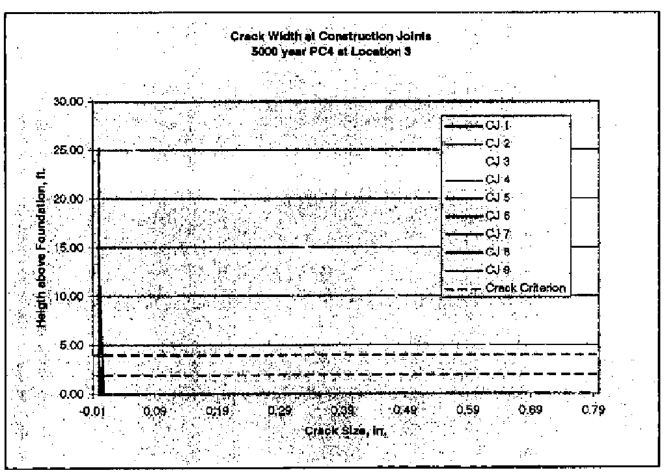
PC-4 Differential Settlement - Location 3
R = 62 ft.

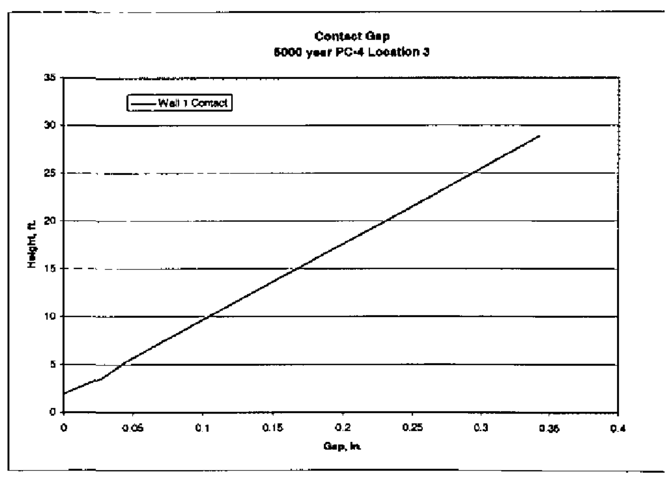




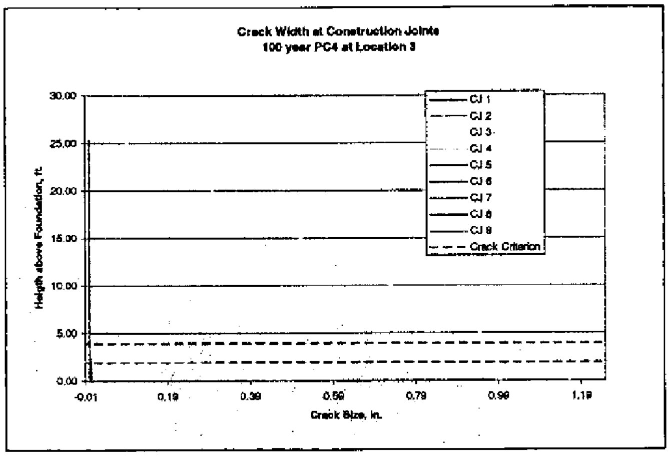


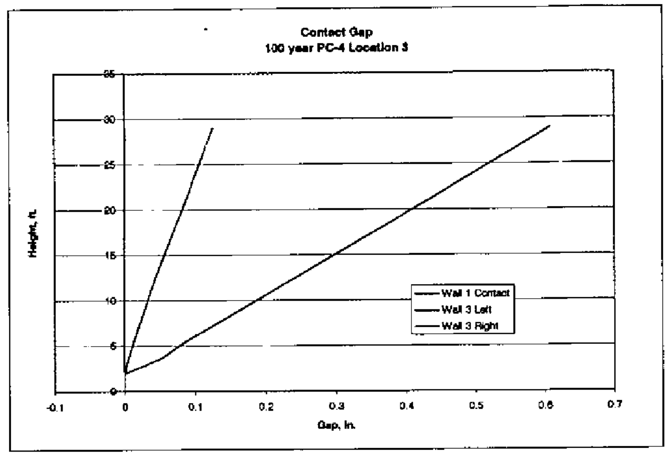


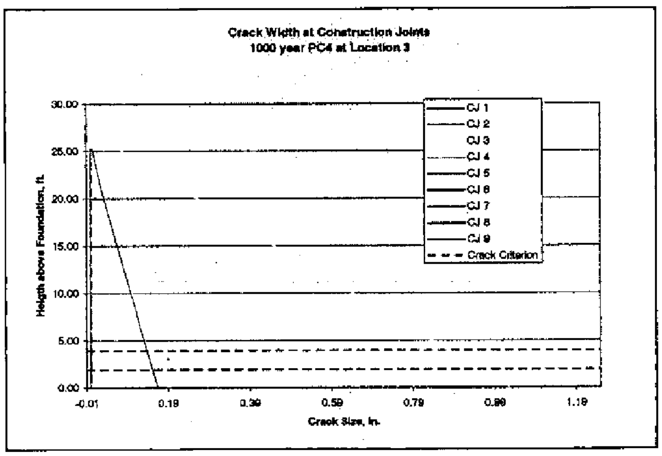


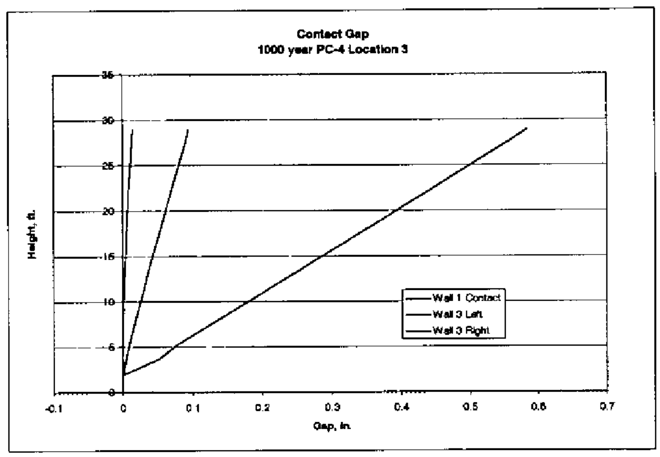


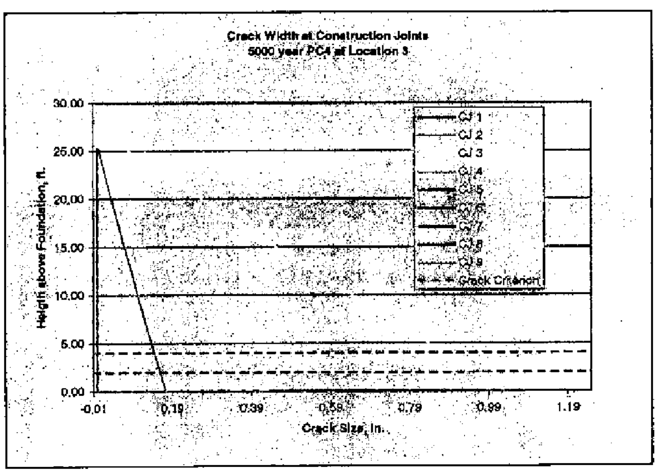
PC-4 Differential Settlement - Location 3
R = 124 ft.

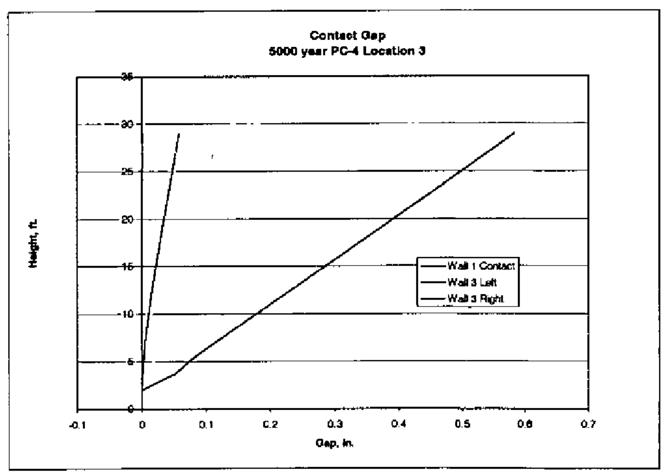






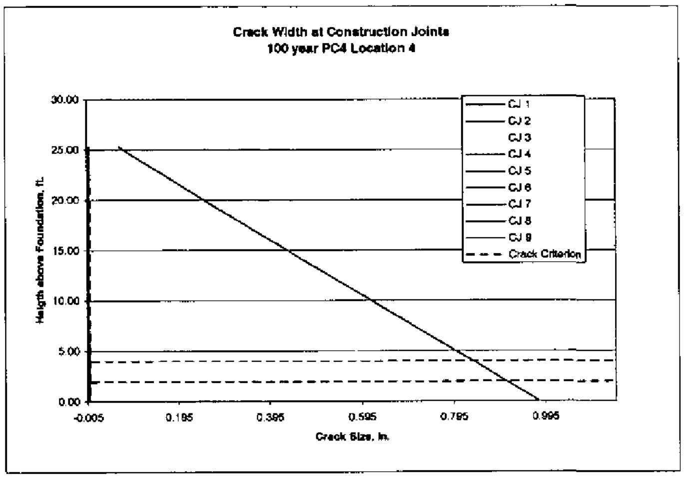


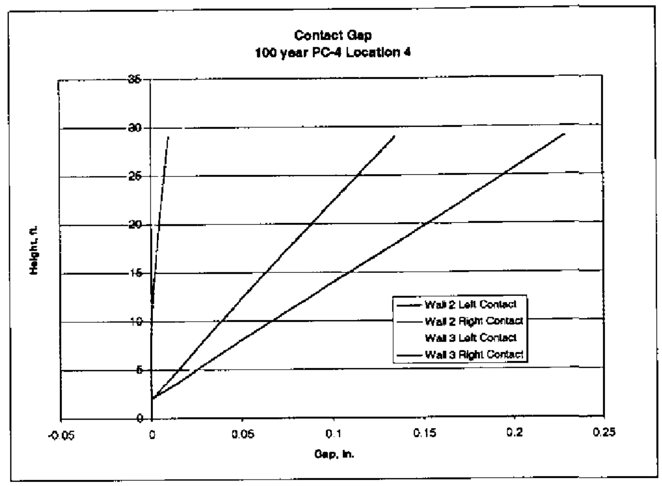


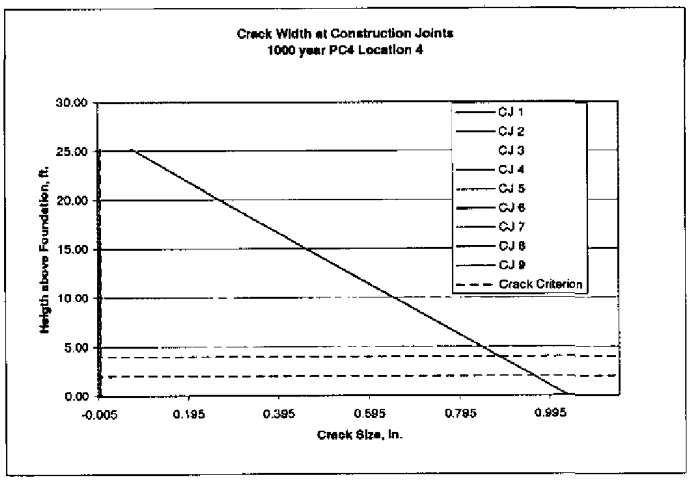


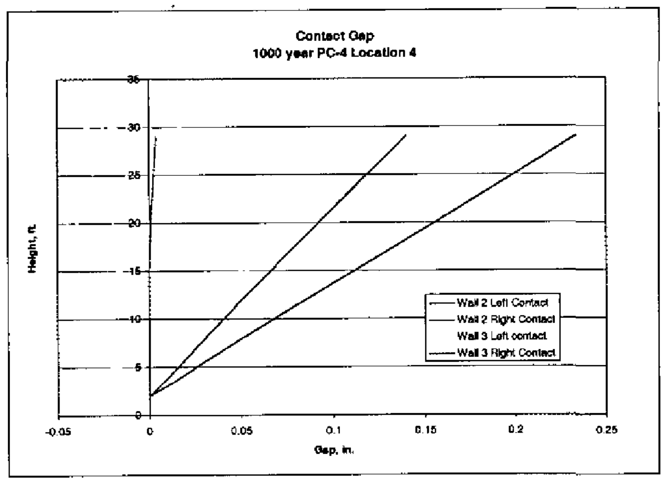
t-CLC-Z-00006, Rev.0 PC-4 Differential Settlement - Location 4

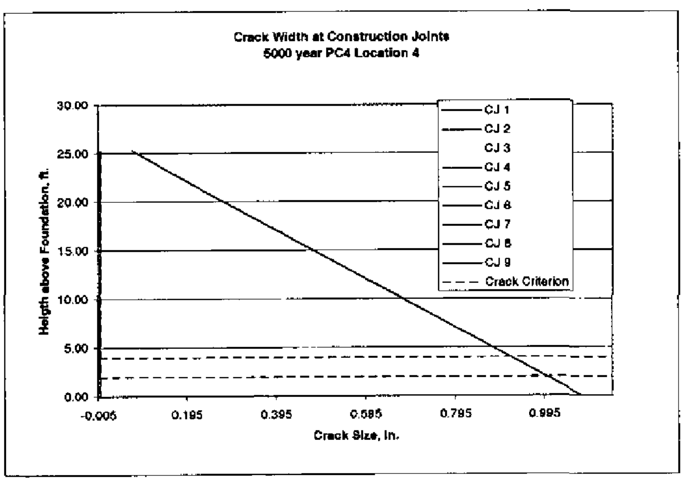
R = 62 ft.

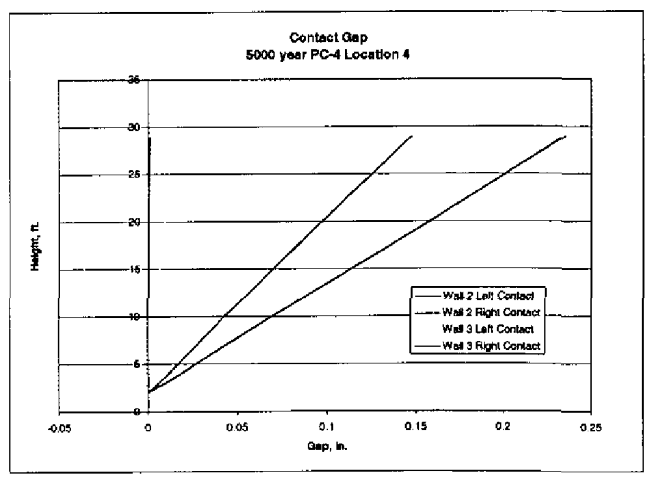












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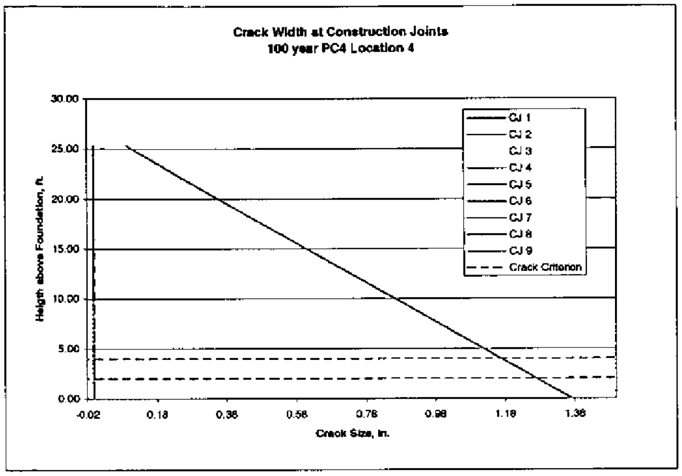
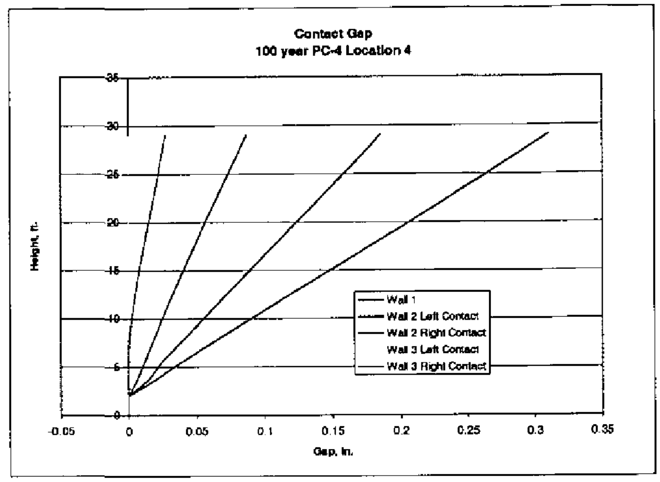
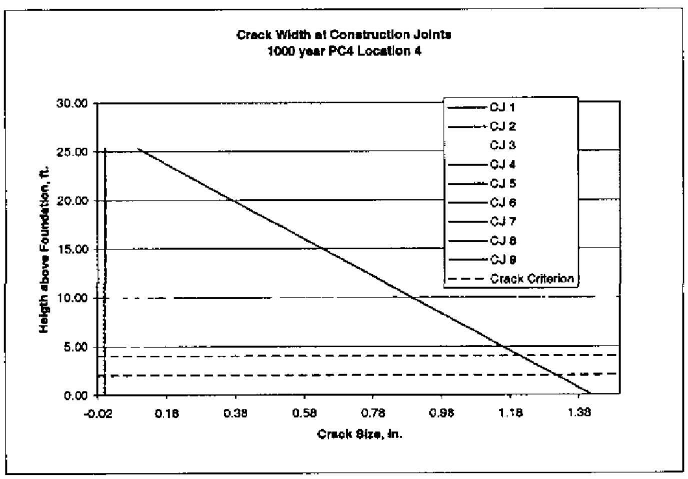
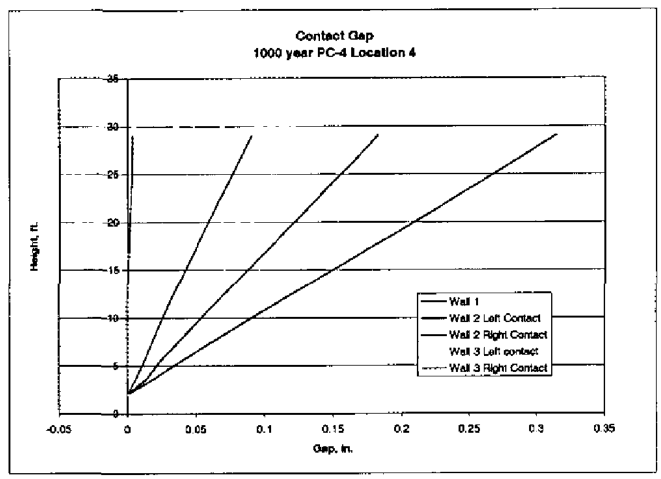
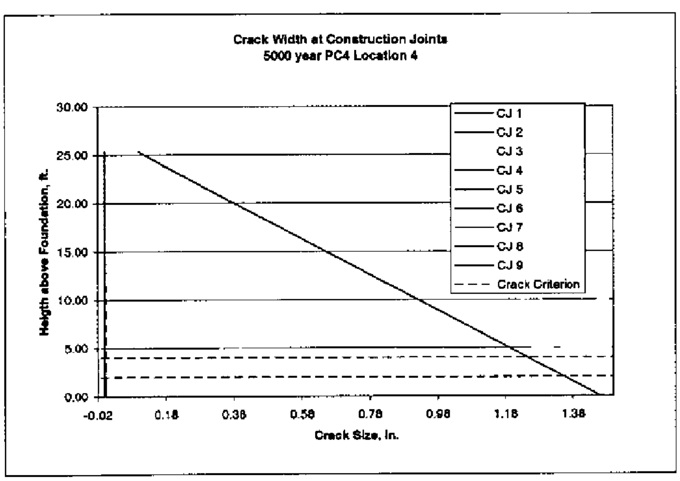
PC-4 Differential Settlement - Location 4
R = 124 ft.

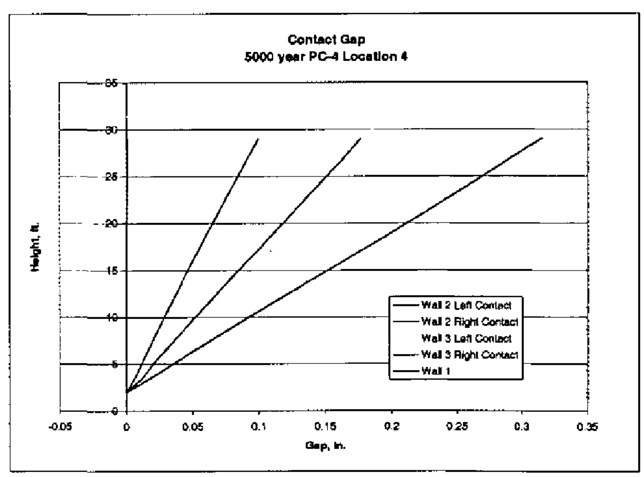






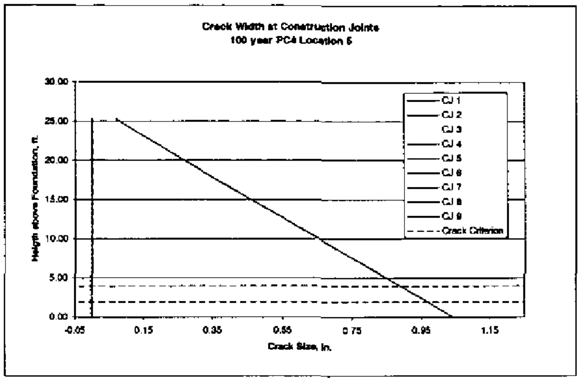


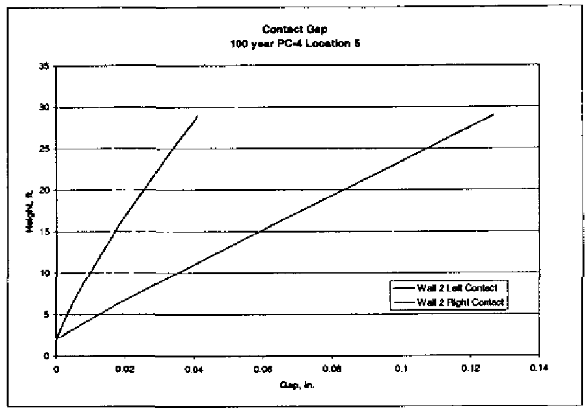


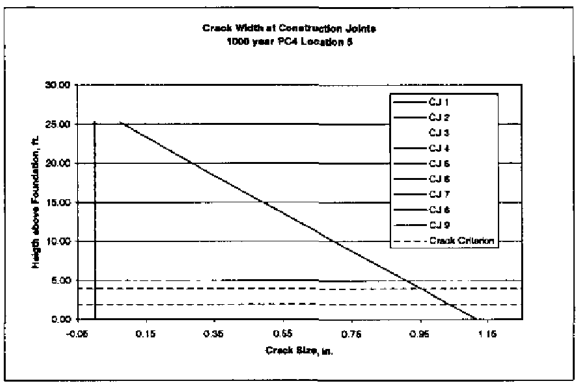


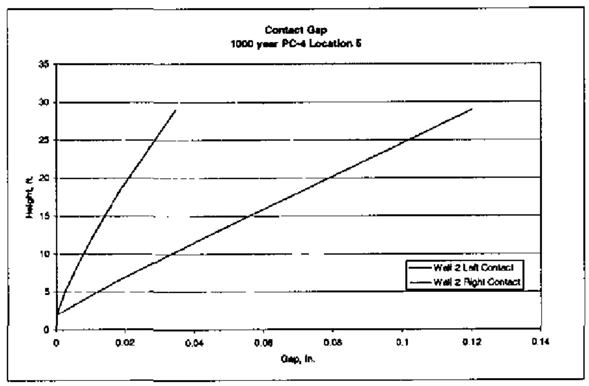
PC-4 Differential Settlement - Location 5

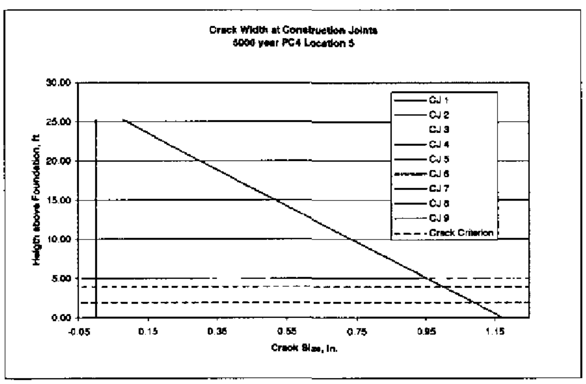
R = 62 ft.

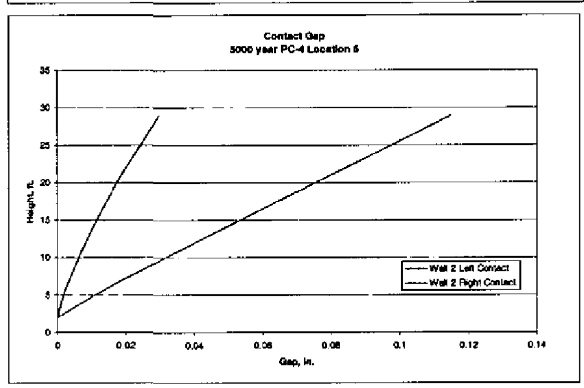












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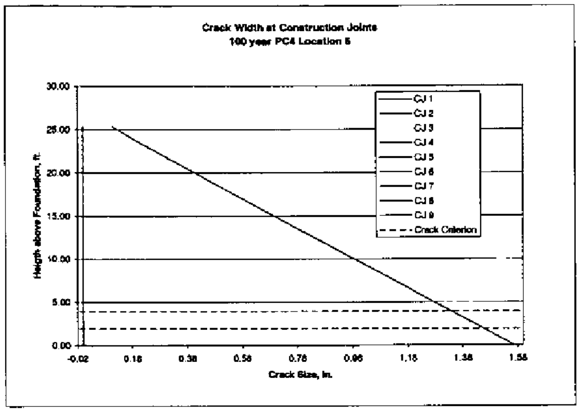
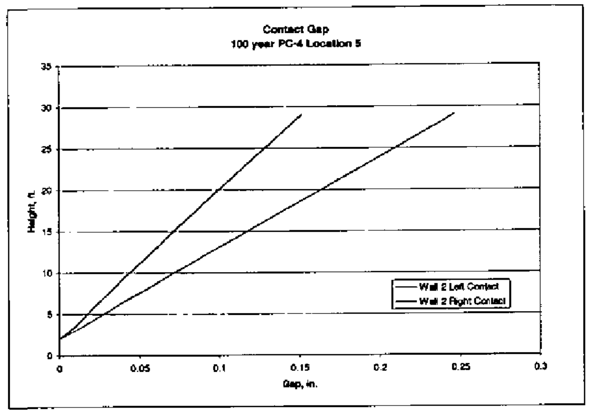
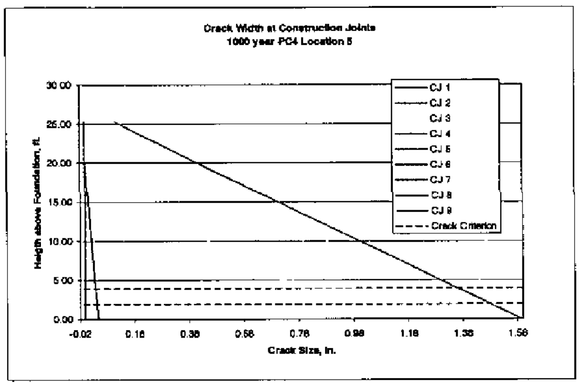
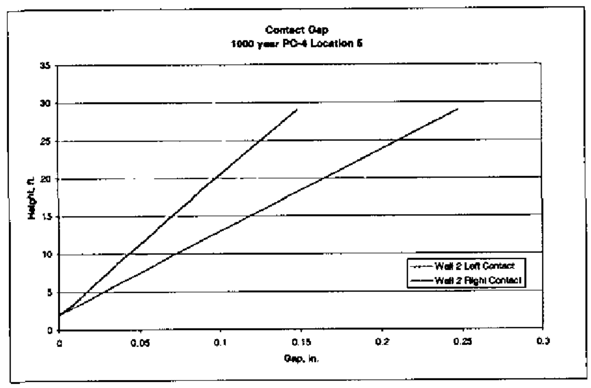
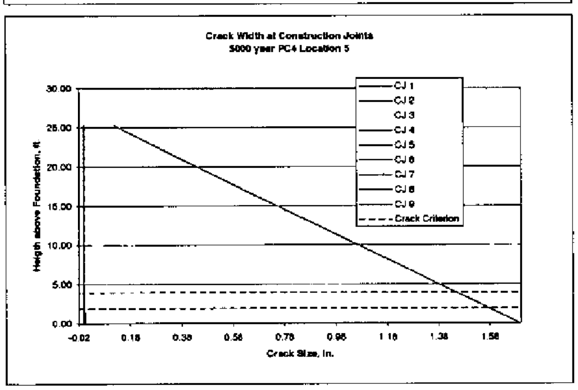
# PC-4 Differential Settlement - Location 5
R = 124 ft.

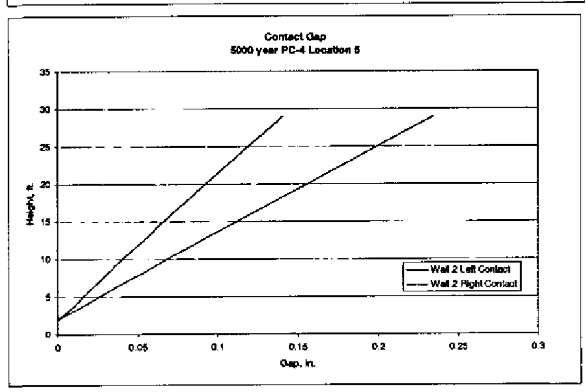




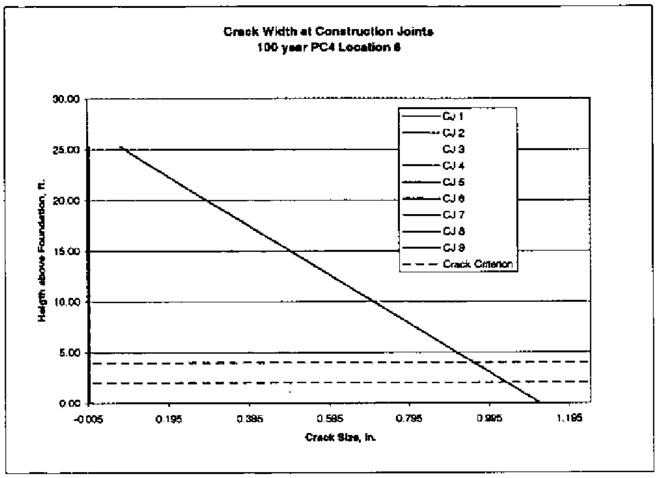


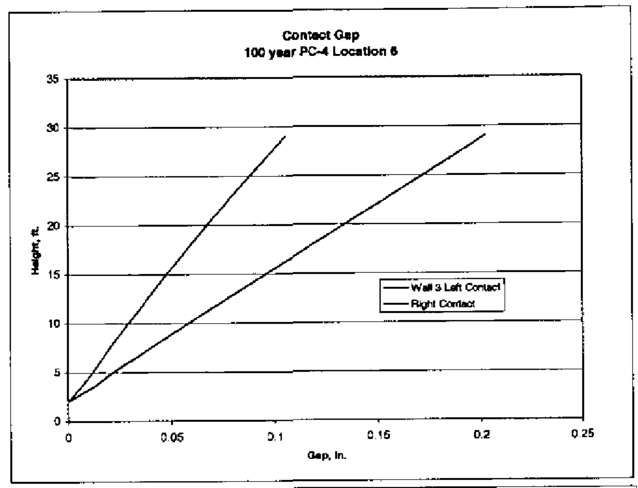


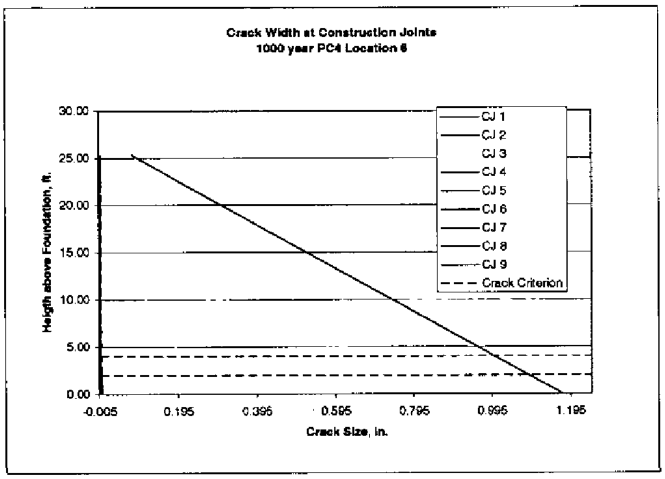


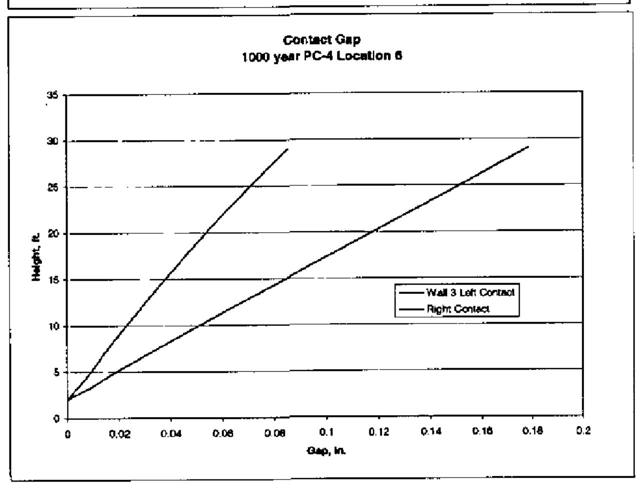


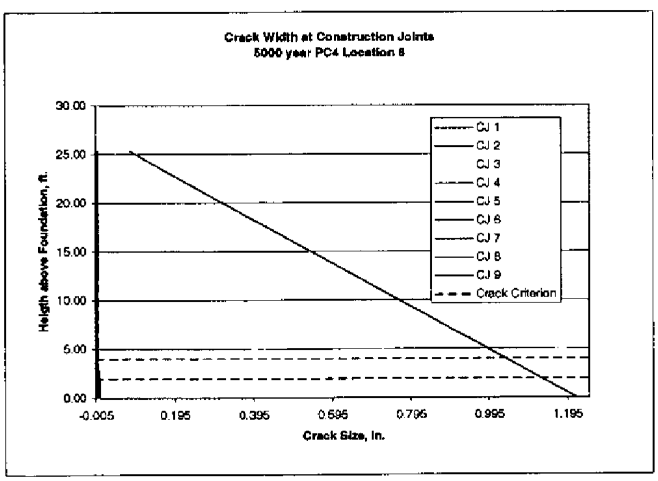
PC-4 Differential Settlement - Location 6
R = 62 ft.

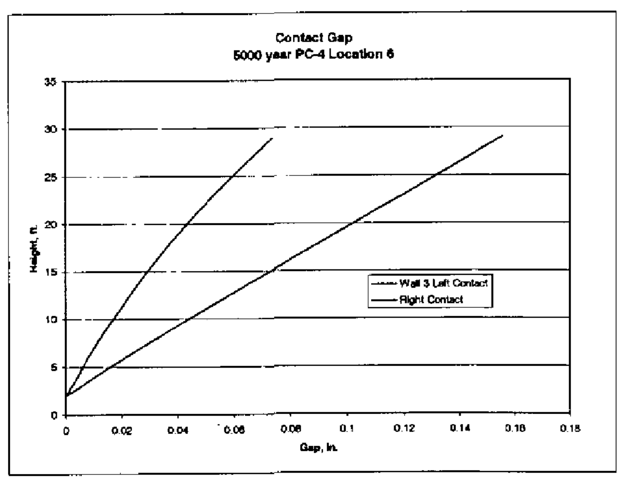












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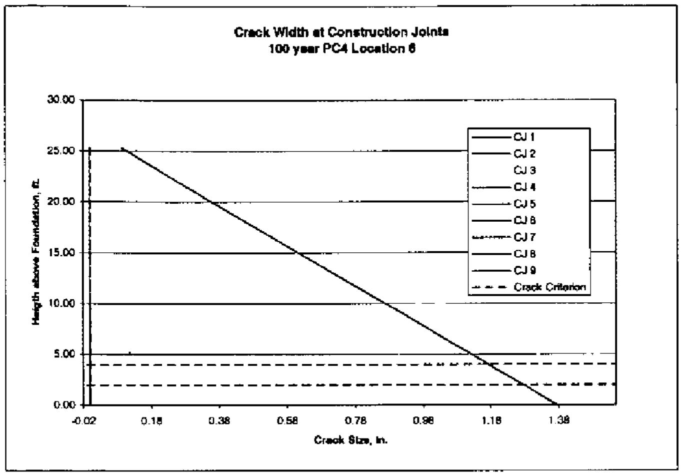
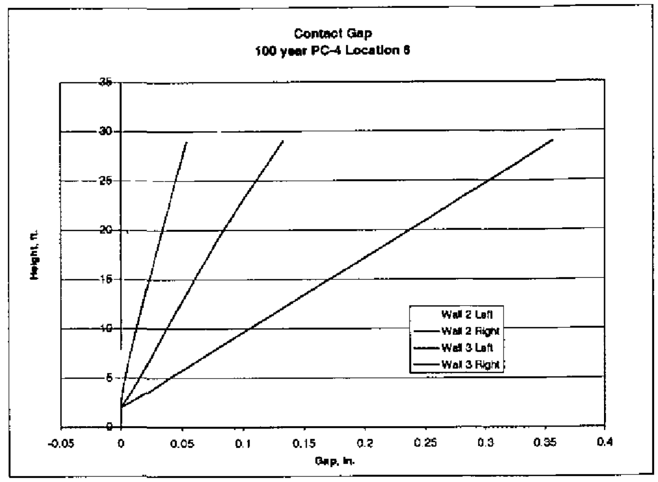
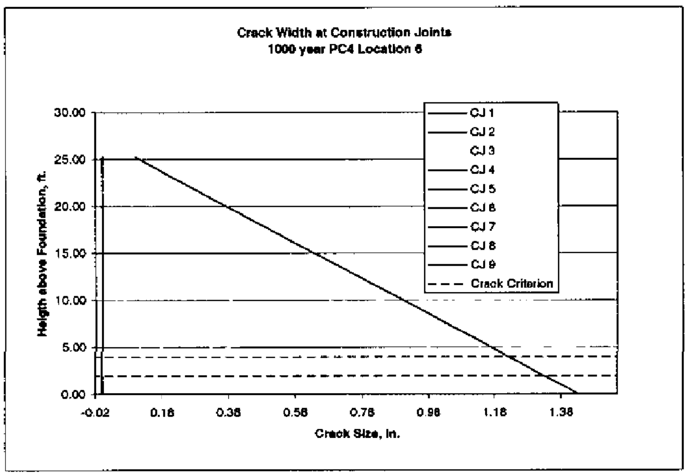
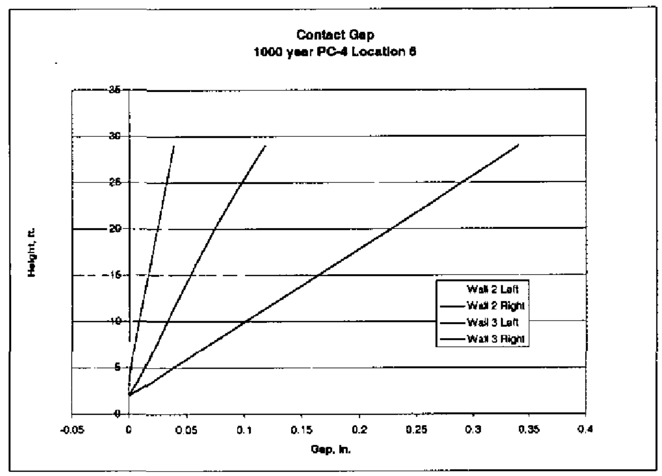
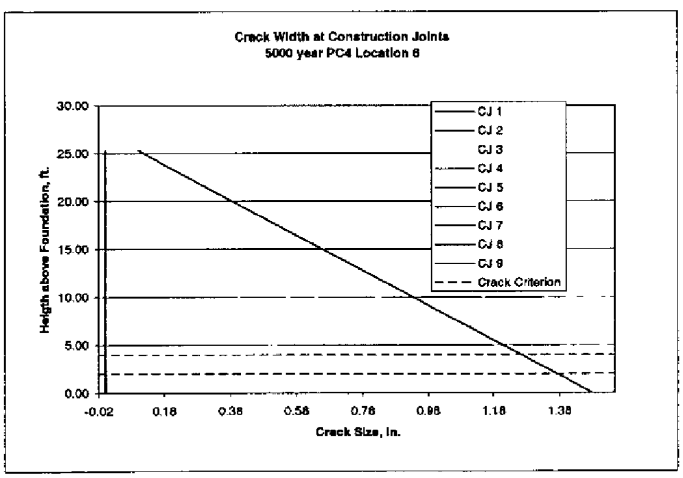
PC-4 Differential Settlement - Location 6
R = 124 ft.

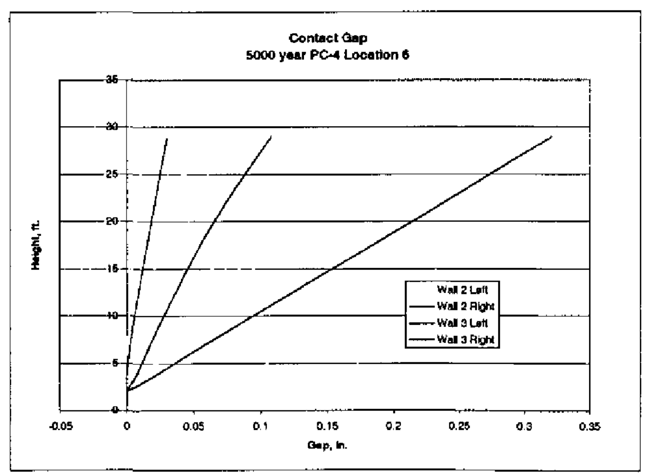




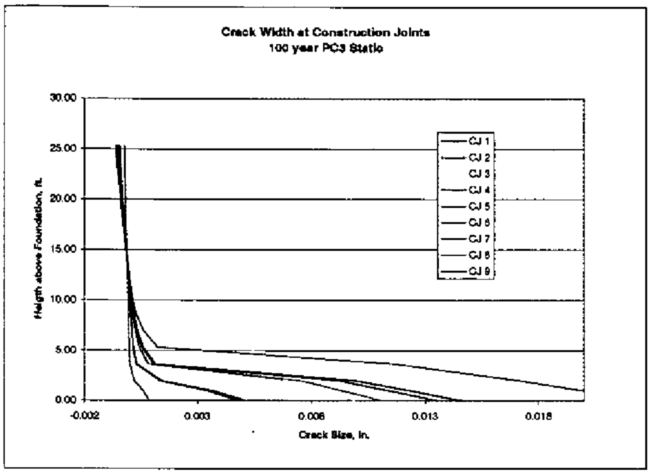


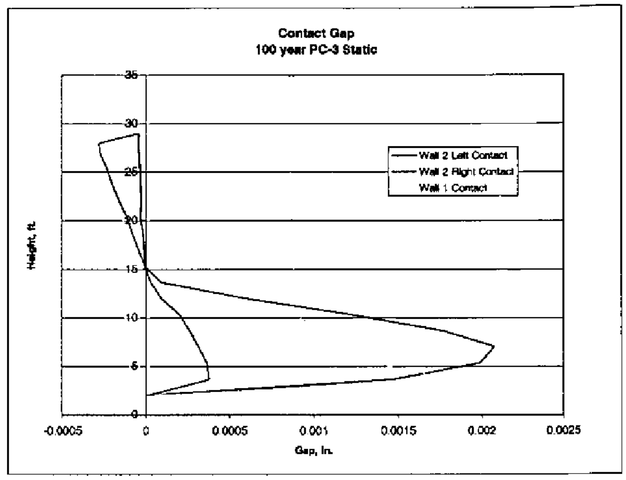


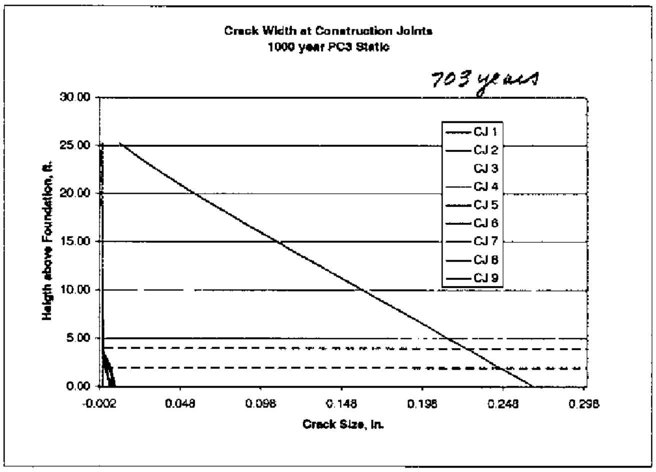


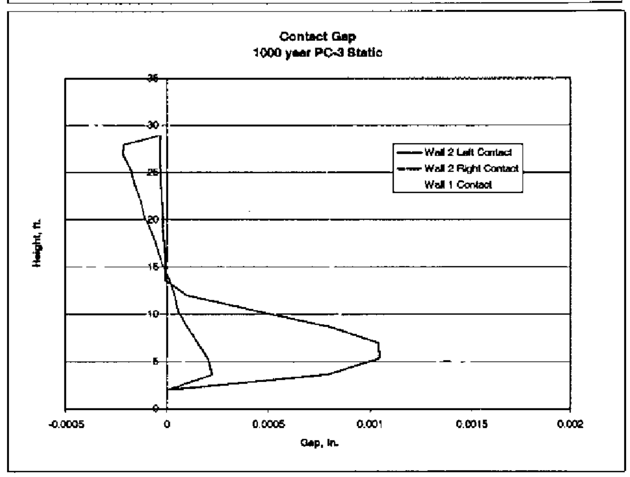


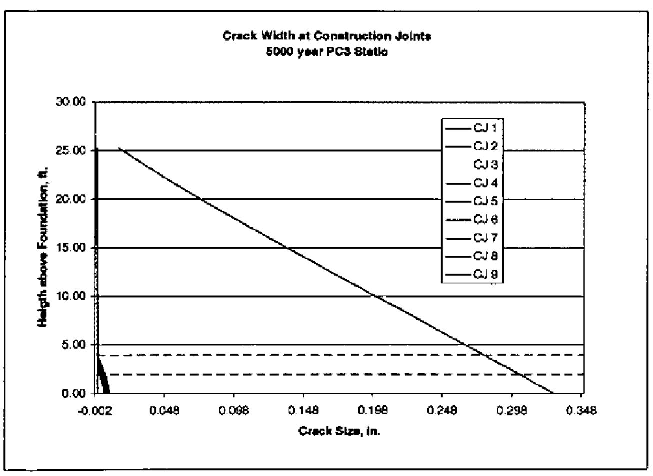
Static Settlement - Low Grout Modulus

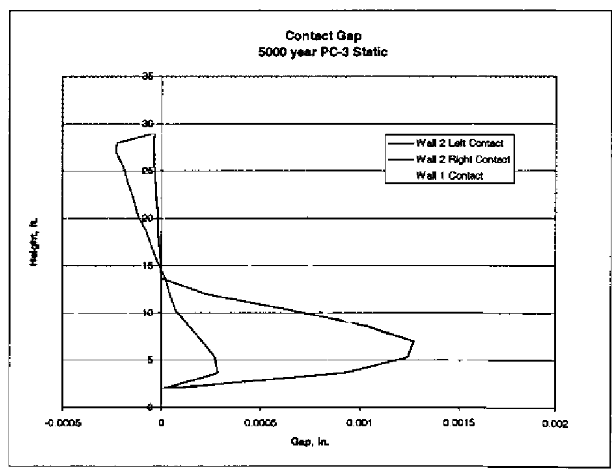




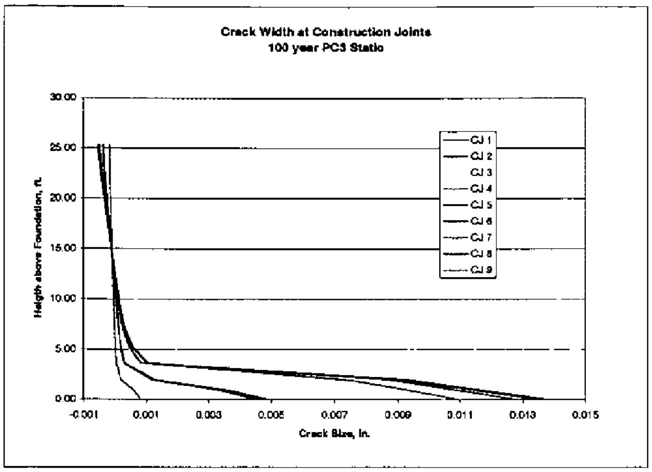


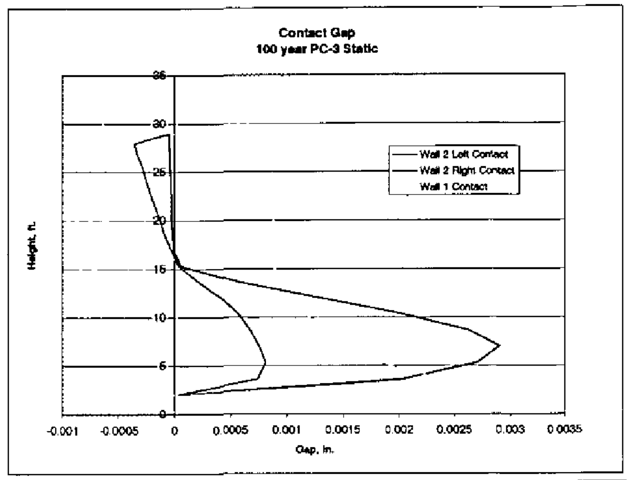


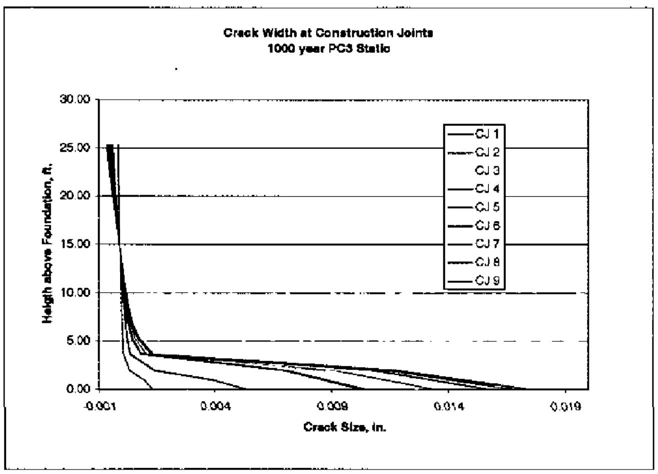


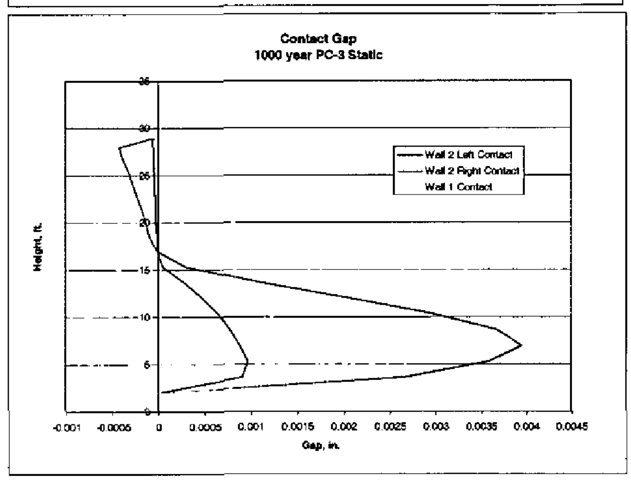


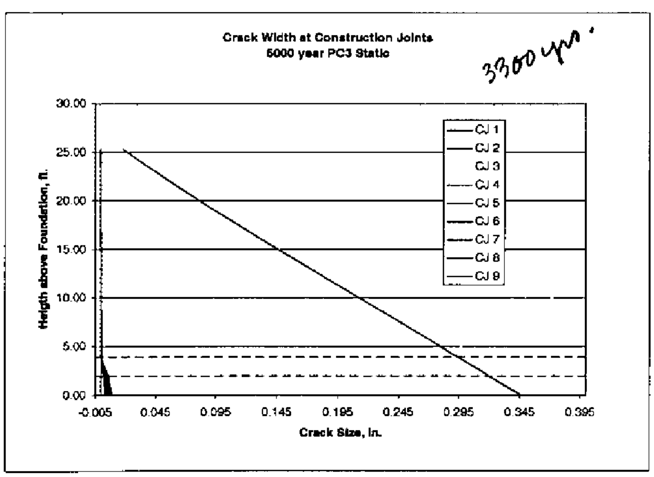
Static Settlement -
Mean Grout Modulus

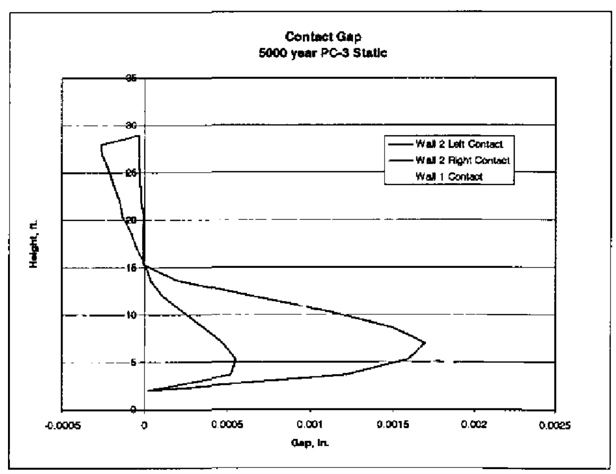












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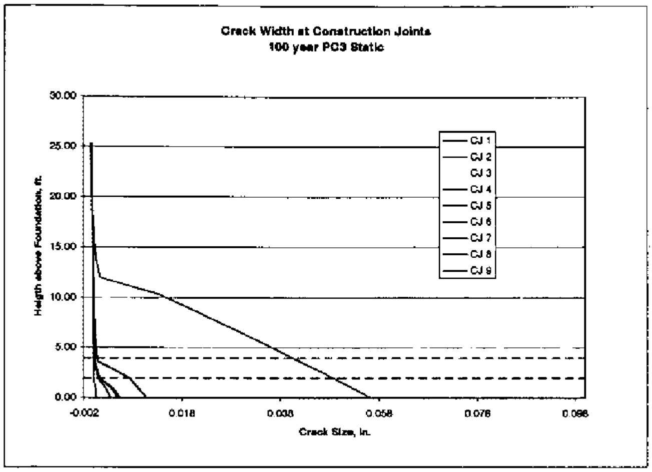
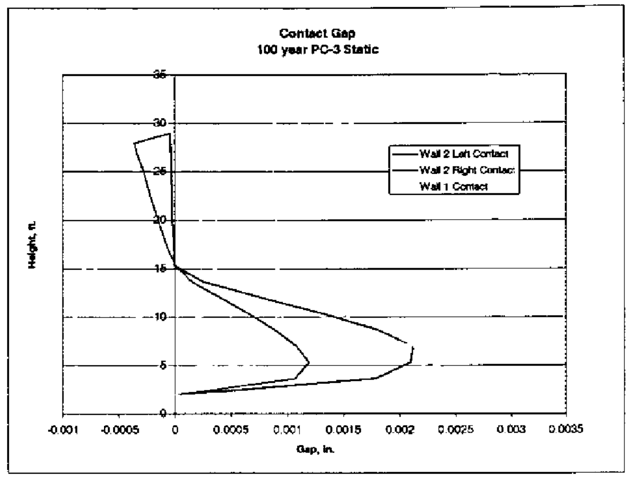
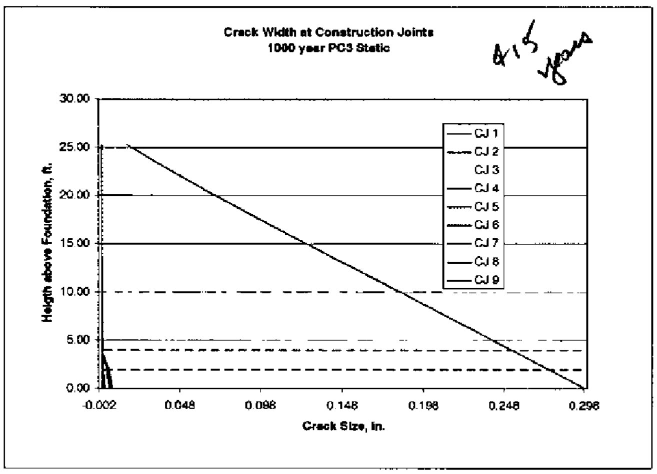
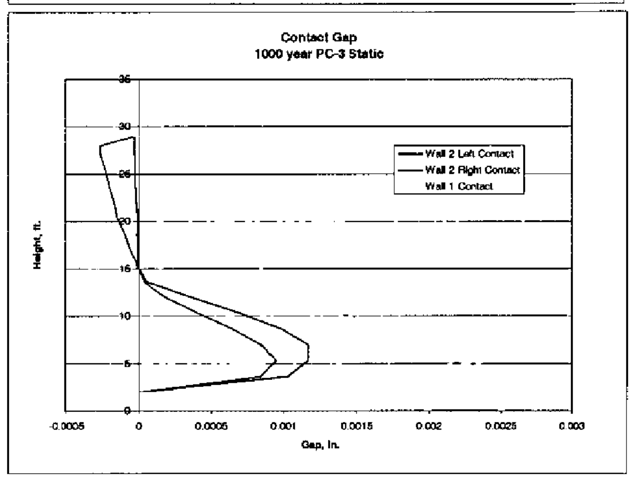
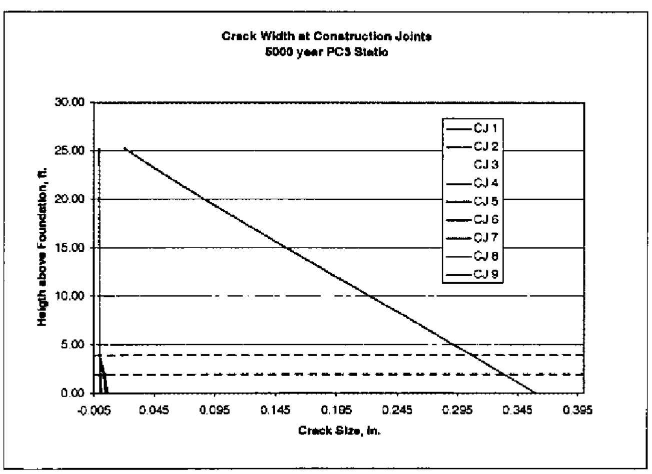
Static Settlement -
High Grout Modulus

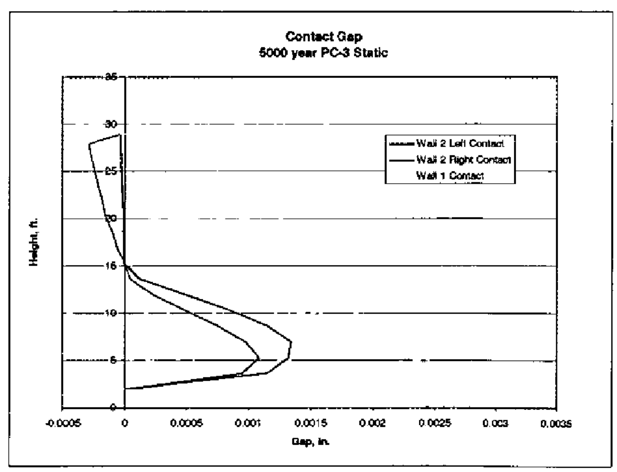












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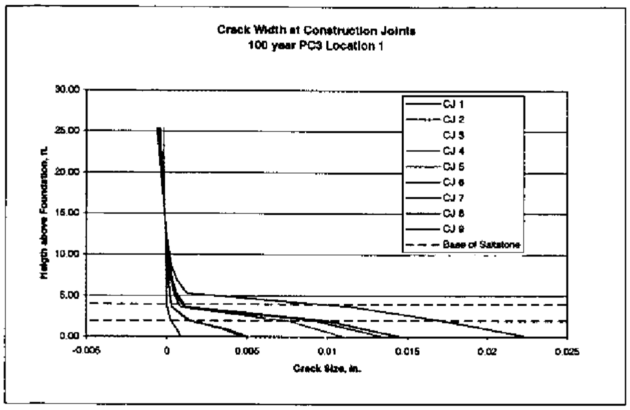
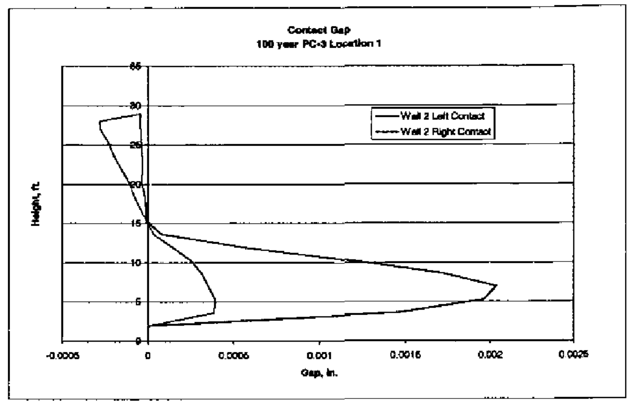
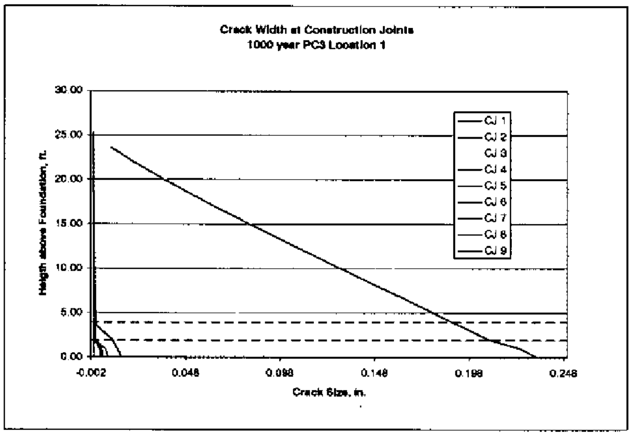
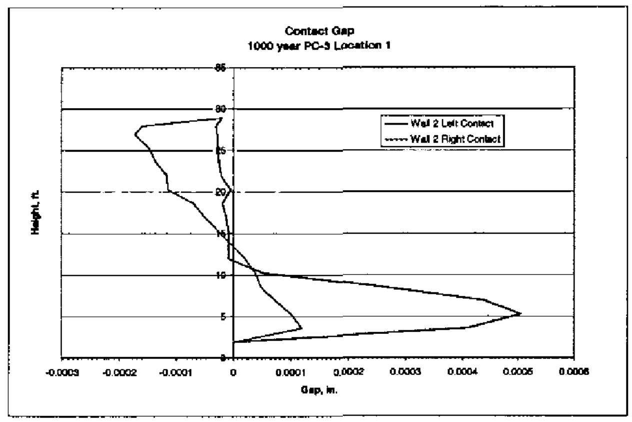
PC-3 Differential Settlement - Low Grout Modulus

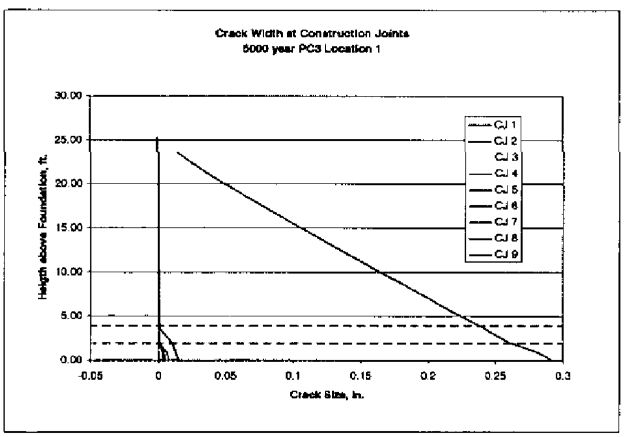
Location 1

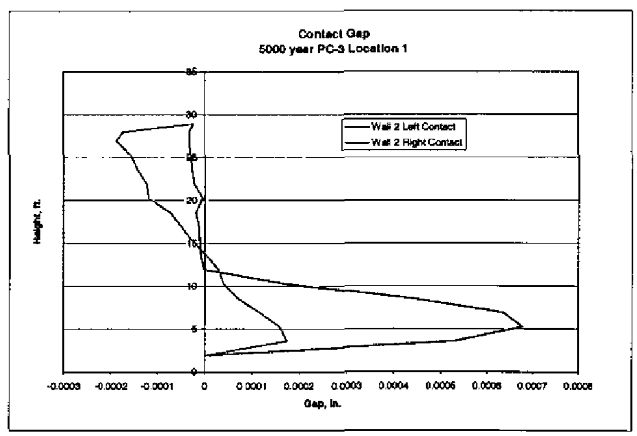












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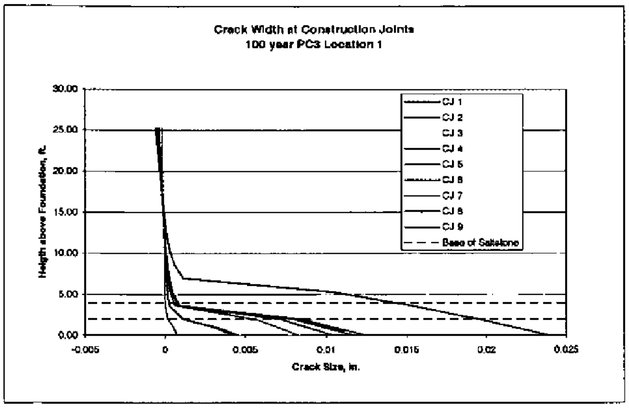
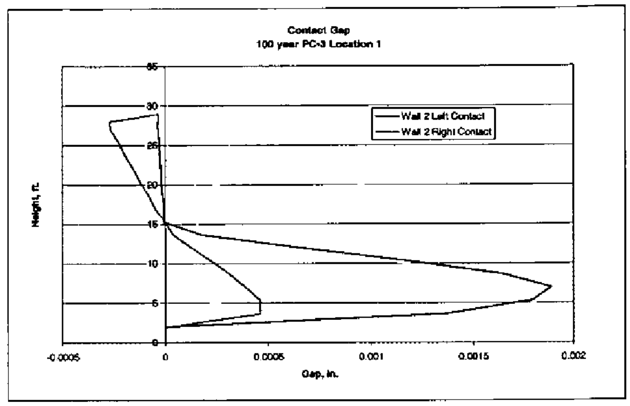
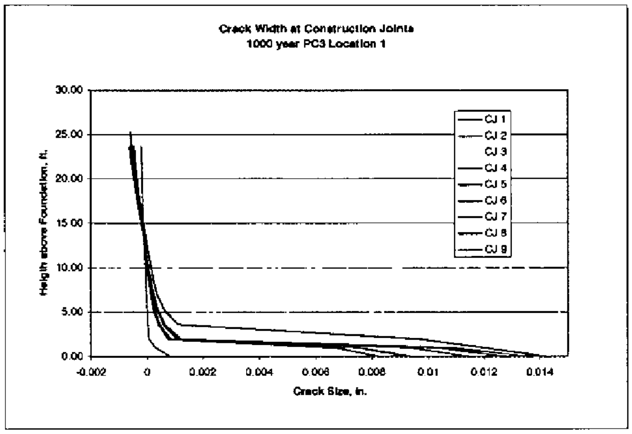
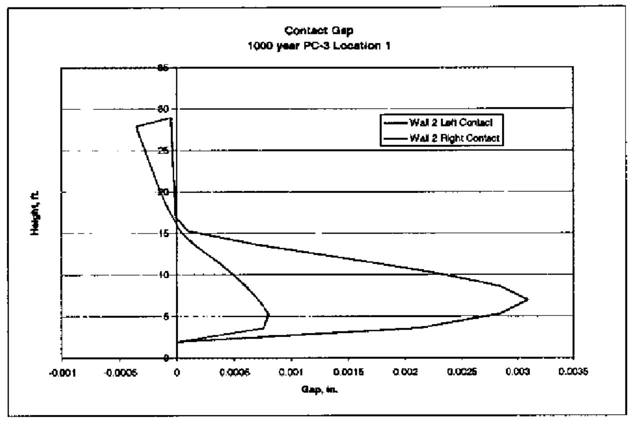
PC-3 Differential Settlement - Mean Grout Modulus

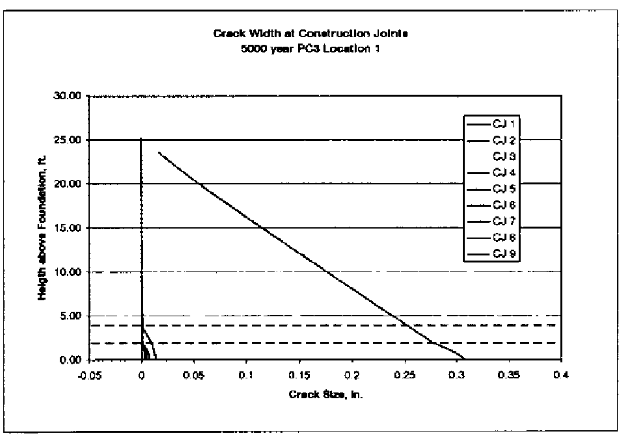
Location 1

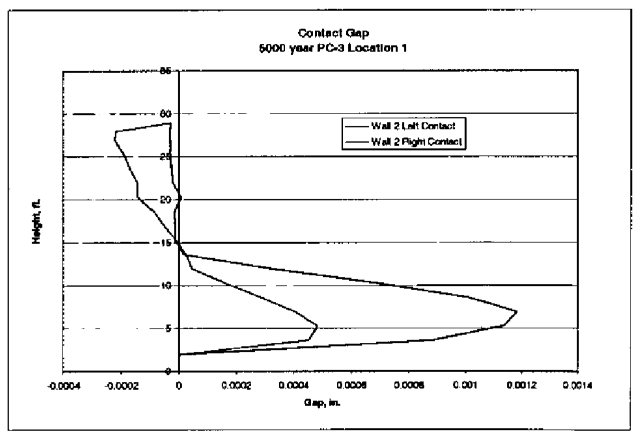






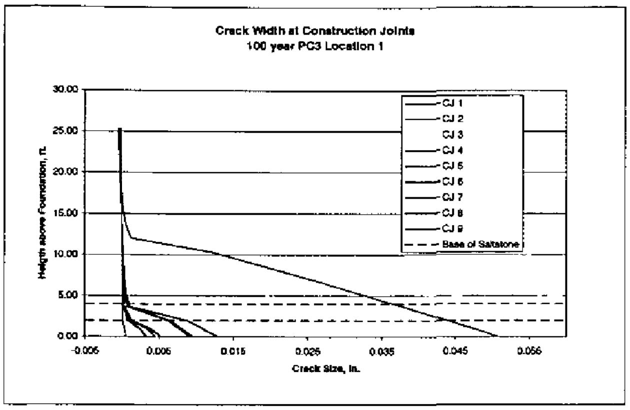


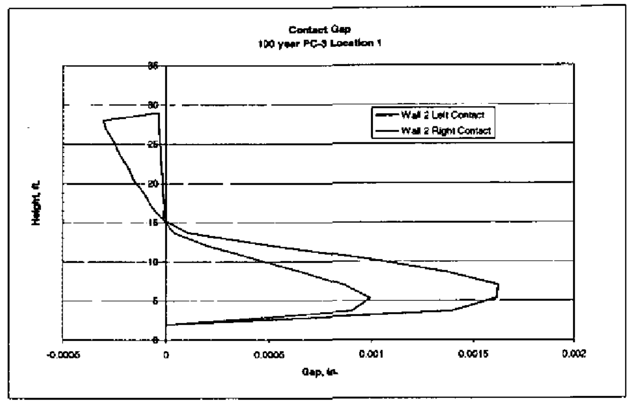


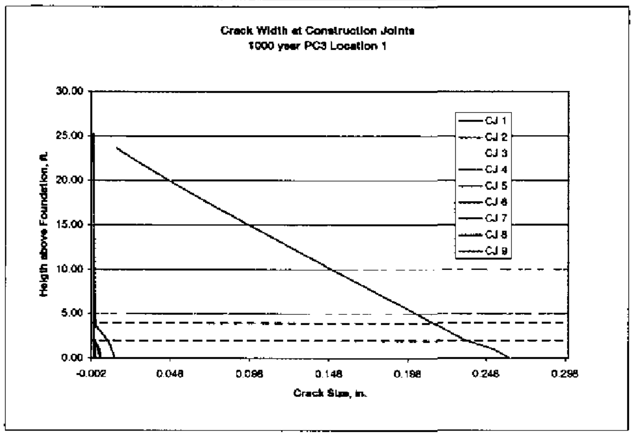


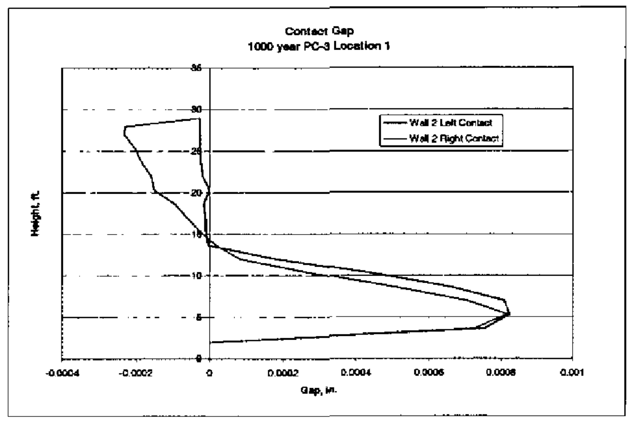
PC-3 Differential Settlement - High Grout Modulus

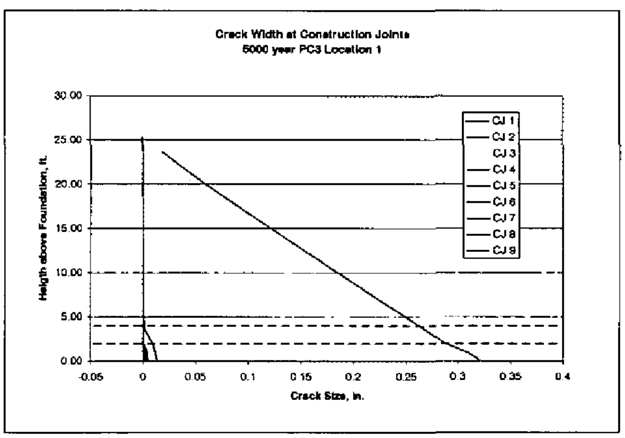
Location 1

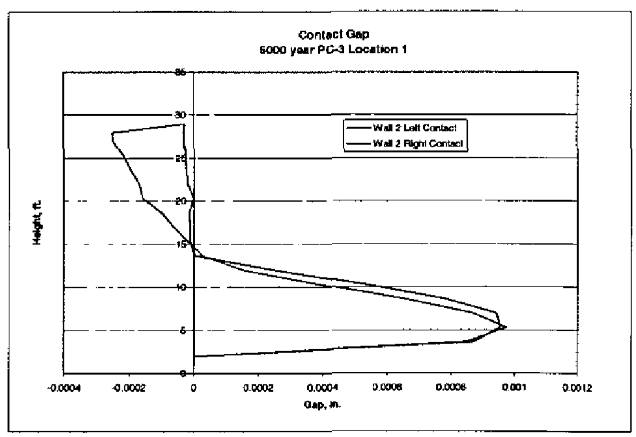




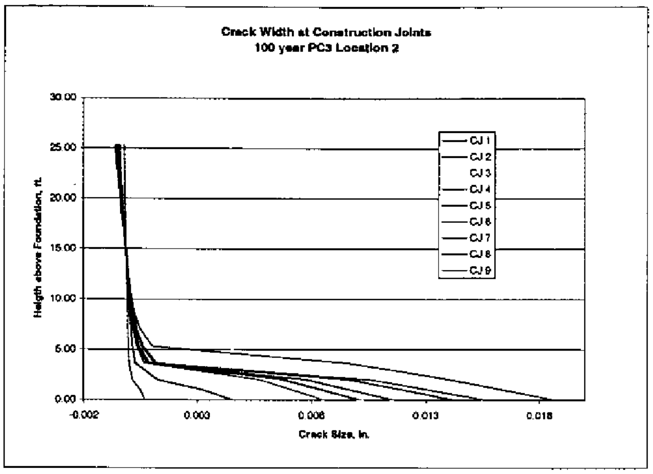


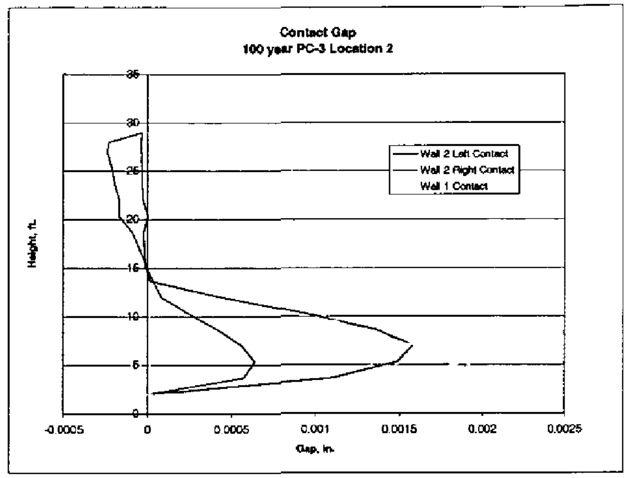


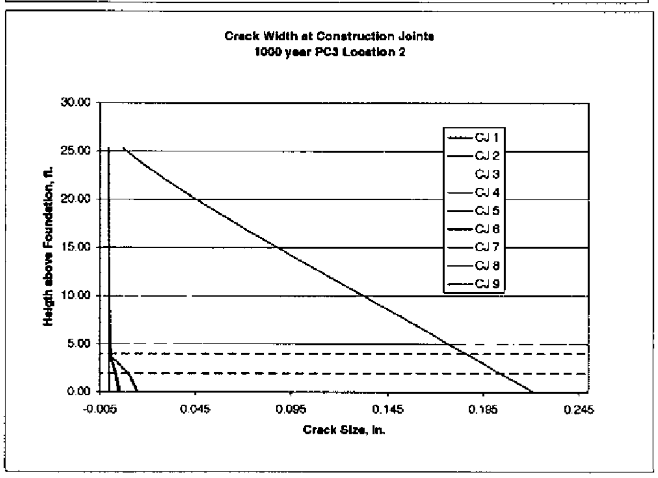


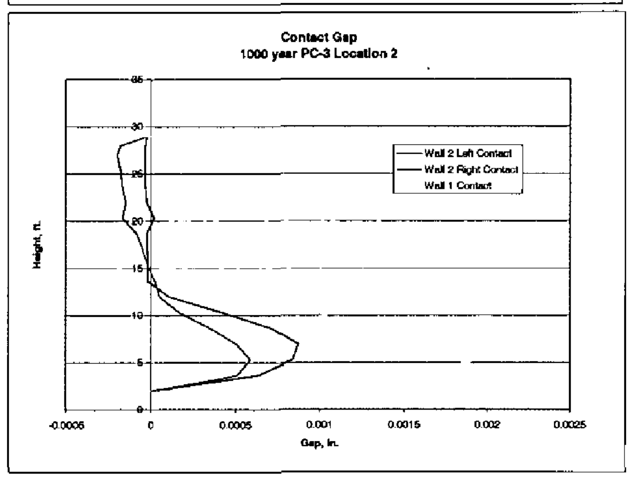


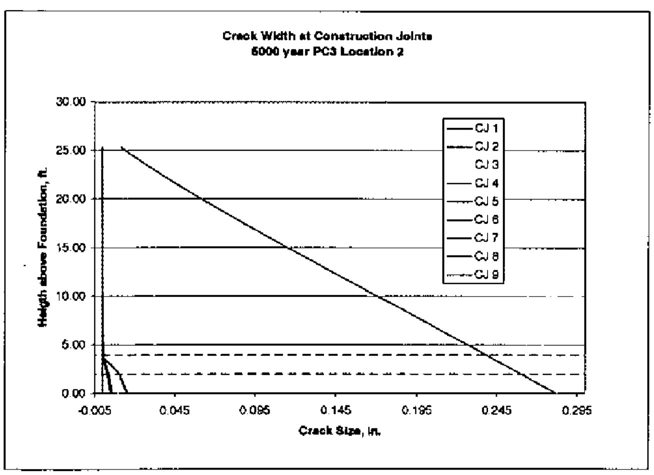
PC-3 Differential Settlement - Location 2
Low Grout Modulus

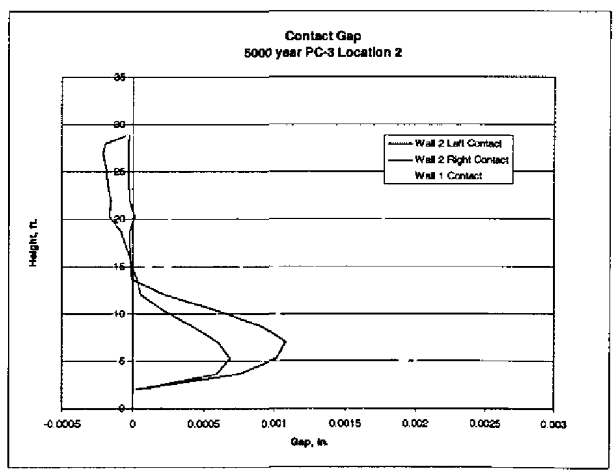




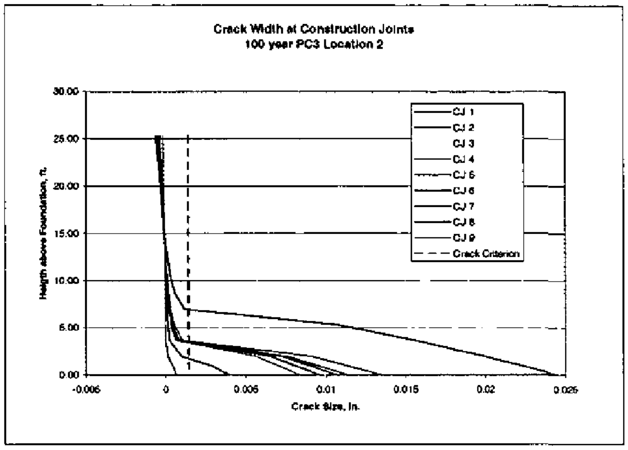


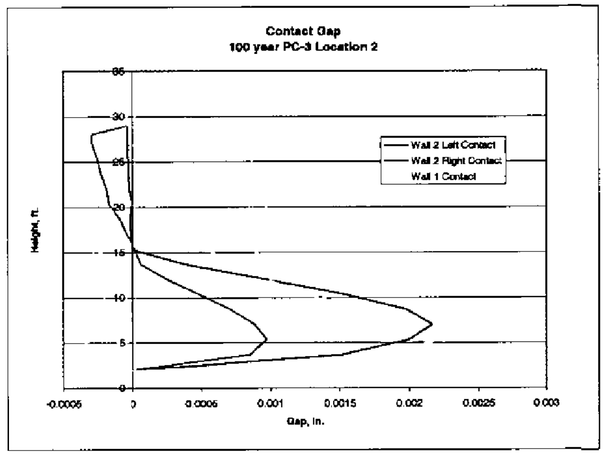


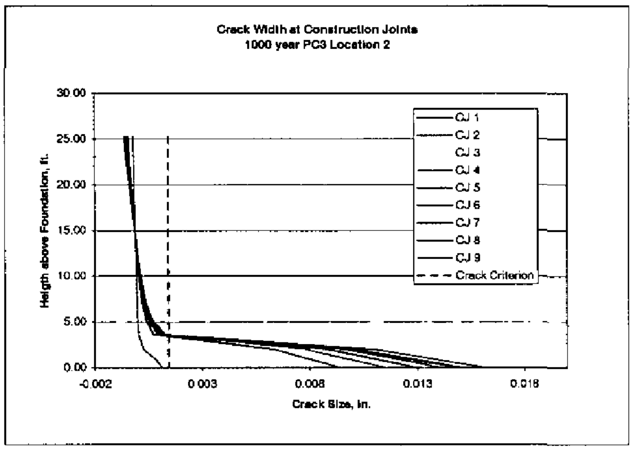


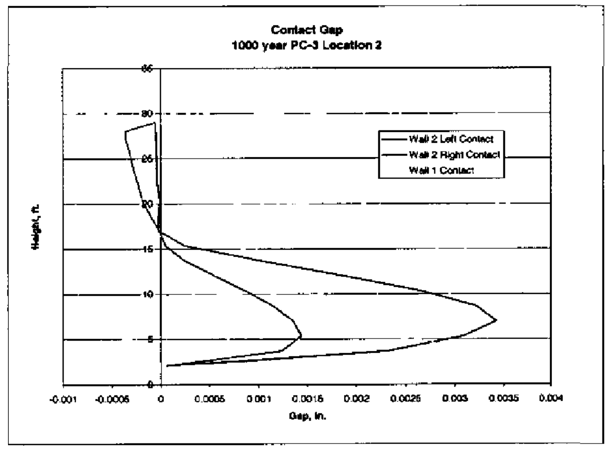


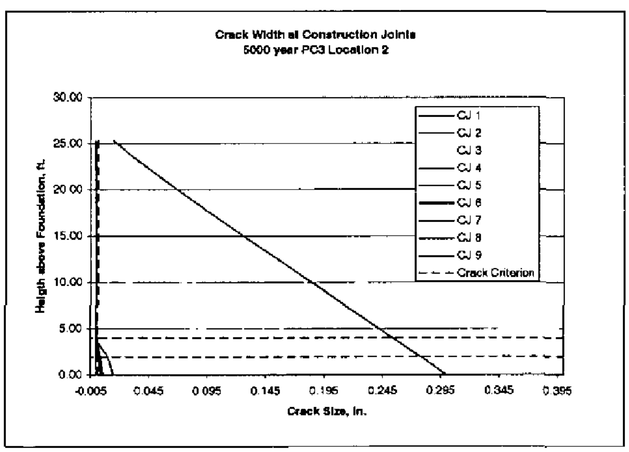
PC-3 Differential Settlement - Location 2
Mean Grout Modulus

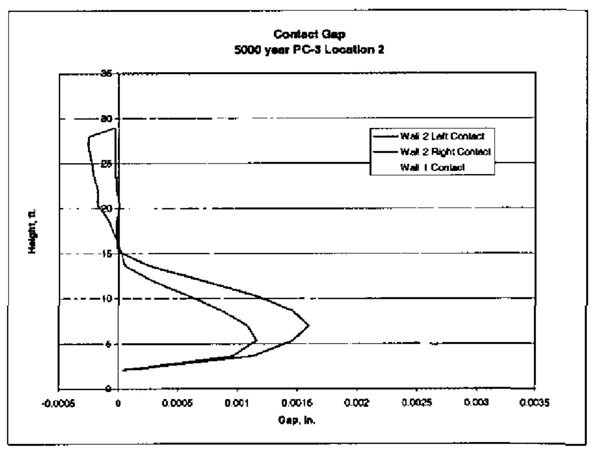












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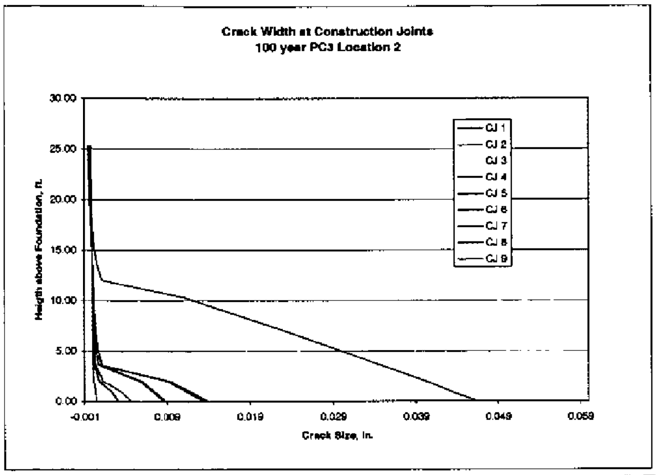
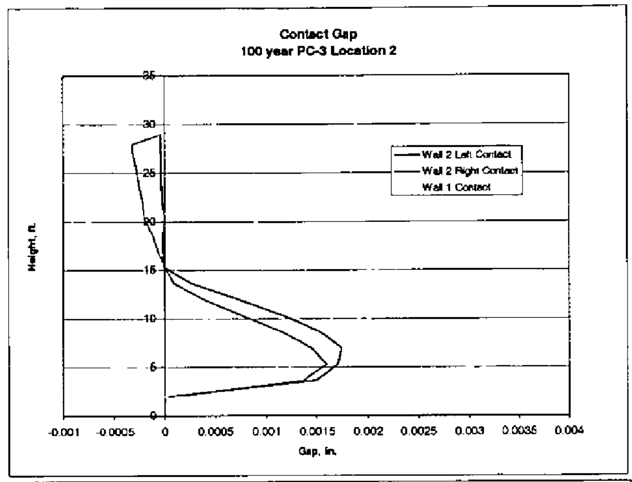
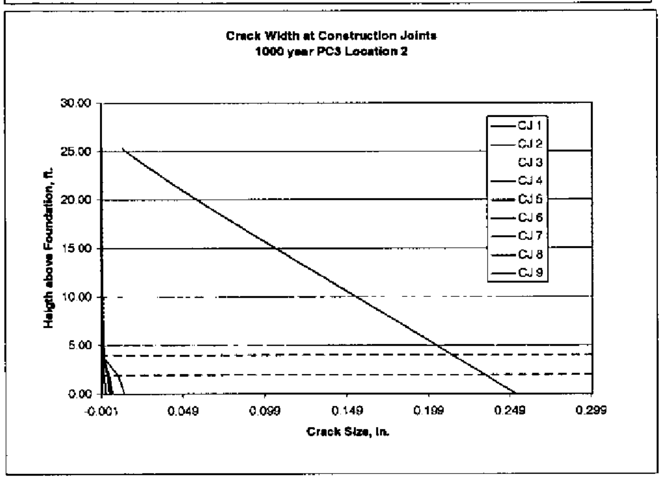
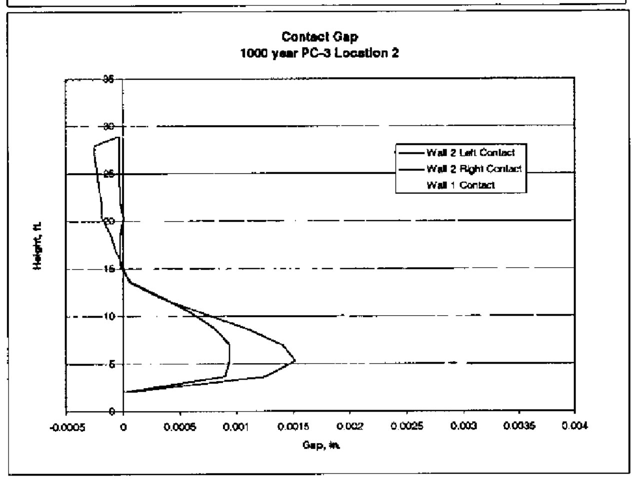
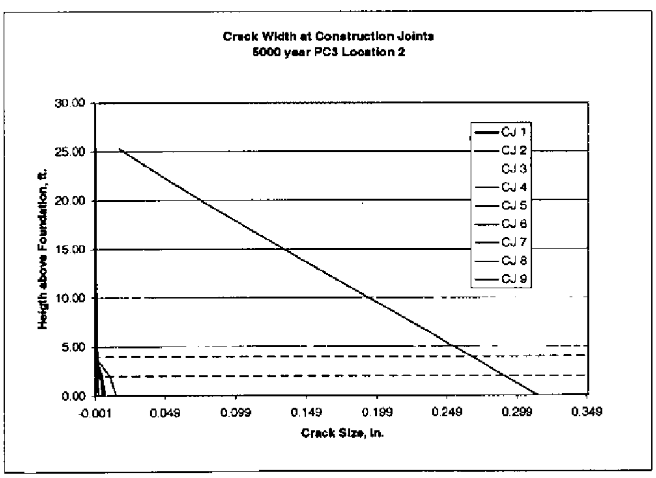
PC-3 Differential Settlement - Location 2
High Grout Modulus

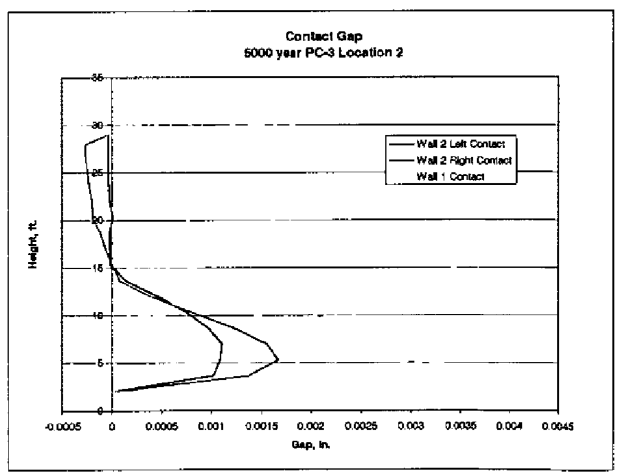


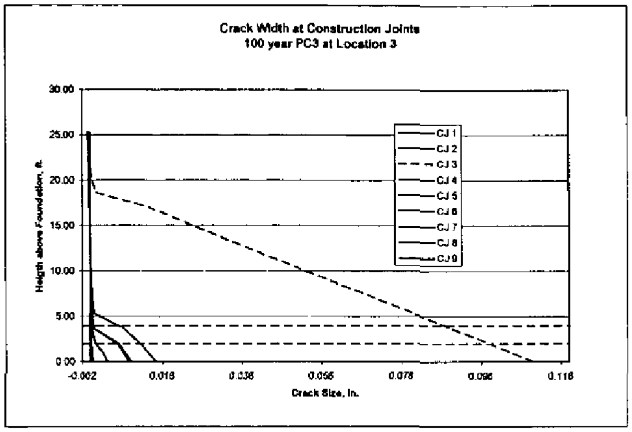


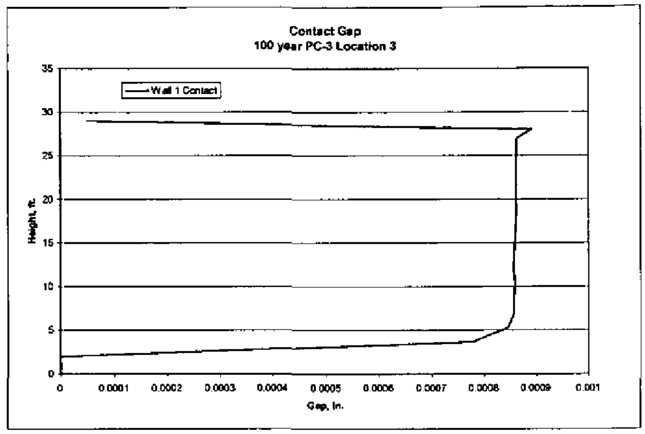


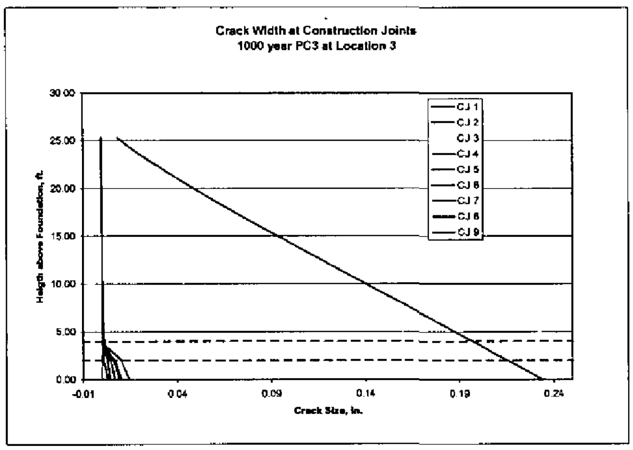


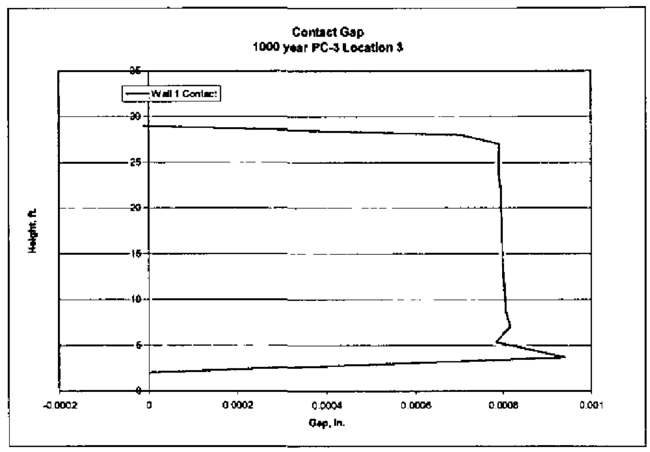


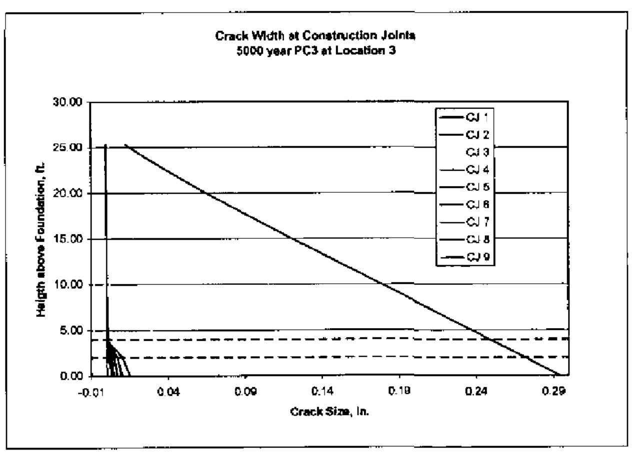


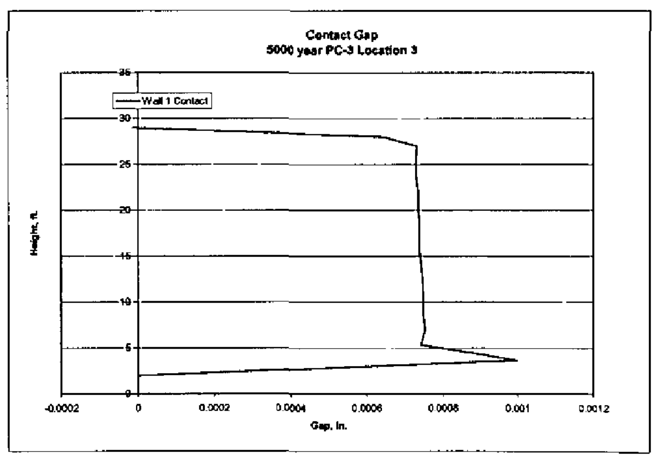

Crack Width at Construction Joints
100 year PC3 at Location 3
Heigth above Foundation, ft.
Crack Size, In.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

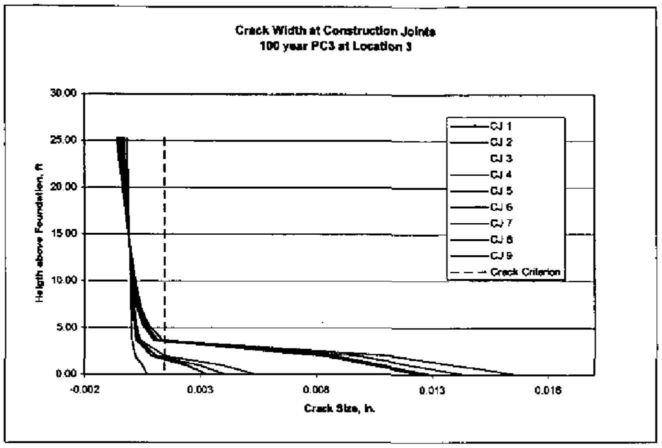

Contact Gap
100 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, In.

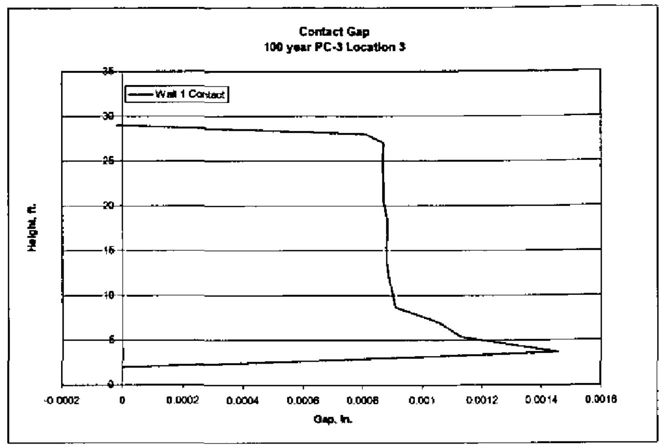

Crack Width at Construction Joints
1000 year PC3 at Location 3
Heigth above Foundation, ft.
Crack Size, In.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

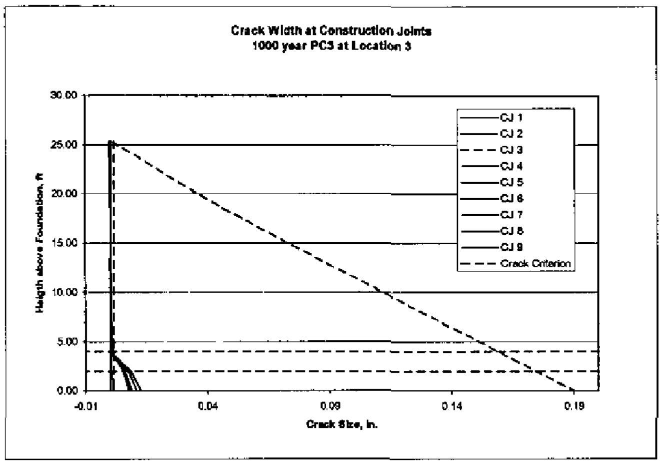

Contact Gap
1000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, In.

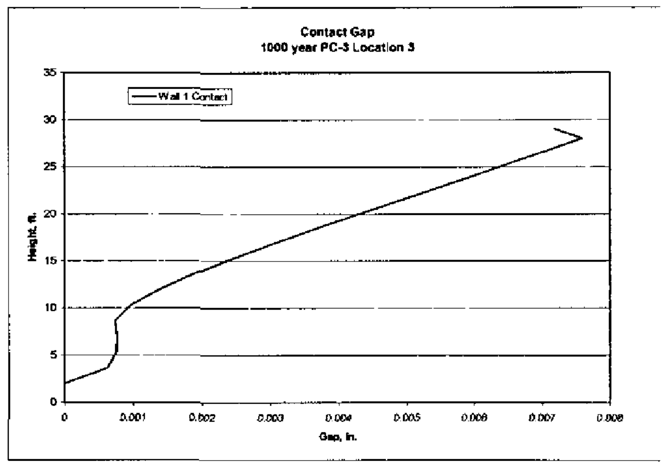

Crack Width at Construction Joints
5000 year PC3 at Location 3
Heigth above Foundation, ft.
Crack Size, In.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

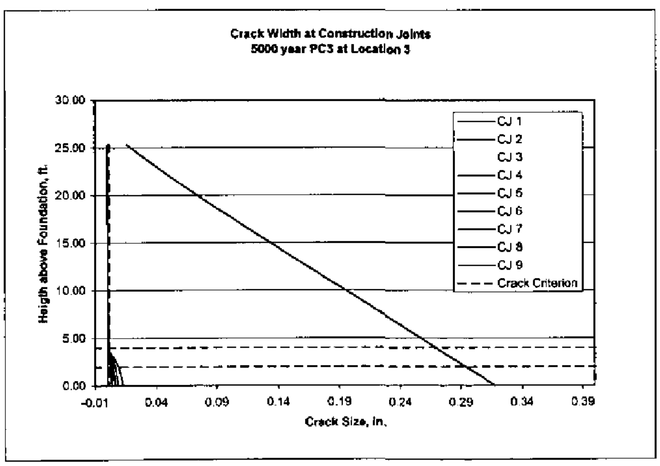

Contact Gap
5000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, In.

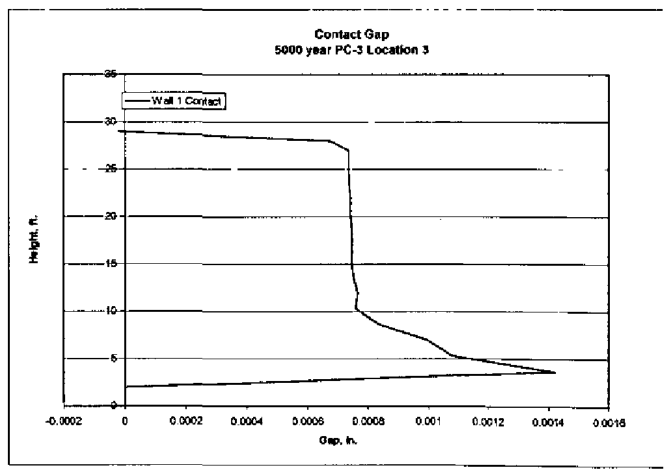

Crack Width at Construction Joints
100 year PC3 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion


Contact Gap
100 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

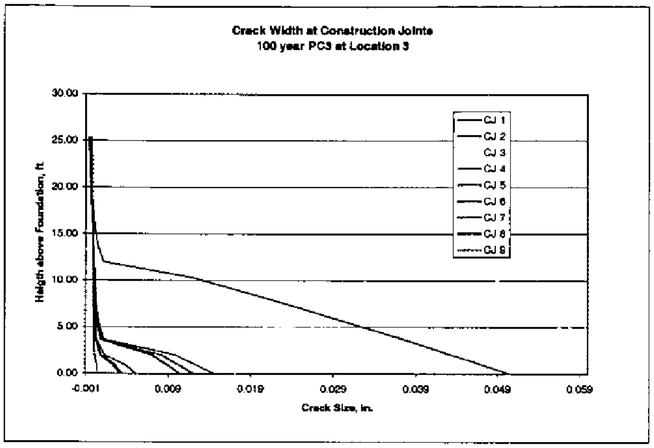

Crack Width at Construction Joints
1000 year PC3 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion

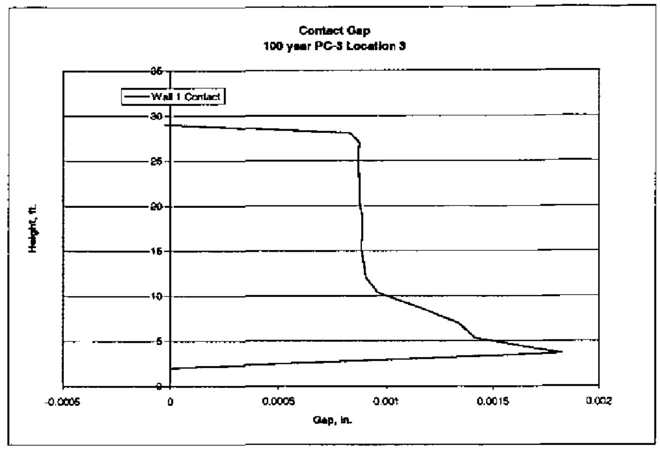

Contact Gap
1000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

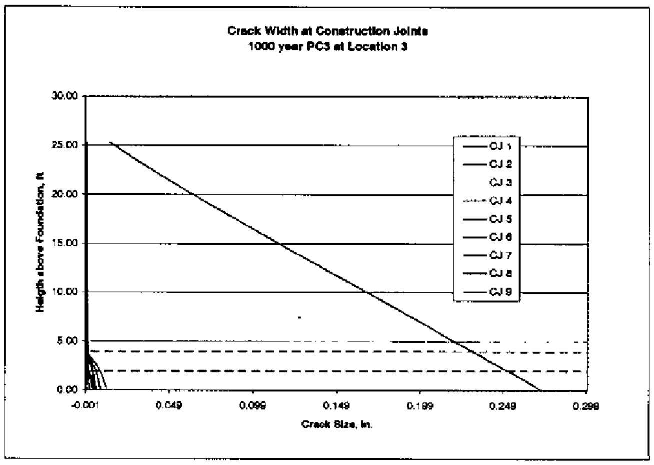

Crack Width at Construction Joints
5000 year PC3 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion

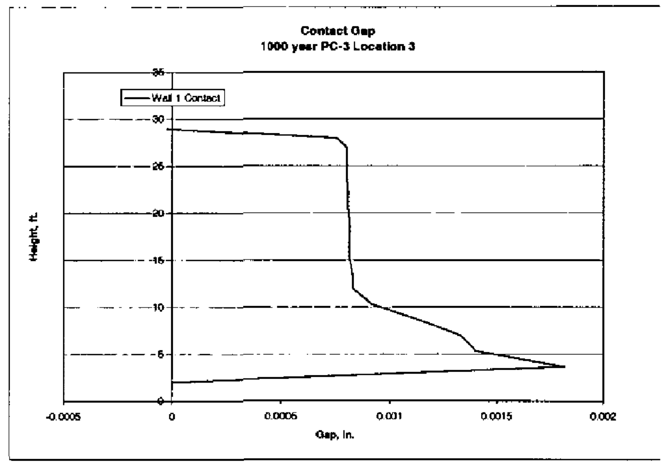

Contact Gap
5000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

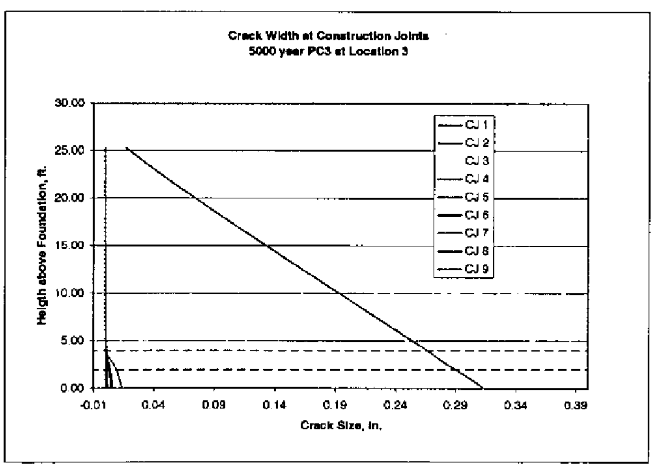
PC-3 Differential Settlement - Location 3
High Grout Modulus

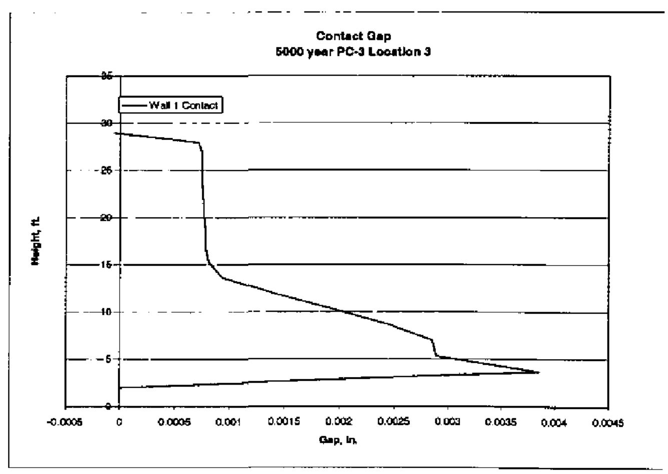












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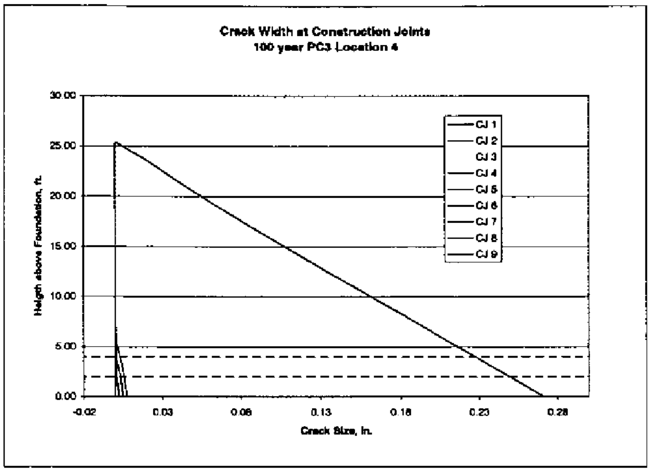
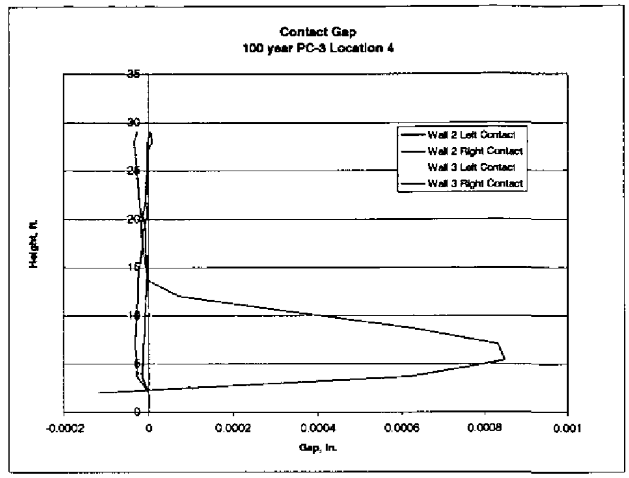
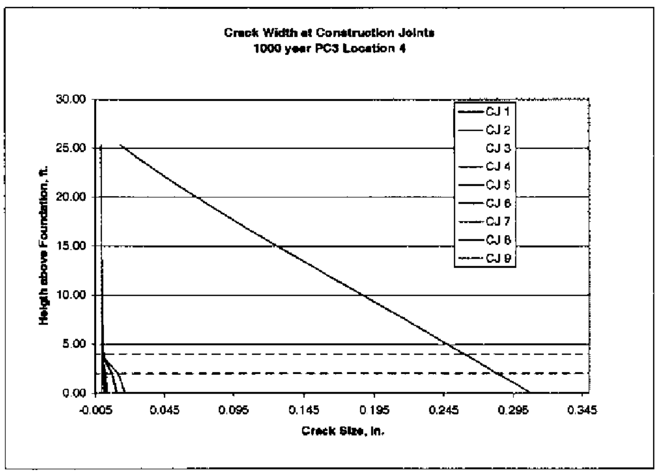
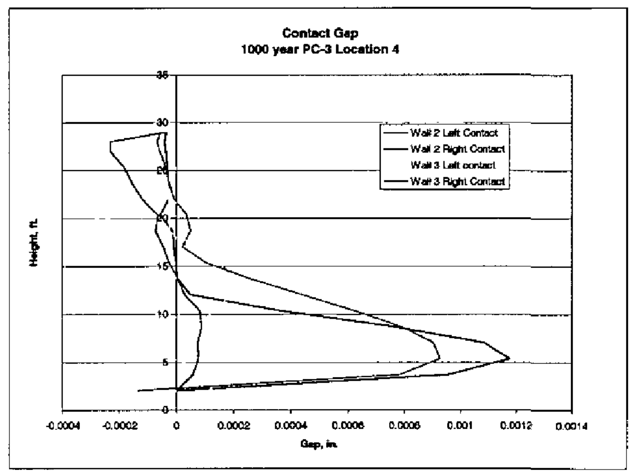
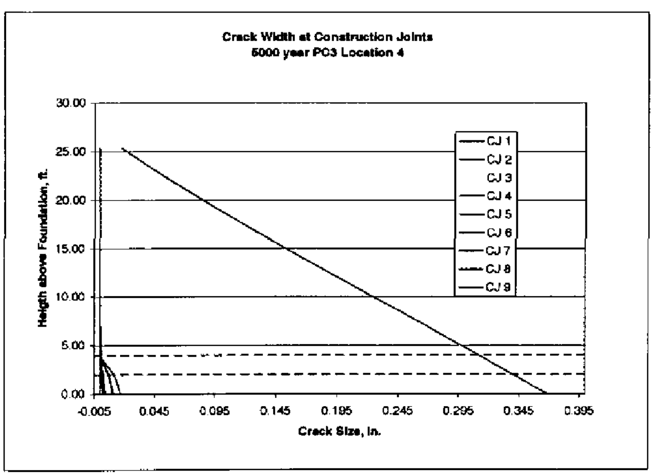
PC-3 Differential Settlement - Location 4
Low Grout Modulus

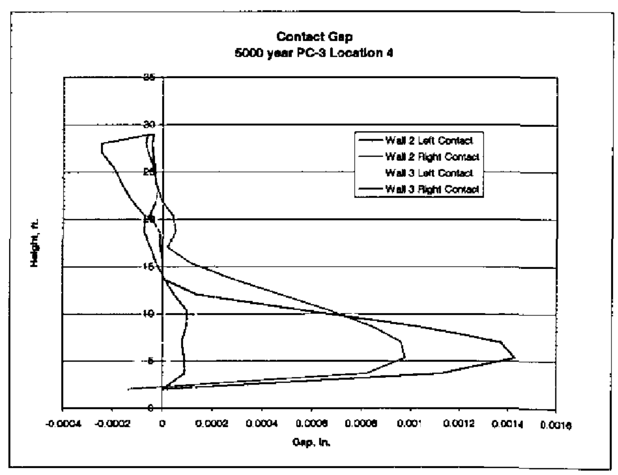




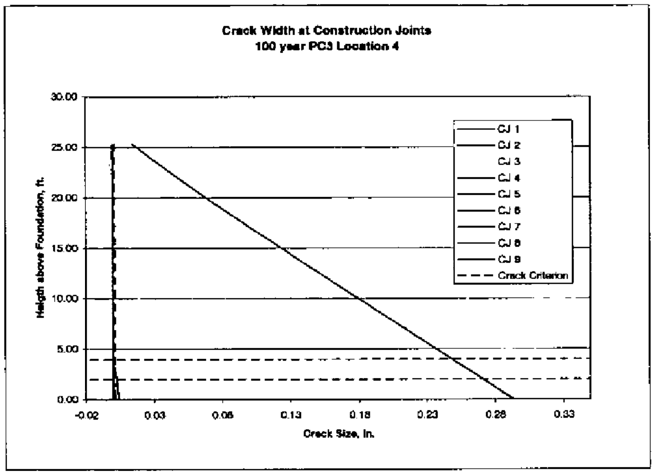


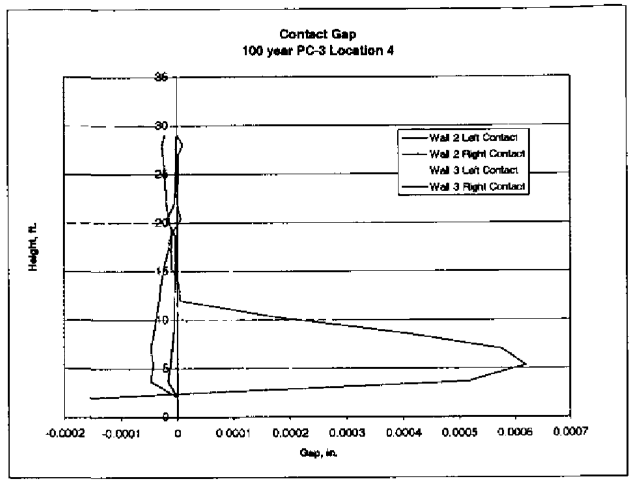


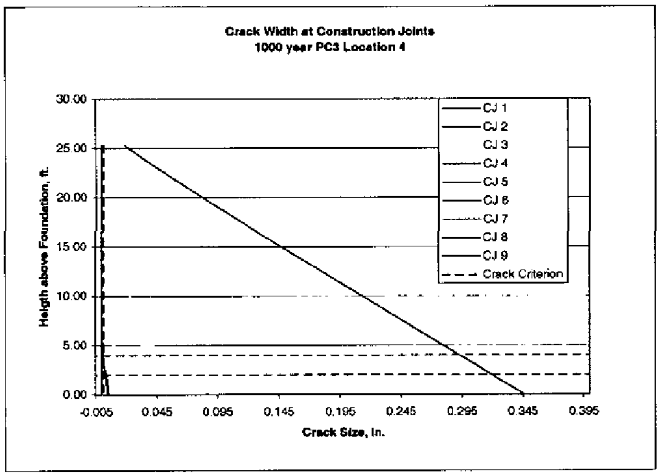


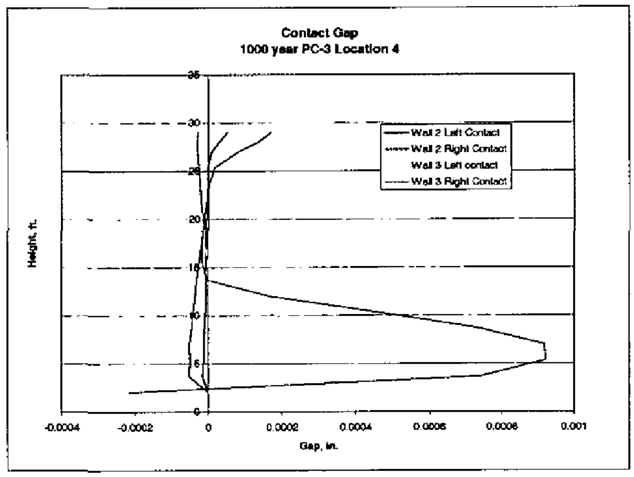


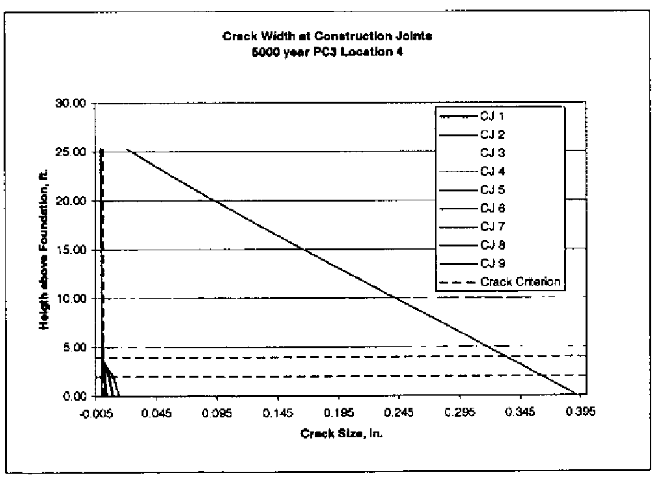
PC-3 Differential Settlement - Location 4
Mean Grout Modulus

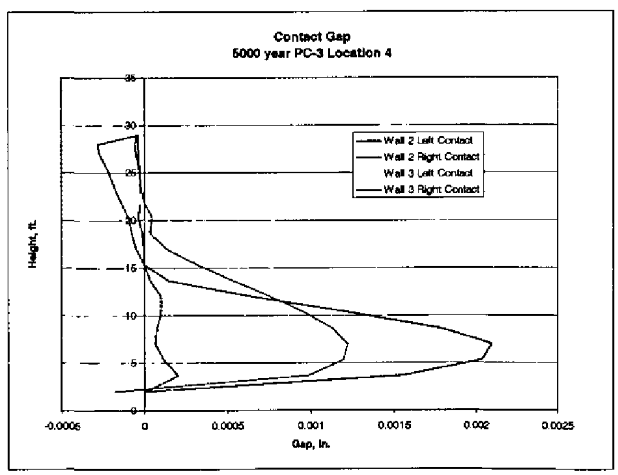




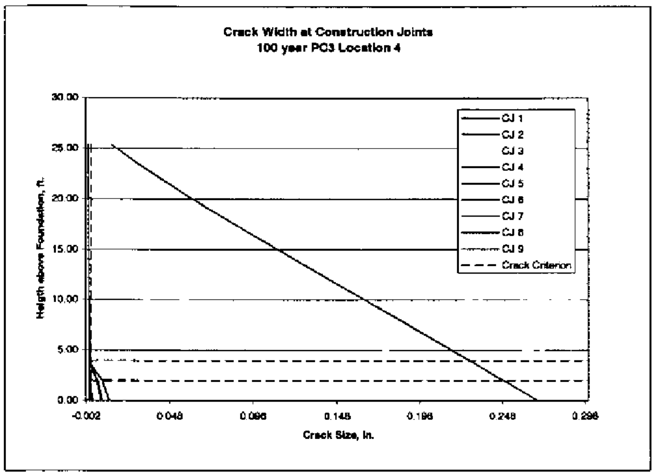


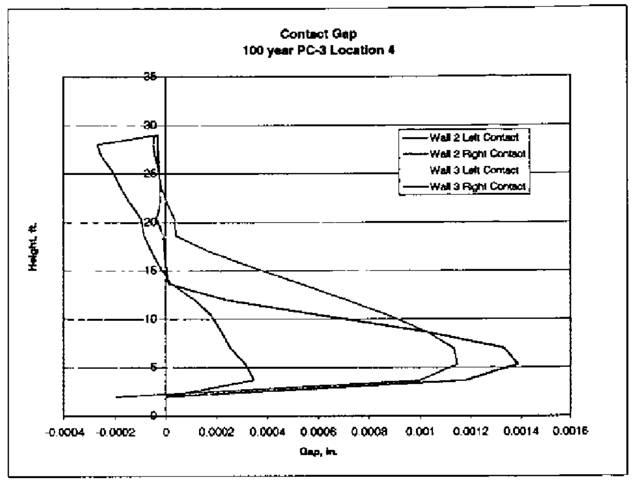


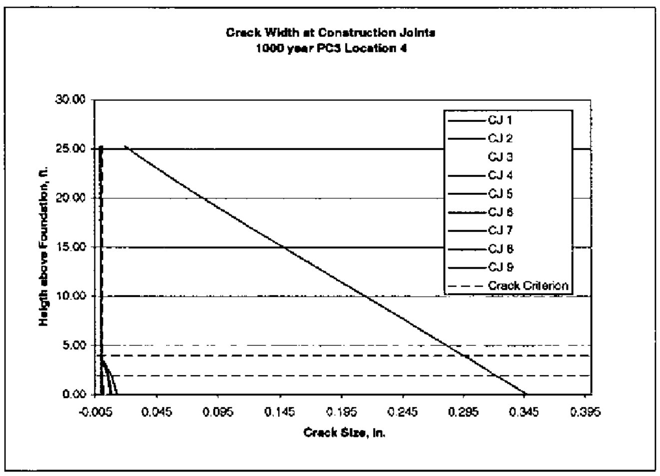


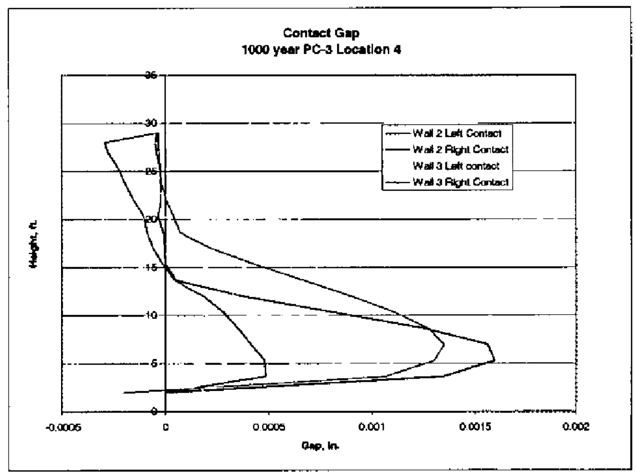


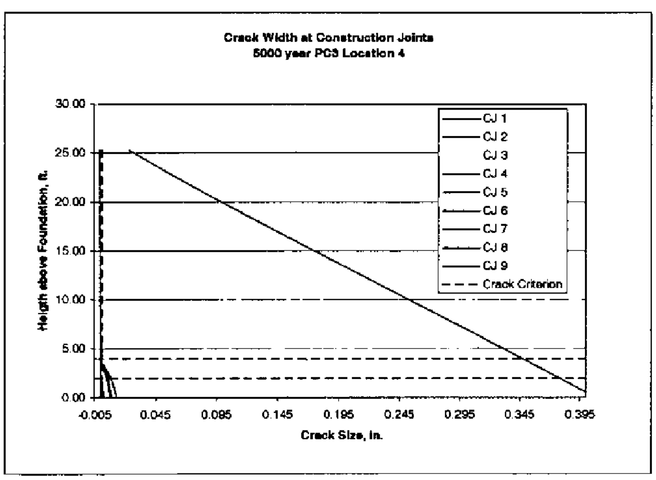
PC-3 Differential Settlement - Location 4
High Grout Modulus

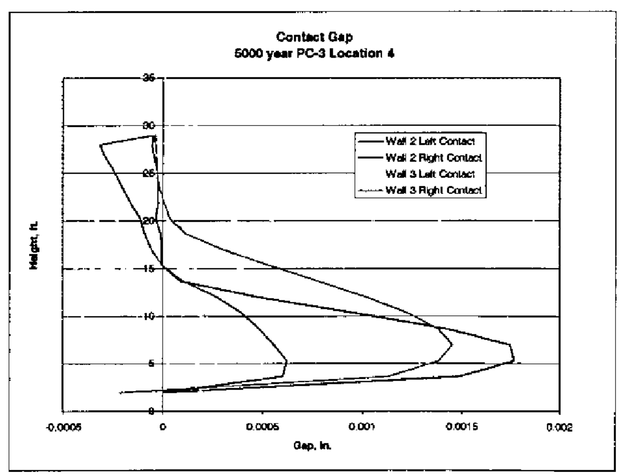




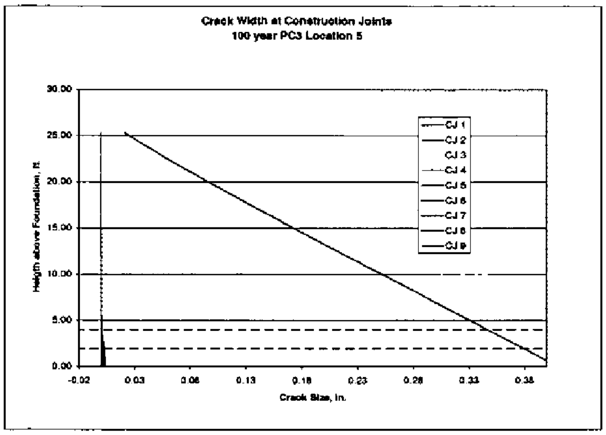


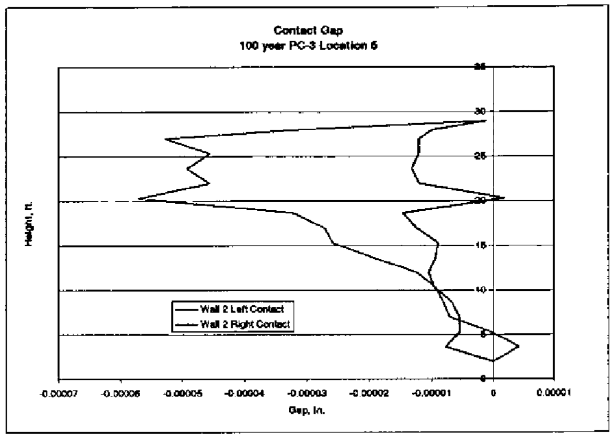


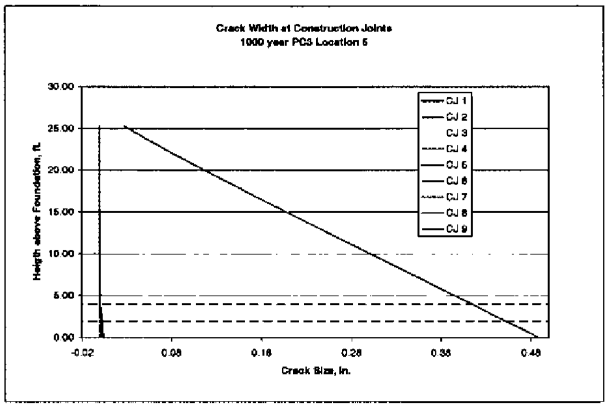


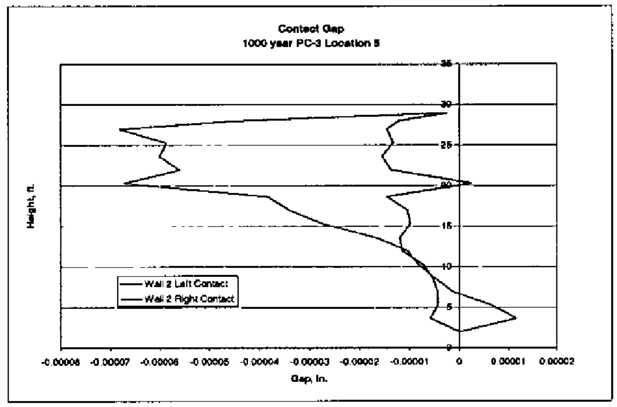


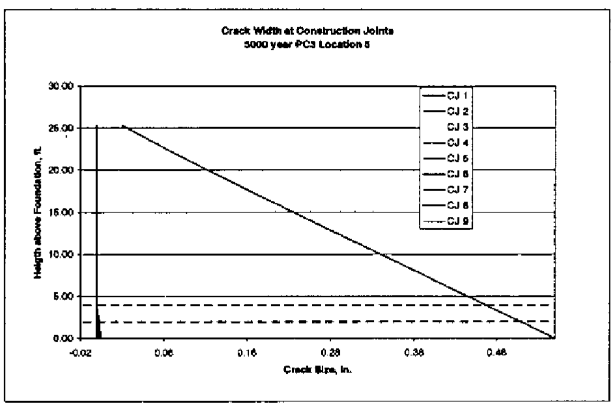
PC-3 Differential Settlement - Location 5
Low Grout Modulus

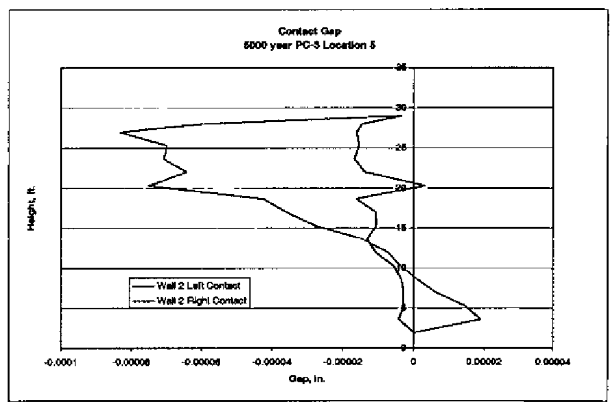




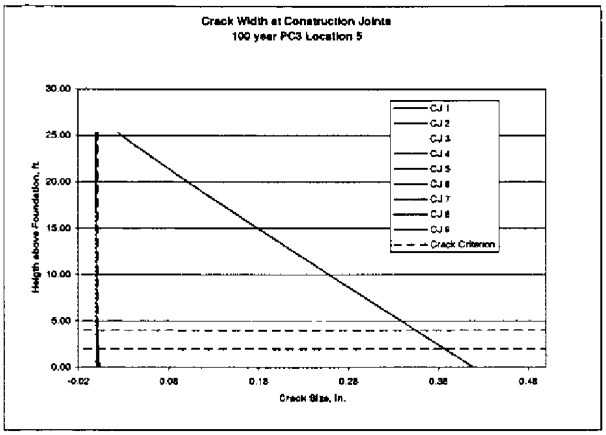


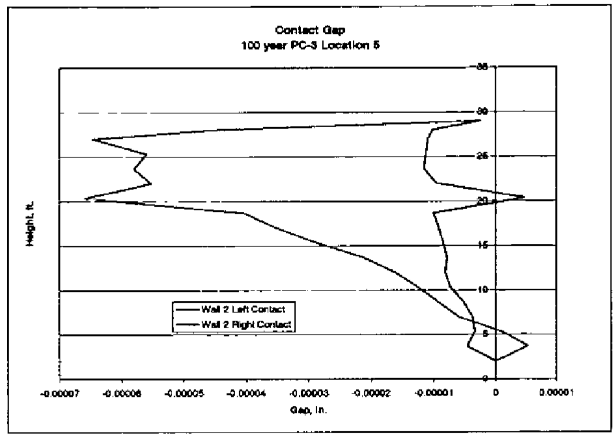


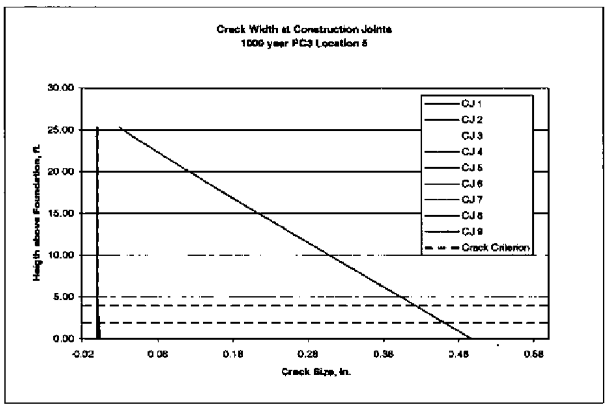


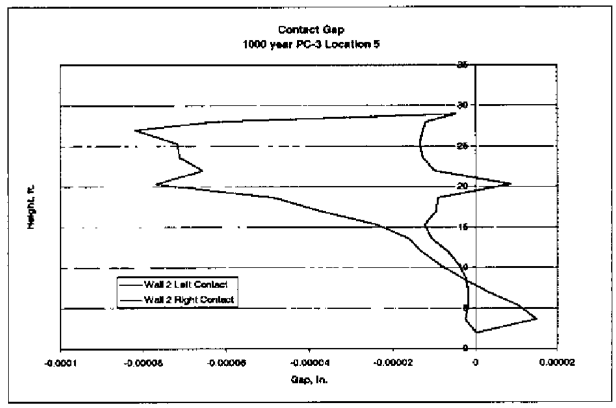


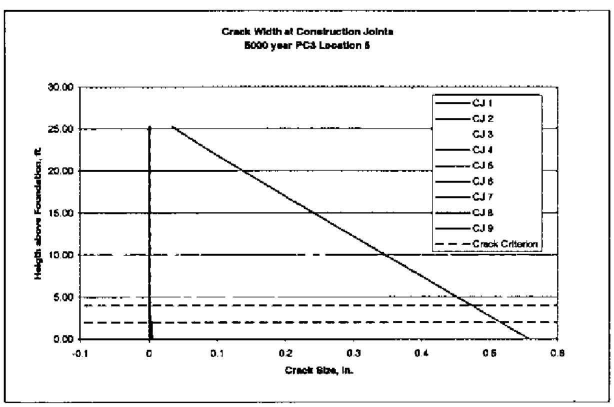
PC-3 Differential Settlement - Location 5
Mean Grout Modulus

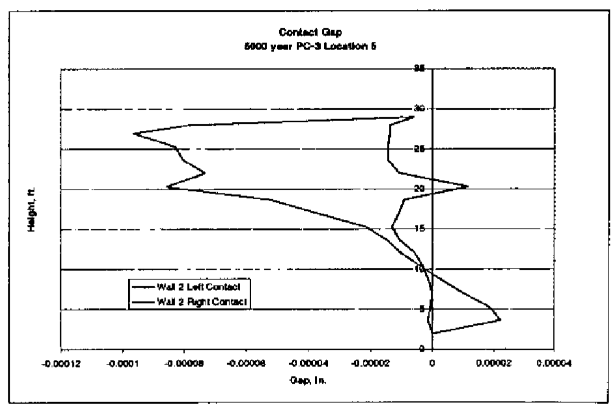




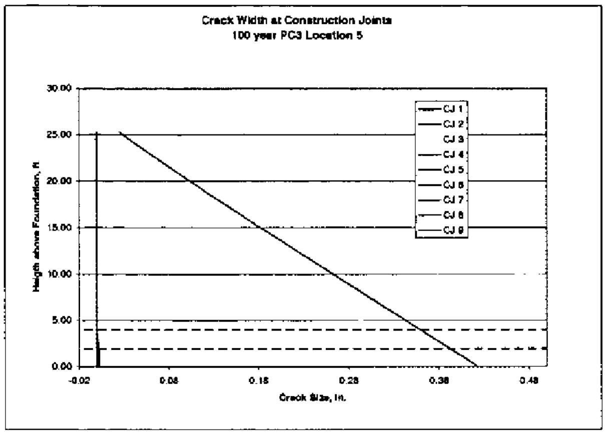


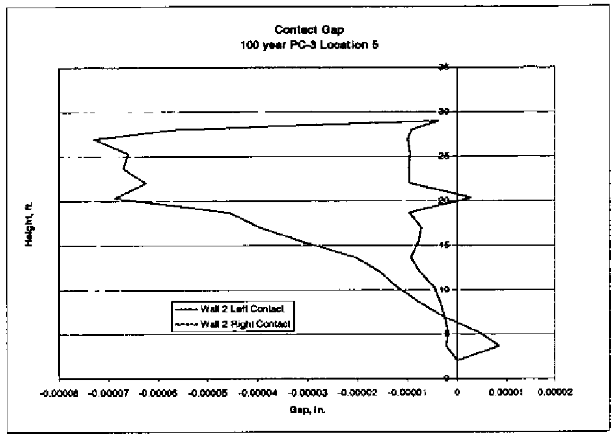


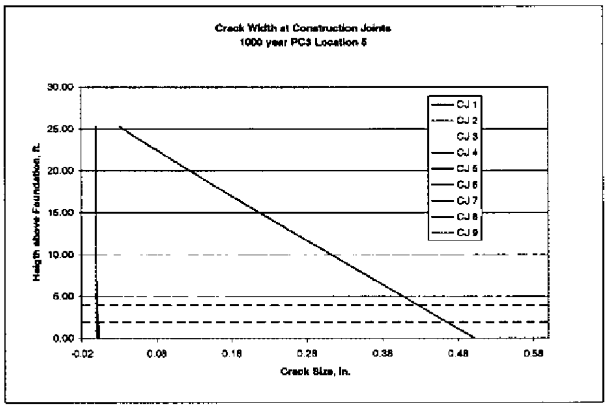


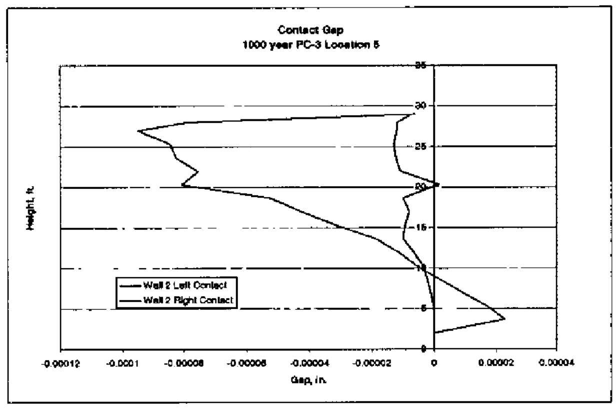


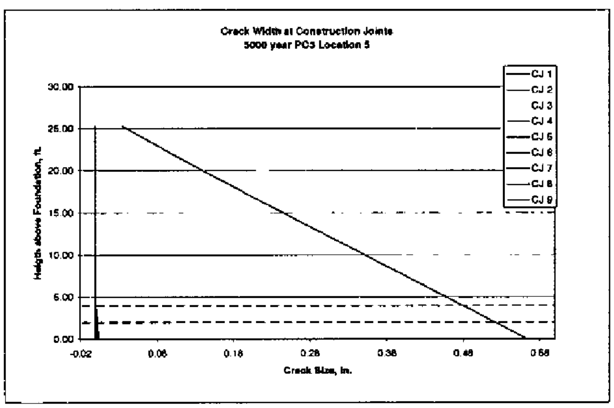
PC-3 Differential Settlement - Location 5
High Grout Modulus

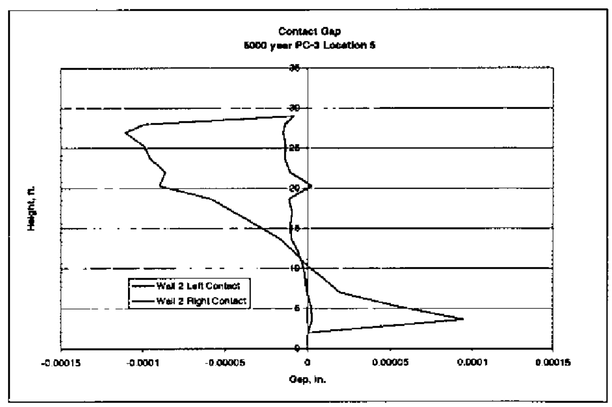




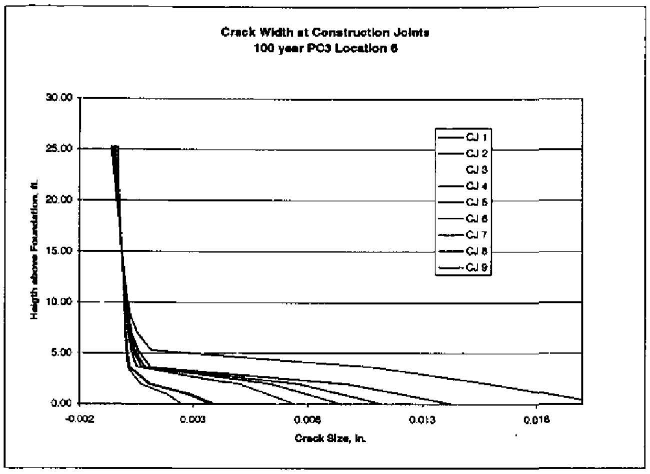


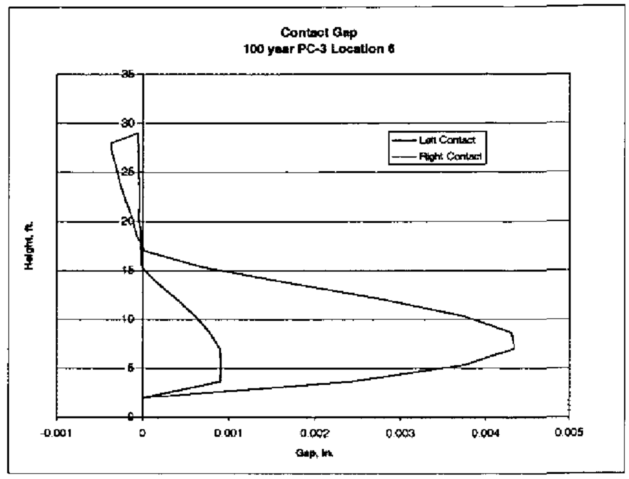


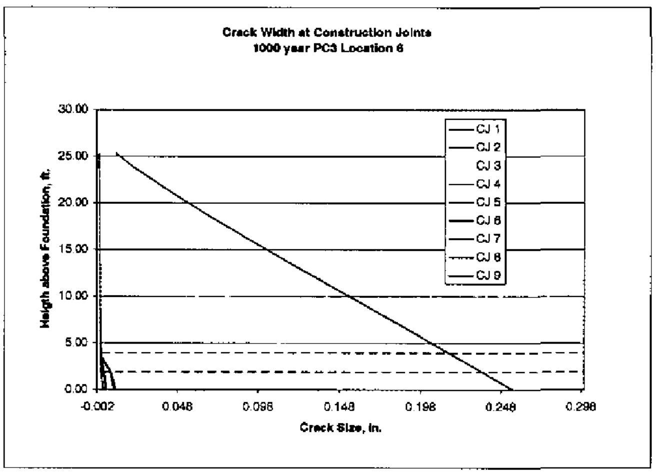


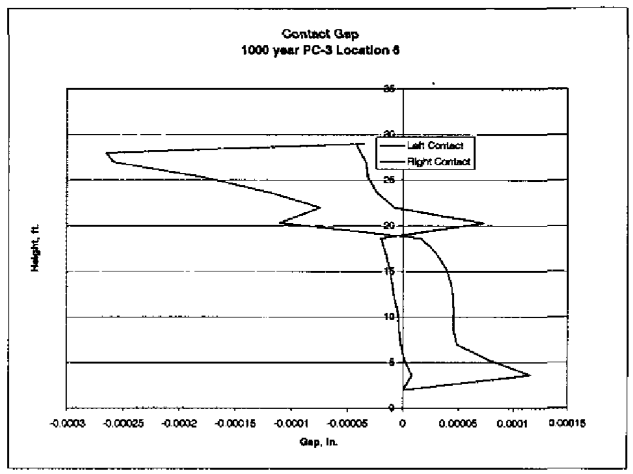


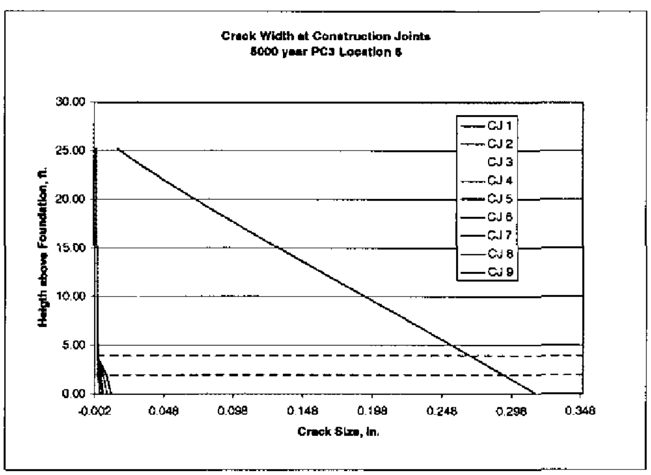
PC-3 Differential Settlement - Location 6
Low Grout Modulus

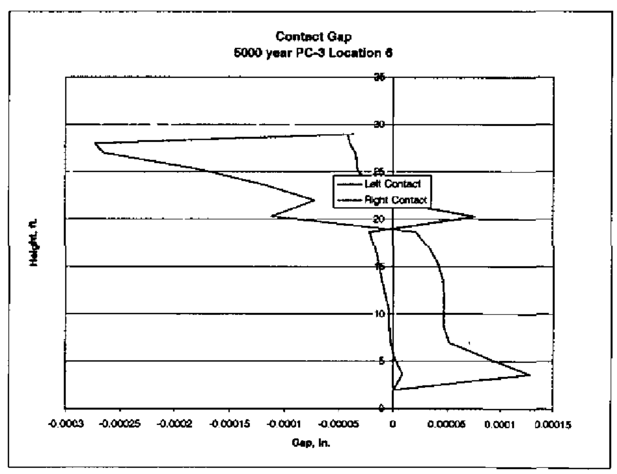












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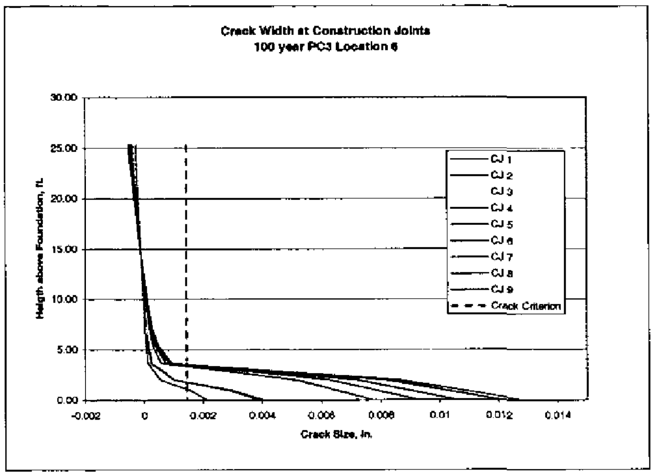
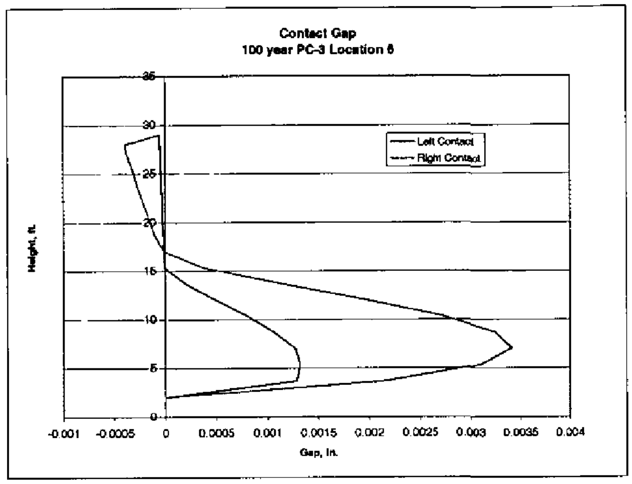
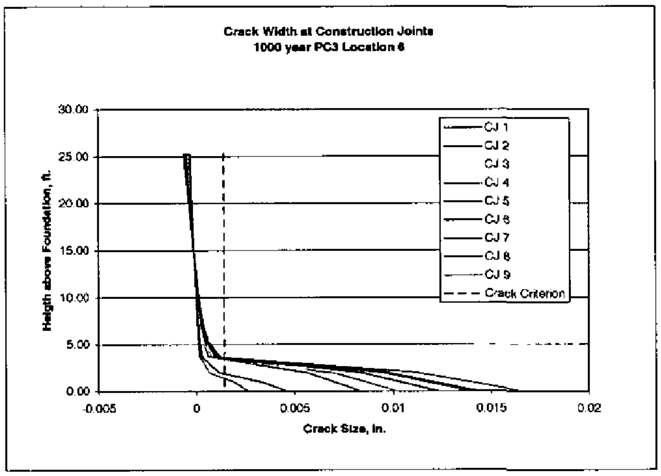
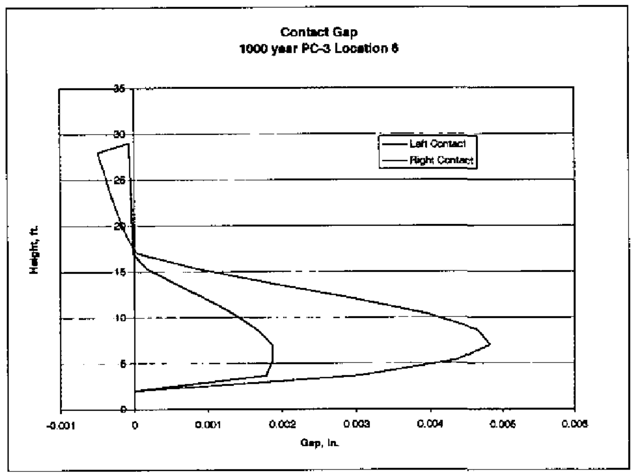
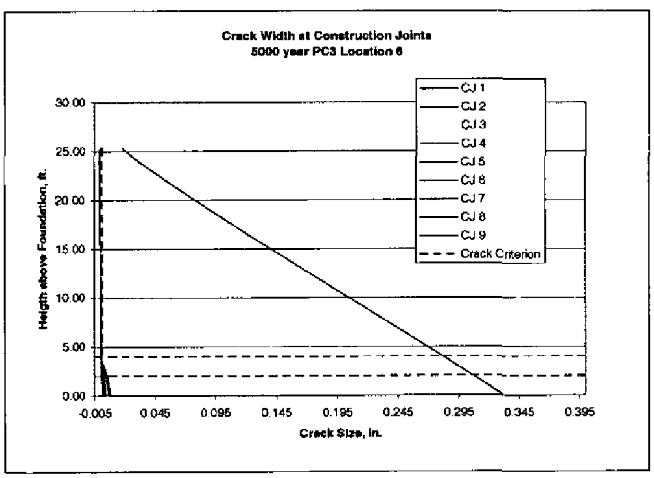
PC-3 Differential Settlement - Location 6
Mean Grout Modulus

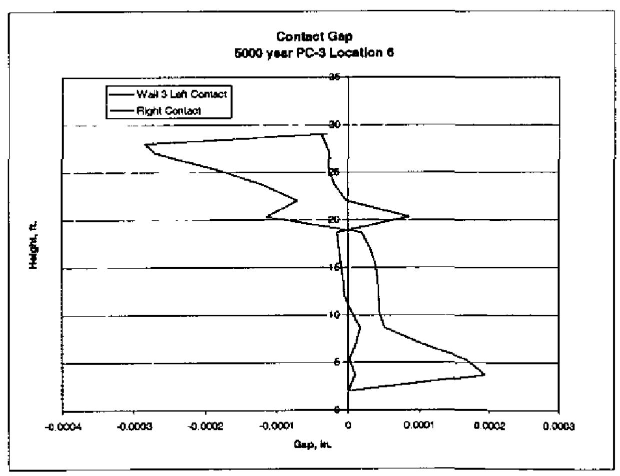




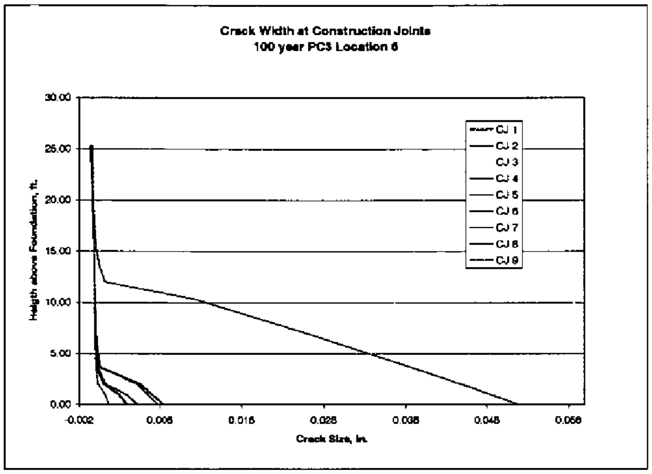


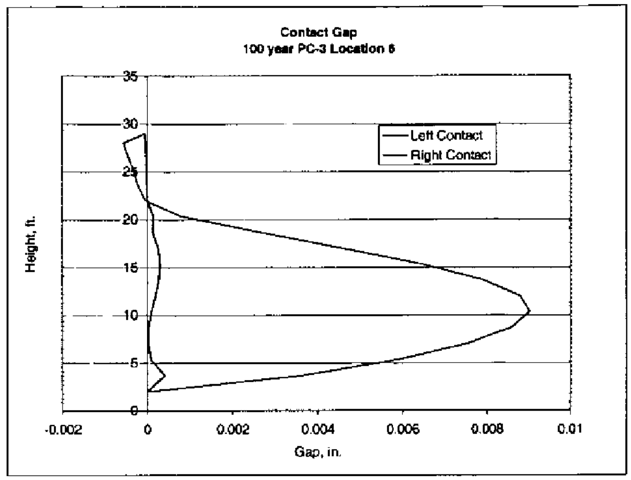


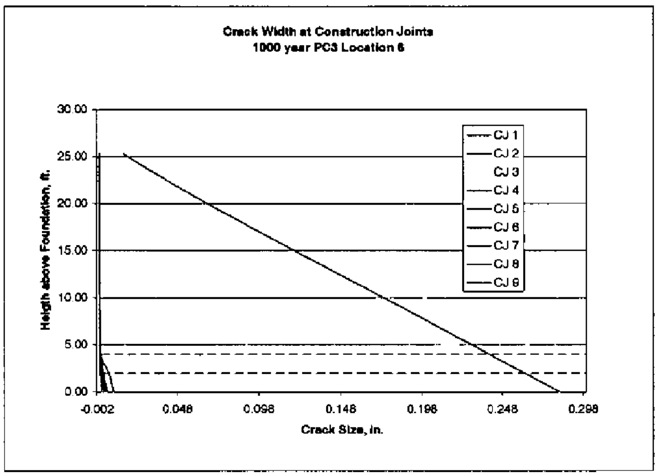


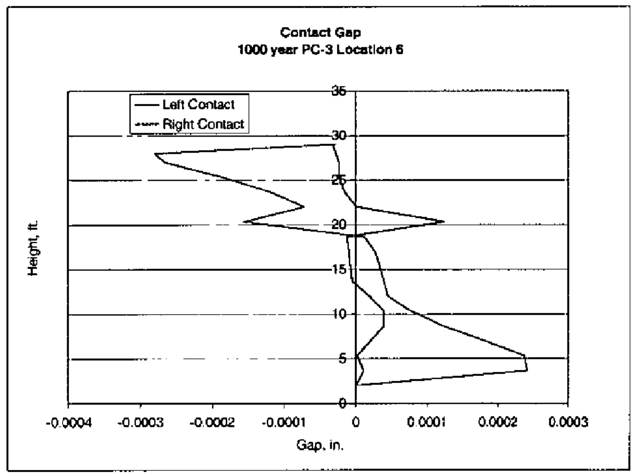


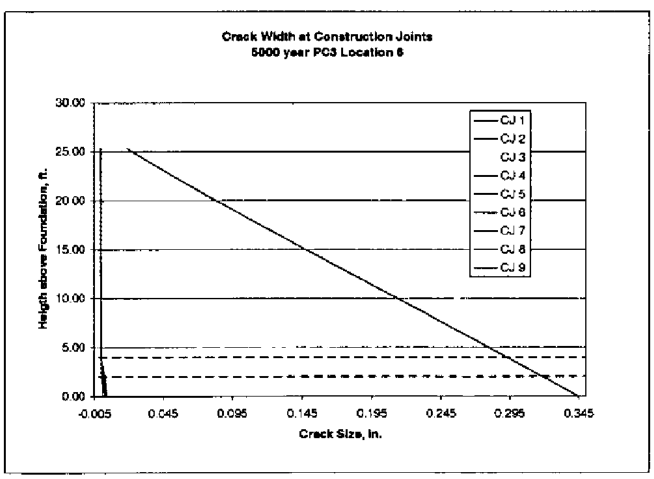
PC-3 Differential Settlement - Location 6
High Grout Modulus

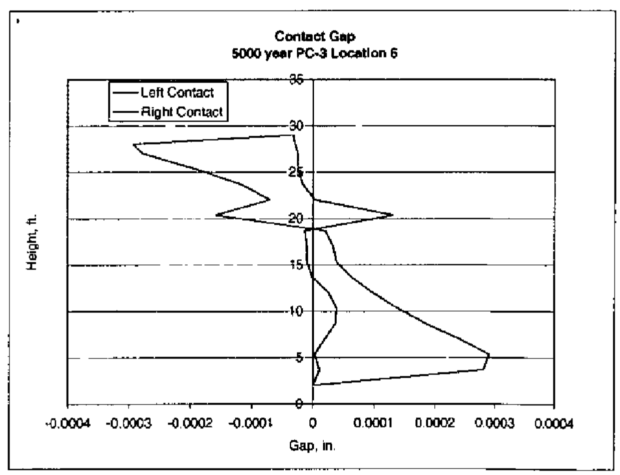




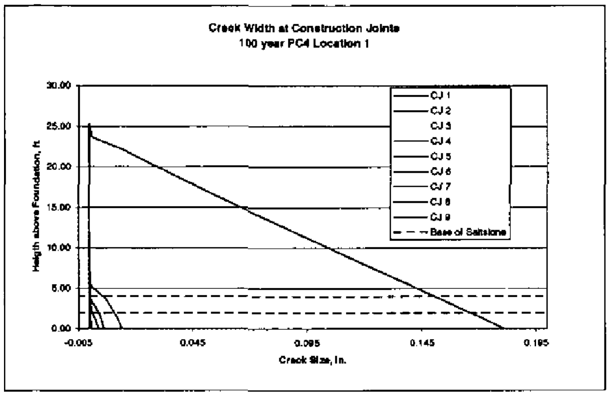


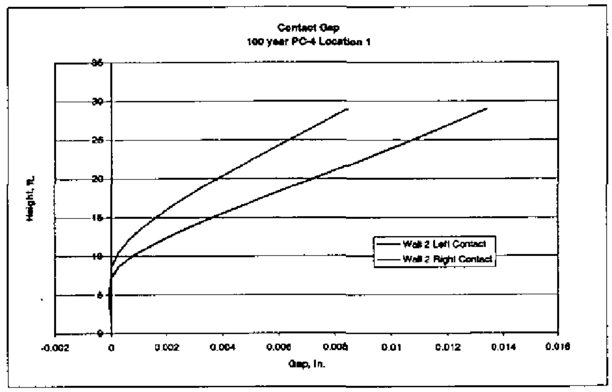


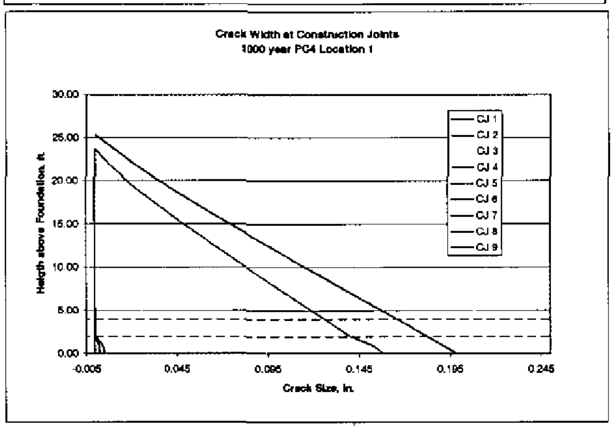


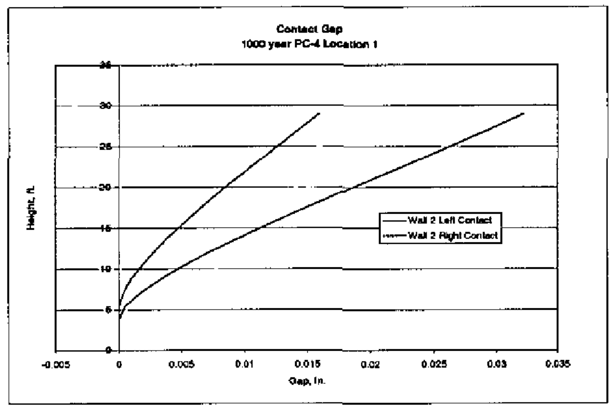


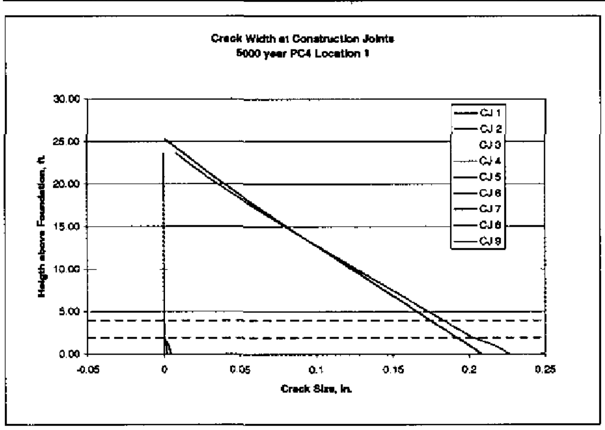
PC-4 Differential Settlement - Location 1
Low Grout Modulus

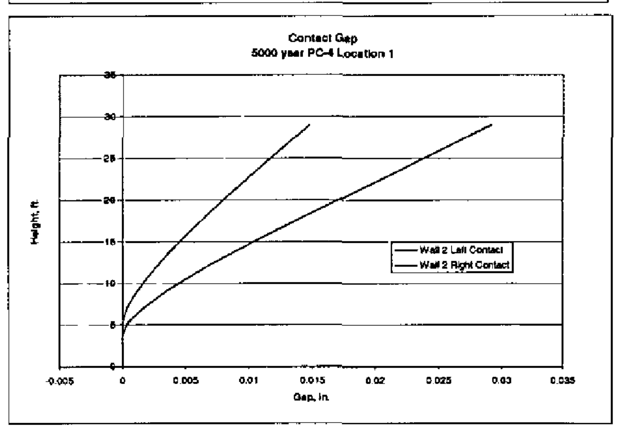




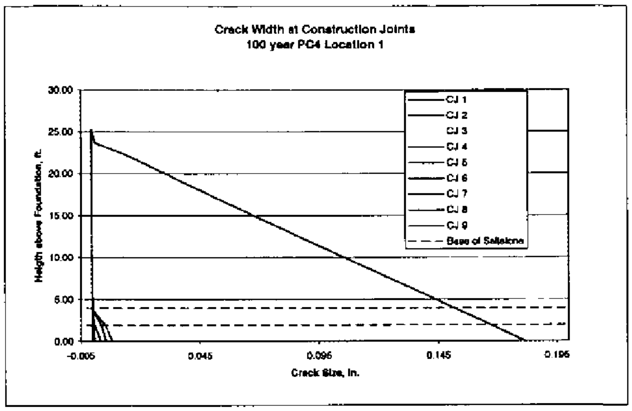


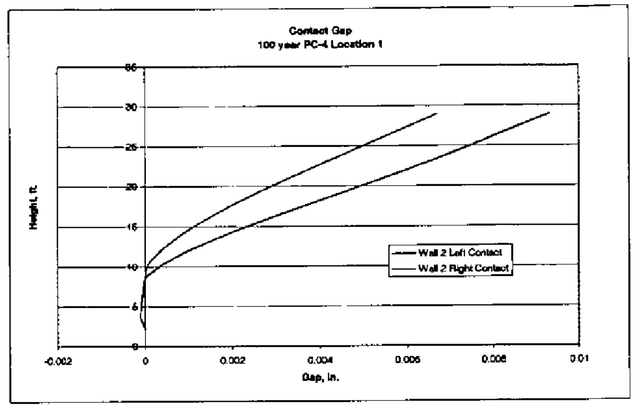


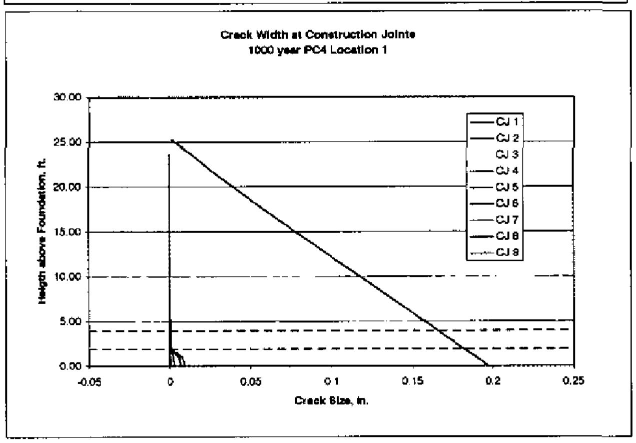


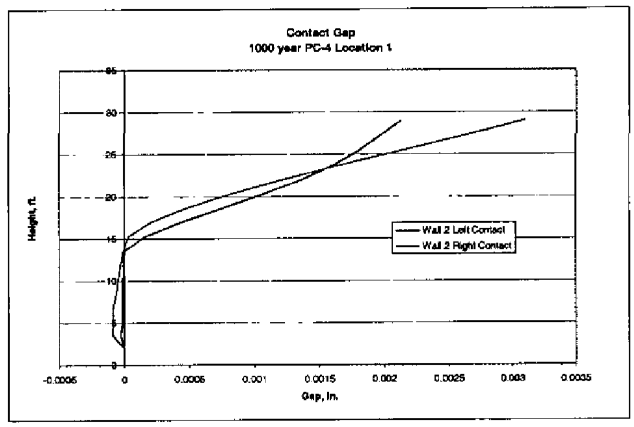


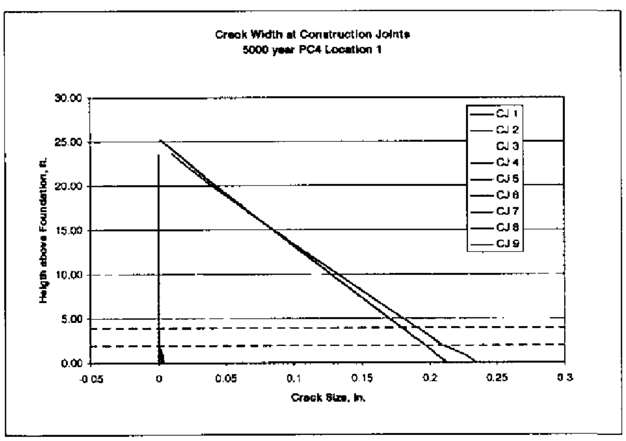
PC-4 Differential Settlement - Location 1
Mean Grout Modulus

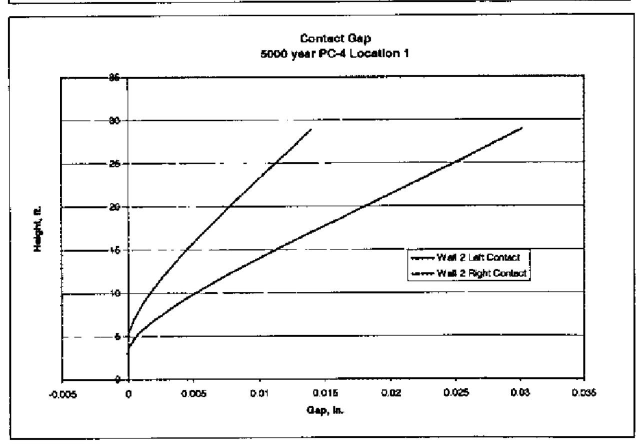




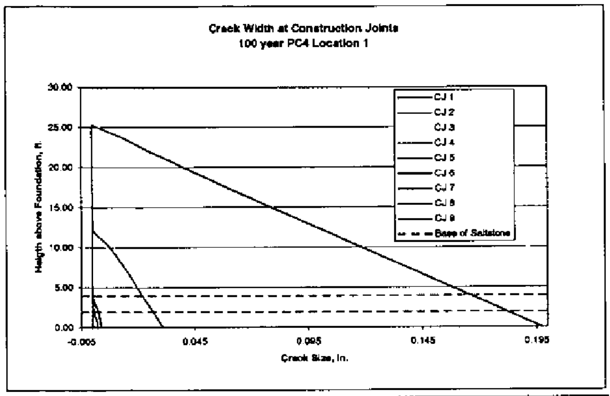


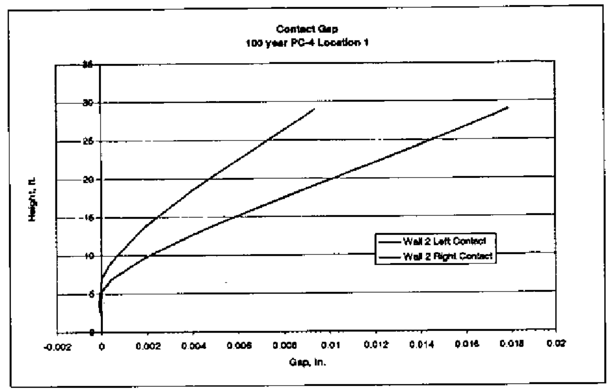


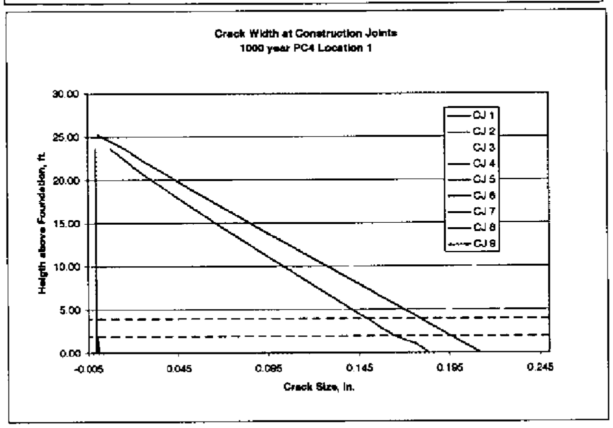


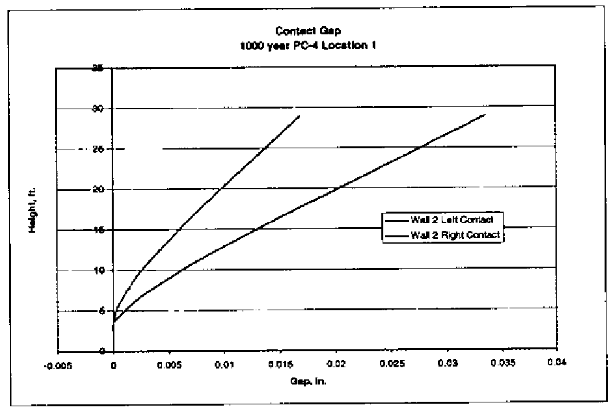


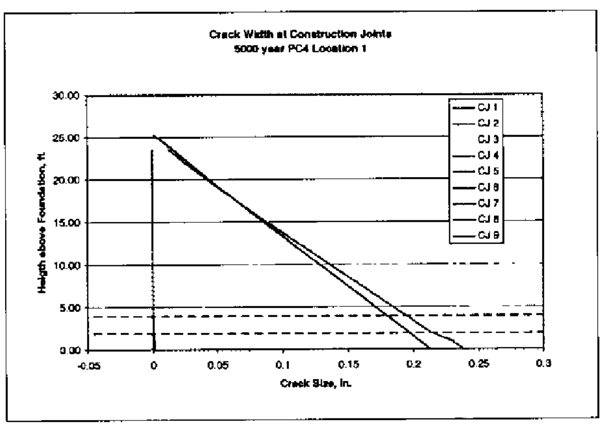
PC-4 Differential Settlement - Location 1
High Grout Modulus

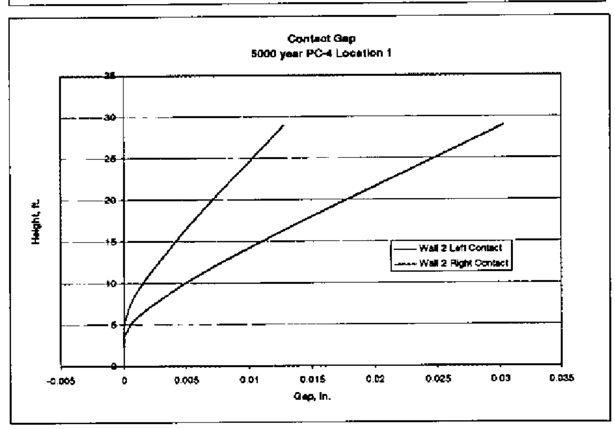




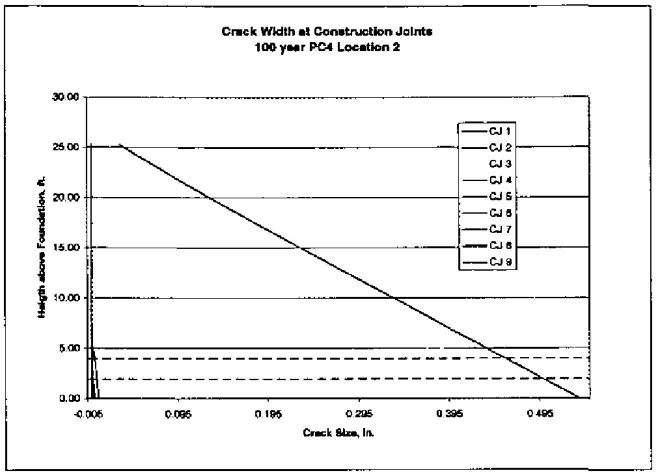


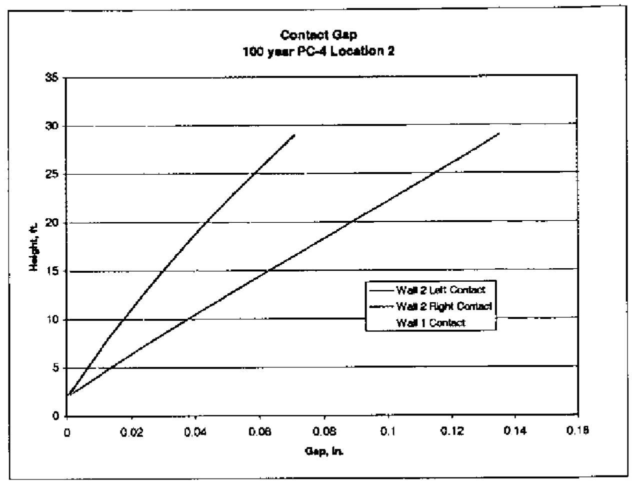


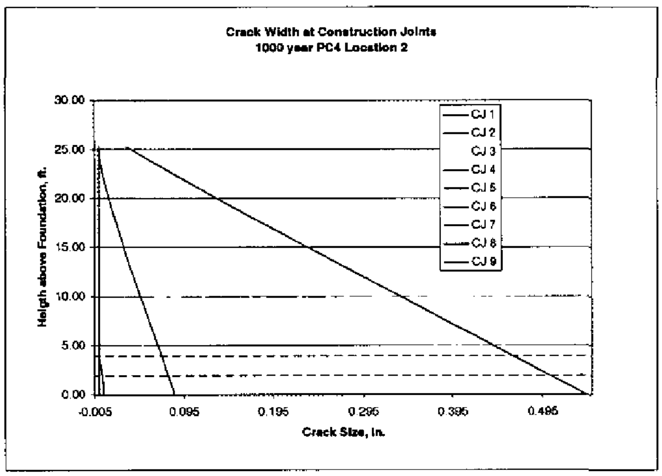


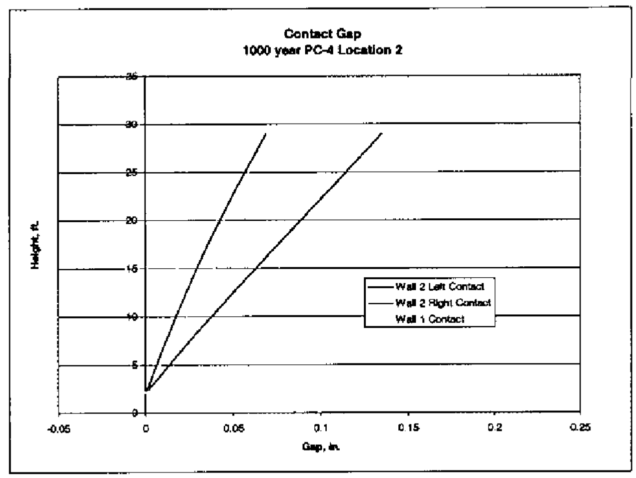


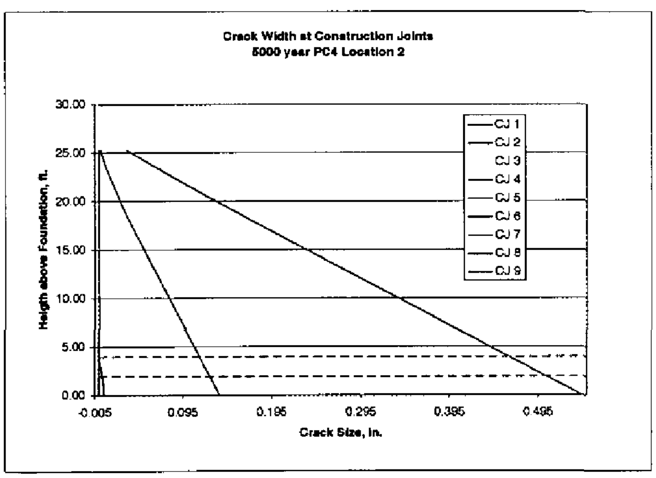
PC-4 Differential Settlement - Location 2
Low Grout Modulus

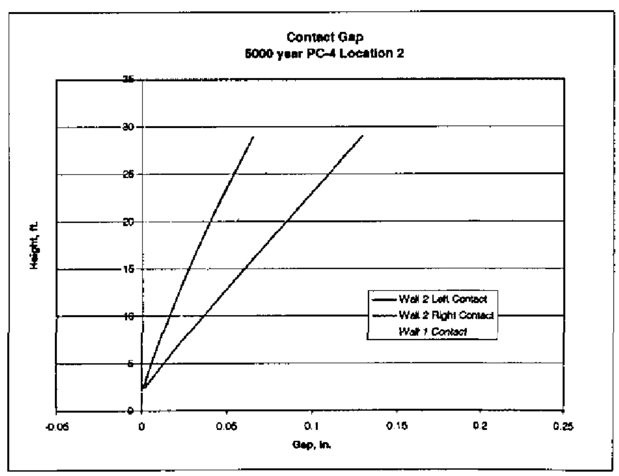




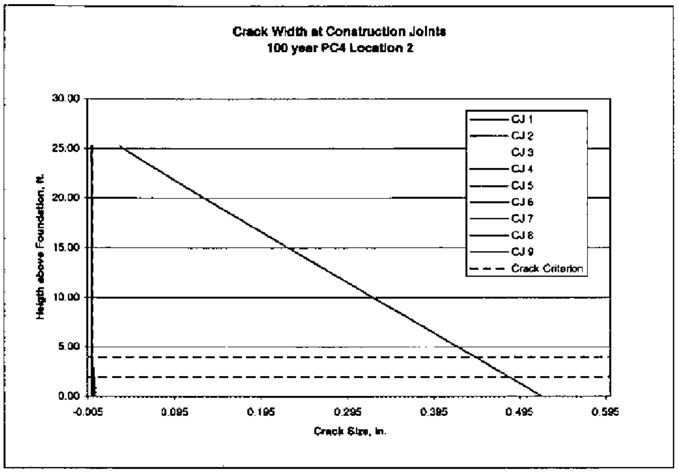


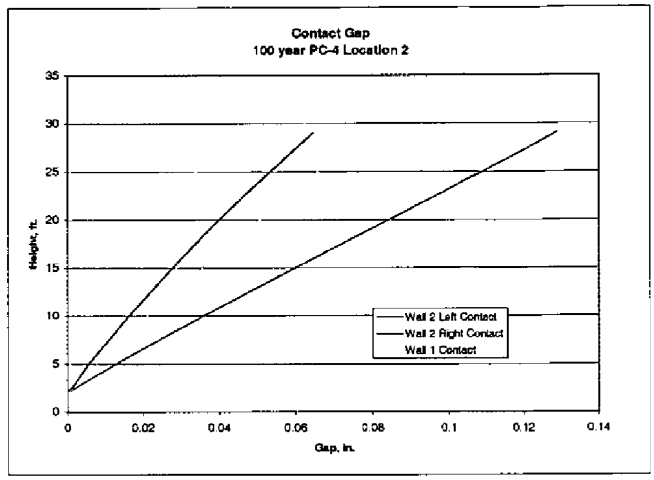


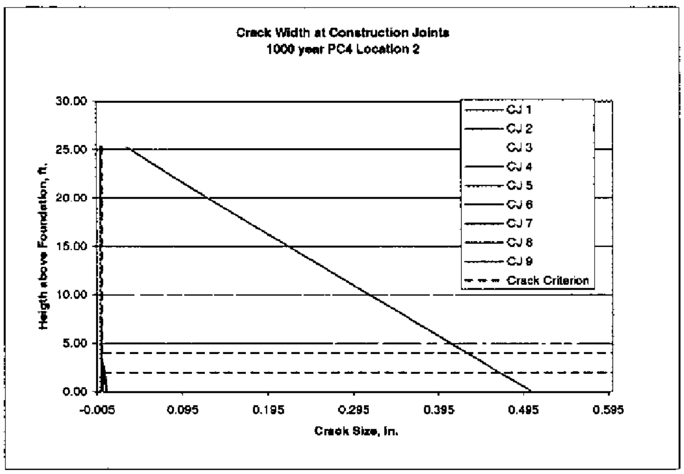


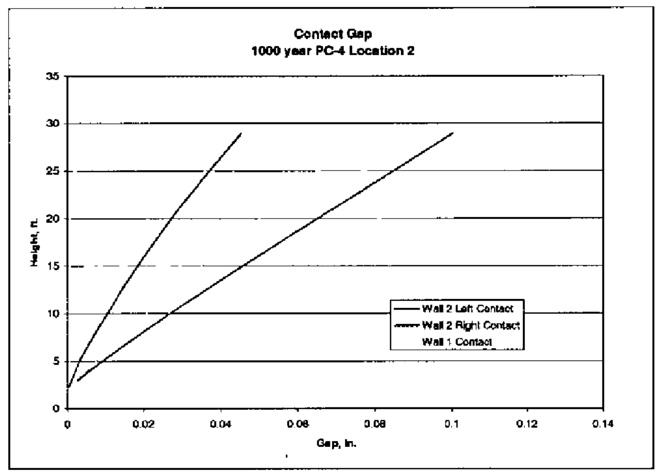


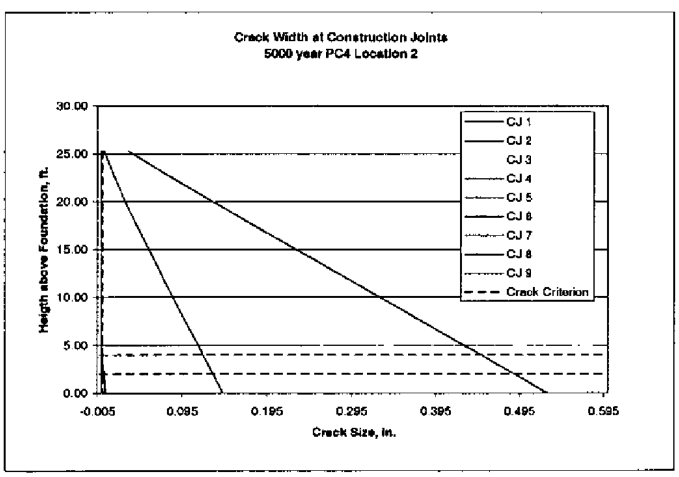
PC-4 Differential Settlement - Location 2
Mean Grout Modulus

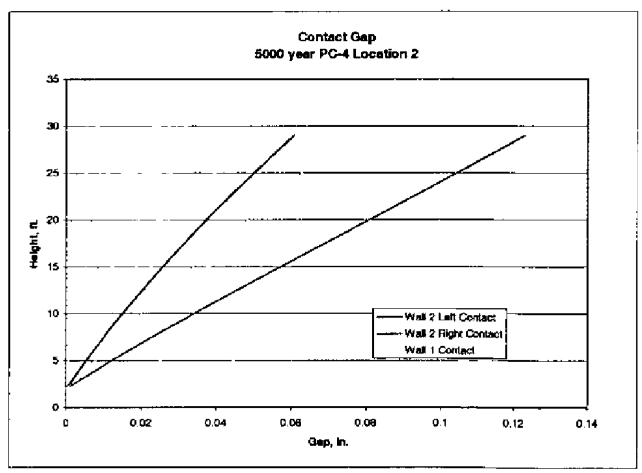












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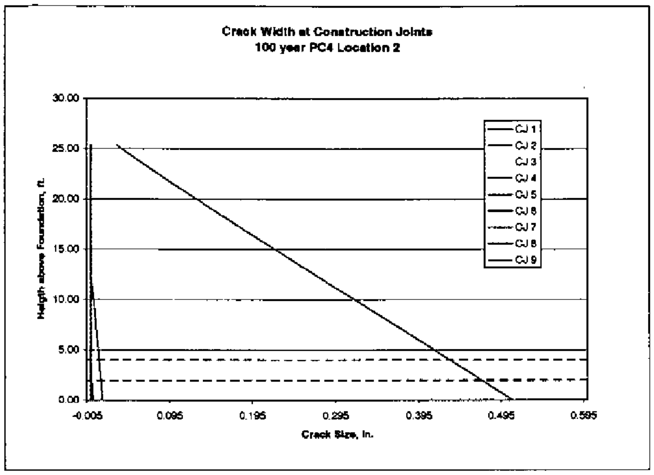
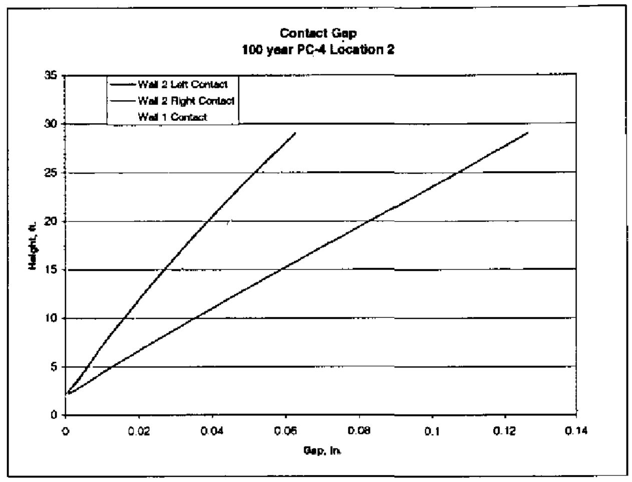
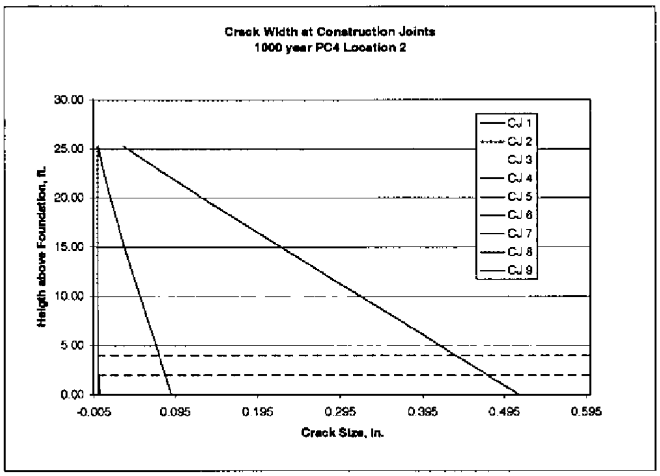
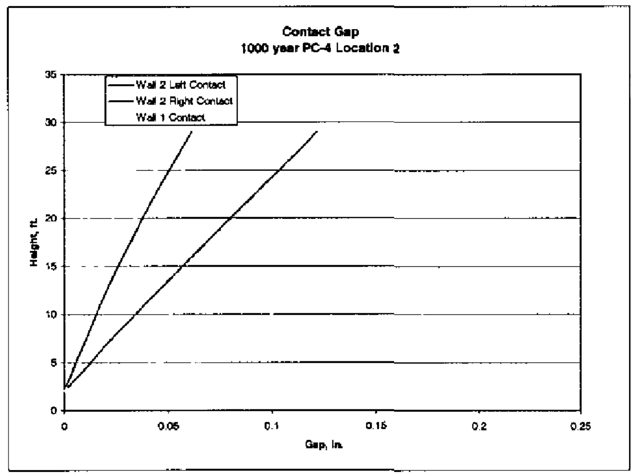
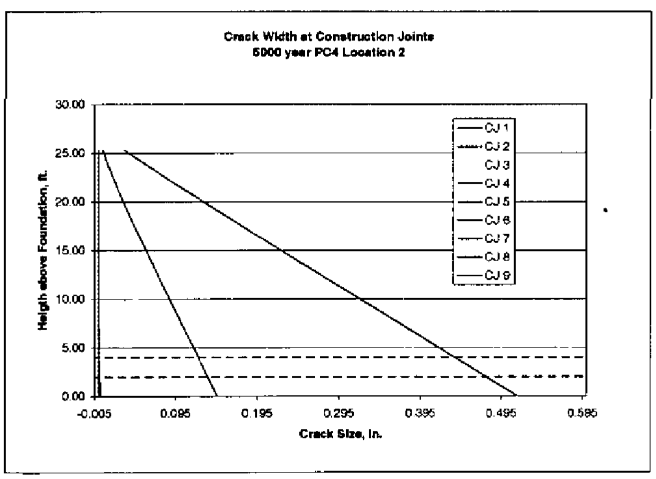
PC-4 Differential Settlement - Location 2
High Grout Modulus

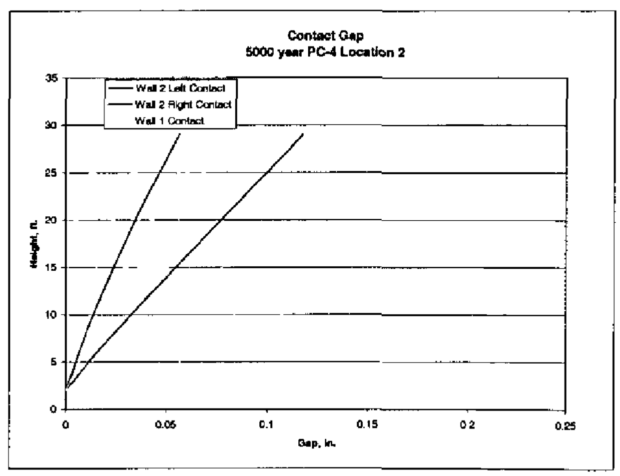


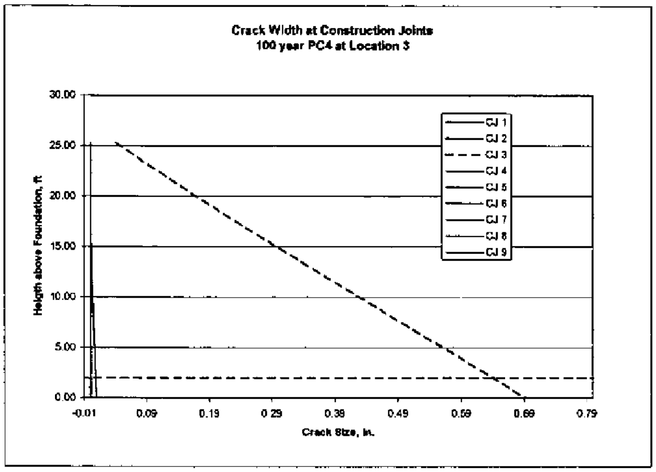


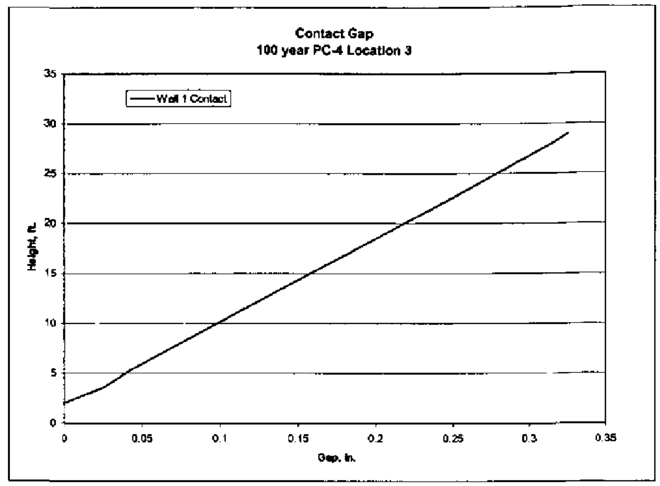


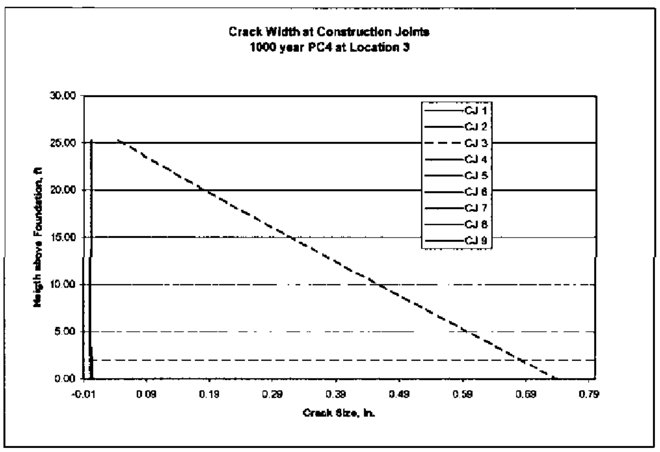


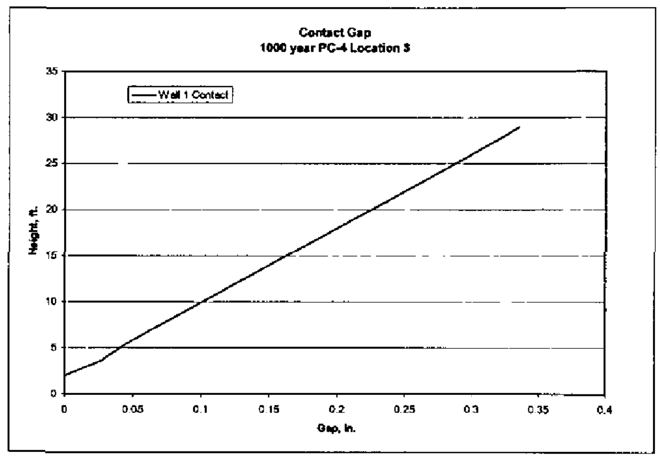


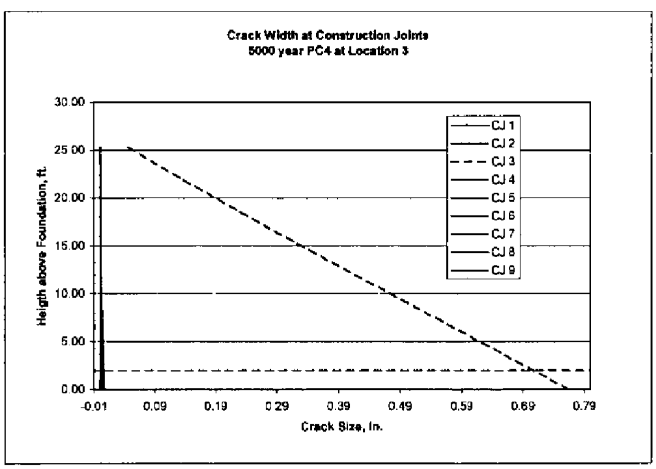


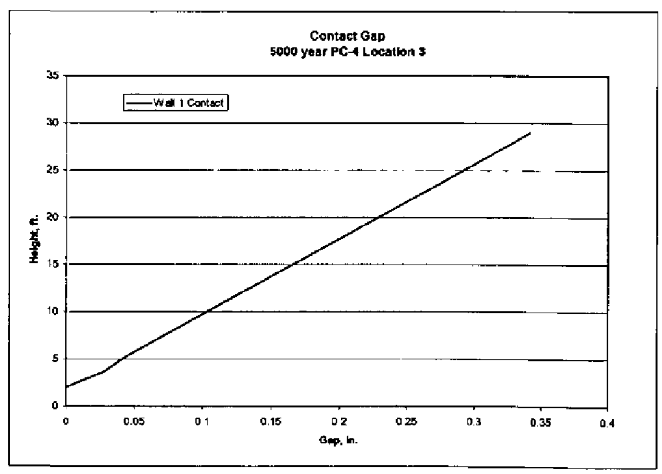

Crack Width at Construction Joints
100 year PC4 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Heigth above Foundation, ft
Crack Size, in.

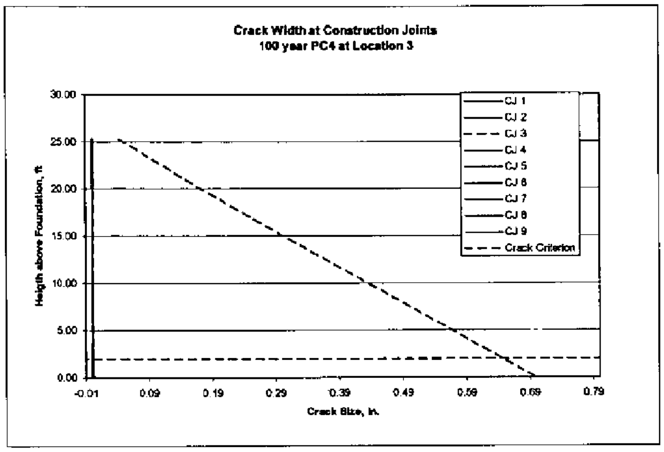

Contact Gap
100 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

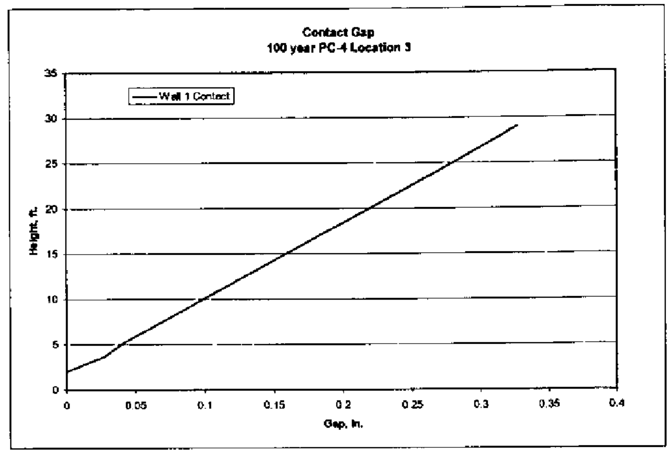

Crack Width at Construction Joints
1000 year PC4 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Heigth above Foundation, ft
Crack Size, in.

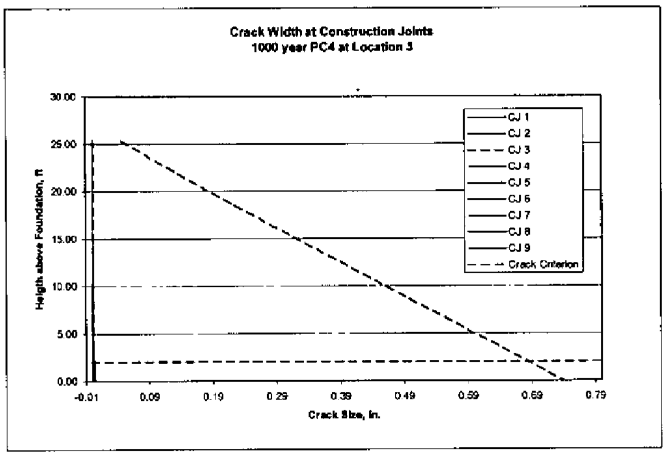

Contact Gap
1000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

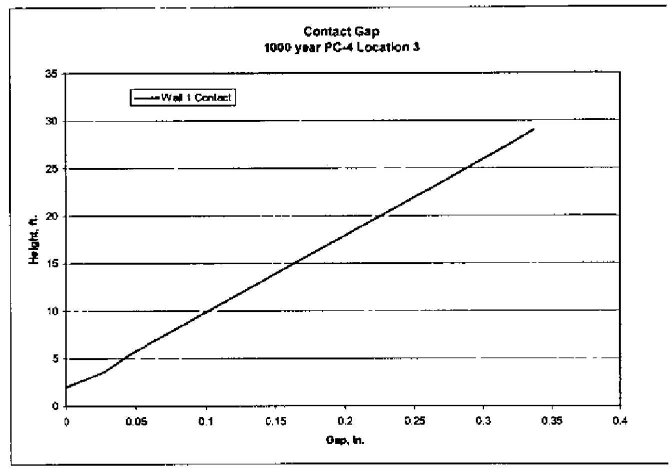

Crack Width at Construction Joints
5000 year PC4 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Heigth above Foundation, ft
Crack Size, in.

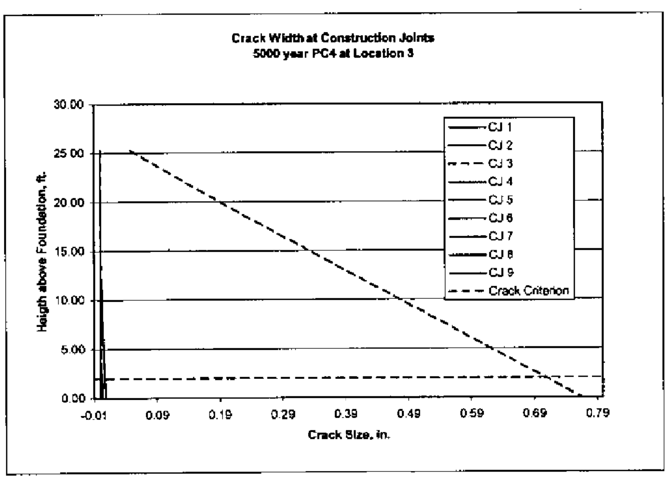

Contact Gap
5000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

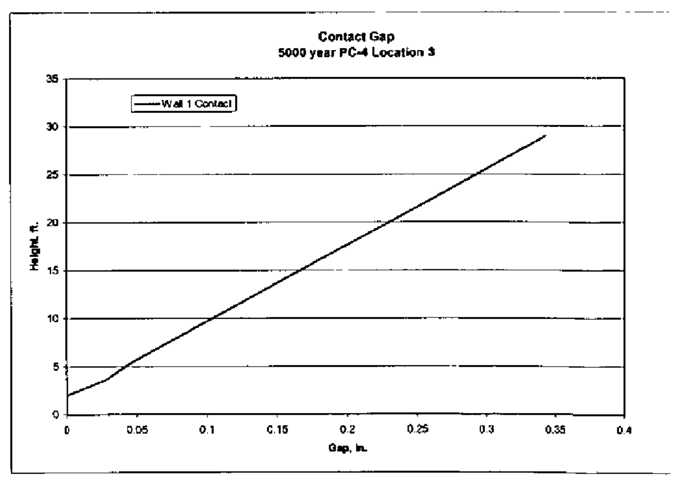

Crack Width at Construction Joints
100 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion

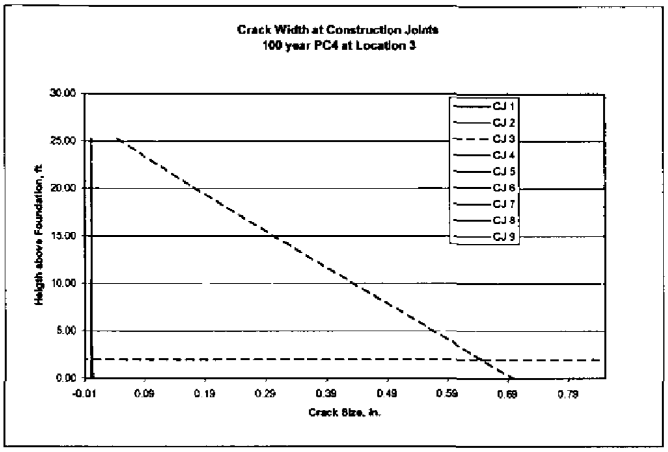

Contact Gap
100 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.


Crack Width at Construction Joints
1000 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion


Contact Gap
1000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.


Crack Width at Construction Joints
5000 year PC4 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Crack Criterion


Contact Gap
5000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.


Crack Width at Construction Joints
100 year PC4 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
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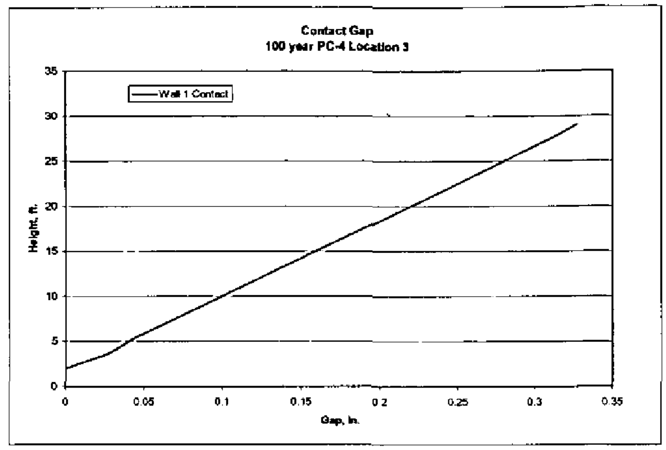
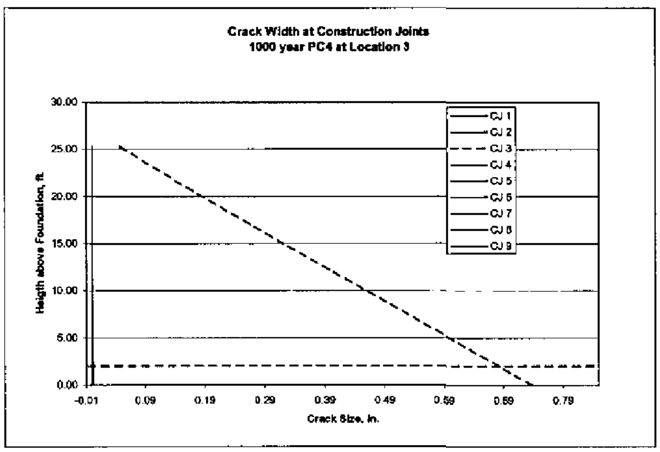
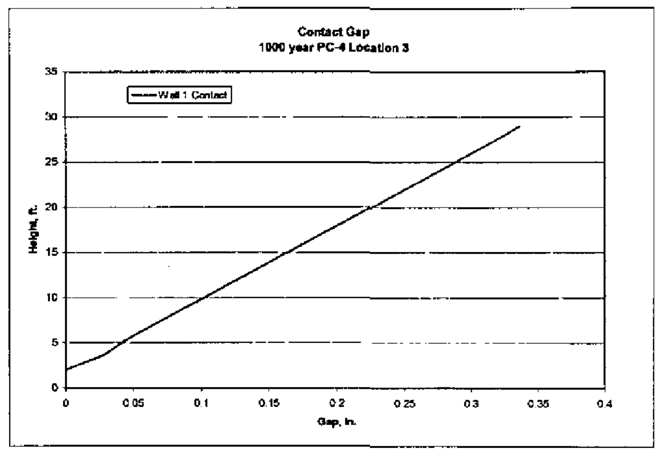
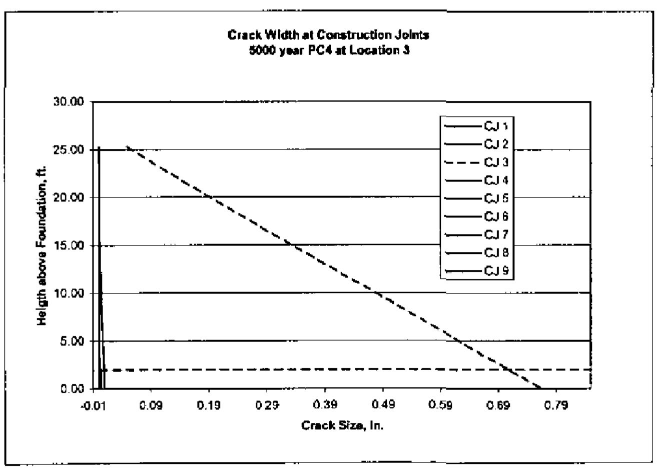
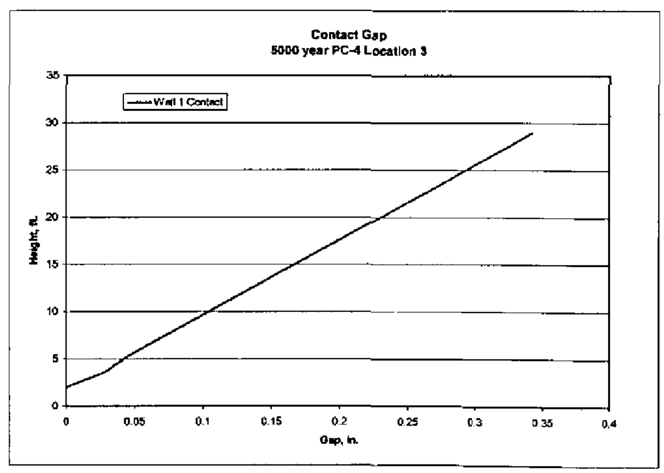
CJ 6
CJ 7
CJ 8
CJ 9


Contact Gap
100 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

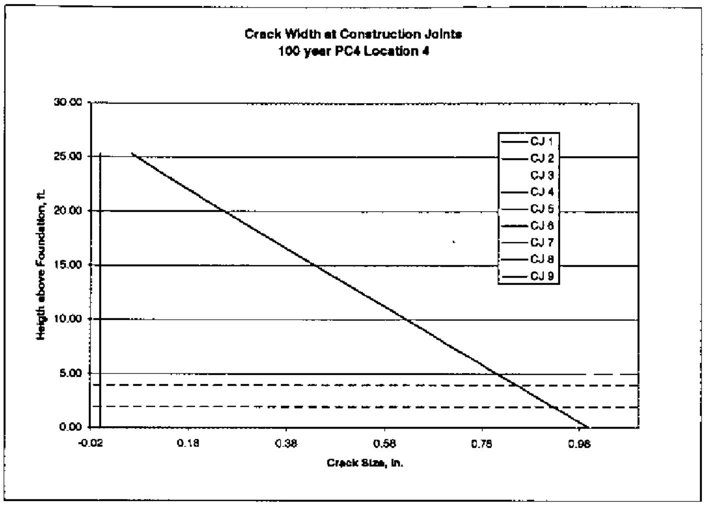

Crack Width at Construction Joints
1000 year PC4 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

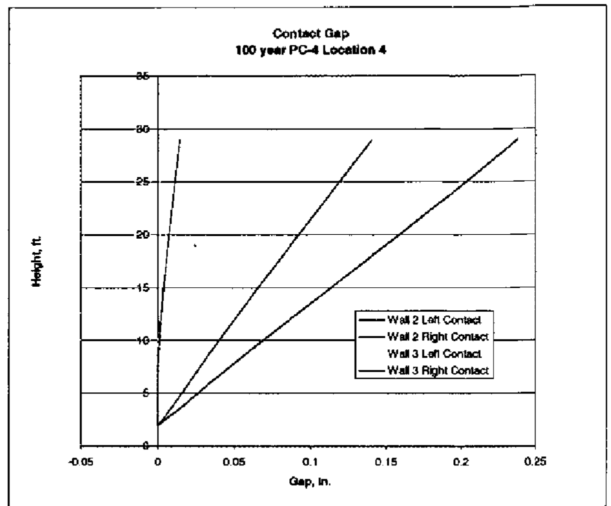

Contact Gap
1000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

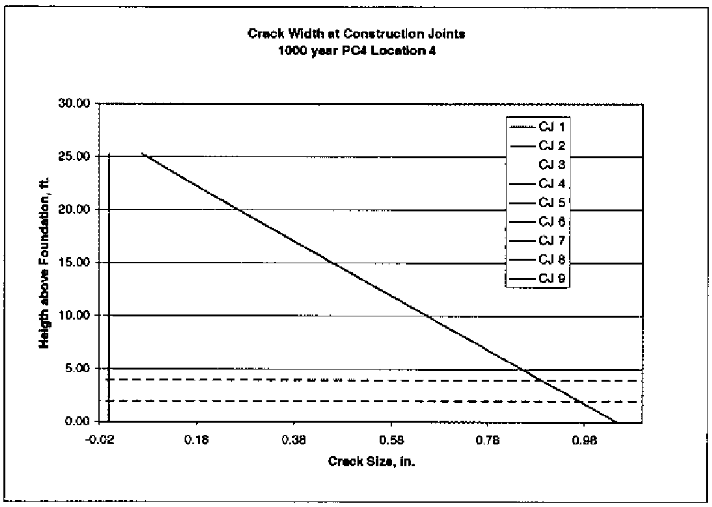

Crack Width at Construction Joints
5000 year PC4 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

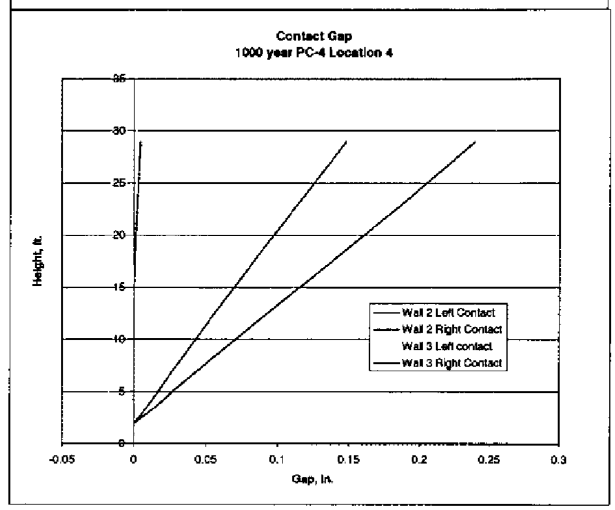

Contact Gap
5000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

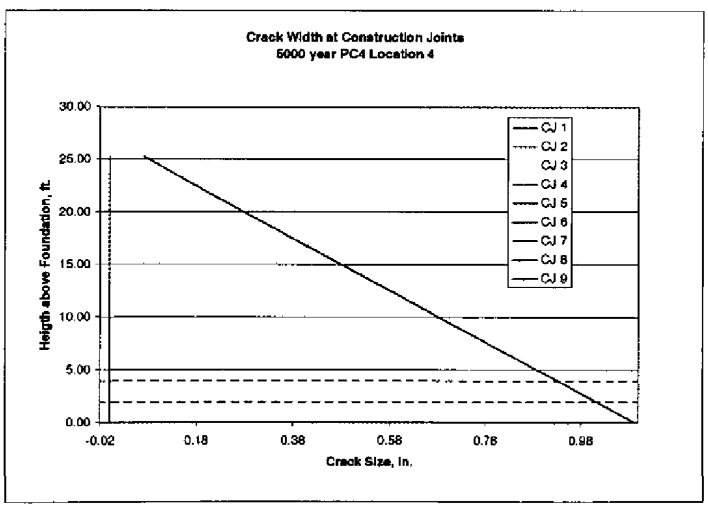
PC-4 Differential Settlement - Location 4
Low Grout Modulus

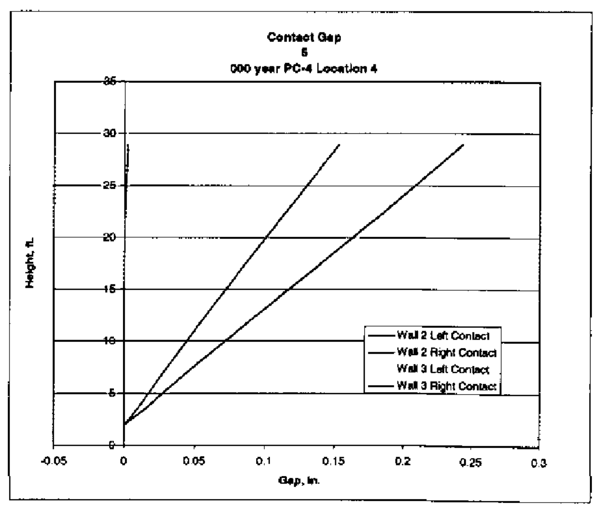




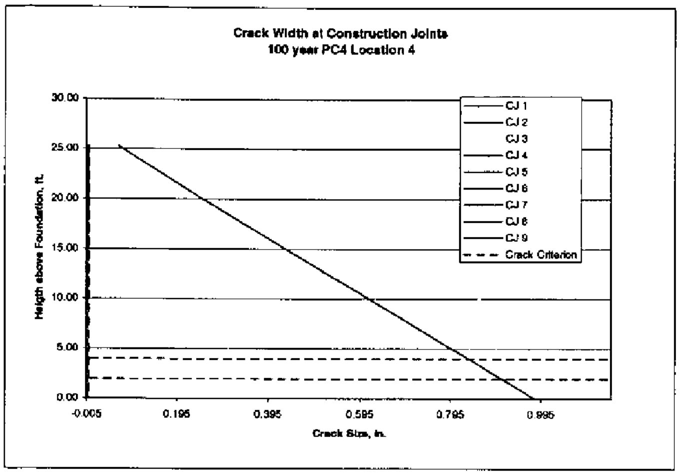


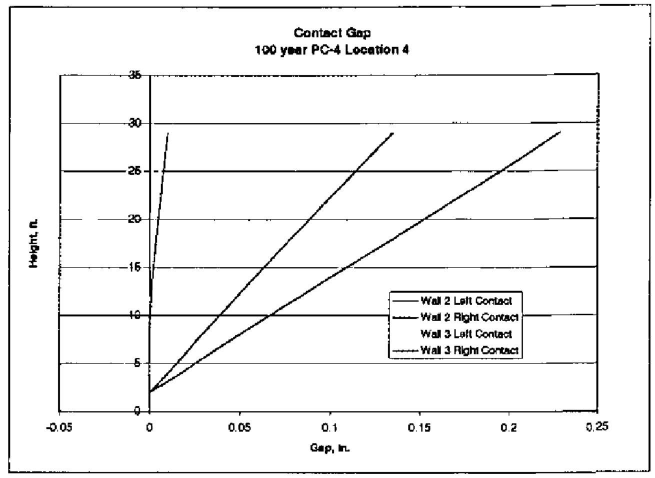


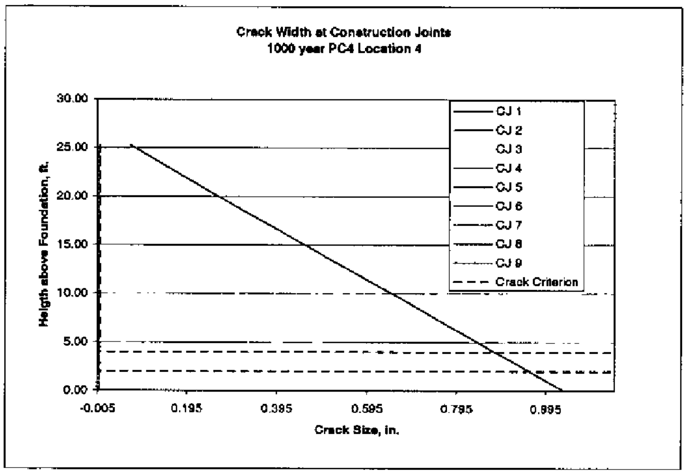


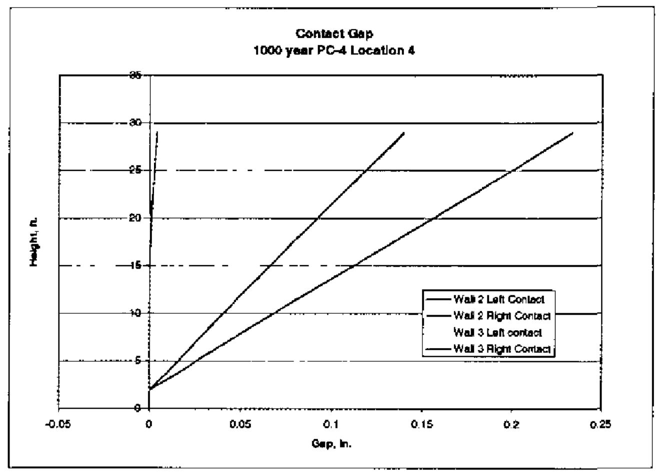


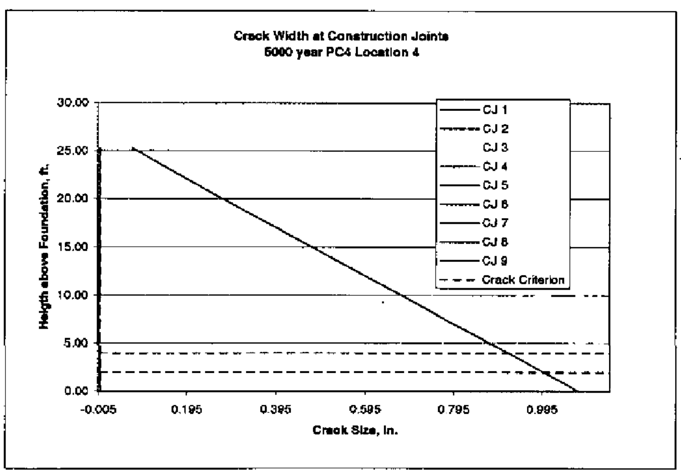
PC-4 Differential Settlement - Location 4
Mean Grout Modulus

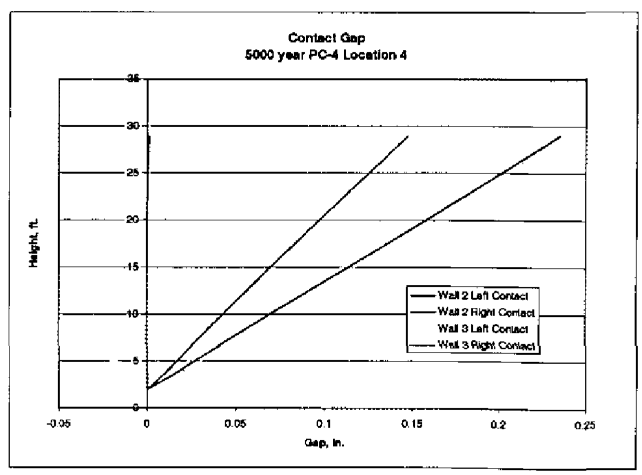




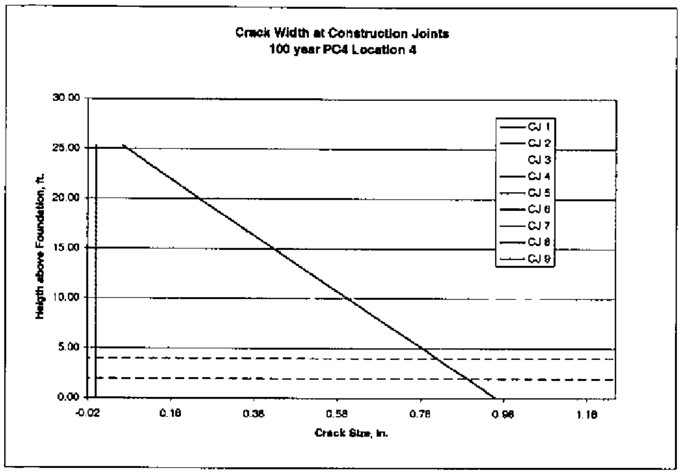


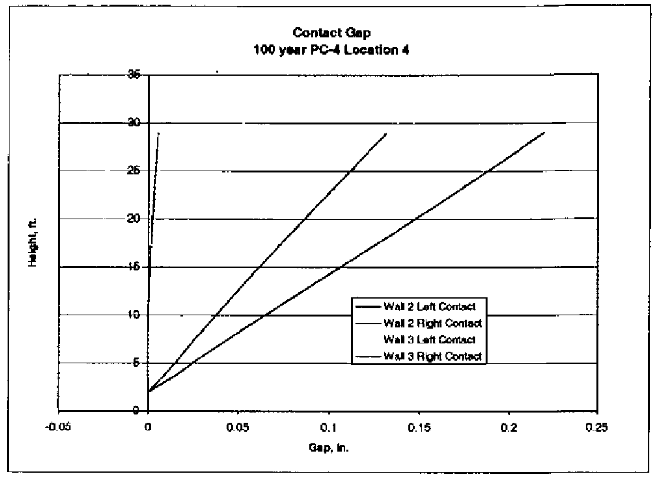


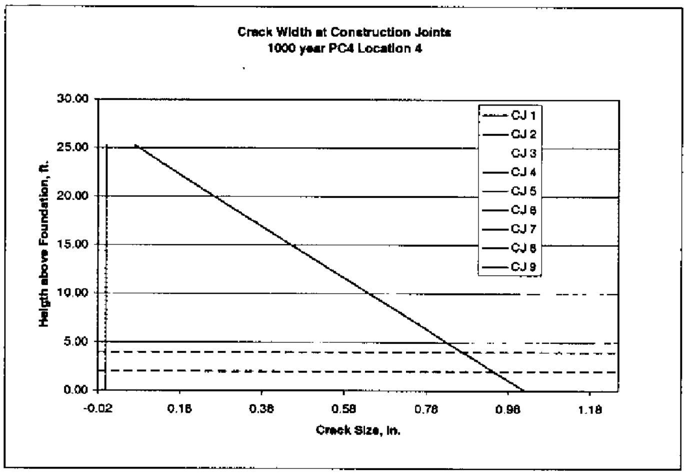


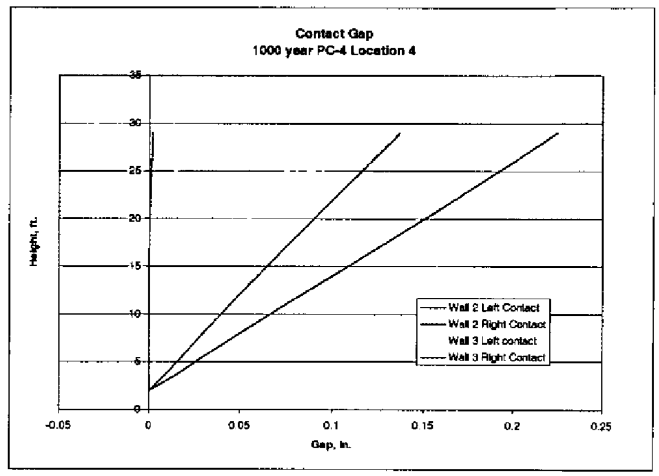


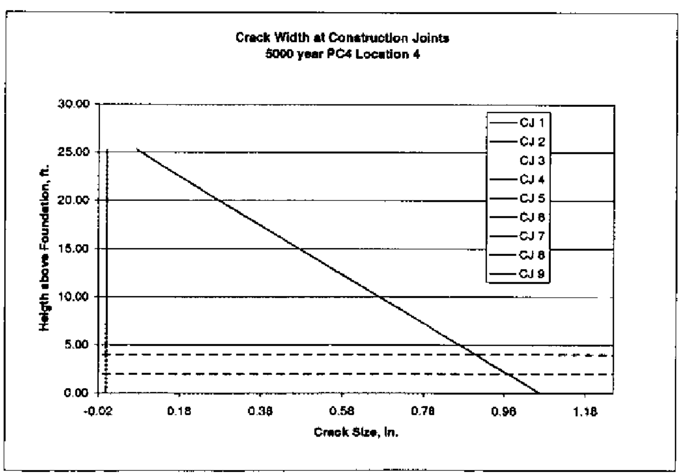
PC-4 Differential Settlement - Location 4
High Grout Modulus

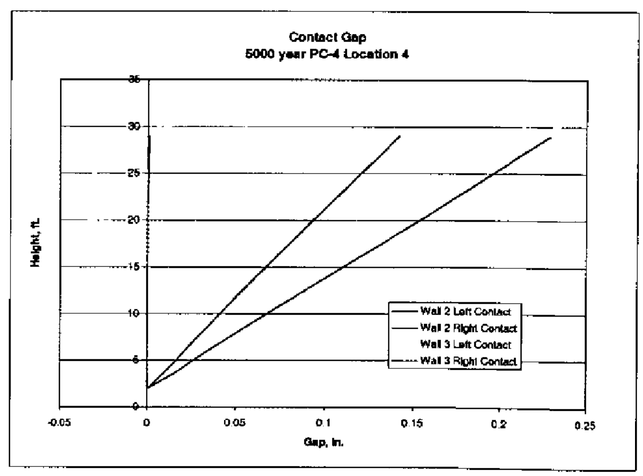




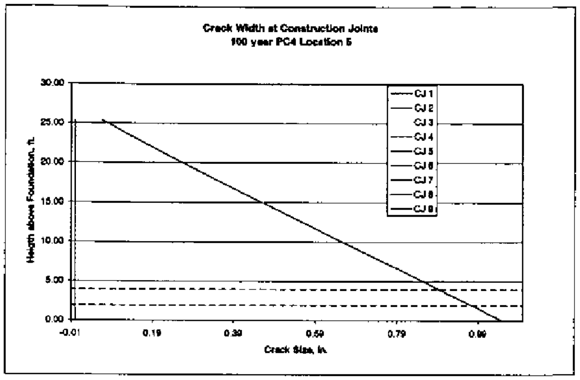


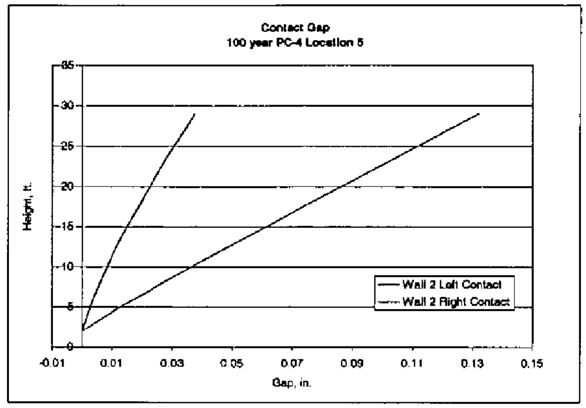


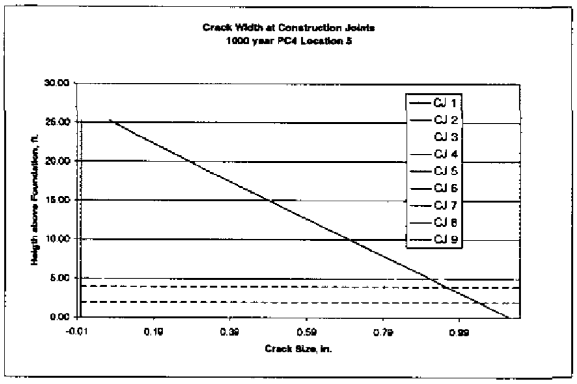


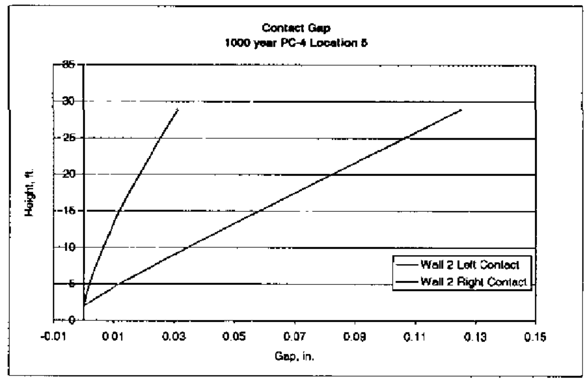


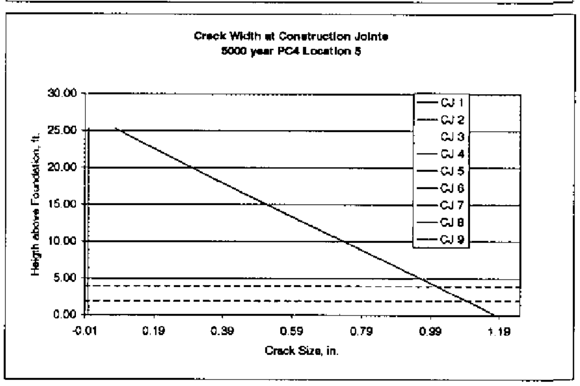
PC-4 Differential Settlement - Location 5
Low Grout Modulus

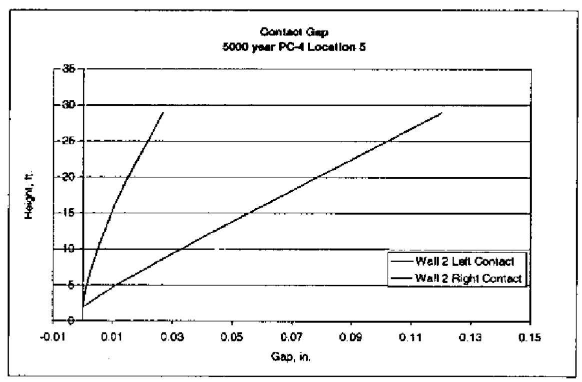




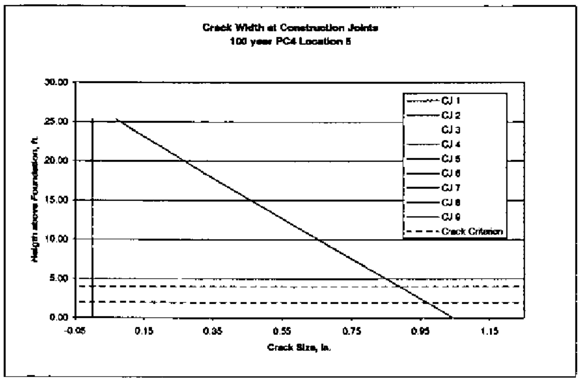


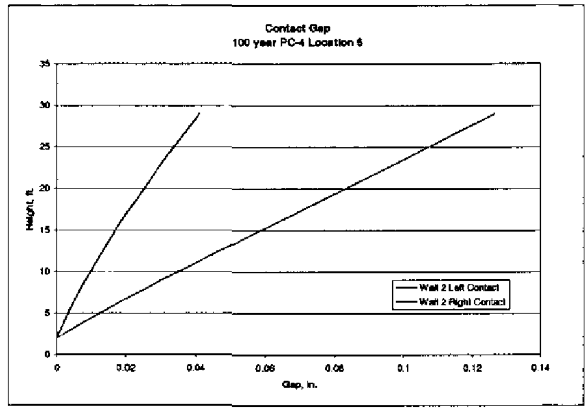


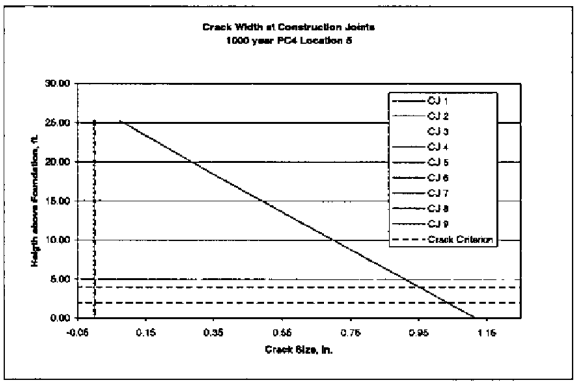


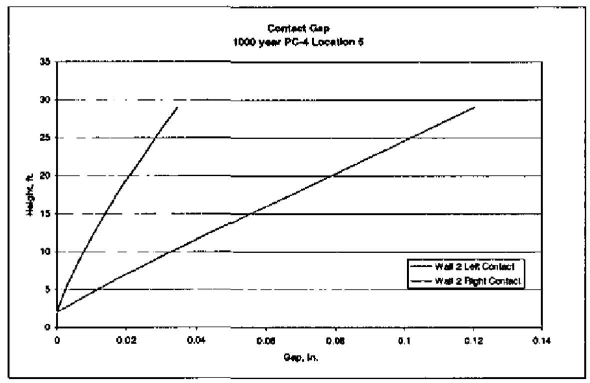


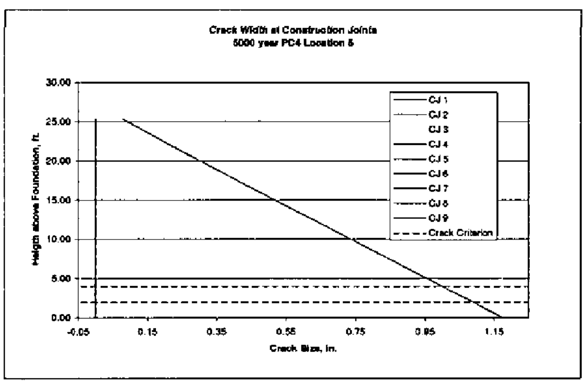
PC-4 Differential Settlement - Location 5
Mean Grout Modulus

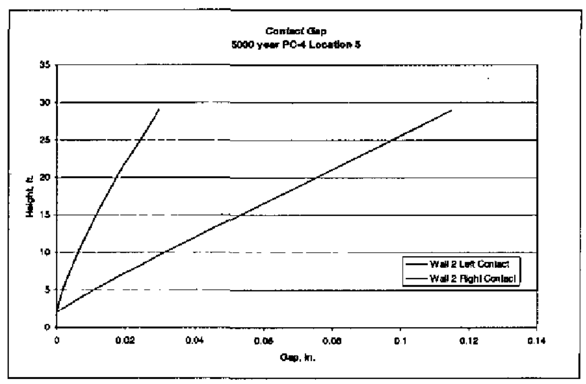




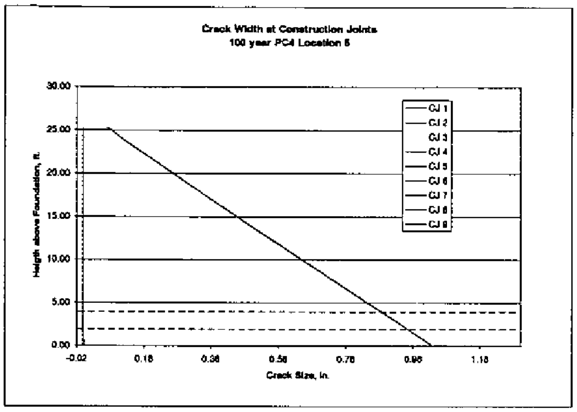


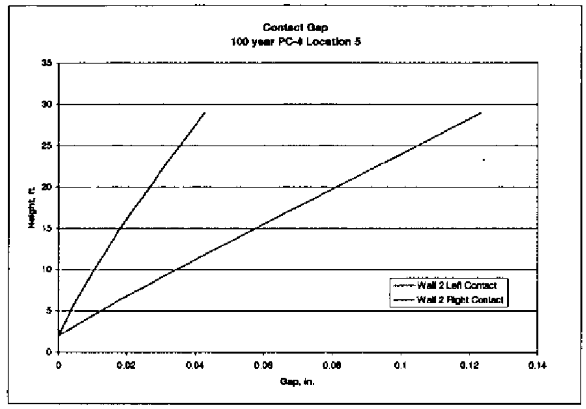


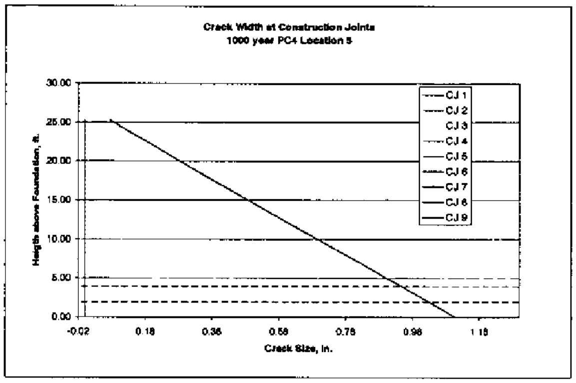


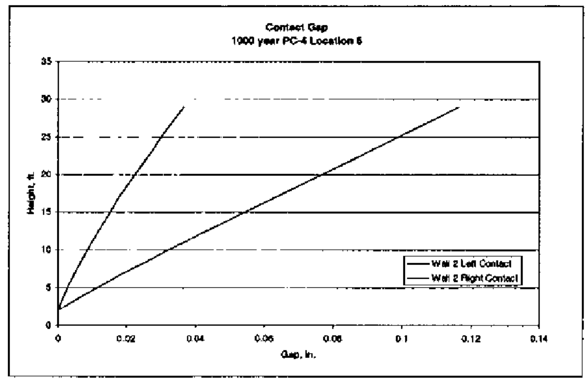


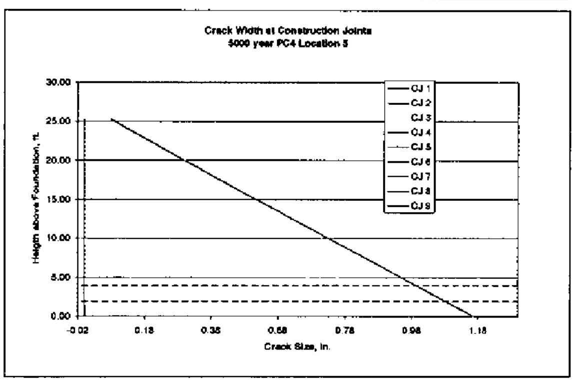
PC-4 Differential Settlement - Location 5
High Grout Modulus

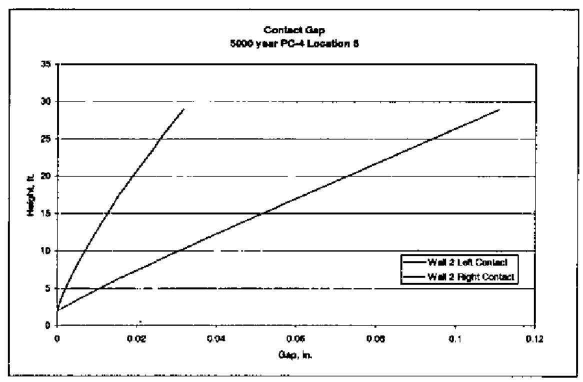




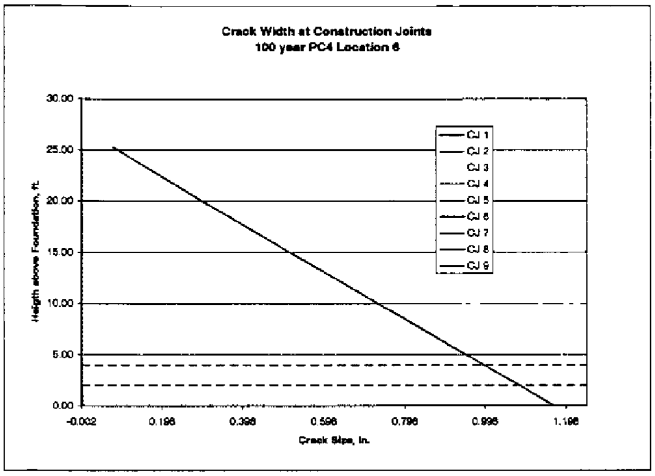


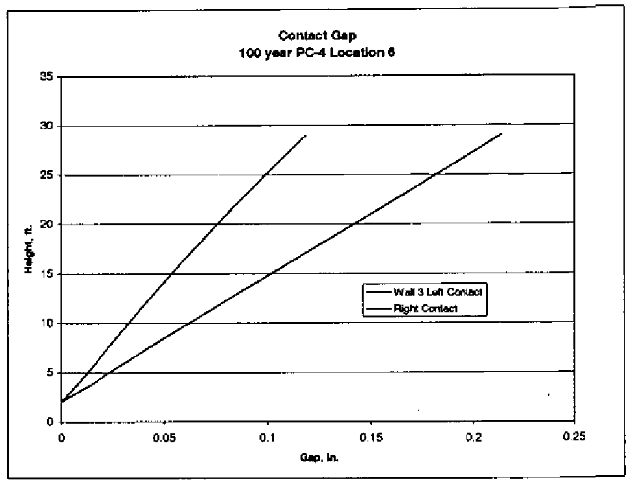


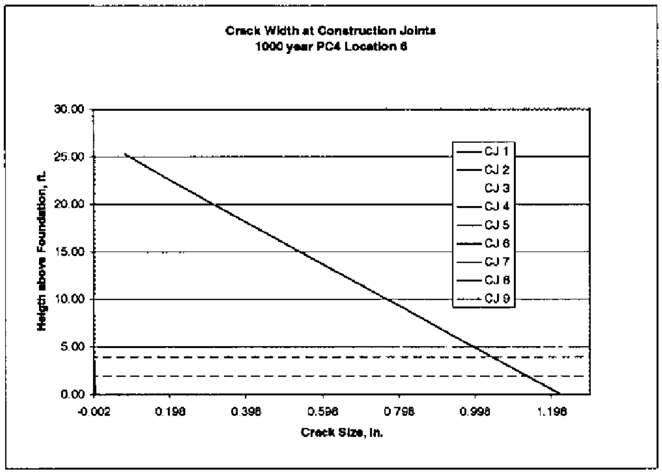


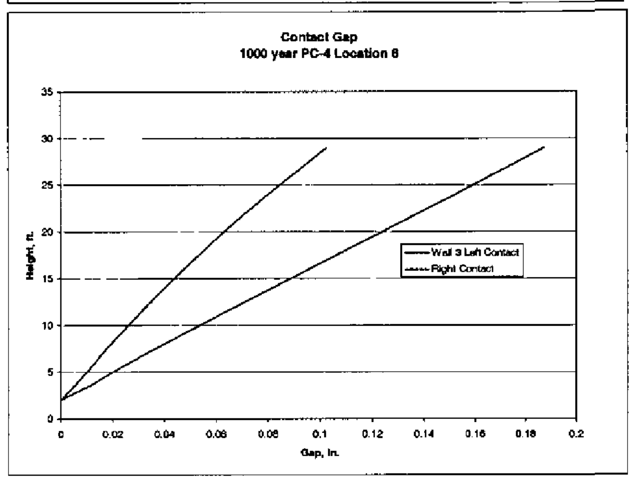


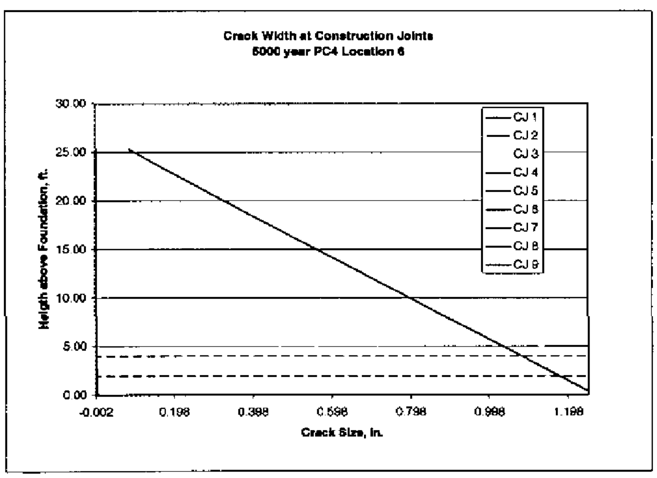
PC-4 Differential Settlement - Location 6
Low Grout Modulus

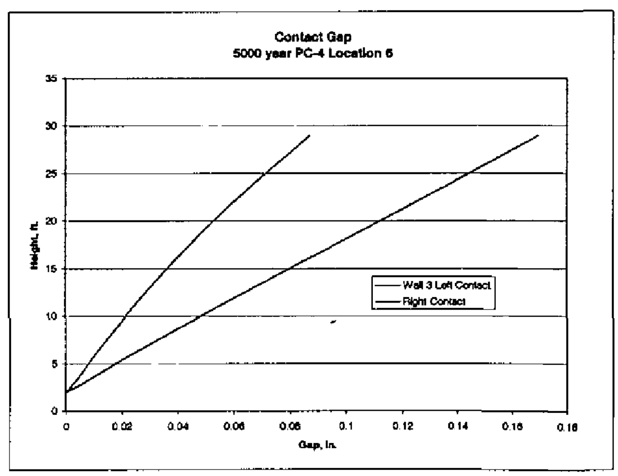




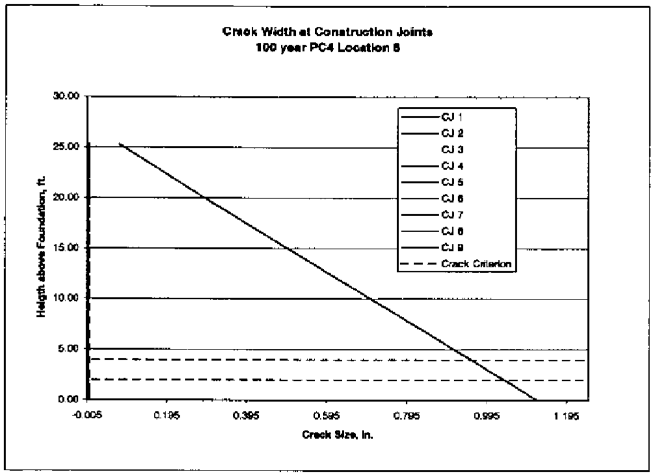


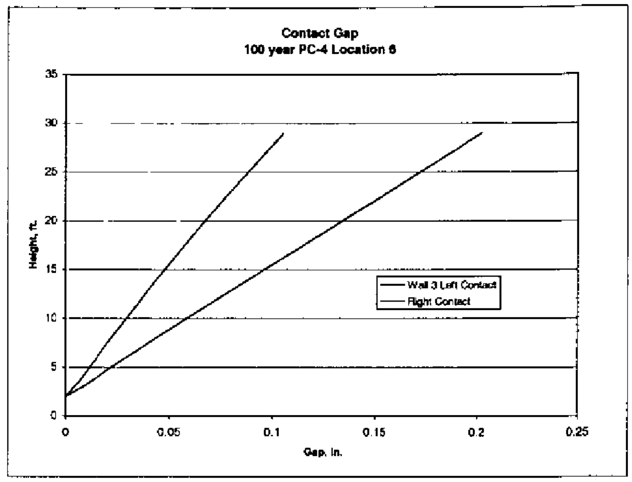


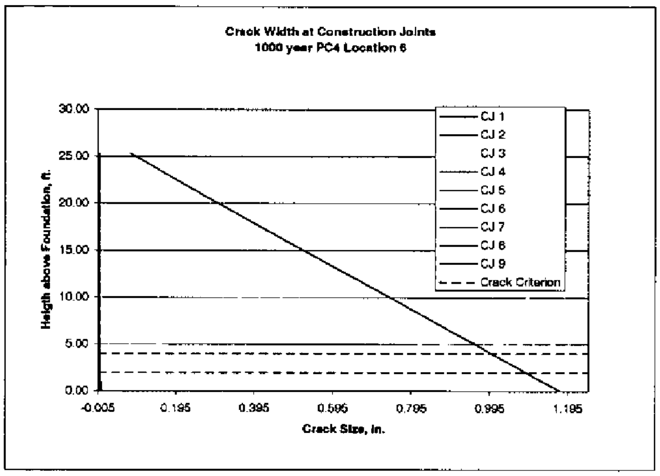


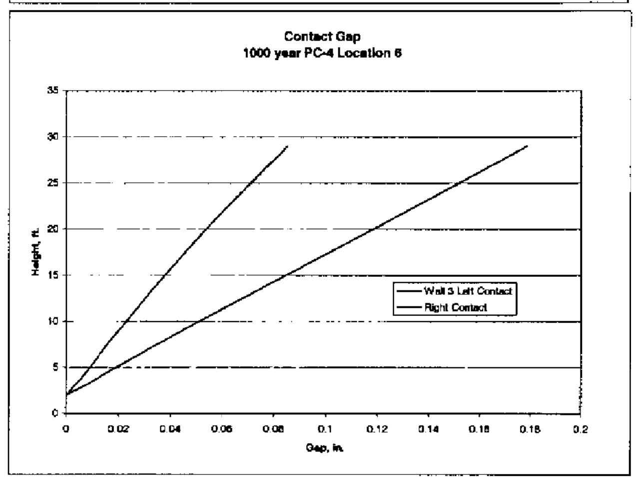


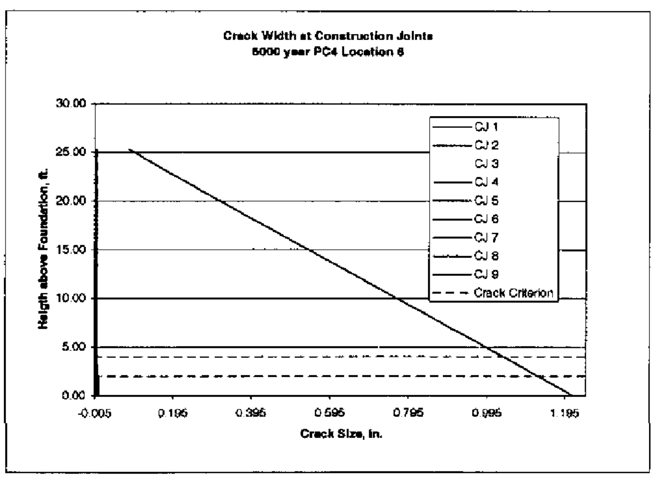
PC-4 Differential Settlement - Location 6
Mean Grout Modulus

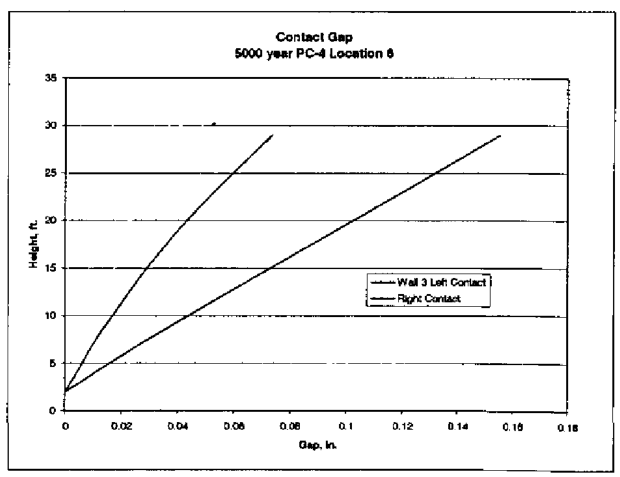




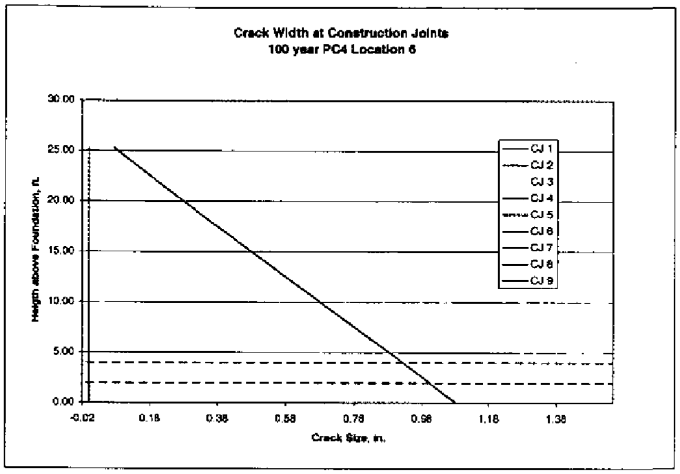


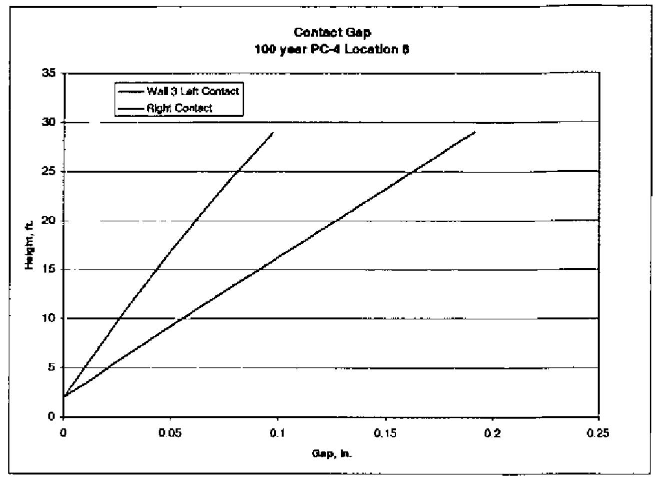


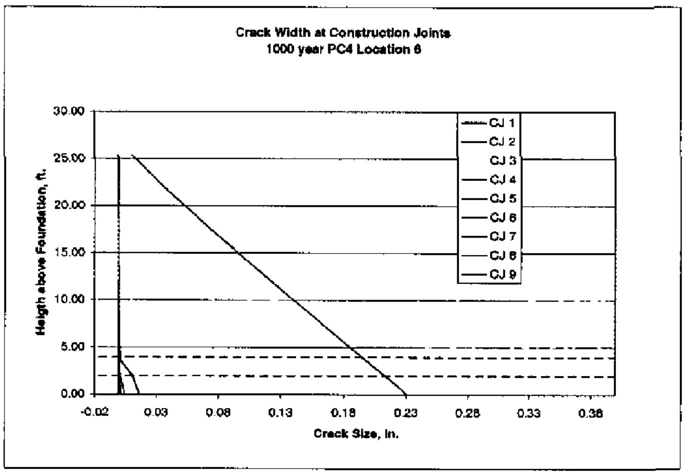


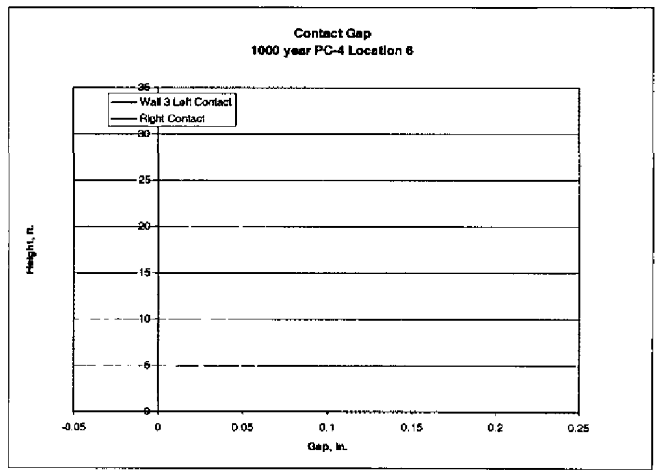


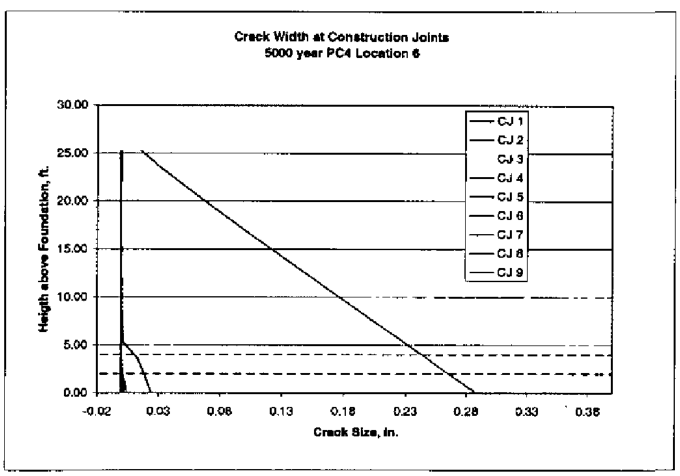
PC-4 Differential Settlement - Location 6
High Grout Modulus

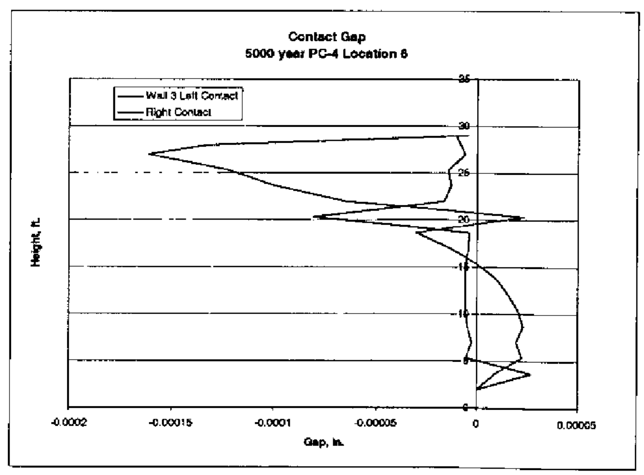






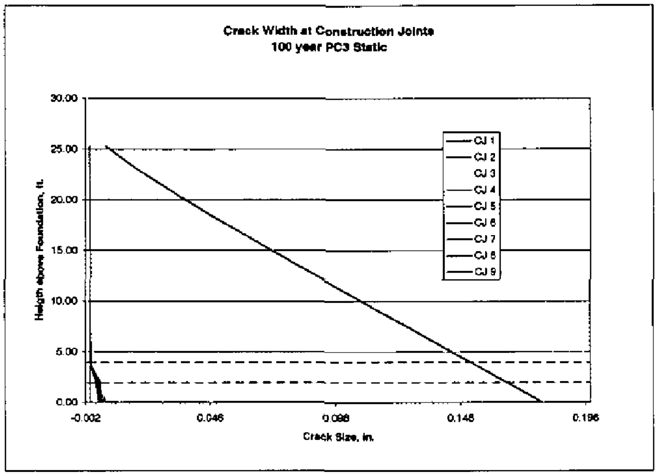


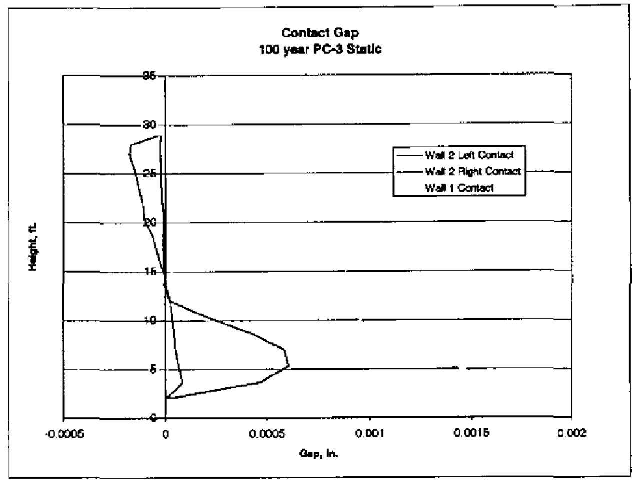


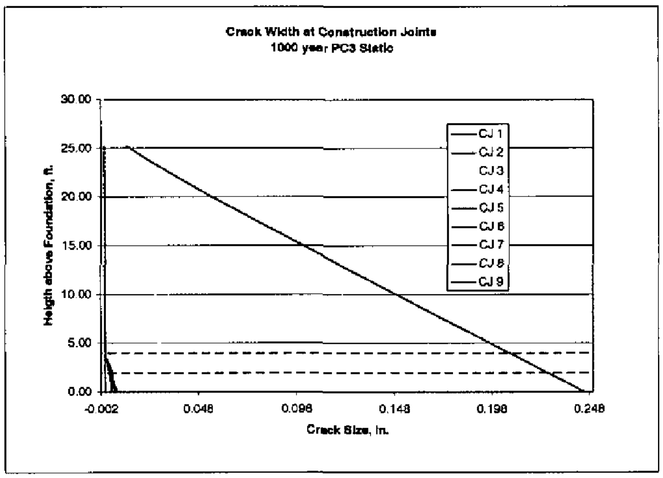


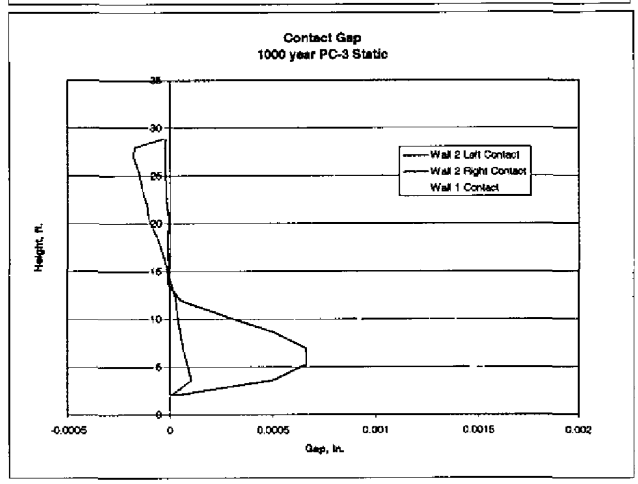
T-CLC-Z-00006, Rev. 0

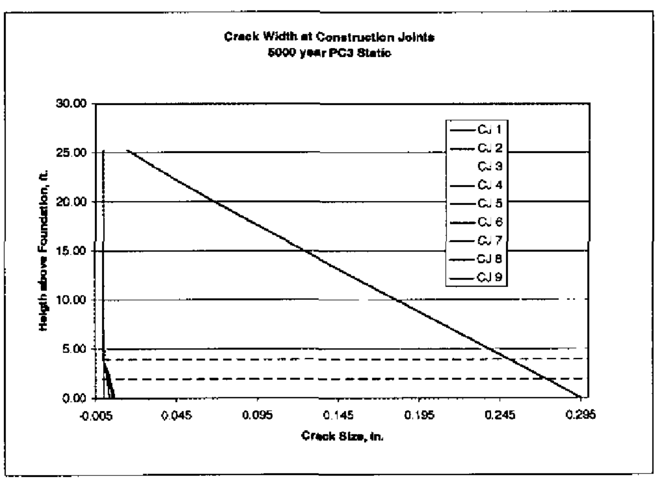
Static Settlement
Low Grout Strength

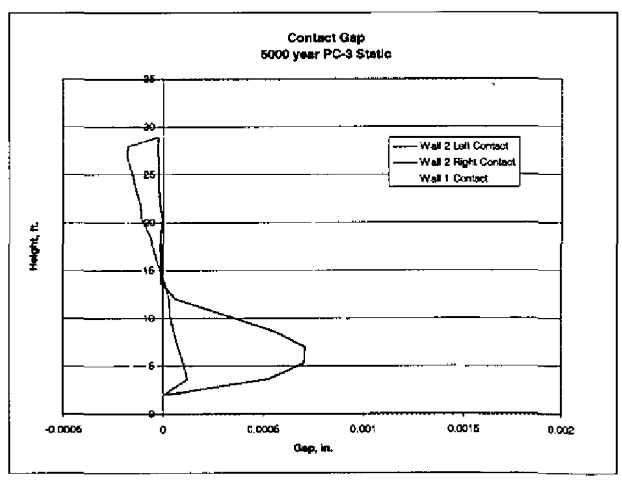




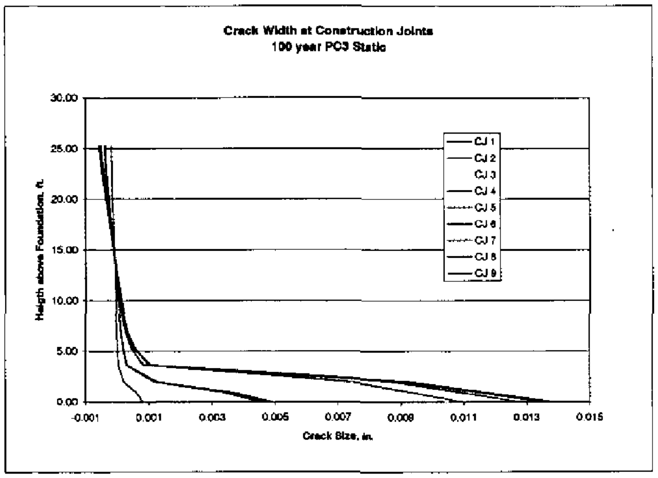


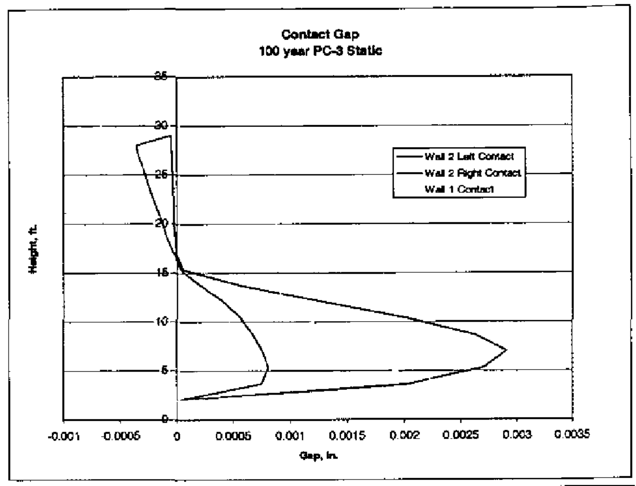


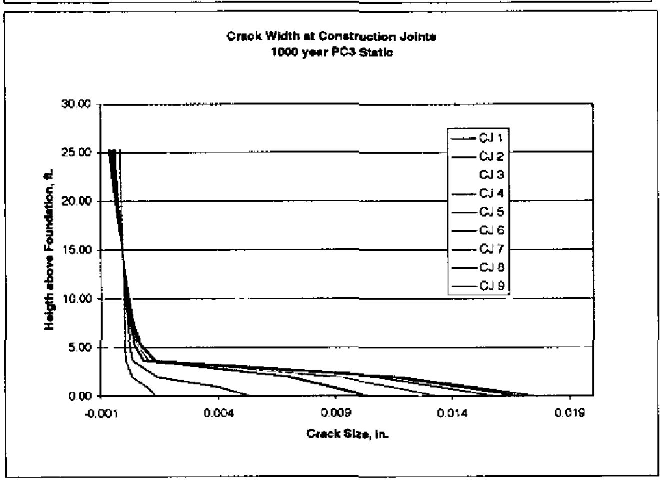


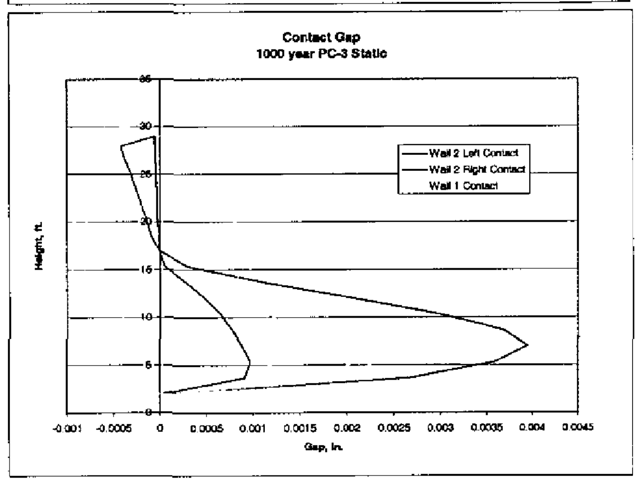


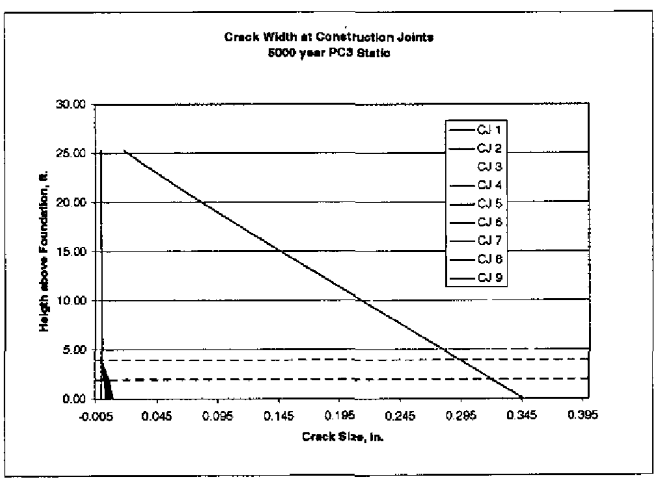
T-CLC-Z-00006, Rev.0 PC-3 Differential Static Settlement
Mean Grout Strength

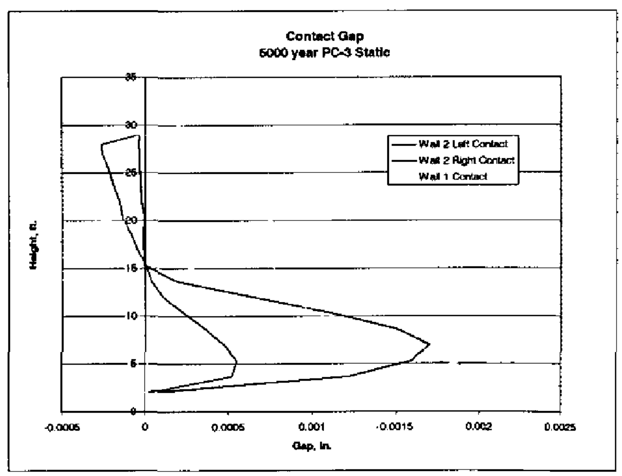




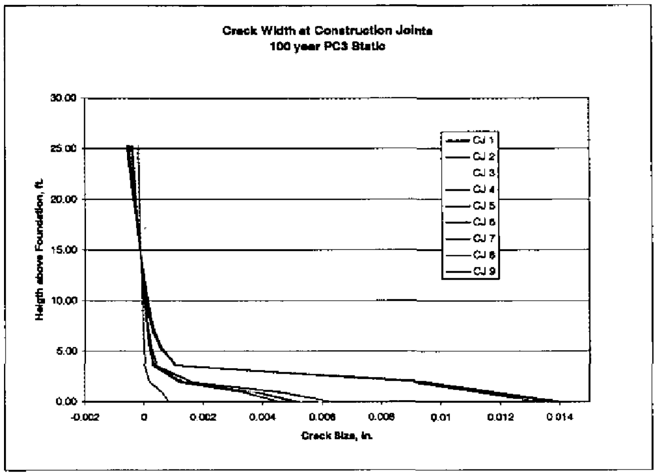


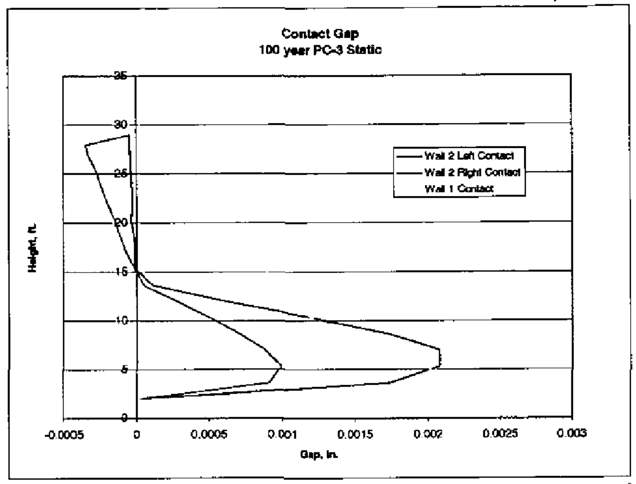


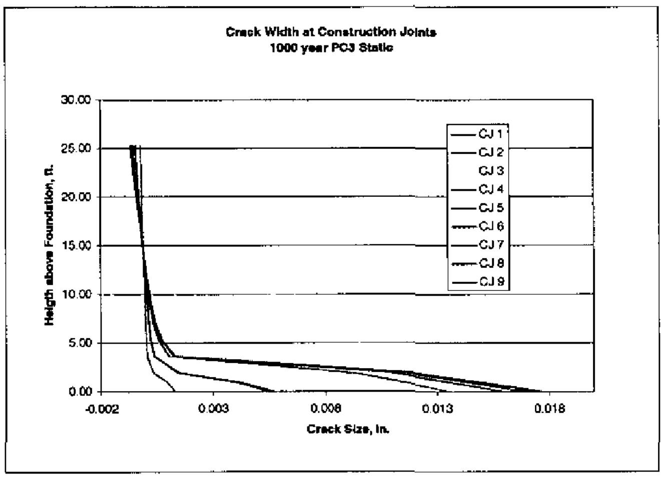


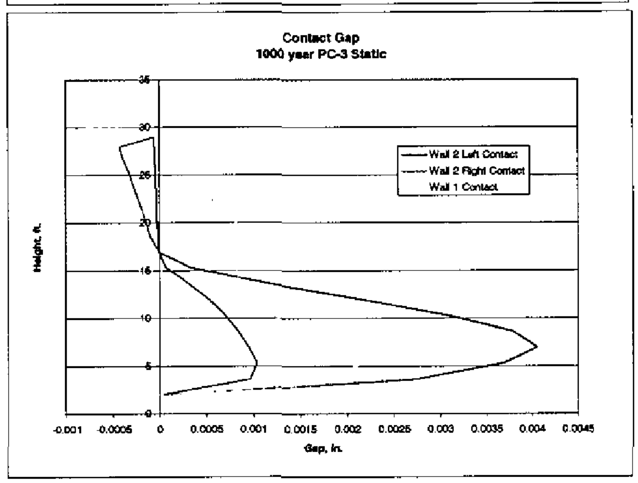


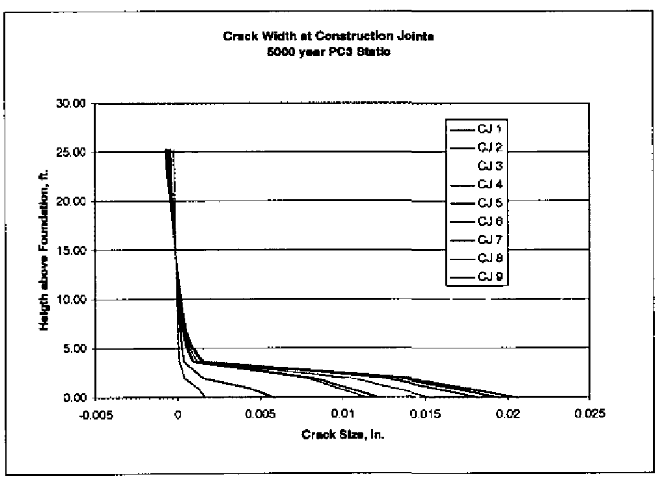
Static Settlement
High Grout Strength

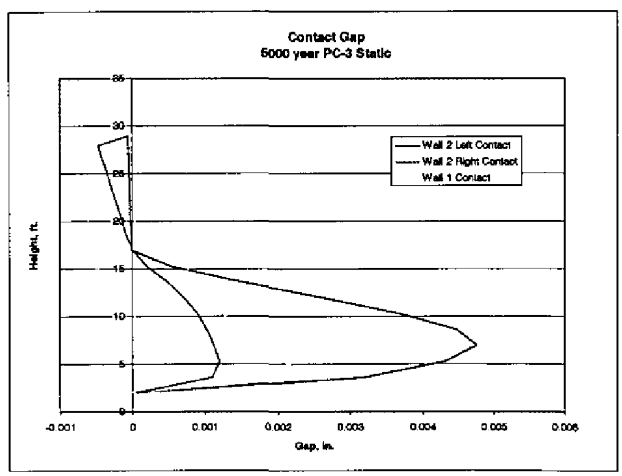






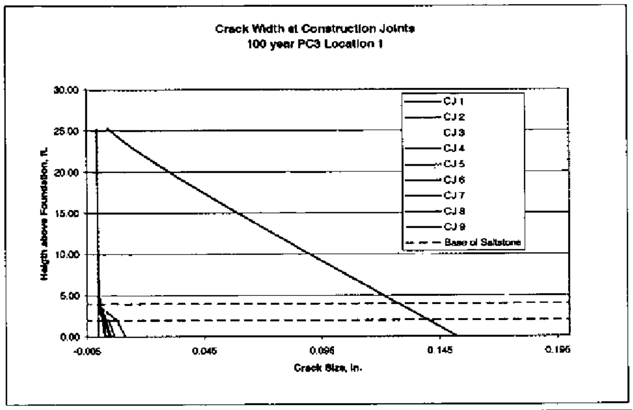


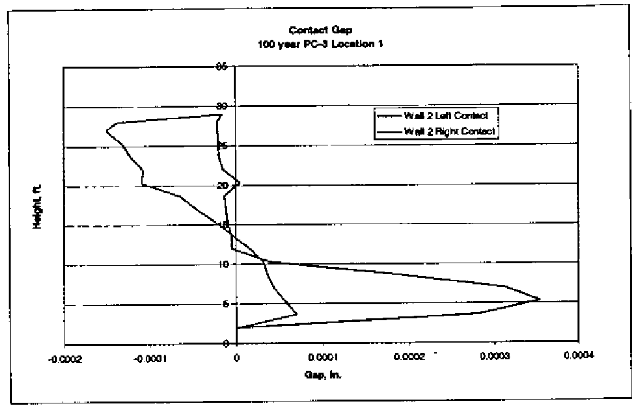


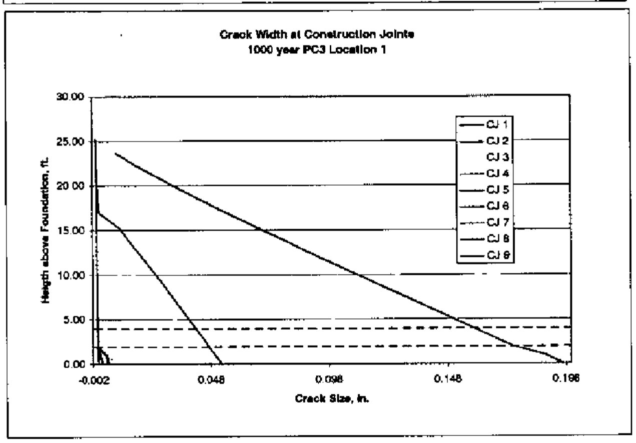


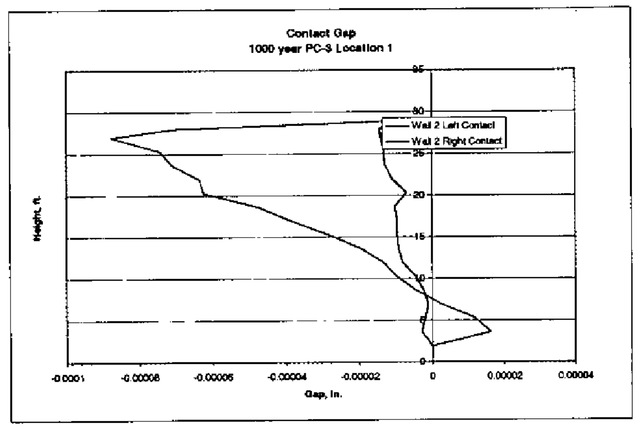
T-CLC-Z-00006, Rev. 0 PC-3 Differential Settlement - Location 1

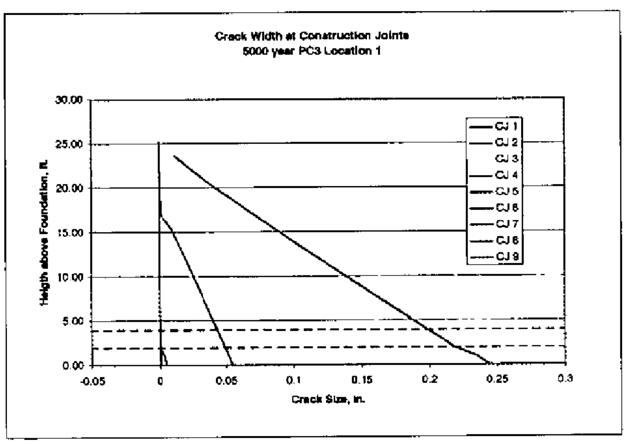
Low Grout Strength

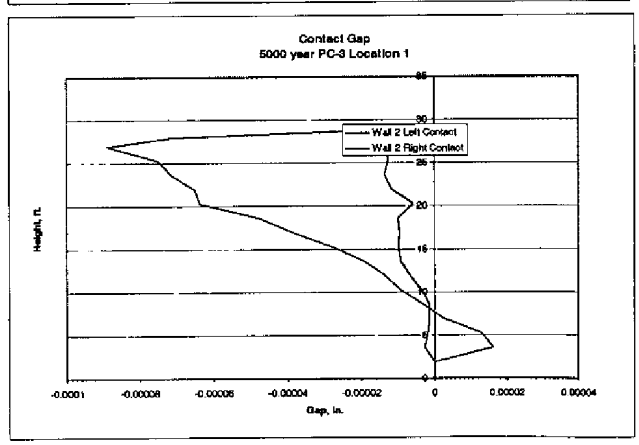






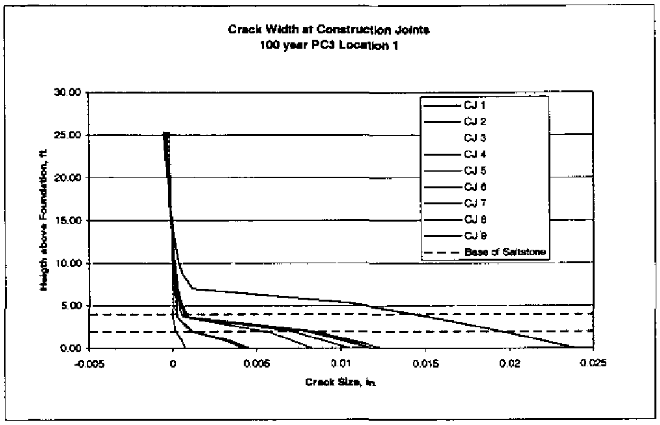


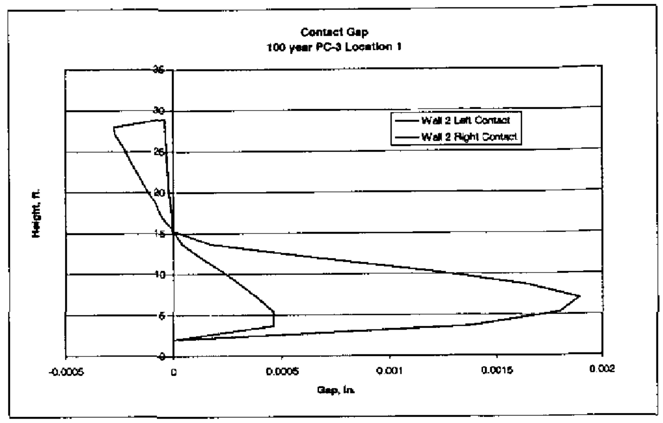


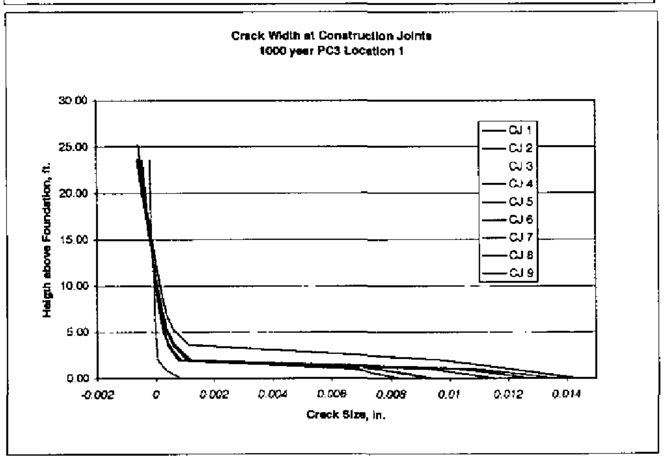


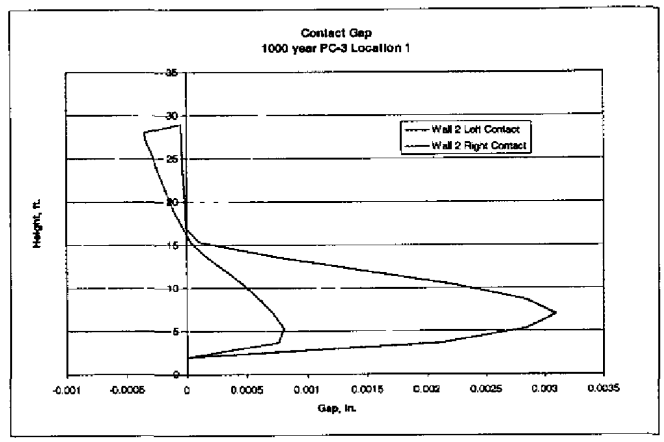
T-CLC-Z-00006, Rev.0

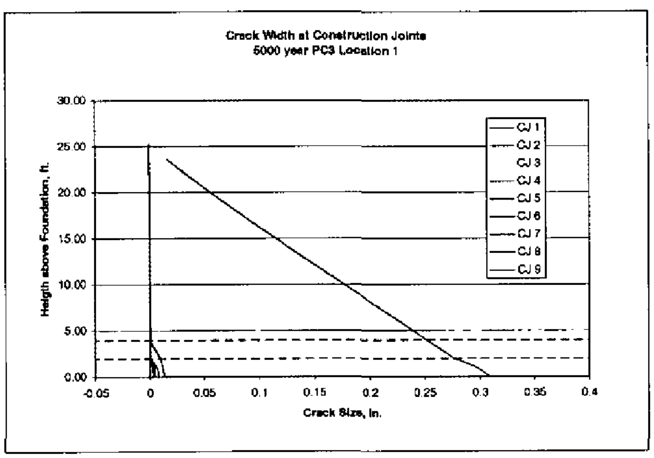
PC-3 Differential Settlement - Location 1
Mean Grout Strength

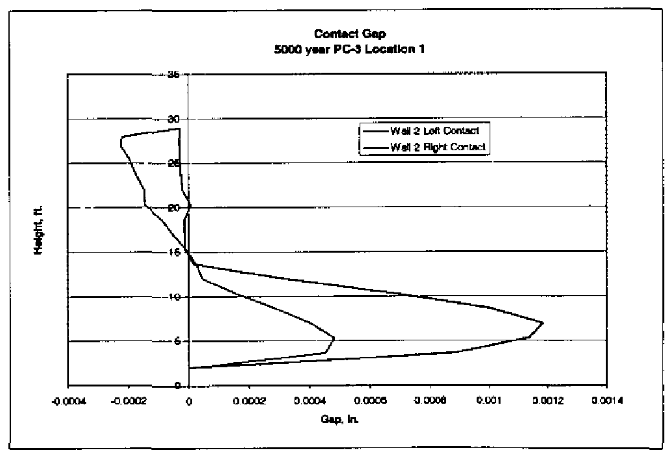




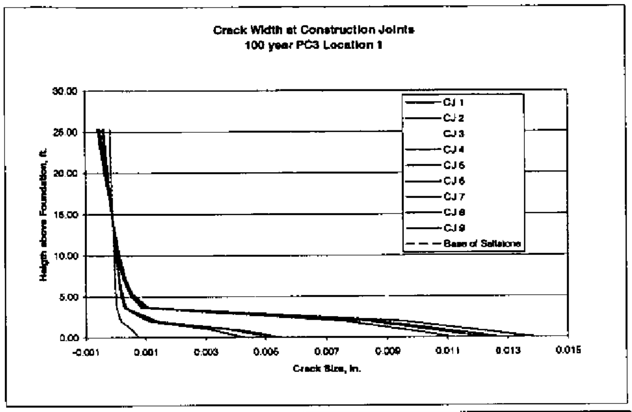


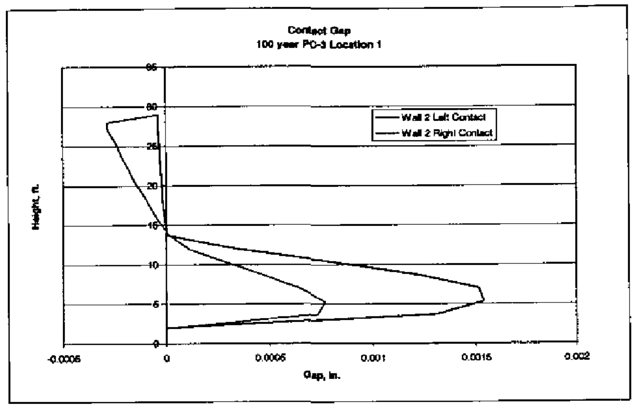


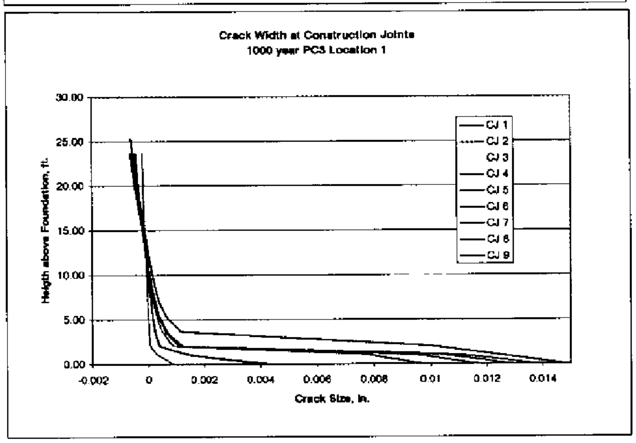


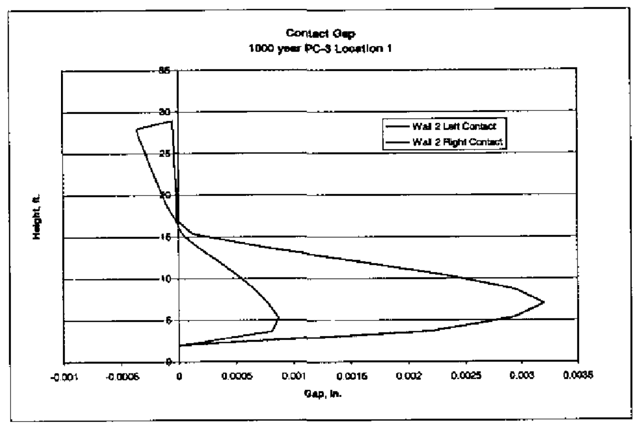


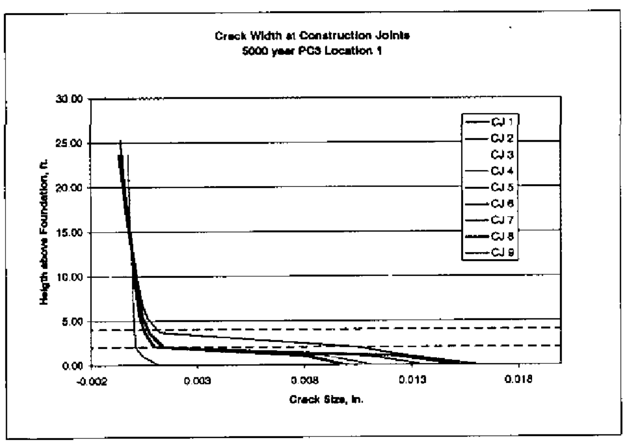
PC-3 Differential Settlement - Location 1
High Grout Strength

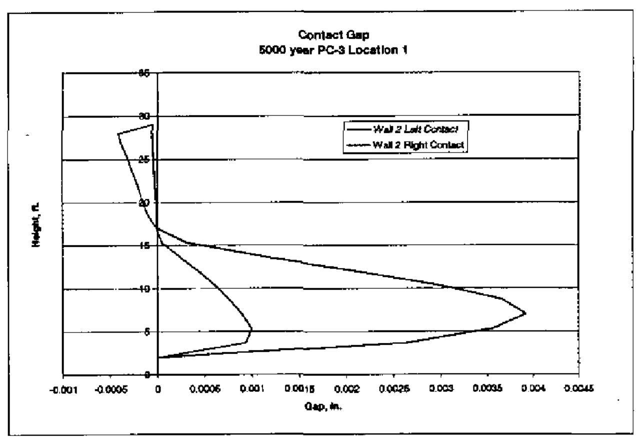




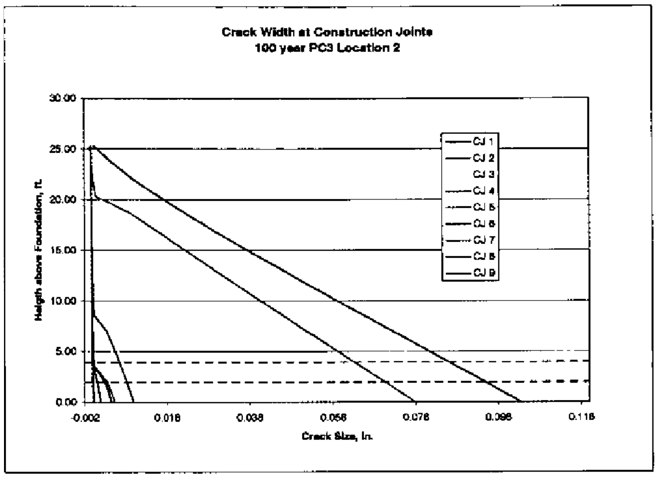


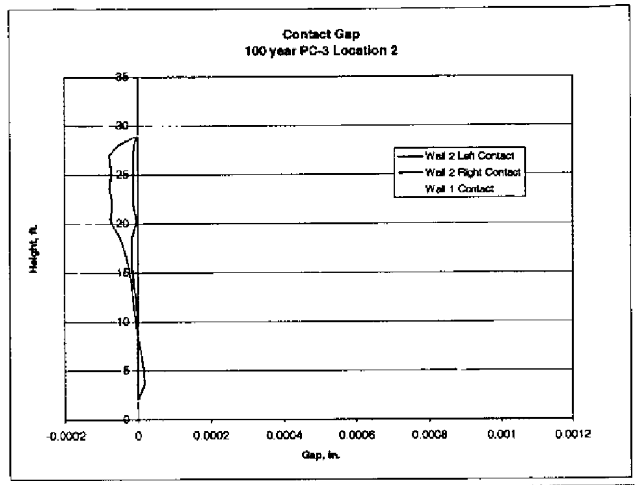


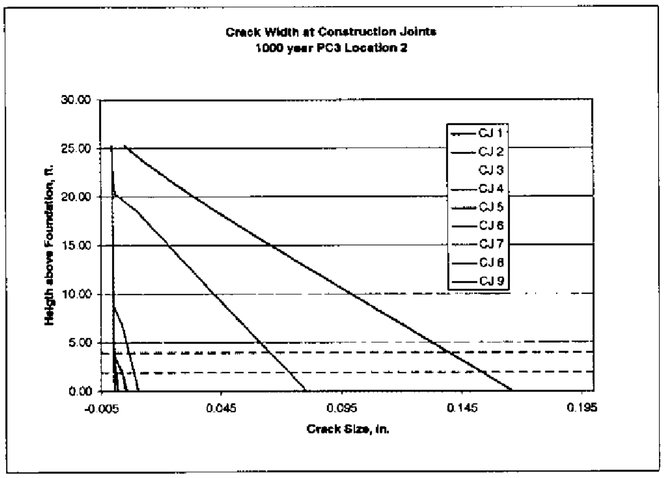


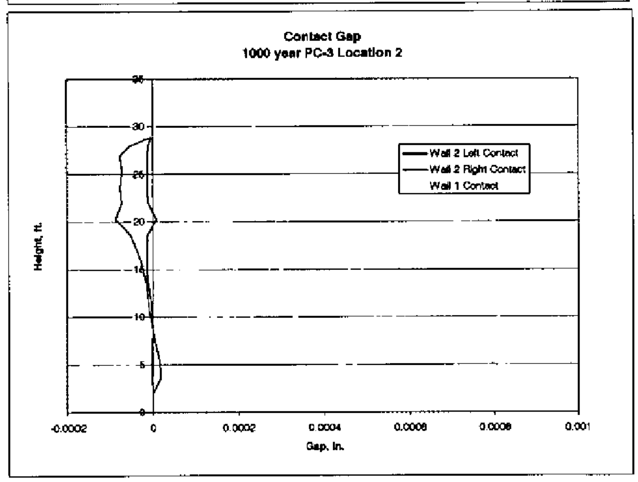


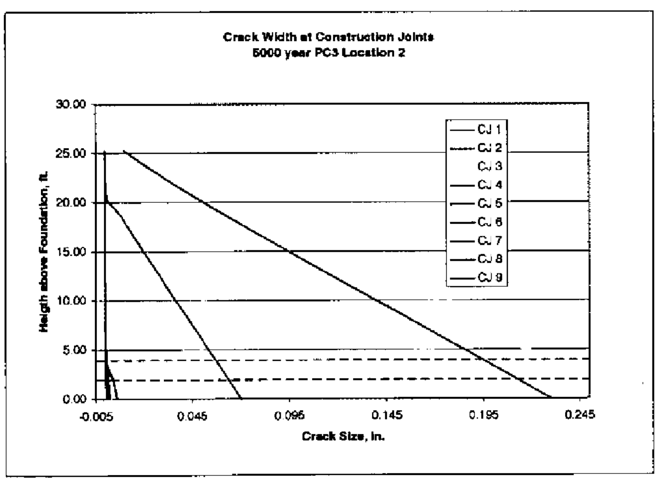
PC-3 Differential Settlement - Location 2
Low Grout Strength

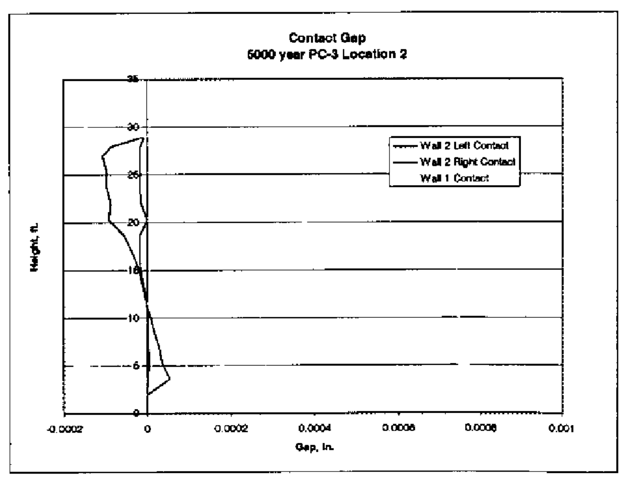




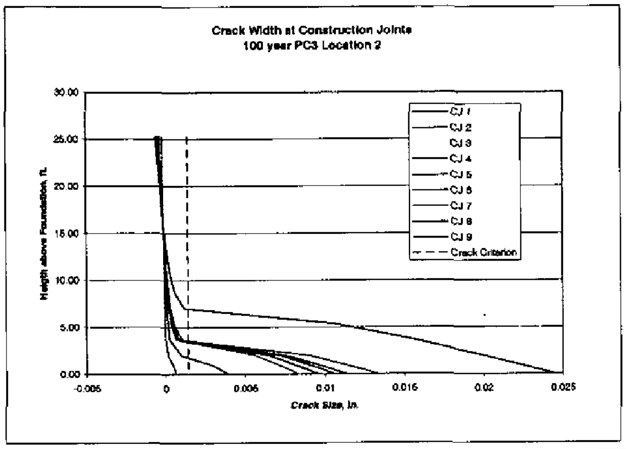


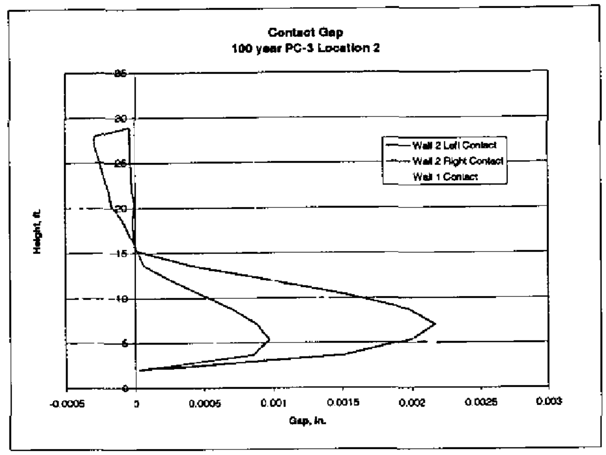


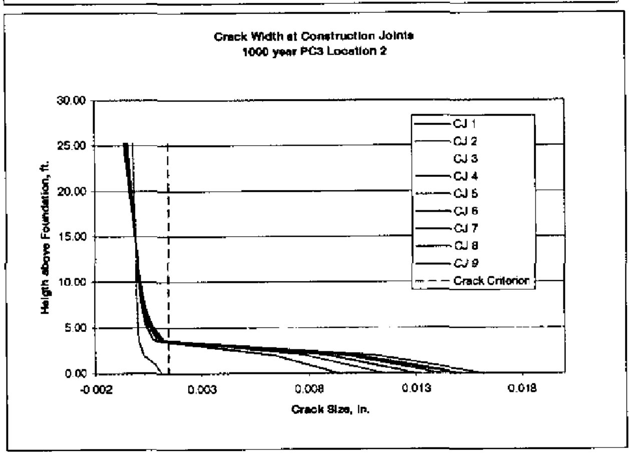


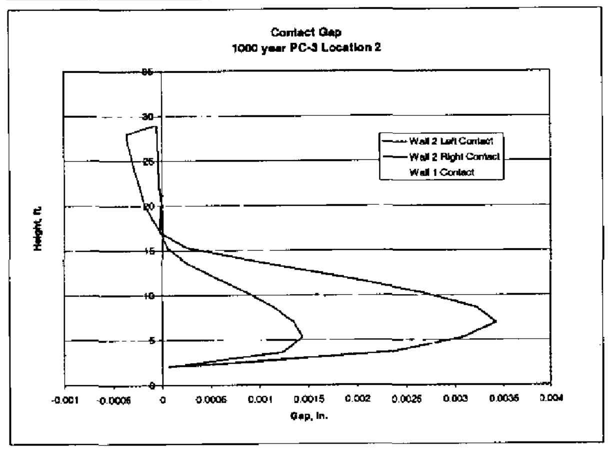


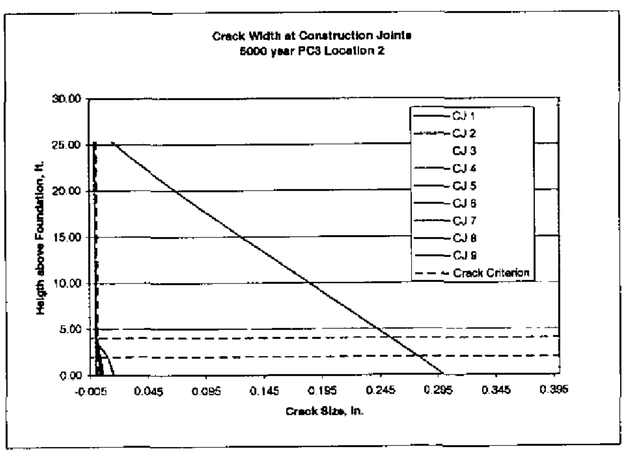
PC-3 Differential Settlement - Location 2
Mean Grout Strength

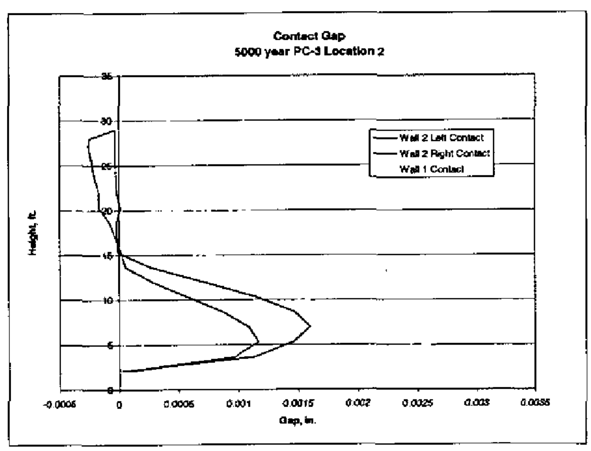




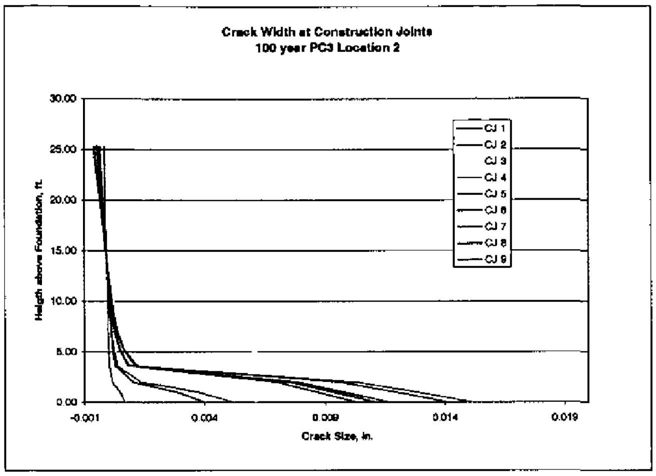


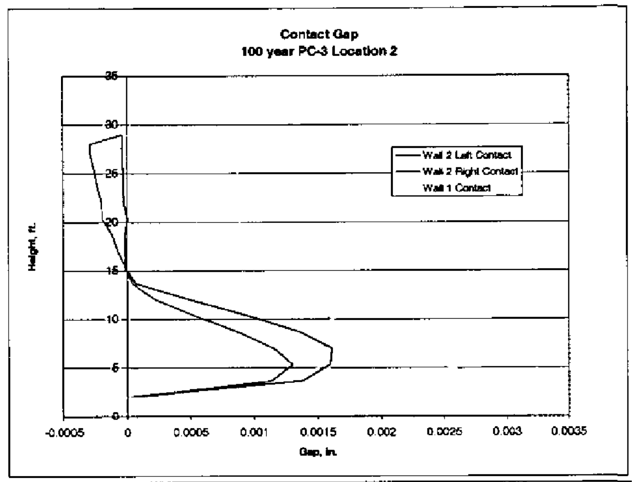


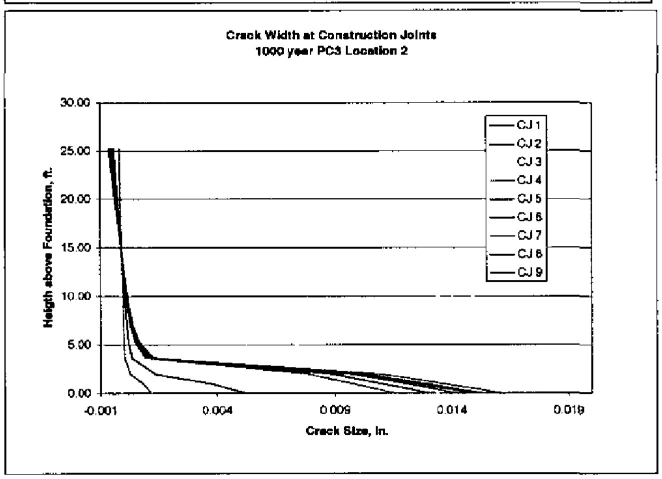


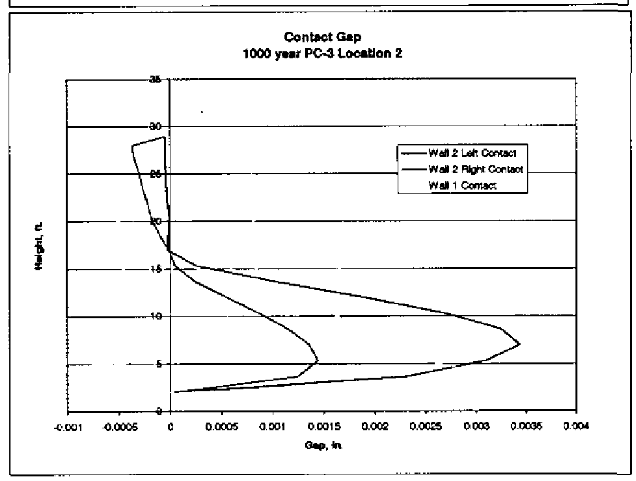


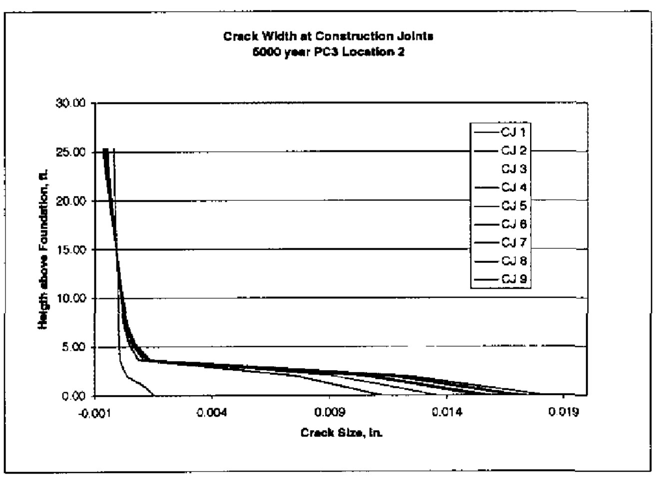
PC-3 Differential Settlement - Location 2
High Grout Strength

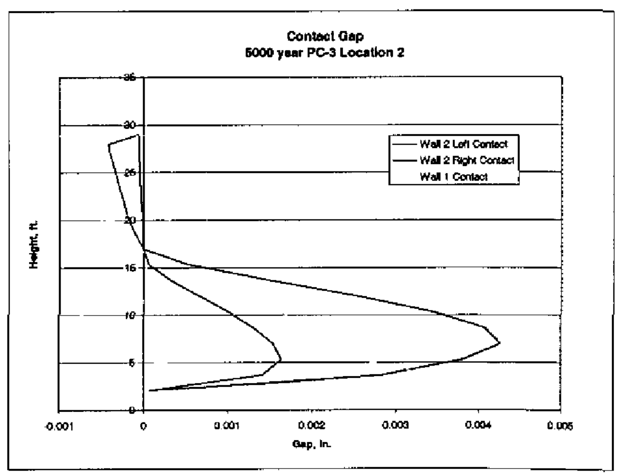


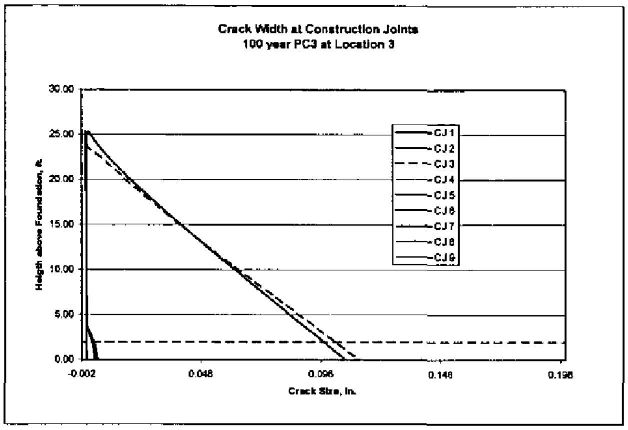


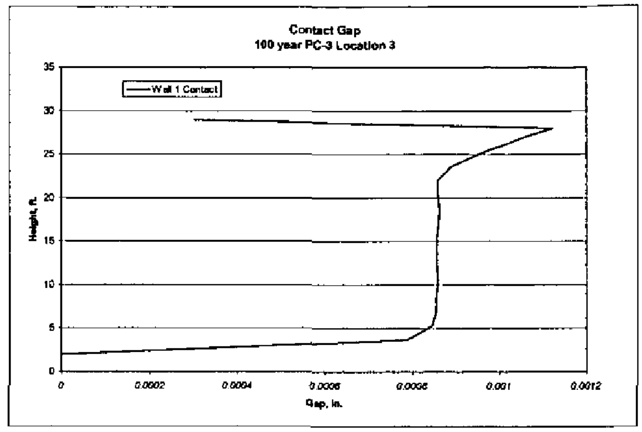


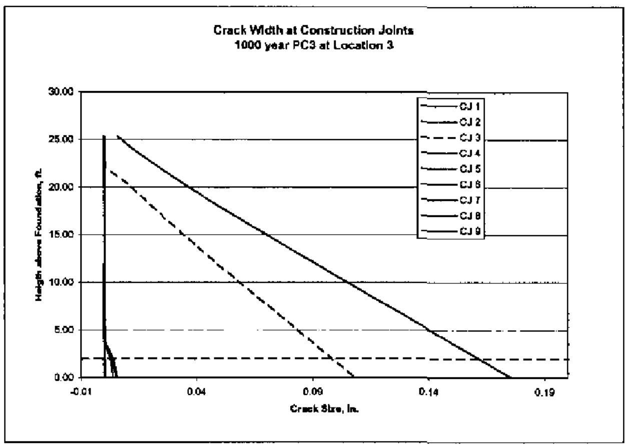


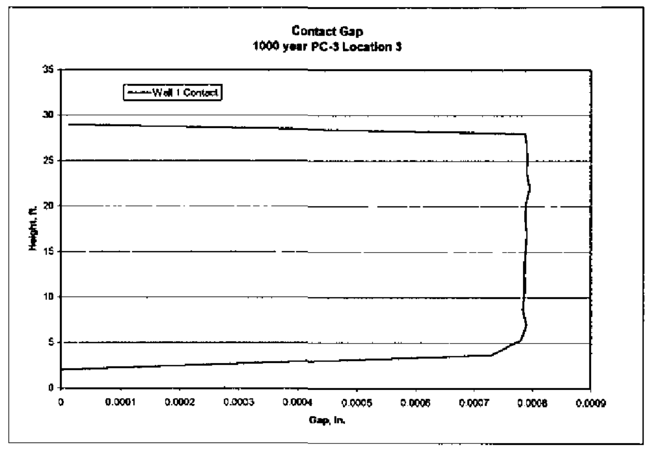


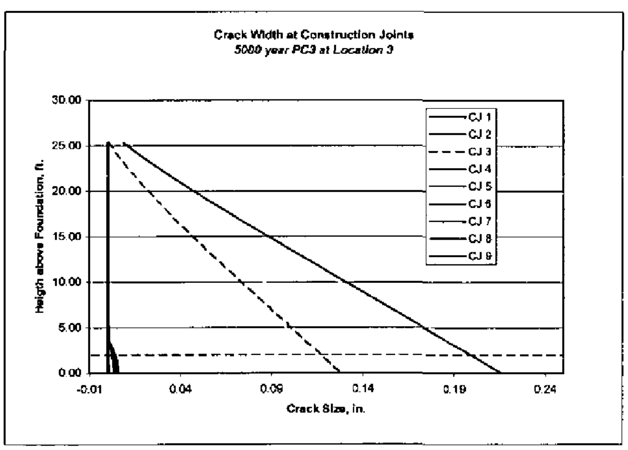


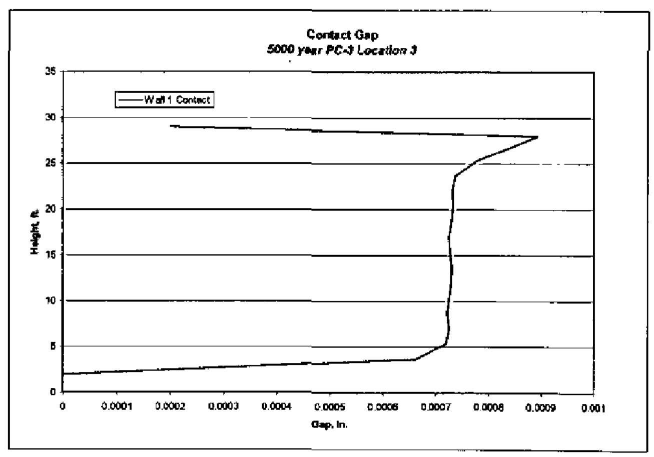

Crack Width at Construction Joints
100 year PC3 at Location 3
Heigth above Foundation, ft.
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-0.002
0.048
0.098
0.148
0.198
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

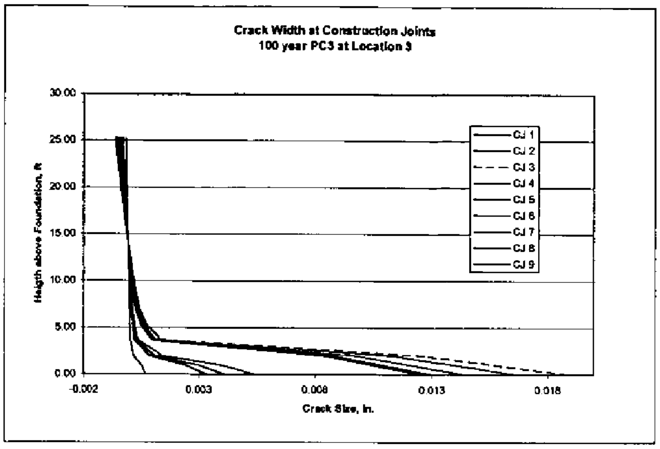

Contact Gap
100 year PC-3 Location 3
Wall 1 Contact
Height, ft.
35
30
25
20
15
10
5
0
0
0.0002
0.0004
0.0006
0.0008
0.001
0.0012
Gap, in.

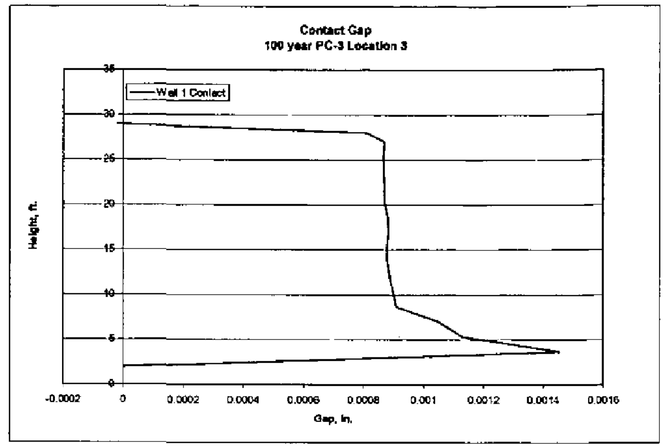

Crack Width at Construction Joints
1000 year PC3 at Location 3
Heigth above Foundation, ft.
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-0.01
0.04
0.09
0.14
0.19
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

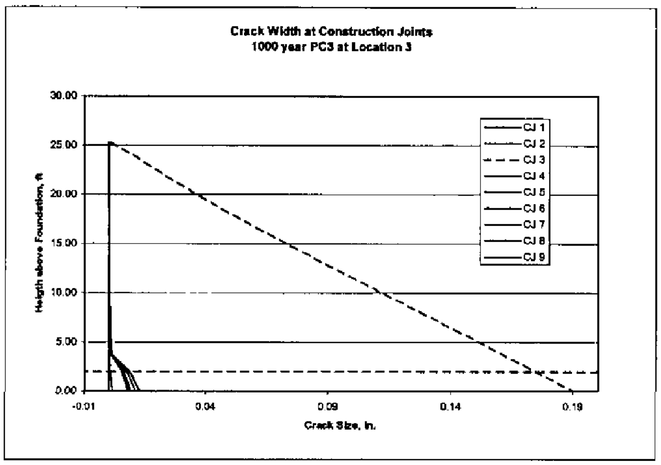

Contact Gap
1000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
35
30
25
20
15
10
5
0
0
0.0001
0.0002
0.0003
0.0004
0.0005
0.0006
0.0007
0.0008
0.0009
Gap, in.

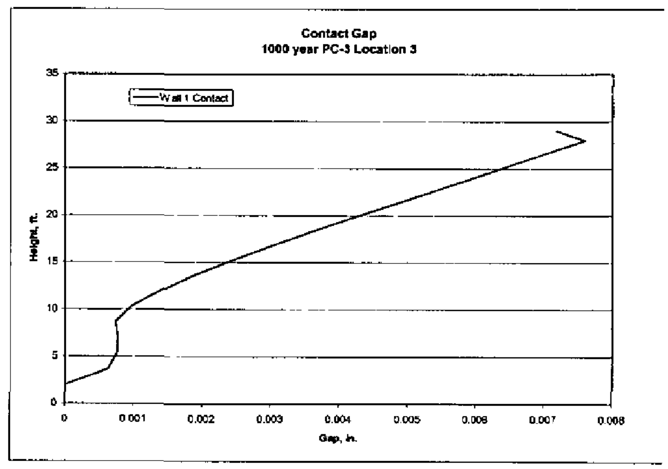

Crack Width at Construction Joints
5000 year PC3 at Location 3
Heigth above Foundation, ft.
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-0.01
0.04
0.09
0.14
0.19
0.24
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

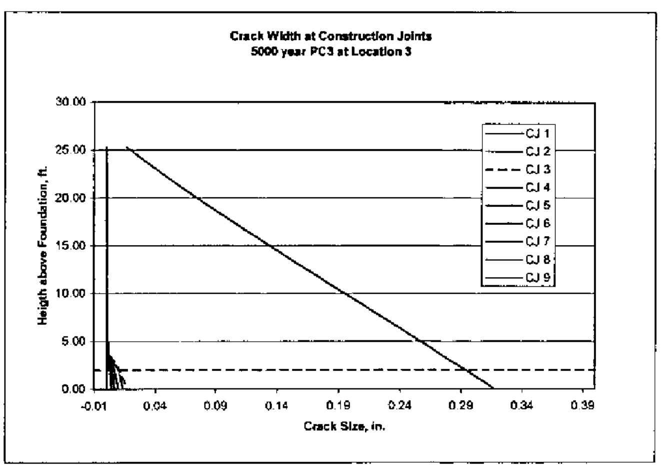

Contact Gap
5000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
35
30
25
20
15
10
5
0
0
0.0001
0.0002
0.0003
0.0004
0.0005
0.0006
0.0007
0.0008
0.0009
0.001
Gap, in.

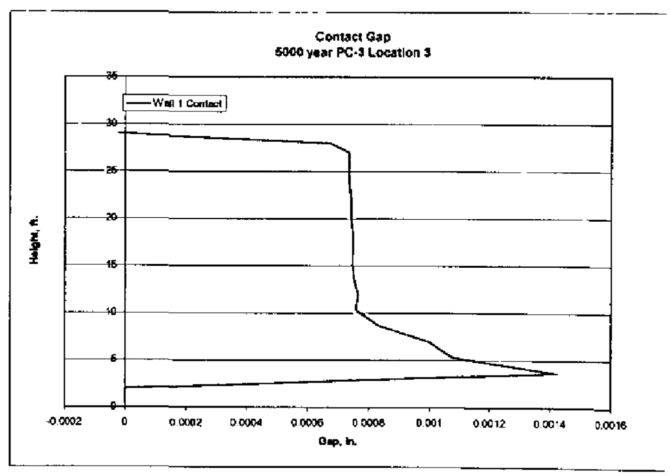

Crack Width at Construction Joints
100 year PC3 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Heigth above Foundation, ft
Crack Size, in.

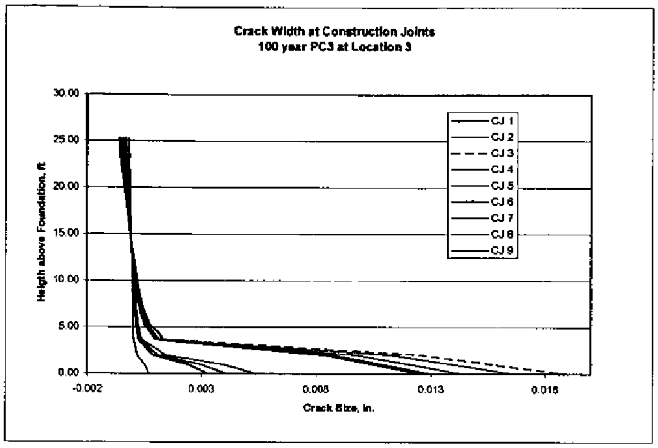

Contact Gap
100 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

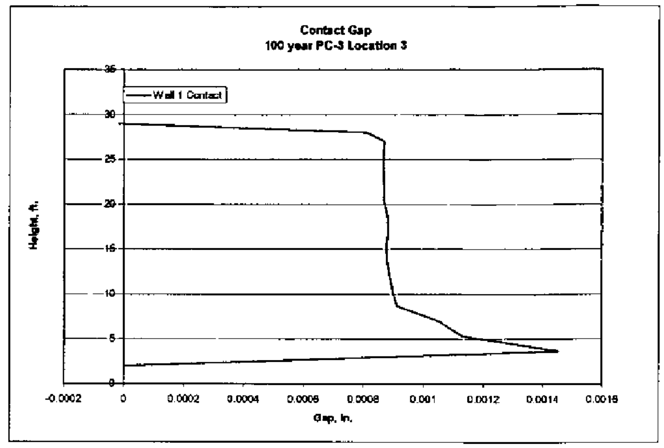

Crack Width at Construction Joints
1000 year PC3 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Heigth above Foundation, ft
Crack Size, in.

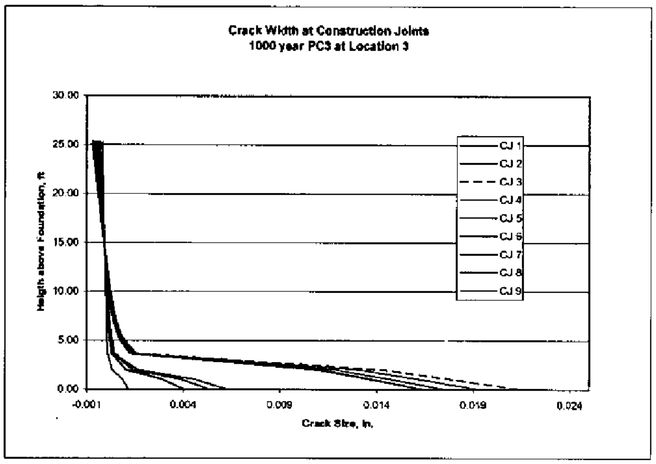

Contact Gap
1000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

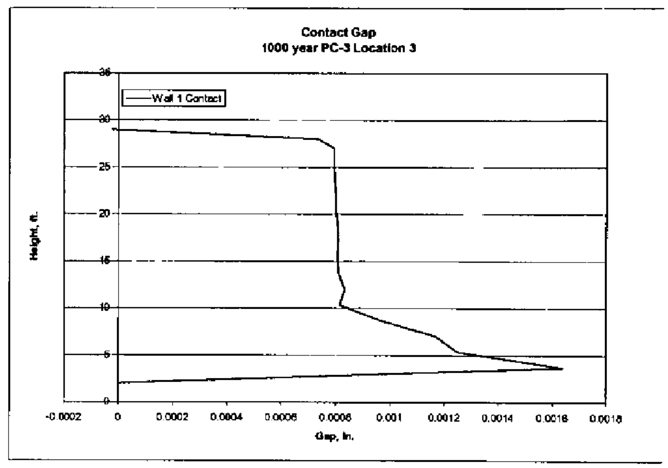

Crack Width at Construction Joints
5000 year PC3 at Location 3
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9
Heigth above Foundation, ft.
Crack Size, in.

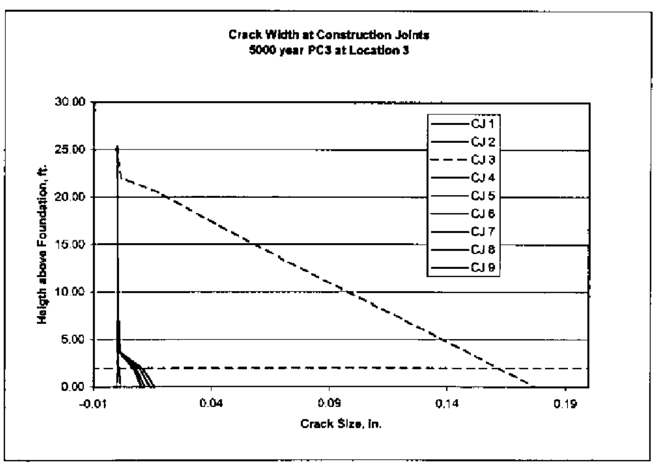

Contact Gap
5000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

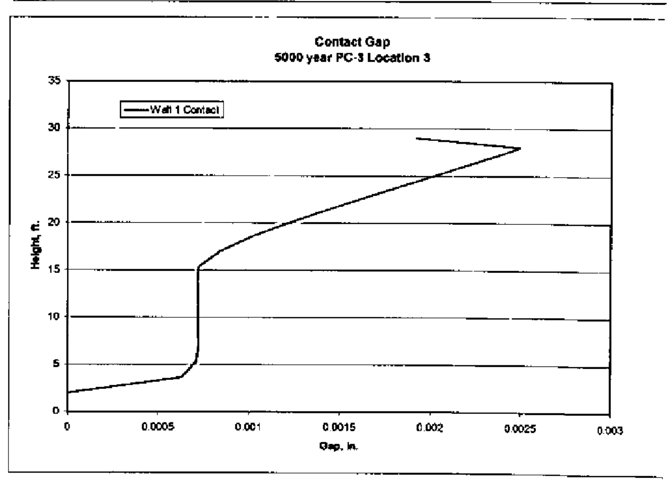

Crack Width at Construction Joints
100 year PC3 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9


Contact Gap
100 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.


Crack Width at Construction Joints
1000 year PC3 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9


Contact Gap
1000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.


Crack Width at Construction Joints
5000 year PC3 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9


Contact Gap
5000 year PC-3 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

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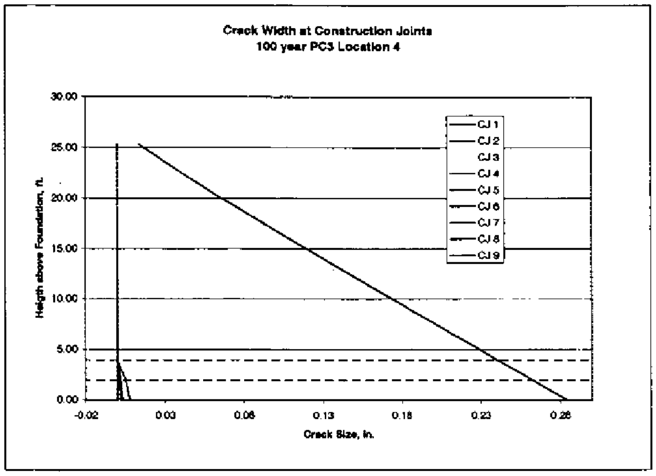
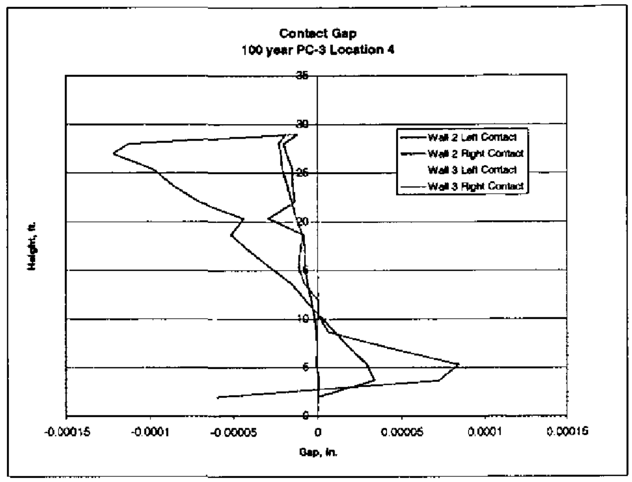
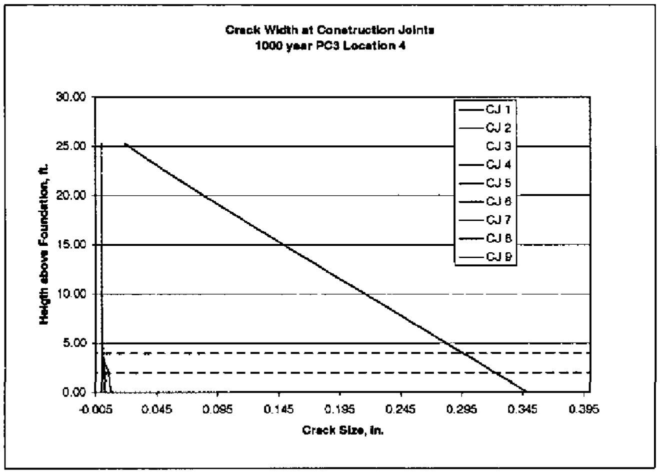
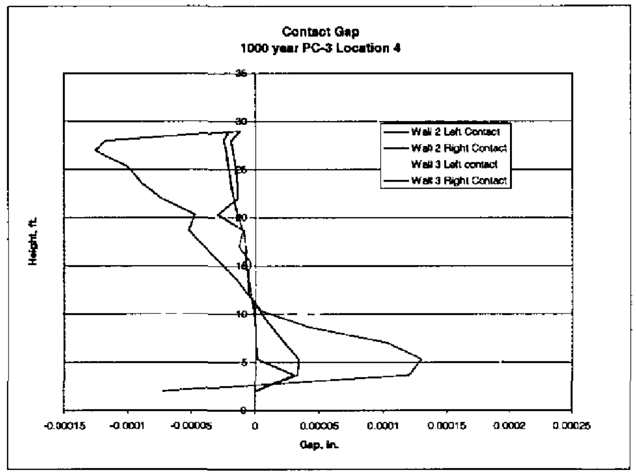
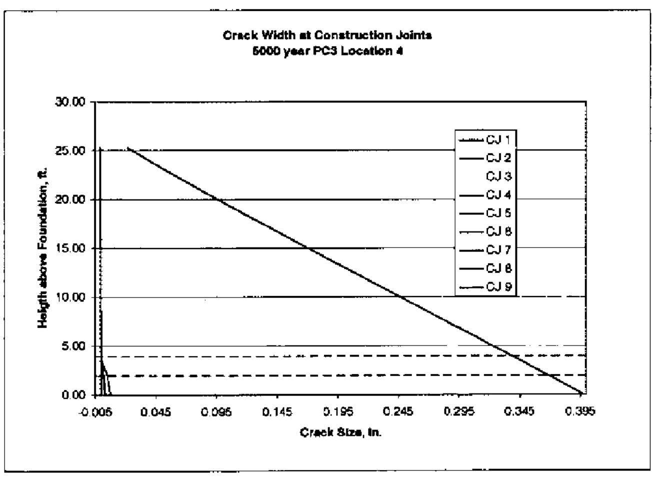
PC-3 Differential Settlement - Location 4
Low Grout Strength

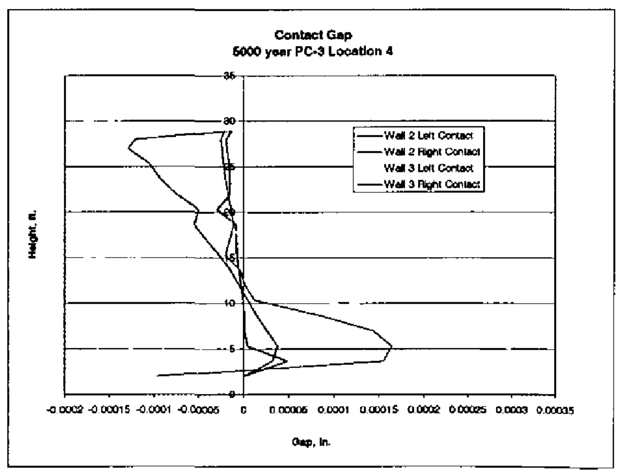












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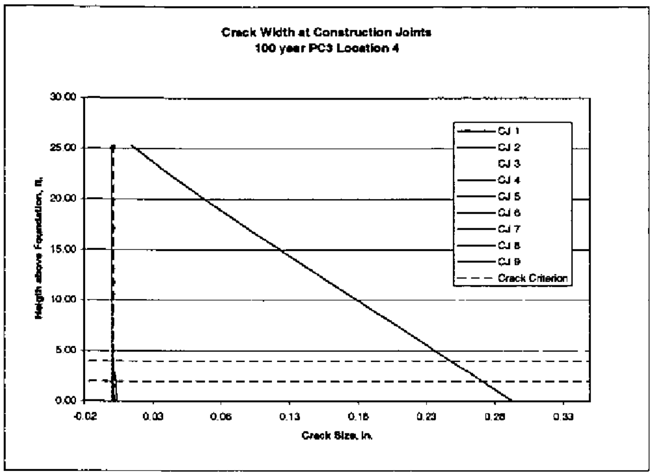
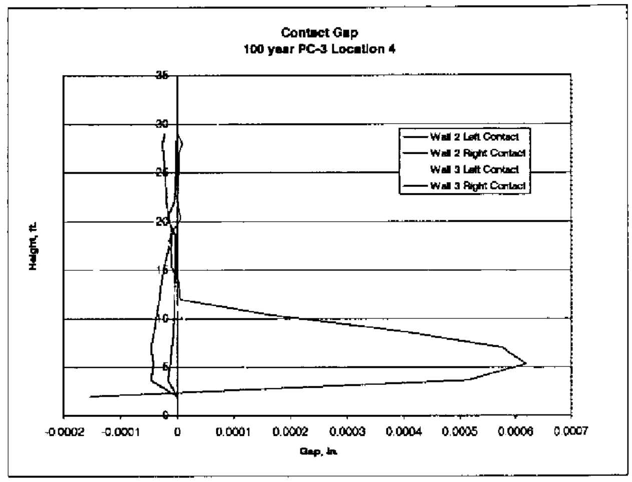
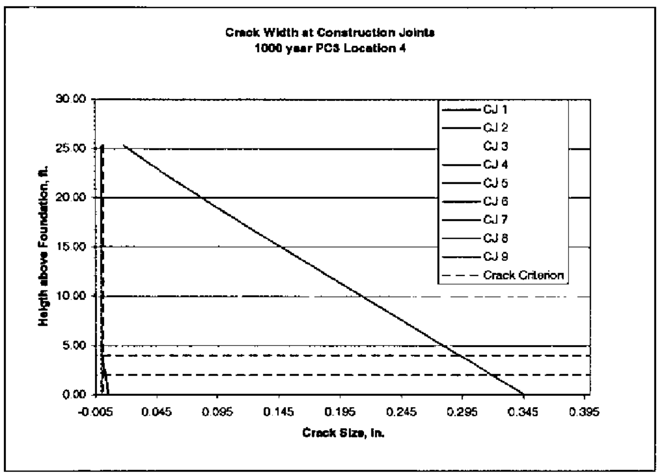
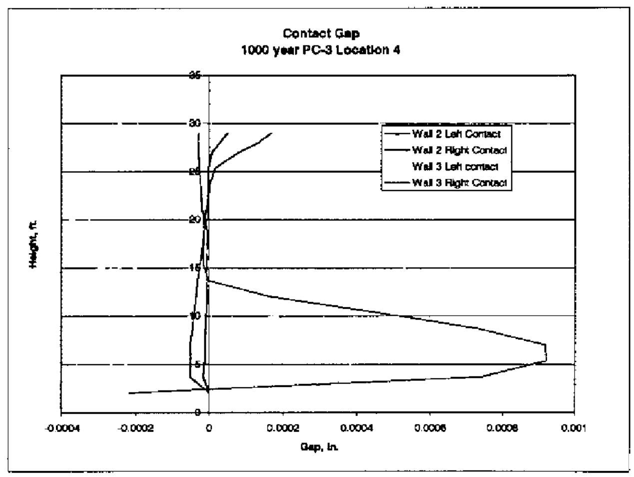
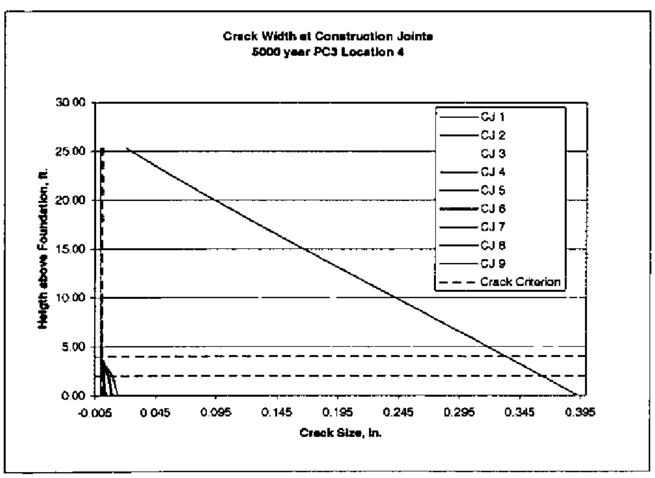
PC-3 Differential Settlement - Location 4
Mean Grout Strength

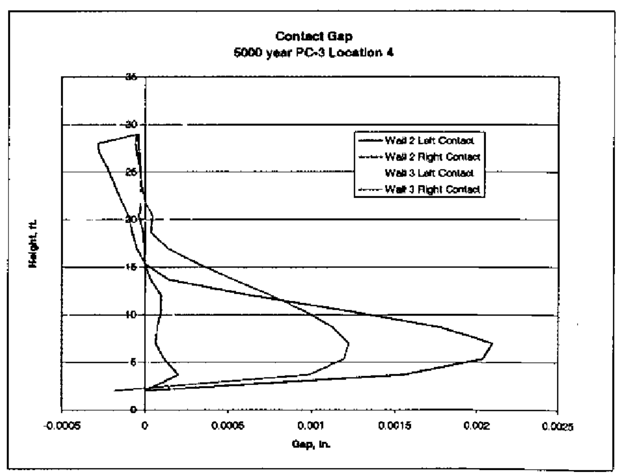












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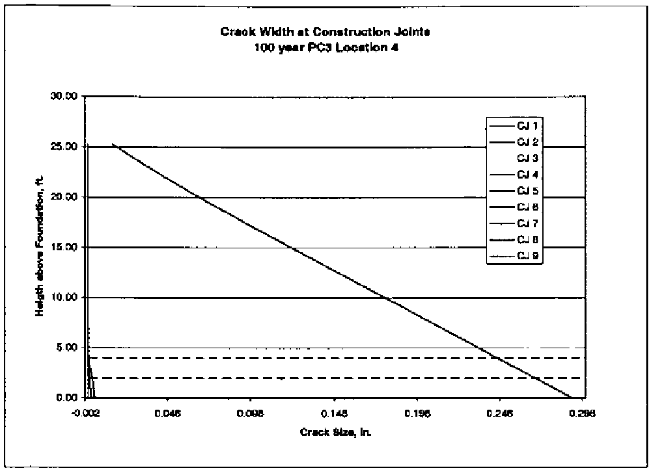
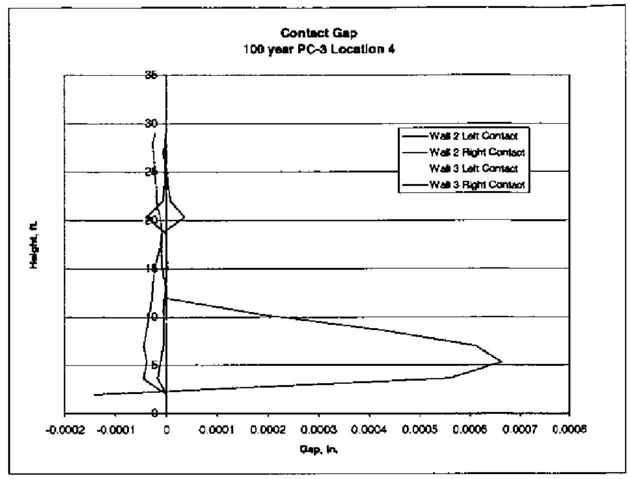
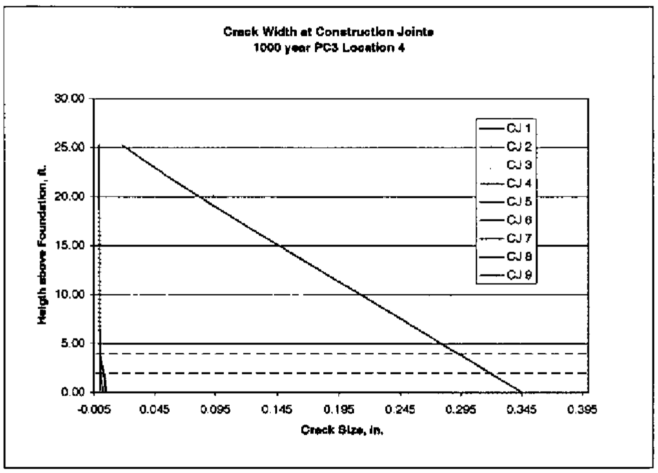
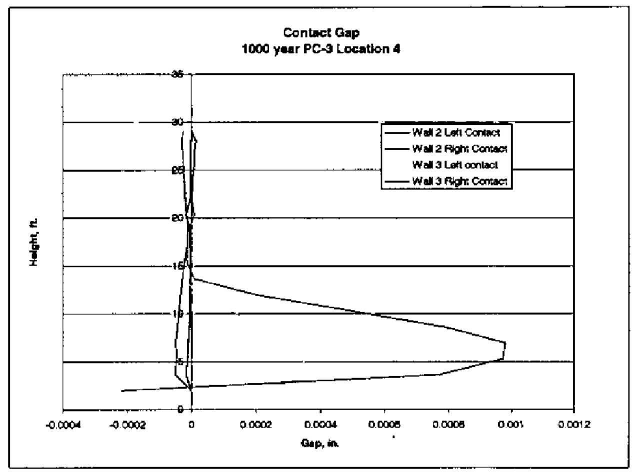
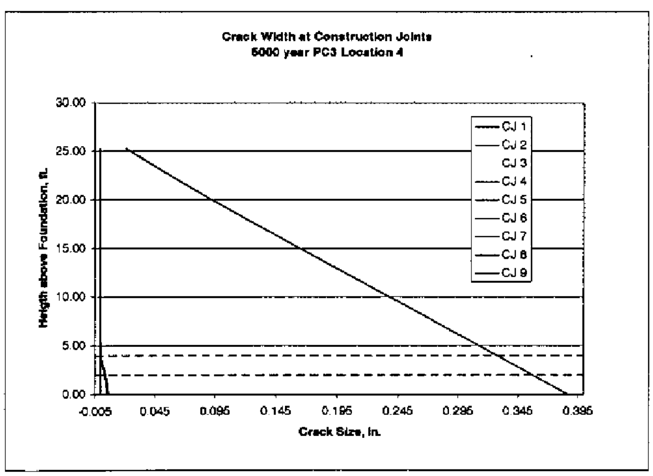
PC-3 Differential Settlement - Location 4
High Grout Strength

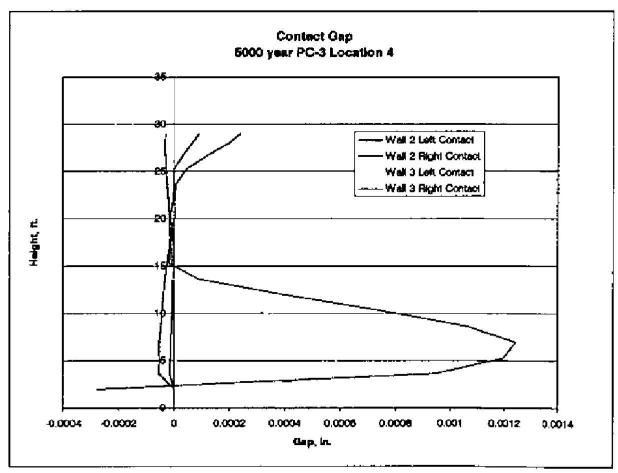












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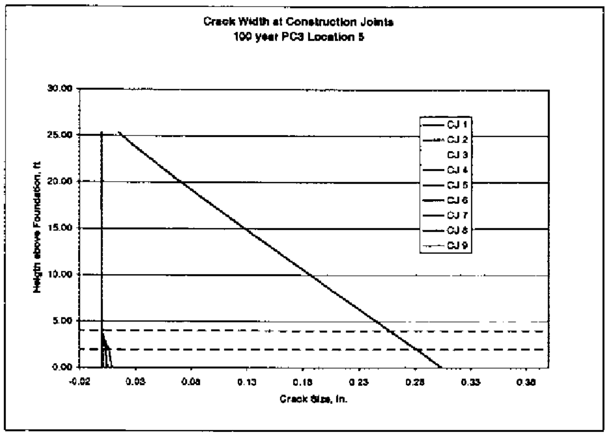
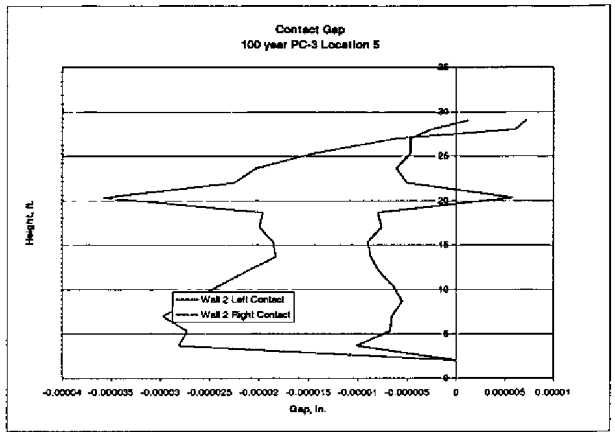
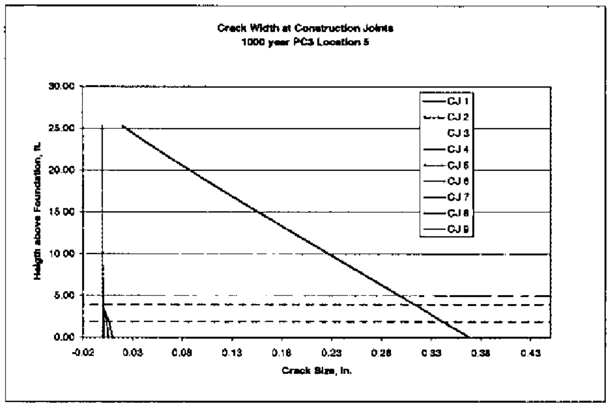
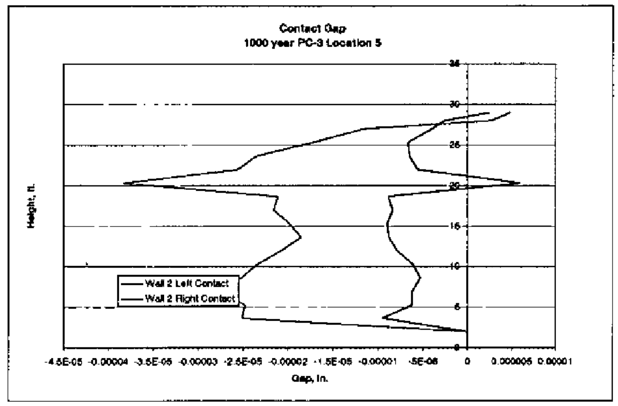
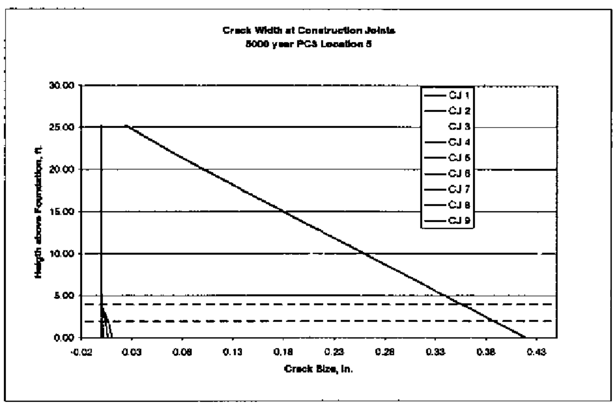
PC-3 Differential Settlement - Location 5
Low Grout Strength

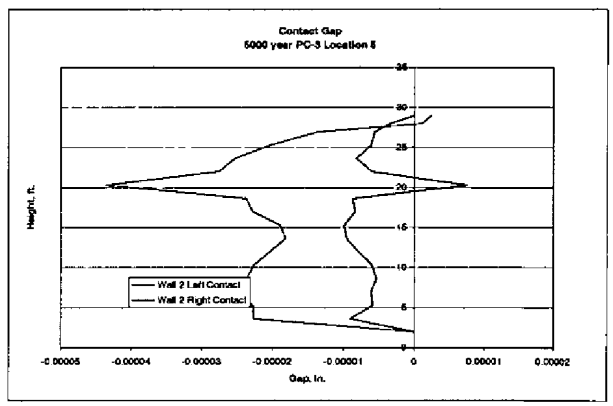




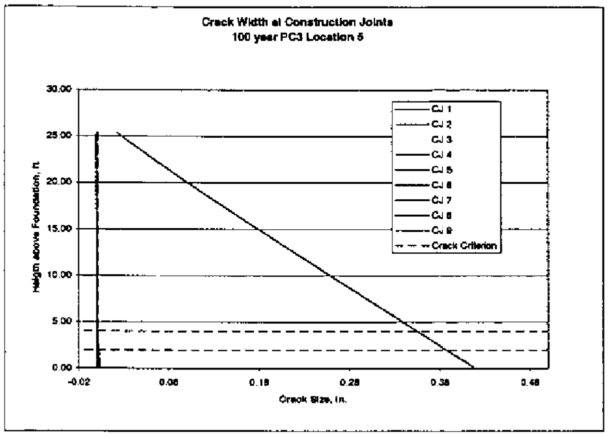


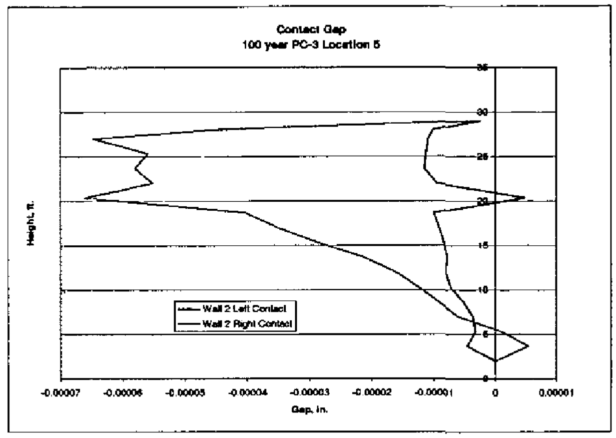


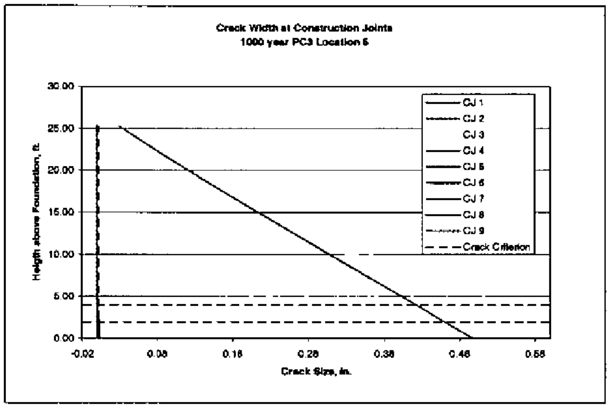


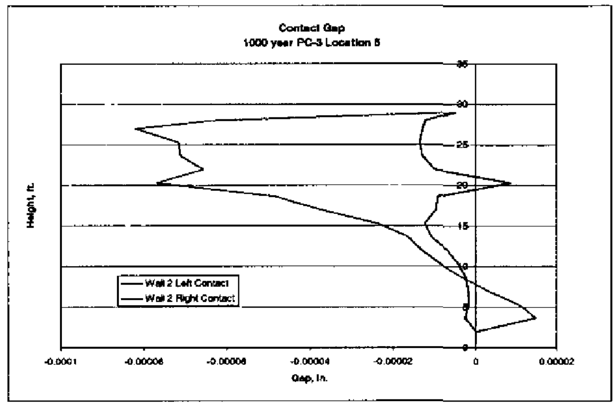


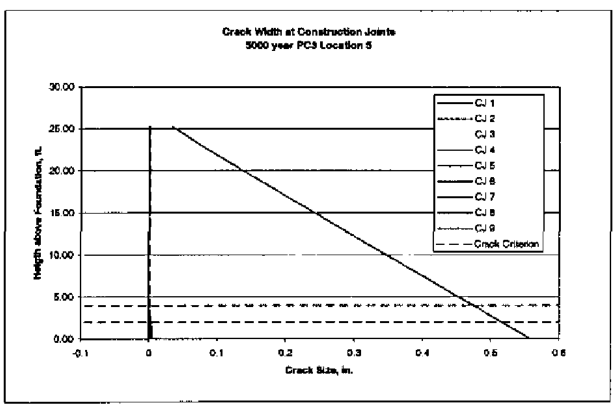
PC-3 Differential Settlement - Location 5
Mean Grout Strength

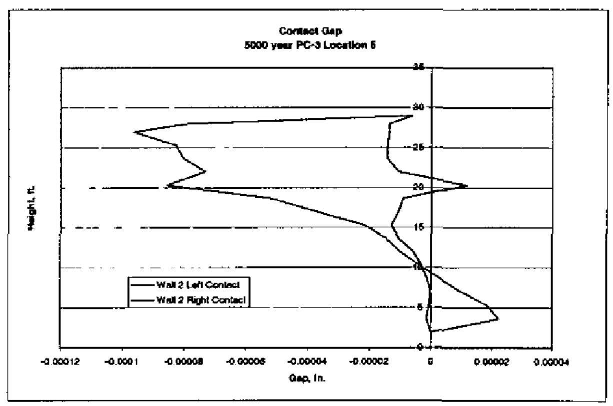












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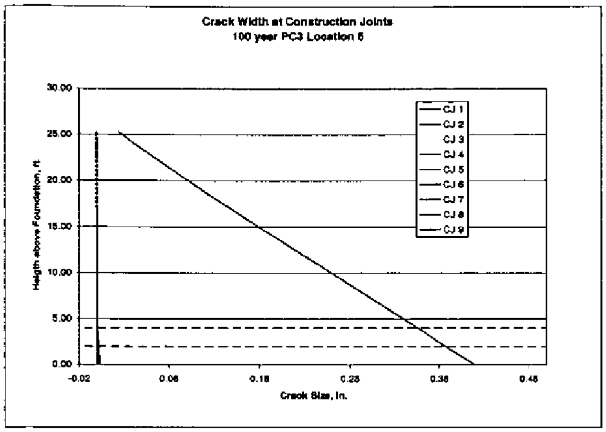
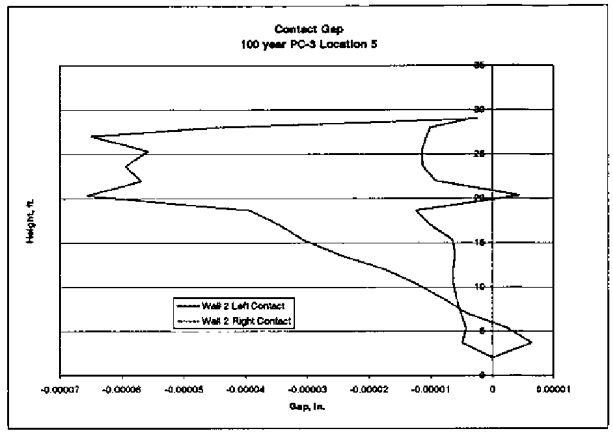
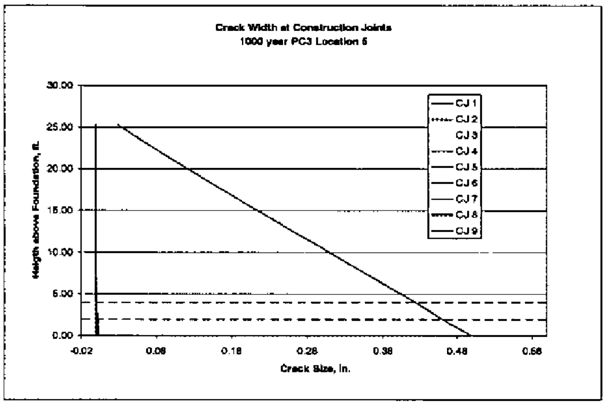
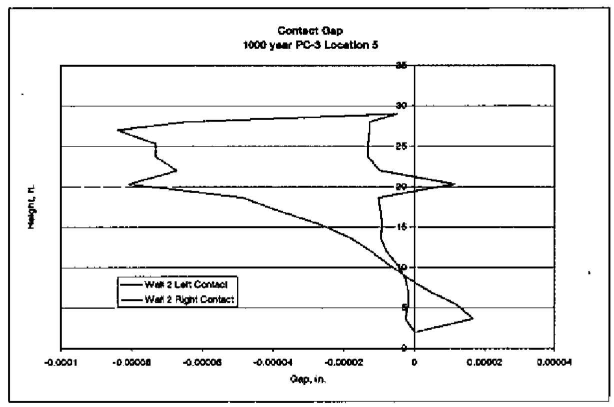
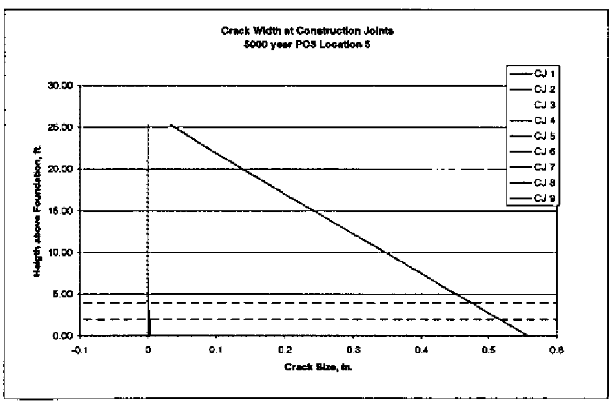
PC-3 Differential Settlement - Location 5
High Grout Strength

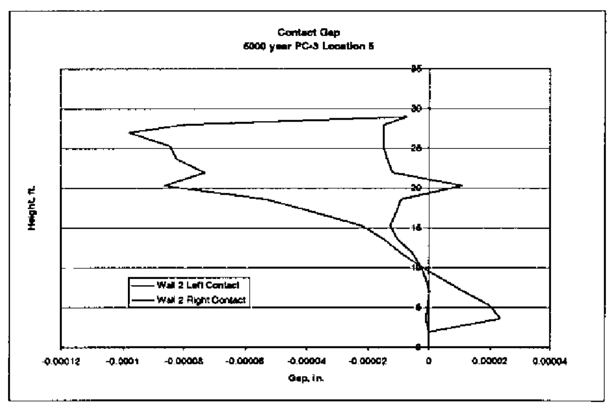




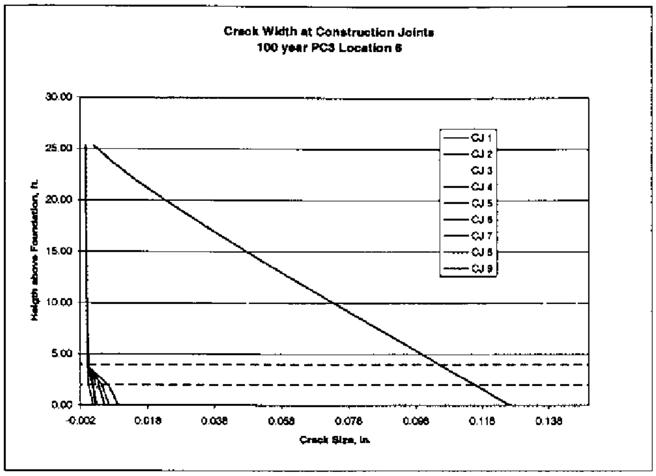


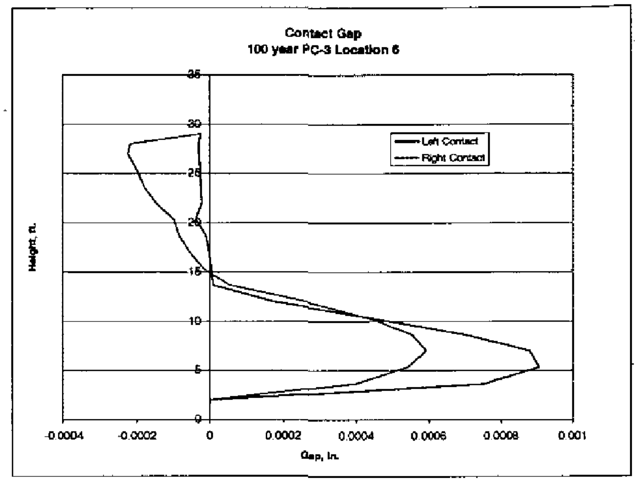


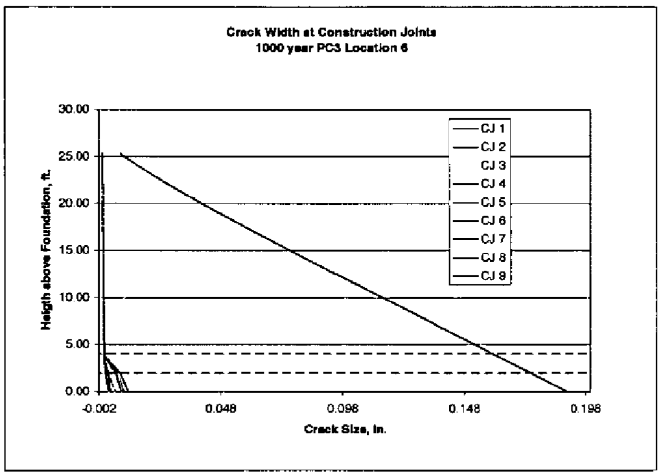


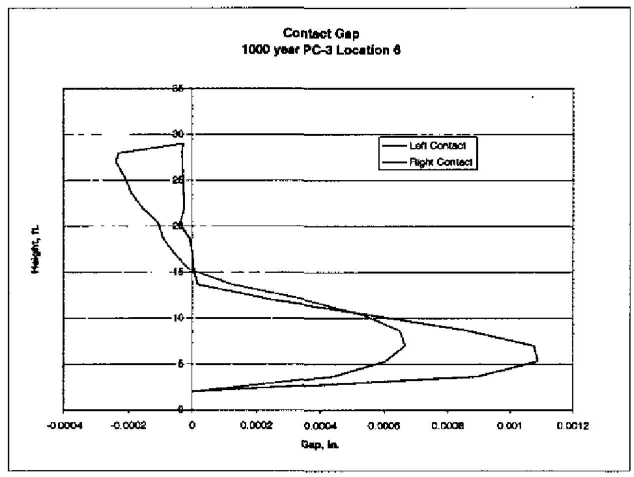


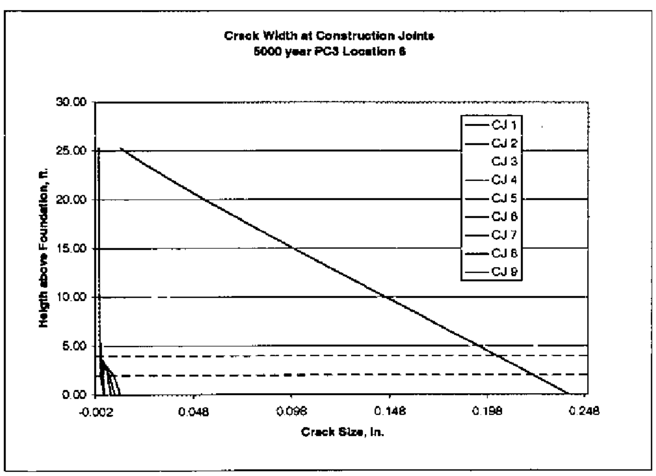
PC-3 Differential Settlement - Location 6
Low Grout Strength

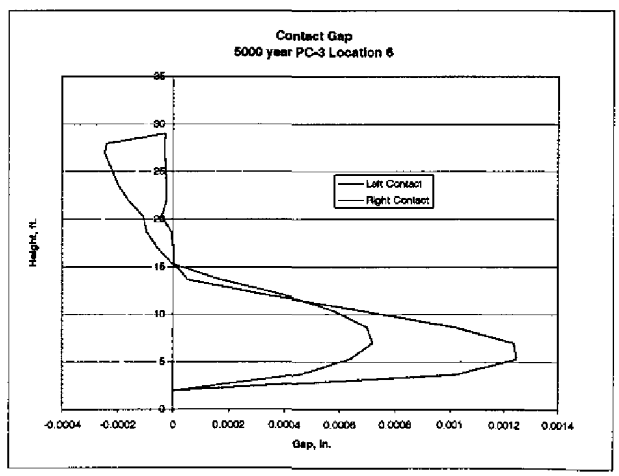




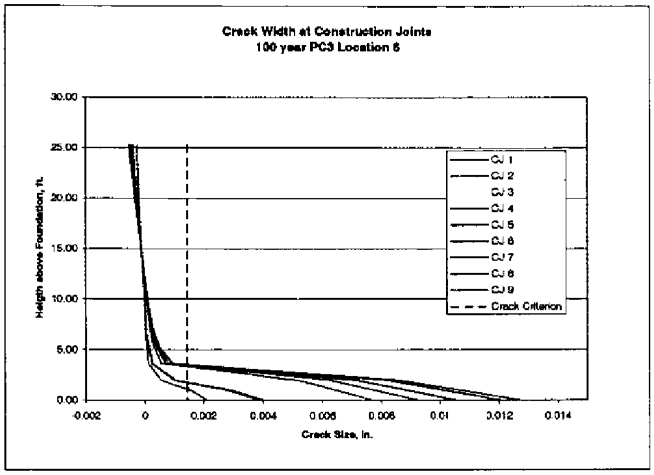


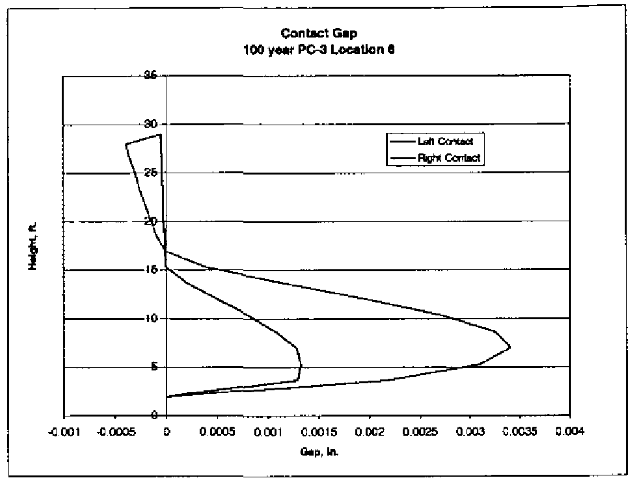


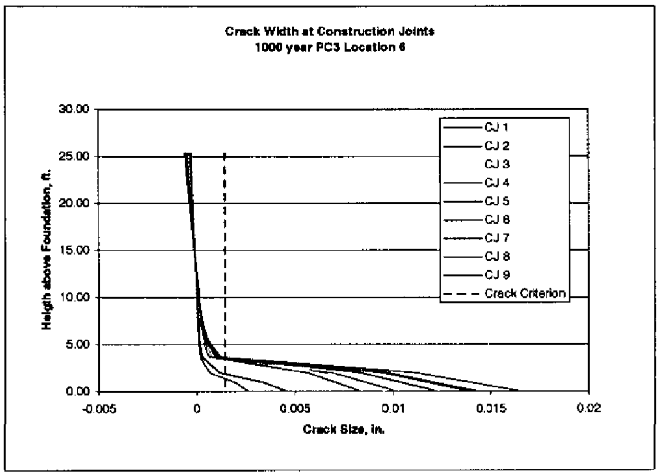


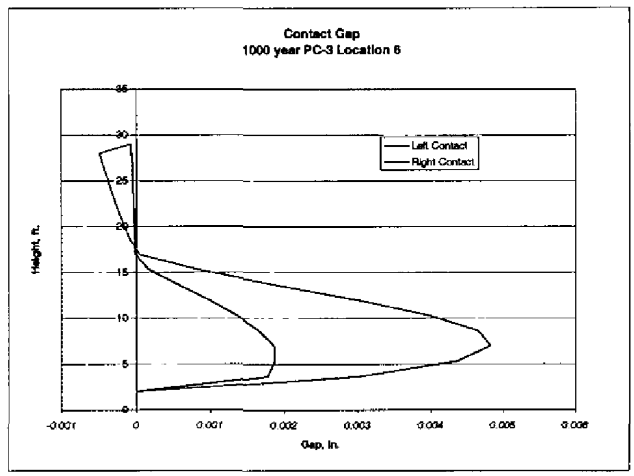


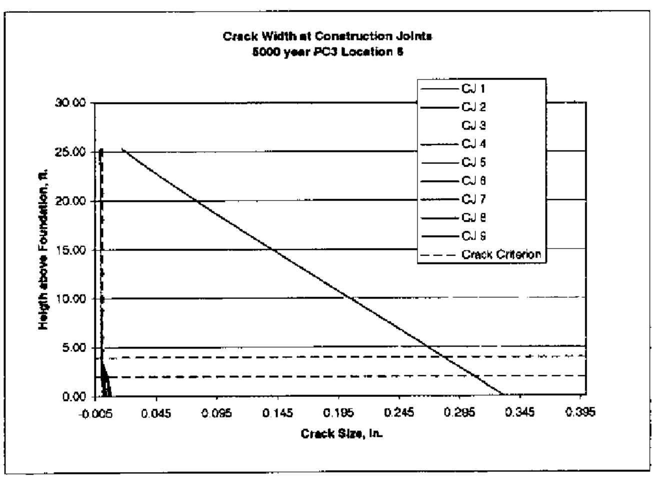
PC-3 Differential Settlement - Location 6
Mean Grout Strength

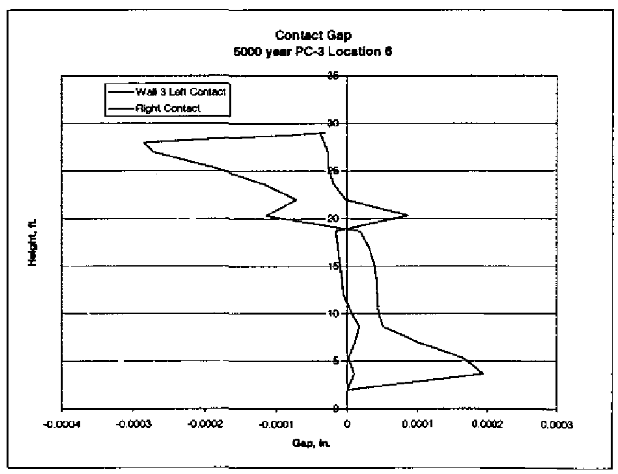




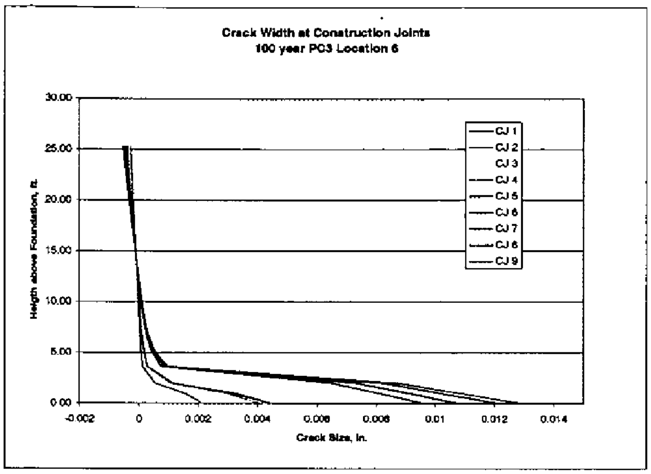


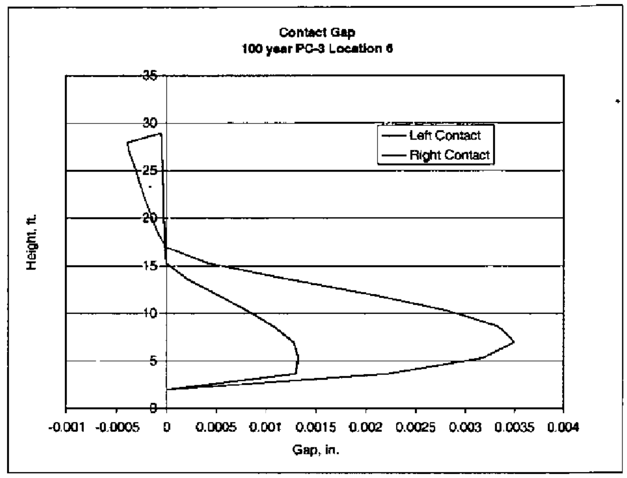


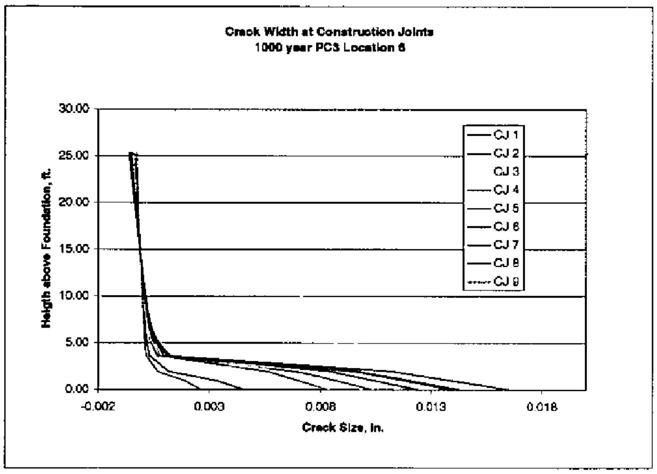


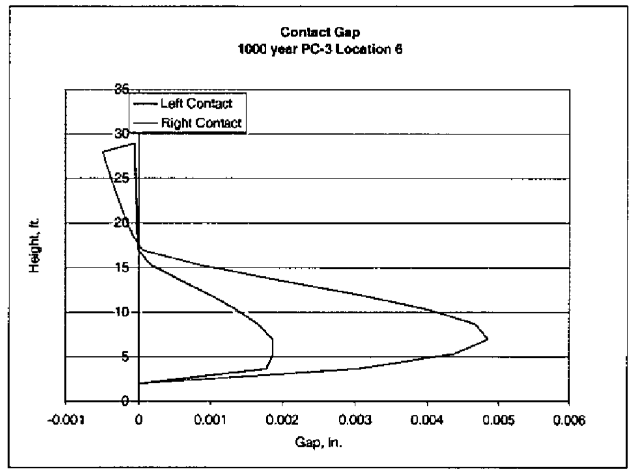


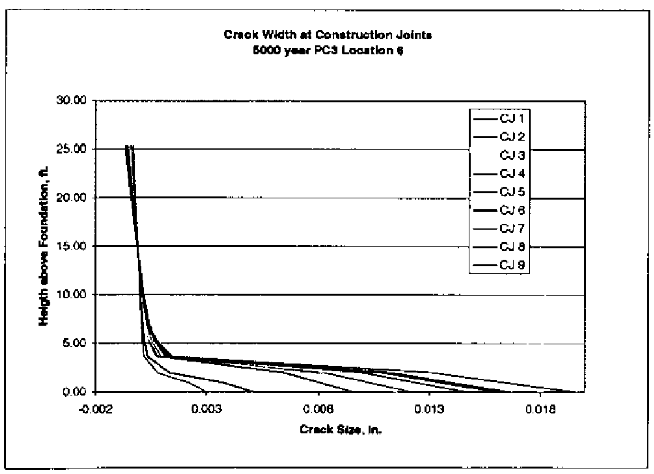
PC-3 Differential Settlement - Location 6
High Grout Strength

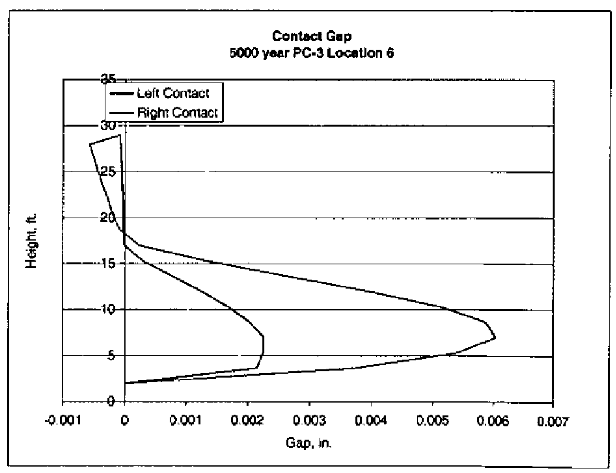




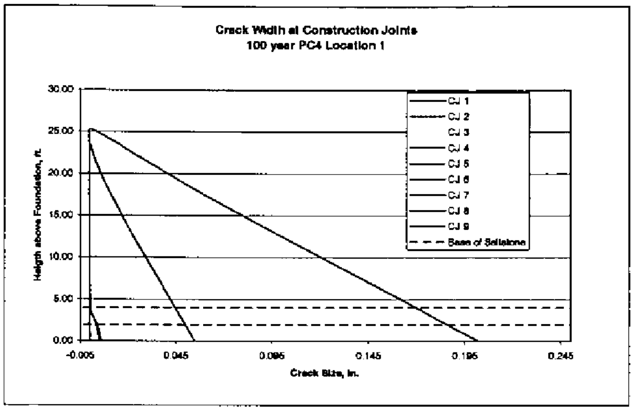


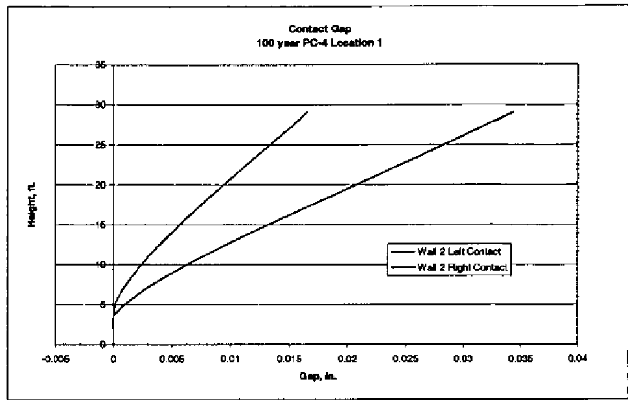


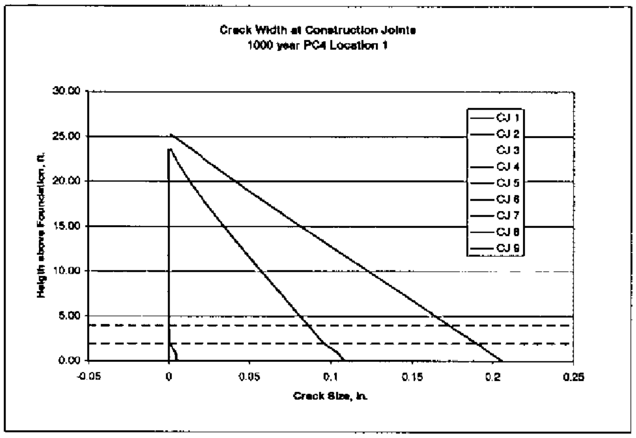


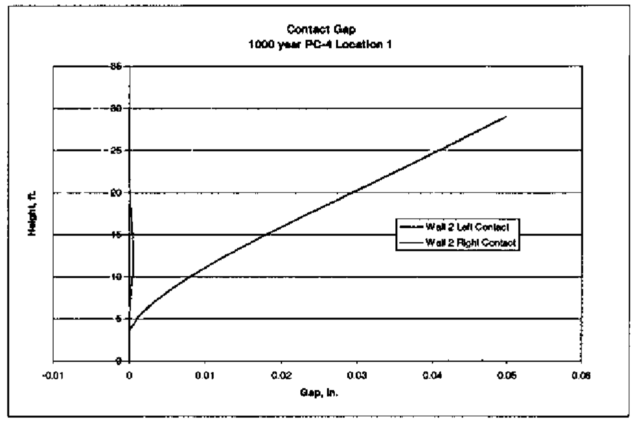


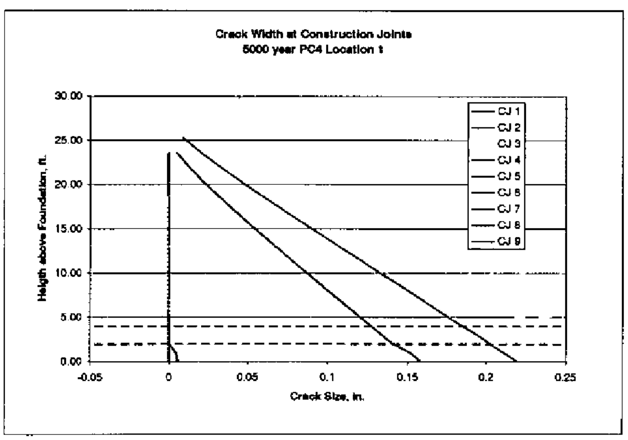
PC-4 Differential Settlement - Location 1
Low Grout Strength

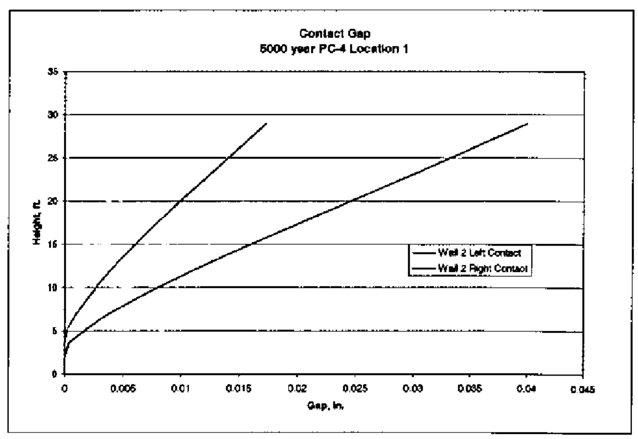












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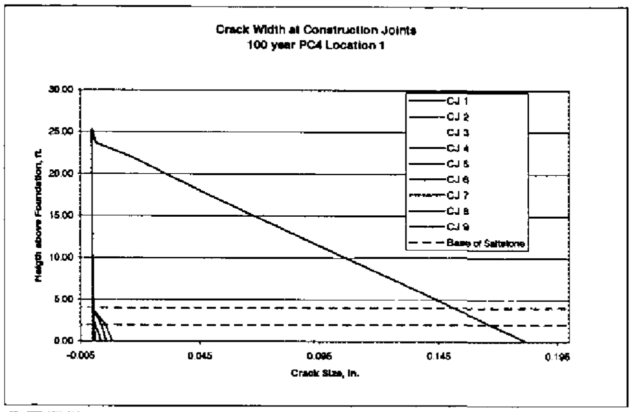
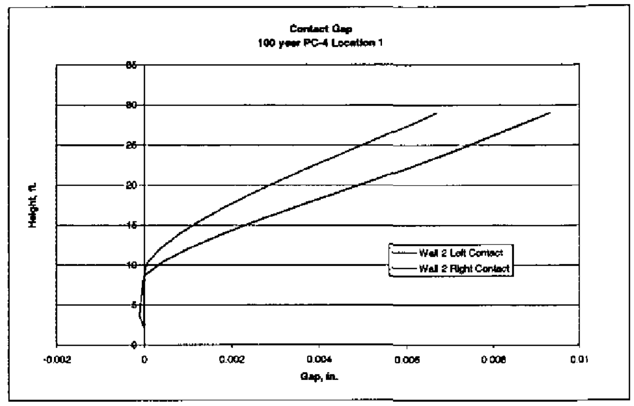
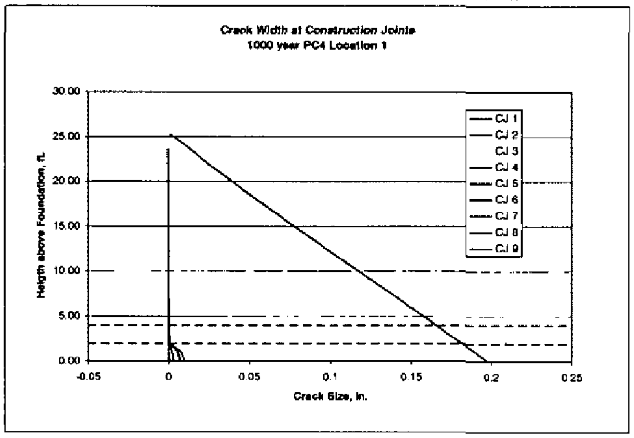
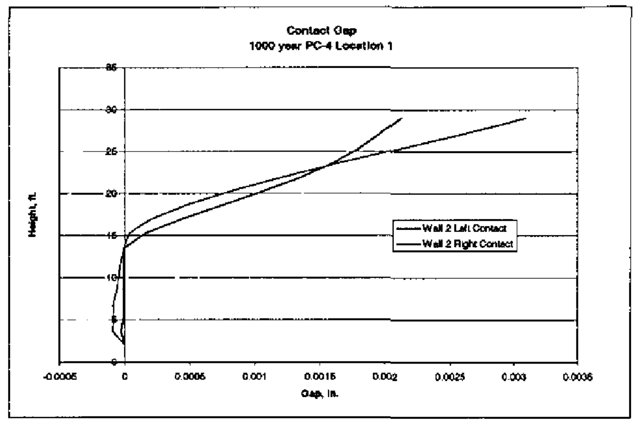
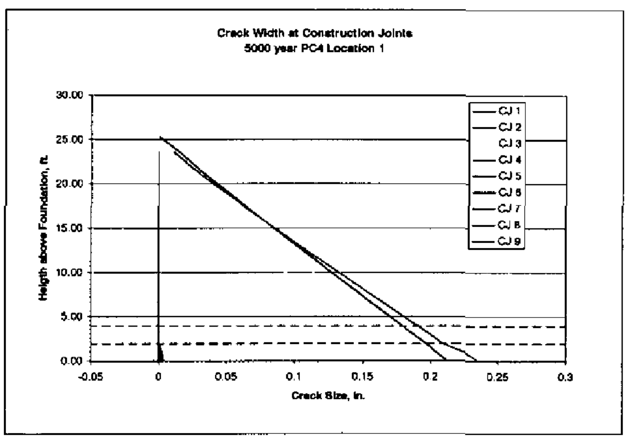
PC-4 Differential Settlement - Location 1
Mean Grout Strength

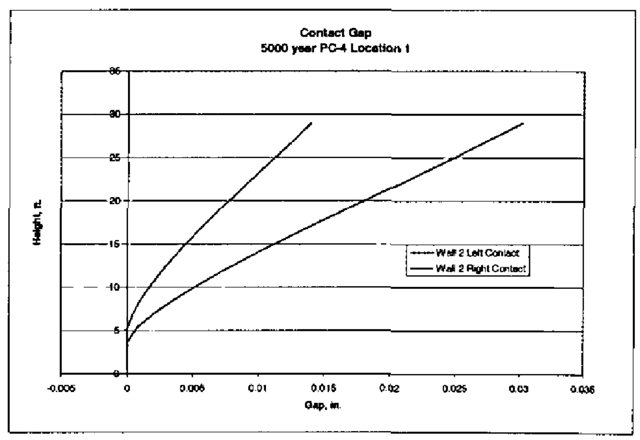












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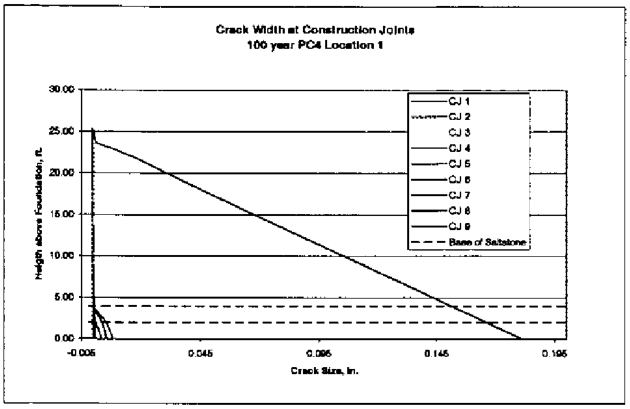
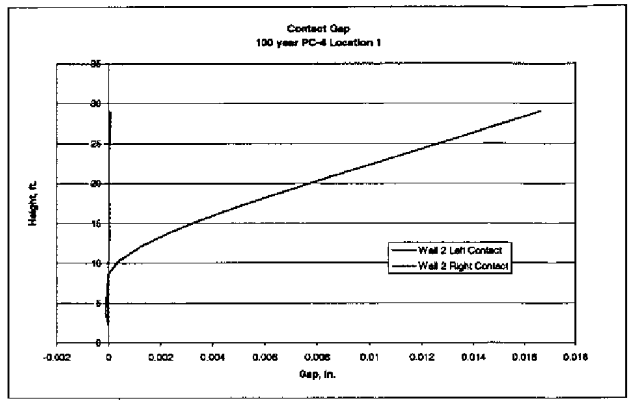
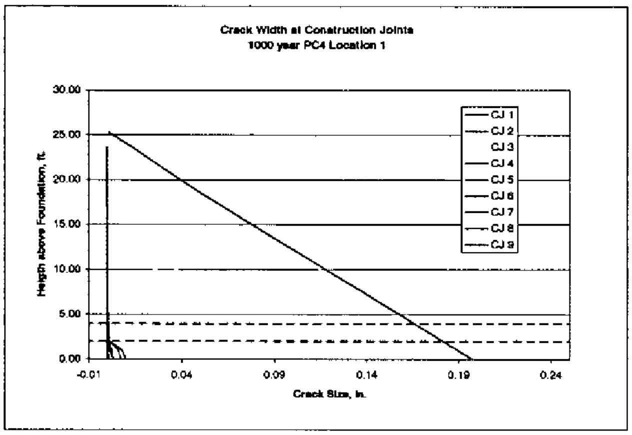
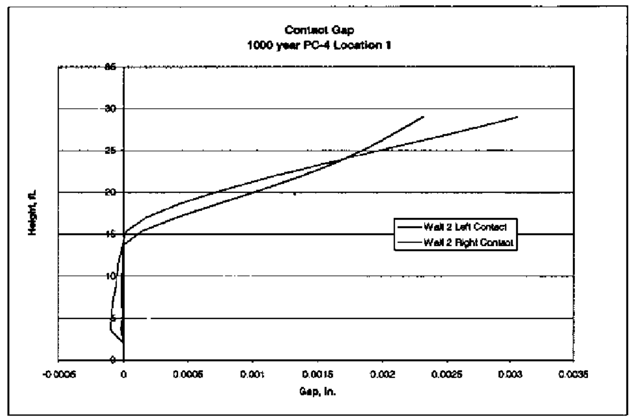
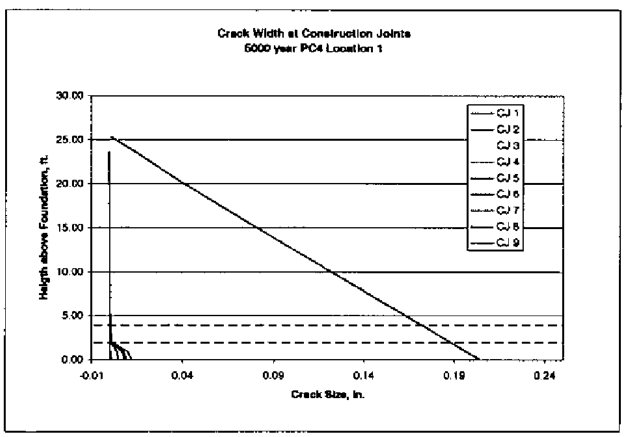
PC-4 Differential Settlement - Location 1
High Grout Strength

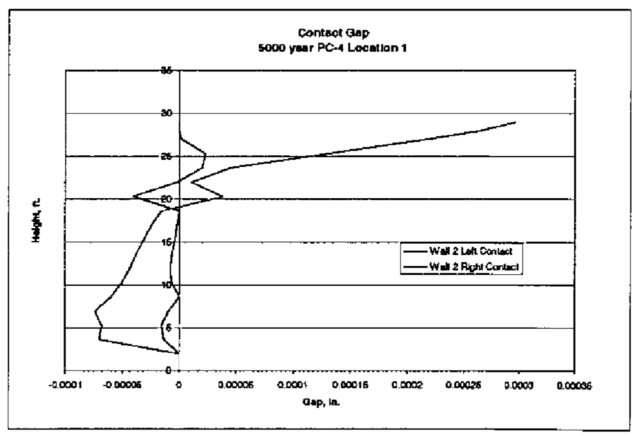












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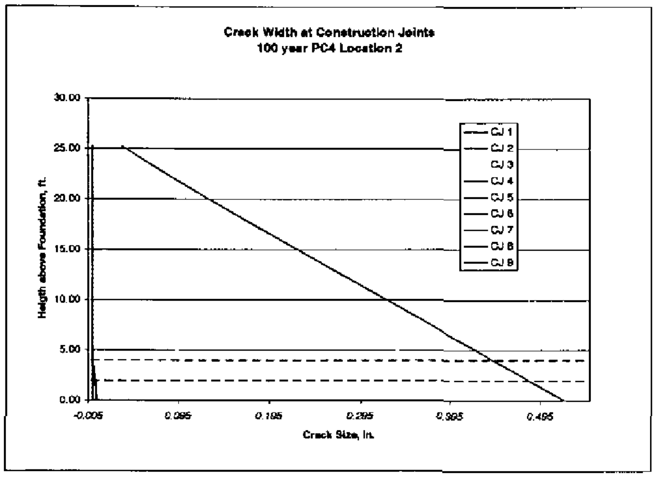
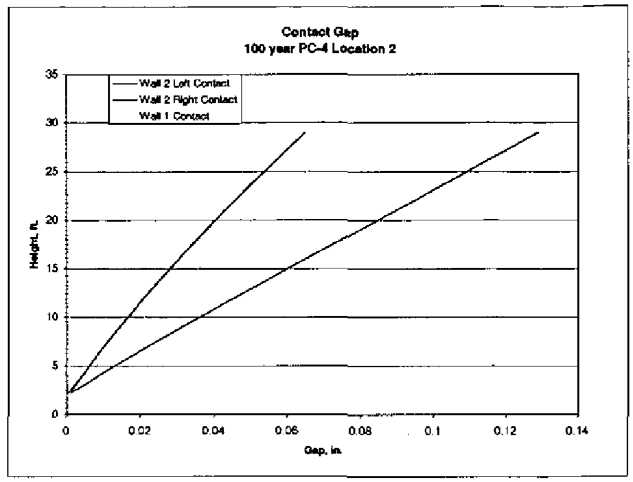
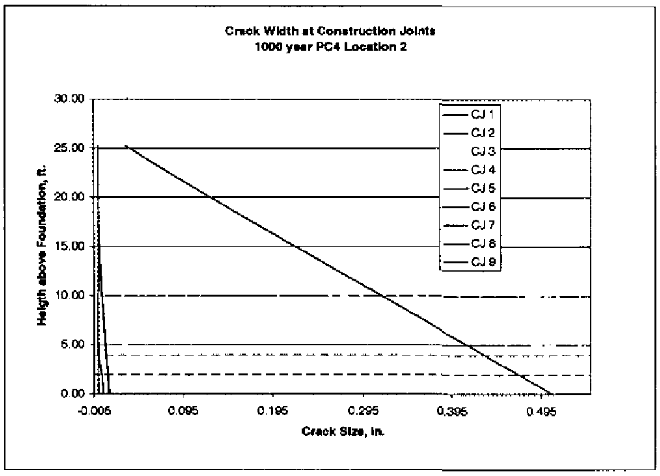
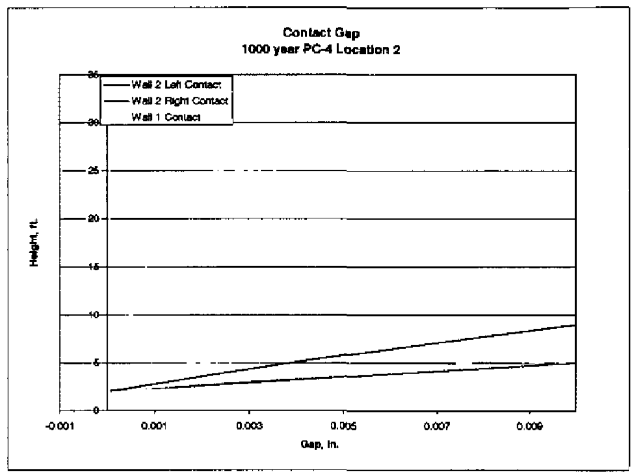
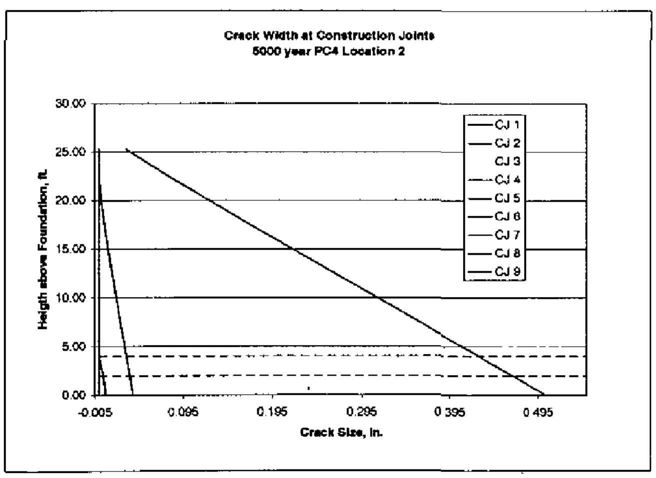
PC-4 Differential Settlement - Location 2
Low Grout Strength

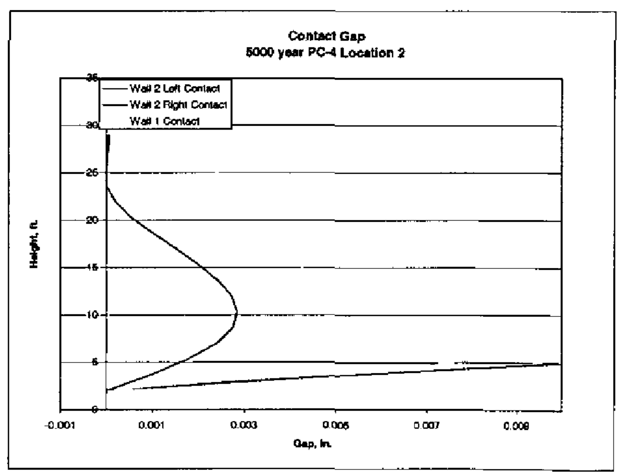




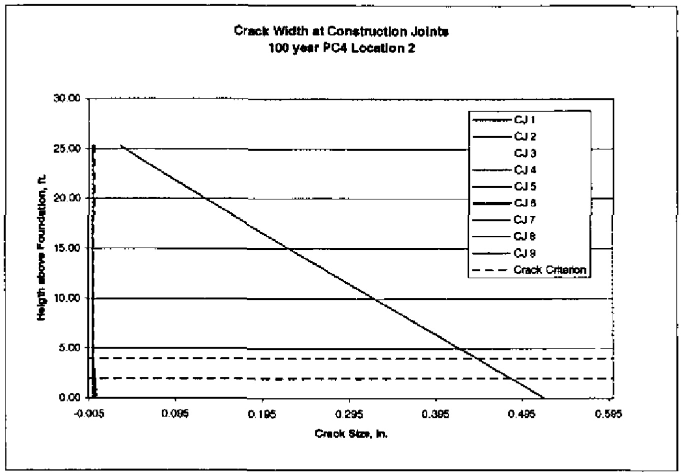


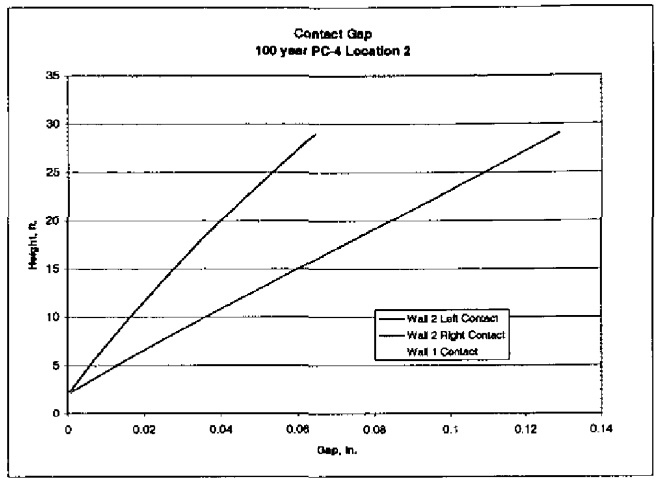


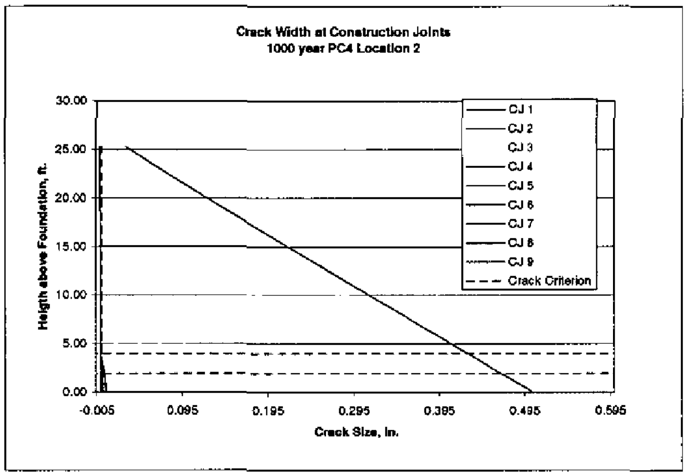


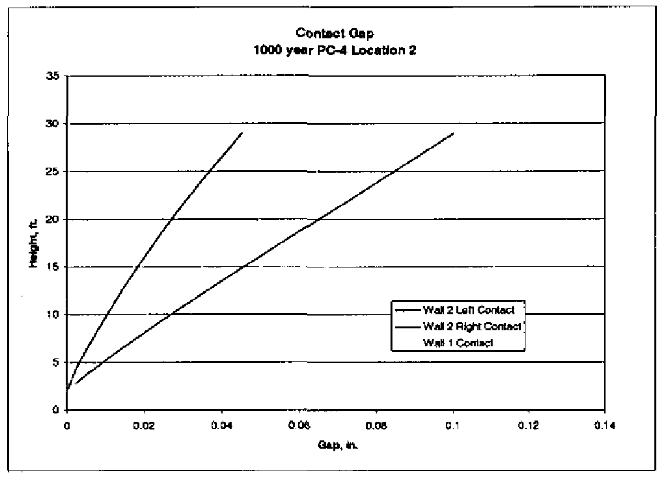


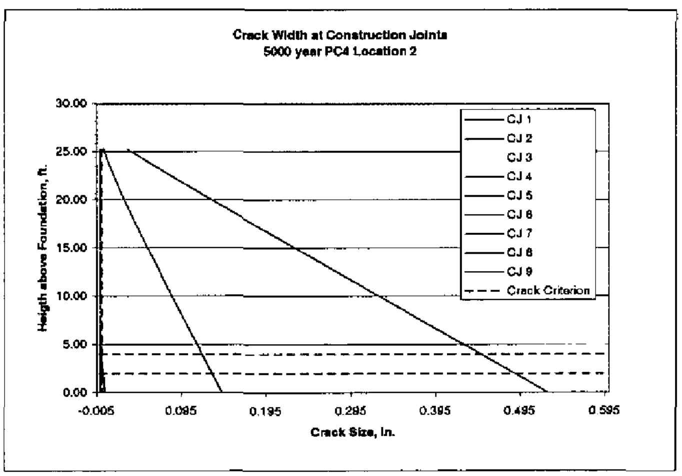
PC-4 Differential Settlement - Location 2
Mean Grout Strength

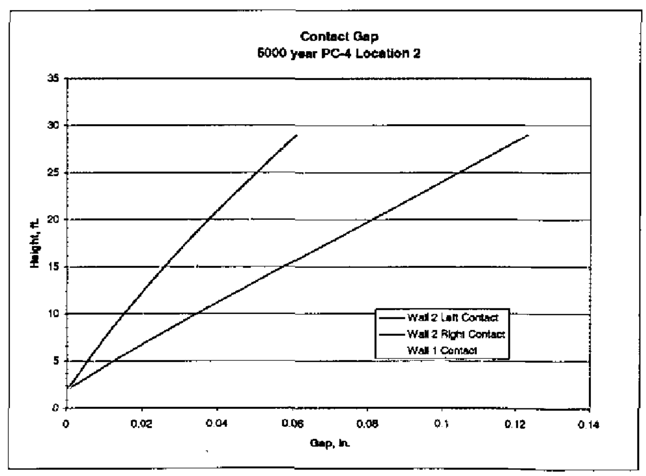




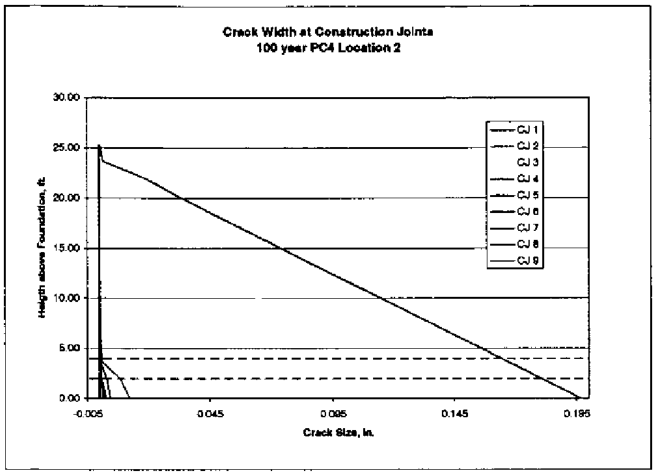




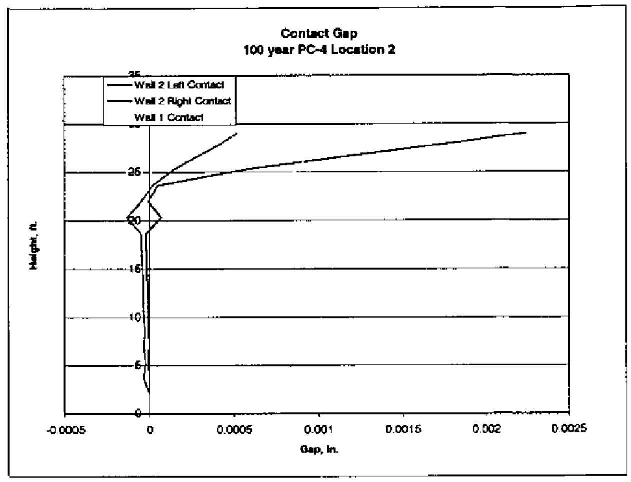




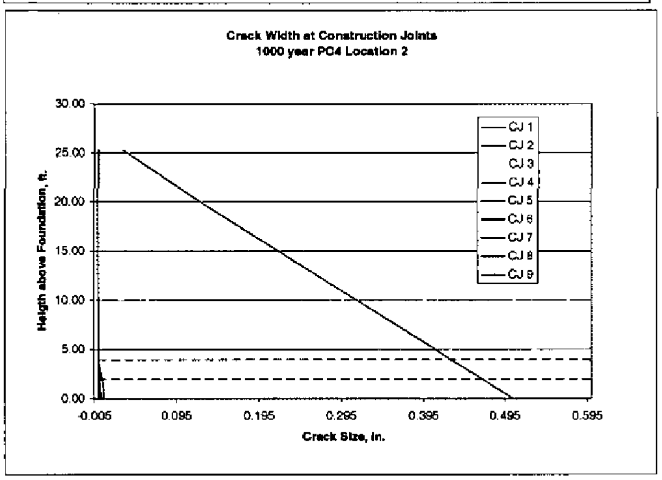
PC-4 Differential Settlement - Location 2
High Grout Strength



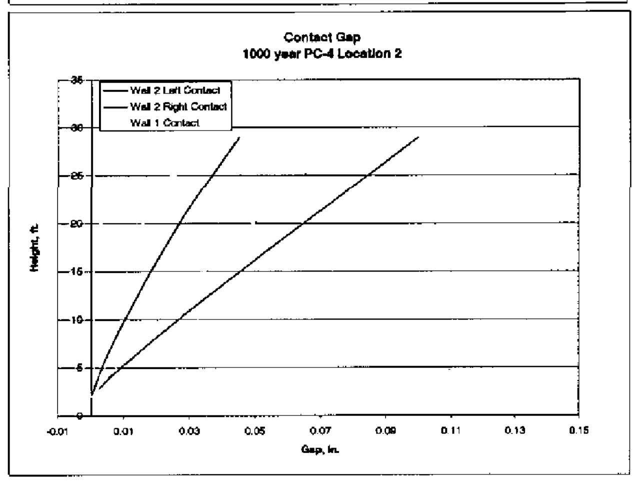
Crack Width at Construction Joints
100 year PC4 Location 2



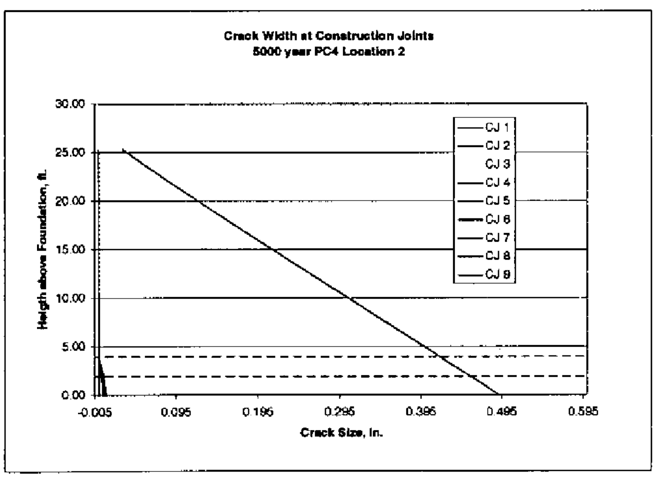
Contact Gap
100 year PC-4 Location 2



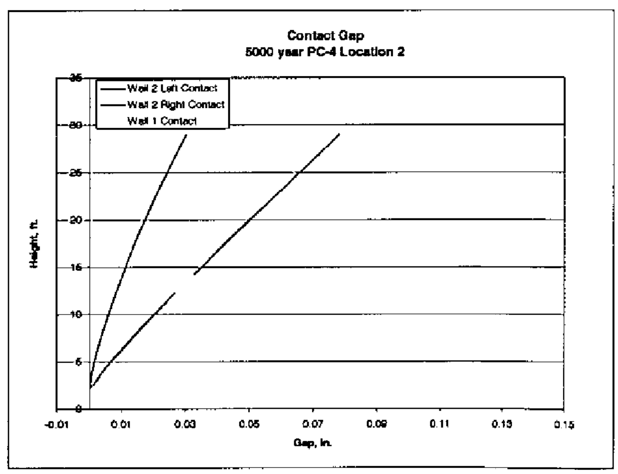
Crack Width at Construction Joints
1000 year PC4 Location 2



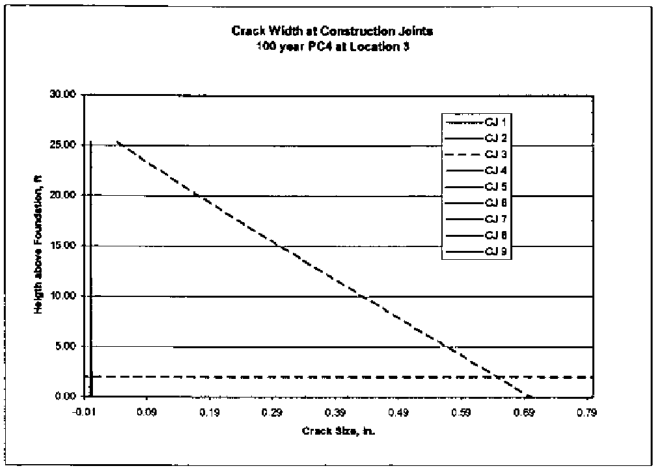
Contact Gap
1000 year PC-4 Location 2

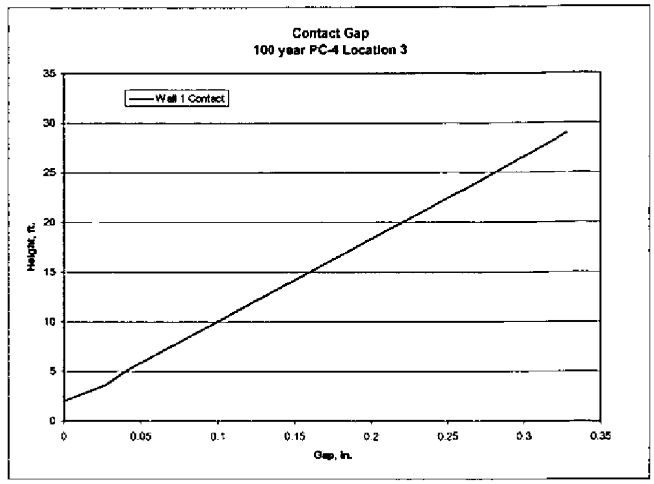


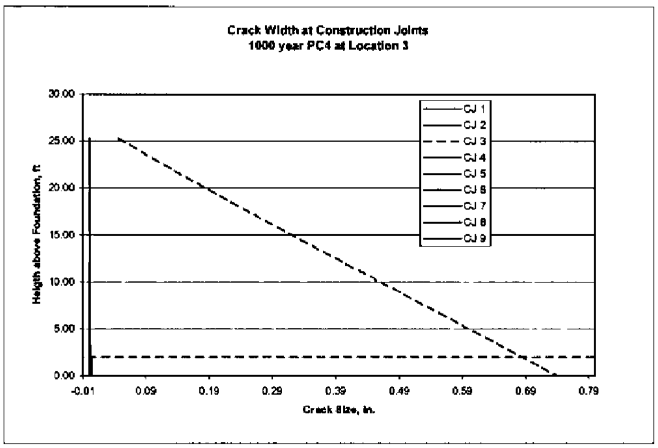
Crack Width at Construction Joints
5000 year PC4 Location 2

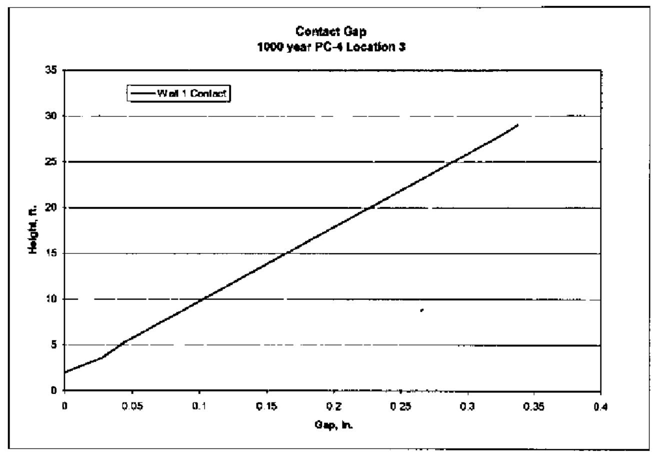


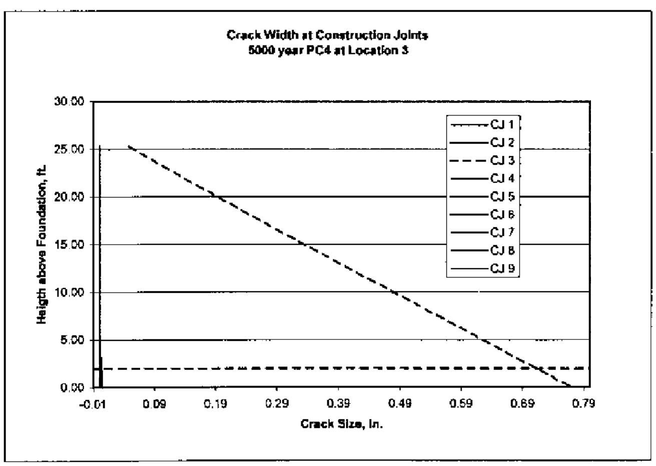
Contact Gap
5000 year PC-4 Location 2

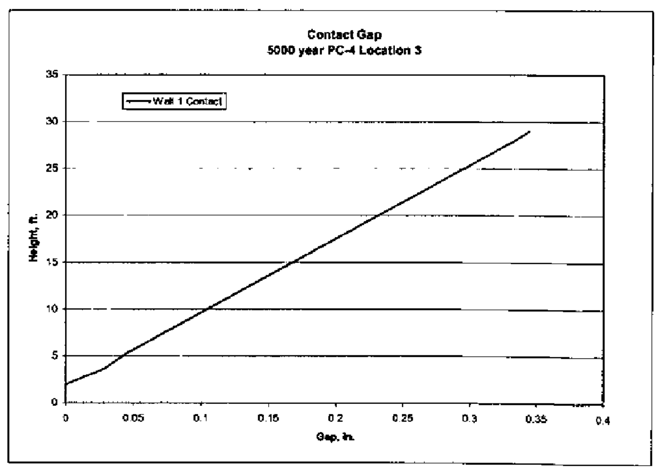

Crack Width at Construction Joints
100 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

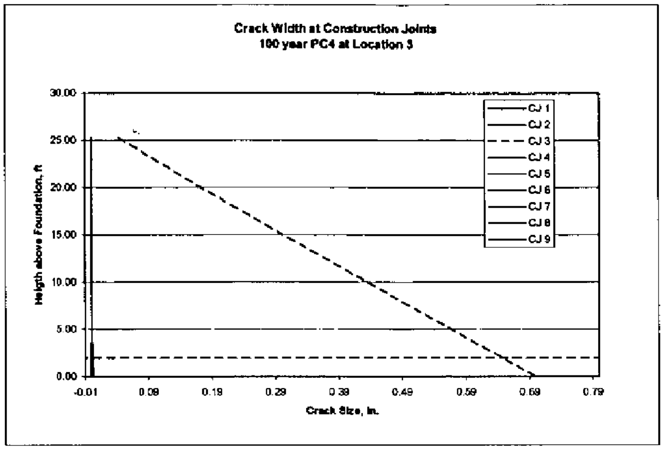

Contact Gap
100 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

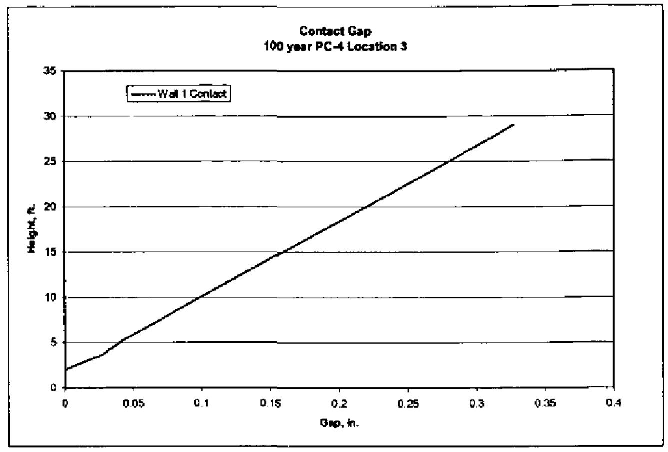

Crack Width at Construction Joints
1000 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

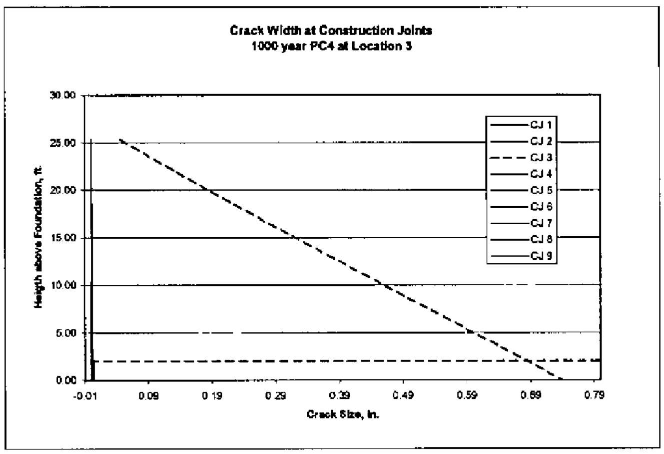

Contact Gap
1000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

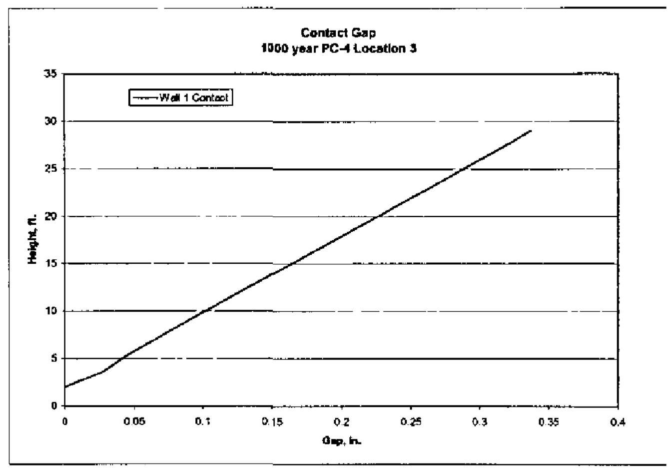

Crack Width at Construction Joints
5000 year PC4 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

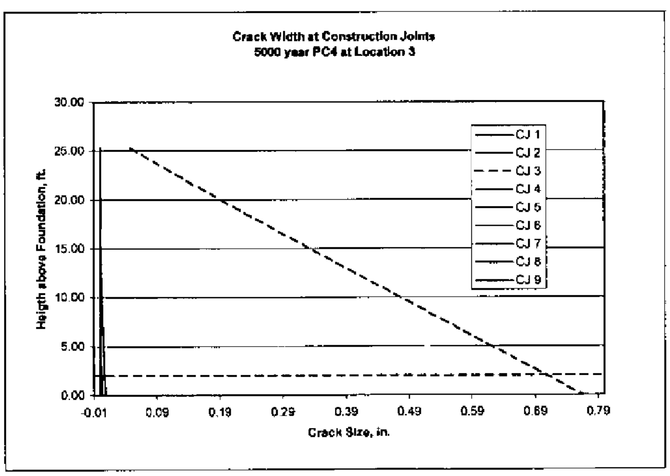

Contact Gap
5000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

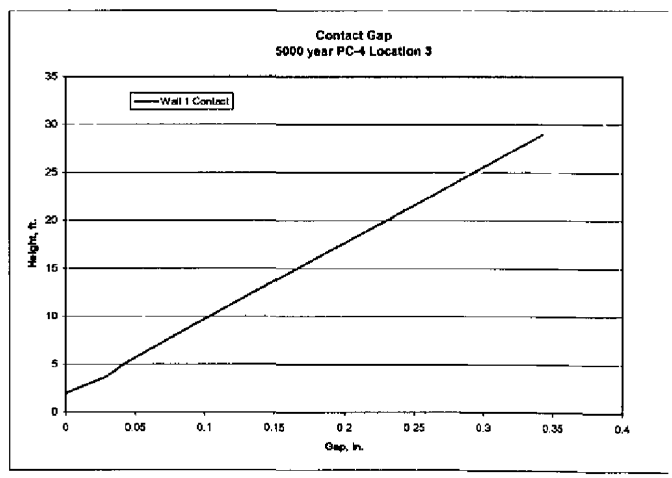

Crack Width at Construction Joints
100 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

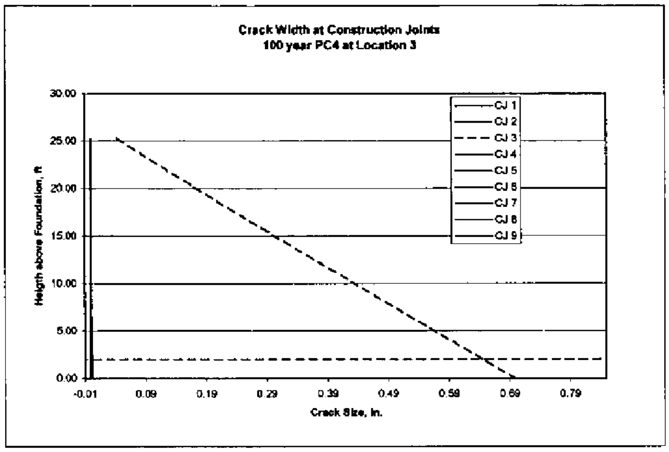

Contact Gap
100 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

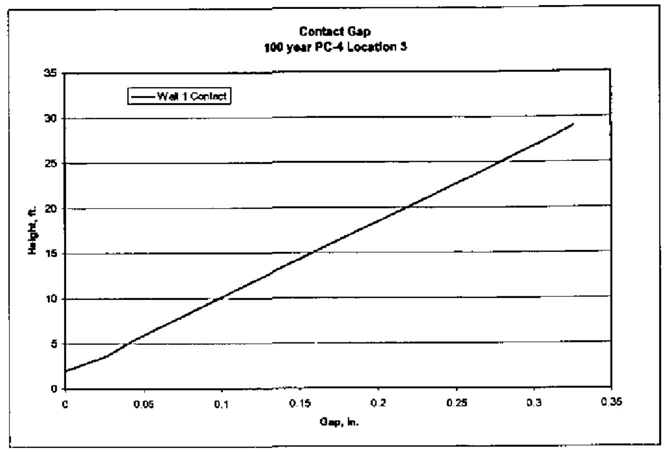

Crack Width at Construction Joints
1000 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

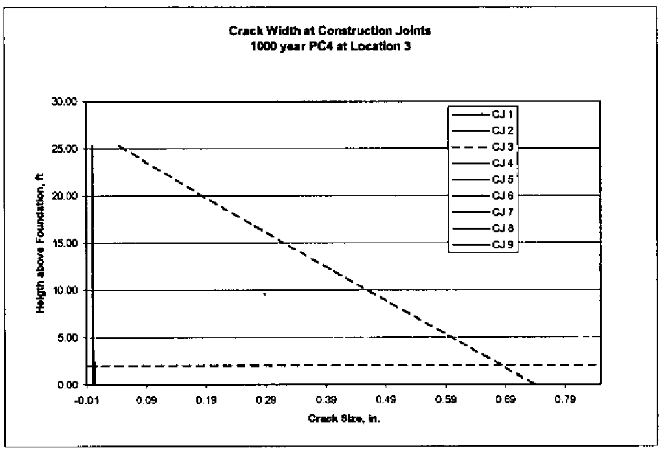

Contact Gap
1000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

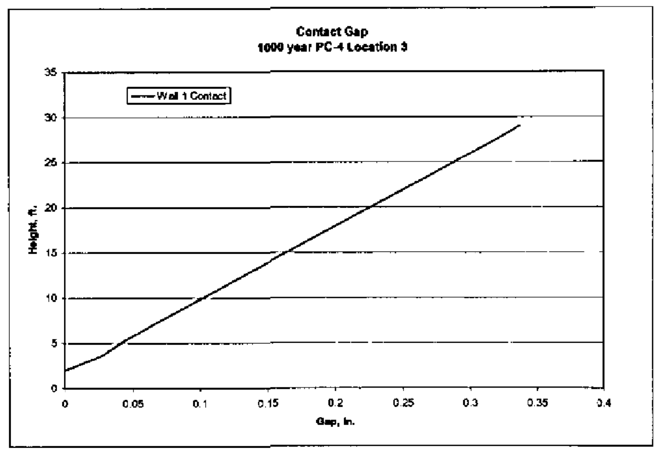

Crack Width at Construction Joints
5000 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9

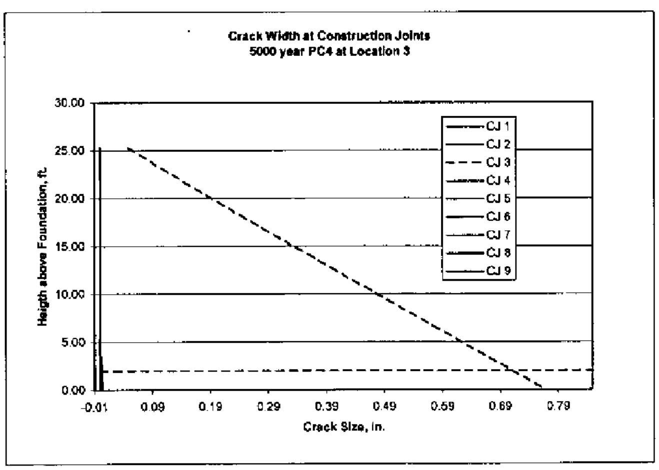

Contact Gap
5000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

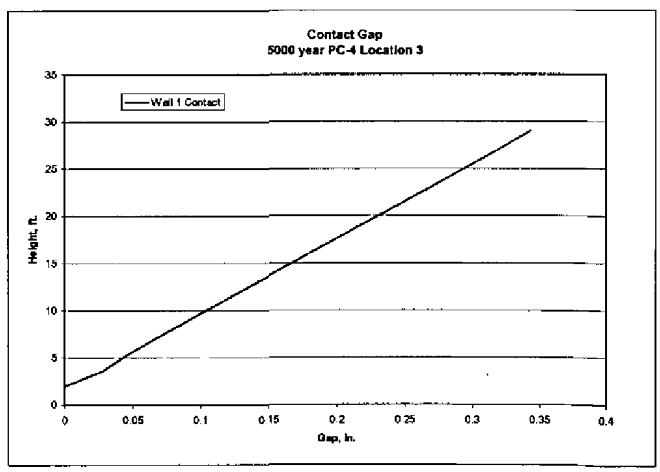

Crack Width at Construction Joints
100 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9


Contact Gap
100 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.


Crack Width at Construction Joints
1000 year PC4 at Location 3
Heigth above Foundation, ft
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9


Contact Gap
1000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.


Crack Width at Construction Joints
5000 year PC4 at Location 3
Heigth above Foundation, ft.
Crack Size, in.
CJ 1
CJ 2
CJ 3
CJ 4
CJ 5
CJ 6
CJ 7
CJ 8
CJ 9


Contact Gap
5000 year PC-4 Location 3
Wall 1 Contact
Height, ft.
Gap, in.

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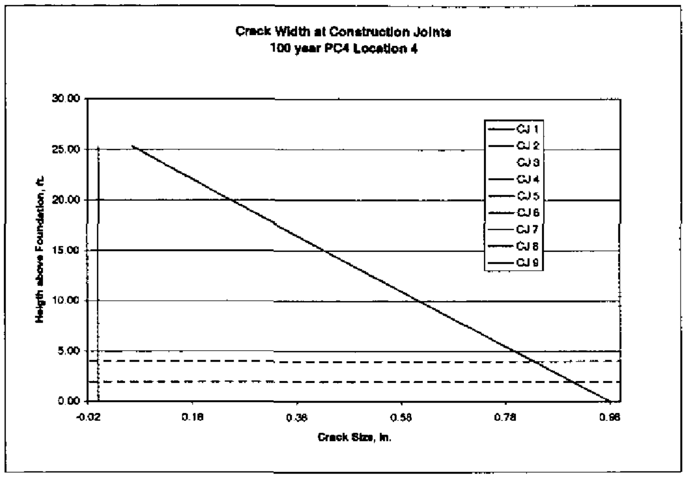
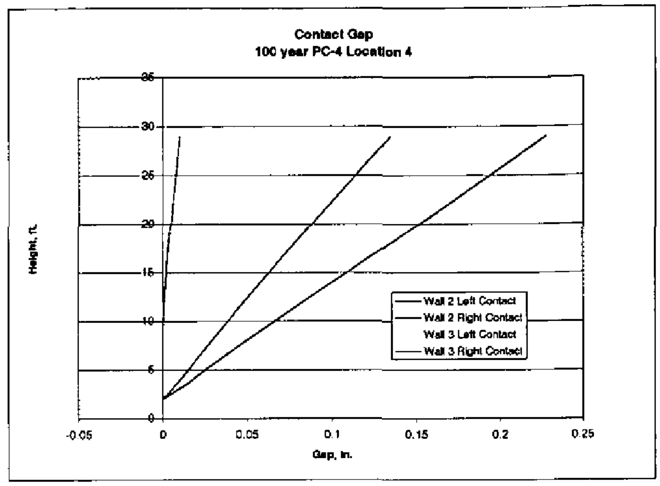
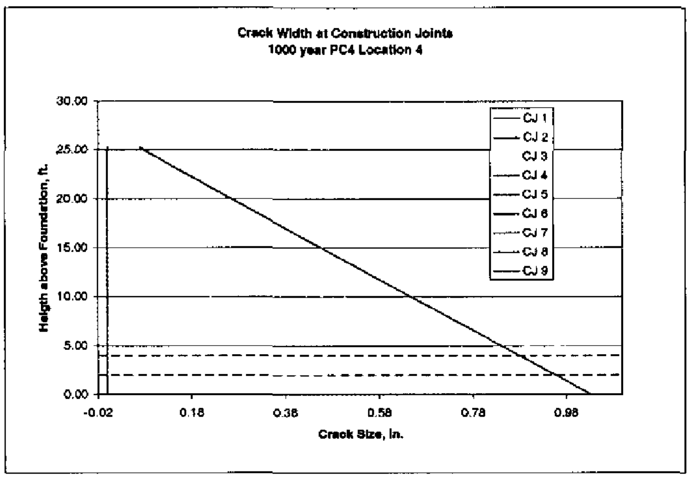
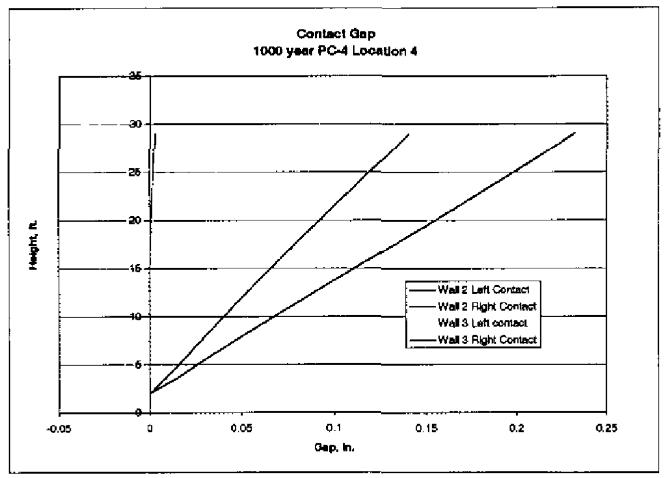
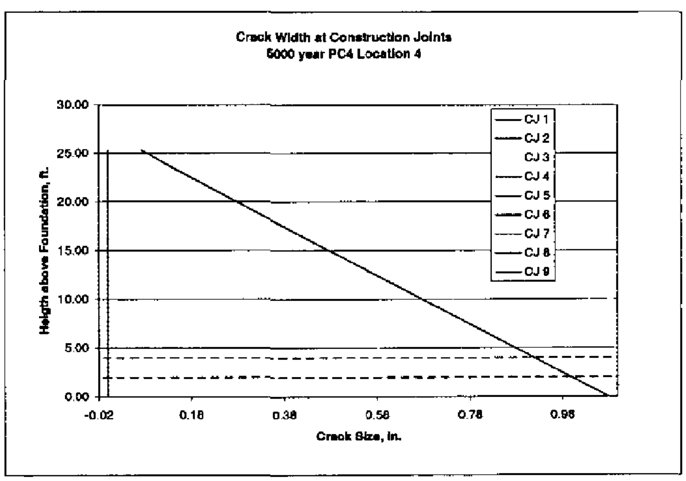
PC-4 Differential Settlement - Location 4
Low Grout Strength

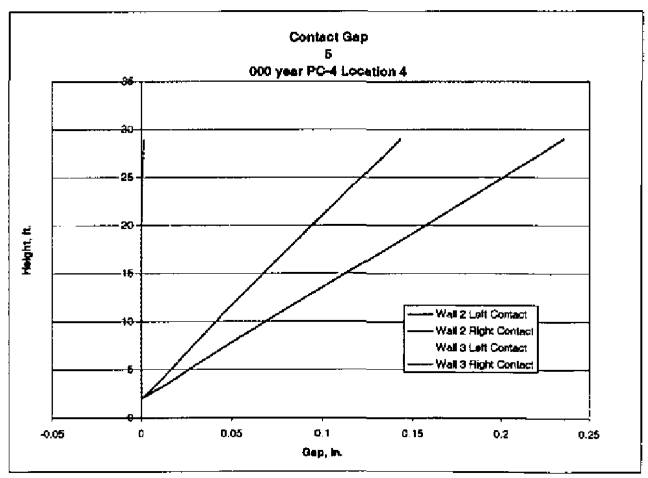




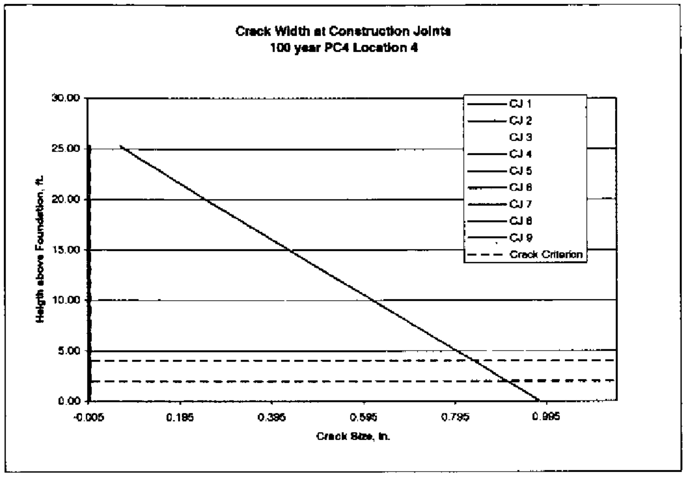


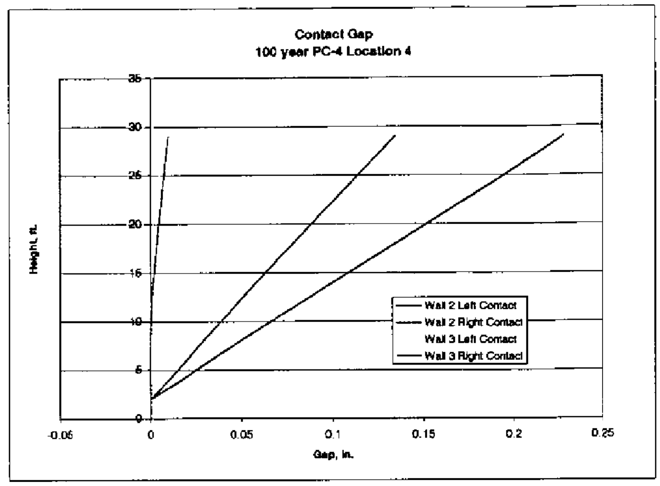


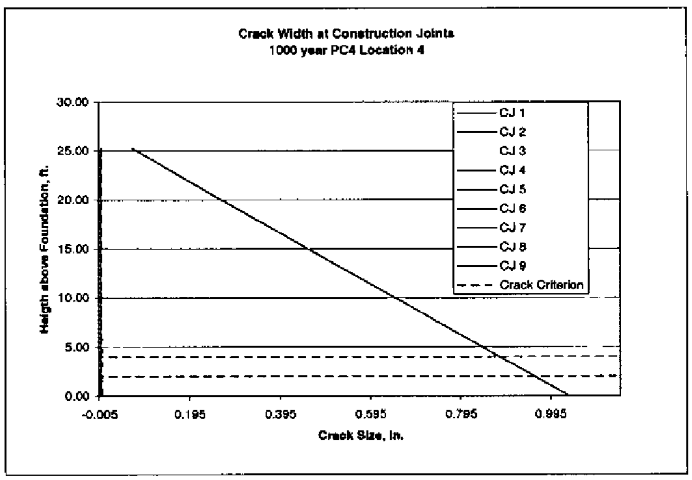


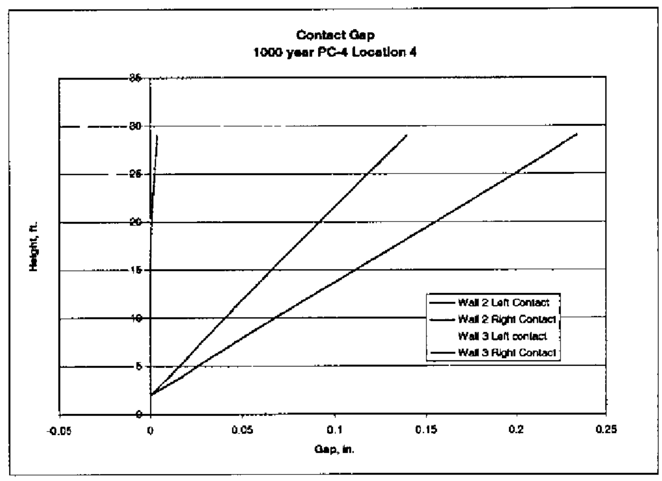


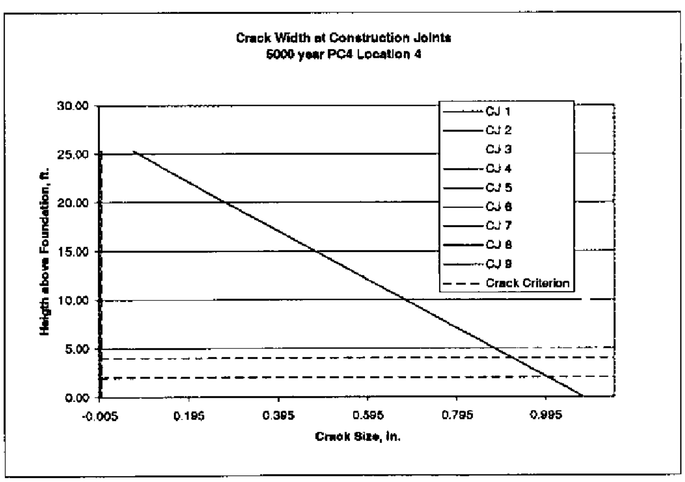
PC-4 Differential Settlement - Location 4
Mean Grout Strength

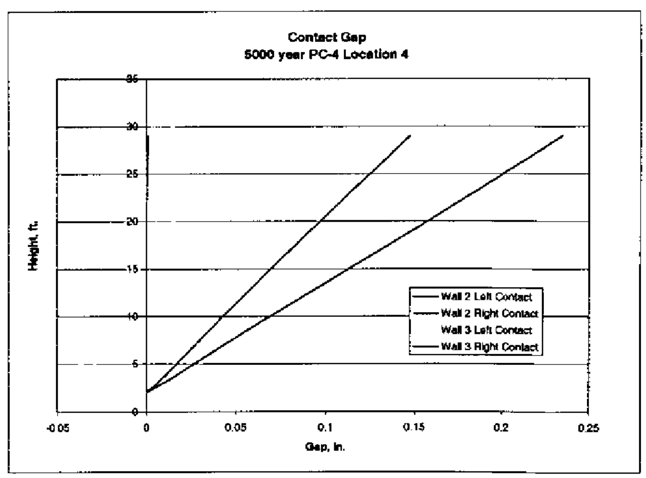












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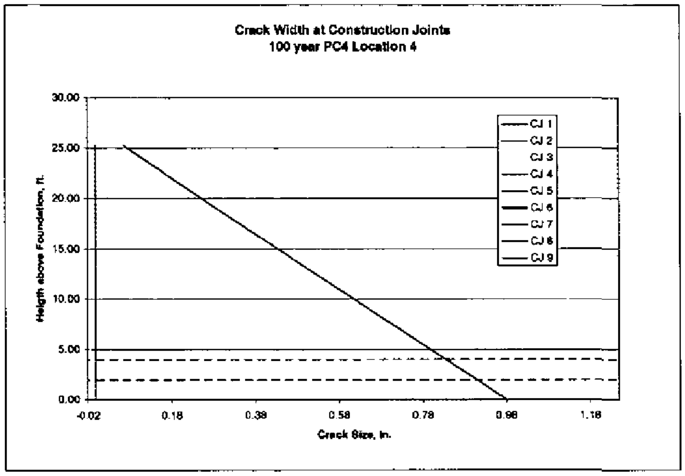
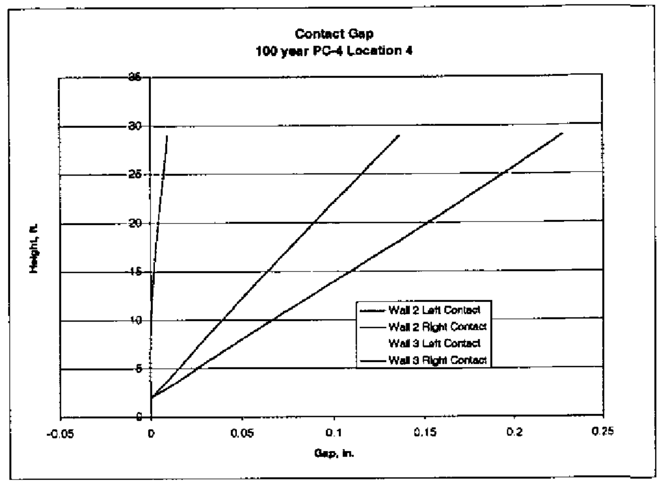
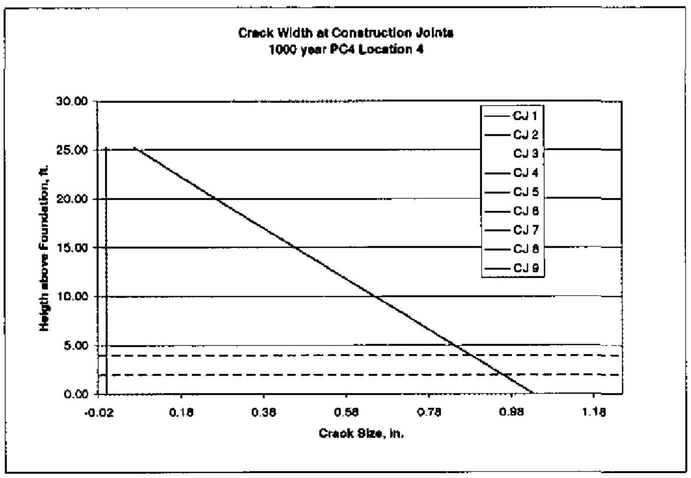
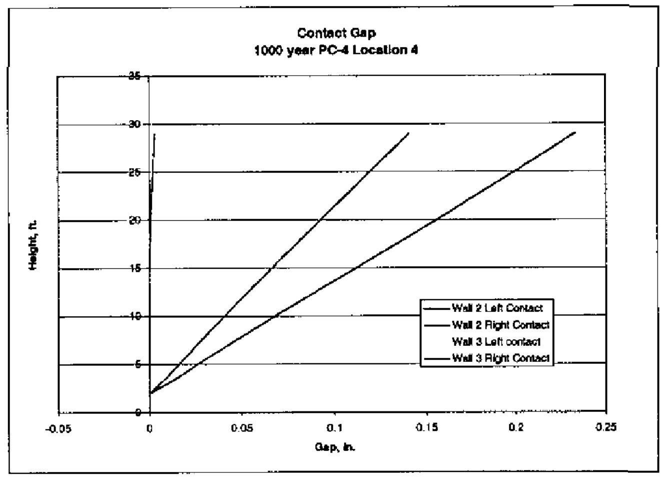
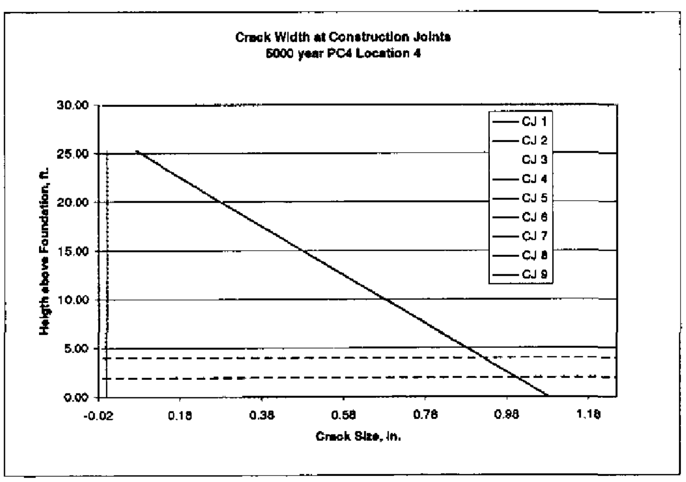
PC-4 Differential Settlement - Location 4
High Grout Strength

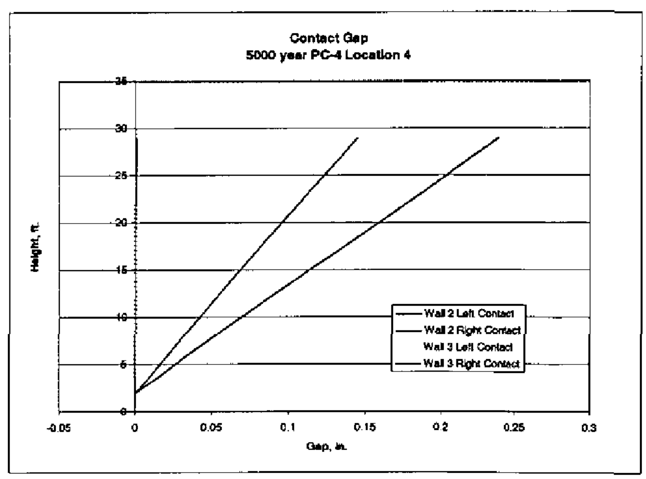












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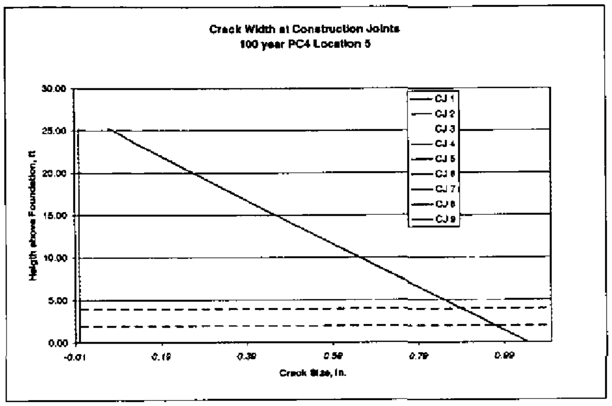
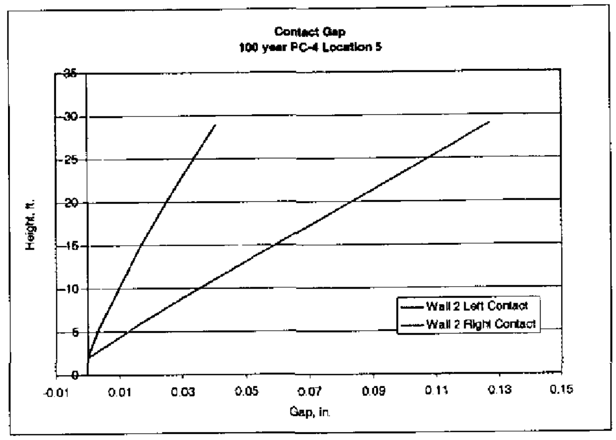
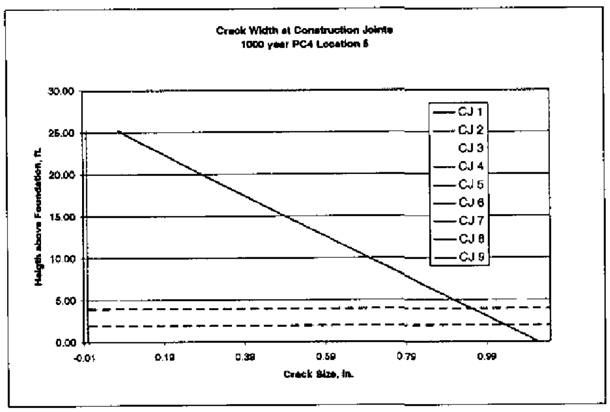
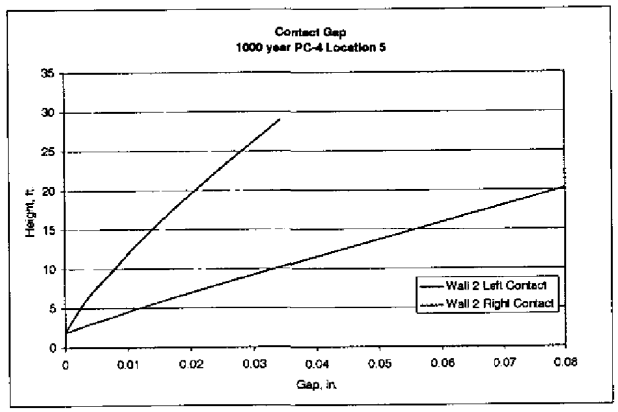
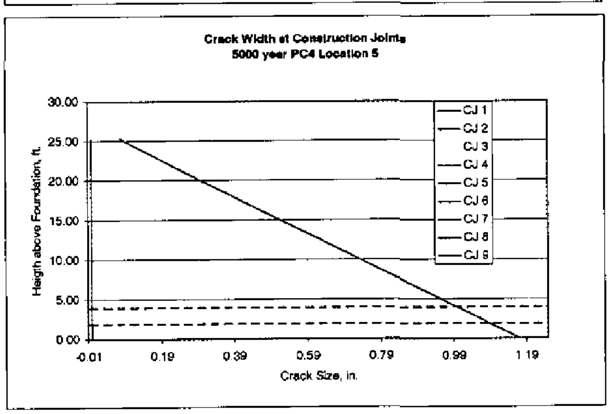
PC-4 Differential Settlement - Location 5
Low Grout Strength

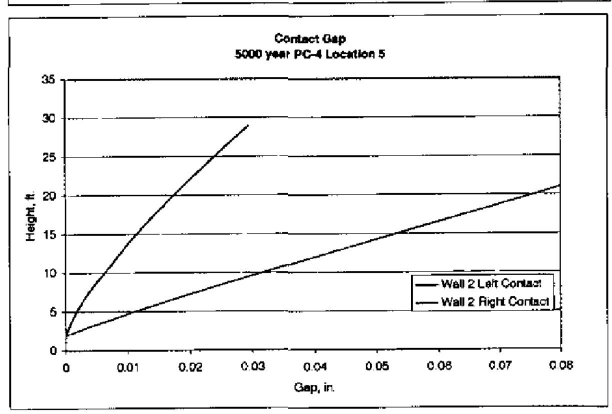




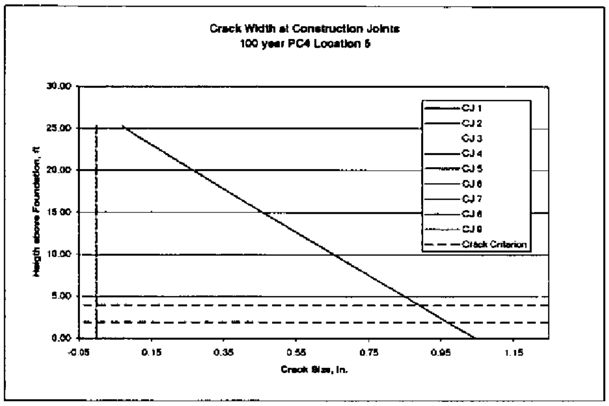


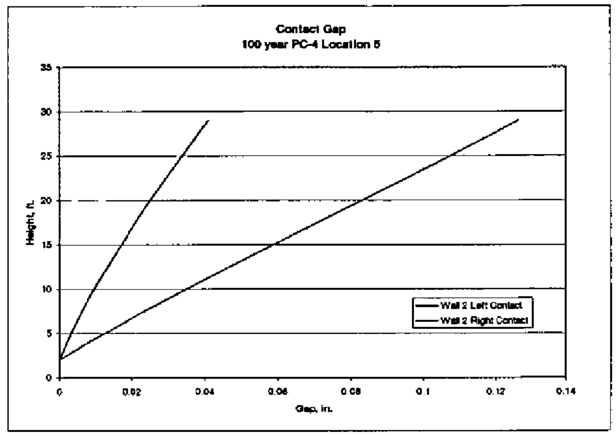


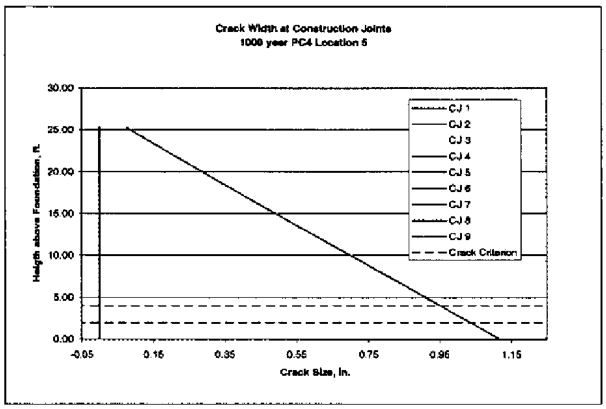


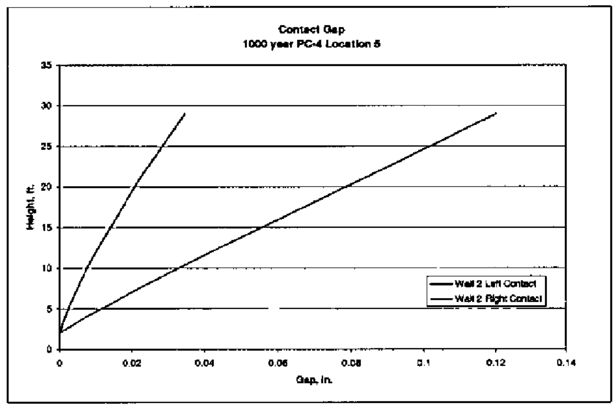


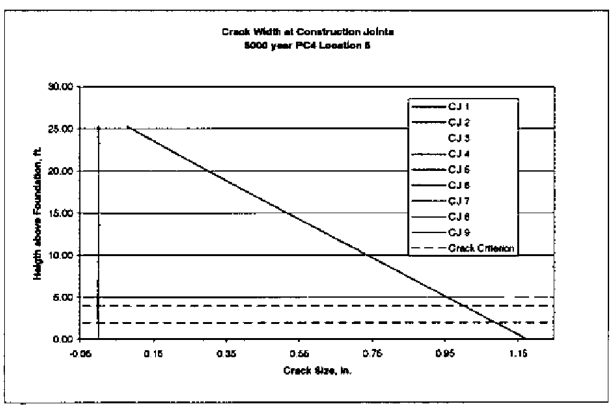
PC-4 Differential Settlement - Location 5
Mean Grout Strength

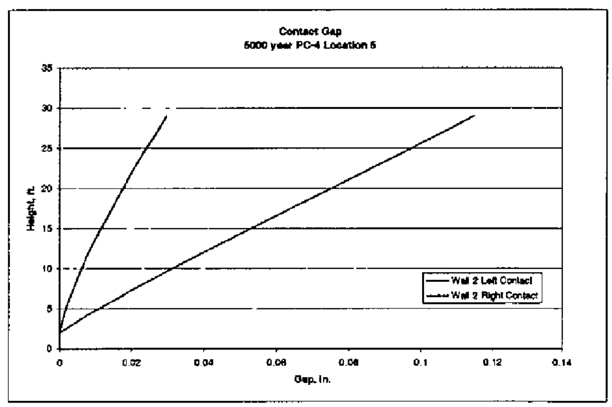












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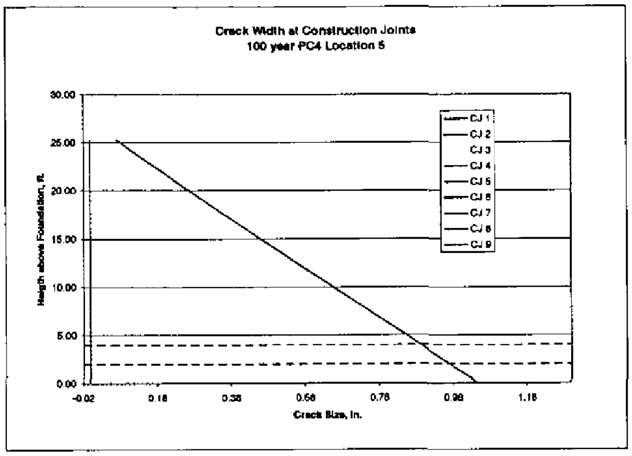
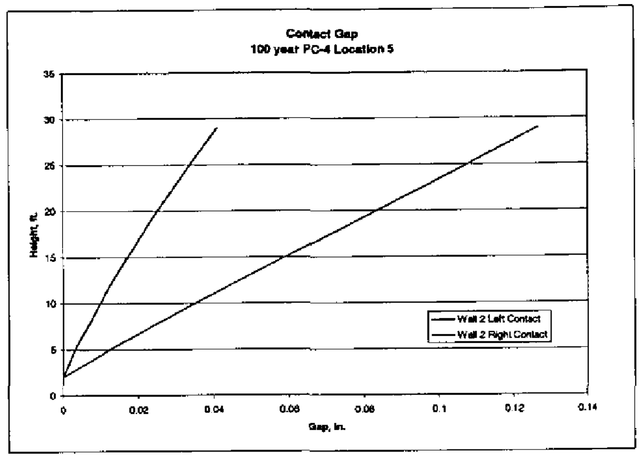
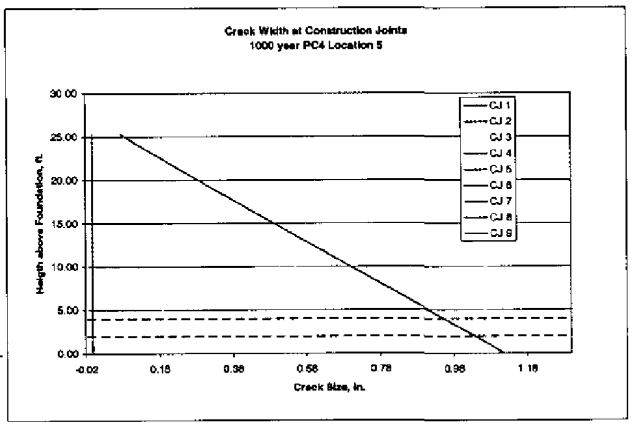
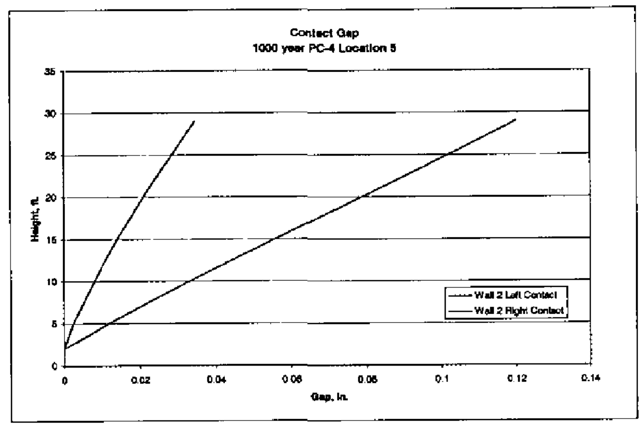
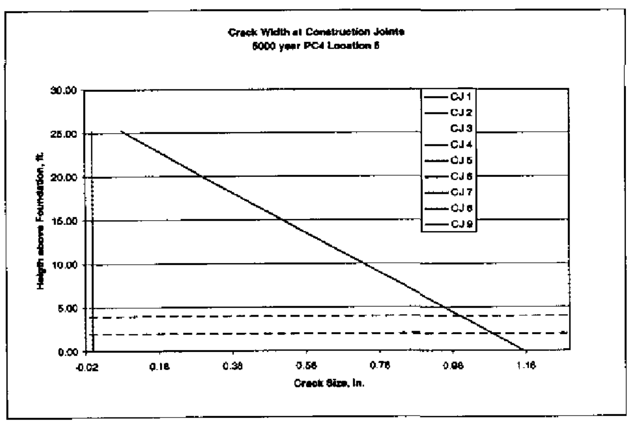
PC-4 Differential Settlement - Location 5
High Grout Strength

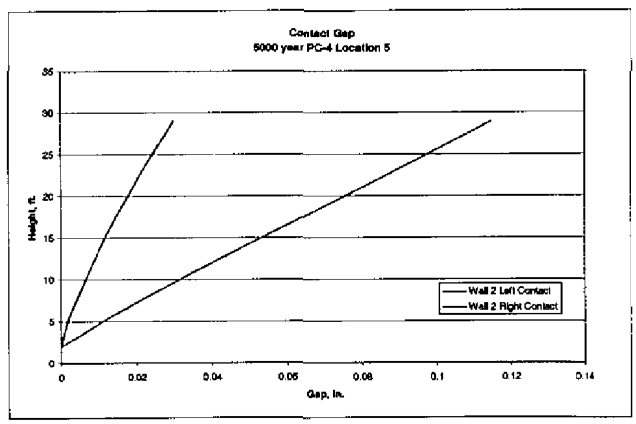












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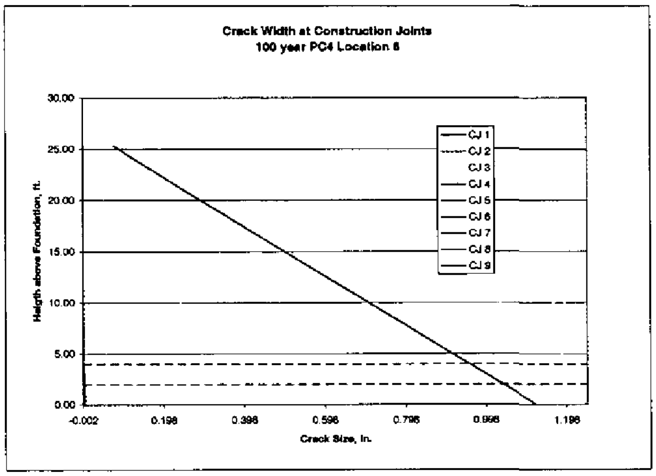
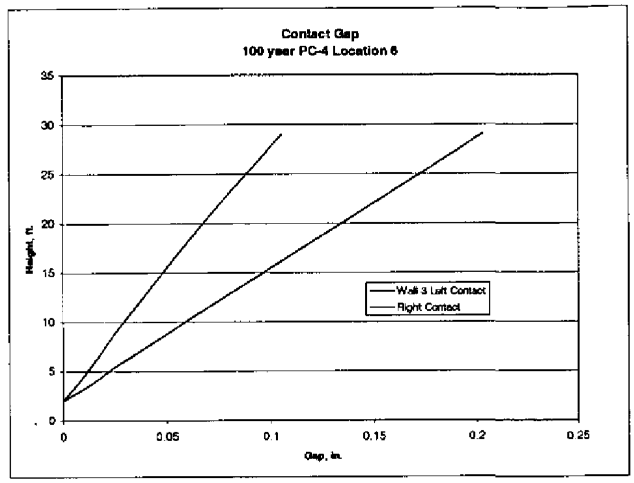
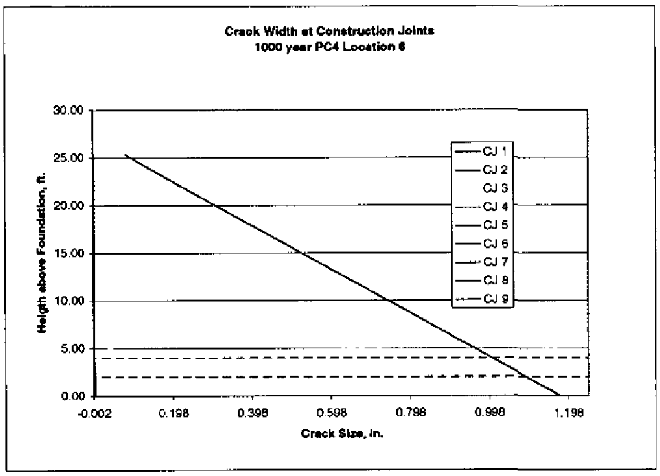
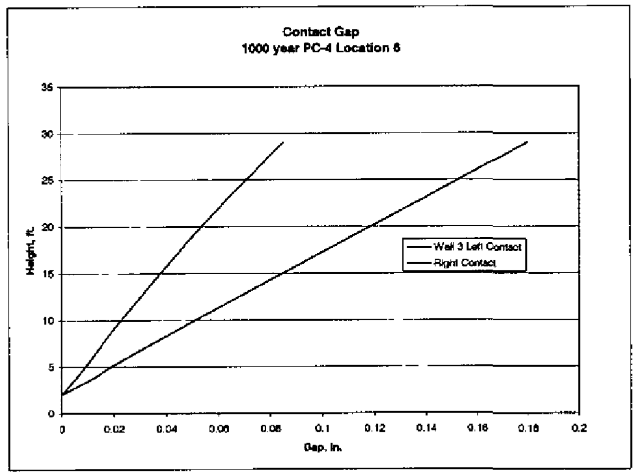
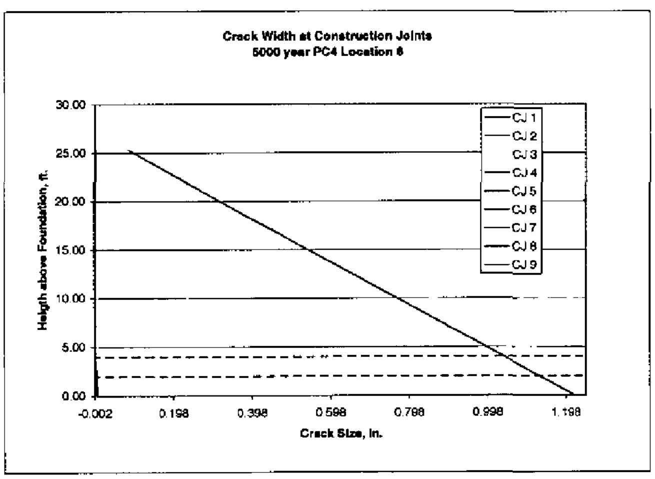
PC-4 Differential Settlement - Location 6
Low Grout Strength

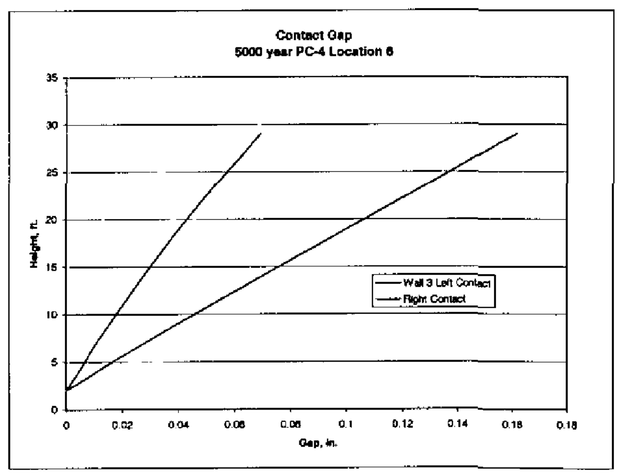












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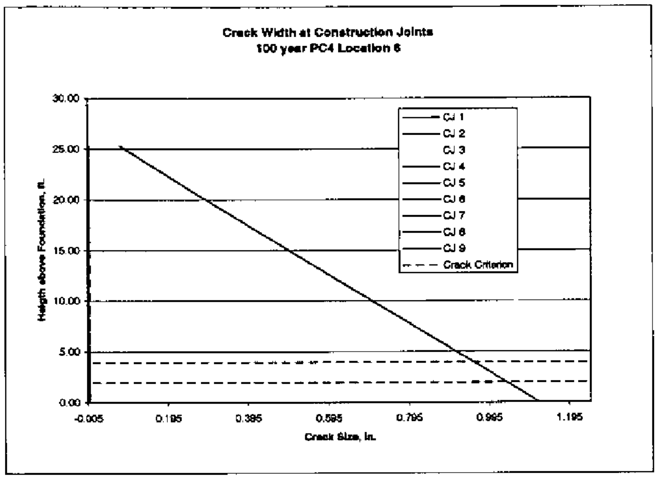
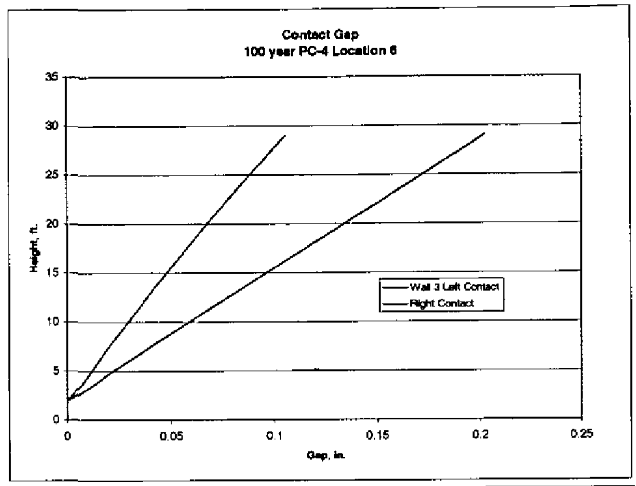
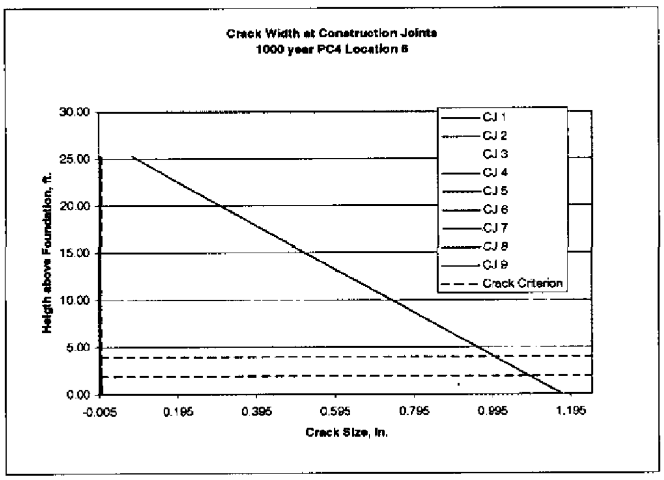
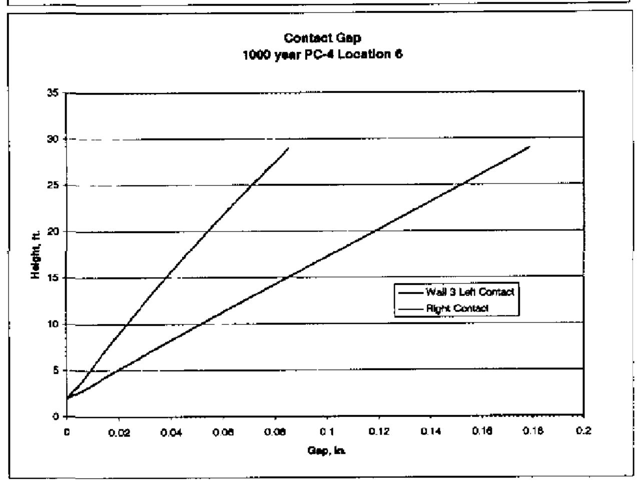
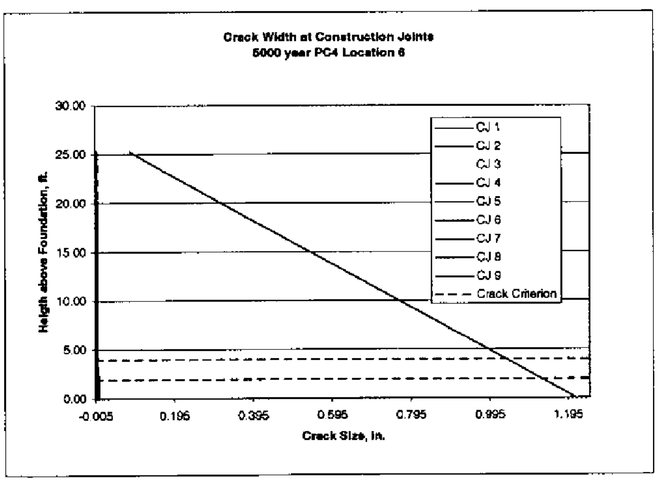
PC-4 Differential Settlement - Location 6
Mean Grout Strength

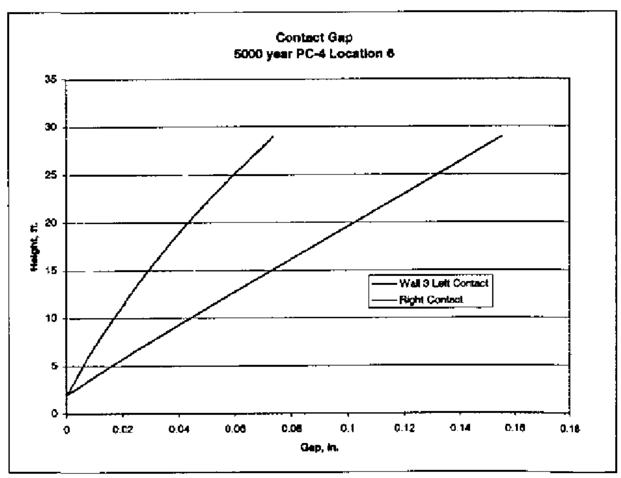




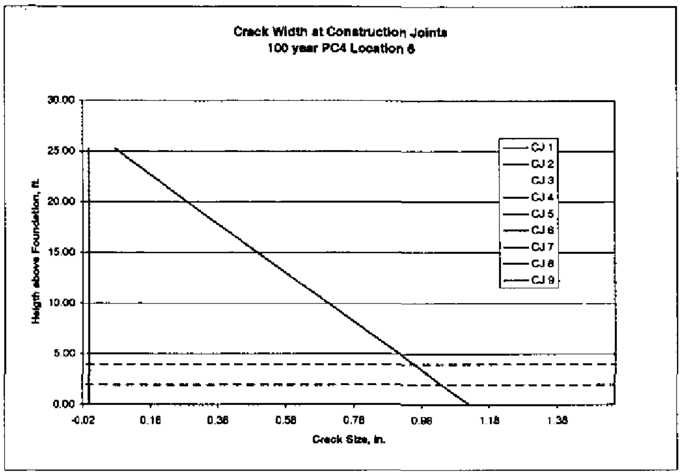


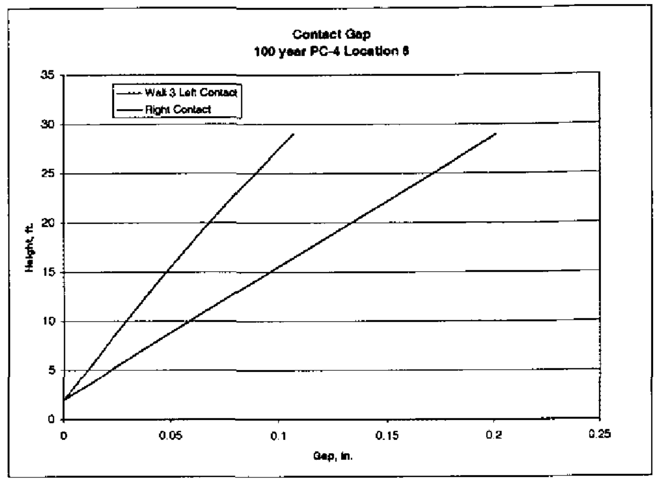


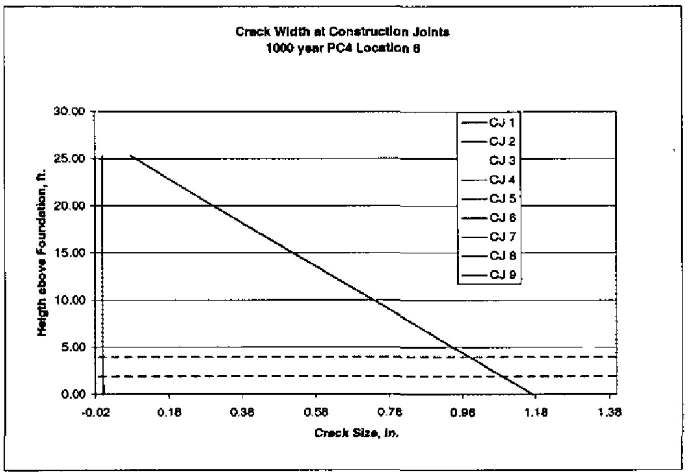


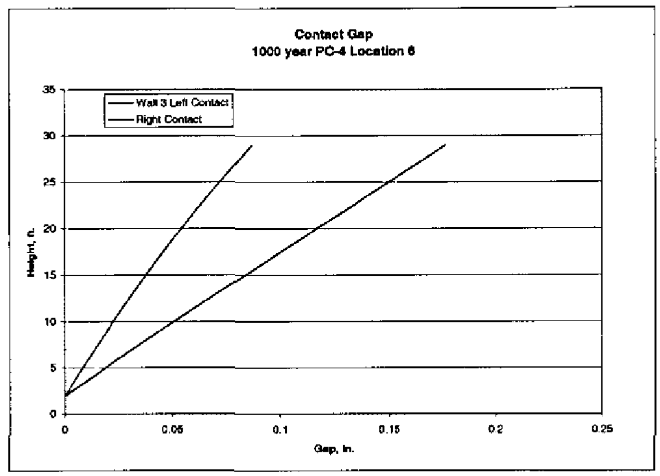


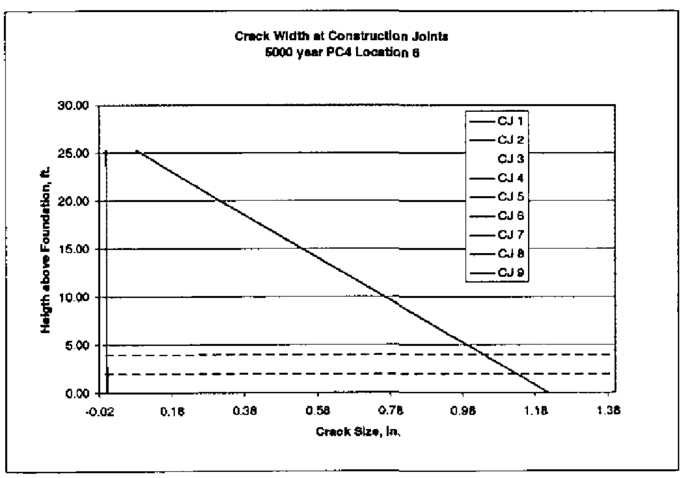
PC-4 Differential Settlement - Location 6
High Grout Strength

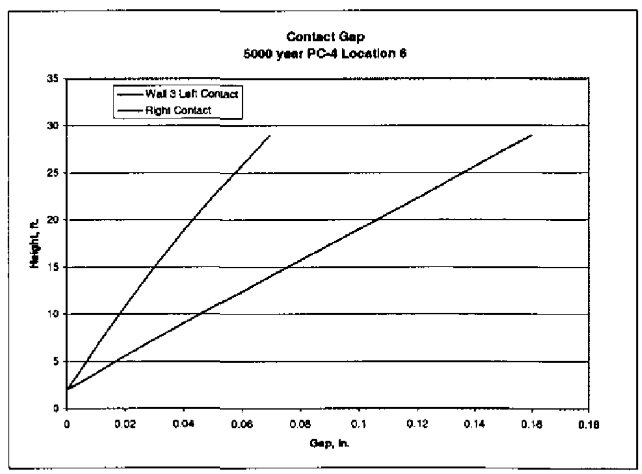












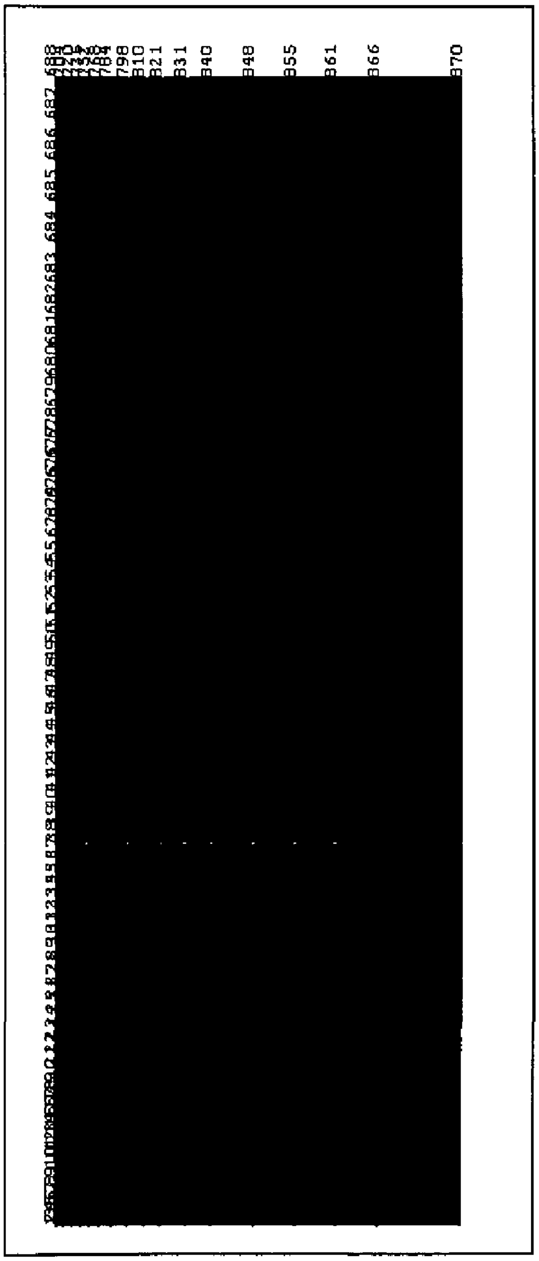
APPENDIX F

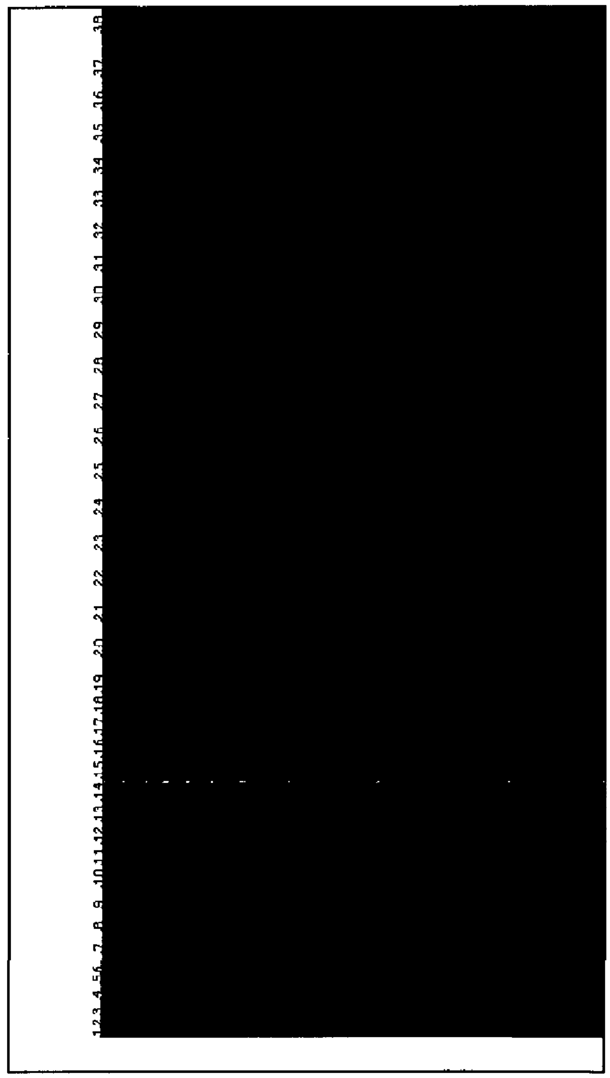
ANSYS Model Data

MODEL 2D

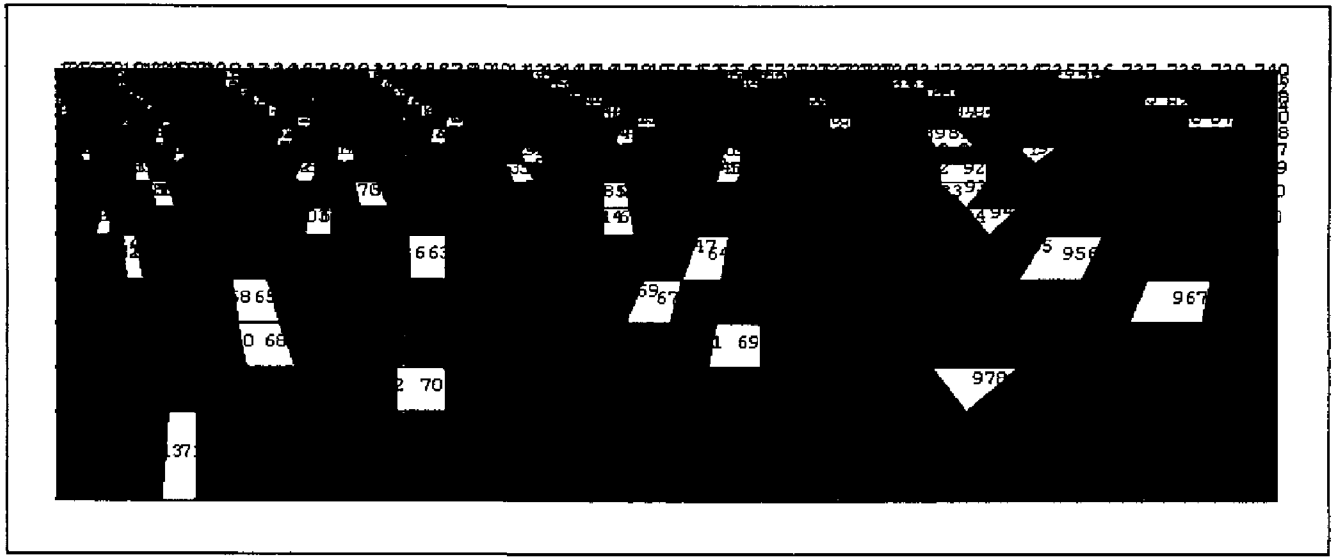
T-CLC-Z-00006, Rev.0

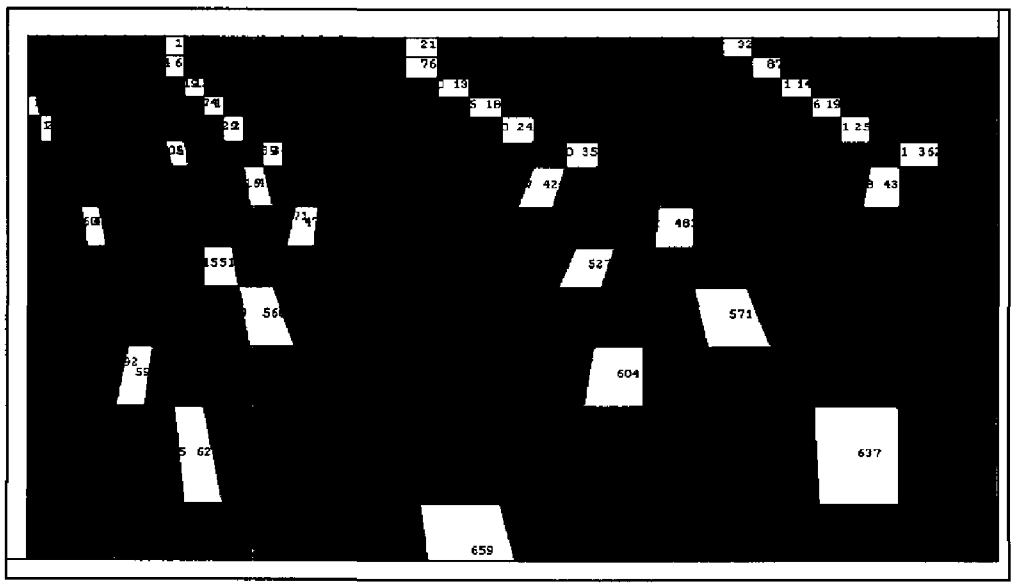
2D Axisymmetric Model ssv7
Node Numbers



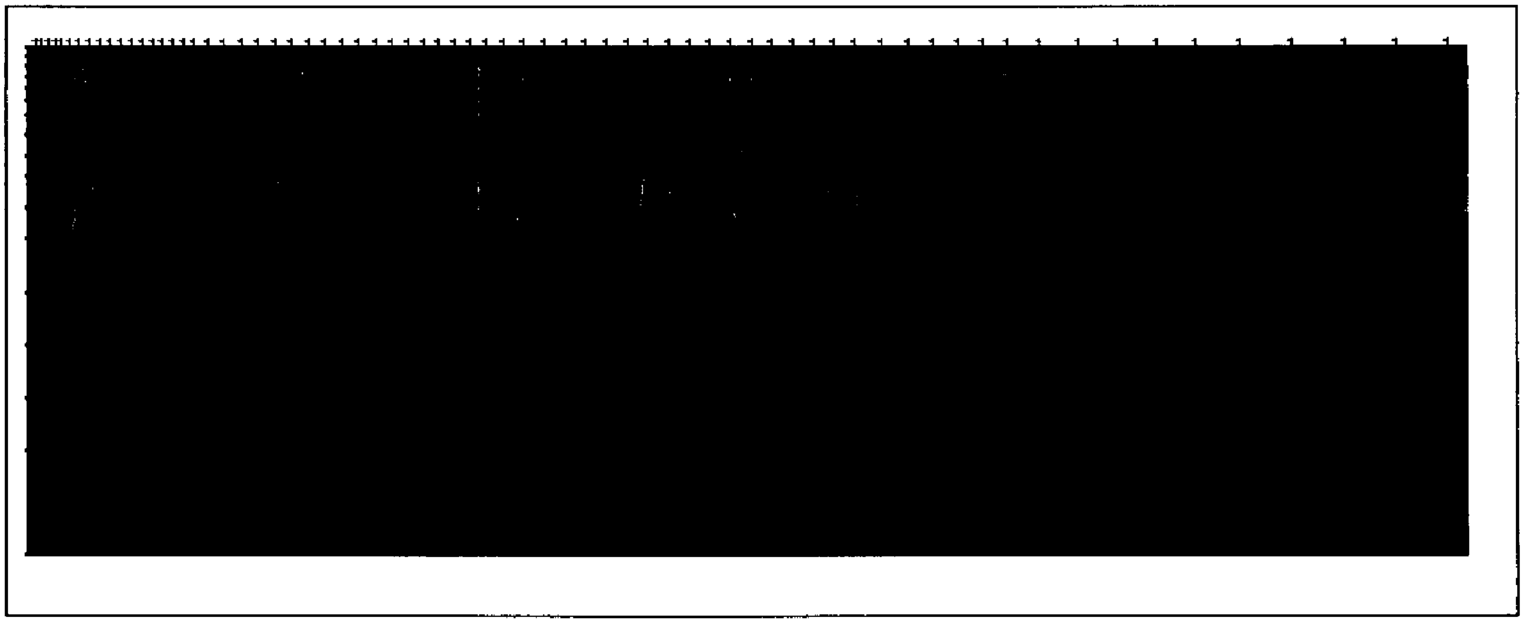


2D Axisymmetric Model ssvle1 (elastic), ssvault6 (creep)
Element Numbers





2D Axisymmetric Model ssvle1 (elastic), ssvault6 (creep)
Material Numbers



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Node Coordinates for Model ssv7

NODE	X	Y	Z	NODE	X	Y	Z	NODE	X	Y	Z
1	0	270	0	291	260	165	0	581	0	-200	0
2	10	270	0	292	280	165	0	582	40	-200	0
3	21	270	0	293	300	165	0	583	80	-200	0
4	35.5	270	0	294	320	165	0	584	120	-200	0
5	50	270	0	295	352.7273	165	0	585	160	-200	0
6	59	270	0	296	385.4545	165	0	586	200	-200	0
7	79.16667	270	0	297	418.1818	165	0	587	240	-200	0
8	99.33333	270	0	298	450.9091	165	0	588	280	-200	0
9	119.5	270	0	299	483.6364	165	0	589	320	-200	0
10	139.6667	270	0	300	516.3636	165	0	590	401.4286	-200	0
11	159.8333	270	0	301	549.0909	165	0	591	482.8571	-200	0
12	180	270	0	302	581.8182	165	0	592	564.2857	-200	0
13	200	270	0	303	614.5455	165	0	593	645.7143	-200	0
14	220	270	0	304	647.2727	165	0	594	727.1429	-200	0
15	240	270	0	305	680	165	0	595	808.5714	-200	0
16	260	270	0	306	710	165	0	596	890	-200	0
17	280	270	0	307	740	165	0	597	980	-200	0
18	300	270	0	308	770	165	0	598	1070	-200	0
19	320	270	0	309	800	165	0	599	1160	-200	0
20	352.7273	270	0	310	830	165	0	600	1250	-200	0
21	385.4545	270	0	311	860	165	0	601	1340	-200	0
22	418.1818	270	0	312	890	165	0	602	1430	-200	0
23	450.9091	270	0	313	930	165	0	603	1520	-200	0
24	483.6364	270	0	314	970	165	0	604	1610	-200	0
25	516.3636	270	0	315	1010	165	0	605	0	-300	0
26	549.0909	270	0	316	1050	165	0	606	45.71429	-300	0
27	581.8182	270	0	317	1090	165	0	607	91.42857	-300	0
28	614.5455	270	0	318	1130	165	0	608	137.1429	-300	0
29	647.2727	270	0	319	1170	165	0	609	182.8571	-300	0
30	680	270	0	320	1210	165	0	610	228.5714	-300	0
31	710	270	0	321	1250	165	0	611	274.2857	-300	0
32	740	270	0	322	1290	165	0	612	320	-300	0
33	770	270	0	323	1330	165	0	613	415	-300	0
34	800	270	0	324	1370	165	0	614	510	-300	0
35	830	270	0	325	1410	165	0	615	605	-300	0
36	860	270	0	326	1450	165	0	616	700	-300	0
37	890	270	0	327	1490	165	0	617	795	-300	0
38	930	270	0	328	1530	165	0	618	890	-300	0
39	970	270	0	329	1570	165	0	619	992.8571	-300	0
40	1010	270	0	330	1610	165	0	620	1095.714	-300	0
41	1050	270	0	331	0	140	0	621	1198.571	-300	0
42	1090	270	0	332	16.36	140	0	622	1301.429	-300	0
43	1130	270	0	333	32.7273	140	0	623	1404.286	-300	0
44	1170	270	0	334	49.0909	140	0	624	1507.143	-300	0
45	1210	270	0	335	65.4545	140	0	625	1610	-300	0
46	1250	270	0	336	81.8182	140	0	626	0	-400	0
47	1290	270	0	337	98.1818	140	0	627	53.33333	-400	0
48	1330	270	0	338	114.5455	140	0	628	106.6667	-400	0
49	1370	270	0	339	130.9091	140	0	629	160	-400	0
50	1410	270	0	340	147.2727	140	0	630	213.3333	-400	0
51	1450	270	0	341	163.6364	140	0	631	266.6667	-400	0
52	1490	270	0	342	180	140	0	632	320	-400	0
53	1530	270	0	343	200	140	0	633	434	-400	0
54	1570	270	0	344	220	140	0	634	548	-400	0
55	1610	270	0	345	240	140	0	635	662	-400	0
56	0	250	0	346	260	140	0	636	776	-400	0
57	10	250	0	347	280	140	0	637	890	-400	0
58	21	250	0	348	300	140	0	638	1010	-400	0
59	35.5	250	0	349	320	140	0	639	1130	-400	0
60	50	250	0	350	352.7273	140	0	640	1250	-400	0
61	59	250	0	351	385.4545	140	0	641	1370	-400	0
62	79.16667	250	0	352	418.1818	140	0	642	1490	-400	0
63	99.33333	250	0	353	450.9091	140	0	643	1610	-400	0
64	119.5	250	0	354	483.6364	140	0	644	0	-500	0
65	139.6667	250	0	355	516.3636	140	0	645	64	-500	0
66	159.8333	250	0	356	549.0909	140	0	646	128	-500	0
67	180	250	0	357	581.8182	140	0	647	192	-500	0
68	200	250	0	358	614.5455	140	0	648	256	-500	0
69	220	250	0	359	647.2727	140	0	649	320	-500	0

70	240	250	0	360	680	140	0	650	434	-500	0
71	260	250	0	361	710	140	0	651	548	-500	0
72	280	250	0	362	740	140	0	652	662	-500	0
73	300	250	0	363	770	140	0	653	776	-500	0
74	320	250	0	364	800	140	0	654	890	-500	0
75	352.7273	250	0	365	830	140	0	655	1034	-500	0
76	385.4545	250	0	366	860	140	0	656	1178	-500	0
77	418.1818	250	0	367	890	140	0	657	1322	-500	0
78	450.9091	250	0	368	930	140	0	658	1466	-500	0
79	483.6364	250	0	369	970	140	0	659	1610	-500	0
80	516.3636	250	0	370	1010	140	0	660	0	-700	0
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82	581.8182	250	0	372	1090	140	0	662	160	-700	0
83	614.5455	250	0	373	1130	140	0	663	240	-700	0
84	647.2727	250	0	374	1170	140	0	664	320	-700	0
85	680	250	0	375	1210	140	0	665	462.5	-700	0
86	710	250	0	376	1250	140	0	666	605	-700	0
87	740	250	0	377	1290	140	0	667	747.5	-700	0
88	770	250	0	378	1330	140	0	668	890	-700	0
89	800	250	0	379	1370	140	0	669	1070	-700	0
90	830	250	0	380	1410	140	0	670	1250	-700	0
91	860	250	0	381	1450	140	0	671	1430	-700	0
92	890	250	0	382	1490	140	0	672	1610	-700	0
93	930	250	0	383	1530	140	0	673	1670	270	0
94	970	250	0	384	1570	140	0	674	1718	270	0
95	1010	250	0	385	1610	140	0	675	1766	270	0
96	1050	250	0	386	0	100	0	676	1814	270	0
97	1090	250	0	387	18	100	0	677	1862	270	0
98	1130	250	0	388	36	100	0	678	1910	270	0
99	1170	250	0	389	54	100	0	679	1985	270	0
100	1210	250	0	390	72	100	0	680	2060	270	0
101	1250	250	0	391	90	100	0	681	2135	270	0
102	1290	250	0	392	108	100	0	682	2210	270	0
103	1330	250	0	393	126	100	0	683	2285	270	0
104	1370	250	0	394	144	100	0	684	2385	270	0
105	1410	250	0	395	162	100	0	685	2485	270	0
106	1450	250	0	396	180	100	0	686	2585	270	0
107	1490	250	0	397	203.3333	100	0	687	2685	270	0
108	1530	250	0	398	226.6667	100	0	688	2785	270	0
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110	1610	250	0	400	273.3333	100	0	690	1718	250	0
111	0	230	0	401	296.6667	100	0	691	1766	250	0
112	10	230	0	402	320	100	0	692	1814	250	0
113	21	230	0	403	356	100	0	693	1862	250	0
114	35.5	230	0	404	392	100	0	694	1910	250	0
115	50	230	0	405	428	100	0	695	1985	250	0
116	59	230	0	406	464	100	0	696	2060	250	0
117	79.16667	230	0	407	500	100	0	697	2135	250	0
118	99.33333	230	0	408	536	100	0	698	2210	250	0
119	119.5	230	0	409	572	100	0	699	2285	250	0
120	139.6667	230	0	410	608	100	0	700	2385	250	0
121	159.8333	230	0	411	644	100	0	701	2485	250	0
122	180	230	0	412	680	100	0	702	2585	250	0
123	200	230	0	413	710	100	0	703	2685	250	0
124	220	230	0	414	741.4286	100	0	704	2785	250	0
125	240	230	0	415	778.5714	100	0	705	1670	230	0
126	260	230	0	416	815.7143	100	0	706	1718	230	0
127	280	230	0	417	852.8571	100	0	707	1766	230	0
128	300	230	0	418	890	100	0	708	1814	230	0
129	320	230	0	419	932.3529	100	0	709	1862	230	0
130	352.7273	230	0	420	974.7059	100	0	710	1910	230	0
131	385.4545	230	0	421	1017.059	100	0	711	1985	230	0
132	418.1818	230	0	422	1059.412	100	0	712	2060	230	0
133	450.9091	230	0	423	1101.765	100	0	713	2135	230	0
134	483.6364	230	0	424	1144.118	100	0	714	2210	230	0
135	516.3636	230	0	425	1186.471	100	0	715	2285	230	0
136	549.0909	230	0	426	1228.824	100	0	716	2385	230	0
137	581.8182	230	0	427	1271.176	100	0	717	2485	230	0
138	614.5455	230	0	428	1313.529	100	0	718	2585	230	0
139	647.2727	230	0	429	1355.882	100	0	719	2685	230	0
140	680	230	0	430	1398.235	100	0	720	2785	230	0
141	710	230	0	431	1440.588	100	0	721	1670	210	0
142	740	230	0	432	1482.941	100	0	722	1718	210	0
143	770	230	0	433	1525.294	100	0	723	1766	210	0

144	800	230	0	434	1567.647	100	0	724	1814	210	0
145	830	230	0	435	1610	100	0	725	1862	210	0
146	860	230	0	436	0	60	0	726	1910	210	0
147	890	230	0	437	20	60	0	727	1985	210	0
148	930	230	0	438	40	60	0	728	2060	210	0
149	970	230	0	439	60	60	0	729	2135	210	0
150	1010	230	0	440	80	60	0	730	2210	210	0
151	1050	230	0	441	100	60	0	731	2285	210	0
152	1090	230	0	442	120	60	0	732	2385	210	0
153	1130	230	0	443	140	60	0	733	2485	210	0
154	1170	230	0	444	160	60	0	734	2585	210	0
155	1210	230	0	445	180	60	0	735	2685	210	0
156	1250	230	0	446	208	60	0	736	2785	210	0
157	1290	230	0	447	236	60	0	737	1670	190	0
158	1330	230	0	448	264	60	0	738	1718	190	0
159	1370	230	0	449	292	60	0	739	1766	190	0
160	1410	230	0	450	320	60	0	740	1814	190	0
161	1450	230	0	451	360	60	0	741	1862	190	0
162	1490	230	0	452	400	60	0	742	1910	190	0
163	1530	230	0	453	440	60	0	743	1985	190	0
164	1570	230	0	454	480	60	0	744	2060	190	0
165	1610	230	0	455	520	60	0	745	2135	190	0
166	0	210	0	456	560	60	0	746	2210	190	0
167	10	210	0	457	600	60	0	747	2285	190	0
168	21	210	0	458	640	60	0	748	2385	190	0
169	35.5	210	0	459	680	60	0	749	2485	190	0
170	50	210	0	460	716.6667	60	0	750	2585	190	0
171	65	210	0	461	760	60	0	751	2685	190	0
172	79.16667	210	0	462	803.3333	60	0	752	2785	190	0
173	99.33333	210	0	463	846.6667	60	0	753	1670	165	0
174	119.5	210	0	464	890	60	0	754	1718	165	0
175	139.6667	210	0	465	935	60	0	755	1766	165	0
176	159.8333	210	0	466	980	60	0	756	1814	165	0
177	180	210	0	467	1025	60	0	757	1862	165	0
178	200	210	0	468	1070	60	0	758	1910	165	0
179	220	210	0	469	1115	60	0	759	1985	165	0
180	240	210	0	470	1160	60	0	760	2060	165	0
181	260	210	0	471	1205	60	0	761	2135	165	0
182	280	210	0	472	1250	60	0	762	2210	165	0
183	300	210	0	473	1295	60	0	763	2285	165	0
184	320	210	0	474	1340	60	0	764	2385	165	0
185	352.7273	210	0	475	1385	60	0	765	2485	165	0
186	385.4545	210	0	476	1430	60	0	766	2585	165	0
187	418.1818	210	0	477	1475	60	0	767	2685	165	0
188	450.9091	210	0	478	1520	60	0	768	2785	165	0
189	483.6364	210	0	479	1565	60	0	769	1670	140	0
190	516.3636	210	0	480	1610	60	0	770	1718	140	0
191	549.0909	210	0	481	0	20	0	771	1766	140	0
192	581.8182	210	0	482	22.5	20	0	772	1814	140	0
193	614.5455	210	0	483	45	20	0	773	1862	140	0
194	647.2727	210	0	484	67.5	20	0	774	1910	140	0
195	680	210	0	485	90	20	0	775	1985	140	0
196	710	210	0	486	112.5	20	0	776	2060	140	0
197	740	210	0	487	135	20	0	777	2135	140	0
198	770	210	0	488	157.5	20	0	778	2210	140	0
199	800	210	0	489	180	20	0	779	2285	140	0
200	830	210	0	490	215	20	0	780	2385	140	0
201	860	210	0	491	250	20	0	781	2485	140	0
202	890	210	0	492	285	20	0	782	2585	140	0
203	930	210	0	493	320	20	0	783	2685	140	0
204	970	210	0	494	364.2857	20	0	784	2785	140	0
205	1010	210	0	495	408.5714	20	0	785	1670	100	0
206	1050	210	0	496	452.8571	20	0	786	1730	100	0
207	1090	210	0	497	497.1429	20	0	787	1790	100	0
208	1130	210	0	498	541.4286	20	0	788	1850	100	0
209	1170	210	0	499	585.7143	20	0	789	1910	100	0
210	1210	210	0	500	630	20	0	790	2005	100	0
211	1250	210	0	501	680	20	0	791	2100	100	0
212	1290	210	0	502	734	20	0	792	2195	100	0
213	1330	210	0	503	786	20	0	793	2290	100	0
214	1370	210	0	504	838	20	0	794	2385	100	0
215	1410	210	0	505	890	20	0	795	2485	100	0
216	1450	210	0	506	941.4286	20	0	796	2585	100	0
217	1490	210	0	507	992.8571	20	0	797	2685	100	0

218	1530	210	0	508	1044.286	20	0	798	2785	100	0
219	1570	210	0	509	1095.714	20	0	799	1685	60	0
220	1610	210	0	510	1147.143	20	0	800	1760	60	0
221	0	190	0	511	1198.571	20	0	801	1835	60	0
222	12	190	0	512	1250	20	0	802	1910	60	0
223	25	190	0	513	1301.429	20	0	803	2019.375	60	0
224	40	190	0	514	1352.857	20	0	804	2128.75	60	0
225	52	190	0	515	1404.286	20	0	805	2238.125	60	0
226	65	190	0	516	1455.714	20	0	806	2347.5	60	0
227	82	190	0	517	1507.143	20	0	807	2456.875	60	0
228	99.33333	190	0	518	1558.571	20	0	808	2566.25	60	0
229	119.5	190	0	519	1610	20	0	809	2675.625	60	0
230	139.6667	190	0	520	0	-40	0	810	2785	60	0
231	159.8333	190	0	521	25.71429	-40	0	811	1710	20	0
232	180	190	0	522	51.42857	-40	0	812	1810	20	0
233	200	190	0	523	77.14286	-40	0	813	1910	20	0
234	220	190	0	524	102.8571	-40	0	814	2019.375	20	0
235	240	190	0	525	128.5714	-40	0	815	2128.75	20	0
236	260	190	0	526	154.2857	-40	0	816	2238.125	20	0
237	280	190	0	527	180	-40	0	817	2347.5	20	0
238	300	190	0	528	226.6667	-40	0	818	2456.875	20	0
239	320	190	0	529	273.3333	-40	0	819	2566.25	20	0
240	352.7273	190	0	530	320	-40	0	820	2675.625	20	0
241	385.4545	190	0	531	371.6667	-40	0	821	2785	20	0
242	418.1818	190	0	532	423.3333	-40	0	822	1727.5	-40	0
243	450.9091	190	0	533	475	-40	0	823	1845	-40	0
244	483.6364	190	0	534	526.6667	-40	0	824	1962.5	-40	0
245	516.3636	190	0	535	578.3333	-40	0	825	2080	-40	0
246	549.0909	190	0	536	630	-40	0	826	2197.5	-40	0
247	581.8182	190	0	537	695	-40	0	827	2315	-40	0
248	614.5455	190	0	538	760	-40	0	828	2432.5	-40	0
249	647.2727	190	0	539	825	-40	0	829	2550	-40	0
250	680	190	0	540	890	-40	0	830	2667.5	-40	0
251	710	190	0	541	950	-40	0	831	2785	-40	0
252	740	190	0	542	1010	-40	0	832	1740.556	-100	0
253	770	190	0	543	1070	-40	0	833	1871.111	-100	0
254	800	190	0	544	1130	-40	0	834	2001.667	-100	0
255	830	190	0	545	1190	-40	0	835	2132.222	-100	0
256	860	190	0	546	1250	-40	0	836	2262.778	-100	0
257	890	190	0	547	1310	-40	0	837	2393.333	-100	0
258	930	190	0	548	1370	-40	0	838	2523.889	-100	0
259	970	190	0	549	1430	-40	0	839	2654.444	-100	0
260	1010	190	0	550	1490	-40	0	840	2785	-100	0
261	1050	190	0	551	1550	-40	0	841	1756.875	-200	0
262	1090	190	0	552	1610	-40	0	842	1903.75	-200	0
263	1130	190	0	553	0	-100	0	843	2050.625	-200	0
264	1170	190	0	554	30	-100	0	844	2197.5	-200	0
265	1210	190	0	555	60	-100	0	845	2344.375	-200	0
266	1250	190	0	556	90	-100	0	846	2491.25	-200	0
267	1290	190	0	557	120	-100	0	847	2638.125	-200	0
268	1330	190	0	558	150	-100	0	848	2785	-200	0
269	1370	190	0	559	180	-100	0	849	1777.857	-300	0
270	1410	190	0	560	226.6667	-100	0	850	1945.714	-300	0
271	1450	190	0	561	273.3333	-100	0	851	2113.571	-300	0
272	1490	190	0	562	320	-100	0	852	2281.429	-300	0
273	1530	190	0	563	382	-100	0	853	2449.286	-300	0
274	1570	190	0	564	444	-100	0	854	2617.143	-300	0
275	1610	190	0	565	506	-100	0	855	2785	-300	0
276	0	165	0	566	568	-100	0	856	1805.833	-400	0
277	12	165	0	567	630	-100	0	857	2001.667	-400	0
278	25	165	0	568	716.6667	-100	0	858	2197.5	-400	0
279	40	165	0	569	803.3333	-100	0	859	2393.333	-400	0
280	52	165	0	570	890	-100	0	860	2589.167	-400	0
281	65	165	0	571	962	-100	0	861	2785	-400	0
282	82	165	0	572	1034	-100	0	862	1845	-500	0
283	99.33333	165	0	573	1106	-100	0	863	2080	-500	0
284	119.5	165	0	574	1178	-100	0	864	2315	-500	0
285	139.6667	165	0	575	1250	-100	0	865	2550	-500	0
286	159.8333	165	0	576	1322	-100	0	866	2785	-500	0
287	180	165	0	577	1394	-100	0	867	1903.75	-700	0
288	200	165	0	578	1466	-100	0	868	2197.5	-700	0
289	220	165	0	579	1538	-100	0	869	2491.25	-700	0
290	240	165	0	580	1610	-100	0	870	2785	-700	0

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Model 2
2D Axisymmetric

Elements

ELEM	MAT	TYP	REL	ESY	SEC	NODES				ELEM	MAT	TYP	REL	ESY	SEC	NODES				ELEM	MAT	TYP	REL	ESY	SEC	NODES			
1	1	1	1	0	1	1	2	57	56	342	4	1	1	0	1	292	293	348	347	640	7	1	1	0	1	570	571	597	596
2	1	1	1	0	1	2	3	58	57	343	4	1	1	0	1	293	294	349	348	641	7	1	1	0	1	571	572	598	597
3	1	1	1	0	1	3	4	59	58	344	4	1	1	0	1	294	295	350	349	642	7	1	1	0	1	572	573	598	598
4	1	1	1	0	1	4	5	60	59	345	4	1	1	0	1	295	296	351	350	643	7	1	1	0	1	573	574	599	598
5	1	1	1	0	1	5	6	61	60	346	4	1	1	0	1	296	297	352	351	644	7	1	1	0	1	574	575	600	599
6	1	1	1	0	1	6	7	62	61	347	4	1	1	0	1	297	298	353	352	645	7	1	1	0	1	575	576	601	600
7	1	1	1	0	1	7	8	63	62	348	4	1	1	0	1	298	299	354	353	646	7	1	1	0	1	576	577	602	601
8	1	1	1	0	1	8	9	64	63	349	4	1	1	0	1	299	300	355	354	647	7	1	1	0	1	577	578	602	602
9	1	1	1	0	1	9	10	65	64	350	4	1	1	0	1	300	301	356	355	648	7	1	1	0	1	578	579	603	602
10	1	1	1	0	1	10	11	66	65	351	4	1	1	0	1	301	302	357	356	649	7	1	1	0	1	579	580	604	603
11	1	1	1	0	1	11	12	67	66	352	4	1	1	0	1	302	303	358	357	650	7	1	1	0	1	581	582	606	605
12	1	1	1	0	1	12	13	68	67	353	4	1	1	0	1	303	304	359	358	651	7	1	1	0	1	582	583	607	606
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948	6	1	1	0	1	828	829	838	837
949	6	1	1	0	1	829	830	839	838
950	6	1	1	0	1	830	831	840	839
951	7	1	1	0	1	580	832	841	604
952	7	1	1	0	1	832	833	842	841
953	7	1	1	0	1	833	834	843	842
954	7	1	1	0	1	834	835	844	843
955	7	1	1	0	1	835	836	844	844
956	7	1	1	0	1	836	837	845	844
957	7	1	1	0	1	837	838	846	845
958	7	1	1	0	1	838	839	847	846
959	7	1	1	0	1	839	840	848	847
960	7	1	1	0	1	604	841	849	625
961	7	1	1	0	1	841	842	850	849
962	7	1	1	0	1	842	843	851	850
963	7	1	1	0	1	843	844	851	851
964	7	1	1	0	1	844	845	852	851
966	7	1	1	0	1	845	846	853	852
967	7	1	1	0	1	846	847	854	853
968	7	1	1	0	1	847	848	855	854
969	8	1	1	0	1	625	849	856	643
970	8	1	1	0	1	849	850	857	856
971	8	1	1	0	1	850	851	858	857
972	8	1	1	0	1	851	852	858	858
973	8	1	1	0	1	852	853	859	858
974	8	1	1	0	1	853	854	860	859
975	8	1	1	0	1	854	855	861	860
976	8	1	1	0	1	643	856	862	659
977	8	1	1	0	1	856	857	863	862
978	8	1	1	0	1	857	858	863	863
979	8	1	1	0	1	858	859	864	863
980	8	1	1	0	1	859	860	865	864
981	8	1	1	0	1	860	861	866	865
982	9	1	1	0	1	659	862	867	672
983	9	1	1	0	1	862	863	868	867
984	9	1	1	0	1	863	864	868	868
985	9	1	1	0	1	864	865	869	868
986	9	1	1	0	1	865	866	870	869

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LIST CONSTRAINTS FOR SELECTED NODES 1 TO 870 BY 1
CURRENTLY SELECTED DOF SET= UX UY

NODE	LABEL	REAL	IMAG
660	UX	0.00000000	0.00000000
660	UY	0.00000000	0.00000000
661	UX	0.00000000	0.00000000
661	UY	0.00000000	0.00000000
662	UX	0.00000000	0.00000000
662	UY	0.00000000	0.00000000
663	UX	0.00000000	0.00000000
663	UY	0.00000000	0.00000000
664	UX	0.00000000	0.00000000
664	UY	0.00000000	0.00000000
665	UX	0.00000000	0.00000000
665	UY	0.00000000	0.00000000
666	UX	0.00000000	0.00000000
666	UY	0.00000000	0.00000000
667	UX	0.00000000	0.00000000
667	UY	0.00000000	0.00000000
668	UX	0.00000000	0.00000000
668	UY	0.00000000	0.00000000
669	UX	0.00000000	0.00000000
669	UY	0.00000000	0.00000000

NODE	LABEL	REAL	IMAG
670	UX	0.00000000	0.00000000
670	UY	0.00000000	0.00000000
671	UX	0.00000000	0.00000000
671	UY	0.00000000	0.00000000
672	UX	0.00000000	0.00000000
672	UY	0.00000000	0.00000000
688	UX	0.00000000	0.00000000
704	UX	0.00000000	0.00000000
720	UX	0.00000000	0.00000000
736	UX	0.00000000	0.00000000
752	UX	0.00000000	0.00000000
768	UX	0.00000000	0.00000000
784	UX	0.00000000	0.00000000
798	UX	0.00000000	0.00000000
810	UX	0.00000000	0.00000000
821	UX	0.00000000	0.00000000
831	UX	0.00000000	0.00000000
840	UX	0.00000000	0.00000000
848	UX	0.00000000	0.00000000
855	UX	0.00000000	0.00000000

NODE	LABEL	REAL	IMAG
861	UX	0.00000000	0.00000000
866	UX	0.00000000	0.00000000
867	UX	0.00000000	0.00000000
867	UY	0.00000000	0.00000000
868	UX	0.00000000	0.00000000
868	UY	0.00000000	0.00000000
869	UX	0.00000000	0.00000000
869	UY	0.00000000	0.00000000
870	UX	0.00000000	0.00000000
870	UY	0.00000000	0.00000000

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EVALUATE MATERIAL PROPERTIES FOR MATERIALS      1 TO      9 IN INCREMENTS OF      1

MATERIAL NUMBER =      1 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   3522.5
 NUXY =  0.31000
 PRXY =  0.31000

MATERIAL NUMBER =      2 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   3365.0
 NUXY =  0.48600
 PRXY =  0.48600

MATERIAL NUMBER =      3 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   2253.8
 NUXY =  0.48200
 PRXY =  0.48200

MATERIAL NUMBER =      4 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   5460.0
 NUXY =  0.47700
 PRXY =  0.47700

MATERIAL NUMBER =      5 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   8065.0
 NUXY =  0.46600
 PRXY =  0.46600

MATERIAL NUMBER =      6 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   11188.
 NUXY =  0.45100
 PRXY =  0.45100

MATERIAL NUMBER =      7 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   13265.
 NUXY =  0.43000
 PRXY =  0.43000

MATERIAL NUMBER =      8 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   18062.
 NUXY =  0.41600
 PRXY =  0.41600

MATERIAL NUMBER =      9 EVALUATED AT TEMPERATURE OF   0.0000
 EX   =   20965.
 NUXY =  0.40800
 PRXY =  0.40800
```

Node	Ux	Uy	Node	Ux	Uy	Node	Ux	Uy	Node	Ux	Uy
1	2.92E-07	-0.18945	219	1.37E-03	5.75E-04	437	3.20E-03	-6.28E-02	655	1.20E-03	-4.75E-05
2	2.10E-03	-0.18942	220	1.29E-03	5.50E-04	438	6.33E-03	-6.17E-02	656	8.75E-04	2.29E-05
3	4.38E-03	-0.18929	221	-3.22E-06	-0.12387	439	9.27E-03	-6.00E-02	657	7.20E-04	1.87E-05
4	7.37E-03	-0.189	222	2.78E-03	-0.12368	440	1.22E-02	-5.76E-02	658	5.30E-04	1.27E-05
5	1.02E-02	-0.18852	223	5.83E-03	-0.1231	441	1.42E-02	-5.50E-02	659	3.96E-04	1.03E-05
6	1.19E-02	-0.18808	224	9.45E-03	-0.12196	442	1.63E-02	-5.14E-02	660	0	0
7	1.51E-02	-0.18652	225	1.24E-02	-0.12054	443	1.80E-02	-4.76E-02	661	0	0
8	1.72E-02	-0.18334	226	1.57E-02	-0.1186	444	1.92E-02	-4.36E-02	662	0	0
9	1.75E-02	-0.1773	227	2.02E-02	-0.11502	445	1.99E-02	-3.94E-02	663	0	0
10	1.55E-02	-0.16507	228	2.49E-02	-0.10995	446	2.02E-02	-3.36E-02	664	0	0
11	1.11E-02	-0.14432	229	3.01E-02	-0.10193	447	1.96E-02	-2.81E-02	665	0	0
12	9.24E-03	-9.51E-02	230	3.46E-02	-9.13E-02	448	1.89E-02	-2.36E-02	666	0	0
13	1.29E-02	-4.91E-02	231	3.75E-02	-7.84E-02	449	1.75E-02	-1.94E-02	667	0	0
14	1.78E-02	-3.12E-02	232	3.82E-02	-6.45E-02	450	1.61E-02	-1.59E-02	668	0	0
15	2.00E-02	-2.13E-02	233	3.67E-02	-5.13E-02	451	1.41E-02	-1.19E-02	669	0	0
16	2.01E-02	-1.64E-02	234	3.36E-02	-3.99E-02	452	1.23E-02	-8.97E-03	670	0	0
17	1.90E-02	-1.36E-02	235	2.97E-02	-3.10E-02	453	1.08E-02	-6.74E-03	671	0	0
18	1.74E-02	-1.18E-02	236	2.59E-02	-2.45E-02	454	9.51E-03	-5.08E-03	672	0	0
19	1.58E-02	-1.03E-02	237	2.25E-02	-1.98E-02	455	8.52E-03	-3.75E-03	673	1.22E-03	5.65E-04
20	1.33E-02	-8.28E-03	238	1.97E-02	-1.63E-02	456	7.61E-03	-2.77E-03	674	1.13E-03	5.38E-04
21	1.14E-02	-6.55E-03	239	1.74E-02	-1.37E-02	457	6.84E-03	-1.98E-03	675	1.05E-03	5.12E-04
22	9.87E-03	-5.14E-03	240	1.46E-02	-1.05E-02	458	6.20E-03	-1.37E-03	676	9.78E-04	4.87E-04
23	8.71E-03	-4.00E-03	241	1.25E-02	-8.12E-03	459	5.64E-03	-8.79E-04	677	9.05E-04	4.64E-04
24	7.80E-03	-3.08E-03	242	1.10E-02	-6.32E-03	460	5.20E-03	-5.22E-04	678	8.36E-04	4.43E-04
25	7.05E-03	-2.34E-03	243	9.73E-03	-4.91E-03	461	4.74E-03	-2.00E-04	679	7.36E-04	4.12E-04
26	6.44E-03	-1.74E-03	244	8.72E-03	-3.80E-03	462	4.35E-03	4.97E-05	680	6.43E-04	3.85E-04
27	5.92E-03	-1.25E-03	245	7.86E-03	-2.91E-03	463	4.00E-03	2.31E-04	681	5.56E-04	3.62E-04
28	5.49E-03	-8.36E-04	246	7.16E-03	-2.19E-03	464	3.69E-03	3.71E-04	682	4.76E-04	3.41E-04
29	5.12E-03	-4.98E-04	247	6.55E-03	-1.61E-03	465	3.41E-03	4.73E-04	683	4.01E-04	3.24E-04
30	4.80E-03	-2.16E-04	248	6.04E-03	-1.13E-03	466	3.16E-03	5.43E-04	684	3.09E-04	3.06E-04
31	4.54E-03	-4.73E-06	249	5.59E-03	-7.37E-04	467	2.93E-03	5.88E-04	685	2.24E-04	2.92E-04
32	4.31E-03	1.74E-04	250	5.21E-03	-4.14E-04	468	2.72E-03	6.12E-04	686	1.45E-04	2.83E-04
33	4.10E-03	3.22E-04	251	4.90E-03	-1.73E-04	469	2.53E-03	6.20E-04	687	7.07E-05	2.77E-04
34	3.92E-03	4.46E-04	252	4.62E-03	2.96E-05	470	2.36E-03	6.19E-04	688	0	2.75E-04
35	3.74E-03	5.47E-04	253	4.37E-03	1.96E-04	471	2.20E-03	6.09E-04	689	1.21E-03	5.55E-04
36	3.58E-03	6.30E-04	254	4.14E-03	3.33E-04	472	2.05E-03	5.93E-04	690	1.12E-03	5.28E-04
37	3.44E-03	6.98E-04	255	3.93E-03	4.45E-04	473	1.91E-03	5.73E-04	691	1.04E-03	5.03E-04
38	3.26E-03	7.66E-04	256	3.74E-03	5.37E-04	474	1.79E-03	5.50E-04	692	9.67E-04	4.78E-04
39	3.09E-03	8.14E-04	257	3.57E-03	6.11E-04	475	1.67E-03	5.25E-04	693	8.96E-04	4.56E-04
40	2.93E-03	8.46E-04	258	3.35E-03	6.85E-04	476	1.56E-03	5.00E-04	694	8.28E-04	4.34E-04
41	2.79E-03	8.64E-04	259	3.16E-03	7.38E-04	477	1.45E-03	4.74E-04	695	7.28E-04	4.04E-04
42	2.65E-03	8.71E-04	260	2.98E-03	7.71E-04	478	1.36E-03	4.49E-04	696	6.36E-04	3.77E-04
43	2.52E-03	8.69E-04	261	2.81E-03	7.90E-04	479	1.27E-03	4.25E-04	697	5.50E-04	3.54E-04
44	2.40E-03	8.60E-04	262	2.66E-03	7.97E-04	480	1.18E-03	4.01E-04	698	4.71E-04	3.34E-04
45	2.28E-03	8.46E-04	263	2.52E-03	7.95E-04	481	-6.57E-07	-5.08E-02	699	3.97E-04	3.17E-04
46	2.17E-03	8.28E-04	264	2.38E-03	7.86E-04	482	2.57E-03	-5.04E-02	700	3.05E-04	2.99E-04
47	2.06E-03	8.06E-04	265	2.25E-03	7.71E-04	483	5.07E-03	-4.94E-02	701	2.21E-04	2.85E-04
48	1.95E-03	7.83E-04	266	2.13E-03	7.53E-04	484	7.45E-03	-4.78E-02	702	1.43E-04	2.76E-04
49	1.85E-03	7.58E-04	267	2.02E-03	7.31E-04	485	9.26E-03	-4.57E-02	703	6.99E-05	2.71E-04
50	1.76E-03	7.32E-04	268	1.91E-03	7.08E-04	486	1.13E-02	-4.32E-02	704	0	2.69E-04
51	1.66E-03	7.05E-04	269	1.80E-03	6.82E-04	487	1.27E-02	-4.02E-02	705	1.19E-03	5.35E-04
52	1.58E-03	6.78E-04	270	1.70E-03	6.57E-04	488	1.39E-02	-3.70E-02	706	1.11E-03	5.08E-04
53	1.49E-03	6.52E-04	271	1.61E-03	6.30E-04	489	1.47E-02	-3.36E-02	707	1.03E-03	4.83E-04
54	1.41E-03	6.26E-04	272	1.52E-03	6.04E-04	490	1.52E-02	-2.83E-02	708	9.57E-04	4.59E-04
55	1.33E-03	6.01E-04	273	1.44E-03	5.79E-04	491	1.51E-02	-2.34E-02	709	8.86E-04	4.37E-04
56	4.73E-07	-0.16338	274	1.35E-03	5.54E-04	492	1.45E-02	-1.91E-02	710	8.18E-04	4.16E-04
57	2.28E-03	-0.16333	275	1.28E-03	5.29E-04	493	1.36E-02	-1.53E-02	711	7.19E-04	3.87E-04
58	4.80E-03	-0.16322	276	-2.48E-06	-0.1101	494	1.22E-02	-1.14E-02	712	6.28E-04	3.61E-04
59	8.09E-03	-0.16293	277	2.86E-03	-0.10985	495	1.09E-02	-8.52E-03	713	5.43E-04	3.38E-04
60	1.14E-02	-0.16249	278	5.95E-03	-0.10923	496	9.61E-03	-6.28E-03	714	4.65E-04	3.19E-04
61	1.35E-02	-0.16212	279	9.56E-03	-0.10789	497	8.66E-03	-4.67E-03	715	3.92E-04	3.02E-04
62	1.82E-02	-0.16068	280	1.25E-02	-0.10639	498	7.70E-03	-3.36E-03	716	3.02E-04	2.85E-04
63	2.29E-02	-0.15797	281	1.56E-02	-0.10429	499	6.92E-03	-2.40E-03	717	2.19E-04	2.72E-04
64	2.78E-02	-0.15225	282	1.99E-02	-0.10057	500	6.22E-03	-1.65E-03	718	1.42E-04	2.63E-04
65	3.29E-02	-0.14145	283	2.39E-02	-9.58E-02	501	5.56E-03	-1.00E-03	719	6.90E-05	2.58E-04
66	4.00E-02	-0.11887	284	2.81E-02	-8.86E-02	502	4.95E-03	-4.87E-04	720	0	2.56E-04
67	4.37E-02	-8.30E-02	285	3.16E-02	-7.96E-02	503	4.48E-03	-1.50E-04	721	1.18E-03	5.15E-04
68	3.89E-02	-4.94E-02	286	3.38E-02	-6.95E-02	504	4.04E-03	1.08E-04	722	1.10E-03	4.89E-04
69	3.22E-02	-3.00E-02	287	3.45E-02	-5.89E-02	505	3.67E-03	2.88E-04	723	1.02E-03	4.64E-04
70	2.80E-02	-2.12E-02	288	3.36E-02	-4.87E-02	506	3.35E-03	4.08E-04	724	9.45E-04	4.41E-04
71	2.45E-02	-1.65E-02	289	3.15E-02	-3.95E-02	507	3.06E-03	4.87E-04	725	8.74E-04	4.19E-04
72	2.16E-02	-1.40E-02	290	2.88E-02	-3.20E-02	508	2.81E-03	5.33E-04	726	8.07E-04	3.99E-04
73	1.92E-02	-1.21E-02	291	2.56E-02	-2.60E-02	509	2.58E-03	5.55E-04	727	7.09E-04	3.70E-04
74	1.71E-02	-1.07E-02	292	2.28E-02	-2.12E-02	510	2.37E-03	5.61E-04	728	6.19E-04	3.45E-04
75	1.43E-02	-8.56E-03	293	2.02E-02	-1.76E-02	511	2.18E-03	5.55E-04	729	5.36E-04	3.23E-04
76	1.22E-02	-6.76E-03	294	1.80E-02	-1.47E-02	512	2.01E-03	5.40E-04	730	4.58E-04	3.04E-04
77	1.06E-02	-5.29E-03	295	1.52E-02	-1.12E-02	513	1.86E-03	5.18E-04	731	3.86E-04	2.88E-04
78	9.28E-03	-4.11E-03	296	1.31E-02	-8.61E-03	514	1.71E-03	4.94E-04	732	2.97E-04	2.71E-04
79	8.26E-03	-3.17E-03	297	1.14E-02	-6.68E-03	515	1.58E-03	4.68E-04	733	2.15E-04	2.59E-04

80	7.43E-03	-2.41E-03
81	6.75E-03	-1.79E-03
82	6.18E-03	-1.29E-03
83	5.70E-03	-8.70E-04
84	5.30E-03	-5.24E-04
85	4.95E-03	-2.39E-04
86	4.66E-03	-2.22E-05
87	4.41E-03	1.59E-04
88	4.19E-03	3.09E-04
89	3.99E-03	4.34E-04
90	3.80E-03	5.37E-04
91	3.63E-03	6.21E-04
92	3.48E-03	6.89E-04
93	3.29E-03	7.58E-04
94	3.11E-03	8.06E-04
95	2.95E-03	8.38E-04
96	2.80E-03	8.55E-04
97	2.65E-03	8.62E-04
98	2.52E-03	8.60E-04
99	2.39E-03	8.51E-04
100	2.27E-03	8.36E-04
101	2.16E-03	8.18E-04
102	2.05E-03	7.97E-04
103	1.94E-03	7.73E-04
104	1.84E-03	7.48E-04
105	1.74E-03	7.22E-04
106	1.65E-03	6.95E-04
107	1.56E-03	6.68E-04
108	1.48E-03	6.42E-04
109	1.40E-03	6.16E-04
110	1.32E-03	5.91E-04
111	-1.65E-06	-0.15178
112	2.48E-03	-0.15174
113	5.21E-03	-0.15155
114	8.95E-03	-0.15116
115	1.28E-02	-0.15046
116	1.54E-02	-0.14992
117	2.17E-02	-0.14795
118	2.91E-02	-0.14433
119	3.76E-02	-0.13797
120	4.77E-02	-0.12563
121	5.59E-02	-0.10441
122	5.80E-02	-7.76E-02
123	5.34E-02	-5.23E-02
124	4.44E-02	-3.40E-02
125	3.55E-02	-2.40E-02
126	2.90E-02	-1.88E-02
127	2.42E-02	-1.56E-02
128	2.07E-02	-1.34E-02
129	1.81E-02	-1.16E-02
130	1.50E-02	-9.21E-03
131	1.28E-02	-7.25E-03
132	1.11E-02	-5.66E-03
133	9.70E-03	-4.39E-03
134	8.61E-03	-3.38E-03
135	7.72E-03	-2.58E-03
136	7.00E-03	-1.93E-03
137	6.39E-03	-1.39E-03
138	5.88E-03	-9.53E-04
139	5.45E-03	-5.92E-04
140	5.07E-03	-2.94E-04
141	4.77E-03	-6.89E-05
142	4.51E-03	1.19E-04
143	4.27E-03	2.75E-04
144	4.05E-03	4.04E-04
145	3.86E-03	5.10E-04
146	3.68E-03	5.96E-04
147	3.51E-03	6.65E-04
148	3.31E-03	7.36E-04
149	3.13E-03	7.85E-04
150	2.96E-03	8.17E-04
151	2.80E-03	8.35E-04
152	2.66E-03	8.42E-04
153	2.52E-03	8.40E-04
154	2.39E-03	8.30E-04
155	2.26E-03	8.16E-04
156	2.15E-03	7.97E-04
157	2.04E-03	7.75E-04
158	1.93E-03	7.52E-04
159	1.83E-03	7.26E-04
298	1.01E-02	-5.20E-03
299	9.04E-03	-4.04E-03
300	8.16E-03	-3.10E-03
301	7.40E-03	-2.35E-03
302	6.77E-03	-1.74E-03
303	6.22E-03	-1.24E-03
304	5.75E-03	-8.30E-04
305	5.35E-03	-4.96E-04
306	5.01E-03	-2.42E-04
307	4.72E-03	-3.35E-05
308	4.45E-03	1.41E-04
309	4.21E-03	2.83E-04
310	3.99E-03	3.99E-04
311	3.79E-03	4.95E-04
312	3.61E-03	5.72E-04
313	3.38E-03	6.49E-04
314	3.18E-03	7.03E-04
315	2.99E-03	7.39E-04
316	2.82E-03	7.59E-04
317	2.66E-03	7.66E-04
318	2.51E-03	7.65E-04
319	2.37E-03	7.56E-04
320	2.24E-03	7.42E-04
321	2.12E-03	7.24E-04
322	2.00E-03	7.03E-04
323	1.89E-03	6.79E-04
324	1.79E-03	6.55E-04
325	1.69E-03	6.29E-04
326	1.59E-03	6.03E-04
327	1.50E-03	5.77E-04
328	1.42E-03	5.52E-04
329	1.34E-03	5.28E-04
330	1.26E-03	5.04E-04
331	-4.15E-06	-9.72E-02
332	3.42E-03	-9.67E-02
333	6.86E-03	-9.57E-02
334	1.02E-02	-9.39E-02
335	1.35E-02	-9.13E-02
336	1.70E-02	-8.81E-02
337	1.97E-02	-8.41E-02
338	2.24E-02	-7.89E-02
339	2.47E-02	-7.31E-02
340	2.65E-02	-6.69E-02
341	2.75E-02	-6.03E-02
342	2.80E-02	-5.36E-02
343	2.77E-02	-4.56E-02
344	2.65E-02	-3.82E-02
345	2.49E-02	-3.16E-02
346	2.33E-02	-2.65E-02
347	2.12E-02	-2.20E-02
348	1.93E-02	-1.84E-02
349	1.76E-02	-1.54E-02
350	1.52E-02	-1.18E-02
351	1.32E-02	-9.07E-03
352	1.16E-02	-7.04E-03
353	1.03E-02	-5.48E-03
354	9.23E-03	-4.28E-03
355	8.31E-03	-3.30E-03
356	7.57E-03	-2.52E-03
357	6.91E-03	-1.88E-03
358	6.35E-03	-1.36E-03
359	5.87E-03	-9.35E-04
360	5.44E-03	-5.84E-04
361	5.10E-03	-3.19E-04
362	4.80E-03	-1.02E-04
363	4.52E-03	7.68E-05
364	4.26E-03	2.26E-04
365	4.04E-03	3.49E-04
366	3.83E-03	4.47E-04
367	3.64E-03	5.28E-04
368	3.41E-03	6.09E-04
369	3.19E-03	6.66E-04
370	3.00E-03	7.03E-04
371	2.82E-03	7.24E-04
372	2.66E-03	7.33E-04
373	2.51E-03	7.32E-04
374	2.36E-03	7.25E-04
375	2.23E-03	7.11E-04
376	2.10E-03	6.93E-04
377	1.99E-03	6.73E-04
516	1.46E-03	4.40E-04
517	1.34E-03	4.14E-04
518	1.24E-03	3.88E-04
519	1.14E-03	3.62E-04
520	1.47E-06	-3.75E-02
521	2.18E-03	-3.71E-02
522	4.28E-03	-3.64E-02
523	6.21E-03	-3.50E-02
524	7.66E-03	-3.35E-02
525	9.30E-03	-3.14E-02
526	1.05E-02	-2.92E-02
527	1.13E-02	-2.66E-02
528	1.22E-02	-2.20E-02
529	1.22E-02	-1.77E-02
530	1.17E-02	-1.38E-02
531	1.07E-02	-1.03E-02
532	9.61E-03	-7.41E-03
533	8.71E-03	-5.39E-03
534	7.76E-03	-3.86E-03
535	6.85E-03	-2.67E-03
536	6.14E-03	-1.78E-03
537	5.32E-03	-9.90E-04
538	4.66E-03	-4.34E-04
539	4.12E-03	-7.10E-05
540	3.63E-03	1.67E-04
541	3.25E-03	3.15E-04
542	2.92E-03	4.06E-04
543	2.64E-03	4.51E-04
544	2.38E-03	4.72E-04
545	2.16E-03	4.73E-04
546	1.95E-03	4.61E-04
547	1.77E-03	4.41E-04
548	1.60E-03	4.15E-04
549	1.45E-03	3.89E-04
550	1.32E-03	3.61E-04
551	1.20E-03	3.34E-04
552	1.09E-03	3.08E-04
553	1.17E-06	-2.78E-02
554	1.74E-03	-2.75E-02
555	3.43E-03	-2.68E-02
556	5.00E-03	-2.58E-02
557	6.08E-03	-2.47E-02
558	7.24E-03	-2.28E-02
559	8.24E-03	-2.09E-02
560	9.06E-03	-1.79E-02
561	9.42E-03	-1.48E-02
562	9.39E-03	-1.20E-02
563	8.88E-03	-8.67E-03
564	8.11E-03	-6.17E-03
565	7.26E-03	-4.20E-03
566	6.55E-03	-2.86E-03
567	5.75E-03	-1.83E-03
568	4.87E-03	-8.61E-04
569	4.13E-03	-2.96E-04
570	3.51E-03	6.40E-05
571	3.08E-03	2.27E-04
572	2.70E-03	3.29E-04
573	2.39E-03	3.75E-04
574	2.11E-03	3.89E-04
575	1.87E-03	3.81E-04
576	1.65E-03	3.60E-04
577	1.46E-03	3.38E-04
578	1.30E-03	3.09E-04
579	1.15E-03	2.81E-04
580	1.02E-03	2.54E-04
581	1.85E-06	-1.73E-02
582	1.47E-03	-1.70E-02
583	2.83E-03	-1.64E-02
584	4.06E-03	-1.54E-02
585	5.17E-03	-1.44E-02
586	5.83E-03	-1.31E-02
587	6.42E-03	-1.16E-02
588	6.81E-03	-1.02E-02
589	7.00E-03	-8.76E-03
590	6.85E-03	-6.14E-03
591	6.32E-03	-4.09E-03
592	5.61E-03	-2.54E-03
593	5.01E-03	-1.55E-03
594	4.32E-03	-8.54E-04
595	3.73E-03	-3.76E-04
734	1.39E-04	2.50E-04
735	6.80E-05	2.46E-04
736	0	2.44E-04
737	1.17E-03	4.95E-04
738	1.08E-03	4.70E-04
739	1.01E-03	4.45E-04
740	9.32E-04	4.23E-04
741	8.62E-04	4.01E-04
742	7.95E-04	3.82E-04
743	6.99E-04	3.54E-04
744	6.10E-04	3.29E-04
745	5.27E-04	3.08E-04
746	4.51E-04	2.89E-04
747	3.80E-04	2.74E-04
748	2.92E-04	2.58E-04
749	2.12E-04	2.46E-04
750	1.37E-04	2.38E-04
751	6.69E-05	2.33E-04
752	0	2.32E-04
753	1.15E-03	4.71E-04
754	1.07E-03	4.46E-04
755	9.91E-04	4.22E-04
756	9.18E-04	4.00E-04
757	8.48E-04	3.80E-04
758	7.83E-04	3.61E-04
759	6.88E-04	3.34E-04
760	6.00E-04	3.10E-04
761	5.18E-04	2.89E-04
762	4.43E-04	2.72E-04
763	3.73E-04	2.57E-04
764	2.87E-04	2.42E-04
765	2.08E-04	2.30E-04
766	1.35E-04	2.23E-04
767	6.58E-05	2.18E-04
768	0	2.17E-04
769	1.13E-03	4.46E-04
770	1.05E-03	4.22E-04
771	9.75E-04	3.99E-04
772	9.02E-04	3.78E-04
773	8.34E-04	3.58E-04
774	7.69E-04	3.40E-04
775	6.75E-04	3.14E-04
776	5.89E-04	2.91E-04
777	5.09E-04	2.71E-04
778	4.35E-04	2.55E-04
779	3.66E-04	2.41E-04
780	2.82E-04	2.26E-04
781	2.04E-04	2.15E-04
782	1.32E-04	2.08E-04
783	6.45E-05	2.04E-04
784	0	2.02E-04
785	1.11E-03	4.09E-04
786	1.01E-03	3.81E-04
787	9.13E-04	3.54E-04
788	8.28E-04	3.30E-04
789	7.48E-04	3.08E-04
790	6.33E-04	2.78E-04
791	5.29E-04	2.52E-04
792	4.36E-04	2.31E-04
793	3.51E-04	2.15E-04
794	2.74E-04	2.02E-04
795	1.98E-04	1.92E-04
796	1.28E-04	1.86E-04
797	6.26E-05	1.82E-04
798	0	1.81E-04
799	1.05E-03	3.65E-04
800	9.30E-04	3.33E-04
801	8.22E-04	3.03E-04
802	7.23E-04	2.78E-04
803	5.95E-04	2.46E-04
804	4.82E-04	2.19E-04
805	3.82E-04	1.99E-04
806	2.92E-04	1.83E-04
807	2.11E-04	1.73E-04
808	1.36E-04	1.65E-04
809	6.61E-05	1.61E-04
810	0	1.60E-04
811	9.74E-04	3.19E-04
812	8.25E-04	2.79E-04
813	6.96E-04	2.47E-04

160	1.73E-03	7.00E-04	378	1.88E-03	6.50E-04	596	3.22E-03	-7.83E-05	814	5.71E-04	2.18E-04
161	1.64E-03	6.74E-04	379	1.77E-03	6.26E-04	597	2.72E-03	1.23E-04	815	4.63E-04	1.94E-04
162	1.55E-03	6.47E-04	380	1.67E-03	6.01E-04	598	2.32E-03	2.17E-04	816	3.66E-04	1.75E-04
163	1.46E-03	6.21E-04	381	1.58E-03	5.76E-04	599	1.97E-03	2.59E-04	817	2.80E-04	1.61E-04
164	1.38E-03	5.95E-04	382	1.49E-03	5.50E-04	600	1.67E-03	2.63E-04	818	2.02E-04	1.51E-04
165	1.30E-03	5.71E-04	383	1.40E-03	5.26E-04	601	1.44E-03	2.49E-04	819	1.30E-04	1.45E-04
166	-1.36E-06	-0.13765	384	1.32E-03	5.02E-04	602	1.23E-03	2.25E-04	820	6.34E-05	1.41E-04
167	2.50E-03	-0.13751	385	1.24E-03	4.79E-04	603	1.05E-03	2.01E-04	821	0	1.39E-04
168	5.29E-03	-0.13725	386	-6.80E-07	-7.91E-02	604	8.97E-04	1.76E-04	822	8.96E-04	2.62E-04
169	9.08E-03	-0.13651	387	3.48E-03	-7.86E-02	605	7.14E-08	-1.03E-02	823	7.35E-04	2.24E-04
170	1.31E-02	-0.13543	388	6.90E-03	-7.75E-02	606	9.61E-04	-1.01E-02	824	5.97E-04	1.94E-04
171	1.76E-02	-0.1336	389	1.03E-02	-7.57E-02	607	1.91E-03	-9.76E-03	825	4.79E-04	1.68E-04
172	2.25E-02	-0.13126	390	1.34E-02	-7.32E-02	608	2.68E-03	-9.23E-03	826	3.77E-04	1.48E-04
173	3.01E-02	-0.12642	391	1.61E-02	-6.98E-02	609	3.28E-03	-8.48E-03	827	2.86E-04	1.35E-04
174	3.90E-02	-0.11844	392	1.89E-02	-6.59E-02	610	3.91E-03	-7.67E-03	828	2.06E-04	1.24E-04
175	4.75E-02	-0.10625	393	2.09E-02	-6.15E-02	611	4.29E-03	-6.79E-03	829	1.32E-04	1.18E-04
176	5.36E-02	-8.98E-02	394	2.25E-02	-5.66E-02	612	4.54E-03	-5.88E-03	830	6.40E-05	1.14E-04
177	5.51E-02	-7.07E-02	395	2.37E-02	-5.14E-02	613	4.73E-03	-4.11E-03	831	0	1.13E-04
178	5.13E-02	-5.27E-02	396	2.43E-02	-4.62E-02	614	4.52E-03	-2.66E-03	832	8.19E-04	2.11E-04
179	4.43E-02	-3.83E-02	397	2.43E-02	-3.95E-02	615	4.10E-03	-1.63E-03	833	6.53E-04	1.76E-04
180	3.65E-02	-2.83E-02	398	2.37E-02	-3.33E-02	616	3.64E-03	-9.07E-04	834	5.15E-04	1.49E-04
181	2.96E-02	-2.20E-02	399	2.22E-02	-2.78E-02	617	3.14E-03	-4.45E-04	835	3.98E-04	1.27E-04
182	2.46E-02	-1.79E-02	400	2.09E-02	-2.31E-02	618	2.67E-03	-1.46E-04	836	3.01E-04	1.12E-04
183	2.09E-02	-1.50E-02	401	1.92E-02	-1.92E-02	619	2.24E-03	3.45E-05	837	2.14E-04	1.00E-04
184	1.81E-02	-1.27E-02	402	1.75E-02	-1.59E-02	620	1.86E-03	1.21E-04	838	1.36E-04	9.32E-05
185	1.50E-02	-9.87E-03	403	1.52E-02	-1.20E-02	621	1.54E-03	1.58E-04	839	6.59E-05	8.92E-05
186	1.28E-02	-7.71E-03	404	1.32E-02	-9.16E-03	622	1.29E-03	1.49E-04	840	0	8.79E-05
187	1.11E-02	-6.01E-03	405	1.15E-02	-7.01E-03	623	1.07E-03	1.41E-04	841	6.93E-04	1.41E-04
188	9.80E-03	-4.66E-03	406	1.02E-02	-5.33E-03	624	8.89E-04	1.26E-04	842	5.32E-04	1.13E-04
189	8.72E-03	-3.60E-03	407	9.09E-03	-4.09E-03	625	7.38E-04	1.05E-04	843	4.01E-04	9.41E-05
190	7.84E-03	-2.75E-03	408	8.12E-03	-3.09E-03	626	2.41E-06	-6.11E-03	844	3.00E-04	7.59E-05
191	7.11E-03	-2.06E-03	409	7.34E-03	-2.29E-03	627	7.66E-04	-6.01E-03	845	2.10E-04	6.66E-05
192	6.50E-03	-1.50E-03	410	6.67E-03	-1.66E-03	628	1.44E-03	-5.71E-03	846	1.33E-04	6.00E-05
193	5.98E-03	-1.04E-03	411	6.09E-03	-1.14E-03	629	2.19E-03	-5.28E-03	847	6.36E-05	5.61E-05
194	5.54E-03	-6.63E-04	412	5.60E-03	-7.30E-04	630	2.60E-03	-4.92E-03	848	0	5.50E-05
195	5.15E-03	-3.55E-04	413	5.23E-03	-4.51E-04	631	3.02E-03	-4.34E-03	849	5.41E-04	8.11E-05
196	4.84E-03	-1.19E-04	414	4.89E-03	-2.04E-04	632	3.32E-03	-3.74E-03	850	3.95E-04	6.38E-05
197	4.57E-03	7.50E-05	415	4.54E-03	2.23E-05	633	3.56E-03	-2.50E-03	851	2.82E-04	4.81E-05
198	4.32E-03	2.37E-04	416	4.22E-03	2.02E-04	634	3.45E-03	-1.54E-03	852	1.97E-04	3.95E-05
199	4.10E-03	3.70E-04	417	3.94E-03	3.45E-04	635	3.09E-03	-8.92E-04	853	1.23E-04	3.34E-05
200	3.90E-03	4.79E-04	418	3.68E-03	4.52E-04	636	2.63E-03	-4.27E-04	854	5.85E-05	3.00E-05
201	3.71E-03	5.68E-04	419	3.42E-03	5.44E-04	637	2.20E-03	-1.68E-04	855	0	2.87E-05
202	3.54E-03	6.39E-04	420	3.19E-03	6.07E-04	638	1.77E-03	-1.24E-05	856	4.01E-04	3.58E-05
203	3.33E-03	7.12E-04	421	2.98E-03	6.47E-04	639	1.43E-03	5.56E-05	857	2.70E-04	3.07E-05
204	3.14E-03	7.62E-04	422	2.78E-03	6.70E-04	640	1.13E-03	6.80E-05	858	1.86E-04	1.78E-05
205	2.97E-03	7.95E-04	423	2.60E-03	6.79E-04	641	9.23E-04	7.76E-05	859	1.14E-04	1.55E-05
206	2.81E-03	8.14E-04	424	2.44E-03	6.78E-04	642	7.35E-04	6.27E-05	860	5.36E-05	1.15E-05
207	2.66E-03	8.20E-04	425	2.29E-03	6.68E-04	643	5.84E-04	5.04E-05	861	0	1.02E-05
208	2.52E-03	8.18E-04	426	2.15E-03	6.54E-04	644	-5.80E-07	-3.05E-03	862	2.48E-04	7.41E-06
209	2.38E-03	8.09E-04	427	2.02E-03	6.35E-04	645	6.32E-04	-2.98E-03	863	1.47E-04	7.08E-06
210	2.26E-03	7.94E-04	428	1.89E-03	6.13E-04	646	1.23E-03	-2.89E-03	864	9.96E-05	5.43E-06
211	2.14E-03	7.75E-04	429	1.78E-03	5.89E-04	647	1.45E-03	-2.66E-03	865	4.23E-05	-1.54E-06
212	2.03E-03	7.54E-04	430	1.67E-03	5.64E-04	648	1.89E-03	-2.33E-03	866	0	8.19E-08
213	1.92E-03	7.30E-04	431	1.57E-03	5.38E-04	649	2.19E-03	-1.98E-03	867	0	0
214	1.82E-03	7.05E-04	432	1.47E-03	5.13E-04	650	2.42E-03	-1.40E-03	868	0	0
215	1.72E-03	6.79E-04	433	1.38E-03	4.88E-04	651	2.33E-03	-8.73E-04	869	0	0
216	1.62E-03	6.52E-04	434	1.29E-03	4.63E-04	652	2.15E-03	-5.75E-04	870	0	0
217	1.54E-03	6.26E-04	435	1.21E-03	4.40E-04	653	1.88E-03	-3.08E-04			
218	1.45E-03	6.00E-04	436	-8.30E-07	-6.33E-02	654	1.57E-03	-1.53E-04			

MAXIMUM ABSOLUTE VALUES		
NODE	122	1
VALUE	-5.80E-02	0.18945

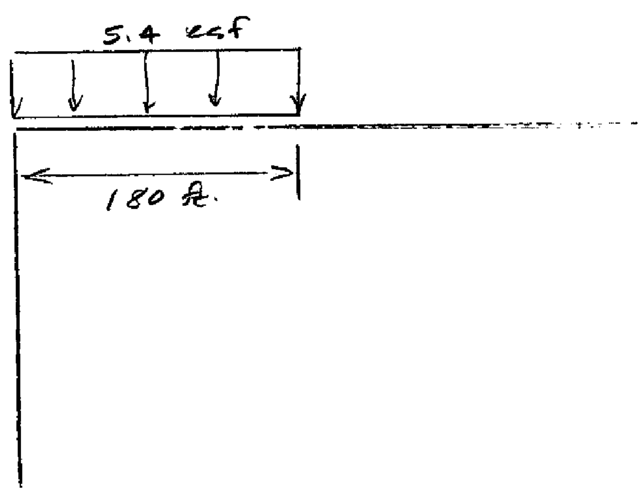
OSR 19-189 (6-11-91)

Calculation Sheet

SRS	Project: See Cover				Calculation No.: T-CLC-Z-00006				
	Subject: " "					Sheet No.: 508			
Rev	Originator	Date	Checker	Date	Rev	Originator	Date	Checker	Date
0	wrp	7/8/03	[signature]	7/10/03					

CASE PO 2D Axisymmetric Creep

DWPF Loads file ssv70



STEP 1 Ramp to 1.0 ksf over 400 days

STEP 2 Ramp to 5.4 ksf over 1500 days

STEP 3 Creep to 6500 days

Model 70

Setting elastic & creep properties

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*SET,k,3
*SET,e,-1.
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MPDATA,PRXY,9,,0.408
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TB,CREE,1,1,4,2
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TBDATA,,c1/20,1,e,,,
TBDE,CREE,2,,,
TB,CREE,2,1,4,2
TBTEMP,0
TBDATA,,c1/20,1,e,0,,
TBDE,CREE,3,,,
TB,CREE,3,1,4,2
TBTEMP,0
TBDATA,,c1/20,1,e,0,,
TBDE,CREE,4,,,
TB,CREE,4,1,4,2
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TBDATA,,c1/25,1,e,0,,
TBDE,CREE,5,,,
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} adjust parameters

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TB,CREE,6,1,4,2
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TBDATA,,c1/60,1,e,0,,
TBDE,CREE,7,,,
TB,CREE,7,1,4,2
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TBDATA,,c1/100,1,e,0,,
TBDE,CREE,8,,,
TB,CREE,8,1,4,2
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TBDATA,,c1/100,1,e,0,,
TBDE,CREE,9,,,
TB,CREE,9,1,4,2
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T-CLC-Z-00006, Rev.0

ssv7p0loads.txt

Load input file for creep model.

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RATE,1
SFEDELE,ALL,ALL,ALL
NLGEOM,1
NSUBST,4,10,4
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FITEM,2,-11
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!*
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/STATUS,SOLU
SOLVE
NSUBST,5,10,4
TIME,1500
FLST,2,11,2,ORDE,2
FITEM,2,1
FITEM,2,-11
/GO
!*
SFE,P51X,1,PRES, ,5.4, , ,
/STATUS,SOLU
SOLVE
NSUBST,8,20,8
TIME,6500
/STATUS,SOLU
SOLVE
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Creep Model Displacement Output T-LLC-2-00006 Rev. 0

Node	Ux	Uy	Node	Ux	Uy	Node	Ux	Uy	Node	Ux	Uy
1	-6.21E-08	-0.27379	219	2.54E-03	1.21E-03	437	5.71E-03	-8.88E-02	655	1.57E-03	6.47E-05
2	3.33E-03	-0.27365	220	2.39E-03	1.16E-03	438	1.13E-02	-8.72E-02	656	1.15E-03	1.17E-04
3	6.93E-03	-0.27314	221	-4.29E-06	-0.19251	439	1.65E-02	-8.45E-02	657	9.59E-04	8.22E-05
4	1.17E-02	-0.27197	222	5.80E-03	-0.19217	440	2.19E-02	-8.09E-02	658	7.07E-04	5.50E-05
5	1.63E-02	-0.27011	223	1.21E-02	-0.1911	441	2.54E-02	-7.73E-02	659	5.33E-04	4.06E-05
6	1.90E-02	-0.26854	224	1.96E-02	-0.18912	442	2.91E-02	-7.17E-02	660	0	0
7	2.47E-02	-0.2637	225	2.55E-02	-0.18659	443	3.23E-02	-6.60E-02	661	0	0
8	2.96E-02	-0.25592	226	3.22E-02	-0.18323	444	3.44E-02	-6.01E-02	662	0	0
9	3.34E-02	-0.24456	227	4.08E-02	-0.17713	445	3.58E-02	-5.39E-02	663	0	0
10	3.51E-02	-0.22517	228	4.98E-02	-0.1687	446	3.64E-02	-4.53E-02	664	0	0
11	3.62E-02	-0.19802	229	5.95E-02	-0.15556	447	3.56E-02	-3.71E-02	665	0	0
12	3.81E-02	-0.13222	230	6.76E-02	-0.13841	448	3.45E-02	-3.05E-02	666	0	0
13	3.83E-02	-7.07E-02	231	7.30E-02	-0.11782	449	3.22E-02	-2.45E-02	667	0	0
14	3.90E-02	-4.71E-02	232	7.44E-02	-9.58E-02	450	2.96E-02	-1.93E-02	668	0	0
15	3.91E-02	-3.15E-02	233	7.21E-02	-7.47E-02	451	2.62E-02	-1.38E-02	669	0	0
16	3.77E-02	-2.27E-02	234	6.70E-02	-5.67E-02	452	2.29E-02	-9.67E-03	670	0	0
17	3.57E-02	-1.67E-02	235	6.02E-02	-4.25E-02	453	2.02E-02	-6.72E-03	671	0	0
18	3.35E-02	-1.27E-02	236	5.35E-02	-3.20E-02	454	1.77E-02	-4.65E-03	672	0	0
19	3.12E-02	-9.81E-03	237	4.71E-02	-2.45E-02	455	1.59E-02	-2.93E-03	673	2.26E-03	1.21E-03
20	2.77E-02	-6.42E-03	238	4.19E-02	-1.90E-02	456	1.42E-02	-1.84E-03	674	2.10E-03	1.14E-03
21	2.47E-02	-4.07E-03	239	3.74E-02	-1.49E-02	457	1.27E-02	-9.06E-04	675	1.94E-03	1.09E-03
22	2.21E-02	-2.38E-03	240	3.17E-02	-1.01E-02	458	1.15E-02	-2.46E-04	676	1.80E-03	1.04E-03
23	1.99E-02	-1.14E-03	241	2.73E-02	-6.90E-03	459	1.05E-02	2.82E-04	677	1.66E-03	9.87E-04
24	1.80E-02	-2.16E-04	242	2.40E-02	-4.62E-03	460	9.65E-03	6.48E-04	678	1.53E-03	9.42E-04
25	1.64E-02	4.79E-04	243	2.12E-02	-2.97E-03	461	8.77E-03	9.53E-04	679	1.34E-03	8.78E-04
26	1.51E-02	1.01E-03	244	1.90E-02	-1.74E-03	462	8.05E-03	1.20E-03	680	1.17E-03	8.21E-04
27	1.39E-02	1.41E-03	245	1.71E-02	-8.19E-04	463	7.40E-03	1.34E-03	681	1.01E-03	7.72E-04
28	1.28E-02	1.72E-03	246	1.56E-02	-8.85E-05	464	6.81E-03	1.45E-03	682	8.63E-04	7.30E-04
29	1.19E-02	1.95E-03	247	1.42E-02	4.48E-04	465	6.29E-03	1.51E-03	683	7.26E-04	6.95E-04
30	1.11E-02	2.12E-03	248	1.30E-02	8.89E-04	466	5.81E-03	1.53E-03	684	5.58E-04	6.57E-04
31	1.04E-02	2.24E-03	249	1.20E-02	1.21E-03	467	5.38E-03	1.53E-03	685	4.04E-04	6.29E-04
32	9.77E-03	2.32E-03	250	1.11E-02	1.47E-03	468	4.98E-03	1.51E-03	686	2.62E-04	6.10E-04
33	9.21E-03	2.38E-03	251	1.04E-02	1.65E-03	469	4.64E-03	1.47E-03	687	1.28E-04	5.99E-04
34	8.70E-03	2.42E-03	252	9.73E-03	1.79E-03	470	4.31E-03	1.42E-03	688	0	5.95E-04
35	8.23E-03	2.43E-03	253	9.14E-03	1.89E-03	471	4.01E-03	1.36E-03	689	2.24E-03	1.17E-03
36	7.80E-03	2.44E-03	254	8.61E-03	1.97E-03	472	3.73E-03	1.30E-03	690	2.07E-03	1.11E-03
37	7.41E-03	2.43E-03	255	8.12E-03	2.02E-03	473	3.48E-03	1.24E-03	691	1.92E-03	1.05E-03
38	6.93E-03	2.41E-03	256	7.68E-03	2.06E-03	474	3.24E-03	1.18E-03	692	1.78E-03	1.00E-03
39	6.49E-03	2.37E-03	257	7.27E-03	2.08E-03	475	3.02E-03	1.12E-03	693	1.64E-03	9.56E-04
40	6.09E-03	2.32E-03	258	6.77E-03	2.08E-03	476	2.81E-03	1.06E-03	694	1.51E-03	9.11E-04
41	5.72E-03	2.26E-03	259	6.32E-03	2.07E-03	477	2.62E-03	1.00E-03	695	1.33E-03	8.49E-04
42	5.38E-03	2.19E-03	260	5.92E-03	2.03E-03	478	2.44E-03	9.47E-04	696	1.16E-03	7.94E-04
43	5.06E-03	2.12E-03	261	5.55E-03	1.99E-03	479	2.27E-03	8.96E-04	697	9.98E-04	7.46E-04
44	4.77E-03	2.05E-03	262	5.20E-03	1.94E-03	480	2.12E-03	8.46E-04	698	8.52E-04	7.05E-04
45	4.50E-03	1.97E-03	263	4.89E-03	1.88E-03	481	-6.05E-07	-6.98E-02	699	7.17E-04	6.71E-04
46	4.24E-03	1.90E-03	264	4.59E-03	1.81E-03	482	4.47E-03	-6.92E-02	700	5.52E-04	6.34E-04
47	4.00E-03	1.82E-03	265	4.32E-03	1.75E-03	483	8.81E-03	-6.77E-02	701	3.99E-04	6.07E-04
48	3.77E-03	1.75E-03	266	4.07E-03	1.68E-03	484	1.29E-02	-6.55E-02	702	2.58E-04	5.88E-04
49	3.55E-03	1.67E-03	267	3.83E-03	1.61E-03	485	1.59E-02	-6.23E-02	703	1.26E-04	5.78E-04
50	3.35E-03	1.60E-03	268	3.60E-03	1.54E-03	486	1.97E-02	-5.86E-02	704	0	5.74E-04
51	3.16E-03	1.53E-03	269	3.39E-03	1.47E-03	487	2.21E-02	-5.44E-02	705	2.21E-03	1.13E-03
52	2.98E-03	1.47E-03	270	3.19E-03	1.41E-03	488	2.42E-02	-4.96E-02	706	2.05E-03	1.07E-03
53	2.80E-03	1.40E-03	271	3.01E-03	1.35E-03	489	2.56E-02	-4.48E-02	707	1.89E-03	1.02E-03
54	2.64E-03	1.34E-03	272	2.83E-03	1.28E-03	490	2.67E-02	-3.71E-02	708	1.75E-03	9.65E-04
55	2.48E-03	1.29E-03	273	2.66E-03	1.23E-03	491	2.65E-02	-3.00E-02	709	1.62E-03	9.19E-04
56	7.91E-07	-0.2508	274	2.50E-03	1.17E-03	492	2.56E-02	-2.40E-02	710	1.49E-03	8.76E-04
57	3.93E-03	-0.2506	275	2.35E-03	1.12E-03	493	2.40E-02	-1.86E-02	711	1.31E-03	8.15E-04
58	8.31E-03	-0.25017	276	-4.86E-06	-0.168	494	2.17E-02	-1.33E-02	712	1.14E-03	7.62E-04
59	1.40E-02	-0.24903	277	5.68E-03	-0.16758	495	1.94E-02	-9.36E-03	713	9.84E-04	7.15E-04
60	1.98E-02	-0.24728	278	1.18E-02	-0.16653	496	1.71E-02	-6.41E-03	714	8.40E-04	6.76E-04
61	2.33E-02	-0.24586	279	1.89E-02	-0.16426	497	1.55E-02	-4.36E-03	715	7.07E-04	6.43E-04
62	3.15E-02	-0.24117	280	2.47E-02	-0.16177	498	1.37E-02	-2.73E-03	716	5.44E-04	6.07E-04
63	3.98E-02	-0.23412	281	3.06E-02	-0.15832	499	1.23E-02	-1.61E-03	717	3.94E-04	5.81E-04
64	4.86E-02	-0.22257	282	3.87E-02	-0.15216	500	1.11E-02	-7.41E-04	718	2.55E-04	5.64E-04
65	5.82E-02	-0.20517	283	4.61E-02	-0.1446	501	9.91E-03	-9.07E-06	719	1.24E-04	5.53E-04
66	7.14E-02	-0.17293	284	5.39E-02	-0.13294	502	8.81E-03	5.53E-04	720	0	5.50E-04
67	7.84E-02	-0.12161	285	6.03E-02	-0.11874	503	8.00E-03	8.76E-04	721	2.18E-03	1.09E-03
68	7.02E-02	-7.34E-02	286	6.43E-02	-0.10275	504	7.21E-03	1.12E-03	722	2.02E-03	1.03E-03
69	5.83E-02	-4.58E-02	287	6.58E-02	-8.61E-02	505	6.58E-03	1.27E-03	723	1.87E-03	9.77E-04
70	5.11E-02	-3.17E-02	288	6.44E-02	-7.01E-02	506	5.99E-03	1.35E-03	724	1.73E-03	9.28E-04
71	4.55E-02	-2.27E-02	289	6.10E-02	-5.57E-02	507	5.49E-03	1.38E-03	725	1.59E-03	8.83E-04
72	4.09E-02	-1.72E-02	290	5.65E-02	-4.40E-02	508	5.02E-03	1.38E-03	726	1.47E-03	8.41E-04
73	3.71E-02	-1.32E-02	291	5.09E-02	-3.44E-02	509	4.62E-03	1.35E-03	727	1.29E-03	7.82E-04
74	3.38E-02	-1.04E-02	292	4.60E-02	-2.70E-02	510	4.25E-03	1.31E-03	728	1.12E-03	7.31E-04
75	2.94E-02	-6.93E-03	293	4.12E-02	-2.13E-02	511	3.91E-03	1.25E-03	729	9.69E-04	6.86E-04
76	2.58E-02	-4.52E-03	294	3.72E-02	-1.68E-02	512	3.60E-03	1.19E-03	730	8.27E-04	6.48E-04
77	2.29E-02	-2.77E-03	295	3.17E-02	-1.16E-02	513	3.32E-03	1.13E-03	731	6.96E-04	6.16E-04
78	2.05E-02	-1.47E-03	296	2.74E-02	-8.01E-03	514	3.06E-03	1.06E-03	732	5.35E-04	5.81E-04
79	1.85E-02	-5.00E-04	297	2.40E-02	-5.45E-03	515	2.81E-03	9.98E-04	733	3.88E-04	5.57E-04

80	1.68E-02	2.36E-04	298	2.13E-02	-3.64E-03	516	2.60E-03	9.34E-04	734	2.51E-04	5.39E-04
81	1.53E-02	7.94E-04	299	1.90E-02	-2.32E-03	517	2.39E-03	8.76E-04	735	1.22E-04	5.29E-04
82	1.41E-02	1.23E-03	300	1.72E-02	-1.27E-03	518	2.20E-03	8.20E-04	736	0	5.26E-04
83	1.29E-02	1.55E-03	301	1.56E-02	-5.12E-04	519	2.03E-03	7.66E-04	737	2.14E-03	1.04E-03
84	1.20E-02	1.80E-03	302	1.42E-02	1.17E-04	520	1.27E-06	-4.90E-02	738	1.99E-03	9.90E-04
85	1.11E-02	1.99E-03	303	1.30E-02	5.75E-04	521	3.66E-03	-4.85E-02	739	1.84E-03	9.39E-04
86	1.04E-02	2.12E-03	304	1.20E-02	9.57E-04	522	7.16E-03	-4.75E-02	740	1.70E-03	8.91E-04
87	9.80E-03	2.21E-03	305	1.11E-02	1.24E-03	523	1.04E-02	-4.57E-02	741	1.57E-03	8.48E-04
88	9.23E-03	2.28E-03	306	1.03E-02	1.45E-03	524	1.26E-02	-4.36E-02	742	1.45E-03	8.07E-04
89	8.71E-03	2.32E-03	307	9.68E-03	1.60E-03	525	1.54E-02	-4.06E-02	743	1.27E-03	7.50E-04
90	8.23E-03	2.35E-03	308	9.09E-03	1.73E-03	526	1.74E-02	-3.76E-02	744	1.10E-03	7.00E-04
91	7.80E-03	2.36E-03	309	8.55E-03	1.81E-03	527	1.88E-02	-3.41E-02	745	9.52E-04	6.56E-04
92	7.39E-03	2.36E-03	310	8.06E-03	1.88E-03	528	2.03E-02	-2.78E-02	746	8.13E-04	6.20E-04
93	6.90E-03	2.34E-03	311	7.62E-03	1.93E-03	529	2.04E-02	-2.19E-02	747	6.84E-04	5.89E-04
94	6.46E-03	2.30E-03	312	7.21E-03	1.96E-03	530	1.95E-02	-1.66E-02	748	5.26E-04	5.56E-04
95	6.06E-03	2.26E-03	313	6.71E-03	1.97E-03	531	1.79E-02	-1.19E-02	749	3.81E-04	5.32E-04
96	5.69E-03	2.20E-03	314	6.26E-03	1.96E-03	532	1.60E-02	-8.09E-03	750	2.47E-04	5.16E-04
97	5.34E-03	2.14E-03	315	5.85E-03	1.94E-03	533	1.46E-02	-5.53E-03	751	1.20E-04	5.06E-04
98	5.03E-03	2.07E-03	316	5.49E-03	1.90E-03	534	1.30E-02	-3.62E-03	752	0	5.03E-04
99	4.73E-03	2.00E-03	317	5.14E-03	1.85E-03	535	1.15E-02	-2.13E-03	753	2.10E-03	9.93E-04
100	4.46E-03	1.92E-03	318	4.83E-03	1.79E-03	536	1.03E-02	-1.08E-03	754	1.95E-03	9.40E-04
101	4.20E-03	1.85E-03	319	4.53E-03	1.73E-03	537	9.00E-03	-1.73E-04	755	1.80E-03	8.92E-04
102	3.96E-03	1.77E-03	320	4.26E-03	1.67E-03	538	7.92E-03	4.55E-04	756	1.67E-03	8.46E-04
103	3.73E-03	1.70E-03	321	4.01E-03	1.61E-03	539	7.06E-03	8.18E-04	757	1.54E-03	8.04E-04
104	3.52E-03	1.63E-03	322	3.77E-03	1.54E-03	540	6.25E-03	1.02E-03	758	1.42E-03	7.65E-04
105	3.32E-03	1.56E-03	323	3.55E-03	1.47E-03	541	5.63E-03	1.14E-03	759	1.24E-03	7.10E-04
106	3.12E-03	1.49E-03	324	3.34E-03	1.41E-03	542	5.07E-03	1.18E-03	760	1.08E-03	6.62E-04
107	2.94E-03	1.43E-03	325	3.14E-03	1.35E-03	543	4.60E-03	1.17E-03	761	9.33E-04	6.20E-04
108	2.77E-03	1.36E-03	326	2.96E-03	1.28E-03	544	4.16E-03	1.14E-03	762	7.97E-04	5.85E-04
109	2.61E-03	1.30E-03	327	2.78E-03	1.23E-03	545	3.77E-03	1.09E-03	763	6.70E-04	5.56E-04
110	2.45E-03	1.25E-03	328	2.62E-03	1.17E-03	546	3.41E-03	1.03E-03	764	5.15E-04	5.25E-04
111	-2.56E-06	-0.23314	329	2.46E-03	1.11E-03	547	3.10E-03	9.83E-04	765	3.73E-04	5.02E-04
112	4.65E-03	-0.23299	330	2.31E-03	1.06E-03	548	2.81E-03	8.93E-04	766	2.42E-04	4.86E-04
113	9.55E-03	-0.23243	331	-6.50E-06	-0.14612	549	2.55E-03	8.29E-04	767	1.18E-04	4.77E-04
114	1.63E-02	-0.23125	332	6.48E-03	-0.14537	550	2.32E-03	7.68E-04	768	0	4.74E-04
115	2.31E-02	-0.22924	333	1.30E-02	-0.14361	551	2.10E-03	7.08E-04	769	2.06E-03	9.42E-04
116	2.76E-02	-0.22763	334	1.92E-02	-0.14078	552	1.90E-03	6.53E-04	770	1.91E-03	8.92E-04
117	3.77E-02	-0.22252	335	2.53E-02	-0.13645	553	9.00E-07	-3.52E-02	771	1.76E-03	8.45E-04
118	4.90E-02	-0.21439	336	3.18E-02	-0.13143	554	2.50E-03	-3.48E-02	772	1.63E-03	8.01E-04
119	6.11E-02	-0.20225	337	3.68E-02	-0.12515	555	4.98E-03	-3.39E-02	773	1.50E-03	7.61E-04
120	7.50E-02	-0.18239	338	4.16E-02	-0.11692	556	7.28E-03	-3.25E-02	774	1.39E-03	7.23E-04
121	8.60E-02	-0.15114	339	4.59E-02	-0.10772	557	8.81E-03	-3.11E-02	775	1.21E-03	6.71E-04
122	8.90E-02	-0.11336	340	4.91E-02	-9.80E-02	558	1.05E-02	-2.85E-02	776	1.06E-03	6.25E-04
123	8.36E-02	-7.76E-02	341	5.12E-02	-8.77E-02	559	1.20E-02	-2.60E-02	777	9.12E-04	5.85E-04
124	7.24E-02	-5.07E-02	342	5.21E-02	-7.73E-02	560	1.33E-02	-2.21E-02	778	7.78E-04	5.51E-04
125	6.09E-02	-3.48E-02	343	5.19E-02	-6.49E-02	561	1.39E-02	-1.80E-02	779	6.55E-04	5.23E-04
126	5.24E-02	-2.53E-02	344	5.01E-02	-5.34E-02	562	1.39E-02	-1.43E-02	780	5.03E-04	4.94E-04
127	4.56E-02	-1.90E-02	345	4.75E-02	-4.31E-02	563	1.34E-02	-9.89E-03	781	3.65E-04	4.73E-04
128	4.04E-02	-1.47E-02	346	4.49E-02	-3.52E-02	564	1.23E-02	-6.67E-03	782	2.36E-04	4.58E-04
129	3.61E-02	-1.16E-02	347	4.13E-02	-2.83E-02	565	1.12E-02	-4.13E-03	783	1.15E-04	4.49E-04
130	3.08E-02	-7.83E-03	348	3.80E-02	-2.27E-02	566	1.02E-02	-2.48E-03	784	0	4.46E-04
131	2.67E-02	-5.22E-03	349	3.49E-02	-1.82E-02	567	9.09E-03	-1.24E-03	785	1.99E-03	8.64E-04
132	2.35E-02	-3.32E-03	350	3.05E-02	-1.28E-02	568	7.85E-03	-9.83E-05	786	1.81E-03	8.05E-04
133	2.09E-02	-1.93E-03	351	2.66E-02	-8.98E-03	569	6.74E-03	4.81E-04	787	1.64E-03	7.51E-04
134	1.88E-02	-8.81E-04	352	2.36E-02	-6.25E-03	570	5.81E-03	8.33E-04	788	1.48E-03	7.03E-04
135	1.70E-02	-9.35E-05	353	2.09E-02	-4.29E-03	571	5.15E-03	9.44E-04	789	1.34E-03	6.59E-04
136	1.55E-02	5.18E-04	354	1.88E-02	-2.87E-03	572	4.55E-03	9.94E-04	790	1.13E-03	5.98E-04
137	1.42E-02	9.79E-04	355	1.69E-02	-1.75E-03	573	4.05E-03	9.80E-04	791	9.43E-04	5.47E-04
138	1.30E-02	1.34E-03	356	1.54E-02	-9.05E-04	574	3.59E-03	9.35E-04	792	7.75E-04	5.05E-04
139	1.20E-02	1.61E-03	357	1.40E-02	-2.50E-04	575	3.19E-03	8.70E-04	793	6.24E-04	4.72E-04
140	1.12E-02	1.83E-03	358	1.29E-02	2.85E-04	576	2.83E-03	7.95E-04	794	4.86E-04	4.47E-04
141	1.05E-02	1.97E-03	359	1.19E-02	6.81E-04	577	2.51E-03	7.33E-04	795	3.52E-04	4.27E-04
142	9.81E-03	2.08E-03	360	1.10E-02	1.01E-03	578	2.23E-03	6.65E-04	796	2.28E-04	4.14E-04
143	9.23E-03	2.15E-03	361	1.02E-02	1.24E-03	579	1.98E-03	6.01E-04	797	1.11E-04	4.06E-04
144	8.70E-03	2.21E-03	362	9.58E-03	1.41E-03	580	1.76E-03	5.43E-04	798	0	4.03E-04
145	8.22E-03	2.24E-03	363	8.99E-03	1.55E-03	581	2.68E-06	-2.16E-02	799	1.88E-03	7.73E-04
146	7.78E-03	2.26E-03	364	8.45E-03	1.66E-03	582	2.14E-03	-2.12E-02	800	1.66E-03	7.06E-04
147	7.37E-03	2.27E-03	365	7.97E-03	1.74E-03	583	4.08E-03	-2.04E-02	801	1.46E-03	6.47E-04
148	6.87E-03	2.25E-03	366	7.53E-03	1.80E-03	584	5.89E-03	-1.90E-02	802	1.28E-03	5.97E-04
149	6.43E-03	2.22E-03	367	7.12E-03	1.84E-03	585	7.61E-03	-1.77E-02	803	1.06E-03	5.32E-04
150	6.02E-03	2.18E-03	368	6.63E-03	1.86E-03	586	8.62E-03	-1.60E-02	804	8.54E-04	4.80E-04
151	5.65E-03	2.13E-03	369	6.18E-03	1.86E-03	587	9.46E-03	-1.40E-02	805	6.76E-04	4.40E-04
152	5.30E-03	2.07E-03	370	5.78E-03	1.84E-03	588	1.01E-02	-1.20E-02	806	5.16E-04	4.09E-04
153	4.99E-03	2.00E-03	371	5.41E-03	1.81E-03	589	1.04E-02	-1.02E-02	807	3.72E-04	3.88E-04
154	4.69E-03	1.93E-03	372	5.07E-03	1.77E-03	590	1.03E-02	-6.73E-03	808	2.40E-04	3.73E-04
155	4.42E-03	1.86E-03	373	4.76E-03	1.71E-03	591	9.71E-03	-4.09E-03	809	1.17E-04	3.65E-04
156	4.16E-03	1.79E-03	374	4.47E-03	1.66E-03	592	8.75E-03	-2.16E-03	810	0	3.62E-04
157	3.92E-03	1.72E-03	375	4.19E-03	1.60E-03	593	7.90E-03	-9.96E-04	811	1.72E-03	6.77E-04
158	3.69E-03	1.65E-03	376	3.94E-03	1.53E-03	594	6.90E-03	-2.23E-04	812	1.46E-03	5.99E-04
159	3.48E-03	1.58E-03	377	3.71E-03	1.47E-03	595	6.03E-03	2.72E-04	813	1.23E-03	5.35E-04

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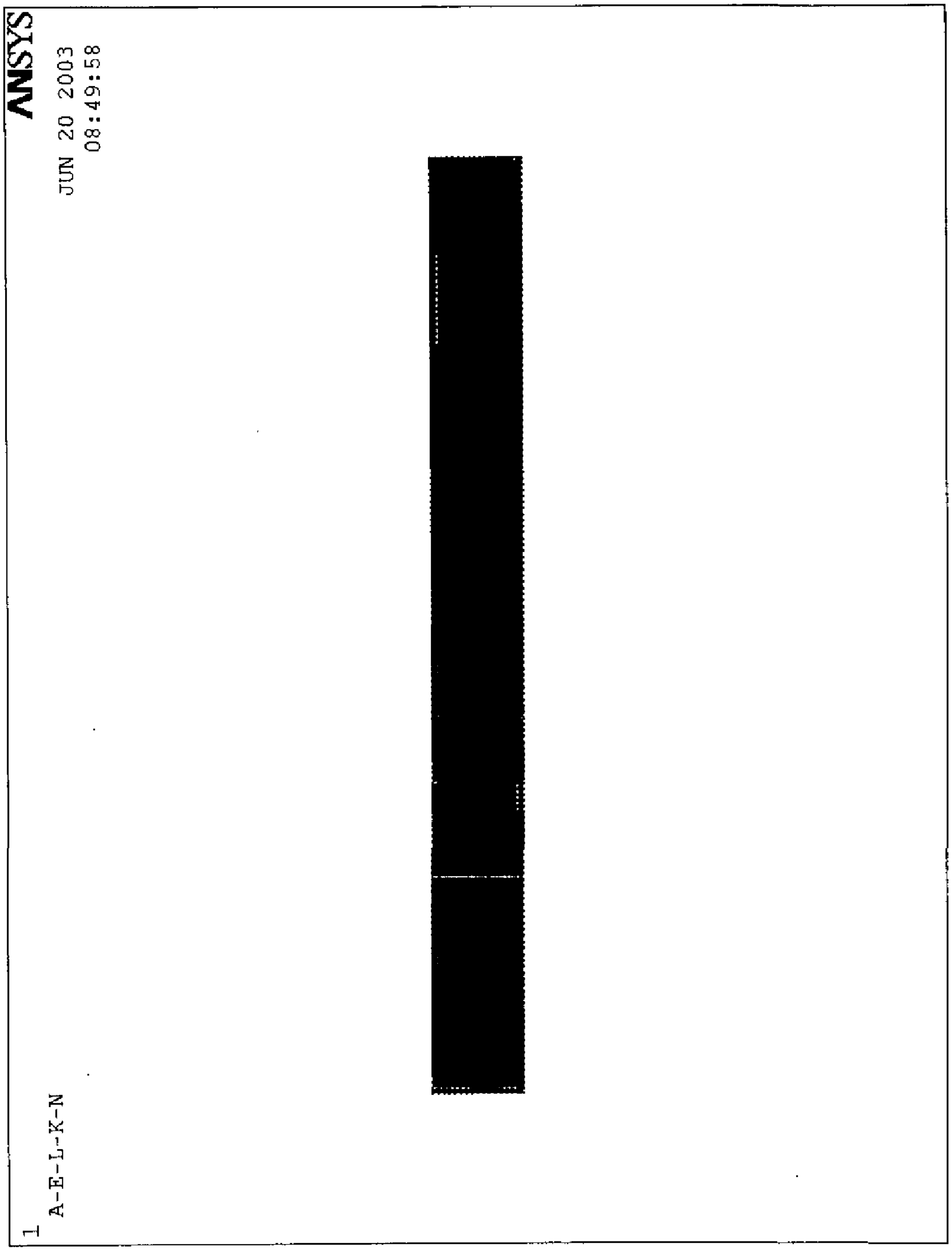
160	3.28E-03	1.51E-03
161	3.09E-03	1.44E-03
162	2.91E-03	1.38E-03
163	2.74E-03	1.32E-03
164	2.58E-03	1.26E-03
165	2.42E-03	1.20E-03
166	-2.69E-06	-0.21312
167	4.88E-03	-0.21284
168	1.03E-02	-0.21228
169	1.75E-02	-0.21072
170	2.50E-02	-0.20846
171	3.28E-02	-0.20484
172	4.09E-02	-0.20032
173	5.25E-02	-0.19139
174	6.51E-02	-0.17782
175	7.66E-02	-0.15825
176	8.46E-02	-0.13306
177	8.69E-02	-0.10435
178	8.26E-02	-7.72E-02
179	7.41E-02	-5.52E-02
180	6.43E-02	-3.94E-02
181	5.52E-02	-2.89E-02
182	4.80E-02	-2.18E-02
183	4.21E-02	-1.69E-02
184	3.75E-02	-1.32E-02
185	3.16E-02	-8.94E-03
186	2.73E-02	-6.04E-03
187	2.39E-02	-3.96E-03
188	2.12E-02	-2.43E-03
189	1.90E-02	-1.31E-03
190	1.71E-02	-4.39E-04
191	1.56E-02	2.10E-04
192	1.42E-02	7.29E-04
193	1.31E-02	1.11E-03
194	1.21E-02	1.42E-03
195	1.12E-02	1.65E-03
196	1.04E-02	1.81E-03
197	9.79E-03	1.93E-03
198	9.20E-03	2.03E-03
199	8.66E-03	2.09E-03
200	8.18E-03	2.14E-03
201	7.73E-03	2.16E-03
202	7.33E-03	2.17E-03
203	6.83E-03	2.17E-03
204	6.38E-03	2.15E-03
205	5.97E-03	2.11E-03
206	5.60E-03	2.06E-03
207	5.26E-03	2.00E-03
208	4.94E-03	1.94E-03
209	4.64E-03	1.87E-03
210	4.37E-03	1.80E-03
211	4.11E-03	1.73E-03
212	3.87E-03	1.66E-03
213	3.65E-03	1.59E-03
214	3.44E-03	1.53E-03
215	3.24E-03	1.46E-03
216	3.05E-03	1.39E-03
217	2.87E-03	1.33E-03
218	2.70E-03	1.27E-03
378	3.49E-03	1.41E-03
379	3.28E-03	1.34E-03
380	3.09E-03	1.28E-03
381	2.90E-03	1.22E-03
382	2.73E-03	1.17E-03
383	2.57E-03	1.11E-03
384	2.41E-03	1.06E-03
385	2.26E-03	1.01E-03
386	-6.47E-07	-0.11553
387	6.37E-03	-0.11479
388	1.26E-02	-0.11301
389	1.89E-02	-0.11022
390	2.45E-02	-0.10653
391	2.91E-02	-0.10118
392	3.43E-02	-9.51E-02
393	3.81E-02	-8.84E-02
394	4.10E-02	-8.08E-02
395	4.31E-02	-7.29E-02
396	4.43E-02	-6.49E-02
397	4.46E-02	-5.46E-02
398	4.37E-02	-4.52E-02
399	4.14E-02	-3.70E-02
400	3.92E-02	-2.99E-02
401	3.63E-02	-2.40E-02
402	3.34E-02	-1.92E-02
403	2.92E-02	-1.36E-02
404	2.56E-02	-9.56E-03
405	2.24E-02	-6.69E-03
406	1.98E-02	-4.52E-03
407	1.77E-02	-3.07E-03
408	1.58E-02	-1.90E-03
409	1.43E-02	-9.73E-04
410	1.30E-02	-3.16E-04
411	1.18E-02	2.26E-04
412	1.08E-02	6.31E-04
413	1.01E-02	8.99E-04
414	9.41E-03	1.13E-03
415	8.71E-03	1.32E-03
416	8.07E-03	1.47E-03
417	7.51E-03	1.58E-03
418	7.01E-03	1.64E-03
419	6.48E-03	1.68E-03
420	6.02E-03	1.70E-03
421	5.60E-03	1.68E-03
422	5.22E-03	1.66E-03
423	4.87E-03	1.61E-03
424	4.55E-03	1.57E-03
425	4.25E-03	1.51E-03
426	3.98E-03	1.45E-03
427	3.72E-03	1.39E-03
428	3.48E-03	1.33E-03
429	3.26E-03	1.26E-03
430	3.05E-03	1.20E-03
431	2.86E-03	1.14E-03
432	2.68E-03	1.08E-03
433	2.51E-03	1.03E-03
434	2.35E-03	9.77E-04
435	2.19E-03	9.28E-04
436	-1.09E-06	-8.95E-02
596	5.25E-03	5.36E-04
597	4.49E-03	6.84E-04
598	3.85E-03	7.08E-04
599	3.30E-03	6.86E-04
600	2.81E-03	6.26E-04
601	2.42E-03	5.66E-04
602	2.08E-03	4.95E-04
603	1.78E-03	4.36E-04
604	1.53E-03	3.82E-04
605	2.42E-06	-1.26E-02
606	1.58E-03	-1.23E-02
607	3.17E-03	-1.18E-02
608	4.41E-03	-1.11E-02
609	5.35E-03	-9.98E-03
610	6.45E-03	-8.91E-03
611	7.07E-03	-7.75E-03
612	7.49E-03	-6.55E-03
613	7.81E-03	-4.26E-03
614	7.45E-03	-2.43E-03
615	6.75E-03	-1.21E-03
616	5.99E-03	-4.04E-04
617	5.17E-03	4.41E-05
618	4.41E-03	3.13E-04
619	3.70E-03	4.29E-04
620	3.07E-03	4.54E-04
621	2.56E-03	4.42E-04
622	2.15E-03	3.72E-04
623	1.78E-03	3.31E-04
624	1.49E-03	2.86E-04
625	1.24E-03	2.37E-04
626	2.08E-06	-6.48E-03
627	1.23E-03	-6.42E-03
628	2.28E-03	-6.00E-03
629	3.51E-03	-5.49E-03
630	4.06E-03	-5.13E-03
631	4.74E-03	-4.39E-03
632	5.22E-03	-3.69E-03
633	5.58E-03	-2.23E-03
634	5.37E-03	-1.18E-03
635	4.79E-03	-5.35E-04
636	4.06E-03	-6.82E-05
637	3.38E-03	1.22E-04
638	2.72E-03	2.30E-04
639	2.20E-03	2.43E-04
640	1.73E-03	2.08E-04
641	1.44E-03	2.04E-04
642	1.15E-03	1.50E-04
643	9.15E-04	1.23E-04
644	-1.17E-06	-2.71E-03
645	8.26E-04	-2.63E-03
646	1.62E-03	-2.60E-03
647	1.85E-03	-2.35E-03
648	2.44E-03	-1.99E-03
649	2.84E-03	-1.63E-03
650	3.15E-03	-1.06E-03
651	3.04E-03	-5.68E-04
652	2.81E-03	-3.15E-04
653	2.46E-03	-9.58E-05
654	2.05E-03	1.60E-05
814	1.00E-03	4.78E-04
815	8.14E-04	4.30E-04
816	6.42E-04	3.92E-04
817	4.91E-04	3.66E-04
818	3.54E-04	3.46E-04
819	2.28E-04	3.32E-04
820	1.11E-04	3.25E-04
821	0	3.22E-04
822	1.57E-03	5.61E-04
823	1.28E-03	4.85E-04
824	1.04E-03	4.25E-04
825	8.33E-04	3.76E-04
826	6.55E-04	3.37E-04
827	4.97E-04	3.10E-04
828	3.57E-04	2.91E-04
829	2.29E-04	2.77E-04
830	1.11E-04	2.70E-04
831	0	2.67E-04
832	1.41E-03	4.56E-04
833	1.12E-03	3.88E-04
834	8.86E-04	3.34E-04
835	6.83E-04	2.91E-04
836	5.17E-04	2.63E-04
837	3.67E-04	2.40E-04
838	2.34E-04	2.27E-04
839	1.13E-04	2.19E-04
840	0	2.16E-04
841	1.19E-03	3.10E-04
842	9.13E-04	2.56E-04
843	6.90E-04	2.20E-04
844	5.17E-04	1.85E-04
845	3.61E-04	1.68E-04
846	2.29E-04	1.55E-04
847	1.10E-04	1.47E-04
848	0	1.45E-04
849	9.18E-04	1.87E-04
850	6.76E-04	1.53E-04
851	4.84E-04	1.22E-04
852	3.42E-04	1.07E-04
853	2.12E-04	9.45E-05
854	1.01E-04	8.83E-05
855	0	8.56E-05
856	6.36E-04	8.76E-05
857	4.28E-04	8.06E-05
858	3.02E-04	5.35E-05
859	1.83E-04	5.06E-05
860	8.74E-05	4.30E-05
861	0	4.06E-05
862	3.37E-04	3.06E-05
863	1.99E-04	2.70E-05
864	1.42E-04	2.42E-05
865	5.87E-05	1.09E-05
866	0	1.54E-05
867	0	0
868	0	0
869	0	0
870	0	0

MAXIMUN ABSOLUTE VALUES

NODE	122	1
VALUE	-8.90E-02	0.27379

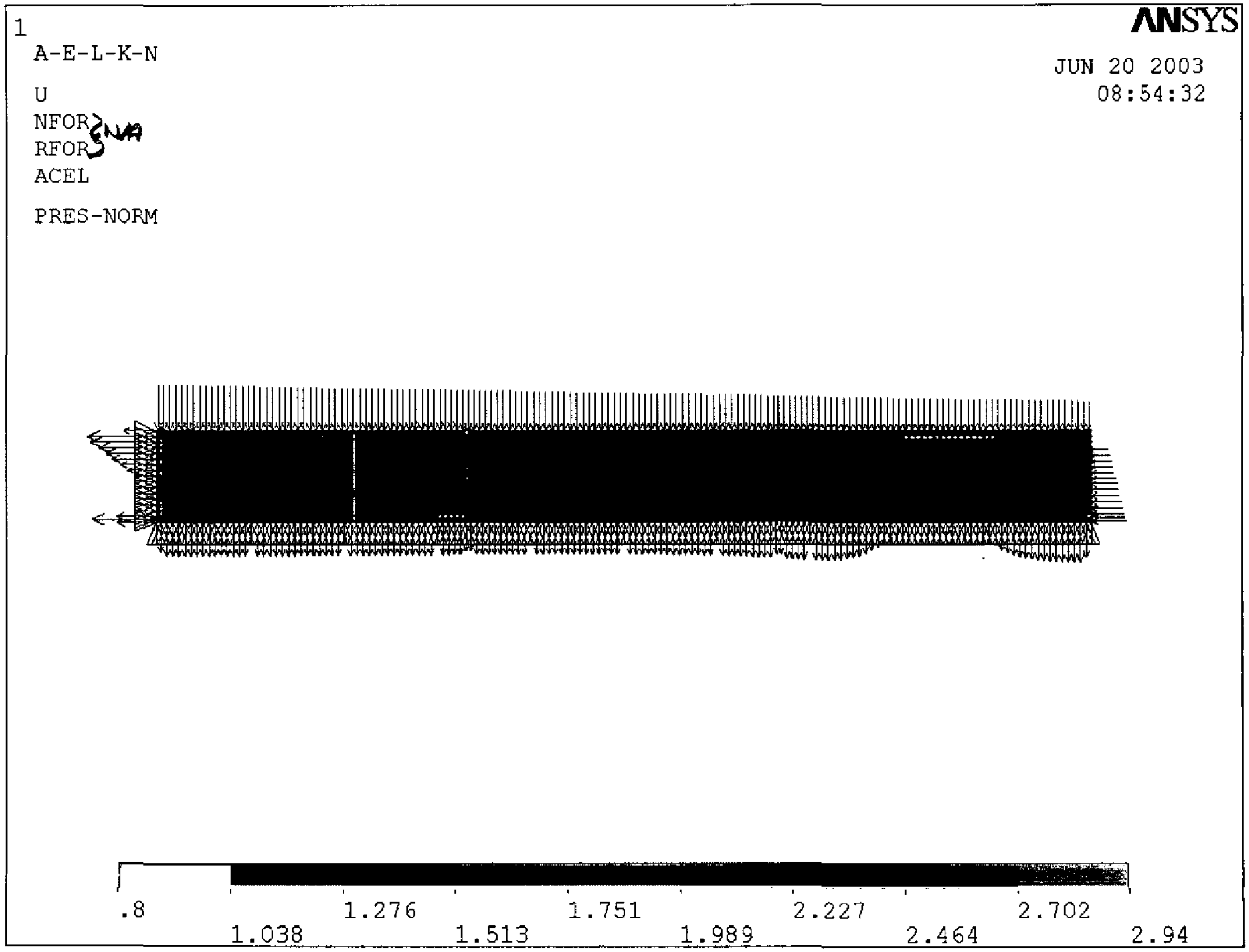
T-CLC-Z-00006, Rev. 0

MODEL 300



Model 300 Element Layout

Model 300 – Applied Loads and Boundary Conditions



Node	X	Y	Node	X	Y	Node	X	Y	Node	X	Y	Node	X	Y	Node	X	Y
1	0.00	0.00	21043	5.40	1.00	51453	40.75	8.67	52736	260.75	13.67	52090	240.75	12.00	53205	134.75	18.67
2	1.50	0.00	21044	7.35	1.00	51454	40.75	10.33	52737	260.75	15.33	52091	240.75	13.67	53206	134.75	20.33
3	1.50	2.00	21045	9.30	1.00	51455	40.75	12.00	52738	260.75	17.00	52092	240.75	15.33	53207	134.75	22.00
4	1.50	1.00	21046	11.25	1.00	51456	40.75	13.67	52739	260.75	18.67	52093	240.75	17.00	53208	134.75	23.67
5	0.00	2.00	21047	13.20	1.00	51457	40.75	15.33	52740	260.75	20.33	52094	240.75	18.67	53209	134.75	25.33
6	0.00	1.00	21048	15.15	1.00	51458	40.75	17.00	52741	260.75	22.00	52095	240.75	20.33	53210	136.75	3.67
178	101.50	0.00	21049	17.10	1.00	51459	40.75	18.67	52742	260.75	23.67	52096	240.75	22.00	53211	136.75	5.33
191	101.50	2.00	21050	19.05	1.00	51460	40.75	20.33	52743	260.75	25.33	52097	240.75	23.67	53212	136.75	7.00
201	101.50	1.00	21051	21.00	1.00	51461	40.75	22.00	52744	262.75	3.67	52098	240.75	25.33	53213	136.75	8.67
211	100.00	0.00	21052	22.95	1.00	51462	40.75	23.67	52745	262.75	5.33	52099	212.75	27.00	53214	136.75	10.33
212	100.00	2.00	21053	24.90	1.00	51463	40.75	25.33	52746	262.75	7.00	52100	214.75	27.00	53215	136.75	12.00
213	100.00	1.00	21054	26.85	1.00	51464	42.75	3.67	52747	262.75	8.67	52101	216.75	27.00	53216	136.75	13.67
214	200.00	0.00	21055	28.80	1.00	51465	42.75	5.33	52748	262.75	10.33	52102	218.75	27.00	53217	136.75	15.33
215	201.50	0.00	21056	90.75	0.00	51466	42.75	7.00	52749	262.75	12.00	52103	220.75	27.00	53218	136.75	17.00
216	201.50	2.00	21057	98.15	0.00	51467	42.75	8.67	52750	262.75	13.67	52104	222.75	27.00	53219	136.75	18.67
217	201.50	1.00	21058	96.30	0.00	51468	42.75	10.33	52751	262.75	15.33	52105	224.75	27.00	53220	136.75	20.33
218	200.00	2.00	21059	94.45	0.00	51469	42.75	12.00	52752	262.75	17.00	52106	226.75	27.00	53221	136.75	22.00
219	200.00	1.00	21060	92.60	0.00	51470	42.75	13.67	52753	262.75	18.67	52107	228.75	27.00	53222	136.75	23.67
361	300.00	0.00	21061	90.75	2.00	51471	42.75	15.33	52754	262.75	20.33	52108	230.75	27.00	53223	136.75	25.33
362	301.50	0.00	21062	98.15	2.00	51472	42.75	17.00	52755	262.75	22.00	52109	232.75	27.00	53224	138.75	3.67
363	301.50	2.00	21063	96.30	2.00	51473	42.75	18.67	52756	262.75	23.67	52110	234.75	27.00	53225	138.75	5.33
364	301.50	1.00	21064	94.45	2.00	51474	42.75	20.33	52757	262.75	25.33	52111	236.75	27.00	53226	138.75	7.00
365	300.00	2.00	21065	92.60	2.00	51475	42.75	22.00	52758	264.75	3.67	52112	238.75	27.00	53227	138.75	8.67
366	300.00	1.00	21066	90.75	1.00	51476	42.75	23.67	52759	264.75	5.33	52113	210.75	3.67	53228	138.75	10.33
10603	301.50	29.00	21067	92.60	1.00	51477	42.75	25.33	52760	264.75	7.00	52114	210.75	5.33	53229	138.75	12.00
10604	301.50	3.80	21068	94.45	1.00	51478	44.75	3.67	52761	264.75	8.67	52115	210.75	7.00	53230	138.75	13.67
10605	301.50	5.60	21069	96.30	1.00	51479	44.75	5.33	52762	264.75	10.33	52116	210.75	8.67	53231	138.75	15.33
10606	301.50	7.40	21070	98.15	1.00	51480	44.75	7.00	52763	264.75	12.00	52117	210.75	10.33	53232	138.75	17.00
10607	301.50	9.20	30001	0.00	0.00	51481	44.75	8.67	52764	264.75	13.67	52118	210.75	12.00	53233	138.75	18.67
10608	301.50	11.00	30002	1.50	0.00	51482	44.75	10.33	52765	264.75	15.33	52119	210.75	13.67	53234	138.75	20.33
10609	301.50	12.80	30178	101.50	0.00	51483	44.75	12.00	52766	264.75	17.00	52120	210.75	15.33	53235	138.75	22.00
10610	301.50	14.60	30211	100.00	0.00	51484	44.75	13.67	52767	264.75	18.67	52121	210.75	17.00	53236	138.75	23.67
10611	301.50	16.40	30214	200.00	0.00	51485	44.75	15.33	52768	264.75	20.33	52122	210.75	18.67	53237	138.75	25.33
10612	301.50	18.20	30215	201.50	0.00	51486	44.75	17.00	52769	264.75	22.00	52123	210.75	20.33	53238	140.75	3.67
10613	301.50	20.00	30361	300.00	0.00	51487	44.75	18.67	52770	264.75	23.67	52124	210.75	22.00	53239	140.75	5.33
10614	301.50	21.80	30362	301.50	0.00	51488	44.75	20.33	52771	264.75	25.33	52125	210.75	23.67	53240	140.75	7.00
10615	301.50	23.60	50603	120.75	0.00	51489	44.75	22.00	52772	266.75	3.67	52126	210.75	25.33	53241	140.75	8.67
10616	301.50	25.40	50604	103.43	0.00	51490	44.75	23.67	52773	266.75	5.33	52127	212.75	3.67	53242	140.75	10.33
10617	301.50	27.20	50605	105.35	0.00	51491	44.75	25.33	52774	266.75	7.00	52128	212.75	5.33	53243	140.75	12.00
10618	300.00	29.00	50606	107.28	0.00	51492	46.75	3.67	52775	266.75	8.67	52129	212.75	7.00	53244	140.75	13.67
10619	300.00	3.80	50607	109.20	0.00	51493	46.75	5.33	52776	266.75	10.33	52130	212.75	8.67	53245	140.75	15.33
10620	300.00	5.60	50608	111.13	0.00	51494	46.75	7.00	52777	266.75	12.00	52131	212.75	10.33	53246	140.75	17.00
10621	300.00	7.40	50609	113.05	0.00	51495	46.75	8.67	52778	266.75	13.67	52132	212.75	12.00	53247	140.75	18.67
10622	300.00	9.20	50610	114.98	0.00	51496	46.75	10.33	52779	266.75	15.33	52133	212.75	13.67	53248	140.75	20.33
10623	300.00	11.00	50611	116.90	0.00	51497	46.75	12.00	52780	266.75	17.00	52134	212.75	15.33	53249	140.75	22.00
10624	300.00	12.80	50612	118.83	0.00	51498	46.75	13.67	52781	266.75	18.67	52135	212.75	17.00	53250	140.75	23.67
10625	300.00	14.60	50633	30.75	0.00	51499	46.75	15.33	52782	266.75	20.33	52136	212.75	18.67	53251	140.75	25.33
10626	300.00	16.40	50634	60.75	0.00	51500	46.75	17.00	52783	266.75	22.00	52137	212.75	20.33	53252	142.75	3.67
10627	300.00	18.20	50635	32.75	0.00	51501	46.75	18.67	52784	266.75	23.67	52138	212.75	22.00	53253	142.75	5.33
10628	300.00	20.00	50636	34.75	0.00	51502	46.75	20.33	52785	266.75	25.33	52139	212.75	23.67	53254	142.75	7.00
10629	300.00	21.80	50637	36.75	0.00	51503	46.75	22.00	52786	268.75	3.67	52140	212.75	25.33	53255	142.75	8.67
10630	300.00	23.60	50638	38.75	0.00	51504	46.75	23.67	52787	268.75	5.33	52141	214.75	3.67	53256	142.75	10.33
10631	300.00	25.40	50639	40.75	0.00	51505	46.75	25.33	52788	268.75	7.00	52142	214.75	5.33	53257	142.75	12.00
10632	300.00	27.20	50640	42.75	0.00	51506	48.75	3.67	52789	268.75	8.67	52143	214.75	7.00	53258	142.75	13.67
10633	101.50	29.00	50641	44.75	0.00	51507	48.75	5.33	52790	268.75	10.33	52144	214.75	8.67	53259	142.75	15.33
10634	101.50	3.80	50642	46.75	0.00	51508	48.75	7.00	52791	268.75	12.00	52145	214.75	10.33	53260	142.75	17.00
10635	101.50	5.60	50643	48.75	0.00	51509	48.75	8.67	52792	268.75	13.67	52146	214.75	12.00	53261	142.75	18.67
10636	101.50	7.40	50644	50.75	0.00	51510	48.75	10.33	52793	268.75	15.33	52147	214.75	13.67	53262	142.75	20.33
10637	101.50	9.20	50645	52.75	0.00	51511	48.75	12.00	52794	268.75	17.00	52148	214.75	15.33	53263	142.75	22.00
10638	101.50	11.00	50646	54.75	0.00	51512	48.75	13.67	52795	268.75	18.67	52149	214.75	17.00	53264	142.75	23.67
10639	101.50	12.80	50647	56.75	0.00	51513	48.75	15.33	52796	268.75	20.33	52150	214.75	18.67	53265	142.75	25.33
10640	101.50	14.60	50648	58.75	0.00	51514	48.75	17.00	52797	268.75	22.00	52151	214.75	20.33	53266	144.75	3.67
10641	101.50	16.40	50681	60.75	0.00	51515	48.75	18.67	52798	268.75	23.67	52152	214.75	22.00	53267	144.75	5.33
10642	101.50	18.20	50682	90.75	0.00	51516	48.75	20.33	52799	268.75	25.33	52153	214.75	23.67	53268	144.75	7.00
10643	101.50	20.00	50683	62.75	0.00	51517	48.75	22.00	52800	300.00	27.00	52154	214.75	25.33	53269	144.75	8.67
10644	101.50	21.80	50684	64.75	0.00	51518	48.75	23.67	52801	300.00	3.67	52155	216.75	3.67	53270	144.75	10.33
10645	101.50	23.60	50685	66.75	0.00	51519	48.75	25.33	52802	300.00	5.33	52156	216.75	5.33	53271	144.75	12.00
10646	101.50	25.40	50686	68.75	0.00	51520	50.75	3.67	52803	300.00	7.00	52157	216.75	7.00	53272	144.75	13.67
10647	101.50	27.20	50687	70.75	0.00	51521	50.75	5.33	52804	300.00	8.67	52158	216.75	8.67	53273	144.75	15.33
10648	100.00	29.00	50688	72.75	0.00	51522	50.75	7.00	52805	300.00	10.33	52159	216.75	10.33	53274	144.75	17.00
10649	100.00	3.80	50689	74.75	0.00	51523	50.75	8.67	52806	300.00	12.00	52160	216.75	12.00	53275	144.75	18.67
10650	100.00	5.60	50690	76.75	0.00	51524	50.75	10.33	52807	300.00	13.67	52161	216.75	13.67	53276	144.75	20.33
10651	100.00	7.40	50691	78.75	0.00	51525	50.75	12.00	52808	300.00	15.33	52162	216.75	15.33	53277	144.75	22.00
10652	100.00	9.20	50692	80.75	0.00	51526	50.75	13.67	52809	300.00	17.00	52163	216.75	17.00	53278	144.75	23.67
10653	100.00	11.00	50693	82.75	0.00	51527	50.75	15.33	52810	300.00	18.67	52164	216.75	18.67	53279	144.75	25.33
10654	100.00	12.80	50694	84.75	0.00	51528	50.75	17.00	52811	300.00	20.33	52165	216.75	20.33	53280	146.75	3.67

10655	100.00	14.60	50695	86.75	0.00	51529	50.75	18.67	52812	300.00	22.00	52166	216.75	22.00	53281	146.75	5.33
10656	100.00	16.40	50696	88.75	0.00	51530	50.75	20.33	52813	300.00	23.67	52167	216.75	23.67	53282	146.75	7.00
10657	100.00	18.20	50729	210.75	0.00	51531	50.75	22.00	52814	300.00	25.33	52168	216.75	25.33	53283	146.75	8.67
10658	100.00	20.00	50730	203.35	0.00	51532	50.75	23.67	52815	272.70	27.00	52169	218.75	3.67	53284	146.75	10.33
10659	100.00	21.80	50731	205.20	0.00	51533	50.75	25.33	52816	274.65	27.00	52170	218.75	5.33	53285	146.75	12.00
10660	100.00	23.60	50732	207.05	0.00	51534	52.75	3.67	52817	276.60	27.00	52171	218.75	7.00	53286	146.75	13.67
10661	100.00	25.40	50733	208.90	0.00	51535	52.75	5.33	52818	278.55	27.00	52172	218.75	8.67	53287	146.75	15.33
10662	100.00	27.20	50744	120.75	0.00	51536	52.75	7.00	52819	280.50	27.00	52173	218.75	10.33	53288	146.75	17.00
10663	201.50	29.00	50745	150.75	0.00	51537	52.75	8.67	52820	282.45	27.00	52174	218.75	12.00	53289	146.75	18.67
10664	201.50	3.80	50746	122.75	0.00	51538	52.75	10.33	52821	284.40	27.00	52175	218.75	13.67	53290	146.75	20.33
10665	201.50	5.60	50747	124.75	0.00	51539	52.75	12.00	52822	286.35	27.00	52176	218.75	15.33	53291	146.75	22.00
10666	201.50	7.40	50748	126.75	0.00	51540	52.75	13.67	52823	288.30	27.00	52177	218.75	17.00	53292	146.75	23.67
10667	201.50	9.20	50749	128.75	0.00	51541	52.75	15.33	52824	290.25	27.00	52178	218.75	18.67	53293	146.75	25.33
10668	201.50	11.00	50750	130.75	0.00	51542	52.75	17.00	52825	292.20	27.00	52179	218.75	20.33	53294	148.75	3.67
10669	201.50	12.80	50751	132.75	0.00	51543	52.75	18.67	52826	294.15	27.00	52180	218.75	22.00	53295	148.75	5.33
10670	201.50	14.60	50752	134.75	0.00	51544	52.75	20.33	52827	296.10	27.00	52181	218.75	23.67	53296	148.75	7.00
10671	201.50	16.40	50753	136.75	0.00	51545	52.75	22.00	52828	298.05	27.00	52182	218.75	25.33	53297	148.75	8.67
10672	201.50	18.20	50754	138.75	0.00	51546	52.75	23.67	52829	270.75	3.67	52183	220.75	3.67	53298	148.75	10.33
10673	201.50	20.00	50755	140.75	0.00	51547	52.75	25.33	52830	270.75	5.33	52184	220.75	5.33	53299	148.75	12.00
10674	201.50	21.80	50756	142.75	0.00	51548	54.75	3.67	52831	270.75	7.00	52185	220.75	7.00	53300	148.75	13.67
10675	201.50	23.60	50757	144.75	0.00	51549	54.75	5.33	52832	270.75	8.67	52186	220.75	8.67	53301	148.75	15.33
10676	201.50	25.40	50758	146.75	0.00	51550	54.75	7.00	52833	270.75	10.33	52187	220.75	10.33	53302	148.75	17.00
10677	201.50	27.20	50759	148.75	0.00	51551	54.75	8.67	52834	270.75	12.00	52188	220.75	12.00	53303	148.75	18.67
10678	200.00	29.00	50792	150.75	0.00	51552	54.75	10.33	52835	270.75	13.67	52189	220.75	13.67	53304	148.75	20.33
10679	200.00	3.80	50793	180.75	0.00	51553	54.75	12.00	52836	270.75	15.33	52190	220.75	15.33	53305	148.75	22.00
10680	200.00	5.60	50794	152.75	0.00	51554	54.75	13.67	52837	270.75	17.00	52191	220.75	17.00	53306	148.75	23.67
10681	200.00	7.40	50795	154.75	0.00	51555	54.75	15.33	52838	270.75	18.67	52192	220.75	18.67	53307	148.75	25.33
10682	200.00	9.20	50796	156.75	0.00	51556	54.75	17.00	52839	270.75	20.33	52193	220.75	20.33	53308	120.75	3.67
10683	200.00	11.00	50797	158.75	0.00	51557	54.75	18.67	52840	270.75	22.00	52194	220.75	22.00	53309	120.75	5.33
10684	200.00	12.80	50798	160.75	0.00	51558	54.75	20.33	52841	270.75	23.67	52195	220.75	23.67	53310	120.75	7.00
10685	200.00	14.60	50799	162.75	0.00	51559	54.75	22.00	52842	270.75	25.33	52196	220.75	25.33	53311	120.75	8.67
10686	200.00	16.40	50800	164.75	0.00	51560	54.75	23.67	52843	272.70	3.67	52197	222.75	3.67	53312	120.75	10.33
10687	200.00	18.20	50801	166.75	0.00	51561	54.75	25.33	52844	272.70	5.33	52198	222.75	5.33	53313	120.75	12.00
10688	200.00	20.00	50802	168.75	0.00	51562	56.75	3.67	52845	272.70	7.00	52199	222.75	7.00	53314	120.75	13.67
10689	200.00	21.80	50803	170.75	0.00	51563	56.75	5.33	52846	272.70	8.67	52200	222.75	8.67	53315	120.75	15.33
10690	200.00	23.60	50804	172.75	0.00	51564	56.75	7.00	52847	272.70	10.33	52201	222.75	10.33	53316	120.75	17.00
10691	200.00	25.40	50805	174.75	0.00	51565	56.75	8.67	52848	272.70	12.00	52202	222.75	12.00	53317	120.75	18.67
10692	200.00	27.20	50806	176.75	0.00	51566	56.75	10.33	52849	272.70	13.67	52203	222.75	13.67	53318	120.75	20.33
10693	1.50	29.00	50807	178.75	0.00	51567	56.75	12.00	52850	272.70	15.33	52204	222.75	15.33	53319	120.75	22.00
10694	1.50	3.80	50840	180.75	0.00	51568	56.75	13.67	52851	272.70	17.00	52205	222.75	17.00	53320	120.75	23.67
10695	1.50	5.60	50841	182.68	0.00	51569	56.75	15.33	52852	272.70	18.67	52206	222.75	18.67	53321	120.75	25.33
10696	1.50	7.40	50842	184.60	0.00	51570	56.75	17.00	52853	272.70	20.33	52207	222.75	20.33	53322	101.50	27.00
10697	1.50	9.20	50843	186.53	0.00	51571	56.75	18.67	52854	272.70	22.00	52208	222.75	22.00	53323	103.43	27.00
10698	1.50	11.00	50844	188.45	0.00	51572	56.75	20.33	52855	272.70	23.67	52209	222.75	23.67	53324	105.35	27.00
10699	1.50	12.80	50845	190.38	0.00	51573	56.75	22.00	52856	272.70	25.33	52210	222.75	25.33	53325	107.28	27.00
10700	1.50	14.60	50846	192.30	0.00	51574	56.75	23.67	52857	274.65	3.67	52211	224.75	3.67	53326	109.20	27.00
10701	1.50	16.40	50847	194.23	0.00	51575	56.75	25.33	52858	274.65	5.33	52212	224.75	5.33	53327	111.13	27.00
10702	1.50	18.20	50848	196.15	0.00	51576	58.75	3.67	52859	274.65	7.00	52213	224.75	7.00	53328	113.05	27.00
10703	1.50	20.00	50849	198.08	0.00	51577	58.75	5.33	52860	274.65	8.67	52214	224.75	8.67	53329	114.98	27.00
10704	1.50	21.80	50870	210.75	0.00	51578	58.75	7.00	52861	274.65	10.33	52215	224.75	10.33	53330	116.90	27.00
10705	1.50	23.60	50871	240.75	0.00	51579	58.75	8.67	52862	274.65	12.00	52216	224.75	12.00	53331	118.83	27.00
10706	1.50	25.40	50872	212.75	0.00	51580	58.75	10.33	52863	274.65	13.67	52217	224.75	13.67	53332	101.50	3.67
10707	1.50	27.20	50873	214.75	0.00	51581	58.75	12.00	52864	274.65	15.33	52218	224.75	15.33	53333	101.50	5.33
10708	0.00	29.00	50874	216.75	0.00	51582	58.75	13.67	52865	274.65	17.00	52219	224.75	17.00	53334	101.50	7.00
10709	0.00	3.80	50875	218.75	0.00	51583	58.75	15.33	52866	274.65	18.67	52220	224.75	18.67	53335	101.50	8.67
10710	0.00	5.60	50876	220.75	0.00	51584	58.75	17.00	52867	274.65	20.33	52221	224.75	20.33	53336	101.50	10.33
10711	0.00	7.40	50877	222.75	0.00	51585	58.75	18.67	52868	274.65	22.00	52222	224.75	22.00	53337	101.50	12.00
10712	0.00	9.20	50878	224.75	0.00	51586	58.75	20.33	52869	274.65	23.67	52223	224.75	23.67	53338	101.50	13.67
10713	0.00	11.00	50879	226.75	0.00	51587	58.75	22.00	52870	274.65	25.33	52224	224.75	25.33	53339	101.50	15.33
10714	0.00	12.80	50880	228.75	0.00	51588	58.75	23.67	52871	276.60	3.67	52225	226.75	3.67	53340	101.50	17.00
10715	0.00	14.60	50881	230.75	0.00	51589	58.75	25.33	52872	276.60	5.33	52226	226.75	5.33	53341	101.50	18.67
10716	0.00	16.40	50882	232.75	0.00	51590	180.75	27.00	52873	276.60	7.00	52227	226.75	7.00	53342	101.50	20.33
10717	0.00	18.20	50883	234.75	0.00	51591	180.75	3.67	52874	276.60	8.67	52228	226.75	8.67	53343	101.50	22.00
10718	0.00	20.00	50884	236.75	0.00	51592	180.75	5.33	52875	276.60	10.33	52229	226.75	10.33	53344	101.50	23.67
10719	0.00	21.80	50885	238.75	0.00	51593	180.75	7.00	52876	276.60	12.00	52230	226.75	12.00	53345	101.50	25.33
10720	0.00	23.60	50918	240.75	0.00	51594	180.75	8.67	52877	276.60	13.67	52231	226.75	13.67	53346	103.43	3.67
10721	0.00	25.40	50919	270.75	0.00	51595	180.75	10.33	52878	276.60	15.33	52232	226.75	15.33	53347	103.43	5.33
10722	0.00	27.20	50920	242.75	0.00	51596	180.75	12.00	52879	276.60	17.00	52233	226.75	17.00	53348	103.43	7.00
20603	120.75	0.00	50921	244.75	0.00	51597	180.75	13.67	52880	276.60	18.67	52234	226.75	18.67	53349	103.43	8.67
20604	103.43	0.00	50922	246.75	0.00	51598	180.75	15.33	52881	276.60	20.33	52235	226.75	20.33	53350	103.43	10.33
20605	105.35	0.00	50923	248.75	0.00	51599	180.75	17.00	52882	276.60	22.00	52236	226.75	22.00	53351	103.43	12.00
20606	107.28	0.00	50924	250.75	0.00	51600	180.75	18.67	52883	276.60	23.67	52237	226.75	23.67	53352	103.43	13.67
20607	109.20	0.00	50925	252.75	0.00	51601	180.75	20.33	52884	276.60	25.33	52238	226.75	25.33	53353	103.43	15.33
20608	111.13	0.00	50926	254.75	0.00	51602	180.75	22.00	52885	278.55	3.67	52239	228.75	3.67	53354	103.43	17.00
20609	113.05	0.00	50927	256.75	0.00	51603	180.75	23.67	52886	278.55	5.33	52240	228.75	5.33	53355	103.43	18.67
20610	114.98	0.00	50928	258.75	0.00	51604	180.75	25.33	52887	278.55	7.00	52241	228.75	7.00	53356	103.43	20.33
20611	116.90	0.00	50929	260.75	0.00	51605	150.75	27.00	52888	278.55	8.67	52242	228.75	8.67	53357	103.43	22.00
20612	118.83	0.00	50930	262.75	0.00	51606	152.75	27.00	52889	278.55	10.33	52243	228.75	10.33	53358	103.43	23.67

20613	120.75	2.00	50931	264.75	0.00	51607	154.75	27.00	52890	278.55	12.00	52244	228.75	12.00	53359	103.43	25.33
20614	120.75	1.00	50932	266.75	0.00	51608	156.75	27.00	52891	278.55	13.67	52245	228.75	13.67	53360	105.35	3.67
20615	103.43	2.00	50933	268.75	0.00	51609	158.75	27.00	52892	278.55	15.33	52246	228.75	15.33	53361	105.35	5.33
20616	105.35	2.00	50966	270.75	0.00	51610	160.75	27.00	52893	278.55	17.00	52247	228.75	17.00	53362	105.35	7.00
20617	107.28	2.00	50967	272.70	0.00	51611	162.75	27.00	52894	278.55	18.67	52248	228.75	18.67	53363	105.35	8.67
20618	109.20	2.00	50968	274.65	0.00	51612	164.75	27.00	52895	278.55	20.33	52249	228.75	20.33	53364	105.35	10.33
20619	111.13	2.00	50969	276.60	0.00	51613	166.75	27.00	52896	278.55	22.00	52250	228.75	22.00	53365	105.35	12.00
20620	113.05	2.00	50970	278.55	0.00	51614	168.75	27.00	52897	278.55	23.67	52251	228.75	23.67	53366	105.35	13.67
20621	114.98	2.00	50971	280.50	0.00	51615	170.75	27.00	52898	278.55	25.33	52252	228.75	25.33	53367	105.35	15.33
20622	116.90	2.00	50972	282.45	0.00	51616	172.75	27.00	52899	280.50	3.67	52253	230.75	3.67	53368	105.35	17.00
20623	118.83	2.00	50973	284.40	0.00	51617	174.75	27.00	52900	280.50	5.33	52254	230.75	5.33	53369	105.35	18.67
20624	103.43	1.00	50974	286.35	0.00	51618	176.75	27.00	52901	280.50	7.00	52255	230.75	7.00	53370	105.35	20.33
20625	105.35	1.00	50975	288.30	0.00	51619	178.75	27.00	52902	280.50	8.67	52256	230.75	8.67	53371	105.35	22.00
20626	107.28	1.00	50976	290.25	0.00	51620	150.75	3.67	52903	280.50	10.33	52257	230.75	10.33	53372	105.35	23.67
20627	109.20	1.00	50977	292.20	0.00	51621	150.75	5.33	52904	280.50	12.00	52258	230.75	12.00	53373	105.35	25.33
20628	111.13	1.00	50978	294.15	0.00	51622	150.75	7.00	52905	280.50	13.67	52259	230.75	13.67	53374	107.28	3.67
20629	113.05	1.00	50979	296.10	0.00	51623	150.75	8.67	52906	280.50	15.33	52260	230.75	15.33	53375	107.28	5.33
20630	114.98	1.00	50980	298.05	0.00	51624	150.75	10.33	52907	280.50	17.00	52261	230.75	17.00	53376	107.28	7.00
20631	116.90	1.00	51011	30.75	0.00	51625	150.75	12.00	52908	280.50	18.67	52262	230.75	18.67	53377	107.28	8.67
20632	118.83	1.00	51012	3.45	0.00	51626	150.75	13.67	52909	280.50	20.33	52263	230.75	20.33	53378	107.28	10.33
20633	30.75	0.00	51013	5.40	0.00	51627	150.75	15.33	52910	280.50	22.00	52264	230.75	22.00	53379	107.28	12.00
20634	60.75	0.00	51014	7.35	0.00	51628	150.75	17.00	52911	280.50	23.67	52265	230.75	23.67	53380	107.28	13.67
20635	32.75	0.00	51015	9.30	0.00	51629	150.75	18.67	52912	280.50	25.33	52266	230.75	25.33	53381	107.28	15.33
20636	34.75	0.00	51016	11.25	0.00	51630	150.75	20.33	51683	158.75	15.33	52267	232.75	3.67	53382	107.28	17.00
20637	36.75	0.00	51017	13.20	0.00	51631	150.75	22.00	51684	158.75	17.00	52268	232.75	5.33	53383	107.28	18.67
20638	38.75	0.00	51018	15.15	0.00	51632	150.75	23.67	51685	158.75	18.67	52269	232.75	7.00	53384	107.28	20.33
20639	40.75	0.00	51019	17.10	0.00	51633	150.75	25.33	51686	158.75	20.33	52270	232.75	8.67	53385	107.28	22.00
20640	42.75	0.00	51020	19.05	0.00	51634	152.75	3.67	51687	158.75	22.00	52271	232.75	10.33	53386	107.28	23.67
20641	44.75	0.00	51021	21.00	0.00	51635	152.75	5.33	51688	158.75	23.67	52272	232.75	12.00	53387	107.28	25.33
20642	46.75	0.00	51022	22.95	0.00	51636	152.75	7.00	51689	158.75	25.33	52273	232.75	13.67	53388	109.20	3.67
20643	48.75	0.00	51023	24.90	0.00	51637	152.75	8.67	51690	160.75	3.67	52274	232.75	15.33	53389	109.20	5.33
20644	50.75	0.00	51024	26.85	0.00	51638	152.75	10.33	51691	160.75	5.33	52275	232.75	17.00	53390	109.20	7.00
20645	52.75	0.00	51025	28.80	0.00	51639	152.75	12.00	51692	160.75	7.00	52276	232.75	18.67	53391	109.20	8.67
20646	54.75	0.00	51056	90.75	0.00	51640	152.75	13.67	51693	160.75	8.67	52277	232.75	20.33	53392	109.20	10.33
20647	56.75	0.00	51057	98.15	0.00	51641	152.75	15.33	51694	160.75	10.33	52278	232.75	22.00	53393	109.20	12.00
20648	58.75	0.00	51058	96.30	0.00	51642	152.75	17.00	51695	160.75	12.00	52279	232.75	23.67	53394	109.20	13.67
20649	60.75	2.00	51059	94.45	0.00	51643	152.75	18.67	51696	160.75	13.67	52280	232.75	25.33	53395	109.20	15.33
20650	60.75	1.00	51060	92.60	0.00	51644	152.75	20.33	51697	160.75	15.33	52281	234.75	3.67	53396	109.20	17.00
20651	30.75	2.00	51061	30.75	29.00	51645	152.75	22.00	51698	160.75	17.00	52282	234.75	5.33	53397	109.20	18.67
20652	58.75	2.00	51062	30.75	27.00	51646	152.75	23.67	51699	160.75	18.67	52283	234.75	7.00	53398	109.20	20.33
20653	56.75	2.00	51063	30.75	28.00	51647	152.75	25.33	51700	160.75	20.33	52284	234.75	8.67	53399	109.20	22.00
20654	54.75	2.00	51064	1.50	29.00	51648	154.75	3.67	51701	160.75	22.00	52285	234.75	10.33	53400	109.20	23.67
20655	52.75	2.00	51065	28.80	29.00	51649	154.75	5.33	51702	160.75	23.67	52286	234.75	12.00	53401	109.20	25.33
20656	50.75	2.00	51066	26.85	29.00	51650	154.75	7.00	51703	160.75	25.33	52287	234.75	13.67	53402	111.13	3.67
20657	48.75	2.00	51067	24.90	29.00	51651	154.75	8.67	51704	162.75	3.67	52288	234.75	15.33	53403	111.13	5.33
20658	46.75	2.00	51068	22.95	29.00	51652	154.75	10.33	51705	162.75	5.33	52289	234.75	17.00	53404	111.13	7.00
20659	44.75	2.00	51069	21.00	29.00	51653	154.75	12.00	51706	162.75	7.00	52290	234.75	18.67	53405	111.13	8.67
20660	42.75	2.00	51070	19.05	29.00	51654	154.75	13.67	51707	162.75	8.67	52291	234.75	20.33	53406	111.13	10.33
20661	40.75	2.00	51071	17.10	29.00	51655	154.75	15.33	51708	162.75	10.33	52292	234.75	22.00	53407	111.13	12.00
20662	38.75	2.00	51072	15.15	29.00	51656	154.75	17.00	51709	162.75	12.00	52293	234.75	23.67	53408	111.13	13.67
20663	36.75	2.00	51073	13.20	29.00	51657	154.75	18.67	51710	162.75	13.67	52294	234.75	25.33	53409	111.13	15.33
20664	34.75	2.00	51074	11.25	29.00	51658	154.75	20.33	51711	162.75	15.33	52295	236.75	3.67	53410	111.13	17.00
20665	32.75	2.00	51075	9.30	29.00	51659	154.75	22.00	51712	162.75	17.00	52296	236.75	5.33	53411	111.13	18.67
20666	30.75	1.00	51076	7.35	29.00	51660	154.75	23.67	51713	162.75	18.67	52297	236.75	7.00	53412	111.13	20.33
20667	32.75	1.00	51077	5.40	29.00	51661	154.75	25.33	51714	162.75	20.33	52298	236.75	8.67	53413	111.13	22.00
20668	34.75	1.00	51078	3.45	29.00	51662	156.75	3.67	51715	162.75	22.00	52299	236.75	10.33	53414	111.13	23.67
20669	36.75	1.00	51079	1.50	27.00	51663	156.75	5.33	51716	162.75	23.67	52300	236.75	12.00	53415	111.13	25.33
20670	38.75	1.00	51080	1.50	28.00	51664	156.75	7.00	51717	162.75	25.33	52301	236.75	13.67	53416	113.05	3.67
20671	40.75	1.00	51081	3.45	27.00	51665	156.75	8.67	51718	164.75	3.67	52302	236.75	15.33	53417	113.05	5.33
20672	42.75	1.00	51082	5.40	27.00	51666	156.75	10.33	51719	164.75	5.33	52303	236.75	17.00	53418	113.05	7.00
20673	44.75	1.00	51083	7.35	27.00	51667	156.75	12.00	51720	164.75	7.00	52304	236.75	18.67	53419	113.05	8.67
20674	46.75	1.00	51084	9.30	27.00	51668	156.75	13.67	51721	164.75	8.67	52305	236.75	20.33	53420	113.05	10.33
20675	48.75	1.00	51085	11.25	27.00	51669	156.75	15.33	51722	164.75	10.33	52306	236.75	22.00	53421	113.05	12.00
20676	50.75	1.00	51086	13.20	27.00	51670	156.75	17.00	51723	164.75	12.00	52307	236.75	23.67	53422	113.05	13.67
20677	52.75	1.00	51087	15.15	27.00	51671	156.75	18.67	51724	164.75	13.67	52308	236.75	25.33	53423	113.05	15.33
20678	54.75	1.00	51088	17.10	27.00	51672	156.75	20.33	51725	164.75	15.33	52309	238.75	3.67	53424	113.05	17.00
20679	56.75	1.00	51089	19.05	27.00	51673	156.75	22.00	51726	164.75	17.00	52310	238.75	5.33	53425	113.05	18.67
20680	58.75	1.00	51090	21.00	27.00	51674	156.75	23.67	51727	164.75	18.67	52311	238.75	7.00	53426	113.05	20.33
20681	60.75	0.00	51091	22.95	27.00	51675	156.75	25.33	51728	164.75	20.33	52312	238.75	8.67	53427	113.05	22.00
20682	90.75	0.00	51092	24.90	27.00	51676	158.75	3.67	51729	164.75	22.00	52313	238.75	10.33	53428	113.05	23.67
20683	62.75	0.00	51093	26.85	27.00	51677	158.75	5.33	51730	164.75	23.67	52314	238.75	12.00	53429	113.05	25.33
20684	64.75	0.00	51094	28.80	27.00	51678	158.75	7.00	51731	164.75	25.33	52315	238.75	13.67	53430	114.98	3.67
20685	66.75	0.00	51095	28.80	28.00	51679	158.75	8.67	51732	166.75	3.67	52316	238.75	15.33	53431	114.98	5.33
20686	68.75	0.00	51096	26.85	28.00	51680	158.75	10.33	51733	166.75	5.33	52317	238.75	17.00	53432	114.98	7.00
20687	70.75	0.00	51097	24.90	28.00	51681	158.75	12.00	51734	166.75	7.00	52318	238.75	18.67	53433	114.98	8.67
20688	72.75	0.00	51098	22.95	28.00	51682	158.75	13.67	51735	166.75	8.67	52319	238.75	20.33	53434	114.98	10.33
20689	74.75	0.00	51099	21.00	28.00	52382	64.75	8.67	51736	166.75	10.33	52320	238.75	22.00	53435	114.98	12.00
20690	76.75	0.00	51100	19.05	28.00	52383	64.75	10.33	51737	166.75	12.00	52321	238.75	23.67	53436	114.98	13.67

20691	78.75	0.00	51101	17.10	28.00	52384	64.75	12.00	51738	166.75	13.67	52322	238.75	25.33	53437	114.98	15.33
20692	80.75	0.00	51102	15.15	28.00	52385	64.75	13.67	51739	166.75	15.33	52323	90.75	3.67	53438	114.98	17.00
20693	82.75	0.00	51103	13.20	28.00	52386	64.75	15.33	51740	166.75	17.00	52324	90.75	5.33	53439	114.98	18.67
20694	84.75	0.00	51104	11.25	28.00	52387	64.75	17.00	51741	166.75	18.67	52325	90.75	7.00	53440	114.98	20.33
20695	86.75	0.00	51105	9.30	28.00	52388	64.75	18.67	51742	166.75	20.33	52326	90.75	8.67	53441	114.98	22.00
20696	88.75	0.00	51106	7.35	28.00	52389	64.75	20.33	51743	166.75	22.00	52327	90.75	10.33	53442	114.98	23.67
20697	90.75	2.00	51107	5.40	28.00	52390	64.75	22.00	51744	166.75	23.67	52328	90.75	12.00	53443	114.98	25.33
20698	90.75	1.00	51108	3.45	28.00	52391	64.75	23.67	51745	166.75	25.33	52329	90.75	13.67	53444	116.90	3.67
20699	60.75	2.00	51109	30.75	3.67	52392	64.75	25.33	51746	168.75	3.67	52330	90.75	15.33	53445	116.90	5.33
20700	88.75	2.00	51110	30.75	5.33	52393	66.75	3.67	51747	168.75	5.33	52331	90.75	17.00	53446	116.90	7.00
20701	86.75	2.00	51111	30.75	7.00	52394	66.75	5.33	51748	168.75	7.00	52332	90.75	18.67	53447	116.90	8.67
20702	84.75	2.00	51112	30.75	8.67	52395	66.75	7.00	51749	168.75	8.67	52333	90.75	20.33	53448	116.90	10.33
20703	82.75	2.00	51113	30.75	10.33	52396	66.75	8.67	51750	168.75	10.33	52334	90.75	22.00	53449	116.90	12.00
20704	80.75	2.00	51114	30.75	12.00	52397	66.75	10.33	51751	168.75	12.00	52335	90.75	23.67	53450	116.90	13.67
20705	78.75	2.00	51115	30.75	13.67	52398	66.75	12.00	51752	168.75	13.67	52336	90.75	25.33	53451	116.90	15.33
20706	76.75	2.00	51116	30.75	15.33	52399	66.75	13.67	51753	168.75	15.33	52337	62.75	27.00	53452	116.90	17.00
20707	74.75	2.00	51117	30.75	17.00	52400	66.75	15.33	51754	168.75	17.00	52338	64.75	27.00	53453	116.90	18.67
20708	72.75	2.00	51118	30.75	18.67	52401	66.75	17.00	51755	168.75	18.67	52339	66.75	27.00	53454	116.90	20.33
20709	70.75	2.00	51119	30.75	20.33	52402	66.75	18.67	51756	168.75	20.33	52340	68.75	27.00	53455	116.90	22.00
20710	68.75	2.00	51120	30.75	22.00	52403	66.75	20.33	51757	168.75	22.00	52341	70.75	27.00	53456	116.90	23.67
20711	66.75	2.00	51121	30.75	23.67	52404	66.75	22.00	51758	168.75	23.67	52342	72.75	27.00	53457	116.90	25.33
20712	64.75	2.00	51122	30.75	25.33	52405	66.75	23.67	51759	168.75	25.33	52343	74.75	27.00	53458	118.83	3.67
20713	62.75	2.00	51123	1.50	3.67	52406	66.75	25.33	51760	170.75	3.67	52344	76.75	27.00	53459	118.83	5.33
20714	60.75	1.00	51124	1.50	5.33	52407	68.75	3.67	51761	170.75	5.33	52345	78.75	27.00	53460	118.83	7.00
20715	62.75	1.00	51125	1.50	7.00	52408	68.75	5.33	51762	170.75	7.00	52346	80.75	27.00	53461	118.83	8.67
20716	64.75	1.00	51126	1.50	8.67	52409	68.75	7.00	51763	170.75	8.67	52347	82.75	27.00	53462	118.83	10.33
20717	66.75	1.00	51127	1.50	10.33	52410	68.75	8.67	51764	170.75	10.33	52348	84.75	27.00	53463	118.83	12.00
20718	68.75	1.00	51128	1.50	12.00	52411	68.75	10.33	51765	170.75	12.00	52349	86.75	27.00	53464	118.83	13.67
20719	70.75	1.00	51129	1.50	13.67	52412	68.75	12.00	51766	170.75	13.67	52350	88.75	27.00	53465	118.83	15.33
20720	72.75	1.00	51130	1.50	15.33	52413	68.75	13.67	51767	170.75	15.33	52351	60.75	3.67	53466	118.83	17.00
20721	74.75	1.00	51131	1.50	17.00	52414	68.75	15.33	51768	170.75	17.00	52352	60.75	5.33	53467	118.83	18.67
20722	76.75	1.00	51132	1.50	18.67	52415	68.75	17.00	51769	170.75	18.67	52353	60.75	7.00	53468	118.83	20.33
20723	78.75	1.00	51133	1.50	20.33	52416	68.75	18.67	51770	170.75	20.33	52354	60.75	8.67	53469	118.83	22.00
20724	80.75	1.00	51134	1.50	22.00	52417	68.75	20.33	51771	170.75	22.00	52355	60.75	10.33	53470	118.83	23.67
20725	82.75	1.00	51135	1.50	23.67	52418	68.75	22.00	51772	170.75	23.67	52356	60.75	12.00	53471	118.83	25.33
20726	84.75	1.00	51136	1.50	25.33	52419	68.75	23.67	51773	170.75	25.33	52357	60.75	13.67	53472	150.75	29.00
20727	86.75	1.00	51137	3.45	3.67	52420	68.75	25.33	51774	172.75	3.67	52358	60.75	15.33	53473	150.75	28.00
20728	88.75	1.00	51138	3.45	5.33	52421	70.75	3.67	51775	172.75	5.33	52359	60.75	17.00	53474	120.75	29.00
20729	210.75	0.00	51139	3.45	7.00	52422	70.75	5.33	51776	172.75	7.00	52360	60.75	18.67	53475	122.75	29.00
20730	203.35	0.00	51140	3.45	8.67	52423	70.75	7.00	51777	172.75	8.67	52361	60.75	20.33	53476	124.75	29.00
20731	205.20	0.00	51141	3.45	10.33	52424	70.75	8.67	51778	172.75	10.33	52362	60.75	22.00	53477	126.75	29.00
20732	207.05	0.00	51142	3.45	12.00	52425	70.75	10.33	51779	172.75	12.00	52363	60.75	23.67	53478	128.75	29.00
20733	208.90	0.00	51143	3.45	13.67	52426	70.75	12.00	51780	172.75	13.67	52364	60.75	25.33	53479	130.75	29.00
20734	210.75	2.00	51144	3.45	15.33	52427	70.75	13.67	51781	172.75	15.33	52365	62.75	3.67	53480	132.75	29.00
20735	210.75	1.00	51145	3.45	17.00	52428	70.75	15.33	51782	172.75	17.00	52366	62.75	5.33	53481	134.75	29.00
20736	203.35	2.00	51146	3.45	18.67	52429	70.75	17.00	51783	172.75	18.67	52367	62.75	7.00	53482	136.75	29.00
20737	205.20	2.00	51147	3.45	20.33	52430	70.75	18.67	51784	172.75	20.33	52368	62.75	8.67	53483	138.75	29.00
20738	207.05	2.00	51148	3.45	22.00	52431	70.75	20.33	51785	172.75	22.00	52369	62.75	10.33	53484	140.75	29.00
20739	208.90	2.00	51149	3.45	23.67	52432	70.75	22.00	51786	172.75	23.67	52370	62.75	12.00	53485	142.75	29.00
20740	203.35	1.00	51150	3.45	25.33	52433	70.75	23.67	51787	172.75	25.33	52371	62.75	13.67	53486	144.75	29.00
20741	205.20	1.00	51151	5.40	3.67	52434	70.75	25.33	51788	174.75	3.67	52372	62.75	15.33	53487	146.75	29.00
20742	207.05	1.00	51152	5.40	5.33	52435	72.75	3.67	51789	174.75	5.33	52373	62.75	17.00	53488	148.75	29.00
20743	208.90	1.00	51153	5.40	7.00	52436	72.75	5.33	51790	174.75	7.00	52374	62.75	18.67	53489	120.75	28.00
20744	120.75	0.00	51154	5.40	8.67	52437	72.75	7.00	51791	174.75	8.67	52375	62.75	20.33	53490	148.75	28.00
20745	150.75	0.00	51155	5.40	10.33	52438	72.75	8.67	51792	174.75	10.33	52376	62.75	22.00	53491	146.75	28.00
20746	122.75	0.00	51156	5.40	12.00	52439	72.75	10.33	51793	174.75	12.00	52377	62.75	23.67	53492	144.75	28.00
20747	124.75	0.00	51157	5.40	13.67	52440	72.75	12.00	51794	174.75	13.67	52378	62.75	25.33	53493	142.75	28.00
20748	126.75	0.00	51158	5.40	15.33	52441	72.75	13.67	51795	174.75	15.33	52379	64.75	3.67	53494	140.75	28.00
20749	128.75	0.00	51159	5.40	17.00	52442	72.75	15.33	51796	174.75	17.00	52380	64.75	5.33	53495	138.75	28.00
20750	130.75	0.00	51160	5.40	18.67	52443	72.75	17.00	51797	174.75	18.67	52381	64.75	7.00	53496	136.75	28.00
20751	132.75	0.00	51161	5.40	20.33	52444	72.75	18.67	51798	174.75	20.33	52913	282.45	3.67	53497	134.75	28.00
20752	134.75	0.00	51162	5.40	22.00	52445	72.75	20.33	51799	174.75	22.00	52914	282.45	5.33	53498	132.75	28.00
20753	136.75	0.00	51163	5.40	23.67	52446	72.75	22.00	51800	174.75	23.67	52915	282.45	7.00	53499	130.75	28.00
20754	138.75	0.00	51164	5.40	25.33	52447	72.75	23.67	51801	174.75	25.33	52916	282.45	8.67	53500	128.75	28.00
20755	140.75	0.00	51165	7.35	3.67	52448	72.75	25.33	51802	176.75	3.67	52917	282.45	10.33	53501	126.75	28.00
20756	142.75	0.00	51166	7.35	5.33	52449	74.75	3.67	51803	176.75	5.33	52918	282.45	12.00	53502	124.75	28.00
20757	144.75	0.00	51167	7.35	7.00	52450	74.75	5.33	51804	176.75	7.00	52919	282.45	13.67	53503	122.75	28.00
20758	146.75	0.00	51168	7.35	8.67	52451	74.75	7.00	51805	176.75	8.67	52920	282.45	15.33	53504	180.75	29.00
20759	148.75	0.00	51169	7.35	10.33	52452	74.75	8.67	51806	176.75	10.33	52921	282.45	17.00	53505	180.75	28.00
20760	150.75	2.00	51170	7.35	12.00	52453	74.75	10.33	51807	176.75	12.00	52922	282.45	18.67	53506	152.75	29.00
20761	150.75	1.00	51171	7.35	13.67	52454	74.75	12.00	51808	176.75	13.67	52923	282.45	20.33	53507	154.75	29.00
20762	120.75	2.00	51172	7.35	15.33	52455	74.75	13.67	51809	176.75	15.33	52924	282.45	22.00	53508	156.75	29.00
20763	148.75	2.00	51173	7.35	17.00	52456	74.75	15.33	51810	176.75	17.00	52925	282.45	23.67	53509	158.75	29.00
20764	146.75	2.00	51174	7.35	18.67	52457	74.75	17.00	51811	176.75	18.67	52926	282.45	25.33	53510	160.75	29.00
20765	144.75	2.00	51175	7.35	20.33	52458	74.75	18.67	51812	176.75	20.33	52927	284.40	3.67	53511	162.75	29.00
20766	142.75	2.00	51176	7.35	22.00	52459	74.75	20.33	51813	176.75	22.00	52928	284.40	5.33	53512	164.75	29.00
20767	140.75	2.00	51177	7.35	23.67	52460	74.75	22.00	51814	176.75	23.67	52929	284.40	7.00	53513	166.75	29.00
20768	138.75	2.00	51178	7.35	25.33	52461	74.75	23.67	51815	176.75	25.33	52930	284.40	8.67	53514	168.75	29.00

20769	136.75	2.00	51179	9.30	3.67	52462	74.75	25.33	51816	178.75	3.67	52931	284.40	10.33	53515	170.75	29.00
20770	134.75	2.00	51180	9.30	5.33	52463	76.75	3.67	51817	178.75	5.33	52932	284.40	12.00	53516	172.75	29.00
20771	132.75	2.00	51181	9.30	7.00	52464	76.75	5.33	51818	178.75	7.00	52933	284.40	13.67	53517	174.75	29.00
20772	130.75	2.00	51182	9.30	8.67	52465	76.75	7.00	51819	178.75	8.67	52934	284.40	15.33	53518	176.75	29.00
20773	128.75	2.00	51183	9.30	10.33	52466	76.75	8.67	51820	178.75	10.33	52935	284.40	17.00	53519	178.75	29.00
20774	126.75	2.00	51184	9.30	12.00	52467	76.75	10.33	51821	178.75	12.00	52936	284.40	18.67	53520	178.75	28.00
20775	124.75	2.00	51185	9.30	13.67	52468	76.75	12.00	51822	178.75	13.67	52937	284.40	20.33	53521	176.75	28.00
20776	122.75	2.00	51186	9.30	15.33	52469	76.75	13.67	51823	178.75	15.33	52938	284.40	22.00	53522	174.75	28.00
20777	120.75	1.00	51187	9.30	17.00	52470	76.75	15.33	51824	178.75	17.00	52939	284.40	23.67	53523	172.75	28.00
20778	122.75	1.00	51188	9.30	18.67	52471	76.75	17.00	51825	178.75	18.67	52940	284.40	25.33	53524	170.75	28.00
20779	124.75	1.00	51189	9.30	20.33	52472	76.75	18.67	51826	178.75	20.33	52941	286.35	3.67	53525	168.75	28.00
20780	126.75	1.00	51190	9.30	22.00	52473	76.75	20.33	51827	178.75	22.00	52942	286.35	5.33	53526	166.75	28.00
20781	128.75	1.00	51191	9.30	23.67	52474	76.75	22.00	51828	178.75	23.67	52943	286.35	7.00	53527	164.75	28.00
20782	130.75	1.00	51192	9.30	25.33	52475	76.75	23.67	51829	178.75	25.33	52944	286.35	8.67	53528	162.75	28.00
20783	132.75	1.00	51193	11.25	3.67	52476	76.75	25.33	51830	200.00	27.00	52945	286.35	10.33	53529	160.75	28.00
20784	134.75	1.00	51194	11.25	5.33	52477	78.75	3.67	51831	200.00	3.67	52946	286.35	12.00	53530	158.75	28.00
20785	136.75	1.00	51195	11.25	7.00	52478	78.75	5.33	51832	200.00	5.33	52947	286.35	13.67	53531	156.75	28.00
20786	138.75	1.00	51196	11.25	8.67	52479	78.75	7.00	51833	200.00	7.00	52948	286.35	15.33	53532	154.75	28.00
20787	140.75	1.00	51197	11.25	10.33	52480	78.75	8.67	51834	200.00	8.67	52949	286.35	17.00	53533	152.75	28.00
20788	142.75	1.00	51198	11.25	12.00	52481	78.75	10.33	51835	200.00	10.33	52950	286.35	18.67	53534	100.00	3.67
20789	144.75	1.00	51199	11.25	13.67	52482	78.75	12.00	51836	200.00	12.00	52951	286.35	20.33	53535	100.00	5.33
20790	146.75	1.00	51200	11.25	15.33	52483	78.75	13.67	51837	200.00	13.67	52952	286.35	22.00	53536	100.00	7.00
20791	148.75	1.00	51201	11.25	17.00	52484	78.75	15.33	51838	200.00	15.33	52953	286.35	23.67	53537	100.00	8.67
20792	150.75	0.00	51202	11.25	18.67	52485	78.75	17.00	51839	200.00	17.00	52954	286.35	25.33	53538	100.00	10.33
20793	180.75	0.00	51203	11.25	20.33	52486	78.75	18.67	51840	200.00	18.67	52955	288.30	3.67	53539	100.00	12.00
20794	152.75	0.00	51204	11.25	22.00	52487	78.75	20.33	51841	200.00	20.33	52956	288.30	5.33	53540	100.00	13.67
20795	154.75	0.00	51205	11.25	23.67	52488	78.75	22.00	51842	200.00	22.00	52957	288.30	7.00	53541	100.00	15.33
20796	156.75	0.00	51206	11.25	25.33	52489	78.75	23.67	51843	200.00	23.67	52958	288.30	8.67	53542	100.00	17.00
20797	158.75	0.00	51207	13.20	3.67	52490	78.75	25.33	51844	200.00	25.33	52959	288.30	10.33	53543	100.00	18.67
20798	160.75	0.00	51208	13.20	5.33	52491	80.75	3.67	51845	182.68	27.00	52960	288.30	12.00	53544	100.00	20.33
20799	162.75	0.00	51209	13.20	7.00	52492	80.75	5.33	51846	184.60	27.00	52961	288.30	13.67	53545	100.00	22.00
20800	164.75	0.00	51210	13.20	8.67	52493	80.75	7.00	51847	186.53	27.00	52962	288.30	15.33	53546	100.00	23.67
20801	166.75	0.00	51211	13.20	10.33	52494	80.75	8.67	51848	188.45	27.00	52963	288.30	17.00	53547	100.00	25.33
20802	168.75	0.00	51212	13.20	12.00	52495	80.75	10.33	51849	190.38	27.00	52964	288.30	18.67	53548	90.75	3.67
20803	170.75	0.00	51213	13.20	13.67	52496	80.75	12.00	51850	192.30	27.00	52965	288.30	20.33	53549	90.75	5.33
20804	172.75	0.00	51214	13.20	15.33	52497	80.75	13.67	51851	194.23	27.00	52966	288.30	22.00	53550	90.75	7.00
20805	174.75	0.00	51215	13.20	17.00	52498	80.75	15.33	51852	196.15	27.00	52967	288.30	23.67	53551	90.75	8.67
20806	176.75	0.00	51216	13.20	18.67	52499	80.75	17.00	51853	198.08	27.00	52968	288.30	25.33	53552	90.75	10.33
20807	178.75	0.00	51217	13.20	20.33	52500	80.75	18.67	51854	180.75	3.67	52969	290.25	3.67	53553	90.75	12.00
20808	180.75	2.00	51218	13.20	22.00	52501	80.75	20.33	51855	180.75	5.33	52970	290.25	5.33	53554	90.75	13.67
20809	180.75	1.00	51219	13.20	23.67	52502	80.75	22.00	51856	180.75	7.00	52971	290.25	7.00	53555	90.75	15.33
20810	150.75	2.00	51220	13.20	25.33	52503	80.75	23.67	51857	180.75	8.67	52972	290.25	8.67	53556	90.75	17.00
20811	178.75	2.00	51221	15.15	3.67	52504	80.75	25.33	51858	180.75	10.33	52973	290.25	10.33	53557	90.75	18.67
20812	176.75	2.00	51222	15.15	5.33	52505	82.75	3.67	51859	180.75	12.00	52974	290.25	12.00	53558	90.75	20.33
20813	174.75	2.00	51223	15.15	7.00	52506	82.75	5.33	51860	180.75	13.67	52975	290.25	13.67	53559	90.75	22.00
20814	172.75	2.00	51224	15.15	8.67	52507	82.75	7.00	51861	180.75	15.33	52976	290.25	15.33	53560	90.75	23.67
20815	170.75	2.00	51225	15.15	10.33	52508	82.75	8.67	51862	180.75	17.00	52977	290.25	17.00	53561	90.75	25.33
20816	168.75	2.00	51226	15.15	12.00	52509	82.75	10.33	51863	180.75	18.67	52978	290.25	18.67	53562	92.60	3.67
20817	166.75	2.00	51227	15.15	13.67	52510	82.75	12.00	51864	180.75	20.33	52979	290.25	20.33	53563	92.60	5.33
20818	164.75	2.00	51228	15.15	15.33	52511	82.75	13.67	51865	180.75	22.00	52980	290.25	22.00	53564	92.60	7.00
20819	162.75	2.00	51229	15.15	17.00	52512	82.75	15.33	51866	180.75	23.67	52981	290.25	23.67	53565	92.60	8.67
20820	160.75	2.00	51230	15.15	18.67	52513	82.75	17.00	51867	180.75	25.33	52982	290.25	25.33	53566	92.60	10.33
20821	158.75	2.00	51231	15.15	20.33	52514	82.75	18.67	51868	182.68	3.67	52983	292.20	3.67	53567	92.60	12.00
20822	156.75	2.00	51232	15.15	22.00	52515	82.75	20.33	51869	182.68	5.33	52984	292.20	5.33	53568	92.60	13.67
20823	154.75	2.00	51233	15.15	23.67	52516	82.75	22.00	51870	182.68	7.00	52985	292.20	7.00	53569	92.60	15.33
20824	152.75	2.00	51234	15.15	25.33	52517	82.75	23.67	51871	182.68	8.67	52986	292.20	8.67	53570	92.60	17.00
20825	150.75	1.00	51235	17.10	3.67	52518	82.75	25.33	51872	182.68	10.33	52987	292.20	10.33	53571	92.60	18.67
20826	152.75	1.00	51236	17.10	5.33	52519	84.75	3.67	51873	182.68	12.00	52988	292.20	12.00	53572	92.60	20.33
20827	154.75	1.00	51237	17.10	7.00	52520	84.75	5.33	51874	182.68	13.67	52989	292.20	13.67	53573	92.60	22.00
20828	156.75	1.00	51238	17.10	8.67	52521	84.75	7.00	51875	182.68	15.33	52990	292.20	15.33	53574	92.60	23.67
20829	158.75	1.00	51239	17.10	10.33	52522	84.75	8.67	51876	182.68	17.00	52991	292.20	17.00	53575	92.60	25.33
20830	160.75	1.00	51240	17.10	12.00	52523	84.75	10.33	51877	182.68	18.67	52992	292.20	18.67	53576	94.45	3.67
20831	162.75	1.00	51241	17.10	13.67	52524	84.75	12.00	51878	182.68	20.33	52993	292.20	20.33	53577	94.45	5.33
20832	164.75	1.00	51242	17.10	15.33	52525	84.75	13.67	51879	182.68	22.00	52994	292.20	22.00	53578	94.45	7.00
20833	166.75	1.00	51243	17.10	17.00	52526	84.75	15.33	51880	182.68	23.67	52995	292.20	23.67	53579	94.45	8.67
20834	168.75	1.00	51244	17.10	18.67	52527	84.75	17.00	51881	182.68	25.33	52996	292.20	25.33	53580	94.45	10.33
20835	170.75	1.00	51245	17.10	20.33	52528	84.75	18.67	51882	184.60	3.67	52997	294.15	3.67	53581	94.45	12.00
20836	172.75	1.00	51246	17.10	22.00	52529	84.75	20.33	51883	184.60	5.33	52998	294.15	5.33	53582	94.45	13.67
20837	174.75	1.00	51247	17.10	23.67	52530	84.75	22.00	51884	184.60	7.00	52999	294.15	7.00	53583	94.45	15.33
20838	176.75	1.00	51248	17.10	25.33	52531	84.75	23.67	51885	184.60	8.67	53000	294.15	8.67	53584	94.45	17.00
20839	178.75	1.00	51249	19.05	3.67	52532	84.75	25.33	51886	184.60	10.33	53001	294.15	10.33	53585	94.45	18.67
20840	180.75	0.00	51250	19.05	5.33	52533	86.75	3.67	51887	184.60	12.00	53002	294.15	12.00	53586	94.45	20.33
20841	182.68	0.00	51251	19.05	7.00	52534	86.75	5.33	51888	184.60	13.67	53003	294.15	13.67	53587	94.45	22.00
20842	184.60	0.00	51252	19.05	8.67	52535	86.75	7.00	51889	184.60	15.33	53004	294.15	15.33	53588	94.45	23.67
20843	186.53	0.00	51253	19.05	10.33	52536	86.75	8.67	51890	184.60	17.00	53005	294.15	17.00	53589	94.45	25.33
20844	188.45	0.00	51254	19.05	12.00	52537	86.75	10.33	51891	184.60	18.67	53006	294.15	18.67	53590	96.30	3.67
20845	190.38	0.00	51255	19.05	13.67	52538	86.75	12.00	51892	184.60	20.33	53007	294.15	20.33	53591	96.30	5.33
20846	192.30	0.00	51256	19.05	15.33	52539	86.75	13.67	51893	184.60	22.00	53008	294.15	22.00	53592	96.30	7.00

20847	194.23	0.00	51257	19.05	17.00	52540	86.75	15.33	51894	184.60	23.67	53009	294.15	23.67	53593	96.30	8.67
20848	196.15	0.00	51258	19.05	18.67	52541	86.75	17.00	51895	184.60	25.33	53010	294.15	25.33	53594	96.30	10.33
20849	198.08	0.00	51259	19.05	20.33	52542	86.75	18.67	51896	186.53	3.67	53011	296.10	3.67	53595	96.30	12.00
20850	180.75	2.00	51260	19.05	22.00	52543	86.75	20.33	51897	186.53	5.33	53012	296.10	5.33	53596	96.30	13.67
20851	198.08	2.00	51261	19.05	23.67	52544	86.75	22.00	51898	186.53	7.00	53013	296.10	7.00	53597	96.30	15.33
20852	196.15	2.00	51262	19.05	25.33	52545	86.75	23.67	51899	186.53	8.67	53014	296.10	8.67	53598	96.30	17.00
20853	194.23	2.00	51263	21.00	3.67	52546	86.75	25.33	51900	186.53	10.33	53015	296.10	10.33	53599	96.30	18.67
20854	192.30	2.00	51264	21.00	5.33	52547	88.75	3.67	51901	186.53	12.00	53016	296.10	12.00	53600	96.30	20.33
20855	190.38	2.00	51265	21.00	7.00	52548	88.75	5.33	51902	186.53	13.67	53017	296.10	13.67	53601	96.30	22.00
20856	188.45	2.00	51266	21.00	8.67	52549	88.75	7.00	51903	186.53	15.33	53018	296.10	15.33	53602	96.30	23.67
20857	186.53	2.00	51267	21.00	10.33	52550	88.75	8.67	51904	186.53	17.00	53019	296.10	17.00	53603	96.30	25.33
20858	184.60	2.00	51268	21.00	12.00	52551	88.75	10.33	51905	186.53	18.67	53020	296.10	18.67	53604	98.15	3.67
20859	182.68	2.00	51269	21.00	13.67	52552	88.75	12.00	51906	186.53	20.33	53021	296.10	20.33	53605	98.15	5.33
20860	180.75	1.00	51270	21.00	15.33	52553	88.75	13.67	51907	186.53	22.00	53022	296.10	22.00	53606	98.15	7.00
20861	182.68	1.00	51271	21.00	17.00	52554	88.75	15.33	51908	186.53	23.67	53023	296.10	23.67	53607	98.15	8.67
20862	184.60	1.00	51272	21.00	18.67	52555	88.75	17.00	51909	186.53	25.33	53024	296.10	25.33	53608	98.15	10.33
20863	186.53	1.00	51273	21.00	20.33	52556	88.75	18.67	51910	188.45	3.67	53025	298.05	3.67	53609	98.15	12.00
20864	188.45	1.00	51274	21.00	22.00	52557	88.75	20.33	51911	188.45	5.33	53026	298.05	5.33	53610	98.15	13.67
20865	190.38	1.00	51275	21.00	23.67	52558	88.75	22.00	51912	188.45	7.00	53027	298.05	7.00	53611	98.15	15.33
20866	192.30	1.00	51276	21.00	25.33	52559	88.75	23.67	51913	188.45	8.67	53028	298.05	8.67	53612	98.15	17.00
20867	194.23	1.00	51277	22.95	3.67	52560	88.75	25.33	51914	188.45	10.33	53029	298.05	10.33	53613	98.15	18.67
20868	196.15	1.00	51278	22.95	5.33	52561	270.75	27.00	51915	188.45	12.00	53030	298.05	12.00	53614	98.15	20.33
20869	198.08	1.00	51279	22.95	7.00	52562	270.75	3.67	51916	188.45	13.67	53031	298.05	13.67	53615	98.15	22.00
20870	210.75	0.00	51280	22.95	8.67	52563	270.75	5.33	51917	188.45	15.33	53032	298.05	15.33	53616	98.15	23.67
20871	240.75	0.00	51281	22.95	10.33	52564	270.75	7.00	51918	188.45	17.00	53033	298.05	17.00	53617	98.15	25.33
20872	212.75	0.00	51282	22.95	12.00	52565	270.75	8.67	51919	188.45	18.67	53034	298.05	18.67	53618	101.50	29.00
20873	214.75	0.00	51283	22.95	13.67	52566	270.75	10.33	51920	188.45	20.33	53035	298.05	20.33	53619	118.83	29.00
20874	216.75	0.00	51284	22.95	15.33	52567	270.75	12.00	51921	188.45	22.00	53036	298.05	22.00	53620	116.90	29.00
20875	218.75	0.00	51285	22.95	17.00	52568	270.75	13.67	51922	188.45	23.67	53037	298.05	23.67	53621	114.98	29.00
20876	220.75	0.00	51286	22.95	18.67	52569	270.75	15.33	51923	188.45	25.33	53038	298.05	25.33	53622	113.05	29.00
20877	222.75	0.00	51287	22.95	20.33	52570	270.75	17.00	51924	190.38	3.67	53039	60.75	29.00	53623	111.13	29.00
20878	224.75	0.00	51288	22.95	22.00	52571	270.75	18.67	51925	190.38	5.33	53040	62.75	29.00	53624	109.20	29.00
20879	226.75	0.00	51289	22.95	23.67	52572	270.75	20.33	51926	190.38	7.00	53041	64.75	29.00	53625	107.28	29.00
20880	228.75	0.00	51290	22.95	25.33	52573	270.75	22.00	51927	190.38	8.67	53042	66.75	29.00	53626	105.35	29.00
20881	230.75	0.00	51291	24.90	3.67	52574	270.75	23.67	51928	190.38	10.33	53043	68.75	29.00	53627	103.43	29.00
20882	232.75	0.00	51292	24.90	5.33	52575	270.75	25.33	51929	190.38	12.00	53044	70.75	29.00	53628	101.50	28.00
20883	234.75	0.00	51293	24.90	7.00	52576	242.75	27.00	51930	190.38	13.67	53045	72.75	29.00	53629	118.83	28.00
20884	236.75	0.00	51294	24.90	8.67	52577	244.75	27.00	51931	190.38	15.33	53046	74.75	29.00	53630	116.90	28.00
20885	238.75	0.00	51295	24.90	10.33	52578	246.75	27.00	51932	190.38	17.00	53047	76.75	29.00	53631	114.98	28.00
20886	240.75	2.00	51296	24.90	12.00	52579	248.75	27.00	51933	190.38	18.67	53048	78.75	29.00	53632	113.05	28.00
20887	240.75	1.00	51297	24.90	13.67	52580	250.75	27.00	51934	190.38	20.33	53049	80.75	29.00	53633	111.13	28.00
20888	210.75	2.00	51298	24.90	15.33	52581	252.75	27.00	51935	190.38	22.00	53050	82.75	29.00	53634	109.20	28.00
20889	238.75	2.00	51299	24.90	17.00	52582	254.75	27.00	51936	190.38	23.67	53051	84.75	29.00	53635	107.28	28.00
20890	236.75	2.00	51300	24.90	18.67	52583	256.75	27.00	51937	190.38	25.33	53052	86.75	29.00	53636	105.35	28.00
20891	234.75	2.00	51301	24.90	20.33	52584	258.75	27.00	51938	192.30	3.67	53053	88.75	29.00	53637	103.43	28.00
20892	232.75	2.00	51302	24.90	22.00	52585	260.75	27.00	51939	192.30	5.33	53054	60.75	28.00	53638	240.75	29.00
20893	230.75	2.00	51303	24.90	23.67	52586	262.75	27.00	51940	192.30	7.00	53055	88.75	28.00	53639	240.75	28.00
20894	228.75	2.00	51304	24.90	25.33	52587	264.75	27.00	51941	192.30	8.67	53056	86.75	28.00	53640	210.75	29.00
20895	226.75	2.00	51305	26.85	3.67	52588	266.75	27.00	51942	192.30	10.33	53057	84.75	28.00	53641	212.75	29.00
20896	224.75	2.00	51306	26.85	5.33	52589	268.75	27.00	51943	192.30	12.00	53058	82.75	28.00	53642	214.75	29.00
20897	222.75	2.00	51307	26.85	7.00	52590	240.75	3.67	51944	192.30	13.67	53059	80.75	28.00	53643	216.75	29.00
20898	220.75	2.00	51308	26.85	8.67	52591	240.75	5.33	51945	192.30	15.33	53060	78.75	28.00	53644	218.75	29.00
20899	218.75	2.00	51309	26.85	10.33	52592	240.75	7.00	51946	192.30	17.00	53061	76.75	28.00	53645	220.75	29.00
20900	216.75	2.00	51310	26.85	12.00	52593	240.75	8.67	51947	192.30	18.67	53062	74.75	28.00	53646	222.75	29.00
20901	214.75	2.00	51311	26.85	13.67	52594	240.75	10.33	51948	192.30	20.33	53063	72.75	28.00	53647	224.75	29.00
20902	212.75	2.00	51312	26.85	15.33	52595	240.75	12.00	51949	192.30	22.00	53064	70.75	28.00	53648	226.75	29.00
20903	210.75	1.00	51313	26.85	17.00	52596	240.75	13.67	51950	192.30	23.67	53065	68.75	28.00	53649	228.75	29.00
20904	212.75	1.00	51314	26.85	18.67	52597	240.75	15.33	51951	192.30	25.33	53066	66.75	28.00	53650	230.75	29.00
20905	214.75	1.00	51315	26.85	20.33	52598	240.75	17.00	51952	194.23	3.67	53067	64.75	28.00	53651	232.75	29.00
20906	216.75	1.00	51316	26.85	22.00	52599	240.75	18.67	51953	194.23	5.33	53068	62.75	28.00	53652	234.75	29.00
20907	218.75	1.00	51317	26.85	23.67	52600	240.75	20.33	51954	194.23	7.00	53069	150.75	3.67	53653	236.75	29.00
20908	220.75	1.00	51318	26.85	25.33	52601	240.75	22.00	51955	194.23	8.67	53070	150.75	5.33	53654	238.75	29.00
20909	222.75	1.00	51319	28.80	3.67	52602	240.75	23.67	51956	194.23	10.33	53071	150.75	7.00	53655	210.75	28.00
20910	224.75	1.00	51320	28.80	5.33	52603	240.75	25.33	51957	194.23	12.00	53072	150.75	8.67	53656	238.75	28.00
20911	226.75	1.00	51321	28.80	7.00	52604	242.75	3.67	51958	194.23	13.67	53073	150.75	10.33	53657	236.75	28.00
20912	228.75	1.00	51322	28.80	8.67	52605	242.75	5.33	51959	194.23	15.33	53074	150.75	12.00	53658	234.75	28.00
20913	230.75	1.00	51323	28.80	10.33	52606	242.75	7.00	51960	194.23	17.00	53075	150.75	13.67	53659	232.75	28.00
20914	232.75	1.00	51324	28.80	12.00	52607	242.75	8.67	51961	194.23	18.67	53076	150.75	15.33	53660	230.75	28.00
20915	234.75	1.00	51325	28.80	13.67	52608	242.75	10.33	51962	194.23	20.33	53077	150.75	17.00	53661	228.75	28.00
20916	236.75	1.00	51326	28.80	15.33	52609	242.75	12.00	51963	194.23	22.00	53078	150.75	18.67	53662	226.75	28.00
20917	238.75	1.00	51327	28.80	17.00	52610	242.75	13.67	51964	194.23	23.67	53079	150.75	20.33	53663	224.75	28.00
20918	240.75	0.00	51328	28.80	18.67	52611	242.75	15.33	51965	194.23	25.33	53080	150.75	22.00	53664	222.75	28.00
20919	270.75	0.00	51329	28.80	20.33	52612	242.75	17.00	51966	196.15	3.67	53081	150.75	23.67	53665	220.75	28.00
20920	242.75	0.00	51330	28.80	22.00	52613	242.75	18.67	51967	196.15	5.33	53082	150.75	25.33	53666	218.75	28.00
20921	244.75	0.00	51331	28.80	23.67	52614	242.75	20.33	51968	196.15	7.00	53083	120.75	27.00	53667	216.75	28.00
20922	246.75	0.00	51332	28.80	25.33	52615	242.75	22.00	51969	196.15	8.67	53084	122.75	27.00	53668	214.75	28.00
20923	248.75	0.00	51333	100.00	29.00	52616	242.75	23.67	51970	196.15	10.33	53085	124.75	27.00	53669	212.75	28.00
20924	250.75	0.00	51334	100.00	27.00	52617	242.75	25.33	51971	196.15	12.00	53086	126.75	27.00	53670	270.75	29.00

20925	252.75	0.00	51335	100.00	28.00	52618	244.75	3.67	51972	196.15	13.67	53087	128.75	27.00	53671	270.75	28.00
20926	254.75	0.00	51336	90.75	29.00	52619	244.75	5.33	51973	196.15	15.33	53088	130.75	27.00	53672	242.75	29.00
20927	256.75	0.00	51337	98.15	29.00	52620	244.75	7.00	51974	196.15	17.00	53089	132.75	27.00	53673	244.75	29.00
20928	258.75	0.00	51338	96.30	29.00	52621	244.75	8.67	51975	196.15	18.67	53090	134.75	27.00	53674	246.75	29.00
20929	260.75	0.00	51339	94.45	29.00	52622	244.75	10.33	51976	196.15	20.33	53091	136.75	27.00	53675	248.75	29.00
20930	262.75	0.00	51340	92.60	29.00	52623	244.75	12.00	51977	196.15	22.00	53092	138.75	27.00	53676	250.75	29.00
20931	264.75	0.00	51341	90.75	27.00	52624	244.75	13.67	51978	196.15	23.67	53093	140.75	27.00	53677	252.75	29.00
20932	266.75	0.00	51342	90.75	28.00	52625	244.75	15.33	51979	196.15	25.33	53094	142.75	27.00	53678	254.75	29.00
20933	268.75	0.00	51343	92.60	27.00	52626	244.75	17.00	51980	198.08	3.67	53095	144.75	27.00	53679	256.75	29.00
20934	270.75	2.00	51344	94.45	27.00	52627	244.75	18.67	51981	198.08	5.33	53096	146.75	27.00	53680	258.75	29.00
20935	270.75	1.00	51345	96.30	27.00	52628	244.75	20.33	51982	198.08	7.00	53097	148.75	27.00	53681	260.75	29.00
20936	240.75	2.00	51346	98.15	27.00	52629	244.75	22.00	51983	198.08	8.67	53098	120.75	3.67	53682	262.75	29.00
20937	268.75	2.00	51347	98.15	28.00	52630	244.75	23.67	51984	198.08	10.33	53099	120.75	5.33	53683	264.75	29.00
20938	266.75	2.00	51348	96.30	28.00	52631	244.75	25.33	51985	198.08	12.00	53100	120.75	7.00	53684	266.75	29.00
20939	264.75	2.00	51349	94.45	28.00	52632	246.75	3.67	51986	198.08	13.67	53101	120.75	8.67	53685	268.75	29.00
20940	262.75	2.00	51350	92.60	28.00	52633	246.75	5.33	51987	198.08	15.33	53102	120.75	10.33	53686	268.75	28.00
20941	260.75	2.00	51351	60.75	27.00	52634	246.75	7.00	51988	198.08	17.00	53103	120.75	12.00	53687	266.75	28.00
20942	258.75	2.00	51352	60.75	3.67	52635	246.75	8.67	51989	198.08	18.67	53104	120.75	13.67	53688	264.75	28.00
20943	256.75	2.00	51353	60.75	5.33	52636	246.75	10.33	51990	198.08	20.33	53105	120.75	15.33	53689	262.75	28.00
20944	254.75	2.00	51354	60.75	7.00	52637	246.75	12.00	51991	198.08	22.00	53106	120.75	17.00	53690	260.75	28.00
20945	252.75	2.00	51355	60.75	8.67	52638	246.75	13.67	51992	198.08	23.67	53107	120.75	18.67	53691	258.75	28.00
20946	250.75	2.00	51356	60.75	10.33	52639	246.75	15.33	51993	198.08	25.33	53108	120.75	20.33	53692	256.75	28.00
20947	248.75	2.00	51357	60.75	12.00	52640	246.75	17.00	51994	210.75	27.00	53109	120.75	22.00	53693	254.75	28.00
20948	246.75	2.00	51358	60.75	13.67	52641	246.75	18.67	51995	210.75	3.67	53110	120.75	23.67	53694	252.75	28.00
20949	244.75	2.00	51359	60.75	15.33	52642	246.75	20.33	51996	210.75	5.33	53111	120.75	25.33	53695	250.75	28.00
20950	242.75	2.00	51360	60.75	17.00	52643	246.75	22.00	51997	210.75	7.00	53112	122.75	3.67	53696	248.75	28.00
20951	240.75	1.00	51361	60.75	18.67	52644	246.75	23.67	51998	210.75	8.67	53113	122.75	5.33	53697	246.75	28.00
20952	242.75	1.00	51362	60.75	20.33	52645	246.75	25.33	51999	210.75	10.33	53114	122.75	7.00	53698	244.75	28.00
20953	244.75	1.00	51363	60.75	22.00	52646	248.75	3.67	52000	210.75	12.00	53115	122.75	8.67	53699	242.75	28.00
20954	246.75	1.00	51364	60.75	23.67	52647	248.75	5.33	52001	210.75	13.67	53116	122.75	10.33	53700	300.00	29.00
20955	248.75	1.00	51365	60.75	25.33	52648	248.75	7.00	52002	210.75	15.33	53117	122.75	12.00	53701	300.00	28.00
20956	250.75	1.00	51366	32.75	27.00	52649	248.75	8.67	52003	210.75	17.00	53118	122.75	13.67	53702	272.70	29.00
20957	252.75	1.00	51367	34.75	27.00	52650	248.75	10.33	52004	210.75	18.67	53119	122.75	15.33	53703	274.65	29.00
20958	254.75	1.00	51368	36.75	27.00	52651	248.75	12.00	52005	210.75	20.33	53120	122.75	17.00	53704	276.60	29.00
20959	256.75	1.00	51369	38.75	27.00	52652	248.75	13.67	52006	210.75	22.00	53121	122.75	18.67	53705	278.55	29.00
20960	258.75	1.00	51370	40.75	27.00	52653	248.75	15.33	52007	210.75	23.67	53122	122.75	20.33	53706	280.50	29.00
20961	260.75	1.00	51371	42.75	27.00	52654	248.75	17.00	52008	210.75	25.33	53123	122.75	22.00	53707	282.45	29.00
20962	262.75	1.00	51372	44.75	27.00	52655	248.75	18.67	52009	201.50	27.00	53124	122.75	23.67	53708	284.40	29.00
20963	264.75	1.00	51373	46.75	27.00	52656	248.75	20.33	52010	203.35	27.00	53125	122.75	25.33	53709	286.35	29.00
20964	266.75	1.00	51374	48.75	27.00	52657	248.75	22.00	52011	205.20	27.00	53126	124.75	3.67	53710	288.30	29.00
20965	268.75	1.00	51375	50.75	27.00	52658	248.75	23.67	52012	207.05	27.00	53127	124.75	5.33	53711	290.25	29.00
20966	270.75	0.00	51376	52.75	27.00	52659	248.75	25.33	52013	208.90	27.00	53128	124.75	7.00	53712	292.20	29.00
20967	272.70	0.00	51377	54.75	27.00	52660	250.75	3.67	52014	201.50	3.67	53129	124.75	8.67	53713	294.15	29.00
20968	274.65	0.00	51378	56.75	27.00	52661	250.75	5.33	52015	201.50	5.33	53130	124.75	10.33	53714	296.10	29.00
20969	276.60	0.00	51379	58.75	27.00	52662	250.75	7.00	52016	201.50	7.00	53131	124.75	12.00	53715	298.05	29.00
20970	278.55	0.00	51380	30.75	3.67	52663	250.75	8.67	52017	201.50	8.67	53132	124.75	13.67	53716	298.05	28.00
20971	280.50	0.00	51381	30.75	5.33	52664	250.75	10.33	52018	201.50	10.33	53133	124.75	15.33	53717	296.10	28.00
20972	282.45	0.00	51382	30.75	7.00	52665	250.75	12.00	52019	201.50	12.00	53134	124.75	17.00	53718	294.15	28.00
20973	284.40	0.00	51383	30.75	8.67	52666	250.75	13.67	52020	201.50	13.67	53135	124.75	18.67	53719	292.20	28.00
20974	286.35	0.00	51384	30.75	10.33	52667	250.75	15.33	52021	201.50	15.33	53136	124.75	20.33	53720	290.25	28.00
20975	288.30	0.00	51385	30.75	12.00	52668	250.75	17.00	52022	201.50	17.00	53137	124.75	22.00	53721	288.30	28.00
20976	290.25	0.00	51386	30.75	13.67	52669	250.75	18.67	52023	201.50	18.67	53138	124.75	23.67	53722	286.35	28.00
20977	292.20	0.00	51387	30.75	15.33	52670	250.75	20.33	52024	201.50	20.33	53139	124.75	25.33	53723	284.40	28.00
20978	294.15	0.00	51388	30.75	17.00	52671	250.75	22.00	52025	201.50	22.00	53140	126.75	3.67	53724	282.45	28.00
20979	296.10	0.00	51389	30.75	18.67	52672	250.75	23.67	52026	201.50	23.67	53141	126.75	5.33	53725	280.50	28.00
20980	298.05	0.00	51390	30.75	20.33	52673	250.75	25.33	52027	201.50	25.33	53142	126.75	7.00	53726	278.55	28.00
20981	270.75	2.00	51391	30.75	22.00	52674	252.75	3.67	52028	203.35	3.67	53143	126.75	8.67	53727	276.60	28.00
20982	298.05	2.00	51392	30.75	23.67	52675	252.75	5.33	52029	203.35	5.33	53144	126.75	10.33	53728	274.65	28.00
20983	296.10	2.00	51393	30.75	25.33	52676	252.75	7.00	52030	203.35	7.00	53145	126.75	12.00	53729	272.70	28.00
20984	294.15	2.00	51394	32.75	3.67	52677	252.75	8.67	52031	203.35	8.67	53146	126.75	13.67	53730	201.50	29.00
20985	292.20	2.00	51395	32.75	5.33	52678	252.75	10.33	52032	203.35	10.33	53147	126.75	15.33	53731	208.90	29.00
20986	290.25	2.00	51396	32.75	7.00	52679	252.75	12.00	52033	203.35	12.00	53148	126.75	17.00	53732	207.05	29.00
20987	288.30	2.00	51397	32.75	8.67	52680	252.75	13.67	52034	203.35	13.67	53149	126.75	18.67	53733	205.20	29.00
20988	286.35	2.00	51398	32.75	10.33	52681	252.75	15.33	52035	203.35	15.33	53150	126.75	20.33	53734	203.35	29.00
20989	284.40	2.00	51399	32.75	12.00	52682	252.75	17.00	52036	203.35	17.00	53151	126.75	22.00	53735	201.50	28.00
20990	282.45	2.00	51400	32.75	13.67	52683	252.75	18.67	52037	203.35	18.67	53152	126.75	23.67	53736	208.90	28.00
20991	280.50	2.00	51401	32.75	15.33	52684	252.75	20.33	52038	203.35	20.33	53153	126.75	25.33	53737	207.05	28.00
20992	278.55	2.00	51402	32.75	17.00	52685	252.75	22.00	52039	203.35	22.00	53154	128.75	3.67	53738	205.20	28.00
20993	276.60	2.00	51403	32.75	18.67	52686	252.75	23.67	52040	203.35	23.67	53155	128.75	5.33	53739	203.35	28.00
20994	274.65	2.00	51404	32.75	20.33	52687	252.75	25.33	52041	203.35	25.33	53156	128.75	7.00	53740	32.75	29.00
20995	272.70	2.00	51405	32.75	22.00	52688	254.75	3.67	52042	205.20	3.67	53157	128.75	8.67	53741	34.75	29.00
20996	270.75	1.00	51406	32.75	23.67	52689	254.75	5.33	52043	205.20	5.33	53158	128.75	10.33	53742	36.75	29.00
20997	272.70	1.00	51407	32.75	25.33	52690	254.75	7.00	52044	205.20	7.00	53159	128.75	12.00	53743	38.75	29.00
20998	274.65	1.00	51408	34.75	3.67	52691	254.75	8.67	52045	205.20	8.67	53160	128.75	13.67	53744	40.75	29.00
20999	276.60	1.00	51409	34.75	5.33	52692	254.75	10.33	52046	205.20	10.33	53161	128.75	15.33	53745	42.75	29.00
21000	278.55	1.00	51410	34.75	7.00	52693	254.75	12.00	52047	205.20	12.00	53162	128.75	17.00	53746	44.75	29.00
21001	280.50	1.00	51411	34.75	8.67	52694	254.75	13.67	52048	205.20	13.67	53163	128.75	18.67	53747	46.75	29.00
21002	282.45	1.00	51412	34.75	10.33	52695	254.75	15.33	52049	205.20	15.33	53164	128.75	20.33	53748	48.75	29.00

21003	284.40	1.00	51413	34.75	12.00	52696	254.75	17.00	52050	205.20	17.00	53165	128.75	22.00	53749	50.75	29.00
21004	286.35	1.00	51414	34.75	13.67	52697	254.75	18.67	52051	205.20	18.67	53166	128.75	23.67	53750	52.75	29.00
21005	288.30	1.00	51415	34.75	15.33	52698	254.75	20.33	52052	205.20	20.33	53167	128.75	25.33	53751	54.75	29.00
21006	290.25	1.00	51416	34.75	17.00	52699	254.75	22.00	52053	205.20	22.00	53168	130.75	3.67	53752	56.75	29.00
21007	292.20	1.00	51417	34.75	18.67	52700	254.75	23.67	52054	205.20	23.67	53169	130.75	5.33	53753	58.75	29.00
21008	294.15	1.00	51418	34.75	20.33	52701	254.75	25.33	52055	205.20	25.33	53170	130.75	7.00	53754	58.75	28.00
21009	296.10	1.00	51419	34.75	22.00	52702	256.75	3.67	52056	207.05	3.67	53171	130.75	8.67	53755	56.75	28.00
21010	298.05	1.00	51420	34.75	23.67	52703	256.75	5.33	52057	207.05	5.33	53172	130.75	10.33	53756	54.75	28.00
21011	30.75	0.00	51421	34.75	25.33	52704	256.75	7.00	52058	207.05	7.00	53173	130.75	12.00	53757	52.75	28.00
21012	3.45	0.00	51422	36.75	3.67	52705	256.75	8.67	52059	207.05	8.67	53174	130.75	13.67	53758	50.75	28.00
21013	5.40	0.00	51423	36.75	5.33	52706	256.75	10.33	52060	207.05	10.33	53175	130.75	15.33	53759	48.75	28.00
21014	7.35	0.00	51424	36.75	7.00	52707	256.75	12.00	52061	207.05	12.00	53176	130.75	17.00	53760	46.75	28.00
21015	9.30	0.00	51425	36.75	8.67	52708	256.75	13.67	52062	207.05	13.67	53177	130.75	18.67	53761	44.75	28.00
21016	11.25	0.00	51426	36.75	10.33	52709	256.75	15.33	52063	207.05	15.33	53178	130.75	20.33	53762	42.75	28.00
21017	13.20	0.00	51427	36.75	12.00	52710	256.75	17.00	52064	207.05	17.00	53179	130.75	22.00	53763	40.75	28.00
21018	15.15	0.00	51428	36.75	13.67	52711	256.75	18.67	52065	207.05	18.67	53180	130.75	23.67	53764	38.75	28.00
21019	17.10	0.00	51429	36.75	15.33	52712	256.75	20.33	52066	207.05	20.33	53181	130.75	25.33	53765	36.75	28.00
21020	19.05	0.00	51430	36.75	17.00	52713	256.75	22.00	52067	207.05	22.00	53182	132.75	3.67	53766	34.75	28.00
21021	21.00	0.00	51431	36.75	18.67	52714	256.75	23.67	52068	207.05	23.67	53183	132.75	5.33	53767	32.75	28.00
21022	22.95	0.00	51432	36.75	20.33	52715	256.75	25.33	52069	207.05	25.33	53184	132.75	7.00	53768	200.00	29.00
21023	24.90	0.00	51433	36.75	22.00	52716	258.75	3.67	52070	208.90	3.67	53185	132.75	8.67	53769	200.00	28.00
21024	26.85	0.00	51434	36.75	23.67	52717	258.75	5.33	52071	208.90	5.33	53186	132.75	10.33	53770	182.68	29.00
21025	28.80	0.00	51435	36.75	25.33	52718	258.75	7.00	52072	208.90	7.00	53187	132.75	12.00	53771	184.60	29.00
21026	30.75	2.00	51436	38.75	3.67	52719	258.75	8.67	52073	208.90	8.67	53188	132.75	13.67	53772	186.53	29.00
21027	30.75	1.00	51437	38.75	5.33	52720	258.75	10.33	52074	208.90	10.33	53189	132.75	15.33	53773	188.45	29.00
21028	3.45	2.00	51438	38.75	7.00	52721	258.75	12.00	52075	208.90	12.00	53190	132.75	17.00	53774	190.38	29.00
21029	5.40	2.00	51439	38.75	8.67	52722	258.75	13.67	52076	208.90	13.67	53191	132.75	18.67	53775	192.30	29.00
21030	7.35	2.00	51440	38.75	10.33	52723	258.75	15.33	52077	208.90	15.33	53192	132.75	20.33	53776	194.23	29.00
21031	9.30	2.00	51441	38.75	12.00	52724	258.75	17.00	52078	208.90	17.00	53193	132.75	22.00	53777	196.15	29.00
21032	11.25	2.00	51442	38.75	13.67	52725	258.75	18.67	52079	208.90	18.67	53194	132.75	23.67	53778	198.08	29.00
21033	13.20	2.00	51443	38.75	15.33	52726	258.75	20.33	52080	208.90	20.33	53195	132.75	25.33	53779	198.08	28.00
21034	15.15	2.00	51444	38.75	17.00	52727	258.75	22.00	52081	208.90	22.00	53196	134.75	3.67	53780	196.15	28.00
21035	17.10	2.00	51445	38.75	18.67	52728	258.75	23.67	52082	208.90	23.67	53197	134.75	5.33	53781	194.23	28.00
21036	19.05	2.00	51446	38.75	20.33	52729	258.75	25.33	52083	208.90	25.33	53198	134.75	7.00	53782	192.30	28.00
21037	21.00	2.00	51447	38.75	22.00	52730	260.75	3.67	52084	240.75	27.00	53199	134.75	8.67	53783	190.38	28.00
21038	22.95	2.00	51448	38.75	23.67	52731	260.75	5.33	52085	240.75	3.67	53200	134.75	10.33	53784	188.45	28.00
21039	24.90	2.00	51449	38.75	25.33	52732	260.75	7.00	52086	240.75	5.33	53201	134.75	12.00	53785	186.53	28.00
21040	26.85	2.00	51450	40.75	3.67	52733	260.75	8.67	52087	240.75	7.00	53202	134.75	13.67	53786	184.60	28.00
21041	28.80	2.00	51451	40.75	5.33	52734	260.75	10.33	52088	240.75	8.67	53203	134.75	15.33	53787	182.68	28.00
21042	3.45	1.00	51452	40.75	7.00	52735	260.75	12.00	52089	240.75	10.33	53204	134.75	17.00			

MODEL 800 Element Data

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 7288   1   1  47   0   1      20909 20910 20896 20897

 ELEM MAT TYP REL ESY SEC TSHA        NODES

 7289   1   1  47   0   1      20910 20911 20895 20896
 7290   1   1  47   0   1      20911 20912 20894 20895
 7291   1   1  47   0   1      20912 20913 20893 20894
 7292   1   1  47   0   1      20913 20914 20892 20893
 7293   1   1  47   0   1      20914 20915 20891 20892
 7294   1   1  47   0   1      20915 20916 20890 20891
 7295   1   1  47   0   1      20916 20917 20889 20890
 7296   1   1  47   0   1      20917 20887 20886 20889
 7297   1   1  47   0   1      20918 20920 20952 20951
 7298   1   1  47   0   1      20920 20921 20953 20952
 7299   1   1  47   0   1      20921 20922 20954 20953
 7300   1   1  47   0   1      20922 20923 20955 20954
 7301   1   1  47   0   1      20923 20924 20956 20955
 7302   1   1  47   0   1      20924 20925 20957 20956
 7303   1   1  47   0   1      20925 20926 20958 20957
 7304   1   1  47   0   1      20926 20927 20959 20958
 7305   1   1  47   0   1      20927 20928 20960 20959
 7306   1   1  47   0   1      20928 20929 20961 20960
 7307   1   1  47   0   1      20929 20930 20962 20961
 7308   1   1  47   0   1      20930 20931 20963 20962

 ELEM MAT TYP REL ESY SEC TSHA        NODES

 7309   1   1  47   0   1      20931 20932 20964 20963
 7310   1   1  47   0   1      20932 20933 20965 20964
 7311   1   1  47   0   1      20933 20919 20935 20965
 7312   1   1  47   0   1      20951 20952 20950 20936
 7313   1   1  47   0   1      20952 20953 20949 20950
 7314   1   1  47   0   1      20953 20954 20948 20949
 7315   1   1  47   0   1      20954 20955 20947 20948
 7316   1   1  47   0   1      20955 20956 20946 20947
 7317   1   1  47   0   1      20956 20957 20945 20946
 7318   1   1  47   0   1      20957 20958 20944 20945
 7319   1   1  47   0   1      20958 20959 20943 20944
 7320   1   1  47   0   1      20959 20960 20942 20943
 7321   1   1  47   0   1      20960 20961 20941 20942
 7322   1   1  47   0   1      20961 20962 20940 20941
 7323   1   1  47   0   1      20962 20963 20939 20940
 7324   1   1  47   0   1      20963 20964 20938 20939
 7325   1   1  47   0   1      20964 20965 20937 20938
 7326   1   1  47   0   1      20965 20935 20934 20937
 7327   1   1  47   0   1      20966 20967 20997 20996
 7328   1   1  47   0   1      20967 20968 20998 20997

 ELEM MAT TYP REL ESY SEC TSHA        NODES

 7329   1   1  47   0   1      20968 20969 20999 20998
 7330   1   1  47   0   1      20969 20970 21000 20999
 7331   1   1  47   0   1      20970 20971 21001 21000
 7332   1   1  47   0   1      20971 20972 21002 21001
 7333   1   1  47   0   1      20972 20973 21003 21002
 7334   1   1  47   0   1      20973 20974 21004 21003
 7335   1   1  47   0   1      20974 20975 21005 21004
 7336   1   1  47   0   1      20975 20976 21006 21005
 7337   1   1  47   0   1      20976 20977 21007 21006
 7338   1   1  47   0   1      20977 20978 21008 21007
 7339   1   1  47   0   1      20978 20979 21009 21008
 7340   1   1  47   0   1      20979 20980 21010 21009
 7341   1   1  47   0   1      20980   361   366 21010
 7342   1   1  47   0   1      20996 20997 20995 20981
 7343   1   1  47   0   1      20997 20998 20994 20995
 7344   1   1  47   0   1      20998 20999 20993 20994
 7345   1   1  47   0   1      20999 21000 20992 20993
 7346   1   1  47   0   1      21000 21001 20991 20992
 7347   1   1  47   0   1      21001 21002 20990 20991
 7348   1   1  47   0   1      21002 21003 20989 20990

 ELEM MAT TYP REL ESY SEC TSHA        NODES

 7349   1   1  47   0   1      21003 21004 20988 20989
 7350   1   1  47   0   1      21004 21005 20987 20988
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 7351   1   1  47   0   1      21005 21006 20986 20987
 7352   1   1  47   0   1      21006 21007 20985 20986
 7353   1   1  47   0   1      21007 21008 20984 20985
 7354   1   1  47   0   1      21008 21009 20983 20984
 7355   1   1  47   0   1      21009 21010 20982 20983
 7356   1   1  47   0   1      21010   366   365 20982
 7357   1   1  47   0   1          2 21012 21042     4
 7358   1   1  47   0   1      21012 21013 21043 21042
 7359   1   1  47   0   1      21013 21014 21044 21043
 7360   1   1  47   0   1      21014 21015 21045 21044
 7361   1   1  47   0   1      21015 21016 21046 21045
 7362   1   1  47   0   1      21016 21017 21047 21046
 7363   1   1  47   0   1      21017 21018 21048 21047
 7364   1   1  47   0   1      21018 21019 21049 21048
 7365   1   1  47   0   1      21019 21020 21050 21049
 7366   1   1  47   0   1      21020 21021 21051 21050
 7367   1   1  47   0   1      21021 21022 21052 21051
 7368   1   1  47   0   1      21022 21023 21053 21052

 ELEM MAT TYP REL ESY SEC TSHA        NODES

 7369   1   1  47   0   1      21023 21024 21054 21053
 7370   1   1  47   0   1      21024 21025 21055 21054
 7371   1   1  47   0   1      21025 21011 21027 21055
 7372   1   1  47   0   1          4 21042 21028     3
 7373   1   1  47   0   1      21042 21043 21029 21028
 7374   1   1  47   0   1      21043 21044 21030 21029
 7375   1   1  47   0   1      21044 21045 21031 21030
 7376   1   1  47   0   1      21045 21046 21032 21031
 7377   1   1  47   0   1      21046 21047 21033 21032
 7378   1   1  47   0   1      21047 21048 21034 21033
 7379   1   1  47   0   1      21048 21049 21035 21034
 7380   1   1  47   0   1      21049 21050 21036 21035
 7381   1   1  47   0   1      21050 21051 21037 21036
 7382   1   1  47   0   1      21051 21052 21038 21037
 7383   1   1  47   0   1      21052 21053 21039 21038
 7384   1   1  47   0   1      21053 21054 21040 21039
 7385   1   1  47   0   1      21054 21055 21041 21040
 7386   1   1  47   0   1      21055 21027 21026 21041
 7387   1   1  47   0   1      21056 21060 21067 21066
 7388   1   1  47   0   1      21060 21059 21068 21067

 ELEM MAT TYP REL ESY SEC TSHA        NODES

 7389   1   1  47   0   1      21059 21058 21069 21068
 7390   1   1  47   0   1      21058 21057 21070 21069
 7391   1   1  47   0   1      21057   211   213 21070
 7392   1   1  47   0   1      21066 21067 21065 21061
 7393   1   1  47   0   1      21067 21068 21064 21065
 7394   1   1  47   0   1      21068 21069 21063 21064
 7395   1   1  47   0   1      21069 21070 21062 21063
 7396   1   1  47   0   1      21070   213   212 21062
 9827   1 183  96   0   1 LINE 21011 21027
REA1        REA2        FKN         FTOL        ICON        PINB
PMAX        PMIN        TAUM        CNOF        FKOP        FKT
COHE        TCC         FHTG        SBCT        RDVF        FWGT
ECC         FHEG        FACT        DC          SLTO        TNOP
TOLS        FPCR        NFLS        SPLS        DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
 9828   1 183  96   0   1 LINE 21027 21026
0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
 9829   1 184  96   0   1      20666 20633     0
REA1        REA2        FKN         FTOL        ICON        PINB
PMAX        PMIN        TAUM        CNOF        FKOP        FKT
COHE        TCC         FHTG        SBCT        RDVF        FWGT
ECC         FHEG        FACT        DC          SLTO        TNOP
TOLS        FPCR        NFLS        SPLS        DLTX        DLTY
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525

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0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9830   1 184  96   0   1      20651 20666     0
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9835   1 187  98   0   1 LINE 20634 20650
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9836   1 187  98   0   1 LINE 20650 20649
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9837   1 188  98   0   1      20714 20681     0
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9838   1 188  98   0   1      20699 20714     0
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9843   1 191 100   0   1 LINE 20682 20698
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9844   1 191 100   0   1 LINE 20698 20697
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9845   1 192 100   0   1      21066 21056     0
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9846   1 192 100   0   1      21061 21066     0
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
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0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000

 ELEM MAT TYP REL ESY SEC TSHA       NODES

 9851   1 195 102   0   1 LINE 20603 20614
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9852   1 195 102   0   1 LINE 20614 20613
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9853   1 196 102   0   1      20777 20744     0
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9854   1 196 102   0   1      20762 20777     0
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9859   1 199 104   0   1 LINE 20745 20761
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9860   1 199 104   0   1 LINE 20761 20760
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9861   1 200 104   0   1      20825 20792     0
REA1        REA2        FKN         FTOL          ICON        PINB
PMAX        PMIN        TAUM        CNOF          FKOP        FKT
COHE        TCC         FHTG        SBCT          RDVF        FWGT
ECC         FHEG        FACT        DC            SLTO        TNOP
TOLS        FPCR        NFLS        SFLS          DLTX        DLTY
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
 9862   1 200 104   0   1      20810 20825     0
0.00000     0.00000     0.100000    0.100000E-01  0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000       1.00000     0.500000
0.00000     0.500000    1.00000     0.00000       0.00000     0.00000
0.00000     0.00000     0.00000     0.00000       0.00000     0.00000
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  9867   1 203 106    0    1 LINE 20793 20809
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9868   1 203 106    0    1 LINE 20809 20808
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9869   1 204 106    0    1      20860 20840      0
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9870   1 204 106    0    1      20850 20860      0
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9875   1 207 108    0    1 LINE 20729 20735
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9876   1 207 108    0    1 LINE 20735 20734
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9877   1 208 108    0    1      20903 20870      0
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9878   1 208 108    0    1      20888 20903      0
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9883   1 211 110    0    1 LINE 20871 20887
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
```



```
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9884   1 211 110    0    1 LINE 20887 20886
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9885   1 212 110    0    1      20951 20918      0
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9886   1 212 110    0    1      20936 20951      0
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000

  ELEM MAT TYP REL ESY SEC TSHA       NODES

  9891   1 215 112    0    1 LINE 20919 20935
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9892   1 215 112    0    1 LINE 20935 20934
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9893   1 216 112    0    1      20996 20966      0
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
  9894   1 216 112    0    1      20981 20996      0
 0.00000     0.00000     0.100000    0.100000E-01 0.00000    0.00000
 0.00000     0.00000     0.100000E+21 0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
 10295    2  86  45    0    1          1 30001
   K           CV1         CV2
 22.5000     0.00000     0.00000
 10296    2  86  46    0    1          2 30002
   K           CV1         CV2
 51.7500     0.00000     0.00000
 10297    2  86  47    0    1      21012 51012
   K           CV1         CV2
 58.5000     0.00000     0.00000
 10298    2  86  47    0    1      21013 51013
 58.5000     0.00000     0.00000
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10299   2  86  47   0   1       21014 51014
58.5000      0.00000      0.00000
10300   2  86  47   0   1       21015 51015
58.5000      0.00000      0.00000
10301   2  86  47   0   1       21016 51016
58.5000      0.00000      0.00000
10302   2  86  47   0   1       21017 51017
58.5000      0.00000      0.00000
10303   2  86  47   0   1       21018 51018
58.5000      0.00000      0.00000
10304   2  86  47   0   1       21019 51019
58.5000      0.00000      0.00000
10305   2  86  47   0   1       21020 51020
58.5000      0.00000      0.00000
10306   2  86  47   0   1       21021 51021
58.5000      0.00000      0.00000
10307   2  86  47   0   1       21022 51022
58.5000      0.00000      0.00000
10308   2  86  47   0   1       21023 51023
58.5000      0.00000      0.00000
10309   2  86  47   0   1       21024 51024
58.5000      0.00000      0.00000
10310   2  86  47   0   1       21025 51025
58.5000      0.00000      0.00000

 ELEM MAT TYP REL ESY SEC TSHA        NODES

10318   2  86  47   0   1       20635 50635
58.5000      0.00000      0.00000
10319   2  86  47   0   1       20636 50636
58.5000      0.00000      0.00000
10320   2  86  47   0   1       20637 50637
58.5000      0.00000      0.00000
10321   2  86  47   0   1       20638 50638
58.5000      0.00000      0.00000
10322   2  86  47   0   1       20639 50639
58.5000      0.00000      0.00000
10323   2  86  47   0   1       20640 50640
58.5000      0.00000      0.00000
10324   2  86  47   0   1       20641 50641
58.5000      0.00000      0.00000
10325   2  86  47   0   1       20642 50642
58.5000      0.00000      0.00000
10326   2  86  47   0   1       20643 50643
58.5000      0.00000      0.00000
10327   2  86  47   0   1       20644 50644
58.5000      0.00000      0.00000
10328   2  86  47   0   1       20645 50645
58.5000      0.00000      0.00000
10329   2  86  47   0   1       20646 50646
58.5000      0.00000      0.00000
10330   2  86  47   0   1       20647 50647
58.5000      0.00000      0.00000
10331   2  86  47   0   1       20648 50648
58.5000      0.00000      0.00000
10339   2  86  47   0   1       20683 50683
58.5000      0.00000      0.00000
10340   2  86  47   0   1       20684 50684
58.5000      0.00000      0.00000
10341   2  86  47   0   1       20685 50685
58.5000      0.00000      0.00000
10342   2  86  47   0   1       20686 50686
58.5000      0.00000      0.00000
10343   2  86  47   0   1       20687 50687
58.5000      0.00000      0.00000
10344   2  86  47   0   1       20688 50688
58.5000      0.00000      0.00000

 ELEM MAT TYP REL ESY SEC TSHA        NODES

10345   2  86  47   0   1       20689 50689
58.5000      0.00000      0.00000
10346   2  86  47   0   1       20690 50690
58.5000      0.00000      0.00000
10347   2  86  47   0   1       20691 50691
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58.5000      0.00000      0.00000
10348   2  86  47   0   1       20692 50692
58.5000      0.00000      0.00000
10349   2  86  47   0   1       20693 50693
58.5000      0.00000      0.00000
10350   2  86  47   0   1       20694 50694
58.5000      0.00000      0.00000
10351   2  86  47   0   1       20695 50695
58.5000      0.00000      0.00000
10352   2  86  47   0   1       20696 50696
58.5000      0.00000      0.00000
10360   2  86  47   0   1       21060 51060
58.5000      0.00000      0.00000
10361   2  86  47   0   1       21059 51059
58.5000      0.00000      0.00000
10362   2  86  47   0   1       21058 51058
58.5000      0.00000      0.00000
10363   2  86  47   0   1       21057 51057
58.5000      0.00000      0.00000
10364   2  86  46   0   1         211 30211
  K           CV1          CV2
51.7500      0.00000      0.00000
10365   2  86  46   0   1         178 30178
51.7500      0.00000      0.00000
10366   2  86  47   0   1       20604 50604
  K           CV1          CV2
58.5000      0.00000      0.00000
10367   2  86  47   0   1       20605 50605
58.5000      0.00000      0.00000
10368   2  86  47   0   1       20606 50606
58.5000      0.00000      0.00000
10369   2  86  47   0   1       20607 50607
58.5000      0.00000      0.00000
10370   2  86  47   0   1       20608 50608
58.5000      0.00000      0.00000
10371   2  86  47   0   1       20609 50609
58.5000      0.00000      0.00000

 ELEM MAT TYP REL ESY SEC TSHA        NODES

10372   2  86  47   0   1       20610 50610
58.5000      0.00000      0.00000
10373   2  86  47   0   1       20611 50611
58.5000      0.00000      0.00000
10374   2  86  47   0   1       20612 50612
58.5000      0.00000      0.00000
10382   2  86  47   0   1       20746 50746
58.5000      0.00000      0.00000
10383   2  86  47   0   1       20747 50747
58.5000      0.00000      0.00000
10384   2  86  47   0   1       20748 50748
58.5000      0.00000      0.00000
10385   2  86  47   0   1       20749 50749
58.5000      0.00000      0.00000
10386   2  86  47   0   1       20750 50750
58.5000      0.00000      0.00000
10387   2  86  47   0   1       20751 50751
58.5000      0.00000      0.00000
10388   2  86  47   0   1       20752 50752
58.5000      0.00000      0.00000
10389   2  86  47   0   1       20753 50753
58.5000      0.00000      0.00000
10390   2  86  47   0   1       20754 50754
58.5000      0.00000      0.00000
10391   2  86  47   0   1       20755 50755
58.5000      0.00000      0.00000
10392   2  86  47   0   1       20756 50756
58.5000      0.00000      0.00000
10393   2  86  47   0   1       20757 50757
58.5000      0.00000      0.00000
10394   2  86  47   0   1       20758 50758
58.5000      0.00000      0.00000
10395   2  86  47   0   1       20759 50759
58.5000      0.00000      0.00000
10403   2  86  47   0   1       20794 50794
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  58.5000      0.00000      0.00000
  10404   2  86  47   0   1       20795 50795
  58.5000      0.00000      0.00000
  10405   2  86  47   0   1       20796 50796
  58.5000      0.00000      0.00000

   ELEM MAT TYP REL ESY SEC TSHA        NODES

  10406   2  86  47   0   1       20797 50797
  58.5000      0.00000      0.00000
  10407   2  86  47   0   1       20798 50798
  58.5000      0.00000      0.00000
  10408   2  86  47   0   1       20799 50799
  58.5000      0.00000      0.00000
  10409   2  86  47   0   1       20800 50800
  58.5000      0.00000      0.00000
  10410   2  86  47   0   1       20801 50801
  58.5000      0.00000      0.00000
  10411   2  86  47   0   1       20802 50802
  58.5000      0.00000      0.00000
  10412   2  86  47   0   1       20803 50803
  58.5000      0.00000      0.00000
  10413   2  86  47   0   1       20804 50804
  58.5000      0.00000      0.00000
  10414   2  86  47   0   1       20805 50805
  58.5000      0.00000      0.00000
  10415   2  86  47   0   1       20806 50806
  58.5000      0.00000      0.00000
  10416   2  86  47   0   1       20807 50807
  58.5000      0.00000      0.00000
  10424   2  86  47   0   1       20841 50841
  58.5000      0.00000      0.00000
  10425   2  86  47   0   1       20842 50842
  58.5000      0.00000      0.00000
  10426   2  86  47   0   1       20843 50843
  58.5000      0.00000      0.00000
  10427   2  86  47   0   1       20844 50844
  58.5000      0.00000      0.00000
  10428   2  86  47   0   1       20845 50845
  58.5000      0.00000      0.00000
  10429   2  86  47   0   1       20846 50846
  58.5000      0.00000      0.00000
  10430   2  86  47   0   1       20847 50847
  58.5000      0.00000      0.00000
  10431   2  86  47   0   1       20848 50848
  58.5000      0.00000      0.00000
  10432   2  86  47   0   1       20849 50849
  58.5000      0.00000      0.00000

   ELEM MAT TYP REL ESY SEC TSHA        NODES

  10433   2  86  46   0   1         214 30214
     K            CV1          CV2
  51.7500      0.00000      0.00000
  10434   2  86  46   0   1         215 30215
  51.7500      0.00000      0.00000
  10435   2  86  47   0   1       20730 50730
     K            CV1          CV2
  58.5000      0.00000      0.00000
  10436   2  86  47   0   1       20731 50731
  58.5000      0.00000      0.00000
  10437   2  86  47   0   1       20732 50732
  58.5000      0.00000      0.00000
  10438   2  86  47   0   1       20733 50733
  58.5000      0.00000      0.00000
  10446   2  86  47   0   2       20872 50872
  58.5000      0.00000      0.00000
  10447   2  86  47   0   1       20873 50873
  58.5000      0.00000      0.00000
  10448   2  86  47   0   1       20874 50874
  58.5000      0.00000      0.00000
  10449   2  86  47   0   1       20875 50875
  58.5000      0.00000      0.00000
  10450   2  86  47   0   1       20876 50876
  58.5000      0.00000      0.00000
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  10451   2  86  47   0   1       20877 50877
  58.5000      0.00000      0.00000
  10452   2  86  47   0   1       20878 50878
  58.5000      0.00000      0.00000
  10453   2  86  47   0   1       20879 50879
  58.5000      0.00000      0.00000
  10454   2  86  47   0   1       20880 50880
  58.5000      0.00000      0.00000
  10455   2  86  47   0   1       20881 50881
  58.5000      0.00000      0.00000
  10456   2  86  47   0   1       20882 50882
  58.5000      0.00000      0.00000
  10457   2  86  47   0   1       20883 50883
  58.5000      0.00000      0.00000
  10458   2  86  47   0   1       20884 50884
  58.5000      0.00000      0.00000
  10459   2  86  47   0   1       20885 50885
  58.5000      0.00000      0.00000

   ELEM MAT TYP REL ESY SEC TSHA        NODES

  10467   2  86  47   0   1       20920 50920
  58.5000      0.00000      0.00000
  10468   2  86  47   0   1       20921 50921
  58.5000      0.00000      0.00000
  10469   2  86  47   0   1       20922 50922
  58.5000      0.00000      0.00000
  10470   2  86  47   0   1       20923 50923
  58.5000      0.00000      0.00000
  10471   2  86  47   0   1       20924 50924
  58.5000      0.00000      0.00000
  10472   2  86  47   0   1       20925 50925
  58.5000      0.00000      0.00000
  10473   2  86  47   0   1       20926 50926
  58.5000      0.00000      0.00000
  10474   2  86  47   0   1       20927 50927
  58.5000      0.00000      0.00000
  10475   2  86  47   0   1       20928 50928
  58.5000      0.00000      0.00000
  10476   2  86  47   0   1       20929 50929
  58.5000      0.00000      0.00000
  10477   2  86  47   0   1       20930 50930
  58.5000      0.00000      0.00000
  10478   2  86  47   0   1       20931 50931
  58.5000      0.00000      0.00000
  10479   2  86  47   0   1       20932 50932
  58.5000      0.00000      0.00000
  10480   2  86  47   0   1       20933 50933
  58.5000      0.00000      0.00000
  10488   2  86  47   0   1       20967 50967
  58.5000      0.00000      0.00000
  10489   2  86  47   0   1       20968 50968
  58.5000      0.00000      0.00000
  10490   2  86  47   0   1       20969 50969
  58.5000      0.00000      0.00000
  10491   2  86  47   0   1       20970 50970
  58.5000      0.00000      0.00000
  10492   2  86  47   0   1       20971 50971
  58.5000      0.00000      0.00000
  10493   2  86  47   0   1       20972 50972
  58.5000      0.00000      0.00000

   ELEM MAT TYP REL ESY SEC TSHA        NODES

  10494   2  86  47   0   1       20973 50973
  58.5000      0.00000      0.00000
  10495   2  86  47   0   1       20974 50974
  58.5000      0.00000      0.00000
  10496   2  86  47   0   1       20975 50975
  58.5000      0.00000      0.00000
  10497   2  86  47   0   1       20976 50976
  58.5000      0.00000      0.00000
  10498   2  86  47   0   1       20977 50977
  58.5000      0.00000      0.00000
  10499   2  86  47   0   1       20978 50978
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 58.5000       0.00000      0.00000
 10500  2  86  47   0   1       20979 50979
 58.5000       0.00000      0.00000
 10501  2  86  47   0   1       20980 50980
 58.5000       0.00000      0.00000
 10502  2  86  46   0   1         361 30361
   K           CV1          CV2
 51.7500       0.00000      0.00000
 10503  2  86  45   0   1         362 30362
   K           CV1          CV2
 22.5000       0.00000      0.00000
 10506  2  86  44   0   1       20633 50633
   K           CV1          CV2
 29.2500       0.00000      0.00000
 10507  1  86  44   0   1       21011 51011
 29.2500       0.00000      0.00000
 10508  1  86  44   0   1       20634 50634
 29.2500       0.00000      0.00000
 10509  1  86  44   0   1       20681 50681
 29.2500       0.00000      0.00000
 10510  1  86  44   0   1       20682 50682
 29.2500       0.00000      0.00000
 10511  1  86  44   0   1       21056 51056
 29.2500       0.00000      0.00000
 10512  1  86  44   0   1       20603 50603
 29.2500       0.00000      0.00000
 10513  1  86  44   0   1       20744 50744
 29.2500       0.00000      0.00000
 10514  1  86  44   0   1       20745 50745
 29.2500       0.00000      0.00000
 10515  1  86  44   0   1       20792 50792
 29.2500       0.00000      0.00000

  ELEM MAT TYP REL ESY SEC TSHA        NODES

 10516  1  86  44   0   1       20793 50793
 29.2500       0.00000      0.00000
 10517  1  86  44   0   1       20840 50840
 29.2500       0.00000      0.00000
 10518  1  86  44   0   1       20729 50729
 29.2500       0.00000      0.00000
 10519  1  86  44   0   1       20870 50870
 29.2500       0.00000      0.00000
 10520  1  86  44   0   1       20871 50871
 29.2500       0.00000      0.00000
 10521  1  86  44   0   1       20918 50918
 29.2500       0.00000      0.00000
 10522  1  86  44   0   1       20919 50919
 29.2500       0.00000      0.00000
 10523  1  86  44   0   1       20966 50966
 29.2500       0.00000      0.00000
 10628  2   1   2   0   1       51062 51063 51095 51094
 10629  2   1   2   0   1       51063 51061 51065 51095
 10630  2   1   2   0   1       51094 51095 51096 51093
 10631  2   1   2   0   1       51095 51065 51066 51096
 10632  2   1   2   0   1       51093 51096 51097 51092
 10633  2   1   2   0   1       51096 51066 51067 51097
 10634  2   1   2   0   1       51092 51097 51098 51091
 10635  2   1   2   0   1       51097 51067 51068 51098
 10636  2   1   2   0   1       51091 51098 51099 51090
 10637  2   1   2   0   1       51098 51068 51069 51099
 10638  2   1   2   0   1       51090 51099 51100 51089
 10639  2   1   2   0   1       51099 51069 51070 51100

  ELEM MAT TYP REL ESY SEC TSHA        NODES

 10640  2   1   2   0   1       51089 51100 51101 51088
 10641  2   1   2   0   1       51100 51070 51071 51101
 10642  2   1   2   0   1       51088 51101 51102 51087
 10643  2   1   2   0   1       51101 51071 51072 51102
 10644  2   1   2   0   1       51087 51102 51103 51086
 10645  2   1   2   0   1       51102 51072 51073 51103
 10646  2   1   2   0   1       51086 51103 51104 51085
 10647  2   1   2   0   1       51103 51073 51074 51104
 10648  2   1   2   0   1       51085 51104 51105 51084
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 10649  2   1   2   0   1       51104 51074 51075 51105
 10650  2   1   2   0   1       51084 51105 51106 51083
 10651  2   1   2   0   1       51105 51075 51076 51106
 10652  2   1   2   0   1       51083 51106 51107 51082
 10653  2   1   2   0   1       51106 51076 51077 51107
 10654  2   1   2   0   1       51082 51107 51108 51081
 10655  2   1   2   0   1       51107 51077 51078 51108
 10656  2   1   2   0   1       51081 51108 51080 51079
 10657  2   1   2   0   1       51108 51078 51064 51080
 10658  2   1   2   0   1           3 21028 51137 51123
 10659  2   1   2   0   1       21028 21029 51151 51137

  ELEM MAT TYP REL ESY SEC TSHA        NODES

 10660  2   1   2   0   1       21029 21030 51165 51151
 10661  2   1   2   0   1       21030 21031 51179 51165
 10662  2   1   2   0   1       21031 21032 51193 51179
 10663  2   1   2   0   1       21032 21033 51207 51193
 10664  2   1   2   0   1       21033 21034 51221 51207
 10665  2   1   2   0   1       21034 21035 51235 51221
 10666  2   1   2   0   1       21035 21036 51249 51235
 10667  2   1   2   0   1       21036 21037 51263 51249
 10668  2   1   2   0   1       21037 21038 51277 51263
 10669  2   1   2   0   1       21038 21039 51291 51277
 10670  2   1   2   0   1       21039 21040 51305 51291
 10671  2   1   2   0   1       21040 21041 51319 51305
 10672  2   1   2   0   1       21041 21026 51109 51319
 10673  2   1   2   0   1       51123 51137 51138 51124
 10674  2   1   2   0   1       51137 51151 51152 51138
 10675  2   1   2   0   1       51151 51165 51166 51152
 10676  2   1   2   0   1       51165 51179 51180 51166
 10677  2   1   2   0   1       51179 51193 51194 51180
 10678  2   1   2   0   1       51193 51207 51208 51194
 10679  2   1   2   0   1       51207 51221 51222 51208

  ELEM MAT TYP REL ESY SEC TSHA        NODES

 10680  2   1   2   0   1       51221 51235 51236 51222
 10681  2   1   2   0   1       51235 51249 51250 51236
 10682  2   1   2   0   1       51249 51263 51264 51250
 10683  2   1   2   0   1       51263 51277 51278 51264
 10684  2   1   2   0   1       51277 51291 51292 51278
 10685  2   1   2   0   1       51291 51305 51306 51292
 10686  2   1   2   0   1       51305 51319 51320 51306
 10687  2   1   2   0   1       51319 51109 51110 51320
 10688  2   1   2   0   1       51124 51138 51139 51125
 10689  2   1   2   0   1       51138 51152 51153 51139
 10690  2   1   2   0   1       51152 51166 51167 51153
 10691  2   1   2   0   1       51166 51180 51181 51167
 10692  2   1   2   0   1       51180 51194 51195 51181
 10693  2   1   2   0   1       51194 51208 51209 51195
 10694  2   1   2   0   1       51208 51222 51223 51209
 10695  2   1   2   0   1       51222 51236 51237 51223
 10696  2   1   2   0   1       51236 51250 51251 51237
 10697  2   1   2   0   1       51250 51264 51265 51251
 10698  2   1   2   0   1       51264 51278 51279 51265
 10699  2   1   2   0   1       51278 51292 51293 51279

  ELEM MAT TYP REL ESY SEC TSHA        NODES

 10700  2   1   2   0   1       51292 51306 51307 51293
 10701  2   1   2   0   1       51306 51320 51321 51307
 10702  2   1   2   0   1       51320 51110 51111 51321
 10703  2   1   2   0   1       51125 51139 51140 51126
 10704  2   1   2   0   1       51139 51153 51154 51140
 10705  2   1   2   0   1       51153 51167 51168 51154
 10706  2   1   2   0   1       51167 51181 51182 51168
 10707  2   1   2   0   1       51181 51195 51196 51182
 10708  2   1   2   0   1       51195 51209 51210 51196
 10709  2   1   2   0   1       51209 51223 51224 51210
 10710  2   1   2   0   1       51223 51237 51238 51224
 10711  2   1   2   0   1       51237 51251 51252 51238
 10712  2   1   2   0   1       51251 51265 51266 51252
 10713  2   1   2   0   1       51265 51279 51280 51266
 10714  2   1   2   0   1       51279 51293 51294 51280
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ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10715	2	1	2	0	1		51293 51307 51308 51294
10716	2	1	2	0	1		51307 51321 51322 51308
10717	2	1	2	0	1		51321 51111 51112 51322
10718	2	1	2	0	1		51126 51140 51141 51127
10719	2	1	2	0	1		51140 51154 51155 51141

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10720	2	1	2	0	1		51154 51168 51169 51155
10721	2	1	2	0	1		51168 51182 51183 51169
10722	2	1	2	0	1		51182 51196 51197 51183
10723	2	1	2	0	1		51196 51210 51211 51197
10724	2	1	2	0	1		51210 51224 51225 51211
10725	2	1	2	0	1		51224 51238 51239 51225
10726	2	1	2	0	1		51238 51252 51253 51239
10727	2	1	2	0	1		51252 51266 51267 51253
10728	2	1	2	0	1		51266 51280 51281 51267
10729	2	1	2	0	1		51280 51294 51295 51281
10730	2	1	2	0	1		51294 51308 51309 51295
10731	2	1	2	0	1		51308 51322 51323 51309
10732	2	1	2	0	1		51322 51112 51113 51323
10733	2	1	2	0	1		51127 51141 51142 51128
10734	2	1	2	0	1		51141 51155 51156 51142
10735	2	1	2	0	1		51155 51169 51170 51156
10736	2	1	2	0	1		51169 51183 51184 51170
10737	2	1	2	0	1		51183 51197 51198 51184
10738	2	1	2	0	1		51197 51211 51212 51198
10739	2	1	2	0	1		51211 51225 51226 51212

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10740	2	1	2	0	1		51225 51239 51240 51226
10741	2	1	2	0	1		51239 51253 51254 51240
10742	2	1	2	0	1		51253 51267 51268 51254
10743	2	1	2	0	1		51267 51281 51282 51268
10744	2	1	2	0	1		51281 51295 51296 51282
10745	2	1	2	0	1		51295 51309 51310 51296
10746	2	1	2	0	1		51309 51323 51324 51310
10747	2	1	2	0	1		51323 51113 51114 51324
10748	2	1	2	0	1		51128 51142 51143 51129
10749	2	1	2	0	1		51142 51156 51157 51143
10750	2	1	2	0	1		51156 51170 51171 51157
10751	2	1	2	0	1		51170 51184 51185 51171
10752	2	1	2	0	1		51184 51198 51199 51185
10753	2	1	2	0	1		51198 51212 51213 51199
10754	2	1	2	0	1		51212 51226 51227 51213
10755	2	1	2	0	1		51226 51240 51241 51227
10756	2	1	2	0	1		51240 51254 51255 51241
10757	2	1	2	0	1		51254 51268 51269 51255
10758	2	1	2	0	1		51268 51282 51283 51269
10759	2	1	2	0	1		51282 51296 51297 51283

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10760	2	1	2	0	1		51296 51310 51311 51297
10761	2	1	2	0	1		51310 51324 51325 51311
10762	2	1	2	0	1		51324 51114 51115 51325
10763	2	1	2	0	1		51129 51143 51144 51130
10764	2	1	2	0	1		51143 51157 51158 51144
10765	2	1	2	0	1		51157 51171 51172 51158
10766	2	1	2	0	1		51171 51185 51186 51172
10767	2	1	2	0	1		51185 51199 51200 51186
10768	2	1	2	0	1		51199 51213 51214 51200
10769	2	1	2	0	1		51213 51227 51228 51214
10770	2	1	2	0	1		51227 51241 51242 51228
10771	2	1	2	0	1		51241 51255 51256 51242
10772	2	1	2	0	1		51255 51269 51270 51256
10773	2	1	2	0	1		51269 51283 51284 51270
10774	2	1	2	0	1		51283 51297 51298 51284
10775	2	1	2	0	1		51297 51311 51312 51298
10776	2	1	2	0	1		51311 51325 51326 51312
10777	2	1	2	0	1		51325 51115 51116 51326
10778	2	1	2	0	1		51130 51144 51145 51131
10779	2	1	2	0	1		51144 51158 51159 51145

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10780	2	1	2	0	1		51158 51172 51173 51159
10781	2	1	2	0	1		51172 51186 51187 51173
10782	2	1	2	0	1		51186 51200 51201 51187
10783	2	1	2	0	1		51200 51214 51215 51201
10784	2	1	2	0	1		51214 51228 51229 51215
10785	2	1	2	0	1		51228 51242 51243 51229
10786	2	1	2	0	1		51242 51256 51257 51243
10787	2	1	2	0	1		51256 51270 51271 51257
10788	2	1	2	0	1		51270 51284 51285 51271
10789	2	1	2	0	1		51284 51298 51299 51285
10790	2	1	2	0	1		51298 51312 51313 51299
10791	2	1	2	0	1		51312 51326 51327 51313
10792	2	1	2	0	1		51326 51116 51117 51327
10793	2	1	2	0	1		51131 51145 51146 51132
10794	2	1	2	0	1		51145 51159 51160 51146
10795	2	1	2	0	1		51159 51173 51174 51160
10796	2	1	2	0	1		51173 51187 51188 51174
10797	2	1	2	0	1		51187 51201 51202 51188
10798	2	1	2	0	1		51201 51215 51216 51202
10799	2	1	2	0	1		51215 51229 51230 51216

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10800	2	1	2	0	1		51229 51243 51244 51230
10801	2	1	2	0	1		51243 51257 51258 51244
10802	2	1	2	0	1		51257 51271 51272 51258
10803	2	1	2	0	1		51271 51285 51286 51272
10804	2	1	2	0	1		51285 51299 51300 51286
10805	2	1	2	0	1		51299 51313 51314 51300
10806	2	1	2	0	1		51313 51327 51328 51314
10807	2	1	2	0	1		51327 51117 51118 51328
10808	2	1	2	0	1		51132 51146 51147 51133
10809	2	1	2	0	1		51146 51160 51161 51147
10810	2	1	2	0	1		51160 51174 51175 51161
10811	2	1	2	0	1		51174 51188 51189 51175
10812	2	1	2	0	1		51188 51202 51203 51189
10813	2	1	2	0	1		51202 51216 51217 51203
10814	2	1	2	0	1		51216 51230 51231 51217
10815	2	1	2	0	1		51230 51244 51245 51231
10816	2	1	2	0	1		51244 51258 51259 51245
10817	2	1	2	0	1		51258 51272 51273 51259
10818	2	1	2	0	1		51272 51286 51287 51273
10819	2	1	2	0	1		51286 51300 51301 51287

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10820	2	1	2	0	1		51300 51314 51315 51301
10821	2	1	2	0	1		51314 51328 51329 51315
10822	2	1	2	0	1		51328 51118 51119 51329
10823	2	1	2	0	1		51133 51147 51148 51134
10824	2	1	2	0	1		51147 51161 51162 51148
10825	2	1	2	0	1		51161 51175 51176 51162
10826	2	1	2	0	1		51175 51189 51190 51176
10827	2	1	2	0	1		51189 51203 51204 51190
10828	2	1	2	0	1		51203 51217 51218 51204
10829	2	1	2	0	1		51217 51231 51232 51218
10830	2	1	2	0	1		51231 51245 51246 51232
10831	2	1	2	0	1		51245 51259 51260 51246
10832	2	1	2	0	1		51259 51273 51274 51260
10833	2	1	2	0	1		51273 51287 51288 51274
10834	2	1	2	0	1		51287 51301 51302 51288
10835	2	1	2	0	1		51301 51315 51316 51302
10836	2	1	2	0	1		51315 51329 51330 51316
10837	2	1	2	0	1		51329 51119 51120 51330
10838	2	1	2	0	1		51134 51148 51149 51135
10839	2	1	2	0	1		51148 51162 51163 51149

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10840	2	1	2	0	1		51162 51176 51177 51163
10841	2	1	2	0	1		51176 51190 51191 51177
10842	2	1	2	0	1		51190 51204 51205 51191
10843	2	1	2	0	1		51204 51218 51219 51205

10844	2	1	2	0	1	51218 51232 51233 51219
10845	2	1	2	0	1	51232 51246 51247 51233
10846	2	1	2	0	1	51246 51260 51261 51247
10847	2	1	2	0	1	51260 51274 51275 51261
10848	2	1	2	0	1	51274 51288 51289 51275
10849	2	1	2	0	1	51288 51302 51303 51289
10850	2	1	2	0	1	51302 51316 51317 51303
10851	2	1	2	0	1	51316 51330 51331 51317
10852	2	1	2	0	1	51330 51120 51121 51331
10853	2	1	2	0	1	51135 51149 51150 51136
10854	2	1	2	0	1	51149 51163 51164 51150
10855	2	1	2	0	1	51163 51177 51178 51164
10856	2	1	2	0	1	51177 51191 51192 51178
10857	2	1	2	0	1	51191 51205 51206 51192
10858	2	1	2	0	1	51205 51219 51220 51206
10859	2	1	2	0	1	51219 51233 51234 51220

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10860	2	1	2	0	1		51233 51247 51248 51234
10861	2	1	2	0	1		51247 51261 51262 51248
10862	2	1	2	0	1		51261 51275 51276 51262
10863	2	1	2	0	1		51275 51289 51290 51276
10864	2	1	2	0	1		51289 51303 51304 51290
10865	2	1	2	0	1		51303 51317 51318 51304
10866	2	1	2	0	1		51317 51331 51332 51318
10867	2	1	2	0	1		51331 51121 51122 51332
10868	2	1	2	0	1		51136 51150 51081 51079
10869	2	1	2	0	1		51150 51164 51082 51081
10870	2	1	2	0	1		51164 51178 51083 51082
10871	2	1	2	0	1		51178 51192 51084 51083
10872	2	1	2	0	1		51192 51206 51085 51084
10873	2	1	2	0	1		51206 51220 51086 51085
10874	2	1	2	0	1		51220 51234 51087 51086
10875	2	1	2	0	1		51234 51248 51088 51087
10876	2	1	2	0	1		51248 51262 51089 51088
10877	2	1	2	0	1		51262 51276 51090 51089
10878	2	1	2	0	1		51276 51290 51091 51090
10879	2	1	2	0	1		51290 51304 51092 51091

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10880	2	1	2	0	1		51304 51318 51093 51092
10881	2	1	2	0	1		51318 51332 51094 51093
10882	2	1	2	0	1		51332 51122 51062 51094
10883	2	1	2	0	1		51334 51335 51347 51346
10884	2	1	2	0	1		51335 51333 51337 51347
10885	2	1	2	0	1		51346 51347 51348 51345
10886	2	1	2	0	1		51347 51337 51338 51348
10887	2	1	2	0	1		51345 51348 51349 51344
10888	2	1	2	0	1		51348 51338 51339 51349
10889	2	1	2	0	1		51344 51349 51350 51343
10890	2	1	2	0	1		51349 51339 51340 51350
10891	2	1	2	0	1		51343 51350 51342 51341
10892	2	1	2	0	1		51350 51340 51336 51342
10893	2	1	2	0	1		20651 20665 51394 51380
10894	2	1	2	0	1		20665 20664 51408 51394
10895	2	1	2	0	1		20664 20663 51422 51408
10896	2	1	2	0	1		20663 20662 52436 52422
10897	2	1	2	0	1		20662 20661 51450 51436
10898	2	1	2	0	1		20661 20660 51464 51450
10899	2	1	2	0	1		20660 20659 51478 51464

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10900	2	1	2	0	1		20659 20658 51492 51478
10901	2	1	2	0	1		20658 20657 51506 51492
10902	2	1	2	0	1		20657 20656 51520 51506
10903	2	1	2	0	1		20656 20655 51534 51520
10904	2	1	2	0	1		20655 20654 51548 51534
10905	2	1	2	0	1		20654 20653 51562 51548
10906	2	1	2	0	1		20653 20652 51576 51562
10907	2	1	2	0	1		20652 20649 51352 51576
10908	2	1	2	0	1		51380 51394 51395 51381
10909	2	1	2	0	1		51394 51408 51409 51395

10910	2	1	2	0	1	51408 51422 51423 51409
10911	2	1	2	0	1	51422 51436 51437 51423
10912	2	1	2	0	1	51436 51450 51451 51437
10913	2	1	2	0	1	51450 51464 51465 51451
10914	2	1	2	0	1	51464 51478 51479 51465
10915	2	1	2	0	1	51478 51492 51493 51479
10916	2	1	2	0	1	51492 51506 51507 51493
10917	2	1	2	0	1	51506 51520 51521 51507
10918	2	1	2	0	1	51520 51534 51535 51521
10919	2	1	2	0	1	51534 51548 51549 51535

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10920	2	1	2	0	1		51548 51562 51563 51549
10921	2	1	2	0	1		51562 51576 51577 51563
10922	2	1	2	0	1		51576 51352 51353 51577
10923	2	1	2	0	1		51381 51395 51396 51382
10924	2	1	2	0	1		51395 51409 51410 51396
10925	2	1	2	0	1		51409 51423 51424 51410
10926	2	1	2	0	1		51423 51437 51438 51424
10927	2	1	2	0	1		51437 51451 51452 51438
10928	2	1	2	0	1		51451 51465 51466 51452
10929	2	1	2	0	1		51465 51479 51480 51466
10930	2	1	2	0	1		51479 51493 51494 51480
10931	2	1	2	0	1		51493 51507 51508 51494
10932	2	1	2	0	1		51507 51521 51522 51508
10933	2	1	2	0	1		51521 51535 51536 51522
10934	2	1	2	0	1		51535 51549 51550 51536
10935	2	1	2	0	1		51549 51563 51564 51550
10936	2	1	2	0	1		51563 51577 51578 51564
10937	2	1	2	0	1		51577 51353 51354 51578
10938	2	1	2	0	1		51382 51396 51397 51383
10939	2	1	2	0	1		51396 51410 51411 51397

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10940	2	1	2	0	1		51410 51424 51425 51411
10941	2	1	2	0	1		51424 51438 51439 51425
10942	2	1	2	0	1		51438 51452 51453 51439
10943	2	1	2	0	1		51452 51466 51467 51453
10944	2	1	2	0	1		51466 51480 51481 51467
10945	2	1	2	0	1		51480 51494 51495 51481
10946	2	1	2	0	1		51494 51508 51509 51495
10947	2	1	2	0	1		51508 51522 51523 51509
10948	2	1	2	0	1		51522 51536 51537 51523
10949	2	1	2	0	1		51536 51550 51551 51537
10950	2	1	2	0	1		51550 51564 51565 51551
10951	2	1	2	0	1		51564 51578 51579 51565
10952	2	1	2	0	1		51578 51354 51355 51579
10953	2	1	2	0	1		51383 51397 51398 51384
10954	2	1	2	0	1		51397 51411 51412 51398
10955	2	1	2	0	1		51411 51425 51426 51412
10956	2	1	2	0	1		51425 51439 51440 51426
10957	2	1	2	0	1		51439 51453 51454 51440
10958	2	1	2	0	1		51453 51467 51468 51454
10959	2	1	2	0	1		51467 51481 51482 51468

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10960	2	1	2	0	1		51481 51495 51496 51482
10961	2	1	2	0	1		51495 51509 51510 51496
10962	2	1	2	0	1		51509 51523 51524 51510
10963	2	1	2	0	1		51523 51537 51538 51524
10964	2	1	2	0	1		51537 51551 51552 51538
10965	2	1	2	0	1		51551 51565 51566 51552
10966	2	1	2	0	1		51565 51579 51580 51566
10967	2	1	2	0	1		51579 51355 51356 51580
10968	2	1	2	0	1		51384 51398 51399 51385
10969	2	1	2	0	1		51398 51412 51413 51399
10970	2	1	2	0	1		51412 51426 51427 51413
10971	2	1	2	0	1		51426 51440 51441 51427
10972	2	1	2	0	1		51440 51454 51455 51441
10973	2	1	2	0	1		51454 51468 51469 51455
10974	2	1	2	0	1		51468 51482 51483 51469
10975	2	1	2	0	1		51482 51496 51497 51483

532

10976	2	1	2	0	1		51496 51510 51511 51497
10977	2	1	2	0	1		51510 51524 51525 51511
10978	2	1	2	0	1		51524 51538 51539 51525
10979	2	1	2	0	1		51538 51552 51553 51539

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
10980	2	1	2	0	1		51552 51566 51567 51553
10981	2	1	2	0	1		51566 51580 51581 51567
10982	2	1	2	0	1		51580 51356 51357 51581
10983	2	1	2	0	1		51385 51399 51400 51386
10984	2	1	2	0	1		51399 51413 51414 51400
10985	2	1	2	0	1		51413 51427 51428 51414
10986	2	1	2	0	1		51427 51441 51442 51428
10987	2	1	2	0	1		51441 51455 51456 51442
10988	2	1	2	0	1		51455 51469 51470 51456
10989	2	1	2	0	1		51469 51483 51484 51470
10990	2	1	2	0	1		51483 51497 51498 51484
10991	2	1	2	0	1		51497 51511 51512 51498
10992	2	1	2	0	1		51511 51525 51526 51512
10993	2	1	2	0	1		51525 51539 51540 51526
10994	2	1	2	0	1		51539 51553 51554 51540
10995	2	1	2	0	1		51553 51567 51568 51554
10996	2	1	2	0	1		51567 51581 51582 51568
10997	2	1	2	0	1		51581 51357 51358 51582
10998	2	1	2	0	1		51386 51400 51401 51387
10999	2	1	2	0	1		51400 51414 51415 51401

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11000	2	1	2	0	1		51414 51428 51429 51415
11001	2	1	2	0	1		51428 51442 51443 51429
11002	2	1	2	0	1		51442 51456 51457 51443
11003	2	1	2	0	1		51456 51470 51471 51457
11004	2	1	2	0	1		51470 51484 51485 51471
11005	2	1	2	0	1		51484 51498 51499 51485
11006	2	1	2	0	1		51498 51512 51513 51499
11007	2	1	2	0	1		51512 51526 51527 51513
11008	2	1	2	0	1		51526 51540 51541 51527
11009	2	1	2	0	1		51540 51554 51555 51541
11010	2	1	2	0	1		51554 51568 51569 51555
11011	2	1	2	0	1		51568 51582 51583 51569
11012	2	1	2	0	1		51582 51358 51359 51583
11013	2	1	2	0	1		51387 51401 51402 51388
11014	2	1	2	0	1		51401 51415 51416 51402
11015	2	1	2	0	1		51415 51429 51430 51416
11016	2	1	2	0	1		51429 51443 51444 51430
11017	2	1	2	0	1		51443 51457 51458 51444
11018	2	1	2	0	1		51457 51471 51472 51458
11019	2	1	2	0	1		51471 51485 51486 51472

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11020	2	1	2	0	1		51485 51499 51500 51486
11021	2	1	2	0	1		51499 51513 51514 51500
11022	2	1	2	0	1		51513 51527 51528 51514
11023	2	1	2	0	1		51527 51541 51542 51528
11024	2	1	2	0	1		51541 51555 51556 51542
11025	2	1	2	0	1		51555 51569 51570 51556
11026	2	1	2	0	1		51569 51583 51584 51570
11027	2	1	2	0	1		51583 51359 51360 51584
11028	2	1	2	0	1		51388 51402 51403 51389
11029	2	1	2	0	1		51402 51416 51417 51403
11030	2	1	2	0	1		51416 51430 51431 51417
11031	2	1	2	0	1		51430 51444 51445 51431
11032	2	1	2	0	1		52444 51458 51459 51445
11033	2	1	2	0	1		51458 51472 51473 51459
11034	2	1	2	0	1		51472 51486 51487 51473
11035	2	1	2	0	1		51486 51500 51501 51487
11036	2	1	2	0	1		51500 51514 51515 51501
11037	2	1	2	0	1		51514 51528 51529 51515
11038	2	1	2	0	1		51528 51542 51543 51529
11039	2	1	2	0	1		51542 51556 51557 51543

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES

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11040	2	1	2	0	1		51556 51570 51571 51557
11041	2	1	2	0	1		51570 51584 51585 51571
11042	2	1	2	0	1		51584 51360 51361 51585
11043	2	1	2	0	1		51389 51403 51404 51390
11044	2	1	2	0	1		51403 51417 51418 51404
11045	2	1	2	0	1		51417 51431 51432 51418
11046	2	1	2	0	1		51431 51445 51446 51432
11047	2	1	2	0	1		51445 51459 51460 51446
11048	2	1	2	0	1		51459 51473 51474 51460
11049	2	1	2	0	1		51473 51487 51488 51474
11050	2	1	2	0	1		51487 51501 51502 51488
11051	2	1	2	0	1		51501 51515 51516 51502
11052	2	1	2	0	1		51515 51529 51530 51516
11053	2	1	2	0	1		51529 51543 51544 51530
11054	2	1	2	0	1		51543 51557 51558 51544
11055	2	1	2	0	1		51557 51571 51572 51558
11056	2	1	2	0	1		51571 51585 51586 51572
11057	2	1	2	0	1		51585 51361 51362 51586
11058	2	1	2	0	1		51390 51404 51405 51391
11059	2	1	2	0	1		51404 51418 51419 51405

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11060	2	1	2	0	1		51418 51432 51433 51419
11061	2	1	2	0	1		51432 51446 51447 51433
11062	2	1	2	0	1		51446 51460 51461 51447
11063	2	1	2	0	1		51460 51474 51475 51461
11064	2	1	2	0	1		51474 51488 51489 51475
11065	2	1	2	0	1		51488 51502 51503 51489
11066	2	1	2	0	1		51502 51516 51517 51503
11067	2	1	2	0	1		51516 51530 51531 51517
11068	2	1	2	0	1		51530 51544 51545 51531
11069	2	1	2	0	1		51544 51558 51559 51545
11070	2	1	2	0	1		51558 51572 51573 51559
11071	2	1	2	0	1		51572 51586 51587 51573
11072	2	1	2	0	1		51586 51362 51363 51587
11073	2	1	2	0	1		51391 51405 51406 51392
11074	2	1	2	0	1		51405 51419 51420 51406
11075	2	1	2	0	1		51419 51433 51434 51420
11076	2	1	2	0	1		51433 51447 51448 51434
11077	2	1	2	0	1		51447 51461 51462 51448
11078	2	1	2	0	1		51461 51475 51476 51462
11079	2	1	2	0	1		51475 51489 51490 51476

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11080	2	1	2	0	1		51489 51503 51504 51490
11081	2	1	2	0	1		51503 51517 51518 51504
11082	2	1	2	0	1		51517 51531 51532 51518
11083	2	1	2	0	1		51531 51545 51546 51532
11084	2	1	2	0	1		51545 51559 51560 51546
11085	2	1	2	0	1		51559 51573 51574 51560
11086	2	1	2	0	1		51573 51587 51588 51574
11087	2	1	2	0	1		51587 51363 51364 51588
11088	2	1	2	0	1		51392 51406 51407 51393
11089	2	1	2	0	1		51406 51420 51421 51407
11090	2	1	2	0	1		51420 51434 51435 51421
11091	2	1	2	0	1		51434 51448 51449 51435
11092	2	1	2	0	1		51448 51462 51463 51449
11093	2	1	2	0	1		51462 51476 51477 51463
11094	2	1	2	0	1		51476 51490 51491 51477
11095	2	1	2	0	1		51490 51504 51505 51491
11096	2	1	2	0	1		51504 51518 51519 51505
11097	2	1	2	0	1		51518 51532 51533 51519
11098	2	1	2	0	1		51532 51546 51547 51533
11099	2	1	2	0	1		51546 51560 51561 51547

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11100	2	1	2	0	1		51560 51574 51575 51561
11101	2	1	2	0	1		51574 51588 51589 51575
11102	2	1	2	0	1		51588 51364 51365 51589
11103	2	1	2	0	1		51393 51407 51366 51062
11104	2	1	2	0	1		51407 51421 51367 51366

11105	2	1	2	0	1		51421 51435 51368 51367
11106	2	1	2	0	1		51435 51449 51369 51368
11107	2	1	2	0	1		51449 51463 51370 51369
11108	2	1	2	0	1		51463 51477 51371 51370
11109	2	1	2	0	1		51477 51491 51372 51371
11110	2	1	2	0	1		51491 51505 51373 51372
11111	2	1	2	0	1		51505 51519 51374 51373
11112	2	1	2	0	1		51519 51533 51375 51374
11113	2	1	2	0	1		51533 51547 51376 51375
11114	2	1	2	0	1		51547 51561 51377 51376
11115	2	1	2	0	1		51561 51575 51378 51377
11116	2	1	2	0	1		51575 51589 51379 51378
11117	2	1	2	0	1		51589 51365 51351 51379
11118	2	1	2	0	1		20810 20824 51634 51620
11119	2	1	2	0	1		20824 20823 51648 51634

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11120	2	1	2	0	1		20823 20822 51662 51648
11121	2	1	2	0	1		20822 20821 51676 51662
11122	2	1	2	0	1		20821 20820 51690 51676
11123	2	1	2	0	1		20820 20819 51704 51690
11124	2	1	2	0	1		20819 20818 51718 51704
11125	2	1	2	0	1		20818 20817 51732 51718
11126	2	1	2	0	1		20817 20816 51746 51732
11127	2	1	2	0	1		20816 20815 51760 51746
11128	2	1	2	0	1		20815 20814 51774 51760
11129	2	1	2	0	1		20814 20813 51788 51774
11130	2	1	2	0	1		20813 20812 51802 51788
11131	2	1	2	0	1		20812 20811 51816 51802
11132	2	1	2	0	1		20811 20808 51591 51816
11133	2	1	2	0	1		51620 51634 51635 51621
11134	2	1	2	0	1		51634 51648 51649 51635
11135	2	1	2	0	1		51648 51662 51663 51649
11136	2	1	2	0	1		51662 51676 51677 51663
11137	2	1	2	0	1		51676 51690 51691 51677
11138	2	1	2	0	1		51690 51704 51705 51691
11139	2	1	2	0	1		51704 51718 51719 51705

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11140	2	1	2	0	1		51718 51732 51733 51719
11141	2	1	2	0	1		51732 51746 51747 51733
11142	2	1	2	0	1		51746 51760 51761 51747
11143	2	1	2	0	1		51760 51774 51775 51761
11144	2	1	2	0	1		51774 51788 51789 51775
11145	2	1	2	0	1		51788 51802 51803 51789
11146	2	1	2	0	1		51802 51816 51817 51803
11147	2	1	2	0	1		51816 51591 51592 51817
11148	2	1	2	0	1		51621 51635 51636 51622
11149	2	1	2	0	1		51635 51649 51650 51636
11150	2	1	2	0	1		51649 51663 51664 51650
11151	2	1	2	0	1		51663 51677 51678 51664
11152	2	1	2	0	1		51677 51691 51692 51678
11153	2	1	2	0	1		51691 51705 51706 51692
11154	2	1	2	0	1		51705 51719 51720 51706
11155	2	1	2	0	1		51719 51733 51734 51720
11156	2	1	2	0	1		51733 51747 51748 51734
11157	2	1	2	0	1		51747 51761 51762 51748
11158	2	1	2	0	1		51761 51775 51776 51762
11159	2	1	2	0	1		51775 51789 51790 51776

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11160	2	1	2	0	1		51789 51803 51804 51790
11161	2	1	2	0	1		51803 51817 51818 51804
11162	2	1	2	0	1		51817 51592 51593 51818
11163	2	1	2	0	1		51622 51636 51637 51623
11164	2	1	2	0	1		51636 51650 51651 51637
11165	2	1	2	0	1		51650 51664 51665 51651
11166	2	1	2	0	1		51664 51678 51679 51665
11167	2	1	2	0	1		51678 51692 51693 51679
11168	2	1	2	0	1		51692 51706 51707 51693
11169	2	1	2	0	1		51706 51720 51721 51707
11170	2	1	2	0	1		51720 51734 51735 51721

11171	2	1	2	0	1		51734 51748 51749 51735
11172	2	1	2	0	1		51748 51762 51763 51749
11173	2	1	2	0	1		51762 51776 51777 51763
11174	2	1	2	0	1		51776 51790 51791 51777
11175	2	1	2	0	1		51790 51804 51805 51791
11176	2	1	2	0	1		51804 51818 51819 51805
11177	2	1	2	0	1		51818 51593 51594 51819
11178	2	1	2	0	1		51623 51637 51638 51624
11179	2	1	2	0	1		51637 51651 51652 51638

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11180	2	1	2	0	1		51651 51665 51666 51652
11181	2	1	2	0	1		51665 51679 51680 51666
11182	2	1	2	0	1		51679 51693 51694 51680
11183	2	1	2	0	1		51693 51707 51708 51694
11184	2	1	2	0	1		51707 51721 51722 51708
11185	2	1	2	0	1		51721 51735 51736 51722
11186	2	1	2	0	1		51735 51749 51750 51736
11187	2	1	2	0	1		51749 51763 51764 51750
11188	2	1	2	0	1		51763 51777 51778 51764
11189	2	1	2	0	1		51777 51791 51792 51778
11190	2	1	2	0	1		51791 51805 51806 51792
11191	2	1	2	0	1		51805 51819 51820 51806
11192	2	1	2	0	1		51819 51594 51595 51820
11193	2	1	2	0	1		51624 51638 51639 51625
11194	2	1	2	0	1		51638 51652 51653 51639
11195	2	1	2	0	1		51652 51666 51667 51653
11196	2	1	2	0	1		51666 51680 51681 51667
11197	2	1	2	0	1		51680 51694 51695 51681
11198	2	1	2	0	1		51694 51708 51709 51695
11199	2	1	2	0	1		51708 51722 51723 51709

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11200	2	1	2	0	1		51722 51736 51737 51723
11201	2	1	2	0	1		51736 51750 51751 51737
11202	2	1	2	0	1		51750 51764 51765 51751
11203	2	1	2	0	1		51764 51778 51779 51765
11204	2	1	2	0	1		51778 51792 51793 51779
11205	2	1	2	0	1		51792 51806 51807 51793
11206	2	1	2	0	1		51806 51820 51821 51807
11207	2	1	2	0	1		51820 51595 51596 51821
11208	2	1	2	0	1		51625 51639 51640 51626
11209	2	1	2	0	1		51639 51653 51654 51640
11210	2	1	2	0	1		51653 51667 51668 51654
11211	2	1	2	0	1		51667 51681 51682 51668
11212	2	1	2	0	1		51681 51695 51696 51682
11213	2	1	2	0	1		51695 51709 51710 51696
11214	2	1	2	0	1		51709 51723 51724 51710
11215	2	1	2	0	1		51723 51737 51738 51724
11216	2	1	2	0	1		51737 51751 51752 51738
11217	2	1	2	0	1		51751 51765 51766 51752
11218	2	1	2	0	1		51765 51779 51780 51766
11219	2	1	2	0	1		51779 51793 51794 51780

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11220	2	1	2	0	1		51793 51807 51808 51794
11221	2	1	2	0	1		51807 51821 51822 51808
11222	2	1	2	0	1		51821 51596 51597 51822
11223	2	1	2	0	1		51626 51640 51641 51627
11224	2	1	2	0	1		51640 51654 51655 51641
11225	2	1	2	0	1		51654 51668 51669 51655
11226	2	1	2	0	1		51668 51682 51683 51669
11227	2	1	2	0	1		51682 51696 51697 51683
11228	2	1	2	0	1		51696 51710 51711 51697
11229	2	1	2	0	1		51710 51724 51725 51711
11230	2	1	2	0	1		51724 51738 51739 51725
11231	2	1	2	0	1		51738 51752 51753 51739
11232	2	1	2	0	1		51752 51766 51767 51753
11233	2	1	2	0	1		51766 51780 51781 51767
11234	2	1	2	0	1		51780 51794 51795 51781
11235	2	1	2	0	1		51794 51808 51809 51795
11236	2	1	2	0	1		51808 51822 51823 51809

11237	2	1	2	0	1	51822	51597	51598	51823
11238	2	1	2	0	1	51627	51641	51642	51628
11239	2	1	2	0	1	51641	51655	51656	51642

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES		
11240	2	1	2	0	1	51655	51669	51670	51656
11241	2	1	2	0	1	51669	51683	51684	51670
11242	2	1	2	0	1	51683	51697	51698	51684
11243	2	1	2	0	1	51697	51711	51712	51698
11244	2	1	2	0	1	51711	51725	51726	51712
11245	2	1	2	0	1	51725	51739	51740	51726
11246	2	1	2	0	1	51739	51753	51754	51740
11247	2	1	2	0	1	51753	51767	51768	51754
11248	2	1	2	0	1	51767	51781	51782	51768
11249	2	1	2	0	1	51781	51795	51796	51782
11250	2	1	2	0	1	51795	51809	51810	51796
11251	2	1	2	0	1	51809	51823	51824	51810
11252	2	1	2	0	1	51823	51598	51599	51824
11253	2	1	2	0	1	51628	51642	51643	51629
11254	2	1	2	0	1	51642	51656	51657	51643
11255	2	1	2	0	1	51656	51670	51671	51657
11256	2	1	2	0	1	51670	51684	51685	51671
11257	2	1	2	0	1	51684	51698	51699	51685
11258	2	1	2	0	1	51698	51712	51713	51699
11259	2	1	2	0	1	51712	51726	51727	51713

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES		
11260	2	1	2	0	1	51726	51740	51741	51727
11261	2	1	2	0	1	51740	51754	51755	51741
11262	2	1	2	0	1	51754	51768	51769	51755
11263	2	1	2	0	1	51768	51782	51783	51769
11264	2	1	2	0	1	51782	51796	51797	51783
11265	2	1	2	0	1	51796	51810	51811	51797
11266	2	1	2	0	1	51810	51824	51825	51811
11267	2	1	2	0	1	51824	51599	51600	51825
11268	2	1	2	0	1	51629	51643	51644	51630
11269	2	1	2	0	1	51643	51657	51658	51644
11270	2	1	2	0	1	51657	51671	51672	51658
11271	2	1	2	0	1	51671	51685	51686	51672
11272	2	1	2	0	1	51685	51699	51700	51686
11273	2	1	2	0	1	51699	51713	51714	51700
11274	2	1	2	0	1	51713	51727	51728	51714
11275	2	1	2	0	1	51727	51741	51742	51728
11276	2	1	2	0	1	51741	51755	51756	51742
11277	2	1	2	0	1	51755	51769	51770	51756
11278	2	1	2	0	1	51769	51783	51784	51770
11279	2	1	2	0	1	51783	51797	51798	51784

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES		
11280	2	1	2	0	1	51797	51811	51812	51798
11281	2	1	2	0	1	51811	51825	51826	51812
11282	2	1	2	0	1	51825	51600	51601	51826
11283	2	1	2	0	1	51630	51644	51645	51631
11284	2	1	2	0	1	51644	51658	51659	51645
11285	2	1	2	0	1	51658	51672	51673	51659
11286	2	1	2	0	1	51672	51686	51687	51673
11287	2	1	2	0	1	51686	51700	51701	51687
11288	2	1	2	0	1	51700	51714	51715	51701
11289	2	1	2	0	1	51714	51728	51729	51715
11290	2	1	2	0	1	51728	51742	51743	51729
11291	2	1	2	0	1	51742	51756	51757	51743
11292	2	1	2	0	1	51756	51770	51771	51757
11293	2	1	2	0	1	51770	51784	51785	51771
11294	2	1	2	0	1	51784	51798	51799	51785
11295	2	1	2	0	1	51798	51812	51813	51799
11296	2	1	2	0	1	51812	51826	51827	51813
11297	2	1	2	0	1	51826	51601	51602	51827
11298	2	1	2	0	1	51631	51645	51646	51632
11299	2	1	2	0	1	51645	51659	51660	51646

ELEM MAT TYP REL ESY SEC TSHA NODES

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11300	2	1	2	0	1	51659	51673	51674	51660
11301	2	1	2	0	1	51673	51687	51688	51674
11302	2	1	2	0	1	51687	51701	51702	51688
11303	2	1	2	0	1	51701	51715	51716	51702
11304	2	1	2	0	1	51715	51729	51730	51716
11305	2	1	2	0	1	51729	51743	51744	51730
11306	2	1	2	0	1	51743	51757	51758	51744
11307	2	1	2	0	1	51757	51771	51772	51758
11308	2	1	2	0	1	51771	51785	51786	51772
11309	2	1	2	0	1	51785	51799	51800	51786
11310	2	1	2	0	1	51799	51813	51814	51800
11311	2	1	2	0	1	51813	51827	51828	51814
11312	2	1	2	0	1	51827	51602	51603	51828
11313	2	1	2	0	1	51632	51646	51647	51633
11314	2	1	2	0	1	51646	51660	51661	51647
11315	2	1	2	0	1	51660	51674	51675	51661
11316	2	1	2	0	1	51674	51688	51689	51675
11317	2	1	2	0	1	51688	51702	51703	51689
11318	2	1	2	0	1	51702	51716	51717	51703
11319	2	1	2	0	1	51716	51730	51731	51717

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES		
11320	2	1	2	0	1	51730	51744	51745	51731
11321	2	1	2	0	1	51744	51758	51759	51745
11322	2	1	2	0	1	51758	51772	51773	51759
11323	2	1	2	0	1	51772	51786	51787	51773
11324	2	1	2	0	1	51786	51800	51801	51787
11325	2	1	2	0	1	51800	51814	51815	51801
11326	2	1	2	0	1	51814	51828	51829	51815
11327	2	1	2	0	1	51828	51603	51604	51829
11328	2	1	2	0	1	51633	51647	51606	51605
11329	2	1	2	0	1	51647	51661	51607	51606
11330	2	1	2	0	1	51661	51675	51608	51607
11331	2	1	2	0	1	51675	51689	51609	51608
11332	2	1	2	0	1	51689	51703	51610	51609
11333	2	1	2	0	1	51703	51717	51611	51610
11334	2	1	2	0	1	51717	51731	51612	51611
11335	2	1	2	0	1	51731	51745	51613	51612
11336	2	1	2	0	1	51745	51759	51614	51613
11337	2	1	2	0	1	51759	51773	51615	51614
11338	2	1	2	0	1	51773	51787	51616	51615
11339	2	1	2	0	1	51787	51801	51617	51616

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES		
11340	2	1	2	0	1	51801	51815	51618	51617
11341	2	1	2	0	1	51815	51829	51619	51618
11342	2	1	2	0	1	51829	51604	51590	51619
11343	2	1	2	0	1	20850	20859	51868	51854
11344	2	1	2	0	1	20859	20858	51882	51868
11345	2	1	2	0	1	20858	20857	51896	51882
11346	2	1	2	0	1	20857	20856	51910	51896
11347	2	1	2	0	1	20856	20855	51924	51910
11348	2	1	2	0	1	20855	20854	51938	51924
11349	2	1	2	0	1	20854	20853	51952	51938
11350	2	1	2	0	1	20853	20852	51966	51952
11351	2	1	2	0	1	20852	20851	51980	51966
11352	2	1	2	0	1	20851	218	51831	51980
11353	2	1	2	0	1	51854	51868	51869	51855
11354	2	1	2	0	1	51868	51882	51883	51869
11355	2	1	2	0	1	51882	51896	51897	51883
11356	2	1	2	0	1	51896	51910	51911	51897
11357	2	1	2	0	1	51910	51924	51925	51911
11358	2	1	2	0	1	51924	51938	51939	51925
11359	2	1	2	0	1	51938	51952	51953	51939

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES		
11360	2	1	2	0	1	51952	51966	51967	51953
11361	2	1	2	0	1	51966	51980	51981	51967
11362	2	1	2	0	1	51980	51831	51832	51981
11363	2	1	2	0	1	51855	51869	51870	51856
11364	2	1	2	0	1	51869	51883	51884	51870
11365	2	1	2	0	1	51883	51897	51898	51884

11366	2	1	2	0	1		51897 51911 51912 51898
11367	2	1	2	0	1		51911 51925 51926 51912
11368	2	1	2	0	1		51925 51939 51940 51926
11369	2	1	2	0	1		51939 51953 51954 51940
11370	2	1	2	0	1		51953 51967 51968 51954
11371	2	1	2	0	1		51967 51981 51982 51968
11372	2	1	2	0	1		51981 51832 51833 51982
11373	2	1	2	0	1		51856 51870 51871 51857
11374	2	1	2	0	1		51870 51884 51885 51871
11375	2	1	2	0	1		51884 51898 51899 51885
11376	2	1	2	0	1		51898 51912 51913 51899
11377	2	1	2	0	1		51912 51926 51927 51913
11378	2	1	2	0	1		51926 51940 51941 51927
11379	2	1	2	0	1		51940 51954 51955 51941

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11380	2	1	2	0	1		51954 51968 51969 51955
11381	2	1	2	0	1		51968 51982 51983 51969
11382	2	1	2	0	1		51982 51833 51834 51983
11383	2	1	2	0	1		51857 51871 51872 51858
11384	2	1	2	0	1		51871 51885 51886 51872
11385	2	1	2	0	1		51885 51899 51900 51886
11386	2	1	2	0	1		51899 51913 51914 51900
11387	2	1	2	0	1		51913 51927 51928 51914
11388	2	1	2	0	1		51927 51941 51942 51928
11389	2	1	2	0	1		51941 51955 51956 51942
11390	2	1	2	0	1		51955 51969 51970 51956
11391	2	1	2	0	1		51969 51983 51984 51970
11392	2	1	2	0	1		51983 51834 51835 51984
11393	2	1	2	0	1		51858 51872 51873 51859
11394	2	1	2	0	1		51872 51886 51887 51873
11395	2	1	2	0	1		51886 51900 51901 51887
11396	2	1	2	0	1		51900 51914 51915 51901
11397	2	1	2	0	1		51914 51928 51929 51915
11398	2	1	2	0	1		51928 51942 51943 51929
11399	2	1	2	0	1		51942 51956 51957 51943

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11400	2	1	2	0	1		51956 51970 51971 51957
11401	2	1	2	0	1		51970 51984 51985 51971
11402	2	1	2	0	1		51984 51835 51836 51985
11403	2	1	2	0	1		51859 51873 51874 51860
11404	2	1	2	0	1		51873 51887 51888 51874
11405	2	1	2	0	1		51887 51901 51902 51888
11406	2	1	2	0	1		51901 51915 51916 51902
11407	2	1	2	0	1		51915 51929 51930 51916
11408	2	1	2	0	1		51929 51943 51944 51930
11409	2	1	2	0	1		51943 51957 51958 51944
11410	2	1	2	0	1		51957 51971 51972 51958
11411	2	1	2	0	1		51971 51985 51986 51972
11412	2	1	2	0	1		51985 51836 51837 51986
11413	2	1	2	0	1		51860 51874 51875 51861
11414	2	1	2	0	1		51874 51888 51889 51875
11415	2	1	2	0	1		51888 51902 51903 51889
11416	2	1	2	0	1		51902 51916 51917 51903
11417	2	1	2	0	1		51916 51930 51931 51917
11418	2	1	2	0	1		51930 51944 51945 51931
11419	2	1	2	0	1		51944 51958 51959 51945

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11420	2	1	2	0	1		51958 51972 51973 51959
11421	2	1	2	0	1		51972 51986 51987 51973
11422	2	1	2	0	1		51986 51837 51838 51987
11423	2	1	2	0	1		51861 51875 51876 51862
11424	2	1	2	0	1		51875 51889 51890 51876
11425	2	1	2	0	1		51889 51903 51904 51890
11426	2	1	2	0	1		51903 51917 51918 51904
11427	2	1	2	0	1		51917 51931 51932 51918
11428	2	1	2	0	1		51931 51945 51946 51932
11429	2	1	2	0	1		51945 51959 51960 51946
11430	2	1	2	0	1		51959 51973 51974 51960
11431	2	1	2	0	1		51973 51987 51988 51974

11432	2	1	2	0	1		51987 51838 51839 51988
11433	2	1	2	0	1		51862 51876 51877 51863
11434	2	1	2	0	1		51876 51890 51891 51877
11435	2	1	2	0	1		51890 51904 51905 51891
11436	2	1	2	0	1		51904 51918 51919 51905
11437	2	1	2	0	1		51918 51932 51933 51919
11438	2	1	2	0	1		51932 51946 51947 51933
11439	2	1	2	0	1		51946 51960 51961 51947

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11440	2	1	2	0	1		51960 51974 51975 51961
11441	2	1	2	0	1		51974 51988 51989 51975
11442	2	1	2	0	1		51988 51839 51840 51989
11443	2	1	2	0	1		51863 51877 51878 51864
11444	2	1	2	0	1		51877 51891 51892 51878
11445	2	1	2	0	1		51891 51905 51906 51892
11446	2	1	2	0	1		51905 51919 51920 51906
11447	2	1	2	0	1		51919 51933 51934 51920
11448	2	1	2	0	1		51933 51947 51948 51934
11449	2	1	2	0	1		51947 51961 51962 51948
11450	2	1	2	0	1		51961 51975 51976 51962
11451	2	1	2	0	1		51975 51989 51990 51976
11452	2	1	2	0	1		51989 51840 51841 51990
11453	2	1	2	0	1		51864 51878 51879 51865
11454	2	1	2	0	1		51878 51892 51893 51879
11455	2	1	2	0	1		51892 51906 51907 51893
11456	2	1	2	0	1		51906 51920 51921 51907
11457	2	1	2	0	1		51920 51934 51935 51921
11458	2	1	2	0	1		51934 51948 51949 51935
11459	2	1	2	0	1		51948 51962 51963 51949

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11460	2	1	2	0	1		51962 51976 51977 51963
11461	2	1	2	0	1		51976 51990 51991 51977
11462	2	1	2	0	1		51990 51841 51842 51991
11463	2	1	2	0	1		51865 51879 51880 51866
11464	2	1	2	0	1		51879 51893 51894 51880
11465	2	1	2	0	1		51893 51907 51908 51894
11466	2	1	2	0	1		51907 51921 51922 51908
11467	2	1	2	0	1		51921 51935 51936 51922
11468	2	1	2	0	1		51935 51949 51950 51936
11469	2	1	2	0	1		51949 51963 51964 51950
11470	2	1	2	0	1		51963 51977 51978 51964
11471	2	1	2	0	1		51977 51991 51992 51978
11472	2	1	2	0	1		51991 51842 51843 51992
11473	2	1	2	0	1		51866 51880 51881 51867
11474	2	1	2	0	1		51880 51894 51895 51881
11475	2	1	2	0	1		51894 51908 51909 51895
11476	2	1	2	0	1		51908 51922 51923 51909
11477	2	1	2	0	1		51922 51936 51937 51923
11478	2	1	2	0	1		51936 51950 51951 51937
11479	2	1	2	0	1		51950 51964 51965 51951

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
11480	2	1	2	0	1		51964 51978 51979 51965
11481	2	1	2	0	1		51978 51992 51993 51979
11482	2	1	2	0	1		51992 51843 51844 51993
11483	2	1	2	0	1		51867 51881 51845 51590
11484	2	1	2	0	1		51881 51895 51846 51845
11485	2	1	2	0	1		51895 51909 51847 51846
11486	2	1	2	0	1		51909 51923 51848 51847
11487	2	1	2	0	1		51923 51937 51849 51848
11488	2	1	2	0	1		51937 51951 51850 51849
11489	2	1	2	0	1		51951 51965 51851 51850
11490	2	1	2	0	1		51965 51979 51852 51851
11491	2	1	2	0	1		51979 51993 51853 51852
11492	2	1	2	0	1		51993 51844 51830 51853
11493	2	1	2	0	1		216 20736 52028 52014
11494	2	1	2	0	1		20736 20737 52042 52028
11495	2	1	2	0	1		20737 20738 52056 52042
11496	2	1	2	0	1		20738 20739 52070 52056
11497	2	1	2	0	1		20739 20734 51995 52070

11498	2	1	2	0	1	52014	52028	52029	52015
11499	2	1	2	0	1	52028	52042	52043	52029

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11500	2	1	2	0	1		52042	52056	52057	52043
11501	2	1	2	0	1		52056	52070	52071	52057
11502	2	1	2	0	1		52070	51995	51996	52071
11503	2	1	2	0	1		52015	52029	52030	52016
11504	2	1	2	0	1		52029	52043	52044	52030
11505	2	1	2	0	1		52043	52057	52058	52044
11506	2	1	2	0	1		52057	52071	52072	52058
11507	2	1	2	0	1		52071	51996	51997	52072
11508	2	1	2	0	1		52016	52030	52031	52017
11509	2	1	2	0	1		52030	52044	52045	52031
11510	2	1	2	0	1		52044	52058	52059	52045
11511	2	1	2	0	1		52058	52072	52073	52059
11512	2	1	2	0	1		52072	51997	51998	52073
11513	2	1	2	0	1		52017	52031	52032	52018
11514	2	1	2	0	1		52031	52045	52046	52032
11515	2	1	2	0	1		52045	52059	52060	52046
11516	2	1	2	0	1		52059	52073	52074	52060
11517	2	1	2	0	1		52073	51998	51999	52074
11518	2	1	2	0	1		52018	52032	52033	52019
11519	2	1	2	0	1		52032	52046	52047	52033

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11520	2	1	2	0	1		52046	52060	52061	52047
11521	2	1	2	0	1		52060	52074	52075	52061
11522	2	1	2	0	1		52074	51999	52000	52075
11523	2	1	2	0	1		52019	52033	52034	52020
11524	2	1	2	0	1		52033	52047	52048	52034
11525	2	1	2	0	1		52047	52061	52062	52048
11526	2	1	2	0	1		52061	52075	52076	52062
11527	2	1	2	0	1		52075	52000	52001	52076
11528	2	1	2	0	1		52020	52034	52035	52021
11529	2	1	2	0	1		52034	52048	52049	52035
11530	2	1	2	0	1		52048	52062	52063	52049
11531	2	1	2	0	1		52062	52076	52077	52063
11532	2	1	2	0	1		52076	52001	52002	52077
11533	2	1	2	0	1		52021	52035	52036	52022
11534	2	1	2	0	1		52035	52049	52050	52036
11535	2	1	2	0	1		52049	52063	52064	52050
11536	2	1	2	0	1		52063	52077	52078	52064
11537	2	1	2	0	1		52077	52002	52003	52078
11538	2	1	2	0	1		52022	52036	52037	52023
11539	2	1	2	0	1		52036	52050	52051	52037

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11540	2	1	2	0	1		52050	52064	52065	52051
11541	2	1	2	0	1		52064	52078	52079	52065
11542	2	1	2	0	1		52078	52003	52004	52079
11543	2	1	2	0	1		52023	52037	52038	52024
11544	2	1	2	0	1		52037	52051	52052	52038
11545	2	1	2	0	1		52051	52065	52066	52052
11546	2	1	2	0	1		52065	52079	52080	52066
11547	2	1	2	0	1		52079	52004	52005	52080
11548	2	1	2	0	1		52024	52038	52039	52025
11549	2	1	2	0	1		52038	52052	52053	52039
11550	2	1	2	0	1		52052	52066	52067	52053
11551	2	1	2	0	1		52066	52080	52081	52067
11552	2	1	2	0	1		52080	52005	52006	52081
11553	2	1	2	0	1		52025	52039	52040	52026
11554	2	1	2	0	1		52039	52053	52054	52040
11555	2	1	2	0	1		52053	52067	52068	52054
11556	2	1	2	0	1		52067	52081	52082	52068
11557	2	1	2	0	1		52081	52006	52007	52082
11558	2	1	2	0	1		52026	52040	52041	52027
11559	2	1	2	0	1		52040	52054	52055	52041

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11560	2	1	2	0	1		52054	52068	52069	52055

11561	2	1	2	0	1	52068	52082	52083	52069
11562	2	1	2	0	1	52082	52007	52008	52083
11563	2	1	2	0	1	52027	52041	52010	52009
11564	2	1	2	0	1	52041	52055	52011	52010
11565	2	1	2	0	1	52055	52069	52012	52011
11566	2	1	2	0	1	52069	52083	52013	52012
11567	2	1	2	0	1	52083	52008	51994	52013
11568	2	1	2	0	1	20888	20902	52127	52113
11569	2	1	2	0	1	20902	20901	52141	52127
11570	2	1	2	0	1	20901	20900	52155	52141
11571	2	1	2	0	1	20900	20899	52169	52155
11572	2	1	2	0	1	20899	20898	52183	52169
11573	2	1	2	0	1	20898	20897	52197	52183
11574	2	1	2	0	1	20897	20896	52211	52197
11575	2	1	2	0	1	20896	20895	52225	52211
11576	2	1	2	0	1	20895	20894	52239	52225
11577	2	1	2	0	1	20894	20893	52253	52239
11578	2	1	2	0	1	20893	20892	52267	52253
11579	2	1	2	0	1	20892	20891	52281	52267

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11580	2	1	2	0	1		20891	20890	52295	52281
11581	2	1	2	0	1		20890	20889	52309	52295
11582	2	1	2	0	1		20889	20886	52085	52309
11583	2	1	2	0	1		52113	52127	52128	52114
11584	2	1	2	0	1		52127	52141	52142	52128
11585	2	1	2	0	1		52141	52155	52156	52142
11586	2	1	2	0	1		52155	52169	52170	52156
11587	2	1	2	0	1		52169	52183	52184	52170
11588	2	1	2	0	1		52183	52197	52198	52184
11589	2	1	2	0	1		52197	52211	52212	52198
11590	2	1	2	0	1		52211	52225	52226	52212
11591	2	1	2	0	1		52225	52239	52240	52226
11592	2	1	2	0	1		52239	52253	52254	52240
11593	2	1	2	0	1		52253	52267	52268	52254
11594	2	1	2	0	1		52267	52281	52282	52268
11595	2	1	2	0	1		52281	52295	52296	52282
11596	2	1	2	0	1		52295	52309	52310	52296
11597	2	1	2	0	1		52309	52085	52086	52310
11598	2	1	2	0	1		52114	52128	52129	52115
11599	2	1	2	0	1		52128	52142	52143	52129

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11600	2	1	2	0	1		52142	52156	52157	52143
11601	2	1	2	0	1		52156	52170	52171	52157
11602	2	1	2	0	1		52170	52184	52185	52171
11603	2	1	2	0	1		52184	52198	52199	52185
11604	2	1	2	0	1		52198	52212	52213	52199
11605	2	1	2	0	1		52212	52226	52227	52213
11606	2	1	2	0	1		52226	52240	52241	52227
11607	2	1	2	0	1		52240	52254	52255	52241
11608	2	1	2	0	1		52254	52268	52269	52255
11609	2	1	2	0	1		52268	52282	52283	52269
11610	2	1	2	0	1		52282	52296	52297	52283
11611	2	1	2	0	1		52296	52310	52311	52297
11612	2	1	2	0	1		52310	52086	52087	52311
11613	2	1	2	0	1		52115	52129	52130	52116
11614	2	1	2	0	1		52129	52143	52144	52130
11615	2	1	2	0	1		52143	52157	52158	52144
11616	2	1	2	0	1		52157	52171	52172	52158
11617	2	1	2	0	1		52171	52185	52186	52172
11618	2	1	2	0	1		52185	52199	52200	52186
11619	2	1	2	0	1		52199	52213	52214	52200

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11620	2	1	2	0	1		52213	52227	52228	52214
11621	2	1	2	0	1		52227	52241	52242	52228
11622	2	1	2	0	1		52241	52255	52256	52242
11623	2	1	2	0	1		52255	52269	52270	52256
11624	2	1	2	0	1		52269	52283	52284	52270
11625	2	1	2	0	1		52283	52297	52298	52284
11626	2	1	2	0	1		52297	52311	52312	52298

11627	2	1	2	0	1	52311	52087	52088	52312
11628	2	1	2	0	1	52116	52130	52131	52117
11629	2	1	2	0	1	52130	52144	52145	52131
11630	2	1	2	0	1	52144	52158	52159	52145
11631	2	1	2	0	1	52158	52172	52173	52159
11632	2	1	2	0	1	52172	52186	52187	52173
11633	2	1	2	0	1	52186	52200	52201	52187
11634	2	1	2	0	1	52200	52214	52215	52201
11635	2	1	2	0	1	52214	52228	52229	52215
11636	2	1	2	0	1	52228	52242	52243	52229
11637	2	1	2	0	1	52242	52256	52257	52243
11638	2	1	2	0	1	52256	52270	52271	52257
11639	2	1	2	0	1	52270	52284	52285	52271

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11640	2	1	2	0	1		52284	52298	52299	52285
11641	2	1	2	0	1		52298	52312	52313	52299
11642	2	1	2	0	1		52312	52088	52089	52313
11643	2	1	2	0	1		52117	52131	52132	52118
11644	2	1	2	0	1		52131	52145	52146	52132
11645	2	1	2	0	1		52145	52159	52160	52146
11646	2	1	2	0	1		52159	52173	52174	52160
11647	2	1	2	0	1		52173	52187	52188	52174
11648	2	1	2	0	1		52187	52201	52202	52188
11649	2	1	2	0	1		52201	52215	52216	52202
11650	2	1	2	0	1		52215	52229	52230	52216
11651	2	1	2	0	1		52229	52243	52244	52230
11652	2	1	2	0	1		52243	52257	52258	52244
11653	2	1	2	0	1		52257	52271	52272	52258
11654	2	1	2	0	1		52271	52285	52286	52272
11655	2	1	2	0	1		52285	52299	52300	52286
11656	2	1	2	0	1		52299	52313	52314	52300
11657	2	1	2	0	1		52313	52089	52090	52314
11658	2	1	2	0	1		52118	52132	52133	52119
11659	2	1	2	0	1		52132	52146	52147	52133

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11660	2	1	2	0	1		52146	52160	52161	52147
11661	2	1	2	0	1		52160	52174	52175	52161
11662	2	1	2	0	1		52174	52188	52189	52175
11663	2	1	2	0	1		52188	52202	52203	52189
11664	2	1	2	0	1		52202	52216	52217	52203
11665	2	1	2	0	1		52216	52230	52231	52217
11666	2	1	2	0	1		52230	52244	52245	52231
11667	2	1	2	0	1		52244	52258	52259	52245
11668	2	1	2	0	1		52258	52272	52273	52259
11669	2	1	2	0	1		52272	52286	52287	52273
11670	2	1	2	0	1		52286	52300	52301	52287
11671	2	1	2	0	1		52300	52314	52315	52301
11672	2	1	2	0	1		52314	52090	52091	52315
11673	2	1	2	0	1		52119	52133	52134	52120
11674	2	1	2	0	1		52133	52147	52148	52134
11675	2	1	2	0	1		52147	52161	52162	52148
11676	2	1	2	0	1		52161	52175	52176	52162
11677	2	1	2	0	1		52175	52189	52190	52176
11678	2	1	2	0	1		52189	52203	52204	52190
11679	2	1	2	0	1		52203	52217	52218	52204

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11680	2	1	2	0	1		52217	52231	52232	52218
11681	2	1	2	0	1		52231	52245	52246	52232
11682	2	1	2	0	1		52245	52259	52260	52246
11683	2	1	2	0	1		52259	52273	52274	52260
11684	2	1	2	0	1		52273	52287	52288	52274
11685	2	1	2	0	1		52287	52301	52302	52288
11686	2	1	2	0	1		52301	52315	52316	52302
11687	2	1	2	0	1		52315	52091	52092	52316
11688	2	1	2	0	1		52120	52134	52135	52121
11689	2	1	2	0	1		52134	52148	52149	52135
11690	2	1	2	0	1		52148	52162	52163	52149
11691	2	1	2	0	1		52162	52176	52177	52163
11692	2	1	2	0	1		52176	52190	52191	52177

11693	2	1	2	0	1	52190	52204	52205	52191
11694	2	1	2	0	1	52204	52218	52219	52205
11695	2	1	2	0	1	52218	52232	52233	52219
11696	2	1	2	0	1	52232	52246	52247	52233
11697	2	1	2	0	1	52246	52260	52261	52247
11698	2	1	2	0	1	52260	52274	52275	52261
11699	2	1	2	0	1	52274	52288	52289	52275

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11700	2	1	2	0	1		52288	52302	52303	52289
11701	2	1	2	0	1		52302	52316	52317	52303
11702	2	1	2	0	1		52316	52092	52093	52317
11703	2	1	2	0	1		52121	52135	52136	52122
11704	2	1	2	0	1		52135	52149	52150	52136
11705	2	1	2	0	1		52149	52163	52164	52150
11706	2	1	2	0	1		52163	52177	52178	52164
11707	2	1	2	0	1		52177	52191	52192	52178
11708	2	1	2	0	1		52191	52205	52206	52192
11709	2	1	2	0	1		52205	52219	52220	52206
11710	2	1	2	0	1		52219	52233	52234	52220
11711	2	1	2	0	1		52233	52247	52248	52234
11712	2	1	2	0	1		52247	52261	52262	52248
11713	2	1	2	0	1		52261	52275	52276	52262
11714	2	1	2	0	1		52275	52289	52290	52276
11715	2	1	2	0	1		52289	52303	52304	52290
11716	2	1	2	0	1		52303	52317	52318	52304
11717	2	1	2	0	1		52317	52093	52094	52318
11718	2	1	2	0	1		52122	52136	52137	52123
11719	2	1	2	0	1		52136	52150	52151	52137

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11720	2	1	2	0	1		52150	52164	52165	52151
11721	2	1	2	0	1		52164	52178	52179	52165
11722	2	1	2	0	1		52178	52192	52193	52179
11723	2	1	2	0	1		52192	52206	52207	52193
11724	2	1	2	0	1		52206	52220	52221	52207
11725	2	1	2	0	1		52220	52234	52235	52221
11726	2	1	2	0	1		52234	52248	52249	52235
11727	2	1	2	0	1		52248	52262	52263	52249
11728	2	1	2	0	1		52262	52276	52277	52263
11729	2	1	2	0	1		52276	52290	52291	52277
11730	2	1	2	0	1		52290	52304	52305	52291
11731	2	1	2	0	1		52304	52318	52319	52305
11732	2	1	2	0	1		52318	52094	52095	52319
11733	2	1	2	0	1		52123	52137	52138	52124
11734	2	1	2	0	1		52137	52151	52152	52138
11735	2	1	2	0	1		52151	52165	52166	52152
11736	2	1	2	0	1		52165	52179	52180	52166
11737	2	1	2	0	1		52179	52193	52194	52180
11738	2	1	2	0	1		52193	52207	52208	52194
11739	2	1	2	0	1		52207	52221	52222	52208

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11740	2	1	2	0	1		52221	52235	52236	52222
11741	2	1	2	0	1		52235	52249	52250	52236
11742	2	1	2	0	1		52249	52263	52264	52250
11743	2	1	2	0	1		52263	52277	52278	52264
11744	2	1	2	0	1		52277	52291	52292	52278
11745	2	1	2	0	1		52291	52305	52306	52292
11746	2	1	2	0	1		52305	52319	52320	52306
11747	2	1	2	0	1		52319	52095	52096	52320
11748	2	1	2	0	1		52124	52138	52139	52125
11749	2	1	2	0	1		52138	52152	52153	52139
11750	2	1	2	0	1		52152	52166	52167	52153
11751	2	1	2	0	1		52166	52180	52181	52167
11752	2	1	2	0	1		52180	52194	52195	52181
11753	2	1	2	0	1		52194	52208	52209	52195
11754	2	1	2	0	1		52208	52222	52223	52209
11755	2	1	2	0	1		52222	52236	52237	52223
11756	2	1	2	0	1		52236	52250	52251	52237
11757	2	1	2	0	1		52250	52264	52265	52251
11758	2	1	2	0	1		52264	52278	52279	52265

11759	2	1	2	0	1	52278	52292	52293	52279

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11760	2	1	2	0	1		52292	52306	52307	52293
11761	2	1	2	0	1		52306	52320	52321	52307
11762	2	1	2	0	1		52320	52096	52097	52321
11763	2	1	2	0	1		52125	52139	52140	52126
11764	2	1	2	0	1		52139	52153	52154	52140
11765	2	1	2	0	1		52153	52167	52168	52154
11766	2	1	2	0	1		52167	52181	52182	52168
11767	2	1	2	0	1		52181	52195	52196	52182
11768	2	1	2	0	1		52195	52209	52210	52196
11769	2	1	2	0	1		52209	52223	52224	52210
11770	2	1	2	0	1		52223	52237	52238	52224
11771	2	1	2	0	1		52237	52251	52252	52238
11772	2	1	2	0	1		52251	52265	52266	52252
11773	2	1	2	0	1		52265	52279	52280	52266
11774	2	1	2	0	1		52279	52293	52294	52280
11775	2	1	2	0	1		52293	52307	52308	52294
11776	2	1	2	0	1		52307	52321	52322	52308
11777	2	1	2	0	1		52321	52097	52098	52322
11778	2	1	2	0	1		52126	52140	52099	51994
11779	2	1	2	0	1		52140	52154	52100	52099

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11780	2	1	2	0	1		52154	52168	52101	52100
11781	2	1	2	0	1		52168	52182	52102	52101
11782	2	1	2	0	1		52182	52196	52103	52102
11783	2	1	2	0	1		52196	52210	52104	52103
11784	2	1	2	0	1		52210	52224	52105	52104
11785	2	1	2	0	1		52224	52238	52106	52105
11786	2	1	2	0	1		52238	52252	52107	52106
11787	2	1	2	0	1		52252	52266	52108	52107
11788	2	1	2	0	1		52266	52280	52109	52108
11789	2	1	2	0	1		52280	52294	52110	52109
11790	2	1	2	0	1		52294	52308	52111	52110
11791	2	1	2	0	1		52308	52322	52112	52111
11792	2	1	2	0	1		52322	52098	52084	52112
11793	2	1	2	0	1		20699	20713	52365	52351
11794	2	1	2	0	1		20713	20712	52379	52365
11795	2	1	2	0	1		20712	20711	52393	52379
11796	2	1	2	0	1		20711	20710	52407	52393
11797	2	1	2	0	1		20710	20709	52421	52407
11798	2	1	2	0	1		20709	20708	52435	52421
11799	2	1	2	0	1		20708	20707	52449	52435

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11800	2	1	2	0	1		20707	20706	52463	52449
11801	2	1	2	0	1		20706	20705	52477	52463
11802	2	1	2	0	1		20705	20704	52491	52477
11803	2	1	2	0	1		20704	20703	52505	52491
11804	2	1	2	0	1		20703	20702	52519	52505
11805	2	1	2	0	1		20702	20701	52533	52519
11806	2	1	2	0	1		20701	20700	52547	52533
11807	2	1	2	0	1		20700	20697	52323	52547
11808	2	1	2	0	1		52351	52365	52366	52352
11809	2	1	2	0	1		52365	52379	52380	52366
11810	2	1	2	0	1		52379	52393	52394	52380
11811	2	1	2	0	1		52393	52407	52408	52394
11812	2	1	2	0	1		52407	52421	52422	52408
11813	2	1	2	0	1		52421	52435	52436	52422
11814	2	1	2	0	1		52435	52449	52450	52436
11815	2	1	2	0	1		52449	52463	52464	52450
11816	2	1	2	0	1		52463	52477	52478	52464
11817	2	1	2	0	1		52477	52491	52492	52478
11818	2	1	2	0	1		52491	52505	52506	52492
11819	2	1	2	0	1		52505	52519	52520	52506

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11820	2	1	2	0	1		52519	52533	52534	52520
11821	2	1	2	0	1		52533	52547	52548	52534

11822	2	1	2	0	1		52547	52323	52324	52548
11823	2	1	2	0	1		52352	52366	52367	52353
11824	2	1	2	0	1		52366	52380	52381	52367
11825	2	1	2	0	1		52380	52394	52395	52381
11826	2	1	2	0	1		52394	52408	52409	52395
11827	2	1	2	0	1		52408	52422	52423	52409
11828	2	1	2	0	1		52422	52436	52437	52423
11829	2	1	2	0	1		52436	52450	52451	52437
11830	2	1	2	0	1		52450	52464	52465	52451
11831	2	1	2	0	1		52464	52478	52479	52465
11832	2	1	2	0	1		52478	52492	52493	52479
11833	2	1	2	0	1		52492	52506	52507	52493
11834	2	1	2	0	1		52506	52520	52521	52507
11835	2	1	2	0	1		52520	52534	52535	52521
11836	2	1	2	0	1		52534	52548	52549	52535
11837	2	1	2	0	1		52548	52324	52325	52549
11838	2	1	2	0	1		52353	52367	52368	52354
11839	2	1	2	0	1		52367	52381	52382	52368

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11840	2	1	2	0	1		52381	52395	52396	52382
11841	2	1	2	0	1		52395	52409	52410	52396
11842	2	1	2	0	1		52409	52423	52424	52410
11843	2	1	2	0	1		52423	52437	52438	52424
11844	2	1	2	0	1		52437	52451	52452	52438
11845	2	1	2	0	1		52451	52465	52466	52452
11846	2	1	2	0	1		52465	52479	52480	52466
11847	2	1	2	0	1		52479	52493	52494	52480
11848	2	1	2	0	1		52493	52507	52508	52494
11849	2	1	2	0	1		52507	52521	52522	52508
11850	2	1	2	0	1		52521	52535	52536	52522
11851	2	1	2	0	1		52535	52549	52550	52536
11852	2	1	2	0	1		52549	52325	52326	52550
11853	2	1	2	0	1		52354	52368	52369	52355
11854	2	1	2	0	1		52368	52382	52383	52369
11855	2	1	2	0	1		52382	52396	52397	52383
11856	2	1	2	0	1		52396	52410	52411	52397
11857	2	1	2	0	1		52410	52424	52425	52411
11858	2	1	2	0	1		52424	52438	52439	52425
11859	2	1	2	0	1		52438	52452	52453	52439

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11860	2	1	2	0	1		52452	52466	52467	52453
11861	2	1	2	0	1		52466	52480	52481	52467
11862	2	1	2	0	1		52480	52494	52495	52481
11863	2	1	2	0	1		52494	52508	52509	52495
11864	2	1	2	0	1		52508	52522	52523	52509
11865	2	1	2	0	1		52522	52536	52537	52523
11866	2	1	2	0	1		52536	52550	52551	52537
11867	2	1	2	0	1		52550	52326	52327	52551
11868	2	1	2	0	1		52355	52369	52370	52356
11869	2	1	2	0	1		52369	52383	52384	52370
11870	2	1	2	0	1		52383	52397	52398	52384
11871	2	1	2	0	1		52397	52411	52412	52398
11872	2	1	2	0	1		52411	52425	52426	52412
11873	2	1	2	0	1		52425	52439	52440	52426
11874	2	1	2	0	1		52439	52453	52454	52440
11875	2	1	2	0	1		52453	52467	52468	52454
11876	2	1	2	0	1		52467	52481	52482	52468
11877	2	1	2	0	1		52481	52495	52496	52482
11878	2	1	2	0	1		52495	52509	52510	52496
11879	2	1	2	0	1		52509	52523	52524	52510

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11880	2	1	2	0	1		52523	52537	52538	52524
11881	2	1	2	0	1		52537	52551	52552	52538
11882	2	1	2	0	1		52551	52327	52328	52552
11883	2	1	2	0	1		52356	52370	52371	52357
11884	2	1	2	0	1		52370	52384	52385	52371
11885	2	1	2	0	1		52384	52398	52399	52385
11886	2	1	2	0	1		52398	52412	52413	52399
11887	2	1	2	0	1		52412	52426	52427	52413

11888	2	1	2	0	1		52426	52440	52441	52427
11889	2	1	2	0	1		52440	52454	52455	52441
11890	2	1	2	0	1		52454	52468	52469	52455
11891	2	1	2	0	1		52468	52482	52483	52469
11892	2	1	2	0	1		52482	52496	52497	52483
11893	2	1	2	0	1		52496	52510	52511	52497
11894	2	1	2	0	1		52510	52524	52525	52511
11895	2	1	2	0	1		52524	52538	52539	52525
11896	2	1	2	0	1		52538	52552	52553	52539
11897	2	1	2	0	1		52552	52328	52329	52553
11898	2	1	2	0	1		52357	52371	52372	52358
11899	2	1	2	0	1		52371	52385	52386	52372

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11900	2	1	2	0	1		52385	52399	52400	52386
11901	2	1	2	0	1		52399	52413	52414	52400
11902	2	1	2	0	1		52413	52427	52428	52414
11903	2	1	2	0	1		52427	52441	52442	52428
11904	2	1	2	0	1		52441	52455	52456	52442
11905	2	1	2	0	1		52455	52469	52470	52456
11906	2	1	2	0	1		52469	52483	52484	52470
11907	2	1	2	0	1		52483	52497	52498	52484
11908	2	1	2	0	1		52497	52511	52512	52498
11909	2	1	2	0	1		52511	52525	52526	52512
11910	2	1	2	0	1		52525	52539	52540	52526
11911	2	1	2	0	1		52539	52553	52554	52540
11912	2	1	2	0	1		52553	52329	52330	52554
11913	2	1	2	0	1		52358	52372	52373	52359
11914	2	1	2	0	1		52372	52386	52387	52373
11915	2	1	2	0	1		52386	52400	52401	52387
11916	2	1	2	0	1		52400	52414	52415	52401
11917	2	1	2	0	1		52414	52428	52429	52415
11918	2	1	2	0	1		52428	52442	52443	52429
11919	2	1	2	0	1		52442	52456	52457	52443

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11920	2	1	2	0	1		52456	52470	52471	52457
11921	2	1	2	0	1		52470	52484	52485	52471
11922	2	1	2	0	1		52484	52498	52499	52485
11923	2	1	2	0	1		52498	52512	52513	52499
11924	2	1	2	0	1		52512	52526	52527	52513
11925	2	1	2	0	1		52526	52540	52541	52527
11926	2	1	2	0	1		52540	52554	52555	52541
11927	2	1	2	0	1		52554	52330	52331	52555
11928	2	1	2	0	1		52359	52373	52374	52360
11929	2	1	2	0	1		52373	52387	52388	52374
11930	2	1	2	0	1		52387	52401	52402	52388
11931	2	1	2	0	1		52401	52415	52416	52402
11932	2	1	2	0	1		52415	52429	52430	52416
11933	2	1	2	0	1		52429	52443	52444	52430
11934	2	1	2	0	1		52443	52457	52458	52444
11935	2	1	2	0	1		52457	52471	52472	52458
11936	2	1	2	0	1		52471	52485	52486	52472
11937	2	1	2	0	1		52485	52499	52500	52486
11938	2	1	2	0	1		52499	52513	52514	52500
11939	2	1	2	0	1		52513	52527	52528	52514

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11940	2	1	2	0	1		52527	52541	52542	52528
11941	2	1	2	0	1		52541	52555	52556	52542
11942	2	1	2	0	1		52555	52331	52332	52556
11943	2	1	2	0	1		52360	52374	52375	52361
11944	2	1	2	0	1		52374	52388	52389	52375
11945	2	1	2	0	1		52388	52402	52403	52389
11946	2	1	2	0	1		52402	52416	52417	52403
11947	2	1	2	0	1		52416	52430	52431	52417
11948	2	1	2	0	1		52430	52444	52445	52431
11949	2	1	2	0	1		52444	52458	52459	52445
11950	2	1	2	0	1		52458	52472	52473	52459
11951	2	1	2	0	1		52472	52486	52487	52473
11952	2	1	2	0	1		52486	52500	52501	52487
11953	2	1	2	0	1		52500	52514	52515	52501

11954	2	1	2	0	1		52514	52528	52529	52515
11955	2	1	2	0	1		52528	52542	52543	52529
11956	2	1	2	0	1		52542	52556	52557	52543
11957	2	1	2	0	1		52556	52332	52333	52557
11958	2	1	2	0	1		52361	52375	52376	52362
11959	2	1	2	0	1		52375	52389	52390	52376

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11960	2	1	2	0	1		52389	52403	52404	52390
11961	2	1	2	0	1		52403	52417	52418	52404
11962	2	1	2	0	1		52417	52431	52432	52418
11963	2	1	2	0	1		52431	52445	52446	52432
11964	2	1	2	0	1		52445	52459	52460	52446
11965	2	1	2	0	1		52459	52473	52474	52460
11966	2	1	2	0	1		52473	52487	52488	52474
11967	2	1	2	0	1		52487	52501	52502	52488
11968	2	1	2	0	1		52501	52515	52516	52502
11969	2	1	2	0	1		52515	52529	52530	52516
11970	2	1	2	0	1		52529	52543	52544	52530
11971	2	1	2	0	1		52543	52557	52558	52544
11972	2	1	2	0	1		52557	52333	52334	52558
11973	2	1	2	0	1		52362	52376	52377	52363
11974	2	1	2	0	1		52376	52390	52391	52377
11975	2	1	2	0	1		52390	52404	52405	52391
11976	2	1	2	0	1		52404	52418	52419	52405
11977	2	1	2	0	1		52418	52432	52433	52419
11978	2	1	2	0	1		52432	52446	52447	52433
11979	2	1	2	0	1		52446	52460	52461	52447

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
11980	2	1	2	0	1		52460	52474	52475	52461
11981	2	1	2	0	1		52474	52488	52489	52475
11982	2	1	2	0	1		52488	52502	52503	52489
11983	2	1	2	0	1		52502	52516	52517	52503
11984	2	1	2	0	1		52516	52530	52531	52517
11985	2	1	2	0	1		52530	52544	52545	52531
11986	2	1	2	0	1		52544	52558	52559	52545
11987	2	1	2	0	1		52558	52334	52335	52559
11988	2	1	2	0	1		52363	52377	52378	52364
11989	2	1	2	0	1		52377	52391	52392	52378
11990	2	1	2	0	1		52391	52405	52406	52392
11991	2	1	2	0	1		52405	52419	52420	52406
11992	2	1	2	0	1		52419	52433	52434	52420
11993	2	1	2	0	1		52433	52447	52448	52434
11994	2	1	2	0	1		52447	52461	52462	52448
11995	2	1	2	0	1		52461	52475	52476	52462
11996	2	1	2	0	1		52475	52489	52490	52476
11997	2	1	2	0	1		52489	52503	52504	52490
11998	2	1	2	0	1		52503	52517	52518	52504
11999	2	1	2	0	1		52517	52531	52532	52518

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12000	2	1	2	0	1		52531	52545	52546	52532
12001	2	1	2	0	1		52545	52559	52560	52546
12002	2	1	2	0	1		52559	52335	52336	52560
12003	2	1	2	0	1		52364	52378	52337	51351
12004	2	1	2	0	1		52378	52392	52338	52337
12005	2	1	2	0	1		52392	52406	52339	52338
12006	2	1	2	0	1		52406	52420	52340	52339
12007	2	1	2	0	1		52420	52434	52341	52340
12008	2	1	2	0	1		52434	52448	52342	52341
12009	2	1	2	0	1		52448	52462	52343	52342
12010	2	1	2	0	1		52462	52476	52344	52343
12011	2	1	2	0	1		52476	52490	52345	52344
12012	2	1	2	0	1		52490	52504	52346	52345
12013	2	1	2	0	1		52504	52518	52347	52346
12014	2	1	2	0	1		52518	52532	52348	52347
12015	2	1	2	0	1		52532	52546	52349	52348
12016	2	1	2	0	1		52546	52560	52350	52349
12017	2	1	2	0	1		52560	52336	51341	52350
12018	2	1	2	0	1		20936	20950	52604	52590
12019	2	1	2	0	1		20950	20949	52618	52604

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12020	2	1	2	0	1		20949 20948 52632 52618
12021	2	1	2	0	1		20948 20947 52646 52632
12022	2	1	2	0	1		20947 20946 52660 52646
12023	2	1	2	0	1		20946 20945 52674 52660
12024	2	1	2	0	1		20945 20944 52688 52674
12025	2	1	2	0	1		20944 20943 52702 52688
12026	2	1	2	0	1		20943 20942 52716 52702
12027	2	1	2	0	1		20942 20941 52730 52716
12028	2	1	2	0	1		20941 20940 52744 52730
12029	2	1	2	0	1		20940 20939 52758 52744
12030	2	1	2	0	1		20939 20938 52772 52758
12031	2	1	2	0	1		20938 20937 52786 52772
12032	2	1	2	0	1		20937 20934 52562 52786
12033	2	1	2	0	1		52590 52604 52605 52591
12034	2	1	2	0	1		52604 52618 52619 52605
12035	2	1	2	0	1		52618 52632 52633 52619
12036	2	1	2	0	1		52632 52646 52647 52633
12037	2	1	2	0	1		52646 52660 52661 52647
12038	2	1	2	0	1		52660 52674 52675 52661
12039	2	1	2	0	1		52674 52688 52689 52675

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12040	2	1	2	0	1		52688 52702 52703 52689
12041	2	1	2	0	1		52702 52716 52717 52703
12042	2	1	2	0	1		52716 52730 52731 52717
12043	2	1	2	0	1		52730 52744 52745 52731
12044	2	1	2	0	1		52744 52758 52759 52745
12045	2	1	2	0	1		52758 52772 52773 52759
12046	2	1	2	0	1		52772 52786 52787 52773
12047	2	1	2	0	1		52786 52562 52563 52787
12048	2	1	2	0	1		52591 52605 52606 52592
12049	2	1	2	0	1		52605 52619 52620 52606
12050	2	1	2	0	1		52619 52633 52634 52620
12051	2	1	2	0	1		52633 52647 52648 52634
12052	2	1	2	0	1		52647 52661 52662 52648
12053	2	1	2	0	1		52661 52675 52676 52662
12054	2	1	2	0	1		52675 52689 52690 52676
12055	2	1	2	0	1		52689 52703 52704 52690
12056	2	1	2	0	1		52703 52717 52718 52704
12057	2	1	2	0	1		52717 52731 52732 52718
12058	2	1	2	0	1		52731 52745 52746 52732
12059	2	1	2	0	1		52745 52759 52760 52746

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12060	2	1	2	0	1		52759 52773 52774 52760
12061	2	1	2	0	1		52773 52787 52788 52774
12062	2	1	2	0	1		52787 52563 52564 52788
12063	2	1	2	0	1		52592 52606 52607 52593
12064	2	1	2	0	1		52606 52620 52621 52607
12065	2	1	2	0	1		52620 52634 52635 52621
12066	2	1	2	0	1		52634 52648 52649 52635
12067	2	1	2	0	1		52648 52662 52663 52649
12068	2	1	2	0	1		52662 52676 52677 52663
12069	2	1	2	0	1		52676 52690 52691 52677
12070	2	1	2	0	1		52690 52704 52705 52691
12071	2	1	2	0	1		52704 52718 52719 52705
12072	2	1	2	0	1		52718 52732 52733 52719
12073	2	1	2	0	1		52732 52746 52747 52733
12074	2	1	2	0	1		52746 52760 52761 52747
12075	2	1	2	0	1		52760 52774 52775 52761
12076	2	1	2	0	1		52774 52788 52789 52775
12077	2	1	2	0	1		52788 52564 52565 52789
12078	2	1	2	0	1		52593 52607 52608 52594
12079	2	1	2	0	1		52607 52621 52622 52608

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12080	2	1	2	0	1		52621 52635 52636 52622
12081	2	1	2	0	1		52635 52649 52650 52636
12082	2	1	2	0	1		52649 52663 52664 52650

12083	2	1	2	0	1		52663 52677 52678 52664
12084	2	1	2	0	1		52677 52691 52692 52678
12085	2	1	2	0	1		52691 52705 52706 52692
12086	2	1	2	0	1		52705 52719 52720 52706
12087	2	1	2	0	1		52719 52733 52734 52720
12088	2	1	2	0	1		52733 52747 52748 52734
12089	2	1	2	0	1		52747 52761 52762 52748
12090	2	1	2	0	1		52761 52775 52776 52762
12091	2	1	2	0	1		52775 52789 52790 52776
12092	2	1	2	0	1		52789 52565 52566 52790
12093	2	1	2	0	1		52594 52608 52609 52595
12094	2	1	2	0	1		52608 52622 52623 52609
12095	2	1	2	0	1		52622 52636 52637 52623
12096	2	1	2	0	1		52636 52650 52651 52637
12097	2	1	2	0	1		52650 52664 52665 52651
12098	2	1	2	0	1		52664 52678 52679 52665
12099	2	1	2	0	1		52678 52692 52693 52679

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12100	2	1	2	0	1		52692 52706 52707 52693
12101	2	1	2	0	1		52706 52720 52721 52707
12102	2	1	2	0	1		52720 52734 52735 52721
12103	2	1	2	0	1		52734 52748 52749 52735
12104	2	1	2	0	1		52748 52762 52763 52749
12105	2	1	2	0	1		52762 52776 52777 52763
12106	2	1	2	0	1		52776 52790 52791 52777
12107	2	1	2	0	1		52790 52566 52567 52791
12108	2	1	2	0	1		52595 52609 52610 52596
12109	2	1	2	0	1		52609 52623 52624 52610
12110	2	1	2	0	1		52623 52637 52638 52624
12111	2	1	2	0	1		52637 52651 52652 52638
12112	2	1	2	0	1		52651 52665 52666 52652
12113	2	1	2	0	1		52665 52679 52680 52666
12114	2	1	2	0	1		52679 52693 52694 52680
12115	2	1	2	0	1		52693 52707 52708 52694
12116	2	1	2	0	1		52707 52721 52722 52708
12117	2	1	2	0	1		52721 52735 52736 52722
12118	2	1	2	0	1		52735 52749 52750 52736
12119	2	1	2	0	1		52749 52763 52764 52750

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12120	2	1	2	0	1		52763 52777 52778 52764
12121	2	1	2	0	1		52777 52791 52792 52778
12122	2	1	2	0	1		52791 52567 52568 52792
12123	2	1	2	0	1		52596 52610 52611 52597
12124	2	1	2	0	1		52610 52624 52625 52611
12125	2	1	2	0	1		52624 52638 52639 52625
12126	2	1	2	0	1		52638 52652 52653 52639
12127	2	1	2	0	1		52652 52666 52667 52653
12128	2	1	2	0	1		52666 52680 52681 52667
12129	2	1	2	0	1		52680 52694 52695 52681
12130	2	1	2	0	1		52694 52708 52709 52695
12131	2	1	2	0	1		52708 52722 52723 52709
12132	2	1	2	0	1		52722 52736 52737 52723
12133	2	1	2	0	1		52736 52750 52751 52737
12134	2	1	2	0	1		52750 52764 52765 52751
12135	2	1	2	0	1		52764 52778 52779 52765
12136	2	1	2	0	1		52778 52792 52793 52779
12137	2	1	2	0	1		52792 52568 52569 52793
12138	2	1	2	0	1		52597 52611 52612 52598
12139	2	1	2	0	1		52611 52625 52626 52612

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12140	2	1	2	0	1		52625 52639 52640 52626
12141	2	1	2	0	1		52639 52653 52654 52640
12142	2	1	2	0	1		52653 52667 52668 52654
12143	2	1	2	0	1		52667 52681 52682 52668
12144	2	1	2	0	1		52681 52695 52696 52682
12145	2	1	2	0	1		52695 52709 52710 52696
12146	2	1	2	0	1		52709 52723 52724 52710
12147	2	1	2	0	1		52723 52737 52738 52724
12148	2	1	2	0	1		52737 52751 52752 52738

541

12149	2	1	2	0	1		52751	52765	52766	52752
12150	2	1	2	0	1		52765	52779	52780	52766
12151	2	1	2	0	1		52779	52793	52794	52780
12152	2	1	2	0	1		52793	52569	52570	52794
12153	2	1	2	0	1		52598	52612	52613	52599
12154	2	1	2	0	1		52612	52626	52627	52613
12155	2	1	2	0	1		52626	52640	52641	52627
12156	2	1	2	0	1		52640	52654	52655	52641
12157	2	1	2	0	1		52654	52668	52669	52655
12158	2	1	2	0	1		52668	52682	52683	52669
12159	2	1	2	0	1		52682	52696	52697	52683

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12160	2	1	2	0	1		52696	52710	52711	52697
12161	2	1	2	0	1		52710	52724	52725	52711
12162	2	1	2	0	1		52724	52738	52739	52725
12163	2	1	2	0	1		52738	52752	52753	52739
12164	2	1	2	0	1		52752	52766	52767	52753
12165	2	1	2	0	1		52766	52780	52781	52767
12166	2	1	2	0	1		52780	52794	52795	52781
12167	2	1	2	0	1		52794	52570	52571	52795
12168	2	1	2	0	1		52599	52613	52614	52600
12169	2	1	2	0	1		52613	52627	52628	52614
12170	2	1	2	0	1		52627	52641	52642	52628
12171	2	1	2	0	1		52641	52655	52656	52642
12172	2	1	2	0	1		52655	52669	52670	52656
12173	2	1	2	0	1		52669	52683	52684	52670
12174	2	1	2	0	1		52683	52697	52698	52684
12175	2	1	2	0	1		52697	52711	52712	52698
12176	2	1	2	0	1		52711	52725	52726	52712
12177	2	1	2	0	1		52725	52739	52740	52726
12178	2	1	2	0	1		52739	52753	52754	52740
12179	2	1	2	0	1		52753	52767	52768	52754

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12180	2	1	2	0	1		52767	52781	52782	52768
12181	2	1	2	0	1		52781	52795	52796	52782
12182	2	1	2	0	1		52795	52571	52572	52796
12183	2	1	2	0	1		52600	52614	52615	52601
12184	2	1	2	0	1		52614	52628	52629	52615
12185	2	1	2	0	1		52628	52642	52643	52629
12186	2	1	2	0	1		52642	52656	52657	52643
12187	2	1	2	0	1		52656	52670	52671	52657
12188	2	1	2	0	1		52670	52684	52685	52671
12189	2	1	2	0	1		52684	52698	52699	52685
12190	2	1	2	0	1		52698	52712	52713	52699
12191	2	1	2	0	1		52712	52726	52727	52713
12192	2	1	2	0	1		52726	52740	52741	52727
12193	2	1	2	0	1		52740	52754	52755	52741
12194	2	1	2	0	1		52754	52768	52769	52755
12195	2	1	2	0	1		52768	52782	52783	52769
12196	2	1	2	0	1		52782	52796	52797	52783
12197	2	1	2	0	1		52796	52572	52573	52797
12198	2	1	2	0	1		52601	52615	52616	52602
12199	2	1	2	0	1		52615	52629	52630	52616

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12200	2	1	2	0	1		52629	52643	52644	52630
12201	2	1	2	0	1		52643	52657	52658	52644
12202	2	1	2	0	1		52657	52671	52672	52658
12203	2	1	2	0	1		52671	52685	52686	52672
12204	2	1	2	0	1		52685	52699	52700	52686
12205	2	1	2	0	1		52699	52713	52714	52700
12206	2	1	2	0	1		52713	52727	52728	52714
12207	2	1	2	0	1		52727	52741	52742	52728
12208	2	1	2	0	1		52741	52755	52756	52742
12209	2	1	2	0	1		52755	52769	52770	52756
12210	2	1	2	0	1		52769	52783	52784	52770
12211	2	1	2	0	1		52783	52797	52798	52784
12212	2	1	2	0	1		52797	52573	52574	52798
12213	2	1	2	0	1		52602	52616	52617	52603
12214	2	1	2	0	1		52616	52630	52631	52617

12215	2	1	2	0	1		52630	52644	52645	52631
12216	2	1	2	0	1		52644	52658	52659	52645
12217	2	1	2	0	1		52658	52672	52673	52659
12218	2	1	2	0	1		52672	52686	52687	52673
12219	2	1	2	0	1		52686	52700	52701	52687

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12220	2	1	2	0	1		52700	52714	52715	52701
12221	2	1	2	0	1		52714	52728	52729	52715
12222	2	1	2	0	1		52728	52742	52743	52729
12223	2	1	2	0	1		52742	52756	52757	52743
12224	2	1	2	0	1		52756	52770	52771	52757
12225	2	1	2	0	1		52770	52784	52785	52771
12226	2	1	2	0	1		52784	52798	52799	52785
12227	2	1	2	0	1		52798	52574	52575	52799
12228	2	1	2	0	1		52603	52617	52576	52084
12229	2	1	2	0	1		52617	52631	52577	52576
12230	2	1	2	0	1		52631	52645	52578	52577
12231	2	1	2	0	1		52645	52659	52579	52578
12232	2	1	2	0	1		52659	52673	52580	52579
12233	2	1	2	0	1		52673	52687	52581	52580
12234	2	1	2	0	1		52687	52701	52582	52581
12235	2	1	2	0	1		52701	52715	52583	52582
12236	2	1	2	0	1		52715	52729	52584	52583
12237	2	1	2	0	1		52729	52743	52585	52584
12238	2	1	2	0	1		52743	52757	52586	52585
12239	2	1	2	0	1		52757	52771	52587	52586

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12240	2	1	2	0	1		52771	52785	52588	52587
12241	2	1	2	0	1		52785	52799	52589	52588
12242	2	1	2	0	1		52799	52575	52561	52589
12243	2	1	2	0	1		20981	20995	52843	52829
12244	2	1	2	0	1		20995	20994	52857	52843
12245	2	1	2	0	1		20994	20993	52871	52857
12246	2	1	2	0	1		20993	20992	52885	52871
12247	2	1	2	0	1		20992	20991	52899	52885
12248	2	1	2	0	1		20991	20990	52913	52899
12249	2	1	2	0	1		20990	20989	52927	52913
12250	2	1	2	0	1		20989	20988	52941	52927
12251	2	1	2	0	1		20988	20987	52955	52941
12252	2	1	2	0	1		20987	20986	52969	52955
12253	2	1	2	0	1		20986	20985	52983	52969
12254	2	1	2	0	1		20985	20984	52997	52983
12255	2	1	2	0	1		20984	20983	53011	52997
12256	2	1	2	0	1		20983	20982	53025	53011
12257	2	1	2	0	1		20982	365	52801	53025
12258	2	1	2	0	1		52829	52843	52844	52830
12259	2	1	2	0	1		52843	52857	52858	52844

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12260	2	1	2	0	1		52857	52871	52872	52858
12261	2	1	2	0	1		52871	52885	52886	52872
12262	2	1	2	0	1		52885	52899	52900	52886
12263	2	1	2	0	1		52899	52913	52914	52900
12264	2	1	2	0	1		52913	52927	52928	52914
12265	2	1	2	0	1		52927	52941	52942	52928
12266	2	1	2	0	1		52941	52955	52956	52942
12267	2	1	2	0	1		52955	52969	52970	52956
12268	2	1	2	0	1		52969	52983	52984	52970
12269	2	1	2	0	1		52983	52997	52998	52984
12270	2	1	2	0	1		52997	53011	53012	52998
12271	2	1	2	0	1		53011	53025	53026	53012
12272	2	1	2	0	1		53025	52801	52802	53026
12273	2	1	2	0	1		52830	52844	52845	52831
12274	2	1	2	0	1		52844	52858	52859	52845
12275	2	1	2	0	1		52858	52872	52873	52859
12276	2	1	2	0	1		52872	52886	52887	52873
12277	2	1	2	0	1		52886	52900	52901	52887
12278	2	1	2	0	1		52900	52914	52915	52901
12279	2	1	2	0	1		52914	52928	52929	52915

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12280	2	1	2	0	1		52928 52942 52943 52929
12281	2	1	2	0	1		52942 52956 52957 52943
12282	2	1	2	0	1		52956 52970 52971 52957
12283	2	1	2	0	1		52970 52984 52985 52971
12284	2	1	2	0	1		52984 52998 52999 52985
12285	2	1	2	0	1		52998 53012 53013 52999
12286	2	1	2	0	1		53012 53026 53027 53013
12287	2	1	2	0	1		53026 52802 52803 53027
12288	2	1	2	0	1		52831 52845 52846 52832
12289	2	1	2	0	1		52845 52859 52860 52846
12290	2	1	2	0	1		52859 52873 52874 52860
12291	2	1	2	0	1		52873 52887 52888 52874
12292	2	1	2	0	1		52887 52901 52902 52888
12293	2	1	2	0	1		52901 52915 52916 52902
12294	2	1	2	0	1		52915 52929 52930 52916
12295	2	1	2	0	1		52929 52943 52944 52930
12296	2	1	2	0	1		52943 52957 52958 52944
12297	2	1	2	0	1		52957 52971 52972 52958
12298	2	1	2	0	1		52971 52985 52986 52972
12299	2	1	2	0	1		52985 52999 53000 52986

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12300	2	1	2	0	1		52999 53013 53014 53000
12301	2	1	2	0	1		53013 53027 53028 53014
12302	2	1	2	0	1		53027 52803 52804 53028
12303	2	1	2	0	1		52832 52846 52847 52833
12304	2	1	2	0	1		52846 52860 52861 52847
12305	2	1	2	0	1		52860 52874 52875 52861
12306	2	1	2	0	1		52874 52888 52889 52875
12307	2	1	2	0	1		52888 52902 52903 52889
12308	2	1	2	0	1		52902 52916 52917 52903
12309	2	1	2	0	1		52916 52930 52931 52917
12310	2	1	2	0	1		52930 52944 52945 52931
12311	2	1	2	0	1		52944 52958 52959 52945
12312	2	1	2	0	1		52958 52972 52973 52959
12313	2	1	2	0	1		52972 52986 52987 52973
12314	2	1	2	0	1		52986 53000 53001 52987
12315	2	1	2	0	1		53000 53014 53015 53001
12316	2	1	2	0	1		53014 53028 53029 53015
12317	2	1	2	0	1		53028 52804 52805 53029
12318	2	1	2	0	1		52833 52847 52848 52834
12319	2	1	2	0	1		52847 52861 52862 52848

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12320	2	1	2	0	1		52861 52875 52876 52862
12321	2	1	2	0	1		52875 52889 52890 52876
12322	2	1	2	0	1		52889 52903 52904 52890
12323	2	1	2	0	1		52903 52917 52918 52904
12324	2	1	2	0	1		52917 52931 52932 52918
12325	2	1	2	0	1		52931 52945 52946 52932
12326	2	1	2	0	1		52945 52959 52960 52946
12327	2	1	2	0	1		52959 52973 52974 52960
12328	2	1	2	0	1		52973 52987 52988 52974
12329	2	1	2	0	1		52987 53001 53002 52988
12330	2	1	2	0	1		53001 53015 53016 53002
12331	2	1	2	0	1		53015 53029 53030 53016
12332	2	1	2	0	1		53029 52805 52806 53030
12333	2	1	2	0	1		52834 52848 52849 52835
12334	2	1	2	0	1		52848 52862 52863 52849
12335	2	1	2	0	1		52862 52876 52877 52863
12336	2	1	2	0	1		52876 52890 52891 52877
12337	2	1	2	0	1		52890 52904 52905 52891
12338	2	1	2	0	1		52904 52918 52919 52905
12339	2	1	2	0	1		52918 52932 52933 52919

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12340	2	1	2	0	1		52932 52946 52947 52933
12341	2	1	2	0	1		52946 52960 52961 52947
12342	2	1	2	0	1		52960 52974 52975 52961
12343	2	1	2	0	1		52974 52988 52989 52975

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12344	2	1	2	0	1		52988 53002 53003 52989
12345	2	1	2	0	1		53002 53016 53017 53003
12346	2	1	2	0	1		53016 53030 53031 53017
12347	2	1	2	0	1		53030 52806 52807 53031
12348	2	1	2	0	1		52835 52849 52850 52836
12349	2	1	2	0	1		52849 52863 52864 52850
12350	2	1	2	0	1		52863 52877 52878 52864
12351	2	1	2	0	1		52877 52891 52892 52878
12352	2	1	2	0	1		52891 52905 52906 52892
12353	2	1	2	0	1		52905 52919 52920 52906
12354	2	1	2	0	1		52919 52933 52934 52920
12355	2	1	2	0	1		52933 52947 52948 52934
12356	2	1	2	0	1		52947 52961 52962 52948
12357	2	1	2	0	1		52961 52975 52976 52962
12358	2	1	2	0	1		52975 52989 52990 52976
12359	2	1	2	0	1		52989 53003 53004 52990

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12360	2	1	2	0	1		53003 53017 53018 53004
12361	2	1	2	0	1		53017 53031 53032 53018
12362	2	1	2	0	1		53031 52807 52808 53032
12363	2	1	2	0	1		52836 52850 52851 52837
12364	2	1	2	0	1		52850 52864 52865 52851
12365	2	1	2	0	1		52864 52878 52879 52865
12366	2	1	2	0	1		52878 52892 52893 52879
12367	2	1	2	0	1		52892 52906 52907 52893
12368	2	1	2	0	1		52906 52920 52921 52907
12369	2	1	2	0	1		52920 52934 52935 52921
12370	2	1	2	0	1		52934 52948 52949 52935
12371	2	1	2	0	1		52948 52962 52963 52949
12372	2	1	2	0	1		52962 52976 52977 52963
12373	2	1	2	0	1		52976 52990 52991 52977
12374	2	1	2	0	1		52990 53004 53005 52991
12375	2	1	2	0	1		53004 53018 53019 53005
12376	2	1	2	0	1		53018 53032 53033 53019
12377	2	1	2	0	1		53032 52808 52809 53033
12378	2	1	2	0	1		52837 52851 52852 52838
12379	2	1	2	0	1		52851 52865 52866 52852

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12380	2	1	2	0	1		52865 52879 52880 52866
12381	2	1	2	0	1		52879 52893 52894 52880
12382	2	1	2	0	1		52893 52907 52908 52894
12383	2	1	2	0	1		52907 52921 52922 52908
12384	2	1	2	0	1		52921 52935 52936 52922
12385	2	1	2	0	1		52935 52949 52950 52936
12386	2	1	2	0	1		52949 52963 52964 52950
12387	2	1	2	0	1		52963 52977 52978 52964
12388	2	1	2	0	1		52977 52991 52992 52978
12389	2	1	2	0	1		52991 53005 53006 52992
12390	2	1	2	0	1		53005 53019 53020 53006
12391	2	1	2	0	1		53019 53033 53034 53020
12392	2	1	2	0	1		53033 52809 52810 53034
12393	2	1	2	0	1		52838 52852 52853 52839
12394	2	1	2	0	1		52852 52866 52867 52853
12395	2	1	2	0	1		52866 52880 52881 52867
12396	2	1	2	0	1		52880 52894 52895 52881
12397	2	1	2	0	1		52894 52908 52909 52895
12398	2	1	2	0	1		52908 52922 52923 52909
12399	2	1	2	0	1		52922 52936 52937 52923

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
12400	2	1	2	0	1		52936 52950 52951 52937
12401	2	1	2	0	1		52950 52964 52965 52951
12402	2	1	2	0	1		52964 52978 52979 52965
12403	2	1	2	0	1		52978 52992 52993 52979
12404	2	1	2	0	1		52992 53006 53007 52993
12405	2	1	2	0	1		53006 53020 53021 53007
12406	2	1	2	0	1		53020 53034 53035 53021
12407	2	1	2	0	1		53034 52810 52811 53035
12408	2	1	2	0	1		52839 52853 52854 52840
12409	2	1	2	0	1		52853 52867 52868 52854

12410	2	1	2	0	1	52867	52881	52882	52868
12411	2	1	2	0	1	52881	52895	52896	52882
12412	2	1	2	0	1	52895	52909	52910	52896
12413	2	1	2	0	1	52909	52923	52924	52910
12414	2	1	2	0	1	52923	52937	52938	52924
12415	2	1	2	0	1	52937	52951	52952	52938
12416	2	1	2	0	1	52951	52965	52966	52952
12417	2	1	2	0	1	52965	52979	52980	52966
12418	2	1	2	0	1	52979	52993	52994	52980
12419	2	1	2	0	1	52993	53007	53008	52994

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12420	2	1	2	0	1		53007	53021	53022	53008
12421	2	1	2	0	1		53021	53035	53036	53022
12422	2	1	2	0	1		53035	52811	52812	53036
12423	2	1	2	0	1		52840	52854	52855	52841
12424	2	1	2	0	1		52854	52868	52869	52855
12425	2	1	2	0	1		52868	52882	52883	52869
12426	2	1	2	0	1		52882	52896	52897	52883
12427	2	1	2	0	1		52896	52910	52911	52897
12428	2	1	2	0	1		52910	52924	52925	52911
12429	2	1	2	0	1		52924	52938	52939	52925
12430	2	1	2	0	1		52938	52952	52953	52939
12431	2	1	2	0	1		52952	52966	52967	52953
12432	2	1	2	0	1		52966	52980	52981	52967
12433	2	1	2	0	1		52980	52994	52995	52981
12434	2	1	2	0	1		52994	53008	53009	52995
12435	2	1	2	0	1		53008	53022	53023	53009
12436	2	1	2	0	1		53022	53036	53037	53023
12437	2	1	2	0	1		53036	52812	52813	53037
12438	2	1	2	0	1		52841	52855	52856	52842
12439	2	1	2	0	1		52855	52869	52870	52856

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12440	2	1	2	0	1		52869	52883	52884	52870
12441	2	1	2	0	1		52883	52897	52898	52884
12442	2	1	2	0	1		52897	52911	52912	52898
12443	2	1	2	0	1		52911	52925	52926	52912
12444	2	1	2	0	1		52925	52939	52940	52926
12445	2	1	2	0	1		52939	52953	52954	52940
12446	2	1	2	0	1		52953	52967	52968	52954
12447	2	1	2	0	1		52967	52981	52982	52968
12448	2	1	2	0	1		52981	52995	52996	52982
12449	2	1	2	0	1		52995	53009	53010	52996
12450	2	1	2	0	1		53009	53023	53024	53010
12451	2	1	2	0	1		53023	53037	53038	53024
12452	2	1	2	0	1		53037	52813	52814	53038
12453	2	1	2	0	1		52842	52856	52815	52561
12454	2	1	2	0	1		52856	52870	52816	52815
12455	2	1	2	0	1		52870	52884	52817	52816
12456	2	1	2	0	1		52884	52898	52818	52817
12457	2	1	2	0	1		52898	52912	52819	52818
12458	2	1	2	0	1		52912	52926	52820	52819
12459	2	1	2	0	1		52926	52940	52821	52820

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12460	2	1	2	0	1		52940	52954	52822	52821
12461	2	1	2	0	1		52954	52968	52823	52822
12462	2	1	2	0	1		52968	52982	52824	52823
12463	2	1	2	0	1		52982	52996	52825	52824
12464	2	1	2	0	1		52996	53010	52826	52825
12465	2	1	2	0	1		53010	53024	52827	52826
12466	2	1	2	0	1		53024	53038	52828	52827
12467	2	1	2	0	1		53038	52814	52800	52828
12468	2	1	2	0	1		51341	51342	53055	52350
12469	2	1	2	0	1		51342	51336	53053	53055
12470	2	1	2	0	1		52350	53055	53056	52349
12471	2	1	2	0	1		53055	53053	53052	53056
12472	2	1	2	0	1		52349	53056	53057	52348
12473	2	1	2	0	1		53056	53052	53051	53057
12474	2	1	2	0	1		52348	53057	53058	52347
12475	2	1	2	0	1		53057	53051	53050	53058

12476	2	1	2	0	1	52347	53058	53059	52346
12477	2	1	2	0	1	53058	53050	53049	53059
12478	2	1	2	0	1	52346	53059	53060	52345
12479	2	1	2	0	1	53059	53049	53048	53060

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12480	2	1	2	0	1		52345	53060	53061	52344
12481	2	1	2	0	1		53060	53048	53047	53061
12482	2	1	2	0	1		52344	53061	53062	52343
12483	2	1	2	0	1		53061	53047	53046	53062
12484	2	1	2	0	1		52343	53062	53063	52342
12485	2	1	2	0	1		53062	53046	53045	53063
12486	2	1	2	0	1		52342	53063	53064	52341
12487	2	1	2	0	1		53063	53045	53044	53064
12488	2	1	2	0	1		52341	53064	53065	52340
12489	2	1	2	0	1		53064	53044	53043	53065
12490	2	1	2	0	1		52340	53065	53066	52339
12491	2	1	2	0	1		53065	53043	53042	53066
12492	2	1	2	0	1		52339	53066	53067	52338
12493	2	1	2	0	1		53066	53042	53041	53067
12494	2	1	2	0	1		52338	53067	53068	52337
12495	2	1	2	0	1		53067	53041	53040	53068
12496	2	1	2	0	1		52337	53068	53054	51351
12497	2	1	2	0	1		53068	53040	53039	53054
12498	2	1	2	0	1		20762	20776	53112	53098
12499	2	1	2	0	1		20776	20775	53126	53112

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12500	2	1	2	0	1		20775	20774	53140	53126
12501	2	1	2	0	1		20774	20773	53154	53140
12502	2	1	2	0	1		20773	20772	53168	53154
12503	2	1	2	0	1		20772	20771	53182	53168
12504	2	1	2	0	1		20771	20770	53196	53182
12505	2	1	2	0	1		20770	20769	53210	53196
12506	2	1	2	0	1		20769	20768	53224	53210
12507	2	1	2	0	1		20768	20767	53238	53224
12508	2	1	2	0	1		20767	20766	53252	53238
12509	2	1	2	0	1		20766	20765	53266	53252
12510	2	1	2	0	1		20765	20764	53280	53266
12511	2	1	2	0	1		20764	20763	53294	53280
12512	2	1	2	0	1		20763	20760	53069	53294
12513	2	1	2	0	1		53098	53112	53113	53099
12514	2	1	2	0	1		53112	53126	53127	53113
12515	2	1	2	0	1		53126	53140	53141	53127
12516	2	1	2	0	1		53140	53154	53155	53141
12517	2	1	2	0	1		53154	53168	53169	53155
12518	2	1	2	0	1		53168	53182	53183	53169
12519	2	1	2	0	1		53182	53196	53197	53183

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12520	2	1	2	0	1		53196	53210	53211	53197
12521	2	1	2	0	1		53210	53224	53225	53211
12522	2	1	2	0	1		53224	53238	53239	53225
12523	2	1	2	0	1		53238	53252	53253	53239
12524	2	1	2	0	1		53252	53266	53267	53253
12525	2	1	2	0	1		53266	53280	53281	53267
12526	2	1	2	0	1		53280	53294	53295	53281
12527	2	1	2	0	1		53294	53069	53070	53295
12528	2	1	2	0	1		53099	53113	53114	53100
12529	2	1	2	0	1		53113	53127	53128	53114
12530	2	1	2	0	1		53127	53141	53142	53128
12531	2	1	2	0	1		53141	53155	53156	53142
12532	2	1	2	0	1		53155	53169	53170	53156
12533	2	1	2	0	1		53169	53183	53184	53170
12534	2	1	2	0	1		53183	53197	53198	53184
12535	2	1	2	0	1		53197	53211	53212	53198
12536	2	1	2	0	1		53211	53225	53226	53212
12537	2	1	2	0	1		53225	53239	53240	53226
12538	2	1	2	0	1		53239	53253	53254	53240
12539	2	1	2	0	1		53253	53267	53268	53254

ELEM MAT TYP REL ESY SEC TSHA NODES

12540	2	1	2	0	1		53267	53281	53282	53268
12541	2	1	2	0	1		53281	53295	53296	53282
12542	2	1	2	0	1		53295	53070	53071	53296
12543	2	1	2	0	1		53100	53114	53115	53101
12544	2	1	2	0	1		53114	53128	53129	53115
12545	2	1	2	0	1		53128	53142	53143	53129
12546	2	1	2	0	1		53142	53156	53157	53143
12547	2	1	2	0	1		53156	53170	53171	53157
12548	2	1	2	0	1		53170	53184	53185	53171
12549	2	1	2	0	1		53184	53198	53199	53185
12550	2	1	2	0	1		53198	53212	53213	53199
12551	2	1	2	0	1		53212	53226	53227	53213
12552	2	1	2	0	1		53226	53240	53241	53227
12553	2	1	2	0	1		53240	53254	53255	53241
12554	2	1	2	0	1		53254	53268	53269	53255
12555	2	1	2	0	1		53268	53282	53283	53269
12556	2	1	2	0	1		53282	53296	53297	53283
12557	2	1	2	0	1		53296	53071	53072	53297
12558	2	1	2	0	1		53101	53115	53116	53102
12559	2	1	2	0	1		53115	53129	53130	53116

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12560	2	1	2	0	1		53129	53143	53144	53130
12561	2	1	2	0	1		53143	53157	53158	53144
12562	2	1	2	0	1		53157	53171	53172	53158
12563	2	1	2	0	1		53171	53185	53186	53172
12564	2	1	2	0	1		53185	53199	53200	53186
12565	2	1	2	0	1		53199	53213	53214	53200
12566	2	1	2	0	1		53213	53227	53228	53214
12567	2	1	2	0	1		53227	53241	53242	53228
12568	2	1	2	0	1		53241	53255	53256	53242
12569	2	1	2	0	1		53255	53269	53270	53256
12570	2	1	2	0	1		53269	53283	53284	53270
12571	2	1	2	0	1		53283	53297	53298	53284
12572	2	1	2	0	1		53297	53072	53073	53298
12573	2	1	2	0	1		53102	53116	53117	53103
12574	2	1	2	0	1		53116	53130	53131	53117
12575	2	1	2	0	1		53130	53144	53145	53131
12576	2	1	2	0	1		53144	53158	53159	53145
12577	2	1	2	0	1		53158	53172	53173	53159
12578	2	1	2	0	1		53172	53186	53187	53173
12579	2	1	2	0	1		53186	53200	53201	53187

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12580	2	1	2	0	1		53200	53214	53215	53201
12581	2	1	2	0	1		53214	53228	53229	53215
12582	2	1	2	0	1		53228	53242	53243	53229
12583	2	1	2	0	1		53242	53256	53257	53243
12584	2	1	2	0	1		53256	53270	53271	53257
12585	2	1	2	0	1		53270	53284	53285	53271
12586	2	1	2	0	1		53284	53298	53299	53285
12587	2	1	2	0	1		53298	53073	53074	53299
12588	2	1	2	0	1		53103	53117	53118	53104
12589	2	1	2	0	1		53117	53131	53132	53118
12590	2	1	2	0	1		53131	53145	53146	53132
12591	2	1	2	0	1		53145	53159	53160	53146
12592	2	1	2	0	1		53159	53173	53174	53160
12593	2	1	2	0	1		53173	53187	53188	53174
12594	2	1	2	0	1		53187	53201	53202	53188
12595	2	1	2	0	1		53201	53215	53216	53202
12596	2	1	2	0	1		53215	53229	53230	53216
12597	2	1	2	0	1		53229	53243	53244	53230
12598	2	1	2	0	1		53243	53257	53258	53244
12599	2	1	2	0	1		53257	53271	53272	53258

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12600	2	1	2	0	1		53271	53285	53286	53272
12601	2	1	2	0	1		53285	53299	53300	53286
12602	2	1	2	0	1		53299	53074	53075	53300
12603	2	1	2	0	1		53104	53118	53119	53105
12604	2	1	2	0	1		53118	53132	53133	53119

12605	2	1	2	0	1		53132	53146	53147	53133
12606	2	1	2	0	1		53146	53160	53161	53147
12607	2	1	2	0	1		53160	53174	53175	53161
12608	2	1	2	0	1		53174	53188	53189	53175
12609	2	1	2	0	1		53188	53202	53203	53189
12610	2	1	2	0	1		53202	53216	53217	53203
12611	2	1	2	0	1		53216	53230	53231	53217
12612	2	1	2	0	1		53230	53244	53245	53231
12613	2	1	2	0	1		53244	53258	53259	53245
12614	2	1	2	0	1		53258	53272	53273	53259
12615	2	1	2	0	1		53272	53286	53287	53273
12616	2	1	2	0	1		53286	53300	53301	53287
12617	2	1	2	0	1		53300	53075	53076	53301
12618	2	1	2	0	1		53105	53119	53120	53106
12619	2	1	2	0	1		53119	53133	53134	53120

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12620	2	1	2	0	1		53133	53147	53148	53134
12621	2	1	2	0	1		53147	53161	53162	53148
12622	2	1	2	0	1		53161	53175	53176	53162
12623	2	1	2	0	1		53175	53189	53190	53176
12624	2	1	2	0	1		53189	53203	53204	53190
12625	2	1	2	0	1		53203	53217	53218	53204
12626	2	1	2	0	1		53217	53231	53232	53218
12627	2	1	2	0	1		53231	53245	53246	53232
12628	2	1	2	0	1		53245	53259	53260	53246
12629	2	1	2	0	1		53259	53273	53274	53260
12630	2	1	2	0	1		53273	53287	53288	53274
12631	2	1	2	0	1		53287	53301	53302	53288
12632	2	1	2	0	1		53301	53076	53077	53302
12633	2	1	2	0	1		53106	53120	53121	53107
12634	2	1	2	0	1		53120	53134	53135	53121
12635	2	1	2	0	1		53134	53148	53149	53135
12636	2	1	2	0	1		53148	53162	53163	53149
12637	2	1	2	0	1		53162	53176	53177	53163
12638	2	1	2	0	1		53176	53190	53191	53177
12639	2	1	2	0	1		53190	53204	53205	53191

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12640	2	1	2	0	1		53204	53218	53219	53205
12641	2	1	2	0	1		53218	53232	53233	53219
12642	2	1	2	0	1		53232	53246	53247	53233
12643	2	1	2	0	1		53246	53260	53261	53247
12644	2	1	2	0	1		53260	53274	53275	53261
12645	2	1	2	0	1		53274	53288	53289	53275
12646	2	1	2	0	1		53288	53302	53303	53289
12647	2	1	2	0	1		53302	53077	53078	53303
12648	2	1	2	0	1		53107	53121	53122	53108
12649	2	1	2	0	1		53121	53135	53136	53122
12650	2	1	2	0	1		53135	53149	53150	53136
12651	2	1	2	0	1		53149	53163	53164	53150
12652	2	1	2	0	1		53163	53177	53178	53164
12653	2	1	2	0	1		53177	53191	53192	53178
12654	2	1	2	0	1		53191	53205	53206	53192
12655	2	1	2	0	1		53205	53219	53220	53206
12656	2	1	2	0	1		53219	53233	53234	53220
12657	2	1	2	0	1		53233	53247	53248	53234
12658	2	1	2	0	1		53247	53261	53262	53248
12659	2	1	2	0	1		53261	53275	53276	53262

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12660	2	1	2	0	1		53275	53289	53290	53276
12661	2	1	2	0	1		53289	53303	53304	53290
12662	2	1	2	0	1		53303	53078	53079	53304
12663	2	1	2	0	1		53108	53122	53123	53109
12664	2	1	2	0	1		53122	53136	53137	53123
12665	2	1	2	0	1		53136	53150	53151	53137
12666	2	1	2	0	1		53150	53164	53165	53151
12667	2	1	2	0	1		53164	53178	53179	53165
12668	2	1	2	0	1		53178	53192	53193	53179
12669	2	1	2	0	1		53192	53206	53207	53193
12670	2	1	2	0	1		53206	53220	53221	53207

12671	2	1	2	0	1		53220	53234	53235	53221
12672	2	1	2	0	1		53234	53248	53249	53235
12673	2	1	2	0	1		53248	53262	53263	53249
12674	2	1	2	0	1		53262	53276	53277	53263
12675	2	1	2	0	1		53276	53290	53291	53277
12676	2	1	2	0	1		53290	53304	53305	53291
12677	2	1	2	0	1		53304	53079	53080	53305
12678	2	1	2	0	1		53109	53123	53124	53110
12679	2	1	2	0	1		53123	53137	53138	53124

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12680	2	1	2	0	1		53137	53151	53152	53138
12681	2	1	2	0	1		53151	53165	53166	53152
12682	2	1	2	0	1		53165	53179	53180	53166
12683	2	1	2	0	1		53179	53193	53194	53180
12684	2	1	2	0	1		53193	53207	53208	53194
12685	2	1	2	0	1		53207	53221	53222	53208
12686	2	1	2	0	1		53221	53235	53236	53222
12687	2	1	2	0	1		53235	53249	53250	53236
12688	2	1	2	0	1		53249	53263	53264	53250
12689	2	1	2	0	1		53263	53277	53278	53264
12690	2	1	2	0	1		53277	53291	53292	53278
12691	2	1	2	0	1		53291	53305	53306	53292
12692	2	1	2	0	1		53305	53080	53081	53306
12693	2	1	2	0	1		53110	53124	53125	53111
12694	2	1	2	0	1		53124	53138	53139	53125
12695	2	1	2	0	1		53138	53152	53153	53139
12696	2	1	2	0	1		53152	53166	53167	53153
12697	2	1	2	0	1		53166	53180	53181	53167
12698	2	1	2	0	1		53180	53194	53195	53181
12699	2	1	2	0	1		53194	53208	53209	53195

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12700	2	1	2	0	1		53208	53222	53223	53209
12701	2	1	2	0	1		53222	53236	53237	53223
12702	2	1	2	0	1		53236	53250	53251	53237
12703	2	1	2	0	1		53250	53264	53265	53251
12704	2	1	2	0	1		53264	53278	53279	53265
12705	2	1	2	0	1		53278	53292	53293	53279
12706	2	1	2	0	1		53292	53306	53307	53293
12707	2	1	2	0	1		53306	53081	53082	53307
12708	2	1	2	0	1		53111	53125	53084	53083
12709	2	1	2	0	1		53125	53139	53085	53084
12710	2	1	2	0	1		53139	53153	53086	53085
12711	2	1	2	0	1		53153	53167	53087	53086
12712	2	1	2	0	1		53167	53181	53088	53087
12713	2	1	2	0	1		53181	53195	53089	53088
12714	2	1	2	0	1		53195	53209	53090	53089
12715	2	1	2	0	1		53209	53223	53091	53090
12716	2	1	2	0	1		53223	53237	53092	53091
12717	2	1	2	0	1		53237	53251	53093	53092
12718	2	1	2	0	1		53251	53265	53094	53093
12719	2	1	2	0	1		53265	53279	53095	53094

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12720	2	1	2	0	1		53279	53293	53096	53095
12721	2	1	2	0	1		53293	53307	53097	53096
12722	2	1	2	0	1		53307	53082	51605	53097
12723	2	1	2	0	1		191	20615	53346	53332
12724	2	1	2	0	1		20615	20616	53360	53346
12725	2	1	2	0	1		20616	20617	53374	53360
12726	2	1	2	0	1		20617	20618	53388	53374
12727	2	1	2	0	1		20618	20619	53402	53388
12728	2	1	2	0	1		20619	20620	53416	53402
12729	2	1	2	0	1		20620	20621	53430	53416
12730	2	1	2	0	1		20621	20622	53444	53430
12731	2	1	2	0	1		20622	20623	53458	53444
12732	2	1	2	0	1		20623	20613	53308	53458
12733	2	1	2	0	1		53332	53346	53347	53333
12734	2	1	2	0	1		53346	53360	53361	53347
12735	2	1	2	0	1		53360	53374	53375	53361
12736	2	1	2	0	1		53374	53388	53389	53375

12737	2	1	2	0	1		53388	53402	53403	53389
12738	2	1	2	0	1		53402	53416	53417	53403
12739	2	1	2	0	1		53416	53430	53431	53417

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12740	2	1	2	0	1		53430	53444	53445	53431
12741	2	1	2	0	1		53444	53458	53459	53445
12742	2	1	2	0	1		53458	53308	53309	53459
12743	2	1	2	0	1		53333	53347	53348	53334
12744	2	1	2	0	1		53347	53361	53362	53348
12745	2	1	2	0	1		53361	53375	53376	53362
12746	2	1	2	0	1		53375	53389	53390	53376
12747	2	1	2	0	1		53389	53403	53404	53390
12748	2	1	2	0	1		53403	53417	53418	53404
12749	2	1	2	0	1		53417	53431	53432	53418
12750	2	1	2	0	1		53431	53445	53446	53432
12751	2	1	2	0	1		53445	53459	53460	53446
12752	2	1	2	0	1		53459	53309	53310	53460
12753	2	1	2	0	1		53334	53348	53349	53335
12754	2	1	2	0	1		53348	53362	53363	53349
12755	2	1	2	0	1		53362	53376	53377	53363
12756	2	1	2	0	1		53376	53390	53391	53377
12757	2	1	2	0	1		53390	53404	53405	53391
12758	2	1	2	0	1		53404	53418	53419	53405
12759	2	1	2	0	1		53418	53432	53433	53419

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12760	2	1	2	0	1		53432	53446	53447	53433
12761	2	1	2	0	1		53446	53460	53461	53447
12762	2	1	2	0	1		53460	53310	53311	53461
12763	2	1	2	0	1		53335	53349	53350	53336
12764	2	1	2	0	1		53349	53363	53364	53350
12765	2	1	2	0	1		53363	53377	53378	53364
12766	2	1	2	0	1		53377	53391	53392	53378
12767	2	1	2	0	1		53391	53405	53406	53392
12768	2	1	2	0	1		53405	53419	53420	53406
12769	2	1	2	0	1		53419	53433	53434	53420
12770	2	1	2	0	1		53433	53447	53448	53434
12771	2	1	2	0	1		53447	53461	53462	53448
12772	2	1	2	0	1		53461	53311	53312	53462
12773	2	1	2	0	1		53336	53350	53351	53337
12774	2	1	2	0	1		53350	53364	53365	53351
12775	2	1	2	0	1		53364	53378	53379	53365
12776	2	1	2	0	1		53378	53392	53393	53379
12777	2	1	2	0	1		53392	53406	53407	53393
12778	2	1	2	0	1		53406	53420	53421	53407
12779	2	1	2	0	1		53420	53434	53435	53421

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12780	2	1	2	0	1		53434	53448	53449	53435
12781	2	1	2	0	1		53448	53462	53463	53449
12782	2	1	2	0	1		53462	53312	53313	53463
12783	2	1	2	0	1		53337	53351	53352	53338
12784	2	1	2	0	1		53351	53365	53366	53352
12785	2	1	2	0	1		53365	53379	53380	53366
12786	2	1	2	0	1		53379	53393	53394	53380
12787	2	1	2	0	1		53393	53407	53408	53394
12788	2	1	2	0	1		53407	53421	53422	53408
12789	2	1	2	0	1		53421	53435	53436	53422
12790	2	1	2	0	1		53435	53449	53450	53436
12791	2	1	2	0	1		53449	53463	53464	53450
12792	2	1	2	0	1		53463	53313	53314	53464
12793	2	1	2	0	1		53338	53352	53353	53339
12794	2	1	2	0	1		53352	53366	53367	53353
12795	2	1	2	0	1		53366	53380	53381	53367
12796	2	1	2	0	1		53380	53394	53395	53381
12797	2	1	2	0	1		53394	53408	53409	53395
12798	2	1	2	0	1		53408	53422	53423	53409
12799	2	1	2	0	1		53422	53436	53437	53423

ELEM MAT TYP REL ESY SEC TSHA NODES

12800	2	1	2	0	1		53436	53450	53451	53437
12801	2	1	2	0	1		53450	53464	53465	53451
12802	2	1	2	0	1		53464	53314	53315	53465
12803	2	1	2	0	1		53339	53353	53354	53340
12804	2	1	2	0	1		53353	53367	53368	53354
12805	2	1	2	0	1		53367	53381	53382	53368
12806	2	1	2	0	1		53381	53395	53396	53382
12807	2	1	2	0	1		53395	53409	53410	53396
12808	2	1	2	0	1		53409	53423	53424	53410
12809	2	1	2	0	1		53423	53437	53438	53424
12810	2	1	2	0	1		53437	53451	53452	53438
12811	2	1	2	0	1		53451	53465	53466	53452
12812	2	1	2	0	1		53465	53315	53316	53466
12813	2	1	2	0	1		53340	53354	53355	53341
12814	2	1	2	0	1		53354	53368	53369	53355
12815	2	1	2	0	1		53368	53382	53383	53369
12816	2	1	2	0	1		53382	53396	53397	53383
12817	2	1	2	0	1		53396	53410	53411	53397
12818	2	1	2	0	1		53410	53424	53425	53411
12819	2	1	2	0	1		53424	53438	53439	53425

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12820	2	1	2	0	1		53438	53452	53453	53439
12821	2	1	2	0	1		53452	53466	53467	53453
12822	2	1	2	0	1		53466	53316	53317	53467
12823	2	1	2	0	1		53341	53355	53356	53342
12824	2	1	2	0	1		53355	53369	53370	53356
12825	2	1	2	0	1		53369	53383	53384	53370
12826	2	1	2	0	1		53383	53397	53398	53384
12827	2	1	2	0	1		53397	53411	53412	53398
12828	2	1	2	0	1		53411	53425	53426	53412
12829	2	1	2	0	1		53425	53439	53440	53426
12830	2	1	2	0	1		53439	53453	53454	53440
12831	2	1	2	0	1		53453	53467	53468	53454
12832	2	1	2	0	1		53467	53317	53318	53468
12833	2	1	2	0	1		53342	53356	53357	53343
12834	2	1	2	0	1		53356	53370	53371	53357
12835	2	1	2	0	1		53370	53384	53385	53371
12836	2	1	2	0	1		53384	53398	53399	53385
12837	2	1	2	0	1		53398	53412	53413	53399
12838	2	1	2	0	1		53412	53426	53427	53413
12839	2	1	2	0	1		53426	53440	53441	53427

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12840	2	1	2	0	1		53440	53454	53455	53441
12841	2	1	2	0	1		53454	53468	53469	53455
12842	2	1	2	0	1		53468	53318	53319	53469
12843	2	1	2	0	1		53343	53357	53358	53344
12844	2	1	2	0	1		53357	53371	53372	53358
12845	2	1	2	0	1		53371	53385	53386	53372
12846	2	1	2	0	1		53385	53399	53400	53386
12847	2	1	2	0	1		53399	53413	53414	53400
12848	2	1	2	0	1		53413	53427	53428	53414
12849	2	1	2	0	1		53427	53441	53442	53428
12850	2	1	2	0	1		53441	53455	53456	53442
12851	2	1	2	0	1		53455	53469	53470	53456
12852	2	1	2	0	1		53469	53319	53320	53470
12853	2	1	2	0	1		53344	53358	53359	53345
12854	2	1	2	0	1		53358	53372	53373	53359
12855	2	1	2	0	1		53372	53386	53387	53373
12856	2	1	2	0	1		53386	53400	53401	53387
12857	2	1	2	0	1		53400	53414	53415	53401
12858	2	1	2	0	1		53414	53428	53429	53415
12859	2	1	2	0	1		53428	53442	53443	53429

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12860	2	1	2	0	1		53442	53456	53457	53443
12861	2	1	2	0	1		53456	53470	53471	53457
12862	2	1	2	0	1		53470	53320	53321	53471
12863	2	1	2	0	1		53345	53359	53323	53322
12864	2	1	2	0	1		53359	53373	53324	53323
12865	2	1	2	0	1		53373	53387	53325	53324

12866	2	1	2	0	1		53387	53401	53326	53325
12867	2	1	2	0	1		53401	53415	53327	53326
12868	2	1	2	0	1		53415	53429	53328	53327
12869	2	1	2	0	1		53429	53443	53329	53328
12870	2	1	2	0	1		53443	53457	53330	53329
12871	2	1	2	0	1		53457	53471	53331	53330
12872	2	1	2	0	1		53471	53321	53083	53331
12873	2	1	2	0	1		51605	53473	53490	53097
12874	2	1	2	0	1		53473	53472	53488	53490
12875	2	1	2	0	1		53097	53490	53491	53096
12876	2	1	2	0	1		53490	53488	53487	53491
12877	2	1	2	0	1		53096	53491	53492	53095
12878	2	1	2	0	1		53491	53487	53486	53492
12879	2	1	2	0	1		53095	53492	53493	53094

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12880	2	1	2	0	1		53492	53486	53485	53493
12881	2	1	2	0	1		53094	53493	53494	53093
12882	2	1	2	0	1		53493	53485	53484	53494
12883	2	1	2	0	1		53093	53494	53495	53092
12884	2	1	2	0	1		53494	53484	53483	53495
12885	2	1	2	0	1		53092	53495	53496	53091
12886	2	1	2	0	1		53495	53483	53482	53496
12887	2	1	2	0	1		53091	53496	53497	53090
12888	2	1	2	0	1		53496	53482	53481	53497
12889	2	1	2	0	1		53090	53497	53498	53089
12890	2	1	2	0	1		53497	53481	53480	53498
12891	2	1	2	0	1		53089	53498	53499	53088
12892	2	1	2	0	1		53498	53480	53479	53499
12893	2	1	2	0	1		53088	53499	53500	53087
12894	2	1	2	0	1		53499	53479	53478	53500
12895	2	1	2	0	1		53087	53500	53501	53086
12896	2	1	2	0	1		53500	53478	53477	53501
12897	2	1	2	0	1		53086	53501	53502	53085
12898	2	1	2	0	1		53501	53477	53476	53502
12899	2	1	2	0	1		53085	53502	53503	53084

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12900	2	1	2	0	1		53502	53476	53475	53503
12901	2	1	2	0	1		53084	53503	53489	53083
12902	2	1	2	0	1		53503	53475	53474	53489
12903	2	1	2	0	1		51590	53505	53520	51619
12904	2	1	2	0	1		53505	53504	53519	53520
12905	2	1	2	0	1		51619	53520	53521	51618
12906	2	1	2	0	1		53520	53519	53518	53521
12907	2	1	2	0	1		51618	53521	53522	51617
12908	2	1	2	0	1		53521	53518	53517	53522
12909	2	1	2	0	1		51617	53522	53523	51616
12910	2	1	2	0	1		53522	53517	53516	53523
12911	2	1	2	0	1		51616	53523	53524	51615
12912	2	1	2	0	1		53523	53516	53515	53524
12913	2	1	2	0	1		51615	53524	53525	51614
12914	2	1	2	0	1		53524	53515	53514	53525
12915	2	1	2	0	1		51614	53525	53526	51613
12916	2	1	2	0	1		53525	53514	53513	53526
12917	2	1	2	0	1		51613	53526	53527	51612
12918	2	1	2	0	1		53526	53513	53512	53527
12919	2	1	2	0	1		51612	53527	53528	51611

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12920	2	1	2	0	1		53527	53512	53511	53528
12921	2	1	2	0	1		51611	53528	53529	51610
12922	2	1	2	0	1		53528	53511	53510	53529
12923	2	1	2	0	1		51610	53529	53530	51609
12924	2	1	2	0	1		53529	53510	53509	53530
12925	2	1	2	0	1		51609	53530	53531	51608
12926	2	1	2	0	1		53530	53509	53508	53531
12927	2	1	2	0	1		51608	53531	53532	51607
12928	2	1	2	0	1		53531	53508	53507	53532
12929	2	1	2	0	1		51607	53532	53533	51606
12930	2	1	2	0	1		53532	53507	53506	53533
12931	2	1	2	0	1		51606	53533	53473	51605

12932	2	1	2	0	1		53533	53506	53472	53473
12933	2	1	2	0	1		21061	21065	53562	53548
12934	2	1	2	0	1		21065	21064	53576	53562
12935	2	1	2	0	1		21064	21063	53590	53576
12936	2	1	2	0	1		21063	21062	53604	53590
12937	2	1	2	0	1		21062	212	53534	53604
12938	2	1	2	0	1		53548	53562	53563	53549
12939	2	1	2	0	1		53562	53576	53577	53563

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12940	2	1	2	0	1		53576	53590	53591	53577
12941	2	1	2	0	1		53590	53604	53605	53591
12942	2	1	2	0	1		53604	53534	53535	53605
12943	2	1	2	0	1		53549	53563	53564	53550
12944	2	1	2	0	1		53563	53577	53578	53564
12945	2	1	2	0	1		53577	53591	53592	53578
12946	2	1	2	0	1		53591	53605	53606	53592
12947	2	1	2	0	1		53605	53535	53536	53606
12948	2	1	2	0	1		53550	53564	53565	53551
12949	2	1	2	0	1		53564	53578	53579	53565
12950	2	1	2	0	1		53578	53592	53593	53579
12951	2	1	2	0	1		53592	53606	53607	53593
12952	2	1	2	0	1		53606	53536	53537	53607
12953	2	1	2	0	1		53551	53565	53566	53552
12954	2	1	2	0	1		53565	53579	53580	53566
12955	2	1	2	0	1		53579	53593	53594	53580
12956	2	1	2	0	1		53593	53607	53608	53594
12957	2	1	2	0	1		53607	53537	53538	53608
12958	2	1	2	0	1		53552	53566	53567	53553
12959	2	1	2	0	1		53566	53580	53581	53567

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12960	2	1	2	0	1		53580	53594	53595	53581
12961	2	1	2	0	1		53594	53608	53609	53595
12962	2	1	2	0	1		53608	53538	53539	53609
12963	2	1	2	0	1		53553	53567	53568	53554
12964	2	1	2	0	1		53567	53581	53582	53568
12965	2	1	2	0	1		53581	53595	53596	53582
12966	2	1	2	0	1		53595	53609	53610	53596
12967	2	1	2	0	1		53609	53539	53540	53610
12968	2	1	2	0	1		53554	53568	53569	53555
12969	2	1	2	0	1		53568	53582	53583	53569
12970	2	1	2	0	1		53582	53596	53597	53583
12971	2	1	2	0	1		53596	53610	53611	53597
12972	2	1	2	0	1		53610	53540	53541	53611
12973	2	1	2	0	1		53555	53569	53570	53556
12974	2	1	2	0	1		53569	53583	53584	53570
12975	2	1	2	0	1		53583	53597	53598	53584
12976	2	1	2	0	1		53597	53611	53612	53598
12977	2	1	2	0	1		53611	53541	53542	53612
12978	2	1	2	0	1		53556	53570	53571	53557
12979	2	1	2	0	1		53570	53584	53585	53571

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
12980	2	1	2	0	1		53584	53598	53599	53585
12981	2	1	2	0	1		53598	53612	53613	53599
12982	2	1	2	0	1		53612	53542	53543	53613
12983	2	1	2	0	1		53557	53571	53572	53558
12984	2	1	2	0	1		53571	53585	53586	53572
12985	2	1	2	0	1		53585	53599	53600	53586
12986	2	1	2	0	1		53599	53613	53614	53600
12987	2	1	2	0	1		53613	53543	53544	53614
12988	2	1	2	0	1		53558	53572	53573	53559
12989	2	1	2	0	1		53572	53586	53587	53573
12990	2	1	2	0	1		53586	53600	53601	53587
12991	2	1	2	0	1		53600	53614	53615	53601
12992	2	1	2	0	1		53614	53544	53545	53615
12993	2	1	2	0	1		53559	53573	53574	53560
12994	2	1	2	0	1		53573	53587	53588	53574
12995	2	1	2	0	1		53587	53601	53602	53588
12996	2	1	2	0	1		53601	53615	53616	53602
12997	2	1	2	0	1		53615	53545	53546	53616

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12998	2	1	2	0	1		53560	53574	53575	53561
12999	2	1	2	0	1		53574	53588	53589	53575

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
13000	2	1	2	0	1		53588	53602	53603	53589
13001	2	1	2	0	1		53602	53616	53617	53603
13002	2	1	2	0	1		53616	53546	53547	53617
13003	2	1	2	0	1		53561	53575	51343	51341
13004	2	1	2	0	1		53575	53589	51344	51343
13005	2	1	2	0	1		53589	53603	51345	51344
13006	2	1	2	0	1		53603	53617	51346	51345
13007	2	1	2	0	1		53617	53547	51334	51346
13008	2	1	2	0	1		53083	53489	53629	53331
13009	2	1	2	0	1		53489	53474	53619	53629
13010	2	1	2	0	1		53331	53629	53630	53330
13011	2	1	2	0	1		53629	53619	53620	53630
13012	2	1	2	0	1		53330	53630	53631	53329
13013	2	1	2	0	1		53630	53620	53621	53631
13014	2	1	2	0	1		53329	53631	53632	53328
13015	2	1	2	0	1		53631	53621	53622	53632
13016	2	1	2	0	1		53328	53632	53633	53327
13017	2	1	2	0	1		53632	53622	53623	53633
13018	2	1	2	0	1		53327	53633	53634	53326
13019	2	1	2	0	1		53633	53623	53624	53634

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
13020	2	1	2	0	1		53326	53634	53635	53325
13021	2	1	2	0	1		53634	53624	53625	53635
13022	2	1	2	0	1		53325	53635	53636	53324
13023	2	1	2	0	1		53635	53625	53626	53636
13024	2	1	2	0	1		53324	53636	53637	53323
13025	2	1	2	0	1		53636	53626	53627	53637
13026	2	1	2	0	1		53323	53637	53628	53322
13027	2	1	2	0	1		53637	53627	53618	53628
13028	2	1	2	0	1		52084	53639	53656	52112
13029	2	1	2	0	1		53639	53638	53654	53656
13030	2	1	2	0	1		52112	53656	53657	52111
13031	2	1	2	0	1		53656	53654	53653	53657
13032	2	1	2	0	1		52111	53657	53658	52110
13033	2	1	2	0	1		53657	53653	53652	53658
13034	2	1	2	0	1		52110	53658	53659	52109
13035	2	1	2	0	1		53658	53652	53651	53659
13036	2	1	2	0	1		52109	53659	53660	52108
13037	2	1	2	0	1		53659	53651	53650	53660
13038	2	1	2	0	1		52108	53660	53661	52107
13039	2	1	2	0	1		53660	53650	53649	53661

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
13040	2	1	2	0	1		52107	53661	53662	52106
13041	2	1	2	0	1		53661	53649	53648	53662
13042	2	1	2	0	1		52106	53662	53663	52105
13043	2	1	2	0	1		53662	53648	53647	53663
13044	2	1	2	0	1		52105	53663	53664	52104
13045	2	1	2	0	1		53663	53647	53646	53664
13046	2	1	2	0	1		52104	53664	53665	52103
13047	2	1	2	0	1		53664	53646	53645	53665
13048	2	1	2	0	1		52103	53665	53666	52102
13049	2	1	2	0	1		53665	53645	53644	53666
13050	2	1	2	0	1		52102	53666	53667	52101
13051	2	1	2	0	1		53666	53644	53643	53667
13052	2	1	2	0	1		52101	53667	53668	52100
13053	2	1	2	0	1		53667	53643	53642	53668
13054	2	1	2	0	1		52100	53668	53669	52099
13055	2	1	2	0	1		53668	53642	53641	53669
13056	2	1	2	0	1		52099	53669	53655	51994
13057	2	1	2	0	1		53669	53641	53640	53655
13058	2	1	2	0	1		52561	53671	53686	52589
13059	2	1	2	0	1		53671	53670	53685	53686

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
13060	2	1	2	0	1		52589	53686	53687	52588

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 13061   2   1   2   0   1        53686 53685 53684 53687
 13062   2   1   2   0   1        52588 53687 53688 52587
 13063   2   1   2   0   1        53687 53684 53683 53688
 13064   2   1   2   0   1        52587 53688 53689 52586
 13065   2   1   2   0   1        53688 53683 53682 53689
 13066   2   1   2   0   1        52586 53689 53690 52585
 13067   2   1   2   0   1        53689 53682 53681 53690
 13068   2   1   2   0   1        52585 53690 53691 52584
 13069   2   1   2   0   1        53690 53681 53680 53691
 13070   2   1   2   0   1        52584 53691 53692 52583
 13071   2   1   2   0   1        53691 53680 53679 53692
 13072   2   1   2   0   1        52583 53692 53693 52582
 13073   2   1   2   0   1        53692 53679 53678 53693
 13074   2   1   2   0   1        52582 53693 53694 52581
 13075   2   1   2   0   1        53693 53678 53677 53694
 13076   2   1   2   0   1        52581 53694 53695 52580
 13077   2   1   2   0   1        53694 53677 53676 53695
 13078   2   1   2   0   1        52580 53695 53696 52579
 13079   2   1   2   0   1        53695 53676 53675 53696

  ELEM MAT TYP REL ESY SEC TSHA         NODES

 13080   2   1   2   0   1        52579 53696 53697 52578
 13081   2   1   2   0   1        53696 53675 53674 53697
 13082   2   1   2   0   1        52578 53697 53698 52577
 13083   2   1   2   0   1        53697 53674 53673 53698
 13084   2   1   2   0   1        52577 53698 53699 52576
 13085   2   1   2   0   1        53698 53673 53672 53699
 13086   2   1   2   0   1        52576 53699 53639 52084
 13087   2   1   2   0   1        53699 53672 53638 53639
 13088   2   1   2   0   1        52800 53701 53716 52828
 13089   2   1   2   0   1        53701 53700 53715 53716
 13090   2   1   2   0   1        52828 53716 53717 52827
 13091   2   1   2   0   1        53716 53715 53714 53717
 13092   2   1   2   0   1        52827 53717 53718 52826
 13093   2   1   2   0   1        53717 53714 53713 53718
 13094   2   1   2   0   1        52826 53718 53719 52825
 13095   2   1   2   0   1        53718 53713 53712 53719
 13096   2   1   2   0   1        52825 53719 53720 52824
 13097   2   1   2   0   1        53719 53712 53711 53720
 13098   2   1   2   0   1        52824 53720 53721 52823
 13099   2   1   2   0   1        53720 53711 53710 53721

  ELEM MAT TYP REL ESY SEC TSHA         NODES

 13100   2   1   2   0   1        52823 53721 53722 52822
 13101   2   1   2   0   1        53721 53710 53709 53722
 13102   2   1   2   0   1        52822 53722 53723 52821
 13103   2   1   2   0   1        53722 53709 53708 53723
 13104   2   1   2   0   1        52821 53723 53724 52820
 13105   2   1   2   0   1        53723 53708 53707 53724
 13106   2   1   2   0   1        52820 53724 53725 52819
 13107   2   1   2   0   1        53724 53707 53706 53725
 13108   2   1   2   0   1        52819 53725 53726 52818
 13109   2   1   2   0   1        53725 53706 53705 53726
 13110   2   1   2   0   1        52818 53726 53727 52817
 13111   2   1   2   0   1        53726 53705 53704 53727
 13112   2   1   2   0   1        52817 53727 53728 52816
 13113   2   1   2   0   1        53727 53704 53703 53728
 13114   2   1   2   0   1        52816 53728 53729 52815
 13115   2   1   2   0   1        53728 53703 53702 53729
 13116   2   1   2   0   1        52815 53729 53671 52561
 13117   2   1   2   0   1        53729 53702 53670 53671
 13118   2   1   2   0   1        51994 53655 53736 52013
 13119   2   1   2   0   1        53655 53640 53731 53736

  ELEM MAT TYP REL ESY SEC TSHA         NODES

 13120   2   1   2   0   1        52013 53736 53737 52012
 13121   2   1   2   0   1        53736 53731 53732 53737
 13122   2   1   2   0   1        52012 53737 53738 52011
 13123   2   1   2   0   1        53737 53732 53733 53738
 13124   2   1   2   0   1        52011 53738 53739 52010
 13125   2   1   2   0   1        53738 53733 53734 53739
 13126   2   1   2   0   1        52010 53739 53735 52009
```



```
 13127   2   1   2   0   1        53739 53734 53730 53735
 13128   2   1   2   0   1        51351 53054 53754 51379
 13129   2   1   2   0   1        53054 53039 53753 53754
 13130   2   1   2   0   1        51379 53754 53755 51378
 13131   2   1   2   0   1        53754 53753 53752 53755
 13132   2   1   2   0   1        51378 53755 53756 51377
 13133   2   1   2   0   1        53755 53752 53751 53756
 13134   2   1   2   0   1        51377 53756 53757 51376
 13135   2   1   2   0   1        53756 53751 53750 53757
 13136   2   1   2   0   1        51376 53757 53758 51375
 13137   2   1   2   0   1        53757 53750 53749 53758
 13138   2   1   2   0   1        51375 53758 53759 51374
 13139   2   1   2   0   1        53758 53749 53748 53759

  ELEM MAT TYP REL ESY SEC TSHA         NODES

 13140   2   1   2   0   1        51374 53759 53760 51373
 13141   2   1   2   0   1        53759 53748 53747 53760
 13142   2   1   2   0   1        51373 53760 53761 51372
 13143   2   1   2   0   1        53760 53747 53746 53761
 13144   2   1   2   0   1        51372 53761 53762 51371
 13145   2   1   2   0   1        53761 53746 53745 53762
 13146   2   1   2   0   1        51371 53762 53763 51370
 13147   2   1   2   0   1        53762 53745 53744 53763
 13148   2   1   2   0   1        51370 53763 53764 51369
 13149   2   1   2   0   1        53763 53744 53743 53764
 13150   2   1   2   0   1        51369 53764 53765 51368
 13151   2   1   2   0   1        53764 53743 53742 53765
 13152   2   1   2   0   1        51368 53765 53766 51367
 13153   2   1   2   0   1        53765 53742 53741 53766
 13154   2   1   2   0   1        51367 53766 53767 51366
 13155   2   1   2   0   1        53766 53741 53740 53767
 13156   2   1   2   0   1        51366 53767 51063 51062
 13157   2   1   2   0   1        53767 53740 51061 51063
 13158   2   1   2   0   1        51830 53769 53779 51853
 13159   2   1   2   0   1        53769 53768 53778 53779

  ELEM MAT TYP REL ESY SEC TSHA         NODES

 13160   2   1   2   0   1        51853 53779 53780 51852
 13161   2   1   2   0   1        53779 53778 53777 53780
 13162   2   1   2   0   1        51852 53780 53781 51851
 13163   2   1   2   0   1        53780 53777 53776 53781
 13164   2   1   2   0   1        51851 53781 53782 51850
 13165   2   1   2   0   1        53781 53776 53775 53782
 13166   2   1   2   0   1        51850 53782 53783 51849
 13167   2   1   2   0   1        53782 53775 53774 53783
 13168   2   1   2   0   1        51849 53783 53784 51848
 13169   2   1   2   0   1        53783 53774 53773 53784
 13170   2   1   2   0   1        51848 53784 53785 51847
 13171   2   1   2   0   1        53784 53773 53772 53785
 13172   2   1   2   0   1        51847 53785 53786 51846
 13173   2   1   2   0   1        53785 53772 53771 53786
 13174   2   1   2   0   1        51846 53786 53787 51845
 13175   2   1   2   0   1        53786 53771 53770 53787
 13176   2   1   2   0   1        51845 53787 53505 51590
 13177   2   1   2   0   1        53787 53770 53504 53505
 13295   2 254 113   0   1 LINE     3 10694
 REA1        REA2        FKN         FTOL        ICON        PINB
 PMAX        PMIN        TAUM        CNOF        FKOP        FKT
 COHE        TCC         FHTG        SBCT        RDVF        FWGT
 ECC         FHEG        FACT        DC          SLTO        TNOP
 TOLS        FPCR        NFLS        SPLS        DLTX        DLTY
 0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
 13296   2 254 113   0   1 LINE 10694 10695
 0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
 0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
```

549

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 ELEM MAT TYP REL ESY SEC TSHA       NODES

13297   2 254 113   0   1 LINE 10695 10696
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13298   2 254 113   0   1 LINE 10696 10697
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13299   2 254 113   0   1 LINE 10697 10698
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13300   2 254 113   0   1 LINE 10698 10699
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13301   2 254 113   0   1 LINE 10699 10700
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13302   2 254 113   0   1 LINE 10700 10701
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13303   2 254 113   0   1 LINE 10701 10702
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13304   2 254 113   0   1 LINE 10702 10703
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13305   2 254 113   0   1 LINE 10703 10704
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13306   2 254 113   0   1 LINE 10704 10705
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13307   2 254 113   0   1 LINE 10705 10706
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13308   2 254 113   0   1 LINE 10706 10707
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13309   2 254 113   0   1 LINE 10707 10693
```



```
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13310   2 255 113   0   1      51080 51079     0
REA1        REA2        FKN         FTOL        ICON        PINB
PMAX        PMIN        TAUM        CNOF        FKOP        FKT
COHE        TCC         FHTG        SBCT        RDVF        FWGT
ECC         FHEG        FACT        DC          SLTO        TNOP
TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13311   2 255 113   0   1      51064 51080     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13312   2 255 113   0   1      51123     3     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13313   2 255 113   0   1      51124 51123     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13314   2 255 113   0   1      51125 51124     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13315   2 255 113   0   1      51126 51125     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13316   2 255 113   0   1      51127 51126     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000

 ELEM MAT TYP REL ESY SEC TSHA       NODES

13317   2 255 113   0   1      51128 51127     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13318   2 255 113   0   1      51129 51128     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13319   2 255 113   0   1      51130 51129     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13320   2 255 113   0   1      51131 51130     0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
```

```
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13321   2 255 113   0   1      51132 51131     0
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13322   2 255 113   0   1      51133 51132     0
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13323   2 255 113   0   1      51134 51133     0
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13324   2 255 113   0   1      51135 51134     0
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13325   2 255 113   0   1      51136 51135     0
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13326   2 255 113   0   1      51079 51136     0
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13327   2 256 114   0   1 LINE 10649    212
 REA1       REA2       FKN        FTOL       ICON       PINB
 PMAX       PMIN       TAUM       CNOF       FKOP       FKT
 COHE       TCC        FHTG       SBCT       RDVF       FWGT
 ECC        FHEG       FACT       DC         SLTO       TNOP
 TOLS       FPCR       NFLS       SFLS       DLTX       DLTY
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13328   2 256 114   0   1 LINE 10650 10649
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000 .  0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13329   2 256 114   0   1 LINE 10651 10650
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13330   2 256 114   0   1 LINE 10652 10651
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13331   2 256 114   0   1 LINE 10653 10652
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
```



```
 13332   2 256 114   0   1 LINE 10654 10653
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13333   2 256 114   0   1 LINE 10655 10654
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13334   2 256 114   0   1 LINE 10656 10655
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13335   2 256 114   0   1 LINE 10657 10656
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13336   2 256 114   0   1 LINE 10658 10657
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000

  ELEM MAT TYP REL ESY SEC TSHA       NODES

 13337   2 256 114   0   1 LINE 10659 10658
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13338   2 256 114   0   1 LINE 10660 10659
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13339   2 256 114   0   1 LINE 10661 10660
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13340   2 256 114   0   1 LINE 10662 10661
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13341   2 256 114   0   1 LINE 10648 10662
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13342   2 257 114   0   1      51334 51335     0
 REA1       REA2       FKN        FTOL       ICON       PINB
 PMAX       PMIN       TAUM       CNOF       FKOP       FKT
 COHE       TCC        FHTG       SBCT       RDVF       FWGT
 ECC        FHEG       FACT       DC         SLTO       TNOP
 TOLS       FPCR       NFLS       SFLS       DLTX       DLTY
 0.00000    0.00000    1.00000    0.100000   0.00000    0.00000
 0.00000    0.00000    0.100000E+21  0.00000    1.00000    0.00000
 0.00000    0.00000    1.00000    0.00000    1.00000    0.500000
 0.00000    0.500000   1.00000    0.00000    0.00000    0.00000
 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
 13343   2 257 114   0   1      51335 51333     0
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0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13344   2 257 114   0   1      212 53534    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13345   2 257 114   0   1    53534 53535    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13346   2 257 114   0   1    53535 53536    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13347   2 257 114   0   1    53536 53537    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13348   2 257 114   0   1    53537 53538    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13349   2 257 114   0   1    53538 53539    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13350   2 257 114   0   1    53539 53540    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13351   2 257 114   0   1    53540 53541    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13352   2 257 114   0   1    53541 53542    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13353   2 257 114   0   1    53542 53543    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13354   2 257 114   0   1    53543 53544    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13355   2 257 114   0   1    53544 53545    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
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0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13356   2 257 114   0   1    53545 53546    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000

 ELEM MAT TYP REL ESY SEC TSHA       NODES

13357   2 257 114   0   1    53546 53547    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13358   2 257 114   0   1    53547 51334    0
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13359   2 258 115   0   1 LINE   191 10634
REA1        REA2        FKN         FTOL         ICON        PINB
PMAX        PMIN        TAUM        CNOF         FKOP        FKT
COHE        TCC         FHTG        SBCT         RDVF        FWGT
ECC         FHEG        FACT        DC           SLTO        TNOP
TOLS        FPCR        NFLS        SFLS         DLTX        DLTY
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13360   2 258 115   0   1 LINE 10634 10635
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13361   2 258 115   0   1 LINE 10635 10636
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13362   2 258 115   0   1 LINE 10636 10637
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13363   2 258 115   0   1 LINE 10637 10638
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13364   2 258 115   0   1 LINE 10638 10639
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13365   2 258 115   0   1 LINE 10639 10640
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
0.00000     0.00000     0.00000     0.00000      0.00000     0.00000
13366   2 258 115   0   1 LINE 10640 10641
0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
0.00000     0.00000     0.100000E+21 0.00000     1.00000     0.00000
0.00000     0.00000     1.00000     0.00000      1.00000     0.500000
0.00000     0.500000    1.00000     0.00000      0.00000     0.00000
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0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13367   2 258 115   0   1 LINE 10641 10642
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13368   2 258 115   0   1 LINE 10642 10643
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13369   2 258 115   0   1 LINE 10643 10644
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13370   2 258 115   0   1 LINE 10644 10645
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13371   2 258 115   0   1 LINE 10645 10646
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13372   2 258 115   0   1 LINE 10646 10647
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13373   2 258 115   0   1 LINE 10647 10633
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13374   2 259 115   0   1      53332    191     0
REA1        REA2        FKN         FTOL        ICON        PINB
PMAX        PMIN        TAUM        CNOF        FKOP        FKT
COHE        TCC         FHTG        SBCT        RDVF        FWGT
ECC         FHEG        FACT        DC          SLTO        TNOP
TOLS        FPCR        NPLS        SFLS        DLTX        DLTY
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13375   2 259 115   0   1      53333 53332      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13376   2 259 115   0   1      53334 53333      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000

 ELEM MAT TYP REL ESY SEC TSHA       NODES

13377   2 259 115   0   1      53335 53334      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
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13378   2 259 115   0   1      53336 53335      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13379   2 259 115   0   1      53337 53336      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13380   2 259 115   0   1      53338 53337      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13381   2 259 115   0   1      53339 53338      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13382   2 259 115   0   1      53340 53339      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13383   2 259 115   0   1      53341 53340      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13384   2 259 115   0   1      53342 53341      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13385   2 259 115   0   1      53343 53342      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13386   2 259 115   0   1      53344 53343      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13387   2 259 115   0   1      53345 53344      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13388   2 259 115   0   1      53322 53345      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13389   2 259 115   0   1      53628 53322      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000     0.500000
0.00000     0.500000    1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13390   2 259 115   0   1      53618 53628      0
0.00000     0.00000     1.00000     0.100000    0.00000     0.00000
0.00000     0.00000     0.100000E+21  0.00000   1.00000     0.00000
```

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 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0:00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13391   2 260 116   0   1 LINE 10679   218
 REA1        REA2         FKN         FTOL        ICON        PINB
 PMAX        PMIN         TAUM        CNOF        FKOP        FKT
 COHE        TCC          FHTG        SBCT        RDVF        FWGT
 ECC         FHEG         FACT        DC          SLTO        TNOP
 TOLS        FPCR         NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13392   2 260 116   0   1 LINE 10680 10679
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13393   2 260 116   0   1 LINE 10681 10680
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13394   2 260 116   0   1 LINE 10682 10681
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13395   2 260 116   0   1 LINE 10683 10682
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13396   2 260 116   0   1 LINE 10684 10683
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000

  ELEM MAT TYP REL ESY SEC TSHA       NODES

 13397   2 260 116   0   1 LINE 10685 10684
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13398   2 260 116   0   1 LINE 10686 10685
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13399   2 260 116   0   1 LINE 10687 10686
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13400   2 260 116   0   1 LINE 10688 10687
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13401   2 260 116   0   1 LINE 10689 10688
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
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 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13402   2 260 116   0   1 LINE 10690 10689
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13403   2 260 116   0   1 LINE 10691 10690
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13404   2 260 116   0   1 LINE 10692 10691
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13405   2 260 116   0   1 LINE 10678 10692
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13406   2 261 116   0   1          218 51831      0
 REA1        REA2         FKN         FTOL        ICON        PINB
 PMAX        PMIN         TAUM        CNOF        FKOP        FKT
 COHE        TCC          FHTG        SBCT        RDVF        FWGT
 ECC         FHEG         FACT        DC          SLTO        TNOP
 TOLS        FPCR         NFLS        SFLS        DLTX        DLTY
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13407   2 261 116   0   1        51831 51832      0
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13408   2 261 116   0   1        51832 51833      0
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13409   2 261 116   0   1        51833 51834      0
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13410   2 261 116   0   1        51834 51835      0
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13411   2 261 116   0   1        51835 51836      0
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13412   2 261 116   0   1        51836 51837      0
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
 0.00000     0.00000      0.100000E+21  0.00000   1.00000     0.00000
 0.00000     0.00000      1.00000     0.00000     1.00000     0.500000
 0.00000     0.500000     1.00000     0.00000     0.00000     0.00000
 0.00000     0.00000      0.00000     0.00000     0.00000     0.00000
 13413   2 261 116   0   1        51837 51838      0
 0.00000     0.00000      1.00000     0.100000    0.00000     0.00000
```

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 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13414   2 261 116   0   1     51838 51839     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13415   2 261 116   0   1     51839 51840     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13416   2 261 116   0   1     51840 51841     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000

  ELEM MAT TYP REL ESY SEC TSHA       NODES

 13417   2 261 116   0   1     51841 51842     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13418   2 261 116   0   1     51842 51843     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13419   2 261 116   0   1     51843 51844     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13420   2 261 116   0   1     51844 51830     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13421   2 261 116   0   1     51830 53769     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13422   2 261 116   0   1     53769 53768     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13423   2 262 117   0   1 LINE    216 10664
 REA1        REA2        FKN          FTOL        ICON        PINB
 PMAX        PMIN        TAUM         CNOF        FKOP        FKT
 COHE        TCC         FHTG         SBCT        RDVF        FWGT
 ECC         FHEG        FACT         DC          SLTO        TNOP
 TOLS        FPCR        NFLS         SFLS        DLTX        DLTY
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13424   2 262 117   0   1 LINE 10664 10665
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
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 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13425   2 262 117   0   1 LINE 10665 10666
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13426   2 262 117   0   1 LINE 10666 10667
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13427   2 262 117   0   1 LINE 10667 10668
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13428   2 262 117   0   1 LINE 10668 10669
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13429   2 262 117   0   1 LINE 10669 10670
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13430   2 262 117   0   1 LINE 10670 10671
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13431   2 262 117   0   1 LINE 10671 10672
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13432   2 262 117   0   1 LINE 10672 10673
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13433   2 262 117   0   1 LINE 10673 10674
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13434   2 262 117   0   1 LINE 10674 10675
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13435   2 262 117   0   1 LINE 10675 10676
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13436   2 262 117   0   1 LINE 10676 10677
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000    0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
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 ELEM MAT TYP REL ESY SEC TSHA        NODES

13437   2 262 117   0   1 LINE 10677 10663
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13438   2 263 117   0   1      52014    216       0
REAL        REA2        FKN         FTOL        ICON        PINB
PMAX        PMIN        TAUM        CNOF        FKOP        FKT
COHE        TCC         FHTG        SBCT        RDVF        FWGT
ECC         FHEG        FACT        DC          SLTO        TNOP
TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13439   2 263 117   0   1      52015 52014      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13440   2 263 117   0   1      52016 52015      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13441   2 263 117   0   1      52017 52016      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13442   2 263 117   0   1      52018 52017      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13443   2 263 117   0   1      52019 52018      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13444   2 263 117   0   1      52020 52019      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13445   2 263 117   0   1      52021 52020      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13446   2 263 117   0   1      52022 52021      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13447   2 263 117   0   1      52023 52022      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13448   2 263 117   0   1      52024 52023      0
```



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0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13449   2 263 117   0   1      52025 52024      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13450   2 263 117   0   1      52026 52025      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13451   2 263 117   0   1      52027 52026      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13452   2 263 117   0   1      52009 52027      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13453   2 263 117   0   1      53735 52009      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13454   2 263 117   0   1      53730 53735      0
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13455   2 264 118   0   1 LINE 10619    365
REAL        REA2        FKN         FTOL        ICON        PINB
PMAX        PMIN        TAUM        CNOF        FKOP        FKT
COHE        TCC         FHTG        SBCT        RDVF        FWGT
ECC         FHEG        FACT        DC          SLTO        TNOP
TOLS        FPCR        NFLS        SFLS        DLTX        DLTY
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13456   2 264 118   0   1 LINE 10620 10619
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000

 ELEM MAT TYP REL ESY SEC TSHA        NODES

13457   2 264 118   0   1 LINE 10621 10620
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13458   2 264 118   0   1 LINE 10622 10621
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
0.00000     0.00000    0.100000E+21  0.00000    1.00000     0.00000
0.00000     0.00000     1.00000     0.00000     1.00000    0.500000
0.00000    0.500000     1.00000     0.00000     0.00000     0.00000
0.00000     0.00000     0.00000     0.00000     0.00000     0.00000
13459   2 264 118   0   1 LINE 10623 10622
0.00000     0.00000     1.00000    0.100000     0.00000     0.00000
```

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 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13460   2 264 118   0   1 LINE 10624 10623
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13461   2 264 118   0   1 LINE 10625 10624
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13462   2 264 118   0   1 LINE 10626 10625
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13463   2 264 118   0   1 LINE 10627 10626
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13464   2 264 118   0   1 LINE 10628 10627
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13465   2 264 118   0   1 LINE 10629 10628
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13466   2 264 118   0   1 LINE 10630 10629
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13467   2 264 118   0   1 LINE 10631 10630
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13468   2 264 118   0   1 LINE 10632 10631
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13469   2 264 118   0   1 LINE 10618 10632
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13470   2 265 118   0   1        365 52801      0
 REA1        REA2        FKN          FTOL        ICON        PINB
 PMAX        PMIN        TAUM         CNOF        FKOP        FKT
 COHE        TCC         FHTG         SBCT        RDVF        FWGT
 ECC         FHEG        FACT         DC          SLTO        TNOP
 TOLS        FPCR        NFLS         SFLS        DLTX        DLTY
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
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 13471   2 265 118   0   1        52801 52802      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13472   2 265 118   0   1        52802 52803      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13473   2 265 118   0   1        52803 52804      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13474   2 265 118   0   1        52804 52805      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13475   2 265 118   0   1        52805 52806      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13476   2 265 118   0   1        52806 52807      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000

  ELEM MAT TYP REL ESY SEC TSHA       NODES

 13477   2 265 118   0   1        52807 52808      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13478   2 265 118   0   1        52808 52809      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13479   2 265 118   0   1        52809 52810      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13480   2 265 118   0   1        52810 52811      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13481   2 265 118   0   1        52811 52812      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13482   2 265 118   0   1        52812 52813      0
 0.00000     0.00000     1.00000      0.100000    0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000     0.500000    1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
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 13483   2 265 118   0   1      52813 52814     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13484   2 265 118   0   1      52814 52800     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13485   2 265 118   0   1      52800 53701     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13486   2 265 118   0   1      53701 53700     0
 0.00000     0.00000     1.00000     0.100000     0.00000     0.00000
 0.00000     0.00000    0.100000E+21  0.00000     1.00000     0.00000
 0.00000     0.00000     1.00000      0.00000     1.00000     0.500000
 0.00000    0.500000     1.00000      0.00000     0.00000     0.00000
 0.00000     0.00000     0.00000      0.00000     0.00000     0.00000
 13892   2    2   3    0   1      21026 20651 20651 21026
 STIF        DAMP        MASJ        ONVL        OFVL         AFOR
 MASI        STRT         C1          C2          C3           C4
 FSLD
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13893   2    2   3    0   1      20649 20699 20699 20649
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13894   2    2   3    0   1      20613 20762 20762 20613
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13895   2    2   3    0   1      20760 20810 20810 20760
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13896   2    2   3    0   1      20808 20850 20850 20808
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13897   2    2   3    0   1      20734 20888 20888 20734
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13898   2    2   3    0   1      20886 20936 20936 20886
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13899   2    2   3    0   1      20934 20981 20981 20934
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13900   2    2   3    0   1      20697 21061 21061 20697
 171000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13901   2    2   2    0   1      51109 51380 51380 51109
 STIF        DAMP        MASJ        ONVL        OFVL         AFOR
 MASI        STRT         C1          C2          C3           C4
 FSLD
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000

  ELEM MAT TYP REL ESY SEC TSHA       NODES

 13902   2    2   2    0   1      51110 51381 51381 51110
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
```



```
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13903   2    2   2    0   1      51111 51382 51382 51111
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13904   2    2   2    0   1      51112 51383 51383 51112
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13905   2    2   2    0   1      51113 51384 51384 51113
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13906   2    2   2    0   1      51114 51385 51385 51114
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13907   2    2   2    0   1      51115 51386 51386 51115
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13908   2    2   2    0   1      51116 51387 51387 51116
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13909   2    2   2    0   1      51117 51388 51388 51117
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13910   2    2   2    0   1      51118 51389 51389 51118
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13911   2    2   2    0   1      51119 51390 51390 51119
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13912   2    2   2    0   1      51120 51391 51391 51120
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13913   2    2   2    0   1      51121 51392 51392 51121
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13914   2    2   2    0   1      51122 51393 51393 51122
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13915   2    2   2    0   1      53069 51620 51620 53069
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13916   2    2   2    0   1      53070 51621 51621 53070
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13917   2    2   2    0   1      53071 51622 51622 53071
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13918   2    2   2    0   1      53072 51623 51623 53072
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13919   2    2   2    0   1      53073 51624 51624 53073
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13920   2    2   2    0   1      53074 51625 51625 53074
 342000.     0.00000     0.00000     0.00000    0.120600E-03  0.00000
 0.00000     1.00000     0.00000     0.00000     0.00000      0.00000
 0.00000
 13921   2    2   2    0   1      53075 51626 51626 53075
```

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342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000

 ELEM MAT TYP REL ESY SEC TSHA       NODES

13922   2   2   2   0   1      53076 51627 51627 53076
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13923   2   2   2   0   1      53077 51628 51628 53077
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13924   2   2   2   0   1      53078 51629 51629 53078
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13925   2   2   2   0   1      53079 51630 51630 53079
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13926   2   2   2   0   1      53080 51631 51631 53080
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13927   2   2   2   0   1      53081 51632 51632 53081
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13928   2   2   2   0   1      53082 51633 51633 53082
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13929   2   2   2   0   1      51591 51854 51854 51591
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13930   2   2   2   0   1      51592 51855 51855 51592
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13931   2   2   2   0   1      51593 51856 51856 51593
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13932   2   2   2   0   1      51594 51857 51857 51594
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13933   2   2   2   0   1      51595 51858 51858 51595
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13934   2   2   2   0   1      51596 51859 51859 51596
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13935   2   2   2   0   1      51597 51860 51860 51597
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13936   2   2   2   0   1      51598 51861 51861 51598
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13937   2   2   2   0   1      51599 51862 51862 51599
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13938   2   2   2   0   1      51600 51863 51863 51600
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13939   2   2   2   0   1      51601 51864 51864 51601
```



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342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13940   2   2   2   0   1      51602 51865 51865 51602
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13941   2   2   2   0   1      51603 51866 51866 51603
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000

 ELEM MAT TYP REL ESY SEC TSHA       NODES

13942   2   2   2   0   1      51604 51867 51867 51604
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13943   2   2   2   0   1      51995 52113 52113 51995
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13944   2   2   2   0   1      51996 52114 52114 51996
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13945   2   2   2   0   1      51997 52115 52115 51997
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13946   2   2   2   0   1      51998 52116 52116 51998
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13947   2   2   2   0   1      51999 52117 52117 51999
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13948   2   2   2   0   1      52000 52118 52118 52000
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13949   2   2   2   0   1      52001 52119 52119 52001
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13950   2   2   2   0   1      52002 52120 52120 52002
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13951   2   2   2   0   1      52003 52121 52121 52003
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13952   2   2   2   0   1      52004 52122 52122 52004
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13953   2   2   2   0   1      52005 52123 52123 52005
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13954   2   2   2   0   1      52006 52124 52124 52006
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13955   2   2   2   0   1      52007 52125 52125 52007
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13956   2   2   2   0   1      52008 52126 52126 52008
342000.      0.00000      0.00000      0.00000      0.120600E-03  0.00000
0.00000      1.00000      0.00000      0.00000      0.00000       0.00000
0.00000
13957   2   2   2   0   1      51352 52351 52351 51352
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 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13958   2   2   2   0   1      51353 52352 52352 51353
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13959   2   2   2   0   1      51354 52353 52353 51354
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13960   2   2   2   0   1      51355 52354 52354 51355
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13961   2   2   2   0   1      51356 52355 52355 51356
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000

  ELEM MAT TYP REL ESY SEC TSHA        NODES

 13962   2   2   2   0   1      51357 52356 52356 51357
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13963   2   2   2   0   1      51358 52357 52357 51358
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13964   2   2   2   0   1      51359 52358 52358 51359
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13965   2   2   2   0   1      51360 52359 52359 51360
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13966   2   2   2   0   1      51361 52360 52360 51361
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13967   2   2   2   0   1      51362 52361 52361 51362
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13968   2   2   2   0   1      51363 52362 52362 51363
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13969   2   2   2   0   1      51364 52363 52363 51364
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13970   2   2   2   0   1      51365 52364 52364 51365
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13971   2   2   2   0   1      52085 52590 52590 52085
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13972   2   2   2   0   1      52086 52591 52591 52086
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13973   2   2   2   0   1      52087 52592 52592 52087
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13974   2   2   2   0   1      52088 52593 52593 52088
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13975   2   2   2   0   1      52089 52594 52594 52089
```



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 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13976   2   2   2   0   1      52090 52595 52595 52090
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13977   2   2   2   0   1      52091 52596 52596 52091
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13978   2   2   2   0   1      52092 52597 52597 52092
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13979   2   2   2   0   1      52093 52598 52598 52093
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13980   2   2   2   0   1      52094 52599 52599 52094
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13981   2   2   2   0   1      52095 52600 52600 52095
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000

  ELEM MAT TYP REL ESY SEC TSHA        NODES

 13982   2   2   2   0   1      52096 52601 52601 52096
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13983   2   2   2   0   1      52097 52602 52602 52097
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13984   2   2   2   0   1      52098 52603 52603 52098
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13985   2   2   2   0   1      52562 52829 52829 52562
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13986   2   2   2   0   1      52563 52830 52830 52563
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13987   2   2   2   0   1      52564 52831 52831 52564
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13988   2   2   2   0   1      52565 52832 52832 52565
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13989   2   2   2   0   1      52566 52833 52833 52566
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13990   2   2   2   0   1      52567 52834 52834 52567
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13991   2   2   2   0   1      52568 52835 52835 52568
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13992   2   2   2   0   1      52569 52836 52836 52569
 342000.     0.00000      0.00000      0.00000     0.120600E-03  0.00000
 0.00000     1.00000      0.00000      0.00000      0.00000      0.00000
 0.00000
 13993   2   2   2   0   1      52570 52837 52837 52570
```

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 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 13994  2  2  2  0  1    52571 52838 52838 52571
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 13995  2  2  2  0  1    52572 52839 52839 52572
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 13996  2  2  2  0  1    52573 52840 52840 52573
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 13997  2  2  2  0  1    52574 52841 52841 52574
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 13998  2  2  2  0  1    52575 52842 52842 52575
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 13999  2  2  2  0  1    53308 53098 53098 53308
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14000  2  2  2  0  1    53309 53099 53099 53309
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14001  2  2  2  0  1    53310 53100 53100 53310
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000

  ELEM MAT TYP REL ESY SEC TSHA      NODES

 14002  2  2  2  0  1    53311 53101 53101 53311
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14003  2  2  2  0  1    53312 53102 53102 53312
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14004  2  2  2  0  1    53313 53103 53103 53313
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14005  2  2  2  0  1    53314 53104 53104 53314
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14006  2  2  2  0  1    53315 53105 53105 53315
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14007  2  2  2  0  1    53316 53106 53106 53316
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14008  2  2  2  0  1    53317 53107 53107 53317
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14009  2  2  2  0  1    53318 53108 53108 53318
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14010  2  2  2  0  1    53319 53109 53109 53319
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14011  2  2  2  0  1    53320 53110 53110 53320
```



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 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14012  2  2  2  0  1    53321 53111 53111 53321
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14013  2  2  2  0  1    52323 53548 53548 52323
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14014  2  2  2  0  1    52324 53549 53549 52324
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14015  2  2  2  0  1    52325 53550 53550 52325
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14016  2  2  2  0  1    52326 53551 53551 52326
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14017  2  2  2  0  1    52327 53552 53552 52327
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14018  2  2  2  0  1    52328 53553 53553 52328
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14019  2  2  2  0  1    52329 53554 53554 52329
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14020  2  2  2  0  1    52330 53555 53555 52330
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14021  2  2  2  0  1    52331 53556 53556 52331
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000

  ELEM MAT TYP REL ESY SEC TSHA      NODES

 14022  2  2  2  0  1    52332 53557 53557 52332
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14023  2  2  2  0  1    52333 53558 53558 52333
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14024  2  2  2  0  1    52334 53559 53559 52334
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14025  2  2  2  0  1    52335 53560 53560 52335
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
 14026  2  2  2  0  1    52336 53561 53561 52336
 342000.    0.00000    0.00000    0.00000    0.120600E-03  0.00000
 0.00000    1.00000    0.00000    0.00000    0.00000       0.00000
 0.00000
```

7156	1	1	47	0	1		20691 20692 20724 20723
7157	1	1	47	0	1		20692 20693 20725 20724
7158	1	1	47	0	1		20693 20694 20726 20725
7159	1	1	47	0	1		20694 20695 20727 20726
7160	1	1	47	0	1		20695 20696 20728 20727
7161	1	1	47	0	1		20696 20682 20698 20728
7162	1	1	47	0	1		20714 20715 20713 20699
7163	1	1	47	0	1		20715 20716 20712 20713
7164	1	1	47	0	1		20716 20717 20711 20712
7165	1	1	47	0	1		20717 20718 20710 20711
7166	1	1	47	0	1		20718 20719 20709 20710
7167	1	1	47	0	1		20719 20720 20708 20709
7168	1	1	47	0	1		20720 20721 20707 20708

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
7169	1	1	47	0	1		20721 20722 20706 20707
7170	1	1	47	0	1		20722 20723 20705 20706
7171	1	1	47	0	1		20723 20724 20704 20705
7172	1	1	47	0	1		20724 20725 20703 20704
7173	1	1	47	0	1		20725 20726 20702 20703
7174	1	1	47	0	1		20726 20727 20701 20702
7175	1	1	47	0	1		20727 20728 20700 20701
7176	1	1	47	0	1		20728 20698 20697 20700
7177	1	1	47	0	1		215 20730 20740 217
7178	1	1	47	0	1		20730 20731 20741 20740
7179	1	1	47	0	1		20731 20732 20742 20741
7180	1	1	47	0	1		20732 20733 20743 20742
7181	1	1	47	0	1		20733 20729 20735 20743
7182	1	1	47	0	1		217 20740 20736 216
7183	1	1	47	0	1		20740 20741 20737 20736
7184	1	1	47	0	1		20741 20742 20738 20737
7185	1	1	47	0	1		20742 20743 20739 20738
7186	1	1	47	0	1		20743 20735 20734 20739
7187	1	1	47	0	1		20744 20746 20778 20777
7188	1	1	47	0	1		20746 20747 20779 20778

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
7189	1	1	47	0	1		20747 20748 20780 20779
7190	1	1	47	0	1		20748 20749 20781 20780
7191	1	1	47	0	1		20749 20750 20782 20781
7192	1	1	47	0	1		20750 20751 20783 20782
7193	1	1	47	0	1		20751 20752 20784 20783
7194	1	1	47	0	1		20752 20753 20785 20784
7195	1	1	47	0	1		20753 20754 20786 20785
7196	1	1	47	0	1		20754 20755 20787 20786
7197	1	1	47	0	1		20755 20756 20788 20787
7198	1	1	47	0	1		20756 20757 20789 20788
7199	1	1	47	0	1		20757 20758 20790 20789
7200	1	1	47	0	1		20758 20759 20791 20790
7201	1	1	47	0	1		20759 20745 20761 20791
7202	1	1	47	0	1		20777 20778 20776 20762
7203	1	1	47	0	1		20778 20779 20775 20776
7204	1	1	47	0	1		20779 20780 20774 20775
7205	1	1	47	0	1		20780 20781 20773 20774
7206	1	1	47	0	1		20781 20782 20772 20773
7207	1	1	47	0	1		20782 20783 20771 20772
7208	1	1	47	0	1		20783 20784 20770 20771

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
7209	1	1	47	0	1		20784 20785 20769 20770
7210	1	1	47	0	1		20785 20786 20768 20769
7211	1	1	47	0	1		20786 20787 20767 20768
7212	1	1	47	0	1		20787 20788 20766 20767
7213	1	1	47	0	1		20788 20789 20765 20766
7214	1	1	47	0	1		20789 20790 20764 20765
7215	1	1	47	0	1		20790 20791 20763 20764
7216	1	1	47	0	1		20791 20761 20760 20763
7217	1	1	47	0	1		20792 20794 20826 20825
7218	1	1	47	0	1		20794 20795 20827 20826
7219	1	1	47	0	1		20795 20796 20828 20827
7220	1	1	47	0	1		20796 20797 20829 20828
7221	1	1	47	0	1		20797 20798 20830 20829

7222	1	1	47	0	1		20798 20799 20831 20830
7223	1	1	47	0	1		20799 20800 20832 20831
7224	1	1	47	0	1		20800 20801 20833 20832
7225	1	1	47	0	1		20801 20802 20834 20833
7226	1	1	47	0	1		20802 20803 20835 20834
7227	1	1	47	0	1		20803 20804 20836 20835
7228	1	1	47	0	1		20804 20805 20837 20836

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
7229	1	1	47	0	1		20805 20806 20838 20837
7230	1	1	47	0	1		20806 20807 20839 20838
7231	1	1	47	0	1		20807 20793 20809 20839
7232	1	1	47	0	1		20825 20826 20824 20810
7233	1	1	47	0	1		20826 20827 20823 20824
7234	1	1	47	0	1		20827 20828 20822 20823
7235	1	1	47	0	1		20828 20829 20821 20822
7236	1	1	47	0	1		20829 20830 20820 20821
7237	1	1	47	0	1		20830 20831 20819 20820
7238	1	1	47	0	1		20831 20832 20818 20819
7239	1	1	47	0	1		20832 20833 20817 20818
7240	1	1	47	0	1		20833 20834 20816 20817
7241	1	1	47	0	1		20834 20835 20815 20816
7242	1	1	47	0	1		20835 20836 20814 20815
7243	1	1	47	0	1		20836 20837 20813 20814
7244	1	1	47	0	1		20837 20838 20812 20813
7245	1	1	47	0	1		20838 20839 20811 20812
7246	1	1	47	0	1		20839 20809 20808 20811
7247	1	1	47	0	1		20840 20841 20861 20860
7248	1	1	47	0	1		20841 20842 20862 20861

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
7249	1	1	47	0	1		20842 20843 20863 20862
7250	1	1	47	0	1		20843 20844 20864 20863
7251	1	1	47	0	1		20844 20845 20865 20864
7252	1	1	47	0	1		20845 20846 20866 20865
7253	1	1	47	0	1		20846 20847 20867 20866
7254	1	1	47	0	1		20847 20848 20868 20867
7255	1	1	47	0	1		20848 20849 20869 20868
7256	1	1	47	0	1		20849 214 219 20869
7257	1	1	47	0	1		20860 20861 20859 20850
7258	1	1	47	0	1		20861 20862 20858 20859
7259	1	1	47	0	1		20862 20863 20857 20858
7260	1	1	47	0	1		20863 20864 20856 20857
7261	1	1	47	0	1		20864 20865 20855 20856
7262	1	1	47	0	1		20865 20866 20854 20855
7263	1	1	47	0	1		20866 20867 20853 20854
7264	1	1	47	0	1		20867 20868 20852 20853
7265	1	1	47	0	1		20868 20869 20851 20852
7266	1	1	47	0	1		20869 219 218 20851
7267	1	1	47	0	1		20870 20872 20904 20903
7268	1	1	47	0	1		20872 20873 20905 20904

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES
7269	1	1	47	0	1		20873 20874 20906 20905
7270	1	1	47	0	1		20874 20875 20907 20906
7271	1	1	47	0	1		20875 20876 20908 20907
7272	1	1	47	0	1		20876 20877 20909 20908
7273	1	1	47	0	1		20877 20878 20910 20909
7274	1	1	47	0	1		20878 20879 20911 20910
7275	1	1	47	0	1		20879 20880 20912 20911
7276	1	1	47	0	1		20880 20881 20913 20912
7277	1	1	47	0	1		20881 20882 20914 20913
7278	1	1	47	0	1		20882 20883 20915 20914
7279	1	1	47	0	1		20883 20884 20916 20915
7280	1	1	47	0	1		20884 20885 20917 20916
7281	1	1	47	0	1		20885 20871 20887 20917
7282	1	1	47	0	1		20903 20904 20902 20888
7283	1	1	47	0	1		20904 20905 20901 20902
7284	1	1	47	0	1		20905 20906 20900 20901
7285	1	1	47	0	1		20906 20907 20899 20900
7286	1	1	47	0	1		20907 20908 20898 20899
7287	1	1	47	0	1		20908 20909 20897 20898

LIST ALL SELECTED ELEMENTS. (LIST NODES)

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
1	1	1	1	0	1		1	2	4	6
2	1	1	1	0	1		6	4	3	5
128	1	1	1	0	1		211	178	201	213
129	1	1	1	0	1		213	201	191	212
130	1	1	1	0	1		214	215	217	219
131	1	1	1	0	1		219	217	216	218
222	1	1	1	0	1		361	362	364	366
223	1	1	1	0	1		366	364	363	365
3822	1	1	47	0	1		365	363	10604	10619
3823	1	1	47	0	1		10619	10604	10605	10620
3824	1	1	47	0	1		10620	10605	10606	10621
3825	1	1	47	0	1		10621	10606	10607	10622
3826	1	1	47	0	1		10622	10607	10608	10623
3827	1	1	47	0	1		10623	10608	10609	10624
3828	1	1	47	0	1		10624	10609	10610	10625
3829	1	1	47	0	1		10625	10610	10611	10626
3830	1	1	47	0	1		10626	10621	10612	10627
3831	1	1	47	0	1		10627	10612	10613	10628
3832	1	1	47	0	1		10628	10613	10614	10629
3833	1	1	47	0	1		10629	10614	10615	10630

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
3834	1	1	47	0	1		10630	10615	10616	10631
3835	1	1	47	0	1		10631	10616	10617	10632
3836	1	1	47	0	1		10632	10617	10603	10618
3837	1	1	47	0	1		212	191	10634	10649
3838	1	1	47	0	1		10649	10634	10635	10650
3839	1	1	47	0	1		10650	10635	10636	10651
3840	1	1	47	0	1		10651	10636	10637	10652
3841	1	1	47	0	1		10652	10637	10638	10653
3842	1	1	47	0	1		10653	10638	10639	10654
3843	1	1	47	0	1		10654	10639	10640	10655
3844	1	1	47	0	1		10655	10640	10641	10656
3845	1	1	47	0	1		10656	10641	10642	10657
3846	1	1	47	0	1		10657	10642	10643	10658
3847	1	1	47	0	1		10658	10643	10644	10659
3848	1	1	47	0	1		10659	10644	10645	10660
3849	1	1	47	0	1		10660	10645	10646	10661
3850	1	1	47	0	1		10661	10646	10647	10662
3851	1	1	47	0	1		10662	10647	10633	10648
3852	1	1	47	0	1		218	216	10664	10679
3853	1	1	47	0	1		10679	10664	10665	10680

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
3854	1	1	47	0	1		10680	10665	10666	10681
3855	1	1	47	0	1		10681	10666	10667	10682
3856	1	1	47	0	1		10682	10667	10668	10683
3857	1	1	47	0	1		10683	10668	10669	10684
3858	1	1	47	0	1		10684	10669	10670	10685
3859	1	1	47	0	1		10685	10670	10671	10686
3860	1	1	47	0	1		10686	10671	10672	10687
3861	1	1	47	0	1		10687	10672	10673	10688
3862	1	1	47	0	1		10688	10673	10674	10689
3863	1	1	47	0	1		10689	10674	10675	10690
3864	1	1	47	0	1		10690	10675	10676	10691
3865	1	1	47	0	1		10691	10676	10677	10692
3866	1	1	47	0	1		10692	10677	10663	10678
3867	1	1	47	0	1		5	3	10694	10709
3868	1	1	47	0	1		10709	10694	10695	10710
3869	1	1	47	0	1		10710	10695	10696	10711
3870	1	1	47	0	1		10711	10696	10697	10712
3871	1	1	47	0	1		10712	10697	10698	10713
3872	1	1	47	0	1		10713	10698	10699	10714
3873	1	1	47	0	1		10714	10699	10700	10715

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
3874	1	1	47	0	1		10715	10700	10701	10716

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
3875	1	1	47	0	1		10716	10701	10702	10717
3876	1	1	47	0	1		10717	10702	10703	10718
3877	1	1	47	0	1		10718	10703	10704	10719
3878	1	1	47	0	1		10719	10704	10705	10720
3879	1	1	47	0	1		10720	10705	10706	10721
3880	1	1	47	0	1		10721	10706	10707	10722
3881	1	1	47	0	1		10722	10707	10693	10708
7097	1	1	47	0	1		178	20604	20624	201
7098	1	1	47	0	1		20604	20605	20625	20624
7099	1	1	47	0	1		20605	20606	20626	20625
7100	1	1	47	0	1		20606	20607	20627	20626
7101	1	1	47	0	1		20607	20608	20628	20627
7102	1	1	47	0	1		20608	20609	20629	20628
7103	1	1	47	0	1		20609	20610	20630	20629
7104	1	1	47	0	1		20610	20611	20631	20630
7105	1	1	47	0	1		20611	20612	20632	20631
7106	1	1	47	0	1		20612	20603	20614	20632
7107	1	1	47	0	1		201	20624	20615	191
7108	1	1	47	0	1		20624	20625	20616	20615

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
7109	1	1	47	0	1		20625	20626	20617	20616
7110	1	1	47	0	1		20626	20627	20618	20617
7111	1	1	47	0	1		20627	20628	20619	20618
7112	1	1	47	0	1		20628	20629	20620	20619
7113	1	1	47	0	1		20629	20630	20621	20620
7114	1	1	47	0	1		20630	20631	20622	20621
7115	1	1	47	0	1		20631	20632	20623	20622
7116	1	1	47	0	1		20632	20614	20613	20623
7117	1	1	47	0	1		20633	20635	20667	20666
7118	1	1	47	0	1		20635	20636	20668	20667
7119	1	1	47	0	1		20636	20637	20669	20668
7120	1	1	47	0	1		20637	20638	20670	20669
7121	1	1	47	0	1		20638	20639	20671	20670
7122	1	1	47	0	1		20639	20640	20672	20671
7123	1	1	47	0	1		20640	20641	20673	20672
7124	1	1	47	0	1		20641	20642	20674	20673
7125	1	1	47	0	1		20642	20643	20675	20674
7126	1	1	47	0	1		20643	20644	20676	20675
7127	1	1	47	0	1		20644	20645	20677	20676
7128	1	1	47	0	1		20645	20646	20678	20677

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
7129	1	1	47	0	1		20646	20647	20679	20678
7130	1	1	47	0	1		20647	20648	20680	20679
7131	1	1	47	0	1		20648	20634	20650	20680
7132	1	1	47	0	1		20666	20667	20665	20651
7133	1	1	47	0	1		20667	20668	20664	20665
7134	1	1	47	0	1		20668	20669	20663	20664
7135	1	1	47	0	1		20669	20670	20662	20663
7136	1	1	47	0	1		20670	20671	20661	20662
7137	1	1	47	0	1		20671	20672	20660	20661
7138	1	1	47	0	1		20672	20673	20659	20660
7139	1	1	47	0	1		20673	20674	20658	20659
7140	1	1	47	0	1		20674	20675	20657	20658
7141	1	1	47	0	1		20675	20676	20656	20657
7142	1	1	47	0	1		20676	20677	20655	20656
7143	1	1	47	0	1		20677	20678	20654	20655
7144	1	1	47	0	1		20678	20679	20653	20654
7145	1	1	47	0	1		20679	20680	20652	20653
7146	1	1	47	0	1		20680	20650	20649	20652
7147	1	1	47	0	1		20681	20683	20715	20714
7148	1	1	47	0	1		20683	20684	20716	20715

ELEM	MAT	TYP	REL	ESY	SEC	TSHA	NODES			
7149	1	1	47	0	1		20684	20685	20717	20716
7150	1	1	47	0	1		20685	20686	20718	20717
7151	1	1	47	0	1		20686	20687	20719	20718
7152	1	1	47	0	1		20687	20688	20720	20719
7153	1	1	47	0	1		20688	20689	20721	20720
7154	1	1	47	0	1		20689	20690	20722	20721
7155	1	1	47	0	1		20690	20691	20723	20722

```
ANTYPE,0
TIME,1
NSUBST,4,10,2
/INPUT,'D1','txt','D:\Ansys Files\Run Files\Model 300\Diff Settlement',, 0
/STATUS,SOLU
SOLVE
!*
TIME,24
NSUBST,4,10,2
/INPUT,'D24','txt','D:\Ansys Files\Run Files\Model 300\Diff Settlement',, 0
/STATUS,SOLU
SOLVE
!*
TIME,100
NSUBST,10,100,5
/INPUT,'D100','txt','D:\Ansys Files\Run Files\Model 300\Diff Settlement',, 0
/STATUS,SOLU
SOLVE
!*
!TIME,1000
!NSUBST,4,100,2
!/INPUT,'D1000','txt','D:\Ansys Files\Run Files\Model 300\Diff Settlement',, 0
!/STATUS,SOLU
!SOLVE
!*
!TIME,5000
!NSUBST,10,100,2
!/INPUT,'D5000','txt','D:\Ansys Files\Run Files\Model 300\Diff Settlement',, 0
!/STATUS,SOLU
!SOLVE
!*
!TIME,10000
!/INPUT,'d10000','txt','D:\Ansys Files\Run Files\Model 300\Diff Settlement',, 0
!/STATUS,SOLU
!SOLVE
!FINISH
```

MODEL 300

Time step file for static displacements

Model 300

Typical static displacement file

```
D,30001,,-0.547,,,,UY
D,30002,,-0.547,,,UY
D,51012,,-0.547,,,UY
D,51013,,-0.547,,,UY
D,51014,,-0.547,,,UY
D,51015,,-0.547,,,UY
D,51016,,-0.547,,,UY
D,51017,,-0.547,,,UY
D,51018,,-0.547,,,UY
D,51019,,-0.547,,,UY
D,51020,,-0.547,,,UY
D,51021,,-0.547,,,UY
D,51022,,-0.547,,,UY
D,51023,,-0.546,,,UY
D,51024,,-0.546,,,UY
D,51025,,-0.546,,,UY
D,50633,,-0.546,,,UY
D,51011,,-0.546,,,UY
D,50635,,-0.546,,,UY
D,50636,,-0.545,,,UY
D,50637,,-0.545,,,UY
D,50638,,-0.545,,,UY
D,50639,,-0.545,,,UY
D,50640,,-0.545,,,UY
D,50641,,-0.545,,,UY
D,50642,,-0.544,,,UY
D,50643,,-0.544,,,UY
D,50644,,-0.544,,,UY
D,50645,,-0.544,,,UY
D,50646,,-0.544,,,UY
D,50647,,-0.543,,,UY
D,50648,,-0.543,,,UY
D,50634,,-0.543,,,UY
D,50681,,-0.543,,,UY
D,50683,,-0.543,,,UY
D,50684,,-0.542,,,UY
D,50685,,-0.542,,,UY
D,50686,,-0.542,,,UY
D,50687,,-0.542,,,UY
D,50688,,-0.542,,,UY
D,50689,,-0.541,,,UY
D,50690,,-0.541,,,UY
D,50691,,-0.541,,,UY
D,50692,,-0.541,,,UY
D,50693,,-0.541,,,UY
D,50694,,-0.540,,,UY
D,50695,,-0.540,,,UY
D,50696,,-0.540,,,UY
D,50682,,-0.540,,,UY
D,51056,,-0.540,,,UY
D,51060,,-0.539,,,UY
D,51059,,-0.539,,,UY
D,51058,,-0.539,,,UY
D,51057,,-0.539,,,UY
D,30211,,-0.538,,,UY
D,30178,,-0.538,,,UY
D,50604,,-0.538,,,UY
D,50605,,-0.538,,,UY
D,50606,,-0.537,,,UY
D,50607,,-0.537,,,UY
D,50608,,-0.537,,,UY
D,50609,,-0.537,,,UY
D,50610,,-0.536,,,UY
D,50611,,-0.536,,,UY
D,50612,,-0.536,,,UY
D,50603,,-0.536,,,UY
D,50744,,-0.536,,,UY
D,50746,,-0.535,,,UY
D,50747,,-0.535,,,UY
D,50748,,-0.534,,,UY
D,50749,,-0.534,,,UY
D,50750,,-0.534,,,UY
D,50751,,-0.533,,,UY
D,50752,,-0.533,,,UY
D,50753,,-0.533,,,UY
```

D,50754,,-0.532,,,,UY
D,50755,,-0.532,,,,UY
D,50756,,-0.531,,,,UY
D,50757,,-0.531,,,,UY
D,50758,,-0.531,,,,UY
D,50759,,-0.530,,,,UY
D,50745,,-0.530,,,,UY
D,50792,,-0.530,,,,UY
D,50794,,-0.529,,,,UY
D,50795,,-0.529,,,,UY
D,50796,,-0.528,,,,UY
D,50797,,-0.527,,,,UY
D,50798,,-0.527,,,,UY
D,50799,,-0.526,,,,UY
D,50800,,-0.525,,,,UY
D,50801,,-0.525,,,,UY
D,50802,,-0.524,,,,UY
D,50803,,-0.523,,,,UY
D,50804,,-0.523,,,,UY
D,50805,,-0.522,,,,UY
D,50806,,-0.521,,,,UY
D,50807,,-0.521,,,,UY
D,50793,,-0.520,,,,UY
D,50840,,-0.520,,,,UY
D,50841,,-0.519,,,,UY
D,50842,,-0.518,,,,UY
D,50843,,-0.517,,,,UY
D,50844,,-0.516,,,,UY
D,50845,,-0.515,,,,UY
D,50846,,-0.513,,,,UY
D,50847,,-0.512,,,,UY
D,50848,,-0.511,,,,UY
D,50849,,-0.510,,,,UY
D,30214,,-0.508,,,,UY
D,30215,,-0.507,,,,UY
D,50730,,-0.506,,,,UY
D,50731,,-0.505,,,,UY
D,50732,,-0.504,,,,UY
D,50733,,-0.503,,,,UY
D,50729,,-0.502,,,,UY
D,50870,,-0.502,,,,UY
D,50872,,-0.500,,,,UY
D,50873,,-0.499,,,,UY
D,50874,,-0.498,,,,UY
D,50875,,-0.496,,,,UY
D,50876,,-0.494,,,,UY
D,50877,,-0.492,,,,UY
D,50878,,-0.490,,,,UY
D,50879,,-0.488,,,,UY
D,50880,,-0.486,,,,UY
D,50881,,-0.484,,,,UY
D,50882,,-0.482,,,,UY
D,50883,,-0.480,,,,UY
D,50884,,-0.478,,,,UY
D,50885,,-0.476,,,,UY
D,50871,,-0.474,,,,UY
D,50918,,-0.474,,,,UY
D,50920,,-0.472,,,,UY
D,50921,,-0.470,,,,UY
D,50922,,-0.468,,,,UY
D,50923,,-0.467,,,,UY
D,50924,,-0.463,,,,UY
D,50925,,-0.458,,,,UY
D,50926,,-0.453,,,,UY
D,50927,,-0.449,,,,UY
D,50928,,-0.444,,,,UY
D,50929,,-0.439,,,,UY
D,50930,,-0.434,,,,UY
D,50931,,-0.429,,,,UY
D,50932,,-0.425,,,,UY
D,50933,,-0.420,,,,UY
D,50919,,-0.415,,,,UY
D,50966,,-0.415,,,,UY
D,50967,,-0.411,,,,UY
D,50968,,-0.406,,,,UY

```
D,50969,,-0.401,,,,UY
D,50970,,-0.397,,,,UY
D,50971,,-0.392,,,,UY
D,50972,,-0.387,,,,UY
D,50973,,-0.382,,,,UY
D,50974,,-0.376,,,,UY
D,50975,,-0.371,,,,UY
D,50976,,-0.365,,,,UY
D,50977,,-0.360,,,,UY
D,50978,,-0.354,,,,UY
D,50979,,-0.349,,,,UY
D,50980,,-0.343,,,,UY
D,30361,,-0.338,,,,UY
D,30362,,-0.334,,,,UY
D,10708,,-0.000992,,,,UX
D,10722,,-0.000931,,,,UX
D,10721,,-0.000869,,,,UX
D,10720,,-0.000808,,,,UX
D,10719,,-0.000746,,,,UX
D,10718,,-0.000684,,,,UX
D,10717,,-0.000623,,,,UX
D,10716,,-0.000561,,,,UX
D,10715,,-0.000500,,,,UX
D,10714,,-0.000438,,,,UX
D,10713,,-0.000376,,,,UX
D,10712,,-0.000315,,,,UX
D,10711,,-0.000253,,,,UX
D,10710,,-0.000192,,,,UX
D,10709,,-0.000130,,,,UX
D,5,,-0.000068,,,,UX
D,6,,-0.000034,,,,UX
D,1,,0.000000,,,,UX
```

Model 300

Typical differential displacement file

```
D,30001,,-0.7141,,,,UY,,,,,
D,30002,,-0.7129,,,UY,,,,
D,51012,,-0.7077,,,UY,,,,
D,51013,,-0.6989,,,UY,,,,
D,51014,,-0.6870,,,UY,,,,
D,51015,,-0.6729,,,UY,,,,
D,51016,,-0.6575,,,UY,,,,
D,51017,,-0.6416,,,UY,,,,
D,51018,,-0.6259,,,UY,,,,
D,51019,,-0.6113,,,UY,,,,
D,51020,,-0.5980,,,UY,,,,
D,51021,,-0.5864,,,UY,,,,
D,51022,,-0.5766,,,UY,,,,
D,51023,,-0.5685,,,UY,,,,
D,51024,,-0.5621,,,UY,,,,
D,51025,,-0.5572,,,UY,,,,
D,50633,,-0.5535,,,UY,,,,
D,51011,,-0.5535,,,UY,,,,
D,50635,,-0.5507,,,UY,,,,
D,50636,,-0.5487,,,UY,,,,
D,50637,,-0.5473,,,UY,,,,
D,50638,,-0.5463,,,UY,,,,
D,50639,,-0.5456,,,UY,,,,
D,50640,,-0.5451,,,UY,,,,
D,50641,,-0.5448,,,UY,,,,
D,50642,,-0.5445,,,UY,,,,
D,50643,,-0.5442,,,UY,,,,
D,50644,,-0.5440,,,UY,,,,
D,50645,,-0.5438,,,UY,,,,
D,50646,,-0.5436,,,UY,,,,
D,50647,,-0.5434,,,UY,,,,
D,50648,,-0.5431,,,UY,,,,
D,50634,,-0.5429,,,UY,,,,
D,50681,,-0.5429,,,UY,,,,
D,50683,,-0.5427,,,UY,,,,
D,50684,,-0.5425,,,UY,,,,
D,50685,,-0.5423,,,UY,,,,
D,50686,,-0.5421,,,UY,,,,
D,50687,,-0.5419,,,UY,,,,
D,50688,,-0.5416,,,UY,,,,
D,50689,,-0.5414,,,UY,,,,
D,50690,,-0.5412,,,UY,,,,
D,50691,,-0.5410,,,UY,,,,
D,50692,,-0.5408,,,UY,,,,
D,50693,,-0.5406,,,UY,,,,
D,50694,,-0.5404,,,UY,,,,
D,50695,,-0.5401,,,UY,,,,
D,50696,,-0.5399,,,UY,,,,
D,50682,,-0.5396,,,UY,,,,
D,51056,,-0.5396,,,UY,,,,
D,51060,,-0.5394,,,UY,,,,
D,51059,,-0.5391,,,UY,,,,
D,51058,,-0.5389,,,UY,,,,
D,51057,,-0.5386,,,UY,,,,
D,30211,,-0.5384,,,UY,,,,
D,30178,,-0.5382,,,UY,,,,
D,50604,,-0.5380,,,UY,,,,
D,50605,,-0.5377,,,UY,,,,
D,50606,,-0.5375,,,UY,,,,
D,50607,,-0.5372,,,UY,,,,
D,50608,,-0.5370,,,UY,,,,
D,50609,,-0.5367,,,UY,,,,
D,50610,,-0.5365,,,UY,,,,
D,50611,,-0.5362,,,UY,,,,
D,50612,,-0.5360,,,UY,,,,
D,50603,,-0.5356,,,UY,,,,
D,50744,,-0.5356,,,UY,,,,
D,50746,,-0.5352,,,UY,,,,
D,50747,,-0.5348,,,UY,,,,
D,50748,,-0.5344,,,UY,,,,
D,50749,,-0.5341,,,UY,,,,
D,50750,,-0.5337,,,UY,,,,
D,50751,,-0.5333,,,UY,,,,
D,50752,,-0.5329,,,UY,,,,
D,50753,,-0.5325,,,UY,,,,
```

```
D,50754,,-0.5322,,,,UY,,,,,
D,50755,,-0.5318,,,,UY,,,,,
D,50756,,-0.5314,,,,UY,,,,,
D,50757,,-0.5310,,,,UY,,,,,
D,50758,,-0.5306,,,,UY,,,,,
D,50759,,-0.5303,,,,UY,,,,,
D,50745,,-0.5299,,,,UY,,,,,
D,50792,,-0.5299,,,,UY,,,,,
D,50794,,-0.5293,,,,UY,,,,,
D,50795,,-0.5286,,,,UY,,,,,
D,50796,,-0.5280,,,,UY,,,,,
D,50797,,-0.5273,,,,UY,,,,,
D,50798,,-0.5266,,,,UY,,,,,
D,50799,,-0.5259,,,,UY,,,,,
D,50800,,-0.5253,,,,UY,,,,,
D,50801,,-0.5246,,,,UY,,,,,
D,50802,,-0.5239,,,,UY,,,,,
D,50803,,-0.5232,,,,UY,,,,,
D,50804,,-0.5225,,,,UY,,,,,
D,50805,,-0.5219,,,,UY,,,,,
D,50806,,-0.5212,,,,UY,,,,,
D,50807,,-0.5205,,,,UY,,,,,
D,50793,,-0.5198,,,,UY,,,,,
D,50840,,-0.5198,,,,UY,,,,,
D,50841,,-0.5192,,,,UY,,,,,
D,50842,,-0.5184,,,,UY,,,,,
D,50843,,-0.5171,,,,UY,,,,,
D,50844,,-0.5159,,,,UY,,,,,
D,50845,,-0.5147,,,,UY,,,,,
D,50846,,-0.5134,,,,UY,,,,,
D,50847,,-0.5122,,,,UY,,,,,
D,50848,,-0.5109,,,,UY,,,,,
D,50849,,-0.5097,,,,UY,,,,,
D,30214,,-0.5085,,,,UY,,,,,
D,30215,,-0.5075,,,,UY,,,,,
D,50730,,-0.5063,,,,UY,,,,,
D,50731,,-0.5051,,,,UY,,,,,
D,50732,,-0.5039,,,,UY,,,,,
D,50733,,-0.5027,,,,UY,,,,,
D,50729,,-0.5015,,,,UY,,,,,
D,50870,,-0.5015,,,,UY,,,,,
D,50872,,-0.5002,,,,UY,,,,,
D,50873,,-0.4989,,,,UY,,,,,
D,50874,,-0.4976,,,,UY,,,,,
D,50875,,-0.4957,,,,UY,,,,,
D,50876,,-0.4938,,,,UY,,,,,
D,50877,,-0.4918,,,,UY,,,,,
D,50878,,-0.4899,,,,UY,,,,,
D,50879,,-0.4879,,,,UY,,,,,
D,50880,,-0.4860,,,,UY,,,,,
D,50881,,-0.4840,,,,UY,,,,,
D,50882,,-0.4821,,,,UY,,,,,
D,50883,,-0.4801,,,,UY,,,,,
D,50884,,-0.4782,,,,UY,,,,,
D,50885,,-0.4762,,,,UY,,,,,
D,50871,,-0.4743,,,,UY,,,,,
D,50918,,-0.4743,,,,UY,,,,,
D,50920,,-0.4724,,,,UY,,,,,
D,50921,,-0.4704,,,,UY,,,,,
D,50922,,-0.4685,,,,UY,,,,,
D,50923,,-0.4665,,,,UY,,,,,
D,50924,,-0.4629,,,,UY,,,,,
D,50925,,-0.4581,,,,UY,,,,,
D,50926,,-0.4533,,,,UY,,,,,
D,50927,,-0.4486,,,,UY,,,,,
D,50928,,-0.4438,,,,UY,,,,,
D,50929,,-0.4390,,,,UY,,,,,
D,50930,,-0.4342,,,,UY,,,,,
D,50931,,-0.4295,,,,UY,,,,,
D,50932,,-0.4247,,,,UY,,,,,
D,50933,,-0.4199,,,,UY,,,,,
D,50919,,-0.4152,,,,UY,,,,,
D,50966,,-0.4152,,,,UY,,,,,
D,50967,,-0.4105,,,,UY,,,,,
D,50968,,-0.4059,,,,UY,,,,,
```

```
D,50969,,-0.4012,,,,UY,,,,,
D,50970,,-0.3966,,,,UY,,,,,
D,50971,,-0.3919,,,,UY,,,,,
D,50972,,-0.3872,,,,UY,,,,,
D,50973,,-0.3817,,,,UY,,,,,
D,50974,,-0.3762,,,,UY,,,,,
D,50975,,-0.3708,,,,UY,,,,,
D,50976,,-0.3653,,,,UY,,,,,
D,50977,,-0.3598,,,,UY,,,,,
D,50978,,-0.3543,,,,UY,,,,,
D,50979,,-0.3489,,,,UY,,,,,
D,50980,,-0.3434,,,,UY,,,,,
D,30361,,-0.3379,,,,UY,,,,,
D,30362,,-0.3337,,,,UY,,,,,
```

```
*SET,k,30
!*
R,44,0.975*k, , ,
!*
R,45,0.75*k, , ,
!*
R,46,1.725*k, , ,
!*
R,47,1.95*k, , ,
!*
```

Model 3000

Script file for setting soil modulus.

OSR-19-260# (10/27/93)

Calculation Continuation Sheet

Calculation No.	Sheet No.	Rev.
T-CLC-Z-00006	572	0

APPENDIX G

2-013-0 esg 7/14/03

Preliminary Model Studi~~es~~y

This Appendix is intended to provide a summary of preliminary calculations that were performed to justify some of the assumptions and methods used for the final analysis.

G1. Bounding Case for Static Settlement Displacements.

A simple 2-D elastic model was used to determine which of the loading conditions resulted in the highest stress/strain state in the vault.

G1.1 Displacement Calculation.

The 2-D axisymmetric model was run with three loading conditions. A preliminary soil closure cap design was used to calculate the vertical pressure loads.

Load P1 – Loading from Vault 4 only.
Load P2 – Loads from all 15 proposed vaults.
Load P3 – Loads from all but 13, 14, 15. (The soil heave effect of these vaults tends to counteract the settlement under vault 4.)

The displacements from the axisymmetric model were interpolated for application to the plane strain elastic model.

G1.2 Plane Strain Model Results.

The model is shown on figures G1 through G3. The horizontal stress is shown on the contour plots in figures G4 through 8. The maximum tensile stress of 13.1 ksf occurs for case P3R. Case P3R is the right hand displacement pattern of loading condition P3. This bounding case is used for the remainder of the analysis in this calculation.

G2. Preliminary 2-D and 3-D Model Comparison.

To validate the use of a 2-D plane strain model, a preliminary analysis was performed with a non-linear 3-D model. Loads and displacements applied to the model were based on preliminary information. The model did not include the construction joints. For comparison, the 2-D model (Model 70) was modified to bond the construction joints and was run with the same loads and properties as the 3-D model.

The results are compared in figures G9 through G14. The results show slightly higher values for the 2-D model.

Table G1. 2-D and 3-D Model Comparison

Description	3-D Max. Value	2-D Max. Value	% Variation
Horizontal Stress	39.5 ksf	41.4 ksf	+4.8%
Horizontal Strain	7.69E-5	7.8E-5	+1.4%
Contact Pressure	18.4 ksf	20.9 ksf	+1.1%

The 2-D model and 3-D model give very similar results. In addition, the contours compare closely for both models.

G3. Conclusions.

1. The loading condition P3R chosen for the analysis represents a bounding case.
2. The use of a 2-D non-linear plane strain model is representative for the structural behavior of the vault.

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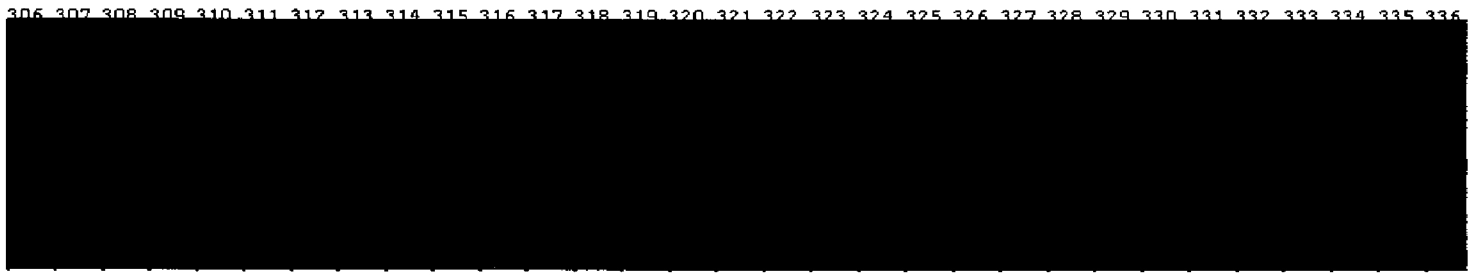
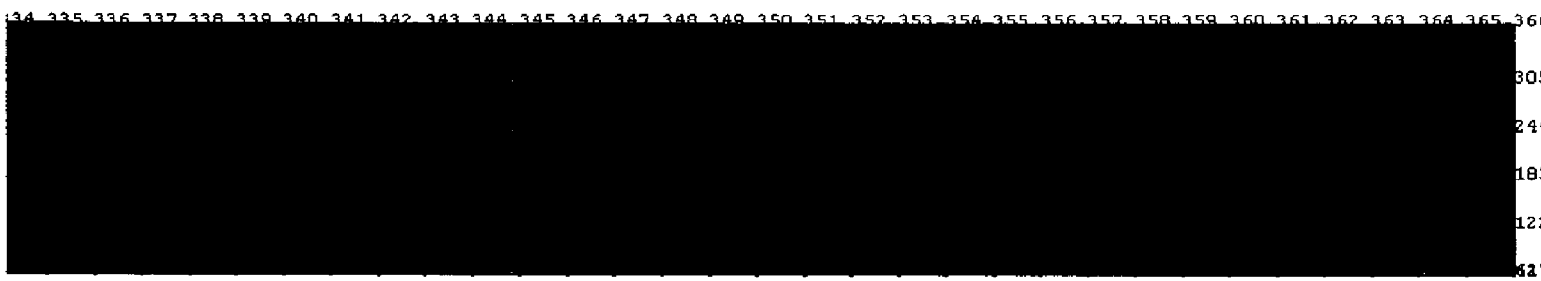
Model 2 - 2D Plane Strain
Node Numbers





Note: Bottom row has coincident nodes 1-61 and 367-427

Figure G1

Model 2 - 2D Plane Strain
Element Numbers

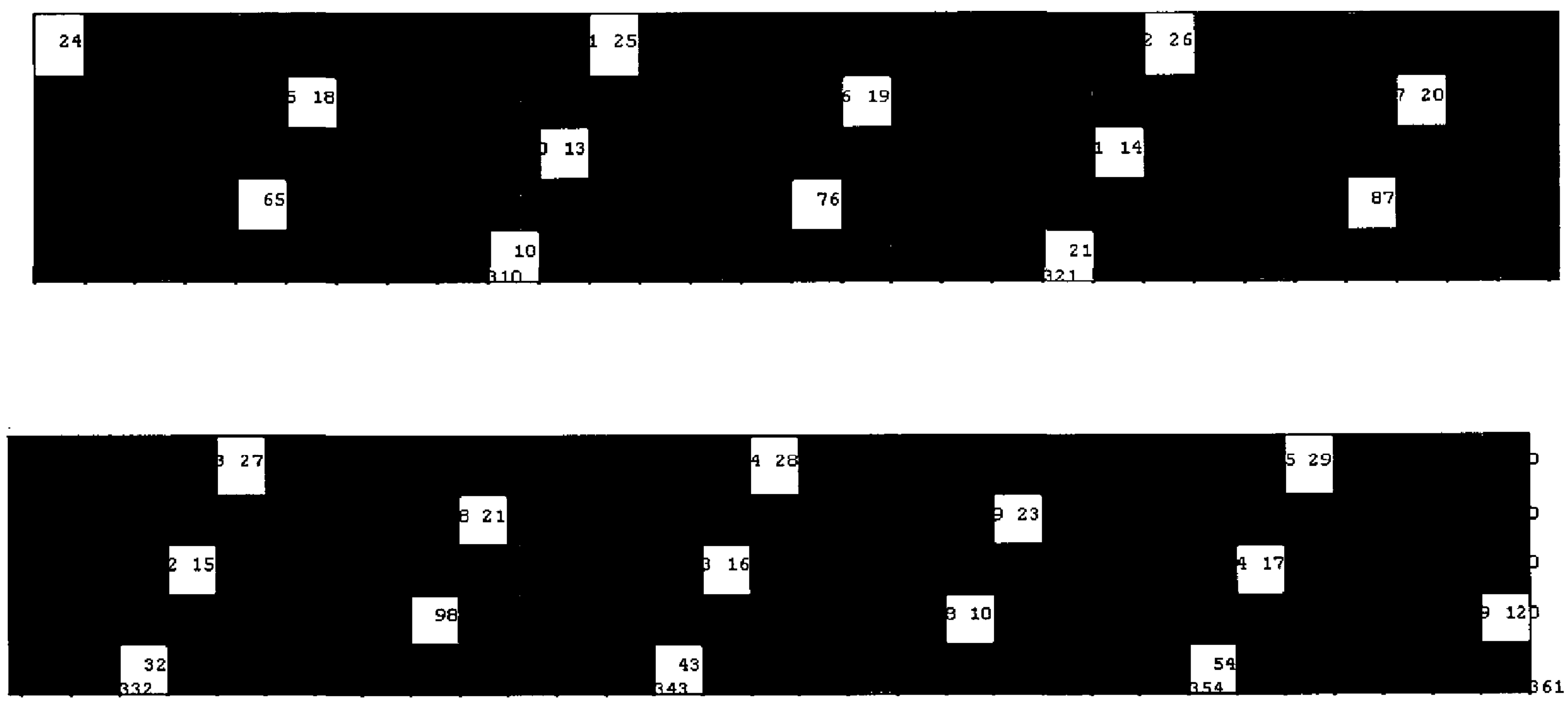


Figure 42

Model 2 - 2D Plane Strain
Boundary Conditions
X dir. - fixed left side
Y dir. - imposed displacements

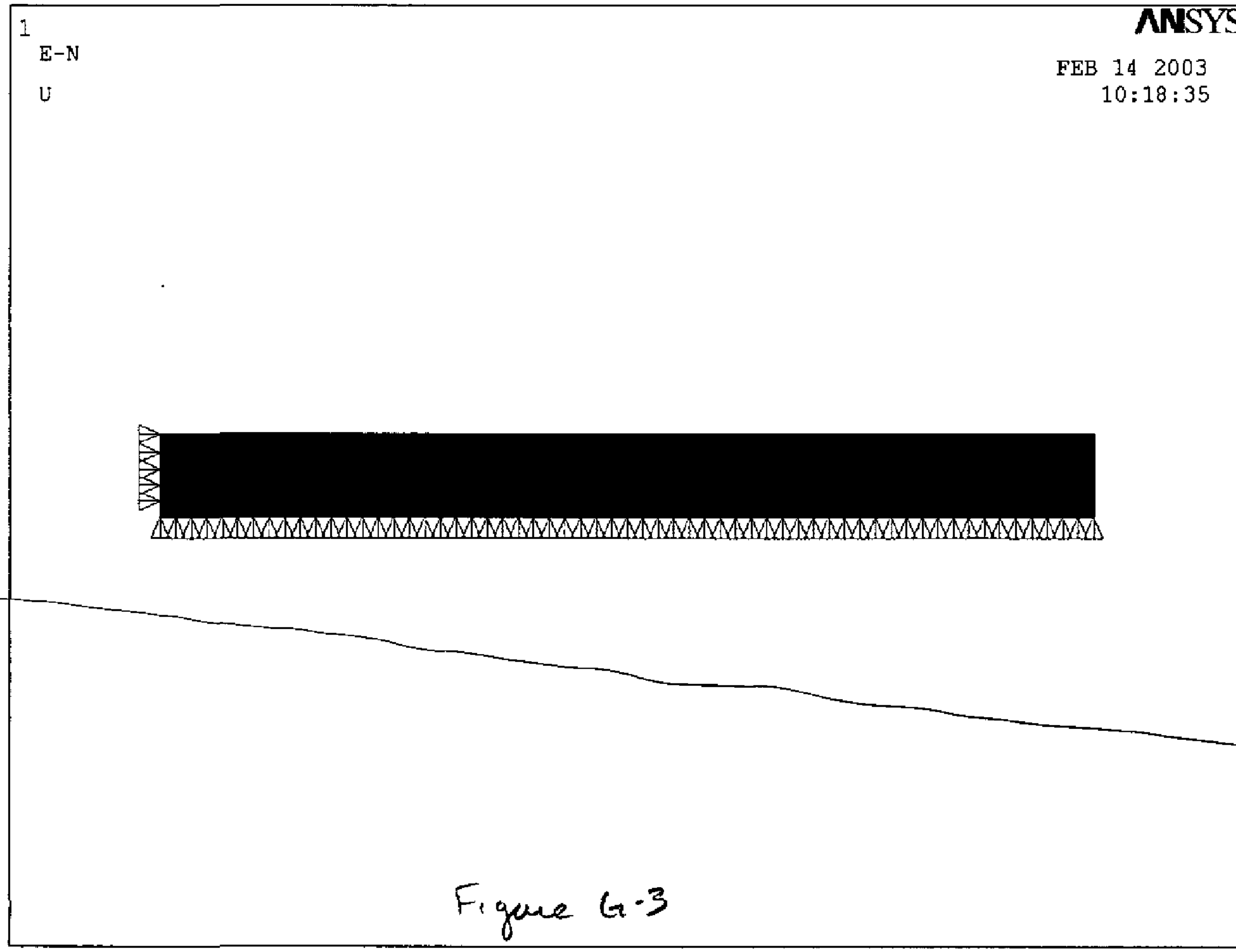


Figure G-3

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Model 2 - 2D Plane Strain
Case P1 - Vault 4 Only
Horizontal Stress σ_x

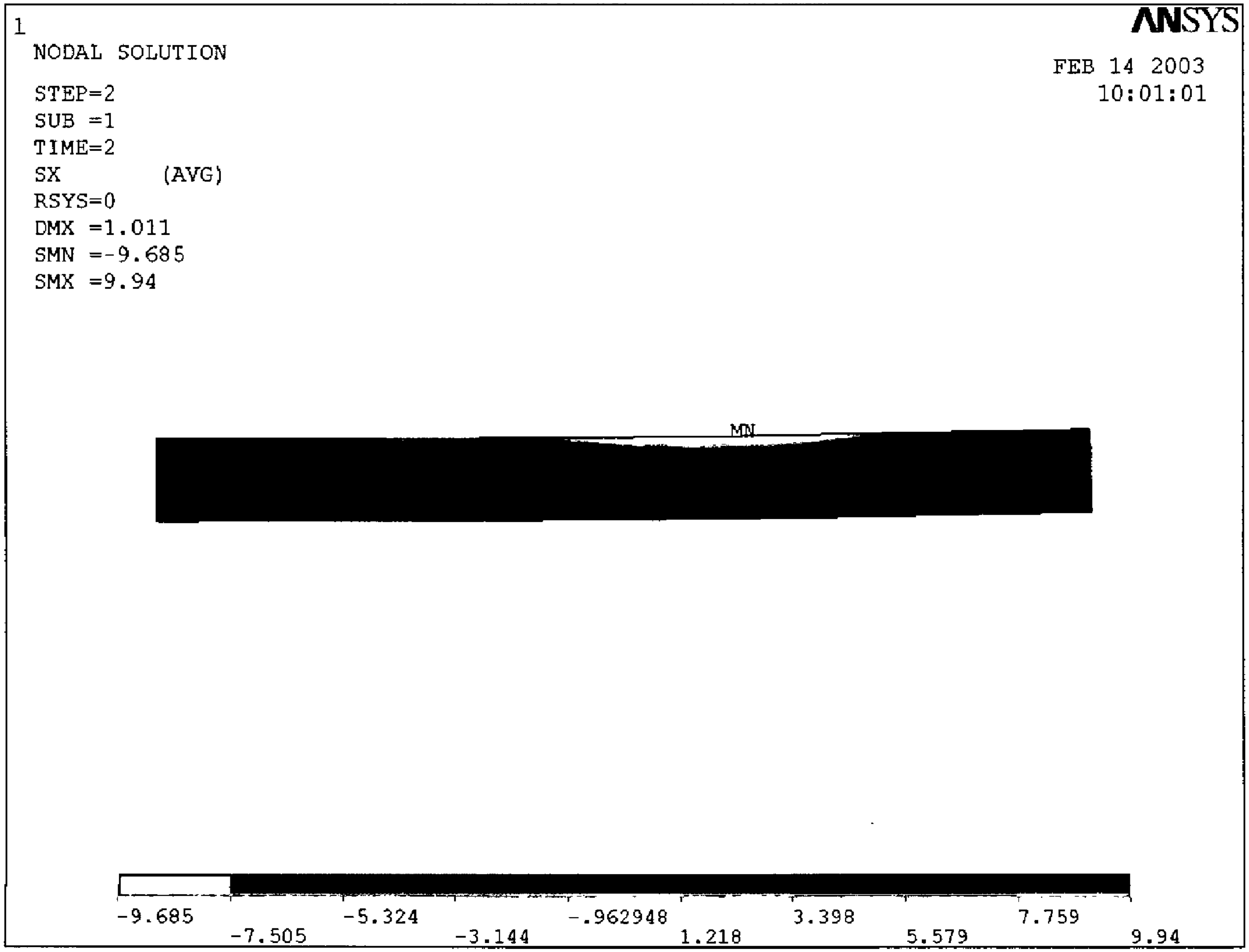

Figure G4

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Model 2 - 2D Plane Strain
Case P2R - All Vaults
Horizontal Stress σ_x

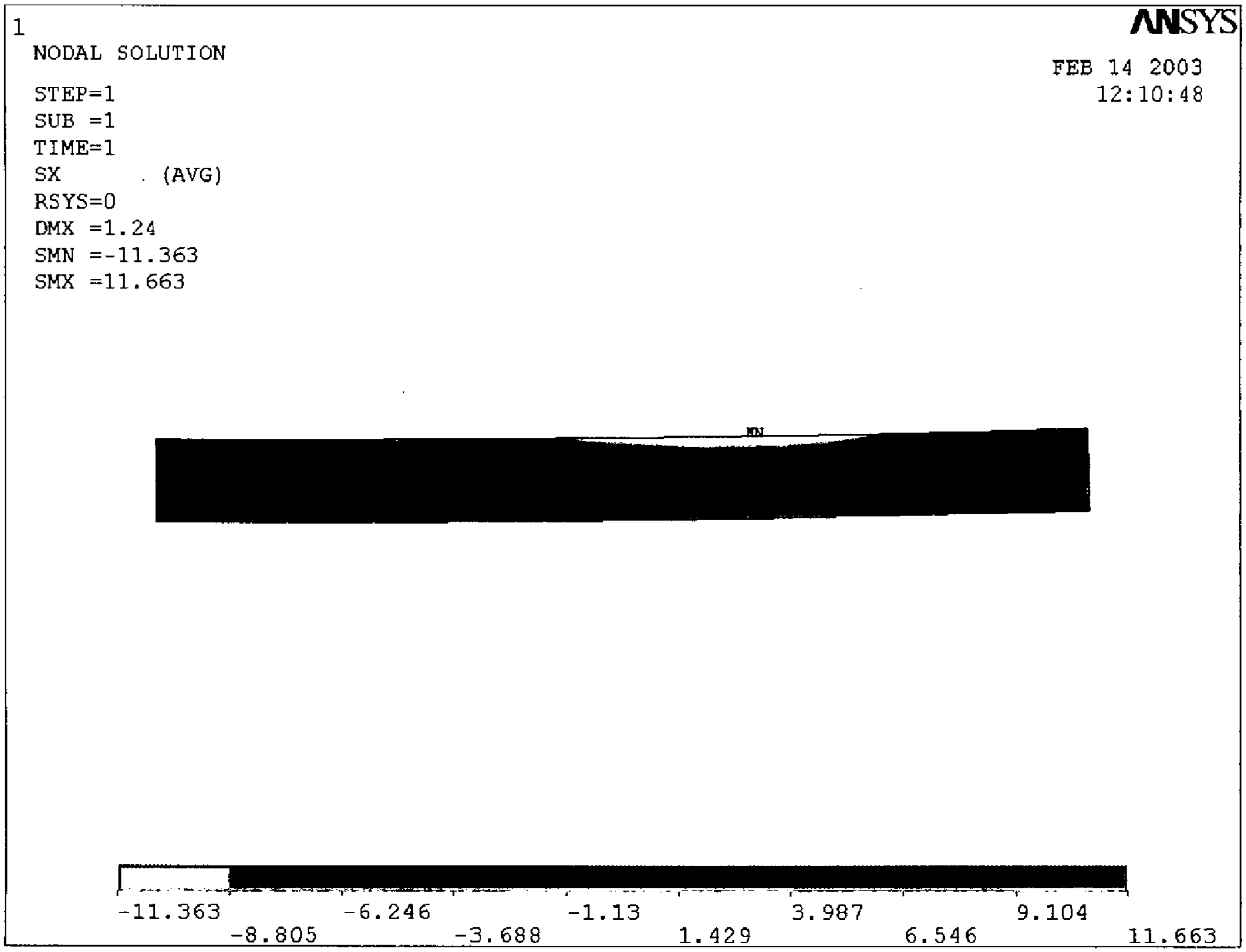


Figure 65

Model 2 - 2D Plane Strain
Case P2L - All Vaults
Horizontal Stress σ_x

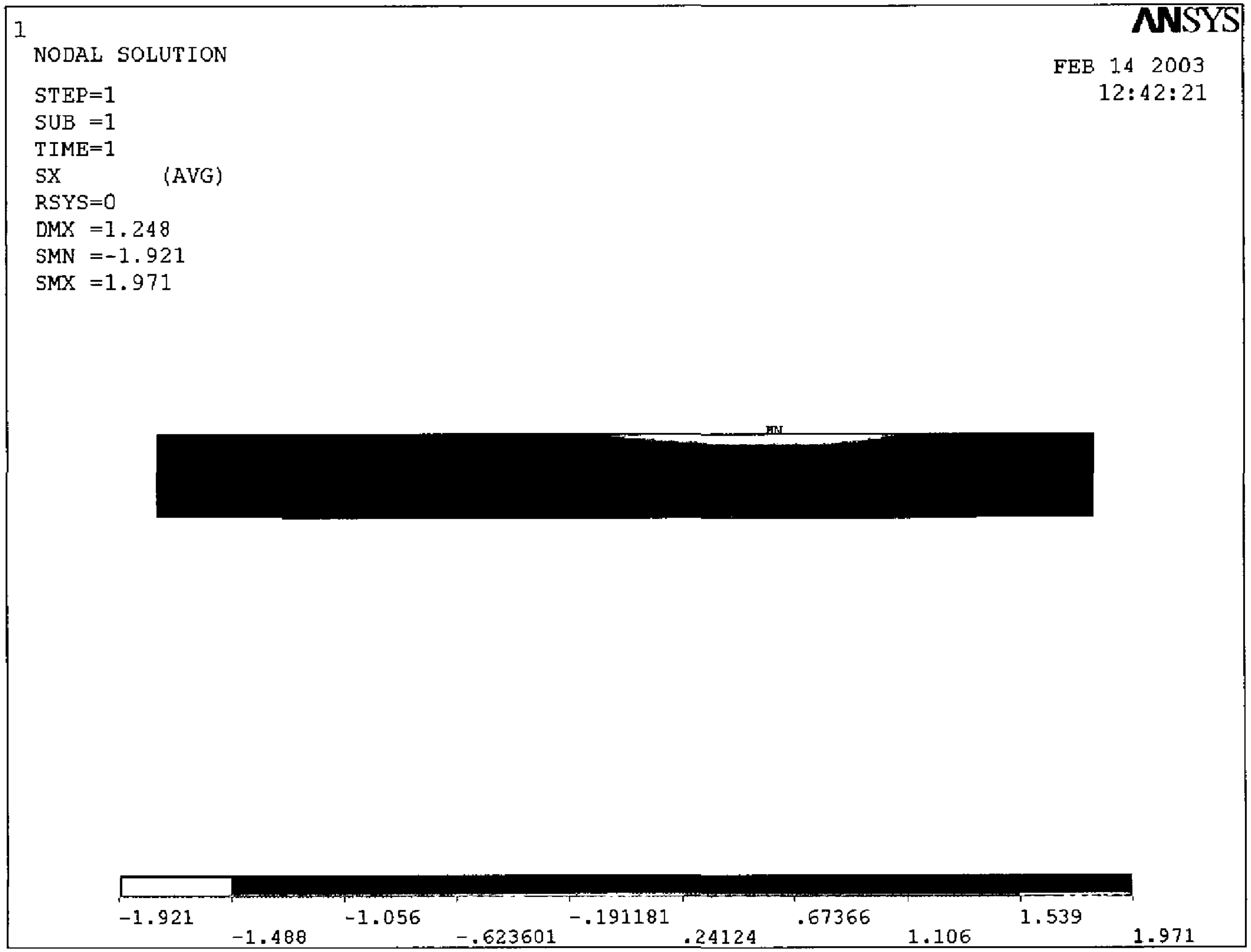


Figure 46

Model 2 - 2D Plane Strain
Case P3R - All Vaults exc. 13,14,15
Horizontal Stress σ_x

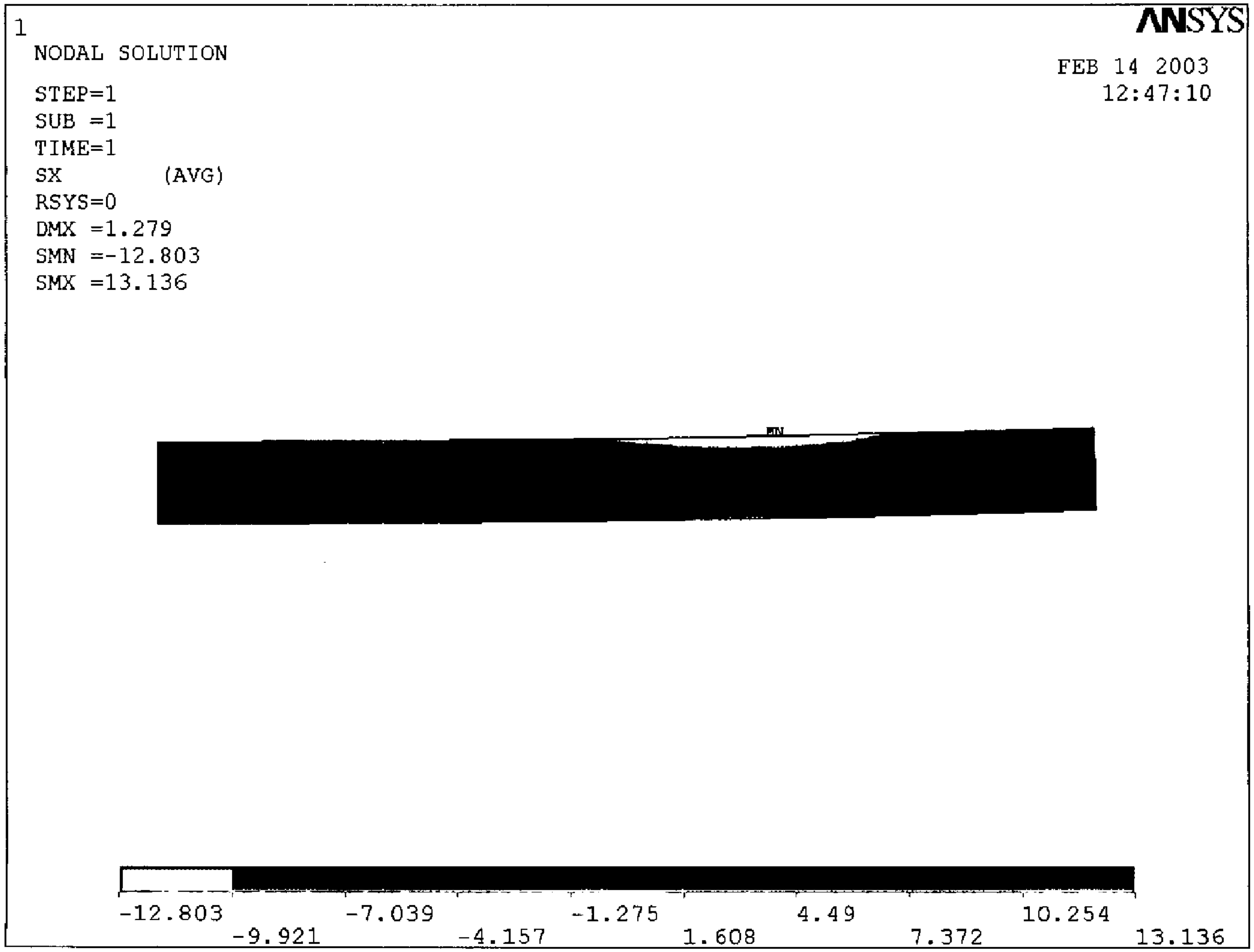


Figure 67

Model 2 - 2D Plane Strain
Case P3L - All Vaults exc. 13,14,15
Horizontal Stress σ_x

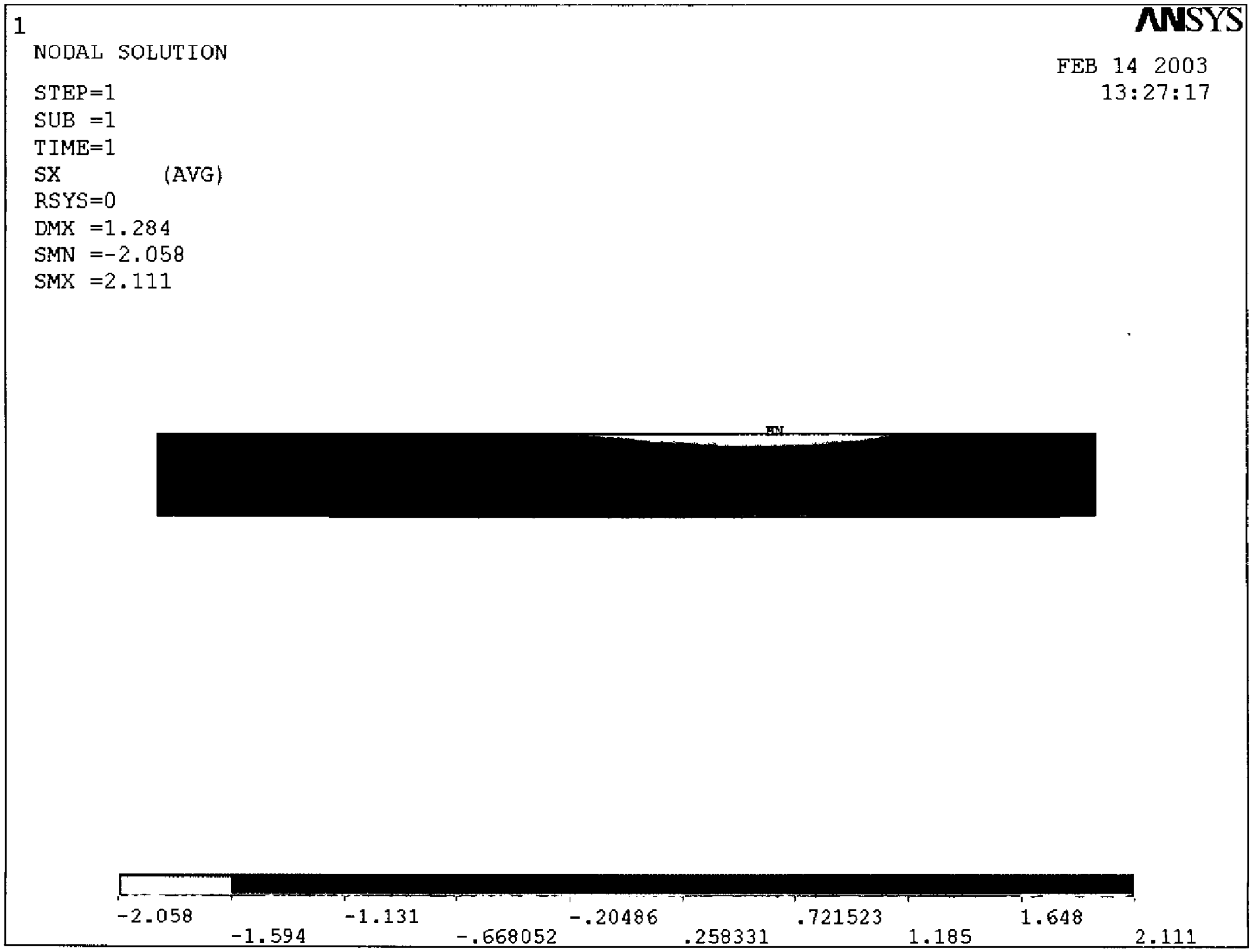


Figure G8

2-D Monolith Model

σ_x Stress

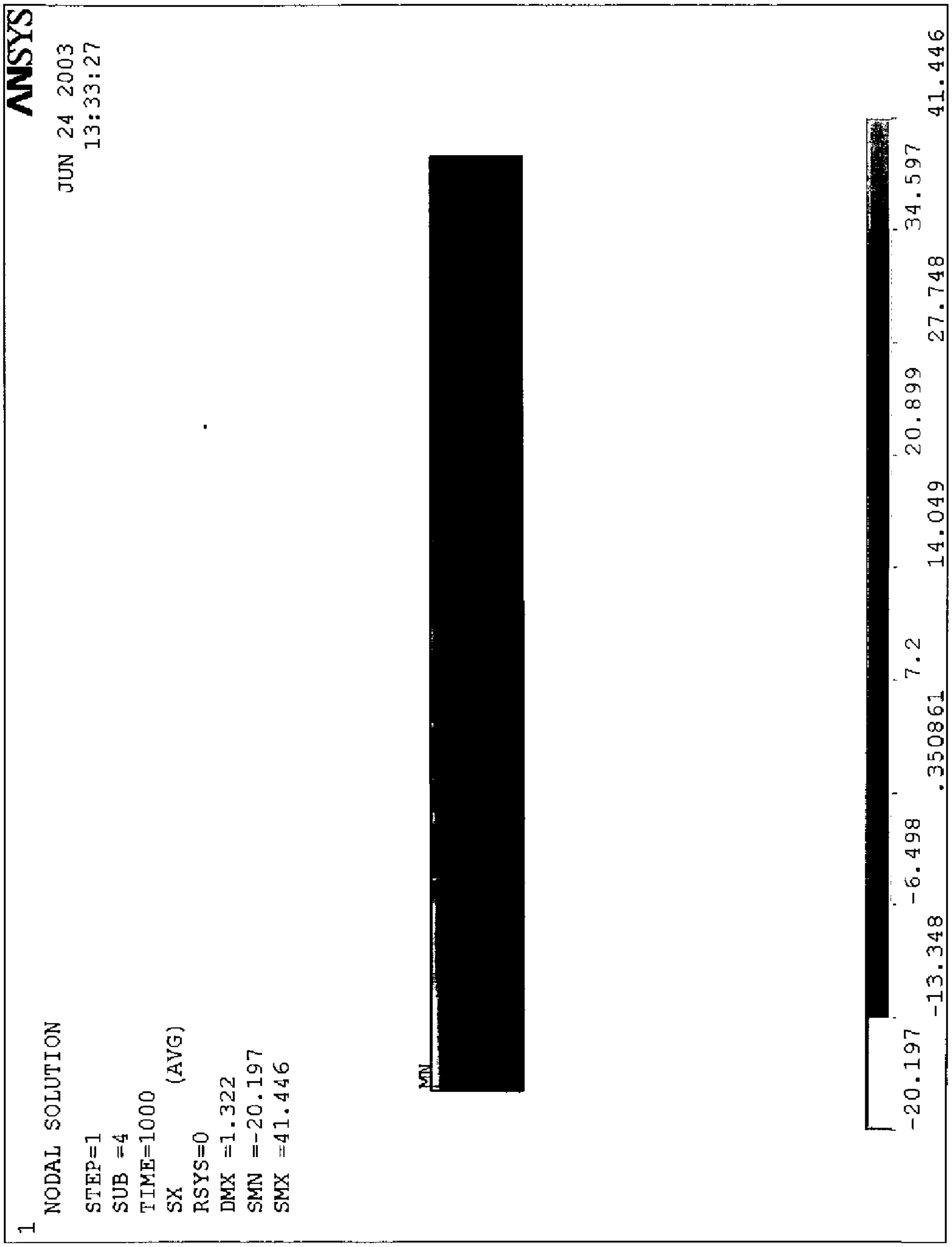


Figure G9

2-D Monolith Model
ε_x Strain

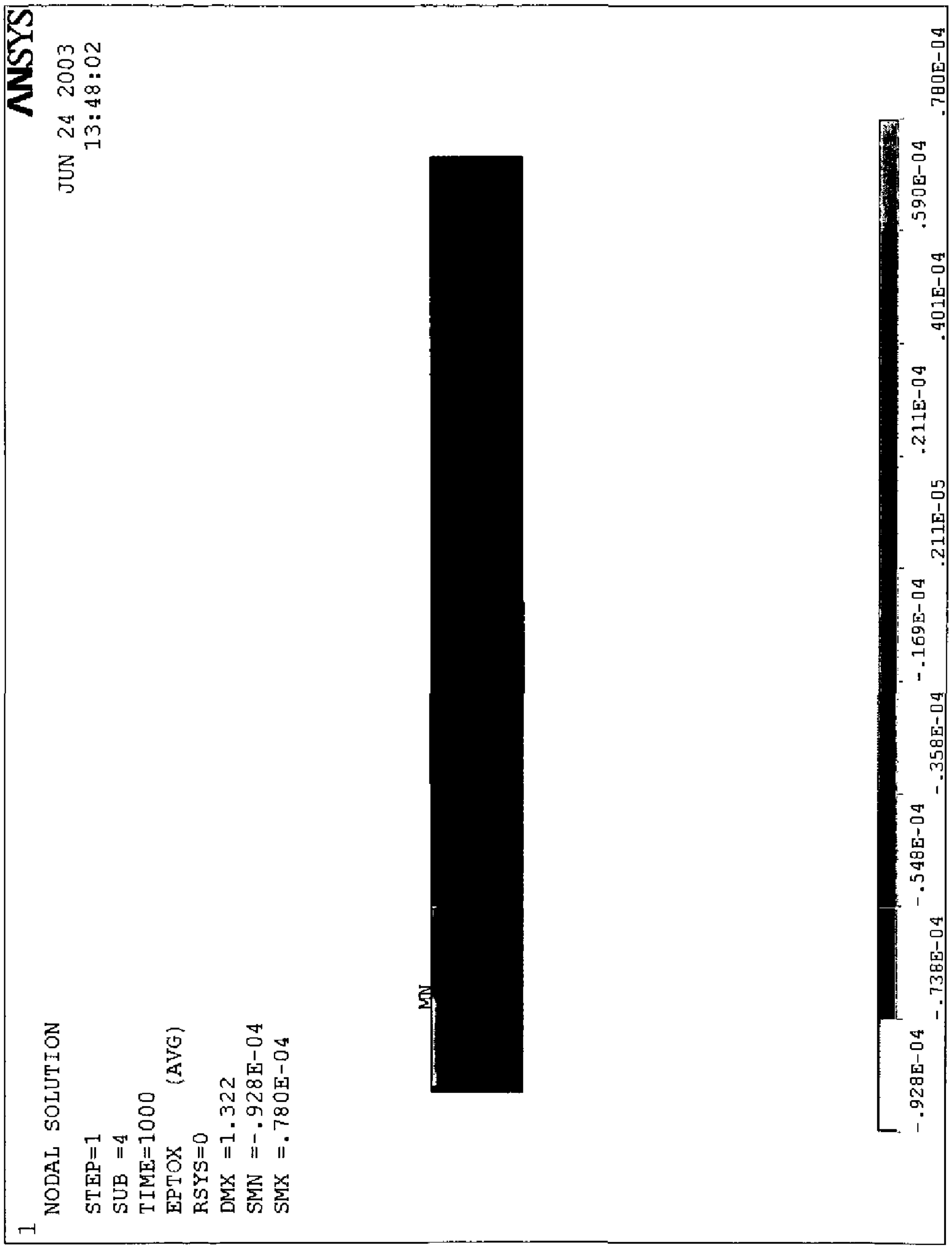
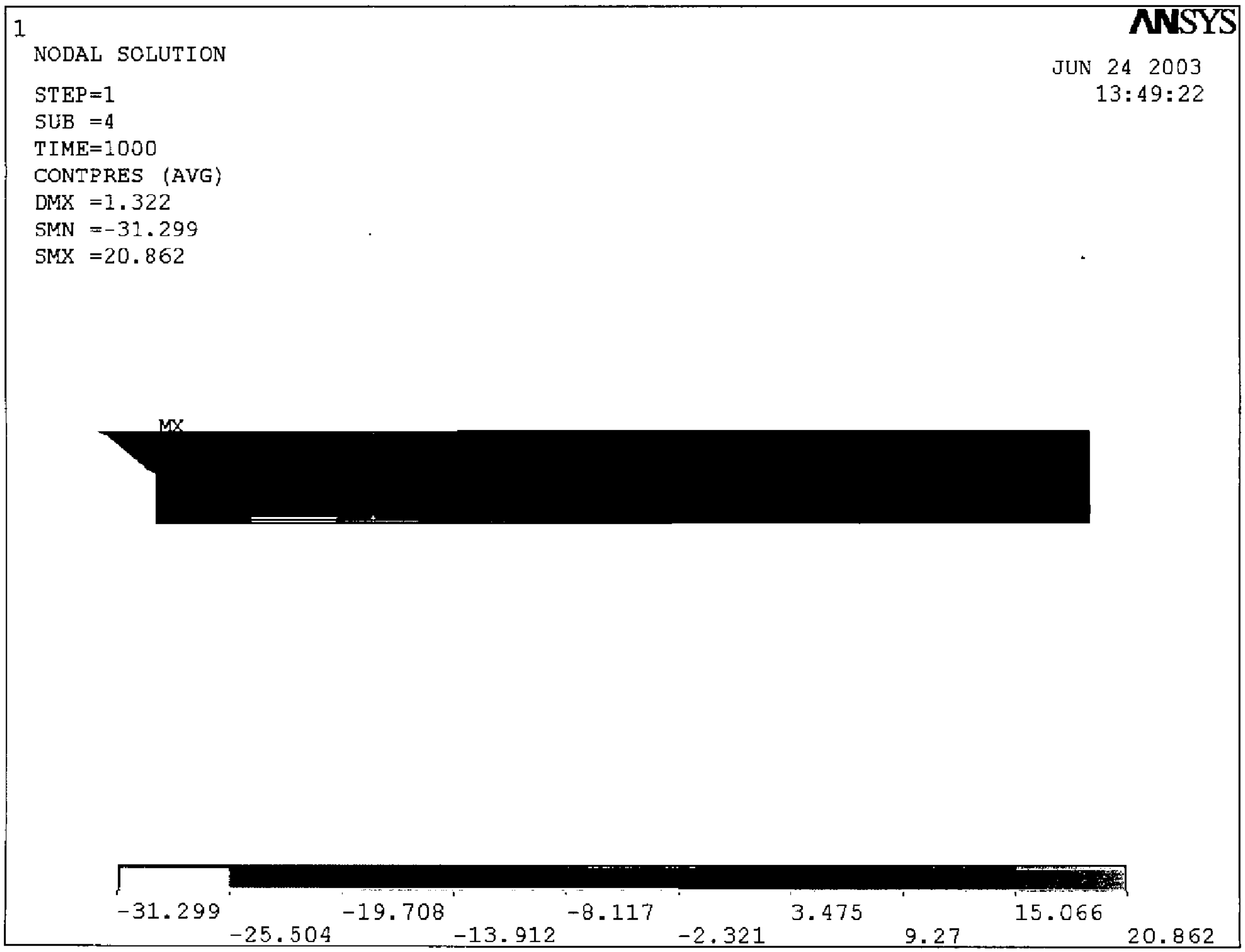


Figure G-10

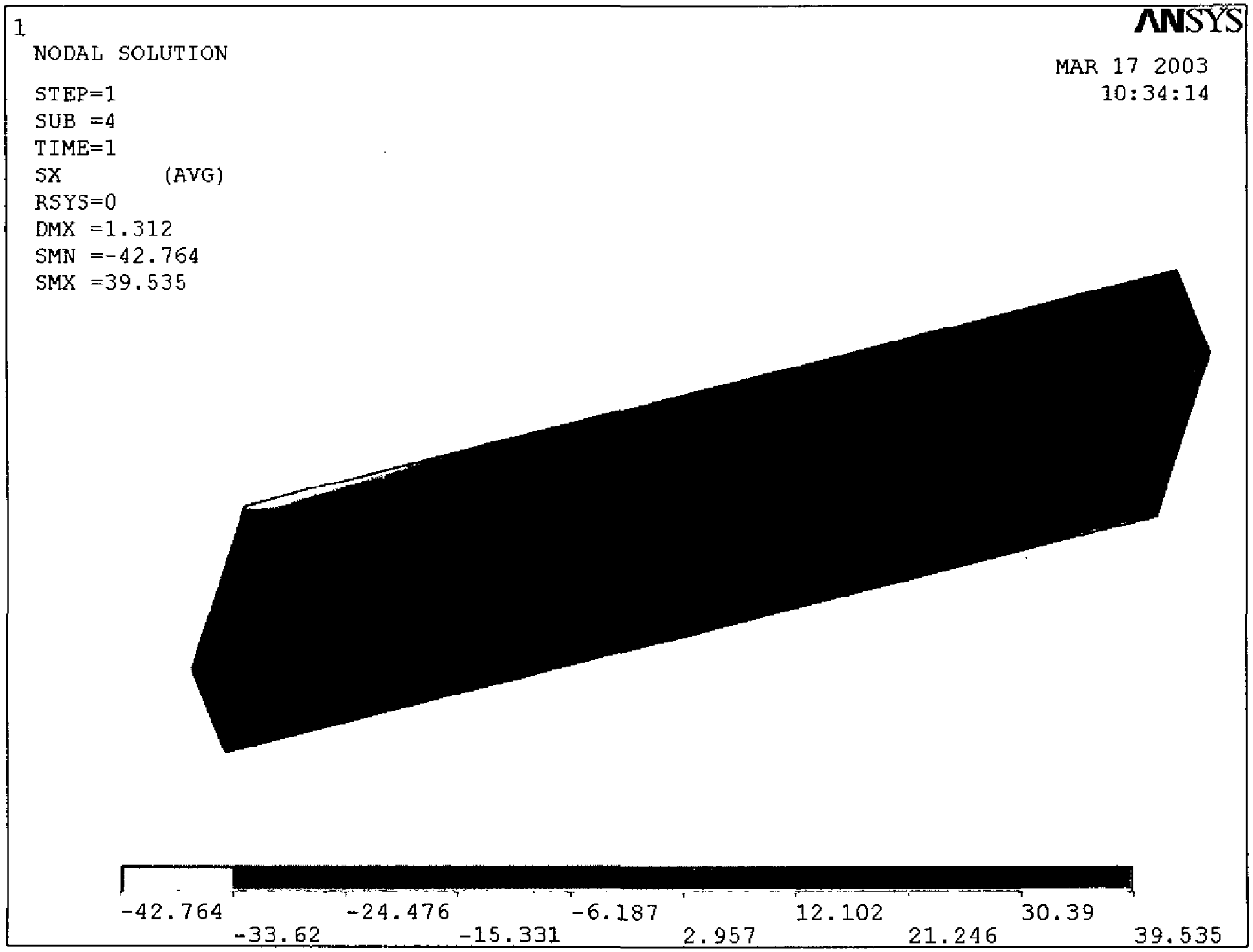
2-D Monolith Model
Contact Pressure



Note: Negative pressure in base slab is due to contact elements being fixed.

Figure G-11

Model 3 – Concrete Structure
Case 3 – Static Deformation after 1000 years
σ_x – Horizontal Stress



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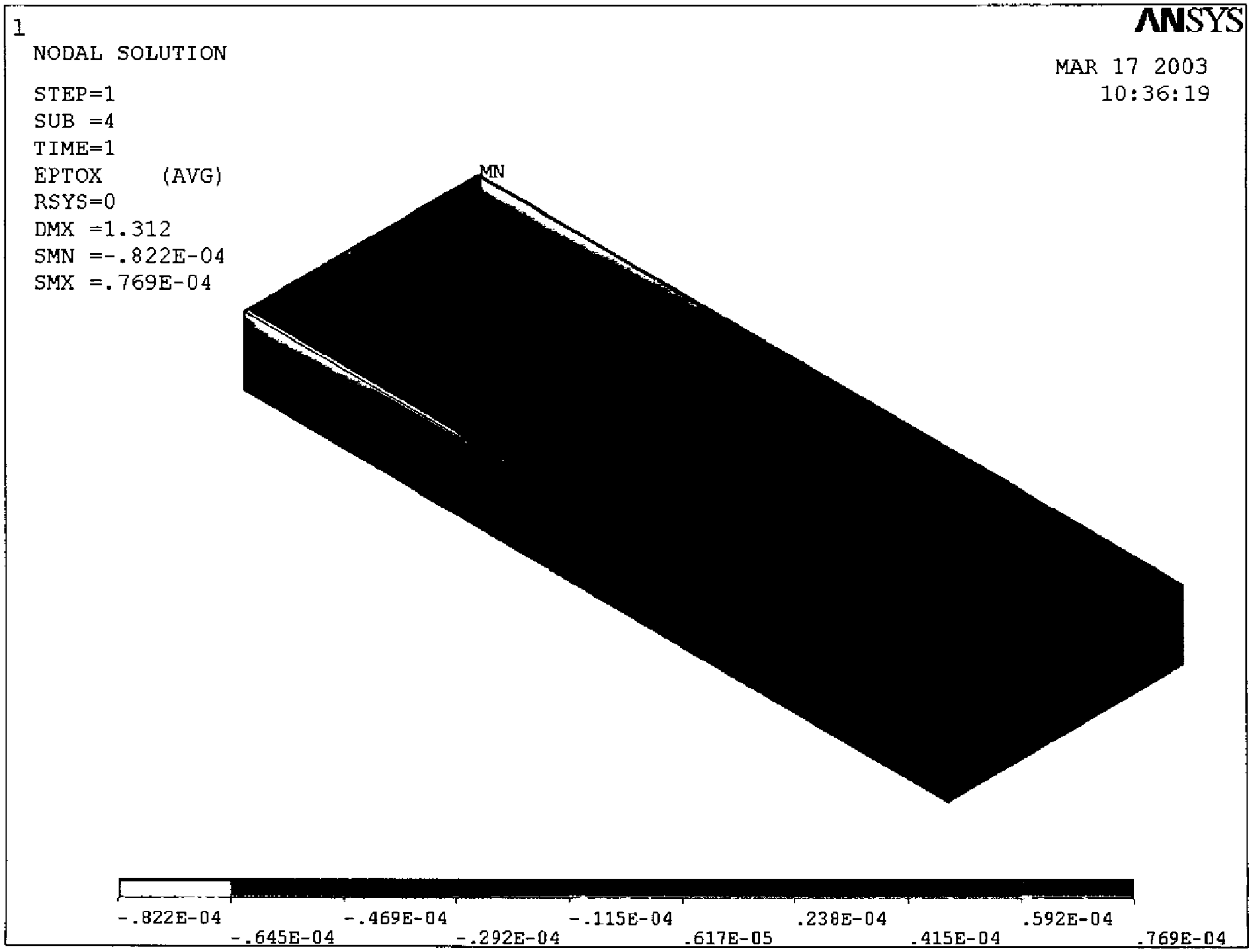
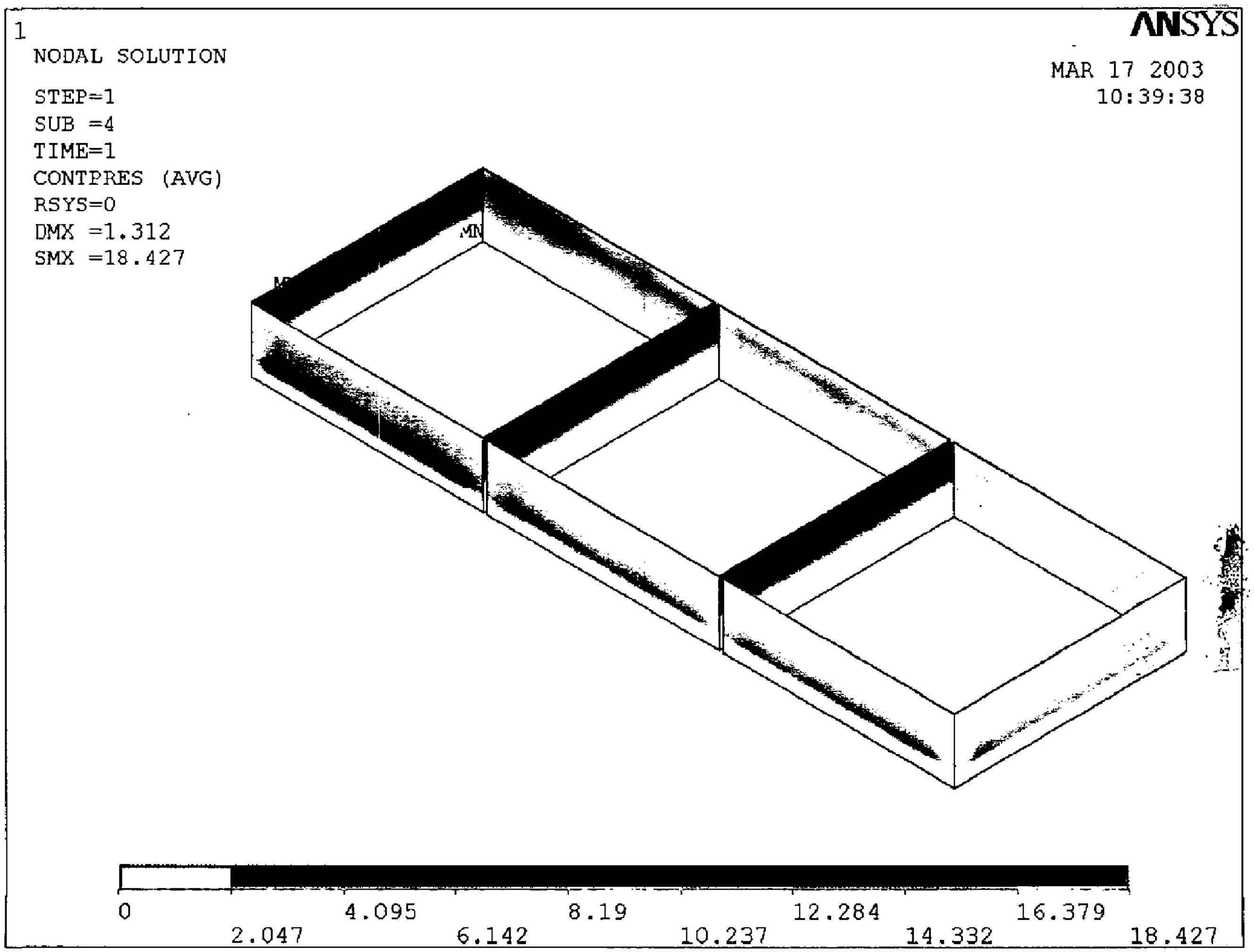
Model 3 – Concrete Structure
Case 3 – Static Deformation after 1000 years
ε_x – Horizontal Strain



Model 3 – Concrete Structure
Case 3 – Static Deformation after 1000 years
Contact Pressure



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APPENDIX H

Independent Verification of Statistical Approach

Appendix H - Independent Verification of Statistical Approach

Contents

Initialize *Mathematica* packages used in this appendix.

```
<< Graphics`Graphics`
<< Statistics`DataManipulation`
<< Statistics`NormalDistribution`
<< Statistics`ContinuousDistributions`
<< Statistics`DescriptiveStatistics`
```

Define the function Stats which calculates the mean and coefficient of variation, cov, of raw data

```
Stats[x_List, print_: True] := Module[{},
  n = Length[x];
  If[n ≤ 0, Print["Invalid number of data, X=", x]; Return[0]];
  ave = (Plus @@ x)/n; std = Sqrt[(Plus @@ (x - ave)^2)/n]; If[ave > 0, cov = std/ave, cov = {}];
  If[print, Print["N=", n, "\nAverage=", ave,
    "\nStandard Deviation=", std, "\nCoefficient of Variation=", cov]];
  {n, ave, std, cov}];
```

$$ave = \frac{\text{Plus @@ x}}{n};\ std = \sqrt{\frac{\text{Plus @@ }(x - ave)^2}{n}};\ \text{If}\left[ave > 0,\ cov = \frac{std}{ave},\ cov = \{\}\right];$$

Note that Plus@@x sums all of the elements in the array x.

■ H.1 Purpose

The mean settlement, along with the settlement variability, are estimated in this appendix using simplified methods to validate the statistical results of this calculation. These results are based on the Finite Element results contained in Section 8.2 of this calculation. This appendix is independently prepared by one of the calculation verifiers.

Greg 7/9/3
Greg Mertz

■ H.2 Conclusion

This appendix independently calculates the crack area using the FEM results developed in Section 8.2. Despite using different seismic hazard models, different probability distributions and different fits to the FEM results, the crack areas calculated in this appendix have similar magnitudes and trends compared to the values developed in the body of this calculation. Note that the differences in results are much less than the inherent variability of the data. It is the verifier's judgement that this match is sufficient verification of the probabilistic results in the body of the calculation.

■ H.3 Discussion

■ H.3.1 Technical Approach

Background and Assumptions

The purpose of this calculation is to forecast cracking of Saltstone Vault #4 over the 1000 year period of the Performance Assessment. Additionally, the cracking is forecasted over a 10,000 year study period. Cracking is an input parameter to environmental studies, by others, to predict contaminate transport.

This calculation focuses on mechanical mechanisms which initiate and propagate cracks through the concrete vault and grout monolith. Non-mechanical mechanisms, such as weathering or chemical degradation are addressed elsewhere.

Cracks were initiated by hydrostatic operating loads in the walls of some cells of Vault #4. A key assumption in this analysis is that these cracks will be repaired prior to closure. Thus, these cracks are not considered in this calculation.

Since Vault #4 will be buried as part of the closure process then, external loads such as wind and tornado missiles will not impact the vault and need not be considered.

Differential settlement of the underlying soil has the largest potential to initiate cracking in Vault #4. Differential settlement due to 1) primary consolidation; 2) secondary consolidation; and 3) post-seismic differential settlement; are considered in this calculation. Post-seismic differential settlement consist of dynamic settlement as identified in Appendix D.

Cracking is quantified in this calculation by a parameter, CA, which represents the summation of projected crack areas on one 300' long vault wall. Cracking is determined by numerous finite element analyses, described in Section 8.2 of this calculation, for various combinations of random variables.

Random Variables

The following sources of variability are considered in this analysis:

1) Grout modulus, Xg,
2) Grout cracking strain, Xϵ,
3) Soil modulus for primary consolidation, Xk,
4) Static settlement rate for secondary consolidation, Xr,
5) Size of the seismic differential settlement region, Xs,
6) Magnitude of seismic event, Xm, and
7) Location of the differential settlement region.

The first five random variables, Xg, Xϵ, Xk, Xr, and Xs are assumed to be normally distributed (truncated) in the calculation and log-normally distributed in this appendix.

Magnitude of Seismic Event

The magnitude of the seismic event, Xm, is a function of the seismic hazard curve and the amount of settlement for a given size earthquake. The differential settlement (mean and variability) for various time periods is determined by Monte-Carlo simulation. The magnitude of the seismic event can be approximated with a lognormal variable as shown below.

The actual magnitude of differential settlement is only known for seismic events with an annual probability of occurrence of $4 \times 10^{-4}$and 10^{-4}. Different assumptions are investigated to determine a continuous probability distribution for these two data points.

Additionally, a conservative bias is introduced in the seismic settlement because each event is assumed to be independent and the resulting settlements are additive.

Location of Differential Settlement Region.

The location of the differential settlement region under the vault is assumed to be a uniformly distributed variable. Structural analyses indicate that multiple differential settlement regions, on the average, are not as severe as a single differential settlement region. A conservative bias is introduced by only postulating one single differential settlement region per seismic event.

The vault is divided into 7 zones and the seismic differential settlement for a given earthquake is randomly assigned to one zone. The choice of 7 zones is based on the vault geometry and corresponds to a settlement zone in the center of each 100' cell and on the boundary of each 100' cell. The zones are centered 50' apart, which is roughly the size of the differential settlement region. The resulting total crack area can be shown to be independent of the number of differential settlement zones that the vault is divided into, provided that a minimum number of zones is used. The use of 7 zones is judged to be more than adequate for this purpose.

Probabilistic Model

The total crack area is represented by the product of lognormal variables in this appendix

$$CA = Xm \times Xg \times X\epsilon \times Xk \times Xr \times Xs.$$

where Xm is $\sum_{i=1}^{7} CAi$, which is the CA due to a seismic event,
CAi is the total crack area due to Δi,
Δi is the differential settlement a location i, $\Delta i = \frac{\Delta s}{7}$,
Δs is the total differential settlement,
Xg is a CA factor to account for changes in grout modulus,
$X\epsilon$ is a CA factor to account for changes in grout cracking strain,
Xk is a CA factor to account for changes in soil subgrade modulus,
Xr is a CA factor to account for changes in secondary consolidation rate,
Xs is a CA factor to account for changes in settlement magnitude.

Since CA is the product of random variables, then it's median is the product of the median of the random variables

$$\overline{CA} = \overline{Xm} \times \overline{Xg} \times \overline{X\epsilon} \times \overline{Xk} \times \overline{Xr} \times \overline{Xs}$$

and the total lognormal standard deviation is

$$\sigma_{lnTotal} = \sqrt{\sigma_{lnXm}^2 + \sigma_{lnXg}^2 + \sigma_{lnX\epsilon}^2 + \sigma_{lnXk}^2 + \sigma_{lnXr}^2 + \sigma_{lnXs}^2}$$

where $\overline{X}$ is the median (50%) value of the random variable and
σ_{ln} is the lognormal standard deviation.

Since Xg, $X\epsilon$, Xk, Xr, Xs are factors to account for variation in input parameters then their median value will be defined as 1.

■ H.3.2 Seismic Settlement

Predicted dynamic settlement data from Geotechnical studies for PC-3 and PC-4 events, Appendix D.

```
ΔPC3 = {.5, .25, .5, .25, .5, 1};
{nPC3, μPC3, σPC3, covPC3} = Stats[%];
```

```
N=6
Average=0.5
Standard Deviation=0.25
Coefficient of Variation=0.5
```

```
ΔPC4 = {3, 1.5, 2.25, 1.5, 2, 4};
{nPC4, μPC4, σPC4, covPC4} = Stats[%];
```

```
N=6
Average=2.375
Standard Deviation=0.886825
Coefficient of Variation=0.3734
```

Conservative estimates of the PC-3 and PC-4 differential settlement, 0.75" and 2.75", are used in the body of the calculation. This bias is removed in this appendix.

■ H.3.2.1 Seismic Differential Settlement Model #1

Seismic Hazard Curve

Define the seismic differential settlement as a function of a uniform random variable X[0,1]. Geotechnical data is available corresponding to PC3 (2,500 year return period) and PC4 (10,000 year return period) events.

```
SeismicΔData = {{4 × 10^-4, μPC3}, {10^-4, μPC4}}
```

$$\left\{\left\{\frac{1}{2500}, 0.5\right\}, \left\{\frac{1}{10000}, 2.375\right\}\right\}$$

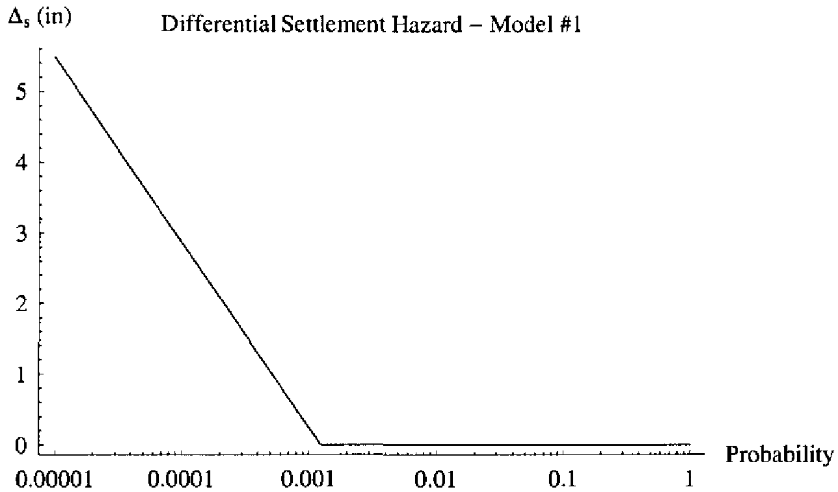
Assume that the seismic hazard curve is linear through these points. Fit a curve to the data and truncate to avoid negative settlements.

```
Clear[p]
SeismicΔ = fit = Max[Fit[SeismicΔData, {1, Log[10, p]}, p], 0]
```

```
Max[0, -10.0822 - 1.35253 Log[p]]
```

Plot the resulting seismic differential settlement hazard curve

```
LogLinearPlot[SeismicΔ, {p, 10^-5, 1}, PlotRange → All, AxesLabel → {"Probability", "Δs (in)"},
  PlotLabel → "Differential Settlement Hazard - Model #1"];
```



Note that probability is expressed as an exceedance probability. For example, the probability that the seismic differential settlement will exceed 4" in a single year is approximately 4×10^{-5}.

Total Seismic Differential Settlement for One Observation

The total seismic differential settlement for a single 10,000 year period is calculated in this section. The resulting settlements from many similar periods are examined in the next section to determine the mean and standard deviation of the differential settlement.

Generate an exceedence probability for each individual year over a 10,000 year period. Recall that low probability events lead to differential settlement.

```
PSeismic = RandomArray[UniformDistribution[], 10000];
Shallow[PSeismic]

{0.942818, 0.12615, 0.441279, 0.622717, 0.936228,
 0.532282, 0.799757, 0.0444464, 0.89475, 0.711487, <<9990>>}
```

Only the first few probabilities are shown above to demonstrate that most years will not have seismic events leading to differential settlement. This observation is consistent with experience.

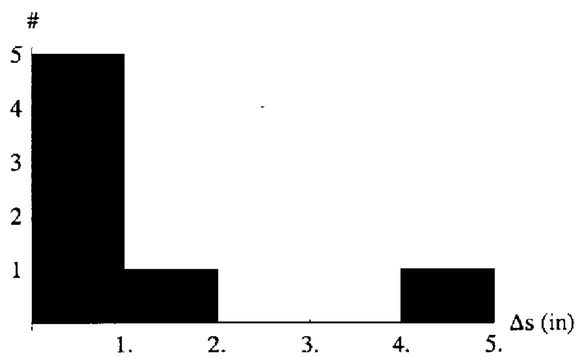
Assign a differential settlement to each year based on the probability and the differential settlement hazard curve developed above. Omit years with zero seismic settlement

```
Δs = {}; listing = {}; ΔsTotal = 0;
Do[
 p = PSeismic[[i]];
 x = SeismicΔ;
 If[x > 0,
  Δs = Append[Δs, x ]; ΔsTotal = ΔsTotal + x; listing = Append[listing, {i, p, x}]];
 , {i, Length[PSeismic]}]
TableForm[listing, TableHeadings → {None, {"Year", "Annual Probability", "Δs (in)"}}]
Print["Summation of seismic differential settlement = ", ΔsTotal " (in)"];
```

Year	Annual Probability	Δs (in)
1096	0.000440239	0.370354
1118	0.000195707	1.46685
3697	0.000399883	0.500397
5969	0.000570669	0.0193866
6088	0.000513084	0.163254
6946	0.0000228231	4.37322
7275	0.000336729	0.732887

Summation of seismic differential settlement = 7.62635 (in)

```
Histogram[Δs, HistogramCategories → {0.001, 1, 2, 3, 4, 5, 6, 7, 8},
  AxesLabel → {"Δs (in)", "#"}, HistogramScale → Automatic];
```



This data represents one observation, numerous observations are averaged below to determine the mean seismic settlement.

Mean Seismic Settlement for Model #1

Determine the cumulative seismic settlement for a Period T with n observations.

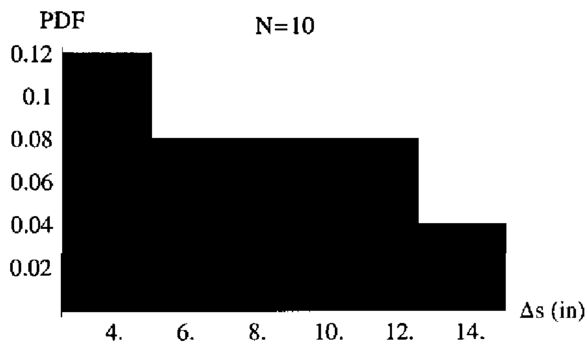
```
Clear[Model1];
Model1[n_, T_] := Module[{},
  Δ = {};
  Do[ Δs = 0;
   Do[ p = Random[];
    Δs = Δs + SeismicΔ;
    , {T}];
   Δ = Append[Δ, Δs];
   , {n}];
  Stats[Δ];
  Δ]
```

Convergence

Calculate the cumulative seismic settlement for a period of 10,000 years using 10, 100 and 1000 observations.

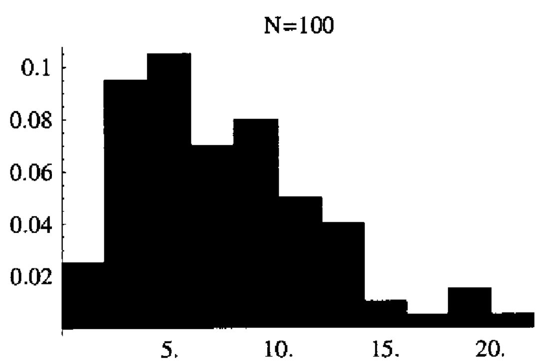
```
Δ = Model1[10, 10000];
Δ1a = Δ;
SetOptions[Histogram, HistogramScale → 1];
Histogram[Δ, AxesLabel → {"Δs (in)", "PDF"}, PlotLabel → "N=10"];
```

```
N=10
Average=8.06629
Standard Deviation=3.52661
Coefficient of Variation=0.437203
```



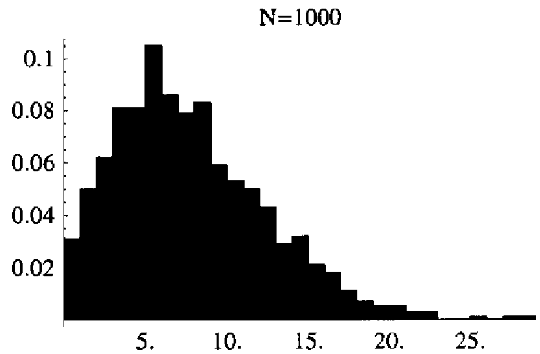

```
Δ = Model1[100, 10000];
Δ1b = Δ; Histogram[Δ1b, PlotLabel → "N=100"];
```

```
N=100
Average=7.46417
Standard Deviation=4.41177
Coefficient of Variation=0.59106
```



```
Δ = Model1[1000, 10000];
Δ1c = Δ; Histogram[Δ1c, PlotLabel → "N=1000"];
```

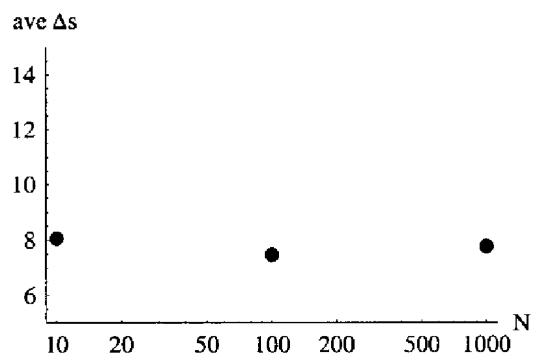
```
N=1000
Average=7.76792
Standard Deviation=4.6
Coefficient of Variation=0.592179
```



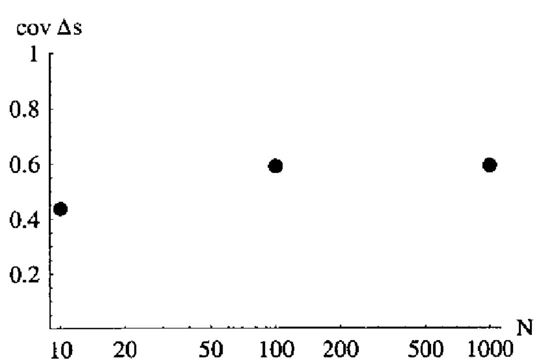
Compare solutions for 10, 100 and 1000 observations.

```
{n, ave, std, cov} =
  soln1 = Transpose[{Stats[Δ1a, False], Stats[Δ1b, False], Stats[Δ1c, False]}];
```

```
ave1 = LogLinearListPlot[Transpose[{n, ave}],
   Prolog → AbsolutePointSize[7], PlotRange → {5, 15}, AxesLabel → {"N", "ave Δs"}];
```




```
ave2 = LogLinearListPlot[Transpose[{n, cov}],
   Prolog → AbsolutePointSize[7], PlotRange → {0, 1}, AxesLabel → {"N", "cov Δs"}];
```



Solutions are roughly stable at N≥100. Note that large numbers of observations are required to define the shape of the distribution while smaller numbers of observations are required top define the mean and cov.

Lognormal Distribution

Demonstrate that the distribution of Δs can be represented by a lognormal distribution by comparing the histogram and probability density function (PDF). Use N=1000 observations

Statitistics for 1000 observations

```
{n, μ, σ, cov} = Stats[Δlc];
```

```
N=1000
Average=7.76792
Standard Deviation=4.6
Coefficient of Variation=0.592179
```

Median Δs

$$\text{Med} = \frac{\mu}{\sqrt{1+\text{cov}^2}}$$

6.68389

Lognormal standard deviation

$$\sigma\text{ln} = \sqrt{\text{Log}[1+\text{cov}^2]}$$

0.548275

Lognormal probability density function

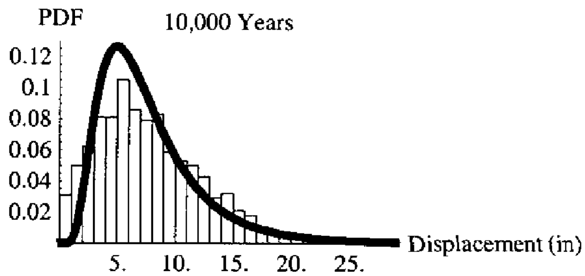
```
Clear[x];
```

$$\text{dist} = \frac{1}{x\,\sigma\text{ln}\sqrt{2\pi}}\,e^{-\frac{1}{2}\left(\frac{\text{Log}[x]-\text{Log}[\text{Med}]}{\sigma\text{ln}}\right)^2}$$

$$\frac{0.727632\,e^{-1.66331\,(-1.8997+\text{Log}[x])^2}}{x}$$

Compare unit histogram and lognormal probability density function

```
pdf = Plot[dist, {x, .1, 35}, PlotRange → All,
   PlotStyle → {AbsoluteThickness[4]}, DisplayFunction → Identity];
bar = Histogram[Δ1c, HistogramScale → 1, BarStyle → {GrayLevel[1]},
   DisplayFunction → Identity];
Show[bar, pdf, DisplayFunction → $DisplayFunction,
  AxesLabel → {"Displacement (in)", "PDF"}, PlotLabel → "10,000 Years"];
```



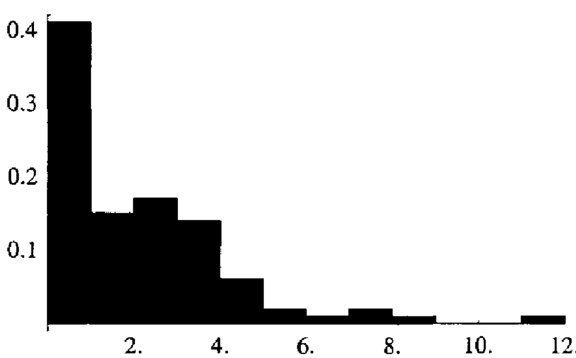
Conclusion: The distribution of seismic displacements can be approximated by a lognormal distribution

Additional Time Periods

Calculate the cumulative seismic settlement for a periods of 2,500, 1,000 and 500 years.

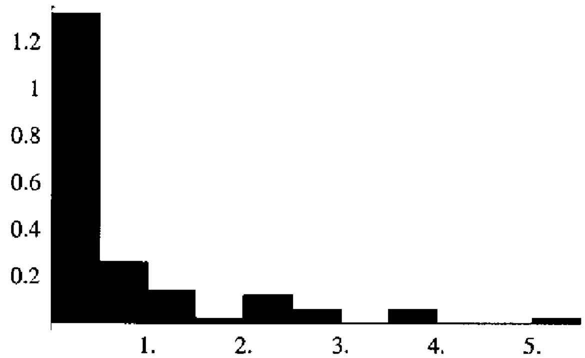
```
T1d = 2500; Δ = Model1[100, T1d];
Δ1d = Δ; Histogram[Δ];
```

```
N=100
Average=1.99837
Standard Deviation=2.09268
Coefficient of Variation=1.0472
```



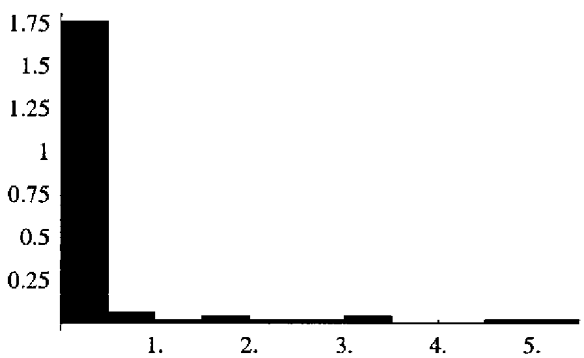
```
T1e = 1000; Δ = Model1[100, T1e];
Δ1e = Δ; Histogram[Δ];
```

```
N=100
Average=0.61383
Standard Deviation=1.03886
Coefficient of Variation=1.69242
```




```
T1f = 500; Δ = Model1[100, T1f];
Δ1f = Δ; Histogram[Δ];
```

```
N=100
Average=0.287912
Standard Deviation=0.903938
Coefficient of Variation=3.13963
```

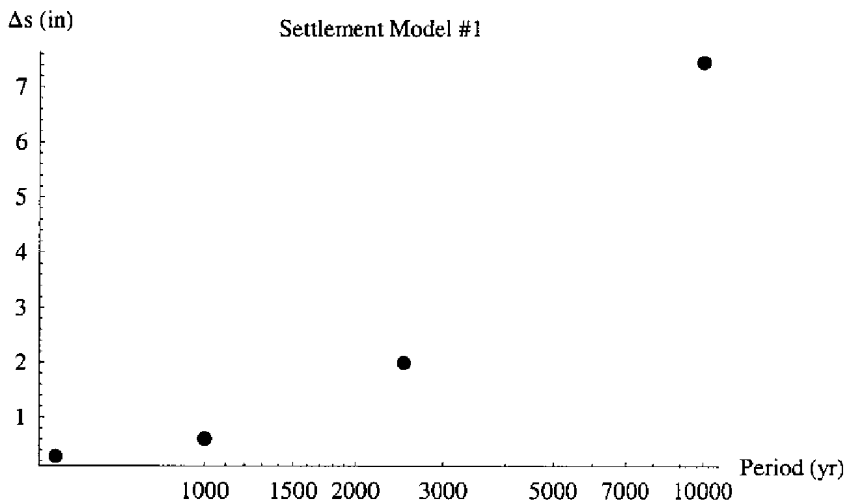


Compare solutions for different periods

```
{n, ave, std, cov} = solns =
  Transpose[{Stats[Δ1b, False], Stats[Δ1d, False], Stats[Δ1e, False], Stats[Δ1f, False]}]
T = {10000, 2500, 1000, 500};
```

```
{{100, 100, 100, 100}, {7.46417, 1.99837, 0.61383, 0.287912},
 {4.41177, 2.09268, 1.03886, 0.903938}, {0.59106, 1.0472, 1.69242, 3.13963}}
```

```
LogLinearListPlot[Transpose[{T, ave}], Prolog → AbsolutePointSize[7], PlotRange → All,
  AxesLabel → {"Period (yr)", "Δs (in)"}, PlotLabel → "Settlement Model #1"];
```




```
LogLinearListPlot[Transpose[{T, cov}], Prolog → AbsolutePointSize[7], PlotRange → {0, 2.5},
  AxesLabel → {"Period (yr)", "cov"}, PlotLabel → "Settlement Model #1"];
```

▪ H.3.2.2 Seismic Differential Settlement Model #2

The body of this calculation assumes that the seismic differential displacement of 4" at a 100,000 year return period. Model #1 is revised to incorporate this data and the results are compared.

Additional settlement data for low probability events

```
SeismicΔData2 = {{10^-4, μPC4}, {10^-5, 4}}
```

$\{\{\frac{1}{10000}, 2.375\}, \{\frac{1}{100000}, 4\}\}$

Fit a curve to the data

```
Clear[p]
fit2 = Fit[SeismicΔData2, {1, Log[10, p]}, p]
```

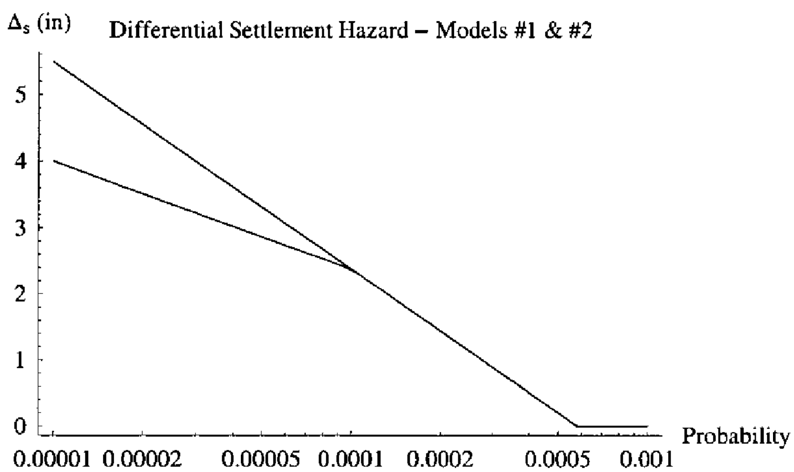
```
-4.125 - 0.705729 Log[p]
```

Set up a function that uses fit for higher probability events and fit2 for low probability events

```
SeismicΔ2[p_] := If[p > 10^-4, fit, fit2]
```

Plot both Models #1 and #2. Model #2 predicts less settlement for very low probability events.

```
LogLinearPlot[{SeismicΔ, SeismicΔ2[p]}, {p, 10^-5, .001},
  PlotRange → All, AxesLabel → {"Probability", "Δs (in)"},
  PlotLabel → "Differential Settlement Hazard - Models #1 & #2"];
```



Mean Seismic Settlement for Model #2

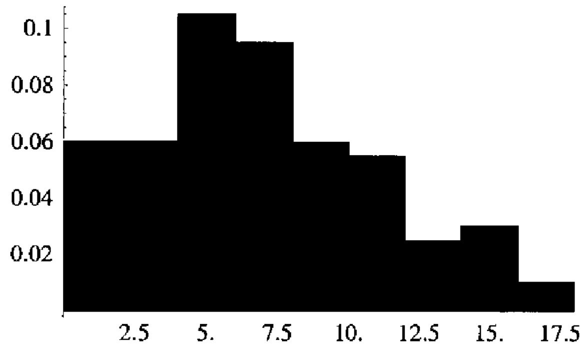
Define a function to determine the cumulative seismic settlement for Period T and n observations.

```
Clear[Model2];
Model2[n_, T_] := Module[{},
  Δ = {};
  Do[Δs = 0;
   Do[p = Random[];
    Δs = Δs + SeismicΔ2[p];
    , {T}];
   Δ = Append[Δ, Δs];
   , {n}];
  Stats[Δ];
  Δ]
```

Calculate the accumulated seismic displacements for a 10,000 year period using n=100

```
Δ = Model2[100, 10000];
Δ2b = Δ; Histogram[Δ];
```

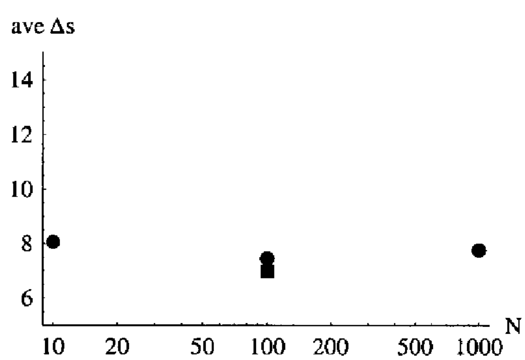
```
N=100
Average=7.02508
Standard Deviation=4.09338
Coefficient of Variation=0.58268
```



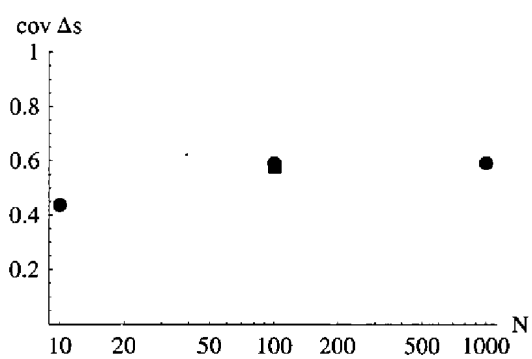
■ H.3.2.3 Comparison of Seismic Settlement Models

Compare Model #1 (●) and Model #2 (■)

```
{n, ave, std, cov} = Stats[Δ2b, False];
Show[ave1, Graphics[Text["■", {Log[10, 100], ave}]]];
```




```
Show[ave2, Graphics[Text["■", {Log[10, 100], cov}]]];
```



The difference between Model #1 and Model #2 is less than the variability within each model.

■ H.3.3 Median Crack Area Estimate

■ H.3.3.1 Crack Area Relationships

The crack area corresponding to seismic settlement events at locations 1 through 7 from the FEM analyses is summarized below. Each crack area corresponds to best estimate soil, grout data and settlement size at a time of 1000 years.

```
loc = {"Loc 1-bot", "Loc 2-bot", "Loc 3-bot", "Loc 4-bot",
   "Loc 5-bot", "Loc 6-bot", "Loc 7-bot", "Loc 1-top", "Loc 2-top",
   "Loc 3-top", "Loc 4-top", "Loc 5-top", "Loc 6-top", "Loc 7-top"};

loc = {"Loc 1", "Loc 2", "Loc 3", "Loc 4", "Loc 5", "Loc 6", "Loc 7"};
PC3 = {0, 0, 25.5, 49.92, 71.76, 0, 0, 0, 0, 0, 0, 0, 0, 0};
PC4 =
  {29.48, 73.32, 110.16, 155.52, 157.14, 176.58, 0, 0, 37.26, 55.08, 59.94, 19.44, 43.74, 0};
TableForm[Transpose[{Take[PC3, 7], Take[PC4, 7], Take[PC3, -7], Take[PC4, -7]}],
 TableHeadings → {loc, {"PC-3 Bot", "PC-4 Bot", "PC-3 Top", "PC-4 Top"}}]
```

	PC-3 Bot	PC-4 Bot	PC-3 Top	PC-4 Top
Loc 1	0	29.48	0	0
Loc 2	0	73.32	0	37.26
Loc 3	25.5	110.16	0	55.08
Loc 4	49.92	155.52	0	59.94
Loc 5	71.76	157.14	0	19.44
Loc 6	0	176.58	0	43.74
Loc 7	0	0	0	0

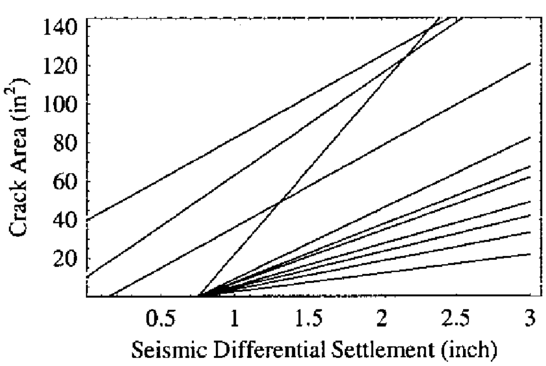
Fit a line through each pair of data as a function of differential settlement. Ensure that the crack area is always positive. Note that the FEM analyses are based on (1) PC-3 events with 0.75" of differential settlement; and () PC-4 events with 2.75" of differential settlement.

```
Clear[Δ];
ΔPC34 = {0.75, 2.75};
CA = {};
Do[
 z = {{ΔPC34[[1]], PC3[[i]]}, {ΔPC34[[2]], PC4[[i]]}};
 CA = Append[CA, Max[0, Fit[z, {1, Δ}, Δ]]];
 , {i, 1, Length[PC3]}]
CAb = Take[CA, 7];
CAt = Take[CA, -7];
TableForm[Transpose[{CAb, CAt}],
 TableHeadings → {loc, {"Bot Crack Area", "Top Crack Area"}}]
```

	Bot Crack Area	Top Crack Area
Loc 1	Max[0, -11.055 + 14.74 Δ]	Max[0, 0. + 0. Δ]
Loc 2	Max[0, -27.495 + 36.66 Δ]	Max[0, -13.9725 + 18.63 Δ]
Loc 3	Max[0, -6.2475 + 42.33 Δ]	Max[0, -20.655 + 27.54 Δ]
Loc 4	Max[0, 10.32 + 52.8 Δ]	Max[0, -22.4775 + 29.97 Δ]
Loc 5	Max[0, 39.7425 + 42.69 Δ]	Max[0, -7.29 + 9.72 Δ]
Loc 6	Max[0, -66.2175 + 88.29 Δ]	Max[0, -16.4025 + 21.87 Δ]
Loc 7	Max[0, 0. + 0. Δ]	Max[0, 0. + 0. Δ]

Plot the individual crack area curves

```
Plot[Evaluate[CA], {Δ, 0, 3}, Frame → True,
  FrameLabel → {"Seismic Differential Settlement (inch)", "Crack Area (in²)"},
  PlotRange → {{0, Automatic}, {0, Automatic}}];
```



▪ H.3.3.2 Median Crack Area

Determine the median crack area for a Period T with n observations. The approach taken is similar to calculation of Δs in Model1. However, once a non-zero seismic displacement is calculated, then the diaplacement is randomally assigned to one of the 7 locations and the corresponding crack area is calculated. All of the crack areas are summed together.

```
Clear[CrackArea, p];
CrackArea[n_, T_] := Module[{},
   ca = {};
   Do[
    cab = cat = 0;
    Do[ p = Random[];
     Δs = SeismicΔ;
     If[Δs > 0,
      locn = Random[Integer, {1, 7}];
      cat = cat + CAt[[locn]] /. Δ → Δs;
      cab = cab + CAb[[locn]] /. Δ → Δs;
     ];
     , {T}];
    ca = Append[ca, {cab, cat}];
    , {n}];
   {cab, cat} = Transpose[ca];
   Print["Total Bottom Crack Area (in^2)"]; Stats[cab];
   Print["Total Top Crack Area (in^2)"]; Stats[cat];
   {cab, cat}];
```

Crack Areas for Various Periods

```
T1 = T = 10000;
{cab1, cat1} = CrackArea[100, T];

Total Bottom Crack Area (in^2)

N=100
Average=299.154
Standard Deviation=211.722
Coefficient of Variation=0.707738

Total Top Crack Area (in^2)

N=100
Average=77.7886
Standard Deviation=75.2141
Coefficient of Variation=0.966904

T2 = T = 2500;
{cab2, cat2} = CrackArea[100, T];

Total Bottom Crack Area (in^2)

N=100
Average=72.8814
Standard Deviation=91.3856
Coefficient of Variation=1.2539

Total Top Crack Area (in^2)

N=100
Average=18.2076
Standard Deviation=30.1546
Coefficient of Variation=1.65615
```

```
T3 = T = 1000;
{cab3, cat3} = CrackArea[100, T];
```

```
Total Bottom Crack Area (in^2)

N=100
Average=36.2603
Standard Deviation=97.4137
Coefficient of Variation=2.68651

Total Top Crack Area (in^2)

N=100
Average=7.32096
Standard Deviation=25.272
Coefficient of Variation=3.45201
```

```
T4 = T = 500;
{cab4, cat4} = CrackArea[100, T];
```

```
Total Bottom Crack Area (in^2)

N=100
Average=15.5225
Standard Deviation=43.8927
Coefficient of Variation=2.82769

Total Top Crack Area (in^2)

N=100
Average=3.51003
Standard Deviation=12.0225
Coefficient of Variation=3.42519
```

Determine the median crack area for bottom and top cracks

```
{n, meanB, stdevB, covB} = Transpose[
   {Stats[cab1, False], Stats[cab2, False], Stats[cab3, False], Stats[cab4, False]}];
```

$$\text{medianB} = \frac{\text{meanB}}{\sqrt{1 + \text{covB}^2}}$$

```
{244.185, 45.4423, 12.6493, 5.17536}
```

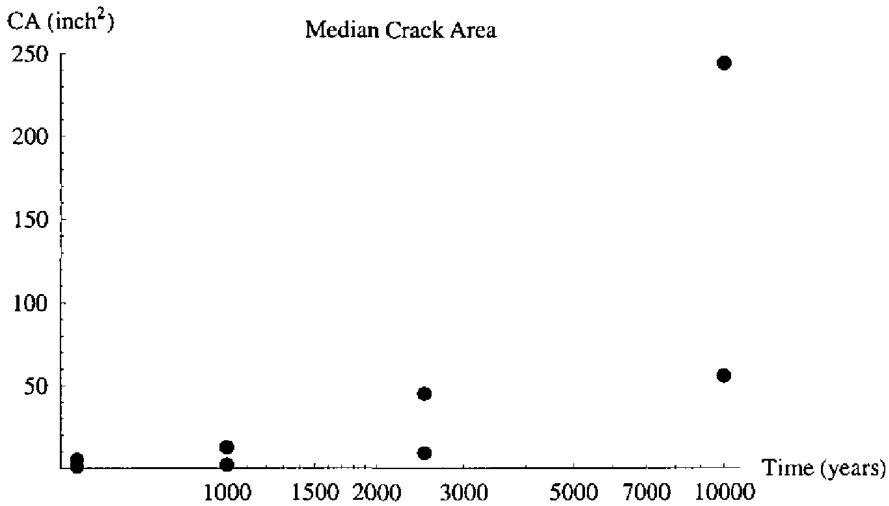
```
{n, meanT, stdevT, covT} = Transpose[
   {Stats[cat1, False], Stats[cat2, False], Stats[cat3, False], Stats[cat4, False]}];
```

$$\text{medianT} = \frac{\text{meanT}}{\sqrt{1 + \text{covT}^2}}$$

```
{55.9225, 9.41136, 2.03703, 0.983701}
```

Plot data for the bottom and top crack areas

```
T = {T1, T2, T3, T4};
LogLinearListPlot[Transpose[{Join[T, T], Join[medianB, medianT]}],
  Prolog → AbsolutePointSize[7], PlotRange → {0, Automatic},
  AxesLabel → {"Time (years)", "CA (inch²)"}, PlotLabel → "Median Crack Area"];
```




```
Print["Crack Area (in²) Due to Xm"]
TableForm[Transpose[{T, meanB, meanT, medianB, medianT}],
 TableHeadings → {None, {"Time (yr)", "Bot Mean", "Top Mean", "Bot Median", "Top Median"}}]
```

Crack Area (in²) Due to Xm

Time (yr)	Bot Mean	Top Mean	Bot Median	Top Median
10000	299.154	77.7886	244.185	55.9225
2500	72.8814	18.2076	45.4423	9.41136
1000	36.2603	7.32096	12.6493	2.03703
500	15.5225	3.51003	5.17536	0.983701

▪ H.3.4 Variability of Mean Crack Area Estimate

▪ H.3.4.1 Variability of Random Variables

Recall the PC4 crack area data from the FEM analyses which corresponds to mean value random parameters. The data contains bottom and top crack areas for each of 7 settlement locations.

```
PC4
{29.48, 73.32, 110.16, 155.52, 157.14, 176.58, 0, 0, 37.26, 55.08, 59.94, 19.44, 43.74, 0}
```

Extract the crack area's for the seven differential settlement locations for a PC-4 event using LB and UB data from each of the random variables. Note that only one random variable is varied at a time and all of the remaining variables are set to their mean or best estimate values.
LB corresponds to lower bound value and is assumed to be the mean less one standard deviation.
UB corresponds to lower bound value and is assumed to be the mean plus one standard deviation.

```
XgLB =
  {27, 81.49, 110.16, 157.14, 168.48, 183.06, 0, 0, 46.98, 54.27, 62.69, 25.27, 48.44, 0};
XgUB = {30, 76.14, 110.16, 153.9, 173.34, 32.76, 0, 0, 40.5, 54.59, 58.32, 24.62, 0, 0};

XeLB =
  {28.5, 76.14, 110.16, 155.52, 166.83, 176.58, 0, 0, 34.54, 55.08, 59.94, 24.95, 42.93, 0};
XeUB = {27.3, 75.65, 110.81, 155.36, 167.67, 176.26,
   0, 0, 35.8, 54.59, 60.43, 25.11, 42.61, 0};

XkLB = {28.5, 46.8, 97.2, 124.74, 149.04, 0, 0, 0, 0, 42.12, 22.68, 10.5, 0, 0};
XkUB =
  {29.4, 129.6, 119.88, 186.3, 178.2, 225.18, 0, 0, 105.3, 61.58, 100.44, 25.92, 76.14, 0};

XsUB = {73.32, 118.26, 178.2, 212.22,
   239.76, 215.46, 0, 48.6, 68.4, 108.54, 93.96, 64.8, 74.52, 0};
```

Varying the static settlement rate for secondary consolidation, Xr, effected the time at which cracking due to gravity loads occurred by did not have a significant influence on the crack area when combined with a PC-4 event. Assign Xr a minimum cov of 0.10 based on judgment.

```
covXr = 0.1;
```

Determine the total crack area for bottom cracks by taking the cov of the sum of the first 7 areas. Similarly, determine the total crack area for the top cracks by summing the last 7 areas. Fit a line for each data set through the points $(-1\,\sigma,\ \frac{\mathrm{LB}}{\mathrm{BE}})$, $(0\,\sigma,\ \frac{\mathrm{BE}}{\mathrm{BE}})$ and $(1\,\sigma,\ \frac{\mathrm{UB}}{\mathrm{BE}})$. Force the line to have a value of 1 at 0σ. This line represents the random variable as a function of σ. The cov is the absolute value of the slope of the line.

```
Clear[x]
```

Variable Xg

```
XLB = XgLB;
XUB = XgUB;
```

$$\text{data} = \left\{\left\{-1,\ \frac{\text{Plus @@ Take[XLB, 7]}}{\text{Plus @@ Take[PC4, 7]}}\right\},\ \{0,\ 1\},\ \left\{1,\ \frac{\text{Plus @@ Take[XUB, 7]}}{\text{Plus @@ Take[PC4, 7]}}\right\}\right\}$$

```
{{-1, 1.03579}, {0, 1}, {1, 0.820706}}

factorBot = Fit[data, {x}, x]

-0.107541 x
```

$$\text{data} = \left\{\left\{-1,\ \frac{\text{Plus @@ Take[XLB, -7]}}{\text{Plus @@ Take[PC4, -7]}}\right\},\ \{0,\ 1\},\ \left\{1,\ \frac{\text{Plus @@ Take[XUB, -7]}}{\text{Plus @@ Take[PC4, -7]}}\right\}\right\}$$

```
{{-1, 1.10299}, {0, 1}, {1, 0.826279}}

factorTop = Fit[data, {x}, x]

-0.138355 x
```

```
covXg = Abs[{factorBot, factorTop} /. x → 1]
```

{0.107541, 0.138355}

Variable Xϵ

```
XLB = XϵLB;
XUB = XϵUB;
```

$$\text{data} = \left\{\left\{-1, \frac{\text{Plus @@ Take[XLB, 7]}}{\text{Plus @@ Take[PC4, 7]}}\right\}, \{0, 1\}, \left\{1, \frac{\text{Plus @@ Take[XUB, 7]}}{\text{Plus @@ Take[PC4, 7]}}\right\}\right\}$$

{{-1, 1.01642}, {0, 1}, {1, 1.01545}}

```
factorBot = Fit[data, {x}, x]
```

-0.000484193 x

$$\text{data} = \left\{\left\{-1, \frac{\text{Plus @@ Take[XLB, -7]}}{\text{Plus @@ Take[PC4, -7]}}\right\}, \{0, 1\}, \left\{1, \frac{\text{Plus @@ Take[XUB, -7]}}{\text{Plus @@ Take[PC4, -7]}}\right\}\right\}$$

{{-1, 1.00919}, {0, 1}, {1, 1.01429}}

```
factorTop = Fit[data, {x}, x]
```

0.00255268 x

```
covXϵ = Abs[{factorBot, factorTop} /. x → 1]
```

{0.000484193, 0.00255268}

Variable Xk

```
XLB = XkLB;
XUB = XkUB;
```

$$\text{data} = \left\{\left\{-1, \frac{\text{Plus @@ Take[XLB, 7]}}{\text{Plus @@ Take[PC4, 7]}}\right\}, \{0, 1\}, \left\{1, \frac{\text{Plus @@ Take[XUB, 7]}}{\text{Plus @@ Take[PC4, 7]}}\right\}\right\}$$

{{-1, 0.635545}, {0, 1}, {1, 1.23691}}

```
factorBot = Fit[data, {x}, x]
```

0.300684 x

$$\text{data} = \left\{\left\{-1, \frac{\text{Plus @@ Take[XLB, -7]}}{\text{Plus @@ Take[PC4, -7]}}\right\}, \{0, 1\}, \left\{1, \frac{\text{Plus @@ Take[XUB, -7]}}{\text{Plus @@ Take[PC4, -7]}}\right\}\right\}$$

{{-1, 0.349485}, {0, 1}, {1, 1.71438}}

```
factorTop = Fit[data, {x}, x]
```

0.682447 x

```
covXk = Abs[{factorBot, factorTop} /. x → 1]
```

{0.300684, 0.682447}

Variable Xs

```
XUB = XsUB;
data = {{0, 1}, {1, Plus @@ Take[XUB, 7] / Plus @@ Take[PC4, 7]}}
{{0, 1}, {1, 1.4771}}

factorBot = Fit[data, {x}, x]
1.4771 x

data = {{0, 1}, {1, Plus @@ Take[XUB, -7] / Plus @@ Take[PC4, -7]}}
{{0, 1}, {1, 2.12949}}

factorTop = Fit[data, {x}, x]
2.12949 x

covXs = Abs[{factorBot, factorTop} /. x → 1]
{1.4771, 2.12949}
```

▪ H.3.4.2 Bottom Crack Areas

The cov of the bottom crack areas, except Xm, is

```
covBot = {covXg[[1]], covXe[[1]], covXk[[1]], covXr, covXs[[1]]}
{0.107541, 0.000484193, 0.300684, 0.1, 1.4771}
```

Logarithmic standard deviation for each variable, except Xm

```
σln = Sqrt[Log[1 + covBot^2]]
{0.107232, 0.000484193, 0.294201, 0.0997513, 1.07585}
```

Logarithmic standard deviation of Xm for various periods, T

```
σlnXm = Sqrt[Log[1 + covB^2]]
{0.637228, 0.971999, 1.45129, 1.48215}
```

Total logarithmic standard deviation for various periods, T

```
σlnBot = Table[Sqrt[Plus @@ σln^2 + σlnXm[[i]]^2], {i, Length[covB]}]
{1.29287, 1.48669, 1.83622, 1.8607}
```

The bottom crack coefficient of variation for various periods, T

```
covBot = Sqrt[e^(σlnBot^2) - 1]
{2.07852, 2.8492, 5.3036, 5.55767}
```

Median crack area for various periods, T

```
medianB
```

```
{244.185, 45.4423, 12.6493, 5.17536}
```

Mean crack area for various periods, T

$$\mathbf{meanB = medianB\sqrt{1 + covBot^2}}$$

```
{563.229, 137.217, 68.2688, 29.2248}
```

mean - 1 σ crack area for various periods, T

$$\mathbf{calbLB = medianB\, e^{-1\, \sigma lnBot}}$$

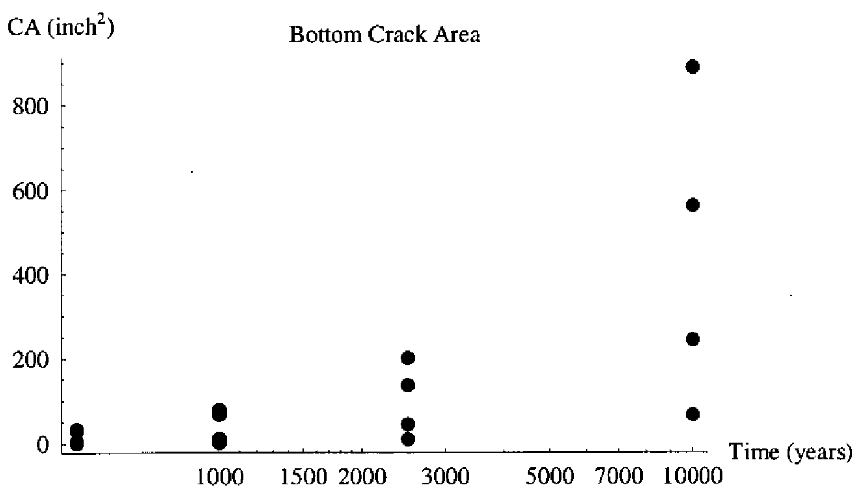
```
{67.0243, 10.2754, 2.01653, 0.805095}
```

mean+1 σ crack area for various periods, T

$$\mathbf{calbUB = medianB\, e^{+1\, \sigma lnBot}}$$

```
{889.625, 200.965, 79.3462, 33.2686}
```

```
LogLinearListPlot[Transpose[{Join[T, T, T, T], Join[meanB, medianB, calbUB, calbLB]}],
  Prolog → AbsolutePointSize[7], PlotRange → All,
  AxesLabel → {"Time (years)", "CA (inch²)"}, PlotLabel → "Bottom Crack Area"];
```



```
Print["Bottom Crack Area"];
TableForm[Transpose[{T, meanB, medianB, calbUB, calbLB, covBot}],
 TableHeadings → {None, {"Time", "Mean", "Median", "Mean+1σ", "Mean-1σ", "cov"}}]
```

Bottom Crack Area

Time	Mean	Median	Mean+1σ	Mean-1σ	cov
10000	563.229	244.185	889.625	67.0243	2.07852
2500	137.217	45.4423	200.965	10.2754	2.8492
1000	68.2688	12.6493	79.3462	2.01653	5.3036
500	29.2248	5.17536	33.2686	0.805095	5.55767

▪ H.3.4.3 Top Crack Areas

The cov of the top crack areas, except Xm, is

```
covTop = {covXg[[2]], covXe[[2]], covXk[[2]], covXr, covXs[[2]]}
```

{0.138355, 0.00255268, 0.682447, 0.1, 2.12949}

Logarithmic standard deviation for each variable, except Xm

$\sigma\mathrm{ln} = \sqrt{\mathrm{Log}[1 + \mathrm{covTop}^2]}$

{0.1377, 0.00255267, 0.618349, 0.0997513, 1.30807}

Logarithmic standard deviation of Xm for various periods, T

$\sigma\mathrm{lnXm} = \sqrt{\mathrm{Log}[1 + \mathrm{covT}^2]}$

{0.812439, 1.14885, 1.59953, 1.59503}

Total logarithmic standard deviation for various periods, T

$\sigma\mathrm{lnTop} = \mathrm{Table}\left[\sqrt{\mathrm{Plus} \mathbin{@@} \sigma\mathrm{ln}^2 + \sigma\mathrm{lnXm}[[i]]^2}, \{i, \mathrm{Length}[\mathrm{covT}]\}\right]$

{1.66804, 1.85531, 2.16352, 2.16019}

The bottom crack coefficient of variation for various periods, T

$\mathrm{covTop} = \sqrt{e^{\sigma\mathrm{lnTop}^2} - 1}$

{3.89324, 5.50041, 10.3372, 10.2624}

Median crack area for various periods, T

```
medianT
```

{55.9225, 9.41136, 2.03703, 0.983701}

Mean crack area for various periods, T

```
meanT = medianT √(1 + covTop²)

{224.787, 52.6149, 21.1555, 10.143}
```

mean - 1 σ crack area for various periods, T

```
caltLB = medianT e^(-1 σlnTop)

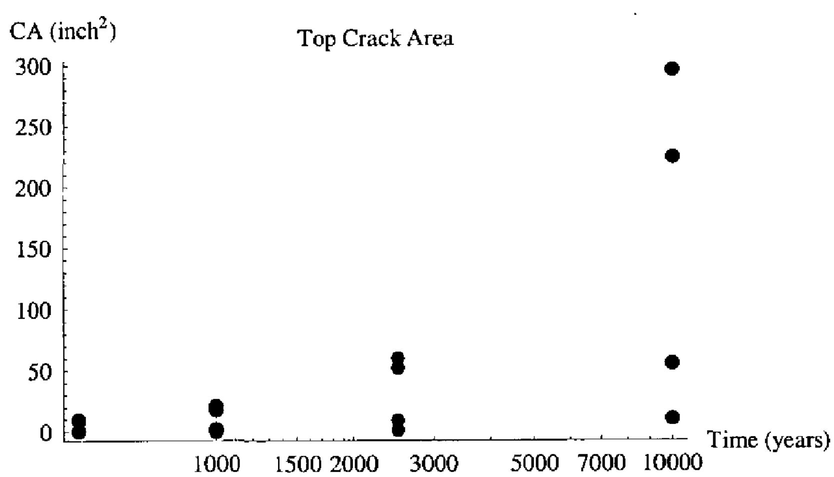
{10.5478, 1.47198, 0.234096, 0.113424}
```

mean+1 σ crack area for various periods, T

```
caltUB = medianT e^(+1 σlnTop)

{296.489, 60.173, 17.7256, 8.53145}

LogLinearListPlot[Transpose[{Join[T, T, T, T], Join[meanT, medianT, caltUB, caltLB]}],
  Prolog → AbsolutePointSize[7], PlotRange → All,
  AxesLabel → {"Time (years)", "CA (inch²)"}, PlotLabel → "Top Crack Area"];
```




```
Print["Top Crack Area"];
TableForm[Transpose[{T, meanT, medianT, caltUB, caltLB, covTop}],
 TableHeadings → {None, {"Time", "Mean", "Median", "Mean+1σ", "Mean-1σ", "cov"}}]
```

Top Crack Area

Time	Mean	Median	Mean+1σ	Mean-1σ	cov
10000	224.787	55.9225	296.489	10.5478	3.89324
2500	52.6149	9.41136	60.173	1.47198	5.50041
1000	21.1555	2.03703	17.7256	0.234096	10.3372
500	10.143	0.983701	8.53145	0.113424	10.2624

See H.2 for conclusion.