Gehry Partners ● **AECOM** Joint Venture

3101 Wilson Boulevard
Suite 900
Arlington, Virginia 22201

February 5, 2014

Mr. Marcel Acosta
Executive Director
National Capital Planning Commission
401 9th Street, NW - North Lobby, Suite 500
Washington, DC 20004

Re: Dwight D. Eisenhower Memorial – Tapestry Engineering and Testing Information for Preliminary Review Submission

Dear Mr. Acosta,

The Gehry Partners – AECOM Joint Venture is pleased to formally submit the Dwight D. Eisenhower Tapestry Engineering and Technical Data Summary Books Volume 1 and Volume 2 dated February 5. 2014 to the National Capital Planning Commission for Preliminary Design Review. This submission supersedes all previously submitted Tapestry Engineering and Technical Data Summary binders circulated to NCPC.

This submission reflects the information as outlined in the Joint Venture letter to yourself dated September 30, 2013 RE: Eisenhower Memorial tapestry development and NCPC review and action. I have attached the letter for your reference. To date, with all current testing completed, the Joint Venture believes the compilation of the calculations and test results provides a degree of certainty and, to this point, satisfies the material requirements identified in the Commemorative Works Act (40 U.S.C. 8905(b) (3)) "a commemorative work shall be constructed of durable material suitable to the outdoor environment."

In addition to the testing information, we have provided reference materials that we believe would be useful for your review as it has relevance to our work on the Eisenhower Memorial. Both the U.S. Air Force Memorial and the Korean War Memorial have similar stainless steel material alloys that were used in the construction of their memorial elements. Both Memorials used stainless steel alloy 316L which is being used for the structural steel components of the tapestry framing system. As we have stated to you earlier the tapestry material will be constructed of 317L alloy which has been proven in our test results to have superior corrosion resistance for our application. We would like to emphasize that we are proposing materials that the National Capital Planning Commission has previously approved.

The National Park Service, EMC, and Joint Venture are intending to submit the project for the April 3, 2014 meeting agenda for Preliminary Design Review. A new design booklet will be submitted to the National Capital Planning Commission that captures the project design refinements, related to the memorial design over the last several months. We intend to submit this information by the February 28, 2014 submission deadline.

As always, if the Joint Venture can be of assistance to you or your staff in the meantime, please do not hesitate to contact myself at your convenience.

Sincerely,



John Bowers
Partner
Gehry Partners LLP

cc:
Mr. Peter May, Associate Regional Director Land, Resource and Planning NCR, National Park Service
Mr. Carl Reddel, Executive Director, Dwight D. Eisenhower Memorial
Mr. Tyrone Anderson, Project Executive, General Services Administration

Gehry Partners ● AECOM Joint Venture

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September 30, 2013

Mr. Marcel Acosta
Executive Director
National Capital Planning Commission
401 9th Street, NW - North Lobby, Suite 500
Washington, DC 20004

RE: Eisenhower Memorial tapestry development and NCPC review and action

Dear Marcel,

As an outcome of our meeting on September 19, 2013, the design team believes that we have a consensus for the additional submission requirements for Preliminary and Final review by NCPC.

These are listed below.

1. Environmental testing on braided and twisted wire. The 1000 hour Salt fog test will be repeated on the proposed alloy for the project, 317L, as well as 316L for additional information until all of the 317L samples types can be obtained.
2. Weld joint strength tests. Three (3) types of mechanical tests will be performed on individual sample joint configurations applicable to project conditions. These test results will confirm the joint strength meets or exceeds the design load criteria. These tests will be performed prior to and post environmental testing in 317L twisted wire and and 316L twisted and braided wire.
3. Mechanical fatigue test. The fatigue test will be performed on a small prototype constructed from the final equipment that will be used to fabricate the project tapestry. The fatigue testing will be based on previously submitted loading conditions and pass/ fail critieria. The test results will confirm the sample is structurally appropriate for both material and welds.

In addition, there are several specific points identified below that are related to the above material and testing that constitutes the direction and agreement moving forward.

1. The design team has selected alloy 317L to be used on the project given its superior corrosion resistance performance based on the initial two environmental test submissions.
2. As stated multiple times, the lead times for acquiring 317L are very long and the material is not readily available. With this in mind, the project team will be continuing to test alloy 316L for the project in absence of the 3 braided art wire types for alloy 317L . The design team will eventually perform environmental and structural tests on remaining alloy 317L once the team receives those materials. The results of the balance of 317L tests will be submitted between Preliminary and Final approval. This has been agreed to in the meeting.
3. The design team will incorporate the "scissor test" of the weld joint strength as recommend by NIST. This has been incorporated into the testing regime.
4. The fatigue test will consist of 317L base structural twisted wire and 316L artwork braided wire for the purpose of this test due to the lead time for this material. This proposed sample construction will not compromise the fatigue test for the project as there is no significant structural difference between the two alloys.

5. The weld settings will be refined for the braided & twisted cables and will vary from those submitted in the previous two submissions. This refinement is due to the difference between solid wire and braided and twisted wires which makes a difference for electrical resistance welding.
6. Each of the wire combination joint types will have separate weld settings optimized for the wires being welded. Each weld type will have multiple test samples. Tested samples will be provided by the design team to NCPC and NIST for review in the same manner as the previous submissions.
7. Department of Army's recommendation for an additional 2000 hour duration of salt fog (environmental) testing will not be pursued by NCPC. NIST confirmed in the meeting that the additional 2000 hours of environmental testing will not yield any new information beyond what we already have.
8. The design team will need follow-up meetings with NCPC and Smithsonian and Dept of Army to discuss additional comments. The goal of the meeting is to clarify the questions and settle any outstanding requirements.
9. Per NCPC and NIST request on 9/19/2013, the design team will provide 317L structural 7 X 7 twisted wire cross welded samples at the same time that the next phase of environmental and mechanical testing begins.

Attached to this letter are the technical matrixes and diagrams as presented in the meeting to serve as record of the future submission for Preliminary Approval.

1. Exhibit 1: Tapestry Timeline
2. Exhibit 2: Testing and Engineering Matrix
3. Exhibit 3: Twisted and Braided joint types mechanical test samples drawing.
4. Exhibit 4: Weld Strength and Environmental sample matrix for testing protocol

For Final Approval the design team will provide a 3'X15' sample containing all final construction methods and materials. This sample will constitute final weld type, final braided and twisted wires and final artwork. In addition the design team will follow-up on the remaining 317L Environmental or weld tests that are lagging behind due to material availability.

The design team would be willing to provide completed test results to NCPC earlier than the 60 day submission if that would be beneficial to the staff and NIST review. The early incremental test results would include the welded joint strength capacity results prior to environmental testing.

Thank you again for arranging the meeting with you and your team. We hope it was beneficial for you to understand where the current status of the design team's development and testing of materials and the tapestry itself.

Regards,

John Bowers
CC: Tyrone Anderson GSA, Carol Moore GILBANE, Dan Feil EMC, Victoria Tigwell EMC, Peter May NPS, Glenn DeMarr NPS

EXHIBIT 1

EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TAPESTRY TIMELINE

07/08/2013

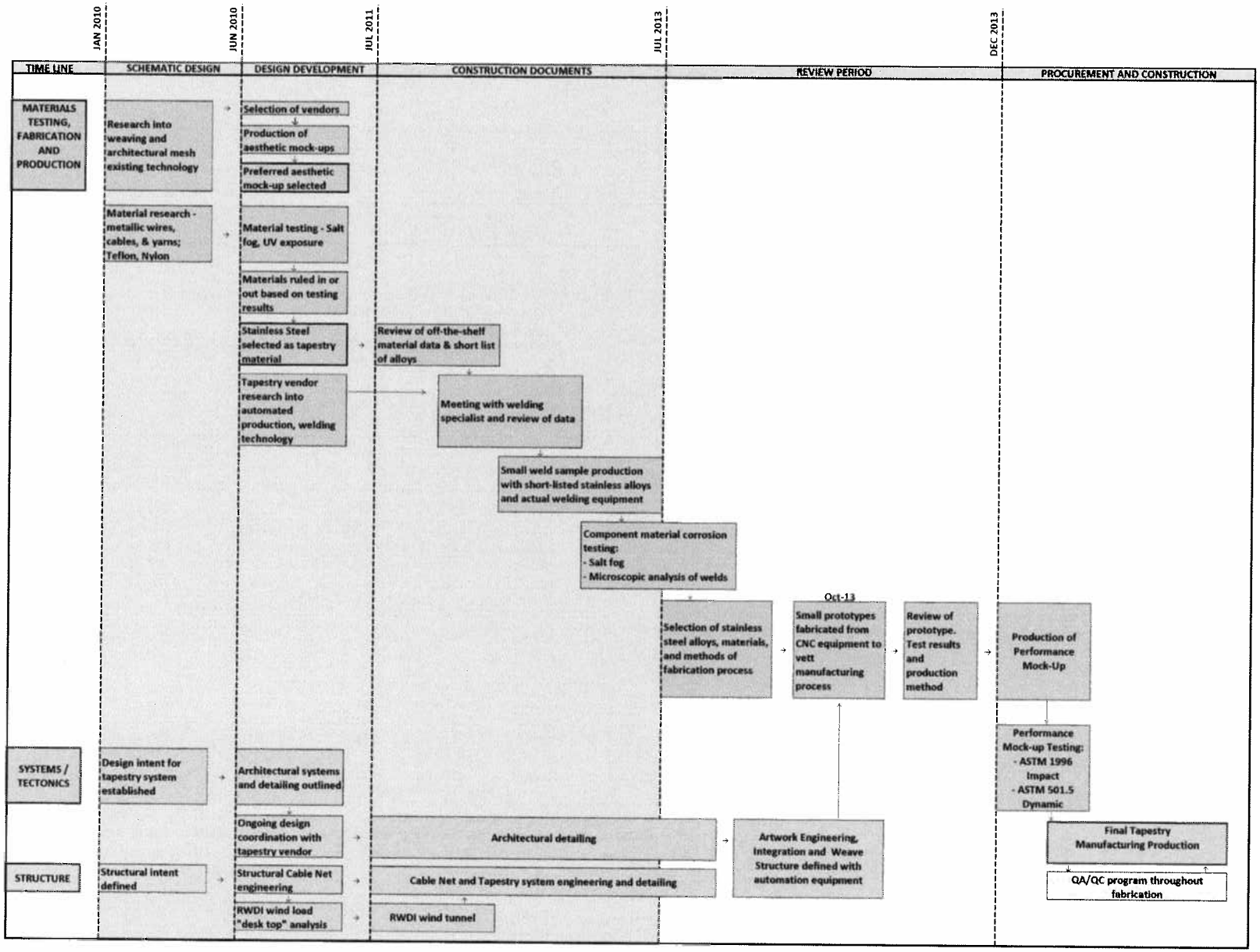


EXHIBIT 2

EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

7/8/13 - Revised on 9/30/2013 - per NCPC meeting on 9/19/2013

This document identifies the testing and engineering data information for the tapestry and its components. It also outlines completed activities and future tests to incorporate into the tapestry engineering, fabrication methods, and maintenance protocols.

Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
2.0	**Wind and Site Analysis**							
2.1	Wind Loading Study	A study to provide wind loading information and coefficients for use in the design of the tapestry structural design.	RWDI	1:250 Scale Model and Physical Samples	N/A	Complete	Complete	Refer to Final Report Wind Loading Study dated December 17, 2012.
2.2	Geotechnical Engineering Report	This geotechnical report provides analysis for the existing soil conditions on the site to be used for the tapestry structural engineering.	Geo Concepts Engineering	N/A	N/A	Complete	Complete	See Geotechnical Engineering Report dated 11/5/2012
3.0	**Structural Calculations**							
3.1	Structural Design Criteria	This information is for reference to clarify the criteria and material of the major structural components related to the Tapestry.	MKA	N/A	N/A	Complete	Complete	Information provided herewith.
3.2	Structural Model, Geometry, and Elements	This information is for reference to clarify the geometry and shapes of the major structural components related to the Tapestry including General Geometry, Steel Cables, Concrete Columns, and Foundation Elements.	MKA	N/A	N/A	Complete	Complete	Information provided herewith.
3.3	Structural Loads							
3.3.1	Dead Loads	This analysis accounts for the actual self-weight of construction materials and attachments.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.2	Ice Loads	Calculations - ASCE 7-10. The results of the ice loading conditions in conjunction with the Wind loading studies have been analyzed and included into the structural calculations of the design of the memorial tapestry and its structural components.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.3	Thermal Loads	Calculations - ACI 224.3R. The thermal calculations and predicted movements have been included in the design of the memorial tapestry structural components.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.4	Seismic Loads	Calculations - ASCE 7-05. All results have been included for the memorial tapestry structural components related to seismic criteria.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.5	Wind Loads	All results have been included to completion for the memorial tapestry structural components related to wind criteria.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.6	Cable Pre-stress and Concrete Creep Analysis	All results have been included to completion for the memorial tapestry structural components related to the cable pre-stressing and concrete creep.	MKA	N/A	N/A	Complete	Complete	Calculations and analysis provided herewith.
3.4	Structural Analysis Results	Computer model simulation of static load cases	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.5	Design of Structural Elements	This section summarizes the design and calculation of specific tapestry structural elements including the Steel Cables, Steel Box Beams, Steel Connection Elements, Concrete columns, and Foundation elements.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.

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EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

7/8/13 - Revised on 9/30/2013 - per NCPC meeting on 9/19/2013

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Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
4.0	**Tapestry Material Testing**							
4.1	Tapestry Cable and Wire Properties	ASTM E8 provides the tensile strength for the individual wires used in the braided cables. The wire for the braids was produced to ASTM specs A580 & A555. Additional break strength certifications are provided for the particular braided cables to be used in the tapestry. This data is used as reference for tapestry panel engineering as well as to qualify the stainless steel products to specification standard.	Tapestry Vendor Engineer and Wire/Cable Manuf.	N/A	N/A	Complete	Complete	Data provided herewith. For Information.
4.2	Solid Wire including welds Environmental Corrosion Test	Evaluation of the Solid Wire Environmental Corrosion Test with weld joints ASTM G85-11 Annex A4, Cycle A4.4.4.1- Modified (SO2) Salt Spray (Fog) Testing	Anachem Laboratories/ Element	Stainless Steel Alloys 316L/317L/ 321 solid wire including welded joints	1000 hours	Complete	Complete	Testing data provided herewith. Element has reported following the evaluation of the samples from the environmental testing that alloys 316L and 317L have performed the best from this test. Inspection of the welded joint have resulted in a positive result. No sensitization of material is observed in the heat affected zone.
4.3	Solid Wire Including welds Pre-Environmental Corrosion Test Images	This report documents all materials prior to the Environmental Corrosion testing for the purposes of being able to compare a before and after scenario.	Element	Stainless Steel Alloys 316L/317L/ 321 solid wire including welded joints	N/A	Complete	Complete	Data provided herewith. For Information.
4.5	Environmental Corrosion Test - Braided and Twisted wire including welds	Braided and Twisted wire Environmental Corrosion Test ASTM G85-11 Annex A4, Cycle A4.4.4.1 - Modified (SO2) Salt Spray (Fog) Testing	Anachem Laboratory / Element	317L structural cable and 316L braided cable with weld joints	1000 hours	To be Completed	12/31/2013	Test for Preliminary Review
4.6	Mechanical Tension and Shear Analysis	Mechanical Tension and Shear Analysis of welded stainless steel braided and twisted wire combinations. Data will be used as reference for tapestry panel engineering	Element	317L alloy structrual cable and 316L braided wire with weld joints	4-6 weeks	To Be Completed	11/15/2013	Test for Preliminary Review
4.7	Fatigue Test	Fatigue Test - 12" x 24" tapestry prototype sample fabricated to specifications.	Element or TBD	Tapestry Sample made from 317L structural cables and 316L braided wire art application	TBD	To Be Completed	12/31/2013	Test for Preliminary Review

EXHIBIT 2

EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

7/8/13 - Revised on 9/30/2013 - per NCPC meeting on 9/19/2013

This document identifies the testing and engineering data information for the tapestry and its components. It also outlines completed activities and future tests to incorporate into the tapestry engineering, fabrication methods, and maintenance protocols.

Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
4.8	Environmental Corrosion Test - Braided and Twisted wire including welds	Braided and Twisted wire Environmental Corrosion Test ASTM G85-11 Annex A4, Cycle A4.4.4.1 - Modified (SO2) Salt Spray (Fog) Testing	Anachem Laboratory / Element	317L braided wire with weld joints	1000 hours	To be Completed	TBD	Test for Final Review - (these are the remaining samples of 317L wire for the three art braided and twisted cables not included in item 4.5 above.)+A1
5.0	**Maintenance and Cleaning**							
5.1	Maintenance + Cleaning	ASTM A380-06 - Standard Practice for Cleaning Descaling and Passivation of Stainless Steel Parts, Equipment and systems	N/A	N/A	N/A	Complete	N/A	Recommendation provided herewith.
5.2	Wind Blown Debris Test	Evaluate susceptibility (risk) of tapestry to trap windblown debris through a simulated wind event. Provide recommended removal for maintenance/cleaning protocol.	Gale Associates, Inc.	10'x15' Aesthetic Tapestry Mock-Up Panel	N/A	Complete	N/A	Report provided herewith. The risk of windblown debris becoming captured or embedded in the tapestry is considered low. Pressure washing is sufficient for removal of embedded material.
6.0	**Performance Mock-up Testing**							
6.1	Dynamic Air Pressure Testing	ASTM-501.5 (Modified)	Independent Laboratory - TBD	full mock-up sample	N/A	To Be Completed	During Construction- TBD	Future Test - This test method is typically performed to determine the resistance to water penetration during rapid cyclic pulses of dynamic air pressure acting on building facades. For the tapestry it can clearly serve as an indicator of how the tapestry will behave under specified dynamic wind loads. By applying deflection gauges to the tapestry, the full range of behavioral data can be obtained and evaluated.
6.2	Projectile Impact Testing	ASTM-E 1886	Independent Laboratory - TBD	full mock-up sample	N/A	To Be Completed	During Construction - TBD	Future Test - This test method determines the performance of exterior windows, curtain walls, doors, and impact protective systems impacted by missile(s) and subsequently subjected to cyclic static pressure differentials. A missile propulsion device, an air pressure system, and a test chamber are used to model some conditions which may be representative of windborne debris and pressures in a windstorm environment.
6.3	Weather Chamber Simulation	A simulated snow and ice performance test used to evaluate the susceptibility of the tapestry to accumulate snow and ice during extreme weather events.	Independent Laboratory	2'x15' Aesthetic Tapestry Mock- Up Panel	N/A	In-Progress	11/30/2013	Initial evaluation is in-progress for gathering background design information.

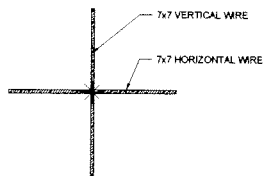
EXHIBIT 3

JOINT TYPES - STRUCTURAL

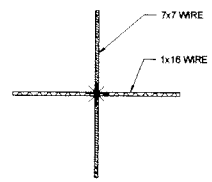
1	7X7 TWISTED WIRE TO 7X7 TWISTED WIRE

JOINT TYPES - ART

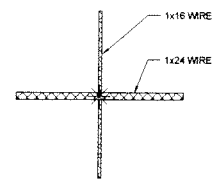
2	1-16 BRAIDED WIRE TO 7X7 TWISTED WIRE
3	1-16 BRAIDED WIRE TO 1-24 BRAIDED WIRE
4	1-24 BRAIDED WIRE TO 2-24 BRAIDED WIRE



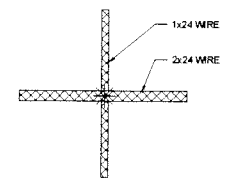
ELEVATION OF SAMPLE



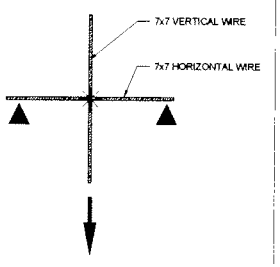
ELEVATION OF SAMPLE



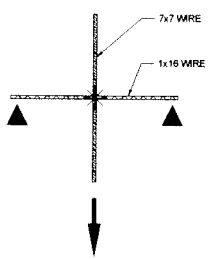
ELEVATION OF SAMPLE



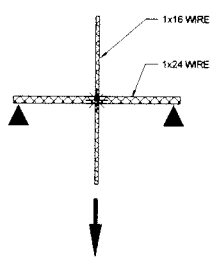
ELEVATION OF SAMPLE



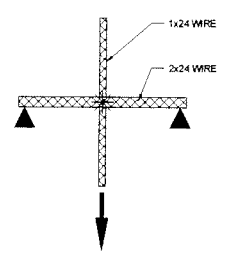
SHEAR TEST



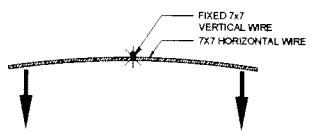
SHEAR TEST



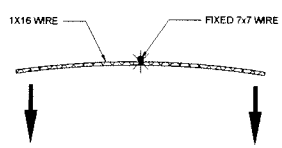
SHEAR TEST



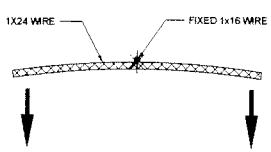
SHEAR TEST



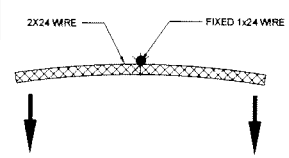
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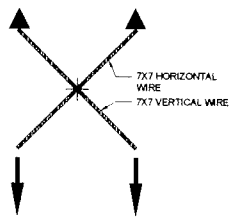
PEEL TEST



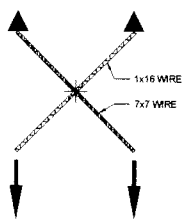
PEEL TEST



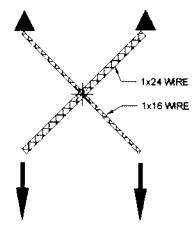
PEEL TEST



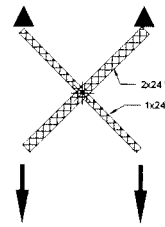
TORQUE SHEAR TEST



TORQUE SHEAR TEST



TORQUE SHEAR TEST



TORQUE SHEAR TEST

LEGEND:

- 7X7 TWISTED WIRE
- 1-16 BRAIDED WIRE
- 1-24 BRAIDED WIRE
- 2-24 BRAIDED WIRE
- WELD
- RESTRAIN
- PULL FORCE

TOMAS OSINSKI DESIGN
4240 GLENMURR AVE
LOS ANGELES
CALIFORNIA 90065
TEL 323 2286578
FAX 323 2276603

TAPESTRY DETAILS
TWISTED AND BRAIDED WIRE
MECHANICAL TEST SAMPLES

EISENHOWER MEMORIAL

DATE SEPT 30 2013
SCALE 1:1
DRAWN TO
SHEET

WT1

1 OF 1 SHEETS

EXHIBIT 4

NCPC Preliminary Review

Executive Summary

Weld Joint Strength Testing Sample Matrix

	Samples	Joint Type 1 7X7 Twisted Wire to 7x7 Twisted Wire	Joint Type 2 1-16 Braided Wire to 7x7 Twisted Wire	Joint Type 3 1-16 Braided Wire to 1-24 Braided Wire	Joint Type 4 1-24 Braided Wire to 2-24 Braided Wire	Notes
317L ANNEALED ALLOY REPRESENTATIVE SAMPLES FOR PROJECT	**TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING**					
	Shear Strength	6				Strength established from Average of 5 samples. One Sample for NIST
	Peel Strength	6				Strength established from Average of 5 samples. One Sample for NIST
	Torque Shear Strength	6				Strength established from Average of 5 samples. One Sample for NIST
	TESTS COMPLETED AFTER ENVIRONMENTAL TESTING					
	Shear Strength	6				Strength established from Average of 5 samples. One Sample for NIST
	Peel Strength	6				Strength established from Average of 5 samples. One Sample for NIST
	Torque Shear Strength	6				Strength established from Average of 5 samples. One Sample for NIST
316L ANNEALED ALLOY FOR INFORMATION AND REFERENCE ONLY	**TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING**					
	Shear Strength	6	6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Peel Strength	6	6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Torque Shear Strength	6	6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	TESTS COMPLETED AFTER ENVIRONMENTAL TESTING					
	Shear Strength	6	6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Peel Strength	6	6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Torque Shear Strength	6	6	6	6	Strength established from Average of 5 samples. One Sample for NIST

Environmental Testing Sample Matrix

	Samples	Joint Type 1 7X7 Twisted Wire to 7x7 Twisted Wire	Joint Type 3 1-16 Braided Wire to 7x7 Twisted Wire	Joint Type 4 1-16 Braided Wire to 1-24 Braided Wire	Joint Type 5 1-24 Braided Wire to 2-24 Braided Wire	Notes
317L	Control	2				Sample does not go in Salt Fog chamber
	Environmental Salt Fog	3				
316L	Control	2	2	2	2	Sample does not go in Salt Fog chamber
	Environmental Salt Fog	3	3	3	3	

EXHIBIT 4

NCPC Final Review

Executive Summary

Weld Joint Strength Testing Sample Matrix

	Samples	Joint Type 1 7X7 Twisted Wire to 7x7 Twisted Wire	Joint Type 2 1-16 Braided Wire to 7x7 Twisted Wire	Joint Type 3 1-16 Braided Wire to 1-24 Braided Wire	Joint Type 4 1-24 Braided Wire to 2-24 Braided Wire	Notes
317L ANNEALED ALLOY REPRESENTATIVE SAMPLES FOR PROJECT	**TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING**					
	Shear Strength		6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Peel Strength		6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Torque Shear Strength		6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	TESTS COMPLETED AFTER ENVIRONMENTAL TESTING					
	Shear Strength		6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Peel Strength		6	6	6	Strength established from Average of 5 samples. One Sample for NIST
	Torque Shear Strength		6	6	6	Strength established from Average of 5 samples. One Sample for NIST

Environmental Testing Sample Matrix

	Samples	Joint Type 1 7X7 Twisted Wire to 7x7 Twisted Wire	Joint Type 3 1-16 Braided Wire to 7x7 Twisted Wire	Joint Type 4 1-16 Braided Wire to 1-24 Braided Wire	Joint Type 5 1-24 Braided Wire to 2-24 Braided Wire	Notes
317L	Control		2	2	2	Control Sample does not go in Salt Fog chamber
	Environmental		3	3	3	

EXHIBIT 4

NCPC Preliminary Review

Weld Strength and Environmental Sample Matrix

Structural Twisted Wire and Art Braided Wire

317L ANNEALED ALLOY REPRESENTATIVE SAMPLES OF THE PROJECT

Sample #	Sample Material	Salt Fog Test***	WELD SETTINGS: Power - Voltage (w)	WELD SETTINGS: Pressure (lbs)	WELD SETTINGS: T - Hold Time (ms)	Documentation Process
JOINT TYPE 1 - 317L Structural 7x7 Twisted Wire to 317L Structural 7x7 Twisted Wire						
WELD STRENGTH TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING						
1	Shear Weld Strength Sample					Pull Tension Test - average five samples - 1 thru 5
2	Shear Weld Strength Sample					Pull Tension Test - average five samples - 1 thru 5
3	Shear Weld Strength Sample					Pull Tension Test - average five samples - 1 thru 5
4	Shear Weld Strength Sample					Pull Tension Test - average five samples - 1 thru 5
5	Shear Weld Strength Sample					Pull Tension Test - average five samples - 1 thru 5
6	Shear Weld Strength Sample					Sample Provided to NIST
7	Peel Weld Strength Sample					Pull Tension Test - average five samples - 7 thru 11
8	Peel Weld Strength Sample					Pull Tension Test - average five samples - 7 thru 11
9	Peel Weld Strength Sample					Pull Tension Test - average five samples - 7 thru 11
10	Peel Weld Strength Sample					Pull Tension Test - average five samples - 7 thru 11
11	Peel Weld Strength Sample					Pull Tension Test - average five samples - 7 thru 11
12	Peel Weld Strength Sample					Sample Provided to NIST
13	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 13 thru 17
14	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 13 thru 17
15	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 13 thru 17
16	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 13 thru 17
17	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 13 thru 17
18	Torque Shear Weld Strength Sample					Sample Provided to NIST
WELD STRENGTH TESTS COMPLETED AFTER ENVIRONMENTAL TESTING						
19	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 19 thru 23
20	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 19 thru 23
21	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 19 thru 23
22	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 19 thru 23
23	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 19 thru 23
24	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2 Sample provided to NIST
25	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 25 thru 29
26	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 25 thru 29
27	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 25 thru 29
28	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 25 thru 29
29	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 25 thru 29
30	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
31	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 31 thru 35
32	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 31 thru 35
33	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 31 thru 35
34	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 31 thru 35
35	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 31 thru 35
36	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
ENVIRONMENTAL TESTING						
37	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
38	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld. Sample Provided to NIST
39	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
40	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
41	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.

EXHIBIT 4

NCPC Preliminary Review

Weld Strength and Environmental Sample Matrix

Structural Twisted Wire and Art Braided Wire

	Sample #	Sample Material	Salt Fog Test***	WELD SETTINGS Power - Voltage (w)	Pressure (lbs)	T - Hold Time (ms)	Documentation Process
316L ANNEALED ALLOY FOR REFERENCE ONLY	**JOINT TYPE 1 - 316L Structural 7x7 Twisted Wire to 316L Structural 7x7 Twisted Wire**						
	WELD STRENGTH TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING						
	51	Shear Weld Strength Sample					Pull Tension Test - average five samples - 51 thru 55
	52	Shear Weld Strength Sample					Pull Tension Test - average five samples - 51 thru 55
	53	Shear Weld Strength Sample					Pull Tension Test - average five samples - 51 thru 55
	54	Shear Weld Strength Sample					Pull Tension Test - average five samples - 51 thru 55
	55	Shear Weld Strength Sample					Pull Tension Test - average five samples - 51 thru 55
	56	Shear Weld Strength Sample					Sample provided to NIST
	57	Peel Weld Strength Sample					Pull Tension Test - average five samples - 57 thru 61
	58	Peel Weld Strength Sample					Pull Tension Test - average five samples - 57 thru 61
	59	Peel Weld Strength Sample					Pull Tension Test - average five samples - 57 thru 61
	60	Peel Weld Strength Sample					Pull Tension Test - average five samples - 57 thru 61
	61	Peel Weld Strength Sample					Pull Tension Test - average five samples - 57 thru 61
	62	Peel Weld Strength Sample					Sample provided to NIST
	63	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 63 thru 67
	64	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 63 thru 67
	65	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 63 thru 67
	66	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 63 thru 67
	67	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 63 thru 67
	68	Torque Shear Weld Strength Sample					Sample provided to NIST
	WELD STRENGTH TESTS COMPLETED AFTER ENVIRONMENTAL TESTING						
	69	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 69 thru 73
	70	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 69 thru 73
	71	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 69 thru 73
	72	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 69 thru 73
	73	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load -69 thru 73
	74	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
	75	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 75 thru 79
	76	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 75 thru 79
	77	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 75 thru 79
	78	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load -75 thru 79
	79	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 75 thru 79
	80	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
	81	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 80 thru 84
	82	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 80 thru 84
	83	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 80 thru 84
	84	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 80 thru 84
	85	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 80 thru 84
	86	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
	ENVIRONMENTAL TESTING						
	87	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
	88	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
	89	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
	90	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
	91	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.

EXHIBIT 4

NCPC Preliminary Review

Weld Strength and Environmental Sample Matrix

Structural Twisted Wire and Art Braided Wire

316L ANNEALED ALLOY FOR REFERENCE ONLY

Sample #	Sample Material	Salt Fog Test***	WELD SETTINGS: Power - Voltage (w)	WELD SETTINGS: Pressure (lbs)	WELD SETTINGS: T - Hold Time (ms)	Documentation Process
JOINT TYPE 2 - 316L Art 1-16 Braided Wire to 316L Structural 7x7 Twisted Wire						
WELD STRENGTH TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING						
101	Shear Weld Strength Sample					Pull Tension Test - average five samples - 101 thru 105
102	Shear Weld Strength Sample					Pull Tension Test - average five samples -101 thru 105
103	Shear Weld Strength Sample					Pull Tension Test - average five samples - 101 thru 105
104	Shear Weld Strength Sample					Pull Tension Test - average five samples - 101 thru 105
105	Shear Weld Strength Sample					Pull Tension Test - average five samples - 101 thru 105
106	Shear Weld Strength Sample					Sample provided to NIST
107	Peel Weld Strength Sample					Pull Tension Test - average five samples - 107 thru 111
108	Peel Weld Strength Sample					Pull Tension Test - average five samples - 107 thru 111
109	Peel Weld Strength Sample					Pull Tension Test - average five samples - 107 thru 111
110	Peel Weld Strength Sample					Pull Tension Test - average five samples - 107 thru 111
111	Peel Weld Strength Sample					Pull Tension Test - average five samples - 107 thru 111
112	Peel Weld Strength Sample					Sample provided to NIST
113	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 113 thru 117
114	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 113 thru 117
115	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 113 thru 117
116	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 113 thru 117
117	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 113 thru 117
118	Torque Shear Weld Strength Sample					Sample provided to NIST
WELD STRENGTH TESTS COMPLETED AFTER ENVIRONMENTAL TESTING						
119	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 119 thru 123
120	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 119 thru 123
121	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 119 thru 123
122	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load -119 thru 123
123	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 119 thru 123
124	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
125	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 125 thru 129
126	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 125 thru 129
127	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 125 thru 129
128	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 125 thru 129
129	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 125 thru 129
130	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
131	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 131 thru 135
132	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 131 thru 135
133	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 131 thru 135
134	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 131 thru 135
135	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 131 thru 135
136	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
ENVIRONMENTAL TESTING						
137	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
138	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
139	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
140	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
141	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.

EXHIBIT 4

NCPC Preliminary Review

Weld Strength and Environmental Sample Matrix

Structural Twisted Wire and Art Braided Wire

316L ANNEALED ALLOY FOR REFERENCE ONLY

Sample #	Sample Material	Salt Fog Test***	WELD SETTINGS: Power - Voltage (w)	WELD SETTINGS: Pressure (lbs)	WELD SETTINGS: T - Hold Time (ms)	Documentation Process
JOINT TYPE 3 - 316L Art 1-16 Braided Wire to 316L Art 1-24 Braided Wire						
WELD STRENGTH TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING						
151	Shear Weld Strength Sample					Pull Tension Test - average five samples - 151 thru 155
152	Shear Weld Strength Sample					Pull Tension Test - average five samples - 151 thru 155
153	Shear Weld Strength Sample					Pull Tension Test - average five samples - 151 thru 155
154	Shear Weld Strength Sample					Pull Tension Test - average five samples - 151 thru 155
155	Shear Weld Strength Sample					Pull Tension Test - average five samples - 151 thru 155
156	Shear Weld Strength Sample					Sample provided to NIST
157	Peel Weld Strength Sample					Pull Tension Test - average five samples - 157 thru 161
158	Peel Weld Strength Sample					Pull Tension Test - average five samples - 157 thru 161
159	Peel Weld Strength Sample					Pull Tension Test - average five samples -157 thru 161
160	Peel Weld Strength Sample					Pull Tension Test - average five samples - 157 thru 161
161	Peel Weld Strength Sample					Pull Tension Test - average five samples -157 thru 161
162	Peel Weld Strength Sample					Sample provided to NIST
163	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 163 thru 167
164	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 163 thru 167
165	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 163 thru 167
166	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 163 thru 167
167	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 163 thru 167
168	Torque Shear Weld Strength Sample					Sample provided to NIST
WELD STRENGTH TESTS COMPLETED AFTER ENVIRONMENTAL TESTING						
169	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 169 thru 173
170	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 169 thru 173
171	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 169 thru 173
172	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 169 thru 173
173	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 169 thru 173
174	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
175	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 175 thru 179
176	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 175 thru 179
177	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 175 thru 179
178	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 175 thru 179
179	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 175 thru 179
180	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
181	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 181 thru 185
182	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 181 thru 185
183	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 181 thru 185
184	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 181 thru 185
185	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load -181 thru 185
186	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
ENVIRONMENTAL TESTING						
187	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
188	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
189	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
190	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
191	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.

NCPC Preliminary Review

Weld Strength and Environmental Sample Matrix

Structural Twisted Wire and Art Braided Wire

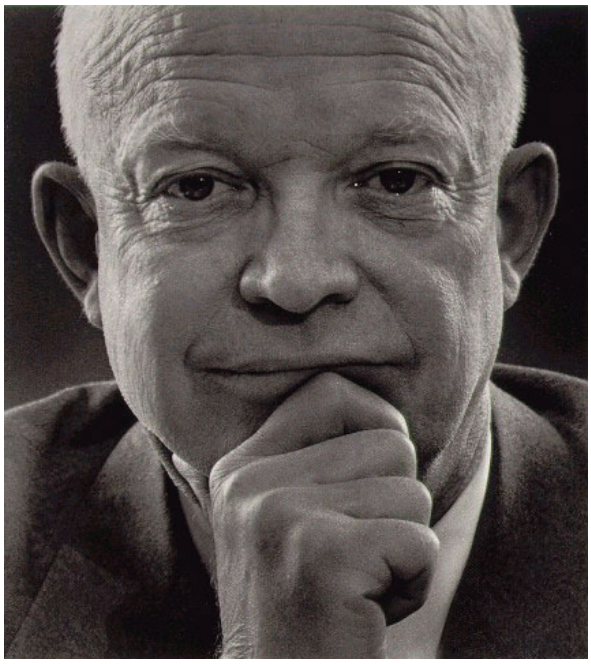
316L ANNEALED ALLOY FOR REFERENCE ONLY

Sample #	Sample Material	Salt Fog Test***	WELD SETTINGS: Power - Voltage (w)	Pressure (lbs)	T - Hold Time (ms)	Documentation Process
JOINT TYPE 4 - 316L Art 1-42 Braided Wire to 316L Art 2-24 Braided Wire						
WELD STRENGTH TESTS COMPLETED PRIOR ENVIRONMENTAL TESTING						
201	Shear Weld Strength Sample					Pull Tension Test - average five samples - 201 thru 205
202	Shear Weld Strength Sample					Pull Tension Test - average five samples - 201 thru 205
203	Shear Weld Strength Sample					Pull Tension Test - average five samples - 201 thru 205
204	Shear Weld Strength Sample					Pull Tension Test - average five samples - 201 thru 205
205	Shear Weld Strength Sample					Pull Tension Test - average five samples - 201 thru 205
206	Shear Weld Strength Sample					Sample provided to NIST
207	Peel Weld Strength Sample					Pull Tension Test - average five samples - 207 thru 211
208	Peel Weld Strength Sample					Pull Tension Test - average five samples - 207 thru 211
209	Peel Weld Strength Sample					Pull Tension Test - average five samples - 207 thru 211
210	Peel Weld Strength Sample					Pull Tension Test - average five samples - 207 thru 211
211	Peel Weld Strength Sample					Pull Tension Test - average five samples - 207 thru 211
212	Peel Weld Strength Sample					Sample provided to NIST
213	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 213 thru 216
214	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 213 thru 216
215	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 213 thru 216
216	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 213 thru 216
217	Torque Shear Weld Strength Sample					Pull Tension Test - average five samples - 213 thru 216
218	Torque Shear Weld Strength Sample					Sample provided to NIST
WELD STRENGTH TESTS COMPLETED AFTER ENVIRONMENTAL TESTING						
219	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 219 thru 223
220	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 219 thru 223
221	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 219 thru 223
222	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 219 thru 223
223	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 219 thru 223
224	Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
225	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 225 thru 229
226	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 225 thru 229
227	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 225 thru 229
228	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 225 thru 229
229	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 225 thru 229
230	Peel Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
231	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 231 thru 235
232	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 231 thru 235
233	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 231 thru 235
234	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 231 thru 235
235	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Pull Tension Test after 1000 hours - average five samples for load - 231 thru 235
236	Torque Shear Weld Strength Sample	X				1) 1000 Hour Salt Fog Test 2) Sample provided to NIST
ENVIRONMENTAL TESTING						
237	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
238	Control Sample					Reference sample: 1) Photograph and document sample at weld interface and general wire condition away from weld.
239	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
240	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.
241	Environmental Sample	X				1) Photograph and document sample at weld interface and general wire condition away from weld. 2) 1000 Hour Salt Fog Test. 3) Photograph and document sample at weld interface and general wire condition away from weld.

Notes	
Salt Fog Test* **	Performed per ASTM G85-09 Annex A4, Cycle A4.4.4.1. 1000 hours A 95+- 3 degrees, with constant spray of 5% +- 1 % wt NaCl, with in injection of SO2 gas every five hours to maintain pH of 2.5-3.2 environmental testing.
	All samples to be weighted with 2lbs during environmental testing. Carbon Black applied to all samples prior to environmental test.

EISENHOWER MEMORIAL
TAPESTRY ENGINEERING
AND TECHNICAL DATA SUMMARY

VOLUME 1: TAPESTRY OVERVIEW AND ENGINEERING SUMMARY



NATIONAL CAPITAL PLANNING COMMISSION

SUBMISSION FOR PRELIMINARY DESIGN REVIEW
SUBMISSION DATE: FEBRUARY 5, 2014
MEETING DATE: APRIL 3, 2014

Gehry Partners, LLP ● AECOM Joint Venture

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EISENHOWER MEMORIAL TAPESTRY ENGINEERING AND TESTING DATA SUMMARY

VOLUME 1: TAPESTRY OVERVIEW AND ENGINEERING SUMMARY



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EISENHOWER MEMORIAL
TAPESTRY ENGINEERING AND TECHNICAL DATA SUMMARY

VOLUME 1 - TAPESTRY OVERVIEW AND ENGINEERING SUMMARY

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1.0 TESTING AND SCHEDULE OVERVIEW

1.1 Overview
1.2 Testing and Engineering Matrix
1.3 Tapestry Timeline

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1.1 OVERVIEW

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Overview of Tapestry Engineering and Testing Data

This submission represents a compilation of engineering data and material testing data specifically related to the tapestry commemorative element proposed for the Eisenhower Memorial project. The specific engineering information and test protocols are based on general engineering practices required of a structure of this nature. The proposed test measures have been researched and performed to address specific questions raised about the tapestry as well as to assist in the technical development of the tapestry element. The material and environmental testing procedures completed to date have been performed in consultation with NPS, and the NCPC staff which included input from the National Institute of Standards and Technology (NIST) at the request of NCPC.

VOLUME 1: TAPESTRY OVERVIEW AND ENGINEERING SUMMARY

Section 2.0 - Wind and Site Analysis

2.1 Wind Loading Study (by an Independent engineering analysis company) – This analysis is complete. This study was performed during the design phase to determine loading criteria for the structural design criteria of the tapestry supporting structure and the other memorial elements on the site. This analysis included additional loading conditions. The results have been included in the engineering analysis for the design of the memorial tapestry and structural elements supporting the tapestry. Physical tapestry samples were also tested within the wind tunnel for the purposes of calculating the drag coefficient of wind forces across the surface of the tapestry to better inform the wind loading requirements on the cable net assembly for inclusion in the design. Results were provided to the design team to incorporate into the structural design of the tapestry, cable net structure, and columns.

2.2 Geotechnical Engineering Report (Nov 5, 2010) - This report has been completed by the design team's Geotechnical engineer. This accounts for the existing soil conditions on the site, and is utilized for the foundation and structural design.

Section 3.0 Structural Calculations: This section includes the supporting data and calculations used for the structural engineering development of the memorial design.

3.1 Structural Criteria – This information is for reference to describe the tapestry structural system and clarify the structural criteria and material for structural components related to the Tapestry.

3.2 Structural Model, Geometry, and Elements – This information is for reference to clarify the structural criteria and shapes of the major structural components related to the Tapestry including General Geometry, Steel Cables, Concrete Columns, and Foundation Elements.

3.3 Structural Loads – This section designates the loads applied to the structural analysis model.

- 3.3.1 Dead Load engineering calculations – This analysis has been completed. This accounts for actual self-weight of construction materials and attachments.
- 3.3.2 Ice loading engineering calculations – This analysis has been completed. The results of the ice loading conditions in conjunction with the wind loading studies have been analyzed and included into the structural calculations of the design of the memorial tapestry and its structural components.
- 3.3.3 Thermal Movement engineering calculations – This analysis has been completed. The thermal calculations and predicted movements have been included in the design of the memorial tapestry structural components.
- 3.3.4 Seismic Load engineering calculations – This analysis has been completed. All results have been included to completion for the memorial tapestry structural components related to seismic criteria.
- 3.3.5 Wind Loads engineering calculations – This analysis has been completed. All results have been included to completion for the memorial tapestry structural components related to wind criteria.
- 3.3.6 Cable Prestress and Concrete Creep Analysis – This analysis has been completed. All results have been included to completion for the memorial tapestry structural components related to these stainless steel cable and concrete properties.

3.4 Structural Analysis Results – This section summarizes the static load cases in the structural analysis model.

3.5 Design of Tapestry Structural Elements - This section summarizes the design and calculation of specific tapestry structural elements including the Steel Cables, Steel Box Beams, Steel Connection Elements, Concrete columns, and Foundation elements.

VOLUME 2: TAPESTRY TECHNICAL DATA SUMMARY

Section 4.0 - Tapestry Material Testing: (by Independent Testing Companies)

This information and testing was prepared to test, examine, and conclude on the performance and durability of the stainless steel alloy for the structural twisted wire and braided wire and the welds proposed for the tapestry fabrication on this project.

4.1 Tapestry Twisted and Braided Wire Properties - ASTM E8 is the Standard Test Method to provide the tensile strength for the individual wires used in the braided wires. The wire for the braids was produced to ASTM specs A580 & A555. In addition material certificate data is provided for each alloy being used in the material testing.

4.2 Weld Strength and Environmental Sample Matrix - This document contains the list of all test specimens prepared for the Environmental Corrosion Test and Weld Joint Strength Testing. The matrix includes the test instructions for each sample specimen and the specimen details with respect to alloy, weld settings, and passivation.

4.3 Environmental Corrosion Test – Twisted Wire and Braided Wire: Per Element Report #TOM002-21955 *Corrosion Analysis of Welded Samples*, SO2 Salt Spray per ASTM G85-11 Annex A4, Cycle A4.4.4.1 was performed on Twisted and Braided wire samples. Stainless steel alloy type 317L and type 316L were tested for the structural twisted wires including a welded joint for each sample to evaluate corrosion resistance in each material. Samples for the three braided wire types with welds to be used for the non-structural, art image on the tapestry were tested in type 316L alloy for reference only. The type 317L alloy, the selected alloy for the project, shows no signs of corrosion on the wire or in the heat affected zone near the weld after the 1000 hour exposure to the salt fog environment.

4.4 Mechanical Tension and Shear Strength Analysis – Element's report #TOM002-21955M *Mechanical Strength Testing of Welded Samples* indicates the breaking loads for the various types of weld joints on samples provided for comparison to the calculated tapestry design loads. The Najjarine Structures report titled *Weld Capacity Report* compares the tested weld strength to the calculated weld loading and demonstrates the weld capacity achieved in the testing results is greater than the design load required for the structural weld.

Section 5.0 – Tapestry Panel Assembly Testing (by Independent Testing Companies)

This section contains test results for assembled samples of the tapestry panel.

5.1 Fatigue Test - A *Fatigue Spectrum Analysis* by RWDI was prepared to demonstrate the range of wind loading and frequency of occurrence that the tapestry could experience over a 100 year period based upon meteorological data available in Washington D.C. and the *Wind Loading Study* by RWDI included in Section 2.1 of this submission. The *Tapestry Fatigue Test Report* by Ed Najjarine establishes the fatigue test parameters and pass/ fail criteria for a 3'-0 x 3'-0 tapestry panel sample. The *Fatigue Testing Methodology and Results Report* by RWDI shows that the applied loads to the tapestry sample had a negligible impact on the sample panel to the structural welds or applied art. The sample passed the pass/fail criteria for the fatigue test.

5.2 Weather Simulation Test –The report by Northern Microclimate for *Ice and Snow Consulting Services* documents the design evaluation and mockup performance tests performed to investigate winter performance and develop recommendations to reduce the potential for snow and ice formation and release. The results of the testing have provided valuable input to the design and fabrication of the tapestry panels. The testing showed a correlation between the tapestry mockups tested and samples of architectural screens that are commonly used in the building industry that have not been reported to be problematic for hazardous falling ice and snow.

Section 6.0 - Maintenance and Cleaning

6.1 Stainless Steel Cleaning Procedure – Procedures have been provided for the care and maintenance of the stainless steel material for the tapestry. Upon completion of the performance mock-up testing in the next phase of work a detailed maintenance plan can be prepared to cover common cleaning procedures with an in situ mock-up. ASTM A380-06 Standard Practice for Cleaning, Descaling and Passivation of Stainless Steel parts, Equipment and Systems is provided for reference.

Section 7.0 Appendix

This information is provided for reference and includes early environmental tests performed on solid wires to establish the corrosion resistance of various stainless steel alloys. Also included is a Wind Debris Test performed by an independent company. Several articles are provided for reference regarding other memorials and welding methods proposed for the project.

7.1 Solid Wire Properties - ASTM E8 is the Standard Test Method to provide the tensile strength of wires. The solid wire samples were produced to ASTM specs A580 & A555. Material certificate data is provided for each alloy to qualify the stainless steel products to the alloy specification standard.

7.2 Environmental Sample Matrix – Solid Wire and Weld Joints; this document contains the list of the test specimens prepared for the Environmental Corrosion Test on solid wires. The matrix includes the test instructions for each sample specimen and the details with respect to alloy, weld settings, and passivation.

7.3 Environmental Testing and Evaluation - Solid Wire including welded samples SO2 Salt Spray per ASTM G85-11 Annex A4, Cycle A4.4.4.1 was performed on solid wires to evaluate the performance of different stainless steel alloys. Element Report Dated July 1, 2013 Tilted “Evaluation of 1000 Hour Salt Spray Tested Solid Wire Welds (Sunstone 2500 Equipment) made from Type 316L, 317L and 321 Stainless Steel.” Alloy types 316L, type 317L and type 321 were all tested including a welded joint at each alloy to evaluate the difference in each material and preparation. Alloy types 316L and 317L performed the best with very little difference. Alloy type 321 did not pass and will be discarded from consideration.

7.4 Pre - Environmental Corrosion Test Images – Solid Wire - Solid Wire including welded samples Element report dated July 2, 2013 titled "Before" Images of the Solid Wire Weld Samples (SUNSTONE 2500 Equipment) Made from type 316L, Type 317L and Type 321 Stainless Steel" documents the material state prior to salt spray testing. This includes documentation of alloy types 316L, type 317L, and type 321 solid wire weld samples prior to descale/passivation and prior to the environmental testing process. This is a reference document for section 7.2.

7.5 Wind Blown Debris Test – Physical testing on the existing aesthetic mock-up has been completed by an independent company. The intent of this test was to understand the risk of windblown debris related to the tapestry elements. The study also included cleaning measures related to windblown debris should it occur. The tapestry element is low risk for windblown debris capture

7.6 Stainless Steel and Weld Information Reference Documents; This Section includes several articles for information. Two articles are included reference the Air Force Memorial and the Korean War Memorial because they have similar stainless steel alloys as being considered for the Eisenhower Memorial. Both memorials use the 316L stainless steel alloy which is being used for the structural steel components of the tapestry. The tapestry panels will be constructed of 317L stainless steel alloy which has been proven in our test results to have superior corrosion resistance for our application. Three other documents are provided for reference to resistance welding which is the welding method used on the tapestry.

1.2 TESTING AND ENGINEERING MATRIX

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EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

February 5, 2014

This document identifies the testing and engineering data information for the tapestry and its components. It also outlines completed activities and future tests to incorporate into the tapestry engineering, fabrication methods, and maintenance protocols.

Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
VOLUME 1: TAPESTRY TESTING OVERVIEW AND ENGINEERING								
1.0	**Overview**							
2.0	**Wind and Site Analysis**							
2.1	Wind Loading Study	A study to provide wind loading information and coefficients for use in the design of the tapestry structural design.	RWDI	1:250 Scale Model and Physical Samples	N/A	Complete	Complete	Refer to Final Report Wind Loading Study dated December 17, 2012.
2.2	Geotechnical Engineering Report	This geotechnical report provides analysis for the existing soil conditions on the site to be used for the tapestry structural engineering.	Geo Concepts Engineering	N/A	N/A	Complete	Complete	See Geotechnical Engineering Report dated 11/5/2012
3.0	**Structural Calculations**							
3.1	Structural Design Criteria	This information is for reference to clarify the criteria and material of the major structural components related to the Tapestry.	MKA	N/A	N/A	Complete	Complete	Information provided herewith.
3.2	Structural Model, Geometry, and Elements	This information is for reference to clarify the geometry and shapes of the major structural components related to the Tapestry including General Geometry, Steel Cables, Concrete Columns, and Foundation Elements.	MKA	N/A	N/A	Complete	Complete	Information provided herewith.
3.3	Structural Loads							
3.3.1	Dead Loads	This analysis accounts for the actual self-weight of construction materials and attachments.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.2	Ice Loads	Calculations - ASCE 7-10. The results of the ice loading conditions in conjunction with the Wind loading studies have been analyzed and included into the structural calculations of the design of the memorial tapestry and its structural components.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.3	Thermal Loads	Calculations - ACI 224.3R. The thermal calculations and predicted movements have been included in the design of the memorial tapestry structural components.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.4	Seismic Loads	Calculations - ASCE 7-05. All results have been included for the memorial tapestry structural components related to seismic criteria.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.5	Wind Loads	All results have been included to completion for the memorial tapestry structural components related to wind criteria.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
3.3.6	Cable Pre-stress and Concrete Creep Analysis	All results have been included to completion for the memorial tapestry structural components related to the cable pre-stressing and concrete creep.	MKA	N/A	N/A	Complete	Complete	Calculations and analysis provided herewith.
3.4	Structural Analysis Results	Computer model simulation of static load cases	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.

EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

February 5, 2014

This document identifies the testing and engineering data information for the tapestry and its components. It also outlines completed activities and future tests to incorporate into the tapestry engineering, fabrication methods, and maintenance protocols.

Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
3.5	Design of Structural Elements	This section summarizes the design and calculation of specific tapestry structural elements including the Steel Cables, Steel Box Beams, Steel Connection Elements, Concrete columns, and Foundation elements.	MKA	N/A	N/A	Complete	Complete	Calculations provided herewith.
VOLUME 2:TAPESTRY TESTING AND TECHNICAL DATA								
4.0	**Tapestry Material Testing**							
4.1	Twisted and Braided Wire Properties	ASTM E8 provides the tensile strength for the individual wires used in the braided wires. The wire for the twisted and braided wires was produced to ASTM specs A580 & A555. Additional break strength certifications are provided for the braided wires to be used in the tapestry. This data is used as reference for tapestry panel engineering as well as to qualify the stainless steel products to the alloy specification standard.	Tapestry Vendor Engineer and Wire/Cable Manuf.	N/A	N/A	Complete	Complete	Data provided herewith. For Information.
4.2	Weld Strength and Environmental Sample Matrix	This section includes a matrix of all test samples for the twisted and braided wires for alloy 317L and 316L for the environmental corrosion and weld strength testing. The sample matrix includes weld settings for each sample and the tests to be preformed on each sample.	GP	N/A	N/A	N/A	N/A	Data provided herewith. For Information. See Section 4.3 and 4.4 for the tests performed on these samples.
4.3	Environmental Corrosion Test - Twisted and Braided Wire including welds	Twisted and Braided wire Environmental Corrosion Test ASTM G85-11 Annex A4, Cycle A4.4.4.1 - Modified (SO2) Salt Spray (Fog) Testing	Anachem Laboratory / Element	317L structural twisted wire and 316L art braided wires with weld joints	1000 hours	Complete	12/3/2013	Testing data provided herewith. Element has reported following the evaluation of the environmentally tested samples that the selected alloy 317L structural twisted wire shows no corrosion on the wire, or at the weld. The reference alloy 316L for structural twisted wire and art braided wire did show some signs of corrosion and will not be used on the tapestry.
4.3.1	**FUTURE TEST** Environmental Corrosion Test - Alloy 317L Braided wire including welds	Braided and Twisted wire Environmental Corrosion Test ASTM G85-11 Annex A4, Cycle A4.4.4.1 - Modified (SO2) Salt Spray (Fog) Testing	Anachem Laboratory / Element	317L braided wire with weld joints	1000 hours	To be Completed	TBD	Test for NCPC Final Review - (the remaining samples of selected 317L alloy for the three art braided wires. Per agreement with NCPC, these samples were not tested for preliminary review due to long lead time to obtain the material.

EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

February 5, 2014

This document identifies the testing and engineering data information for the tapestry and its components. It also outlines completed activities and future tests to incorporate into the tapestry engineering, fabrication methods, and maintenance protocols.

Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
4.4	Mechanical Tension and Shear Strength Analysis	Mechanical Tension and Shear Analysis of welded stainless steel braided and twisted wire combinations. Data will be used as reference for tapestry panel engineering	Element	317L alloy structural cable and 316L braided wire with weld joints	4-6 weeks	Complete	12/31/2013	Element performed weld strength testing on welded joints for as welded (prior to salt fog) and environmentally tested samples (after salt fog) The results show no loss of weld strength resulting from exposure to the corrosive salt fog environmental test. The tested weld strength exceeds the calculated weld capacity for all joint types and alloys.
5.0	**Panel Assembly Testing**							
5.1	Fatigue Test	Fatigue Test - 3' x 3' tapestry prototype panel sample fabricated to specifications. The sample was subjected to fatigue loading conditions that illustrate the moderate to extreme loading conditions with their frequency of occurrence. This will be reflective of wind loading conditions that the tapestries may experience during heavier wind events based on a wind climate model that represents up to the 100 year event.	RWDI	Tapestry Panel Sample 3' x 3' made from 317L structural cables and 316L braided wire art application	1.5 weeks	Complete	1/23/2014	Test data provided herewith. The report indicates that wind pressure cycles applied to the tapestry panel sample had a negligible impact on structural welds or aesthetic appearance.
5.2	Weather Chamber Simulation	A simulated snow and ice performance test used to evaluate the susceptibility of the tapestry to accumulate snow and ice during extreme weather events. The tests were performed in two phases with an aesthetic mockup panel for phase one, and then several other proof of concept tapestry panel samples incorporating recommendations from the first phase of testing.	Northern Microclimate	2'x15' Aesthetic Tapestry Mock- Up Panel and 3' x 5' Tapestry Panel Sample	N/A	Complete	1/30/2014	Test data provided herewith. The report recommends mitigation measures to reduce the potential for ice and snow related issues. The report concludes there is a correlation between the tapestry samples tested and samples of other architectural screens that are commonly used in the building industry, and have not been reported to be problematic.
6.0	**Maintenance and Cleaning**							
6.1	Maintenance + Cleaning	ASTM A380-06 - Standard Practice for Cleaning Descaling and Passivation of Stainless Steel Parts, equipment and systems	N/A	N/A	N/A	Complete	N/A	Recommendation provided herewith.
7.0	**Appendix**							
7.1	Solid Wire Properties	ASTM E8 provides the tensile strength for the individual wires. The solid wires were produced to ASTM specs A580 & A555. This data is used to qualify the stainless steel products to the alloy specification standard.	Tapestry Vendor Engineer and Wire/Cable Manuf.	N/A	N/A	Complete	Complete	Data provided herewith. For Information.

EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

February 5, 2014

This document identifies the testing and engineering data information for the tapestry and its components. It also outlines completed activities and future tests to incorporate into the tapestry engineering, fabrication methods, and maintenance protocols.

Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
7.2	Environmental Sample Matrix - Solid Wires and Weld Joints	This section includes a matrix of all test samples for the solid wire environmental corrosion test for alloy 316L, 317L and 321L. The sample matrix includes weld settings for each sample and the tests to be preformed on each sample.	Tapestry Vendor Engineer and Wire/Cable Manuf.	N/A	N/A	Complete	Complete	Data provided herewith. For Information. See section 7.3 and 7.4 for tests performed on these samples.
7.3	Environmental Corrosion Test - Solid Wire and Weld Joints	Evaluation of the Solid Wire Environmental Corrosion Test with weld joints ASTM G85-11 Annex A4, Cycle A4.4.4.1- Modified (SO2) Salt Spray (Fog) Testing	Anachem Laboratories/ Element	Stainless Steel Alloys 316L/317L/ 321 solid wire including welded joints	1000 hours	Complete	Complete	Testing data provided herewith. Element has reported following the evaluation of the samples from the environmental testing that alloys 316L and 317L have performed the best from this test. Inspection of the welded joint have resulted in a positive result. No sensitization of material is observed in the heat affected zone. Alloy 317L was selected for the tapestry production as it performed better in this test.
7.4	Pre-Environmental Corrosion Test Images - Solid wire	This report documents all materials prior to the Environmental Corrosion testing for the purposes of being able to compare a before and after scenario.	Element	Stainless Steel Alloys 316L/317L/ 321 solid wire including welded joints	N/A	Complete	Complete	Data provided herewith. For information.
7.5	Wind Blown Debris Test	Evaluate susceptibility (risk) of tapestry to trap windblown debris through a simulated wind event. Provide recommended removal for maintenance/cleaning protocol.	Gale Associates, Inc.	10'x15' Aesthetic Tapestry Mock-Up Panel	N/A	Complete	N/A	Report provided herewith. The risk of windblown debris becoming captured or embedded in the tapestry is considered low. Pressure washing is sufficient for removal of embedded material.
7.6	Stainless Steel and Weld Information Reference Documents	This section contains two articles about the stainless steel material used on the Air Force Memorial and the Korean War Memorial. In addition there are technical articles about resistance spot welding, which is the welding method used for the tapestry fabrication.	NA	NA	NA	NA	NA	Data provided herewith. For information.
8.0	**Performance Mock-up Testing**							

EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TESTING AND ENGINEERING MATRIX

February 5, 2014

This document identifies the testing and engineering data information for the tapestry and its components. It also outlines completed activities and future tests to incorporate into the tapestry engineering, fabrication methods, and maintenance protocols.

Section	Test	Standard or Description	Lab or Engineer	Sample Size	Duration	Status	Expected Completion Date	Notes
8.1	Dynamic Air Pressure Testing	ASTM-501.5 (Modified)	Independent Laboratory - TBD	full mock-up sample	N/A	To Be Completed	During Construction TBD	Future Test - This test method is typically performed to determine the resistance to water penetration during rapid cyclic pulses of dynamic air pressure acting on building facades. For the tapestry it can clearly serve as an indicator of how the tapestry will behave under specified dynamic wind loads. By applying deflection gauges to the tapestry, the full range of behavioral data can be obtained and evaluated.
8.2	Projectile Impact Testing	ASTM-E 1886	Independent Laboratory - TBD	full mock-up sample	N/A	To Be Completed	During Construction - TBD	Future Test - This test method determines the performance of exterior windows, curtain walls, doors, and impact protective systems impacted by missile(s) and subsequently subjected to cyclic static pressure differentials. A missile propulsion device, an air pressure system, and a test chamber are used to model some conditions which may be representative of windborne debris and pressures in a windstorm environment.

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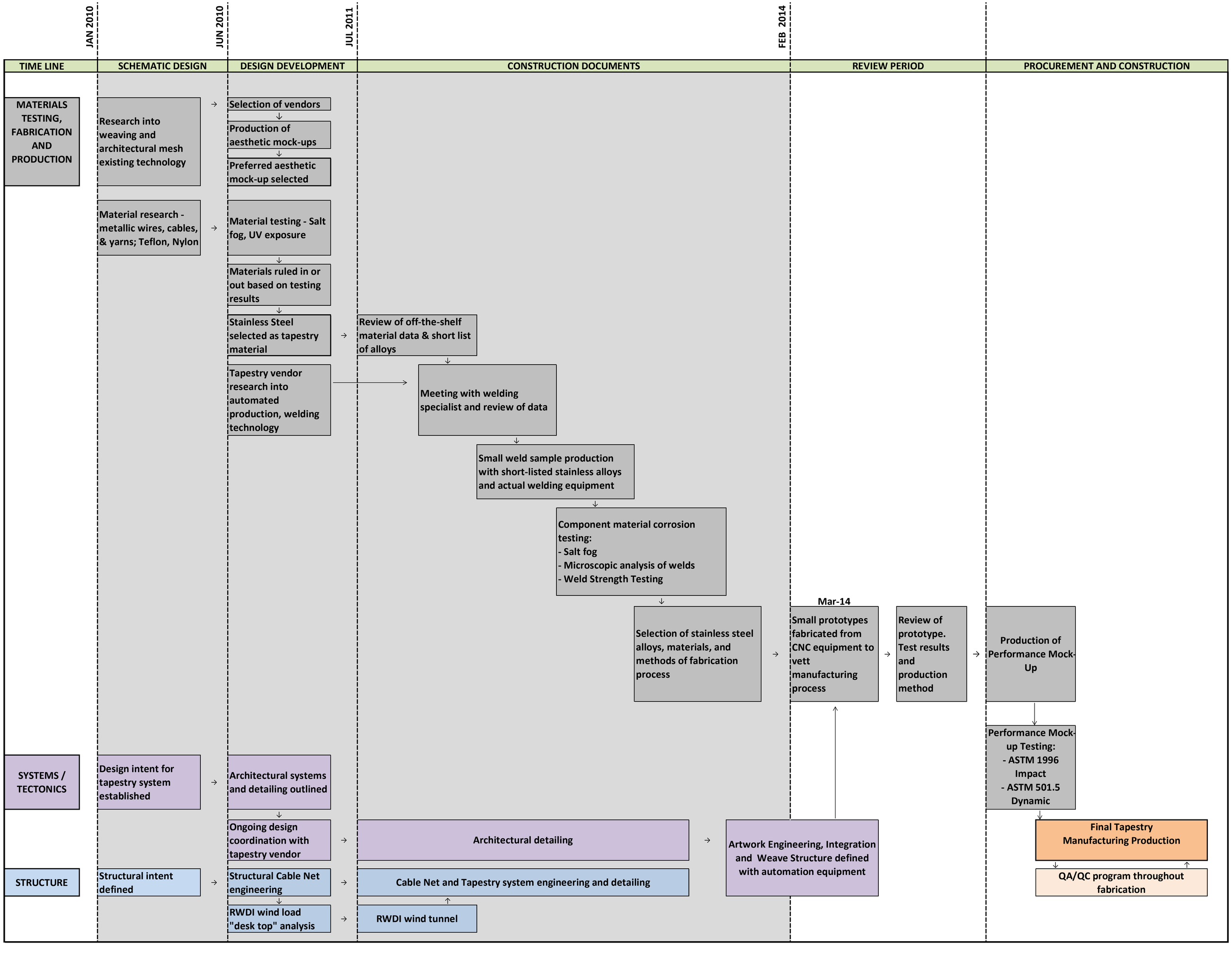
1.3 TAPESTRY TIMELINE

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EISENHOWER MEMORIAL - ENGINEERING AND TECHNICAL DATA SUMMARY

TAPESTRY TIMELINE

02/05/2014



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2.0 WIND AND SITE ANALYSIS

2.1 Wind Loading Study
2.2 Geotechnical Engineering Report

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2.1 WIND LOADING STUDY

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Dwight D. Eisenhower Memorial

Washington, D.C.

Final Report

Wind Loading Study

RWDI #1011813
December 17, 2012

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Appendix A: Wind Tunnel Procedures
Appendix B: Structural Dynamic Properties

1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Gehry Partners – AECOM – JV to study the wind loading on the proposed Dwight D. Eisenhower Memorial Tapestry in Washington, D.C.

The proposed Dwight D. Eisenhower Memorial site is surrounded by Independence Ave to the North, 6th Street to the West, 4th street to the East and the U.S. Department of Education, Lyndon Baines Johnson Building to the South. The memorial will replace the existing portion of Maryland Ave which runs diagonally through the site. The site footprint is approximately 250 feet by 550 feet. The site contains various small structures, screens and landscaping, including restrooms, sculptural relief blocks, memorial colonnades and three large tapestries reaching approximately 75 feet above ground.

The objectives of this study were

i. to determine the drag coefficients of two full-scale tapestry samples;

ii. to provide wind loading information for the overall structural design of the proposed tapestries under normal conditions; and,

iii. to provide wind loading information for the overall structural design of the proposed tapestries under iced conditions.

The following table summarizes relevant information about the design team, recommendations, and the governing parameters:

Project Details:		
	Project Manager & Architect of Record	Gehry Partners LLP of Los Angeles, CA
	Design Architect	Gehry Partners LLP of Los Angeles, CA
	Structural Engineer	Magnusson Klemencic Associates of Seattle, WA
Key Results and Recommendations:		
	Coordinate System for Structural Loading	Figure 5
	Recommended Wind Pressures	Table 2a (normal condition) Table 2b (iced condition)
	Determination of Forces from Pressures	Table 3
	Recommended Wind Load Combination Factors	Table 4
Selected Analysis Parameters:		
	Basic Wind Speed per ASCE 7-05	90 mph (3-second gust) at 33 ft in open terrain
	Importance Factor on Wind Pressure	1.15

The wind tunnel test procedures met or exceeded the requirements set out in Section 6.6 of the ASCE 7-05 Standard. The following sections outline the test methodology for the current study, and discuss the recommendations. Appendix A provides additional background information on the testing and analysis procedures for this type of study.

2. METHODOLOGY

To achieve the objectives of this study, RWDI carried out specific wind tunnel research as described in the following sections. Due to the unique nature of the proposed tapestries, static force tests were conducted to determine representative drag coefficients for two full-scale tapestry samples, hereafter referred to as 'large' sample and 'small' sample. The results from this testing were used to adjust the pressure data obtained on a 1:250 scale model of the tapestry. The pressure tests on each tapestry bay provided wind loading in the direction perpendicular to the tapestries, and simultaneous measurements over the entire 5-bay South Tapestry. However, since it is difficult to obtain reliable wind loads on porous structures based on pressure data alone, high-frequency force balance (HFFB) tests on a 1:250 scale model were also performed to obtain more accurate wind load information on individual tapestry bays. The force balance tests provided wind loading perpendicular to the plane of the tapestries, and augmented the wind loads determined from the pressure tests.

2.1 Drag Coefficient Tests

The large tapestry sample was inserted into a steel frame and mounted on a spring suspension system, which was built directly into the side walls of the wind tunnel with the springs located outside the tunnel walls. The wind loading on the tapestry sample was measured using strain-gauges flexures attached to the assembly. For the measurement the static drag forces of the sample, stiff springs were used to eliminate the motion of the model. Tests were conducted with and without the tapestry in place to quantify the force on the steel frame alone, which was subsequently removed in the calculation of the drag force on the tapestry only. Drag forces were measured for the following angles of attack: -25°, -20°, -10°, 0°, +10°, +20°, and +25°. The angle of attack is defined as the inclination of the wind relative to the horizontal plane. An angle of attack of 0° corresponds to horizontal winds perpendicular to the tapestry plane.

For the small tapestry sample, the adopted testing method is based on the high-frequency force balance (HFFB) technique which is primarily used for buildings. The force balance used for these studies consists of flexural elements instrumented with strain gauges which are calibrated to measure bending and twisting responses. The small sample, which included a metal frame around the perimeter, was mounted vertically on a force balance to measure drag force. Tests with the long direction of the small sample oriented horizontally and vertically were carried out, and the measured drag forces were similar. As in the case of the large sample, tests were conducted with and without the tapestry in place to quantify the force on the metal frame alone, which was subsequently removed in the determination of the drag force on the tapestry only. The force balance was shrouded by a plastic tube so that that only wind loading on the test section would be measured. The entire system was installed on a turntable to vary the angle of attack. The tests were conducted at angles of attack ranging from -30° to +30° at 10° increments in both horizontal and vertical orientations of the sample. An angle of attack of 0° corresponds to winds perpendicular to the tapestry plane.

The static force (drag) coefficients were calculated by normalizing the drag forces measured on the tapestry samples as follows:

$$C_d = \frac{F_{drag}}{\frac{1}{2}\rho U^2 dB}, \quad (2\text{-}1)$$

where

- F_{drag} is lateral force (drag, lbf);
- ρ is the air density (0.07647 lb/ft^3);
- U is the mean wind speed at the center of the tapestry sample (ft/s);
- d, the representative depth of the sample (taken as d = 2.1 ft for large sample and 0.71 ft for small sample); and
- B is the representative width of the sample (taken as B = 4.0 ft for large sample and 1.2 ft for small sample).

The drag force measured for both samples was consistent over the tested wind speed range of 20 ft/s to 60 ft/s. Selected results for a single wind speed are plotted in Figure 1a for the large sample and Figure 1b for the small sample. Each of these figures also includes a photograph of the tapestry sample in the wind tunnel. It can be seen that the drag coefficient, C_d, for both samples is at its highest value for winds perpendicular to the tapestry plane (i.e., 0° angle of attack), and decreases with either positive or negative angle of attack.
The maximum coefficient from all tests was 0.7 for the large sample and 0.45 for the small sample. These values were used to adjust the measurements obtained using the 1:250 scale models as described in the next section.

2.2 1:250 Scale Wind Tunnel Tests

2.2.1 Pressure Tests

A 1:250 scale model of the proposed development was constructed using the architectural drawings listed in Table 1. The porosity of the scale model was varied spatially to approximate the changing density of the interwoven strands of the tapestries. Taps and instrumentation that measure fluctuating wind pressure were installed on the front and back surfaces of the tapestries. The tests were conducted on the porous model representing 'normal' conditions and on a solid model representing a fully iced-up condition. The same scale model was used for both conditions; the openings in the porous model were covered using a paper-thin membrane to achieve a solid wind-blockage front surface. Photographs of the porous scale model in the boundary layer wind tunnel are shown in Figure 1c.

The mean pressure, the root-mean-square of pressure fluctuations and the peak negative and peak positive pressures were measured at each tap using a system capable of responding to pressure

fluctuations as short as 0.5 to 1 second at full scale. Measurements were taken for 36 wind directions spaced 10 degrees apart. The measured data were converted into pressure coefficients based on the measured upper level mean dynamic pressure in the wind tunnel. Time histories of the instantaneous pressure fluctuations at all tap locations were recorded and saved for post-test analysis.

The methodology for determining the wind loads from pressure measurements involved the following steps:

1. Measurements of weighted, area-averaged pressures on a rigid scale model of the development in a wind tunnel in order to determine the mean and background fluctuating loads.

2. Analysis of the wind tunnel data to determine the dynamic amplification effects on the fluctuating wind loads, caused by the motion of the structure, and also to determine the wind directions which produced the highest wind loads for the load cases of interest.

3. Determination of the effective peak pressure distributions that produce the highest wind loads for the load cases of interest.

The wind pressure patterns affecting the structure vary both spatially and with time and are very complex. The force or stress generated in any one component of the structure depends, to some extent, on the continually changing pressure pattern over the entire structure. For the design of a structural element, the relevant wind loads are those acting simultaneously over the element's tributary area. For example, assume one loading condition of interest to be, that which causes the highest lateral force perpendicular to the tapestries. In this case, to determine the lateral force L, one would need to determine the highest instantaneous value of

$$L = p_1 A_{1p} + p_2 A_{2p} + p_3 A_{3p} + \ldots$$

where p_1, p_2, p_3, etc. are the instantaneous pressures measured at representative pressure taps 1, 2, 3, etc. and A_{1p}, A_{2p}, A_{3p}, etc. are the tributary areas associated with each of the pressure taps. Each term in the above summation is the contribution to the force coming from one of the areas. Because of lack of correlation of the wind pressures over the specific area, the individual terms do not all reach their peak at the same instant. Therefore, to determine the true peak force, it is important to carry out the above summation on a continuous and instantaneous basis. The results are usually expressed in coefficient form. For example, in the case of the lateral force, the force is divided by the reference gradient wind pressure q_g, and the tributary area of the section A, to obtain

$$\frac{L}{q_g A} = \frac{1}{q_g}\left(\frac{p_1 A_{1p}}{A} + \frac{p_2 A_{2p}}{A} + \frac{p_3 A_{3p}}{A} + \ldots\right)$$

The summation in the brackets on the right hand side, obtained on an instantaneous basis from the wind tunnel, is the overall lateral force divided by the projected area and so is an area-averaged pressure.

The above discussion represents one pressure pattern. Since it is impractical to analyse the structure for every possible wind pressure pattern that might occur, it is necessary (as is effectively done by building codes in very simplified ways) to select from the wind tunnel results certain loading scenarios that tend to be dominant and that are likely to stress the structure in important ways. In this study, since the structural system includes tensioned cables between support columns, the primary loading scenarios of concern are those related to the lateral force perpendicular to the tapestries which can produce high tension in the cables to resist it.

For flexible, lightly damped structures with relatively low natural frequencies, the inertial loads due to wind-induced structural motion can add a significant contribution to the overall wind loads. The structural wind load distributions were determined by considering the mean and fluctuating wind loading for aerodynamically important wind directions. The fluctuating wind loads are due to wind turbulence and the dynamic response of the structure. For the present study, natural frequencies and animation files for the fundamental modes of vibrations of the structure were received from the structural engineers on February 15, 2012 (see Appendix B). Allowances for the effects of dynamic response were primarily based on the provided natural frequencies along with a low damping level.

2.2.2 Force Balance Tests

In addition to the pressure tests discussed in the previous section, force balance tests were carried out to obtain wind load information on individual tapestry bays through an alternative test technique. By using this approach, the drag forces and overturning moments in the two principle directions, along with torsion, were obtained for each test location. Two test models were constructed, each representing a single tapestry bay: one model was tested in the East and West Tapestry locations, and the other was tested in three out of the five bays in the South Tapestry (i.e., the two (2) end bays and the center bay). Non-instrumented tapestry bays were also constructed to complete the full tapestry structures. The model porosities of the force balance models were the same as the pressure models, and similarly to the pressure tests, force balance testing was conducted on the porous model representing 'normal' conditions and on a solid model representing a fully iced-up condition. Photographs of the porous and solid scale models in the boundary layer wind tunnel are shown in Figure 1d.

The force balance data were used to determine wind loading in the plane of the tapestries, and augment the wind loads obtained from the pressure tests, which were adjusted using the drag coefficient information discussed in Section 2.1.

2.2.3 Surroundings and Upwind Profiles

The 1:250 scale models of the proposed Dwight D. Eisenhower Memorial were tested in the presence of all existing surroundings within a full-scale radius of 1000 ft, in RWDI's 8 ft × 6.5 ft boundary layer wind tunnel facility in Guelph, Ontario. An orientation plan showing the location of the study site is given in Figure 2.

Beyond the modeled area, the influence of the upwind terrain on the planetary boundary layer was simulated in the testing by appropriate roughness on the wind tunnel floor and flow conditioning spires at

the upwind end of the working section for each wind direction. This simulation and subsequent analysis of the data from the model were targeted to represent the following upwind terrain conditions. Wind direction is defined as the direction from which the wind blows, measured clockwise from true north.

Upwind Terrain	Wind Directions (Inclusive)
Suburban – terrain with many low buildings	10° to 170°, 290° to 360°
Modified Suburban – suburban terrain modified to account the Potomac River upwind of the study site	180° to 280°

3. WIND CLIMATE

In order to predict the full-scale wind loading as a function of return period, the 1:250 scale wind tunnel data were combined with a statistical model of the local wind climate. The wind climate model was based on local surface wind measurements taken at Ronald Reagan Washington National Airport.

The wind climate model was scaled so that the magnitude of the wind velocity for the 50-year return period corresponded to a 3-second gust wind speed of 90 mph at a height of 33 ft in open terrain. This value is consistent with that identified for Washington D.C. in the ASCE 7-05 Standard. The wind loads provided herein also include a wind load importance factor of 1.15 to account for the fact that this memorial is a unique, important national structure that should be designed to a higher level of structural reliability. The inclusion of the importance factor effectively increases the return period from 50 to 100 years.

The wind climate for Washington D.C. is illustrated by the plots in Figure 3. The upper four plots show, based on the wind climate model, the relative probability that wind speeds associated with various return periods will be exceeded from each wind direction.

4. RECOMMENDED DESIGN WIND LOADS

For the structural design of the proposed memorial in normal and iced conditions, we recommend that consideration be given to the wind load information contained in Tables 2a and 2b, respectively, which are described below. The key plan for the pressure zones from these tables is presented in Figure 4. The wind loads provided in Table 2a report are based on the 50-year return period basic wind speed of 90 mph (3-second gust) at a height of 33 ft in open terrain and an importance factor of 1.15. RWDI also conducted an analysis of the full-scale meteorological data to assess a wind speed to be applied concurrently with the ice load for this structure. As a result, the wind loads provided in Table 2b report are based on the 50-year return period basic wind speed of 75 mph and an importance factor of 1.0. As the radial ice thickness in the Washington area will likely not completely fill the openings of the tapestries, the recommendations in Table 2b are based on a combination of the porous and solid test data.

The wind pressures provided for each load case are to be applied to all surfaces simultaneously. The provided loads are net pressures, which consider the instantaneous pressure difference across the tapestries. These wind pressures are to be applied normal to the front surface of each tapestry. These

pressures act in the Y direction (Py) shown in Figure 5; positive pressures are defined to act inwards towards the front surface, and negative pressures act outwards.

For each load case, the magnitude of the forces in the Y and X directions should be determined using the equations in Table 3, with positive directions defined in Figure 5. These forces should be used with the load combinations given in Table 4. Forces derived from the use of Table 3, are based on the solid area (including ice coverage where appropriate) in each pressure zone. The pressures provided are approximately based on solidity ratios as depicted in Figure 4. RWDI should be contacted to review the impact on these recommendations if significant revisions of the solidity ratios occur.

The following summarizes the overall structural wind load cases provided in Tables 2a and 2b.

Load Cases 1a and 1b (LC1a & LC1b) provide the maximum positive and negative pressure distributions acting on the East Tapestry (Tapestry Location A).

Load Cases 2a and 2b (LC2a & LC2b) provide the maximum positive and negative pressure distributions acting on the east-end bay of the South Tapestry (Tapestry Location B), with simultaneous loading on the remaining bays.

Load Cases 3a and 3b (LC3a & LC3b) provide the maximum positive and negative pressure distributions acting on Tapestry Location C, with simultaneous loading on the remaining bays.

Load Cases 4a and 4b (LC4a & LC4b) provide the maximum positive and negative pressure distributions acting on the middle bay of the South Tapestry (Tapestry Location D), with simultaneous loading on the remaining bays.

Load Cases 5a and 5b (LC5a & LC5b) provide the maximum positive and negative pressure distributions acting on Tapestry Location E, with simultaneous loading on the remaining bays.

Load Cases 6a and 6b (LC6a & LC6b) provide the maximum positive and negative pressure distributions acting on the west-end bay of the South Tapestry (Tapestry Location F), with simultaneous loading on the remaining bays.

Load Cases 7a and 7b (LC7a & LC7b) provide the maximum positive and negative pressure distributions acting on the West Tapestry (Tapestry Location G).

For the wind loading on the columns, use the same pressure that is given for the adjacent tapestry. This pressure should be applied to the frontal area of the column in the appropriate direction.

The wind loads provided in this report include the effects of directionality in the local wind climate. These loads do not contain safety or load factors and are to be applied to the structural systems in the same manner as would wind loads calculated by code analytical methods.

5. APPLICABILITY OF RESULTS

5.1 The Proximity Model

The structural wind loads determined by the wind tunnel tests and the associated analysis are applicable for the particular configuration of surrounding buildings modeled. City development over time can cause changes in the surroundings from those tested, resulting in loads that could differ from those predicted in this report.

Changes in surroundings can be divided into two categories:

a) addition or demolition of buildings far upwind, having the effect of changing the roughness of the earth's surface and thereby changing the general wind exposure of the site; and

b) addition or demolition of buildings close to the site, which can cause changes in the local flow patterns about the memorial.

Based on the past history of city developments it appears that, with respect to Category (a), development over time is far more likely to increase rather than reduce building density. This implies that the development over time would more likely diminish loads on the memorial rather than increase them. With respect to Category (b), the wind tunnel tests were conducted to represent the current state of the development of the nearby surroundings. If, at a later date, additional buildings besides those considered in the tested configuration are constructed near the project site, then some load changes could occur. Unless, however, a building of unusual stature is constructed nearby, the normal use of safety or load factors can be expected to cover the potential increases in structural loads.

5.2 Study Model and Structural Properties Information

The results presented in this report pertain to 1) the structural properties, as shown in Appendix B, and 2) the scale model of the proposed development, constructed using the architectural information listed in Table 1. Should there be any design changes that deviate substantially from the above information, the results for the revised design may differ from those presented in this report. Therefore, if the design changes, RWDI should be contacted and requested to review the impact on the wind loads.

TABLES

TABLE 1: LIST OF DRAWINGS AND INFORMATION USED FOR MODEL CONSTRUCTION

The drawings and information listed below were received from Gehry Partners – AECOM -JV and were used to construct the scale model of the proposed Dwight D. Eisenhower Memorial in Washington, D.C. Should there be any design changes that deviate from this list of drawings, the results may change. Therefore, if changes in the design area made, it is recommended that RWDI be contacted and requested to review their potential effects on wind pressures presented in this report.

File Name	File Type	Date Received (dd/mm/yyyy)
2012-01-19_GPLA_EISNM_ARC_ALL.3dm	Rhino	19/01/2012
T0079.pdf	PDF	03/02/2012

Table 2a: Recommended Wind Pressures under Normal Conditions

Tapestry Location (see Figure 4)	A		B		C		D		E		F		G	
Load Case Number	LC1a	LC1b	LC2a	LC2b	LC3a	LC3b	LC4a	LC4b	LC5a	LC5b	LC6a	LC6b	LC7a	LC7b
Pressure Zone (see Figure 4)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)
A1	**34**	**-16**	--	--	--	--	--	--	--	--	--	--	--	--
A2	**30**	**-16**	--	--	--	--	--	--	--	--	--	--	--	--
A3	**24**	**-12**	--	--	--	--	--	--	--	--	--	--	--	--
B1	--	--	**18**	**-10**	10	-6	10	-6	10	-6	10	-2	--	--
B2	--	--	**16**	**-10**	8	-4	8	-4	8	-6	8	-2	--	--
B3	--	--	**12**	**-10**	6	-4	6	-4	6	-4	6	-2	--	--
C1	--	--	8	-4	**16**	**-10**	12	-6	12	-6	12	-4	--	--
C2	--	--	6	-6	**14**	**-10**	10	-6	10	-6	10	-4	--	--
C3	--	--	6	-6	**10**	**-10**	8	-4	8	-6	8	-2	--	--
D1	--	--	4	-4	10	-4	**12**	**-10**	10	-4	10	-4	--	--
D2	--	--	6	-6	10	-4	**12**	**-10**	10	-6	10	-4	--	--
D3	--	--	6	-6	6	-4	**10**	**-10**	6	-6	6	-4	--	--
E1	--	--	6	-6	10	-4	10	-4	**12**	**-10**	10	-4	--	--
E2	--	--	4	-6	8	-4	8	-4	**10**	**-10**	8	-4	--	--
E3	--	--	6	-10	6	-2	6	-2	**10**	**-12**	6	-4	--	--
F1	--	--	6	-8	10	-4	10	-4	10	-8	**10**	**-10**	--	--
F2	--	--	4	-8	8	-2	8	-2	8	-8	**10**	**-10**	--	--
F3	--	--	6	-10	8	-2	8	-2	8	-10	**10**	**-10**	--	--
G1	--	--	--	--	--	--	--	--	--	--	--	--	**24**	**-28**
G2	--	--	--	--	--	--	--	--	--	--	--	--	**22**	**-24**
G3	--	--	--	--	--	--	--	--	--	--	--	--	**16**	**-22**

Notes:

1. The structural wind loads DO NOT contain load or safety factors and are to be applied to the structural systems in the same manner as would wind loads calculated by code analytical methods.

2. The above loads correspond to a 50-Year Basic Wind Speed of 90 mph and an Importance Factor of 1.15.

3. The wind pressures provided for each load case are to be applied to all surfaces simultaneously.

4. The wind pressures provided are to be applied normal to the front surface of each tapestry. These pressures act in the Y direction (Py); positive pressures are defined to act inwards towards the front surface, and negative pressures act outwards.

5. For each load case, the magnitude of the forces in the Y and X directions should be determined using the equations in Table 3, with positive directions defined in Figure 5. These forces should be used with the load combinations given in Table 4.

6. The provided loads are net pressures, which consider the instantaneous pressure difference across the tapestries.

7. For the wind loading on the columns, use the same pressure that is given for the adjacent tapestry. This pressure should be applied to the frontal area of the column in the appropriate direction.

8. The tributary areas associated with each pressure zone are shown in Figure 4.

9. Forces derived from the use of Table 3, are based on the solid area in each pressure zone (Figure 4). The pressures provided are approximately based on solidity ratios as depicted in Figure 4. RWDI should be contacted to review the impact on these recommendations if significant revisions of the solidity ratios occur.

Table 2b: Recommended Wind Pressures to be Combined with Ice Load

Tapestry Location (see Figure 4)	A		B		C		D		E		F		G	
Load Case Number	LC1a	LC1b	LC2a	LC2b	LC3a	LC3b	LC4a	LC4b	LC5a	LC5b	LC6a	LC6b	LC7a	LC7b
Pressure Zone (see Figure 4)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)	Pos. (psf)	Neg. (psf)
A1	**21**	**-9**	--	--	--	--	--	--	--	--	--	--	--	--
A2	**18**	**-8**	--	--	--	--	--	--	--	--	--	--	--	--
A3	**17**	**-7**	--	--	--	--	--	--	--	--	--	--	--	--
B1	--	--	**11**	**-6**	6	-4	6	-4	6	-4	6	-1	--	--
B2	--	--	**10**	**-6**	7	-4	7	-4	7	-4	7	-1	--	--
B3	--	--	**11**	**-6**	7	-4	7	-4	7	-5	7	-1	--	--
C1	--	--	6	-3	**10**	**-6**	8	-4	8	-4	8	-2	--	--
C2	--	--	6	-4	**10**	**-6**	8	-4	8	-4	8	-2	--	--
C3	--	--	7	-5	**11**	**-6**	9	-5	9	-5	9	-2	--	--
D1	--	--	3	-3	7	-3	**8**	**-6**	7	-3	7	-2	--	--
D2	--	--	5	-4	8	-3	**9**	**-6**	8	-4	8	-2	--	--
D3	--	--	6	-5	9	-4	**11**	**-6**	9	-5	9	-2	--	--
E1	--	--	4	-3	7	-3	7	-3	**8**	**-6**	7	-2	--	--
E2	--	--	4	-3	7	-2	7	-2	**8**	**-6**	7	-2	--	--
E3	--	--	5	-4	8	-2	8	-2	**9**	**-6**	8	-2	--	--
F1	--	--	4	-5	7	-3	7	-3	7	-5	**7**	**-6**	--	--
F2	--	--	4	-5	7	-2	7	-2	7	-5	**8**	**-6**	--	--
F3	--	--	5	-6	8	-2	8	-2	8	-6	**11**	**-7**	--	--
G1	--	--	--	--	--	--	--	--	--	--	--	--	**15**	**-16**
G2	--	--	--	--	--	--	--	--	--	--	--	--	**13**	**-13**
G3	--	--	--	--	--	--	--	--	--	--	--	--	**12**	**-12**

Notes:

1. The structural wind loads DO NOT contain load or safety factors and are to be applied to the structural systems in the same manner as would wind loads calculated by code analytical methods.

2. The above loads correspond to a 50-Year Basic Wind Speed of 75 mph and an Importance Factor of 1.0.

3. The wind pressures provided for each load case are to be applied to all surfaces simultaneously.

4. The wind pressures provided are to be applied normal to the front surface of each tapestry. These pressures act in the Y direction (Py); positive pressures are defined to act inwards towards the front surface, and negative pressures act outwards.

5. For each load case, the magnitude of the forces in the Y and X directions should be determined using the equations in Table 3, with positive directions defined in Figure 5. These forces should be used with the load combinations given in Table 4.

6. The provided loads are net pressures, which consider the instantaneous pressure difference across the tapestries.

7. For the wind loading on the columns, use the same pressure that is given for the adjacent tapestry. This pressure should be applied to the frontal area of the column in the appropriate direction.

8. The tributary areas associated with each pressure zone are shown in Figure 4.

9. Forces derived from the use of Table 3 are based on the solid area, including ice coverage, in each pressure zone (Figure 4). The pressures provided are approximately based on solidity ratios as depicted in Figure 4. RWDI should be contacted to review the impact on these recommendations if significant revisions of the solidity ratios occur.

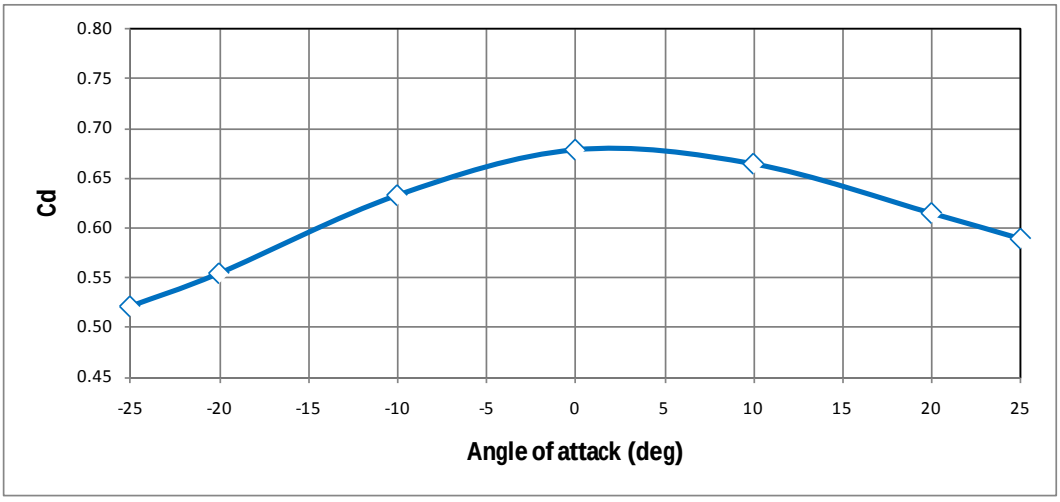
Table 3: Determination of Forces from Pressures (Py) in Tables 2a and 2b

Pressure Zone (see Figure 4)	Magnitude of Forces in Y and X directions	
	Fy =	Fx =
A1	Py · Solid AreaA1	1.0 · Fy
A2	Py · Solid AreaA2	1.0 · Fy
A3	Py · Solid AreaA3	1.0 · Fy
B1	Py · Solid AreaB1	0.5 · Fy
B2	Py · Solid AreaB2	0.5 · Fy
B3	Py · Solid AreaB3	0.5 · Fy
C1	Py · Solid AreaC1	0.75 · Fy
C2	Py · Solid AreaC2	0.75 · Fy
C3	Py · Solid AreaC3	0.75 · Fy
D1	Py · Solid AreaD1	0.75 · Fy
D2	Py · Solid AreaD2	0.75 · Fy
D3	Py · Solid AreaD3	0.75 · Fy
E1	Py · Solid AreaE1	0.75 · Fy
E2	Py · Solid AreaE2	0.75 · Fy
E3	Py · Solid AreaE3	0.75 · Fy
F1	Py · Solid AreaF1	0.75 · Fy
F2	Py · Solid AreaF2	0.75 · Fy
F3	Py · Solid AreaF3	0.75 · Fy
G1	Py · Solid AreaG1	0.5 · Fy
G2	Py · Solid AreaG2	0.5 · Fy
G3	Py · Solid AreaG3	0.5 · Fy

Table 4: Recommended Wind Load Combination Factors

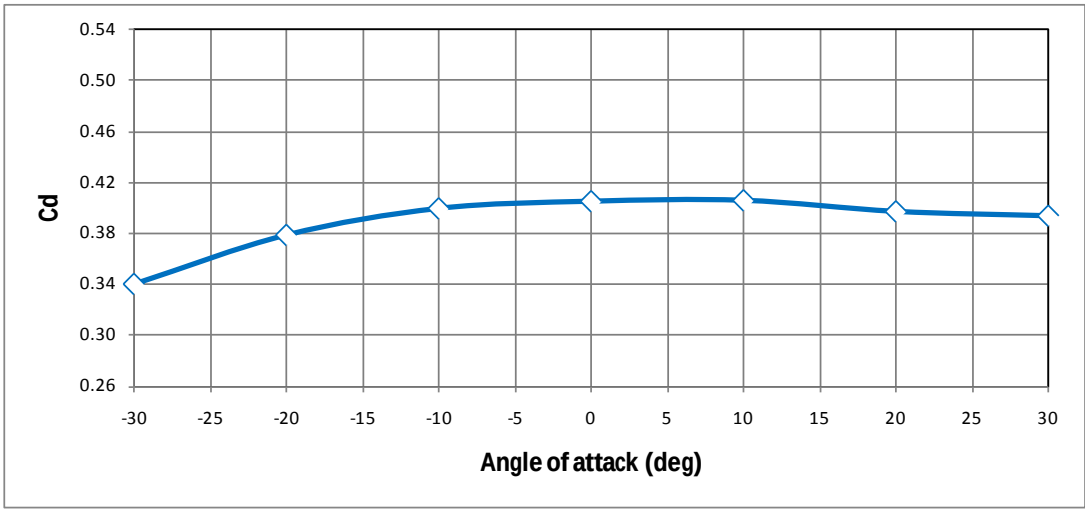
Combination Case	Factor for Simultaneous Application of Loads from Table 3	
	Y Forces (Fy - see Figure 5)	X Forces (Fx - see Figure 5)
1	100%	0%
2	50%	100%
3	-50%	100%

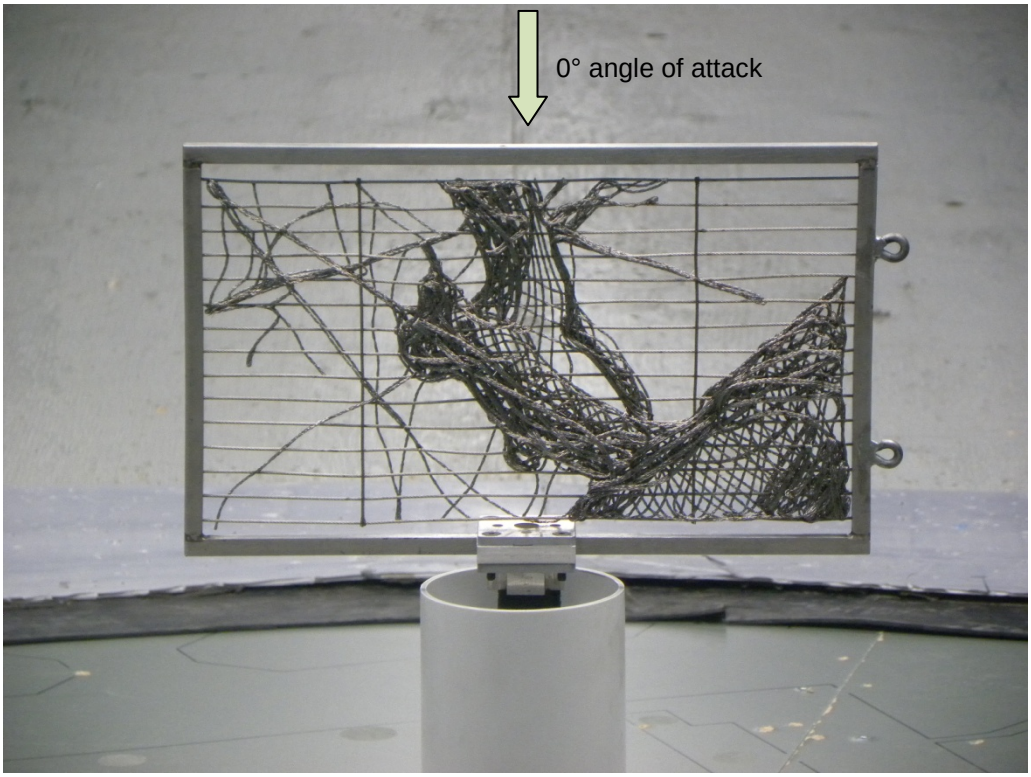
FIGURES



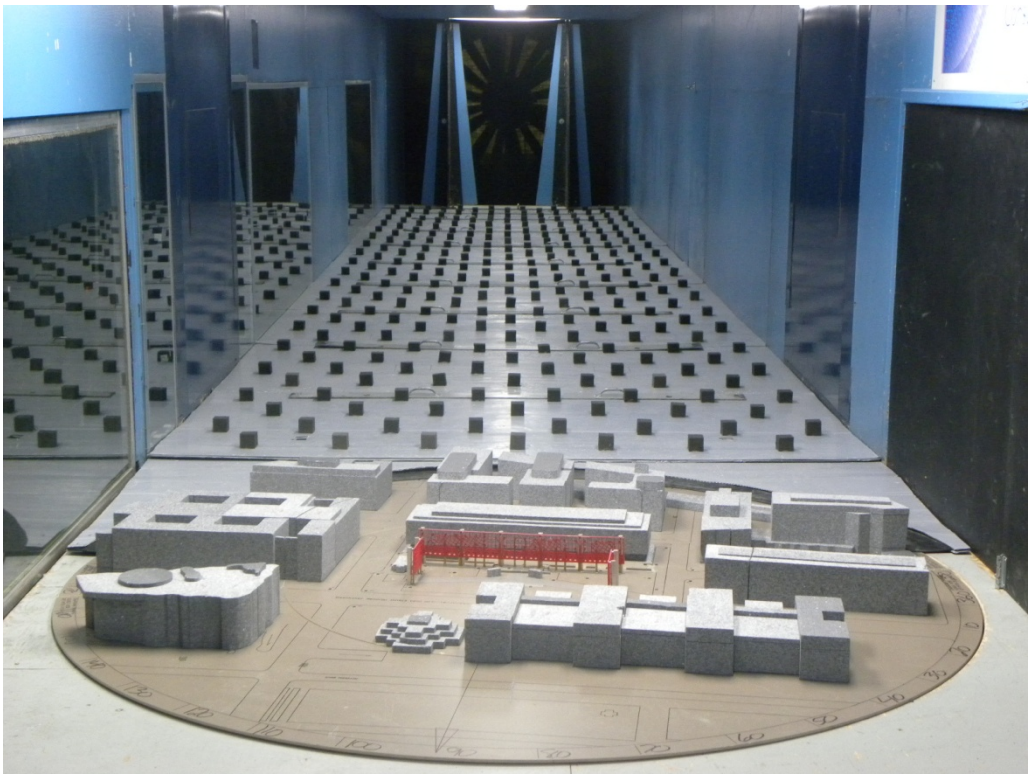


Measured Drag Coefficient (C_d) – Large Tapestry Sample	Figure No. 1a	RWDI
Dwight D. Eisenhower Memorial – Washington, DC Project #1011813	Date: May 24, 2012	



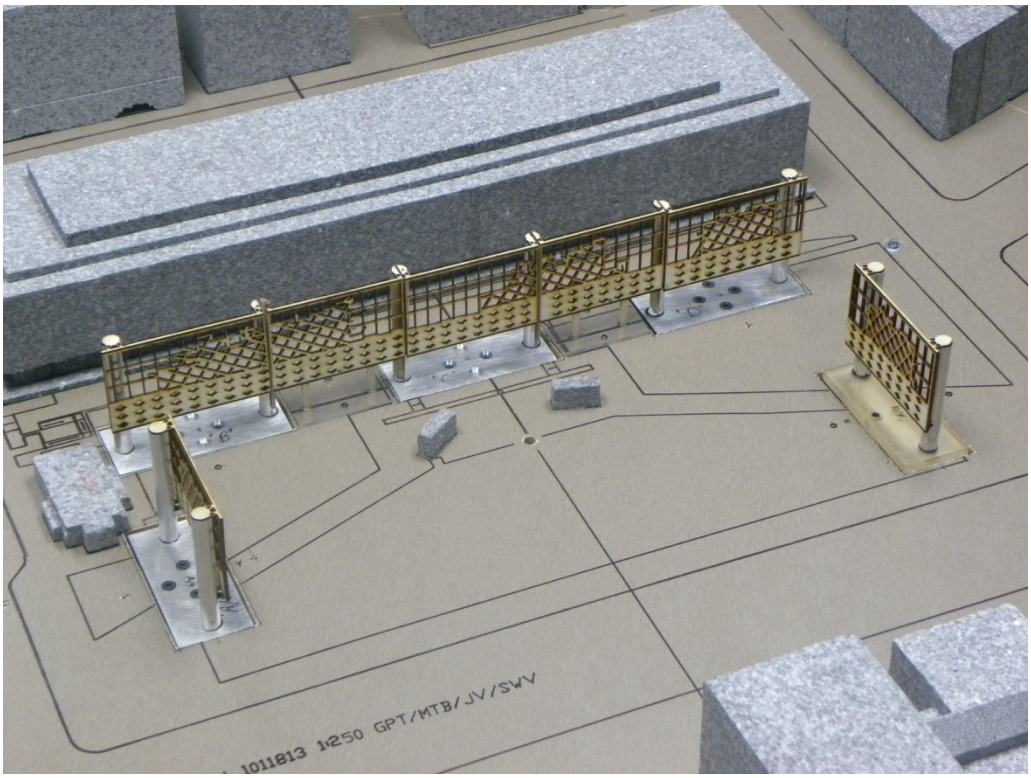


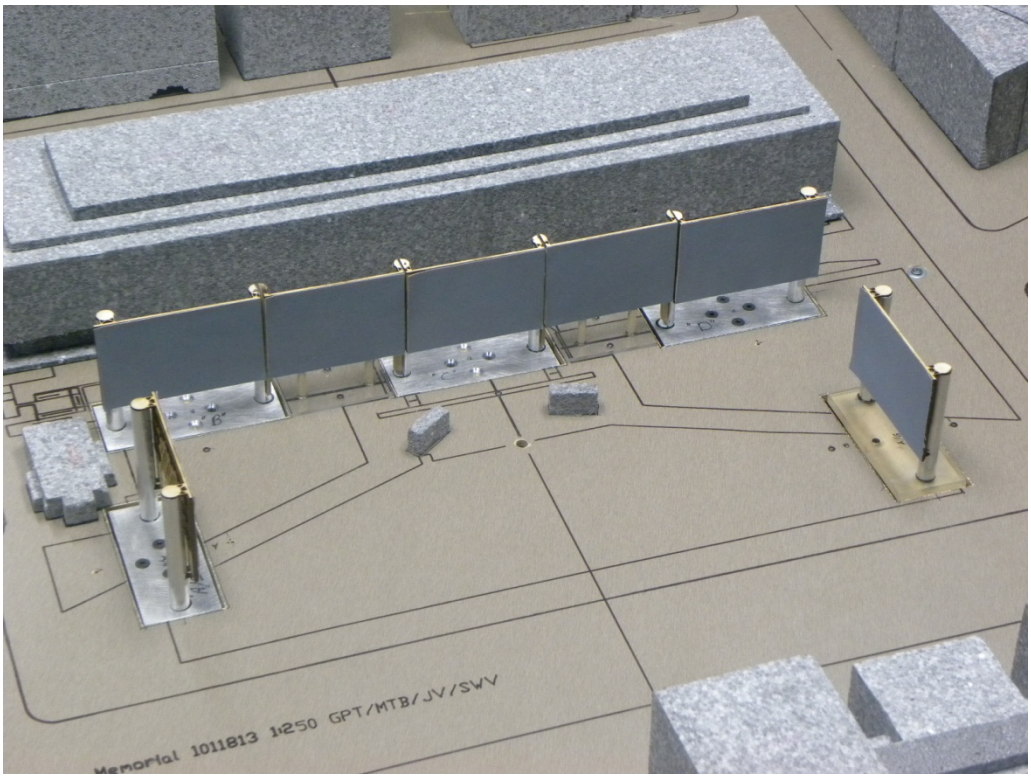
Measured Drag Coefficient (C_d) – Small Tapestry Sample	Figure No. 1b	RWDI
Dwight D. Eisenhower Memorial – Washington, DC Project #1011813	Date: May 24, 2012	



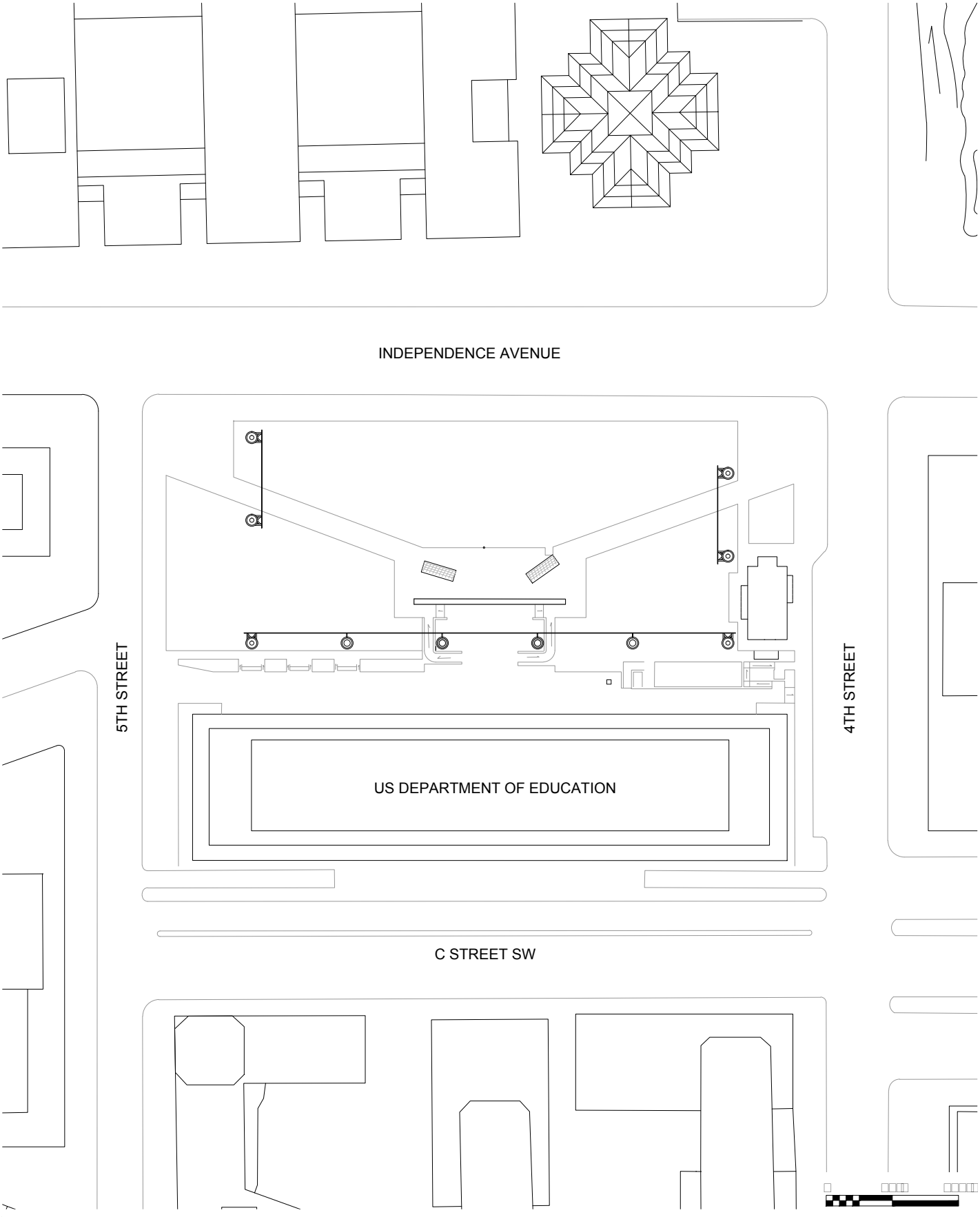


1:250 Scale Wind Tunnel Study Model – Pressure Tests **Porous Tapestry Condition**	Figure No. 1c	RWDI
Dwight D. Eisenhower Memorial – Washington, DC Project #1011813	Date: May 24, 2012	





1:250 Scale Wind Tunnel Study Model – Force Balance Tests **Porous (top photo) and Solid (bottom photo) Tapestry Conditions**	Figure No. 1d	RWDI
Dwight D. Eisenhower Memorial – Washington, DC Project #1011813	Date: May 24, 2012	



Site Plan

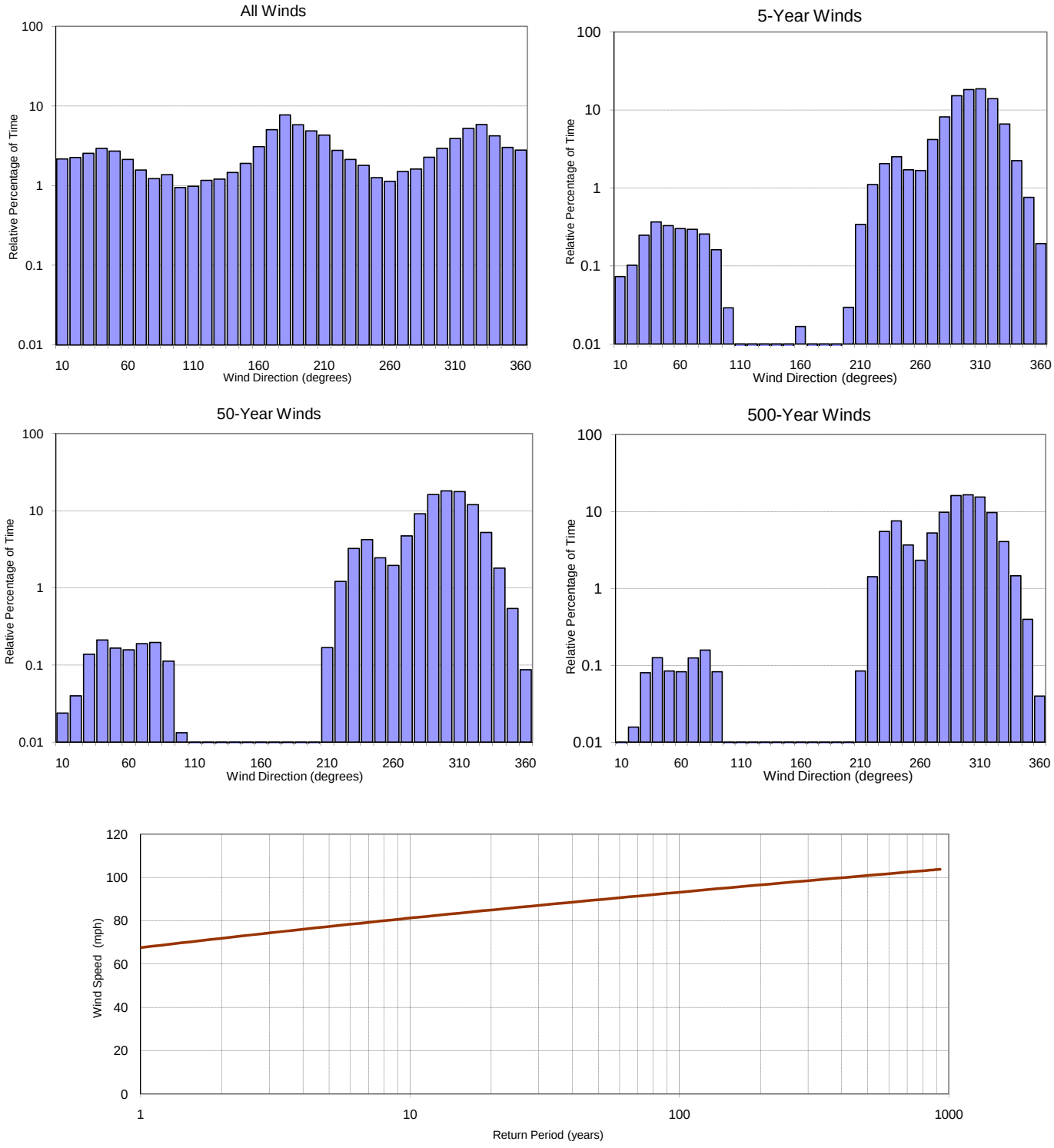
True North

Dwight D. Eisenhower Memorial - Washington, DC

Project #1011813

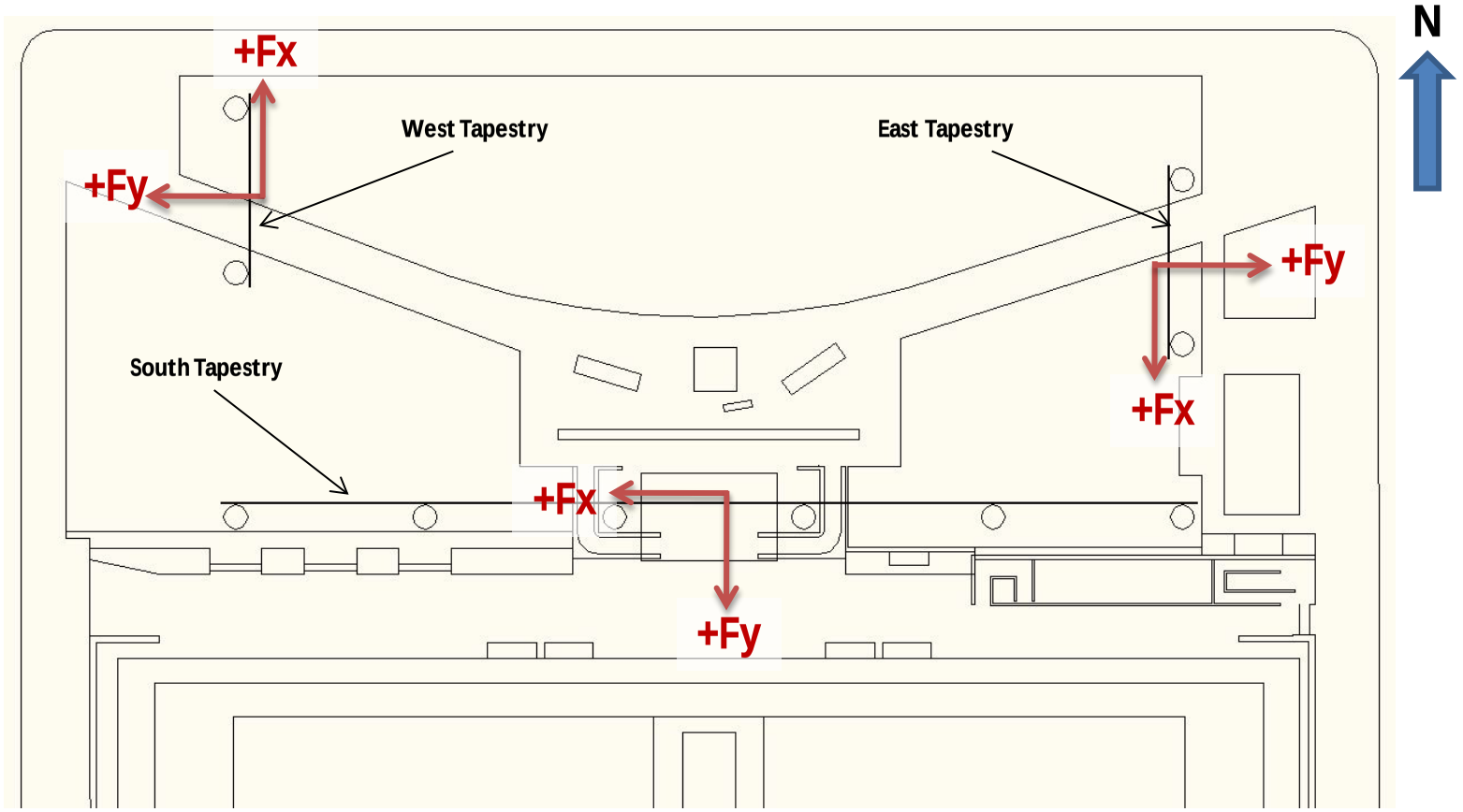
Drawn by: SMR	Figure:	2
Approx. Scale:	1"=120'	
Date Revised:	May 9, 2012	

RWDI



Note: Wind Speeds shown are 3-Second Gust Wind Speeds at 33 feet height in Open Terrain

Directional Distribution of Local Wind Speeds	Figure No. 3	RWDI
Dwight D. Eisenhower Memorial - Washington, DC Project #1011813	Date: May 7, 2012	



Coordinate System for Structural Loading	Figure No. 5	RWDI
Dwight D. Eisenhower Memorial – Washington, DC	Project #1011813	Date: May 7, 2012

2.2 GEOTECHNICAL ENGINEERING REPORT

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GeoConcepts Engineering, Inc.

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November 5, 2010

Mr. Sean Rousseau, PE
AECOM
3101 Wilson Boulevard, Suite 900
Arlington, VA 22201

Subject: ***Geotechnical Engineering Report, Dwight D. Eisenhower Memorial, Independence Avenue, SW, Washington, DC (Our 10004)***

Dear Mr. Rousseau:

GeoConcepts Engineering, Inc. (GeoConcepts) is pleased to present this geotechnical engineering report for the above referenced project. These services have been performed in accordance with our proposal dated June 8, 2010.

1.0 Scope of Services

This geotechnical engineering report presents the results of the field investigation, soil laboratory testing, and engineering analysis of the geotechnical data. This report specifically addresses the following:

- An evaluation of subsurface conditions within the area of the proposed site development, including a seismic site classification and site-specific spectral response acceleration parameters per the International Building Code.
- Foundation recommendations for support of the proposed structures and slabs on grade. Both shallow and deep foundations, including ground improvement techniques, have been evaluated.
- Lateral earth pressures for use in site retaining walls, including recommended backfill and subdrainage requirements.
- An assessment of subgrade conditions for support of flexible and rigid pavements, including an estimated design California Bearing Ratio (CBR) value based on soil laboratory classification (CBR) test results.
- Earthwork recommendations for construction of loadbearing fills, including an assessment of on-site soils to be excavated for re-use as fill.
- Recommendations regarding the feasibility of using stormwater management by infiltration, including estimated infiltration rates based on field tests and published correlations with soil classifications.

Services not specifically identified in the contract for this project are not included in the scope of services.

2.0 Site Description and Proposed Construction

The Dwight D. Eisenhower Memorial site is located on south of Independence Avenue between 4th Street and 6th Street in SW, Washington, DC. In addition, Maryland Avenue bisects the site from northeast to southwest. A site vicinity map is provided as Figure 1 at the end of this report. The site is relatively flat at about EL 14 to EL 17, and currently developed with roadways, concrete and tile sidewalks, planters, and a community garden.

We understand that the proposed Eisenhower Memorial will be a plaza type memorial consisting of several small 1-story buildings, block and lintel structures, ancillary site structures and paving, and memorial tapestry columns. We understand that structural loading will not exceed 6 kips per linear foot, expect for the tapestry columns which will have loads of 500 kips in compression and 450 kips in tension.

3.0 Subsurface Conditions

Subsurface conditions were investigated by drilling a total of 15 test borings in the proposed Memorial area. Four of the test borings were performed as dilatometer test (DMT) borings (B-2, B-7, B-8, and B-14), with two of the borings included cone penetration (CPT) testing (B-2 and B-7). Five offset test borings (B-4, B-5, B-9, B-10, and B-15) were also drilled to perform in-situ infiltration tests for evaluation of stormwater management by infiltration. Test boring logs and a boring location plan are presented in Appendix A of this report.

3.1 Stratification

The subsurface materials encountered have been stratified for purposes of our discussions herein. These stratum designations do not imply that the materials encountered are continuous across the site. Stratum designations have been established to characterize similar subsurface conditions based on material gradations and parent geology. The subsurface materials encountered in the test borings completed at the site have been assigned to the following strata:

Stratum A (Existing Fill)	generally medium stiff, sandy lean clay FILL, and generally firm clayey sand and silty sand FILL, with gravel, brick, and organics, moist, brown and gray.
Stratum B1 (Terrace Deposits)	generally medium stiff, sandy LEAN CLAY (CL) , moist, brown.
Stratum B2 (Terrace Deposits)	firm to compact, clayey SAND (SC), silty SAND (SM), POORLY GRADED SAND (SP), and POORLY GRADED GRAVEL (GP), moist to wet, brown.
Stratum C1 (Potomac Group)	stiff, FAT CLAY (CH) and LEAN CLAY (CL), with various amounts of sand, moist, gray and brown.

Stratum C2 (Potomac Group)	compact, clayey SAND (SC), silty SAND (SM), POORLY GRADED SAND (SP-SM) with silt, clayey GRAVEL (GC), and silty GRAVEL (GM), moist to wet, gray.

The two letter designations included in the strata descriptions presented above and on the test boring logs represent the Unified Soil Classification System (USCS) group symbol and group name for the samples based on laboratory testing per ASTM D-2487 and visual classifications per ASTM D-2488. It should be noted that visual classifications per ASTM D-2488 may not match classifications determined by laboratory testing per ASTM D-2487.

3.2 Geology

The site is located in the Coastal Plain Physiographic Province of the District of Columbia. The Coastal Plain consists of a seaward thickening wedge of unconsolidated to semi-consolidated sedimentary deposits from the Cretaceous Geologic Period to the Holocene Geologic Epoch. These deposits represent marginal-marine to marine sediments consisting of interbedded sands and clays. The Coastal Plain is bordered to the east by the Atlantic Ocean and to the west by the Piedmont Physiographic Province. The dividing line between the Coastal Plain and the Piedmont is locally referred to as the "Fall Line". This name comes from the waterfalls that form as a result of the differential erosion that occurs as streams cross the Piedmont/Coastal Plain contact.

The existing fill soils of Stratum A are believed to be related to previous site grading. The natural soils assigned to Strata B and Strata C are believed to be Pleistocene age terrace deposits and Potomac Group sedimentary deposits, respectively. The Potomac Group sediments are the oldest sedimentary deposits in the Washington, DC area. These soils are known to be highly over-consolidated as a result of the weight of a substantial thickness of overlying soils that have since been eroded away. As a result of over-consolidation, Potomac Group soils have been pre-loaded and are capable of supporting substantial loads.

3.3 Groundwater

Groundwater level observations were made in the field during drilling. Longer-term groundwater level readings were obtained in temporary water observation standpipes installed in test borings B-4, B-9, and B-11. Groundwater was encountered at depths of about 21.0 to 28.0 feet below the existing ground surface, or about EL -6 to EL -12. A summary of the water level readings rounded off to the nearest 0.5 feet elevation is presented in the table below.

Test Boring No.	Depth to Groundwater (feet)	Groundwater Elevation (feet)
B-1	23.5	-7.5
B-3	23.5	-9.5

Test Boring No.	Depth to Groundwater (feet)	Groundwater Elevation (feet)
B-4	23.5	-9.5
B-5	27.0	-10.0
B-6	21.0	-6.0
B-9	25.5	-8.5
B-10	28.0	-12.0
B-11	26.5	-10.5
B-12	28.0	-11.0
B-13	27.0	-10.0
B-15	24.5	-9.5

The groundwater observations presented herein are considered to be an indication of the groundwater levels at the dates and times indicated. Also, fluctuations in groundwater levels should be expected with seasons of the year, construction activity, changes to surface grades, precipitation, or other similar factors.

3.4 Soil Laboratory Test Results

Selected soil samples obtained from the field investigation were tested for grain size distribution (with hydrometer), Atterberg limits, compaction characteristics using modified effort, California Bearing Ratio (CBR), natural moisture contents, consolidation, and corrosion series. A summary of soil laboratory test results is presented as Appendix B. The results of natural moisture content tests are presented on the test boring logs in Appendix A.

3.4.1 Classification Test Results

Samples tested from Stratum A classified as LEAN CLAY (CL) and silty SAND (SM) in accordance with the USCS, with about 41 to 71 percent fines passing the U.S. Standard No. 200 sieve. Liquid limits and plasticity indices ranged from 18 to 34, and 3 to 16, respectively. Natural moisture contents ranged from 2.2 to 16.2 percent. Laboratory CBR test results of the Stratum A soil materials expected at pavement subgrades for the on site soils indicate CBR values of 6.0 and 33.5.

Samples tested from Stratum B1 classified as LEAN CLAY (CL) in accordance with the USCS, with about 50 to 75 percent fines passing the U.S. Standard No. 200 sieve. Liquid limits and plasticity indices ranged from 23 to 27, and 8 to 11, respectively. Natural moisture contents ranged from 15.2 to 15.7 percent.

Samples tested from Stratum B2 classified as clayey SAND (SC) and silty SAND (SM) in accordance with the USCS, with about 15 to 32 percent fines passing the U.S. Standard No. 200 sieve.

Liquid limits and plasticity indices ranged from non-plastic (NP) to 40, and NP to 24, respectively. Natural moisture contents ranged from 13.3 to 25.4 percent.

Samples tested from Stratum C2 classified as silty SAND (SM), POORLY GRADED SAND (SP-SM) with silt, POORLY GRADED SAND (SP), clayey GRAVEL (GC), and silty GRAVEL (GM) in accordance with the USCS, with about 5 to 32 percent fines passing the U.S. Standard No. 200 sieve. Liquid limits and plasticity indices ranged from NP to 44, and NP to 22, respectively. Natural moisture contents ranged from 13.3 to 31.8 percent.

3.4.2 Consolidation Test Results

One consolidation test was performed on an undisturbed sample of Stratum A/B1 clay soils. The results of this test are listed below:

Test Boring No.	Sample Depth (feet)	e_o	Pc (tsf)	Cc	Cr	Avg. Cv (in^2/min)
B-13	10.0-12.0	0.511	6.14	0.11	0.01	0.025

e_o = initial void ratio; Pc = preconsolidation pressure; Cc = compression index; Cr = recompression index; Cv = coefficient of consolidation.

These consolidation test results indicate that the Stratum A/B1 clay soils are highly over-consolidated, and have low compressibility.

3.4.3 Corrosion Series Test Results

In addition to standard geotechnical soil laboratory testing, two samples were submitted to an analytical laboratory for metal corrosion and concrete attack testing. Corrosion testing consisted of analysis for moisture content (ASTM D-2216), pH (ASTM 4972), resistivity (ASTM G57), sulfides (SM 4500 S2 – C+E), and reduction-oxidation potential (ASTM D-498 mod.). The results of these tests are presented below:

Test Boring No.	Sample Depth (feet)	Moisture Content (%)	pH	Resistivity (ohm – cm)	Sulfides (ppm)	Red-ox Potential (mV)	Point Total
B-3	5.0-10.0	13.0	4.2	1,800	<1.2	424	11
B-11	5.0-10.0	12.0	7.3	1,900	<1.2	390	8

For each test presented above, points are assigned based on the range of the test results. If the total points from the five tests completed for a particular sample are 10 or more, the soil is considered to be corrosive. The methods described herein are based on information from the American Water Works Association (AWWA). Using the methods described by AWWA, the point total for the sample tested from test boring B-3 is 11, and the point total for the sample tested from test boring B-11 was 8. Accordingly, the site soils are considered corrosive at test boring B-3 and non-corrosive at test boring B-11.

Sulfate (SM 4500504-D) tests were performed on selected soil samples to determine the severity of sulfate attack on concrete structures. The results of sulfate testing are presented in the table below.

Test Boring No.	Sample Depth (feet)	Sulfate Concentration (ppm)
B-3	5.0-10.0	240
B-11	5.0-10.0	390

Based on correlations between sulfate concentrations and severity of sulfate attack as presented in American Concrete Institute (ACI) 318, the above sulfate concentrations are considered to pose a negligible threat of sulfate attack on concrete.

3.5 Seismic Site Classification

Based on the results of the subsurface investigation and our knowledge of local geologic conditions, the site soils have been assigned to a site class D per the International Building Code (IBC). It may be possible to improve the site classification from a "D" to a "C" with in-situ shear wave testing at the site. We can provide this additional service upon request.

The site coefficients and adjusted Maximum Considered Earthquake (MCE) spectral response acceleration parameters were obtained from the USGS computer program, and are presented in the table below.

Mapped Spectral Accelerations for Site Class B and 5% Damping (Step 1)	Site Coefficients to Modify Accelerations Based on Site Classification D (Step 2)
Ss = 0.0.153 (g)	Fa = 1.6
S1 = 0.050 (g)	Fv = 2.4

MCE Spectral Response Accelerations (Step 3)	Design Spectral Response Accelerations (Step 4)
S_{MS} = 0.245 (g) (=Ss*Fa)	S_{DS} = 0.163 (g) (=2/3*S_{MS})
S_{M1} = 0.121 (g) (=S1*Fv)	S_{D1} = 0.080 (g) (=2/3*S_{M1})

4.0 Engineering Analysis

Recommendations regarding foundations, lower floor slabs, lateral earth pressures, pavements, earthwork, and stormwater management by infiltration are presented herein.

4.1 Foundations

The proposed lightly loaded 1-story buildings, block and lintel structures, and ancillary site structures may be supported on spread footings bearing on firm existing fill, natural soils, new compacted

fill, or soils improved with aggregate piers. Auger cast piles bearing on the compact Stratum C2 soils are recommended for support of the proposed tapestry columns. Detailed recommendations for each foundation system are presented in the following sections of this report.

4.1.1 Soil Design Parameters

We recommend the following soil design parameters be used for this project:

Stratum	Effective Unit Weight (pcf)	Angle of Internal Friction (degrees)	Cohesion (psf)	Lateral Earth Pressure Coefficients			Coefficient of Sliding Friction	Horizontal Modulus, k (pci)
				Active Ka	At-Rest Ko	Passive Kp		
Stratum A	120*	30	--	0.33	0.50	3.00	0.30	25
Stratum B1	120*	30	--	0.33	0.50	3.00	0.30	25
Stratum B2	125*	32	--	0.31	0.47	3.25	0.35	50
Stratum C1	58	--	3,000	1.0	1.0	1.0	0.30	400
Stratum C2	63	35	--	0.27	0.43	3.69	0.40	100

* use buoyant weight below EL -6.

4.1.2 Spread Footings (lightly loaded 1-story buildings, block and lintel structures, and ancillary site structures)

Based on the proposed lightly loaded 1-story buildings, block and lintel structures, and ancillary site structures being at about existing grades, firm existing fill, natural soils, or new compacted fill should be encountered at normal spread footing depths. Spread footings founded in these materials are considered suitable for support of the proposed strictures, and may be designed with a net allowable soil bearing pressure of 2,000 psf with a factor of safety of 2.5. It should be feasible to increase the allowable bearing pressure by one-third when considering temporary wind or seismic loads in the total loads. Fill material and compaction requirements are presented in Section 4.5 of this report. In addition, where existing fill is encountered at bearing subgrades, it may be necessary to undercut the existing fill to achieve the design bearing pressure, as determined during bearing inspections during construction.

Exterior footing subgrades should be located at least 2.5 feet below final exterior grades for frost considerations. Individual column footings and continuous wall footings should be at least 30 inches and 18 inches wide, respectively, for local or punching shear considerations. A maximum slope of one horizontal to one vertical (1H:1V) should be maintained between the bottom edges of adjacent footings. Settlement of spread footings should not exceed about 1-inch, and differential settlement between adjacent foundation elements should not exceed about one-half this amount, including not exceeding an

angular distortion of 0.002 inch/inch along continuous wall footings. The vertical spring stiffness is estimated at 50 pci for shallow foundations.

Footing subgrades should be observed and approved prior to placement of concrete, to ascertain that footings are placed on suitable bearing soils as recommended herein. Footings should be excavated and concrete placed the same day in order to avoid disturbance from water or weather. Disturbance of footing subgrades by exposure to water seepage or weather conditions should be avoided. Any existing fill, disturbed, frozen, or soft subgrade soils should be removed prior to placing footing concrete. It may be desirable to place a 3 to 4-inch thick "mud mat" of lean concrete immediately on the approved footing subgrade to avoid softening of the exposed subgrade. Forms may be used if necessary, but less subgrade disturbance is anticipated if excavations are made to the required dimensions and concrete placed against the soil. If footings are formed, the forms should be removed and the excavation backfilled as soon as possible. Water should not be allowed to pond along the outside of footings for long periods of time.

4.1.3 Alternate Spread Footings Supported by Soils Improved with Aggregate Piers (lightly loaded 1-story buildings, block and lintel structures, and ancillary site structures)

Spread footings may be used to support the proposed lightly loaded 1-story buildings, block and lintel structures, and ancillary site structures when founded on soils improved by aggregate piers. Aggregate pier systems are design-build systems and are installed under various trade names. Typically, these elements are constructed by the replacement method by pre-drilling a nominal 30-inch diameter hole into the subsurface soils to the design depth. Subsequently, crushed stone is placed in the hole in lifts and densified with a special, high-energy compactor (probe) until thoroughly compacted. The process repeats until the hole is filled to the ground surface. Upon completion of the aggregate pier installation, conventional spread foundations can be constructed in accordance with commonly accepted methods. We estimate that treatment of this site with aggregate piers will increase the allowable bearing capacity for the design of spread foundations to 5,000 psf with a maximum allowable total settlement less than 1-inch. The actual settlement at the design bearing capacity will be confirmed by the specialty contractor during construction by the performance of a modulus test. We can provide contact information as necessary to engage a qualified aggregate pier contractor. The specific pier design including lengths, support capacities, spacings, and layout should be a coordinated effort between the pier designer and structural engineer.

Aggregate piers can also be installed by the displacement method depending on the site conditions. Displacement (driven) aggregate piers are a ground improvement technique that involves creating a cavity in the ground using specially designed equipment. The cavity is filled with aggregate in layers and each layer is subjected to a compaction process, and the process is repeated. This technique may be preferable to the replacement method in that it doesn't generate spoils.

After designing the support system, the pier foundation installer should provide a cost and time estimate for construction. The estimate should include the cost to provide at least one full-scale pier modulus load test on-site for each building to verify design assumptions. The modulus load test provides a measure of the stiffness of the pier element and will help establish installation procedures for this particular project. We will coordinate with the pier installer to locate the modulus load test in the weakest site areas as disclosed by the field investigation, and to provide full-time quality assurance (QA) monitoring services during load test operations.

The pier production operations should also be monitored on a full-time basis by us as a QA service. Our service will supplement the installer's internal quality control (QC) program. Together the QA/QC program will monitor pier drill depths, diameters, installation procedures, aggregate quality, and densification of lifts. These items will be documented for each pier element installed, to provide a complete installation report.

To implement the use of pier foundations for your project, it is best to contact the pier designer to review the project. Since they will be the designer of record, and stamp the final pier design, it is best to contact them early on in the design process. They can refine the general recommendations presented above, provide design details for footing sizes (and uplift anchors as needed) specific to the actual loads, and provide design advice on how to handle any conflicts with shoring or utilities. Local design requirements will vary, but in general, a statement in the foundations notes should state that, "All footings shall be supported by pier elements and they shall provide sufficient support to control total settlement to within 1.0 inch and differential settlement of adjacent footings to within 0.5 inch for footings designed for a maximum allowable bearing pressure of 5,000 psf." It is also helpful to provide a typical section showing a footing supported by pier elements and standard construction notes which can be obtained from the pier designer.

4.1.4 Auger Cast Piles (Memorial Tapestry Columns)

The use of 14-inch, 16-inch, or 18-inch diameter auger cast piles are recommended for support of the memorial tapestry columns. Piles may be designed for an allowable capacity of 65, 80, or 95 tons, respectively, per pile when bearing in the Stratum C2 soils at or below EL -45, with a factor of safety of 2.0. When extending piles below the recommended bearing elevation, allowable skin friction capacities of 1.5 tons/ft for 14-inch diameter piles, 1.75 tons/ft for 16-inch diameter piles, and 2 tons/ft for 18-inch diameter piles are recommended. Allowable tension capacities of 40 tons, 45 tons, or 50 tons, respectively, per pile are recommended for 14-inch, 16-inch, or 18-inch diameter auger cast piles, respectively, when bearing in the Stratum C2 soils at or below EL -45. Actual pile tip elevations should be based on criteria established during pile load testing as discussed in Section 4.1.5 of this report. Piles should be placed at least 3.0 times the pile diameter, center to center from the nearest pile, to prevent capacity reduction due to pile group action. Settlement of piles should not exceed about 0.75-inches, and differential settlement should not exceed about 0.5-inches.

Auger cast piles are installed by drilling with a hollow stem auger with a plug at the tip of the auger. After the bearing level is reached, a sand-cement grout is placed under pressure through the hollow stem as the augers are withdrawn. The upper portion of the pile is cast to subgrade level and cut off about 6 inches above the bottom of the pile cap. A reinforcing bar should be installed in the upper portion of each pile as determined by the structural engineer. This reinforcement will provide added structural capacity and provide some assurance that the pile will not be damaged during excavation for the pile caps.

For auger cast piles, the center opening should be at least 3-½ inches to limit head loss of grout. A fluidifier should be used to inhibit early setup and to increase fluidity. The grout pump used for pile construction should be a high pressure, positive displacement pump equipped with a stroke counter to allow measurements of grout volume. The pump should be calibrated within 6 months of use on this project. The contractor should establish an accurate method of determining the auger depth at all times, and pressure gauges should be in place for determining grouting pressure. Careful observations and monitoring of the grout pressures and volumes should be provided by the contractor and should be documented by a GeoConcepts field representative. Insufficient grout pressures may result in necking of the piles.

During pumping of grout, the auger withdrawal should be a smooth operation. The auger withdrawal rate should be slower than the rate of grout pumping such that the grout will form a relatively uniform shaft to the surface. Records should be maintained of the grout pumped into the pile at 3 feet to 5 feet intervals. Should the grout take at any interval be less than 120 percent of the theoretical volume, that pile interval should be redrilled and regrouted prior to continuing grout installation. In this case, no consideration of the previously placed grout should occur. The contractor should be prepared to install greater than normal grout volumes due to the soft Stratum B soils. Piles should not be installed within five pile diameters of an adjacent pile (center to center dimension) for a period of at least 24 hours after casting the adjacent pile.

Construction of auger cast piles should be performed under the full-time observation of a geotechnical engineer. Quality control should include documentation of augering depths and monitoring of grout pressures, volumes, and consistency. Flow cone tests should be performed periodically to verify minimum and maximum efflux times of not less than 16 seconds or more than 25 seconds. In addition, prior to the start of production piles, a 55-gallon drum should be filled with grout under observation of the geotechnical engineer to establish grout volumes per pump stroke.

The installation of auger cast piles for this project should be restricted to contractors with demonstrated ability and experience. Contractors should have at least five years of experience in the installation of auger cast piles.

4.1.5 Pile Load Testing

Axial load tests should be performed in accordance with ASTM D-1143 on piles installed to the recommended tip elevation presented in Section 4.1.4 of this report. It is recommended that two test piles be installed across the site footprint, at locations determined by the geotechnical engineer. The load tests should not be performed until the grout reaches 100% of the design strength. Additional tests may be required depending upon the results of the initial load test program. Installation of production piles should not begin until the data from the load tests have been evaluated by the geotechnical engineer, and adjustments to the pile lengths may result from this load test program.

4.2 Lower Floor Slabs on Grade

Lower floor slabs supported by firm existing fill, natural soils, or new compacted fill are considered feasible at the site. The lower floor slab may be designed based on a modulus of subgrade reaction K_S of 125 pounds per cubic inch (pci). However, where floor subgrades consist of existing fill, we recommend undercutting the existing fill to a depth of at least 2 feet and backfilling with new compacted fill. After undercutting the existing fill and prior to placement of any new compacted fill, the undercut subgrade should be observed during proofrolling by the geotechnical engineer to confirm that the new subgrade is suitable to receive new compacted fill.

All debris and soft soils near the final floor slab subgrade as a result of construction operations should be stripped and removed prior to placement of underfloor stone. A 4-inch minimum thickness of washed gravel or crushed stone meeting the requirement of AASHTO No. 57 should be placed below floor slabs on grade to serve as a capillary break. An impermeable plastic membrane should be placed on top of the crushed stone layer to assist as a moisture barrier. Special attention should be given to the surface curing of the slab in order to minimize uneven drying of the slab and associated cracking.

We recommend that the floor slab be isolated from the footings so differential settlement of the structure will not induce shear stresses on the floor slab. We also recommend mesh (fiber or welded wire fabric) reinforcement be included in the design of the floor slab to minimize the development of any shrinkage cracks near the surface of the slab. If welded wire fabric is used, the mesh should be located in the top half of the slab.

4.3 Lateral Earth Pressures

Site retaining walls should be designed to withstand lateral earth pressures. An average equivalent fluid pressure of 45H (psf) should be used for design of site retaining walls, where H refers to the height of the wall. An additional 8H (psf) should be considered for seismic lateral loads as needed. The design should account for any surcharge loads within a 45 degree slope from the base of the wall. Retaining walls may be designed to include a passive equivalent fluid pressure of 345D (psf), where D represents the depth of wall embedment below the exposed wall face. The upper 1.5 feet of soil at the base of retaining walls should not be included in the design of passive soil resistance. A coefficient of

friction of 0.30 may be used for sliding resistance at the soil/concrete interface. A recommended lateral earth pressure diagram for use in the design of site retaining walls is presented as Figure 2 at the end of this report.

Hydrostatic pressures are not included in the lateral earth pressure diagram assuming the use of relatively granular or free draining backfill, and perimeter subdrainage (weepholes) at the base of walls below grade. Recommended subdrainage for site retaining walls are presented on Figure 2 at the end of this report. Recommendations for backfill against walls below grade are presented in Section 4.5 of this report.

4.4 Pavements

Pavement subgrades are expected to consist of firm existing fill, natural soils, or new compacted fill. These materials are generally considered suitable for support of the planned roadways and parking areas. However, where pavement subgrades consist of existing fill, we recommend budgeting for undercutting the existing fill to a depth of at least 2 feet and backfilling with new compacted fill. The decision to undercut the existing fill should be based on a thorough proofroll of the pavement subgrades under the observation of the geotechnical engineer.

Based on the California Bearing Ratio (CBR) test results for the materials expected at pavement subgrades, a preliminary design CBR value of 6 is recommended for pavement design purposes. If fill placed at the site is generated from off-site borrow areas, the actual CBR value for the pavement subgrades may be significantly different from the preliminary value presented herein. Therefore, CBR tests should be performed on the in-place subgrade after rough grading and installation of utilities within roadways. Final pavement sections should be based on CBR tests taken on subgrade soils at the time of construction. Design of concrete pavements including compressive strength, air entrainment, reinforcement, control joints, etc. should be provided by the structural engineer.

4.5 Earthwork

Fill will be required for site grading in the Memorial area including backfill against walls below grade. Unsuitable existing fill, soft or loose natural soils, organic material, and rubble should be stripped to approved subgrades as determined by the geotechnical engineer. Topsoil depths presented on the boring logs should not be considered as stripping depths, as topsoil depths may vary widely across the site. Stripping depths will probably extend to greater depths than the topsoil depths indicated herein due to the presence of minor amounts of organics, roots, and other surficial materials that will require removal as a part of the stripping operations. In addition, seasonal soil moisture variations can affect stripping depths. In general, less stripping may occur during summer months when drier weather conditions can be expected. The depth of required stripping should be determined prior to construction by the excavation contractor using test pits, probes, or other means that the contractor wishes to employ, and this determination should be the responsibility of the excavation contractor. All subgrades

should be proofrolled with a minimum 20 ton, loaded dump truck or suitable rubber tire construction equipment approved by the geotechnical engineer, prior to the placement of new fill.

For building areas, the new fill should extend at least 10 feet outside building lines. For parking areas, the new fill should extend at least 5 feet outside pavement edges. These recommendations are illustrated by Figure 3 at the end of this report. Fill material should be placed in lifts not exceeding 8 inches loose thickness, with fill materials compacted by hand operated tampers or light compaction equipment placed in maximum 4-inch thick loose lifts. Fill should be compacted at +/- 2% of the optimum moisture content to at least 95 percent of the maximum dry density per ASTM D-1557.

Materials used for compacted fill for support of structures and pavements should consist of soils classifying CL, ML, SC, SM, SP, SW, GC, GM, GP, or GW per ASTM D-2487, with a liquid limit and plasticity index less than 40 and 15, respectively, and a maximum dry density greater than 105 pcf. Materials used for backfill against walls below grade should consist of soils classifying SM, SP, SW, GM, GP, or GW, with a liquid limit and plasticity index less than 40 and 15, respectively. It is expected that the majority of soils excavated at the site will be suitable for re-use as fill based on classification. However, the Stratum A existing fill may not be suitable for re-use as new compacted fill due to deleterious man-made materials in the fill. In addition, drying of excavated soils by spreading and aerating may be necessary to obtain proper compaction. This may not be practical during the wet period of the year. Accordingly, earthwork operations should be planned for early Spring through late Fall, when drier weather conditions can be expected. Drying of fill materials by the use of lime may also be considered. However, in the event that lime is used, more specific details regarding the percentage of lime used and installation techniques should be provided. Individual borrow areas, both from on-site and off-site sources, should be sampled and tested to verify classification of materials prior to their use as fill.

Fill materials should not be placed on frozen or frost-heaved soils, and/or soils that have been recently subjected to precipitation. All frozen or frost-heaved soils should be removed prior to continuation of fill operations. Borrow fill materials should not contain frozen materials at the time of placement.

Compaction equipment that is compatible with the soil type used for fill should be selected. Theoretically, any equipment type can be used as long as the required density is achieved; however, sheepsfoot roller equipment are best suited for fine-grained soils and vibratory smooth drum rollers are best suited for granular soils. Ideally, a smooth drum roller should be used for sealing the surface soils at the end of the day or prior to upcoming rain events. In addition, compaction equipment used adjacent to walls below grade should be selected so as to not impose undesirable surcharge on walls. All areas receiving fill should be graded to facilitate positive drainage of any water associated with precipitation and surface run-off.

After completion of compacted fill operations in structure or pavement areas, construction of structural elements or pavements should begin immediately, or the finished subgrade should be

protected from exposure to inclement weather conditions. Exposure to precipitation and freeze/thaw cycles will cause the finished subgrade to soften and become excessively disturbed. If development plans require that finished subgrades remain exposed to weather conditions after completion of fill operations, additional fill should be placed above finished grades to protect the newly placed fill. Alternatively, a budget should be established for reworking of the upper 1 to 2 feet of previously placed compacted fill.

Excavations may be constructed by laying back the earth with temporary slopes. Temporary excavations that may occur will generally extend through sandy soils. Based on the on-site soils, an OSHA type C soil classification should be used for design of earth slopes. A type C classification requires a maximum allowable slope of 1.5H:1V for excavations less than 20 feet in depth. Any benching of excavations should be performed in accordance with OSHA requirements.

4.6 Infiltration Analysis

Two methods were used to estimate infiltration capabilities on the subject site: in-situ infiltration testing and published correlations with soil classifications. Details regarding the in-situ infiltration and classification test techniques, the estimated infiltration rates from the individual methods, and the recommended design infiltration rate for the site soils are presented herein.

4.6.1 Infiltration Test Results

In-situ infiltration tests are performed in the field to observe the rate at which water will permeate the soil under saturated conditions. Five test borings were drilled in the area of planned infiltration. Test borings were initially drilled to depths of at least 4 feet below the planned infiltration invert elevations. Offset infiltration test holes were drilled at the boring locations to planned infiltration invert elevations. Five-inch diameter PVC casing was set to the bottom of the test holes. The purpose of the casing is to prevent caving of test hole sidewalls. After setting the PVC casing, the borehole was filled with water to saturate the bottom subsoils. The following day, the test hole was refilled with water and the water level in each test hole was recorded every hour for a 4-hour period. Using this procedure, the average change in the water level over the 4-hour period is considered the infiltration rate. Based on the results of the in-situ infiltration tests, estimated infiltration rates have been assigned for the site soils, as presented in the table below.

Test Boring No.	Approximate Test Depth (feet)	Estimated Infiltration Rate (inches/hour)
B-4	7.1	1.65
B-5	7.35	0.00
B-9	7.5	0.00

Test Boring No.	Approximate Test Depth (feet)	Estimated Infiltration Rate (inches/hour)
B-10	7.5	0.00
B-15	7.1	0.60

4.6.2 Classification Test Results

The classification test method is performed with grain-size sieve analyses including hydrometer testing on samples obtained from corresponding proposed infiltration depths, to determine the USDA soil texture classifications. Published correlations between USDA classifications and infiltration rates were used to provide estimated hydraulic conductivity values. Since hydraulic conductivity and infiltration values are essentially equal at no head conditions, using the hydraulic conductivity values to estimate the infiltration rates provides a conservative estimate of infiltration for use in design. Estimated infiltration rates using the USDA soil texture classifications are presented below.

Test Boring No.	Approximate Test Depth (feet)	USDA Soil Texture Classification	Estimated Infiltration Rate (inches/hour)
B-4	8.5-10.0	SANDY LOAM	1.02
B-5	8.5-10.0	LOAM	0.52
B-9	8.5-10.0	LOAM	0.52
B-10	8.5-10.0	SILT LOAM	0.27
B-15	8.5-10.0	LOAM	0.52

4.6.3 Recommended Design Infiltration Rate

Based on the results of the in-situ infiltration tests and soil laboratory classification tests, we recommend that a design infiltration rate of 0.25 inches/hour be used for design of infiltration structures. It should be noted that the recommended design infiltration rate presented herein is intended for use in design. However, during construction, observations of the subgrade conditions should be made to confirm that the subgrade soils are consistent with the soils analyzed in this report.

5.0 General Limitations

Recommendations contained in this report are based upon the data obtained from the relatively limited number of test borings. This report does not reflect conditions that may occur between the points investigated, or between sampling intervals in test borings. The nature and extent of variations between test borings and sampling intervals may not become evident until the course of construction. Therefore, it is essential that on-site observations of subgrade conditions be performed during the construction

period to determine if re-evaluation of the recommendations in this report must be made. It is critical to the successful completion of this project that GeoConcepts be retained during construction to observe the implementation of the recommendations provided herein.

This report has been prepared to aid in the evaluation of the site and to assist your office and the design professionals in the design of this project. It is intended for use with regard to the specific project as described herein. Changes in proposed construction, grading plans, structural loads, etc. should be brought to our attention so that we may determine any effect on the recommendations presented herein.

An allowance should be established for additional costs that may be required for foundation and earthwork construction as recommended in this report. Additional costs may be incurred for various reasons including wet fill materials, soft subgrade conditions, unexpected groundwater problems, etc.

This report should be made available to bidders prior to submitting their proposals to supply them with facts relative to the subsurface conditions revealed by our investigation and the results of analyses and studies that have been performed for this project. In addition, this report should be given to the successful contractor and subcontractors for their information only.

We recommend the project specifications contain the following statement: "A geotechnical engineering report has been prepared for this project by GeoConcepts Engineering, Inc. This report is for informational purposes only and should not be considered part of the contract documents. The opinions expressed in this report are those of the geotechnical engineer and represent their interpretation of the subsoil conditions, tests and results of analyses that they performed. Should the data contained in this report not be adequate for the contractor's purposes, the contractor may make their own investigations, tests and analyses prior to bidding."

This report was prepared in accordance with generally accepted geotechnical engineering practices. No warranties, expressed or implied, are made as to the professional services included in this report.

We appreciate the opportunity to be of service for this project. Please contact the undersigned if you require clarification of any aspect of this report.

Sincerely,

GEOCONCEPTS ENGINEERING, INC.

Rebecca L. Smith-Zakowicz, CPG
Senior Project Manager

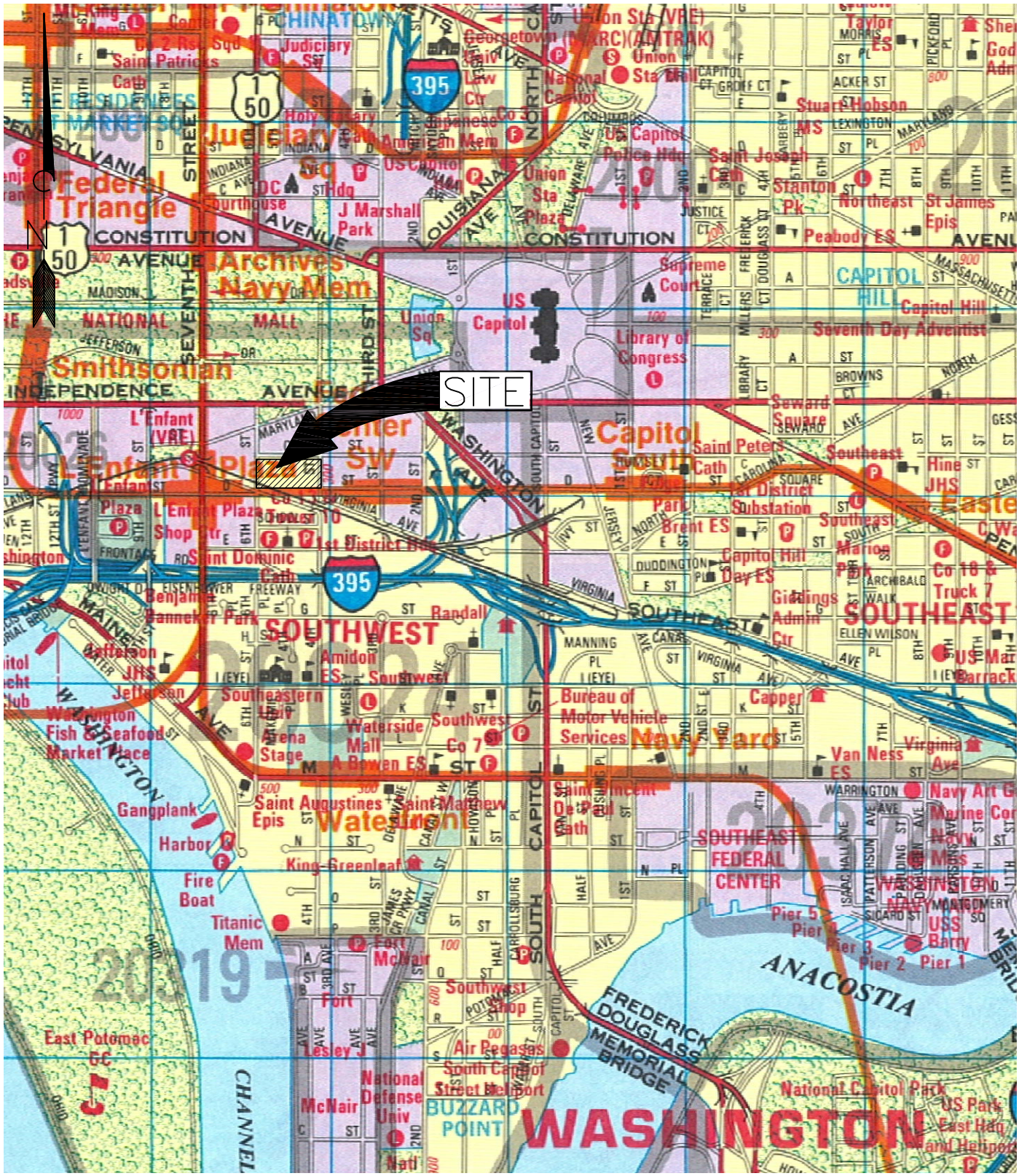
Paul E. Burkart, PE
Principal

DISTRICT OF COLUMBIA
PAUL E. BURKART
No. 900345
REGISTERED
PROFESSIONAL ENGINEER

Figure 1: Site Vicinity Map
Figure 2: Design Earth Pressures for Site Retaining Walls
Figure 3: Compacted Structural Fill Diagram

Appendix A: Subsurface Investigation Report
Appendix B: Soil Laboratory Test Report

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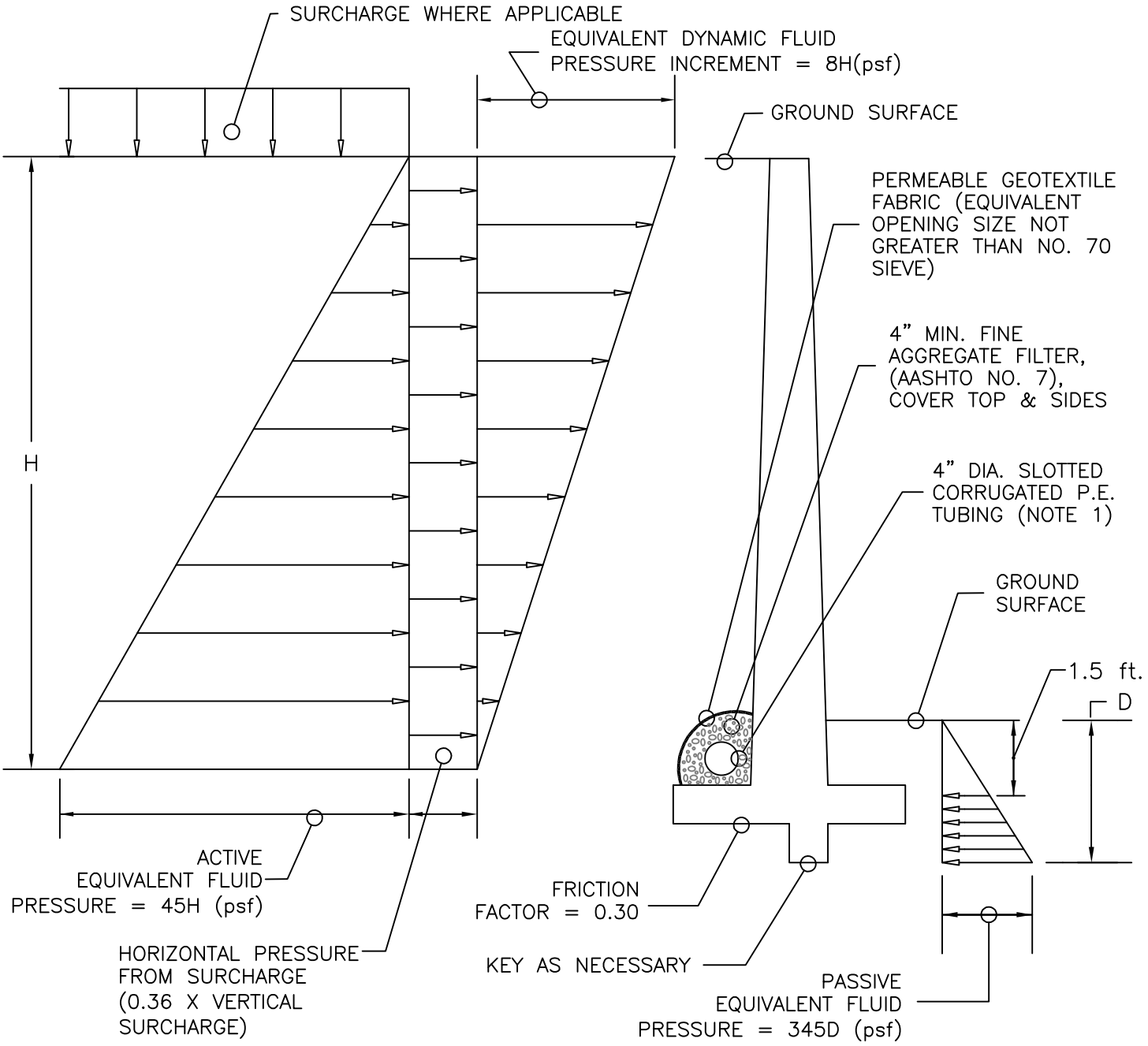
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Ashburn, Virginia 20147 (703) 726-8032 fax

DWIGHT D. EISENHOWER MEMORIAL
INDEPENDENCE AVENUE, SW, WASHINGTON, D.C.

SITE VICINITY MAP		Scale: N.T.S.	Fig. 1
Date: OCTOBER 2010	Checked By: P.E.B.	Project No.: 10004	



NOTES:

1) WEEPHOLES CONSISTING OF 3–INCH DIA. PVC PIPE AT 10 FEET INTERVALS SHOULD BE SUBSTITUTED FOR SUBDRAINAGE PIPE.
2) PRESSURE DIAGRAM SHOWN ASSUMES HORIZONTAL GROUND BEHIND WALL AND FULL DRAINAGE OF HYDROSTATIC PRESSURES.
3) BACKFILL SHOULD CONSIST OF MATERIAL CLASSIFIED AS SM, SP, SW, GM, GP, OR GW PER ASTM D–2487. THE LIQUID LIMIT AND PLASTICITY INDEX OF BACKFILL MATERIAL SHOULD NOT EXCEED 40 AND 15, RESPECTIVELY.
4) DYNAMIC PRESSURE DIAGRAM IS BASED ON A HORIZONTAL SEISMIC ACCELERATION OF 0.1g

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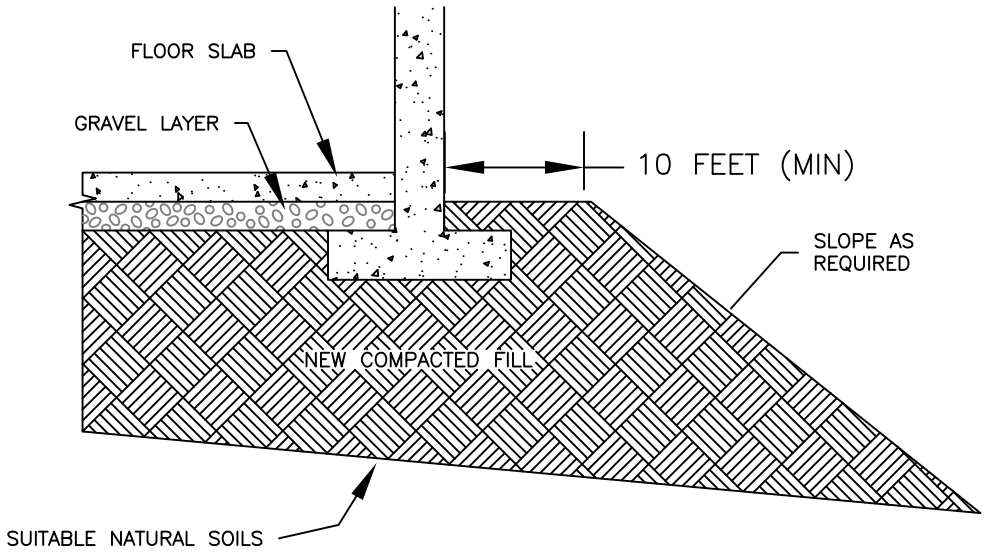
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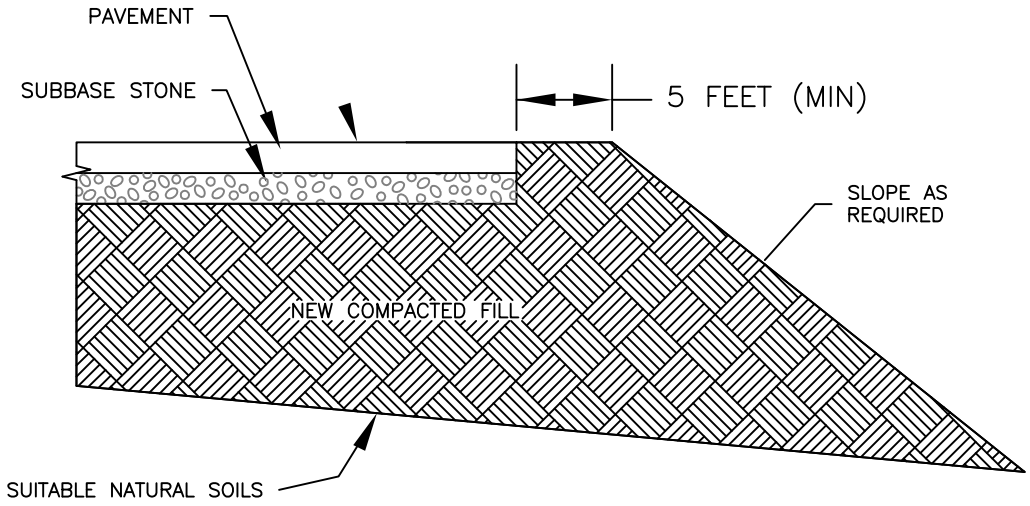
DWIGHT D. EISENHOWER MEMORIAL
INDEPENDENCE AVENUE, SW, WASHINGTON, DC

DESIGN EARTH PRESSURES FOR SITE RETAINING WALLS	Scale: N.T.S.	Fig. 2
Date: OCTOBER 2010	Checked By: P.E.B.	Project No.: 10004

FOR BUILDINGS:



FOR PAVEMENTS:



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DWIGHT D. EISENHOWER MEMORIAL INDEPENDENCE AVENUE, SW, WASHINGTON, DC			
COMPACTED STRUCTURAL FILL DIAGRAM		Scale: N.T.S.	Fig. 3
Date: OCTOBER 2010	Checked By: P.E.B.	Project No.: 10004	

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Appendix A
Contract No. 10004

Subsurface Investigation Report

Subsurface Investigation Procedures (1 page)
Identification of Soil (1 page)
Test Boring Notes (1 page)
Dilatometer Test (DMT) Procedures (2 pages)
Cone Penetrometer Test (CPT) Procedures (1 page)
Test Boring Logs (11 pages)
Dilatometer Test Data (24 pages)
Cone Penetration Test Data (6 pages)
Subsurface Investigation Location Plan, Figure 4 (1 page)

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Appendix A
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Subsurface Investigation Procedures

1. ***Test Borings – Hollow Stem Augers***
   The borings are advanced by turning an auger with a center opening of 3-¼ inches. A plug device blocks off the center opening while augers are advanced. Cuttings are brought to the surface by the auger flights. Sampling is performed through the center opening in the hollow stem auger, by standard methods, after removal of the plug. Usually, no water is introduced into the boring using this procedure.

2. ***Standard Penetration Tests***
   Standard penetration tests are performed by driving a 2 inch O.D., 1-⅜ inch I.D. sampling spoon with a 140-pound hammer falling 30 inches, according to ASTM D-1586. After an initial 6 inches penetration to assure the sampling spoon is in undisturbed material, the number of blows required to drive the sampler an additional 12 inches is generally taken as the N value. In the event 30 or more blows are required to drive the sampling spoon the initial 6 inch interval, the sampling spoon is driven to a total penetration resistance of 100 blows or 18 inches, whichever occurs first. The sampling operation is terminated after a total of 100 hammer blows and the depth of penetration is recorded.

3. ***Undisturbed Tube Samples***
   Undisturbed tube sampling is accomplished by inserting 3 inch I.D. thin walled steel tubes into the soil through the hollow stem of the augers with hydraulically actuated rams.

4. ***Temporary Water Observation Standpipes***
   Temporary water observation standpipes were installed in test borings B-4, B-9, and B-11. The wells were installed by inserting a 1-1/4 inch plastic perforated pipe through the 3-¼ inch center opening of the auger and backfilling with sand filter material as the auger was withdrawn. The pipe was capped for protection from rainfall, runoff, and foreign objects. Readings were taken as shown on the test boring logs.

5. ***Test Boring Stakeout***
   The test boring stakeout was provided by GeoConcepts personnel using available site plans. Ground surface elevations were estimated from topographic information contained on the site plan provided to us and should be considered approximate. If the risk related to using approximate boring locations and elevations is unacceptable, we recommend an as-drilled survey of boring locations and elevations be completed by a licensed surveyor.

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IDENTIFICATION OF SOIL

I. DEFINITION OF SOIL GROUP NAMES

		ASTM D-2487	Symbol	Group Name
Coarse-Grained Soils More than 50% retained on No. 200 sieve	**Gravels** - More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines	**GW**	WELL GRADED GRAVEL
			GP	POORLY GRADED GRAVEL
		Gravels with Fines More than 12% fines	**GM**	silty GRAVEL
			GC	clayey GRAVEL
	Sands - 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines	**SW**	WELL GRADED SAND
			SP	POORLY GRADED SAND
		Sands with fines More than 12% fines	**SM**	silty SAND
			SC	clayey SAND
Fine-Grained Soils 50% or more passes the No. 200 sieve	**Silts and Clays** - Liquid Limit less than 50	Inorganic	**CL**	LEAN CLAY
			ML	SILT
		Organic	**OL**	ORGANIC CLAY
				ORGANIC SILT
	Silts and Clays - Liquid Limit 50 or more	Inorganic	**CH**	FAT CLAY
			MH	ELASTIC SILT
		Organic	**OH**	ORGANIC CLAY
				ORGANIC SILT
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		**PT**	PEAT

II. DEFINITION OF MINOR COMPONENT PROPORTIONS

Minor Component	**Approximate Percentage of Fraction by Weight**
Adjective Form	
Gravelly, Sandy	30% or more coarse grained
With	
Sand, Gravel	15% to 29% coarse grained
Silt, Clay	5% to 12% fine grained

III. GLOSSARY OF MISCELLANEOUS TERMS

SYMBOLS - Unified Soil Classification Symbols are shown above as group symbols. Use "A" Line Chart for laboratory identification. Dual symbols are used for borderline classification.

BOULDERS & COBBLES - Boulders are considered pieces of rock larger than 12 inches, while cobbles range from 3 to 12 inches.

DISINTEGRATED ROCK - Residual rock material with a standard penetration test (SPT) resistance between 60 blows per foot and refusal.

ROCK - Rock material with a standard penetration test (SPT) resistance of 100 blows for 2 inches or 50 blows for 0 inches, or less penetration

DECOMPOSED ROCK - Residual rock material exhibiting rock-like properties that can be excavated by backhoe equipment. Similar to Disintegrated Rock, but cannot be classified as such because SPT N-Values were not obtained.

ROCK FRAGMENTS - Angular pieces of rock, distinguished from rounded transported gravel, which have separated from original vein or strata and are present in a soil matrix.

QUARTZ - A hard silicate mineral often found in residual soils. Only used when describing residual soils.

CEMENTED SAND - Usually localized rock-like deposits within a soil stratum composed of sand grains cemented by calcium carbonate, iron oxide, or other minerals. Commonly encountered in Coastal Plain sediments, primarily in the Potomac Group sands (Kps).

MICA - A plate-like phyllosilicate mineral found in many rocks, and in residual or transported soil derived therefrom.

ORGANIC MATERIALS (Excluding Peat) - Topsoil - Surface soils that support plant life and contain organic matter.
Lignite - Hard, brittle decomposed organic matter with low fixed carbon content (a low grade of coal).

FILL - Man made deposit containing soil, rock, and other foreign matter.

PROBABLE FILL - Soils which contain no visually detected foreign matter but which are suspect with regard to origin.

LAYERS - ½ to 12 inch seam of minor soil component.

COLOR - Two most predominant colors present should be described.

MOISTURE CONDITIONS - Wet, moist, or dry to indicate visual appearance of specimen.

Test Boring Notes

1. Classification of soil is by visual inspection and is in accordance with the Unified Soil Classification System.

2. Estimated groundwater levels are indicated on the logs. These are only estimates from available data and may vary with precipitation, porosity of soil, site topography, etc.

3. Sampling data presents standard penetrations for 6-inch intervals or as indicated with graphic representations adjacent to the sampling data. Where undisturbed tube samples are taken, they are designated "Shelby Tube" on the test boring log.

4. The logs and related information depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at the test locations. Also, the passage of time may result in a change in the subsurface conditions at the test locations.

5. The stratification lines represent the approximate boundary between soil types as determined in the sampling operation. Some variation may be expected vertically between samples taken. The soil profile, groundwater level observations and penetration resistances presented on the logs have been made with reasonable care and accuracy and must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.

Dilatometer Test (DMT) Procedures

The dilatometer test (DMT) is a geotechnical device used for profiling subsurface conditions. A special steel blade is hydraulically pushed into the ground at one-foot intervals. Vertical penetration resistance of the blade and horizontal resistances of an expandable diaphragm on the blade are measured at each test depth. The results are used to evaluate the soil type, strength, modulus, in-situ lateral stress, density, and degree of preconsolidation.

The test begins by inserting a 14 mm thick flat wedge, approximately 94 mm wide, into the ground with a drill rig and special rods. The blade has a 16º cutting edge at the tip. The vertical thrust may be measured during the penetration.

At each test depth, a flexible steel membrane on one side of the blade is pneumatically expanded. The pressures required to mobilize two pre-established strain levels are recorded (A and B readings). Calculated and derived data are presented in the accompanying computer output. In addition to the measured field resistances, the output includes an estimated soil classification and the following parameters:

Parameter	***Units***	***Description***
Z	Meters	Test reading depth
THRUST	Kgf	Total thrust force needed to advance the blade
A	Bars	Dilatometer control unit "A" reading
B	Bars	Dilatometer control unit "B" reading
C	Bars	Dilatometer control unit "C" reading
DA	Bars	Dilatometer A - calibration
DB	Bars	Dilatometer B - calibration
ZMRNG	Bars	Maximum control unit reading on low range gage
ZMLO	Bars	Gage zero for low range gage
ZMHI	Bars	Gage zero for high range gage
ZMCAL	Bars	Gage zero for calibration gage
P0	Bars	Corrected "A" reading
P1	Bars	Corrected "B" reading
P2	Bars	Corrected "C" reading
U0	Bars	Porewater pressure
GAMMA	ton/m^3	Total unit weight of soil (1 ton/m^3 = 62.4 pcf)
SVP	Bars	Effective vertical stress
KD	-	Dilatometer horizontal stress index
ID	-	Dilatometer material index
UD	-	Proposed pore pressure index
ED	Bars	Dilatometer modulus (1 bar = 1.044 tsf)
K0	-	In-situ coefficient of lateral earth pressure
SU	Bars	Undrained shear strength for $I_D \leq 0.6$
QD	Bars	DMT bearing capacity from PHI calculation
PHI	Degrees	The soil's drained plane strain friction angle for $I_D \geq 1.2$

SIGFF	Bars	Failure plane stress used to calculate PHIO
PHIO	Degrees	PHI normalized to 2.72 bars, Baligh's theory
PC	Bars	Preconsolidation pressure
OCR	-	Overconsolidation ratio
M	Bars	Tangent drained constrained modulus
SOIL TYPE	-	Type of soil (clay, sand, etc.)

GeoConcepts Engineering, Inc.

Appendix A
Contract No. 10004

Cone Penetration Test (CPT) Procedures

The cone penetration test (CPT) is a geotechnical device used for profiling subsurface conditions. A cone is hydraulically pushed into the ground and test data obtained at one-foot intervals. The data collected via instrumentation on the cone penetrometer represents the soil responses in relation to tip resistance, friction sleeve resistance, pore pressures, and electrical resistivity. The results are used to evaluate the soil type, strength, modulus, in-situ lateral stress, density, and degree of pre-consolidation.

Calculated and derived data are presented in the accompanying computer output. In addition to the measured field resistances, the output includes an estimated soil classification and the following parameters:

Parameter	***Units***	***Description***
Depth	Meters	Test reading depth
Qt (avg)	Bars	Corrected Tip Resistance
Rf	%	Friction Ratio = Fs/Qt
Fs (avg)	Bars	Sleeve Friction
Gamma	kN/m^3	Total unit weight of soil (1 kN/m^3 = 7.1 pcf)
U2	meters of water	Pore Pressure behind Cone Tip
Uo	meters of water	Pore water pressure
Rf Zone	Zone #	Soil Classification Zone (Campanella & Robertson)
Bq Zone	Zone #	Soil Classification Zone (Campanella & Robertson)
OS (avg)	Bars	Vertical Overburden Stress
EOS (avg)	Bars	Effective Vertical Overburden Stress
Bq	ratio	Pore Pressure Parameter Ratio
Ic	-	Classification Index (Davies)
FC	%	Fines Content (passing # 200)
State	-	State Parameter
Spt N	blow/ft	Correlated N60 value
Dr	%	Relative Density
Phi	degree	Angle of Internal Friction
Su	Bars	Undrained Shear Strength
Su/EOS	ratio	Normalized Undrained Shear Strength
OCR	ratio	Over Consolidation Ratio
CSR (QC)	ratio	Cyclic Stress Ratio Corresponding to Tip Resistance (QC)
CSR (EQ)	ratio	Cyclic Stress Ratio Corresponding to Earthquake (EQ)
M	Bars	Constrained Modulus

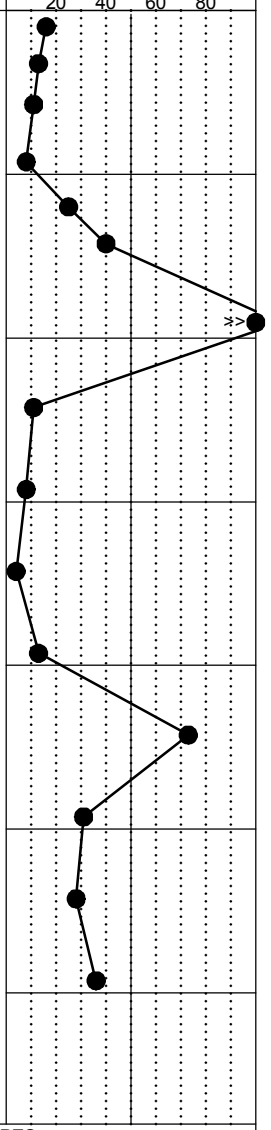
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Ashburn, VA 20147 703-726-8032 fax

PROJECT:	LOGGED BY:	BORING NUMBER:
Dwight D. Eisenhower Memorial	J. Brackett	**B-1**
LOCATION:	DRILLING CONTRACTOR:	SHEET 1 OF 1
Independence Avenue, SW, Washington, DC	Connelly and Associates, Inc.	
OWNER/CLIENT:	DRILLER:	DATE STARTED:
AECOM	W. Smith	9/15/10
PROJECT NUMBER: / GROUND SURFACE ELEVATION (ft):	DRILLING METHOD:	DATE COMPLETED:
10004 / 16.0 ±	3.25" I.D. HSA	9/15/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
15.8			Topsoil = 3 inches			5+6+10+12	18
			sandy lean clay FILL, moist, brown			5+6+7	18
		A				5+5+6	18
7.5							
	10		silty sand FILL, moist, dark brown	15.4		3+4+4	18
4.7			clayey SAND (SC), with gravel, moist, brown			10+12+13	18
						7+10+30	6
-2.5			POORLY GRADED GRAVEL (GP), with sand, moist, brown			33+50/5	11
	20						
-7.5 ▽			clayey SAND (SC), wet, brown			6+6+5	12
		B2				2+3+5	18
	30					2+2+2	12
						10+10+3	18
	40						
-27.5			POORLY GRADED SAND (SP), with gravel, wet, brown			31+36+37	12
-32.5			clayey SAND (SC), moist, gray			8+13+18	18
	50	C2				9+12+16	18
-44.0						10+15+21	18
	60		Bottom of Boring at 60.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)



GROUND WATER LEVELS:

▽ ENCOUNTERED: 23.5 ft ELEV. -7.5

UPON COMPLETION: Dry CAVED: 8.0 ft ELEV. 8.0

SAMPLE TYPES:

Split Spoon

Shelby Tube

REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

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PROJECT:	LOGGED BY:	BORING NUMBER:
Dwight D. Eisenhower Memorial	J. Brackett	**B-3**
LOCATION:	DRILLING CONTRACTOR:	SHEET 1 OF 1
Independence Avenue, SW, Washington, DC	Connelly and Associates, Inc.	
OWNER/CLIENT:	DRILLER:	DATE STARTED:
AECOM	W. Smith	9/8/10
PROJECT NUMBER: / GROUND SURFACE ELEVATION (ft):	DRILLING METHOD:	DATE COMPLETED:
10004 / 14.0 ±	3.25" I.D. HSA	9/8/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
13.8			Topsoil = 3 inches			7+15+15+15	24
			sandy LEAN CLAY (CL), moist, brown			4+7+10	18
		B1				11+12+15	18
	10					4+4+5	18
0.5			clayey SAND (SC), moist, brown			4+5+6	18
							24
-4.5			POORLY GRADED GRAVEL (GP), moist, brown			7+13+19	18
	20	B2				40+34+43	12
-9.5 ▽			clayey SAND (SC), with gravel, wet, brown			15+7+9	12
-14.5			FAT CLAY (CH), moist, gray			5+10+12	18
	30	C1				7+12+16	18
-21.0			POORLY GRADED SAND (SP), with gravel, moist, gray	13.3			24
						6+10+12	18
	40					14+15+17	8
-29.5			clayey SAND (SC), moist, gray			6+9+11	18
	50	C2				6+11+16	18
						10+15+24	18
	60					8+12+14	18
-51.0						15+20+34	18
			Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT): 20 40 60 80

GROUND WATER LEVELS:

▽ ENCOUNTERED: 23.5 ft ELEV. -9.5

UPON COMPLETION: Dry CAVED: 15.0 ft ELEV. -1.0

SAMPLE TYPES:

Split Spoon

Shelby Tube

REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

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PROJECT:	LOGGED BY:	BORING NUMBER:
Dwight D. Eisenhower Memorial	J. Brackett	**B-4**
LOCATION:	DRILLING CONTRACTOR:	SHEET 1 OF 1
Independence Avenue, SW, Washington, DC	Connelly and Associates, Inc.	
OWNER/CLIENT:	DRILLER:	DATE STARTED:
AECOM	W. Smith	9/8/10
PROJECT NUMBER: / GROUND SURFACE ELEVATION (ft):	DRILLING METHOD:	DATE COMPLETED:
10004 / 14.0 ±	3.25" I.D. HSA	9/8/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
13.8		A	Topsoil = 3 inches			9+10+10+16	12
			clayey sand FILL, with organics, moist, brown			18+15+16	18
9.0		B2	clayey SAND (SC), moist, brown	2.2		8+8+8	10
5.5			silty SAND (SM), moist, brown	13.3		2+3+4	18
0.5	10		clayey SAND (SC), moist, brown			1+2+3	18
			with gravel below 18.5 ft.			3+4+20	14
-9.5 ▼	20		POORLY GRADED SAND (SP), moist, brown			5+7+8	18
-14.5			clayey SAND (SC), moist, brown			6+8+9	18
-16.0	30		Bottom of Boring at 30.0 ft				
	40						
	50						
	60						

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)
20 40 60 80

GROUND WATER LEVELS:

▽ ENCOUNTERED: 23.5 ft ELEV. -9.5

UPON COMPLETION: Dry

▼ 9/16/2010 23.5 ft ELEV. -9.5

SAMPLE TYPES:

⊠ Split Spoon

REMARKS: Bulk sample collected from 2.0 - 7.0 ft.
Temporary water observation standpipe installed.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

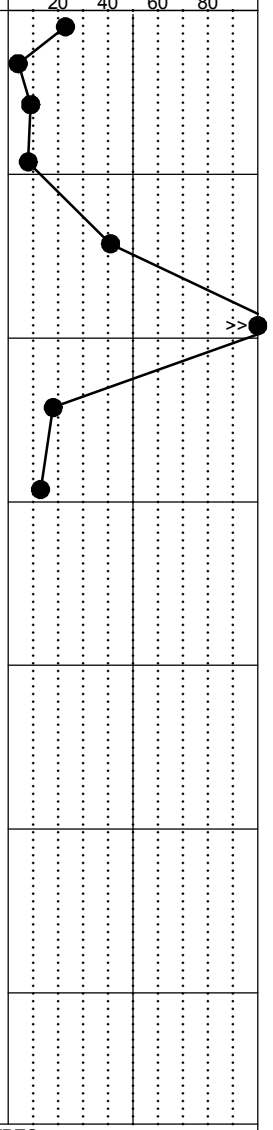
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PROJECT:	LOGGED BY:	BORING NUMBER:
Dwight D. Eisenhower Memorial	J. Brackett	**B-5**
LOCATION:	DRILLING CONTRACTOR:	SHEET 1 OF 1
Independence Avenue, SW, Washington, DC	Connelly and Associates, Inc.	
OWNER/CLIENT:	DRILLER:	DATE STARTED:
AECOM	W. Smith	9/15/10
PROJECT NUMBER: / GROUND SURFACE ELEVATION (ft):	DRILLING METHOD:	DATE COMPLETED:
10004 / 17.0 ±	3.25" I.D. HSA	9/15/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
16.8			Topsoil = 3 inches		☒	10+11+12+10	24
			sandy lean clay FILL, with gravel, moist, brown		☒	2+2+2	18
					☒	10+4+5	6
	10	A	no gravel below 8.5 ft.	16.2	☒	4+4+4	18
3.5							
			silty sand FILL, with gravel, moist, brown		☒	13+14+27	14
-1.5							
	20		silty SAND (SM), with gravel, moist, brown		☒	44+50/5	11
-6.5		B2					
			POORLY GRADED SAND (SP), moist, brown		☒	6+9+9	12
▽ -11.5							
-13.0		C1	sandy FAT CLAY (CH), moist, gray		☒	3+3+10	18
	30		Bottom of Boring at 30.0 ft				
	40						
	50						
	60						

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)



GROUND WATER LEVELS:

▽ ENCOUNTERED: 27.0 ft ELEV. -10.0

UPON COMPLETION: Dry CAVED: 17.0 ft ELEV. 0.0

SAMPLE TYPES:

☒ Split Spoon

REMARKS: Backfilled upon completion for safety concerns.
Bulk sample collected from 2.0 - 7.0 ft.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

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PROJECT: Dwight D. Eisenhower Memorial	LOGGED BY: J. Brackett	BORING NUMBER: **B-6**
LOCATION: Independence Avenue, SW, Washington, DC	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/9/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 15.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/9/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
14.8			Asphalt = 3 inches				
14.3			Concrete = 6 inches				
		A	sandy lean clay FILL, moist, brown			2+2+4	10
						4+5+6	18
						4+4+5	18
6.5							
	10	B1	sandy LEAN CLAY (CH), moist, brown			3+4+5	18
1.5							
		B2	clayey SAND (SC), with gravel, moist, brown			6+6+16	14
-3.5							
	20		POORLY GRADED GRAVEL (GP), moist, brown			40+50/6	12
			wet below 23.5 ft.			20+21+21	18
-13.5							
	30		clayey SAND (SC), with gravel, wet, brown	20.3		25+21+16	18
						25+34+40	4
-23.5							
	40	C1	FAT CLAY (CH), wet, gray			21+28+20	0
-28.5							
		C2	silty GRAVEL (GM), with sand, moist, gray	27.6		10+15+17	18
-33.5							
	50		POORLY GRADED SAND (SP-SM), with silt and gravel, moist, gray			12+12+14	18
				31.8		7+12+17	18
	60					9+15+20	18
-50.0						10+13+15	18
			Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)
20 40 60 80

GROUND WATER LEVELS:

▽ ENCOUNTERED: 24.0 ft ELEV. -9.0

▼ UPON COMPLETION: 21.0 ft ELEV. -6.0 CAVED: 25.0 ft ELEV. -10.0

SAMPLE TYPES:

☒ Split Spoon

REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

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PROJECT: Dwight D. Eisenhower Memorial	LOGGED BY: J. Brackett	BORING NUMBER: **B-9**
LOCATION: Independence Avenue, SW, Washington, DC	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/13/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 17.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/14/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
16.8			Topsoil = 3 inches				
			lean clay FILL, with sand, moist, brown			7+9+9+10	24
						7+10+11	18
				6.8		6+6+10	18
8.5							
	10	A	sandy lean clay FILL, moist, brown	12.7		6+8+10	18
3.5							
			sandy silt FILL, with gravel, brown, moist			11+14+21	18
-1.5							
	20		POORLY GRADED GRAVEL (GP), with sand, moist, brown			21+31+34	0
		B2				2+2+2	0
-13.0	30		wet below 28.5 ft.			5+6+13	16
			Bottom of Boring at 30.0 ft				
	40						
	50						
	60						

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)
20 40 60 80

GROUND WATER LEVELS:

▽ ENCOUNTERED:	27.0 ft	ELEV.	-10.0
▼ UPON COMPLETION:	25.5 ft	ELEV.	-8.5
▼ 9/16/2010	25.5 ft	ELEV.	-8.5

SAMPLE TYPES:

⊠ Split Spoon

REMARKS: Temporary water observation standpipe installed.
Bulk sample collected from 2.0 - 7.0 ft.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

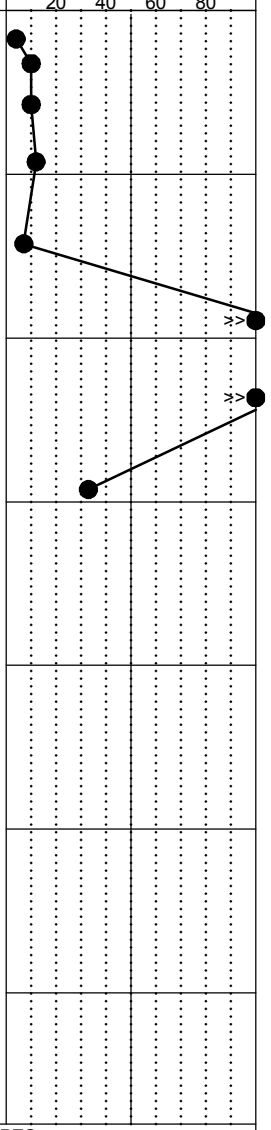
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PROJECT:	LOGGED BY:	BORING NUMBER:
Dwight D. Eisenhower Memorial	J. Brackett	**B-10**
LOCATION:	DRILLING CONTRACTOR:	SHEET 1 OF 1
Independence Avenue, SW, Washington, DC	Connelly and Associates, Inc.	
OWNER/CLIENT:	DRILLER:	DATE STARTED:
AECOM	W. Smith	9/10/10
PROJECT NUMBER: / GROUND SURFACE ELEVATION (ft):	DRILLING METHOD:	DATE COMPLETED:
10004 / 16.0 ±	3.25" I.D. HSA	9/10/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
15.0			Concrete = 12 inches				
		A	lean clay FILL, with sand, moist, brown			1+2+2	12
						4+4+6	18
						5+5+5	18
7.5							
	10	B1	LEAN CLAY (CL), with sand, moist, brown	15.7		4+5+7	18
2.5							
			clayey SAND (SC), moist, brown			3+3+4	18
-2.5							
	20	B2	silty SAND (SM), with gravel, moist, brown			26+50/5	9
						50/3	0
-12.5 ▽							
-14.0	30	C1	sandy FAT CLAY (CH), moist, brown			15+11+22	12
			Bottom of Boring at 30.0 ft				
	40						
	50						
	60						

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)



GROUND WATER LEVELS:

▽ ENCOUNTERED: 28.0 ft ELEV. -12.0

UPON COMPLETION: Dry CAVED: 7.0 ft ELEV. 9.0

SAMPLE TYPES:

☒ Split Spoon

REMARKS: Backfilled upon completion due to safety concerns.
Bulk sample collected from 2.0 - 7.0 ft.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

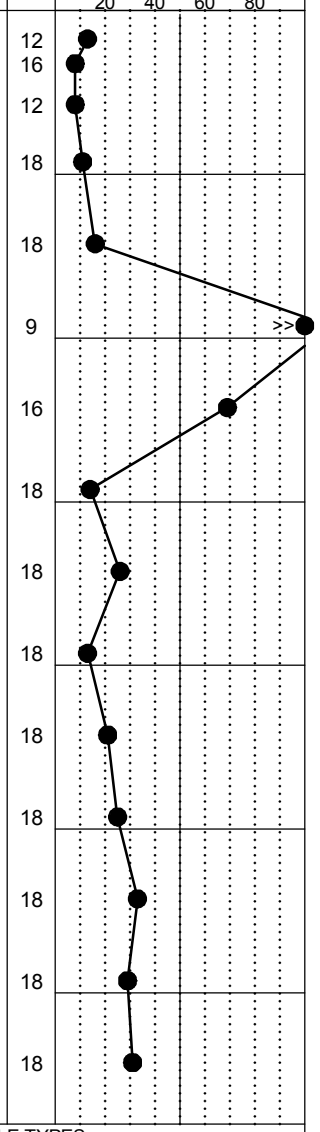
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PROJECT: Dwight D. Eisenhower Memorial	LOGGED BY: J. Brackett	BORING NUMBER: **B-11**
LOCATION: Independence Avenue, SW, Washington, DC	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/10/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 16.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/10/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
15.2			Concrete = 10 inches				
		A	lean clay FILL, with sand and gravel, moist, brown with brick at 2.5 ft.			6+7+6	12
						4+4+4	16
						4+4+4	12
	10					4+5+6	18
2.5			clayey SAND (SC), moist, brown			5+8+8	18
	20	B2	with gravel below 18.5 ft.			25+50/3	9
-7.5			POORLY GRADED SAND (SP), with gravel, moist, brown			30+37+32	16
-12.5 ▽			clayey SAND (SC), moist, brown			6+6+8	18
	30						
-17.5			FAT CLAY (CH), moist, gray			7+11+15	18
						5+6+7	18
	40	C1				9+10+11	18
						8+11+14	18
	50						
-37.5			clayey SAND (SC), moist, gray			12+14+19	18
	60	C2				8+13+16	18
-49.0						10+14+17	18
			Bottom of Boring at 65.0 ft				



GROUND WATER LEVELS:

▽ ENCOUNTERED:	27.5 ft	ELEV.	-11.5
▼ UPON COMPLETION:	26.5 ft	ELEV.	-10.5
▼ 9/16/2010	26.5 ft	ELEV.	-10.5

SAMPLE TYPES:

☒ Split Spoon

REMARKS: Temporary water observation standpipe installed.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

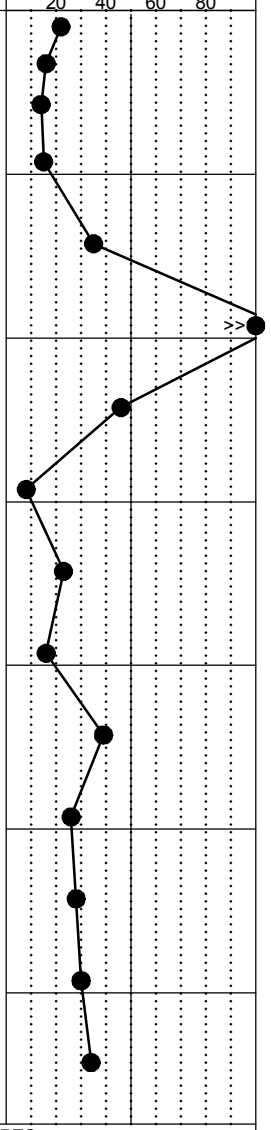
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PROJECT: Dwight D. Eisenhower Memorial	LOGGED BY: J. Brackett	BORING NUMBER: **B-12**
LOCATION: Independence Avenue, SW, Washington, DC	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/14/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 17.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/14/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
16.8			Topsoil = 2 inches		☒	8+10+12+12	24
			lean clay FILL, with sand and gravel, moist, brown		☒	7+7+9	18
			without gravel below 1.5 ft.		☒	6+7+7	18
	10	A			☒	6+7+8	18
			with gravel below 10.0 ft.		☒	10+17+18	10
-1.5							
	20		POORLY GRADED SAND (SP), with gravel, moist, brown		☒	27+50/6	12
					☒	21+27+19	6
			wet below 25.5 ft.				
-11.5 ▽							
	30		silty SAND (SM), moist, brown	25.4	☒	3+4+4	18
-16.5		B2	POORLY GRADED GRAVEL (GP), with sand, wet, brown		☒	7+10+13	18
	40				☒	7+12+4	18
					☒	4+16+23	12
-31.5							
	50		clayey GRAVEL (GC), with sand, moist, gray		☒	8+10+16	18
				25.0	☒	7+12+16	18
		C2					
	60		wet below 58.5 ft.		☒	8+13+17	18
-48.0					☒	11+14+20	18
			Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)



GROUND WATER LEVELS:

▽ ENCOUNTERED: 28.0 ft ELEV. -11.0

UPON COMPLETION: Dry CAVED: 8.0 ft ELEV. 9.0

SAMPLE TYPES:

☒ Split Spoon

REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

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Ashburn, VA 20147 703-726-8032 fax

PROJECT: Dwight D. Eisenhower Memorial	LOGGED BY: J. Brackett	BORING NUMBER: **B-13**
LOCATION: Independence Avenue, SW, Washington, DC	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/14/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 17.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/14/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
16.0			Concrete = 12 inches				
		A	lean clay FILL, moist, brown			3+5+6	18
						3+6+8	18
						4+7+11	18
8.5							
	10		sandy silty clay FILL, moist, brown			4+7+10	18
5.0				17.0			24
		B1	sandy LEAN CLAY (CL), moist, brown			4+4+7	18
						2+2+4	18
-1.5							
	20	B2	POORLY GRADED SAND (SP), with gravel, moist, brown			5+21+39	18
						22+50/6	12
			without gravel below 28.5 ft.			16+38+28	14
-16.5	30						
		C1	sandy LEAN CLAY (CL), wet, brown and gray			2+2+3	18
	40		moist, gray below 38.5 ft.			12+14+22	18
						7+9+12	18
-31.5							
	50	C2	silty SAND (SM), wet, gray			16+14+14	18
				27.4		11+15+21	18
						10+13+18	18
	60					11+17+20	18
-48.0						7+12+14	18
			Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT): 20 40 60 80 (>> at 12 in)

GROUND WATER LEVELS:

▽ ENCOUNTERED: 27.0 ft ELEV. -10.0

UPON COMPLETION: Dry CAVED: 17.0 ft ELEV. 0.0

SAMPLE TYPES: Split Spoon; Shelby Tube

REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

GeoConcepts Engineering, Inc.

19955 Highland Vista Dr, #170 703-726-8030
Ashburn, VA 20147 703-726-8032 fax

PROJECT:	LOGGED BY:	BORING NUMBER:
Dwight D. Eisenhower Memorial	J. Brackett	**B-15**
LOCATION:	DRILLING CONTRACTOR:	SHEET 1 OF 1
Independence Avenue, SW, Washington, DC	Connelly and Associates, Inc.	
OWNER/CLIENT:	DRILLER:	DATE STARTED:
AECOM	W. Smith	9/9/10
PROJECT NUMBER: / GROUND SURFACE ELEVATION (ft):	DRILLING METHOD:	DATE COMPLETED:
10004 / 15.0 ±	3.25" I.D. HSA	9/9/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
14.5			Topsoil = 6 inches				
		A	sandy lean clay FILL, with organics and brick, moist, brown, gray			0+2+3+4	12
						4+10+10	12
						9+7+8	18
6.5							
	10	B1	sandy LEAN CLAY (CL), moist, brown	15.2		3+2+2	18
						3+2+3	18
-3.5							
	20		POORLY GRADED SAND (SP), with gravel, wet, brown			21+50/5	12
-8.5		B2	clayey SAND (SC), moist, gray			22+15+14	14
-15.0	30					6+7+7	18
			Bottom of Boring at 30.0 ft				
	40						
	50						
	60						

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT)

20 40 60 80

GROUND WATER LEVELS:

▽ ENCOUNTERED: 24.5 ft ELEV. -9.5

UPON COMPLETION: Dry CAVED: 22.0 ft ELEV. -7.0

SAMPLE TYPES:

Split Spoon

REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL)
In-Situ Soil Testing, L.C.
JOB FILE: Dwight D. Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger
ANAL.BY : Roger Failmezger, P.E.

SNDG. NO. :D-2

FILE NO. : 2010-52

SNDG. DATE: 9/13/10
ANAL. DATE: 9/14/10

ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 4.6 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 6.9 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.18 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA/PHI = 0.5 DELTA-B = 0.07 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

Z (M)	ELEV (M)	THRUST (KGF)	A (BAR)	B (BAR)	C (BAR)	DA (BAR)	DB (BAR)	ZMRNG (BAR)	ZMLO (BAR)	ZMHI (BAR)	ZMCAL (BAR)	P0 (BAR)	P1 (BAR)	P2 (BAR)	U0 (BAR)	GAMMA (T/M3)	SVP (BAR)
0.20	4.40	2380	4.61	20.00		0.18	0.07	9.00	0.00	0.00	0.00	4.03	19.93		0.000	2.00	0.035
0.40	4.20	6170	10.45	32.70		0.18	0.07	9.00	0.00	0.00	0.00	9.53	32.63		0.000	2.15	0.076
0.60	4.00	6440	9.85	29.80		0.18	0.07	9.00	0.00	0.00	0.00	9.05	29.73		0.000	2.15	0.118
0.80	3.80	4820	11.25	32.60		0.18	0.07	9.00	0.00	0.00	0.00	10.38	32.53		0.000	2.15	0.160
1.00	3.60	3530	10.95	27.25		0.18	0.07	9.00	0.00	0.00	0.00	10.33	27.18		0.000	2.10	0.202
1.20	3.40	3320	11.15	26.95		0.18	0.07	9.00	0.00	0.00	0.00	10.55	26.88		0.000	2.10	0.243
1.40	3.20	3220	8.08	24.05		0.18	0.07	9.00	0.00	0.00	0.00	7.47	23.98		0.000	2.00	0.283
1.60	3.00	3110	10.45	26.75		0.18	0.07	9.00	0.00	0.00	0.00	9.83	26.68		0.000	2.10	0.324
1.80	2.80	3580	10.40	26.05		0.18	0.07	9.00	0.00	0.00	0.00	9.81	25.98		0.000	2.10	0.365
2.00	2.60	3390	5.52	18.60		0.18	0.07	9.00	0.00	0.00	0.00	5.06	18.53		0.000	2.00	0.405
2.20	2.40	2200	7.07	14.95		0.18	0.07	9.00	0.00	0.00	0.00	6.87	14.88		0.000	1.95	0.444
2.40	2.20	1620	6.62	14.30		0.18	0.07	9.00	0.00	0.00	0.00	6.43	14.23		0.000	1.95	0.482
2.60	2.00	4190	3.62	8.03		0.18	0.07	9.00	0.00	0.00	0.00	3.59	7.96		0.000	1.80	0.519
2.80	1.80	3340	14.60	27.80		0.18	0.07	9.00	0.00	0.00	0.00	14.13	27.73		0.000	2.10	0.557
3.00	1.60	4140	11.50	28.60		0.18	0.07	9.00	0.00	0.00	0.00	10.84	28.53		0.000	2.10	0.598
3.20	1.40	3060	7.62	17.00		0.18	0.07	9.00	0.00	0.00	0.00	7.34	16.93		0.000	1.95	0.638
3.40	1.20	2320	6.58	13.95		0.18	0.07	9.00	0.00	0.00	0.00	6.40	13.88		0.000	1.95	0.676
3.60	1.00	1870	6.11	15.35		0.18	0.07	9.00	0.00	0.00	0.00	5.84	15.28		0.000	1.95	0.715
3.80	0.80	1880	6.19	14.50		0.18	0.07	9.00	0.00	0.00	0.00	5.97	14.43		0.000	1.95	0.753
4.00	0.60	3220	4.11	13.70		0.18	0.07	9.00	0.00	0.00	0.00	3.82	13.63		0.000	1.90	0.791
4.20	0.40	6970	6.68	14.70		0.18	0.07	9.00	0.00	0.00	0.00	6.47	14.63		0.000	1.95	0.828

DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL)
In-Situ Soil Testing, L.C.
JOB FILE: Dwight D. Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger
ANAL.BY : Roger Failmezger, P.E.

SNDG. NO. : D-2
Page 1b
FILE NO. :2010-52

SNDG. DATE: 9/13/10
ANAL. DATE: 9/14/10

ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 4.6 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 6.9 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.18 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA / PHI = 0.5 DELTA-B = 0.07 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

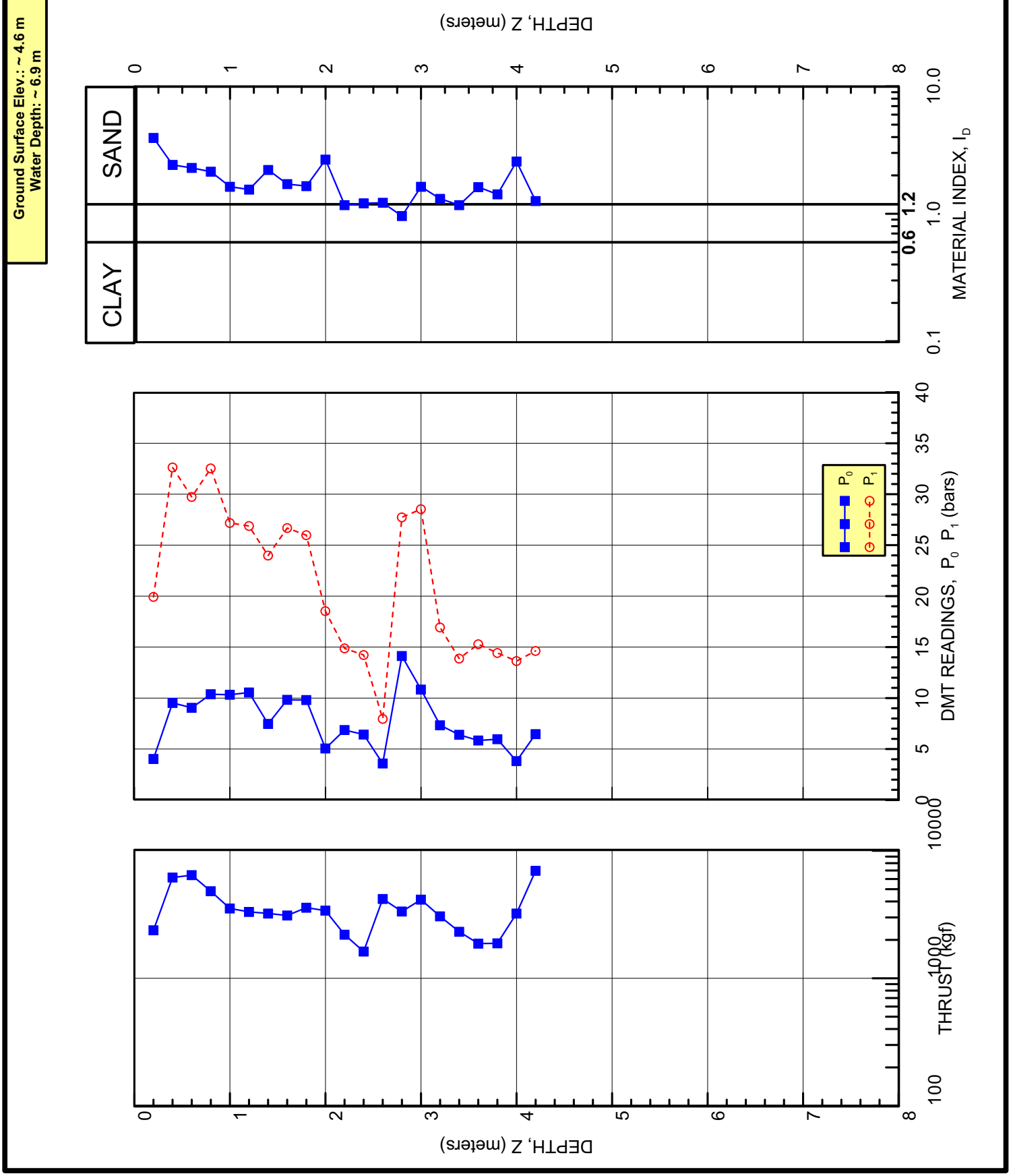
Z (M)	ELEV (M)	KD	ID	UD	ED (BAR)	K0	SU (BAR)	QD (BAR)	PHI (DEG)	SIGFF (BAR)	PHIO (DEG)	PC (BAR)	OCR	M (BAR)	SOIL TYPE
0.20	4.40	115.23	3.94		552									2656	SAND
0.40	4.20	125.85	2.42		802									3926	SILTY SAND
0.60	4.00	76.70	2.29		718	8.94		181.3	47.5	0.20	44.3	54.82	464.9	3179	SILTY SAND
0.80	3.80	64.79	2.14		769	7.78		120.8	43.5	0.27	40.2	65.14	406.8	3282	SILTY SAND
1.00	3.60	51.17	1.63		585	6.25		78.1	40.8	0.33	37.5	58.46	289.7	2366	SANDY SILT
1.20	3.40	43.42	1.55		567	5.35		70.8	39.9	0.40	36.8	52.89	217.6	2204	SANDY SILT
1.40	3.20	26.38	2.21		573	3.24		80.1	41.6	0.47	38.9	21.32	75.3	1958	SILTY SAND
1.60	3.00	30.38	1.71		585	3.80		67.4	39.3	0.53	36.7	35.16	108.7	2077	SANDY SILT
1.80	2.80	26.90	1.65		561	3.35		83.4	40.3	0.60	37.9	30.00	82.3	1928	SANDY SILT
2.00	2.60	12.49	2.66		467	1.51		97.5	43.1	0.68	41.1	6.60	16.3	1267	SILTY SAND
2.20	2.40	15.48	1.17		278	2.40						10.80	24.3	810	SILT
2.40	2.20	13.34	1.21		271	1.85		33.0	35.4	0.76	33.1	11.94	24.8	751	SANDY SILT
2.60	2.00	6.92	1.22		152	0.72		133.1	45.1	0.89	43.6	2.11	4.1	324	SANDY SILT
2.80	1.80	25.37	0.96		472	3.18						29.31	52.6	1595	SILT
3.00	1.60	18.11	1.63		614	2.31		99.7	39.8	0.98	38.1	23.04	38.5	1880	SANDY SILT
3.20	1.40	11.51	1.31		333	1.53		77.7	39.3	1.04	37.7	10.47	16.4	876	SANDY SILT
3.40	1.20	9.47	1.17		259	1.78						7.65	11.3	635	SILT
3.60	1.00	8.17	1.62		328	1.22		44.5	35.9	1.13	34.3	7.05	9.9	756	SANDY SILT
3.80	0.80	7.93	1.42		294	1.20		44.5	35.6	1.19	34.1	7.10	9.4	668	SANDY SILT
4.00	0.60	4.84	2.57		340	0.66		99.1	41.4	1.31	40.3	2.38	3.0	629	SILTY SAND
4.20	0.40	7.81	1.26		283	0.85		218.6	44.8	1.41	44.0	4.55	5.5	639	SANDY SILT

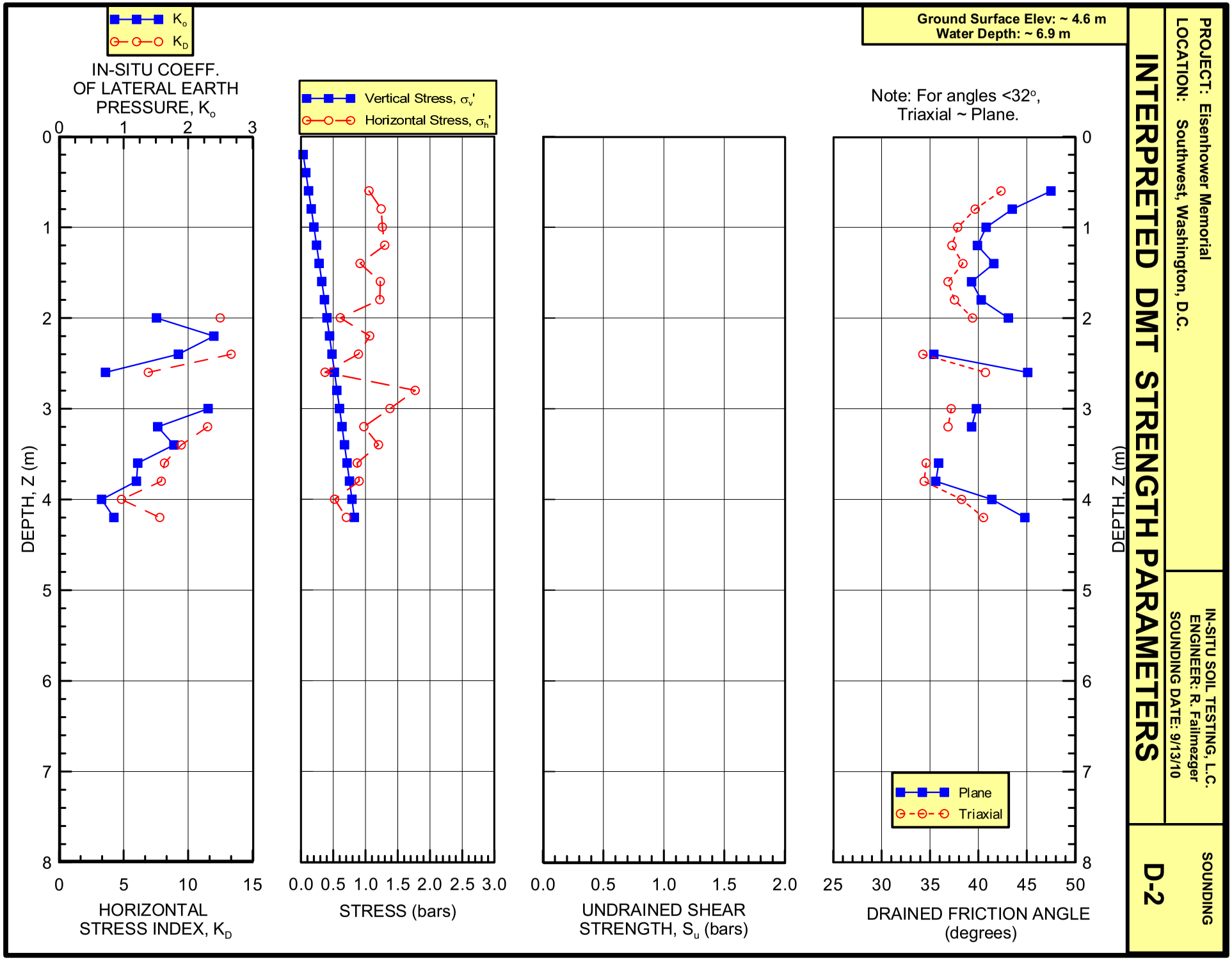
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PROJECT: Eisenhower Memorial LOCATION: Southwest, Washington, D.C.	IN-SITU SOIL TESTING, L.C. ENGINEER: R. Failmezger SOUNDING DATE: 9/13/10	SOUNDING D-2

DILATOMETER RESULTS

Ground Surface Elev.: ~ 4.6 m
Water Depth: ~ 6.9 m




Ground Surface Elev: ~ 4.6 m
Water Depth: ~ 6.9 m
INTERPRETED DMT STRENGTH PARAMETERS
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10
SOUNDING
D-2
K_o
K_D
IN-SITU COEFF. OF LATERAL EARTH PRESSURE, K_o
HORIZONTAL STRESS INDEX, K_D
Vertical Stress, σ_v'
Horizontal Stress, σ_h'
STRESS (bars)
UNDRAINED SHEAR STRENGTH, S_u (bars)
Note: For angles <32°, Triaxial ~ Plane.
Plane
Triaxial
DRAINED FRICTION ANGLE (degrees)
DEPTH, Z (m)

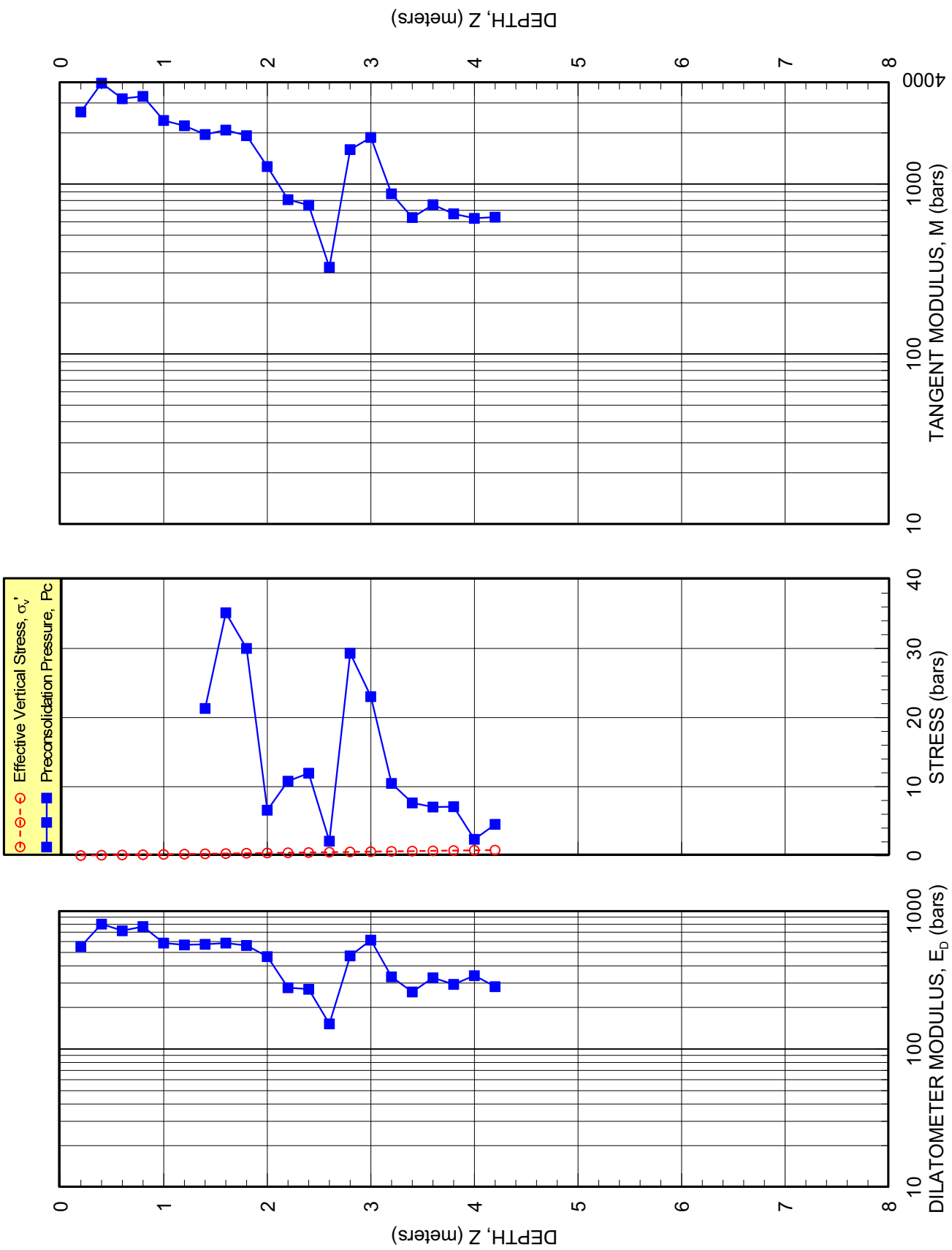
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING
D-2

INTERPRETED DMT DEFORMATION PARAMETERS

Ground Surface Elev.: ~ 4.6 m
Water Depth: ~ 6.9 m



Pile Width/Diameter = 18 inches 46 cm

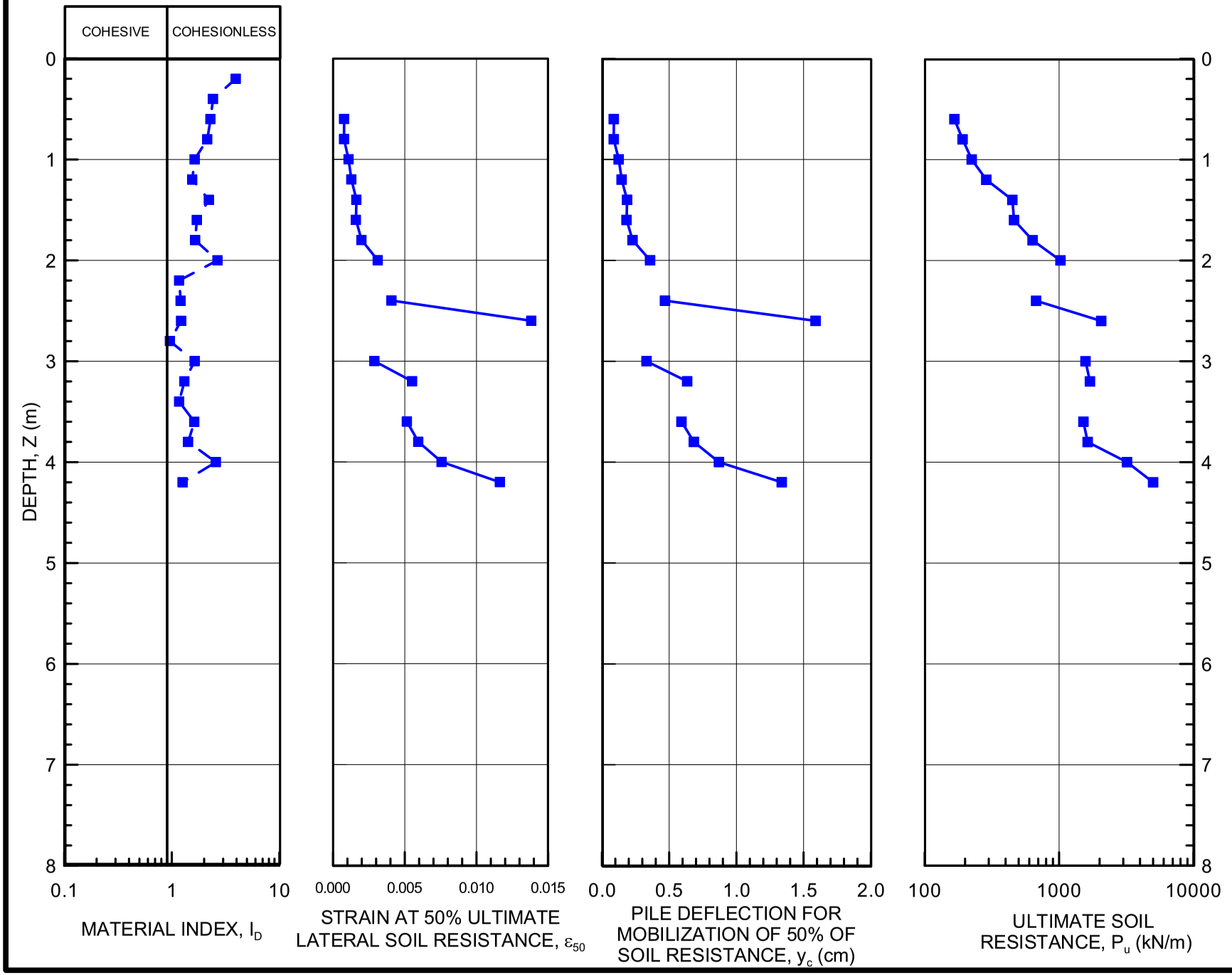
Ground Surface Elev: ~ 4.6 m
Water Depth: ~ 6.9 m

PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

INTERPRETED P-y PARAMETERS FOR LATERAL LOAD ANALYSES

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING D-2



DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL) SNDG. NO. :D-7
In-Situ Soil Testing, L.C. Page 1a
JOB FILE: Dwight D. Eisenhower Memorial FILE NO. : 2010-52
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger SNDG. DATE: 9/13/10
ANAL.BY : Roger Failmezger, P.E. ANAL. DATE: 9/14/10

ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 4.6 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 7.5 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.24 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA/PHI = 0.5 DELTA-B = 0.06 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

Z (M)	ELEV (M)	THRUST (KGF)	A (BAR)	B (BAR)	C (BAR)	DA (BAR)	DB (BAR)	ZMRNG (BAR)	ZMLO (BAR)	ZMHI (BAR)	ZMCAL (BAR)	P0 (BAR)	P1 (BAR)	P2 (BAR)	U0 (BAR)	GAMMA (T/M3)	SVP (BAR)
0.40	4.20	820	2.33	5.13		0.24	0.06	9.00	0.00	0.00	0.00	2.45	5.07		0.000	1.70	0.070
0.60	4.00	1080	5.98	12.75		0.24	0.06	9.00	0.00	0.00	0.00	5.90	12.69		0.000	1.95	0.106
0.80	3.80	1350	7.52	15.25		0.24	0.06	9.00	0.00	0.00	0.00	7.39	15.19		0.000	1.95	0.144
1.00	3.60	1400	8.10	16.10		0.24	0.06	9.00	0.00	0.00	0.00	7.96	16.04		0.000	1.95	0.182
1.20	3.40	1460	8.29	15.30		0.24	0.06	9.00	0.00	0.00	0.00	8.19	15.24		0.000	1.95	0.221
1.40	3.20	1480	7.88	15.40		0.24	0.06	9.00	0.00	0.00	0.00	7.76	15.34		0.000	1.95	0.259
1.60	3.00	2030	7.79	20.60		0.24	0.06	9.00	0.00	0.00	0.00	7.40	20.54		0.000	1.95	0.297
1.80	2.80	2680	7.30	19.85		0.24	0.06	9.00	0.00	0.00	0.00	6.93	19.79		0.000	2.00	0.336
2.00	2.60	3790	5.26	19.15		0.24	0.06	9.00	0.00	0.00	0.00	4.82	19.09		0.000	2.00	0.375
2.20	2.40	4880	7.05	21.80		0.24	0.06	9.00	0.00	0.00	0.00	6.57	21.74		0.000	2.00	0.414
2.40	2.20	4200	7.43	22.80		0.24	0.06	9.00	0.00	0.00	0.00	6.92	22.74		0.000	2.00	0.454
2.60	2.00	2930	5.17	16.45		0.24	0.06	9.00	0.00	0.00	0.00	4.86	16.39		0.000	2.00	0.493
2.80	1.80	3410	2.30	6.89		0.24	0.06	9.00	0.00	0.00	0.00	2.33	6.83		0.000	1.90	0.531
3.00	1.60	2820	6.38	11.15		0.24	0.06	9.00	0.00	0.00	0.00	6.40	11.09		0.000	1.95	0.569
3.20	1.40	1390	4.82	9.95		0.24	0.06	9.00	0.00	0.00	0.00	4.82	9.89		0.000	1.80	0.606
3.40	1.20	1120	3.88	8.41		0.24	0.06	9.00	0.00	0.00	0.00	3.91	8.35		0.000	1.80	0.641
3.60	1.00	1020	3.19	6.38		0.24	0.06	9.00	0.00	0.00	0.00	3.29	6.32		0.000	1.80	0.676
3.80	0.80	960	3.19	5.28		0.24	0.06	9.00	0.00	0.00	0.00	3.34	5.22		0.000	1.70	0.711
4.00	0.60	890	4.68	6.10		0.24	0.06	9.00	0.00	0.00	0.00	4.86	6.04		0.000	1.70	0.744
4.20	0.40	1240	5.58	8.93		0.24	0.06	9.00	0.00	0.00	0.00	5.67	8.87		0.000	1.80	0.779
4.40	0.20	2200	8.73	22.60		0.24	0.06	9.00	0.00	0.00	0.00	8.29	22.54		0.000	1.95	0.815
4.60	0.00	2710	3.78	11.30		0.24	0.06	9.00	0.00	0.00	0.00	3.66	11.24		0.000	1.90	0.853
4.80	-0.20	2230	3.13	11.15		0.24	0.06	9.00	0.00	0.00	0.00	2.98	11.09		0.000	1.90	0.890
5.00	-0.40	1900	2.88	10.15		0.24	0.06	9.00	0.00	0.00	0.00	2.77	10.09		0.000	1.90	0.928
5.20	-0.60	1900	4.41	7.39		0.24	0.06	9.00	0.00	0.00	0.00	4.52	7.33		0.000	1.80	0.964
5.40	-0.80	2910	4.57	13.25		0.24	0.06	9.00	0.00	0.00	0.00	4.39	13.19		0.000	1.90	1.000
5.60	-1.00	5410	9.35	26.70		0.24	0.06	9.00	0.00	0.00	0.00	8.74	26.64		0.000	2.15	1.040
5.80	-1.20	5420	9.25	25.80		0.24	0.06	9.00	0.00	0.00	0.00	8.68	25.74		0.000	2.15	1.082
6.00	-1.40	4990	6.60	19.25		0.24	0.06	9.00	0.00	0.00	0.00	6.22	19.19		0.000	2.00	1.123
6.20	-1.60	7320	10.75	34.25		0.24	0.06	9.00	0.00	0.00	0.00	9.83	34.19		0.000	2.15	1.164

DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL)
In-Situ Soil Testing, L.C.
JOB FILE: Dwight D. Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger
ANAL.BY : Roger Failmezger, P.E.

SNDG. NO. : D-7

FILE NO. :2010-52

SNDG. DATE: 9/13/10
ANAL. DATE: 9/14/10

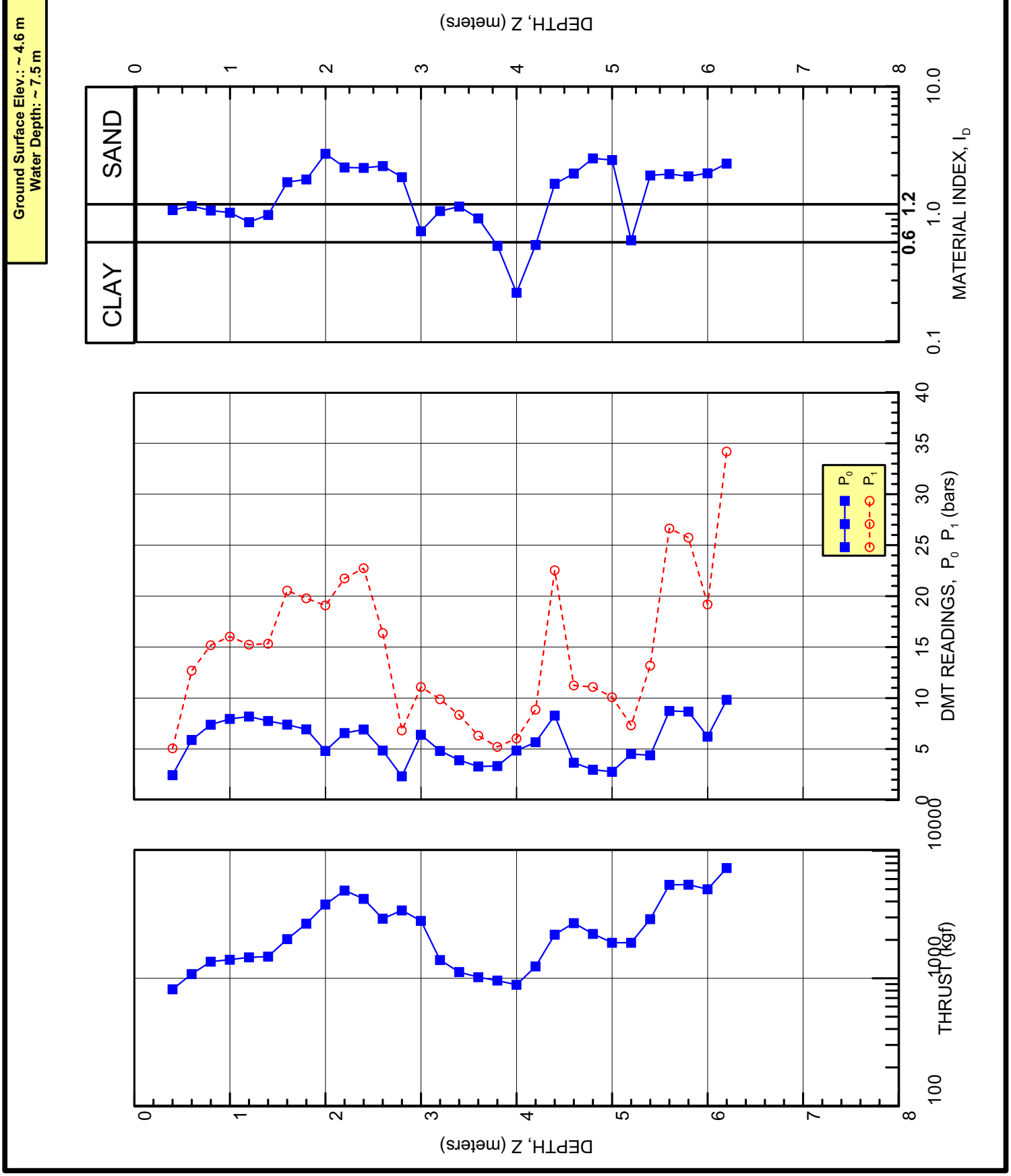
ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 4.6 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 7.5 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.24 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA / PHI = 0.5 DELTA-B = 0.06 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

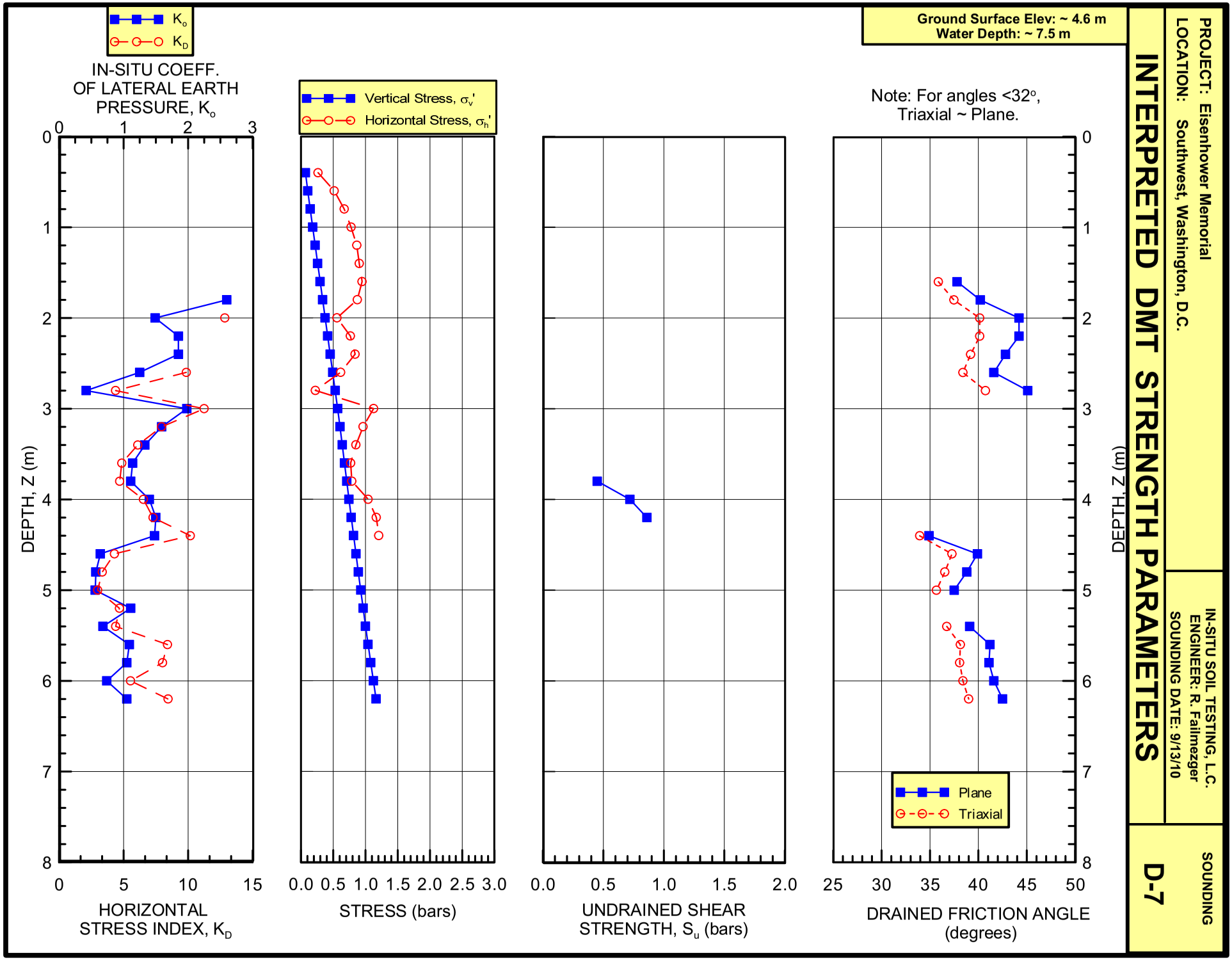
Z (M)	ELEV (M)	KD	ID	UD	ED (BAR)	K0	SU (BAR)	QD (BAR)	PHI (DEG)	SIGFF (BAR)	PHIO (DEG)	PC (BAR)	OCR	M (BAR)	SOIL TYPE
0.40	4.20	34.93	1.07		91	3.79						6.07	86.6	336	SILT
0.60	4.00	55.72	1.15		236	4.87						19.00	179.6	973	SILT
0.80	3.80	51.28	1.06		271	4.66						22.72	157.7	1096	SILT
1.00	3.60	43.62	1.02		281	4.27						22.35	122.6	1093	SILT
1.20	3.40	37.14	0.86		244	3.92						21.04	95.4	915	CLAYEY SILT
1.40	3.20	29.97	0.98		263	3.49						17.67	68.2	931	SILT
1.60	3.00	24.92	1.77		456	3.19		41.3	37.8	0.48	34.8	23.11	77.8	1533	SANDY SILT
1.80	2.80	20.62	1.86		446	2.60		64.7	40.2	0.55	37.7	16.37	48.7	1422	SILTY SAND
2.00	2.60	12.85	2.96		495	1.49		112.4	44.2	0.64	42.2	6.05	16.1	1355	SILTY SAND
2.20	2.40	15.85	2.31		526	1.85		142.5	44.2	0.70	42.3	10.17	24.5	1546	SILTY SAND
2.40	2.20	15.24	2.29		549	1.85		117.5	42.8	0.76	40.9	11.08	24.4	1592	SILTY SAND
2.60	2.00	9.86	2.37		400	1.25		83.0	41.6	0.82	39.8	5.47	11.1	995	SILTY SAND
2.80	1.80	4.38	1.94		156	0.42		111.9	45.1	0.91	43.6	0.77	1.4	270	SILTY SAND
3.00	1.60	11.24	0.73		163	1.98						8.41	14.8	425	CLAYEY SILT
3.20	1.40	7.95	1.05		176	1.59						5.22	8.6	400	SILT
3.40	1.20	6.10	1.14		154	1.33						3.65	5.7	310	SILT
3.60	1.00	4.86	0.92		105	1.14						2.70	4.0	187	SILT
3.80	0.80	4.70	0.56		65	1.11	0.45					2.69	3.8	113	SILTY CLAY
4.00	0.60	6.54	0.24		41	1.40	0.72					4.72	6.3	84	CLAY
4.20	0.40	7.28	0.57		111	1.50	0.86					5.84	7.5	242	SILTY CLAY
4.40	0.20	10.17	1.72		494	1.48		47.2	34.9	1.28	33.6	12.30	15.1	1244	SANDY SILT
4.60	0.00	4.29	2.07		263	0.64		82.4	39.9	1.40	38.8	2.34	2.7	451	SILTY SAND
4.80	-0.20	3.35	2.72		281	0.57		68.8	38.8	1.45	37.7	1.80	2.0	430	SILTY SAND
5.00	-0.40	2.99	2.64		254	0.56		58.4	37.5	1.49	36.5	1.74	1.9	361	SILTY SAND
5.20	-0.60	4.68	0.62		98	1.11						3.64	3.8	168	CLAYEY SILT
5.40	-0.80	4.39	2.00		305	0.68		86.8	39.1	1.63	38.3	3.00	3.0	529	SILTY SAND
5.60	-1.00	8.40	2.05		621	1.09		154.6	41.2	1.73	40.5	8.71	8.4	1452	SILTY SAND
5.80	-1.20	8.02	1.97		592	1.05		155.5	41.1	1.79	40.5	8.34	7.7	1358	SILTY SAND
6.00	-1.40	5.54	2.08		450	0.74		151.7	41.6	1.87	41.0	4.26	3.8	878	SILTY SAND
6.20	-1.60	8.45	2.48		845	1.05		216.7	42.5	1.95	42.0	9.13	7.8	1984	SILTY SAND

PROJECT: Eisenhower Memorial LOCATION: Southwest, Washington, D.C.	IN-SITU SOIL TESTING, L.C. ENGINEER: R. Failmezger SOUNDING DATE: 9/13/10	SOUNDING D-7

DILATOMETER RESULTS

Ground Surface Elev.: ~ 4.6 m
Water Depth: ~ 7.5 m




Ground Surface Elev: ~ 4.6 m
Water Depth: ~ 7.5 m
INTERPRETED DMT STRENGTH PARAMETERS
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10
SOUNDING
D-7
IN-SITU COEFF. OF LATERAL EARTH PRESSURE, K_o
K_o
K_D
HORIZONTAL STRESS INDEX, K_D
Vertical Stress, σ_v'
Horizontal Stress, σ_h'
STRESS (bars)
UNDRAINED SHEAR STRENGTH, S_u (bars)
Note: For angles <32°, Triaxial ~ Plane.
Plane
Triaxial
DRAINED FRICTION ANGLE (degrees)
DEPTH, Z (m)

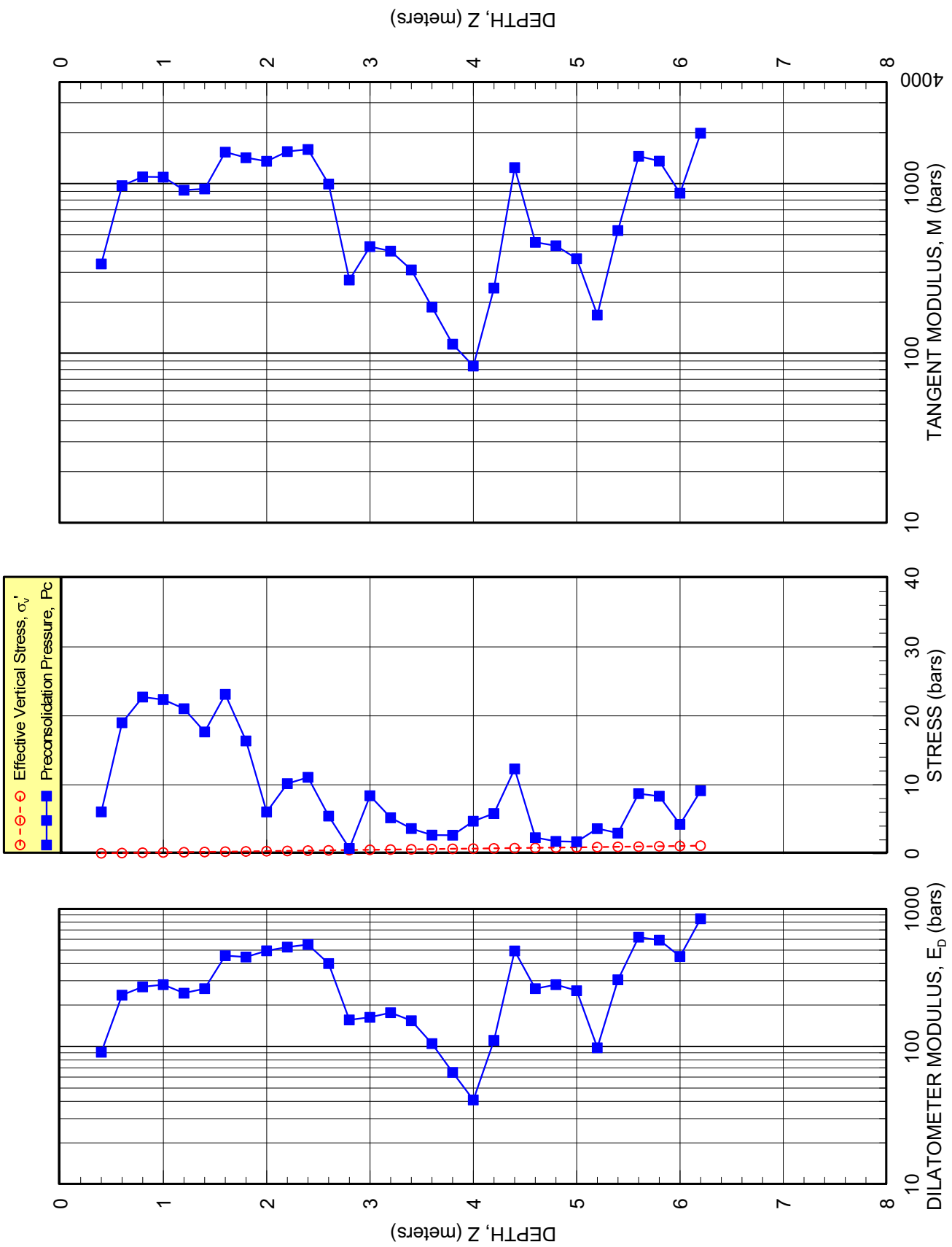
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING
D-7

INTERPRETED DMT DEFORMATION PARAMETERS

Ground Surface Elev.: ~ 4.6 m
Water Depth: ~ 7.5 m



Pile Width/Diameter = 18 inches 46 cm

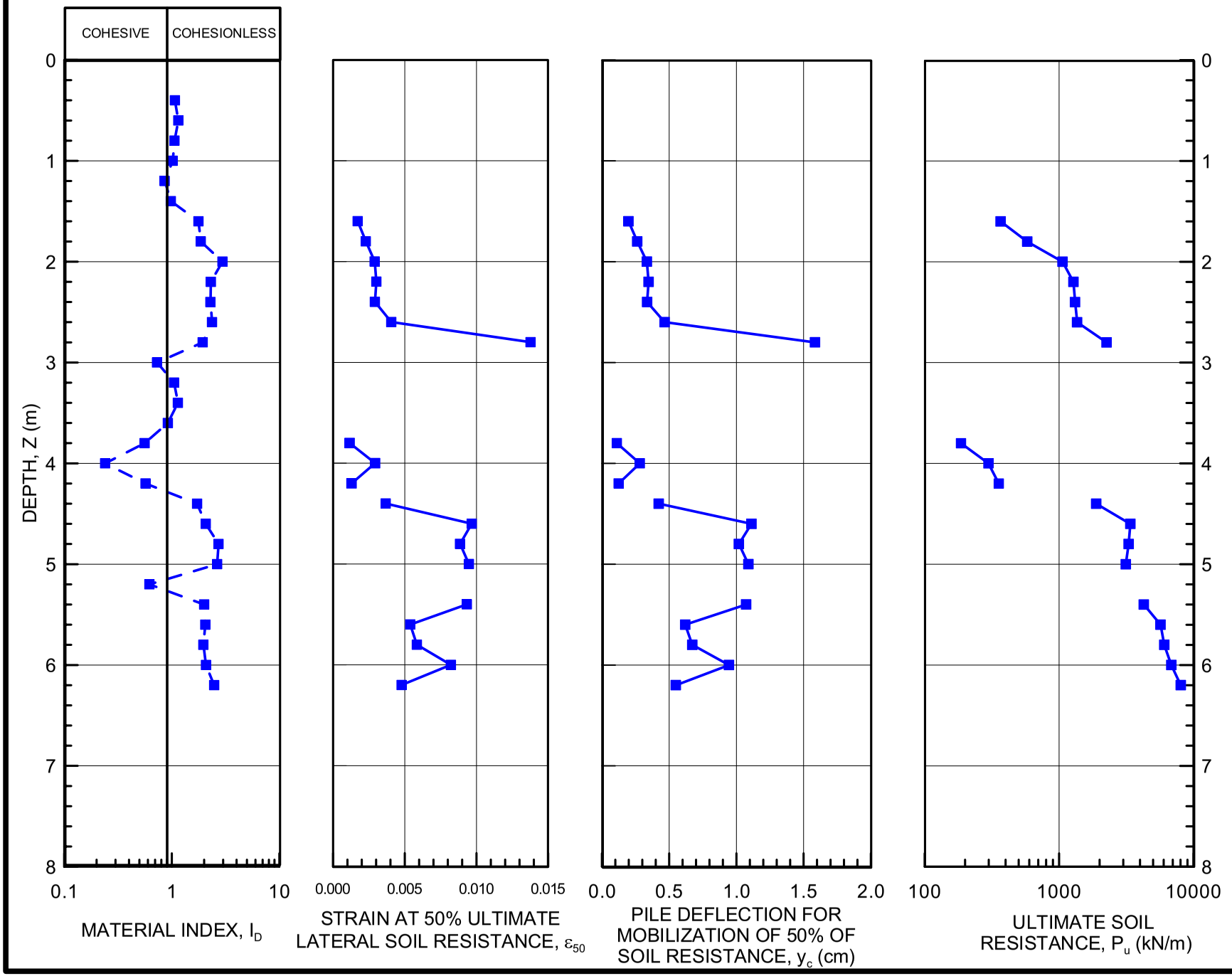
Ground Surface Elev: ~ 4.6 m
Water Depth: ~ 7.5 m

PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

INTERPRETED P-y PARAMETERS FOR LATERAL LOAD ANALYSES

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING D-7



DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL)
In-Situ Soil Testing, L.C.
JOB FILE: Dwight D. Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger
ANAL.BY : Roger Failmezger, P.E.

SNDG. NO. :D-8

FILE NO. : 2010-52
SNDG. DATE: 9/13/10
ANAL. DATE: 9/14/10

ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 5.0 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 8.7 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.24 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA/PHI = 0.5 DELTA-B = 0.06 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

Z (M)	ELEV (M)	THRUST (KGF)	A (BAR)	B (BAR)	C (BAR)	DA (BAR)	DB (BAR)	ZMRNG (BAR)	ZMLO (BAR)	ZMHI (BAR)	ZMCAL (BAR)	P0 (BAR)	P1 (BAR)	P2 (BAR)	U0 (BAR)	GAMMA (T/M3)	SVP (BAR)
0.40	4.60	500	1.40	5.11		0.24	0.06	9.00	0.00	0.00	0.00	1.47	5.05		0.000	1.80	0.070
0.60	4.40	1060	2.12	7.27		0.24	0.06	9.00	0.00	0.00	0.00	2.12	7.21		0.000	1.80	0.105
0.80	4.20	930	2.42	5.43		0.24	0.06	9.00	0.00	0.00	0.00	2.52	5.37		0.000	1.70	0.140
1.00	4.00	760	3.18	7.21		0.24	0.06	9.00	0.00	0.00	0.00	3.23	7.15		0.000	1.80	0.174
1.20	3.80	720	5.27	10.65		0.24	0.06	9.00	0.00	0.00	0.00	5.26	10.59		0.000	1.80	0.209
1.40	3.60	1250	6.43	13.40		0.24	0.06	9.00	0.00	0.00	0.00	6.34	13.34		0.000	1.95	0.246
1.60	3.40	970	8.60	17.45		0.24	0.06	9.00	0.00	0.00	0.00	8.41	17.39		0.000	1.95	0.284
1.80	3.20	1040	8.03	11.25		0.24	0.06	9.00	0.00	0.00	0.00	8.12	11.19		0.000	1.90	0.322
2.00	3.00	1260	6.18	12.40		0.24	0.06	9.00	0.00	0.00	0.00	6.12	12.34		0.000	1.95	0.360
2.20	2.80	1470	6.48	12.55		0.24	0.06	9.00	0.00	0.00	0.00	6.43	12.49		0.000	1.95	0.398
2.40	2.60	1920	8.15	16.80		0.24	0.06	9.00	0.00	0.00	0.00	7.97	16.74		0.000	1.95	0.437
2.60	2.40	1660	5.80	11.50		0.24	0.06	9.00	0.00	0.00	0.00	5.77	11.44		0.000	1.95	0.475
2.80	2.20	1180	5.11	9.25		0.24	0.06	9.00	0.00	0.00	0.00	5.16	9.19		0.000	1.80	0.512
3.00	2.00	980	5.09	10.90		0.24	0.06	9.00	0.00	0.00	0.00	5.05	10.84		0.000	1.80	0.547
3.20	1.80	1150	5.10	8.80		0.24	0.06	9.00	0.00	0.00	0.00	5.17	8.74		0.000	1.80	0.582
3.40	1.60	990	4.22	6.48		0.24	0.06	9.00	0.00	0.00	0.00	4.36	6.42		0.000	1.80	0.618
3.60	1.40	690	4.79	6.92		0.24	0.06	9.00	0.00	0.00	0.00	4.94	6.86		0.000	1.80	0.653
3.80	1.20	1220	5.58	19.30		0.24	0.06	9.00	0.00	0.00	0.00	5.15	19.24		0.000	2.00	0.690
4.00	1.00	1800	3.62	10.20		0.24	0.06	9.00	0.00	0.00	0.00	3.55	10.14		0.000	1.90	0.728
4.20	0.80	1570	5.09	8.22		0.24	0.06	9.00	0.00	0.00	0.00	5.19	8.16		0.000	1.80	0.765
4.40	0.60	1660	6.38	9.95		0.24	0.06	9.00	0.00	0.00	0.00	6.46	9.89		0.000	1.80	0.800
4.60	0.40	4380	1.89	6.68		0.24	0.06	9.00	0.00	0.00	0.00	1.91	6.62		0.000	1.80	0.835
4.70	0.30	8380	5.91	20.80		0.24	0.06	9.00	0.00	0.00	0.00	5.42	20.74		0.000	2.00	0.854

DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL)
In-Situ Soil Testing, L.C.
JOB FILE: Dwight D. Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger
ANAL.BY : Roger Failmezger, P.E.

SNDG. NO. : D-8
Page 1b
FILE NO. :2010-52

SNDG. DATE: 9/13/10
ANAL. DATE: 9/14/10

ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 5.0 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 8.7 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.24 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA / PHI = 0.5 DELTA-B = 0.06 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

Z (M)	ELEV (M)	KD	ID	UD	ED (BAR)	K0	SU (BAR)	QD (BAR)	PHI (DEG)	SIGFF (BAR)	PHIO (DEG)	PC (BAR)	OCR	M (BAR)	SOIL TYPE
0.40	4.60	20.99	2.44		124	2.63		11.7	40.6	0.12	35.4	3.49	49.9	398	SILTY SAND
0.60	4.40	20.10	2.40		177	2.43		28.1	43.0	0.18	38.9	4.39	41.6	559	SILTY SAND
0.80	4.20	18.07	1.13		99	2.62						4.33	31.0	302	SILT
1.00	4.00	18.58	1.21		136	2.47		14.6	35.9	0.28	31.8	8.10	46.5	419	SANDY SILT
1.20	3.80	25.11	1.01		185	3.16						10.84	51.8	624	SILT
1.40	3.60	25.74	1.11		243	3.20						13.25	53.8	825	SILT
1.60	3.40	29.58	1.07		312	3.46						19.01	66.8	1099	SILT
1.80	3.20	25.21	0.38		106	3.17	1.68					16.79	52.1	359	SILTY CLAY
2.00	3.00	17.01	1.02		216	2.53						10.15	28.2	648	SILT
2.20	2.80	16.15	0.94		210	2.46						10.36	26.0	621	SILT
2.40	2.60	18.26	1.10		304	2.64						13.76	31.5	934	SILT
2.60	2.40	12.15	0.98		197	2.07						7.92	16.7	528	SILT
2.80	2.20	10.08	0.78		140	1.85						6.38	12.5	351	CLAYEY SILT
3.00	2.00	9.24	1.14		201	1.75						5.96	10.9	486	SILT
3.20	1.80	8.88	0.69		124	1.71						5.96	10.2	295	CLAYEY SILT
3.40	1.60	7.06	0.47		71	1.47	0.66					4.42	7.2	153	SILTY CLAY
3.60	1.40	7.56	0.39		67	1.54	0.76					5.20	8.0	148	SILTY CLAY
3.80	1.20	7.46	2.74		489	1.21		26.0	32.6	1.06	30.8	6.42	9.3	1095	SILTY SAND
4.00	1.00	4.87	1.86		229	0.78		51.0	37.6	1.17	36.1	2.81	3.9	417	SILTY SAND
4.20	0.80	6.78	0.57		103	1.43	0.77					5.14	6.7	217	SILTY CLAY
4.40	0.60	8.07	0.53		119	1.61	1.01					7.05	8.8	272	SILTY CLAY
4.60	0.40	2.28	2.47		164	0.16		149.7	45.2	1.43	44.3	0.19	0.2	191	SILTY SAND
4.70	0.30	6.35	2.83		532	0.53		273.9	46.7	1.48	46.0	2.04	2.4	1116	SILTY SAND

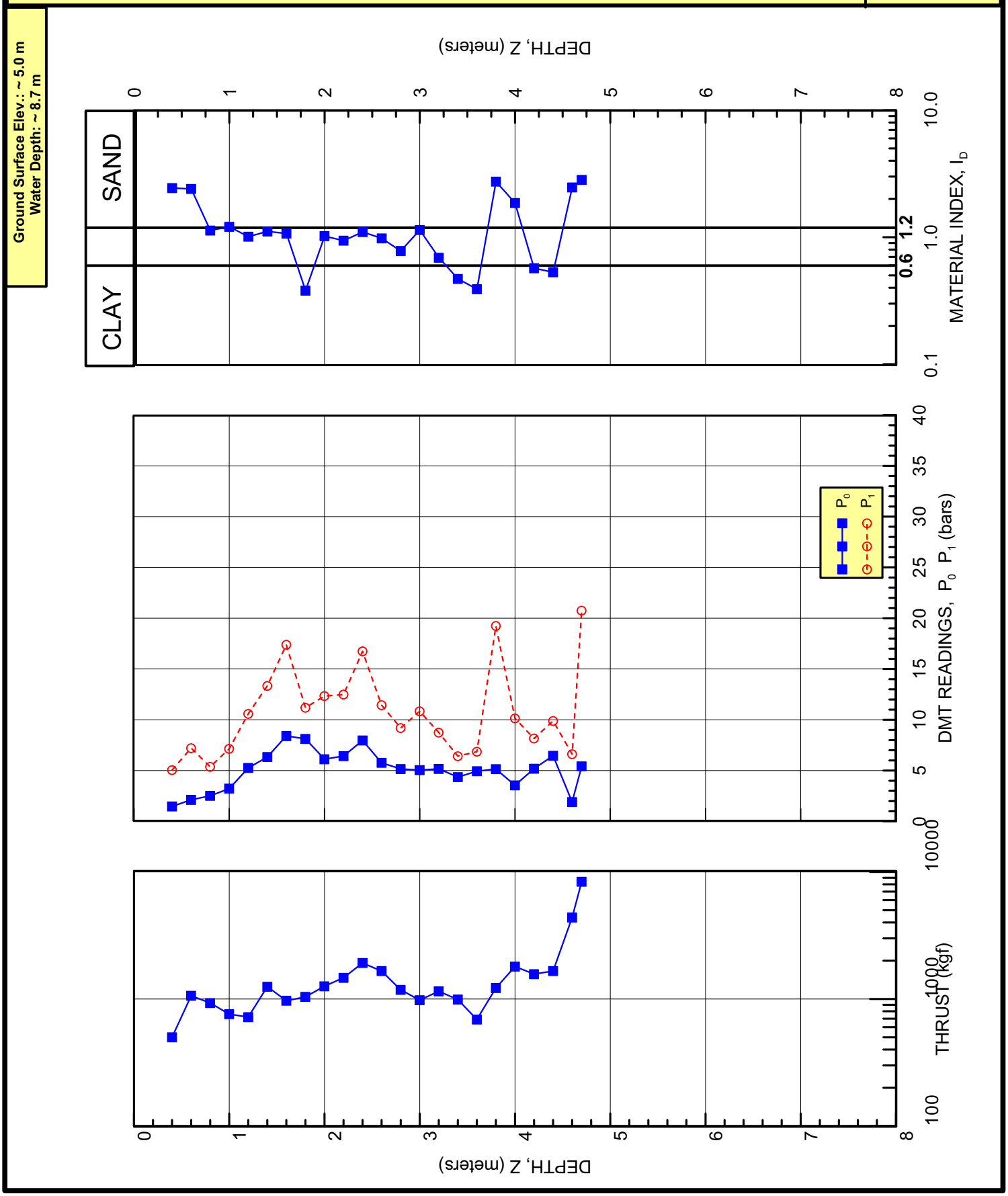
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

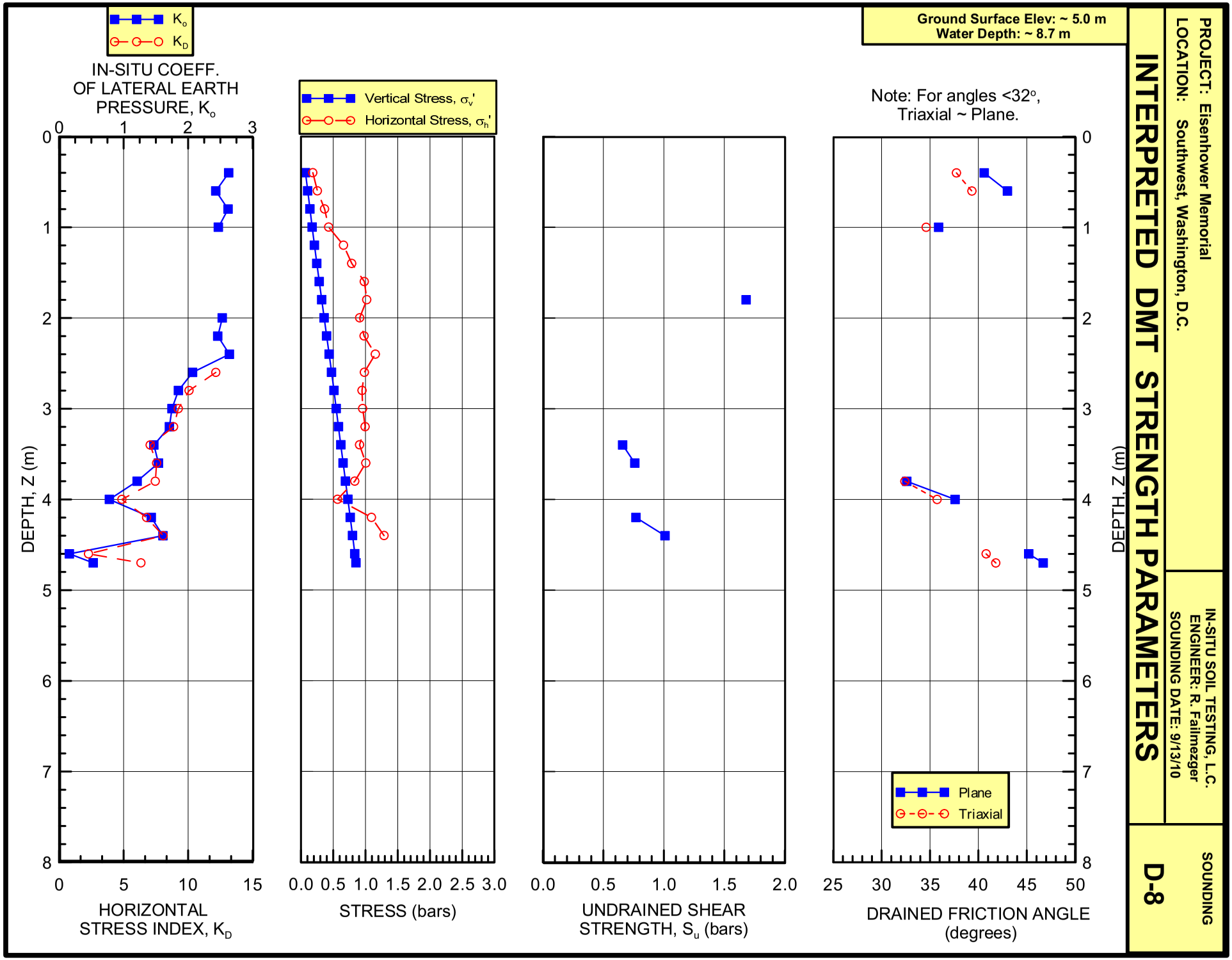
IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING
D-8

DILATOMETER RESULTS

Ground Surface Elev.: ~ 5.0 m
Water Depth: ~ 8.7 m




Ground Surface Elev: ~ 5.0 m
Water Depth: ~ 8.7 m
INTERPRETED DMT STRENGTH PARAMETERS
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10
SOUNDING
D-8
IN-SITU COEFF. OF LATERAL EARTH PRESSURE, K_o
K_o
K_D
HORIZONTAL STRESS INDEX, K_D
Vertical Stress, σ_v'
Horizontal Stress, σ_h'
STRESS (bars)
UNDRAINED SHEAR STRENGTH, S_u (bars)
Note: For angles <32°, Triaxial ~ Plane.
Plane
Triaxial
DRAINED FRICTION ANGLE (degrees)
DEPTH, Z (m)

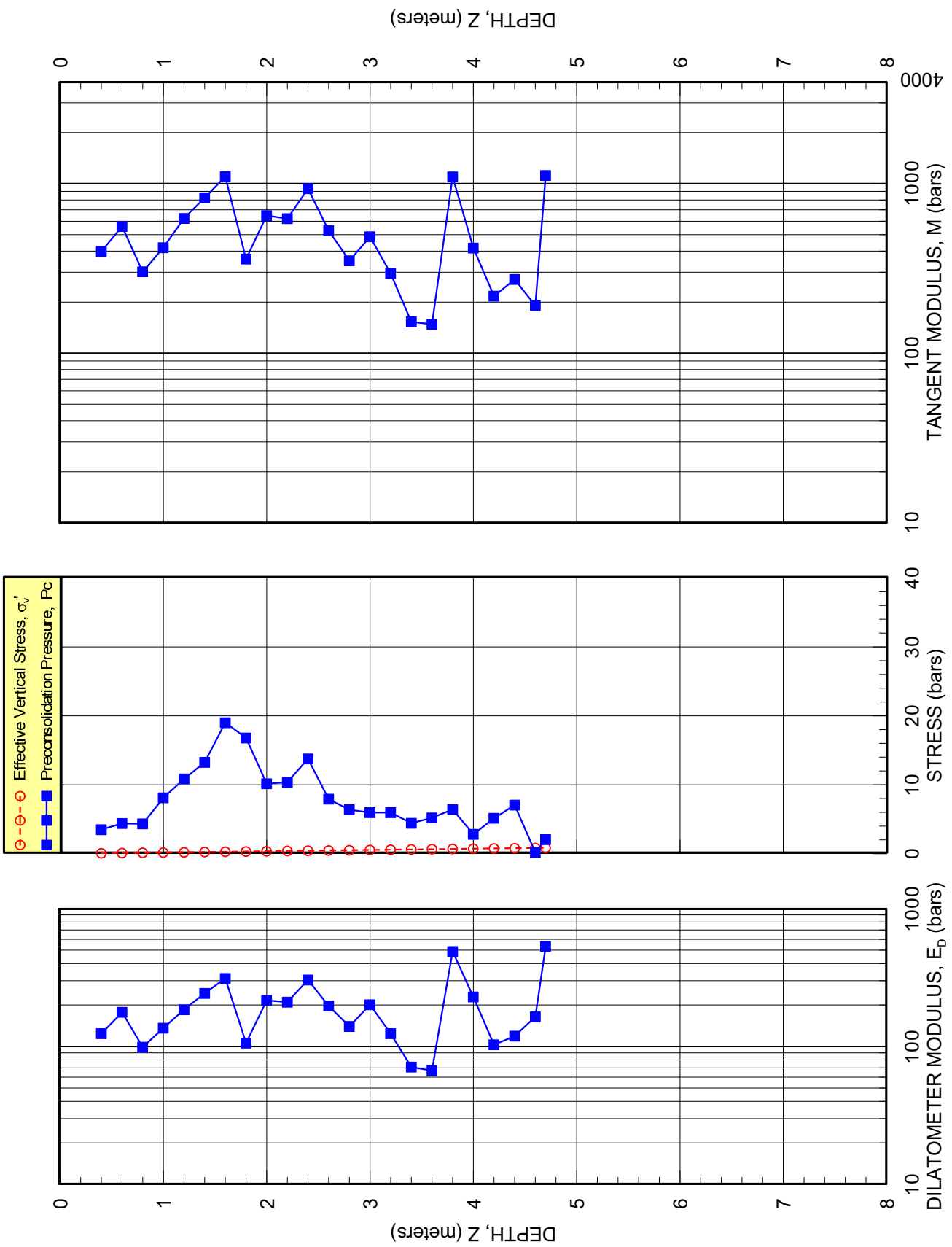
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING
D-8

INTERPRETED DMT DEFORMATION PARAMETERS

Ground Surface Elev.: ~ 5.0 m
Water Depth: ~ 8.7 m



Pile Width/Diameter = 18 inches 46 cm

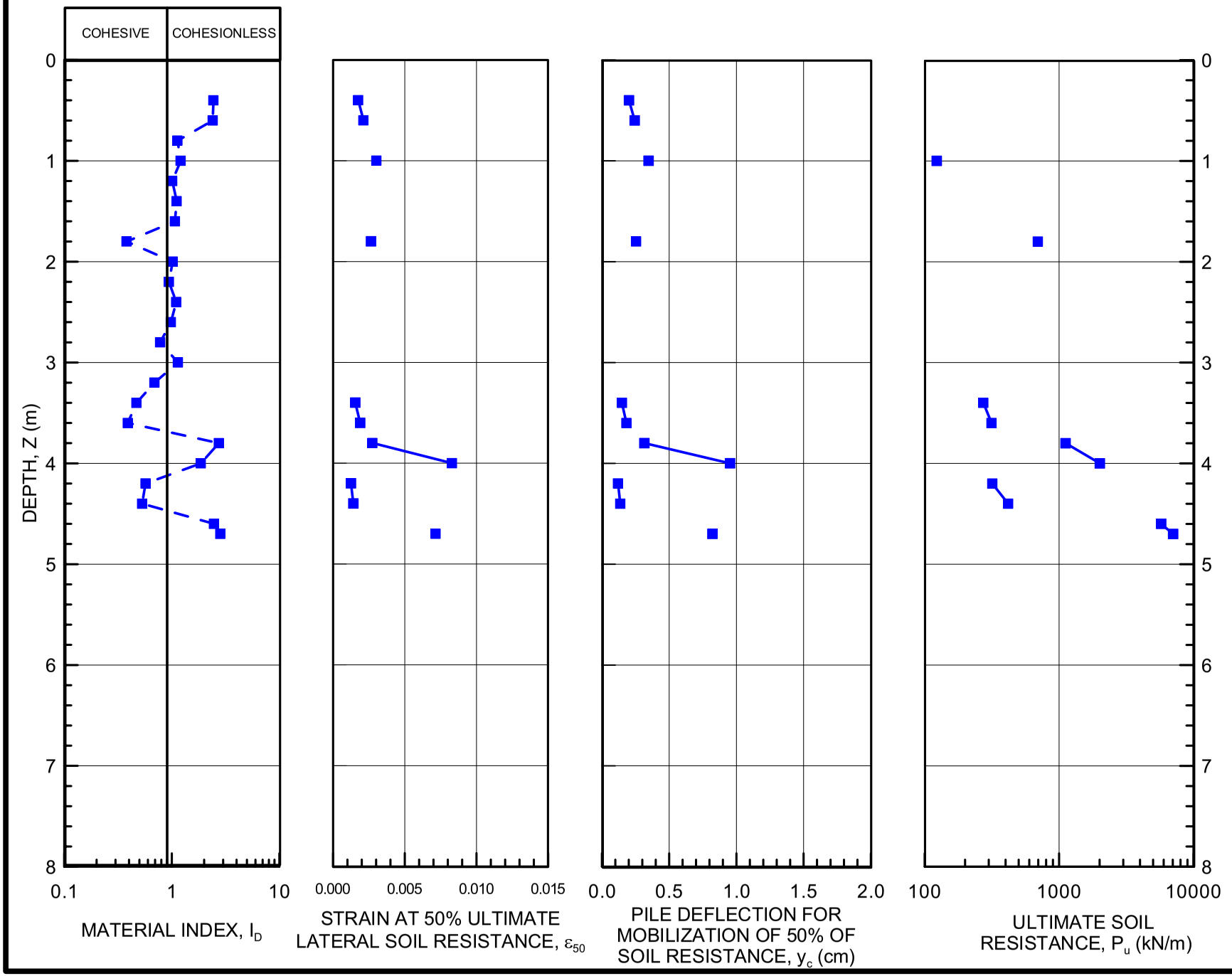
Ground Surface Elev: ~ 5.0 m
Water Depth: ~ 8.7 m

PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

INTERPRETED P-y PARAMETERS FOR LATERAL LOAD ANALYSES

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING D-8



DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL)
In-Situ Soil Testing, L.C.
JOB FILE: Dwight D. Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger
ANAL.BY : Roger Failmezger, P.E.

SNDG. NO. :D-14

FILE NO. : 2010-52

SNDG. DATE: 9/13/10
ANAL. DATE: 9/14/10

ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 5.2 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 8.7 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.22 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA/PHI = 0.5 DELTA-B = 0.09 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

Z (M)	ELEV (M)	THRUST (KGF)	A (BAR)	B (BAR)	C (BAR)	DA (BAR)	DB (BAR)	ZMRNG (BAR)	ZMLO (BAR)	ZMHI (BAR)	ZMCAL (BAR)	P0 (BAR)	P1 (BAR)	P2 (BAR)	U0 (BAR)	GAMMA (T/M3)	SVP (BAR)
0.40	4.80	680	2.40	7.08		0.22	0.09	9.00	0.00	0.00	0.00	2.40	6.99		0.000	1.90	0.070
0.60	4.60	1200	4.59	11.85		0.22	0.09	9.00	0.00	0.00	0.00	4.46	11.76		0.000	1.80	0.106
0.80	4.40	1300	4.72	13.95		0.22	0.09	9.00	0.00	0.00	0.00	4.49	13.86		0.000	2.00	0.144
1.00	4.20	1560	6.10	14.30		0.22	0.09	9.00	0.00	0.00	0.00	5.93	14.21		0.000	1.95	0.182
1.20	4.00	1580	6.12	13.95		0.22	0.09	9.00	0.00	0.00	0.00	5.96	13.86		0.000	1.95	0.221
1.40	3.80	1920	7.48	17.00		0.22	0.09	9.00	0.00	0.00	0.00	7.24	16.91		0.000	1.95	0.259
1.60	3.60	2110	7.70	17.20		0.22	0.09	9.00	0.00	0.00	0.00	7.46	17.11		0.000	1.95	0.297
1.80	3.40	2180	6.42	15.15		0.22	0.09	9.00	0.00	0.00	0.00	6.22	15.06		0.000	1.95	0.335
2.00	3.20	2450	7.61	17.70		0.22	0.09	9.00	0.00	0.00	0.00	7.34	17.61		0.000	1.95	0.374
2.20	3.00	2650	10.55	24.35		0.22	0.09	9.00	0.00	0.00	0.00	10.10	24.26		0.000	2.10	0.413
2.40	2.80	2570	8.68	23.60		0.22	0.09	9.00	0.00	0.00	0.00	8.17	23.51		0.000	2.00	0.454
2.60	2.60	2810	8.88	21.30		0.22	0.09	9.00	0.00	0.00	0.00	8.49	21.21		0.000	1.95	0.492
2.80	2.40	2290	7.22	15.60		0.22	0.09	9.00	0.00	0.00	0.00	7.04	15.51		0.000	1.95	0.531
3.00	2.20	1620	6.95	11.95		0.22	0.09	9.00	0.00	0.00	0.00	6.94	11.86		0.000	1.95	0.569
3.20	2.00	1380	9.55	15.50		0.22	0.09	9.00	0.00	0.00	0.00	9.49	15.41		0.000	1.95	0.607
3.40	1.80	1790	7.20	12.30		0.22	0.09	9.00	0.00	0.00	0.00	7.18	12.21		0.000	1.95	0.646
3.60	1.60	2030	5.87	13.50		0.22	0.09	9.00	0.00	0.00	0.00	5.72	13.41		0.000	1.95	0.684
3.80	1.40	2500	3.40	11.35		0.22	0.09	9.00	0.00	0.00	0.00	3.24	11.26		0.000	1.90	0.722
4.00	1.20	3220	6.02	16.35		0.22	0.09	9.00	0.00	0.00	0.00	5.74	16.26		0.000	2.00	0.760
4.20	1.00	3150	4.80	13.80		0.22	0.09	9.00	0.00	0.00	0.00	4.59	13.71		0.000	2.00	0.799
4.40	0.80	3400	3.53	8.85		0.22	0.09	9.00	0.00	0.00	0.00	3.50	8.76		0.000	1.80	0.836
4.60	0.60	3110	5.90	18.80		0.22	0.09	9.00	0.00	0.00	0.00	5.49	18.71		0.000	2.00	0.874
4.80	0.40	4140	5.23	17.95		0.22	0.09	9.00	0.00	0.00	0.00	4.83	17.86		0.000	2.00	0.913
5.00	0.20	5030	8.80	25.60		0.22	0.09	9.00	0.00	0.00	0.00	8.20	25.51		0.000	2.00	0.952
5.20	0.00	3340	7.60	20.45		0.22	0.09	9.00	0.00	0.00	0.00	7.19	20.36		0.000	2.00	0.991
5.40	-0.20	2000	6.30	7.87		0.22	0.09	9.00	0.00	0.00	0.00	6.46	7.78		0.000	1.80	1.029
5.60	-0.40	7430	1.90	5.70		0.22	0.09	9.00	0.00	0.00	0.00	1.95	5.61		0.000	1.80	1.064

DILATOMETER DATA LISTING & INTERPRETATION (BASED ON THE 1988 DILATOMETER MANUAL)
In-Situ Soil Testing, L.C.
JOB FILE: Dwight D. Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.
SNDG.BY : R. Failmezger
ANAL.BY : Roger Failmezger, P.E.

SNDG. NO. : D-14

FILE NO. :2010-52

SNDG. DATE: 9/13/10
ANAL. DATE: 9/14/10

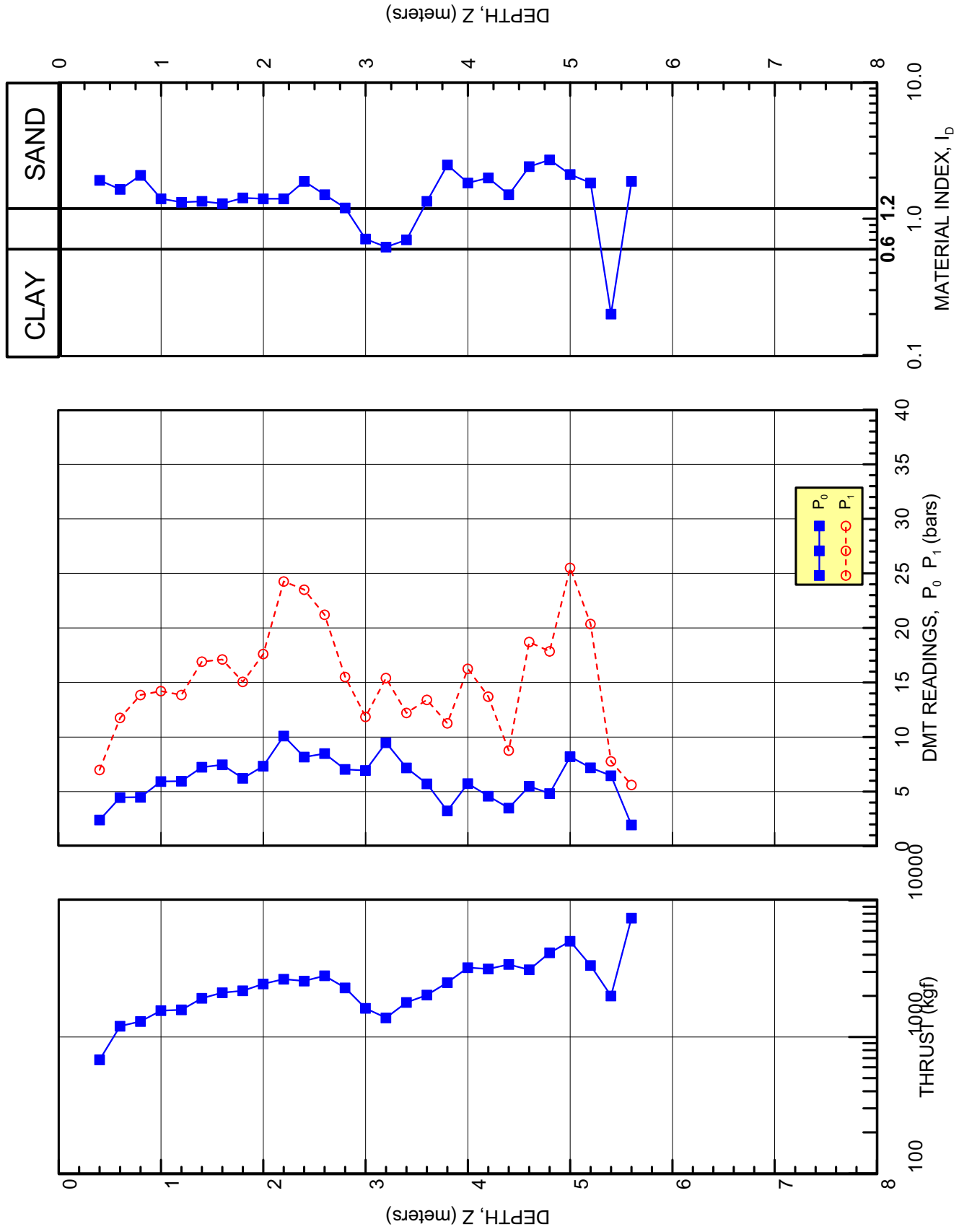
ANALYSIS PARAMETERS: LO RANGE = 9.00 BARS ROD DIAM. = 4.4 CM BL.THICK. = 15.0 MM SU FACTOR = 1
SURF.ELEV. = 5.2 M LO GAGE 0 = 0.00 BARS FR.RED.DIA. = 5.1 CM BL.WIDTH = 96.0 MM PHI FACTOR = 1
WATER DEPTH = 8.7 M HI GAGE 0 = 0.00 BARS LIN.ROD WT. = 8.0 KGF/M DELTA-A = 0.22 BARS OCR FACTOR = 1
SP.GR.WATER = 1.000 CAL GAGE 0 = 0.00 BARS DELTA / PHI = 0.5 DELTA-B = 0.09 BARS M FACTOR = 1
MAX SU ID = 0.6 SU OPTION = 0 MIN PHI ID = 1.2 OCR OPTION = 0 K0 FACTOR = 1
UNIT CONVERSIONS: 1 BAR = 1.019 KGF/CM2 = 100 KPA = 1.044 TSF = 14.51 PSI 1 M = 3.2808 FT

Z (M)	ELEV (M)	KD	ID	UD	ED (BAR)	K0	SU (BAR)	QD (BAR)	PHI (DEG)	SIGFF (BAR)	PHIO (DEG)	PC (BAR)	OCR	M (BAR)	SOIL TYPE
0.40	4.80	34.31	1.91		159	4.26		13.9	39.8	0.11	34.5	9.53	136.2	584	SILTY SAND
0.60	4.60	41.98	1.64		253	5.20		23.4	39.0	0.17	34.3	22.53	212.0	977	SANDY SILT
0.80	4.40	31.29	2.08		325	3.92		27.0	39.0	0.23	34.9	16.81	117.1	1164	SILTY SAND
1.00	4.20	32.49	1.40		287	4.09		30.5	38.1	0.29	34.3	23.96	131.4	1039	SANDY SILT
1.20	4.00	27.03	1.32		274	3.44		31.4	37.7	0.36	34.2	20.26	91.8	943	SANDY SILT
1.40	3.80	27.96	1.34		336	3.55		38.0	37.7	0.42	34.5	25.45	98.3	1166	SANDY SILT
1.60	3.60	25.10	1.29		335	3.20		43.6	38.1	0.48	35.1	23.20	78.1	1129	SANDY SILT
1.80	3.40	18.54	1.42		307	2.38		50.9	39.2	0.55	36.6	13.76	41.0	946	SANDY SILT
2.00	3.20	19.64	1.40		356	2.52		55.7	38.9	0.61	36.5	17.36	46.5	1119	SANDY SILT
2.20	3.00	24.42	1.40		492	3.14		52.4	37.3	0.66	34.9	31.51	76.2	1644	SANDY SILT
2.40	2.80	18.01	1.88		532	2.34		57.1	38.2	0.73	36.0	18.25	40.2	1627	SILTY SAND
2.60	2.60	17.25	1.50		441	2.24		64.1	38.5	0.80	36.5	18.01	36.6	1331	SANDY SILT
2.80	2.40	13.26	1.20		294	1.79		52.7	37.7	0.86	35.7	12.03	22.7	814	SANDY SILT
3.00	2.20	12.19	0.71		171	2.08						9.54	16.8	459	CLAYEY SILT
3.20	2.00	15.62	0.62		205	2.41						15.00	24.7	601	CLAYEY SILT
3.40	1.80	11.12	0.70		175	1.96						9.38	14.5	454	CLAYEY SILT
3.60	1.60	8.37	1.34		267	1.22		50.0	36.9	1.09	35.3	6.80	10.0	620	SANDY SILT
3.80	1.40	4.49	2.48		278	0.65		76.4	40.4	1.19	39.1	2.06	2.8	495	SILTY SAND
4.00	1.20	7.55	1.83		365	1.03		90.6	40.2	1.25	38.9	5.51	7.3	816	SILTY SAND
4.20	1.00	5.74	1.99		317	0.79		93.4	40.6	1.32	39.5	3.45	4.3	627	SILTY SAND
4.40	0.80	4.18	1.50		183	0.56		107.2	41.8	1.39	40.8	1.87	2.2	303	SANDY SILT
4.60	0.60	6.28	2.41		459	0.90		88.4	39.5	1.43	38.5	4.71	5.4	953	SILTY SAND
4.80	0.40	5.29	2.70		452	0.69		127.3	41.9	1.52	41.0	3.10	3.4	875	SILTY SAND
5.00	0.20	8.61	2.11		601	1.12		143.4	41.2	1.58	40.4	8.33	8.7	1419	SILTY SAND
5.20	0.00	7.25	1.83		457	1.04		89.9	38.5	1.61	37.6	7.20	7.3	1004	SILTY SAND
5.40	-0.20	6.28	0.20		46	1.36	0.95					6.13	6.0	93	CLAY
5.60	-0.40	1.83	1.88		127									115	SILTY SAND

PROJECT: Eisenhower Memorial **LOCATION:** Southwest, Washington, D.C.	**IN-SITU SOIL TESTING, L.C.** **ENGINEER: R. Failmezger** **SOUNDING DATE: 9/13/10**	**SOUNDING** **D-14**

DILATOMETER RESULTS

Ground Surface Elev.: ~ 5.2 m
Water Depth: ~ 8.7 m



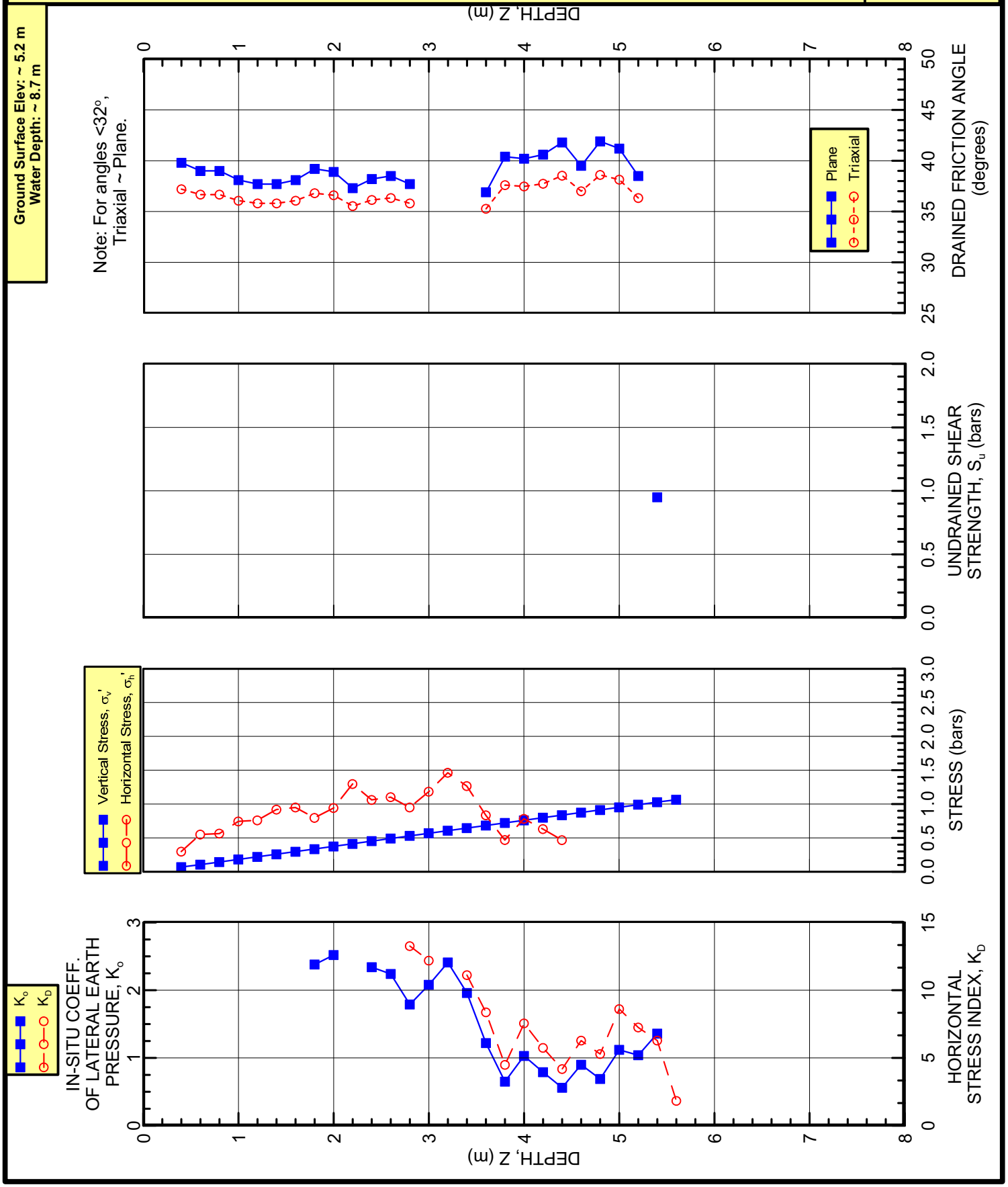
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING
D-14

INTERPRETED DMT STRENGTH PARAMETERS

Ground Surface Elev: ~ 5.2 m
Water Depth: ~ 8.7 m



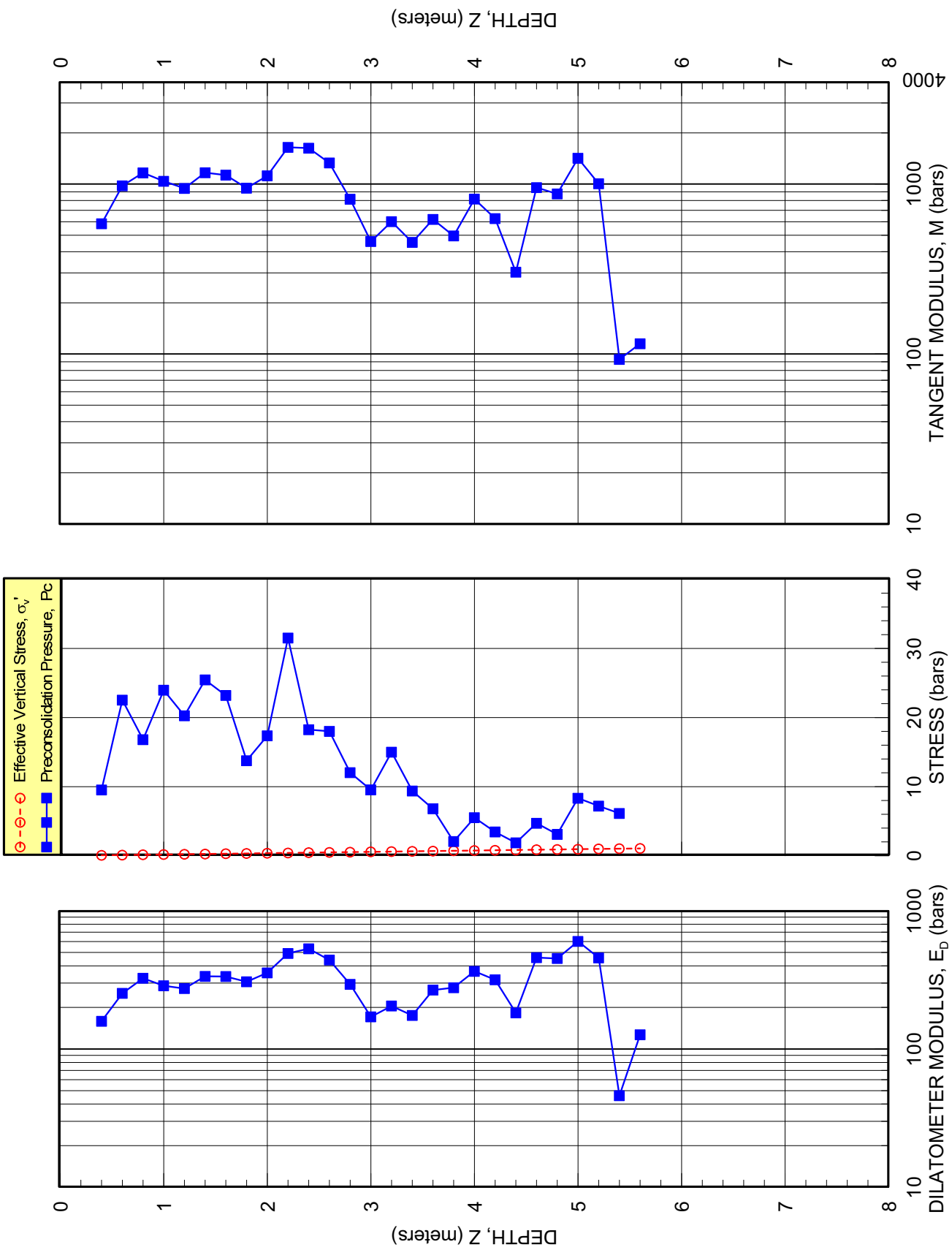
PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING
D-14

INTERPRETED DMT DEFORMATION PARAMETERS

Ground Surface Elev.: ~ 5.2 m
Water Depth: ~ 8.7 m



Pile Width/Diameter = 18 inches 46 cm

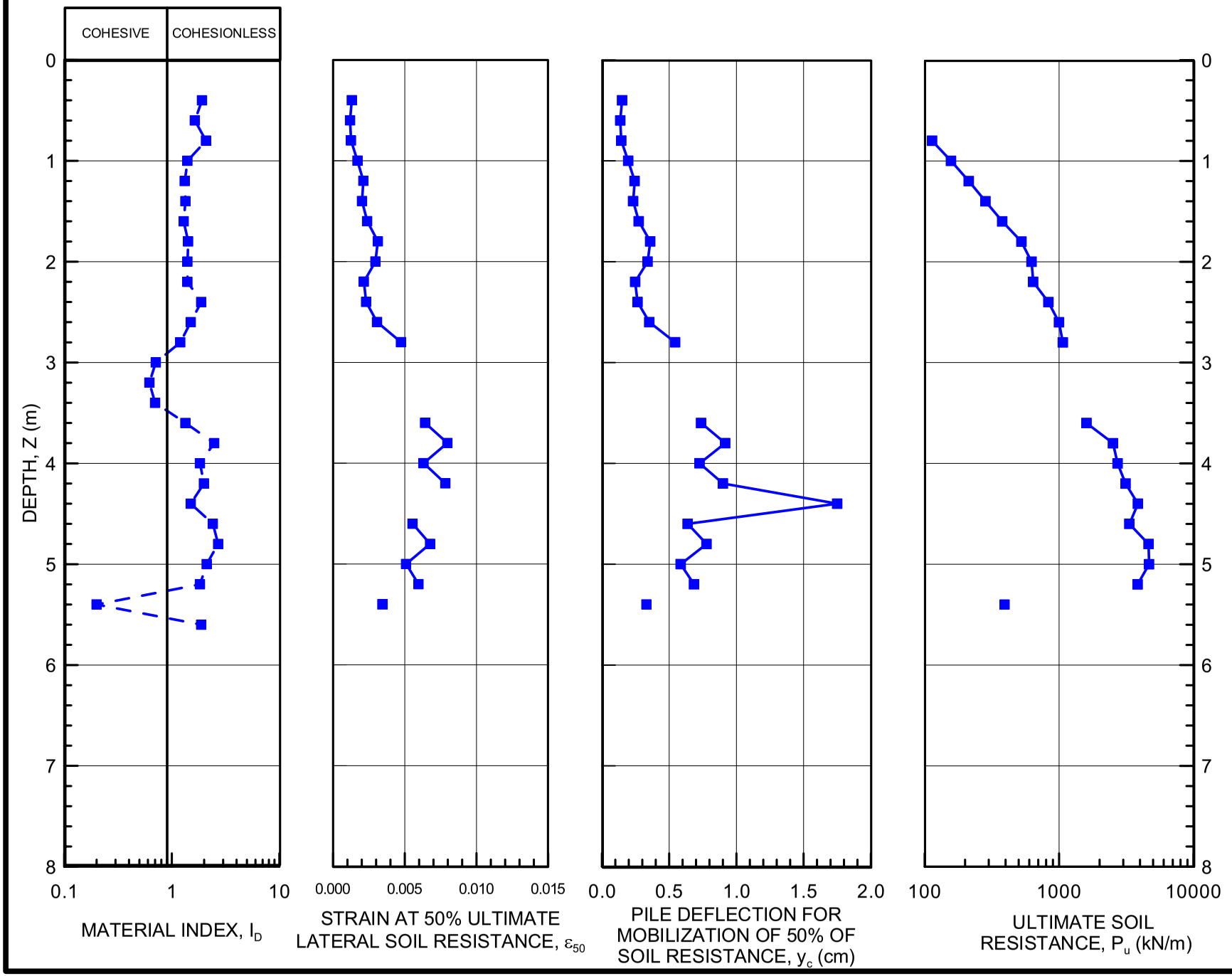
Ground Surface Elev: ~ 5.2 m
Water Depth: ~ 8.7 m

PROJECT: Eisenhower Memorial
LOCATION: Southwest, Washington, D.C.

INTERPRETED P-y PARAMETERS FOR LATERAL LOAD ANALYSES

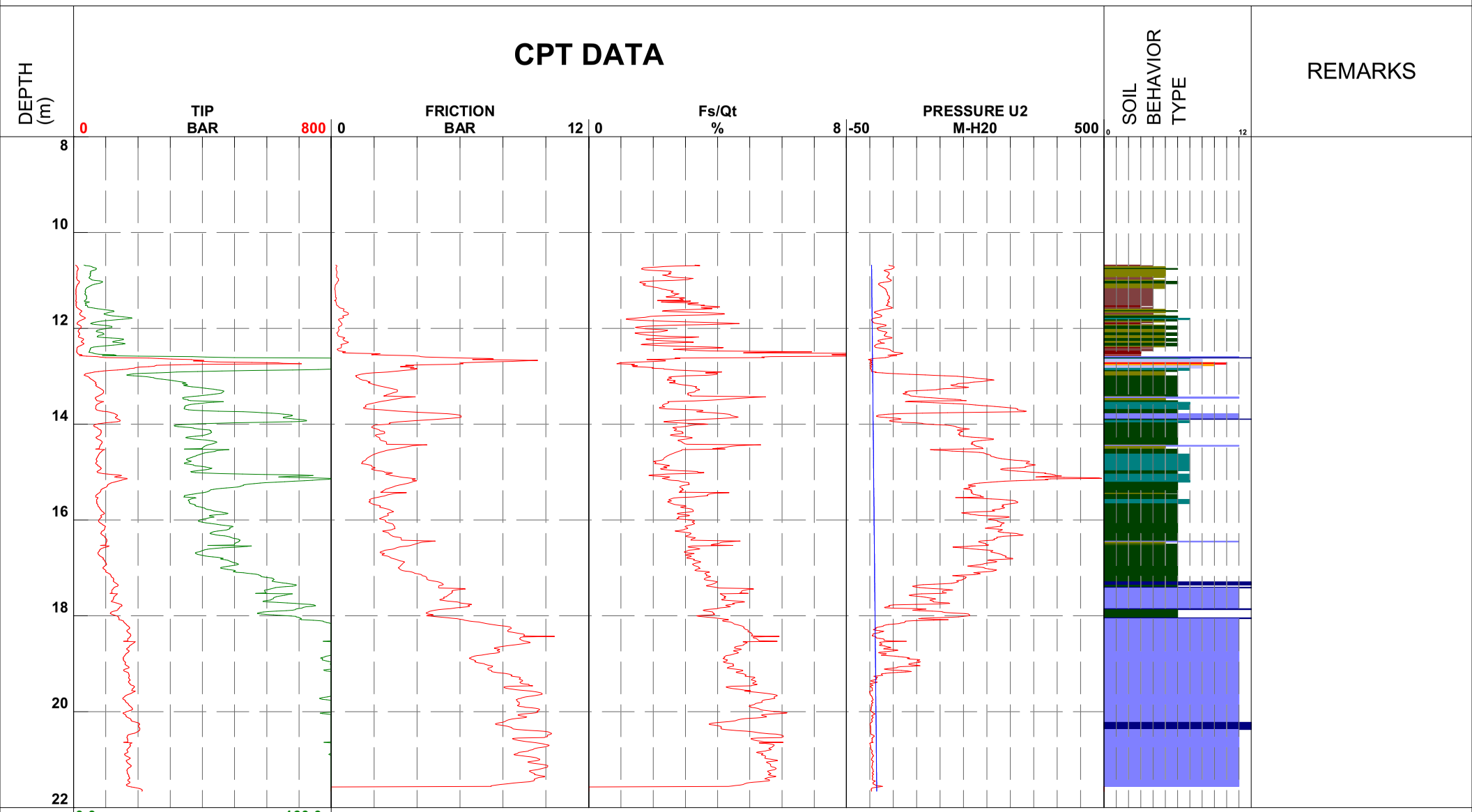
IN-SITU SOIL TESTING, L.C.
ENGINEER: R. Failmezger
SOUNDING DATE: 9/13/10

SOUNDING
D-14



In-Situ Soil Testing, L.C. CPTU Sounding Data

Project	Eisenhower Memorial			Sounding	C-2
Location	SW, Washington, D.C.	Cone Number	DSG0304	Date/Time	9/13/2010 2:33:02 PM
Operator	R. Failmezger	Ground Elev.	4.6 m	Water Depth	6.90 m
Engineer	R. Failmezger	File Name	2010-52C-2.cpt	Total Depth	21.66 m



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

CPTINT Analyses
Sounding C-2

"
"Output file from CPTINT - Version 5.2
"=====================================
"INPUT FILE: c:\insitu\cpt\2010\eisenhow\C-2.TXT
"---
"
"Licensed to: UBC In-Situ Testing FREEWARE
"   Address: Piezocone Interpretation
"   City: www.civil.ubc.ca/home/in-situ
"
"Interpreter Name: Roger A. Failmezger
"
"
"SUMMARY SHEET
"-------------
"'a' for calculating Qt: 0.800
"Value for Water Table (in m):   6.900
"Valid Zone Classification based on: Rf
"Missing unit weight to start depth: 18.860
"Method for calculating Su: Nkt
"Value of the constant Nkt: 14.000
"'alpha' for Modulus in clay: 8.000
"Method used to calculate OCR: Su/EOS
"(Su/EOS) for normal consolidation: 0.350
"Define Zone 6 for Sand Parameters?   YES
"Sand Compressibility for calc Dr: High
"Method for Friction Angle: Robertson & Campanella
"Initial guess of OCR for sand: 1.000
"Method for Modulus in sand: 'alpha' x Qt
"'alpha' for Modulus in sand (Qt mthd): 4.000
"Silty sand correction for CSR (Qc)?   YES
"EQ magnitudes for CSR (Qc):   7.500
"'a max/g' value for calc CSR (Eq):   0.300
"Graph used for calculating rd: Fraser Delta
"Vertical Flow Gradient, i (- up):   +0.000
"Constant Volume Friction Angle: 33.000
"CPT to SPT N60 Conversion: Jeffries & Davies
"
"Soil Behavior Type Zone Numbers
"For Rf Zone & Bq Zone Classification
"-----------------------------------
"Zone #1=Sensitive fine grained   Zone #7 =Sand with some Silt
"Zone #2=Organic material   Zone #8 =Fine sand
"Zone #3=Clay   Zone #9 =Sand
"Zone #4=Silty clay   Zone #10=Gravelly sand
"Zone #5=Clayey silt   Zone #11=Very stiff fine grained *
"Zone #6=Silty sand   Zone #12=Sand to clayey sand *
"   * Overconsolidated and/or cemented
"
"NOTE:
"-----
"For soil classification, Rf values > 8 are assumed to be 8.
"
"(Note: 9E9 means Out Of Range)
"

"--| INPUT FILE: c:\insitu\cpt\2010\eisenhow\C-2.TXT |----------

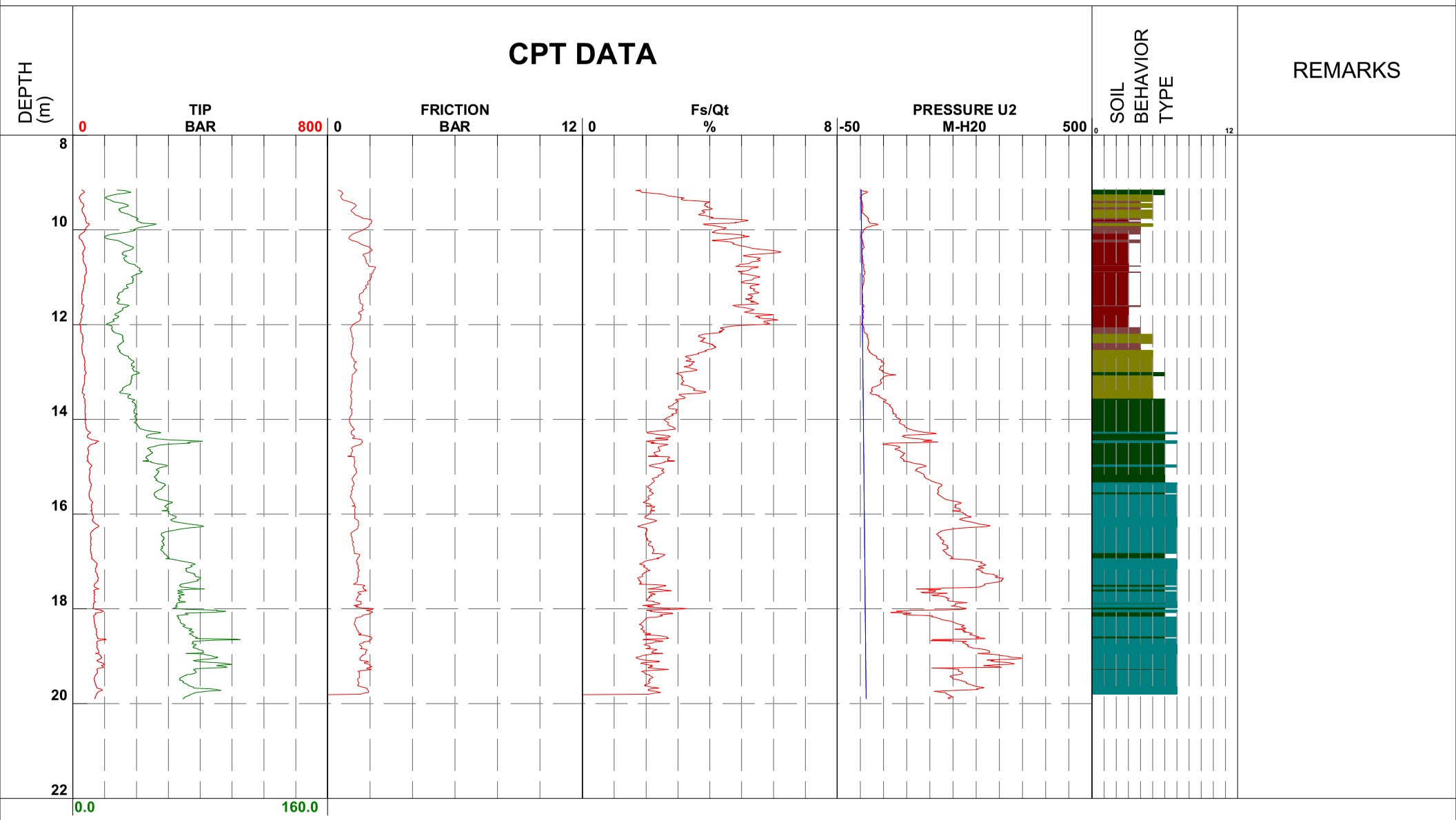
" Depth (meter)	Qt(avg) (bars)	Rf (%)	Gamma (kN/m^3)	Uo (meter)	U2 (meter)	Rf Zone (zone #)	Bq Zone (zone #)	OS(avg) (bars)	EOS(avg) (bars)	Bq (ratio)	Ic index	FC (%)	State (e-units)	Spt N (blow/ft)	Dr (%)	Phi (degree)	Su (bars)	Su/EOS (ratio)	OCR (ratio)	CSR (Qc) (ratio)	CSR (Eq) (ratio)	M Modulus (bars)	Depth (feet)
10.625	10.841	2.237	18.860	3.725	48.173	5	3	2.004	1.638	0.492	3.294	84.878	0.132	4	9E9	9E9	0.631	0.385	1.127	9E9	9E9	86.727	34.859
10.875	11.033	2.463	18.860	3.975	39.481	5	4	2.051	1.661	0.388	3.266	83.679	0.108	4	9E9	9E9	0.642	0.386	1.131	9E9	9E9	88.262	35.679
11.125	11.008	1.955	18.860	4.225	29.965	5	4	2.098	1.684	0.283	3.139	78.294	0.095	3	9E9	9E9	0.636	0.378	1.101	9E9	9E9	88.061	36.499
11.375	7.721	2.768	18.860	4.475	39.653	4	3	2.145	1.706	0.619	3.679	100.000	0.253	4	9E9	9E9	0.398	0.233	0.603	9E9	9E9	61.771	37.319
11.625	17.595	3.164	18.860	4.725	27.527	5	5	2.192	1.729	0.145	3.072	75.468	-0.009	5	9E9	9E9	1.100	0.636	2.111	9E9	9E9	140.762	38.139
11.875	21.962	1.992	19.650	4.975	15.840	6	6	2.241	1.753	0.054	2.774	62.802	-0.018	6	2	28	9E9	9E9	9E9	0.049	0.158	87.847	38.959
12.125	19.435	2.068	18.860	5.225	30.752	6	5	2.289	1.776	0.146	2.875	67.103	0.008	5	-1	28	9E9	9E9	9E9	0.041	0.157	77.738	39.780
12.375	18.133	2.845	18.860	5.475	26.653	5	5	2.336	1.799	0.131	3.031	73.700	-0.003	5	9E9	9E9	1.128	0.627	2.074	9E9	9E9	145.066	40.600
12.625	261.319	2.036	19.650	5.725	24.990	8	10	2.384	1.822	0.007	2.088	33.704	-0.294	54	92	43	9E9	9E9	9E9	0.403	0.157	1045.276	41.420
12.875	130.186	2.163	18.860	5.975	35.145	7	9	2.432	1.846	0.022	2.271	41.463	-0.223	29	66	39	9E9	9E9	9E9	0.260	0.156	520.742	42.240
13.125	64.439	2.829	19.650	6.225	212.881	6	5	2.480	1.870	0.327	2.679	58.782	-0.131	17	40	35	9E9	9E9	9E9	0.107	0.155	257.755	43.061
13.375	81.696	3.643	19.650	6.475	115.143	5	7	2.529	1.894	0.135	2.670	58.411	-0.238	21	9E9	9E9	5.655	2.985	14.576	9E9	9E9	653.567	43.881
13.625	78.048	2.743	19.650	6.725	240.907	6	5	2.579	1.919	0.304	2.609	55.800	-0.152	20	47	37	9E9	9E9	9E9	0.128	0.154	312.191	44.701
13.875	125.510	3.713	19.650	6.975	60.975	6	9	2.628	1.943	0.043	2.561	53.773	-0.315	32	64	39	9E9	9E9	9E9	0.204	0.154	502.040	45.521
14.125	77.483	2.809	19.650	7.225	188.949	6	6	2.677	1.968	0.238	2.606	55.664	-0.162	20	46	37	9E9	9E9	9E9	0.118	0.153	309.931	46.341
14.375	80.992	3.458	19.650	7.475	231.529	6	6	2.726	1.993	0.281	2.707	59.963	-0.192	22	48	37	9E9	9E9	9E9	0.139	0.152	323.967	47.161
14.625	78.828	2.676	19.650	7.725	238.557	6	5	2.775	2.017	0.298	2.607	55.733	-0.145	20	46	37	9E9	9E9	9E9	0.118	0.152	315.313	47.982
14.875	76.288	2.416	19.650	7.975	324.930	6	5	2.824	2.042	0.423	2.629	56.646	-0.104	20	45	37	9E9	9E9	9E9	0.118	0.151	305.151	48.802
15.125	129.385	2.591	18.860	8.225	349.994	7	6	2.872	2.065	0.265	2.453	49.187	-0.202	31	64	39	9E9	9E9	9E9	0.260	0.151	517.541	49.622
15.375	87.175	3.149	19.650	8.475	217.631	6	6	2.920	2.089	0.244	2.644	57.308	-0.186	23	49	37	9E9	9E9	9E9	0.139	0.150	348.700	50.442
15.625	73.995	2.733	19.650	8.725	280.273	6	5	2.970	2.114	0.375	2.681	58.853	-0.119	19	43	35	9E9	9E9	9E9	0.107	0.149	295.978	51.263
15.875	86.522	2.998	19.650	8.975	252.350	6	6	3.019	2.138	0.286	2.645	57.336	-0.167	22	49	37	9E9	9E9	9E9	0.128	0.149	346.088	52.083
16.125	89.823	3.066	19.650	9.225	274.622	6	6	3.068	2.163	0.300	2.653	57.687	-0.171	23	50	37	9E9	9E9	9E9	0.128	0.148	359.291	52.903
16.375	96.409	3.491	19.650	9.475	273.808	6	6	3.117	2.187	0.278	2.689	59.219	-0.206	26	52	37	9E9	9E9	9E9	0.150	0.147	385.635	53.723
16.625	86.101	3.272	19.650	9.725	246.158	6	6	3.166	2.212	0.280	2.694	59.422	-0.177	23	48	37	9E9	9E9	9E9	0.128	0.146	344.404	54.543
16.875	95.302	3.286	19.650	9.975	258.126	6	6	3.215	2.237	0.264	2.666	58.224	-0.193	25	51	37	9E9	9E9	9E9	0.139	0.146	381.208	55.363
17.125	110.193	3.595	19.650	10.225	225.105	6	7	3.264	2.261	0.197	2.652	57.632	-0.242	29	56	37	9E9	9E9	9E9	0.161	0.145	440.770	56.184
17.375	126.971	4.164	21.220	10.475	147.084	11	8	3.315	2.288	0.108	2.668	58.314	-0.319	34	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	57.004
17.625	125.983	4.381	21.220	10.725	129.431	11	8	3.368	2.316	0.095	2.695	59.443	-0.338	34	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	57.824

CPTINT Analyses
Sounding C-2

17.875	133.187	3.951	21.220	10.975	119.736	12	8	3.422	2.345	0.082	2.631	56.735	-0.309	35	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	58.644
18.125	155.354	4.361	21.220	11.225	85.224	11	9	3.475	2.373	0.048	2.641	57.147	-0.374	41	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	59.465
18.375	171.588	5.075	21.220	11.475	15.683	11	9	3.528	2.402	0.002	2.690	59.244	-0.484	46	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	60.285
18.625	173.886	4.786	21.220	11.725	35.835	11	9	3.581	2.430	0.014	2.662	58.061	-0.443	46	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	61.105
18.875	159.012	4.334	21.220	11.975	69.422	11	9	3.634	2.459	0.036	2.638	57.031	-0.372	42	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	61.925
19.125	165.895	4.605	21.220	12.225	57.121	11	9	3.687	2.487	0.027	2.660	57.963	-0.407	44	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	62.745
19.375	176.343	4.969	21.220	12.475	7.827	11	9	3.740	2.516	-0.003	2.682	58.920	-0.467	47	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	63.565
19.625	171.283	5.331	21.220	12.725	3.424	11	9	3.793	2.545	-0.005	2.726	60.763	-0.514	47	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	64.386
19.875	171.816	5.276	21.220	12.975	3.928	11	9	3.846	2.573	-0.005	2.722	60.615	-0.504	47	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	65.206
20.125	173.377	4.968	21.220	13.225	5.347	11	9	3.899	2.602	-0.005	2.692	59.341	-0.458	47	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	66.026
20.375	195.859	4.652	21.220	13.475	2.259	11	9	3.952	2.630	-0.006	2.636	56.959	-0.437	51	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	66.846
20.625	170.593	5.561	21.220	13.725	3.771	11	9	4.005	2.659	-0.006	2.757	62.098	-0.545	47	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	67.666
20.875	167.064	5.477	21.220	13.975	4.766	11	9	4.058	2.687	-0.006	2.756	62.050	-0.523	46	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	68.487
21.125	169.751	5.679	21.220	14.225	5.871	11	9	4.111	2.716	-0.005	2.773	62.788	-0.561	47	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	69.307
21.375	170.898	5.493	21.220	14.475	6.743	11	9	4.164	2.744	-0.005	2.758	62.111	-0.526	47	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	70.127
21.625	189.739	-10792.265	9E9	14.725	9.531	9E9	9E9	9E9	9E9	9E9	2.758	62.111	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	70.947

In-Situ Soil Testing, L.C. CPTU Sounding Data

Project	Eisenhower Memorial			Sounding	C-7
Location	SW, Washington, D.C.	Cone Number	DSG0304	Date/Time	9/13/2010 12:58:51 PM
Operator	R. Failmezger	Ground Elev.	4.6 m	Water Depth	7.50 m
Engineer	R. Failmezger	File Name	2010-52C-7.cpt	Total Depth	19.90 m



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

CPTINT Analyses
Sounding C-7

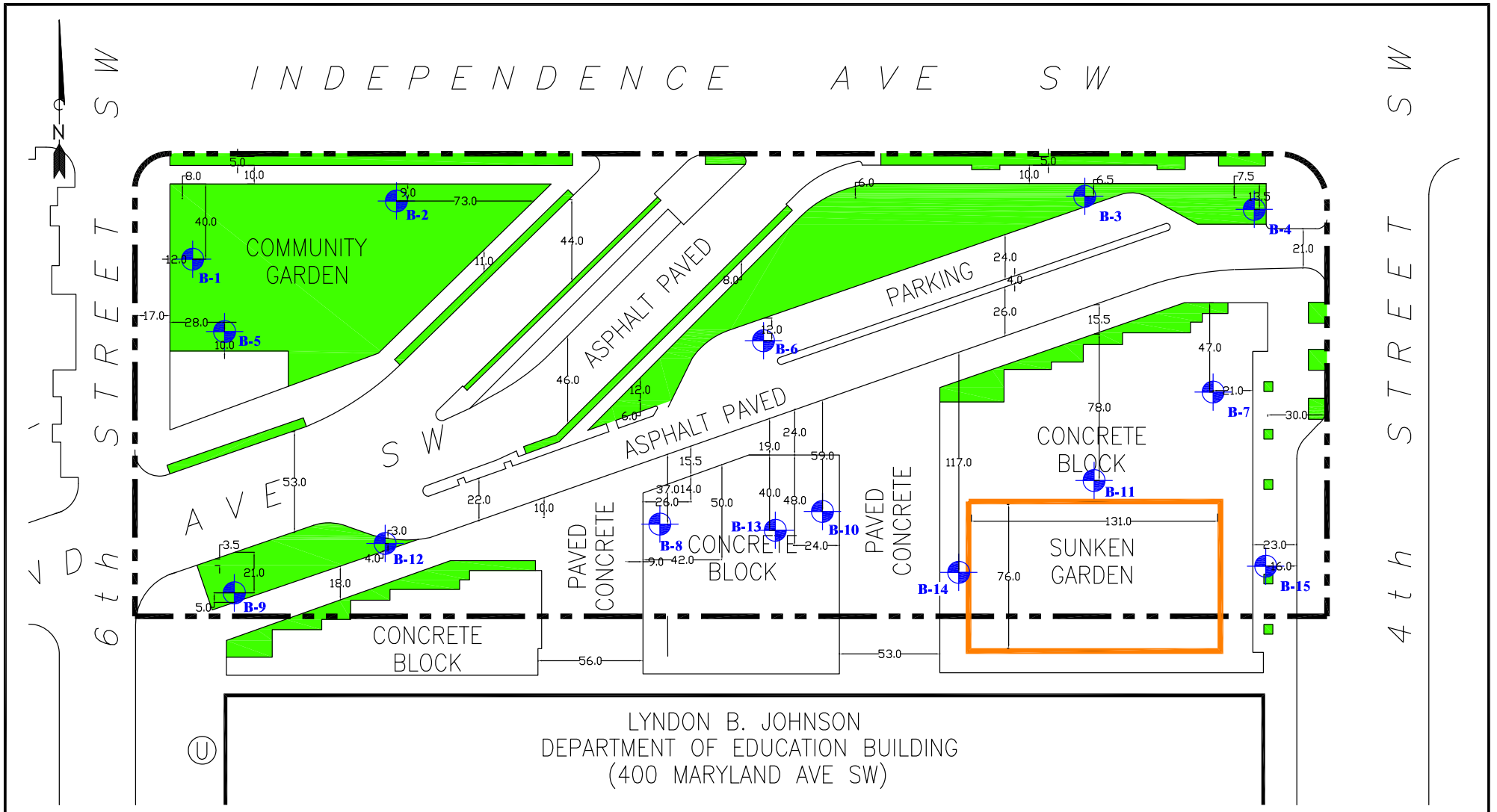
"
"Output file from CPTINT - Version 5.2
"====================================
"INPUT FILE: c:\insitu\cpt\2010\eisenhow\C-7.TXT
"--
"
"Licensed to: UBC In-Situ Testing FREEWARE
"   Address: Piezocone Interpretation
"   City: www.civil.ubc.ca/home/in-situ
"
"Interpreter Name: Roger A. Failmezger
"
"
"SUMMARY SHEET
"-------------
"'a' for calculating Qt: 0.800
"Value for Water Table (in m):   7.500
"Valid Zone Classification based on: Rf
"Missing unit weight to start depth: 18.860
"Method for calculating Su: Nkt
"Value of the constant Nkt: 14.000
"'alpha' for Modulus in clay: 8.000
"Method used to calculate OCR: Su/EOS
"(Su/EOS) for normal consolidation: 0.350
"Define Zone 6 for Sand Parameters?   YES
"Sand Compressibility for calc Dr: High
"Method for Friction Angle: Robertson & Campanella
"Initial guess of OCR for sand: 1.000
"Method for Modulus in sand: 'alpha' x Qt
"'alpha' for Modulus in sand (Qt mthd): 4.000
"Silty sand correction for CSR (Qc)?   YES
"EQ magnitudes for CSR (Qc):   7.500
"'a max/g' value for calc CSR (Eq):   0.300
"Graph used for calculating rd: Fraser Delta
"Vertical Flow Gradient, i (- up):   +0.000
"Constant Volume Friction Angle: 33.000
"CPT to SPT N60 Conversion: Jeffries & Davies
"
"Soil Behavior Type Zone Numbers
"For Rf Zone & Bq Zone Classification
"-----------------------------------
"Zone #1=Sensitive fine grained   Zone #7 =Sand with some Silt
"Zone #2=Organic material   Zone #8 =Fine sand
"Zone #3=Clay   Zone #9 =Sand
"Zone #4=Silty clay   Zone #10=Gravelly sand
"Zone #5=Clayey silt   Zone #11=Very stiff fine grained *
"Zone #6=Silty sand   Zone #12=Sand to clayey sand *
"   * Overconsolidated and/or cemented
"
"NOTE:
"-----
"For soil classification, Rf values > 8 are assumed to be 8.
"
"(Note: 9E9 means Out Of Range)
"

"--| INPUT FILE: c:\insitu\cpt\2010\eisenhow\C-7.TXT |

" Depth (meter)	Qt(avg) (bars)	Rf (%)	Gamma (kN/m^3)	Uo (meter)	U2 (meter)	Rf Zone (zone #)	Bq Zone (zone #)	OS(avg) (bars)	EOS(avg) (bars)	Bq (ratio)	Ic index	FC (%)	State (e-units)	Spt N (blow/ft)	Dr (%)	Phi (degree)	Su (bars)	Su/EOS (ratio)	OCR (ratio)	CSR (Qc) (ratio)	CSR (Eq) (ratio)	M Modulus (bars)	Depth (feet)
9.125	32.332	2.002	19.650	1.625	8.542	6	7	1.722	1.563	0.022	2.578	54.510	-0.079	8	19	31	9E9	9E9	9E9	0.057	0.153	129.327	29.937
9.375	26.483	3.468	19.650	1.875	2.817	5	7	1.771	1.587	0.004	2.880	67.323	-0.114	7	9E9	9E9	1.765	1.112	4.242	9E9	9E9	211.865	30.757
9.625	33.258	3.885	19.650	2.125	7.615	5	7	1.820	1.612	0.017	2.869	66.833	-0.162	9	9E9	9E9	2.246	1.393	5.623	9E9	9E9	266.063	31.578
9.875	43.304	4.479	19.650	2.375	19.514	4	7	1.869	1.636	0.041	2.869	66.831	-0.235	12	9E9	9E9	2.960	1.809	7.791	9E9	9E9	346.436	32.398
10.125	27.007	4.482	19.650	2.625	3.530	4	7	1.918	1.661	0.004	3.004	72.579	-0.158	8	9E9	9E9	1.792	1.079	4.085	9E9	9E9	216.059	33.218
10.375	34.311	5.380	19.650	2.875	5.447	3	7	1.968	1.686	0.008	3.021	73.287	-0.269	11	9E9	9E9	2.310	1.371	5.509	9E9	9E9	274.485	34.038
10.625	33.862	5.301	19.650	3.125	5.263	3	7	2.017	1.710	0.007	3.022	73.346	-0.256	10	9E9	9E9	2.275	1.330	5.306	9E9	9E9	270.900	34.859
10.875	40.728	5.214	19.650	3.375	7.918	3	8	2.066	1.735	0.012	2.967	71.013	-0.281	12	9E9	9E9	2.762	1.592	6.642	9E9	9E9	325.826	35.679
11.125	35.922	5.281	19.650	3.625	6.350	3	8	2.115	1.759	0.008	3.013	72.940	-0.260	11	9E9	9E9	2.415	1.373	5.519	9E9	9E9	287.378	36.499
11.375	29.341	5.336	19.650	3.875	4.365	3	7	2.164	1.784	0.002	3.082	75.869	-0.221	9	9E9	9E9	1.941	1.088	4.128	9E9	9E9	234.731	37.319
11.625	30.846	5.179	19.650	4.125	5.635	3	7	2.213	1.809	0.005	3.058	74.869	-0.215	10	9E9	9E9	2.045	1.131	4.332	9E9	9E9	246.769	38.139
11.875	25.771	5.713	19.650	4.375	4.903	3	7	2.262	1.833	0.002	3.164	79.370	-0.222	9	9E9	9E9	1.679	0.916	3.329	9E9	9E9	206.168	38.959
12.125	26.438	4.235	19.650	4.625	9.436	4	7	2.311	1.858	0.020	3.032	73.746	-0.119	8	9E9	9E9	1.723	0.928	3.382	9E9	9E9	211.502	39.780
12.375	30.255	3.925	19.650	4.875	16.829	4	7	2.361	1.882	0.042	2.964	70.883	-0.122	9	9E9	9E9	1.992	1.059	3.988	9E9	9E9	242.043	40.600
12.625	32.280	3.564	19.650	5.125	27.908	5	6	2.410	1.907	0.075	2.915	68.773	-0.109	9	9E9	9E9	2.134	1.119	4.274	9E9	9E9	258.240	41.420
12.875	37.941	3.401	19.650	5.375	46.360	5	6	2.459	1.932	0.113	2.858	66.353	-0.117	11	9E9	9E9	2.534	1.312	5.217	9E9	9E9	303.531	42.240
13.125	37.649	3.107	19.650	5.625	50.904	5	6	2.508	1.956	0.126	2.829	65.144	-0.101	10	9E9	9E9	2.510	1.283	5.073	9E9	9E9	301.195	43.061
13.375	32.514	3.409	19.650	5.875	29.018	5	6	2.557	1.981	0.076	2.907	68.455	-0.098	9	9E9	9E9	2.140	1.080	4.091	9E9	9E9	260.109	43.881
13.625	37.696	2.945	19.650	6.125	54.540	6	6	2.606	2.005	0.135	2.817	64.642	-0.090	10	20	31	9E9	9E9	9E9	0.066	0.149	150.784	44.701
13.875	39.135	2.814	19.650	6.375	74.363	6	6	2.655	2.030	0.183	2.805	64.145	-0.081	11	21	31	9E9	9E9	9E9	0.066	0.149	156.542	45.521
14.125	41.522	2.701	19.650	6.625	96.087	6	5	2.704	2.055	0.226	2.788	63.405	-0.076	11	23	31	9E9	9E9	9E9	0.066	0.148	166.088	46.341
14.375	57.233	2.336	19.650	6.875	125.699	6	6	2.754	2.079	0.214	2.621	56.330	-0.101	15	34	35	9E9	9E9	9E9	0.085	0.148	228.931	47.161
14.625	51.136	2.406	19.650	7.125	79.932	6	6	2.803	2.104	0.148	2.651	57.600	-0.099	13	30	33	9E9	9E9	9E9	0.074	0.147	204.543	47.982
14.875	50.278	2.459	19.650	7.375	107.193	6	6	2.852	2.128	0.206	2.690	59.252	-0.089	13	29	33	9E9	9E9	9E9	0.074	0.146	201.114	48.802
15.125	53.029	2.436	19.650	7.625	131.176	6	5	2.901	2.153	0.242	2.686	59.063	-0.088	14	31	33	9E9	9E9	9E9	0.085	0.146	212.117	49.622
15.375	55.401	2.154	19.650	7.875	165.113	6	5	2.950	2.178	0.294	2.644	57.279	-0.072	14	32	33	9E9	9E9	9E9	0.074	0.145	221.606	50.442
15.625	53.943	2.089	19.650	8.125	179.748	6	5	2.999	2.202	0.330	2.659	57.942	-0.059	14	31	33	9E9	9E9	9E9	0.074	0.145	215.773	51.263
15.875	59.515	2.140	18.860	8.375	212.263	7	5	3.047	2.226	0.354	2.651	57.581	-0.067	15	34	33	9E9	9E9	9E9	0.161	0.144	238.060	52.083
16.125	66.938	2.055	18.860	8.625	238.682	7	5	3.094	2.248	0.353	2.598	55.362	-0.076	17	38	35	9E9	9E9	9E9	0.172	0.143	267.751	52.903

CPTINT Analyses
Sounding C-7

16.375	62.472	1.969	18.860	8.875	188.136	7	5	3.142	2.271	0.296	2.582	54.668	-0.073	16	36	35	9E9	9E9	9E9	0.161	0.143	249.888	53.723
16.625	56.482	2.123	19.650	9.125	181.605	6	5	3.190	2.295	0.317	2.659	57.951	-0.063	15	32	33	9E9	9E9	9E9	0.085	0.142	225.927	54.543
16.875	59.910	2.299	19.650	9.375	200.377	6	5	3.239	2.319	0.331	2.683	58.935	-0.074	16	34	33	9E9	9E9	9E9	0.085	0.142	239.638	55.363
17.125	73.350	1.958	18.860	9.625	261.698	7	5	3.287	2.343	0.353	2.562	53.830	-0.077	18	41	35	9E9	9E9	9E9	0.172	0.141	293.398	56.184
17.375	75.703	1.865	18.860	9.875	291.259	7	5	3.334	2.365	0.381	2.548	53.228	-0.071	19	42	35	9E9	9E9	9E9	0.183	0.140	302.811	57.004
17.625	69.059	2.310	19.650	10.125	180.506	6	6	3.382	2.389	0.254	2.618	56.199	-0.099	18	38	35	9E9	9E9	9E9	0.096	0.140	276.238	57.824
17.875	66.265	2.260	19.650	10.375	204.289	6	5	3.431	2.414	0.303	2.644	57.314	-0.084	17	37	35	9E9	9E9	9E9	0.096	0.139	265.060	58.644
18.125	73.958	2.312	18.860	10.625	136.918	7	6	3.480	2.437	0.176	2.576	54.405	-0.117	19	40	35	9E9	9E9	9E9	0.183	0.139	295.830	59.465
18.375	71.206	1.884	18.860	10.875	216.588	7	5	3.527	2.460	0.298	2.549	53.261	-0.074	18	39	35	9E9	9E9	9E9	0.172	0.138	284.822	60.285
18.625	78.933	2.277	18.860	11.125	230.224	7	6	3.574	2.483	0.285	2.594	55.190	-0.104	20	42	35	9E9	9E9	9E9	0.183	0.137	315.731	61.105
18.875	79.838	2.126	18.860	11.375	265.451	7	5	3.621	2.505	0.327	2.581	54.627	-0.091	20	43	35	9E9	9E9	9E9	0.183	0.137	319.352	61.925
19.125	88.768	2.003	18.860	11.625	297.729	7	5	3.668	2.528	0.330	2.526	52.303	-0.096	22	46	35	9E9	9E9	9E9	0.193	0.136	355.072	62.745
19.375	72.853	2.131	18.860	11.875	207.370	7	6	3.715	2.550	0.277	2.597	55.318	-0.087	18	39	35	9E9	9E9	9E9	0.172	0.136	291.412	63.565
19.625	76.604	2.128	18.860	12.125	230.537	7	5	3.763	2.573	0.294	2.590	55.013	-0.089	19	41	35	9E9	9E9	9E9	0.183	0.135	306.416	64.386
19.875	73.004	-29922.791	9E9	12.375	189.941	9E9	9E9	9E9	9E9	9E9	0.000	0.000	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	9E9	65.206



L E G E N D

B-1 TEST BORING LOCATION

NOTE: BASE PLAN PROVIDED BY AECOM

GRAPHICAL SCALE

50' 0 50' 100'

N:\PROJECTS\10004, Dwight D Eisenhower Mem\Final\Figure 4.BLP.dwg

GeoConcepts Engineering, Inc.

19955 Highland Vista Dr., Suite 170 (703) 726-8030
Ashburn, Virginia 20147 (703) 726-8032 fax

DWIGHT D. EISENHOWER MEMORIAL
INDEPENDENCE AVENUE, SW, WASHINGTON, D.C.

SUBSURFACE INVESTIGATION LOCATION PLAN	Scale: AS SHOWN	Fig. 4
Date: OCTOBER 2010	Checked By: P.E.B.	Project No.: 10004

GeoConcepts Engineering, Inc.

Appendix B
Contract No. 10004

Soil Laboratory Test Report

Summary of Soil Laboratory Test Results (1 page)
Gradation Test Data (5 pages)
Moisture Density Relationship Test Data (2 pages)
CBR Test Data (2 pages)
Corrosion Series Test Data (1 page)
Consolidation Test Data (4 pages)

Summary of Soil Laboratory Test Results

Project: **Eisenhower Memorial** **Contract No.: 10004**

Boring	Depth (ft.)	Sample Type	Stratum	Description of Soil Specimen	Sieve Results		Atterberg Limits			Natural Moisture Content (%)	Remarks
					Percent Retained # 4 Sieve	Percent Passing # 200 Sieve	LL	PL	PI		
B-1	10.0'-11.3'	Tube	A	silty SAND (SM)	5.3	48.6	18	15	3	15.4	---
B-3	35.0'-37.0'	Tube	C2	POORLY GRADED SAND (SP) with gravel	0.0	31.6	NP	NP	NP	13.3	---
B-4	2.0'-7.0'	Bag	A/B2	clayey SAND (SC)	11.9	40.8	25	16	9	2.2	CBR = 33.5%
B-4	8.5'-10.0'	Jar	B2	silty SAND (SM)	0.0	31.6	NP	NP	NP	13.3	---
B-5	8.5'-10.0'	Jar	A	sandy LEAN CLAY (CL)	0.0	55.5	24	14	10	16.2	---
B-6	28.5'-30.0'	Jar	B2	clayey SAND (SC) with gravel	16.2	14.9	40	16	24	20.3	---
B-6	43.5'-45.0'	Jar	C2	silty GRAVEL (GM) with sand	63.4	4.6	37	25	12	27.6	
B-6	53.5'-55.0'	Jar	C2	POORLY GRADED SAND (SP-SM) with silt and gravel	15.0	7.8	NP	NP	NP	31.8	---
B-9	2.0'-7.0'	Bag	A	LEAN CLAY (CL) with sand	0.3	70.9	34	18	16	6.8	CBR = 6.0%
B-9	8.5'-10.0'	Jar	A	sandy LEAN CLAY (CL)	0.0	58.3	28	16	12	12.7	---
B-10	8.5'-10.0'	Jar	B1	LEAN CLAY (CL) with sand	0.0	75.4	27	16	11	15.7	---
B-12	28.5'-30.0'	Jar	B2	silty SAND (SM)	0.0	16.1	NP	NP	NP	25.4	---
B-12	53.5'-55.0'	Jar	C2	clayey GRAVEL (GM) with sand	65.1	6.6	44	22	22	25.0	
B-13	10.0'-12'	Tube	A	sandy silty CLAY (CL-ML)	0.0	57.5	23	16	7	17.0	---
B-13	50.0'-51.2'	Tube	C2	silty SAND (SM)	0.0	24.3	NP	NP	NP	27.4	---
B-15	8.5'-10.0'	Jar	B1	sandy LEAN CLAY (CL)	0.0	50.2	23	15	8	15.2	---

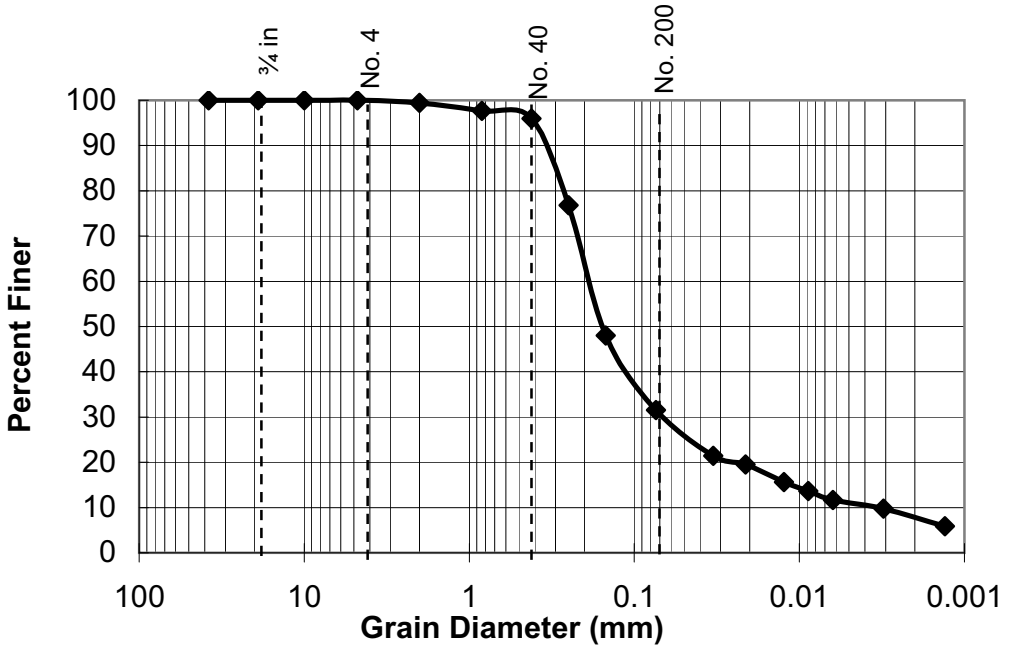
Notes:

1. Soil tests are in accordance with applicable ASTM standards.
2. Soil classification symbols are in accordance with Unified Soil Classification System.
3. Visual identification of samples is in accordance with ASTM D-2488.
4. Key to abbreviations: LL= Liquid Limit; PL= Plastic Limit; PI= Plasticity Index; NP= Nonplastic; N/T = Not Tested

GeoConcepts Engineering, Inc.

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HYDROMETER ANALYSIS			
Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-4	**Depth (Feet)**	8.5-10.0
Lab Order No.	2374-2	**Date**	10/13/2010



SIEVE	% Passing
1 ½ "	**100.0**
3/4"	**100.0**
3/8"	**100.0**
#4	**100.0**
#10	**99.4**
#40	**96.0**
#100	**48.0**
#200	**31.6**
Pan	**--**

USCS Group Symbol	**SM**
USCS Group Name	**SILTY SAND**
Cu	**54.7**
Cc	**6.9**
LL	**NP**
PI	**NP**
Gravel	**0.0**
Sand	**68.4**
Silt	**24.2**
Clay	**7.4**
Fines	**31.6**
AASHTO Classification	**A-2-4**

Test Method: ASTM D 422
Soil Classification by ASTM D2487 and AASHTO M 145

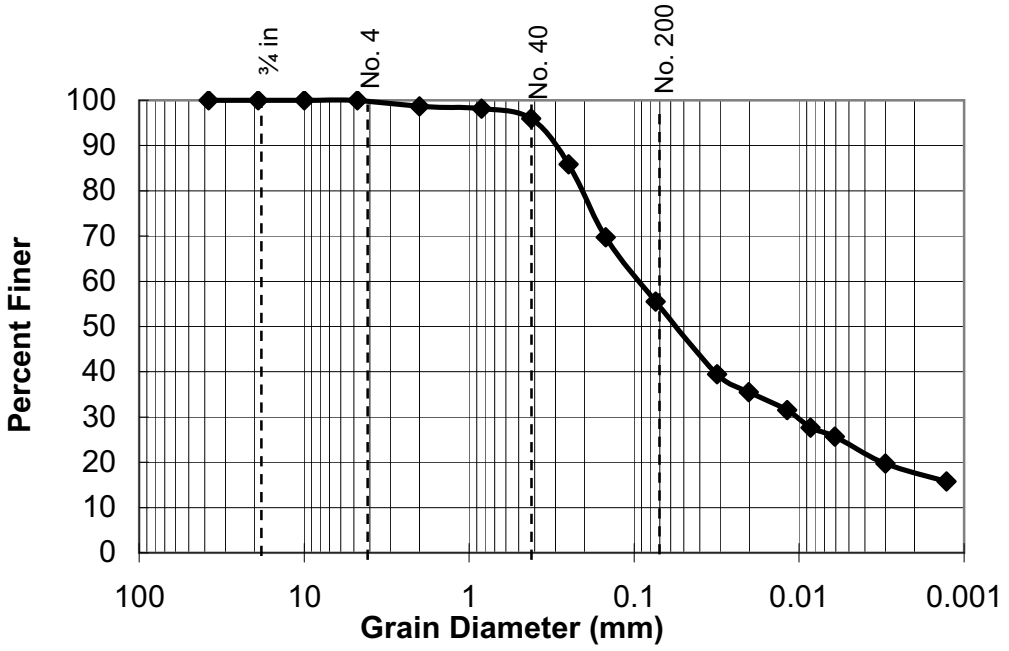
Tested by _____

Reviewed by R. Drew Thomas

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HYDROMETER ANALYSIS			
Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-5	**Depth (Feet)**	8.5-10.0
Lab Order No.	2374-3	**Date**	10/13/2010



SIEVE	% Passing
1 ½ "	**100.0**
3/4"	**100.0**
3/8"	**100.0**
#4	**100.0**
#10	**98.6**
#40	**96.0**
#100	**69.7**
#200	**55.5**
Pan	**--**

USCS Group Symbol	**CL**
USCS Group Name	**sandy Lean Clay**
Cu	**---**
Cc	**---**
LL	**24**
PI	**10**
Gravel	**0.0**
Sand	**44.5**
Silt	**38.1**
Clay	**17.4**
Fines	**55.5**
AASHTO Classification	**---**

Test Method: ASTM D 422
Soil Classification by ASTM D2487 and AASHTO M 145

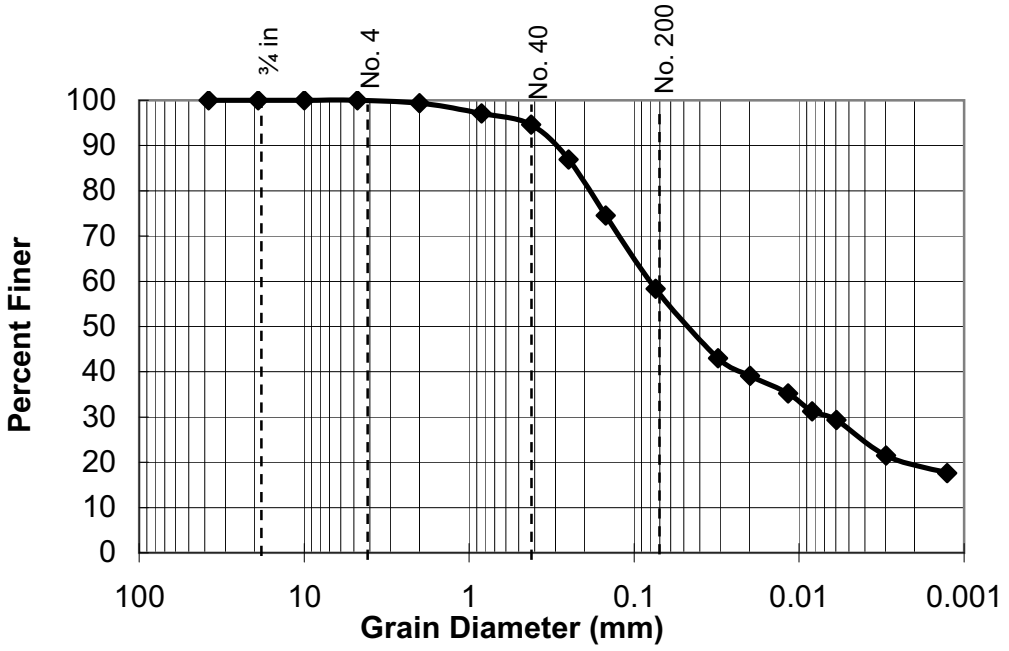
Tested by _____

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HYDROMETER ANALYSIS			
Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-9	**Depth (Feet)**	8.5-10.0
Lab Order No.	2374-8	**Date**	7/13/2010



SIEVE	% Passing
1 ½ "	**100.0**
3/4"	**100.0**
3/8"	**100.0**
#4	**100.0**
#10	**99.4**
#40	**94.7**
#100	**74.6**
#200	**58.3**
Pan	**--**

USCS Group Symbol	**CL**
USCS Group Name	**sandy Lean Clay**
Cu	**---**
Cc	**---**
LL	**28**
PI	**12**
Gravel	**0.0**
Sand	**41.7**
Silt	**39.1**
Clay	**19.3**
Fines	**58.3**
AASHTO Classification	**A-6**

Test Method: ASTM D 422
Soil Classification by ASTM D2487 and AASHTO M 145

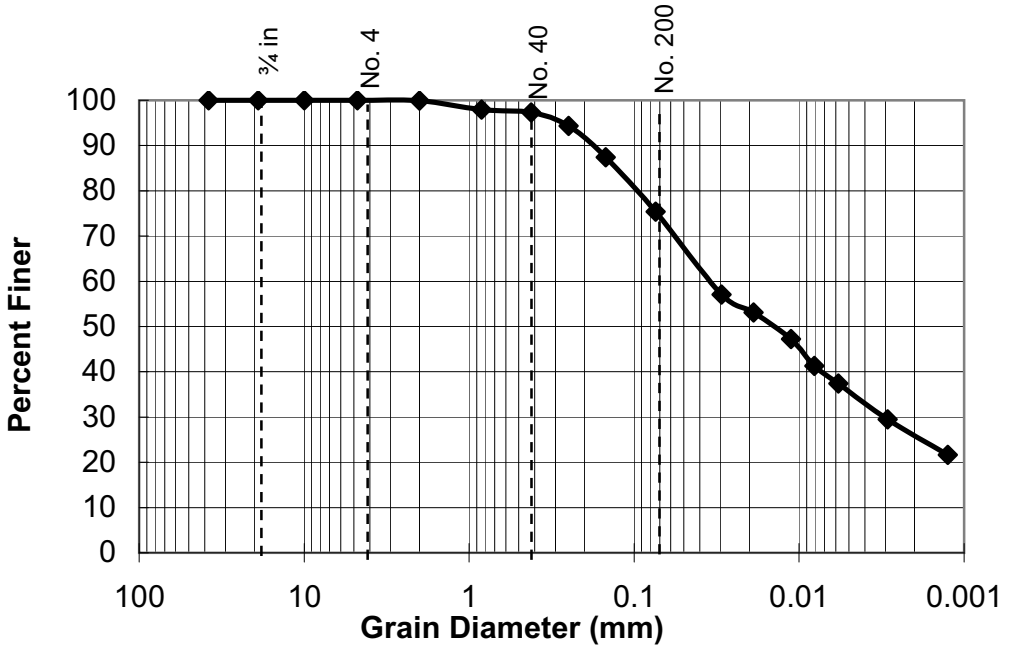
Tested by _____

Reviewed by R. Drew Thomas

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HYDROMETER ANALYSIS			
Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-10	**Depth (Feet)**	8.5-10.0
Lab Order No.	2374-9	**Date**	7/13/2010



SIEVE	% Passing
1 ½ "	**100.0**
3/4"	**100.0**
3/8"	**100.0**
#4	**100.0**
#10	**100.0**
#40	**97.3**
#100	**87.4**
#200	**75.4**
Pan	**--**

USCS Group Symbol	**CL**
USCS Group Name	**Lean Clay with sand**
Cu	**---**
Cc	**---**
LL	**27**
PI	**11**
Gravel	**0.0**
Sand	**24.6**
Silt	**50.2**
Clay	**25.2**
Fines	**75.4**
AASHTO Classification	**A-6**

Test Method: ASTM D 422
Soil Classification by ASTM D2487 and AASHTO M 145

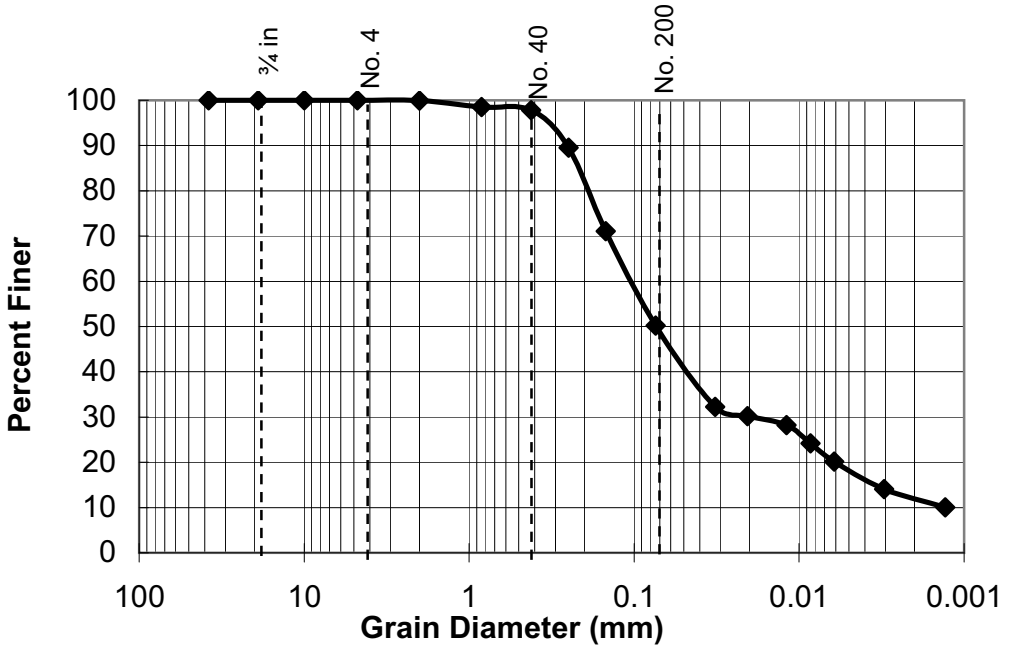
Tested by _____

Reviewed by R. Drew Thomas

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HYDROMETER ANALYSIS			
Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-15	**Depth (Feet)**	8.5-10.0
Lab Order No.	2374-12	**Date**	7/13/2010



SIEVE	% Passing
1 ½ "	**100.0**
3/4"	**100.0**
3/8"	**100.0**
#4	**100.0**
#10	**99.9**
#40	**97.8**
#100	**71.1**
#200	**50.2**
Pan	**--**

USCS Group Symbol	**CL**
USCS Group Name	**sandy Lean Clay**
Cu	**---**
Cc	**---**
LL	**23**
PI	**8**
Gravel	**0.0**
Sand	**49.8**
Silt	**38.6**
Clay	**11.7**
Fines	**50.2**
AASHTO Classification	**A-4**

Test Method: ASTM D 422
Soil Classification by ASTM D2487 and AASHTO M 145

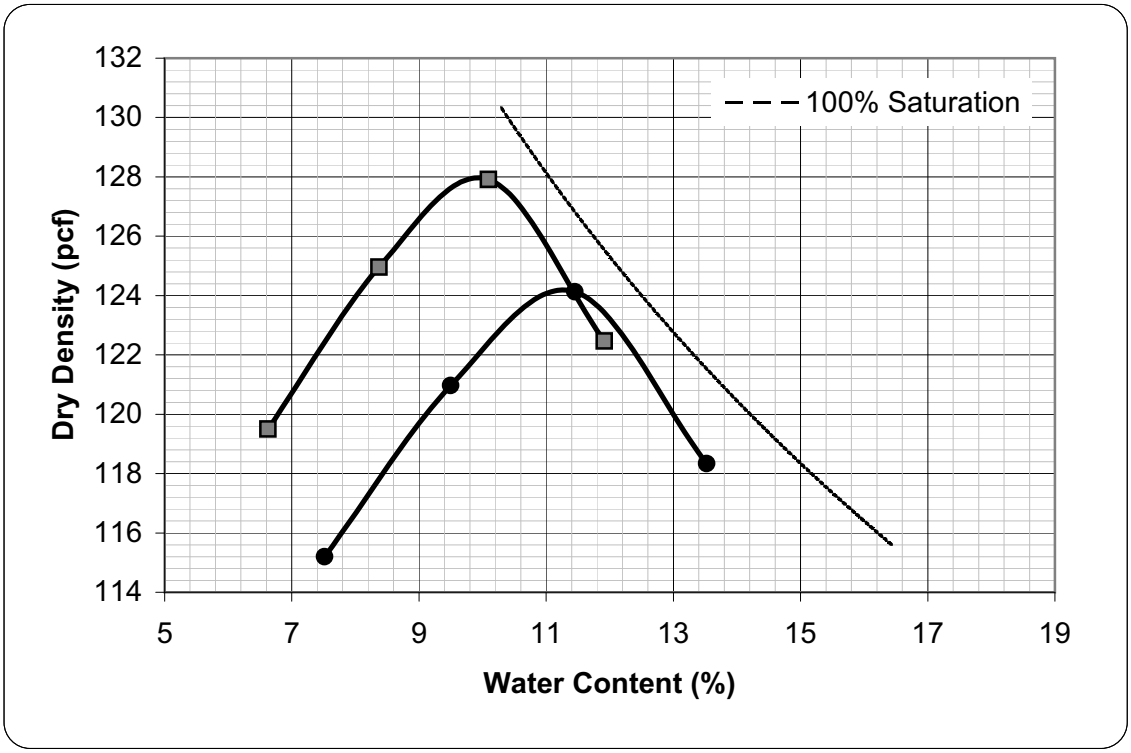
Tested by _____

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MOISTURE-DENSITY RELATIONSHIP			
Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-4	**Depth (Feet)**	2.0-7.0
Lab Order No.	2374-1	**Date**	10/19/2010



TEST RESULTS	Before Correc.	After Correc.
Maximum Dry Density (pcf)	124.2	128
Optimum Moisture Content (%)	11.3	10

Material	Classification		Nat. Moist. (%)	Sp. G. (Assumed)	LL	PI	% > # 4	% < #200
CLAYEY SAND	USCS	AASHTO	2.2	2.65	25	9	11.9	40.8
	SC	A-4						

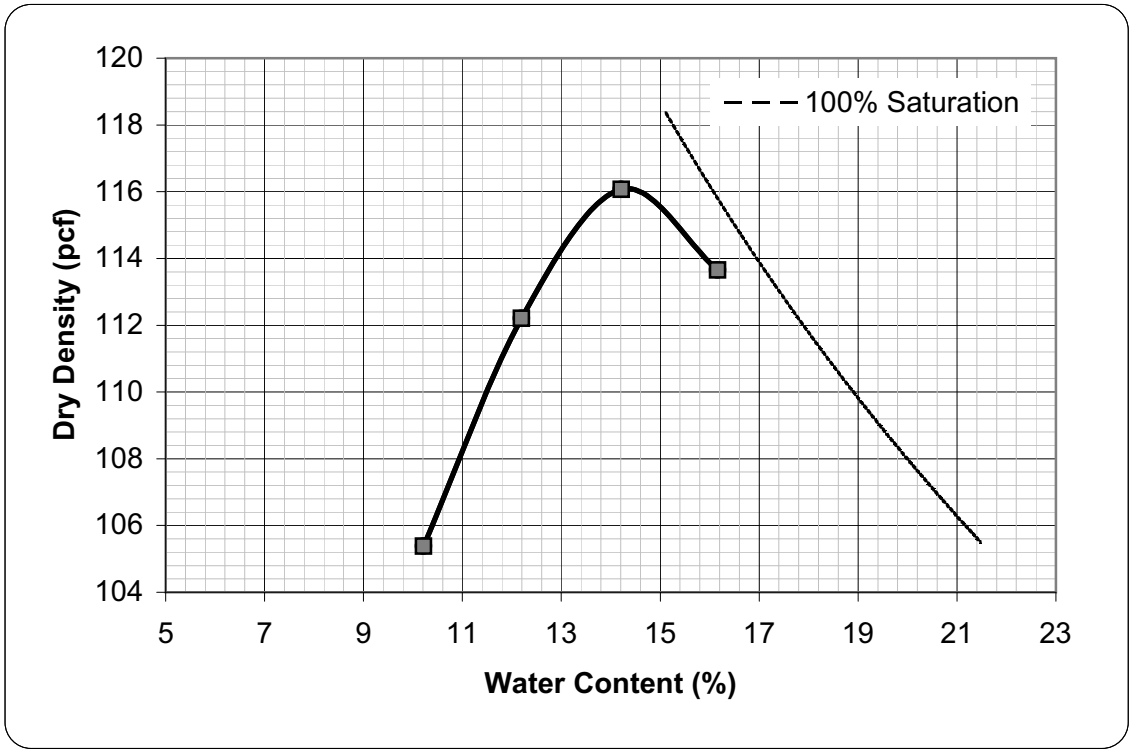
ASTM D 1557 **Preparation Method-Moist**
Method-A **Manual Rammer**

Tested by _____ Reviewed by R. Drew Thomas

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MOISTURE-DENSITY RELATIONSHIP			
Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-9	**Depth (Feet)**	2.0-7.0
Lab Order No.	2374-7	**Date**	10/19/2010



TEST RESULTS	Before Correc.	After Correc.
Maximum Dry Density (pcf)	116	--
Optimum Moisture Content (%)	14.4	--

Material	Classification		Nat. Moist. (%)	Sp. G. (Assumed)	LL	PI	% > # 4	% < #200
Lean Clay with sand	USCS	AASHTO	6.8	2.65	34	16	0.3	70.9
	CL	A-6						

ASTM D 1557 **Preparation Method-Moist**
Method-A **Manual Rammer**

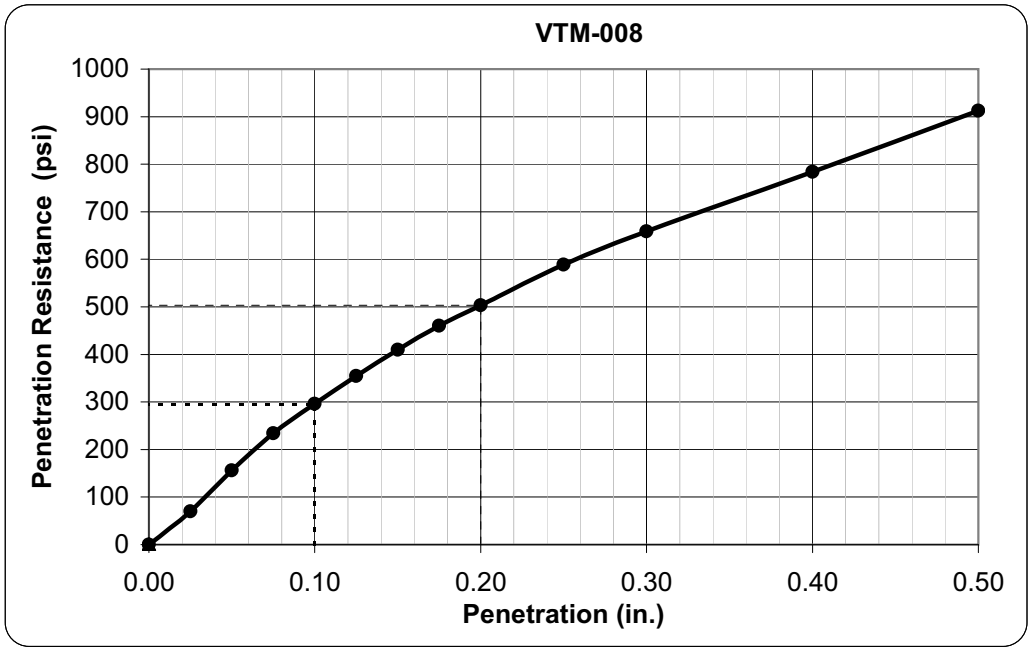
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CALIFORNIA BEARING RATIO (CBR) TEST

Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-4	**Depth (Feet)**	2.0-7.0
Lab Order No.	2374-1	**Date**	10/19/2010



Molded	
Dry Density (pcf)	127.6
Moisture (%)	10.0
Percent of Max. Density (%)	99.7

Soaked	
Dry Density (pcf)	127.1
Moisture (%)	12.0
Percentage of Max. Density (%)	99.3

CBR (%)	
0.1 in.	29.6
0.2 in.	33.5

Linearity Correction	0.000
Surcharge (lbs)	10
Max Swell (%)	0.5

Material Description	CLAYEY SAND
USCS	SC
Max Density	128
Optimum Moisture (%)	10
LL	25
PI	9

Tested by: _____

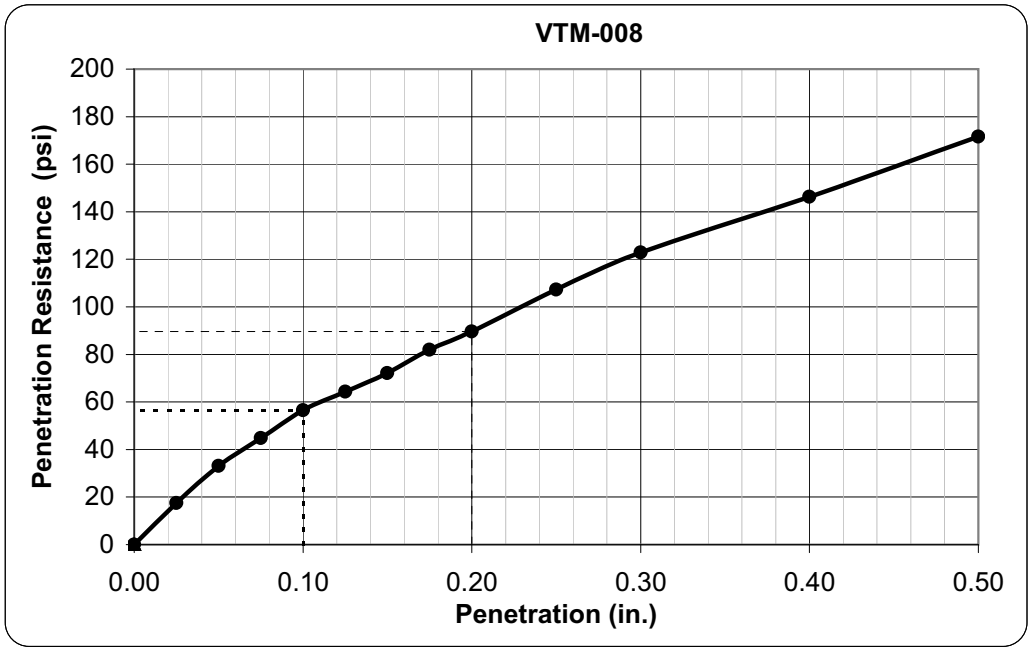
Reviewed by: R. Drew Thomas

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CALIFORNIA BEARING RATIO (CBR) TEST

Project No.	10004	**Project Name**	Eisenhower Memorial
Test Boring No.	B-9	**Depth (Feet)**	2.0-7.0
Lab Order No.	2374-7	**Date**	10/19/2010



Molded	
Dry Density (pcf)	116.3
Moisture (%)	14.7
Percent of Max. Density (%)	100.3

Soaked	
Dry Density (pcf)	115.5
Moisture (%)	16.9
Percentage of Max. Density (%)	99.6

CBR (%)	
0.1 in.	5.7
0.2 in.	6.0

Linearity Correction	0.000
Surcharge (lbs)	10
Max Swell (%)	0.7

Material Description	Lean Clay with sand
USCS	CL
Max Density	116
Optimum Moisture (%)	14
LL	34
PI	16

Tested by: _____

Reviewed by: R. Drew Thomas

HP ENVIRONMENTAL
INCORPORATED

Certificate of Laboratory Analysis

GeoConcepts Engineering, Inc.
Attn: Rebecca Smith
19955 Highland Vista Dr.
Suite 170
Ashburn, VA 20147

Date Received: 09/22/10
Date Reported: 09/28/10
Project Location: **Eisenhower Memorial**

Report Number: **104363**

1. Client Sample No: **B-3** HPE Sample No.: 104363-01
Sample Matrix: Soil Date Collected: 09/22/10
Sample Location:

Test(s) Requested: **Soil Corrosion Potential Profile**
Analysis Method(s): Various Date Analyzed: 09/23/10

Analyte	Result	Units	Reporting Limit	Qualifier
Resistivity - ASTM G57	**1800**	ohm-cm	N/A	
Redox Potential - Electrode	+ **424**	mV	N/A	
pH - CA643	**4.2**	pH	N/A	
Sulfate (Water Soluble) - CA417	**240**	mg/Kg	10	D
Sulfide (Water Soluble) EPA 376.2	< 1.2	mg/Kg	1.2	U
Moisture (Percent)	**13**	%	N/A	

2. Client Sample No: **B-11** HPE Sample No.: 104363-02
Sample Matrix: Soil Date Collected: 09/22/10
Sample Location:

Test(s) Requested: **Soil Corrosion Potential Profile**
Analysis Method(s): Various Date Analyzed: 09/23/10

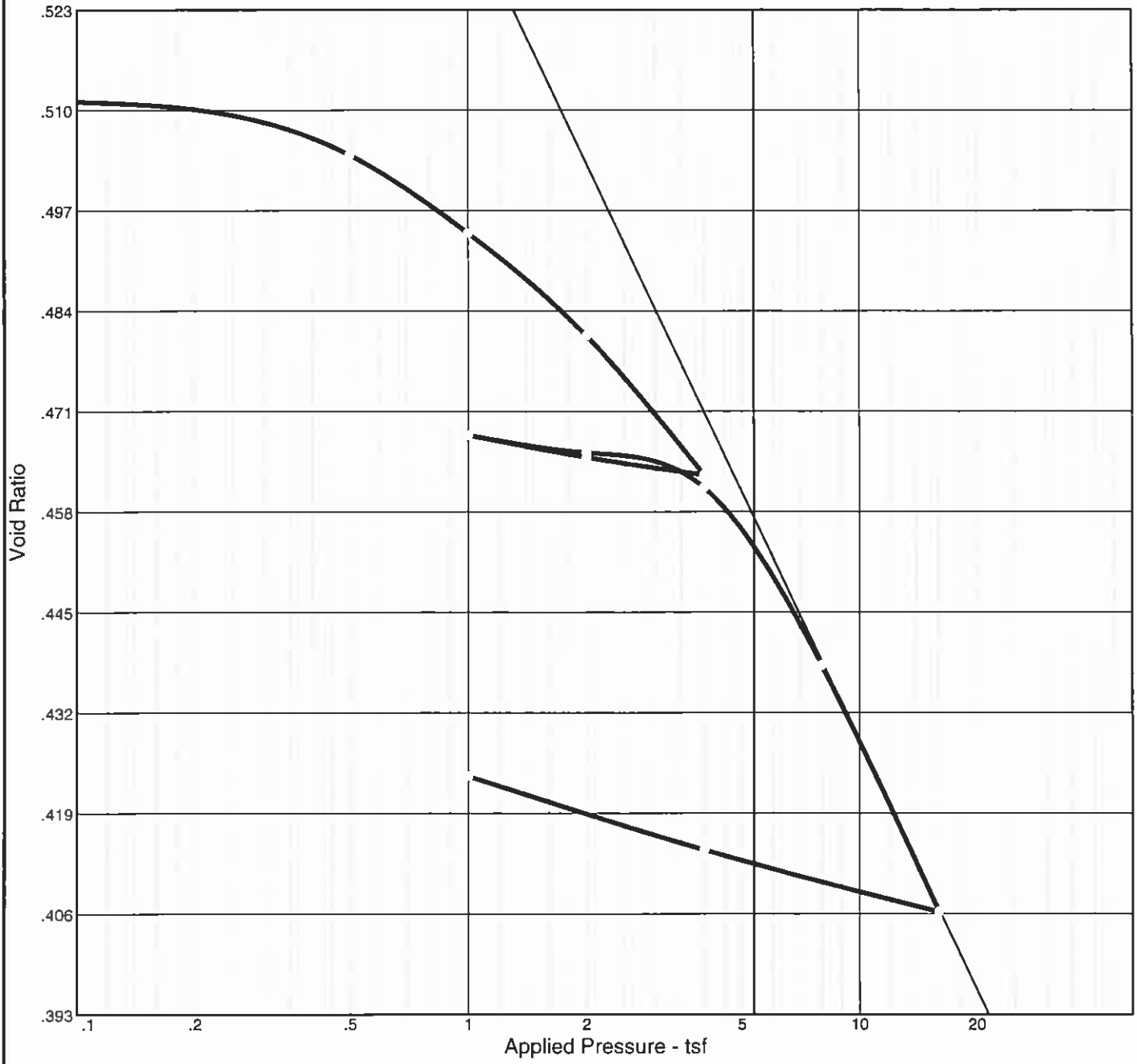
Analyte	Result	Units	Reporting Limit	Qualifier
Resistivity - ASTM G57	**1900**	ohm-cm	N/A	
Redox Potential - Electrode	+ **308**	mV	N/A	
pH - CA643	**7.3**	pH	N/A	
Sulfate (Water Soluble) - CA417	**390**	mg/Kg	10	D
Sulfide (Water Soluble) EPA 376.2	< 1.2	mg/Kg	1.2	U
Moisture (Percent)	**12**	%	N/A	

JP 09/28/10
Approved by Date

Analyte Qualifier Codes

U = Analyte was not detected
J = Analyte detected below reporting limit (estimated value)
D = Analyte reported from a sample dilution
B = Analyte was detected in the corresponding method blank

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Heave %	e_o
Sat.	Moist.											
88.3 %	16.6 %	112.1	23	7	2.72		6.14	0.11	0.01			0.511

MATERIAL DESCRIPTION	USCS	AASHTO
	CL-ML	A-4(1)

Project No. 33088-029 **Client:** GeoConcepts Engineering, inc.

Project: Eisenhower Memorial

Source: B-13 Sample **No.:** B-13 **Elev./Depth:** 10' - 12'

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Chantilly, VA

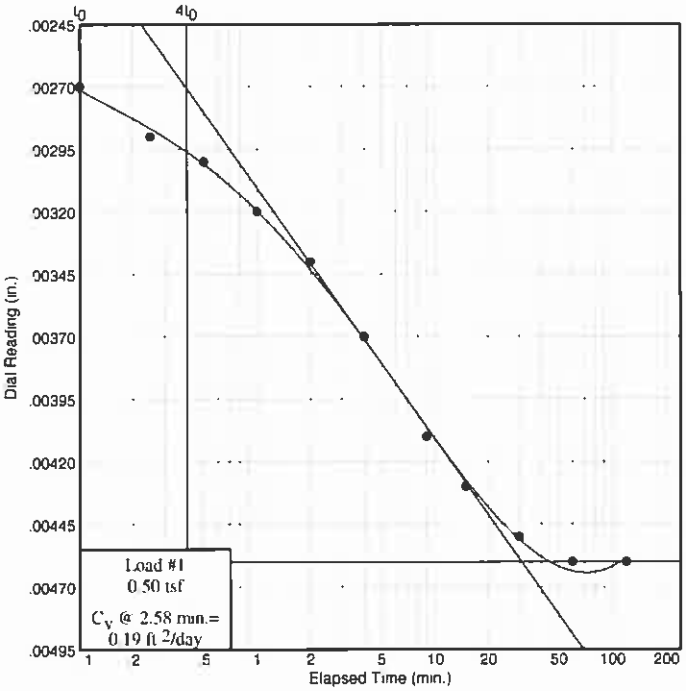
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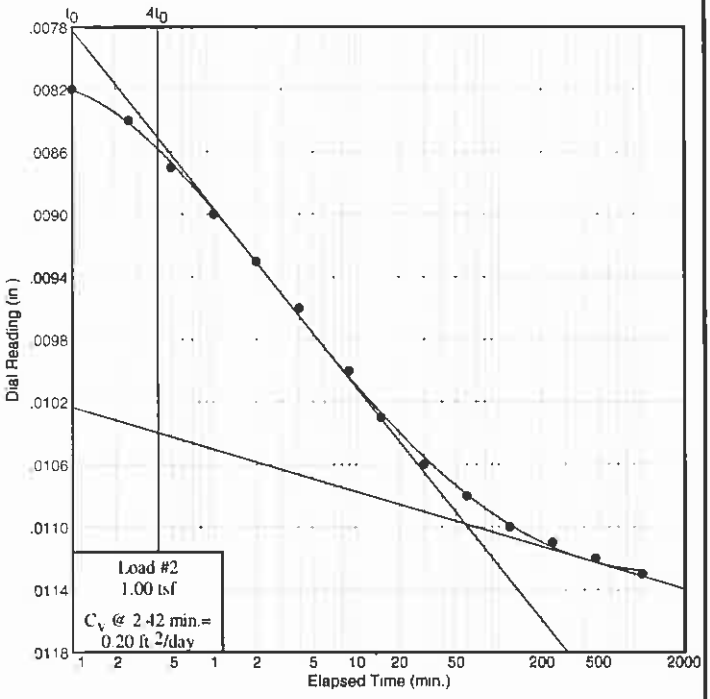
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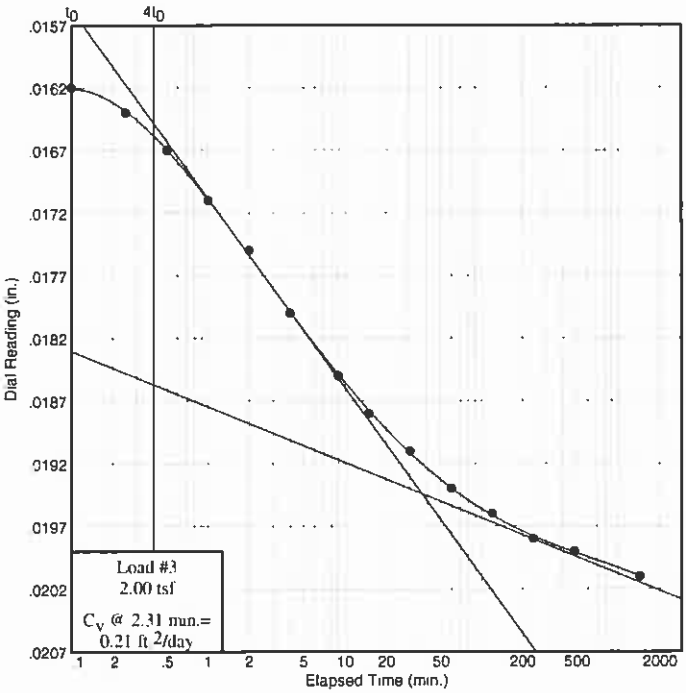
Dial Reading vs. Time

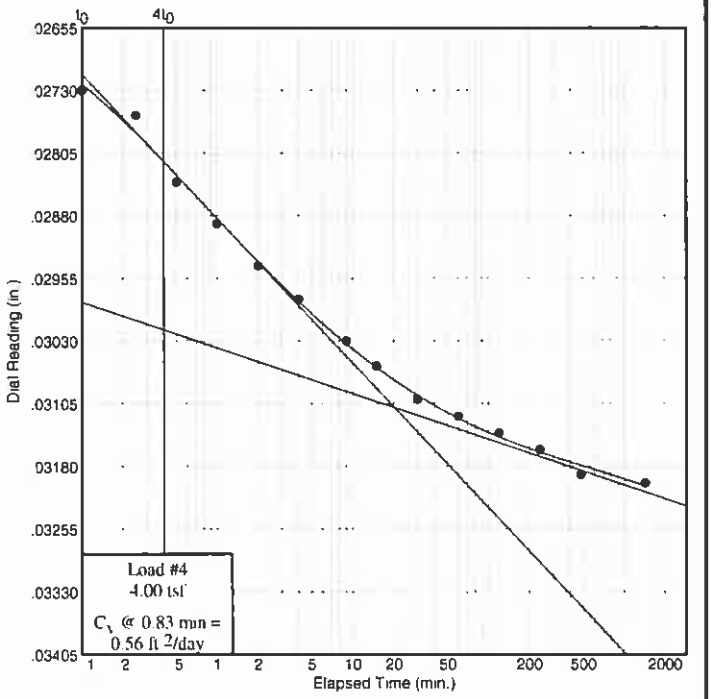
Project No.: 33088-029
Project: Eisenhower Memorial

Source: B-13 Sample No.: B-13 Elev./Depth: 10' - 12'









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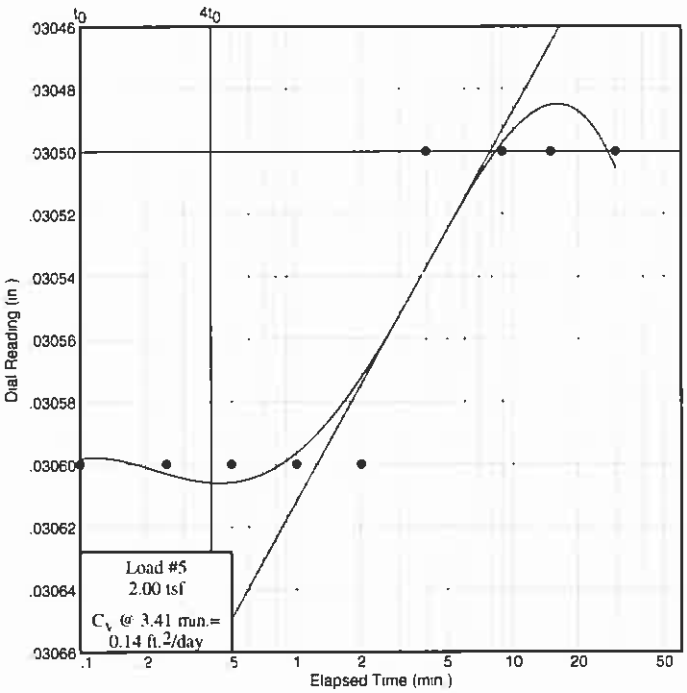
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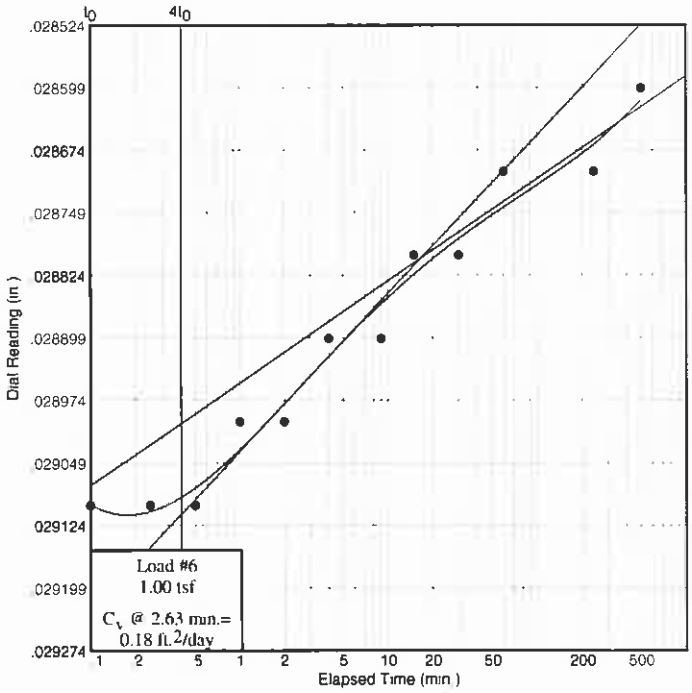
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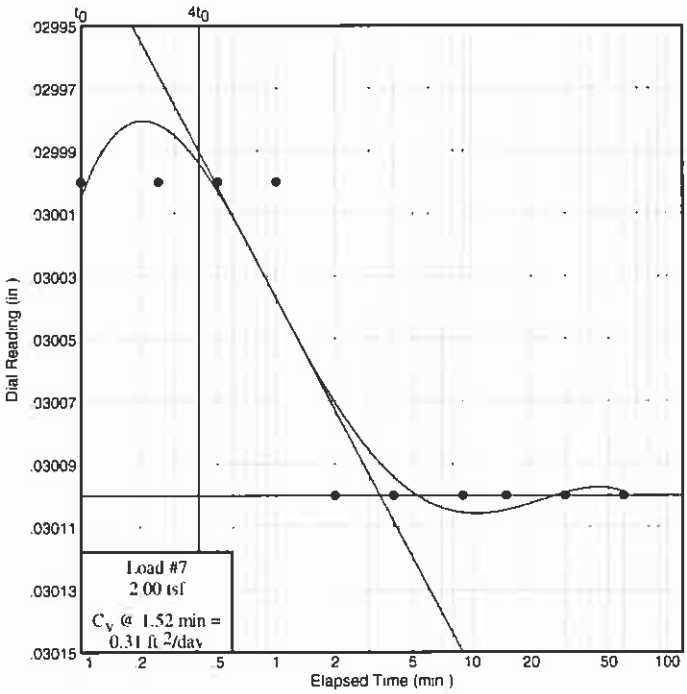
Dial Reading vs. Time

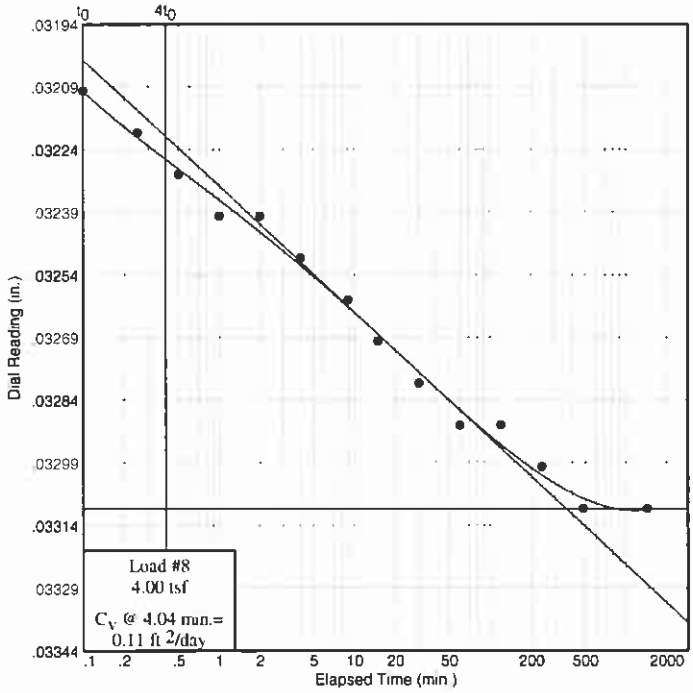
Project No.: 33088-029
Project: Eisenhower Memorial

Source: B-13 Sample No.: B-13 Elev./Depth: 10' - 12'









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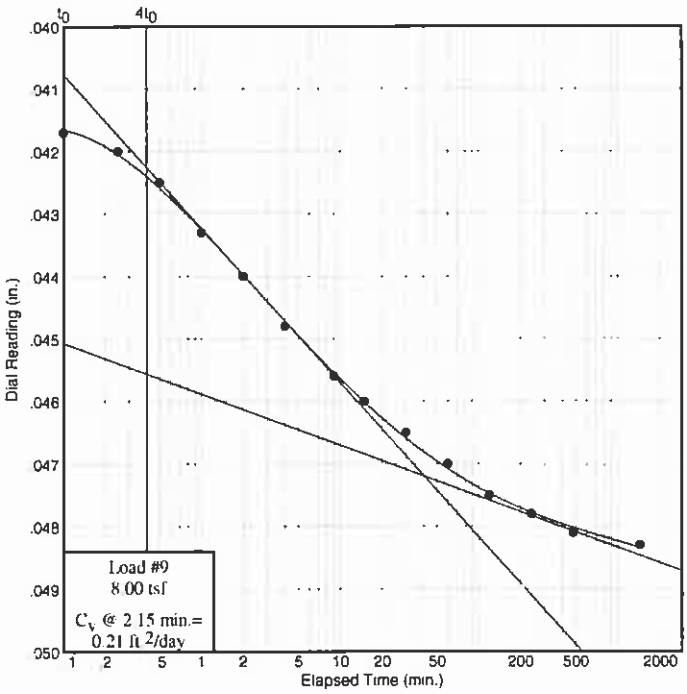
Chantilly, VA

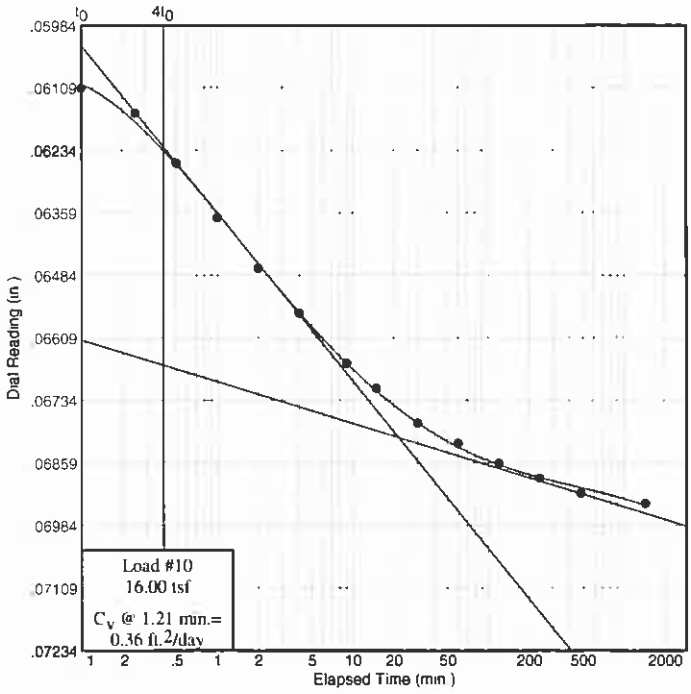
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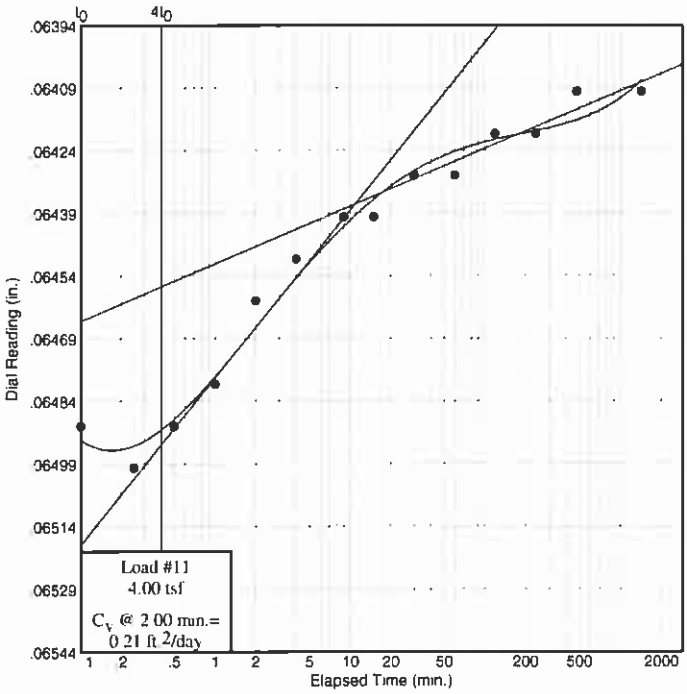
Dial Reading vs. Time

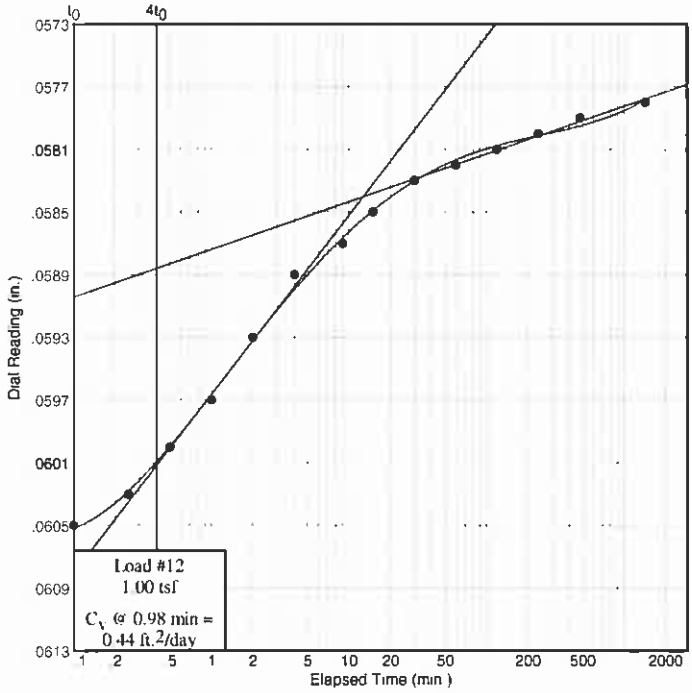
Project No.: 33088-029
Project: Eisenhower Memorial

Source: B-13 Sample No.: B-13 Elev./Depth: 10' - 12'









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Chantilly, VA

Figure

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3.0 STRUCTURAL CALCULATIONS

3.1 Structural Design Criteria
3.2 Structural Model, Geometry, and Elements
- 3.2.1 General Geometry
- 3.2.2 Stainless Steel Cables
- 3.2.3 Concrete Columns
- 3.2.4 Foundation Elements

3.3 Structural Loads
- 3.3.1 Dead Loads
- 3.3.2 Ice Loads
- 3.3.3 Thermal Loads
- 3.3.4 Seismic Loads
- 3.3.5 Wind Loads
- 3.3.6 Cable Prestress and Concrete Creep Analysis

3.4 Structural Analysis Results
3.5 Design of Tapestry Structural Elements
- 3.5.1 Structural Steel Cables
- 3.5.2 Structural Steel Box Beam
- 3.5.3 Structural Steel Connections
- 3.5.4 Concrete Columns
- 3.5.5 Foundation Elements

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3.1 STRUCTURAL DESIGN CRITERIA

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The Eisenhower Memorial Tapestries are composed of three structural components, the East Tapestry, the West Tapestry and the South Tapestry. Each tapestry is composed of an artistic and/or photographic image constructed of a metal mesh supported by a cable net system spanning between 9-foot-diameter, 85-foot-tall columns. The South Tapestry, the primary tapestry located at the south side of the site, spans between six columns totaling approximately 430 feet in length. The East and West Tapestries, located near Independence Avenue, span between a pair of 9-foot-diameter columns.

STRUCTURAL SYSTEM DESCRIPTION

The tapestries will be 60-foot-tall woven metal mesh supported by a stainless steel cable net system spanning between the concrete columns. The column spacing will be approximately 86 feet on-center at the South tapestry and 80 feet on-center at the East and West tapestry.

Horizontal cables will be provided at approximately 5 feet on-center along the height of the tapestry to resist wind loads. Vertical cables will be provided along the tapestry to support the dead weight of the tapestry. The vertical cables will be anchored to the box beam. At the East and West Tapestries, two additional vertical cables are provided to support the weight of the horizontal cables and minimize sag of the horizontal cables.

A continuous stainless steel box beam will be provided at the top of the tapestries spanning between the columns. The box beam will support the vertical cables and will function as a compression strut at the top of the columns to counteract the tension loads in the cables.

The tapestry is offset 1'-0" from the face of the concrete column. Stainless steel plates and pipe sections located at each column will support the tapestry cable net system and transfer loads to the columns.

The foundations for the tapestry concrete columns will be a 4-foot deep pile caps supported on 16-inch-diameter concrete augercast piles. Concrete grade beams will be provided at the end columns at the South Tapestry and at the East and West Tapestry columns to resist large horizontal forces induced by the cable net system.

LATERAL FORCE-RESISTING SYSTEM

Lateral force resistance for the tapestry will primarily be provided by the concrete columns fixed at their base acting as a cantilevered column system. Out-of-plane wind loads are carried to the columns through the cable net system. Dead loads are transferred to the columns by the steel box beam spanning between columns.

BUILDING CODES AND REFERENCE STANDARDS

The project will be designed in accordance with the following building codes, material codes, and standards:

BUILDING CODES

- International Building Code, 2009 Edition (IBC 2009) with reference to *Minimum Design Loads for Buildings and Other Structures,* 2005 Edition (ASCE 7-05)
- Structural Applications of Steel Cables for Buildings, ASCE 19-96

MATERIAL CODES

- American Concrete Institute, *Building Code Requirements for Structural Concrete and Commentary* (ACI 318-08)
- American Institute of Steel Construction, *Specification for Structural Steel Buildings,* Thirteenth Edition (AISC 360-05)
- American Institute of Steel Construction, *Seismic Provisions for Structural Steel Buildings* (AISC 341-05)

REFERENCE STANDARDS

- Facilities Standards, Public Building Service, 2005 Edition (PBS-P100)
- Unified Facilities Criteria, Department of Defense Minimum Antiterrorism Standards for Buildings, October 8, 2003 Including Change 1, dated January 22, 2007 (UFC 4-010-01)
- Interagency Security Committee's Security Design Criteria, dated September 29, 2004
- CEB-FIP 90 (Comite Euro-International du Beton (CEB) – Federation Internationale de la Precontrainte (FIP), Model code for Concrete Structures, CEB, 1990)

LOADING AND SERVICEABILITY CRITERIA

A summary of the project-specific loading and serviceability criteria follows. These criteria meet or exceed the requirements of the IBC 2009 and incorporate additional requirements specific to this project.

GRAVITY LOADING

The tapestry cable net system is designed to support a tapestry weight of 20 lbs/sf over the area of the tapestry, in addition to self-weight of the cable system

The columns are designed to support, the tapestry, 20 lbs/sf over the horizontal surface at the top of the column and the weight of stone veneer attached to the column, in addition to the self-weight of the column

WIND DESIGN CRITERIA

The wind loading outlined in Table 1 below is in accordance with the requirements of IBC 2009 and ASCE 7-05. The basic wind speed prescribed by the code is 90 mph and corresponds to a recurrence interval of 50 years. To accommodate the 100-year structural system requirement, the basic wind speed has been adjusted to 96 mph to correspond to a recurrence interval of 100 years.

Table 1. Wind Design Criteria

Parameter	Value
Basic Wind Speed, 3-second gust *(V)*	96 mph
Exposure	B
Importance Factor *(I_w)*	1.00

Wind loads for the design of the tapestry are based on a wind tunnel report by RWDI entitled "Draft Final Report, Wind Loading Study," dated May 30, 2012. Final design of the tapestry support structure, including the structural columns, cables, and compression box is based on the final wind tunnel report.

Wind Loads shown in the RWDI report are based on a solid tapestry surface. As recommended by the RWDI report, the design pressures on the tapestry have been reduced for the actual porosity of the tapestry.

SEISMIC DESIGN CRITERIA

The seismic loads outlined in Table 2 below are in accordance with the requirements of IBC 2009 and ASCE 7-05.

The recurrence interval for seismic loads in the IBC 2009 and ASCE 7-05 is approximately 1,100 years based on a regionally-based Maximum Considered Earthquake ground motion with a uniform probability of exceedance of 2 percent in 50 years (return period of approximately 2,500 years).

Table 2. Seismic Design Criteria

Parameter	Value
Building Latitude	38.8877°N
Building Longitude	77.0174°W
Occupancy Category	II
Importance Factor *(I_e)*	1.00
Mapped Spectral Acceleration	S_s = 0.153; S_1 = 0.050
Site Class	D
Site Class Coefficients	F_a = 1.60; F_v = 2.40
Spectral Response Coefficients	S_{DS} = 0.163; S_{D1} = 0.080
Seismic Design Category	B
Lateral System	
Tapestry	Reinforced Concrete Distributed Mass Cantilever Structure (ASCE 7-05, Chapter 15)
Response Modification Coefficient *(R)*	
Tapestry	3.0

THERMAL LOADS

Thermal Loads are analyzed in accordance with ACI 224.3R, “Joints in Concrete Construction”. The tapestry support frame is designed to resist additional structural stresses and accommodate movements due to temperature fluctuations, between 16°F and 94°F.

ICE LOADS

Ice Loads are applied per ASCE 7-05, Chapter 10 with load combinations provided in ASCE 7-05 Section 2.4.3. Wind and Ice load combinations are applied according to RWDI recommendations. The weight of Ice on the tapestry is estimated at 25 lbs/sf over the area of the tapestry. The ice loads are reduced according to the porosity of the tapestry, as described in the wind loading section.

CREEP

Creep on the concrete elements are analyzed in accordance with CEB-FIP 90 (Comite Euro-International du Beton (CEB) – Federation Internationale de la Precontrainte (FIP), Model code for Concrete Structures, CEB, 1990). Cables are specified as pre-stretched cables and will not require a long-term creep analysis.

FOUNDATION DESIGN CRITERIA

A site-specific geotechnical investigation for the Eisenhower Memorial project scope has been performed by GeoConcepts Engineering, Inc.

The following criteria are in accordance with the Final Geotechnical Report for "Dwight D. Eisenhower Memorial, Independence Avenue SW, Washington D.C.," issued by GeoConcepts Engineering on November 5, 2010.

Table 3. Foundation Design Criteria

Parameter	Value
Site Elevations	Varies across site from approximately Elevation +14 to Elevation +17
Groundwater Elevation	Varies across site from approximately Elevation -8.5 to Elevation -10.5
Spread Footings Bearing in Existing Fill or Compacted Structural Fill	2,000 psf
Augercast Piles	Assuming bearing in Stratum C2 at Elevation -45
16-inch-diameter	95 tons downward
Vertical Load Capacities (service)	50 tons uplift
Foundation Resistance to Lateral Loads	
Allowable Passive Pressure	345D
Coefficient of Friction	0.30
Retaining Walls	
Restrained Walls	60 pcf equivalent fluid pressure
Unrestrained Walls	40 pcf equivalent fluid pressure

STRUCTURAL MATERIALS

The material properties used for the design include the following:

Table 4. Structural Steel Properties

Member	Standard, Strength
Round and Rectangular HSS Sections	ASTM 312, Type 316L, F_y = 30 ksi
Cables	ASTM A580/ASTM 368, Safe Working Load = 212 kips for 1.44" dia
Miscellaneous Plates and Connection Material	ASTM A572, F_y = 50 ksi ASTM A240, Type 316L (F_y = 30 ksi, min)

STRUCTURAL ANALYSIS

The tapestry structures are analyzed using the analysis program SAP2000 v15, a non-linear analysis program capable of analyzing structures that include cables and other highly non-linear elements. Analysis models are built for the East Tapestry (similar in geometry to the west tapestry with larger loads) and the South Tapestry.

SERVICEABILITY CRITERIA

Deflections Limits are set based on structural member lengths, "L" noted below. Deflection limits, Δ, noted below meet or exceed code recommended limits for members loaded with sustained loads (dead and live loads) and short term loads (wind and ice loads) .

Horizontal, or deflections perpendicular to the tapestry surface, are designated as Δ_h. Vertical deflections are designated as Δ_v

- Cable Deflection Criteria:
  - Wind Loads: $\Delta_h < L/75$
  - Wind on Ice Loads: $\Delta_h < L/50$
- Columns
  - Sustained Loads: $\Delta_h < L/400$
  - Short Term Loads: $\Delta_h < L/240$
- Box Beam
  - Sustained Loads: $\Delta_v < L/240$
  - Short Term Loads: $\Delta_h < L/400$

The maximum anticipated horizontal displacement at the concrete columns due to creep is ¼", maximum

The maximum anticipated movement at the box beam due to thermal expansion or contraction is +/- ½" upwards/downwards

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3.2 STRUCTURAL MODEL, GEOMETRY, AND ELEMENTS

The following pages summarize the 3-Dimensional structural analysis model and its elements:

3.2.1 General Geometry
3.2.2 Steel Cables
3.2.3 Concrete Columns
3.2.4 Foundation Elements

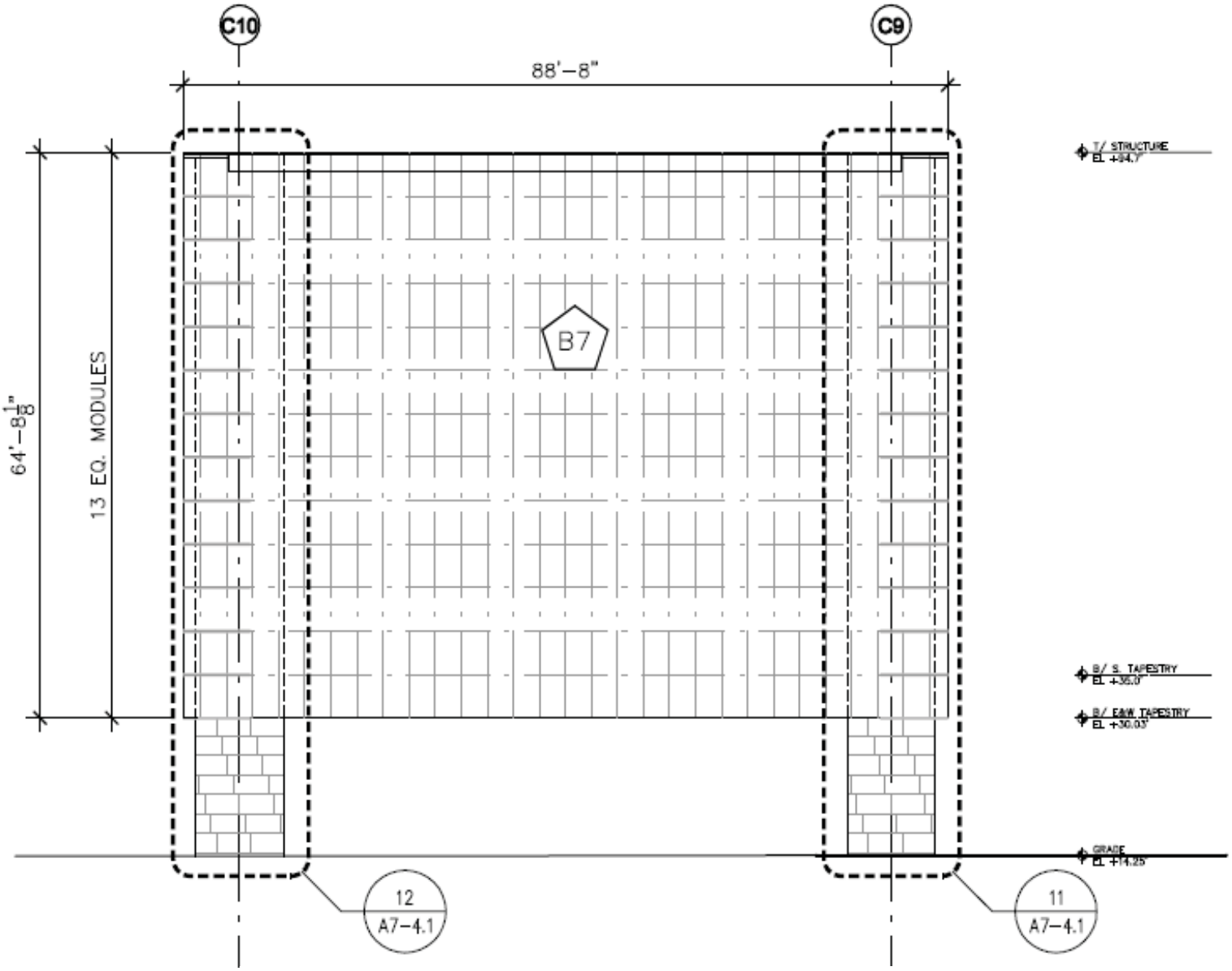
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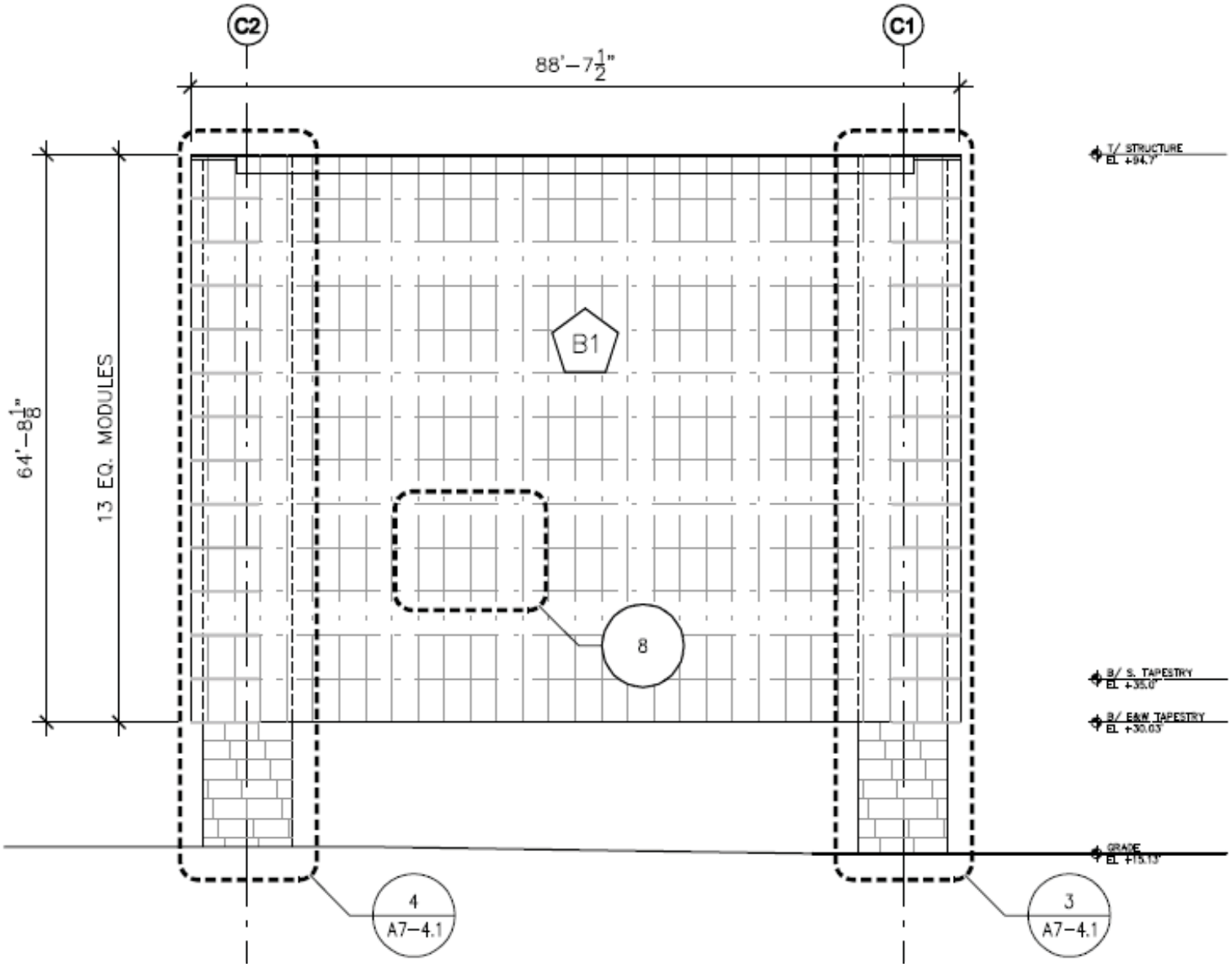
3.2.1 GENERAL GEOMETRY

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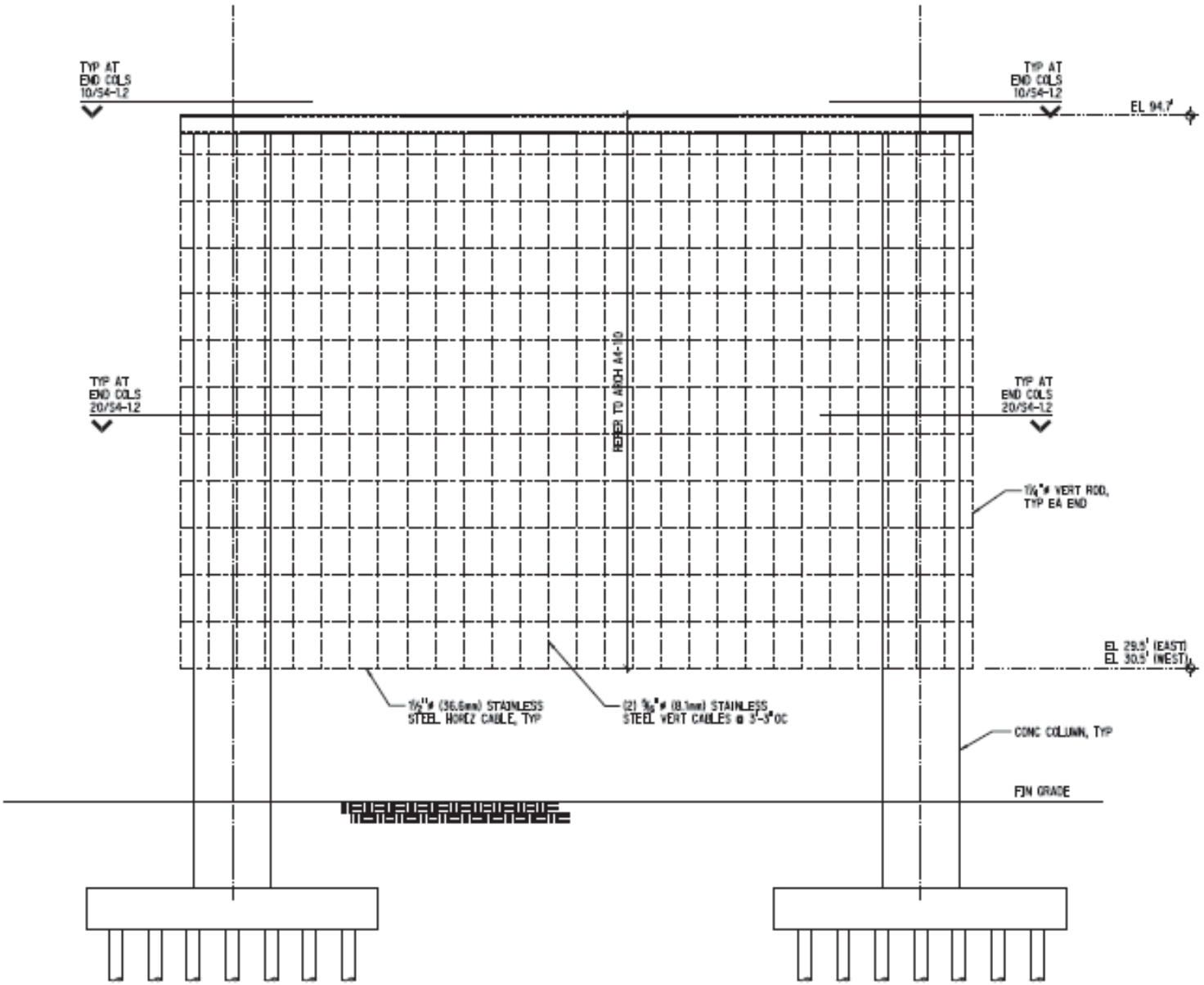
EAST TAPESTRY
-GP ELEVATION



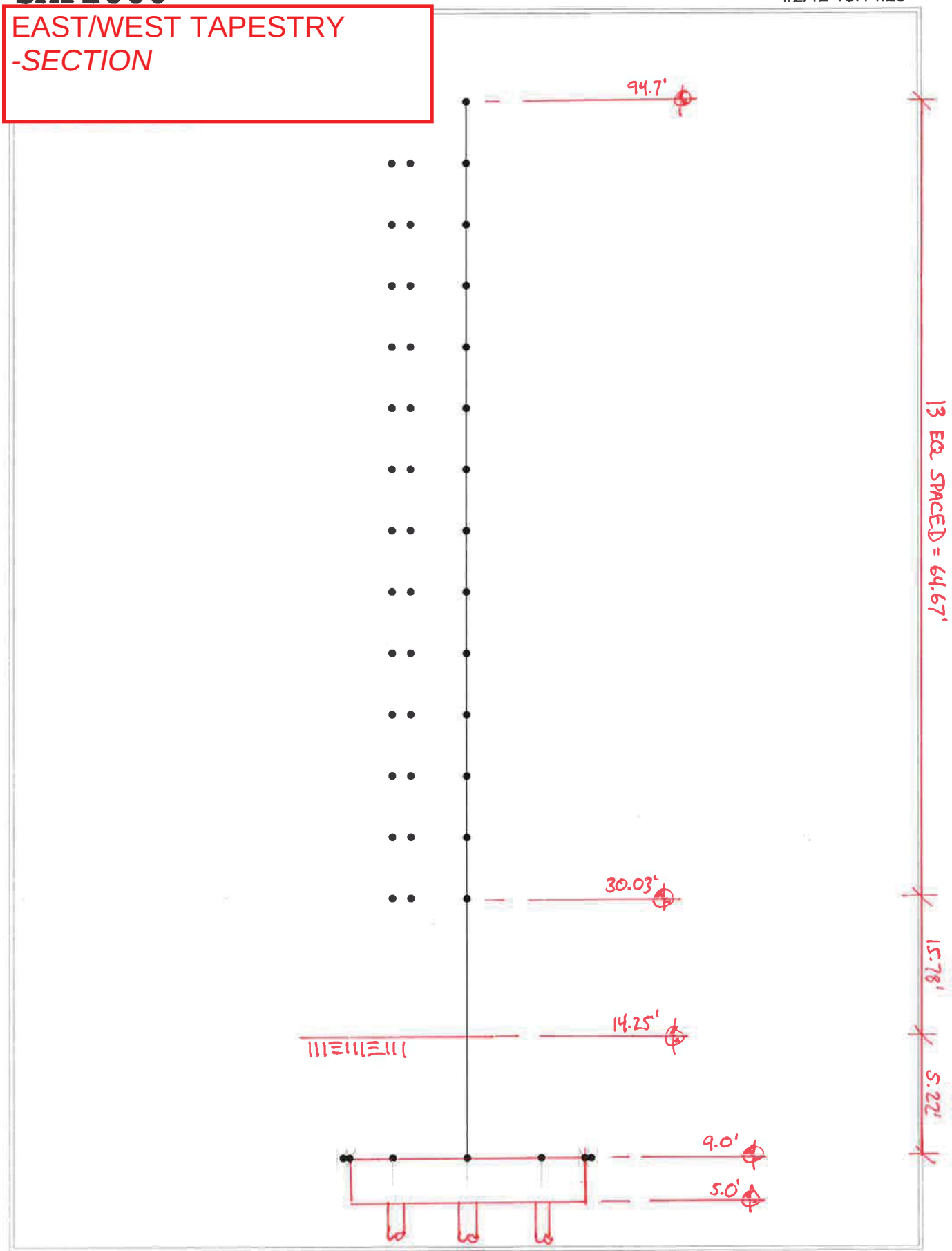
WEST TAPESTRY
-GP ELEVATION



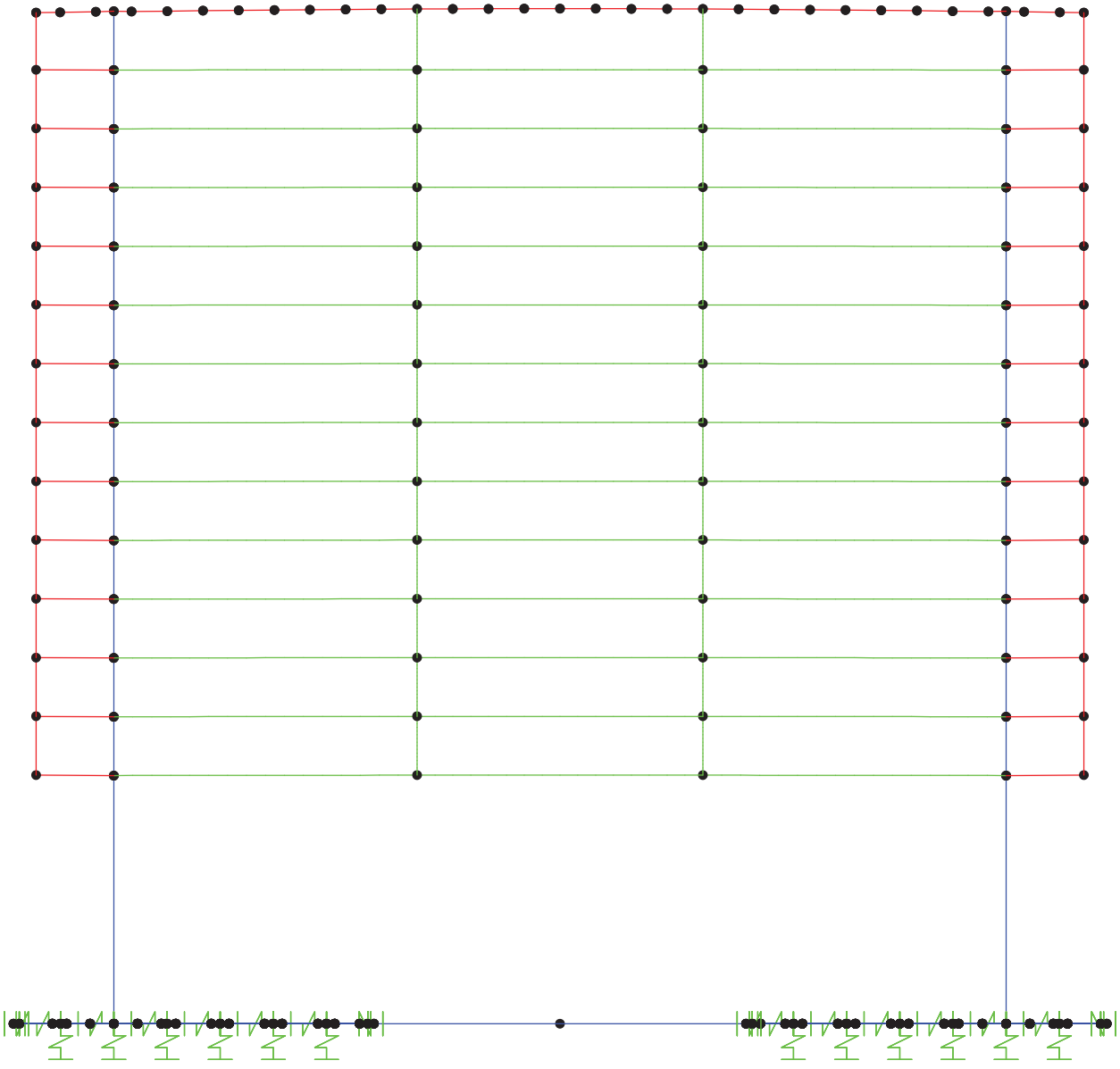
EAST/WEST TAPESTRY
-MKA ELEVATION



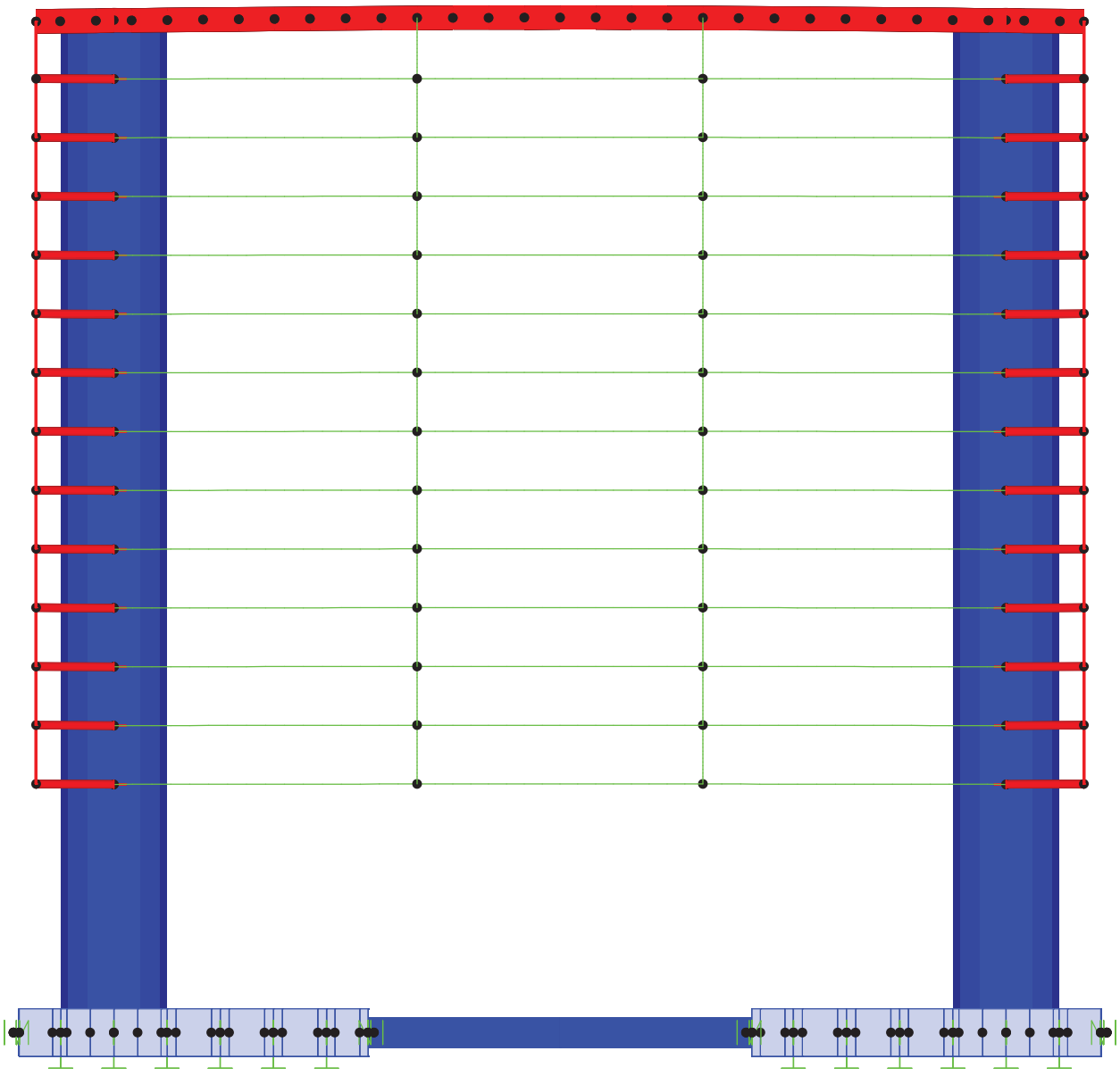
EAST/WEST TAPESTRY
-SECTION



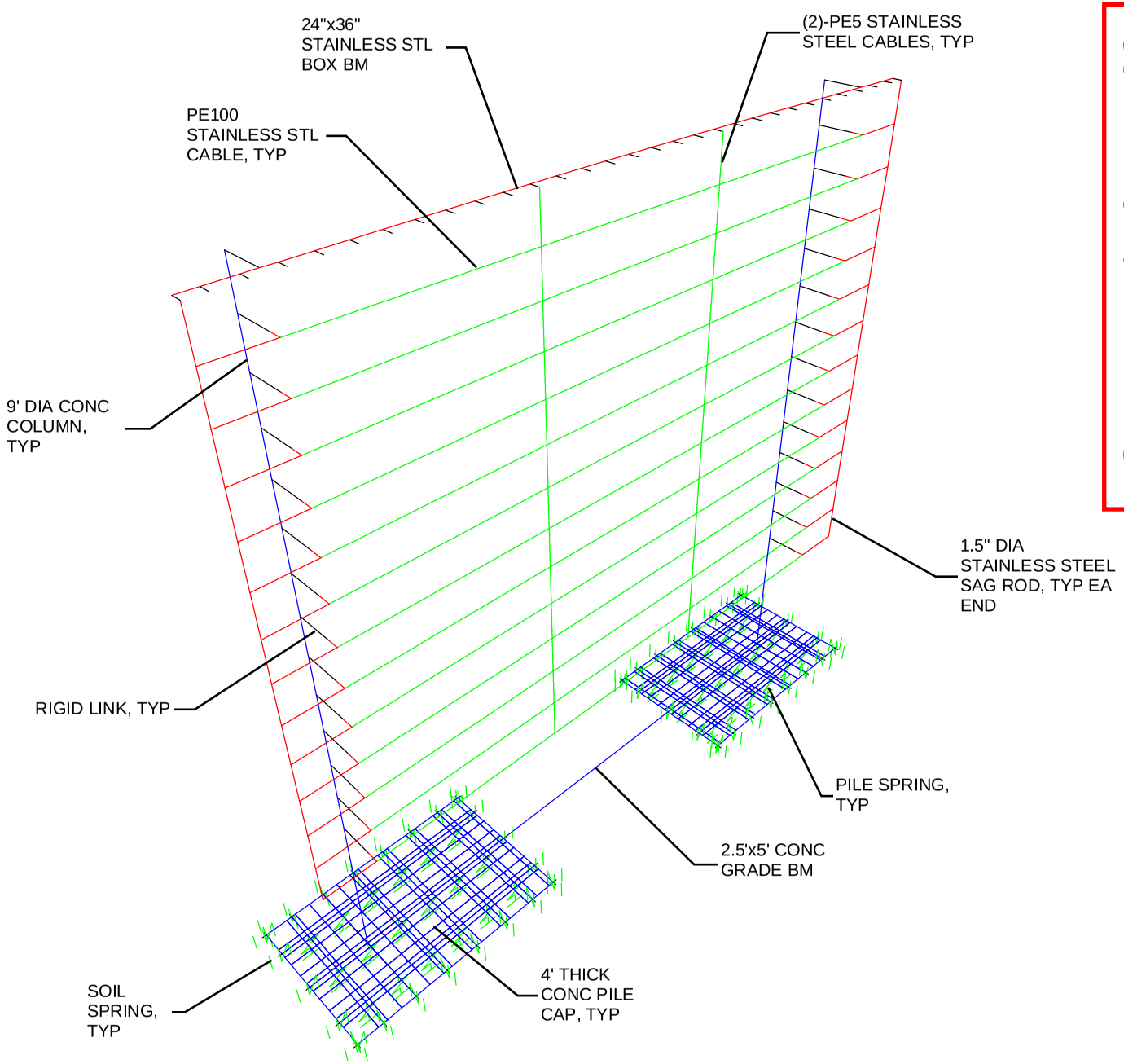
EAST TAPESTRY ANALYSIS MODEL
-ELEVATION



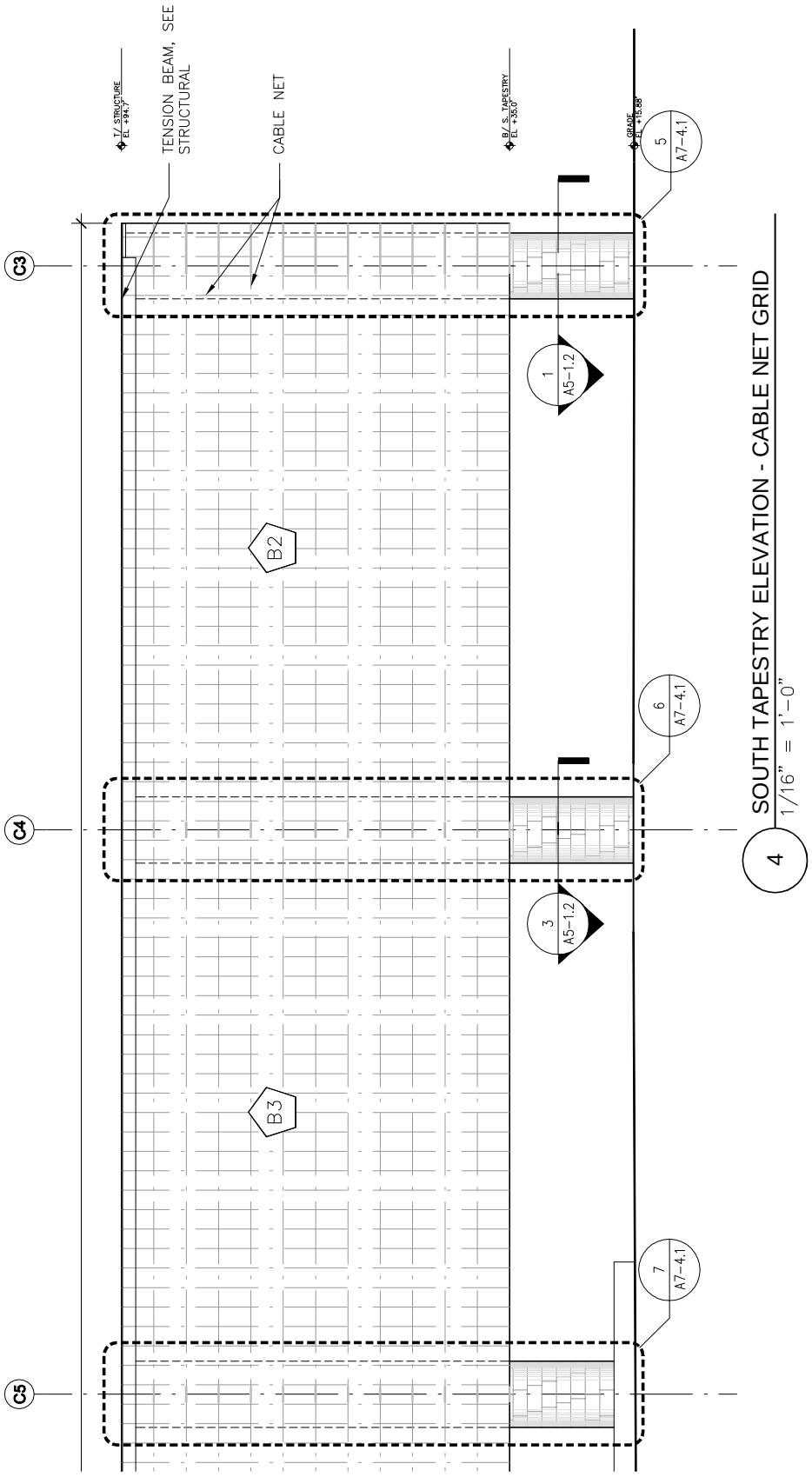
EAST TAPESTRY ANALYSIS MODEL
-ELEVATION



EAST TAPESTRY ANALYSIS MODEL
-ISOMETRIC W/ ELEMENTS

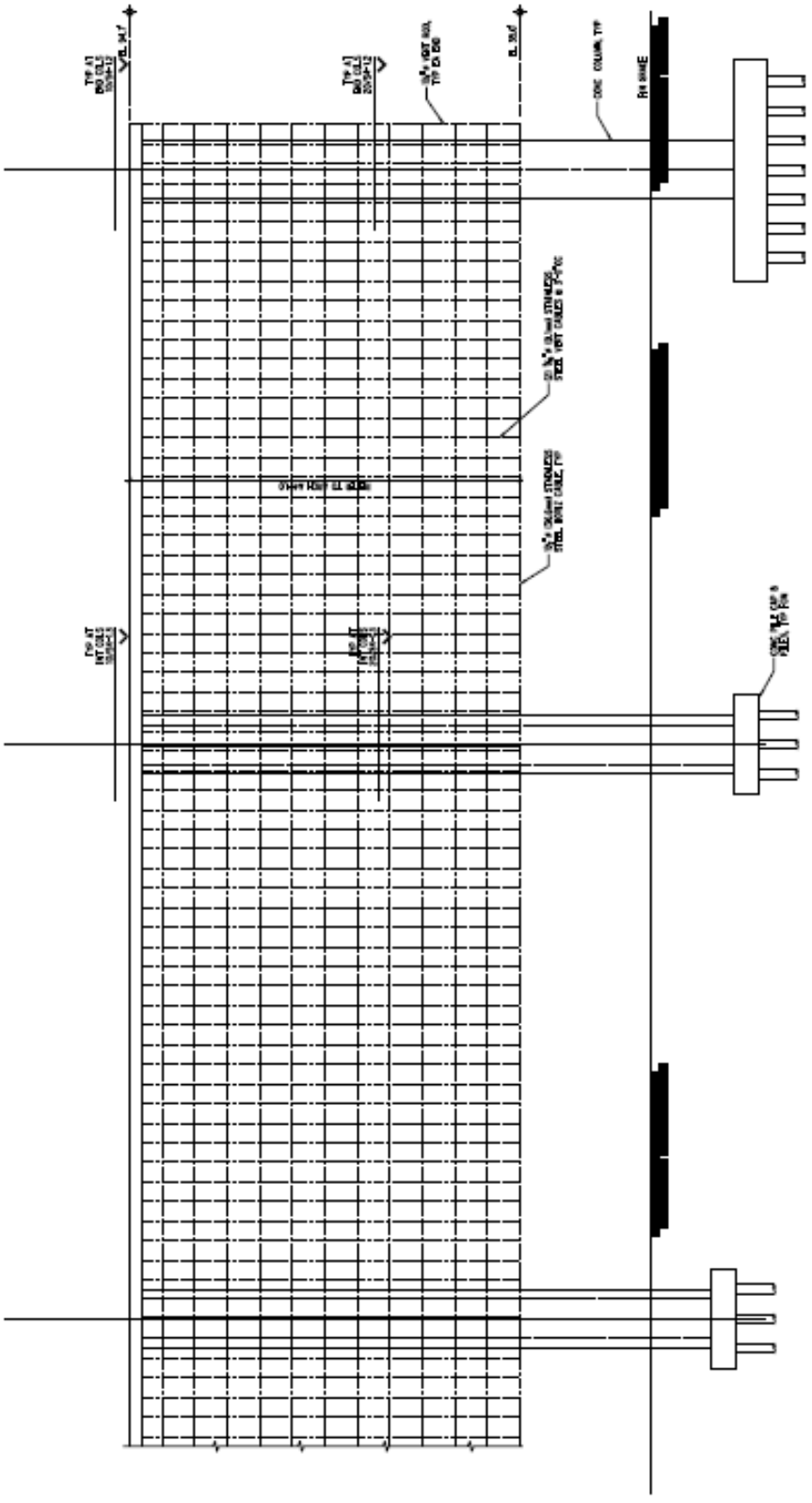


SOUTH TAPESTRY
-GP PARTIAL ELEVATION



4 SOUTH TAPESTRY ELEVATION - CABLE NET GRID
1/16" = 1'-0"

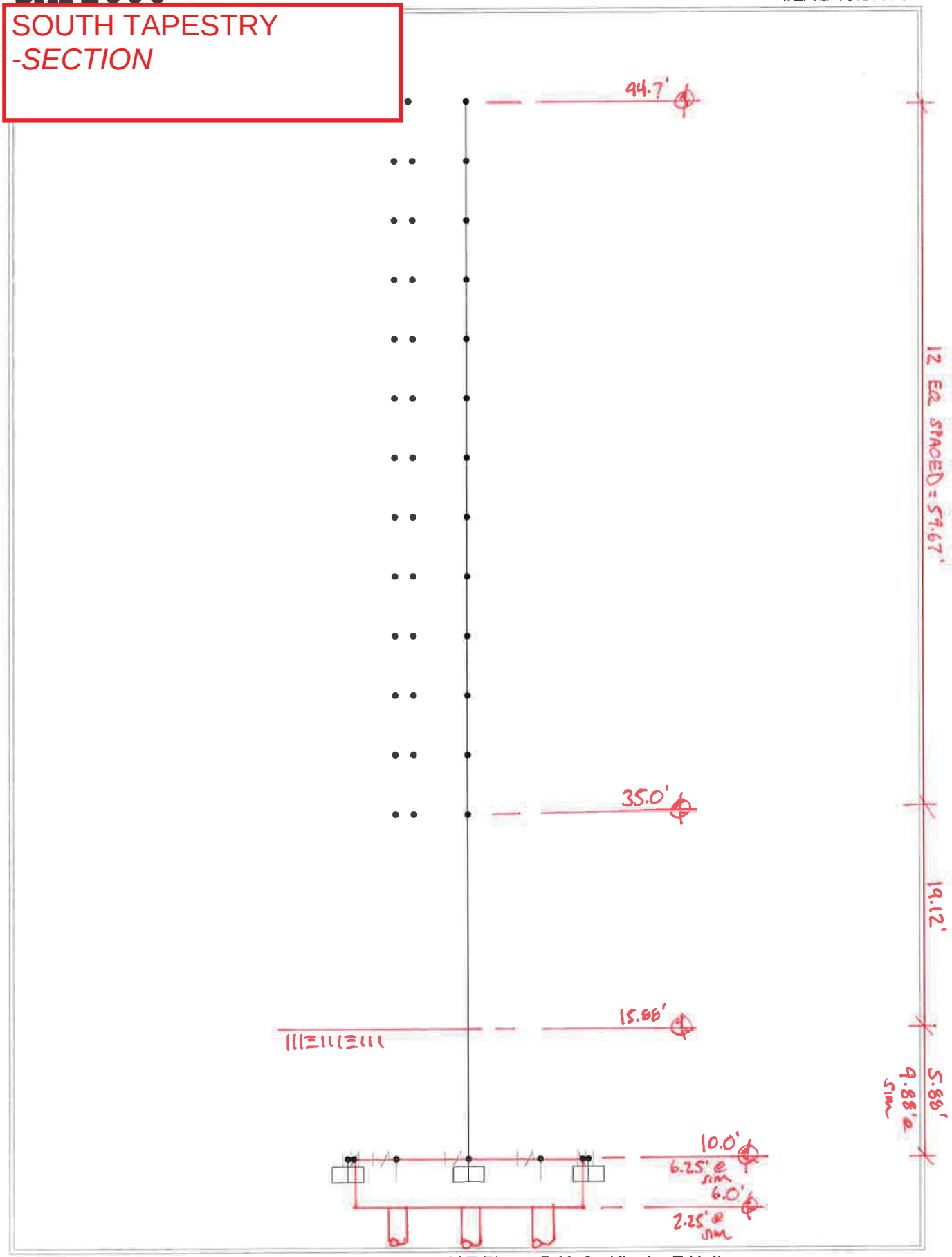
SOUTH TAPESTRY
-MKA PARTIAL ELEVATION



SAP2000

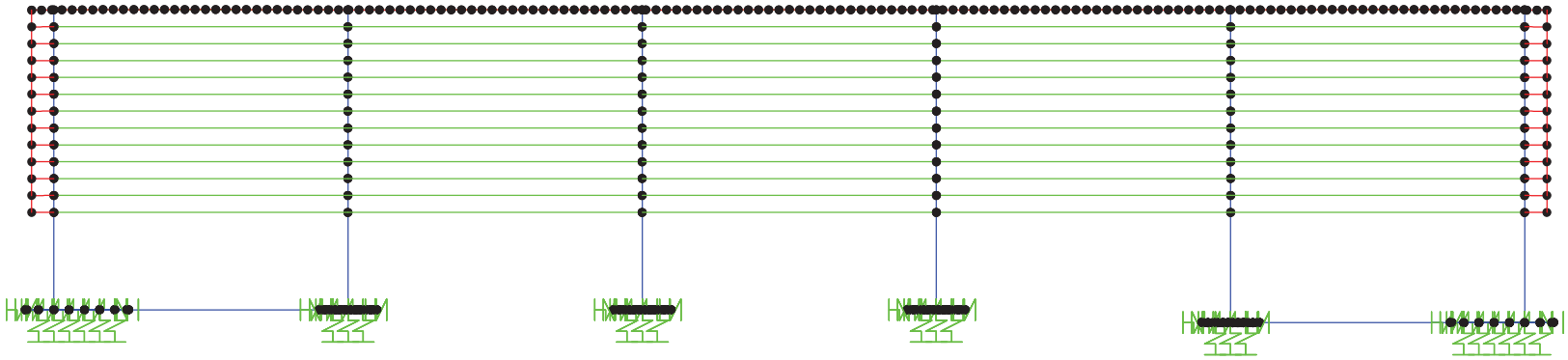
4/2/12 13:57:14

SOUTH TAPESTRY
-SECTION

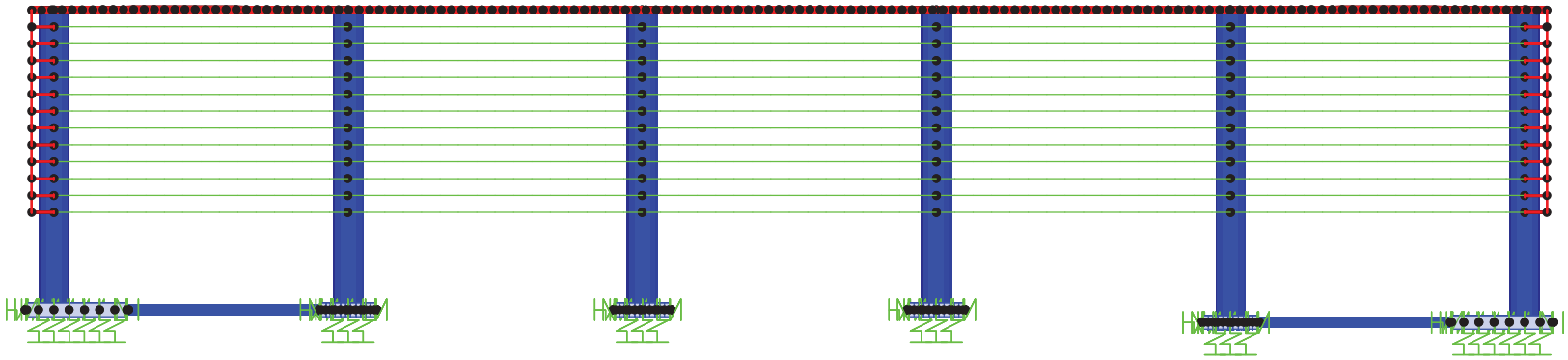


SAP2000 v15.1.0 - File:12_04_02_South Tapestry - Y-Z Plane @ X=0 - Kip, in, F Units

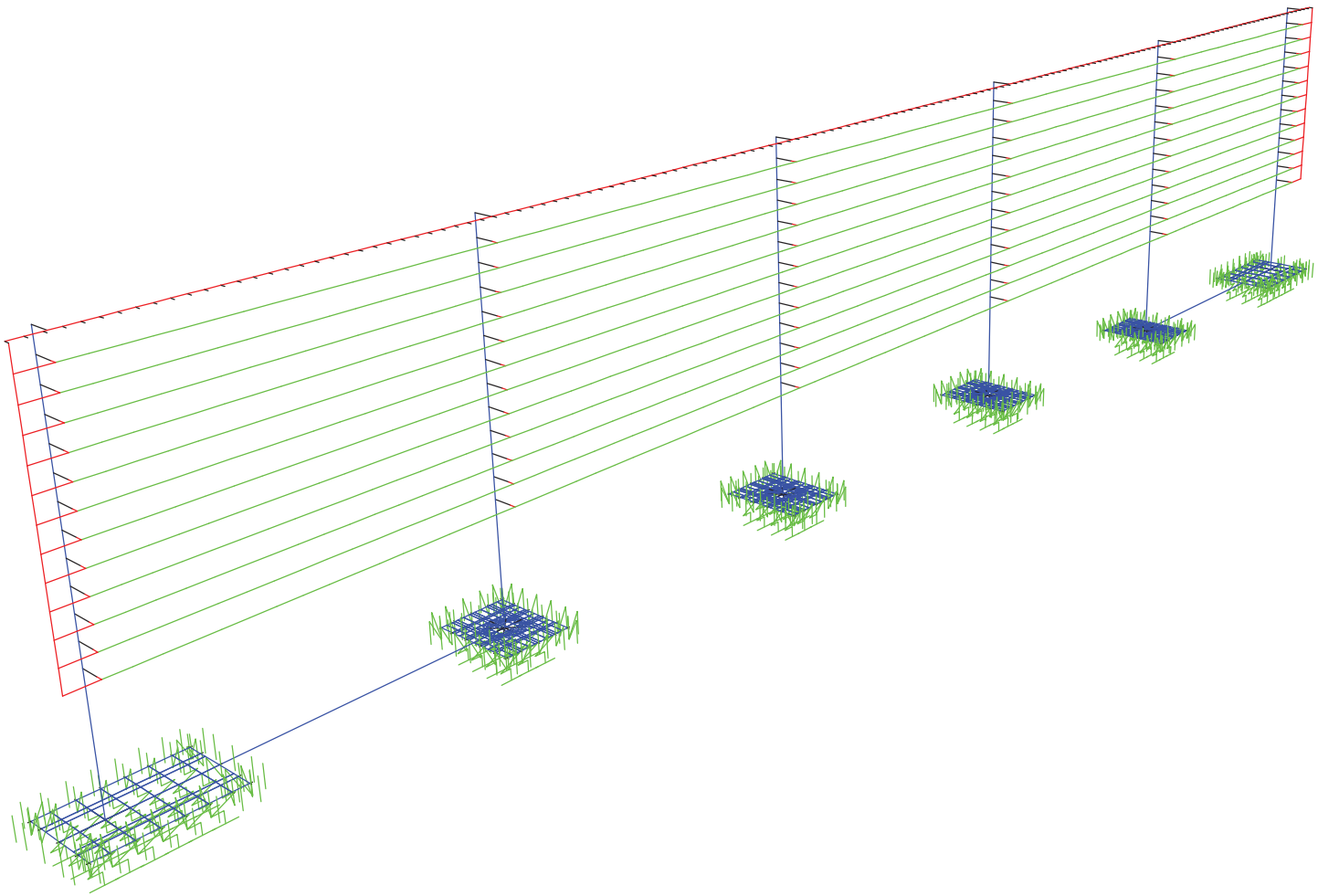
SOUTH TAPESTRY
ANALYSIS MODEL
-ELEVATION

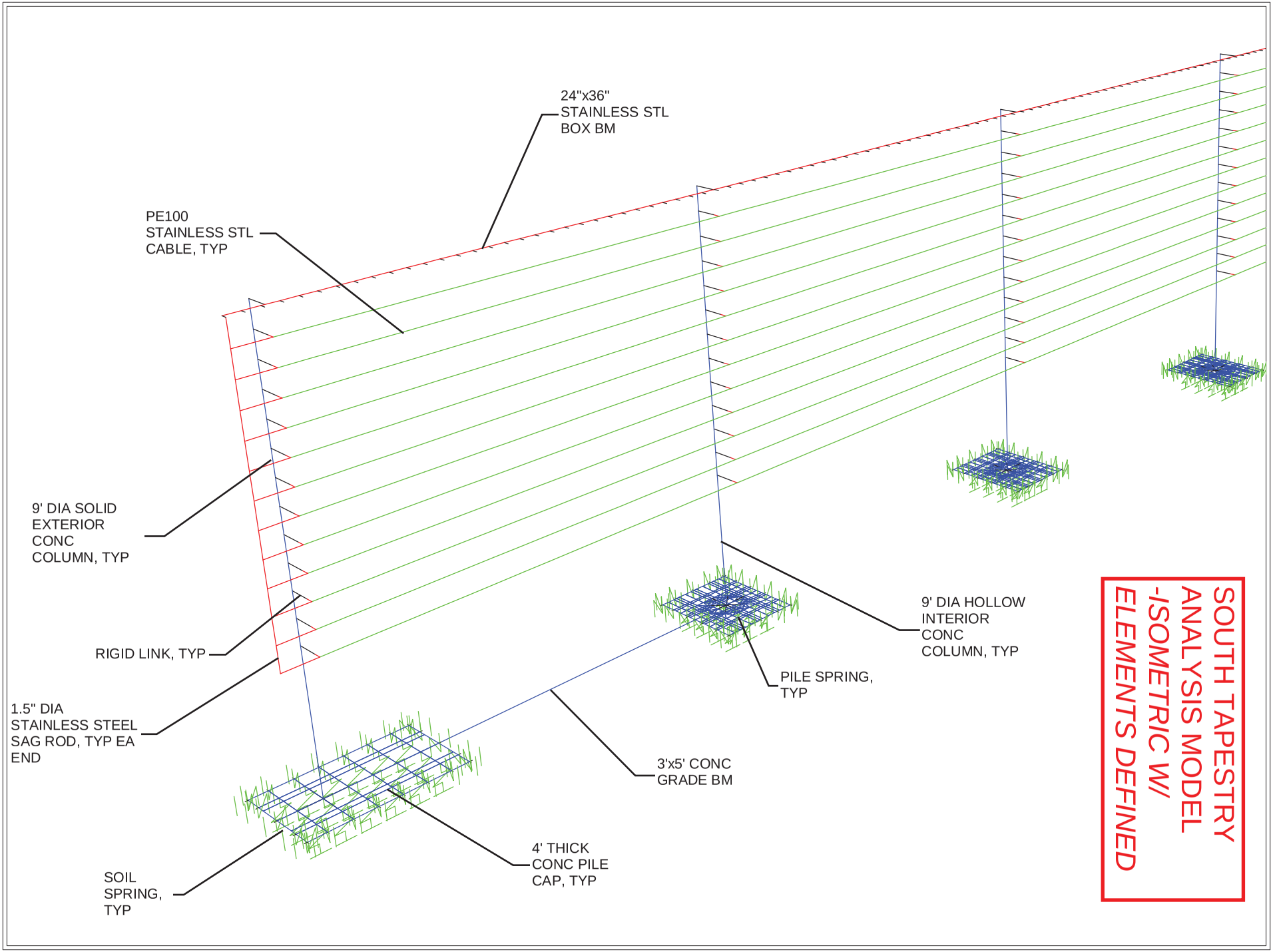


SOUTH TAPESTRY
ANALYSIS MODEL
-ELEVATION



SOUTH TAPESTRY
ANALYSIS MODEL
-ISOMETRIC




24"x36"
STAINLESS STL
BOX BM
PE100
STAINLESS STL
CABLE, TYP
9' DIA SOLID
EXTERIOR
CONC
COLUMN, TYP
RIGID LINK, TYP
1.5" DIA
STAINLESS STEEL
SAG ROD, TYP EA
END
SOIL
SPRING,
TYP
4' THICK
CONC PILE
CAP, TYP
3'x5' CONC
GRADE BM
PILE SPRING,
TYP
9' DIA HOLLOW
INTERIOR
CONC
COLUMN, TYP
SOUTH TAPESTRY
ANALYSIS MODEL
-ISOMETRIC W/
ELEMENTS DEFINED

3.2.2 STAINLESS STEEL CABLES

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Spiralseil DIN EN 12385 – Edelstahl
Spiral Strand DIN EN 12385 – Stainless Steel

Zulassungsnummer
Approval-Number
Z-14.7-411

PE

1 x 19  1 x 37  1 x 61  1 x 91 

Technische Daten	***Technical Data***
Material: gemäß Zulassung Z-14.7-411	*Material:* *according Technical Approval Z-14.7-411*
Elastizitätsmodul: 130 ± 10 kN/mm²	*Modulus of Elasticity:* *130 ± 10 kN/mm²*
Toleranz d_S: + 3%	*Tolerance d_S:* *+ 3%*

SEE ATTACHED



TAPESTRY ANALYSIS MODELS
CABLE ELEMENT PROPERTIES
-
FOR ENGINEERING ANALYSIS
NOT FOR PROCUREMENT

Größe *size*	Charakt. Bruchkraft *charact. breaking load* $Z_{B,k}$ DIN 18800* kN	Grenzzugkraft *limit tension* $Z_{R,d}$ DIN 18800 kN	Metall. Querschnitt *metallic cross section* ca./*approx.* mm²	Gewicht *weight* ca./*approx.* kg/m	Konstruktion *construction*	Seil-Nenndurchmesser *nomin. strand dia.* d_S mm
PE 3	26	16	22	0,2	1 x 19	6,1
PE 5	47	28	38	0,3	1 x 19	8,1
PE 7	73	44	60	0,5	1 x 19	10,1
PE 10	101	61	83	0,7	1 x 19	11,9
PE 15	141	86	117	0,9	1 x 37	14,1
PE 20	195	118	161	1,3	1 x 37	16,6
PE 30	298	180	246	1,9	1 x 37	20,5
PE 45	409	248	338	2,7	1 x 61	24,1
PE 60	578	350	477	3,7	1 x 61	28,6
PE 75	730	442	602	4,7	1 x 91	32,1
PE 100	945	573	780	6,1	1 x 91	36,6

*nach EC 3 = $F_{u,k}$ und nach ASCE 19-96 = S_d
Konstruktionsänderungen vorbehalten
Größere Abmessungen und Zwischengrößen auf Anfrage

*according EC 3 = $F_{u,k}$ and according ASCE 19-96 = S_d
Subject to technical modification
Bigger dimensions and intermediate dimensions upon request

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TAPESTRY ANALYSIS DOCUMENT

CABLE NET AND COMPONENTS PROPERTIES

-

FOR ENGINEERING ANALYSIS
NOT FOR PROCUREMENT

German Technical Approval

Cable Tension Members made of stainless steels

Z-14.7-411



validity to 30 April 2010

CERTIFIED TRANSLATION FROM THE GERMAN LANGUAGE
(Vom Deutschen Institut für Bautechnik nicht geprüfte Übersetzung der deutschen Originalfassung –
Translation of the German original not verified by the German Institute for Construction Engineering)

German Technical Approval

Approval number: Z-14.7-411

Applicant:

Generic type of construction product: Cable Tension Members made of rustproof steels

Validity to: 30 April 2010

The above-mentioned object of approval is herewith technically approved.*

The original of the German Technical Approval contains six (6) pages and ten (10) appendices.

(Official Seal of the Deutsches Institut für Bautechnik – German Institute for Construction Engineering)

* This German Technical Approval replaces the German Technical Approval number Z-14.7-411 dated 31 March 2000, extended by notification of 30 March 2005.

I. GENERAL CONDITIONS

1 This German Technical Approval is granted as proof of the fitness for an intended use or application of the construction product within the meaning of the building regulations of the German Länder.

2 This German Technical Approval does not replace the permissions, approvals and certificates that are prescribed by law for the execution of construction projects.

3 This German Technical Approval is granted without prejudice to the rights of third parties and especially to private property rights.

4 Without prejudice to any further regulations stipulated in the "Specific Conditions" below the manufacturer and the suppliers of the construction product are obliged to provide photocopies of this German Technical Approval to the user or applier of the construction product, respectively, and to point out to them that the German Technical Approval has to be available at the site of use or application. Photocopies of this German Technical Approval have to be provided to the authorities involved upon request.

5 This German Technical Approval may only be reproduced in full. Any partial reproduction requires the prior consent of the Deutsches Institut für Bautechnik (German Institute for Construction Engineering). Texts and drawings of advertising brochures shall not contradict this German Technical Approval. Translations of this German Technical Approval have to be designated as "Vom Deutschen Institut für Bautechnik nicht geprüfte Übersetzung der deutschen Originalfassung" ("Translation of the German original not verified by the German Institute for Construction Engineering").

6 This German Technical Approval may be withdrawn at any time. The conditions of this German Technical Approval can be supplemented and amended subsequently especially if required by new technical findings.

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II. SPECIAL CONDITIONS

1 Definition of product and intended use

The product is prefabricated high-strength cable tension members made of rustproof steels (cf. Appendix 1) consisting of spiral strands or strand ropes as well as the corresponding swaged final anchorings, connection constructions, deflection bearings, clamps and straps.

This German Technical Approval regulates and governs manufacturing, design and use of the prefabricated high-strength cable tension members. Furthermore, unless otherwise provided in this German Technical Approval, the regulations stipulated in German standard DIN 18800-1:1990-11, in the German Anpassungsrichtlinie Stahlbau (Adaptation Guideline structural steel engineering), in the pertinent application standards as well as in the German Technical Approval number Z-30.3-6 shall apply.

2 Characteristics of the construction products

2.1 Properties and composition

2.1.1 Cables

The specifications made in DIN EN 10264-4:2002-11 as well as in the standards of series DIN 12385 shall apply to the cables mentioned in section 1 above. In addition the specifications made in Section 2.1.2 below as well as the specifications in Appendices 2.1 to 8 have to be observed.

2.1.2 Swaged fittings (open swaged fittings, closed swaged fittings and swaged fittings with thread)

For the mechanical properties of the open swaged fittings, closed swaged fittings and swaged fittings with thread the specifications listed in Appendices 2.1 and 3 to 8 shall apply.

The dimensions have to correspond to the specifications made in Appendices 3 to 8. The swaged fittings with thread shown in Appendices 5 and 8 have to be provided with metric ISO screw threads pursuant to German standards of the series DIN 13. The specifications pertinent German standards of series DIN 13 shall apply to the tolerances of the screw threads.

The swaged fittings shown in Appendices 3 to 8 may be used for spiral strands and strand ropes with diameters from 3 mm to 36 mm and from 6.1 mm to 36.6 mm, respectively (also see Appendix 2.2 and Appendices 3 to 8).

2.1.3 Pins for open swaged fittings

The specifications made in Appendices 2.1, 3 and 6 shall apply.

2.1.4 Connection constructions, deflection bearings, clamps and straps

The connection constructions, deflection bearings, clamps and straps for the cables mentioned in sections 1 and 2.1.1 above regulated and governed by this German Technical Approval are made of rustproof steel with the material number 1.4462 in property class S460.

2.1.5 Manufacturing of the cable tension members

Specifications for manufacturing of the cable tension members have been deposited with the Deutsches Institut für Bautechnik (German Institute for Construction Engineering).

2.1.6 Corrosion resistance classes

The specifications made in Appendix 2.1 shall apply (also cf. German Technical Approval number Z-30.3-6).

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17

2.2 CE Marking

The manufacturer has to mark each packaging of the cable tension members with the conformity sign (CE sign) pursuant to the Ordinances on the Conformity Sign of the German Länder. CE marking may only take place if the requirements of Section 2.3 are fulfilled.

In addition, marking must identify the manufacturing plant, the manufacturing year, the designation of the construction product and the material of the individual components.

Cable tension members of different strengths have to be marked such that they cannot be mixed up.

2.3 Proof of conformity

2.3.1 General information

Conformity of the cable tension members with the conditions of this German Technical Approval has to be confirmed and attested for each manufacturing plant with a certificate of conformity issued on the strength of both the factory production control and the continuous outside surveillance at regular intervals including initial type-testing of the cable tension members in accordance with the following provisions.

The manufacturer of the cable tension members has to involve an approved certification body and an approved inspection body for granting of the conformity certificate and execution of continuous outside surveillance including the necessary product tests to be carried out.

A photocopy of the conformity certificate granted by the certification body shall be submitted to the Deutsches Institut für Bautechnik (German Institute for Construction Engineering) for information purposes.

2.3.2 Factory production control

The manufacturer has to establish a factory production control system and exercise factory production control in each manufacturing plant. Factory production control is taken to mean the continuous control of production to be exercised by the manufacturer so as to ensure that the construction products manufactured by him are in conformity with this German Technical Approval.

Factory production control shall at least encompass the following measures and steps:

- **Cables**

  The dimensions required in Section 2.1 above have to be checked for each delivery. Proof of the material properties required in Section 2.1 above has to be furnished by means of an inspection certificate "3.1" pursuant to German standard DIN EN 10204:2005-01. The technical delivery conditions according to German standards DIN 10264-4:2002-11 and of the standards of series DIN 12385 have to be observed.

- **Open swaged fittings, closed swaged fittings and swaged fittings with thread as well as connection constructions, deflection bearings, clamps, straps and pins**

  The dimensions and tolerances required in Section 2.1 above have to be checked for each production lot. Proof of the material properties required in Section 2.1 above has to furnished by means of an inspection certificate "3.1" pursuant to German standard DIN EN 10204:2005-01.

(Official Seal of the Deutsches Institut für Bautechnik – German Institute for Construction Engineering)

- **Verification of the k_e value (loss factor, cf. Appendix 2.2) of prefabricated cable tension members**

  The k_e values stated in Appendix 2.2 and thus the breaking loads have to be checked at regular intervals by tension tests of prefabricated cable tension members. On the occasion of the initial type-testing of the product (cf. Section 2.3.3 below) nature, extent and frequency of said tests have to be agreed with the inspection body involved in continuous outside surveillance and the Deutsches Institut für Bautechnik (German Institute for Construction Engineering).

The results of factory production control have to be recorded and evaluated. The records have to include at least the following information:

- designation of the construction product or the basic material and the components;
- type of control or testing;
- date of manufacture of the construction product and date of testing of the construction product and the basic material or the components, respectively;
- result of control and testing and comparison with the requirements;
- signature of the person responsible for factory production control.

The records have to be kept for at least five (5) years and they have to be presented to the inspection body involved in continuous outside surveillance. They have to be presented to the Deutsches Institut für Bautechnik (German Institute for Construction Engineering) and the competent Highest Building Inspectorate upon request.

Should the test result be unsatisfactory, the manufacturer shall immediately take the necessary steps so as to remedy the defect. Construction products which fail to meet the requirements have to be handled such that confusion with construction products that are in conformity with requirements is excluded. After the defect has been remedied, the test concerned has to be repeated immediately – provided that this is technically feasible and necessary so as to furnish proof of the removal of defects.

2.3.3 Continuous outside surveillance

In each manufacturing plant factory production control has to be checked by continuous outside surveillance carried out at regular intervals but at least twice a year.

In the scope of continuous outside surveillance initial type-testing of the construction product has to be carried out and sample tests of the properties of the cable tension members required in Section 2.1 above have to be carried out. The competent approved body is responsible for taking of samples and execution of the tests. Statistical evaluation of the values obtained during continuous outside surveillance has to prove that the respective requirements are met in each case.

The records of certification and continuous outside surveillance have to be kept for at least five (5) years. They have to be presented by the certification body or the inspection body, respectively, to the Deutsches Institut für Bautechnik (German Institute for Construction Engineering) and the competent Highest Building-Supervisory Authority upon request.

3 Conditions for construction and design

3.1 General information

For verification of load-bearing capacity of the cable tension members the proof concept stated in German standard DIN 18800-1:1990-11 shall apply. Verification of load-bearing capacity shall be construed to have been furnished if the stress of the cable tension members does not exceed loading according to Sections 3.2 and 3.3, respectively. In each case the smaller value shall be decisive. The characteristic values of resistance quantities necessary for the establishment of loading shall be taken from Appendix 2.1.

The linear thermal expansion coefficient α_T and the creep ε_K as well as reference values for the modulus of elasticity E_Q following German standard DIN 18800-1:1990-11, element 426 with annotation 2, have to be taken from Appendix 2.3.

Creep ε_K has to be taken into consideration for design if stress caused by constant actions, calculated with characteristic values multiplied by a factor of 1.0, exceeds 40% of the calculated breaking load established pursuant to German standard DIN 18800-1:1990-11, element 905.

3.2 Limit of the tensile force of the cable tension members

The limit of the tensile force of the cable tension members is always the limit of tensile force pursuant to German standard DIN 18800-1:1990-11, element 903 in connection with element 905. The k_e value (loss factor) and the k_s value (stranding factor) necessary to establish the calculated breaking load shall be taken from Appendix 2.2. The value of the limit of the tensile force shall apply to the cable including the swaged fitting.

3.3 Loading of the connection constructions provided for the swaged fittings

The connection constructions for the swaged fittings shown in Appendices 3 to 8 (connecting plates, pins, turnbuckles, etc.) have to be proven in each case. Loading shall be established according to German standard DIN 18800-1:1990-11. In the case of open swaged fittings, loading of the pin is already covered by the limit of the tensile force according to Section 3.2 above, provided that the thickness of the connecting plate corresponds to the specifications listed in Appendices 3 and 6, respectively.

4 Conditions for installation

The manufacturer has to draw up implementing instructions for installation of the prefabricated cable tension members and to hand these instructions over to the firm executing the works.

Prior to installation all individual components of the cable tension members have to checked as to their complete flawlessness. Damaged parts must not be used.

The swaged fittings with thread have to be screwed into the connection constructions according to Appendices 5 and 8, respectively.

The person responsible for installation has to put down in writing that all connections were checked as to adherence to minimum thread reaches.

Conformity of the connection constructions and of the installation of the prefabricated cable tension members with the provisions of this German Technical Approval has to be certified and attested by the firm executing the works.

Breitschaft

Certified
(Signature illegible, the translator)

(Official Seal of the Deutsches Institut für Bautechnik – German Institute for Construction Engineering)



Open Swaged Fitting
Type 961



Closed Swaged Fitting
Type 963



Swaged Fitting with Thread
Type 969

PE



Open Swaged Fitting
Type 981



Closed Swaged Fitting
Type 983



Swaged Fitting with Thread
Type 989

	Cable Systems **End Terminations** Examples	Appendix 1 German technical approval No.: Z-14.7-411 from: 13. April 2006

Table 1 – Steel Quality, Mechanical Properties (Minimum Value)

Members	Steel Quality				Mechanical Properties (Minimum Value)						
	Contraction	Material-No.	Structure	Property Class	Yield Strength $R_{p0,2}$ in N/mm²	Tensile Strength R_m in N/mm²	Elongation in % A_5	A_{10}	A_{GL}	Thermal Expansion Coefficient α_k in K^{-1}	Corrosion Resistance Class
Cable	X4CrNiMo 17-13-3	1.4436	A	S1100	1100	1450	-	6	2	$16x10^{-6}$	III*
	X5CrNiMo 17-12-2	1.4401	A	S1100	1100	1450	-	6	2	$16x10^{-6}$	II
Pin	X2CrNiMoN 22-5-3	1.4462	FA	S460	460	600	10	-	-	$13x10^{-6}$	III
				S690	690	800	12	-	-	$13x10^{-6}$	
Type 961,963,969 Type 981,983,989	X2CrNiMoN 22-5-3	1.4462	FA	S460	460	600	10	-	-	$13x10^{-6}$	III

* Accessible construction with moderate chloride and sulphur loading

Table 1 **Steel Quality** **Mechanical Properties (Minimum Value)**	**Appendix 2.1** German technical approval **No.: Z-14.7-411** from: **13. April 2006**

Table 2 – Loss Factor k_e, Stranding Factor k_s

Spiral Strand

End Termination Type 961, Type 963 and Type 969

Cable Construction		1 x 19	1 x 37	1 x 61	1 x 91
Stranding Factor k_s		**0,88**	**0,87**	**0,87**	**0,87**
Loss Factor k_e	Swaged Fittings	**0,9**			

End Terminations PE Type 981, PE Type 983 and PE Type 989

Cable Construction		1 x 19	1 x 37	1 x 61	1 x 91
Stranding Factor k_s		**0,88**			
Loss Factor k_e	Swaged Fittings	**0,95**			

Strand Ropes

End Terminations Type 961, Type 963 and Type 969

Cable Construction		6x7 SE	6x19 SE	6x19 WS / SE	6x36 WS / SE
Stranding Factor k_s		**0,84**	**0,80**	**0,80**	**0,78**
Loss Factor k_e	Swaged Fittings	**0,9**			

Table 2 **Loss Factor k_e** **Stranding Factor k_s**	**Appendix 2.2** German technical approval **No.: Z-14.7-411** from: **13. April 2006**

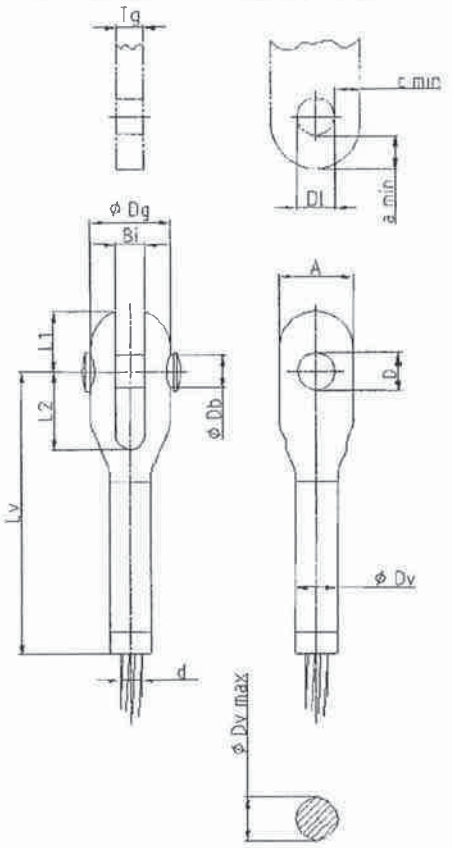
Tabelle 3 – Reference Value for Modulus of Elasticity E_Q

Cable Type	E_Q in N/mm²
Spiral Strand	**$0{,}13 \times 10^6$**
Strand Rope	**$0{,}10 \times 10^6$**

Tabelle 4 – Creep ε_K

Temperature in °C	ε_K in %
20	**$2{,}5 \times 10^{-2}$**
40	**$3{,}0 \times 10^{-2}$**
70	**$3{,}5 \times 10^{-2}$**

	Table 3 Reference Value for Modulus of Elasticity E_Q **Table 4** creep ε_K	**Appendix 2.3** German technical approval **No.: Z-14.7-411** from: **13. April 2006**



Open Swaged Fitting Type 961												Pin		Connecting Plate				
Size	d	D	A	Bi	Dg	Dv	Dvmax *)	L1	L2	~Lv max		Db		Tg	a min	c min	Dl	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm		mm	mm	mm	mm	
030	3	6	11	7	13	6	7	10	14	48	1.4462 - S460	5	1.4462 - S690	5	6	4	6	S355
040	4	7	14	7	15	7	9	11	16	58		6		5	7	5	7	
050	5	8	16	8	18	8	10	13	19	68		7		6	8	6	8	
060	6	10	20	10	22	11	13	16	23	79		9		8	10	7	10	
080	8	13	25	12	28	13	15	21	30	108		12		10	13	9	13	
100	10	16	31	14	34	17	20	27	36	134		15		12	16	11	16	
120	12	20	37	17	41	19	22	32	44	159		19		15	20	13	20	
140	14	23	44	20	48	22	26	37	51	193		22		18	23	15	23	
160	16	27	50	22	55	26	30	43	59	215		25	1.4462 - S460	20	27	18	27	
180	18	30	58	28	64	30	34	48	67	239		28		25	29	19	30	
200	20	32	62	28	68	34	39	53	73	271		30		25	32	21	32	
220	22	35	66	28	72	38	43	57	77	287		33		25	36	24	35	
240	24	35	70	28	75	38	43	60	80	321		33		25	38	27	35	
260	26	38	76	33	83	44	50	65	88	342		36		30	40	27	38	
280	28	42	83	33	89	44	50	70	93	367		40		30	45	31	42	
300	30	47	90	38	98	48	55	77	103	403		45		35	48	32	47	
320	32	50	97	43	106	52	59	82	113	426		48		40	50	33	50	
340	34	54	103	43	112	56	64	88	118	458		52		40	55	37	54	
360	36	57	109	48	119	58	66	92	126	482		55		45	57	38	57	

*) after swaging

Type 961

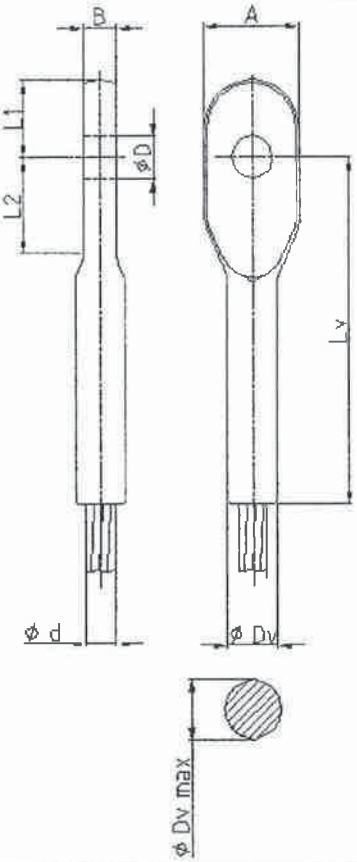
Open Swaged Fitting
Pin
Connecting Plate

Appendix 3

German technical approval

No.: Z-14.7-411

from: **13. April 2006**



Closed Swaged Fitting Type 963

Size	d	A	B	D	Dv	Dvmax *	L1	L2	~Lv max
	mm	mm	mm	mm	mm	mm	mm	mm	mm
030	3	13	5	6	6	7	11	14	48
040	4	15	5	7	7	9	12	15	58
050	5	18	6	8	8	10	14	18	69
060	6	22	8	10	11	13	17	22	79
080	8	28	10	13	13	15	23	29	108
100	10	34	12	16	17	20	28	35	134
120	12	41	15	20	19	22	34	42	159
140	14	48	18	23	22	26	39	49	193
160	16	55	20	27	26	30	46	57	215
180	18	64	25	30	30	34	52	66	239
200	20	68	25	32	34	39	56	70	269
220	22	72	25	35	38	43	60	74	287
240	24	75	25	35	38	43	63	77	321
260	26	83	30	38	44	50	68	85	342
280	28	89	30	42	44	50	74	90	367
300	30	98	35	47	48	55	81	100	403
320	32	106	40	50	52	59	87	108	426
340	34	112	40	54	56	64	92	114	458
360	36	119	45	57	58	66	97	121	482

1.4462 - S460

*) after swaging

Type 963

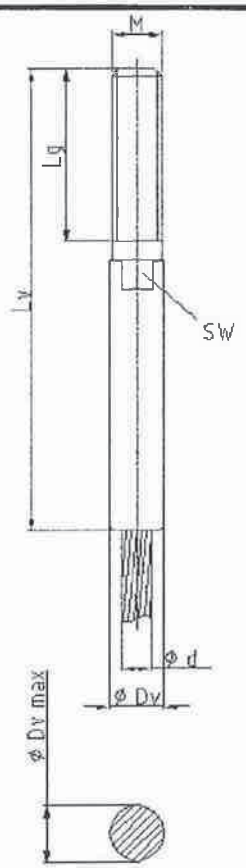
Closed Swaged Fitting

Appendix 4

German technical approval

No.: Z-14.7-411

from: **13. April 2006**



Swaged Fitting with Thread Type 969									
Size	d mm	M mm	Lg mm	~Lv max mm	Dv mm	Dvmax * mm	SW mm	Minimal Thread Reach mm	1.4462 - S460
030	3	5	22	60	6	7	5	5	
040	4	6	27	73	7	9	6	6	
050	5	8	33	85	8	10	6	8	
060	6	10	36	98	11	13	9	10	
080	8	12	51	134	13	15	11	12	
100	10	14	63	164	17	20	13	14	
120	12	16	73	196	19	22	17	16	
140	14	20	93	240	22	26	19	20	
160	16	22	101	262	26	30	22	22	
180	18	24	108	284	30	34	22	24	
200	20	27	126	333	34	39	27	27	
220	22	30	136	355	38	43	30	30	
240	24	33	158	409	38	43	32	33	
260	26	36	166	431	44	50	32	36	
280	28	39	179	458	44	50	36	39	
300	30	42	197	507	48	55	43	42	
320	32	45	205	529	52	59	46	45	
340	34	48	224	573	56	64	46	48	
360	36	48	231	595	58	66	46	48	

*) after swaging

Type 969

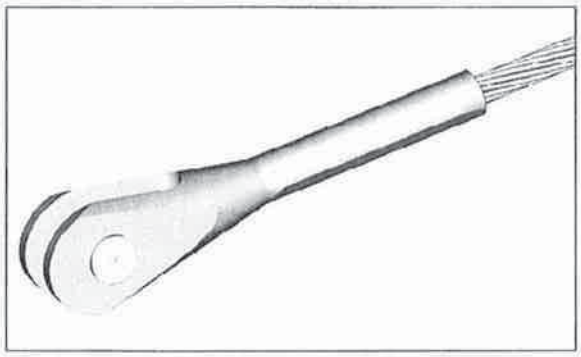
Swaged Fitting with Thread

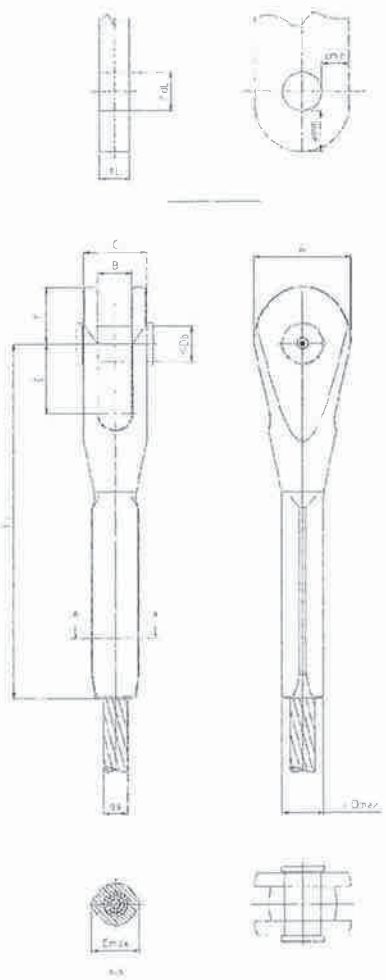
Appendix 5

German technical approval

No.: Z-14.7-411

from: **13. April 2006**





Open Swaged Fitting Type 981											Pin		Connecting Plate				
Size	A	B	C	E	F	G	Dmax *	~Lv *	ds		Db		dL	tL	amin	cmin	
	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm		mm	mm	mm	mm	
PE 3	25	10,5	18	18	15	27	13	101	6,1	1.4462 - S460	9	1.4462 - S460	10	8	11	7	S355
PE 5	32	12,5	23	24	20	32	15	129	8,1		12		13	10	14	10	
PE 7	40	14,5	27	29	24	36	20	156	10,1		15		16	12	17	12	
PE 10	50	17,5	33	35	30	39	22	190	11,9		19		20	15	22	15	
PE 15	57	20,5	38	41	35	50	26	223	14,1		22		23	18	25	17	
PE 20	67	22,5	43	48	41	55	30	258	16,6		25		27	20	29	20	
PE 30	80	28	52	59	48	64	39	310	20,5		30		32	25	34	24	
PE 45	96	28	58	66	57	73	44	383	24,1		33		35	25	41	30	
PE 60	110	33	68	77	67	83	51	424	28,6		40		42	30	48	34	
PE 75	117	38	76	84	71	95	60	466	32,1		45		47	35	51	36	
PE 100	142	49	92	102	86	111	66	547	36,6		55		57	45	63	44	

*) after swaging

PE Type 981

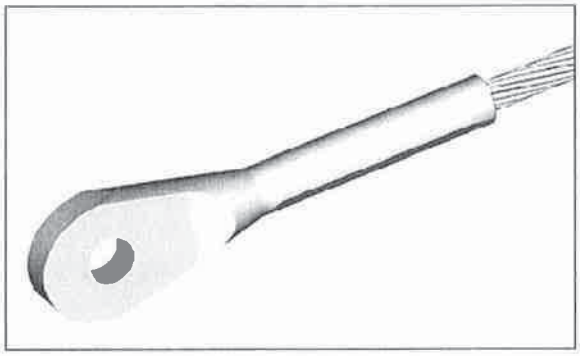
Open Swaged Fitting
Pin
Connecting Plate

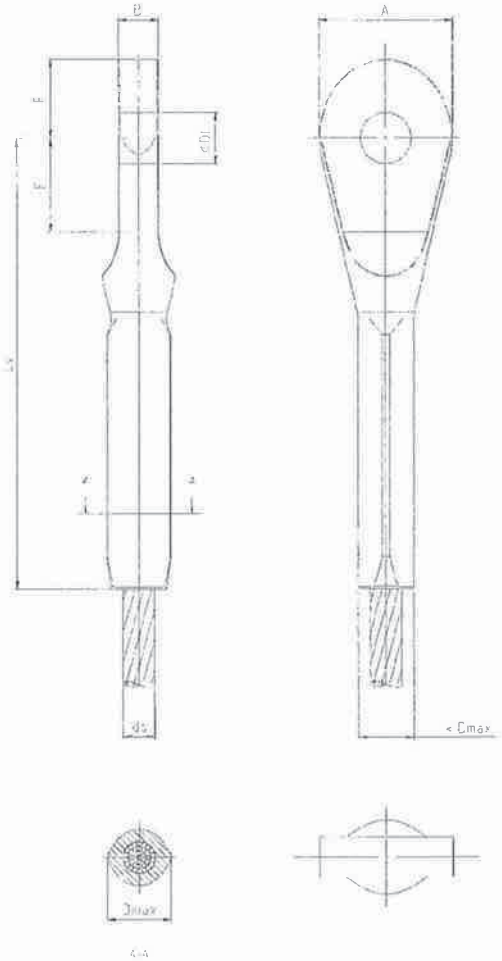
Appendix 6

German technical approval

No.: Z-14.7-411

from: **13. April 2006**





Closed Swaged Fitting Type 983									
Size	A	B	Dmax *	DL	E	F	~Lv *	ds	
	mm	mm	mm	mm	mm	mm	mm	mm	
PE 3	25	8	13	10	18	15	86	6,1	1.4462 - S460
PE 5	32	10	15	13	24	20	115	8,1	
PE 7	40	12	20	16	29	24	145	10,1	
PE 10	50	15	22	20	35	30	176	11,9	
PE 15	57	18	26	23	41	35	206	14,1	
PE 20	67	20	30	27	48	41	235	16,6	
PE 30	80	25	39	32	59	48	290	20,5	
PE 45	96	25	44	35	66	57	344	24,1	
PE 60	110	30	51	42	77	67	400	28,6	
PE 75	117	35	60	47	84	71	447	32,1	
PE 100	142	45	66	57	102	86	504	36,6	

*) after swaging

PE Type 983

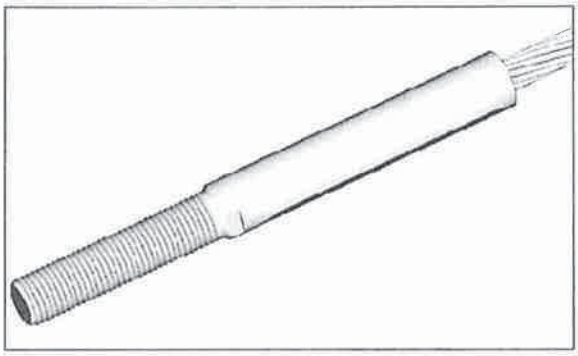
Closed Swaged Fittinge

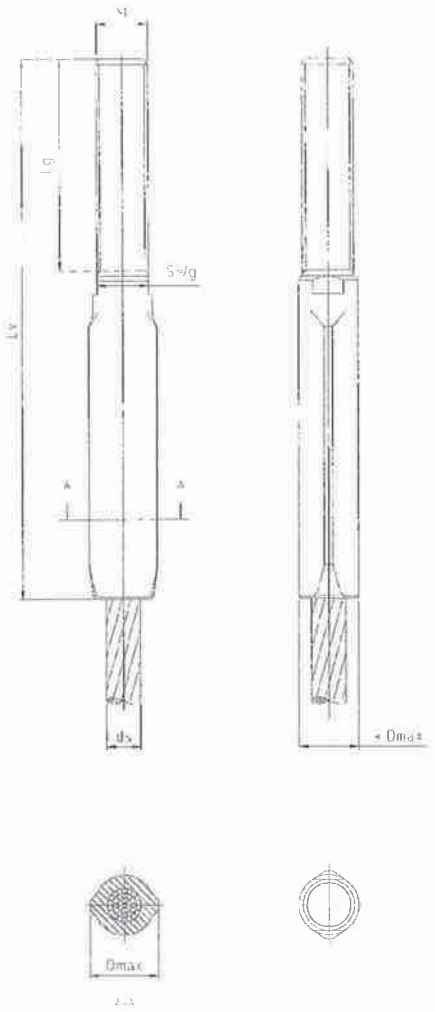
Appendix 7

German technical approval

No.: Z-14.7-411

from: **13. April 2006**





Swaged Fitting with Thread Type 989								
Size	M	Dmax *	Lg	-Lv *	SWg	ds	Minimal Thread Reach	1.4462 - S460
	mm	mm	mm	mm	mm	mm	mm	
PE 3	10	13	40	104	9	6,1	9	
PE 5	14	15	56	140	12	8,1	13	
PE 7	16	20	64	169	15	10,1	14	
PE 10	20	22	80	205	17	11,9	18	
PE 15	24	26	96	243	20	14,1	22	
PE 20	27	30	108	274	24	16,6	24	
PE 30	30	39	120	329	30	20,5	27	
PE 45	36	44	144	393	32	24,1	32	
PE 60	42	51	168	456	36	28,6	38	
PE 75	48	60	192	523	45	32,1	43	
PE 100	56	66	224	594	50	36,6	50	

*) after swaging

PE Type 989

Swaged Fitting with Thread

Appendix 8

German technical approval

No.: Z-14.7-411

from: **13. April 2006**

BEGLAUBIGUNGSVERMERK
(ATTESTATION CLAUSE)

Als in Bayern öffentlich bestellter und allgemein beeidigter Dolmetscher und Übersetzer für die englische Sprache bestätige ich: Vorstehende Übersetzung der mir im Original vorgelegten, in deutscher Sprache abgefassten Urkunde ist richtig und vollständig.

I, the undersigned translator duly sworn in Bavaria do hereby certify that the foregoing is a true and correct translation of a document in German that was presented to me in original.
IN WITNESS WHEREOF I have hereunder set my hand and seal
at Kempten, Germany this **22 May 2006**.

Kempten, Montag, 22. Mai 2006

Peter Th. Gansimayr
Zwanzigerstraße 11
87435 Kempten

Gansimayr
officially appointed and sworn
translator and interpreter

3.2.3 CONCRETE COLUMNS

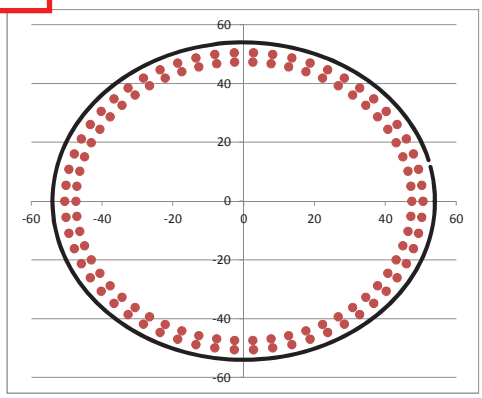
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EAST TAPESTRY ANALYSIS MODEL
-COLUMN ELEMENT PROPERTIES

EISENHOWER MEMORIAL TAPESTRY

END CONCRETE COLUMN CRACKED SECTION ANALYSIS

COLUMN DIAMETER D =	108	in
CONCRETE STRENGTH f'c =	8	ksi
CONCRETE MODULUS OF ELASTICITY Ec =	5098	ksi
STEEL MODULUS OF ELASTICITY Es =	29000	ksi
MODULAR RATIO n =	5.69	



OUTER LAYER

BAR	R (in)	θ	Bar	Astl (in2)	Astl,tr (in2)	y (in)	Ay	Ay2	d	Ad2
1	50.56	0	9	1	4.69	50.560	237.0376	11984.6196	16.421	1264.123
2	50.56	6.206897	9	1	4.69	50.264	235.648	11844.5227	16.124	1218.902
3	50.56	12.41379	9	1	4.69	49.378	231.4958	11430.7829	15.239	1088.674
4	50.56	18.62069	9	1	4.69	47.913	224.6294	10762.7461	13.774	889.4639
5	50.56	24.82759	9	1	4.69	45.887	215.1295	9871.64898	11.748	647.0103
6	50.56	31.03448	9	1	4.69	43.323	203.1073	8799.15829	9.183	395.3756
7	50.56	37.24138	9	1	4.69	40.250	188.704	7595.42248	6.111	175.0844
8	50.56	43.44828	9	1	4.69	36.706	172.0882	6316.72691	2.567	30.89208
9	50.56	49.65517	9	1	4.69	32.732	153.4549	5022.86196	-1.408	9.288001
10	50.56	55.86207	9	1	4.69	28.374	133.0224	3774.3273	-5.766	155.8558
11	50.56	62.06897	9	1	4.69	23.683	111.0304	2629.50305	-10.457	512.6191
12	50.56	68.27586	9	1	4.69	18.714	87.73665	1641.9199	-15.425	1115.504
13	50.56	74.48276	9	1	4.69	13.526	63.41427	857.756146	-20.613	1992.042
14	50.56	80.68966	9	1	4.69	8.180	38.34841	313.678415	-25.960	3159.43
15	50.56	86.89655	9	1	4.69	2.737	12.83296	35.1271768	-31.402	4623.042
16	50.56	93.10345	9	1	4.69	2.737	12.83296	35.1271768	-31.402	4623.042
17	50.56	99.31034	9	1	4.69	8.180	38.34841	313.678415	-25.960	3159.43
18	50.56	105.5172	9	1	4.69	13.526	63.41427	857.756146	-20.613	1992.042
19	50.56	111.7241	9	1	4.69	18.714	87.73665	1641.9199	-15.425	1115.504
20	50.56	117.931	9	1	4.69	23.683	111.0304	2629.50305	-10.457	512.6191
21	50.56	124.1379	9	1	4.69	28.374	133.0224	3774.3273	-5.766	155.8558
22	50.56	130.3448	9	1	4.69	32.732	153.4549	5022.86196	-1.408	9.288001
23	50.56	136.5517	9	1	4.69	36.706	172.0882	6316.72691	2.567	30.89208
24	50.56	142.7586	9	1	4.69	40.250	188.704	7595.42248	6.111	175.0844
25	50.56	148.9655	9	1	4.69	43.323	203.1073	8799.15829	9.183	395.3756
26	50.56	155.1724	9	1	4.69	45.887	215.1295	9871.64898	11.748	647.0103
27	50.56	161.3793	9	1	4.69	47.913	224.6294	10762.7461	13.774	889.4639
28	50.56	167.5862	9	1	4.69	49.378	231.4958	11430.7829	15.239	1088.674
29	50.56	173.7931	9	1	4.69	50.264	235.648	11844.5227	16.124	1218.902
30	50.56	180	9	1	4.69	50.560	237.0376	11984.6196	16.421	1264.123
31	50.56	186.2069	9	1	4.69	50.264	235.648	11844.5227	16.124	1218.902
32	50.56	192.4138	9	1	4.69	49.378	231.4958	11430.7829	15.239	1088.674
33	50.56	198.6207	9	1	4.69	47.913	224.6294	10762.7461	13.774	889.4639
34	50.56	204.8276	9	1	4.69	45.887	215.1295	9871.64898	11.748	647.0103
35	50.56	211.0345	9	1	4.69	43.323	203.1073	8799.15829	9.183	395.3756
36	50.56	217.2414	9	1	4.69	40.250	188.704	7595.42248	6.111	175.0844
37	50.56	223.4483	9	1	4.69	36.706	172.0882	6316.72691	2.567	30.89208
38	50.56	229.6552	9	1	4.69	32.732	153.4549	5022.86196	-1.408	9.288001
39	50.56	235.8621	9	1	4.69	28.374	133.0224	3774.3273	-5.766	155.8558
40	50.56	242.069	9	1	4.69	23.683	111.0304	2629.50305	-10.457	512.6191
41	50.56	248.2759	9	1	4.69	18.714	87.73665	1641.9199	-15.425	1115.504
42	50.56	254.4828	9	1	4.69	13.526	63.41427	857.756146	-20.613	1992.042
43	50.56	260.6897	9	1	4.69	8.180	38.34841	313.678415	-25.960	3159.43
44	50.56	266.8966	9	1	4.69	2.737	12.83296	35.1271768	-31.402	4623.042
45	50.56	273.1034	9	1	4.69	-2.737	-12.833	35.1271768	-36.877	6375.478
46	50.56	279.3103	9	1	4.69	-8.180	-38.3484	313.678415	-42.319	8396.193
47	50.56	285.5172	9	1	4.69	-13.526	-63.4143	857.756146	-47.666	10651.74
48	50.56	291.7241	9	1	4.69	-18.714	-87.7366	1641.9199	-52.854	13096.6
49	50.56	297.931	9	1	4.69	-23.683	-111.03	2629.50305	-57.822	15674.65
50	50.56	304.1379	9	1	4.69	-28.374	-133.022	3774.3273	-62.513	18321.06
51	50.56	310.3448	9	1	4.69	-32.732	-153.455	5022.86196	-66.871	20964.7
52	50.56	316.5517	9	1	4.69	-36.706	-172.088	6316.72691	-70.846	23530.83
53	50.56	322.7586	9	1	4.69	-40.250	-188.704	7595.42248	-74.390	25944.03
54	50.56	328.9655	9	1	4.69	-43.323	-203.107	8799.15829	-77.462	28131.21
55	50.56	335.1724	9	1	4.69	-45.887	-215.129	9871.64898	-80.026	30024.55
56	50.56	341.3793	9	1	4.69	-47.913	-224.629	10762.7461	-82.053	31564.29
57	50.56	347.5862	9	1	4.69	-49.378	-231.496	11430.7829	-83.517	32701.16
58	50.56	353.7931	9	1	4.69	-50.264	-235.648	11844.5227	-84.403	33398.41

INNER LAYER										
BAR	R (in)	θ	Bar	Astl (in2)	Astl,tr (in2)	y (in)	Ay	Ay2	d	Ad2
1	47.43	0	9	1	4.69	47.430	222.3634	10546.6947	13.291	828.1346
2	47.43	6.206897	9	1	4.69	47.152	221.0599	10423.4067	13.013	793.8482
3	47.43	12.41379	9	1	4.69	46.321	217.1646	10059.3077	12.182	695.7106
4	47.43	18.62069	9	1	4.69	44.947	210.7234	9471.42256	10.808	547.6283
5	47.43	24.82759	9	1	4.69	43.046	201.8115	8687.24006	8.907	371.934
6	47.43	31.03448	9	1	4.69	40.641	190.5336	7743.42772	6.501	198.1612
7	47.43	37.24138	9	1	4.69	37.759	177.0219	6684.11717	3.619	61.41349
8	47.43	43.44828	9	1	4.69	34.434	161.4348	5558.84059	0.295	0.406863
9	47.43	49.65517	9	1	4.69	30.706	143.955	4420.21467	-3.434	55.28041
10	47.43	55.86207	9	1	4.69	26.617	124.7874	3321.48027	-7.522	265.2823
11	47.43	62.06897	9	1	4.69	22.217	104.1569	2314.01302	-11.923	666.4444
12	47.43	68.27586	9	1	4.69	17.556	82.30517	1444.92094	-16.584	1289.36
13	47.43	74.48276	9	1	4.69	12.689	59.4885	754.841827	-21.451	2157.174
14	47.43	80.68966	9	1	4.69	7.673	35.97439	276.04301	-26.466	3283.89
15	47.43	86.89655	9	1	4.69	2.568	12.03851	30.912588	-31.572	4673.071
16	47.43	93.10345	9	1	4.69	2.568	12.03851	30.912588	-31.572	4673.071
17	47.43	99.31034	9	1	4.69	7.673	35.97439	276.04301	-26.466	3283.89
18	47.43	105.5172	9	1	4.69	12.689	59.4885	754.841827	-21.451	2157.174
19	47.43	111.7241	9	1	4.69	17.556	82.30517	1444.92094	-16.584	1289.36
20	47.43	117.931	9	1	4.69	22.217	104.1569	2314.01302	-11.923	666.4444
21	47.43	124.1379	9	1	4.69	26.617	124.7874	3321.48027	-7.522	265.2823
22	47.43	130.3448	9	1	4.69	30.706	143.955	4420.21467	-3.434	55.28041
23	47.43	136.5517	9	1	4.69	34.434	161.4348	5558.84059	0.295	0.406863
24	47.43	142.7586	9	1	4.69	37.759	177.0219	6684.11717	3.619	61.41349
25	47.43	148.9655	9	1	4.69	40.641	190.5336	7743.42772	6.501	198.1612
26	47.43	155.1724	9	1	4.69	43.046	201.8115	8687.24006	8.907	371.934
27	47.43	161.3793	9	1	4.69	44.947	210.7234	9471.42256	10.808	547.6283
28	47.43	167.5862	9	1	4.69	46.321	217.1646	10059.3077	12.182	695.7106
29	47.43	173.7931	9	1	4.69	47.152	221.0599	10423.4067	13.013	793.8482
30	47.43	180	9	1	4.69	47.430	222.3634	10546.6947	13.291	828.1346
31	47.43	186.2069	9	1	4.69	47.152	221.0599	10423.4067	13.013	793.8482
32	47.43	192.4138	9	1	4.69	46.321	217.1646	10059.3077	12.182	695.7106
33	47.43	198.6207	9	1	4.69	44.947	210.7234	9471.42256	10.808	547.6283
34	47.43	204.8276	9	1	4.69	43.046	201.8115	8687.24006	8.907	371.934
35	47.43	211.0345	9	1	4.69	40.641	190.5336	7743.42772	6.501	198.1612
36	47.43	217.2414	9	1	4.69	37.759	177.0219	6684.11717	3.619	61.41349
37	47.43	223.4483	9	1	4.69	34.434	161.4348	5558.84059	0.295	0.406863
38	47.43	229.6552	9	1	4.69	30.706	143.955	4420.21467	-3.434	55.28041
39	47.43	235.8621	9	1	4.69	26.617	124.7874	3321.48027	-7.522	265.2823
40	47.43	242.069	9	1	4.69	22.217	104.1569	2314.01302	-11.923	666.4444
41	47.43	248.2759	9	1	4.69	17.556	82.30517	1444.92094	-16.584	1289.36
42	47.43	254.4828	9	1	4.69	12.689	59.4885	754.841827	-21.451	2157.174
43	47.43	260.6897	9	1	4.69	7.673	35.97439	276.04301	-26.466	3283.89
44	47.43	266.8966	9	1	4.69	2.568	12.03851	30.912588	-31.572	4673.071
45	47.43	273.1034	9	1	4.69	-2.568	-12.0385	30.912588	-36.707	6317.02
46	47.43	279.3103	9	1	4.69	-7.673	-35.9744	276.04301	-41.813	8196.462
47	47.43	285.5172	9	1	4.69	-12.689	-59.4885	754.841827	-46.828	10280.78
48	47.43	291.7241	9	1	4.69	-17.556	-82.3052	1444.92094	-51.695	12528.75
49	47.43	297.931	9	1	4.69	-22.217	-104.157	2314.01302	-56.356	14889.85
50	47.43	304.1379	9	1	4.69	-26.617	-124.787	3321.48027	-60.756	17305.94
51	47.43	310.3448	9	1	4.69	-30.706	-143.955	4420.21467	-64.845	19713.42
52	47.43	316.5517	9	1	4.69	-34.434	-161.435	5558.84059	-68.573	22045.54
53	47.43	322.7586	9	1	4.69	-37.759	-177.022	6684.11717	-71.898	24235.09
54	47.43	328.9655	9	1	4.69	-40.641	-190.534	7743.42772	-74.780	26216.96
55	47.43	335.1724	9	1	4.69	-43.046	-201.812	8687.24006	-77.186	27930.81
56	47.43	341.3793	9	1	4.69	-44.947	-210.723	9471.42256	-79.087	29323.48
57	47.43	347.5862	9	1	4.69	-46.321	-217.165	10059.3077	-80.460	30351.17
58	47.43	353.7931	9	1	4.69	-47.152	-221.06	10423.4067	-81.291	30981.23

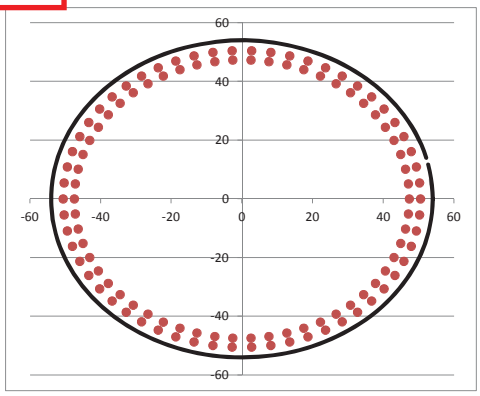
	BEGINNING NEUTRAL AXIS DEPTH Yna =	34.14	in	
	Σay =	58197	in3	
	ΣA =	1704.6	in2	
	NEUTRAL AXIS DEPTH Yna =	34.14	in2	
		0.00064545	<----------	GOAL SEEK TO 0 BY CHANGING VALUE IN CELL N86
	TRANSFORMED SECTION CRACKED MOMENT OF INERTIA Icr,tr =	4582867	in4	
	GROSS MOMENT OF INERTIA Ig =	6678285	in4	
	GROSS SECTION MODULUS Sg =	123672	in3	
	TRANSFORMED SECTION MOMENT OF INERTIA Ig,tr =	7082497	in4	
	Icr/Ig =	0.69		
	MODULUS OF RUPTURE fr =	0.67	ksi	(ACI 9.5.2.3 EQ 9-10)
	CRACKING MOMENT Mcr =	82962	k-in	(ACI 9.5.2.3 EQ 9-9)
	SERVICE LEVEL MOMENT Ma =	46483	k-in	
M2	EFFECTIVE MOMENT OF INERTIA Ie =	6678285	in4	(ACI 9.5.2.3 EQ 9-8)
	Ie/Ig =	**1.00**	in4	----------> **APPLY AS A FRAME SECTION PROPERTY MODIFIER**
	SERVICE LEVEL MOMENT Ma =	109214	k-in	
M3	EFFECTIVE MOMENT OF INERTIA Ie =	5501343	in4	(ACI 9.5.2.3 EQ 9-8)
	Ie/Ig =	**0.82**	in4	----------> **APPLY AS A FRAME SECTION PROPERTY MODIFIER**

SOUTH TAPESTRY ANALYSIS MODEL
-COLUMN ELEMENT PROPERTIES

EISENHOWER MEMORIAL TAPESTRY

END CONCRETE COLUMN CRACKED SECTION ANALYSIS

COLUMN DIAMETER D =	108	in
CONCRETE STRENGTH f'c =	8	ksi
CONCRETE MODULUS OF ELASTICITY Ec =	5098	ksi
STEEL MODULUS OF ELASTICITY Es =	29000	ksi
MODULAR RATIO n =	5.69	



OUTER LAYER										
BAR	R (in)	θ	Bar	Astl (in2)	Astl,tr (in2)	y (in)	Ay	Ay2	d	Ad2
1	50.56	0	9	1	4.69	50.560	237.0376	11984.6196	16.421	1264.123
2	50.56	6.206897	9	1	4.69	50.264	235.648	11844.5227	16.124	1218.902
3	50.56	12.41379	9	1	4.69	49.378	231.4958	11430.7829	15.239	1088.674
4	50.56	18.62069	9	1	4.69	47.913	224.6294	10762.7461	13.774	889.4639
5	50.56	24.82759	9	1	4.69	45.887	215.1295	9871.64898	11.748	647.0103
6	50.56	31.03448	9	1	4.69	43.323	203.1073	8799.15829	9.183	395.3756
7	50.56	37.24138	9	1	4.69	40.250	188.704	7595.42248	6.111	175.0844
8	50.56	43.44828	9	1	4.69	36.706	172.0882	6316.72691	2.567	30.89208
9	50.56	49.65517	9	1	4.69	32.732	153.4549	5022.86196	-1.408	9.288001
10	50.56	55.86207	9	1	4.69	28.374	133.0224	3774.3273	-5.766	155.8558
11	50.56	62.06897	9	1	4.69	23.683	111.0304	2629.50305	-10.457	512.6191
12	50.56	68.27586	9	1	4.69	18.714	87.73665	1641.9199	-15.425	1115.504
13	50.56	74.48276	9	1	4.69	13.526	63.41427	857.756146	-20.613	1992.042
14	50.56	80.68966	9	1	4.69	8.180	38.34841	313.678415	-25.960	3159.43
15	50.56	86.89655	9	1	4.69	2.737	12.83296	35.1271768	-31.402	4623.042
16	50.56	93.10345	9	1	4.69	2.737	12.83296	35.1271768	-31.402	4623.042
17	50.56	99.31034	9	1	4.69	8.180	38.34841	313.678415	-25.960	3159.43
18	50.56	105.5172	9	1	4.69	13.526	63.41427	857.756146	-20.613	1992.042
19	50.56	111.7241	9	1	4.69	18.714	87.73665	1641.9199	-15.425	1115.504
20	50.56	117.931	9	1	4.69	23.683	111.0304	2629.50305	-10.457	512.6191
21	50.56	124.1379	9	1	4.69	28.374	133.0224	3774.3273	-5.766	155.8558
22	50.56	130.3448	9	1	4.69	32.732	153.4549	5022.86196	-1.408	9.288001
23	50.56	136.5517	9	1	4.69	36.706	172.0882	6316.72691	2.567	30.89208
24	50.56	142.7586	9	1	4.69	40.250	188.704	7595.42248	6.111	175.0844
25	50.56	148.9655	9	1	4.69	43.323	203.1073	8799.15829	9.183	395.3756
26	50.56	155.1724	9	1	4.69	45.887	215.1295	9871.64898	11.748	647.0103
27	50.56	161.3793	9	1	4.69	47.913	224.6294	10762.7461	13.774	889.4639
28	50.56	167.5862	9	1	4.69	49.378	231.4958	11430.7829	15.239	1088.674
29	50.56	173.7931	9	1	4.69	50.264	235.648	11844.5227	16.124	1218.902
30	50.56	180	9	1	4.69	50.560	237.0376	11984.6196	16.421	1264.123
31	50.56	186.2069	9	1	4.69	50.264	235.648	11844.5227	16.124	1218.902
32	50.56	192.4138	9	1	4.69	49.378	231.4958	11430.7829	15.239	1088.674
33	50.56	198.6207	9	1	4.69	47.913	224.6294	10762.7461	13.774	889.4639
34	50.56	204.8276	9	1	4.69	45.887	215.1295	9871.64898	11.748	647.0103
35	50.56	211.0345	9	1	4.69	43.323	203.1073	8799.15829	9.183	395.3756
36	50.56	217.2414	9	1	4.69	40.250	188.704	7595.42248	6.111	175.0844
37	50.56	223.4483	9	1	4.69	36.706	172.0882	6316.72691	2.567	30.89208
38	50.56	229.6552	9	1	4.69	32.732	153.4549	5022.86196	-1.408	9.288001
39	50.56	235.8621	9	1	4.69	28.374	133.0224	3774.3273	-5.766	155.8558
40	50.56	242.069	9	1	4.69	23.683	111.0304	2629.50305	-10.457	512.6191
41	50.56	248.2759	9	1	4.69	18.714	87.73665	1641.9199	-15.425	1115.504
42	50.56	254.4828	9	1	4.69	13.526	63.41427	857.756146	-20.613	1992.042
43	50.56	260.6897	9	1	4.69	8.180	38.34841	313.678415	-25.960	3159.43
44	50.56	266.8966	9	1	4.69	2.737	12.83296	35.1271768	-31.402	4623.042
45	50.56	273.1034	9	1	4.69	-2.737	-12.833	35.1271768	-36.877	6375.478
46	50.56	279.3103	9	1	4.69	-8.180	-38.3484	313.678415	-42.319	8396.193
47	50.56	285.5172	9	1	4.69	-13.526	-63.4143	857.756146	-47.666	10651.74
48	50.56	291.7241	9	1	4.69	-18.714	-87.7366	1641.9199	-52.854	13096.6
49	50.56	297.931	9	1	4.69	-23.683	-111.03	2629.50305	-57.822	15674.65
50	50.56	304.1379	9	1	4.69	-28.374	-133.022	3774.3273	-62.513	18321.06
51	50.56	310.3448	9	1	4.69	-32.732	-153.455	5022.86196	-66.871	20964.7
52	50.56	316.5517	9	1	4.69	-36.706	-172.088	6316.72691	-70.846	23530.83
53	50.56	322.7586	9	1	4.69	-40.250	-188.704	7595.42248	-74.390	25944.03
54	50.56	328.9655	9	1	4.69	-43.323	-203.107	8799.15829	-77.462	28131.21
55	50.56	335.1724	9	1	4.69	-45.887	-215.129	9871.64898	-80.026	30024.55
56	50.56	341.3793	9	1	4.69	-47.913	-224.629	10762.7461	-82.053	31564.29
57	50.56	347.5862	9	1	4.69	-49.378	-231.496	11430.7829	-83.517	32701.16
58	50.56	353.7931	9	1	4.69	-50.264	-235.648	11844.5227	-84.403	33398.41

INNER LAYER										
BAR	R (in)	θ	Bar	Astl (in2)	Astl,tr (in2)	y (in)	Ay	Ay2	d	Ad2
1	47.43	0	9	1	4.69	47.430	222.3634	10546.6947	13.291	828.1346
2	47.43	6.206897	9	1	4.69	47.152	221.0599	10423.4067	13.013	793.8482
3	47.43	12.41379	9	1	4.69	46.321	217.1646	10059.3077	12.182	695.7106
4	47.43	18.62069	9	1	4.69	44.947	210.7234	9471.42256	10.808	547.6283
5	47.43	24.82759	9	1	4.69	43.046	201.8115	8687.24006	8.907	371.934
6	47.43	31.03448	9	1	4.69	40.641	190.5336	7743.42772	6.501	198.1612
7	47.43	37.24138	9	1	4.69	37.759	177.0219	6684.11717	3.619	61.41349
8	47.43	43.44828	9	1	4.69	34.434	161.4348	5558.84059	0.295	0.406863
9	47.43	49.65517	9	1	4.69	30.706	143.955	4420.21467	-3.434	55.28041
10	47.43	55.86207	9	1	4.69	26.617	124.7874	3321.48027	-7.522	265.2823
11	47.43	62.06897	9	1	4.69	22.217	104.1569	2314.01302	-11.923	666.4444
12	47.43	68.27586	9	1	4.69	17.556	82.30517	1444.92094	-16.584	1289.36
13	47.43	74.48276	9	1	4.69	12.689	59.4885	754.841827	-21.451	2157.174
14	47.43	80.68966	9	1	4.69	7.673	35.97439	276.04301	-26.466	3283.89
15	47.43	86.89655	9	1	4.69	2.568	12.03851	30.912588	-31.572	4673.071
16	47.43	93.10345	9	1	4.69	2.568	12.03851	30.912588	-31.572	4673.071
17	47.43	99.31034	9	1	4.69	7.673	35.97439	276.04301	-26.466	3283.89
18	47.43	105.5172	9	1	4.69	12.689	59.4885	754.841827	-21.451	2157.174
19	47.43	111.7241	9	1	4.69	17.556	82.30517	1444.92094	-16.584	1289.36
20	47.43	117.931	9	1	4.69	22.217	104.1569	2314.01302	-11.923	666.4444
21	47.43	124.1379	9	1	4.69	26.617	124.7874	3321.48027	-7.522	265.2823
22	47.43	130.3448	9	1	4.69	30.706	143.955	4420.21467	-3.434	55.28041
23	47.43	136.5517	9	1	4.69	34.434	161.4348	5558.84059	0.295	0.406863
24	47.43	142.7586	9	1	4.69	37.759	177.0219	6684.11717	3.619	61.41349
25	47.43	148.9655	9	1	4.69	40.641	190.5336	7743.42772	6.501	198.1612
26	47.43	155.1724	9	1	4.69	43.046	201.8115	8687.24006	8.907	371.934
27	47.43	161.3793	9	1	4.69	44.947	210.7234	9471.42256	10.808	547.6283
28	47.43	167.5862	9	1	4.69	46.321	217.1646	10059.3077	12.182	695.7106
29	47.43	173.7931	9	1	4.69	47.152	221.0599	10423.4067	13.013	793.8482
30	47.43	180	9	1	4.69	47.430	222.3634	10546.6947	13.291	828.1346
31	47.43	186.2069	9	1	4.69	47.152	221.0599	10423.4067	13.013	793.8482
32	47.43	192.4138	9	1	4.69	46.321	217.1646	10059.3077	12.182	695.7106
33	47.43	198.6207	9	1	4.69	44.947	210.7234	9471.42256	10.808	547.6283
34	47.43	204.8276	9	1	4.69	43.046	201.8115	8687.24006	8.907	371.934
35	47.43	211.0345	9	1	4.69	40.641	190.5336	7743.42772	6.501	198.1612
36	47.43	217.2414	9	1	4.69	37.759	177.0219	6684.11717	3.619	61.41349
37	47.43	223.4483	9	1	4.69	34.434	161.4348	5558.84059	0.295	0.406863
38	47.43	229.6552	9	1	4.69	30.706	143.955	4420.21467	-3.434	55.28041
39	47.43	235.8621	9	1	4.69	26.617	124.7874	3321.48027	-7.522	265.2823
40	47.43	242.069	9	1	4.69	22.217	104.1569	2314.01302	-11.923	666.4444
41	47.43	248.2759	9	1	4.69	17.556	82.30517	1444.92094	-16.584	1289.36
42	47.43	254.4828	9	1	4.69	12.689	59.4885	754.841827	-21.451	2157.174
43	47.43	260.6897	9	1	4.69	7.673	35.97439	276.04301	-26.466	3283.89
44	47.43	266.8966	9	1	4.69	2.568	12.03851	30.912588	-31.572	4673.071
45	47.43	273.1034	9	1	4.69	-2.568	-12.0385	30.912588	-36.707	6317.02
46	47.43	279.3103	9	1	4.69	-7.673	-35.9744	276.04301	-41.813	8196.462
47	47.43	285.5172	9	1	4.69	-12.689	-59.4885	754.841827	-46.828	10280.78
48	47.43	291.7241	9	1	4.69	-17.556	-82.3052	1444.92094	-51.695	12528.75
49	47.43	297.931	9	1	4.69	-22.217	-104.157	2314.01302	-56.356	14889.85
50	47.43	304.1379	9	1	4.69	-26.617	-124.787	3321.48027	-60.756	17305.94
51	47.43	310.3448	9	1	4.69	-30.706	-143.955	4420.21467	-64.845	19713.42
52	47.43	316.5517	9	1	4.69	-34.434	-161.435	5558.84059	-68.573	22045.54
53	47.43	322.7586	9	1	4.69	-37.759	-177.022	6684.11717	-71.898	24235.09
54	47.43	328.9655	9	1	4.69	-40.641	-190.534	7743.42772	-74.780	26216.96
55	47.43	335.1724	9	1	4.69	-43.046	-201.812	8687.24006	-77.186	27930.81
56	47.43	341.3793	9	1	4.69	-44.947	-210.723	9471.42256	-79.087	29323.48
57	47.43	347.5862	9	1	4.69	-46.321	-217.165	10059.3077	-80.460	30351.17
58	47.43	353.7931	9	1	4.69	-47.152	-221.06	10423.4067	-81.291	30981.23

	BEGINNING NEUTRAL AXIS DEPTH Yna =	34.14	in	
	Σay =	58197	in3	
	ΣA =	1704.6	in2	
	NEUTRAL AXIS DEPTH Yna =	34.14	in2	
		0.00064545	<----------	GOAL SEEK TO 0 BY CHANGING VALUE IN CELL N86
	TRANSFORMED SECTION CRACKED MOMENT OF INERTIA Icr,tr =	4582867	in4	
	GROSS MOMENT OF INERTIA Ig =	6678285	in4	
	GROSS SECTION MODULUS Sg =	123672	in3	
	TRANSFORMED SECTION MOMENT OF INERTIA Ig,tr =	7082497	in4	
	Icr/Ig =	0.69		
	MODULUS OF RUPTURE fr =	0.67	ksi	(ACI 9.5.2.3 EQ 9-10)
	CRACKING MOMENT Mcr =	82962	k-in	(ACI 9.5.2.3 EQ 9-9)
	SERVICE LEVEL MOMENT Ma =	34862	k-in	
M2	EFFECTIVE MOMENT OF INERTIA Ie =	6678285	in4	(ACI 9.5.2.3 EQ 9-8)
	Ie/Ig =	**1.00**	in4	----------> **APPLY AS A FRAME SECTION PROPERTY MODIFIER**
	SERVICE LEVEL MOMENT Ma =	119638	k-in	
M3	EFFECTIVE MOMENT OF INERTIA Ie =	5281575	in4	(ACI 9.5.2.3 EQ 9-8)
	Ie/Ig =	**0.79**	in4	----------> **APPLY AS A FRAME SECTION PROPERTY MODIFIER**

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

PROJECT EISENHOWER MEMORIAL | SHEET
LOCATION | CLIENT | DATE | BY BHC

INTERIOR CONCRETE COLUMN CRACKED SECTION ANALYSIS

DIAMETER = 108"

WALL THICKNESS = 18"

f'_c = 8000 PSI

MAX SERVICE MOMENT = 43,600 K-IN (M2)
= 6175 K-IN (M3)

SECTION MODULUS = 99,243 K-IN

MODULUS OF RUPTURE, $f_r = 7.5\sqrt{f'_c} = 671$ PSI

CRACKING MOMENT, $M_{cr} = f_r S = 66,592$ K-IN > 43,600 K-IN
→ SECTION REMAINS UNCRACKED!

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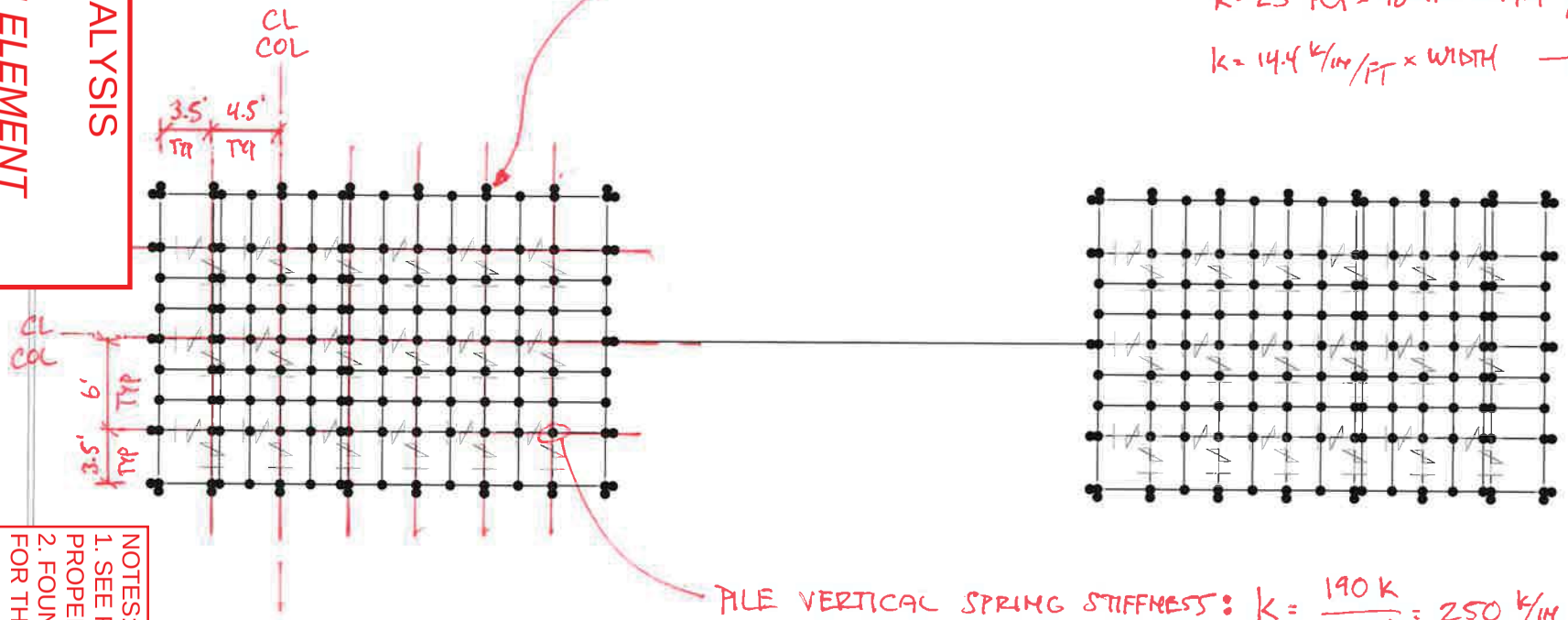
3.2.4 FOUNDATION ELEMENTS

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4/8/12 12:31:40

TAPESTRY ANALYSIS MODELS
-FOUNDATION ELEMENT PROPERTIES



PASSIVE PRESSURE SPRING STIFFNESS: HORIZ MODULUS, k = 25 PCI

k = 25 PCI × 48"×12" = 14.4 K/IN/FT

k = 14.4 K/IN/FT × WIDTH → DEFINE AS GAP LINK IN SAP

PILE VERTICAL SPRING STIFFNESS: $k = \frac{190\,k}{0.75"} = 250\ K/IN$ ↓

$= \frac{100\,k}{0.75"} = 130\ K/IN$ ↑

→ DEFINE AS MULTILINEAR SPRING IN SAP

PILE HORIZONTAL SPRING STIFFNESS: * TOTAL STIFFNESS = $\frac{15\,k}{0.5"} = 30\ K/IN$

↳ PER PILE ANALYSIS

$k = 30\ K/IN = \sqrt{k_x^2 + k_y^2} = \sqrt{2}\,k^2 \rightarrow k_x = k_y = 21.2\ K/IN$

NOTES:
1. SEE FOLLOWING PAGES FOR SOIL PROPERTIES AND PILE ANALYSIS.
2. FOUNDATION ELEMENTS ARE DEFINED FOR THE SOUTH TAPESTRY IN A SIMILAR MANNER.

v15.1.0 - File:12_04_06_East Tapestry - X-Y Plane @ Z=-6 - Kip, ft, F Units

TAPESTRY ANALYSIS MODEL
-SITE SOIL STRATA

er cast piles bearing on the compact Stratum C2 soils are
apestry columns. Detailed recommendations for each foundation system are presented in the following sections of this report.

4.1.1 Soil Design Parameters

We recommend the following soil design parameters be used for this project:

Stratum	Effective Unit Weight (pcf)	Angle of Internal Friction (degrees)	Cohesion (psf)	Lateral Earth Pressure Coefficients			Coefficient of Sliding Friction	Horizontal Modulus, k (pci)
				Active Ka	At-Rest Ko	Passive Kp		
Stratum A	120*	30	--	0.33	0.50	3.00	0.30	25
Stratum B1	120*	30	--	0.33	0.50	3.00	0.30	25
Stratum B2	125*	32	--	0.31	0.47	3.25	0.35	50
Stratum C1	58	--	3,000	1.0	1.0	1.0	0.30	400
Stratum C2	63	35	--	0.27	0.43	3.69	0.40	100

* use buoyant weight below EL -6.

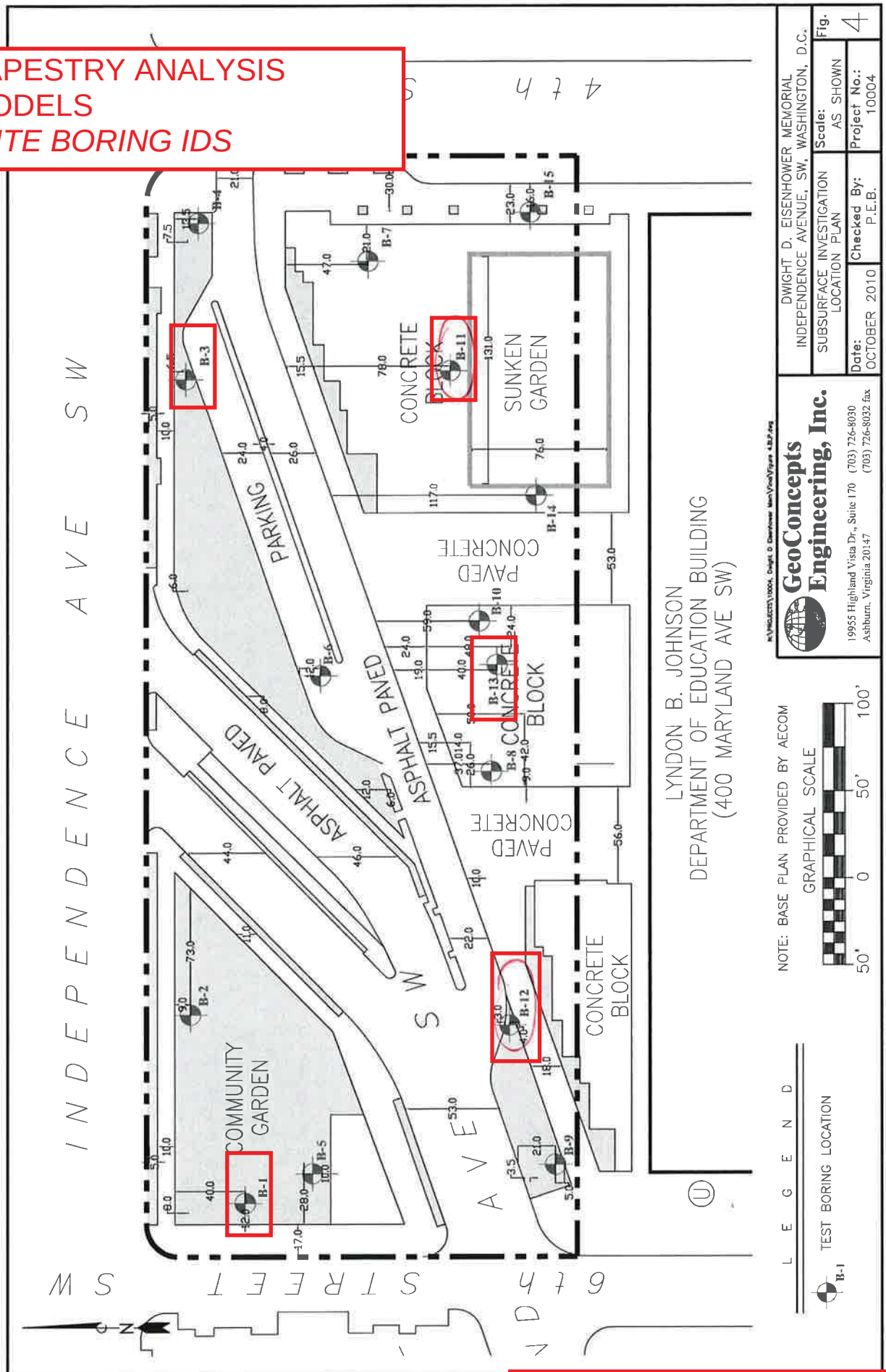
4.1.2 Spread Footings (lightly loaded 1-story buildings, block and lintel structures, and ancillary site structures)

Based on the proposed lightly loaded 1-story buildings, block and lintel structures, and ancillary site structures being at about existing grades, firm existing fill, natural soils, or new compacted fill should be encountered at normal spread footing depths. Spread footings founded in these materials are considered suitable for support of the proposed strictures, and may be designed with a net allowable soil bearing pressure of 2,000 psf with a factor of safety of 2.5. It should be feasible to increase the allowable bearing pressure by one-third when considering temporary wind or seismic loads in the total loads. Fill material and compaction requirements are presented in Section 4.5 of this report. In addition, where existing fill is encountered at bearing subgrades, it may be necessary to undercut the existing fill to achieve the design bearing pressure, as determined during bearing inspections during construction.

Exterior footing subgrades should be located at least 2.5 feet below final exterior grades for frost considerations. Individual column footings and continuous wall footings should be at least 30 inches and 18 inches wide, respectively, for local or punching shear considerations. A maximum slope of one horizontal to one vertical (1H:1V) should be maintained between the bottom edges of adjacent footings. Settlement of spread footings should not exceed about 1-inch, and differential settlement between adjacent foundation elements should not exceed about one-half this amount, including not exceeding an

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TAPESTRY ANALYSIS MODELS
-SITE BORING IDS



DWIGHT D. EISENHOWER MEMORIAL
INDEPENDENCE AVENUE, SW, WASHINGTON, D.C.
SUBSURFACE INVESTIGATION LOCATION PLAN
Scale: AS SHOWN
Fig. 4
Date: OCTOBER 2010
Checked By: P.E.B.
Project No.: 10004

GeoConcepts Engineering, Inc.
19955 Highland Vista Dr., Suite 170 (703) 726-8030
Ashburn, Virginia 20147 (703) 726-8032 fax

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GeoConcepts

TAPESTRY ANALYSIS MODELS
-SITE BORING LOG

19955 Highland Vista Dr, #170 703-726-8030
Ashburn, VA 20147 703-726-8032 fax

Independence Avenue, SW, Washington, DC

LOGGED BY: J. Brackett

DRILLING CONTRACTOR: Connelly and Associates, Inc.

BORING NUMBER: **B-11**

SHEET 1 OF 1

OWNER/CLIENT: AECOM

DRILLER: W. Smith

DATE STARTED: 9/10/10

PROJECT NUMBER: 10004

GROUND SURFACE ELEVATION (ft): 16.0 ±

DRILLING METHOD: 3.25" I.D. HSA

DATE COMPLETED: 9/10/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
15.2			Concrete = 10 inches				
		A	lean clay FILL, with sand and gravel, moist, brown with brick at 2.5 ft.			6+7+6	12
						4+4+4	16
						4+4+4	12
	10					4+5+6	18
2.5	30	B2	clayey SAND (SC), moist, brown			5+8+8	18
	20		with gravel below 18.5 ft.			25+50/3	9
-7.5			POORLY GRADED SAND (SP), with gravel, moist, brown			30+37+32	16
-11.5 ▽ -12.5	198						
	30		clayey SAND (SC), moist, brown			6+6+8	18
-17.5	270	C1	FAT CLAY (CH), moist, gray			7+11+15	18
	40					5+6+7	18
						9+10+11	18
	50					8+11+14	18
-37.5	510	C2	clayey SAND (SC), moist, gray			12+14+19	18
	60					8+13+16	18
-49.0	600					10+14+17	18
			Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT): 20 40 60 80

GROUND WATER LEVELS:

- ▽ ENCOUNTERED: 27.5 ft ELEV. -11.5
- ▽ UPON COMPLETION: 26.5 ft ELEV. -10.5
- ▼ 9/16/2010 26.5 ft ELEV. -10.5

SAMPLE TYPES: ☒ Split Spoon

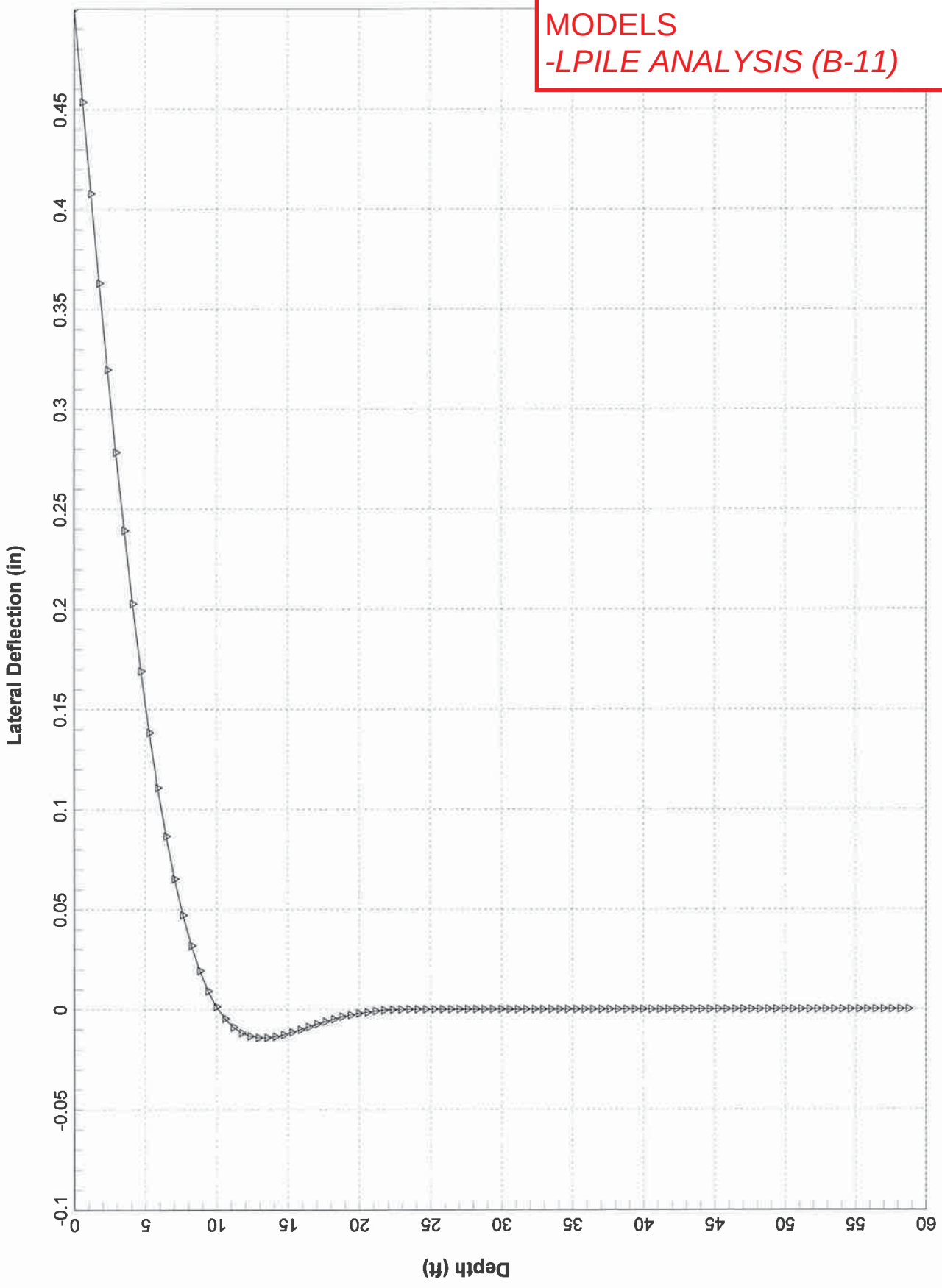
REMARKS: Temporary water observation standpipe installed.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITI

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

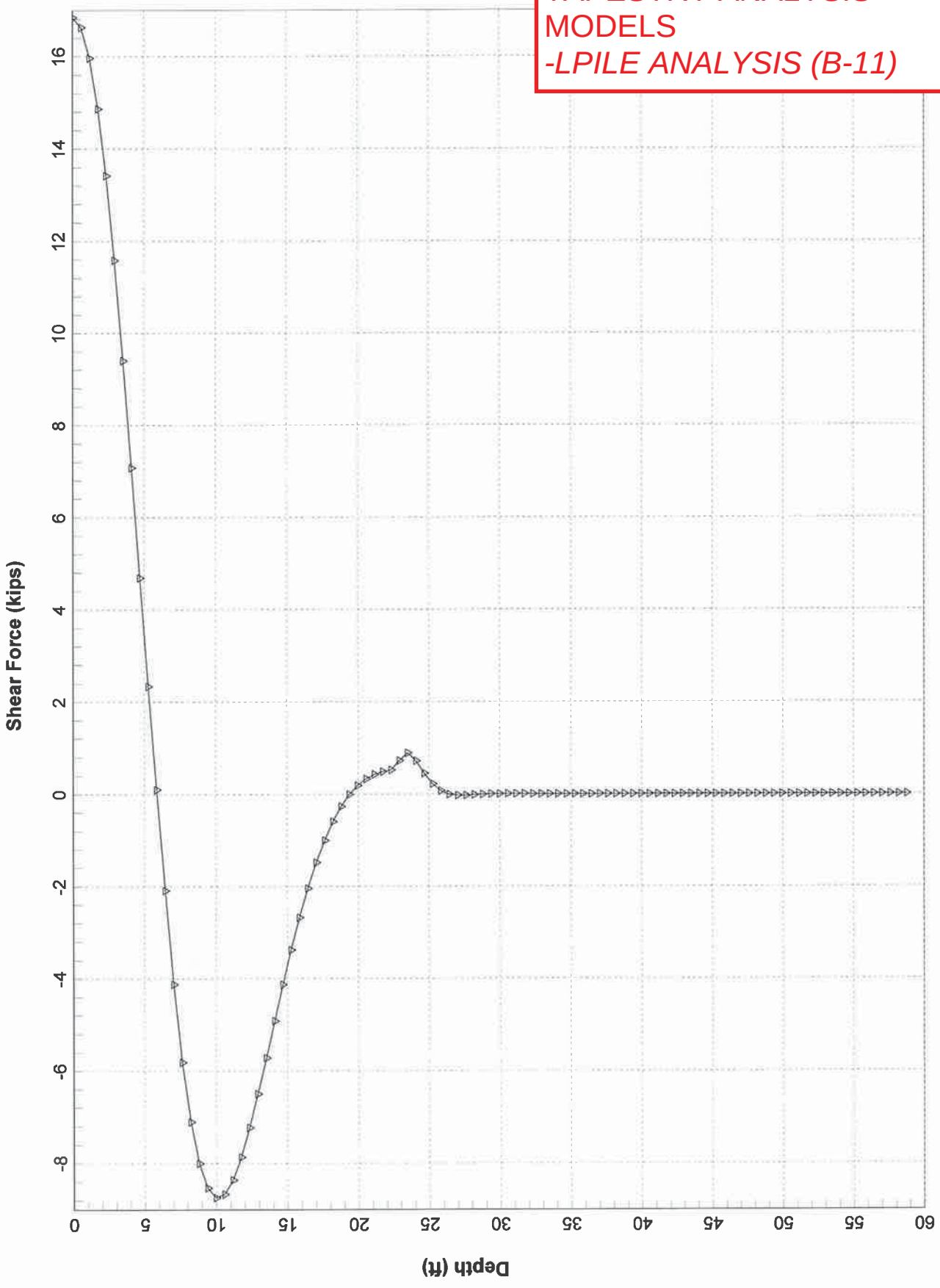
**GEOCONCEPTS ENGINEERING, INC. "GEOTECHNICAL ENGINEERING REPORT, DWIGHT D. EISENHOWER MEMORIAL." (NOVEMBER 5, 2010).

TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-11)



B11 16" ø +5ft to -53.25ft

TAPESTRY ANALYSIS MODELS
-LPILE ANALYSIS (B-11)



B11 16"ϕ rsfr To - 53.25 ft

TAPESTRY ANALYSIS MODELS
-SITE BORING LOG

GeoConcepts
19955 Highland Vista Dr, #170 703-726-8030
Ashburn, VA 20147 703-726-8032 fax

Independence Avenue, SW, Washington, DC

LOGGED BY: J. Brackett
DRILLING CONTRACTOR: Connelly and Associates, Inc.
BORING NUMBER: **B-12**
SHEET 1 OF 1

OWNER/CLIENT: AECOM
DRILLER: W. Smith
DATE STARTED: 9/14/10

PROJECT NUMBER: 10004
GROUND SURFACE ELEVATION (ft): 17.0 ±
DRILLING METHOD: 3.25" I.D. HSA
DATE COMPLETED: 9/14/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
16.8			Topsoil = 2 inches		☒	8+10+12+12	24
			lean clay FILL, with sand and gravel, moist, brown		☒	7+7+9	18
			without gravel below 1.5 ft.		☒	6+7+7	18
	10	A			☒	6+7+8	18
			with gravel below 10.0 ft.		☒	10+17+18	10
-1.5	20		POORLY GRADED SAND (SP), with gravel, moist, brown		☒	27+50/6	12
					☒	21+27+19	6
			wet below 25.5 ft.				
-11.5	30		silty SAND (SM), moist, brown	25.4	☒	3+4+4	18
-16.5		B2	POORLY GRADED GRAVEL (GP), with sand, wet, brown		☒	7+10+13	18
	40				☒	7+12+4	18
					☒	4+16+23	12
-31.5	50		clayey GRAVEL (GC), with sand, moist, gray		☒	8+10+16	18
				25.0	☒	7+12+16	18
		C2					
	60		wet below 58.5 ft.		☒	8+13+17	18
-48.0					☒	11+14+20	18
			Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT): 20 40 60 80

GROUND WATER LEVELS:
▽ ENCOUNTERED: 28.0 ft ELEV. -11.0
UPON COMPLETION: Dry CAVED: 8.0 ft ELEV. 9.0

SAMPLE TYPES: ☒ Split Spoon

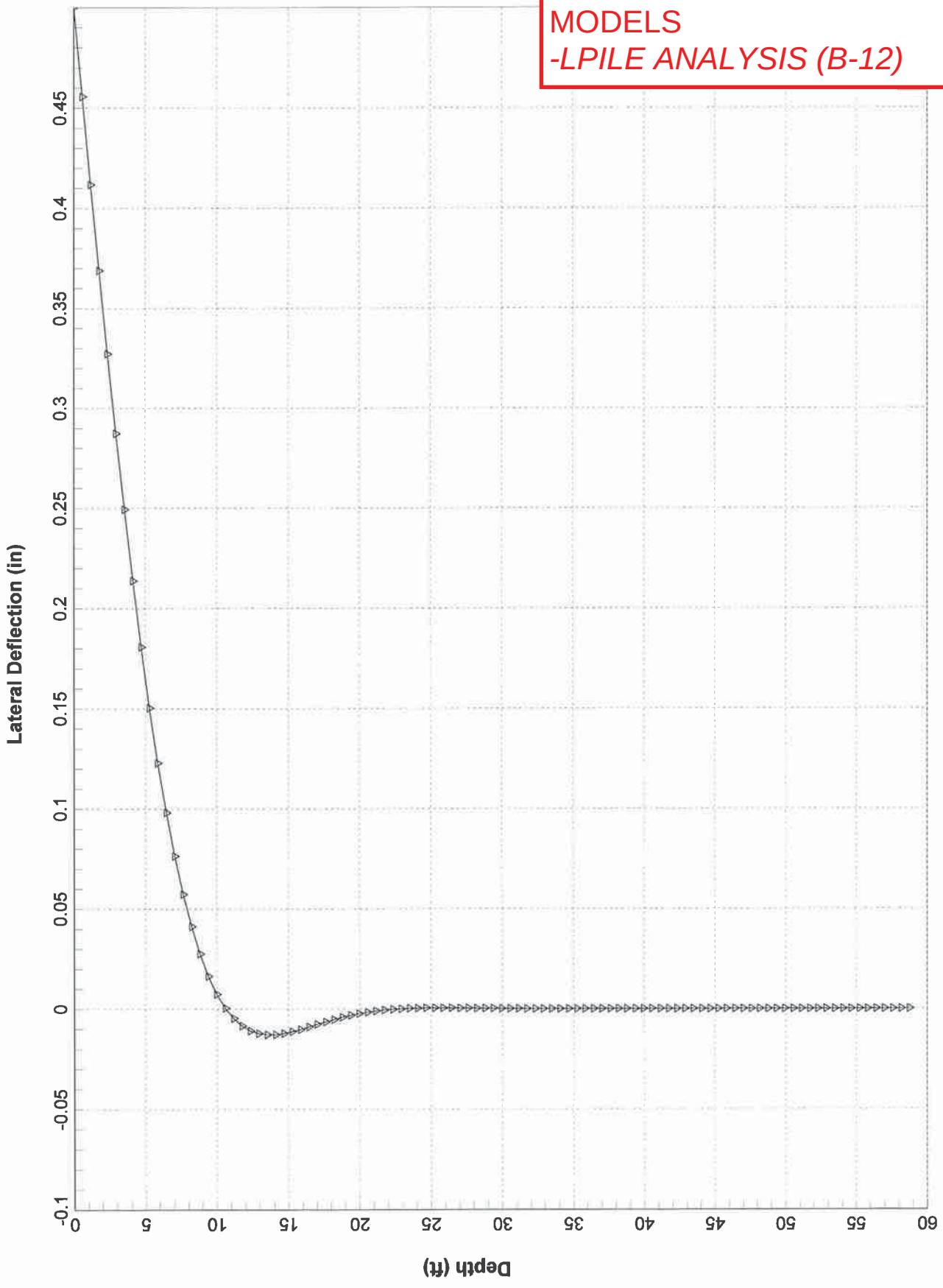
REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITI

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

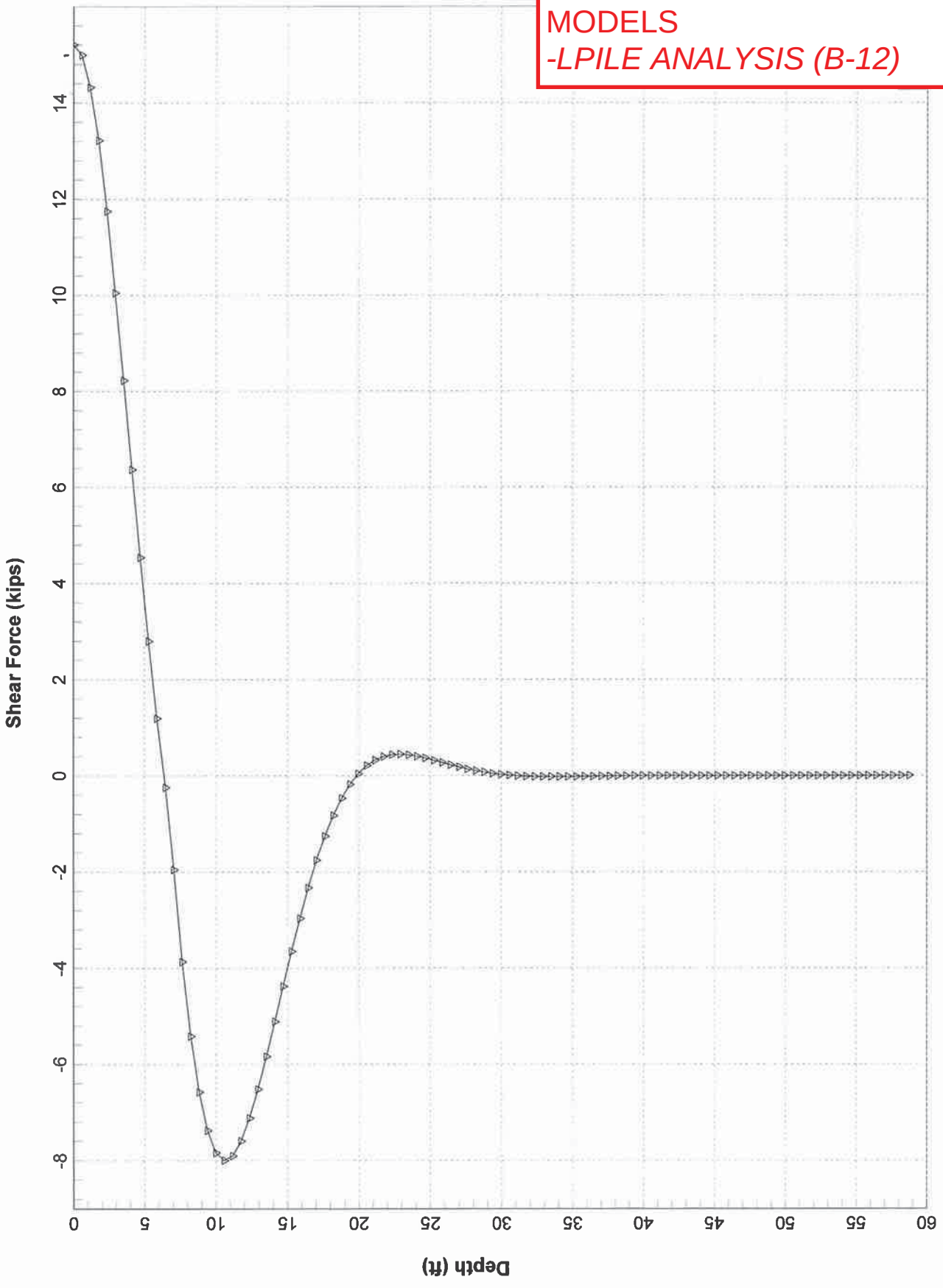
**GEOCONCEPTS ENGINEERING, INC. "GEOTECHNICAL ENGINEERING REPORT, DWIGHT D. EISENHOWER MEMORIAL." (NOVEMBER 5, 2010).

TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-12)



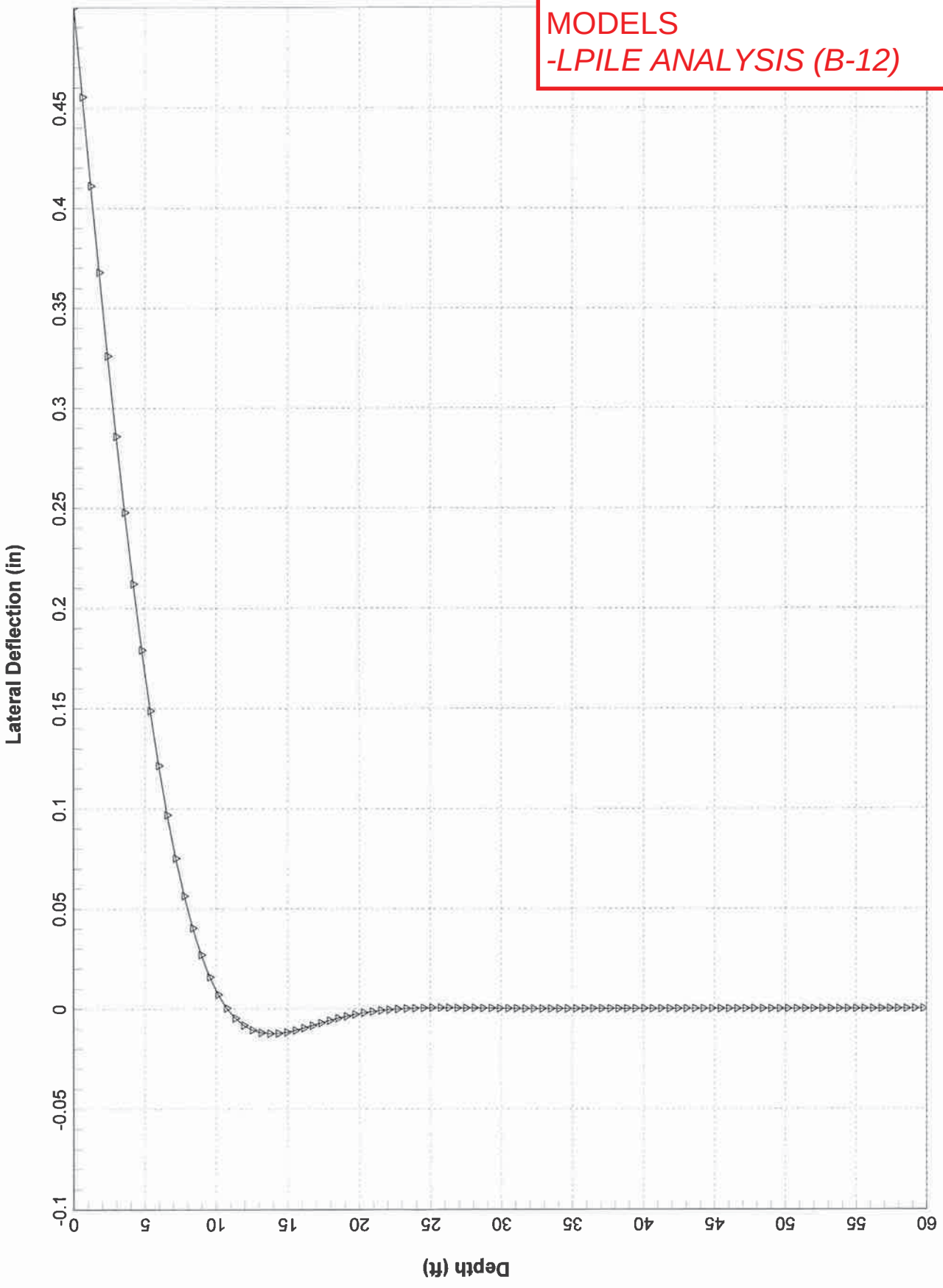
B12 16"ϕ +5 FT TO -53.75 FT

TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-12)



B12 16Ø +5Ft to -53.75 Ft

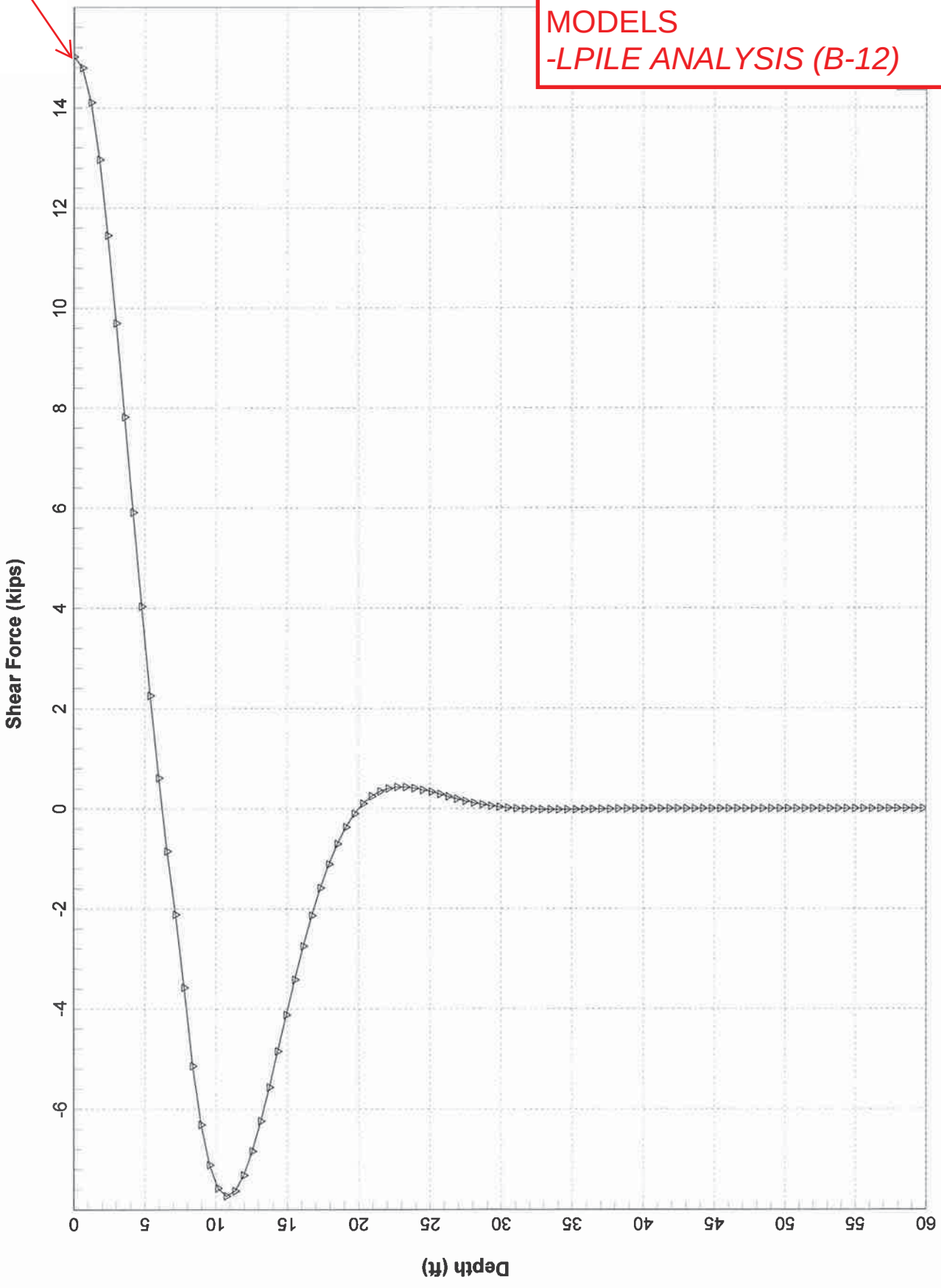
TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-12)



B12 16" ϕ +64ft to -53.25ft

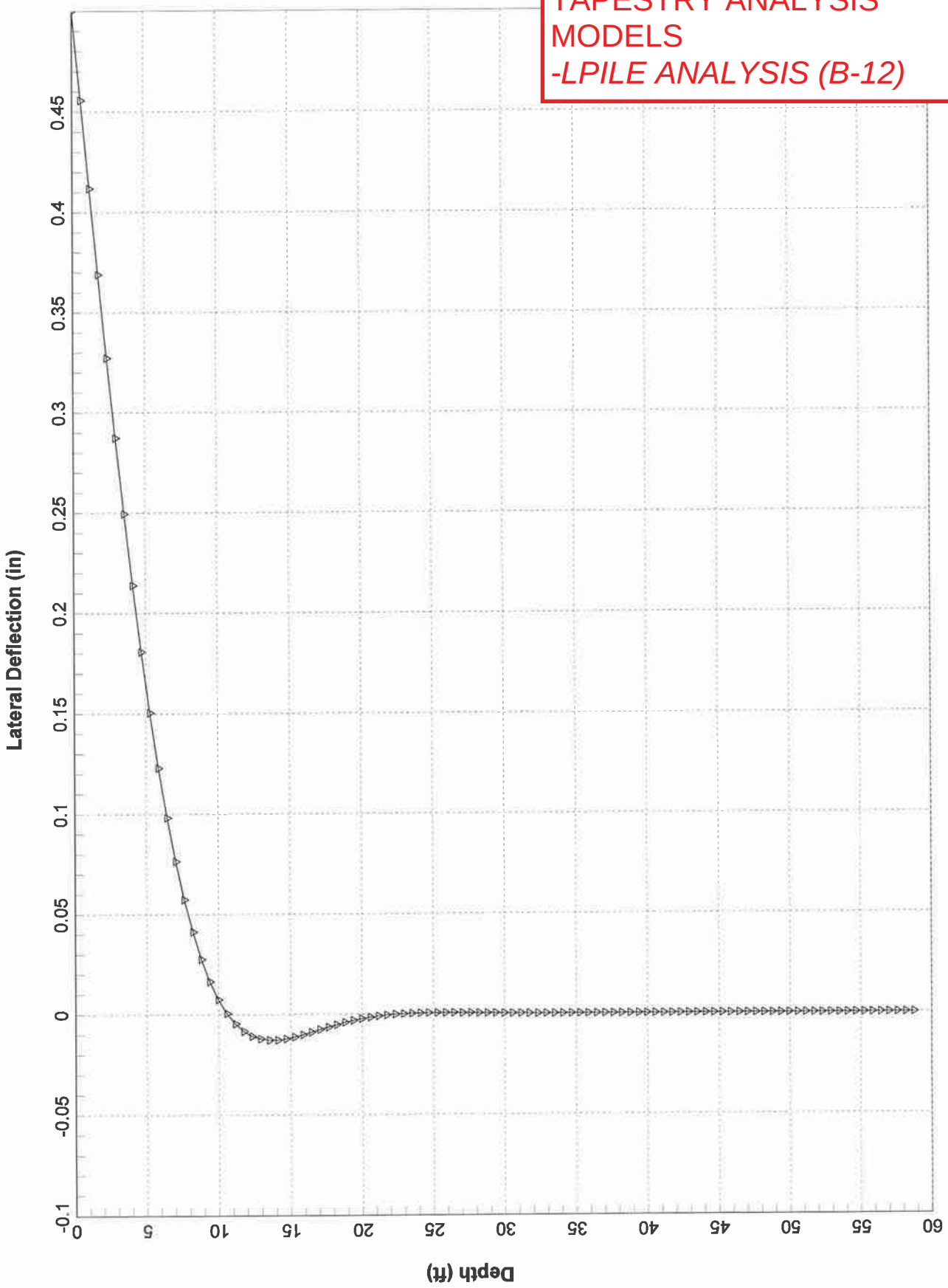
CONTROLS SOUTH
TAPESTRY PILE
LATERAL CAPACITY

TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-12)



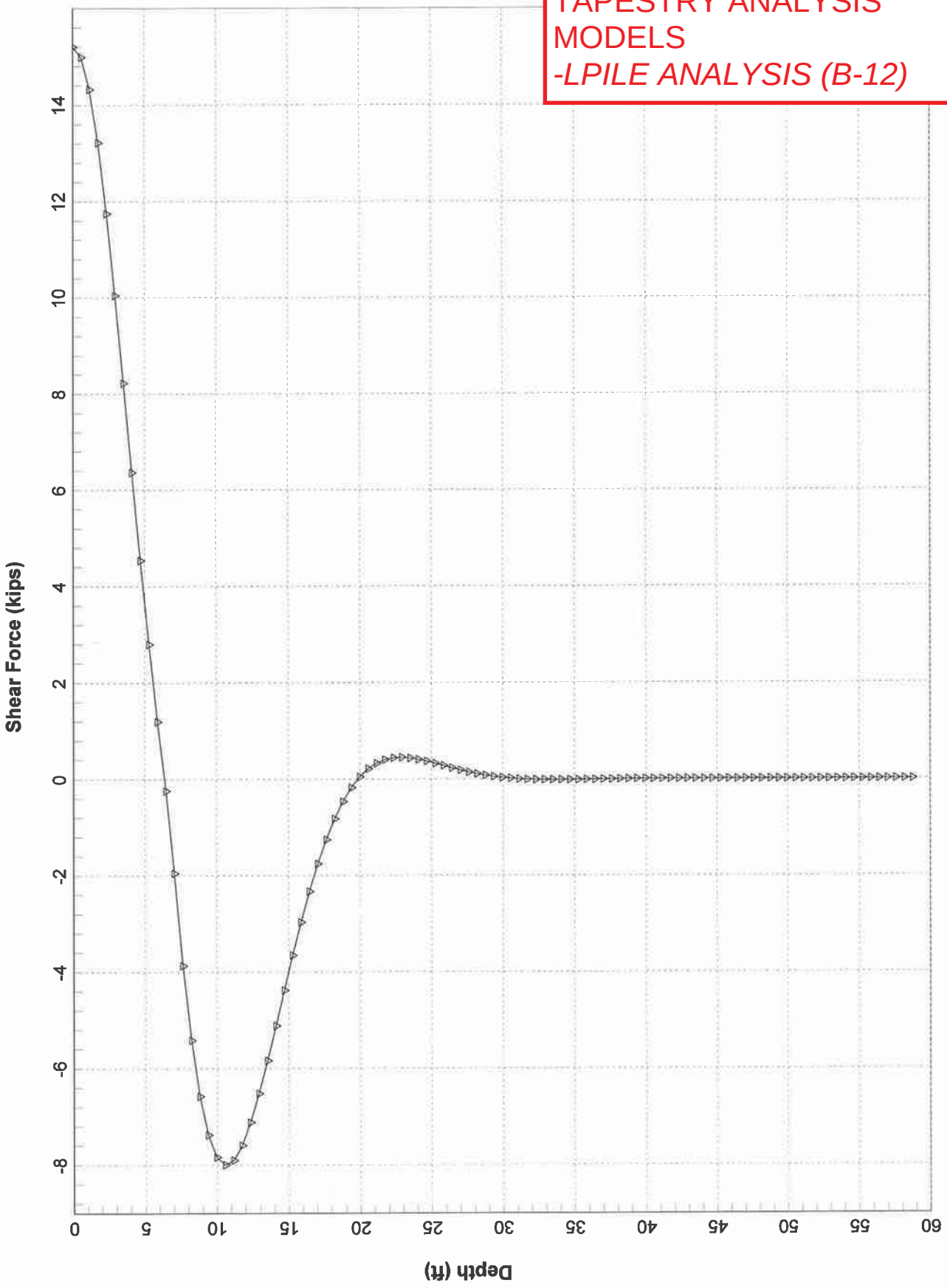
B12 16" ϕ +6FT TO -53.75FT

TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-12)



B12 16'Ø +5FT TO -45 FT

TAPESTRY ANALYSIS MODELS
-LPILE ANALYSIS (B-12)



B12 16" ϕ +5 ft to 45 ft

GeoConcepts Engineering, Inc.
19955 Highland Vista Dr, #170
Ashburn, VA 20147
703-726-8030
703-726-8032 fax

TAPESTRY ANALYSIS MODELS
-SITE BORING LOG

PR	LOGGED BY: J. Brackett	BORING NUMBER: **B-13**
LO	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/14/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 17.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/14/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
16.0			Concrete = 12 inches				
		A	lean clay FILL, moist, brown			3+5+6	18
						3+6+8	18
8.5						4+7+11	18
			sandy silty clay FILL, moist, brown			4+7+10	18
5.0	10			17.0			24
		B1	sandy LEAN CLAY (CL), moist, brown			4+4+7	18
						2+2+4	18
-1.5	78						
	20	B2	POORLY GRADED SAND (SP), with gravel, moist, brown			5+21+39	18
						22+50/6	12
-10 ▽	180						
	30		without gravel below 28.5 ft.			16+38+28	14
-16.5	258						
		C1	sandy LEAN CLAY (CL), wet, brown and gray			2+2+3	18
	40		moist, gray below 38.5 ft.			12+14+22	18
						7+9+12	18
-31.5	438						
	50	C2	silty SAND (SM), wet, gray	27.4		16+14+14	18
						11+15+21	18
						10+13+18	18
	60					11+17+20	18
-48.0	600					7+12+14	18
			Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT): 20 40 60 80

GROUND WATER LEVELS:
▽ ENCOUNTERED: 27.0 ft ELEV. -10.0
UPON COMPLETION: Dry CAVED: 17.0 ft ELEV. 0.0

SAMPLE TYPES:
Split Spoon
Shelby Tube

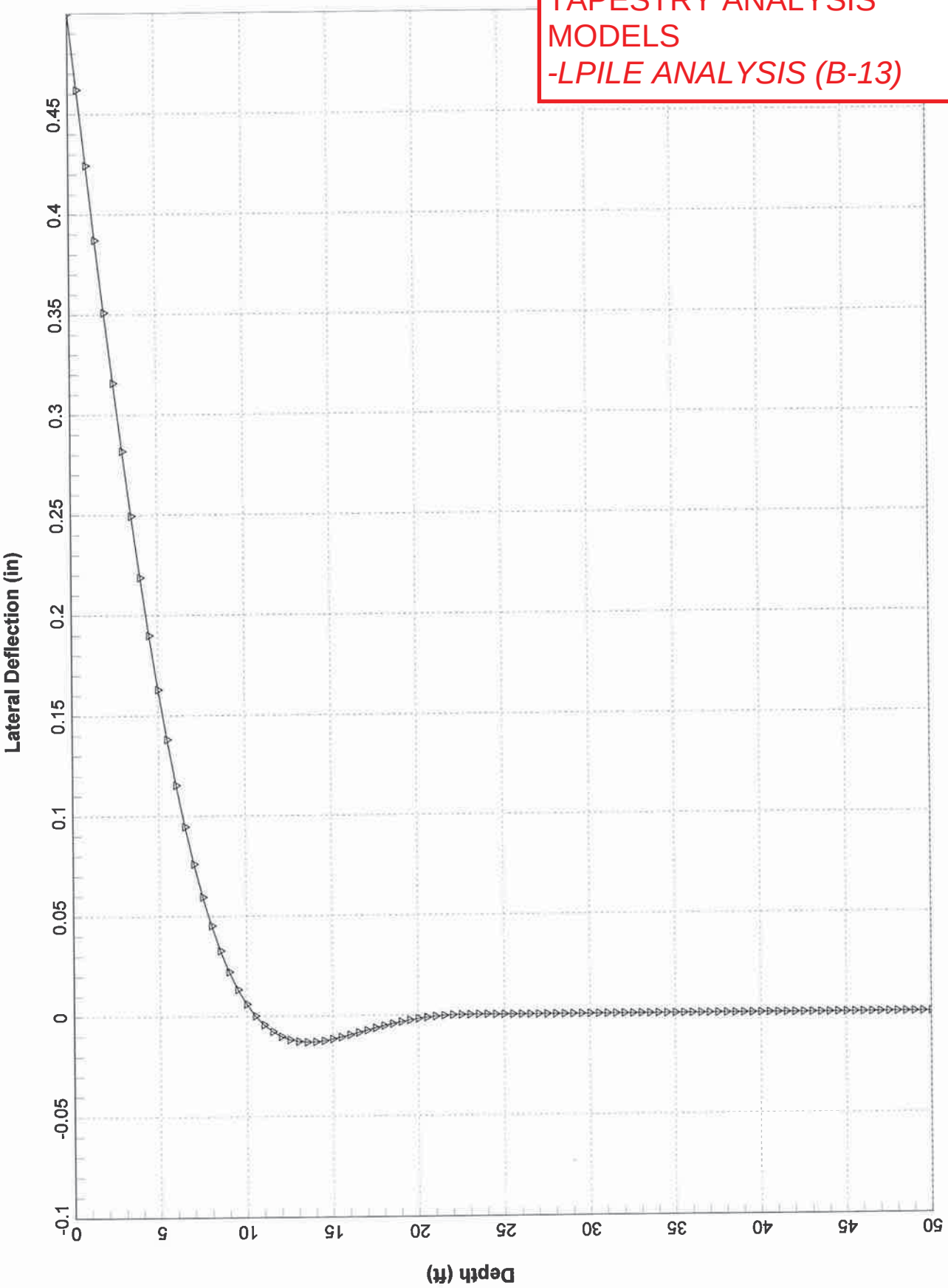
REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITIO

**GEOCONCEPTS ENGINEERING, INC. "GEOTECHNICAL ENGINEERING REPORT, DWIGHT D. EISENHOWER MEMORIAL." (NOVEMBER 5, 2010).

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-13)

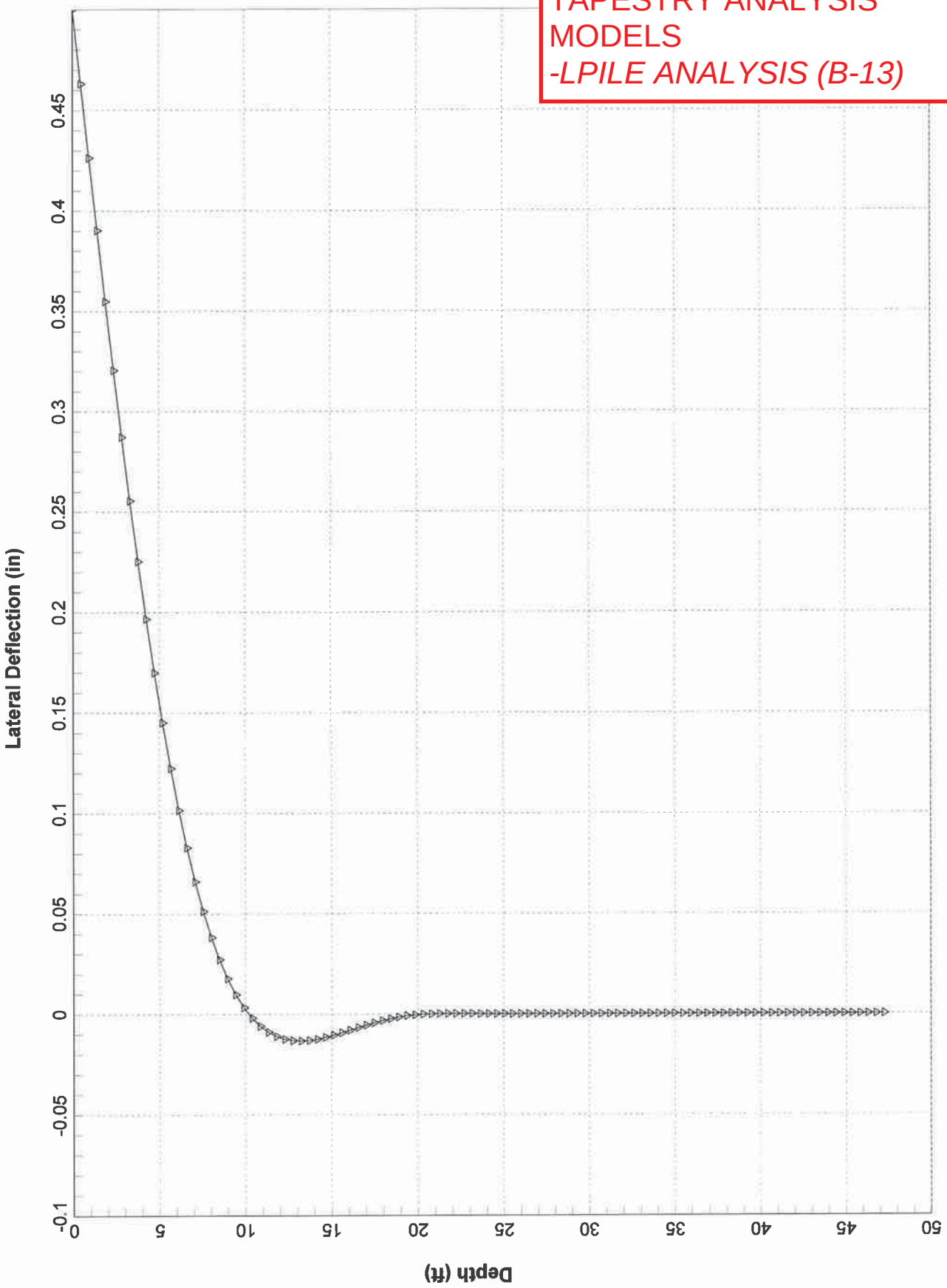


B13 16"ϕ +5 FT TO -45 FT

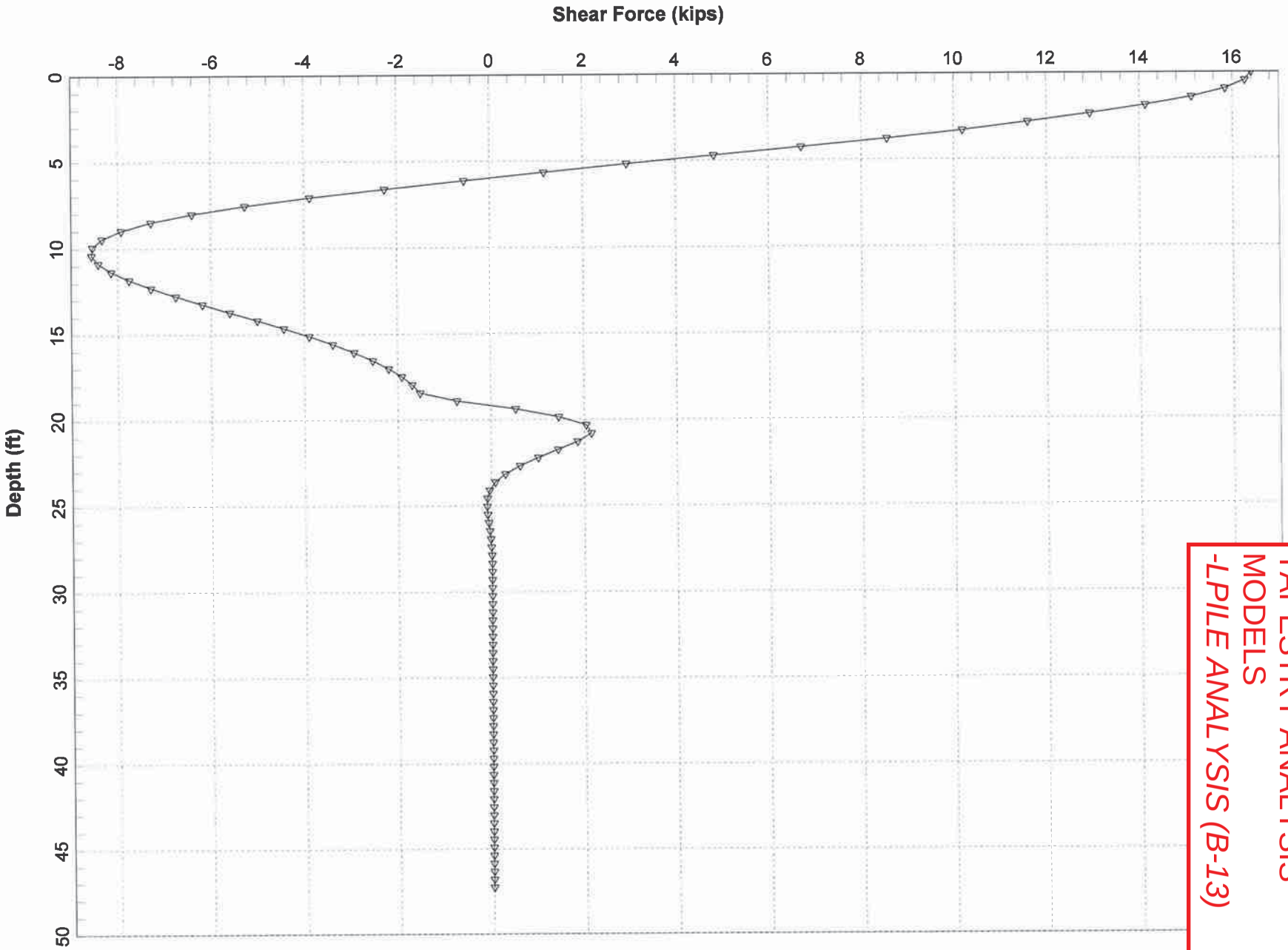
TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-13)

B13 16"ø +5ft To -45ft

TAPESTRY ANALYSIS MODELS
-LPILE ANALYSIS (B-13)



B13 16" Ø +2.25 ft to -45 ft



TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-13)

B13 16"ϕ +2.25 FT TO -45 FT

GeoConcepts Engineering, Inc.
19955 Highland Vista Dr, #170 703-726-8030
Ashburn, VA 20147 703-726-8032 fax

TAPESTRY ANALYSIS MODELS
-SITE BORING LOG

PR	LOGGED BY: J. Brackett	BORING NUMBER: **B-1**
LO	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/15/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 16.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/15/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
15.8		A	Topsoil = 3 inches			5+6+10+12	18
			sandy lean clay FILL, moist, brown			5+6+7	18
						5+5+6	18
7.5							
4.7	10		silty sand FILL, moist, dark brown	15.4		3+4+4	18
			clayey SAND (SC), with gravel, moist, brown			10+12+13	18
						7+10+30	6
-2.5							
	20		POORLY GRADED GRAVEL (GP), with sand, moist, brown			33+50/5	11
-7.5 ▽			clayey SAND (SC), wet, brown			6+6+5	12
	30	B2				2+3+5	18
						2+2+2	12
	40					10+10+3	18
-27.5			POORLY GRADED SAND (SP), with gravel, wet, brown			31+36+37	12
-32.5			clayey SAND (SC), moist, gray			8+13+18	18
	50	C2				9+12+16	18
-44.0						10+15+21	18
	60		Bottom of Boring at 60.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT): 20 40 60 80

GROUND WATER LEVELS:
▽ ENCOUNTERED: 23.5 ft ELEV. -7.5
UPON COMPLETION: Dry CAVED: 8.0 ft ELEV. 8.0

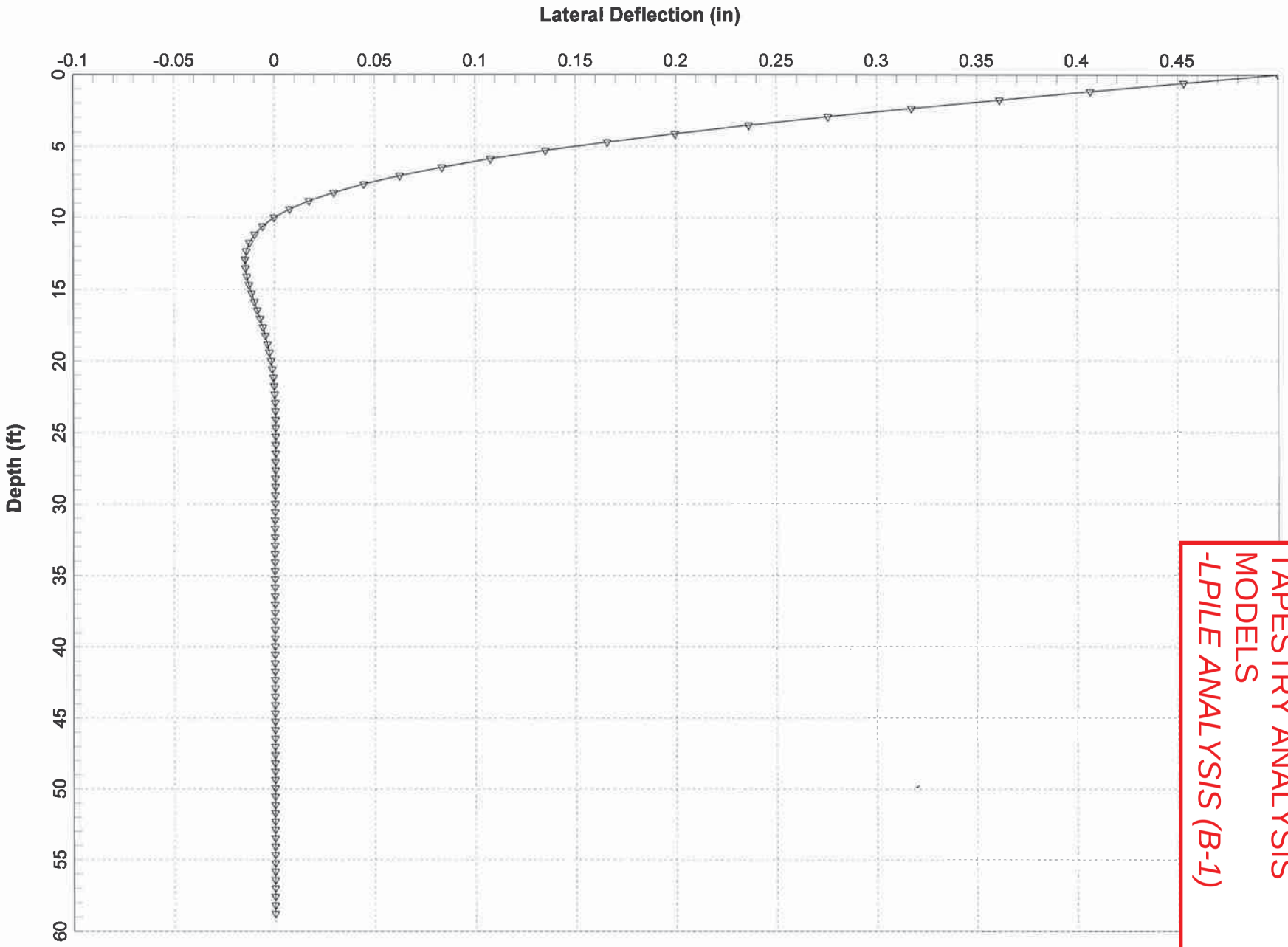
SAMPLE TYPES: Split Spoon; Shelby Tube

REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITI

**GEOCONCEPTS ENGINEERING, INC. "GEOTECHNICAL ENGINEERING REPORT, DWIGHT D. EISENHOWER MEMORIAL." (NOVEMBER 5, 2010).

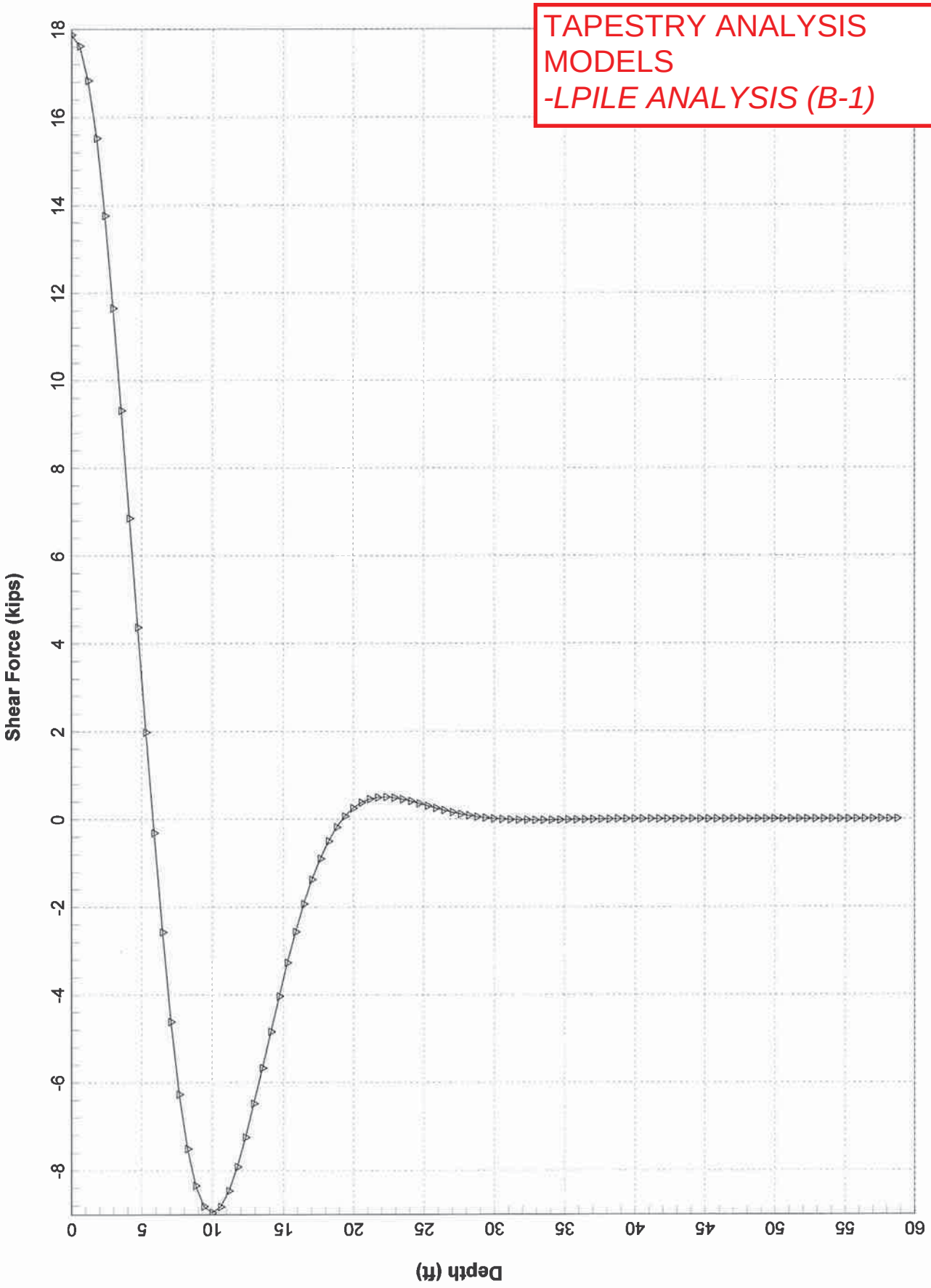
BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10



TAPESTRY ANALYSIS
MODELS
-LPILE ANALYSIS (B-1)

B1 16" Ø +5FT TO -53.75 FT

TAPESTRY ANALYSIS MODELS
-LPILE ANALYSIS (B-1)



16" ϕ +5 Ft To -53.75 Ft

GeoConcepts Engineering, Inc.
19955 Highland Vista Dr, #170
Ashburn, VA 20147
703-726-8030
703-726-8032 fax

TAPESTRY ANALYSIS MODELS
-SITE BORING LOG

PR	LOGGED BY: J. Brackett	BORING NUMBER: B-3
LO	DRILLING CONTRACTOR: Connelly and Associates, Inc.	SHEET 1 OF 1
OWNER/CLIENT: AECOM	DRILLER: W. Smith	DATE STARTED: 9/8/10
PROJECT NUMBER: 10004 / GROUND SURFACE ELEVATION (ft): 14.0 ±	DRILLING METHOD: 3.25" I.D. HSA	DATE COMPLETED: 9/8/10

ELEV. (ft)	DEPTH (ft)	STRATUM	MATERIAL DESCRIPTION	MC (%)	SAMPLE TYPE	SPT BLOW COUNTS	RECOVERY (in)
13.8			Topsoil = 3 inches			7+15+15+15	24
			sandy LEAN CLAY (CL), moist, brown			4+7+10	18
		B1				11+12+15	18
	0					4+4+5	18
	10						
0.5	54						
			clayey SAND (SC), moist, brown			4+5+6	18
							24
-4.5						7+13+19	18
			POORLY GRADED GRAVEL (GP), moist, brown			40+34+43	12
	20	B2					
-9.5 ▽	174						
			clayey SAND (SC), with gravel, wet, brown			15+7+9	12
-14.5	234						
	30		FAT CLAY (CH), moist, gray			5+10+12	18
		C1					
-21.0	312					7+12+16	18
			POORLY GRADED SAND (SP), with gravel, moist, gray	13.3			24
						6+10+12	18
	40					14+15+17	8
-29.5							
			clayey SAND (SC), moist, gray			6+9+11	18
	50	C2				6+11+16	18
						10+15+24	18
	60						
						8+12+14	18
-51.0							
						15+20+34	18
	705		Bottom of Boring at 65.0 ft				

STANDARD PENETRATION TEST RESISTANCE (BLOWS/FOOT): 20 40 60 80

GROUND WATER LEVELS:
▽ ENCOUNTERED: 23.5 ft ELEV. -9.5
UPON COMPLETION: Dry
CAVED: 15.0 ft ELEV. -1.0

SAMPLE TYPES:
Split Spoon
Shelby Tube

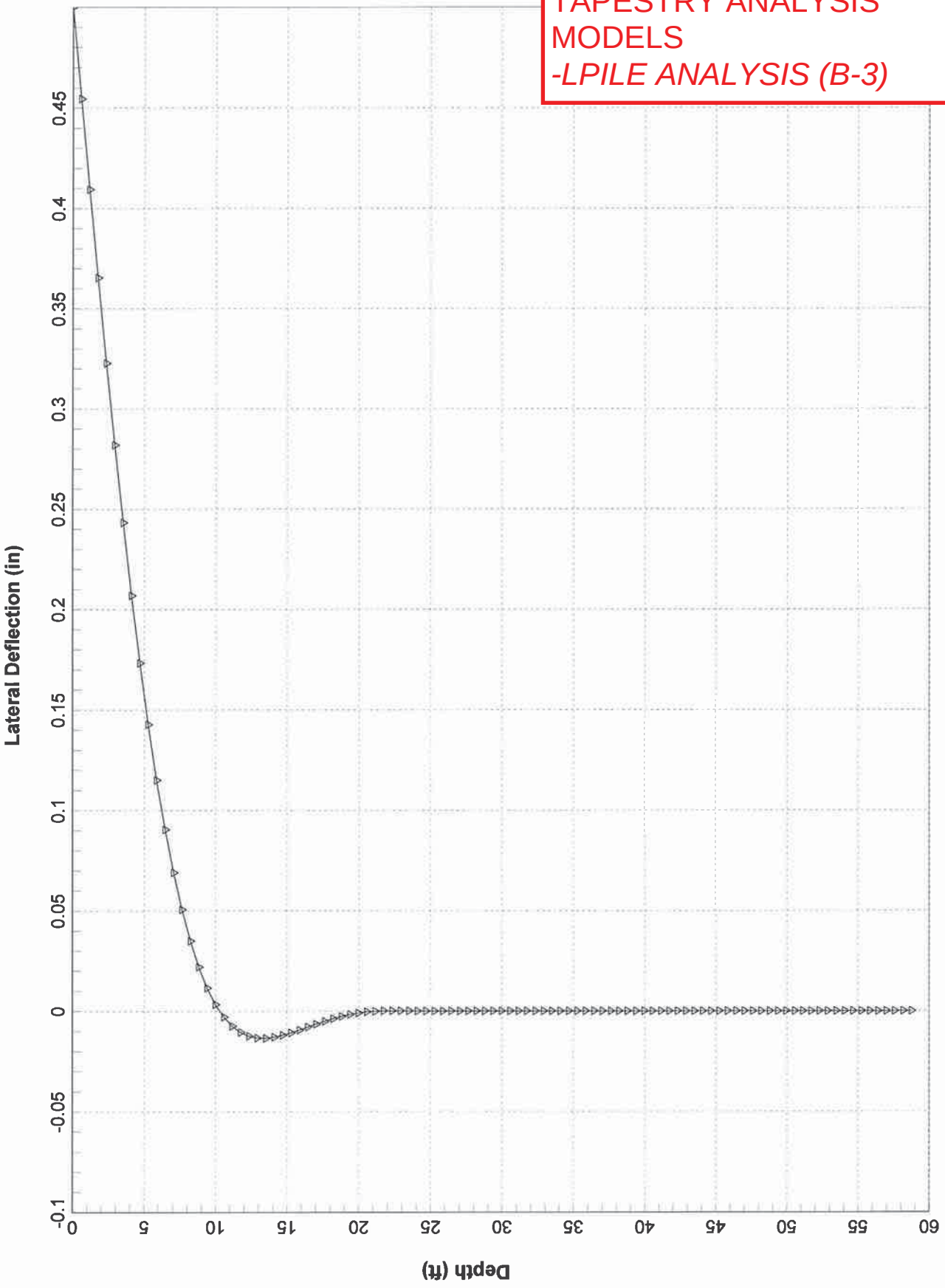
REMARKS: Backfilled upon completion for safety concerns.

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSIT

**GEOCONCEPTS ENGINEERING, INC. "GEOTECHNICAL ENGINEERING REPORT, DWIGHT D. EISENHOWER MEMORIAL." (NOVEMBER 5, 2010).

BOREHOLE/TEST PIT LOGS.GPJ GEOCONCEPTS.GDT 11/5/10

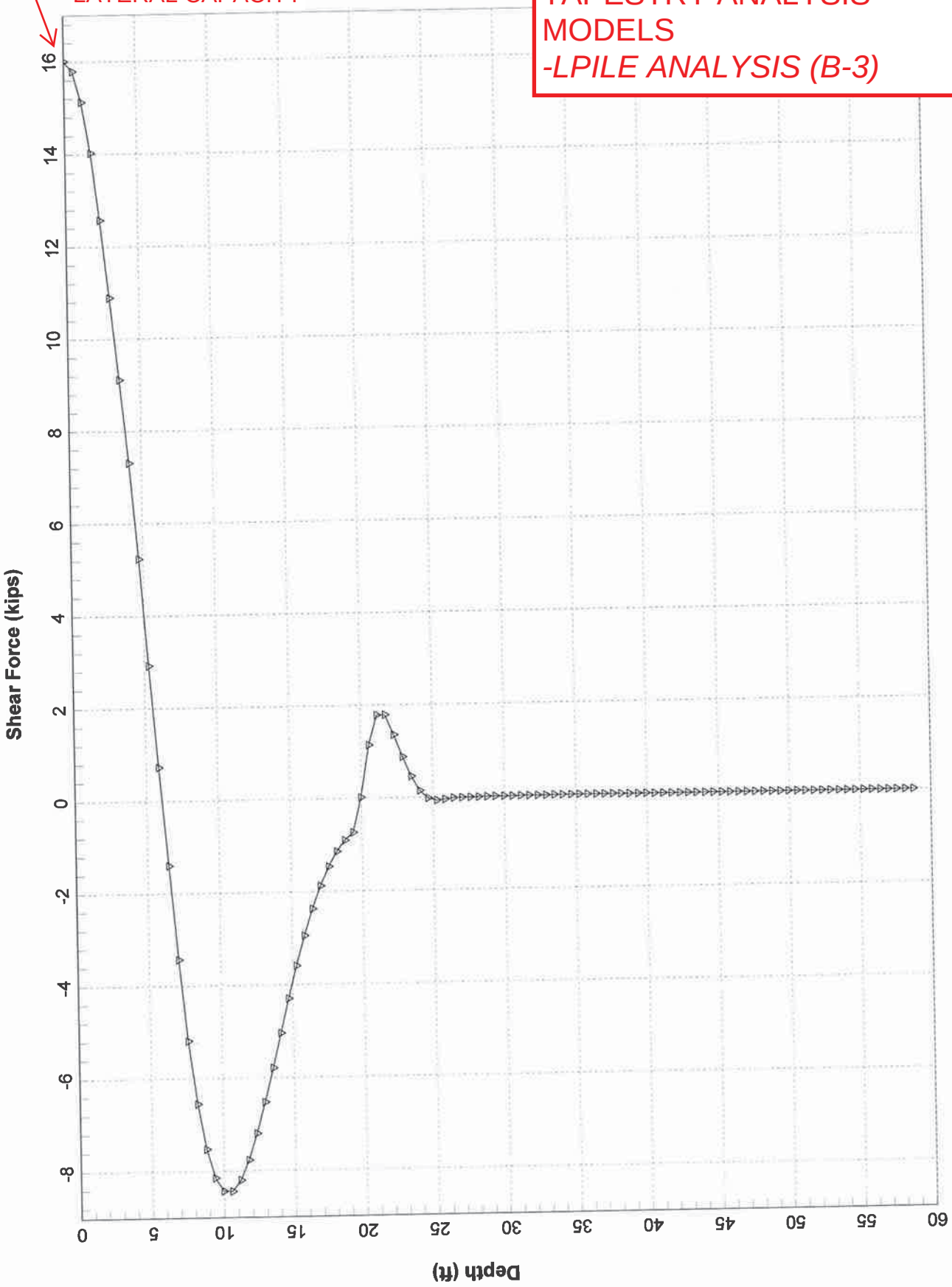
TAPESTRY ANALYSIS MODELS
-LPILE ANALYSIS (B-3)



B3 16" Ø TO -53.75 FT

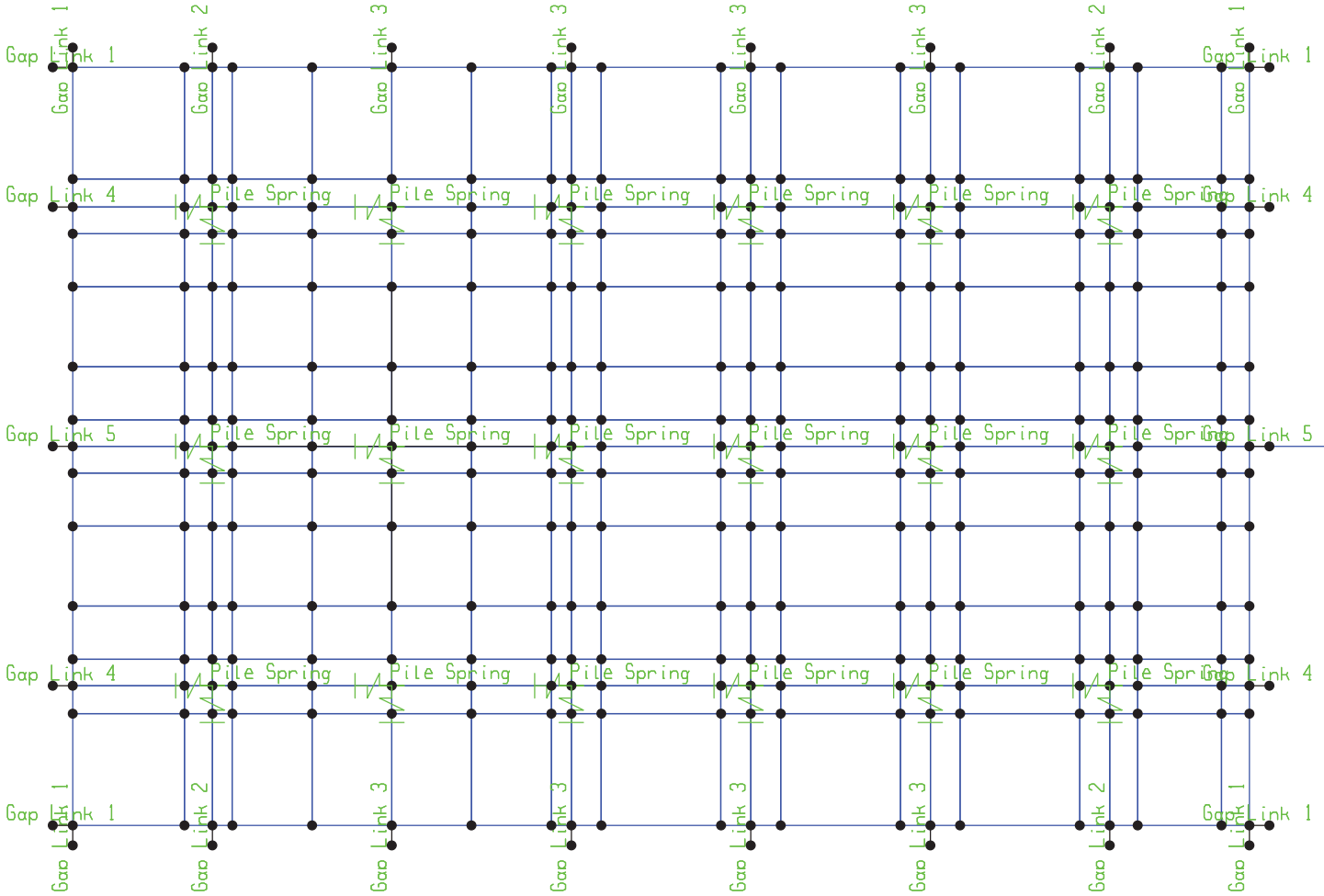
CONTROLS EAST
TAPESTRY PILE
LATERAL CAPACITY

TAPESTRY ANALYSIS MODELS
-LPILE ANALYSIS (B-3)



B3 16" ø +5 FT TO -53.75 FT

EAST TAPESTRY ANALYSIS MODEL
-FOUNDATION ELEMENTS



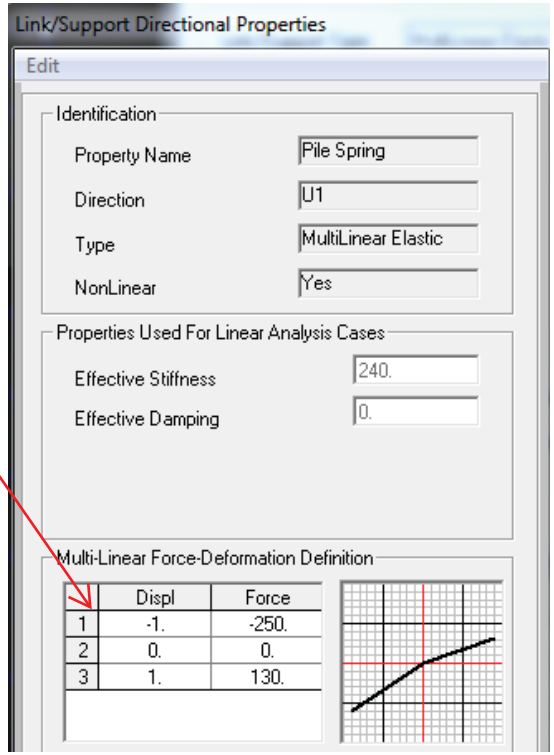
**SEE ATTACHED FOR NONLINEAR LINK PROPERTY DEFINITIONS

TABLE: Link Property Definitions 03 - MultiLinear

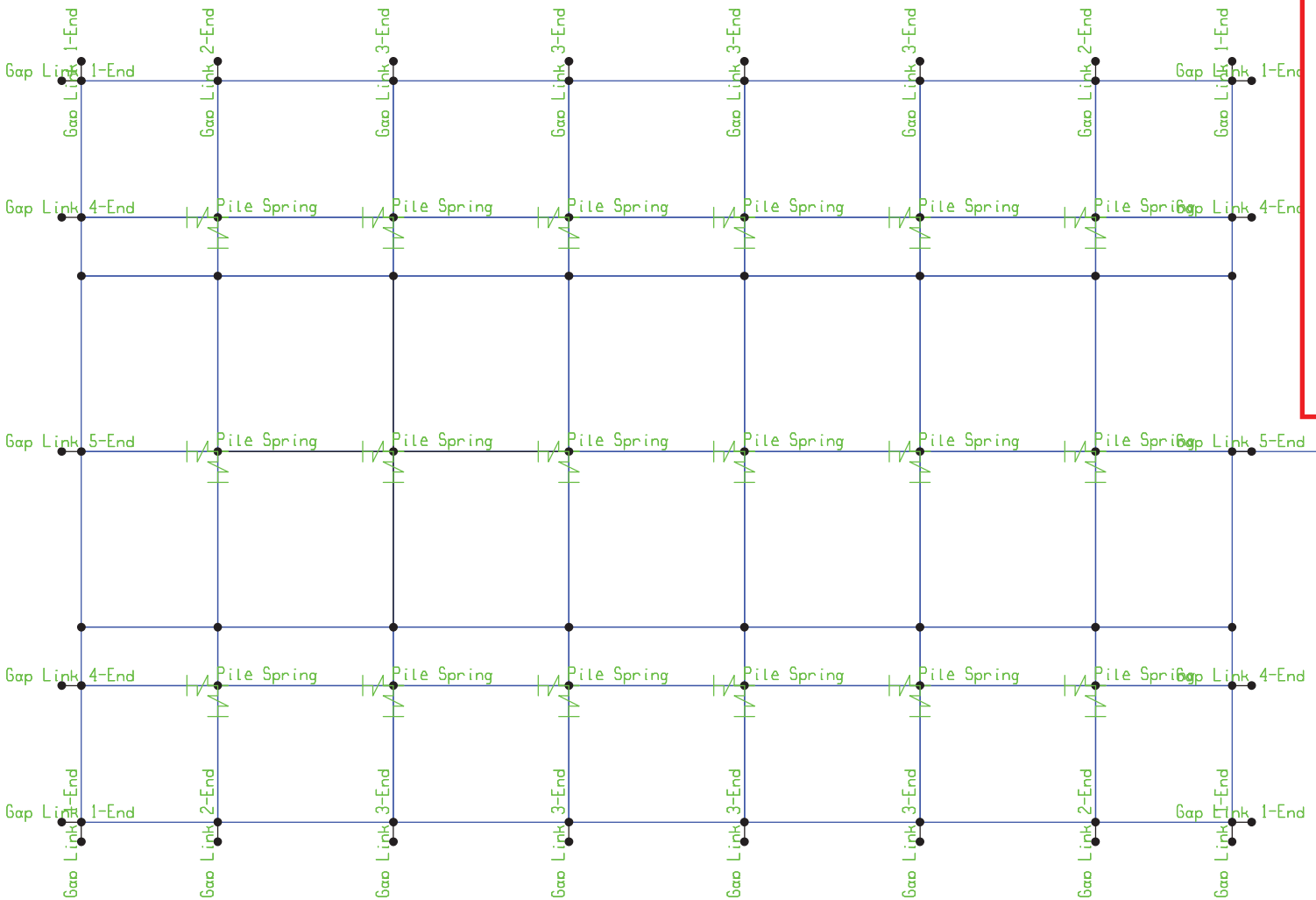
Link	DOF	Fixed	NonLinear	TransKE	TransCE	Point	Force	Displ
Text	Text	Yes/No	Yes/No	Kip/in	Kip-s/in	Text	Kip	in
Pile Spring	U1	No	Yes	240	0	1	-250	-1
Pile Spring	U1					2	0	0
Pile Spring	U1					3	130	1

TABLE: Link Property Definitions 05 - Gap

Link	DOF	Fixed	NonLinear	TransKE	TransCE	TransK	TransOpen
Text	Text	Yes/No	Yes/No	Kip/in	Kip-s/in	Kip/in	in
Gap Link 1	U1	No	Yes	25	0	25	0
Gap Link 2	U1	No	Yes	58	0	58	0
Gap Link 3	U1	No	Yes	65	0	65	0
Gap Link 4	U1	No	Yes	68.4	0	68.4	0
Gap Link 5	U1	No	Yes	86.4	0	86.4	0

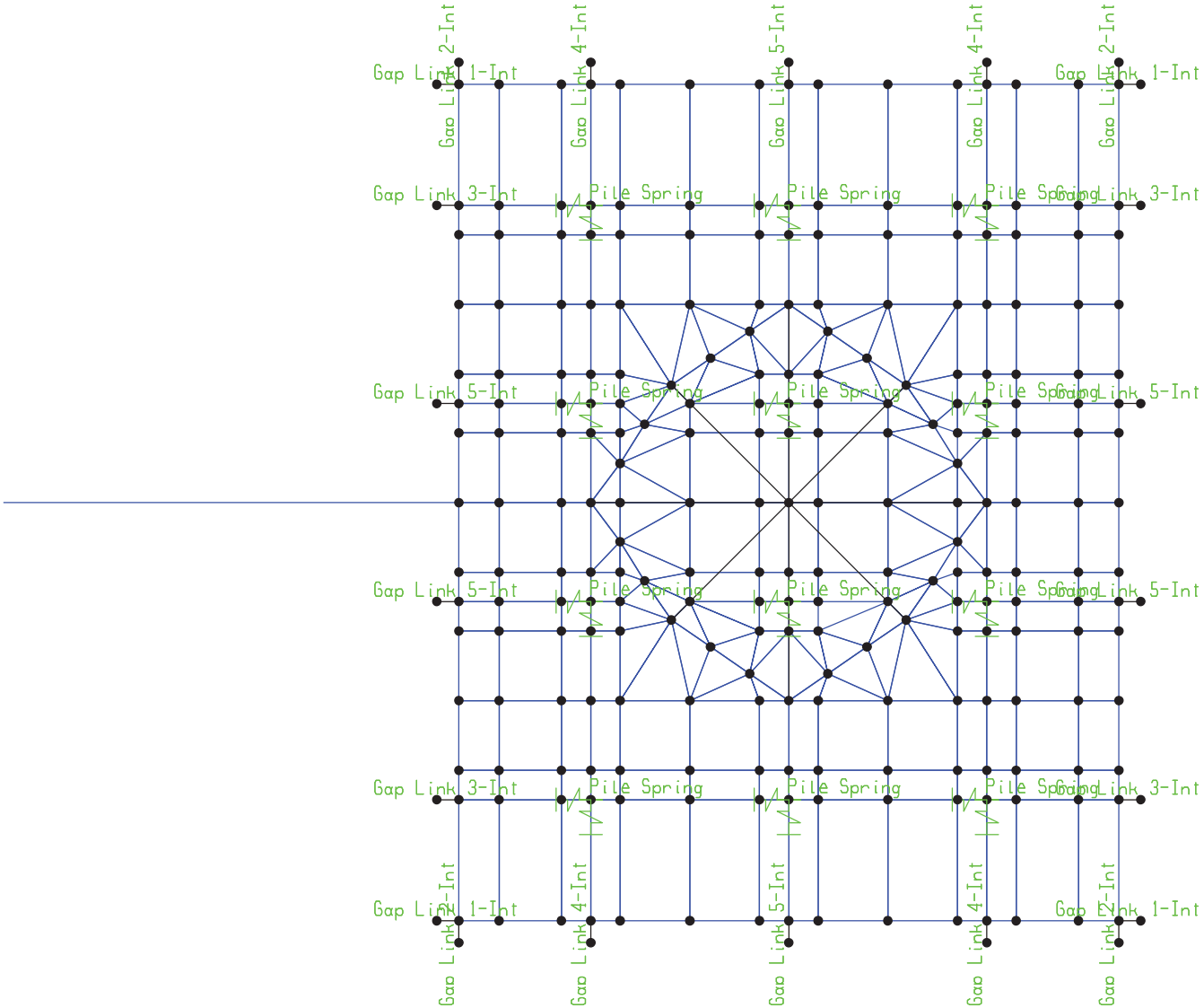


SOUTH TAPESTRY
ANALYSIS MODEL
-FOUNDATION ELEMENTS



**SEE ATTACHED FOR
NONLINEAR LINK PROPERTY
DEFINITIONS

SOUTH TAPESTRY
ANALYSIS MODEL
-FOUNDATION ELEMENTS



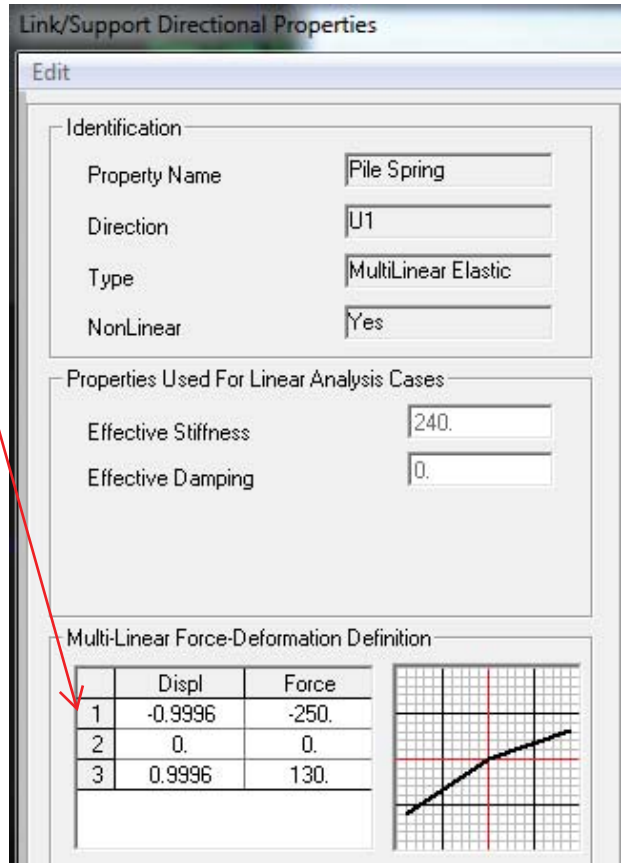
**SEE ATTACHED FOR
NONLINEAR LINK PROPERTY
DEFINITIONS

TABLE: Link Property Definitions 03 - MultiLinear

Link	DOF	Fixed	NonLinear	TransKE	TransCE	Point	Force	Displ
Text	Text	Yes/No	Yes/No	Kip/in	Kip-s/in	Text	Kip	in
Pile Spring	U1	No	Yes	240	0	1	-250	-0.9996
Pile Spring	U1					2	0	0
Pile Spring	U1					3	130	0.9996

TABLE: Link Property Definitions 05 - Gap

Link	DOF	Fixed	NonLinear	TransKE	TransCE	TransK	TransOpen
Text	Text	Yes/No	Yes/No	Kip/in	Kip-s/in	Kip/in	in
Gap Link 1- U1		No	Yes	25.2	0	25.2	0
Gap Link 1- U1		No	Yes	19.8	0	19.8	0
Gap Link 2- U1		No	Yes	57.6	0	57.6	0
Gap Link 2- U1		No	Yes	21.6	0	21.6	0
Gap Link 3- U1		No	Yes	64.8	0	64.8	0
Gap Link 3- U1		No	Yes	52.2	0	52.2	0
Gap Link 4- U1		No	Yes	68.4	0	68.4	0
Gap Link 4- U1		No	Yes	54	0	54	0
Gap Link 5- U1		No	Yes	86.4	0	86.4	0
Gap Link 5- U1		No	Yes	64.8	0	64.8	0



EAST TAPESTRY ANALYSIS MODEL
-FOUNDATION ELEMENTS

**SEE ATTACHED FOR NONLINEAR LINK PROPERTY DEFINITIONS

SAP2000

SAP2000 v15.1.0 - File:12_04_06_East Tapestry - X-Y Plane @ Z=-72 - Kip, in, F Units

TABLE: Link Property Definitions 03 - MultiLinear

Link	DOF	Fixed	NonLinear	TransKE	TransCE	Point	Force	Displ
Text	Text	Yes/No	Yes/No	Kip/in	Kip-s/in	Text	Kip	in
Pile Spring	U1	No	Yes	250	0	1	-250	-1
Pile Spring	U1					2	0	0
Pile Spring	U1					3	130	1

TABLE: Link Property Definitions 05 - Gap

Link	DOF	Fixed	NonLinear	TransKE	TransCE	TransK	TransOpen
Text	Text	Yes/No	Yes/No	Kip/in	Kip-s/in	Kip/in	in
Gap Link 1	U1	No	Yes	25	0	25	0
Gap Link 2	U1	No	Yes	58	0	58	0
Gap Link 3	U1	No	Yes	65	0	65	0
Gap Link 4	U1	No	Yes	68.4	0	68.4	0
Gap Link 5	U1	No	Yes	86.4	0	86.4	0

3.3 STRUCTURAL LOADS

The following pages summarize the loads applied to the structural analysis model. These loads are derived through building code requirements, testing, and standards.

3.3.1 Dead Loads
3.3.2 Ice Loads
3.3.3 Thermal Loads
3.3.4 Seismic Loads
3.3.5 Wind Loads
3.3.6 Cable Prestress and Concrete Creep Analysis

MAGNUSSON KLEMENCIC ASSOCIATES
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1301 Fifth Avenue, Suite 3200
Seattle, Washington 98101-2699
T: 206 292 1200 F: 206 292 1201

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3.3.1 DEAD LOADS

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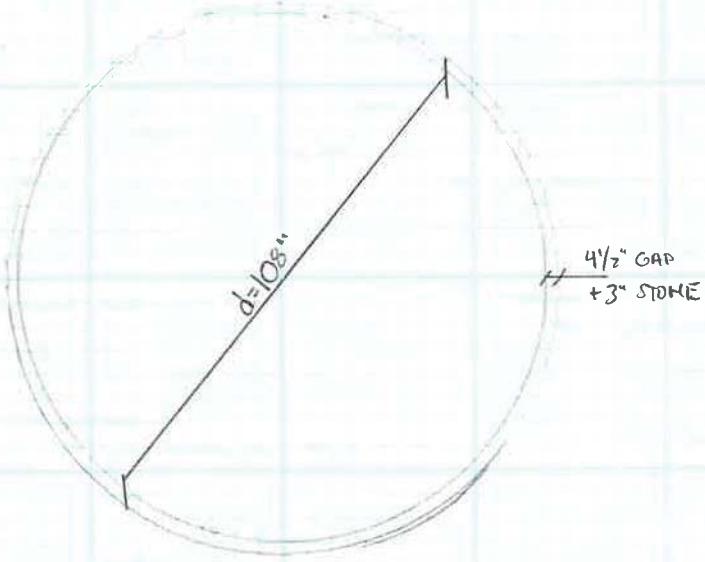
Design Sheet

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TAPESTRY ANALYSIS MODELS
-DEAD LOADS

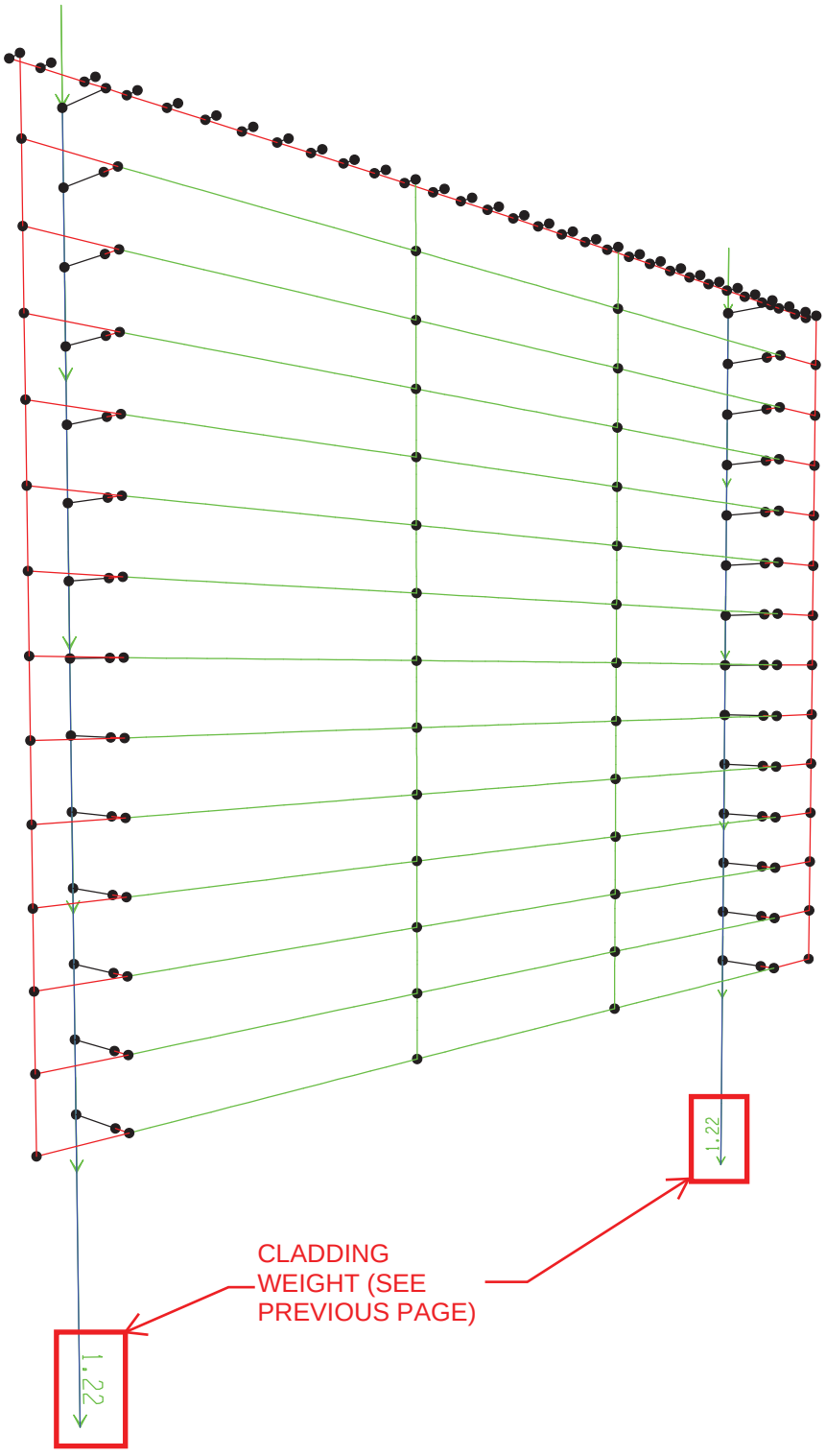
LOCATION | CLIENT | SHEET | DATE | BY

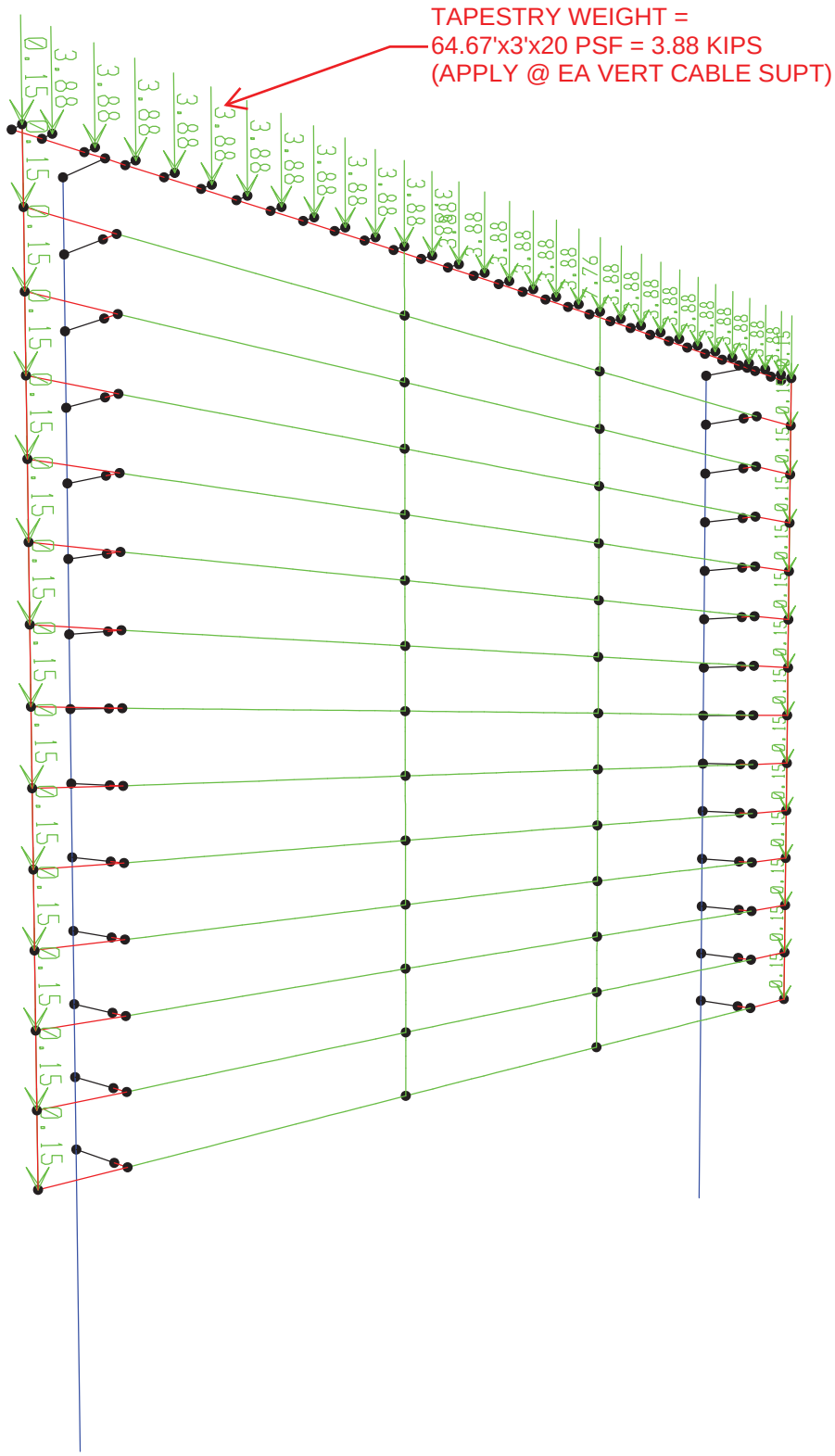
COLUMN CLADDING WEIGHT

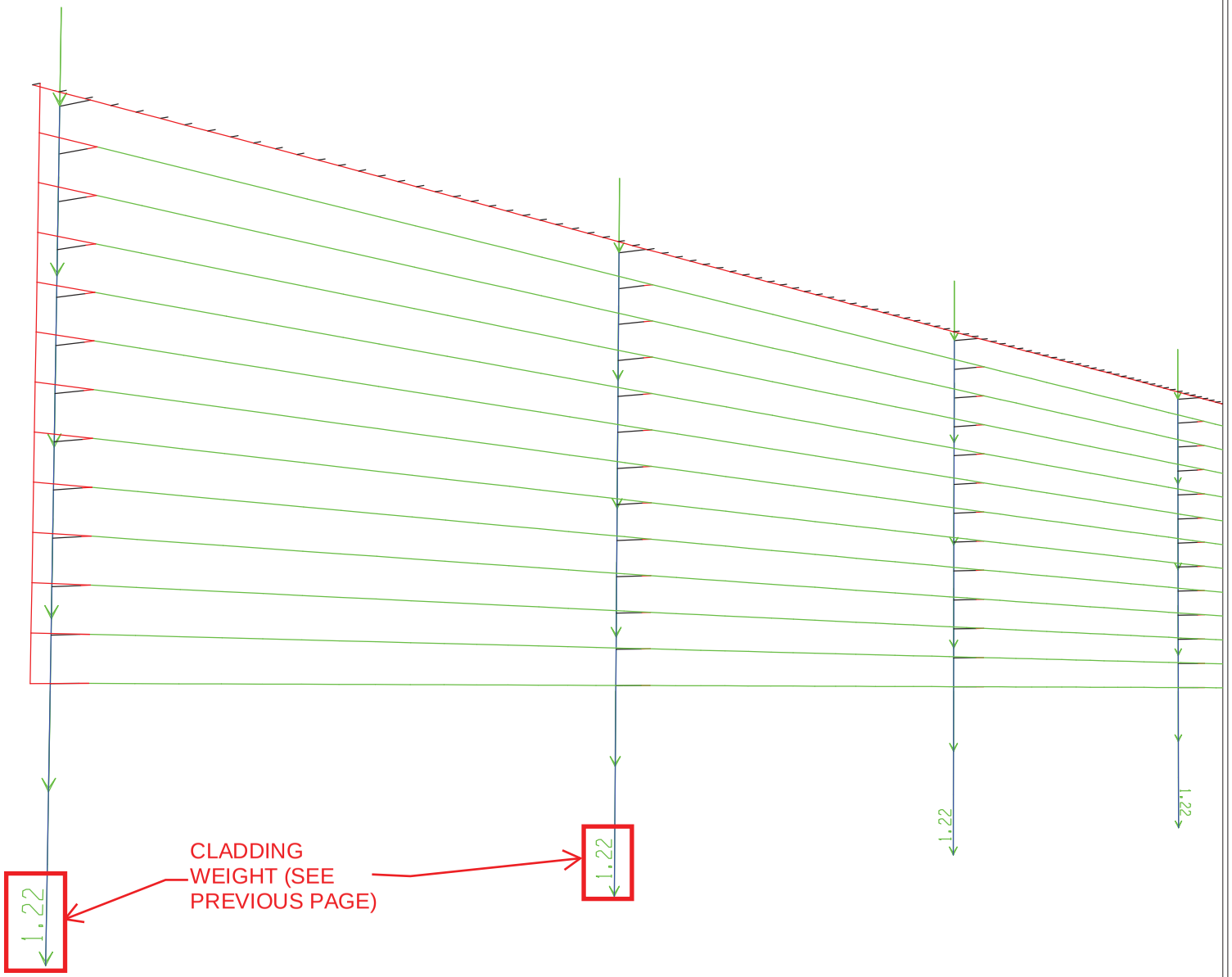


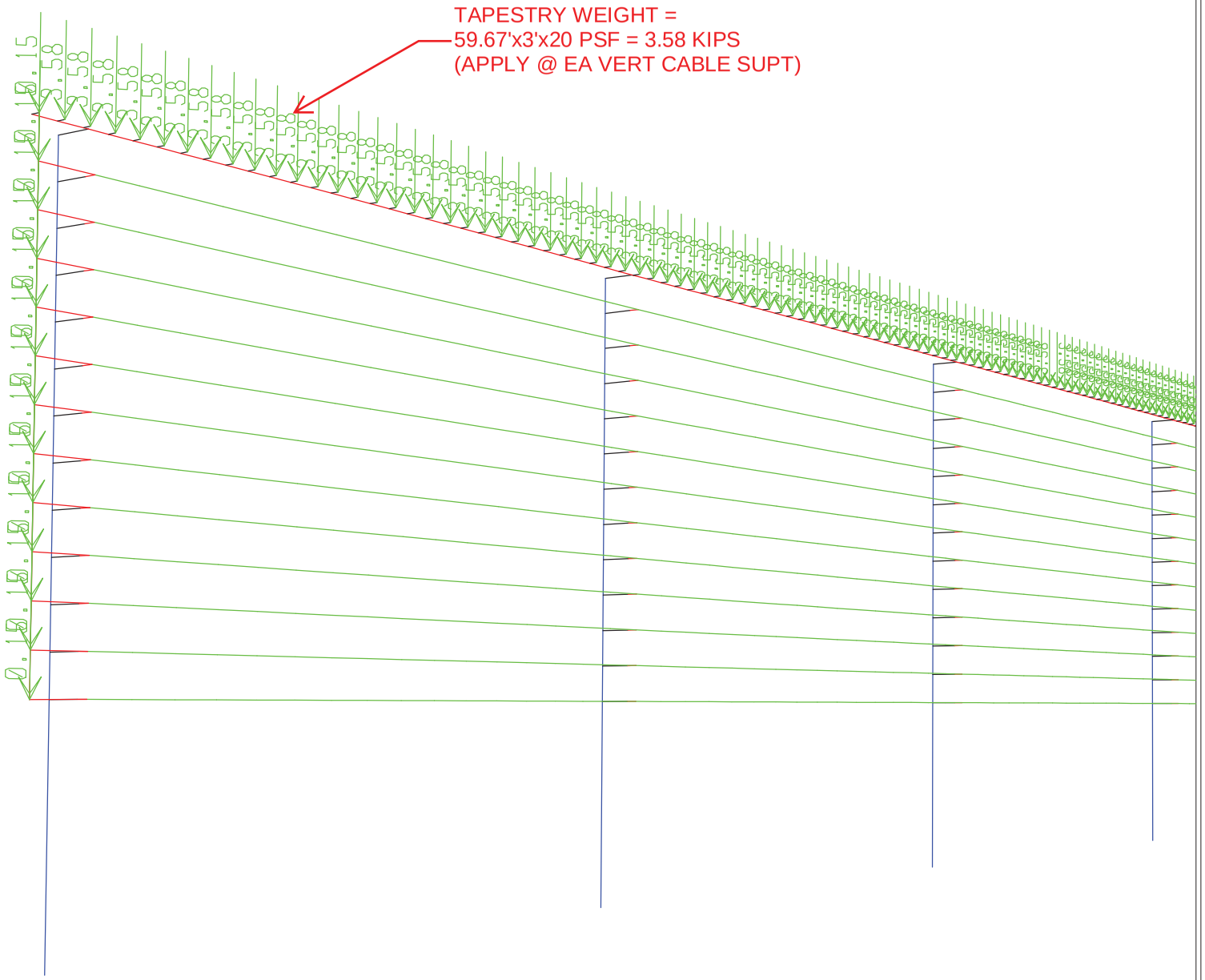
$C = 2\pi \times (54" + 7.5") = 386" = 32.2'$

$w = 38\ PSF \times 32.2' = 1224\ PLF$ → APPLY AS DISTRIBUTED FRAME LOAD IN SAP


1.22
CLADDING
WEIGHT (SEE
PREVIOUS PAGE)
1.22


TAPESTRY WEIGHT =
64.67'x3'x20 PSF = 3.88 KIPS
(APPLY @ EA VERT CABLE SUPT)


1.22
CLADDING
WEIGHT (SEE
PREVIOUS PAGE)
1.22
1.22
1.22


TAPESTRY WEIGHT =
59.67'x3'x20 PSF = 3.58 KIPS
(APPLY @ EA VERT CABLE SUPT)

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3.3.2 ICE LOADS

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Design Sheet

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TAPESTRY ANALYSIS MODELS
-ICE LOADS

LOCATION CLIENT SHEET DATE 4/2/13 BY BHK

TAPESTRY ELEMENT ICE LOADS

NOMINAL ICE THICKNESS, $t = 0.75"$ (ASCE 7-05 FIG 10-2)

HORIZONTAL CABLE

$z = 80.5'$

$I_i = 1.25$

$K_{zt} = 1.0$

$f_z = \left(\frac{z}{33}\right)^{0.1} = 1.1$

$t_d = 2.0 + I_i f_z (K_{zt})^{0.35} = 2.07"$

$D_c = 1.44"$ (PE100, D = 36.6 mm) (ASCE 7 FIG 10-1)

$A_i = \pi t_d (D_c + t_d) = 22.8\ IN^2 = 0.16\ FT^2$

$\omega_i = A_i \times 56\ PCF = 8.8\ PLF \rightarrow$ **1.8 PSF**



APPLY AS JOINT LOAD @ EACH VERT CABLE SUPT IN SAP

VERTICAL CABLES

$t_d = 2.07"$

$D_c = 0.31"$ (PE5, D = 8.1 mm) (ASCE 7 FIG 10-1)

$A_i = \pi t_d (D_c + t_d) = 15.5\ IN^2 = 0.11\ FT^2$ $\quad A_i = 19.16\ IN^2$

$\omega_i = 2 \times A_i \times 56\ PCF = 12.3\ PLF \rightarrow 4.1\ PSF$ $\quad \omega_i = 7.45\ PLF$

2.5 PSF



APPLY AS JOINT LOAD @ EACH VERT CABLE SUPT IN SAP

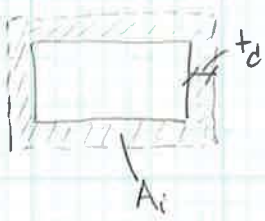
24"x36" BOX BEAM

$t_d = 2.07"$

$D_c = \sqrt{24"^2 + 36"^2} = 43.3"$ (ASCE 7 FIG 10-1)

$A_i = \pi t_d (D_c + t_d) = 295.1\ IN^2 = 2.05\ FT^2$ $\quad 1.85\ FT^2$

$\omega_i = A_i \times 56\ PCF =$ **115 PLF** $\quad 104\ PLF$



APPLY AS DISTRIBUTED FRAME LOAD @ BOX BEAM IN SAP

Design Sheet

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Structural + Civil Engineers

PROJECT			SHEET
LOCATION	CLIENT	DATE	BY

STONE-CLAD COLUMN

$t_d = 2.07"$

$D_c = 10.167'$ (ASCE7 FIG10-1)

$A_i = \pi t_d (D_c + t_d) = 807\ IN^2 = 5.6\ FT^2$

$w_i = A_i \times 56\ PCF = 314\ PLF$

APPLY AS DISTRIBUTED FRAME LOAD @ COLUMNS IN SAP

TAPESTRY

$t_d = 2.07"$

$V_i = \pi t_d A_s = \pi t_d \times 0.8 \times 12" \times 12" = 0.44\ FT^3$

↑ MULTIPLY BY 0.8 FOR VERTICAL FLAT SURFACE

$W_i = V_i \times 56\ PSF = 24.26\ PSF$

* REDUCE ICE LOAD ON TAPESTRY BASED ON RWDI EMAIL DATED 7/12/12

OVER TOP HALF OF TAPESTRY → $W_i = 0.7 \times 24.28\ PSF = 17.0\ PSF$

" BOTTOM " " → $W_i = 24.28\ PSF$

AVERAGE ICE WEIGHT = 20.64 PSF

APPLY AS JOINT LOAD @ EACH VERT CABLE SUPT IN SAP

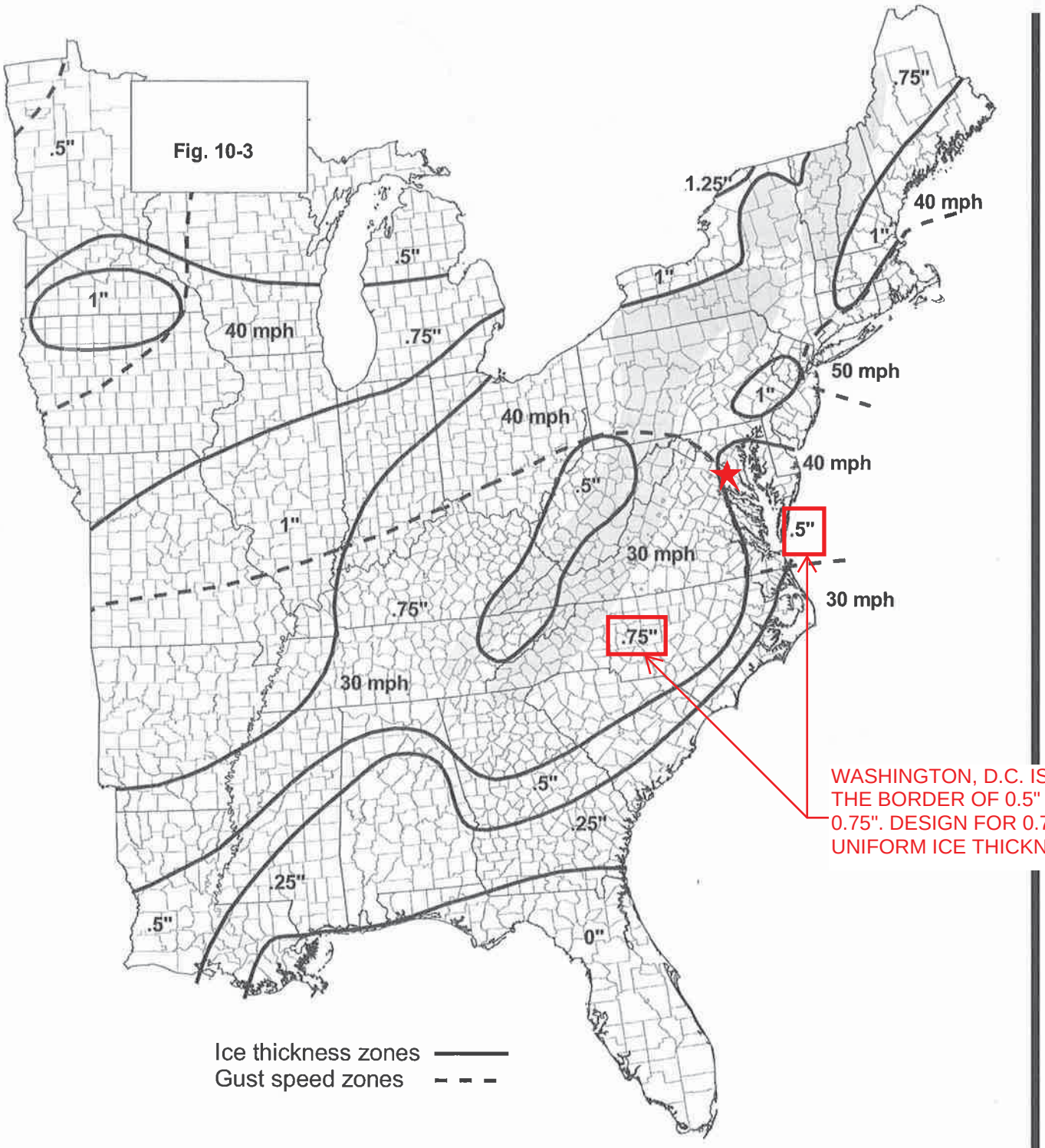
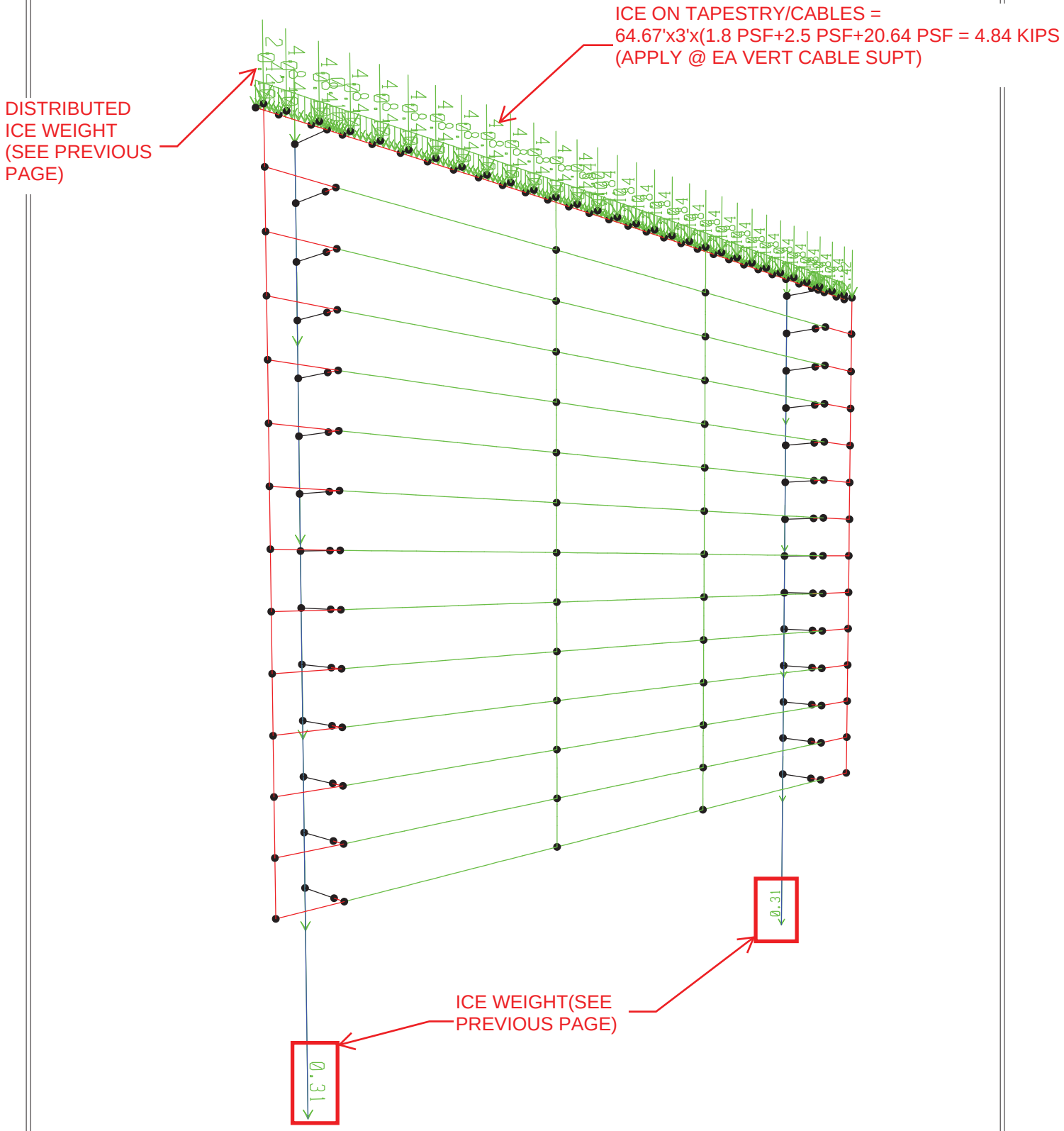
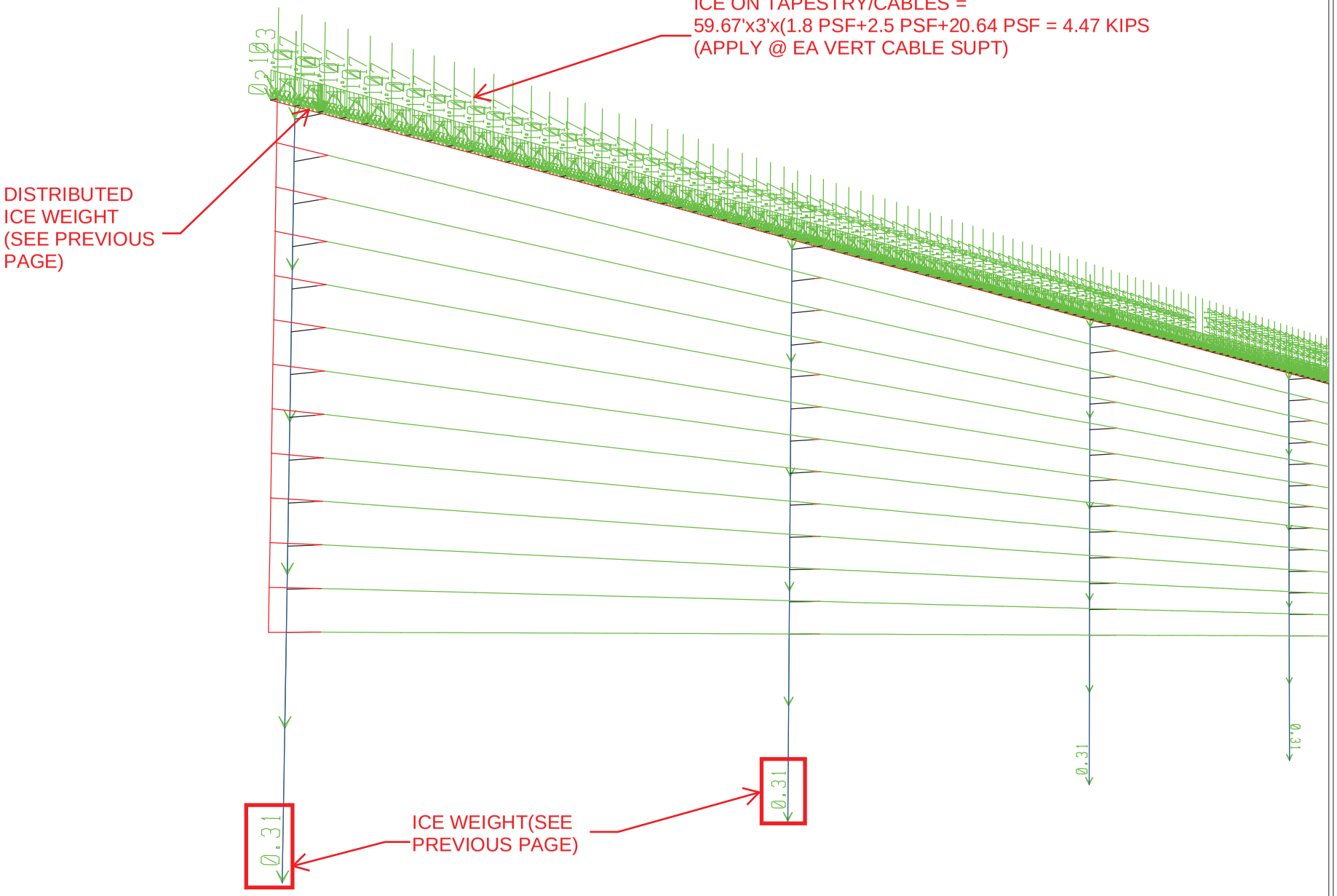


FIGURE 10-2 (continued) 50-YEAR MEAN RECURRENCE INTERVAL UNIFORM ICE THICKNESSES DUE TO FREEZING RAIN WITH CONCURRENT 3-SECOND GUST SPEEDS: CONTIGUOUS 48 STATES.

WASHINGTON, D.C. IS ON THE BORDER OF 0.5" AND 0.75". DESIGN FOR 0.75" UNIFORM ICE THICKNESS

**AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 7-05. "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."


ICE ON TAPESTRY/CABLES =
64.67'x3'x(1.8 PSF+2.5 PSF+20.64 PSF = 4.84 KIPS
(APPLY @ EA VERT CABLE SUPT)
DISTRIBUTED
ICE WEIGHT
(SEE PREVIOUS
PAGE)
0.31
ICE WEIGHT(SEE
PREVIOUS PAGE)
0.31


ICE ON TAPESTRY/CABLES =
59.67'x3'x(1.8 PSF+2.5 PSF+20.64 PSF = 4.47 KIPS
(APPLY @ EA VERT CABLE SUPT)
DISTRIBUTED
ICE WEIGHT
(SEE PREVIOUS
PAGE)
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0.31
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3.3.3 THERMAL LOADS

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TAPESTRY ANALYSIS MODELS -THERMAL LOADS

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APPENDIX A—Temperatures used for calculation of ΔT (after National Academy of Sciences 1974)

The method proposed by the National Academy of Sciences (1974) for expansion joint spacing in single and multistory construction requires location-specific information. Values of T_m, T_w, and T_c for selected locations throughout the United States are given below. This information is taken from the SCSE report (National Academy of Sciences 1974) and was derived from data now available in ASHRAE (1981).

T_m = temperature during the normal construction season in the locality of the building, assumed to be the continuous period in a year during which the minimum daily temperature equals or exceeds 32 F (0 C)

T_w = temperature exceeded, on average, only 1 percent of the time during the summer months of June through September

T_c = temperature equaled or exceeded, on average, 99 percent of the time during the winter months of December, January, and February

Location	T_w	T_m	T_c
Alabama			
Birmingham	97	63	19
Huntsville	97	61	13
Mobile	96	68	2
Montgomery	98	66	22
Alaska			
Anchorage	73	51	–25
Barrow	58	38	–45
Fairbanks	82	50	–53
Juneau	75	48	–7
Nome	66	45	–32
Arizona			
Flagstaff	84	58	0
Phoenix	108	70	31
Prescott	96	64	15
Tucson	105	67	29
Winslow	97	67	9
Yuma	111	72	37
Arkansas			
Ft. Smith	101	65	15
Little Rock	99	65	19
Texarkana	99	65	22
California			
Bakersfield	103	65	31
Burbank	97	64	36
Eureka/Arcata	67	52	32
Fresno	101	63	28
Long Beach	87	63	41
Los Angeles	94	62	41
Oakland	85	57	35
Sacramento	100	60	30
San Diego	86	62	42
San Francisco	83	56	35
Santa Maria	85	57	3
Colorado			
Alamosa	84	60	–17
Colorado Springs	90	61	–1
Denver	92	62	–2

Location	T_w	T_m	T_c
Grand Junction	96	64	–5
Pueblo	96	64	–5
Connecticut			
Bridgeport	90	60	4
Hartford	90	61	1
New Haven	88	59	5
Delaware			
Wilmington	93	62	12
Florida			
Daytona Beach	94	70	3
Ft. Myers	94	74	38
Jacksonville	96	68	29
Key West	90	77	55
Lakeland	95	72	35
Miami	92	75	44
Miami Beach	91	75	45
Orlando	96	72	33
Pensacola	92	68	29
Tallahassee	96	68	25
Tampa	92	72	36
West Palm Beach	92	75	40
Georgia			
Athens	96	61	17
Atlanta	95	62	18
Augusta	98	64	20
Columbus	98	65	23
Macon	98	65	23
Rome	97	62	16
Savannah/Travis	96	67	24
Hawaii			
Hilo	85	73	59
Honolulu	87	76	60
Idaho			
Boise	96	61	4
Idaho Falls	91	61	–12
Lewiston	98	60	6
Pocatello	94	60	–8
Illinois			
Chicago	95	60	–3
Moline	94	63	–7
Peoria	94	61	–2
Rockford	92	62	–7
Springfield	95	62	–1
Indiana			
Evansville	96	65	6
Fort Wayne	93	62	0
Indianapolis	93	63	0
South Bend	92	61	–2

Location	T_w	T_m	T_c
Iowa			
Burlington	95	64	–4
Des Moines	95	64	–7
Dubuque	62	63	–11
Sioux City	96	64	–10
Waterloo	91	63	–12
Kansas			
Dodge City	99	64	3
Goodland	99	65	–2
Topeka	99	69	3
Wichita	102	68	5
Kentucky			
Covington	93	63	3
Lexington	94	63	6
Louisville	96	64	8
Louisiana			
Baton Rouge	96	68	25
Lake Charles	95	68	29
New Orleans	93	69	32
Shreveport	99	66	22
Maine			
Caribou	85	56	–18
Portland	88	58	–5
Maryland			
Baltimore	94	63	12
Frederick	94	63	7
Massachusetts			
Boston	91	58	6
Pittsfield	86	58	–5
Worcester	89	58	–3
Michigan			
Alpena	87	57	–5
Detroit-Metro	92	58	4
Escanaba	82	55	–7
Flint	89	60	–1
Grand Rapids	91	62	2
Lansing	89	59	2
Marquette	88	55	–8
Muskegon	87	59	4
Sault Ste. Marie	83	55	–12
Minnesota			
Duluth	85	55	–19
International Falls	86	57	–29
Minneapolis/St. Paul	92	62	–14
Rochester	90	60	–17
St. Cloud	90	60	–20

Location	T_w	T_m	T_c
Mississippi			
Jackson	98	66	21
Meridian	97	65	20
Vicksburg	97	66	23
Missouri			
Columbia	97	65	2
Kansas City	100	65	4
St. Joseph	97	66	–1
St. Louis	98	65	4
Springfield	97	64	5
Montana			
Billings	94	60	–10
Glasgow	96	60	–25
Great Falls	91	58	–20
Havre	91	58	–22
Helena	90	58	–17
Kalispell	88	56	–7
Miles City	97	62	–19
Missoula	92	58	–7
Nebraska			
Grand Island	98	65	–6
Lincoln	100	64	–4
Norfolk	97	64	–11
North Platte	97	64	–6
Omaha	97	64	–5
Scottsbluff	96	62	–8
Nevada			
Elko	94	61	–13
Ely	90	59	–6
Las Vegas	108	66	23
Reno	95	62	2
Winnemucca	97	63	1
New Hampshire			
Concord	91	60	–11
New Jersey			
Atlantic City	91	61	14
Newark	94	62	11
Trenton	92	61	12
New Mexico			
Albuquerque	96	64	14
Raton	92	64	–2
Roswell	101	70	16
New York			
Albany	91	61	–5
Binghampton	91	67	–2
Buffalo	88	59	3
New York	94	59	11
Rochester	91	59	2
Syracuse	90	59	–2

Location	T_w	T_m	T_c
North Carolina			
Asheville	91	60	13
Charlotte	96	60	18
Greensboro	94	64	14
Raleigh/Durham	95	62	16
Wilmington	93	63	23
Winston/Salem	94	63	14
North Dakota			
Bismarck	95	60	–24
Devils Lake	93	58	–23
Fargo	92	59	–22
Minot	91	—	–24
Williston	94	59	–21
Ohio			
Akron/Canton	89	60	1
Cincinnati	94	62	8
Cleveland	91	61	2
Columbus	92	61	2
Dayton	92	61	0
Mansfield	91	61	1
Sandusky	92	60	4
Toledo	92	61	1
Youngstown	89	59	1
Oklahoma			
Oklahoma City	100	64	11
Tulsa	102	65	12
Oregon			
Astoria	79	50	27
Eugene	91	52	22
Medford	98	56	21
Pendleton	97	58	3
Portland	91	52	21
Roseburg	93	54	25
Salem	92	52	21
Pennsylvania			
Allentown	92	61	3
Erie	88	59	7
Harrisburg	92	61	9
Philadelphia	93	63	11
Pittsburgh	90	63	5
Reading/Scranton Wilkes-Barre	89	61	2
Williamsport	91	61	1
Rhode Island			
Providence	89	60	6
South Carolina			
Charleston	95	66	23
Columbia	98	64	20

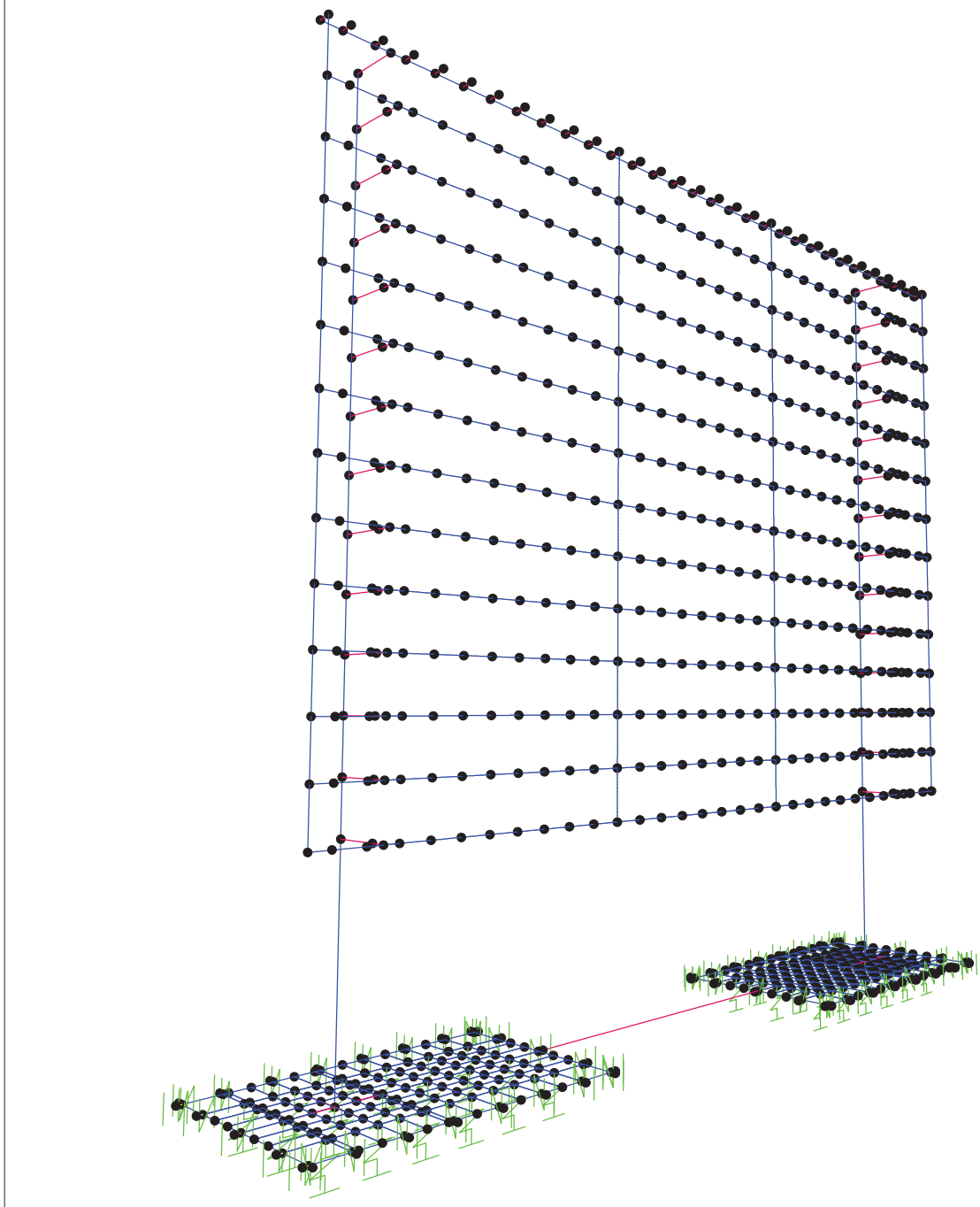
Location	T_w	T_m	T_c
Florence	96	64	21
Greenville	95	61	19
Spartanburg	95	60	18
South Dakota			
Huron	97	62	–16
Rapid City	96	61	–9
Sioux Falls	95	62	–14
Tennessee			
Bristol/Tri City	92	63	11
Chattanooga	97	60	15
Knoxville	95	60	13
Memphis	98	62	17
Nashville	97	62	12
Texas			
Abilene	101	65	17
Amarillo	98	66	8
Austin	101	68	25
Brownsville	94	74	36
Corpus Christi	95	71	32
Dallas	101	66	19
El Paso	100	65	21
Fort Worth	102	66	20
Galveston	91	70	32
Houston	96	68	28
Loredo AFB	103	74	32
Lubbock	99	67	11
Midland	100	66	19
Port Arthur	94	69	29
San Angelo	101	65	20
San Antonio	99	69	25
Victoria	98	71	28
Waco	101	67	21
Wichita Falls	103	66	15

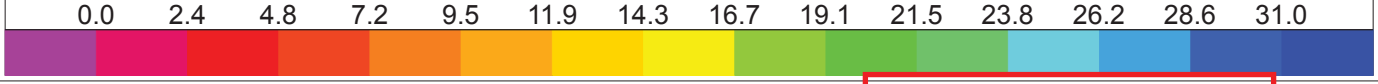
Location	T_w	T_m	T_c
Utah			
Salt Lake City	97	63	5
Vermont			
Burlington	88	57	–12
Virginia			
Lynchburg	94	62	15
Norfolk	94	60	20
Richmond	94	64	14
Roanoke	94	63	15
Washington, D.C.			
National Airport	94	63	16
Washington			
Charleston	92	63	9
Huntington	95	63	10
Parkersberg	93	62	8
Wisconsin			
Green Bay	88	59	–12
La Crosse	90	62	–12
Madison	92	61	–9
Milwaukee	90	60	–6
Wyoming			
Casper	92	59	–11
Cheyenne	89	58	–6
Lander	92	58	–16
Sheridan	95	59	–12

ACI 224.3R-95 was submitted to letter ballot of the committee and approved in accordance with ACI balloting procedures.

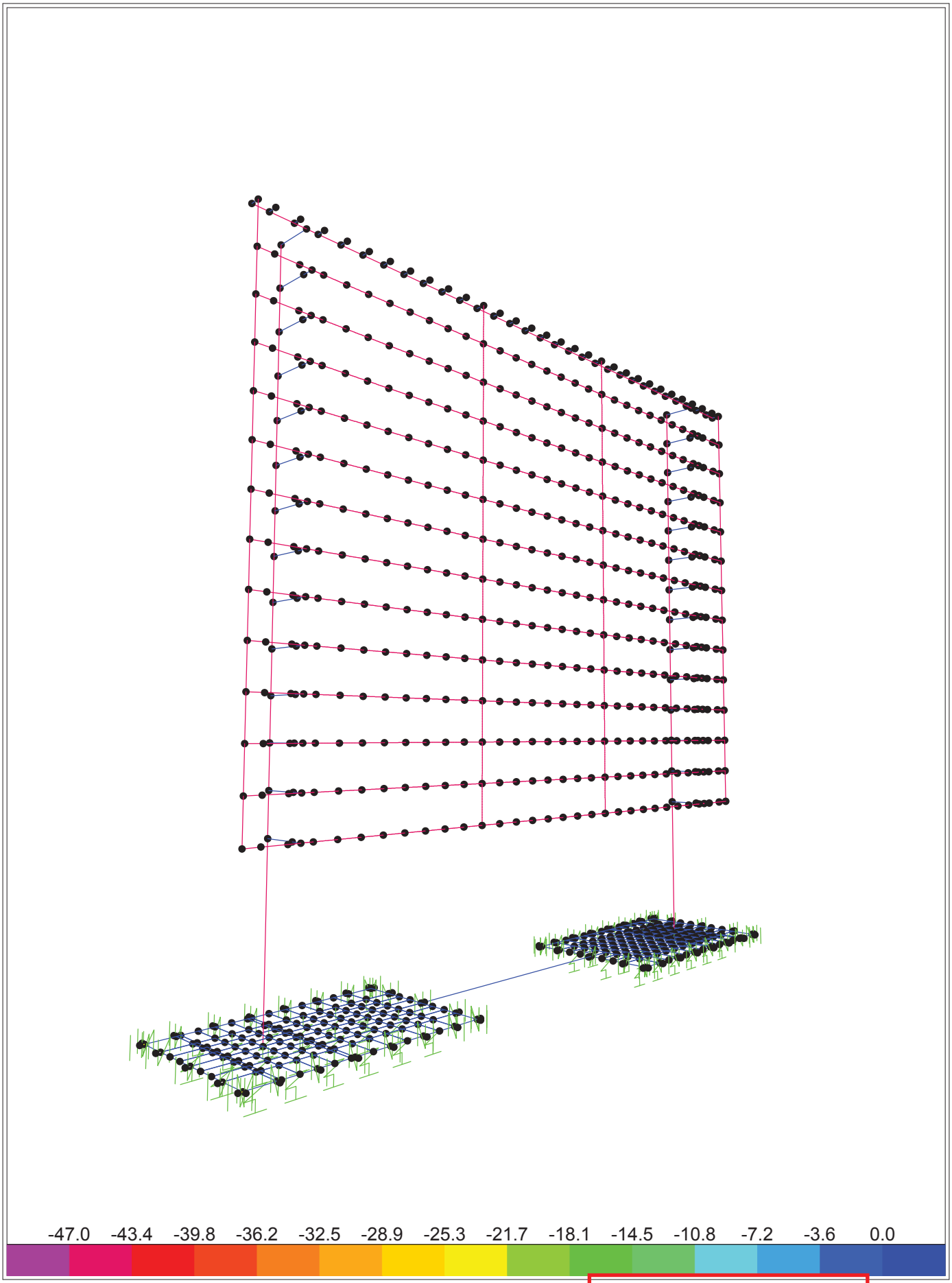
→ TEMPERATURE RISE = 94°F - 63°F = +31°F
TEMPERATURE FALL = 63°F - 16°F = -47°F

**AMERICAN CONCRETE INSTITUTE (ACI) 224.3R-95. "JOINTS IN CONCRETE CONSTRUCTION."

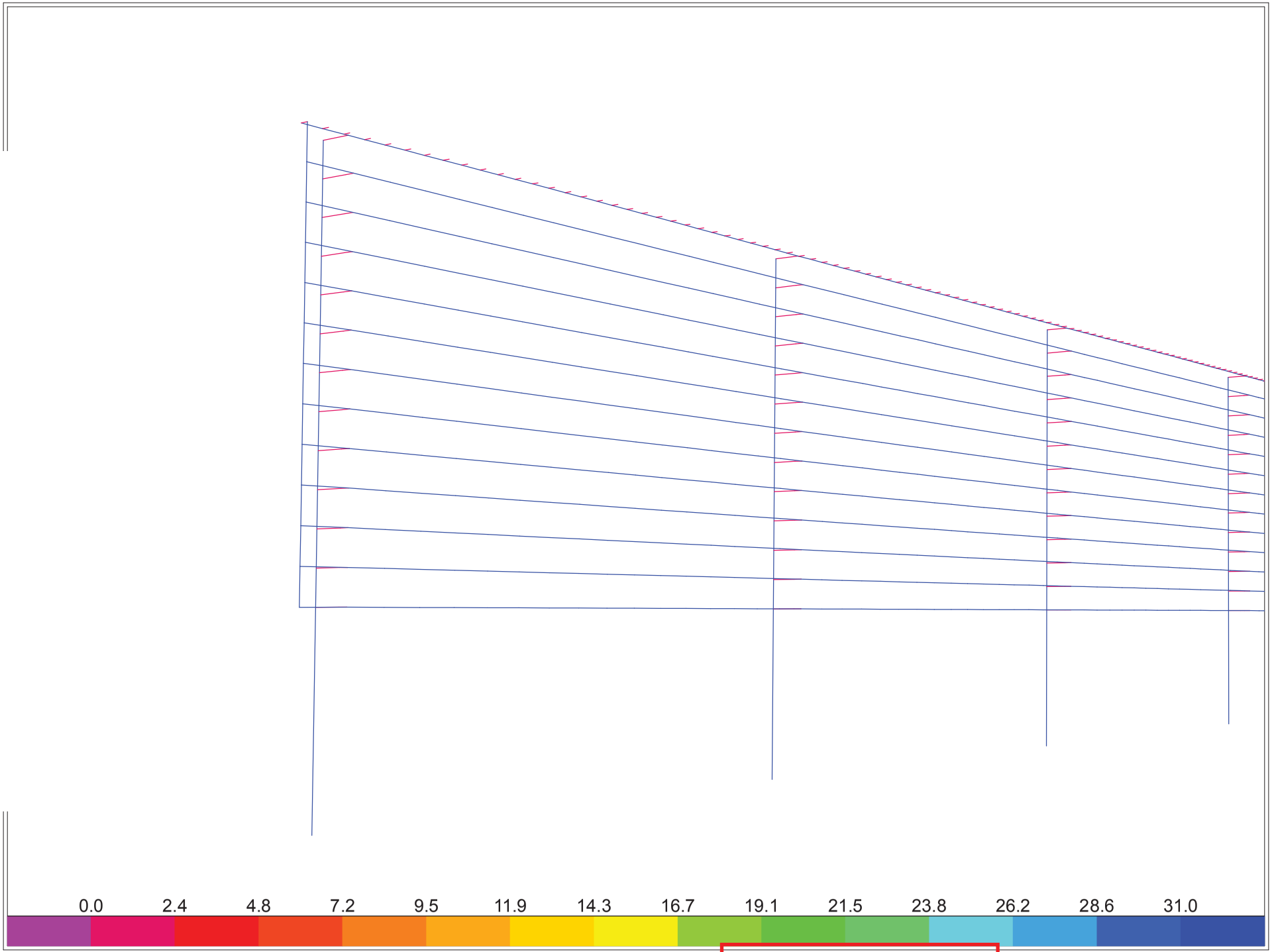




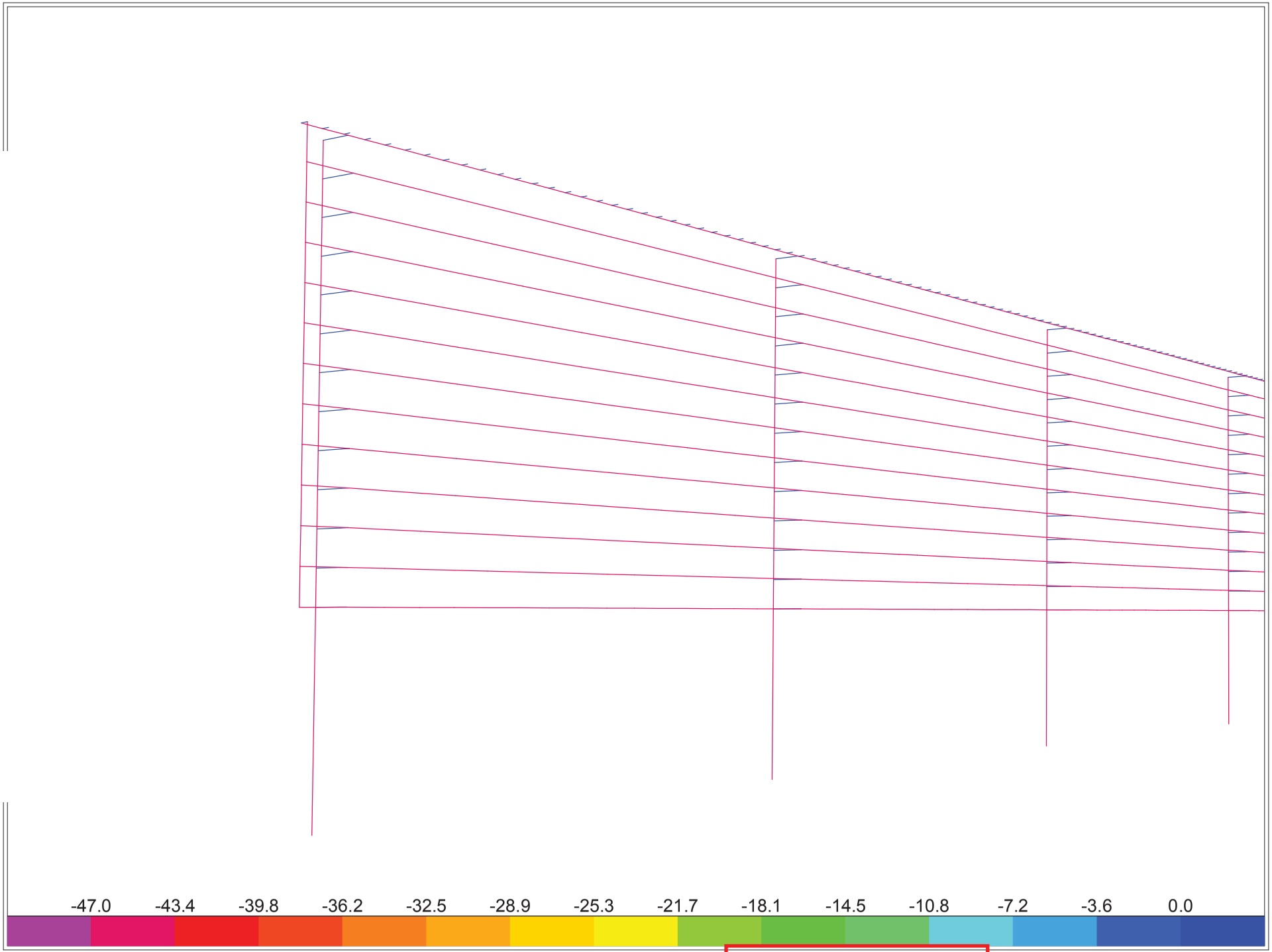
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SAP2000 v15.1.0 - File:12_08_26_South Tapestry_staged_no verts - Frame Temperatures (THERMALmin) - Kip, ft, F Units

3.3.4 SEISMIC LOADS

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Design Sheet

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

TAPESTRY ANALYSIS MODELS
-SEISMIC LOADS

LOCATION CLIENT SHEET

DATE 2/6/12 BY BHK

TAPESTRY SEISMIC LOADS

* DETERMINE SEISMIC LOADS PER ASCE7-05 CH 15
* TREAT AS A "NONBUILDING STRUCTURE NOT SIMILAR TO BUILDINGS"
* PER TABLE 15.4-2, FOR "SIGNS AND BILLBOARDS": $R = 3.5$
  $\Omega_o = 1.75$
  $C_d = 3$

OCCUPANCY CATEGORY: II $\rightarrow I = 1.0$

$S_s = 0.153$, $S_1 = 0.050$

$S_{DS} = 0.163$, $S_{D1} = 0.080$

$$C_s = \frac{S_{DS}}{(R/I)} = 0.044 \qquad (12.8\text{-}2)$$

$$C_{s,min} = 0.044 S_{DS} I = 0.007 \qquad (15.4\text{-}1)$$

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3.3.5 WIND LOADS

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Preliminary Results - Structural Wind Loads, 50-Year Basic Wind Speed = 90 mph, Importance Factor Iw = 1.15
Dwight D. Eisenhower Memorial (RWDI Project #1011813)
3/2/2012

Notes:

1) The structural wind loads DO NOT contain load or safety factors and are to be applied to the structural systems in the same manner as would wind loads calculated by code analytical methods.
2) The wind pressures provided for each load case are to be applied to all surfaces simultaneously.
3) The wind pressures provided are to be applied normal to the front surface of each tapestry. These pressures act in the Y direction (Py); positive pressures are defined to act inwards towards the front surface, and negative pressures act outwards.
4) For each load case, the magnitude of the forces in the Y and X directions should be determined using the equations in Table 2, with positive directions defined in Figure 2. These forces should be used with the load combinations given in Table 3.
5) The provided loads are net pressures, which consider the instantaneous pressure difference across the tapestries.
6) The tributary areas associated with each pressure zone is shown in Figure 1.
7) Forces derived from the use of Table 2, are based on the solid area in each pressure zone (Figure 1). The pressures provided are approximately based on solidity ratios as depicted in Figure 1. RWDI should be contacted to review the impact on these recommendations if significant revision of the solidity ratios occur.

Table 1: Recommended Wind Pressures

Tapestry Location (see Figure 1)	A		B		C		D		E		F		G	
Load Case Number	LC1a	LC1b	LC2a	LC2b	LC3a	LC3b	LC4a	LC4b	LC5a	LC5b	LC6a	LC6b	LC7a	LC7b
Pressure Zone (see Figure 1)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)
A1	**34**	**-16**	--	--	--	--	--	--	--	--	--	--	--	--
A2	**30**	**-16**	--	--	--	--	--	--	--	--	--	--	--	--
A3	**24**	**-12**	--	--	--	--	--	--	--	--	--	--	--	--
B1	--	--	**18**	**-10**	10	-6	10	-6	10	-6	10	-2	--	--
B2	--	--	**16**	**-10**	8	-4	8	-4	8	-6	8	-2	--	--
B3	--	--	**12**	**-10**	6	-4	6	-4	6	-4	6	-2	--	--
C1	--	--	8	-4	**16**	**-10**	12	-6	12	-6	12	-4	--	--
C2	--	--	6	-6	**14**	**-10**	10	-6	10	-6	10	-4	--	--
C3	--	--	6	-6	**10**	**-10**	8	-4	8	-6	8	-2	--	--
D1	--	--	4	-4	10	-4	**12**	**-10**	10	-4	10	-4	--	--
D2	--	--	6	-6	10	-4	**12**	**-10**	10	-6	10	-4	--	--
D3	--	--	6	-6	6	-4	**10**	**-10**	6	-6	6	-4	--	--
E1	--	--	6	-6	10	-4	10	-4	**12**	**-10**	10	-4	--	--
E2	--	--	4	-6	8	-4	8	-4	**10**	**-10**	8	-4	--	--
E3	--	--	6	-10	6	-2	6	-2	**10**	**-12**	6	-4	--	--
F1	--	--	6	-8	10	-4	10	-4	10	-8	**10**	**-10**	--	--
F2	--	--	4	-8	8	-2	8	-2	8	-8	**10**	**-10**	--	--
F3	--	--	6	-10	8	-2	8	-2	8	-10	**10**	**-10**	--	--
G1	--	--	--	--	--	--	--	--	--	--	--	--	**24**	**-28**
G2	--	--	--	--	--	--	--	--	--	--	--	--	**22**	**-24**
G3	--	--	--	--	--	--	--	--	--	--	--	--	**16**	**-22**

Table 2: Determination of Forces from Pressures (Py) in Table 1

Pressure Zone (see Figure 1)	Magnitude of Forces in Y and X directions	
	Fy =	Fx =
A1	Py · Solid AreaA1	1.0 · Fy
A2	Py · Solid AreaA2	1.0 · Fy
A3	Py · Solid AreaA3	1.0 · Fy
B1	Py · Solid AreaB1	0.5 · Fy
B2	Py · Solid AreaB2	0.5 · Fy
B3	Py · Solid AreaB3	0.5 · Fy
C1	Py · Solid AreaC1	0.75 · Fy
C2	Py · Solid AreaC2	0.75 · Fy
C3	Py · Solid AreaC3	0.75 · Fy
D1	Py · Solid AreaD1	0.75 · Fy
D2	Py · Solid AreaD2	0.75 · Fy
D3	Py · Solid AreaD3	0.75 · Fy
E1	Py · Solid AreaE1	0.75 · Fy
E2	Py · Solid AreaE2	0.75 · Fy
E3	Py · Solid AreaE3	0.75 · Fy
F1	Py · Solid AreaF1	0.75 · Fy
F2	Py · Solid AreaF2	0.75 · Fy
F3	Py · Solid AreaF3	0.75 · Fy
G1	Py · Solid AreaG1	0.5 · Fy
G2	Py · Solid AreaG2	0.5 · Fy
G3	Py · Solid AreaG3	0.5 · Fy

Table 3: Recommended Wind Load Combination Factors

Combination Case	Factor for Simultaneous Application of Loads from Table 2	
	Y Forces (Fy - see Figure 2)	X Forces (Fx - see Figure 2)
1	100%	0%
2	50%	100%
3	-50%	100%

TAPESTRY ANALYSIS MODELS -*WIND LOADS*

Preliminary Results - Structural Wind Loads to be Combination with Ice Load, 50-Year Basic Wind Speed = 75 mph, Importance Factor Iw = 1.0

Dwight D. Eisenhower Memorial (RWDI Project #1011813)

3/30/2012

Notes:

1) The structural wind loads DO NOT contain load or safety factors and are to be applied to the structural systems in the same manner as would wind loads calculated by code analytical methods.
2) The wind pressures provided for each load case are to be applied to all surfaces simultaneously.
3) The wind pressures provided are to be applied normal to the front surface of each tapestry. These pressures act in the Y direction (Py); positive pressures are defined to act inwards towards the front surface, and negative pressures act outwards.
4) For each load case, the magnitude of the forces in the Y and X directions should be determined using the equations in Table 2, with positive directions defined in Figure 2. These forces should be used with the load combinations given in Table 3.
5) The provided loads are net pressures, which consider the instantaneous pressure difference across the tapestries.
6) For the wind loading on the columns, use the same pressure that is given for the adjacent tapestry. This pressure should be applied to the frontal area of the column in the appropriate direction.
7) The tributary areas associated with each pressure zone is shown in Figure 1.
8) Forces derived from the use of Table 2 are based on the solid area, including ice coverage, in each pressure zone (Figure 1). The pressures provided are approximately based on solidity ratios as depicted in Figure 1. RWDI should be contacted to review the impact on these recommendations if significant revision of the solidity ratios occur.

Table 1b: Recommended Wind Pressures to be Combined with Ice Load

Tapestry Location (see Figure 1)	A		B		C		D		E		F		G	
Load Case Number	LC1a	LC1b	LC2a	LC2b	LC3a	LC3b	LC4a	LC4b	LC5a	LC5b	LC6a	LC6b	LC7a	LC7b
Pressure Zone (see Figure 1)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)	Pos. Wind Pressures (psf)	Neg. Wind Pressures (psf)
A1	**21**	**-9**	--	--	--	--	--	--	--	--	--	--	--	--
A2	**18**	**-8**	--	--	--	--	--	--	--	--	--	--	--	--
A3	**17**	**-7**	--	--	--	--	--	--	--	--	--	--	--	--
B1	--	--	**11**	**-6**	6	-4	6	-4	6	-4	6	-1	--	--
B2	--	--	**10**	**-6**	7	-4	7	-4	7	-4	7	-1	--	--
B3	--	--	**11**	**-6**	7	-4	7	-4	7	-5	7	-1	--	--
C1	--	--	6	-3	**10**	**-6**	8	-4	8	-4	8	-2	--	--
C2	--	--	6	-4	**10**	**-6**	8	-4	8	-4	8	-2	--	--
C3	--	--	7	-5	**11**	**-6**	9	-5	9	-5	9	-2	--	--
D1	--	--	3	-3	7	-3	**8**	**-6**	7	-3	7	-2	--	--
D2	--	--	5	-4	8	-3	**9**	**-6**	8	-4	8	-2	--	--
D3	--	--	6	-5	9	-4	**11**	**-6**	9	-5	9	-2	--	--
E1	--	--	4	-3	7	-3	7	-3	**8**	**-6**	7	-2	--	--
E2	--	--	4	-3	7	-2	7	-2	**8**	**-6**	7	-2	--	--
E3	--	--	5	-4	8	-2	8	-2	**9**	**-6**	8	-2	--	--
F1	--	--	4	-5	7	-3	7	-3	7	-5	**7**	**-6**	--	--
F2	--	--	4	-5	7	-2	7	-2	7	-5	**8**	**-6**	--	--
F3	--	--	5	-6	8	-2	8	-2	8	-6	**11**	**-7**	--	--
G1	--	--	--	--	--	--	--	--	--	--	--	--	**15**	**-16**
G2	--	--	--	--	--	--	--	--	--	--	--	--	**13**	**-13**
G3	--	--	--	--	--	--	--	--	--	--	--	--	**12**	**-12**

Table 2: Determination of Forces from Pressures (Py) in Tables 1a and 1b

Pressure Zone (see Figure 1)	Magnitude of Forces in Y and X directions	
	Fy =	Fx =
A1	Py · Solid AreaA1	1.0 · Fy
A2	Py · Solid AreaA2	1.0 · Fy
A3	Py · Solid AreaA3	1.0 · Fy
B1	Py · Solid AreaB1	0.5 · Fy
B2	Py · Solid AreaB2	0.5 · Fy
B3	Py · Solid AreaB3	0.5 · Fy
C1	Py · Solid AreaC1	0.75 · Fy
C2	Py · Solid AreaC2	0.75 · Fy
C3	Py · Solid AreaC3	0.75 · Fy
D1	Py · Solid AreaD1	0.75 · Fy
D2	Py · Solid AreaD2	0.75 · Fy
D3	Py · Solid AreaD3	0.75 · Fy
E1	Py · Solid AreaE1	0.75 · Fy
E2	Py · Solid AreaE2	0.75 · Fy
E3	Py · Solid AreaE3	0.75 · Fy
F1	Py · Solid AreaF1	0.75 · Fy
F2	Py · Solid AreaF2	0.75 · Fy
F3	Py · Solid AreaF3	0.75 · Fy
G1	Py · Solid AreaG1	0.5 · Fy
G2	Py · Solid AreaG2	0.5 · Fy
G3	Py · Solid AreaG3	0.5 · Fy

Table 3: Recommended Wind Load Combination Factors

Combination Case	Factor for Simultaneous Application of Loads from Table 2	
	Y Forces (Fy - see Figure 2)	X Forces (Fx - see Figure 2)
1	100%	0%
2	50%	100%
3	-50%	100%

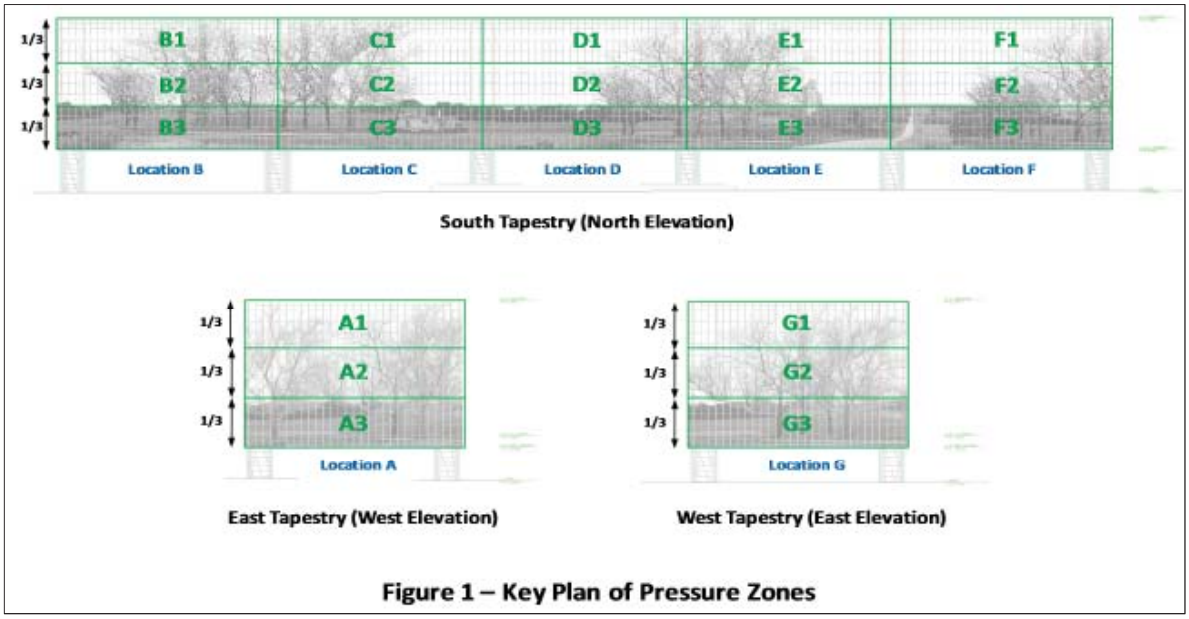


Figure 1 – Key Plan of Pressure Zones

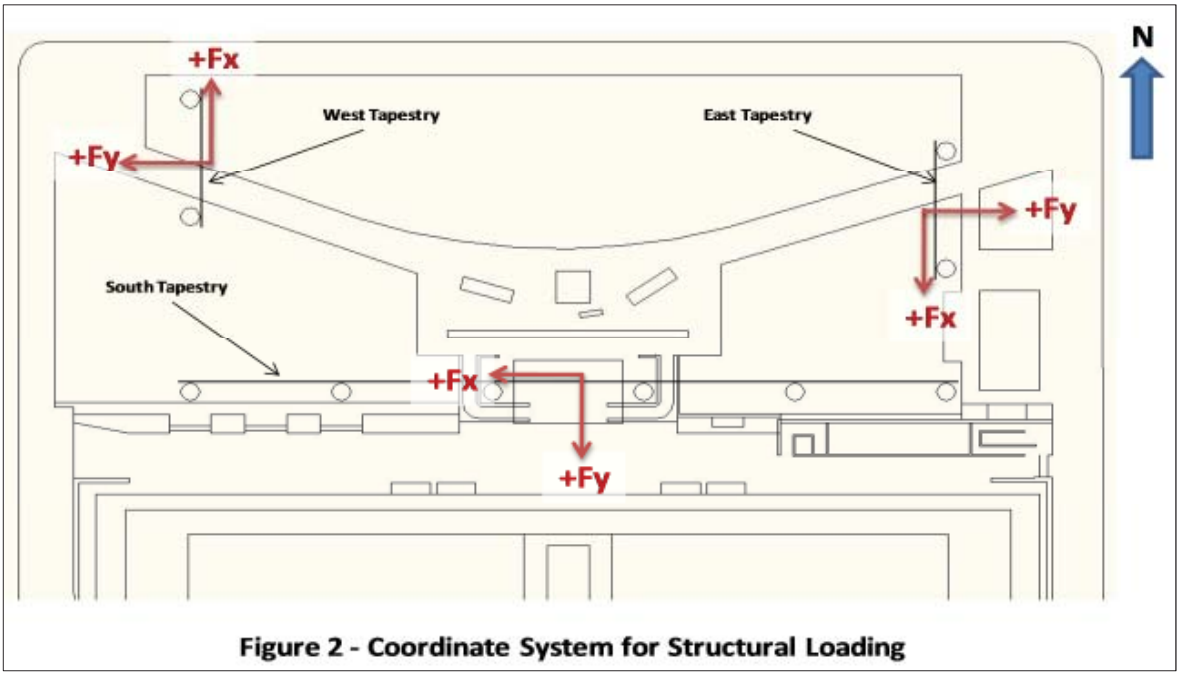


Figure 2 - Coordinate System for Structural Loading

EISENHOWER MEMORIAL WIND LOAD SUMMARY - EAST TAPESTRY

MKA, 3/22/2012

NOTES: 1. EFFECTIVE PRESSURE IS EQUAL TO THE SOLIDITY MULTIPLIED BY THE WIND PRESSURE.
THIS VALUE IS MULTIPLIED BY THE GROSS TAPESTRY AREA TO DETERMINE TOTAL WIND WIND LOAD ON THE TAPESTRY
2. "Py" IS THE WIND PRESSURE PERPENDICULAR TO THE TAPESTRY. "Px" IS THE WIND PRESSURE PARALLEL TO THE TAPESTRY
3. LOAD CASE LC1B DOES NOT CONTROL DESIGN.
4. LOAD COMBINATION 3 DOES NOT CONTROL DESIGN.

LOAD CASE	ZONE	SOLIDITY* (%)	PRESSURE** (PSF)	EFFECTIVE PRESSURE (PSF)	Py (PSF)	Px FACTOR**	Px (PSF)
LC	A1	20	34	6.8	6.8	1.0	6.8
	A2	50	30	15.0	15.0	1.0	15.0
	A3	95	24	22.8	22.8	1.0	22.8

* SOLIDITY VALUES PER GEHRY PARTNERS "ARTWORK COVERAGE ON TAPESTRY" (3/15/12)

** WIND PRESSURES AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS" (3/2/12)

		LOAD COMBINATION 1				LOAD COMBINATION 2			
LOAD CASE	ZONE	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)
LC1	A1	1.0	6.8	0.0	0	0.5	3.4	1.0	6.8
	A2	1.0	15.0	0.0	0	0.5	7.5	1.0	15.0
	A3	1.0	22.8	0.0	0	0.5	11.4	1.0	22.8

*Py AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS" (3/2/12)

EISENHOWER MEMORIAL WIND LOAD SUMMARY - WEST TAPESTRY

MKA, 3/22/2012

NOTES: 1. EFFECTIVE PRESSURE IS EQUAL TO THE SOLIDITY MULTIPLIED BY THE WIND PRESSURE.
THIS VALUE IS MULTIPLIED BY THE GROSS TAPESTRY AREA TO DETERMINE TOTAL WIND WIND LOAD ON THE TAPESTRY
2. "Py" IS THE WIND PRESSURE PERPENDICULAR TO THE TAPESTRY. "Px" IS THE WIND PRESSURE PARALLEL TO THE TAPESTRY.
3. LOAD CASE LC7B DOES NOT CONTROL DESIGN.
4. LOAD COMBINATION 3 DOES NOT CONTROL DESIGN.

LOAD CASE	ZONE	SOLIDITY* (%)	PRESSURE** (PSF)	EFFECTIVE PRESSURE (PSF)	Py (PSF)	Px FACTOR**	Px (PSF)
LC7	G1	20	28	5.6	5.6	0.5	2.8
	G2	50	24	12.0	12.0	0.5	6.0
	G3	95	22	20.9	20.9	0.5	10.5

* SOLIDITY VALUES PER GEHRY PARTNERS "ARTWORK COVERAGE ON TAPESTRY" (3/15/12)

** WIND PRESSURES AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS" (3/2/12)

		LOAD COMBINATION 1				LOAD COMBINATION 2			
LOAD CASE	ZONE	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)
LC7	G1	1.0	5.6	0.0	0	0.5	2.8	1.0	2.8
	G2	1.0	12.0	0.0	0	0.5	6	1.0	6.0
	G3	1.0	20.9	0.0	0	0.5	10.5	1.0	10.5

*Py AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS" (3/2/12)

EISENHOWER MEMORIAL WIND LOAD ON ICE SUMMARY - EAST TAPESTRY

MKA, 4/10/2012

NOTES: 1. EFFECTIVE PRESSURE IS EQUAL TO THE SOLIDITY MULTIPLIED BY THE WIND PRESSURE.
THIS VALUE IS MULTIPLIED BY THE GROSS TAPESTRY AREA TO DETERMINE TOTAL WIND WIND LOAD ON THE TAPESTR\
2. "Py" IS THE WIND PRESSURE PERPENDICULAR TO THE TAPESTRY. "Px" IS THE WIND PRESSURE PARALLEL TO THE TAPESTRY
3. LOAD CASE LC1B DOES NOT CONTROL DESIGN.
4. LOAD COMBINATION 3 DOES NOT CONTROL DESIGN.

LOAD CASE	ZONE	SOLIDITY* (%)	PRESSURE** (PSF)	EFFECTIVE PRESSURE (PSF)	Py (PSF)	Px FACTOR**	Px (PSF)
LC1	A1	70	21	14.7	14.7	1.0	14.7
	A2 HI	70	18	12.6	12.6	1.0	12.6
	A2 LO	100	18	18.0	18.0	1.0	18.0
	A3	100	17	17.0	17.0	1.0	17.0

* UNDER ICED CONDITIONS, THE BOTTOM HALF OF TAPESTRIES IS ASSUMED TO BE 100% SOLID. THE TOP HALF IS ASSUMED TO BE 70% SOLID.

** WIND PRESSURES AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS TO BE COMBINED WITH ICE LOAD" (3/30/12)

		LOAD COMBINATION 1				LOAD COMBINATION 2			
LOAD CASE	ZONE	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)
LC1	A1	1.0	14.7	0.0	0	0.5	7.4	1.0	14.7
	A2 HI	1.0	12.6	0.0	0	0.5	6.3	1.0	12.6
	A2 LO	1.0	18.0	0.0	0	0.5	9.0	1.0	18.0
	A3	1.0	17.0	0.0	0	0.5	8.5	1.0	17.0

*Py AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS TO BE COMBINED WITH ICE LOAD" (3/30/12)

EISENHOWER MEMORIAL WIND LOAD ON ICE SUMMARY - WEST TAPESTRY

MKA, 4/10/2012

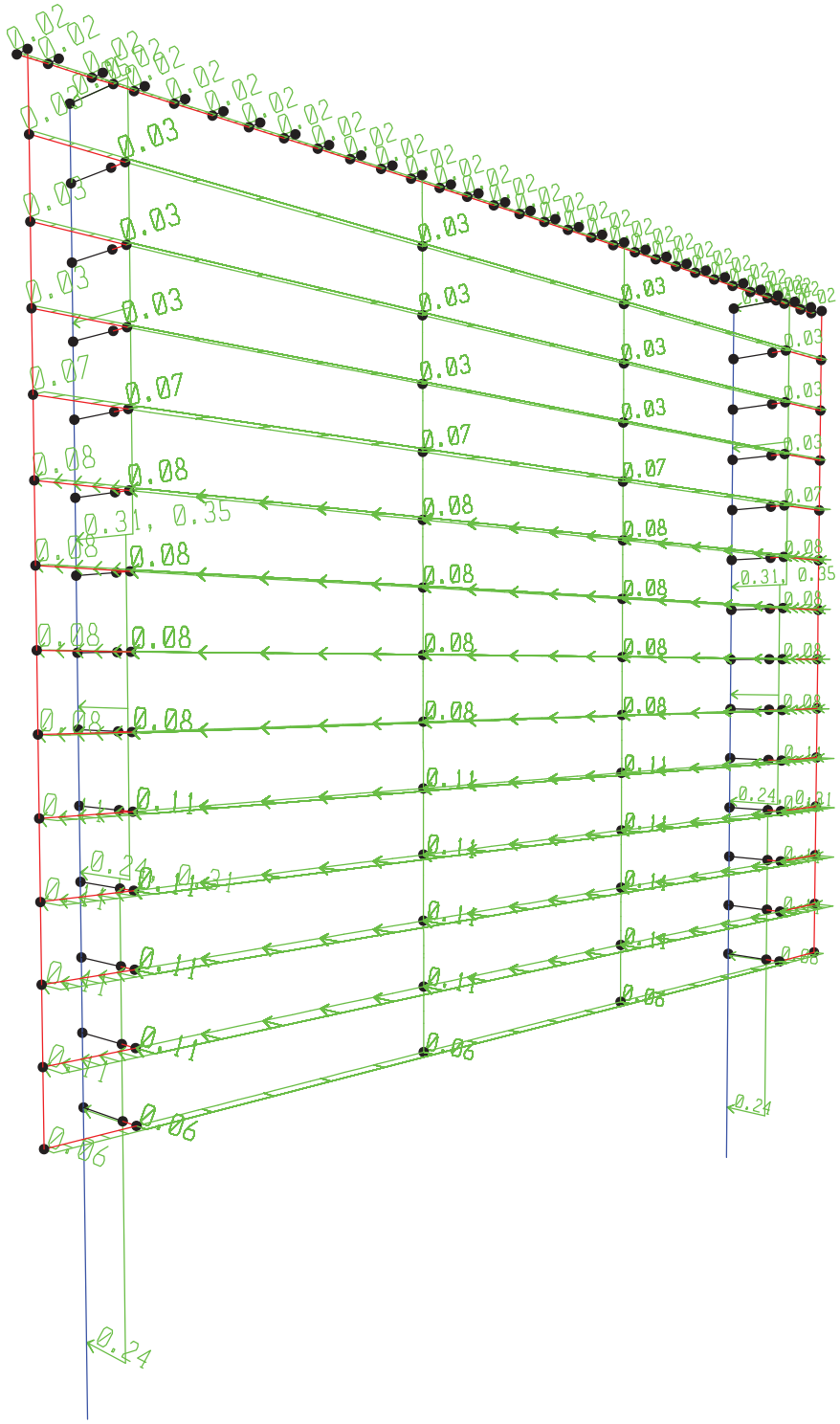
NOTES: 1. EFFECTIVE PRESSURE IS EQUAL TO THE SOLIDITY MULTIPLIED BY THE WIND PRESSURE.
THIS VALUE IS MULTIPLIED BY THE GROSS TAPESTRY AREA TO DETERMINE TOTAL WIND WIND LOAD ON THE TAPESTRY
2. "Py" IS THE WIND PRESSURE PERPENDICULAR TO THE TAPESTRY. "Px" IS THE WIND PRESSURE PARALLEL TO THE TAPESTRY.
3. LOAD CASE LC7B DOES NOT CONTROL DESIGN.
4. LOAD COMBINATION 3 DOES NOT CONTROL DESIGN.

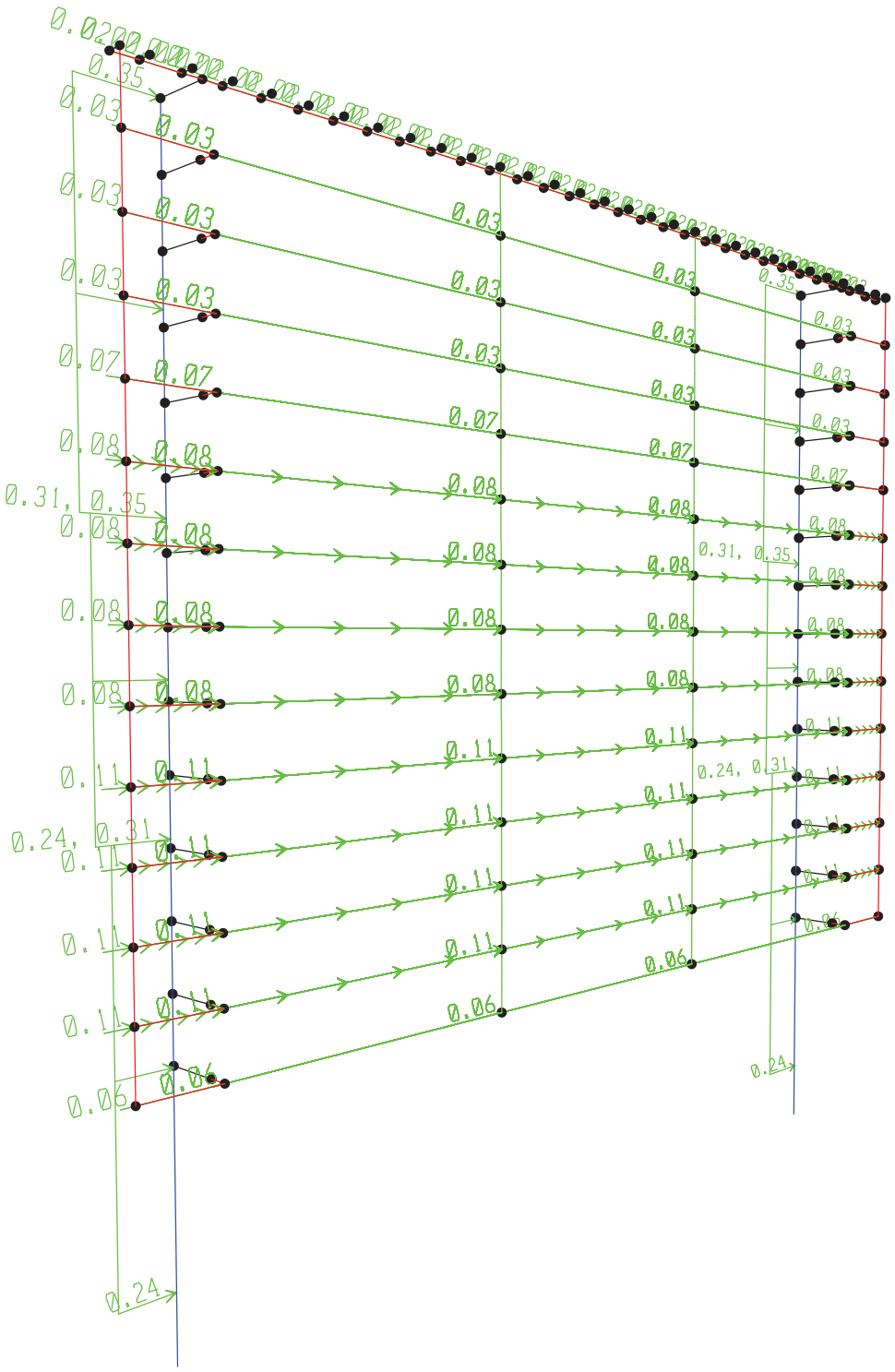
LOAD CASE	ZONE	SOLIDITY* (%)	PRESSURE** (PSF)	EFFECTIVE PRESSURE (PSF)	Py (PSF)	Px FACTOR**	Px (PSF)
LC7	G1	70	16	11.2	11.2	0.5	5.6
	G2 HI	70	13	9.1	9.1	0.5	4.6
	G2 LO	100	13	13.0	13.0	0.5	6.5
	G3	100	12	12.0	12.0	0.5	6.0

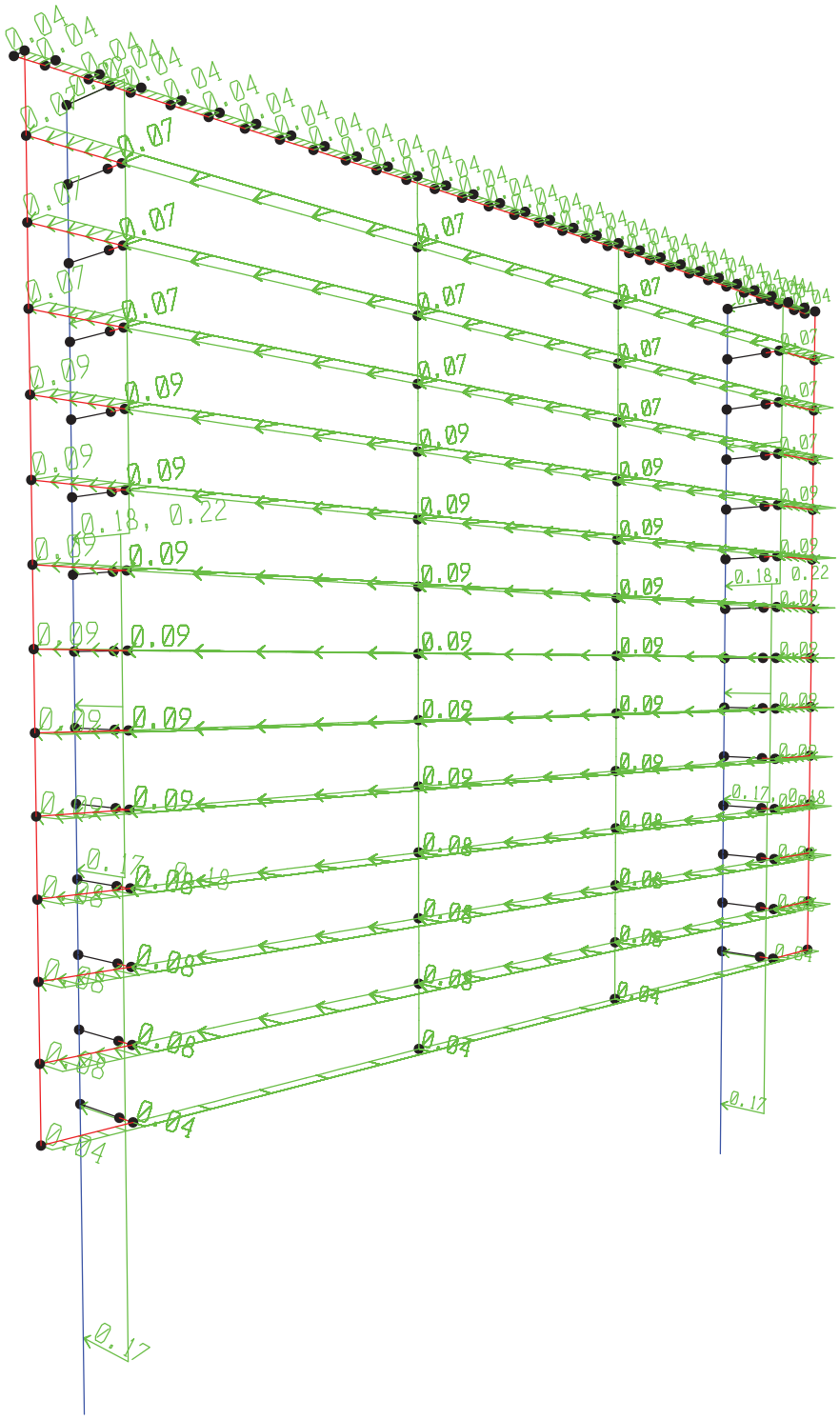
* UNDER ICED CONDITIONS, THE BOTTOM HALF OF TAPESTRIES IS ASSUMED TO BE 100% SOLID. THE TOP HALF IS ASSUMED TO BE 70% SOLID.
** WIND PRESSURES AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS TO BE COMBINED WITH ICE LOAD" (3/30/12)

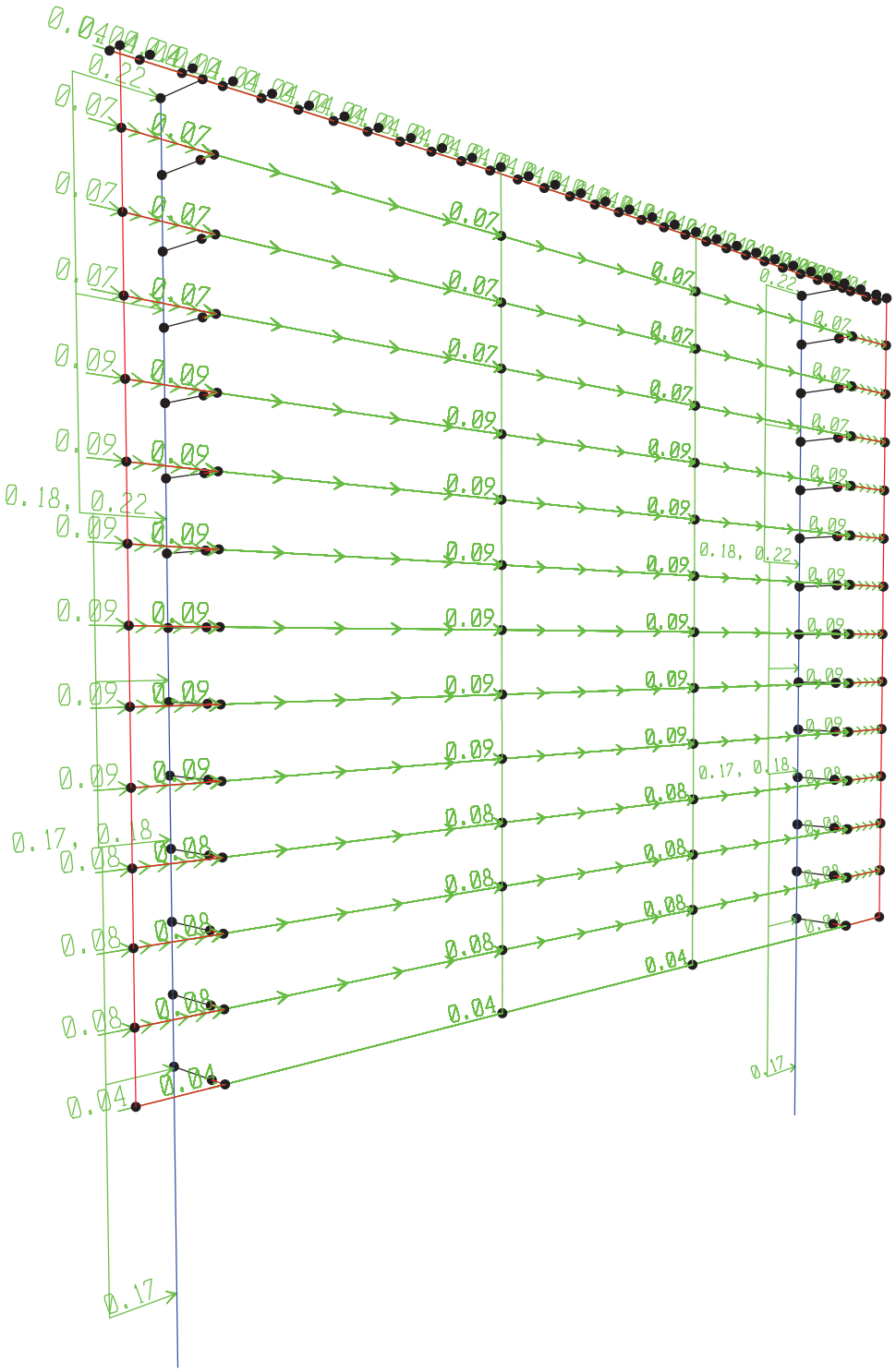
		LOAD COMBINATION 1				LOAD COMBINATION 2			
LOAD CASE	ZONE	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)
LC7	G1	1.0	11.2	0.0	0	0.5	5.6	1.0	5.6
	G2 HI	1.0	9.1	0.0	0	0.5	4.6	1.0	4.6
	G2 LO	1.0	13.0	0.0	0	0.5	6.5	1.0	6.5
	G3	1.0	12.0	0.0	0	0.5	6.0	1.0	6.0

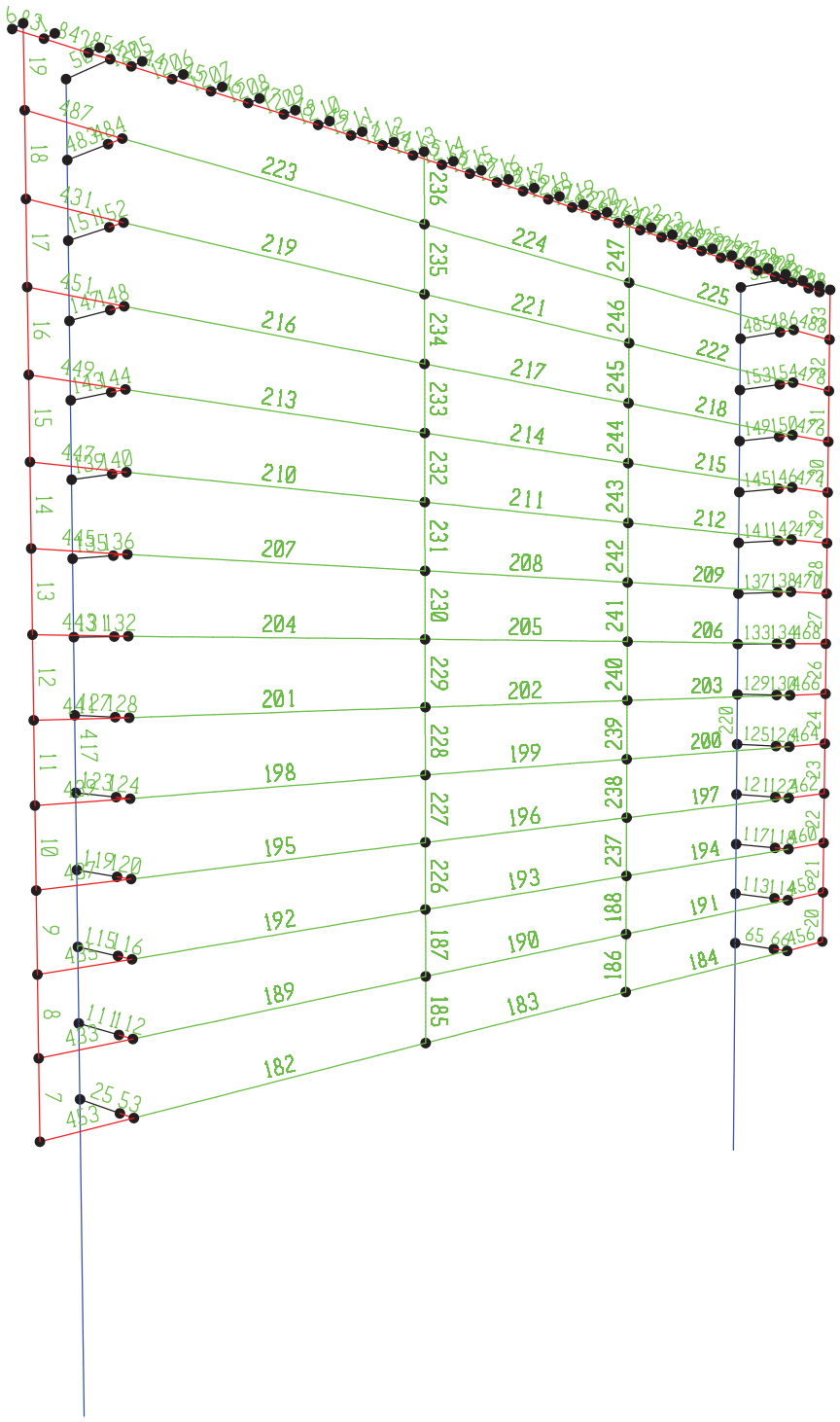
*Py AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS TO BE COMBINED WITH ICE LOAD" (3/30/12)


0.02
0.03
0.07
0.08
0.31, 0.35
0.11
0.24
0.06


0.02
0.35
0.03
0.07
0.08
0.31, 0.35
0.11
0.24, 0.31
0.06
0.24


0.04
0.07
0.09
0.18, 0.22
0.17
0.08
0.04


0.22
0.07
0.09
0.18, 0.22
0.17, 0.18
0.08
0.04
0.17



** CABLE/FRAME ELEMENT IDS. SEE FOLLOWING PAGES FOR APPLIED WIND LOADS

EISENHOWER MEMORIAL TAPESTRY CABLE WIND LOADS

CABLE ID	LOAD CASE			DIRECTION	DISTRIBUTED LOAD (K/IN)
182	WINDY	GLOBAL	Force	Y	0.0047500
183	WINDY	GLOBAL	Force	Y	0.0047500
184	WINDY	GLOBAL	Force	Y	0.0047500
189	WINDY	GLOBAL	Force	Y	0.0095000
190	WINDY	GLOBAL	Force	Y	0.0095000
191	WINDY	GLOBAL	Force	Y	0.0095000
192	WINDY	GLOBAL	Force	Y	0.0095000
193	WINDY	GLOBAL	Force	Y	0.0095000
194	WINDY	GLOBAL	Force	Y	0.0095000
195	WINDY	GLOBAL	Force	Y	0.0095000
196	WINDY	GLOBAL	Force	Y	0.0095000
197	WINDY	GLOBAL	Force	Y	0.0095000
198	WINDY	GLOBAL	Force	Y	0.0089605
199	WINDY	GLOBAL	Force	Y	0.0089605
200	WINDY	GLOBAL	Force	Y	0.0089605
201	WINDY	GLOBAL	Force	Y	0.0062500
202	WINDY	GLOBAL	Force	Y	0.0062500
203	WINDY	GLOBAL	Force	Y	0.0062500
204	WINDY	GLOBAL	Force	Y	0.0062500
205	WINDY	GLOBAL	Force	Y	0.0062500
206	WINDY	GLOBAL	Force	Y	0.0062500
207	WINDY	GLOBAL	Force	Y	0.0062500
208	WINDY	GLOBAL	Force	Y	0.0062500
209	WINDY	GLOBAL	Force	Y	0.0062500
210	WINDY	GLOBAL	Force	Y	0.0062500
211	WINDY	GLOBAL	Force	Y	0.0062500
212	WINDY	GLOBAL	Force	Y	0.0062500
213	WINDY	GLOBAL	Force	Y	0.0056828
214	WINDY	GLOBAL	Force	Y	0.0056828
215	WINDY	GLOBAL	Force	Y	0.0056828
216	WINDY	GLOBAL	Force	Y	0.0028333
217	WINDY	GLOBAL	Force	Y	0.0028333
218	WINDY	GLOBAL	Force	Y	0.0028333
219	WINDY	GLOBAL	Force	Y	0.0028333
221	WINDY	GLOBAL	Force	Y	0.0028333
222	WINDY	GLOBAL	Force	Y	0.0028333
223	WINDY	GLOBAL	Force	Y	0.0028333
224	WINDY	GLOBAL	Force	Y	0.0028333
225	WINDY	GLOBAL	Force	Y	0.0028333
182	WINDX	GLOBAL	Force	X	0.0047500
183	WINDX	GLOBAL	Force	X	0.0047500
184	WINDX	GLOBAL	Force	X	0.0047500
189	WINDX	GLOBAL	Force	X	0.0095000
190	WINDX	GLOBAL	Force	X	0.0095000
191	WINDX	GLOBAL	Force	X	0.0095000
192	WINDX	GLOBAL	Force	X	0.0095000
193	WINDX	GLOBAL	Force	X	0.0095000
194	WINDX	GLOBAL	Force	X	0.0095000
195	WINDX	GLOBAL	Force	X	0.0095000
196	WINDX	GLOBAL	Force	X	0.0095000
197	WINDX	GLOBAL	Force	X	0.0095000
198	WINDX	GLOBAL	Force	X	0.0089605
199	WINDX	GLOBAL	Force	X	0.0089605
200	WINDX	GLOBAL	Force	X	0.0089605
201	WINDX	GLOBAL	Force	X	0.0062500
202	WINDX	GLOBAL	Force	X	0.0062500
203	WINDX	GLOBAL	Force	X	0.0062500
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224	WINDX	GLOBAL	Force	X	0.0028333
225	WINDX	GLOBAL	Force	X	0.0028333

EISENHOWER MEMORIAL TAPESTRY FRAME WIND LOADS

FRAME ID	LOAD CASE			DIRECTION		RELATIVE DISTANCE		ABSOLUTE DISTANCE (IN)		DISTRIBUTED LOAD (K/IN	
42	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	18.001	0.0014167	0.0014167
44	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
45	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
46	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
47	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
48	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
49	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
51	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
54	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
55	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
56	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
57	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
58	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
59	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
61	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
62	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
63	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.25	0.0014167	0.0014167
64	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
67	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
68	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
69	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.251	0.0014167	0.0014167
70	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
71	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
72	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
73	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
74	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	17.997	0.0014167	0.0014167
83	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	24.501	0.0014167	0.0014167
84	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
85	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	18.258	0.0014167	0.0014167
86	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	18.262	0.0014167	0.0014167
87	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	36.252	0.0014167	0.0014167
88	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	24.497	0.0014167	0.0014167
431	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0028333	0.0028333
433	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0095000	0.0095000
435	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0095000	0.0095000
437	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0095000	0.0095000
439	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0089605	0.0089605
441	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0062500	0.0062500
443	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0062500	0.0062500
445	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0062500	0.0062500
447	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0062500	0.0062500
449	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0056828	0.0056828
451	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0028333	0.0028333
453	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0047500	0.0047500
456	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0047500	0.0047500
458	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0095000	0.0095000
460	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0095000	0.0095000
462	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0095000	0.0095000
464	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0089605	0.0089605
466	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0062500	0.0062500
468	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0062500	0.0062500
470	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0062500	0.0062500
472	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0062500	0.0062500
474	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0056828	0.0056828
476	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0028333	0.0028333
478	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0028333	0.0028333
487	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0028333	0.0028333
488	WINDY	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0028333	0.0028333
42	WINDX	GLOBAL	Force	X	RelDist	0	1	0	18.001	0.0014167	0.0014167
44	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
45	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
46	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
47	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
48	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
49	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
51	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
54	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
55	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
56	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
57	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
58	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
59	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
61	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
62	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
63	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.25	0.0014167	0.0014167
64	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
67	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
68	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
69	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.251	0.0014167	0.0014167
70	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
71	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
72	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
73	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
74	WINDX	GLOBAL	Force	X	RelDist	0	1	0	17.997	0.0014167	0.0014167
83	WINDX	GLOBAL	Force	X	RelDist	0	1	0	24.501	0.0014167	0.0014167
84	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
85	WINDX	GLOBAL	Force	X	RelDist	0	1	0	18.258	0.0014167	0.0014167
86	WINDX	GLOBAL	Force	X	RelDist	0	1	0	18.262	0.0014167	0.0014167
87	WINDX	GLOBAL	Force	X	RelDist	0	1	0	36.252	0.0014167	0.0014167
88	WINDX	GLOBAL	Force	X	RelDist	0	1	0	24.497	0.0014167	0.0014167
431	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0028333	0.0028333
433	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0095000	0.0095000
435	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0095000	0.0095000
437	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0095000	0.0095000
439	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0089605	0.0089605
441	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0062500	0.0062500
443	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0062500	0.0062500
445	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0062500	0.0062500
447	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0062500	0.0062500
449	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0056828	0.0056828
451	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0028333	0.0028333
453	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0047500	0.0047500
456	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0047500	0.0047500
458	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0095000	0.0095000
460	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0095000	0.0095000
462	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0095000	0.0095000
464	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0089605	0.0089605
466	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0062500	0.0062500
468	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0062500	0.0062500
470	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0062500	0.0062500
472	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0062500	0.0062500
474	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0056828	0.0056828
476	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0028333	0.0028333
478	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0028333	0.0028333
487	WINDX	GLOBAL	Force	X	RelDist	0	1	0	79	0.0028333	0.0028333
488	WINDX	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0028333	0.0028333

EISENHOWER MEMORIAL WIND LOAD SUMMARY - SOUTH TAPESTRY

MKA, 3/22/2012

NOTES: 1. EFFECTIVE PRESSURE IS EQUAL TO THE SOLIDITY MULTIPLIED BY THE WIND PRESSURE.
THIS VALUE IS MULTIPLIED BY THE GROSS TAPESTRY AREA TO DETERMINE TOTAL WIND WIND LOAD ON THE TAPESTRY
2. "Py" IS THE WIND PRESSURE PERPENDICULAR TO THE TAPESTRY. "Px" IS THE WIND PRESSURE PARALLEL TO THE TAPESTRY.
3. LOAD CASES LC2B, LC3B, LC4A/B, LC5A/B, AND LC6A/B DO NOT CONTROL DESIGN.
4. LOAD COMBINATION 3 DOES NOT CONTROL DESIGN.

LOAD CASE	ZONE	SOLIDITY* (%)	PRESSURE** (PSF)	EFFECTIVE PRESSURE (PSF)	Py (PSF)	Px FACTOR**	Px (PSF)
LC2	B1	20	18	3.6	3.6	0.5	1.8
	B2	50	16	8.0	8.0	0.5	4.0
	B3	95	12	11.4	11.4	0.5	5.7
	C1	20	8	1.6	1.6	0.75	1.2
	C2	50	6	3.0	3.0	0.75	2.3
	C3	95	6	5.7	5.7	0.75	4.3
	D1	20	4	0.8	0.8	0.75	0.6
	D2	50	6	3.0	3.0	0.75	2.3
	D3	95	6	5.7	5.7	0.75	4.3
	E1	20	6	1.2	1.2	0.75	0.9
	E2	50	4	2.0	2.0	0.75	1.5
	E3	95	6	5.7	5.7	0.75	4.3
	F1	20	6	1.2	1.2	0.75	0.9
	F2	50	4	2.0	2.0	0.75	1.5
	F3	95	6	5.7	5.7	0.75	4.3
LC3	B1	20	10	2.0	2.0	0.5	1.0
	B2	50	8	4.0	4.0	0.5	2.0
	B3	95	6	5.7	5.7	0.5	2.9
	C1	20	16	3.2	3.2	0.75	2.4
	C2	50	14	7.0	7.0	0.75	5.3
	C3	95	10	9.5	9.5	0.75	7.1
	D1	20	10	2.0	2.0	0.75	1.5
	D2	50	10	5.0	5.0	0.75	3.8
	D3	95	6	5.7	5.7	0.75	4.3
	E1	20	10	2.0	2.0	0.75	1.5
	E2	50	8	4.0	4.0	0.75	3.0
	E3	95	6	5.7	5.7	0.75	4.3
	F1	20	10	2.0	2.0	0.75	1.5
	F2	50	8	4.0	4.0	0.75	3.0
	F3	95	8	7.6	7.6	0.75	5.7

* SOLIDITY VALUES PER GEHRY PARTNERS "ARTWORK COVERAGE ON TAPESTRY" (3/15/12)

** WIND PRESSURES AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS" (3/2/12)

		LOAD COMBINATION 1				LOAD COMBINATION 2			
LOAD CASE	ZONE	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)
LC2	B1	1.0	3.6	0.0	0	0.5	1.8	1.0	1.8
	B2	1.0	8.0	0.0	0	0.5	4.0	1.0	4.0
	B3	1.0	11.4	0.0	0	0.5	5.7	1.0	5.7
	C1	1.0	1.6	0.0	0	0.5	0.8	1.0	1.2
	C2	1.0	3.0	0.0	0	0.5	1.5	1.0	2.3
	C3	1.0	5.7	0.0	0	0.5	2.9	1.0	4.3
	D1	1.0	0.8	0.0	0	0.5	0.4	1.0	0.6
	D2	1.0	3.0	0.0	0	0.5	1.5	1.0	2.3
	D3	1.0	5.7	0.0	0	0.5	2.9	1.0	4.3
	E1	1.0	1.2	0.0	0	0.5	0.6	1.0	0.9
	E2	1.0	2.0	0.0	0	0.5	1.0	1.0	1.5
	E3	1.0	5.7	0.0	0	0.5	2.9	1.0	4.3
	F1	1.0	1.2	0.0	0	0.5	0.6	1.0	0.9
	F2	1.0	2.0	0.0	0	0.5	1.0	1.0	1.5
	F3	1.0	5.7	0.0	0	0.5	2.9	1.0	4.3
LC3	B1	1.0	2.0	0.0	0	0.5	1.0	1.0	1.0
	B2	1.0	4.0	0.0	0	0.5	2.0	1.0	2.0
	B3	1.0	5.7	0.0	0	0.5	2.9	1.0	2.9
	C1	1.0	3.2	0.0	0	0.5	1.6	1.0	2.4
	C2	1.0	7.0	0.0	0	0.5	3.5	1.0	5.3
	C3	1.0	9.5	0.0	0	0.5	4.8	1.0	7.1
	D1	1.0	2.0	0.0	0	0.5	1.0	1.0	1.5
	D2	1.0	5.0	0.0	0	0.5	2.5	1.0	3.8
	D3	1.0	5.7	0.0	0	0.5	2.9	1.0	4.3
	E1	1.0	2.0	0.0	0	0.5	1.0	1.0	1.5
	E2	1.0	4.0	0.0	0	0.5	2.0	1.0	3.0
	E3	1.0	5.7	0.0	0	0.5	2.9	1.0	4.3
	F1	1.0	2.0	0.0	0	0.5	1.0	1.0	1.5
	F2	1.0	4.0	0.0	0	0.5	2.0	1.0	3.0
	F3	1.0	7.6	0.0	0	0.5	3.8	1.0	5.7

*Py AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS" (3/2/12)

SOUTH TAPESTRY CONTROLLING LOAD CASE CHECK

MKA, 3/22/2012

		LOAD CASE																	
		LC2A			LC2B			LC3A			LC3B			LC4A			LC4B		
	Px FACTOR	PRESSURE	Py	Px	PRESSURE	Py	Px	PRESSURE	Py	Px	PRESSURE	Py	Px	PRESSURE	Py	Px	PRESSURE	Py	Px
B1	0.5	10	10	5	-10	-10	-5	10	10	5	-6	-6	-3	10	10	5	-6	-6	-3
B2	0.5	16	16	8	-10	-10	-5	8	8	4	-4	-4	-2	8	8	4	-4	-4	-2
B3	0.5	12	12	6	-10	-10	-5	6	6	3	-4	-4	-2	6	6	3	-4	-4	-2
C1	0.75	8	8	4	-4	-4	-2	16	16	8	-10	-10	-5	12	12	6	-6	-6	-3
C2	0.75	6	6	3	-6	-6	-3	14	14	7	-10	-10	-5	10	10	5	-6	-6	-3
C3	0.75	6	6	3	-6	-6	-3	10	10	5	-10	-10	-5	8	8	4	-4	-4	-2
D1	0.75	4	4	2	-4	-4	-2	10	10	5	-4	-4	-2	12	12	6	-10	-10	-5
D2	0.75	6	6	3	-6	-6	-3	10	10	5	-4	-4	-2	12	12	6	-10	-10	-5
D3	0.75	6	6	3	-6	-6	-3	6	6	3	-4	-4	-2	10	10	5	-10	-10	-5
E1	0.75	6	6	3	-6	-6	-3	10	10	5	-4	-4	-2	10	10	5	-4	-4	-2
E2	0.75	4	4	2	-6	-6	-3	8	8	4	-4	-4	-2	8	8	4	-4	-4	-2
E3	0.75	6	6	3	-10	-10	-5	6	6	3	-2	-2	-1	6	6	3	-2	-2	-1
F1	0.75	6	6	3	-8	-8	-4	10	10	5	-4	-4	-2	10	10	5	-4	-4	-2
F2	0.75	4	4	2	-8	-8	-4	8	8	4	-2	-2	-1	8	8	4	-2	-2	-1
F3	0.75	6	6	3	-10	-10	-5	8	8	4	-2	-2	-1	8	8	4	-2	-2	-1
			ΣPx =	53		ΣPx =	-55		ΣPx =	70		ΣPx =	-37		ΣPx =	69		ΣPx =	-39
										CONTROLS									

		LOAD CASE											
		LC5A			LC5B			LC6A			LC6B		
	Px FACTOR	PRESSURE	Py	Px	PRESSURE	Py	Px	PRESSURE	Py	Px	PRESSURE	Py	Px
B1	0.5	10	10	5	-6	-6	-3	10	10	5	-2	-2	-1
B2	0.5	8	8	4	-6	-6	-3	8	8	4	-2	-2	-1
B3	0.5	6	6	3	-4	-4	-2	6	6	3	-2	-2	-1
C1	0.75	12	12	6	-6	-6	-3	12	12	6	-4	-4	-2
C2	0.75	10	10	5	-6	-6	-3	10	10	5	-4	-4	-2
C3	0.75	8	8	4	-6	-6	-3	8	8	4	-2	-2	-1
D1	0.75	10	10	5	-4	-4	-2	10	10	5	-4	-4	-2
D2	0.75	10	10	5	-6	-6	-3	10	10	5	-4	-4	-2
D3	0.75	6	6	3	-6	-6	-3	6	6	3	-4	-4	-2
E1	0.75	12	12	6	-10	-10	-5	10	10	5	-4	-4	-2
E2	0.75	10	10	5	-10	-10	-5	8	8	4	-4	-4	-2
E3	0.75	10	10	5	-12	-12	-6	6	6	3	-4	-4	-2
F1	0.75	10	10	5	-8	-8	-4	10	10	5	-10	-10	-5
F2	0.75	8	8	4	-8	-8	-4	10	10	5	-10	-10	-5
F3	0.75	8	8	4	-10	-10	-5	10	10	5	-10	-10	-5
			ΣPx =	69		ΣPx =	-54		ΣPx =	67		ΣPx =	-35

EISENHOWER MEMORIAL WIND LOAD ON ICE SUMMARY - SOUTH TAPESTRY

MKA, 4/10/2012

NOTES: 1. EFFECTIVE PRESSURE IS EQUAL TO THE SOLIDITY MULTIPLIED BY THE WIND PRESSURE.
THIS VALUE IS MULTIPLIED BY THE GROSS TAPESTRY AREA TO DETERMINE TOTAL WIND WIND LOAD ON THE TAPESTRY
2. "Py" IS THE WIND PRESSURE PERPENDICULAR TO THE TAPESTRY. "Px" IS THE WIND PRESSURE PARALLEL TO THE TAPESTRY.
3. LOAD CASES LC2B, LC3B, LC4A/B, LC5A/B, AND LC6A/B DO NOT CONTROL DESIGN.
4. LOAD COMBINATION 3 DOES NOT CONTROL DESIGN.

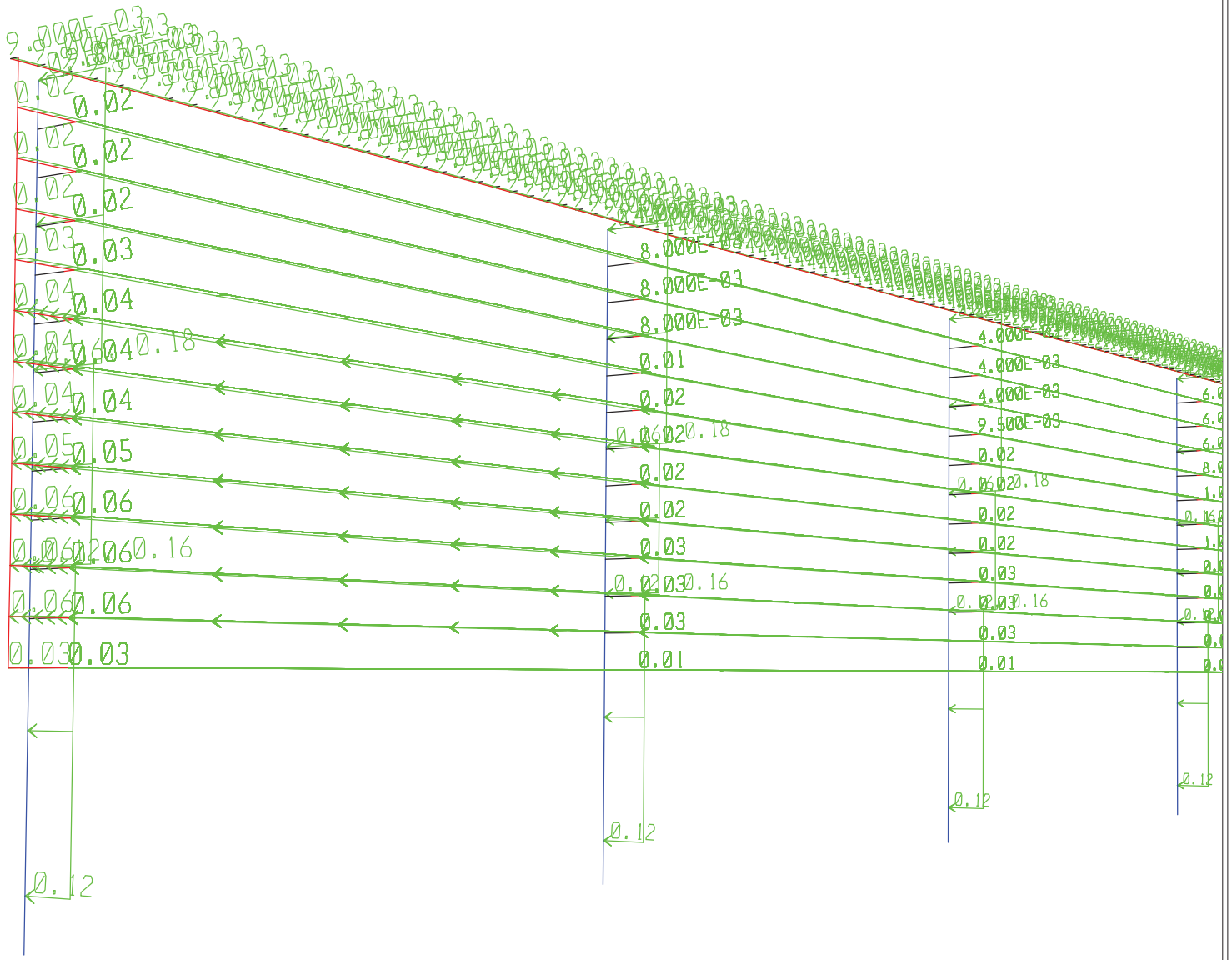
LOAD CASE	ZONE	SOLIDITY* (%)	PRESSURE** (PSF)	EFFECTIVE PRESSURE (PSF)	Py (PSF)	Px FACTOR**	Px (PSF)
LC2	B1	70	11	7.7	7.7	0.5	3.9
	B2 HI	70	10	7.0	7.0	0.5	3.5
	B2 LO	100	10	10.0	10.0	0.5	5.0
	B3	100	11	11.0	11.0	0.5	5.5
	C1	70	6	4.2	4.2	0.75	3.2
	C2 HI	70	6	4.2	4.2	0.75	3.2
	C2 LO	100	6	6.0	6.0	0.75	4.5
	C3	100	7	7.0	7.0	0.75	5.3
	D1	70	3	2.1	2.1	0.75	1.6
	D2 HI	70	5	3.5	3.5	0.75	2.6
	D2 LO	100	5	5.0	5.0	0.75	3.8
	D3	100	6	6.0	6.0	0.75	4.5
	E1	70	4	2.8	2.8	0.75	2.1
	E2 HI	70	4	2.8	2.8	0.75	2.1
	E2 LO	100	4	4.0	4.0	0.75	3.0
	E3	100	5	5.0	5.0	0.75	3.8
	F1	70	4	2.8	2.8	0.75	2.1
	F2 HI	70	4	2.8	2.8	0.75	2.1
	F2 LO	100	4	4.0	4.0	0.75	3.0
	F3	100	5	5.0	5.0	0.75	3.8
LC3	B1	70	6	4.2	4.2	0.5	2.1
	B2 HI	70	7	4.9	4.9	0.5	2.5
	B2 LO	100	7	7.0	7.0	0.5	3.5
	B3	100	7	7.0	7.0	0.5	3.5
	C1	70	10	7.0	7.0	0.75	5.3
	C2 HI	70	10	7.0	7.0	0.75	5.3
	C2 LO	100	10	10.0	10.0	0.75	7.5
	C3	100	11	11.0	11.0	0.75	8.3
	D1	70	7	4.9	4.9	0.75	3.7
	D2 HI	70	8	5.6	5.6	0.75	4.2
	D2 LO	100	8	8.0	8.0	0.75	6.0
	D3	100	9	9.0	9.0	0.75	6.8
	E1	70	7	4.9	4.9	0.75	3.7
	E2 HI	70	7	4.9	4.9	0.75	3.7
	E2 LO	100	7	7.0	7.0	0.75	5.3
	E3	100	8	8.0	8.0	0.75	6.0
	F1	70	7	4.9	4.9	0.75	3.7
	F2 HI	70	7	4.9	4.9	0.75	3.7
	F2 LO	100	7	7.0	7.0	0.75	5.3
	F3	100	8	8.0	8.0	0.75	6.0

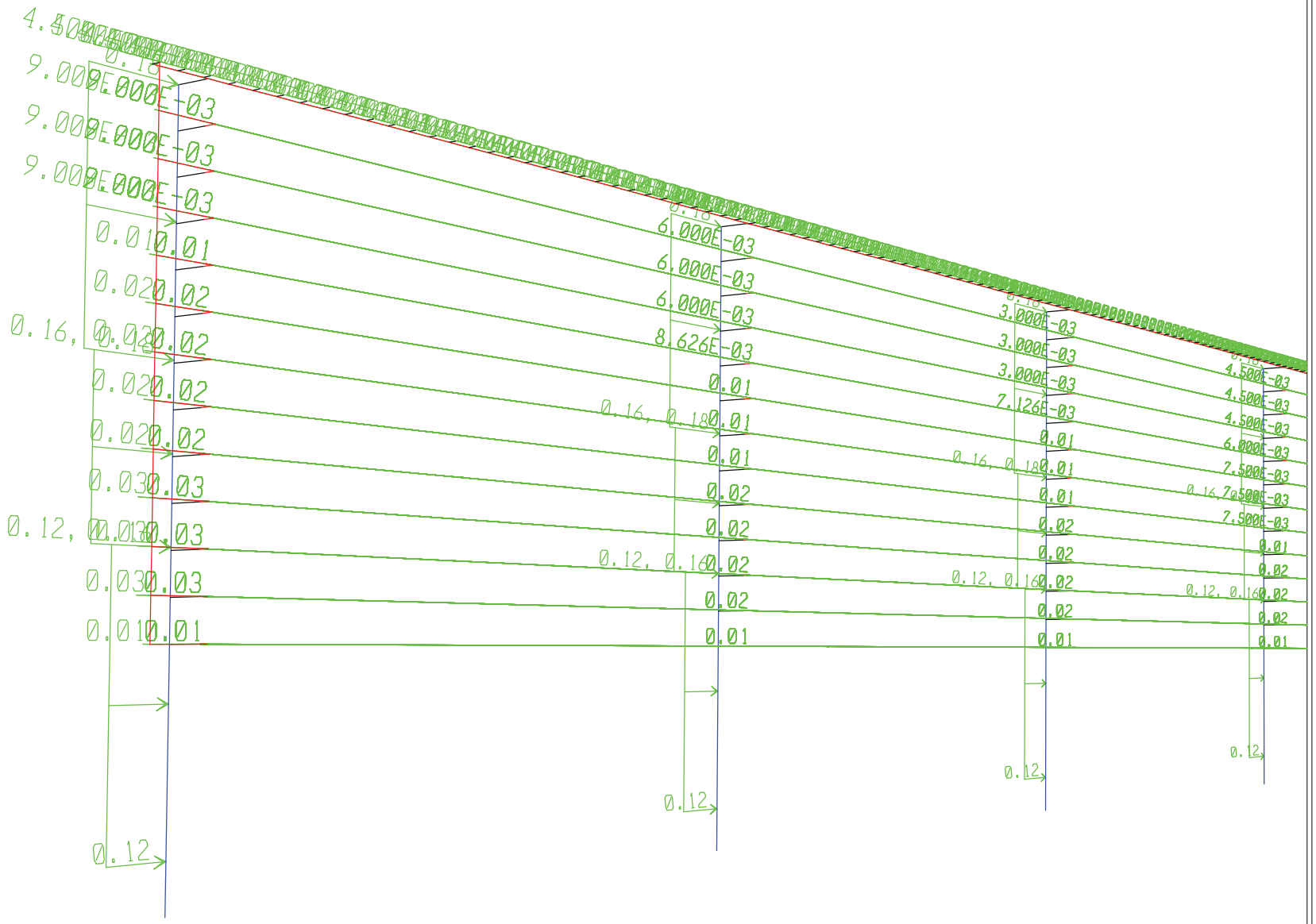
* UNDER ICED CONDITIONS, THE BOTTOM HALF OF TAPESTRIES IS ASSUMED TO BE 100% SOLID. THE TOP HALF IS ASSUMED TO BE 70% SOLID.

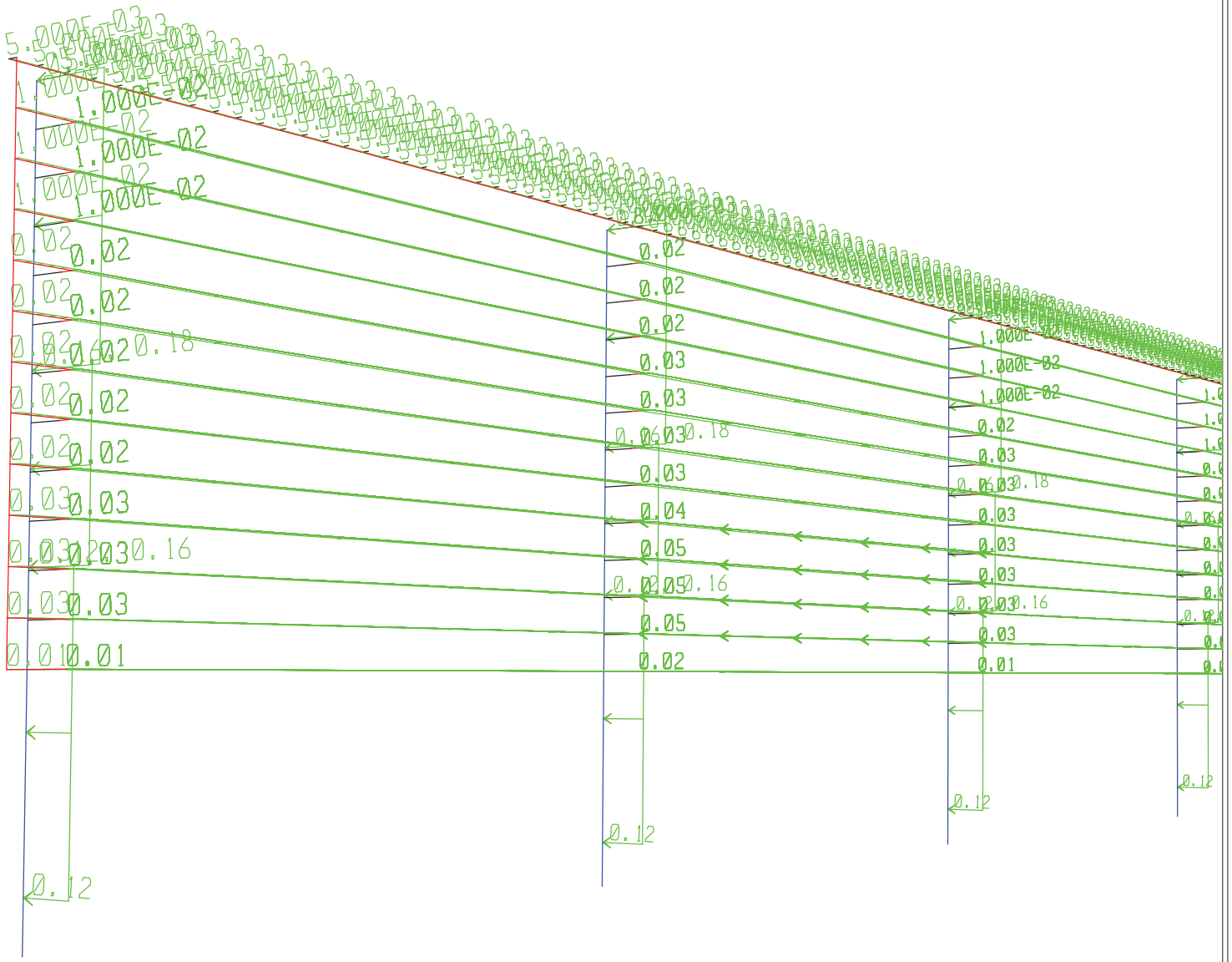
** WIND PRESSURES AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS TO BE COMBINED WITH ICE LOAD" (3/30/12)

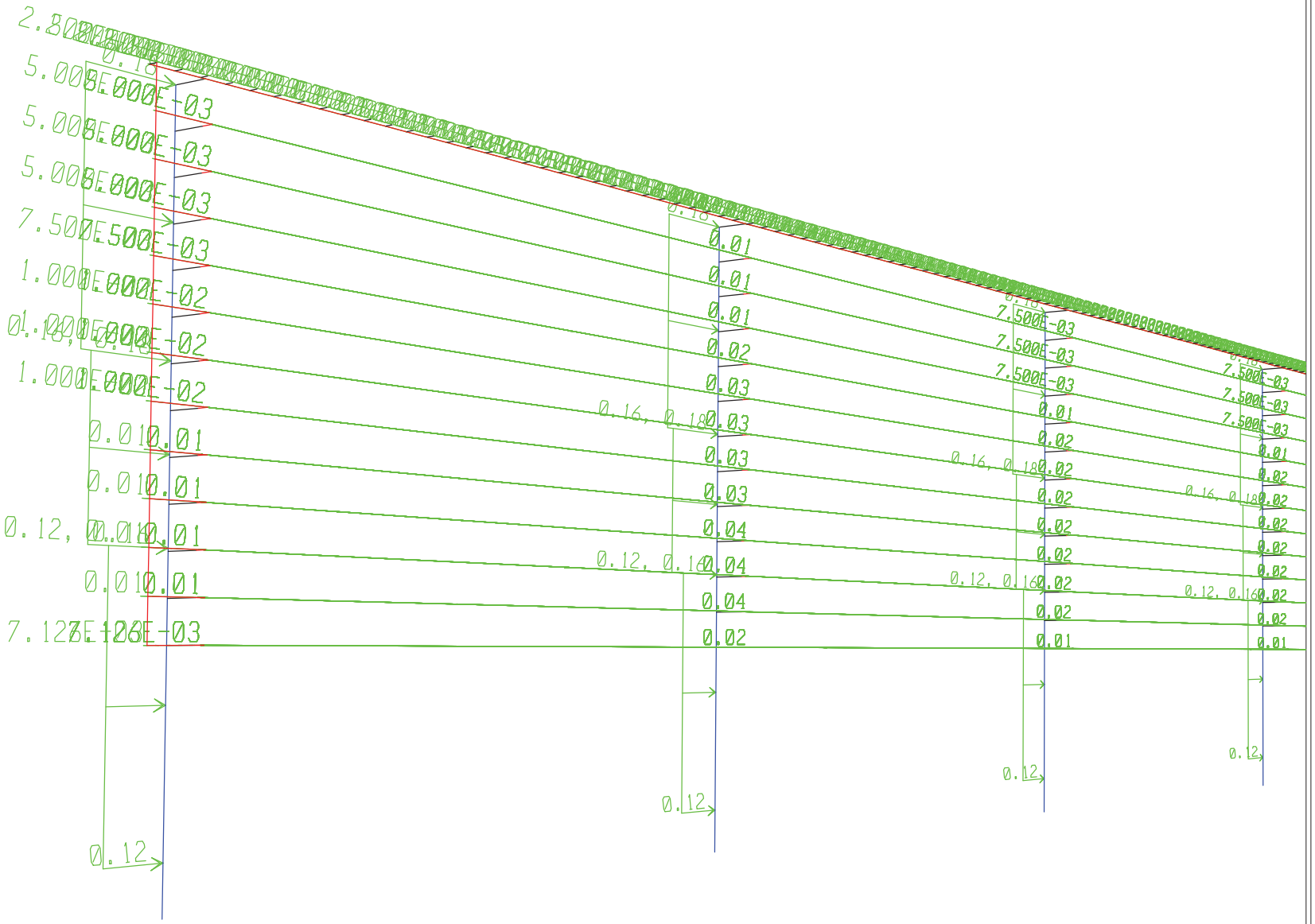
		LOAD COMBINATION 1				LOAD COMBINATION 2			
LOAD CASE	ZONE	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)	Py FACTOR*	Py (PSF)	Px FACTOR*	Px (PSF)
LC2	B1	1.0	7.7	0.0	0	0.5	3.9	1.0	3.9
	B2 HI	1.0	7.0	0.0	0	0.5	3.5	1.0	3.5
	B2 LO	1.0	10.0	0.0	0	0.5	5.0	1.0	5.0
	B3	1.0	11.0	0.0	0	0.5	5.5	1.0	5.5
	C1	1.0	4.2	0.0	0	0.5	2.1	1.0	3.2
	C2 HI	1.0	4.2	0.0	0	0.5	2.1	1.0	3.2
	C2 LO	1.0	6.0	0.0	0	0.5	3.0	1.0	4.5
	C3	1.0	7.0	0.0	0	0.5	3.5	1.0	5.3
	D1	1.0	2.1	0.0	0	0.5	1.1	1.0	1.6
	D2 HI	1.0	3.5	0.0	0	0.5	1.8	1.0	2.6
	D2 LO	1.0	5.0	0.0	0	0.5	2.5	1.0	3.8
	D3	1.0	6.0	0.0	0	0.5	3.0	1.0	4.5
	E1	1.0	2.8	0.0	0	0.5	1.4	1.0	2.1
	E2 HI	1.0	2.8	0.0	0	0.5	1.4	1.0	2.1
	E2 LO	1.0	4.0	0.0	0	0.5	2.0	1.0	3.0
	E3	1.0	5.0	0.0	0	0.5	2.5	1.0	3.8
	F1	1.0	2.8	0.0	0	0.5	1.4	1.0	2.1
	F2 HI	1.0	2.8	0.0	0	0.5	1.4	1.0	2.1
	F2 LO	1.0	4.0	0.0	0	0.5	2.0	1.0	3.0
	F3	1.0	5.0	0.0	0	0.5	2.5	1.0	3.8
LC3	B1	1.0	4.2	0.0	0	0.5	2.1	1.0	2.1
	B2 HI	1.0	4.9	0.0	0	0.5	2.5	1.0	2.5
	B2 LO	1.0	7.0	0.0	0	0.5	3.5	1.0	3.5
	B3	1.0	7.0	0.0	0	0.5	3.5	1.0	3.5
	C1	1.0	7.0	0.0	0	0.5	3.5	1.0	5.3
	C2 HI	1.0	7.0	0.0	0	0.5	3.5	1.0	5.3
	C2 LO	1.0	10.0	0.0	0	0.5	5.0	1.0	7.5
	C3	1.0	11.0	0.0	0	0.5	5.5	1.0	8.3
	D1	1.0	4.9	0.0	0	0.5	2.5	1.0	3.7
	D2 HI	1.0	5.6	0.0	0	0.5	2.8	1.0	4.2
	D2 LO	1.0	8.0	0.0	0	0.5	4.0	1.0	6.0
	D3	1.0	9.0	0.0	0	0.5	4.5	1.0	6.8
	E1	1.0	4.9	0.0	0	0.5	2.5	1.0	3.7
	E2 HI	1.0	4.9	0.0	0	0.5	2.5	1.0	3.7
	E2 LO	1.0	7.0	0.0	0	0.5	3.5	1.0	5.3
	E3	1.0	8.0	0.0	0	0.5	4.0	1.0	6.0
	F1	1.0	4.9	0.0	0	0.5	2.5	1.0	3.7
	F2 HI	1.0	4.9	0.0	0	0.5	2.5	1.0	3.7
	F2 LO	1.0	7.0	0.0	0	0.5	3.5	1.0	5.3
	F3	1.0	8.0	0.0	0	0.5	4.0	1.0	6.0

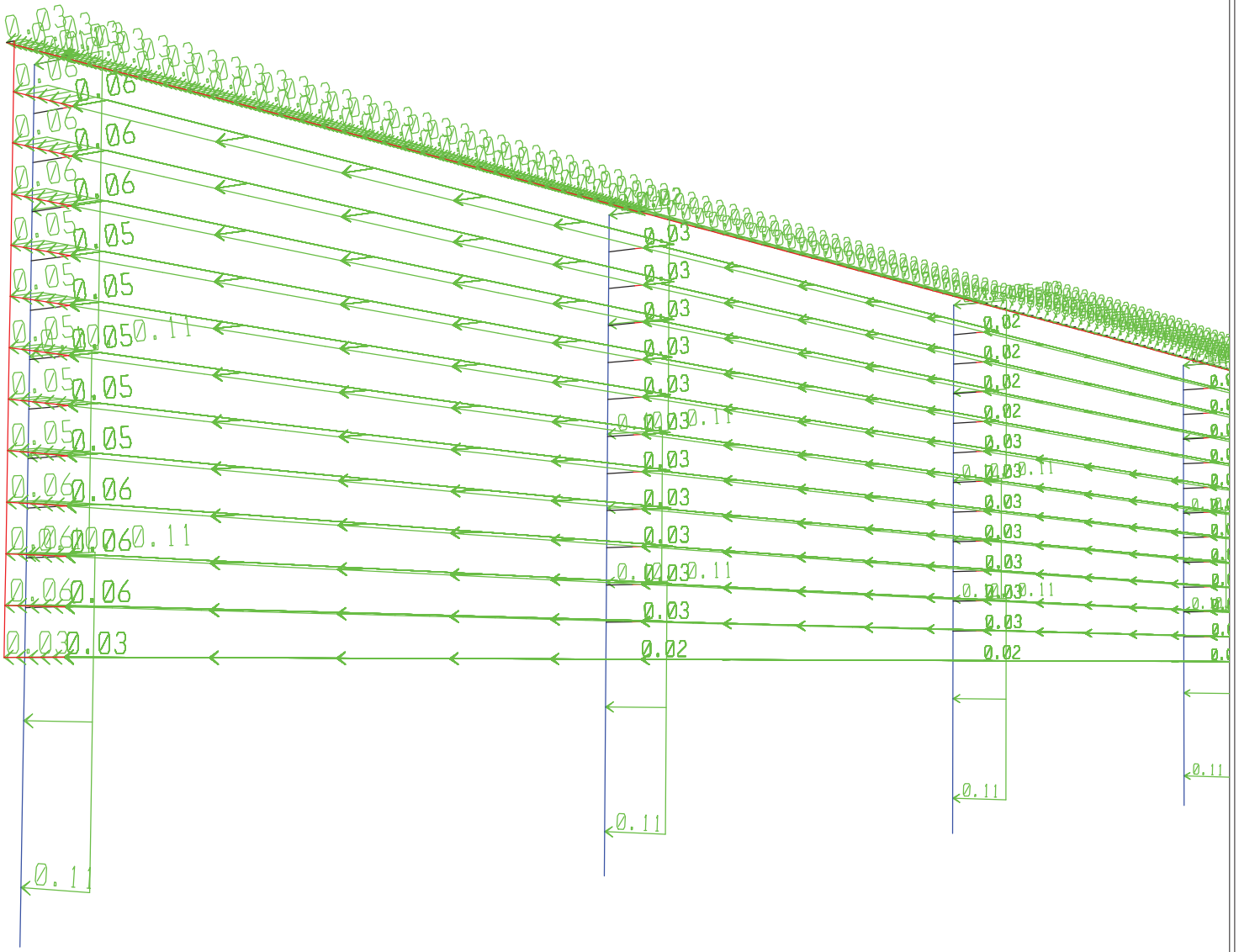
*Py AND Px FACTORS PER RWDI "PRELIMINARY RESULTS - STRUCTURAL WIND LOADS TO BE COMBINED WITH ICE LOAD" (3/30/12)

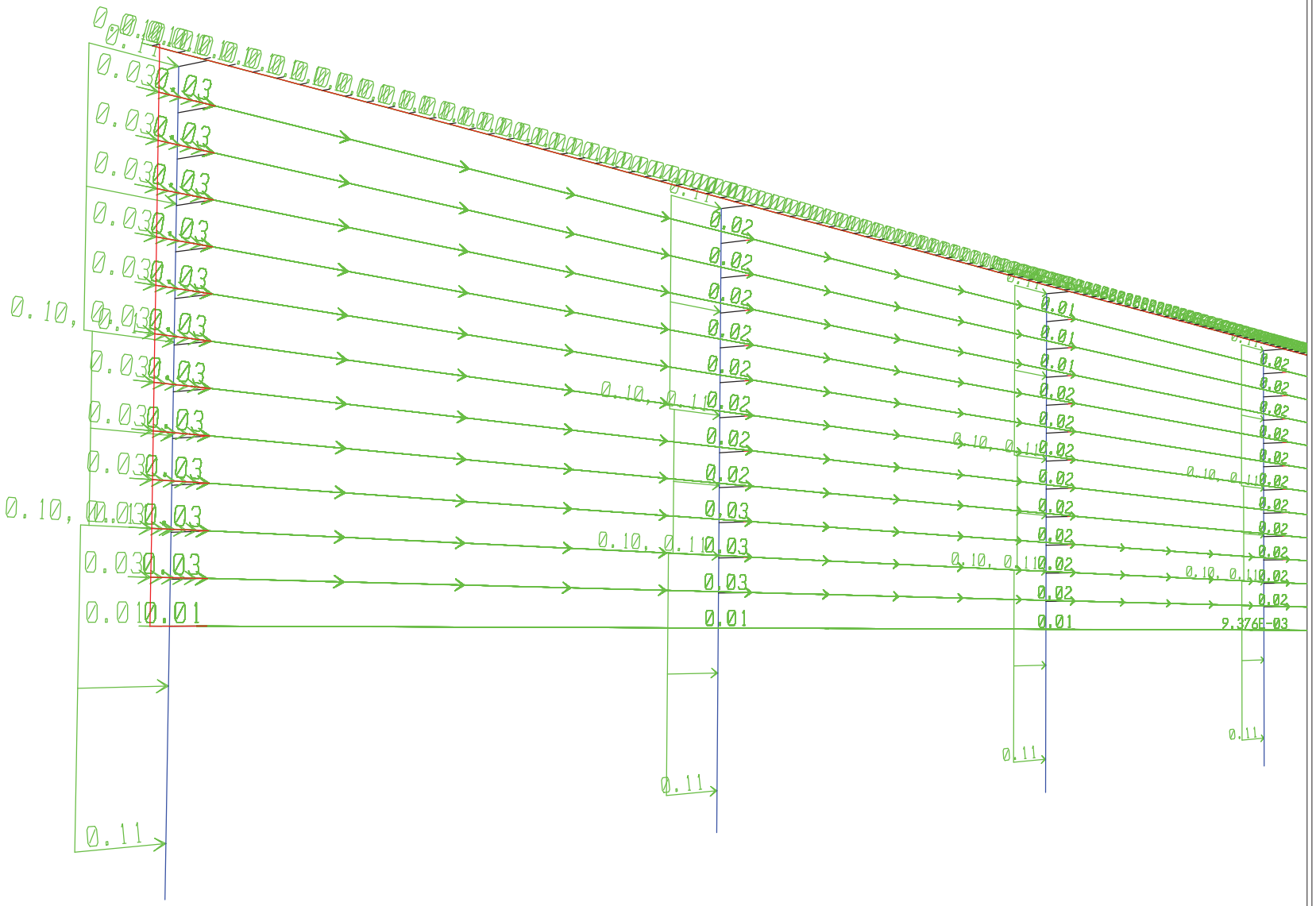

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0.04
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0.06
0.06
0.16
0.06
0.03
0.12
8.000E-03
8.000E-03
8.000E-03
0.01
0.02
0.18
0.02
0.02
0.03
0.16
0.03
0.01
0.12
4.000E-03
4.000E-03
4.000E-03
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0.03
0.16
0.03
0.01
0.12

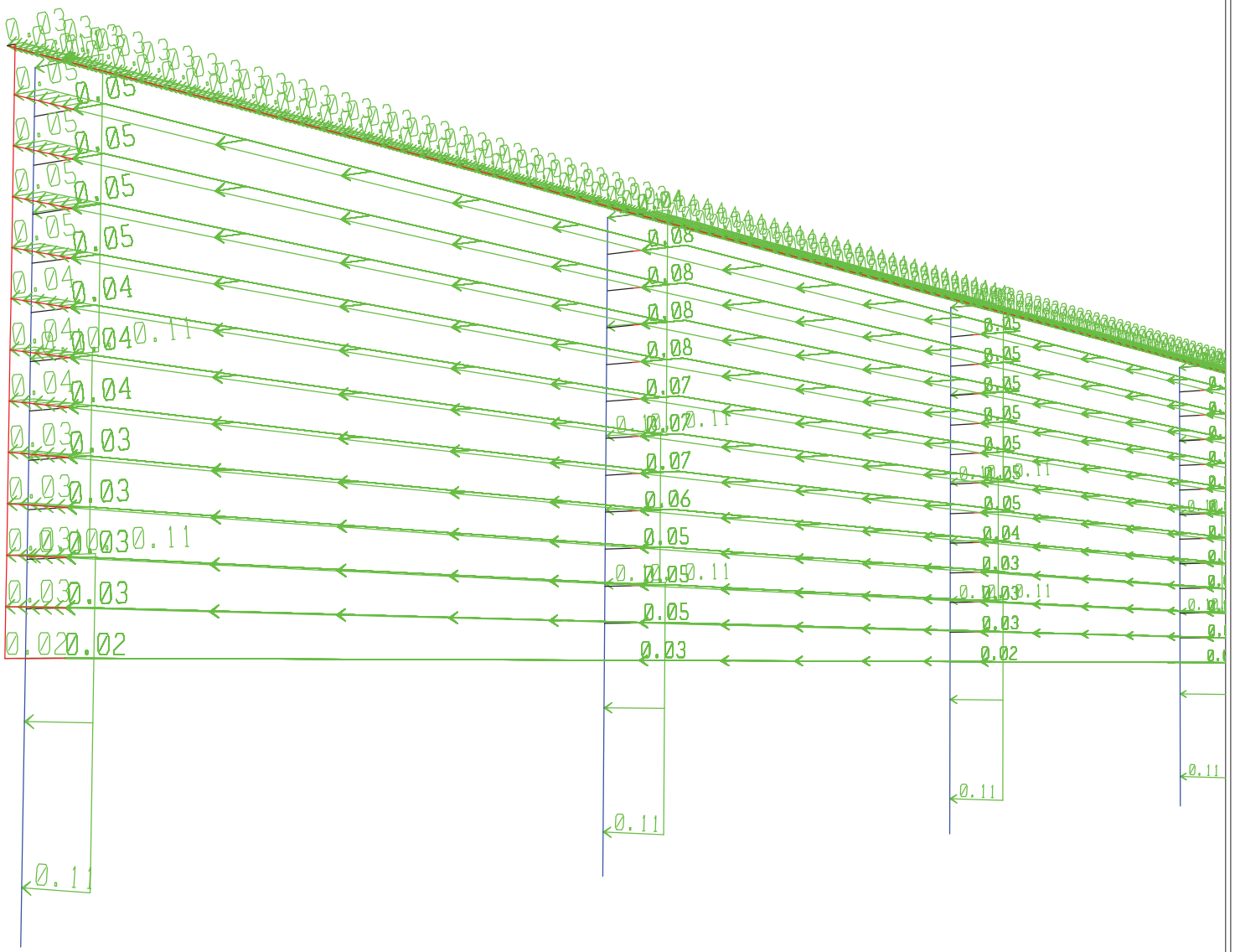

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9.000E-03
9.000E-03
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0.03
0.03
0.03
0.01
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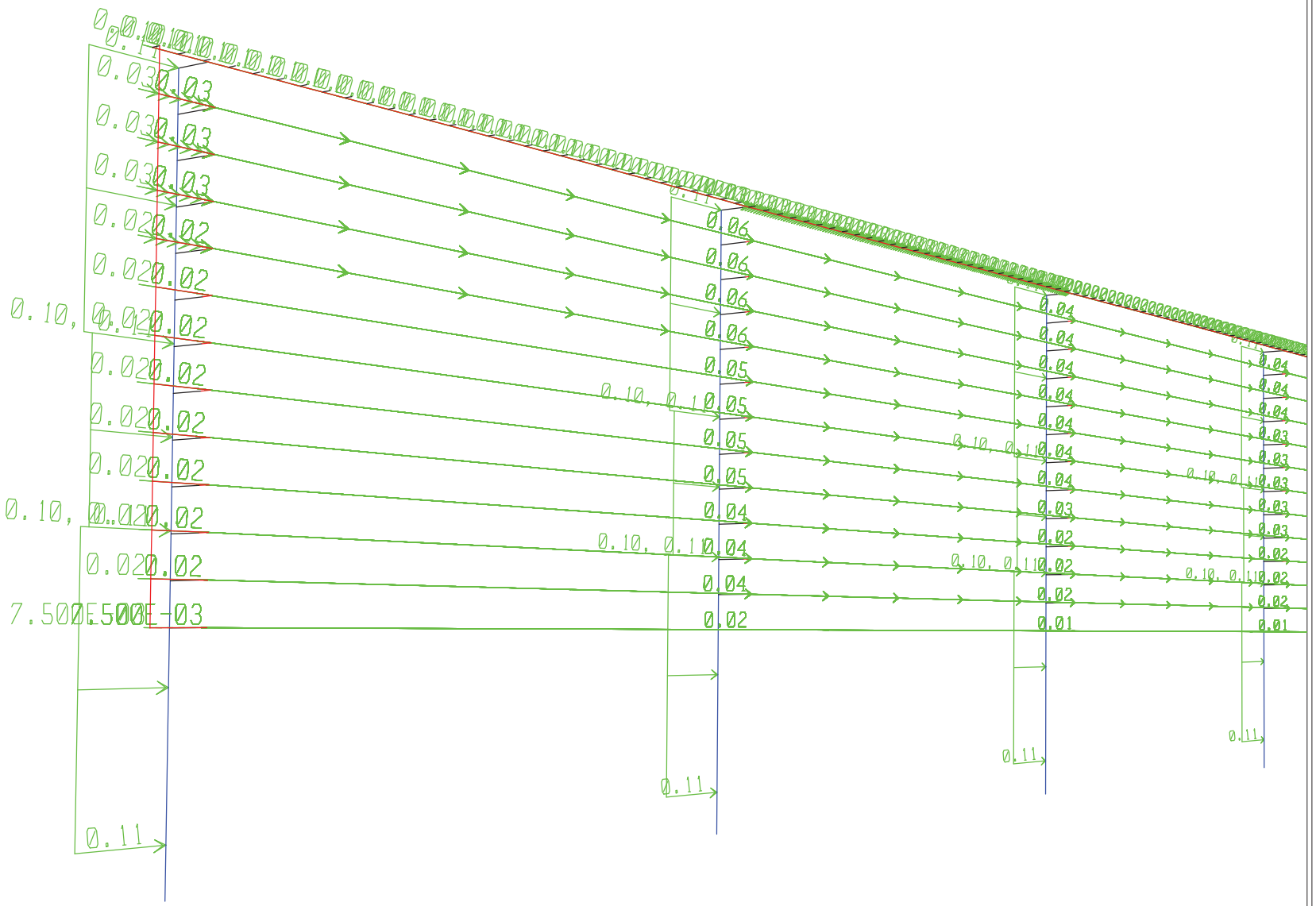


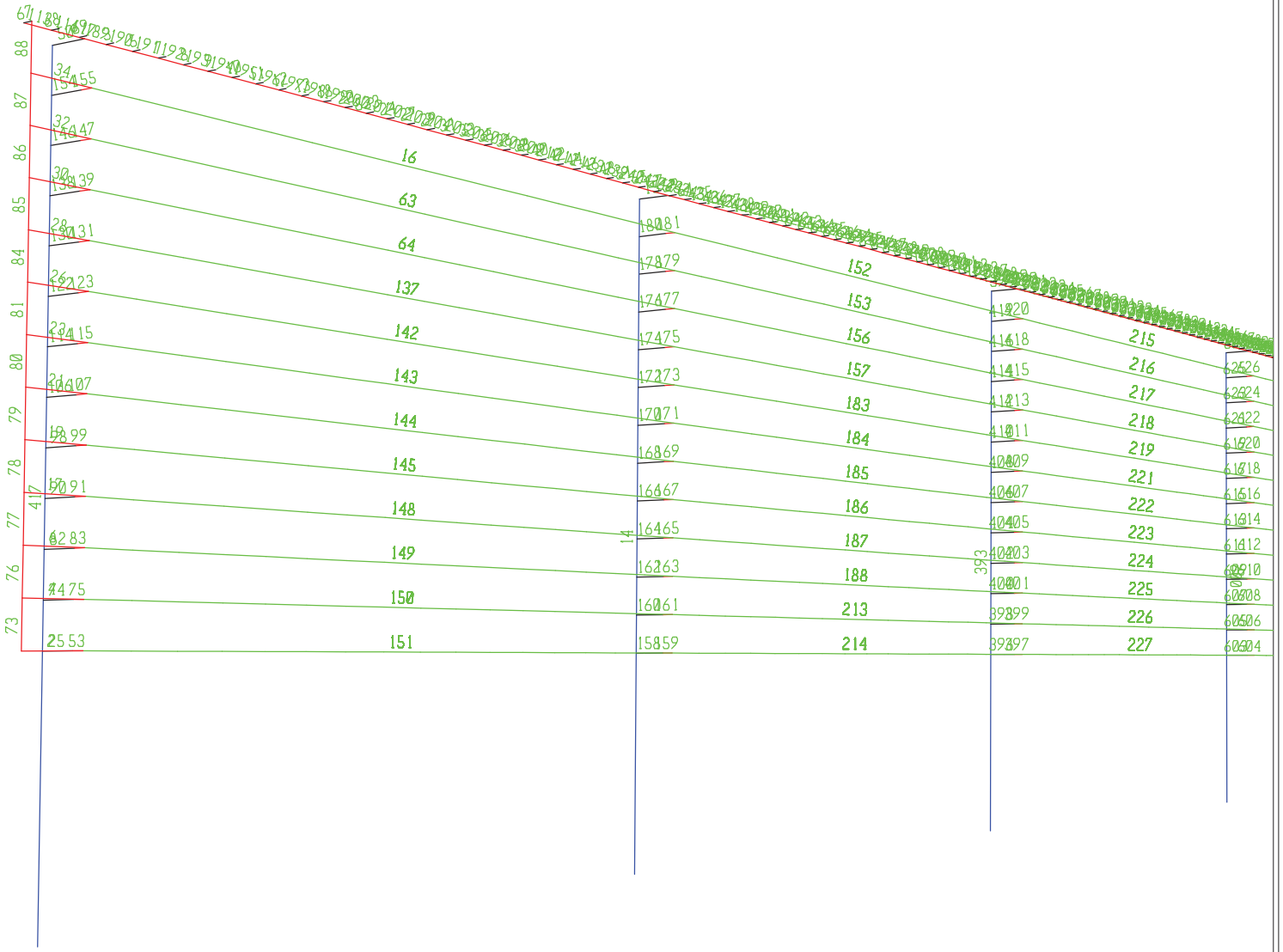

0.12
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0.12
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0.12











** CABLE/FRAME ELEMENT IDS. SEE FOLLOWING PAGES FOR APPLIED WIND LOADS.

EISENHOWER MEMORIAL TAPESTRY CABLE WIND LOADS

CABLE ID	LOAD CASE			DIRECTION	DISTRIBUTED LOAD (K/IN)
16	WINDYA	GLOBAL	Force	Y	0.0015000
63	WINDYA	GLOBAL	Force	Y	0.0015000
64	WINDYA	GLOBAL	Force	Y	0.0015000
137	WINDYA	GLOBAL	Force	Y	0.0024167
142	WINDYA	GLOBAL	Force	Y	0.0033333
143	WINDYA	GLOBAL	Force	Y	0.0033333
144	WINDYA	GLOBAL	Force	Y	0.0033333
145	WINDYA	GLOBAL	Force	Y	0.0040417
148	WINDYA	GLOBAL	Force	Y	0.0047500
149	WINDYA	GLOBAL	Force	Y	0.0047500
150	WINDYA	GLOBAL	Force	Y	0.0047500
151	WINDYA	GLOBAL	Force	Y	0.0023750
152	WINDYA	GLOBAL	Force	Y	0.0006667
153	WINDYA	GLOBAL	Force	Y	0.0006667
156	WINDYA	GLOBAL	Force	Y	0.0006667
157	WINDYA	GLOBAL	Force	Y	0.0009583
183	WINDYA	GLOBAL	Force	Y	0.0012500
184	WINDYA	GLOBAL	Force	Y	0.0012500
185	WINDYA	GLOBAL	Force	Y	0.0012500
186	WINDYA	GLOBAL	Force	Y	0.0018125
187	WINDYA	GLOBAL	Force	Y	0.0023750
188	WINDYA	GLOBAL	Force	Y	0.0023750
213	WINDYA	GLOBAL	Force	Y	0.0023750
214	WINDYA	GLOBAL	Force	Y	0.0011875
215	WINDYA	GLOBAL	Force	Y	0.0003333
216	WINDYA	GLOBAL	Force	Y	0.0003333
217	WINDYA	GLOBAL	Force	Y	0.0003333
218	WINDYA	GLOBAL	Force	Y	0.0007917
219	WINDYA	GLOBAL	Force	Y	0.0012500
221	WINDYA	GLOBAL	Force	Y	0.0012500
222	WINDYA	GLOBAL	Force	Y	0.0012500
223	WINDYA	GLOBAL	Force	Y	0.0018125
224	WINDYA	GLOBAL	Force	Y	0.0023750
225	WINDYA	GLOBAL	Force	Y	0.0023750
226	WINDYA	GLOBAL	Force	Y	0.0023750
227	WINDYA	GLOBAL	Force	Y	0.0011875
228	WINDYA	GLOBAL	Force	Y	0.0005000
229	WINDYA	GLOBAL	Force	Y	0.0005000
230	WINDYA	GLOBAL	Force	Y	0.0005000
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233	WINDYA	GLOBAL	Force	Y	0.0008333
234	WINDYA	GLOBAL	Force	Y	0.0008333
235	WINDYA	GLOBAL	Force	Y	0.0008333
236	WINDYA	GLOBAL	Force	Y	0.0016042
237	WINDYA	GLOBAL	Force	Y	0.0023750
238	WINDYA	GLOBAL	Force	Y	0.0023750
251	WINDYA	GLOBAL	Force	Y	0.0023750
252	WINDYA	GLOBAL	Force	Y	0.0011875
277	WINDYA	GLOBAL	Force	Y	0.0005000
278	WINDYA	GLOBAL	Force	Y	0.0005000
279	WINDYA	GLOBAL	Force	Y	0.0005000
280	WINDYA	GLOBAL	Force	Y	0.0006667
281	WINDYA	GLOBAL	Force	Y	0.0008333
282	WINDYA	GLOBAL	Force	Y	0.0008333
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285	WINDYA	GLOBAL	Force	Y	0.0023750
286	WINDYA	GLOBAL	Force	Y	0.0023750
299	WINDYA	GLOBAL	Force	Y	0.0023750
300	WINDYA	GLOBAL	Force	Y	0.0011875
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63	WINDXA	GLOBAL	Force	X	0.0007500
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142	WINDXA	GLOBAL	Force	X	0.0016667
143	WINDXA	GLOBAL	Force	X	0.0016667
144	WINDXA	GLOBAL	Force	X	0.0016667
145	WINDXA	GLOBAL	Force	X	0.0020208
148	WINDXA	GLOBAL	Force	X	0.0023750
149	WINDXA	GLOBAL	Force	X	0.0023750
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186	WINDXA	GLOBAL	Force	X	0.0013594
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223	WINDXA	GLOBAL	Force	X	0.0013594
224	WINDXA	GLOBAL	Force	X	0.0017813

225	WINDXA	GLOBAL	Force	X	0.0017813
226	WINDXA	GLOBAL	Force	X	0.0017813
227	WINDXA	GLOBAL	Force	X	0.0008906
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238	WINDXA	GLOBAL	Force	X	0.0017813
251	WINDXA	GLOBAL	Force	X	0.0017813
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63	WINDYB	GLOBAL	Force	Y	0.0008333
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142	WINDYB	GLOBAL	Force	Y	0.0016667
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151	WINDYB	GLOBAL	Force	Y	0.0011875
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157	WINDYB	GLOBAL	Force	Y	0.0021250
183	WINDYB	GLOBAL	Force	Y	0.0029167
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225	WINDYB	GLOBAL	Force	Y	0.0023750
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227	WINDYB	GLOBAL	Force	Y	0.0011875
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229	WINDYB	GLOBAL	Force	Y	0.0008333
230	WINDYB	GLOBAL	Force	Y	0.0008333
232	WINDYB	GLOBAL	Force	Y	0.0012500
233	WINDYB	GLOBAL	Force	Y	0.0016667
234	WINDYB	GLOBAL	Force	Y	0.0016667
235	WINDYB	GLOBAL	Force	Y	0.0016667
236	WINDYB	GLOBAL	Force	Y	0.0020208
237	WINDYB	GLOBAL	Force	Y	0.0023750
238	WINDYB	GLOBAL	Force	Y	0.0023750
251	WINDYB	GLOBAL	Force	Y	0.0023750
252	WINDYB	GLOBAL	Force	Y	0.0011875
277	WINDYB	GLOBAL	Force	Y	0.0008333
278	WINDYB	GLOBAL	Force	Y	0.0008333
279	WINDYB	GLOBAL	Force	Y	0.0008333
280	WINDYB	GLOBAL	Force	Y	0.0012500
281	WINDYB	GLOBAL	Force	Y	0.0016667
282	WINDYB	GLOBAL	Force	Y	0.0016667
283	WINDYB	GLOBAL	Force	Y	0.0016667
284	WINDYB	GLOBAL	Force	Y	0.0024167
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228	WINDXB	GLOBAL	Force	X	0.0006250
229	WINDXB	GLOBAL	Force	X	0.0006250
230	WINDXB	GLOBAL	Force	X	0.0006250
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233	WINDXB	GLOBAL	Force	X	0.0012500
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277	WINDXB	GLOBAL	Force	X	0.0006250
278	WINDXB	GLOBAL	Force	X	0.0006250
279	WINDXB	GLOBAL	Force	X	0.0006250
280	WINDXB	GLOBAL	Force	X	0.0009375
281	WINDXB	GLOBAL	Force	X	0.0012500
282	WINDXB	GLOBAL	Force	X	0.0012500
283	WINDXB	GLOBAL	Force	X	0.0012500
284	WINDXB	GLOBAL	Force	X	0.0018125
285	WINDXB	GLOBAL	Force	X	0.0023750
286	WINDXB	GLOBAL	Force	X	0.0023750
299	WINDXB	GLOBAL	Force	X	0.0023750
300	WINDXB	GLOBAL	Force	X	0.0011875

EISENHOWER MEMORIAL TAPESTRY FRAME WIND LOADS

FRAME ID	LOAD CASE			DIRECTION		RELATIVE DISTANCE		ABSOLUTE DISTANCE (IN)		DISTRIBUTED LOAD (K/IN)	
2	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0023750	0.0023750
4	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0047500	0.0047500
6	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0047500	0.0047500
17	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0047500	0.0047500
19	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0040417	0.0040417
21	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0033333	0.0033333
23	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0033333	0.0033333
26	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0033333	0.0033333
28	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0024167	0.0024167
30	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0015000	0.0015000
32	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0015000	0.0015000
34	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0015000	0.0015000
37	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0011875	0.0011875
39	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0023750	0.0023750
41	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0023750	0.0023750
43	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0023750	0.0023750
45	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0016042	0.0016042
47	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0008333	0.0008333
49	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0008333	0.0008333
54	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0008333	0.0008333
56	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0006667	0.0006667
58	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0005000	0.0005000
60	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0005000	0.0005000
62	WINDYA	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0005000	0.0005000
2	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0011875	0.0011875
4	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0023750	0.0023750
6	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0023750	0.0023750
17	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0023750	0.0023750
19	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0020208	0.0020208
21	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0016667	0.0016667
23	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0016667	0.0016667
26	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0016667	0.0016667
28	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0012083	0.0012083
30	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0007500	0.0007500
32	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0007500	0.0007500
34	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	79	0.0007500	0.0007500
37	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0008906	0.0008906
39	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0017813	0.0017813
41	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0017813	0.0017813
43	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0017813	0.0017813
45	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0012031	0.0012031
47	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0006250	0.0006250
49	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0006250	0.0006250
54	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0006250	0.0006250
56	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0005000	0.0005000
58	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0003750	0.0003750
60	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0003750	0.0003750
62	WINDXA	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0003750	0.0003750
2	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0011875	0.0011875
4	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0023750	0.0023750
6	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0023750	0.0023750
17	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0023750	0.0023750
19	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0020208	0.0020208
21	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0016667	0.0016667
23	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0016667	0.0016667
26	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0016667	0.0016667
28	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0012500	0.0012500
30	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0008333	0.0008333
32	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0008333	0.0008333
34	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	79	0.0008333	0.0008333
37	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0015833	0.0015833
39	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0031667	0.0031667
41	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0031667	0.0031667
43	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0031667	0.0031667
45	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0024167	0.0024167
47	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0016667	0.0016667
49	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0016667	0.0016667
54	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0016667	0.0016667
56	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0012500	0.0012500
58	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0008333	0.0008333
60	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0008333	0.0008333
62	WINDYB	GLOBAL	Force	Y	RelDist	0	1	0	78.996	0.0008333	0.0008333
2	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0005938	0.0005938
4	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0011875	0.0011875
6	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0011875	0.0011875
17	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0011875	0.0011875
19	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0010104	0.0010104
21	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0008333	0.0008333
23	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0008333	0.0008333
26	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0008333	0.0008333
28	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0006250	0.0006250
30	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0004167	0.0004167
32	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0004167	0.0004167
34	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	79	0.0004167	0.0004167
37	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0011875	0.0011875
39	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0023750	0.0023750
41	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0023750	0.0023750
43	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0023750	0.0023750
45	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0018125	0.0018125
47	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0012500	0.0012500
49	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0012500	0.0012500
54	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0012500	0.0012500
56	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0009375	0.0009375

58	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0006250	0.0006250
60	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0006250	0.0006250
62	WINDXB	GLOBAL	Force	X	RelDist	0	1	0	78.996	0.0006250	0.0006250

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3.3.6 CABLE PRESTRESS AND CONCRETE CREEP ANALYSIS

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Design Sheet

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

TAPESTRY ANALYSIS MODELS
-CABLE PRESTRESS

LOCATION | CLIENT | SHEET | DATE 3/15/12 BY BHK

CABLE PRESTRESS

EAST TAPESTRY

MAX WIND PRESSURE = 21.6 PSF

L = 75.5'

w_{TRIB} = 5.0' → w_w = 5.0' × 21.6 PSF = 0.108 K/FT

$M_w = \frac{w_w L^2}{8}$ = 77 K-FT

$\Delta_{MAX} = L/75$ = 12.1"

PRESTRESS FORCE, $P = \frac{M_w}{\Delta_{MAX}}$ = 76.4 K

WEST TAPESTRY

MAX WIND PRESSURE = 22 PSF

L = 75.5'

w_{TRIB} = 5.0' → w_w = 0.110 K/FT

$M_w = \frac{w_w L^2}{8}$ = 78.4 K-FT

Δ_{MAX} = 12.1'

PRESTRESS FORCE, P = 77.8 K

SOUTH TAPESTRY

MAX WIND PRESSURE = 12 PSF

L = 86.75'

w_{TRIB} = 5.0' → w_w = 0.060 K/FT

$M_w = \frac{w_w L^2}{8}$ = 56.5 K-FT

Δ_{MAX} = 13.8"

PRESTRESS FORCE, P = 49.2 K

EISENHOWER MEMORIAL TAPESTRY CABLE LOADS

							APPLIED CABLE LOADS								
							LOAD CASE A		LOAD CASE B						
	CABLE LINE	PANEL	$W_{trib,1}$ (FT)	$P_{EFF,1}$ (PSF)	$W_{trib,2}$ (FT)	$P_{EFF,2}$ (PSF)	$w_{wind,y}$ (KLF)	$w_{wind,x}$ (KLF)	$w_{wind,y}$ (KLF)	$w_{wind,x}$ (KLF)	L (FT)	$\Delta_{W,MAX}$ (IN)	$M_{W,MAX}$ (K-FT)	PRESTRESS (K)	
EAST TAPESTRY	BOX BM	A1	2.5	A1			0.017	0.017	0.000	0.000	75.5	12.1	12.1	12.0	
	CL13	A1	5	A1			0.034	0.034	0.000	0.000	75.5	12.1	24.2	24.1	
	CL12	A1	5	A1			0.034	0.034	0.000	0.000	75.5	12.1	24.2	24.1	
	CL11	A1	5	A1			0.034	0.034	0.000	0.000	75.5	12.1	24.2	24.1	
	CL10	A2	4.17	A2	0.83	A1	0.068	0.068	0.000	0.000	75.5	12.1	48.6	48.3	
	CL9	A2	5	A2			0.075	0.075	0.000	0.000	75.5	12.1	53.4	53.1	
	CL8	A2	5	A2			0.075	0.075	0.000	0.000	75.5	12.1	53.4	53.1	
	CL7	A2	5	A2			0.075	0.075	0.000	0.000	75.5	12.1	53.4	53.1	
	CL6	A2	5	A2			0.075	0.075	0.000	0.000	75.5	12.1	53.4	53.1	
	CL5	A3	4.17	A3	0.83	A2	0.108	0.108	0.000	0.000	75.5	12.1	76.6	76.1	
	CL4	A3	5	A3			0.114	0.114	0.000	0.000	75.5	12.1	81.2	80.7	
	CL3	A3	5	A3			0.114	0.114	0.000	0.000	75.5	12.1	81.2	80.7	
	CL2	A3	5	A3			0.114	0.114	0.000	0.000	75.5	12.1	81.2	80.7	
	CL1	A3	2.5	A3			0.057	0.057	0.000	0.000	75.5	12.1	40.6	40.3	
SOUTH TAPESTRY	BOX BM	B1	2.5	B1			0.009	0.005	0.005	0.003	86.75	13.9	8.5	7.3	7.3
	CL12	B1	5	B1			0.018	0.009	0.010	0.005	86.75	13.9	16.9	14.6	14.6
	CL11	B1	5	B1			0.018	0.009	0.010	0.005	86.75	13.9	16.9	14.6	14.6
	CL10	B1	5	B1			0.018	0.009	0.010	0.005	86.75	13.9	16.9	14.6	14.6
	CL9	B1/B2	2.5	B1	2.5	B2	0.029	0.015	0.015	0.008	86.75	13.9	27.3	23.6	23.6
	CL8	B2	5	B2			0.040	0.020	0.020	0.010	86.75	13.9	37.6	32.5	32.5
	CL7	B2	5	B2			0.040	0.020	0.020	0.010	86.75	13.9	37.6	32.5	32.5
	CL6	B2	5	B2			0.040	0.020	0.020	0.010	86.75	13.9	37.6	32.5	32.5
	CL5	B2/B3	2.5	B2	2.5	B3	0.049	0.024	0.024	0.012	86.75	13.9	45.6	39.4	39.4
	CL4	B3	5	B3			0.057	0.029	0.029	0.014	86.75	13.9	53.6	46.4	46.4
	CL3	B3	5	B3			0.057	0.029	0.029	0.014	86.75	13.9	53.6	46.4	46.4
	CL2	B3	5	B3			0.057	0.029	0.029	0.014	86.75	13.9	53.6	46.4	46.4
	CL1	B3	2.5	B3			0.029	0.014	0.014	0.007	86.75	13.9	26.8	23.2	23.2
	BOX BM	C1	2.5	C1			0.004	0.003	0.008	0.006	86.75	13.9	7.5	6.5	
	CL12	C1	5	C1			0.008	0.006	0.016	0.012	86.75	13.9	15.1	13.0	
	CL11	C1	5	C1			0.008	0.006	0.016	0.012	86.75	13.9	15.1	13.0	
	CL10	C1	5	C1			0.008	0.006	0.016	0.012	86.75	13.9	15.1	13.0	
	CL9	C1/C2	2.5	C1	2.5	C2	0.012	0.009	0.026	0.019	86.75	13.9	24.0	20.7	
	CL8	C2	5	C2			0.015	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL7	C2	5	C2			0.015	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL6	C2	5	C2			0.015	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL5	C2/C3	2.5	C2	2.5	C3	0.022	0.016	0.041	0.031	86.75	13.9	38.8	33.5	
	CL4	C3	5	C3			0.029	0.021	0.048	0.036	86.75	13.9	44.7	38.6	
	CL3	C3	5	C3			0.029	0.021	0.048	0.036	86.75	13.9	44.7	38.6	
	CL2	C3	5	C3			0.029	0.021	0.048	0.036	86.75	13.9	44.7	38.6	
	CL1	C3	2.5	C3			0.014	0.011	0.024	0.018	86.75	13.9	22.3	19.3	
	BOX BM	D1	2.5	D1			0.002	0.002	0.005	0.004	86.75	13.9	4.7	4.1	
	CL12	D1	5	D1			0.004	0.003	0.010	0.008	86.75	13.9	9.4	8.1	
	CL11	D1	5	D1			0.004	0.003	0.010	0.008	86.75	13.9	9.4	8.1	
	CL10	D1	5	D1			0.004	0.003	0.010	0.008	86.75	13.9	9.4	8.1	
	CL9	D1/D2	2.5	D1	2.5	D2	0.010	0.007	0.018	0.013	86.75	13.9	16.5	14.2	
	CL8	D2	5	D2			0.015	0.011	0.025	0.019	86.75	13.9	23.5	20.3	
	CL7	D2	5	D2			0.015	0.011	0.025	0.019	86.75	13.9	23.5	20.3	
	CL6	D2	5	D2			0.015	0.011	0.025	0.019	86.75	13.9	23.5	20.3	
	CL5	D2/D3	2.5	D2	2.5	D3	0.022	0.016	0.027	0.020	86.75	13.9	25.2	21.8	
	CL4	D3	5	D3			0.029	0.021	0.029	0.021	86.75	13.9	26.8	23.2	
	CL3	D3	5	D3			0.029	0.021	0.029	0.021	86.75	13.9	26.8	23.2	
	CL2	D3	5	D3			0.029	0.021	0.029	0.021	86.75	13.9	26.8	23.2	
	CL1	D3	2.5	D3			0.014	0.011	0.014	0.011	86.75	13.9	13.4	11.6	
	BOX BM	E1	2.5	E1			0.003	0.002	0.005	0.004	86.75	13.9	4.7	4.1	
	CL12	E1	5	E1			0.006	0.005	0.010	0.008	86.75	13.9	9.4	8.1	
	CL11	E1	5	E1			0.006	0.005	0.010	0.008	86.75	13.9	9.4	8.1	
	CL10	E1	5	E1			0.006	0.005	0.010	0.008	86.75	13.9	9.4	8.1	
	CL9	E1/E2	2.5	E1	2.5	E2	0.008	0.006	0.015	0.011	86.75	13.9	14.1	12.2	
	CL8	E2	5	E2			0.010	0.008	0.020	0.015	86.75	13.9	18.8	16.3	
	CL7	E2	5	E2			0.010	0.008	0.020	0.015	86.75	13.9	18.8	16.3	
	CL6	E2	5	E2			0.010	0.008	0.020	0.015	86.75	13.9	18.8	16.3	
	CL5	E2/E3	2.5	E2	2.5	E3	0.019	0.014	0.024	0.018	86.75	13.9	22.8	19.7	
	CL4	E3	5	E3			0.029	0.021	0.029	0.021	86.75	13.9	26.8	23.2	
	CL3	E3	5	E3			0.029	0.021	0.029	0.021	86.75	13.9	26.8	23.2	
	CL2	E3	5	E3			0.029	0.021	0.029	0.021	86.75	13.9	26.8	23.2	
	CL1	E3	2.5	E3			0.014	0.011	0.014	0.011	86.75	13.9	13.4	11.6	
	BOX BM	F1	2.5	F1			0.003	0.002	0.005	0.004	86.75	13.9	4.7	4.1	
	CL12	F1	5	F1			0.006	0.005	0.010	0.008	86.75	13.9	9.4	8.1	
	CL11	F1	5	F1			0.006	0.005	0.010	0.008	86.75	13.9	9.4	8.1	
	CL10	F1	5	F1			0.006	0.005	0.010	0.008	86.75	13.9	9.4	8.1	
	CL9	F1/F2	2.5	F1	2.5	F2	0.008	0.006	0.015	0.011	86.75	13.9	14.1	12.2	
	CL8	F2	5	F2			0.010	0.008	0.020	0.015	86.75	13.9	18.8	16.3	
	CL7	F2	5	F2			0.010	0.008	0.020	0.015	86.75	13.9	18.8	16.3	
	CL6	F2	5	F2			0.010	0.008	0.020	0.015	86.75	13.9	18.8	16.3	
	CL5	F2/F3	2.5	F2	2.5	F3	0.019	0.014	0.029	0.022	86.75	13.9	27.3	23.6	
	CL4	F3	5	F3			0.029	0.021	0.038	0.029	86.75	13.9	35.7	30.9	
	CL3	F3	5	F3			0.029	0.021	0.038	0.029	86.75	13.9	35.7	30.9	
	CL2	F3	5	F3			0.029	0.021	0.038	0.029	86.75	13.9	35.7	30.9	
	CL1	F3	2.5	F3			0.014	0.011	0.019	0.014	75.5	12.1	13.5	13.4	
WEST TAPESTRY	BOX BM	G1	2.5	G1			0.014	0.007	0.000	0.000	75.5	12.1	10.0	9.9	
	CL13	G1	5	G1			0.028	0.014	0.000	0.000	75.5	12.1	20.0	19.8	
	CL12	G1	5	G1			0.028	0.014	0.000	0.000	75.5	12.1	20.0	19.8	
	CL11	G1	5	G1			0.028	0.014	0.000	0.000	75.5	12.1	20.0	19.8	
	CL10	G2	4.17	G2	0.83	G1	0.055	0.027	0.000	0.000	75.5	12.1	39.0	38.7	
	CL9	G2	5	G2			0.060	0.030	0.000	0.000	75.5	12.1	42.8	42.5	
	CL8	G2	5	G2			0.060	0.030	0.000	0.000	75.5	12.1	42.8	42.5	
	CL7	G2	5	G2			0.060	0.030	0.000	0.000	75.5	12.1	42.8	42.5	
	CL6	G2	5	G2			0.060	0.030	0.000	0.000	75.5	12.1	42.8	42.5	
	CL5	G3	4.17	G3	0.83	G2	0.097	0.049	0.000	0.000	75.5	12.1	69.2	68.7	
	CL4	G3	5	G3			0.105	0.052	0.000	0.000	75.5	12.1	74.5	74.0	
	CL3	G3	5	G3			0.105	0.052	0.000	0.000	75.5	12.1	74.5	74.0	
	CL2	G3	5	G3			0.105	0.052	0.000	0.000	75.5	12.1	74.5	74.0	
	CL1	G3	2.5	G3			0.052	0.026	0.000	0.000	75.5	12.1	37.2	37.0	

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EISENHOWER MEMORIAL TAPESTRY CABLE LOADS - ICED

							APPLIED CABLE LOADS								
							LOAD CASE A		LOAD CASE B						
	CABLE LINE	PANEL	$W_{trib,1}$ (FT)	$P_{EFF,1}$ (PSF)	$W_{trib,2}$ (FT)	$P_{EFF,2}$ (PSF)	$w_{wind,y}$ (KLF)	$w_{wind,x}$ (KLF)	$w_{wind,y}$ (KLF)	$w_{wind,x}$ (KLF)	L (FT)	$\Delta_{W,MAX}$ (IN)	$M_{W,MAX}$ (K-FT)	PRESTRESS (K)	
EAST TAPESTRY	BOX BM	A1	2.5	A1			0.037	0.037	0.000	0.000	75.5	18.1	26.2	17.3	
	CL13	A1	5	A1			0.074	0.074	0.000	0.000	75.5	18.1	52.4	34.7	
	CL12	A1	5	A1			0.074	0.074	0.000	0.000	75.5	18.1	52.4	34.7	
	CL11	A1	5	A1			0.074	0.074	0.000	0.000	75.5	18.1	52.4	34.7	
	CL10	A2	4.17	A2	0.83	A1	0.087	0.087	0.000	0.000	75.5	18.1	62.2	41.2	
	CL9	A2	5	A2			0.090	0.090	0.000	0.000	75.5	18.1	64.1	42.5	
	CL8	A2	5	A2			0.090	0.090	0.000	0.000	75.5	18.1	64.1	42.5	
	CL7	A2	5	A2			0.090	0.090	0.000	0.000	75.5	18.1	64.1	42.5	
	CL6	A2	5	A2			0.090	0.090	0.000	0.000	75.5	18.1	64.1	42.5	
	CL5	A3	4.17	A3	0.83	A2	0.086	0.086	0.000	0.000	75.5	18.1	61.2	40.5	
	CL4	A3	5	A3			0.085	0.085	0.000	0.000	75.5	18.1	60.6	40.1	
	CL3	A3	5	A3			0.085	0.085	0.000	0.000	75.5	18.1	60.6	40.1	
	CL2	A3	5	A3			0.085	0.085	0.000	0.000	75.5	18.1	60.6	40.1	
	CL1	A3	2.5	A3			0.043	0.043	0.000	0.000	75.5	18.1	30.3	20.1	
SOUTH TAPESTRY	BOX BM	B1	2.5	B1			0.019	0.010	0.018	0.009	86.75	13.9	18.1	15.7	22.8
	CL12	B1	5	B1			0.039	0.019	0.035	0.018	86.75	13.9	36.2	31.3	45.5
	CL11	B1	5	B1			0.039	0.019	0.035	0.018	86.75	13.9	36.2	31.3	45.5
	CL10	B1	5	B1			0.039	0.019	0.035	0.018	86.75	13.9	36.2	31.3	45.5
	CL9	B1/B2	2.5	B1	2.5	B2	0.044	0.022	0.038	0.019	86.75	13.9	41.6	36.0	51.2
	CL8	B2	5	B2			0.050	0.025	0.040	0.020	86.75	13.9	47.0	40.7	56.9
	CL7	B2	5	B2			0.050	0.025	0.040	0.020	86.75	13.9	47.0	40.7	56.9
	CL6	B2	5	B2			0.050	0.025	0.040	0.020	86.75	13.9	47.0	40.7	56.9
	CL5	B2/B3	2.5	B2	2.5	B3	0.053	0.026	0.035	0.018	86.75	13.9	49.4	42.7	48.8
	CL4	B3	5	B3			0.055	0.028	0.030	0.015	86.75	13.9	51.7	44.7	44.7
	CL3	B3	5	B3			0.055	0.028	0.030	0.015	86.75	13.9	51.7	44.7	44.7
	CL2	B3	5	B3			0.055	0.028	0.030	0.015	86.75	13.9	51.7	44.7	44.7
	CL1	B3	2.5	B3			0.028	0.014	0.015	0.008	86.75	13.9	25.9	22.4	22.4
	BOX BM	C1	2.5	C1			0.011	0.008	0.028	0.021	86.75	13.9	26.3	22.8	
	CL12	C1	5	C1			0.021	0.016	0.056	0.042	86.75	13.9	52.7	45.5	
	CL11	C1	5	C1			0.021	0.016	0.056	0.042	86.75	13.9	52.7	45.5	
	CL10	C1	5	C1			0.021	0.016	0.056	0.042	86.75	13.9	52.7	45.5	
	CL9	C1/C2	2.5	C1	2.5	C2	0.026	0.019	0.063	0.047	86.75	13.9	59.3	51.2	
	CL8	C2	5	C2			0.030	0.023	0.070	0.053	86.75	13.9	65.8	56.9	
	CL7	C2	5	C2			0.030	0.023	0.070	0.053	86.75	13.9	65.8	56.9	
	CL6	C2	5	C2			0.030	0.023	0.070	0.053	86.75	13.9	65.8	56.9	
	CL5	C2/C3	2.5	C2	2.5	C3	0.033	0.024	0.060	0.045	86.75	13.9	56.4	48.8	
	CL4	C3	5	C3			0.035	0.026	0.050	0.038	86.75	13.9	47.0	40.7	
	CL3	C3	5	C3			0.035	0.026	0.050	0.038	86.75	13.9	47.0	40.7	
	CL2	C3	5	C3			0.035	0.026	0.050	0.038	86.75	13.9	47.0	40.7	
	CL1	C3	2.5	C3			0.018	0.013	0.025	0.019	86.75	13.9	23.5	20.3	
	BOX BM	D1	2.5	D1			0.005	0.004	0.018	0.013	86.75	13.9	16.5	14.2	
	CL12	D1	5	D1			0.011	0.008	0.035	0.026	86.75	13.9	32.9	28.5	
	CL11	D1	5	D1			0.011	0.008	0.035	0.026	86.75	13.9	32.9	28.5	
	CL10	D1	5	D1			0.011	0.008	0.035	0.026	86.75	13.9	32.9	28.5	
	CL9	D1/D2	2.5	D1	2.5	D2	0.018	0.013	0.043	0.032	86.75	13.9	40.0	34.6	
	CL8	D2	5	D2			0.025	0.019	0.050	0.038	86.75	13.9	47.0	40.7	
	CL7	D2	5	D2			0.025	0.019	0.050	0.038	86.75	13.9	47.0	40.7	
	CL6	D2	5	D2			0.025	0.019	0.050	0.038	86.75	13.9	47.0	40.7	
	CL5	D2/D3	2.5	D2	2.5	D3	0.028	0.021	0.040	0.030	86.75	13.9	37.6	32.5	
	CL4	D3	5	D3			0.030	0.023	0.030	0.023	86.75	13.9	28.2	24.4	
	CL3	D3	5	D3			0.030	0.023	0.030	0.023	86.75	13.9	28.2	24.4	
	CL2	D3	5	D3			0.030	0.023	0.030	0.023	86.75	13.9	28.2	24.4	
	CL1	D3	2.5	D3			0.015	0.011	0.015	0.011	86.75	13.9	14.1	12.2	
	BOX BM	E1	2.5	E1			0.007	0.005	0.018	0.013	86.75	13.9	16.5	14.2	
	CL12	E1	5	E1			0.014	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL11	E1	5	E1			0.014	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL10	E1	5	E1			0.014	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL9	E1/E2	2.5	E1	2.5	E2	0.017	0.013	0.038	0.028	86.75	13.9	35.3	30.5	
	CL8	E2	5	E2			0.020	0.015	0.040	0.030	86.75	13.9	37.6	32.5	
	CL7	E2	5	E2			0.020	0.015	0.040	0.030	86.75	13.9	37.6	32.5	
	CL6	E2	5	E2			0.020	0.015	0.040	0.030	86.75	13.9	37.6	32.5	
	CL5	E2/E3	2.5	E2	2.5	E3	0.023	0.017	0.035	0.026	86.75	13.9	32.9	28.5	
	CL4	E3	5	E3			0.025	0.019	0.030	0.023	86.75	13.9	28.2	24.4	
	CL3	E3	5	E3			0.025	0.019	0.030	0.023	86.75	13.9	28.2	24.4	
	CL2	E3	5	E3			0.025	0.019	0.030	0.023	86.75	13.9	28.2	24.4	
	CL1	E3	2.5	E3			0.013	0.009	0.015	0.011	86.75	13.9	14.1	12.2	
	BOX BM	F1	2.5	F1			0.007	0.005	0.018	0.013	86.75	13.9	16.5	14.2	
	CL12	F1	5	F1			0.014	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL11	F1	5	F1			0.014	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL10	F1	5	F1			0.014	0.011	0.035	0.026	86.75	13.9	32.9	28.5	
	CL9	F1/F2	2.5	F1	2.5	F2	0.017	0.013	0.038	0.028	86.75	13.9	35.3	30.5	
	CL8	F2	5	F2			0.020	0.015	0.040	0.030	86.75	13.9	37.6	32.5	
	CL7	F2	5	F2			0.020	0.015	0.040	0.030	86.75	13.9	37.6	32.5	
	CL6	F2	5	F2			0.020	0.015	0.040	0.030	86.75	13.9	37.6	32.5	
	CL5	F2/F3	2.5	F2	2.5	F3	0.023	0.017	0.040	0.030	86.75	13.9	37.6	32.5	
	CL4	F3	5	F3			0.025	0.019	0.040	0.030	86.75	13.9	37.6	32.5	
	CL3	F3	5	F3			0.025	0.019	0.040	0.030	86.75	13.9	37.6	32.5	
	CL2	F3	5	F3			0.025	0.019	0.040	0.030	86.75	13.9	37.6	32.5	
	CL1	F3	2.5	F3			0.013	0.009	0.020	0.015	75.5	12.1	14.3	14.2	
WEST TAPESTRY	BOX BM	G1	2.5	G1			0.028	0.014	0.000	0.000	75.5	18.1	20.0	13.2	
	CL13	G1	5	G1			0.056	0.028	0.000	0.000	75.5	18.1	39.9	26.4	
	CL12	G1	5	G1			0.056	0.028	0.000	0.000	75.5	18.1	39.9	26.4	
	CL11	G1	5	G1			0.056	0.028	0.000	0.000	75.5	18.1	39.9	26.4	
	CL10	G2	4.17	G2	0.83	G1	0.064	0.032	0.000	0.000	75.5	18.1	45.3	30.0	
	CL9	G2	5	G2			0.065	0.033	0.000	0.000	75.5	18.1	46.3	30.7	
	CL8	G2	5	G2			0.065	0.033	0.000	0.000	75.5	18.1	46.3	30.7	
	CL7	G2	5	G2			0.065	0.033	0.000	0.000	75.5	18.1	46.3	30.7	
	CL6	G2	5	G2			0.065	0.033	0.000	0.000	75.5	18.1	46.3	30.7	
	CL5	G3	4.17	G3	0.83	G2	0.061	0.030	0.000	0.000	75.5	18.1	43.3	28.7	
	CL4	G3	5	G3			0.060	0.030	0.000	0.000	75.5	18.1	42.8	28.3	
	CL3	G3	5	G3			0.060	0.030	0.000	0.000	75.5	18.1	42.8	28.3	
	CL2	G3	5	G3			0.060	0.030	0.000	0.000	75.5	18.1	42.8	28.3	
	CL1	G3	2.5	G3			0.030	0.015	0.000	0.000	75.5	18.1	21.4	14.2	

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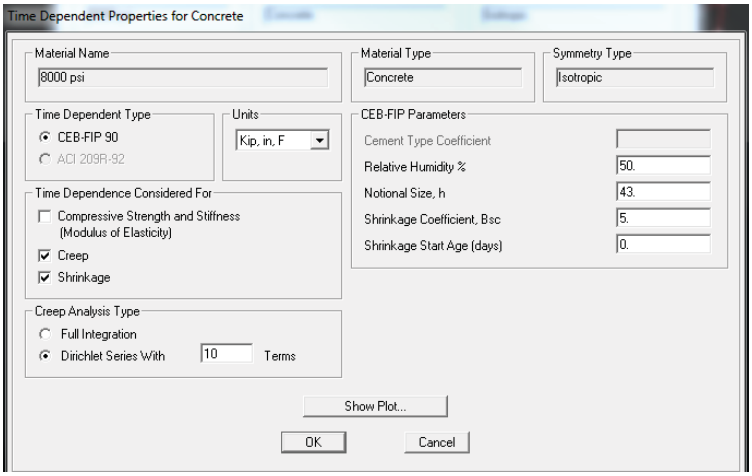
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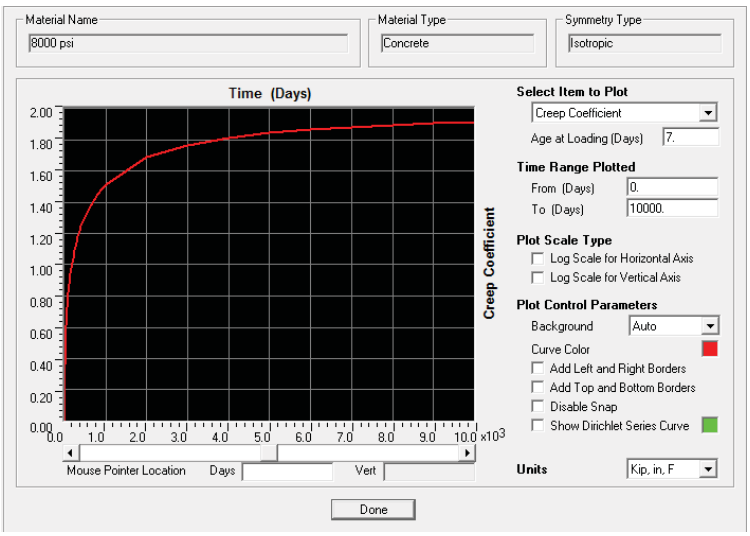
EISENHOWER MEMORIAL TAPESTRY STRUCTURE

CONCRETE CREEP ANALYSIS

The concrete creep analysis for the tapestry columns is performed in SAP2000 Version 15. SAP2000 utilizes the methodology provided in CEB-FIP 90 to perform an incremental creep analysis of the concrete structure based on the state of stress in the concrete at each given time step. This method analysis is appropriate for a highly nonlinear structure such as the tapestry structures, given that the state of stress in the columns is dependent on the nonlinearly behaving cables and foundation system.

The user defines the time-dependent material properties of the concrete to be used in the analysis.





Once the time-dependent material properties are defined, the user defines nonlinear staged construction analyses, which are used to sequentially build and load the structure and then evaluate the effects of creep over a given time period.

TABLE: Case - Static 5 - Nonlinear Stage Definitions

Case	Stage	Duration	Output	OutputName	Comment
Text	Unitless	Unitless	Yes/No	Text	Text
ACASE2	1	0	Yes	Columns	
ACASE2-1	1	0	Yes	Box Beam	
ACASE2-2	1	0	Yes	Remove Tie	
ACASE2-2	2	0	Yes	Cables	
ACASE2-2	3	0	Yes	Load Cables	
ACASE2-3	1	0	Yes	Tapestry DL	
ACASE2-3	2	0	Yes	Retension	
ACASE2-4	1	62	Yes	Creep28-90	
ACASE2-4	2	90	Yes	Creep90-180	
ACASE2-4	3	180	Yes	Creep180-360	
ACASE2-4	4	360	Yes	Creep360-720	
ACASE2-4	5	360	Yes	Creep720-1080	
ACASE2-4	6	360	Yes	Creep1080-1440	
ACASE2-4	7	360	Yes	Creep1440-1800	

TABLE: Case - Static 6 - Nonlinear Stage Data

Case	Stage	Operation	ObjType	ObjName	Age	LoadType
Text	Unitless	Text	Text	Text	Unitless	Text
ACASE2-1	1	Add Structure	Group	Horiz Box	28	
ACASE2-1	1	Load Objects If New	Group	ALL		Load patter
ACASE2-2	1	Remove Structure	Group	TIE		
ACASE2-2	2	Add Structure	Group	Horiz Cables	28	
ACASE2-2	2	Add Structure	Group	Vert Cables	28	
ACASE2-2	2	Load Objects If New	Group	Horiz Cables		Load patter
ACASE2-2	3	Load Objects	Group	Vert Cables		Load patter
ACASE2-2	3	Load Objects	Group	Horiz Cables		Load patter
ACASE2-2	3	Load Objects	Group	Horiz Cables		Load patter
ACASE2-3	1	Load Objects	Group	ALL		Load patter
ACASE2-3	1	Load Objects	Group	Columns		Load patter
ACASE2-3	2	Load Objects	Group	Top Vert Cables		Load patter

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3.4 STRUCTURAL ANALYSIS RESULTS

The following pages summarize the static load cases in the structural analysis model.

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EAST TAPESTRY ANALYSIS MODEL
-NONLINEAR STATIC LOAD CASES

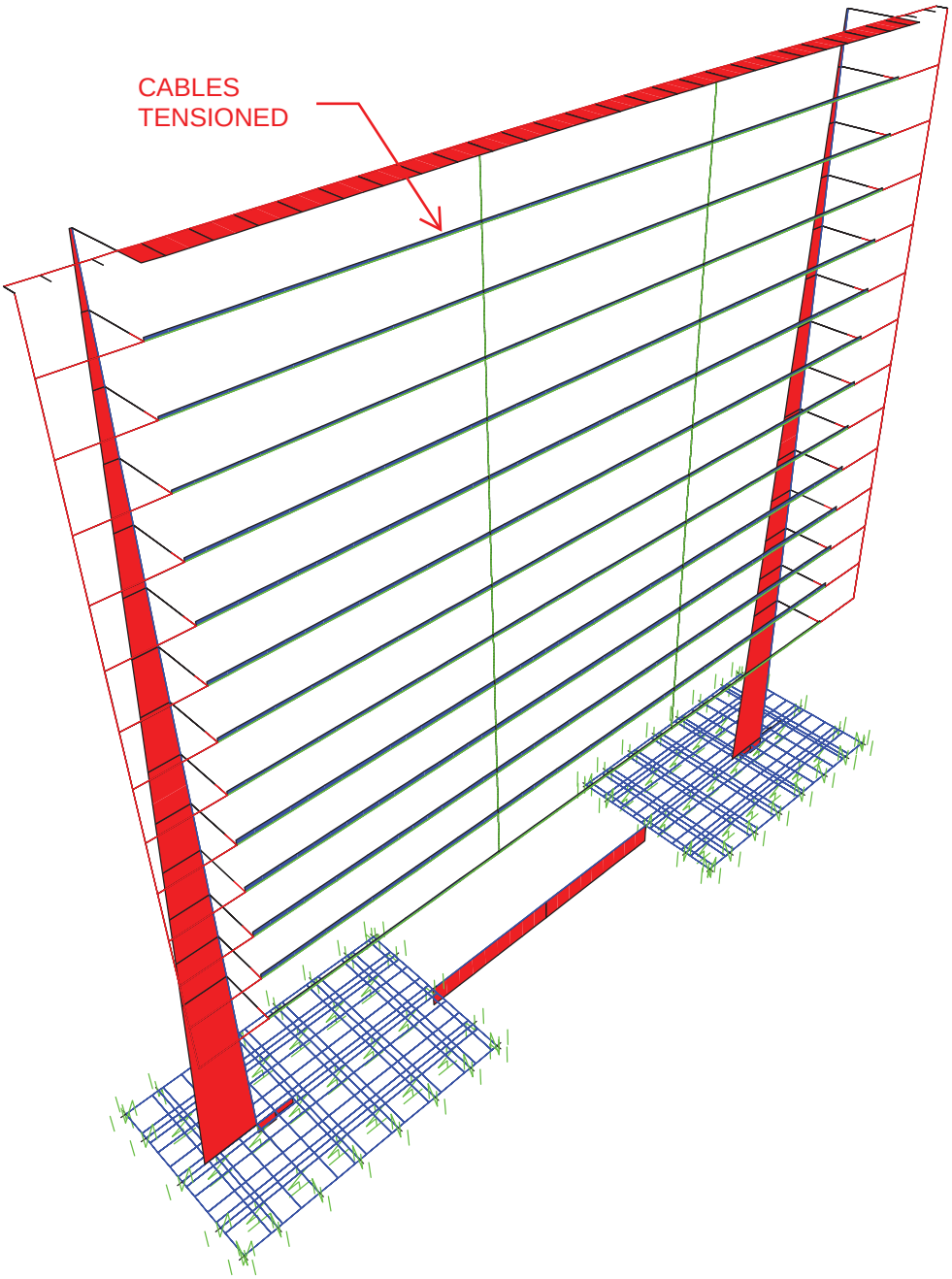
Case	Type	InitialCond	ModalCase	BaseCase	DesTypeOpt	DesignType	DesActOpt	AutoType	RunCase
Text	Text	Text	Text	Text	Text	Text	Text	Text	Yes/No
P+SW	NonStatic	Zero			Prog Det	OTHER	Prog Det	None	Yes
P+D	NonStatic	P+SW			Prog Det	OTHER	Prog Det	None	Yes
P+D+Tmax	NonStatic	P+D			Prog Det	TEMPERATURE	Prog Det	None	Yes
P+D+Tmin	NonStatic	P+D			Prog Det	TEMPERATURE	Prog Det	None	Yes
P+D+Tmax+WA1	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA1	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WA2	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA2	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA1	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA1	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA2	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA2	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6SW	NonStatic	Zero			Prog Det	OTHER	Prog Det	None	No
P+0.6D	NonStatic	P+0.6SW			Prog Det	OTHER	Prog Det	None	Yes
P+0.6D+Tmax	NonStatic	P+0.6D			Prog Det	TEMPERATURE	Prog Det	None	Yes
P+0.6D+Tmin	NonStatic	P+0.6D			Prog Det	TEMPERATURE	Prog Det	None	Yes
P+0.6D+Tmax+WA1	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin+WA1	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmax+WA2	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin+WA2	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmax-WA1	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin-WA1	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmax-WA2	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin-WA2	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D ICE	NonStatic	P+D			Prog Det	OTHER	Prog Det	None	Yes
P+D+Tmax ICE	NonStatic	P+D ICE			Prog Det	TEMPERATURE	Prog Det	None	Yes
P+D+Tmin ICE	NonStatic	P+D ICE			Prog Det	TEMPERATURE	Prog Det	None	Yes
P+D+Tmax+WA1 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA1 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WA2 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA2 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA1 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA1 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA2 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA2 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
MODAL	LinModal	P+D			Prog Det	QUAKE	Prog Det	None	Yes
SOIL	LinStatic	Zero			Prog Det	OTHER	Prog Det	None	No

EAST TAPESTRY ANALYSIS MODEL
-NONLINEAR STATIC LOAD CASES

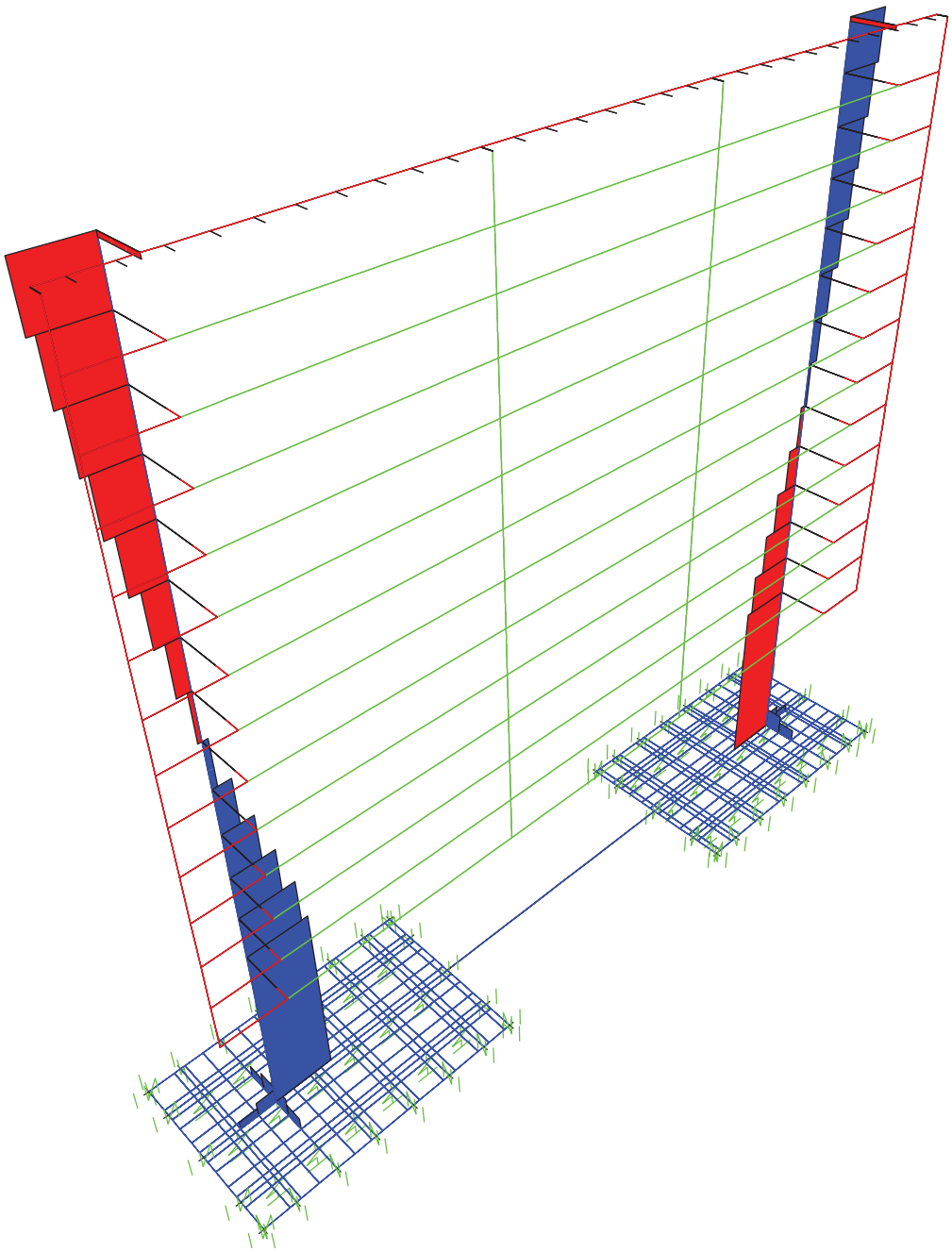
TABLE: Case - Static 1 - Load Assignments

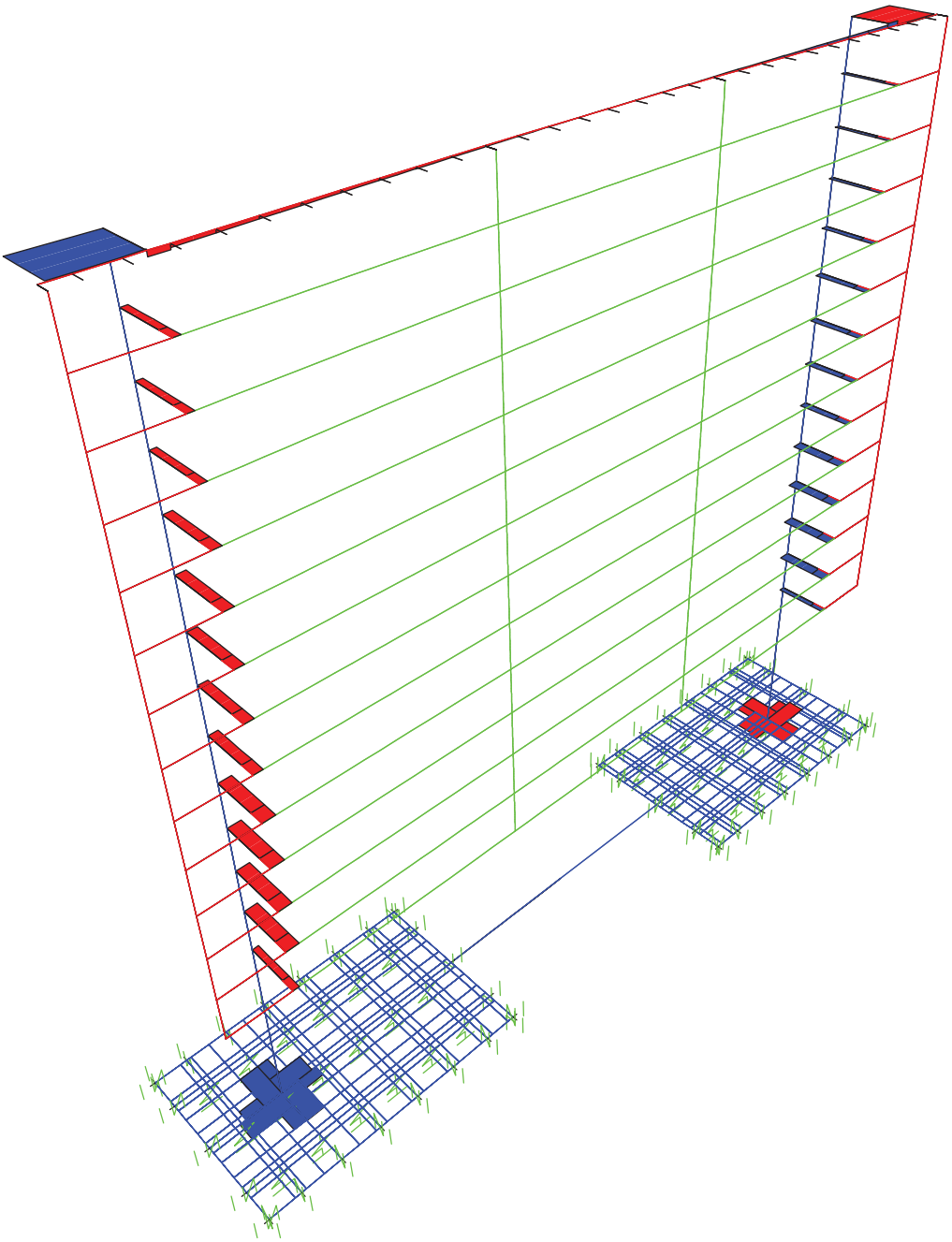
Case	LoadType	LoadName	LoadSF
Text	Text	Text	Unitless
P+SW	Load pattern	PRESTRESS	1
P+SW	Load pattern	SW	1
P+D	Load pattern	DEAD	1
P+D	Load pattern	TAPESTRY DE/	1
P+D+Tmax	Load pattern	THERMALmax	1
P+D+Tmin	Load pattern	THERMALmin	1
P+D+Tmax+WA1	Load pattern	WINDY	1
P+D+Tmin+WA1	Load pattern	WINDY	1
P+D+Tmax+WA2	Load pattern	WINDY	0.5
P+D+Tmax+WA2	Load pattern	WINDX	1
P+D+Tmin+WA2	Load pattern	WINDY	0.5
P+D+Tmin+WA2	Load pattern	WINDX	1
P+D+Tmax-WA1	Load pattern	WINDY	-1
P+D+Tmin-WA1	Load pattern	WINDY	-1
P+D+Tmax-WA2	Load pattern	WINDY	-0.5
P+D+Tmax-WA2	Load pattern	WINDX	1
P+D+Tmin-WA2	Load pattern	WINDY	-0.5
P+D+Tmin-WA2	Load pattern	WINDX	1
P+0.6SW	Load pattern	PRESTRESS	1
P+0.6SW	Load pattern	SW	0.6
P+0.6D	Load pattern	DEAD	0.6
P+0.6D	Load pattern	TAPESTRY DE/	0.6
P+0.6D+Tmax	Load pattern	THERMALmax	1
P+0.6D+Tmin	Load pattern	THERMALmin	1
P+0.6D+Tmax+WA1	Load pattern	WINDY	1
P+0.6D+Tmin+WA1	Load pattern	WINDY	1
P+0.6D+Tmax+WA2	Load pattern	WINDY	0.5
P+0.6D+Tmax+WA2	Load pattern	WINDX	1
P+0.6D+Tmin+WA2	Load pattern	WINDY	0.5
P+0.6D+Tmin+WA2	Load pattern	WINDX	1
P+0.6D+Tmax-WA1	Load pattern	WINDY	-1
P+0.6D+Tmin-WA1	Load pattern	WINDY	-1
P+0.6D+Tmax-WA2	Load pattern	WINDY	-0.5
P+0.6D+Tmax-WA2	Load pattern	WINDX	1
P+0.6D+Tmin-WA2	Load pattern	WINDY	-0.5
P+0.6D+Tmin-WA2	Load pattern	WINDX	1
P+D ICE	Load Pattern	ICE	0.7
P+D+Tmax ICE	Load Pattern	THERMALmax	1
P+D+Tmin ICE	Load Pattern	THERMALmin	1
P+D+Tmax+WA1 ICE	Load pattern	WINDYi	0.7
P+D+Tmin+WA1 ICE	Load pattern	WINDYi	0.7
P+D+Tmax+WA2 ICE	Load pattern	WINDYi	0.35
P+D+Tmax+WA2 ICE	Load pattern	WINDXi	0.7
P+D+Tmin+WA2 ICE	Load pattern	WINDYi	0.35
P+D+Tmin+WA2 ICE	Load pattern	WINDXi	0.7
P+D+Tmax-WA1 ICE	Load pattern	WINDYi	-0.7
P+D+Tmin-WA1 ICE	Load pattern	WINDYi	-0.7
P+D+Tmax-WA2 ICE	Load pattern	WINDYi	-0.35
P+D+Tmax-WA2 ICE	Load pattern	WINDXi	0.7
P+D+Tmin-WA2 ICE	Load pattern	WINDYi	-0.35
P+D+Tmin-WA2 ICE	Load pattern	WINDXi	0.7
SOIL	Load pattern	SOIL	1

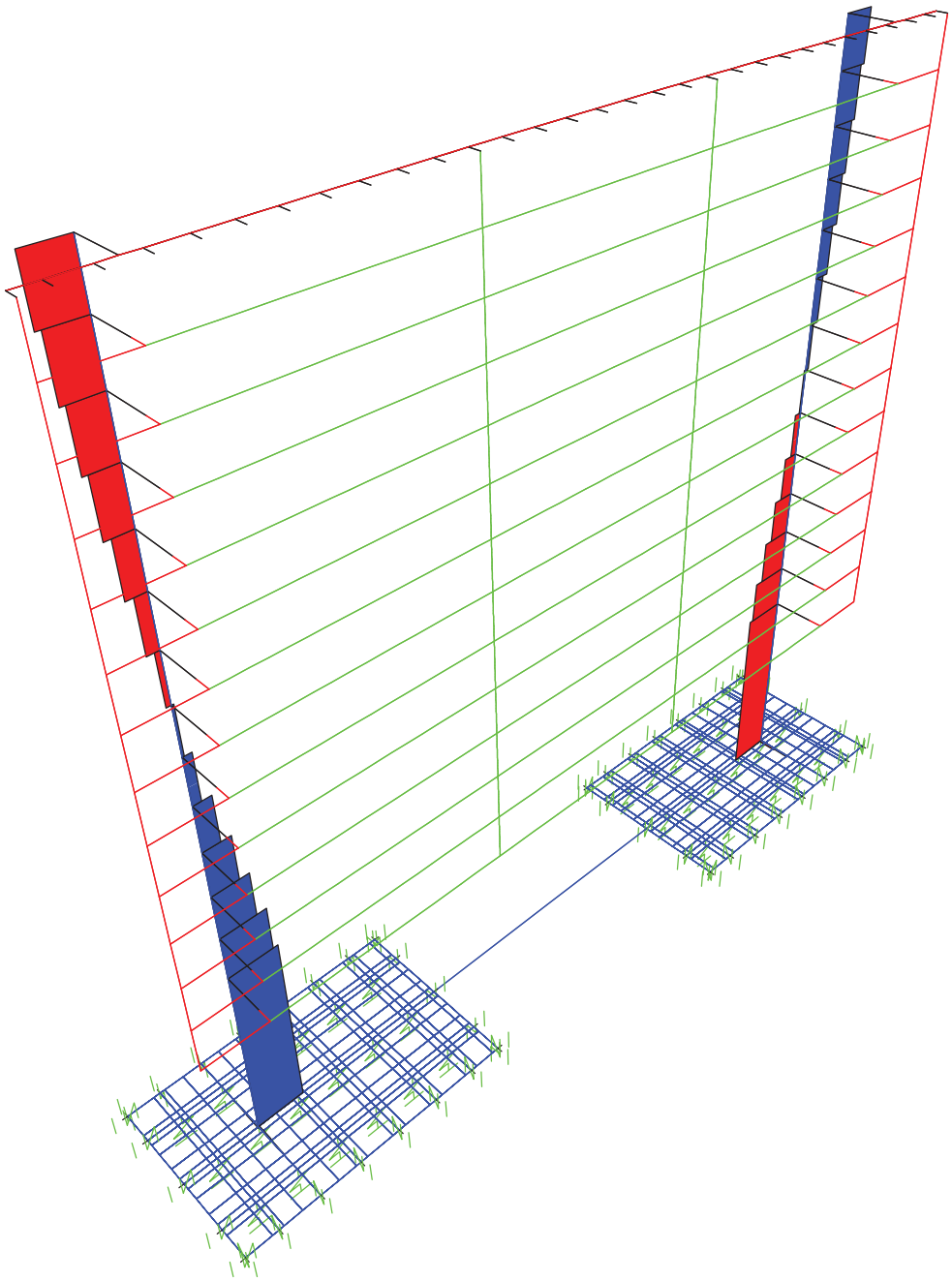
EAST TAPESTRY ANALYSIS MODEL
-PRESTRESS+SELF WEIGHT RESULTS

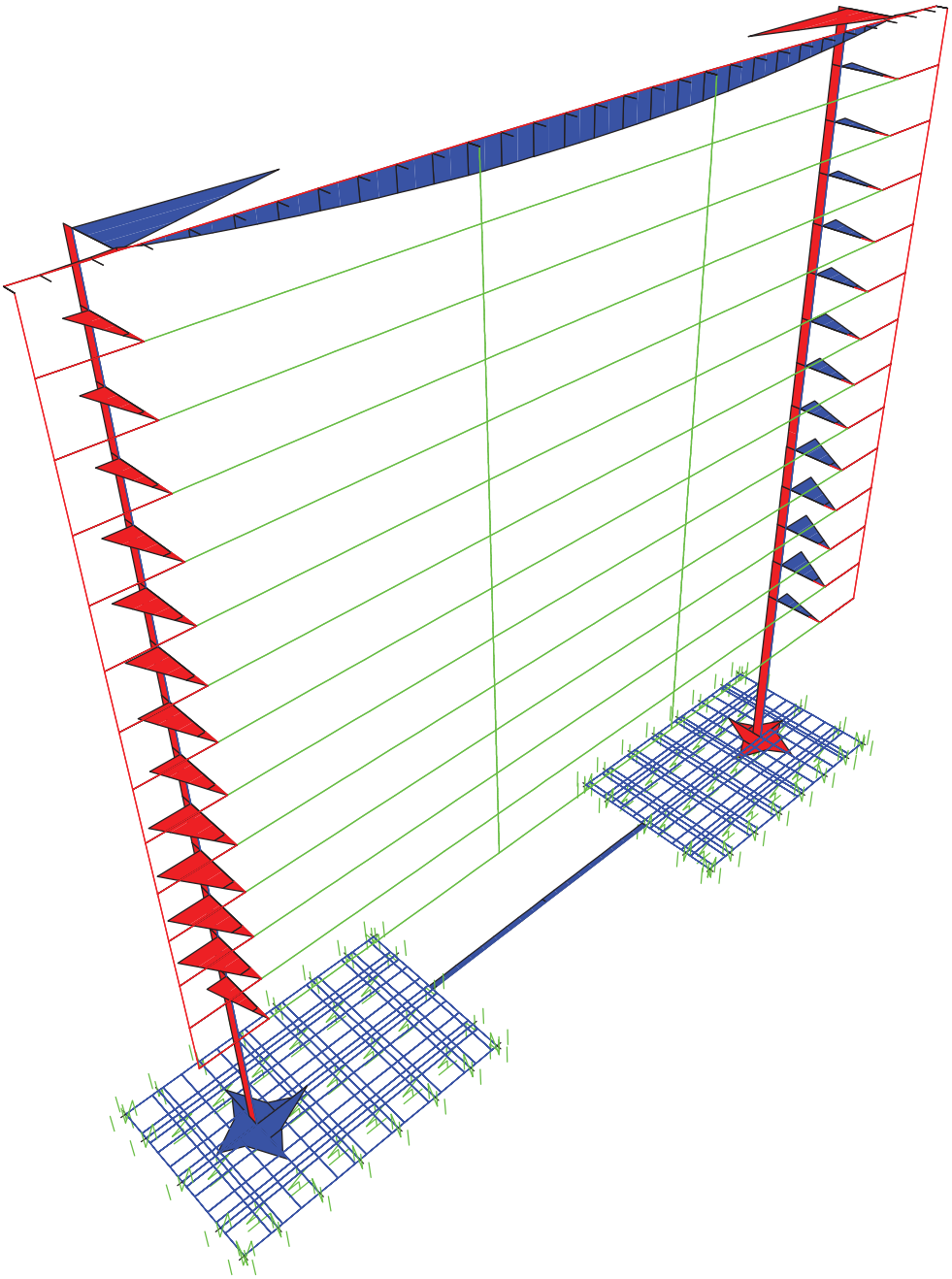


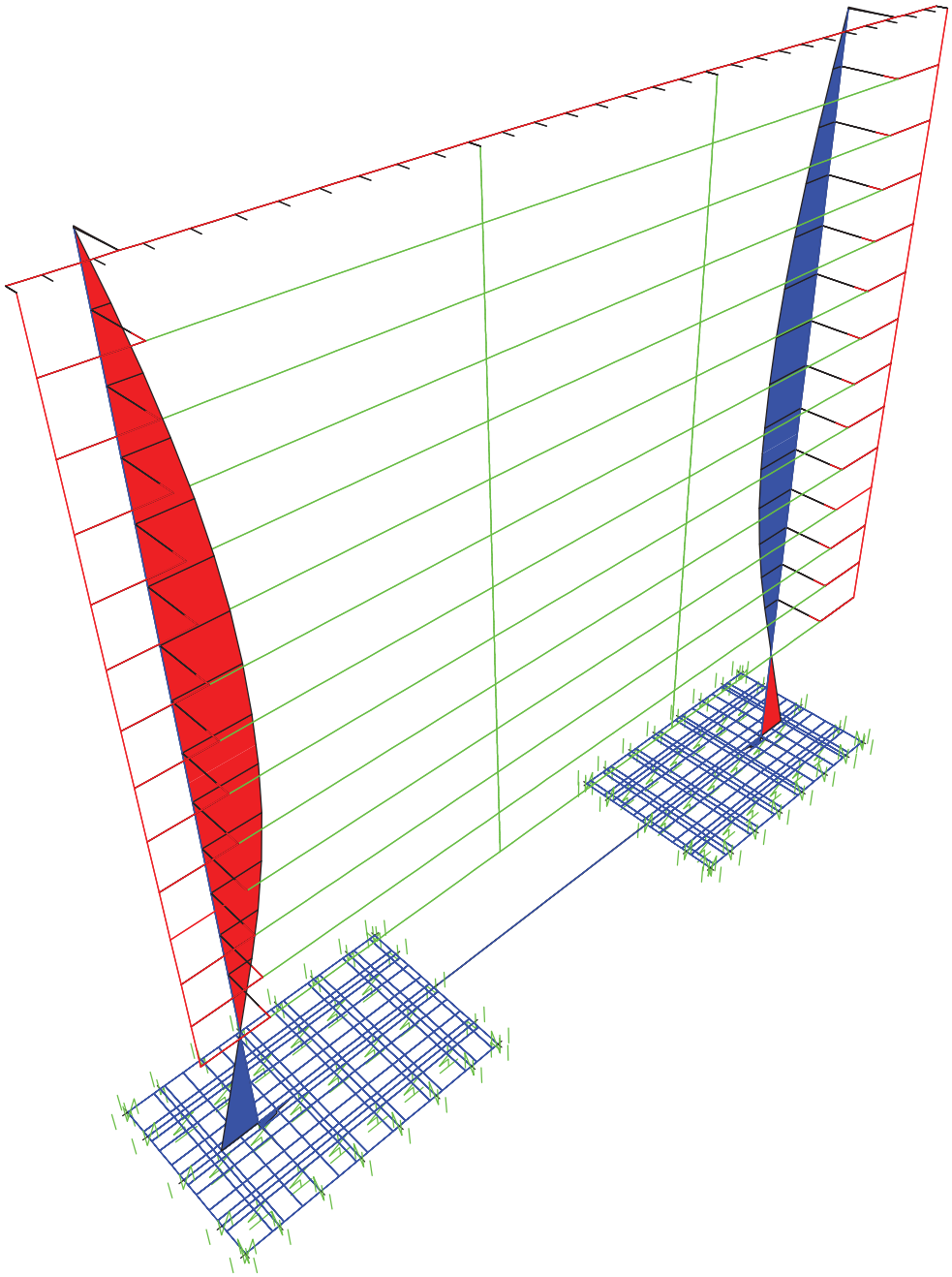
NOTE:
RED DIAGRAM IS COMPRESSION.
BLUE DIAGRAM IS TENSION.

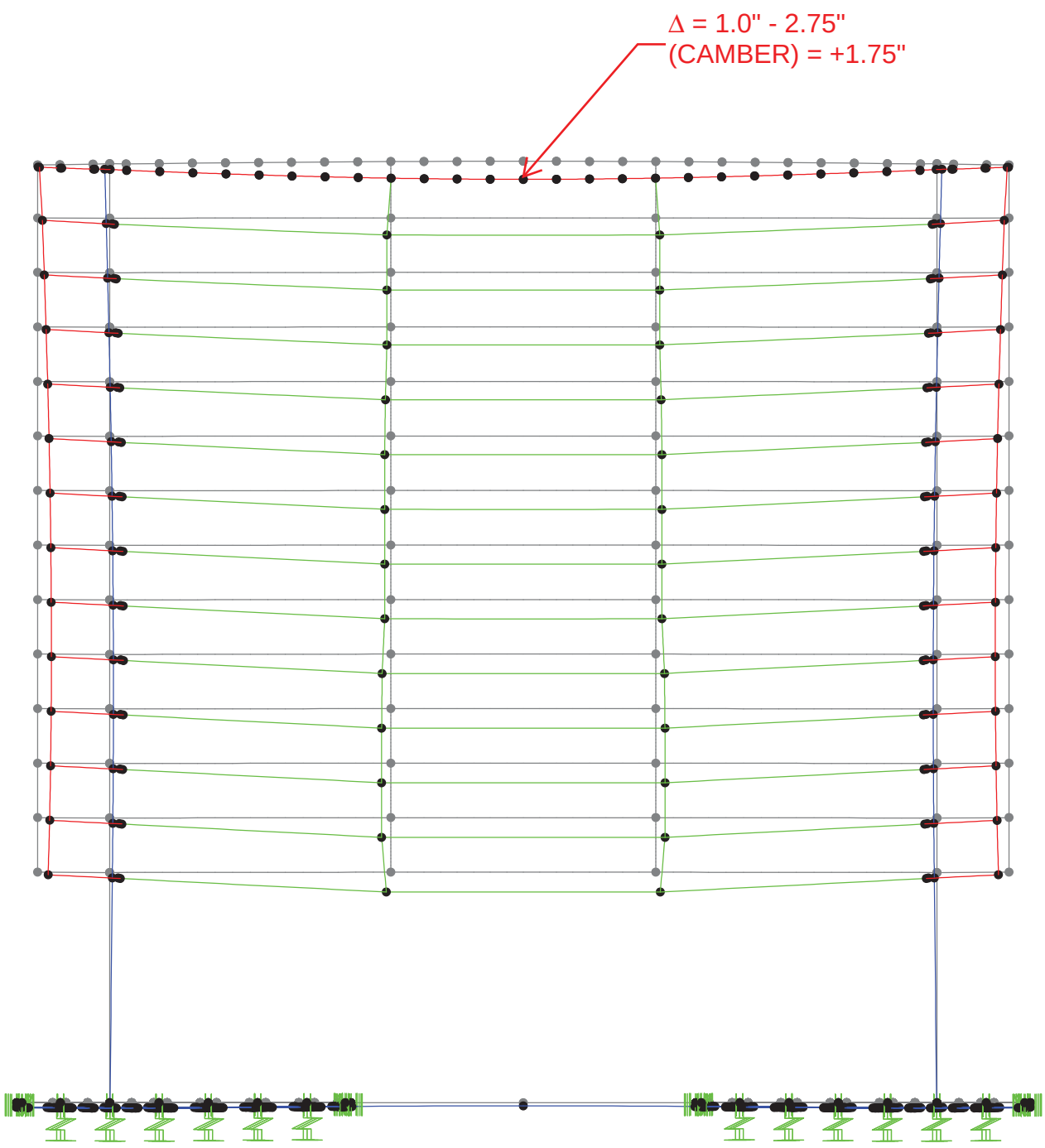


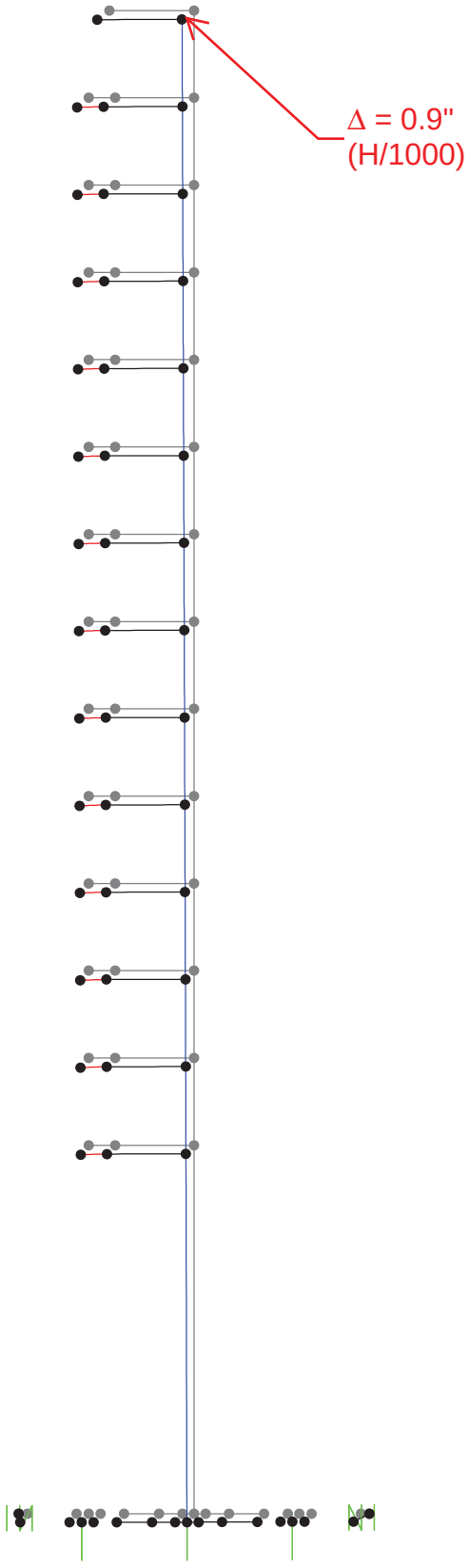


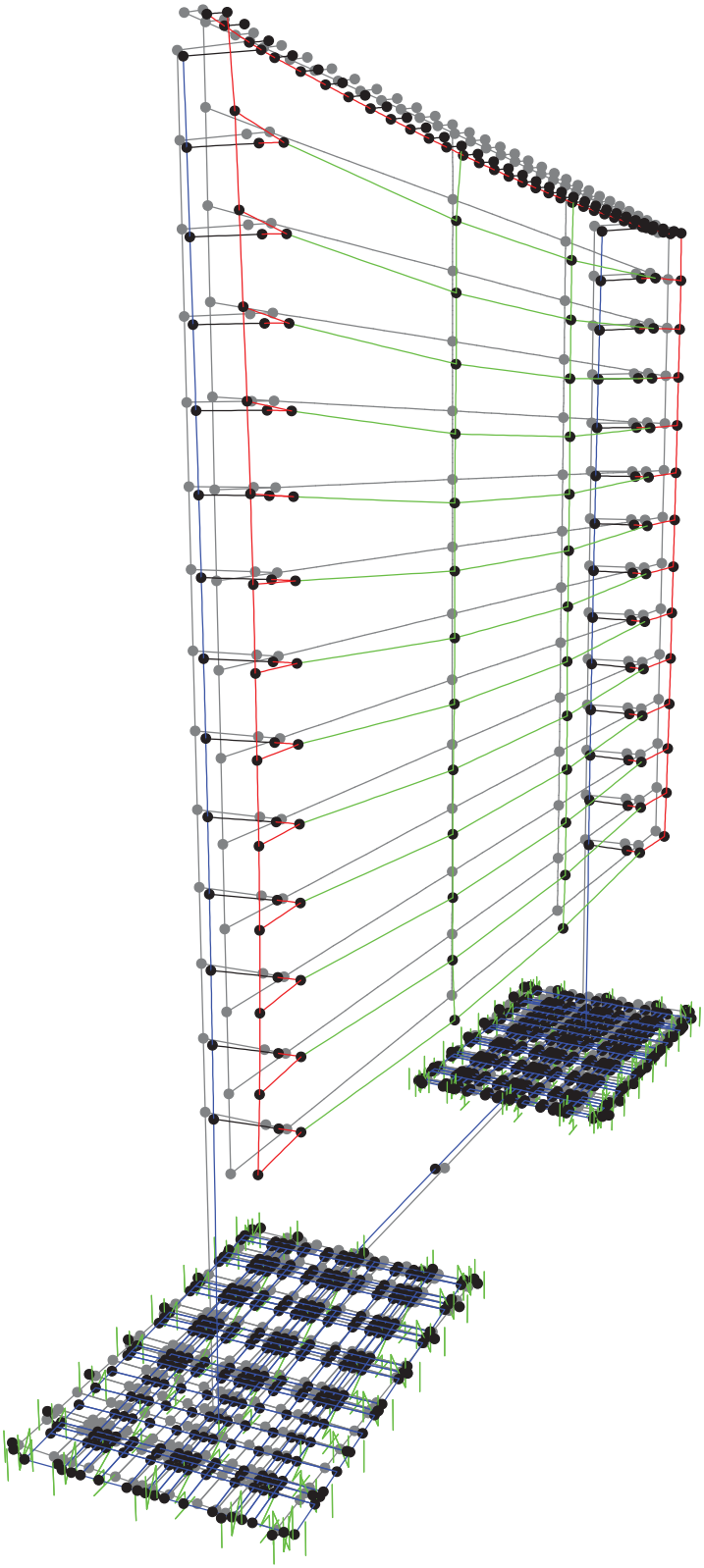




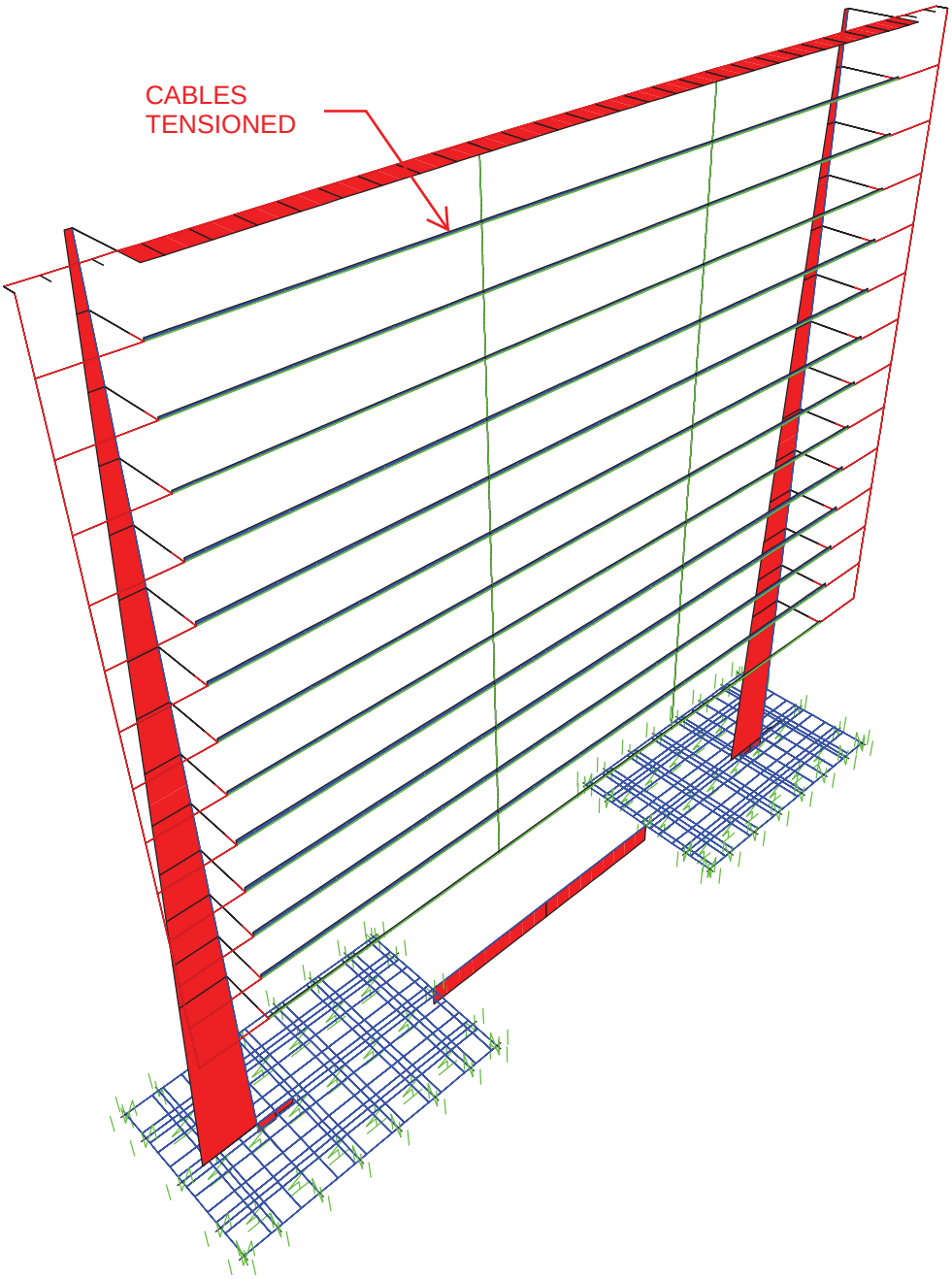



Δ = 1.0" - 2.75"
(CAMBER) = +1.75"

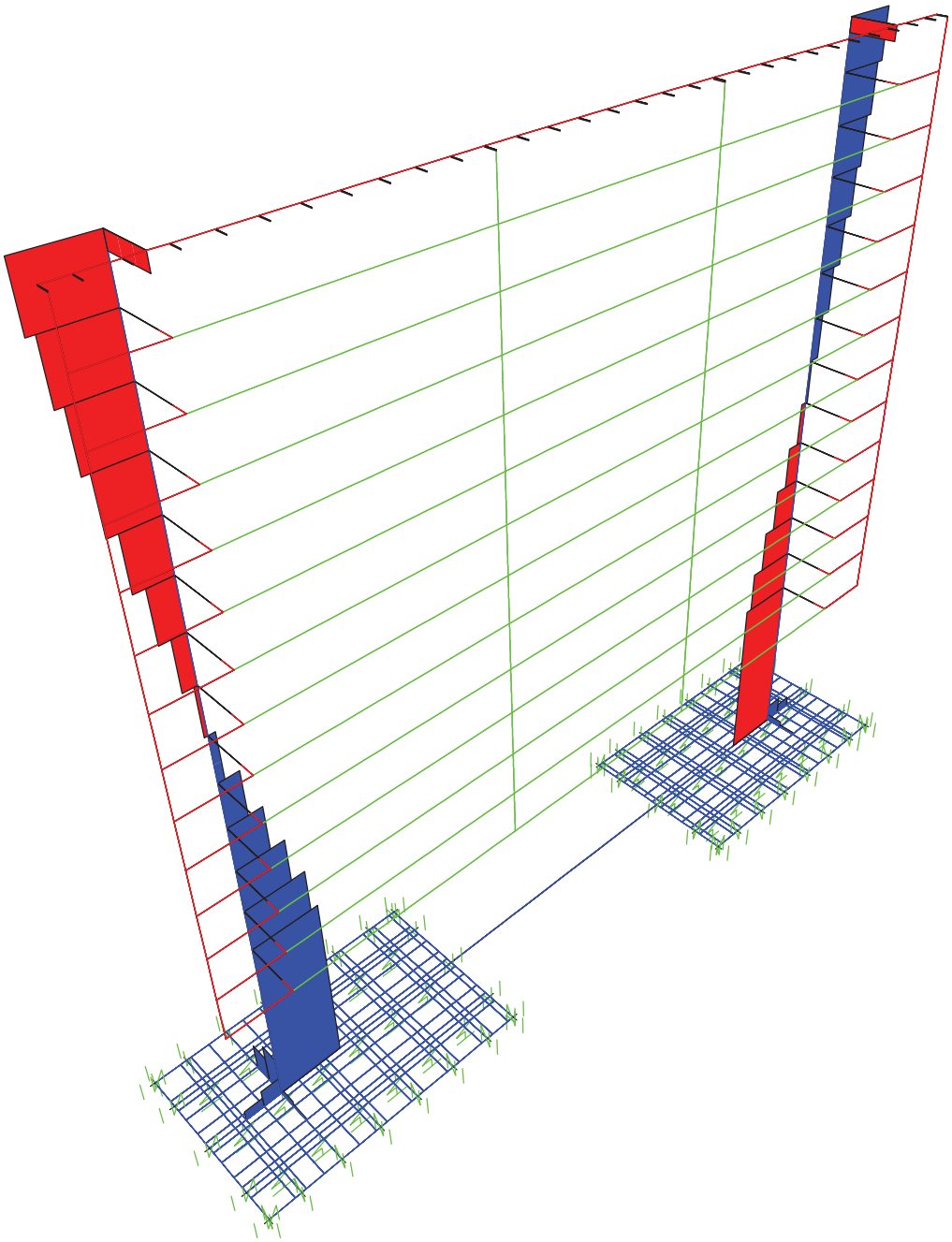

Δ = 0.9"
(H/1000)

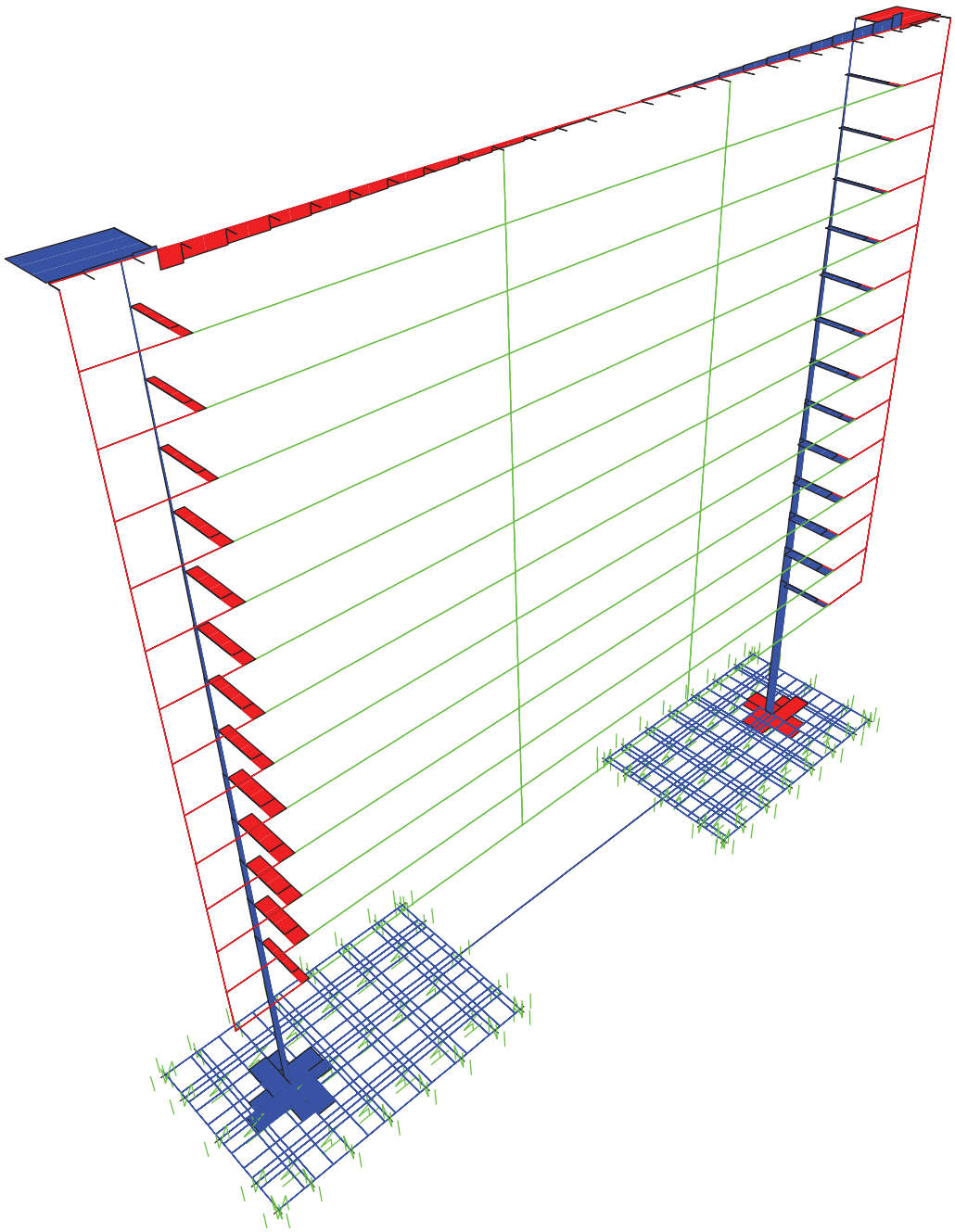


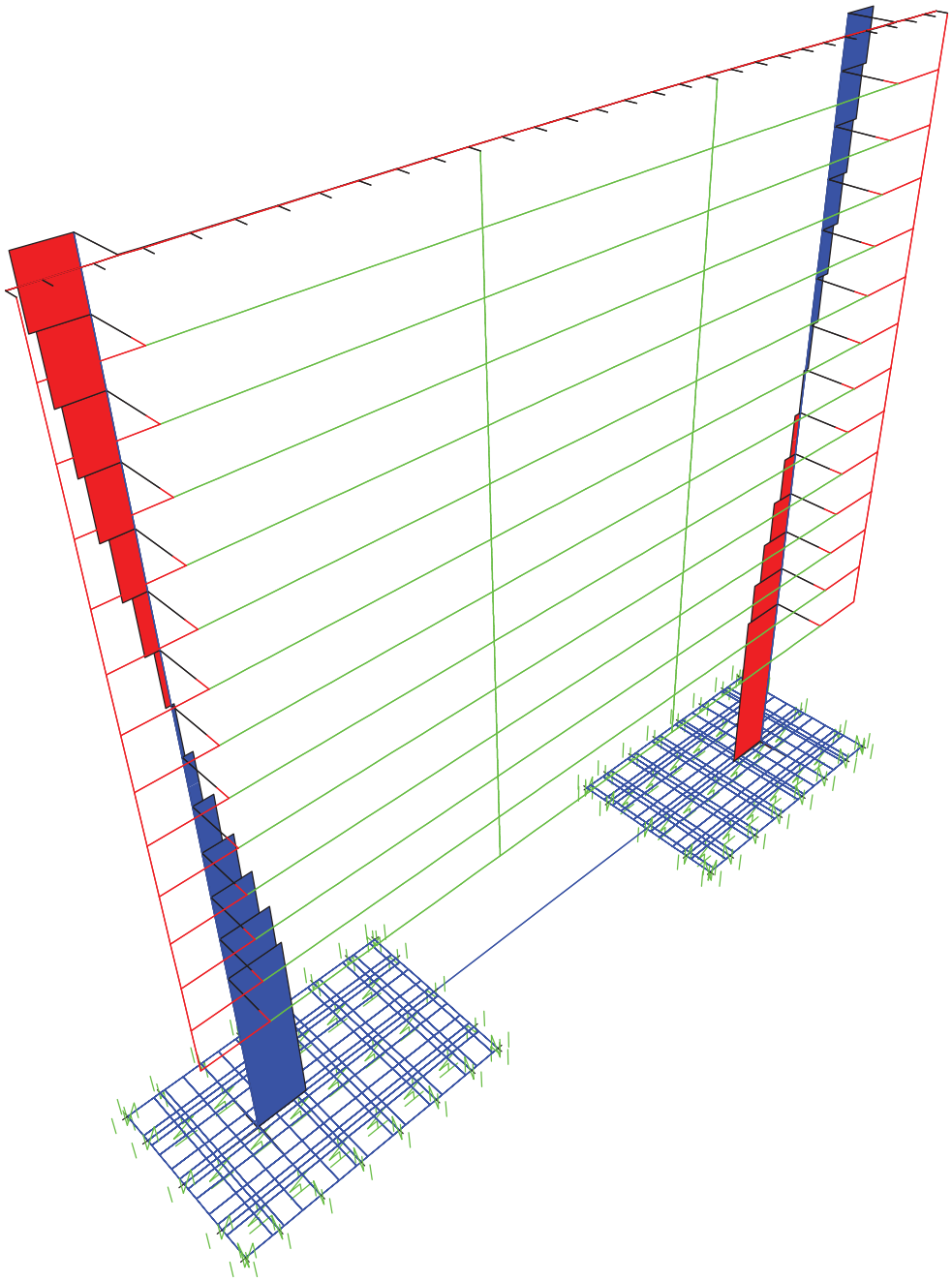
EAST TAPESTRY ANALYSIS MODEL
-PRESTRESS+DEAD LOAD+THERMAL+WIND RESULTS

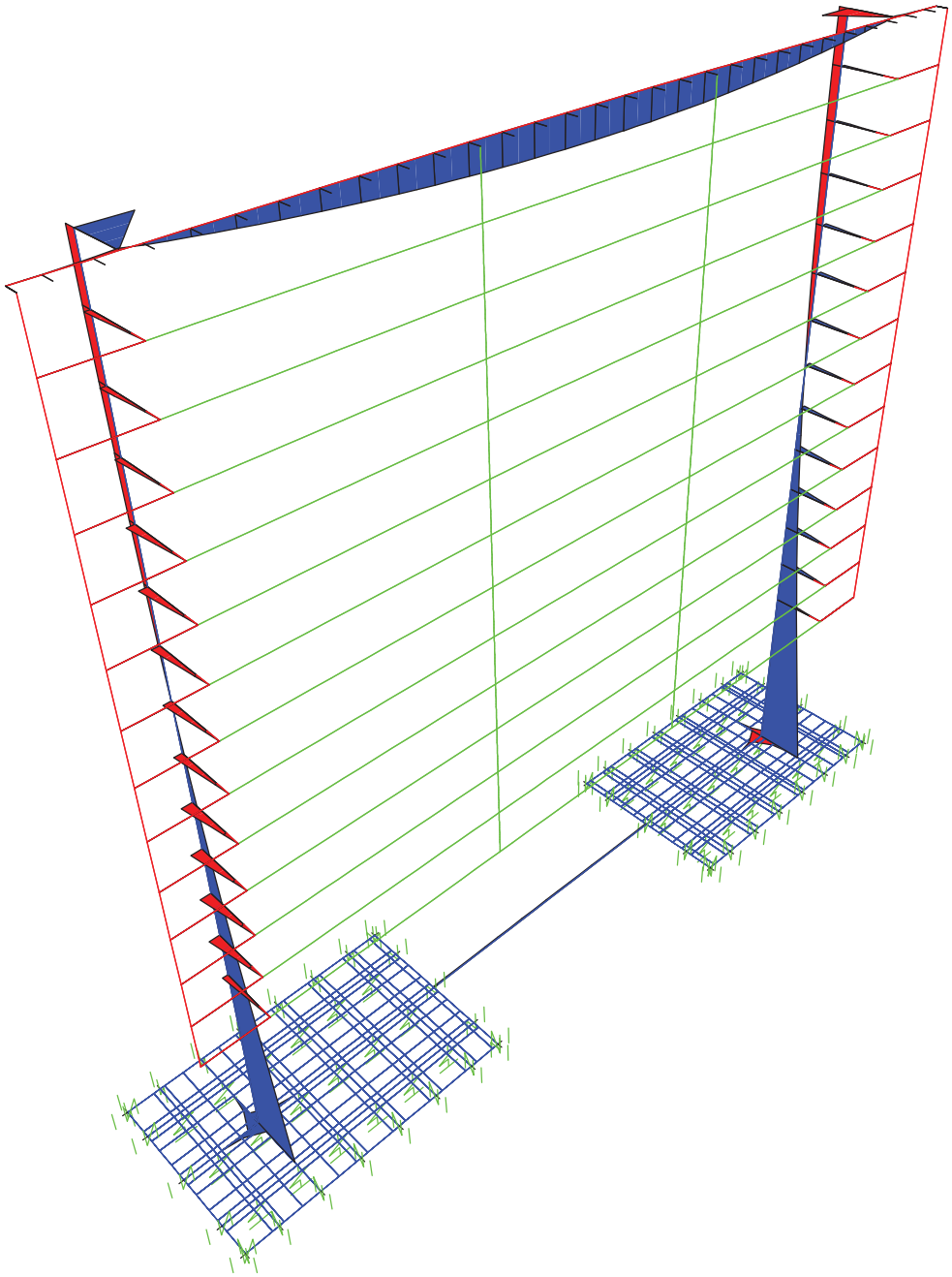


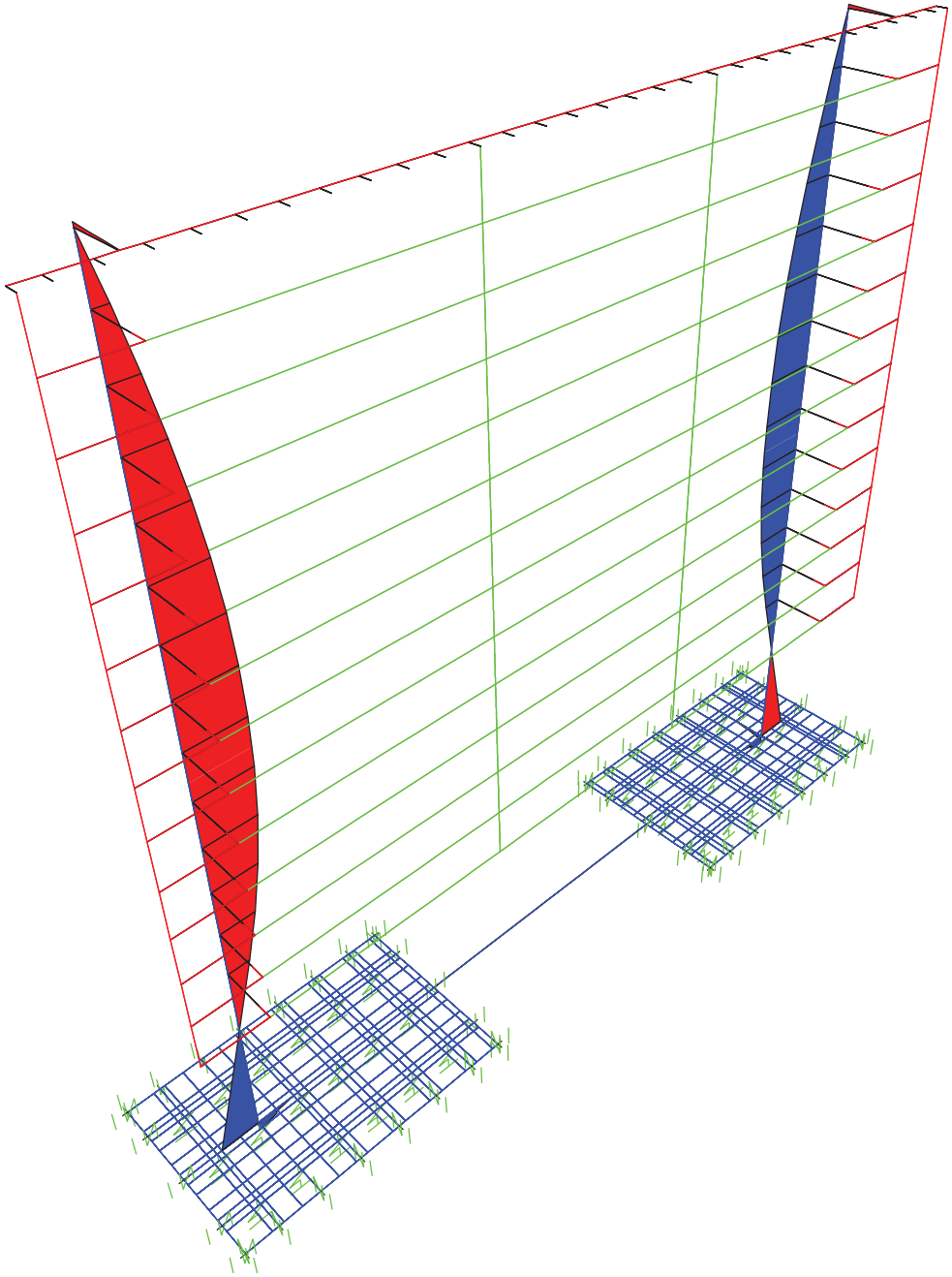
NOTE:
RED DIAGRAM IS COMPRESSION.
BLUE DIAGRAM IS TENSION.

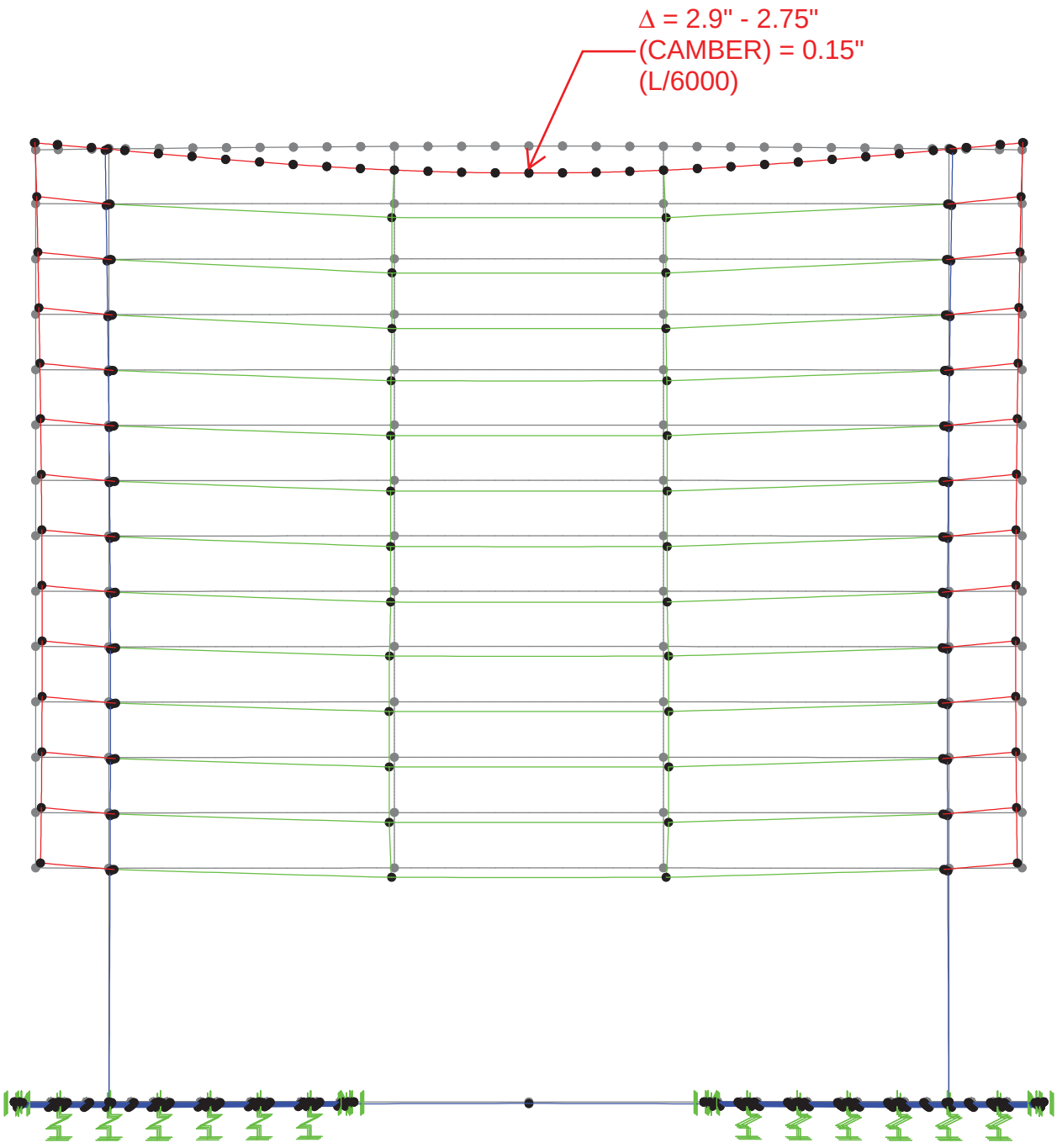


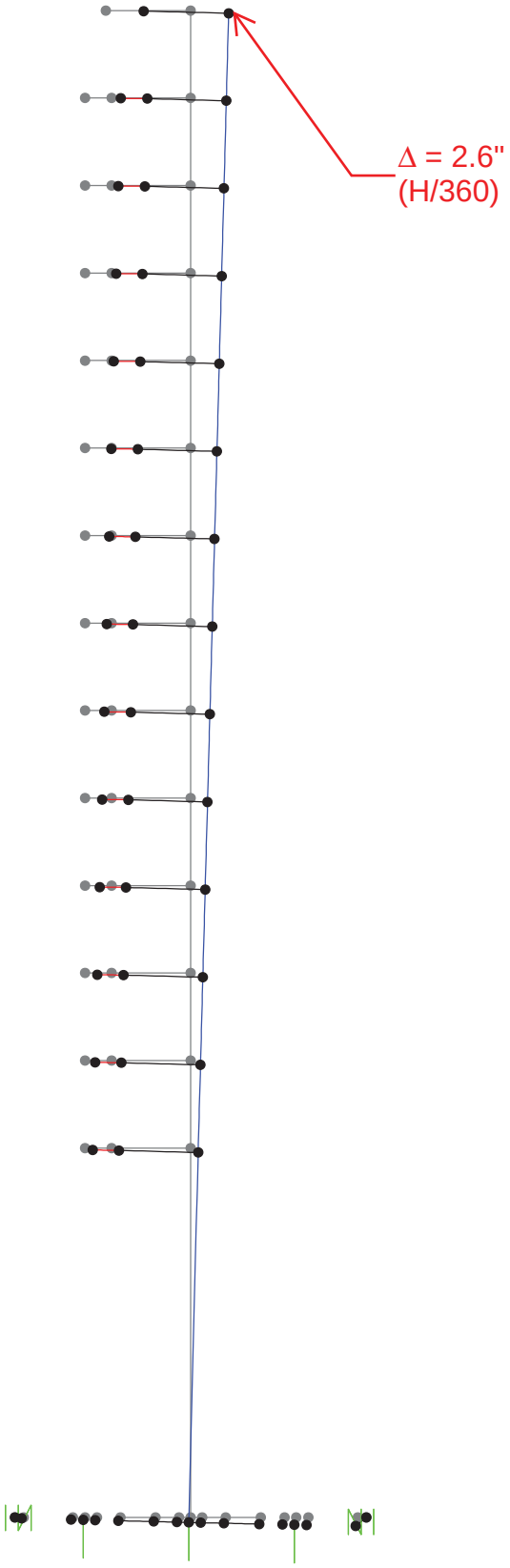




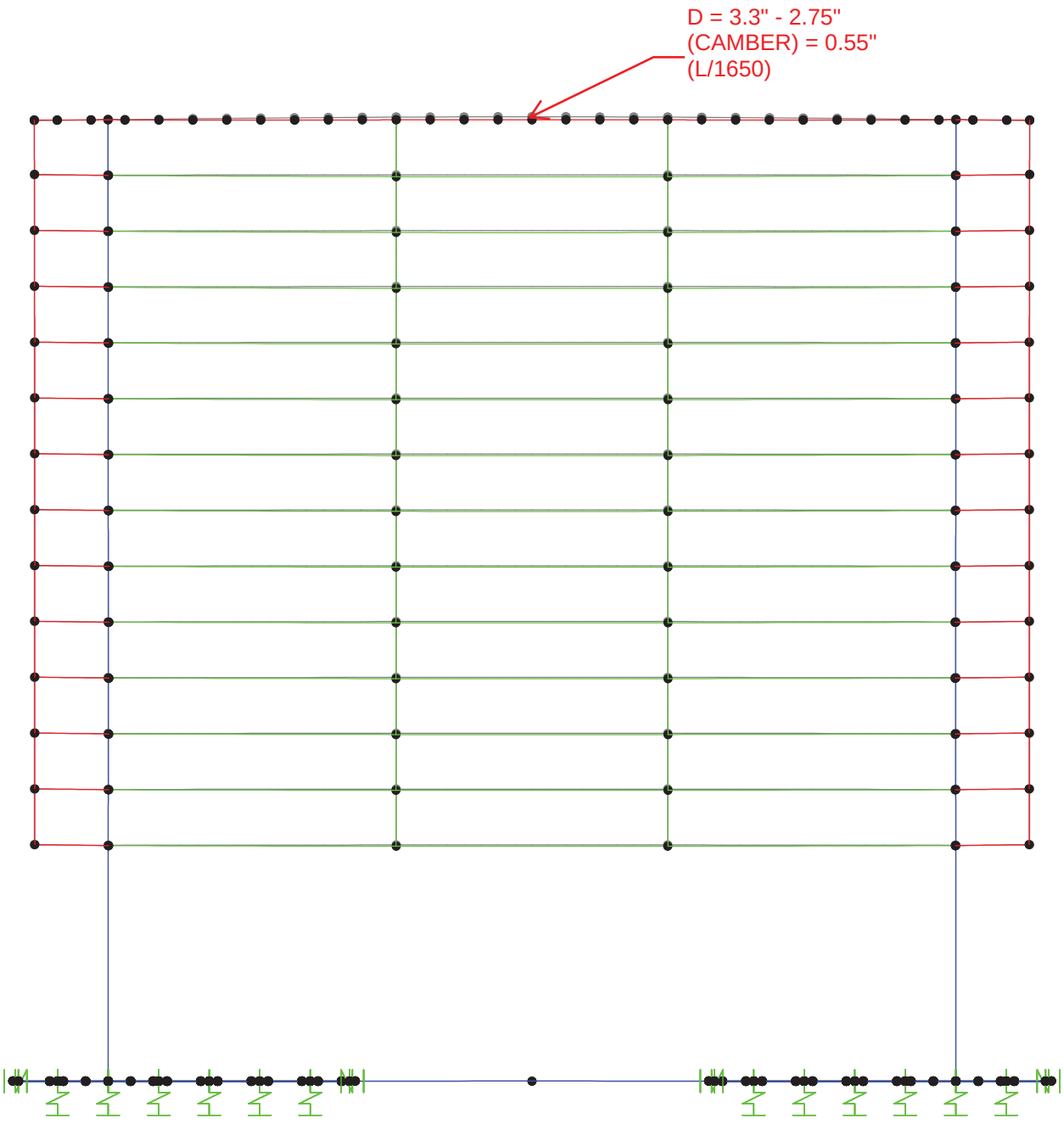





Δ = 2.9" - 2.75"
(CAMBER) = 0.15"
(L/6000)


Δ = 2.6"
(H/360)

EAST TAPESTRY ANALYSIS MODEL
-PRESTRESS+DEAD LOAD RESULTS



SOUTH TAPESTRY ANALYSIS MODEL
-NONLINEAR STATIC LOAD CASES

TABLE: Load Case Definitions

Case	Type	InitialCond	ModalCase	BaseCase	DesTypeOpt	DesignType	DesActOpt	AutoType	RunCase
Text	Text	Text	Text	Text	Text	Text	Text	Text	Yes/No
P+SW	NonStatic	Zero			Prog Det	OTHER	Prog Det	None	Yes
P+D	NonStatic	P+SW			Prog Det	OTHER	Prog Det	None	Yes
P+D+Tmax	NonStatic	P+D			Prog Det	TEMPERATL	Prog Det	None	Yes
P+D+Tmin	NonStatic	P+D			Prog Det	TEMPERATL	Prog Det	None	Yes
P+D+Tmax+WA1	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA1	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WA2	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA2	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA1	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA1	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA2	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA2	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WB1	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WB1	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WB2	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WB2	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WB1	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WB1	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WB2	NonStatic	P+D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WB2	NonStatic	P+D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6SW	NonStatic	Zero			Prog Det	OTHER	Prog Det	None	No
P+0.6D	NonStatic	P+0.6SW			Prog Det	OTHER	Prog Det	None	Yes
P+0.6D+Tmax	NonStatic	P+0.6D			Prog Det	TEMPERATL	Prog Det	None	Yes
P+0.6D+Tmin	NonStatic	P+0.6D			Prog Det	TEMPERATL	Prog Det	None	Yes
P+0.6D+Tmax+WA1	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin+WA1	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmax+WA2	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin+WA2	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmax+WB1	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin+WB1	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmax+WB2	NonStatic	P+0.6D+Tmax			Prog Det	WIND	Prog Det	None	Yes
P+0.6D+Tmin+WB2	NonStatic	P+0.6D+Tmin			Prog Det	WIND	Prog Det	None	Yes
P+D ICE	NonStatic	P+D			Prog Det	OTHER	Prog Det	None	Yes
P+D+Tmax ICE	NonStatic	P+D ICE			Prog Det	TEMPERATL	Prog Det	None	Yes
P+D+Tmin ICE	NonStatic	P+D ICE			Prog Det	TEMPERATL	Prog Det	None	Yes
P+D+Tmax+WA1 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA1 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WA2 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WA2 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA1 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA1 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WA2 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WA2 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WB1 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WB1 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax+WB2 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin+WB2 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WB1 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WB1 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmax-WB2 ICE	NonStatic	P+D+Tmax ICE			Prog Det	WIND	Prog Det	None	Yes
P+D+Tmin-WB2 ICE	NonStatic	P+D+Tmin ICE			Prog Det	WIND	Prog Det	None	Yes
MODAL	LinModal	P+D			Prog Det	QUAKE	Prog Det	None	Yes
SOIL	LinStatic	Zero			Prog Det	OTHER	Prog Det	None	No

SOUTH TAPESTRY ANALYSIS MODEL
-NONLINEAR STATIC LOAD CASES

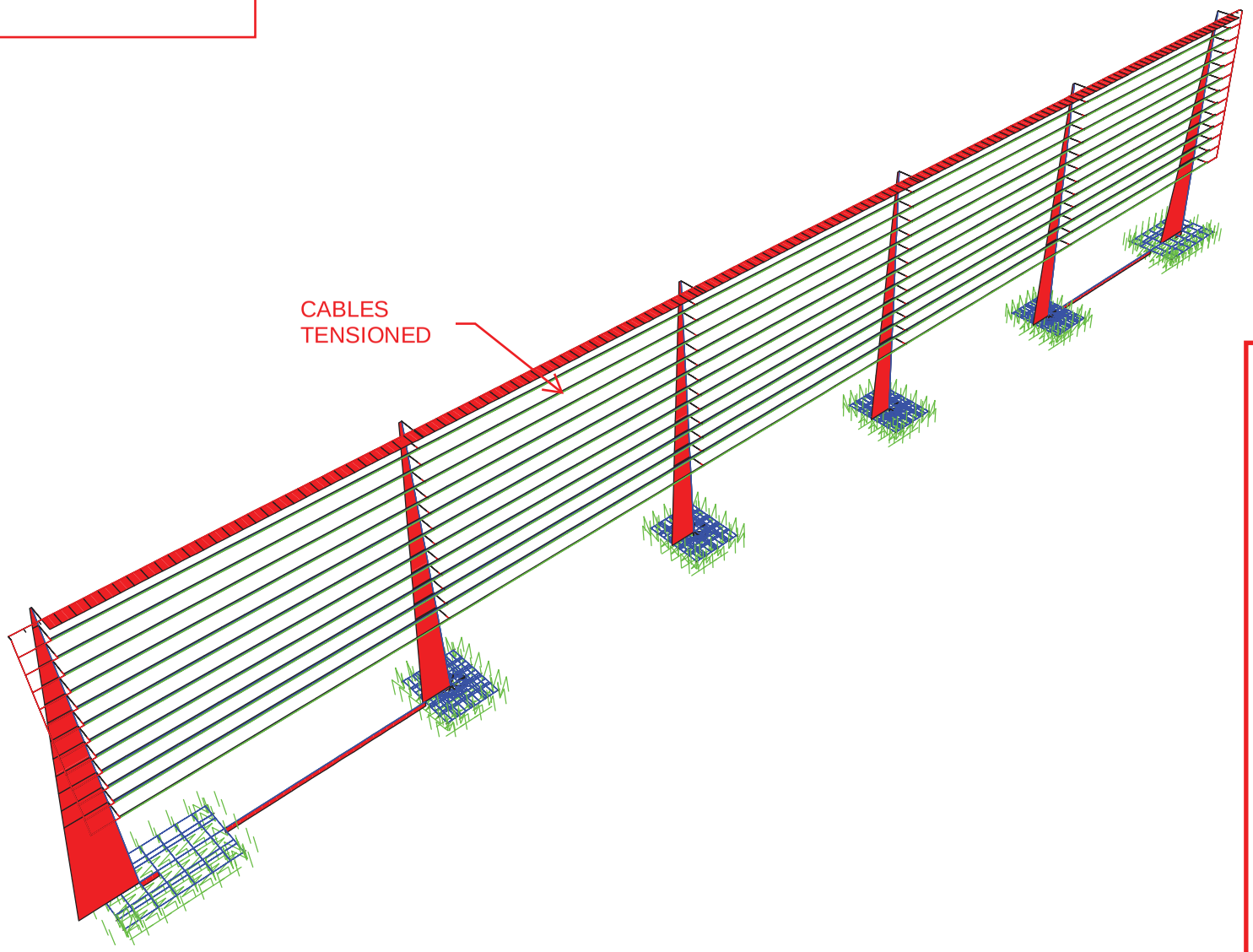
TABLE: Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
Text	Text	Text	Unitless
P+SW	Load pattern	PRESTRESS	1
P+SW	Load pattern	SW	1
P+D	Load pattern	DEAD	1
P+D	Load pattern	TAPESTRY DEAD	1
P+D+Tmax	Load pattern	THERMALmax	1
P+D+Tmin	Load pattern	THERMALmin	1
P+D+Tmax+WA1	Load pattern	WINDYA	1
P+D+Tmin+WA1	Load pattern	WINDYA	1
P+D+Tmax+WA2	Load pattern	WINDYA	0.5
P+D+Tmax+WA2	Load pattern	WINDXA	1
P+D+Tmin+WA2	Load pattern	WINDYA	0.5
P+D+Tmin+WA2	Load pattern	WINDXA	1
P+D+Tmax-WA1	Load pattern	WINDYA	-1
P+D+Tmin-WA1	Load pattern	WINDYA	-1
P+D+Tmax-WA2	Load pattern	WINDYA	-0.5
P+D+Tmax-WA2	Load pattern	WINDXA	1
P+D+Tmin-WA2	Load pattern	WINDYA	-0.5
P+D+Tmin-WA2	Load pattern	WINDXA	1
P+D+Tmax+WB1	Load pattern	WINDYB	1
P+D+Tmin+WB1	Load pattern	WINDYB	1
P+D+Tmax+WB2	Load pattern	WINDYB	0.5
P+D+Tmax+WB2	Load pattern	WINDXB	1
P+D+Tmin+WB2	Load pattern	WINDYB	0.5
P+D+Tmin+WB2	Load pattern	WINDXB	1
P+D+Tmax-WB1	Load pattern	WINDYB	-1
P+D+Tmin-WB1	Load pattern	WINDYB	-1
P+D+Tmax-WB2	Load pattern	WINDYB	-0.5
P+D+Tmax-WB2	Load pattern	WINDXB	1
P+D+Tmin-WB2	Load pattern	WINDYB	-0.5
P+D+Tmin-WB2	Load pattern	WINDXB	1
P+0.6SW	Load pattern	PRESTRESS	1
P+0.6SW	Load pattern	SW	0.6
P+0.6D	Load pattern	DEAD	0.6
P+0.6D	Load pattern	TAPESTRY DEAD	0.6
P+0.6D+Tmax	Load pattern	THERMALmax	1
P+0.6D+Tmin	Load pattern	THERMALmin	1
P+0.6D+Tmax+WA1	Load pattern	WINDYA	1
P+0.6D+Tmin+WA1	Load pattern	WINDYA	1
P+0.6D+Tmax+WA2	Load pattern	WINDYA	0.5
P+0.6D+Tmax+WA2	Load pattern	WINDXA	1
P+0.6D+Tmin+WA2	Load pattern	WINDYA	0.5
P+0.6D+Tmin+WA2	Load pattern	WINDXA	1
P+0.6D+Tmax+WB1	Load pattern	WINDYB	1

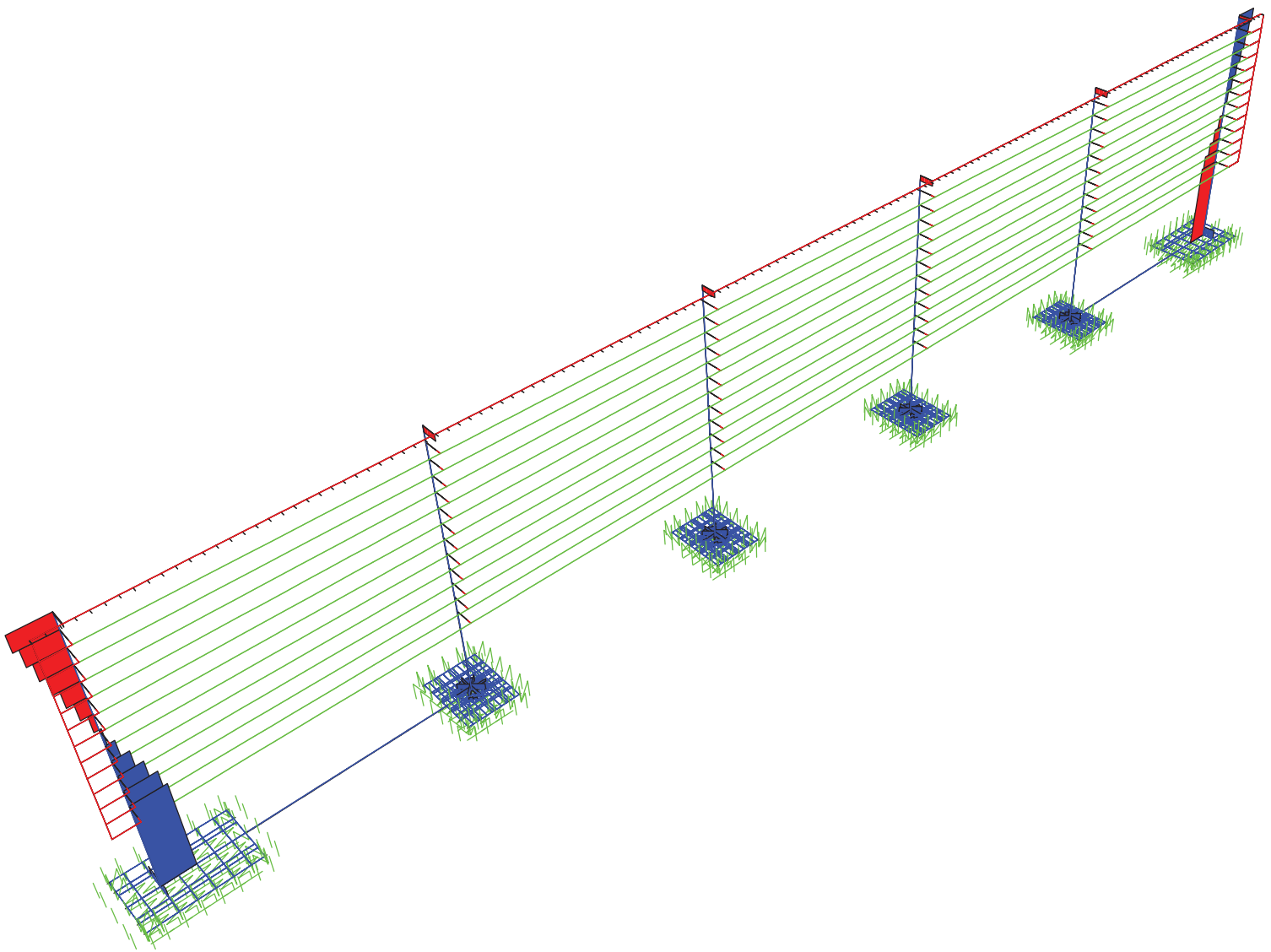
P+0.6D+Tmin+WB1	Load pattern	WINDYB	1
P+0.6D+Tmax+WB2	Load pattern	WINDYB	0.5
P+0.6D+Tmax+WB2	Load pattern	WINDXB	1
P+0.6D+Tmin+WB2	Load pattern	WINDYB	0.5
P+0.6D+Tmin+WB2	Load pattern	WINDXB	1

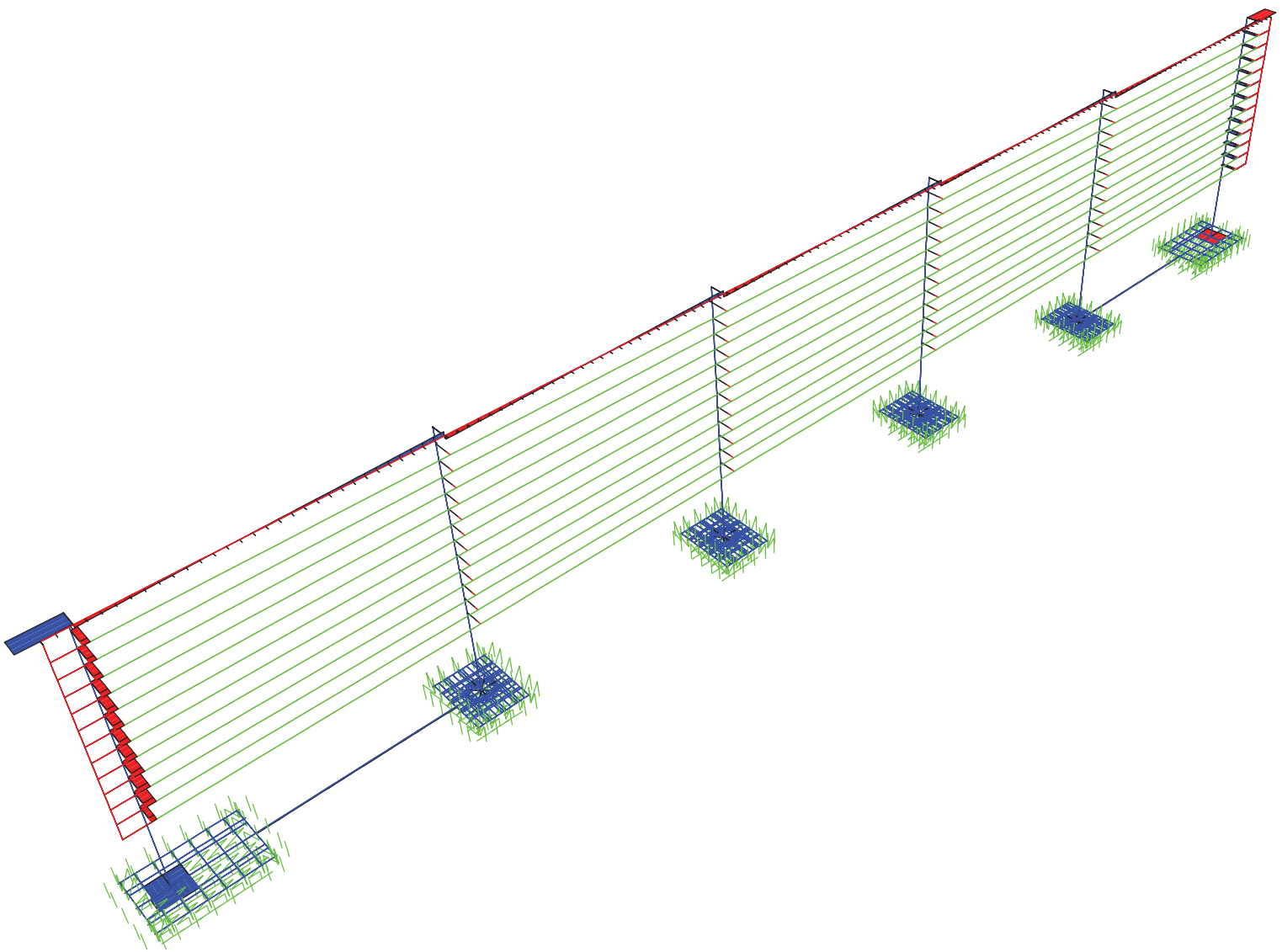
P+D ICE	Load pattern	ICE	0.7
P+D+Tmax ICE	Load pattern	THERMALmax	1
P+D+Tmin ICE	Load pattern	THERMALmin	1
P+D+Tmax+WA1 ICE	Load pattern	WINDYAi	0.7
P+D+Tmin+WA1 ICE	Load pattern	WINDYAi	0.7
P+D+Tmax+WA2 ICE	Load pattern	WINDYAi	0.35
P+D+Tmax+WA2 ICE	Load pattern	WINDXAi	0.7
P+D+Tmin+WA2 ICE	Load pattern	WINDYAi	0.35
P+D+Tmin+WA2 ICE	Load pattern	WINDXAi	0.7
P+D+Tmax-WA1 ICE	Load pattern	WINDYAi	-0.7
P+D+Tmin-WA1 ICE	Load pattern	WINDYAi	-0.7
P+D+Tmax-WA2 ICE	Load pattern	WINDYAi	-0.35
P+D+Tmax-WA2 ICE	Load pattern	WINDXAi	0.7
P+D+Tmin-WA2 ICE	Load pattern	WINDYAi	-0.35
P+D+Tmin-WA2 ICE	Load pattern	WINDXAi	0.7
P+D+Tmax+WB1 ICE	Load pattern	WINDYBi	0.7
P+D+Tmin+WB1 ICE	Load pattern	WINDYBi	0.7
P+D+Tmax+WB2 ICE	Load pattern	WINDYBi	0.35
P+D+Tmax+WB2 ICE	Load pattern	WINDXBi	0.7
P+D+Tmin+WB2 ICE	Load pattern	WINDYBi	0.35
P+D+Tmin+WB2 ICE	Load pattern	WINDXBi	0.7
P+D+Tmax-WB1 ICE	Load pattern	WINDYBi	-0.7
P+D+Tmin-WB1 ICE	Load pattern	WINDYBi	-0.7
P+D+Tmax-WB2 ICE	Load pattern	WINDYBi	-0.35
P+D+Tmax-WB2 ICE	Load pattern	WINDXBi	0.7
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P+D+Tmin-WB2 ICE	Load pattern	WINDXBi	0.7
SOIL	Load pattern	SOIL	1

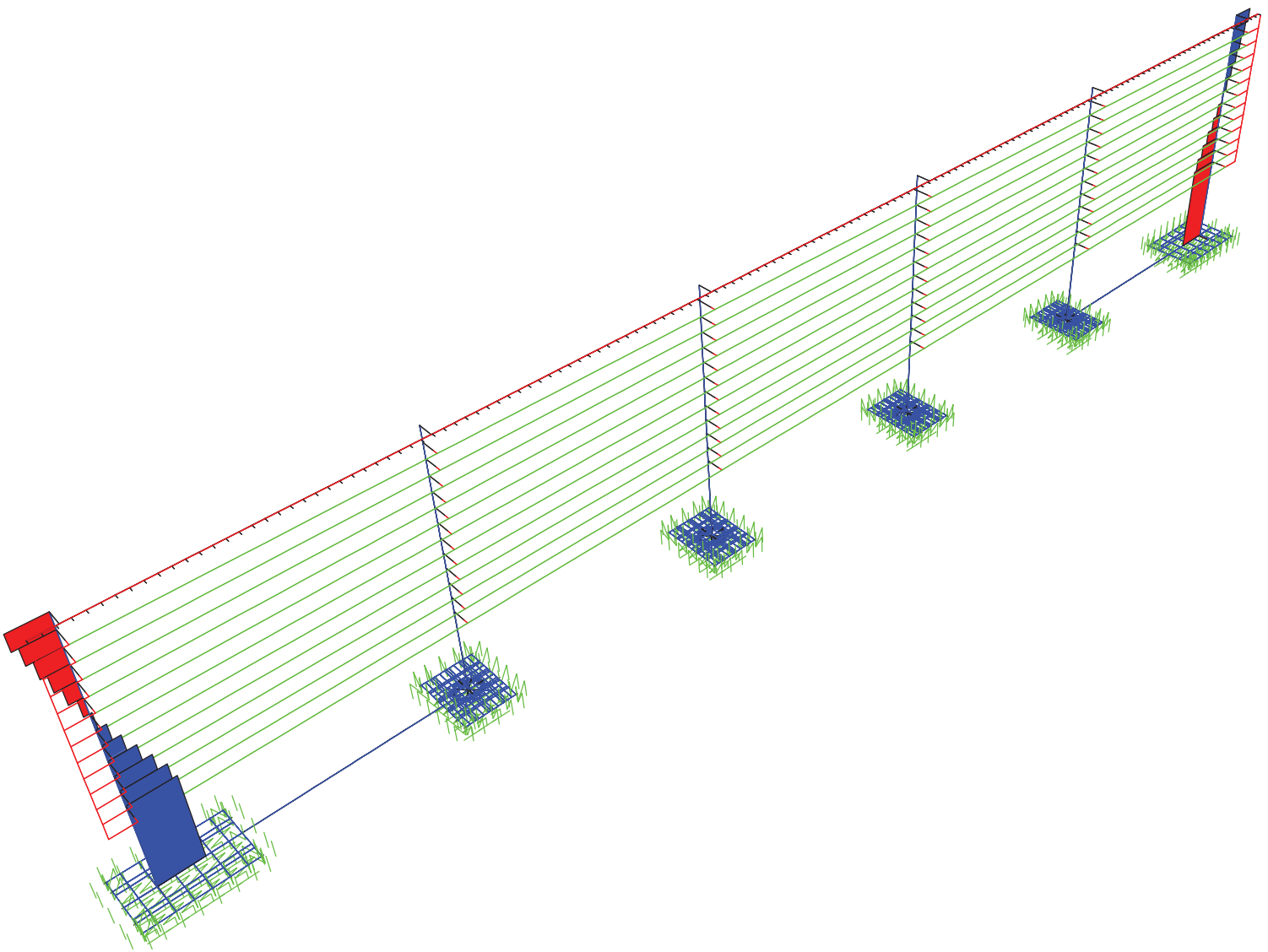
NOTE:
RED DIAGRAM IS COMPRESSION.
BLUE DIAGRAM IS TENSION.

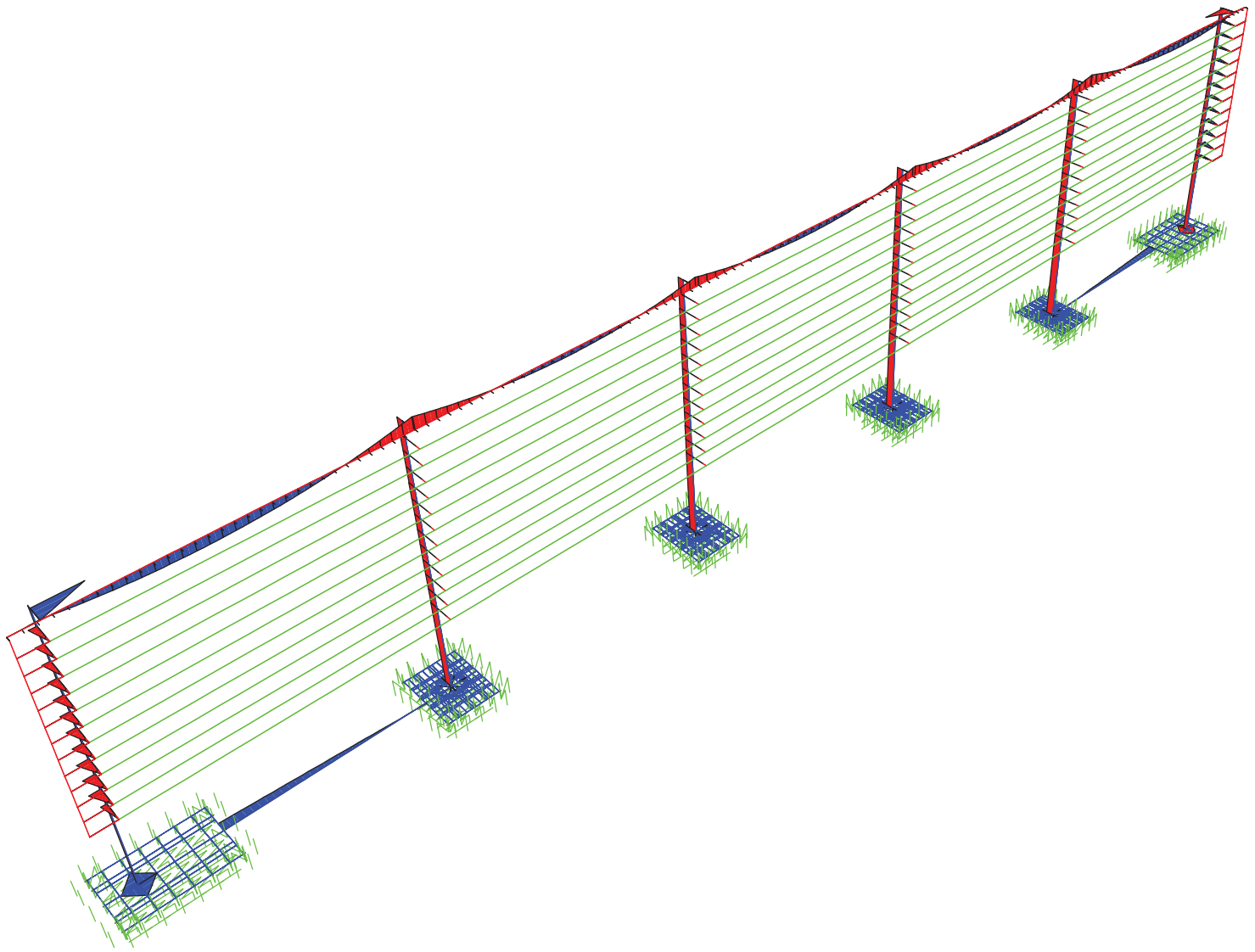


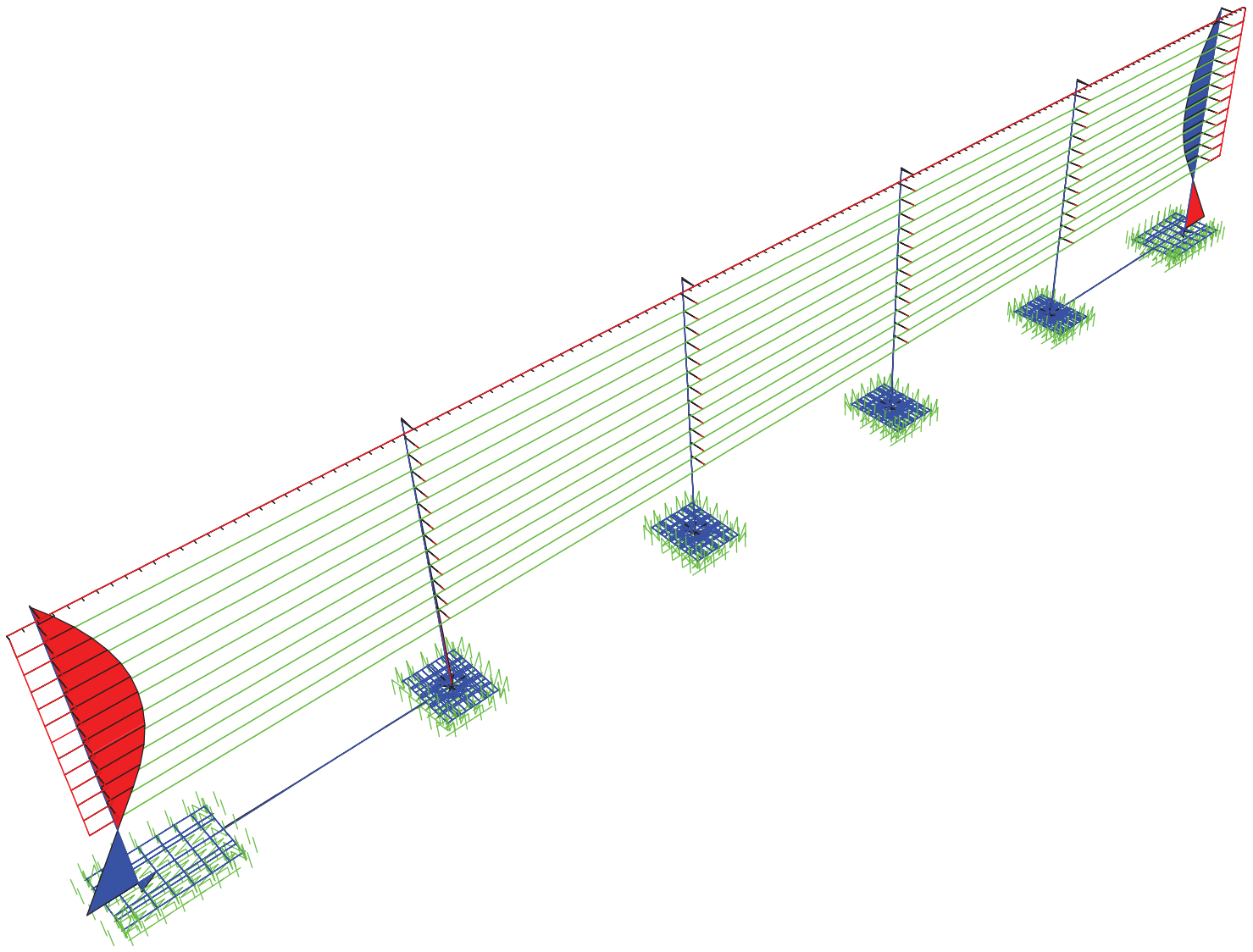
SOUTH TAPESTRY ANALYSIS MODEL
-PRESTRESS+SELF WEIGHT RESULTS

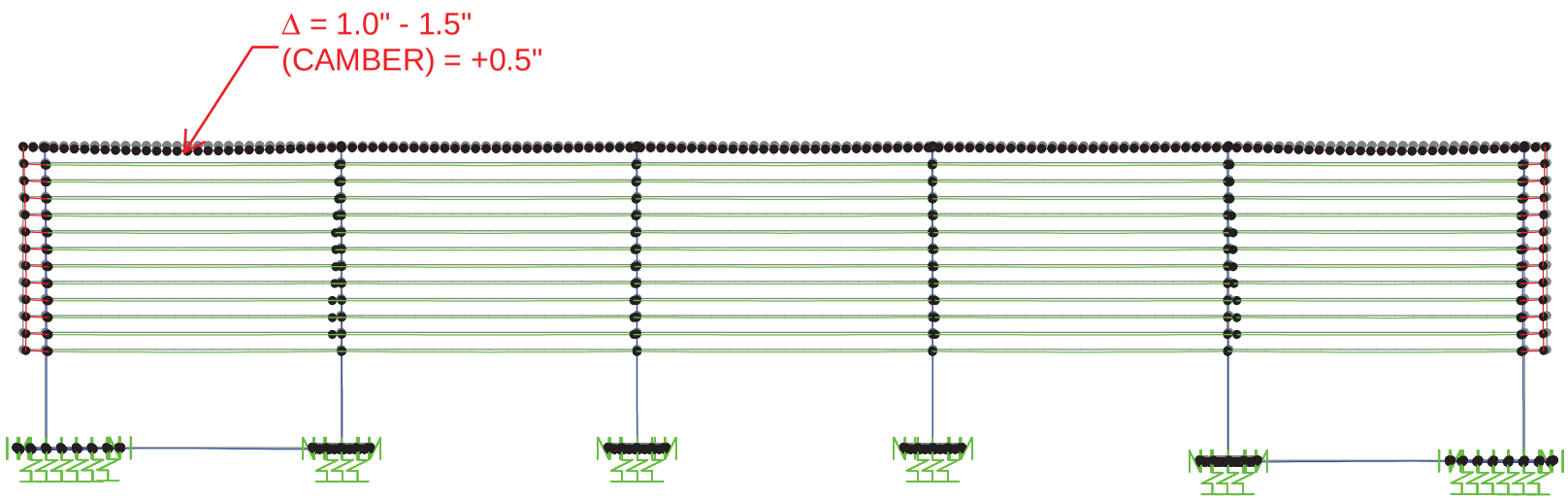


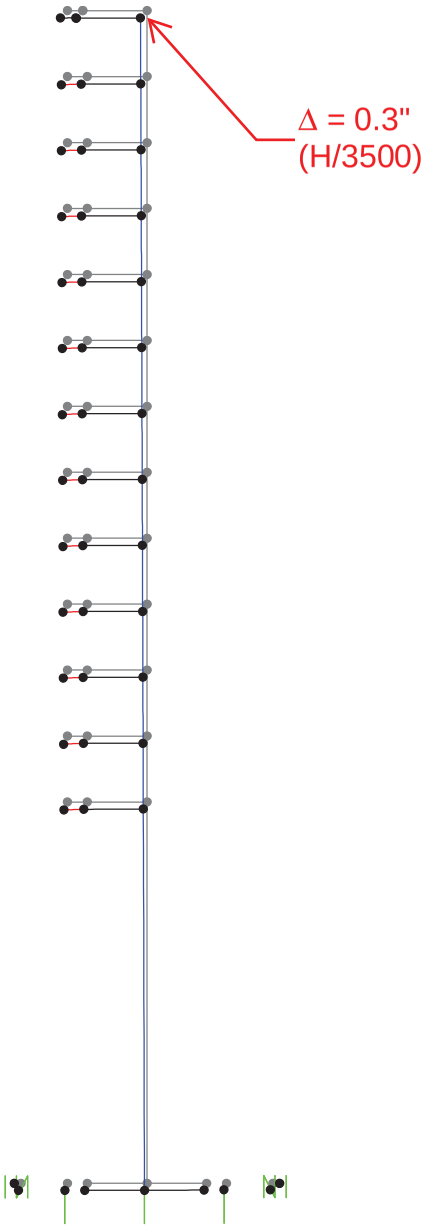


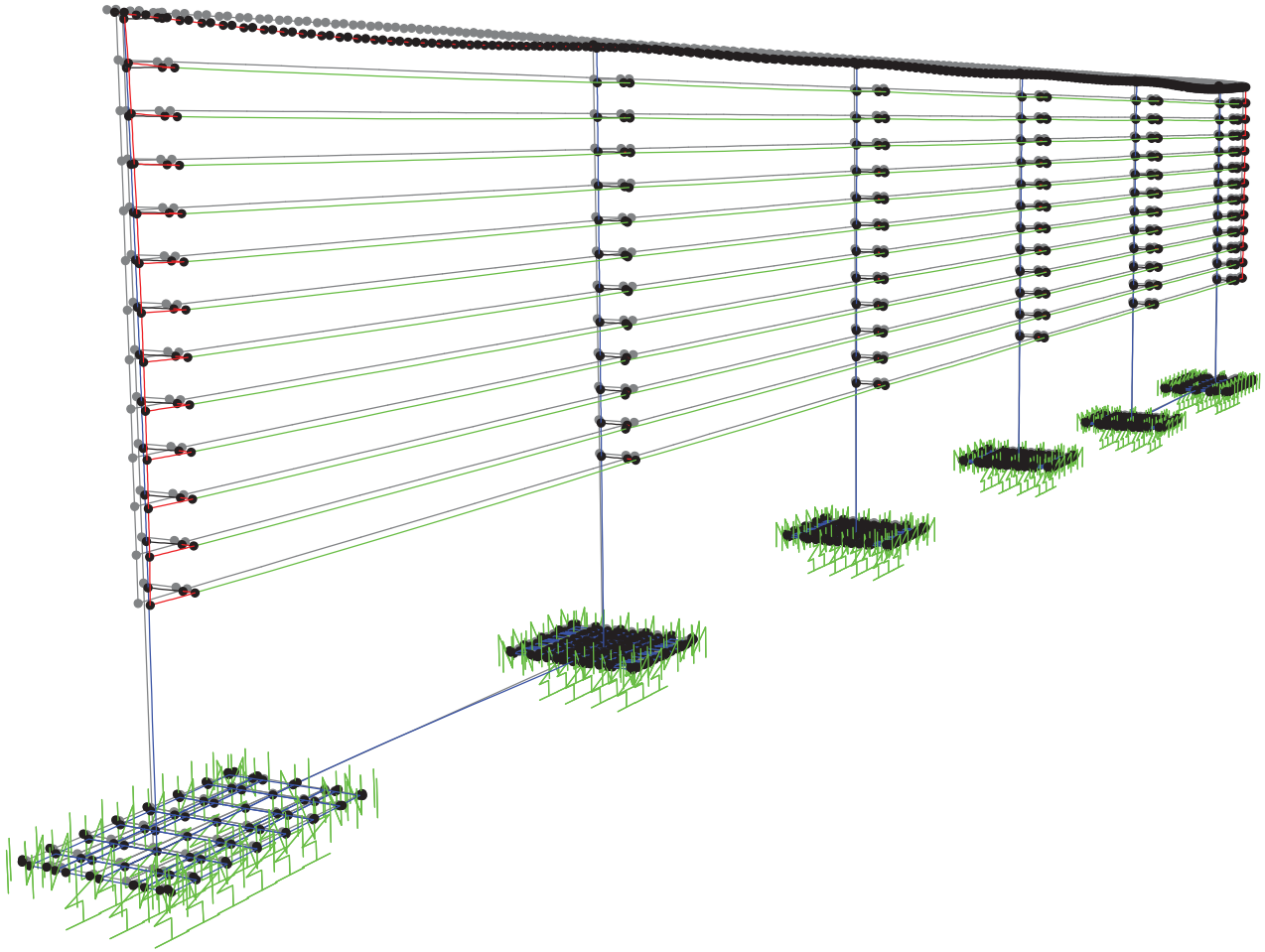




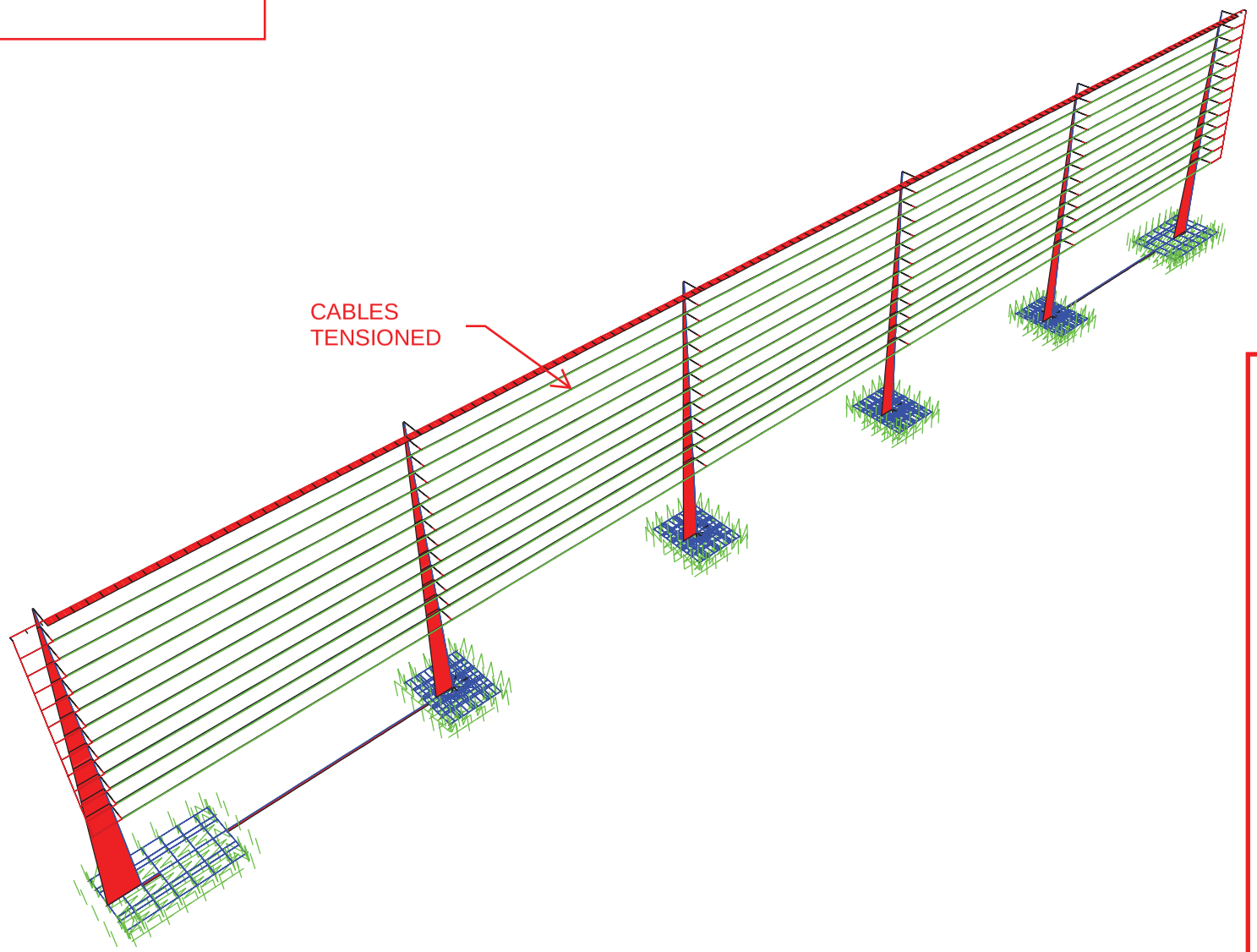



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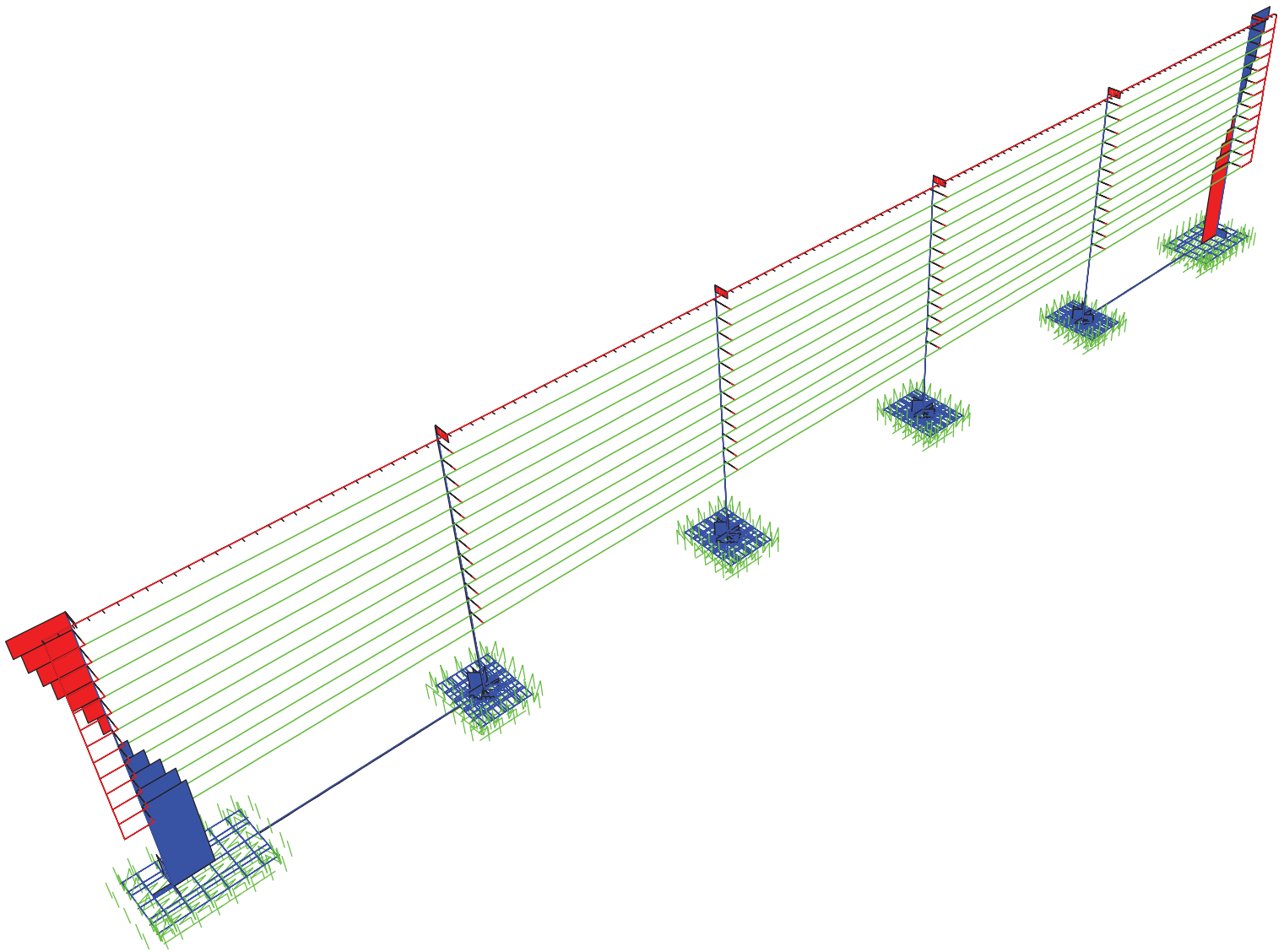

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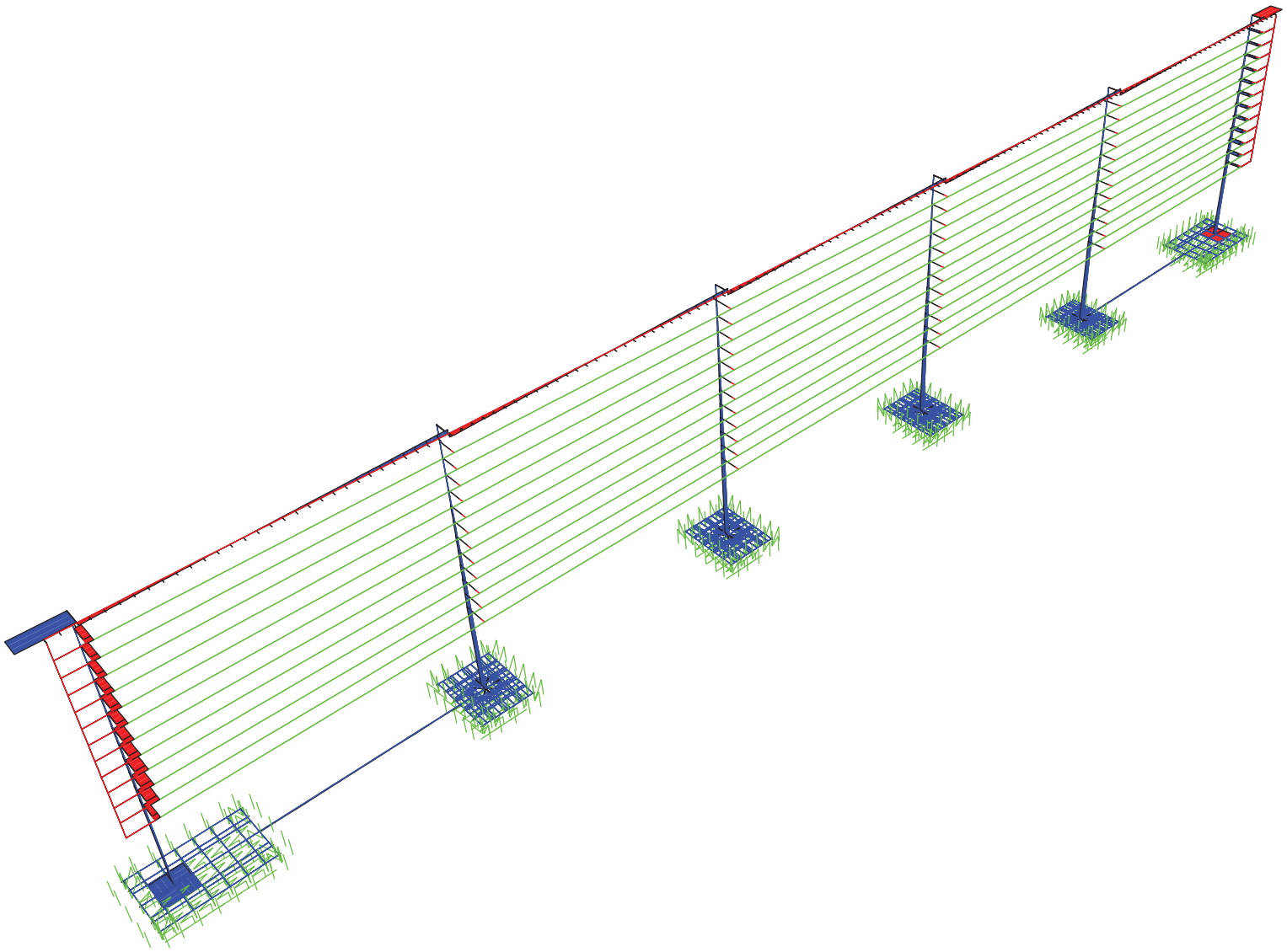


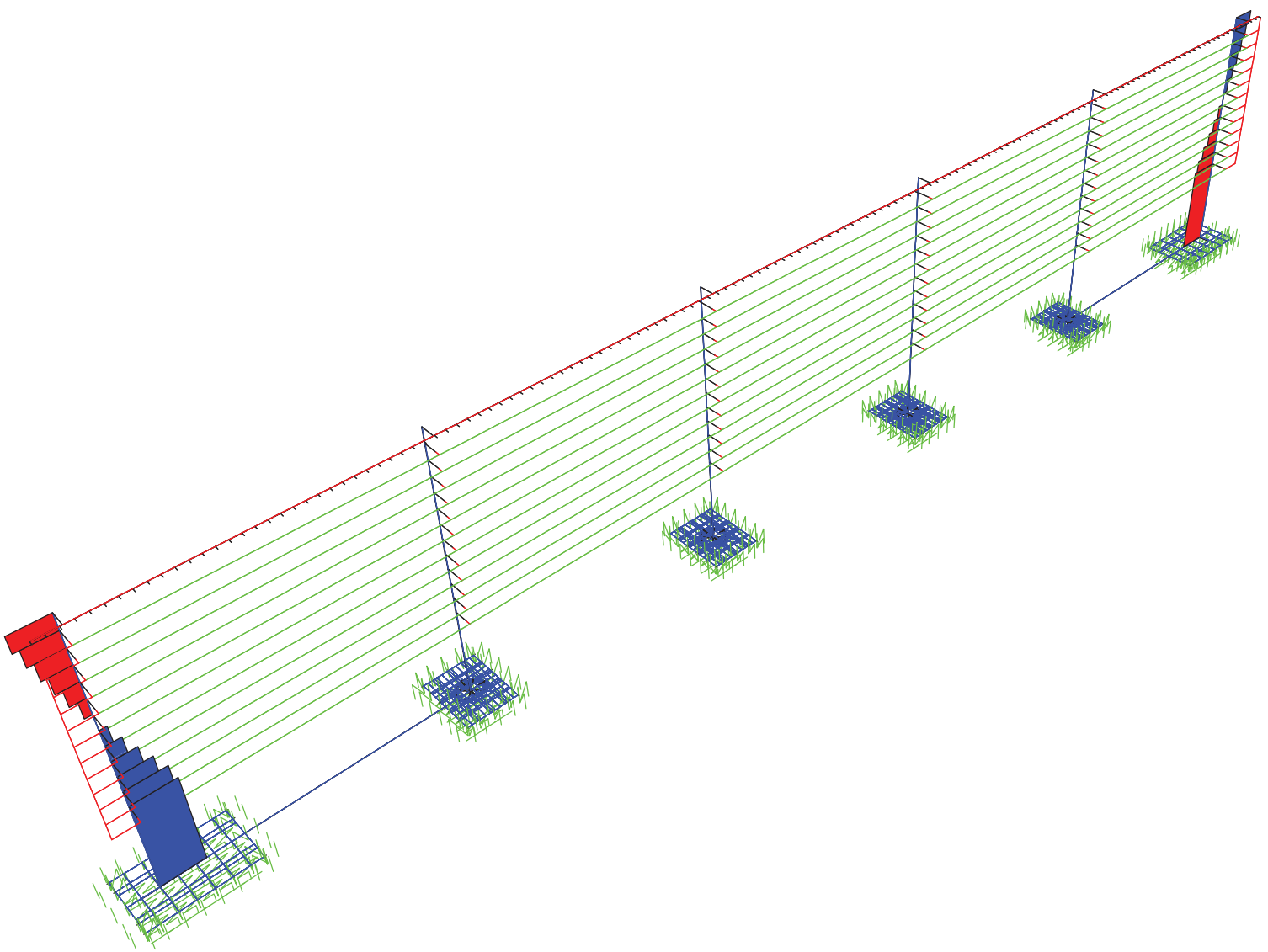
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BLUE DIAGRAM IS TENSION.

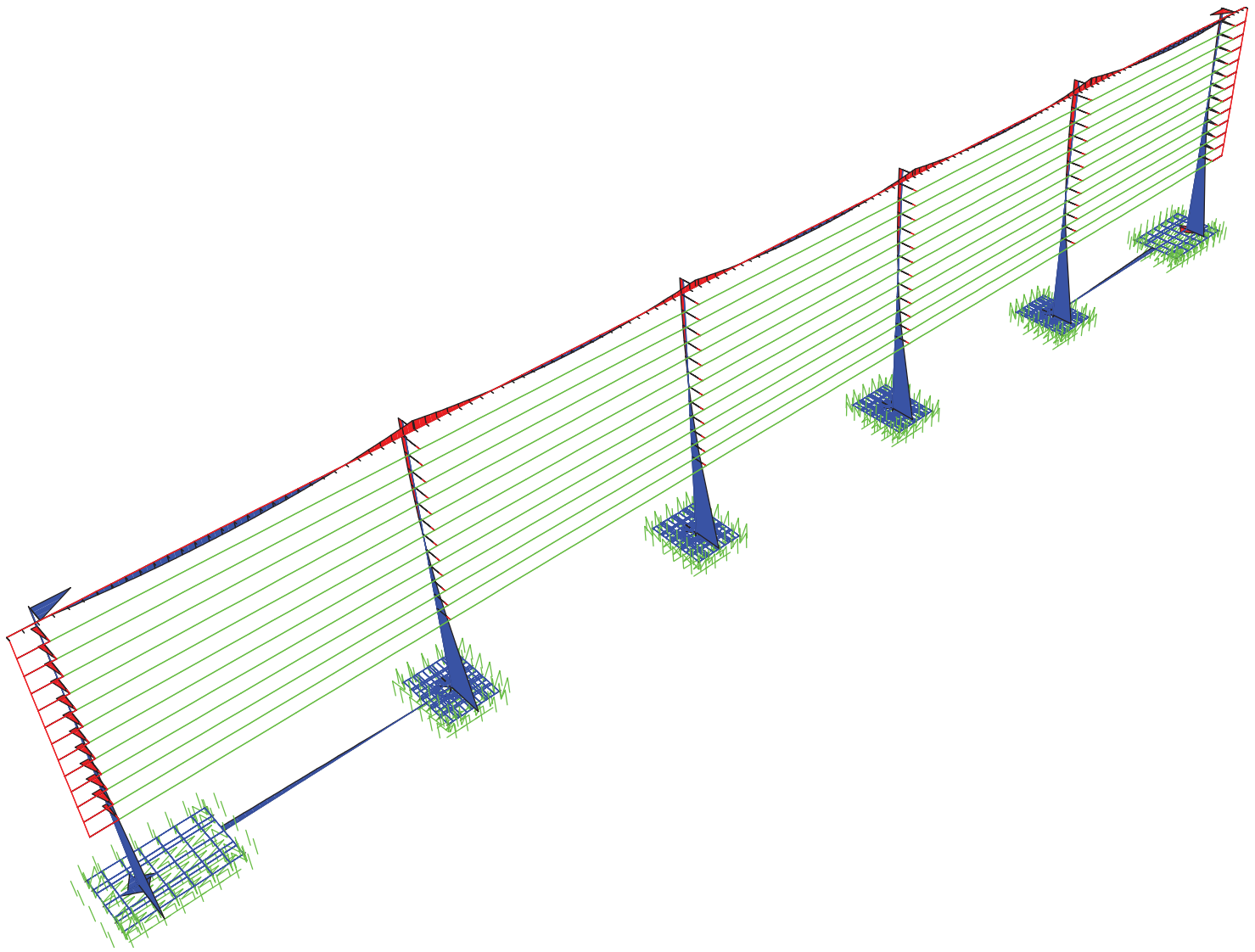


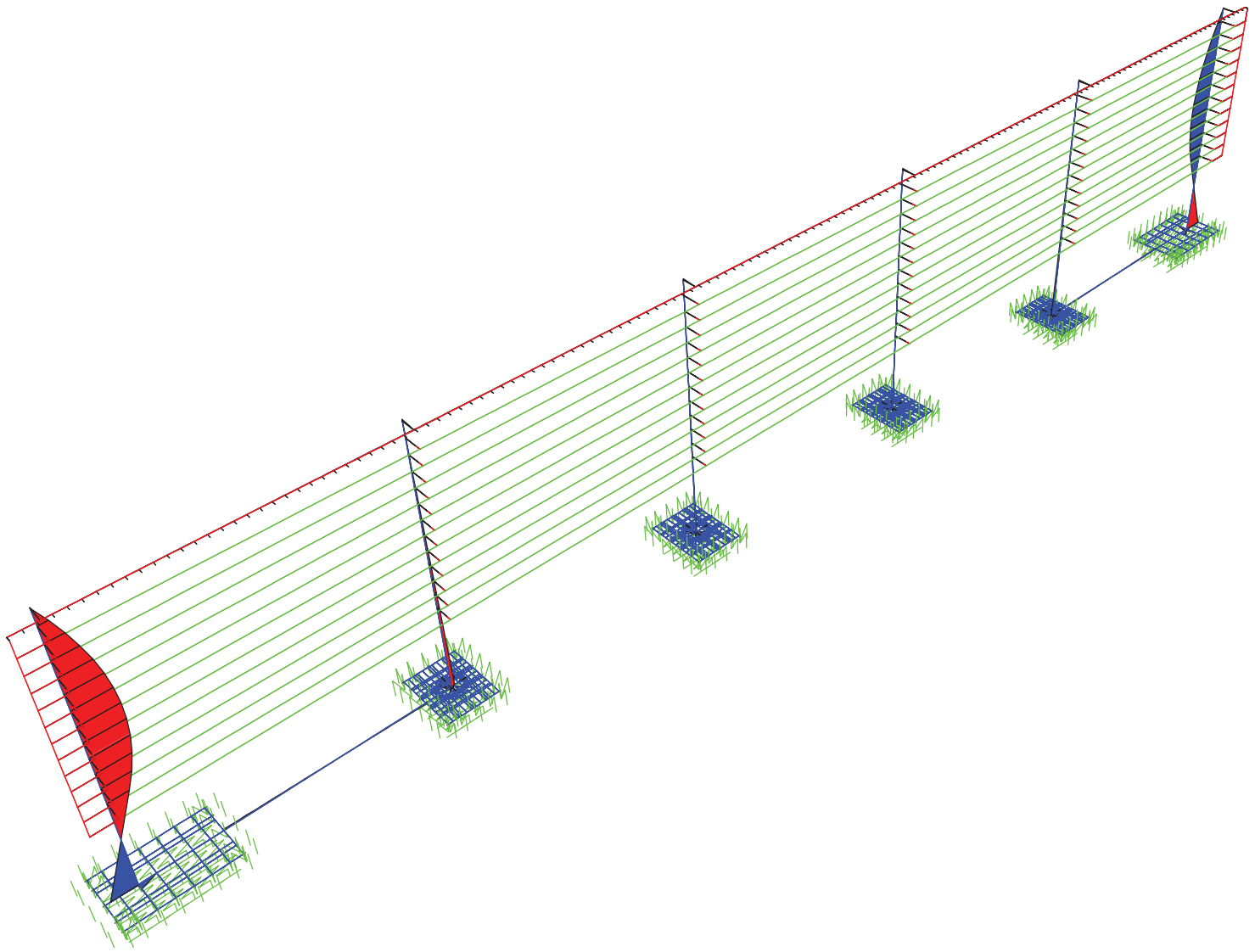
SOUTH TAPESTRY ANALYSIS MODEL
-PRESTRESS+DEAD
LOAD+THERMAL+WIND RESULTS

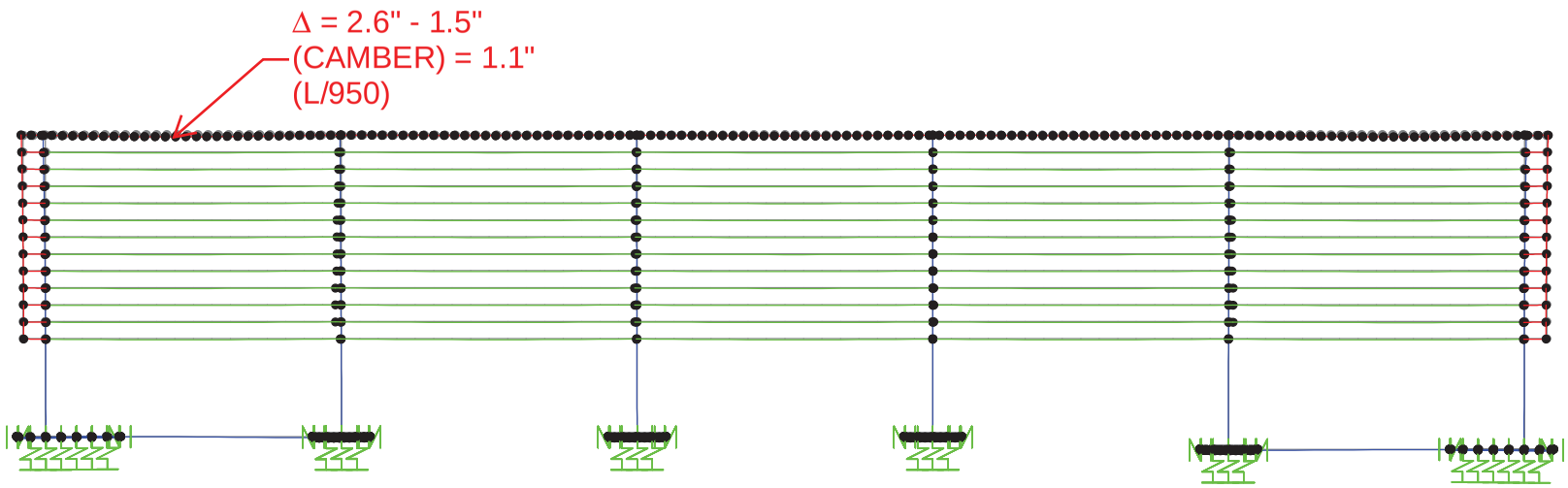


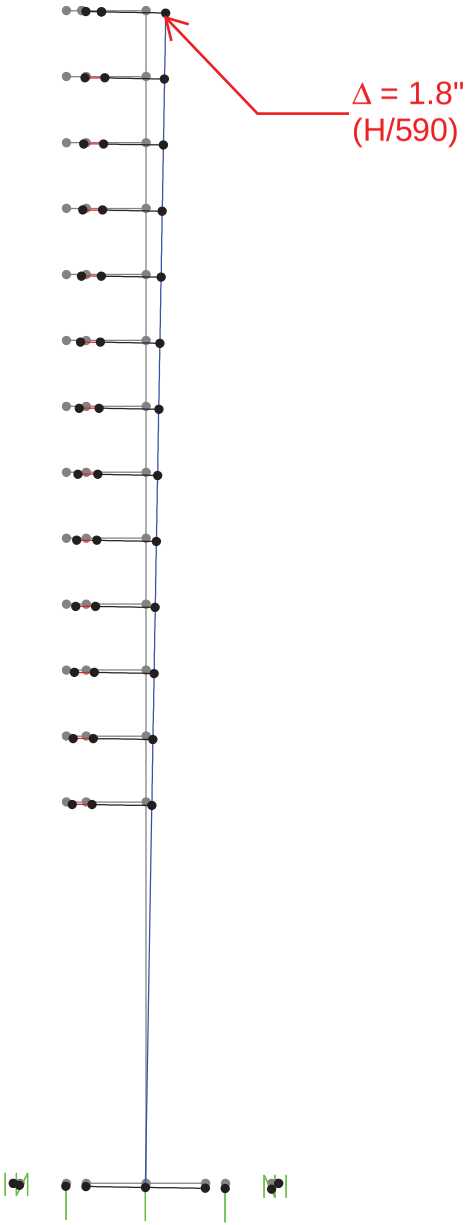


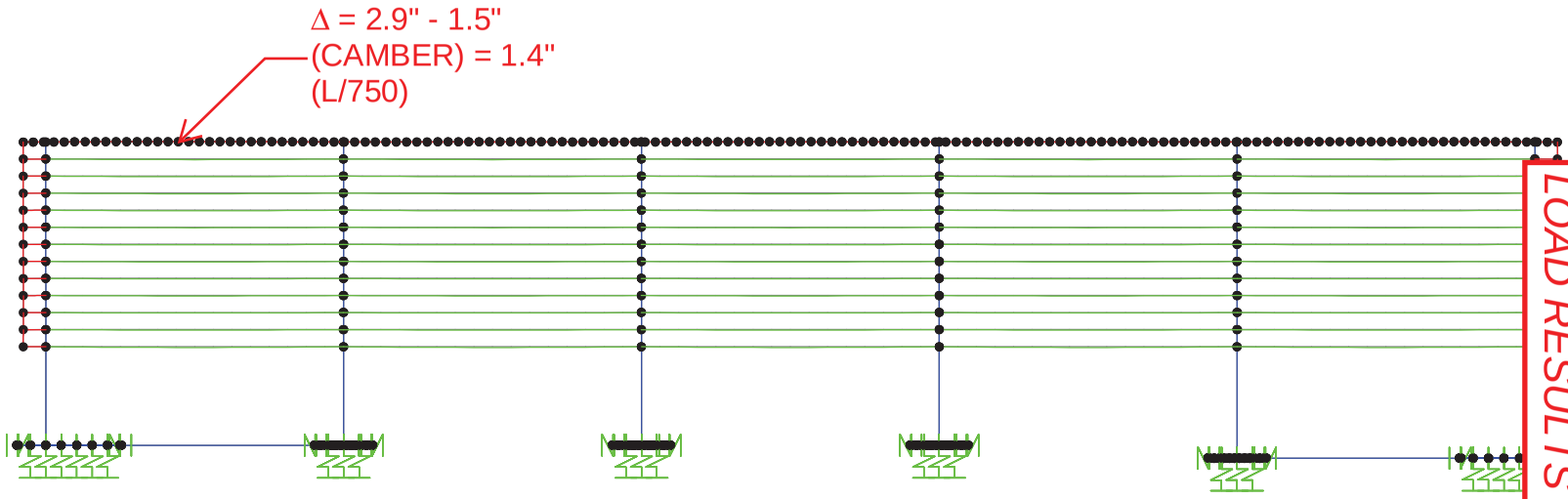







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SOUTH TAPESTRY ANALYSIS MODEL
-PRESTRESS+SELF WEIGHT+DEAD LOAD RESULTS

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3.5 DESIGN OF TAPESTRY STRUCTURAL ELEMENTS

The following pages summarize the design of specific tapestry structural elements:

3.5.1 Stainless Steel Cables
3.5.2 Stainless Steel Box Beams
3.5.3 Stainless Steel Connection
3.5.4 Concrete Columns
3.5.5 Foundation Elements

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3.5.1 STAINLESS STEEL CABLES

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TAPESTRY ELEMENT
DESIGN
-STAINLESS STEEL CABLES

ASCE 19-96

ASCE STANDARD

American Society of Civil Engineers

Structural Applications of Steel Cables for Buildings

ASCE

ASCE 19-96

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Abstract:

This Standard provides requirements for the structural design, construction contract documents, fabrication, and installation of cables for use as structural elements for the support and bracing of buildings, their roofs, and their floors. It specifically covers such topics as drawings and specifications; design considerations; cable materials; fittings; protective coatings; fabrication; and erection.

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STANDARDS

In April 1980, the Board of Direction approved ASCE Rules for Standards Committees to govern the writing and maintenance of standards developed by the Society. All such standards are developed by a consensus standards process managed by the Codes and Standards Activities Committee. The consensus process includes balloting by the balanced standards committee, which is composed of Society members and nonmembers, balloting by the membership of ASCE as a whole, and balloting by the public. All standards are updated or reaffirmed by the same process at intervals not exceeding five years.

The following standards have been issued.

ANSI/ASCE 1-82 N-725 Guideline for Design and Analysis of Nuclear Safety Related Earth Structures

ANSI/ASCE 2-91 Measurement of Oxygen Transfer in Clean Water

ANSI/ASCE 3-91 Standard for the Structural Design of Composite Slabs and ANSI/ASCE 9-91 Standard Practice for the Construction and Inspection of Composite Slabs

ANSI/ASCE 4-86 Seismic Analysis of Safety-Related Nuclear Structures

ACI 530-95/ASCE 5-95/TMS402-95 Building Code Requirements for Masonry Structures

ACI 530.1-95/ASCE 6-95/TMS602-95 Specifications for Masonry Structures

ANSI/ASCE 7-95 Minimum Design Loads for Buildings and Other Structures

ANSI/ASCE 8-90 Specification for the Design of Cold-Formed Stainless Steel Structural Members

ANSI/ASCE 9-91 listed with ASCE 3-91

ANSI/ASCE 10-90 Design of Latticed Steel Transmission Structures

ANSI/ASCE 11-90 Guideline for Structural Condition Assessment of Existing Buildings

ANSI/ASCE 12-91 Guideline for the Design of Urban Subsurface Drainage

ASCE 13-93 Standard Guidelines for Installation of Urban Subsurface Drainage

ASCE 14-93 Standard Guidelines for Operation and Maintenance of Urban Subsurface Drainage

ASCE 15-93 Standard Practice for Direct Design of Buried Precast Concrete Pipe Using Standard Installations (SIDD)

ASCE 16-95 Standard for Load and Resistance Factor Design (LRFD) of Engineered Wood Construction

ASCE 17-96 Air-Supported Structures

ASCE 18-96 Standard Guidelines for In-Process Oxygen Transfer Testing

ASCE 19-96 Structural Applications of Steel Cables for Buildings

ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations

ASCE 21-96 Automated People Mover Standards—Part I

FOREWORD

The material presented in this Standard has been prepared in accordance with recognized engineering principles. This Standard should not be used without first securing competent advice with respect to its suitability for any given application. The publication of the material contained herein is not intended as a representation or warranty on the part of the American Society of Civil Engineers, or of any other person named herein, that this information is suitable for any general or particular use or promises freedom from infringement of any patent or patents. Anyone making use of this information assumes all liability from such use.

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This Standard was prepared through the consensus standards process by balloting in compliance with procedures of ASCE's Codes and Standards Activities Committee. Those individuals who serve on the Structural Applications of Steel Cables for Buildings Standards Committee are:

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1.0 General

1.1 Scope

This Standard provides requirements for the structural design, construction contract documents, fabrication, and installation of cables for use as structural elements for the support and bracing of buildings, their roofs, and their floors. Herein the word cable denotes a structural member that is a helically twisted wire strand or wire rope, or a parallel wire strand; its suitability as a structural member is essentially its capability for resisting tension. This Standard covers the use, for buildings, of carbon steel and stainless steel cables comprised of wires either uncoated or having a protective coating.

1.2 Glossary

Anchorage: a structural member at which the cable is terminated.

Cable: a flexible tension member consisting of a wire strand or a multiplicity of wire strands forming a wire rope.

Clamp: a cable fitting that transfers force by friction.

Damper: an active or passive device attached to the cable structure that modifies the structural response to dynamic loads.

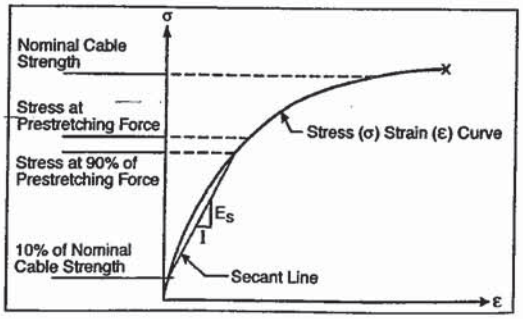
Deflector: a grooved cable support used to create an angle change in the cable, also known as a saddle.

Fitting: any accessory used as an attachment to, or support for, the cable or its components.

Grade: classification of cable by nominal cable strength and/or metallic composition of wire.

Modulus of Elasticity: the slope of the secant to the stress-strain curve between 10% of the nominal cable strength and 90% of the prestretching force.

Nominal Cable Strength: the nominal cable strength of a cable is a computed value based on the breaking strength of the individual wires and the type of cable, as given in ASTM Standards.



Prestressing: applying a tensile force to a cable at the time of its installation.

Prestretching: applying a tensile force to a helically twisted cable according to a predetermined program in order to remove constructional stretch in the cable.

Prestretching Force: tensile force applied to a cable one or more times and held for a specified duration during prestretching.

Rope: A plurality of strands twisted about an axis, or about a core which may be a strand or another wire rope.

Strand: a plurality of wires either parallel or helically twisted about an axis, usually about a central wire.

Termination: a device, also known as an end fitting, attached to a cable to transfer the tension in the cable to its supporting anchorage. A termination may also be a loop formed from the end of a rope.

Wire: a single continuous length of steel with a circular or noncircular cross-section. Wires of circular cross-section are cold-drawn from rod. Wires of noncircular cross-section are either cold-drawn or cold-rolled from rod.

1.3 Symbols and Notation

C = Erection or temporary load during construction

D = Dead load due to weight of the structure and the permanent features on the structure

E = Earthquake load

E_s = Modulus of elasticity (secant)

L = Live load due to occupancy and movable equipment

L_r = Roof live load

P = Prestress force ← use 1.10·P in load combos. See ASCE 7-02 A9.8.8

R = Load due to initial rainwater exclusive of the ponding contribution

S = Snow load

S_d = Design strength of the cable

S_n = Nominal strength of the cable

T = Cable tension

W = Wind load

ϕ_d = Deflector reduction factor

ϕ_f = Fitting reduction factor

1.4 Reference Standards

ASCE 7-95 *Minimum Design Loads for Buildings and Other Structures.*

ASTM B6-87 *Specification for Zinc (Slab Zinc).*

ASTM A416-90A *Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete.*

ASTM A474-86 *Aluminum-Coated Steel Wire Strand.*

ASTM A475-89 *Zinc-Coated Steel Wire Strand.*

ASTM A492-92 *Stainless and Heat Resisting Steel Wire Rope.*

ASTM A586-86 *Zinc-Coated Parallel and Helical Steel Wire Structural Strand.*

ASTM A603-88 *Zinc-Coated Steel Structural Wire Rope.*

ASTM A779-90 *Steel Strand, Seven-Wire, Uncoated, Compacted, Stress-Relieved for Prestressed Concrete.*

ASTM A780-90 *Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.*

ASTM A855/855M-89 *Zinc—5% Aluminum-Mischmetal Alloy-Coated Steel Wire Strand.*

ASTM A882/882M-91 *Epoxy-Coated Seven-Wire Prestressing Steel Strand.*

2.0 Drawings and Specifications

2.1 Construction Contract Documents

2.1.1 Contract drawings. The Contract Drawings shall indicate the horizontal and vertical location of the cables and their connections for a specified load and temperature condition, typically the final dead load condition at an ambient temperature. Dimensions and loading data shall be shown to enable the computation of cable lengths under the specified condition. Required prestressing at erection shall be shown.

Terminations, fittings, anchorages, and other support details shall be fully detailed or sufficient data shall be provided to enable their selection and procurement. The required camber of supporting structural members and the required initial out-of-plumb of columns shall be shown on the drawings. The erection procedure modeled in the structural analysis and design shall be outlined on the drawings or in the Contract Specifications, with a statement whether it is a suggested procedure or is mandatory because of controlling loadings or displacements of the cables or the supporting structure.

2.1.2 Contract specifications. For each cable in the proposed cable structure the Contract Specifications shall indicate the diameter (size), the nominal or the specific configuration (construction) of the cable, the wire coating, the grade of cable, the applicable material or testing specification and, if necessary, direction and type of lay, whether preformed or not, and the type of core. Cable and fitting manufacturing tolerances required for design or erection conditions shall also be given. They shall also state the erection tolerances, both for the final geometry of the system and the prestressing forces. The required tension in the cables when length and diametral measurements are made shall be indicated. The Contract Specifications shall identify all other required submittals, including fabrication drawings and erection drawings.

2.2 Fabrication (Shop) Drawings

Drawings for the fabrication of cables and fittings shall reflect the requirements indicated in the contract documents. Exact locations, material, sizes, and lengths of all cables and fittings shall be shown as well as fabricating and preparation procedures for cables and fittings. Where approved substitutions or changes from the contract documents are made, an alternate member or fitting shall be detailed that will satisfy the loading and configurations indicated in the contract documents.

2.3 Erection (Field) Drawings

Separate erection drawings shall be prepared to show the critical sequence, procedures, and methods of erection.

3.0 Design Considerations

3.1 Design Loadings

3.1.1 Loads. In the absence of an applicable local building code, the design loads shall be those given in ASCE 7, *Minimum Design Loads for Buildings and Other Structures.* Additional load provisions shall be based on the following considerations: aerodynamic effects on individual cables and complete cable structures, either through numerical

dynamic analysis or through wind tunnel tests; wind-induced structural vibration and fatigue effects; and earthquake effects.

3.1.2 Load combinations. Cable tensions shall be calculated for the following load combinations:

T_1 = Cable tension due to $D + P$

T_2 = Cable tension due to $D + P + L + (L_r$ or S or $R)$

T_3 = Cable tension due to $D + P + (W$ or $E)$

T_4 = Cable tension due to $D + P + L + (L_r$ or S or $R) + (W$ or $E)$

T_5 = Cable tension due to C + erection components of D, L, P, and W.

3.2 Cable Strength

3.2.1 Design strength. The design strength S_d of each cable shall be equal to or greater than:

(a) $2.2\ T_1$

(b) $2.2\ T_2$

(c) $2.0\ T_3$

(d) $2.0\ T_4$ — use $1.5(T_4)$ per ASCE 7-02 A9.8.8

(e) $2.0\ T_5$

The above criteria shall be satisfied for the full range of temperatures to which the structure will be subjected.

Except for designs in which fatigue and/or elevated temperature control, the design strength S_d of the cable shall be taken as the smaller of:

$$S_d = S_n \times \phi_f \quad \text{or} \quad S_d = S_n \times \phi_d$$

in which

S_n = specified nominal strength of the cable,

ϕ_f = fitting reduction factor, and

ϕ_d = deflector reduction factor ($\phi_d = 1$ for no deflector).

3.2.1.1 Fitting reduction factor. The factor to be applied due to the action of the end fitting in transferring tension from the cable to the fitting is given in Table 3.2.1.

3.2.1.2 Deflector reduction factor. The factor to be applied due to curvature over a saddle is given in Table 3.2.2.

Table 3.2.2 applies to saddles for which the live load changes the deflector angle of the cable less than 2 degrees for strand and 4 degrees for rope, per saddle end. For greater anticipated deflector angle changes, the deflector reduction factor shall be determined by an approved method. Table 3.2.2 is limited to curvature induced by saddles.

3.2.1.3 Elevated temperature effect. The effect of elevated temperature on the physical properties of cable and end fittings shall be considered during design.

3.2.1.4 Fatigue effect. The reduction in cable strength due to fatigue effects shall be considered.

Table 3.2.1
Fitting reduction factor.

Type of Termination	Fitting Reduction Factor ϕ_f	
	Rope	Strand
Poured socket (Zinc or resin)	1.00	1.00
Swaged socket	1.00 (Note #1)	(Note #2)
Mechanical loop splice with sleeve and thimble		
0 < dia ≤ 1 inch	0.95	N/A
1 < dia ≤ 2 inch	0.925	N/A
2 < dia ≤ 3-1/2 inch	0.90	N/A
Loop or thimble splice (Hand splice)		
(Carbon steel rope)		
1/4 inch size	0.90	N/A
1/2	0.86	N/A
3/4	0.82	N/A
7/8 thru 2-1/2	0.80	N/A
(Stainless steel rope)		
1/4 inch size	0.80	N/A
1/2	0.76	N/A
3/4	0.72	N/A
7/8	0.70	N/A
Wedge socket (Note #3)	0.75 to 0.80	N/A
Clip (Note #4)	0.80	N/A

Notes:
1 in. = 25.4 mm
Note #1 – Regular lay ropes only. Consult manufacturer for sizes over 2 inches.
Note #2 – Consult manufacturer.
Note #3 – Value depends on fitting design. Typical range given. Consult fitting manufacturer for a more precise value.
Note #4 – Number of clips varies with size and construction of rope.

3.2.2 End fittings. Fittings shall develop an ultimate strength of at least 110 percent of the specified nominal cable strength. Moreover, fittings shall be designed such that the computed average stresses across the fitting body are less than the yield stress of the fitting material under a static tension force equal to the specified nominal strength of the rope or strand for which the fitting is designed to be attached. Localized yielding at stress concentrations, such as at the line contact of pins and the roots of screw threads, is permitted at the cable working tension.

Under special circumstances, over-designed cables may terminate with undersize fittings, or conventionally designed cables with oversize fittings. Such designs shall be based on data supplied by an assembler or a fitting manufacturer regarding fit of the cable in the fitting and the stresses in the fitting.

3.3 Structural Analysis

3.3.1 General considerations. The structural analysis shall be based on the following considerations in addition to those mentioned elsewhere in this Standard:

(a) Elastic stretch of the cables and deformation of the supporting structure shall be taken into account in the design.

(b) Nonlinear analyses shall be performed if it is determined that the magnitudes of the cable displacements are such that the equilibrium equations should be based on the geometry of the displaced structure.

3.3.2 Vibrations. The effect of dynamic loading on cable stresses, fatigue, and deflections of the individual cable and the entire structure shall be considered in the design.

3.3.3 Deflections. Cables supporting floors and roofs shall be so proportioned that the maximum deflection under the combined action of applied loads and cable stretch will not damage the supported or adjacent structure.

Table 3.2.2
Deflector reduction factor.

Ratio: Saddle Radius to Rope Diameter	Ratio: Saddle Radius to Strand Diameter	Deflector Reduction Factor ϕ_d
15 and over	20 and over	1.0
14	19	0.95
13	18	0.90
12	17	0.85
11	16	0.80
10 min.	15 min.	0.75

3.3.4 Erection analyses. A structural analysis shall be performed for the suggested or mandatory erection procedure including the items listed in Section 3.3.1.

4.0 Cable Materials

4.1 Cable Specifications

This Standard applies to cables conforming to the following standard specifications:

ASTM A416-90A, *Steel Strand, Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete.*

ASTM A474-86, *Aluminum-Coated Steel Wire Strand.*

ASTM A475-89, *Zinc-Coated Steel Wire Strand.*

ASTM A492-92, *Stainless and Heat Resisting Steel Wire Rope.*

ASTM A586, *Zinc-Coated Parallel and Helical Steel Wire Structural Strand.*

ASTM A603-88, *Zinc-Coated Steel Structural Wire Rope.*

ASTM A779-90, *Steel Strand, Seven-Wire, Uncoated, Compacted, Stress-Relieved for Prestressed Concrete.*

ASTM A855/855M-89, *Zinc—5% Aluminum-Mischmetal Alloy-Coated Steel Wire Strand.*

ASTM A882/882M-91, *Epoxy-Coated Seven-Wire Prestressing Steel Strand.*

Some of the above cable specifications apply to cables of a specific construction. This Standard does not exclude cables of other construction provided that the chemical and mechanical properties of the wires constituting the cables conform to the requirements of one of the above specifications.

4.2 Prestretching

For each type and construction of cables specified in the contract documents, the prestretching requirements shall be explicitly stated. For prestretched cables, the minimum value of the modulus of elasticity of the cable after prestretching shall be specified. Prestretch force shall be not less than 50% of the nominal cable strength of cables that are 2-1/2 in. (63 mm) in diameter or less, except if it can be physically demonstrated by the manufacturer that

the specified minimum modulus of elasticity can be attained at a lower prestretch force (for the stress range required by the design loadings). For cables over 2-1/2 in. in diameter, approved prestretching requirements shall be developed in consultation with a cable manufacturer.

5.0 Fittings

5.1 Materials

When selecting fitting materials, the compatibility of the cable and fitting materials shall be considered.

5.2 Inspection

Stock or standard sockets shall be subjected to the manufacturer's quality control testing. For special sockets, additional inspection and/or proof loading of the fittings shall be specified. Approved nondestructive testing procedures are: magnetic particle, dye penetrant, ultrasonic, and radiographic. With appropriately trained and experienced inspectors, electromagnetic or acoustic emission procedures also are not prohibited. No cracks or other injurious defects shall be present at high-stress areas of the fittings.

5.3 End Fittings

End fittings shall be positioned so as not to create a collection basin for dirt or moisture. The provision of additional corrosion protection for cables where dirt and moisture may accumulate shall be considered.

NOTE: Examples of representative end fittings are contained in the Commentary (Appendix A).

5.3.1 Zinc-poured fittings. Zinc for zinc-poured fittings shall conform to prime western, high grade or higher purity zinc as defined in ASTM B6. The maximum service temperature for zinc fittings shall be 400 degrees F (204 degrees C).

5.3.2 Resin-Poured Fittings. The resin used in thermoset resin sockets shall have suitable characteristics and properties for both uncured and cured conditions. Resin properties, including shelf life, and any precautions for their use shall be approved based on data supplied by resin manufacturers. Sockets shall have been specifically designed for resin socketing.

5.3.3 Swaged, clip, and wedge-type fittings. Swaged, wedge-type, and clip fittings may be utilized provided they meet the strength requirement of Section 3.2.2.

5.4 Saddles

The surface of the saddle in contact with the rope or strand shall be free of projections and all sharp edges and corners. The curved contact surface shall extend a distance sufficient to ensure that the cable will not contact the end of the saddle groove for any condition of cable deflection.

5.5 Clamps

Factors that shall be considered in clamp design include: bearing pressures, cable compaction, deflection angles, friction, and groove contour as prescribed by cable manufacturers. All surfaces of the clamp in contact with the cable shall be free of sharp corners and edges.

6.0 Protective Coatings

Cables exposed to atmospheric conditions shall have corrosion protection at least equivalent to Class A zinc coating on all wires as defined in ASTM A586 and A603. Heavier Class B or Class C zinc coatings or other approved equivalent coatings shall be considered for severe environmental conditions. Fire protective coatings shall not be considered as corrosion protection.

7.0 Fabrication

7.1 Socketing

Zinc-poured sockets and resin-poured sockets shall be attached by an approved method. For resin socketing, the resin manufacturer's recommendations regarding the ambient temperature and the temperature of the cable and fitting shall be strictly observed.

7.2 Proof Loading of Assemblies

When required on the plans, assemblies with attached sockets shall be proof loaded to a tension force specified to verify the integrity of the sockets. With prior approval, the fabricator may proof load both ends of each assembly independently, instead of the whole assembly at once, by utilizing approved cable grips.

7.3 Prestretching

Cables shall be prestretched to achieve the minimum values of the modulus of elasticity specified in the ASTM specification covering the product, unless other moduli values are called for in the contract documents.

7.4 Cable Length Measurements

Length measurements of the cable shall be made under the cable tensions specified in the contract documents. Measurements shall be made after prestretching if prestretching is required.

7.5 Striping

When required, a longitudinal paint stripe shall be applied to the cable while it is subjected to the tension specified for length measurements.

7.6 Shipping

Cable assemblies shall be shipped on reels or in coils. Rope shall not be wound onto a reel or into a coil that has a diameter less than 20 times the rope diameter. Unless otherwise approved, strands shall not be wound onto a reel or into a coil that has a diameter less than 25 times the strand diameter, for strands up to 2 in. (51 mm) in diameter, or less than 28 times the diameter of the strand, for strands greater than 2 in. in diameter.

Because both wire diameter and cable prestretch influence cable flexibility, some cable configurations can safely be wound onto reels or coiled into smaller diameters than above. However, smaller reel or coil diameters shall be approved only after consultation with cable manufacturers and acceptance of their shipping practices. In no case, shall an alternative reel or coil diameter be approved if its use would result in the loss of the specified prestretch condition.

8.0 Erection

8.1 Erection Procedure

The construction contract documents shall show a recommended erection procedure for the proposed structure. That procedure shall reflect all assumptions regarding its erection sequence made during the structural design. Unless otherwise stated in the contract documents, the Contractor shall follow the recommended erection procedure or follow an approved alternate erection procedure.

8.2 Cable Installation

Care shall be exercised during erection to avoid damaging the cables and their coatings. The cables shall not be dragged over or around any objects that will scrub, abrade, or distort the wires, thereby damaging or causing the removal of markings or of the protective coating and possible damage to the steel wires and cable assemblies. Cables shall not be bent sharper than as specified in Section 7.6. Striped cables shall be erected such that the paint stripe applied during measuring is straight after erection.

8.3 Intermediate Fittings

Intermediate saddles and clamps shall be attached in a manner that will not damage the cables. Such fittings shall be positioned so as not to induce twist in the cable.

8.4 Permanent Fittings Attached in the Field

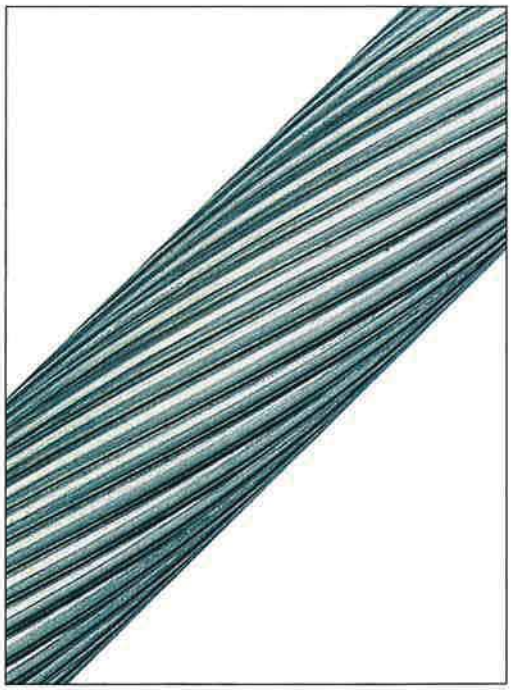
When permanent fittings are attached to cables in the field, the work shall be performed in accordance with approved recommendations of the cable and fitting manufacturers.

Spiralseil DIN EN 12385 – Edelstahl
Spiral Strand DIN EN 12385 – Stainless Steel

Zulassungsnummer
Approval-Number
Z-14.7-411

1 x 19  1 x 37  1 x 61  1 x 91 

Technische Daten	***Technical Data***
Material: gemäß Zulassung Z-14.7-411	*Material:* *according Technical Approval Z-14.7-411*
Elastizitätsmodul: 130 ± 10 kN/mm²	*Modulus of Elasticity:* *130 ± 10 kN/mm²*
Toleranz d_S: + 3%	*Tolerance d_S:* *+ 3%*



TAPESTRY ANALYSIS MODELS
CABLE ELEMENT PROPERTIES
-
FOR ENGINEERING ANALYSIS
NOT FOR PROCUREMENT

Größe *size*	**Charakt. Bruchkraft** *charact. breaking load* $Z_{B,k}$ DIN 18800* kN	**Grenzzugkraft** *limit tension* $Z_{R,d}$ DIN 18800 kN	**Metall. Querschnitt** *metallic cross section* ca./*approx.* mm²	**Gewicht** *weight* ca./*approx.* kg/m	**Konstruktion** *construction*	**Seil-Nenndurchmesser** *nomin. strand dia.* d_S mm
PE 3	26 5k	16	22	0,2	1 x 19	6,1 0.24"
PE 5	47 10k	28	38	0,3	1 x 19	8,1 0.31"
PE 7	73 16k	44	60	0,5	1 x 19	10,1 0.39"
PE 10	101 22k	61	83	0,7	1 x 19	11,9 0.46"
PE 15	141 31k	86	117	0,9	1 x 37	14,1 0.55"
PE 20	195 44k	118	161	1,3	1 x 37	16,6 0.65"
PE 30	298 67k	180	246	1,9	1 x 37	20,5 0.80"
PE 45	409 92k	248	338	2,7	1 x 61	24,1 0.95"
PE 60	578 130k	350	477	3,7	1 x 61	28,6 1.12"
PE 75	730 164k	442	602	4,7	1 x 91	32,1 1.26"
PE 100	945 212k	573	780	6,1	1 x 91	36,6 1.44"

0.75A_g

*nach EC 3 = $F_{u,k}$ und nach ASCE 19-96 = S_d
Konstruktionsänderungen vorbehalten
Größere Abmessungen und Zwischengrößen auf Anfrage

*according EC 3 = $F_{u,k}$ and according ASCE 19-96 = S_d
Subject to technical modification
Bigger dimensions and intermediate dimensions upon request

S_d = 212 KIPS (PER ASCE19-96 3.2.1)

Eisenhower Memorial Tapestry Cable Forces - East

< 212 KIPS OK!

TABLE: Element Forces - Frames				MAX	183.315					
Frame	Station	OutputCase	CaseType	StepType	P	V2	V3	T	M2	M3
Text	in	Text	Text	Text	Kip	Kip	Kip	Kip-in	Kip-in	Kip-in
182	0	2.2T1	Combination	Max	88.621	0	0	0	0	0
182	154	2.2T1	Combination	Max	88.62	0	0	0	0	0
182	308	2.2T1	Combination	Max	88.62	0	0	0	0	0
182	0	2.2T1	Combination	Min	88.139	0	0	0	0	0
182	154	2.2T1	Combination	Min	88.138	0	0	0	0	0
182	308	2.2T1	Combination	Min	88.138	0	0	0	0	0
182	0	2.0T3	Combination	Max	102.365	0	0	0	0	0
182	154	2.0T3	Combination	Max	102.312	0	0	0	0	0
182	308	2.0T3	Combination	Max	102.281	0	0	0	0	0
182	0	2.0T3	Combination	Min	77.088	0	0	0	0	0
182	154	2.0T3	Combination	Min	76.319	0	0	0	0	0
182	308	2.0T3	Combination	Min	75.553	0	0	0	0	0
183	0	2.2T1	Combination	Max	88.609	0	0	0	0	0
183	145	2.2T1	Combination	Max	88.608	0	0	0	0	0
183	290	2.2T1	Combination	Max	88.609	0	0	0	0	0
183	0	2.2T1	Combination	Min	88.127	0	0	0	0	0
183	145	2.2T1	Combination	Min	88.126	0	0	0	0	0
183	290	2.2T1	Combination	Min	88.127	0	0	0	0	0
183	0	2.0T3	Combination	Max	102.269	0	0	0	0	0
183	145	2.0T3	Combination	Max	102.26	0	0	0	0	0
183	290	2.0T3	Combination	Max	102.269	0	0	0	0	0
183	0	2.0T3	Combination	Min	75.543	0	0	0	0	0
183	145	2.0T3	Combination	Min	74.823	0	0	0	0	0
183	290	2.0T3	Combination	Min	74.105	0	0	0	0	0
184	0	2.2T1	Combination	Max	88.62	0	0	0	0	0
184	154	2.2T1	Combination	Max	88.62	0	0	0	0	0
184	308	2.2T1	Combination	Max	88.621	0	0	0	0	0
184	0	2.2T1	Combination	Min	88.138	0	0	0	0	0
184	154	2.2T1	Combination	Min	88.138	0	0	0	0	0
184	308	2.2T1	Combination	Min	88.139	0	0	0	0	0
184	0	2.0T3	Combination	Max	102.281	0	0	0	0	0
184	154	2.0T3	Combination	Max	102.312	0	0	0	0	0
184	308	2.0T3	Combination	Max	102.365	0	0	0	0	0
184	0	2.0T3	Combination	Min	74.115	0	0	0	0	0
184	154	2.0T3	Combination	Min	73.354	0	0	0	0	0
184	308	2.0T3	Combination	Min	72.596	0	0	0	0	0
189	0	2.2T1	Combination	Max	176.813	0	0	0	0	0
189	154	2.2T1	Combination	Max	176.813	0	0	0	0	0
189	308	2.2T1	Combination	Max	176.812	0	0	0	0	0
189	0	2.2T1	Combination	Min	176.221	0	0	0	0	0
189	154	2.2T1	Combination	Min	176.22	0	0	0	0	0
189	308	2.2T1	Combination	Min	176.22	0	0	0	0	0
189	0	2.0T3	Combination	Max	183.315	0	0	0	0	0
189	154	2.0T3	Combination	Max	183.201	0	0	0	0	0
189	308	2.0T3	Combination	Max	183.133	0	0	0	0	0
189	0	2.0T3	Combination	Min	158.364	0	0	0	0	0
189	154	2.0T3	Combination	Min	158.328	0	0	0	0	0
189	308	2.0T3	Combination	Min	157.008	0	0	0	0	0
190	0	2.2T1	Combination	Max	176.8	0	0	0	0	0
190	145	2.2T1	Combination	Max	176.8	0	0	0	0	0
190	290	2.2T1	Combination	Max	176.8	0	0	0	0	0
190	0	2.2T1	Combination	Min	176.207	0	0	0	0	0
190	145	2.2T1	Combination	Min	176.207	0	0	0	0	0
190	290	2.2T1	Combination	Min	176.207	0	0	0	0	0
190	0	2.0T3	Combination	Max	183.121	0	0	0	0	0
190	145	2.0T3	Combination	Max	183.101	0	0	0	0	0
190	290	2.0T3	Combination	Max	183.121	0	0	0	0	0

190	0	2.0T3	Combination Min	156.996	0	0	0	0	0
190	145	2.0T3	Combination Min	155.557	0	0	0	0	0
190	290	2.0T3	Combination Min	154.12	0	0	0	0	0
191	0	2.2T1	Combination Max	176.813	0	0	0	0	0
191	154	2.2T1	Combination Max	176.813	0	0	0	0	0
191	308	2.2T1	Combination Max	176.813	0	0	0	0	0
191	0	2.2T1	Combination Min	176.22	0	0	0	0	0
191	154	2.2T1	Combination Min	176.22	0	0	0	0	0
191	308	2.2T1	Combination Min	176.221	0	0	0	0	0
191	0	2.0T3	Combination Max	183.133	0	0	0	0	0
191	154	2.0T3	Combination Max	183.201	0	0	0	0	0
191	308	2.0T3	Combination Max	183.315	0	0	0	0	0
191	0	2.0T3	Combination Min	154.132	0	0	0	0	0
191	154	2.0T3	Combination Min	152.611	0	0	0	0	0
191	308	2.0T3	Combination Min	149.902	0	0	0	0	0
192	0	2.2T1	Combination Max	176.968	0	0	0	0	0
192	154	2.2T1	Combination Max	176.968	0	0	0	0	0
192	308	2.2T1	Combination Max	176.967	0	0	0	0	0
192	0	2.2T1	Combination Min	176.282	0	0	0	0	0
192	154	2.2T1	Combination Min	176.282	0	0	0	0	0
192	308	2.2T1	Combination Min	176.281	0	0	0	0	0
192	0	2.0T3	Combination Max	181.719	0	0	0	0	0
192	154	2.0T3	Combination Max	181.603	0	0	0	0	0
192	308	2.0T3	Combination Max	181.535	0	0	0	0	0
192	0	2.0T3	Combination Min	158.793	0	0	0	0	0
192	154	2.0T3	Combination Min	158.756	0	0	0	0	0
192	308	2.0T3	Combination Min	157.778	0	0	0	0	0
193	0	2.2T1	Combination Max	176.955	0	0	0	0	0
193	145	2.2T1	Combination Max	176.955	0	0	0	0	0
193	290	2.2T1	Combination Max	176.955	0	0	0	0	0
193	0	2.2T1	Combination Min	176.269	0	0	0	0	0
193	145	2.2T1	Combination Min	176.269	0	0	0	0	0
193	290	2.2T1	Combination Min	176.269	0	0	0	0	0
193	0	2.0T3	Combination Max	181.524	0	0	0	0	0
193	145	2.0T3	Combination Max	181.503	0	0	0	0	0
193	290	2.0T3	Combination Max	181.524	0	0	0	0	0
193	0	2.0T3	Combination Min	157.767	0	0	0	0	0
193	145	2.0T3	Combination Min	156.327	0	0	0	0	0
193	290	2.0T3	Combination Min	154.891	0	0	0	0	0
194	0	2.2T1	Combination Max	176.968	0	0	0	0	0
194	154	2.2T1	Combination Max	176.968	0	0	0	0	0
194	308	2.2T1	Combination Max	176.968	0	0	0	0	0
194	0	2.2T1	Combination Min	176.282	0	0	0	0	0
194	154	2.2T1	Combination Min	176.282	0	0	0	0	0
194	308	2.2T1	Combination Min	176.282	0	0	0	0	0
194	0	2.0T3	Combination Max	181.536	0	0	0	0	0
194	154	2.0T3	Combination Max	181.604	0	0	0	0	0
194	308	2.0T3	Combination Max	181.719	0	0	0	0	0
194	0	2.0T3	Combination Min	154.902	0	0	0	0	0
194	154	2.0T3	Combination Min	153.362	0	0	0	0	0
194	308	2.0T3	Combination Min	150.47	0	0	0	0	0
195	0	2.2T1	Combination Max	177.098	0	0	0	0	0
195	154	2.2T1	Combination Max	177.097	0	0	0	0	0
195	308	2.2T1	Combination Max	177.097	0	0	0	0	0
195	0	2.2T1	Combination Min	176.331	0	0	0	0	0
195	154	2.2T1	Combination Min	176.33	0	0	0	0	0
195	308	2.2T1	Combination Min	176.33	0	0	0	0	0
195	0	2.0T3	Combination Max	180.382	0	0	0	0	0
195	154	2.0T3	Combination Max	180.266	0	0	0	0	0
195	308	2.0T3	Combination Max	180.197	0	0	0	0	0
195	0	2.0T3	Combination Min	159.266	0	0	0	0	0
195	154	2.0T3	Combination Min	159.229	0	0	0	0	0

195	308	2.0T3	Combination Min	158.52	0	0	0	0	0
196	0	2.2T1	Combination Max	177.097	0	0	0	0	0
196	145	2.2T1	Combination Max	177.097	0	0	0	0	0
196	290	2.2T1	Combination Max	177.097	0	0	0	0	0
196	0	2.2T1	Combination Min	176.33	0	0	0	0	0
196	145	2.2T1	Combination Min	176.33	0	0	0	0	0
196	290	2.2T1	Combination Min	176.33	0	0	0	0	0
196	0	2.0T3	Combination Max	180.197	0	0	0	0	0
196	145	2.0T3	Combination Max	180.176	0	0	0	0	0
196	290	2.0T3	Combination Max	180.197	0	0	0	0	0
196	0	2.0T3	Combination Min	158.52	0	0	0	0	0
196	145	2.0T3	Combination Min	157.08	0	0	0	0	0
196	290	2.0T3	Combination Min	155.644	0	0	0	0	0
197	0	2.2T1	Combination Max	177.097	0	0	0	0	0
197	154	2.2T1	Combination Max	177.097	0	0	0	0	0
197	308	2.2T1	Combination Max	177.098	0	0	0	0	0
197	0	2.2T1	Combination Min	176.33	0	0	0	0	0
197	154	2.2T1	Combination Min	176.33	0	0	0	0	0
197	308	2.2T1	Combination Min	176.331	0	0	0	0	0
197	0	2.0T3	Combination Max	180.197	0	0	0	0	0
197	154	2.0T3	Combination Max	180.266	0	0	0	0	0
197	308	2.0T3	Combination Max	180.383	0	0	0	0	0
197	0	2.0T3	Combination Min	155.644	0	0	0	0	0
197	154	2.0T3	Combination Min	153.968	0	0	0	0	0
197	308	2.0T3	Combination Min	151.077	0	0	0	0	0
198	0	2.2T1	Combination Max	168.415	0	0	0	0	0
198	154	2.2T1	Combination Max	168.414	0	0	0	0	0
198	308	2.2T1	Combination Max	168.414	0	0	0	0	0
198	0	2.2T1	Combination Min	167.576	0	0	0	0	0
198	154	2.2T1	Combination Min	167.576	0	0	0	0	0
198	308	2.2T1	Combination Min	167.575	0	0	0	0	0
198	0	2.0T3	Combination Max	170.963	0	0	0	0	0
198	154	2.0T3	Combination Max	170.853	0	0	0	0	0
198	308	2.0T3	Combination Max	170.787	0	0	0	0	0
198	0	2.0T3	Combination Min	152.42	0	0	0	0	0
198	154	2.0T3	Combination Min	152.382	0	0	0	0	0
198	308	2.0T3	Combination Min	151.409	0	0	0	0	0
199	0	2.2T1	Combination Max	168.414	0	0	0	0	0
199	145	2.2T1	Combination Max	168.414	0	0	0	0	0
199	290	2.2T1	Combination Max	168.414	0	0	0	0	0
199	0	2.2T1	Combination Min	167.575	0	0	0	0	0
199	145	2.2T1	Combination Min	167.575	0	0	0	0	0
199	290	2.2T1	Combination Min	167.575	0	0	0	0	0
199	0	2.0T3	Combination Max	170.787	0	0	0	0	0
199	145	2.0T3	Combination Max	170.767	0	0	0	0	0
199	290	2.0T3	Combination Max	170.787	0	0	0	0	0
199	0	2.0T3	Combination Min	151.409	0	0	0	0	0
199	145	2.0T3	Combination Min	149.955	0	0	0	0	0
199	290	2.0T3	Combination Min	148.505	0	0	0	0	0
200	0	2.2T1	Combination Max	168.414	0	0	0	0	0
200	154	2.2T1	Combination Max	168.414	0	0	0	0	0
200	308	2.2T1	Combination Max	168.415	0	0	0	0	0
200	0	2.2T1	Combination Min	167.575	0	0	0	0	0
200	154	2.2T1	Combination Min	167.576	0	0	0	0	0
200	308	2.2T1	Combination Min	167.576	0	0	0	0	0
200	0	2.0T3	Combination Max	170.788	0	0	0	0	0
200	154	2.0T3	Combination Max	170.853	0	0	0	0	0
200	308	2.0T3	Combination Max	170.963	0	0	0	0	0
200	0	2.0T3	Combination Min	148.505	0	0	0	0	0
200	154	2.0T3	Combination Min	146.81	0	0	0	0	0
200	308	2.0T3	Combination Min	144.07	0	0	0	0	0
201	0	2.2T1	Combination Max	120.18	0	0	0	0	0

201	154	2.2T1	Combination Max	120.18	0	0	0	0	0
201	308	2.2T1	Combination Max	120.18	0	0	0	0	0
201	0	2.2T1	Combination Min	119.276	0	0	0	0	0
201	154	2.2T1	Combination Min	119.275	0	0	0	0	0
201	308	2.2T1	Combination Min	119.275	0	0	0	0	0
201	0	2.0T3	Combination Max	124.533	0	0	0	0	0
201	154	2.0T3	Combination Max	124.459	0	0	0	0	0
201	308	2.0T3	Combination Max	124.415	0	0	0	0	0
201	0	2.0T3	Combination Min	113.318	0	0	0	0	0
201	154	2.0T3	Combination Min	111.686	0	0	0	0	0
201	308	2.0T3	Combination Min	110.06	0	0	0	0	0
202	0	2.2T1	Combination Max	120.179	0	0	0	0	0
202	145	2.2T1	Combination Max	120.179	0	0	0	0	0
202	290	2.2T1	Combination Max	120.179	0	0	0	0	0
202	0	2.2T1	Combination Min	119.275	0	0	0	0	0
202	145	2.2T1	Combination Min	119.274	0	0	0	0	0
202	290	2.2T1	Combination Min	119.275	0	0	0	0	0
202	0	2.0T3	Combination Max	124.414	0	0	0	0	0
202	145	2.0T3	Combination Max	124.401	0	0	0	0	0
202	290	2.0T3	Combination Max	124.414	0	0	0	0	0
202	0	2.0T3	Combination Min	110.061	0	0	0	0	0
202	145	2.0T3	Combination Min	108.535	0	0	0	0	0
202	290	2.0T3	Combination Min	106.817	0	0	0	0	0
203	0	2.2T1	Combination Max	120.18	0	0	0	0	0
203	154	2.2T1	Combination Max	120.18	0	0	0	0	0
203	308	2.2T1	Combination Max	120.18	0	0	0	0	0
203	0	2.2T1	Combination Min	119.275	0	0	0	0	0
203	154	2.2T1	Combination Min	119.275	0	0	0	0	0
203	308	2.2T1	Combination Min	119.276	0	0	0	0	0
203	0	2.0T3	Combination Max	124.415	0	0	0	0	0
203	154	2.0T3	Combination Max	124.459	0	0	0	0	0
203	308	2.0T3	Combination Max	124.533	0	0	0	0	0
203	0	2.0T3	Combination Min	106.814	0	0	0	0	0
203	154	2.0T3	Combination Min	104.886	0	0	0	0	0
203	308	2.0T3	Combination Min	102.968	0	0	0	0	0
204	0	2.2T1	Combination Max	120.305	0	0	0	0	0
204	154	2.2T1	Combination Max	120.304	0	0	0	0	0
204	308	2.2T1	Combination Max	120.304	0	0	0	0	0
204	0	2.2T1	Combination Min	119.335	0	0	0	0	0
204	154	2.2T1	Combination Min	119.335	0	0	0	0	0
204	308	2.2T1	Combination Min	119.335	0	0	0	0	0
204	0	2.0T3	Combination Max	123.857	0	0	0	0	0
204	154	2.0T3	Combination Max	123.782	0	0	0	0	0
204	308	2.0T3	Combination Max	123.738	0	0	0	0	0
204	0	2.0T3	Combination Min	113.952	0	0	0	0	0
204	154	2.0T3	Combination Min	112.321	0	0	0	0	0
204	308	2.0T3	Combination Min	110.695	0	0	0	0	0
205	0	2.2T1	Combination Max	120.304	0	0	0	0	0
205	145	2.2T1	Combination Max	120.303	0	0	0	0	0
205	290	2.2T1	Combination Max	120.304	0	0	0	0	0
205	0	2.2T1	Combination Min	119.334	0	0	0	0	0
205	145	2.2T1	Combination Min	119.334	0	0	0	0	0
205	290	2.2T1	Combination Min	119.334	0	0	0	0	0
205	0	2.0T3	Combination Max	123.737	0	0	0	0	0
205	145	2.0T3	Combination Max	123.723	0	0	0	0	0
205	290	2.0T3	Combination Max	123.737	0	0	0	0	0
205	0	2.0T3	Combination Min	110.695	0	0	0	0	0
205	145	2.0T3	Combination Min	109.17	0	0	0	0	0
205	290	2.0T3	Combination Min	107.423	0	0	0	0	0
206	0	2.2T1	Combination Max	120.304	0	0	0	0	0
206	154	2.2T1	Combination Max	120.304	0	0	0	0	0
206	308	2.2T1	Combination Max	120.305	0	0	0	0	0

206	0	2.2T1	Combination Min	119.335	0	0	0	0	0
206	154	2.2T1	Combination Min	119.335	0	0	0	0	0
206	308	2.2T1	Combination Min	119.335	0	0	0	0	0
206	0	2.0T3	Combination Max	123.738	0	0	0	0	0
206	154	2.0T3	Combination Max	123.782	0	0	0	0	0
206	308	2.0T3	Combination Max	123.857	0	0	0	0	0
206	0	2.0T3	Combination Min	107.42	0	0	0	0	0
206	154	2.0T3	Combination Min	105.492	0	0	0	0	0
206	308	2.0T3	Combination Min	103.574	0	0	0	0	0
207	0	2.2T1	Combination Max	120.445	0	0	0	0	0
207	154	2.2T1	Combination Max	120.445	0	0	0	0	0
207	308	2.2T1	Combination Max	120.444	0	0	0	0	0
207	0	2.2T1	Combination Min	119.411	0	0	0	0	0
207	154	2.2T1	Combination Min	119.411	0	0	0	0	0
207	308	2.2T1	Combination Min	119.41	0	0	0	0	0
207	0	2.0T3	Combination Max	123.387	0	0	0	0	0
207	154	2.0T3	Combination Max	123.312	0	0	0	0	0
207	308	2.0T3	Combination Max	123.268	0	0	0	0	0
207	0	2.0T3	Combination Min	114.599	0	0	0	0	0
207	154	2.0T3	Combination Min	112.968	0	0	0	0	0
207	308	2.0T3	Combination Min	111.342	0	0	0	0	0
208	0	2.2T1	Combination Max	120.444	0	0	0	0	0
208	145	2.2T1	Combination Max	120.444	0	0	0	0	0
208	290	2.2T1	Combination Max	120.444	0	0	0	0	0
208	0	2.2T1	Combination Min	119.41	0	0	0	0	0
208	145	2.2T1	Combination Min	119.41	0	0	0	0	0
208	290	2.2T1	Combination Min	119.41	0	0	0	0	0
208	0	2.0T3	Combination Max	123.267	0	0	0	0	0
208	145	2.0T3	Combination Max	123.253	0	0	0	0	0
208	290	2.0T3	Combination Max	123.267	0	0	0	0	0
208	0	2.0T3	Combination Min	111.343	0	0	0	0	0
208	145	2.0T3	Combination Min	109.817	0	0	0	0	0
208	290	2.0T3	Combination Min	108.059	0	0	0	0	0
209	0	2.2T1	Combination Max	120.444	0	0	0	0	0
209	154	2.2T1	Combination Max	120.445	0	0	0	0	0
209	308	2.2T1	Combination Max	120.445	0	0	0	0	0
209	0	2.2T1	Combination Min	119.41	0	0	0	0	0
209	154	2.2T1	Combination Min	119.411	0	0	0	0	0
209	308	2.2T1	Combination Min	119.411	0	0	0	0	0
209	0	2.0T3	Combination Max	123.268	0	0	0	0	0
209	154	2.0T3	Combination Max	123.312	0	0	0	0	0
209	308	2.0T3	Combination Max	123.387	0	0	0	0	0
209	0	2.0T3	Combination Min	108.057	0	0	0	0	0
209	154	2.0T3	Combination Min	106.129	0	0	0	0	0
209	308	2.0T3	Combination Min	104.211	0	0	0	0	0
210	0	2.2T1	Combination Max	120.607	0	0	0	0	0
210	154	2.2T1	Combination Max	120.607	0	0	0	0	0
210	308	2.2T1	Combination Max	120.606	0	0	0	0	0
210	0	2.2T1	Combination Min	119.505	0	0	0	0	0
210	154	2.2T1	Combination Min	119.505	0	0	0	0	0
210	308	2.2T1	Combination Min	119.505	0	0	0	0	0
210	0	2.0T3	Combination Max	123.115	0	0	0	0	0
210	154	2.0T3	Combination Max	123.04	0	0	0	0	0
210	308	2.0T3	Combination Max	122.995	0	0	0	0	0
210	0	2.0T3	Combination Min	115.267	0	0	0	0	0
210	154	2.0T3	Combination Min	113.636	0	0	0	0	0
210	308	2.0T3	Combination Min	112.01	0	0	0	0	0
211	0	2.2T1	Combination Max	120.606	0	0	0	0	0
211	145	2.2T1	Combination Max	120.606	0	0	0	0	0
211	290	2.2T1	Combination Max	120.606	0	0	0	0	0
211	0	2.2T1	Combination Min	119.504	0	0	0	0	0
211	145	2.2T1	Combination Min	119.504	0	0	0	0	0

211	290	2.2T1	Combination Min	119.504	0	0	0	0	0
211	0	2.0T3	Combination Max	122.994	0	0	0	0	0
211	145	2.0T3	Combination Max	122.98	0	0	0	0	0
211	290	2.0T3	Combination Max	122.994	0	0	0	0	0
211	0	2.0T3	Combination Min	112.011	0	0	0	0	0
211	145	2.0T3	Combination Min	110.485	0	0	0	0	0
211	290	2.0T3	Combination Min	108.731	0	0	0	0	0
212	0	2.2T1	Combination Max	120.606	0	0	0	0	0
212	154	2.2T1	Combination Max	120.607	0	0	0	0	0
212	308	2.2T1	Combination Max	120.607	0	0	0	0	0
212	0	2.2T1	Combination Min	119.505	0	0	0	0	0
212	154	2.2T1	Combination Min	119.505	0	0	0	0	0
212	308	2.2T1	Combination Min	119.505	0	0	0	0	0
212	0	2.0T3	Combination Max	122.995	0	0	0	0	0
212	154	2.0T3	Combination Max	123.04	0	0	0	0	0
212	308	2.0T3	Combination Max	123.115	0	0	0	0	0
212	0	2.0T3	Combination Min	108.729	0	0	0	0	0
212	154	2.0T3	Combination Min	106.801	0	0	0	0	0
212	308	2.0T3	Combination Min	104.883	0	0	0	0	0
213	0	2.2T1	Combination Max	107.623	0	0	0	0	0
213	154	2.2T1	Combination Max	107.622	0	0	0	0	0
213	308	2.2T1	Combination Max	107.622	0	0	0	0	0
213	0	2.2T1	Combination Min	106.45	0	0	0	0	0
213	154	2.2T1	Combination Min	106.449	0	0	0	0	0
213	308	2.2T1	Combination Min	106.449	0	0	0	0	0
213	0	2.0T3	Combination Max	111.095	0	0	0	0	0
213	154	2.0T3	Combination Max	111.027	0	0	0	0	0
213	308	2.0T3	Combination Max	110.987	0	0	0	0	0
213	0	2.0T3	Combination Min	104.415	0	0	0	0	0
213	154	2.0T3	Combination Min	102.832	0	0	0	0	0
213	308	2.0T3	Combination Min	101.07	0	0	0	0	0
214	0	2.2T1	Combination Max	107.622	0	0	0	0	0
214	145	2.2T1	Combination Max	107.622	0	0	0	0	0
214	290	2.2T1	Combination Max	107.622	0	0	0	0	0
214	0	2.2T1	Combination Min	106.449	0	0	0	0	0
214	145	2.2T1	Combination Min	106.448	0	0	0	0	0
214	290	2.2T1	Combination Min	106.449	0	0	0	0	0
214	0	2.0T3	Combination Max	110.985	0	0	0	0	0
214	145	2.0T3	Combination Max	110.972	0	0	0	0	0
214	290	2.0T3	Combination Max	110.985	0	0	0	0	0
214	0	2.0T3	Combination Min	101.074	0	0	0	0	0
214	145	2.0T3	Combination Min	99.417	0	0	0	0	0
214	290	2.0T3	Combination Min	97.767	0	0	0	0	0
215	0	2.2T1	Combination Max	107.622	0	0	0	0	0
215	154	2.2T1	Combination Max	107.622	0	0	0	0	0
215	308	2.2T1	Combination Max	107.623	0	0	0	0	0
215	0	2.2T1	Combination Min	106.449	0	0	0	0	0
215	154	2.2T1	Combination Min	106.449	0	0	0	0	0
215	308	2.2T1	Combination Min	106.45	0	0	0	0	0
215	0	2.0T3	Combination Max	110.987	0	0	0	0	0
215	154	2.0T3	Combination Max	111.027	0	0	0	0	0
215	308	2.0T3	Combination Max	111.095	0	0	0	0	0
215	0	2.0T3	Combination Min	97.764	0	0	0	0	0
215	154	2.0T3	Combination Min	96.019	0	0	0	0	0
215	308	2.0T3	Combination Min	94.284	0	0	0	0	0
216	0	2.2T1	Combination Max	79.352	0	0	0	0	0
216	154	2.2T1	Combination Max	79.352	0	0	0	0	0
216	308	2.2T1	Combination Max	79.351	0	0	0	0	0
216	0	2.2T1	Combination Min	78.106	0	0	0	0	0
216	154	2.2T1	Combination Min	78.105	0	0	0	0	0
216	308	2.2T1	Combination Min	78.105	0	0	0	0	0
216	0	2.0T3	Combination Max	86.181	0	0	0	0	0

216	154	2.0T3	Combination Max	86.131	0	0	0	0	0
216	308	2.0T3	Combination Max	86.101	0	0	0	0	0
216	0	2.0T3	Combination Min	74.199	0	0	0	0	0
216	154	2.0T3	Combination Min	73.33	0	0	0	0	0
216	308	2.0T3	Combination Min	72.464	0	0	0	0	0
217	0	2.2T1	Combination Max	79.351	0	0	0	0	0
217	145	2.2T1	Combination Max	79.351	0	0	0	0	0
217	290	2.2T1	Combination Max	79.351	0	0	0	0	0
217	0	2.2T1	Combination Min	78.105	0	0	0	0	0
217	145	2.2T1	Combination Min	78.104	0	0	0	0	0
217	290	2.2T1	Combination Min	78.105	0	0	0	0	0
217	0	2.0T3	Combination Max	86.095	0	0	0	0	0
217	145	2.0T3	Combination Max	86.086	0	0	0	0	0
217	290	2.0T3	Combination Max	86.095	0	0	0	0	0
217	0	2.0T3	Combination Min	72.464	0	0	0	0	0
217	145	2.0T3	Combination Min	71.651	0	0	0	0	0
217	290	2.0T3	Combination Min	70.84	0	0	0	0	0
218	0	2.2T1	Combination Max	79.351	0	0	0	0	0
218	154	2.2T1	Combination Max	79.352	0	0	0	0	0
218	308	2.2T1	Combination Max	79.352	0	0	0	0	0
218	0	2.2T1	Combination Min	78.105	0	0	0	0	0
218	154	2.2T1	Combination Min	78.105	0	0	0	0	0
218	308	2.2T1	Combination Min	78.106	0	0	0	0	0
218	0	2.0T3	Combination Max	86.101	0	0	0	0	0
218	154	2.0T3	Combination Max	86.131	0	0	0	0	0
218	308	2.0T3	Combination Max	86.181	0	0	0	0	0
218	0	2.0T3	Combination Min	70.839	0	0	0	0	0
218	154	2.0T3	Combination Min	69.981	0	0	0	0	0
218	308	2.0T3	Combination Min	69.126	0	0	0	0	0
219	0	2.2T1	Combination Max	79.595	0	0	0	0	0
219	154	2.2T1	Combination Max	79.594	0	0	0	0	0
219	308	2.2T1	Combination Max	79.594	0	0	0	0	0
219	0	2.2T1	Combination Min	78.262	0	0	0	0	0
219	154	2.2T1	Combination Min	78.262	0	0	0	0	0
219	308	2.2T1	Combination Min	78.261	0	0	0	0	0
219	0	2.0T3	Combination Max	86.196	0	0	0	0	0
219	154	2.0T3	Combination Max	86.146	0	0	0	0	0
219	308	2.0T3	Combination Max	86.117	0	0	0	0	0
219	0	2.0T3	Combination Min	75.002	0	0	0	0	0
219	154	2.0T3	Combination Min	74.133	0	0	0	0	0
219	308	2.0T3	Combination Min	73.266	0	0	0	0	0
221	0	2.2T1	Combination Max	79.594	0	0	0	0	0
221	145	2.2T1	Combination Max	79.594	0	0	0	0	0
221	290	2.2T1	Combination Max	79.594	0	0	0	0	0
221	0	2.2T1	Combination Min	78.261	0	0	0	0	0
221	145	2.2T1	Combination Min	78.261	0	0	0	0	0
221	290	2.2T1	Combination Min	78.261	0	0	0	0	0
221	0	2.0T3	Combination Max	86.11	0	0	0	0	0
221	145	2.0T3	Combination Max	86.101	0	0	0	0	0
221	290	2.0T3	Combination Max	86.11	0	0	0	0	0
221	0	2.0T3	Combination Min	73.267	0	0	0	0	0
221	145	2.0T3	Combination Min	72.453	0	0	0	0	0
221	290	2.0T3	Combination Min	71.642	0	0	0	0	0
222	0	2.2T1	Combination Max	79.594	0	0	0	0	0
222	154	2.2T1	Combination Max	79.594	0	0	0	0	0
222	308	2.2T1	Combination Max	79.595	0	0	0	0	0
222	0	2.2T1	Combination Min	78.261	0	0	0	0	0
222	154	2.2T1	Combination Min	78.262	0	0	0	0	0
222	308	2.2T1	Combination Min	78.262	0	0	0	0	0
222	0	2.0T3	Combination Max	86.117	0	0	0	0	0
222	154	2.0T3	Combination Max	86.146	0	0	0	0	0
222	308	2.0T3	Combination Max	86.196	0	0	0	0	0

222	0	2.0T3	Combination Min	71.642	0	0	0	0	0
222	154	2.0T3	Combination Min	70.784	0	0	0	0	0
222	308	2.0T3	Combination Min	69.928	0	0	0	0	0
223	0	2.2T1	Combination Max	79.864	0	0	0	0	0
223	154	2.2T1	Combination Max	79.863	0	0	0	0	0
223	308	2.2T1	Combination Max	79.862	0	0	0	0	0
223	0	2.2T1	Combination Min	78.436	0	0	0	0	0
223	154	2.2T1	Combination Min	78.436	0	0	0	0	0
223	308	2.2T1	Combination Min	78.435	0	0	0	0	0
223	0	2.0T3	Combination Max	86.421	0	0	0	0	0
223	154	2.0T3	Combination Max	86.371	0	0	0	0	0
223	308	2.0T3	Combination Max	86.342	0	0	0	0	0
223	0	2.0T3	Combination Min	75.764	0	0	0	0	0
223	154	2.0T3	Combination Min	74.894	0	0	0	0	0
223	308	2.0T3	Combination Min	74.028	0	0	0	0	0
224	0	2.2T1	Combination Max	79.862	0	0	0	0	0
224	145	2.2T1	Combination Max	79.862	0	0	0	0	0
224	290	2.2T1	Combination Max	79.862	0	0	0	0	0
224	0	2.2T1	Combination Min	78.435	0	0	0	0	0
224	145	2.2T1	Combination Min	78.435	0	0	0	0	0
224	290	2.2T1	Combination Min	78.435	0	0	0	0	0
224	0	2.0T3	Combination Max	86.335	0	0	0	0	0
224	145	2.0T3	Combination Max	86.326	0	0	0	0	0
224	290	2.0T3	Combination Max	86.335	0	0	0	0	0
224	0	2.0T3	Combination Min	73.757	0	0	0	0	0
224	145	2.0T3	Combination Min	72.944	0	0	0	0	0
224	290	2.0T3	Combination Min	72.133	0	0	0	0	0
225	0	2.2T1	Combination Max	79.862	0	0	0	0	0
225	154	2.2T1	Combination Max	79.863	0	0	0	0	0
225	308	2.2T1	Combination Max	79.864	0	0	0	0	0
225	0	2.2T1	Combination Min	78.435	0	0	0	0	0
225	154	2.2T1	Combination Min	78.436	0	0	0	0	0
225	308	2.2T1	Combination Min	78.436	0	0	0	0	0
225	0	2.0T3	Combination Max	86.342	0	0	0	0	0
225	154	2.0T3	Combination Max	86.372	0	0	0	0	0
225	308	2.0T3	Combination Max	86.421	0	0	0	0	0
225	0	2.0T3	Combination Min	72.411	0	0	0	0	0
225	154	2.0T3	Combination Min	71.553	0	0	0	0	0
225	308	2.0T3	Combination Min	70.697	0	0	0	0	0

Eisenhower Memorial Tapestry Cable Forces - **South**

< 212 KIPS OK!

TABLE: Element Forces - Frames				MAX	116.896					
Frame	Station	OutputCase	CaseType	StepType	P	V2	V3	T	M2	M3
Text	in	Text	Text	Text	Kip	Kip	Kip	Kip-in	Kip-in	Kip-in
16	0	2.2T1	Combination	Max	66.086	0	0	0	0	0
16	43.375	2.2T1	Combination	Max	66.084	0	0	0	0	0
16	86.75	2.2T1	Combination	Max	66.086	0	0	0	0	0
16	0	2.2T1	Combination	Min	65.81	0	0	0	0	0
16	43.375	2.2T1	Combination	Min	65.808	0	0	0	0	0
16	86.75	2.2T1	Combination	Min	65.81	0	0	0	0	0
16	0	2.0T3	Combination	Max	77.914	0	0	0	0	0
16	43.375	2.0T3	Combination	Max	76.367	0	0	0	0	0
16	86.75	2.0T3	Combination	Max	76.098	0	0	0	0	0
16	0	2.0T3	Combination	Min	60.431	0	0	0	0	0
16	43.375	2.0T3	Combination	Min	60.407	0	0	0	0	0
16	86.75	2.0T3	Combination	Min	60.428	0	0	0	0	0
63	0	2.2T1	Combination	Max	66.061	0	0	0	0	0
63	43.375	2.2T1	Combination	Max	66.059	0	0	0	0	0
63	86.75	2.2T1	Combination	Max	66.061	0	0	0	0	0
63	0	2.2T1	Combination	Min	65.79	0	0	0	0	0
63	43.375	2.2T1	Combination	Min	65.787	0	0	0	0	0
63	86.75	2.2T1	Combination	Min	65.79	0	0	0	0	0
63	0	2.0T3	Combination	Max	78.766	0	0	0	0	0
63	43.375	2.0T3	Combination	Max	77.219	0	0	0	0	0
63	86.75	2.0T3	Combination	Max	76.715	0	0	0	0	0
63	0	2.0T3	Combination	Min	59.703	0	0	0	0	0
63	43.375	2.0T3	Combination	Min	59.68	0	0	0	0	0
63	86.75	2.0T3	Combination	Min	59.701	0	0	0	0	0
64	0	2.2T1	Combination	Max	66.039	0	0	0	0	0
64	43.375	2.2T1	Combination	Max	66.037	0	0	0	0	0
64	86.75	2.2T1	Combination	Max	66.039	0	0	0	0	0
64	0	2.2T1	Combination	Min	65.771	0	0	0	0	0
64	43.375	2.2T1	Combination	Min	65.769	0	0	0	0	0
64	86.75	2.2T1	Combination	Min	65.772	0	0	0	0	0
64	0	2.0T3	Combination	Max	79.633	0	0	0	0	0
64	43.375	2.0T3	Combination	Max	78.086	0	0	0	0	0
64	86.75	2.0T3	Combination	Max	77.354	0	0	0	0	0
64	0	2.0T3	Combination	Min	58.983	0	0	0	0	0
64	43.375	2.0T3	Combination	Min	58.959	0	0	0	0	0
64	86.75	2.0T3	Combination	Min	58.981	0	0	0	0	0
137	0	2.2T1	Combination	Max	74.767	0	0	0	0	0
137	43.375	2.2T1	Combination	Max	74.765	0	0	0	0	0
137	86.75	2.2T1	Combination	Max	74.767	0	0	0	0	0
137	0	2.2T1	Combination	Min	74.503	0	0	0	0	0
137	43.375	2.2T1	Combination	Min	74.501	0	0	0	0	0
137	86.75	2.2T1	Combination	Min	74.503	0	0	0	0	0
137	0	2.0T3	Combination	Max	86.396	0	0	0	0	0
137	43.375	2.0T3	Combination	Max	84.999	0	0	0	0	0
137	86.75	2.0T3	Combination	Max	83.626	0	0	0	0	0
137	0	2.0T3	Combination	Min	67.569	0	0	0	0	0
137	43.375	2.0T3	Combination	Min	67.519	0	0	0	0	0
137	86.75	2.0T3	Combination	Min	67.565	0	0	0	0	0
142	0	2.2T1	Combination	Max	83.499	0	0	0	0	0
142	43.375	2.2T1	Combination	Max	83.497	0	0	0	0	0
142	86.75	2.2T1	Combination	Max	83.499	0	0	0	0	0

142	0	2.2T1	Combination Min	83.239	0	0	0	0	0
142	43.375	2.2T1	Combination Min	83.237	0	0	0	0	0
142	86.75	2.2T1	Combination Min	83.239	0	0	0	0	0
142	0	2.0T3	Combination Max	93.528	0	0	0	0	0
142	43.375	2.0T3	Combination Max	92.281	0	0	0	0	0
142	86.75	2.0T3	Combination Max	91.051	0	0	0	0	0
142	0	2.0T3	Combination Min	76.264	0	0	0	0	0
142	43.375	2.0T3	Combination Min	76.183	0	0	0	0	0
142	86.75	2.0T3	Combination Min	75.938	0	0	0	0	0
143	0	2.2T1	Combination Max	83.485	0	0	0	0	0
143	43.375	2.2T1	Combination Max	83.484	0	0	0	0	0
143	86.75	2.2T1	Combination Max	83.485	0	0	0	0	0
143	0	2.2T1	Combination Min	83.232	0	0	0	0	0
143	43.375	2.2T1	Combination Min	83.23	0	0	0	0	0
143	86.75	2.2T1	Combination Min	83.232	0	0	0	0	0
143	0	2.0T3	Combination Max	94.513	0	0	0	0	0
143	43.375	2.0T3	Combination Max	93.265	0	0	0	0	0
143	86.75	2.0T3	Combination Max	92.035	0	0	0	0	0
143	0	2.0T3	Combination Min	75.609	0	0	0	0	0
143	43.375	2.0T3	Combination Min	75.527	0	0	0	0	0
143	86.75	2.0T3	Combination Min	75.284	0	0	0	0	0
144	0	2.2T1	Combination Max	83.475	0	0	0	0	0
144	43.375	2.2T1	Combination Max	83.473	0	0	0	0	0
144	86.75	2.2T1	Combination Max	83.475	0	0	0	0	0
144	0	2.2T1	Combination Min	83.228	0	0	0	0	0
144	43.375	2.2T1	Combination Min	83.227	0	0	0	0	0
144	86.75	2.2T1	Combination Min	83.228	0	0	0	0	0
144	0	2.0T3	Combination Max	95.51	0	0	0	0	0
144	43.375	2.0T3	Combination Max	94.262	0	0	0	0	0
144	86.75	2.0T3	Combination Max	93.032	0	0	0	0	0
144	0	2.0T3	Combination Min	74.968	0	0	0	0	0
144	43.375	2.0T3	Combination Min	74.886	0	0	0	0	0
144	86.75	2.0T3	Combination Min	74.638	0	0	0	0	0
145	0	2.2T1	Combination Max	87.84	0	0	0	0	0
145	43.375	2.2T1	Combination Max	87.838	0	0	0	0	0
145	86.75	2.2T1	Combination Max	87.84	0	0	0	0	0
145	0	2.2T1	Combination Min	87.602	0	0	0	0	0
145	43.375	2.2T1	Combination Min	87.601	0	0	0	0	0
145	86.75	2.2T1	Combination Min	87.602	0	0	0	0	0
145	0	2.0T3	Combination Max	98.41	0	0	0	0	0
145	43.375	2.0T3	Combination Max	97.311	0	0	0	0	0
145	86.75	2.0T3	Combination Max	96.225	0	0	0	0	0
145	0	2.0T3	Combination Min	78.979	0	0	0	0	0
145	43.375	2.0T3	Combination Min	78.911	0	0	0	0	0
145	86.75	2.0T3	Combination Min	78.975	0	0	0	0	0
148	0	2.2T1	Combination Max	103.14	0	0	0	0	0
148	43.375	2.2T1	Combination Max	103.139	0	0	0	0	0
148	86.75	2.2T1	Combination Max	103.14	0	0	0	0	0
148	0	2.2T1	Combination Min	102.913	0	0	0	0	0
148	43.375	2.2T1	Combination Min	102.912	0	0	0	0	0
148	86.75	2.2T1	Combination Min	102.913	0	0	0	0	0
148	0	2.0T3	Combination Max	114.807	0	0	0	0	0
148	43.375	2.0T3	Combination Max	113.269	0	0	0	0	0
148	86.75	2.0T3	Combination Max	112.028	0	0	0	0	0
148	0	2.0T3	Combination Min	91.117	0	0	0	0	0
148	43.375	2.0T3	Combination Min	91.096	0	0	0	0	0
148	86.75	2.0T3	Combination Min	91.113	0	0	0	0	0
149	0	2.2T1	Combination Max	103.133	0	0	0	0	0
149	43.375	2.2T1	Combination Max	103.132	0	0	0	0	0
149	86.75	2.2T1	Combination Max	103.133	0	0	0	0	0
149	0	2.2T1	Combination Min	102.92	0	0	0	0	0
149	43.375	2.2T1	Combination Min	102.918	0	0	0	0	0

149	86.75	2.2T1	Combination Min	102.92	0	0	0	0	0
149	0	2.0T3	Combination Max	115.849	0	0	0	0	0
149	43.375	2.0T3	Combination Max	114.311	0	0	0	0	0
149	86.75	2.0T3	Combination Max	113.07	0	0	0	0	0
149	0	2.0T3	Combination Min	90.534	0	0	0	0	0
149	43.375	2.0T3	Combination Min	90.513	0	0	0	0	0
149	86.75	2.0T3	Combination Min	90.531	0	0	0	0	0
150	0	2.2T1	Combination Max	103.125	0	0	0	0	0
150	43.375	2.2T1	Combination Max	103.124	0	0	0	0	0
150	86.75	2.2T1	Combination Max	103.125	0	0	0	0	0
150	0	2.2T1	Combination Min	102.928	0	0	0	0	0
150	43.375	2.2T1	Combination Min	102.927	0	0	0	0	0
150	86.75	2.2T1	Combination Min	102.928	0	0	0	0	0
150	0	2.0T3	Combination Max	116.896	0	0	0	0	0
150	43.375	2.0T3	Combination Max	115.356	0	0	0	0	0
150	86.75	2.0T3	Combination Max	114.115	0	0	0	0	0
150	0	2.0T3	Combination Min	89.968	0	0	0	0	0
150	43.375	2.0T3	Combination Min	89.946	0	0	0	0	0
150	86.75	2.0T3	Combination Min	89.965	0	0	0	0	0
151	0	2.2T1	Combination Max	52.816	0	0	0	0	0
151	43.375	2.2T1	Combination Max	52.814	0	0	0	0	0
151	86.75	2.2T1	Combination Max	52.816	0	0	0	0	0
151	0	2.2T1	Combination Min	52.643	0	0	0	0	0
151	43.375	2.2T1	Combination Min	52.641	0	0	0	0	0
151	86.75	2.2T1	Combination Min	52.643	0	0	0	0	0
151	0	2.0T3	Combination Max	66.344	0	0	0	0	0
151	43.375	2.0T3	Combination Max	65.625	0	0	0	0	0
151	86.75	2.0T3	Combination Max	65.012	0	0	0	0	0
151	0	2.0T3	Combination Min	44.15	0	0	0	0	0
151	43.375	2.0T3	Combination Min	44.137	0	0	0	0	0
151	86.75	2.0T3	Combination Min	43.593	0	0	0	0	0
152	0	2.2T1	Combination Max	66.086	0	0	0	0	0
152	43.375	2.2T1	Combination Max	66.084	0	0	0	0	0
152	86.75	2.2T1	Combination Max	66.086	0	0	0	0	0
152	0	2.2T1	Combination Min	65.81	0	0	0	0	0
152	43.375	2.2T1	Combination Min	65.808	0	0	0	0	0
152	86.75	2.2T1	Combination Min	65.81	0	0	0	0	0
152	0	2.0T3	Combination Max	76.217	0	0	0	0	0
152	43.375	2.0T3	Combination Max	76.058	0	0	0	0	0
152	86.75	2.0T3	Combination Max	76.215	0	0	0	0	0
152	0	2.0T3	Combination Min	60.413	0	0	0	0	0
152	43.375	2.0T3	Combination Min	60.147	0	0	0	0	0
152	86.75	2.0T3	Combination Min	59.63	0	0	0	0	0
153	0	2.2T1	Combination Max	66.061	0	0	0	0	0
153	43.375	2.2T1	Combination Max	66.059	0	0	0	0	0
153	86.75	2.2T1	Combination Max	66.061	0	0	0	0	0
153	0	2.2T1	Combination Min	65.79	0	0	0	0	0
153	43.375	2.2T1	Combination Min	65.787	0	0	0	0	0
153	86.75	2.2T1	Combination Min	65.79	0	0	0	0	0
153	0	2.0T3	Combination Max	76.83	0	0	0	0	0
153	43.375	2.0T3	Combination Max	76.673	0	0	0	0	0
153	86.75	2.0T3	Combination Max	76.829	0	0	0	0	0
153	0	2.0T3	Combination Min	59.685	0	0	0	0	0
153	43.375	2.0T3	Combination Min	59.47	0	0	0	0	0
153	86.75	2.0T3	Combination Min	58.953	0	0	0	0	0
156	0	2.2T1	Combination Max	66.039	0	0	0	0	0
156	43.375	2.2T1	Combination Max	66.037	0	0	0	0	0
156	86.75	2.2T1	Combination Max	66.039	0	0	0	0	0
156	0	2.2T1	Combination Min	65.771	0	0	0	0	0
156	43.375	2.2T1	Combination Min	65.769	0	0	0	0	0
156	86.75	2.2T1	Combination Min	65.771	0	0	0	0	0
156	0	2.0T3	Combination Max	77.467	0	0	0	0	0

156	43.375	2.0T3	Combination Max	77.312	0	0	0	0	0
156	86.75	2.0T3	Combination Max	77.466	0	0	0	0	0
156	0	2.0T3	Combination Min	58.965	0	0	0	0	0
156	43.375	2.0T3	Combination Min	58.798	0	0	0	0	0
156	86.75	2.0T3	Combination Min	58.281	0	0	0	0	0
157	0	2.2T1	Combination Max	74.767	0	0	0	0	0
157	43.375	2.2T1	Combination Max	74.765	0	0	0	0	0
157	86.75	2.2T1	Combination Max	74.767	0	0	0	0	0
157	0	2.2T1	Combination Min	74.503	0	0	0	0	0
157	43.375	2.2T1	Combination Min	74.501	0	0	0	0	0
157	86.75	2.2T1	Combination Min	74.503	0	0	0	0	0
157	0	2.0T3	Combination Max	83.648	0	0	0	0	0
157	43.375	2.0T3	Combination Max	82.606	0	0	0	0	0
157	86.75	2.0T3	Combination Max	82.734	0	0	0	0	0
157	0	2.0T3	Combination Min	67.528	0	0	0	0	0
157	43.375	2.0T3	Combination Min	66.859	0	0	0	0	0
157	86.75	2.0T3	Combination Min	66.115	0	0	0	0	0
183	0	2.2T1	Combination Max	83.499	0	0	0	0	0
183	43.375	2.2T1	Combination Max	83.497	0	0	0	0	0
183	86.75	2.2T1	Combination Max	83.499	0	0	0	0	0
183	0	2.2T1	Combination Min	83.239	0	0	0	0	0
183	43.375	2.2T1	Combination Min	83.237	0	0	0	0	0
183	86.75	2.2T1	Combination Min	83.239	0	0	0	0	0
183	0	2.0T3	Combination Max	91.069	0	0	0	0	0
183	43.375	2.0T3	Combination Max	88.364	0	0	0	0	0
183	86.75	2.0T3	Combination Max	88.465	0	0	0	0	0
183	0	2.0T3	Combination Min	75.923	0	0	0	0	0
183	43.375	2.0T3	Combination Min	74.944	0	0	0	0	0
183	86.75	2.0T3	Combination Min	73.974	0	0	0	0	0
184	0	2.2T1	Combination Max	83.485	0	0	0	0	0
184	43.375	2.2T1	Combination Max	83.484	0	0	0	0	0
184	86.75	2.2T1	Combination Max	83.485	0	0	0	0	0
184	0	2.2T1	Combination Min	83.232	0	0	0	0	0
184	43.375	2.2T1	Combination Min	83.23	0	0	0	0	0
184	86.75	2.2T1	Combination Min	83.232	0	0	0	0	0
184	0	2.0T3	Combination Max	92.053	0	0	0	0	0
184	43.375	2.0T3	Combination Max	89.191	0	0	0	0	0
184	86.75	2.0T3	Combination Max	89.292	0	0	0	0	0
184	0	2.0T3	Combination Min	75.27	0	0	0	0	0
184	43.375	2.0T3	Combination Min	74.29	0	0	0	0	0
184	86.75	2.0T3	Combination Min	73.32	0	0	0	0	0
185	0	2.2T1	Combination Max	83.475	0	0	0	0	0
185	43.375	2.2T1	Combination Max	83.473	0	0	0	0	0
185	86.75	2.2T1	Combination Max	83.475	0	0	0	0	0
185	0	2.2T1	Combination Min	83.228	0	0	0	0	0
185	43.375	2.2T1	Combination Min	83.227	0	0	0	0	0
185	86.75	2.2T1	Combination Min	83.228	0	0	0	0	0
185	0	2.0T3	Combination Max	93.05	0	0	0	0	0
185	43.375	2.0T3	Combination Max	90.044	0	0	0	0	0
185	86.75	2.0T3	Combination Max	90.144	0	0	0	0	0
185	0	2.0T3	Combination Min	74.623	0	0	0	0	0
185	43.375	2.0T3	Combination Min	73.643	0	0	0	0	0
185	86.75	2.0T3	Combination Min	72.673	0	0	0	0	0
186	0	2.2T1	Combination Max	87.84	0	0	0	0	0
186	43.375	2.2T1	Combination Max	87.838	0	0	0	0	0
186	86.75	2.2T1	Combination Max	87.84	0	0	0	0	0
186	0	2.2T1	Combination Min	87.602	0	0	0	0	0
186	43.375	2.2T1	Combination Min	87.601	0	0	0	0	0
186	86.75	2.2T1	Combination Min	87.602	0	0	0	0	0
186	0	2.0T3	Combination Max	96.237	0	0	0	0	0
186	43.375	2.0T3	Combination Max	93.453	0	0	0	0	0
186	86.75	2.0T3	Combination Max	92.8	0	0	0	0	0

186	0	2.0T3	Combination Min	78.935	0	0	0	0	0
186	43.375	2.0T3	Combination Min	78.088	0	0	0	0	0
186	86.75	2.0T3	Combination Min	76.64	0	0	0	0	0
187	0	2.2T1	Combination Max	103.14	0	0	0	0	0
187	43.375	2.2T1	Combination Max	103.139	0	0	0	0	0
187	86.75	2.2T1	Combination Max	103.14	0	0	0	0	0
187	0	2.2T1	Combination Min	102.913	0	0	0	0	0
187	43.375	2.2T1	Combination Min	102.912	0	0	0	0	0
187	86.75	2.2T1	Combination Min	102.913	0	0	0	0	0
187	0	2.0T3	Combination Max	112.041	0	0	0	0	0
187	43.375	2.0T3	Combination Max	108.901	0	0	0	0	0
187	86.75	2.0T3	Combination Max	108.494	0	0	0	0	0
187	0	2.0T3	Combination Min	91.148	0	0	0	0	0
187	43.375	2.0T3	Combination Min	91.096	0	0	0	0	0
187	86.75	2.0T3	Combination Min	89.826	0	0	0	0	0
188	0	2.2T1	Combination Max	103.133	0	0	0	0	0
188	43.375	2.2T1	Combination Max	103.132	0	0	0	0	0
188	86.75	2.2T1	Combination Max	103.133	0	0	0	0	0
188	0	2.2T1	Combination Min	102.92	0	0	0	0	0
188	43.375	2.2T1	Combination Min	102.918	0	0	0	0	0
188	86.75	2.2T1	Combination Min	102.92	0	0	0	0	0
188	0	2.0T3	Combination Max	113.083	0	0	0	0	0
188	43.375	2.0T3	Combination Max	109.943	0	0	0	0	0
188	86.75	2.0T3	Combination Max	109.442	0	0	0	0	0
188	0	2.0T3	Combination Min	90.566	0	0	0	0	0
188	43.375	2.0T3	Combination Min	90.513	0	0	0	0	0
188	86.75	2.0T3	Combination Min	89.18	0	0	0	0	0
213	0	2.2T1	Combination Max	103.125	0	0	0	0	0
213	43.375	2.2T1	Combination Max	103.124	0	0	0	0	0
213	86.75	2.2T1	Combination Max	103.125	0	0	0	0	0
213	0	2.2T1	Combination Min	102.928	0	0	0	0	0
213	43.375	2.2T1	Combination Min	102.927	0	0	0	0	0
213	86.75	2.2T1	Combination Min	102.928	0	0	0	0	0
213	0	2.0T3	Combination Max	114.128	0	0	0	0	0
213	43.375	2.0T3	Combination Max	110.988	0	0	0	0	0
213	86.75	2.0T3	Combination Max	110.405	0	0	0	0	0
213	0	2.0T3	Combination Min	90	0	0	0	0	0
213	43.375	2.0T3	Combination Min	89.946	0	0	0	0	0
213	86.75	2.0T3	Combination Min	88.537	0	0	0	0	0
214	0	2.2T1	Combination Max	52.816	0	0	0	0	0
214	43.375	2.2T1	Combination Max	52.814	0	0	0	0	0
214	86.75	2.2T1	Combination Max	52.816	0	0	0	0	0
214	0	2.2T1	Combination Min	52.643	0	0	0	0	0
214	43.375	2.2T1	Combination Min	52.641	0	0	0	0	0
214	86.75	2.2T1	Combination Min	52.643	0	0	0	0	0
214	0	2.0T3	Combination Max	65.017	0	0	0	0	0
214	43.375	2.0T3	Combination Max	63.898	0	0	0	0	0
214	86.75	2.0T3	Combination Max	63.913	0	0	0	0	0
214	0	2.0T3	Combination Min	43.59	0	0	0	0	0
214	43.375	2.0T3	Combination Min	42.783	0	0	0	0	0
214	86.75	2.0T3	Combination Min	41.989	0	0	0	0	0
215	0	2.2T1	Combination Max	66.086	0	0	0	0	0
215	43.375	2.2T1	Combination Max	66.084	0	0	0	0	0
215	86.75	2.2T1	Combination Max	66.086	0	0	0	0	0
215	0	2.2T1	Combination Min	65.81	0	0	0	0	0
215	43.375	2.2T1	Combination Min	65.808	0	0	0	0	0
215	86.75	2.2T1	Combination Min	65.81	0	0	0	0	0
215	0	2.0T3	Combination Max	76.103	0	0	0	0	0
215	43.375	2.0T3	Combination Max	76.041	0	0	0	0	0
215	86.75	2.0T3	Combination Max	76.106	0	0	0	0	0
215	0	2.0T3	Combination Min	59.629	0	0	0	0	0
215	43.375	2.0T3	Combination Min	59.367	0	0	0	0	0

215	86.75	2.0T3	Combination Min	58.858	0	0	0	0	0
216	0	2.2T1	Combination Max	66.061	0	0	0	0	0
216	43.375	2.2T1	Combination Max	66.059	0	0	0	0	0
216	86.75	2.2T1	Combination Max	66.061	0	0	0	0	0
216	0	2.2T1	Combination Min	65.79	0	0	0	0	0
216	43.375	2.2T1	Combination Min	65.787	0	0	0	0	0
216	86.75	2.2T1	Combination Min	65.79	0	0	0	0	0
216	0	2.0T3	Combination Max	76.719	0	0	0	0	0
216	43.375	2.0T3	Combination Max	76.658	0	0	0	0	0
216	86.75	2.0T3	Combination Max	76.722	0	0	0	0	0
216	0	2.0T3	Combination Min	58.953	0	0	0	0	0
216	43.375	2.0T3	Combination Min	58.69	0	0	0	0	0
216	86.75	2.0T3	Combination Min	58.199	0	0	0	0	0
217	0	2.2T1	Combination Max	66.039	0	0	0	0	0
217	43.375	2.2T1	Combination Max	66.037	0	0	0	0	0
217	86.75	2.2T1	Combination Max	66.039	0	0	0	0	0
217	0	2.2T1	Combination Min	65.771	0	0	0	0	0
217	43.375	2.2T1	Combination Min	65.769	0	0	0	0	0
217	86.75	2.2T1	Combination Min	65.771	0	0	0	0	0
217	0	2.0T3	Combination Max	77.358	0	0	0	0	0
217	43.375	2.0T3	Combination Max	77.298	0	0	0	0	0
217	86.75	2.0T3	Combination Max	77.361	0	0	0	0	0
217	0	2.0T3	Combination Min	58.28	0	0	0	0	0
217	43.375	2.0T3	Combination Min	58.018	0	0	0	0	0
217	86.75	2.0T3	Combination Min	57.543	0	0	0	0	0
218	0	2.2T1	Combination Max	74.767	0	0	0	0	0
218	43.375	2.2T1	Combination Max	74.765	0	0	0	0	0
218	86.75	2.2T1	Combination Max	74.767	0	0	0	0	0
218	0	2.2T1	Combination Min	74.503	0	0	0	0	0
218	43.375	2.2T1	Combination Min	74.501	0	0	0	0	0
218	86.75	2.2T1	Combination Min	74.503	0	0	0	0	0
218	0	2.0T3	Combination Max	82.659	0	0	0	0	0
218	43.375	2.0T3	Combination Max	82.603	0	0	0	0	0
218	86.75	2.0T3	Combination Max	82.662	0	0	0	0	0
218	0	2.0T3	Combination Min	66.114	0	0	0	0	0
218	43.375	2.0T3	Combination Min	65.494	0	0	0	0	0
218	86.75	2.0T3	Combination Min	64.715	0	0	0	0	0
219	0	2.2T1	Combination Max	83.499	0	0	0	0	0
219	43.375	2.2T1	Combination Max	83.497	0	0	0	0	0
219	86.75	2.2T1	Combination Max	83.499	0	0	0	0	0
219	0	2.2T1	Combination Min	83.239	0	0	0	0	0
219	43.375	2.2T1	Combination Min	83.237	0	0	0	0	0
219	86.75	2.2T1	Combination Min	83.239	0	0	0	0	0
219	0	2.0T3	Combination Max	88.416	0	0	0	0	0
219	43.375	2.0T3	Combination Max	88.363	0	0	0	0	0
219	86.75	2.0T3	Combination Max	88.419	0	0	0	0	0
219	0	2.0T3	Combination Min	73.973	0	0	0	0	0
219	43.375	2.0T3	Combination Min	72.994	0	0	0	0	0
219	86.75	2.0T3	Combination Min	71.859	0	0	0	0	0
221	0	2.2T1	Combination Max	83.485	0	0	0	0	0
221	43.375	2.2T1	Combination Max	83.484	0	0	0	0	0
221	86.75	2.2T1	Combination Max	83.485	0	0	0	0	0
221	0	2.2T1	Combination Min	83.232	0	0	0	0	0
221	43.375	2.2T1	Combination Min	83.23	0	0	0	0	0
221	86.75	2.2T1	Combination Min	83.232	0	0	0	0	0
221	0	2.0T3	Combination Max	89.243	0	0	0	0	0
221	43.375	2.0T3	Combination Max	89.19	0	0	0	0	0
221	86.75	2.0T3	Combination Max	89.245	0	0	0	0	0
221	0	2.0T3	Combination Min	73.32	0	0	0	0	0
221	43.375	2.0T3	Combination Min	72.341	0	0	0	0	0
221	86.75	2.0T3	Combination Min	71.223	0	0	0	0	0
222	0	2.2T1	Combination Max	83.475	0	0	0	0	0

222	43.375	2.2T1	Combination Max	83.473	0	0	0	0	0
222	86.75	2.2T1	Combination Max	83.475	0	0	0	0	0
222	0	2.2T1	Combination Min	83.228	0	0	0	0	0
222	43.375	2.2T1	Combination Min	83.227	0	0	0	0	0
222	86.75	2.2T1	Combination Min	83.228	0	0	0	0	0
222	0	2.0T3	Combination Max	90.096	0	0	0	0	0
222	43.375	2.0T3	Combination Max	90.044	0	0	0	0	0
222	86.75	2.0T3	Combination Max	90.098	0	0	0	0	0
222	0	2.0T3	Combination Min	72.673	0	0	0	0	0
222	43.375	2.0T3	Combination Min	71.694	0	0	0	0	0
222	86.75	2.0T3	Combination Min	70.592	0	0	0	0	0
223	0	2.2T1	Combination Max	87.84	0	0	0	0	0
223	43.375	2.2T1	Combination Max	87.838	0	0	0	0	0
223	86.75	2.2T1	Combination Max	87.84	0	0	0	0	0
223	0	2.2T1	Combination Min	87.602	0	0	0	0	0
223	43.375	2.2T1	Combination Min	87.601	0	0	0	0	0
223	86.75	2.2T1	Combination Min	87.602	0	0	0	0	0
223	0	2.0T3	Combination Max	92.756	0	0	0	0	0
223	43.375	2.0T3	Combination Max	92.727	0	0	0	0	0
223	86.75	2.0T3	Combination Max	92.757	0	0	0	0	0
223	0	2.0T3	Combination Min	76.638	0	0	0	0	0
223	43.375	2.0T3	Combination Min	75.395	0	0	0	0	0
223	86.75	2.0T3	Combination Min	74.163	0	0	0	0	0
224	0	2.2T1	Combination Max	103.14	0	0	0	0	0
224	43.375	2.2T1	Combination Max	103.139	0	0	0	0	0
224	86.75	2.2T1	Combination Max	103.14	0	0	0	0	0
224	0	2.2T1	Combination Min	102.913	0	0	0	0	0
224	43.375	2.2T1	Combination Min	102.912	0	0	0	0	0
224	86.75	2.2T1	Combination Min	102.913	0	0	0	0	0
224	0	2.0T3	Combination Max	108.493	0	0	0	0	0
224	43.375	2.0T3	Combination Max	108.463	0	0	0	0	0
224	86.75	2.0T3	Combination Max	108.493	0	0	0	0	0
224	0	2.0T3	Combination Min	89.825	0	0	0	0	0
224	43.375	2.0T3	Combination Min	88.436	0	0	0	0	0
224	86.75	2.0T3	Combination Min	87.059	0	0	0	0	0
225	0	2.2T1	Combination Max	103.133	0	0	0	0	0
225	43.375	2.2T1	Combination Max	103.132	0	0	0	0	0
225	86.75	2.2T1	Combination Max	103.133	0	0	0	0	0
225	0	2.2T1	Combination Min	102.92	0	0	0	0	0
225	43.375	2.2T1	Combination Min	102.918	0	0	0	0	0
225	86.75	2.2T1	Combination Min	102.92	0	0	0	0	0
225	0	2.0T3	Combination Max	109.441	0	0	0	0	0
225	43.375	2.0T3	Combination Max	109.411	0	0	0	0	0
225	86.75	2.0T3	Combination Max	109.441	0	0	0	0	0
225	0	2.0T3	Combination Min	89.178	0	0	0	0	0
225	43.375	2.0T3	Combination Min	87.789	0	0	0	0	0
225	86.75	2.0T3	Combination Min	86.412	0	0	0	0	0
226	0	2.2T1	Combination Max	103.125	0	0	0	0	0
226	43.375	2.2T1	Combination Max	103.124	0	0	0	0	0
226	86.75	2.2T1	Combination Max	103.125	0	0	0	0	0
226	0	2.2T1	Combination Min	102.928	0	0	0	0	0
226	43.375	2.2T1	Combination Min	102.927	0	0	0	0	0
226	86.75	2.2T1	Combination Min	102.928	0	0	0	0	0
226	0	2.0T3	Combination Max	110.404	0	0	0	0	0
226	43.375	2.0T3	Combination Max	110.375	0	0	0	0	0
226	86.75	2.0T3	Combination Max	110.405	0	0	0	0	0
226	0	2.0T3	Combination Min	88.535	0	0	0	0	0
226	43.375	2.0T3	Combination Min	87.146	0	0	0	0	0
226	86.75	2.0T3	Combination Min	85.769	0	0	0	0	0
227	0	2.2T1	Combination Max	52.816	0	0	0	0	0
227	43.375	2.2T1	Combination Max	52.814	0	0	0	0	0
227	86.75	2.2T1	Combination Max	52.816	0	0	0	0	0

227	0	2.2T1	Combination Min	52.643	0	0	0	0	0
227	43.375	2.2T1	Combination Min	52.641	0	0	0	0	0
227	86.75	2.2T1	Combination Min	52.643	0	0	0	0	0
227	0	2.0T3	Combination Max	63.912	0	0	0	0	0
227	43.375	2.0T3	Combination Max	63.898	0	0	0	0	0
227	86.75	2.0T3	Combination Max	63.913	0	0	0	0	0
227	0	2.0T3	Combination Min	41.988	0	0	0	0	0
227	43.375	2.0T3	Combination Min	41.3	0	0	0	0	0
227	86.75	2.0T3	Combination Min	40.623	0	0	0	0	0
228	0	2.2T1	Combination Max	66.086	0	0	0	0	0
228	43.375	2.2T1	Combination Max	66.084	0	0	0	0	0
228	86.75	2.2T1	Combination Max	66.086	0	0	0	0	0
228	0	2.2T1	Combination Min	65.81	0	0	0	0	0
228	43.375	2.2T1	Combination Min	65.808	0	0	0	0	0
228	86.75	2.2T1	Combination Min	65.81	0	0	0	0	0
228	0	2.0T3	Combination Max	76.104	0	0	0	0	0
228	43.375	2.0T3	Combination Max	76.041	0	0	0	0	0
228	86.75	2.0T3	Combination Max	76.104	0	0	0	0	0
228	0	2.0T3	Combination Min	58.858	0	0	0	0	0
228	43.375	2.0T3	Combination Min	58.205	0	0	0	0	0
228	86.75	2.0T3	Combination Min	57.303	0	0	0	0	0
229	0	2.2T1	Combination Max	66.061	0	0	0	0	0
229	43.375	2.2T1	Combination Max	66.059	0	0	0	0	0
229	86.75	2.2T1	Combination Max	66.061	0	0	0	0	0
229	0	2.2T1	Combination Min	65.79	0	0	0	0	0
229	43.375	2.2T1	Combination Min	65.787	0	0	0	0	0
229	86.75	2.2T1	Combination Min	65.79	0	0	0	0	0
229	0	2.0T3	Combination Max	76.72	0	0	0	0	0
229	43.375	2.0T3	Combination Max	76.658	0	0	0	0	0
229	86.75	2.0T3	Combination Max	76.72	0	0	0	0	0
229	0	2.0T3	Combination Min	58.199	0	0	0	0	0
229	43.375	2.0T3	Combination Min	57.546	0	0	0	0	0
229	86.75	2.0T3	Combination Min	56.713	0	0	0	0	0
230	0	2.2T1	Combination Max	66.039	0	0	0	0	0
230	43.375	2.2T1	Combination Max	66.037	0	0	0	0	0
230	86.75	2.2T1	Combination Max	66.039	0	0	0	0	0
230	0	2.2T1	Combination Min	65.771	0	0	0	0	0
230	43.375	2.2T1	Combination Min	65.769	0	0	0	0	0
230	86.75	2.2T1	Combination Min	65.771	0	0	0	0	0
230	0	2.0T3	Combination Max	77.36	0	0	0	0	0
230	43.375	2.0T3	Combination Max	77.298	0	0	0	0	0
230	86.75	2.0T3	Combination Max	77.36	0	0	0	0	0
230	0	2.0T3	Combination Min	57.543	0	0	0	0	0
230	43.375	2.0T3	Combination Min	56.889	0	0	0	0	0
230	86.75	2.0T3	Combination Min	56.133	0	0	0	0	0
232	0	2.2T1	Combination Max	74.767	0	0	0	0	0
232	43.375	2.2T1	Combination Max	74.765	0	0	0	0	0
232	86.75	2.2T1	Combination Max	74.767	0	0	0	0	0
232	0	2.2T1	Combination Min	74.503	0	0	0	0	0
232	43.375	2.2T1	Combination Min	74.501	0	0	0	0	0
232	86.75	2.2T1	Combination Min	74.503	0	0	0	0	0
232	0	2.0T3	Combination Max	82.65	0	0	0	0	0
232	43.375	2.0T3	Combination Max	82.603	0	0	0	0	0
232	86.75	2.0T3	Combination Max	82.651	0	0	0	0	0
232	0	2.0T3	Combination Min	64.714	0	0	0	0	0
232	43.375	2.0T3	Combination Min	63.733	0	0	0	0	0
232	86.75	2.0T3	Combination Min	62.299	0	0	0	0	0
233	0	2.2T1	Combination Max	83.499	0	0	0	0	0
233	43.375	2.2T1	Combination Max	83.497	0	0	0	0	0
233	86.75	2.2T1	Combination Max	83.499	0	0	0	0	0
233	0	2.2T1	Combination Min	83.239	0	0	0	0	0
233	43.375	2.2T1	Combination Min	83.237	0	0	0	0	0

233	86.75	2.2T1	Combination Min	83.239	0	0	0	0	0
233	0	2.0T3	Combination Max	88.397	0	0	0	0	0
233	43.375	2.0T3	Combination Max	88.363	0	0	0	0	0
233	86.75	2.0T3	Combination Max	88.397	0	0	0	0	0
233	0	2.0T3	Combination Min	71.856	0	0	0	0	0
233	43.375	2.0T3	Combination Min	70.497	0	0	0	0	0
233	86.75	2.0T3	Combination Min	68.77	0	0	0	0	0
234	0	2.2T1	Combination Max	83.485	0	0	0	0	0
234	43.375	2.2T1	Combination Max	83.484	0	0	0	0	0
234	86.75	2.2T1	Combination Max	83.485	0	0	0	0	0
234	0	2.2T1	Combination Min	83.232	0	0	0	0	0
234	43.375	2.2T1	Combination Min	83.23	0	0	0	0	0
234	86.75	2.2T1	Combination Min	83.232	0	0	0	0	0
234	0	2.0T3	Combination Max	89.224	0	0	0	0	0
234	43.375	2.0T3	Combination Max	89.19	0	0	0	0	0
234	86.75	2.0T3	Combination Max	89.224	0	0	0	0	0
234	0	2.0T3	Combination Min	71.22	0	0	0	0	0
234	43.375	2.0T3	Combination Min	69.861	0	0	0	0	0
234	86.75	2.0T3	Combination Min	68.155	0	0	0	0	0
235	0	2.2T1	Combination Max	83.475	0	0	0	0	0
235	43.375	2.2T1	Combination Max	83.473	0	0	0	0	0
235	86.75	2.2T1	Combination Max	83.475	0	0	0	0	0
235	0	2.2T1	Combination Min	83.228	0	0	0	0	0
235	43.375	2.2T1	Combination Min	83.227	0	0	0	0	0
235	86.75	2.2T1	Combination Min	83.228	0	0	0	0	0
235	0	2.0T3	Combination Max	90.077	0	0	0	0	0
235	43.375	2.0T3	Combination Max	90.044	0	0	0	0	0
235	86.75	2.0T3	Combination Max	90.077	0	0	0	0	0
235	0	2.0T3	Combination Min	70.589	0	0	0	0	0
235	43.375	2.0T3	Combination Min	69.23	0	0	0	0	0
235	86.75	2.0T3	Combination Min	67.547	0	0	0	0	0
236	0	2.2T1	Combination Max	87.84	0	0	0	0	0
236	43.375	2.2T1	Combination Max	87.838	0	0	0	0	0
236	86.75	2.2T1	Combination Max	87.84	0	0	0	0	0
236	0	2.2T1	Combination Min	87.602	0	0	0	0	0
236	43.375	2.2T1	Combination Min	87.601	0	0	0	0	0
236	86.75	2.2T1	Combination Min	87.602	0	0	0	0	0
236	0	2.0T3	Combination Max	92.752	0	0	0	0	0
236	43.375	2.0T3	Combination Max	92.727	0	0	0	0	0
236	86.75	2.0T3	Combination Max	92.751	0	0	0	0	0
236	0	2.0T3	Combination Min	74.162	0	0	0	0	0
236	43.375	2.0T3	Combination Min	72.642	0	0	0	0	0
236	86.75	2.0T3	Combination Min	71.05	0	0	0	0	0
237	0	2.2T1	Combination Max	103.14	0	0	0	0	0
237	43.375	2.2T1	Combination Max	103.139	0	0	0	0	0
237	86.75	2.2T1	Combination Max	103.14	0	0	0	0	0
237	0	2.2T1	Combination Min	102.913	0	0	0	0	0
237	43.375	2.2T1	Combination Min	102.912	0	0	0	0	0
237	86.75	2.2T1	Combination Min	102.913	0	0	0	0	0
237	0	2.0T3	Combination Max	108.493	0	0	0	0	0
237	43.375	2.0T3	Combination Max	108.463	0	0	0	0	0
237	86.75	2.0T3	Combination Max	108.493	0	0	0	0	0
237	0	2.0T3	Combination Min	87.057	0	0	0	0	0
237	43.375	2.0T3	Combination Min	85.622	0	0	0	0	0
237	86.75	2.0T3	Combination Min	83.761	0	0	0	0	0
238	0	2.2T1	Combination Max	103.133	0	0	0	0	0
238	43.375	2.2T1	Combination Max	103.132	0	0	0	0	0
238	86.75	2.2T1	Combination Max	103.133	0	0	0	0	0
238	0	2.2T1	Combination Min	102.92	0	0	0	0	0
238	43.375	2.2T1	Combination Min	102.918	0	0	0	0	0
238	86.75	2.2T1	Combination Min	102.92	0	0	0	0	0
238	0	2.0T3	Combination Max	109.441	0	0	0	0	0

238	43.375	2.0T3	Combination Max	109.411	0	0	0	0	0
238	86.75	2.0T3	Combination Max	109.44	0	0	0	0	0
238	0	2.0T3	Combination Min	86.411	0	0	0	0	0
238	43.375	2.0T3	Combination Min	85.005	0	0	0	0	0
238	86.75	2.0T3	Combination Min	83.144	0	0	0	0	0
251	0	2.2T1	Combination Max	103.125	0	0	0	0	0
251	43.375	2.2T1	Combination Max	103.124	0	0	0	0	0
251	86.75	2.2T1	Combination Max	103.125	0	0	0	0	0
251	0	2.2T1	Combination Min	102.928	0	0	0	0	0
251	43.375	2.2T1	Combination Min	102.927	0	0	0	0	0
251	86.75	2.2T1	Combination Min	102.928	0	0	0	0	0
251	0	2.0T3	Combination Max	110.405	0	0	0	0	0
251	43.375	2.0T3	Combination Max	110.375	0	0	0	0	0
251	86.75	2.0T3	Combination Max	110.404	0	0	0	0	0
251	0	2.0T3	Combination Min	85.768	0	0	0	0	0
251	43.375	2.0T3	Combination Min	84.394	0	0	0	0	0
251	86.75	2.0T3	Combination Min	82.533	0	0	0	0	0
252	0	2.2T1	Combination Max	52.816	0	0	0	0	0
252	43.375	2.2T1	Combination Max	52.814	0	0	0	0	0
252	86.75	2.2T1	Combination Max	52.816	0	0	0	0	0
252	0	2.2T1	Combination Min	52.643	0	0	0	0	0
252	43.375	2.2T1	Combination Min	52.641	0	0	0	0	0
252	86.75	2.2T1	Combination Min	52.643	0	0	0	0	0
252	0	2.0T3	Combination Max	63.913	0	0	0	0	0
252	43.375	2.0T3	Combination Max	63.898	0	0	0	0	0
252	86.75	2.0T3	Combination Max	63.912	0	0	0	0	0
252	0	2.0T3	Combination Min	40.622	0	0	0	0	0
252	43.375	2.0T3	Combination Min	40.049	0	0	0	0	0
252	86.75	2.0T3	Combination Min	39.481	0	0	0	0	0
277	0	2.2T1	Combination Max	66.086	0	0	0	0	0
277	43.375	2.2T1	Combination Max	66.084	0	0	0	0	0
277	86.75	2.2T1	Combination Max	66.086	0	0	0	0	0
277	0	2.2T1	Combination Min	65.81	0	0	0	0	0
277	43.375	2.2T1	Combination Min	65.808	0	0	0	0	0
277	86.75	2.2T1	Combination Min	65.81	0	0	0	0	0
277	0	2.0T3	Combination Max	76.1	0	0	0	0	0
277	43.375	2.0T3	Combination Max	76.041	0	0	0	0	0
277	86.75	2.0T3	Combination Max	76.109	0	0	0	0	0
277	0	2.0T3	Combination Min	57.307	0	0	0	0	0
277	43.375	2.0T3	Combination Min	55.029	0	0	0	0	0
277	86.75	2.0T3	Combination Min	52.797	0	0	0	0	0
278	0	2.2T1	Combination Max	66.061	0	0	0	0	0
278	43.375	2.2T1	Combination Max	66.059	0	0	0	0	0
278	86.75	2.2T1	Combination Max	66.061	0	0	0	0	0
278	0	2.2T1	Combination Min	65.79	0	0	0	0	0
278	43.375	2.2T1	Combination Min	65.787	0	0	0	0	0
278	86.75	2.2T1	Combination Min	65.79	0	0	0	0	0
278	0	2.0T3	Combination Max	76.716	0	0	0	0	0
278	43.375	2.0T3	Combination Max	76.658	0	0	0	0	0
278	86.75	2.0T3	Combination Max	76.725	0	0	0	0	0
278	0	2.0T3	Combination Min	56.718	0	0	0	0	0
278	43.375	2.0T3	Combination Min	54.439	0	0	0	0	0
278	86.75	2.0T3	Combination Min	52.208	0	0	0	0	0
279	0	2.2T1	Combination Max	66.039	0	0	0	0	0
279	43.375	2.2T1	Combination Max	66.037	0	0	0	0	0
279	86.75	2.2T1	Combination Max	66.039	0	0	0	0	0
279	0	2.2T1	Combination Min	65.772	0	0	0	0	0
279	43.375	2.2T1	Combination Min	65.769	0	0	0	0	0
279	86.75	2.2T1	Combination Min	65.771	0	0	0	0	0
279	0	2.0T3	Combination Max	77.355	0	0	0	0	0
279	43.375	2.0T3	Combination Max	77.298	0	0	0	0	0
279	86.75	2.0T3	Combination Max	77.364	0	0	0	0	0

279	0	2.0T3	Combination Min	56.139	0	0	0	0	0
279	43.375	2.0T3	Combination Min	53.86	0	0	0	0	0
279	86.75	2.0T3	Combination Min	51.628	0	0	0	0	0
280	0	2.2T1	Combination Max	74.767	0	0	0	0	0
280	43.375	2.2T1	Combination Max	74.765	0	0	0	0	0
280	86.75	2.2T1	Combination Max	74.767	0	0	0	0	0
280	0	2.2T1	Combination Min	74.503	0	0	0	0	0
280	43.375	2.2T1	Combination Min	74.501	0	0	0	0	0
280	86.75	2.2T1	Combination Min	74.503	0	0	0	0	0
280	0	2.0T3	Combination Max	82.647	0	0	0	0	0
280	43.375	2.0T3	Combination Max	82.603	0	0	0	0	0
280	86.75	2.0T3	Combination Max	82.654	0	0	0	0	0
280	0	2.0T3	Combination Min	62.3	0	0	0	0	0
280	43.375	2.0T3	Combination Min	60.245	0	0	0	0	0
280	86.75	2.0T3	Combination Min	58.225	0	0	0	0	0
281	0	2.2T1	Combination Max	83.499	0	0	0	0	0
281	43.375	2.2T1	Combination Max	83.497	0	0	0	0	0
281	86.75	2.2T1	Combination Max	83.499	0	0	0	0	0
281	0	2.2T1	Combination Min	83.239	0	0	0	0	0
281	43.375	2.2T1	Combination Min	83.237	0	0	0	0	0
281	86.75	2.2T1	Combination Min	83.239	0	0	0	0	0
281	0	2.0T3	Combination Max	88.394	0	0	0	0	0
281	43.375	2.0T3	Combination Max	88.363	0	0	0	0	0
281	86.75	2.0T3	Combination Max	88.4	0	0	0	0	0
281	0	2.0T3	Combination Min	68.77	0	0	0	0	0
281	43.375	2.0T3	Combination Min	66.938	0	0	0	0	0
281	86.75	2.0T3	Combination Min	65.132	0	0	0	0	0
282	0	2.2T1	Combination Max	83.485	0	0	0	0	0
282	43.375	2.2T1	Combination Max	83.484	0	0	0	0	0
282	86.75	2.2T1	Combination Max	83.485	0	0	0	0	0
282	0	2.2T1	Combination Min	83.232	0	0	0	0	0
282	43.375	2.2T1	Combination Min	83.23	0	0	0	0	0
282	86.75	2.2T1	Combination Min	83.232	0	0	0	0	0
282	0	2.0T3	Combination Max	89.221	0	0	0	0	0
282	43.375	2.0T3	Combination Max	89.19	0	0	0	0	0
282	86.75	2.0T3	Combination Max	89.227	0	0	0	0	0
282	0	2.0T3	Combination Min	68.155	0	0	0	0	0
282	43.375	2.0T3	Combination Min	66.323	0	0	0	0	0
282	86.75	2.0T3	Combination Min	64.517	0	0	0	0	0
283	0	2.2T1	Combination Max	83.475	0	0	0	0	0
283	43.375	2.2T1	Combination Max	83.473	0	0	0	0	0
283	86.75	2.2T1	Combination Max	83.475	0	0	0	0	0
283	0	2.2T1	Combination Min	83.228	0	0	0	0	0
283	43.375	2.2T1	Combination Min	83.227	0	0	0	0	0
283	86.75	2.2T1	Combination Min	83.228	0	0	0	0	0
283	0	2.0T3	Combination Max	90.075	0	0	0	0	0
283	43.375	2.0T3	Combination Max	90.044	0	0	0	0	0
283	86.75	2.0T3	Combination Max	90.08	0	0	0	0	0
283	0	2.0T3	Combination Min	67.547	0	0	0	0	0
283	43.375	2.0T3	Combination Min	65.715	0	0	0	0	0
283	86.75	2.0T3	Combination Min	63.909	0	0	0	0	0
284	0	2.2T1	Combination Max	87.84	0	0	0	0	0
284	43.375	2.2T1	Combination Max	87.838	0	0	0	0	0
284	86.75	2.2T1	Combination Max	87.84	0	0	0	0	0
284	0	2.2T1	Combination Min	87.602	0	0	0	0	0
284	43.375	2.2T1	Combination Min	87.601	0	0	0	0	0
284	86.75	2.2T1	Combination Min	87.602	0	0	0	0	0
284	0	2.0T3	Combination Max	92.759	0	0	0	0	0
284	43.375	2.0T3	Combination Max	92.727	0	0	0	0	0
284	86.75	2.0T3	Combination Max	92.764	0	0	0	0	0
284	0	2.0T3	Combination Min	71.052	0	0	0	0	0
284	43.375	2.0T3	Combination Min	69.214	0	0	0	0	0

284	86.75	2.0T3	Combination Min	67.356	0	0	0	0	0
285	0	2.2T1	Combination Max	103.14	0	0	0	0	0
285	43.375	2.2T1	Combination Max	103.139	0	0	0	0	0
285	86.75	2.2T1	Combination Max	103.14	0	0	0	0	0
285	0	2.2T1	Combination Min	102.913	0	0	0	0	0
285	43.375	2.2T1	Combination Min	102.912	0	0	0	0	0
285	86.75	2.2T1	Combination Min	102.913	0	0	0	0	0
285	0	2.0T3	Combination Max	108.491	0	0	0	0	0
285	43.375	2.0T3	Combination Max	108.463	0	0	0	0	0
285	86.75	2.0T3	Combination Max	108.495	0	0	0	0	0
285	0	2.0T3	Combination Min	83.771	0	0	0	0	0
285	43.375	2.0T3	Combination Min	81.257	0	0	0	0	0
285	86.75	2.0T3	Combination Min	78.781	0	0	0	0	0
286	0	2.2T1	Combination Max	103.133	0	0	0	0	0
286	43.375	2.2T1	Combination Max	103.132	0	0	0	0	0
286	86.75	2.2T1	Combination Max	103.133	0	0	0	0	0
286	0	2.2T1	Combination Min	102.92	0	0	0	0	0
286	43.375	2.2T1	Combination Min	102.918	0	0	0	0	0
286	86.75	2.2T1	Combination Min	102.92	0	0	0	0	0
286	0	2.0T3	Combination Max	109.439	0	0	0	0	0
286	43.375	2.0T3	Combination Max	109.411	0	0	0	0	0
286	86.75	2.0T3	Combination Max	109.442	0	0	0	0	0
286	0	2.0T3	Combination Min	83.154	0	0	0	0	0
286	43.375	2.0T3	Combination Min	80.641	0	0	0	0	0
286	86.75	2.0T3	Combination Min	78.164	0	0	0	0	0
299	0	2.2T1	Combination Max	103.125	0	0	0	0	0
299	43.375	2.2T1	Combination Max	103.124	0	0	0	0	0
299	86.75	2.2T1	Combination Max	103.125	0	0	0	0	0
299	0	2.2T1	Combination Min	102.928	0	0	0	0	0
299	43.375	2.2T1	Combination Min	102.927	0	0	0	0	0
299	86.75	2.2T1	Combination Min	102.928	0	0	0	0	0
299	0	2.0T3	Combination Max	110.403	0	0	0	0	0
299	43.375	2.0T3	Combination Max	110.375	0	0	0	0	0
299	86.75	2.0T3	Combination Max	110.406	0	0	0	0	0
299	0	2.0T3	Combination Min	82.543	0	0	0	0	0
299	43.375	2.0T3	Combination Min	80.029	0	0	0	0	0
299	86.75	2.0T3	Combination Min	77.553	0	0	0	0	0
300	0	2.2T1	Combination Max	52.816	0	0	0	0	0
300	43.375	2.2T1	Combination Max	52.814	0	0	0	0	0
300	86.75	2.2T1	Combination Max	52.816	0	0	0	0	0
300	0	2.2T1	Combination Min	52.643	0	0	0	0	0
300	43.375	2.2T1	Combination Min	52.641	0	0	0	0	0
300	86.75	2.2T1	Combination Min	52.643	0	0	0	0	0
300	0	2.0T3	Combination Max	63.912	0	0	0	0	0
300	43.375	2.0T3	Combination Max	63.899	0	0	0	0	0
300	86.75	2.0T3	Combination Max	63.913	0	0	0	0	0
300	0	2.0T3	Combination Min	39.483	0	0	0	0	0
300	43.375	2.0T3	Combination Min	38.375	0	0	0	0	0
300	86.75	2.0T3	Combination Min	37.14	0	0	0	0	0
301	0	2.2T1	Combination Max	15.25	0	0	0	0	0
301	43.375	2.2T1	Combination Max	15.241	0	0	0	0	0
301	86.75	2.2T1	Combination Max	15.25	0	0	0	0	0
301	0	2.2T1	Combination Min	15.045	0	0	0	0	0
301	43.375	2.2T1	Combination Min	15.036	0	0	0	0	0
301	86.75	2.2T1	Combination Min	15.045	0	0	0	0	0
301	0	2.0T3	Combination Max	22.131	0	0	0	0	0
301	43.375	2.0T3	Combination Max	22.126	0	0	0	0	0
301	86.75	2.0T3	Combination Max	22.131	0	0	0	0	0
301	0	2.0T3	Combination Min	8.942	0	0	0	0	0
301	43.375	2.0T3	Combination Min	8.929	0	0	0	0	0
301	86.75	2.0T3	Combination Min	8.942	0	0	0	0	0
302	0	2.2T1	Combination Max	12.203	0	0	0	0	0

302	43.375	2.2T1	Combination Max	12.191	0	0	0	0	0
302	86.75	2.2T1	Combination Max	12.203	0	0	0	0	0
302	0	2.2T1	Combination Min	12.193	0	0	0	0	0
302	43.375	2.2T1	Combination Min	12.181	0	0	0	0	0
302	86.75	2.2T1	Combination Min	12.193	0	0	0	0	0
302	0	2.0T3	Combination Max	16.232	0	0	0	0	0
302	43.375	2.0T3	Combination Max	16.224	0	0	0	0	0
302	86.75	2.0T3	Combination Max	16.232	0	0	0	0	0
302	0	2.0T3	Combination Min	7.65	0	0	0	0	0
302	43.375	2.0T3	Combination Min	7.635	0	0	0	0	0
302	86.75	2.0T3	Combination Min	7.65	0	0	0	0	0
303	0	2.2T1	Combination Max	12.444	0	0	0	0	0
303	43.375	2.2T1	Combination Max	12.433	0	0	0	0	0
303	86.75	2.2T1	Combination Max	12.444	0	0	0	0	0
303	0	2.2T1	Combination Min	12.403	0	0	0	0	0
303	43.375	2.2T1	Combination Min	12.391	0	0	0	0	0
303	86.75	2.2T1	Combination Min	12.403	0	0	0	0	0
303	0	2.0T3	Combination Max	16.416	0	0	0	0	0
303	43.375	2.0T3	Combination Max	16.409	0	0	0	0	0
303	86.75	2.0T3	Combination Max	16.416	0	0	0	0	0
303	0	2.0T3	Combination Min	7.741	0	0	0	0	0
303	43.375	2.0T3	Combination Min	7.726	0	0	0	0	0
303	86.75	2.0T3	Combination Min	7.741	0	0	0	0	0
304	0	2.2T1	Combination Max	12.22	0	0	0	0	0
304	43.375	2.2T1	Combination Max	12.208	0	0	0	0	0
304	86.75	2.2T1	Combination Max	12.22	0	0	0	0	0
304	0	2.2T1	Combination Min	12.21	0	0	0	0	0
304	43.375	2.2T1	Combination Min	12.198	0	0	0	0	0
304	86.75	2.2T1	Combination Min	12.21	0	0	0	0	0
304	0	2.0T3	Combination Max	16.039	0	0	0	0	0
304	43.375	2.0T3	Combination Max	16.032	0	0	0	0	0
304	86.75	2.0T3	Combination Max	16.039	0	0	0	0	0
304	0	2.0T3	Combination Min	7.655	0	0	0	0	0
304	43.375	2.0T3	Combination Min	7.64	0	0	0	0	0
304	86.75	2.0T3	Combination Min	7.655	0	0	0	0	0
305	0	2.2T1	Combination Max	15.275	0	0	0	0	0
305	43.3748	2.2T1	Combination Max	15.266	0	0	0	0	0
305	86.7497	2.2T1	Combination Max	15.275	0	0	0	0	0
305	0	2.2T1	Combination Min	15.071	0	0	0	0	0
305	43.3748	2.2T1	Combination Min	15.062	0	0	0	0	0
305	86.7497	2.2T1	Combination Min	15.071	0	0	0	0	0
305	0	2.0T3	Combination Max	21.632	0	0	0	0	0
305	43.3748	2.0T3	Combination Max	21.627	0	0	0	0	0
305	86.7497	2.0T3	Combination Max	21.632	0	0	0	0	0
305	0	2.0T3	Combination Min	8.71	0	0	0	0	0
305	43.3748	2.0T3	Combination Min	8.697	0	0	0	0	0
305	86.7497	2.0T3	Combination Min	8.71	0	0	0	0	0

3.5.2 STAINLESS STEEL BOX BEAMS

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TAPESTRY ELEMENT DESIGN -STAINLESS STEEL BOX BEAM

Built-Up Box Beam Design

Project: Eisenhower Memorial
Location: East Tapestry

Project #:
Engineer: BHK

Input

Span Data:

P_u =	-531	kips
$V_{u,y} = V_2$ =	1.3	kips
$M_{u,x} = M_3$ =	27	k-ft
$V_{u,x} = V_3$ =	153	kips
$M_{u,y} = M_2$ =	2799	k-ft
T_u =	142	k-ft
L =	75.5	ft
$k_{c,x}$ =	1	
$k_{c,y}$ =	1	

Built-Up Section Properties:

F_y =	30	ksi
E =	28000	ksi
d =	36	in
t_w =	1.75	in
b_f =	24	in
t_f =	0.5	in
A =	147	in^2
I_x =	20067	in^4
S_x =	1115	in^3
r_x =	12	in
Z_x =	1498	in^3
I_y =	16345	in^4
S_y =	1362	in^3
r_y =	11	in
Z_y =	1507	in^3

Output

Section Compactness:

λf, x	41.0	Noncompact	**λf, y**	20.0	Compact
λw, x	20.0	Compact	**λw, y**	41.0	Compact

AISC 2005 E3 - Flexural Buckling Strength of Compression Members w/o Slender Elements

(kL/r)x	77.4	
(kL/r)y	85.8	
Fe	37.6	ksi
Fcr	21.5	ksi
Pn	3146.1	kips
ϕPn	2831.5	kips

AISC 2005 E7 - Compressive Strength of Members w/ Slender Elements

be,flg	24.0	in
be,web	35.0	in
Aeff	146.5	in^2
Aeff	146.5	in^2
Qa	1.0	
Q	1.0	
Fe	37.6	ksi
Fcr	21.5	ksi
Pn	3146.1	kips
ϕPn	2831.5	kips

AISC 2005 F7 - Flexural Strength of Square and Rectangular HSS and Box-Shaped Members

Yielding:

Mn,x	3744.7	k-ft
Mn,y	3767.0	k-ft

Flange Local Buckling:

Mn,x	2987.2	k-ft
Mn,y	1000000.0	k-ft

Web Local Buckling:

Mn,x	83333.3	
Mn,y	83333.3	

ϕMn,x	2688.4	k-ft
ϕMn,y	3390.3	k-ft

AISC 2005 G2 - Shear Strength of Members w/ Unstiffened or Stiffened Webs

kv	5.0	
Cv,x	1.0	
Cv,y	1.0	
Vn,y	2268.0	kips
Vn,x	432.0	kips
ϕVn,y	2041.2	kips
ϕVn,x	388.8	kips

AISC 2005 H1- Doubly and Singly Symmetric Members in Flexure and Compression

This section controls member design.

Pu/ϕPn	0.17	
Vu,y/ϕVn,y	0.00	
Vu,x/ϕVn,x	0.35	
Mu,x/ϕMn,x	0.01	
Mu,y/ϕMn,y	0.74	
DCR	0.84	**OK**

AISC 2005 H3 - Members Under Torsion and Combined Torsion, Flexure, Shear and/or Axial Force

Torsion:

C	833.8	in^3
(h/t)max	48	
Fcr	18.0	ksi
Tn	1250.7	kip-ft
ϕTn	1125.6	kip-ft
Tu/ϕTn	0.13	**<0.2, Neglect Torsion per AISC H3.2**

Interaction:

DCR	N/A	

EISENHOWER MEMORIAL TAPESTRY BOX BEAM FORCES - East

TABLE: Element Forces - Frames					MAX	1.128	1.267	153.056	1694.779	33597.428	294.137
					MIN	-531.069	-1.259	-151.556	-1697.985	-1442.305	-320.461
Frame	Station	OutputCase	CaseType	StepType		P	V2	V3	T	M2	M3
Text	in	Text	Text	Text		Kip	Kip	Kip	Kip-in	Kip-in	Kip-in
42	0	FACTORED_ENVE	Combination	Max		-480.598	1.266	-92.493	1694.779	-911.855	0
42	18.001	FACTORED_ENVE	Combination	Max		-480.607	1.216	-91.567	1694.779	1459.568	23.048
42	0	FACTORED_ENVE	Combination	Min		-528.244	-1.259	-151.556	909.708	-1436.441	0
42	18.001	FACTORED_ENVE	Combination	Min		-528.254	-1.208	-150.488	909.708	833.727	-23.346
44	0	FACTORED_ENVE	Combination	Max		-482.279	1.216	-76.443	1561.954	1459.568	-2.487
44	18.126	FACTORED_ENVE	Combination	Max		-482.269	1.166	-75.511	1561.954	3994.198	13.986
44	36.252	FACTORED_ENVE	Combination	Max		-482.259	1.115	-74.579	1561.954	6508.053	36.091
44	0	FACTORED_ENVE	Combination	Min		-531.041	-1.208	-130.99	838.616	833.727	-55.331
44	18.126	FACTORED_ENVE	Combination	Min		-531.029	-1.158	-129.915	838.616	2314.836	-78.111
44	36.252	FACTORED_ENVE	Combination	Min		-531.018	-1.107	-128.84	838.616	3778.372	-99.957
45	0	FACTORED_ENVE	Combination	Max		-482.186	1.115	-69.682	1429.714	6508.054	37.895
45	18.126	FACTORED_ENVE	Combination	Max		-482.176	1.065	-68.749	1429.714	8831.466	59.065
45	36.252	FACTORED_ENVE	Combination	Max		-482.166	1.014	-67.817	1429.714	11132.543	79.307
45	0	FACTORED_ENVE	Combination	Min		-530.884	-1.107	-119.527	768.021	3778.372	-98.155
45	18.126	FACTORED_ENVE	Combination	Min		-530.873	-1.057	-118.452	768.021	5134.756	-119.061
45	36.252	FACTORED_ENVE	Combination	Min		-530.862	-1.006	-117.377	768.021	6472.742	-139.025
46	0	FACTORED_ENVE	Combination	Max		-482.088	1.014	-62.993	1297.491	11132.543	81.215
46	18.126	FACTORED_ENVE	Combination	Max		-482.078	0.964	-62.061	1297.491	13243.004	100.506
46	36.252	FACTORED_ENVE	Combination	Max		-482.069	0.913	-61.129	1297.491	15329.708	118.859
46	0	FACTORED_ENVE	Combination	Min		-530.719	-1.006	-108.131	697.444	6472.742	-137.119
46	18.126	FACTORED_ENVE	Combination	Min		-530.708	-0.956	-107.056	697.444	7703.989	-156.132
46	36.252	FACTORED_ENVE	Combination	Min		-530.698	-0.905	-105.981	697.444	8916.085	-174.195
47	0	FACTORED_ENVE	Combination	Max		-481.984	0.913	-56.406	1165.293	15329.708	120.881
47	18.126	FACTORED_ENVE	Combination	Max		-481.976	0.863	-55.474	1165.293	17226.295	138.265
47	36.252	FACTORED_ENVE	Combination	Max		-481.967	0.812	-54.542	1165.293	19097.841	154.703
47	0	FACTORED_ENVE	Combination	Min		-530.545	-0.905	-96.828	626.899	8916.085	-172.176
47	18.126	FACTORED_ENVE	Combination	Min		-530.535	-0.855	-95.753	626.899	10022.412	-189.28
47	36.252	FACTORED_ENVE	Combination	Min		-530.525	-0.804	-94.678	626.899	11108.91	-205.426
48	0	FACTORED_ENVE	Combination	Max		-481.882	0.812	-49.892	1033.118	19097.841	156.706
48	18.126	FACTORED_ENVE	Combination	Max		-481.874	0.762	-48.96	1033.118	20779.382	172.161
48	36.251	FACTORED_ENVE	Combination	Max		-481.866	0.711	-48.028	1033.118	22434.738	186.663
48	0	FACTORED_ENVE	Combination	Min		-530.373	-0.804	-85.592	556.384	11108.91	-203.428
48	18.126	FACTORED_ENVE	Combination	Min		-530.363	-0.754	-84.517	556.384	12090.202	-218.609
48	36.251	FACTORED_ENVE	Combination	Min		-530.354	-0.703	-83.442	556.384	13051.059	-232.826
49	0	FACTORED_ENVE	Combination	Max		-481.785	0.711	-43.437	900.966	22434.739	188.567
49	18.126	FACTORED_ENVE	Combination	Max		-481.778	0.661	-42.505	900.966	23900.08	202.074
49	36.251	FACTORED_ENVE	Combination	Max		-481.771	0.61	-41.573	900.966	25338.234	214.62
49	0	FACTORED_ENVE	Combination	Min		-530.209	-0.703	-74.409	485.899	13051.059	-230.926
49	18.126	FACTORED_ENVE	Combination	Min		-530.201	-0.653	-73.334	485.899	13907.108	-244.172
49	36.251	FACTORED_ENVE	Combination	Min		-530.193	-0.602	-72.259	485.899	14742.19	-256.448
51	0	FACTORED_ENVE	Combination	Max		-481.694	0.61	-37.069	768.845	25338.235	216.423
51	18.125	FACTORED_ENVE	Combination	Max		-481.687	0.56	-36.137	768.845	26587.035	227.96
51	36.251	FACTORED_ENVE	Combination	Max		-481.681	0.509	-35.205	768.845	27807.784	238.531
51	0	FACTORED_ENVE	Combination	Min		-530.055	-0.602	-63.306	415.411	14742.19	-254.65
51	18.125	FACTORED_ENVE	Combination	Min		-530.048	-0.552	-62.231	415.411	15473.417	-265.95
51	36.251	FACTORED_ENVE	Combination	Min		-530.041	-0.501	-61.156	415.411	16183.22	-276.275
54	0	FACTORED_ENVE	Combination	Max		-481.614	0.509	-30.73	636.741	27807.784	240.098
54	18.125	FACTORED_ENVE	Combination	Max		-481.608	0.458	-29.798	636.741	28838.923	249.652
54	36.251	FACTORED_ENVE	Combination	Max		-481.603	0.408	-28.866	636.741	29841.288	258.234
54	0	FACTORED_ENVE	Combination	Min		-529.921	-0.501	-52.23	344.715	16183.22	-274.712
54	18.125	FACTORED_ENVE	Combination	Min		-529.915	-0.451	-51.155	344.715	16789.232	-284.058
54	36.251	FACTORED_ENVE	Combination	Min		-529.909	-0.4	-50.08	344.715	17373.434	-292.426
55	0	FACTORED_ENVE	Combination	Max		-481.547	0.408	-24.417	504.615	29841.288	259.544
55	18.125	FACTORED_ENVE	Combination	Max		-481.543	0.357	-23.485	504.615	30653.879	267.1
55	36.25	FACTORED_ENVE	Combination	Max		-481.538	0.307	-22.553	504.615	31437.114	273.681
55	0	FACTORED_ENVE	Combination	Min		-529.809	-0.4	-41.177	273.971	17373.434	-291.12
55	18.125	FACTORED_ENVE	Combination	Min		-529.804	-0.35	-40.102	273.971	17853.934	-298.504
55	36.25	FACTORED_ENVE	Combination	Min		-529.8	-0.299	-39.027	273.971	18312.315	-304.905
56	0	FACTORED_ENVE	Combination	Max		-481.493	0.307	-18.18	372.553	31437.114	274.74
56	18.125	FACTORED_ENVE	Combination	Max		-481.49	0.256	-17.248	372.553	32031.441	280.286

56	36.25	FACTORED_ENVE	Combination	Max	-481.487	0.206	-16.316	372.553	32595.97	284.855
56	0	FACTORED_ENVE	Combination	Min	-529.719	-0.299	-30.194	203.245	18312.315	-303.849
56	18.125	FACTORED_ENVE	Combination	Min	-529.715	-0.249	-29.119	203.245	18667.972	-309.267
56	36.25	FACTORED_ENVE	Combination	Min	-529.712	-0.198	-28.044	203.245	19001.273	-313.7
57	0	FACTORED_ENVE	Combination	Max	-481.455	0.206	-11.91	240.492	32595.97	285.572
57	18.125	FACTORED_ENVE	Combination	Max	-481.454	0.155	-10.978	240.492	32970.96	289.104
57	36.25	FACTORED_ENVE	Combination	Max	-481.452	0.105	-10.046	240.492	33315.85	291.656
57	0	FACTORED_ENVE	Combination	Min	-529.657	-0.198	-19.197	132.517	19001.273	-312.985
57	18.125	FACTORED_ENVE	Combination	Min	-529.655	-0.148	-18.122	132.517	19231.412	-316.432
57	36.25	FACTORED_ENVE	Combination	Min	-529.653	-0.097	-17.047	132.517	19439.029	-318.893
58	0	FACTORED_ENVE	Combination	Max	-481.434	0.105	-5.659	108.446	33315.85	292.052
58	18.125	FACTORED_ENVE	Combination	Max	-481.433	0.054	-4.727	108.446	33471.769	293.562
58	36.25	FACTORED_ENVE	Combination	Max	-481.433	0.00423	-3.795	108.446	33597.428	294.091
58	0	FACTORED_ENVE	Combination	Min	-529.623	-0.097	-8.24	61.777	19439.029	-318.499
58	18.125	FACTORED_ENVE	Combination	Min	-529.623	-0.051	-7.165	61.777	19544.079	-319.973
58	36.25	FACTORED_ENVE	Combination	Min	-529.622	-0.033	-6.09	61.777	19626.517	-320.461
59	0	FACTORED_ENVE	Combination	Max	-481.43	0.00423	2.768	11.656	33597.428	294.137
59	18.125	FACTORED_ENVE	Combination	Max	-481.431	0.055	3.843	11.656	33534.025	293.623
59	36.25	FACTORED_ENVE	Combination	Max	-481.431	0.105	4.918	11.656	33440.344	292.129
59	0	FACTORED_ENVE	Combination	Min	-529.619	-0.033	0.487	-39.05	19626.517	-320.416
59	18.125	FACTORED_ENVE	Combination	Min	-529.62	-0.047	1.419	-39.05	19606.334	-319.917
59	36.25	FACTORED_ENVE	Combination	Min	-529.62	-0.097	2.351	-39.05	19563.52	-318.432
61	0	FACTORED_ENVE	Combination	Max	-481.444	0.105	13.723	-58.82	33440.344	291.829
61	18.125	FACTORED_ENVE	Combination	Max	-481.445	0.156	14.797	-58.82	33157.385	289.294
61	36.25	FACTORED_ENVE	Combination	Max	-481.447	0.206	15.872	-58.82	32844.267	285.779
61	0	FACTORED_ENVE	Combination	Min	-529.644	-0.097	6.71	-171.495	19563.52	-318.732
61	18.125	FACTORED_ENVE	Combination	Min	-529.646	-0.148	7.642	-171.495	19417.863	-316.26
61	36.25	FACTORED_ENVE	Combination	Min	-529.648	-0.198	8.574	-171.495	19249.63	-312.802
62	0	FACTORED_ENVE	Combination	Max	-481.474	0.206	24.677	-129.299	32844.267	285.135
62	18.125	FACTORED_ENVE	Combination	Max	-481.477	0.257	25.752	-129.299	32342.06	280.581
62	36.25	FACTORED_ENVE	Combination	Max	-481.48	0.307	26.827	-129.299	31809.956	275.049
62	0	FACTORED_ENVE	Combination	Min	-529.698	-0.198	12.932	-303.934	19249.63	-313.444
62	18.125	FACTORED_ENVE	Combination	Min	-529.702	-0.249	13.864	-303.934	18978.643	-309
62	36.25	FACTORED_ENVE	Combination	Min	-529.705	-0.299	14.797	-303.934	18685.209	-303.572
63	0	FACTORED_ENVE	Combination	Max	-481.521	0.307	35.659	-199.786	31809.956	274.085
63	18.125	FACTORED_ENVE	Combination	Max	-481.525	0.358	36.733	-199.786	31088.559	267.519
63	36.25	FACTORED_ENVE	Combination	Max	-481.529	0.408	37.808	-199.786	30337.667	259.979
63	0	FACTORED_ENVE	Combination	Min	-529.78	-0.299	19.184	-436.359	18685.209	-304.533
63	18.125	FACTORED_ENVE	Combination	Min	-529.785	-0.35	20.116	-436.359	18288.703	-298.121
63	36.25	FACTORED_ENVE	Combination	Min	-529.79	-0.4	21.048	-436.359	17869.95	-290.727
64	0	FACTORED_ENVE	Combination	Max	-481.612	0.408	51.71	-340.929	30337.667	258.302
64	18.125	FACTORED_ENVE	Combination	Max	-481.617	0.459	52.785	-340.929	29306.118	249.731
64	36.251	FACTORED_ENVE	Combination	Max	-481.622	0.509	53.86	-340.929	28245.644	240.188
64	0	FACTORED_ENVE	Combination	Min	-529.917	-0.4	30.497	-639.42	17869.95	-292.4
64	18.125	FACTORED_ENVE	Combination	Min	-529.923	-0.451	31.429	-639.42	17256.563	-284.023
64	36.251	FACTORED_ENVE	Combination	Min	-529.929	-0.501	32.361	-639.42	16621.231	-274.667
67	0	FACTORED_ENVE	Combination	Max	-481.692	0.509	62.773	-411.44	28245.644	238.59
67	18.125	FACTORED_ENVE	Combination	Max	-481.698	0.56	63.848	-411.44	26995.682	228.028
67	36.251	FACTORED_ENVE	Combination	Max	-481.704	0.61	64.923	-411.44	25717.538	216.501
67	0	FACTORED_ENVE	Combination	Min	-530.052	-0.501	36.821	-771.804	16621.231	-276.262
67	18.125	FACTORED_ENVE	Combination	Min	-530.059	-0.552	37.753	-771.804	15882.22	-265.927
67	36.251	FACTORED_ENVE	Combination	Min	-530.066	-0.602	38.685	-771.804	15121.664	-254.617
68	0	FACTORED_ENVE	Combination	Max	-481.783	0.61	73.876	-481.964	25717.538	214.685
68	18.126	FACTORED_ENVE	Combination	Max	-481.791	0.661	74.951	-481.964	24249.916	202.148
68	36.251	FACTORED_ENVE	Combination	Max	-481.798	0.711	76.026	-481.964	22754.994	188.65
68	0	FACTORED_ENVE	Combination	Min	-530.205	-0.602	43.189	-904.164	15121.664	-256.429
68	18.126	FACTORED_ENVE	Combination	Min	-530.214	-0.653	44.121	-904.164	14257.142	-244.144
68	36.251	FACTORED_ENVE	Combination	Min	-530.222	-0.704	45.053	-904.164	13371.55	-230.888
69	0	FACTORED_ENVE	Combination	Max	-481.883	0.711	85.032	-552.504	22754.994	186.678
69	18.126	FACTORED_ENVE	Combination	Max	-481.891	0.762	86.107	-552.504	21070.482	172.183
69	36.251	FACTORED_ENVE	Combination	Max	-481.899	0.812	87.182	-552.504	19359.691	156.734
69	0	FACTORED_ENVE	Combination	Min	-530.373	-0.704	49.615	-1036.5	13371.55	-232.856
69	18.126	FACTORED_ENVE	Combination	Min	-530.382	-0.754	50.547	-1036.5	12381.537	-218.63
69	36.251	FACTORED_ENVE	Combination	Min	-530.391	-0.805	51.48	-1036.5	11371.004	-203.439
70	0	FACTORED_ENVE	Combination	Max	-481.985	0.812	96.268	-623.063	19359.691	154.715
70	18.126	FACTORED_ENVE	Combination	Max	-481.994	0.863	97.343	-623.063	17458.809	138.283

70	36.252	FACTORED_ENVE	Combination	Max	-482.003	0.913	98.418	-623.063	15532.812	120.906
70	0	FACTORED_ENVE	Combination	Min	-530.545	-0.805	56.129	-1168.808	11371.004	-205.455
70	18.126	FACTORED_ENVE	Combination	Min	-530.555	-0.855	57.061	-1168.808	10255.188	-189.299
70	36.252	FACTORED_ENVE	Combination	Min	-530.565	-0.906	57.993	-1168.808	9119.474	-172.185
71	0	FACTORED_ENVE	Combination	Max	-482.09	0.913	107.558	-693.636	15532.812	118.833
71	18.126	FACTORED_ENVE	Combination	Max	-482.1	0.964	108.633	-693.636	13416.895	100.485
71	36.252	FACTORED_ENVE	Combination	Max	-482.109	1.014	109.708	-693.636	11277.164	81.2
71	0	FACTORED_ENVE	Combination	Min	-530.723	-0.906	62.701	-1301.096	9119.474	-174.255
71	18.126	FACTORED_ENVE	Combination	Min	-530.733	-0.956	63.633	-1301.096	7878.171	-156.183
71	36.252	FACTORED_ENVE	Combination	Min	-530.744	-1.007	64.565	-1301.096	6617.666	-137.16
72	0	FACTORED_ENVE	Combination	Max	-482.189	1.014	118.954	-764.227	11277.164	79.276
72	18.126	FACTORED_ENVE	Combination	Max	-482.199	1.065	120.029	-764.227	8946.769	59.039
72	36.252	FACTORED_ENVE	Combination	Max	-482.208	1.115	121.104	-764.227	6594.003	37.875
72	0	FACTORED_ENVE	Combination	Min	-530.888	-1.007	69.39	-1433.364	6617.666	-139.083
72	18.126	FACTORED_ENVE	Combination	Min	-530.9	-1.057	70.322	-1433.364	5250.38	-119.109
72	36.252	FACTORED_ENVE	Combination	Min	-530.911	-1.108	71.254	-1433.364	3864.661	-98.194
73	0	FACTORED_ENVE	Combination	Max	-482.282	1.115	130.417	-834.829	6594.002	36.056
73	18.126	FACTORED_ENVE	Combination	Max	-482.293	1.166	131.492	-834.829	4050.763	13.956
73	36.252	FACTORED_ENVE	Combination	Max	-482.303	1.216	132.567	-834.829	1486.731	-2.614
73	0	FACTORED_ENVE	Combination	Min	-531.046	-1.108	76.152	-1565.622	3864.661	-100.011
73	18.126	FACTORED_ENVE	Combination	Min	-531.057	-1.158	77.084	-1565.622	2371.764	-78.154
73	36.252	FACTORED_ENVE	Combination	Min	-531.069	-1.209	78.016	-1565.622	861.072	-55.365
74	0	FACTORED_ENVE	Combination	Max	-480.612	1.216	151.989	-905.767	1486.731	23.04
74	17.997	FACTORED_ENVE	Combination	Max	-480.604	1.267	153.056	-905.767	-917.226	7.36E-10
74	0	FACTORED_ENVE	Combination	Min	-528.272	-1.209	93.077	-1697.985	861.072	-23.353
74	17.997	FACTORED_ENVE	Combination	Min	-528.263	-1.259	94.003	-1697.985	-1442.305	-1.07E-09
83	0	FACTORED_ENVE	Combination	Max	0.065	0.033	7.134	-68.091	6.933E-07	0.909
83	12.251	FACTORED_ENVE	Combination	Max	0.068	0.04	7.86	-68.091	-63.44	0.764
83	24.501	FACTORED_ENVE	Combination	Max	0.075	0.074	8.587	-68.091	-134.6	1.029
83	0	FACTORED_ENVE	Combination	Min	0.036	0.001854	4.863	-99.895	-8.555E-07	0.5
83	12.251	FACTORED_ENVE	Combination	Min	0.028	-0.008469	5.493	-99.895	-91.857	0.249
83	24.501	FACTORED_ENVE	Combination	Min	0.011	-0.043	6.123	-99.895	-192.615	-0.136
84	0	FACTORED_ENVE	Combination	Max	0.174	0.074	18.034	-138.703	-134.6	2.414
84	18.126	FACTORED_ENVE	Combination	Max	0.186	0.124	19.109	-138.703	-345.475	3.66
84	36.252	FACTORED_ENVE	Combination	Max	0.197	0.175	20.184	-138.703	-573.251	5.822
84	0	FACTORED_ENVE	Combination	Min	0.065	-0.043	11.167	-232.153	-192.615	0.654
84	18.126	FACTORED_ENVE	Combination	Min	0.042	-0.093	12.1	-232.153	-529.297	-0.526
84	36.252	FACTORED_ENVE	Combination	Min	0.019	-0.144	13.032	-232.153	-885.466	-3.218
85	0	FACTORED_ENVE	Combination	Max	0.879	0.175	29.619	-209.229	-573.251	14.381
85	18.258	FACTORED_ENVE	Combination	Max	0.912	0.226	30.702	-209.229	-911.855	17.547
85	0	FACTORED_ENVE	Combination	Min	0.428	-0.144	18.071	-364.376	-885.466	2.671
85	18.258	FACTORED_ENVE	Combination	Min	0.423	-0.195	19.01	-364.376	-1436.441	0.371
86	0	FACTORED_ENVE	Combination	Max	1.128	0.195	-19.074	365.358	-917.226	17.547
86	18.262	FACTORED_ENVE	Combination	Max	1.044	0.144	-18.135	365.358	-577.351	14.38
86	0	FACTORED_ENVE	Combination	Min	0.56	-0.226	-30.768	210.148	-1442.305	0.372
86	18.262	FACTORED_ENVE	Combination	Min	0.531	-0.175	-29.687	210.148	-889.915	2.672
87	0	FACTORED_ENVE	Combination	Max	0.362	0.144	-13.099	233.18	-577.351	5.843
87	18.126	FACTORED_ENVE	Combination	Max	0.3	0.093	-12.167	233.18	-348.349	3.681
87	36.252	FACTORED_ENVE	Combination	Max	0.239	0.043	-11.235	233.18	-136.242	2.434
87	0	FACTORED_ENVE	Combination	Min	0.122	-0.175	-20.255	139.642	-889.915	-3.196
87	18.126	FACTORED_ENVE	Combination	Min	0.113	-0.124	-19.181	139.642	-532.41	-0.505
87	36.252	FACTORED_ENVE	Combination	Min	0.103	-0.074	-18.106	139.642	-194.382	0.666
88	0	FACTORED_ENVE	Combination	Max	0.139	0.043	-6.191	100.923	-136.242	1.041
88	12.249	FACTORED_ENVE	Combination	Max	0.097	0.008502	-5.561	100.923	-64.263	0.73
88	24.497	FACTORED_ENVE	Combination	Max	0.061	-0.001814	-4.931	100.923	0.000000698	0.856
88	0	FACTORED_ENVE	Combination	Min	0.05	-0.074	-8.659	69.03	-194.382	-0.123
88	12.249	FACTORED_ENVE	Combination	Min	0.043	-0.04	-7.933	69.03	-92.744	0.197
88	24.497	FACTORED_ENVE	Combination	Min	0.03	-0.033	-7.207	69.03	-8.609E-07	0.42

Built-Up Box Beam Design

Project: Eisenhower Memorial
Location: South Tapestry
Project #:
Engineer: BHK

Input

Span Data:

P_u =	-359	kips
$V_{u,y} = V_2$ =	4.3	kips
$M_{u,x} = M_3$ =	195	k-ft
$V_{u,x} = V_3$ =	185	kips
$M_{u,y} = M_2$ =	2869	k-ft
T_u =	226	k-ft
L =	86.75	ft
$k_{c,x}$ =	1	
$k_{c,y}$ =	1	

Built-Up Section Properties:

F_y =	30	ksi
E =	28000	ksi
d =	36	in
t_w =	1.5	in
b_f =	24	in
t_f =	0.75	in
A =	140	in^2
I_x =	21451	in^4
S_x =	1192	in^3
r_x =	12	in
Z_x =	1527	in^3
I_y =	14847	in^4
S_y =	1237	in^3
r_y =	10	in
Z_y =	1380	in^3

Output

Section Compactness:

λf, x	28.0	Compact	**λf, y**	23.0	Compact
λw, x	23.0	Compact	**λw, y**	28.0	Compact

AISC 2005 E3 - Flexural Buckling Strength of Compression Members w/o Slender Elements

(kL/r)x	83.9	
(kL/r)y	100.9	
Fe	27.1	ksi
Fcr	18.9	ksi
Pn	2634.9	kips
ϕPn	2371.4	kips

AISC 2005 E7 - Compressive Strength of Members w/ Slender Elements

be,flg	24.0	in
be,web	34.5	in
Aeff	139.5	in^2
Aeff	139.5	in^2
Qa	1.0	
Q	1.0	
Fe	27.1	ksi
Fcr	18.9	ksi
Pn	2634.9	kips
ϕPn	2371.4	kips

AISC 2005 F7 - Flexural Strength of Square and Rectangular HSS and Box-Shaped Members

Yielding:

Mn,x	3818.0	k-ft
Mn,y	3450.9	k-ft

Flange Local Buckling:

Mn,x	1000000.0	k-ft
Mn,y	1000000.0	k-ft

Web Local Buckling:

Mn,x	83333.3	
Mn,y	83333.3	

ϕMn,x	3436.2	k-ft
ϕMn,y	3105.8	k-ft

AISC 2005 G2 - Shear Strength of Members w/ Unstiffened or Stiffened Webs

kv	5.0	
Cv,x	1.0	
Cv,y	1.0	
Vn,y	1944.0	kips
Vn,x	648.0	kips
ϕVn,y	1749.6	kips
ϕVn,x	583.2	kips

AISC 2005 H1- Doubly and Singly Symmetric Members in Flexure and Compression

This section controls member design.

Pu/ϕPn	0.14	
Vu,y/ϕVn,y	0.00	
Vu,x/ϕVn,x	0.29	
Mu,x/ϕMn,x	0.05	
Mu,y/ϕMn,y	0.83	
DCR	0.95	OK

AISC 2005 H3 - Members Under Torsion and Combined Torsion, Flexure, Shear and/or Axial Force

Torsional Shear Stress at Flange:

Ao	793.1	in^3
h/t	28.0	
Fcr	18.0	ksi
qcr	13.5	k/in

Torsional Shear Stress at Web:

Ao	793.1	in^3
h/t	23.0	
Fcr	18.0	ksi
qcr	27.0	k/in

Tn	1784.5	kip-ft
ϕTn	1606.1	kip-ft
Tu/ϕTn	0.14	per AISC H3.2

Interaction:

DCR	N/A

EISENHOWER MEMORIAL TAPESTRY BOX BEAM FORCES - **South**

TABLE: Element Forces - Frames				MAX	0.267	3.637	184.121	2707.826	25799.865	2338.279
				MIN	-358.906	-4.24	-184.149	-2499.182	-34434.299	-1111.136
Frame	Station	OutputCase	CaseType	StepType	P	V2	V3	T	M2	M3
Text	in	Text	Text	Text	Kip	Kip	Kip	Kip-in	Kip-in	Kip-in
113	0	FACTORED_ENVE	Combination	Max	0.037	0.029	6.6	-63.88	9.679E-07	0.516
113	17.625	FACTORED_ENVE	Combination	Max	0.035	0.049	7.69	-63.88	-88.813	0.27
113	35.25	FACTORED_ENVE	Combination	Max	0.04	0.086	8.781	-63.88	-194.404	0.781
113	0	FACTORED_ENVE	Combination	Min	0.012	0.012	4.563	-92.394	-1.54E-07	0.167
113	17.625	FACTORED_ENVE	Combination	Min	0.014	-0.01	5.515	-92.394	-125.939	-0.221
113	35.25	FACTORED_ENVE	Combination	Min	0.003253	-0.047	6.467	-92.394	-271.105	-1.313
116	0	FACTORED_ENVE	Combination	Max	0.085	0.086	17.498	-129.035	-194.404	1.403
116	18.125	FACTORED_ENVE	Combination	Max	0.091	0.124	18.62	-129.035	-404.843	2.611
116	36.25	FACTORED_ENVE	Combination	Max	0.096	0.162	19.742	-129.035	-633.026	4.506
116	0	FACTORED_ENVE	Combination	Min	0.034	-0.047	11.121	-214.432	-271.105	-0.691
116	18.125	FACTORED_ENVE	Combination	Min	0.031	-0.085	12.099	-214.432	-598.453	-2.583
116	36.25	FACTORED_ENVE	Combination	Min	0.023	-0.123	13.078	-214.432	-946.134	-5.164
117	0	FACTORED_ENVE	Combination	Max	0.117	0.162	28.459	-194.189	-633.026	4.847
117	7.5	FACTORED_ENVE	Combination	Max	0.119	0.177	28.923	-194.189	-767.541	5.833
117	0	FACTORED_ENVE	Combination	Min	0.036	-0.123	17.732	-336.475	-946.134	-4.822
117	7.5	FACTORED_ENVE	Combination	Min	0.034	-0.139	18.137	-336.475	-1161.331	-6.09
118	0	FACTORED_ENVE	Combination	Max	0.267	0.123	-18.141	336.622	-767.861	5.632
118	7.5	FACTORED_ENVE	Combination	Max	0.253	0.109	-17.736	336.622	-633.312	4.755
118	0	FACTORED_ENVE	Combination	Min	0.091	-0.165	-28.933	194.251	-1162.17	-5.228
118	7.5	FACTORED_ENVE	Combination	Min	0.089	-0.151	-28.469	194.251	-946.885	-4.049
119	0	FACTORED_ENVE	Combination	Max	0.195	0.109	-13.082	214.583	-633.312	3.965
119	18.125	FACTORED_ENVE	Combination	Max	0.162	0.074	-12.104	214.583	-405.052	2.298
119	36.25	FACTORED_ENVE	Combination	Max	0.13	0.04	-11.125	214.583	-194.535	1.257
119	0	FACTORED_ENVE	Combination	Min	0.056	-0.151	-19.752	129.096	-946.885	-4.839
119	18.125	FACTORED_ENVE	Combination	Min	0.051	-0.116	-18.63	129.096	-599.004	-2.427
119	36.25	FACTORED_ENVE	Combination	Min	0.046	-0.082	-17.508	129.096	-271.454	-0.643
120	0	FACTORED_ENVE	Combination	Max	0.086	0.04	-6.471	92.544	-194.535	0.635
120	17.623	FACTORED_ENVE	Combination	Max	0.055	0.006017	-5.519	92.544	-88.881	0.23
120	35.246	FACTORED_ENVE	Combination	Max	0.03	-0.014	-4.567	92.544	8.634E-07	0.426
120	0	FACTORED_ENVE	Combination	Min	0.022	-0.082	-8.791	63.941	-271.454	-1.265
120	17.623	FACTORED_ENVE	Combination	Min	0.016	-0.048	-7.701	63.941	-126.117	-0.307
120	35.246	FACTORED_ENVE	Combination	Min	0.006532	-0.029	-6.61	63.941	-0.00000015	0.092
189	0	FACTORED_ENVE	Combination	Max	-294.337	1.413	-72.726	2707.826	-767.541	0
189	14.375	FACTORED_ENVE	Combination	Max	-294.333	1.383	-71.949	2707.826	643.762	50.704
189	28.75	FACTORED_ENVE	Combination	Max	-294.328	1.353	-71.173	2707.826	2435.991	100.964
189	0	FACTORED_ENVE	Combination	Min	-349.871	-2.7	-121.382	842.115	-1161.331	0
189	14.375	FACTORED_ENVE	Combination	Min	-349.867	-2.67	-120.493	842.115	310.258	-20.188
189	28.75	FACTORED_ENVE	Combination	Min	-349.862	-2.64	-119.603	842.115	1377.224	-39.938
190	0	FACTORED_ENVE	Combination	Max	-294.285	1.353	-66.604	2585.76	2435.991	102.232
190	18.125	FACTORED_ENVE	Combination	Max	-294.28	1.315	-65.625	2585.76	4520.513	164.968
190	36.25	FACTORED_ENVE	Combination	Max	-294.275	1.277	-64.647	2585.76	6583.864	226.993
190	0	FACTORED_ENVE	Combination	Min	-349.785	-2.64	-110.967	776.965	1377.224	-38.789
190	18.125	FACTORED_ENVE	Combination	Min	-349.779	-2.602	-109.845	776.965	2623.466	-63.072
190	36.25	FACTORED_ENVE	Combination	Min	-349.773	-2.564	-108.724	776.965	3851.505	-86.657
191	0	FACTORED_ENVE	Combination	Max	-294.241	1.277	-60.045	2463.685	6583.865	227.977
191	18.125	FACTORED_ENVE	Combination	Max	-294.236	1.239	-59.067	2463.685	8468.453	289.275
191	36.25	FACTORED_ENVE	Combination	Max	-294.231	1.201	-58.088	2463.685	10331.137	349.845
191	0	FACTORED_ENVE	Combination	Min	-349.712	-2.564	-100.057	711.817	3851.505	-85.747
191	18.125	FACTORED_ENVE	Combination	Min	-349.706	-2.526	-98.935	711.817	4977.607	-108.633
191	36.25	FACTORED_ENVE	Combination	Min	-349.701	-2.488	-97.813	711.817	6085.091	-130.816
192	0	FACTORED_ENVE	Combination	Max	-294.196	1.201	-53.504	2341.57	10331.137	350.901
192	18.125	FACTORED_ENVE	Combination	Max	-294.192	1.163	-52.525	2341.57	12014.696	410.725
192	36.25	FACTORED_ENVE	Combination	Max	-294.187	1.125	-51.546	2341.57	13675.693	469.804
192	0	FACTORED_ENVE	Combination	Min	-349.638	-2.488	-89.163	646.677	6085.091	-129.859
192	18.125	FACTORED_ENVE	Combination	Min	-349.632	-2.45	-88.041	646.677	7090.562	-151.336
192	36.25	FACTORED_ENVE	Combination	Min	-349.627	-2.412	-86.919	646.677	8077.044	-172.104
193	0	FACTORED_ENVE	Combination	Max	-294.151	1.125	-46.989	2219.391	13675.693	470.963
193	18.125	FACTORED_ENVE	Combination	Max	-294.146	1.087	-46.01	2219.391	15157.447	529.277
193	36.25	FACTORED_ENVE	Combination	Max	-294.142	1.049	-45.031	2219.391	16616.056	586.83
193	0	FACTORED_ENVE	Combination	Min	-349.562	-2.412	-78.295	581.549	8077.044	-171.081

193	18.125	FACTORED_ENVE	Combination	Min	-349.557	-2.374	-77.173	581.549	8961.64	-191.138
193	36.25	FACTORED_ENVE	Combination	Min	-349.552	-2.336	-76.051	581.549	9826.917	-210.481
194	0	FACTORED_ENVE	Combination	Max	-294.106	1.049	-40.492	2097.144	16616.056	588.013
194	18.125	FACTORED_ENVE	Combination	Max	-294.102	1.011	-39.513	2097.144	17895.212	644.782
194	36.25	FACTORED_ENVE	Combination	Max	-294.098	0.973	-38.534	2097.144	19150.717	700.773
194	0	FACTORED_ENVE	Combination	Min	-349.489	-2.336	-67.443	516.433	9826.917	-209.511
194	18.125	FACTORED_ENVE	Combination	Min	-349.484	-2.298	-66.321	516.433	10590.318	-228.405
194	36.25	FACTORED_ENVE	Combination	Min	-349.479	-2.26	-65.199	516.433	11334.114	-246.637
195	0	FACTORED_ENVE	Combination	Max	-294.064	0.973	-34.02	1974.799	19150.717	702.006
195	18.125	FACTORED_ENVE	Combination	Max	-294.061	0.935	-33.042	1974.799	20226.803	757.196
195	36.25	FACTORED_ENVE	Combination	Max	-294.057	0.897	-32.063	1974.799	21278.806	811.592
195	0	FACTORED_ENVE	Combination	Min	-349.419	-2.26	-56.616	451.336	11334.115	-245.738
195	18.125	FACTORED_ENVE	Combination	Min	-349.415	-2.222	-55.494	451.336	11976.248	-263.305
195	36.25	FACTORED_ENVE	Combination	Min	-349.41	-2.184	-54.372	451.336	12598.533	-280.204
196	0	FACTORED_ENVE	Combination	Max	-294.028	0.898	-27.549	1852.406	21278.806	812.716
196	18.125	FACTORED_ENVE	Combination	Max	-294.025	0.86	-26.57	1852.406	22150.997	866.295
196	36.25	FACTORED_ENVE	Combination	Max	-294.021	0.822	-25.591	1852.406	22998.749	919.065
196	0	FACTORED_ENVE	Combination	Min	-349.358	-2.184	-45.789	386.248	12598.533	-279.413
196	18.125	FACTORED_ENVE	Combination	Min	-349.355	-2.146	-44.668	386.248	13118.933	-295.643
196	36.25	FACTORED_ENVE	Combination	Min	-349.351	-2.109	-43.546	386.248	13619.284	-311.201
197	0	FACTORED_ENVE	Combination	Max	-293.995	0.822	-21.104	1729.889	22998.749	920.199
197	18.125	FACTORED_ENVE	Combination	Max	-293.993	0.784	-20.125	1729.889	23666.877	972.134
197	36.25	FACTORED_ENVE	Combination	Max	-293.99	0.762	-19.147	1729.889	24310.285	1023.246
197	0	FACTORED_ENVE	Combination	Min	-349.305	-2.109	-34.988	321.183	13619.284	-310.463
197	18.125	FACTORED_ENVE	Combination	Min	-349.302	-2.071	-33.866	321.183	14018.05	-325.348
197	36.25	FACTORED_ENVE	Combination	Min	-349.299	-2.033	-32.744	321.183	14396.607	-339.557
198	0	FACTORED_ENVE	Combination	Max	-293.97	0.762	-14.659	1607.319	24310.285	1024.251
198	18.125	FACTORED_ENVE	Combination	Max	-293.968	0.744	-13.68	1607.319	24773.828	1074.513
198	36.25	FACTORED_ENVE	Combination	Max	-293.965	0.726	-12.702	1607.319	25212.446	1123.938
198	0	FACTORED_ENVE	Combination	Min	-349.263	-2.033	-24.186	256.128	14396.607	-338.947
198	18.125	FACTORED_ENVE	Combination	Min	-349.26	-1.995	-23.065	256.128	14673.444	-352.478
198	36.25	FACTORED_ENVE	Combination	Min	-349.258	-1.957	-21.943	256.128	14929.957	-365.329
199	0	FACTORED_ENVE	Combination	Max	-293.95	0.726	-8.232	1484.634	25212.446	1124.879
199	18.125	FACTORED_ENVE	Combination	Max	-293.949	0.709	-7.253	1484.634	25471.37	1173.438
199	36.25	FACTORED_ENVE	Combination	Max	-293.947	0.691	-6.274	1484.634	25705.241	1221.146
199	0	FACTORED_ENVE	Combination	Min	-349.231	-1.957	-13.402	191.093	14929.957	-364.824
199	18.125	FACTORED_ENVE	Combination	Min	-349.23	-1.919	-12.28	191.093	15084.975	-376.995
199	36.25	FACTORED_ENVE	Combination	Min	-349.228	-1.881	-11.158	191.093	15219.598	-388.481
200	0	FACTORED_ENVE	Combination	Max	-293.939	0.691	-1.813	1361.859	25705.241	1221.974
200	18.125	FACTORED_ENVE	Combination	Max	-293.938	0.673	-0.835	1361.859	25759.495	1268.802
200	36.25	FACTORED_ENVE	Combination	Max	-293.937	0.656	0.144	1361.859	25788.643	1314.765
200	0	FACTORED_ENVE	Combination	Min	-349.212	-1.881	-2.625	126.075	15219.598	-388.109
200	18.125	FACTORED_ENVE	Combination	Min	-349.211	-1.843	-1.504	126.075	15252.834	-398.913
200	36.25	FACTORED_ENVE	Combination	Min	-349.21	-1.805	-0.382	126.075	15265.646	-409.029
201	0	FACTORED_ENVE	Combination	Max	-293.935	0.656	8.338	1239.027	25788.643	1315.444
201	18.125	FACTORED_ENVE	Combination	Max	-293.935	0.638	9.46	1239.027	25638.16	1360.515
201	36.25	FACTORED_ENVE	Combination	Max	-293.934	0.62	10.582	1239.027	25462.594	1404.707
201	0	FACTORED_ENVE	Combination	Min	-349.207	-1.805	4.458	61.067	15265.646	-408.805
201	18.125	FACTORED_ENVE	Combination	Min	-349.206	-1.767	5.437	61.067	15177.063	-418.236
201	36.25	FACTORED_ENVE	Combination	Min	-349.206	-1.729	6.416	61.067	15068.07	-429.863
202	0	FACTORED_ENVE	Combination	Max	-293.939	0.62	19.097	1116.179	25462.594	1405.216
202	18.125	FACTORED_ENVE	Combination	Max	-293.939	0.603	20.219	1116.179	25107.29	1448.504
202	36.25	FACTORED_ENVE	Combination	Max	-293.939	0.585	21.341	1116.179	24727	1490.902
202	0	FACTORED_ENVE	Combination	Min	-349.214	-1.729	10.897	-3.939	15068.07	-429.746
202	18.125	FACTORED_ENVE	Combination	Min	-349.214	-1.691	11.876	-3.939	14857.557	-441.92
202	36.25	FACTORED_ENVE	Combination	Min	-349.214	-1.653	12.854	-3.939	14626.69	-453.713
203	0	FACTORED_ENVE	Combination	Max	-293.951	0.585	29.855	993.24	24727	1491.288
203	18.125	FACTORED_ENVE	Combination	Max	-293.952	0.567	30.976	993.24	24167.277	1532.768
203	36.25	FACTORED_ENVE	Combination	Max	-293.952	0.55	32.098	993.24	23582.743	1573.347
203	0	FACTORED_ENVE	Combination	Min	-349.234	-1.653	17.327	-75.424	14626.69	-453.669
203	18.125	FACTORED_ENVE	Combination	Min	-349.235	-1.615	18.306	-75.424	14294.54	-465.079
203	36.25	FACTORED_ENVE	Combination	Min	-349.236	-1.577	19.285	-75.424	13942.135	-476.104
204	0	FACTORED_ENVE	Combination	Max	-293.969	0.55	40.647	870.379	23582.743	1573.538
204	18.125	FACTORED_ENVE	Combination	Max	-293.97	0.532	41.768	870.379	22818.482	1613.192
204	36.25	FACTORED_ENVE	Combination	Max	-293.971	0.514	42.89	870.379	22029.66	1651.931
204	0	FACTORED_ENVE	Combination	Min	-349.264	-1.577	23.783	-197.232	13942.135	-476.141

204	18.125	FACTORED_ENVE	Combination	Min	-349.265	-1.539	24.761	-197.232	13488.09	-486.779
204	36.25	FACTORED_ENVE	Combination	Min	-349.267	-1.501	25.74	-197.232	13013.931	-497.03
205	0	FACTORED_ENVE	Combination	Max	-293.993	0.514	51.439	747.478	22029.66	1651.994
205	18.125	FACTORED_ENVE	Combination	Max	-293.995	0.497	52.56	747.478	21061.399	1689.797
205	36.25	FACTORED_ENVE	Combination	Max	-293.997	0.479	53.682	747.478	20068.902	1726.676
205	0	FACTORED_ENVE	Combination	Min	-349.305	-1.501	30.238	-319.035	13013.931	-497.135
205	18.125	FACTORED_ENVE	Combination	Min	-349.308	-1.464	31.217	-319.035	12438.295	-506.997
205	36.25	FACTORED_ENVE	Combination	Min	-349.31	-1.426	32.195	-319.035	11842.73	-516.469
206	0	FACTORED_ENVE	Combination	Max	-294.022	0.479	62.257	624.679	20068.902	1726.585
206	18.125	FACTORED_ENVE	Combination	Max	-294.024	0.461	63.379	624.679	18896.825	1762.52
206	36.25	FACTORED_ENVE	Combination	Max	-294.026	0.444	64.501	624.679	17700.912	1797.52
206	0	FACTORED_ENVE	Combination	Min	-349.353	-1.426	36.718	-440.872	11842.73	-516.633
206	18.125	FACTORED_ENVE	Combination	Min	-349.356	-1.388	37.696	-440.872	11145.415	-525.713
206	36.25	FACTORED_ENVE	Combination	Min	-349.358	-1.35	38.675	-440.872	10428.398	-534.399
207	0	FACTORED_ENVE	Combination	Max	-294.055	0.444	73.085	501.897	17700.912	1797.317
207	18.125	FACTORED_ENVE	Combination	Max	-294.057	0.426	74.206	501.897	16325.69	1831.364
207	36.25	FACTORED_ENVE	Combination	Max	-294.06	0.408	75.328	501.897	14927.109	1864.467
207	0	FACTORED_ENVE	Combination	Min	-349.409	-1.35	43.205	-562.72	10428.398	-534.617
207	18.125	FACTORED_ENVE	Combination	Min	-349.412	-1.312	44.183	-562.72	9609.722	-542.909
207	36.25	FACTORED_ENVE	Combination	Min	-349.415	-1.274	45.162	-562.72	8771.614	-550.805
208	0	FACTORED_ENVE	Combination	Max	-294.089	0.408	83.939	379.242	14927.108	1864.157
208	18.125	FACTORED_ENVE	Combination	Max	-294.092	0.391	85.061	379.242	13349.495	1896.3
208	36.25	FACTORED_ENVE	Combination	Max	-294.095	0.373	86.182	379.242	11751.824	1927.49
208	0	FACTORED_ENVE	Combination	Min	-349.466	-1.274	49.715	-684.606	8771.614	-551.058
208	18.125	FACTORED_ENVE	Combination	Min	-349.469	-1.236	50.693	-684.606	7831.66	-558.558
208	36.25	FACTORED_ENVE	Combination	Min	-349.473	-1.198	51.672	-684.606	6872.586	-565.66
209	0	FACTORED_ENVE	Combination	Max	-294.123	0.373	94.819	256.724	11751.824	1927.104
209	18.125	FACTORED_ENVE	Combination	Max	-294.126	0.355	95.941	256.724	9974.987	1957.328
209	36.25	FACTORED_ENVE	Combination	Max	-294.13	0.338	97.063	256.724	8176.076	1986.591
209	0	FACTORED_ENVE	Combination	Min	-349.523	-1.198	56.25	-806.531	6872.586	-565.931
209	18.125	FACTORED_ENVE	Combination	Min	-349.526	-1.16	57.229	-806.531	5811.523	-572.634
209	36.25	FACTORED_ENVE	Combination	Min	-349.53	-1.122	58.208	-806.531	4731.696	-578.938
210	0	FACTORED_ENVE	Combination	Max	-294.159	0.338	105.709	140.981	8176.076	1986.149
210	18.125	FACTORED_ENVE	Combination	Max	-294.162	0.32	106.831	140.981	6198.468	2014.584
210	36.25	FACTORED_ENVE	Combination	Max	-294.166	0.302	107.953	140.981	4199.446	2042.794
210	0	FACTORED_ENVE	Combination	Min	-349.582	-1.122	62.794	-928.469	4731.696	-579.232
210	18.125	FACTORED_ENVE	Combination	Min	-349.586	-1.084	63.773	-928.469	3550.099	-585.135
210	36.25	FACTORED_ENVE	Combination	Min	-349.59	-1.046	64.752	-928.469	2350.136	-590.637
211	0	FACTORED_ENVE	Combination	Max	-294.188	0.302	116.645	75.722	4199.445	2042.368
211	18.125	FACTORED_ENVE	Combination	Max	-294.191	0.285	117.767	75.722	2021.634	2069.639
211	36.25	FACTORED_ENVE	Combination	Max	-294.195	0.267	118.889	75.722	-108.945	2095.97
211	0	FACTORED_ENVE	Combination	Min	-349.63	-1.046	69.38	-1050.471	2350.135	-590.9
211	18.125	FACTORED_ENVE	Combination	Min	-349.634	-1.008	70.359	-1050.471	1048.026	-596
211	36.25	FACTORED_ENVE	Combination	Min	-349.638	-0.971	71.338	-1050.471	-366.303	-600.697
212	0	FACTORED_ENVE	Combination	Max	-294.214	0.267	127.598	10.53	-108.945	2095.529
212	18.125	FACTORED_ENVE	Combination	Max	-294.217	0.249	128.719	10.53	-1526.818	2120.915
212	36.25	FACTORED_ENVE	Combination	Max	-294.221	0.232	129.841	10.53	-2962.18	2145.353
212	0	FACTORED_ENVE	Combination	Min	-349.673	-0.971	75.984	-1172.498	-366.303	-600.944
212	18.125	FACTORED_ENVE	Combination	Min	-349.677	-0.953	76.962	-1172.498	-2751.024	-605.238
212	36.25	FACTORED_ENVE	Combination	Min	-349.681	-0.935	77.941	-1172.498	-5156.029	-609.127
231	0	FACTORED_ENVE	Combination	Max	-294.224	0.232	138.609	-54.404	-2962.18	2144.951
231	18.125	FACTORED_ENVE	Combination	Max	-294.227	0.214	139.731	-54.404	-4500.148	2168.443
231	36.25	FACTORED_ENVE	Combination	Max	-294.23	0.196	140.852	-54.404	-6055.114	2190.98
231	0	FACTORED_ENVE	Combination	Min	-349.69	-0.935	82.646	-1294.608	-5156.029	-609.27
231	18.125	FACTORED_ENVE	Combination	Min	-349.694	-0.918	83.625	-1294.608	-7739.618	-612.756
231	36.25	FACTORED_ENVE	Combination	Min	-349.697	-0.9	84.604	-1294.608	-10342.044	-615.836
239	0	FACTORED_ENVE	Combination	Max	-294.227	0.196	149.641	-119.255	-6055.115	2190.637
239	18.125	FACTORED_ENVE	Combination	Max	-294.23	0.179	150.763	-119.255	-7712.472	2212.224
239	36.25	FACTORED_ENVE	Combination	Max	-294.233	0.161	151.884	-119.255	-9386.298	2232.848
239	0	FACTORED_ENVE	Combination	Min	-349.694	-0.9	89.325	-1416.739	-10342.044	-615.923
239	18.125	FACTORED_ENVE	Combination	Min	-349.698	-0.882	90.304	-1416.739	-13122.396	-618.598
239	36.25	FACTORED_ENVE	Combination	Min	-349.702	-0.865	91.283	-1416.739	-15920.546	-620.868
240	0	FACTORED_ENVE	Combination	Max	-294.214	0.161	160.717	-183.902	-9386.299	2232.625
240	18.125	FACTORED_ENVE	Combination	Max	-294.216	0.143	161.839	-183.902	-11162.709	2252.297
240	36.25	FACTORED_ENVE	Combination	Max	-294.219	0.126	162.961	-183.902	-12955.019	2271.001
240	0	FACTORED_ENVE	Combination	Min	-349.672	-0.865	96.047	-1538.919	-15920.546	-620.832

240	18.125	FACTORED_ENVE	Combination	Min	-349.675	-0.856	97.026	-1538.919	-18896.41	-622.696
240	36.25	FACTORED_ENVE	Combination	Min	-349.679	-0.89	98.005	-1538.919	-21888.956	-624.153
241	0	FACTORED_ENVE	Combination	Max	-294.184	0.126	171.829	-248.376	-12955.019	2270.931
241	18.125	FACTORED_ENVE	Combination	Max	-294.187	0.108	172.951	-248.376	-14849.919	2288.68
241	36.25	FACTORED_ENVE	Combination	Max	-294.189	0.09	174.072	-248.376	-16760.109	2305.456
241	0	FACTORED_ENVE	Combination	Min	-349.623	-0.89	102.801	-1661.133	-21888.957	-623.988
241	18.125	FACTORED_ENVE	Combination	Min	-349.626	-0.925	103.78	-1661.133	-25058.756	-625.04
241	36.25	FACTORED_ENVE	Combination	Min	-349.629	-0.96	104.759	-1661.133	-28244.049	-625.686
242	0	FACTORED_ENVE	Combination	Max	-294.463	0.09	182.047	-317.116	-16760.109	2303.43
242	16.75	FACTORED_ENVE	Combination	Max	-294.467	0.074	183.084	-317.116	-18604.722	2317.989
242	33.5	FACTORED_ENVE	Combination	Max	-294.472	0.058	184.121	-317.116	-20461.861	2331.712
242	0	FACTORED_ENVE	Combination	Min	-350.088	-0.96	108.674	-1782.332	-28244.05	-627.807
242	16.75	FACTORED_ENVE	Combination	Min	-350.093	-0.992	109.579	-1782.332	-31333.079	-628.032
242	33.5	FACTORED_ENVE	Combination	Min	-350.098	-1.024	110.483	-1782.332	-34434.299	-627.91
243	0	FACTORED_ENVE	Combination	Max	-294.655	2.084	-90.059	1984.818	-20461.86	2265.911
243	2.752	FACTORED_ENVE	Combination	Max	-294.65	2.087	-89.911	1984.818	-20213.052	2266.457
243	0	FACTORED_ENVE	Combination	Min	-357.734	-0.618	-158.296	886.585	-34434.297	-661.54
243	2.752	FACTORED_ENVE	Combination	Min	-357.728	-0.62	-158.125	886.585	-34007.274	-659.656
244	0	FACTORED_ENVE	Combination	Max	-291.145	2.087	-96.899	1808.451	-20213.052	2337.13
244	18.125	FACTORED_ENVE	Combination	Max	-291.146	2.108	-95.92	1808.451	-18473.255	2338.279
244	36.25	FACTORED_ENVE	Combination	Max	-291.147	2.13	-94.941	1808.451	-16748.228	2338.091
244	0	FACTORED_ENVE	Combination	Min	-351.808	-0.62	-160.477	788.622	-34007.274	-621.299
244	18.125	FACTORED_ENVE	Combination	Min	-351.809	-0.627	-159.355	788.622	-31125.943	-608.608
244	36.25	FACTORED_ENVE	Combination	Min	-351.809	-0.635	-158.234	788.622	-28258.897	-595.691
245	0	FACTORED_ENVE	Combination	Max	-291.205	2.13	-90.109	1686.26	-16748.228	2336.988
245	18.125	FACTORED_ENVE	Combination	Max	-291.205	2.151	-89.13	1686.26	-15125.908	2335.491
245	36.25	FACTORED_ENVE	Combination	Max	-291.205	2.173	-88.151	1686.26	-13518.895	2332.658
245	0	FACTORED_ENVE	Combination	Min	-351.907	-0.635	-149.303	724.476	-28258.897	-596.311
245	18.125	FACTORED_ENVE	Combination	Min	-351.907	-0.643	-148.181	724.476	-25568.76	-583.172
245	36.25	FACTORED_ENVE	Combination	Min	-351.908	-0.651	-147.059	724.476	-22893.986	-569.811
246	0	FACTORED_ENVE	Combination	Max	-291.248	2.173	-83.351	1564.096	-13518.895	2331.872
246	18.125	FACTORED_ENVE	Combination	Max	-291.248	2.194	-82.373	1564.096	-12014.525	2327.726
246	36.25	FACTORED_ENVE	Combination	Max	-291.247	2.215	-81.394	1564.096	-10525.962	2322.244
246	0	FACTORED_ENVE	Combination	Min	-351.978	-0.651	-138.174	660.113	-22893.986	-570.255
246	18.125	FACTORED_ENVE	Combination	Min	-351.978	-0.659	-137.052	660.113	-20396.456	-556.675
246	36.25	FACTORED_ENVE	Combination	Min	-351.977	-0.667	-135.93	660.113	-17915.294	-542.876
247	0	FACTORED_ENVE	Combination	Max	-291.275	2.215	-76.626	1441.958	-10525.962	2321.734
247	18.125	FACTORED_ENVE	Combination	Max	-291.275	2.237	-75.647	1441.958	-9139.941	2314.936
247	36.25	FACTORED_ENVE	Combination	Max	-291.274	2.258	-74.669	1441.958	-7770.189	2306.804
247	0	FACTORED_ENVE	Combination	Min	-352.024	-0.667	-127.087	595.547	-17915.294	-543.167
247	18.125	FACTORED_ENVE	Combination	Min	-352.023	-0.675	-125.966	595.547	-15611.64	-560.083
247	36.25	FACTORED_ENVE	Combination	Min	-352.022	-0.682	-124.844	595.547	-13325.282	-586.187
248	0	FACTORED_ENVE	Combination	Max	-291.294	2.258	-69.917	1319.835	-7770.189	2306.46
248	18.125	FACTORED_ENVE	Combination	Max	-291.293	2.28	-68.938	1319.835	-6503.13	2297.011
248	36.25	FACTORED_ENVE	Combination	Max	-291.292	2.301	-67.96	1319.835	-5252.766	2286.232
248	0	FACTORED_ENVE	Combination	Min	-352.054	-0.682	-116.019	530.875	-13325.283	-586.47
248	18.125	FACTORED_ENVE	Combination	Min	-352.053	-0.69	-114.897	530.875	-11216.974	-611.5
248	36.25	FACTORED_ENVE	Combination	Min	-352.052	-0.698	-113.775	530.875	-9126.817	-635.451
249	0	FACTORED_ENVE	Combination	Max	-291.298	2.301	-63.257	1197.755	-5252.766	2286.162
249	18.125	FACTORED_ENVE	Combination	Max	-291.297	2.323	-62.278	1197.755	-4104.625	2274.06
249	36.25	FACTORED_ENVE	Combination	Max	-291.296	2.344	-61.299	1197.755	-2973.565	2260.631
249	0	FACTORED_ENVE	Combination	Min	-352.061	-0.698	-105.004	465.949	-9126.817	-635.49
249	18.125	FACTORED_ENVE	Combination	Min	-352.059	-0.706	-103.882	465.949	-7214.471	-658.358
249	36.25	FACTORED_ENVE	Combination	Min	-352.058	-0.714	-102.761	465.949	-5321.054	-680.141
250	0	FACTORED_ENVE	Combination	Max	-291.296	2.344	-56.613	1075.688	-2973.565	2260.66
250	18.125	FACTORED_ENVE	Combination	Max	-291.295	2.366	-55.634	1075.688	-1944.805	2245.911
250	36.25	FACTORED_ENVE	Combination	Max	-291.294	2.387	-54.655	1075.688	-933.473	2229.838
250	0	FACTORED_ENVE	Combination	Min	-352.058	-0.714	-94.008	400.938	-5321.054	-680.092
250	18.125	FACTORED_ENVE	Combination	Min	-352.057	-0.722	-92.886	400.938	-3605.838	-700.786
250	36.25	FACTORED_ENVE	Combination	Min	-352.055	-0.73	-91.764	400.938	-1910.252	-720.388
263	0	FACTORED_ENVE	Combination	Max	-291.29	2.387	-49.985	953.635	-933.473	2229.945
263	18.125	FACTORED_ENVE	Combination	Max	-291.289	2.408	-49.006	953.635	-24.478	2212.553
263	36.25	FACTORED_ENVE	Combination	Max	-291.288	2.43	-48.027	953.635	1306.161	2193.843
263	0	FACTORED_ENVE	Combination	Min	-352.048	-0.73	-83.029	335.851	-1910.252	-720.271
263	18.125	FACTORED_ENVE	Combination	Min	-352.047	-0.737	-81.907	335.851	-393.179	-738.777
263	36.25	FACTORED_ENVE	Combination	Min	-352.045	-0.745	-80.785	335.851	721.178	-756.187

264	0	FACTORED_ENVE	Combination	Max	-291.279	2.43	-43.389	831.607	1306.161	2194.053
264	18.125	FACTORED_ENVE	Combination	Max	-291.278	2.451	-42.411	831.607	2618.398	2174.024
264	36.25	FACTORED_ENVE	Combination	Max	-291.277	2.473	-41.432	831.607	3909.863	2152.683
264	0	FACTORED_ENVE	Combination	Min	-352.03	-0.745	-72.086	270.63	721.178	-755.987
264	18.125	FACTORED_ENVE	Combination	Min	-352.028	-0.753	-70.964	270.63	1514.441	-772.296
264	36.25	FACTORED_ENVE	Combination	Min	-352.027	-0.761	-69.843	270.63	2289.693	-787.503
265	0	FACTORED_ENVE	Combination	Max	-291.267	2.473	-36.802	709.585	3909.863	2152.898
265	18.125	FACTORED_ENVE	Combination	Max	-291.266	2.494	-35.823	709.585	5022.625	2130.243
265	36.25	FACTORED_ENVE	Combination	Max	-291.265	2.516	-34.844	709.585	6114.211	2106.282
265	0	FACTORED_ENVE	Combination	Min	-352.01	-0.761	-61.153	205.384	2289.693	-787.303
265	18.125	FACTORED_ENVE	Combination	Min	-352.009	-0.769	-60.031	205.384	2962.812	-801.405
265	36.25	FACTORED_ENVE	Combination	Min	-352.008	-0.777	-58.909	205.384	3617.66	-814.399
266	0	FACTORED_ENVE	Combination	Max	-291.254	2.516	-30.239	587.579	6114.211	2106.523
266	18.125	FACTORED_ENVE	Combination	Max	-291.253	2.537	-29.26	587.579	7027.18	2081.251
266	36.25	FACTORED_ENVE	Combination	Max	-291.252	2.559	-28.281	587.579	7918.636	2054.681
266	0	FACTORED_ENVE	Combination	Min	-351.989	-0.777	-50.246	140.059	3617.66	-814.189
266	18.125	FACTORED_ENVE	Combination	Min	-351.988	-0.785	-49.124	140.059	4170.624	-826.075
266	36.25	FACTORED_ENVE	Combination	Min	-351.986	-0.792	-48.002	140.059	4705.1	-836.851
267	0	FACTORED_ENVE	Combination	Max	-291.243	2.559	-23.684	465.575	7918.636	2054.894
267	18.125	FACTORED_ENVE	Combination	Max	-291.242	2.58	-22.705	465.575	8631.323	2027.019
267	36.25	FACTORED_ENVE	Combination	Max	-291.241	2.601	-21.726	465.575	9322.227	1997.853
267	0	FACTORED_ENVE	Combination	Min	-351.97	-0.792	-39.348	74.722	4705.1	-836.674
267	18.125	FACTORED_ENVE	Combination	Min	-351.969	-0.8	-38.226	74.722	5137.661	-846.338
267	36.25	FACTORED_ENVE	Combination	Min	-351.968	-0.808	-37.104	74.722	5551.56	-854.889
268	0	FACTORED_ENVE	Combination	Max	-291.234	2.601	-17.129	343.568	9322.227	1998.019
268	18.125	FACTORED_ENVE	Combination	Max	-291.233	2.623	-16.15	343.568	9834.127	1967.557
268	36.25	FACTORED_ENVE	Combination	Max	-291.233	2.644	-15.172	343.568	10324.041	1935.814
268	0	FACTORED_ENVE	Combination	Min	-351.955	-0.808	-28.45	9.4	5551.56	-854.759
268	18.125	FACTORED_ENVE	Combination	Min	-351.954	-0.816	-27.328	9.4	5863.392	-862.196
268	36.25	FACTORED_ENVE	Combination	Min	-351.953	-0.824	-26.207	9.4	6156.433	-868.516
269	0	FACTORED_ENVE	Combination	Max	-291.227	2.644	-10.591	221.567	10324.041	1935.943
269	18.125	FACTORED_ENVE	Combination	Max	-291.227	2.666	-9.612	221.567	10635.086	1902.91
269	36.25	FACTORED_ENVE	Combination	Max	-291.226	2.687	-8.633	221.567	10924.011	1868.606
269	0	FACTORED_ENVE	Combination	Min	-351.943	-0.824	-17.57	-55.95	6156.433	-868.433
269	18.125	FACTORED_ENVE	Combination	Min	-351.943	-0.832	-16.449	-55.95	6347.622	-873.638
269	36.25	FACTORED_ENVE	Combination	Min	-351.942	-0.84	-15.327	-55.95	6519.933	-877.725
270	0	FACTORED_ENVE	Combination	Max	-291.223	2.687	-4.06	99.564	10924.011	1868.677
270	18.125	FACTORED_ENVE	Combination	Max	-291.223	2.709	-3.081	99.564	11035.149	1833.091
270	36.25	FACTORED_ENVE	Combination	Max	-291.223	2.73	-2.102	99.564	11124.509	1796.244
270	0	FACTORED_ENVE	Combination	Min	-351.937	-0.84	-6.7	-147.312	6519.933	-877.705
270	18.125	FACTORED_ENVE	Combination	Min	-351.937	-0.847	-5.578	-147.312	6590.49	-880.675
270	36.25	FACTORED_ENVE	Combination	Min	-351.937	-0.855	-4.456	-147.312	6642.126	-882.527
271	0	FACTORED_ENVE	Combination	Max	-291.223	2.73	4.432	24.176	11124.509	1796.249
271	18.125	FACTORED_ENVE	Combination	Max	-291.223	2.751	5.554	24.176	11034.799	1758.133
271	36.25	FACTORED_ENVE	Combination	Max	-291.223	2.773	6.676	24.176	10922.726	1718.768
271	0	FACTORED_ENVE	Combination	Min	-351.936	-0.855	2.237	-269.599	6642.126	-882.568
271	18.125	FACTORED_ENVE	Combination	Min	-351.936	-0.863	3.216	-269.599	6591.823	-883.301
271	36.25	FACTORED_ENVE	Combination	Min	-351.937	-0.871	4.195	-269.599	6522.598	-882.916
272	0	FACTORED_ENVE	Combination	Max	-291.226	2.773	15.317	-40.954	10922.726	1718.712
272	18.125	FACTORED_ENVE	Combination	Max	-291.226	2.794	16.439	-40.954	10631.62	1678.089
272	36.25	FACTORED_ENVE	Combination	Max	-291.226	2.816	17.561	-40.954	10318.227	1636.228
272	0	FACTORED_ENVE	Combination	Min	-351.941	-0.871	8.769	-391.86	6522.598	-883.017
272	18.125	FACTORED_ENVE	Combination	Min	-351.942	-0.879	9.748	-391.86	6351.457	-881.514
272	36.25	FACTORED_ENVE	Combination	Min	-351.942	-0.887	10.727	-391.86	6161.437	-878.892
273	0	FACTORED_ENVE	Combination	Max	-291.232	2.816	26.202	-106.093	10318.227	1636.111
273	18.125	FACTORED_ENVE	Combination	Max	-291.233	2.837	27.324	-106.093	9825.911	1593.006
273	36.25	FACTORED_ENVE	Combination	Max	-291.233	2.859	28.446	-106.093	9311.455	1548.675
273	0	FACTORED_ENVE	Combination	Min	-351.952	-0.887	15.301	-514.093	6161.437	-879.054
273	18.125	FACTORED_ENVE	Combination	Min	-351.952	-0.895	16.279	-514.093	5869.564	-875.315
273	36.25	FACTORED_ENVE	Combination	Min	-351.953	-0.902	17.258	-514.093	5558.9	-870.458
274	0	FACTORED_ENVE	Combination	Max	-291.241	2.859	37.096	-171.242	9311.455	1548.509
274	18.125	FACTORED_ENVE	Combination	Max	-291.242	2.88	38.217	-171.242	8618.095	1502.949
274	36.25	FACTORED_ENVE	Combination	Max	-291.242	2.902	39.339	-171.242	7902.818	1456.176
274	0	FACTORED_ENVE	Combination	Min	-351.966	-0.902	21.841	-636.28	5558.9	-870.663
274	18.125	FACTORED_ENVE	Combination	Min	-351.967	-0.91	22.82	-636.28	5146.328	-864.69
274	36.25	FACTORED_ENVE	Combination	Min	-351.968	-0.918	23.799	-636.28	4715.094	-857.6

287	0	FACTORED_ENVE	Combination	Max	-291.252	2.902	47.997	-236.399	7902.818	1455.971
287	18.125	FACTORED_ENVE	Combination	Max	-291.253	2.923	49.119	-236.399	7008.73	1407.983
287	36.25	FACTORED_ENVE	Combination	Max	-291.254	2.944	50.241	-236.399	6093.02	1358.798
287	0	FACTORED_ENVE	Combination	Min	-351.985	-0.918	28.391	-758.427	4715.094	-857.84
287	18.125	FACTORED_ENVE	Combination	Min	-351.986	-0.926	29.37	-758.427	4181.942	-849.635
287	36.25	FACTORED_ENVE	Combination	Min	-351.987	-0.934	30.349	-758.427	3630.3	-840.316
288	0	FACTORED_ENVE	Combination	Max	-291.263	2.944	58.916	-301.562	6093.02	1358.583
288	18.125	FACTORED_ENVE	Combination	Max	-291.265	2.966	60.038	-301.562	4998.498	1308.2
288	36.25	FACTORED_ENVE	Combination	Max	-291.266	2.987	61.159	-301.562	3882.724	1256.635
288	0	FACTORED_ENVE	Combination	Min	-352.004	-0.934	34.958	-880.527	3630.3	-840.557
288	18.125	FACTORED_ENVE	Combination	Min	-352.005	-0.942	35.937	-880.527	2976.611	-830.126
288	36.25	FACTORED_ENVE	Combination	Min	-352.007	-0.95	36.916	-880.527	2304.647	-818.584
289	0	FACTORED_ENVE	Combination	Max	-291.274	2.987	69.851	-366.725	3882.724	1256.429
289	18.125	FACTORED_ENVE	Combination	Max	-291.276	3.009	70.973	-366.725	2588.213	1203.684
289	36.25	FACTORED_ENVE	Combination	Max	-291.277	3.03	72.095	-366.725	1272.893	1149.773
289	0	FACTORED_ENVE	Combination	Min	-352.023	-0.95	41.543	-1002.594	2304.647	-818.805
289	18.125	FACTORED_ENVE	Combination	Min	-352.024	-0.957	42.522	-1002.594	1530.548	-806.221
289	36.25	FACTORED_ENVE	Combination	Min	-352.025	-0.965	43.501	-1002.594	738.434	-792.882
290	0	FACTORED_ENVE	Combination	Max	-291.285	3.03	80.795	-431.888	1272.893	1149.571
290	18.125	FACTORED_ENVE	Combination	Max	-291.287	3.052	81.917	-431.888	-104.644	1094.498
290	36.25	FACTORED_ENVE	Combination	Max	-291.288	3.073	83.038	-431.888	-1018.82	1038.274
290	0	FACTORED_ENVE	Combination	Min	-352.041	-0.965	48.137	-1124.645	738.434	-793.093
290	18.125	FACTORED_ENVE	Combination	Min	-352.042	-0.973	49.116	-1124.645	-303.464	-778.642
290	36.25	FACTORED_ENVE	Combination	Min	-352.043	-0.981	50.095	-1124.645	-1814.724	-763.082
291	0	FACTORED_ENVE	Combination	Max	-291.291	3.073	91.772	-497.034	-1018.82	1038.172
291	18.125	FACTORED_ENVE	Combination	Max	-291.292	3.095	92.894	-497.034	-2035.332	980.808
291	36.25	FACTORED_ENVE	Combination	Max	-291.293	3.131	94.016	-497.034	-3069.24	922.31
291	0	FACTORED_ENVE	Combination	Min	-352.05	-0.981	54.766	-1246.68	-1814.724	-763.173
291	18.125	FACTORED_ENVE	Combination	Min	-352.051	-0.989	55.745	-1246.68	-3504.515	-746.505
291	36.25	FACTORED_ENVE	Combination	Min	-352.053	-0.997	56.724	-1246.68	-5213.957	-728.731
292	0	FACTORED_ENVE	Combination	Max	-291.294	3.131	102.758	-562.173	-3069.24	922.254
292	18.125	FACTORED_ENVE	Combination	Max	-291.295	3.186	103.88	-562.173	-4205.29	862.635
292	36.25	FACTORED_ENVE	Combination	Max	-291.296	3.24	105.002	-562.173	-5358.368	801.9
292	0	FACTORED_ENVE	Combination	Min	-352.055	-0.997	61.405	-1368.724	-5213.957	-728.773
292	18.125	FACTORED_ENVE	Combination	Min	-352.056	-1.027	62.384	-1368.724	-7101.444	-709.897
292	36.25	FACTORED_ENVE	Combination	Min	-352.057	-1.081	63.362	-1368.724	-9007.883	-689.922
293	0	FACTORED_ENVE	Combination	Max	-291.287	3.24	113.786	-627.274	-5358.368	802.039
293	18.125	FACTORED_ENVE	Combination	Max	-291.288	3.295	114.908	-627.274	-6613.967	740.207
293	36.25	FACTORED_ENVE	Combination	Max	-291.288	3.349	116.03	-627.274	-7886.187	677.278
293	0	FACTORED_ENVE	Combination	Min	-352.043	-1.081	68.087	-1490.8	-9007.883	-689.743
293	18.125	FACTORED_ENVE	Combination	Min	-352.044	-1.136	69.066	-1490.8	-11092.508	-668.672
293	36.25	FACTORED_ENVE	Combination	Min	-352.045	-1.19	70.045	-1490.8	-13195.309	-646.509
294	0	FACTORED_ENVE	Combination	Max	-291.27	3.349	124.84	-692.342	-7886.187	677.587
294	18.125	FACTORED_ENVE	Combination	Max	-291.271	3.403	125.962	-692.342	-9260.958	613.583
294	36.25	FACTORED_ENVE	Combination	Max	-291.271	3.458	127.083	-692.342	-10650.543	548.501
294	0	FACTORED_ENVE	Combination	Min	-352.015	-1.19	74.797	-1612.927	-13195.309	-646.146
294	18.125	FACTORED_ENVE	Combination	Min	-352.016	-1.244	75.776	-1612.927	-15476.008	-622.894
294	36.25	FACTORED_ENVE	Combination	Min	-352.016	-1.299	76.754	-1612.927	-17774.032	-598.557
295	0	FACTORED_ENVE	Combination	Max	-291.243	3.458	135.919	-757.37	-10650.543	549.008
295	18.125	FACTORED_ENVE	Combination	Max	-291.243	3.512	137.04	-757.37	-12140.884	482.874
295	36.25	FACTORED_ENVE	Combination	Max	-291.243	3.567	138.162	-757.37	-13646.81	415.682
295	0	FACTORED_ENVE	Combination	Min	-351.97	-1.299	81.533	-1735.126	-17774.032	-597.98
295	18.125	FACTORED_ENVE	Combination	Min	-351.97	-1.353	82.512	-1735.126	-20249.591	-572.562
295	36.25	FACTORED_ENVE	Combination	Min	-351.97	-1.408	83.49	-1735.126	-22741.546	-546.067
296	0	FACTORED_ENVE	Combination	Max	-291.544	3.567	145.851	-823.8	-13646.81	410.07
296	23.25	FACTORED_ENVE	Combination	Max	-291.548	3.637	147.29	-823.8	-15683.756	402.054
296	0	FACTORED_ENVE	Combination	Min	-352.47	-1.408	87.048	-1855.317	-22741.546	-552.285
296	23.25	FACTORED_ENVE	Combination	Min	-352.475	-1.477	88.303	-1855.317	-26139.312	-628.27
297	0	FACTORED_ENVE	Combination	Max	-291.571	0.516	-93.161	1903.075	-15683.756	397.539
297	13	FACTORED_ENVE	Combination	Max	-291.566	0.508	-92.459	1903.075	-14472.152	394.075
297	0	FACTORED_ENVE	Combination	Min	-354.454	-0.397	-156.411	885.03	-26139.313	-633.987
297	13	FACTORED_ENVE	Combination	Min	-354.448	-0.39	-155.606	885.03	-24104.182	-631.766
298	0	FACTORED_ENVE	Combination	Max	-290.956	0.508	-89.882	1784.381	-14472.152	400.668
298	18.125	FACTORED_ENVE	Combination	Max	-290.955	0.498	-88.904	1784.381	-12842.49	395.863
298	36.25	FACTORED_ENVE	Combination	Max	-290.954	0.488	-87.925	1784.381	-11228.278	391.075
298	0	FACTORED_ENVE	Combination	Min	-353.428	-0.39	-148.841	818.739	-24104.182	-620.807

298	18.125	FACTORED_ENVE	Combination	Min	-353.427	-0.398	-147.719	818.739	-21402.145	-617.974
298	36.25	FACTORED_ENVE	Combination	Min	-353.426	-0.408	-146.597	818.739	-18717.588	-615.242
323	0	FACTORED_ENVE	Combination	Max	-290.983	0.488	-83.144	1662.131	-11228.278	390.777
323	18.125	FACTORED_ENVE	Combination	Max	-290.982	0.482	-82.165	1662.131	-9716.69	386.006
323	36.25	FACTORED_ENVE	Combination	Max	-290.981	0.492	-81.186	1662.131	-8221.109	381.254
323	0	FACTORED_ENVE	Combination	Min	-353.474	-0.408	-137.749	753.648	-18717.588	-615.714
323	18.125	FACTORED_ENVE	Combination	Min	-353.473	-0.417	-136.628	753.648	-16210.683	-613.072
323	36.25	FACTORED_ENVE	Combination	Min	-353.471	-0.427	-135.506	753.648	-13721.426	-610.531
324	0	FACTORED_ENVE	Combination	Max	-291	0.492	-76.431	1539.925	-8221.109	381.076
324	18.125	FACTORED_ENVE	Combination	Max	-290.998	0.502	-75.452	1539.925	-6828.205	376.343
324	36.25	FACTORED_ENVE	Combination	Max	-290.996	0.511	-74.473	1539.925	-5451.823	371.629
324	0	FACTORED_ENVE	Combination	Min	-353.501	-0.427	-126.686	688.538	-13721.426	-610.793
324	18.125	FACTORED_ENVE	Combination	Min	-353.499	-0.437	-125.564	688.538	-11410.191	-608.344
324	36.25	FACTORED_ENVE	Combination	Min	-353.497	-0.447	-124.442	688.538	-9117.397	-605.997
325	0	FACTORED_ENVE	Combination	Max	-291	0.511	-69.768	1417.804	-5451.823	371.618
325	18.125	FACTORED_ENVE	Combination	Max	-290.998	0.521	-68.789	1417.804	-4177.644	366.924
325	36.25	FACTORED_ENVE	Combination	Max	-290.996	0.531	-67.81	1417.804	-2920.461	362.252
325	0	FACTORED_ENVE	Combination	Min	-353.501	-0.447	-115.675	623.401	-9117.397	-605.982
325	18.125	FACTORED_ENVE	Combination	Min	-353.499	-0.457	-114.553	623.401	-7002.491	-603.733
325	36.25	FACTORED_ENVE	Combination	Min	-353.497	-0.466	-113.431	623.401	-4906.757	-601.586
326	0	FACTORED_ENVE	Combination	Max	-290.996	0.531	-63.112	1295.698	-2920.461	362.281
326	18.125	FACTORED_ENVE	Combination	Max	-290.994	0.541	-62.133	1295.698	-1765.772	357.63
326	36.25	FACTORED_ENVE	Combination	Max	-290.992	0.567	-61.154	1295.698	-628.508	353.001
326	0	FACTORED_ENVE	Combination	Min	-353.494	-0.466	-104.673	558.258	-4906.757	-601.501
326	18.125	FACTORED_ENVE	Combination	Min	-353.492	-0.476	-103.551	558.258	-2989.458	-599.453
326	36.25	FACTORED_ENVE	Combination	Min	-353.49	-0.486	-102.429	558.258	-1091.997	-597.509
327	0	FACTORED_ENVE	Combination	Max	-290.982	0.567	-56.5	1173.658	-628.508	353.134
327	18.125	FACTORED_ENVE	Combination	Max	-290.98	0.602	-55.521	1173.658	686.636	348.528
327	36.25	FACTORED_ENVE	Combination	Max	-290.978	0.637	-54.542	1173.658	2386.43	343.945
327	0	FACTORED_ENVE	Combination	Min	-353.472	-0.486	-93.712	493.102	-1091.997	-597.26
327	18.125	FACTORED_ENVE	Combination	Min	-353.47	-0.496	-92.59	493.102	349.825	-595.419
327	36.25	FACTORED_ENVE	Combination	Min	-353.467	-0.506	-91.468	493.102	1366.995	-593.683
328	0	FACTORED_ENVE	Combination	Max	-290.966	0.637	-49.906	1051.643	2386.43	344.108
328	18.125	FACTORED_ENVE	Combination	Max	-290.964	0.671	-48.927	1051.643	3907.597	339.549
328	36.25	FACTORED_ENVE	Combination	Max	-290.962	0.706	-47.948	1051.643	5407.726	335.015
328	0	FACTORED_ENVE	Combination	Min	-353.445	-0.506	-82.768	427.944	1366.995	-593.388
328	18.125	FACTORED_ENVE	Combination	Min	-353.443	-0.516	-81.646	427.944	2282.039	-591.758
328	36.25	FACTORED_ENVE	Combination	Min	-353.441	-0.525	-80.524	427.944	3178.971	-590.232
329	0	FACTORED_ENVE	Combination	Max	-290.948	0.706	-43.33	929.65	5407.726	335.198
329	18.125	FACTORED_ENVE	Combination	Max	-290.946	0.741	-42.351	929.65	6729.009	330.688
329	36.25	FACTORED_ENVE	Combination	Max	-290.944	0.775	-41.372	929.65	8028.745	326.205
329	0	FACTORED_ENVE	Combination	Min	-353.415	-0.525	-71.84	362.785	3178.971	-589.913
329	18.125	FACTORED_ENVE	Combination	Min	-353.413	-0.535	-70.718	362.785	3973.775	-588.496
329	36.25	FACTORED_ENVE	Combination	Min	-353.411	-0.545	-69.597	362.785	4750.192	-587.184
330	0	FACTORED_ENVE	Combination	Max	-290.929	0.775	-36.778	807.687	8028.745	326.408
330	18.125	FACTORED_ENVE	Combination	Max	-290.927	0.81	-35.799	807.687	9149.651	321.951
330	36.25	FACTORED_ENVE	Combination	Max	-290.925	0.845	-34.82	807.687	10248.573	317.52
330	0	FACTORED_ENVE	Combination	Min	-353.383	-0.545	-60.937	297.63	4750.192	-586.843
330	18.125	FACTORED_ENVE	Combination	Min	-353.381	-0.557	-59.816	297.63	5424.668	-585.643
330	36.25	FACTORED_ENVE	Combination	Min	-353.379	-0.591	-58.694	297.63	6080.519	-584.549
331	0	FACTORED_ENVE	Combination	Max	-290.91	0.845	-30.242	685.739	10248.573	317.719
331	18.125	FACTORED_ENVE	Combination	Max	-290.909	0.879	-29.263	685.739	11168.591	313.315
331	36.25	FACTORED_ENVE	Combination	Max	-290.907	0.914	-28.284	685.739	12066.26	308.94
331	0	FACTORED_ENVE	Combination	Min	-353.352	-0.591	-50.054	232.481	6080.519	-584.23
331	18.125	FACTORED_ENVE	Combination	Min	-353.351	-0.626	-48.932	232.481	6634.509	-583.25
331	36.25	FACTORED_ENVE	Combination	Min	-353.349	-0.66	-47.811	232.481	7169.677	-582.377
332	0	FACTORED_ENVE	Combination	Max	-290.894	0.914	-23.715	563.794	12066.26	309.114
332	18.125	FACTORED_ENVE	Combination	Max	-290.893	0.948	-22.736	563.794	12784.862	304.767
332	36.25	FACTORED_ENVE	Combination	Max	-290.892	0.983	-21.757	563.794	13480.822	300.449
332	0	FACTORED_ENVE	Combination	Min	-353.326	-0.66	-39.181	167.34	7169.677	-582.109
332	18.125	FACTORED_ENVE	Combination	Min	-353.324	-0.695	-38.059	167.34	7602.954	-581.351
332	36.25	FACTORED_ENVE	Combination	Min	-353.323	-0.73	-36.937	167.34	8016.979	-580.699
333	0	FACTORED_ENVE	Combination	Max	-290.881	0.983	-17.196	441.847	13480.822	300.594
333	18.125	FACTORED_ENVE	Combination	Max	-290.88	1.018	-16.217	441.847	13998.179	296.305
333	36.25	FACTORED_ENVE	Combination	Max	-290.879	1.052	-15.239	441.847	14493.616	292.047
333	0	FACTORED_ENVE	Combination	Min	-353.304	-0.73	-28.316	102.209	8016.979	-580.493

333	18.125	FACTORED_ENVE	Combination	Min	-353.304	-0.764	-27.194	102.209	8328.815	-579.959
333	36.25	FACTORED_ENVE	Combination	Min	-353.303	-0.799	-26.073	102.209	8621.512	-579.531
334	0	FACTORED_ENVE	Combination	Max	-290.872	1.052	-10.686	319.898	14493.616	292.156
334	18.125	FACTORED_ENVE	Combination	Max	-290.871	1.087	-9.707	319.898	14809.806	287.929
334	36.25	FACTORED_ENVE	Combination	Max	-290.871	1.122	-8.728	319.898	15102.776	283.733
334	0	FACTORED_ENVE	Combination	Min	-353.289	-0.799	-17.46	37.089	8621.512	-579.397
334	18.125	FACTORED_ENVE	Combination	Min	-353.289	-0.834	-16.339	37.089	8812.384	-579.087
334	36.25	FACTORED_ENVE	Combination	Min	-353.288	-0.868	-15.217	37.089	8984.037	-578.884
347	0	FACTORED_ENVE	Combination	Max	-290.867	1.122	-4.184	197.943	15102.776	283.802
347	18.125	FACTORED_ENVE	Combination	Max	-290.867	1.156	-3.206	197.943	15216.558	279.637
347	36.25	FACTORED_ENVE	Combination	Max	-290.867	1.191	-2.227	197.943	15307.04	275.505
347	0	FACTORED_ENVE	Combination	Min	-353.281	-0.868	-6.613	-74.847	8984.037	-578.831
347	18.125	FACTORED_ENVE	Combination	Min	-353.281	-0.903	-5.491	-74.847	9053.957	-578.748
347	36.25	FACTORED_ENVE	Combination	Min	-353.281	-0.938	-4.37	-74.847	9104.616	-578.772
348	0	FACTORED_ENVE	Combination	Max	-290.867	1.191	4.357	75.968	15307.04	275.526
348	18.125	FACTORED_ENVE	Combination	Max	-290.867	1.226	5.479	75.968	15218.117	271.427
348	36.25	FACTORED_ENVE	Combination	Max	-290.867	1.26	6.601	75.968	15105.894	267.362
348	0	FACTORED_ENVE	Combination	Min	-353.281	-0.938	2.219	-196.842	9104.616	-578.802
348	18.125	FACTORED_ENVE	Combination	Min	-353.281	-0.972	3.198	-196.842	9053.37	-578.945
348	36.25	FACTORED_ENVE	Combination	Min	-353.281	-1.007	4.177	-196.842	8982.863	-579.194
349	0	FACTORED_ENVE	Combination	Max	-290.871	1.26	15.198	-29.322	15105.894	267.338
349	18.125	FACTORED_ENVE	Combination	Max	-290.871	1.295	16.32	-29.322	14814.483	263.307
349	36.25	FACTORED_ENVE	Combination	Max	-290.872	1.329	17.442	-29.322	14499.85	259.31
349	0	FACTORED_ENVE	Combination	Min	-353.288	-1.007	8.72	-318.815	8982.863	-579.312
349	18.125	FACTORED_ENVE	Combination	Min	-353.289	-1.041	9.699	-318.815	8810.624	-579.681
349	36.25	FACTORED_ENVE	Combination	Min	-353.289	-1.076	10.678	-318.815	8619.165	-580.156
350	0	FACTORED_ENVE	Combination	Max	-290.879	1.329	26.055	-94.482	14499.85	259.243
350	18.125	FACTORED_ENVE	Combination	Max	-290.88	1.364	27.177	-94.482	14005.969	255.281
350	36.25	FACTORED_ENVE	Combination	Max	-290.881	1.399	28.299	-94.482	13489.025	251.356
350	0	FACTORED_ENVE	Combination	Min	-353.302	-1.076	15.23	-440.776	8619.165	-580.351
350	18.125	FACTORED_ENVE	Combination	Min	-353.303	-1.111	16.209	-440.776	8325.882	-580.945
350	36.25	FACTORED_ENVE	Combination	Min	-353.304	-1.145	17.187	-440.776	8013.461	-581.645
351	0	FACTORED_ENVE	Combination	Max	-290.892	1.399	36.922	-159.65	13489.025	251.25
351	18.125	FACTORED_ENVE	Combination	Max	-290.893	1.433	38.044	-159.65	12792.853	247.36
351	36.25	FACTORED_ENVE	Combination	Max	-290.894	1.468	39.166	-159.65	12073.854	243.508
351	0	FACTORED_ENVE	Combination	Min	-353.323	-1.145	21.748	-562.726	8013.461	-581.907
351	18.125	FACTORED_ENVE	Combination	Min	-353.324	-1.18	22.727	-562.726	7599.165	-582.724
351	36.25	FACTORED_ENVE	Combination	Min	-353.326	-1.215	23.706	-562.726	7165.853	-583.647
352	0	FACTORED_ENVE	Combination	Max	-290.908	1.468	47.789	-224.828	12073.854	243.362
352	18.125	FACTORED_ENVE	Combination	Max	-290.909	1.503	48.911	-224.828	11175.904	239.547
352	36.25	FACTORED_ENVE	Combination	Max	-290.911	1.537	50.033	-224.828	10255.441	235.77
352	0	FACTORED_ENVE	Combination	Min	-353.35	-1.215	28.266	-684.657	7165.853	-583.983
352	18.125	FACTORED_ENVE	Combination	Min	-353.352	-1.249	29.245	-684.657	6630.808	-585.023
352	36.25	FACTORED_ENVE	Combination	Min	-353.354	-1.284	30.224	-684.657	6076.909	-586.169
353	0	FACTORED_ENVE	Combination	Max	-290.924	1.537	58.69	-290.003	10255.441	235.617
353	18.125	FACTORED_ENVE	Combination	Max	-290.926	1.572	59.812	-290.003	9155.675	231.879
353	36.25	FACTORED_ENVE	Combination	Max	-290.928	1.607	60.933	-290.003	8033.791	228.18
353	0	FACTORED_ENVE	Combination	Min	-353.378	-1.284	34.818	-806.616	6076.91	-586.495
353	18.125	FACTORED_ENVE	Combination	Min	-353.379	-1.319	35.797	-806.616	5420.853	-587.753
353	36.25	FACTORED_ENVE	Combination	Min	-353.381	-1.353	36.776	-806.616	4746.145	-589.117
354	0	FACTORED_ENVE	Combination	Max	-290.944	1.607	69.582	-355.189	8033.791	227.992
354	18.125	FACTORED_ENVE	Combination	Max	-290.946	1.641	70.704	-355.189	6733.213	224.333
354	36.25	FACTORED_ENVE	Combination	Max	-290.948	1.676	71.826	-355.189	5410.989	220.714
354	0	FACTORED_ENVE	Combination	Min	-353.411	-1.353	41.361	-928.55	4746.145	-589.514
354	18.125	FACTORED_ENVE	Combination	Min	-353.413	-1.388	42.34	-928.55	3969.655	-590.991
354	36.25	FACTORED_ENVE	Combination	Min	-353.415	-1.422	43.319	-928.55	3174.757	-592.572
355	0	FACTORED_ENVE	Combination	Max	-290.962	1.676	80.509	-420.363	5410.989	220.544
355	18.125	FACTORED_ENVE	Combination	Max	-290.964	1.711	81.631	-420.363	3909.878	216.966
355	36.25	FACTORED_ENVE	Combination	Max	-290.966	1.745	82.752	-420.363	2387.672	218.409
355	0	FACTORED_ENVE	Combination	Min	-353.44	-1.422	47.939	-1050.529	3174.757	-592.912
355	18.125	FACTORED_ENVE	Combination	Min	-353.443	-1.457	48.918	-1050.529	2277.733	-594.602
355	36.25	FACTORED_ENVE	Combination	Min	-353.445	-1.492	49.897	-1050.529	1362.585	-617.499
356	0	FACTORED_ENVE	Combination	Max	-290.978	1.745	91.453	-485.529	2387.672	218.117
356	18.125	FACTORED_ENVE	Combination	Max	-290.98	1.78	92.574	-485.529	687.805	249.088
356	36.25	FACTORED_ENVE	Combination	Max	-290.982	1.814	93.696	-485.529	-627.882	280.65
356	0	FACTORED_ENVE	Combination	Min	-353.467	-1.492	54.534	-1172.535	1362.585	-617.806

356	18.125	FACTORED_ENVE	Combination	Min	-353.47	-1.526	55.512	-1172.535	345.31	-652.681
356	36.25	FACTORED_ENVE	Combination	Min	-353.472	-1.561	56.491	-1172.535	-1098.29	-688.087
357	0	FACTORED_ENVE	Combination	Max	-290.992	1.814	102.413	-550.685	-627.882	280.401
357	18.125	FACTORED_ENVE	Combination	Max	-290.994	1.849	103.535	-550.685	-1763.934	312.549
357	36.25	FACTORED_ENVE	Combination	Max	-290.996	1.884	104.657	-550.685	-2917.426	345.278
357	0	FACTORED_ENVE	Combination	Min	-353.49	-1.561	61.145	-1294.575	-1098.29	-688.336
357	18.125	FACTORED_ENVE	Combination	Min	-353.492	-1.596	62.124	-1294.575	-2995.923	-724.267
357	36.25	FACTORED_ENVE	Combination	Min	-353.494	-1.63	63.103	-1294.575	-4913.376	-760.717
358	0	FACTORED_ENVE	Combination	Max	-290.996	1.884	113.417	-615.805	-2917.426	345.186
358	18.125	FACTORED_ENVE	Combination	Max	-290.998	1.918	114.538	-615.805	-4173.395	378.492
358	36.25	FACTORED_ENVE	Combination	Max	-291	1.953	115.66	-615.805	-5446.394	412.369
358	0	FACTORED_ENVE	Combination	Min	-353.496	-1.63	67.8	-1416.719	-4913.376	-760.771
358	18.125	FACTORED_ENVE	Combination	Min	-353.499	-1.665	68.778	-1416.719	-7009.454	-797.729
358	36.25	FACTORED_ENVE	Combination	Min	-353.501	-1.7	69.757	-1416.719	-9126.788	-835.195
434	0	FACTORED_ENVE	Combination	Max	-290.996	1.953	124.429	-680.911	-5446.394	412.346
434	18.125	FACTORED_ENVE	Combination	Max	-290.998	1.988	125.55	-680.911	-6821.592	446.789
434	36.25	FACTORED_ENVE	Combination	Max	-291	2.022	126.672	-680.911	-8213.368	481.793
434	0	FACTORED_ENVE	Combination	Min	-353.497	-1.7	74.462	-1538.898	-9126.788	-835.172
434	18.125	FACTORED_ENVE	Combination	Min	-353.499	-1.734	75.441	-1538.898	-11421.963	-873.134
434	36.25	FACTORED_ENVE	Combination	Min	-353.501	-1.769	76.42	-1538.898	-13735.369	-911.593
525	0	FACTORED_ENVE	Combination	Max	-290.981	2.022	135.492	-745.956	-8213.368	482.041
525	18.125	FACTORED_ENVE	Combination	Max	-290.982	2.057	136.614	-745.956	-9707.797	517.6
525	36.25	FACTORED_ENVE	Combination	Max	-290.984	2.092	137.735	-745.956	-11218.312	553.71
525	0	FACTORED_ENVE	Combination	Min	-353.471	-1.769	81.176	-1661.239	-13735.369	-911.255
525	18.125	FACTORED_ENVE	Combination	Min	-353.473	-1.803	82.155	-1661.239	-16226.763	-950.191
525	36.25	FACTORED_ENVE	Combination	Min	-353.474	-1.838	83.134	-1661.239	-18735.505	-989.613
526	0	FACTORED_ENVE	Combination	Max	-290.954	2.092	146.581	-810.959	-11218.312	554.164
526	18.125	FACTORED_ENVE	Combination	Max	-290.955	2.126	147.702	-810.959	-12831.429	590.818
526	36.25	FACTORED_ENVE	Combination	Max	-290.956	2.161	148.824	-810.959	-14460.099	628.012
526	0	FACTORED_ENVE	Combination	Min	-353.426	-1.838	87.916	-1783.689	-18735.505	-989.047
526	18.125	FACTORED_ENVE	Combination	Min	-353.427	-1.873	88.894	-1783.689	-21421.814	-1028.931
526	36.25	FACTORED_ENVE	Combination	Min	-353.428	-1.907	89.873	-1783.689	-24124.515	-1069.288
527	0	FACTORED_ENVE	Combination	Max	-291.566	2.161	155.597	-878.722	-14460.1	617.318
527	13	FACTORED_ENVE	Combination	Max	-291.572	2.186	156.402	-878.722	-15672.27	644.338
527	0	FACTORED_ENVE	Combination	Min	-354.448	-1.907	92.44	-1898.772	-24124.515	-1081.714
527	13	FACTORED_ENVE	Combination	Min	-354.454	-1.932	93.142	-1898.772	-26158.274	-1111.136
543	0	FACTORED_ENVE	Combination	Max	-293.379	1.643	-88.312	1844.558	-15672.27	649.791
543	23.25	FACTORED_ENVE	Combination	Max	-293.374	1.599	-87.056	1844.558	-13634.76	615.644
543	0	FACTORED_ENVE	Combination	Min	-353.533	-4.24	-147.231	865.628	-26158.274	-1102.806
543	23.25	FACTORED_ENVE	Combination	Min	-353.528	-4.195	-145.792	865.628	-22756.226	-1006.049
544	0	FACTORED_ENVE	Combination	Max	-293.074	1.599	-83.459	1720.41	-13634.76	621.957
544	18.125	FACTORED_ENVE	Combination	Max	-293.073	1.564	-82.48	1720.41	-12129.328	595.946
544	36.25	FACTORED_ENVE	Combination	Max	-293.073	1.529	-81.501	1720.41	-10639.57	570.473
544	0	FACTORED_ENVE	Combination	Min	-353.028	-4.195	-138.137	802.503	-22756.225	-1000.551
544	18.125	FACTORED_ENVE	Combination	Min	-353.028	-4.161	-137.015	802.503	-20259.905	-925.801
544	36.25	FACTORED_ENVE	Combination	Min	-353.028	-4.126	-135.893	802.503	-17780.168	-851.539
545	0	FACTORED_ENVE	Combination	Max	-293.104	1.529	-76.719	1598.606	-10639.57	569.842
545	18.125	FACTORED_ENVE	Combination	Max	-293.103	1.495	-75.74	1598.606	-9252.515	544.912
545	36.25	FACTORED_ENVE	Combination	Max	-293.102	1.46	-74.762	1598.606	-7881.623	520.64
545	0	FACTORED_ENVE	Combination	Min	-353.078	-4.126	-127.046	737.137	-17780.168	-852.072
545	18.125	FACTORED_ENVE	Combination	Min	-353.077	-4.091	-125.924	737.137	-15478.173	-778.293
545	36.25	FACTORED_ENVE	Combination	Min	-353.076	-4.057	-124.802	737.137	-13193.646	-705.025
546	0	FACTORED_ENVE	Combination	Max	-293.119	1.46	-70.023	1476.709	-7881.623	520.313
546	18.125	FACTORED_ENVE	Combination	Max	-293.118	1.425	-69.044	1476.709	-6613.132	496.946
546	36.25	FACTORED_ENVE	Combination	Max	-293.117	1.391	-68.065	1476.709	-5361.256	474.128
546	0	FACTORED_ENVE	Combination	Min	-353.103	-4.057	-115.999	671.864	-13193.646	-705.286
546	18.125	FACTORED_ENVE	Combination	Min	-353.102	-4.022	-114.877	671.864	-11086.873	-632.528
546	36.25	FACTORED_ENVE	Combination	Min	-353.101	-3.987	-113.756	671.864	-8998.38	-560.302
547	0	FACTORED_ENVE	Combination	Max	-293.125	1.391	-63.351	1354.76	-5361.256	473.981
547	18.125	FACTORED_ENVE	Combination	Max	-293.124	1.356	-62.372	1354.76	-4211.746	451.717
547	36.25	FACTORED_ENVE	Combination	Max	-293.123	1.322	-61.394	1354.76	-3079.26	430.008
547	0	FACTORED_ENVE	Combination	Min	-353.113	-3.987	-104.978	606.643	-8998.38	-560.403
547	18.125	FACTORED_ENVE	Combination	Min	-353.111	-3.953	-103.857	606.643	-7087.916	-488.712
547	36.25	FACTORED_ENVE	Combination	Min	-353.11	-3.918	-102.735	606.643	-5196.472	-417.575
548	0	FACTORED_ENVE	Combination	Max	-293.125	1.322	-56.697	1232.779	-3079.26	429.976
548	18.125	FACTORED_ENVE	Combination	Max	-293.124	1.287	-55.718	1232.779	-2049.223	408.828

548	36.25	FACTORED_ENVE	Combination	Max	-293.123	1.252	-54.739	1232.779	-1036.577	388.242
548	0	FACTORED_ENVE	Combination	Min	-353.113	-3.918	-93.975	541.452	-5196.472	-417.575
548	18.125	FACTORED_ENVE	Combination	Min	-353.112	-3.883	-92.853	541.452	-3483.426	-346.997
548	36.25	FACTORED_ENVE	Combination	Min	-353.11	-3.849	-91.731	541.452	-1790.067	-276.995
549	0	FACTORED_ENVE	Combination	Max	-293.118	1.252	-50.077	1110.75	-1036.577	388.366
549	18.125	FACTORED_ENVE	Combination	Max	-293.117	1.218	-49.098	1110.75	-126.111	368.347
549	36.25	FACTORED_ENVE	Combination	Max	-293.116	1.183	-48.119	1110.75	1241.538	348.898
549	0	FACTORED_ENVE	Combination	Min	-353.101	-3.849	-83.006	476.291	-1790.067	-276.864
549	18.125	FACTORED_ENVE	Combination	Min	-353.1	-3.814	-81.884	476.291	-275.068	-207.447
549	36.25	FACTORED_ENVE	Combination	Min	-353.099	-3.78	-80.762	476.291	751.333	-138.626
550	0	FACTORED_ENVE	Combination	Max	-293.107	1.183	-43.482	988.691	1241.538	349.11
550	18.125	FACTORED_ENVE	Combination	Max	-293.106	1.148	-42.503	988.691	2552.081	330.233
550	36.25	FACTORED_ENVE	Combination	Max	-293.105	1.114	-41.524	988.691	3842.099	311.931
550	0	FACTORED_ENVE	Combination	Min	-353.083	-3.78	-72.062	411.14	751.333	-138.427
550	18.125	FACTORED_ENVE	Combination	Min	-353.082	-3.745	-70.94	411.14	1546.489	-70.216
550	36.25	FACTORED_ENVE	Combination	Min	-353.081	-3.71	-69.818	411.14	2322.803	-2.622
551	0	FACTORED_ENVE	Combination	Max	-293.096	1.114	-36.896	866.625	3842.099	312.154
551	18.125	FACTORED_ENVE	Combination	Max	-293.095	1.079	-35.917	866.625	4955.737	294.429
551	36.25	FACTORED_ENVE	Combination	Max	-293.094	1.044	-34.938	866.625	6048.227	277.286
551	0	FACTORED_ENVE	Combination	Min	-353.065	-3.71	-61.127	345.984	2322.803	-2.418
551	18.125	FACTORED_ENVE	Combination	Min	-353.063	-3.676	-60.005	345.984	2996.981	39.277
551	36.25	FACTORED_ENVE	Combination	Min	-353.062	-3.641	-58.883	345.984	3651.114	59.124
552	0	FACTORED_ENVE	Combination	Max	-293.084	1.044	-30.327	744.548	6048.227	277.53
552	18.125	FACTORED_ENVE	Combination	Max	-293.083	1.01	-29.348	744.548	6962.207	260.969
552	36.25	FACTORED_ENVE	Combination	Max	-293.082	0.975	-28.369	744.548	7856.56	301.28
552	0	FACTORED_ENVE	Combination	Min	-353.045	-3.641	-50.209	280.817	3651.114	59.251
552	18.125	FACTORED_ENVE	Combination	Min	-353.044	-3.606	-49.087	280.817	4202.413	53.544
552	36.25	FACTORED_ENVE	Combination	Min	-353.043	-3.572	-47.966	280.817	4734.536	47.935
553	0	FACTORED_ENVE	Combination	Max	-293.073	0.975	-23.766	622.468	7856.56	301.482
553	18.125	FACTORED_ENVE	Combination	Max	-293.073	0.941	-22.787	622.468	8571.985	347.053
553	36.25	FACTORED_ENVE	Combination	Max	-293.072	0.906	-21.809	622.468	9265.907	392.326
553	0	FACTORED_ENVE	Combination	Min	-353.027	-3.572	-39.3	215.634	4734.536	48.053
553	18.125	FACTORED_ENVE	Combination	Min	-353.026	-3.537	-38.178	215.634	5164.574	42.544
553	36.25	FACTORED_ENVE	Combination	Min	-353.026	-3.502	-37.056	215.634	5575.908	37.137
554	0	FACTORED_ENVE	Combination	Max	-293.063	0.906	-17.231	500.377	9265.907	392.515
554	18.125	FACTORED_ENVE	Combination	Max	-293.063	0.871	-16.252	500.377	9781.385	453.083
554	36.25	FACTORED_ENVE	Combination	Max	-293.062	0.837	-15.274	500.377	10274.722	515.349
554	0	FACTORED_ENVE	Combination	Min	-353.011	-3.502	-28.417	150.418	5575.908	37.252
554	18.125	FACTORED_ENVE	Combination	Min	-353.01	-3.468	-27.295	150.418	5885.254	31.945
554	36.25	FACTORED_ENVE	Combination	Min	-353.01	-3.433	-26.173	150.418	6175.856	26.741
640	0	FACTORED_ENVE	Combination	Max	-293.057	0.837	-10.696	378.292	10274.722	515.458
640	18.125	FACTORED_ENVE	Combination	Max	-293.056	0.802	-9.717	378.292	10589.141	577.007
640	36.25	FACTORED_ENVE	Combination	Max	-293.056	0.767	-8.739	378.292	10881.269	637.841
640	0	FACTORED_ENVE	Combination	Min	-353	-3.433	-17.533	85.182	6175.856	26.824
640	18.125	FACTORED_ENVE	Combination	Min	-353	-3.399	-16.411	85.182	6364.592	21.722
640	36.25	FACTORED_ENVE	Combination	Min	-352.999	-3.364	-15.289	85.182	6534.502	16.723
753	0	FACTORED_ENVE	Combination	Max	-293.053	0.767	-4.161	256.214	10881.269	637.889
753	18.125	FACTORED_ENVE	Combination	Max	-293.053	0.733	-3.182	256.214	10994.368	697.987
753	36.25	FACTORED_ENVE	Combination	Max	-293.053	0.707	-2.203	256.214	11085.101	757.352
753	0	FACTORED_ENVE	Combination	Min	-352.995	-3.364	-6.655	18.784	6534.502	16.774
753	18.125	FACTORED_ENVE	Combination	Min	-352.995	-3.329	-5.533	18.784	6602.484	11.879
753	36.25	FACTORED_ENVE	Combination	Min	-352.994	-3.295	-4.411	18.784	6651.6	7.089
754	0	FACTORED_ENVE	Combination	Max	-293.053	0.707	4.488	134.141	11085.101	757.34
754	18.125	FACTORED_ENVE	Combination	Max	-293.053	0.697	5.61	134.141	10996.767	815.951
754	36.25	FACTORED_ENVE	Combination	Max	-293.053	0.687	6.732	134.141	10886.067	873.812
754	0	FACTORED_ENVE	Combination	Min	-352.995	-3.295	2.113	-103.444	6651.6	7.108
754	18.125	FACTORED_ENVE	Combination	Min	-352.995	-3.26	3.092	-103.444	6598.768	2.423
754	36.25	FACTORED_ENVE	Combination	Min	-352.995	-3.225	4.071	-103.444	6527.071	-3.004
755	0	FACTORED_ENVE	Combination	Max	-293.056	0.687	15.363	12.071	10886.067	873.733
755	18.125	FACTORED_ENVE	Combination	Max	-293.057	0.677	16.485	12.071	10596.504	930.82
755	36.25	FACTORED_ENVE	Combination	Max	-293.057	0.668	17.606	12.071	10284.649	987.14
755	0	FACTORED_ENVE	Combination	Min	-353	-3.225	8.639	-225.725	6527.071	-3.011
755	18.125	FACTORED_ENVE	Combination	Min	-353.001	-3.191	9.618	-225.725	6353.601	-15.116
755	36.25	FACTORED_ENVE	Combination	Min	-353.001	-3.156	10.597	-225.725	6161.308	-27.04
756	0	FACTORED_ENVE	Combination	Max	-293.062	0.668	26.255	-58.264	10284.649	987.012
756	18.125	FACTORED_ENVE	Combination	Max	-293.063	0.658	27.376	-58.264	9793.707	1042.544

756	36.25	FACTORED_ENVE	Combination Max	-293.064	0.648	28.498	-58.264	9280.622	1097.292
756	0	FACTORED_ENVE	Combination Min	-353.011	-3.156	15.183	-347.983	6161.308	-27.08
756	18.125	FACTORED_ENVE	Combination Min	-353.011	-3.121	16.162	-347.983	5866.996	-38.823
756	36.25	FACTORED_ENVE	Combination Min	-353.012	-3.087	17.141	-347.983	5553.943	-50.382
757	0	FACTORED_ENVE	Combination Max	-293.071	0.648	37.146	-123.409	9280.622	1097.111
757	18.125	FACTORED_ENVE	Combination Max	-293.072	0.638	38.268	-123.409	8588.669	1151.054
757	36.25	FACTORED_ENVE	Combination Max	-293.073	0.628	39.39	-123.409	7875.44	1204.196
757	0	FACTORED_ENVE	Combination Min	-353.026	-3.087	21.727	-470.265	5553.943	-50.451
757	18.125	FACTORED_ENVE	Combination Min	-353.027	-3.052	22.705	-470.265	5138.975	-61.826
757	36.25	FACTORED_ENVE	Combination Min	-353.028	-3.018	23.684	-470.265	4705.39	-73.014
758	0	FACTORED_ENVE	Combination Max	-293.083	0.628	48.038	-188.549	7875.44	1203.961
758	18.125	FACTORED_ENVE	Combination Max	-293.084	0.618	49.16	-188.549	6983.593	1256.284
758	36.25	FACTORED_ENVE	Combination Max	-293.085	0.609	50.281	-188.549	6070.215	1307.789
758	0	FACTORED_ENVE	Combination Min	-353.046	-3.018	28.27	-592.571	4705.39	-73.111
758	18.125	FACTORED_ENVE	Combination Min	-353.047	-2.983	29.249	-592.571	4170.035	-84.111
758	36.25	FACTORED_ENVE	Combination Min	-353.048	-2.948	30.228	-592.571	3616.228	-94.921
759	0	FACTORED_ENVE	Combination Max	-293.094	0.609	58.964	-253.694	6070.215	1307.579
759	18.125	FACTORED_ENVE	Combination Max	-293.096	0.599	60.086	-253.694	4977.906	1358.254
759	36.25	FACTORED_ENVE	Combination Max	-293.097	0.589	61.208	-253.694	3864.411	1408.096
759	0	FACTORED_ENVE	Combination Min	-353.064	-2.948	34.848	-714.755	3616.228	-95.019
759	18.125	FACTORED_ENVE	Combination Min	-353.065	-2.914	35.826	-714.755	2960.218	-105.638
759	36.25	FACTORED_ENVE	Combination Min	-353.067	-2.879	36.805	-714.755	2285.963	-116.065
760	0	FACTORED_ENVE	Combination Max	-293.107	0.589	69.89	-318.837	3864.411	1407.859
760	18.125	FACTORED_ENVE	Combination Max	-293.108	0.579	71.012	-318.837	2572.363	1456.856
760	36.25	FACTORED_ENVE	Combination Max	-293.109	0.569	72.134	-318.837	1259.542	1505.005
760	0	FACTORED_ENVE	Combination Min	-353.085	-2.879	41.425	-836.951	2285.963	-116.177
760	18.125	FACTORED_ENVE	Combination Min	-353.086	-2.844	42.404	-836.951	1509.732	-126.41
760	36.25	FACTORED_ENVE	Combination Min	-353.088	-2.81	43.383	-836.951	715.504	-136.446
761	0	FACTORED_ENVE	Combination Max	-293.118	0.569	80.833	-383.986	1259.542	1504.794
761	18.125	FACTORED_ENVE	Combination Max	-293.119	0.56	81.955	-383.986	-55.036	1552.086
761	36.25	FACTORED_ENVE	Combination Max	-293.121	0.55	83.077	-383.986	-964.332	1598.517
761	0	FACTORED_ENVE	Combination Min	-353.103	-2.81	48.02	-959.074	715.504	-136.552
761	18.125	FACTORED_ENVE	Combination Min	-353.105	-2.775	48.999	-959.074	-358.167	-146.392
761	36.25	FACTORED_ENVE	Combination Min	-353.106	-2.741	49.978	-959.074	-1875.632	-156.033
762	0	FACTORED_ENVE	Combination Max	-293.124	0.55	91.811	-449.15	-964.332	1598.411
762	18.125	FACTORED_ENVE	Combination Max	-293.125	0.54	92.933	-449.15	-1975.976	1643.975
762	36.25	FACTORED_ENVE	Combination Max	-293.126	0.53	94.055	-449.15	-3005.024	1688.663
762	0	FACTORED_ENVE	Combination Min	-353.113	-2.741	54.649	-1081.025	-1875.632	-156.096
762	18.125	FACTORED_ENVE	Combination Min	-353.115	-2.706	55.627	-1081.025	-3571.617	-165.538
762	36.25	FACTORED_ENVE	Combination Min	-353.116	-2.671	56.606	-1081.025	-5287.238	-174.778
763	0	FACTORED_ENVE	Combination Max	-293.126	0.53	102.807	-514.326	-3005.024	1688.638
763	18.125	FACTORED_ENVE	Combination Max	-293.127	0.52	103.928	-514.326	-4136.378	1732.448
763	36.25	FACTORED_ENVE	Combination Max	-293.128	0.51	105.05	-514.326	-5284.769	1775.37
763	0	FACTORED_ENVE	Combination Min	-353.116	-2.671	61.294	-1202.879	-5287.238	-174.806
763	18.125	FACTORED_ENVE	Combination Min	-353.117	-2.637	62.273	-1202.879	-7181.065	-183.844
763	36.25	FACTORED_ENVE	Combination Min	-353.119	-2.602	63.252	-1202.879	-9093.823	-192.679
764	0	FACTORED_ENVE	Combination Max	-293.122	0.51	113.819	-579.513	-5284.769	1775.444
764	18.125	FACTORED_ENVE	Combination Max	-293.123	0.501	114.941	-579.513	-6535.387	1817.477
764	36.25	FACTORED_ENVE	Combination Max	-293.124	0.491	116.062	-579.513	-7802.631	1858.609
764	0	FACTORED_ENVE	Combination Min	-353.11	-2.602	67.957	-1324.625	-9093.823	-192.66
764	18.125	FACTORED_ENVE	Combination Min	-353.111	-2.567	68.936	-1324.625	-11184.398	-201.29
764	36.25	FACTORED_ENVE	Combination Min	-353.113	-2.533	69.915	-1324.625	-13293.123	-209.714
765	0	FACTORED_ENVE	Combination Max	-293.104	0.491	124.883	-644.739	-7802.631	1858.963
765	18.125	FACTORED_ENVE	Combination Max	-293.105	0.481	126.005	-644.739	-9172.599	1899.2
765	36.25	FACTORED_ENVE	Combination Max	-293.106	0.471	127.127	-644.739	-10558.745	1938.524
765	0	FACTORED_ENVE	Combination Min	-353.08	-2.533	74.671	-1446.05	-13293.123	-209.567
765	18.125	FACTORED_ENVE	Combination Min	-353.081	-2.498	75.65	-1446.05	-15579.902	-217.785
765	36.25	FACTORED_ENVE	Combination Min	-353.082	-2.463	76.629	-1446.05	-17883.976	-225.793
766	0	FACTORED_ENVE	Combination Max	-293.08	0.471	135.956	-709.976	-10558.745	1939.002
766	18.125	FACTORED_ENVE	Combination Max	-293.08	0.461	137.078	-709.976	-12047.298	1977.42
766	36.25	FACTORED_ENVE	Combination Max	-293.08	0.452	138.2	-709.976	-13551.539	2014.913
766	0	FACTORED_ENVE	Combination Min	-353.039	-2.463	81.393	-1567.395	-17883.976	-225.584
766	18.125	FACTORED_ENVE	Combination Min	-353.039	-2.429	82.372	-1567.395	-20365.384	-233.384
766	36.25	FACTORED_ENVE	Combination Min	-353.04	-2.394	83.351	-1567.395	-22863.155	-240.974
767	0	FACTORED_ENVE	Combination Max	-293.036	0.452	147.081	-775.258	-13551.539	2015.757
767	18.125	FACTORED_ENVE	Combination Max	-293.036	0.442	148.203	-775.258	-15158.604	2052.34

767	36.25	FACTORED_ENVE	Combination	Max	-293.035	0.432	149.325	-775.258	-16780.827	2087.986
767	0	FACTORED_ENVE	Combination	Min	-352.966	-2.394	88.167	-1688.379	-22863.154	-240.589
767	18.125	FACTORED_ENVE	Combination	Min	-352.965	-2.36	89.146	-1688.379	-25538.348	-247.968
767	36.25	FACTORED_ENVE	Combination	Min	-352.965	-2.325	90.125	-1688.379	-28228.896	-255.135
768	0	FACTORED_ENVE	Combination	Max	-292.977	0.432	158.25	-840.569	-16780.827	2089.108
768	18.125	FACTORED_ENVE	Combination	Max	-292.976	0.422	159.372	-840.569	-18505.788	2123.836
768	36.25	FACTORED_ENVE	Combination	Max	-292.975	0.412	160.494	-840.569	-20245.336	2157.617
768	0	FACTORED_ENVE	Combination	Min	-352.867	-2.325	94.966	-1809.151	-28228.896	-254.612
768	18.125	FACTORED_ENVE	Combination	Min	-352.867	-2.29	95.945	-1809.151	-31096.353	-261.568
768	36.25	FACTORED_ENVE	Combination	Min	-352.866	-2.256	96.924	-1809.151	-33978.084	-268.309
769	0	FACTORED_ENVE	Combination	Max	-296.543	0.412	157.878	-895.137	-20245.337	2084.503
769	2.752	FACTORED_ENVE	Combination	Max	-296.548	0.411	158.048	-895.137	-20491.745	2089.32
769	0	FACTORED_ENVE	Combination	Min	-358.9	-2.256	89.64	-2009.994	-33978.084	-301.709
769	2.752	FACTORED_ENVE	Combination	Min	-358.906	-2.25	89.788	-2009.994	-34404.353	-302.693
770	0	FACTORED_ENVE	Combination	Max	-295.213	1.161	-110.432	1595.975	-20491.747	2156.478
770	16.75	FACTORED_ENVE	Combination	Max	-295.232	1.129	-109.527	1595.975	-18634.974	2145.141
770	33.5	FACTORED_ENVE	Combination	Max	-295.251	1.097	-108.623	1595.975	-16790.59	2132.988
770	0	FACTORED_ENVE	Combination	Min	-353.217	0.113	-184.149	435.239	-34404.355	-274.199
770	16.75	FACTORED_ENVE	Combination	Min	-353.212	0.107	-183.112	435.239	-31303.833	-275.296
770	33.5	FACTORED_ENVE	Combination	Min	-353.207	0.1	-182.075	435.239	-28215.46	-276.208
771	0	FACTORED_ENVE	Combination	Max	-294.781	1.097	-104.744	1473.816	-16790.589	2135.57
771	18.125	FACTORED_ENVE	Combination	Max	-294.804	1.063	-103.765	1473.816	-14879.505	2121.418
771	36.25	FACTORED_ENVE	Combination	Max	-294.828	1.028	-102.786	1473.816	-12983.581	2106.314
771	0	FACTORED_ENVE	Combination	Min	-352.736	0.1	-174.106	366.436	-28215.46	-273.907
771	18.125	FACTORED_ENVE	Combination	Min	-352.734	0.09	-172.984	366.436	-25030.599	-274.679
771	36.25	FACTORED_ENVE	Combination	Min	-352.731	0.08	-171.862	366.436	-21865.73	-275.234
772	0	FACTORED_ENVE	Combination	Max	-294.884	1.028	-97.985	1351.783	-12983.58	2106.287
772	18.125	FACTORED_ENVE	Combination	Max	-294.907	0.993	-97.007	1351.783	-11190.266	2090.248
772	36.25	FACTORED_ENVE	Combination	Max	-294.93	0.959	-96.028	1351.783	-9412.751	2073.261
772	0	FACTORED_ENVE	Combination	Min	-352.787	0.08	-163.003	301.958	-21865.73	-275.425
772	18.125	FACTORED_ENVE	Combination	Min	-352.783	0.07	-161.882	301.958	-18878.254	-275.764
772	36.25	FACTORED_ENVE	Combination	Min	-352.78	0.06	-160.76	301.958	-15907.955	-275.887
773	0	FACTORED_ENVE	Combination	Max	-294.96	0.959	-91.261	1229.736	-9412.751	2073.41
773	18.125	FACTORED_ENVE	Combination	Max	-294.982	0.924	-90.282	1229.736	-7737.841	2055.49
773	36.25	FACTORED_ENVE	Combination	Max	-295.005	0.889	-89.304	1229.736	-6079.33	2036.628
773	0	FACTORED_ENVE	Combination	Min	-352.81	0.06	-151.934	237.307	-15907.954	-275.942
773	18.125	FACTORED_ENVE	Combination	Min	-352.806	0.051	-150.812	237.307	-13115.445	-275.848
773	36.25	FACTORED_ENVE	Combination	Min	-352.802	0.041	-149.691	237.307	-10341.075	-275.538
774	0	FACTORED_ENVE	Combination	Max	-295.008	0.889	-84.58	1107.685	-6079.33	2036.925
774	18.125	FACTORED_ENVE	Combination	Max	-295.031	0.855	-83.602	1107.685	-4523.221	2017.131
774	36.25	FACTORED_ENVE	Combination	Max	-295.053	0.865	-82.623	1107.685	-2984.068	1996.401
774	0	FACTORED_ENVE	Combination	Min	-352.805	0.041	-140.907	172.453	-10341.075	-275.462
774	18.125	FACTORED_ENVE	Combination	Min	-352.801	0.031	-139.785	172.453	-7744.677	-274.935
774	36.25	FACTORED_ENVE	Combination	Min	-352.798	0.021	-138.663	172.453	-5167.317	-274.191
775	0	FACTORED_ENVE	Combination	Max	-295.041	0.865	-77.926	985.635	-2984.068	1996.778
775	18.125	FACTORED_ENVE	Combination	Max	-295.063	0.879	-76.947	985.635	-1547.386	1975.119
775	36.25	FACTORED_ENVE	Combination	Max	-295.086	0.893	-75.968	985.635	-128.177	1952.53
775	0	FACTORED_ENVE	Combination	Min	-352.785	0.021	-129.904	107.481	-5167.316	-274.041
775	18.125	FACTORED_ENVE	Combination	Min	-352.781	0.011	-128.782	107.481	-2768.346	-273.081
775	36.25	FACTORED_ENVE	Combination	Min	-352.777	0.001437	-127.661	107.481	-389.246	-271.904
776	0	FACTORED_ENVE	Combination	Max	-295.054	0.893	-71.314	863.596	-128.177	1952.968
776	18.125	FACTORED_ENVE	Combination	Max	-295.077	0.907	-70.335	863.596	2002.6	1929.453
776	36.25	FACTORED_ENVE	Combination	Max	-295.099	0.92	-69.356	863.596	4184.328	1905.014
776	0	FACTORED_ENVE	Combination	Min	-352.746	0.001449	-118.943	42.326	-389.245	-271.67
776	18.125	FACTORED_ENVE	Combination	Min	-352.742	-0.00837	-117.822	42.326	1028.901	-270.277
776	36.25	FACTORED_ENVE	Combination	Min	-352.738	-0.018	-116.7	42.326	2330.655	-268.668
777	0	FACTORED_ENVE	Combination	Max	-295.056	0.92	-64.737	741.571	4184.329	1905.46
777	18.125	FACTORED_ENVE	Combination	Max	-295.078	0.934	-63.758	741.571	6187.412	1880.099
777	36.25	FACTORED_ENVE	Combination	Max	-295.101	0.948	-62.779	741.571	8169	1853.822
777	0	FACTORED_ENVE	Combination	Min	-352.695	-0.018	-108.016	-22.968	2330.656	-268.389
777	18.125	FACTORED_ENVE	Combination	Min	-352.691	-0.028	-106.894	-22.968	3530.422	-266.564
777	36.25	FACTORED_ENVE	Combination	Min	-352.687	-0.038	-105.772	-22.968	4711.853	-264.523
778	0	FACTORED_ENVE	Combination	Max	-295.055	0.948	-58.177	619.556	8169	1854.238
778	18.125	FACTORED_ENVE	Combination	Max	-295.077	0.962	-57.198	619.556	9971.531	1827.045
778	36.25	FACTORED_ENVE	Combination	Max	-295.1	0.975	-56.219	619.556	11751.857	1798.944
778	0	FACTORED_ENVE	Combination	Min	-352.641	-0.038	-97.105	-88.322	4711.853	-264.239

778	18.125	FACTORED_ENVE	Combination	Min	-352.637	-0.048	-95.983	-88.322	5791.199	-261.983
778	36.25	FACTORED_ENVE	Combination	Min	-352.633	-0.057	-94.861	-88.322	6851.829	-259.513
779	0	FACTORED_ENVE	Combination	Max	-295.047	0.975	-51.652	497.563	11751.857	1799.3
779	18.125	FACTORED_ENVE	Combination	Max	-295.07	0.989	-50.673	497.563	13353.129	1770.287
779	36.25	FACTORED_ENVE	Combination	Max	-295.093	1.003	-49.694	497.563	14931.56	1740.374
779	0	FACTORED_ENVE	Combination	Min	-352.581	-0.057	-86.227	-171.191	6851.829	-259.219
779	18.125	FACTORED_ENVE	Combination	Min	-352.577	-0.067	-85.106	-171.191	7810.622	-256.534
779	36.25	FACTORED_ENVE	Combination	Min	-352.574	-0.077	-83.984	-171.191	8750.359	-253.635
780	0	FACTORED_ENVE	Combination	Max	-295.04	1.003	-45.153	375.588	14931.561	1740.639
780	18.125	FACTORED_ENVE	Combination	Max	-295.063	1.017	-44.174	375.588	16330.85	1709.82
780	36.25	FACTORED_ENVE	Combination	Max	-295.087	1.03	-43.195	375.588	17706.74	1678.112
780	0	FACTORED_ENVE	Combination	Min	-352.52	-0.077	-75.375	-293.855	8750.359	-253.359
780	18.125	FACTORED_ENVE	Combination	Min	-352.517	-0.087	-74.253	-293.855	9588.396	-250.246
780	36.25	FACTORED_ENVE	Combination	Min	-352.514	-0.097	-73.131	-293.855	10407.079	-246.921
781	0	FACTORED_ENVE	Combination	Max	-295.038	1.03	-38.662	253.624	17706.741	1678.277
781	18.125	FACTORED_ENVE	Combination	Max	-295.062	1.044	-37.683	253.624	18903.137	1645.671
781	36.25	FACTORED_ENVE	Combination	Max	-295.086	1.058	-36.704	253.624	20075.652	1612.184
781	0	FACTORED_ENVE	Combination	Min	-352.466	-0.097	-64.531	-416.543	10407.079	-246.687
781	18.125	FACTORED_ENVE	Combination	Min	-352.464	-0.107	-63.409	-416.543	11123.935	-243.149
781	36.25	FACTORED_ENVE	Combination	Min	-352.461	-0.116	-62.287	-416.543	11821.178	-239.399
782	0	FACTORED_ENVE	Combination	Max	-295.041	1.058	-32.197	131.681	20075.653	1612.211
782	18.125	FACTORED_ENVE	Combination	Max	-295.065	1.093	-31.218	131.681	21068.74	1577.833
782	36.25	FACTORED_ENVE	Combination	Max	-295.09	1.127	-30.239	131.681	22037.539	1542.586
782	0	FACTORED_ENVE	Combination	Min	-352.416	-0.116	-53.711	-539.339	11821.179	-239.209
782	18.125	FACTORED_ENVE	Combination	Min	-352.414	-0.126	-52.59	-539.339	12416.814	-235.247
782	36.25	FACTORED_ENVE	Combination	Min	-352.412	-0.136	-51.468	-539.339	12992.62	-231.075
783	0	FACTORED_ENVE	Combination	Max	-295.053	1.127	-25.741	23.968	22037.539	1542.48
783	18.125	FACTORED_ENVE	Combination	Max	-295.077	1.162	-24.762	23.968	22826.712	1506.351
783	36.25	FACTORED_ENVE	Combination	Max	-295.102	1.196	-23.783	23.968	23591.268	1469.365
783	0	FACTORED_ENVE	Combination	Min	-352.375	-0.136	-42.901	-662.145	12992.62	-230.945
783	18.125	FACTORED_ENVE	Combination	Min	-352.373	-0.146	-41.779	-662.145	13466.774	-227.27
783	36.25	FACTORED_ENVE	Combination	Min	-352.372	-0.156	-40.657	-662.145	13920.921	-229.245
784	0	FACTORED_ENVE	Combination	Max	-295.072	1.197	-19.311	-41.065	23591.268	1469.072
784	18.125	FACTORED_ENVE	Combination	Max	-295.098	1.231	-18.332	-41.065	24176.418	1431.211
784	36.25	FACTORED_ENVE	Combination	Max	-295.123	1.266	-17.353	-41.065	24736.697	1392.504
784	0	FACTORED_ENVE	Combination	Min	-352.342	-0.156	-32.115	-785.036	13920.921	-229.148
784	18.125	FACTORED_ENVE	Combination	Min	-352.341	-0.165	-30.993	-785.036	14273.717	-230.467
784	36.25	FACTORED_ENVE	Combination	Min	-352.34	-0.175	-29.871	-785.036	14606.371	-231.122
785	0	FACTORED_ENVE	Combination	Max	-295.105	1.266	-12.88	-106.104	24736.697	1392.069
785	18.125	FACTORED_ENVE	Combination	Max	-295.131	1.3	-11.901	-106.104	25117.355	1352.5
785	36.25	FACTORED_ENVE	Combination	Max	-295.157	1.335	-10.923	-106.104	25472.967	1312.096
785	0	FACTORED_ENVE	Combination	Min	-352.321	-0.175	-21.337	-907.883	14606.371	-231.166
785	18.125	FACTORED_ENVE	Combination	Min	-352.321	-0.185	-20.215	-907.883	14837.559	-231.164
785	36.25	FACTORED_ENVE	Combination	Min	-352.321	-0.195	-19.094	-907.883	15048.51	-230.498
786	0	FACTORED_ENVE	Combination	Max	-295.149	1.335	-6.459	-171.143	25472.967	1311.49
786	18.125	FACTORED_ENVE	Combination	Max	-295.176	1.37	-5.48	-171.143	25648.989	1270.235
786	36.25	FACTORED_ENVE	Combination	Max	-295.203	1.404	-4.501	-171.143	25799.865	1228.158
786	0	FACTORED_ENVE	Combination	Min	-352.313	-0.195	-10.59	-1030.719	15048.51	-230.694
786	18.125	FACTORED_ENVE	Combination	Min	-352.314	-0.205	-9.468	-1030.719	15158.073	-229.371
786	36.25	FACTORED_ENVE	Combination	Min	-352.314	-0.214	-8.346	-1030.719	15247.345	-227.385
787	0	FACTORED_ENVE	Combination	Max	-295.207	1.404	0.34	-236.193	25799.865	1227.436
787	18.125	FACTORED_ENVE	Combination	Max	-295.235	1.439	1.462	-236.193	25770.919	1184.522
787	36.25	FACTORED_ENVE	Combination	Max	-295.262	1.474	2.584	-236.193	25716.805	1140.799
787	0	FACTORED_ENVE	Combination	Min	-352.318	-0.214	-0.141	-1153.47	15247.345	-227.716
787	18.125	FACTORED_ENVE	Combination	Min	-352.319	-0.224	0.838	-1153.47	15235.042	-225.072
787	36.25	FACTORED_ENVE	Combination	Min	-352.32	-0.234	1.817	-1153.47	15202.436	-221.766
788	0	FACTORED_ENVE	Combination	Max	-295.278	1.474	11.129	-301.25	25716.805	1139.935
788	18.125	FACTORED_ENVE	Combination	Max	-295.306	1.508	12.251	-301.25	25482.883	1095.387
788	36.25	FACTORED_ENVE	Combination	Max	-295.334	1.543	13.373	-301.25	25223.846	1050.045
788	0	FACTORED_ENVE	Combination	Min	-352.336	-0.234	6.291	-1276.171	15202.436	-222.239
788	18.125	FACTORED_ENVE	Combination	Min	-352.338	-0.244	7.27	-1276.171	15068.261	-218.276
788	36.25	FACTORED_ENVE	Combination	Min	-352.339	-0.254	8.249	-1276.171	14913.812	-213.652
789	0	FACTORED_ENVE	Combination	Max	-295.361	1.543	21.919	-366.314	25223.846	1049.039
789	18.125	FACTORED_ENVE	Combination	Max	-295.39	1.578	23.04	-366.314	24785.093	1002.886
789	36.25	FACTORED_ENVE	Combination	Max	-295.418	1.612	24.162	-366.314	24321.355	955.952
789	0	FACTORED_ENVE	Combination	Min	-352.366	-0.254	12.715	-1398.819	14913.812	-214.265

789	18.125	FACTORED_ENVE	Combination	Min	-352.368	-0.264	13.694	-1398.819	14657.842	-208.985
789	36.25	FACTORED_ENVE	Combination	Min	-352.371	-0.273	14.673	-1398.819	14381.666	-203.045
790	0	FACTORED_ENVE	Combination	Max	-295.455	1.612	32.724	-431.394	24321.355	954.889
790	18.125	FACTORED_ENVE	Combination	Max	-295.484	1.647	33.846	-431.394	23677.729	907.161
790	36.25	FACTORED_ENVE	Combination	Max	-295.513	1.682	34.968	-431.394	23009.325	858.666
790	0	FACTORED_ENVE	Combination	Min	-352.407	-0.273	19.157	-1521.359	14381.666	-203.754
790	18.125	FACTORED_ENVE	Combination	Min	-352.41	-0.283	20.136	-1521.359	14003.753	-197.159
790	36.25	FACTORED_ENVE	Combination	Min	-352.413	-0.304	21.115	-1521.359	13605.744	-189.906
791	0	FACTORED_ENVE	Combination	Max	-295.557	1.682	43.546	-496.488	23009.325	857.565
791	18.125	FACTORED_ENVE	Combination	Max	-295.587	1.716	44.668	-496.488	22160.937	808.293
791	36.25	FACTORED_ENVE	Combination	Max	-295.617	1.751	45.789	-496.488	21288.055	758.27
791	0	FACTORED_ENVE	Combination	Min	-352.457	-0.304	25.617	-1643.801	13605.744	-190.688
791	18.125	FACTORED_ENVE	Combination	Min	-352.46	-0.339	26.596	-1643.801	13105.823	-182.781
791	36.25	FACTORED_ENVE	Combination	Min	-352.464	-0.373	27.575	-1643.801	12585.957	-174.218
792	0	FACTORED_ENVE	Combination	Max	-295.674	1.751	54.351	-561.582	21288.055	756.957
792	18.125	FACTORED_ENVE	Combination	Max	-295.704	1.785	55.473	-561.582	20235.85	706.17
792	36.25	FACTORED_ENVE	Combination	Max	-295.735	1.82	56.595	-561.582	19159.512	654.647
792	0	FACTORED_ENVE	Combination	Min	-352.52	-0.373	32.059	-1766.238	12585.956	-175.175
792	18.125	FACTORED_ENVE	Combination	Min	-352.524	-0.408	33.038	-1766.238	11964.654	-165.96
792	36.25	FACTORED_ENVE	Combination	Min	-352.528	-0.443	34.016	-1766.238	11323.597	-156.092
793	0	FACTORED_ENVE	Combination	Max	-295.794	1.82	65.189	-626.695	19159.512	653.414
793	18.125	FACTORED_ENVE	Combination	Max	-295.825	1.855	66.311	-626.695	17903.569	601.147
793	36.25	FACTORED_ENVE	Combination	Max	-295.856	1.889	67.433	-626.695	16623.93	548.16
793	0	FACTORED_ENVE	Combination	Min	-352.587	-0.443	38.536	-1888.547	11323.597	-157.044
793	18.125	FACTORED_ENVE	Combination	Min	-352.592	-0.477	39.515	-1888.547	10580.707	-146.526
793	36.25	FACTORED_ENVE	Combination	Min	-352.597	-0.512	40.494	-1888.547	9818.295	-135.357
794	0	FACTORED_ENVE	Combination	Max	-295.921	1.889	76.035	-691.817	16623.93	546.882
794	18.125	FACTORED_ENVE	Combination	Max	-295.952	1.924	77.157	-691.817	15164.991	493.167
794	36.25	FACTORED_ENVE	Combination	Max	-295.984	1.959	78.279	-691.817	13682.871	438.75
794	0	FACTORED_ENVE	Combination	Min	-352.662	-0.512	45.023	-2010.798	9818.295	-136.373
794	18.125	FACTORED_ENVE	Combination	Min	-352.667	-0.546	46.002	-2010.798	8954.15	-124.557
794	36.25	FACTORED_ENVE	Combination	Min	-352.672	-0.581	46.98	-2010.798	8070.757	-112.094
795	0	FACTORED_ENVE	Combination	Max	-296.047	1.959	86.914	-756.953	13682.871	437.613
795	18.125	FACTORED_ENVE	Combination	Max	-296.079	1.993	88.036	-756.953	12021.324	382.489
795	36.25	FACTORED_ENVE	Combination	Max	-296.111	2.028	89.158	-756.953	10337.185	326.679
795	0	FACTORED_ENVE	Combination	Min	-352.735	-0.581	51.545	-2132.958	8070.757	-113.043
795	18.125	FACTORED_ENVE	Combination	Min	-352.74	-0.616	52.524	-2132.958	7085.316	-99.935
795	36.25	FACTORED_ENVE	Combination	Min	-352.745	-0.65	53.503	-2132.958	6080.941	-86.184
796	0	FACTORED_ENVE	Combination	Max	-296.176	2.028	97.801	-822.095	10337.185	325.536
796	18.125	FACTORED_ENVE	Combination	Max	-296.209	2.063	98.923	-822.095	8474.079	269.038
796	36.25	FACTORED_ENVE	Combination	Max	-296.241	2.097	100.044	-822.095	6589.048	211.87
796	0	FACTORED_ENVE	Combination	Min	-352.811	-0.65	58.076	-2255.077	6080.941	-87.158
796	18.125	FACTORED_ENVE	Combination	Min	-352.817	-0.685	59.055	-2255.077	4974.701	-72.766
796	36.25	FACTORED_ENVE	Combination	Min	-352.823	-0.72	60.034	-2255.077	3849.883	-57.734
797	0	FACTORED_ENVE	Combination	Max	-296.302	2.097	108.712	-887.244	6589.048	210.863
797	18.125	FACTORED_ENVE	Combination	Max	-296.335	2.132	109.834	-887.244	4525.248	153.027
797	36.25	FACTORED_ENVE	Combination	Max	-296.367	2.166	110.956	-887.244	2440.264	94.539
797	0	FACTORED_ENVE	Combination	Min	-352.884	-0.72	64.634	-2377.151	3849.882	-58.628
797	18.125	FACTORED_ENVE	Combination	Min	-352.89	-0.754	65.613	-2377.151	2623.118	-42.959
797	36.25	FACTORED_ENVE	Combination	Min	-352.896	-0.789	66.592	-2377.151	1378.172	-26.656
798	0	FACTORED_ENVE	Combination	Max	-296.403	2.166	119.695	-952.4	2440.264	94.089
798	14.375	FACTORED_ENVE	Combination	Max	-296.429	2.194	120.584	-952.4	646.021	47.248
798	28.75	FACTORED_ENVE	Combination	Max	-296.454	2.221	121.474	-952.4	-767.753	3.048E-10
798	0	FACTORED_ENVE	Combination	Min	-352.932	-0.789	71.269	-2499.182	1378.172	-27.156
798	14.375	FACTORED_ENVE	Combination	Min	-352.937	-0.816	72.046	-2499.182	310.7	-13.777
798	28.75	FACTORED_ENVE	Combination	Min	-352.941	-0.844	72.822	-2499.182	-1162.002	-5.26E-10

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3.5.3 STAINLESS STEEL CONNECTIONS

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Design Sheet

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

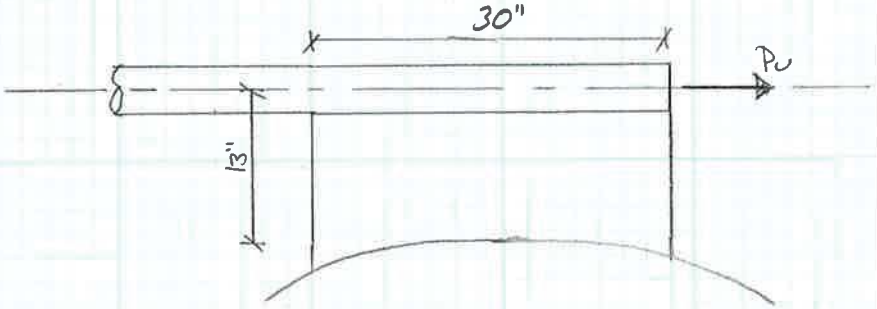
TAPESTRY ELEMENT DESIGN -STAINLESS STEEL CONNECTIONS

LOCATION | CLIENT | SHEET | DATE 4/9/12 | BY BHK

TAPESTRY CABLE END CONNECTION TO COLUMN

*DESIGN FOR CABLE CAPACITY → $P_{u,CABLE} = 212\ k$

$P_u = 7\ k$
$V_{u,VERT} = 1\ k$
$V_{u,HORIZ} = 212\ k$



* TYPE 316 STAINLESS STEEL
→ $F_y = 30\ KSI$
→ $F_u = 75\ KSI$

* ASSUME $t_{PL} = 1"$

SHEAR

$$\phi R_n = \text{MIN}\begin{Bmatrix} 1.0 \times 0.6F_y \\ 0.75 \times 0.6F_u \end{Bmatrix} \times 30" \times 1" = 540\ k > V_{u,HORIZ}\ \checkmark$$

FLEXURE

*TREAT AS THE WEB OF A COPED BEAM

$M_u = 212\ k \times 13" = 2756\ k\text{-}IN$

FLEXURAL CAPACITY: $Z = \frac{bh^2}{4} = \frac{1" \times 30"^2}{4} = 225\ IN^3$

$$F_{cr} = \sqrt{F_y^2 - 3f_v^2} = \sqrt{(30\ KSI)^2 - 3 \times \left(\frac{212\ k}{1" \times 30"}\right)^2} = 27.4\ KSI$$

$$\phi M_n = \phi F_{cr} Z = 0.9 \times 27.4\ KSI \times 225\ IN^3 = 5546\ k\text{-}IN > M_u\ \checkmark$$

PROJECT			SHEET
LOCATION	CLIENT	DATE	BY

LOCAL PLATE BUCKLING: $c = 13"$

$h_o = 30"$

$$\lambda = \frac{h_o\sqrt{F_y}}{10t_{pl}\sqrt{475+280\left(h_o/c\right)^2}} = 0.37 < 0.7 \rightarrow Q = 1$$

$F_{cr} = QF_y = 30\ ksi$

$S = \frac{bh^2}{6} = \frac{1" \times 30"^2}{6} = 150\ in^3$

$\phi M_n = \phi F_{cr} S = 0.9 \times 30\ ksi \times 150\ in^3 = 4050\ k\text{-}in > M_u$ ✓

PLATE-COLUMN WELD

$L_w = 29"$

$f_v = \frac{V_u}{2L_w} = \frac{212\ k}{2 \times 29"} = 3.7\ k/in$

$f_b = \frac{6M_u}{2L_w^2} = \frac{6 \times 2756\ k\text{-}in}{2 \times 29"^2} = 9.9\ k/in$

$\rightarrow F_w = \sqrt{f_v^2 + f_b^2} = 10.6\ k/in$

$$w_{reqd} = \frac{F_w}{\phi \times 0.6 F_{exx} \times 0.707} = \frac{10.6\ k/in}{0.75 \times 0.6 \times 70\ ksi \times .707} = 0.48"$$

PLATE-PIPE WELD

$L_w = 29"$

$f_v = \frac{V_u}{2L_w} = \frac{212\ k}{2 \times 29"} = 3.7\ k/in$

$f_b = \frac{6M_u}{2L_w^2} = \frac{6 \times 2756\ k\text{-}in \times 2"/13"}{2 \times 29"^2} = 1.6\ k/in$

$\rightarrow F_w = \sqrt{f_v^2 + f_b^2} = 4.1\ k/in$

$w_{reqd} = 0.19"$

PROJECT			SHEET
LOCATION	CLIENT	DATE	BY

PIPE

MIN WALL THICKNESS PER AISC K1-10:

$$F_{yp} t_p \leq F_u t \rightarrow t_{min} \geq \frac{F_{yp} t_p}{F_u} = \frac{30\ ksi \times 1"}{75\ ksi} = 0.4" \rightarrow \text{PIPE5 SCH 80}$$

CONCENTRATED FORCE ON END OF PIPE:

BEARING $\rightarrow \phi R_n = \phi \times 1.8 F_y A_{BRG} = 0.75 \times 1.8 \times 30\ ksi \times 5.72\ in^2 = 231\ k > P_{u,CABLE}$ ✓

WELD $\rightarrow L = C = \pi \times D_{ANG} = \pi \times 5.18" = 16.2"$

$$w_{REQ'D} = \frac{212\ k}{0.8 \times 0.6 \times 70\ ksi \times 16.2"} = 0.39" > t_{WALL} \rightarrow \text{CJP}$$

PROJECT			SHEET
LOCATION	CLIENT	DATE	BY

EMBED: $M_u = 2756$ k-in $\rightarrow P_u = \frac{M_u}{30"} = 91.9$ k

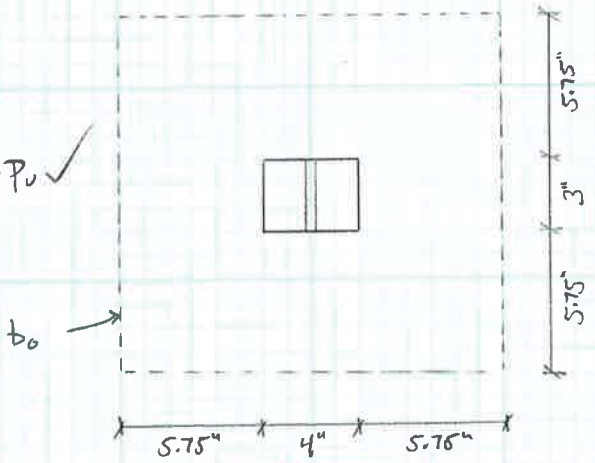
$\phi P_n = 0.9 \times 50\text{ksi} \times 0.75" \times 3" = 101\text{ k} > P_u/2$ ✓

$A_{BRG,REQ'D} = \frac{P_u/2}{0.65 \times 0.85 f'_c} = 10.4\text{ in}^2 \rightarrow w = \frac{10.4\text{ in}^2}{3"} = 3.5" - 0.75" = 2.75" \rightarrow$ USE 4"

$d = 11.5"$

$b_o = 60"$

$\phi V_n = 0.75 \times 4 \sqrt{f'_c} \times 60" \times 11.5" = 185\text{ k} > P_u$ ✓



$f_{BRG} = \frac{P_u/2}{3" \times 3.25"} = 4.8\text{ ksi}$

$M_u = \frac{4.8\text{ksi} \times 1" \times 2"^2}{2} = 9.6\text{ k-in/in}$

$\phi M_n = 0.9 \times 50\text{ksi} \times \frac{1" \times t^2}{4} \rightarrow t_{req} = 0.93"$ → USE 1.25"

PROJECT EISENHOWER MEMORIAL SHEET

LOCATION CLIENT DATE 1/25/12 BY BHK

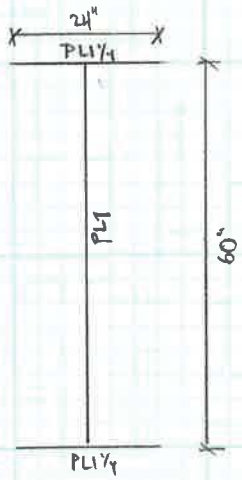
"OPTION 8" BOX BEAM END CONNECTION

$F_x = 755\ k$ (IN-PLANE)

$F_y = 12\ k$ (OUT-OF-PLANE)

$F_z = -135\ k$ (VERTICAL)

BUILT-UP I SHAPE



$I = 1/12 \times 1.0" \times 57.5"^3 + 2 \times 1/12 \times 24" \times 1.25"^3 + 2 \times 24" \times 1.25" \times (60"/2 - 1.25"/2)^2 = 67623\ in^4$

$S = 2254\ in^3$

$\phi M_n = 0.9 \times 30\ ksi \times 2254\ in^3 = 60858\ k\text{-}in$

$M_u = 755\ k \times 59" = 44545\ k\text{-}in < \phi M_n$ ✓

$h/t_w = 60"/1" = 60" < 260$

$< 1.37\sqrt{k_v E/F_y} \rightarrow C_v = \dfrac{1.1\sqrt{k_v E/F_y}}{h/t_w}$

$= 1.25 > 1.0$

$\phi V_n = 1.0 \times 0.6 \times 30\ ksi \times 1.0" \times 60" \times 1.0 = 1080\ k > 755\ k$ ✓

→ WELD TO DEVELOP FLGS OVER 49" - 18" = 31"

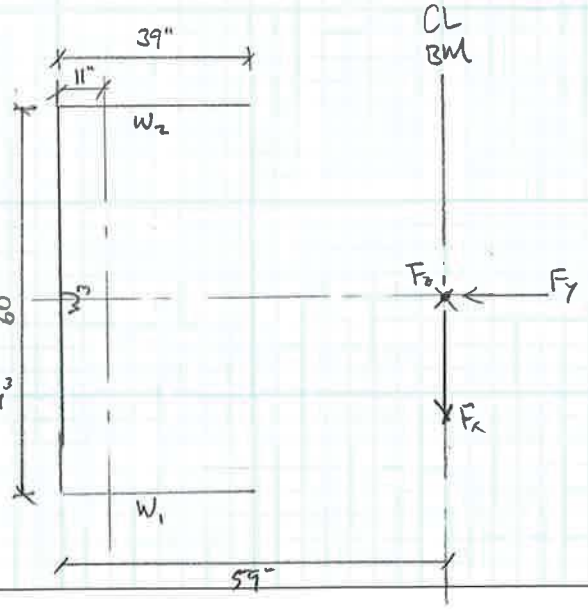
$w = \dfrac{30\ ksi \times 1.25" \times 24"}{1.392 \times 2 \times 31"} = 10.5/16$

→ WELDS TO TRANSFER F_x OVER 60":

$w = \dfrac{755\ k}{1.392 \times 60" \times 2} = 4.6/16$

VERTICAL PLATE WELDS TO EMBED

* SEE ATTACHED ELASTIC WELD ANALYSIS



$L_w = 60" + 2 \times 39" = 138"$

$S_1 = \dfrac{2 \times 60" \times 39" + 39"^2}{3} = 2067\ in^2$

$S_2 = \dfrac{39"^2 \times (2 \times 60" + 39")}{3 \times (39" \times 60")} = 815\ in^2$

$J = \dfrac{(60" + 2 \times 39")^3}{12} - \dfrac{39"^2 \times (60" + 39")^2}{(60" + 2 \times 39")} = 83639\ in^3$

PROJECT | SHEET

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@ W1/W2:

$$f_{F_x} = \frac{F_x}{L_w} + \frac{F_x \times (59" - 11") \times 30"}{J} = 18.5\ K/IN \rightarrow \checkmark$$

$$f_{F_y} = \frac{F_y}{L_w} = 0.09\ K/IN \rightarrow \checkmark$$

$$f_{F_z} = \frac{F_z}{L_w} + \frac{F_z \times (59" - 11")}{S_2} = 8.9\ K/IN \rightarrow A$$

$$\sigma_a = \frac{8.9\ K/IN}{1.25"} = 7.1\ KSI$$

$$\sigma_v = \frac{18.5\ K/IN + 0.09\ K/IN}{1.25"} = 14.9\ KSI$$

$$\rightarrow \sqrt{\left(\frac{\sigma_a}{\phi F_y}\right)^2 + 3\left(\frac{\sigma_v}{\phi F_y}\right)^2} = 0.99 < 1.0 \checkmark$$

$\rightarrow$ USE CJP

@ W3:

$$f_{F_x} = \frac{F_x}{L_w} + \frac{F_x \times (59" - 11") \times (39" - 11")}{J} = 13.1\ K/IN \rightarrow \checkmark$$

$$f_{F_y} = \frac{F_y}{L_w} = 0.09\ K/IN \rightarrow \checkmark$$

$$f_{F_z} = \frac{F_z}{L_w} + \frac{F_z \times (59" - 11")}{S_2} = 8.9\ K/IN \rightarrow A$$

$f_v = 13.2\ K/IN$

$f_a = 8.9\ K/IN$

$$F_w = \sqrt{f_a^2 + f_v^2} = 15.9\ K/IN$$

$$\rightarrow D_{REQ'D} = \frac{F_w}{1.392} = 11.5 \text{ SIXTEENTHS}$$

$\rightarrow$ USE 3/4" FILLET

$$t_{MIN} = \frac{3.09D}{F_u} = 0.51" < 3/4" \checkmark$$

PROJECT | SHEET
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VERTICAL EMBED PLATE WELD - PL1/PL2

$L_w = 36" - 2\times 2" = 32"$

$f_v = \frac{18.5\ k/in \times 39"}{2L_w} = 11.3\ k/in \rightarrow D_{REQD} = \frac{F_v}{1.392} = 8.1$ SIXTEENTHS $\rightarrow$ USE 9/16" FILLETS

$t_{MIN} = \frac{6.19D}{F_u} = 0.86" < 1"$ ✓

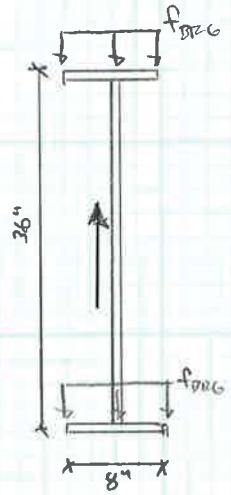
VERTICAL EMBED BEARING - PL1/PL2

$A_{BRG} = \frac{18.5\ k/in \times 39"}{0.65\times 0.85 f'_c} = 164\ in^2 \rightarrow 2\times(8"-1")\times 18" = 252\ in^2$ ✓

$f_{BRG} = \frac{18.5\ k/in \times 39"}{252\ in^2} = 2.9\ ksi$

$M_u = \frac{w_u L^2}{2} = \frac{2.9\ ksi \times 1" \times 1"^2}{2} = 23.2\ k\text{-}in/in$

$\phi M_n = \phi F_y Z = 0.9\times 50\ ksi \times \frac{1"\times t^2}{4} \rightarrow t_{PL} = 1.5"$ $\rightarrow$ USE PL2



VERTICAL EMBED - EMBED WELDS - PL1/PL2

$L_w = 17"$

$D_{REQD} = \frac{0.5\times 18.5\ k/in \times 39"}{2\times 1.392\times L_w} = 7.7$ SIXTEENTHS $\rightarrow$ USE 1/2" FILLET

VERTICAL EMBED PLATE WELD - PL3

$L_w = 60" - 2\times 1" = 58"$

$f_v = \frac{13.1\ k/in \times 60"}{2L_w} = 6.8\ k/in$ $\rightarrow$ USE 9/16" FILLETS

VERTICAL EMBED BEARING - PL3

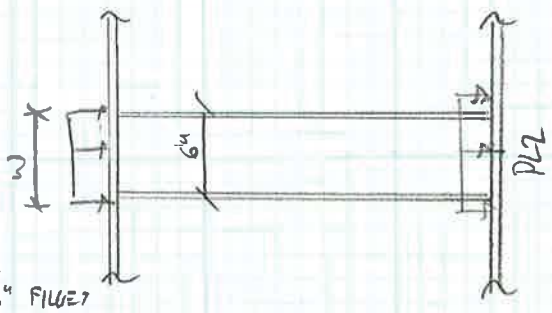
$w_{REQD} = \frac{13.1\ k/in \times 60"}{0.65\times 0.85 f'_c \times 2\times 18"} = 5"$

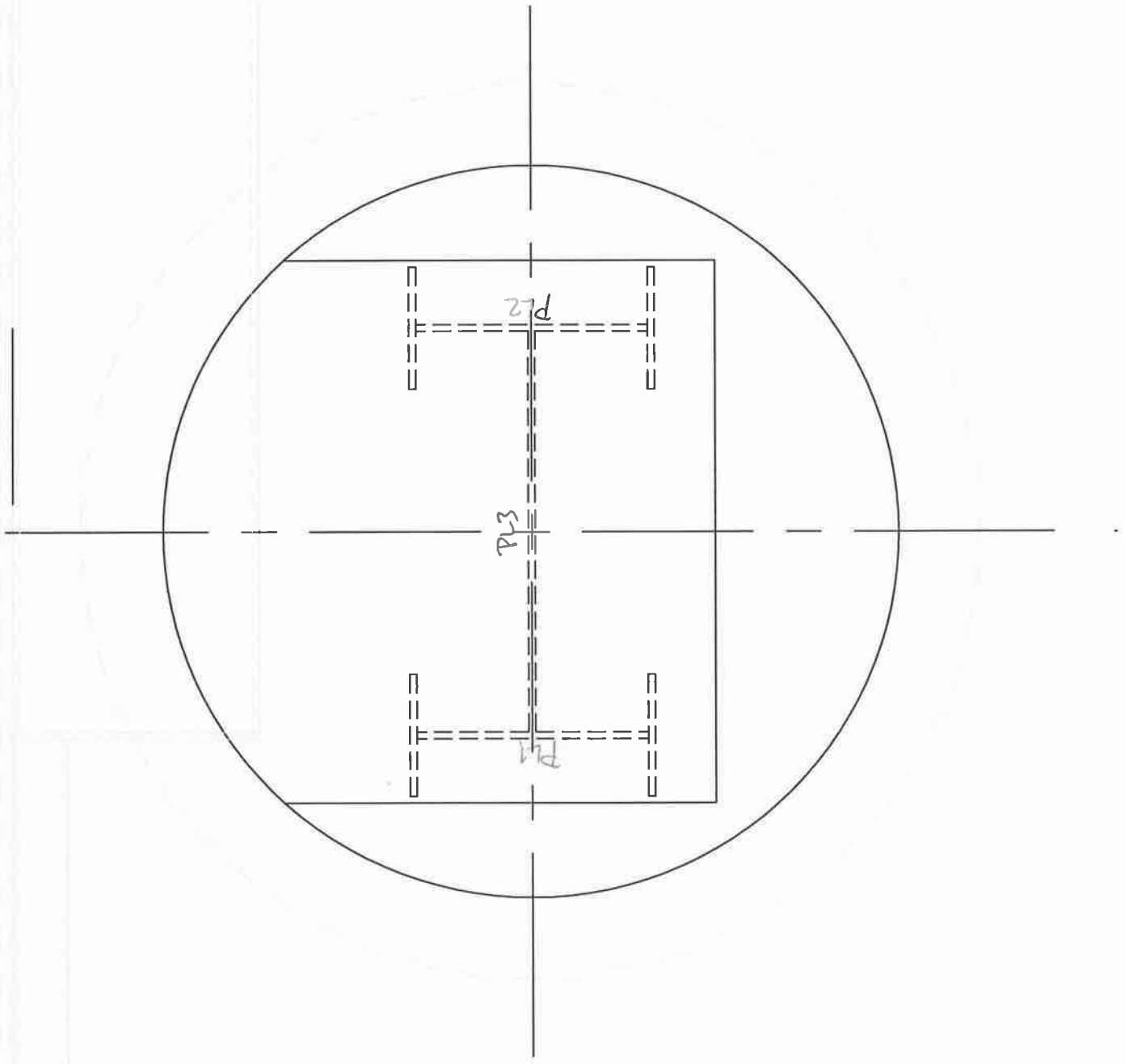
$f_{BRG} = \frac{13.1\ k/in \times 60"}{2\times 6"\times 18"} = 3.64\ ksi$ $M_u = \frac{3.64\ ksi \times 1" \times 6"^2}{12} = 10.9\ k\text{-}in/in$

$\phi M_n = \phi F_y Z \rightarrow t_{PL} = 0.99"$

VERTICAL EMBED - EMBED WELD - PL3

$D_{REQD} = \frac{0.5\times 13.1\ k/in \times 60"}{2\times 1.392\times L_w} = 8.3$ SIXTEENTHS $\rightarrow$ USE 9/16" FILLET




PL2
PL3
PL1

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WELD AT END OF BOX BEAM

$P_u = -505\ k$
$T_u = 1347\ k\text{-}in$
$V_{u,vert} = 122\ k$
$M_{u,vert} = 2754\ k\text{-}in$
$V_{u,horiz} = 1\ k$
$M_{u,horiz} = 26\ k\text{-}in$

* SEE ATTACHED ELASTIC WELD ANALYSIS

$\rightarrow F_w = 7.5\ k/in$

$w_{REQ'D} = \dfrac{7.5\ k/in}{0.75 \times 0.6 \times 70\ ksi} = 0.23"$

WELD GROUP ANALYSIS

Using the Elastic Method for up to 24 Total Welds

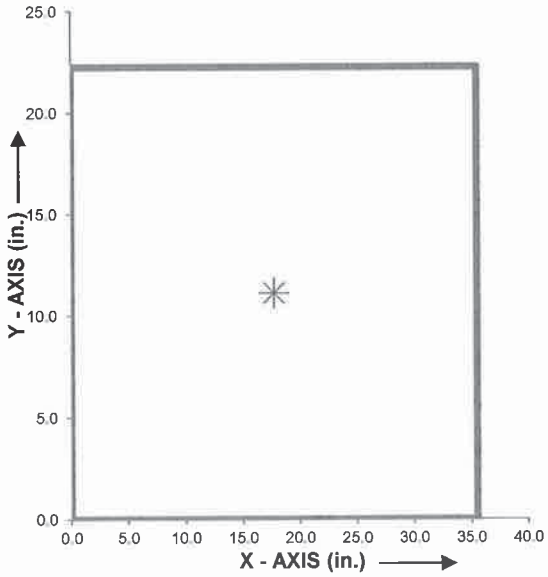
Job Name:	Eisenhower Memorial	Subject:	East Tapestry Box BM End		
Job Number:		Originator:	BHK	Checker:	

Input Data:

Number of Welds, Nw = 4

Weld Coordinates:

	Start		End	
	X1 (in.)	Y1 (in.)	X2 (in.)	Y2 (in.)
Weld #1	0.000	0.000	35.500	0.000
Weld #2	0.000	22.250	35.500	22.250
Weld #3	0.000	0.000	0.000	22.250
Weld #4	35.500	0.000	35.500	22.250

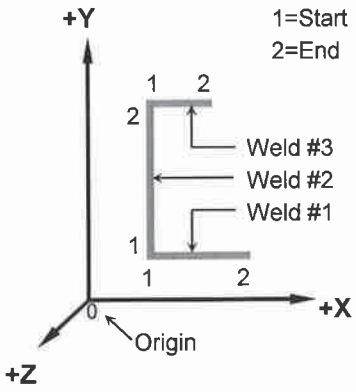


WELD GROUP PLOT

No. of Load Points = 1

Load Point Data:

	Point #1			
X-Coordinate (in.) =	17.750			
Y-Coordinate (in.) =	11.125			
Z-Coordinate (in.) =	0.000			
Axial Load, Pz (k) =	505.00			
Shear Load, Px (k) =	1.00			
Shear Load, Py (k) =	122.00			
Moment, Mx (in-k) =	2754.00			
Moment, My (in-k) =	26.00			
Moment, Mz (in-k) =	1347.00			



NOMENCLATURE

(continued)

Results:

Weld Group Properties:

Lw =	115.500	in.
Xc =	17.750	in.
Yc =	11.125	in.
Ix =	10623.22	in^3
Iy =	21476.76	in^3
J =	32099.98	in^3

Σ Loads @ C.G. of Weld Group:

Σ Pz =	505.00	kips
Σ Px =	1.00	kips
Σ Py =	122.00	kips
Σ Mx =	2754.00	in-k
Σ My =	26.00	in-k
Σ Mz =	1347.00	in-k

	Weld Forces (k/in.)	
	Fw(1)	Fw(2)
Weld #1	1.613	2.371
Weld #2	7.299	7.470
Weld #3	1.613	7.299
Weld #4	2.371	7.470

Required E70XX Weld Size:

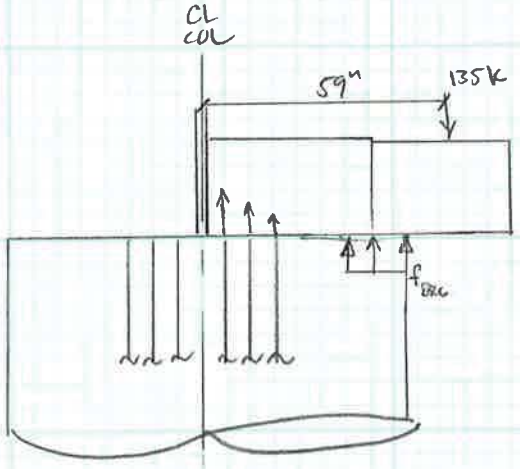
Fw(max) =	7.470	kips/in.
Fillet (leg) =	0.503	in.
Throat (eff) =	0.356	in.

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DEFORMED BAR ANCHORS

*DETERMINE FORCE DISTRIBUTION USING SAP2000 ANALYSIS MODEL, SEE ATTACHED



BOX BEAM END CONNECTION VERTICAL PLATE MODEL

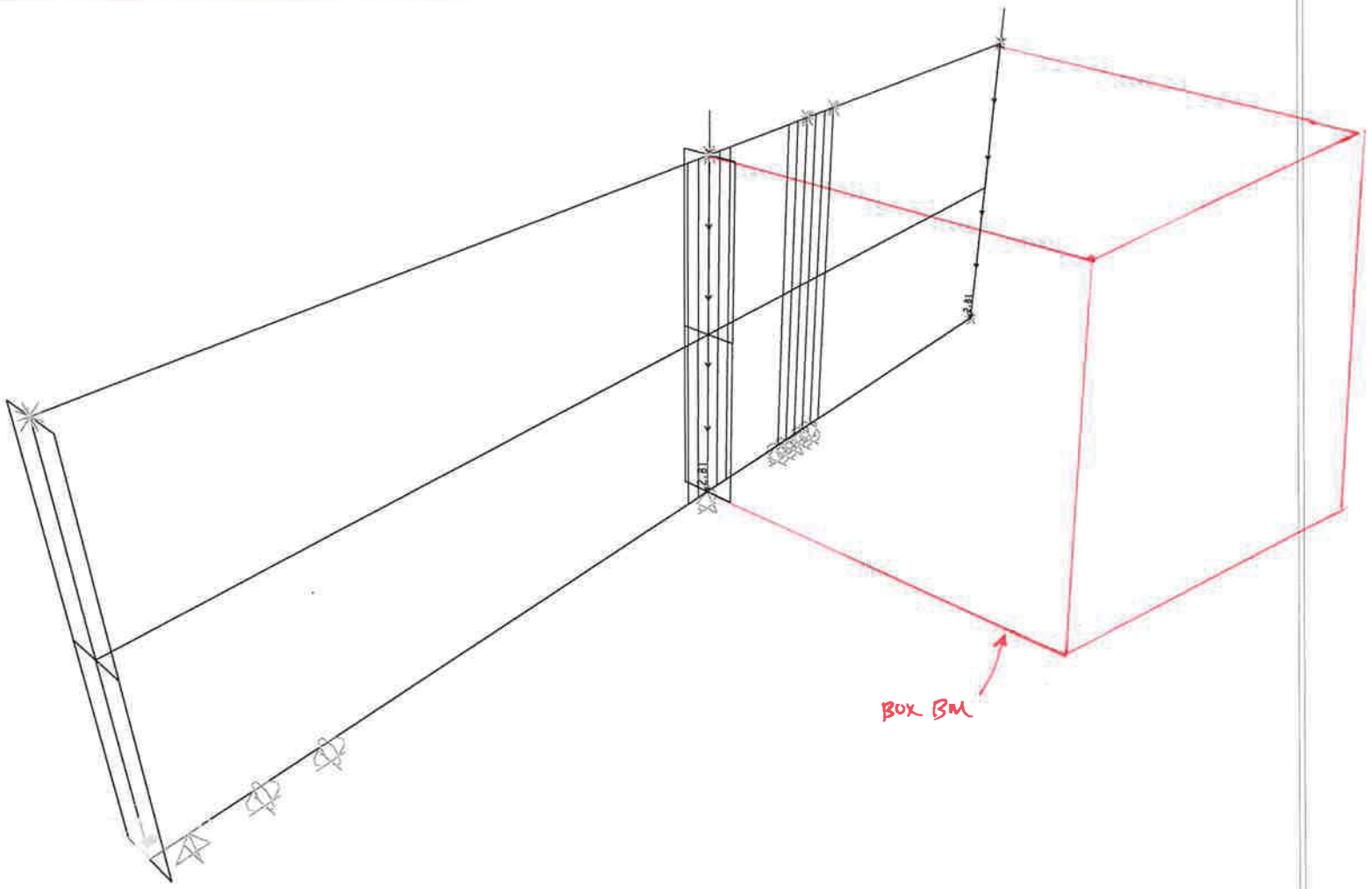
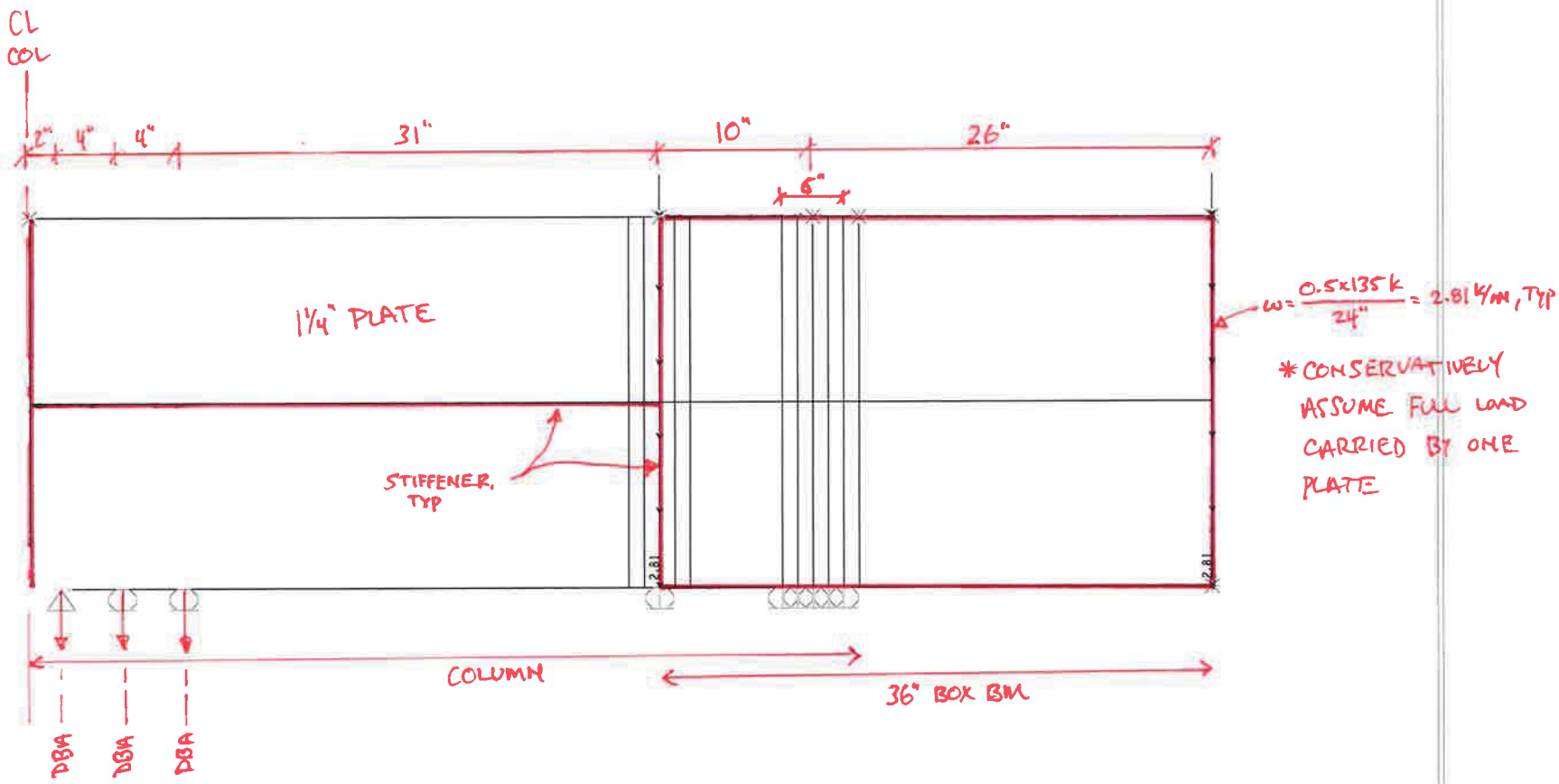
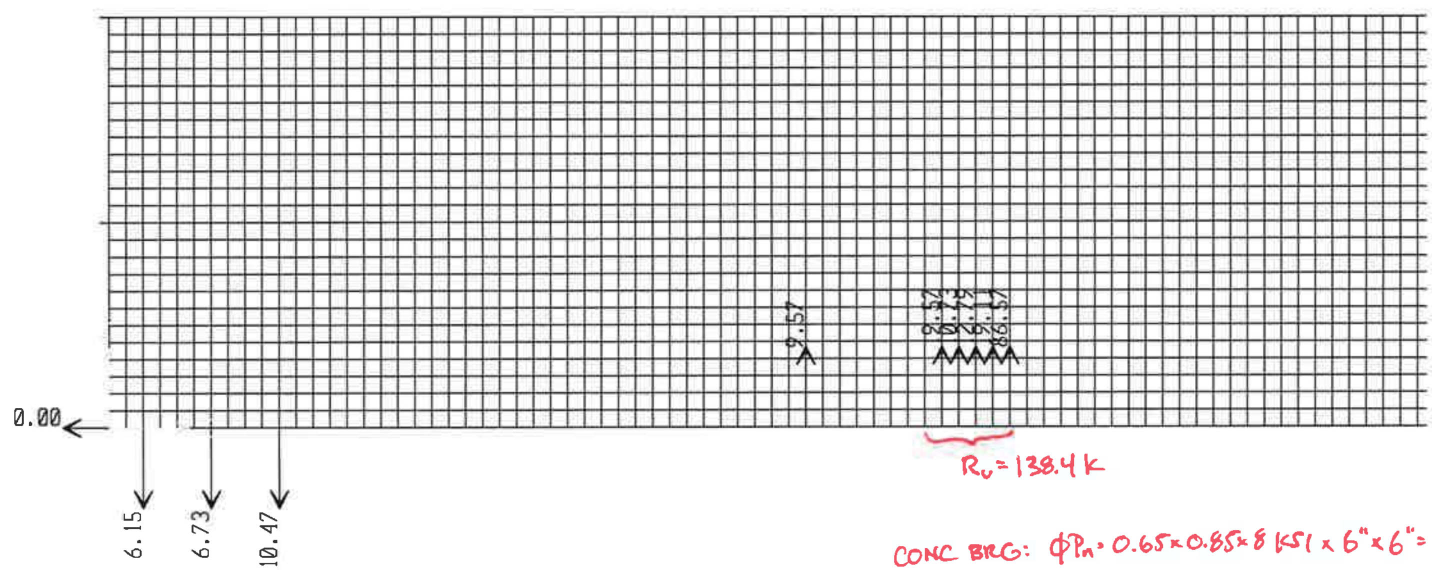


PLATE GEOMETRY AND LOADS



FACTORED REACTIONS

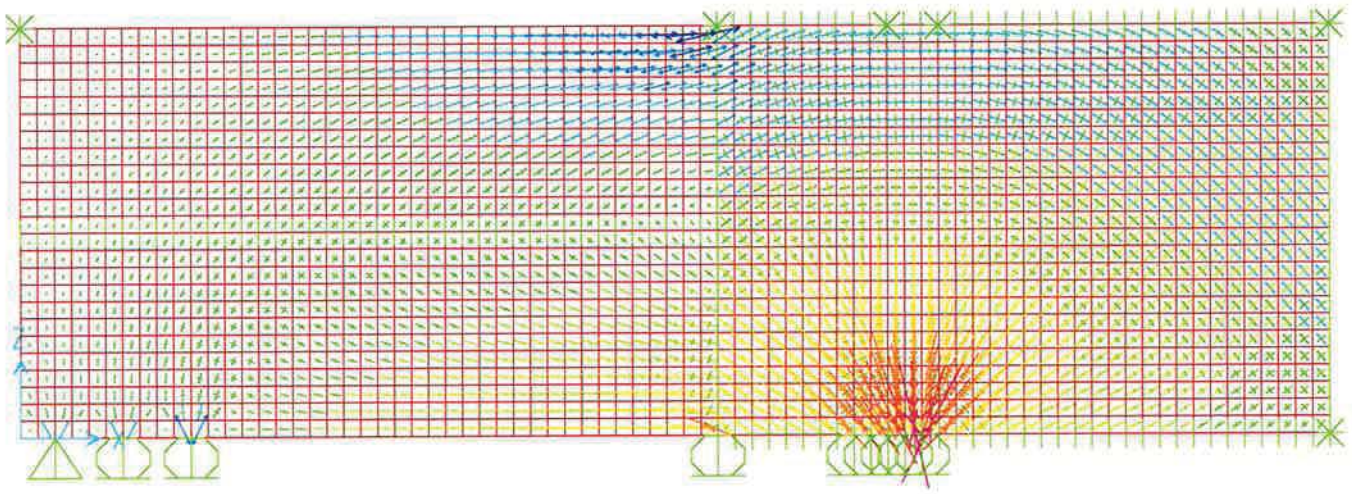


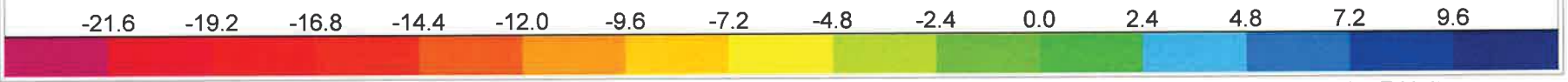
CONC BRG: $\phi P_n = 0.65 \times 0.85 \times 8\text{ KSI} \times 6" \times 6" = 159\text{ k} > R_u$ ✓

STL BRG: $\phi R_n = 0.75 \times 1.8 \times 30\text{ KSI} \times 6" \times 1.25" = 303\text{ k} > R_u$ ✓

#6 DBA: $\phi P_n = 0.9 \times 60\text{ KSI} \times 0.44\text{ in}^2 = 23.7\text{ k} > 10.5\text{ k}$ ✓

MAX/MIN STRESS VECTORS

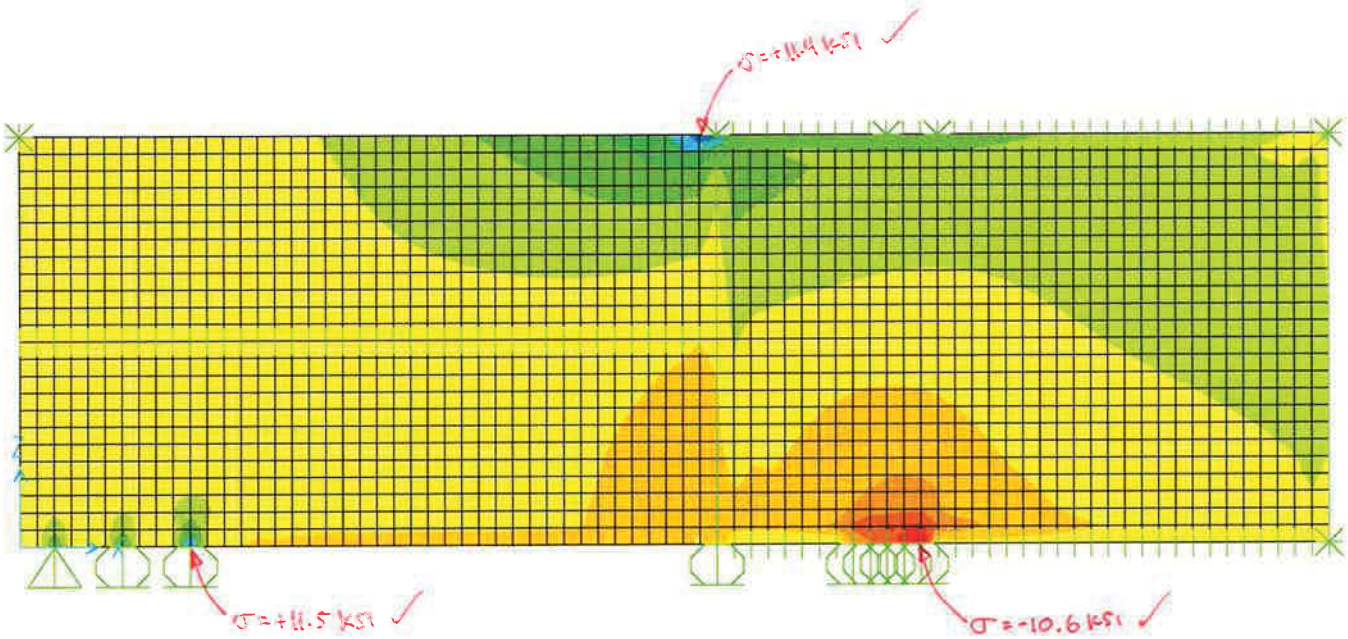


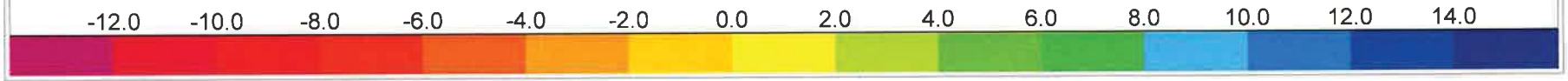


SAP2000 v15.1.0 - File:Box Beam End Connection Vertical Plate1 - Resultant SMAX and SMIN Arrows - Top Face (ULT) - Kip, in, F Units

MAX/MIN PLATE STRESSES

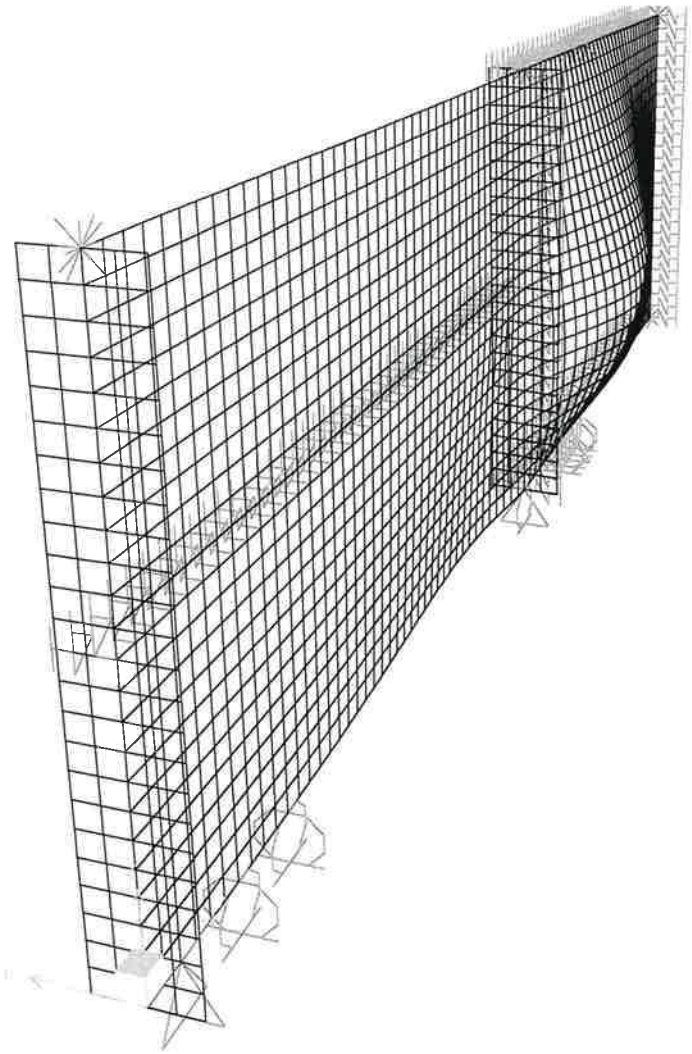
$\phi\sigma = 0.9 \times 30\ ksi = 27\ ksi$





SAP2000 v15.1.0 - File:Box Beam End Connection Vertical Plate1 - Stress SMAX Diagram - Max (ULT) - Kip, in, F Units

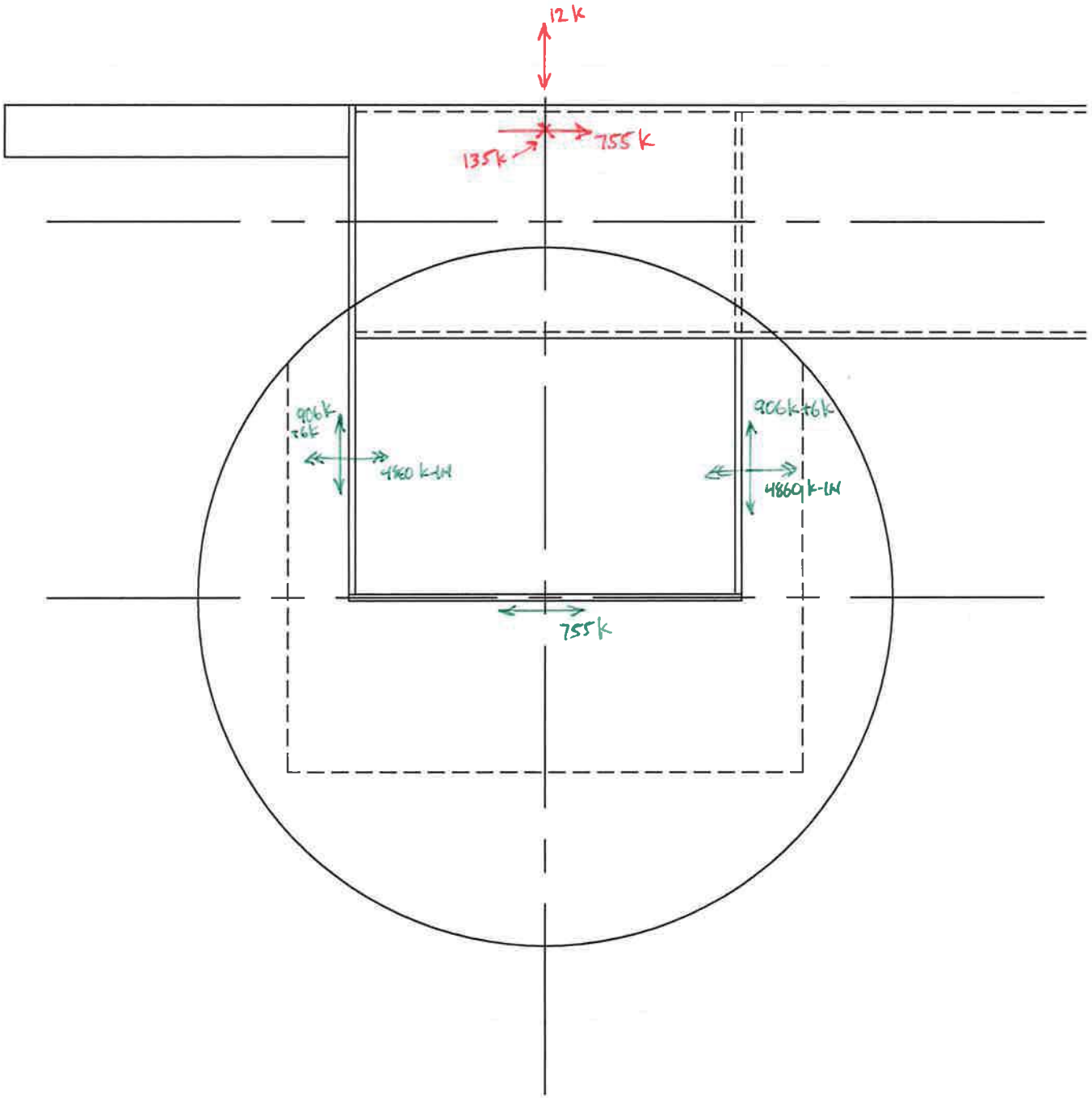
1ST BUCKLING MODE



BUCKLING LOAD = 2 x 1 K/IN x 24" x 174.6
= 8380 K ✓

BASED ON UNIT LOAD APPLIED AT EACH BOX BM WALL

SAP2000 v15.1.0 - File:Box Beam End Connection Vertical Plate1 - Deformed Shape (BUCKLE) - Mode 1 - Factor 174.62733 - Kip, in, F Units


12 k
135k
755 k
906k
766
4960 k-in
906k+6k
4860 k-in
755k

PROJECT EISENHOWER MEMORIAL SHEET

LOCATION CLIENT DATE 4/10/12 BY BHK

BOX BEAM INTERIOR CONNECTION

F_x = 24 k (IN-PLANE)
F_y = 3 k (OUT-OF-PLANE)
F_z = 323 k (VERTICAL)

"FLANGE" PLATE DESIGN

* DESIGN TO TAKE VERTICAL RXN IN STRONG-AXIS BENDING

SHEAR: $\phi V_n = \phi \times 0.6 F_y A = 1.0 \times 0.6 \times 30\ ksi \times 24'' \times 1'' = 432\ k > V_u$ ✓

FLEXURE (PER AISC SPEC F11):

@ MAX MOMENT: $M_u = 3605$ k-in

$L_b = 0$

$$\phi M_n = \phi \times MIN \begin{Bmatrix} F_y Z \\ 1.6 F_y S \end{Bmatrix} = 0.9 \times MIN \begin{Bmatrix} 30\ ksi \times \frac{1'' \times 24''^2}{4} \\ 1.6 \times 30\ ksi \times \frac{1'' \times 24''^2}{6} \end{Bmatrix} = 3888\ k\text{-in} > M_u \checkmark$$

@ FACE OF BOX BEAM: $M_u = 1164$ k-in

$L_b = 38.2''$

$$\frac{L_b d}{t^2} = 917 > \frac{0.08E}{F_y} = 75$$

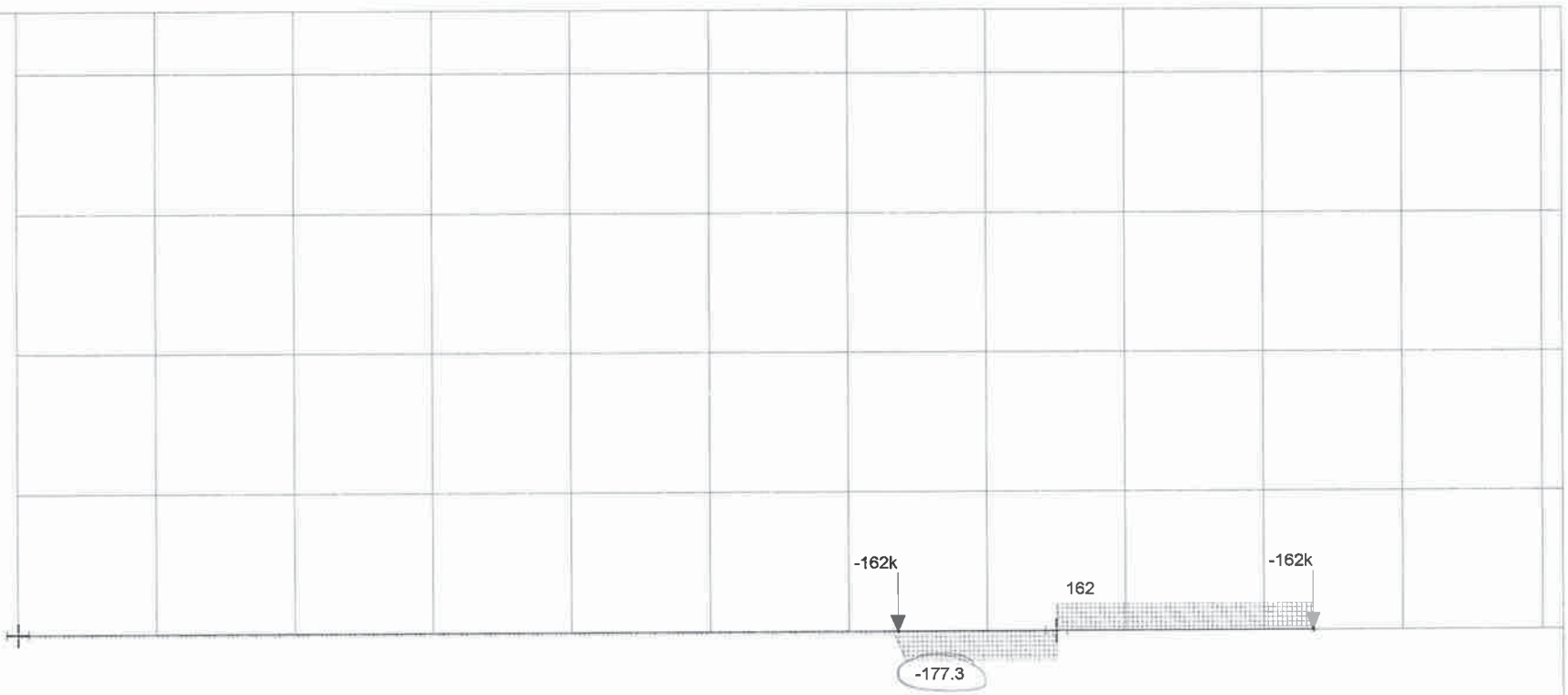
$$< \frac{1.9E}{F_y} = 1773$$

$$\phi M_n = \phi \times \left[1.52 - 0.274\left(\frac{L_b d}{t^2}\right)\left(\frac{F_y}{E}\right)\right] \times M_y \times C_b$$

$$C_b = \frac{12.5 \times 97\ k\text{-ft}}{2.5 \times 97\ k\text{-ft} + 3 \times 61\ k\text{-ft} + 4 \times 73\ k\text{-ft} + 3 \times 84\ k\text{-ft}} \times 1.0 = 1.25$$

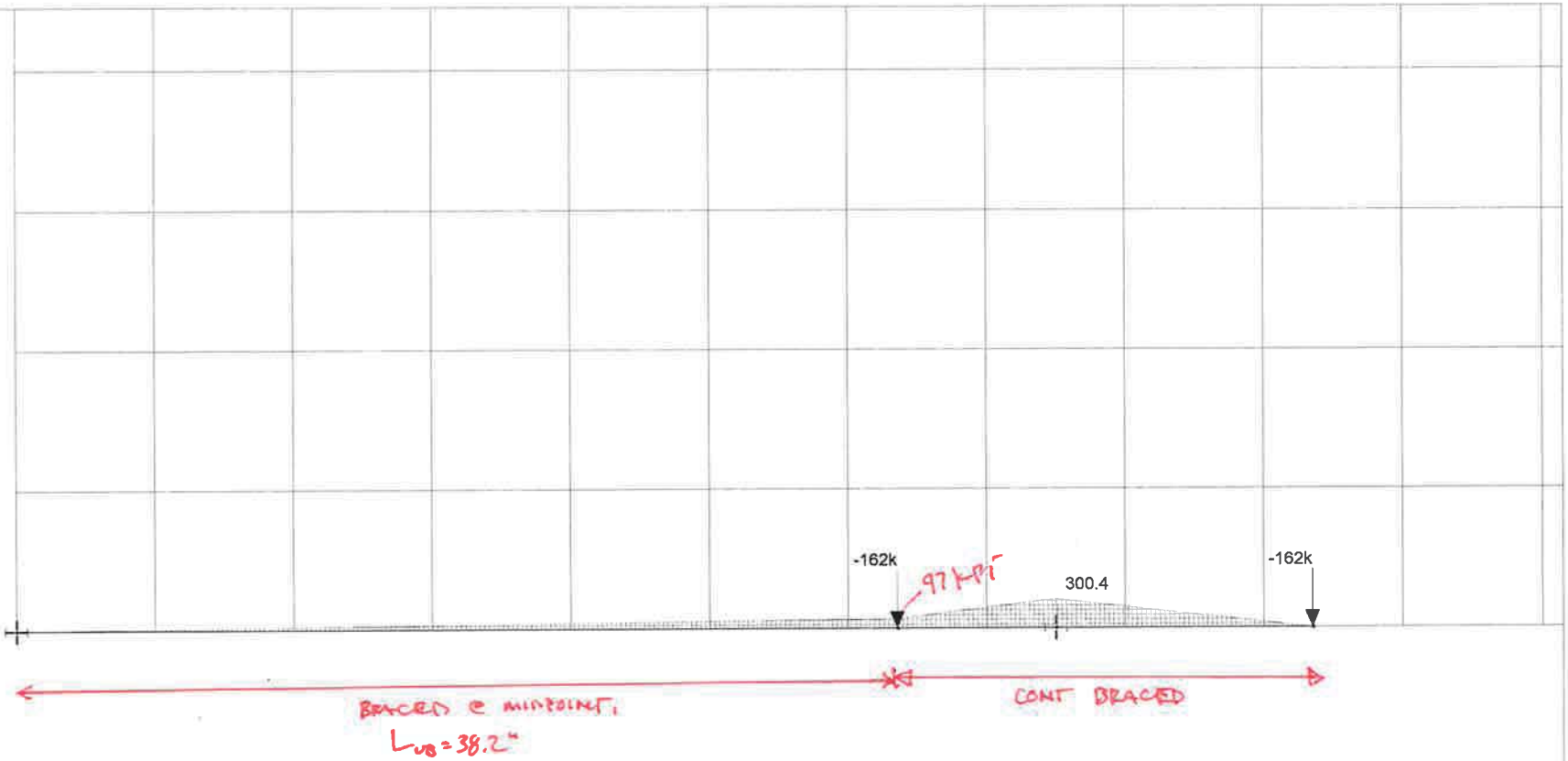
$$= 0.9 \times \left[1.52 - 0.274 \times 917 \times \frac{30\ ksi}{29000\ ksi}\right] \times 30\ ksi \times \frac{1'' \times 24''^2}{6} \times 1.0$$

$$= 3242\ k\text{-in} > M_u \checkmark$$



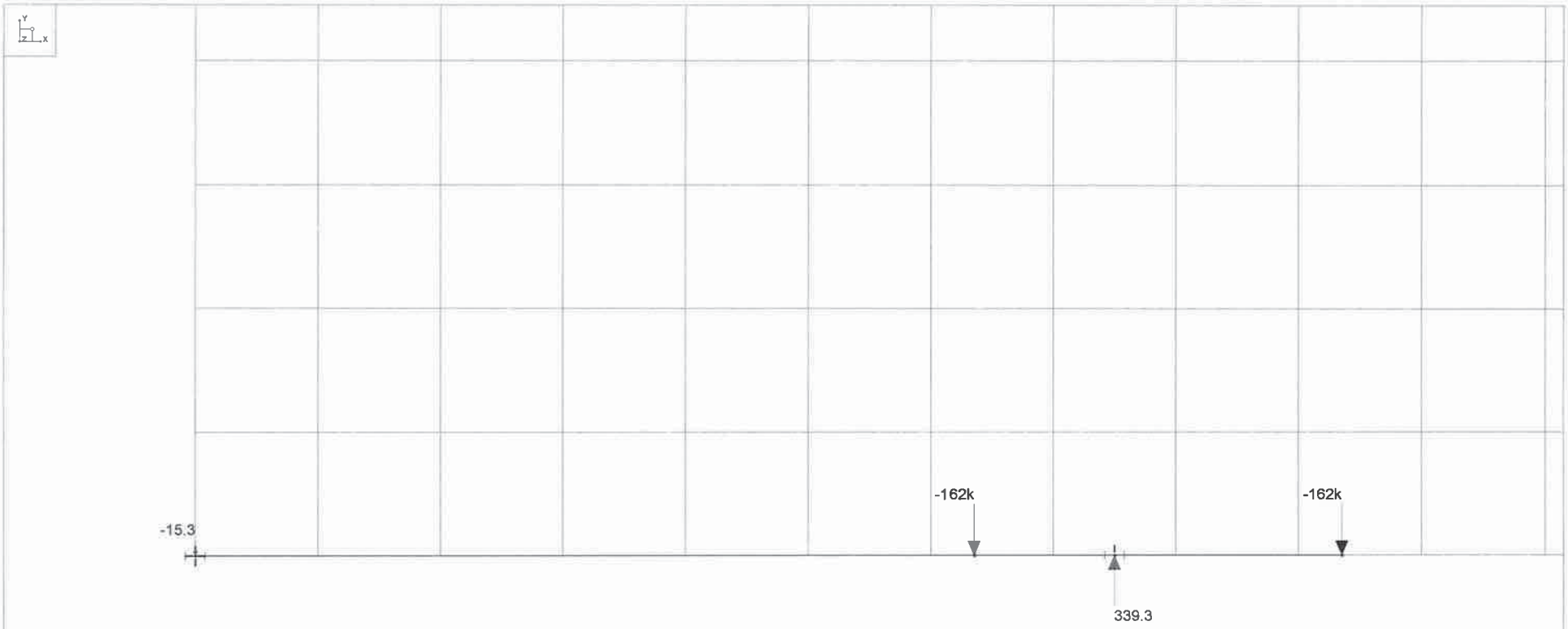
Loads: BLC 1, Ultimate
Results for LC 1, Ultimate
Member y Shear Forces (k)

Magnusson Klemencic Associates		SK - 1
		Apr 11, 2012 at 9:41 AM
		Interior Column Top Connection Flg PL.r3d



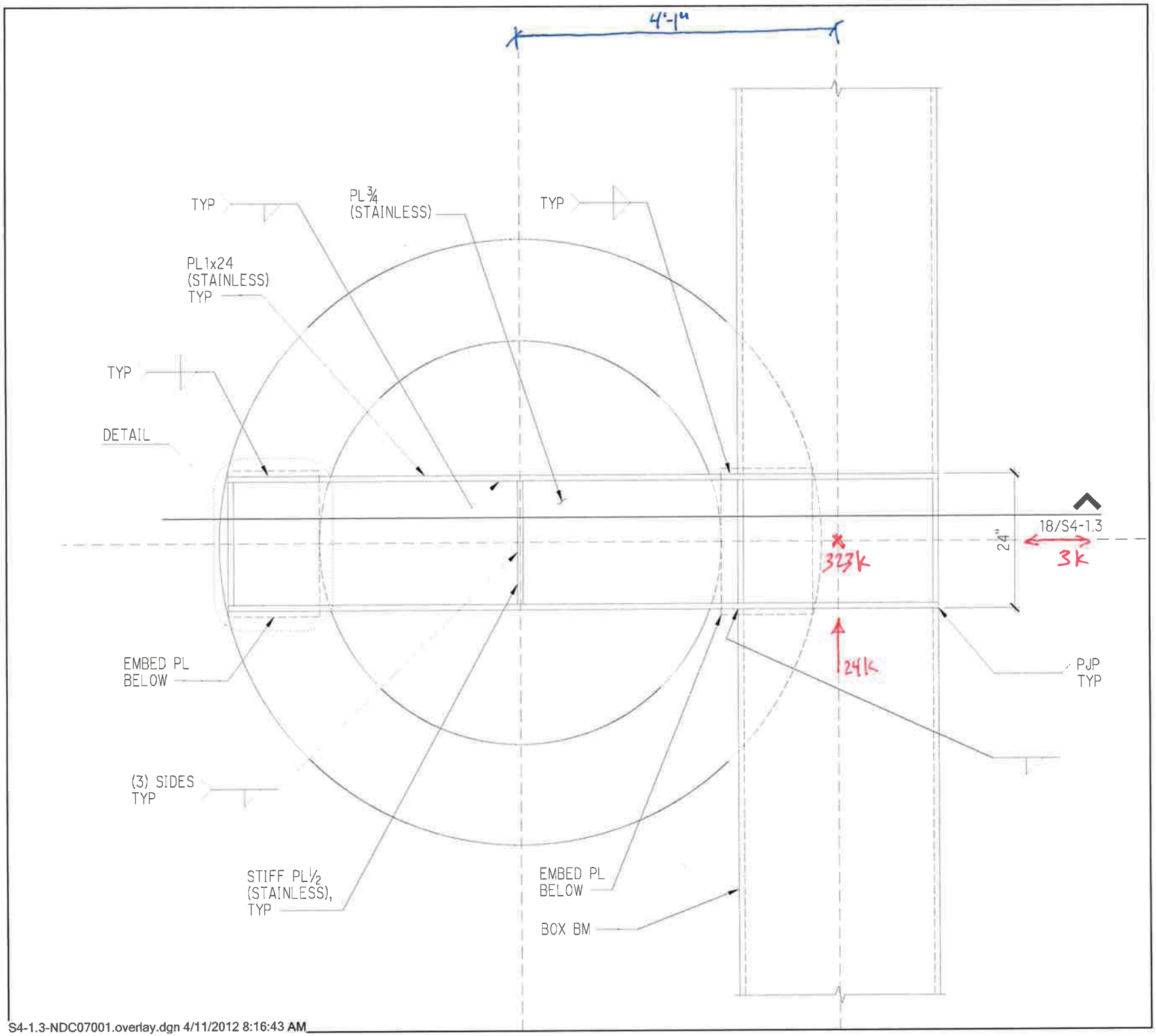
Loads: BLC 1, Ultimate
Results for LC 1, Ultimate
Member z Bending Moments (k-ft)

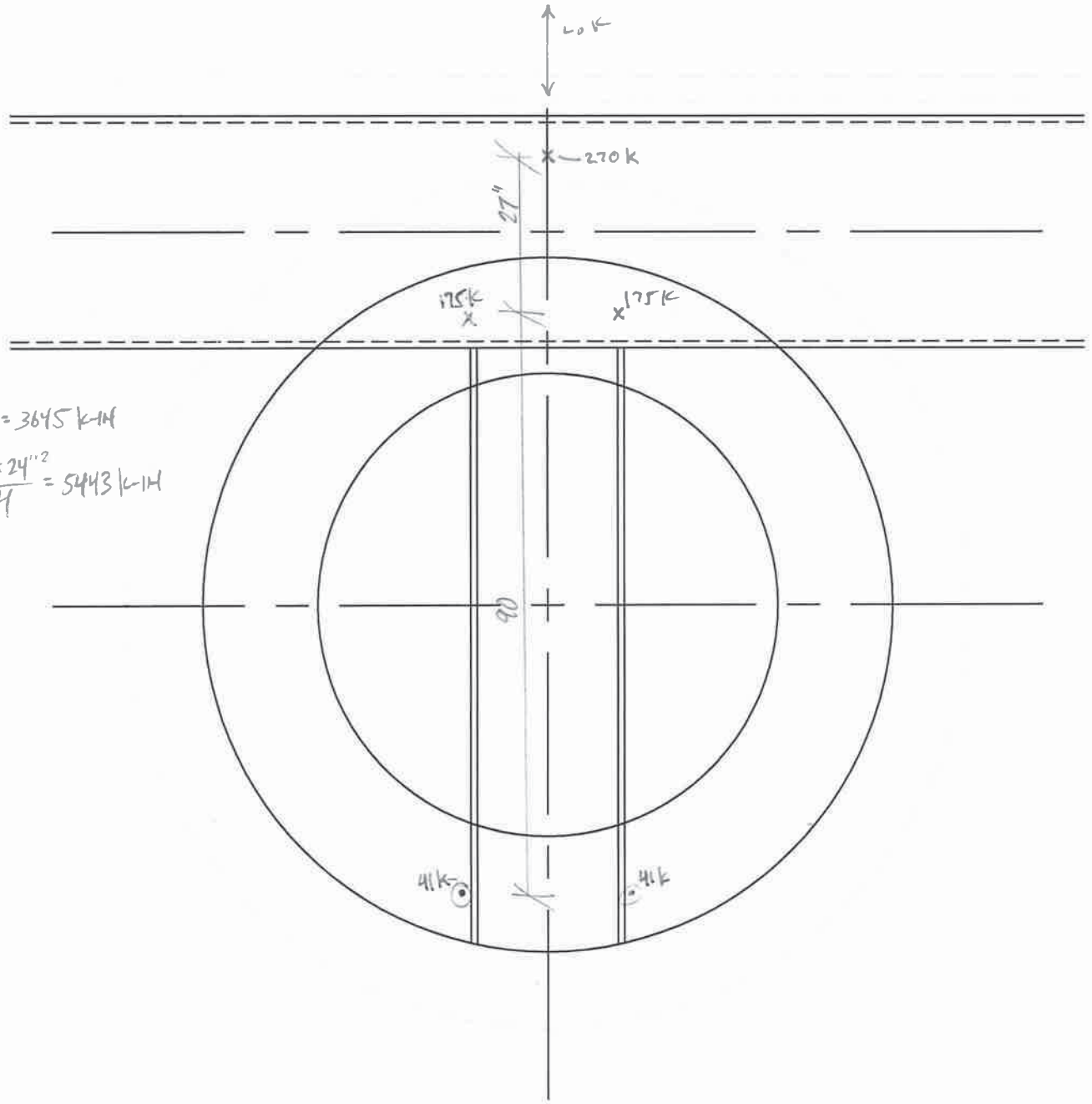
Magnusson Klemencic Associates		SK - 2
		Apr 11, 2012 at 9:41 AM
		Interior Column Top Connection Fig PL.r3d



Loads: BLC 1, Ultimate
Results for LC 1, Ultimate
Y-direction Reaction units are k and k-ft

Magnusson Klemencic Associates		SK - 3
		Apr 11, 2012 at 10:18 AM
		Interior Column Top Connection Flg PL.r3d


4'-1"
TYP
PL ¾
(STAINLESS)
TYP
PL1x24
(STAINLESS)
TYP
TYP
DETAIL
18/S4-1.3
24"
323k
3k
241k
EMBED PL
BELOW
PJP
TYP
(3) SIDES
TYP
STIFF PL½
(STAINLESS),
TYP
EMBED PL
BELOW
BOX BM



$M_{u,FLG} = 27' \times 270k/2 = 3645\ k\text{-ft}$

$\phi M_n = 0.9 \times 42\ ksi \times \frac{1" \times 24"^2}{4} = 5443\ k\text{-in}$

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3.5.4 CONCRETE COLUMNS

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Design Sheet

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

TAPESTRY ELEMENT DESIGN -CONCRETE COLUMN

PROJECT EISENHOWER MEMORIAL | SHEET
LOCATION | CLIENT | DATE | BY BHK

TAPESTRY END COLUMN - SHEAR/FLEXURE/AXIAL DESIGN

$P_u = -1265$ k
$V_{u,2} = 764$ k
$V_{u,3} = 100$ k
$\rightarrow V_u = \sqrt{V_{u,2}^2 + V_{u,3}^2} = 771$ k

$M_{u,2} = 6098$ k-ft
$M_{u,3} = 15526$ k-ft

OLD DESIGN FORCES, SEE FOLLOWING PAGES FOR UPDATED FORCES AND DESIGN

SHEAR DESIGN

$A_v = \pi \times (54" - 3" - 0.875" - 0.5 \times 1.27")^2 = 7694$ in^2

$\phi V_c = 0.75 \times 2 \times \sqrt{f'_c} A_v = 1033$ k

* $V_u > 0.5 \phi V_c \rightarrow$ PROVIDE MINIMUM SHEAR REINFORCEMENT

$$\left(\frac{A_v}{s}\right)_{MIN} = MAX\begin{Bmatrix} 0.75\sqrt{f'_c}\, b/f_y \\ 50\, b/f_y \end{Bmatrix} = 1.45 \text{ in}^2/\text{ft}$$

TOTAL REQUIRED SHEAR + TORSION REINFORCEMENT = 2.0 in^2/ft + 1/2 x 1.45 in^2/ft = 2.73 in^2/ft

(1) #7@4"
(1) #6@4"
$A_s = 3.12$ in^2/ft

FLEXURE/AXIAL DESIGN

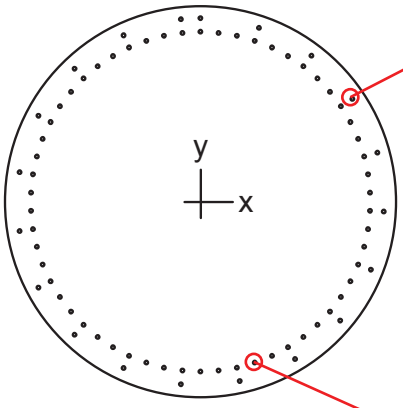
*SEE ATTACHED FOR SP COLUMN RESULTS

EISENHOWER MEMORIAL TAPESTRY END COLUMN FORCES - East

TABLE: Element Forces - Frames					MAX	-108.646	639.758	88.284	48189.48	43839.099	142018.9
					MIN	-1411.01	-580.699	-88.285	-46462.33	-60517.535	-136495.6
Frame	Station	OutputCase	CaseType	StepType		P	V2	V3	T	M2	M3
Text	in	Text	Text	Text		Kip	Kip	Kip	Kip-in	Kip-in	Kip-in
220	0	FACTORED_ENVE	Combination	Max		-1316.16	-410.609	88.284	-35034.08	43727.078	-29347.39
220	252	FACTORED_ENVE	Combination	Max		-1022.23	-415.62	83.278	-35034.08	21200.542	76663.241
220	252	FACTORED_ENVE	Combination	Max		-1021.79	-369.701	79.957	-31718.06	21232.089	76663.241
220	311.7	FACTORED_ENVE	Combination	Max		-952.157	-371.279	78.379	-31718.06	16349.652	101128.05
220	311.7	FACTORED_ENVE	Combination	Max		-951.642	-276.342	71.808	-24865	16386.391	101128.05
220	371.4	FACTORED_ENVE	Combination	Max		-882.009	-277.92	70.23	-24865	12000.304	119318.33
220	371.4	FACTORED_ENVE	Combination	Max		-881.493	-182.453	63.662	-17973.9	12037.165	119318.33
220	431.1	FACTORED_ENVE	Combination	Max		-811.86	-184.031	62.084	-17973.9	8147.789	131287.09
220	431.1	FACTORED_ENVE	Combination	Max		-811.342	-88.072	55.509	-11047.49	8184.797	131287.09
220	490.8	FACTORED_ENVE	Combination	Max		-741.709	-89.995	53.587	-11047.49	4801.857	137090.75
220	490.8	FACTORED_ENVE	Combination	Max		-741.191	1.604	47.361	-4435.971	4838.413	137090.75
220	514.002	FACTORED_ENVE	Combination	Max		-714.129	0.838	46.595	-4435.971	3706.673	137076.39
220	550.5	FACTORED_ENVE	Combination	Max		-671.558	-0.368	45.389	-4435.971	1955.778	137080.9
220	550.5	FACTORED_ENVE	Combination	Max		-671.034	69.769	41.03	277.647	1991.52	137080.9
220	610.2	FACTORED_ENVE	Combination	Max		-601.401	67.796	39.058	277.647	-501.93	134596.7
220	610.2	FACTORED_ENVE	Combination	Max		-600.876	138.964	34.699	5060.487	-466.088	134596.7
220	669.9	FACTORED_ENVE	Combination	Max		-531.243	136.991	32.727	5060.487	-2570.201	127891.49
220	669.9	FACTORED_ENVE	Combination	Max		-530.718	207.691	28.368	9874.65	-2534.242	127891.49
220	729.6	FACTORED_ENVE	Combination	Max		-461.085	205.575	26.252	9874.65	-4246.628	116401.23
220	729.6	FACTORED_ENVE	Combination	Max		-460.559	275.881	21.893	14972.05	-4210.536	116401.23
220	789.3	FACTORED_ENVE	Combination	Max		-390.926	273.643	19.656	14972.05	-5519.307	100139.09
220	789.3	FACTORED_ENVE	Combination	Max		-390.401	344.102	15.712	20004.53	-5483.317	100139.09
220	849	FACTORED_ENVE	Combination	Max		-320.768	344.102	13.474	20004.53	-6411.58	79573.502
220	849	FACTORED_ENVE	Combination	Max		-320.243	394.107	11.536	23504.57	-6375.323	79573.502
220	908.7	FACTORED_ENVE	Combination	Max		-250.61	394.107	9.349	23504.57	-7042.892	56024.85
220	908.7	FACTORED_ENVE	Combination	Max		-250.084	444.234	7.36	27061.84	-7006.506	56024.85
220	968.4	FACTORED_ENVE	Combination	Max		-180.451	444.234	5.409	27061.84	-7413.428	29487.455
220	968.4	FACTORED_ENVE	Combination	Max		-179.954	494.525	3.167	30699.04	-7378.982	29487.455
220	1028.004	FACTORED_ENVE	Combination	Max		-110.433	494.53	1.453	30699.04	-7518.738	-1.39E-05
220	0	FACTORED_ENVE	Combination	Min		-1411.01	-580.694	-88.283	-46462.33	-60517.535	-95850.92
220	252	FACTORED_ENVE	Combination	Min		-1111.08	-580.699	-83.277	-46462.33	-37691.848	41502.501
220	252	FACTORED_ENVE	Combination	Min		-1110.64	-514.252	-79.955	-41694.58	-37660.531	41502.501
220	311.7	FACTORED_ENVE	Combination	Min		-1039.58	-514.252	-78.377	-41694.58	-32714.918	68318.36
220	311.7	FACTORED_ENVE	Combination	Min		-1039.04	-395.245	-71.806	-33161.18	-32678.604	68318.359
220	371.4	FACTORED_ENVE	Combination	Min		-967.982	-395.245	-70.228	-33161.18	-29308.524	89142.08
220	371.4	FACTORED_ENVE	Combination	Min		-967.435	-278.538	-63.653	-24723.67	-29271.173	89142.08
220	431.1	FACTORED_ENVE	Combination	Min		-896.381	-278.538	-62.075	-24723.67	-26417.539	103935.91
220	431.1	FACTORED_ENVE	Combination	Min		-895.831	-167.31	-55.507	-16733.37	-26380.148	103935.91
220	490.8	FACTORED_ENVE	Combination	Min		-824.776	-167.31	-53.585	-16733.37	-23791.064	112665.6
220	490.8	FACTORED_ENVE	Combination	Min		-824.233	-61.78	-47.361	-9205.001	-23754.195	112665.6
220	514.002	FACTORED_ENVE	Combination	Min		-796.618	-61.78	-46.594	-9205.001	-22847.718	113811.18
220	550.5	FACTORED_ENVE	Combination	Min		-753.179	-61.78	-45.388	-9205.001	-21433.787	115611.07
220	550.5	FACTORED_ENVE	Combination	Min		-752.667	12.613	-41.029	-3527.921	-21398.021	115611.07
220	610.2	FACTORED_ENVE	Combination	Min		-681.613	12.613	-39.057	-3527.921	-19356.807	114450.16
220	610.2	FACTORED_ENVE	Combination	Min		-681.105	86.632	-34.699	2119.814	-19320.987	114450.16
220	669.9	FACTORED_ENVE	Combination	Min		-610.051	86.632	-32.726	2119.814	-17559.296	109157.03
220	669.9	FACTORED_ENVE	Combination	Min		-609.543	157.774	-28.368	7745.186	-17523.403	109157.03
220	729.6	FACTORED_ENVE	Combination	Min		-538.488	157.774	-26.253	7745.186	-16042.787	99707.146
220	729.6	FACTORED_ENVE	Combination	Min		-537.979	227.779	-21.895	13343.1	-16006.802	99707.146
220	789.3	FACTORED_ENVE	Combination	Min		-466.925	227.779	-19.658	13343.1	-14813.978	86076.848
220	789.3	FACTORED_ENVE	Combination	Min		-466.416	290.426	-15.716	17950.71	-14778.106	86076.848
220	849	FACTORED_ENVE	Combination	Min		-395.361	290.426	-13.478	17950.71	-13867.611	68694.663
220	849	FACTORED_ENVE	Combination	Min		-394.851	336.661	-11.54	21265.21	-13831.72	68694.663
220	908.7	FACTORED_ENVE	Combination	Min		-323.797	336.661	-9.349	21265.21	-13170.667	48528.146
220	908.7	FACTORED_ENVE	Combination	Min		-323.286	383.324	-7.365	24573.1	-13134.669	48528.146
220	968.4	FACTORED_ENVE	Combination	Min		-252.231	383.324	-5.41	24573.1	-12723.195	25623.272
220	968.4	FACTORED_ENVE	Combination	Min		-251.752	429.682	-3.208	27906.7	-12689.166	25623.272
220	1028.004	FACTORED_ENVE	Combination	Min		-180.812	429.687	-1.491	27906.7	-12534.66	-5.89E-05
417	0	FACTORED_ENVE	Combination	Max		-1314.66	639.758	88.284	48189.48	43839.099	142018.91
417	252	FACTORED_ENVE	Combination	Max		-1020.74	634.751	83.277	48189.48	21312.054	-16969.96

417	252	FACTORED_ENVE	Combination	Max	-1020.28	569.702	79.957	43514.65	21342.872	-16969.96
417	311.7	FACTORED_ENVE	Combination	Max	-950.65	568.124	78.379	43514.65	16460.357	-48641.94
417	311.7	FACTORED_ENVE	Combination	Max	-950.106	448.401	71.808	34911.68	16497.11	-48641.94
417	371.4	FACTORED_ENVE	Combination	Max	-880.473	446.823	70.23	34911.68	12110.94	-73755.73
417	371.4	FACTORED_ENVE	Combination	Max	-879.926	327.99	63.663	26372.58	12147.816	-73755.73
417	431.1	FACTORED_ENVE	Combination	Max	-810.293	326.412	62.085	26372.58	8258.345	-92278.32
417	431.1	FACTORED_ENVE	Combination	Max	-809.747	208.361	55.51	18018.21	8295.368	-92278.32
417	490.8	FACTORED_ENVE	Combination	Max	-740.114	206.439	53.588	18018.21	4912.318	-103693.2
417	490.8	FACTORED_ENVE	Combination	Max	-739.571	94.704	47.363	10292.61	4948.888	-103693.2
417	514.002	FACTORED_ENVE	Combination	Max	-712.509	93.938	46.596	10292.61	3817.1	-105784.1
417	550.5	FACTORED_ENVE	Combination	Max	-669.938	92.732	45.39	10292.61	2066.126	-109058.7
417	550.5	FACTORED_ENVE	Combination	Max	-669.394	17.129	41.033	4593.706	2101.878	-109058.7
417	610.2	FACTORED_ENVE	Combination	Max	-599.761	15.156	39.06	4593.706	-391.712	-109975.5
417	610.2	FACTORED_ENVE	Combination	Max	-599.215	-59.348	34.702	-1070.09	-355.859	-109975.5
417	669.9	FACTORED_ENVE	Combination	Max	-529.583	-60.273	32.73	-1070.09	-2460.126	-106417.4
417	669.9	FACTORED_ENVE	Combination	Max	-529.036	-134.705	28.372	-6703.319	-2424.157	-106417.4
417	729.6	FACTORED_ENVE	Combination	Max	-459.403	-135.612	26.256	-6703.319	-4136.715	-98357.23
417	729.6	FACTORED_ENVE	Combination	Max	-458.856	-210.514	21.898	-12310.38	-4100.611	-98357.23
417	789.3	FACTORED_ENVE	Combination	Max	-389.223	-211.487	19.66	-12310.38	-5409.576	-85762.44
417	789.3	FACTORED_ENVE	Combination	Max	-388.679	-279.355	15.717	-17332.19	-5373.575	-85762.44
417	849	FACTORED_ENVE	Combination	Max	-319.046	-280.328	13.479	-17332.19	-6302.052	-68694.76
417	849	FACTORED_ENVE	Combination	Max	-318.508	-331.964	11.542	-21058.06	-6265.786	-68694.76
417	908.7	FACTORED_ENVE	Combination	Max	-248.876	-332.938	9.354	-21058.06	-6933.578	-48528.41
417	908.7	FACTORED_ENVE	Combination	Max	-248.338	-383.324	7.367	-24573.16	-6897.183	-48528.41
417	968.4	FACTORED_ENVE	Combination	Max	-178.705	-383.324	5.415	-24573.16	-7304.34	-25623.7
417	968.4	FACTORED_ENVE	Combination	Max	-178.167	-429.694	3.174	-27907.26	-7267.824	-25623.7
417	1028.004	FACTORED_ENVE	Combination	Max	-108.646	-429.694	1.46	-27907.26	-7404.846	5.813E-05
417	0	FACTORED_ENVE	Combination	Min	-1409.48	490.208	-88.285	38324.38	-60394.953	79835.808
417	252	FACTORED_ENVE	Combination	Min	-1109.56	490.208	-83.278	38324.38	-37572.299	-53051.13
417	252	FACTORED_ENVE	Combination	Min	-1109.1	442.919	-79.957	34919.58	-37541.697	-53051.13
417	311.7	FACTORED_ENVE	Combination	Min	-1038.05	442.919	-78.378	34919.58	-32596.777	-83792.25
417	311.7	FACTORED_ENVE	Combination	Min	-1037.49	343.023	-71.807	27727.05	-32560.443	-83792.25
417	371.4	FACTORED_ENVE	Combination	Min	-966.432	343.023	-70.228	27727.05	-29191.625	-107418.2
417	371.4	FACTORED_ENVE	Combination	Min	-965.866	242.562	-63.653	20493.82	-29154.256	-107418.2
417	431.1	FACTORED_ENVE	Combination	Min	-894.811	242.562	-62.075	20493.82	-26301.299	-123990.4
417	431.1	FACTORED_ENVE	Combination	Min	-894.242	141.571	-55.507	13222.42	-26263.889	-123990.4
417	490.8	FACTORED_ENVE	Combination	Min	-823.188	141.571	-53.585	13222.42	-23675.504	-133560.7
417	490.8	FACTORED_ENVE	Combination	Min	-822.627	45.293	-47.359	6290.423	-23638.618	-133560.7
417	514.002	FACTORED_ENVE	Combination	Min	-795.012	45.293	-46.592	6290.423	-22732.421	-134702.2
417	550.5	FACTORED_ENVE	Combination	Min	-751.572	45.293	-45.386	6290.423	-21318.935	-136495.6
417	550.5	FACTORED_ENVE	Combination	Min	-751.04	-31.637	-41.027	1382.637	-21283.155	-136495.6
417	610.2	FACTORED_ENVE	Combination	Min	-679.985	-31.637	-39.055	1382.637	-19242.685	-134596.3
417	610.2	FACTORED_ENVE	Combination	Min	-679.46	-112.03	-34.696	-3932.109	-19206.851	-134596.3
417	669.9	FACTORED_ENVE	Combination	Min	-608.406	-112.03	-32.723	-3932.109	-17445.924	-127891.2
417	669.9	FACTORED_ENVE	Combination	Min	-607.88	-192.112	-28.365	-9432.695	-17410.016	-127891.2
417	729.6	FACTORED_ENVE	Combination	Min	-536.825	-192.112	-26.249	-9432.695	-15930.189	-116401.1
417	729.6	FACTORED_ENVE	Combination	Min	-536.298	-272.012	-21.891	-14972.13	-15894.189	-116401.1
417	789.3	FACTORED_ENVE	Combination	Min	-465.244	-272.012	-19.653	-14972.13	-14702.181	-100139.1
417	789.3	FACTORED_ENVE	Combination	Min	-464.718	-344.102	-15.71	-20004.6	-14666.294	-100139.1
417	849	FACTORED_ENVE	Combination	Min	-393.664	-344.102	-13.472	-20004.6	-13756.64	-79573.63
417	849	FACTORED_ENVE	Combination	Min	-393.14	-394.107	-11.533	-23504.64	-13720.737	-79573.63
417	908.7	FACTORED_ENVE	Combination	Min	-322.085	-394.107	-9.343	-23504.64	-13060.541	-56025.13
417	908.7	FACTORED_ENVE	Combination	Min	-321.56	-444.234	-7.358	-27061.91	-13024.531	-56025.13
417	968.4	FACTORED_ENVE	Combination	Min	-250.506	-444.234	-5.403	-27061.91	-12613.931	-29487.89
417	968.4	FACTORED_ENVE	Combination	Min	-249.979	-494.538	-3.201	-30700.11	-12577.846	-29487.89
417	1028.004	FACTORED_ENVE	Combination	Min	-179.039	-494.538	-1.484	-30700.11	-12416.343	1.397E-05

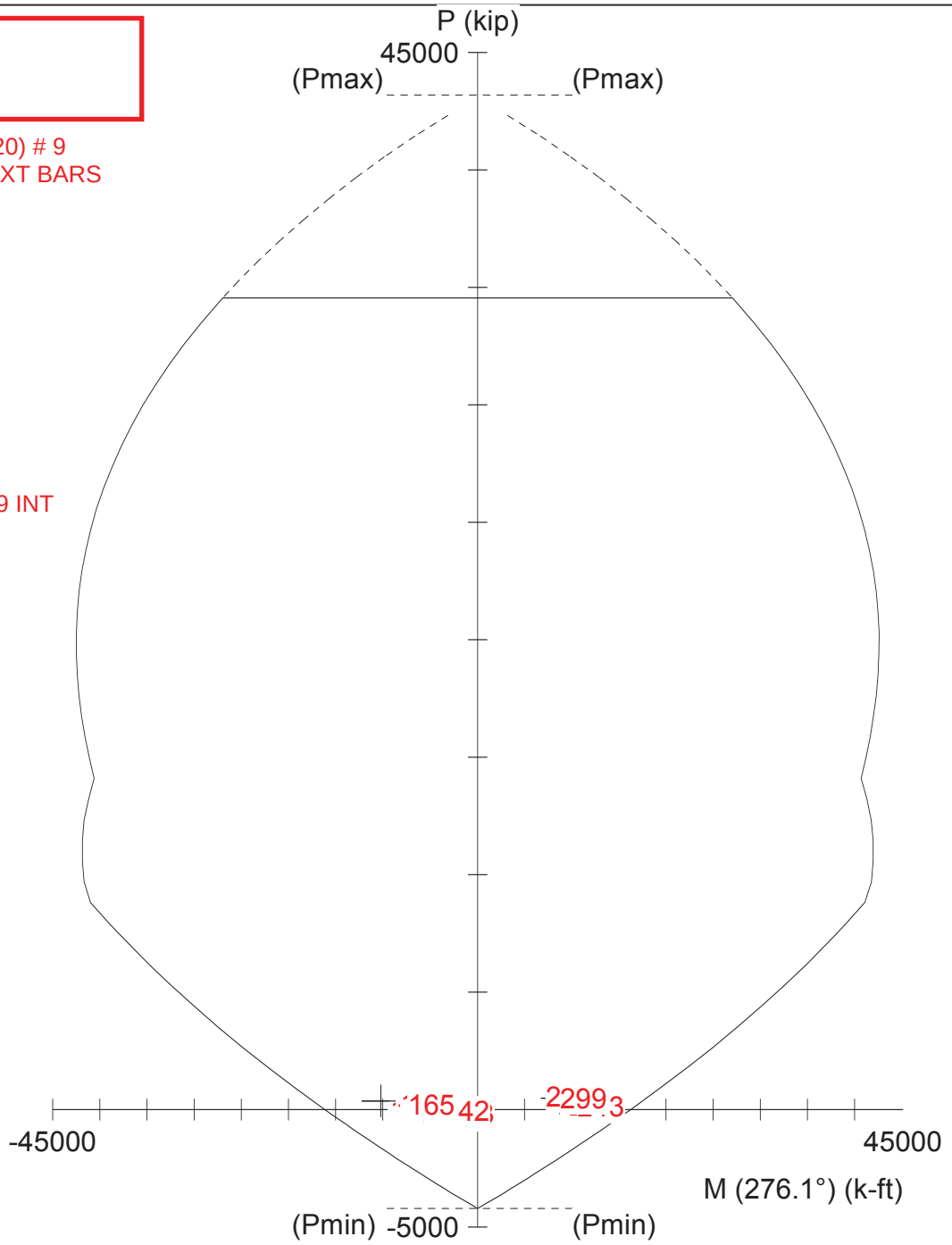
EAST TAPESTRY END COLUMN



(20) # 9 EXT BARS

(58) #9 INT BARS

108 in diam.



Code: ACI 318-08

Units: English

Run axis: Biaxial

Run option: Investigation

Slenderness: Not considered

Column type: Structural

Bars: ASTM A615

Date: 08/26/12

Time: 14:41:58

spColumn v4.60. Licensed to: Magnusson Klemencic Associates. License ID: 57793-1025074-4-28196-2ACD5

File: c:\users\bhk\documents\eisenhower memorial\misc\12_1_5_1-bay solid column.col

Project: Eisenhower Memorial

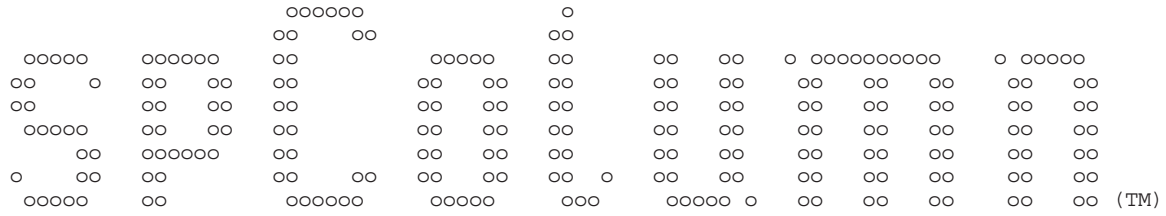
Column: 1 Bay Ext

Engineer: BHK

f'c = 8 ksi	fy = 60 ksi	Ag = 9160.88 in^2	78 #9 bars → REMAINING (38) BARS ASSUMED TO RESIST TORSION ONLY
Ec = 5098 ksi	Es = 29000 ksi	As = 78.00 in^2	rho = 0.85%
fc = 6.8 ksi		Xo = 0.00 in	Ix = 6.67829e+006 in^4
e_u = 0.003 in/in		Yo = 0.00 in	Iy = 6.67829e+006 in^4
Beta1 = 0.65		Min clear spacing = 2.61 in	Clear cover = 2.87 in

Confinement: Tied

phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65



==========

spColumn v4.60 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections
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General Information:
==========
File Name: C:\Users\bhk\Documents\Eisenhower Memorial\Misc\12_08_26_1-bay solid column.col
Project: Eisenhower Memorial
Column: 1 Bay Ext Engineer: BHK
Code: ACI 318-08 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: Biaxial Column Type: Structural

Material Properties:
==========
f'c = 8 ksi fy = 60 ksi
Ec = 5098.24 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.65

Section:
========
Circular: Diameter = 108 in

Gross section area, Ag = 9160.88 in^2
Ix = 6.67829e+006 in^4 Iy = 6.67829e+006 in^4
rx = 27 in ry = 27 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #6 ties with #10 bars, #6 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Pattern: Irregular
Total steel area: As = 78.00 in^2 at rho = 0.85% (Note: rho < 1.0%)
Minimum clear spacing = 2.61 in

Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)
1.00	0.0	50.6	1.00	16.1	47.9	1.00	30.6	40.3
1.00	41.8	28.4	1.00	48.7	13.5	1.00	50.5	-2.7
1.00	47.0	-18.7	1.00	38.5	-32.7	1.00	26.1	-43.3
1.00	10.9	-49.4	1.00	-5.5	-50.3	1.00	-21.2	-45.9
1.00	-34.8	-36.7	1.00	-44.7	-23.7	1.00	-49.9	-8.2
1.00	-49.9	8.2	1.00	-44.7	23.7	1.00	-34.8	36.7
1.00	-21.2	45.9	1.00	-5.5	50.3	1.00	0.0	46.8
1.00	5.1	46.5	1.00	10.1	45.7	1.00	14.9	44.4
1.00	19.7	42.5	1.00	24.1	40.1	1.00	28.3	37.3
1.00	32.2	34.0	1.00	35.7	30.3	1.00	38.7	26.3
1.00	41.4	21.9	1.00	43.5	17.3	1.00	45.1	12.5
1.00	46.2	7.6	1.00	46.7	2.5	1.00	46.7	-2.5
1.00	46.2	-7.6	1.00	45.1	-12.5	1.00	43.5	-17.3
1.00	41.4	-21.9	1.00	38.7	-26.3	1.00	35.7	-30.3
1.00	32.2	-34.0	1.00	28.3	-37.3	1.00	24.1	-40.1
1.00	19.7	-42.5	1.00	14.9	-44.4	1.00	10.1	-45.7
1.00	5.1	-46.5	1.00	0.0	-46.8	1.00	-5.1	-46.5
1.00	-10.1	-45.7	1.00	-14.9	-44.4	1.00	-19.7	-42.5
1.00	-24.1	-40.1	1.00	-28.3	-37.3	1.00	-32.2	-34.0
1.00	-35.7	-30.3	1.00	-38.7	-26.3	1.00	-41.4	-21.9
1.00	-43.5	-17.3	1.00	-45.1	-12.5	1.00	-46.2	-7.6
1.00	-46.7	-2.5	1.00	-46.7	2.5	1.00	-46.2	7.6
1.00	-45.1	12.5	1.00	-43.5	17.3	1.00	-41.4	21.9
1.00	-38.7	26.3	1.00	-35.7	30.3	1.00	-32.2	34.0
1.00	-28.3	37.3	1.00	-24.1	40.1	1.00	-19.7	42.5
1.00	-14.9	44.4	1.00	-10.1	45.7	1.00	-5.1	46.5

Factored Loads and Moments with Corresponding Capacities:

No.	Pu kip	Mux k-ft	Muy k-ft	PhiMnx k-ft	PhiMny k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	1316.16	3643.92	-2445.62	17246.52	-11574.98	4.733	19.54	104.30	0.01302	0.900
2	1022.23	1766.71	6388.60	5258.52	19015.33	2.976	18.72	104.31	0.01372	0.900
3	1021.79	1769.34	6388.60	5265.40	19011.94	2.976	18.72	104.31	0.01372	0.900
4	952.16	1362.47	8427.34	3116.07	19273.92	2.287	18.54	104.47	0.01390	0.900
5	951.64	1365.53	8427.34	3122.70	19271.62	2.287	18.54	104.47	0.01391	0.900
6	882.01	1000.03	9943.19	1924.88	19139.01	1.925	18.32	104.24	0.01407	0.900
7	881.49	1003.10	9943.19	1930.57	19136.79	1.925	18.32	104.24	0.01407	0.900
8	811.86	678.98	10940.59	1177.09	18966.75	1.734	18.11	104.10	0.01424	0.900
9	811.34	682.07	10940.59	1182.30	18964.56	1.733	18.11	104.10	0.01424	0.900
10	741.71	400.15	11424.23	657.66	18775.83	1.644	17.91	104.00	0.01442	0.900
11	741.19	403.20	11424.23	662.59	18773.65	1.643	17.91	104.00	0.01442	0.900
12	714.13	308.89	11423.03	505.56	18696.25	1.637	17.83	103.97	0.01449	0.900
13	671.56	162.98	11423.41	265.00	18574.09	1.626	17.71	103.92	0.01460	0.900
14	671.03	165.96	11423.41	269.81	18571.91	1.626	17.71	103.92	0.01460	0.900
15	601.40	-41.83	11216.39	-68.35	18329.38	1.634	17.52	103.93	0.01480	0.900
16	600.88	-38.84	11216.39	-63.47	18328.01	1.634	17.51	103.93	0.01480	0.900
17	531.24	-214.18	10657.62	-363.03	18063.88	1.695	17.32	103.99	0.01502	0.900
18	530.72	-211.19	10657.62	-357.92	18062.52	1.695	17.31	103.99	0.01502	0.900
19	461.08	-353.89	9700.10	-649.34	17798.57	1.835	17.12	104.06	0.01524	0.900
20	460.56	-350.88	9700.10	-643.77	17797.26	1.835	17.12	104.06	0.01524	0.900
21	390.93	-459.94	8344.92	-966.20	17530.10	2.101	16.92	104.13	0.01546	0.900
22	390.40	-456.94	8344.92	-959.83	17528.85	2.101	16.92	104.13	0.01547	0.900
23	320.77	-534.30	6631.13	-1390.13	17252.78	2.602	16.71	104.23	0.01571	0.900
24	320.24	-531.28	6631.13	-1382.18	17251.67	2.602	16.71	104.23	0.01571	0.900
25	250.61	-586.91	4668.74	-2130.23	16945.52	3.630	16.51	104.40	0.01597	0.900
26	250.08	-583.88	4668.74	-2119.11	16944.67	3.629	16.51	104.40	0.01597	0.900
27	180.45	-617.79	2457.29	-4095.01	16288.19	6.629	16.30	104.33	0.01620	0.900
28	179.95	-614.92	2457.29	-4076.76	16291.30	6.630	16.30	104.33	0.01620	0.900
29	110.43	-626.56	0.00	-16545.88	-0.00	26.407	15.92	104.26	0.01664	0.900
30	1411.01	-5043.13	-7987.58	-11142.70	-17648.40	2.209	19.73	104.16	0.01284	0.900
31	1111.08	-3140.99	3458.54	-13367.17	14718.59	4.256	18.89	104.29	0.01356	0.900
32	1110.64	-3138.38	3458.54	-13360.36	14723.33	4.257	18.89	104.29	0.01356	0.900
33	1039.58	-2726.24	5693.20	-8499.00	17748.41	3.117	18.76	104.35	0.01369	0.900
34	1039.04	-2723.22	5693.20	-8490.51	17750.38	3.118	18.76	104.34	0.01369	0.900
35	967.98	-2442.38	7428.51	-6089.42	18521.00	2.493	18.56	104.14	0.01383	0.900
36	967.44	-2439.26	7428.51	-6081.72	18521.18	2.493	18.56	104.14	0.01384	0.900
37	896.38	-2201.46	8661.33	-4737.02	18637.10	2.152	18.37	104.33	0.01404	0.900
38	895.83	-2198.35	8661.33	-4730.29	18637.00	2.152	18.37	104.33	0.01404	0.900
39	824.78	-1982.59	9388.80	-3928.81	18605.39	1.982	18.17	104.44	0.01424	0.900
40	824.23	-1979.52	9388.80	-3922.68	18605.16	1.982	18.17	104.44	0.01424	0.900
41	796.62	-1903.98	9484.27	-3726.27	18561.64	1.957	18.08	104.46	0.01433	0.900
42	753.18	-1786.15	9634.26	-3428.02	18490.27	1.919	17.96	104.50	0.01445	0.900
43	752.67	-1783.17	9634.26	-3422.25	18490.04	1.919	17.96	104.50	0.01446	0.900
44	681.61	-1613.07	9537.51	-3099.89	18328.57	1.922	17.76	104.55	0.01466	0.900
45	681.11	-1610.08	9537.51	-3094.11	18328.35	1.922	17.76	104.55	0.01466	0.900
46	610.05	-1463.27	9096.42	-2913.30	18110.46	1.991	17.56	104.53	0.01486	0.900
47	609.54	-1460.28	9096.42	-2907.15	18109.26	1.991	17.56	104.53	0.01486	0.900
48	538.49	-1336.90	8308.93	-2875.10	17868.94	2.151	17.34	104.53	0.01509	0.900
49	537.98	-1333.90	8308.93	-2868.46	17867.78	2.150	17.34	104.53	0.01509	0.900
50	466.92	-1234.50	7173.07	-3028.02	17594.36	2.453	17.14	104.54	0.01530	0.900
51	466.42	-1231.51	7173.07	-3020.71	17594.51	2.453	17.13	104.54	0.01530	0.900
52	395.36	-1155.63	5724.56	-3476.50	17221.19	3.008	16.93	104.46	0.01551	0.900
53	394.85	-1152.64	5724.56	-3467.61	17221.77	3.008	16.93	104.46	0.01551	0.900
54	323.80	-1097.56	4044.01	-4528.48	16685.46	4.126	16.71	104.28	0.01572	0.900
55	323.29	-1094.56	4044.01	-4516.48	16686.86	4.126	16.71	104.28	0.01572	0.900
56	252.23	-1060.27	2135.27	-7571.72	15248.70	7.141	16.51	104.39	0.01597	0.900
57	251.75	-1057.43	2135.27	-7554.53	15254.89	7.144	16.50	104.38	0.01597	0.900
58	180.81	-1044.55	0.00	-16792.73	-0.00	16.076	16.13	104.26	0.01640	0.900
59	789.67	3853.94	-732.58	18765.93	-3567.12	4.869	18.04	104.03	0.01430	0.900
60	613.31	1999.09	7642.18	4644.98	17756.94	2.324	17.55	104.35	0.01483	0.900
61	613.05	2000.65	7642.18	4648.13	17755.17	2.323	17.55	104.35	0.01483	0.900
62	571.27	1598.40	9573.97	3003.84	17992.11	1.879	17.45	104.49	0.01497	0.900
63	570.97	1600.17	9573.97	3006.95	17990.82	1.879	17.44	104.49	0.01497	0.900
64	529.19	1238.99	10984.51	2022.85	17933.91	1.633	17.31	104.28	0.01507	0.900
65	528.89	1240.78	10984.51	2025.62	17932.63	1.633	17.31	104.29	0.01507	0.900
66	487.11	920.69	11878.30	1383.23	17845.66	1.502	17.19	104.15	0.01518	0.900
67	486.81	922.50	11878.30	1385.84	17844.38	1.502	17.19	104.15	0.01518	0.900
68	445.03	644.27	12260.28	932.26	17740.73	1.447	17.07	104.06	0.01529	0.900
69	444.72	646.06	12260.28	934.79	17739.45	1.447	17.07	104.06	0.01529	0.900
70	428.48	553.05	12220.28	800.84	17695.42	1.448	17.02	104.03	0.01533	0.900
71	402.94	409.19	12159.69	593.13	17625.83	1.450	16.95	103.99	0.01540	0.900
72	402.62	410.93	12159.69	595.61	17624.53	1.449	16.95	103.99	0.01541	0.900
73	360.84	206.15	11875.19	303.90	17506.33	1.474	16.83	103.93	0.01552	0.900
74	360.53	207.90	11875.19	306.46	17505.03	1.474	16.83	103.93	0.01552	0.900

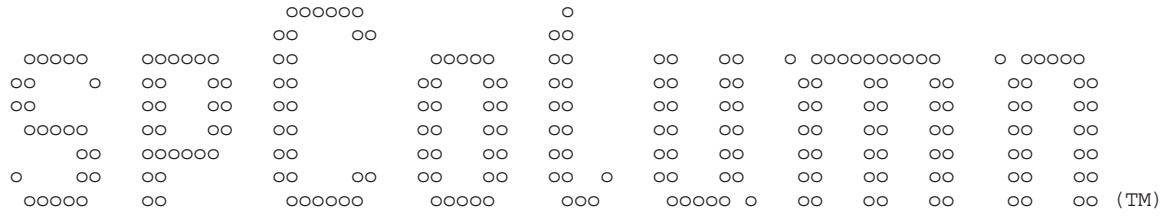
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76	318.43	36.99	11217.32	57.27	17370.89	1.549	16.71	103.90	0.01565	0.900
77	276.65	-103.39	10162.57	-175.06	17206.84	1.693	16.59	103.96	0.01579	0.900
78	276.34	-101.62	10162.57	-172.05	17206.02	1.693	16.59	103.96	0.01579	0.900
79	234.56	-208.70	8711.92	-408.23	17040.77	1.956	16.47	104.01	0.01594	0.900
80	234.24	-206.94	8711.92	-404.76	17039.98	1.956	16.47	104.01	0.01594	0.900
81	192.46	-282.66	6904.28	-690.64	16869.59	2.443	16.35	104.08	0.01610	0.900
82	192.15	-280.86	6904.28	-686.22	16868.88	2.443	16.35	104.08	0.01610	0.900
83	150.37	-335.19	4849.49	-1153.09	16682.58	3.440	16.23	104.19	0.01626	0.900
84	150.05	-333.39	4849.49	-1146.84	16682.03	3.440	16.23	104.18	0.01626	0.900
85	108.27	-366.33	2547.00	-2363.14	16430.14	6.451	16.09	104.47	0.01648	0.900
86	107.98	-364.65	2547.00	-2352.27	16430.08	6.451	16.09	104.47	0.01648	0.900
87	66.27	-374.67	0.00	-16390.63	-0.00	43.747	15.80	104.26	0.01680	0.900
88	789.77	-4679.02	-6022.80	-11536.73	-14850.01	2.466	17.98	104.45	0.01442	0.900
89	613.42	-2814.15	4902.20	-9110.54	15870.42	3.237	17.55	104.51	0.01487	0.900
90	613.15	-2812.60	4902.20	-9106.51	15872.16	3.238	17.55	104.52	0.01487	0.900
91	571.37	-2408.25	6999.68	-5913.70	17188.43	2.456	17.43	104.11	0.01491	0.900
92	571.04	-2406.49	6999.68	-5909.38	17188.44	2.456	17.43	104.11	0.01492	0.900
93	529.26	-2043.32	8601.13	-4159.99	17511.03	2.036	17.31	104.37	0.01508	0.900
94	528.93	-2041.55	8601.13	-4156.34	17510.85	2.036	17.31	104.37	0.01508	0.900
95	487.15	-1719.59	9703.85	-3125.86	17639.59	1.818	17.19	104.53	0.01524	0.900
96	486.82	-1717.81	9703.85	-3122.58	17639.29	1.818	17.19	104.53	0.01524	0.900
97	445.04	-1437.84	10305.35	-2453.58	17585.43	1.706	17.07	104.45	0.01535	0.900
98	444.73	-1436.08	10305.35	-2450.46	17584.62	1.706	17.07	104.45	0.01535	0.900
99	428.49	-1342.44	10353.52	-2274.80	17544.29	1.695	17.03	104.41	0.01540	0.900
100	402.95	-1197.58	10429.19	-2007.24	17480.04	1.676	16.95	104.36	0.01547	0.900
101	402.65	-1195.86	10429.19	-2004.25	17479.28	1.676	16.95	104.36	0.01547	0.900
102	360.87	-989.59	10215.45	-1682.21	17365.23	1.700	16.82	104.29	0.01560	0.900
103	360.57	-987.86	10215.45	-1679.18	17364.47	1.700	16.82	104.29	0.01560	0.900
104	318.79	-813.84	9662.12	-1452.17	17240.59	1.784	16.71	104.24	0.01572	0.900
105	318.50	-812.09	9662.12	-1448.98	17239.84	1.784	16.71	104.24	0.01572	0.900
106	276.72	-670.51	8767.26	-1308.39	17107.89	1.951	16.59	104.21	0.01585	0.900
107	276.42	-668.75	8767.26	-1304.90	17107.16	1.951	16.59	104.21	0.01585	0.900
108	234.64	-560.61	7528.98	-1263.30	16966.08	2.253	16.47	104.20	0.01598	0.900
109	234.34	-558.86	7528.98	-1259.30	16965.39	2.253	16.47	104.20	0.01598	0.900
110	192.56	-482.23	5984.23	-1354.77	16811.77	2.809	16.35	104.23	0.01613	0.900
111	192.25	-480.44	5984.23	-1349.68	16811.15	2.809	16.35	104.23	0.01613	0.900
112	150.47	-425.38	4215.11	-1678.96	16636.97	3.947	16.22	104.31	0.01629	0.900
113	150.17	-423.58	4215.11	-1671.83	16636.54	3.947	16.22	104.31	0.01629	0.900
114	108.39	-390.07	2219.78	-2874.22	16356.52	7.369	16.09	104.53	0.01648	0.900
115	108.12	-388.39	2219.78	-2862.26	16358.74	7.370	16.09	104.53	0.01648	0.900
116	66.40	-378.66	0.00	-16391.10	-0.00	43.287	15.80	104.26	0.01680	0.900
117	1316.16	3643.92	-2477.81	17174.11	-11678.12	4.713	19.54	104.31	0.01302	0.900
118	1022.23	1766.71	6366.59	5275.43	19010.74	2.986	18.72	104.31	0.01372	0.900
119	1021.79	1769.34	6366.59	5282.34	19007.34	2.985	18.72	104.31	0.01372	0.900
120	952.16	1362.47	8407.63	3123.27	19273.31	2.292	18.54	104.47	0.01390	0.900
121	951.64	1365.53	8407.63	3129.92	19271.02	2.292	18.54	104.47	0.01391	0.900
122	882.01	1000.03	9925.69	1928.25	19138.72	1.928	18.32	104.24	0.01407	0.900
123	881.49	1003.10	9925.69	1933.95	19136.50	1.928	18.32	104.24	0.01407	0.900
124	811.86	678.98	10925.16	1178.75	18966.60	1.736	18.11	104.10	0.01424	0.900
125	811.34	682.07	10925.16	1183.96	18964.42	1.736	18.11	104.10	0.01424	0.900
126	741.71	400.16	11410.75	658.43	18775.76	1.645	17.91	104.00	0.01442	0.900
127	741.19	403.20	11410.75	663.37	18773.59	1.645	17.91	104.00	0.01442	0.900
128	714.13	308.89	11410.27	506.13	18696.20	1.639	17.83	103.97	0.01449	0.900
129	671.56	162.98	11411.76	265.27	18574.07	1.628	17.71	103.92	0.01460	0.900
130	671.03	165.96	11411.76	270.09	18571.88	1.627	17.71	103.92	0.01460	0.900
131	601.40	-41.83	11206.46	-68.41	18329.37	1.636	17.52	103.93	0.01480	0.900
132	600.88	-38.84	11206.46	-63.52	18328.00	1.635	17.51	103.93	0.01480	0.900
133	531.24	-214.18	10649.31	-363.31	18063.85	1.696	17.32	103.99	0.01502	0.900
134	530.72	-211.19	10649.31	-358.20	18062.50	1.696	17.31	103.99	0.01502	0.900
135	461.08	-353.89	9693.31	-649.79	17798.54	1.836	17.12	104.06	0.01524	0.900
136	460.56	-350.88	9693.31	-644.22	17797.22	1.836	17.12	104.06	0.01524	0.900
137	390.93	-459.94	8339.59	-966.81	17530.04	2.102	16.92	104.13	0.01546	0.900
138	390.40	-456.94	8339.59	-960.44	17528.79	2.102	16.92	104.13	0.01547	0.900
139	320.77	-534.30	6627.17	-1390.96	17252.71	2.603	16.71	104.23	0.01571	0.900
140	320.24	-531.28	6627.17	-1383.00	17251.59	2.603	16.71	104.23	0.01571	0.900
141	250.61	-586.91	4666.13	-2131.40	16945.42	3.632	16.51	104.40	0.01597	0.900
142	250.08	-583.88	4666.13	-2120.28	16944.57	3.631	16.51	104.40	0.01597	0.900
143	180.45	-617.79	2455.99	-4097.03	16287.65	6.632	16.30	104.33	0.01620	0.900
144	179.95	-614.91	2455.99	-4078.77	16290.76	6.633	16.30	104.33	0.01620	0.900
145	110.43	-626.56	0.00	-16545.88	-0.00	26.407	15.92	104.26	0.01664	0.900
146	1411.01	-5043.13	-8019.77	-11111.65	-17670.17	2.203	19.73	104.15	0.01284	0.900
147	1111.08	-3140.99	3436.53	-13411.87	14673.81	4.270	18.89	104.29	0.01356	0.900
148	1110.64	-3138.38	3436.53	-13405.06	14678.55	4.271	18.89	104.29	0.01356	0.900
149	1039.58	-2726.24	5673.49	-8523.11	17737.17	3.126	18.76	104.35	0.01369	0.900
150	1039.04	-2723.22	5673.49	-8514.61	17739.15	3.127	18.76	104.35	0.01369	0.900
151	967.98	-2442.38	7411.00	-6102.63	18517.44	2.499	18.56	104.14	0.01383	0.900
152	967.44	-2439.26	7411.00	-6094.91	18517.63	2.499	18.56	104.14	0.01384	0.900
153	896.38	-2201.46	8645.90	-4744.93	18634.97	2.155	18.37	104.33	0.01404	0.900
154	895.83	-2198.35	8645.90	-4738.19	18634.87	2.155	18.37	104.33	0.01404	0.900

155	824.78	-1982.59	9375.32	-3934.16	18603.96	1.984	18.17	104.44	0.01424	0.900
156	824.23	-1979.52	9375.32	-3928.01	18603.73	1.984	18.17	104.44	0.01424	0.900
157	796.62	-1903.98	9471.50	-3731.04	18560.36	1.960	18.08	104.46	0.01433	0.900
158	753.18	-1786.15	9622.61	-3431.97	18489.21	1.921	17.96	104.50	0.01445	0.900
159	752.67	-1783.17	9622.61	-3426.20	18488.98	1.921	17.96	104.50	0.01446	0.900
160	681.61	-1613.07	9527.59	-3102.98	18327.74	1.924	17.76	104.54	0.01466	0.900
161	681.11	-1610.08	9527.59	-3097.20	18327.52	1.924	17.76	104.55	0.01466	0.900
162	610.05	-1463.27	9088.11	-2915.93	18110.23	1.993	17.56	104.53	0.01486	0.900
163	609.54	-1460.28	9088.11	-2909.77	18109.03	1.993	17.56	104.53	0.01486	0.900
164	538.49	-1336.90	8302.14	-2877.41	17868.74	2.152	17.34	104.53	0.01509	0.900
165	537.98	-1333.90	8302.14	-2870.78	17867.58	2.152	17.34	104.53	0.01509	0.900
166	466.92	-1234.50	7167.73	-3030.18	17593.79	2.455	17.14	104.54	0.01530	0.900
167	466.42	-1231.51	7167.73	-3022.86	17593.94	2.455	17.13	104.54	0.01530	0.900
168	395.36	-1155.63	5720.60	-3478.77	17220.58	3.010	16.93	104.46	0.01551	0.900
169	394.85	-1152.64	5720.60	-3469.89	17221.16	3.010	16.93	104.46	0.01551	0.900
170	323.80	-1097.56	4041.41	-4531.20	16684.73	4.128	16.71	104.28	0.01572	0.900
171	323.29	-1094.56	4041.41	-4519.20	16686.13	4.129	16.71	104.28	0.01572	0.900
172	252.23	-1060.27	2133.98	-7575.46	15246.96	7.145	16.51	104.39	0.01597	0.900
173	251.75	-1057.43	2133.98	-7558.26	15253.15	7.148	16.50	104.38	0.01597	0.900
174	180.81	-1044.55	0.00	-16792.73	-0.00	16.076	16.13	104.26	0.01640	0.900
175	1314.66	3653.26	11834.91	6107.62	19785.95	1.672	19.52	104.23	0.01302	0.900
176	1020.74	1776.00	-1414.16	15511.10	-12350.88	8.734	18.70	104.46	0.01376	0.900
177	1020.28	1778.57	-1414.16	15517.96	-12338.51	8.725	18.70	104.46	0.01376	0.900
178	950.65	1371.70	-4053.49	6256.77	-18489.34	4.561	18.52	104.40	0.01391	0.900
179	950.10	1374.76	-4053.49	6268.99	-18484.22	4.560	18.52	104.40	0.01391	0.900
180	880.47	1009.25	-6146.31	3121.13	-19007.71	3.093	18.30	104.35	0.01411	0.900
181	879.93	1012.32	-6146.31	3130.20	-19005.03	3.092	18.30	104.35	0.01411	0.900
182	810.29	688.20	-7689.86	1691.51	-18900.91	2.458	18.12	104.42	0.01429	0.900
183	809.75	691.28	-7689.86	1698.88	-18898.39	2.458	18.11	104.41	0.01429	0.900
184	740.11	409.36	-8641.10	887.67	-18737.60	2.168	17.92	104.45	0.01448	0.900
185	739.57	412.41	-8641.10	894.17	-18735.18	2.168	17.92	104.45	0.01448	0.900
186	712.51	318.09	-8815.34	673.47	-18663.81	2.117	17.85	104.46	0.01456	0.900
187	669.94	172.18	-9088.22	351.43	-18549.24	2.041	17.74	104.48	0.01467	0.900
188	669.39	175.16	-9088.22	357.46	-18546.85	2.041	17.73	104.48	0.01467	0.900
189	599.76	-32.64	-9164.62	-65.20	-18307.33	1.998	17.53	104.47	0.01487	0.900
190	599.22	-29.65	-9164.62	-59.23	-18305.99	1.997	17.53	104.47	0.01488	0.900
191	529.58	-205.01	-8868.12	-416.90	-18034.02	2.034	17.32	104.44	0.01509	0.900
192	529.04	-202.01	-8868.12	-410.78	-18032.69	2.033	17.32	104.44	0.01509	0.900
193	459.40	-344.73	-8196.44	-747.07	-17762.97	2.167	17.12	104.41	0.01530	0.900
194	458.86	-341.72	-8196.44	-740.50	-17761.67	2.167	17.12	104.41	0.01530	0.900
195	389.22	-450.80	-7146.87	-1103.20	-17490.07	2.447	16.91	104.37	0.01551	0.900
196	388.68	-447.80	-7146.87	-1095.78	-17488.84	2.447	16.91	104.37	0.01551	0.900
197	319.05	-525.17	-5724.56	-1578.61	-17207.50	3.006	16.71	104.32	0.01573	0.900
198	318.51	-522.15	-5724.56	-1569.43	-17206.44	3.006	16.71	104.32	0.01573	0.900
199	248.88	-577.80	-4044.03	-2413.80	-16894.30	4.178	16.51	104.24	0.01594	0.900
200	248.34	-574.77	-4044.03	-2401.02	-16893.54	4.177	16.51	104.24	0.01595	0.900
201	178.70	-608.70	-2135.31	-4598.24	-16130.68	7.554	16.31	104.42	0.01621	0.900
202	178.17	-605.65	-2135.31	-4576.39	-16134.67	7.556	16.30	104.41	0.01621	0.900
203	108.65	-617.07	0.00	-16539.59	-0.00	26.803	15.92	104.26	0.01665	0.900
204	1409.48	-5032.91	6652.98	-12587.82	16639.78	2.501	19.74	104.31	0.01285	0.900
205	1109.56	-3131.02	-4420.93	-11476.00	-16203.82	3.665	18.89	104.32	0.01357	0.900
206	1109.10	-3128.47	-4420.93	-11468.89	-16206.99	3.666	18.89	104.32	0.01357	0.900
207	1038.05	-2716.40	-6982.69	-7143.93	-18363.97	2.630	18.77	104.45	0.01369	0.900
208	1037.49	-2713.37	-6982.69	-7136.53	-18365.42	2.630	18.77	104.45	0.01369	0.900
209	966.43	-2432.64	-8951.51	-5100.63	-18769.12	2.097	18.56	104.39	0.01388	0.900
210	965.87	-2429.52	-8951.51	-5094.04	-18768.90	2.097	18.55	104.39	0.01388	0.900
211	894.81	-2191.77	-10332.53	-3990.81	-18813.64	1.821	18.34	104.28	0.01405	0.900
212	894.24	-2188.66	-10332.53	-3985.05	-18813.20	1.821	18.34	104.28	0.01406	0.900
213	823.19	-1972.96	-11130.06	-3322.10	-18740.99	1.684	18.14	104.22	0.01424	0.900
214	822.63	-1969.88	-11130.06	-3316.83	-18740.43	1.684	18.13	104.21	0.01424	0.900
215	795.01	-1894.37	-11225.19	-3153.67	-18687.24	1.665	18.04	104.20	0.01433	0.900
216	751.57	-1776.58	-11374.64	-2899.73	-18565.66	1.632	17.92	104.22	0.01445	0.900
217	751.04	-1773.60	-11374.64	-2894.65	-18564.32	1.632	17.92	104.22	0.01445	0.900
218	679.98	-1603.56	-11216.36	-2623.18	-18348.28	1.636	17.72	104.24	0.01464	0.900
219	679.46	-1600.57	-11216.36	-2618.10	-18346.96	1.636	17.72	104.24	0.01464	0.900
220	608.41	-1453.83	-10657.60	-2471.62	-18118.72	1.700	17.53	104.25	0.01484	0.900
221	607.88	-1450.83	-10657.60	-2466.35	-18117.41	1.700	17.52	104.25	0.01485	0.900
222	536.83	-1327.52	-9700.09	-2446.57	-17876.99	1.843	17.31	104.25	0.01507	0.900
223	536.30	-1324.52	-9700.09	-2440.86	-17875.71	1.843	17.31	104.25	0.01507	0.900
224	465.24	-1225.18	-8344.92	-2586.97	-17620.33	2.112	17.11	104.23	0.01528	0.900
225	464.72	-1222.19	-8344.92	-2580.47	-17619.11	2.111	17.11	104.23	0.01528	0.900
226	393.66	-1146.39	-6631.14	-2995.46	-17326.88	2.613	16.91	104.21	0.01549	0.900
227	393.14	-1143.39	-6631.14	-2987.68	-17327.13	2.613	16.91	104.21	0.01549	0.900
228	322.09	-1088.38	-4668.76	-3922.38	-16825.62	3.604	16.71	104.32	0.01573	0.900
229	321.56	-1085.38	-4668.76	-3911.79	-16826.61	3.604	16.71	104.32	0.01573	0.900
230	250.51	-1051.16	-2457.32	-6686.36	-15630.87	6.361	16.51	104.35	0.01596	0.900
231	249.98	-1048.15	-2457.32	-6669.69	-15636.62	6.363	16.51	104.36	0.01597	0.900
232	179.04	-1034.70	0.00	-16786.52	-0.00	16.224	16.12	104.26	0.01640	0.900
233	788.80	3859.47	10055.78	6813.33	17752.01	1.765	18.03	104.10	0.01432	0.900
234	612.44	2004.62	-2716.08	10921.12	-14797.12	5.448	17.55	104.35	0.01483	0.900

235	612.17	2006.11	-2716.08	10925.94	-14792.64	5.446	17.55	104.35	0.01483	0.900
236	570.39	1603.87	-5242.85	5325.05	-17406.91	3.320	17.44	104.38	0.01496	0.900
237	570.07	1605.64	-5242.85	5330.17	-17404.42	3.320	17.43	104.38	0.01496	0.900
238	528.29	1244.46	-7224.90	3069.31	-17819.29	2.466	17.28	104.34	0.01511	0.900
239	527.96	1246.25	-7224.90	3073.46	-17817.79	2.466	17.28	104.34	0.01511	0.900
240	486.18	926.16	-8659.73	1901.54	-17779.52	2.053	17.18	104.40	0.01523	0.900
241	485.85	927.97	-8659.73	1905.09	-17778.08	2.053	17.18	104.40	0.01523	0.900
242	444.07	649.74	-9544.16	1204.73	-17696.61	1.854	17.07	104.44	0.01535	0.900
243	443.73	651.53	-9544.16	1207.97	-17695.16	1.854	17.07	104.44	0.01535	0.900
244	427.50	558.52	-9684.33	1018.26	-17655.91	1.823	17.03	104.44	0.01540	0.900
245	401.95	414.66	-9902.26	736.68	-17592.46	1.777	16.96	104.46	0.01548	0.900
246	401.62	416.40	-9902.26	739.72	-17591.05	1.776	16.96	104.46	0.01548	0.900
247	359.85	211.61	-9883.52	374.23	-17478.36	1.768	16.84	104.48	0.01561	0.900
248	359.51	213.36	-9883.52	377.29	-17476.95	1.768	16.84	104.48	0.01561	0.900
249	317.73	40.68	-9485.62	74.39	-17344.91	1.829	16.72	104.48	0.01575	0.900
250	317.40	42.44	-9485.62	77.61	-17344.03	1.828	16.72	104.48	0.01575	0.900
251	275.62	-97.94	-8706.01	-193.22	-17175.90	1.973	16.60	104.46	0.01588	0.900
252	275.28	-96.17	-8706.01	-189.71	-17175.04	1.973	16.59	104.46	0.01588	0.900
253	233.50	-203.26	-7528.98	-459.14	-17007.15	2.259	16.47	104.43	0.01602	0.900
254	233.17	-201.50	-7528.98	-455.14	-17006.35	2.259	16.47	104.43	0.01602	0.900
255	191.39	-277.23	-5984.23	-779.86	-16833.97	2.813	16.35	104.40	0.01615	0.900
256	191.07	-275.43	-5984.23	-774.76	-16833.27	2.813	16.35	104.40	0.01615	0.900
257	149.29	-329.77	-4215.12	-1302.16	-16644.17	3.949	16.23	104.35	0.01629	0.900
258	148.96	-327.97	-4215.12	-1294.98	-16643.63	3.949	16.23	104.35	0.01629	0.900
259	107.18	-360.93	-2219.80	-2664.05	-16384.76	7.381	16.11	104.21	0.01641	0.900
260	106.85	-359.07	-2219.80	-2650.37	-16384.76	7.381	16.11	104.21	0.01641	0.900
261	65.14	-368.51	0.00	-16386.67	-0.00	44.467	15.79	104.26	0.01681	0.900
262	788.90	-4673.01	4942.14	-12910.83	13654.41	2.763	17.99	104.32	0.01439	0.900
263	612.54	-2808.24	-5716.45	-8038.49	-16363.13	2.862	17.54	104.21	0.01482	0.900
264	612.26	-2806.75	-5716.45	-8034.60	-16363.91	2.863	17.54	104.21	0.01482	0.900
265	570.49	-2402.43	-8167.25	-5113.24	-17382.86	2.128	17.44	104.43	0.01497	0.900
266	570.14	-2400.67	-8167.25	-5109.42	-17382.65	2.128	17.44	104.43	0.01497	0.900
267	528.36	-2037.52	-10026.89	-3585.03	-17642.35	1.760	17.29	104.26	0.01509	0.900
268	528.01	-2035.75	-10026.89	-3581.83	-17641.96	1.759	17.29	104.26	0.01509	0.900
269	486.23	-1713.83	-11300.61	-2681.82	-17683.36	1.565	17.17	104.23	0.01521	0.900
270	485.87	-1712.05	-11300.61	-2678.89	-17682.41	1.565	17.17	104.23	0.01522	0.900
271	444.09	-1432.10	-11992.99	-2100.57	-17590.98	1.467	17.06	104.28	0.01534	0.900
272	443.75	-1430.34	-11992.99	-2097.86	-17590.04	1.467	17.06	104.28	0.01534	0.900
273	427.51	-1336.71	-12048.04	-1946.89	-17547.72	1.456	17.01	104.29	0.01539	0.900
274	401.97	-1191.88	-12134.51	-1716.96	-17480.30	1.441	16.94	104.31	0.01547	0.900
275	401.65	-1190.15	-12134.51	-1714.39	-17479.46	1.440	16.94	104.31	0.01547	0.900
276	359.88	-983.92	-11875.17	-1438.36	-17359.98	1.462	16.83	104.34	0.01560	0.900
277	359.56	-982.18	-11875.17	-1435.75	-17359.12	1.462	16.83	104.34	0.01560	0.900
278	317.78	-808.20	-11217.31	-1241.56	-17232.09	1.536	16.71	104.36	0.01574	0.900
279	317.46	-806.45	-11217.31	-1238.80	-17231.24	1.536	16.71	104.36	0.01574	0.900
280	275.68	-664.91	-10162.56	-1118.62	-17097.15	1.682	16.59	104.37	0.01587	0.900
281	275.37	-663.15	-10162.56	-1115.60	-17096.30	1.682	16.59	104.37	0.01587	0.900
282	233.59	-555.05	-8711.91	-1080.20	-16954.76	1.946	16.47	104.37	0.01601	0.900
283	233.27	-553.29	-8711.91	-1076.74	-16953.96	1.946	16.47	104.37	0.01601	0.900
284	191.49	-476.71	-6904.29	-1160.12	-16802.26	2.434	16.35	104.36	0.01615	0.900
285	191.18	-474.92	-6904.29	-1155.70	-16801.54	2.433	16.35	104.36	0.01615	0.900
286	149.40	-419.89	-4849.50	-1440.17	-16632.99	3.430	16.23	104.33	0.01628	0.900
287	149.08	-418.10	-4849.50	-1433.96	-16632.42	3.430	16.23	104.33	0.01629	0.900
288	107.30	-384.63	-2547.02	-2476.72	-16400.90	6.439	16.11	104.23	0.01641	0.900
289	106.99	-382.78	-2547.02	-2464.82	-16400.78	6.439	16.11	104.23	0.01641	0.900
290	65.27	-372.28	0.00	-16387.13	-0.00	44.018	15.79	104.26	0.01681	0.900
291	1314.66	3653.26	11867.10	6092.32	19790.07	1.668	19.52	104.23	0.01302	0.900
292	1020.73	1776.01	-1392.15	15598.22	-12226.89	8.783	18.70	104.45	0.01376	0.900
293	1020.28	1778.57	-1392.15	15605.05	-12214.59	8.774	18.70	104.45	0.01376	0.900
294	950.65	1371.70	-4033.79	6284.81	-18481.94	4.582	18.52	104.40	0.01391	0.900
295	950.10	1374.76	-4033.79	6297.09	-18476.80	4.581	18.52	104.40	0.01391	0.900
296	880.47	1009.25	-6128.81	3129.91	-19006.91	3.101	18.30	104.35	0.01411	0.900
297	879.93	1012.32	-6128.81	3139.01	-19004.23	3.101	18.30	104.35	0.01411	0.900
298	810.29	688.20	-7674.43	1694.90	-18900.60	2.463	18.12	104.42	0.01429	0.900
299	809.75	691.28	-7674.43	1702.26	-18898.08	2.462	18.11	104.41	0.01429	0.900
300	740.11	409.36	-8627.62	889.05	-18737.47	2.172	17.92	104.45	0.01448	0.900
301	739.57	412.41	-8627.62	895.55	-18735.05	2.172	17.92	104.45	0.01448	0.900
302	712.51	318.09	-8802.57	674.43	-18663.72	2.120	17.85	104.46	0.01456	0.900
303	669.94	172.18	-9076.58	351.87	-18549.20	2.044	17.74	104.48	0.01467	0.900
304	669.39	175.16	-9076.58	357.91	-18546.81	2.043	17.73	104.48	0.01467	0.900
305	599.76	-32.64	-9154.70	-65.27	-18307.31	2.000	17.53	104.47	0.01487	0.900
306	599.22	-29.65	-9154.70	-59.30	-18305.99	2.000	17.53	104.47	0.01488	0.900
307	529.58	-205.01	-8859.80	-417.29	-18033.99	2.035	17.32	104.44	0.01509	0.900
308	529.04	-202.01	-8859.80	-411.16	-18032.65	2.035	17.32	104.44	0.01509	0.900
309	459.40	-344.73	-8189.65	-747.68	-17762.92	2.169	17.12	104.41	0.01530	0.900
310	458.86	-341.72	-8189.65	-741.11	-17761.62	2.169	17.12	104.41	0.01530	0.900
311	389.22	-450.80	-7141.53	-1104.03	-17490.00	2.449	16.91	104.37	0.01551	0.900
312	388.68	-447.80	-7141.53	-1096.61	-17488.77	2.449	16.91	104.37	0.01551	0.900
313	319.05	-525.17	-5720.61	-1579.69	-17207.41	3.008	16.71	104.32	0.01573	0.900
314	318.51	-522.15	-5720.61	-1570.50	-17206.35	3.008	16.71	104.32	0.01573	0.900

315	248.88	-577.80	-4041.43	-2415.34	-16894.17	4.180	16.51	104.24	0.01594	0.900
316	248.34	-574.77	-4041.43	-2402.55	-16893.40	4.180	16.51	104.24	0.01595	0.900
317	178.70	-608.70	-2134.01	-4600.83	-16129.98	7.559	16.31	104.42	0.01621	0.900
318	178.17	-605.65	-2134.01	-4578.97	-16133.97	7.560	16.30	104.41	0.01621	0.900
319	108.65	-617.07	0.00	-16539.59	-0.00	26.803	15.92	104.26	0.01665	0.900
320	1409.48	-5032.91	6685.18	-12548.42	16667.96	2.493	19.74	104.32	0.01285	0.900
321	1109.55	-3131.02	-4398.91	-11514.28	-16176.91	3.677	18.89	104.32	0.01357	0.900
322	1109.10	-3128.47	-4398.91	-11507.16	-16180.10	3.678	18.89	104.32	0.01357	0.900
323	1038.05	-2716.40	-6962.99	-7160.97	-18355.84	2.636	18.77	104.45	0.01369	0.900
324	1037.49	-2713.37	-6962.99	-7153.55	-18357.30	2.636	18.77	104.45	0.01369	0.900
325	966.43	-2432.64	-8934.01	-5109.96	-18766.65	2.101	18.56	104.39	0.01388	0.900
326	965.86	-2429.52	-8934.01	-5103.36	-18766.44	2.101	18.55	104.39	0.01388	0.900
327	894.81	-2191.77	-10317.10	-3996.47	-18812.15	1.823	18.34	104.28	0.01405	0.900
328	894.24	-2188.66	-10317.10	-3990.68	-18811.71	1.823	18.34	104.28	0.01406	0.900
329	823.19	-1972.96	-11116.58	-3325.94	-18739.97	1.686	18.14	104.22	0.01424	0.900
330	822.63	-1969.88	-11116.58	-3320.67	-18739.41	1.686	18.13	104.22	0.01424	0.900
331	795.01	-1894.37	-11212.42	-3157.11	-18686.33	1.667	18.04	104.20	0.01433	0.900
332	751.57	-1776.58	-11362.99	-2902.65	-18565.40	1.634	17.92	104.22	0.01445	0.900
333	751.04	-1773.60	-11362.99	-2897.58	-18564.06	1.634	17.92	104.22	0.01445	0.900
334	679.98	-1603.56	-11206.43	-2625.47	-18348.07	1.637	17.72	104.24	0.01464	0.900
335	679.46	-1600.57	-11206.43	-2620.40	-18346.75	1.637	17.72	104.24	0.01464	0.900
336	608.41	-1453.83	-10649.29	-2473.52	-18118.55	1.701	17.53	104.25	0.01484	0.900
337	607.88	-1450.83	-10649.29	-2468.25	-18117.24	1.701	17.52	104.25	0.01485	0.900
338	536.83	-1327.52	-9693.30	-2448.26	-17876.84	1.844	17.31	104.25	0.01507	0.900
339	536.30	-1324.52	-9693.30	-2442.56	-17875.55	1.844	17.31	104.25	0.01507	0.900
340	465.24	-1225.18	-8339.58	-2588.61	-17620.18	2.113	17.11	104.23	0.01528	0.900
341	464.72	-1222.19	-8339.58	-2582.12	-17618.97	2.113	17.11	104.23	0.01528	0.900
342	393.66	-1146.39	-6627.19	-2997.17	-17326.42	2.614	16.91	104.21	0.01549	0.900
343	393.14	-1143.39	-6627.19	-2989.39	-17326.67	2.614	16.91	104.21	0.01549	0.900
344	322.09	-1088.38	-4666.15	-3924.43	-16825.06	3.606	16.71	104.32	0.01573	0.900
345	321.56	-1085.38	-4666.15	-3913.85	-16826.05	3.606	16.71	104.32	0.01573	0.900
346	250.51	-1051.16	-2456.03	-6689.31	-15629.50	6.364	16.51	104.35	0.01596	0.900
347	249.98	-1048.15	-2456.03	-6672.63	-15635.26	6.366	16.51	104.36	0.01597	0.900
348	179.04	-1034.70	0.00	-16786.52	-0.00	16.224	16.12	104.26	0.01640	0.900

*** End of output ***



spColumn v4.60 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections
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General Information:
====================
File Name: C:\Users\bhk\Documents\Eisenhower Memorial\Misc\12_08_26_1-bay solid column.col
Project: Eisenhower Memorial
Column: 1 Bay Ext Engineer: BHK
Code: ACI 318-08 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: Biaxial Column Type: Structural

Material Properties:
====================
f'c = 8 ksi fy = 60 ksi
Ec = 5098.24 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.65

Section:
========
Circular: Diameter = 108 in

Gross section area, Ag = 9160.88 in^2
Ix = 6.67829e+006 in^4 Iy = 6.67829e+006 in^4
rx = 27 in ry = 27 in
Xo = 0 in Yo = 0 in

Reinforcement:
==============
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #6 ties with #10 bars, #6 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Pattern: Irregular
Total steel area: As = 78.00 in^2 at rho = 0.85% (Note: rho < 1.0%)
Minimum clear spacing = 2.61 in

Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)
1.00	0.0	50.6	1.00	16.1	47.9	1.00	30.6	40.3
1.00	41.8	28.4	1.00	48.7	13.5	1.00	50.5	-2.7
1.00	47.0	-18.7	1.00	38.5	-32.7	1.00	26.1	-43.3
1.00	10.9	-49.4	1.00	-5.5	-50.3	1.00	-21.2	-45.9
1.00	-34.8	-36.7	1.00	-44.7	-23.7	1.00	-49.9	-8.2
1.00	-49.9	8.2	1.00	-44.7	23.7	1.00	-34.8	36.7
1.00	-21.2	45.9	1.00	-5.5	50.3	1.00	0.0	46.8
1.00	5.1	46.5	1.00	10.1	45.7	1.00	14.9	44.4
1.00	19.7	42.5	1.00	24.1	40.1	1.00	28.3	37.3
1.00	32.2	34.0	1.00	35.7	30.3	1.00	38.7	26.3
1.00	41.4	21.9	1.00	43.5	17.3	1.00	45.1	12.5
1.00	46.2	7.6	1.00	46.7	2.5	1.00	46.7	-2.5
1.00	46.2	-7.6	1.00	45.1	-12.5	1.00	43.5	-17.3
1.00	41.4	-21.9	1.00	38.7	-26.3	1.00	35.7	-30.3
1.00	32.2	-34.0	1.00	28.3	-37.3	1.00	24.1	-40.1
1.00	19.7	-42.5	1.00	14.9	-44.4	1.00	10.1	-45.7
1.00	5.1	-46.5	1.00	0.0	-46.8	1.00	-5.1	-46.5
1.00	-10.1	-45.7	1.00	-14.9	-44.4	1.00	-19.7	-42.5
1.00	-24.1	-40.1	1.00	-28.3	-37.3	1.00	-32.2	-34.0
1.00	-35.7	-30.3	1.00	-38.7	-26.3	1.00	-41.4	-21.9
1.00	-43.5	-17.3	1.00	-45.1	-12.5	1.00	-46.2	-7.6
1.00	-46.7	-2.5	1.00	-46.7	2.5	1.00	-46.2	7.6
1.00	-45.1	12.5	1.00	-43.5	17.3	1.00	-41.4	21.9
1.00	-38.7	26.3	1.00	-35.7	30.3	1.00	-32.2	34.0
1.00	-28.3	37.3	1.00	-24.1	40.1	1.00	-19.7	42.5
1.00	-14.9	44.4	1.00	-10.1	45.7	1.00	-5.1	46.5

Control Points:

Bending about	Axial Load P kip	X-Moment k-ft	Y-Moment k-ft	NA depth in	Dt depth in	eps_t	Phi
X @ Max compression	43188.4	-97.23	-5.22	336.92	104.56	-0.00207	0.650
@ Allowable comp.	34550.7	27023.04	10.35	124.70	104.56	-0.00048	0.650
@ fs = 0.0	28492.7	37536.00	-5.94	104.56	104.56	0.00000	0.650
@ fs = 0.5*fy	19568.6	42706.07	16.42	77.75	104.56	0.00103	0.650
@ Balanced point	13990.0	40822.27	0.46	61.88	104.56	0.00207	0.650
@ Tension control	9018.6	41782.03	-4.21	39.21	104.56	0.00500	0.900
@ Pure bending	0.0	16409.45	25.38	15.77	104.56	0.01689	0.900
@ Max tension	-4212.0	151.83	8.15	0.00	104.56	9.99999	0.900
Y @ Max compression	43188.4	-97.23	-5.22	334.76	103.89	-0.00207	0.650
@ Allowable comp.	34550.7	-76.25	27072.92	124.64	103.89	-0.00050	0.650
@ fs = 0.0	28299.0	-59.51	37781.21	103.89	103.89	0.00000	0.650
@ fs = 0.5*fy	19415.1	-50.82	42639.34	77.25	103.89	0.00103	0.650
@ Balanced point	13871.3	-0.47	40613.48	61.49	103.89	0.00207	0.650
@ Tension control	8936.9	110.52	41418.07	38.96	103.89	0.00500	0.900
@ Pure bending	0.0	131.91	16271.61	15.77	103.89	0.01676	0.900
@ Max tension	-4212.0	151.83	8.15	0.00	103.89	9.99999	0.900
-X @ Max compression	43188.4	-97.23	-5.22	335.95	104.26	-0.00207	0.650
@ Allowable comp.	34550.7	-27184.50	2.09	124.64	104.26	-0.00049	0.650
@ fs = 0.0	28422.5	-37746.01	-1.15	104.26	104.26	0.00000	0.650
@ fs = 0.5*fy	19526.4	-42745.00	3.47	77.53	104.26	0.00103	0.650
@ Balanced point	13977.6	-40771.74	-1.17	61.70	104.26	0.00207	0.650
@ Tension control	9045.8	-41668.63	6.46	39.10	104.26	0.00500	0.900
@ Pure bending	0.0	-16159.14	-18.57	15.60	104.26	0.01704	0.900
@ Max tension	-4212.0	151.83	8.15	0.00	104.26	9.99999	0.900
-Y @ Max compression	43188.4	-97.23	-5.22	336.69	104.49	-0.00207	0.650
@ Allowable comp.	34550.7	-91.51	-27083.06	124.64	104.49	-0.00048	0.650
@ fs = 0.0	28494.5	-80.60	-37559.02	104.49	104.49	-0.00000	0.650
@ fs = 0.5*fy	19567.0	-54.15	-42648.67	77.70	104.49	0.00103	0.650
@ Balanced point	14004.6	-27.27	-40702.99	61.84	104.49	0.00207	0.650
@ Tension control	9035.1	60.05	-41613.06	39.18	104.49	0.00500	0.900
@ Pure bending	0.0	151.83	-16246.83	15.77	104.49	0.01688	0.900
@ Max tension	-4212.0	151.83	8.15	0.00	104.49	9.99999	0.900

*** End of output ***

SECTION SATISFIES ACI 10.3.5

PROJECT EISENHOWER MEMORIAL | SHEET
LOCATION | CLIENT | DATE | BY

TAPESTRY END COLUMN - TORSION DESIGN

$f'_c = 8$ KSI

$D_{col} = 108"$

$T_u = 7222$ k-FT $= 86{,}664$ k-IN

OLD DESIGN FORCE, SEE FOLLOWING PAGES FOR UPDATED FORCE AND DESIGN

THRESHOLD TORSION

* PER ACI318-05 R11.6.1, THRESHOLD TORSION EQUAL TO ONE-QUARTER OF CRACKING TORSION ($T_u \le \phi \times 1/4\, T_{cr} = \phi \times 1/4 \times \sigma_{cr} J/c = \phi \times 1/4 \times 4\sqrt{f'_c}\, J/c$)

* FOR A CIRCULAR SECTION UNDER PURE TORSION THE MAX TENSILE STRESS IS

$$\sigma_{max} = \tau_{max} = \frac{Tc}{J}$$

$$J = \frac{\pi \times 54"^4}{2} = 1.335 \times 10^7\ IN^4$$

$$\tau_{max} = \frac{86{,}664\ k\text{-}IN \times 54"}{1.335 \times 10^7\ IN^4} = 0.35\ KSI > \phi \times 1/4 \times 4\sqrt{f'_c} = 0.75 \times 1/4 \times 4\sqrt{8000\ PSI} = 0.07\ KSI$$

TORSION DESIGN (PER ACI318-05)

$p_h = 2\pi \times (54" - 2" - 0.5 \times 0.875") = 324"$

$A_{oh} = \pi \times (54" - 2" - 0.5 \times 0.875")^2 = 8353\ IN^2$

$A_o = 0.85 A_{oh} = 7099\ IN^2$

$\theta = 45°$

$b_w = 108"$

$$\phi T_n = \phi \frac{2 A_o A_t f_y}{s} \cot\theta = T_u \rightarrow \left(\frac{A_t}{s}\right)_{REQ'D} = \frac{T_u}{\phi \times 2 A_o f_y \cot\theta} = 1.63\ IN^2/FT \rightarrow (1)\#7@6" \ (1)\#6@6"$$

$$A_L = \frac{A_t}{s} p_h \cot^2\theta = 0.135\ IN^2/IN \times 324" \times \cot^2(45) = 43.8\ IN^2 \rightarrow (35)\#10$$

MAGNUSSON
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PROJECT			SHEET
LOCATION	CLIENT	DATE	BY

MINIMUM TORSION REINFORCEMENT

$A_{cp,SOLID} = 9160\ IN^2$

$A_{cp,HOLLOW} = 7352\ IN^2$

$\left(\frac{A_t}{S}\right)_{MIN} = \frac{25b}{f_y} = 0.045$

$P_h = 317.6"$

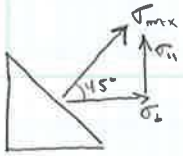
$A_{L,MIN} = \frac{5\sqrt{f'_c}\,A_{cp}}{f_y} - \left(\frac{A_t}{S}\right)P_h = 54\ IN^2$ @ SOLID

→ USE MORE DETAILED DESIGN PROCEDURE IN LIEU OF ACI 318-05

PROJECT			SHEET
LOCATION	CLIENT	DATE	BY

TAPESTRY END COLUMN - TORSION DESIGN CONTD

SOLID COLUMN



$T_u = 86{,}664$ k-in

$J = 1.110 \times 10^7$ in^4 $= \frac{\pi \times 103.125^4}{32}$ * EFFECTIVE TORSIONAL SECTION DEFINED BY CL OF OUTERMOST TIE

$\tau_{max} = 0.41$ ksi $= \sigma_{max}$

NORMAL STRESS PARALLEL TO COLUMN AXIS, $\sigma_{11} = \sigma_{max} \sin 45 = 0.285$ ksi

NORMAL STRESS PERPENDICULAR TO COLUMN AXIS $\sigma_{\perp} = \sigma_{max} \cos 45 = 0.285$ ksi

$P_{u,11} = 1/2 \times 0.285$ ksi $\times 51.6'' \times 36'' \times 0.3250$ rad $= 86.1$ k

$A_{s,11} = \frac{86.1 \text{ k}}{2 \times 0.75 \times 60 \text{ ksi}} = 0.97$ in^2 → 2 x 19 "SECTORS" = (38) #9

(2 = CUTS)

$P_{u,\perp} = 1/2 \times 0.285$ ksi $\times 51.6'' \times 6'' = 44.2$ k

(6" = TIE SPACING)

$A_{s,\perp} = \frac{44.2 \text{ k}}{0.75 \times 60 \text{ ksi}} = 0.99$ in^2 → 1.98 in^2/ft

Concrete Tapestry Column Design - End Column

Shear/Torsion Design

Project: Eisenhower Memorial — Project #:

Location: East Tapestry — Engineer: BHK

Input

Column Data:

P_u =	-540	kips
$V_{u,y}$ =	89	kips
$V_{u,x}$ =	641	kips
T_u =	4020	k-ft

Column Section Properties:

f'c =	8	ksi
fy =	60	ksi
D =	108	in
A =	9161	in^2
I =	6678285	in^4
S =	123672	in^3
r =	27	in
J =	1.34E+07	in^3

Output

Threshold Torsion Check (per ACI 318 11.6.1)

Deff =	103.125	in
Jeff =	1.11E+07	in^3
τu = σu =	0.22	ksi
	Threshold torsion exceeded!	

Torsion Design (per ACI 318 11.6)

Dimension to tie CL =	2.4375	in
ph =	324.0	in
Aoh =	8353	in^2
Ao =	7100	in^2
θ =	45	
(At/s)min =	0.54	in^2/ft
(Al)min =	53.7	in^2
(At/s)reqd =	0.91	in^2/ft
(Al)reqd =	24.5	in^2

Torsion Design

θ =	45	
τu = σu =	0.22	ksi
σu, par =	0.16	ksi
σu, perp =	0.16	ksi
Tie Spacing =	6	in
Pu,perp =	24.50	kips
As, perp =	0.54	in^2
	1.09	in^2/ft
Number of Sectors =	19	
Pu,par =	46.4	kips
As, par =	1.03	in^2
Bars/sector	2	
As/bar =	0.52	in^2

Shear Design

Vu,srss =	647.1	kips
Av =	8353	in^2
ϕVc =	1121	kips
	< 2Vu	Provide Min Shear Reinf
(Av/s)min =	1.45	in^2/ft

Lateral Reinforcement As =	1.81	in^2/ft	
Vertical Reinforcemen As =	19.6	in^2	→ (20) #9, As=20 in^2

M3 IS THE ONLY FORCE THAT EXCEEDS THOSE AT THE EAST TAPESTRY END COLUMNS. BY INSPECTION, END COLUMN DESIGN HAS RESERVE CAPACITY FOR 7% INCREASE (SEE P-M-M DIAGRAM).

EISENHOWER MEMORIAL TAPESTRY END COLUMN FORCES - **South**

TABLE: Element Forces - Frames					MAX	-29.326	418.07	47.514	33488.97	28864.548	151788.3
					MIN	-1411.89	-494.538	-47.556	-30700.11	-35634.305	-113745.7
Frame	Station	OutputCase	CaseType	StepType		P	V2	V3	T	M2	M3
Text	in	Text	Text	Text		Kip	Kip	Kip	Kip-in	Kip-in	Kip-in
220	0	FACTORED_ENVE	Combination	Max		-1326	-186.385	35.914	-17443.58	22357.88	-14689.34
220	390	FACTORED_ENVE	Combination	Max		-871.109	-190.572	31.731	-17443.58	8458.157	58667.65
220	390	FACTORED_ENVE	Combination	Max		-870.55	-166.536	30.469	-15690.54	8497.792	58667.65
220	449.667	FACTORED_ENVE	Combination	Max		-800.956	-167.324	29.68	-15690.54	6635.606	68561.738
220	449.667	FACTORED_ENVE	Combination	Max		-800.402	-116.322	27.158	-11982.57	6674.842	68561.738
220	509.334	FACTORED_ENVE	Combination	Max		-730.808	-116.813	26.303	-11982.57	5016.54	75411.885
220	509.334	FACTORED_ENVE	Combination	Max		-730.255	-64.844	24.471	-8245.333	5055.777	75411.885
220	553.002	FACTORED_ENVE	Combination	Max		-679.321	-65.182	24.134	-8245.333	3995.821	78177.212
220	569.001	FACTORED_ENVE	Combination	Max		-660.66	-65.306	24.01	-8245.333	3613.212	79192.336
220	569.001	FACTORED_ENVE	Combination	Max		-660.107	-12.929	22.176	-4478.709	3652.451	79192.336
220	628.668	FACTORED_ENVE	Combination	Max		-590.513	-13.391	21.715	-4478.709	2429.127	79879.034
220	628.668	FACTORED_ENVE	Combination	Max		-589.958	30.285	19.883	-1338.531	2468.41	79879.034
220	688.335	FACTORED_ENVE	Combination	Max		-520.364	29.824	19.422	-1338.531	1427.079	79617.092
220	688.335	FACTORED_ENVE	Combination	Max		-519.808	71.218	17.589	1637.412	1466.394	79617.092
220	748.002	FACTORED_ENVE	Combination	Max		-450.214	70.748	17.119	1637.412	574.736	77380.161
220	748.002	FACTORED_ENVE	Combination	Max		-449.659	112.537	15.285	4641.738	614.054	77380.161
220	807.669	FACTORED_ENVE	Combination	Max		-380.064	112.031	14.778	4641.738	-122.736	72001.264
220	807.669	FACTORED_ENVE	Combination	Max		-379.509	154.219	12.943	7674.765	-83.417	72001.264
220	867.336	FACTORED_ENVE	Combination	Max		-309.914	153.712	12.436	7674.765	-662.421	63459.201
220	867.336	FACTORED_ENVE	Combination	Max		-309.358	193.458	10.328	10425.32	-623.303	63459.202
220	927.003	FACTORED_ENVE	Combination	Max		-239.764	193.458	9.822	10425.32	-1062.363	51909.302
220	927.003	FACTORED_ENVE	Combination	Max		-239.207	241.167	7.497	13511.04	-1023.188	51909.302
220	986.67	FACTORED_ENVE	Combination	Max		-169.612	241.167	6.99	13511.04	-1345.56	37496.63
220	986.67	FACTORED_ENVE	Combination	Max		-169.055	289.58	4.664	16985.59	-1306.386	37496.63
220	1046.337	FACTORED_ENVE	Combination	Max		-99.461	289.58	4.158	16985.59	-1511.971	20200.682
220	1046.337	FACTORED_ENVE	Combination	Max		-98.923	338.356	1.994	20485.72	-1474.06	20200.682
220	1106.004	FACTORED_ENVE	Combination	Max		-29.329	338.361	1.312	20485.72	-1562.09	0.46
220	0	FACTORED_ENVE	Combination	Min		-1411.89	-350.112	-36.021	-29582.61	-33644.547	-113745.7
220	390	FACTORED_ENVE	Combination	Min		-947.716	-350.116	-31.839	-29582.61	-19948.217	20977.676
220	390	FACTORED_ENVE	Combination	Min		-947.142	-309.999	-30.582	-26699.9	-19908.155	20977.676
220	449.667	FACTORED_ENVE	Combination	Min		-876.127	-309.999	-29.793	-26699.9	-18004.992	38458.114
220	449.667	FACTORED_ENVE	Combination	Min		-875.552	-240.254	-27.879	-21680.01	-17965.051	38458.114
220	509.334	FACTORED_ENVE	Combination	Min		-804.537	-240.254	-27.388	-21680.01	-16209.829	51872.137
220	509.334	FACTORED_ENVE	Combination	Min		-803.962	-171.176	-25.536	-16707.47	-16169.891	51872.137
220	553.002	FACTORED_ENVE	Combination	Min		-751.989	-171.176	-25.198	-16707.47	-14990.895	58742.957
220	569.001	FACTORED_ENVE	Combination	Min		-732.947	-171.176	-25.075	-16707.47	-14561.372	61259.908
220	569.001	FACTORED_ENVE	Combination	Min		-732.372	-102.757	-23.216	-11781.67	-14521.44	61259.908
220	628.668	FACTORED_ENVE	Combination	Min		-661.357	-102.757	-22.754	-11781.67	-13059.76	66662.086
220	628.668	FACTORED_ENVE	Combination	Min		-660.783	-42.47	-20.895	-7440.164	-13019.925	66662.086
220	688.335	FACTORED_ENVE	Combination	Min		-589.768	-42.47	-20.434	-7440.164	-11705.297	68659.992
220	688.335	FACTORED_ENVE	Combination	Min		-589.195	16.021	-18.571	-3222.824	-11665.481	68659.992
220	748.002	FACTORED_ENVE	Combination	Min		-518.179	16.021	-18.1	-3222.824	-10498.446	67448.994
220	748.002	FACTORED_ENVE	Combination	Min		-517.606	73.634	-16.231	955.199	-10458.635	67448.994
220	807.669	FACTORED_ENVE	Combination	Min		-446.591	73.634	-15.725	955.199	-9441.488	62860.613
220	807.669	FACTORED_ENVE	Combination	Min		-446.017	125.973	-13.85	5095.16	-9401.682	62860.613
220	867.336	FACTORED_ENVE	Combination	Min		-375.002	125.973	-13.343	5095.16	-8535.806	55186.62
220	867.336	FACTORED_ENVE	Combination	Min		-374.429	172.48	-11.194	8684.661	-8496.104	55186.62
220	927.003	FACTORED_ENVE	Combination	Min		-303.414	172.48	-10.688	8684.661	-7797.958	44878.285
220	927.003	FACTORED_ENVE	Combination	Min		-302.842	211.551	-8.32	11613.67	-7758.345	44878.285
220	986.67	FACTORED_ENVE	Combination	Min		-231.827	211.551	-7.813	11613.67	-7241.099	32244.389
220	986.67	FACTORED_ENVE	Combination	Min		-231.256	250.565	-5.441	14496.4	-7201.49	32244.389
220	1046.337	FACTORED_ENVE	Combination	Min		-160.241	250.565	-4.934	14496.4	-6865.538	17285.006
220	1046.337	FACTORED_ENVE	Combination	Min		-159.692	289.583	-2.569	17184.79	-6827.255	17285.006
220	1106.004	FACTORED_ENVE	Combination	Min		-88.677	289.588	-2.062	17184.79	-6672.27	0.108
417	0	FACTORED_ENVE	Combination	Max		-1273.56	418.07	47.514	33488.97	28864.548	151788.31
417	345	FACTORED_ENVE	Combination	Max		-871.16	415.739	43.887	33488.97	12354.007	6975.158
417	345	FACTORED_ENVE	Combination	Max		-870.601	373.785	42.005	30472.08	12393.277	6975.158
417	404.667	FACTORED_ENVE	Combination	Max		-801.007	373.278	41.216	30472.08	9823.662	-15435.47

417	404.667	FACTORED_ENVE	Combination	Max	-800.452	299.57	37.453	25167.11	9862.753	-15435.47
417	464.334	FACTORED_ENVE	Combination	Max	-730.857	299.063	36.665	25167.11	7571.395	-33406.03
417	464.334	FACTORED_ENVE	Combination	Max	-730.3	226.042	32.9	19911.27	7610.485	-33406.03
417	524.001	FACTORED_ENVE	Combination	Max	-660.706	225.577	31.863	19911.27	5604.684	-46981.33
417	524.001	FACTORED_ENVE	Combination	Max	-660.148	153.243	28.097	14704.54	5643.775	-46981.33
417	530.502	FACTORED_ENVE	Combination	Max	-652.566	153.193	27.982	14704.54	5455.632	-47986.94
417	583.668	FACTORED_ENVE	Combination	Max	-590.554	152.782	27.043	14704.54	3932.634	-56203.12
417	583.668	FACTORED_ENVE	Combination	Max	-589.996	88.731	23.903	10093.22	3971.786	-56203.12
417	643.335	FACTORED_ENVE	Combination	Max	-520.401	88.269	22.849	10093.22	2518.146	-61565.34
417	643.335	FACTORED_ENVE	Combination	Max	-519.842	26.101	20.254	5615.773	2557.345	-61565.34
417	703.002	FACTORED_ENVE	Combination	Max	-450.248	25.64	19.511	5615.773	1328.754	-63179.91
417	703.002	FACTORED_ENVE	Combination	Max	-449.689	-35.845	17.204	1184.609	1367.955	-63179.91
417	762.669	FACTORED_ENVE	Combination	Max	-380.095	-36.349	16.7	1184.609	367.955	-60548.83
417	762.669	FACTORED_ENVE	Combination	Max	-379.536	-97.2	14.394	-3200.861	407.158	-60548.83
417	822.336	FACTORED_ENVE	Combination	Max	-309.942	-97.706	13.887	-3200.861	-359.845	-54079.15
417	822.336	FACTORED_ENVE	Combination	Max	-309.383	-153.94	11.473	-7254.555	-320.58	-54079.15
417	882.003	FACTORED_ENVE	Combination	Max	-239.788	-154.446	10.966	-7254.555	-896.367	-44301.02
417	882.003	FACTORED_ENVE	Combination	Max	-239.228	-204.704	8.445	-10993.68	-857.167	-44301.02
417	941.67	FACTORED_ENVE	Combination	Max	-169.634	-205.887	7.938	-10993.68	-1237.807	-31858.7
417	941.67	FACTORED_ENVE	Combination	Max	-169.074	-247.301	5.416	-14255.59	-1198.725	-31858.7
417	1001.337	FACTORED_ENVE	Combination	Max	-99.48	-247.301	4.909	-14255.59	-1401.902	-17091.76
417	1001.337	FACTORED_ENVE	Combination	Max	-98.92	-286.329	2.619	-17091.35	-1362.819	-17091.76
417	1061.004	FACTORED_ENVE	Combination	Max	-29.326	-286.329	1.87	-17091.35	-1448.316	4.316E-06
417	0	FACTORED_ENVE	Combination	Min	-1358.41	252.593	-47.556	21384.32	-35634.305	50928.156
417	345	FACTORED_ENVE	Combination	Min	-947.792	252.593	-43.929	21384.32	-21586.017	-41060.26
417	345	FACTORED_ENVE	Combination	Min	-947.22	226.506	-42.054	19506	-21546.439	-41060.26
417	404.667	FACTORED_ENVE	Combination	Min	-876.204	226.506	-41.265	19506	-19315.037	-55386.11
417	404.667	FACTORED_ENVE	Combination	Min	-875.624	170.444	-37.514	15469.57	-19275.443	-55386.11
417	464.334	FACTORED_ENVE	Combination	Min	-804.609	170.444	-36.725	15469.57	-17233.748	-66078.68
417	464.334	FACTORED_ENVE	Combination	Min	-804.029	113.945	-32.97	11401.58	-17194.158	-66078.68
417	524.001	FACTORED_ENVE	Combination	Min	-733.014	113.945	-31.933	11401.58	-15341.666	-73136.82
417	524.001	FACTORED_ENVE	Combination	Min	-732.434	55.106	-28.175	7301.939	-15302.081	-73136.82
417	530.502	FACTORED_ENVE	Combination	Min	-724.696	55.106	-28.06	7301.939	-15120.035	-73594.97
417	583.668	FACTORED_ENVE	Combination	Min	-661.419	55.106	-27.121	7301.939	-13637.918	-77340.49
417	583.668	FACTORED_ENVE	Combination	Min	-660.84	2.711	-23.986	3577.995	-13598.398	-77340.49
417	643.335	FACTORED_ENVE	Combination	Min	-589.825	2.711	-23.178	3577.995	-12116.292	-78396.25
417	643.335	FACTORED_ENVE	Combination	Min	-589.247	-46.017	-20.846	82.169	-12076.78	-78396.25
417	703.002	FACTORED_ENVE	Combination	Min	-518.231	-46.017	-20.384	82.169	-10770.61	-76331.32
417	703.002	FACTORED_ENVE	Combination	Min	-517.653	-95.456	-18.048	-3443.619	-10731.102	-76331.32
417	762.669	FACTORED_ENVE	Combination	Min	-446.638	-95.456	-17.544	-3443.619	-9647.765	-71125.27
417	762.669	FACTORED_ENVE	Combination	Min	-446.06	-145.902	-15.203	-7041.647	-9607.769	-71125.27
417	822.336	FACTORED_ENVE	Combination	Min	-375.044	-145.902	-14.696	-7041.647	-8737.913	-62756.86
417	822.336	FACTORED_ENVE	Combination	Min	-374.467	-190.528	-12.247	-10249.74	-8698.029	-62756.86
417	882.003	FACTORED_ENVE	Combination	Min	-303.452	-190.528	-11.74	-10249.74	-7996.822	-51381.41
417	882.003	FACTORED_ENVE	Combination	Min	-302.875	-238.182	-9.182	-13332.09	-7957.036	-51381.41
417	941.67	FACTORED_ENVE	Combination	Min	-231.859	-238.182	-8.676	-13332.09	-7437.679	-37143.97
417	941.67	FACTORED_ENVE	Combination	Min	-231.282	-286.596	-6.115	-16806.61	-7397.897	-37143.97
417	1001.337	FACTORED_ENVE	Combination	Min	-160.267	-286.596	-5.608	-16806.61	-7060.898	-20024.01
417	1001.337	FACTORED_ENVE	Combination	Min	-159.69	-335.383	-3.055	-20307.17	-7021.119	-20024.01
417	1061.004	FACTORED_ENVE	Combination	Min	-88.675	-335.383	-2.549	-20307.17	-6866.303	-4.61E-06
417	789.3	FACTORED_ENVE	Combination	Min	-464.718	-344.102	-15.71	-20004.6	-14666.294	-100139.1
417	849	FACTORED_ENVE	Combination	Min	-393.664	-344.102	-13.472	-20004.6	-13756.64	-79573.63
417	849	FACTORED_ENVE	Combination	Min	-393.14	-394.107	-11.533	-23504.64	-13720.737	-79573.63
417	908.7	FACTORED_ENVE	Combination	Min	-322.085	-394.107	-9.343	-23504.64	-13060.541	-56025.13
417	908.7	FACTORED_ENVE	Combination	Min	-321.56	-444.234	-7.358	-27061.91	-13024.531	-56025.13
417	968.4	FACTORED_ENVE	Combination	Min	-250.506	-444.234	-5.403	-27061.91	-12613.931	-29487.89
417	968.4	FACTORED_ENVE	Combination	Min	-249.979	-494.538	-3.201	-30700.11	-12577.846	-29487.89
417	1028.004	FACTORED_ENVE	Combination	Min	-179.039	-494.538	-1.484	-30700.11	-12416.343	1.397E-05

EISENHOWER MEMORIAL TAPESTRY INTERIOR COLUMN FORCES - **South**

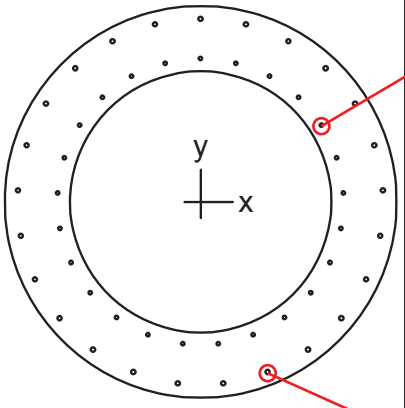
TABLE: Element Forces - Frames				MAX	-55.375	25.236	59.656	795.073	31235.552	22721.3
				MIN	-1022.47	-7.301	-60.717	-317.001	-58887.832	-8083.268
Frame	Station	OutputCase	CaseType	StepType	P	V2	V3	T	M2	M3
Text	in	Text	Text	Text	Kip	Kip	Kip	Kip-in	Kip-in	Kip-in
14	0	FACTORED_ENVE	Combination	Max	-822.855	22.516	57.572	795.073	28053.683	18630.704
14	345	FACTORED_ENVE	Combination	Max	-578.967	18.889	55.241	795.073	9946.209	11403.226
14	345	FACTORED_ENVE	Combination	Max	-578.17	18.889	53.648	795.064	10002.333	11403.226
14	404.667	FACTORED_ENVE	Combination	Max	-535.99	18.1	53.141	795.064	7283.961	10266.037
14	404.667	FACTORED_ENVE	Combination	Max	-535.198	18.1	50.006	795.049	7340.054	10266.037
14	464.334	FACTORED_ENVE	Combination	Max	-493.018	17.312	49.499	795.049	4930.4	9163.716
14	464.334	FACTORED_ENVE	Combination	Max	-492.225	17.312	46.368	795.035	4986.492	9163.716
14	524.001	FACTORED_ENVE	Combination	Max	-450.045	16.401	45.903	795.035	2892.5	8095.235
14	524.001	FACTORED_ENVE	Combination	Max	-449.253	16.401	42.776	795.023	2948.592	8095.235
14	530.502	FACTORED_ENVE	Combination	Max	-444.657	16.35	42.725	795.023	2754.078	7981.619
14	583.668	FACTORED_ENVE	Combination	Max	-407.073	15.939	42.314	795.023	1179.017	7059.23
14	583.668	FACTORED_ENVE	Combination	Max	-406.279	15.939	38.617	795.011	1235.121	7059.23
14	643.335	FACTORED_ENVE	Combination	Max	-364.099	15.478	38.156	795.011	-250.09	6055.825
14	643.335	FACTORED_ENVE	Combination	Max	-363.305	15.478	33.894	795	-193.941	6055.825
14	703.002	FACTORED_ENVE	Combination	Max	-321.125	15.016	33.432	795	-1427.024	5085.131
14	703.002	FACTORED_ENVE	Combination	Max	-320.331	15.016	29.174	794.991	-1370.873	5085.131
14	762.669	FACTORED_ENVE	Combination	Max	-278.151	14.512	28.67	794.991	-2348.556	4148.437
14	762.669	FACTORED_ENVE	Combination	Max	-277.357	14.512	24.415	794.985	-2292.402	4148.437
14	822.336	FACTORED_ENVE	Combination	Max	-235.177	14.005	23.908	794.985	-3010.542	3247.329
14	822.336	FACTORED_ENVE	Combination	Max	-234.381	14.005	19.18	794.981	-2954.33	3247.329
14	882.003	FACTORED_ENVE	Combination	Max	-192.201	13.498	18.673	794.981	-3461.172	2381.882
14	882.003	FACTORED_ENVE	Combination	Max	-191.405	13.498	13.568	794.979	-3404.897	2381.882
14	941.67	FACTORED_ENVE	Combination	Max	-149.225	12.992	13.061	794.979	-3458.451	1552.151
14	941.67	FACTORED_ENVE	Combination	Max	-148.429	12.992	7.958	794.98	-3402.956	1552.151
14	1001.337	FACTORED_ENVE	Combination	Max	-106.249	12.485	7.451	794.98	-3293.33	758.18
14	1001.337	FACTORED_ENVE	Combination	Max	-105.452	12.485	2.351	794.985	-3237.831	758.18
14	1061.004	FACTORED_ENVE	Combination	Max	-63.272	11.978	1.845	794.985	-3291.299	5.289E-09
14	0	FACTORED_ENVE	Combination	Min	-989.534	-7.301	-55.368	-190.938	-55000.239	-8083.268
14	345	FACTORED_ENVE	Combination	Min	-737.431	-7.301	-53.037	-190.938	-34939.755	-5416.132
14	345	FACTORED_ENVE	Combination	Min	-736.627	-7.301	-51.452	-190.897	-34884.729	-5416.132
14	404.667	FACTORED_ENVE	Combination	Min	-693.026	-7.301	-50.945	-190.897	-31637.053	-4957.775
14	404.667	FACTORED_ENVE	Combination	Min	-692.219	-7.301	-47.826	-190.814	-31583.002	-4957.775
14	464.334	FACTORED_ENVE	Combination	Min	-648.619	-7.301	-47.319	-190.814	-28561.578	-4500.497
14	464.334	FACTORED_ENVE	Combination	Min	-647.812	-7.301	-44.208	-190.73	-28507.538	-4500.497
14	524.001	FACTORED_ENVE	Combination	Min	-604.211	-7.301	-43.744	-190.73	-25711.135	-4044.37
14	524.001	FACTORED_ENVE	Combination	Min	-603.404	-7.301	-40.641	-190.644	-25657.102	-4044.37
14	530.502	FACTORED_ENVE	Combination	Min	-598.654	-7.301	-40.591	-190.644	-25376.052	-3994.812
14	583.668	FACTORED_ENVE	Combination	Min	-559.804	-7.301	-40.18	-190.644	-23084.122	-3589.461
14	583.668	FACTORED_ENVE	Combination	Min	-558.998	-7.301	-36.509	-190.575	-23030.195	-3589.461
14	643.335	FACTORED_ENVE	Combination	Min	-515.397	-7.301	-36.048	-190.575	-20714.88	-3135.83
14	643.335	FACTORED_ENVE	Combination	Min	-514.591	-7.301	-31.816	-190.518	-20661.15	-3135.83
14	703.002	FACTORED_ENVE	Combination	Min	-470.99	-7.301	-31.354	-190.518	-18637.341	-2683.531
14	703.002	FACTORED_ENVE	Combination	Min	-470.185	-7.301	-27.13	-190.462	-18583.617	-2683.531
14	762.669	FACTORED_ENVE	Combination	Min	-426.584	-7.301	-26.626	-190.462	-16852.35	-2232.614
14	762.669	FACTORED_ENVE	Combination	Min	-425.778	-7.301	-22.408	-190.404	-16798.63	-2232.614
14	822.336	FACTORED_ENVE	Combination	Min	-382.178	-7.301	-21.901	-190.404	-15361.216	-1783.119
14	822.336	FACTORED_ENVE	Combination	Min	-381.372	-7.301	-17.212	-190.361	-15307.63	-1783.119
14	882.003	FACTORED_ENVE	Combination	Min	-337.772	-7.301	-16.705	-190.361	-14192.408	-1335.083
14	882.003	FACTORED_ENVE	Combination	Min	-336.966	-7.301	-11.639	-190.334	-14138.924	-1335.083
14	941.67	FACTORED_ENVE	Combination	Min	-293.366	-7.301	-11.132	-190.334	-13368.578	-888.536
14	941.67	FACTORED_ENVE	Combination	Min	-292.561	-7.301	-6.072	-190.306	-13315.098	-888.536
14	1001.337	FACTORED_ENVE	Combination	Min	-248.96	-7.301	-5.565	-190.306	-13564.268	-443.503
14	1001.337	FACTORED_ENVE	Combination	Min	-248.155	-7.301	-0.568	-190.277	-13508.125	-443.503
14	1061.004	FACTORED_ENVE	Combination	Min	-204.554	-7.301	-1.514	-190.277	-13649.319	-1.9E-07
393	0	FACTORED_ENVE	Combination	Max	-815.119	16.861	59.656	360.809	31235.552	12380.658
393	345	FACTORED_ENVE	Combination	Max	-571.231	13.234	57.325	360.809	11722.675	7198.147
393	345	FACTORED_ENVE	Combination	Max	-570.429	13.234	55.723	360.802	11778.614	7198.147
393	404.667	FACTORED_ENVE	Combination	Max	-528.249	12.445	55.216	360.802	8915.858	6414.072
393	404.667	FACTORED_ENVE	Combination	Max	-527.448	12.445	52.063	360.788	8971.559	6414.072
393	464.334	FACTORED_ENVE	Combination	Max	-485.268	11.657	51.556	360.788	6419.021	5664.536

393	464.334	FACTORED_ENVE	Combination	Max	-484.466	11.657	48.407	360.773	6474.717	5664.536
393	524.001	FACTORED_ENVE	Combination	Max	-442.287	10.694	47.943	360.773	4239.445	4948.45
393	524.001	FACTORED_ENVE	Combination	Max	-441.485	10.694	44.798	360.757	4295.138	4948.45
393	530.502	FACTORED_ENVE	Combination	Max	-436.889	10.643	44.748	360.757	4085.419	4873.176
393	583.668	FACTORED_ENVE	Combination	Max	-399.305	10.232	44.337	360.757	2385.992	4264.398
393	583.668	FACTORED_ENVE	Combination	Max	-398.504	10.232	40.435	360.736	2441.738	4264.398
393	643.335	FACTORED_ENVE	Combination	Max	-356.324	9.771	39.973	360.736	826.624	3612.454
393	643.335	FACTORED_ENVE	Combination	Max	-355.522	9.771	35.269	360.71	882.419	3612.454
393	703.002	FACTORED_ENVE	Combination	Max	-313.342	9.309	34.807	360.71	-462.824	2992.686
393	703.002	FACTORED_ENVE	Combination	Max	-312.54	9.309	30.105	360.682	-407.03	2992.686
393	762.669	FACTORED_ENVE	Combination	Max	-270.36	8.805	29.601	360.682	-1421.804	2406.343
393	762.669	FACTORED_ENVE	Combination	Max	-269.559	8.805	24.901	360.654	-1365.869	2406.343
393	822.336	FACTORED_ENVE	Combination	Max	-227.379	8.298	24.394	360.654	-2022.61	1854.977
393	822.336	FACTORED_ENVE	Combination	Max	-226.577	8.298	19.458	360.622	-1966.612	1854.977
393	882.003	FACTORED_ENVE	Combination	Max	-184.397	7.792	18.952	360.622	-2476.978	1338.632
393	882.003	FACTORED_ENVE	Combination	Max	-183.595	7.792	13.826	360.588	-2420.924	1338.632
393	941.67	FACTORED_ENVE	Combination	Max	-141.415	7.285	13.32	360.588	-2814.457	857.34
393	941.67	FACTORED_ENVE	Combination	Max	-140.614	7.285	8.197	360.553	-2758.409	857.34
393	1001.337	FACTORED_ENVE	Combination	Max	-98.434	6.778	7.69	360.553	-3035.206	411.124
393	1001.337	FACTORED_ENVE	Combination	Max	-97.632	6.778	3.171	360.517	-2979.158	411.124
393	1061.004	FACTORED_ENVE	Combination	Max	-55.452	6.271	2.062	360.517	-3073.663	1.346E-08
393	0	FACTORED_ENVE	Combination	Min	-962.352	-1.145	-60.717	-139.693	-58887.832	-1306.334
393	345	FACTORED_ENVE	Combination	Min	-710.249	-1.145	-58.387	-139.693	-36937.317	-865.687
393	345	FACTORED_ENVE	Combination	Min	-709.446	-1.145	-56.789	-139.69	-36881.898	-865.687
393	404.667	FACTORED_ENVE	Combination	Min	-665.845	-1.145	-56.282	-139.69	-33310.452	-790.885
393	404.667	FACTORED_ENVE	Combination	Min	-665.041	-1.145	-53.135	-139.685	-33255.724	-790.885
393	464.334	FACTORED_ENVE	Combination	Min	-621.441	-1.145	-52.629	-139.685	-29912.963	-716.536
393	464.334	FACTORED_ENVE	Combination	Min	-620.637	-1.145	-49.484	-139.678	-29858.245	-716.536
393	524.001	FACTORED_ENVE	Combination	Min	-577.036	-1.145	-49.02	-139.678	-26743.306	-642.652
393	524.001	FACTORED_ENVE	Combination	Min	-576.232	-1.145	-45.879	-139.672	-26688.597	-642.652
393	530.502	FACTORED_ENVE	Combination	Min	-571.481	-1.145	-45.828	-139.672	-26373.185	-634.655
393	583.668	FACTORED_ENVE	Combination	Min	-532.631	-1.145	-45.417	-139.672	-23800.243	-569.243
393	583.668	FACTORED_ENVE	Combination	Min	-531.828	-1.145	-41.518	-139.667	-23745.81	-569.243
393	643.335	FACTORED_ENVE	Combination	Min	-488.227	-1.145	-41.056	-139.667	-21129.635	-496.318
393	643.335	FACTORED_ENVE	Combination	Min	-487.426	-1.145	-36.355	-139.663	-21075.517	-496.318
393	703.002	FACTORED_ENVE	Combination	Min	-443.825	-1.145	-35.893	-139.663	-18779.738	-423.887
393	703.002	FACTORED_ENVE	Combination	Min	-443.024	-1.145	-31.194	-139.659	-18725.63	-423.887
393	762.669	FACTORED_ENVE	Combination	Min	-399.424	-1.145	-30.69	-139.659	-16751.58	-351.956
393	762.669	FACTORED_ENVE	Combination	Min	-398.623	-1.145	-25.993	-139.655	-16697.478	-351.956
393	822.336	FACTORED_ENVE	Combination	Min	-355.023	-1.145	-25.487	-139.655	-15046.764	-280.532
393	822.336	FACTORED_ENVE	Combination	Min	-354.222	-1.145	-20.553	-139.652	-14992.752	-280.532
393	882.003	FACTORED_ENVE	Combination	Min	-310.622	-1.145	-20.047	-139.652	-13679.683	-209.62
393	882.003	FACTORED_ENVE	Combination	Min	-309.822	-1.145	-14.924	-139.65	-13625.742	-209.62
393	941.67	FACTORED_ENVE	Combination	Min	-266.221	-1.145	-14.417	-139.65	-12664.314	-139.225
393	941.67	FACTORED_ENVE	Combination	Min	-265.421	-1.145	-9.297	-139.648	-12608.624	-139.225
393	1001.337	FACTORED_ENVE	Combination	Min	-221.82	-1.145	-8.79	-139.648	-12217.005	-98.015
393	1001.337	FACTORED_ENVE	Combination	Min	-221.02	-1.145	-3.672	-139.646	-12161.317	-98.015
393	1061.004	FACTORED_ENVE	Combination	Min	-177.42	-2.325	-3.165	-139.646	-12096.53	-1.88E-09
600	0	FACTORED_ENVE	Combination	Max	-815.046	16.543	50.178	361.272	26867.204	12026.81
600	345	FACTORED_ENVE	Combination	Max	-571.158	12.915	47.847	361.272	10897.535	6963.609
600	345	FACTORED_ENVE	Combination	Max	-570.356	12.915	46.611	361.266	10953.533	6963.609
600	404.667	FACTORED_ENVE	Combination	Max	-528.176	12.127	46.104	361.266	8457.683	6199.792
600	404.667	FACTORED_ENVE	Combination	Max	-527.374	12.127	43.727	361.256	8513.515	6199.792
600	464.334	FACTORED_ENVE	Combination	Max	-485.194	11.338	43.22	361.256	6264.025	5470.392
600	464.334	FACTORED_ENVE	Combination	Max	-484.392	11.338	40.842	361.244	6319.855	5470.392
600	524.001	FACTORED_ENVE	Combination	Max	-442.212	10.39	40.378	361.244	4323.87	4774.319
600	524.001	FACTORED_ENVE	Combination	Max	-441.41	10.39	38	361.232	4379.699	4774.319
600	530.502	FACTORED_ENVE	Combination	Max	-436.814	10.34	37.95	361.232	4189.116	4701.211
600	583.668	FACTORED_ENVE	Combination	Max	-399.23	9.928	37.538	361.232	2646.185	4110.152
600	583.668	FACTORED_ENVE	Combination	Max	-398.428	9.928	34.593	361.216	2702.053	4110.152
600	643.335	FACTORED_ENVE	Combination	Max	-356.248	9.467	34.132	361.216	1206.866	3477.963
600	643.335	FACTORED_ENVE	Combination	Max	-355.446	9.467	30.572	361.196	1262.764	3477.963
600	703.002	FACTORED_ENVE	Combination	Max	-313.266	9.005	30.11	361.196	-9.214	2877.818
600	703.002	FACTORED_ENVE	Combination	Max	-312.465	9.005	26.55	361.175	46.598	2877.818
600	762.669	FACTORED_ENVE	Combination	Max	-270.285	8.501	26.046	361.175	-999.165	2310.964
600	762.669	FACTORED_ENVE	Combination	Max	-269.483	8.501	22.485	361.154	-943.351	2310.964

600	822.336	FACTORED_ENVE	Combination	Max	-227.303	7.995	21.978	361.154	-1759.15	1778.951
600	822.336	FACTORED_ENVE	Combination	Max	-226.501	7.995	18.181	361.129	-1703.248	1778.951
600	882.003	FACTORED_ENVE	Combination	Max	-184.321	7.488	17.674	361.129	-2329.441	1281.822
600	882.003	FACTORED_ENVE	Combination	Max	-183.519	7.488	13.688	361.103	-2273.439	1281.822
600	941.67	FACTORED_ENVE	Combination	Max	-141.339	6.981	13.181	361.103	-2755.792	819.606
600	941.67	FACTORED_ENVE	Combination	Max	-140.537	6.981	9.195	361.075	-2699.789	819.606
600	1001.337	FACTORED_ENVE	Combination	Max	-98.357	6.474	8.688	361.075	-3038.311	392.327
600	1001.337	FACTORED_ENVE	Combination	Max	-97.555	6.474	4.701	361.047	-2982.307	392.327
600	1061.004	FACTORED_ENVE	Combination	Max	-55.375	5.967	4.195	361.047	-3159.933	2.504E-09
600	0	FACTORED_ENVE	Combination	Min	-962.434	-2.346	-51.55	-198.463	-53110.548	-2694.687
600	345	FACTORED_ENVE	Combination	Min	-710.331	-2.346	-49.219	-198.463	-34452.848	-1785.924
600	345	FACTORED_ENVE	Combination	Min	-709.527	-2.346	-47.982	-198.459	-34397.025	-1785.924
600	404.667	FACTORED_ENVE	Combination	Min	-665.926	-2.346	-47.475	-198.459	-31370.344	-1631.639
600	404.667	FACTORED_ENVE	Combination	Min	-665.122	-2.346	-45.098	-198.451	-31314.849	-1631.639
600	464.334	FACTORED_ENVE	Combination	Min	-621.521	-2.346	-44.591	-198.451	-28469.824	-1478.282
600	464.334	FACTORED_ENVE	Combination	Min	-620.717	-2.346	-42.213	-198.442	-28414.341	-1478.282
600	524.001	FACTORED_ENVE	Combination	Min	-577.116	-2.346	-41.748	-198.442	-25750.243	-1325.878
600	524.001	FACTORED_ENVE	Combination	Min	-576.311	-2.346	-39.37	-198.433	-25694.771	-1325.878
600	530.502	FACTORED_ENVE	Combination	Min	-571.561	-2.346	-39.32	-198.433	-25423.385	-1309.381
600	583.668	FACTORED_ENVE	Combination	Min	-532.711	-2.346	-38.909	-198.433	-23210.504	-1174.449
600	583.668	FACTORED_ENVE	Combination	Min	-531.907	-2.346	-35.964	-198.426	-23155.258	-1174.449
600	643.335	FACTORED_ENVE	Combination	Min	-488.306	-2.346	-35.503	-198.426	-20884.98	-1024.013
600	643.335	FACTORED_ENVE	Combination	Min	-487.502	-2.346	-31.943	-198.422	-20829.964	-1024.013
600	703.002	FACTORED_ENVE	Combination	Min	-443.901	-2.346	-31.482	-198.422	-18810.682	-874.588
600	703.002	FACTORED_ENVE	Combination	Min	-443.097	-2.346	-27.922	-198.417	-18755.676	-874.588
600	762.669	FACTORED_ENVE	Combination	Min	-399.496	-2.346	-27.418	-198.417	-16988.855	-726.191
600	762.669	FACTORED_ENVE	Combination	Min	-398.692	-2.346	-23.858	-198.412	-16933.86	-726.191
600	822.336	FACTORED_ENVE	Combination	Min	-355.091	-2.346	-23.351	-198.412	-15421.241	-578.833
600	822.336	FACTORED_ENVE	Combination	Min	-354.288	-2.346	-19.556	-198.409	-15366.347	-578.833
600	882.003	FACTORED_ENVE	Combination	Min	-310.687	-2.346	-19.049	-198.409	-14122.219	-432.527
600	882.003	FACTORED_ENVE	Combination	Min	-309.883	-2.346	-15.065	-198.407	-14067.408	-432.527
600	941.67	FACTORED_ENVE	Combination	Min	-266.282	-2.346	-14.558	-198.407	-13103.202	-287.281
600	941.67	FACTORED_ENVE	Combination	Min	-265.479	-2.346	-10.573	-198.405	-13048.399	-287.281
600	1001.337	FACTORED_ENVE	Combination	Min	-221.878	-2.346	-10.066	-198.405	-12364.266	-168.558
600	1001.337	FACTORED_ENVE	Combination	Min	-221.074	-2.346	-6.082	-198.402	-12309.469	-168.558
600	1061.004	FACTORED_ENVE	Combination	Min	-177.473	-3.492	-5.575	-198.402	-11937.928	-2.16E-08
803	0	FACTORED_ENVE	Combination	Max	-854.7	25.236	46.384	660.548	24428.993	22721.298
803	390	FACTORED_ENVE	Combination	Max	-579	21.053	43.696	660.548	7413.041	13399.431
803	390	FACTORED_ENVE	Combination	Max	-578.202	21.053	42.287	660.53	7469.154	13399.431
803	449.667	FACTORED_ENVE	Combination	Max	-536.022	20.265	41.78	660.53	5165.604	12097.609
803	449.667	FACTORED_ENVE	Combination	Max	-535.227	20.265	39.058	660.494	5221.675	12097.609
803	509.334	FACTORED_ENVE	Combination	Max	-493.047	19.68	38.567	660.494	3195.336	10830.209
803	509.334	FACTORED_ENVE	Combination	Max	-492.252	19.68	35.846	660.456	3251.405	10830.209
803	553.002	FACTORED_ENVE	Combination	Max	-461.382	19.342	35.508	660.456	1975.553	9924.729
803	569.001	FACTORED_ENVE	Combination	Max	-450.072	19.218	35.384	660.456	1513.856	9595.444
803	569.001	FACTORED_ENVE	Combination	Max	-449.277	19.218	32.664	660.417	1569.923	9595.444
803	628.668	FACTORED_ENVE	Combination	Max	-407.097	18.757	32.203	660.417	124.396	8392.93
803	628.668	FACTORED_ENVE	Combination	Max	-406.301	18.757	29.291	660.374	180.502	8392.93
803	688.335	FACTORED_ENVE	Combination	Max	-364.121	18.295	28.83	660.374	-1021.161	7222.817
803	688.335	FACTORED_ENVE	Combination	Max	-363.324	18.295	25.73	660.327	-964.997	7222.817
803	748.002	FACTORED_ENVE	Combination	Max	-321.144	17.825	25.259	660.327	-1962.928	6085.286
803	748.002	FACTORED_ENVE	Combination	Max	-320.348	17.825	22.16	660.278	-1906.763	6085.286
803	807.669	FACTORED_ENVE	Combination	Max	-278.168	17.318	21.653	660.278	-2695.04	4982.22
803	807.669	FACTORED_ENVE	Combination	Max	-277.371	17.318	18.555	660.228	-2639.222	4982.22
803	867.336	FACTORED_ENVE	Combination	Max	-235.191	16.812	18.048	660.228	-3214.614	3914.599
803	867.336	FACTORED_ENVE	Combination	Max	-234.394	16.812	14.476	660.168	-3158.728	3914.599
803	927.003	FACTORED_ENVE	Combination	Max	-192.214	16.305	13.969	660.168	-3555.312	2882.507
803	927.003	FACTORED_ENVE	Combination	Max	-191.416	16.305	10.018	660.101	-3499.347	2882.507
803	986.67	FACTORED_ENVE	Combination	Max	-149.236	15.798	9.511	660.101	-3573.513	1886.011
803	986.67	FACTORED_ENVE	Combination	Max	-148.438	15.798	5.56	660.031	-3517.921	1886.011
803	1046.337	FACTORED_ENVE	Combination	Max	-106.258	15.291	5.053	660.031	-3417.687	925.162
803	1046.337	FACTORED_ENVE	Combination	Max	-105.46	15.291	1.181	659.959	-3362.091	925.162
803	1106.004	FACTORED_ENVE	Combination	Max	-63.28	14.784	1.688	659.959	-3404.836	1.473E-07
803	0	FACTORED_ENVE	Combination	Min	-1022.47	-4.055	-43.874	-317.001	-47664.931	-4804.54
803	390	FACTORED_ENVE	Combination	Min	-737.48	-4.055	-41.187	-317.001	-29696.354	-3052.063
803	390	FACTORED_ENVE	Combination	Min	-736.675	-4.055	-39.789	-316.967	-29641.135	-3052.063

803	449.667	FACTORED_ENVE	Combination	Min	-693.074	-4.055	-39.283	-316.967	-27113.37	-2789.036
803	449.667	FACTORED_ENVE	Combination	Min	-692.267	-4.055	-36.583	-316.901	-27058.933	-2789.036
803	509.334	FACTORED_ENVE	Combination	Min	-648.666	-4.055	-36.093	-316.901	-24730.978	-2527.494
803	509.334	FACTORED_ENVE	Combination	Min	-647.858	-4.055	-33.399	-316.837	-24676.546	-2527.494
803	553.002	FACTORED_ENVE	Combination	Min	-615.949	-4.055	-33.061	-316.837	-23115.897	-2337.201
803	569.001	FACTORED_ENVE	Combination	Min	-604.258	-4.055	-32.937	-316.837	-22546.496	-2267.471
803	569.001	FACTORED_ENVE	Combination	Min	-603.45	-4.055	-30.249	-316.774	-22492.068	-2267.471
803	628.668	FACTORED_ENVE	Combination	Min	-559.85	-4.055	-29.787	-316.774	-20559.394	-2009.002
803	628.668	FACTORED_ENVE	Combination	Min	-559.043	-4.055	-26.908	-316.726	-20504.939	-2009.002
803	688.335	FACTORED_ENVE	Combination	Min	-515.442	-4.055	-26.446	-316.726	-18781.328	-1752.116
803	688.335	FACTORED_ENVE	Combination	Min	-514.637	-4.055	-23.381	-316.691	-18726.924	-1752.116
803	748.002	FACTORED_ENVE	Combination	Min	-471.036	-4.055	-22.911	-316.691	-17223.778	-1496.838
803	748.002	FACTORED_ENVE	Combination	Min	-470.23	-4.055	-19.851	-316.656	-17169.377	-1496.838
803	807.669	FACTORED_ENVE	Combination	Min	-426.629	-4.055	-19.344	-316.656	-15888.427	-1243.192
803	807.669	FACTORED_ENVE	Combination	Min	-425.824	-4.055	-16.288	-316.623	-15834.029	-1243.192
803	867.336	FACTORED_ENVE	Combination	Min	-382.223	-4.055	-15.781	-316.623	-14776.097	-991.197
803	867.336	FACTORED_ENVE	Combination	Min	-381.417	-4.055	-12.252	-316.598	-14721.818	-991.197
803	927.003	FACTORED_ENVE	Combination	Min	-337.817	-4.055	-11.745	-316.598	-13915.29	-740.869
803	927.003	FACTORED_ENVE	Combination	Min	-337.011	-4.055	-7.838	-316.583	-13861.102	-740.869
803	986.67	FACTORED_ENVE	Combination	Min	-293.411	-4.055	-7.332	-316.583	-13328.711	-492.221
803	986.67	FACTORED_ENVE	Combination	Min	-292.606	-4.055	-3.428	-316.568	-13274.527	-492.221
803	1046.337	FACTORED_ENVE	Combination	Min	-249.005	-4.055	-2.922	-316.568	-13419.042	-245.263
803	1046.337	FACTORED_ENVE	Combination	Min	-248.2	-4.055	-0.032	-316.554	-13363.135	-245.263
803	1106.004	FACTORED_ENVE	Combination	Min	-204.599	-4.055	-1.215	-316.554	-13434.665	-3.05E-10

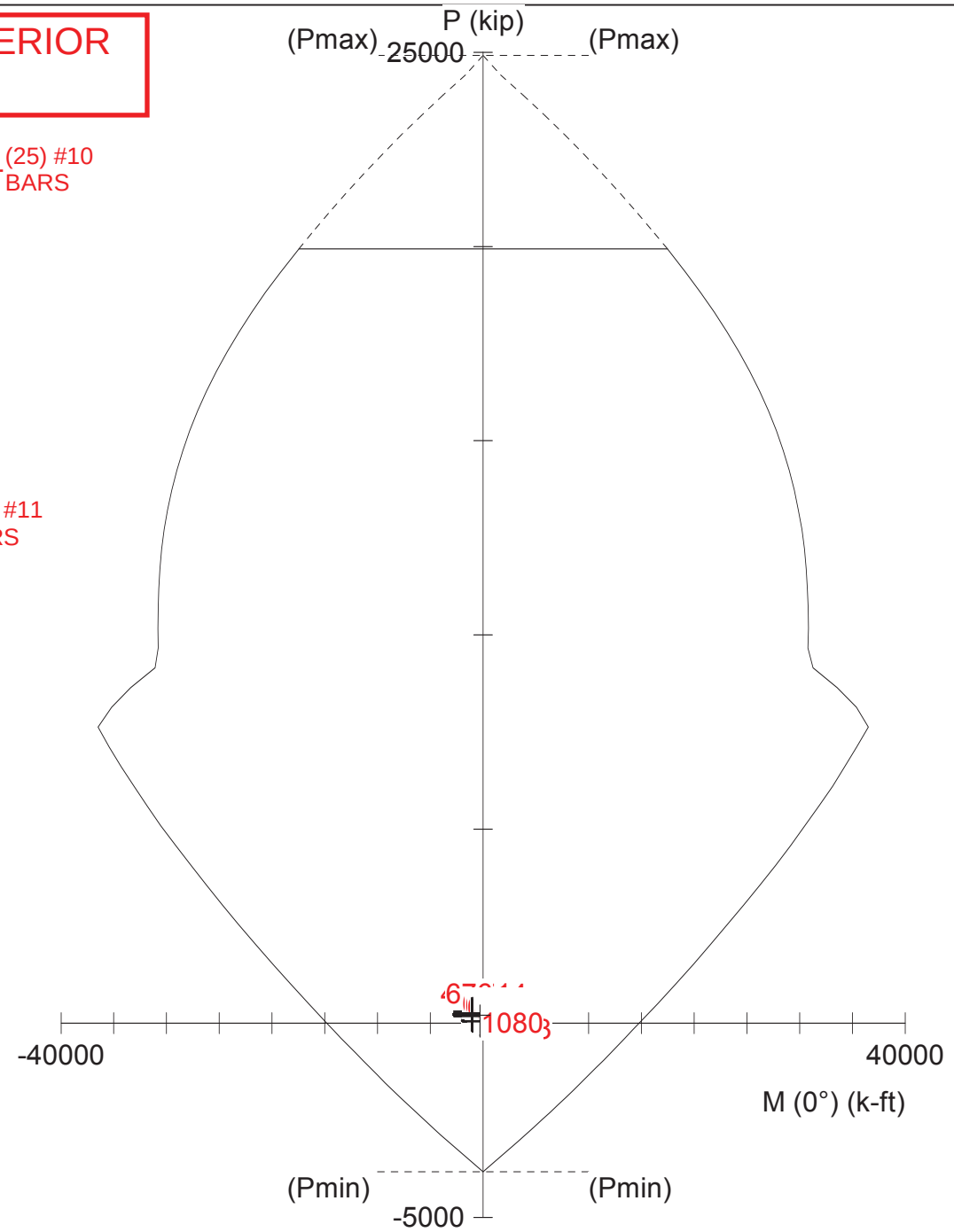
SOUTH TAPESTRY INTERIOR COLUMN



(25) #10 BARS

(25) #11 BARS

108 x 108 in



Code: ACI 318-08

Units: English

Run axis: Biaxial

Run option: Investigation

Slenderness: Not considered

Column type: Structural

Bars: ASTM A615

Date: 08/28/12

Time: 18:57:08

spColumn v4.60. Licensed to: Magnusson Klemencic Associates. License ID: 57793-1025074-4-28196-2ACD5

File: C:\Users\bhk\Documents\Eisenhower Memorial\Misc\11_12_19_1-bay hollow column.col

Project: Eisenhower Memorial

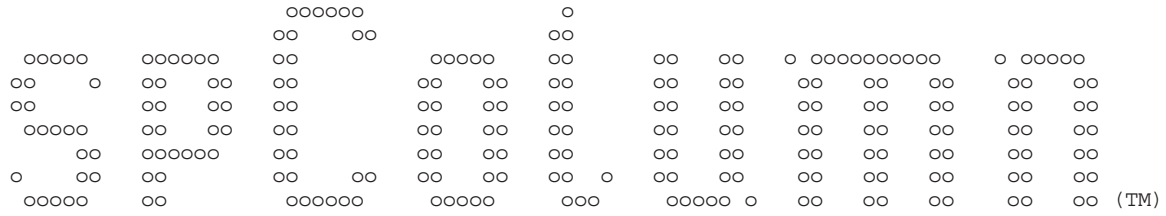
Column: 1 Bay Ext

Engineer: BHK

f'c = 8 ksi	fy = 60 ksi	Ag = 5082.61 in^2	50 bars
Ec = 5098 ksi	Es = 29000 ksi	As = 70.75 in^2	rho = 1.39%
fc = 6.8 ksi		Xo = -0.00 in	Ix = 5.34509e+006 in^4
e_u = 0.003 in/in		Yo = -0.00 in	Iy = 5.34509e+006 in^4
Beta1 = 0.65		Min clear spacing = 8.61 in	Clear cover = N/A

Confinement: Tied

phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65



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spColumn v4.60 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections
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General Information:
==========
File Name: C:\Users\bhk\Documents\Eisenhower Memorial\Misc\11_12_19_1-bay hollow column.col
Project: Eisenhower Memorial
Column: 1 Bay Ext Engineer: BHK
Code: ACI 318-08 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: Biaxial Column Type: Structural

Material Properties:
==========
f'c = 8 ksi fy = 60 ksi
Ec = 5098.24 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.65

Section:
========
Exterior Points

No.	X (in)	Y (in)	No.	X (in)	Y (in)	No.	X (in)	Y (in)
1	0.0	54.0	2	4.7	53.8	3	9.4	53.2
4	14.0	52.2	5	18.5	50.7	6	22.8	48.9
7	27.0	46.8	8	31.0	44.2	9	34.7	41.4
10	38.2	38.2	11	41.4	34.7	12	44.2	31.0
13	46.8	27.0	14	48.9	22.8	15	50.7	18.5
16	52.2	14.0	17	53.2	9.4	18	53.8	4.7
19	54.0	0.0	20	53.8	-4.7	21	53.2	-9.4
22	52.2	-14.0	23	50.7	-18.5	24	48.9	-22.8
25	46.8	-27.0	26	44.2	-31.0	27	41.4	-34.7
28	38.2	-38.2	29	34.7	-41.4	30	31.0	-44.2
31	27.0	-46.8	32	22.8	-48.9	33	18.5	-50.7
34	14.0	-52.2	35	9.4	-53.2	36	4.7	-53.8
37	0.0	-54.0	38	-4.7	-53.8	39	-9.4	-53.2
40	-14.0	-52.2	41	-18.5	-50.7	42	-22.8	-48.9
43	-27.0	-46.8	44	-31.0	-44.2	45	-34.7	-41.4
46	-38.2	-38.2	47	-41.4	-34.7	48	-44.2	-31.0
49	-46.8	-27.0	50	-48.9	-22.8	51	-50.7	-18.5
52	-52.2	-14.0	53	-53.2	-9.4	54	-53.8	-4.7
55	-54.0	0.0	56	-53.8	4.7	57	-53.2	9.4
58	-52.2	14.0	59	-50.7	18.5	60	-48.9	22.8
61	-46.8	27.0	62	-44.2	31.0	63	-41.4	34.7
64	-38.2	38.2	65	-34.7	41.4	66	-31.0	44.2
67	-27.0	46.8	68	-22.8	48.9	69	-18.5	50.7
70	-14.0	52.2	71	-9.4	53.2	72	-4.7	53.8

Interior Points

No.	X (in)	Y (in)	No.	X (in)	Y (in)	No.	X (in)	Y (in)
1	0.0	36.0	2	3.1	35.9	3	6.3	35.5
4	9.3	34.8	5	12.3	33.8	6	15.2	32.6
7	18.0	31.2	8	20.6	29.5	9	23.1	27.6
10	25.5	25.5	11	27.6	23.1	12	29.5	20.6
13	31.2	18.0	14	32.6	15.2	15	33.8	12.3
16	34.8	9.3	17	35.5	6.3	18	35.9	3.1
19	36.0	0.0	20	35.9	-3.1	21	35.5	-6.3
22	34.8	-9.3	23	33.8	-12.3	24	32.6	-15.2
25	31.2	-18.0	26	29.5	-20.6	27	27.6	-23.1
28	25.5	-25.5	29	23.1	-27.6	30	20.6	-29.5
31	18.0	-31.2	32	15.2	-32.6	33	12.3	-33.8
34	9.3	-34.8	35	6.3	-35.5	36	3.1	-35.9
37	0.0	-36.0	38	-3.1	-35.9	39	-6.3	-35.5
40	-9.3	-34.8	41	-12.3	-33.8	42	-15.2	-32.6
43	-18.0	-31.2	44	-20.6	-29.5	45	-23.1	-27.6
46	-25.5	-25.5	47	-27.6	-23.1	48	-29.5	-20.6
49	-31.2	-18.0	50	-32.6	-15.2	51	-33.8	-12.3
52	-34.8	-9.3	53	-35.5	-6.3	54	-35.9	-3.1
55	-36.0	0.0	56	-35.9	3.1	57	-35.5	6.3
58	-34.8	9.3	59	-33.8	12.3	60	-32.6	15.2
61	-31.2	18.0	62	-29.5	20.6	63	-27.6	23.1
64	-25.5	25.5	65	-23.1	27.6	66	-20.6	29.5
67	-18.0	31.2	68	-15.2	32.6	69	-12.3	33.8
70	-9.3	34.8	71	-6.3	35.5	72	-3.1	35.9

Gross section area, Ag = 5082.61 in^2
Ix = 5.34509e+006 in^4 Iy = 5.34509e+006 in^4
rx = 32.429 in ry = 32.429 in
Xo = -3.97765e-007 in Yo = -4.75912e-008 in

Reinforcement:
==============
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #6 ties with #10 bars, #6 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Pattern: Irregular
Total steel area: As = 70.75 in^2 at rho = 1.39%
Minimum clear spacing = 8.61 in

Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)
1.56	0.0	50.4	1.56	12.5	48.8	1.56	24.3	44.2
1.56	34.5	36.8	1.56	42.6	27.0	1.56	48.0	15.6
1.56	50.3	3.2	1.56	49.5	-9.4	1.56	45.6	-21.5
1.56	38.8	-32.1	1.56	29.6	-40.8	1.56	18.6	-46.9
1.56	6.3	-50.0	1.56	-6.3	-50.0	1.56	-18.6	-46.9
1.56	-29.6	-40.8	1.56	-38.8	-32.1	1.56	-45.6	-21.5
1.56	-49.5	-9.4	1.56	-50.3	3.2	1.56	-48.0	15.6
1.56	-42.6	27.0	1.56	-34.5	36.8	1.56	-24.3	44.2
1.56	-12.5	48.8	1.27	0.0	39.5	1.27	9.8	38.2
1.27	19.0	34.6	1.27	27.0	28.8	1.27	33.3	21.1
1.27	37.5	12.2	1.27	39.4	2.5	1.27	38.8	-7.4
1.27	35.7	-16.8	1.27	30.4	-25.1	1.27	23.2	-31.9
1.27	14.5	-36.7	1.27	4.9	-39.1	1.27	-4.9	-39.1
1.27	-14.5	-36.7	1.27	-23.2	-31.9	1.27	-30.4	-25.1
1.27	-35.7	-16.8	1.27	-38.8	-7.4	1.27	-39.4	2.5
1.27	-37.5	12.2	1.27	-33.3	21.1	1.27	-27.0	28.8
1.27	-19.0	34.6	1.27	-9.8	38.2			

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	Muy k-ft	PhiMnx k-ft	PhiMny k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	822.85	2337.81	1552.56	14631.12	9716.66	6.258	17.98	104.38	0.01442	0.900
2	578.97	828.85	950.27	11023.54	12638.38	13.300	17.27	104.09	0.01508	0.900
3	578.17	833.53	950.27	11054.99	12603.32	13.263	17.27	104.10	0.01509	0.900
4	535.99	607.00	855.50	9599.15	13529.07	15.814	17.14	104.21	0.01524	0.900
5	535.20	611.67	855.50	9646.79	13492.31	15.771	17.14	104.20	0.01524	0.900
6	493.02	410.87	763.64	7803.86	14504.37	18.994	17.01	104.38	0.01541	0.900
7	492.23	415.54	763.64	7873.37	14468.96	18.947	17.01	104.38	0.01541	0.900
8	450.05	241.04	674.60	5502.36	15399.46	22.827	16.88	104.38	0.01555	0.900
9	449.25	245.72	674.60	5597.93	15368.88	22.782	16.88	104.38	0.01555	0.900
10	444.66	229.51	665.13	5323.54	15428.21	23.196	16.87	104.36	0.01556	0.900
11	407.07	98.25	588.27	2669.28	15982.03	27.168	16.78	104.12	0.01561	0.900
12	406.28	102.93	588.27	2793.94	15968.51	27.145	16.78	104.11	0.01561	0.900
13	364.10	-20.84	504.65	-661.05	16007.03	31.719	16.63	104.34	0.01582	0.900
14	363.30	-16.16	504.65	-512.96	16017.26	31.739	16.63	104.34	0.01582	0.900
15	321.12	-118.92	423.76	-4284.76	15268.52	36.031	16.52	104.30	0.01594	0.900
16	320.33	-114.24	423.76	-4126.78	15307.91	36.124	16.52	104.31	0.01594	0.900
17	278.15	-195.71	345.70	-7765.81	13717.34	39.680	16.39	104.25	0.01608	0.900
18	277.36	-191.03	345.70	-7616.90	13783.89	39.872	16.39	104.24	0.01608	0.900
19	235.18	-250.88	270.61	-10585.83	11418.43	42.195	16.25	104.39	0.01627	0.900
20	234.38	-246.19	270.61	-10480.26	11519.66	42.569	16.25	104.39	0.01627	0.900
21	192.20	-288.43	198.49	-12704.15	8742.64	44.046	16.16	104.22	0.01635	0.900
22	191.41	-283.74	198.49	-12633.75	8837.89	44.526	16.15	104.22	0.01636	0.900
23	149.22	-288.20	129.35	-13930.21	6251.87	48.335	16.02	104.29	0.01654	0.900
24	148.43	-283.58	129.35	-13888.91	6334.99	48.977	16.02	104.29	0.01653	0.900
25	106.25	-274.44	63.18	-14739.12	3393.19	53.705	15.87	104.37	0.01673	0.900
26	105.45	-269.82	63.18	-14721.68	3447.27	54.561	15.87	104.37	0.01673	0.900
27	63.27	-274.27	0.00	-15043.46	-0.00	54.848	15.81	104.02	0.01674	0.900
28	989.53	-4583.35	-673.61	-17949.89	-2638.06	3.916	18.46	104.30	0.01395	0.900
29	737.43	-2911.65	-451.34	-17107.99	-2651.97	5.876	17.72	104.32	0.01466	0.900
30	736.63	-2907.06	-451.34	-17104.95	-2655.68	5.884	17.72	104.32	0.01466	0.900
31	693.03	-2636.42	-413.15	-16956.70	-2657.25	6.432	17.59	104.32	0.01479	0.900
32	692.22	-2631.92	-413.15	-16953.62	-2661.31	6.442	17.59	104.32	0.01479	0.900
33	648.62	-2380.13	-375.04	-16806.26	-2648.19	7.061	17.46	104.32	0.01492	0.900
34	647.81	-2375.63	-375.04	-16803.15	-2652.72	7.073	17.46	104.32	0.01492	0.900
35	604.21	-2142.59	-337.03	-16657.53	-2620.23	7.774	17.34	104.32	0.01505	0.900
36	603.40	-2138.09	-337.03	-16654.35	-2625.25	7.789	17.33	104.32	0.01506	0.900
37	598.65	-2114.67	-332.90	-16638.67	-2619.34	7.868	17.32	104.32	0.01507	0.900
38	559.80	-1923.68	-299.12	-16510.65	-2567.32	8.583	17.21	104.32	0.01519	0.900

39	559.00	-1919.18	-299.12	-16507.43	-2572.84	8.601	17.20	104.32	0.01519	0.900
40	515.40	-1726.24	-261.32	-16366.79	-2477.62	9.481	17.08	104.31	0.01533	0.900
41	514.59	-1721.76	-261.32	-16363.54	-2483.57	9.504	17.07	104.31	0.01533	0.900
42	470.99	-1553.11	-223.63	-16227.44	-2336.54	10.448	16.95	104.30	0.01546	0.900
43	470.19	-1548.63	-223.63	-16224.15	-2342.82	10.476	16.95	104.30	0.01547	0.900
44	426.58	-1404.36	-186.05	-16093.63	-2132.10	11.460	16.82	104.28	0.01560	0.900
45	425.78	-1399.89	-186.05	-16090.33	-2138.48	11.494	16.82	104.28	0.01560	0.900
46	382.18	-1280.10	-148.59	-15966.54	-1853.38	12.473	16.69	104.24	0.01573	0.900
47	381.37	-1275.64	-148.59	-15963.25	-1859.49	12.514	16.69	104.25	0.01574	0.900
48	337.77	-1182.70	-111.26	-15847.17	-1490.75	13.399	16.57	104.20	0.01587	0.900
49	336.97	-1178.24	-111.26	-15843.95	-1496.08	13.447	16.57	104.20	0.01587	0.900
50	293.37	-1114.05	-74.04	-15735.50	-1045.86	14.125	16.45	104.15	0.01600	0.900
51	292.56	-1109.59	-74.04	-15732.40	-1049.85	14.179	16.44	104.15	0.01600	0.900
52	248.96	-1130.36	-36.96	-15632.48	-511.13	13.830	16.33	104.08	0.01612	0.900
53	248.16	-1125.68	-36.96	-15629.56	-513.16	13.885	16.33	104.08	0.01613	0.900
54	204.55	-1137.44	-0.00	-15527.98	-0.00	13.652	16.21	104.02	0.01625	0.900
55	493.50	2384.21	1546.73	13805.96	8956.46	5.791	17.02	104.39	0.01540	0.900
56	347.17	950.12	877.38	11726.20	10828.41	12.342	16.59	104.26	0.01585	0.900
57	346.69	952.92	877.38	11741.54	10810.73	12.322	16.59	104.26	0.01585	0.900
58	321.38	729.21	775.07	10874.71	11558.67	14.913	16.53	104.15	0.01590	0.900
59	320.91	732.00	775.07	10894.95	11536.07	14.884	16.53	104.15	0.01590	0.900
60	295.60	533.84	676.90	9784.53	12406.61	18.328	16.46	104.12	0.01597	0.900
61	295.12	536.63	676.90	9816.45	12382.39	18.293	16.46	104.11	0.01597	0.900
62	269.82	364.60	583.45	8322.98	13318.81	22.828	16.37	104.32	0.01612	0.900
63	269.34	367.39	583.45	8366.37	13286.60	22.772	16.37	104.31	0.01612	0.900
64	266.58	351.43	573.72	8201.83	13389.78	23.338	16.36	104.33	0.01613	0.900
65	244.03	222.21	495.46	6380.94	14227.50	28.716	16.28	104.38	0.01623	0.900
66	243.55	225.00	495.46	6446.44	14195.16	28.650	16.28	104.38	0.01624	0.900
67	218.25	103.34	412.94	3765.44	15047.17	36.439	16.23	104.22	0.01626	0.900
68	217.77	106.13	412.94	3860.29	15019.67	36.372	16.23	104.23	0.01627	0.900
69	192.46	5.29	335.89	243.24	15456.42	46.016	16.14	104.30	0.01639	0.900
70	191.98	8.08	335.89	371.65	15444.01	45.979	16.14	104.29	0.01639	0.900
71	166.68	-71.67	264.60	-4007.23	14794.57	55.913	16.05	104.31	0.01649	0.900
72	166.20	-68.87	264.60	-3860.42	14831.43	56.052	16.05	104.32	0.01650	0.900
73	140.89	-127.19	199.43	-8202.38	12861.54	64.491	15.99	104.29	0.01657	0.900
74	140.41	-124.38	199.43	-8076.03	12948.90	64.929	15.99	104.28	0.01657	0.900
75	115.11	-165.20	140.38	-11584.12	9843.91	70.121	15.91	104.31	0.01666	0.900
76	114.63	-162.41	140.38	-11491.59	9933.35	70.758	15.91	104.31	0.01667	0.900
77	89.32	-162.92	87.46	-13298.90	7139.46	81.628	15.85	104.19	0.01673	0.900
78	88.84	-160.15	87.46	-13252.29	7237.49	82.749	15.85	104.18	0.01672	0.900
79	63.53	-151.72	40.67	-14455.91	3874.87	95.280	15.74	104.38	0.01689	0.900
80	63.05	-148.95	40.67	-14436.21	3941.54	96.920	15.74	104.38	0.01689	0.900
81	37.75	-153.83	0.00	-14954.25	-0.00	97.210	15.74	104.02	0.01683	0.900
82	493.89	-2815.66	-538.08	-16196.94	-3095.28	5.752	17.01	104.36	0.01540	0.900
83	347.56	-1375.94	-361.12	-15424.80	-4048.31	11.210	16.58	104.38	0.01588	0.900
84	347.08	-1373.18	-361.12	-15421.23	-4055.50	11.230	16.58	104.38	0.01588	0.900
85	321.77	-1148.66	-330.68	-15242.18	-4387.98	13.270	16.51	104.38	0.01597	0.900
86	321.28	-1145.95	-330.68	-15237.98	-4397.15	13.297	16.51	104.38	0.01597	0.900
87	295.97	-947.07	-300.30	-15047.39	-4771.21	15.888	16.43	104.39	0.01606	0.900
88	295.49	-944.36	-300.30	-15042.40	-4783.32	15.929	16.43	104.39	0.01606	0.900
89	270.18	-771.70	-269.97	-14842.20	-5192.39	19.233	16.35	104.39	0.01615	0.900
90	269.69	-768.99	-269.97	-14836.11	-5208.56	19.293	16.35	104.40	0.01615	0.900
91	266.93	-752.97	-266.67	-14815.86	-5247.24	19.677	16.34	104.40	0.01616	0.900
92	244.38	-623.26	-239.71	-14588.57	-5610.78	23.407	16.28	104.37	0.01623	0.900
93	243.90	-620.53	-239.71	-14577.32	-5631.08	23.492	16.28	104.37	0.01623	0.900
94	218.59	-498.40	-209.51	-14304.22	-6012.93	28.701	16.21	104.33	0.01630	0.900
95	218.10	-495.66	-209.51	-14289.80	-6040.02	28.830	16.21	104.33	0.01631	0.900
96	192.79	-394.42	-179.37	-14035.25	-6382.84	35.585	16.15	104.29	0.01638	0.900
97	192.31	-391.68	-179.37	-14016.74	-6418.94	35.786	16.15	104.28	0.01638	0.900
98	167.00	-311.61	-149.30	-13825.96	-6624.50	44.370	16.08	104.26	0.01646	0.900
99	166.51	-308.87	-149.30	-13802.33	-6671.75	44.686	16.08	104.25	0.01645	0.900
100	141.21	-250.30	-119.30	-13758.90	-6557.85	54.969	16.00	104.26	0.01655	0.900
101	140.72	-247.55	-119.30	-13729.93	-6616.79	55.463	16.00	104.26	0.01655	0.900
102	115.41	-206.47	-89.37	-13908.25	-6020.17	67.363	15.91	104.31	0.01667	0.900
103	114.93	-203.70	-89.37	-13875.41	-6087.62	68.117	15.91	104.31	0.01667	0.900
104	89.62	-201.69	-59.51	-14445.21	-4261.99	71.620	15.82	104.38	0.01680	0.900
105	89.13	-198.88	-59.51	-14428.57	-4317.26	72.549	15.82	104.38	0.01680	0.900
106	63.83	-207.95	-29.72	-14844.19	-2121.45	71.385	15.76	104.30	0.01685	0.900
107	63.34	-205.14	-29.72	-14839.93	-2149.91	72.342	15.76	104.30	0.01685	0.900
108	38.03	-200.94	-0.00	-14955.26	-0.00	74.426	15.74	104.02	0.01683	0.900
109	822.90	2337.62	1564.60	14594.91	9768.58	6.244	17.98	104.38	0.01441	0.900
110	579.01	828.65	958.39	10971.98	12689.90	13.241	17.27	104.08	0.01508	0.900
111	578.22	833.33	958.39	11003.44	12654.83	13.204	17.27	104.09	0.01508	0.900
112	536.04	606.80	862.95	9541.69	13569.67	15.725	17.14	104.22	0.01524	0.900
113	535.24	611.47	862.95	9589.22	13532.97	15.682	17.14	104.21	0.01524	0.900
114	493.06	410.67	770.41	7745.97	14531.55	18.862	17.01	104.38	0.01541	0.900
115	492.27	415.34	770.41	7815.16	14496.28	18.816	17.01	104.38	0.01541	0.900
116	450.09	240.84	680.70	5453.24	15412.73	22.643	16.88	104.37	0.01555	0.900
117	449.30	245.52	680.70	5548.90	15384.40	22.601	16.88	104.38	0.01555	0.900
118	444.70	229.31	671.15	5275.62	15441.16	23.007	16.87	104.35	0.01556	0.900

119	407.12	98.05	593.69	2639.95	15984.73	26.925	16.78	104.12	0.01561	0.900
120	406.32	102.73	593.69	2763.56	15971.31	26.902	16.78	104.11	0.01561	0.900
121	364.14	-21.04	509.39	-661.25	16007.17	31.424	16.63	104.34	0.01582	0.900
122	363.35	-16.36	509.39	-514.48	16017.28	31.444	16.63	104.34	0.01582	0.900
123	321.17	-119.12	427.82	-4253.64	15276.99	35.709	16.52	104.30	0.01594	0.900
124	320.37	-114.44	427.82	-4096.93	15316.05	35.800	16.52	104.32	0.01594	0.900
125	278.19	-195.92	349.09	-7712.51	13742.40	39.367	16.39	104.24	0.01608	0.900
126	277.40	-191.23	349.09	-7564.46	13808.55	39.556	16.39	104.24	0.01608	0.900
127	235.22	-251.08	273.32	-10535.57	11468.68	41.961	16.25	104.39	0.01627	0.900
128	234.42	-246.39	273.32	-10430.10	11569.81	42.331	16.25	104.40	0.01627	0.900
129	192.24	-288.63	200.52	-12664.91	8798.63	43.879	16.16	104.22	0.01635	0.900
130	191.45	-283.94	200.52	-12594.31	8894.15	44.355	16.15	104.23	0.01636	0.900
131	149.27	-288.41	130.70	-13907.11	6302.39	48.220	16.02	104.29	0.01653	0.900
132	148.47	-283.78	130.70	-13865.57	6386.01	48.860	16.02	104.28	0.01653	0.900
133	106.29	-274.65	63.86	-14730.68	3425.04	53.635	15.87	104.37	0.01673	0.900
134	105.49	-270.02	63.86	-14713.12	3479.58	54.489	15.87	104.37	0.01673	0.900
135	63.31	-274.48	0.00	-15043.60	-0.00	54.808	15.81	104.02	0.01674	0.900
136	989.58	-4583.54	-661.57	-17953.96	-2591.39	3.917	18.46	104.30	0.01395	0.900
137	737.48	-2911.85	-443.22	-17112.05	-2604.67	5.877	17.72	104.31	0.01466	0.900
138	736.67	-2907.26	-443.22	-17109.02	-2608.32	5.885	17.72	104.31	0.01466	0.900
139	693.07	-2636.62	-405.70	-16960.80	-2609.78	6.433	17.59	104.32	0.01479	0.900
140	692.26	-2632.12	-405.70	-16957.72	-2613.77	6.443	17.59	104.32	0.01479	0.900
141	648.66	-2380.33	-368.27	-16810.39	-2600.81	7.062	17.46	104.32	0.01492	0.900
142	647.86	-2375.83	-368.27	-16807.28	-2605.25	7.074	17.46	104.32	0.01492	0.900
143	604.26	-2142.80	-330.94	-16661.64	-2573.26	7.776	17.34	104.32	0.01505	0.900
144	603.45	-2138.29	-330.94	-16658.48	-2578.18	7.791	17.33	104.32	0.01506	0.900
145	598.70	-2114.87	-326.88	-16642.79	-2572.36	7.869	17.32	104.32	0.01507	0.900
146	559.85	-1923.88	-293.71	-16514.73	-2521.19	8.584	17.21	104.31	0.01519	0.900
147	559.04	-1919.38	-293.71	-16511.51	-2526.60	8.603	17.20	104.32	0.01519	0.900
148	515.44	-1726.44	-256.58	-16370.78	-2432.99	9.482	17.08	104.31	0.01532	0.900
149	514.63	-1721.96	-256.58	-16367.53	-2438.83	9.505	17.07	104.31	0.01533	0.900
150	471.03	-1553.31	-219.57	-16231.25	-2294.34	10.449	16.95	104.29	0.01546	0.900
151	470.23	-1548.83	-219.57	-16227.97	-2300.50	10.478	16.95	104.29	0.01546	0.900
152	426.63	-1404.56	-182.67	-16097.16	-2093.46	11.461	16.82	104.27	0.01560	0.900
153	425.82	-1400.09	-182.67	-16093.86	-2099.73	11.495	16.82	104.27	0.01560	0.900
154	382.22	-1280.30	-145.88	-15969.66	-1819.67	12.473	16.69	104.24	0.01573	0.900
155	381.41	-1275.84	-145.88	-15966.38	-1825.67	12.514	16.69	104.24	0.01574	0.900
156	337.81	-1182.90	-109.23	-15849.74	-1463.52	13.399	16.57	104.20	0.01587	0.900
157	337.01	-1178.45	-109.23	-15846.53	-1468.76	13.447	16.57	104.20	0.01587	0.900
158	293.41	-1114.25	-72.69	-15737.37	-1026.67	14.124	16.45	104.15	0.01600	0.900
159	292.60	-1109.79	-72.69	-15734.27	-1030.58	14.178	16.45	104.15	0.01600	0.900
160	249.00	-1130.56	-36.28	-15633.47	-501.70	13.828	16.33	104.08	0.01612	0.900
161	248.20	-1125.88	-36.28	-15630.56	-503.70	13.883	16.33	104.08	0.01612	0.900
162	204.60	-1137.65	-0.00	-15528.13	-0.00	13.649	16.21	104.02	0.01625	0.900
163	823.19	-354.25	-314.59	-13149.15	-11677.04	37.118	17.98	104.32	0.01440	0.900
164	579.30	-351.88	-211.32	-14381.11	-8636.58	40.869	17.28	104.16	0.01509	0.900
165	578.50	-347.20	-211.32	-14321.83	-8716.96	41.249	17.27	104.17	0.01509	0.900
166	536.32	-346.97	-193.53	-14523.95	-8101.01	41.859	17.15	104.17	0.01522	0.900
167	535.51	-342.29	-193.53	-14480.47	-8187.33	42.305	17.15	104.16	0.01522	0.900
168	493.33	-342.13	-175.76	-14636.52	-7519.20	42.780	17.03	104.22	0.01536	0.900
169	492.53	-337.45	-175.76	-14594.81	-7601.87	43.251	17.02	104.21	0.01536	0.900
170	450.35	-337.37	-158.02	-14759.55	-6913.43	43.749	16.90	104.27	0.01551	0.900
171	449.55	-332.68	-158.02	-14719.83	-6991.92	44.246	16.90	104.26	0.01551	0.900
172	444.95	-332.68	-156.10	-14738.47	-6915.32	44.302	16.88	104.27	0.01553	0.900
173	407.37	-332.68	-140.32	-14893.75	-6281.89	44.769	16.77	104.33	0.01567	0.900
174	406.56	-328.00	-140.32	-14856.31	-6355.58	45.294	16.77	104.32	0.01567	0.900
175	364.38	-328.07	-122.65	-15039.94	-5622.54	45.844	16.63	104.39	0.01583	0.900
176	363.58	-323.39	-122.65	-15005.10	-5690.76	46.400	16.63	104.38	0.01583	0.900
177	321.40	-323.53	-105.01	-15103.18	-4902.03	46.682	16.51	104.39	0.01597	0.900
178	320.60	-318.85	-105.01	-15082.82	-4967.33	47.304	16.50	104.39	0.01598	0.900
179	278.42	-319.07	-87.41	-15151.32	-4150.69	47.487	16.38	104.38	0.01612	0.900
180	277.61	-314.38	-87.41	-15133.22	-4207.48	48.136	16.38	104.38	0.01612	0.900
181	235.44	-314.67	-69.85	-15206.72	-3375.31	48.325	16.26	104.37	0.01626	0.900
182	234.63	-309.99	-69.85	-15191.10	-3422.78	49.005	16.25	104.37	0.01626	0.900
183	192.45	-310.36	-52.32	-15250.53	-2571.09	49.139	16.13	104.34	0.01640	0.900
184	191.65	-305.67	-52.32	-15244.21	-2609.39	49.871	16.13	104.35	0.01641	0.900
185	149.47	-306.11	-34.84	-15179.55	-1727.69	49.588	16.02	104.24	0.01652	0.900
186	148.67	-301.43	-34.84	-15174.32	-1753.92	50.341	16.02	104.24	0.01652	0.900
187	106.49	-301.95	-17.40	-15111.59	-870.81	50.047	15.92	104.13	0.01662	0.900
188	105.68	-297.26	-17.40	-15107.51	-884.28	50.822	15.92	104.13	0.01663	0.900
189	63.50	-297.85	0.00	-15044.26	-0.00	50.509	15.81	104.02	0.01674	0.900
190	989.30	-1122.75	-349.24	-17309.74	-5384.31	15.417	18.45	104.39	0.01398	0.900
191	737.20	-1128.34	-234.76	-16938.23	-3524.14	15.012	17.72	104.37	0.01467	0.900
192	736.40	-1123.67	-234.76	-16931.86	-3537.45	15.068	17.72	104.37	0.01467	0.900
193	692.80	-1125.13	-215.01	-16863.28	-3222.61	14.988	17.59	104.36	0.01479	0.900
194	692.00	-1120.46	-215.01	-16857.20	-3234.86	15.045	17.59	104.36	0.01480	0.900
195	648.40	-1122.07	-195.29	-16782.64	-2920.97	14.957	17.46	104.36	0.01493	0.900
196	647.59	-1117.40	-195.29	-16778.94	-2932.52	15.016	17.46	104.36	0.01493	0.900
197	603.99	-1119.16	-175.60	-16657.35	-2613.58	14.884	17.33	104.32	0.01505	0.900
198	603.19	-1114.50	-175.60	-16653.75	-2623.95	14.943	17.33	104.32	0.01506	0.900

199	598.44	-1114.71	-173.46	-16640.49	-2589.40	14.928	17.32	104.32	0.01507	0.900
200	559.59	-1116.40	-155.94	-16531.92	-2309.15	14.808	17.21	104.29	0.01518	0.900
201	558.79	-1111.73	-155.94	-16528.41	-2318.35	14.867	17.20	104.29	0.01519	0.900
202	515.19	-1113.79	-136.31	-16406.46	-2007.84	14.730	17.08	104.26	0.01531	0.900
203	514.39	-1109.13	-136.31	-16403.04	-2015.87	14.789	17.08	104.26	0.01532	0.900
204	470.79	-1111.34	-116.71	-16281.05	-1709.84	14.650	16.95	104.22	0.01545	0.900
205	469.99	-1106.68	-116.71	-16277.73	-1716.70	14.709	16.95	104.22	0.01545	0.900
206	426.39	-1109.05	-97.16	-16155.61	-1415.30	14.567	16.82	104.19	0.01558	0.900
207	425.59	-1104.39	-97.16	-16152.39	-1421.00	14.626	16.82	104.19	0.01558	0.900
208	381.99	-1106.92	-77.64	-16030.19	-1124.39	14.482	16.70	104.16	0.01571	0.900
209	381.19	-1102.25	-77.64	-16027.07	-1128.93	14.540	16.70	104.16	0.01571	0.900
210	337.59	-1104.96	-58.17	-15904.70	-837.25	14.394	16.57	104.12	0.01585	0.900
211	336.79	-1100.29	-58.17	-15901.67	-840.64	14.452	16.57	104.12	0.01585	0.900
212	293.19	-1103.17	-38.73	-15779.02	-554.02	14.303	16.45	104.09	0.01598	0.900
213	292.39	-1098.50	-38.73	-15776.09	-556.27	14.361	16.45	104.09	0.01598	0.900
214	248.79	-1101.56	-19.34	-15653.27	-274.89	14.210	16.33	104.05	0.01611	0.900
215	247.99	-1096.89	-19.34	-15650.44	-276.01	14.268	16.33	104.05	0.01612	0.900
216	204.39	-1100.14	0.00	-15527.42	-0.00	14.114	16.21	104.02	0.01625	0.900
217	823.23	-354.44	-302.55	-13393.21	-11432.41	37.787	17.99	104.31	0.01440	0.900
218	579.34	-352.09	-203.20	-14545.97	-8394.91	41.314	17.28	104.15	0.01509	0.900
219	578.54	-347.40	-203.20	-14490.23	-8475.50	41.710	17.27	104.15	0.01509	0.900
220	536.36	-347.17	-186.08	-14642.65	-7848.35	42.177	17.15	104.20	0.01523	0.900
221	535.56	-342.49	-186.08	-14600.11	-7932.65	42.630	17.15	104.19	0.01523	0.900
222	493.38	-342.33	-168.99	-14748.48	-7280.55	43.082	17.02	104.24	0.01537	0.900
223	492.57	-337.65	-168.99	-14707.70	-7361.21	43.560	17.02	104.24	0.01537	0.900
224	450.39	-337.57	-151.93	-14864.23	-6689.98	44.033	16.90	104.29	0.01552	0.900
225	449.59	-332.88	-151.93	-14825.44	-6766.48	44.536	16.89	104.29	0.01552	0.900
226	445.00	-332.88	-150.08	-14843.16	-6691.83	44.590	16.88	104.29	0.01554	0.900
227	407.41	-332.88	-134.90	-14990.56	-6074.97	45.033	16.76	104.35	0.01567	0.900
228	406.61	-328.20	-134.90	-14954.04	-6146.70	45.564	16.76	104.34	0.01567	0.900
229	364.43	-328.27	-117.91	-15115.24	-5428.99	46.045	16.63	104.40	0.01583	0.900
230	363.62	-323.59	-117.91	-15093.49	-5499.67	46.645	16.63	104.40	0.01583	0.900
231	321.44	-323.73	-100.95	-15150.93	-4724.33	46.801	16.51	104.39	0.01597	0.900
232	320.64	-319.05	-100.95	-15131.16	-4787.46	47.426	16.50	104.39	0.01598	0.900
233	278.46	-319.27	-84.02	-15192.41	-3998.22	47.585	16.38	104.38	0.01612	0.900
234	277.66	-314.58	-84.02	-15174.83	-4053.07	48.238	16.38	104.38	0.01612	0.900
235	235.48	-314.88	-67.14	-15240.70	-3249.59	48.402	16.26	104.37	0.01626	0.900
236	234.67	-310.19	-67.14	-15225.52	-3295.38	49.084	16.25	104.37	0.01626	0.900
237	192.49	-310.56	-50.29	-15259.87	-2471.17	49.137	16.14	104.33	0.01640	0.900
238	191.69	-305.88	-50.29	-15253.68	-2508.00	49.869	16.13	104.34	0.01640	0.900
239	149.51	-306.32	-33.49	-15186.01	-1660.14	49.576	16.03	104.23	0.01651	0.900
240	148.71	-301.63	-33.49	-15180.88	-1685.35	50.329	16.02	104.23	0.01652	0.900
241	106.53	-302.15	-16.72	-15114.98	-836.55	50.025	15.92	104.13	0.01662	0.900
242	105.73	-297.47	-16.72	-15110.96	-849.50	50.799	15.92	104.13	0.01663	0.900
243	63.55	-298.06	0.00	-15044.41	-0.00	50.475	15.81	104.02	0.01674	0.900
244	989.35	-1122.94	-337.20	-17355.78	-5211.62	15.456	18.45	104.38	0.01397	0.900
245	737.24	-1128.54	-226.64	-16969.55	-3407.85	15.037	17.72	104.36	0.01467	0.900
246	736.44	-1123.87	-226.64	-16963.29	-3420.76	15.094	17.72	104.36	0.01467	0.900
247	692.84	-1125.33	-207.57	-16892.01	-3115.72	15.011	17.59	104.36	0.01479	0.900
248	692.04	-1120.66	-207.57	-16886.04	-3127.60	15.068	17.59	104.36	0.01480	0.900
249	648.44	-1122.27	-188.52	-16791.20	-2820.64	14.962	17.46	104.34	0.01492	0.900
250	647.64	-1117.60	-188.52	-16787.55	-2831.79	15.021	17.46	104.35	0.01493	0.900
251	604.04	-1119.36	-169.51	-16665.10	-2523.60	14.888	17.33	104.31	0.01505	0.900
252	603.24	-1114.70	-169.51	-16661.53	-2533.63	14.947	17.33	104.31	0.01506	0.900
253	598.49	-1114.91	-167.44	-16648.18	-2500.24	14.932	17.32	104.31	0.01507	0.900
254	559.64	-1116.60	-150.52	-16538.85	-2229.47	14.812	17.21	104.28	0.01518	0.900
255	558.84	-1111.93	-150.52	-16535.38	-2238.36	14.871	17.20	104.28	0.01518	0.900
256	515.24	-1113.99	-131.57	-16412.56	-1938.40	14.733	17.08	104.25	0.01531	0.900
257	514.44	-1109.33	-131.57	-16409.17	-1946.15	14.792	17.08	104.25	0.01532	0.900
258	470.84	-1111.54	-112.65	-16286.33	-1650.57	14.652	16.95	104.22	0.01544	0.900
259	470.04	-1106.88	-112.65	-16283.03	-1657.19	14.711	16.95	104.22	0.01545	0.900
260	426.44	-1109.25	-93.77	-16160.06	-1366.11	14.568	16.82	104.18	0.01558	0.900
261	425.64	-1104.59	-93.77	-16156.86	-1371.62	14.627	16.82	104.18	0.01558	0.900
262	382.03	-1107.12	-74.93	-16033.79	-1085.21	14.482	16.70	104.15	0.01571	0.900
263	381.23	-1102.45	-74.93	-16030.68	-1089.60	14.541	16.70	104.15	0.01571	0.900
264	337.63	-1105.16	-56.14	-15907.44	-808.00	14.394	16.57	104.12	0.01585	0.900
265	336.83	-1100.49	-56.14	-15904.43	-811.27	14.452	16.57	104.12	0.01585	0.900
266	293.23	-1103.37	-37.38	-15780.90	-534.62	14.302	16.45	104.09	0.01598	0.900
267	292.43	-1098.70	-37.38	-15777.99	-536.79	14.361	16.45	104.09	0.01598	0.900
268	248.83	-1101.77	-18.67	-15654.28	-265.24	14.208	16.33	104.05	0.01611	0.900
269	248.03	-1097.10	-18.67	-15651.46	-266.32	14.266	16.33	104.05	0.01612	0.900
270	204.43	-1100.34	0.00	-15527.56	-0.00	14.112	16.21	104.02	0.01625	0.900
271	815.12	2602.96	1031.72	16319.55	6468.49	6.270	17.94	104.22	0.01443	0.900
272	571.23	976.89	599.85	14266.96	8760.43	14.604	17.25	104.40	0.01516	0.900
273	570.43	981.55	599.85	14285.05	8729.88	14.554	17.24	104.40	0.01516	0.900
274	528.25	742.99	534.51	13447.38	9674.06	18.099	17.12	104.37	0.01529	0.900
275	527.45	747.63	534.51	13473.21	9632.46	18.021	17.12	104.37	0.01529	0.900
276	485.27	534.92	472.04	12334.57	10884.77	23.059	16.99	104.30	0.01542	0.900
277	484.47	539.56	472.04	12382.50	10833.08	22.949	16.99	104.31	0.01542	0.900
278	442.29	353.29	412.37	10617.94	12393.69	30.055	16.88	104.08	0.01550	0.900

279	441.49	357.93	412.37	10690.86	12316.99	29.869	16.88	104.09	0.01550	0.900
280	436.89	340.45	406.10	10480.78	12501.71	30.785	16.87	104.06	0.01551	0.900
281	399.31	198.83	355.37	7894.33	14109.25	39.703	16.74	104.38	0.01571	0.900
282	398.50	203.48	355.37	8038.52	14038.96	39.506	16.74	104.38	0.01571	0.900
283	356.32	68.89	301.04	3566.92	15587.92	51.781	16.63	104.19	0.01579	0.900
284	355.52	73.53	301.04	3792.22	15524.63	51.570	16.63	104.21	0.01580	0.900
285	313.34	-38.57	249.39	-2424.49	15677.07	62.862	16.48	104.41	0.01600	0.900
286	312.54	-33.92	249.39	-2135.30	15699.79	62.953	16.48	104.40	0.01600	0.900
287	270.36	-118.48	200.53	-8003.23	13545.13	67.547	16.37	104.26	0.01611	0.900
288	269.56	-113.82	200.53	-7767.29	13684.15	68.240	16.37	104.25	0.01611	0.900
289	227.38	-168.55	154.58	-11460.02	10510.21	67.991	16.24	104.33	0.01628	0.900
290	226.58	-163.88	154.58	-11303.64	10661.99	68.973	16.23	104.34	0.01628	0.900
291	184.40	-206.41	111.55	-13565.69	7331.30	65.721	16.14	104.19	0.01636	0.900
292	183.60	-201.74	111.55	-13500.88	7465.21	66.921	16.15	104.18	0.01636	0.900
293	141.42	-234.54	71.44	-14582.69	4442.18	62.176	15.97	104.39	0.01661	0.900
294	140.61	-229.87	71.44	-14557.59	4524.64	63.330	15.97	104.39	0.01661	0.900
295	98.43	-252.93	34.26	-14973.94	2028.25	59.201	15.87	104.28	0.01672	0.900
296	97.63	-248.26	34.26	-14967.62	2065.53	60.289	15.86	104.29	0.01672	0.900
297	55.45	-256.14	0.00	-15016.12	-0.00	58.625	15.79	104.02	0.01677	0.900
298	962.35	-4907.32	-108.86	-18047.04	-400.35	3.678	18.37	104.06	0.01400	0.900
299	710.25	-3078.11	-72.14	-17202.08	-403.16	5.589	17.64	104.07	0.01470	0.900
300	709.45	-3073.49	-72.14	-17199.34	-403.71	5.596	17.64	104.07	0.01470	0.900
301	665.85	-2775.87	-65.91	-17052.40	-404.87	6.143	17.51	104.07	0.01482	0.900
302	665.04	-2771.31	-65.91	-17049.64	-405.48	6.152	17.51	104.07	0.01483	0.900
303	621.44	-2492.75	-59.71	-16902.72	-404.89	6.781	17.39	104.07	0.01496	0.900
304	620.64	-2488.19	-59.71	-16899.96	-405.57	6.792	17.39	104.07	0.01496	0.900
305	577.04	-2228.61	-53.55	-16753.14	-402.59	7.517	17.26	104.07	0.01509	0.900
306	576.23	-2224.05	-53.55	-16750.35	-403.34	7.531	17.26	104.07	0.01509	0.900
307	571.48	-2197.77	-52.89	-16734.37	-402.70	7.614	17.24	104.07	0.01510	0.900
308	532.63	-1983.35	-47.44	-16603.68	-397.12	8.372	17.13	104.07	0.01522	0.900
309	531.83	-1978.82	-47.44	-16600.90	-397.97	8.389	17.13	104.07	0.01522	0.900
310	488.23	-1760.80	-41.36	-16454.59	-386.50	9.345	17.01	104.07	0.01536	0.900
311	487.43	-1756.29	-41.36	-16451.81	-387.43	9.367	17.00	104.07	0.01536	0.900
312	443.83	-1564.98	-35.32	-16306.08	-368.05	10.419	16.88	104.06	0.01549	0.900
313	443.02	-1560.47	-35.32	-16303.29	-369.05	10.448	16.88	104.06	0.01550	0.900
314	399.42	-1395.96	-29.33	-16158.40	-339.50	11.575	16.75	104.06	0.01563	0.900
315	398.62	-1391.46	-29.33	-16155.59	-340.54	11.611	16.75	104.06	0.01564	0.900
316	355.02	-1253.90	-23.38	-16011.75	-298.53	12.770	16.63	104.06	0.01577	0.900
317	354.22	-1249.40	-23.38	-16008.95	-299.55	12.813	16.63	104.06	0.01578	0.900
318	310.62	-1139.97	-17.47	-15866.07	-243.12	13.918	16.50	104.05	0.01591	0.900
319	309.82	-1135.48	-17.47	-15863.27	-244.05	13.971	16.50	104.05	0.01592	0.900
320	266.22	-1055.36	-11.60	-15721.68	-172.84	14.897	16.38	104.04	0.01605	0.900
321	265.42	-1050.72	-11.60	-15718.90	-173.57	14.960	16.38	104.04	0.01606	0.900
322	221.82	-1018.08	-8.17	-15575.25	-124.96	15.299	16.26	104.04	0.01620	0.900
323	221.02	-1013.44	-8.17	-15572.48	-125.51	15.366	16.26	104.04	0.01620	0.900
324	177.42	-1008.04	-0.00	-15435.85	-0.00	15.313	16.14	104.02	0.01634	0.900
325	489.11	2601.60	929.99	15525.08	5549.73	5.968	17.02	104.18	0.01537	0.900
326	342.78	1093.11	461.89	14686.49	6205.72	13.436	16.59	104.25	0.01585	0.900
327	342.30	1095.89	461.89	14691.13	6191.89	13.406	16.59	104.25	0.01585	0.900
328	316.99	859.42	394.36	14400.89	6608.02	16.756	16.51	104.29	0.01595	0.900
329	316.51	862.19	394.36	14407.55	6589.89	16.710	16.51	104.29	0.01595	0.900
330	291.20	651.38	330.94	14053.95	7140.20	21.576	16.43	104.34	0.01605	0.900
331	290.72	654.14	330.94	14063.88	7115.07	21.500	16.43	104.34	0.01605	0.900
332	265.41	469.59	272.22	13600.67	7884.23	28.963	16.35	104.41	0.01616	0.900
333	264.93	472.35	272.22	13621.18	7849.95	28.837	16.34	104.41	0.01616	0.900
334	262.17	455.04	266.27	13554.13	7931.29	29.787	16.34	104.41	0.01617	0.900
335	239.62	314.78	218.93	12787.12	8893.63	40.622	16.27	104.37	0.01624	0.900
336	239.14	317.55	218.93	12822.28	8840.37	40.379	16.27	104.38	0.01625	0.900
337	213.83	184.28	171.09	11362.60	10549.29	61.659	16.21	104.26	0.01629	0.900
338	213.35	187.05	171.09	11442.71	10466.21	61.173	16.21	104.27	0.01630	0.900
339	188.04	76.08	128.69	7860.40	13296.24	103.319	16.12	104.36	0.01642	0.900
340	187.56	78.85	128.69	8060.57	13155.50	102.226	16.13	104.33	0.01641	0.900
341	162.26	-4.44	92.02	-738.12	15304.88	166.322	16.04	104.35	0.01651	0.900
342	161.78	-1.65	92.02	-275.39	15345.08	166.759	16.04	104.33	0.01651	0.900
343	136.47	-55.86	61.44	-10248.67	11272.33	183.482	15.96	104.39	0.01662	0.900
344	135.99	-53.06	61.44	-9971.67	11544.88	187.919	15.96	104.41	0.01663	0.900
345	110.68	-95.22	36.94	-14136.34	5484.57	148.467	15.88	104.37	0.01671	0.900
346	110.20	-92.42	36.94	-14070.32	5624.25	152.249	15.89	104.35	0.01671	0.900
347	84.89	-124.97	18.54	-14909.24	2211.60	119.307	15.82	104.31	0.01678	0.900
348	84.41	-122.17	18.54	-14902.85	2261.28	121.987	15.82	104.31	0.01678	0.900
349	59.10	-145.15	6.22	-14968.04	641.76	103.123	15.78	104.10	0.01679	0.900
350	58.62	-142.35	6.22	-14965.18	654.25	105.130	15.78	104.10	0.01679	0.900
351	33.31	-148.92	0.00	-14938.76	-0.00	100.315	15.72	104.02	0.01685	0.900
352	489.37	-2987.80	-106.50	-16441.22	-586.04	5.503	17.01	104.09	0.01536	0.900
353	343.03	-1477.38	-71.11	-15929.48	-766.71	10.782	16.59	104.11	0.01583	0.900
354	342.55	-1474.61	-71.11	-15927.73	-768.07	10.801	16.59	104.11	0.01583	0.900
355	317.25	-1237.95	-65.06	-15835.93	-832.20	12.792	16.52	104.12	0.01591	0.900
356	316.76	-1235.24	-65.06	-15834.13	-833.94	12.819	16.52	104.12	0.01591	0.900
357	291.46	-1024.29	-59.03	-15741.44	-907.11	15.368	16.44	104.13	0.01600	0.900
358	290.97	-1021.58	-59.03	-15739.59	-909.41	15.407	16.44	104.13	0.01600	0.900

359	265.67	-836.93	-53.02	-15646.01	-991.12	18.695	16.37	104.14	0.01609	0.900
360	265.18	-834.22	-53.02	-15644.09	-994.22	18.753	16.37	104.14	0.01609	0.900
361	262.43	-816.90	-52.36	-15633.97	-1002.16	19.138	16.36	104.14	0.01610	0.900
362	239.87	-676.60	-47.03	-15549.95	-1080.89	22.983	16.30	104.16	0.01618	0.900
363	239.39	-673.87	-47.03	-15547.92	-1085.11	23.072	16.29	104.16	0.01618	0.900
364	214.09	-540.62	-41.07	-15453.34	-1173.91	28.585	16.22	104.17	0.01627	0.900
365	213.60	-537.88	-41.07	-15451.15	-1179.71	28.726	16.22	104.17	0.01627	0.900
366	188.29	-426.97	-35.13	-15356.45	-1263.43	35.966	16.15	104.18	0.01636	0.900
367	187.81	-424.24	-35.13	-15354.07	-1271.37	36.192	16.14	104.18	0.01636	0.900
368	162.51	-347.53	-29.21	-15265.93	-1283.23	43.927	16.07	104.18	0.01645	0.900
369	162.02	-344.75	-29.21	-15263.33	-1293.36	44.274	16.07	104.18	0.01645	0.900
370	136.71	-289.75	-23.32	-15182.96	-1222.04	52.400	16.00	104.18	0.01654	0.900
371	136.23	-286.96	-23.32	-15180.15	-1233.70	52.900	16.00	104.18	0.01654	0.900
372	110.93	-244.07	-17.45	-15107.25	-1080.37	61.897	15.93	104.16	0.01662	0.900
373	110.44	-241.27	-17.45	-15104.40	-1092.70	62.604	15.93	104.16	0.01662	0.900
374	85.13	-207.97	-11.61	-15039.94	-839.73	72.319	15.86	104.13	0.01670	0.900
375	84.65	-205.17	-11.61	-15037.20	-851.04	73.293	15.85	104.13	0.01670	0.900
376	59.35	-181.45	-7.80	-14968.72	-643.60	82.494	15.78	104.10	0.01679	0.900
377	58.86	-178.65	-7.80	-14966.09	-653.57	83.772	15.78	104.10	0.01679	0.900
378	33.56	-170.32	-0.00	-14939.61	-0.00	87.717	15.72	104.02	0.01685	0.900
379	815.02	2603.06	1034.26	16313.12	6481.59	6.267	17.94	104.22	0.01443	0.900
380	571.13	977.11	601.56	14255.38	8776.32	14.589	17.25	104.40	0.01516	0.900
381	570.33	981.77	601.56	14273.49	8745.75	14.539	17.24	104.40	0.01516	0.900
382	528.15	743.23	536.07	13435.33	9690.62	18.077	17.12	104.37	0.01529	0.900
383	527.34	747.87	536.07	13461.18	9649.00	17.999	17.11	104.37	0.01529	0.900
384	485.16	535.18	473.47	12319.66	10899.15	23.020	16.99	104.30	0.01542	0.900
385	484.36	539.82	473.47	12367.58	10847.46	22.911	16.99	104.30	0.01542	0.900
386	442.18	353.57	413.65	10604.50	12406.62	29.993	16.88	104.07	0.01550	0.900
387	441.38	358.21	413.65	10677.35	12329.99	29.808	16.88	104.09	0.01550	0.900
388	436.79	340.74	407.37	10465.50	12512.00	30.714	16.87	104.06	0.01551	0.900
389	399.20	199.14	356.51	7883.64	14113.86	39.589	16.74	104.38	0.01571	0.900
390	398.40	203.78	356.51	8027.47	14043.73	39.393	16.74	104.38	0.01571	0.900
391	356.22	69.21	302.04	3571.50	15586.33	51.604	16.63	104.19	0.01579	0.900
392	355.42	73.86	302.04	3796.01	15523.25	51.395	16.63	104.21	0.01580	0.900
393	313.24	-38.22	250.25	-2394.92	15679.32	62.656	16.48	104.41	0.01600	0.900
394	312.44	-33.57	250.25	-2106.63	15701.95	62.746	16.48	104.40	0.01600	0.900
395	270.26	-118.12	201.24	-7965.55	13571.22	67.438	16.37	104.25	0.01611	0.900
396	269.45	-113.46	201.24	-7725.62	13703.22	68.094	16.37	104.24	0.01611	0.900
397	227.28	-168.16	155.15	-11426.87	10542.71	67.951	16.24	104.33	0.01628	0.900
398	226.47	-163.50	155.15	-11270.12	10694.86	68.932	16.23	104.34	0.01628	0.900
399	184.29	-206.01	111.98	-13549.63	7365.26	65.773	16.14	104.19	0.01636	0.900
400	183.49	-201.33	111.98	-13484.47	7499.90	66.975	16.15	104.17	0.01636	0.900
401	141.31	-234.11	71.73	-14575.89	4466.00	62.261	15.97	104.39	0.01661	0.900
402	140.51	-229.44	71.73	-14550.64	4549.03	63.419	15.97	104.39	0.01661	0.900
403	98.33	-252.48	34.40	-14972.45	2040.11	59.301	15.87	104.28	0.01672	0.900
404	97.53	-247.81	34.40	-14966.10	2077.68	60.393	15.86	104.29	0.01672	0.900
405	55.35	-255.67	0.00	-15015.76	-0.00	58.732	15.79	104.02	0.01677	0.900
406	962.25	-4907.23	-106.33	-18047.46	-391.05	3.678	18.37	104.06	0.01400	0.900
407	710.14	-3077.89	-70.43	-17202.52	-393.64	5.589	17.64	104.06	0.01470	0.900
408	709.34	-3073.27	-70.43	-17199.78	-394.17	5.597	17.64	104.06	0.01470	0.900
409	665.74	-2775.63	-64.34	-17052.85	-395.29	6.144	17.51	104.07	0.01482	0.900
410	664.94	-2771.07	-64.34	-17050.09	-395.88	6.153	17.51	104.07	0.01483	0.900
411	621.34	-2492.49	-58.29	-16903.18	-395.28	6.782	17.39	104.07	0.01496	0.900
412	620.53	-2487.93	-58.29	-16900.42	-395.94	6.793	17.39	104.07	0.01496	0.900
413	576.93	-2228.33	-52.27	-16753.59	-393.01	7.518	17.26	104.07	0.01509	0.900
414	576.13	-2223.77	-52.27	-16750.82	-393.75	7.533	17.26	104.07	0.01509	0.900
415	571.38	-2197.48	-51.62	-16734.83	-393.12	7.615	17.24	104.07	0.01510	0.900
416	532.53	-1983.05	-46.30	-16604.14	-387.65	8.373	17.13	104.07	0.01522	0.900
417	531.72	-1978.51	-46.30	-16601.36	-388.47	8.391	17.13	104.07	0.01522	0.900
418	488.12	-1760.48	-40.36	-16455.03	-377.27	9.347	17.01	104.06	0.01536	0.900
419	487.32	-1755.97	-40.36	-16452.25	-378.17	9.369	17.00	104.06	0.01536	0.900
420	443.72	-1564.63	-34.47	-16306.50	-359.24	10.422	16.88	104.06	0.01549	0.900
421	442.92	-1560.12	-34.47	-16303.71	-360.21	10.450	16.88	104.06	0.01550	0.900
422	399.32	-1395.60	-28.62	-16158.75	-331.34	11.578	16.75	104.06	0.01563	0.900
423	398.52	-1391.09	-28.62	-16155.96	-332.36	11.614	16.75	104.06	0.01564	0.900
424	354.92	-1253.51	-22.81	-16012.04	-291.34	12.774	16.63	104.06	0.01577	0.900
425	354.12	-1249.01	-22.81	-16009.24	-292.34	12.818	16.63	104.06	0.01578	0.900
426	310.52	-1139.56	-17.04	-15866.23	-237.26	13.923	16.50	104.05	0.01591	0.900
427	309.72	-1135.07	-17.04	-15863.44	-238.16	13.976	16.50	104.05	0.01592	0.900
428	266.12	-1054.93	-11.32	-15721.70	-168.66	14.903	16.38	104.04	0.01605	0.900
429	265.32	-1050.29	-11.32	-15718.93	-169.37	14.966	16.38	104.04	0.01606	0.900
430	221.72	-1017.63	-8.03	-15575.08	-122.83	15.305	16.26	104.04	0.01620	0.900
431	220.92	-1012.99	-8.03	-15572.32	-123.37	15.373	16.26	104.04	0.01620	0.900
432	177.32	-1007.57	-0.00	-15435.50	-0.00	15.319	16.14	104.02	0.01634	0.900
433	815.21	-343.07	-45.63	-17399.30	-2313.97	50.716	17.95	104.28	0.01443	0.900
434	571.33	-334.24	-30.24	-16640.17	-1505.26	49.785	17.24	104.20	0.01513	0.900
435	570.52	-329.56	-30.24	-16635.67	-1526.22	50.479	17.24	104.20	0.01513	0.900
436	528.34	-328.20	-27.62	-16504.23	-1389.10	50.288	17.12	104.18	0.01526	0.900
437	527.54	-323.52	-27.62	-16499.81	-1408.81	51.001	17.12	104.19	0.01526	0.900
438	485.36	-322.21	-25.03	-16368.48	-1271.39	50.801	16.99	104.17	0.01539	0.900

439	484.56	-317.53	-25.03	-16364.17	-1289.78	51.536	16.99	104.17	0.01539	0.900
440	442.38	-316.28	-22.45	-16232.90	-1152.09	51.325	16.87	104.16	0.01552	0.900
441	441.58	-311.60	-22.45	-16228.70	-1169.09	52.082	16.87	104.16	0.01552	0.900
442	436.98	-311.47	-22.17	-16214.41	-1154.00	52.058	16.86	104.16	0.01554	0.900
443	399.40	-310.41	-19.88	-16097.53	-1031.15	51.860	16.75	104.14	0.01565	0.900
444	398.59	-305.73	-19.88	-16093.44	-1046.67	52.640	16.75	104.15	0.01566	0.900
445	356.41	-304.60	-17.34	-15962.38	-908.52	52.404	16.63	104.13	0.01579	0.900
446	355.61	-299.92	-17.34	-15958.41	-922.47	53.209	16.62	104.13	0.01579	0.900
447	313.43	-298.86	-14.81	-15827.24	-784.17	52.958	16.51	104.12	0.01592	0.900
448	312.63	-294.18	-14.81	-15823.41	-796.46	53.788	16.50	104.12	0.01593	0.900
449	270.45	-293.19	-12.30	-15692.32	-658.06	53.522	16.39	104.10	0.01606	0.900
450	269.65	-288.51	-12.30	-15688.65	-668.58	54.377	16.38	104.10	0.01606	0.900
451	227.47	-287.60	-9.80	-15557.62	-530.16	54.095	16.27	104.09	0.01619	0.900
452	226.66	-282.92	-9.80	-15554.10	-538.81	54.977	16.27	104.09	0.01620	0.900
453	184.48	-282.08	-7.32	-15422.92	-400.43	54.675	16.15	104.07	0.01633	0.900
454	183.68	-277.40	-7.32	-15419.57	-407.09	55.586	16.15	104.07	0.01634	0.900
455	141.50	-276.64	-4.86	-15288.68	-268.84	55.265	16.03	104.05	0.01647	0.900
456	140.70	-271.96	-4.86	-15285.52	-273.41	56.204	16.03	104.05	0.01647	0.900
457	98.52	-271.29	-2.42	-15153.41	-135.36	55.858	15.91	104.04	0.01661	0.900
458	97.72	-266.61	-2.42	-15150.39	-137.71	56.827	15.91	104.04	0.01662	0.900
459	55.54	-266.01	0.00	-15016.42	-0.00	56.450	15.79	104.02	0.01677	0.900
460	962.19	-1155.49	-47.63	-18017.87	-742.74	15.593	18.37	104.10	0.01400	0.900
461	710.08	-1113.44	-31.56	-17194.55	-487.32	15.443	17.64	104.08	0.01470	0.900
462	709.28	-1108.76	-31.56	-17191.68	-489.30	15.505	17.64	104.08	0.01470	0.900
463	665.68	-1102.02	-28.83	-17048.41	-445.99	15.470	17.51	104.07	0.01483	0.900
464	664.88	-1097.34	-28.83	-17045.55	-447.82	15.534	17.51	104.07	0.01483	0.900
465	621.28	-1090.78	-26.12	-16902.19	-404.71	15.496	17.39	104.07	0.01496	0.900
466	620.47	-1086.10	-26.12	-16899.33	-406.38	15.560	17.38	104.07	0.01496	0.900
467	576.87	-1079.72	-23.42	-16755.90	-363.51	15.519	17.26	104.06	0.01509	0.900
468	576.07	-1075.04	-23.42	-16753.07	-365.03	15.584	17.26	104.06	0.01509	0.900
469	571.32	-1074.37	-23.13	-16737.43	-360.37	15.579	17.24	104.06	0.01510	0.900
470	532.47	-1068.86	-20.75	-16609.54	-322.40	15.540	17.13	104.06	0.01522	0.900
471	531.67	-1064.18	-20.75	-16606.71	-323.76	15.605	17.13	104.06	0.01522	0.900
472	488.07	-1058.20	-18.09	-16463.12	-281.41	15.558	17.01	104.05	0.01535	0.900
473	487.26	-1053.52	-18.09	-16460.31	-282.61	15.624	17.00	104.05	0.01536	0.900
474	443.66	-1047.77	-15.45	-16316.64	-240.56	15.573	16.88	104.05	0.01549	0.900
475	442.86	-1043.09	-15.45	-16313.83	-241.61	15.640	16.88	104.05	0.01549	0.900
476	399.26	-1037.56	-12.83	-16170.11	-199.89	15.585	16.75	104.04	0.01563	0.900
477	398.46	-1032.88	-12.83	-16167.32	-200.76	15.653	16.75	104.04	0.01563	0.900
478	354.86	-1027.60	-10.22	-16023.52	-159.40	15.593	16.63	104.04	0.01577	0.900
479	354.05	-1022.92	-10.22	-16020.75	-160.11	15.662	16.63	104.04	0.01577	0.900
480	310.45	-1017.88	-7.64	-15876.58	-119.14	15.598	16.51	104.03	0.01591	0.900
481	309.65	-1013.20	-7.64	-15873.82	-119.67	15.667	16.50	104.03	0.01591	0.900
482	266.05	-1008.41	-5.07	-15729.55	-79.13	15.598	16.38	104.03	0.01605	0.900
483	265.25	-1003.73	-5.07	-15726.80	-79.49	15.668	16.38	104.03	0.01605	0.900
484	221.65	-999.22	-2.53	-15582.44	-39.41	15.595	16.26	104.02	0.01619	0.900
485	220.85	-994.54	-2.53	-15579.70	-39.58	15.665	16.26	104.02	0.01620	0.900
486	177.24	-990.30	-0.00	-15435.26	-0.00	15.586	16.14	104.02	0.01634	0.900
487	815.11	-342.98	-43.09	-17409.28	-2187.30	50.759	17.95	104.26	0.01443	0.900
488	571.22	-334.02	-28.52	-16646.93	-1421.63	49.838	17.24	104.19	0.01513	0.900
489	570.42	-329.34	-28.52	-16642.52	-1441.44	50.533	17.24	104.19	0.01513	0.900
490	528.24	-327.96	-26.06	-16510.50	-1311.71	50.343	17.12	104.17	0.01526	0.900
491	527.44	-323.28	-26.06	-16506.18	-1330.36	51.059	17.12	104.18	0.01526	0.900
492	485.26	-321.95	-23.60	-16374.26	-1200.39	50.860	16.99	104.16	0.01539	0.900
493	484.45	-317.27	-23.60	-16370.04	-1217.78	51.597	16.99	104.16	0.01539	0.900
494	442.27	-315.99	-21.16	-16238.17	-1087.58	51.387	16.87	104.15	0.01552	0.900
495	441.47	-311.31	-21.16	-16234.04	-1103.65	52.147	16.87	104.15	0.01552	0.900
496	436.88	-311.18	-20.90	-16219.69	-1089.39	52.123	16.86	104.15	0.01554	0.900
497	399.29	-310.10	-18.74	-16102.26	-973.25	51.925	16.75	104.14	0.01565	0.900
498	398.49	-305.42	-18.74	-16098.24	-987.93	52.708	16.75	104.14	0.01566	0.900
499	356.31	-304.28	-16.34	-15966.56	-857.39	52.474	16.63	104.12	0.01579	0.900
500	355.51	-299.60	-16.34	-15962.67	-870.57	53.281	16.63	104.13	0.01579	0.900
501	313.33	-298.52	-13.95	-15830.85	-739.92	53.032	16.51	104.11	0.01592	0.900
502	312.53	-293.84	-13.95	-15827.08	-751.52	53.864	16.50	104.11	0.01592	0.900
503	270.35	-292.83	-11.58	-15695.32	-620.83	53.599	16.39	104.10	0.01606	0.900
504	269.54	-288.15	-11.58	-15691.70	-630.76	54.457	16.39	104.10	0.01606	0.900
505	227.36	-287.21	-9.23	-15560.00	-500.08	54.176	16.27	104.08	0.01619	0.900
506	226.56	-282.53	-9.23	-15556.53	-508.24	55.061	16.27	104.08	0.01620	0.900
507	184.38	-281.67	-6.90	-15424.67	-377.64	54.761	16.15	104.07	0.01633	0.900
508	183.58	-276.99	-6.90	-15421.35	-383.94	55.674	16.15	104.07	0.01633	0.900
509	141.40	-276.21	-4.58	-15289.76	-253.50	55.355	16.03	104.05	0.01647	0.900
510	140.60	-271.53	-4.58	-15286.62	-257.81	56.297	16.03	104.05	0.01647	0.900
511	98.42	-270.83	-2.28	-15153.78	-127.61	55.952	15.91	104.04	0.01661	0.900
512	97.61	-266.15	-2.28	-15150.77	-129.83	56.925	15.91	104.04	0.01662	0.900
513	55.43	-265.54	0.00	-15016.06	-0.00	56.549	15.79	104.02	0.01677	0.900
514	962.08	-1155.39	-45.10	-18020.81	-703.40	15.597	18.37	104.10	0.01400	0.900
515	709.98	-1113.23	-29.85	-17196.38	-461.06	15.447	17.64	104.07	0.01470	0.900
516	709.18	-1108.55	-29.85	-17193.52	-462.92	15.510	17.64	104.07	0.01470	0.900
517	665.58	-1101.78	-27.26	-17050.07	-421.87	15.475	17.51	104.07	0.01483	0.900
518	664.77	-1097.10	-27.26	-17047.22	-423.60	15.538	17.51	104.07	0.01483	0.900

519	621.17	-1090.52	-24.69	-16903.67	-382.75	15.501	17.39	104.06	0.01496	0.900
520	620.37	-1085.84	-24.69	-16900.84	-384.34	15.565	17.38	104.06	0.01496	0.900
521	576.77	-1079.44	-22.14	-16757.23	-343.72	15.524	17.26	104.06	0.01509	0.900
522	575.97	-1074.76	-22.14	-16754.40	-345.16	15.589	17.26	104.06	0.01509	0.900
523	571.22	-1074.08	-21.86	-16738.75	-340.75	15.584	17.24	104.06	0.01510	0.900
524	532.37	-1068.55	-19.61	-16610.69	-304.79	15.545	17.13	104.06	0.01522	0.900
525	531.56	-1063.87	-19.61	-16607.87	-306.08	15.611	17.13	104.06	0.01522	0.900
526	487.96	-1057.88	-17.09	-16464.10	-265.99	15.563	17.01	104.05	0.01535	0.900
527	487.16	-1053.20	-17.09	-16461.29	-267.13	15.630	17.00	104.05	0.01536	0.900
528	443.56	-1047.43	-14.59	-16317.44	-227.34	15.579	16.88	104.05	0.01549	0.900
529	442.76	-1042.74	-14.59	-16314.64	-228.32	15.646	16.88	104.05	0.01549	0.900
530	399.16	-1037.20	-12.11	-16170.73	-188.86	15.591	16.75	104.04	0.01563	0.900
531	398.35	-1032.52	-12.11	-16167.94	-189.68	15.659	16.75	104.04	0.01563	0.900
532	354.75	-1027.21	-9.65	-16023.96	-150.58	15.600	16.63	104.04	0.01577	0.900
533	353.95	-1022.53	-9.65	-16021.19	-151.24	15.668	16.63	104.04	0.01577	0.900
534	310.35	-1017.47	-7.21	-15876.82	-112.52	15.604	16.51	104.03	0.01591	0.900
535	309.55	-1012.79	-7.21	-15874.06	-113.02	15.674	16.50	104.03	0.01591	0.900
536	265.95	-1007.98	-4.79	-15729.60	-74.72	15.605	16.38	104.03	0.01605	0.900
537	265.15	-1003.30	-4.79	-15726.86	-75.05	15.675	16.38	104.03	0.01605	0.900
538	221.54	-998.77	-2.38	-15582.28	-37.20	15.602	16.26	104.02	0.01619	0.900
539	220.74	-994.09	-2.38	-15579.54	-37.37	15.672	16.26	104.02	0.01620	0.900
540	177.14	-989.83	-0.00	-15434.90	-0.00	15.594	16.14	104.02	0.01634	0.900
541	815.05	2238.93	1002.23	15999.09	7161.82	7.146	17.94	104.28	0.01443	0.900
542	571.16	908.13	580.30	14094.21	9006.31	15.520	17.25	104.39	0.01516	0.900
543	570.36	912.79	580.30	14114.23	8973.00	15.463	17.24	104.39	0.01516	0.900
544	528.18	704.81	516.65	13362.24	9795.02	18.959	17.12	104.36	0.01529	0.900
545	527.37	709.46	516.65	13389.85	9750.89	18.873	17.11	104.37	0.01529	0.900
546	485.19	522.00	455.87	12394.74	10824.36	23.745	16.99	104.31	0.01542	0.900
547	484.39	526.65	455.87	12443.97	10771.36	23.628	16.99	104.31	0.01542	0.900
548	442.21	360.32	397.86	10936.07	12075.36	30.351	16.88	104.12	0.01551	0.900
549	441.41	364.98	397.86	11007.91	11999.74	30.161	16.87	104.13	0.01551	0.900
550	436.81	349.09	391.77	10830.82	12154.82	31.026	16.86	104.11	0.01552	0.900
551	399.23	220.52	342.51	8735.63	13568.50	39.615	16.75	104.29	0.01568	0.900
552	398.43	225.17	342.51	8860.43	13477.80	39.350	16.74	104.28	0.01568	0.900
553	356.25	100.57	289.83	5252.04	15135.38	52.222	16.61	104.36	0.01585	0.900
554	355.45	105.23	289.83	5472.75	15073.30	52.007	16.60	104.38	0.01586	0.900
555	313.27	-0.77	239.82	-50.87	15886.02	66.242	16.48	104.32	0.01599	0.900
556	312.46	3.88	239.82	256.93	15867.56	66.165	16.48	104.30	0.01598	0.900
557	270.28	-83.26	192.58	-6228.42	14405.69	74.804	16.36	104.22	0.01611	0.900
558	269.48	-78.61	192.58	-5935.18	14539.64	75.499	16.36	104.22	0.01611	0.900
559	227.30	-146.60	148.25	-10922.24	11045.18	74.506	16.23	104.37	0.01629	0.900
560	226.50	-141.94	148.25	-10742.62	11220.08	75.686	16.23	104.38	0.01629	0.900
561	184.32	-194.12	106.82	-13516.33	7437.64	69.629	16.15	104.18	0.01636	0.900
562	183.52	-189.45	106.82	-13446.85	7581.67	70.977	16.15	104.17	0.01635	0.900
563	141.34	-229.65	68.30	-14608.65	4344.79	63.613	15.97	104.38	0.01661	0.900
564	140.54	-224.98	68.30	-14583.54	4427.29	64.821	15.97	104.39	0.01661	0.900
565	98.36	-253.19	32.69	-14982.53	1934.64	59.174	15.87	104.27	0.01671	0.900
566	97.55	-248.53	32.69	-14976.37	1970.17	60.261	15.87	104.27	0.01672	0.900
567	55.37	-263.33	0.00	-15015.86	-0.00	57.023	15.79	104.02	0.01677	0.900
568	962.43	-4425.88	-224.56	-18004.42	-913.50	4.068	18.37	104.12	0.01400	0.900
569	710.33	-2871.07	-148.83	-17162.03	-889.63	5.978	17.64	104.12	0.01470	0.900
570	709.53	-2866.42	-148.83	-17159.21	-890.92	5.986	17.64	104.12	0.01471	0.900
571	665.93	-2614.20	-135.97	-17012.58	-884.86	6.508	17.52	104.12	0.01483	0.900
572	665.12	-2609.57	-135.97	-17009.74	-886.28	6.518	17.51	104.12	0.01484	0.900
573	621.52	-2372.49	-123.19	-16863.35	-875.62	7.108	17.39	104.12	0.01496	0.900
574	620.72	-2367.86	-123.19	-16860.50	-877.18	7.121	17.39	104.12	0.01497	0.900
575	577.12	-2145.85	-110.49	-16714.53	-860.63	7.789	17.26	104.12	0.01510	0.900
576	576.31	-2141.23	-110.49	-16711.66	-862.34	7.805	17.26	104.12	0.01510	0.900
577	571.56	-2118.62	-109.12	-16695.81	-859.89	7.881	17.24	104.12	0.01511	0.900
578	532.71	-1934.21	-97.87	-16566.20	-838.25	8.565	17.13	104.12	0.01523	0.900
579	531.91	-1929.60	-97.87	-16563.31	-840.10	8.584	17.13	104.12	0.01523	0.900
580	488.31	-1740.41	-85.33	-16418.73	-805.03	9.434	17.01	104.12	0.01537	0.900
581	487.50	-1735.83	-85.33	-16415.83	-807.01	9.457	17.00	104.12	0.01537	0.900
582	443.90	-1567.56	-72.88	-16272.51	-756.58	10.381	16.88	104.11	0.01550	0.900
583	443.10	-1562.97	-72.88	-16269.60	-758.66	10.409	16.88	104.11	0.01551	0.900
584	399.50	-1415.74	-60.52	-16127.90	-689.39	11.392	16.75	104.10	0.01564	0.900
585	398.69	-1411.16	-60.52	-16124.99	-691.50	11.427	16.75	104.10	0.01565	0.900
586	355.09	-1285.10	-48.24	-15985.24	-600.00	12.439	16.63	104.09	0.01578	0.900
587	354.29	-1280.53	-48.24	-15982.34	-602.04	12.481	16.62	104.09	0.01579	0.900
588	310.69	-1176.85	-36.04	-15844.63	-485.28	13.464	16.50	104.08	0.01592	0.900
589	309.88	-1172.28	-36.04	-15841.74	-487.08	13.514	16.50	104.08	0.01592	0.900
590	266.28	-1091.93	-23.94	-15706.43	-344.36	14.384	16.38	104.06	0.01606	0.900
591	265.48	-1087.37	-23.94	-15703.57	-345.74	14.442	16.38	104.06	0.01606	0.900
592	221.88	-1030.36	-14.05	-15567.50	-212.23	15.109	16.26	104.05	0.01620	0.900
593	221.07	-1025.79	-14.05	-15564.69	-213.13	15.173	16.26	104.05	0.01620	0.900
594	177.47	-994.83	-0.00	-15436.04	-0.00	15.516	16.14	104.02	0.01634	0.900
595	489.02	2342.43	895.69	15383.55	5882.31	6.567	17.01	104.20	0.01537	0.900
596	342.69	1025.28	438.99	14654.10	6274.34	14.293	16.59	104.26	0.01585	0.900
597	342.21	1028.07	438.99	14659.22	6259.49	14.259	16.59	104.25	0.01585	0.900
598	316.90	821.96	373.40	14426.07	6553.49	17.551	16.51	104.28	0.01594	0.900

599	316.42	824.74	373.40	14433.07	6534.61	17.500	16.51	104.28	0.01595	0.900
600	291.11	639.00	311.93	14160.32	6912.30	22.160	16.43	104.32	0.01604	0.900
601	290.63	641.78	311.93	14170.22	6887.24	22.080	16.43	104.32	0.01604	0.900
602	265.32	477.00	255.14	13833.82	7399.55	29.002	16.35	104.37	0.01615	0.900
603	264.84	479.77	255.14	13848.41	7364.53	28.864	16.35	104.36	0.01615	0.900
604	262.08	464.04	249.40	13810.63	7422.65	29.762	16.34	104.37	0.01616	0.900
605	239.53	336.70	203.79	13353.33	8082.09	39.660	16.27	104.40	0.01625	0.900
606	239.05	339.48	203.79	13384.43	8034.62	39.427	16.27	104.40	0.01625	0.900
607	213.74	216.11	157.86	12508.52	9137.19	57.880	16.20	104.37	0.01633	0.900
608	213.26	218.88	157.86	12560.92	9059.18	57.386	16.19	104.37	0.01633	0.900
609	187.96	113.96	117.38	10734.86	11057.03	94.202	16.15	104.18	0.01635	0.900
610	187.48	116.73	117.38	10864.15	10924.28	93.071	16.15	104.19	0.01636	0.900
611	162.17	30.43	82.61	5309.37	14414.23	174.485	16.03	104.38	0.01653	0.900
612	161.69	33.20	82.61	5716.43	14222.77	172.167	16.03	104.38	0.01653	0.900
613	136.38	-34.11	53.92	-8148.36	12880.77	238.870	15.97	104.29	0.01658	0.900
614	135.90	-31.33	53.92	-7676.45	13212.59	245.023	15.98	104.25	0.01657	0.900
615	110.59	-83.02	31.32	-14195.43	5355.20	170.987	15.88	104.38	0.01672	0.900
616	110.11	-80.23	31.32	-14121.26	5512.63	176.014	15.88	104.37	0.01671	0.900
617	84.80	-120.11	14.80	-14944.00	1841.07	124.421	15.83	104.26	0.01676	0.900
618	84.32	-117.32	14.80	-14938.23	1884.16	127.334	15.83	104.26	0.01676	0.900
619	59.01	-145.38	4.36	-14985.99	449.13	103.078	15.79	104.08	0.01678	0.900
620	58.53	-142.59	4.36	-14983.48	457.85	105.080	15.79	104.08	0.01678	0.900
621	33.22	-157.51	0.00	-14938.44	-0.00	94.844	15.72	104.02	0.01685	0.900
622	489.34	-2756.33	-221.31	-16378.24	-1315.03	5.942	17.01	104.18	0.01538	0.900
623	343.01	-1429.13	-147.77	-15851.86	-1639.10	11.092	16.58	104.22	0.01585	0.900
624	342.53	-1426.35	-147.77	-15849.94	-1642.10	11.112	16.58	104.22	0.01586	0.900
625	317.22	-1218.63	-135.20	-15754.08	-1747.79	12.928	16.51	104.24	0.01594	0.900
626	316.74	-1215.88	-135.20	-15752.10	-1751.52	12.955	16.51	104.24	0.01594	0.900
627	291.43	-1028.56	-122.66	-15655.21	-1867.01	15.220	16.43	104.25	0.01603	0.900
628	290.95	-1025.81	-122.66	-15653.14	-1871.77	15.259	16.43	104.25	0.01603	0.900
629	265.64	-859.49	-110.18	-15555.49	-1994.07	18.098	16.36	104.27	0.01612	0.900
630	265.16	-856.74	-110.18	-15553.28	-2000.18	18.154	16.36	104.27	0.01613	0.900
631	262.40	-840.85	-108.82	-15542.81	-2011.57	18.485	16.35	104.27	0.01614	0.900
632	239.85	-712.17	-97.74	-15455.61	-2121.17	21.702	16.28	104.29	0.01622	0.900
633	239.37	-709.41	-97.74	-15453.22	-2129.08	21.783	16.28	104.29	0.01622	0.900
634	214.06	-584.57	-85.35	-15355.88	-2242.00	26.269	16.20	104.30	0.01631	0.900
635	213.58	-581.81	-85.35	-15353.27	-2252.26	26.389	16.20	104.30	0.01631	0.900
636	188.27	-475.36	-73.01	-15256.95	-2343.17	32.096	16.13	104.32	0.01641	0.900
637	187.79	-472.59	-73.01	-15254.05	-2356.42	32.277	16.12	104.32	0.01641	0.900
638	162.48	-384.83	-60.71	-15162.76	-2392.14	39.401	16.05	104.32	0.01650	0.900
639	161.99	-382.07	-60.71	-15159.52	-2408.90	39.678	16.05	104.33	0.01650	0.900
640	136.69	-313.35	-48.47	-15078.71	-2332.37	48.121	15.97	104.32	0.01659	0.900
641	136.20	-310.57	-48.47	-15075.01	-2352.61	48.539	15.97	104.32	0.01659	0.900
642	110.90	-257.54	-36.27	-15009.36	-2114.10	58.280	15.90	104.29	0.01668	0.900
643	110.41	-254.75	-36.27	-15005.53	-2136.68	58.902	15.90	104.29	0.01668	0.900
644	85.11	-213.59	-24.13	-14959.35	-1690.15	70.037	15.84	104.24	0.01675	0.900
645	84.62	-210.81	-24.13	-14955.59	-1712.06	70.945	15.83	104.24	0.01675	0.900
646	59.32	-181.52	-13.72	-14922.75	-1127.49	82.209	15.77	104.17	0.01681	0.900
647	58.83	-178.74	-13.72	-14919.42	-1144.82	83.472	15.77	104.17	0.01682	0.900
648	33.53	-162.52	-0.00	-14939.50	-0.00	91.924	15.72	104.02	0.01685	0.900
649	815.24	2238.81	1004.84	15992.42	7177.80	7.143	17.95	104.28	0.01443	0.900
650	571.35	907.74	582.06	14079.74	9028.08	15.511	17.25	104.39	0.01516	0.900
651	570.55	912.42	582.06	14099.85	8994.64	15.453	17.24	104.39	0.01516	0.900
652	528.37	704.39	518.26	13345.97	9819.38	18.947	17.12	104.36	0.01529	0.900
653	527.57	709.05	518.26	13373.70	9775.07	18.861	17.12	104.37	0.01529	0.900
654	485.39	521.55	457.33	12371.67	10848.30	23.721	16.99	104.30	0.01542	0.900
655	484.58	526.21	457.33	12421.08	10795.12	23.605	16.99	104.31	0.01542	0.900
656	442.40	359.83	399.18	10909.76	12102.56	30.319	16.88	104.12	0.01551	0.900
657	441.60	364.50	399.18	10981.84	12026.69	30.129	16.88	104.13	0.01551	0.900
658	437.00	348.61	393.07	10804.33	12182.20	30.993	16.86	104.10	0.01552	0.900
659	399.42	219.99	343.68	8701.18	13593.40	39.552	16.75	104.30	0.01568	0.900
660	398.62	224.66	343.68	8826.28	13502.49	39.288	16.75	104.28	0.01568	0.900
661	356.44	100.01	290.85	5208.74	15147.66	52.080	16.61	104.36	0.01585	0.900
662	355.63	104.68	290.85	5429.51	15085.56	51.866	16.61	104.38	0.01586	0.900
663	313.45	-1.36	240.70	-89.77	15883.22	65.989	16.48	104.32	0.01599	0.900
664	312.65	3.30	240.70	217.64	15871.55	65.940	16.48	104.30	0.01598	0.900
665	270.47	-83.89	193.31	-6247.94	14397.27	74.477	16.36	104.22	0.01611	0.900
666	269.66	-79.23	193.31	-5955.53	14530.81	75.168	16.36	104.22	0.01611	0.900
667	227.48	-147.26	148.83	-10925.79	11042.53	74.195	16.23	104.37	0.01629	0.900
668	226.68	-142.59	148.83	-10746.58	11217.01	75.367	16.23	104.38	0.01629	0.900
669	184.50	-194.82	107.26	-13515.45	7441.02	69.375	16.15	104.18	0.01636	0.900
670	183.70	-190.14	107.26	-13446.03	7584.89	70.717	16.15	104.16	0.01635	0.900
671	141.52	-230.38	68.59	-14608.05	4349.39	63.409	15.97	104.38	0.01661	0.900
672	140.71	-225.70	68.59	-14582.94	4431.89	64.611	15.97	104.39	0.01661	0.900
673	98.53	-253.96	32.84	-14982.88	1937.50	58.998	15.87	104.27	0.01671	0.900
674	97.73	-249.28	32.84	-14976.71	1973.04	60.080	15.87	104.27	0.01672	0.900
675	55.55	-264.13	0.00	-15016.47	-0.00	56.853	15.79	104.02	0.01677	0.900
676	962.63	-4426.00	-221.96	-18005.96	-902.97	4.068	18.37	104.12	0.01400	0.900
677	710.53	-2871.45	-147.07	-17163.56	-879.10	5.977	17.64	104.12	0.01470	0.900
678	709.72	-2866.79	-147.07	-17160.74	-880.38	5.986	17.64	104.12	0.01471	0.900

679	666.12	-2614.61	-134.36	-17014.11	-874.33	6.507	17.52	104.12	0.01483	0.900
680	665.31	-2609.98	-134.36	-17011.28	-875.74	6.518	17.51	104.12	0.01484	0.900
681	621.71	-2372.94	-121.73	-16864.88	-865.14	7.107	17.39	104.12	0.01496	0.900
682	620.91	-2368.30	-121.73	-16862.03	-866.69	7.120	17.39	104.12	0.01497	0.900
683	577.31	-2146.34	-109.17	-16716.05	-850.26	7.788	17.26	104.12	0.01510	0.900
684	576.50	-2141.71	-109.17	-16713.18	-851.95	7.804	17.26	104.12	0.01510	0.900
685	571.75	-2119.10	-107.81	-16697.32	-849.52	7.879	17.24	104.12	0.01511	0.900
686	532.90	-1934.73	-96.70	-16567.70	-828.08	8.563	17.13	104.12	0.01523	0.900
687	532.09	-1930.12	-96.70	-16564.82	-829.91	8.582	17.13	104.12	0.01523	0.900
688	488.49	-1740.97	-84.31	-16420.21	-795.19	9.432	17.01	104.11	0.01537	0.900
689	487.69	-1736.38	-84.31	-16417.32	-797.15	9.455	17.00	104.11	0.01537	0.900
690	444.09	-1568.15	-72.00	-16273.95	-747.25	10.378	16.88	104.11	0.01550	0.900
691	443.28	-1563.56	-72.00	-16271.04	-749.31	10.406	16.88	104.11	0.01551	0.900
692	399.68	-1416.37	-59.78	-16129.27	-680.82	11.388	16.75	104.10	0.01564	0.900
693	398.87	-1411.77	-59.78	-16126.35	-682.91	11.423	16.75	104.10	0.01564	0.900
694	355.27	-1285.77	-47.65	-15986.53	-592.47	12.433	16.63	104.09	0.01578	0.900
695	354.47	-1281.18	-47.65	-15983.62	-594.48	12.476	16.62	104.09	0.01578	0.900
696	310.87	-1177.55	-35.61	-15845.79	-479.12	13.457	16.50	104.08	0.01592	0.900
697	310.06	-1172.97	-35.61	-15842.90	-480.91	13.507	16.50	104.08	0.01592	0.900
698	266.46	-1092.66	-23.65	-15707.43	-339.94	14.375	16.38	104.06	0.01606	0.900
699	265.65	-1088.09	-23.65	-15704.57	-341.31	14.433	16.38	104.06	0.01606	0.900
700	222.05	-1031.12	-13.90	-15568.31	-209.87	15.098	16.26	104.05	0.01620	0.900
701	221.25	-1026.54	-13.90	-15565.50	-210.77	15.163	16.26	104.05	0.01620	0.900
702	177.65	-995.63	-0.00	-15436.63	-0.00	15.504	16.14	104.02	0.01634	0.900
703	815.28	-347.59	-76.33	-17146.55	-3765.53	49.330	17.95	104.37	0.01444	0.900
704	571.39	-337.22	-50.59	-16557.23	-2484.17	49.100	17.24	104.31	0.01515	0.900
705	570.59	-332.54	-50.59	-16551.58	-2518.28	49.774	17.24	104.31	0.01516	0.900
706	528.41	-330.91	-46.23	-16426.86	-2294.68	49.641	17.11	104.29	0.01528	0.900
707	527.60	-326.23	-46.23	-16421.37	-2326.85	50.337	17.11	104.29	0.01528	0.900
708	485.42	-324.66	-41.88	-16296.93	-2102.36	50.197	16.99	104.27	0.01541	0.900
709	484.62	-319.98	-41.88	-16291.60	-2132.43	50.915	16.99	104.27	0.01541	0.900
710	442.44	-318.47	-37.57	-16167.35	-1907.07	50.766	16.87	104.25	0.01554	0.900
711	441.64	-313.79	-37.57	-16162.19	-1934.91	51.507	16.86	104.25	0.01554	0.900
712	437.04	-313.63	-37.10	-16148.68	-1910.21	51.489	16.85	104.25	0.01556	0.900
713	399.46	-312.35	-33.28	-16038.20	-1708.72	51.348	16.74	104.23	0.01567	0.900
714	398.65	-307.66	-33.28	-16033.23	-1734.19	52.113	16.74	104.23	0.01568	0.900
715	356.47	-306.29	-29.02	-15909.50	-1507.21	51.943	16.62	104.20	0.01581	0.900
716	355.67	-301.60	-29.02	-15904.73	-1530.15	52.734	16.62	104.21	0.01581	0.900
717	313.49	-300.30	-24.78	-15781.14	-1302.43	52.552	16.50	104.18	0.01594	0.900
718	312.69	-295.62	-24.78	-15776.59	-1322.68	53.368	16.50	104.18	0.01594	0.900
719	270.51	-294.38	-20.58	-15653.23	-1094.31	53.173	16.38	104.16	0.01607	0.900
720	269.71	-289.70	-20.58	-15648.93	-1111.69	54.018	16.38	104.16	0.01608	0.900
721	227.53	-288.54	-16.41	-15525.81	-882.72	53.808	16.26	104.13	0.01621	0.900
722	226.72	-283.86	-16.41	-15521.77	-897.05	54.681	16.26	104.13	0.01621	0.900
723	184.54	-282.78	-12.26	-15398.50	-667.58	54.454	16.15	104.10	0.01634	0.900
724	183.74	-278.10	-12.26	-15394.73	-678.65	55.357	16.14	104.11	0.01635	0.900
725	141.56	-277.10	-8.14	-15272.02	-448.81	55.114	16.03	104.08	0.01648	0.900
726	140.76	-272.42	-8.14	-15268.56	-456.42	56.049	16.03	104.08	0.01648	0.900
727	98.58	-271.50	-4.06	-15145.01	-226.30	55.783	15.91	104.05	0.01662	0.900
728	97.78	-266.82	-4.06	-15141.84	-230.22	56.750	15.91	104.05	0.01662	0.900
729	55.60	-265.99	0.00	-15016.63	-0.00	56.457	15.79	104.02	0.01677	0.900
730	962.24	-1168.48	-76.75	-17981.42	-1181.10	15.389	18.37	104.15	0.01401	0.900
731	710.14	-1121.81	-50.86	-17170.60	-778.46	15.306	17.64	104.11	0.01470	0.900
732	709.34	-1117.12	-50.86	-17167.63	-781.58	15.368	17.64	104.11	0.01471	0.900
733	665.74	-1109.59	-46.46	-17026.29	-712.97	15.345	17.51	104.10	0.01483	0.900
734	664.93	-1104.91	-46.46	-17023.35	-715.87	15.407	17.51	104.10	0.01483	0.900
735	621.33	-1097.56	-42.10	-16881.93	-647.48	15.381	17.39	104.09	0.01496	0.900
736	620.53	-1092.88	-42.10	-16878.99	-650.14	15.444	17.38	104.10	0.01496	0.900
737	576.93	-1085.74	-37.75	-16737.54	-582.02	15.416	17.26	104.09	0.01509	0.900
738	576.12	-1081.05	-37.75	-16734.62	-584.44	15.480	17.26	104.09	0.01509	0.900
739	571.37	-1080.30	-37.28	-16719.21	-577.04	15.476	17.24	104.09	0.01511	0.900
740	532.52	-1074.11	-33.44	-16593.10	-516.61	15.448	17.13	104.08	0.01522	0.900
741	531.72	-1069.43	-33.44	-16590.20	-518.78	15.513	17.13	104.08	0.01523	0.900
742	488.12	-1062.71	-29.16	-16448.64	-451.29	15.478	17.01	104.07	0.01536	0.900
743	487.32	-1058.03	-29.16	-16445.76	-453.21	15.544	17.00	104.07	0.01536	0.900
744	443.72	-1051.53	-24.90	-16304.15	-386.11	15.505	16.88	104.07	0.01550	0.900
745	442.91	-1046.85	-24.90	-16301.28	-387.76	15.572	16.88	104.07	0.01550	0.900
746	399.31	-1040.59	-20.68	-16159.64	-321.08	15.529	16.75	104.06	0.01563	0.900
747	398.51	-1035.90	-20.68	-16156.80	-322.48	15.597	16.75	104.06	0.01564	0.900
748	354.91	-1029.89	-16.48	-16015.11	-256.27	15.550	16.63	104.05	0.01577	0.900
749	354.11	-1025.21	-16.48	-16012.29	-257.39	15.619	16.63	104.05	0.01577	0.900
750	310.51	-1019.44	-12.31	-15870.27	-191.70	15.568	16.50	104.04	0.01591	0.900
751	309.70	-1014.76	-12.31	-15867.48	-192.55	15.637	16.50	104.04	0.01591	0.900
752	266.10	-1009.26	-8.18	-15725.38	-127.43	15.581	16.38	104.04	0.01605	0.900
753	265.30	-1004.58	-8.18	-15722.60	-128.01	15.651	16.38	104.04	0.01605	0.900
754	221.70	-999.35	-4.07	-15580.42	-63.52	15.591	16.26	104.03	0.01619	0.900
755	220.90	-994.67	-4.07	-15577.66	-63.80	15.661	16.26	104.03	0.01620	0.900
756	177.30	-989.72	0.00	-15435.44	-0.00	15.596	16.14	104.02	0.01634	0.900
757	815.47	-347.71	-73.73	-17180.17	-3643.09	49.410	17.95	104.37	0.01444	0.900
758	571.58	-337.60	-48.84	-16565.34	-2396.45	49.068	17.24	104.30	0.01515	0.900

759	570.78	-332.91	-48.84	-16559.80	-2429.41	49.743	17.24	104.30	0.01515	0.900
760	528.60	-331.33	-44.62	-16434.52	-2213.05	49.602	17.12	104.28	0.01528	0.900
761	527.79	-326.64	-44.62	-16429.11	-2244.12	50.298	17.11	104.28	0.01528	0.900
762	485.61	-325.11	-40.42	-16304.09	-2027.00	50.149	16.99	104.26	0.01541	0.900
763	484.81	-320.42	-40.42	-16298.84	-2056.03	50.867	16.99	104.26	0.01541	0.900
764	442.63	-318.96	-36.25	-16174.00	-1838.18	50.709	16.87	104.24	0.01554	0.900
765	441.83	-314.27	-36.25	-16168.92	-1865.05	51.450	16.87	104.24	0.01554	0.900
766	437.23	-314.11	-35.80	-16155.34	-1841.17	51.431	16.85	104.24	0.01556	0.900
767	399.65	-312.87	-32.11	-16044.31	-1646.51	51.281	16.75	104.22	0.01567	0.900
768	398.84	-308.18	-32.11	-16039.41	-1671.07	52.046	16.74	104.22	0.01567	0.900
769	356.66	-306.84	-27.99	-15915.04	-1451.89	51.867	16.62	104.20	0.01580	0.900
770	355.86	-302.15	-27.99	-15910.34	-1474.00	52.657	16.62	104.20	0.01581	0.900
771	313.68	-300.89	-23.91	-15786.07	-1254.24	52.464	16.50	104.17	0.01594	0.900
772	312.87	-296.20	-23.91	-15781.58	-1273.74	53.280	16.50	104.18	0.01594	0.900
773	270.69	-295.01	-19.85	-15657.53	-1053.47	53.075	16.38	104.15	0.01607	0.900
774	269.89	-290.32	-19.85	-15653.28	-1070.20	53.918	16.38	104.15	0.01608	0.900
775	227.71	-289.20	-15.82	-15529.44	-849.50	53.697	16.26	104.13	0.01621	0.900
776	226.90	-284.51	-15.82	-15525.45	-863.29	54.569	16.26	104.13	0.01621	0.900
777	184.72	-283.48	-11.82	-15401.44	-642.23	54.331	16.15	104.10	0.01634	0.900
778	183.92	-278.78	-11.82	-15397.72	-652.88	55.232	16.14	104.10	0.01635	0.900
779	141.74	-277.83	-7.85	-15274.24	-431.62	54.977	16.03	104.08	0.01648	0.900
780	140.94	-273.14	-7.85	-15270.81	-438.93	55.909	16.03	104.08	0.01648	0.900
781	98.76	-272.26	-3.91	-15146.46	-217.55	55.632	15.91	104.05	0.01662	0.900
782	97.95	-267.57	-3.91	-15143.29	-221.32	56.595	15.91	104.05	0.01662	0.900
783	55.77	-266.78	0.00	-15017.24	-0.00	56.290	15.79	104.02	0.01676	0.900
784	962.44	-1168.61	-74.15	-17985.41	-1141.20	15.390	18.37	104.14	0.01400	0.900
785	710.33	-1122.19	-49.10	-17173.49	-751.46	15.304	17.64	104.11	0.01470	0.900
786	709.53	-1117.50	-49.10	-17170.53	-754.49	15.365	17.64	104.11	0.01470	0.900
787	665.93	-1110.01	-44.85	-17029.02	-688.13	15.341	17.52	104.10	0.01483	0.900
788	665.12	-1105.32	-44.85	-17026.07	-690.94	15.404	17.51	104.10	0.01483	0.900
789	621.52	-1098.02	-40.63	-16884.48	-624.82	15.377	17.39	104.09	0.01496	0.900
790	620.72	-1093.32	-40.63	-16881.55	-627.39	15.441	17.39	104.09	0.01496	0.900
791	577.12	-1086.22	-36.44	-16739.92	-561.55	15.411	17.26	104.09	0.01509	0.900
792	576.31	-1081.53	-36.44	-16737.00	-563.89	15.475	17.26	104.09	0.01509	0.900
793	571.56	-1080.78	-35.98	-16721.56	-556.74	15.472	17.24	104.08	0.01511	0.900
794	532.71	-1074.64	-32.27	-16595.30	-498.36	15.443	17.13	104.08	0.01522	0.900
795	531.91	-1069.94	-32.27	-16592.39	-500.46	15.508	17.13	104.08	0.01523	0.900
796	488.31	-1063.27	-28.13	-16450.65	-435.28	15.472	17.01	104.07	0.01536	0.900
797	487.50	-1058.57	-28.13	-16447.77	-437.13	15.538	17.00	104.07	0.01536	0.900
798	443.90	-1052.12	-24.02	-16305.97	-372.33	15.498	16.88	104.06	0.01549	0.900
799	443.10	-1047.43	-24.02	-16303.11	-373.93	15.565	16.88	104.06	0.01550	0.900
800	399.50	-1041.21	-19.94	-16161.27	-309.57	15.522	16.75	104.06	0.01563	0.900
801	398.69	-1036.52	-19.94	-16158.43	-310.91	15.589	16.75	104.06	0.01563	0.900
802	355.09	-1030.55	-15.89	-16016.55	-247.03	15.542	16.63	104.05	0.01577	0.900
803	354.29	-1025.86	-15.89	-16013.73	-248.12	15.610	16.63	104.05	0.01577	0.900
804	310.69	-1020.14	-11.88	-15871.50	-184.76	15.558	16.51	104.04	0.01591	0.900
805	309.88	-1015.45	-11.88	-15868.70	-185.58	15.627	16.50	104.04	0.01591	0.900
806	266.28	-1009.99	-7.89	-15726.40	-122.80	15.571	16.38	104.04	0.01605	0.900
807	265.48	-1005.30	-7.89	-15723.61	-123.35	15.641	16.38	104.04	0.01605	0.900
808	221.88	-1000.12	-3.93	-15581.22	-61.19	15.579	16.26	104.03	0.01619	0.900
809	221.07	-995.42	-3.93	-15578.47	-61.47	15.650	16.26	104.03	0.01620	0.900
810	177.47	-990.52	0.00	-15436.03	-0.00	15.584	16.14	104.02	0.01634	0.900
811	854.70	2035.75	1893.44	12942.47	12037.73	6.358	18.08	104.26	0.01430	0.900
812	579.00	617.75	1116.62	8121.23	14679.52	13.146	17.26	104.38	0.01514	0.900
813	578.20	622.43	1116.62	8168.69	14654.38	13.124	17.26	104.38	0.01514	0.900
814	536.02	430.47	1008.13	6518.39	15265.78	15.143	17.13	104.38	0.01528	0.900
815	535.23	435.14	1008.13	6576.21	15235.81	15.113	17.13	104.38	0.01528	0.900
816	493.05	266.28	902.52	4654.75	15776.71	17.481	17.01	104.29	0.01539	0.900
817	492.25	270.95	902.52	4729.60	15753.98	17.456	17.01	104.29	0.01539	0.900
818	461.38	164.63	827.06	3195.76	16054.77	19.412	16.93	104.14	0.01545	0.900
819	450.07	126.15	799.62	2546.09	16138.17	20.182	16.90	104.13	0.01548	0.900
820	449.28	130.83	799.62	2638.62	16127.36	20.169	16.90	104.12	0.01548	0.900
821	407.10	10.37	699.41	240.01	16193.31	23.153	16.76	104.30	0.01567	0.900
822	406.30	15.04	699.41	348.00	16181.20	23.135	16.76	104.29	0.01567	0.900
823	364.12	-85.10	601.90	-2243.51	15868.69	26.364	16.64	104.40	0.01583	0.900
824	363.32	-80.42	601.90	-2121.18	15876.64	26.377	16.63	104.40	0.01583	0.900
825	321.14	-163.58	507.11	-4874.35	15111.00	29.798	16.53	104.26	0.01592	0.900
826	320.35	-158.90	507.11	-4744.84	15142.79	29.861	16.53	104.27	0.01593	0.900
827	278.17	-224.59	415.18	-7489.89	13846.28	33.350	16.39	104.24	0.01608	0.900
828	277.37	-219.94	415.18	-7364.25	13901.95	33.484	16.39	104.24	0.01608	0.900
829	235.19	-267.88	326.22	-9902.95	12059.33	36.967	16.25	104.41	0.01627	0.900
830	234.39	-263.23	326.22	-9791.46	12134.52	37.198	16.25	104.40	0.01627	0.900
831	192.21	-296.28	240.21	-12006.11	9734.08	40.523	16.14	104.29	0.01638	0.900
832	191.42	-291.61	240.21	-11934.62	9830.87	40.926	16.14	104.29	0.01639	0.900
833	149.24	-297.79	157.17	-13522.65	7136.92	45.410	16.04	104.20	0.01649	0.900
834	148.44	-293.16	157.17	-13478.58	7226.07	45.977	16.04	104.20	0.01649	0.900
835	106.26	-284.81	77.10	-14589.27	3949.29	51.225	15.87	104.38	0.01673	0.900
836	105.46	-280.17	77.10	-14570.21	4009.35	52.004	15.87	104.38	0.01674	0.900
837	63.28	-283.74	0.00	-15043.48	-0.00	53.019	15.81	104.02	0.01674	0.900
838	1022.47	-3972.08	-400.38	-18127.13	-1827.18	4.564	18.55	104.22	0.01386	0.900

839	737.48	-2474.70	-254.34	-17181.28	-1765.82	6.943	17.72	104.22	0.01464	0.900
840	736.67	-2470.09	-254.34	-17178.30	-1768.81	6.955	17.72	104.22	0.01464	0.900
841	693.07	-2259.45	-232.42	-17032.12	-1752.02	7.538	17.59	104.22	0.01477	0.900
842	692.27	-2254.91	-232.42	-17029.12	-1755.24	7.552	17.59	104.22	0.01477	0.900
843	648.67	-2060.91	-210.62	-16883.77	-1725.52	8.192	17.47	104.22	0.01490	0.900
844	647.86	-2056.38	-210.62	-16880.75	-1729.01	8.209	17.46	104.22	0.01490	0.900
845	615.95	-1926.32	-194.77	-16775.37	-1696.12	8.708	17.37	104.22	0.01500	0.900
846	604.26	-1878.87	-188.96	-16736.82	-1683.20	8.908	17.34	104.21	0.01503	0.900
847	603.45	-1874.34	-188.96	-16733.76	-1686.96	8.928	17.33	104.22	0.01504	0.900
848	559.85	-1713.28	-167.42	-16591.36	-1621.26	9.684	17.21	104.21	0.01517	0.900
849	559.04	-1708.74	-167.42	-16588.28	-1625.26	9.708	17.21	104.21	0.01517	0.900
850	515.44	-1565.11	-146.01	-16447.95	-1534.43	10.509	17.08	104.20	0.01530	0.900
851	514.64	-1560.58	-146.01	-16444.86	-1538.61	10.538	17.08	104.20	0.01530	0.900
852	471.04	-1435.31	-124.74	-16307.22	-1417.19	11.361	16.95	104.19	0.01544	0.900
853	470.23	-1430.78	-124.74	-16304.11	-1421.40	11.395	16.95	104.19	0.01544	0.900
854	426.63	-1324.04	-103.60	-16169.53	-1265.19	12.212	16.83	104.17	0.01557	0.900
855	425.82	-1319.50	-103.60	-16166.44	-1269.30	12.252	16.82	104.17	0.01558	0.900
856	382.22	-1231.34	-82.60	-16035.27	-1075.66	13.023	16.70	104.15	0.01571	0.900
857	381.42	-1226.82	-82.60	-16032.20	-1079.42	13.068	16.70	104.15	0.01571	0.900
858	337.82	-1159.61	-61.74	-15904.62	-846.79	13.716	16.58	104.12	0.01585	0.900
859	337.01	-1155.09	-61.74	-15901.60	-849.94	13.767	16.57	104.12	0.01585	0.900
860	293.41	-1110.73	-41.02	-15777.20	-582.64	14.204	16.45	104.09	0.01598	0.900
861	292.61	-1106.21	-41.02	-15774.26	-584.91	14.260	16.45	104.09	0.01598	0.900
862	249.00	-1118.25	-20.44	-15652.98	-286.10	13.998	16.33	104.06	0.01611	0.900
863	248.20	-1113.59	-20.44	-15650.15	-287.24	14.054	16.33	104.06	0.01612	0.900
864	204.60	-1119.56	-0.00	-15528.14	-0.00	13.870	16.21	104.02	0.01625	0.900
865	512.62	2137.15	1616.57	13176.79	9967.16	6.166	17.07	104.36	0.01534	0.900
866	347.20	739.79	857.52	10447.89	12110.52	14.123	16.61	104.08	0.01580	0.900
867	346.73	742.59	857.52	10467.98	12088.08	14.097	16.61	104.09	0.01580	0.900
868	321.42	553.28	756.37	9366.70	12804.83	16.929	16.53	104.18	0.01591	0.900
869	320.94	556.07	756.37	9396.94	12781.75	16.899	16.53	104.18	0.01591	0.900
870	295.63	389.71	659.43	8047.94	13618.07	20.651	16.44	104.36	0.01604	0.900
871	295.16	392.50	659.43	8087.81	13588.29	20.606	16.44	104.36	0.01604	0.900
872	276.63	287.89	591.93	6869.26	14124.07	23.861	16.38	104.38	0.01612	0.900
873	269.85	250.04	567.68	6322.03	14353.33	25.284	16.36	104.38	0.01614	0.900
874	269.37	252.83	567.68	6379.75	14324.63	25.234	16.36	104.38	0.01615	0.900
875	244.06	134.53	481.37	4198.16	15021.57	31.206	16.30	104.26	0.01619	0.900
876	243.59	137.32	481.37	4278.64	14998.04	31.157	16.29	104.27	0.01620	0.900
877	218.28	39.18	400.52	1510.42	15439.05	38.547	16.23	104.20	0.01626	0.900
878	217.80	41.98	400.52	1617.25	15428.46	38.521	16.23	104.19	0.01626	0.900
879	192.49	-39.35	325.15	-1852.73	15308.97	47.083	16.13	104.39	0.01642	0.900
880	192.02	-36.55	325.15	-1722.02	15319.07	47.114	16.13	104.38	0.01642	0.900
881	166.71	-100.53	255.67	-5621.61	14297.00	55.919	16.06	104.21	0.01647	0.900
882	166.23	-97.76	255.67	-5489.56	14356.88	56.153	16.06	104.21	0.01647	0.900
883	140.92	-144.24	192.31	-9145.92	12194.31	63.410	15.98	104.37	0.01660	0.900
884	140.44	-141.46	192.31	-9029.06	12274.93	63.829	15.98	104.36	0.01660	0.900
885	115.14	-173.20	135.06	-11966.32	9331.06	69.089	15.92	104.27	0.01665	0.900
886	114.66	-170.42	135.06	-11896.08	9427.96	69.806	15.92	104.28	0.01665	0.900
887	89.35	-174.92	83.92	-13583.51	6517.05	77.655	15.83	104.26	0.01675	0.900
888	88.87	-172.14	83.92	-13542.64	6602.50	78.673	15.84	104.25	0.01675	0.900
889	63.56	-164.03	38.90	-14569.19	3455.30	88.818	15.74	104.37	0.01689	0.900
890	63.09	-161.25	38.90	-14552.53	3510.92	90.247	15.74	104.37	0.01689	0.900
891	37.78	-164.81	0.00	-14954.36	-0.00	90.735	15.74	104.02	0.01683	0.900
892	513.05	-2557.80	-508.14	-16229.98	-3224.27	6.345	17.07	104.36	0.01534	0.900
893	347.63	-1158.98	-326.08	-15352.49	-4319.45	13.247	16.58	104.38	0.01588	0.900
894	347.14	-1156.20	-326.08	-15348.39	-4328.65	13.275	16.58	104.38	0.01588	0.900
895	321.83	-966.83	-298.47	-15163.86	-4681.26	15.684	16.51	104.39	0.01597	0.900
896	321.35	-964.09	-298.47	-15158.96	-4693.04	15.724	16.51	104.39	0.01597	0.900
897	296.04	-797.73	-270.94	-14964.17	-5082.30	18.758	16.43	104.39	0.01606	0.900
898	295.55	-795.00	-270.94	-14958.28	-5097.79	18.816	16.43	104.39	0.01606	0.900
899	277.03	-690.45	-250.84	-14815.65	-5382.52	21.458	16.37	104.40	0.01613	0.900
900	270.24	-652.62	-243.47	-14739.13	-5498.79	22.585	16.35	104.39	0.01615	0.900
901	269.76	-649.88	-243.47	-14728.41	-5517.93	22.663	16.35	104.39	0.01615	0.900
902	244.45	-531.74	-216.09	-14464.94	-5878.33	27.203	16.29	104.35	0.01622	0.900
903	243.96	-528.99	-216.09	-14451.48	-5903.40	27.319	16.29	104.34	0.01622	0.900
904	218.65	-431.07	-188.79	-14207.69	-6222.23	32.959	16.22	104.31	0.01630	0.900
905	218.17	-428.31	-188.79	-14190.68	-6254.87	33.132	16.22	104.30	0.01630	0.900
906	192.86	-347.27	-161.57	-13979.57	-6503.97	40.256	16.15	104.28	0.01637	0.900
907	192.37	-344.51	-161.57	-13958.26	-6546.12	40.517	16.15	104.27	0.01637	0.900
908	167.06	-280.75	-134.43	-13827.84	-6620.94	49.253	16.08	104.26	0.01645	0.900
909	166.58	-277.99	-134.43	-13801.53	-6674.01	49.648	16.08	104.25	0.01645	0.900
910	141.27	-231.72	-107.37	-13828.32	-6407.58	59.678	16.00	104.28	0.01656	0.900
911	140.78	-228.94	-107.37	-13797.43	-6470.67	60.265	16.00	104.27	0.01655	0.900
912	115.48	-197.48	-80.40	-14047.03	-5718.76	71.130	15.90	104.34	0.01668	0.900
913	114.99	-194.70	-80.40	-14013.89	-5786.83	71.977	15.90	104.34	0.01668	0.900
914	89.68	-191.20	-53.51	-14500.33	-4058.40	75.840	15.82	104.38	0.01680	0.900
915	89.20	-188.39	-53.51	-14483.55	-4114.15	76.882	15.82	104.38	0.01680	0.900
916	63.89	-197.09	-26.71	-14854.79	-2013.40	75.372	15.76	104.28	0.01684	0.900
917	63.40	-194.28	-26.71	-14850.39	-2041.91	76.439	15.76	104.28	0.01685	0.900
918	38.10	-191.37	-0.00	-14955.48	-0.00	78.150	15.74	104.02	0.01683	0.900

919	854.54	2035.61	1884.89	12970.03	12009.70	6.372	18.08	104.26	0.01430	0.900
920	578.84	617.91	1111.08	8154.81	14663.27	13.197	17.26	104.38	0.01514	0.900
921	578.05	622.58	1111.08	8202.33	14638.10	13.175	17.26	104.38	0.01514	0.900
922	535.87	430.67	1003.06	6548.22	15251.28	15.205	17.13	104.38	0.01528	0.900
923	535.07	435.33	1003.06	6606.14	15221.27	15.175	17.13	104.38	0.01528	0.900
924	492.89	266.52	897.90	4680.68	15769.27	17.562	17.01	104.29	0.01539	0.900
925	492.10	271.18	897.90	4755.74	15746.48	17.537	17.01	104.30	0.01539	0.900
926	461.23	164.90	822.78	3216.37	16048.73	19.505	16.93	104.15	0.01545	0.900
927	449.92	126.43	795.47	2564.71	16136.02	20.285	16.90	104.13	0.01548	0.900
928	449.13	131.10	795.47	2657.56	16125.20	20.271	16.90	104.12	0.01548	0.900
929	406.94	10.68	695.72	248.66	16192.03	23.274	16.76	104.30	0.01567	0.900
930	406.15	15.35	695.72	357.06	16179.89	23.256	16.76	104.29	0.01567	0.900
931	363.97	-84.74	598.67	-2246.06	15867.94	26.505	16.63	104.40	0.01583	0.900
932	363.17	-80.07	598.67	-2123.26	15875.94	26.519	16.63	104.40	0.01583	0.900
933	320.99	-163.18	504.34	-4887.93	15106.84	29.954	16.53	104.25	0.01592	0.900
934	320.20	-158.51	504.34	-4757.97	15138.75	30.017	16.53	104.26	0.01593	0.900
935	278.02	-224.15	412.88	-7511.46	13835.64	33.510	16.39	104.24	0.01608	0.900
936	277.22	-219.51	412.88	-7385.49	13891.47	33.646	16.39	104.24	0.01608	0.900
937	235.04	-267.41	324.37	-9927.21	12041.61	37.123	16.25	104.41	0.01627	0.900
938	234.25	-262.76	324.37	-9815.56	12116.91	37.355	16.25	104.41	0.01627	0.900
939	192.07	-295.77	238.82	-12023.44	9708.60	40.652	16.14	104.29	0.01638	0.900
940	191.27	-291.11	238.82	-11952.01	9805.31	41.057	16.14	104.29	0.01639	0.900
941	149.09	-297.25	156.24	-13532.93	7113.42	45.528	16.04	104.21	0.01649	0.900
942	148.29	-292.62	156.24	-13488.95	7202.39	46.097	16.04	104.20	0.01649	0.900
943	106.11	-284.22	76.64	-14592.71	3934.61	51.342	15.87	104.38	0.01673	0.900
944	105.32	-279.60	76.64	-14573.70	3994.51	52.124	15.87	104.38	0.01674	0.900
945	63.14	-283.12	0.00	-15042.98	-0.00	53.133	15.81	104.02	0.01674	0.900
946	1022.31	-3972.22	-408.93	-18123.35	-1865.78	4.563	18.55	104.22	0.01386	0.900
947	737.32	-2474.54	-259.88	-17177.60	-1804.00	6.942	17.72	104.22	0.01464	0.900
948	736.52	-2469.94	-259.88	-17174.62	-1807.05	6.953	17.72	104.22	0.01464	0.900
949	692.92	-2259.25	-237.50	-17028.43	-1790.07	7.537	17.59	104.22	0.01477	0.900
950	692.11	-2254.72	-237.50	-17025.42	-1793.35	7.551	17.59	104.22	0.01477	0.900
951	648.51	-2060.67	-215.24	-16880.10	-1763.16	8.192	17.46	104.22	0.01490	0.900
952	647.71	-2056.15	-215.24	-16877.07	-1766.72	8.208	17.46	104.22	0.01491	0.900
953	615.80	-1926.06	-199.04	-16771.73	-1733.24	8.708	17.37	104.22	0.01500	0.900
954	604.10	-1878.60	-193.11	-16733.19	-1720.09	8.907	17.34	104.22	0.01504	0.900
955	603.30	-1874.07	-193.11	-16730.13	-1723.94	8.927	17.33	104.22	0.01504	0.900
956	559.70	-1712.96	-171.11	-16587.80	-1656.97	9.684	17.21	104.21	0.01517	0.900
957	558.89	-1708.43	-171.11	-16584.72	-1661.06	9.708	17.21	104.21	0.01517	0.900
958	515.29	-1564.75	-149.24	-16444.52	-1568.42	10.509	17.08	104.20	0.01530	0.900
959	514.49	-1560.23	-149.24	-16441.42	-1572.67	10.538	17.08	104.21	0.01531	0.900
960	470.89	-1434.92	-127.51	-16303.98	-1448.77	11.362	16.95	104.19	0.01544	0.900
961	470.08	-1430.39	-127.51	-16300.87	-1453.07	11.396	16.95	104.19	0.01544	0.900
962	426.48	-1323.60	-105.91	-16166.55	-1293.56	12.214	16.83	104.18	0.01558	0.900
963	425.68	-1319.08	-105.91	-16163.45	-1297.75	12.254	16.82	104.18	0.01558	0.900
964	382.08	-1230.87	-84.45	-16032.63	-1099.95	13.025	16.70	104.15	0.01571	0.900
965	381.27	-1226.35	-84.45	-16029.55	-1103.79	13.071	16.70	104.15	0.01571	0.900
966	337.67	-1159.10	-63.12	-15902.40	-866.04	13.720	16.57	104.13	0.01585	0.900
967	336.87	-1154.59	-63.12	-15899.38	-869.25	13.771	16.57	104.13	0.01585	0.900
968	293.27	-1110.18	-41.94	-15775.51	-595.99	14.210	16.45	104.09	0.01598	0.900
969	292.46	-1105.67	-41.94	-15772.57	-598.30	14.265	16.45	104.09	0.01598	0.900
970	248.86	-1117.67	-20.90	-15651.90	-292.69	14.004	16.33	104.06	0.01611	0.900
971	248.06	-1113.02	-20.90	-15649.07	-293.86	14.060	16.33	104.06	0.01612	0.900
972	204.46	-1118.94	-0.00	-15527.65	-0.00	13.877	16.21	104.02	0.01625	0.900
973	854.95	-349.22	169.38	-15891.48	7707.54	45.505	18.06	104.25	0.01432	0.900
974	579.24	-348.52	110.23	-15974.59	5052.42	45.835	17.26	104.39	0.01514	0.900
975	578.44	-343.84	110.23	-15955.05	5114.92	46.402	17.26	104.39	0.01515	0.900
976	536.26	-343.93	101.11	-15922.42	4680.84	46.296	17.13	104.38	0.01528	0.900
977	535.46	-339.25	101.11	-15903.81	4739.86	46.879	17.13	104.38	0.01528	0.900
978	493.28	-339.40	91.97	-15872.30	4300.97	46.765	17.01	104.38	0.01541	0.900
979	492.48	-334.72	91.97	-15854.68	4356.27	47.367	17.01	104.38	0.01541	0.900
980	461.61	-334.88	85.27	-15832.61	4031.43	47.278	16.92	104.38	0.01551	0.900
981	450.30	-334.94	82.82	-15824.43	3912.68	47.245	16.88	104.37	0.01555	0.900
982	449.50	-330.26	82.82	-15807.88	3963.97	47.864	16.88	104.37	0.01555	0.900
983	407.32	-330.55	73.65	-15778.73	3515.72	47.735	16.76	104.37	0.01568	0.900
984	406.51	-325.87	73.65	-15763.33	3562.73	48.373	16.76	104.37	0.01569	0.900
985	364.33	-326.23	64.48	-15735.29	3109.90	48.234	16.63	104.36	0.01582	0.900
986	363.53	-321.55	64.48	-15721.09	3152.31	48.892	16.63	104.36	0.01583	0.900
987	321.35	-321.97	55.29	-15683.82	2693.21	48.712	16.51	104.35	0.01596	0.900
988	320.55	-317.29	55.29	-15677.62	2731.85	49.411	16.51	104.36	0.01597	0.900
989	278.37	-317.78	46.09	-15575.25	2259.12	49.013	16.39	104.30	0.01609	0.900
990	277.57	-313.10	46.09	-15569.53	2292.03	49.727	16.39	104.30	0.01609	0.900
991	235.39	-313.66	36.89	-15467.69	1819.10	49.314	16.27	104.25	0.01622	0.900
992	234.59	-308.98	36.89	-15462.50	1846.03	50.044	16.27	104.25	0.01622	0.900
993	192.41	-309.60	27.68	-15360.50	1373.11	49.613	16.16	104.19	0.01635	0.900
994	191.60	-304.93	27.68	-15355.84	1393.77	50.359	16.15	104.20	0.01635	0.900
995	149.42	-305.62	18.46	-15254.72	921.28	49.914	16.04	104.14	0.01648	0.900
996	148.62	-300.94	18.46	-15250.65	935.35	50.677	16.04	104.14	0.01648	0.900
997	106.44	-301.70	9.23	-15149.96	463.57	50.215	15.93	104.08	0.01660	0.900
998	105.64	-297.02	9.23	-15146.49	470.76	50.994	15.93	104.08	0.01661	0.900

999	63.46	-297.86	-0.00	-15043.93	-0.00	50.507	15.81	104.02	0.01674	0.900
1000	1022.14	-1108.81	138.19	-18089.98	2254.60	16.315	18.55	104.26	0.01386	0.900
1001	737.15	-1120.10	89.95	-17211.81	1382.25	15.366	17.72	104.18	0.01464	0.900
1002	736.35	-1115.43	89.95	-17208.66	1387.78	15.428	17.72	104.18	0.01464	0.900
1003	692.75	-1117.69	82.51	-17071.90	1260.31	15.274	17.59	104.16	0.01476	0.900
1004	691.95	-1113.03	82.51	-17068.78	1265.36	15.335	17.59	104.16	0.01476	0.900
1005	648.35	-1115.42	75.06	-16931.85	1139.37	15.180	17.46	104.15	0.01489	0.900
1006	647.55	-1110.76	75.06	-16928.77	1143.94	15.241	17.46	104.15	0.01489	0.900
1007	615.64	-1112.61	69.60	-16828.57	1052.64	15.125	17.37	104.14	0.01499	0.900
1008	603.95	-1113.28	67.59	-16791.83	1019.52	15.083	17.34	104.14	0.01502	0.900
1009	603.15	-1108.63	67.59	-16788.79	1023.62	15.144	17.33	104.14	0.01502	0.900
1010	559.55	-1111.27	60.12	-16651.69	900.82	14.984	17.21	104.13	0.01515	0.900
1011	558.75	-1106.61	60.12	-16648.68	904.44	15.045	17.21	104.13	0.01515	0.900
1012	515.15	-1109.40	52.63	-16511.47	783.32	14.883	17.08	104.11	0.01528	0.900
1013	514.35	-1104.74	52.63	-16508.50	786.48	14.943	17.08	104.11	0.01529	0.900
1014	470.75	-1107.67	45.14	-16371.21	667.10	14.780	16.96	104.10	0.01542	0.900
1015	469.95	-1103.01	45.14	-16368.28	669.80	14.840	16.95	104.10	0.01542	0.900
1016	426.35	-1106.08	37.63	-16230.89	552.21	14.674	16.83	104.09	0.01555	0.900
1017	425.55	-1101.42	37.63	-16227.99	554.45	14.734	16.83	104.09	0.01556	0.900
1018	381.95	-1104.64	30.12	-16090.51	438.73	14.566	16.70	104.07	0.01569	0.900
1019	381.15	-1099.98	30.12	-16087.66	440.51	14.625	16.70	104.07	0.01569	0.900
1020	337.55	-1103.35	22.60	-15949.98	326.70	14.456	16.58	104.06	0.01583	0.900
1021	336.75	-1098.69	22.60	-15947.16	328.03	14.515	16.58	104.06	0.01583	0.900
1022	293.15	-1102.23	15.07	-15809.19	216.19	14.343	16.46	104.05	0.01597	0.900
1023	292.35	-1097.56	15.07	-15806.39	217.08	14.401	16.45	104.05	0.01597	0.900
1024	248.75	-1101.28	7.54	-15668.29	107.27	14.227	16.33	104.03	0.01611	0.900
1025	247.95	-1096.61	7.54	-15665.54	107.71	14.285	16.33	104.03	0.01611	0.900
1026	204.35	-1100.50	-0.00	-15527.29	-0.00	14.109	16.21	104.02	0.01625	0.900
1027	854.79	-349.36	160.82	-16043.08	7384.98	45.921	18.06	104.28	0.01432	0.900
1028	579.09	-348.36	104.69	-16036.37	4819.31	46.034	17.26	104.38	0.01514	0.900
1029	578.29	-343.69	104.69	-16017.56	4879.11	46.605	17.26	104.39	0.01515	0.900
1030	536.11	-343.73	96.03	-15979.75	4464.37	46.489	17.13	104.38	0.01528	0.900
1031	535.31	-339.06	96.03	-15961.83	4520.83	47.077	17.13	104.38	0.01528	0.900
1032	493.13	-339.16	87.35	-15925.08	4101.59	46.954	17.01	104.38	0.01541	0.900
1033	492.32	-334.49	87.35	-15908.11	4154.46	47.559	17.01	104.38	0.01541	0.900
1034	461.45	-334.62	80.99	-15882.15	3844.20	47.463	16.92	104.37	0.01551	0.900
1035	450.14	-334.66	78.66	-15872.53	3730.80	47.428	16.88	104.37	0.01555	0.900
1036	449.34	-329.99	78.66	-15856.59	3779.83	48.052	16.88	104.37	0.01555	0.900
1037	407.16	-330.23	69.96	-15822.03	3351.84	47.912	16.76	104.37	0.01568	0.900
1038	406.36	-325.56	69.96	-15807.19	3396.75	48.554	16.76	104.37	0.01569	0.900
1039	364.18	-325.87	61.24	-15773.65	2964.48	48.405	16.63	104.36	0.01582	0.900
1040	363.38	-321.20	61.24	-15759.97	3005.00	49.066	16.63	104.36	0.01583	0.900
1041	321.20	-321.58	52.52	-15694.92	2563.25	48.806	16.51	104.34	0.01596	0.900
1042	320.40	-316.90	52.52	-15688.88	2600.05	49.507	16.51	104.34	0.01596	0.900
1043	278.22	-317.35	43.78	-15584.53	2150.20	49.109	16.39	104.29	0.01609	0.900
1044	277.42	-312.68	43.78	-15578.97	2181.55	49.825	16.39	104.29	0.01609	0.900
1045	235.24	-313.19	35.04	-15475.13	1731.48	49.412	16.27	104.24	0.01622	0.900
1046	234.44	-308.52	35.04	-15470.06	1757.12	50.144	16.27	104.24	0.01622	0.900
1047	192.26	-309.10	26.29	-15366.07	1307.03	49.713	16.16	104.19	0.01635	0.900
1048	191.46	-304.42	26.29	-15361.51	1326.69	50.461	16.15	104.19	0.01635	0.900
1049	149.28	-305.07	17.53	-15258.36	876.97	50.015	16.04	104.13	0.01647	0.900
1050	148.48	-300.40	17.53	-15254.36	890.38	50.780	16.04	104.13	0.01648	0.900
1051	106.30	-301.12	8.77	-15151.57	441.29	50.317	15.93	104.08	0.01660	0.900
1052	105.50	-296.45	8.77	-15148.13	448.14	51.099	15.93	104.08	0.01661	0.900
1053	63.32	-297.24	-0.00	-15043.61	-0.00	50.611	15.81	104.02	0.01674	0.900
1054	1021.98	-1108.95	129.64	-18101.15	2116.03	16.323	18.55	104.25	0.01386	0.900
1055	736.99	-1119.94	84.41	-17218.26	1297.80	15.374	17.72	104.17	0.01463	0.900
1056	736.20	-1115.28	84.41	-17215.13	1302.99	15.436	17.72	104.17	0.01464	0.900
1057	692.59	-1117.49	77.43	-17077.77	1183.37	15.282	17.59	104.15	0.01476	0.900
1058	691.80	-1112.84	77.43	-17074.68	1188.11	15.343	17.59	104.16	0.01476	0.900
1059	648.20	-1115.18	70.44	-16937.15	1069.87	15.188	17.46	104.14	0.01489	0.900
1060	647.40	-1110.53	70.44	-16934.10	1074.16	15.249	17.46	104.14	0.01489	0.900
1061	615.49	-1112.35	65.32	-16833.46	988.46	15.133	17.37	104.13	0.01499	0.900
1062	603.80	-1113.01	63.44	-16796.56	957.37	15.091	17.34	104.13	0.01502	0.900
1063	603.00	-1108.35	63.44	-16793.54	961.21	15.152	17.33	104.13	0.01502	0.900
1064	559.40	-1110.96	56.42	-16655.85	845.93	14.992	17.21	104.12	0.01515	0.900
1065	558.60	-1106.30	56.42	-16652.86	849.34	15.053	17.21	104.12	0.01515	0.900
1066	515.00	-1109.04	49.40	-16515.06	735.62	14.891	17.08	104.11	0.01528	0.900
1067	514.20	-1104.39	49.40	-16512.10	738.59	14.951	17.08	104.11	0.01529	0.900
1068	470.60	-1107.27	42.37	-16374.23	626.50	14.788	16.96	104.09	0.01542	0.900
1069	469.80	-1102.62	42.37	-16371.31	629.03	14.848	16.95	104.09	0.01542	0.900
1070	426.20	-1105.65	35.32	-16233.33	518.62	14.682	16.83	104.08	0.01555	0.900
1071	425.40	-1100.99	35.32	-16230.44	520.72	14.742	16.83	104.08	0.01556	0.900
1072	381.80	-1104.17	28.27	-16092.37	412.05	14.574	16.70	104.07	0.01569	0.900
1073	381.01	-1099.51	28.27	-16089.52	413.73	14.633	16.70	104.07	0.01569	0.900
1074	337.40	-1102.84	21.22	-15951.25	306.85	14.464	16.58	104.06	0.01583	0.900
1075	336.61	-1098.18	21.22	-15948.44	308.10	14.523	16.58	104.06	0.01583	0.900
1076	293.01	-1101.68	14.15	-15809.87	203.06	14.351	16.46	104.05	0.01597	0.900
1077	292.21	-1097.02	14.15	-15807.08	203.89	14.409	16.45	104.05	0.01597	0.900
1078	248.61	-1100.69	7.08	-15668.39	100.77	14.235	16.33	104.03	0.01611	0.900

1079	247.81	-1096.04	7.08	-15665.64	101.17	14.293	16.33	104.03	0.01611	0.900
1080	204.21	-1099.88	-0.00	-15526.80	-0.00	14.117	16.21	104.02	0.01625	0.900

*** End of output ***

3.5.5 FOUNDATION ELEMENTS

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FOUNDATION ELEMENTS
-PILE CAPACITY DESIGN CHECK

Eisenhower Memorial Pile Capacity Check - East Tapestry

Pile Capacity - Sustained Loads	190 kips
Pile Capacity - Short-Term Loads	252.7 kips
Pile Uplift Capacity	-100 kips
Pile Lateral Capacity	16 kips

TABLE: Joint Reactions

Joint	OutputCase	CaseType	StepType	F1	F2	Fsrss	Lateral DCR	F3	Vertical DCR
Text	Text	Text	Text	Kip	Kip	Kip		Kip	
2	ALLOW_ENVE	Combination	Max	-0.393	-0.563	0.69	0.04	99.0	0.39
2	ALLOW_ENVE	Combination	Min	-2.718	-3.575	4.49	0.28	89.3	0.35
2	ALLOW_UPLIFT_ENVE	Combination	Max	-0.357	-0.474	0.59	0.04	118.3	0.47
2	ALLOW_UPLIFT_ENVE	Combination	Min	-2.682	-3.524	4.43	0.28	108.6	0.43
2	ALLOW_ENVE+SOIL	Combination	Max	-0.393	-0.564	0.69	0.04	143.7	0.57
2	ALLOW_ENVE+SOIL	Combination	Min	-2.718	-3.575	4.49	0.28	38.3	0.15
2	SUST ALLOW_ENVE	Combination	Max	-0.405	-1.891	1.93	0.12	101.5	0.53
2	SUST ALLOW_ENVE	Combination	Min	-0.414	-1.918	1.96	0.12	-2.0	0.02
2	SUST ALLOW_ENVE+SC	Combination	Max	-0.405	-1.892	1.93	0.12	163.1	0.86
2	SUST ALLOW_ENVE+SC	Combination	Min	-0.414	-1.919	1.96	0.12	57.7	0.30
3	ALLOW_ENVE	Combination	Max	-0.373	-5.107	5.12	0.32	102.9	0.41
3	ALLOW_ENVE	Combination	Min	-2.702	-7.164	7.66	0.48	92.2	0.36
3	ALLOW_UPLIFT_ENVE	Combination	Max	-0.34	-4.9	4.91	0.31	122.2	0.48
3	ALLOW_UPLIFT_ENVE	Combination	Min	-2.661	-6.983	7.47	0.47	111.5	0.44
3	ALLOW_ENVE+SOIL	Combination	Max	-0.374	-5.109	5.12	0.32	153.4	0.61
3	ALLOW_ENVE+SOIL	Combination	Min	-2.702	-7.166	7.66	0.48	34.4	0.14
3	SUST ALLOW_ENVE	Combination	Max	-0.386	-5.602	5.62	0.35	107.6	0.57
3	SUST ALLOW_ENVE	Combination	Min	-0.394	-5.669	5.68	0.36	-6.1	0.06
3	SUST ALLOW_ENVE+SC	Combination	Max	-0.386	-5.605	5.62	0.35	172.9	0.91
3	SUST ALLOW_ENVE+SC	Combination	Min	-0.394	-5.672	5.69	0.36	53.8	0.28
9	ALLOW_ENVE	Combination	Max	-0.344	-8.959	8.97	0.56	103.4	0.41
9	ALLOW_ENVE	Combination	Min	-2.674	-11.138	11.45	0.72	91.9	0.36
9	ALLOW_UPLIFT_ENVE	Combination	Max	-0.315	-8.652	8.66	0.54	122.8	0.49
9	ALLOW_UPLIFT_ENVE	Combination	Min	-2.631	-10.815	11.13	0.70	111.3	0.44
9	ALLOW_ENVE+SOIL	Combination	Max	-0.345	-8.963	8.97	0.56	106.5	0.42
9	ALLOW_ENVE+SOIL	Combination	Min	-2.675	-11.142	11.46	0.72	81.4	0.32
9	SUST ALLOW_ENVE	Combination	Max	-0.356	-9.314	9.32	0.58	66.7	0.35
9	SUST ALLOW_ENVE	Combination	Min	-0.363	-9.421	9.43	0.59	41.6	0.22
9	SUST ALLOW_ENVE+SC	Combination	Max	-0.357	-9.318	9.32	0.58	125.9	0.66
9	SUST ALLOW_ENVE+SC	Combination	Min	-0.364	-9.425	9.43	0.59	100.7	0.53
11	ALLOW_ENVE	Combination	Max	-0.4	13.961	13.97	0.87	91.4	0.36
11	ALLOW_ENVE	Combination	Min	-2.739	6.483	7.04	0.44	85.6	0.34
11	ALLOW_UPLIFT_ENVE	Combination	Max	-0.375	13.671	13.68	0.85	110.7	0.44
11	ALLOW_UPLIFT_ENVE	Combination	Min	-2.739	6.154	6.74	0.42	104.9	0.42
11	ALLOW_ENVE+SOIL	Combination	Max	-0.4	13.965	13.97	0.87	100.0	0.40
11	ALLOW_ENVE+SOIL	Combination	Min	-2.74	6.486	7.04	0.44	55.7	0.22
11	SUST ALLOW_ENVE	Combination	Max	-0.412	9.402	9.41	0.59	77.6	0.41
11	SUST ALLOW_ENVE	Combination	Min	-0.419	9.307	9.32	0.58	72.2	0.38
11	SUST ALLOW_ENVE+SC	Combination	Max	-0.412	9.406	9.42	0.59	96.9	0.51
11	SUST ALLOW_ENVE+SC	Combination	Min	-0.419	9.311	9.32	0.58	91.6	0.48
26	ALLOW_ENVE	Combination	Max	6.084	14.052	15.31	0.96	113.5	0.45
26	ALLOW_ENVE	Combination	Min	2.342	6.523	6.93	0.43	5.8	0.02
26	ALLOW_UPLIFT_ENVE	Combination	Max	5.914	13.738	14.96	0.93	72.3	0.29
26	ALLOW_UPLIFT_ENVE	Combination	Min	2.187	6.202	6.58	0.41	-20.3	0.20
26	ALLOW_ENVE+SOIL	Combination	Max	6.086	14.056	15.32	0.96	132.9	0.53
26	ALLOW_ENVE+SOIL	Combination	Min	2.344	6.527	6.94	0.43	25.3	0.10
26	SUST ALLOW_ENVE	Combination	Max	4.631	9.403	10.48	0.66	65.8	0.35
26	SUST ALLOW_ENVE	Combination	Min	4.582	9.304	10.37	0.65	64.3	0.34
26	SUST ALLOW_ENVE+SC	Combination	Max	4.633	9.407	10.49	0.66	85.2	0.45
26	SUST ALLOW_ENVE+SC	Combination	Min	4.583	9.308	10.38	0.65	83.7	0.44

27	ALLOW_ENVE	Combination Max	6.088	9.14	10.98	0.69	119.3	0.47
27	ALLOW_ENVE	Combination Min	2.347	3.21	3.98	0.25	17.3	0.07
27	ALLOW_UPLIFT_ENVE	Combination Max	5.919	8.962	10.74	0.67	82.6	0.33
27	ALLOW_UPLIFT_ENVE	Combination Min	2.2	3.016	3.73	0.23	-12.2	0.12
27	ALLOW_ENVE+SOIL	Combination Max	6.09	9.142	10.98	0.69	138.6	0.55
27	ALLOW_ENVE+SOIL	Combination Min	2.349	3.213	3.98	0.25	36.6	0.14
27	SUST ALLOW_ENVE	Combination Max	4.631	5.617	7.28	0.45	70.9	0.37
27	SUST ALLOW_ENVE	Combination Min	4.582	5.559	7.20	0.45	70.1	0.37
27	SUST ALLOW_ENVE+SC	Combination Max	4.632	5.619	7.28	0.46	90.2	0.47
27	SUST ALLOW_ENVE+SC	Combination Min	4.583	5.562	7.21	0.45	89.4	0.47
28	ALLOW_ENVE	Combination Max	6.085	4.235	7.41	0.46	0.0	0.00
28	ALLOW_ENVE	Combination Min	2.33	-0.094	2.33	0.15	0.0	0.00
28	ALLOW_UPLIFT_ENVE	Combination Max	5.92	4.191	7.25	0.45	0.0	0.00
28	ALLOW_UPLIFT_ENVE	Combination Min	2.196	-0.164	2.20	0.14	0.0	0.00
28	ALLOW_ENVE+SOIL	Combination Max	6.087	4.236	7.42	0.46	0.0	0.00
28	ALLOW_ENVE+SOIL	Combination Min	2.332	-0.094	2.33	0.15	0.0	0.00
28	SUST ALLOW_ENVE	Combination Max	4.62	1.838	4.97	0.31	0.0	0.00
28	SUST ALLOW_ENVE	Combination Min	4.571	1.822	4.92	0.31	0.0	0.00
28	SUST ALLOW_ENVE+SC	Combination Max	4.622	1.839	4.97	0.31	0.0	0.00
28	SUST ALLOW_ENVE+SC	Combination Min	4.573	1.823	4.92	0.31	0.0	0.00
29	ALLOW_ENVE	Combination Max	6.083	-0.485	6.10	0.38	121.6	0.48
29	ALLOW_ENVE	Combination Min	2.314	-3.541	4.23	0.26	24.2	0.10
29	ALLOW_UPLIFT_ENVE	Combination Max	5.921	-0.405	5.93	0.37	96.2	0.38
29	ALLOW_UPLIFT_ENVE	Combination Min	2.19	-3.482	4.11	0.26	-1.9	0.02
29	ALLOW_ENVE+SOIL	Combination Max	6.085	-0.485	6.10	0.38	141.0	0.56
29	ALLOW_ENVE+SOIL	Combination Min	2.316	-3.542	4.23	0.26	43.6	0.17
29	SUST ALLOW_ENVE	Combination Max	4.614	-1.897	4.99	0.31	72.1	0.38
29	SUST ALLOW_ENVE	Combination Min	4.565	-1.922	4.95	0.31	71.4	0.38
29	SUST ALLOW_ENVE+SC	Combination Max	4.616	-1.898	4.99	0.31	91.5	0.48
29	SUST ALLOW_ENVE+SC	Combination Min	4.567	-1.922	4.95	0.31	90.8	0.48
39	ALLOW_ENVE	Combination Max	-0.412	4.136	4.16	0.26	87.0	0.34
39	ALLOW_ENVE	Combination Min	-2.735	-0.135	2.74	0.17	78.3	0.31
39	ALLOW_UPLIFT_ENVE	Combination Max	-0.377	4.106	4.12	0.26	48.2	0.19
39	ALLOW_UPLIFT_ENVE	Combination Min	-2.709	-0.214	2.72	0.17	42.0	0.17
39	ALLOW_ENVE+SOIL	Combination Max	-0.413	4.137	4.16	0.26	106.3	0.42
39	ALLOW_ENVE+SOIL	Combination Min	-2.736	-0.135	2.74	0.17	97.6	0.39
39	SUST ALLOW_ENVE	Combination Max	-0.424	1.831	1.88	0.12	86.5	0.46
39	SUST ALLOW_ENVE	Combination Min	-0.433	1.819	1.87	0.12	82.5	0.43
39	SUST ALLOW_ENVE+SC	Combination Max	-0.425	1.832	1.88	0.12	105.8	0.56
39	SUST ALLOW_ENVE+SC	Combination Min	-0.434	1.819	1.87	0.12	101.8	0.54
40	ALLOW_ENVE	Combination Max	0.47	4.136	4.16	0.26	89.9	0.36
40	ALLOW_ENVE	Combination Min	-1.85	-0.136	1.85	0.12	81.8	0.32
40	ALLOW_UPLIFT_ENVE	Combination Max	0.439	4.105	4.13	0.26	52.1	0.21
40	ALLOW_UPLIFT_ENVE	Combination Min	-1.892	-0.214	1.90	0.12	45.2	0.18
40	ALLOW_ENVE+SOIL	Combination Max	0.471	4.137	4.16	0.26	109.2	0.43
40	ALLOW_ENVE+SOIL	Combination Min	-1.85	-0.135	1.85	0.12	101.1	0.40
40	SUST ALLOW_ENVE	Combination Max	0.434	1.831	1.88	0.12	86.7	0.46
40	SUST ALLOW_ENVE	Combination Min	0.424	1.818	1.87	0.12	82.7	0.44
40	SUST ALLOW_ENVE+SC	Combination Max	0.434	1.831	1.88	0.12	106.0	0.56
40	SUST ALLOW_ENVE+SC	Combination Min	0.425	1.819	1.87	0.12	102.0	0.54
42	ALLOW_ENVE	Combination Max	6.088	-5.032	7.90	0.49	120.6	0.48
42	ALLOW_ENVE	Combination Min	2.31	-7.129	7.49	0.47	21.8	0.09
42	ALLOW_UPLIFT_ENVE	Combination Max	5.926	-4.836	7.65	0.48	101.4	0.40
42	ALLOW_UPLIFT_ENVE	Combination Min	2.191	-6.942	7.28	0.45	0.3	0.00
42	ALLOW_ENVE+SOIL	Combination Max	6.09	-5.034	7.90	0.49	140.2	0.55
42	ALLOW_ENVE+SOIL	Combination Min	2.312	-7.131	7.50	0.47	41.4	0.16
42	SUST ALLOW_ENVE	Combination Max	4.618	-5.607	7.26	0.45	69.4	0.37
42	SUST ALLOW_ENVE	Combination Min	4.569	-5.672	7.28	0.46	67.8	0.36
42	SUST ALLOW_ENVE+SC	Combination Max	4.62	-5.61	7.27	0.45	89.0	0.47
42	SUST ALLOW_ENVE+SC	Combination Min	4.571	-5.674	7.29	0.46	87.4	0.46

43	ALLOW_ENVE	Combination Max	6.093	-8.957	10.83	0.68	119.5	0.47
43	ALLOW_ENVE	Combination Min	2.311	-11.128	11.37	0.71	18.8	0.07
43	ALLOW_UPLIFT_ENVE	Combination Max	5.93	-8.651	10.49	0.66	106.3	0.42
43	ALLOW_UPLIFT_ENVE	Combination Min	2.193	-10.802	11.02	0.69	3.4	0.01
43	ALLOW_ENVE+SOIL	Combination Max	6.094	-8.961	10.84	0.68	139.4	0.55
43	ALLOW_ENVE+SOIL	Combination Min	2.313	-11.132	11.37	0.71	38.7	0.15
43	SUST ALLOW_ENVE	Combination Max	4.624	-9.312	10.40	0.65	66.4	0.35
43	SUST ALLOW_ENVE	Combination Min	4.574	-9.416	10.47	0.65	63.9	0.34
43	SUST ALLOW_ENVE+SC	Combination Max	4.626	-9.315	10.40	0.65	86.3	0.45
43	SUST ALLOW_ENVE+SC	Combination Min	4.576	-9.42	10.47	0.65	83.8	0.44
45	ALLOW_ENVE	Combination Max	-4.82	13.851	14.67	0.92	132.9	0.53
45	ALLOW_ENVE	Combination Min	-9.022	6.418	11.07	0.69	19.7	0.08
45	ALLOW_UPLIFT_ENVE	Combination Max	-4.646	13.565	14.34	0.90	84.7	0.34
45	ALLOW_UPLIFT_ENVE	Combination Min	-8.843	6.088	10.74	0.67	-15.9	0.16
45	ALLOW_ENVE+SOIL	Combination Max	-4.823	13.855	14.67	0.92	152.4	0.60
45	ALLOW_ENVE+SOIL	Combination Min	-9.025	6.422	11.08	0.69	39.1	0.15
45	SUST ALLOW_ENVE	Combination Max	-5.381	9.383	10.82	0.68	89.5	0.47
45	SUST ALLOW_ENVE	Combination Min	-5.445	9.291	10.77	0.67	80.2	0.42
45	SUST ALLOW_ENVE+SC	Combination Max	-5.384	9.387	10.82	0.68	108.9	0.57
45	SUST ALLOW_ENVE+SC	Combination Min	-5.447	9.294	10.77	0.67	99.6	0.52
46	ALLOW_ENVE	Combination Max	-0.396	9.038	9.05	0.57	85.9	0.34
46	ALLOW_ENVE	Combination Min	-2.719	3.176	4.18	0.26	60.0	0.24
46	ALLOW_UPLIFT_ENVE	Combination Max	-0.374	8.883	8.89	0.56	41.3	0.16
46	ALLOW_UPLIFT_ENVE	Combination Min	-2.72	2.97	4.03	0.25	18.3	0.07
46	ALLOW_ENVE+SOIL	Combination Max	-0.396	9.04	9.05	0.57	105.2	0.42
46	ALLOW_ENVE+SOIL	Combination Min	-2.72	3.179	4.18	0.26	79.4	0.31
46	SUST ALLOW_ENVE	Combination Max	-0.407	5.612	5.63	0.35	84.2	0.44
46	SUST ALLOW_ENVE	Combination Min	-0.414	5.559	5.57	0.35	79.4	0.42
46	SUST ALLOW_ENVE+SC	Combination Max	-0.407	5.614	5.63	0.35	103.6	0.55
46	SUST ALLOW_ENVE+SC	Combination Min	-0.414	5.561	5.58	0.35	98.8	0.52
47	ALLOW_ENVE	Combination Max	-4.817	8.96	10.17	0.64	137.4	0.54
47	ALLOW_ENVE	Combination Min	-9.014	3.123	9.54	0.60	31.5	0.12
47	ALLOW_UPLIFT_ENVE	Combination Max	-4.641	8.802	9.95	0.62	93.9	0.37
47	ALLOW_UPLIFT_ENVE	Combination Min	-8.824	2.913	9.29	0.58	-7.0	0.07
47	ALLOW_ENVE+SOIL	Combination Max	-4.819	8.963	10.18	0.64	156.8	0.62
47	ALLOW_ENVE+SOIL	Combination Min	-9.016	3.125	9.54	0.60	50.8	0.20
47	SUST ALLOW_ENVE	Combination Max	-5.382	5.613	7.78	0.49	94.4	0.50
47	SUST ALLOW_ENVE	Combination Min	-5.446	5.561	7.78	0.49	85.8	0.45
47	SUST ALLOW_ENVE+SC	Combination Max	-5.384	5.616	7.78	0.49	113.7	0.60
47	SUST ALLOW_ENVE+SC	Combination Min	-5.449	5.564	7.79	0.49	105.2	0.55
49	ALLOW_ENVE	Combination Max	-4.806	4.075	6.30	0.39	137.8	0.55
49	ALLOW_ENVE	Combination Min	-9.015	-0.167	9.02	0.56	38.5	0.15
49	ALLOW_UPLIFT_ENVE	Combination Max	-4.626	4.044	6.14	0.38	99.8	0.40
49	ALLOW_UPLIFT_ENVE	Combination Min	-8.808	-0.252	8.81	0.55	-0.4	0.00
49	ALLOW_ENVE+SOIL	Combination Max	-4.808	4.076	6.30	0.39	157.1	0.62
49	ALLOW_ENVE+SOIL	Combination Min	-9.017	-0.166	9.02	0.56	57.8	0.23
49	SUST ALLOW_ENVE	Combination Max	-5.38	1.848	5.69	0.36	95.9	0.50
49	SUST ALLOW_ENVE	Combination Min	-5.446	1.836	5.75	0.36	88.2	0.46
49	SUST ALLOW_ENVE+SC	Combination Max	-5.382	1.848	5.69	0.36	115.2	0.61
49	SUST ALLOW_ENVE+SC	Combination Min	-5.449	1.837	5.75	0.36	107.5	0.57
50	ALLOW_ENVE	Combination Max	-4.79	-0.634	4.83	0.30	136.3	0.54
50	ALLOW_ENVE	Combination Min	-9.012	-3.608	9.71	0.61	39.9	0.16
50	ALLOW_UPLIFT_ENVE	Combination Max	-4.608	-0.542	4.64	0.29	104.8	0.41
50	ALLOW_UPLIFT_ENVE	Combination Min	-8.794	-3.565	9.49	0.59	7.8	0.03
50	ALLOW_ENVE+SOIL	Combination Max	-4.793	-0.635	4.83	0.30	155.7	0.62
50	ALLOW_ENVE+SOIL	Combination Min	-9.015	-3.609	9.71	0.61	59.3	0.23
50	SUST ALLOW_ENVE	Combination Max	-5.37	-1.882	5.69	0.36	93.6	0.49
50	SUST ALLOW_ENVE	Combination Min	-5.437	-1.911	5.76	0.36	87.0	0.46
50	SUST ALLOW_ENVE+SC	Combination Max	-5.372	-1.883	5.69	0.36	113.0	0.59
50	SUST ALLOW_ENVE+SC	Combination Min	-5.439	-1.912	5.77	0.36	106.4	0.56

64	ALLOW_ENVE	Combination Max	-4.775	-5.178	7.04	0.44	133.9	0.53
64	ALLOW_ENVE	Combination Min	-9.003	-7.196	11.53	0.72	38.1	0.15
64	ALLOW_UPLIFT_ENVE	Combination Max	-4.593	-4.967	6.77	0.42	109.0	0.43
64	ALLOW_UPLIFT_ENVE	Combination Min	-8.779	-7.022	11.24	0.70	12.2	0.05
64	ALLOW_ENVE+SOIL	Combination Max	-4.777	-5.18	7.05	0.44	153.5	0.61
64	ALLOW_ENVE+SOIL	Combination Min	-9.006	-7.199	11.53	0.72	57.7	0.23
64	SUST ALLOW_ENVE	Combination Max	-5.355	-5.595	7.74	0.48	89.5	0.47
64	SUST ALLOW_ENVE	Combination Min	-5.421	-5.664	7.84	0.49	83.9	0.44
64	SUST ALLOW_ENVE+SC	Combination Max	-5.358	-5.597	7.75	0.48	109.1	0.57
64	SUST ALLOW_ENVE+SC	Combination Min	-5.424	-5.666	7.84	0.49	103.5	0.54
65	ALLOW_ENVE	Combination Max	-4.763	-8.958	10.15	0.63	131.7	0.52
65	ALLOW_ENVE	Combination Min	-8.994	-11.143	14.32	0.89	35.8	0.14
65	ALLOW_UPLIFT_ENVE	Combination Max	-4.584	-8.651	9.79	0.61	113.2	0.45
65	ALLOW_UPLIFT_ENVE	Combination Min	-8.767	-10.823	13.93	0.87	15.9	0.06
65	ALLOW_ENVE+SOIL	Combination Max	-4.766	-8.962	10.15	0.63	151.6	0.60
65	ALLOW_ENVE+SOIL	Combination Min	-8.997	-11.146	14.32	0.90	55.7	0.22
65	SUST ALLOW_ENVE	Combination Max	-5.344	-9.313	10.74	0.67	85.3	0.45
65	SUST ALLOW_ENVE	Combination Min	-5.409	-9.423	10.87	0.68	80.7	0.42
65	SUST ALLOW_ENVE+SC	Combination Max	-5.346	-9.317	10.74	0.67	105.2	0.55
65	SUST ALLOW_ENVE+SC	Combination Min	-5.411	-9.427	10.87	0.68	100.6	0.53
140	ALLOW_ENVE	Combination Max	0.458	13.961	13.97	0.87	105.7	0.42
140	ALLOW_ENVE	Combination Min	-1.836	6.483	6.74	0.42	64.5	0.26
140	ALLOW_UPLIFT_ENVE	Combination Max	0.442	13.671	13.68	0.85	61.8	0.24
140	ALLOW_UPLIFT_ENVE	Combination Min	-1.879	6.154	6.43	0.40	18.7	0.07
140	ALLOW_ENVE+SOIL	Combination Max	0.458	13.964	13.97	0.87	125.2	0.50
140	ALLOW_ENVE+SOIL	Combination Min	-1.836	6.486	6.74	0.42	84.0	0.33
140	SUST ALLOW_ENVE	Combination Max	0.419	9.402	9.41	0.59	78.0	0.41
140	SUST ALLOW_ENVE	Combination Min	0.412	9.307	9.32	0.58	72.6	0.38
140	SUST ALLOW_ENVE+SC	Combination Max	0.419	9.406	9.42	0.59	97.5	0.51
140	SUST ALLOW_ENVE+SC	Combination Min	0.412	9.31	9.32	0.58	92.1	0.48
142	ALLOW_ENVE	Combination Max	0.45	-0.564	0.72	0.05	84.9	0.34
142	ALLOW_ENVE	Combination Min	-1.885	-3.575	4.04	0.25	73.9	0.29
142	ALLOW_UPLIFT_ENVE	Combination Max	0.416	-0.474	0.63	0.04	52.8	0.21
142	ALLOW_UPLIFT_ENVE	Combination Min	-1.92	-3.525	4.01	0.25	45.3	0.18
142	ALLOW_ENVE+SOIL	Combination Max	0.45	-0.564	0.72	0.05	104.3	0.41
142	ALLOW_ENVE+SOIL	Combination Min	-1.885	-3.575	4.04	0.25	93.3	0.37
142	SUST ALLOW_ENVE	Combination Max	0.414	-1.891	1.94	0.12	83.3	0.44
142	SUST ALLOW_ENVE	Combination Min	0.405	-1.919	1.96	0.12	80.2	0.42
142	SUST ALLOW_ENVE+SC	Combination Max	0.414	-1.892	1.94	0.12	102.6	0.54
142	SUST ALLOW_ENVE+SC	Combination Min	0.405	-1.919	1.96	0.12	99.6	0.52
155	ALLOW_ENVE	Combination Max	0.43	-4.558	4.58	0.29	82.7	0.33
155	ALLOW_ENVE	Combination Min	-1.918	-7.164	7.42	0.46	61.8	0.24
155	ALLOW_UPLIFT_ENVE	Combination Max	0.397	-4.365	4.38	0.27	58.3	0.23
155	ALLOW_UPLIFT_ENVE	Combination Min	-1.944	-6.984	7.25	0.45	39.3	0.16
155	ALLOW_ENVE+SOIL	Combination Max	0.43	-4.56	4.58	0.29	102.2	0.40
155	ALLOW_ENVE+SOIL	Combination Min	-1.917	-7.166	7.42	0.46	81.3	0.32
155	SUST ALLOW_ENVE	Combination Max	0.394	-5.602	5.62	0.35	78.8	0.41
155	SUST ALLOW_ENVE	Combination Min	0.386	-5.67	5.68	0.36	76.8	0.40
155	SUST ALLOW_ENVE+SC	Combination Max	0.394	-5.605	5.62	0.35	98.4	0.52
155	SUST ALLOW_ENVE+SC	Combination Min	0.386	-5.672	5.69	0.36	96.3	0.51
156	ALLOW_ENVE	Combination Max	0.398	-8.189	8.20	0.51	80.6	0.32
156	ALLOW_ENVE	Combination Min	-1.957	-10.754	10.93	0.68	50.9	0.20
156	ALLOW_UPLIFT_ENVE	Combination Max	0.368	-7.878	7.89	0.49	63.6	0.25
156	ALLOW_UPLIFT_ENVE	Combination Min	-1.975	-10.444	10.63	0.66	34.2	0.14
156	ALLOW_ENVE+SOIL	Combination Max	0.399	-8.193	8.20	0.51	100.4	0.40
156	ALLOW_ENVE+SOIL	Combination Min	-1.957	-10.758	10.93	0.68	70.7	0.28
156	SUST ALLOW_ENVE	Combination Max	0.363	-9.314	9.32	0.58	74.5	0.39
156	SUST ALLOW_ENVE	Combination Min	0.356	-9.422	9.43	0.59	73.5	0.39
156	SUST ALLOW_ENVE+SC	Combination Max	0.364	-9.318	9.33	0.58	94.3	0.50
156	SUST ALLOW_ENVE+SC	Combination Min	0.357	-9.425	9.43	0.59	93.3	0.49

157	ALLOW_ENVE	Combination Max	-3.955	-8.163	9.07	0.57	119.0	0.47
157	ALLOW_ENVE	Combination Min	-7.239	-10.712	12.93	0.81	18.6	0.07
157	ALLOW_UPLIFT_ENVE	Combination Max	-3.837	-7.861	8.75	0.55	105.8	0.42
157	ALLOW_UPLIFT_ENVE	Combination Min	-7.078	-10.395	12.58	0.79	3.3	0.01
157	ALLOW_ENVE+SOIL	Combination Max	-3.957	-8.166	9.07	0.57	138.8	0.55
157	ALLOW_ENVE+SOIL	Combination Min	-7.241	-10.715	12.93	0.81	38.4	0.15
157	SUST ALLOW_ENVE	Combination Max	-4.574	-9.312	10.37	0.65	66.0	0.35
157	SUST ALLOW_ENVE	Combination Min	-4.624	-9.416	10.49	0.66	63.5	0.33
157	SUST ALLOW_ENVE+SC	Combination Max	-4.576	-9.315	10.38	0.65	85.9	0.45
157	SUST ALLOW_ENVE+SC	Combination Min	-4.626	-9.42	10.49	0.66	83.4	0.44
158	ALLOW_ENVE	Combination Max	-3.949	-4.538	6.02	0.38	120.2	0.48
158	ALLOW_ENVE	Combination Min	-7.226	-7.129	10.15	0.63	21.7	0.09
158	ALLOW_UPLIFT_ENVE	Combination Max	-3.833	-4.35	5.80	0.36	101.0	0.40
158	ALLOW_UPLIFT_ENVE	Combination Min	-7.072	-6.942	9.91	0.62	0.2	0.00
158	ALLOW_ENVE+SOIL	Combination Max	-3.95	-4.54	6.02	0.38	139.8	0.55
158	ALLOW_ENVE+SOIL	Combination Min	-7.228	-7.132	10.15	0.63	41.3	0.16
158	SUST ALLOW_ENVE	Combination Max	-4.569	-5.607	7.23	0.45	69.2	0.36
158	SUST ALLOW_ENVE	Combination Min	-4.618	-5.672	7.31	0.46	67.6	0.36
158	SUST ALLOW_ENVE+SC	Combination Max	-4.571	-5.61	7.24	0.45	88.7	0.47
158	SUST ALLOW_ENVE+SC	Combination Min	-4.62	-5.674	7.32	0.46	87.2	0.46
159	ALLOW_ENVE	Combination Max	-3.945	-0.484	3.97	0.25	121.4	0.48
159	ALLOW_ENVE	Combination Min	-7.212	-3.541	8.03	0.50	24.1	0.10
159	ALLOW_UPLIFT_ENVE	Combination Max	-3.83	-0.405	3.85	0.24	95.9	0.38
159	ALLOW_UPLIFT_ENVE	Combination Min	-7.063	-3.483	7.88	0.49	-2.0	0.02
159	ALLOW_ENVE+SOIL	Combination Max	-3.947	-0.485	3.98	0.25	140.8	0.56
159	ALLOW_ENVE+SOIL	Combination Min	-7.214	-3.542	8.04	0.50	43.5	0.17
159	SUST ALLOW_ENVE	Combination Max	-4.565	-1.897	4.94	0.31	72.0	0.38
159	SUST ALLOW_ENVE	Combination Min	-4.614	-1.922	5.00	0.31	71.3	0.38
159	SUST ALLOW_ENVE+SC	Combination Max	-4.567	-1.898	4.95	0.31	91.4	0.48
159	SUST ALLOW_ENVE+SC	Combination Min	-4.616	-1.922	5.00	0.31	90.7	0.48
160	ALLOW_ENVE	Combination Max	-3.955	4.235	5.79	0.36	121.4	0.48
160	ALLOW_ENVE	Combination Min	-7.204	-0.095	7.20	0.45	23.5	0.09
160	ALLOW_UPLIFT_ENVE	Combination Max	-3.837	4.191	5.68	0.36	89.8	0.36
160	ALLOW_UPLIFT_ENVE	Combination Min	-7.059	-0.164	7.06	0.44	-6.1	0.06
160	ALLOW_ENVE+SOIL	Combination Max	-3.956	4.236	5.80	0.36	140.8	0.56
160	ALLOW_ENVE+SOIL	Combination Min	-7.206	-0.094	7.21	0.45	42.8	0.17
160	SUST ALLOW_ENVE	Combination Max	-4.571	1.838	4.93	0.31	73.1	0.38
160	SUST ALLOW_ENVE	Combination Min	-4.62	1.822	4.97	0.31	72.9	0.38
160	SUST ALLOW_ENVE+SC	Combination Max	-4.573	1.839	4.93	0.31	92.4	0.49
160	SUST ALLOW_ENVE+SC	Combination Min	-4.622	1.823	4.97	0.31	92.3	0.49
165	ALLOW_ENVE	Combination Max	-3.975	9.14	9.97	0.62	119.7	0.47
165	ALLOW_ENVE	Combination Min	-7.201	3.21	7.88	0.49	17.3	0.07
165	ALLOW_UPLIFT_ENVE	Combination Max	-3.849	8.962	9.75	0.61	82.8	0.33
165	ALLOW_UPLIFT_ENVE	Combination Min	-7.056	3.016	7.67	0.48	-12.3	0.12
165	ALLOW_ENVE+SOIL	Combination Max	-3.977	9.142	9.97	0.62	139.1	0.55
165	ALLOW_ENVE+SOIL	Combination Min	-7.202	3.212	7.89	0.49	36.7	0.15
165	SUST ALLOW_ENVE	Combination Max	-4.582	5.616	7.25	0.45	71.1	0.37
165	SUST ALLOW_ENVE	Combination Min	-4.631	5.559	7.24	0.45	70.3	0.37
165	SUST ALLOW_ENVE+SC	Combination Max	-4.583	5.619	7.25	0.45	90.5	0.48
165	SUST ALLOW_ENVE+SC	Combination Min	-4.632	5.562	7.24	0.45	89.7	0.47
166	ALLOW_ENVE	Combination Max	-3.98	14.052	14.60	0.91	120.4	0.48
166	ALLOW_ENVE	Combination Min	-7.192	6.522	9.71	0.61	8.8	0.03
166	ALLOW_UPLIFT_ENVE	Combination Max	-3.85	13.738	14.27	0.89	79.6	0.31
166	ALLOW_UPLIFT_ENVE	Combination Min	-7.05	6.202	9.39	0.59	-19.3	0.19
166	ALLOW_ENVE+SOIL	Combination Max	-3.982	14.056	14.61	0.91	139.9	0.55
166	ALLOW_ENVE+SOIL	Combination Min	-7.193	6.526	9.71	0.61	28.3	0.11
166	SUST ALLOW_ENVE	Combination Max	-4.582	9.403	10.46	0.65	66.1	0.35
166	SUST ALLOW_ENVE	Combination Min	-4.631	9.304	10.39	0.65	64.7	0.34
166	SUST ALLOW_ENVE+SC	Combination Max	-4.583	9.407	10.46	0.65	85.6	0.45
166	SUST ALLOW_ENVE+SC	Combination Min	-4.633	9.308	10.40	0.65	84.2	0.44

168	ALLOW_ENVE	Combination Max	6.95	-8.211	10.76	0.67	131.7	0.52
168	ALLOW_ENVE	Combination Min	2.118	-10.792	11.00	0.69	35.5	0.14
168	ALLOW_UPLIFT_ENVE	Combination Max	6.723	-7.896	10.37	0.65	113.3	0.45
168	ALLOW_UPLIFT_ENVE	Combination Min	1.941	-10.488	10.67	0.67	15.7	0.06
168	ALLOW_ENVE+SOIL	Combination Max	6.953	-8.215	10.76	0.67	151.5	0.60
168	ALLOW_ENVE+SOIL	Combination Min	2.12	-10.796	11.00	0.69	55.4	0.22
168	SUST ALLOW_ENVE	Combination Max	5.409	-9.313	10.77	0.67	85.1	0.45
168	SUST ALLOW_ENVE	Combination Min	5.344	-9.423	10.83	0.68	80.5	0.42
168	SUST ALLOW_ENVE+SC	Combination Max	5.411	-9.317	10.77	0.67	105.0	0.55
168	SUST ALLOW_ENVE+SC	Combination Min	5.346	-9.427	10.84	0.68	100.4	0.53
179	ALLOW_ENVE	Combination Max	6.964	-4.574	8.33	0.52	134.0	0.53
179	ALLOW_ENVE	Combination Min	2.138	-7.196	7.51	0.47	38.0	0.15
179	ALLOW_UPLIFT_ENVE	Combination Max	6.734	-4.378	8.03	0.50	109.2	0.43
179	ALLOW_UPLIFT_ENVE	Combination Min	1.953	-7.022	7.29	0.46	12.2	0.05
179	ALLOW_ENVE+SOIL	Combination Max	6.966	-4.577	8.34	0.52	153.6	0.61
179	ALLOW_ENVE+SOIL	Combination Min	2.14	-7.198	7.51	0.47	57.6	0.23
179	SUST ALLOW_ENVE	Combination Max	5.422	-5.595	7.79	0.49	89.5	0.47
179	SUST ALLOW_ENVE	Combination Min	5.355	-5.664	7.79	0.49	83.9	0.44
179	SUST ALLOW_ENVE+SC	Combination Max	5.424	-5.597	7.79	0.49	109.1	0.57
179	SUST ALLOW_ENVE+SC	Combination Min	5.358	-5.667	7.80	0.49	103.5	0.54
180	ALLOW_ENVE	Combination Max	6.98	-0.635	7.01	0.44	136.4	0.54
180	ALLOW_ENVE	Combination Min	2.163	-3.608	4.21	0.26	39.9	0.16
180	ALLOW_UPLIFT_ENVE	Combination Max	6.748	-0.543	6.77	0.42	105.0	0.42
180	ALLOW_UPLIFT_ENVE	Combination Min	1.971	-3.565	4.07	0.25	7.9	0.03
180	ALLOW_ENVE+SOIL	Combination Max	6.982	-0.636	7.01	0.44	155.8	0.62
180	ALLOW_ENVE+SOIL	Combination Min	2.166	-3.609	4.21	0.26	59.3	0.23
180	SUST ALLOW_ENVE	Combination Max	5.437	-1.882	5.75	0.36	93.7	0.49
180	SUST ALLOW_ENVE	Combination Min	5.37	-1.911	5.70	0.36	87.1	0.46
180	SUST ALLOW_ENVE+SC	Combination Max	5.439	-1.883	5.76	0.36	113.1	0.60
180	SUST ALLOW_ENVE+SC	Combination Min	5.372	-1.912	5.70	0.36	106.5	0.56
181	ALLOW_ENVE	Combination Max	6.986	4.075	8.09	0.51	138.0	0.55
181	ALLOW_ENVE	Combination Min	2.189	-0.167	2.20	0.14	38.8	0.15
181	ALLOW_UPLIFT_ENVE	Combination Max	6.76	4.044	7.88	0.49	100.0	0.40
181	ALLOW_UPLIFT_ENVE	Combination Min	1.992	-0.252	2.01	0.13	-0.3	0.00
181	ALLOW_ENVE+SOIL	Combination Max	6.989	4.076	8.09	0.51	157.3	0.62
181	ALLOW_ENVE+SOIL	Combination Min	2.192	-0.166	2.20	0.14	58.1	0.23
181	SUST ALLOW_ENVE	Combination Max	5.446	1.847	5.75	0.36	96.1	0.51
181	SUST ALLOW_ENVE	Combination Min	5.38	1.836	5.68	0.36	88.5	0.47
181	SUST ALLOW_ENVE+SC	Combination Max	5.449	1.848	5.75	0.36	115.5	0.61
181	SUST ALLOW_ENVE+SC	Combination Min	5.383	1.837	5.69	0.36	107.8	0.57
182	ALLOW_ENVE	Combination Max	6.978	8.96	11.36	0.71	137.7	0.54
182	ALLOW_ENVE	Combination Min	2.209	3.123	3.83	0.24	31.9	0.13
182	ALLOW_UPLIFT_ENVE	Combination Max	6.762	8.801	11.10	0.69	94.0	0.37
182	ALLOW_UPLIFT_ENVE	Combination Min	2.009	2.914	3.54	0.22	-6.7	0.07
182	ALLOW_ENVE+SOIL	Combination Max	6.981	8.962	11.36	0.71	157.1	0.62
182	ALLOW_ENVE+SOIL	Combination Min	2.211	3.125	3.83	0.24	51.3	0.20
182	SUST ALLOW_ENVE	Combination Max	5.446	5.613	7.82	0.49	94.8	0.50
182	SUST ALLOW_ENVE	Combination Min	5.382	5.561	7.74	0.48	86.2	0.45
182	SUST ALLOW_ENVE+SC	Combination Max	5.449	5.616	7.83	0.49	114.2	0.60
182	SUST ALLOW_ENVE+SC	Combination Min	5.385	5.564	7.74	0.48	105.6	0.56
183	ALLOW_ENVE	Combination Max	6.972	13.85	15.51	0.97	138.0	0.55
183	ALLOW_ENVE	Combination Min	2.219	6.418	6.79	0.42	22.6	0.09
183	ALLOW_UPLIFT_ENVE	Combination Max	6.762	13.565	15.16	0.95	90.5	0.36
183	ALLOW_UPLIFT_ENVE	Combination Min	2.018	6.088	6.41	0.40	-14.1	0.14
183	ALLOW_ENVE+SOIL	Combination Max	6.974	13.854	15.51	0.97	157.5	0.62
183	ALLOW_ENVE+SOIL	Combination Min	2.222	6.422	6.80	0.42	42.1	0.17
183	SUST ALLOW_ENVE	Combination Max	5.445	9.383	10.85	0.68	90.0	0.47
183	SUST ALLOW_ENVE	Combination Min	5.381	9.29	10.74	0.67	80.7	0.42
183	SUST ALLOW_ENVE+SC	Combination Max	5.447	9.387	10.85	0.68	109.5	0.58
183	SUST ALLOW_ENVE+SC	Combination Min	5.384	9.294	10.74	0.67	100.2	0.53

192	ALLOW_ENVE	Combination Max	0.452	9.037	9.05	0.57	99.0	0.39
192	ALLOW_ENVE	Combination Min	-1.845	3.176	3.67	0.23	75.3	0.30
192	ALLOW_UPLIFT_ENVE	Combination Max	0.438	8.882	8.89	0.56	57.8	0.23
192	ALLOW_UPLIFT_ENVE	Combination Min	-1.882	2.97	3.52	0.22	33.8	0.13
192	ALLOW_ENVE+SOIL	Combination Max	0.453	9.04	9.05	0.57	118.3	0.47
192	ALLOW_ENVE+SOIL	Combination Min	-1.845	3.178	3.67	0.23	94.7	0.37
192	SUST ALLOW_ENVE	Combination Max	0.414	5.611	5.63	0.35	84.5	0.44
192	SUST ALLOW_ENVE	Combination Min	0.407	5.558	5.57	0.35	79.7	0.42
192	SUST ALLOW_ENVE+SC	Combination Max	0.414	5.614	5.63	0.35	103.9	0.55
192	SUST ALLOW_ENVE+SC	Combination Min	0.407	5.561	5.58	0.35	99.1	0.52

Eisenhower Memorial Pile Capacity Check - South Tapestry

Pile Capacity	190 kips
Pile Capacity - Short-Term Loads	252.7 kips
Pile Uplift Capacity	-100 kips
Pile Lateral Capacity	15 kips

TABLE: Joint Reactions

Joint	OutputCase	CaseType	StepType	F1	F2	Fsrss	Lateral DCR	F3	Vertical DCR
Text	Text	Text	Text	Kip	Kip	Kip		Kip	
2	ALLOW_ENVE	Combination	Max	-3.561	-0.068	3.56	0.24	90.083	0.36
2	ALLOW_ENVE	Combination	Min	-6.301	-1.733	6.53	0.44	71.284	0.28
2	ALLOW_UPLIFT_ENVE	Combination	Max	-3.262	0.182	3.27	0.22	57.215	0.23
2	ALLOW_UPLIFT_ENVE	Combination	Min	-5.934	-1.7	6.17	0.41	42.789	0.17
2	ALLOW_ENVE+SOIL	Combination	Max	-3.569	-0.068	3.57	0.24	111.902	0.44
2	ALLOW_ENVE+SOIL	Combination	Min	-6.309	-1.733	6.54	0.44	93.103	0.37
2	SUST_ALLOW_ENVE	Combination	Max	-4.074	-0.739	4.14	0.28	77.559	0.41
2	SUST_ALLOW_ENVE	Combination	Min	-4.121	-0.745	4.19	0.28	74.258	0.39
2	SUST_ALLOW_ENVE+SC	Combination	Max	-4.082	-0.74	4.15	0.28	99.378	0.52
2	SUST_ALLOW_ENVE+SC	Combination	Min	-4.129	-0.745	4.20	0.28	96.077	0.51
3	ALLOW_ENVE	Combination	Max	-3.546	-2.122	4.13	0.28	93.976	0.37
3	ALLOW_ENVE	Combination	Min	-6.297	-3.53	7.22	0.48	55.91	0.22
3	ALLOW_UPLIFT_ENVE	Combination	Max	-3.252	-1.537	3.60	0.24	67.103	0.27
3	ALLOW_UPLIFT_ENVE	Combination	Min	-5.925	-3.313	6.79	0.45	33.605	0.13
3	ALLOW_ENVE+SOIL	Combination	Max	-3.554	-2.125	4.14	0.28	116.027	0.46
3	ALLOW_ENVE+SOIL	Combination	Min	-6.306	-3.533	7.23	0.48	77.961	0.31
3	SUST_ALLOW_ENVE	Combination	Max	-4.063	-2.359	4.70	0.31	65.059	0.34
3	SUST_ALLOW_ENVE	Combination	Min	-4.109	-2.38	4.75	0.32	62.791	0.33
3	SUST_ALLOW_ENVE+SC	Combination	Max	-4.071	-2.361	4.71	0.31	87.11	0.46
3	SUST_ALLOW_ENVE+SC	Combination	Min	-4.117	-2.383	4.76	0.32	84.841	0.45
9	ALLOW_ENVE	Combination	Max	-3.529	-3.608	5.05	0.34	96.882	0.38
9	ALLOW_ENVE	Combination	Min	-6.286	-5.749	8.52	0.57	40.905	0.16
9	ALLOW_UPLIFT_ENVE	Combination	Max	-3.242	-3.286	4.62	0.31	75.935	0.30
9	ALLOW_UPLIFT_ENVE	Combination	Min	-5.912	-5.309	7.95	0.53	24.663	0.10
9	ALLOW_ENVE+SOIL	Combination	Max	-3.537	-3.613	5.06	0.34	119.276	0.47
9	ALLOW_ENVE+SOIL	Combination	Min	-6.294	-5.753	8.53	0.57	63.299	0.25
9	SUST_ALLOW_ENVE	Combination	Max	-4.048	-4.005	5.69	0.38	52.702	0.28
9	SUST_ALLOW_ENVE	Combination	Min	-4.093	-4.044	5.75	0.38	51.441	0.27
9	SUST_ALLOW_ENVE+SC	Combination	Max	-4.057	-4.01	5.70	0.38	75.097	0.40
9	SUST_ALLOW_ENVE+SC	Combination	Min	-4.101	-4.048	5.76	0.38	73.835	0.39
11	ALLOW_ENVE	Combination	Max	-3.574	6.596	7.50	0.50	112.762	0.45
11	ALLOW_ENVE	Combination	Min	-6.307	2.499	6.78	0.45	44.126	0.17
11	ALLOW_UPLIFT_ENVE	Combination	Max	-3.273	5.42	6.33	0.42	64.795	0.26
11	ALLOW_UPLIFT_ENVE	Combination	Min	-5.975	2.268	6.39	0.43	1.343	0.01
11	ALLOW_ENVE+SOIL	Combination	Max	-3.582	6.601	7.51	0.50	134.606	0.53
11	ALLOW_ENVE+SOIL	Combination	Min	-6.316	2.504	6.79	0.45	65.971	0.26
11	SUST_ALLOW_ENVE	Combination	Max	-4.073	4.247	5.88	0.39	100.905	0.53
11	SUST_ALLOW_ENVE	Combination	Min	-4.12	4.2	5.88	0.39	95.063	0.50
11	SUST_ALLOW_ENVE+SC	Combination	Max	-4.081	4.251	5.89	0.39	122.749	0.65
11	SUST_ALLOW_ENVE+SC	Combination	Min	-4.128	4.205	5.89	0.39	116.907	0.62
26	ALLOW_ENVE	Combination	Max	-1.581	6.631	6.82	0.45	128.22	0.51
26	ALLOW_ENVE	Combination	Min	-3.389	2.502	4.21	0.28	23.749	0.09
26	ALLOW_UPLIFT_ENVE	Combination	Max	-1.193	5.449	5.58	0.37	87.854	0.35
26	ALLOW_UPLIFT_ENVE	Combination	Min	-3.249	2.276	3.97	0.26	8.727	0.03
26	ALLOW_ENVE+SOIL	Combination	Max	-1.586	6.636	6.82	0.45	150.128	0.59
26	ALLOW_ENVE+SOIL	Combination	Min	-3.395	2.507	4.22	0.28	45.656	0.18
26	SUST_ALLOW_ENVE	Combination	Max	-1.867	4.246	4.64	0.31	87.913	0.46
26	SUST_ALLOW_ENVE	Combination	Min	-1.887	4.196	4.60	0.31	87.139	0.46
26	SUST_ALLOW_ENVE+SC	Combination	Max	-1.873	4.251	4.65	0.31	109.82	0.58
26	SUST_ALLOW_ENVE+SC	Combination	Min	-1.893	4.201	4.61	0.31	109.046	0.57

27	ALLOW_ENVE	Combination Max	-1.576	4.401	4.67	0.31	118.281	0.47
27	ALLOW_ENVE	Combination Min	-3.377	1.148	3.57	0.24	42.569	0.17
27	ALLOW_UPLIFT_ENVE	Combination Max	-1.188	3.699	3.89	0.26	82.003	0.32
27	ALLOW_UPLIFT_ENVE	Combination Min	-3.229	1.01	3.38	0.23	24.402	0.10
27	ALLOW_ENVE+SOIL	Combination Max	-1.582	4.404	4.68	0.31	140.066	0.55
27	ALLOW_ENVE+SOIL	Combination Min	-3.383	1.151	3.57	0.24	64.355	0.25
27	SUST_ALLOW_ENVE	Combination Max	-1.866	2.576	3.18	0.21	82.666	0.44
27	SUST_ALLOW_ENVE	Combination Min	-1.886	2.544	3.17	0.21	82.589	0.43
27	SUST_ALLOW_ENVE+SC	Combination Max	-1.872	2.579	3.19	0.21	104.452	0.55
27	SUST_ALLOW_ENVE+SC	Combination Min	-1.892	2.547	3.17	0.21	104.375	0.55
28	ALLOW_ENVE	Combination Max	-1.582	2.179	2.69	0.18	106	0.42
28	ALLOW_ENVE	Combination Min	-3.391	-0.199	3.40	0.23	44.541	0.18
28	ALLOW_UPLIFT_ENVE	Combination Max	-1.192	1.952	2.29	0.15	74.554	0.30
28	ALLOW_UPLIFT_ENVE	Combination Min	-3.229	-0.25	3.24	0.22	17.907	0.07
28	ALLOW_ENVE+SOIL	Combination Max	-1.588	2.18	2.70	0.18	127.77	0.51
28	ALLOW_ENVE+SOIL	Combination Min	-3.397	-0.198	3.40	0.23	66.311	0.26
28	SUST_ALLOW_ENVE	Combination Max	-1.877	0.913	2.09	0.14	75.778	0.40
28	SUST_ALLOW_ENVE	Combination Min	-1.897	0.899	2.10	0.14	75.122	0.40
28	SUST_ALLOW_ENVE+SC	Combination Max	-1.883	0.914	2.09	0.14	97.548	0.51
28	SUST_ALLOW_ENVE+SC	Combination Min	-1.903	0.9	2.11	0.14	96.891	0.51
29	ALLOW_ENVE	Combination Max	-1.582	-0.029	1.58	0.11	99.147	0.39
29	ALLOW_ENVE	Combination Min	-3.408	-1.721	3.82	0.25	42.858	0.17
29	ALLOW_UPLIFT_ENVE	Combination Max	-1.193	0.214	1.21	0.08	73.326	0.29
29	ALLOW_UPLIFT_ENVE	Combination Min	-3.234	-1.684	3.65	0.24	10.358	0.04
29	ALLOW_ENVE+SOIL	Combination Max	-1.588	-0.029	1.59	0.11	121.021	0.48
29	ALLOW_ENVE+SOIL	Combination Min	-3.414	-1.722	3.82	0.25	64.733	0.26
29	SUST_ALLOW_ENVE	Combination Max	-1.883	-0.737	2.02	0.13	66.308	0.35
29	SUST_ALLOW_ENVE	Combination Min	-1.902	-0.739	2.04	0.14	64.822	0.34
29	SUST_ALLOW_ENVE+SC	Combination Max	-1.889	-0.737	2.03	0.14	88.182	0.46
29	SUST_ALLOW_ENVE+SC	Combination Min	-1.908	-0.74	2.05	0.14	86.697	0.46
42	ALLOW_ENVE	Combination Max	-1.573	-2.13	2.65	0.18	94.546	0.37
42	ALLOW_ENVE	Combination Min	-3.413	-3.543	4.92	0.33	38.591	0.15
42	ALLOW_UPLIFT_ENVE	Combination Max	-1.189	-1.519	1.93	0.13	74.881	0.30
42	ALLOW_UPLIFT_ENVE	Combination Min	-3.233	-3.321	4.63	0.31	2.058	0.01
42	ALLOW_ENVE+SOIL	Combination Max	-1.579	-2.132	2.65	0.18	116.654	0.46
42	ALLOW_ENVE+SOIL	Combination Min	-3.419	-3.545	4.93	0.33	60.699	0.24
42	SUST_ALLOW_ENVE	Combination Max	-1.879	-2.367	3.02	0.20	55.362	0.29
42	SUST_ALLOW_ENVE	Combination Min	-1.897	-2.386	3.05	0.20	52.965	0.28
42	SUST_ALLOW_ENVE+SC	Combination Max	-1.885	-2.369	3.03	0.20	77.469	0.41
42	SUST_ALLOW_ENVE+SC	Combination Min	-1.903	-2.389	3.05	0.20	75.072	0.40
43	ALLOW_ENVE	Combination Max	-1.571	-3.594	3.92	0.26	96.575	0.38
43	ALLOW_ENVE	Combination Min	-3.423	-5.729	6.67	0.44	32.958	0.13
43	ALLOW_UPLIFT_ENVE	Combination Max	-1.195	-3.245	3.46	0.23	82.785	0.33
43	ALLOW_UPLIFT_ENVE	Combination Min	-3.24	-5.289	6.20	0.41	-3.337	0.03
43	ALLOW_ENVE+SOIL	Combination Max	-1.577	-3.598	3.93	0.26	119.022	0.47
43	ALLOW_ENVE+SOIL	Combination Min	-3.429	-5.733	6.68	0.45	55.405	0.22
43	SUST_ALLOW_ENVE	Combination Max	-1.881	-3.99	4.41	0.29	44.224	0.23
43	SUST_ALLOW_ENVE	Combination Min	-1.899	-4.026	4.45	0.30	40.889	0.22
43	SUST_ALLOW_ENVE+SC	Combination Max	-1.887	-3.994	4.42	0.29	66.672	0.35
43	SUST_ALLOW_ENVE+SC	Combination Min	-1.905	-4.03	4.46	0.30	63.336	0.33
45	ALLOW_ENVE	Combination Max	-5.552	6.545	8.58	0.57	121.271	0.48
45	ALLOW_ENVE	Combination Min	-9.436	2.475	9.76	0.65	41.636	0.16
45	ALLOW_UPLIFT_ENVE	Combination Max	-5.135	5.381	7.44	0.50	98.36	0.39
45	ALLOW_UPLIFT_ENVE	Combination Min	-8.677	2.241	8.96	0.60	-2.255	0.02
45	ALLOW_ENVE+SOIL	Combination Max	-5.563	6.549	8.59	0.57	143.174	0.57
45	ALLOW_ENVE+SOIL	Combination Min	-9.447	2.48	9.77	0.65	63.539	0.25
45	SUST_ALLOW_ENVE	Combination Max	-6.261	4.233	7.56	0.50	113.753	0.60
45	SUST_ALLOW_ENVE	Combination Min	-6.334	4.189	7.59	0.51	102.906	0.54
45	SUST_ALLOW_ENVE+SC	Combination Max	-6.272	4.238	7.57	0.50	135.656	0.71
45	SUST_ALLOW_ENVE+SC	Combination Min	-6.344	4.193	7.60	0.51	124.81	0.66

46	ALLOW_ENVE	Combination Max	-3.567	4.358	5.63	0.38	103.785	0.41
46	ALLOW_ENVE	Combination Min	-6.282	1.145	6.39	0.43	64.757	0.26
46	ALLOW_UPLIFT_ENVE	Combination Max	-3.271	3.664	4.91	0.33	59.507	0.24
46	ALLOW_UPLIFT_ENVE	Combination Min	-5.953	1	6.04	0.40	25.239	0.10
46	ALLOW_ENVE+SOIL	Combination Max	-3.575	4.361	5.64	0.38	125.535	0.50
46	ALLOW_ENVE+SOIL	Combination Min	-6.29	1.148	6.39	0.43	86.506	0.34
46	SUST_ALLOW_ENVE	Combination Max	-4.067	2.572	4.81	0.32	97.421	0.51
46	SUST_ALLOW_ENVE	Combination Min	-4.113	2.544	4.84	0.32	92.215	0.49
46	SUST_ALLOW_ENVE+SC	Combination Max	-4.075	2.575	4.82	0.32	119.17	0.63
46	SUST_ALLOW_ENVE+SC	Combination Min	-4.121	2.547	4.84	0.32	113.965	0.60
47	ALLOW_ENVE	Combination Max	-5.553	4.329	7.04	0.47	124.462	0.49
47	ALLOW_ENVE	Combination Min	-9.432	1.13	9.50	0.63	57.678	0.23
47	ALLOW_UPLIFT_ENVE	Combination Max	-5.136	3.639	6.29	0.42	92.057	0.36
47	ALLOW_UPLIFT_ENVE	Combination Min	-8.662	0.981	8.72	0.58	16.078	0.06
47	ALLOW_ENVE+SOIL	Combination Max	-5.564	4.332	7.05	0.47	146.244	0.58
47	ALLOW_ENVE+SOIL	Combination Min	-9.443	1.133	9.51	0.63	79.46	0.31
47	SUST_ALLOW_ENVE	Combination Max	-6.266	2.574	6.77	0.45	108.33	0.57
47	SUST_ALLOW_ENVE	Combination Min	-6.339	2.547	6.83	0.46	98.244	0.52
47	SUST_ALLOW_ENVE+SC	Combination Max	-6.277	2.577	6.79	0.45	130.112	0.68
47	SUST_ALLOW_ENVE+SC	Combination Min	-6.35	2.55	6.84	0.46	120.026	0.63
49	ALLOW_ENVE	Combination Max	-5.546	2.117	5.94	0.40	123.798	0.49
49	ALLOW_ENVE	Combination Min	-9.432	-0.213	9.43	0.63	59.555	0.24
49	ALLOW_UPLIFT_ENVE	Combination Max	-5.128	1.898	5.47	0.36	84.015	0.33
49	ALLOW_UPLIFT_ENVE	Combination Min	-8.64	-0.275	8.64	0.58	22.999	0.09
49	ALLOW_ENVE+SOIL	Combination Max	-5.557	2.118	5.95	0.40	145.563	0.58
49	ALLOW_ENVE+SOIL	Combination Min	-9.443	-0.212	9.45	0.63	81.321	0.32
49	SUST_ALLOW_ENVE	Combination Max	-6.264	0.916	6.33	0.42	100.182	0.53
49	SUST_ALLOW_ENVE	Combination Min	-6.339	0.907	6.40	0.43	91.062	0.48
49	SUST_ALLOW_ENVE+SC	Combination Max	-6.275	0.918	6.34	0.42	121.948	0.64
49	SUST_ALLOW_ENVE+SC	Combination Min	-6.349	0.908	6.41	0.43	112.827	0.59
50	ALLOW_ENVE	Combination Max	-5.535	-0.087	5.54	0.37	119.031	0.47
50	ALLOW_ENVE	Combination Min	-9.438	-1.733	9.60	0.64	50.419	0.20
50	ALLOW_UPLIFT_ENVE	Combination Max	-5.119	0.164	5.12	0.34	74.632	0.30
50	ALLOW_UPLIFT_ENVE	Combination Min	-8.628	-1.705	8.79	0.59	19.681	0.08
50	ALLOW_ENVE+SOIL	Combination Max	-5.546	-0.088	5.55	0.37	140.902	0.56
50	ALLOW_ENVE+SOIL	Combination Min	-9.449	-1.734	9.61	0.64	72.29	0.29
50	SUST_ALLOW_ENVE	Combination Max	-6.258	-0.729	6.30	0.42	89.17	0.47
50	SUST_ALLOW_ENVE	Combination Min	-6.333	-0.737	6.38	0.43	81.153	0.43
50	SUST_ALLOW_ENVE+SC	Combination Max	-6.269	-0.73	6.31	0.42	111.04	0.58
50	SUST_ALLOW_ENVE+SC	Combination Min	-6.344	-0.737	6.39	0.43	103.024	0.54
64	ALLOW_ENVE	Combination Max	-5.521	-2.126	5.92	0.39	116.206	0.46
64	ALLOW_ENVE	Combination Min	-9.438	-3.535	10.08	0.67	36.175	0.14
64	ALLOW_UPLIFT_ENVE	Combination Max	-5.11	-1.569	5.35	0.36	65.387	0.26
64	ALLOW_UPLIFT_ENVE	Combination Min	-8.619	-3.326	9.24	0.62	11.546	0.05
64	ALLOW_ENVE+SOIL	Combination Max	-5.532	-2.129	5.93	0.40	138.31	0.55
64	ALLOW_ENVE+SOIL	Combination Min	-9.448	-3.537	10.09	0.67	58.278	0.23
64	SUST_ALLOW_ENVE	Combination Max	-6.249	-2.363	6.68	0.45	76.784	0.40
64	SUST_ALLOW_ENVE	Combination Min	-6.322	-2.387	6.76	0.45	69.883	0.37
64	SUST_ALLOW_ENVE+SC	Combination Max	-6.259	-2.365	6.69	0.45	98.887	0.52
64	SUST_ALLOW_ENVE+SC	Combination Min	-6.333	-2.39	6.77	0.45	91.986	0.48
65	ALLOW_ENVE	Combination Max	-5.501	-3.596	6.57	0.44	118.935	0.47
65	ALLOW_ENVE	Combination Min	-9.421	-5.729	11.03	0.74	21.89	0.09
65	ALLOW_UPLIFT_ENVE	Combination Max	-5.097	-3.296	6.07	0.40	70.637	0.28
65	ALLOW_UPLIFT_ENVE	Combination Min	-8.602	-5.291	10.10	0.67	3.311	0.01
65	ALLOW_ENVE+SOIL	Combination Max	-5.512	-3.6	6.58	0.44	141.379	0.56
65	ALLOW_ENVE+SOIL	Combination Min	-9.432	-5.733	11.04	0.74	44.334	0.18
65	SUST_ALLOW_ENVE	Combination Max	-6.231	-3.991	7.40	0.49	64.388	0.34
65	SUST_ALLOW_ENVE	Combination Min	-6.304	-4.032	7.48	0.50	58.549	0.31
65	SUST_ALLOW_ENVE+SC	Combination Max	-6.242	-3.995	7.41	0.49	86.832	0.46
65	SUST_ALLOW_ENVE+SC	Combination Min	-6.314	-4.036	7.49	0.50	80.993	0.43

141	ALLOW_ENVE	Combination Max	5.106	5.735	7.68	0.51	145.237	0.57
141	ALLOW_ENVE	Combination Min	2.424	2.427	3.43	0.23	71.838	0.28
141	ALLOW_UPLIFT_ENVE	Combination Max	4.746	4.603	6.61	0.44	91.668	0.36
141	ALLOW_UPLIFT_ENVE	Combination Min	2.111	2.247	3.08	0.21	27.379	0.11
141	ALLOW_ENVE+SOIL	Combination Max	5.115	5.74	7.69	0.51	182.147	0.72
141	ALLOW_ENVE+SOIL	Combination Min	2.432	2.432	3.44	0.23	108.748	0.43
141	SUST_ALLOW_ENVE	Combination Max	4.1	3.904	5.66	0.38	99.411	0.52
141	SUST_ALLOW_ENVE	Combination Min	4.054	3.862	5.60	0.37	93.569	0.49
141	SUST_ALLOW_ENVE+SC	Combination Max	4.109	3.909	5.67	0.38	136.322	0.72
141	SUST_ALLOW_ENVE+SC	Combination Min	4.063	3.866	5.61	0.37	130.48	0.69
142	ALLOW_ENVE	Combination Max	5.119	-0.524	5.15	0.34	85.962	0.34
142	ALLOW_ENVE	Combination Min	2.366	-1.65	2.88	0.19	67.706	0.27
142	ALLOW_UPLIFT_ENVE	Combination Max	4.735	-0.238	4.74	0.32	53.096	0.21
142	ALLOW_UPLIFT_ENVE	Combination Min	2.07	-1.607	2.62	0.17	38.197	0.15
142	ALLOW_ENVE+SOIL	Combination Max	5.128	-0.525	5.15	0.34	122.57	0.49
142	ALLOW_ENVE+SOIL	Combination Min	2.375	-1.651	2.89	0.19	104.314	0.41
142	SUST_ALLOW_ENVE	Combination Max	4.107	-0.895	4.20	0.28	80.837	0.43
142	SUST_ALLOW_ENVE	Combination Min	4.059	-0.902	4.16	0.28	77.476	0.41
142	SUST_ALLOW_ENVE+SC	Combination Max	4.116	-0.896	4.21	0.28	117.446	0.62
142	SUST_ALLOW_ENVE+SC	Combination Min	4.068	-0.904	4.17	0.28	114.084	0.60
155	ALLOW_ENVE	Combination Max	5.113	-2.011	5.49	0.37	81.035	0.32
155	ALLOW_ENVE	Combination Min	2.339	-3.412	4.14	0.28	44.355	0.18
155	ALLOW_UPLIFT_ENVE	Combination Max	4.729	-1.513	4.97	0.33	55.5	0.22
155	ALLOW_UPLIFT_ENVE	Combination Min	2.054	-3.233	3.83	0.26	21.179	0.08
155	ALLOW_ENVE+SOIL	Combination Max	5.122	-2.014	5.50	0.37	117.97	0.47
155	ALLOW_ENVE+SOIL	Combination Min	2.348	-3.415	4.14	0.28	81.29	0.32
155	SUST_ALLOW_ENVE	Combination Max	4.096	-2.453	4.77	0.32	69.22	0.36
155	SUST_ALLOW_ENVE	Combination Min	4.05	-2.477	4.75	0.32	66.881	0.35
155	SUST_ALLOW_ENVE+SC	Combination Max	4.105	-2.456	4.78	0.32	106.154	0.56
155	SUST_ALLOW_ENVE+SC	Combination Min	4.059	-2.48	4.76	0.32	103.815	0.55
156	ALLOW_ENVE	Combination Max	5.101	-3.125	5.98	0.40	75.765	0.30
156	ALLOW_ENVE	Combination Min	2.313	-5.217	5.71	0.38	20.799	0.08
156	ALLOW_UPLIFT_ENVE	Combination Max	4.719	-2.718	5.45	0.36	57.374	0.23
156	ALLOW_UPLIFT_ENVE	Combination Min	2.038	-4.885	5.29	0.35	4.95	0.02
156	ALLOW_ENVE+SOIL	Combination Max	5.11	-3.13	5.99	0.40	113.218	0.45
156	ALLOW_ENVE+SOIL	Combination Min	2.322	-5.222	5.71	0.38	58.252	0.23
156	SUST_ALLOW_ENVE	Combination Max	4.082	-4.038	5.74	0.38	57.642	0.30
156	SUST_ALLOW_ENVE	Combination Min	4.036	-4.078	5.74	0.38	56.303	0.30
156	SUST_ALLOW_ENVE+SC	Combination Max	4.091	-4.043	5.75	0.38	95.096	0.50
156	SUST_ALLOW_ENVE+SC	Combination Min	4.045	-4.083	5.75	0.38	93.757	0.49
157	ALLOW_ENVE	Combination Max	2.729	-3.115	4.14	0.28	88.425	0.35
157	ALLOW_ENVE	Combination Min	0.835	-5.198	5.26	0.35	19.72	0.08
157	ALLOW_UPLIFT_ENVE	Combination Max	2.549	-2.702	3.71	0.25	74.308	0.29
157	ALLOW_UPLIFT_ENVE	Combination Min	0.444	-4.862	4.88	0.33	-5.393	0.05
157	ALLOW_ENVE+SOIL	Combination Max	2.736	-3.12	4.15	0.28	125.966	0.50
157	ALLOW_ENVE+SOIL	Combination Min	0.841	-5.203	5.27	0.35	57.261	0.23
157	SUST_ALLOW_ENVE	Combination Max	1.97	-4.023	4.48	0.30	48.971	0.26
157	SUST_ALLOW_ENVE	Combination Min	1.95	-4.06	4.50	0.30	45.628	0.24
157	SUST_ALLOW_ENVE+SC	Combination Max	1.976	-4.028	4.49	0.30	86.512	0.46
157	SUST_ALLOW_ENVE+SC	Combination Min	1.957	-4.065	4.51	0.30	83.169	0.44
158	ALLOW_ENVE	Combination Max	2.723	-2.018	3.39	0.23	92.855	0.37
158	ALLOW_ENVE	Combination Min	0.849	-3.419	3.52	0.23	39.274	0.16
158	ALLOW_UPLIFT_ENVE	Combination Max	2.542	-1.513	2.96	0.20	72.545	0.29
158	ALLOW_UPLIFT_ENVE	Combination Min	0.445	-3.234	3.26	0.22	5.663	0.02
158	ALLOW_ENVE+SOIL	Combination Max	2.729	-2.021	3.40	0.23	129.883	0.51
158	ALLOW_ENVE+SOIL	Combination Min	0.856	-3.422	3.53	0.24	76.302	0.30
158	SUST_ALLOW_ENVE	Combination Max	1.968	-2.461	3.15	0.21	59.323	0.31
158	SUST_ALLOW_ENVE	Combination Min	1.948	-2.482	3.16	0.21	56.91	0.30
158	SUST_ALLOW_ENVE+SC	Combination Max	1.974	-2.464	3.16	0.21	96.352	0.51
158	SUST_ALLOW_ENVE+SC	Combination Min	1.954	-2.485	3.16	0.21	93.939	0.49

159	ALLOW_ENVE	Combination Max	2.72	-0.496	2.76	0.18	96.694	0.38
159	ALLOW_ENVE	Combination Min	0.872	-1.644	1.86	0.12	49.644	0.20
159	ALLOW_UPLIFT_ENVE	Combination Max	2.541	-0.215	2.55	0.17	70.179	0.28
159	ALLOW_UPLIFT_ENVE	Combination Min	0.456	-1.598	1.66	0.11	18.956	0.08
159	ALLOW_ENVE+SOIL	Combination Max	2.727	-0.497	2.77	0.18	133.396	0.53
159	ALLOW_ENVE+SOIL	Combination Min	0.878	-1.646	1.87	0.12	86.346	0.34
159	SUST_ALLOW_ENVE	Combination Max	1.971	-0.892	2.16	0.14	69.362	0.37
159	SUST_ALLOW_ENVE	Combination Min	1.951	-0.897	2.15	0.14	67.849	0.36
159	SUST_ALLOW_ENVE+SC	Combination Max	1.978	-0.893	2.17	0.14	106.064	0.56
159	SUST_ALLOW_ENVE+SC	Combination Min	1.957	-0.898	2.15	0.14	104.551	0.55
160	ALLOW_ENVE	Combination Max	2.703	1.559	3.12	0.21	102.166	0.40
160	ALLOW_ENVE	Combination Min	0.889	-0.059	0.89	0.06	50.47	0.20
160	ALLOW_UPLIFT_ENVE	Combination Max	2.531	1.39	2.89	0.19	69.608	0.28
160	ALLOW_UPLIFT_ENVE	Combination Min	0.465	-0.097	0.48	0.03	25.139	0.10
160	ALLOW_ENVE+SOIL	Combination Max	2.709	1.56	3.13	0.21	138.765	0.55
160	ALLOW_ENVE+SOIL	Combination Min	0.895	-0.058	0.90	0.06	87.07	0.34
160	SUST_ALLOW_ENVE	Combination Max	1.964	0.693	2.08	0.14	77.646	0.41
160	SUST_ALLOW_ENVE	Combination Min	1.943	0.682	2.06	0.14	76.945	0.40
160	SUST_ALLOW_ENVE+SC	Combination Max	1.97	0.694	2.09	0.14	114.245	0.60
160	SUST_ALLOW_ENVE+SC	Combination Min	1.949	0.683	2.07	0.14	113.545	0.60
165	ALLOW_ENVE	Combination Max	2.682	3.649	4.53	0.30	119.299	0.47
165	ALLOW_ENVE	Combination Min	0.901	1.3	1.58	0.11	47.038	0.19
165	ALLOW_UPLIFT_ENVE	Combination Max	2.52	3.003	3.92	0.26	79.837	0.32
165	ALLOW_UPLIFT_ENVE	Combination Min	0.473	1.187	1.28	0.09	29.912	0.12
165	ALLOW_ENVE+SOIL	Combination Max	2.688	3.651	4.53	0.30	156.011	0.62
165	ALLOW_ENVE+SOIL	Combination Min	0.907	1.303	1.59	0.11	83.751	0.33
165	SUST_ALLOW_ENVE	Combination Max	1.951	2.295	3.01	0.20	82.903	0.44
165	SUST_ALLOW_ENVE	Combination Min	1.93	2.266	2.98	0.20	82.892	0.44
165	SUST_ALLOW_ENVE+SC	Combination Max	1.957	2.298	3.02	0.20	119.616	0.63
165	SUST_ALLOW_ENVE+SC	Combination Min	1.936	2.269	2.98	0.20	119.605	0.63
167	ALLOW_ENVE	Combination Max	2.681	5.77	6.36	0.42	143.1	0.57
167	ALLOW_ENVE	Combination Min	0.917	2.417	2.59	0.17	40.703	0.16
167	ALLOW_UPLIFT_ENVE	Combination Max	2.524	4.621	5.27	0.35	97.122	0.38
167	ALLOW_UPLIFT_ENVE	Combination Min	0.487	2.24	2.29	0.15	24.786	0.10
167	ALLOW_ENVE+SOIL	Combination Max	2.687	5.775	6.37	0.42	180.111	0.71
167	ALLOW_ENVE+SOIL	Combination Min	0.924	2.422	2.59	0.17	77.714	0.31
167	SUST_ALLOW_ENVE	Combination Max	1.951	3.904	4.36	0.29	86.302	0.45
167	SUST_ALLOW_ENVE	Combination Min	1.93	3.858	4.31	0.29	85.62	0.45
167	SUST_ALLOW_ENVE+SC	Combination Max	1.957	3.909	4.37	0.29	123.312	0.65
167	SUST_ALLOW_ENVE+SC	Combination Min	1.936	3.863	4.32	0.29	122.63	0.65
168	ALLOW_ENVE	Combination Max	7.9	-3.115	8.49	0.57	109.923	0.43
168	ALLOW_ENVE	Combination Min	3.803	-5.204	6.45	0.43	18.384	0.07
168	ALLOW_UPLIFT_ENVE	Combination Max	6.933	-2.712	7.44	0.50	60.57	0.24
168	ALLOW_UPLIFT_ENVE	Combination Min	3.421	-4.878	5.96	0.40	-0.286	0.00
168	ALLOW_ENVE+SOIL	Combination Max	7.911	-3.119	8.50	0.57	147.458	0.58
168	ALLOW_ENVE+SOIL	Combination Min	3.814	-5.209	6.46	0.43	55.919	0.22
168	SUST_ALLOW_ENVE	Combination Max	6.21	-4.025	7.40	0.49	69.555	0.37
168	SUST_ALLOW_ENVE	Combination Min	6.138	-4.067	7.36	0.49	63.554	0.33
168	SUST_ALLOW_ENVE+SC	Combination Max	6.221	-4.03	7.41	0.49	107.091	0.56
168	SUST_ALLOW_ENVE+SC	Combination Min	6.149	-4.072	7.38	0.49	101.09	0.53
179	ALLOW_ENVE	Combination Max	7.917	-2.012	8.17	0.54	115.675	0.46
179	ALLOW_ENVE	Combination Min	3.83	-3.418	5.13	0.34	40.695	0.16
179	ALLOW_UPLIFT_ENVE	Combination Max	6.945	-1.522	7.11	0.47	62.885	0.25
179	ALLOW_UPLIFT_ENVE	Combination Min	3.438	-3.244	4.73	0.32	15.32	0.06
179	ALLOW_ENVE+SOIL	Combination Max	7.929	-2.015	8.18	0.55	152.698	0.60
179	ALLOW_ENVE+SOIL	Combination Min	3.842	-3.421	5.14	0.34	77.718	0.31
179	SUST_ALLOW_ENVE	Combination Max	6.227	-2.457	6.69	0.45	81.163	0.43
179	SUST_ALLOW_ENVE	Combination Min	6.154	-2.484	6.64	0.44	74.106	0.39
179	SUST_ALLOW_ENVE+SC	Combination Max	6.239	-2.46	6.71	0.45	118.186	0.62
179	SUST_ALLOW_ENVE+SC	Combination Min	6.165	-2.487	6.65	0.44	111.129	0.58

180	ALLOW_ENVE	Combination Max	7.921	-0.533	7.94	0.53	121.031	0.48
180	ALLOW_ENVE	Combination Min	3.856	-1.644	4.19	0.28	59.465	0.24
180	ALLOW_UPLIFT_ENVE	Combination Max	6.951	-0.246	6.96	0.46	71.147	0.28
180	ALLOW_UPLIFT_ENVE	Combination Min	3.453	-1.606	3.81	0.25	27.738	0.11
180	ALLOW_ENVE+SOIL	Combination Max	7.933	-0.534	7.95	0.53	157.728	0.62
180	ALLOW_ENVE+SOIL	Combination Min	3.867	-1.645	4.20	0.28	96.162	0.38
180	SUST_ALLOW_ENVE	Combination Max	6.236	-0.885	6.30	0.42	92.641	0.49
180	SUST_ALLOW_ENVE	Combination Min	6.162	-0.895	6.23	0.42	84.477	0.44
180	SUST_ALLOW_ENVE+SC	Combination Max	6.248	-0.886	6.31	0.42	129.338	0.68
180	SUST_ALLOW_ENVE+SC	Combination Min	6.174	-0.896	6.24	0.42	121.173	0.64
181	ALLOW_ENVE	Combination Max	7.915	1.519	8.06	0.54	123.925	0.49
181	ALLOW_ENVE	Combination Min	3.882	-0.06	3.88	0.26	67.486	0.27
181	ALLOW_UPLIFT_ENVE	Combination Max	6.958	1.356	7.09	0.47	78.846	0.31
181	ALLOW_UPLIFT_ENVE	Combination Min	3.471	-0.108	3.47	0.23	29.726	0.12
181	ALLOW_ENVE+SOIL	Combination Max	7.927	1.52	8.07	0.54	160.519	0.64
181	ALLOW_ENVE+SOIL	Combination Min	3.894	-0.059	3.89	0.26	104.08	0.41
181	SUST_ALLOW_ENVE	Combination Max	6.239	0.697	6.28	0.42	102.465	0.54
181	SUST_ALLOW_ENVE	Combination Min	6.166	0.69	6.20	0.41	93.207	0.49
181	SUST_ALLOW_ENVE+SC	Combination Max	6.251	0.698	6.29	0.42	139.058	0.73
181	SUST_ALLOW_ENVE+SC	Combination Min	6.177	0.691	6.22	0.41	129.801	0.68
182	ALLOW_ENVE	Combination Max	7.906	3.578	8.68	0.58	127.843	0.51
182	ALLOW_ENVE	Combination Min	3.905	1.31	4.12	0.27	63.704	0.25
182	ALLOW_UPLIFT_ENVE	Combination Max	6.969	2.964	7.57	0.50	89.747	0.36
182	ALLOW_UPLIFT_ENVE	Combination Min	3.489	1.18	3.68	0.25	20.83	0.08
182	ALLOW_ENVE+SOIL	Combination Max	7.917	3.581	8.69	0.58	164.55	0.65
182	ALLOW_ENVE+SOIL	Combination Min	3.917	1.312	4.13	0.28	100.411	0.40
182	SUST_ALLOW_ENVE	Combination Max	6.237	2.292	6.64	0.44	109.037	0.57
182	SUST_ALLOW_ENVE	Combination Min	6.165	2.269	6.57	0.44	98.833	0.52
182	SUST_ALLOW_ENVE+SC	Combination Max	6.249	2.295	6.66	0.44	145.744	0.77
182	SUST_ALLOW_ENVE+SC	Combination Min	6.177	2.272	6.58	0.44	135.539	0.71
184	ALLOW_ENVE	Combination Max	7.896	5.682	9.73	0.65	145.04	0.57
184	ALLOW_ENVE	Combination Min	3.92	2.426	4.61	0.31	56.785	0.22
184	ALLOW_UPLIFT_ENVE	Combination Max	6.973	4.574	8.34	0.56	107.328	0.42
184	ALLOW_UPLIFT_ENVE	Combination Min	3.499	2.24	4.15	0.28	9.667	0.04
184	ALLOW_ENVE+SOIL	Combination Max	7.907	5.687	9.74	0.65	182.045	0.72
184	ALLOW_ENVE+SOIL	Combination Min	3.932	2.43	4.62	0.31	93.789	0.37
184	SUST_ALLOW_ENVE	Combination Max	6.231	3.89	7.35	0.49	112.615	0.59
184	SUST_ALLOW_ENVE	Combination Min	6.159	3.85	7.26	0.48	101.674	0.54
184	SUST_ALLOW_ENVE+SC	Combination Max	6.242	3.895	7.36	0.49	149.619	0.79
184	SUST_ALLOW_ENVE+SC	Combination Min	6.171	3.854	7.28	0.49	138.678	0.73
192	ALLOW_ENVE	Combination Max	5.094	3.605	6.24	0.42	122.601	0.49
192	ALLOW_ENVE	Combination Min	2.408	1.306	2.74	0.18	80.951	0.32
192	ALLOW_UPLIFT_ENVE	Combination Max	4.737	2.98	5.60	0.37	74.699	0.30
192	ALLOW_UPLIFT_ENVE	Combination Min	2.102	1.189	2.41	0.16	40.075	0.16
192	ALLOW_ENVE+SOIL	Combination Max	5.103	3.607	6.25	0.42	159.255	0.63
192	ALLOW_ENVE+SOIL	Combination Min	2.417	1.309	2.75	0.18	117.605	0.47
192	SUST_ALLOW_ENVE	Combination Max	4.093	2.291	4.69	0.31	97.925	0.52
192	SUST_ALLOW_ENVE	Combination Min	4.047	2.266	4.64	0.31	92.693	0.49
192	SUST_ALLOW_ENVE+SC	Combination Max	4.102	2.293	4.70	0.31	134.58	0.71
192	SUST_ALLOW_ENVE+SC	Combination Min	4.056	2.269	4.65	0.31	129.347	0.68
335	ALLOW_ENVE	Combination Max	-3.579	2.139	4.17	0.28	90.9	0.36
335	ALLOW_ENVE	Combination Min	-6.309	-0.208	6.31	0.42	79.956	0.32
335	ALLOW_UPLIFT_ENVE	Combination Max	-3.275	1.92	3.80	0.25	52.046	0.21
335	ALLOW_UPLIFT_ENVE	Combination Min	-5.951	-0.265	5.96	0.40	45.191	0.18
335	ALLOW_ENVE+SOIL	Combination Max	-3.587	2.14	4.18	0.28	112.62	0.45
335	ALLOW_ENVE+SOIL	Combination Min	-6.317	-0.207	6.32	0.42	101.676	0.40
335	SUST_ALLOW_ENVE	Combination Max	-4.087	0.909	4.19	0.28	89.695	0.47
335	SUST_ALLOW_ENVE	Combination Min	-4.134	0.898	4.23	0.28	85.355	0.45
335	SUST_ALLOW_ENVE+SC	Combination Max	-4.095	0.91	4.19	0.28	111.415	0.59
335	SUST_ALLOW_ENVE+SC	Combination Min	-4.142	0.899	4.24	0.28	107.075	0.56

418	ALLOW_ENVE	Combination Max	-3.498	1.556	3.83	0.26	106.865	0.42
418	ALLOW_ENVE	Combination Min	-6.063	-2.306	6.49	0.43	64.643	0.26
418	ALLOW_UPLIFT_ENVE	Combination Max	-3.219	1.507	3.55	0.24	63.625	0.25
418	ALLOW_UPLIFT_ENVE	Combination Min	-5.741	-2.05	6.10	0.41	30.714	0.12
418	ALLOW_ENVE+SOIL	Combination Max	-3.505	1.555	3.83	0.26	123.576	0.49
418	ALLOW_ENVE+SOIL	Combination Min	-6.07	-2.307	6.49	0.43	81.354	0.32
418	SUST_ALLOW_ENVE	Combination Max	-3.977	-0.304	3.99	0.27	85.813	0.45
418	SUST_ALLOW_ENVE	Combination Min	-4.021	-0.352	4.04	0.27	79.69	0.42
418	SUST_ALLOW_ENVE+SC	Combination Max	-3.984	-0.304	4.00	0.27	102.524	0.54
418	SUST_ALLOW_ENVE+SC	Combination Min	-4.028	-0.353	4.04	0.27	96.401	0.51
419	ALLOW_ENVE	Combination Max	-3.831	1.708	4.19	0.28	123.882	0.49
419	ALLOW_ENVE	Combination Min	-6.384	-2.298	6.79	0.45	1.648	0.01
419	ALLOW_UPLIFT_ENVE	Combination Max	-3.525	1.558	3.85	0.26	85.242	0.34
419	ALLOW_UPLIFT_ENVE	Combination Min	-5.98	-2.034	6.32	0.42	-4.704	0.05
419	ALLOW_ENVE+SOIL	Combination Max	-3.837	1.708	4.20	0.28	140.622	0.56
419	ALLOW_ENVE+SOIL	Combination Min	-6.39	-2.298	6.79	0.45	18.388	0.07
419	SUST_ALLOW_ENVE	Combination Max	-4.298	-0.297	4.31	0.29	65.6	0.35
419	SUST_ALLOW_ENVE	Combination Min	-4.348	-0.333	4.36	0.29	62.63	0.33
419	SUST_ALLOW_ENVE+SC	Combination Max	-4.304	-0.298	4.31	0.29	82.34	0.43
419	SUST_ALLOW_ENVE+SC	Combination Min	-4.354	-0.333	4.37	0.29	79.369	0.42
421	ALLOW_ENVE	Combination Max	-3.162	1.406	3.46	0.23	129.822	0.51
421	ALLOW_ENVE	Combination Min	-5.799	-2.316	6.24	0.42	77.681	0.31
421	ALLOW_UPLIFT_ENVE	Combination Max	-2.912	1.45	3.25	0.22	70.645	0.28
421	ALLOW_UPLIFT_ENVE	Combination Min	-5.5	-2.067	5.88	0.39	40.609	0.16
421	ALLOW_ENVE+SOIL	Combination Max	-3.17	1.405	3.47	0.23	146.521	0.58
421	ALLOW_ENVE+SOIL	Combination Min	-5.807	-2.316	6.25	0.42	94.38	0.37
421	SUST_ALLOW_ENVE	Combination Max	-3.654	-0.309	3.67	0.24	108.594	0.57
421	SUST_ALLOW_ENVE	Combination Min	-3.691	-0.369	3.71	0.25	93.346	0.49
421	SUST_ALLOW_ENVE+SC	Combination Max	-3.662	-0.309	3.68	0.25	125.293	0.66
421	SUST_ALLOW_ENVE+SC	Combination Min	-3.7	-0.37	3.72	0.25	110.045	0.58
422	ALLOW_ENVE	Combination Max	-2.823	1.267	3.09	0.21	192.315	0.76
422	ALLOW_ENVE	Combination Min	-5.576	-2.328	6.04	0.40	59.858	0.24
422	ALLOW_UPLIFT_ENVE	Combination Max	-2.602	1.397	2.95	0.20	109.657	0.43
422	ALLOW_UPLIFT_ENVE	Combination Min	-5.256	-2.085	5.65	0.38	18.201	0.07
422	ALLOW_ENVE+SOIL	Combination Max	-2.833	1.266	3.10	0.21	209.022	0.83
422	ALLOW_ENVE+SOIL	Combination Min	-5.586	-2.328	6.05	0.40	76.565	0.30
422	SUST_ALLOW_ENVE	Combination Max	-3.328	-0.313	3.34	0.22	130.314	0.69
422	SUST_ALLOW_ENVE	Combination Min	-3.359	-0.384	3.38	0.23	106.172	0.56
422	SUST_ALLOW_ENVE+SC	Combination Max	-3.338	-0.313	3.35	0.22	147.021	0.77
422	SUST_ALLOW_ENVE+SC	Combination Min	-3.369	-0.384	3.39	0.23	122.879	0.65
424	ALLOW_ENVE	Combination Max	-3.495	1.935	3.99	0.27	122.029	0.48
424	ALLOW_ENVE	Combination Min	-6.039	-2.023	6.37	0.42	68.924	0.27
424	ALLOW_UPLIFT_ENVE	Combination Max	-3.217	1.903	3.74	0.25	78.988	0.31
424	ALLOW_UPLIFT_ENVE	Combination Min	-5.722	-1.82	6.00	0.40	24.639	0.10
424	ALLOW_ENVE+SOIL	Combination Max	-3.502	1.933	4.00	0.27	138.764	0.55
424	ALLOW_ENVE+SOIL	Combination Min	-6.046	-2.025	6.38	0.43	85.658	0.34
424	SUST_ALLOW_ENVE	Combination Max	-3.976	0.021	3.98	0.27	83.871	0.44
424	SUST_ALLOW_ENVE	Combination Min	-4.02	-0.019	4.02	0.27	77.752	0.41
424	SUST_ALLOW_ENVE+SC	Combination Max	-3.983	0.019	3.98	0.27	100.606	0.53
424	SUST_ALLOW_ENVE+SC	Combination Min	-4.027	-0.021	4.03	0.27	94.487	0.50
425	ALLOW_ENVE	Combination Max	-3.829	2.086	4.36	0.29	127.908	0.51
425	ALLOW_ENVE	Combination Min	-6.363	-2.014	6.67	0.44	6.061	0.02
425	ALLOW_UPLIFT_ENVE	Combination Max	-3.523	1.949	4.03	0.27	89.311	0.35
425	ALLOW_UPLIFT_ENVE	Combination Min	-5.96	-1.804	6.23	0.42	-7.842	0.08
425	ALLOW_ENVE+SOIL	Combination Max	-3.835	2.084	4.36	0.29	144.682	0.57
425	ALLOW_ENVE+SOIL	Combination Min	-6.369	-2.016	6.68	0.45	22.835	0.09
425	SUST_ALLOW_ENVE	Combination Max	-4.297	0.027	4.30	0.29	63.707	0.34
425	SUST_ALLOW_ENVE	Combination Min	-4.347	-0.00093	4.35	0.29	60.741	0.32
425	SUST_ALLOW_ENVE+SC	Combination Max	-4.303	0.025	4.30	0.29	80.481	0.42
425	SUST_ALLOW_ENVE+SC	Combination Min	-4.353	-0.00256	4.35	0.29	77.515	0.41

427	ALLOW_ENVE	Combination Max	-3.159	1.788	3.63	0.24	144.745	0.57
427	ALLOW_ENVE	Combination Min	-5.775	-2.031	6.12	0.41	71.489	0.28
427	ALLOW_UPLIFT_ENVE	Combination Max	-2.91	1.848	3.45	0.23	76.088	0.30
427	ALLOW_UPLIFT_ENVE	Combination Min	-5.48	-1.836	5.78	0.39	34.54	0.14
427	ALLOW_ENVE+SOIL	Combination Max	-3.168	1.787	3.64	0.24	161.469	0.64
427	ALLOW_ENVE+SOIL	Combination Min	-5.784	-2.033	6.13	0.41	88.213	0.35
427	SUST_ALLOW_ENVE	Combination Max	-3.653	0.017	3.65	0.24	106.487	0.56
427	SUST_ALLOW_ENVE	Combination Min	-3.69	-0.035	3.69	0.25	91.309	0.48
427	SUST_ALLOW_ENVE+SC	Combination Max	-3.661	0.015	3.66	0.24	123.211	0.65
427	SUST_ALLOW_ENVE+SC	Combination Min	-3.699	-0.037	3.70	0.25	108.033	0.57
428	ALLOW_ENVE	Combination Max	-2.822	1.647	3.27	0.22	196.246	0.78
428	ALLOW_ENVE	Combination Min	-5.553	-2.042	5.92	0.39	53.735	0.21
428	ALLOW_UPLIFT_ENVE	Combination Max	-2.6	1.794	3.16	0.21	103.354	0.41
428	ALLOW_UPLIFT_ENVE	Combination Min	-5.236	-1.853	5.55	0.37	12.188	0.05
428	ALLOW_ENVE+SOIL	Combination Max	-2.832	1.646	3.28	0.22	212.987	0.84
428	ALLOW_ENVE+SOIL	Combination Min	-5.563	-2.044	5.93	0.40	70.477	0.28
428	SUST_ALLOW_ENVE	Combination Max	-3.328	0.013	3.33	0.22	128.25	0.68
428	SUST_ALLOW_ENVE	Combination Min	-3.358	-0.05	3.36	0.22	104.174	0.55
428	SUST_ALLOW_ENVE+SC	Combination Max	-3.337	0.011	3.34	0.22	144.991	0.76
428	SUST_ALLOW_ENVE+SC	Combination Min	-3.368	-0.052	3.37	0.22	120.915	0.64
436	ALLOW_ENVE	Combination Max	-3.5	1.175	3.69	0.25	111.957	0.44
436	ALLOW_ENVE	Combination Min	-6.089	-2.592	6.62	0.44	50.794	0.20
436	ALLOW_UPLIFT_ENVE	Combination Max	-3.222	1.109	3.41	0.23	68.84	0.27
436	ALLOW_UPLIFT_ENVE	Combination Min	-5.762	-2.281	6.20	0.41	28.926	0.11
436	ALLOW_ENVE+SOIL	Combination Max	-3.507	1.176	3.70	0.25	128.664	0.51
436	ALLOW_ENVE+SOIL	Combination Min	-6.096	-2.591	6.62	0.44	67.501	0.27
436	SUST_ALLOW_ENVE	Combination Max	-3.979	-0.63	4.03	0.27	87.56	0.46
436	SUST_ALLOW_ENVE	Combination Min	-4.023	-0.686	4.08	0.27	81.42	0.43
436	SUST_ALLOW_ENVE+SC	Combination Max	-3.986	-0.629	4.04	0.27	104.267	0.55
436	SUST_ALLOW_ENVE+SC	Combination Min	-4.03	-0.685	4.09	0.27	98.128	0.52
437	ALLOW_ENVE	Combination Max	-3.833	1.325	4.06	0.27	129.017	0.51
437	ALLOW_ENVE	Combination Min	-6.404	-2.581	6.90	0.46	-1.323	0.01
437	ALLOW_UPLIFT_ENVE	Combination Max	-3.527	1.165	3.71	0.25	90.49	0.36
437	ALLOW_UPLIFT_ENVE	Combination Min	-5.999	-2.263	6.41	0.43	-1.509	0.02
437	ALLOW_ENVE+SOIL	Combination Max	-3.839	1.326	4.06	0.27	145.764	0.58
437	ALLOW_ENVE+SOIL	Combination Min	-6.41	-2.58	6.91	0.46	15.424	0.06
437	SUST_ALLOW_ENVE	Combination Max	-4.299	-0.622	4.34	0.29	67.329	0.35
437	SUST_ALLOW_ENVE	Combination Min	-4.349	-0.665	4.40	0.29	64.381	0.34
437	SUST_ALLOW_ENVE+SC	Combination Max	-4.304	-0.621	4.35	0.29	84.077	0.44
437	SUST_ALLOW_ENVE+SC	Combination Min	-4.355	-0.664	4.41	0.29	81.128	0.43
439	ALLOW_ENVE	Combination Max	-3.163	1.029	3.33	0.22	125.124	0.50
439	ALLOW_ENVE	Combination Min	-5.824	-2.6	6.38	0.43	64.474	0.26
439	ALLOW_UPLIFT_ENVE	Combination Max	-2.914	1.054	3.10	0.21	76.511	0.30
439	ALLOW_UPLIFT_ENVE	Combination Min	-5.52	-2.297	5.98	0.40	27.551	0.11
439	ALLOW_ENVE+SOIL	Combination Max	-3.172	1.03	3.34	0.22	141.821	0.56
439	ALLOW_ENVE+SOIL	Combination Min	-5.833	-2.599	6.39	0.43	81.171	0.32
439	SUST_ALLOW_ENVE	Combination Max	-3.655	-0.633	3.71	0.25	110.179	0.58
439	SUST_ALLOW_ENVE	Combination Min	-3.692	-0.701	3.76	0.25	94.979	0.50
439	SUST_ALLOW_ENVE+SC	Combination Max	-3.663	-0.632	3.72	0.25	126.876	0.67
439	SUST_ALLOW_ENVE+SC	Combination Min	-3.7	-0.7	3.77	0.25	111.676	0.59
440	ALLOW_ENVE	Combination Max	-2.824	0.891	2.96	0.20	187.625	0.74
440	ALLOW_ENVE	Combination Min	-5.599	-2.613	6.18	0.41	56.321	0.22
440	ALLOW_UPLIFT_ENVE	Combination Max	-2.603	1	2.79	0.19	115.472	0.46
440	ALLOW_UPLIFT_ENVE	Combination Min	-5.275	-2.317	5.76	0.38	14.675	0.06
440	ALLOW_ENVE+SOIL	Combination Max	-2.834	0.892	2.97	0.20	204.34	0.81
440	ALLOW_ENVE+SOIL	Combination Min	-5.609	-2.612	6.19	0.41	73.036	0.29
440	SUST_ALLOW_ENVE	Combination Max	-3.328	-0.639	3.39	0.23	131.885	0.69
440	SUST_ALLOW_ENVE	Combination Min	-3.358	-0.717	3.43	0.23	107.793	0.57
440	SUST_ALLOW_ENVE+SC	Combination Max	-3.338	-0.638	3.40	0.23	148.6	0.78
440	SUST_ALLOW_ENVE+SC	Combination Min	-3.368	-0.716	3.44	0.23	124.508	0.66

1474	ALLOW_ENVE	Combination Max	0.022	2.091	2.09	0.14	104.754	0.41
1474	ALLOW_ENVE	Combination Min	-0.494	-2.012	2.07	0.14	58.876	0.23
1474	ALLOW_UPLIFT_ENVE	Combination Max	0.025	1.841	1.84	0.12	63.28	0.25
1474	ALLOW_UPLIFT_ENVE	Combination Min	-0.5	-1.793	1.86	0.12	27.765	0.11
1474	ALLOW_ENVE+SOIL	Combination Max	0.022	2.091	2.09	0.14	121.427	0.48
1474	ALLOW_ENVE+SOIL	Combination Min	-0.494	-2.012	2.07	0.14	75.549	0.30
1474	SUST_ALLOW_ENVE	Combination Max	0.01	0.008474	0.01	0.00	82.514	0.43
1474	SUST_ALLOW_ENVE	Combination Min	0.01	0.002979	0.01	0.00	77.848	0.41
1474	SUST_ALLOW_ENVE+SC	Combination Max	0.009672	0.008566	0.01	0.00	99.187	0.52
1474	SUST_ALLOW_ENVE+SC	Combination Min	0.009547	0.003071	0.01	0.00	94.521	0.50
1475	ALLOW_ENVE	Combination Max	0.00688	2.255	2.26	0.15	124.195	0.49
1475	ALLOW_ENVE	Combination Min	-0.51	-2	2.06	0.14	-5.251	0.05
1475	ALLOW_UPLIFT_ENVE	Combination Max	0.011	1.898	1.90	0.13	87.025	0.34
1475	ALLOW_UPLIFT_ENVE	Combination Min	-0.505	-1.772	1.84	0.12	-7.862	0.08
1475	ALLOW_ENVE+SOIL	Combination Max	0.006688	2.255	2.26	0.15	140.903	0.56
1475	ALLOW_ENVE+SOIL	Combination Min	-0.511	-2	2.06	0.14	11.457	0.05
1475	SUST_ALLOW_ENVE	Combination Max	0.003426	0.03	0.03	0.00	63.325	0.33
1475	SUST_ALLOW_ENVE	Combination Min	0.003076	0.01	0.01	0.00	58.404	0.31
1475	SUST_ALLOW_ENVE+SC	Combination Max	0.003234	0.03	0.03	0.00	80.033	0.42
1475	SUST_ALLOW_ENVE+SC	Combination Min	0.002884	0.01	0.01	0.00	75.112	0.40
1477	ALLOW_ENVE	Combination Max	0.041	1.916	1.92	0.13	128.063	0.51
1477	ALLOW_ENVE	Combination Min	-0.488	-2.025	2.08	0.14	75.34	0.30
1477	ALLOW_UPLIFT_ENVE	Combination Max	0.043	1.773	1.77	0.12	70.812	0.28
1477	ALLOW_UPLIFT_ENVE	Combination Min	-0.513	-1.814	1.89	0.13	38.803	0.15
1477	ALLOW_ENVE+SOIL	Combination Max	0.04	1.916	1.92	0.13	144.72	0.57
1477	ALLOW_ENVE+SOIL	Combination Min	-0.489	-2.025	2.08	0.14	91.998	0.36
1477	SUST_ALLOW_ENVE	Combination Max	0.017	-0.00276	0.02	0.00	106.231	0.56
1477	SUST_ALLOW_ENVE	Combination Min	0.017	-0.01	0.02	0.00	91.929	0.48
1477	SUST_ALLOW_ENVE+SC	Combination Max	0.016	-0.00266	0.02	0.00	122.888	0.65
1477	SUST_ALLOW_ENVE+SC	Combination Min	0.016	-0.01	0.02	0.00	108.586	0.57
1478	ALLOW_ENVE	Combination Max	0.06	1.752	1.75	0.12	195.543	0.77
1478	ALLOW_ENVE	Combination Min	-0.543	-2.041	2.11	0.14	55.622	0.22
1478	ALLOW_UPLIFT_ENVE	Combination Max	0.062	1.709	1.71	0.11	112.877	0.45
1478	ALLOW_UPLIFT_ENVE	Combination Min	-0.526	-1.836	1.91	0.13	14.291	0.06
1478	ALLOW_ENVE+SOIL	Combination Max	0.059	1.752	1.75	0.12	212.206	0.84
1478	ALLOW_ENVE+SOIL	Combination Min	-0.544	-2.04	2.11	0.14	72.285	0.29
1478	SUST_ALLOW_ENVE	Combination Max	0.024	-0.00729	0.03	0.00	128.867	0.68
1478	SUST_ALLOW_ENVE	Combination Min	0.024	-0.026	0.04	0.00	105.16	0.55
1478	SUST_ALLOW_ENVE+SC	Combination Max	0.023	-0.0072	0.02	0.00	145.53	0.77
1478	SUST_ALLOW_ENVE+SC	Combination Min	0.023	-0.026	0.03	0.00	121.823	0.64
1480	ALLOW_ENVE	Combination Max	0.023	2.084	2.08	0.14	115.901	0.46
1480	ALLOW_ENVE	Combination Min	-0.478	-2.017	2.07	0.14	59.735	0.24
1480	ALLOW_UPLIFT_ENVE	Combination Max	0.026	1.861	1.86	0.12	75.028	0.30
1480	ALLOW_UPLIFT_ENVE	Combination Min	-0.485	-1.799	1.86	0.12	25.44	0.10
1480	ALLOW_ENVE+SOIL	Combination Max	0.022	2.083	2.08	0.14	132.631	0.52
1480	ALLOW_ENVE+SOIL	Combination Min	-0.479	-2.017	2.07	0.14	76.465	0.30
1480	SUST_ALLOW_ENVE	Combination Max	0.01	0.018	0.02	0.00	81.339	0.43
1480	SUST_ALLOW_ENVE	Combination Min	0.01	0.011	0.01	0.00	76.703	0.40
1480	SUST_ALLOW_ENVE+SC	Combination Max	0.009957	0.017	0.02	0.00	98.069	0.52
1480	SUST_ALLOW_ENVE+SC	Combination Min	0.009755	0.011	0.01	0.00	93.433	0.49
1481	ALLOW_ENVE	Combination Max	0.007096	2.249	2.25	0.15	124.739	0.49
1481	ALLOW_ENVE	Combination Min	-0.495	-2.004	2.06	0.14	-4.779	0.05
1481	ALLOW_UPLIFT_ENVE	Combination Max	0.011	1.916	1.92	0.13	87.748	0.35
1481	ALLOW_UPLIFT_ENVE	Combination Min	-0.494	-1.778	1.85	0.12	-9.055	0.09
1481	ALLOW_ENVE+SOIL	Combination Max	0.006903	2.248	2.25	0.15	141.514	0.56
1481	ALLOW_ENVE+SOIL	Combination Min	-0.495	-2.004	2.06	0.14	11.997	0.05
1481	SUST_ALLOW_ENVE	Combination Max	0.003536	0.038	0.04	0.00	62.213	0.33
1481	SUST_ALLOW_ENVE	Combination Min	0.003129	0.018	0.02	0.00	57.268	0.30
1481	SUST_ALLOW_ENVE+SC	Combination Max	0.003344	0.038	0.04	0.00	78.988	0.42
1481	SUST_ALLOW_ENVE+SC	Combination Min	0.002937	0.018	0.02	0.00	74.044	0.39

1483	ALLOW_ENVE	Combination Max	0.041	1.911	1.91	0.13	139.548	0.55
1483	ALLOW_ENVE	Combination Min	-0.473	-2.03	2.08	0.14	72.876	0.29
1483	ALLOW_UPLIFT_ENVE	Combination Max	0.043	1.794	1.79	0.12	80.009	0.32
1483	ALLOW_UPLIFT_ENVE	Combination Min	-0.498	-1.82	1.89	0.13	36.497	0.14
1483	ALLOW_ENVE+SOIL	Combination Max	0.04	1.911	1.91	0.13	156.263	0.62
1483	ALLOW_ENVE+SOIL	Combination Min	-0.473	-2.03	2.08	0.14	89.59	0.35
1483	SUST_ALLOW_ENVE	Combination Max	0.017	0.005878	0.02	0.00	104.882	0.55
1483	SUST_ALLOW_ENVE	Combination Min	0.017	-0.00062	0.02	0.00	90.681	0.48
1483	SUST_ALLOW_ENVE+SC	Combination Max	0.016	0.005663	0.02	0.00	121.597	0.64
1483	SUST_ALLOW_ENVE+SC	Combination Min	0.016	-0.00084	0.02	0.00	107.396	0.57
1484	ALLOW_ENVE	Combination Max	0.06	1.745	1.75	0.12	195.915	0.78
1484	ALLOW_ENVE	Combination Min	-0.525	-2.045	2.11	0.14	53.206	0.21
1484	ALLOW_UPLIFT_ENVE	Combination Max	0.063	1.728	1.73	0.12	110.27	0.44
1484	ALLOW_UPLIFT_ENVE	Combination Min	-0.511	-1.842	1.91	0.13	12.023	0.05
1484	ALLOW_ENVE+SOIL	Combination Max	0.059	1.745	1.75	0.12	212.646	0.84
1484	ALLOW_ENVE+SOIL	Combination Min	-0.526	-2.045	2.11	0.14	69.937	0.28
1484	SUST_ALLOW_ENVE	Combination Max	0.024	0.000719	0.02	0.00	127.543	0.67
1484	SUST_ALLOW_ENVE	Combination Min	0.023	-0.018	0.03	0.00	103.936	0.55
1484	SUST_ALLOW_ENVE+SC	Combination Max	0.023	0.000504	0.02	0.00	144.274	0.76
1484	SUST_ALLOW_ENVE+SC	Combination Min	0.022	-0.018	0.03	0.00	120.667	0.64
1492	ALLOW_ENVE	Combination Max	0.022	2.098	2.10	0.14	106.968	0.42
1492	ALLOW_ENVE	Combination Min	-0.509	-2.027	2.09	0.14	49.233	0.19
1492	ALLOW_UPLIFT_ENVE	Combination Max	0.025	1.821	1.82	0.12	65.431	0.26
1492	ALLOW_UPLIFT_ENVE	Combination Min	-0.515	-1.808	1.88	0.13	21.639	0.09
1492	ALLOW_ENVE+SOIL	Combination Max	0.022	2.098	2.10	0.14	123.601	0.49
1492	ALLOW_ENVE+SOIL	Combination Min	-0.51	-2.027	2.09	0.14	65.866	0.26
1492	SUST_ALLOW_ENVE	Combination Max	0.009907	5.65E-05	0.01	0.00	83.56	0.44
1492	SUST_ALLOW_ENVE	Combination Min	0.009861	-0.00501	0.01	0.00	78.835	0.41
1492	SUST_ALLOW_ENVE+SC	Combination Max	0.009408	0.000456	0.01	0.00	100.193	0.53
1492	SUST_ALLOW_ENVE+SC	Combination Min	0.009361	-0.00461	0.01	0.00	95.469	0.50
1493	ALLOW_ENVE	Combination Max	0.006675	2.261	2.26	0.15	126.408	0.50
1493	ALLOW_ENVE	Combination Min	-0.526	-2.015	2.08	0.14	-5.581	0.06
1493	ALLOW_UPLIFT_ENVE	Combination Max	0.011	1.879	1.88	0.13	89.159	0.35
1493	ALLOW_UPLIFT_ENVE	Combination Min	-0.515	-1.787	1.86	0.12	-6.571	0.07
1493	ALLOW_ENVE+SOIL	Combination Max	0.006483	2.261	2.26	0.15	143.087	0.57
1493	ALLOW_ENVE+SOIL	Combination Min	-0.526	-2.014	2.08	0.14	11.098	0.04
1493	SUST_ALLOW_ENVE	Combination Max	0.003316	0.021	0.02	0.00	64.328	0.34
1493	SUST_ALLOW_ENVE	Combination Min	0.003026	0.002085	0.00	0.00	59.471	0.31
1493	SUST_ALLOW_ENVE+SC	Combination Max	0.003124	0.021	0.02	0.00	81.007	0.43
1493	SUST_ALLOW_ENVE+SC	Combination Min	0.002833	0.002484	0.00	0.00	76.15	0.40
1495	ALLOW_ENVE	Combination Max	0.04	1.925	1.93	0.13	126.912	0.50
1495	ALLOW_ENVE	Combination Min	-0.504	-2.04	2.10	0.14	63.224	0.25
1495	ALLOW_UPLIFT_ENVE	Combination Max	0.042	1.754	1.75	0.12	72.988	0.29
1495	ALLOW_UPLIFT_ENVE	Combination Min	-0.528	-1.829	1.90	0.13	26.84	0.11
1495	ALLOW_ENVE+SOIL	Combination Max	0.039	1.926	1.93	0.13	143.53	0.57
1495	ALLOW_ENVE+SOIL	Combination Min	-0.504	-2.04	2.10	0.14	79.843	0.32
1495	SUST_ALLOW_ENVE	Combination Max	0.017	-0.01	0.02	0.00	107.108	0.56
1495	SUST_ALLOW_ENVE	Combination Min	0.017	-0.018	0.02	0.00	92.817	0.49
1495	SUST_ALLOW_ENVE+SC	Combination Max	0.016	-0.00991	0.02	0.00	123.727	0.65
1495	SUST_ALLOW_ENVE+SC	Combination Min	0.016	-0.018	0.02	0.00	109.435	0.58
1496	ALLOW_ENVE	Combination Max	0.059	1.759	1.76	0.12	194.392	0.77
1496	ALLOW_ENVE	Combination Min	-0.562	-2.056	2.13	0.14	54.799	0.22
1496	ALLOW_UPLIFT_ENVE	Combination Max	0.062	1.689	1.69	0.11	115.036	0.46
1496	ALLOW_UPLIFT_ENVE	Combination Min	-0.541	-1.851	1.93	0.13	13.433	0.05
1496	ALLOW_ENVE+SOIL	Combination Max	0.058	1.76	1.76	0.12	211.027	0.84
1496	ALLOW_ENVE+SOIL	Combination Min	-0.563	-2.055	2.13	0.14	71.433	0.28
1496	SUST_ALLOW_ENVE	Combination Max	0.024	-0.015	0.03	0.00	129.75	0.68
1496	SUST_ALLOW_ENVE	Combination Min	0.024	-0.035	0.04	0.00	106.053	0.56
1496	SUST_ALLOW_ENVE+SC	Combination Max	0.023	-0.015	0.03	0.00	146.384	0.77
1496	SUST_ALLOW_ENVE+SC	Combination Min	0.023	-0.035	0.04	0.00	122.688	0.65

1526	ALLOW_ENVE	Combination Max	0.05	1.788	1.79	0.12	101.669	0.40
1526	ALLOW_ENVE	Combination Min	-0.477	-1.694	1.76	0.12	62.721	0.25
1526	ALLOW_UPLIFT_ENVE	Combination Max	0.05	1.62	1.62	0.11	61.718	0.24
1526	ALLOW_UPLIFT_ENVE	Combination Min	-0.502	-1.569	1.65	0.11	30.285	0.12
1526	ALLOW_ENVE+SOIL	Combination Max	0.049	1.788	1.79	0.12	118.358	0.47
1526	ALLOW_ENVE+SOIL	Combination Min	-0.478	-1.694	1.76	0.12	79.409	0.31
1526	SUST_ALLOW_ENVE	Combination Max	0.016	0.017	0.02	0.00	82.387	0.43
1526	SUST_ALLOW_ENVE	Combination Min	0.016	0.008355	0.02	0.00	77.773	0.41
1526	SUST_ALLOW_ENVE+SC	Combination Max	0.015	0.017	0.02	0.00	99.075	0.52
1526	SUST_ALLOW_ENVE+SC	Combination Min	0.015	0.008179	0.02	0.00	94.461	0.50
1527	ALLOW_ENVE	Combination Max	0.024	1.934	1.93	0.13	115.097	0.46
1527	ALLOW_ENVE	Combination Min	-0.488	-1.689	1.76	0.12	0.288	0.00
1527	ALLOW_UPLIFT_ENVE	Combination Max	0.016	1.671	1.67	0.11	82.411	0.33
1527	ALLOW_UPLIFT_ENVE	Combination Min	-0.515	-1.554	1.64	0.11	-4.678	0.05
1527	ALLOW_ENVE+SOIL	Combination Max	0.024	1.934	1.93	0.13	131.817	0.52
1527	ALLOW_ENVE+SOIL	Combination Min	-0.488	-1.689	1.76	0.12	17.008	0.07
1527	SUST_ALLOW_ENVE	Combination Max	0.005271	0.039	0.04	0.00	63.094	0.33
1527	SUST_ALLOW_ENVE	Combination Min	0.004907	0.016	0.02	0.00	58.017	0.31
1527	SUST_ALLOW_ENVE+SC	Combination Max	0.005074	0.039	0.04	0.00	79.814	0.42
1527	SUST_ALLOW_ENVE+SC	Combination Min	0.00471	0.016	0.02	0.00	74.738	0.39
1529	ALLOW_ENVE	Combination Max	0.082	1.644	1.65	0.11	125.893	0.50
1529	ALLOW_ENVE	Combination Min	-0.477	-1.699	1.76	0.12	76.912	0.30
1529	ALLOW_UPLIFT_ENVE	Combination Max	0.088	1.563	1.57	0.10	69.707	0.28
1529	ALLOW_UPLIFT_ENVE	Combination Min	-0.5	-1.585	1.66	0.11	40.332	0.16
1529	ALLOW_ENVE+SOIL	Combination Max	0.081	1.644	1.65	0.11	142.567	0.56
1529	ALLOW_ENVE+SOIL	Combination Min	-0.478	-1.7	1.77	0.12	93.586	0.37
1529	SUST_ALLOW_ENVE	Combination Max	0.027	0.002454	0.03	0.00	106.367	0.56
1529	SUST_ALLOW_ENVE	Combination Min	0.026	-0.00182	0.03	0.00	92.012	0.48
1529	SUST_ALLOW_ENVE+SC	Combination Max	0.026	0.002279	0.03	0.00	123.041	0.65
1529	SUST_ALLOW_ENVE+SC	Combination Min	0.025	-0.00199	0.03	0.00	108.687	0.57
1530	ALLOW_ENVE	Combination Max	0.119	1.51	1.51	0.10	187.148	0.74
1530	ALLOW_ENVE	Combination Min	-0.526	-1.707	1.79	0.12	60.34	0.24
1530	ALLOW_UPLIFT_ENVE	Combination Max	0.128	1.509	1.51	0.10	108.189	0.43
1530	ALLOW_UPLIFT_ENVE	Combination Min	-0.507	-1.602	1.68	0.11	18.874	0.07
1530	ALLOW_ENVE+SOIL	Combination Max	0.118	1.51	1.51	0.10	203.829	0.81
1530	ALLOW_ENVE+SOIL	Combination Min	-0.528	-1.707	1.79	0.12	77.021	0.30
1530	SUST_ALLOW_ENVE	Combination Max	0.038	-0.00223	0.04	0.00	129.263	0.68
1530	SUST_ALLOW_ENVE	Combination Min	0.036	-0.018	0.04	0.00	105.4	0.55
1530	SUST_ALLOW_ENVE+SC	Combination Max	0.037	-0.00241	0.04	0.00	145.944	0.77
1530	SUST_ALLOW_ENVE+SC	Combination Min	0.035	-0.018	0.04	0.00	122.082	0.64
1532	ALLOW_ENVE	Combination Max	0.051	1.834	1.83	0.12	113.716	0.45
1532	ALLOW_ENVE	Combination Min	-0.463	-1.694	1.76	0.12	57.952	0.23
1532	ALLOW_UPLIFT_ENVE	Combination Max	0.051	1.618	1.62	0.11	73.529	0.29
1532	ALLOW_UPLIFT_ENVE	Combination Min	-0.488	-1.569	1.64	0.11	30.543	0.12
1532	ALLOW_ENVE+SOIL	Combination Max	0.05	1.833	1.83	0.12	130.462	0.52
1532	ALLOW_ENVE+SOIL	Combination Min	-0.464	-1.694	1.76	0.12	74.699	0.30
1532	SUST_ALLOW_ENVE	Combination Max	0.016	0.031	0.03	0.00	80.645	0.42
1532	SUST_ALLOW_ENVE	Combination Min	0.016	0.021	0.03	0.00	76.026	0.40
1532	SUST_ALLOW_ENVE+SC	Combination Max	0.016	0.031	0.03	0.00	97.391	0.51
1532	SUST_ALLOW_ENVE+SC	Combination Min	0.015	0.021	0.03	0.00	92.772	0.49
1533	ALLOW_ENVE	Combination Max	0.024	1.974	1.97	0.13	115.033	0.46
1533	ALLOW_ENVE	Combination Min	-0.48	-1.688	1.75	0.12	-2.327	0.02
1533	ALLOW_UPLIFT_ENVE	Combination Max	0.017	1.669	1.67	0.11	82.467	0.33
1533	ALLOW_UPLIFT_ENVE	Combination Min	-0.5	-1.554	1.63	0.11	-4.53	0.05
1533	ALLOW_ENVE+SOIL	Combination Max	0.024	1.974	1.97	0.13	131.823	0.52
1533	ALLOW_ENVE+SOIL	Combination Min	-0.48	-1.689	1.76	0.12	14.463	0.06
1533	SUST_ALLOW_ENVE	Combination Max	0.005442	0.052	0.05	0.00	61.381	0.32
1533	SUST_ALLOW_ENVE	Combination Min	0.005025	0.029	0.03	0.00	56.317	0.30
1533	SUST_ALLOW_ENVE+SC	Combination Max	0.005245	0.052	0.05	0.00	78.171	0.41
1533	SUST_ALLOW_ENVE+SC	Combination Min	0.004828	0.028	0.03	0.00	73.107	0.38

1535	ALLOW_ENVE	Combination Max	0.083	1.691	1.69	0.11	132.665	0.52
1535	ALLOW_ENVE	Combination Min	-0.463	-1.699	1.76	0.12	72.036	0.29
1535	ALLOW_UPLIFT_ENVE	Combination Max	0.089	1.562	1.56	0.10	81.894	0.32
1535	ALLOW_UPLIFT_ENVE	Combination Min	-0.486	-1.585	1.66	0.11	35.572	0.14
1535	ALLOW_ENVE+SOIL	Combination Max	0.082	1.691	1.69	0.11	149.398	0.59
1535	ALLOW_ENVE+SOIL	Combination Min	-0.464	-1.699	1.76	0.12	88.769	0.35
1535	SUST_ALLOW_ENVE	Combination Max	0.027	0.016	0.03	0.00	104.449	0.55
1535	SUST_ALLOW_ENVE	Combination Min	0.026	0.012	0.03	0.00	90.162	0.47
1535	SUST_ALLOW_ENVE+SC	Combination Max	0.026	0.015	0.03	0.00	121.183	0.64
1535	SUST_ALLOW_ENVE+SC	Combination Min	0.025	0.012	0.03	0.00	106.895	0.56
1536	ALLOW_ENVE	Combination Max	0.12	1.555	1.56	0.10	181.906	0.72
1536	ALLOW_ENVE	Combination Min	-0.509	-1.706	1.78	0.12	55.509	0.22
1536	ALLOW_UPLIFT_ENVE	Combination Max	0.129	1.507	1.51	0.10	108.171	0.43
1536	ALLOW_UPLIFT_ENVE	Combination Min	-0.493	-1.602	1.68	0.11	14.153	0.06
1536	ALLOW_ENVE+SOIL	Combination Max	0.119	1.554	1.56	0.10	198.657	0.79
1536	ALLOW_ENVE+SOIL	Combination Min	-0.51	-1.706	1.78	0.12	72.26	0.29
1536	SUST_ALLOW_ENVE	Combination Max	0.038	0.011	0.04	0.00	127.372	0.67
1536	SUST_ALLOW_ENVE	Combination Min	0.036	-0.00507	0.04	0.00	103.575	0.55
1536	SUST_ALLOW_ENVE+SC	Combination Max	0.037	0.01	0.04	0.00	144.123	0.76
1536	SUST_ALLOW_ENVE+SC	Combination Min	0.035	-0.00556	0.04	0.00	120.326	0.63
1544	ALLOW_ENVE	Combination Max	0.048	1.743	1.74	0.12	106.348	0.42
1544	ALLOW_ENVE	Combination Min	-0.492	-1.726	1.79	0.12	55.466	0.22
1544	ALLOW_UPLIFT_ENVE	Combination Max	0.049	1.621	1.62	0.11	66.331	0.26
1544	ALLOW_UPLIFT_ENVE	Combination Min	-0.516	-1.601	1.68	0.11	19.668	0.08
1544	ALLOW_ENVE+SOIL	Combination Max	0.048	1.743	1.74	0.12	122.994	0.49
1544	ALLOW_ENVE+SOIL	Combination Min	-0.493	-1.726	1.80	0.12	72.113	0.29
1544	SUST_ALLOW_ENVE	Combination Max	0.016	0.004368	0.02	0.00	84.002	0.44
1544	SUST_ALLOW_ENVE	Combination Min	0.015	-0.00439	0.02	0.00	79.364	0.42
1544	SUST_ALLOW_ENVE+SC	Combination Max	0.015	0.004507	0.02	0.00	100.649	0.53
1544	SUST_ALLOW_ENVE+SC	Combination Min	0.015	-0.00425	0.02	0.00	96.011	0.51
1545	ALLOW_ENVE	Combination Max	0.023	1.888	1.89	0.13	119.764	0.47
1545	ALLOW_ENVE	Combination Min	-0.496	-1.721	1.79	0.12	5.275	0.02
1545	ALLOW_UPLIFT_ENVE	Combination Max	0.016	1.672	1.67	0.11	87.003	0.34
1545	ALLOW_UPLIFT_ENVE	Combination Min	-0.528	-1.586	1.67	0.11	-4.739	0.05
1545	ALLOW_ENVE+SOIL	Combination Max	0.023	1.888	1.89	0.13	136.455	0.54
1545	ALLOW_ENVE+SOIL	Combination Min	-0.496	-1.72	1.79	0.12	21.965	0.09
1545	SUST_ALLOW_ENVE	Combination Max	0.0051	0.026	0.03	0.00	64.697	0.34
1545	SUST_ALLOW_ENVE	Combination Min	0.004796	0.002866	0.01	0.00	59.65	0.31
1545	SUST_ALLOW_ENVE+SC	Combination Max	0.004904	0.026	0.03	0.00	81.387	0.43
1545	SUST_ALLOW_ENVE+SC	Combination Min	0.004599	0.003005	0.01	0.00	76.341	0.40
1547	ALLOW_ENVE	Combination Max	0.081	1.601	1.60	0.11	130.418	0.52
1547	ALLOW_ENVE	Combination Min	-0.492	-1.731	1.80	0.12	64.615	0.26
1547	ALLOW_UPLIFT_ENVE	Combination Max	0.087	1.565	1.57	0.10	69.299	0.27
1547	ALLOW_UPLIFT_ENVE	Combination Min	-0.514	-1.617	1.70	0.11	28.281	0.11
1547	ALLOW_ENVE+SOIL	Combination Max	0.08	1.601	1.60	0.11	147.052	0.58
1547	ALLOW_ENVE+SOIL	Combination Min	-0.493	-1.731	1.80	0.12	81.249	0.32
1547	SUST_ALLOW_ENVE	Combination Max	0.027	-0.00983	0.03	0.00	107.812	0.57
1547	SUST_ALLOW_ENVE	Combination Min	0.026	-0.014	0.03	0.00	93.503	0.49
1547	SUST_ALLOW_ENVE+SC	Combination Max	0.026	-0.00969	0.03	0.00	124.446	0.65
1547	SUST_ALLOW_ENVE+SC	Combination Min	0.025	-0.014	0.03	0.00	110.137	0.58
1548	ALLOW_ENVE	Combination Max	0.118	1.465	1.47	0.10	191.649	0.76
1548	ALLOW_ENVE	Combination Min	-0.544	-1.738	1.82	0.12	60.085	0.24
1548	ALLOW_UPLIFT_ENVE	Combination Max	0.127	1.511	1.52	0.10	107.779	0.43
1548	ALLOW_UPLIFT_ENVE	Combination Min	-0.521	-1.634	1.72	0.11	18.659	0.07
1548	ALLOW_ENVE+SOIL	Combination Max	0.117	1.465	1.47	0.10	208.301	0.82
1548	ALLOW_ENVE+SOIL	Combination Min	-0.545	-1.738	1.82	0.12	76.736	0.30
1548	SUST_ALLOW_ENVE	Combination Max	0.039	-0.015	0.04	0.00	130.71	0.69
1548	SUST_ALLOW_ENVE	Combination Min	0.037	-0.032	0.05	0.00	106.893	0.56
1548	SUST_ALLOW_ENVE+SC	Combination Max	0.037	-0.015	0.04	0.00	147.362	0.78
1548	SUST_ALLOW_ENVE+SC	Combination Min	0.036	-0.031	0.05	0.00	123.545	0.65

1578	ALLOW_ENVE	Combination Max	4.975	1.142	5.10	0.34	105.691	0.42
1578	ALLOW_ENVE	Combination Min	2.343	-1.927	3.03	0.20	68.395	0.27
1578	ALLOW_UPLIFT_ENVE	Combination Max	4.569	1.257	4.74	0.32	63.576	0.25
1578	ALLOW_UPLIFT_ENVE	Combination Min	2.06	-1.794	2.73	0.18	34.922	0.14
1578	ALLOW_ENVE+SOIL	Combination Max	4.982	1.142	5.11	0.34	133.785	0.53
1578	ALLOW_ENVE+SOIL	Combination Min	2.351	-1.927	3.04	0.20	96.489	0.38
1578	SUST_ALLOW_ENVE	Combination Max	3.988	-0.305	4.00	0.27	88.182	0.46
1578	SUST_ALLOW_ENVE	Combination Min	3.945	-0.357	3.96	0.26	81.939	0.43
1578	SUST_ALLOW_ENVE+SC	Combination Max	3.996	-0.305	4.01	0.27	116.276	0.61
1578	SUST_ALLOW_ENVE+SC	Combination Min	3.952	-0.358	3.97	0.26	110.032	0.58
1579	ALLOW_ENVE	Combination Max	5.329	1.258	5.48	0.37	115.964	0.46
1579	ALLOW_ENVE	Combination Min	2.624	-1.926	3.25	0.22	15.429	0.06
1579	ALLOW_UPLIFT_ENVE	Combination Max	4.77	1.304	4.95	0.33	82.388	0.33
1579	ALLOW_UPLIFT_ENVE	Combination Min	2.319	-1.782	2.92	0.19	-0.431	0.00
1579	ALLOW_ENVE+SOIL	Combination Max	5.335	1.258	5.48	0.37	144.106	0.57
1579	ALLOW_ENVE+SOIL	Combination Min	2.63	-1.926	3.26	0.22	43.572	0.17
1579	SUST_ALLOW_ENVE	Combination Max	4.285	-0.299	4.30	0.29	67.988	0.36
1579	SUST_ALLOW_ENVE	Combination Min	4.235	-0.339	4.25	0.28	65.235	0.34
1579	SUST_ALLOW_ENVE+SC	Combination Max	4.292	-0.299	4.30	0.29	96.13	0.51
1579	SUST_ALLOW_ENVE+SC	Combination Min	4.242	-0.339	4.26	0.28	93.377	0.49
1581	ALLOW_ENVE	Combination Max	4.662	1.079	4.79	0.32	128.281	0.51
1581	ALLOW_ENVE	Combination Min	2.061	-1.93	2.82	0.19	81.214	0.32
1581	ALLOW_UPLIFT_ENVE	Combination Max	4.371	1.21	4.54	0.30	70.798	0.28
1581	ALLOW_UPLIFT_ENVE	Combination Min	1.788	-1.807	2.54	0.17	43.34	0.17
1581	ALLOW_ENVE+SOIL	Combination Max	4.671	1.079	4.79	0.32	156.353	0.62
1581	ALLOW_ENVE+SOIL	Combination Min	2.07	-1.93	2.83	0.19	109.286	0.43
1581	SUST_ALLOW_ENVE	Combination Max	3.688	-0.31	3.70	0.25	110.695	0.58
1581	SUST_ALLOW_ENVE	Combination Min	3.652	-0.374	3.67	0.24	95.424	0.50
1581	SUST_ALLOW_ENVE+SC	Combination Max	3.697	-0.31	3.71	0.25	138.767	0.73
1581	SUST_ALLOW_ENVE+SC	Combination Min	3.661	-0.374	3.68	0.25	123.496	0.65
1582	ALLOW_ENVE	Combination Max	4.414	1.023	4.53	0.30	183.116	0.72
1582	ALLOW_ENVE	Combination Min	1.733	-1.933	2.60	0.17	66.125	0.26
1582	ALLOW_UPLIFT_ENVE	Combination Max	4.171	1.166	4.33	0.29	105.784	0.42
1582	ALLOW_UPLIFT_ENVE	Combination Min	1.499	-1.821	2.36	0.16	23.706	0.09
1582	ALLOW_ENVE+SOIL	Combination Max	4.424	1.022	4.54	0.30	211.199	0.84
1582	ALLOW_ENVE+SOIL	Combination Min	1.743	-1.933	2.60	0.17	94.208	0.37
1582	SUST_ALLOW_ENVE	Combination Max	3.387	-0.314	3.40	0.23	132.12	0.70
1582	SUST_ALLOW_ENVE	Combination Min	3.357	-0.388	3.38	0.23	108.053	0.57
1582	SUST_ALLOW_ENVE+SC	Combination Max	3.397	-0.314	3.41	0.23	160.204	0.84
1582	SUST_ALLOW_ENVE+SC	Combination Min	3.368	-0.388	3.39	0.23	136.136	0.72
1584	ALLOW_ENVE	Combination Max	4.98	0.827	5.05	0.34	118.274	0.47
1584	ALLOW_ENVE	Combination Min	2.359	-2.18	3.21	0.21	60.627	0.24
1584	ALLOW_UPLIFT_ENVE	Combination Max	4.573	0.905	4.66	0.31	75.915	0.30
1584	ALLOW_UPLIFT_ENVE	Combination Min	2.076	-2.003	2.88	0.19	38.738	0.15
1584	ALLOW_ENVE+SOIL	Combination Max	4.988	0.828	5.06	0.34	146.476	0.58
1584	ALLOW_ENVE+SOIL	Combination Min	2.367	-2.179	3.22	0.21	88.829	0.35
1584	SUST_ALLOW_ENVE	Combination Max	3.99	-0.598	4.03	0.27	87.24	0.46
1584	SUST_ALLOW_ENVE	Combination Min	3.946	-0.656	4.00	0.27	81.034	0.43
1584	SUST_ALLOW_ENVE+SC	Combination Max	3.998	-0.596	4.04	0.27	115.442	0.61
1584	SUST_ALLOW_ENVE+SC	Combination Min	3.954	-0.655	4.01	0.27	109.236	0.57
1585	ALLOW_ENVE	Combination Max	5.332	0.935	5.41	0.36	118.663	0.47
1585	ALLOW_ENVE	Combination Min	2.639	-2.176	3.42	0.23	7.632	0.03
1585	ALLOW_UPLIFT_ENVE	Combination Max	4.772	0.954	4.87	0.32	85.408	0.34
1585	ALLOW_UPLIFT_ENVE	Combination Min	2.334	-1.989	3.07	0.20	2.994	0.01
1585	ALLOW_ENVE+SOIL	Combination Max	5.338	0.936	5.42	0.36	146.935	0.58
1585	ALLOW_ENVE+SOIL	Combination Min	2.646	-2.175	3.43	0.23	35.903	0.14
1585	SUST_ALLOW_ENVE	Combination Max	4.286	-0.59	4.33	0.29	67.106	0.35
1585	SUST_ALLOW_ENVE	Combination Min	4.235	-0.636	4.28	0.29	64.321	0.34
1585	SUST_ALLOW_ENVE+SC	Combination Max	4.292	-0.589	4.33	0.29	95.377	0.50
1585	SUST_ALLOW_ENVE+SC	Combination Min	4.242	-0.635	4.29	0.29	92.592	0.49

1587	ALLOW_ENVE	Combination Max	4.666	0.767	4.73	0.32	129.855	0.51
1587	ALLOW_ENVE	Combination Min	2.077	-2.181	3.01	0.20	74.138	0.29
1587	ALLOW_UPLIFT_ENVE	Combination Max	4.375	0.86	4.46	0.30	83.831	0.33
1587	ALLOW_UPLIFT_ENVE	Combination Min	1.803	-2.016	2.70	0.18	36.435	0.14
1587	ALLOW_ENVE+SOIL	Combination Max	4.675	0.768	4.74	0.32	158.037	0.63
1587	ALLOW_ENVE+SOIL	Combination Min	2.086	-2.18	3.02	0.20	102.321	0.40
1587	SUST_ALLOW_ENVE	Combination Max	3.689	-0.601	3.74	0.25	109.587	0.58
1587	SUST_ALLOW_ENVE	Combination Min	3.653	-0.671	3.71	0.25	94.42	0.50
1587	SUST_ALLOW_ENVE+SC	Combination Max	3.698	-0.6	3.75	0.25	137.77	0.73
1587	SUST_ALLOW_ENVE+SC	Combination Min	3.662	-0.67	3.72	0.25	122.603	0.65
1588	ALLOW_ENVE	Combination Max	4.417	0.707	4.47	0.30	174.863	0.69
1588	ALLOW_ENVE	Combination Min	1.751	-2.186	2.80	0.19	59.075	0.23
1588	ALLOW_UPLIFT_ENVE	Combination Max	4.173	0.815	4.25	0.28	109.312	0.43
1588	ALLOW_UPLIFT_ENVE	Combination Min	1.514	-2.031	2.53	0.17	16.823	0.07
1588	ALLOW_ENVE+SOIL	Combination Max	4.427	0.708	4.48	0.30	203.075	0.80
1588	ALLOW_ENVE+SOIL	Combination Min	1.761	-2.185	2.81	0.19	87.287	0.35
1588	SUST_ALLOW_ENVE	Combination Max	3.386	-0.606	3.44	0.23	131.025	0.69
1588	SUST_ALLOW_ENVE	Combination Min	3.357	-0.687	3.43	0.23	107.062	0.56
1588	SUST_ALLOW_ENVE+SC	Combination Max	3.396	-0.605	3.45	0.23	159.238	0.84
1588	SUST_ALLOW_ENVE+SC	Combination Min	3.367	-0.686	3.44	0.23	135.274	0.71
1596	ALLOW_ENVE	Combination Max	4.971	1.463	5.18	0.35	113.394	0.45
1596	ALLOW_ENVE	Combination Min	2.326	-1.677	2.87	0.19	64.671	0.26
1596	ALLOW_UPLIFT_ENVE	Combination Max	4.566	1.607	4.84	0.32	71.075	0.28
1596	ALLOW_UPLIFT_ENVE	Combination Min	2.043	-1.586	2.59	0.17	20.146	0.08
1596	ALLOW_ENVE+SOIL	Combination Max	4.979	1.461	5.19	0.35	141.412	0.56
1596	ALLOW_ENVE+SOIL	Combination Min	2.334	-1.678	2.87	0.19	92.689	0.37
1596	SUST_ALLOW_ENVE	Combination Max	3.987	-0.014	3.99	0.27	88.93	0.47
1596	SUST_ALLOW_ENVE	Combination Min	3.944	-0.06	3.94	0.26	82.637	0.43
1596	SUST_ALLOW_ENVE+SC	Combination Max	3.995	-0.015	4.00	0.27	116.948	0.62
1596	SUST_ALLOW_ENVE+SC	Combination Min	3.952	-0.061	3.95	0.26	110.655	0.58
1597	ALLOW_ENVE	Combination Max	5.324	1.58	5.55	0.37	123.655	0.49
1597	ALLOW_ENVE	Combination Min	2.607	-1.675	3.10	0.21	23.407	0.09
1597	ALLOW_UPLIFT_ENVE	Combination Max	4.766	1.651	5.04	0.34	89.857	0.36
1597	ALLOW_UPLIFT_ENVE	Combination Min	2.302	-1.574	2.79	0.19	-2.372	0.02
1597	ALLOW_ENVE+SOIL	Combination Max	5.331	1.578	5.56	0.37	151.739	0.60
1597	ALLOW_ENVE+SOIL	Combination Min	2.613	-1.676	3.10	0.21	51.491	0.20
1597	SUST_ALLOW_ENVE	Combination Max	4.284	-0.00804	4.28	0.29	68.712	0.36
1597	SUST_ALLOW_ENVE	Combination Min	4.234	-0.042	4.23	0.28	66.014	0.35
1597	SUST_ALLOW_ENVE+SC	Combination Max	4.29	-0.00926	4.29	0.29	96.796	0.51
1597	SUST_ALLOW_ENVE+SC	Combination Min	4.24	-0.043	4.24	0.28	94.099	0.50
1599	ALLOW_ENVE	Combination Max	4.658	1.396	4.86	0.32	135.866	0.54
1599	ALLOW_ENVE	Combination Min	2.043	-1.677	2.64	0.18	65.87	0.26
1599	ALLOW_UPLIFT_ENVE	Combination Max	4.368	1.562	4.64	0.31	66.785	0.26
1599	ALLOW_UPLIFT_ENVE	Combination Min	1.771	-1.598	2.39	0.16	28.256	0.11
1599	ALLOW_ENVE+SOIL	Combination Max	4.667	1.394	4.87	0.32	163.864	0.65
1599	ALLOW_ENVE+SOIL	Combination Min	2.052	-1.678	2.65	0.18	93.869	0.37
1599	SUST_ALLOW_ENVE	Combination Max	3.688	-0.017	3.69	0.25	111.285	0.59
1599	SUST_ALLOW_ENVE	Combination Min	3.651	-0.074	3.65	0.24	96.028	0.51
1599	SUST_ALLOW_ENVE+SC	Combination Max	3.697	-0.019	3.70	0.25	139.283	0.73
1599	SUST_ALLOW_ENVE+SC	Combination Min	3.66	-0.076	3.66	0.24	124.026	0.65
1600	ALLOW_ENVE	Combination Max	4.411	1.338	4.61	0.31	190.681	0.75
1600	ALLOW_ENVE	Combination Min	1.713	-1.68	2.40	0.16	62.294	0.25
1600	ALLOW_UPLIFT_ENVE	Combination Max	4.167	1.517	4.43	0.30	101.798	0.40
1600	ALLOW_UPLIFT_ENVE	Combination Min	1.483	-1.611	2.19	0.15	19.859	0.08
1600	ALLOW_ENVE+SOIL	Combination Max	4.421	1.337	4.62	0.31	218.707	0.87
1600	ALLOW_ENVE+SOIL	Combination Min	1.723	-1.681	2.41	0.16	90.32	0.36
1600	SUST_ALLOW_ENVE	Combination Max	3.386	-0.021	3.39	0.23	132.731	0.70
1600	SUST_ALLOW_ENVE	Combination Min	3.357	-0.089	3.36	0.22	108.674	0.57
1600	SUST_ALLOW_ENVE+SC	Combination Max	3.397	-0.022	3.40	0.23	160.757	0.85
1600	SUST_ALLOW_ENVE+SC	Combination Min	3.367	-0.09	3.37	0.22	136.7	0.72

2717	ALLOW_ENVE	Combination Max	5.127	1.53	5.35	0.36	96.729	0.38
2717	ALLOW_ENVE	Combination Min	2.397	-0.062	2.40	0.16	85.171	0.34
2717	ALLOW_UPLIFT_ENVE	Combination Max	4.746	1.367	4.94	0.33	56.216	0.22
2717	ALLOW_UPLIFT_ENVE	Combination Min	2.09	-0.105	2.09	0.14	49.409	0.20
2717	ALLOW_ENVE+SOIL	Combination Max	5.136	1.53	5.36	0.36	133.242	0.53
2717	ALLOW_ENVE+SOIL	Combination Min	2.406	-0.061	2.41	0.16	121.684	0.48
2717	SUST_ALLOW_ENVE	Combination Max	4.118	0.689	4.18	0.28	91.903	0.48
2717	SUST_ALLOW_ENVE	Combination Min	4.07	0.681	4.13	0.28	87.514	0.46
2717	SUST_ALLOW_ENVE+SC	Combination Max	4.127	0.69	4.18	0.28	128.417	0.68
2717	SUST_ALLOW_ENVE+SC	Combination Min	4.079	0.682	4.14	0.28	124.027	0.65

FOUNDATION ELEMENTS
-PASSIVE SOIL PRESSURE CHECK

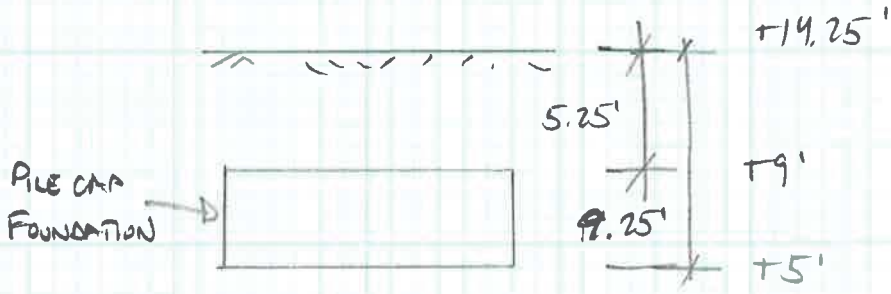
MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

PROJECT EISENHOWER | SHEET
LOCATION | CLIENT | DATE 8/29/2012 | BY GAT

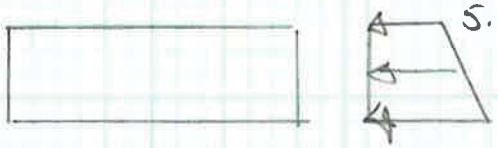
PILE CAP - PASSIVE SOIL PRESSURE CHECK

PER GEOTECHNICAL REPORT, A PASSIVE EQUIVALENT FLUID PRESSURE OF 345 D (PSF), WHERE D = DEPTH BELOW THE EXPOSED SURFACE CAN BE USED.

GOVERNING CONDITION:



RESULTING PRESSURE: 345D



EQUIVALENT RESISTANCE FOR SAP JOINT = $4'(1.811) + \frac{1}{2}(3.191 - 1.811)(4')$
= 10.0 K/FT PILECAP

* SEE ATTACHED SPREADSHEETS COMPARING SAP RESULTS TO PASSIVE RESISTANCE ABOVE.

Eisenhower Memorial Pile Cap Passive Pressure Check - South Tapestry

Allowable Passive Pressure 10 kips/ft

TABLE: Joint Reactions

Joint	OutputCase	CaseType	StepType	F1	F2	Link ID	Width	Rallowable	DCR
Text	Text	Text	Text	Kip	Kip		Ft	Kip	
287	ALLOW_ENVE	Combination	Max	-0.46	0.122	Gap Link 1-End	1.75	17.5	0.03
287	ALLOW_ENVE	Combination	Min	-2.189	0.018	Gap Link 1-End	1.75	17.5	0.13
287	ALLOW_UPLIFT_ENVE	Combination	Max	0	0.11	Gap Link 1-End	1.75	17.5	0.01
287	ALLOW_UPLIFT_ENVE	Combination	Min	-2.072	0	Gap Link 1-End	1.75	17.5	0.12
287	ALLOW_ENVE+SOIL	Combination	Max	-0.465	0.122	Gap Link 1-End	1.75	17.5	0.03
287	ALLOW_ENVE+SOIL	Combination	Min	-2.194	0.018	Gap Link 1-End	1.75	17.5	0.13
287	SUST_ALLOW_ENVE	Combination	Max	-0.706	0.03	Gap Link 1-End	1.75	17.5	0.04
287	SUST_ALLOW_ENVE	Combination	Min	-0.71	0.029	Gap Link 1-End	1.75	17.5	0.04
287	SUST_ALLOW_ENVE+S(	Combination	Max	-0.711	0.03	Gap Link 1-End	1.75	17.5	0.04
287	SUST_ALLOW_ENVE+S(	Combination	Min	-0.715	0.029	Gap Link 1-End	1.75	17.5	0.04
288	ALLOW_ENVE	Combination	Max	-4.989	0.636	Gap Link 4-End	4.75	47.5	0.11
288	ALLOW_ENVE	Combination	Min	-11.047	0.186	Gap Link 4-End	4.75	47.5	0.23
288	ALLOW_UPLIFT_ENVE	Combination	Max	-3.836	0.568	Gap Link 4-End	4.75	47.5	0.08
288	ALLOW_UPLIFT_ENVE	Combination	Min	-10.511	0.139	Gap Link 4-End	4.75	47.5	0.22
288	ALLOW_ENVE+SOIL	Combination	Max	-5.008	0.636	Gap Link 4-End	4.75	47.5	0.11
288	ALLOW_ENVE+SOIL	Combination	Min	-11.067	0.186	Gap Link 4-End	4.75	47.5	0.23
288	SUST_ALLOW_ENVE	Combination	Max	-5.988	0.252	Gap Link 4-End	4.75	47.5	0.13
288	SUST_ALLOW_ENVE	Combination	Min	-6.045	0.247	Gap Link 4-End	4.75	47.5	0.13
288	SUST_ALLOW_ENVE+S(	Combination	Max	-6.007	0.252	Gap Link 4-End	4.75	47.5	0.13
288	SUST_ALLOW_ENVE+S(	Combination	Min	-6.064	0.247	Gap Link 4-End	4.75	47.5	0.13
289	ALLOW_ENVE	Combination	Max	-14.244	1.491	Gap Link 5-End	6	60	0.24
289	ALLOW_ENVE	Combination	Min	-25.588	0.528	Gap Link 5-End	6	60	0.43
289	ALLOW_UPLIFT_ENVE	Combination	Max	-13.137	1.299	Gap Link 5-End	6	60	0.22
289	ALLOW_UPLIFT_ENVE	Combination	Min	-24.127	0.46	Gap Link 5-End	6	60	0.40
289	ALLOW_ENVE+SOIL	Combination	Max	-14.277	1.491	Gap Link 5-End	6	60	0.24
289	ALLOW_ENVE+SOIL	Combination	Min	-25.621	0.528	Gap Link 5-End	6	60	0.43
289	SUST_ALLOW_ENVE	Combination	Max	-16.36	0.686	Gap Link 5-End	6	60	0.27
289	SUST_ALLOW_ENVE	Combination	Min	-16.533	0.673	Gap Link 5-End	6	60	0.28
289	SUST_ALLOW_ENVE+S(	Combination	Max	-16.394	0.686	Gap Link 5-End	6	60	0.27
289	SUST_ALLOW_ENVE+S(	Combination	Min	-16.566	0.673	Gap Link 5-End	6	60	0.28
290	ALLOW_ENVE	Combination	Max	-17.675	1.744	Gap Link 4-End	4.75	47.5	0.37
290	ALLOW_ENVE	Combination	Min	-30.456	0.659	Gap Link 4-End	4.75	47.5	0.64
290	ALLOW_UPLIFT_ENVE	Combination	Max	-16.424	1.506	Gap Link 4-End	4.75	47.5	0.35
290	ALLOW_UPLIFT_ENVE	Combination	Min	-27.844	0.577	Gap Link 4-End	4.75	47.5	0.59
290	ALLOW_ENVE+SOIL	Combination	Max	-17.709	1.744	Gap Link 4-End	4.75	47.5	0.37
290	ALLOW_ENVE+SOIL	Combination	Min	-30.49	0.659	Gap Link 4-End	4.75	47.5	0.64
290	SUST_ALLOW_ENVE	Combination	Max	-20.039	0.845	Gap Link 4-End	4.75	47.5	0.42
290	SUST_ALLOW_ENVE	Combination	Min	-20.257	0.828	Gap Link 4-End	4.75	47.5	0.43
290	SUST_ALLOW_ENVE+S(	Combination	Max	-20.074	0.845	Gap Link 4-End	4.75	47.5	0.42
290	SUST_ALLOW_ENVE+S(	Combination	Min	-20.291	0.828	Gap Link 4-End	4.75	47.5	0.43
291	ALLOW_ENVE	Combination	Max	-7.81	0.764	Gap Link 1-End	1.75	17.5	0.45
291	ALLOW_ENVE	Combination	Min	-13.397	0.294	Gap Link 1-End	1.75	17.5	0.77
291	ALLOW_UPLIFT_ENVE	Combination	Max	-7.279	0.656	Gap Link 1-End	1.75	17.5	0.42
291	ALLOW_UPLIFT_ENVE	Combination	Min	-12.124	0.258	Gap Link 1-End	1.75	17.5	0.69
291	ALLOW_ENVE+SOIL	Combination	Max	-7.825	0.764	Gap Link 1-End	1.75	17.5	0.45
291	ALLOW_ENVE+SOIL	Combination	Min	-13.411	0.294	Gap Link 1-End	1.75	17.5	0.77
291	SUST_ALLOW_ENVE	Combination	Max	-8.895	0.375	Gap Link 1-End	1.75	17.5	0.51
291	SUST_ALLOW_ENVE	Combination	Min	-8.992	0.368	Gap Link 1-End	1.75	17.5	0.51
291	SUST_ALLOW_ENVE+S(	Combination	Max	-8.909	0.375	Gap Link 1-End	1.75	17.5	0.51
291	SUST_ALLOW_ENVE+S(	Combination	Min	-9.006	0.368	Gap Link 1-End	1.75	17.5	0.51
292	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
292	ALLOW_ENVE	Combination	Min	-0.089	-0.00231	Gap Link 1-End	1.75	17.5	0.01
292	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
292	ALLOW_UPLIFT_ENVE	Combination	Min	-0.6	-0.02	Gap Link 1-End	1.75	17.5	0.03
292	ALLOW_ENVE+SOIL	Combination	Max	0.005773	1.64E-16	Gap Link 1-End	1.75	17.5	0.00
292	ALLOW_ENVE+SOIL	Combination	Min	-0.083	-0.00231	Gap Link 1-End	1.75	17.5	0.00

292	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
292	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
292	SUST_ALLOW_ENVE+S(	Combination	Max	0.005773	1.64E-16	Gap Link 1-End	1.75	17.5	0.00
292	SUST_ALLOW_ENVE+S(	Combination	Min	0.005773	1.64E-16	Gap Link 1-End	1.75	17.5	0.00
293	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
293	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
293	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
293	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
293	ALLOW_ENVE+SOIL	Combination	Max	0.021	6.8E-16	Gap Link 4-End	4.75	47.5	0.00
293	ALLOW_ENVE+SOIL	Combination	Min	0.021	6.8E-16	Gap Link 4-End	4.75	47.5	0.00
293	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
293	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
293	SUST_ALLOW_ENVE+S(	Combination	Max	0.021	6.8E-16	Gap Link 4-End	4.75	47.5	0.00
293	SUST_ALLOW_ENVE+S(	Combination	Min	0.021	6.8E-16	Gap Link 4-End	4.75	47.5	0.00
294	ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-End	6	60	0.00
294	ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-End	6	60	0.00
294	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 5-End	6	60	0.00
294	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 5-End	6	60	0.00
294	ALLOW_ENVE+SOIL	Combination	Max	0.036	1.21E-15	Gap Link 5-End	6	60	0.00
294	ALLOW_ENVE+SOIL	Combination	Min	0.036	1.21E-15	Gap Link 5-End	6	60	0.00
294	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-End	6	60	0.00
294	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-End	6	60	0.00
294	SUST_ALLOW_ENVE+S(	Combination	Max	0.036	1.21E-15	Gap Link 5-End	6	60	0.00
294	SUST_ALLOW_ENVE+S(	Combination	Min	0.036	1.21E-15	Gap Link 5-End	6	60	0.00
295	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
295	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
295	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
295	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
295	ALLOW_ENVE+SOIL	Combination	Max	0.037	1.32E-15	Gap Link 4-End	4.75	47.5	0.00
295	ALLOW_ENVE+SOIL	Combination	Min	0.037	1.32E-15	Gap Link 4-End	4.75	47.5	0.00
295	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
295	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
295	SUST_ALLOW_ENVE+S(	Combination	Max	0.037	1.32E-15	Gap Link 4-End	4.75	47.5	0.00
295	SUST_ALLOW_ENVE+S(	Combination	Min	0.037	1.32E-15	Gap Link 4-End	4.75	47.5	0.00
296	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
296	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
296	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
296	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
296	ALLOW_ENVE+SOIL	Combination	Max	0.015	5.29E-16	Gap Link 1-End	1.75	17.5	0.00
296	ALLOW_ENVE+SOIL	Combination	Min	0.015	5.29E-16	Gap Link 1-End	1.75	17.5	0.00
296	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
296	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
296	SUST_ALLOW_ENVE+S(	Combination	Max	0.015	5.29E-16	Gap Link 1-End	1.75	17.5	0.00
296	SUST_ALLOW_ENVE+S(	Combination	Min	0.015	5.29E-16	Gap Link 1-End	1.75	17.5	0.00
297	ALLOW_ENVE	Combination	Max	1.641	0.083	Gap Link 1-End	1.75	17.5	0.09
297	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
297	ALLOW_UPLIFT_ENVE	Combination	Max	1.524	0.074	Gap Link 1-End	1.75	17.5	0.09
297	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
297	ALLOW_ENVE+SOIL	Combination	Max	1.647	0.083	Gap Link 1-End	1.75	17.5	0.09
297	ALLOW_ENVE+SOIL	Combination	Min	0.005822	-1.1E-16	Gap Link 1-End	1.75	17.5	0.00
297	SUST_ALLOW_ENVE	Combination	Max	0.85	0.035	Gap Link 1-End	1.75	17.5	0.05
297	SUST_ALLOW_ENVE	Combination	Min	0.844	0.035	Gap Link 1-End	1.75	17.5	0.05
297	SUST_ALLOW_ENVE+S(	Combination	Max	0.856	0.035	Gap Link 1-End	1.75	17.5	0.05
297	SUST_ALLOW_ENVE+S(	Combination	Min	0.85	0.035	Gap Link 1-End	1.75	17.5	0.05
298	ALLOW_ENVE	Combination	Max	8.737	0.453	Gap Link 4-End	4.75	47.5	0.18
298	ALLOW_ENVE	Combination	Min	2.612	0.083	Gap Link 4-End	4.75	47.5	0.05
298	ALLOW_UPLIFT_ENVE	Combination	Max	8.218	0.399	Gap Link 4-End	4.75	47.5	0.17
298	ALLOW_UPLIFT_ENVE	Combination	Min	1.427	0.041	Gap Link 4-End	4.75	47.5	0.03
298	ALLOW_ENVE+SOIL	Combination	Max	8.758	0.453	Gap Link 4-End	4.75	47.5	0.18
298	ALLOW_ENVE+SOIL	Combination	Min	2.633	0.083	Gap Link 4-End	4.75	47.5	0.06
298	SUST_ALLOW_ENVE	Combination	Max	6.271	0.26	Gap Link 4-End	4.75	47.5	0.13
298	SUST_ALLOW_ENVE	Combination	Min	6.21	0.256	Gap Link 4-End	4.75	47.5	0.13
298	SUST_ALLOW_ENVE+S(	Combination	Max	6.292	0.26	Gap Link 4-End	4.75	47.5	0.13

298	SUST_ALLOW_ENVE+S(	Combination	Min	6.231	0.256	Gap Link 4-End	4.75	47.5	0.13
299	ALLOW_ENVE	Combination	Max	20.668	1.069	Gap Link 5-End	6	60	0.34
299	ALLOW_ENVE	Combination	Min	9.316	0.296	Gap Link 5-End	6	60	0.16
299	ALLOW_UPLIFT_ENVE	Combination	Max	19.193	0.929	Gap Link 5-End	6	60	0.32
299	ALLOW_UPLIFT_ENVE	Combination	Min	8.26	0.236	Gap Link 5-End	6	60	0.14
299	ALLOW_ENVE+SOIL	Combination	Max	20.704	1.069	Gap Link 5-End	6	60	0.35
299	ALLOW_ENVE+SOIL	Combination	Min	9.352	0.296	Gap Link 5-End	6	60	0.16
299	SUST_ALLOW_ENVE	Combination	Max	16.485	0.682	Gap Link 5-End	6	60	0.27
299	SUST_ALLOW_ENVE	Combination	Min	16.31	0.669	Gap Link 5-End	6	60	0.27
299	SUST_ALLOW_ENVE+S(	Combination	Max	16.521	0.682	Gap Link 5-End	6	60	0.28
299	SUST_ALLOW_ENVE+S(	Combination	Min	16.346	0.669	Gap Link 5-End	6	60	0.27
300	ALLOW_ENVE	Combination	Max	25.434	1.264	Gap Link 4-End	4.75	47.5	0.54
300	ALLOW_ENVE	Combination	Min	12.23	0.386	Gap Link 4-End	4.75	47.5	0.26
300	ALLOW_UPLIFT_ENVE	Combination	Max	22.39	1.084	Gap Link 4-End	4.75	47.5	0.47
300	ALLOW_UPLIFT_ENVE	Combination	Min	11.045	0.33	Gap Link 4-End	4.75	47.5	0.23
300	ALLOW_ENVE+SOIL	Combination	Max	25.471	1.264	Gap Link 4-End	4.75	47.5	0.54
300	ALLOW_ENVE+SOIL	Combination	Min	12.267	0.386	Gap Link 4-End	4.75	47.5	0.26
300	SUST_ALLOW_ENVE	Combination	Max	19.953	0.83	Gap Link 4-End	4.75	47.5	0.42
300	SUST_ALLOW_ENVE	Combination	Min	19.736	0.813	Gap Link 4-End	4.75	47.5	0.42
300	SUST_ALLOW_ENVE+S(	Combination	Max	19.989	0.83	Gap Link 4-End	4.75	47.5	0.42
300	SUST_ALLOW_ENVE+S(	Combination	Min	19.773	0.813	Gap Link 4-End	4.75	47.5	0.42
301	ALLOW_ENVE	Combination	Max	11.306	0.562	Gap Link 1-End	1.75	17.5	0.65
301	ALLOW_ENVE	Combination	Min	5.54	0.174	Gap Link 1-End	1.75	17.5	0.32
301	ALLOW_UPLIFT_ENVE	Combination	Max	9.789	0.473	Gap Link 1-End	1.75	17.5	0.56
301	ALLOW_UPLIFT_ENVE	Combination	Min	5.03	0.15	Gap Link 1-End	1.75	17.5	0.29
301	ALLOW_ENVE+SOIL	Combination	Max	11.321	0.562	Gap Link 1-End	1.75	17.5	0.65
301	ALLOW_ENVE+SOIL	Combination	Min	5.556	0.174	Gap Link 1-End	1.75	17.5	0.32
301	SUST_ALLOW_ENVE	Combination	Max	8.823	0.367	Gap Link 1-End	1.75	17.5	0.50
301	SUST_ALLOW_ENVE	Combination	Min	8.726	0.36	Gap Link 1-End	1.75	17.5	0.50
301	SUST_ALLOW_ENVE+S(	Combination	Max	8.838	0.367	Gap Link 1-End	1.75	17.5	0.51
301	SUST_ALLOW_ENVE+S(	Combination	Min	8.742	0.36	Gap Link 1-End	1.75	17.5	0.50
302	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
302	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
302	ALLOW_UPLIFT_ENVE	Combination	Max	0.215	0	Gap Link 1-End	1.75	17.5	0.01
302	ALLOW_UPLIFT_ENVE	Combination	Min	0	-0.012	Gap Link 1-End	1.75	17.5	0.00
302	ALLOW_ENVE+SOIL	Combination	Max	-0.00537	0	Gap Link 1-End	1.75	17.5	0.00
302	ALLOW_ENVE+SOIL	Combination	Min	-0.00537	0	Gap Link 1-End	1.75	17.5	0.00
302	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
302	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
302	SUST_ALLOW_ENVE+S(	Combination	Max	-0.00537	0	Gap Link 1-End	1.75	17.5	0.00
302	SUST_ALLOW_ENVE+S(	Combination	Min	-0.00537	0	Gap Link 1-End	1.75	17.5	0.00
303	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
303	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
303	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
303	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
303	ALLOW_ENVE+SOIL	Combination	Max	-0.019	-9E-17	Gap Link 4-End	4.75	47.5	0.00
303	ALLOW_ENVE+SOIL	Combination	Min	-0.019	-9E-17	Gap Link 4-End	4.75	47.5	0.00
303	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
303	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00
303	SUST_ALLOW_ENVE+S(	Combination	Max	-0.019	-9E-17	Gap Link 4-End	4.75	47.5	0.00
303	SUST_ALLOW_ENVE+S(	Combination	Min	-0.019	-9E-17	Gap Link 4-End	4.75	47.5	0.00
304	ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-End	6	60	0.00
304	ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-End	6	60	0.00
304	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 5-End	6	60	0.00
304	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 5-End	6	60	0.00
304	ALLOW_ENVE+SOIL	Combination	Max	-0.034	-1.6E-16	Gap Link 5-End	6	60	0.00
304	ALLOW_ENVE+SOIL	Combination	Min	-0.034	-1.6E-16	Gap Link 5-End	6	60	0.00
304	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-End	6	60	0.00
304	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-End	6	60	0.00
304	SUST_ALLOW_ENVE+S(	Combination	Max	-0.034	-1.6E-16	Gap Link 5-End	6	60	0.00
304	SUST_ALLOW_ENVE+S(	Combination	Min	-0.034	-1.6E-16	Gap Link 5-End	6	60	0.00
305	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-End	4.75	47.5	0.00
305	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-End	4.75	47.5	0.00

305	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 4-End	4.75	47.5	0.00
305	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 4-End	4.75	47.5	0.00
305	ALLOW_ENVE+SOIL	Combination Max	-0.034	-2.4E-16	Gap Link 4-End	4.75	47.5	0.00
305	ALLOW_ENVE+SOIL	Combination Min	-0.034	-2.4E-16	Gap Link 4-End	4.75	47.5	0.00
305	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 4-End	4.75	47.5	0.00
305	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 4-End	4.75	47.5	0.00
305	SUST_ALLOW_ENVE+S(	Combination Max	-0.034	-2.4E-16	Gap Link 4-End	4.75	47.5	0.00
305	SUST_ALLOW_ENVE+S(	Combination Min	-0.034	-2.4E-16	Gap Link 4-End	4.75	47.5	0.00
306	ALLOW_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
306	ALLOW_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
306	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
306	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
306	ALLOW_ENVE+SOIL	Combination Max	-0.014	-1E-16	Gap Link 1-End	1.75	17.5	0.00
306	ALLOW_ENVE+SOIL	Combination Min	-0.014	-1E-16	Gap Link 1-End	1.75	17.5	0.00
306	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
306	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
306	SUST_ALLOW_ENVE+S(	Combination Max	-0.014	-1E-16	Gap Link 1-End	1.75	17.5	0.00
306	SUST_ALLOW_ENVE+S(	Combination Min	-0.014	-1E-16	Gap Link 1-End	1.75	17.5	0.00
307	ALLOW_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
307	ALLOW_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
307	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
307	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
307	ALLOW_ENVE+SOIL	Combination Max	-6.7E-17	0.007053	Gap Link 1-End	1.75	17.5	0.00
307	ALLOW_ENVE+SOIL	Combination Min	-6.7E-17	0.007053	Gap Link 1-End	1.75	17.5	0.00
307	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
307	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
307	SUST_ALLOW_ENVE+S(	Combination Max	-6.7E-17	0.007053	Gap Link 1-End	1.75	17.5	0.00
307	SUST_ALLOW_ENVE+S(	Combination Min	-6.7E-17	0.007053	Gap Link 1-End	1.75	17.5	0.00
308	ALLOW_ENVE	Combination Max	0	0	Gap Link 2-End	4	40	0.00
308	ALLOW_ENVE	Combination Min	0	0	Gap Link 2-End	4	40	0.00
308	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 2-End	4	40	0.00
308	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 2-End	4	40	0.00
308	ALLOW_ENVE+SOIL	Combination Max	-1.5E-16	0.012	Gap Link 2-End	4	40	0.00
308	ALLOW_ENVE+SOIL	Combination Min	-1.5E-16	0.012	Gap Link 2-End	4	40	0.00
308	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 2-End	4	40	0.00
308	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 2-End	4	40	0.00
308	SUST_ALLOW_ENVE+S(	Combination Max	-1.5E-16	0.012	Gap Link 2-End	4	40	0.00
308	SUST_ALLOW_ENVE+S(	Combination Min	-1.5E-16	0.012	Gap Link 2-End	4	40	0.00
313	ALLOW_ENVE	Combination Max	0.153	-6.474	Gap Link 3-End	4.5	45	0.14
313	ALLOW_ENVE	Combination Min	0.02	-10.813	Gap Link 3-End	4.5	45	0.24
313	ALLOW_UPLIFT_ENVE	Combination Max	0.14	-4.633	Gap Link 3-End	4.5	45	0.10
313	ALLOW_UPLIFT_ENVE	Combination Min	-0.00579	-10.235	Gap Link 3-End	4.5	45	0.23
313	ALLOW_ENVE+SOIL	Combination Max	0.153	-6.482	Gap Link 3-End	4.5	45	0.14
313	ALLOW_ENVE+SOIL	Combination Min	0.02	-10.821	Gap Link 3-End	4.5	45	0.24
313	SUST_ALLOW_ENVE	Combination Max	0.034	-7.194	Gap Link 3-End	4.5	45	0.16
313	SUST_ALLOW_ENVE	Combination Min	0.033	-7.234	Gap Link 3-End	4.5	45	0.16
313	SUST_ALLOW_ENVE+S(	Combination Max	0.034	-7.202	Gap Link 3-End	4.5	45	0.16
313	SUST_ALLOW_ENVE+S(	Combination Min	0.033	-7.242	Gap Link 3-End	4.5	45	0.16
314	ALLOW_ENVE	Combination Max	0.215	-9.744	Gap Link 2-End	4	40	0.24
314	ALLOW_ENVE	Combination Min	0.031	-15.556	Gap Link 2-End	4	40	0.39
314	ALLOW_UPLIFT_ENVE	Combination Max	0.196	-8.825	Gap Link 2-End	4	40	0.22
314	ALLOW_UPLIFT_ENVE	Combination Min	-0.011	-14.405	Gap Link 2-End	4	40	0.36
314	ALLOW_ENVE+SOIL	Combination Max	0.215	-9.756	Gap Link 2-End	4	40	0.24
314	ALLOW_ENVE+SOIL	Combination Min	0.031	-15.568	Gap Link 2-End	4	40	0.39
314	SUST_ALLOW_ENVE	Combination Max	0.051	-10.814	Gap Link 2-End	4	40	0.27
314	SUST_ALLOW_ENVE	Combination Min	0.05	-10.899	Gap Link 2-End	4	40	0.27
314	SUST_ALLOW_ENVE+S(	Combination Max	0.051	-10.825	Gap Link 2-End	4	40	0.27
314	SUST_ALLOW_ENVE+S(	Combination Min	0.05	-10.911	Gap Link 2-End	4	40	0.27
317	ALLOW_ENVE	Combination Max	0.122	-5.624	Gap Link 1-End	1.75	17.5	0.32
317	ALLOW_ENVE	Combination Min	0.018	-8.833	Gap Link 1-End	1.75	17.5	0.50
317	ALLOW_UPLIFT_ENVE	Combination Max	0.11	-5.303	Gap Link 1-End	1.75	17.5	0.30
317	ALLOW_UPLIFT_ENVE	Combination Min	-0.0067	-8.161	Gap Link 1-End	1.75	17.5	0.47
317	ALLOW_ENVE+SOIL	Combination Max	0.122	-5.631	Gap Link 1-End	1.75	17.5	0.32

317	ALLOW_ENVE+SOIL	Combination Min	0.018	-8.84	Gap Link 1-End	1.75	17.5	0.51
317	SUST_ALLOW_ENVE	Combination Max	0.03	-6.238	Gap Link 1-End	1.75	17.5	0.36
317	SUST_ALLOW_ENVE	Combination Min	0.029	-6.293	Gap Link 1-End	1.75	17.5	0.36
317	SUST_ALLOW_ENVE+S(	Combination Max	0.03	-6.245	Gap Link 1-End	1.75	17.5	0.36
317	SUST_ALLOW_ENVE+S(	Combination Min	0.029	-6.3	Gap Link 1-End	1.75	17.5	0.36
318	ALLOW_ENVE	Combination Max	0.002048	-4.72	Gap Link 1-End	1.75	17.5	0.27
318	ALLOW_ENVE	Combination Min	-0.083	-7.857	Gap Link 1-End	1.75	17.5	0.45
318	ALLOW_UPLIFT_ENVE	Combination Max	0.016	-4.322	Gap Link 1-End	1.75	17.5	0.25
318	ALLOW_UPLIFT_ENVE	Combination Min	-0.074	-7.331	Gap Link 1-End	1.75	17.5	0.42
318	ALLOW_ENVE+SOIL	Combination Max	0.002048	-4.728	Gap Link 1-End	1.75	17.5	0.27
318	ALLOW_ENVE+SOIL	Combination Min	-0.083	-7.865	Gap Link 1-End	1.75	17.5	0.45
318	SUST_ALLOW_ENVE	Combination Max	-0.035	-6.22	Gap Link 1-End	1.75	17.5	0.36
318	SUST_ALLOW_ENVE	Combination Min	-0.035	-6.275	Gap Link 1-End	1.75	17.5	0.36
318	SUST_ALLOW_ENVE+S(	Combination Max	-0.035	-6.228	Gap Link 1-End	1.75	17.5	0.36
318	SUST_ALLOW_ENVE+S(	Combination Min	-0.035	-6.283	Gap Link 1-End	1.75	17.5	0.36
319	ALLOW_ENVE	Combination Max	0.003867	-8.461	Gap Link 2-End	4	40	0.21
319	ALLOW_ENVE	Combination Min	-0.15	-14.191	Gap Link 2-End	4	40	0.35
319	ALLOW_UPLIFT_ENVE	Combination Max	0.028	-7.347	Gap Link 2-End	4	40	0.18
319	ALLOW_UPLIFT_ENVE	Combination Min	-0.134	-13.305	Gap Link 2-End	4	40	0.33
319	ALLOW_ENVE+SOIL	Combination Max	0.003867	-8.474	Gap Link 2-End	4	40	0.21
319	ALLOW_ENVE+SOIL	Combination Min	-0.15	-14.205	Gap Link 2-End	4	40	0.36
319	SUST_ALLOW_ENVE	Combination Max	-0.061	-10.901	Gap Link 2-End	4	40	0.27
319	SUST_ALLOW_ENVE	Combination Min	-0.061	-10.989	Gap Link 2-End	4	40	0.27
319	SUST_ALLOW_ENVE+S(	Combination Max	-0.061	-10.915	Gap Link 2-End	4	40	0.27
319	SUST_ALLOW_ENVE+S(	Combination Min	-0.061	-11.002	Gap Link 2-End	4	40	0.28
320	ALLOW_ENVE	Combination Max	0.002804	-6.159	Gap Link 3-End	4.5	45	0.14
320	ALLOW_ENVE	Combination Min	-0.113	-10.529	Gap Link 3-End	4.5	45	0.23
320	ALLOW_UPLIFT_ENVE	Combination Max	0.018	-4.613	Gap Link 3-End	4.5	45	0.10
320	ALLOW_UPLIFT_ENVE	Combination Min	-0.1	-9.985	Gap Link 3-End	4.5	45	0.22
320	ALLOW_ENVE+SOIL	Combination Max	0.002804	-6.168	Gap Link 3-End	4.5	45	0.14
320	ALLOW_ENVE+SOIL	Combination Min	-0.113	-10.538	Gap Link 3-End	4.5	45	0.23
320	SUST_ALLOW_ENVE	Combination Max	-0.042	-7.479	Gap Link 3-End	4.5	45	0.17
320	SUST_ALLOW_ENVE	Combination Min	-0.042	-7.522	Gap Link 3-End	4.5	45	0.17
320	SUST_ALLOW_ENVE+S(	Combination Max	-0.042	-7.488	Gap Link 3-End	4.5	45	0.17
320	SUST_ALLOW_ENVE+S(	Combination Min	-0.042	-7.532	Gap Link 3-End	4.5	45	0.17
325	ALLOW_ENVE	Combination Max	0	0	Gap Link 2-End	4	40	0.00
325	ALLOW_ENVE	Combination Min	0	0	Gap Link 2-End	4	40	0.00
325	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 2-End	4	40	0.00
325	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 2-End	4	40	0.00
325	ALLOW_ENVE+SOIL	Combination Max	0	0.013	Gap Link 2-End	4	40	0.00
325	ALLOW_ENVE+SOIL	Combination Min	0	0.013	Gap Link 2-End	4	40	0.00
325	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 2-End	4	40	0.00
325	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 2-End	4	40	0.00
325	SUST_ALLOW_ENVE+S(	Combination Max	0	0.013	Gap Link 2-End	4	40	0.00
325	SUST_ALLOW_ENVE+S(	Combination Min	0	0.013	Gap Link 2-End	4	40	0.00
326	ALLOW_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
326	ALLOW_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
326	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
326	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
326	ALLOW_ENVE+SOIL	Combination Max	0	0.007265	Gap Link 1-End	1.75	17.5	0.00
326	ALLOW_ENVE+SOIL	Combination Min	0	0.007265	Gap Link 1-End	1.75	17.5	0.00
326	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-End	1.75	17.5	0.00
326	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-End	1.75	17.5	0.00
326	SUST_ALLOW_ENVE+S(	Combination Max	0	0.007265	Gap Link 1-End	1.75	17.5	0.00
326	SUST_ALLOW_ENVE+S(	Combination Min	0	0.007265	Gap Link 1-End	1.75	17.5	0.00
327	ALLOW_ENVE	Combination Max	0.87	9.969	Gap Link 1-End	1.75	17.5	0.57
327	ALLOW_ENVE	Combination Min	0.214	4.119	Gap Link 1-End	1.75	17.5	0.24
327	ALLOW_UPLIFT_ENVE	Combination Max	0.611	8.122	Gap Link 1-End	1.75	17.5	0.46
327	ALLOW_UPLIFT_ENVE	Combination Min	0.184	3.793	Gap Link 1-End	1.75	17.5	0.22
327	ALLOW_ENVE+SOIL	Combination Max	0.87	9.976	Gap Link 1-End	1.75	17.5	0.57
327	ALLOW_ENVE+SOIL	Combination Min	0.214	4.126	Gap Link 1-End	1.75	17.5	0.24
327	SUST_ALLOW_ENVE	Combination Max	0.396	6.617	Gap Link 1-End	1.75	17.5	0.38
327	SUST_ALLOW_ENVE	Combination Min	0.386	6.525	Gap Link 1-End	1.75	17.5	0.37

327	SUST_ALLOW_ENVE+S(	Combination	Max	0.396	6.624	Gap Link 1-End	1.75	17.5	0.38
327	SUST_ALLOW_ENVE+S(	Combination	Min	0.386	6.532	Gap Link 1-End	1.75	17.5	0.37
328	ALLOW_ENVE	Combination	Max	1.542	18.097	Gap Link 2-End	4	40	0.45
328	ALLOW_ENVE	Combination	Min	0.342	6.581	Gap Link 2-End	4	40	0.16
328	ALLOW_UPLIFT_ENVE	Combination	Max	1.051	14.862	Gap Link 2-End	4	40	0.37
328	ALLOW_UPLIFT_ENVE	Combination	Min	0.291	6.014	Gap Link 2-End	4	40	0.15
328	ALLOW_ENVE+SOIL	Combination	Max	1.542	18.109	Gap Link 2-End	4	40	0.45
328	ALLOW_ENVE+SOIL	Combination	Min	0.342	6.594	Gap Link 2-End	4	40	0.16
328	SUST_ALLOW_ENVE	Combination	Max	0.694	11.604	Gap Link 2-End	4	40	0.29
328	SUST_ALLOW_ENVE	Combination	Min	0.677	11.435	Gap Link 2-End	4	40	0.29
328	SUST_ALLOW_ENVE+S(	Combination	Max	0.694	11.616	Gap Link 2-End	4	40	0.29
328	SUST_ALLOW_ENVE+S(	Combination	Min	0.677	11.447	Gap Link 2-End	4	40	0.29
333	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-End	4.5	45	0.00
333	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-End	4.5	45	0.00
333	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3-End	4.5	45	0.00
333	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3-End	4.5	45	0.00
333	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00763	Gap Link 3-End	4.5	45	0.00
333	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00763	Gap Link 3-End	4.5	45	0.00
333	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-End	4.5	45	0.00
333	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-End	4.5	45	0.00
333	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00763	Gap Link 3-End	4.5	45	0.00
333	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00763	Gap Link 3-End	4.5	45	0.00
336	ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-End	4	40	0.00
336	ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-End	4	40	0.00
336	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 2-End	4	40	0.00
336	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 2-End	4	40	0.00
336	ALLOW_ENVE+SOIL	Combination	Max	0	-0.012	Gap Link 2-End	4	40	0.00
336	ALLOW_ENVE+SOIL	Combination	Min	0	-0.012	Gap Link 2-End	4	40.0	0.00
336	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-End	4	40.0	0.00
336	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-End	4	40.0	0.00
336	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.012	Gap Link 2-End	4	40.0	0.00
336	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.012	Gap Link 2-End	4	40.0	0.00
337	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
337	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
337	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
337	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
337	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00668	Gap Link 1-End	1.75	17.5	0.00
337	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00668	Gap Link 1-End	1.75	17.5	0.00
337	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
337	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
337	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00668	Gap Link 1-End	1.75	17.5	0.00
337	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00668	Gap Link 1-End	1.75	17.5	0.00
338	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
338	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
338	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
338	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
338	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00762	Gap Link 1-End	1.75	17.5	0.00
338	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00762	Gap Link 1-End	1.75	17.5	0.00
338	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-End	1.75	17.5	0.00
338	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-End	1.75	17.5	0.00
338	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00762	Gap Link 1-End	1.75	17.5	0.00
338	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00762	Gap Link 1-End	1.75	17.5	0.00
339	ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-End	4	40.0	0.00
339	ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-End	4	40.0	0.00
339	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 2-End	4	40.0	0.00
339	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 2-End	4	40.0	0.00
339	ALLOW_ENVE+SOIL	Combination	Max	0	-0.013	Gap Link 2-End	4	40.0	0.00
339	ALLOW_ENVE+SOIL	Combination	Min	0	-0.013	Gap Link 2-End	4	40.0	0.00
339	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-End	4	40.0	0.00
339	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-End	4	40.0	0.00
339	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.013	Gap Link 2-End	4	40.0	0.00
339	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.013	Gap Link 2-End	4	40.0	0.00
340	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-End	4.5	45.0	0.00

340	ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
340	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
340	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
340	ALLOW_ENVE+SOIL	Combination Max	0	-0.00925	Gap Link 3-End	4.5	45.0	0.00
340	ALLOW_ENVE+SOIL	Combination Min	0	-0.00925	Gap Link 3-End	4.5	45.0	0.00
340	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
340	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
340	SUST_ALLOW_ENVE+S(	Combination Max	0	-0.00925	Gap Link 3-End	4.5	45.0	0.00
340	SUST_ALLOW_ENVE+S(	Combination Min	0	-0.00925	Gap Link 3-End	4.5	45.0	0.00
345	ALLOW_ENVE	Combination Max	-0.243	15.766	Gap Link 2-End	4	40.0	0.39
345	ALLOW_ENVE	Combination Min	-1.186	6.577	Gap Link 2-End	4	40.0	0.16
345	ALLOW_UPLIFT_ENVE	Combination Max	-0.202	12.606	Gap Link 2-End	4	40.0	0.32
345	ALLOW_UPLIFT_ENVE	Combination Min	-0.742	6.034	Gap Link 2-End	4	40.0	0.15
345	ALLOW_ENVE+SOIL	Combination Max	-0.243	15.779	Gap Link 2-End	4	40.0	0.39
345	ALLOW_ENVE+SOIL	Combination Min	-1.186	6.589	Gap Link 2-End	4	40.0	0.16
345	SUST_ALLOW_ENVE	Combination Max	-0.61	10.675	Gap Link 2-End	4	40.0	0.27
345	SUST_ALLOW_ENVE	Combination Min	-0.626	10.516	Gap Link 2-End	4	40.0	0.26
345	SUST_ALLOW_ENVE+S(	Combination Max	-0.61	10.687	Gap Link 2-End	4	40.0	0.27
345	SUST_ALLOW_ENVE+S(	Combination Min	-0.626	10.529	Gap Link 2-End	4	40.0	0.26
346	ALLOW_ENVE	Combination Max	-0.145	8.847	Gap Link 1-End	1.75	17.5	0.51
346	ALLOW_ENVE	Combination Min	-0.665	3.91	Gap Link 1-End	1.75	17.5	0.22
346	ALLOW_UPLIFT_ENVE	Combination Max	-0.121	7.01	Gap Link 1-End	1.75	17.5	0.40
346	ALLOW_UPLIFT_ENVE	Combination Min	-0.429	3.609	Gap Link 1-End	1.75	17.5	0.21
346	ALLOW_ENVE+SOIL	Combination Max	-0.145	8.854	Gap Link 1-End	1.75	17.5	0.51
346	ALLOW_ENVE+SOIL	Combination Min	-0.665	3.917	Gap Link 1-End	1.75	17.5	0.22
346	SUST_ALLOW_ENVE	Combination Max	-0.352	6.153	Gap Link 1-End	1.75	17.5	0.35
346	SUST_ALLOW_ENVE	Combination Min	-0.361	6.067	Gap Link 1-End	1.75	17.5	0.35
346	SUST_ALLOW_ENVE+S(	Combination Max	-0.352	6.16	Gap Link 1-End	1.75	17.5	0.35
346	SUST_ALLOW_ENVE+S(	Combination Min	-0.361	6.074	Gap Link 1-End	1.75	17.5	0.35
347	ALLOW_ENVE	Combination Max	0.063	0	Gap Link 3-End	4.5	45.0	0.00
347	ALLOW_ENVE	Combination Min	0	-5.424	Gap Link 3-End	4.5	45.0	0.12
347	ALLOW_UPLIFT_ENVE	Combination Max	0.058	0	Gap Link 3-End	4.5	45.0	0.00
347	ALLOW_UPLIFT_ENVE	Combination Min	0	-5.285	Gap Link 3-End	4.5	45.0	0.12
347	ALLOW_ENVE+SOIL	Combination Max	0.063	-0.00232	Gap Link 3-End	4.5	45.0	0.00
347	ALLOW_ENVE+SOIL	Combination Min	3.3E-17	-5.426	Gap Link 3-End	4.5	45.0	0.12
347	SUST_ALLOW_ENVE	Combination Max	0.01	-2.183	Gap Link 3-End	4.5	45.0	0.05
347	SUST_ALLOW_ENVE	Combination Min	0.01	-2.201	Gap Link 3-End	4.5	45.0	0.05
347	SUST_ALLOW_ENVE+S(	Combination Max	0.01	-2.185	Gap Link 3-End	4.5	45.0	0.05
347	SUST_ALLOW_ENVE+S(	Combination Min	0.01	-2.203	Gap Link 3-End	4.5	45.0	0.05
348	ALLOW_ENVE	Combination Max	0.006126	0.08	Gap Link 3-End	4.5	45.0	0.00
348	ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
348	ALLOW_UPLIFT_ENVE	Combination Max	0.04	0.708	Gap Link 3-End	4.5	45.0	0.02
348	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
348	ALLOW_ENVE+SOIL	Combination Max	0.006126	0.078	Gap Link 3-End	4.5	45.0	0.00
348	ALLOW_ENVE+SOIL	Combination Min	-2.7E-17	-0.00227	Gap Link 3-End	4.5	45.0	0.00
348	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
348	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
348	SUST_ALLOW_ENVE+S(	Combination Max	-2.7E-17	-0.00227	Gap Link 3-End	4.5	45.0	0.00
348	SUST_ALLOW_ENVE+S(	Combination Min	-2.7E-17	-0.00227	Gap Link 3-End	4.5	45.0	0.00
349	ALLOW_ENVE	Combination Max	0.005875	0	Gap Link 3-End	4.5	45.0	0.00
349	ALLOW_ENVE	Combination Min	0	-0.783	Gap Link 3-End	4.5	45.0	0.02
349	ALLOW_UPLIFT_ENVE	Combination Max	0.006132	0	Gap Link 3-End	4.5	45.0	0.00
349	ALLOW_UPLIFT_ENVE	Combination Min	0	-0.905	Gap Link 3-End	4.5	45.0	0.02
349	ALLOW_ENVE+SOIL	Combination Max	0.005875	0.003055	Gap Link 3-End	4.5	45.0	0.00
349	ALLOW_ENVE+SOIL	Combination Min	-5.4E-17	-0.78	Gap Link 3-End	4.5	45.0	0.02
349	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
349	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
349	SUST_ALLOW_ENVE+S(	Combination Max	-5.4E-17	0.003055	Gap Link 3-End	4.5	45.0	0.00
349	SUST_ALLOW_ENVE+S(	Combination Min	-5.4E-17	0.003055	Gap Link 3-End	4.5	45.0	0.00
350	ALLOW_ENVE	Combination Max	0.521	6.821	Gap Link 3-End	4.5	45.0	0.15
350	ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
350	ALLOW_UPLIFT_ENVE	Combination Max	0.342	6.031	Gap Link 3-End	4.5	45.0	0.13
350	ALLOW_UPLIFT_ENVE	Combination Min	-2.8E-17	0	Gap Link 3-End	4.5	45.0	0.00

350	ALLOW_ENVE+SOIL	Combination Max	0.521	6.825	Gap Link 3-End	4.5	45.0	0.15
350	ALLOW_ENVE+SOIL	Combination Min	4.02E-17	0.003086	Gap Link 3-End	4.5	45.0	0.00
350	SUST_ALLOW_ENVE	Combination Max	0.173	2.897	Gap Link 3-End	4.5	45.0	0.06
350	SUST_ALLOW_ENVE	Combination Min	0.167	2.822	Gap Link 3-End	4.5	45.0	0.06
350	SUST_ALLOW_ENVE+S(	Combination Max	0.173	2.9	Gap Link 3-End	4.5	45.0	0.06
350	SUST_ALLOW_ENVE+S(	Combination Min	0.167	2.825	Gap Link 3-End	4.5	45.0	0.06
351	ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
351	ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
351	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
351	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
351	ALLOW_ENVE+SOIL	Combination Max	-1.1E-16	0.008468	Gap Link 3-End	4.5	45.0	0.00
351	ALLOW_ENVE+SOIL	Combination Min	-1.1E-16	0.008468	Gap Link 3-End	4.5	45.0	0.00
351	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
351	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
351	SUST_ALLOW_ENVE+S(	Combination Max	-1.1E-16	0.008468	Gap Link 3-End	4.5	45.0	0.00
351	SUST_ALLOW_ENVE+S(	Combination Min	-1.1E-16	0.008468	Gap Link 3-End	4.5	45.0	0.00
352	ALLOW_ENVE	Combination Max	1.09	13.592	Gap Link 3-End	4.5	45.0	0.30
352	ALLOW_ENVE	Combination Min	0.172	3.315	Gap Link 3-End	4.5	45.0	0.07
352	ALLOW_UPLIFT_ENVE	Combination Max	0.683	11.377	Gap Link 3-End	4.5	45.0	0.25
352	ALLOW_UPLIFT_ENVE	Combination Min	0.142	2.934	Gap Link 3-End	4.5	45.0	0.07
352	ALLOW_ENVE+SOIL	Combination Max	1.09	13.6	Gap Link 3-End	4.5	45.0	0.30
352	ALLOW_ENVE+SOIL	Combination Min	0.172	3.323	Gap Link 3-End	4.5	45.0	0.07
352	SUST_ALLOW_ENVE	Combination Max	0.477	7.975	Gap Link 3-End	4.5	45.0	0.18
352	SUST_ALLOW_ENVE	Combination Min	0.464	7.842	Gap Link 3-End	4.5	45.0	0.17
352	SUST_ALLOW_ENVE+S(	Combination Max	0.477	7.983	Gap Link 3-End	4.5	45.0	0.18
352	SUST_ALLOW_ENVE+S(	Combination Min	0.464	7.851	Gap Link 3-End	4.5	45.0	0.17
355	ALLOW_ENVE	Combination Max	0.001425	-1.374	Gap Link 3-End	4.5	45.0	0.03
355	ALLOW_ENVE	Combination Min	-0.055	-5.136	Gap Link 3-End	4.5	45.0	0.11
355	ALLOW_UPLIFT_ENVE	Combination Max	0.003803	-0.612	Gap Link 3-End	4.5	45.0	0.01
355	ALLOW_UPLIFT_ENVE	Combination Min	-0.05	-4.98	Gap Link 3-End	4.5	45.0	0.11
355	ALLOW_ENVE+SOIL	Combination Max	0.001425	-1.377	Gap Link 3-End	4.5	45.0	0.03
355	ALLOW_ENVE+SOIL	Combination Min	-0.055	-5.139	Gap Link 3-End	4.5	45.0	0.11
355	SUST_ALLOW_ENVE	Combination Max	-0.015	-2.661	Gap Link 3-End	4.5	45.0	0.06
355	SUST_ALLOW_ENVE	Combination Min	-0.015	-2.673	Gap Link 3-End	4.5	45.0	0.06
355	SUST_ALLOW_ENVE+S(	Combination Max	-0.015	-2.664	Gap Link 3-End	4.5	45.0	0.06
355	SUST_ALLOW_ENVE+S(	Combination Min	-0.015	-2.676	Gap Link 3-End	4.5	45.0	0.06
356	ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
356	ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
356	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
356	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
356	ALLOW_ENVE+SOIL	Combination Max	0	-0.00345	Gap Link 3-End	4.5	45.0	0.00
356	ALLOW_ENVE+SOIL	Combination Min	0	-0.00345	Gap Link 3-End	4.5	45.0	0.00
356	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
356	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
356	SUST_ALLOW_ENVE+S(	Combination Max	0	-0.00345	Gap Link 3-End	4.5	45.0	0.00
356	SUST_ALLOW_ENVE+S(	Combination Min	0	-0.00345	Gap Link 3-End	4.5	45.0	0.00
357	ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
357	ALLOW_ENVE	Combination Min	-0.00205	-0.294	Gap Link 3-End	4.5	45.0	0.01
357	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
357	ALLOW_UPLIFT_ENVE	Combination Min	-0.00243	-0.393	Gap Link 3-End	4.5	45.0	0.01
357	ALLOW_ENVE+SOIL	Combination Max	0	0.002324	Gap Link 3-End	4.5	45.0	0.00
357	ALLOW_ENVE+SOIL	Combination Min	-0.00205	-0.292	Gap Link 3-End	4.5	45.0	0.01
357	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-End	4.5	45.0	0.00
357	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-End	4.5	45.0	0.00
357	SUST_ALLOW_ENVE+S(	Combination Max	0	0.002324	Gap Link 3-End	4.5	45.0	0.00
357	SUST_ALLOW_ENVE+S(	Combination Min	0	0.002324	Gap Link 3-End	4.5	45.0	0.00
358	ALLOW_ENVE	Combination Max	0	4.926	Gap Link 3-End	4.5	45.0	0.11
358	ALLOW_ENVE	Combination Min	-0.366	0	Gap Link 3-End	4.5	45.0	0.01
358	ALLOW_UPLIFT_ENVE	Combination Max	0	4.319	Gap Link 3-End	4.5	45.0	0.10
358	ALLOW_UPLIFT_ENVE	Combination Min	-0.235	0	Gap Link 3-End	4.5	45.0	0.01
358	ALLOW_ENVE+SOIL	Combination Max	0	4.928	Gap Link 3-End	4.5	45.0	0.11
358	ALLOW_ENVE+SOIL	Combination Min	-0.366	0.00236	Gap Link 3-End	4.5	45.0	0.01
358	SUST_ALLOW_ENVE	Combination Max	-0.125	2.23	Gap Link 3-End	4.5	45.0	0.05

358	SUST_ALLOW_ENVE	Combination	Min	-0.131	2.162	Gap Link 3-End	4.5	45.0	0.05
358	SUST_ALLOW_ENVE+S(	Combination	Max	-0.125	2.232	Gap Link 3-End	4.5	45.0	0.05
358	SUST_ALLOW_ENVE+S(	Combination	Min	-0.131	2.165	Gap Link 3-End	4.5	45.0	0.05
359	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-End	4.5	45.0	0.00
359	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-End	4.5	45.0	0.00
359	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3-End	4.5	45.0	0.00
359	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3-End	4.5	45.0	0.00
359	ALLOW_ENVE+SOIL	Combination	Max	0	0.016	Gap Link 3-End	4.5	45.0	0.00
359	ALLOW_ENVE+SOIL	Combination	Min	0	0.016	Gap Link 3-End	4.5	45.0	0.00
359	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-End	4.5	45.0	0.00
359	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-End	4.5	45.0	0.00
359	SUST_ALLOW_ENVE+S(	Combination	Max	0	0.016	Gap Link 3-End	4.5	45.0	0.00
359	SUST_ALLOW_ENVE+S(	Combination	Min	0	0.016	Gap Link 3-End	4.5	45.0	0.00
360	ALLOW_ENVE	Combination	Max	-0.292	22.603	Gap Link 3-End	4.5	45.0	0.50
360	ALLOW_ENVE	Combination	Min	-1.698	7.801	Gap Link 3-End	4.5	45.0	0.17
360	ALLOW_UPLIFT_ENVE	Combination	Max	-0.24	18.493	Gap Link 3-End	4.5	45.0	0.41
360	ALLOW_UPLIFT_ENVE	Combination	Min	-1.007	7.099	Gap Link 3-End	4.5	45.0	0.16
360	ALLOW_ENVE+SOIL	Combination	Max	-0.292	22.62	Gap Link 3-End	4.5	45.0	0.50
360	ALLOW_ENVE+SOIL	Combination	Min	-1.698	7.818	Gap Link 3-End	4.5	45.0	0.17
360	SUST_ALLOW_ENVE	Combination	Max	-0.811	14.229	Gap Link 3-End	4.5	45.0	0.32
360	SUST_ALLOW_ENVE	Combination	Min	-0.834	13.984	Gap Link 3-End	4.5	45.0	0.31
360	SUST_ALLOW_ENVE+S(	Combination	Max	-0.811	14.246	Gap Link 3-End	4.5	45.0	0.32
360	SUST_ALLOW_ENVE+S(	Combination	Min	-0.834	14	Gap Link 3-End	4.5	45.0	0.31
448	ALLOW_ENVE	Combination	Max	0.31	0	Gap Link 5-Int	4.5	45.0	0.01
448	ALLOW_ENVE	Combination	Min	0	-7.259	Gap Link 5-Int	4.5	45.0	0.16
448	ALLOW_UPLIFT_ENVE	Combination	Max	0.251	0	Gap Link 5-Int	4.5	45.0	0.01
448	ALLOW_UPLIFT_ENVE	Combination	Min	0	-6.42	Gap Link 5-Int	4.5	45.0	0.14
448	ALLOW_ENVE+SOIL	Combination	Max	0.31	-0.00082	Gap Link 5-Int	4.5	45.0	0.01
448	ALLOW_ENVE+SOIL	Combination	Min	0	-7.26	Gap Link 5-Int	4.5	45.0	0.16
448	SUST_ALLOW_ENVE	Combination	Max	0.031	-0.805	Gap Link 5-Int	4.5	45.0	0.02
448	SUST_ALLOW_ENVE	Combination	Min	0.028	-0.854	Gap Link 5-Int	4.5	45.0	0.02
448	SUST_ALLOW_ENVE+S(	Combination	Max	0.031	-0.806	Gap Link 5-Int	4.5	45.0	0.02
448	SUST_ALLOW_ENVE+S(	Combination	Min	0.028	-0.855	Gap Link 5-Int	4.5	45.0	0.02
449	ALLOW_ENVE	Combination	Max	0.227	0	Gap Link 4-Int	3.75	37.5	0.01
449	ALLOW_ENVE	Combination	Min	0	-5.335	Gap Link 4-Int	3.75	37.5	0.14
449	ALLOW_UPLIFT_ENVE	Combination	Max	0.186	0	Gap Link 4-Int	3.75	37.5	0.00
449	ALLOW_UPLIFT_ENVE	Combination	Min	0	-4.774	Gap Link 4-Int	3.75	37.5	0.13
449	ALLOW_ENVE+SOIL	Combination	Max	0.227	-0.00416	Gap Link 4-Int	3.75	37.5	0.01
449	ALLOW_ENVE+SOIL	Combination	Min	0	-5.34	Gap Link 4-Int	3.75	37.5	0.14
449	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
449	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
449	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00416	Gap Link 4-Int	3.75	37.5	0.00
449	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00416	Gap Link 4-Int	3.75	37.5	0.00
450	ALLOW_ENVE	Combination	Max	0.083	0	Gap Link 2-Int	1.5	15.0	0.01
450	ALLOW_ENVE	Combination	Min	0	-1.944	Gap Link 2-Int	1.5	15.0	0.13
450	ALLOW_UPLIFT_ENVE	Combination	Max	0.069	0	Gap Link 2-Int	1.5	15.0	0.00
450	ALLOW_UPLIFT_ENVE	Combination	Min	0	-1.756	Gap Link 2-Int	1.5	15.0	0.12
450	ALLOW_ENVE+SOIL	Combination	Max	0.083	-0.00259	Gap Link 2-Int	1.5	15.0	0.01
450	ALLOW_ENVE+SOIL	Combination	Min	0	-1.946	Gap Link 2-Int	1.5	15.0	0.13
450	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
450	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
450	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00259	Gap Link 2-Int	1.5	15.0	0.00
450	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00259	Gap Link 2-Int	1.5	15.0	0.00
451	ALLOW_ENVE	Combination	Max	0.288	0	Gap Link 4-Int	3.75	37.5	0.01
451	ALLOW_ENVE	Combination	Min	0	-6.764	Gap Link 4-Int	3.75	37.5	0.18
451	ALLOW_UPLIFT_ENVE	Combination	Max	0.232	0	Gap Link 4-Int	3.75	37.5	0.01
451	ALLOW_UPLIFT_ENVE	Combination	Min	0	-5.926	Gap Link 4-Int	3.75	37.5	0.16
451	ALLOW_ENVE+SOIL	Combination	Max	0.288	0.002789	Gap Link 4-Int	3.75	37.5	0.01
451	ALLOW_ENVE+SOIL	Combination	Min	0	-6.761	Gap Link 4-Int	3.75	37.5	0.18
451	SUST_ALLOW_ENVE	Combination	Max	0.056	-1.495	Gap Link 4-Int	3.75	37.5	0.04
451	SUST_ALLOW_ENVE	Combination	Min	0.053	-1.554	Gap Link 4-Int	3.75	37.5	0.04
451	SUST_ALLOW_ENVE+S(	Combination	Max	0.056	-1.492	Gap Link 4-Int	3.75	37.5	0.04
451	SUST_ALLOW_ENVE+S(	Combination	Min	0.053	-1.551	Gap Link 4-Int	3.75	37.5	0.04

452	ALLOW_ENVE	Combination Max	0.123	0	Gap Link 2-Int	1.5	15.0	0.01
452	ALLOW_ENVE	Combination Min	0	-2.895	Gap Link 2-Int	1.5	15.0	0.19
452	ALLOW_UPLIFT_ENVE	Combination Max	0.099	0	Gap Link 2-Int	1.5	15.0	0.01
452	ALLOW_UPLIFT_ENVE	Combination Min	0	-2.523	Gap Link 2-Int	1.5	15.0	0.17
452	ALLOW_ENVE+SOIL	Combination Max	0.123	0.002046	Gap Link 2-Int	1.5	15.0	0.01
452	ALLOW_ENVE+SOIL	Combination Min	0	-2.893	Gap Link 2-Int	1.5	15.0	0.19
452	SUST_ALLOW_ENVE	Combination Max	0.03	-0.817	Gap Link 2-Int	1.5	15.0	0.05
452	SUST_ALLOW_ENVE	Combination Min	0.029	-0.845	Gap Link 2-Int	1.5	15.0	0.06
452	SUST_ALLOW_ENVE+S(	Combination Max	0.03	-0.815	Gap Link 2-Int	1.5	15.0	0.05
452	SUST_ALLOW_ENVE+S(	Combination Min	0.029	-0.843	Gap Link 2-Int	1.5	15.0	0.06
453	ALLOW_ENVE	Combination Max	0.165	5.229	Gap Link 5-Int	4.5	45.0	0.12
453	ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
453	ALLOW_UPLIFT_ENVE	Combination Max	0.093	4.74	Gap Link 5-Int	4.5	45.0	0.11
453	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
453	ALLOW_ENVE+SOIL	Combination Max	0.165	5.228	Gap Link 5-Int	4.5	45.0	0.12
453	ALLOW_ENVE+SOIL	Combination Min	0	-0.00082	Gap Link 5-Int	4.5	45.0	0.00
453	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
453	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
453	SUST_ALLOW_ENVE+S(	Combination Max	0	-0.00082	Gap Link 5-Int	4.5	45.0	0.00
453	SUST_ALLOW_ENVE+S(	Combination Min	0	-0.00082	Gap Link 5-Int	4.5	45.0	0.00
454	ALLOW_ENVE	Combination Max	0.169	5.353	Gap Link 4-Int	3.75	37.5	0.14
454	ALLOW_ENVE	Combination Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
454	ALLOW_UPLIFT_ENVE	Combination Max	0.097	4.94	Gap Link 4-Int	3.75	37.5	0.13
454	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
454	ALLOW_ENVE+SOIL	Combination Max	0.169	5.349	Gap Link 4-Int	3.75	37.5	0.14
454	ALLOW_ENVE+SOIL	Combination Min	0	-0.00414	Gap Link 4-Int	3.75	37.5	0.00
454	SUST_ALLOW_ENVE	Combination Max	0.003916	0.16	Gap Link 4-Int	3.75	37.5	0.00
454	SUST_ALLOW_ENVE	Combination Min	0.003384	0.137	Gap Link 4-Int	3.75	37.5	0.00
454	SUST_ALLOW_ENVE+S(	Combination Max	0.003916	0.155	Gap Link 4-Int	3.75	37.5	0.00
454	SUST_ALLOW_ENVE+S(	Combination Min	0.003384	0.133	Gap Link 4-Int	3.75	37.5	0.00
455	ALLOW_ENVE	Combination Max	0.076	2.406	Gap Link 2-Int	1.5	15.0	0.16
455	ALLOW_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
455	ALLOW_UPLIFT_ENVE	Combination Max	0.044	2.239	Gap Link 2-Int	1.5	15.0	0.15
455	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
455	ALLOW_ENVE+SOIL	Combination Max	0.076	2.404	Gap Link 2-Int	1.5	15.0	0.16
455	ALLOW_ENVE+SOIL	Combination Min	0	-0.00258	Gap Link 2-Int	1.5	15.0	0.00
455	SUST_ALLOW_ENVE	Combination Max	0.006982	0.285	Gap Link 2-Int	1.5	15.0	0.02
455	SUST_ALLOW_ENVE	Combination Min	0.006932	0.28	Gap Link 2-Int	1.5	15.0	0.02
455	SUST_ALLOW_ENVE+S(	Combination Max	0.006982	0.282	Gap Link 2-Int	1.5	15.0	0.02
455	SUST_ALLOW_ENVE+S(	Combination Min	0.006932	0.278	Gap Link 2-Int	1.5	15.0	0.02
456	ALLOW_ENVE	Combination Max	0.106	3.36	Gap Link 4-Int	3.75	37.5	0.09
456	ALLOW_ENVE	Combination Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
456	ALLOW_UPLIFT_ENVE	Combination Max	0.058	2.959	Gap Link 4-Int	3.75	37.5	0.08
456	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
456	ALLOW_ENVE+SOIL	Combination Max	0.106	3.363	Gap Link 4-Int	3.75	37.5	0.09
456	ALLOW_ENVE+SOIL	Combination Min	0	0.002772	Gap Link 4-Int	3.75	37.5	0.00
456	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
456	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
456	SUST_ALLOW_ENVE+S(	Combination Max	0	0.002772	Gap Link 4-Int	3.75	37.5	0.00
456	SUST_ALLOW_ENVE+S(	Combination Min	0	0.002772	Gap Link 4-Int	3.75	37.5	0.00
457	ALLOW_ENVE	Combination Max	0.034	1.079	Gap Link 2-Int	1.5	15.0	0.07
457	ALLOW_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
457	ALLOW_UPLIFT_ENVE	Combination Max	0.018	0.92	Gap Link 2-Int	1.5	15.0	0.06
457	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
457	ALLOW_ENVE+SOIL	Combination Max	0.034	1.081	Gap Link 2-Int	1.5	15.0	0.07
457	ALLOW_ENVE+SOIL	Combination Min	0	0.002032	Gap Link 2-Int	1.5	15.0	0.00
457	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
457	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
457	SUST_ALLOW_ENVE+S(	Combination Max	0	0.002032	Gap Link 2-Int	1.5	15.0	0.00
457	SUST_ALLOW_ENVE+S(	Combination Min	0	0.002032	Gap Link 2-Int	1.5	15.0	0.00
458	ALLOW_ENVE	Combination Max	-10.627	0.228	Gap Link 5-Int	4.5	45.0	0.24
458	ALLOW_ENVE	Combination Min	-18.732	-0.285	Gap Link 5-Int	4.5	45.0	0.42
458	ALLOW_UPLIFT_ENVE	Combination Max	-9.8	0.191	Gap Link 5-Int	4.5	45.0	0.22

458	ALLOW_UPLIFT_ENVE	Combination Min	-17.676	-0.185	Gap Link 5-Int	4.5	45.0	0.39
458	ALLOW_ENVE+SOIL	Combination Max	-10.649	0.228	Gap Link 5-Int	4.5	45.0	0.24
458	ALLOW_ENVE+SOIL	Combination Min	-18.754	-0.285	Gap Link 5-Int	4.5	45.0	0.42
458	SUST_ALLOW_ENVE	Combination Max	-12.129	-0.026	Gap Link 5-Int	4.5	45.0	0.27
458	SUST_ALLOW_ENVE	Combination Min	-12.261	-0.026	Gap Link 5-Int	4.5	45.0	0.27
458	SUST_ALLOW_ENVE+S(	Combination Max	-12.151	-0.026	Gap Link 5-Int	4.5	45.0	0.27
458	SUST_ALLOW_ENVE+S(	Combination Min	-12.283	-0.026	Gap Link 5-Int	4.5	45.0	0.27
459	ALLOW_ENVE	Combination Max	-9.392	0.194	Gap Link 3-Int	3.625	36.3	0.26
459	ALLOW_ENVE	Combination Min	-15.798	-0.247	Gap Link 3-Int	3.625	36.3	0.44
459	ALLOW_UPLIFT_ENVE	Combination Max	-8.653	0.161	Gap Link 3-Int	3.625	36.3	0.24
459	ALLOW_UPLIFT_ENVE	Combination Min	-14.842	-0.165	Gap Link 3-Int	3.625	36.3	0.41
459	ALLOW_ENVE+SOIL	Combination Max	-9.406	0.194	Gap Link 3-Int	3.625	36.3	0.26
459	ALLOW_ENVE+SOIL	Combination Min	-15.813	-0.247	Gap Link 3-Int	3.625	36.3	0.44
459	SUST_ALLOW_ENVE	Combination Max	-10.565	-0.023	Gap Link 3-Int	3.625	36.3	0.29
459	SUST_ALLOW_ENVE	Combination Min	-10.689	-0.023	Gap Link 3-Int	3.625	36.3	0.29
459	SUST_ALLOW_ENVE+S(	Combination Max	-10.579	-0.023	Gap Link 3-Int	3.625	36.3	0.29
459	SUST_ALLOW_ENVE+S(	Combination Min	-10.703	-0.023	Gap Link 3-Int	3.625	36.3	0.30
460	ALLOW_ENVE	Combination Max	-3.756	0.076	Gap Link 1-Int	1.375	13.8	0.27
460	ALLOW_ENVE	Combination Min	-6.18	-0.098	Gap Link 1-Int	1.375	13.8	0.45
460	ALLOW_UPLIFT_ENVE	Combination Max	-3.459	0.063	Gap Link 1-Int	1.375	13.8	0.25
460	ALLOW_UPLIFT_ENVE	Combination Min	-5.77	-0.067	Gap Link 1-Int	1.375	13.8	0.42
460	ALLOW_ENVE+SOIL	Combination Max	-3.76	0.076	Gap Link 1-Int	1.375	13.8	0.27
460	ALLOW_ENVE+SOIL	Combination Min	-6.185	-0.098	Gap Link 1-Int	1.375	13.8	0.45
460	SUST_ALLOW_ENVE	Combination Max	-4.192	-0.00904	Gap Link 1-Int	1.375	13.8	0.30
460	SUST_ALLOW_ENVE	Combination Min	-4.243	-0.00907	Gap Link 1-Int	1.375	13.8	0.31
460	SUST_ALLOW_ENVE+S(	Combination Max	-4.197	-0.00904	Gap Link 1-Int	1.375	13.8	0.31
460	SUST_ALLOW_ENVE+S(	Combination Min	-4.248	-0.00907	Gap Link 1-Int	1.375	13.8	0.31
461	ALLOW_ENVE	Combination Max	-9.592	0.215	Gap Link 5-Int	4.5	45.0	0.21
461	ALLOW_ENVE	Combination Min	-17.988	-0.263	Gap Link 5-Int	4.5	45.0	0.40
461	ALLOW_UPLIFT_ENVE	Combination Max	-8.854	0.181	Gap Link 5-Int	4.5	45.0	0.20
461	ALLOW_UPLIFT_ENVE	Combination Min	-16.922	-0.164	Gap Link 5-Int	4.5	45.0	0.38
461	ALLOW_ENVE+SOIL	Combination Max	-9.618	0.215	Gap Link 5-Int	4.5	45.0	0.21
461	ALLOW_ENVE+SOIL	Combination Min	-18.014	-0.263	Gap Link 5-Int	4.5	45.0	0.40
461	SUST_ALLOW_ENVE	Combination Max	-11.139	-0.024	Gap Link 5-Int	4.5	45.0	0.25
461	SUST_ALLOW_ENVE	Combination Min	-11.249	-0.024	Gap Link 5-Int	4.5	45.0	0.25
461	SUST_ALLOW_ENVE+S(	Combination Max	-11.165	-0.024	Gap Link 5-Int	4.5	45.0	0.25
461	SUST_ALLOW_ENVE+S(	Combination Min	-11.275	-0.024	Gap Link 5-Int	4.5	45.0	0.25
462	ALLOW_ENVE	Combination Max	-6.89	0.162	Gap Link 3-Int	3.625	36.3	0.19
462	ALLOW_ENVE	Combination Min	-13.948	-0.194	Gap Link 3-Int	3.625	36.3	0.38
462	ALLOW_UPLIFT_ENVE	Combination Max	-6.368	0.138	Gap Link 3-Int	3.625	36.3	0.18
462	ALLOW_UPLIFT_ENVE	Combination Min	-13.019	-0.116	Gap Link 3-Int	3.625	36.3	0.36
462	ALLOW_ENVE+SOIL	Combination Max	-6.915	0.162	Gap Link 3-Int	3.625	36.3	0.19
462	ALLOW_ENVE+SOIL	Combination Min	-13.972	-0.194	Gap Link 3-Int	3.625	36.3	0.39
462	SUST_ALLOW_ENVE	Combination Max	-8.172	-0.018	Gap Link 3-Int	3.625	36.3	0.23
462	SUST_ALLOW_ENVE	Combination Min	-8.243	-0.018	Gap Link 3-Int	3.625	36.3	0.23
462	SUST_ALLOW_ENVE+S(	Combination Max	-8.196	-0.018	Gap Link 3-Int	3.625	36.3	0.23
462	SUST_ALLOW_ENVE+S(	Combination Min	-8.267	-0.018	Gap Link 3-Int	3.625	36.3	0.23
463	ALLOW_ENVE	Combination Max	-2.42	0.059	Gap Link 1-Int	1.375	13.8	0.18
463	ALLOW_ENVE	Combination Min	-5.165	-0.07	Gap Link 1-Int	1.375	13.8	0.38
463	ALLOW_UPLIFT_ENVE	Combination Max	-2.239	0.051	Gap Link 1-Int	1.375	13.8	0.16
463	ALLOW_UPLIFT_ENVE	Combination Min	-4.797	-0.04	Gap Link 1-Int	1.375	13.8	0.35
463	ALLOW_ENVE+SOIL	Combination Max	-2.43	0.059	Gap Link 1-Int	1.375	13.8	0.18
463	ALLOW_ENVE+SOIL	Combination Min	-5.175	-0.07	Gap Link 1-Int	1.375	13.8	0.38
463	SUST_ALLOW_ENVE	Combination Max	-2.914	-0.00635	Gap Link 1-Int	1.375	13.8	0.21
463	SUST_ALLOW_ENVE	Combination Min	-2.937	-0.0064	Gap Link 1-Int	1.375	13.8	0.21
463	SUST_ALLOW_ENVE+S(	Combination Max	-2.924	-0.00635	Gap Link 1-Int	1.375	13.8	0.21
463	SUST_ALLOW_ENVE+S(	Combination Min	-2.947	-0.0064	Gap Link 1-Int	1.375	13.8	0.21
464	ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
464	ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
464	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
464	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
464	ALLOW_ENVE+SOIL	Combination Max	-0.022	0	Gap Link 5-Int	4.5	45.0	0.00
464	ALLOW_ENVE+SOIL	Combination Min	-0.022	0	Gap Link 5-Int	4.5	45.0	0.00

464	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
464	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
464	SUST_ALLOW_ENVE+S(	Combination	Max	-0.022	0	Gap Link 5-Int	4.5	45.0	0.00
464	SUST_ALLOW_ENVE+S(	Combination	Min	-0.022	0	Gap Link 5-Int	4.5	45.0	0.00
465	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
465	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
465	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
465	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
465	ALLOW_ENVE+SOIL	Combination	Max	-0.014	0	Gap Link 3-Int	3.625	36.3	0.00
465	ALLOW_ENVE+SOIL	Combination	Min	-0.014	0	Gap Link 3-Int	3.625	36.3	0.00
465	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
465	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
465	SUST_ALLOW_ENVE+S(	Combination	Max	-0.014	0	Gap Link 3-Int	3.625	36.3	0.00
465	SUST_ALLOW_ENVE+S(	Combination	Min	-0.014	0	Gap Link 3-Int	3.625	36.3	0.00
466	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
466	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
466	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
466	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
466	ALLOW_ENVE+SOIL	Combination	Max	-0.00466	0	Gap Link 1-Int	1.375	13.8	0.00
466	ALLOW_ENVE+SOIL	Combination	Min	-0.00466	0	Gap Link 1-Int	1.375	13.8	0.00
466	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
466	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
466	SUST_ALLOW_ENVE+S(	Combination	Max	-0.00466	0	Gap Link 1-Int	1.375	13.8	0.00
466	SUST_ALLOW_ENVE+S(	Combination	Min	-0.00466	0	Gap Link 1-Int	1.375	13.8	0.00
467	ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
467	ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
467	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
467	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
467	ALLOW_ENVE+SOIL	Combination	Max	-0.026	0	Gap Link 5-Int	4.5	45.0	0.00
467	ALLOW_ENVE+SOIL	Combination	Min	-0.026	0	Gap Link 5-Int	4.5	45.0	0.00
467	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
467	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
467	SUST_ALLOW_ENVE+S(	Combination	Max	-0.026	0	Gap Link 5-Int	4.5	45.0	0.00
467	SUST_ALLOW_ENVE+S(	Combination	Min	-0.026	0	Gap Link 5-Int	4.5	45.0	0.00
468	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
468	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
468	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
468	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
468	ALLOW_ENVE+SOIL	Combination	Max	-0.024	0	Gap Link 3-Int	3.625	36.3	0.00
468	ALLOW_ENVE+SOIL	Combination	Min	-0.024	0	Gap Link 3-Int	3.625	36.3	0.00
468	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
468	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
468	SUST_ALLOW_ENVE+S(	Combination	Max	-0.024	0	Gap Link 3-Int	3.625	36.3	0.00
468	SUST_ALLOW_ENVE+S(	Combination	Min	-0.024	0	Gap Link 3-Int	3.625	36.3	0.00
469	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
469	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
469	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
469	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
469	ALLOW_ENVE+SOIL	Combination	Max	-0.01	0	Gap Link 1-Int	1.375	13.8	0.00
469	ALLOW_ENVE+SOIL	Combination	Min	-0.01	0	Gap Link 1-Int	1.375	13.8	0.00
469	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
469	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
469	SUST_ALLOW_ENVE+S(	Combination	Max	-0.01	0	Gap Link 1-Int	1.375	13.8	0.00
469	SUST_ALLOW_ENVE+S(	Combination	Min	-0.01	0	Gap Link 1-Int	1.375	13.8	0.00
1504	ALLOW_ENVE	Combination	Max	0.012	0	Gap Link 5-Int	4.5	45.0	0.00
1504	ALLOW_ENVE	Combination	Min	-0.00013	-6.382	Gap Link 5-Int	4.5	45.0	0.14
1504	ALLOW_UPLIFT_ENVE	Combination	Max	0.012	0	Gap Link 5-Int	4.5	45.0	0.00
1504	ALLOW_UPLIFT_ENVE	Combination	Min	-3.5E-05	-5.648	Gap Link 5-Int	4.5	45.0	0.13
1504	ALLOW_ENVE+SOIL	Combination	Max	0.012	0.000281	Gap Link 5-Int	4.5	45.0	0.00
1504	ALLOW_ENVE+SOIL	Combination	Min	-0.00013	-6.382	Gap Link 5-Int	4.5	45.0	0.14
1504	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1504	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1504	SUST_ALLOW_ENVE+S(	Combination	Max	0	0.000281	Gap Link 5-Int	4.5	45.0	0.00

1504	SUST_ALLOW_ENVE+S(	Combination	Min	0	0.000281	Gap Link 5-Int	4.5	45.0	0.00
1505	ALLOW_ENVE	Combination	Max	0.009831	0	Gap Link 4-Int	3.75	37.5	0.00
1505	ALLOW_ENVE	Combination	Min	-8.2E-05	-5.331	Gap Link 4-Int	3.75	37.5	0.14
1505	ALLOW_UPLIFT_ENVE	Combination	Max	0.009794	0	Gap Link 4-Int	3.75	37.5	0.00
1505	ALLOW_UPLIFT_ENVE	Combination	Min	-9.6E-06	-4.723	Gap Link 4-Int	3.75	37.5	0.13
1505	ALLOW_ENVE+SOIL	Combination	Max	0.009831	-0.00055	Gap Link 4-Int	3.75	37.5	0.00
1505	ALLOW_ENVE+SOIL	Combination	Min	-8.2E-05	-5.331	Gap Link 4-Int	3.75	37.5	0.14
1505	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1505	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
1505	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00055	Gap Link 4-Int	3.75	37.5	0.00
1505	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00055	Gap Link 4-Int	3.75	37.5	0.00
1506	ALLOW_ENVE	Combination	Max	0.003942	0	Gap Link 2-Int	1.5	15.0	0.00
1506	ALLOW_ENVE	Combination	Min	-2.8E-05	-2.136	Gap Link 2-Int	1.5	15.0	0.14
1506	ALLOW_UPLIFT_ENVE	Combination	Max	0.003937	0	Gap Link 2-Int	1.5	15.0	0.00
1506	ALLOW_UPLIFT_ENVE	Combination	Min	-1.7E-06	-1.894	Gap Link 2-Int	1.5	15.0	0.13
1506	ALLOW_ENVE+SOIL	Combination	Max	0.003942	-0.00043	Gap Link 2-Int	1.5	15.0	0.00
1506	ALLOW_ENVE+SOIL	Combination	Min	-2.8E-05	-2.136	Gap Link 2-Int	1.5	15.0	0.14
1506	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1506	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
1506	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00043	Gap Link 2-Int	1.5	15.0	0.00
1506	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00043	Gap Link 2-Int	1.5	15.0	0.00
1507	ALLOW_ENVE	Combination	Max	0.009938	0	Gap Link 4-Int	3.75	37.5	0.00
1507	ALLOW_ENVE	Combination	Min	-0.00014	-5.361	Gap Link 4-Int	3.75	37.5	0.14
1507	ALLOW_UPLIFT_ENVE	Combination	Max	0.009874	0	Gap Link 4-Int	3.75	37.5	0.00
1507	ALLOW_UPLIFT_ENVE	Combination	Min	-5.1E-05	-4.75	Gap Link 4-Int	3.75	37.5	0.13
1507	ALLOW_ENVE+SOIL	Combination	Max	0.009938	0.001016	Gap Link 4-Int	3.75	37.5	0.00
1507	ALLOW_ENVE+SOIL	Combination	Min	-0.00014	-5.36	Gap Link 4-Int	3.75	37.5	0.14
1507	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1507	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
1507	SUST_ALLOW_ENVE+S(	Combination	Max	0	0.001016	Gap Link 4-Int	3.75	37.5	0.00
1507	SUST_ALLOW_ENVE+S(	Combination	Min	0	0.001016	Gap Link 4-Int	3.75	37.5	0.00
1508	ALLOW_ENVE	Combination	Max	0.004031	0	Gap Link 2-Int	1.5	15.0	0.00
1508	ALLOW_ENVE	Combination	Min	-6E-05	-2.156	Gap Link 2-Int	1.5	15.0	0.14
1508	ALLOW_UPLIFT_ENVE	Combination	Max	0.003998	0	Gap Link 2-Int	1.5	15.0	0.00
1508	ALLOW_UPLIFT_ENVE	Combination	Min	-2.4E-05	-1.912	Gap Link 2-Int	1.5	15.0	0.13
1508	ALLOW_ENVE+SOIL	Combination	Max	0.004031	0.000615	Gap Link 2-Int	1.5	15.0	0.00
1508	ALLOW_ENVE+SOIL	Combination	Min	-6E-05	-2.155	Gap Link 2-Int	1.5	15.0	0.14
1508	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1508	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
1508	SUST_ALLOW_ENVE+S(	Combination	Max	0	0.000615	Gap Link 2-Int	1.5	15.0	0.00
1508	SUST_ALLOW_ENVE+S(	Combination	Min	0	0.000615	Gap Link 2-Int	1.5	15.0	0.00
1509	ALLOW_ENVE	Combination	Max	0.019	6.847	Gap Link 5-Int	4.5	45.0	0.15
1509	ALLOW_ENVE	Combination	Min	-7.8E-05	0	Gap Link 5-Int	4.5	45.0	0.00
1509	ALLOW_UPLIFT_ENVE	Combination	Max	0.01	5.757	Gap Link 5-Int	4.5	45.0	0.13
1509	ALLOW_UPLIFT_ENVE	Combination	Min	-0.00311	0	Gap Link 5-Int	4.5	45.0	0.00
1509	ALLOW_ENVE+SOIL	Combination	Max	0.019	6.847	Gap Link 5-Int	4.5	45.0	0.15
1509	ALLOW_ENVE+SOIL	Combination	Min	-7.8E-05	0.000281	Gap Link 5-Int	4.5	45.0	0.00
1509	SUST_ALLOW_ENVE	Combination	Max	-3.5E-05	0.25	Gap Link 5-Int	4.5	45.0	0.01
1509	SUST_ALLOW_ENVE	Combination	Min	-6.6E-05	0.135	Gap Link 5-Int	4.5	45.0	0.00
1509	SUST_ALLOW_ENVE+S(	Combination	Max	-3.5E-05	0.25	Gap Link 5-Int	4.5	45.0	0.01
1509	SUST_ALLOW_ENVE+S(	Combination	Min	-6.6E-05	0.135	Gap Link 5-Int	4.5	45.0	0.00
1510	ALLOW_ENVE	Combination	Max	0.015	5.692	Gap Link 4-Int	3.75	37.5	0.15
1510	ALLOW_ENVE	Combination	Min	-9E-05	0	Gap Link 4-Int	3.75	37.5	0.00
1510	ALLOW_UPLIFT_ENVE	Combination	Max	0.008851	4.838	Gap Link 4-Int	3.75	37.5	0.13
1510	ALLOW_UPLIFT_ENVE	Combination	Min	-0.00259	0	Gap Link 4-Int	3.75	37.5	0.00
1510	ALLOW_ENVE+SOIL	Combination	Max	0.015	5.691	Gap Link 4-Int	3.75	37.5	0.15
1510	ALLOW_ENVE+SOIL	Combination	Min	-9E-05	-0.00055	Gap Link 4-Int	3.75	37.5	0.00
1510	SUST_ALLOW_ENVE	Combination	Max	-3.4E-05	0.228	Gap Link 4-Int	3.75	37.5	0.01
1510	SUST_ALLOW_ENVE	Combination	Min	-6E-05	0.132	Gap Link 4-Int	3.75	37.5	0.00
1510	SUST_ALLOW_ENVE+S(	Combination	Max	-3.4E-05	0.227	Gap Link 4-Int	3.75	37.5	0.01
1510	SUST_ALLOW_ENVE+S(	Combination	Min	-6E-05	0.131	Gap Link 4-Int	3.75	37.5	0.00
1511	ALLOW_ENVE	Combination	Max	0.005541	2.273	Gap Link 2-Int	1.5	15.0	0.15
1511	ALLOW_ENVE	Combination	Min	-4.2E-05	0	Gap Link 2-Int	1.5	15.0	0.00

1511	ALLOW_UPLIFT_ENVE	Combination Max	0.003579	1.946	Gap Link 2-Int	1.5	15.0	0.13
1511	ALLOW_UPLIFT_ENVE	Combination Min	-0.00104	0	Gap Link 2-Int	1.5	15.0	0.00
1511	ALLOW_ENVE+SOIL	Combination Max	0.005541	2.272	Gap Link 2-Int	1.5	15.0	0.15
1511	ALLOW_ENVE+SOIL	Combination Min	-4.2E-05	-0.00043	Gap Link 2-Int	1.5	15.0	0.00
1511	SUST_ALLOW_ENVE	Combination Max	-1.5E-05	0.096	Gap Link 2-Int	1.5	15.0	0.01
1511	SUST_ALLOW_ENVE	Combination Min	-2.6E-05	0.058	Gap Link 2-Int	1.5	15.0	0.00
1511	SUST_ALLOW_ENVE+S(	Combination Max	-1.5E-05	0.096	Gap Link 2-Int	1.5	15.0	0.01
1511	SUST_ALLOW_ENVE+S(	Combination Min	-2.6E-05	0.057	Gap Link 2-Int	1.5	15.0	0.00
1512	ALLOW_ENVE	Combination Max	0.017	5.718	Gap Link 4-Int	3.75	37.5	0.15
1512	ALLOW_ENVE	Combination Min	-5E-05	0	Gap Link 4-Int	3.75	37.5	0.00
1512	ALLOW_UPLIFT_ENVE	Combination Max	0.00855	4.756	Gap Link 4-Int	3.75	37.5	0.13
1512	ALLOW_UPLIFT_ENVE	Combination Min	-0.00259	0	Gap Link 4-Int	3.75	37.5	0.00
1512	ALLOW_ENVE+SOIL	Combination Max	0.017	5.719	Gap Link 4-Int	3.75	37.5	0.15
1512	ALLOW_ENVE+SOIL	Combination Min	-5E-05	0.001014	Gap Link 4-Int	3.75	37.5	0.00
1512	SUST_ALLOW_ENVE	Combination Max	-2.4E-05	0.188	Gap Link 4-Int	3.75	37.5	0.01
1512	SUST_ALLOW_ENVE	Combination Min	-5E-05	0.093	Gap Link 4-Int	3.75	37.5	0.00
1512	SUST_ALLOW_ENVE+S(	Combination Max	-2.4E-05	0.189	Gap Link 4-Int	3.75	37.5	0.01
1512	SUST_ALLOW_ENVE+S(	Combination Min	-5E-05	0.094	Gap Link 4-Int	3.75	37.5	0.00
1513	ALLOW_ENVE	Combination Max	0.007348	2.29	Gap Link 2-Int	1.5	15.0	0.15
1513	ALLOW_ENVE	Combination Min	-1.9E-05	0	Gap Link 2-Int	1.5	15.0	0.00
1513	ALLOW_UPLIFT_ENVE	Combination Max	0.003379	1.891	Gap Link 2-Int	1.5	15.0	0.13
1513	ALLOW_UPLIFT_ENVE	Combination Min	-0.00103	0	Gap Link 2-Int	1.5	15.0	0.00
1513	ALLOW_ENVE+SOIL	Combination Max	0.007348	2.291	Gap Link 2-Int	1.5	15.0	0.15
1513	ALLOW_ENVE+SOIL	Combination Min	-1.9E-05	0.000614	Gap Link 2-Int	1.5	15.0	0.00
1513	SUST_ALLOW_ENVE	Combination Max	-8.3E-06	0.07	Gap Link 2-Int	1.5	15.0	0.00
1513	SUST_ALLOW_ENVE	Combination Min	-1.9E-05	0.032	Gap Link 2-Int	1.5	15.0	0.00
1513	SUST_ALLOW_ENVE+S(	Combination Max	-8.3E-06	0.071	Gap Link 2-Int	1.5	15.0	0.00
1513	SUST_ALLOW_ENVE+S(	Combination Min	-1.9E-05	0.033	Gap Link 2-Int	1.5	15.0	0.00
1514	ALLOW_ENVE	Combination Max	0	0.012	Gap Link 5-Int	4.5	45.0	0.00
1514	ALLOW_ENVE	Combination Min	-1.673	-0.013	Gap Link 5-Int	4.5	45.0	0.04
1514	ALLOW_UPLIFT_ENVE	Combination Max	0	0.012	Gap Link 5-Int	4.5	45.0	0.00
1514	ALLOW_UPLIFT_ENVE	Combination Min	-1.654	-0.012	Gap Link 5-Int	4.5	45.0	0.04
1514	ALLOW_ENVE+SOIL	Combination Max	-0.00153	0.012	Gap Link 5-Int	4.5	45.0	0.00
1514	ALLOW_ENVE+SOIL	Combination Min	-1.675	-0.013	Gap Link 5-Int	4.5	45.0	0.04
1514	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1514	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1514	SUST_ALLOW_ENVE+S(	Combination Max	-0.00153	0	Gap Link 5-Int	4.5	45.0	0.00
1514	SUST_ALLOW_ENVE+S(	Combination Min	-0.00153	0	Gap Link 5-Int	4.5	45.0	0.00
1515	ALLOW_ENVE	Combination Max	0	0.009567	Gap Link 3-Int	3.625	36.3	0.00
1515	ALLOW_ENVE	Combination Min	-1.339	-0.01	Gap Link 3-Int	3.625	36.3	0.04
1515	ALLOW_UPLIFT_ENVE	Combination Max	0	0.009591	Gap Link 3-Int	3.625	36.3	0.00
1515	ALLOW_UPLIFT_ENVE	Combination Min	-1.315	-0.00973	Gap Link 3-Int	3.625	36.3	0.04
1515	ALLOW_ENVE+SOIL	Combination Max	-0.00047	0.009567	Gap Link 3-Int	3.625	36.3	0.00
1515	ALLOW_ENVE+SOIL	Combination Min	-1.339	-0.01	Gap Link 3-Int	3.625	36.3	0.04
1515	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1515	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1515	SUST_ALLOW_ENVE+S(	Combination Max	-0.00047	0	Gap Link 3-Int	3.625	36.3	0.00
1515	SUST_ALLOW_ENVE+S(	Combination Min	-0.00047	0	Gap Link 3-Int	3.625	36.3	0.00
1516	ALLOW_ENVE	Combination Max	0	0.003614	Gap Link 1-Int	1.375	13.8	0.00
1516	ALLOW_ENVE	Combination Min	-0.506	-0.00384	Gap Link 1-Int	1.375	13.8	0.04
1516	ALLOW_UPLIFT_ENVE	Combination Max	0	0.003609	Gap Link 1-Int	1.375	13.8	0.00
1516	ALLOW_UPLIFT_ENVE	Combination Min	-0.495	-0.00376	Gap Link 1-Int	1.375	13.8	0.04
1516	ALLOW_ENVE+SOIL	Combination Max	-4.2E-06	0.003614	Gap Link 1-Int	1.375	13.8	0.00
1516	ALLOW_ENVE+SOIL	Combination Min	-0.506	-0.00384	Gap Link 1-Int	1.375	13.8	0.04
1516	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1516	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1516	SUST_ALLOW_ENVE+S(	Combination Max	-4.2E-06	0	Gap Link 1-Int	1.375	13.8	0.00
1516	SUST_ALLOW_ENVE+S(	Combination Min	-4.2E-06	0	Gap Link 1-Int	1.375	13.8	0.00
1517	ALLOW_ENVE	Combination Max	0	0.015	Gap Link 5-Int	4.5	45.0	0.00
1517	ALLOW_ENVE	Combination Min	-1.689	-0.013	Gap Link 5-Int	4.5	45.0	0.04
1517	ALLOW_UPLIFT_ENVE	Combination Max	0	0.012	Gap Link 5-Int	4.5	45.0	0.00
1517	ALLOW_UPLIFT_ENVE	Combination Min	-1.674	-0.011	Gap Link 5-Int	4.5	45.0	0.04
1517	ALLOW_ENVE+SOIL	Combination Max	-0.00246	0.015	Gap Link 5-Int	4.5	45.0	0.00

1517	ALLOW_ENVE+SOIL	Combination Min	-1.692	-0.013	Gap Link 5-Int	4.5	45.0	0.04
1517	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1517	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1517	SUST_ALLOW_ENVE+S(	Combination Max	-0.00246	0	Gap Link 5-Int	4.5	45.0	0.00
1517	SUST_ALLOW_ENVE+S(	Combination Min	-0.00246	0	Gap Link 5-Int	4.5	45.0	0.00
1518	ALLOW_ENVE	Combination Max	0	0.014	Gap Link 3-Int	3.625	36.3	0.00
1518	ALLOW_ENVE	Combination Min	-1.554	-0.012	Gap Link 3-Int	3.625	36.3	0.04
1518	ALLOW_UPLIFT_ENVE	Combination Max	0	0.009946	Gap Link 3-Int	3.625	36.3	0.00
1518	ALLOW_UPLIFT_ENVE	Combination Min	-1.364	-0.00884	Gap Link 3-Int	3.625	36.3	0.04
1518	ALLOW_ENVE+SOIL	Combination Max	-0.00274	0.014	Gap Link 3-Int	3.625	36.3	0.00
1518	ALLOW_ENVE+SOIL	Combination Min	-1.557	-0.012	Gap Link 3-Int	3.625	36.3	0.04
1518	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1518	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1518	SUST_ALLOW_ENVE+S(	Combination Max	-0.00274	0	Gap Link 3-Int	3.625	36.3	0.00
1518	SUST_ALLOW_ENVE+S(	Combination Min	-0.00274	0	Gap Link 3-Int	3.625	36.3	0.00
1519	ALLOW_ENVE	Combination Max	0	0.005794	Gap Link 1-Int	1.375	13.8	0.00
1519	ALLOW_ENVE	Combination Min	-0.646	-0.00508	Gap Link 1-Int	1.375	13.8	0.05
1519	ALLOW_UPLIFT_ENVE	Combination Max	0	0.0038	Gap Link 1-Int	1.375	13.8	0.00
1519	ALLOW_UPLIFT_ENVE	Combination Min	-0.521	-0.00328	Gap Link 1-Int	1.375	13.8	0.04
1519	ALLOW_ENVE+SOIL	Combination Max	-0.00121	0.005794	Gap Link 1-Int	1.375	13.8	0.00
1519	ALLOW_ENVE+SOIL	Combination Min	-0.647	-0.00508	Gap Link 1-Int	1.375	13.8	0.05
1519	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1519	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1519	SUST_ALLOW_ENVE+S(	Combination Max	-0.00121	0	Gap Link 1-Int	1.375	13.8	0.00
1519	SUST_ALLOW_ENVE+S(	Combination Min	-0.00121	0	Gap Link 1-Int	1.375	13.8	0.00
1520	ALLOW_ENVE	Combination Max	0.093	0.001547	Gap Link 5-Int	4.5	45.0	0.00
1520	ALLOW_ENVE	Combination Min	0	-2.2E-05	Gap Link 5-Int	4.5	45.0	0.00
1520	ALLOW_UPLIFT_ENVE	Combination Max	0.089	0.001307	Gap Link 5-Int	4.5	45.0	0.00
1520	ALLOW_UPLIFT_ENVE	Combination Min	0	-0.00117	Gap Link 5-Int	4.5	45.0	0.00
1520	ALLOW_ENVE+SOIL	Combination Max	0.092	0.001547	Gap Link 5-Int	4.5	45.0	0.00
1520	ALLOW_ENVE+SOIL	Combination Min	-0.00153	-2.2E-05	Gap Link 5-Int	4.5	45.0	0.00
1520	SUST_ALLOW_ENVE	Combination Max	0.041	-1E-05	Gap Link 5-Int	4.5	45.0	0.00
1520	SUST_ALLOW_ENVE	Combination Min	0.04	-2.2E-05	Gap Link 5-Int	4.5	45.0	0.00
1520	SUST_ALLOW_ENVE+S(	Combination Max	0.04	-1E-05	Gap Link 5-Int	4.5	45.0	0.00
1520	SUST_ALLOW_ENVE+S(	Combination Min	0.039	-2.2E-05	Gap Link 5-Int	4.5	45.0	0.00
1521	ALLOW_ENVE	Combination Max	0.033	0.00055	Gap Link 3-Int	3.625	36.3	0.00
1521	ALLOW_ENVE	Combination Min	0	-7.7E-06	Gap Link 3-Int	3.625	36.3	0.00
1521	ALLOW_UPLIFT_ENVE	Combination Max	0.029	0.000425	Gap Link 3-Int	3.625	36.3	0.00
1521	ALLOW_UPLIFT_ENVE	Combination Min	0	-0.00036	Gap Link 3-Int	3.625	36.3	0.00
1521	ALLOW_ENVE+SOIL	Combination Max	0.033	0.00055	Gap Link 3-Int	3.625	36.3	0.00
1521	ALLOW_ENVE+SOIL	Combination Min	-0.00047	-7.7E-06	Gap Link 3-Int	3.625	36.3	0.00
1521	SUST_ALLOW_ENVE	Combination Max	0.014	-3.4E-06	Gap Link 3-Int	3.625	36.3	0.00
1521	SUST_ALLOW_ENVE	Combination Min	0.014	-7.7E-06	Gap Link 3-Int	3.625	36.3	0.00
1521	SUST_ALLOW_ENVE+S(	Combination Max	0.014	-3.4E-06	Gap Link 3-Int	3.625	36.3	0.00
1521	SUST_ALLOW_ENVE+S(	Combination Min	0.013	-7.7E-06	Gap Link 3-Int	3.625	36.3	0.00
1522	ALLOW_ENVE	Combination Max	0.003314	5.51E-05	Gap Link 1-Int	1.375	13.8	0.00
1522	ALLOW_ENVE	Combination Min	0	-5.4E-07	Gap Link 1-Int	1.375	13.8	0.00
1522	ALLOW_UPLIFT_ENVE	Combination Max	0.001498	2.21E-05	Gap Link 1-Int	1.375	13.8	0.00
1522	ALLOW_UPLIFT_ENVE	Combination Min	0	-1.4E-06	Gap Link 1-Int	1.375	13.8	0.00
1522	ALLOW_ENVE+SOIL	Combination Max	0.00331	5.51E-05	Gap Link 1-Int	1.375	13.8	0.00
1522	ALLOW_ENVE+SOIL	Combination Min	-4.2E-06	-5.4E-07	Gap Link 1-Int	1.375	13.8	0.00
1522	SUST_ALLOW_ENVE	Combination Max	0.001003	-2.2E-07	Gap Link 1-Int	1.375	13.8	0.00
1522	SUST_ALLOW_ENVE	Combination Min	0.00088	-5.4E-07	Gap Link 1-Int	1.375	13.8	0.00
1522	SUST_ALLOW_ENVE+S(	Combination Max	0.000999	-2.2E-07	Gap Link 1-Int	1.375	13.8	0.00
1522	SUST_ALLOW_ENVE+S(	Combination Min	0.000875	-5.4E-07	Gap Link 1-Int	1.375	13.8	0.00
1523	ALLOW_ENVE	Combination Max	0.145	0.002398	Gap Link 5-Int	4.5	45.0	0.00
1523	ALLOW_ENVE	Combination Min	0	-3.5E-05	Gap Link 5-Int	4.5	45.0	0.00
1523	ALLOW_UPLIFT_ENVE	Combination Max	0.142	0.002075	Gap Link 5-Int	4.5	45.0	0.00
1523	ALLOW_UPLIFT_ENVE	Combination Min	0	-0.00191	Gap Link 5-Int	4.5	45.0	0.00
1523	ALLOW_ENVE+SOIL	Combination Max	0.143	0.002398	Gap Link 5-Int	4.5	45.0	0.00
1523	ALLOW_ENVE+SOIL	Combination Min	-0.00246	-3.5E-05	Gap Link 5-Int	4.5	45.0	0.00
1523	SUST_ALLOW_ENVE	Combination Max	0.065	-1.6E-05	Gap Link 5-Int	4.5	45.0	0.00
1523	SUST_ALLOW_ENVE	Combination Min	0.063	-3.5E-05	Gap Link 5-Int	4.5	45.0	0.00

1523	SUST_ALLOW_ENVE+S(	Combination	Max	0.063	-1.6E-05	Gap Link 5-Int	4.5	45.0	0.00
1523	SUST_ALLOW_ENVE+S(	Combination	Min	0.061	-3.5E-05	Gap Link 5-Int	4.5	45.0	0.00
1524	ALLOW_ENVE	Combination	Max	0.16	0.002629	Gap Link 3-Int	3.625	36.3	0.00
1524	ALLOW_ENVE	Combination	Min	0	-3.9E-05	Gap Link 3-Int	3.625	36.3	0.00
1524	ALLOW_UPLIFT_ENVE	Combination	Max	0.157	0.0023	Gap Link 3-Int	3.625	36.3	0.00
1524	ALLOW_UPLIFT_ENVE	Combination	Min	0	-0.00212	Gap Link 3-Int	3.625	36.3	0.00
1524	ALLOW_ENVE+SOIL	Combination	Max	0.157	0.002629	Gap Link 3-Int	3.625	36.3	0.00
1524	ALLOW_ENVE+SOIL	Combination	Min	-0.00274	-3.9E-05	Gap Link 3-Int	3.625	36.3	0.00
1524	SUST_ALLOW_ENVE	Combination	Max	0.071	-1.7E-05	Gap Link 3-Int	3.625	36.3	0.00
1524	SUST_ALLOW_ENVE	Combination	Min	0.069	-3.9E-05	Gap Link 3-Int	3.625	36.3	0.00
1524	SUST_ALLOW_ENVE+S(	Combination	Max	0.069	-1.7E-05	Gap Link 3-Int	3.625	36.3	0.00
1524	SUST_ALLOW_ENVE+S(	Combination	Min	0.067	-3.9E-05	Gap Link 3-Int	3.625	36.3	0.00
1525	ALLOW_ENVE	Combination	Max	0.071	0.00116	Gap Link 1-Int	1.375	13.8	0.01
1525	ALLOW_ENVE	Combination	Min	0	-1.7E-05	Gap Link 1-Int	1.375	13.8	0.00
1525	ALLOW_UPLIFT_ENVE	Combination	Max	0.07	0.001019	Gap Link 1-Int	1.375	13.8	0.01
1525	ALLOW_UPLIFT_ENVE	Combination	Min	0	-0.00095	Gap Link 1-Int	1.375	13.8	0.00
1525	ALLOW_ENVE+SOIL	Combination	Max	0.069	0.00116	Gap Link 1-Int	1.375	13.8	0.01
1525	ALLOW_ENVE+SOIL	Combination	Min	-0.00121	-1.7E-05	Gap Link 1-Int	1.375	13.8	0.00
1525	SUST_ALLOW_ENVE	Combination	Max	0.032	-7.6E-06	Gap Link 1-Int	1.375	13.8	0.00
1525	SUST_ALLOW_ENVE	Combination	Min	0.031	-1.7E-05	Gap Link 1-Int	1.375	13.8	0.00
1525	SUST_ALLOW_ENVE+S(	Combination	Max	0.03	-7.6E-06	Gap Link 1-Int	1.375	13.8	0.00
1525	SUST_ALLOW_ENVE+S(	Combination	Min	0.029	-1.7E-05	Gap Link 1-Int	1.375	13.8	0.00
1556	ALLOW_ENVE	Combination	Max	0.01	0	Gap Link 5-Int	4.5	45.0	0.00
1556	ALLOW_ENVE	Combination	Min	-0.00023	-5.334	Gap Link 5-Int	4.5	45.0	0.12
1556	ALLOW_UPLIFT_ENVE	Combination	Max	0.01	0	Gap Link 5-Int	4.5	45.0	0.00
1556	ALLOW_UPLIFT_ENVE	Combination	Min	-7E-05	-4.939	Gap Link 5-Int	4.5	45.0	0.11
1556	ALLOW_ENVE+SOIL	Combination	Max	0.01	-0.00054	Gap Link 5-Int	4.5	45.0	0.00
1556	ALLOW_ENVE+SOIL	Combination	Min	-0.00023	-5.335	Gap Link 5-Int	4.5	45.0	0.12
1556	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1556	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1556	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00054	Gap Link 5-Int	4.5	45.0	0.00
1556	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00054	Gap Link 5-Int	4.5	45.0	0.00
1557	ALLOW_ENVE	Combination	Max	0.008442	0	Gap Link 4-Int	3.75	37.5	0.00
1557	ALLOW_ENVE	Combination	Min	-0.00017	-4.443	Gap Link 4-Int	3.75	37.5	0.12
1557	ALLOW_UPLIFT_ENVE	Combination	Max	0.008463	0	Gap Link 4-Int	3.75	37.5	0.00
1557	ALLOW_UPLIFT_ENVE	Combination	Min	-4.1E-05	-4.117	Gap Link 4-Int	3.75	37.5	0.11
1557	ALLOW_ENVE+SOIL	Combination	Max	0.008442	-0.00125	Gap Link 4-Int	3.75	37.5	0.00
1557	ALLOW_ENVE+SOIL	Combination	Min	-0.00017	-4.445	Gap Link 4-Int	3.75	37.5	0.12
1557	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1557	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
1557	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00125	Gap Link 4-Int	3.75	37.5	0.00
1557	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00125	Gap Link 4-Int	3.75	37.5	0.00
1558	ALLOW_ENVE	Combination	Max	0.003375	0	Gap Link 2-Int	1.5	15.0	0.00
1558	ALLOW_ENVE	Combination	Min	-6.3E-05	-1.778	Gap Link 2-Int	1.5	15.0	0.12
1558	ALLOW_UPLIFT_ENVE	Combination	Max	0.00339	0	Gap Link 2-Int	1.5	15.0	0.00
1558	ALLOW_UPLIFT_ENVE	Combination	Min	-1.4E-05	-1.648	Gap Link 2-Int	1.5	15.0	0.11
1558	ALLOW_ENVE+SOIL	Combination	Max	0.003375	-0.00071	Gap Link 2-Int	1.5	15.0	0.00
1558	ALLOW_ENVE+SOIL	Combination	Min	-6.3E-05	-1.779	Gap Link 2-Int	1.5	15.0	0.12
1558	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1558	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
1558	SUST_ALLOW_ENVE+S(	Combination	Max	0	-0.00071	Gap Link 2-Int	1.5	15.0	0.00
1558	SUST_ALLOW_ENVE+S(	Combination	Min	0	-0.00071	Gap Link 2-Int	1.5	15.0	0.00
1559	ALLOW_ENVE	Combination	Max	0.008775	0	Gap Link 4-Int	3.75	37.5	0.00
1559	ALLOW_ENVE	Combination	Min	-0.00021	-4.532	Gap Link 4-Int	3.75	37.5	0.12
1559	ALLOW_UPLIFT_ENVE	Combination	Max	0.008791	0	Gap Link 4-Int	3.75	37.5	0.00
1559	ALLOW_UPLIFT_ENVE	Combination	Min	-7.6E-05	-4.207	Gap Link 4-Int	3.75	37.5	0.11
1559	ALLOW_ENVE+SOIL	Combination	Max	0.008775	0.000355	Gap Link 4-Int	3.75	37.5	0.00
1559	ALLOW_ENVE+SOIL	Combination	Min	-0.00021	-4.532	Gap Link 4-Int	3.75	37.5	0.12
1559	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1559	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
1559	SUST_ALLOW_ENVE+S(	Combination	Max	0	0.000355	Gap Link 4-Int	3.75	37.5	0.00
1559	SUST_ALLOW_ENVE+S(	Combination	Min	0	0.000355	Gap Link 4-Int	3.75	37.5	0.00
1560	ALLOW_ENVE	Combination	Max	0.003614	0	Gap Link 2-Int	1.5	15.0	0.00

1560	ALLOW_ENVE	Combination Min	-8.9E-05	-1.836	Gap Link 2-Int	1.5	15.0	0.12
1560	ALLOW_UPLIFT_ENVE	Combination Max	0.003615	0	Gap Link 2-Int	1.5	15.0	0.00
1560	ALLOW_UPLIFT_ENVE	Combination Min	-3.4E-05	-1.707	Gap Link 2-Int	1.5	15.0	0.11
1560	ALLOW_ENVE+SOIL	Combination Max	0.003614	0.000356	Gap Link 2-Int	1.5	15.0	0.00
1560	ALLOW_ENVE+SOIL	Combination Min	-8.9E-05	-1.836	Gap Link 2-Int	1.5	15.0	0.12
1560	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1560	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
1560	SUST_ALLOW_ENVE+S(	Combination Max	0	0.000356	Gap Link 2-Int	1.5	15.0	0.00
1560	SUST_ALLOW_ENVE+S(	Combination Min	0	0.000356	Gap Link 2-Int	1.5	15.0	0.00
1561	ALLOW_ENVE	Combination Max	0.012	5.91	Gap Link 5-Int	4.5	45.0	0.13
1561	ALLOW_ENVE	Combination Min	-0.00684	0	Gap Link 5-Int	4.5	45.0	0.00
1561	ALLOW_UPLIFT_ENVE	Combination Max	0.011	5.082	Gap Link 5-Int	4.5	45.0	0.11
1561	ALLOW_UPLIFT_ENVE	Combination Min	-8E-05	0	Gap Link 5-Int	4.5	45.0	0.00
1561	ALLOW_ENVE+SOIL	Combination Max	0.012	5.909	Gap Link 5-Int	4.5	45.0	0.13
1561	ALLOW_ENVE+SOIL	Combination Min	-0.00684	-0.00054	Gap Link 5-Int	4.5	45.0	0.00
1561	SUST_ALLOW_ENVE	Combination Max	-6.3E-05	0.279	Gap Link 5-Int	4.5	45.0	0.01
1561	SUST_ALLOW_ENVE	Combination Min	-0.00011	0.153	Gap Link 5-Int	4.5	45.0	0.00
1561	SUST_ALLOW_ENVE+S(	Combination Max	-6.3E-05	0.279	Gap Link 5-Int	4.5	45.0	0.01
1561	SUST_ALLOW_ENVE+S(	Combination Min	-0.00011	0.152	Gap Link 5-Int	4.5	45.0	0.00
1562	ALLOW_ENVE	Combination Max	0.00981	5.011	Gap Link 4-Int	3.75	37.5	0.13
1562	ALLOW_ENVE	Combination Min	-0.00578	0	Gap Link 4-Int	3.75	37.5	0.00
1562	ALLOW_UPLIFT_ENVE	Combination Max	0.009072	4.231	Gap Link 4-Int	3.75	37.5	0.11
1562	ALLOW_UPLIFT_ENVE	Combination Min	-0.00017	0	Gap Link 4-Int	3.75	37.5	0.00
1562	ALLOW_ENVE+SOIL	Combination Max	0.00981	5.01	Gap Link 4-Int	3.75	37.5	0.13
1562	ALLOW_ENVE+SOIL	Combination Min	-0.00578	-0.00125	Gap Link 4-Int	3.75	37.5	0.00
1562	SUST_ALLOW_ENVE	Combination Max	-6.5E-05	0.263	Gap Link 4-Int	3.75	37.5	0.01
1562	SUST_ALLOW_ENVE	Combination Min	-0.00011	0.158	Gap Link 4-Int	3.75	37.5	0.00
1562	SUST_ALLOW_ENVE+S(	Combination Max	-6.5E-05	0.261	Gap Link 4-Int	3.75	37.5	0.01
1562	SUST_ALLOW_ENVE+S(	Combination Min	-0.00011	0.157	Gap Link 4-Int	3.75	37.5	0.00
1563	ALLOW_ENVE	Combination Max	0.003767	2.027	Gap Link 2-Int	1.5	15.0	0.14
1563	ALLOW_ENVE	Combination Min	-0.00233	0	Gap Link 2-Int	1.5	15.0	0.00
1563	ALLOW_UPLIFT_ENVE	Combination Max	0.003618	1.691	Gap Link 2-Int	1.5	15.0	0.11
1563	ALLOW_UPLIFT_ENVE	Combination Min	-9.8E-05	0	Gap Link 2-Int	1.5	15.0	0.00
1563	ALLOW_ENVE+SOIL	Combination Max	0.003767	2.026	Gap Link 2-Int	1.5	15.0	0.14
1563	ALLOW_ENVE+SOIL	Combination Min	-0.00233	-0.00071	Gap Link 2-Int	1.5	15.0	0.00
1563	SUST_ALLOW_ENVE	Combination Max	-2.9E-05	0.113	Gap Link 2-Int	1.5	15.0	0.01
1563	SUST_ALLOW_ENVE	Combination Min	-4.6E-05	0.071	Gap Link 2-Int	1.5	15.0	0.00
1563	SUST_ALLOW_ENVE+S(	Combination Max	-2.9E-05	0.112	Gap Link 2-Int	1.5	15.0	0.01
1563	SUST_ALLOW_ENVE+S(	Combination Min	-4.6E-05	0.071	Gap Link 2-Int	1.5	15.0	0.00
1564	ALLOW_ENVE	Combination Max	0.011	4.837	Gap Link 4-Int	3.75	37.5	0.13
1564	ALLOW_ENVE	Combination Min	-0.00562	0	Gap Link 4-Int	3.75	37.5	0.00
1564	ALLOW_UPLIFT_ENVE	Combination Max	0.009145	4.238	Gap Link 4-Int	3.75	37.5	0.11
1564	ALLOW_UPLIFT_ENVE	Combination Min	-1.1E-05	0	Gap Link 4-Int	3.75	37.5	0.00
1564	ALLOW_ENVE+SOIL	Combination Max	0.011	4.838	Gap Link 4-Int	3.75	37.5	0.13
1564	ALLOW_ENVE+SOIL	Combination Min	-0.00562	0.000354	Gap Link 4-Int	3.75	37.5	0.00
1564	SUST_ALLOW_ENVE	Combination Max	-4E-05	0.202	Gap Link 4-Int	3.75	37.5	0.01
1564	SUST_ALLOW_ENVE	Combination Min	-8.2E-05	0.097	Gap Link 4-Int	3.75	37.5	0.00
1564	SUST_ALLOW_ENVE+S(	Combination Max	-4E-05	0.203	Gap Link 4-Int	3.75	37.5	0.01
1564	SUST_ALLOW_ENVE+S(	Combination Min	-8.2E-05	0.097	Gap Link 4-Int	3.75	37.5	0.00
1565	ALLOW_ENVE	Combination Max	0.004546	1.911	Gap Link 2-Int	1.5	15.0	0.13
1565	ALLOW_ENVE	Combination Min	-0.00222	0	Gap Link 2-Int	1.5	15.0	0.00
1565	ALLOW_UPLIFT_ENVE	Combination Max	0.003667	1.696	Gap Link 2-Int	1.5	15.0	0.11
1565	ALLOW_UPLIFT_ENVE	Combination Min	-9.8E-07	0	Gap Link 2-Int	1.5	15.0	0.00
1565	ALLOW_ENVE+SOIL	Combination Max	0.004546	1.912	Gap Link 2-Int	1.5	15.0	0.13
1565	ALLOW_ENVE+SOIL	Combination Min	-0.00222	0.000355	Gap Link 2-Int	1.5	15.0	0.00
1565	SUST_ALLOW_ENVE	Combination Max	-1.3E-05	0.073	Gap Link 2-Int	1.5	15.0	0.00
1565	SUST_ALLOW_ENVE	Combination Min	-3E-05	0.031	Gap Link 2-Int	1.5	15.0	0.00
1565	SUST_ALLOW_ENVE+S(	Combination Max	-1.3E-05	0.073	Gap Link 2-Int	1.5	15.0	0.00
1565	SUST_ALLOW_ENVE+S(	Combination Min	-3E-05	0.031	Gap Link 2-Int	1.5	15.0	0.00
1566	ALLOW_ENVE	Combination Max	0	0.01	Gap Link 5-Int	4.5	45.0	0.00
1566	ALLOW_ENVE	Combination Min	-1.65	-0.011	Gap Link 5-Int	4.5	45.0	0.04
1566	ALLOW_UPLIFT_ENVE	Combination Max	0	0.01	Gap Link 5-Int	4.5	45.0	0.00
1566	ALLOW_UPLIFT_ENVE	Combination Min	-1.627	-0.011	Gap Link 5-Int	4.5	45.0	0.04

1566	ALLOW_ENVE+SOIL	Combination Max	-0.00156	0.01	Gap Link 5-Int	4.5	45.0	0.00
1566	ALLOW_ENVE+SOIL	Combination Min	-1.652	-0.011	Gap Link 5-Int	4.5	45.0	0.04
1566	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1566	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1566	SUST_ALLOW_ENVE+S(	Combination Max	-0.00156	0	Gap Link 5-Int	4.5	45.0	0.00
1566	SUST_ALLOW_ENVE+S(	Combination Min	-0.00156	0	Gap Link 5-Int	4.5	45.0	0.00
1567	ALLOW_ENVE	Combination Max	0	0.008154	Gap Link 3-Int	3.625	36.3	0.00
1567	ALLOW_ENVE	Combination Min	-1.33	-0.00928	Gap Link 3-Int	3.625	36.3	0.04
1567	ALLOW_UPLIFT_ENVE	Combination Max	0	0.008214	Gap Link 3-Int	3.625	36.3	0.00
1567	ALLOW_UPLIFT_ENVE	Combination Min	-1.306	-0.00852	Gap Link 3-Int	3.625	36.3	0.04
1567	ALLOW_ENVE+SOIL	Combination Max	-0.00048	0.008154	Gap Link 3-Int	3.625	36.3	0.00
1567	ALLOW_ENVE+SOIL	Combination Min	-1.331	-0.00928	Gap Link 3-Int	3.625	36.3	0.04
1567	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1567	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1567	SUST_ALLOW_ENVE+S(	Combination Max	-0.00048	0	Gap Link 3-Int	3.625	36.3	0.00
1567	SUST_ALLOW_ENVE+S(	Combination Min	-0.00048	0	Gap Link 3-Int	3.625	36.3	0.00
1568	ALLOW_ENVE	Combination Max	0	0.003094	Gap Link 1-Int	1.375	13.8	0.00
1568	ALLOW_ENVE	Combination Min	-0.505	-0.00367	Gap Link 1-Int	1.375	13.8	0.04
1568	ALLOW_UPLIFT_ENVE	Combination Max	0	0.003108	Gap Link 1-Int	1.375	13.8	0.00
1568	ALLOW_UPLIFT_ENVE	Combination Min	-0.494	-0.00322	Gap Link 1-Int	1.375	13.8	0.04
1568	ALLOW_ENVE+SOIL	Combination Max	-4.4E-06	0.003094	Gap Link 1-Int	1.375	13.8	0.00
1568	ALLOW_ENVE+SOIL	Combination Min	-0.505	-0.00367	Gap Link 1-Int	1.375	13.8	0.04
1568	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1568	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1568	SUST_ALLOW_ENVE+S(	Combination Max	-4.4E-06	0	Gap Link 1-Int	1.375	13.8	0.00
1568	SUST_ALLOW_ENVE+S(	Combination Min	-4.4E-06	0	Gap Link 1-Int	1.375	13.8	0.00
1569	ALLOW_ENVE	Combination Max	0	0.012	Gap Link 5-Int	4.5	45.0	0.00
1569	ALLOW_ENVE	Combination Min	-1.648	-0.00995	Gap Link 5-Int	4.5	45.0	0.04
1569	ALLOW_UPLIFT_ENVE	Combination Max	0	0.01	Gap Link 5-Int	4.5	45.0	0.00
1569	ALLOW_UPLIFT_ENVE	Combination Min	-1.633	-0.011	Gap Link 5-Int	4.5	45.0	0.04
1569	ALLOW_ENVE+SOIL	Combination Max	-0.00252	0.012	Gap Link 5-Int	4.5	45.0	0.00
1569	ALLOW_ENVE+SOIL	Combination Min	-1.65	-0.00995	Gap Link 5-Int	4.5	45.0	0.04
1569	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1569	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1569	SUST_ALLOW_ENVE+S(	Combination Max	-0.00252	0	Gap Link 5-Int	4.5	45.0	0.00
1569	SUST_ALLOW_ENVE+S(	Combination Min	-0.00252	0	Gap Link 5-Int	4.5	45.0	0.00
1570	ALLOW_ENVE	Combination Max	0	0.011	Gap Link 3-Int	3.625	36.3	0.00
1570	ALLOW_ENVE	Combination Min	-1.496	-0.00849	Gap Link 3-Int	3.625	36.3	0.04
1570	ALLOW_UPLIFT_ENVE	Combination Max	0	0.008294	Gap Link 3-Int	3.625	36.3	0.00
1570	ALLOW_UPLIFT_ENVE	Combination Min	-1.323	-0.00871	Gap Link 3-Int	3.625	36.3	0.04
1570	ALLOW_ENVE+SOIL	Combination Max	-0.00281	0.011	Gap Link 3-Int	3.625	36.3	0.00
1570	ALLOW_ENVE+SOIL	Combination Min	-1.499	-0.00849	Gap Link 3-Int	3.625	36.3	0.04
1570	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1570	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1570	SUST_ALLOW_ENVE+S(	Combination Max	-0.00281	0	Gap Link 3-Int	3.625	36.3	0.00
1570	SUST_ALLOW_ENVE+S(	Combination Min	-0.00281	0	Gap Link 3-Int	3.625	36.3	0.00
1571	ALLOW_ENVE	Combination Max	0	0.00475	Gap Link 1-Int	1.375	13.8	0.00
1571	ALLOW_ENVE	Combination Min	-0.619	-0.00345	Gap Link 1-Int	1.375	13.8	0.05
1571	ALLOW_UPLIFT_ENVE	Combination Max	0	0.003153	Gap Link 1-Int	1.375	13.8	0.00
1571	ALLOW_UPLIFT_ENVE	Combination Min	-0.504	-0.00332	Gap Link 1-Int	1.375	13.8	0.04
1571	ALLOW_ENVE+SOIL	Combination Max	-0.00124	0.00475	Gap Link 1-Int	1.375	13.8	0.00
1571	ALLOW_ENVE+SOIL	Combination Min	-0.62	-0.00345	Gap Link 1-Int	1.375	13.8	0.05
1571	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1571	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1571	SUST_ALLOW_ENVE+S(	Combination Max	-0.00124	0	Gap Link 1-Int	1.375	13.8	0.00
1571	SUST_ALLOW_ENVE+S(	Combination Min	-0.00124	0	Gap Link 1-Int	1.375	13.8	0.00
1572	ALLOW_ENVE	Combination Max	0.187	0.00265	Gap Link 5-Int	4.5	45.0	0.00
1572	ALLOW_ENVE	Combination Min	0	-0.00261	Gap Link 5-Int	4.5	45.0	0.00
1572	ALLOW_UPLIFT_ENVE	Combination Max	0.183	0.002402	Gap Link 5-Int	4.5	45.0	0.00
1572	ALLOW_UPLIFT_ENVE	Combination Min	0	-1.1E-06	Gap Link 5-Int	4.5	45.0	0.00
1572	ALLOW_ENVE+SOIL	Combination Max	0.185	0.00265	Gap Link 5-Int	4.5	45.0	0.00
1572	ALLOW_ENVE+SOIL	Combination Min	-0.00156	-0.00261	Gap Link 5-Int	4.5	45.0	0.00
1572	SUST_ALLOW_ENVE	Combination Max	0.063	-1.5E-05	Gap Link 5-Int	4.5	45.0	0.00

1572	SUST_ALLOW_ENVE	Combination	Min	0.063	-3.6E-05	Gap Link 5-Int	4.5	45.0	0.00
1572	SUST_ALLOW_ENVE+S(	Combination	Max	0.062	-1.5E-05	Gap Link 5-Int	4.5	45.0	0.00
1572	SUST_ALLOW_ENVE+S(	Combination	Min	0.062	-3.6E-05	Gap Link 5-Int	4.5	45.0	0.00
1573	ALLOW_ENVE	Combination	Max	0.066	0.000934	Gap Link 3-Int	3.625	36.3	0.00
1573	ALLOW_ENVE	Combination	Min	0	-0.00086	Gap Link 3-Int	3.625	36.3	0.00
1573	ALLOW_UPLIFT_ENVE	Combination	Max	0.059	0.000776	Gap Link 3-Int	3.625	36.3	0.00
1573	ALLOW_UPLIFT_ENVE	Combination	Min	0	-3.6E-07	Gap Link 3-Int	3.625	36.3	0.00
1573	ALLOW_ENVE+SOIL	Combination	Max	0.065	0.000934	Gap Link 3-Int	3.625	36.3	0.00
1573	ALLOW_ENVE+SOIL	Combination	Min	-0.00048	-0.00086	Gap Link 3-Int	3.625	36.3	0.00
1573	SUST_ALLOW_ENVE	Combination	Max	0.022	-5.1E-06	Gap Link 3-Int	3.625	36.3	0.00
1573	SUST_ALLOW_ENVE	Combination	Min	0.022	-1.2E-05	Gap Link 3-Int	3.625	36.3	0.00
1573	SUST_ALLOW_ENVE+S(	Combination	Max	0.021	-5.1E-06	Gap Link 3-Int	3.625	36.3	0.00
1573	SUST_ALLOW_ENVE+S(	Combination	Min	0.021	-1.2E-05	Gap Link 3-Int	3.625	36.3	0.00
1574	ALLOW_ENVE	Combination	Max	0.005764	8.17E-05	Gap Link 1-Int	1.375	13.8	0.00
1574	ALLOW_ENVE	Combination	Min	0	-3.9E-05	Gap Link 1-Int	1.375	13.8	0.00
1574	ALLOW_UPLIFT_ENVE	Combination	Max	0.002355	3.1E-05	Gap Link 1-Int	1.375	13.8	0.00
1574	ALLOW_UPLIFT_ENVE	Combination	Min	0	-8.6E-09	Gap Link 1-Int	1.375	13.8	0.00
1574	ALLOW_ENVE+SOIL	Combination	Max	0.00576	8.17E-05	Gap Link 1-Int	1.375	13.8	0.00
1574	ALLOW_ENVE+SOIL	Combination	Min	-4.2E-06	-3.9E-05	Gap Link 1-Int	1.375	13.8	0.00
1574	SUST_ALLOW_ENVE	Combination	Max	0.001504	-3.2E-07	Gap Link 1-Int	1.375	13.8	0.00
1574	SUST_ALLOW_ENVE	Combination	Min	0.001366	-8.5E-07	Gap Link 1-Int	1.375	13.8	0.00
1574	SUST_ALLOW_ENVE+S(	Combination	Max	0.0015	-3.2E-07	Gap Link 1-Int	1.375	13.8	0.00
1574	SUST_ALLOW_ENVE+S(	Combination	Min	0.001361	-8.5E-07	Gap Link 1-Int	1.375	13.8	0.00
1575	ALLOW_ENVE	Combination	Max	0.296	0.00413	Gap Link 5-Int	4.5	45.0	0.01
1575	ALLOW_ENVE	Combination	Min	0	-0.00417	Gap Link 5-Int	4.5	45.0	0.00
1575	ALLOW_UPLIFT_ENVE	Combination	Max	0.292	0.003832	Gap Link 5-Int	4.5	45.0	0.01
1575	ALLOW_UPLIFT_ENVE	Combination	Min	0	-1.8E-06	Gap Link 5-Int	4.5	45.0	0.00
1575	ALLOW_ENVE+SOIL	Combination	Max	0.293	0.00413	Gap Link 5-Int	4.5	45.0	0.01
1575	ALLOW_ENVE+SOIL	Combination	Min	-0.00252	-0.00417	Gap Link 5-Int	4.5	45.0	0.00
1575	SUST_ALLOW_ENVE	Combination	Max	0.1	-2.4E-05	Gap Link 5-Int	4.5	45.0	0.00
1575	SUST_ALLOW_ENVE	Combination	Min	0.1	-5.6E-05	Gap Link 5-Int	4.5	45.0	0.00
1575	SUST_ALLOW_ENVE+S(	Combination	Max	0.098	-2.4E-05	Gap Link 5-Int	4.5	45.0	0.00
1575	SUST_ALLOW_ENVE+S(	Combination	Min	0.097	-5.6E-05	Gap Link 5-Int	4.5	45.0	0.00
1576	ALLOW_ENVE	Combination	Max	0.327	0.004528	Gap Link 3-Int	3.625	36.3	0.01
1576	ALLOW_ENVE	Combination	Min	0	-0.0046	Gap Link 3-Int	3.625	36.3	0.00
1576	ALLOW_UPLIFT_ENVE	Combination	Max	0.323	0.004245	Gap Link 3-Int	3.625	36.3	0.01
1576	ALLOW_UPLIFT_ENVE	Combination	Min	0	-2E-06	Gap Link 3-Int	3.625	36.3	0.00
1576	ALLOW_ENVE+SOIL	Combination	Max	0.324	0.004528	Gap Link 3-Int	3.625	36.3	0.01
1576	ALLOW_ENVE+SOIL	Combination	Min	-0.00281	-0.0046	Gap Link 3-Int	3.625	36.3	0.00
1576	SUST_ALLOW_ENVE	Combination	Max	0.11	-2.6E-05	Gap Link 3-Int	3.625	36.3	0.00
1576	SUST_ALLOW_ENVE	Combination	Min	0.109	-6.2E-05	Gap Link 3-Int	3.625	36.3	0.00
1576	SUST_ALLOW_ENVE+S(	Combination	Max	0.107	-2.6E-05	Gap Link 3-Int	3.625	36.3	0.00
1576	SUST_ALLOW_ENVE+S(	Combination	Min	0.107	-6.2E-05	Gap Link 3-Int	3.625	36.3	0.00
1577	ALLOW_ENVE	Combination	Max	0.145	0.001997	Gap Link 1-Int	1.375	13.8	0.01
1577	ALLOW_ENVE	Combination	Min	0	-0.00204	Gap Link 1-Int	1.375	13.8	0.00
1577	ALLOW_UPLIFT_ENVE	Combination	Max	0.143	0.00188	Gap Link 1-Int	1.375	13.8	0.01
1577	ALLOW_UPLIFT_ENVE	Combination	Min	0	-9E-07	Gap Link 1-Int	1.375	13.8	0.00
1577	ALLOW_ENVE+SOIL	Combination	Max	0.144	0.001997	Gap Link 1-Int	1.375	13.8	0.01
1577	ALLOW_ENVE+SOIL	Combination	Min	-0.00124	-0.00204	Gap Link 1-Int	1.375	13.8	0.00
1577	SUST_ALLOW_ENVE	Combination	Max	0.049	-1.1E-05	Gap Link 1-Int	1.375	13.8	0.00
1577	SUST_ALLOW_ENVE	Combination	Min	0.048	-2.7E-05	Gap Link 1-Int	1.375	13.8	0.00
1577	SUST_ALLOW_ENVE+S(	Combination	Max	0.047	-1.1E-05	Gap Link 1-Int	1.375	13.8	0.00
1577	SUST_ALLOW_ENVE+S(	Combination	Min	0.047	-2.7E-05	Gap Link 1-Int	1.375	13.8	0.00
1608	ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1608	ALLOW_ENVE	Combination	Min	-0.252	-6.018	Gap Link 5-Int	4.5	45.0	0.13
1608	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1608	ALLOW_UPLIFT_ENVE	Combination	Min	-0.217	-5.62	Gap Link 5-Int	4.5	45.0	0.12
1608	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00026	Gap Link 5-Int	4.5	45.0	0.00
1608	ALLOW_ENVE+SOIL	Combination	Min	-0.252	-6.019	Gap Link 5-Int	4.5	45.0	0.13
1608	SUST_ALLOW_ENVE	Combination	Max	-0.028	-0.806	Gap Link 5-Int	4.5	45.0	0.02
1608	SUST_ALLOW_ENVE	Combination	Min	-0.03	-0.866	Gap Link 5-Int	4.5	45.0	0.02
1608	SUST_ALLOW_ENVE+S(	Combination	Max	-0.028	-0.807	Gap Link 5-Int	4.5	45.0	0.02
1608	SUST_ALLOW_ENVE+S(	Combination	Min	-0.03	-0.867	Gap Link 5-Int	4.5	45.0	0.02

1609	ALLOW_ENVE	Combination Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1609	ALLOW_ENVE	Combination Min	-0.237	-5.646	Gap Link 4-Int	3.75	37.5	0.15
1609	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1609	ALLOW_UPLIFT_ENVE	Combination Min	-0.201	-5.198	Gap Link 4-Int	3.75	37.5	0.14
1609	ALLOW_ENVE+SOIL	Combination Max	0	0.002665	Gap Link 4-Int	3.75	37.5	0.00
1609	ALLOW_ENVE+SOIL	Combination Min	-0.237	-5.643	Gap Link 4-Int	3.75	37.5	0.15
1609	SUST_ALLOW_ENVE	Combination Max	-0.049	-1.415	Gap Link 4-Int	3.75	37.5	0.04
1609	SUST_ALLOW_ENVE	Combination Min	-0.052	-1.481	Gap Link 4-Int	3.75	37.5	0.04
1609	SUST_ALLOW_ENVE+S(	Combination Max	-0.049	-1.412	Gap Link 4-Int	3.75	37.5	0.04
1609	SUST_ALLOW_ENVE+S(	Combination Min	-0.052	-1.479	Gap Link 4-Int	3.75	37.5	0.04
1610	ALLOW_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1610	ALLOW_ENVE	Combination Min	-0.102	-2.432	Gap Link 2-Int	1.5	15.0	0.16
1610	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1610	ALLOW_UPLIFT_ENVE	Combination Min	-0.086	-2.232	Gap Link 2-Int	1.5	15.0	0.15
1610	ALLOW_ENVE+SOIL	Combination Max	0	0.001838	Gap Link 2-Int	1.5	15.0	0.00
1610	ALLOW_ENVE+SOIL	Combination Min	-0.102	-2.43	Gap Link 2-Int	1.5	15.0	0.16
1610	SUST_ALLOW_ENVE	Combination Max	-0.026	-0.763	Gap Link 2-Int	1.5	15.0	0.05
1610	SUST_ALLOW_ENVE	Combination Min	-0.028	-0.794	Gap Link 2-Int	1.5	15.0	0.05
1610	SUST_ALLOW_ENVE+S(	Combination Max	-0.026	-0.761	Gap Link 2-Int	1.5	15.0	0.05
1610	SUST_ALLOW_ENVE+S(	Combination Min	-0.028	-0.792	Gap Link 2-Int	1.5	15.0	0.05
1611	ALLOW_ENVE	Combination Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1611	ALLOW_ENVE	Combination Min	-0.184	-4.386	Gap Link 4-Int	3.75	37.5	0.12
1611	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1611	ALLOW_UPLIFT_ENVE	Combination Min	-0.161	-4.168	Gap Link 4-Int	3.75	37.5	0.11
1611	ALLOW_ENVE+SOIL	Combination Max	0	-0.00311	Gap Link 4-Int	3.75	37.5	0.00
1611	ALLOW_ENVE+SOIL	Combination Min	-0.184	-4.389	Gap Link 4-Int	3.75	37.5	0.12
1611	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1611	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
1611	SUST_ALLOW_ENVE+S(	Combination Max	0	-0.00311	Gap Link 4-Int	3.75	37.5	0.00
1611	SUST_ALLOW_ENVE+S(	Combination Min	0	-0.00311	Gap Link 4-Int	3.75	37.5	0.00
1612	ALLOW_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1612	ALLOW_ENVE	Combination Min	-0.066	-1.586	Gap Link 2-Int	1.5	15.0	0.11
1612	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1612	ALLOW_UPLIFT_ENVE	Combination Min	-0.059	-1.53	Gap Link 2-Int	1.5	15.0	0.10
1612	ALLOW_ENVE+SOIL	Combination Max	0	-0.00201	Gap Link 2-Int	1.5	15.0	0.00
1612	ALLOW_ENVE+SOIL	Combination Min	-0.066	-1.588	Gap Link 2-Int	1.5	15.0	0.11
1612	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1612	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
1612	SUST_ALLOW_ENVE+S(	Combination Max	0	-0.00201	Gap Link 2-Int	1.5	15.0	0.00
1612	SUST_ALLOW_ENVE+S(	Combination Min	0	-0.00201	Gap Link 2-Int	1.5	15.0	0.00
1613	ALLOW_ENVE	Combination Max	0	3.942	Gap Link 5-Int	4.5	45.0	0.09
1613	ALLOW_ENVE	Combination Min	-0.127	0	Gap Link 5-Int	4.5	45.0	0.00
1613	ALLOW_UPLIFT_ENVE	Combination Max	0	3.981	Gap Link 5-Int	4.5	45.0	0.09
1613	ALLOW_UPLIFT_ENVE	Combination Min	-0.081	0	Gap Link 5-Int	4.5	45.0	0.00
1613	ALLOW_ENVE+SOIL	Combination Max	0	3.941	Gap Link 5-Int	4.5	45.0	0.09
1613	ALLOW_ENVE+SOIL	Combination Min	-0.127	-0.00026	Gap Link 5-Int	4.5	45.0	0.00
1613	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1613	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1613	SUST_ALLOW_ENVE+S(	Combination Max	0	-0.00026	Gap Link 5-Int	4.5	45.0	0.00
1613	SUST_ALLOW_ENVE+S(	Combination Min	0	-0.00026	Gap Link 5-Int	4.5	45.0	0.00
1614	ALLOW_ENVE	Combination Max	0	2.415	Gap Link 4-Int	3.75	37.5	0.06
1614	ALLOW_ENVE	Combination Min	-0.078	0	Gap Link 4-Int	3.75	37.5	0.00
1614	ALLOW_UPLIFT_ENVE	Combination Max	0	2.434	Gap Link 4-Int	3.75	37.5	0.06
1614	ALLOW_UPLIFT_ENVE	Combination Min	-0.049	0	Gap Link 4-Int	3.75	37.5	0.00
1614	ALLOW_ENVE+SOIL	Combination Max	0	2.417	Gap Link 4-Int	3.75	37.5	0.06
1614	ALLOW_ENVE+SOIL	Combination Min	-0.078	0.002647	Gap Link 4-Int	3.75	37.5	0.00
1614	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 4-Int	3.75	37.5	0.00
1614	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 4-Int	3.75	37.5	0.00
1614	SUST_ALLOW_ENVE+S(	Combination Max	0	0.002647	Gap Link 4-Int	3.75	37.5	0.00
1614	SUST_ALLOW_ENVE+S(	Combination Min	0	0.002647	Gap Link 4-Int	3.75	37.5	0.00
1615	ALLOW_ENVE	Combination Max	0	0.734	Gap Link 2-Int	1.5	15.0	0.05
1615	ALLOW_ENVE	Combination Min	-0.024	0	Gap Link 2-Int	1.5	15.0	0.00
1615	ALLOW_UPLIFT_ENVE	Combination Max	0	0.738	Gap Link 2-Int	1.5	15.0	0.05

1615	ALLOW_UPLIFT_ENVE	Combination Min	-0.015	0	Gap Link 2-Int	1.5	15.0	0.00
1615	ALLOW_ENVE+SOIL	Combination Max	0	0.736	Gap Link 2-Int	1.5	15.0	0.05
1615	ALLOW_ENVE+SOIL	Combination Min	-0.024	0.001824	Gap Link 2-Int	1.5	15.0	0.00
1615	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 2-Int	1.5	15.0	0.00
1615	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 2-Int	1.5	15.0	0.00
1615	SUST_ALLOW_ENVE+S(	Combination Max	0	0.001824	Gap Link 2-Int	1.5	15.0	0.00
1615	SUST_ALLOW_ENVE+S(	Combination Min	0	0.001824	Gap Link 2-Int	1.5	15.0	0.00
1616	ALLOW_ENVE	Combination Max	0	4.153	Gap Link 4-Int	3.75	37.5	0.11
1616	ALLOW_ENVE	Combination Min	-0.134	0	Gap Link 4-Int	3.75	37.5	0.00
1616	ALLOW_UPLIFT_ENVE	Combination Max	0	4.2	Gap Link 4-Int	3.75	37.5	0.11
1616	ALLOW_UPLIFT_ENVE	Combination Min	-0.085	0	Gap Link 4-Int	3.75	37.5	0.00
1616	ALLOW_ENVE+SOIL	Combination Max	0	4.15	Gap Link 4-Int	3.75	37.5	0.11
1616	ALLOW_ENVE+SOIL	Combination Min	-0.134	-0.00309	Gap Link 4-Int	3.75	37.5	0.00
1616	SUST_ALLOW_ENVE	Combination Max	-0.0011	0.076	Gap Link 4-Int	3.75	37.5	0.00
1616	SUST_ALLOW_ENVE	Combination Min	-0.00191	0.044	Gap Link 4-Int	3.75	37.5	0.00
1616	SUST_ALLOW_ENVE+S(	Combination Max	-0.0011	0.073	Gap Link 4-Int	3.75	37.5	0.00
1616	SUST_ALLOW_ENVE+S(	Combination Min	-0.00191	0.04	Gap Link 4-Int	3.75	37.5	0.00
1617	ALLOW_ENVE	Combination Max	0	1.892	Gap Link 2-Int	1.5	15.0	0.13
1617	ALLOW_ENVE	Combination Min	-0.061	0	Gap Link 2-Int	1.5	15.0	0.00
1617	ALLOW_UPLIFT_ENVE	Combination Max	0	1.915	Gap Link 2-Int	1.5	15.0	0.13
1617	ALLOW_UPLIFT_ENVE	Combination Min	-0.039	0	Gap Link 2-Int	1.5	15.0	0.00
1617	ALLOW_ENVE+SOIL	Combination Max	0	1.89	Gap Link 2-Int	1.5	15.0	0.13
1617	ALLOW_ENVE+SOIL	Combination Min	-0.061	-0.002	Gap Link 2-Int	1.5	15.0	0.00
1617	SUST_ALLOW_ENVE	Combination Max	-0.00557	0.229	Gap Link 2-Int	1.5	15.0	0.02
1617	SUST_ALLOW_ENVE	Combination Min	-0.00574	0.221	Gap Link 2-Int	1.5	15.0	0.01
1617	SUST_ALLOW_ENVE+S(	Combination Max	-0.00557	0.227	Gap Link 2-Int	1.5	15.0	0.02
1617	SUST_ALLOW_ENVE+S(	Combination Min	-0.00574	0.219	Gap Link 2-Int	1.5	15.0	0.01
1618	ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1618	ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1618	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1618	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1618	ALLOW_ENVE+SOIL	Combination Max	0.024	0	Gap Link 5-Int	4.5	45.0	0.00
1618	ALLOW_ENVE+SOIL	Combination Min	0.024	0	Gap Link 5-Int	4.5	45.0	0.00
1618	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1618	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1618	SUST_ALLOW_ENVE+S(	Combination Max	0.024	0	Gap Link 5-Int	4.5	45.0	0.00
1618	SUST_ALLOW_ENVE+S(	Combination Min	0.024	0	Gap Link 5-Int	4.5	45.0	0.00
1619	ALLOW_ENVE	Combination Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1619	ALLOW_ENVE	Combination Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1619	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1619	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1619	ALLOW_ENVE+SOIL	Combination Max	0.017	0	Gap Link 3-Int	3.625	36.3	0.00
1619	ALLOW_ENVE+SOIL	Combination Min	0.017	0	Gap Link 3-Int	3.625	36.3	0.00
1619	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1619	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1619	SUST_ALLOW_ENVE+S(	Combination Max	0.017	0	Gap Link 3-Int	3.625	36.3	0.00
1619	SUST_ALLOW_ENVE+S(	Combination Min	0.017	0	Gap Link 3-Int	3.625	36.3	0.00
1620	ALLOW_ENVE	Combination Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1620	ALLOW_ENVE	Combination Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1620	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1620	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1620	ALLOW_ENVE+SOIL	Combination Max	0.005646	0	Gap Link 1-Int	1.375	13.8	0.00
1620	ALLOW_ENVE+SOIL	Combination Min	0.005646	0	Gap Link 1-Int	1.375	13.8	0.00
1620	SUST_ALLOW_ENVE	Combination Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1620	SUST_ALLOW_ENVE	Combination Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1620	SUST_ALLOW_ENVE+S(	Combination Max	0.005646	0	Gap Link 1-Int	1.375	13.8	0.00
1620	SUST_ALLOW_ENVE+S(	Combination Min	0.005646	0	Gap Link 1-Int	1.375	13.8	0.00
1621	ALLOW_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1621	ALLOW_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1621	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1621	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1621	ALLOW_ENVE+SOIL	Combination Max	0.028	0	Gap Link 5-Int	4.5	45.0	0.00
1621	ALLOW_ENVE+SOIL	Combination Min	0.028	0	Gap Link 5-Int	4.5	45.0	0.00

1621	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 5-Int	4.5	45.0	0.00
1621	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 5-Int	4.5	45.0	0.00
1621	SUST_ALLOW_ENVE+S(	Combination	Max	0.028	0	Gap Link 5-Int	4.5	45.0	0.00
1621	SUST_ALLOW_ENVE+S(	Combination	Min	0.028	0	Gap Link 5-Int	4.5	45.0	0.00
1622	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1622	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1622	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1622	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1622	ALLOW_ENVE+SOIL	Combination	Max	0.025	0	Gap Link 3-Int	3.625	36.3	0.00
1622	ALLOW_ENVE+SOIL	Combination	Min	0.025	0	Gap Link 3-Int	3.625	36.3	0.00
1622	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 3-Int	3.625	36.3	0.00
1622	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 3-Int	3.625	36.3	0.00
1622	SUST_ALLOW_ENVE+S(	Combination	Max	0.025	0	Gap Link 3-Int	3.625	36.3	0.00
1622	SUST_ALLOW_ENVE+S(	Combination	Min	0.025	0	Gap Link 3-Int	3.625	36.3	0.00
1623	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1623	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1623	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1623	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1623	ALLOW_ENVE+SOIL	Combination	Max	0.01	0	Gap Link 1-Int	1.375	13.8	0.00
1623	ALLOW_ENVE+SOIL	Combination	Min	0.01	0	Gap Link 1-Int	1.375	13.8	0.00
1623	SUST_ALLOW_ENVE	Combination	Max	0	0	Gap Link 1-Int	1.375	13.8	0.00
1623	SUST_ALLOW_ENVE	Combination	Min	0	0	Gap Link 1-Int	1.375	13.8	0.00
1623	SUST_ALLOW_ENVE+S(	Combination	Max	0.01	0	Gap Link 1-Int	1.375	13.8	0.00
1623	SUST_ALLOW_ENVE+S(	Combination	Min	0.01	0	Gap Link 1-Int	1.375	13.8	0.00
1624	ALLOW_ENVE	Combination	Max	15.257	0.185	Gap Link 5-Int	4.5	45.0	0.34
1624	ALLOW_ENVE	Combination	Min	6.944	-0.222	Gap Link 5-Int	4.5	45.0	0.15
1624	ALLOW_UPLIFT_ENVE	Combination	Max	14.008	0.165	Gap Link 5-Int	4.5	45.0	0.31
1624	ALLOW_UPLIFT_ENVE	Combination	Min	6.158	-0.157	Gap Link 5-Int	4.5	45.0	0.14
1624	ALLOW_ENVE+SOIL	Combination	Max	15.281	0.185	Gap Link 5-Int	4.5	45.0	0.34
1624	ALLOW_ENVE+SOIL	Combination	Min	6.968	-0.222	Gap Link 5-Int	4.5	45.0	0.15
1624	SUST_ALLOW_ENVE	Combination	Max	12.187	-0.02	Gap Link 5-Int	4.5	45.0	0.27
1624	SUST_ALLOW_ENVE	Combination	Min	12.054	-0.021	Gap Link 5-Int	4.5	45.0	0.27
1624	SUST_ALLOW_ENVE+S(	Combination	Max	12.211	-0.02	Gap Link 5-Int	4.5	45.0	0.27
1624	SUST_ALLOW_ENVE+S(	Combination	Min	12.078	-0.021	Gap Link 5-Int	4.5	45.0	0.27
1625	ALLOW_ENVE	Combination	Max	13.122	0.156	Gap Link 3-Int	3.625	36.3	0.36
1625	ALLOW_ENVE	Combination	Min	6.286	-0.191	Gap Link 3-Int	3.625	36.3	0.17
1625	ALLOW_UPLIFT_ENVE	Combination	Max	11.788	0.139	Gap Link 3-Int	3.625	36.3	0.33
1625	ALLOW_UPLIFT_ENVE	Combination	Min	5.59	-0.139	Gap Link 3-Int	3.625	36.3	0.15
1625	ALLOW_ENVE+SOIL	Combination	Max	13.139	0.156	Gap Link 3-Int	3.625	36.3	0.36
1625	ALLOW_ENVE+SOIL	Combination	Min	6.303	-0.191	Gap Link 3-Int	3.625	36.3	0.17
1625	SUST_ALLOW_ENVE	Combination	Max	10.549	-0.018	Gap Link 3-Int	3.625	36.3	0.29
1625	SUST_ALLOW_ENVE	Combination	Min	10.425	-0.018	Gap Link 3-Int	3.625	36.3	0.29
1625	SUST_ALLOW_ENVE+S(	Combination	Max	10.565	-0.018	Gap Link 3-Int	3.625	36.3	0.29
1625	SUST_ALLOW_ENVE+S(	Combination	Min	10.442	-0.018	Gap Link 3-Int	3.625	36.3	0.29
1626	ALLOW_ENVE	Combination	Max	5.171	0.061	Gap Link 1-Int	1.375	13.8	0.38
1626	ALLOW_ENVE	Combination	Min	2.545	-0.075	Gap Link 1-Int	1.375	13.8	0.19
1626	ALLOW_UPLIFT_ENVE	Combination	Max	4.591	0.054	Gap Link 1-Int	1.375	13.8	0.33
1626	ALLOW_UPLIFT_ENVE	Combination	Min	2.266	-0.056	Gap Link 1-Int	1.375	13.8	0.16
1626	ALLOW_ENVE+SOIL	Combination	Max	5.177	0.061	Gap Link 1-Int	1.375	13.8	0.38
1626	ALLOW_ENVE+SOIL	Combination	Min	2.551	-0.075	Gap Link 1-Int	1.375	13.8	0.19
1626	SUST_ALLOW_ENVE	Combination	Max	4.172	-0.00697	Gap Link 1-Int	1.375	13.8	0.30
1626	SUST_ALLOW_ENVE	Combination	Min	4.121	-0.00716	Gap Link 1-Int	1.375	13.8	0.30
1626	SUST_ALLOW_ENVE+S(	Combination	Max	4.177	-0.00697	Gap Link 1-Int	1.375	13.8	0.30
1626	SUST_ALLOW_ENVE+S(	Combination	Min	4.126	-0.00716	Gap Link 1-Int	1.375	13.8	0.30
1627	ALLOW_ENVE	Combination	Max	14.321	0.175	Gap Link 5-Int	4.5	45.0	0.32
1627	ALLOW_ENVE	Combination	Min	6.081	-0.208	Gap Link 5-Int	4.5	45.0	0.14
1627	ALLOW_UPLIFT_ENVE	Combination	Max	13.387	0.158	Gap Link 5-Int	4.5	45.0	0.30
1627	ALLOW_UPLIFT_ENVE	Combination	Min	5.309	-0.142	Gap Link 5-Int	4.5	45.0	0.12
1627	ALLOW_ENVE+SOIL	Combination	Max	14.349	0.175	Gap Link 5-Int	4.5	45.0	0.32
1627	ALLOW_ENVE+SOIL	Combination	Min	6.109	-0.208	Gap Link 5-Int	4.5	45.0	0.14
1627	SUST_ALLOW_ENVE	Combination	Max	11.274	-0.019	Gap Link 5-Int	4.5	45.0	0.25
1627	SUST_ALLOW_ENVE	Combination	Min	11.162	-0.02	Gap Link 5-Int	4.5	45.0	0.25
1627	SUST_ALLOW_ENVE+S(	Combination	Max	11.302	-0.019	Gap Link 5-Int	4.5	45.0	0.25

1627	SUST_ALLOW_ENVE+S(	Combination	Min	11.189	-0.02	Gap Link 5-Int	4.5	45.0	0.25
1628	ALLOW_ENVE	Combination	Max	10.921	0.133	Gap Link 3-Int	3.625	36.3	0.30
1628	ALLOW_ENVE	Combination	Min	4.042	-0.155	Gap Link 3-Int	3.625	36.3	0.11
1628	ALLOW_UPLIFT_ENVE	Combination	Max	10.28	0.121	Gap Link 3-Int	3.625	36.3	0.28
1628	ALLOW_UPLIFT_ENVE	Combination	Min	3.528	-0.101	Gap Link 3-Int	3.625	36.3	0.10
1628	ALLOW_ENVE+SOIL	Combination	Max	10.946	0.133	Gap Link 3-Int	3.625	36.3	0.30
1628	ALLOW_ENVE+SOIL	Combination	Min	4.067	-0.155	Gap Link 3-Int	3.625	36.3	0.11
1628	SUST_ALLOW_ENVE	Combination	Max	8.344	-0.014	Gap Link 3-Int	3.625	36.3	0.23
1628	SUST_ALLOW_ENVE	Combination	Min	8.269	-0.015	Gap Link 3-Int	3.625	36.3	0.23
1628	SUST_ALLOW_ENVE+S(	Combination	Max	8.369	-0.014	Gap Link 3-Int	3.625	36.3	0.23
1628	SUST_ALLOW_ENVE+S(	Combination	Min	8.294	-0.015	Gap Link 3-Int	3.625	36.3	0.23
1629	ALLOW_ENVE	Combination	Max	4	0.049	Gap Link 1-Int	1.375	13.8	0.29
1629	ALLOW_ENVE	Combination	Min	1.326	-0.056	Gap Link 1-Int	1.375	13.8	0.10
1629	ALLOW_UPLIFT_ENVE	Combination	Max	3.783	0.045	Gap Link 1-Int	1.375	13.8	0.28
1629	ALLOW_UPLIFT_ENVE	Combination	Min	1.165	-0.036	Gap Link 1-Int	1.375	13.8	0.08
1629	ALLOW_ENVE+SOIL	Combination	Max	4.01	0.049	Gap Link 1-Int	1.375	13.8	0.29
1629	ALLOW_ENVE+SOIL	Combination	Min	1.336	-0.056	Gap Link 1-Int	1.375	13.8	0.10
1629	SUST_ALLOW_ENVE	Combination	Max	2.994	-0.0051	Gap Link 1-Int	1.375	13.8	0.22
1629	SUST_ALLOW_ENVE	Combination	Min	2.97	-0.00526	Gap Link 1-Int	1.375	13.8	0.22
1629	SUST_ALLOW_ENVE+S(	Combination	Max	3.004	-0.0051	Gap Link 1-Int	1.375	13.8	0.22
1629	SUST_ALLOW_ENVE+S(	Combination	Min	2.98	-0.00526	Gap Link 1-Int	1.375	13.8	0.22

Eisenhower Memorial Pile Cap Passive Pressure Check - East Tapestry

Allowable Passive Pressure 10 kips/ft

TABLE: Joint Reactions

Joint	OutputCase	CaseType	StepType	F1	F2	Link ID	Width	Rallowable	DCR
Text	Text	Text	Text	Kip	Kip		Ft	Kip	
287	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
287	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
287	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
287	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
287	ALLOW_ENVE+SOIL	Combination	Max	0.003415	0	Gap Link 1	1.75	17.5	0.00
287	ALLOW_ENVE+SOIL	Combination	Min	0.003415	0	Gap Link 1	1.75	17.5	0.00
287	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
287	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
287	SUST ALLOW_ENVE+SC	Combination	Max	0.003415	0	Gap Link 1	1.75	17.5	0.00
287	SUST ALLOW_ENVE+SC	Combination	Min	0.003415	0	Gap Link 1	1.75	17.5	0.00
288	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
288	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
288	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
288	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
288	ALLOW_ENVE+SOIL	Combination	Max	0.005544	2.63E-17	Gap Link 4	4.75	47.5	0.00
288	ALLOW_ENVE+SOIL	Combination	Min	0.005544	2.63E-17	Gap Link 4	4.75	47.5	0.00
288	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
288	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
288	SUST ALLOW_ENVE+SC	Combination	Max	0.005544	2.63E-17	Gap Link 4	4.75	47.5	0.00
288	SUST ALLOW_ENVE+SC	Combination	Min	0.005544	2.63E-17	Gap Link 4	4.75	47.5	0.00
289	ALLOW_ENVE	Combination	Max	-0.956	1.206	Gap Link 5	6	60	0.02
289	ALLOW_ENVE	Combination	Min	-10.508	0.088	Gap Link 5	6	60	0.18
289	ALLOW_UPLIFT_ENVE	Combination	Max	-0.913	1.161	Gap Link 5	6	60	0.02
289	ALLOW_UPLIFT_ENVE	Combination	Min	-10.418	0.081	Gap Link 5	6	60	0.17
289	ALLOW_ENVE+SOIL	Combination	Max	-0.957	1.206	Gap Link 5	6	60	0.02
289	ALLOW_ENVE+SOIL	Combination	Min	-10.509	0.088	Gap Link 5	6	60	0.18
289	SUST ALLOW_ENVE	Combination	Max	-0.995	0.097	Gap Link 5	6	60	0.02
289	SUST ALLOW_ENVE	Combination	Min	-1.007	0.095	Gap Link 5	6	60	0.02
289	SUST ALLOW_ENVE+SC	Combination	Max	-0.996	0.097	Gap Link 5	6	60	0.02
289	SUST ALLOW_ENVE+SC	Combination	Min	-1.008	0.095	Gap Link 5	6	60	0.02
290	ALLOW_ENVE	Combination	Max	-15.333	3.338	Gap Link 4	4.75	47.5	0.32
290	ALLOW_ENVE	Combination	Min	-29.019	1.52	Gap Link 4	4.75	47.5	0.61
290	ALLOW_UPLIFT_ENVE	Combination	Max	-14.774	3.168	Gap Link 4	4.75	47.5	0.31
290	ALLOW_UPLIFT_ENVE	Combination	Min	-28.363	1.418	Gap Link 4	4.75	47.5	0.60
290	ALLOW_ENVE+SOIL	Combination	Max	-15.341	3.338	Gap Link 4	4.75	47.5	0.32
290	ALLOW_ENVE+SOIL	Combination	Min	-29.027	1.52	Gap Link 4	4.75	47.5	0.61
290	SUST ALLOW_ENVE	Combination	Max	-17.157	1.683	Gap Link 4	4.75	47.5	0.36
290	SUST ALLOW_ENVE	Combination	Min	-17.351	1.646	Gap Link 4	4.75	47.5	0.37
290	SUST ALLOW_ENVE+SC	Combination	Max	-17.165	1.683	Gap Link 4	4.75	47.5	0.36
290	SUST ALLOW_ENVE+SC	Combination	Min	-17.358	1.646	Gap Link 4	4.75	47.5	0.37
291	ALLOW_ENVE	Combination	Max	-8.628	1.72	Gap Link 1	1.75	17.5	0.49
291	ALLOW_ENVE	Combination	Min	-14.952	0.855	Gap Link 1	1.75	17.5	0.85
291	ALLOW_UPLIFT_ENVE	Combination	Max	-8.314	1.63	Gap Link 1	1.75	17.5	0.48
291	ALLOW_UPLIFT_ENVE	Combination	Min	-14.591	0.798	Gap Link 1	1.75	17.5	0.83
291	ALLOW_ENVE+SOIL	Combination	Max	-8.632	1.72	Gap Link 1	1.75	17.5	0.49
291	ALLOW_ENVE+SOIL	Combination	Min	-14.957	0.855	Gap Link 1	1.75	17.5	0.85
291	SUST ALLOW_ENVE	Combination	Max	-9.696	0.951	Gap Link 1	1.75	17.5	0.55
291	SUST ALLOW_ENVE	Combination	Min	-9.805	0.93	Gap Link 1	1.75	17.5	0.56
291	SUST ALLOW_ENVE+SC	Combination	Max	-9.7	0.951	Gap Link 1	1.75	17.5	0.55
291	SUST ALLOW_ENVE+SC	Combination	Min	-9.809	0.93	Gap Link 1	1.75	17.5	0.56
292	ALLOW_ENVE	Combination	Max	-7.719	-0.543	Gap Link 1	1.75	17.5	0.44

292	ALLOW_ENVE	Combination	Min	-12.2	-1.642	Gap Link 1	1.75	17.5	0.70
292	ALLOW_UPLIFT_ENVE	Combination	Max	-7.444	-0.502	Gap Link 1	1.75	17.5	0.43
292	ALLOW_UPLIFT_ENVE	Combination	Min	-11.886	-1.555	Gap Link 1	1.75	17.5	0.68
292	ALLOW_ENVE+SOIL	Combination	Max	-7.723	-0.543	Gap Link 1	1.75	17.5	0.44
292	ALLOW_ENVE+SOIL	Combination	Min	-12.203	-1.642	Gap Link 1	1.75	17.5	0.70
292	SUST ALLOW_ENVE	Combination	Max	-8.83	-0.849	Gap Link 1	1.75	17.5	0.50
292	SUST ALLOW_ENVE	Combination	Min	-8.928	-0.869	Gap Link 1	1.75	17.5	0.51
292	SUST ALLOW_ENVE+SC	Combination	Max	-8.833	-0.849	Gap Link 1	1.75	17.5	0.50
292	SUST ALLOW_ENVE+SC	Combination	Min	-8.932	-0.869	Gap Link 1	1.75	17.5	0.51
293	ALLOW_ENVE	Combination	Max	-12.82	-0.902	Gap Link 4	4.75	47.5	0.27
293	ALLOW_ENVE	Combination	Min	-23.304	-2.76	Gap Link 4	4.75	47.5	0.49
293	ALLOW_UPLIFT_ENVE	Combination	Max	-12.365	-0.834	Gap Link 4	4.75	47.5	0.26
293	ALLOW_UPLIFT_ENVE	Combination	Min	-22.771	-2.614	Gap Link 4	4.75	47.5	0.48
293	ALLOW_ENVE+SOIL	Combination	Max	-12.826	-0.902	Gap Link 4	4.75	47.5	0.27
293	ALLOW_ENVE+SOIL	Combination	Min	-23.31	-2.76	Gap Link 4	4.75	47.5	0.49
293	SUST ALLOW_ENVE	Combination	Max	-14.763	-1.42	Gap Link 4	4.75	47.5	0.31
293	SUST ALLOW_ENVE	Combination	Min	-14.928	-1.452	Gap Link 4	4.75	47.5	0.31
293	SUST ALLOW_ENVE+SC	Combination	Max	-14.768	-1.42	Gap Link 4	4.75	47.5	0.31
293	SUST ALLOW_ENVE+SC	Combination	Min	-14.933	-1.452	Gap Link 4	4.75	47.5	0.31
294	ALLOW_ENVE	Combination	Max	0	0	Gap Link 5	6	60	0.00
294	ALLOW_ENVE	Combination	Min	-7.776	-0.848	Gap Link 5	6	60	0.13
294	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 5	6	60	0.00
294	ALLOW_UPLIFT_ENVE	Combination	Min	-7.804	-0.824	Gap Link 5	6	60	0.13
294	ALLOW_ENVE+SOIL	Combination	Max	0.001457	4.83E-17	Gap Link 5	6	60	0.00
294	ALLOW_ENVE+SOIL	Combination	Min	-7.775	-0.848	Gap Link 5	6	60	0.13
294	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 5	6	60	0.00
294	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 5	6	60	0.00
294	SUST ALLOW_ENVE+SC	Combination	Max	0.001457	4.83E-17	Gap Link 5	6	60	0.00
294	SUST ALLOW_ENVE+SC	Combination	Min	0.001457	4.83E-17	Gap Link 5	6	60	0.00
295	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
295	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
295	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
295	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
295	ALLOW_ENVE+SOIL	Combination	Max	0.00776	2.76E-16	Gap Link 4	4.75	47.5	0.00
295	ALLOW_ENVE+SOIL	Combination	Min	0.00776	2.76E-16	Gap Link 4	4.75	47.5	0.00
295	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
295	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
295	SUST ALLOW_ENVE+SC	Combination	Max	0.00776	2.76E-16	Gap Link 4	4.75	47.5	0.00
295	SUST ALLOW_ENVE+SC	Combination	Min	0.00776	2.76E-16	Gap Link 4	4.75	47.5	0.00
296	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
296	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
296	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
296	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
296	ALLOW_ENVE+SOIL	Combination	Max	0.004245	1.46E-16	Gap Link 1	1.75	17.5	0.00
296	ALLOW_ENVE+SOIL	Combination	Min	0.004245	1.46E-16	Gap Link 1	1.75	17.5	0.00
296	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
296	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
296	SUST ALLOW_ENVE+SC	Combination	Max	0.004245	1.46E-16	Gap Link 1	1.75	17.5	0.00
296	SUST ALLOW_ENVE+SC	Combination	Min	0.004245	1.46E-16	Gap Link 1	1.75	17.5	0.00
297	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
297	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
297	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
297	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
297	ALLOW_ENVE+SOIL	Combination	Max	-0.00342	6.47E-17	Gap Link 1	1.75	17.5	0.00
297	ALLOW_ENVE+SOIL	Combination	Min	-0.00342	6.47E-17	Gap Link 1	1.75	17.5	0.00
297	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
297	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
297	SUST ALLOW_ENVE+SC	Combination	Max	-0.00342	6.47E-17	Gap Link 1	1.75	17.5	0.00

297	SUST ALLOW_ENVE+SC	Combination	Min	-0.00342	6.47E-17	Gap Link 1	1.75	17.5	0.00
298	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
298	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
298	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
298	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
298	ALLOW_ENVE+SOIL	Combination	Max	-0.00554	1.31E-16	Gap Link 4	4.75	47.5	0.00
298	ALLOW_ENVE+SOIL	Combination	Min	-0.00554	1.31E-16	Gap Link 4	4.75	47.5	0.00
298	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
298	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
298	SUST ALLOW_ENVE+SC	Combination	Max	-0.00554	1.31E-16	Gap Link 4	4.75	47.5	0.00
298	SUST ALLOW_ENVE+SC	Combination	Min	-0.00554	1.31E-16	Gap Link 4	4.75	47.5	0.00
299	ALLOW_ENVE	Combination	Max	1.13	0.124	Gap Link 5	6	60	0.02
299	ALLOW_ENVE	Combination	Min	0	0	Gap Link 5	6	60	0.00
299	ALLOW_UPLIFT_ENVE	Combination	Max	1.086	0.116	Gap Link 5	6	60	0.02
299	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 5	6	60	0.00
299	ALLOW_ENVE+SOIL	Combination	Max	1.131	0.124	Gap Link 5	6	60	0.02
299	ALLOW_ENVE+SOIL	Combination	Min	0.000871	-2.1E-17	Gap Link 5	6	60	0.00
299	SUST ALLOW_ENVE	Combination	Max	1.006	0.097	Gap Link 5	6	60	0.02
299	SUST ALLOW_ENVE	Combination	Min	0.995	0.095	Gap Link 5	6	60	0.02
299	SUST ALLOW_ENVE+SC	Combination	Max	1.007	0.097	Gap Link 5	6	60	0.02
299	SUST ALLOW_ENVE+SC	Combination	Min	0.995	0.095	Gap Link 5	6	60	0.02
300	ALLOW_ENVE	Combination	Max	22.301	2.484	Gap Link 4	4.75	47.5	0.47
300	ALLOW_ENVE	Combination	Min	6.789	0.577	Gap Link 4	4.75	47.5	0.14
300	ALLOW_UPLIFT_ENVE	Combination	Max	21.66	2.34	Gap Link 4	4.75	47.5	0.46
300	ALLOW_UPLIFT_ENVE	Combination	Min	6.256	0.512	Gap Link 4	4.75	47.5	0.13
300	ALLOW_ENVE+SOIL	Combination	Max	22.308	2.484	Gap Link 4	4.75	47.5	0.47
300	ALLOW_ENVE+SOIL	Combination	Min	6.797	0.577	Gap Link 4	4.75	47.5	0.14
300	SUST ALLOW_ENVE	Combination	Max	17.351	1.683	Gap Link 4	4.75	47.5	0.37
300	SUST ALLOW_ENVE	Combination	Min	17.157	1.646	Gap Link 4	4.75	47.5	0.36
300	SUST ALLOW_ENVE+SC	Combination	Max	17.358	1.683	Gap Link 4	4.75	47.5	0.37
300	SUST ALLOW_ENVE+SC	Combination	Min	17.165	1.646	Gap Link 4	4.75	47.5	0.36
301	ALLOW_ENVE	Combination	Max	12.645	1.408	Gap Link 1	1.75	17.5	0.72
301	ALLOW_ENVE	Combination	Min	5.27	0.448	Gap Link 1	1.75	17.5	0.30
301	ALLOW_UPLIFT_ENVE	Combination	Max	12.285	1.327	Gap Link 1	1.75	17.5	0.70
301	ALLOW_UPLIFT_ENVE	Combination	Min	4.964	0.406	Gap Link 1	1.75	17.5	0.28
301	ALLOW_ENVE+SOIL	Combination	Max	12.649	1.408	Gap Link 1	1.75	17.5	0.72
301	ALLOW_ENVE+SOIL	Combination	Min	5.274	0.448	Gap Link 1	1.75	17.5	0.30
301	SUST ALLOW_ENVE	Combination	Max	9.805	0.951	Gap Link 1	1.75	17.5	0.56
301	SUST ALLOW_ENVE	Combination	Min	9.696	0.93	Gap Link 1	1.75	17.5	0.55
301	SUST ALLOW_ENVE+SC	Combination	Max	9.809	0.951	Gap Link 1	1.75	17.5	0.56
301	SUST ALLOW_ENVE+SC	Combination	Min	9.7	0.93	Gap Link 1	1.75	17.5	0.55
302	ALLOW_ENVE	Combination	Max	11.669	-0.543	Gap Link 1	1.75	17.5	0.67
302	ALLOW_ENVE	Combination	Min	6.156	-1.642	Gap Link 1	1.75	17.5	0.35
302	ALLOW_UPLIFT_ENVE	Combination	Max	11.349	-0.502	Gap Link 1	1.75	17.5	0.65
302	ALLOW_UPLIFT_ENVE	Combination	Min	5.88	-1.555	Gap Link 1	1.75	17.5	0.34
302	ALLOW_ENVE+SOIL	Combination	Max	11.673	-0.543	Gap Link 1	1.75	17.5	0.67
302	ALLOW_ENVE+SOIL	Combination	Min	6.159	-1.642	Gap Link 1	1.75	17.5	0.35
302	SUST ALLOW_ENVE	Combination	Max	8.928	-0.849	Gap Link 1	1.75	17.5	0.51
302	SUST ALLOW_ENVE	Combination	Min	8.83	-0.869	Gap Link 1	1.75	17.5	0.50
302	SUST ALLOW_ENVE+SC	Combination	Max	8.932	-0.849	Gap Link 1	1.75	17.5	0.51
302	SUST ALLOW_ENVE+SC	Combination	Min	8.833	-0.869	Gap Link 1	1.75	17.5	0.50
303	ALLOW_ENVE	Combination	Max	19.606	-0.658	Gap Link 4	4.75	47.5	0.41
303	ALLOW_ENVE	Combination	Min	7.423	-2.76	Gap Link 4	4.75	47.5	0.16
303	ALLOW_UPLIFT_ENVE	Combination	Max	19.076	-0.597	Gap Link 4	4.75	47.5	0.40
303	ALLOW_UPLIFT_ENVE	Combination	Min	6.981	-2.614	Gap Link 4	4.75	47.5	0.15
303	ALLOW_ENVE+SOIL	Combination	Max	19.612	-0.658	Gap Link 4	4.75	47.5	0.41
303	ALLOW_ENVE+SOIL	Combination	Min	7.428	-2.76	Gap Link 4	4.75	47.5	0.16
303	SUST ALLOW_ENVE	Combination	Max	14.928	-1.42	Gap Link 4	4.75	47.5	0.31

303	SUST ALLOW_ENVE	Combination	Min	14.763	-1.452	Gap Link 4	4.75	47.5	0.31
303	SUST ALLOW_ENVE+SC	Combination	Max	14.933	-1.42	Gap Link 4	4.75	47.5	0.31
303	SUST ALLOW_ENVE+SC	Combination	Min	14.768	-1.452	Gap Link 4	4.75	47.5	0.31
304	ALLOW_ENVE	Combination	Max	0	0	Gap Link 5	6	60	0.00
304	ALLOW_ENVE	Combination	Min	0	0	Gap Link 5	6	60	0.00
304	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 5	6	60	0.00
304	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 5	6	60	0.00
304	ALLOW_ENVE+SOIL	Combination	Max	-0.00146	-6.9E-18	Gap Link 5	6	60	0.00
304	ALLOW_ENVE+SOIL	Combination	Min	-0.00146	-6.9E-18	Gap Link 5	6	60	0.00
304	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 5	6	60	0.00
304	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 5	6	60	0.00
304	SUST ALLOW_ENVE+SC	Combination	Max	-0.00146	-6.9E-18	Gap Link 5	6	60	0.00
304	SUST ALLOW_ENVE+SC	Combination	Min	-0.00146	-6.9E-18	Gap Link 5	6	60	0.00
305	ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
305	ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
305	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
305	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
305	ALLOW_ENVE+SOIL	Combination	Max	-0.00776	-5.5E-17	Gap Link 4	4.75	47.5	0.00
305	ALLOW_ENVE+SOIL	Combination	Min	-0.00776	-5.5E-17	Gap Link 4	4.75	47.5	0.00
305	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 4	4.75	47.5	0.00
305	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 4	4.75	47.5	0.00
305	SUST ALLOW_ENVE+SC	Combination	Max	-0.00776	-5.5E-17	Gap Link 4	4.75	47.5	0.00
305	SUST ALLOW_ENVE+SC	Combination	Min	-0.00776	-5.5E-17	Gap Link 4	4.75	47.5	0.00
306	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
306	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
306	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
306	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
306	ALLOW_ENVE+SOIL	Combination	Max	-0.00425	-3E-17	Gap Link 1	1.75	17.5	0.00
306	ALLOW_ENVE+SOIL	Combination	Min	-0.00425	-3E-17	Gap Link 1	1.75	17.5	0.00
306	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
306	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
306	SUST ALLOW_ENVE+SC	Combination	Max	-0.00425	-3E-17	Gap Link 1	1.75	17.5	0.00
306	SUST ALLOW_ENVE+SC	Combination	Min	-0.00425	-3E-17	Gap Link 1	1.75	17.5	0.00
307	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
307	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
307	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
307	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
307	ALLOW_ENVE+SOIL	Combination	Max	-5.6E-17	0.005952	Gap Link 1	1.75	17.5	0.00
307	ALLOW_ENVE+SOIL	Combination	Min	-5.6E-17	0.005952	Gap Link 1	1.75	17.5	0.00
307	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
307	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
307	SUST ALLOW_ENVE+SC	Combination	Max	-5.6E-17	0.005952	Gap Link 1	1.75	17.5	0.00
307	SUST ALLOW_ENVE+SC	Combination	Min	-5.6E-17	0.005952	Gap Link 1	1.75	17.5	0.00
313	ALLOW_ENVE	Combination	Max	-0.826	-15.37	Gap Link 3	4.5	45	0.34
313	ALLOW_ENVE	Combination	Min	-1.307	-22.217	Gap Link 3	4.5	45	0.49
313	ALLOW_UPLIFT_ENVE	Combination	Max	-0.766	-14.848	Gap Link 3	4.5	45	0.33
313	ALLOW_UPLIFT_ENVE	Combination	Min	-1.229	-21.601	Gap Link 3	4.5	45	0.48
313	ALLOW_ENVE+SOIL	Combination	Max	-0.826	-15.377	Gap Link 3	4.5	45	0.34
313	ALLOW_ENVE+SOIL	Combination	Min	-1.307	-22.224	Gap Link 3	4.5	45	0.49
313	SUST ALLOW_ENVE	Combination	Max	-1.007	-17.149	Gap Link 3	4.5	45	0.38
313	SUST ALLOW_ENVE	Combination	Min	-1.029	-17.325	Gap Link 3	4.5	45	0.39
313	SUST ALLOW_ENVE+SC	Combination	Max	-1.007	-17.156	Gap Link 3	4.5	45	0.38
313	SUST ALLOW_ENVE+SC	Combination	Min	-1.029	-17.332	Gap Link 3	4.5	45	0.39
314	ALLOW_ENVE	Combination	Max	-1.151	-24.457	Gap Link 2	4	40	0.61
314	ALLOW_ENVE	Combination	Min	-2.199	-30.553	Gap Link 2	4	40	0.76
314	ALLOW_UPLIFT_ENVE	Combination	Max	-1.065	-23.636	Gap Link 2	4	40	0.59
314	ALLOW_UPLIFT_ENVE	Combination	Min	-2.073	-29.67	Gap Link 2	4	40	0.74
314	ALLOW_ENVE+SOIL	Combination	Max	-1.151	-24.467	Gap Link 2	4	40	0.61

314	ALLOW_ENVE+SOIL	Combination Min	-2.199	-30.564	Gap Link 2	4	40	0.76
314	SUST ALLOW_ENVE	Combination Max	-1.493	-25.425	Gap Link 2	4	40	0.64
314	SUST ALLOW_ENVE	Combination Min	-1.526	-25.696	Gap Link 2	4	40	0.64
314	SUST ALLOW_ENVE+SC	Combination Max	-1.493	-25.436	Gap Link 2	4	40	0.64
314	SUST ALLOW_ENVE+SC	Combination Min	-1.526	-25.707	Gap Link 2	4	40	0.64
317	ALLOW_ENVE	Combination Max	-0.634	-13.806	Gap Link 1	1.75	17.5	0.79
317	ALLOW_ENVE	Combination Min	-1.293	-17.208	Gap Link 1	1.75	17.5	0.98
317	ALLOW_UPLIFT_ENVE	Combination Max	-0.587	-13.341	Gap Link 1	1.75	17.5	0.76
317	ALLOW_UPLIFT_ENVE	Combination Min	-1.22	-16.711	Gap Link 1	1.75	17.5	0.95
317	ALLOW_ENVE+SOIL	Combination Max	-0.634	-13.812	Gap Link 1	1.75	17.5	0.79
317	ALLOW_ENVE+SOIL	Combination Min	-1.293	-17.214	Gap Link 1	1.75	17.5	0.98
317	SUST ALLOW_ENVE	Combination Max	-0.842	-14.352	Gap Link 1	1.75	17.5	0.82
317	SUST ALLOW_ENVE	Combination Min	-0.861	-14.507	Gap Link 1	1.75	17.5	0.83
317	SUST ALLOW_ENVE+SC	Combination Max	-0.842	-14.358	Gap Link 1	1.75	17.5	0.82
317	SUST ALLOW_ENVE+SC	Combination Min	-0.861	-14.513	Gap Link 1	1.75	17.5	0.83
318	ALLOW_ENVE	Combination Max	1.293	-12.706	Gap Link 1	1.75	17.5	0.73
318	ALLOW_ENVE	Combination Min	0.76	-16.663	Gap Link 1	1.75	17.5	0.95
318	ALLOW_UPLIFT_ENVE	Combination Max	1.22	-12.238	Gap Link 1	1.75	17.5	0.70
318	ALLOW_UPLIFT_ENVE	Combination Min	0.71	-16.163	Gap Link 1	1.75	17.5	0.92
318	ALLOW_ENVE+SOIL	Combination Max	1.293	-12.712	Gap Link 1	1.75	17.5	0.73
318	ALLOW_ENVE+SOIL	Combination Min	0.76	-16.668	Gap Link 1	1.75	17.5	0.95
318	SUST ALLOW_ENVE	Combination Max	0.861	-14.352	Gap Link 1	1.75	17.5	0.82
318	SUST ALLOW_ENVE	Combination Min	0.842	-14.507	Gap Link 1	1.75	17.5	0.83
318	SUST ALLOW_ENVE+SC	Combination Max	0.861	-14.358	Gap Link 1	1.75	17.5	0.82
318	SUST ALLOW_ENVE+SC	Combination Min	0.842	-14.513	Gap Link 1	1.75	17.5	0.83
319	ALLOW_ENVE	Combination Max	2.199	-22.314	Gap Link 2	4	40	0.56
319	ALLOW_ENVE	Combination Min	1.381	-29.587	Gap Link 2	4	40	0.74
319	ALLOW_UPLIFT_ENVE	Combination Max	2.073	-21.506	Gap Link 2	4	40	0.54
319	ALLOW_UPLIFT_ENVE	Combination Min	1.29	-28.702	Gap Link 2	4	40	0.72
319	ALLOW_ENVE+SOIL	Combination Max	2.199	-22.324	Gap Link 2	4	40	0.56
319	ALLOW_ENVE+SOIL	Combination Min	1.381	-29.597	Gap Link 2	4	40	0.74
319	SUST ALLOW_ENVE	Combination Max	1.526	-25.425	Gap Link 2	4	40	0.64
319	SUST ALLOW_ENVE	Combination Min	1.493	-25.696	Gap Link 2	4	40	0.64
319	SUST ALLOW_ENVE+SC	Combination Max	1.526	-25.436	Gap Link 2	4	40	0.64
319	SUST ALLOW_ENVE+SC	Combination Min	1.493	-25.707	Gap Link 2	4	40	0.64
320	ALLOW_ENVE	Combination Max	1.307	-13.862	Gap Link 3	4.5	45	0.31
320	ALLOW_ENVE	Combination Min	0.932	-22.217	Gap Link 3	4.5	45	0.49
320	ALLOW_UPLIFT_ENVE	Combination Max	1.229	-13.338	Gap Link 3	4.5	45	0.30
320	ALLOW_UPLIFT_ENVE	Combination Min	0.871	-21.601	Gap Link 3	4.5	45	0.48
320	ALLOW_ENVE+SOIL	Combination Max	1.307	-13.869	Gap Link 3	4.5	45	0.31
320	ALLOW_ENVE+SOIL	Combination Min	0.932	-22.224	Gap Link 3	4.5	45	0.49
320	SUST ALLOW_ENVE	Combination Max	1.029	-17.149	Gap Link 3	4.5	45	0.38
320	SUST ALLOW_ENVE	Combination Min	1.007	-17.325	Gap Link 3	4.5	45	0.39
320	SUST ALLOW_ENVE+SC	Combination Max	1.029	-17.156	Gap Link 3	4.5	45	0.38
320	SUST ALLOW_ENVE+SC	Combination Min	1.007	-17.332	Gap Link 3	4.5	45	0.39
326	ALLOW_ENVE	Combination Max	0	0	Gap Link 1	1.75	17.5	0.00
326	ALLOW_ENVE	Combination Min	0	0	Gap Link 1	1.75	17.5	0.00
326	ALLOW_UPLIFT_ENVE	Combination Max	0	0	Gap Link 1	1.75	17.5	0.00
326	ALLOW_UPLIFT_ENVE	Combination Min	0	0	Gap Link 1	1.75	17.5	0.00
326	ALLOW_ENVE+SOIL	Combination Max	0	0.005952	Gap Link 1	1.75	17.5	0.00
326	ALLOW_ENVE+SOIL	Combination Min	0	0.005952	Gap Link 1	1.75	17.5	0.00
326	SUST ALLOW_ENVE	Combination Max	0	0	Gap Link 1	1.75	17.5	0.00
326	SUST ALLOW_ENVE	Combination Min	0	0	Gap Link 1	1.75	17.5	0.00
326	SUST ALLOW_ENVE+SC	Combination Max	0	0.005952	Gap Link 1	1.75	17.5	0.00
326	SUST ALLOW_ENVE+SC	Combination Min	0	0.005952	Gap Link 1	1.75	17.5	0.00
327	ALLOW_ENVE	Combination Max	1.933	21.076	Gap Link 1	1.75	17.5	1.20
327	ALLOW_ENVE	Combination Min	0.611	10.528	Gap Link 1	1.75	17.5	0.60
327	ALLOW_UPLIFT_ENVE	Combination Max	1.835	20.52	Gap Link 1	1.75	17.5	1.17

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327	ALLOW_UPLIFT_ENVE	Combination	Min	0.564	10.089	Gap Link 1	1.75	17.5	0.58
327	ALLOW_ENVE+SOIL	Combination	Max	1.933	21.082	Gap Link 1	1.75	17.5	1.20
327	ALLOW_ENVE+SOIL	Combination	Min	0.611	10.534	Gap Link 1	1.75	17.5	0.60
327	SUST ALLOW_ENVE	Combination	Max	0.959	14.564	Gap Link 1	1.75	17.5	0.83
327	SUST ALLOW_ENVE	Combination	Min	0.937	14.396	Gap Link 1	1.75	17.5	0.82
327	SUST ALLOW_ENVE+SC	Combination	Max	0.959	14.57	Gap Link 1	1.75	17.5	0.83
327	SUST ALLOW_ENVE+SC	Combination	Min	0.937	14.402	Gap Link 1	1.75	17.5	0.82
333	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
333	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
333	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
333	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
333	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00703	Gap Link 3	4.5	45	0.00
333	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00703	Gap Link 3	4.5	45	0.00
333	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
333	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
333	SUST ALLOW_ENVE+SC	Combination	Max	0	-0.00703	Gap Link 3	4.5	45	0.00
333	SUST ALLOW_ENVE+SC	Combination	Min	0	-0.00703	Gap Link 3	4.5	45	0.00
336	ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
336	ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
336	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
336	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
336	ALLOW_ENVE+SOIL	Combination	Max	0	-0.01	Gap Link 2	4	40	0.00
336	ALLOW_ENVE+SOIL	Combination	Min	0	-0.01	Gap Link 2	4	40	0.00
336	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
336	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
336	SUST ALLOW_ENVE+SC	Combination	Max	0	-0.01	Gap Link 2	4	40	0.00
336	SUST ALLOW_ENVE+SC	Combination	Min	0	-0.01	Gap Link 2	4	40	0.00
337	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
337	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
337	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
337	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
337	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00592	Gap Link 1	1.75	17.5	0.00
337	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00592	Gap Link 1	1.75	17.5	0.00
337	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
337	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
337	SUST ALLOW_ENVE+SC	Combination	Max	0	-0.00592	Gap Link 1	1.75	17.5	0.00
337	SUST ALLOW_ENVE+SC	Combination	Min	0	-0.00592	Gap Link 1	1.75	17.5	0.00
338	ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
338	ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
338	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
338	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
338	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00592	Gap Link 1	1.75	17.5	0.00
338	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00592	Gap Link 1	1.75	17.5	0.00
338	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 1	1.75	17.5	0.00
338	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 1	1.75	17.5	0.00
338	SUST ALLOW_ENVE+SC	Combination	Max	0	-0.00592	Gap Link 1	1.75	17.5	0.00
338	SUST ALLOW_ENVE+SC	Combination	Min	0	-0.00592	Gap Link 1	1.75	17.5	0.00
339	ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
339	ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
339	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
339	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
339	ALLOW_ENVE+SOIL	Combination	Max	0	-0.01	Gap Link 2	4	40	0.00
339	ALLOW_ENVE+SOIL	Combination	Min	0	-0.01	Gap Link 2	4	40	0.00
339	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
339	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
339	SUST ALLOW_ENVE+SC	Combination	Max	0	-0.01	Gap Link 2	4	40	0.00
339	SUST ALLOW_ENVE+SC	Combination	Min	0	-0.01	Gap Link 2	4	40	0.00
340	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00

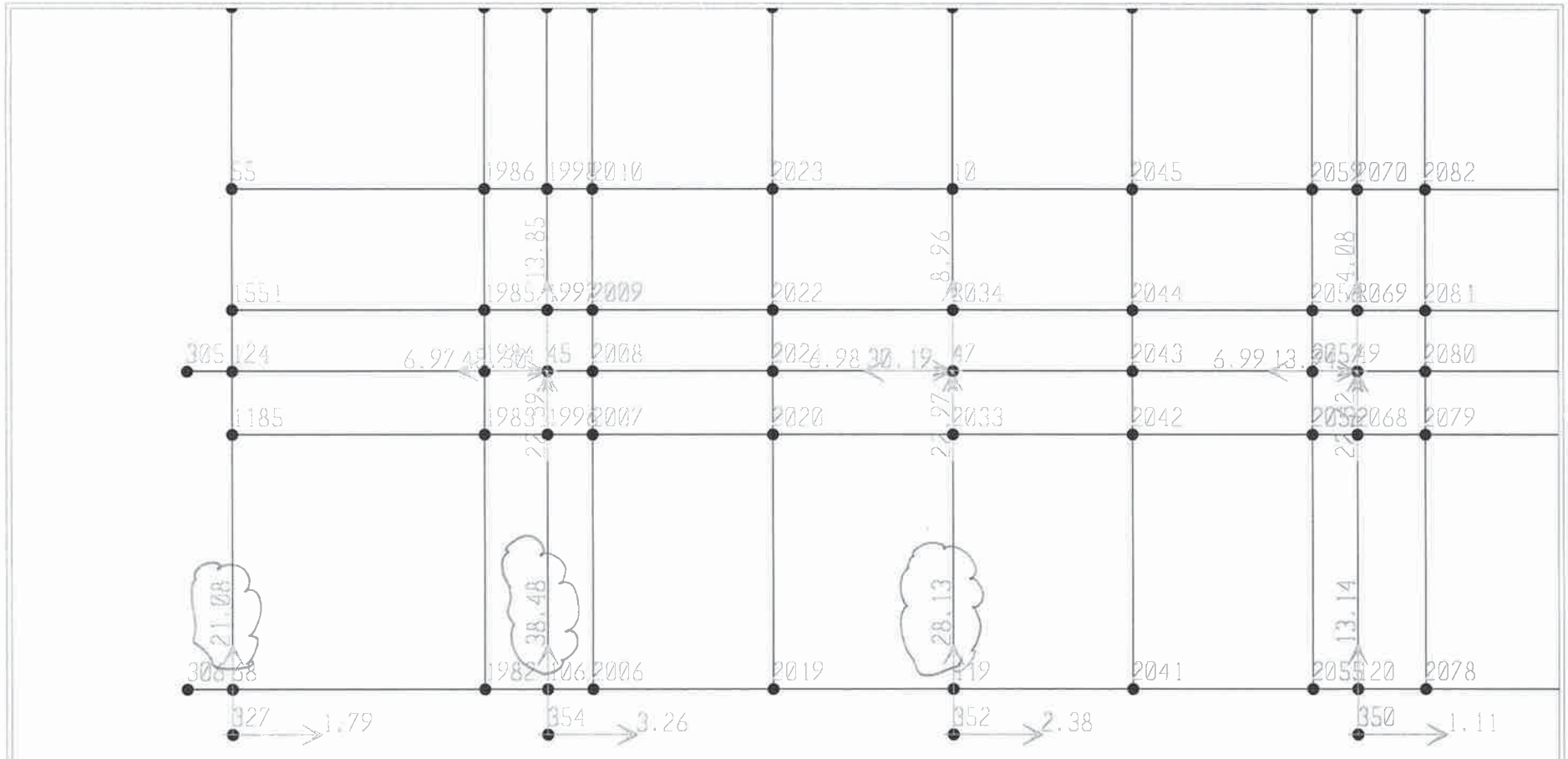
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340	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
340	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
340	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
340	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00703	Gap Link 3	4.5	45	0.00
340	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00703	Gap Link 3	4.5	45	0.00
340	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
340	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
340	SUST ALLOW_ENVE+SC	Combination	Max	0	-0.00703	Gap Link 3	4.5	45	0.00
340	SUST ALLOW_ENVE+SC	Combination	Min	0	-0.00703	Gap Link 3	4.5	45	0.00
346	ALLOW_ENVE	Combination	Max	-0.38	21.076	Gap Link 1	1.75	17.5	1.20
346	ALLOW_ENVE	Combination	Min	-1.788	10.528	Gap Link 1	1.75	17.5	0.60
346	ALLOW_UPLIFT_ENVE	Combination	Max	-0.342	20.52	Gap Link 1	1.75	17.5	1.17
346	ALLOW_UPLIFT_ENVE	Combination	Min	-1.691	10.089	Gap Link 1	1.75	17.5	0.58
346	ALLOW_ENVE+SOIL	Combination	Max	-0.38	21.082	Gap Link 1	1.75	17.5	1.20
346	ALLOW_ENVE+SOIL	Combination	Min	-1.788	10.534	Gap Link 1	1.75	17.5	0.60
346	SUST ALLOW_ENVE	Combination	Max	-0.937	14.564	Gap Link 1	1.75	17.5	0.83
346	SUST ALLOW_ENVE	Combination	Min	-0.959	14.396	Gap Link 1	1.75	17.5	0.82
346	SUST ALLOW_ENVE+SC	Combination	Max	-0.937	14.57	Gap Link 1	1.75	17.5	0.83
346	SUST ALLOW_ENVE+SC	Combination	Min	-0.959	14.402	Gap Link 1	1.75	17.5	0.82
347	ALLOW_ENVE	Combination	Max	-0.101	-1.383	Gap Link 3	4.5	45	0.03
347	ALLOW_ENVE	Combination	Min	-0.631	-11.233	Gap Link 3	4.5	45	0.25
347	ALLOW_UPLIFT_ENVE	Combination	Max	-0.089	-1.256	Gap Link 3	4.5	45	0.03
347	ALLOW_UPLIFT_ENVE	Combination	Min	-0.597	-10.994	Gap Link 3	4.5	45	0.24
347	ALLOW_ENVE+SOIL	Combination	Max	-0.101	-1.386	Gap Link 3	4.5	45	0.03
347	ALLOW_ENVE+SOIL	Combination	Min	-0.631	-11.235	Gap Link 3	4.5	45	0.25
347	SUST ALLOW_ENVE	Combination	Max	-0.339	-5.76	Gap Link 3	4.5	45	0.13
347	SUST ALLOW_ENVE	Combination	Min	-0.345	-5.808	Gap Link 3	4.5	45	0.13
347	SUST ALLOW_ENVE+SC	Combination	Max	-0.339	-5.762	Gap Link 3	4.5	45	0.13
347	SUST ALLOW_ENVE+SC	Combination	Min	-0.345	-5.81	Gap Link 3	4.5	45	0.13
348	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
348	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
348	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
348	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
348	ALLOW_ENVE+SOIL	Combination	Max	-2.8E-17	-0.00234	Gap Link 3	4.5	45	0.00
348	ALLOW_ENVE+SOIL	Combination	Min	-2.8E-17	-0.00234	Gap Link 3	4.5	45	0.00
348	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
348	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
348	SUST ALLOW_ENVE+SC	Combination	Max	-2.8E-17	-0.00234	Gap Link 3	4.5	45	0.00
348	SUST ALLOW_ENVE+SC	Combination	Min	-2.8E-17	-0.00234	Gap Link 3	4.5	45	0.00
349	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
349	ALLOW_ENVE	Combination	Min	-0.035	-0.689	Gap Link 3	4.5	45	0.02
349	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
349	ALLOW_UPLIFT_ENVE	Combination	Min	-0.041	-0.82	Gap Link 3	4.5	45	0.02
349	ALLOW_ENVE+SOIL	Combination	Max	-4.1E-17	0.002311	Gap Link 3	4.5	45	0.00
349	ALLOW_ENVE+SOIL	Combination	Min	-0.035	-0.687	Gap Link 3	4.5	45	0.02
349	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
349	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
349	SUST ALLOW_ENVE+SC	Combination	Max	-4.1E-17	0.002311	Gap Link 3	4.5	45	0.00
349	SUST ALLOW_ENVE+SC	Combination	Min	-4.1E-17	0.002311	Gap Link 3	4.5	45	0.00
350	ALLOW_ENVE	Combination	Max	1.112	13.139	Gap Link 3	4.5	45	0.29
350	ALLOW_ENVE	Combination	Min	-5.6E-17	0	Gap Link 3	4.5	45	0.00
350	ALLOW_UPLIFT_ENVE	Combination	Max	1.057	12.859	Gap Link 3	4.5	45	0.29
350	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
350	ALLOW_ENVE+SOIL	Combination	Max	1.112	13.142	Gap Link 3	4.5	45	0.29
350	ALLOW_ENVE+SOIL	Combination	Min	-2.5E-17	0.002346	Gap Link 3	4.5	45	0.00
350	SUST ALLOW_ENVE	Combination	Max	0.378	5.763	Gap Link 3	4.5	45	0.13
350	SUST ALLOW_ENVE	Combination	Min	0.369	5.682	Gap Link 3	4.5	45	0.13
350	SUST ALLOW_ENVE+SC	Combination	Max	0.378	5.765	Gap Link 3	4.5	45	0.13

350	SUST ALLOW_ENVE+SC	Combination	Min	0.369	5.685	Gap Link 3	4.5	45	0.13
351	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
351	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
351	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
351	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
351	ALLOW_ENVE+SOIL	Combination	Max	-9.2E-17	0.007043	Gap Link 3	4.5	45	0.00
351	ALLOW_ENVE+SOIL	Combination	Min	-9.2E-17	0.007043	Gap Link 3	4.5	45	0.00
351	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
351	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
351	SUST ALLOW_ENVE+SC	Combination	Max	-9.2E-17	0.007043	Gap Link 3	4.5	45	0.00
351	SUST ALLOW_ENVE+SC	Combination	Min	-9.2E-17	0.007043	Gap Link 3	4.5	45	0.00
352	ALLOW_ENVE	Combination	Max	2.439	28.13	Gap Link 3	4.5	45	0.63
352	ALLOW_ENVE	Combination	Min	0.546	9.427	Gap Link 3	4.5	45	0.21
352	ALLOW_UPLIFT_ENVE	Combination	Max	2.317	27.43	Gap Link 3	4.5	45	0.61
352	ALLOW_UPLIFT_ENVE	Combination	Min	0.499	8.931	Gap Link 3	4.5	45	0.20
352	ALLOW_ENVE+SOIL	Combination	Max	2.439	28.137	Gap Link 3	4.5	45	0.63
352	ALLOW_ENVE+SOIL	Combination	Min	0.546	9.434	Gap Link 3	4.5	45	0.21
352	SUST ALLOW_ENVE	Combination	Max	1.139	17.311	Gap Link 3	4.5	45	0.38
352	SUST ALLOW_ENVE	Combination	Min	1.113	17.102	Gap Link 3	4.5	45	0.38
352	SUST ALLOW_ENVE+SC	Combination	Max	1.139	17.318	Gap Link 3	4.5	45	0.38
352	SUST ALLOW_ENVE+SC	Combination	Min	1.113	17.109	Gap Link 3	4.5	45	0.38
353	ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
353	ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
353	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
353	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
353	ALLOW_ENVE+SOIL	Combination	Max	-7.5E-17	0.011	Gap Link 2	4	40	0.00
353	ALLOW_ENVE+SOIL	Combination	Min	-7.5E-17	0.011	Gap Link 2	4	40	0.00
353	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
353	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
353	SUST ALLOW_ENVE+SC	Combination	Max	-7.5E-17	0.011	Gap Link 2	4	40	0.00
353	SUST ALLOW_ENVE+SC	Combination	Min	-7.5E-17	0.011	Gap Link 2	4	40	0.00
354	ALLOW_ENVE	Combination	Max	3.475	38.479	Gap Link 2	4	40	0.96
354	ALLOW_ENVE	Combination	Min	1.01	17.416	Gap Link 2	4	40	0.44
354	ALLOW_UPLIFT_ENVE	Combination	Max	3.3	37.48	Gap Link 2	4	40	0.94
354	ALLOW_UPLIFT_ENVE	Combination	Min	0.931	16.65	Gap Link 2	4	40	0.42
354	ALLOW_ENVE+SOIL	Combination	Max	3.475	38.489	Gap Link 2	4	40	0.96
354	ALLOW_ENVE+SOIL	Combination	Min	1.01	17.427	Gap Link 2	4	40	0.44
354	SUST ALLOW_ENVE	Combination	Max	1.696	25.759	Gap Link 2	4	40	0.64
354	SUST ALLOW_ENVE	Combination	Min	1.658	25.459	Gap Link 2	4	40	0.64
354	SUST ALLOW_ENVE+SC	Combination	Max	1.696	25.77	Gap Link 2	4	40	0.64
354	SUST ALLOW_ENVE+SC	Combination	Min	1.658	25.469	Gap Link 2	4	40	0.64
355	ALLOW_ENVE	Combination	Max	0.631	-1.383	Gap Link 3	4.5	45	0.03
355	ALLOW_ENVE	Combination	Min	0.101	-11.233	Gap Link 3	4.5	45	0.25
355	ALLOW_UPLIFT_ENVE	Combination	Max	0.597	-1.256	Gap Link 3	4.5	45	0.03
355	ALLOW_UPLIFT_ENVE	Combination	Min	0.089	-10.994	Gap Link 3	4.5	45	0.24
355	ALLOW_ENVE+SOIL	Combination	Max	0.631	-1.385	Gap Link 3	4.5	45	0.03
355	ALLOW_ENVE+SOIL	Combination	Min	0.101	-11.235	Gap Link 3	4.5	45	0.25
355	SUST ALLOW_ENVE	Combination	Max	0.345	-5.759	Gap Link 3	4.5	45	0.13
355	SUST ALLOW_ENVE	Combination	Min	0.339	-5.808	Gap Link 3	4.5	45	0.13
355	SUST ALLOW_ENVE+SC	Combination	Max	0.345	-5.762	Gap Link 3	4.5	45	0.13
355	SUST ALLOW_ENVE+SC	Combination	Min	0.339	-5.81	Gap Link 3	4.5	45	0.13
356	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
356	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
356	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
356	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
356	ALLOW_ENVE+SOIL	Combination	Max	0	-0.00234	Gap Link 3	4.5	45	0.00
356	ALLOW_ENVE+SOIL	Combination	Min	0	-0.00234	Gap Link 3	4.5	45	0.00
356	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00

356	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
356	SUST ALLOW_ENVE+SC	Combination	Max	0	-0.00234	Gap Link 3	4.5	45	0.00
356	SUST ALLOW_ENVE+SC	Combination	Min	0	-0.00234	Gap Link 3	4.5	45	0.00
357	ALLOW_ENVE	Combination	Max	0.035	0	Gap Link 3	4.5	45	0.00
357	ALLOW_ENVE	Combination	Min	0	-0.689	Gap Link 3	4.5	45	0.02
357	ALLOW_UPLIFT_ENVE	Combination	Max	0.041	0	Gap Link 3	4.5	45	0.00
357	ALLOW_UPLIFT_ENVE	Combination	Min	0	-0.82	Gap Link 3	4.5	45	0.02
357	ALLOW_ENVE+SOIL	Combination	Max	0.035	0.002311	Gap Link 3	4.5	45	0.00
357	ALLOW_ENVE+SOIL	Combination	Min	0	-0.687	Gap Link 3	4.5	45	0.02
357	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
357	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
357	SUST ALLOW_ENVE+SC	Combination	Max	0	0.002311	Gap Link 3	4.5	45	0.00
357	SUST ALLOW_ENVE+SC	Combination	Min	0	0.002311	Gap Link 3	4.5	45	0.00
358	ALLOW_ENVE	Combination	Max	-5.6E-17	13.14	Gap Link 3	4.5	45	0.29
358	ALLOW_ENVE	Combination	Min	-1.112	0	Gap Link 3	4.5	45	0.02
358	ALLOW_UPLIFT_ENVE	Combination	Max	5.55E-17	12.859	Gap Link 3	4.5	45	0.29
358	ALLOW_UPLIFT_ENVE	Combination	Min	-1.057	0	Gap Link 3	4.5	45	0.02
358	ALLOW_ENVE+SOIL	Combination	Max	-1.1E-17	13.142	Gap Link 3	4.5	45	0.29
358	ALLOW_ENVE+SOIL	Combination	Min	-1.112	0.002346	Gap Link 3	4.5	45	0.02
358	SUST ALLOW_ENVE	Combination	Max	-0.369	5.763	Gap Link 3	4.5	45	0.13
358	SUST ALLOW_ENVE	Combination	Min	-0.378	5.683	Gap Link 3	4.5	45	0.13
358	SUST ALLOW_ENVE+SC	Combination	Max	-0.369	5.765	Gap Link 3	4.5	45	0.13
358	SUST ALLOW_ENVE+SC	Combination	Min	-0.378	5.685	Gap Link 3	4.5	45	0.13
359	ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
359	ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
359	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
359	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
359	ALLOW_ENVE+SOIL	Combination	Max	0	0.007043	Gap Link 3	4.5	45	0.00
359	ALLOW_ENVE+SOIL	Combination	Min	0	0.007043	Gap Link 3	4.5	45	0.00
359	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 3	4.5	45	0.00
359	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 3	4.5	45	0.00
359	SUST ALLOW_ENVE+SC	Combination	Max	0	0.007043	Gap Link 3	4.5	45	0.00
359	SUST ALLOW_ENVE+SC	Combination	Min	0	0.007043	Gap Link 3	4.5	45	0.00
360	ALLOW_ENVE	Combination	Max	-0.398	28.13	Gap Link 3	4.5	45	0.63
360	ALLOW_ENVE	Combination	Min	-2.385	9.427	Gap Link 3	4.5	45	0.21
360	ALLOW_UPLIFT_ENVE	Combination	Max	-0.357	27.43	Gap Link 3	4.5	45	0.61
360	ALLOW_UPLIFT_ENVE	Combination	Min	-2.259	8.931	Gap Link 3	4.5	45	0.20
360	ALLOW_ENVE+SOIL	Combination	Max	-0.398	28.138	Gap Link 3	4.5	45	0.63
360	ALLOW_ENVE+SOIL	Combination	Min	-2.385	9.434	Gap Link 3	4.5	45	0.21
360	SUST ALLOW_ENVE	Combination	Max	-1.113	17.311	Gap Link 3	4.5	45	0.38
360	SUST ALLOW_ENVE	Combination	Min	-1.139	17.103	Gap Link 3	4.5	45	0.38
360	SUST ALLOW_ENVE+SC	Combination	Max	-1.113	17.318	Gap Link 3	4.5	45	0.38
360	SUST ALLOW_ENVE+SC	Combination	Min	-1.139	17.11	Gap Link 3	4.5	45	0.38
361	ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
361	ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
361	ALLOW_UPLIFT_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
361	ALLOW_UPLIFT_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
361	ALLOW_ENVE+SOIL	Combination	Max	3.98E-16	0.011	Gap Link 2	4	40	0.00
361	ALLOW_ENVE+SOIL	Combination	Min	3.98E-16	0.011	Gap Link 2	4	40	0.00
361	SUST ALLOW_ENVE	Combination	Max	0	0	Gap Link 2	4	40	0.00
361	SUST ALLOW_ENVE	Combination	Min	0	0	Gap Link 2	4	40	0.00
361	SUST ALLOW_ENVE+SC	Combination	Max	3.98E-16	0.011	Gap Link 2	4	40	0.00
361	SUST ALLOW_ENVE+SC	Combination	Min	3.98E-16	0.011	Gap Link 2	4	40	0.00
370	ALLOW_ENVE	Combination	Max	-0.651	38.479	Gap Link 2	4	40	0.96
370	ALLOW_ENVE	Combination	Min	-3.264	17.416	Gap Link 2	4	40	0.44
370	ALLOW_UPLIFT_ENVE	Combination	Max	-0.586	37.48	Gap Link 2	4	40	0.94
370	ALLOW_UPLIFT_ENVE	Combination	Min	-3.089	16.65	Gap Link 2	4	40	0.42
370	ALLOW_ENVE+SOIL	Combination	Max	-0.651	38.49	Gap Link 2	4	40	0.96

370	ALLOW_ENVE+SOIL	Combination Min	-3.264	17.427	Gap Link 2	4	40	0.44
370	SUST ALLOW_ENVE	Combination Max	-1.658	25.76	Gap Link 2	4	40	0.64
370	SUST ALLOW_ENVE	Combination Min	-1.696	25.459	Gap Link 2	4	40	0.64
370	SUST ALLOW_ENVE+SC	Combination Max	-1.658	25.77	Gap Link 2	4	40	0.64
370	SUST ALLOW_ENVE+SC	Combination Min	-1.696	25.469	Gap Link 2	4	40	0.64



PASSIVE PRESSURE FOR GOVERNING LOAD COMBO

SUM PASSIVE FORCES @ OUTER 3 TOWERS:

21.08
38.48
+ 28.13
87.69 K

TRIBUTH OF TOWERS:

3.5' + 4.5'/2 + 4.5'/2 = 10.25'

AVERAGE PASSIVE RESISTANCE:

87.7 K / 10.25' = 8.6 K/FT

*AVERAGE PASSIVE RESISTANCE IS LESS THAN LIMIT OF 10 K/FT. OK!

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FOUNDATION ELEMENTS
-PILE CAP DESIGN - PC1 & PC2

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

PROJECT			SHEET
LOCATION	CLIENT	DATE	BY

PILE CAP DESIGN – PC1 & PC2

LOADING/DEMANDS: PILE CAP DEMANDS WERE TAKEN FROM SAP MODEL RESULTS

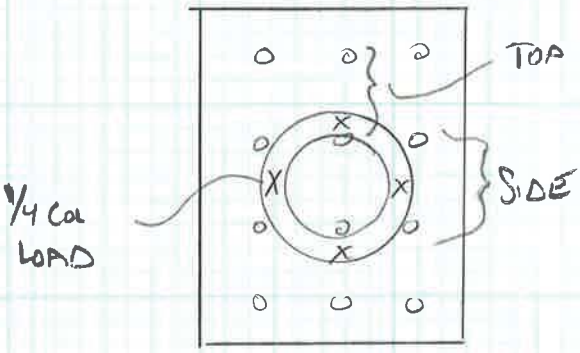
DESIGN SUMMARY: PERMANENT GRAVITY LOADS WERE ANALYZED PER THE ACI APPENDIX A STRUT & TIE PROCEDURE. BIAXIAL MOMENTS DUE TO LATERAL LOADS IN COMBINATION WITH GRAVITY LOADS WERE EVALUATED AT CRITICAL SECTIONS DEFINED IN SAP.

* SEE THE FOLLOWING PAGES FOR CALCULATIONS OF BOTH STRUT & TIE AND CRITICAL SECTION DESIGNS.

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers

PROJECT EISENHOWER | SHEET 1/2
LOCATION | CLIENT | DATE 8/29/2012 | BY GAT

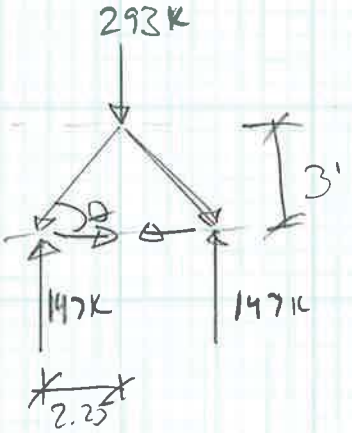
AXIAL LOAD STRUT & TIE SAMPLE CALC FOR PC2



FACTORED AXIAL COLUMN LOAD:

1,173 KIP (FROM SAP)

TO EACH STRUT = 293 K



SIDES:

* ASSUME BOTTLE-SHAPED STRUT, TYP
$\beta = 0.6$

$\theta = 53°$

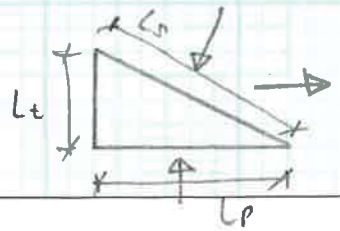
STRUT FORCE = $\frac{147}{\sin 53°} = 184K$

TIE FORCE = $184 \cos\theta = 111$ K

CHECK STRUT*: $A_c \geq \frac{184}{.75(.85)(.6)(4)} = 120\ in^2$ REQ'D DEPTH FOR 16" WIDTH = 7.5". OK

CHECK TIE: $A_{ts} = \frac{111}{.75(60)} = 2.5\ in^2$ PROVIDE (4) #8 ($A_{s\,PROV} = 3.16\ in^2$)

CHECK NODES: AT PILE, EQUIVALENT SQUARE AREA OF 16"Ø = 14.2"



$\beta = 0.8$ (1 TIE)

$L_s = \frac{184}{(0.75)(0.8)(0.85)(4)(14.2)} = 6.4"$

$L_t = 3.9"$

$L_p = \frac{147}{(.75)(.8)(.85)(4)(14.2)} = 5.07"$

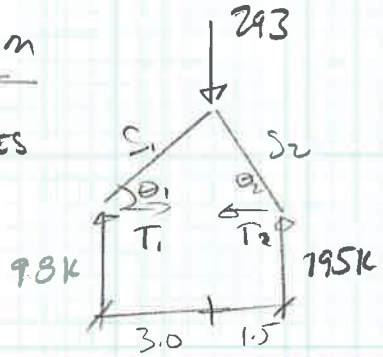
* ASSUMED WIDTH, MAX

L_s, L_p & L_t ARE OK!

PROJECT EISENHOWER | SHEET 2/2
LOCATION | CLIENT | DATE 8/21/2012 | BY GAT

TOP & BOTTOM

SIMILAR TO SIDES



$\theta_1 = 45°$

$\theta_2 = 63.4°$

CHECK STRUT

$S_1 = \frac{98}{\sin 45} = 138.6\,K$ $\quad A_c \geq 90.6\,in^2$

$S_2 = \frac{195}{\sin 63.4} = 218.1$ $\quad A_c \geq 142.5\,in^2$

$L_{WIDTH} = 8.9\,in$ OK

CHECK TIE

$T_1 = 138.6 * \cos 45 = 98K$

$T_2 = 228.1 * \cos 63.4 = 98K$ } MATCH ✓

$A_{ts1} = 2.2\,in^2$

$A_{ts2} = 2.2\,in^2$

(4) #8 OK

CHECK NODES:

S_2/T_2 GOVERNS

$L_s = \frac{218.1}{(0.75)(0.8)(0.85)(4)(14.2)} = 7.53"$

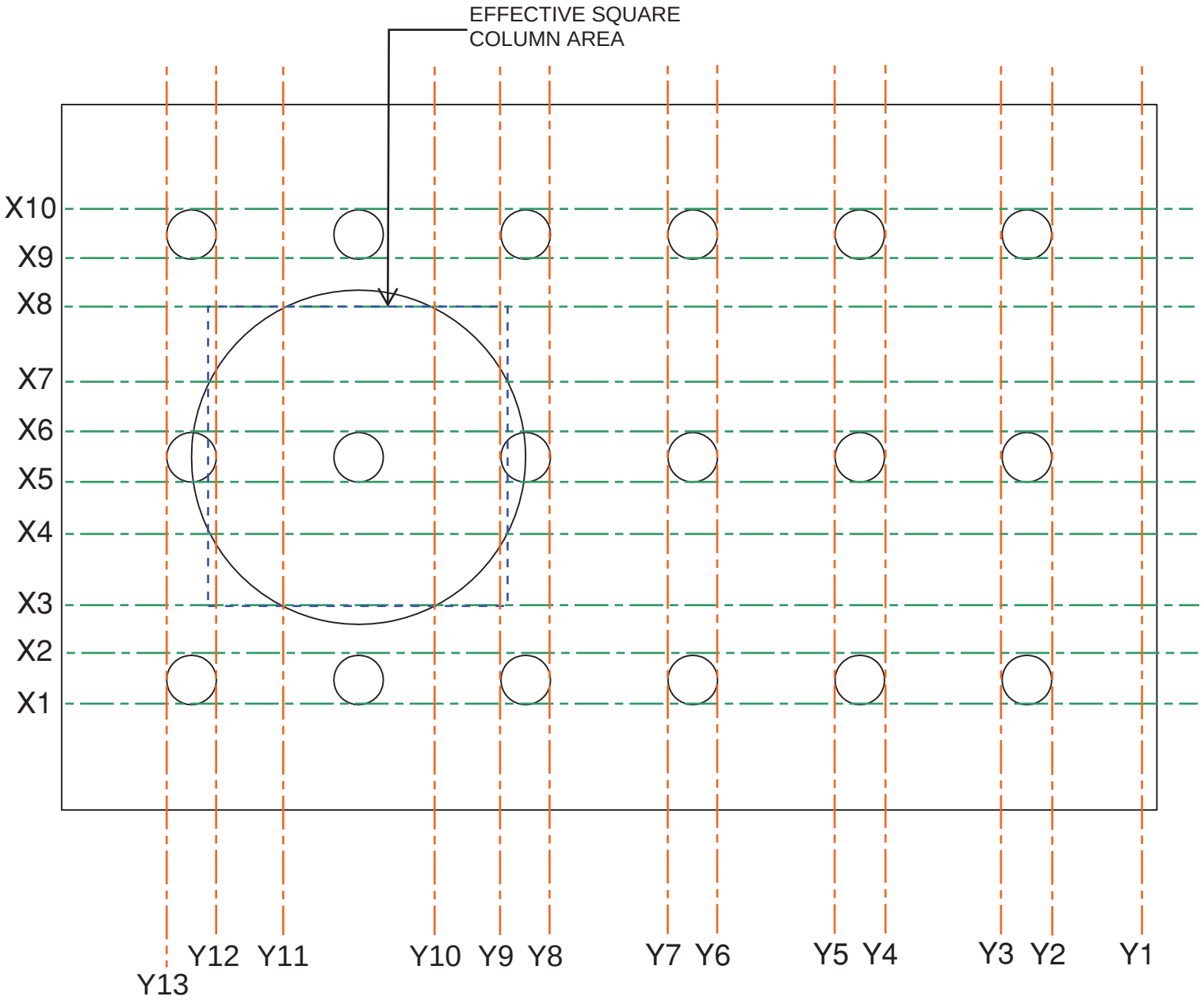
$L_p = \frac{195}{(.75)(0.8)(0.85)(4)(14.2)} = 6.73"$

$L_t = \sqrt{L_s^2 - L_p^2} = 3.4"$

$= \frac{98}{(.75)(0.8)(.85)(4)(14.2)} = 3.4"$ } OK ✓

NODE GEOMETRY OK FOR PILE SIZE & RENF!

EAST TAPESTRY
PC1 CRITICAL SHEAR AND FLEXURE SECTIONS



PC1 - X Section Design

Section Geometry & Demands

Strip #	Strip ID	Length (in)	Height (in)	d (in)
1	PCLX1	354	48	41
2	PCLX10	354	48	41
3	PCLX2	354	48	41
4	PCLX3A	195	48	41
5	PCLX3B	159	48	41
6	PCLX4	354	48	41
7	PCLX5	354	48	41
8	PCLX6	354	48	41
9	PCLX7	354	48	41
10	PCLX8A	195	48	41
11	PCLX8B	159	48	41
12	PCLX9	354	48	41
13	PCLX3	354	48	41
14	PCLX8	354	48	41

	Maximum Demands - Allowable (k,in)						Minimum Demands - Allowable (k,in)					
Strip ID	F1	F2	F3	M1	M2	M3	F1	F2	F3	M1	M2	M3
PCLX1	8.1	-36.5	113.9	-459.8	2029.3	12180.0	4.1	-102.2	28.6	-2138.3	-26.1	5069.5
PCLX10	6.8	-57.8	-27.8	-428.1	326.1	-6552.9	3.1	-79.9	-108.9	-1961.7	-938.3	-8500.9
PCLX2	89.3	-26.9	25.9	3759.5	11504.1	16982.3	48.8	-114.6	-739.5	-1162.9	-12742.5	8148.7
PCLX3A	202.0	-22.9	-23.2	13913.1	28686.3	12619.4	151.8	-107.5	-502.1	-3122.9	10563.7	9756.1
PCLX3B	-99.0	-4.0	64.7	2249.4	-937.7	-2609.9	-127.5	-7.1	-192.6	359.8	-3476.6	-3315.9
PCLX4	-13.6	-45.7	28.7	24952.4	17937.1	15650.9	-47.8	-96.5	-408.2	-1883.2	-3826.7	9478.4
PCLX5	-232.0	-48.1	40.6	29870.7	23884.7	10484.8	-289.4	-80.5	-256.6	259.5	-2936.6	5679.9
PCLX6	-173.9	-57.0	216.1	26428.5	5969.0	-6924.0	-242.0	-74.5	-77.5	-1628.2	-21050.8	-10035.0
PCLX7	-173.9	-57.0	239.7	22784.9	6315.0	-10343.2	-242.0	-74.5	-47.3	-761.0	-20950.4	-13584.3
PCLX8A	-57.0	-17.3	289.8	12312.7	-13264.0	-4919.8	-91.8	-25.6	69.3	-6714.7	-35537.1	-6336.0
PCLX8B	43.7	-43.0	113.8	5062.1	3690.9	-3437.8	25.8	-56.1	-112.4	-405.5	198.9	-4285.8
PCLX9	62.9	-49.1	649.3	3298.1	11202.4	-9984.0	23.3	-91.4	-75.4	-1827.0	-11200.6	-12722.6
PCLX3	89.3	-26.9	40.1	14755.1	11609.4	18024.6	48.8	-114.6	-691.3	-1449.1	-12351.5	8903.9
PCLX8	62.9	-49.1	601.1	12850.0	10812.6	-10680.4	23.3	-91.4	-89.5	-2584.1	-11309.5	-13330.1

Shear Design

F1 - Compare with 10sqrtF'c (Ultimate Loads)

Strip ID	F1 Demand	F1 Stress	phi*F'c Factor	phi*10sqrtF'c	Ok?
PCLX1	10.6	0.001	0.02	0.474	OK
PCLX10	8.8	0.001	0.01	0.474	OK
PCLX2	116.1	0.008	0.17	0.474	OK
PCLX3A	262.6	0.033	0.69	0.474	OK
PCLX3B	165.8	0.025	0.54	0.474	OK
PCLX4	62.2	0.004	0.09	0.474	OK
PCLX5	376.2	0.026	0.55	0.474	OK
PCLX6	314.6	0.022	0.46	0.474	OK
PCLX7	314.6	0.022	0.46	0.474	OK
PCLX8A	119.3	0.015	0.31	0.474	OK
PCLX8B	56.9	0.009	0.18	0.474	OK
PCLX9	81.8	0.006	0.12	0.474	OK
PCLX3	116.1	0.008	0.17	0.474	OK
PCLX8	81.8	0.006	0.12	0.474	OK

F2 - Axial Check with T&B Reinf (Ultimate Loads)

Strip ID	F2 Max	Axial Direction	F2 Min	Axial Direction	Need Reinf?
PCLX1	-47.4	Compression	-132.9	Compression	No
PCLX10	-75.1	Compression	-103.9	Compression	No
PCLX2	-35.0	Compression	-149.0	Compression	No
PCLX3A	-29.8	Compression	-139.7	Compression	No
PCLX3B	-5.2	Compression	-9.3	Compression	No
PCLX4	-59.4	Compression	-125.4	Compression	No
PCLX5	-62.5	Compression	-104.6	Compression	No
PCLX6	-74.1	Compression	-96.9	Compression	No
PCLX7	-74.1	Compression	-96.9	Compression	No
PCLX8A	-22.5	Compression	-33.3	Compression	No
PCLX8B	-55.9	Compression	-72.9	Compression	No
PCLX9	-63.8	Compression	-118.8	Compression	No
PCLX3	-35.0	Compression	-149.0	Compression	No
PCLX8	-63.8	Compression	-118.8	Compression	No

F3 - Typ Beam Shear (Ultimate Loads)

Strip ID	F3 Demand	Shear/ft	Shear Stress	phi*1sqrtF'c	Need Reinf?	Min Reinf?	#5@18"x18"oc phi*Vn	#4@15"x15"oc phi*Vn	#5 OK?	#4 OK?
PCLX1	174.1	5.90	0.012	0.047	No	N/A	2002	1957	OK	OK
PCLX10	167.5	5.68	0.012	0.047	No	N/A	2002	1957	OK	OK
PCLX2	987.3	33.47	0.068	0.047	Yes, Reinf	Min OK	2002	1957	OK	OK
PCLX3A	652.7	40.17	0.082	0.047	Yes, Reinf	Min OK	1103	1078	OK	OK
PCLX3B	250.4	18.90	0.038	0.047	No	N/A	899	879	OK	OK
PCLX4	530.6	17.99	0.037	0.047	No	N/A	2002	1957	OK	OK
PCLX5	359.6	12.19	0.025	0.047	No	N/A	2002	1957	OK	OK
PCLX6	306.9	10.40	0.021	0.047	No	N/A	2002	1957	OK	OK
PCLX7	311.6	10.56	0.021	0.047	No	N/A	2002	1957	OK	OK
PCLX8A	376.8	23.19	0.047	0.047	No	N/A	1103	1078	OK	OK
PCLX8B	147.9	11.16	0.023	0.047	No	N/A	899	879	OK	OK
PCLX9	870.1	29.50	0.060	0.047	Yes, Reinf	Min OK	2002	1957	OK	OK
PCLX3	898.6	30.46	0.062	0.047	Yes, Reinf	Min OK	2002	1957	OK	OK
PCLX8	781.4	26.49	0.054	0.047	Yes, Reinf	Min OK	2002	1957	OK	OK

Moment Design

M3 - Moment to Side Bars (Ultimate Loads) M/(phi*Fy*d) #6 @ 8"

Strip ID	M3 Demand	M3 (k-in/ft depth)	Effective d	As,req per ft	As provided	Ok?
PCLX1	15834	3959	283.2	0.259	0.660	OK
PCLX10	11051	2763	283.2	0.181	0.660	OK
PCLX2	22077	5519	283.2	0.361	0.660	OK
PCLX3A	16405	4101	156	0.487	0.660	OK
PCLX3B	4311	1078	127.2	0.157	0.660	OK
PCLX4	20346	5087	283.2	0.333	0.660	OK
PCLX5	13630	3408	283.2	0.223	0.660	OK
PCLX6	13045	3261	283.2	0.213	0.660	OK
PCLX7	17660	4415	283.2	0.289	0.660	OK
PCLX8A	8237	2059	156	0.244	0.660	OK
PCLX8B	5572	1393	127.2	0.203	0.660	OK
PCLX9	16539	4135	283.2	0.270	0.660	OK
PCLX3	23432	5858	283.2	0.383	0.660	OK
PCLX8	17329	4332	283.2	0.283	0.660	OK

M1 - Typ Beam Moment (Ultmate Loads) #6@12 #8@12

Strip ID	M1 Max /ft	Tension Side	M1 Min /ft	Tension Side	Design M1,top /ft	Design M1,bot /ft	As,req,top /ft	As,req,bot /ft	As,min	As,top prov	As,bot prov	Top OK?	Bot OK?
PCLX1	-20	Top Reinf	-94	Top Reinf	94	Min Reinf	0.043	N/A	0.5184	0.44	0.79	OK	OK
PCLX10	-19	Top Reinf	-86	Top Reinf	86	Min Reinf	0.039	N/A	0.5184	0.44	0.79	OK	OK
PCLX2	166	Bot Reinf	-51	Top Reinf	51	166	0.023	0.085	0.5184	0.44	0.79	OK	OK
PCLX3A	1113	Bot Reinf	-250	Top Reinf	250	1113	0.113	0.573	0.5184	0.44	0.79	OK	OK
PCLX3B	221	Bot Reinf	35	Bot Reinf	Min Reinf	221	N/A	0.114	0.5184	0.44	0.79	OK	OK
PCLX4	1100	Bot Reinf	-83	Top Reinf	83	1100	0.037	0.566	0.5184	0.44	0.79	OK	OK
PCLX5	1316	Bot Reinf	11	Bot Reinf	Min Reinf	1316	N/A	0.677	0.5184	0.44	0.79	OK	OK
PCLX6	1165	Bot Reinf	-72	Top Reinf	72	1165	0.032	0.599	0.5184	0.44	0.79	OK	OK
PCLX7	1004	Bot Reinf	-34	Top Reinf	34	1004	0.015	0.517	0.5184	0.44	0.79	OK	OK
PCLX8A	985	Bot Reinf	-537	Top Reinf	537	985	0.243	0.507	0.5184	0.44	0.79	OK	OK
PCLX8B	497	Bot Reinf	-40	Top Reinf	40	497	0.018	0.255	0.5184	0.44	0.79	OK	OK
PCLX9	145	Bot Reinf	-81	Top Reinf	81	145	0.036	0.075	0.5184	0.44	0.79	OK	OK
PCLX3	650	Bot Reinf	-64	Top Reinf	64	650	0.029	0.334	0.5184	0.44	0.79	OK	OK
PCLX8	566	Bot Reinf	-114	Top Reinf	114	566	0.051	0.291	0.5184	0.44	0.79	OK	OK

PC1 - Y Section Design

Section Geometry & Demands

Strip #	Strip ID	Length (in)	Height (in)	d (in)
1	PCLY1	228	48	41
2	PCLY10	228	48	41
3	PCLY11	228	48	41
4	PCLY12	228	48	41
5	PCLY13	228	48	41
6	PCLY2	228	48	41
7	PCLY3	228	48	41
8	PCLY4	228	48	41
9	PCLY5	228	48	41
10	PCLY6	228	48	41
11	PCLY7	228	48	41
12	PCLY8	228	48	41
13	PCLY9	228	48	41

	Maximum Demands - Allowable (k,in)						Minimum Demands - Allowable (k,in)					
Strip ID	F1	F2	F3	M1	M2	M3	F1	F2	F3	M1	M2	M3
PCLY1	468.4	13.1	18.9	144.8	3379.6	5006.2	378.4	11.0	-8.9	-297.3	-699.7	2788.8
PCLY10	344.7	48.8	-217.3	29699.2	86337.1	26919.4	266.6	-6.7	-417.6	-22493.4	36943.5	20250.0
PCLY11	116.5	-180.5	51.9	5015.2	13953.8	-1881.1	90.8	-238.7	-56.0	-6157.2	7366.4	-4641.0
PCLY12	78.2	12.1	153.5	5588.0	465.0	-2364.1	54.1	-33.0	-24.1	-6908.2	-1113.0	-4350.7
PCLY13	33.1	16.7	-18.8	290.2	-308.1	-1429.7	13.9	8.8	-67.9	-172.5	-1187.1	-3069.0
PCLY2	468.4	13.1	67.8	157.6	3389.3	5231.7	378.4	11.0	5.4	-314.2	-1766.5	3049.5
PCLY3	476.9	76.1	-91.0	7341.7	5162.3	6675.2	380.7	60.6	-242.8	-5451.0	-1131.9	4191.0
PCLY4	476.9	76.1	-57.5	7338.3	12470.8	9295.4	380.7	60.6	-199.5	-5449.0	2257.4	6515.7
PCLY5	486.1	119.2	-191.1	15105.9	18254.6	11735.7	382.6	92.2	-459.3	-11214.8	5277.7	8436.1
PCLY6	486.1	119.2	-170.6	15111.3	33647.8	15738.1	382.6	92.2	-410.7	-11219.3	11883.2	11718.4
PCLY7	494.5	140.7	-300.2	23046.1	43136.3	18701.6	383.9	97.2	-664.5	-17217.4	16120.3	14086.1
PCLY8	494.5	140.7	-279.7	23049.4	65744.0	23315.9	383.9	97.2	-611.3	-17220.9	26562.5	17748.9
PCLY9	501.7	140.9	-416.3	31009.0	76173.2	26070.0	384.7	73.0	-854.2	-23491.3	31563.4	19840.9

Shear Design

F2 - Compare with 10sqrtF'c (Ultimate Loads)

Strip ID	F2 Demand	F2 Stress	phi*F'c Factor	phi*10sqrtF'c	Ok?
PCLY1	17.1	0.002	0.04	0.474	OK
PCLY10	63.5	0.007	0.14	0.474	OK
PCLY11	310.3	0.033	0.70	0.474	OK
PCLY12	42.9	0.005	0.10	0.474	OK
PCLY13	21.8	0.002	0.05	0.474	OK
PCLY2	17.1	0.002	0.04	0.474	OK
PCLY3	98.9	0.011	0.22	0.474	OK
PCLY4	98.9	0.011	0.22	0.474	OK
PCLY5	154.9	0.017	0.35	0.474	OK
PCLY6	154.9	0.017	0.35	0.474	OK
PCLY7	182.9	0.020	0.41	0.474	OK
PCLY8	182.9	0.020	0.41	0.474	OK
PCLY9	183.2	0.020	0.41	0.474	OK

F1 - Axial Check with T&B Reinf (Ultimate Loads)

Strip ID	F1 Max	Axial Direction	F1 Min	Axial Direction	Need Reinf?
PCLY1	608.9	Compression	491.9	Compression	No
PCLY10	448.1	Compression	346.6	Compression	No
PCLY11	151.5	Compression	118.0	Compression	No
PCLY12	101.6	Compression	70.3	Compression	No
PCLY13	43.0	Compression	18.1	Compression	No
PCLY2	608.9	Compression	491.9	Compression	No
PCLY3	619.9	Compression	494.9	Compression	No
PCLY4	619.9	Compression	494.9	Compression	No
PCLY5	631.9	Compression	497.4	Compression	No
PCLY6	631.9	Compression	497.4	Compression	No
PCLY7	642.8	Compression	499.1	Compression	No
PCLY8	642.8	Compression	499.1	Compression	No
PCLY9	652.2	Compression	500.1	Compression	No

F3 - Typ Beam Shear (Ultimate Loads)

Strip ID	F3 Demand	Shear/ft	Shear Stress	phi*1sqrtF'c	Need Reinf?	Min Reinf?	#5@18"x18"oc phi*Vn	#4@15"x15"oc phi*Vn	#5 OK?	#4 OK?
PCLY1	50.6	2.66	0.005	0.047	No	N/A	1289	1261	OK	OK
PCLY10	542.9	28.57	0.058	0.047	Yes, Reinf	Min OK	1289	1261	OK	OK
PCLY11	72.8	3.83	0.008	0.047	No	N/A	1289	1261	OK	OK
PCLY12	225.6	11.87	0.024	0.047	No	N/A	1289	1261	OK	OK
PCLY13	114.3	6.01	0.012	0.047	No	N/A	1289	1261	OK	OK
PCLY2	114.2	6.01	0.012	0.047	No	N/A	1289	1261	OK	OK
PCLY3	341.7	17.98	0.037	0.047	No	N/A	1289	1261	OK	OK
PCLY4	285.4	15.02	0.031	0.047	No	N/A	1289	1261	OK	OK
PCLY5	623.1	32.80	0.067	0.047	Yes, Reinf	Min OK	1289	1261	OK	OK
PCLY6	560.0	29.47	0.060	0.047	Yes, Reinf	Min OK	1289	1261	OK	OK
PCLY7	889.9	46.84	0.095	0.047	Yes, Reinf	More	1289	1261	OK	OK
PCLY8	820.7	43.19	0.088	0.047	Yes, Reinf	Min OK	1289	1261	OK	OK
PCLY9	1136.4	59.81	0.122	0.047	Yes, Reinf	More	1289	1261	OK	OK

Moment Design

M3 - Moment to Side Bars (Ultimate Loads) M/(phi*Fy*d) #8 @ 8"

Strip ID	M3 Demand	M3 (k-in/ft depth)	Effective d	As,req per ft	As provided	Ok?
PCLY1	6508	1627.0306	182.4	0.165	1.185	OK
PCLY10	34995	8748.81865	182.4	0.888	1.185	OK
PCLY11	6033	1508.3185	182.4	0.153	1.185	OK
PCLY12	5656	1413.96385	182.4	0.144	1.185	OK
PCLY13	3990	997.42825	182.4	0.101	1.185	OK
PCLY2	6801	1700.306725	182.4	0.173	1.185	OK
PCLY3	8678	2169.447475	182.4	0.220	1.185	OK
PCLY4	12084	3021.020925	182.4	0.307	1.185	OK
PCLY5	15256	3814.117125	182.4	0.387	1.185	OK
PCLY6	20460	5114.891275	182.4	0.519	1.185	OK
PCLY7	24312	6078.012525	182.4	0.617	1.185	OK
PCLY8	30311	7577.683425	182.4	0.769	1.185	OK
PCLY9	33891	8472.734725	182.4	0.860	1.185	OK

M2 - Typ Beam Moment (Ultmate Loads) #6@12 #8@4" w/ Tie Reinf

Strip ID	M2 Max /ft	Tension Side	M2 Min /ft	Tension Side	Design M1,top /ft	Design M1,bot /ft	As,req,top /ft	As,req,bot /ft	As,min	As,top prov	As,bot prov	Top OK?	Bot OK?
PCLY1	231	Bot Reinf	-48	Top Reinf	48	231	0.022	0.119	0.5184	0.44	3.87	OK	OK
PCLY10	5907	Bot Reinf	2528	Bot Reinf	Min Reinf	5907	N/A	3.039	0.5184	0.44	3.87	OK	OK
PCLY11	955	Bot Reinf	504	Bot Reinf	Min Reinf	955	N/A	0.491	0.5184	0.44	3.87	OK	OK
PCLY12	32	Bot Reinf	-76	Top Reinf	76	32	0.034	0.016	0.5184	0.44	3.87	OK	OK
PCLY13	-21	Top Reinf	-81	Top Reinf	81	Min Reinf	0.037	N/A	0.5184	0.44	3.87	OK	OK
PCLY2	232	Bot Reinf	-121	Top Reinf	121	232	0.055	0.119	0.5184	0.44	3.87	OK	OK
PCLY3	353	Bot Reinf	-77	Top Reinf	77	353	0.035	0.182	0.5184	0.44	3.87	OK	OK
PCLY4	853	Bot Reinf	154	Bot Reinf	Min Reinf	853	N/A	0.439	0.5184	0.44	3.87	OK	OK
PCLY5	1249	Bot Reinf	361	Bot Reinf	Min Reinf	1249	N/A	0.642	0.5184	0.44	3.87	OK	OK
PCLY6	2302	Bot Reinf	813	Bot Reinf	Min Reinf	2302	N/A	1.184	0.5184	0.44	3.87	OK	OK
PCLY7	2951	Bot Reinf	1103	Bot Reinf	Min Reinf	2951	N/A	1.518	0.5184	0.44	3.87	OK	OK
PCLY8	4498	Bot Reinf	1817	Bot Reinf	Min Reinf	4498	N/A	2.314	0.5184	0.44	3.87	OK	OK
PCLY9	5212	Bot Reinf	2160	Bot Reinf	Min Reinf	5212	N/A	2.681	0.5184	0.44	3.87	OK	OK

Pile Cap PC1 Column Demand Comparison

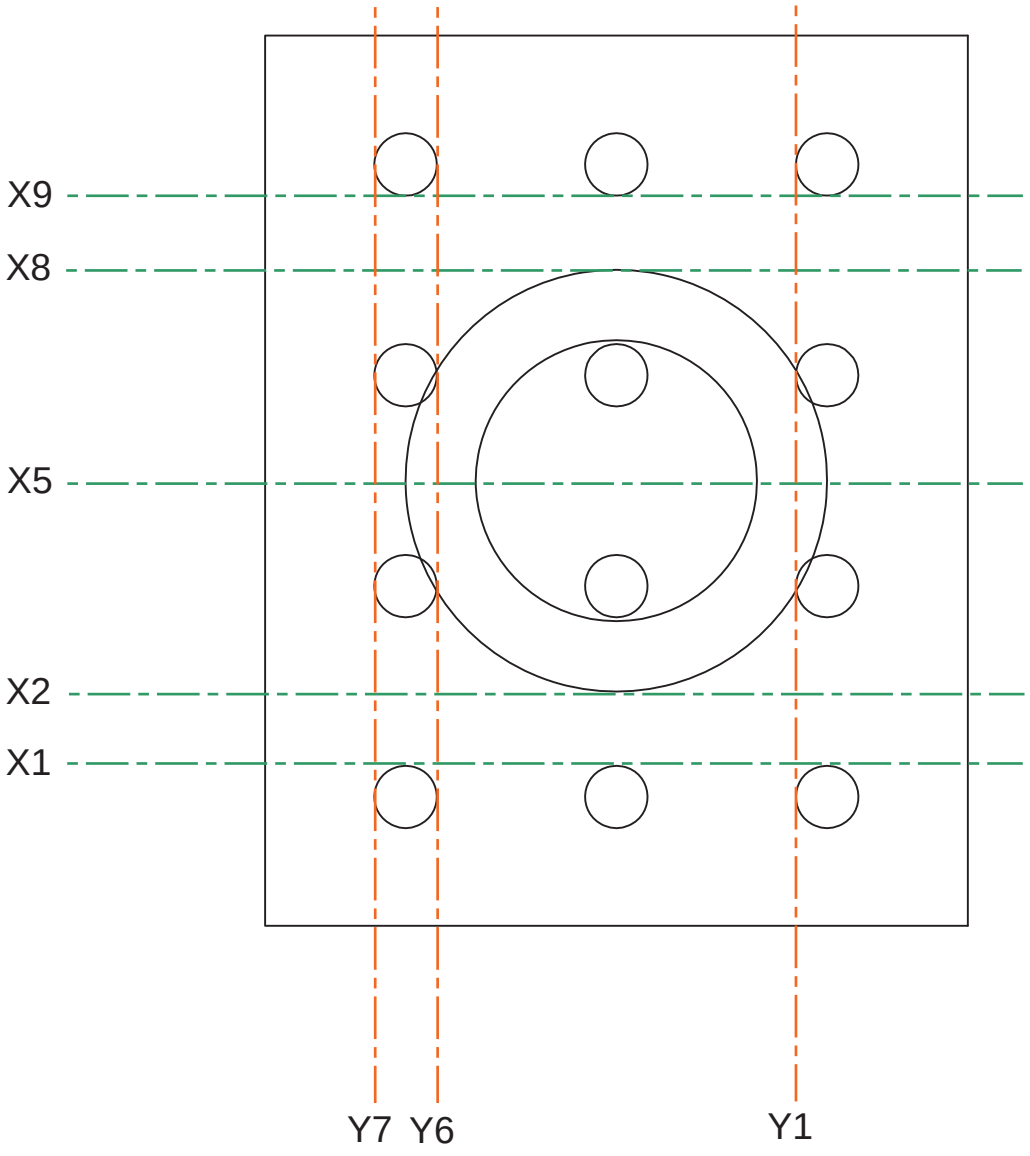
Enveloped SAP Results - Column Base Reactions

Units in k-in

		P	V2	V3	T	M2	M3
East	Max	-50	496	68	38,796	35,624	113,062
	Min	-1,085	-450	-68	-37,460	-46,555	-111,881
South	Max	-43	324	36	26,215	20,059	118,893
	Min	-1,135	-271	-37	-23,187	-31,983	-89,468
Comparison (South/East)	Max	0.86	0.65	0.54	0.68	0.56	1.05
	Min	1.05	0.60	0.54	0.62	0.69	0.80

<u>Conclusion:</u> East PC1 demands govern in general. Pile cap demands have an excess of 5% capacity, sufficient for the slightly larger Pmin and M3max loads at the South Tapestry

SOUTH TAPESTRY
PC2 CRITICAL SHEAR AND FLEXURE SECTIONS



PC2 - X Section Design

Section Geometry & Demands

Strip #	Strip ID	Length (in)	Height (in)	d (in)
1	PCLX1	180	48	41
2	PCLX2	180	48	41
3	PCLX5	180	48	41
4	PCLX8	180	48	41
5	PCLX9	180	48	41

	Maximum Demands - Allowable (k,in)						Minimum Demands - Allowable (k,in)					
Strip ID	F1	F2	F3	M1	M2	M3	F1	F2	F3	M1	M2	M3
PCLX1	28.6	5.5	-33.0	3653.2	3303.2	309.7	12.7	-18.2	-499.7	60.7	-416.8	-11.1
PCLX2	33.7	4.7	-26.4	12972.9	3855.1	811.8	15.3	-20.9	-487.2	583.3	-421.7	126.0
PCLX5	32.9	-2.8	-60.8	16009.5	4582.5	1686.3	19.2	-5.7	-274.2	-228.0	372.3	715.8
PCLX8	-15.7	-0.8	215.2	4333.7	246.2	1079.8	-29.9	-26.7	-21.6	-446.8	-1812.3	660.3
PCLX9	-18.3	3.5	317.0	2120.4	395.1	542.0	-33.5	-28.3	-28.5	-831.3	-2689.4	319.2

Shear Design

F1 - Compare with 10sqrtF'c (Ultimate Loads)

Strip ID	F1 Demand	F1 Stress	phi*F'c Factor	phi*10sqrtF'c	Ok?
PCLX1	37.2	0.005	0.11	0.474	OK
PCLX2	43.8	0.006	0.13	0.474	OK
PCLX5	42.7	0.006	0.12	0.474	OK
PCLX8	38.9	0.005	0.11	0.474	OK
PCLX9	43.5	0.006	0.12	0.474	OK

F2 - Axial Check with T&B Reinf (Ultimate Loads)

Strip ID	F2 Max	Axial Direction	F2 Min	Axial Direction	Need Reinf?
PCLX1	7.2	Tension	-23.6	Compression	Yes
PCLX2	6.1	Tension	-27.2	Compression	Yes
PCLX5	-3.6	Compression	-7.5	Compression	No
PCLX8	-1.0	Compression	-34.7	Compression	No
PCLX9	4.5	Tension	-36.7	Compression	Yes

	F3 - Typ Beam Shear (Ultimate Loads)						#5@18"x18"oc	#4@15"x15"oc		
Strip ID	F3 Demand	Shear/ft	Shear Stress	phi*1sqrtF'c	Need Reinf?	Min Reinf?	phi*Vn	phi*Vn	#5 OK?	#4 OK?
PCLX1	675.6	45.04	0.092	0.047	Yes, Reinf	Min OK	1018	995	OK	OK
PCLX2	633.3	42.22	0.086	0.047	Yes, Reinf	Min OK	1018	995	OK	OK
PCLX5	356.5	23.77	0.048	0.047	Yes, Reinf	Min OK	1018	995	OK	OK
PCLX8	305.7	20.38	0.041	0.047	No	N/A	1018	995	OK	OK
PCLX9	438.1	29.21	0.059	0.047	Yes, Reinf	Min OK	1018	995	OK	OK

Moment Design

	M3 - Moment to Side Bars (Ultimate Loads)			M/(phi*Fy*d)	#6@12"	
Strip ID	M3 Demand	M3 (k-in/ft depth)	Effective d	As,req per ft	As provided	Ok?
PCLX1	403	101	144	0.013	0.440	OK
PCLX2	1055	264	144	0.034	0.440	OK
PCLX5	2192	548	144	0.070	0.440	OK
PCLX8	1404	351	144	0.045	0.440	OK
PCLX9	705	176	144	0.023	0.440	OK

	M1 - Typ Beam Moment (Ultmate Loads)									#6@12	#8 @ 12 + Tie Reinf		
Strip ID	M1 Max /ft	Tension Side	M1 Min /ft	Tension Side	Design M1,top /ft	Design M1,bot /ft	As,req,top /ft	As,req,bot /ft	As,min	As,top prov	As,bot prov	Top OK?	Bot OK?
PCLX1	317	Bot Reinf	5	Bot Reinf	Min Reinf	317	N/A	0.163	0.5184	0.44	1.738	OK	OK
PCLX2	1124	Bot Reinf	51	Bot Reinf	Min Reinf	1124	N/A	0.578	0.5184	0.44	1.738	OK	OK
PCLX5	1387	Bot Reinf	-20	Top Reinf	20	1387	0.009	0.714	0.5184	0.44	1.738	OK	OK
PCLX8	376	Bot Reinf	-39	Top Reinf	39	376	0.017	0.193	0.5184	0.44	1.738	OK	OK
PCLX9	184	Bot Reinf	-72	Top Reinf	72	184	0.033	0.095	0.5184	0.44	1.738	OK	OK

PC2 - Y Section Design

Section Geometry & Demands

Strip #	Strip ID	Length (in)	Height (in)	d (in)
1	PCLY1	228	48	41
2	PCLY6	228	48	41
3	PCLY7	228	48	41

	SAP Maximum Demands - Allowable (k,in)						SAP Minimum Demands - Allowable (k,in)					
Strip ID	F1	F2	F3	M1	M2	M3	F1	F2	F3	M1	M2	M3
PCLY1	88.8	12.5	-139.7	15661.8	-266.5	-164.4	45.5	-12.0	-408.8	-5470.4	-1378.1	-714.9
PCLY6	37.1	23.8	302.1	5476.0	741.4	-146.9	23.7	-6.3	80.0	-15739.2	-4421.5	-1098.5
PCLY7	132.9	8.9	-10.5	24.8	2541.2	-201.6	80.6	1.4	-66.9	-33.3	-4798.5	-771.8

Shear Design

F2 - Compare with 10sqrtF'c (Ultimate Loads)

Strip ID	F2 Demand	F2 Stress	phi*F'c Factor	phi*10sqrtF'c	Ok?
PCLY1	16.2	0.002	0.04	0.474	OK
PCLY6	31.0	0.003	0.07	0.474	OK
PCLY7	11.6	0.001	0.03	0.474	OK

F1 - Axial Check with T&B Reinf (Ultimate Loads)

Strip ID	F1 Max	Axial Direction	F1 Min	Axial Direction	Need Reinf?
PCLY1	115.4	Compression	59.2	Compression	No
PCLY6	48.3	Compression	30.8	Compression	No
PCLY7	172.8	Compression	104.8	Compression	No

F3 - Typ Beam Shear (Ultimate Loads)							#5@18"x18"oc	#4@15"x15"oc		
Strip ID	F3 Demand	Shear/ft	Shear Stress	phi*1sqrtF'c	Need Reinf?	Min Reinf?	phi*Vn	phi*Vn	#5 OK?	#4 OK?
PCLY1	557.5	29.34	0.060	0.047	Yes, Reinf	Min OK	1289	1261	OK	OK
PCLY6	418.7	22.04	0.045	0.047	No	N/A	1289	1261	OK	OK
PCLY7	113.0	5.95	0.012	0.047	No	N/A	1289	1261	OK	OK

Moment Design

M3 - Moment to Side Bars (Ultimate Loads) M/(phi*Fy*d) #6@12"

Strip ID	M3 Demand	M3 (k-in/ft depth)	Effective d	As,req per ft	As provided	Ok?
PCLY1	929	232	182.4	0.024	0.440	OK
PCLY6	1428	357	182.4	0.036	0.440	OK
PCLY7	1003	251	182.4	0.025	0.440	OK

M2 - Typ Beam Moment (Ultmate Loads)										#8@12	#6@12" w/ Tie Reinf		
Strip ID	M2 Max /ft	Tension Side	M2 Min /ft	Tension Side	Design M1,top /ft	Design M1,bot /ft	As,req,top /ft	As,req,bot /ft	As,min	As,top prov	As,bot prov	Top OK?	Bot OK?
PCLY1	-18	Top Reinf	-94	Top Reinf	94	Min Reinf	0.043	N/A	0.5184	0.79	0.94	OK	OK
PCLY6	51	Bot Reinf	-303	Top Reinf	303	51	0.137	0.026	0.5184	0.79	0.94	OK	OK
PCLY7	174	Bot Reinf	-328	Top Reinf	328	174	0.148	0.089	0.5184	0.79	0.94	OK	OK

FOUNDATION ELEMENTS
-GRADE BEAM DESIGN

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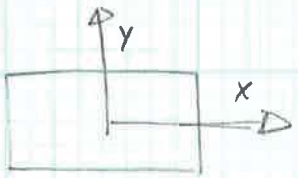
PROJECT EISENHOWER | SHEET
LOCATION | CLIENT | DATE 8/29/12 | BY GAT

EAST TAPESTRY GRADE BEAM DESIGN:

GEOMETRY: LENGTH = 32'6"
WIDTH = 5'0" (60")
DEPTH = 2'6" (30")

LOADS:
- DETERMINE LOAD DEMANDS FROM SAP MODEL
- DESIGN USING LRFD CODE EQUATIONS COMPARED WITH 1.5*ASD ENVELOPE COMBOS FROM SAP (CONSERVATIVE EQUIVALENT LRFD LOAD FACTOR)
- SEE ATTACHED FOR SAP OUTPUT

GOVERNING DEMANDS:



P_u = 653 K
$M_{u,x}$ = 5768 K-IN = 481 K-FT
$M_{u,y}$ = 1874 K-IN = 156 K-FT
$V_{u,x}$ = 1.2 K
$V_{u,y}$ = 25.3 K

DESIGN: SINCE AXIAL DEMAND (653K) IS LESS THAN 10% $A_g * f'c$ (720K), DESIGN GRADE BEAM AS A BEAM (NOT COLUMN). SEE ATTACHED BEAM DESIGN SPREADSHEET.

- PROVIDE (26) #8 LONGITUDINAL BARS: (10) T&B + (3) EA SIDE
- SHEAR REINF NOT REQUIRED
  - ↳ PROVIDE MIN REINF FOR CRACK CONTROL

Ver 1.4

Reinforced Concrete Beams (ACI 318-2005)

Beam ID:	**East Tapestry Grade Beam - Mx**	
Project:	Eisenhower	
Date:	08/29/12	
Engineer :	GAT	

Ultimate Forces:

Mu	481	kip-ft
Vu	25	kips
Pu	653	kips

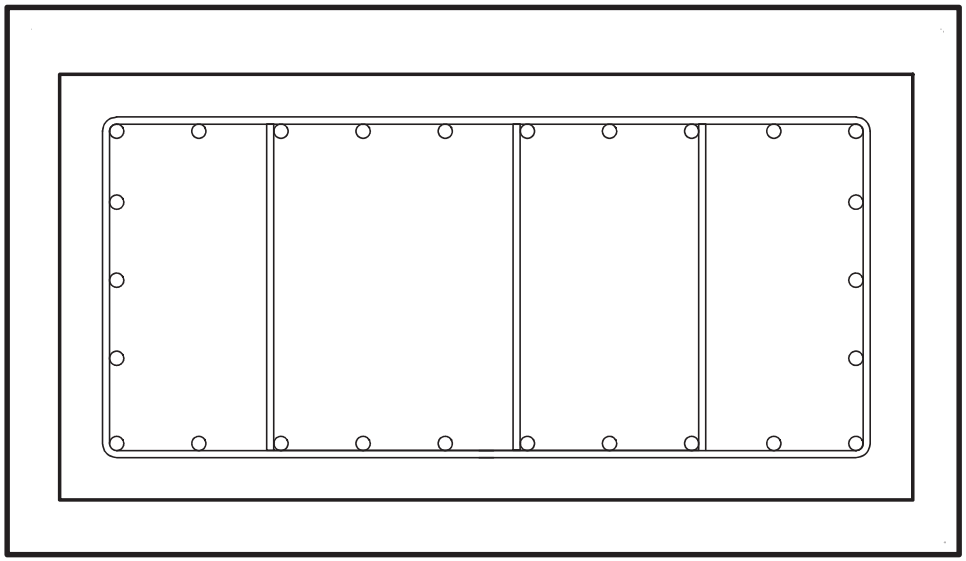
Reinforcement Summary

1 LAYER OF (10) #8 TENSION

#4 STIRRUPS @ 18 in w/ 5 VERT LEGS
(3) #8 BARS EACH SIDE

Geometry:

Length	32.5	ft
Width	60	in
Height	30	in
Fixity Type	Pin-Pin	
Member Type	Beam	
T-Beam Slab	12	in
B,flange	Auto	auto or in
b,eff	60.0	in



Concrete:

F'c	4000	psi
β_1	0.850	
Ec	3605	ksi

Steel:

Fy	60	ksi
Es	29000	ksi
Inter-Layer Clearance	1	in
Bottom Cover	3.0	in
Side Cover	3	in
Consider ρ'	No	
As' Location	Web	

"Compression" REINF	Count	Bar Number	Depth to bar	As / bar	As / Layer	d	Diameter	Horiz Clr	Spacing Check
Extreme-most Layer	10	8	auto	0.79	7.90	4.00	1.000	4.77	(OK)
2nd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
4th Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	

Tension REINF

4th Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
2nd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
Extreme-most Layer	10	8	auto	0.79	7.90	26.00	1	4.77	(OK)
			in or auto	in^2	in^2	in	in	in	

Global:

d	26.00 in		d'	4.00 in	
As	7.90 in^2		As'	7.90 in^2	
As min	5.20 in^2	N/A	ρ (rho)	0.51 %	

Internal Axial Forces:

Equilibrate Section Macro

s,max	6.18	in	(OK)
c	2.73	in	
Extreme Fiber εs	0.0255		
ϕ	0.90	Tension Controlled	
Mn	981	kip-ft	
ϕMn	**883**	kip-ft	
Mu	**481**	kip-ft	(OK)

Strain Compatibility - Axial Force Equilibrium - Moment Capacity

Layer	depth (in)	strain	stress (ksi)	Area (in^2)	Force (kips)	Moment (k-in)
Comp Web	1.16	0.00300	3.40	139.41	474	- - -
Comp Flange						
As'1						
As'2						
As'3						
As'4						
As4						
As3						
As2						
As1	26.00	-0.02553	-60.00	7.9	-474	11773
				Σ	0.00	11773

Transverse Shear REINF

Shear Reinf is not required per 11.5.6.1

Fy	60	ksi
Transverse Bar Mark	4	
Spacing,$_T$	18	in
# Legs,$_T$	5	
A_{VT}/layer	1.00	in^2

Shear:

Vn,max	987 kips	=	10.00*sqrt(f'c)*bw*d
Vc	197 kips	=	2.00*sqrt(f'c)*bw*d
Vs	87 kips	=	0.88*sqrt(f'c)*bw*d
ϕVn	**213** kips		
Vu	**25** kips		(OK)

Longitudinal Skin REINF

Required?	No	
Maximum Spacing		in
Side Bars	8	mark
Number of Side Bar Pairs	3	# or "Above"
Spacing,$_L$	5.50	in

Ver 1.4

Reinforced Concrete Beams (ACI 318-2005)

Ultimate Forces:

Mu	156	kip-ft
Vu	1	kips
Pu	653	kips

Beam ID:	**East Tapestry Grade Beam - My**
Project:	Eisenhower
Date:	08/29/12
Engineer :	GAT

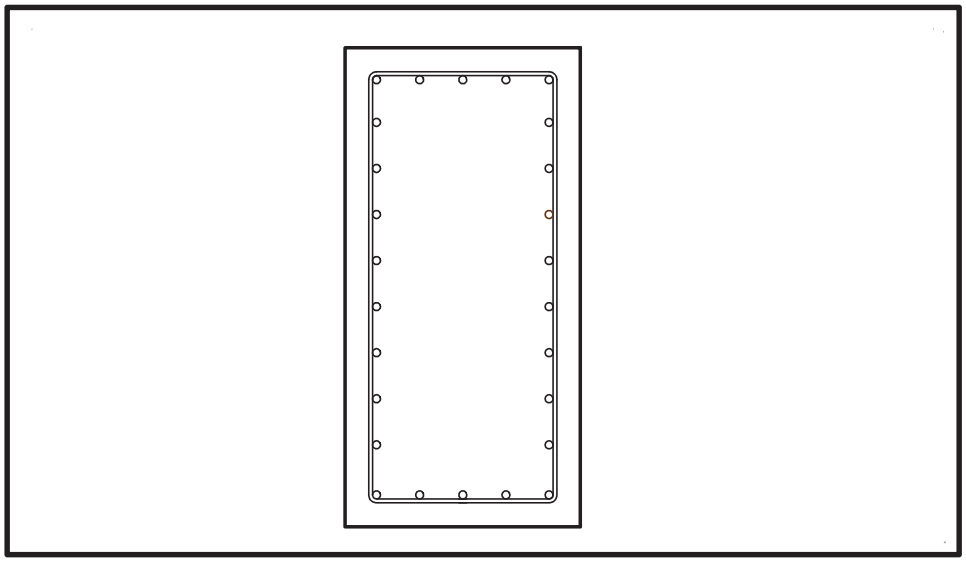
Reinforcement Summary

1 LAYER OF (5) #8 TENSION

#4 STIRRUPS @ 18 in
(8) #8 BARS EACH SIDE

Geometry:

Length	32.5	ft
Width	30	in
Height	60	in
Fixity Type	Pin-Pin	
Member Type	Beam	
T-Beam Slab	12	in
B,flange	Auto	auto or in
b,eff	30.0	in



Concrete:

F'c	4000	psi
β_1	0.850	
Ec	3605	ksi

Steel:

Fy	60	ksi
Es	29000	ksi
Inter-Layer Clearance	1	in
Bottom Cover	3.0	in
Side Cover	3	in
Consider ρ'	No	
As' Location	Web	

"Compression" REINF	Count	Bar Number	Depth to bar	As / bar	As / Layer	d	Diameter	Horiz Clr	Spacing Check
Extreme-most Layer	5	8	auto	0.79	3.95	4.00	1.000	4.50	(OK)
2nd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
4th Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	

Tension REINF

4th Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
2nd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
Extreme-most Layer	5	8	auto	0.79	3.95	56.00	1	4.50	(OK)
			in or auto	in^2	in^2	in	in	in	

Global:

d	56.00 in		d'	4.00 in	
As	3.95 in^2		As'	3.95 in^2	
As min	5.60 in^2	N/A	ρ (rho)	0.24 %	

Internal Axial Forces:

Equilibrate Section Macro

s,max	6.18	in	(OK)
c	2.73	in	
Extreme Fiber εs	0.0585		
ϕ	0.90	Tension Controlled	
Mn	1083	kip-ft	
ϕMn	**975**	kip-ft	
Mu	**156**	kip-ft	(OK)

Strain Compatibility - Axial Force Equilibrium - Moment Capacity

Layer	depth (in)	strain	stress (ksi)	Area (in^2)	Force (kips)	Moment (k-in)
Comp Web	1.16	0.00300	3.40	69.71	237	- - -
Comp Flange						
As'1						
As'2						
As'3						
As'4						
As4						
As3						
As2						
As1	56.00	-0.05846	-60.00	3.95	-237	12997
				Σ	0.00	12997

Transverse Shear REINF

Shear Reinf is not required per 11.5.6.1

Fy	60	ksi
Transverse Bar Mark	4	
Spacing,$_T$	18	in
# Legs,$_T$	2	
A_{VT}/layer	0.40	in^2

Increase Av per 11.5.6.3.

Shear:

Vn,max	1063 kips	=	10.00*sqrt(f'c)*bw*d
Vc	213 kips	=	2.00*sqrt(f'c)*bw*d
Vs	75 kips	=	0.70*sqrt(f'c)*bw*d
ϕVn	**215** kips		
Vu	**1** kips		(OK)

Longitudinal Skin REINF

Required?	Yes	
Maximum Spacing	6.2	in
Side Bars	8	mark
Number of Side Bar Pairs	8	# or "Above"
Spacing,$_L$	5.77	in

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Structural + Civil Engineers

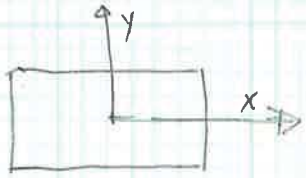
PROJECT EISENHOWER SHEET
LOCATION CLIENT DATE 8/29/12 BY GAT

SOUTH TAPESTRY GRADE BEAM DESIGN:

GEOMETRY: LENGTH = 57'3"
WIDTH = 5'0" (60")
DEPTH = 3'-0" (36")

LOADS:
- DETERMINE LOAD DEMANDS FROM SAP MODELS
- DESIGN USING LRFD CODE EQUATIONS COMPARED WITH 1.5 * ASD ENVELOPE COMBOS FROM SAP (CONSERVATIVE EQUIVALENT LRFD LOAD FACTOR)
- SEE ATTACHED FOR SAP OUTPUT

GOVERNING DEMANDS:



P_u = 200 KIPS
$M_{u,x}$ = 9138 K-IN = 762 K-FT
$M_{u,y}$ = 8065 K-IN = 672 K-FT
V_{ux} = 12.7 K
$V_{u,y}$ = 26.1 K

DESIGN: SINCE AXIAL DEMAND (200K) IS LESS THAN 10% $A_g * f'_c$ (864 K) DESIGN GRADE BM AS BEAM, NOT COLUMN. SEE ATTACHED BEAM DESIGN SPREADSHEET.

- PROVIDE (20) #8 LONGITUDINAL: (10) TOP + (9) @ SIDES
- SHEAR REINF NOT REQUIRED
  LD PROVIDE MIN FOR CRACK CONTROL

Ver 1.4

Reinforced Concrete Beams (ACI 318-2005)

Beam ID:	**South Tapestry Grade Beam - My**	
Project:	Eisenhower	
Date:	08/29/12	
Engineer :	GAT	

Ultimate Forces:

Mu	672	kip-ft
Vu	13	kips
Pu	200	kips

Geometry:

Length	57.25	ft
Width	36	in
Height	60	in
Fixity Type	Pin-Pin	
Member Type	Beam	
T-Beam Slab	12	in
B,flange	Auto	auto or in
b,eff	36.0	in

Concrete:

F'c	4000	psi
β_1	0.850	
Ec	3605	ksi

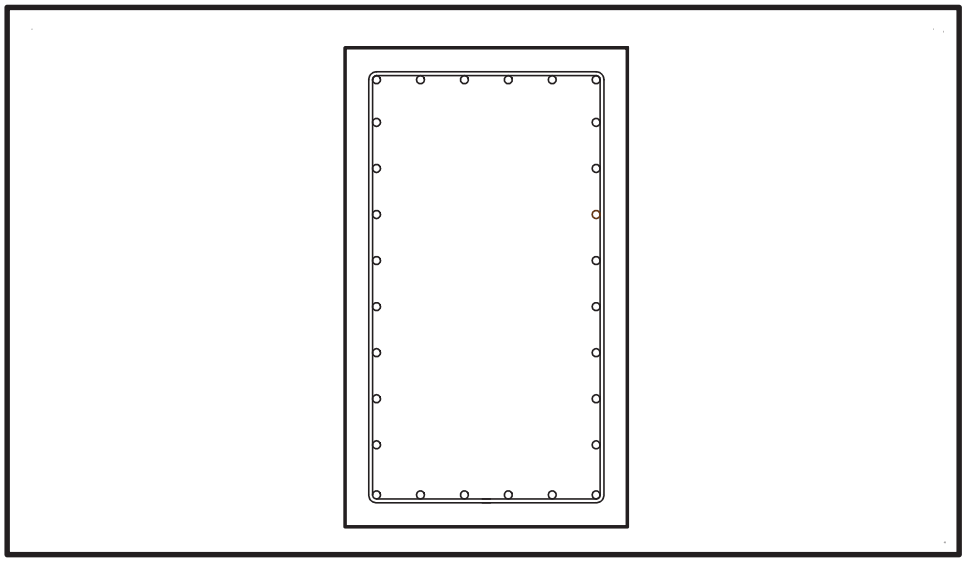
Steel:

Fy	60	ksi
Es	29000	ksi
Inter-Layer Clearance	1	in
Bottom Cover	3.0	in
Side Cover	3	in
Consider ρ'	No	
As' Location	Web	

Reinforcement Summary

1 LAYER OF (6) #8 TENSION

#4 STIRRUPS @ 18 in
(8) #8 BARS EACH SIDE



"Compression" REINF	Count	Bar Number	Depth to bar	As / bar	As / Layer	d	Diameter	Horiz Clr	Spacing Check
Extreme-most Layer	6	8	auto	0.79	4.74	4.00	1.000	4.60	(OK)
2nd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
4th Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	

Tension REINF

4th Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
2nd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
Extreme-most Layer	6	8	auto	0.79	4.74	56.00	1	4.60	(OK)
			in or auto	in^2	in^2	in	in	in	

Global:

d	56.00 in		d'	4.00 in	
As	4.74 in^2		As'	4.74 in^2	
As min	6.72 in^2	N/A	ρ (rho)	0.24 %	

Internal Axial Forces:

Equilibrate Section Macro

s,max	6.18	in	(OK)
c	2.73	in	
Extreme Fiber εs	0.0585		
ϕ	0.90	Tension Controlled	
Mn	1300	kip-ft	
ϕMn	**1170**	kip-ft	
Mu	**672**	kip-ft	(OK)

Strain Compatibility - Axial Force Equilibrium - Moment Capacity

Layer	depth (in)	strain	stress (ksi)	Area (in^2)	Force (kips)	Moment (k-in)
Comp Web	1.16	0.00300	3.40	83.65	284	- - -
Comp Flange						
As'1						
As'2						
As'3						
As'4						
As4						
As3						
As2						
As1	56.00	-0.05846	-60.00	4.74	-284	15596
				Σ	0.00	15596

Transverse Shear REINF

Shear Reinf is not required per 11.5.6.1

Fy	60	ksi
Transverse Bar Mark	4	
$Spacing_T$	18	in
$\#\ Legs_T$	2	
A_{VT}/layer	0.40	in^2

Increase Av per 11.5.6.3.

Shear:

Vn,max	1275 kips	=	10.00*sqrt(f'c)*bw*d
Vc	255 kips	=	2.00*sqrt(f'c)*bw*d
Vs	75 kips	=	0.59*sqrt(f'c)*bw*d
ϕVn	**247** kips		
Vu	**13** kips		(OK)

Longitudinal Skin REINF

Required?	Yes	
Maximum Spacing	6.2	in
Side Bars	8	mark
Number of Side Bar Pairs	8	# or "Above"
$Spacing_L$	5.77	in

Deflections:

L/h max	16		No Deflection Calculations Req'd
L/h actual	12		
Check Anyway	Yes		
L/Δ Limit	240		
Ma, DL	448	ft-kip	
Ma, DL+LL	448	ft-kip	
Loading Type	Distributed		
Ec	3605	ksi	
Ie DL	648000	in^4	
Ie DL+LL	648000	in^4	
Δ DL	0.113	in	
Δ DL+LL	0.113	in	

Auto-Calculated Deflections:

0.113	in
0.113	in

Allowed Deflection	**2.86**	in
Total Long Term Deflection	**0.32**	in

(OK)

fr	474	psi
b,eff	36	in
Ig	648000	in^4
Mcr	853.8	ft-kip
n	8.04	
Ac,d	2016	in^2
Icrack	93743	in^4
ρ'	0.00235	
λ	1.79	

Slab Depth	0	in
Compression Zone Entirely W/in Slab?	No	

Uncracked Ixx Calculation

	Beam	Slab	
Ybar	30.00	0.00	in
Area	2160	0	in^2
A*Ybar	64800	0	in^3
Ybar,G	30.00	in	
Iself	648000	0	in^4
AY^2+Iself	648000	0	in^4
I,gross		648000	in^4

Cracked Moment of Inertia Calculation

	Beam	Slab	Top Steel	Bottom Steel	
Ybar /c	0.50	0.00	1.00	1.00	in
Ybar	0.00	6.00	-4.00	-56.00	in
Area /c	36.00	0.00	0.00	0.00	in^2
Area	0.00	0.00	33.39	38.13	in^2
A*Ybar /c^2	18.00	0.00	0.00	0.00	in^3
A*Ybar /c	0.00	0.00	33.39	38.13	in^3
A*Ybar	0.00	0.00	-133.56	-2135.30	in^3
c	9.41	in			
Ybar	4.71	6.00	5.41	-46.59	in
Area	338.93	0.00	33.39	38.13	in^2
Iself	2504	0	---	---	in^4
AY^2	7511	0	979	82750	in^4
			Icrack	93743	in^4

Icrack/Igross 14%

Ver 1.4

Reinforced Concrete Beams (ACI 318-2005)

Beam ID:	**South Tapestry Grade Beam - Mx**	
Project:	Eisenhower	
Date:	08/29/12	
Engineer :	GAT	

Ultimate Forces:

Mu	762	kip-ft
Vu	26	kips
Pu	200	kips

Geometry:

Length	57.25	ft
Width	60	in
Height	36	in
Fixity Type	Pin-Pin	
Member Type	Beam	
T-Beam Slab	12	in
B,flange	Auto	auto or in
b,eff	60.0	in

Concrete:

F'c	4000	psi
β_1	0.850	
Ec	3605	ksi

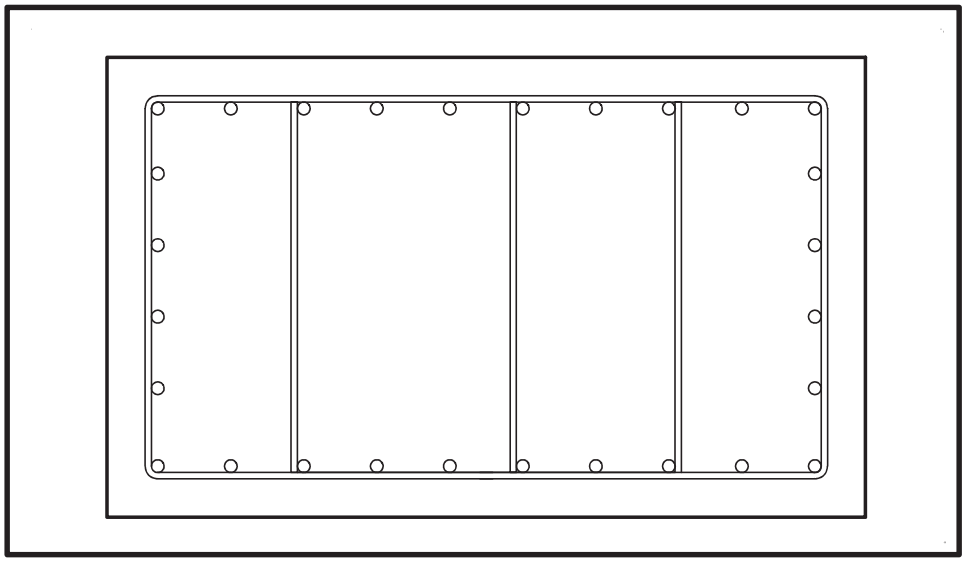
Steel:

Fy	60	ksi
Es	29000	ksi
Inter-Layer Clearance	1	in
Bottom Cover	3.0	in
Side Cover	3	in
Consider ρ'	No	
As' Location	Web	

Reinforcement Summary

1 LAYER OF (10) #8 TENSION

#4 STIRRUPS @ 18 in w/ 5 VERT LEGS
(4) #8 BARS EACH SIDE



"Compression" REINF	Count	Bar Number	Depth to bar	As / bar	As / Layer	d	Diameter	Horiz Clr	Spacing Check
Extreme-most Layer	10	8	auto	0.79	7.90	4.00	1.000	4.77	(OK)
2nd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
4th Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	

Tension REINF

4th Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
2nd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
Extreme-most Layer	10	8	auto	0.79	7.90	32.00	1	4.77	(OK)
			in or auto	in^2	in^2	in	in	in	

Global:

d	32.00 in		d'	4.00 in	
As	7.90 in^2		As'	7.90 in^2	
As min	6.40 in^2	N/A	ρ (rho)	0.41 %	

Internal Axial Forces:

Equilibrate Section Macro

s,max	6.18	in	(OK)
c	2.73	in	
Extreme Fiber εs	0.0321		
ϕ	0.90	Tension Controlled	
Mn	1218	kip-ft	
ϕMn	**1096**	kip-ft	
Mu	**762**	kip-ft	(OK)

Strain Compatibility - Axial Force Equilibrium - Moment Capacity

Layer	depth (in)	strain	stress (ksi)	Area (in^2)	Force (kips)	Moment (k-in)
Comp Web	1.16	0.00300	3.40	139.41	474	- - -
Comp Flange						
As'1						
As'2						
As'3						
As'4						
As4						
As3						
As2						
As1	32.00	-0.03212	-60.00	7.9	-474	14617
				Σ	0.00	14617

Transverse Shear REINF

Shear Reinf is not required per 11.5.6.1

Fy	60	ksi
Transverse Bar Mark	4	
Spacing,T	18	in
# Legs,T	5	
A_{VT}/layer	1.00	in^2

Shear:

Vn,max	1214 kips	=	10.00*sqrt(f'c)*bw*d
Vc	243 kips	=	2.00*sqrt(f'c)*bw*d
Vs	107 kips	=	0.88*sqrt(f'c)*bw*d
ϕVn	**262** kips		
Vu	**26** kips		(OK)

Longitudinal Skin REINF

Required?	No	
Maximum Spacing		in
Side Bars	8	mark
Number of Side Bar Pairs	4	# or "Above"
Spacing,L	5.60	in

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