KOONTZ BRYANT JOHNSON WILLIAMS

FORMERLY CBC ENGINEERS

March 4, 2022

Contech Engineered Solutions LLC
9025 Centre Pointe Drive
Suite 400
West Chester, OH 45069

Attn: Mr. Erik Early, P.E.
Design Engineer – Drainage, Plate, and Specialty Products

Re: Peer Review of CANDE Finite Element Analyses, and Preparation of Load Rating Calculations for a BridgeCor Arch (635632); Sterling Ranch, Briargate Boulevard, El Paso County, Colorado; KBJW Report No. 24776D-1-0322-05

Ladies and Gentlemen:

Koontz Bryant Johnson Williams, Inc. (KBJW, formerly CBC Engineers and Associates, Ltd.) is pleased to submit our report for the above referenced project. This report contains the peer review of the CANDE finite element analyses and preparation of load rating calculations for the above referenced structure. Others are responsible for all other aspects of the design of the structure including but not limited to footing design, end treatment, backfill evaluation, hydraulics, and scour/abrasion/corrosion, and the only responsibility of KBJW is as referenced above.

If you have any questions, please contact us.

Respectfully submitted,

Koontz Bryant Johnson Williams, Inc.

Deepa Nair, M.S., P.E.
Project Engineer

COLORADO LICENSED MITCHELL T. HARDERT PE-45539 PROFESSIONAL ENGINEER

Mitchell T. Hardert, P.E.
Chief Engineer

DN/MTH/mt
ec: Client (erik.early@conteches.com)
ec: Darrell Sanders (darrell.sanders@conteches.com)
ec: Melinda Fugate (melinda.fugate@conteches.com)
1-File

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SECTION I

TEXT

1.0 AUTHORIZATION

Authorization to proceed with this project was given by Mr. Erik Early of Contech Engineered Solutions LLC. Work was to proceed in accordance with CBC Engineers & Associates, Ltd. Quotation No. 22-113-05 dated February 24, 2022, and the terms and conditions of the Master Agreement for Engineering Services dated July 30, 2009.

2.0 STRUCTURE DESCRIPTION

The proposed project consists of a BridgeCor arch structure with a maximum span of 43'-0" and an inside rise of 26'-3 3/4". The 15" x 5-½" deep corrugated structural plates for the BridgeCor box structure are proposed to be 5 gage (0.218"). The design height of cover over the structure is reported to vary from 5.0 feet to 7.0 ft. above the crown @ 120 pcf. The design live load considered in the evaluation is the HL-93 live loading.

TABLE 1

STRUCTURE CHARACTERISTICS

Number of Structures	1
Structure Type	BridgeCor Arch
Maximum Span (ft.-in.)	43'-0"
Rise (ft.-in.)	26'-3 3/4"
Gage	5 gage (0.218")
Live Load	HL-93
Design Cover (ft.)	5.0' to 7.0' at 120 pcf

3.0 REVIEW OF CANDE ANALYSIS

The CANDE finite element analyses for the proposed BridgeCor box structure is based on AASHTO – LRFD Bridge Design Specifications considering the specific requirements of Section 12 for deep corrugated steel plate profiles using the CANDE 2019 computer model with elasticity based correction for live load distribution.

CANDE analyses have been performed for the structure considering the design height of cover of 5.0 to 7.0 feet at 120 pcf with HL-93 live loading. Based on the analyses of the proposed structure, the governing live load is HL-93 tandem live load over the structure with the design

maximum height of cover of 7.0 feet above the crown of the structure. The 15" x 5-½" deep corrugated steel plates are proposed to be 5 gage (0.218"). The design calculations are based on the AASHTO-LRFD Bridge Design Specifications considering the specific requirements of Section 12 for deep corrugated steel plate profiles, using the CANDE 2019 computer model. The select backfill material above and around the proposed BridgeCor structure (modeled to extend to at least 8.5 feet outside the springline of the BridgeCor arch, and to 3.0 ft. min. over the crown of the structure) has been modeled in the provided CANDE analyses as an SW-95 material (gravelly sand with 95% relative compaction as per AASHTO T-99) with the established hyperbolic stress-strain parameters for this material designation and an in-place unit weight of 120 pcf. The general embankment fill material outside the select backfill zone has been modeled in the provided CANDE analyses as an SM-90 material (silty sand with 90% relative compaction as per AASHTO T-99) with the established hyperbolic stress-strain parameters for this material designation and an in-place unit weight of 120 pcf. The in-situ material at the project location has been considered as a stiff soil with E=3,000 psi.

Based on the reviewed Contech CANDE analyses, with deep corrugated steel with a thickness of 5 gage (0.218"), it is the opinion of this office that the structural analyses and resultant plate gage for the proposed BridgeCor arch conform to industry standards for the structure type. The CANDE finite element analyses performed using the soil structure interaction model indicate that the proposed BridgeCor arch structure given the proposed installation conditions and proposed material properties, meets AASHTO LRFD Bridge Design Specification strength criteria including wall area, buckling, seam strength and combined moment and thrust criterion. We have not made an independent verification of the background site road and structure elevations and geotechnical data used in the design calculations and understand all initial assumptions and data are correct as presented to us. The actual in-service performance of the installed structure will be highly dependent on their conformity to the attributes modeled in the CANDE analyses, including but not limited to the geometry and strength parameters of the BridgeCor arch and the various soil zones. The soil parameters utilized in the CANDE analyses, including the type and strength characteristics of the foundation material, road fill/in-situ soil outside the select backfill zone, and the structural backfill must be available in the field (and verified by the project geotechnical engineer) during the installation of the structure in order for the actual performance of the proposed structure to be in agreement with the calculated performance from the CANDE analyses. Deviations between the actual installed conditions and the modeled conditions will result in changes in the expected performance of the structure.

We have accordingly included in this report the calculations, and they are attached in Appendix A. The select backfill around and over the proposed BridgeCor arch must be placed and compacted in strict conformance with the project specifications, the manufacturer's requirements, and accepted industry standards. The backfill material around the structure must be placed in balanced steps. The backfill must be brought up relatively level on both sides of the structure as recommended by the structure manufacturer. If the backfill on one side is much higher than the backfill on the other, the unbalanced soil pressure may distort the structure. Therefore, care must be exercised to maintain balanced loading on the structure during any backfilling operations and the structure must be properly backfilled to maintain this balanced loading.

4.0 LOAD RATING PROCEDURE

The load carrying capability of the deep corrugated buried corrugated metal culvert has been analyzed in accordance with the *Manual for Bridge Evaluation (AASHTO)* as well as the provisions of the *NCSPA Design Data Sheet No. 19, AASHTO LRFD Bridge Design Specifications, Section 12.8.9 for deep corrugated structures (LRFR rating) for design vehicles, and CDOT Bridge Load Rating Manual* using the LRFR methodology. AASHTO LRFD Bridge Design Specifications state that finite element analyses shall be performed in the analysis of deep corrugated structures and CANDE is specifically referenced in AASHTO. CANDE is a computer program for the structural analysis, design, and evaluation of buried culverts with consideration of the soil-structure systems. We have accordingly utilized the finite element computer program CANDE for the load rating evaluation of the Bridge-Cor structure. Combined soil-structure interaction system models were developed using CANDE and the models subjected to earth and live loads for the detailed investigation of the performance of the structure for the various live load cases mentioned above. All design parameters including but not limited to, the structure properties, in-situ soil properties, and backfill soil properties, utilized in the CANDE finite element analysis for the structure have been utilized in the load rating evaluation. The load ratings have been performed assuming that the in-place condition of the Bridge-Cor arch is as per the design characteristics, and that no deformation, deflection, corrosion, or any other type of distress is present in the Bridge-Cor arch structure. Deviations from these considered conditions will affect the load ratings presented herein, and if observed, should be investigated and evaluated as necessary. The structure is to be rated for HL-93 design live load, CDOT Legal Trucks, Specialized Hauling Vehicles, CDOT Permit Vehicles, and FHWA Emergency Vehicles as per CDOT Bridge Load Rating Manual with minimum cover conditions over the structure in traffic areas.

Inventory and Operating load ratings for the design loads have been performed for the Bridge-Cor structure. An earth load factor of 1.5 and a live load factor of 1.35 for operating load ratings and a live load factor of 1.75 for inventory load ratings have been utilized for the design loads. An earth load factor of 1.5 and a live load factor of 1.45 for operating load ratings have been utilized for the CDOT Legal Trucks, and Specialized Hauling Vehicles. An earth load factor of 1.5 and a live load factor of 1.3 for operating load ratings have been utilized for the Permit Live Load Vehicles and Emergency Vehicles. The actual pipe wall thrusts (critical for deep corrugated structures) from the earth dead loads and live loads as obtained from the CANDE analyses for the various live loads have been utilized in the load rating of the structure. These loads are used in in-house developed load rating spreadsheets following the provisions of the *NCSPA Design Data Sheet No. 19, Manual for Bridge Evaluation (AASHTO), and AASHTO LRFD Bridge Design Specifications* to analyze the structure for the defined dead loads and live loads (pipe-wall thrusts obtained from CANDE runs) for each load rating using the appropriate load/resistance factors (depending on LRFR), in order to compute the rating factors for wall strength, individually for the structures.

AASHTO LRFD Design Specifications Section 12.8.9 for deep corrugated structures state that in addition to the strength limit state criteria for wall area, buckling and seam resistance, the combined effects criteria of factored thrust and moment must be met for the structures at all stages of construction. For LRFR methodology, the structure is further modeled with the operating/inventory loads obtained based on the critical strength rating factor to verify that it meets AASHTO LRFD Design Specifications Section 12.8.9 combined effects criteria of factored thrust and moment. If the combined effects criteria of factored thrust and moment are not met for the computed loads, the operating and inventory rating factors for the various live loads are reduced to a level whereby the combined effects criteria is met.

The lowest load rating factor based on either wall strength or the factored thrust-moment criteria of the structure for LRFR methodology is the controlling load rating factor for the specific vehicle being considered. The Load Rating is calculated from the load factors and the Gross Vehicle Weight (GVW) using the following equations:

1) Operating Loads (tons)

$$\text{Load} = RF_o(GVW)$$

2) Inventory Loads (tons)

Load = RF_i(GVW)

The results of the calculations are as follows:

TABLE 2
LOAD RATINGS (LRFR METHODOLOGY)

VEHICLE		OPERATING LOAD		INVENTORY LOAD	
LIVE LOAD	GROSS VEHICLE WEIGHT (tons)	RF_o	LOAD RATING (tons)	RF_i	LOAD RATING (tons)
HL-93 Tandem	25.0	1.68	42.0	1.30	32.5
HL-93 Truck	36.0	2.69	96.8	2.07	74.5
Type 3	27.0	2.33	62.9	--	--
Type 3S2	42.5	2.34	99.5	--	--
Type 3-2	42.5	2.41	102.4	--	--
SU4	27.0	2.37	64.0	--	--
SU5	31.0	2.37	73.5	--	--
SU6	34.75	2.40	83.5	--	--
SU7	38.75	2.51	97.3	--	--
NRL	40.0	2.60	104.0	--	--
EV2	28.75	2.46	70.7	--	--
EV3	43.0	1.54	66.2	--	--
Permit Truck	96.0	1.60	153.6	--	--
Modified Tandem	50.0	2.36	118.0	--	--

The calculations based on the AASHTO LRFD Bridge Design Specifications, CDOT Bridge Load Rating Manual, Manual for Bridge Evaluation (AASHTO) and "NCSPA Design Data Sheet No. 19 - 1995" are attached in Appendix A.

5.0 WARRANTY

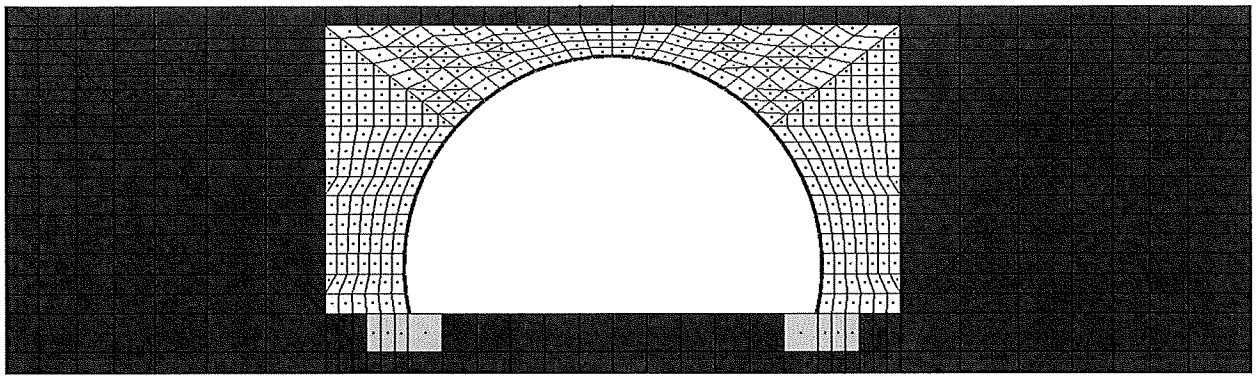
Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. No other warranty, expressed or implied, is made.

This report has been prepared for the exclusive use of Contech Engineered Solutions LLC for specific application to the structure herein described. Specific recommendations have been provided in the various sections of the report. The report shall, therefore, be used in its entirety. This report is not a bidding document and shall not be used for that purpose. Anyone reviewing this report must interpret and draw their own conclusions regarding specific construction techniques and methods chosen. KBJW is not responsible for the independent conclusions, opinions or recommendations made by others.

APPENDIX A

CALCULATIONS

STRUCTURAL CALCULATIONS



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage Tandem

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE........... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION.......... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

- -

REVIEW SYSTEM INPUT DATA

FINITE ELEMENT INPUT CONTROLS (PREP)

THE DATA TO BE RUN IS ENTITLED ...

BRIDGECOR

PRINT AND PLOT CONTROL CODES ...
PRINT CONTROL FOR MESH DATA------------ 3
PLOT FILE CONTROL MESH & RESULS-------- 3
PRINT FINITE ELEMENT RESULTS ---------- 1
INPUT DATA CHECK CODE------------------ 0

BANDWIDTH MINIMIZER IS ON, MINBW------- 1

KEY NUMBERS DESCRIBING MESH ...
THE NUMBER OF LOAD STEPS IS------------ 21
TOTAL NUMBER OF NODES IS--------------- 1163
TOTAL NUMBER OF ELEMENTS IS------------ 1127
TOTAL NUMBER OF BEAM ELEMENTS IS------- 38
MAX NUMBER OF BOUNDARY CONDITIONS IS--- 97

CONTINUOUS LOAD SCALING IS NOT ACTIVATED.

NODAL INPUT DATA TO GENERATE COORDINATES

NODE NUMBER	GENERATE CODE	NODE INCR.	X-AXIS COORD.	Y-AXIS COORD.	SPACING PARAMETER	ARC RADIUS
1	0	1	254.123	0.000	1.00	0.00
2	0	1	258.503	24.256	1.00	0.00
3	0	1	260.573	48.818	1.00	0.00
4	0	1	260.315	73.465	1.00	0.00
5	0	1	257.731	97.978	1.00	0.00
6	0	1	252.844	122.138	1.00	0.00
7	0	1	245.697	145.727	1.00	0.00

8	0	1	236.355	168.537	1.00	0.00
9	0	1	224.901	190.363	1.00	0.00
10	0	1	211.437	211.009	1.00	0.00
11	0	1	196.083	230.292	1.00	0.00
12	0	1	178.978	248.039	1.00	0.00
13	0	1	160.273	264.092	1.00	0.00
14	0	1	140.136	278.307	1.00	0.00
15	0	1	118.747	290.557	1.00	0.00
16	0	1	96.296	300.732	1.00	0.00
17	0	1	72.985	308.742	1.00	0.00
18	0	1	49.022	314.515	1.00	0.00
19	0	1	24.621	318.000	1.00	0.00
20	0	1	0.000	319.165	1.00	0.00
21	0	1	-24.621	318.000	1.00	0.00
22	0	1	-49.022	314.515	1.00	0.00
23	0	1	-72.985	308.742	1.00	0.00
24	0	1	-96.296	300.732	1.00	0.00
25	0	1	-118.747	290.557	1.00	0.00
26	0	1	-140.136	278.307	1.00	0.00
27	0	1	-160.273	264.092	1.00	0.00
28	0	1	-178.978	248.039	1.00	0.00
29	0	1	-196.083	230.292	1.00	0.00
30	0	1	-211.437	211.009	1.00	0.00
31	0	1	-224.901	190.363	1.00	0.00
32	0	1	-236.355	168.537	1.00	0.00
33	0	1	-245.697	145.727	1.00	0.00
34	0	1	-252.844	122.138	1.00	0.00
35	0	1	-257.731	97.978	1.00	0.00
36	0	1	-260.315	73.465	1.00	0.00
37	0	1	-260.573	48.818	1.00	0.00
38	0	1	-258.503	24.256	1.00	0.00
39	0	1	-254.123	0.000	1.00	0.00
40	0	1	258.503	24.256	1.00	0.00
41	0	1	260.573	48.818	1.00	0.00
42	0	1	260.315	73.465	1.00	0.00
43	0	1	257.731	97.978	1.00	0.00
44	0	1	252.844	122.138	1.00	0.00
45	0	1	245.697	145.727	1.00	0.00
46	0	1	236.355	168.537	1.00	0.00
47	0	1	224.901	190.363	1.00	0.00
48	0	1	211.437	211.009	1.00	0.00
49	0	1	196.083	230.292	1.00	0.00
50	0	1	178.978	248.039	1.00	0.00
51	0	1	160.273	264.092	1.00	0.00
52	0	1	140.136	278.307	1.00	0.00
53	0	1	118.747	290.557	1.00	0.00
54	0	1	96.296	300.732	1.00	0.00
55	0	1	72.985	308.742	1.00	0.00
56	0	1	49.022	314.515	1.00	0.00
57	0	1	24.621	318.000	1.00	0.00
58	0	1	0.000	319.165	1.00	0.00
59	0	1	-24.621	318.000	1.00	0.00
60	0	1	-49.022	314.515	1.00	0.00
61	0	1	-72.985	308.742	1.00	0.00
62	0	1	-96.296	300.732	1.00	0.00
63	0	1	-118.747	290.557	1.00	0.00
64	0	1	-140.136	278.307	1.00	0.00
65	0	1	-160.273	264.092	1.00	0.00
66	0	1	-178.978	248.039	1.00	0.00
67	0	1	-196.083	230.292	1.00	0.00
68	0	1	-211.437	211.009	1.00	0.00
69	0	1	-224.901	190.363	1.00	0.00
70	0	1	-236.355	168.537	1.00	0.00
71	0	1	-245.697	145.727	1.00	0.00
72	0	1	-252.844	122.138	1.00	0.00
73	0	1	-257.731	97.978	1.00	0.00
74	0	1	-260.315	73.465	1.00	0.00
75	0	1	-260.573	48.818	1.00	0.00
76	0	1	-258.503	24.256	1.00	0.00
77	0	1	258.503	24.256	1.00	0.00
78	0	1	260.573	48.818	1.00	0.00
79	0	1	260.315	73.465	1.00	0.00
80	0	1	257.731	97.978	1.00	0.00
81	0	1	252.844	122.138	1.00	0.00
82	0	1	245.697	145.727	1.00	0.00
83	0	1	236.355	168.537	1.00	0.00
84	0	1	224.901	190.363	1.00	0.00
85	0	1	211.437	211.009	1.00	0.00
86	0	1	196.083	230.292	1.00	0.00
87	0	1	178.978	248.039	1.00	0.00
88	0	1	160.273	264.092	1.00	0.00

89	0	1	140.136	278.307	1.00	0.00
90	0	1	118.747	290.557	1.00	0.00
91	0	1	96.296	300.732	1.00	0.00
92	0	1	72.985	308.742	1.00	0.00
93	0	1	49.022	314.515	1.00	0.00
94	0	1	24.621	318.000	1.00	0.00
95	0	1	0.000	319.165	1.00	0.00
96	0	1	-24.621	318.000	1.00	0.00
97	0	1	-49.022	314.515	1.00	0.00
98	0	1	-72.985	308.742	1.00	0.00
99	0	1	-96.296	300.732	1.00	0.00
100	0	1	-118.747	290.557	1.00	0.00
101	0	1	-140.136	278.307	1.00	0.00
102	0	1	-160.273	264.092	1.00	0.00
103	0	1	-178.978	248.039	1.00	0.00
104	0	1	-196.083	230.292	1.00	0.00
105	0	1	-211.437	211.009	1.00	0.00
106	0	1	-224.901	190.363	1.00	0.00
107	0	1	-236.355	168.537	1.00	0.00
108	0	1	-245.697	145.727	1.00	0.00
109	0	1	-252.844	122.138	1.00	0.00
110	0	1	-257.731	97.978	1.00	0.00
111	0	1	-260.315	73.465	1.00	0.00
112	0	1	-260.573	48.818	1.00	0.00
113	0	1	-258.503	24.256	1.00	0.00
114	0	1	0.000	355.165	1.00	0.00
115	0	1	0.000	328.165	1.00	0.00
116	0	1	0.000	337.165	1.00	0.00
117	0	1	0.000	346.165	1.00	0.00
118	0	1	0.000	0.000	1.00	0.00
119	0	1	0.000	-47.875	1.00	0.00
120	0	1	356.750	0.000	1.00	0.00
121	0	1	356.750	24.256	1.00	0.00
122	0	1	356.750	48.818	1.00	0.00
123	0	1	356.750	73.465	1.00	0.00
124	0	1	356.750	97.978	1.00	0.00
125	0	1	356.750	122.138	1.00	0.00
126	0	1	356.750	145.727	1.00	0.00
127	0	1	356.750	168.537	1.00	0.00
128	0	1	356.750	190.363	1.00	0.00
129	0	1	356.750	211.009	1.00	0.00
130	0	1	356.750	230.292	1.00	0.00
131	0	1	271.227	0.000	1.00	0.00
132	0	1	288.332	0.000	1.00	0.00
133	0	1	305.436	0.000	1.00	0.00
134	0	1	322.541	0.000	1.00	0.00
135	0	1	339.645	0.000	1.00	0.00
136	0	1	216.167	230.292	1.00	0.00
137	0	1	236.250	230.292	1.00	0.00
138	0	1	256.333	230.292	1.00	0.00
139	0	1	276.417	230.292	1.00	0.00
140	0	1	296.500	230.292	1.00	0.00
141	0	1	316.583	230.292	1.00	0.00
142	0	1	336.667	230.292	1.00	0.00
143	0	1	274.877	24.256	1.00	0.00
144	0	1	291.252	24.256	1.00	0.00
145	0	1	307.626	24.256	1.00	0.00
146	0	1	324.001	24.256	1.00	0.00
147	0	1	340.375	24.256	1.00	0.00
148	0	1	274.313	48.818	1.00	0.00
149	0	1	288.052	48.818	1.00	0.00
150	0	1	301.792	48.818	1.00	0.00
151	0	1	315.531	48.818	1.00	0.00
152	0	1	329.271	48.818	1.00	0.00
153	0	1	343.010	48.818	1.00	0.00
154	0	1	274.092	73.465	1.00	0.00
155	0	1	287.868	73.465	1.00	0.00
156	0	1	301.644	73.465	1.00	0.00
157	0	1	315.421	73.465	1.00	0.00
158	0	1	329.197	73.465	1.00	0.00
159	0	1	342.974	73.465	1.00	0.00
160	0	1	271.877	97.978	1.00	0.00
161	0	1	286.022	97.978	1.00	0.00
162	0	1	300.168	97.978	1.00	0.00
163	0	1	314.313	97.978	1.00	0.00
164	0	1	328.459	97.978	1.00	0.00
165	0	1	342.604	97.978	1.00	0.00
166	0	1	267.688	122.138	1.00	0.00
167	0	1	282.531	122.138	1.00	0.00
168	0	1	297.375	122.138	1.00	0.00
169	0	1	312.219	122.138	1.00	0.00

170	0	1	327.063	122.138	1.00	0.00
171	0	1	341.906	122.138	1.00	0.00
172	0	1	261.562	145.727	1.00	0.00
173	0	1	277.427	145.727	1.00	0.00
174	0	1	293.291	145.727	1.00	0.00
175	0	1	309.156	145.727	1.00	0.00
176	0	1	325.021	145.727	1.00	0.00
177	0	1	340.885	145.727	1.00	0.00
178	0	1	251.404	168.537	1.00	0.00
179	0	1	266.454	168.537	1.00	0.00
180	0	1	281.503	168.537	1.00	0.00
181	0	1	296.552	168.537	1.00	0.00
182	0	1	311.602	168.537	1.00	0.00
183	0	1	326.651	168.537	1.00	0.00
184	0	1	341.701	168.537	1.00	0.00
185	0	1	241.382	190.363	1.00	0.00
186	0	1	257.863	190.363	1.00	0.00
187	0	1	274.344	190.363	1.00	0.00
188	0	1	290.825	190.363	1.00	0.00
189	0	1	307.307	190.363	1.00	0.00
190	0	1	323.788	190.363	1.00	0.00
191	0	1	340.269	190.363	1.00	0.00
192	0	1	229.601	211.009	1.00	0.00
193	0	1	247.765	211.009	1.00	0.00
194	0	1	265.929	211.009	1.00	0.00
195	0	1	284.093	211.009	1.00	0.00
196	0	1	302.258	211.009	1.00	0.00
197	0	1	320.422	211.009	1.00	0.00
198	0	1	338.586	211.009	1.00	0.00
199	0	1	356.750	355.165	1.00	0.00
200	0	1	356.750	245.901	1.00	0.00
201	0	1	356.750	261.510	1.00	0.00
202	0	1	356.750	277.120	1.00	0.00
203	0	1	356.750	292.729	1.00	0.00
204	0	1	356.750	308.338	1.00	0.00
205	0	1	356.750	323.947	1.00	0.00
206	0	1	356.750	339.556	1.00	0.00
207	0	1	216.167	245.901	1.00	0.00
208	0	1	236.250	261.510	1.00	0.00
209	0	1	256.333	277.120	1.00	0.00
210	0	1	276.417	292.729	1.00	0.00
211	0	1	296.500	308.338	1.00	0.00
212	0	1	316.583	323.947	1.00	0.00
213	0	1	336.667	339.556	1.00	0.00
214	0	1	236.250	245.901	1.00	0.00
215	0	1	256.333	245.901	1.00	0.00
216	0	1	276.417	245.901	1.00	0.00
217	0	1	296.500	245.901	1.00	0.00
218	0	1	316.583	245.901	1.00	0.00
219	0	1	336.667	245.901	1.00	0.00
220	0	1	256.333	261.510	1.00	0.00
221	0	1	276.417	261.510	1.00	0.00
222	0	1	296.500	261.510	1.00	0.00
223	0	1	316.583	261.510	1.00	0.00
224	0	1	336.667	261.510	1.00	0.00
225	0	1	276.417	277.120	1.00	0.00
226	0	1	296.500	277.120	1.00	0.00
227	0	1	316.583	277.120	1.00	0.00
228	0	1	336.667	277.120	1.00	0.00
229	0	1	296.500	292.729	1.00	0.00
230	0	1	316.583	292.729	1.00	0.00
231	0	1	336.667	292.729	1.00	0.00
232	0	1	316.583	308.338	1.00	0.00
233	0	1	336.667	308.338	1.00	0.00
234	0	1	336.667	323.947	1.00	0.00
235	0	1	39.639	355.165	1.00	0.00
236	0	1	79.278	355.165	1.00	0.00
237	0	1	118.917	355.165	1.00	0.00
238	0	1	158.556	355.165	1.00	0.00
239	0	1	198.194	355.165	1.00	0.00
240	0	1	237.833	355.165	1.00	0.00
241	0	1	277.472	355.165	1.00	0.00
242	0	1	317.111	355.165	1.00	0.00
243	0	1	28.376	327.291	1.00	0.00
244	0	1	32.130	336.582	1.00	0.00
245	0	1	35.884	345.874	1.00	0.00
246	0	1	56.586	324.678	1.00	0.00
247	0	1	64.150	334.840	1.00	0.00
248	0	1	71.714	345.002	1.00	0.00
249	0	1	82.172	318.027	1.00	0.00
250	0	1	91.358	327.311	1.00	0.00

251	0	1	100.544	336.596	1.00	0.00
252	0	1	109.730	345.880	1.00	0.00
253	0	1	108.748	311.619	1.00	0.00
254	0	1	121.200	322.505	1.00	0.00
255	0	1	133.652	333.392	1.00	0.00
256	0	1	146.104	344.278	1.00	0.00
257	0	1	131.988	301.325	1.00	0.00
258	0	1	145.229	312.093	1.00	0.00
259	0	1	158.471	322.861	1.00	0.00
260	0	1	171.712	333.629	1.00	0.00
261	0	1	184.953	344.397	1.00	0.00
262	0	1	156.419	291.116	1.00	0.00
263	0	1	172.702	303.926	1.00	0.00
264	0	1	188.985	316.736	1.00	0.00
265	0	1	205.268	329.546	1.00	0.00
266	0	1	221.550	342.355	1.00	0.00
267	0	1	177.016	277.102	1.00	0.00
268	0	1	193.759	290.113	1.00	0.00
269	0	1	210.501	303.123	1.00	0.00
270	0	1	227.244	316.134	1.00	0.00
271	0	1	243.987	329.144	1.00	0.00
272	0	1	260.729	342.154	1.00	0.00
273	0	1	196.245	261.430	1.00	0.00
274	0	1	213.511	274.821	1.00	0.00
275	0	1	230.778	288.211	1.00	0.00
276	0	1	248.044	301.602	1.00	0.00
277	0	1	265.311	314.993	1.00	0.00
278	0	1	282.578	328.384	1.00	0.00
279	0	1	299.844	341.774	1.00	0.00
280	0	1	42.354	0.000	1.00	0.00
281	0	1	84.708	0.000	1.00	0.00
282	0	1	127.061	0.000	1.00	0.00
283	0	1	169.415	0.000	1.00	0.00
284	0	1	211.769	0.000	1.00	0.00
285	0	1	254.123	-47.875	1.00	0.00
286	0	1	356.750	-47.875	1.00	0.00
287	0	1	271.227	-47.875	1.00	0.00
288	0	1	288.332	-47.875	1.00	0.00
289	0	1	305.436	-47.875	1.00	0.00
290	0	1	322.541	-47.875	1.00	0.00
291	0	1	339.645	-47.875	1.00	0.00
292	0	1	42.354	-47.875	1.00	0.00
293	0	1	84.708	-47.875	1.00	0.00
294	0	1	127.061	-47.875	1.00	0.00
295	0	1	169.415	-47.875	1.00	0.00
296	0	1	211.769	-47.875	1.00	0.00
297	0	1	-356.750	0.000	1.00	0.00
298	0	1	-356.750	24.256	1.00	0.00
299	0	1	-356.750	48.818	1.00	0.00
300	0	1	-356.750	73.465	1.00	0.00
301	0	1	-356.750	97.978	1.00	0.00
302	0	1	-356.750	122.138	1.00	0.00
303	0	1	-356.750	145.727	1.00	0.00
304	0	1	-356.750	168.537	1.00	0.00
305	0	1	-356.750	190.363	1.00	0.00
306	0	1	-356.750	211.009	1.00	0.00
307	0	1	-356.750	230.292	1.00	0.00
308	0	1	-271.227	0.000	1.00	0.00
309	0	1	-288.332	0.000	1.00	0.00
310	0	1	-305.436	0.000	1.00	0.00
311	0	1	-322.541	0.000	1.00	0.00
312	0	1	-339.645	0.000	1.00	0.00
313	0	1	-216.167	230.292	1.00	0.00
314	0	1	-236.250	230.292	1.00	0.00
315	0	1	-256.333	230.292	1.00	0.00
316	0	1	-276.417	230.292	1.00	0.00
317	0	1	-296.500	230.292	1.00	0.00
318	0	1	-316.583	230.292	1.00	0.00
319	0	1	-336.667	230.292	1.00	0.00
320	0	1	-274.877	24.256	1.00	0.00
321	0	1	-291.252	24.256	1.00	0.00
322	0	1	-307.626	24.256	1.00	0.00
323	0	1	-324.001	24.256	1.00	0.00
324	0	1	-340.375	24.256	1.00	0.00
325	0	1	-274.313	48.818	1.00	0.00
326	0	1	-288.052	48.818	1.00	0.00
327	0	1	-301.792	48.818	1.00	0.00
328	0	1	-315.531	48.818	1.00	0.00
329	0	1	-329.271	48.818	1.00	0.00
330	0	1	-343.010	48.818	1.00	0.00
331	0	1	-274.092	73.465	1.00	0.00

332	0	1	-287.868	73.465	1.00	0.00
333	0	1	-301.644	73.465	1.00	0.00
334	0	1	-315.421	73.465	1.00	0.00
335	0	1	-329.197	73.465	1.00	0.00
336	0	1	-342.974	73.465	1.00	0.00
337	0	1	-271.877	97.978	1.00	0.00
338	0	1	-286.022	97.978	1.00	0.00
339	0	1	-300.168	97.978	1.00	0.00
340	0	1	-314.313	97.978	1.00	0.00
341	0	1	-328.459	97.978	1.00	0.00
342	0	1	-342.604	97.978	1.00	0.00
343	0	1	-267.688	122.138	1.00	0.00
344	0	1	-282.531	122.138	1.00	0.00
345	0	1	-297.375	122.138	1.00	0.00
346	0	1	-312.219	122.138	1.00	0.00
347	0	1	-327.063	122.138	1.00	0.00
348	0	1	-341.906	122.138	1.00	0.00
349	0	1	-261.562	145.727	1.00	0.00
350	0	1	-277.427	145.727	1.00	0.00
351	0	1	-293.291	145.727	1.00	0.00
352	0	1	-309.156	145.727	1.00	0.00
353	0	1	-325.021	145.727	1.00	0.00
354	0	1	-340.885	145.727	1.00	0.00
355	0	1	-251.404	168.537	1.00	0.00
356	0	1	-266.454	168.537	1.00	0.00
357	0	1	-281.503	168.537	1.00	0.00
358	0	1	-296.552	168.537	1.00	0.00
359	0	1	-311.602	168.537	1.00	0.00
360	0	1	-326.651	168.537	1.00	0.00
361	0	1	-341.701	168.537	1.00	0.00
362	0	1	-241.382	190.363	1.00	0.00
363	0	1	-257.863	190.363	1.00	0.00
364	0	1	-274.344	190.363	1.00	0.00
365	0	1	-290.825	190.363	1.00	0.00
366	0	1	-307.307	190.363	1.00	0.00
367	0	1	-323.788	190.363	1.00	0.00
368	0	1	-340.269	190.363	1.00	0.00
369	0	1	-229.601	211.009	1.00	0.00
370	0	1	-247.765	211.009	1.00	0.00
371	0	1	-265.929	211.009	1.00	0.00
372	0	1	-284.093	211.009	1.00	0.00
373	0	1	-302.258	211.009	1.00	0.00
374	0	1	-320.422	211.009	1.00	0.00
375	0	1	-338.586	211.009	1.00	0.00
376	0	1	-356.750	355.165	1.00	0.00
377	0	1	-356.750	245.901	1.00	0.00
378	0	1	-356.750	261.510	1.00	0.00
379	0	1	-356.750	277.120	1.00	0.00
380	0	1	-356.750	292.729	1.00	0.00
381	0	1	-356.750	308.338	1.00	0.00
382	0	1	-356.750	323.947	1.00	0.00
383	0	1	-356.750	339.556	1.00	0.00
384	0	1	-216.167	245.901	1.00	0.00
385	0	1	-236.250	261.510	1.00	0.00
386	0	1	-256.333	277.120	1.00	0.00
387	0	1	-276.417	292.729	1.00	0.00
388	0	1	-296.500	308.338	1.00	0.00
389	0	1	-316.583	323.947	1.00	0.00
390	0	1	-336.667	339.556	1.00	0.00
391	0	1	-236.250	245.901	1.00	0.00
392	0	1	-256.333	245.901	1.00	0.00
393	0	1	-276.417	245.901	1.00	0.00
394	0	1	-296.500	245.901	1.00	0.00
395	0	1	-316.583	245.901	1.00	0.00
396	0	1	-336.667	245.901	1.00	0.00
397	0	1	-256.333	261.510	1.00	0.00
398	0	1	-276.417	261.510	1.00	0.00
399	0	1	-296.500	261.510	1.00	0.00
400	0	1	-316.583	261.510	1.00	0.00
401	0	1	-336.667	261.510	1.00	0.00
402	0	1	-276.417	277.120	1.00	0.00
403	0	1	-296.500	277.120	1.00	0.00
404	0	1	-316.583	277.120	1.00	0.00
405	0	1	-336.667	277.120	1.00	0.00
406	0	1	-296.500	292.729	1.00	0.00
407	0	1	-316.583	292.729	1.00	0.00
408	0	1	-336.667	292.729	1.00	0.00
409	0	1	-316.583	308.338	1.00	0.00
410	0	1	-336.667	308.338	1.00	0.00
411	0	1	-336.667	323.947	1.00	0.00
412	0	1	-39.639	355.165	1.00	0.00

413	0	1	-79.278	355.165	1.00	0.00
414	0	1	-118.917	355.165	1.00	0.00
415	0	1	-158.556	355.165	1.00	0.00
416	0	1	-198.194	355.165	1.00	0.00
417	0	1	-237.833	355.165	1.00	0.00
418	0	1	-277.472	355.165	1.00	0.00
419	0	1	-317.111	355.165	1.00	0.00
420	0	1	-28.376	327.291	1.00	0.00
421	0	1	-32.130	336.582	1.00	0.00
422	0	1	-35.884	345.874	1.00	0.00
423	0	1	-56.586	324.678	1.00	0.00
424	0	1	-64.150	334.840	1.00	0.00
425	0	1	-71.714	345.002	1.00	0.00
426	0	1	-82.172	318.027	1.00	0.00
427	0	1	-91.358	327.311	1.00	0.00
428	0	1	-100.544	336.596	1.00	0.00
429	0	1	-109.730	345.880	1.00	0.00
430	0	1	-108.748	311.619	1.00	0.00
431	0	1	-121.200	322.505	1.00	0.00
432	0	1	-133.652	333.392	1.00	0.00
433	0	1	-146.104	344.278	1.00	0.00
434	0	1	-131.988	301.325	1.00	0.00
435	0	1	-145.229	312.093	1.00	0.00
436	0	1	-158.471	322.861	1.00	0.00
437	0	1	-171.712	333.629	1.00	0.00
438	0	1	-184.953	344.397	1.00	0.00
439	0	1	-156.419	291.116	1.00	0.00
440	0	1	-172.702	303.926	1.00	0.00
441	0	1	-188.985	316.736	1.00	0.00
442	0	1	-205.268	329.546	1.00	0.00
443	0	1	-221.550	342.355	1.00	0.00
444	0	1	-177.016	277.102	1.00	0.00
445	0	1	-193.759	290.113	1.00	0.00
446	0	1	-210.501	303.123	1.00	0.00
447	0	1	-227.244	316.134	1.00	0.00
448	0	1	-243.987	329.144	1.00	0.00
449	0	1	-260.729	342.154	1.00	0.00
450	0	1	-196.245	261.430	1.00	0.00
451	0	1	-213.511	274.821	1.00	0.00
452	0	1	-230.778	288.211	1.00	0.00
453	0	1	-248.044	301.602	1.00	0.00
454	0	1	-265.311	314.993	1.00	0.00
455	0	1	-282.578	328.384	1.00	0.00
456	0	1	-299.844	341.774	1.00	0.00
457	0	1	-42.354	0.000	1.00	0.00
458	0	1	-84.708	0.000	1.00	0.00
459	0	1	-127.061	0.000	1.00	0.00
460	0	1	-169.415	0.000	1.00	0.00
461	0	1	-211.769	0.000	1.00	0.00
462	0	1	-254.123	-47.875	1.00	0.00
463	0	1	-356.750	-47.875	1.00	0.00
464	0	1	-271.227	-47.875	1.00	0.00
465	0	1	-288.332	-47.875	1.00	0.00
466	0	1	-305.436	-47.875	1.00	0.00
467	0	1	-322.541	-47.875	1.00	0.00
468	0	1	-339.645	-47.875	1.00	0.00
469	0	1	-42.354	-47.875	1.00	0.00
470	0	1	-84.708	-47.875	1.00	0.00
471	0	1	-127.061	-47.875	1.00	0.00
472	0	1	-169.415	-47.875	1.00	0.00
473	0	1	-211.769	-47.875	1.00	0.00
474	0	1	-356.750	-100.537	1.00	0.00
475	0	1	-339.645	-100.537	1.00	0.00
476	0	1	-322.541	-100.537	1.00	0.00
477	0	1	-305.436	-100.537	1.00	0.00
478	0	1	-288.332	-100.537	1.00	0.00
479	0	1	-271.227	-100.537	1.00	0.00
480	0	1	-254.123	-100.537	1.00	0.00
481	0	1	-211.769	-100.537	1.00	0.00
482	0	1	-169.415	-100.537	1.00	0.00
483	0	1	-127.061	-100.537	1.00	0.00
484	0	1	-84.708	-100.537	1.00	0.00
485	0	1	-42.354	-100.537	1.00	0.00
486	0	1	0.000	-100.537	1.00	0.00
487	0	1	42.354	-100.537	1.00	0.00
488	0	1	84.708	-100.537	1.00	0.00
489	0	1	127.061	-100.537	1.00	0.00
490	0	1	169.415	-100.537	1.00	0.00
491	0	1	211.769	-100.537	1.00	0.00
492	0	1	254.123	-100.537	1.00	0.00
493	0	1	271.227	-100.537	1.00	0.00

494	0	1	288.332	-100.537	1.00	0.00
495	0	1	305.436	-100.537	1.00	0.00
496	0	1	322.541	-100.537	1.00	0.00
497	0	1	339.645	-100.537	1.00	0.00
498	0	1	356.750	-100.537	1.00	0.00
499	0	1	-356.750	-158.465	1.00	0.00
500	0	1	-339.645	-158.465	1.00	0.00
501	0	1	-322.541	-158.465	1.00	0.00
502	0	1	-305.436	-158.465	1.00	0.00
503	0	1	-288.332	-158.465	1.00	0.00
504	0	1	-271.227	-158.465	1.00	0.00
505	0	1	-254.123	-158.465	1.00	0.00
506	0	1	-211.769	-158.465	1.00	0.00
507	0	1	-169.415	-158.465	1.00	0.00
508	0	1	-127.061	-158.465	1.00	0.00
509	0	1	-84.708	-158.465	1.00	0.00
510	0	1	-42.354	-158.465	1.00	0.00
511	0	1	0.000	-158.465	1.00	0.00
512	0	1	42.354	-158.465	1.00	0.00
513	0	1	84.708	-158.465	1.00	0.00
514	0	1	127.061	-158.465	1.00	0.00
515	0	1	169.415	-158.465	1.00	0.00
516	0	1	211.769	-158.465	1.00	0.00
517	0	1	254.123	-158.465	1.00	0.00
518	0	1	271.227	-158.465	1.00	0.00
519	0	1	288.332	-158.465	1.00	0.00
520	0	1	305.436	-158.465	1.00	0.00
521	0	1	322.541	-158.465	1.00	0.00
522	0	1	339.645	-158.465	1.00	0.00
523	0	1	356.750	-158.465	1.00	0.00
524	0	1	-356.750	-222.187	1.00	0.00
525	0	1	-339.645	-222.187	1.00	0.00
526	0	1	-322.541	-222.187	1.00	0.00
527	0	1	-305.436	-222.187	1.00	0.00
528	0	1	-288.332	-222.187	1.00	0.00
529	0	1	-271.227	-222.187	1.00	0.00
530	0	1	-254.123	-222.187	1.00	0.00
531	0	1	-211.769	-222.187	1.00	0.00
532	0	1	-169.415	-222.187	1.00	0.00
533	0	1	-127.061	-222.187	1.00	0.00
534	0	1	-84.708	-222.187	1.00	0.00
535	0	1	-42.354	-222.187	1.00	0.00
536	0	1	0.000	-222.187	1.00	0.00
537	0	1	42.354	-222.187	1.00	0.00
538	0	1	84.708	-222.187	1.00	0.00
539	0	1	127.061	-222.187	1.00	0.00
540	0	1	169.415	-222.187	1.00	0.00
541	0	1	211.769	-222.187	1.00	0.00
542	0	1	254.123	-222.187	1.00	0.00
543	0	1	271.227	-222.187	1.00	0.00
544	0	1	288.332	-222.187	1.00	0.00
545	0	1	305.436	-222.187	1.00	0.00
546	0	1	322.541	-222.187	1.00	0.00
547	0	1	339.645	-222.187	1.00	0.00
548	0	1	356.750	-222.187	1.00	0.00
549	0	1	-356.750	-292.280	1.00	0.00
550	0	1	-339.645	-292.280	1.00	0.00
551	0	1	-322.541	-292.280	1.00	0.00
552	0	1	-305.436	-292.280	1.00	0.00
553	0	1	-288.332	-292.280	1.00	0.00
554	0	1	-271.227	-292.280	1.00	0.00
555	0	1	-254.123	-292.280	1.00	0.00
556	0	1	-211.769	-292.280	1.00	0.00
557	0	1	-169.415	-292.280	1.00	0.00
558	0	1	-127.061	-292.280	1.00	0.00
559	0	1	-84.708	-292.280	1.00	0.00
560	0	1	-42.354	-292.280	1.00	0.00
561	0	1	0.000	-292.280	1.00	0.00
562	0	1	42.354	-292.280	1.00	0.00
563	0	1	84.708	-292.280	1.00	0.00
564	0	1	127.061	-292.280	1.00	0.00
565	0	1	169.415	-292.280	1.00	0.00
566	0	1	211.769	-292.280	1.00	0.00
567	0	1	254.123	-292.280	1.00	0.00
568	0	1	271.227	-292.280	1.00	0.00
569	0	1	288.332	-292.280	1.00	0.00
570	0	1	305.436	-292.280	1.00	0.00
571	0	1	322.541	-292.280	1.00	0.00
572	0	1	339.645	-292.280	1.00	0.00
573	0	1	356.750	-292.280	1.00	0.00
574	0	1	-356.750	-369.383	1.00	0.00

575	0	1	-339.645	-369.383	1.00	0.00
576	0	1	-322.541	-369.383	1.00	0.00
577	0	1	-305.436	-369.383	1.00	0.00
578	0	1	-288.332	-369.383	1.00	0.00
579	0	1	-271.227	-369.383	1.00	0.00
580	0	1	-254.123	-369.383	1.00	0.00
581	0	1	-211.769	-369.383	1.00	0.00
582	0	1	-169.415	-369.383	1.00	0.00
583	0	1	-127.061	-369.383	1.00	0.00
584	0	1	-84.708	-369.383	1.00	0.00
585	0	1	-42.354	-369.383	1.00	0.00
586	0	1	0.000	-369.383	1.00	0.00
587	0	1	42.354	-369.383	1.00	0.00
588	0	1	84.708	-369.383	1.00	0.00
589	0	1	127.061	-369.383	1.00	0.00
590	0	1	169.415	-369.383	1.00	0.00
591	0	1	211.769	-369.383	1.00	0.00
592	0	1	254.123	-369.383	1.00	0.00
593	0	1	271.227	-369.383	1.00	0.00
594	0	1	288.332	-369.383	1.00	0.00
595	0	1	305.436	-369.383	1.00	0.00
596	0	1	322.541	-369.383	1.00	0.00
597	0	1	339.645	-369.383	1.00	0.00
598	0	1	356.750	-369.383	1.00	0.00
599	0	1	-430.215	-369.383	1.00	0.00
600	0	1	-430.215	-292.280	1.00	0.00
601	0	1	-430.215	-222.187	1.00	0.00
602	0	1	-430.215	-158.465	1.00	0.00
603	0	1	-430.215	-100.537	1.00	0.00
604	0	1	-430.215	-47.875	1.00	0.00
605	0	1	-430.215	0.000	1.00	0.00
606	0	1	-430.215	24.256	1.00	0.00
607	0	1	-430.215	48.818	1.00	0.00
608	0	1	-430.215	73.465	1.00	0.00
609	0	1	-430.215	97.978	1.00	0.00
610	0	1	-430.215	122.138	1.00	0.00
611	0	1	-430.215	145.727	1.00	0.00
612	0	1	-430.215	168.537	1.00	0.00
613	0	1	-430.215	190.363	1.00	0.00
614	0	1	-430.215	211.009	1.00	0.00
615	0	1	-430.215	230.292	1.00	0.00
616	0	1	-430.215	245.901	1.00	0.00
617	0	1	-430.215	261.510	1.00	0.00
618	0	1	-430.215	277.120	1.00	0.00
619	0	1	-430.215	292.729	1.00	0.00
620	0	1	-430.215	308.338	1.00	0.00
621	0	1	-430.215	323.947	1.00	0.00
622	0	1	-430.215	339.556	1.00	0.00
623	0	1	-430.215	355.165	1.00	0.00
624	0	1	-502.477	-369.383	1.00	0.00
625	0	1	-502.477	-292.280	1.00	0.00
626	0	1	-502.477	-222.187	1.00	0.00
627	0	1	-502.477	-158.465	1.00	0.00
628	0	1	-502.477	-100.537	1.00	0.00
629	0	1	-502.477	-47.875	1.00	0.00
630	0	1	-502.477	0.000	1.00	0.00
631	0	1	-502.477	24.256	1.00	0.00
632	0	1	-502.477	48.818	1.00	0.00
633	0	1	-502.477	73.465	1.00	0.00
634	0	1	-502.477	97.978	1.00	0.00
635	0	1	-502.477	122.138	1.00	0.00
636	0	1	-502.477	145.727	1.00	0.00
637	0	1	-502.477	168.537	1.00	0.00
638	0	1	-502.477	190.363	1.00	0.00
639	0	1	-502.477	211.009	1.00	0.00
640	0	1	-502.477	230.292	1.00	0.00
641	0	1	-502.477	245.901	1.00	0.00
642	0	1	-502.477	261.510	1.00	0.00
643	0	1	-502.477	277.120	1.00	0.00
644	0	1	-502.477	292.729	1.00	0.00
645	0	1	-502.477	308.338	1.00	0.00
646	0	1	-502.477	323.947	1.00	0.00
647	0	1	-502.477	339.556	1.00	0.00
648	0	1	-502.477	355.165	1.00	0.00
649	0	1	-567.759	-369.383	1.00	0.00
650	0	1	-567.759	-292.280	1.00	0.00
651	0	1	-567.759	-222.187	1.00	0.00
652	0	1	-567.759	-158.465	1.00	0.00
653	0	1	-567.759	-100.537	1.00	0.00
654	0	1	-567.759	-47.875	1.00	0.00
655	0	1	-567.759	0.000	1.00	0.00

656	0	1	-567.759	24.256	1.00	0.00
657	0	1	-567.759	48.818	1.00	0.00
658	0	1	-567.759	73.465	1.00	0.00
659	0	1	-567.759	97.978	1.00	0.00
660	0	1	-567.759	122.138	1.00	0.00
661	0	1	-567.759	145.727	1.00	0.00
662	0	1	-567.759	168.537	1.00	0.00
663	0	1	-567.759	190.363	1.00	0.00
664	0	1	-567.759	211.009	1.00	0.00
665	0	1	-567.759	230.292	1.00	0.00
666	0	1	-567.759	245.901	1.00	0.00
667	0	1	-567.759	261.510	1.00	0.00
668	0	1	-567.759	277.120	1.00	0.00
669	0	1	-567.759	292.729	1.00	0.00
670	0	1	-567.759	308.338	1.00	0.00
671	0	1	-567.759	323.947	1.00	0.00
672	0	1	-567.759	339.556	1.00	0.00
673	0	1	-567.759	355.165	1.00	0.00
674	0	1	-618.260	-369.383	1.00	0.00
675	0	1	-618.260	-292.280	1.00	0.00
676	0	1	-618.260	-222.187	1.00	0.00
677	0	1	-618.260	-158.465	1.00	0.00
678	0	1	-618.260	-100.537	1.00	0.00
679	0	1	-618.260	-47.875	1.00	0.00
680	0	1	-618.260	0.000	1.00	0.00
681	0	1	-618.260	24.256	1.00	0.00
682	0	1	-618.260	48.818	1.00	0.00
683	0	1	-618.260	73.465	1.00	0.00
684	0	1	-618.260	97.978	1.00	0.00
685	0	1	-618.260	122.138	1.00	0.00
686	0	1	-618.260	145.727	1.00	0.00
687	0	1	-618.260	168.537	1.00	0.00
688	0	1	-618.260	190.363	1.00	0.00
689	0	1	-618.260	211.009	1.00	0.00
690	0	1	-618.260	230.292	1.00	0.00
691	0	1	-618.260	245.901	1.00	0.00
692	0	1	-618.260	261.510	1.00	0.00
693	0	1	-618.260	277.120	1.00	0.00
694	0	1	-618.260	292.729	1.00	0.00
695	0	1	-618.260	308.338	1.00	0.00
696	0	1	-618.260	323.947	1.00	0.00
697	0	1	-618.260	339.556	1.00	0.00
698	0	1	-618.260	355.165	1.00	0.00
699	0	1	-665.088	-369.383	1.00	0.00
700	0	1	-665.088	-292.280	1.00	0.00
701	0	1	-665.088	-222.187	1.00	0.00
702	0	1	-665.088	-158.465	1.00	0.00
703	0	1	-665.088	-100.537	1.00	0.00
704	0	1	-665.088	-47.875	1.00	0.00
705	0	1	-665.088	0.000	1.00	0.00
706	0	1	-665.088	24.256	1.00	0.00
707	0	1	-665.088	48.818	1.00	0.00
708	0	1	-665.088	73.465	1.00	0.00
709	0	1	-665.088	97.978	1.00	0.00
710	0	1	-665.088	122.138	1.00	0.00
711	0	1	-665.088	145.727	1.00	0.00
712	0	1	-665.088	168.537	1.00	0.00
713	0	1	-665.088	190.363	1.00	0.00
714	0	1	-665.088	211.009	1.00	0.00
715	0	1	-665.088	230.292	1.00	0.00
716	0	1	-665.088	245.901	1.00	0.00
717	0	1	-665.088	261.510	1.00	0.00
718	0	1	-665.088	277.120	1.00	0.00
719	0	1	-665.088	292.729	1.00	0.00
720	0	1	-665.088	308.338	1.00	0.00
721	0	1	-665.088	323.947	1.00	0.00
722	0	1	-665.088	339.556	1.00	0.00
723	0	1	-665.088	355.165	1.00	0.00
724	0	1	-711.915	-369.383	1.00	0.00
725	0	1	-711.915	-292.280	1.00	0.00
726	0	1	-711.915	-222.187	1.00	0.00
727	0	1	-711.915	-158.465	1.00	0.00
728	0	1	-711.915	-100.537	1.00	0.00
729	0	1	-711.915	-47.875	1.00	0.00
730	0	1	-711.915	0.000	1.00	0.00
731	0	1	-711.915	24.256	1.00	0.00
732	0	1	-711.915	48.818	1.00	0.00
733	0	1	-711.915	73.465	1.00	0.00
734	0	1	-711.915	97.978	1.00	0.00
735	0	1	-711.915	122.138	1.00	0.00
736	0	1	-711.915	145.727	1.00	0.00

737	0	1	-711.915	168.537	1.00	0.00
738	0	1	-711.915	190.363	1.00	0.00
739	0	1	-711.915	211.009	1.00	0.00
740	0	1	-711.915	230.292	1.00	0.00
741	0	1	-711.915	245.901	1.00	0.00
742	0	1	-711.915	261.510	1.00	0.00
743	0	1	-711.915	277.120	1.00	0.00
744	0	1	-711.915	292.729	1.00	0.00
745	0	1	-711.915	308.338	1.00	0.00
746	0	1	-711.915	323.947	1.00	0.00
747	0	1	-711.915	339.556	1.00	0.00
748	0	1	-711.915	355.165	1.00	0.00
749	0	1	-381.006	24.256	1.00	0.00
750	0	1	-405.568	48.818	1.00	0.00
751	0	1	-454.728	97.978	1.00	0.00
752	0	1	-478.888	122.138	1.00	0.00
753	0	1	-525.287	168.537	1.00	0.00
754	0	1	-547.113	190.363	1.00	0.00
755	0	1	-587.042	230.292	1.00	0.00
756	0	1	-602.651	245.901	1.00	0.00
757	0	1	-633.870	277.120	1.00	0.00
758	0	1	-649.479	292.729	1.00	0.00
759	0	1	-680.697	323.947	1.00	0.00
760	0	1	-696.306	339.556	1.00	0.00
761	0	1	-831.915	-369.383	1.00	0.00
762	0	1	-831.915	-292.280	1.00	0.00
763	0	1	-831.915	-222.187	1.00	0.00
764	0	1	-831.915	-158.465	1.00	0.00
765	0	1	-831.915	-100.537	1.00	0.00
766	0	1	-831.915	-47.875	1.00	0.00
767	0	1	-831.915	0.000	1.00	0.00
768	0	1	-831.915	24.256	1.00	0.00
769	0	1	-831.915	48.818	1.00	0.00
770	0	1	-831.915	73.465	1.00	0.00
771	0	1	-831.915	97.978	1.00	0.00
772	0	1	-831.915	122.138	1.00	0.00
773	0	1	-831.915	145.727	1.00	0.00
774	0	1	-831.915	168.537	1.00	0.00
775	0	1	-831.915	190.363	1.00	0.00
776	0	1	-831.915	211.009	1.00	0.00
777	0	1	-831.915	230.292	1.00	0.00
778	0	1	-831.915	245.901	1.00	0.00
779	0	1	-831.915	261.510	1.00	0.00
780	0	1	-831.915	277.120	1.00	0.00
781	0	1	-831.915	292.729	1.00	0.00
782	0	1	-831.915	308.338	1.00	0.00
783	0	1	-831.915	323.947	1.00	0.00
784	0	1	-831.915	339.556	1.00	0.00
785	0	1	-831.915	355.165	1.00	0.00
786	0	1	-951.915	-369.383	1.00	0.00
787	0	1	-951.915	-292.280	1.00	0.00
788	0	1	-951.915	-222.187	1.00	0.00
789	0	1	-951.915	-158.465	1.00	0.00
790	0	1	-951.915	-100.537	1.00	0.00
791	0	1	-951.915	-47.875	1.00	0.00
792	0	1	-951.915	0.000	1.00	0.00
793	0	1	-951.915	24.256	1.00	0.00
794	0	1	-951.915	48.818	1.00	0.00
795	0	1	-951.915	73.465	1.00	0.00
796	0	1	-951.915	97.978	1.00	0.00
797	0	1	-951.915	122.138	1.00	0.00
798	0	1	-951.915	145.727	1.00	0.00
799	0	1	-951.915	168.537	1.00	0.00
800	0	1	-951.915	190.363	1.00	0.00
801	0	1	-951.915	211.009	1.00	0.00
802	0	1	-951.915	230.292	1.00	0.00
803	0	1	-951.915	245.901	1.00	0.00
804	0	1	-951.915	261.510	1.00	0.00
805	0	1	-951.915	277.120	1.00	0.00
806	0	1	-951.915	292.729	1.00	0.00
807	0	1	-951.915	308.338	1.00	0.00
808	0	1	-951.915	323.947	1.00	0.00
809	0	1	-951.915	339.556	1.00	0.00
810	0	1	-951.915	355.165	1.00	0.00
811	0	1	-1071.915	-369.383	1.00	0.00
812	0	1	-1071.915	-292.280	1.00	0.00
813	0	1	-1071.915	-222.187	1.00	0.00
814	0	1	-1071.915	-158.465	1.00	0.00
815	0	1	-1071.915	-100.537	1.00	0.00
816	0	1	-1071.915	-47.875	1.00	0.00
817	0	1	-1071.915	0.000	1.00	0.00

818	0	1	-1071.915	24.256	1.00	0.00
819	0	1	-1071.915	48.818	1.00	0.00
820	0	1	-1071.915	73.465	1.00	0.00
821	0	1	-1071.915	97.978	1.00	0.00
822	0	1	-1071.915	122.138	1.00	0.00
823	0	1	-1071.915	145.727	1.00	0.00
824	0	1	-1071.915	168.537	1.00	0.00
825	0	1	-1071.915	190.363	1.00	0.00
826	0	1	-1071.915	211.009	1.00	0.00
827	0	1	-1071.915	230.292	1.00	0.00
828	0	1	-1071.915	245.901	1.00	0.00
829	0	1	-1071.915	261.510	1.00	0.00
830	0	1	-1071.915	277.120	1.00	0.00
831	0	1	-1071.915	292.729	1.00	0.00
832	0	1	-1071.915	308.338	1.00	0.00
833	0	1	-1071.915	323.947	1.00	0.00
834	0	1	-1071.915	339.556	1.00	0.00
835	0	1	-1071.915	355.165	1.00	0.00
836	0	1	-1191.915	-369.383	1.00	0.00
837	0	1	-1191.915	-292.280	1.00	0.00
838	0	1	-1191.915	-222.187	1.00	0.00
839	0	1	-1191.915	-158.465	1.00	0.00
840	0	1	-1191.915	-100.537	1.00	0.00
841	0	1	-1191.915	-47.875	1.00	0.00
842	0	1	-1191.915	0.000	1.00	0.00
843	0	1	-1191.915	24.256	1.00	0.00
844	0	1	-1191.915	48.818	1.00	0.00
845	0	1	-1191.915	73.465	1.00	0.00
846	0	1	-1191.915	97.978	1.00	0.00
847	0	1	-1191.915	122.138	1.00	0.00
848	0	1	-1191.915	145.727	1.00	0.00
849	0	1	-1191.915	168.537	1.00	0.00
850	0	1	-1191.915	190.363	1.00	0.00
851	0	1	-1191.915	211.009	1.00	0.00
852	0	1	-1191.915	230.292	1.00	0.00
853	0	1	-1191.915	245.901	1.00	0.00
854	0	1	-1191.915	261.510	1.00	0.00
855	0	1	-1191.915	277.120	1.00	0.00
856	0	1	-1191.915	292.729	1.00	0.00
857	0	1	-1191.915	308.338	1.00	0.00
858	0	1	-1191.915	323.947	1.00	0.00
859	0	1	-1191.915	339.556	1.00	0.00
860	0	1	-1191.915	355.165	1.00	0.00
861	0	1	430.215	-369.383	1.00	0.00
862	0	1	430.215	-292.280	1.00	0.00
863	0	1	430.215	-222.187	1.00	0.00
864	0	1	430.215	-158.465	1.00	0.00
865	0	1	430.215	-100.537	1.00	0.00
866	0	1	430.215	-47.875	1.00	0.00
867	0	1	430.215	0.000	1.00	0.00
868	0	1	430.215	24.256	1.00	0.00
869	0	1	430.215	48.818	1.00	0.00
870	0	1	430.215	73.465	1.00	0.00
871	0	1	430.215	97.978	1.00	0.00
872	0	1	430.215	122.138	1.00	0.00
873	0	1	430.215	145.727	1.00	0.00
874	0	1	430.215	168.537	1.00	0.00
875	0	1	430.215	190.363	1.00	0.00
876	0	1	430.215	211.009	1.00	0.00
877	0	1	430.215	230.292	1.00	0.00
878	0	1	430.215	245.901	1.00	0.00
879	0	1	430.215	261.510	1.00	0.00
880	0	1	430.215	277.120	1.00	0.00
881	0	1	430.215	292.729	1.00	0.00
882	0	1	430.215	308.338	1.00	0.00
883	0	1	430.215	323.947	1.00	0.00
884	0	1	430.215	339.556	1.00	0.00
885	0	1	430.215	355.165	1.00	0.00
886	0	1	502.477	-369.383	1.00	0.00
887	0	1	502.477	-292.280	1.00	0.00
888	0	1	502.477	-222.187	1.00	0.00
889	0	1	502.477	-158.465	1.00	0.00
890	0	1	502.477	-100.537	1.00	0.00
891	0	1	502.477	-47.875	1.00	0.00
892	0	1	502.477	0.000	1.00	0.00
893	0	1	502.477	24.256	1.00	0.00
894	0	1	502.477	48.818	1.00	0.00
895	0	1	502.477	73.465	1.00	0.00
896	0	1	502.477	97.978	1.00	0.00
897	0	1	502.477	122.138	1.00	0.00
898	0	1	502.477	145.727	1.00	0.00

899	0	1	502.477	168.537	1.00	0.00
900	0	1	502.477	190.363	1.00	0.00
901	0	1	502.477	211.009	1.00	0.00
902	0	1	502.477	230.292	1.00	0.00
903	0	1	502.477	245.901	1.00	0.00
904	0	1	502.477	261.510	1.00	0.00
905	0	1	502.477	277.120	1.00	0.00
906	0	1	502.477	292.729	1.00	0.00
907	0	1	502.477	308.338	1.00	0.00
908	0	1	502.477	323.947	1.00	0.00
909	0	1	502.477	339.556	1.00	0.00
910	0	1	502.477	355.165	1.00	0.00
911	0	1	567.759	-369.383	1.00	0.00
912	0	1	567.759	-292.280	1.00	0.00
913	0	1	567.759	-222.187	1.00	0.00
914	0	1	567.759	-158.465	1.00	0.00
915	0	1	567.759	-100.537	1.00	0.00
916	0	1	567.759	-47.875	1.00	0.00
917	0	1	567.759	0.000	1.00	0.00
918	0	1	567.759	24.256	1.00	0.00
919	0	1	567.759	48.818	1.00	0.00
920	0	1	567.759	73.465	1.00	0.00
921	0	1	567.759	97.978	1.00	0.00
922	0	1	567.759	122.138	1.00	0.00
923	0	1	567.759	145.727	1.00	0.00
924	0	1	567.759	168.537	1.00	0.00
925	0	1	567.759	190.363	1.00	0.00
926	0	1	567.759	211.009	1.00	0.00
927	0	1	567.759	230.292	1.00	0.00
928	0	1	567.759	245.901	1.00	0.00
929	0	1	567.759	261.510	1.00	0.00
930	0	1	567.759	277.120	1.00	0.00
931	0	1	567.759	292.729	1.00	0.00
932	0	1	567.759	308.338	1.00	0.00
933	0	1	567.759	323.947	1.00	0.00
934	0	1	567.759	339.556	1.00	0.00
935	0	1	567.759	355.165	1.00	0.00
936	0	1	618.260	-369.383	1.00	0.00
937	0	1	618.260	-292.280	1.00	0.00
938	0	1	618.260	-222.187	1.00	0.00
939	0	1	618.260	-158.465	1.00	0.00
940	0	1	618.260	-100.537	1.00	0.00
941	0	1	618.260	-47.875	1.00	0.00
942	0	1	618.260	0.000	1.00	0.00
943	0	1	618.260	24.256	1.00	0.00
944	0	1	618.260	48.818	1.00	0.00
945	0	1	618.260	73.465	1.00	0.00
946	0	1	618.260	97.978	1.00	0.00
947	0	1	618.260	122.138	1.00	0.00
948	0	1	618.260	145.727	1.00	0.00
949	0	1	618.260	168.537	1.00	0.00
950	0	1	618.260	190.363	1.00	0.00
951	0	1	618.260	211.009	1.00	0.00
952	0	1	618.260	230.292	1.00	0.00
953	0	1	618.260	245.901	1.00	0.00
954	0	1	618.260	261.510	1.00	0.00
955	0	1	618.260	277.120	1.00	0.00
956	0	1	618.260	292.729	1.00	0.00
957	0	1	618.260	308.338	1.00	0.00
958	0	1	618.260	323.947	1.00	0.00
959	0	1	618.260	339.556	1.00	0.00
960	0	1	618.260	355.165	1.00	0.00
961	0	1	665.088	-369.383	1.00	0.00
962	0	1	665.088	-292.280	1.00	0.00
963	0	1	665.088	-222.187	1.00	0.00
964	0	1	665.088	-158.465	1.00	0.00
965	0	1	665.088	-100.537	1.00	0.00
966	0	1	665.088	-47.875	1.00	0.00
967	0	1	665.088	0.000	1.00	0.00
968	0	1	665.088	24.256	1.00	0.00
969	0	1	665.088	48.818	1.00	0.00
970	0	1	665.088	73.465	1.00	0.00
971	0	1	665.088	97.978	1.00	0.00
972	0	1	665.088	122.138	1.00	0.00
973	0	1	665.088	145.727	1.00	0.00
974	0	1	665.088	168.537	1.00	0.00
975	0	1	665.088	190.363	1.00	0.00
976	0	1	665.088	211.009	1.00	0.00
977	0	1	665.088	230.292	1.00	0.00
978	0	1	665.088	245.901	1.00	0.00
979	0	1	665.088	261.510	1.00	0.00

980	0	1	665.088	277.120	1.00	0.00
981	0	1	665.088	292.729	1.00	0.00
982	0	1	665.088	308.338	1.00	0.00
983	0	1	665.088	323.947	1.00	0.00
984	0	1	665.088	339.556	1.00	0.00
985	0	1	665.088	355.165	1.00	0.00
986	0	1	711.915	-369.383	1.00	0.00
987	0	1	711.915	-292.280	1.00	0.00
988	0	1	711.915	-222.187	1.00	0.00
989	0	1	711.915	-158.465	1.00	0.00
990	0	1	711.915	-100.537	1.00	0.00
991	0	1	711.915	-47.875	1.00	0.00
992	0	1	711.915	0.000	1.00	0.00
993	0	1	711.915	24.256	1.00	0.00
994	0	1	711.915	48.818	1.00	0.00
995	0	1	711.915	73.465	1.00	0.00
996	0	1	711.915	97.978	1.00	0.00
997	0	1	711.915	122.138	1.00	0.00
998	0	1	711.915	145.727	1.00	0.00
999	0	1	711.915	168.537	1.00	0.00
1000	0	1	711.915	190.363	1.00	0.00
1001	0	1	711.915	211.009	1.00	0.00
1002	0	1	711.915	230.292	1.00	0.00
1003	0	1	711.915	245.901	1.00	0.00
1004	0	1	711.915	261.510	1.00	0.00
1005	0	1	711.915	277.120	1.00	0.00
1006	0	1	711.915	292.729	1.00	0.00
1007	0	1	711.915	308.338	1.00	0.00
1008	0	1	711.915	323.947	1.00	0.00
1009	0	1	711.915	339.556	1.00	0.00
1010	0	1	711.915	355.165	1.00	0.00
1011	0	1	381.006	24.256	1.00	0.00
1012	0	1	405.568	48.818	1.00	0.00
1013	0	1	454.728	97.978	1.00	0.00
1014	0	1	478.888	122.138	1.00	0.00
1015	0	1	525.287	168.537	1.00	0.00
1016	0	1	547.113	190.363	1.00	0.00
1017	0	1	587.042	230.292	1.00	0.00
1018	0	1	602.651	245.901	1.00	0.00
1019	0	1	633.870	277.120	1.00	0.00
1020	0	1	649.479	292.729	1.00	0.00
1021	0	1	680.697	323.947	1.00	0.00
1022	0	1	696.306	339.556	1.00	0.00
1023	0	1	831.915	-369.383	1.00	0.00
1024	0	1	831.915	-292.280	1.00	0.00
1025	0	1	831.915	-222.187	1.00	0.00
1026	0	1	831.915	-158.465	1.00	0.00
1027	0	1	831.915	-100.537	1.00	0.00
1028	0	1	831.915	-47.875	1.00	0.00
1029	0	1	831.915	0.000	1.00	0.00
1030	0	1	831.915	24.256	1.00	0.00
1031	0	1	831.915	48.818	1.00	0.00
1032	0	1	831.915	73.465	1.00	0.00
1033	0	1	831.915	97.978	1.00	0.00
1034	0	1	831.915	122.138	1.00	0.00
1035	0	1	831.915	145.727	1.00	0.00
1036	0	1	831.915	168.537	1.00	0.00
1037	0	1	831.915	190.363	1.00	0.00
1038	0	1	831.915	211.009	1.00	0.00
1039	0	1	831.915	230.292	1.00	0.00
1040	0	1	831.915	245.901	1.00	0.00
1041	0	1	831.915	261.510	1.00	0.00
1042	0	1	831.915	277.120	1.00	0.00
1043	0	1	831.915	292.729	1.00	0.00
1044	0	1	831.915	308.338	1.00	0.00
1045	0	1	831.915	323.947	1.00	0.00
1046	0	1	831.915	339.556	1.00	0.00
1047	0	1	831.915	355.165	1.00	0.00
1048	0	1	951.915	-369.383	1.00	0.00
1049	0	1	951.915	-292.280	1.00	0.00
1050	0	1	951.915	-222.187	1.00	0.00
1051	0	1	951.915	-158.465	1.00	0.00
1052	0	1	951.915	-100.537	1.00	0.00
1053	0	1	951.915	-47.875	1.00	0.00
1054	0	1	951.915	0.000	1.00	0.00
1055	0	1	951.915	24.256	1.00	0.00
1056	0	1	951.915	48.818	1.00	0.00
1057	0	1	951.915	73.465	1.00	0.00
1058	0	1	951.915	97.978	1.00	0.00
1059	0	1	951.915	122.138	1.00	0.00
1060	0	1	951.915	145.727	1.00	0.00

1061	0	1	951.915	168.537	1.00	0.00
1062	0	1	951.915	190.363	1.00	0.00
1063	0	1	951.915	211.009	1.00	0.00
1064	0	1	951.915	230.292	1.00	0.00
1065	0	1	951.915	245.901	1.00	0.00
1066	0	1	951.915	261.510	1.00	0.00
1067	0	1	951.915	277.120	1.00	0.00
1068	0	1	951.915	292.729	1.00	0.00
1069	0	1	951.915	308.338	1.00	0.00
1070	0	1	951.915	323.947	1.00	0.00
1071	0	1	951.915	339.556	1.00	0.00
1072	0	1	951.915	355.165	1.00	0.00
1073	0	1	1071.915	-369.383	1.00	0.00
1074	0	1	1071.915	-292.280	1.00	0.00
1075	0	1	1071.915	-222.187	1.00	0.00
1076	0	1	1071.915	-158.465	1.00	0.00
1077	0	1	1071.915	-100.537	1.00	0.00
1078	0	1	1071.915	-47.875	1.00	0.00
1079	0	1	1071.915	0.000	1.00	0.00
1080	0	1	1071.915	24.256	1.00	0.00
1081	0	1	1071.915	48.818	1.00	0.00
1082	0	1	1071.915	73.465	1.00	0.00
1083	0	1	1071.915	97.978	1.00	0.00
1084	0	1	1071.915	122.138	1.00	0.00
1085	0	1	1071.915	145.727	1.00	0.00
1086	0	1	1071.915	168.537	1.00	0.00
1087	0	1	1071.915	190.363	1.00	0.00
1088	0	1	1071.915	211.009	1.00	0.00
1089	0	1	1071.915	230.292	1.00	0.00
1090	0	1	1071.915	245.901	1.00	0.00
1091	0	1	1071.915	261.510	1.00	0.00
1092	0	1	1071.915	277.120	1.00	0.00
1093	0	1	1071.915	292.729	1.00	0.00
1094	0	1	1071.915	308.338	1.00	0.00
1095	0	1	1071.915	323.947	1.00	0.00
1096	0	1	1071.915	339.556	1.00	0.00
1097	0	1	1071.915	355.165	1.00	0.00
1098	0	1	1191.915	-369.383	1.00	0.00
1099	0	1	1191.915	-292.280	1.00	0.00
1100	0	1	1191.915	-222.187	1.00	0.00
1101	0	1	1191.915	-158.465	1.00	0.00
1102	0	1	1191.915	-100.537	1.00	0.00
1103	0	1	1191.915	-47.875	1.00	0.00
1104	0	1	1191.915	0.000	1.00	0.00
1105	0	1	1191.915	24.256	1.00	0.00
1106	0	1	1191.915	48.818	1.00	0.00
1107	0	1	1191.915	73.465	1.00	0.00
1108	0	1	1191.915	97.978	1.00	0.00
1109	0	1	1191.915	122.138	1.00	0.00
1110	0	1	1191.915	145.727	1.00	0.00
1111	0	1	1191.915	168.537	1.00	0.00
1112	0	1	1191.915	190.363	1.00	0.00
1113	0	1	1191.915	211.009	1.00	0.00
1114	0	1	1191.915	230.292	1.00	0.00
1115	0	1	1191.915	245.901	1.00	0.00
1116	0	1	1191.915	261.510	1.00	0.00
1117	0	1	1191.915	277.120	1.00	0.00
1118	0	1	1191.915	292.729	1.00	0.00
1119	0	1	1191.915	308.338	1.00	0.00
1120	0	1	1191.915	323.947	1.00	0.00
1121	0	1	1191.915	339.556	1.00	0.00
1122	0	1	1191.915	355.165	1.00	0.00
1123	0	1	-1191.915	379.165	1.00	0.00
1124	0	1	-1071.915	379.165	1.00	0.00
1125	0	1	-951.915	379.165	1.00	0.00
1126	0	1	-831.915	379.165	1.00	0.00
1127	0	1	-711.915	379.165	1.00	0.00
1128	0	1	-665.088	379.165	1.00	0.00
1129	0	1	-618.260	379.165	1.00	0.00
1130	0	1	-567.759	379.165	1.00	0.00
1131	0	1	-502.477	379.165	1.00	0.00
1132	0	1	-430.215	379.165	1.00	0.00
1133	0	1	-356.750	379.165	1.00	0.00
1134	0	1	-317.111	379.165	1.00	0.00
1135	0	1	-277.472	379.165	1.00	0.00
1136	0	1	-237.833	379.165	1.00	0.00
1137	0	1	-198.194	379.165	1.00	0.00
1138	0	1	-158.556	379.165	1.00	0.00
1139	0	1	-118.917	379.165	1.00	0.00
1140	0	1	-79.278	379.165	1.00	0.00
1141	0	1	-39.639	379.165	1.00	0.00

1142	0	1	0.000	379.165	1.00	0.00
1143	0	1	39.639	379.165	1.00	0.00
1144	0	1	79.278	379.165	1.00	0.00
1145	0	1	118.917	379.165	1.00	0.00
1146	0	1	158.556	379.165	1.00	0.00
1147	0	1	198.194	379.165	1.00	0.00
1148	0	1	237.833	379.165	1.00	0.00
1149	0	1	277.472	379.165	1.00	0.00
1150	0	1	317.111	379.165	1.00	0.00
1151	0	1	356.750	379.165	1.00	0.00
1152	0	1	430.215	379.165	1.00	0.00
1153	0	1	502.477	379.165	1.00	0.00
1154	0	1	567.759	379.165	1.00	0.00
1155	0	1	618.260	379.165	1.00	0.00
1156	0	1	665.088	379.165	1.00	0.00
1157	0	1	711.915	379.165	1.00	0.00
1158	0	1	831.915	379.165	1.00	0.00
1159	0	1	951.915	379.165	1.00	0.00
1160	0	1	1071.915	379.165	1.00	0.00
1161	0	1	1191.915	379.165	1.00	0.00
1162	0	1	-735.915	379.165	1.00	0.00
1163	0	1	735.915	379.165	1.00	0.00

ALL ELEMENT DATA AS INPUT "I" AND GENERATED

	ELEMENT NUMBER	NODE-CONNECTIVITY I	J	K	L	MATERIAL NUMBER	CONSTR. INCR.	ELEMENT TYPE	BAND WIDTH	GENERATION INCREMENTS
I	1	38	39	0	0	1	1	BEAM	6	1, 0, 0
I	2	37	38	0	0	1	1	BEAM	6	1, 0, 0
I	3	36	37	0	0	1	1	BEAM	6	1, 0, 0
I	4	35	36	0	0	1	1	BEAM	6	1, 0, 0
I	5	34	35	0	0	1	1	BEAM	6	1, 0, 0
I	6	33	34	0	0	1	1	BEAM	6	1, 0, 0
I	7	32	33	0	0	1	1	BEAM	6	1, 0, 0
I	8	31	32	0	0	1	1	BEAM	6	1, 0, 0
I	9	30	31	0	0	1	1	BEAM	6	1, 0, 0
I	10	29	30	0	0	1	1	BEAM	6	1, 0, 0
I	11	28	29	0	0	1	1	BEAM	6	1, 0, 0
I	12	27	28	0	0	1	1	BEAM	6	1, 0, 0
I	13	26	27	0	0	1	1	BEAM	6	1, 0, 0
I	14	25	26	0	0	1	1	BEAM	6	1, 0, 0
I	15	24	25	0	0	1	1	BEAM	6	1, 0, 0
I	16	23	24	0	0	1	1	BEAM	6	1, 0, 0
I	17	22	23	0	0	1	1	BEAM	6	1, 0, 0
I	18	21	22	0	0	1	1	BEAM	6	1, 0, 0
I	19	20	21	0	0	1	1	BEAM	6	1, 0, 0
I	20	19	20	0	0	1	1	BEAM	6	1, 0, 0
I	21	18	19	0	0	1	1	BEAM	6	1, 0, 0
I	22	17	18	0	0	1	1	BEAM	6	1, 0, 0
I	23	16	17	0	0	1	1	BEAM	6	1, 0, 0
I	24	15	16	0	0	1	1	BEAM	6	1, 0, 0
I	25	14	15	0	0	1	1	BEAM	6	1, 0, 0
I	26	13	14	0	0	1	1	BEAM	6	1, 0, 0
I	27	12	13	0	0	1	1	BEAM	6	1, 0, 0
I	28	11	12	0	0	1	1	BEAM	6	1, 0, 0
I	29	10	11	0	0	1	1	BEAM	6	1, 0, 0
I	30	9	10	0	0	1	1	BEAM	6	1, 0, 0
I	31	8	9	0	0	1	1	BEAM	6	1, 0, 0
I	32	7	8	0	0	1	1	BEAM	6	1, 0, 0
I	33	6	7	0	0	1	1	BEAM	6	1, 0, 0
I	34	5	6	0	0	1	1	BEAM	6	1, 0, 0
I	35	4	5	0	0	1	1	BEAM	6	1, 0, 0
I	36	3	4	0	0	1	1	BEAM	6	1, 0, 0
I	37	2	3	0	0	1	1	BEAM	6	1, 0, 0
I	38	1	2	0	0	1	1	BEAM	6	1, 0, 0
I	39	464	462	39	308	2	1	QUAD	852	1, 0, 0
I	40	462	473	461	39	2	1	QUAD	870	1, 0, 0
I	41	296	285	1	284	2	1	QUAD	592	1, 0, 0
I	42	285	287	131	1	2	1	QUAD	574	1, 0, 0
I	43	1	131	143	77	3	2	QUAD	286	1, 0, 0
I	44	131	132	144	143	3	2	QUAD	28	1, 0, 0
I	45	132	133	145	144	3	2	QUAD	28	1, 0, 0
I	46	133	134	146	145	3	2	QUAD	28	1, 0, 0
I	47	134	135	147	146	3	2	QUAD	28	1, 0, 0
I	48	135	120	121	147	3	2	QUAD	56	1, 0, 0
I	49	77	143	148	78	3	3	QUAD	144	1, 0, 0
I	50	143	144	149	148	3	3	QUAD	14	1, 0, 0
I	51	144	145	150	149	3	3	QUAD	14	1, 0, 0
I	52	145	146	151	150	3	3	QUAD	14	1, 0, 0

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I   53    146  147  152  151       3       3       QUAD      14      1, 0, 0
I   54    147  121  153  152       3       3       QUAD      66      1, 0, 0
I   55    121  122  153    0       3       3       TRI.      66      1, 0, 0
I   56     78  148  154   79       3       4       QUAD     154      1, 0, 0
I   57    148  149  155  154       3       4       QUAD      16      1, 0, 0
I   58    149  150  156  155       3       4       QUAD      16      1, 0, 0
I   59    150  151  157  156       3       4       QUAD      16      1, 0, 0
I   60    151  152  158  157       3       4       QUAD      16      1, 0, 0
I   61    152  153  159  158       3       4       QUAD      16      1, 0, 0
I   62    153  122  123  159       3       4       QUAD      76      1, 0, 0
I   63     79  154  160   80       3       5       QUAD     164      1, 0, 0
I   64    154  155  161  160       3       5       QUAD      16      1, 0, 0
I   65    155  156  162  161       3       5       QUAD      16      1, 0, 0
I   66    156  157  163  162       3       5       QUAD      16      1, 0, 0
I   67    157  158  164  163       3       5       QUAD      16      1, 0, 0
I   68    158  159  165  164       3       5       QUAD      16      1, 0, 0
I   69    159  123  124  165       3       5       QUAD      86      1, 0, 0
I   70     80  160  166   81       3       6       QUAD     174      1, 0, 0
I   71    160  161  167  166       3       6       QUAD      16      1, 0, 0
I   72    161  162  168  167       3       6       QUAD      16      1, 0, 0
I   73    162  163  169  168       3       6       QUAD      16      1, 0, 0
I   74    163  164  170  169       3       6       QUAD      16      1, 0, 0
I   75    164  165  171  170       3       6       QUAD      16      1, 0, 0
I   76    165  124  125  171       3       6       QUAD      96      1, 0, 0
I   77     81  166  172   82       3       7       QUAD     184      1, 0, 0
I   78    166  167  173  172       3       7       QUAD      16      1, 0, 0
I   79    167  168  174  173       3       7       QUAD      16      1, 0, 0
I   80    168  169  175  174       3       7       QUAD      16      1, 0, 0
I   81    169  170  176  175       3       7       QUAD      16      1, 0, 0
I   82    170  171  177  176       3       7       QUAD      16      1, 0, 0
I   83    171  125  126  177       3       7       QUAD     106      1, 0, 0
I   84     82  172  178   83       3       8       QUAD     194      1, 0, 0
I   85    172  173  179  178       3       8       QUAD      16      1, 0, 0
I   86    173  174  180  179       3       8       QUAD      16      1, 0, 0
I   87    174  175  181  180       3       8       QUAD      16      1, 0, 0
I   88    175  176  182  181       3       8       QUAD      16      1, 0, 0
I   89    176  177  183  182       3       8       QUAD      16      1, 0, 0
I   90    177  126  184  183       3       8       QUAD     118      1, 0, 0
I   91    126  127  184    0       3       8       TRI.     118      1, 0, 0
I   92     83  178  185   84       3       9       QUAD     206      1, 0, 0
I   93    178  179  186  185       3       9       QUAD      18      1, 0, 0
I   94    179  180  187  186       3       9       QUAD      18      1, 0, 0
I   95    180  181  188  187       3       9       QUAD      18      1, 0, 0
I   96    181  182  189  188       3       9       QUAD      18      1, 0, 0
I   97    182  183  190  189       3       9       QUAD      18      1, 0, 0
I   98    183  184  191  190       3       9       QUAD      18      1, 0, 0
I   99    184  127  128  191       3       9       QUAD     130      1, 0, 0
I  100     84  185  192   85       3      10       QUAD     218      1, 0, 0
I  101    185  186  193  192       3      10       QUAD      18      1, 0, 0
I  102    186  187  194  193       3      10       QUAD      18      1, 0, 0
I  103    187  188  195  194       3      10       QUAD      18      1, 0, 0
I  104    188  189  196  195       3      10       QUAD      18      1, 0, 0
I  105    189  190  197  196       3      10       QUAD      18      1, 0, 0
I  106    190  191  198  197       3      10       QUAD      18      1, 0, 0
I  107    191  128  129  198       3      10       QUAD     142      1, 0, 0
I  108     85  192  136   86       3      11       QUAD     216      1, 0, 0
I  109    192  193  137  136       3      11       QUAD     116      1, 0, 0
I  110    193  194  138  137       3      11       QUAD     116      1, 0, 0
I  111    194  195  139  138       3      11       QUAD     116      1, 0, 0
I  112    195  196  140  139       3      11       QUAD     116      1, 0, 0
I  113    196  197  141  140       3      11       QUAD     116      1, 0, 0
I  114    197  198  142  141       3      11       QUAD     116      1, 0, 0
I  115    198  129  130  142       3      11       QUAD     140      1, 0, 0
I  116     86  136  207    0       3      12       TRI.     244      1, 0, 0
I  117    136  137  214  207       3      12       QUAD     158      1, 0, 0
I  118    137  138  215  214       3      12       QUAD     158      1, 0, 0
I  119    138  139  216  215       3      12       QUAD     158      1, 0, 0
I  120    139  140  217  216       3      12       QUAD     158      1, 0, 0
I  121    140  141  218  217       3      12       QUAD     158      1, 0, 0
I  122    141  142  219  218       3      12       QUAD     158      1, 0, 0
I  123    142  130  200  219       3      12       QUAD     180      1, 0, 0
I  124    207  214  208    0       3      14       TRI.      16      1, 0, 0
I  125    214  215  220  208       3      14       QUAD      26      1, 0, 0
I  126    215  216  221  220       3      14       QUAD      14      1, 0, 0
I  127    216  217  222  221       3      14       QUAD      14      1, 0, 0
I  128    217  218  223  222       3      14       QUAD      14      1, 0, 0
I  129    218  219  224  223       3      14       QUAD      14      1, 0, 0
I  130    219  200  201  224       3      14       QUAD      50      1, 0, 0
I  131    208  220  209    0       3      15       TRI.      26      1, 0, 0
I  132    220  221  225  209       3      15       QUAD      34      1, 0, 0
I  133    221  222  226  225       3      15       QUAD      12      1, 0, 0
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I	134	222	223	227	226	3	15	QUAD	12	1, 0, 0
I	135	223	224	228	227	3	15	QUAD	12	1, 0, 0
I	136	224	201	202	228	3	15	QUAD	56	1, 0, 0
I	137	209	225	210	0	3	16	TRI.	34	1, 0, 0
I	138	225	226	229	210	3	16	QUAD	40	1, 0, 0
I	139	226	227	230	229	3	16	QUAD	10	1, 0, 0
I	140	227	228	231	230	3	16	QUAD	10	1, 0, 0
I	141	228	202	203	231	3	16	QUAD	60	1, 0, 0
I	142	210	229	211	0	3	17	TRI.	40	1, 0, 0
I	143	229	230	232	211	3	17	QUAD	44	1, 0, 0
I	144	230	231	233	232	3	17	QUAD	8	1, 0, 0
I	145	231	203	204	233	3	17	QUAD	62	1, 0, 0
I	146	211	232	212	0	3	18	TRI.	44	1, 0, 0
I	147	232	233	234	212	3	18	QUAD	46	1, 0, 0
I	148	233	204	205	234	3	18	QUAD	62	1, 0, 0
I	149	212	234	213	0	3	19	TRI.	46	1, 0, 0
I	150	234	205	206	213	3	19	QUAD	60	1, 0, 0
I	151	213	206	199	0	3	19	TRI.	30	1, 0, 0
I	152	86	207	87	0	3	12	TRI.	244	1, 0, 0
I	153	207	208	273	0	3	14	TRI.	134	1, 0, 0
I	154	208	209	274	0	3	15	TRI.	134	1, 0, 0
I	155	209	210	276	275	3	16	QUAD	136	1, 0, 0
I	156	210	211	277	276	3	17	QUAD	136	1, 0, 0
I	157	211	212	278	277	3	18	QUAD	136	1, 0, 0
I	158	212	213	279	278	3	19	QUAD	136	1, 0, 0
I	159	213	199	242	279	3	19	QUAD	162	1, 0, 0
I	160	87	273	88	0	3	13	TRI.	374	1, 0, 0
I	161	273	274	267	0	3	15	TRI.	16	1, 0, 0
I	162	274	275	269	268	3	16	QUAD	16	1, 0, 0
I	163	275	276	269	0	3	16	TRI.	16	1, 0, 0
I	164	276	277	270	0	3	17	TRI.	16	1, 0, 0
I	165	277	278	271	0	3	18	TRI.	16	1, 0, 0
I	166	278	279	241	272	3	19	QUAD	78	1, 0, 0
I	167	279	242	241	0	3	19	TRI.	78	1, 0, 0
I	168	88	267	262	89	3	13	QUAD	360	1, 0, 0
I	169	267	268	263	262	3	16	QUAD	14	1, 0, 0
I	170	268	269	263	0	3	16	TRI.	14	1, 0, 0
I	171	269	270	264	0	3	17	TRI.	14	1, 0, 0
I	172	270	271	265	0	3	18	TRI.	14	1, 0, 0
I	173	271	272	240	266	3	19	QUAD	66	1, 0, 0
I	174	272	241	240	0	3	19	TRI.	66	1, 0, 0
I	175	89	262	257	90	3	13	QUAD	348	1, 0, 0
I	176	262	263	257	0	3	16	TRI.	14	1, 0, 0
I	177	263	264	259	258	3	17	QUAD	14	1, 0, 0
I	178	264	265	260	259	3	18	QUAD	14	1, 0, 0
I	179	265	266	261	260	3	19	QUAD	14	1, 0, 0
I	180	266	240	239	261	3	19	QUAD	56	1, 0, 0
I	181	90	257	253	91	3	13	QUAD	336	1, 0, 0
I	182	257	258	254	253	3	17	QUAD	12	1, 0, 0
I	183	258	259	254	0	3	17	TRI.	12	1, 0, 0
I	184	259	260	255	0	3	18	TRI.	12	1, 0, 0
I	185	260	261	238	256	3	19	QUAD	48	1, 0, 0
I	186	261	239	238	0	3	19	TRI.	48	1, 0, 0
I	187	91	253	249	92	3	13	QUAD	326	1, 0, 0
I	188	253	254	250	249	3	17	QUAD	12	1, 0, 0
I	189	254	255	251	250	3	18	QUAD	12	1, 0, 0
I	190	255	256	252	251	3	19	QUAD	12	1, 0, 0
I	191	256	238	237	252	3	19	QUAD	40	1, 0, 0
I	192	92	249	246	93	3	13	QUAD	316	1, 0, 0
I	193	249	250	247	246	3	17	QUAD	10	1, 0, 0
I	194	250	251	248	247	3	18	QUAD	10	1, 0, 0
I	195	251	252	236	248	3	19	QUAD	34	1, 0, 0
I	196	252	237	236	0	3	19	TRI.	34	1, 0, 0
I	197	93	246	243	94	3	13	QUAD	308	1, 0, 0
I	198	246	247	244	243	3	17	QUAD	10	1, 0, 0
I	199	247	248	245	244	3	18	QUAD	10	1, 0, 0
I	200	248	236	235	245	3	19	QUAD	28	1, 0, 0
I	201	94	243	115	95	3	13	QUAD	300	1, 0, 0
I	202	243	244	116	115	3	17	QUAD	260	1, 0, 0
I	203	244	245	117	116	3	18	QUAD	260	1, 0, 0
I	204	245	235	114	117	3	19	QUAD	264	1, 0, 0
I	205	119	292	280	118	1	1	QUAD	350	1, 0, 0
I	206	292	293	281	280	1	1	QUAD	28	1, 0, 0
I	207	293	294	282	281	1	1	QUAD	28	1, 0, 0
I	208	294	295	283	282	1	1	QUAD	28	1, 0, 0
I	209	295	296	284	283	1	1	QUAD	28	1, 0, 0
I	210	287	288	132	131	2	1	QUAD	316	1, 0, 0
I	211	288	289	133	132	2	1	QUAD	316	1, 0, 0
I	212	289	290	134	133	1	1	QUAD	316	1, 0, 0
I	213	290	291	135	134	1	1	QUAD	316	1, 0, 0
I	214	291	286	120	135	1	1	QUAD	344	1, 0, 0

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I  215     2   77   40    0      1      2      FACE    152     1, 0, 0
I  216     3   78   41    0      2      3      FACE    152     1, 0, 0
I  217     4   79   42    0      3      4      FACE    152     1, 0, 0
I  218     5   80   43    0      4      5      FACE    152     1, 0, 0
I  219     6   81   44    0      5      6      FACE    152     1, 0, 0
I  220     7   82   45    0      6      7      FACE    152     1, 0, 0
I  221     8   83   46    0      7      8      FACE    152     1, 0, 0
I  222     9   84   47    0      8      9      FACE    152     1, 0, 0
I  223    10   85   48    0      9     10      FACE    152     1, 0, 0
I  224    11   86   49    0     10     11      FACE    152     1, 0, 0
I  225    12   87   50    0     11     12      FACE    152     1, 0, 0
I  226    13   88   51    0     12     13      FACE    152     1, 0, 0
I  227    14   89   52    0     13     13      FACE    152     1, 0, 0
I  228    15   90   53    0     14     13      FACE    152     1, 0, 0
I  229    16   91   54    0     15     13      FACE    152     1, 0, 0
I  230    17   92   55    0     16     13      FACE    152     1, 0, 0
I  231    18   93   56    0     17     13      FACE    152     1, 0, 0
I  232    19   94   57    0     18     13      FACE    152     1, 0, 0
I  233    20   95   58    0     19     13      FACE    152     1, 0, 0
I  234   297  312  324  298      3      2      QUAD     56     1, 0, 0
I  235   312  311  323  324      3      2      QUAD     28     1, 0, 0
I  236   311  310  322  323      3      2      QUAD     28     1, 0, 0
I  237   310  309  321  322      3      2      QUAD     28     1, 0, 0
I  238   309  308  320  321      3      2      QUAD     28     1, 0, 0
I  239   308   39  113  320      3      2      QUAD    564     1, 0, 0
I  240   298  330  299    0      3      3      TRI.     66     1, 0, 0
I  241   298  324  329  330      3      3      QUAD     66     1, 0, 0
I  242   324  323  328  329      3      3      QUAD     14     1, 0, 0
I  243   323  322  327  328      3      3      QUAD     14     1, 0, 0
I  244   322  321  326  327      3      3      QUAD     14     1, 0, 0
I  245   321  320  325  326      3      3      QUAD     14     1, 0, 0
I  246   320  113  112  325      3      3      QUAD    428     1, 0, 0
I  247   299  330  336  300      3      4      QUAD     76     1, 0, 0
I  248   330  329  335  336      3      4      QUAD     16     1, 0, 0
I  249   329  328  334  335      3      4      QUAD     16     1, 0, 0
I  250   328  327  333  334      3      4      QUAD     16     1, 0, 0
I  251   327  326  332  333      3      4      QUAD     16     1, 0, 0
I  252   326  325  331  332      3      4      QUAD     16     1, 0, 0
I  253   325  112  111  331      3      4      QUAD    442     1, 0, 0
I  254   300  336  342  301      3      5      QUAD     86     1, 0, 0
I  255   336  335  341  342      3      5      QUAD     16     1, 0, 0
I  256   335  334  340  341      3      5      QUAD     16     1, 0, 0
I  257   334  333  339  340      3      5      QUAD     16     1, 0, 0
I  258   333  332  338  339      3      5      QUAD     16     1, 0, 0
I  259   332  331  337  338      3      5      QUAD     16     1, 0, 0
I  260   331  111  110  337      3      5      QUAD    456     1, 0, 0
I  261   301  342  348  302      3      6      QUAD     96     1, 0, 0
I  262   342  341  347  348      3      6      QUAD     16     1, 0, 0
I  263   341  340  346  347      3      6      QUAD     16     1, 0, 0
I  264   340  339  345  346      3      6      QUAD     16     1, 0, 0
I  265   339  338  344  345      3      6      QUAD     16     1, 0, 0
I  266   338  337  343  344      3      6      QUAD     16     1, 0, 0
I  267   337  110  109  343      3      6      QUAD    470     1, 0, 0
I  268   302  348  354  303      3      7      QUAD    106     1, 0, 0
I  269   348  347  353  354      3      7      QUAD     16     1, 0, 0
I  270   347  346  352  353      3      7      QUAD     16     1, 0, 0
I  271   346  345  351  352      3      7      QUAD     16     1, 0, 0
I  272   345  344  350  351      3      7      QUAD     16     1, 0, 0
I  273   344  343  349  350      3      7      QUAD     16     1, 0, 0
I  274   343  109  108  349      3      7      QUAD    484     1, 0, 0
I  275   303  361  304    0      3      8      TRI.    118     1, 0, 0
I  276   303  354  360  361      3      8      QUAD    118     1, 0, 0
I  277   354  353  359  360      3      8      QUAD     16     1, 0, 0
I  278   353  352  358  359      3      8      QUAD     16     1, 0, 0
I  279   352  351  357  358      3      8      QUAD     16     1, 0, 0
I  280   351  350  356  357      3      8      QUAD     16     1, 0, 0
I  281   350  349  355  356      3      8      QUAD     16     1, 0, 0
I  282   349  108  107  355      3      8      QUAD    498     1, 0, 0
I  283   304  361  368  305      3      9      QUAD    130     1, 0, 0
I  284   361  360  367  368      3      9      QUAD     18     1, 0, 0
I  285   360  359  366  367      3      9      QUAD     18     1, 0, 0
I  286   359  358  365  366      3      9      QUAD     18     1, 0, 0
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I	1125	1097	1122	1161	1160	1	1	QUAD	130	1, 0, 0
I	1126	748	1127	1162	0	4	20	TRI.	830	1, 0, 0
I	1127	1010	1163	1157	0	4	20	TRI.	308	1, 0, 0

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -179.9	F = 0.000
1141	21	F = 0.000	F = -179.9	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000

842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9

11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000

25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 19

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 19
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.350E+00 -0.248E+01	-0.803E+01 0.142E+01	0.986E-10 -0.277E+04	-0.922E+04 -0.922E+04	0.140E+03 0.466E+03
2	-258.50 24.26	-0.198E+00 -0.246E+01	-0.819E+01 0.198E+01	-0.279E+04 -0.273E+04	-0.165E+05 -0.908E+04	0.835E+02 0.278E+03
3	-260.57 48.82	-0.263E-02 -0.245E+01	-0.834E+01 0.254E+01	-0.418E+04 -0.267E+04	-0.201E+05 -0.890E+04	0.319E+02 0.106E+03
4	-260.31 73.47	0.259E+00 -0.246E+01	-0.797E+01 0.240E+01	-0.437E+04 -0.261E+04	-0.204E+05 -0.869E+04	-0.169E+02 -0.563E+02
5	-257.73 97.98	0.588E+00 -0.250E+01	-0.764E+01 0.228E+01	-0.329E+04 -0.255E+04	-0.173E+05 -0.848E+04	-0.681E+02 -0.227E+03
6	-252.84 122.14	0.961E+00 -0.259E+01	-0.780E+01 0.227E+01	-0.899E+03 -0.248E+04	-0.107E+05 -0.826E+04	-0.115E+03 -0.383E+03
7	-245.70 145.73	0.134E+01 -0.271E+01	-0.866E+01 0.245E+01	0.253E+04 -0.241E+04	-0.148E+05 -0.802E+04	-0.143E+03 -0.475E+03

8	-236.35	0.166E+01	-0.102E+02	0.629E+04	-0.246E+05	-0.133E+03
	168.54	-0.285E+01	0.282E+01	-0.233E+04	-0.775E+04	-0.444E+03
9	-224.90	0.187E+01	-0.105E+02	0.925E+04	-0.322E+05	-0.935E+02
	190.36	-0.298E+01	0.293E+01	-0.224E+04	-0.747E+04	-0.311E+03
10	-211.44	0.195E+01	-0.111E+02	0.110E+05	-0.367E+05	-0.345E+02
	211.01	-0.303E+01	0.320E+01	-0.216E+04	-0.720E+04	-0.115E+03
11	-196.08	0.189E+01	-0.875E+01	0.110E+05	-0.365E+05	0.106E+02
	230.29	-0.299E+01	0.254E+01	-0.209E+04	-0.695E+04	0.354E+02
12	-178.98	0.169E+01	-0.925E+01	0.106E+05	-0.349E+05	0.396E+02
	248.04	-0.281E+01	0.278E+01	-0.202E+04	-0.674E+04	0.132E+03
13	-160.27	0.140E+01	-0.103E+02	0.909E+04	-0.308E+05	0.944E+02
	264.09	-0.249E+01	0.323E+01	-0.195E+04	-0.650E+04	0.314E+03
14	-140.14	0.105E+01	-0.903E+01	0.584E+04	-0.219E+05	0.153E+03
	278.31	-0.202E+01	0.291E+01	-0.189E+04	-0.629E+04	0.510E+03
15	-118.75	0.706E+00	-0.746E+01	0.142E+04	-0.991E+04	0.182E+03
	290.56	-0.143E+01	0.247E+01	-0.184E+04	-0.612E+04	0.606E+03
16	-96.30	0.403E+00	-0.628E+01	-0.333E+04	-0.149E+05	0.181E+03
	300.73	-0.802E+00	0.167E+01	-0.180E+04	-0.600E+04	0.604E+03
17	-72.98	0.181E+00	-0.543E+01	-0.775E+04	-0.267E+05	0.158E+03
	308.74	-0.195E+00	0.937E+00	-0.179E+04	-0.594E+04	0.527E+03
18	-49.02	0.496E-01	-0.489E+01	-0.114E+05	-0.363E+05	0.119E+03
	314.51	0.307E+00	0.816E+00	-0.178E+04	-0.591E+04	0.396E+03
19	-24.62	-0.420E-02	-0.410E+01	-0.138E+05	-0.428E+05	0.646E+02
	318.00	0.635E+00	0.729E+00	-0.177E+04	-0.588E+04	0.215E+03
20	0.00	-0.140E-01	-0.374E+01	-0.146E+05	-0.440E+05	-0.338E+01
	319.17	0.742E+00	-0.477E-01	-0.176E+04	-0.586E+04	-0.113E+02
21	24.62	-0.252E-01	-0.413E+01	-0.136E+05	-0.423E+05	-0.710E+02
	318.00	0.610E+00	-0.736E+00	-0.177E+04	-0.588E+04	-0.237E+03
22	49.02	-0.824E-01	-0.490E+01	-0.110E+05	-0.354E+05	-0.125E+03
	314.51	0.260E+00	-0.813E+00	-0.178E+04	-0.591E+04	-0.417E+03
23	72.98	-0.218E+00	-0.549E+01	-0.727E+04	-0.254E+05	-0.163E+03
	308.74	-0.258E+00	-0.967E+00	-0.178E+04	-0.594E+04	-0.544E+03
24	96.30	-0.443E+00	-0.643E+01	-0.274E+04	-0.133E+05	-0.184E+03
	300.73	-0.873E+00	-0.177E+01	-0.180E+04	-0.600E+04	-0.613E+03
25	118.75	-0.745E+00	-0.765E+01	0.203E+04	-0.116E+05	-0.181E+03
	290.56	-0.150E+01	-0.252E+01	-0.184E+04	-0.613E+04	-0.602E+03
26	140.14	-0.109E+01	-0.919E+01	0.637E+04	-0.233E+05	-0.148E+03
	278.31	-0.208E+01	-0.295E+01	-0.189E+04	-0.630E+04	-0.493E+03
27	160.27	-0.142E+01	-0.107E+02	0.945E+04	-0.318E+05	-0.835E+02
	264.09	-0.253E+01	-0.333E+01	-0.196E+04	-0.653E+04	-0.278E+03
28	178.98	-0.170E+01	-0.928E+01	0.105E+05	-0.349E+05	-0.248E+02

	248.04	-0.284E+01	-0.278E+01	-0.203E+04	-0.677E+04	-0.825E+02
29	196.08	-0.187E+01	-0.845E+01	0.107E+05	-0.355E+05	0.106E-01
	230.29	-0.300E+01	-0.244E+01	-0.210E+04	-0.698E+04	0.352E-01
30	211.44	-0.193E+01	-0.107E+02	0.105E+05	-0.352E+05	0.356E+02
	211.01	-0.303E+01	-0.308E+01	-0.217E+04	-0.722E+04	0.119E+03
31	224.90	-0.184E+01	-0.104E+02	0.879E+04	-0.310E+05	0.879E+02
	190.36	-0.297E+01	-0.290E+01	-0.225E+04	-0.749E+04	0.293E+03
32	236.35	-0.162E+01	-0.102E+02	0.601E+04	-0.238E+05	0.127E+03
	168.54	-0.285E+01	-0.284E+01	-0.233E+04	-0.777E+04	0.422E+03
33	245.70	-0.130E+01	-0.877E+01	0.240E+04	-0.145E+05	0.137E+03
	145.73	-0.271E+01	-0.249E+01	-0.241E+04	-0.803E+04	0.458E+03
34	252.84	-0.929E+00	-0.790E+01	-0.929E+03	-0.108E+05	0.112E+03
	122.14	-0.258E+01	-0.231E+01	-0.249E+04	-0.828E+04	0.373E+03
35	257.73	-0.561E+00	-0.777E+01	-0.327E+04	-0.172E+05	0.674E+02
	97.98	-0.250E+01	-0.231E+01	-0.255E+04	-0.850E+04	0.224E+03
36	260.31	-0.237E+00	-0.805E+01	-0.436E+04	-0.204E+05	0.181E+02
	73.47	-0.246E+01	-0.243E+01	-0.262E+04	-0.872E+04	0.601E+02
37	260.57	0.196E-01	-0.834E+01	-0.421E+04	-0.202E+05	-0.305E+02
	48.82	-0.245E+01	-0.253E+01	-0.268E+04	-0.893E+04	-0.101E+03
38	258.50	0.210E+00	-0.807E+01	-0.285E+04	-0.167E+05	-0.842E+02
	24.26	-0.245E+01	-0.190E+01	-0.273E+04	-0.910E+04	-0.280E+03
39	254.12	0.355E+00	-0.781E+01	-0.290E-10	-0.923E+04	-0.144E+03
	0.00	-0.247E+01	-0.127E+01	-0.277E+04	-0.923E+04	-0.479E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 19

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.28930E-03	-0.28930E-03	.20953	0.00000
2	-0.51916E-03	-0.50451E-04	.37602	0.00000
3	-0.62978E-03	0.71096E-04	.45613	0.00000
4	-0.63920E-03	0.93540E-04	.46295	0.00000
5	-0.54183E-03	0.95148E-05	.39243	0.00000
6	-0.33461E-03	-0.18373E-03	.24235	0.00000
7	-0.39385E-04	-0.46380E-03	.33592	0.00000
8	0.28415E-03	-0.77061E-03	.55813	0.00000
9	0.54112E-03	-0.10101E-02	.73162	0.00000
10	0.69852E-03	-0.11501E-02	.83300	0.00000
11	0.70791E-03	-0.11441E-02	.82867	0.00000
12	0.67385E-03	-0.10965E-02	.79419	0.00000
13	0.55855E-03	-0.96676E-03	.70020	0.00000
14	0.29253E-03	-0.68709E-03	.49764	0.00000
15	-0.72944E-04	-0.31084E-03	.22514	0.00000
16	-0.46743E-03	0.90884E-04	.33855	0.00000
17	-0.83676E-03	0.46371E-03	.60605	0.00000
18	-0.11378E-02	0.76663E-03	.82408	0.00000
19	-0.13424E-02	0.97346E-03	.97227	0.00000
20	-0.14122E-02	0.10440E-02	1.0228	0.01283
21	-0.13280E-02	0.95891E-03	.96183	0.00000
22	-0.11102E-02	0.73902E-03	.80410	0.00000
23	-0.79654E-03	0.42351E-03	.57692	0.00000
24	-0.41794E-03	0.41137E-04	.30271	0.00000
25	-0.21744E-04	-0.36271E-03	.26270	0.00000
26	0.33629E-03	-0.73182E-03	.53004	0.00000
27	0.58756E-03	-0.99726E-03	.72229	0.00000

28	0.67119E-03	-0.10959E-02	.79371	0.00000
29	0.67432E-03	-0.11125E-02	.80578	0.00000
30	0.65140E-03	-0.11045E-02	.79999	0.00000
31	0.50251E-03	-0.97267E-03	.70448	0.00000
32	0.26004E-03	-0.74751E-03	.54141	0.00000
33	-0.50684E-04	-0.45354E-03	.32849	0.00000
34	-0.33763E-03	-0.18185E-03	.24453	0.00000
35	-0.54072E-03	0.71290E-05	.39163	0.00000
36	-0.63919E-03	0.92078E-04	.46295	0.00000
37	-0.63349E-03	0.73250E-04	.45882	0.00000
38	-0.52478E-03	-0.46203E-04	.38009	0.00000
39	-0.28978E-03	-0.28978E-03	.20988	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 19

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.23281	0.00000	0.05420
2	-0.22920	-0.13457	0.18710
3	-0.22480	-0.20122	0.25176
4	-0.21956	-0.21037	0.25858
5	-0.21419	-0.15829	0.20417
6	-0.20857	-0.04332	0.08682
7	-0.20247	0.12185	0.16284
8	-0.19574	0.30282	0.34114
9	-0.18872	0.44537	0.48099
10	-0.18171	0.53075	0.56377
11	-0.17553	0.53173	0.56254
12	-0.17008	0.50828	0.53721
13	-0.16425	0.43793	0.46490
14	-0.15876	0.28125	0.30646
15	-0.15443	0.06830	0.09215
16	-0.15151	-0.16030	0.18325
17	-0.15011	-0.37337	0.39590
18	-0.14935	-0.54677	0.56908
19	-0.14845	-0.66489	0.68693
20	-0.14798	-0.70494	0.72683
21	-0.14851	-0.65658	0.67863
22	-0.14936	-0.53092	0.55323
23	-0.15010	-0.35028	0.37281
24	-0.15162	-0.13180	0.15479
25	-0.15469	0.09789	0.12182
26	-0.15915	0.30666	0.33199
27	-0.16485	0.45501	0.48219
28	-0.17088	0.50733	0.53653
29	-0.17632	0.51301	0.54410
30	-0.18233	0.50414	0.53738
31	-0.18918	0.42353	0.45932
32	-0.19615	0.28927	0.32775
33	-0.20289	0.11566	0.15683
34	-0.20903	-0.04472	0.08841
35	-0.21470	-0.15729	0.20339
36	-0.22014	-0.20995	0.25841
37	-0.22543	-0.20291	0.25372
38	-0.22975	-0.13740	0.19019
39	-0.23320	0.00000	0.05438

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 19

LRFD STRENGTH-LIMIT RATIOS AT STEP 19, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	39	9235.	30800.	0.300
BUCKLING THRUST (psi)	39	9235.	40838.	0.226
SEAM THRUST (psi)	39	9235.	23052.	0.401
PLASTIC-PENETRATE (%)	20	1.28	90.00	0.014

COMBINED T&M Ratio	20	0.727	1.000	0.727

LRFD SERVICE PERFORMANCE AT STEP 19, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.75
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.15
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 20

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 20
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.411E+00 -0.278E+01	-0.932E+01 -0.286E+00	0.895E-10 -0.358E+04	-0.119E+05 -0.119E+05	0.173E+03 0.576E+03
2	-258.50 24.26	-0.287E+00 -0.277E+01	-0.104E+02 0.743E+00	-0.337E+04 -0.357E+04	-0.209E+05 -0.119E+05	0.918E+02 0.306E+03
3	-260.57 48.82	-0.112E+00 -0.277E+01	-0.115E+02 0.177E+01	-0.471E+04 -0.354E+04	-0.244E+05 -0.118E+05	0.256E+02 0.853E+02
4	-260.31 73.47	0.137E+00 -0.278E+01	-0.115E+02 0.217E+01	-0.475E+04 -0.349E+04	-0.243E+05 -0.116E+05	-0.229E+02 -0.761E+02
5	-257.73 97.98	0.459E+00 -0.283E+01	-0.110E+02 0.279E+01	-0.364E+04 -0.342E+04	-0.211E+05 -0.114E+05	-0.714E+02 -0.238E+03
6	-252.84 122.14	0.832E+00 -0.291E+01	-0.109E+02 0.316E+01	-0.125E+04 -0.334E+04	-0.145E+05 -0.111E+05	-0.120E+03 -0.399E+03
7	-245.70 145.73	0.121E+01 -0.304E+01	-0.119E+02 0.334E+01	0.229E+04 -0.324E+04	-0.169E+05 -0.108E+05	-0.149E+03 -0.497E+03
8	-236.35 168.54	0.154E+01 -0.319E+01	-0.136E+02 0.373E+01	0.615E+04 -0.314E+04	-0.269E+05 -0.105E+05	-0.136E+03 -0.453E+03
9	-224.90 190.36	0.177E+01 -0.332E+01	-0.136E+02 0.377E+01	0.907E+04 -0.303E+04	-0.343E+05 -0.101E+05	-0.916E+02 -0.305E+03
10	-211.44 211.01	0.186E+01 -0.339E+01	-0.139E+02 0.396E+01	0.108E+05 -0.293E+04	-0.385E+05 -0.976E+04	-0.326E+02 -0.108E+03
11	-196.08 230.29	0.181E+01 -0.335E+01	-0.115E+02 0.331E+01	0.108E+05 -0.284E+04	-0.383E+05 -0.945E+04	0.998E+01 0.332E+02
12	-178.98 248.04	0.163E+01 -0.319E+01	-0.121E+02 0.361E+01	0.104E+05 -0.275E+04	-0.369E+05 -0.917E+04	0.387E+02 0.129E+03
13	-160.27 264.09	0.135E+01 -0.289E+01	-0.131E+02 0.406E+01	0.901E+04 -0.266E+04	-0.330E+05 -0.887E+04	0.947E+02 0.315E+03

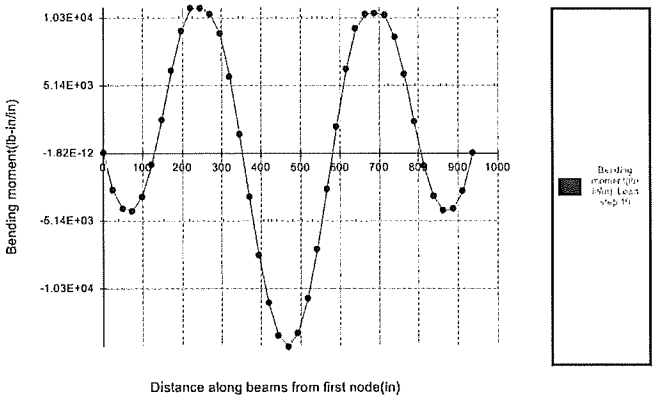
14	-140.14	0.102E+01	-0.117E+02	0.586E+04	-0.243E+05	0.154E+03
	278.31	-0.244E+01	0.375E+01	-0.258E+04	-0.858E+04	0.513E+03
15	-118.75	0.687E+00	-0.101E+02	0.156E+04	-0.125E+05	0.184E+03
	290.56	-0.189E+01	0.333E+01	-0.251E+04	-0.834E+04	0.613E+03
16	-96.30	0.394E+00	-0.882E+01	-0.308E+04	-0.164E+05	0.185E+03
	300.73	-0.128E+01	0.297E+01	-0.244E+04	-0.814E+04	0.616E+03
17	-72.98	0.178E+00	-0.778E+01	-0.744E+04	-0.279E+05	0.163E+03
	308.74	-0.692E+00	0.210E+01	-0.240E+04	-0.798E+04	0.542E+03
18	-49.02	0.493E-01	-0.708E+01	-0.110E+05	-0.373E+05	0.123E+03
	314.51	-0.206E+00	0.161E+01	-0.236E+04	-0.787E+04	0.408E+03
19	-24.62	-0.439E-02	-0.622E+01	-0.134E+05	-0.437E+05	0.663E+02
	318.00	0.112E+00	0.114E+01	-0.234E+04	-0.779E+04	0.221E+03
20	0.00	-0.155E-01	-0.583E+01	-0.142E+05	-0.440E+05	-0.376E+01
	319.17	0.215E+00	-0.466E-01	-0.233E+04	-0.776E+04	-0.125E+02
21	24.62	-0.280E-01	-0.625E+01	-0.132E+05	-0.432E+05	-0.735E+02
	318.00	0.860E-01	-0.115E+01	-0.234E+04	-0.779E+04	-0.245E+03
22	49.02	-0.852E-01	-0.710E+01	-0.106E+05	-0.363E+05	-0.129E+03
	314.51	-0.255E+00	-0.162E+01	-0.236E+04	-0.787E+04	-0.430E+03
23	72.98	-0.218E+00	-0.786E+01	-0.692E+04	-0.265E+05	-0.168E+03
	308.74	-0.758E+00	-0.215E+01	-0.240E+04	-0.798E+04	-0.559E+03
24	96.30	-0.438E+00	-0.899E+01	-0.246E+04	-0.147E+05	-0.187E+03
	300.73	-0.135E+01	-0.302E+01	-0.245E+04	-0.814E+04	-0.624E+03
25	118.75	-0.730E+00	-0.103E+02	0.219E+04	-0.142E+05	-0.182E+03
	290.56	-0.196E+01	-0.338E+01	-0.251E+04	-0.835E+04	-0.607E+03
26	140.14	-0.106E+01	-0.119E+02	0.640E+04	-0.257E+05	-0.149E+03
	278.31	-0.251E+01	-0.379E+01	-0.258E+04	-0.860E+04	-0.495E+03
27	160.27	-0.138E+01	-0.134E+02	0.936E+04	-0.339E+05	-0.832E+02
	264.09	-0.294E+01	-0.415E+01	-0.267E+04	-0.889E+04	-0.277E+03
28	178.98	-0.164E+01	-0.121E+02	0.103E+05	-0.369E+05	-0.234E+02
	248.04	-0.322E+01	-0.359E+01	-0.276E+04	-0.920E+04	-0.780E+02
29	196.08	-0.180E+01	-0.112E+02	0.104E+05	-0.372E+05	0.744E+00
	230.29	-0.336E+01	-0.321E+01	-0.285E+04	-0.948E+04	0.248E+01
30	211.44	-0.183E+01	-0.135E+02	0.102E+05	-0.370E+05	0.336E+02
	211.01	-0.338E+01	-0.384E+01	-0.294E+04	-0.978E+04	0.112E+03
31	224.90	-0.173E+01	-0.136E+02	0.861E+04	-0.331E+05	0.858E+02
	190.36	-0.331E+01	-0.375E+01	-0.304E+04	-0.101E+05	0.286E+03
32	236.35	-0.151E+01	-0.136E+02	0.587E+04	-0.261E+05	0.130E+03
	168.54	-0.318E+01	-0.375E+01	-0.314E+04	-0.105E+05	0.432E+03
33	245.70	-0.118E+01	-0.120E+02	0.216E+04	-0.166E+05	0.144E+03
	145.73	-0.303E+01	-0.337E+01	-0.324E+04	-0.108E+05	0.480E+03

34	252.84	-0.801E+00	-0.110E+02	-0.128E+04	-0.145E+05	0.117E+03
	122.14	-0.291E+01	-0.319E+01	-0.334E+04	-0.111E+05	0.389E+03
35	257.73	-0.433E+00	-0.111E+02	-0.362E+04	-0.211E+05	0.705E+02
	97.98	-0.282E+01	-0.287E+01	-0.343E+04	-0.114E+05	0.235E+03
36	260.31	-0.115E+00	-0.116E+02	-0.474E+04	-0.243E+05	0.240E+02
	73.47	-0.278E+01	-0.222E+01	-0.350E+04	-0.116E+05	0.799E+02
37	260.57	0.129E+00	-0.115E+02	-0.474E+04	-0.245E+05	-0.242E+02
	48.82	-0.276E+01	-0.178E+01	-0.355E+04	-0.118E+05	-0.806E+02
38	258.50	0.299E+00	-0.103E+02	-0.343E+04	-0.211E+05	-0.926E+02
	24.26	-0.277E+01	-0.663E+00	-0.357E+04	-0.119E+05	-0.308E+03
39	254.12	0.416E+00	-0.909E+01	0.592E-10	-0.119E+05	-0.177E+03
	0.00	-0.278E+01	0.453E+00	-0.358E+04	-0.119E+05	-0.590E+03

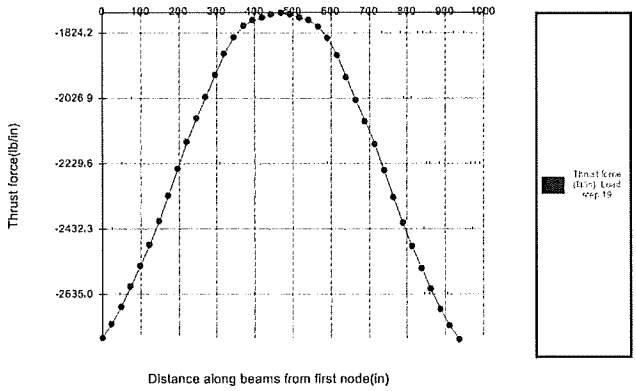
STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.37391E-03	-0.37391E-03	.27081	0.00000
2	-0.65503E-03	-0.90338E-04	.47442	0.00000
3	-0.76449E-03	0.24882E-04	.55370	0.00000
4	-0.76275E-03	0.33705E-04	.55244	0.00000
5	-0.66299E-03	-0.51897E-04	.48019	0.00000
6	-0.45344E-03	-0.24377E-03	.32841	0.00000
7	-0.14668E-03	-0.53069E-03	.38436	0.00000
8	0.18827E-03	-0.84418E-03	.61142	0.00000
9	0.44357E-03	-0.10775E-02	.78041	0.00000
10	0.59573E-03	-0.12081E-02	.87502	0.00000
11	0.60733E-03	-0.12004E-02	.86943	0.00000
12	0.58335E-03	-0.11588E-02	.83927	0.00000
13	0.47731E-03	-0.10340E-02	.74889	0.00000
14	0.22221E-03	-0.76096E-03	.55115	0.00000
15	-0.13107E-03	-0.39254E-03	.28431	0.00000
16	-0.51365E-03	0.28149E-05	.37203	0.00000
17	-0.87477E-03	0.37371E-03	.63358	0.00000
18	-0.11703E-02	0.67611E-03	.84763	0.00000
19	-0.13706E-02	0.88163E-03	.99266	0.00000
20	-0.14369E-02	0.94892E-03	1.0407	0.02358
21	-0.13548E-02	0.86573E-03	.98122	0.00000
22	-0.11401E-02	0.64588E-03	.82575	0.00000
23	-0.83136E-03	0.33025E-03	.60214	0.00000
24	-0.46146E-03	-0.49612E-04	.33423	0.00000
25	-0.78264E-04	-0.44582E-03	.32289	0.00000
26	0.26699E-03	-0.80648E-03	.58411	0.00000
27	0.50656E-03	-0.10645E-02	.77098	0.00000
28	0.57959E-03	-0.11567E-02	.83777	0.00000
29	0.57286E-03	-0.11676E-02	.84566	0.00000
30	0.54757E-03	-0.11612E-02	.84101	0.00000
31	0.40522E-03	-0.10399E-02	.75321	0.00000
32	0.16395E-03	-0.82055E-03	.59430	0.00000
33	-0.15826E-03	-0.51981E-03	.37649	0.00000
34	-0.45653E-03	-0.24147E-03	.33065	0.00000
35	-0.66180E-03	-0.54120E-04	.47933	0.00000
36	-0.76260E-03	0.32178E-04	.55233	0.00000
37	-0.76820E-03	0.27035E-04	.55639	0.00000
38	-0.66075E-03	-0.85997E-04	.47857	0.00000
39	-0.37439E-03	-0.37439E-03	.27116	0.00000

Bending moment(lb-in/in)



Thrust force(lb/in)



COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.30091	0.00000	0.09054
2	-0.29992	-0.16213	0.25208
3	-0.29760	-0.22663	0.31520
4	-0.29335	-0.22866	0.31472
5	-0.28765	-0.17545	0.25819
6	-0.28054	-0.06020	0.13890
7	-0.27256	0.11025	0.18454
8	-0.26392	0.29642	0.36608
9	-0.25508	0.43671	0.50178
10	-0.24642	0.51790	0.57862
11	-0.23864	0.51901	0.57596
12	-0.23153	0.50017	0.55378
13	-0.22399	0.43390	0.48407
14	-0.21678	0.28227	0.32927
15	-0.21069	0.07507	0.11946
16	-0.20555	-0.14828	0.19053
17	-0.20161	-0.35844	0.39909
18	-0.19886	-0.53012	0.56966
19	-0.19673	-0.64661	0.68531
20	-0.19584	-0.68580	0.72415
21	-0.19677	-0.63751	0.67623
22	-0.19886	-0.51276	0.55231
23	-0.20164	-0.33350	0.37416
24	-0.20564	-0.11824	0.16053
25	-0.21088	0.10553	0.15000
26	-0.21708	0.30820	0.35532

27	-0.22449	0.45105	0.50145
28	-0.23222	0.49850	0.55242
29	-0.23931	0.49969	0.55696
30	-0.24690	0.49059	0.55155
31	-0.25540	0.41491	0.48014
32	-0.26420	0.28265	0.35245
33	-0.27284	0.10380	0.17825
34	-0.28086	-0.06175	0.14063
35	-0.28807	-0.17447	0.25745
36	-0.29390	-0.22818	0.31456
37	-0.29823	-0.22832	0.31726
38	-0.30047	-0.16501	0.25530
39	-0.30129	0.00000	0.09077

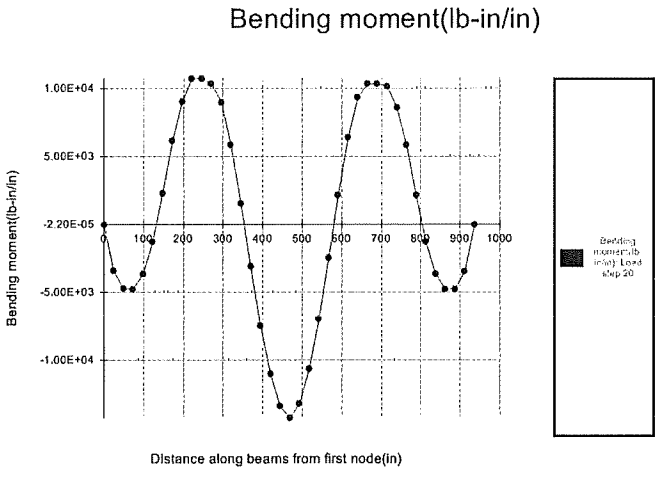
ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 20

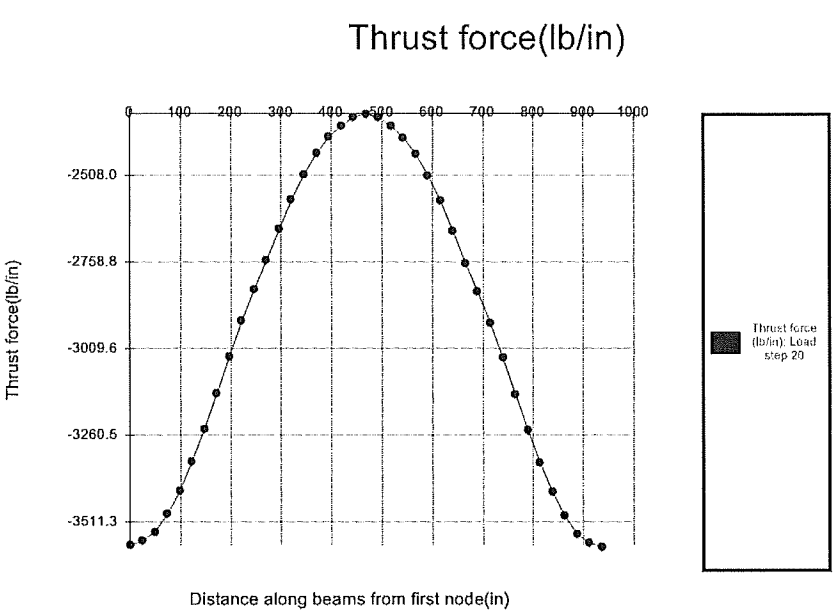
LRFD STRENGTH-LIMIT RATIOS AT STEP 20, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	39	11931.	30800.	0.387
BUCKLING THRUST (psi)	39	11931.	41967.	0.284
SEAM THRUST (psi)	39	11931.	23052.	0.518
PLASTIC-PENETRATE (%)	20	2.36	90.00	0.026
COMBINED T&M Ratio	20	0.724	1.000	0.724

LRFD SERVICE PERFORMANCE AT STEP 20, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.72
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.14
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020





STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.482E+00 -0.285E+01	-0.958E+01 -0.184E+01	0.122E-09 -0.374E+04	-0.125E+05 -0.125E+05	0.182E+03 0.605E+03
2	-258.50 24.26	-0.382E+00 -0.284E+01	-0.110E+02 -0.108E+01	-0.349E+04 -0.378E+04	-0.219E+05 -0.126E+05	0.945E+02 0.315E+03
3	-260.57 48.82	-0.230E+00 -0.284E+01	-0.124E+02 -0.307E+00	-0.483E+04 -0.380E+04	-0.256E+05 -0.126E+05	0.235E+02 0.783E+02
4	-260.31 73.47	-0.785E-03 -0.285E+01	-0.129E+02 -0.787E-01	-0.481E+04 -0.380E+04	-0.255E+05 -0.127E+05	-0.250E+02 -0.834E+02
5	-257.73 97.98	0.303E+00 -0.290E+01	-0.125E+02 0.590E+00	-0.375E+04 -0.379E+04	-0.226E+05 -0.126E+05	-0.713E+02 -0.237E+03
6	-252.84 122.14	0.659E+00 -0.298E+01	-0.124E+02 0.113E+01	-0.143E+04 -0.376E+04	-0.163E+05 -0.125E+05	-0.121E+03 -0.404E+03
7	-245.70 145.73	0.102E+01 -0.311E+01	-0.135E+02 0.149E+01	0.211E+04 -0.371E+04	-0.180E+05 -0.123E+05	-0.155E+03 -0.515E+03
8	-236.35 168.54	0.134E+01 -0.325E+01	-0.157E+02 0.223E+01	0.609E+04 -0.365E+04	-0.284E+05 -0.121E+05	-0.141E+03 -0.470E+03
9	-224.90 190.36	0.156E+01 -0.338E+01	-0.161E+02 0.298E+01	0.899E+04 -0.357E+04	-0.359E+05 -0.119E+05	-0.885E+02 -0.295E+03
10	-211.44 211.01	0.164E+01 -0.344E+01	-0.163E+02 0.381E+01	0.104E+05 -0.348E+04	-0.393E+05 -0.116E+05	-0.212E+02 -0.708E+02

11	-196.08	0.159E+01	-0.139E+02	0.100E+05	-0.380E+05	0.273E+02
	230.29	-0.341E+01	0.392E+01	-0.338E+04	-0.113E+05	0.910E+02
12	-178.98	0.142E+01	-0.146E+02	0.907E+04	-0.352E+05	0.650E+02
	248.04	-0.326E+01	0.434E+01	-0.328E+04	-0.109E+05	0.216E+03
13	-160.27	0.117E+01	-0.146E+02	0.695E+04	-0.292E+05	0.121E+03
	264.09	-0.298E+01	0.450E+01	-0.318E+04	-0.106E+05	0.403E+03
14	-140.14	0.875E+00	-0.130E+02	0.344E+04	-0.195E+05	0.166E+03
	278.31	-0.259E+01	0.412E+01	-0.309E+04	-0.103E+05	0.552E+03
15	-118.75	0.593E+00	-0.105E+02	-0.690E+03	-0.119E+05	0.169E+03
	290.56	-0.213E+01	0.346E+01	-0.301E+04	-0.100E+05	0.563E+03
16	-96.30	0.360E+00	-0.904E+01	-0.415E+04	-0.209E+05	0.131E+03
	300.73	-0.164E+01	0.305E+01	-0.294E+04	-0.980E+04	0.435E+03
17	-72.98	0.197E+00	-0.883E+01	-0.626E+04	-0.263E+05	0.779E+02
	308.74	-0.121E+01	0.304E+01	-0.288E+04	-0.958E+04	0.259E+03
18	-49.02	0.101E+00	-0.959E+01	-0.715E+04	-0.284E+05	0.385E+02
	314.51	-0.851E+00	0.331E+01	-0.280E+04	-0.933E+04	0.128E+03
19	-24.62	0.574E-01	-0.111E+02	-0.757E+04	-0.293E+05	0.343E+02
	318.00	-0.606E+00	0.360E+01	-0.272E+04	-0.906E+04	0.114E+03
20	0.00	0.444E-01	-0.105E+02	-0.869E+04	-0.322E+05	0.458E+02
	319.17	-0.485E+00	-0.233E+01	-0.271E+04	-0.902E+04	0.152E+03
21	24.62	0.362E-01	-0.817E+01	-0.102E+05	-0.364E+05	0.187E+02
	318.00	-0.508E+00	-0.286E+01	-0.278E+04	-0.924E+04	0.622E+02
22	49.02	0.147E-02	-0.769E+01	-0.103E+05	-0.371E+05	-0.493E+02
	314.51	-0.695E+00	-0.270E+01	-0.284E+04	-0.947E+04	-0.164E+03
23	72.98	-0.918E-01	-0.808E+01	-0.864E+04	-0.328E+05	-0.125E+03
	308.74	-0.104E+01	-0.279E+01	-0.290E+04	-0.967E+04	-0.415E+03
24	96.30	-0.265E+00	-0.967E+01	-0.507E+04	-0.234E+05	-0.181E+03
	300.73	-0.150E+01	-0.324E+01	-0.296E+04	-0.987E+04	-0.603E+03
25	118.75	-0.516E+00	-0.116E+02	-0.404E+03	-0.112E+05	-0.201E+03
	290.56	-0.202E+01	-0.379E+01	-0.303E+04	-0.101E+05	-0.668E+03
26	140.14	-0.819E+00	-0.138E+02	0.436E+04	-0.220E+05	-0.177E+03
	278.31	-0.252E+01	-0.437E+01	-0.312E+04	-0.104E+05	-0.589E+03
27	160.27	-0.113E+01	-0.158E+02	0.807E+04	-0.323E+05	-0.110E+03
	264.09	-0.294E+01	-0.430E+01	-0.321E+04	-0.107E+05	-0.366E+03
28	178.98	-0.139E+01	-0.147E+02	0.972E+04	-0.369E+05	-0.399E+02
	248.04	-0.322E+01	-0.284E+01	-0.329E+04	-0.110E+05	-0.133E+03
29	196.08	-0.156E+01	-0.132E+02	0.101E+05	-0.381E+05	-0.861E+01
	230.29	-0.337E+01	-0.234E+01	-0.336E+04	-0.112E+05	-0.287E+02
30	211.44	-0.161E+01	-0.158E+02	0.102E+05	-0.388E+05	0.292E+02
	211.01	-0.340E+01	-0.310E+01	-0.343E+04	-0.114E+05	0.973E+02
31	224.90	-0.152E+01	-0.157E+02	0.876E+04	-0.351E+05	0.910E+02

	190.36	-0.333E+01	-0.221E+01	-0.350E+04	-0.117E+05	0.303E+03
32	236.35	-0.131E+01	-0.152E+02	0.587E+04	-0.275E+05	0.139E+03
	168.54	-0.321E+01	-0.174E+01	-0.356E+04	-0.119E+05	0.463E+03
33	245.70	-0.993E+00	-0.131E+02	0.201E+04	-0.174E+05	0.150E+03
	145.73	-0.307E+01	-0.129E+01	-0.361E+04	-0.120E+05	0.500E+03
34	252.84	-0.634E+00	-0.121E+02	-0.142E+04	-0.160E+05	0.118E+03
	122.14	-0.295E+01	-0.110E+01	-0.366E+04	-0.122E+05	0.393E+03
35	257.73	-0.285E+00	-0.122E+02	-0.367E+04	-0.221E+05	0.705E+02
	97.98	-0.286E+01	-0.731E+00	-0.369E+04	-0.123E+05	0.235E+03
36	260.31	0.128E-01	-0.125E+02	-0.475E+04	-0.250E+05	0.257E+02
	73.47	-0.282E+01	-0.123E+00	-0.371E+04	-0.124E+05	0.857E+02
37	260.57	0.237E+00	-0.120E+02	-0.479E+04	-0.252E+05	-0.227E+02
	48.82	-0.281E+01	0.106E+00	-0.371E+04	-0.124E+05	-0.755E+02
38	258.50	0.385E+00	-0.106E+02	-0.348E+04	-0.216E+05	-0.940E+02
	24.26	-0.281E+01	0.943E+00	-0.370E+04	-0.123E+05	-0.313E+03
39	254.12	0.481E+00	-0.926E+01	0.456E-10	-0.122E+05	-0.182E+03
	0.00	-0.282E+01	0.178E+01	-0.366E+04	-0.122E+05	-0.605E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39127E-03	-0.39127E-03	.28339	0.00000
2	-0.68782E-03	-0.10170E-03	.49817	0.00000
3	-0.80215E-03	0.83381E-05	.58098	0.00000
4	-0.80097E-03	0.66143E-05	.58012	0.00000
5	-0.71000E-03	-0.81644E-04	.51424	0.00000
6	-0.51273E-03	-0.27215E-03	.37135	0.00000
7	-0.21010E-03	-0.56488E-03	.40913	0.00000
8	0.12973E-03	-0.89180E-03	.64591	0.00000
9	0.38104E-03	-0.11270E-02	.81627	0.00000
10	0.50757E-03	-0.12346E-02	.89419	0.00000
11	0.48567E-03	-0.11925E-02	.86367	0.00000
12	0.41794E-03	-0.11040E-02	.79962	0.00000
13	0.25049E-03	-0.91534E-03	.66296	0.00000
14	-0.34395E-04	-0.61080E-03	.44239	0.00000
15	-0.37228E-03	-0.25646E-03	.26963	0.00000
16	-0.65536E-03	0.40619E-04	.47466	0.00000
17	-0.82533E-03	0.22436E-03	.59777	0.00000
18	-0.89252E-03	0.30686E-03	.64643	0.00000
19	-0.91930E-03	0.35081E-03	.66583	0.00000
20	-0.10111E-02	0.44383E-03	.73233	0.00000
21	-0.11427E-02	0.56270E-03	.82762	0.00000
22	-0.11641E-02	0.57004E-03	.84314	0.00000
23	-0.10280E-02	0.42144E-03	.74458	0.00000
24	-0.73496E-03	0.11571E-03	.53231	0.00000
25	-0.35081E-03	-0.28297E-03	.25409	0.00000
26	0.40375E-04	-0.69170E-03	.50098	0.00000
27	0.34172E-03	-0.10128E-02	.73357	0.00000
28	0.47098E-03	-0.11593E-02	.83967	0.00000
29	0.49536E-03	-0.11969E-02	.86688	0.00000
30	0.50106E-03	-0.12172E-02	.88155	0.00000
31	0.36940E-03	-0.11007E-02	.79723	0.00000
32	0.12022E-03	-0.86440E-03	.62606	0.00000
33	-0.20873E-03	-0.54654E-03	.39584	0.00000
34	-0.50111E-03	-0.26340E-03	.36294	0.00000
35	-0.69391E-03	-0.77623E-04	.50258	0.00000
36	-0.78593E-03	0.10812E-04	.56923	0.00000
37	-0.78972E-03	0.14084E-04	.57197	0.00000
38	-0.67771E-03	-0.94502E-04	.49085	0.00000
39	-0.38297E-03	-0.38297E-03	.27737	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31488	0.00000	0.09915
2	-0.31768	-0.16828	0.26920
3	-0.31941	-0.23269	0.33472
4	-0.31963	-0.23186	0.33402
5	-0.31854	-0.18040	0.28187
6	-0.31581	-0.06907	0.16881
7	-0.31183	0.10186	0.19910
8	-0.30664	0.29328	0.38731
9	-0.30016	0.43297	0.52307
10	-0.29254	0.50018	0.58576
11	-0.28440	0.48180	0.56268
12	-0.27606	0.43696	0.51317
13	-0.26752	0.33472	0.40628
14	-0.25961	0.16549	0.23289
15	-0.25299	-0.03325	0.09726
16	-0.24736	-0.19982	0.26101
17	-0.24181	-0.30137	0.35984
18	-0.23565	-0.34435	0.39988
19	-0.22875	-0.36466	0.41698
20	-0.22773	-0.41853	0.47040
21	-0.23337	-0.48962	0.54409
22	-0.23904	-0.49788	0.55502
23	-0.24408	-0.41615	0.47572
24	-0.24917	-0.24423	0.30632
25	-0.25502	-0.01948	0.08451
26	-0.26208	0.21018	0.27887
27	-0.27004	0.38890	0.46182
28	-0.27697	0.46807	0.54478
29	-0.28228	0.48585	0.56554
30	-0.28814	0.49331	0.57633
31	-0.29427	0.42208	0.50867
32	-0.29944	0.28269	0.37235
33	-0.30390	0.09699	0.18934
34	-0.30762	-0.06825	0.16288
35	-0.31044	-0.17694	0.27331
36	-0.31189	-0.22875	0.32602
37	-0.31210	-0.23078	0.32818
38	-0.31072	-0.16744	0.26399
39	-0.30819	0.00000	0.09498

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	4	12657.	30800.	0.411
BUCKLING THRUST (psi)	4	12657.	44285.	0.286
SEAM THRUST (psi)	4	12657.	23052.	0.549
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.586	1.000	0.586

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.60

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

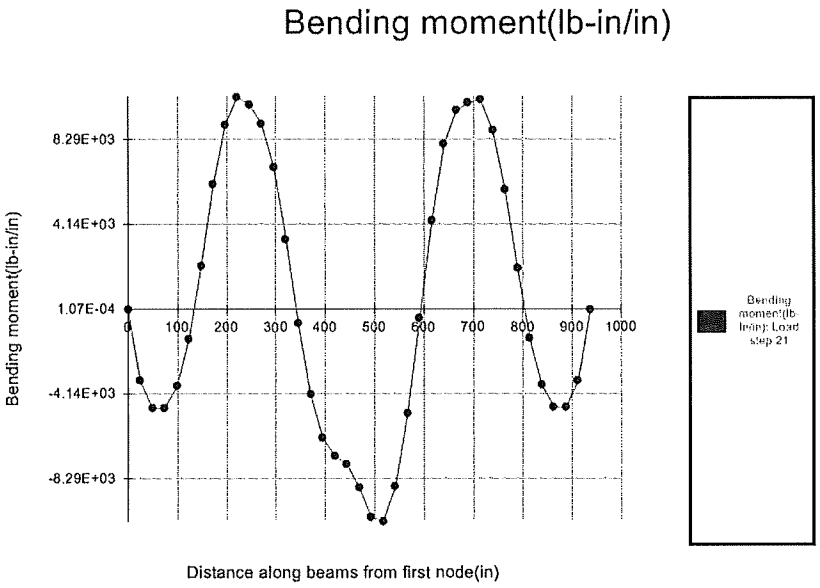
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.12

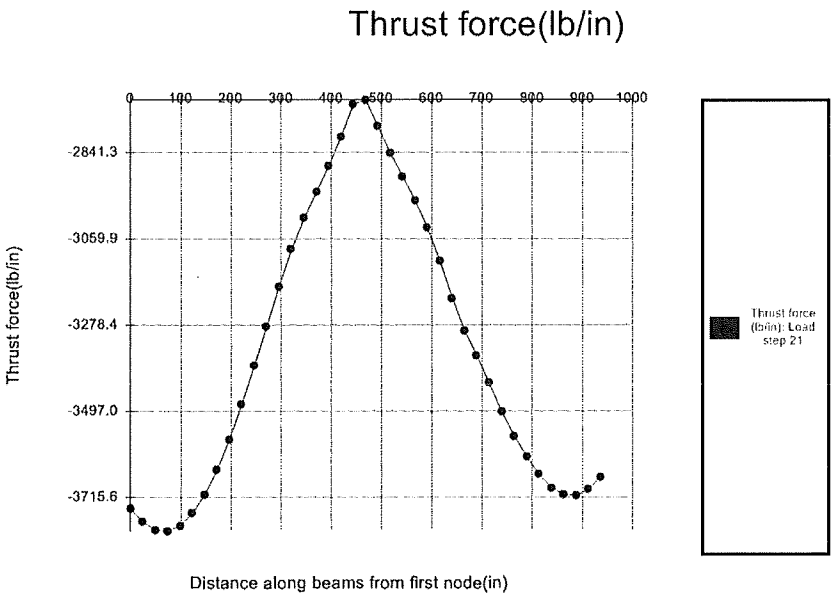
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

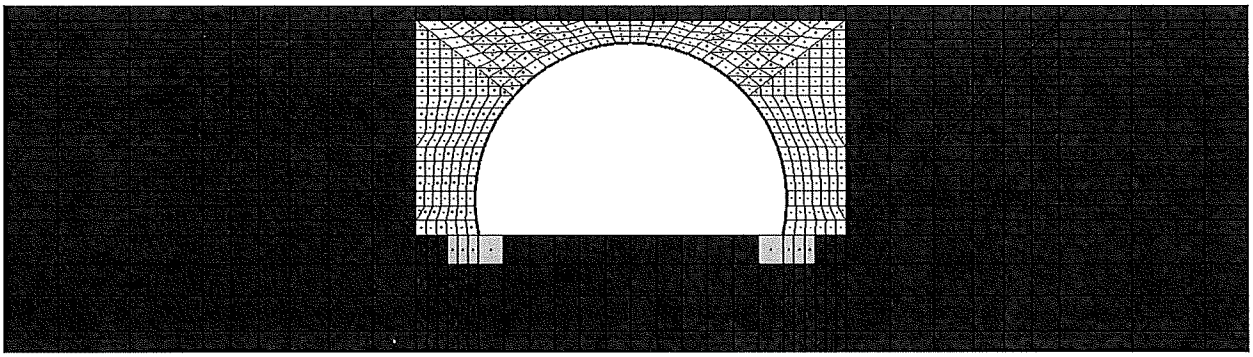
SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020

* * * * NORMAL EXIT FROM CANDE * * * *







*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage HL-93 TRUCK

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -115.1	F = 0.000
1142	22	F = 0.000	F = -115.1	F = 0.000
1138	21	F = 0.000	F = -115.1	F = 0.000
1138	22	F = 0.000	F = -115.1	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000

911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000

12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21
22	1.750	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 19

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 19
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.350E+00 -0.248E+01	-0.803E+01 0.142E+01	0.986E-10 -0.277E+04	-0.922E+04 -0.922E+04	0.140E+03 0.466E+03
2	-258.50 24.26	-0.198E+00 -0.246E+01	-0.819E+01 0.198E+01	-0.279E+04 -0.273E+04	-0.165E+05 -0.908E+04	0.835E+02 0.278E+03
3	-260.57 48.82	-0.263E-02 -0.245E+01	-0.834E+01 0.254E+01	-0.418E+04 -0.267E+04	-0.201E+05 -0.890E+04	0.319E+02 0.106E+03
4	-260.31	0.259E+00	-0.797E+01	-0.437E+04	-0.204E+05	-0.169E+02

	73.47	-0.246E+01	0.240E+01	-0.261E+04	-0.869E+04	-0.563E+02
5	-257.73	0.588E+00	-0.764E+01	-0.329E+04	-0.173E+05	-0.681E+02
	97.98	-0.250E+01	0.228E+01	-0.255E+04	-0.848E+04	-0.227E+03
6	-252.84	0.961E+00	-0.780E+01	-0.899E+03	-0.107E+05	-0.115E+03
	122.14	-0.259E+01	0.227E+01	-0.248E+04	-0.826E+04	-0.383E+03
7	-245.70	0.134E+01	-0.866E+01	0.253E+04	-0.148E+05	-0.143E+03
	145.73	-0.271E+01	0.245E+01	-0.241E+04	-0.802E+04	-0.475E+03
8	-236.35	0.166E+01	-0.102E+02	0.629E+04	-0.246E+05	-0.133E+03
	168.54	-0.285E+01	0.282E+01	-0.233E+04	-0.775E+04	-0.444E+03
9	-224.90	0.187E+01	-0.105E+02	0.925E+04	-0.322E+05	-0.935E+02
	190.36	-0.298E+01	0.293E+01	-0.224E+04	-0.747E+04	-0.311E+03
10	-211.44	0.195E+01	-0.111E+02	0.110E+05	-0.367E+05	-0.345E+02
	211.01	-0.303E+01	0.320E+01	-0.216E+04	-0.720E+04	-0.115E+03
11	-196.08	0.189E+01	-0.875E+01	0.110E+05	-0.365E+05	0.106E+02
	230.29	-0.299E+01	0.254E+01	-0.209E+04	-0.695E+04	0.354E+02
12	-178.98	0.169E+01	-0.925E+01	0.106E+05	-0.349E+05	0.396E+02
	248.04	-0.281E+01	0.278E+01	-0.202E+04	-0.674E+04	0.132E+03
13	-160.27	0.140E+01	-0.103E+02	0.909E+04	-0.308E+05	0.944E+02
	264.09	-0.249E+01	0.323E+01	-0.195E+04	-0.650E+04	0.314E+03
14	-140.14	0.105E+01	-0.903E+01	0.584E+04	-0.219E+05	0.153E+03
	278.31	-0.202E+01	0.291E+01	-0.189E+04	-0.629E+04	0.510E+03
15	-118.75	0.706E+00	-0.746E+01	0.142E+04	-0.991E+04	0.182E+03
	290.56	-0.143E+01	0.247E+01	-0.184E+04	-0.612E+04	0.606E+03
16	-96.30	0.403E+00	-0.628E+01	-0.333E+04	-0.149E+05	0.181E+03
	300.73	-0.802E+00	0.167E+01	-0.180E+04	-0.600E+04	0.604E+03
17	-72.98	0.181E+00	-0.543E+01	-0.775E+04	-0.267E+05	0.158E+03
	308.74	-0.195E+00	0.937E+00	-0.179E+04	-0.594E+04	0.527E+03
18	-49.02	0.496E-01	-0.489E+01	-0.114E+05	-0.363E+05	0.119E+03
	314.51	0.307E+00	0.816E+00	-0.178E+04	-0.591E+04	0.396E+03
19	-24.62	-0.420E-02	-0.410E+01	-0.138E+05	-0.428E+05	0.646E+02
	318.00	0.635E+00	0.729E+00	-0.177E+04	-0.588E+04	0.215E+03
20	0.00	-0.140E-01	-0.374E+01	-0.146E+05	-0.440E+05	-0.338E+01
	319.17	0.742E+00	-0.477E-01	-0.176E+04	-0.586E+04	-0.113E+02
21	24.62	-0.252E-01	-0.413E+01	-0.136E+05	-0.423E+05	-0.710E+02
	318.00	0.610E+00	-0.736E+00	-0.177E+04	-0.588E+04	-0.237E+03
22	49.02	-0.824E-01	-0.490E+01	-0.110E+05	-0.354E+05	-0.125E+03
	314.51	0.260E+00	-0.813E+00	-0.178E+04	-0.591E+04	-0.417E+03
23	72.98	-0.218E+00	-0.549E+01	-0.727E+04	-0.254E+05	-0.163E+03
	308.74	-0.258E+00	-0.967E+00	-0.178E+04	-0.594E+04	-0.544E+03
24	96.30	-0.443E+00	-0.643E+01	-0.274E+04	-0.133E+05	-0.184E+03
	300.73	-0.873E+00	-0.177E+01	-0.180E+04	-0.600E+04	-0.613E+03

25	118.75	-0.745E+00	-0.765E+01	0.203E+04	-0.116E+05	-0.181E+03
	290.56	-0.150E+01	-0.252E+01	-0.184E+04	-0.613E+04	-0.602E+03
26	140.14	-0.109E+01	-0.919E+01	0.637E+04	-0.233E+05	-0.148E+03
	278.31	-0.208E+01	-0.295E+01	-0.189E+04	-0.630E+04	-0.493E+03
27	160.27	-0.142E+01	-0.107E+02	0.945E+04	-0.318E+05	-0.835E+02
	264.09	-0.253E+01	-0.333E+01	-0.196E+04	-0.653E+04	-0.278E+03
28	178.98	-0.170E+01	-0.928E+01	0.105E+05	-0.349E+05	-0.248E+02
	248.04	-0.284E+01	-0.278E+01	-0.203E+04	-0.677E+04	-0.825E+02
29	196.08	-0.187E+01	-0.845E+01	0.107E+05	-0.355E+05	0.106E-01
	230.29	-0.300E+01	-0.244E+01	-0.210E+04	-0.698E+04	0.352E-01
30	211.44	-0.193E+01	-0.107E+02	0.105E+05	-0.352E+05	0.356E+02
	211.01	-0.303E+01	-0.308E+01	-0.217E+04	-0.722E+04	0.119E+03
31	224.90	-0.184E+01	-0.104E+02	0.879E+04	-0.310E+05	0.879E+02
	190.36	-0.297E+01	-0.290E+01	-0.225E+04	-0.749E+04	0.293E+03
32	236.35	-0.162E+01	-0.102E+02	0.601E+04	-0.238E+05	0.127E+03
	168.54	-0.285E+01	-0.284E+01	-0.233E+04	-0.777E+04	0.422E+03
33	245.70	-0.130E+01	-0.877E+01	0.240E+04	-0.145E+05	0.137E+03
	145.73	-0.271E+01	-0.249E+01	-0.241E+04	-0.803E+04	0.458E+03
34	252.84	-0.929E+00	-0.790E+01	-0.929E+03	-0.108E+05	0.112E+03
	122.14	-0.258E+01	-0.231E+01	-0.249E+04	-0.828E+04	0.373E+03
35	257.73	-0.561E+00	-0.777E+01	-0.327E+04	-0.172E+05	0.674E+02
	97.98	-0.250E+01	-0.231E+01	-0.255E+04	-0.850E+04	0.224E+03
36	260.31	-0.237E+00	-0.805E+01	-0.436E+04	-0.204E+05	0.181E+02
	73.47	-0.246E+01	-0.243E+01	-0.262E+04	-0.872E+04	0.601E+02
37	260.57	0.196E-01	-0.834E+01	-0.421E+04	-0.202E+05	-0.305E+02
	48.82	-0.245E+01	-0.253E+01	-0.268E+04	-0.893E+04	-0.101E+03
38	258.50	0.210E+00	-0.807E+01	-0.285E+04	-0.167E+05	-0.842E+02
	24.26	-0.245E+01	-0.190E+01	-0.273E+04	-0.910E+04	-0.280E+03
39	254.12	0.355E+00	-0.781E+01	-0.290E-10	-0.923E+04	-0.144E+03
	0.00	-0.247E+01	-0.127E+01	-0.277E+04	-0.923E+04	-0.479E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 19

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.28930E-03	-0.28930E-03	.20953	0.00000
2	-0.51916E-03	-0.50451E-04	.37602	0.00000
3	-0.62978E-03	0.71096E-04	.45613	0.00000
4	-0.63920E-03	0.93540E-04	.46295	0.00000
5	-0.54183E-03	0.95148E-05	.39243	0.00000
6	-0.33461E-03	-0.18373E-03	.24235	0.00000
7	-0.39385E-04	-0.46380E-03	.33592	0.00000
8	0.28415E-03	-0.77061E-03	.55813	0.00000
9	0.54112E-03	-0.10101E-02	.73162	0.00000
10	0.69852E-03	-0.11501E-02	.83300	0.00000
11	0.70791E-03	-0.11441E-02	.82867	0.00000
12	0.67385E-03	-0.10965E-02	.79419	0.00000

13	0.55855E-03	-0.96676E-03	.70020	0.00000
14	0.29253E-03	-0.68709E-03	.49764	0.00000
15	-0.72944E-04	-0.31084E-03	.22514	0.00000
16	-0.46743E-03	0.90884E-04	.33855	0.00000
17	-0.83676E-03	0.46371E-03	.60605	0.00000
18	-0.11378E-02	0.76663E-03	.82408	0.00000
19	-0.13424E-02	0.97346E-03	.97227	0.00000
20	-0.14122E-02	0.10440E-02	1.0228	0.01283
21	-0.13280E-02	0.95891E-03	.96183	0.00000
22	-0.11102E-02	0.73902E-03	.80410	0.00000
23	-0.79654E-03	0.42351E-03	.57692	0.00000
24	-0.41794E-03	0.41137E-04	.30271	0.00000
25	-0.21744E-04	-0.36271E-03	.26270	0.00000
26	0.33629E-03	-0.73182E-03	.53004	0.00000
27	0.58756E-03	-0.99726E-03	.72229	0.00000
28	0.67119E-03	-0.10959E-02	.79371	0.00000
29	0.67432E-03	-0.11125E-02	.80578	0.00000
30	0.65140E-03	-0.11045E-02	.79999	0.00000
31	0.50251E-03	-0.97267E-03	.70448	0.00000
32	0.26004E-03	-0.74751E-03	.54141	0.00000
33	-0.50684E-04	-0.45354E-03	.32849	0.00000
34	-0.33763E-03	-0.18185E-03	.24453	0.00000
35	-0.54072E-03	0.71290E-05	.39163	0.00000
36	-0.63919E-03	0.92078E-04	.46295	0.00000
37	-0.63349E-03	0.73250E-04	.45882	0.00000
38	-0.52478E-03	-0.46203E-04	.38009	0.00000
39	-0.28978E-03	-0.28978E-03	.20988	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 19

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.23281	0.00000	0.05420
2	-0.22920	-0.13457	0.18710
3	-0.22480	-0.20122	0.25176
4	-0.21956	-0.21037	0.25858
5	-0.21419	-0.15829	0.20417
6	-0.20857	-0.04332	0.08682
7	-0.20247	0.12185	0.16284
8	-0.19574	0.30282	0.34114
9	-0.18872	0.44537	0.48099
10	-0.18171	0.53075	0.56377
11	-0.17553	0.53173	0.56254
12	-0.17008	0.50828	0.53721
13	-0.16425	0.43793	0.46490
14	-0.15876	0.28125	0.30646
15	-0.15443	0.06830	0.09215
16	-0.15151	-0.16030	0.18325
17	-0.15011	-0.37337	0.39590
18	-0.14935	-0.54677	0.56908
19	-0.14845	-0.66489	0.68693
20	-0.14798	-0.70494	0.72683
21	-0.14851	-0.65658	0.67863
22	-0.14936	-0.53092	0.55323
23	-0.15010	-0.35028	0.37281
24	-0.15162	-0.13180	0.15479
25	-0.15469	0.09789	0.12182
26	-0.15915	0.30666	0.33199
27	-0.16485	0.45501	0.48219
28	-0.17088	0.50733	0.53653
29	-0.17632	0.51301	0.54410
30	-0.18233	0.50414	0.53738
31	-0.18918	0.42353	0.45932
32	-0.19615	0.28927	0.32775
33	-0.20289	0.11566	0.15683
34	-0.20903	-0.04472	0.08841
35	-0.21470	-0.15729	0.20339
36	-0.22014	-0.20995	0.25841
37	-0.22543	-0.20291	0.25372
38	-0.22975	-0.13740	0.19019
39	-0.23320	0.00000	0.05438

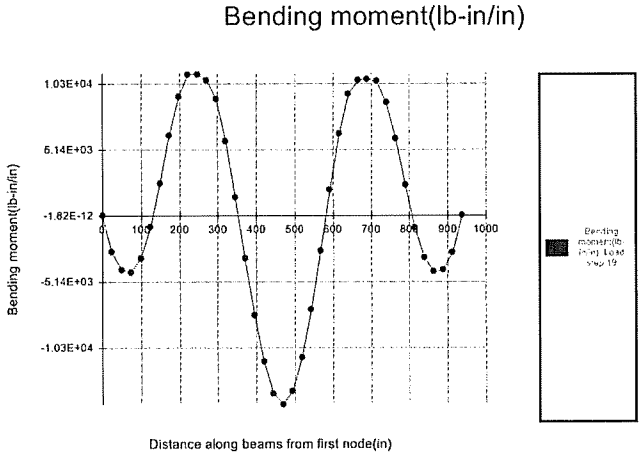
ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 19

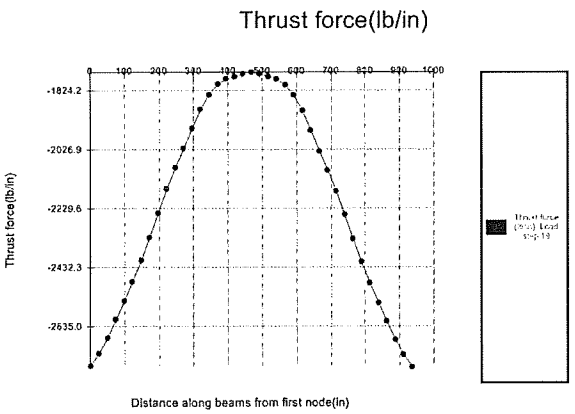
LRFD STRENGTH-LIMIT RATIOS AT STEP 19, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	39	9235.	30800.	0.300
BUCKLING THRUST (psi)	39	9235.	40838.	0.226
SEAM THRUST (psi)	39	9235.	23052.	0.401
PLASTIC-PENETRATE (%)	20	1.28	90.00	0.014
COMBINED T&M Ratio	20	0.727	1.000	0.727

LRFD SERVICE PERFORMANCE AT STEP 19, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.75
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.15
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020





STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 20

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 20
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.411E+00 -0.278E+01	-0.932E+01 -0.286E+00	0.895E-10 -0.358E+04	-0.119E+05 -0.119E+05	0.173E+03 0.576E+03
2	-258.50 24.26	-0.287E+00 -0.277E+01	-0.104E+02 0.743E+00	-0.337E+04 -0.357E+04	-0.209E+05 -0.119E+05	0.918E+02 0.306E+03
3	-260.57 48.82	-0.112E+00 -0.277E+01	-0.115E+02 0.177E+01	-0.471E+04 -0.354E+04	-0.244E+05 -0.118E+05	0.256E+02 0.853E+02
4	-260.31 73.47	0.137E+00 -0.278E+01	-0.115E+02 0.217E+01	-0.475E+04 -0.349E+04	-0.243E+05 -0.116E+05	-0.229E+02 -0.761E+02
5	-257.73 97.98	0.459E+00 -0.283E+01	-0.110E+02 0.279E+01	-0.364E+04 -0.342E+04	-0.211E+05 -0.114E+05	-0.714E+02 -0.238E+03
6	-252.84 122.14	0.832E+00 -0.291E+01	-0.109E+02 0.316E+01	-0.125E+04 -0.334E+04	-0.145E+05 -0.111E+05	-0.120E+03 -0.399E+03
7	-245.70 145.73	0.121E+01 -0.304E+01	-0.119E+02 0.334E+01	0.229E+04 -0.324E+04	-0.169E+05 -0.108E+05	-0.149E+03 -0.497E+03
8	-236.35 168.54	0.154E+01 -0.319E+01	-0.136E+02 0.373E+01	0.615E+04 -0.314E+04	-0.269E+05 -0.105E+05	-0.136E+03 -0.453E+03
9	-224.90 190.36	0.177E+01 -0.332E+01	-0.136E+02 0.377E+01	0.907E+04 -0.303E+04	-0.343E+05 -0.101E+05	-0.916E+02 -0.305E+03
10	-211.44 211.01	0.186E+01 -0.339E+01	-0.139E+02 0.396E+01	0.108E+05 -0.293E+04	-0.385E+05 -0.976E+04	-0.326E+02 -0.108E+03
11	-196.08 230.29	0.181E+01 -0.335E+01	-0.115E+02 0.331E+01	0.108E+05 -0.284E+04	-0.383E+05 -0.945E+04	0.998E+01 0.332E+02
12	-178.98 248.04	0.163E+01 -0.319E+01	-0.121E+02 0.361E+01	0.104E+05 -0.275E+04	-0.369E+05 -0.917E+04	0.387E+02 0.129E+03
13	-160.27 264.09	0.135E+01 -0.289E+01	-0.131E+02 0.406E+01	0.901E+04 -0.266E+04	-0.330E+05 -0.887E+04	0.947E+02 0.315E+03
14	-140.14 278.31	0.102E+01 -0.244E+01	-0.117E+02 0.375E+01	0.586E+04 -0.258E+04	-0.243E+05 -0.858E+04	0.154E+03 0.513E+03
15	-118.75 290.56	0.687E+00 -0.189E+01	-0.101E+02 0.333E+01	0.156E+04 -0.251E+04	-0.125E+05 -0.834E+04	0.184E+03 0.613E+03
16	-96.30 300.73	0.394E+00 -0.128E+01	-0.882E+01 0.297E+01	-0.308E+04 -0.244E+04	-0.164E+05 -0.814E+04	0.185E+03 0.616E+03
17	-72.98 308.74	0.178E+00 -0.692E+00	-0.778E+01 0.210E+01	-0.744E+04 -0.240E+04	-0.279E+05 -0.798E+04	0.163E+03 0.542E+03
18	-49.02 314.51	0.493E-01 -0.206E+00	-0.708E+01 0.161E+01	-0.110E+05 -0.236E+04	-0.373E+05 -0.787E+04	0.123E+03 0.408E+03

19	-24.62	-0.439E-02	-0.622E+01	-0.134E+05	-0.437E+05	0.663E+02
	318.00	0.112E+00	0.114E+01	-0.234E+04	-0.779E+04	0.221E+03
20	0.00	-0.155E-01	-0.583E+01	-0.142E+05	-0.440E+05	-0.376E+01
	319.17	0.215E+00	-0.466E-01	-0.233E+04	-0.776E+04	-0.125E+02
21	24.62	-0.280E-01	-0.625E+01	-0.132E+05	-0.432E+05	-0.735E+02
	318.00	0.860E-01	-0.115E+01	-0.234E+04	-0.779E+04	-0.245E+03
22	49.02	-0.852E-01	-0.710E+01	-0.106E+05	-0.363E+05	-0.129E+03
	314.51	-0.255E+00	-0.162E+01	-0.236E+04	-0.787E+04	-0.430E+03
23	72.98	-0.218E+00	-0.786E+01	-0.692E+04	-0.265E+05	-0.168E+03
	308.74	-0.758E+00	-0.215E+01	-0.240E+04	-0.798E+04	-0.559E+03
24	96.30	-0.438E+00	-0.899E+01	-0.246E+04	-0.147E+05	-0.187E+03
	300.73	-0.135E+01	-0.302E+01	-0.245E+04	-0.814E+04	-0.624E+03
25	118.75	-0.730E+00	-0.103E+02	0.219E+04	-0.142E+05	-0.182E+03
	290.56	-0.196E+01	-0.338E+01	-0.251E+04	-0.835E+04	-0.607E+03
26	140.14	-0.106E+01	-0.119E+02	0.640E+04	-0.257E+05	-0.149E+03
	278.31	-0.251E+01	-0.379E+01	-0.258E+04	-0.860E+04	-0.495E+03
27	160.27	-0.138E+01	-0.134E+02	0.936E+04	-0.339E+05	-0.832E+02
	264.09	-0.294E+01	-0.415E+01	-0.267E+04	-0.889E+04	-0.277E+03
28	178.98	-0.164E+01	-0.121E+02	0.103E+05	-0.369E+05	-0.234E+02
	248.04	-0.322E+01	-0.359E+01	-0.276E+04	-0.920E+04	-0.780E+02
29	196.08	-0.180E+01	-0.112E+02	0.104E+05	-0.372E+05	0.744E+00
	230.29	-0.336E+01	-0.321E+01	-0.285E+04	-0.948E+04	0.248E+01
30	211.44	-0.183E+01	-0.135E+02	0.102E+05	-0.370E+05	0.336E+02
	211.01	-0.338E+01	-0.384E+01	-0.294E+04	-0.978E+04	0.112E+03
31	224.90	-0.173E+01	-0.136E+02	0.861E+04	-0.331E+05	0.858E+02
	190.36	-0.331E+01	-0.375E+01	-0.304E+04	-0.101E+05	0.286E+03
32	236.35	-0.151E+01	-0.136E+02	0.587E+04	-0.261E+05	0.130E+03
	168.54	-0.318E+01	-0.375E+01	-0.314E+04	-0.105E+05	0.432E+03
33	245.70	-0.118E+01	-0.120E+02	0.216E+04	-0.166E+05	0.144E+03
	145.73	-0.303E+01	-0.337E+01	-0.324E+04	-0.108E+05	0.480E+03
34	252.84	-0.801E+00	-0.110E+02	-0.128E+04	-0.145E+05	0.117E+03
	122.14	-0.291E+01	-0.319E+01	-0.334E+04	-0.111E+05	0.389E+03
35	257.73	-0.433E+00	-0.111E+02	-0.362E+04	-0.211E+05	0.705E+02
	97.98	-0.282E+01	-0.287E+01	-0.343E+04	-0.114E+05	0.235E+03
36	260.31	-0.115E+00	-0.116E+02	-0.474E+04	-0.243E+05	0.240E+02
	73.47	-0.278E+01	-0.222E+01	-0.350E+04	-0.116E+05	0.799E+02
37	260.57	0.129E+00	-0.115E+02	-0.474E+04	-0.245E+05	-0.242E+02
	48.82	-0.276E+01	-0.178E+01	-0.355E+04	-0.118E+05	-0.806E+02
38	258.50	0.299E+00	-0.103E+02	-0.343E+04	-0.211E+05	-0.926E+02
	24.26	-0.277E+01	-0.663E+00	-0.357E+04	-0.119E+05	-0.308E+03

39	254.12	0.416E+00	-0.909E+01	0.592E-10	-0.119E+05	-0.177E+03
	0.00	-0.278E+01	0.453E+00	-0.358E+04	-0.119E+05	-0.590E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.37391E-03	-0.37391E-03	.27081	0.00000
2	-0.65503E-03	-0.90338E-04	.47442	0.00000
3	-0.76449E-03	0.24882E-04	.55370	0.00000
4	-0.76275E-03	0.33705E-04	.55244	0.00000
5	-0.66299E-03	-0.51897E-04	.48019	0.00000
6	-0.45344E-03	-0.24377E-03	.32841	0.00000
7	-0.14668E-03	-0.53069E-03	.38436	0.00000
8	0.18827E-03	-0.84418E-03	.61142	0.00000
9	0.44357E-03	-0.10775E-02	.78041	0.00000
10	0.59573E-03	-0.12081E-02	.87502	0.00000
11	0.60733E-03	-0.12004E-02	.86943	0.00000
12	0.58335E-03	-0.11588E-02	.83927	0.00000
13	0.47731E-03	-0.10340E-02	.74889	0.00000
14	0.22221E-03	-0.76096E-03	.55115	0.00000
15	-0.13107E-03	-0.39254E-03	.28431	0.00000
16	-0.51365E-03	0.28149E-05	.37203	0.00000
17	-0.87477E-03	0.37371E-03	.63358	0.00000
18	-0.11703E-02	0.67611E-03	.84763	0.00000
19	-0.13706E-02	0.88163E-03	.99266	0.00000
20	-0.14369E-02	0.94892E-03	1.0407	0.02358
21	-0.13548E-02	0.86573E-03	.98122	0.00000
22	-0.11401E-02	0.64588E-03	.82575	0.00000
23	-0.83136E-03	0.33025E-03	.60214	0.00000
24	-0.46146E-03	-0.49612E-04	.33423	0.00000
25	-0.78264E-04	-0.44582E-03	.32289	0.00000
26	0.26699E-03	-0.80648E-03	.58411	0.00000
27	0.50656E-03	-0.10645E-02	.77098	0.00000
28	0.57959E-03	-0.11567E-02	.83777	0.00000
29	0.57286E-03	-0.11676E-02	.84566	0.00000
30	0.54757E-03	-0.11612E-02	.84101	0.00000
31	0.40522E-03	-0.10399E-02	.75321	0.00000
32	0.16395E-03	-0.82055E-03	.59430	0.00000
33	-0.15826E-03	-0.51981E-03	.37649	0.00000
34	-0.45653E-03	-0.24147E-03	.33065	0.00000
35	-0.66180E-03	-0.54120E-04	.47933	0.00000
36	-0.76260E-03	0.32178E-04	.55233	0.00000
37	-0.76820E-03	0.27035E-04	.55639	0.00000
38	-0.66075E-03	-0.85997E-04	.47857	0.00000
39	-0.37439E-03	-0.37439E-03	.27116	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.30091	0.00000	0.09054
2	-0.29992	-0.16213	0.25208
3	-0.29760	-0.22663	0.31520
4	-0.29335	-0.22866	0.31472
5	-0.28765	-0.17545	0.25819
6	-0.28054	-0.06020	0.13890
7	-0.27256	0.11025	0.18454
8	-0.26392	0.29642	0.36608
9	-0.25508	0.43671	0.50178
10	-0.24642	0.51790	0.57862
11	-0.23864	0.51901	0.57596
12	-0.23153	0.50017	0.55378
13	-0.22399	0.43390	0.48407
14	-0.21678	0.28227	0.32927
15	-0.21069	0.07507	0.11946
16	-0.20555	-0.14828	0.19053
17	-0.20161	-0.35844	0.39909
18	-0.19886	-0.53012	0.56966
19	-0.19673	-0.64661	0.68531
20	-0.19584	-0.68580	0.72415

21	-0.19677	-0.63751	0.67623
22	-0.19886	-0.51276	0.55231
23	-0.20164	-0.33350	0.37416
24	-0.20564	-0.11824	0.16053
25	-0.21088	0.10553	0.15000
26	-0.21708	0.30820	0.35532
27	-0.22449	0.45105	0.50145
28	-0.23222	0.49850	0.55242
29	-0.23931	0.49969	0.55696
30	-0.24690	0.49059	0.55155
31	-0.25540	0.41491	0.48014
32	-0.26420	0.28265	0.35245
33	-0.27284	0.10380	0.17825
34	-0.28086	-0.06175	0.14063
35	-0.28807	-0.17447	0.25745
36	-0.29390	-0.22818	0.31456
37	-0.29823	-0.22832	0.31726
38	-0.30047	-0.16501	0.25530
39	-0.30129	0.00000	0.09077

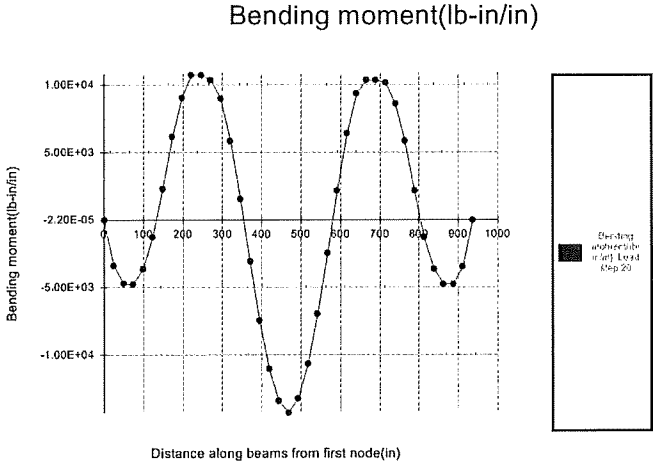
ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 20

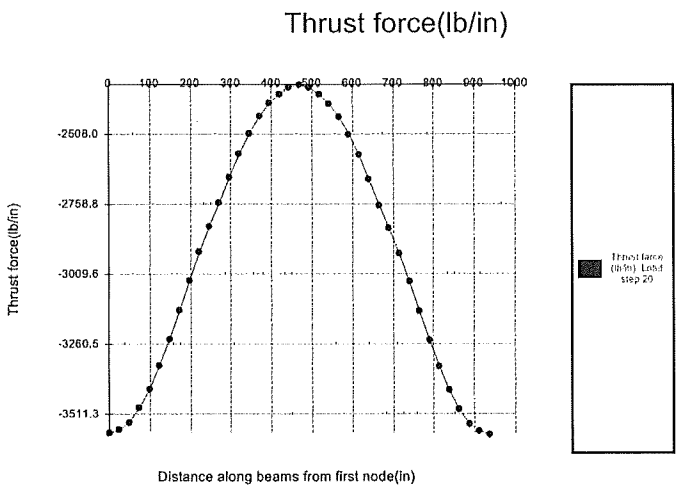
LRFD STRENGTH-LIMIT RATIOS AT STEP 20, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	39	11931.	30800.	0.387
BUCKLING THRUST (psi)	39	11931.	41967.	0.284
SEAM THRUST (psi)	39	11931.	23052.	0.518
PLASTIC-PENETRATE (%)	20	2.36	90.00	0.026
COMBINED T&M Ratio	20	0.724	1.000	0.724

LRFD SERVICE PERFORMANCE AT STEP 20, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.72
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.14
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020





STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD	X-DISP.	N-PRES.	MOMENT	MAX-STRESS	SHEAR
	Y-COORD	Y-DISP.	S-PRES.	THRUST	HOOP-STRESS	S-STRESS
1	-254.12	-0.447E+00	-0.953E+01	0.858E-10	-0.125E+05	0.184E+03
	0.00	-0.285E+01	-0.118E+01	-0.375E+04	-0.125E+05	0.612E+03
2	-258.50	-0.336E+00	-0.109E+02	-0.350E+04	-0.219E+05	0.961E+02
	24.26	-0.284E+01	-0.192E+00	-0.376E+04	-0.125E+05	0.320E+03
3	-260.57	-0.173E+00	-0.122E+02	-0.483E+04	-0.254E+05	0.254E+02
	48.82	-0.283E+01	0.793E+00	-0.376E+04	-0.125E+05	0.844E+02
4	-260.31	0.673E-01	-0.125E+02	-0.482E+04	-0.253E+05	-0.236E+02
	73.47	-0.285E+01	0.122E+01	-0.373E+04	-0.124E+05	-0.785E+02
5	-257.73	0.382E+00	-0.121E+02	-0.373E+04	-0.222E+05	-0.709E+02
	97.98	-0.289E+01	0.203E+01	-0.368E+04	-0.123E+05	-0.236E+03
6	-252.84	0.749E+00	-0.120E+02	-0.138E+04	-0.157E+05	-0.119E+03
	122.14	-0.298E+01	0.279E+01	-0.361E+04	-0.120E+05	-0.395E+03
7	-245.70	0.112E+01	-0.130E+02	0.208E+04	-0.173E+05	-0.147E+03
	145.73	-0.311E+01	0.366E+01	-0.352E+04	-0.117E+05	-0.488E+03
8	-236.35	0.145E+01	-0.147E+02	0.583E+04	-0.269E+05	-0.132E+03
	168.54	-0.325E+01	0.402E+01	-0.341E+04	-0.113E+05	-0.440E+03
9	-224.90	0.169E+01	-0.146E+02	0.862E+04	-0.340E+05	-0.878E+02
	190.36	-0.339E+01	0.402E+01	-0.330E+04	-0.110E+05	-0.292E+03
10	-211.44	0.179E+01	-0.148E+02	0.102E+05	-0.379E+05	-0.312E+02
	211.01	-0.346E+01	0.419E+01	-0.319E+04	-0.106E+05	-0.104E+03
11	-196.08	0.175E+01	-0.124E+02	0.103E+05	-0.377E+05	0.922E+01
	230.29	-0.344E+01	0.356E+01	-0.309E+04	-0.103E+05	0.307E+02

12	-178.98	0.159E+01	-0.128E+02	0.992E+04	-0.365E+05	0.337E+02
	248.04	-0.330E+01	0.378E+01	-0.300E+04	-0.998E+04	0.112E+03
13	-160.27	0.134E+01	-0.139E+02	0.880E+04	-0.332E+05	0.850E+02
	264.09	-0.303E+01	0.429E+01	-0.290E+04	-0.967E+04	0.283E+03
14	-140.14	0.103E+01	-0.127E+02	0.595E+04	-0.253E+05	0.144E+03
	278.31	-0.261E+01	0.404E+01	-0.281E+04	-0.936E+04	0.481E+03
15	-118.75	0.718E+00	-0.111E+02	0.190E+04	-0.142E+05	0.177E+03
	290.56	-0.209E+01	0.365E+01	-0.273E+04	-0.909E+04	0.591E+03
16	-96.30	0.439E+00	-0.965E+01	-0.259E+04	-0.158E+05	0.180E+03
	300.73	-0.151E+01	0.324E+01	-0.266E+04	-0.886E+04	0.600E+03
17	-72.98	0.231E+00	-0.828E+01	-0.683E+04	-0.269E+05	0.155E+03
	308.74	-0.951E+00	0.283E+01	-0.260E+04	-0.866E+04	0.515E+03
18	-49.02	0.106E+00	-0.747E+01	-0.101E+05	-0.355E+05	0.108E+03
	314.51	-0.480E+00	0.259E+01	-0.255E+04	-0.848E+04	0.358E+03
19	-24.62	0.515E-01	-0.720E+01	-0.121E+05	-0.406E+05	0.520E+02
	318.00	-0.161E+00	0.181E+01	-0.250E+04	-0.832E+04	0.173E+03
20	0.00	0.388E-01	-0.770E+01	-0.127E+05	-0.423E+05	0.219E+01
	319.17	-0.363E-01	-0.563E+00	-0.249E+04	-0.828E+04	0.729E+01
21	24.62	0.283E-01	-0.732E+01	-0.124E+05	-0.415E+05	-0.473E+02
	318.00	-0.120E+00	-0.254E+01	-0.252E+04	-0.840E+04	-0.158E+03
22	49.02	-0.204E-01	-0.758E+01	-0.107E+05	-0.371E+05	-0.103E+03
	314.51	-0.403E+00	-0.263E+01	-0.258E+04	-0.859E+04	-0.342E+03
23	72.98	-0.139E+00	-0.823E+01	-0.761E+04	-0.291E+05	-0.152E+03
	308.74	-0.848E+00	-0.281E+01	-0.263E+04	-0.877E+04	-0.507E+03
24	96.30	-0.342E+00	-0.950E+01	-0.344E+04	-0.182E+05	-0.184E+03
	300.73	-0.140E+01	-0.317E+01	-0.269E+04	-0.897E+04	-0.612E+03
25	118.75	-0.620E+00	-0.110E+02	0.122E+04	-0.125E+05	-0.187E+03
	290.56	-0.197E+01	-0.360E+01	-0.276E+04	-0.919E+04	-0.623E+03
26	140.14	-0.942E+00	-0.128E+02	0.565E+04	-0.245E+05	-0.157E+03
	278.31	-0.250E+01	-0.381E+01	-0.284E+04	-0.944E+04	-0.523E+03
27	160.27	-0.126E+01	-0.145E+02	0.889E+04	-0.335E+05	-0.909E+02
	264.09	-0.293E+01	-0.395E+01	-0.292E+04	-0.973E+04	-0.303E+03
28	178.98	-0.152E+01	-0.133E+02	0.101E+05	-0.371E+05	-0.274E+02
	248.04	-0.322E+01	-0.316E+01	-0.300E+04	-0.100E+05	-0.911E+02
29	196.08	-0.168E+01	-0.121E+02	0.103E+05	-0.377E+05	-0.107E+01
	230.29	-0.336E+01	-0.275E+01	-0.308E+04	-0.102E+05	-0.355E+01
30	211.44	-0.173E+01	-0.145E+02	0.102E+05	-0.378E+05	0.333E+02
	211.01	-0.339E+01	-0.348E+01	-0.316E+04	-0.105E+05	0.111E+03
31	224.90	-0.164E+01	-0.145E+02	0.869E+04	-0.340E+05	0.894E+02
	190.36	-0.332E+01	-0.304E+01	-0.325E+04	-0.108E+05	0.298E+03
32	236.35	-0.141E+01	-0.143E+02	0.587E+04	-0.268E+05	0.135E+03

	168.54	-0.319E+01	-0.281E+01	-0.333E+04	-0.111E+05	0.449E+03
33	245.70	-0.109E+01	-0.125E+02	0.209E+04	-0.169E+05	0.147E+03
	145.73	-0.305E+01	-0.241E+01	-0.341E+04	-0.114E+05	0.491E+03
34	252.84	-0.724E+00	-0.115E+02	-0.134E+04	-0.152E+05	0.118E+03
	122.14	-0.292E+01	-0.223E+01	-0.348E+04	-0.116E+05	0.391E+03
35	257.73	-0.365E+00	-0.116E+02	-0.364E+04	-0.215E+05	0.702E+02
	97.98	-0.284E+01	-0.190E+01	-0.354E+04	-0.118E+05	0.234E+03
36	260.31	-0.570E-01	-0.120E+02	-0.474E+04	-0.246E+05	0.240E+02
	73.47	-0.279E+01	-0.127E+01	-0.359E+04	-0.120E+05	0.799E+02
37	260.57	0.178E+00	-0.117E+02	-0.476E+04	-0.248E+05	-0.248E+02
	48.82	-0.278E+01	-0.933E+00	-0.362E+04	-0.121E+05	-0.825E+02
38	258.50	0.338E+00	-0.104E+02	-0.344E+04	-0.213E+05	-0.950E+02
	24.26	-0.279E+01	0.546E-01	-0.363E+04	-0.121E+05	-0.316E+03
39	254.12	0.445E+00	-0.914E+01	0.583E-10	-0.120E+05	-0.182E+03
	0.00	-0.280E+01	0.104E+01	-0.362E+04	-0.120E+05	-0.604E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39156E-03	-0.39156E-03	.28360	0.00000
2	-0.68612E-03	-0.99461E-04	.49694	0.00000
3	-0.79728E-03	0.12486E-04	.57745	0.00000
4	-0.79412E-03	0.14939E-04	.57516	0.00000
5	-0.69741E-03	-0.72037E-04	.50512	0.00000
6	-0.49299E-03	-0.26172E-03	.35706	0.00000
7	-0.19271E-03	-0.54231E-03	.39278	0.00000
8	0.13331E-03	-0.84537E-03	.61228	0.00000
9	0.37834E-03	-0.10671E-02	.77286	0.00000
10	0.52421E-03	-0.11902E-02	.86205	0.00000
11	0.53773E-03	-0.11832E-02	.85695	0.00000
12	0.51890E-03	-0.11455E-02	.82968	0.00000
13	0.43444E-03	-0.10412E-02	.75408	0.00000
14	0.20574E-03	-0.79299E-03	.57434	0.00000
15	-0.12557E-03	-0.44480E-03	.32216	0.00000
16	-0.49559E-03	-0.60392E-04	.35894	0.00000
17	-0.84458E-03	0.30108E-03	.61171	0.00000
18	-0.11142E-02	0.58215E-03	.80697	0.00000
19	-0.12756E-02	0.75336E-03	.92385	0.00000
20	-0.13271E-02	0.80627E-03	.96118	0.00000
21	-0.13011E-02	0.77404E-03	.94235	0.00000
22	-0.11640E-02	0.62506E-03	.84306	0.00000
23	-0.91375E-03	0.36319E-03	.66181	0.00000
24	-0.57013E-03	0.73180E-05	.41293	0.00000
25	-0.18582E-03	-0.39096E-03	.28316	0.00000
26	0.17723E-03	-0.76993E-03	.55764	0.00000
27	0.44083E-03	-0.10514E-02	.76148	0.00000
28	0.53515E-03	-0.11631E-02	.84244	0.00000
29	0.54010E-03	-0.11834E-02	.85708	0.00000
30	0.52763E-03	-0.11876E-02	.86016	0.00000
31	0.38953E-03	-0.10679E-02	.77345	0.00000
32	0.14434E-03	-0.84041E-03	.60869	0.00000
33	-0.18096E-03	-0.53177E-03	.38515	0.00000
34	-0.47646E-03	-0.25126E-03	.34509	0.00000
35	-0.67577E-03	-0.64876E-04	.48945	0.00000
36	-0.77236E-03	0.22163E-04	.55940	0.00000
37	-0.77707E-03	0.20759E-04	.56281	0.00000
38	-0.66778E-03	-0.90044E-04	.48366	0.00000
39	-0.37805E-03	-0.37805E-03	.27381	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31511	0.00000	0.09930
2	-0.31610	-0.16843	0.26835
3	-0.31578	-0.23249	0.33221
4	-0.31352	-0.23228	0.33058
5	-0.30961	-0.17955	0.27540
6	-0.30368	-0.06640	0.15862
7	-0.29576	0.10037	0.18784
8	-0.28651	0.28098	0.36307
9	-0.27713	0.41499	0.49179
10	-0.26799	0.49222	0.56404
11	-0.25971	0.49408	0.56153
12	-0.25214	0.47786	0.54144
13	-0.24413	0.42365	0.48325
14	-0.23629	0.28674	0.34257
15	-0.22950	0.09165	0.14433
16	-0.22371	-0.12495	0.17499
17	-0.21869	-0.32893	0.37675
18	-0.21407	-0.48702	0.53285
19	-0.21012	-0.58251	0.62666
20	-0.20903	-0.61331	0.65700
21	-0.21208	-0.59578	0.64075
22	-0.21686	-0.51365	0.56068
23	-0.22153	-0.36661	0.41569
24	-0.22646	-0.16579	0.21707
25	-0.23208	0.05889	0.11276
26	-0.23849	0.27193	0.32881
27	-0.24566	0.42842	0.48877
28	-0.25269	0.48759	0.55144
29	-0.25883	0.49482	0.56181
30	-0.26556	0.49245	0.56297
31	-0.27296	0.41843	0.49294
32	-0.28008	0.28272	0.36117
33	-0.28678	0.10072	0.18296
34	-0.29282	-0.06465	0.15040
35	-0.29802	-0.17539	0.26421
36	-0.30186	-0.22811	0.31923
37	-0.30432	-0.22906	0.32167
38	-0.30493	-0.16587	0.25885
39	-0.30424	0.00000	0.09256

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	2	12518.	30800.	0.406
BUCKLING THRUST (psi)	2	12518.	43669.	0.287
SEAM THRUST (psi)	2	12518.	23052.	0.543
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	20	0.657	1.000	0.657

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.68

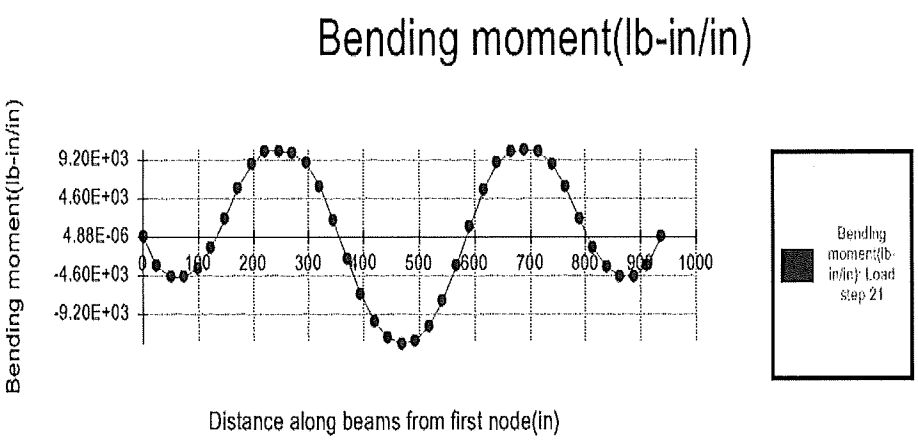
RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

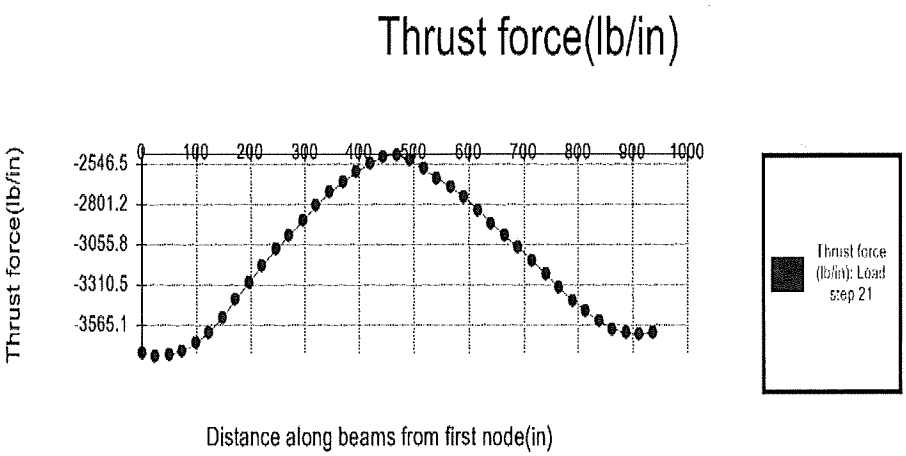
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.14

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020





STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12	-0.487E+00	-0.977E+01	0.713E-10	-0.130E+05	0.192E+03
	0.00	-0.291E+01	-0.211E+01	-0.391E+04	-0.130E+05	0.639E+03
2	-258.50	-0.388E+00	-0.114E+02	-0.363E+04	-0.229E+05	0.986E+02
	24.26	-0.290E+01	-0.118E+01	-0.395E+04	-0.131E+05	0.328E+03
3	-260.57	-0.236E+00	-0.130E+02	-0.495E+04	-0.265E+05	0.240E+02
	48.82	-0.290E+01	-0.256E+00	-0.397E+04	-0.132E+05	0.799E+02
4	-260.31	-0.460E-02	-0.135E+02	-0.489E+04	-0.263E+05	-0.247E+02
	73.47	-0.291E+01	0.202E+00	-0.397E+04	-0.132E+05	-0.824E+02

5	-257.73	0.302E+00	-0.131E+02	-0.380E+04	-0.233E+05	-0.703E+02
	97.98	-0.296E+01	0.119E+01	-0.394E+04	-0.131E+05	-0.234E+03
6	-252.84	0.663E+00	-0.131E+02	-0.148E+04	-0.169E+05	-0.117E+03
	122.14	-0.304E+01	0.235E+01	-0.389E+04	-0.129E+05	-0.389E+03
7	-245.70	0.103E+01	-0.141E+02	0.192E+04	-0.178E+05	-0.143E+03
	145.73	-0.317E+01	0.394E+01	-0.380E+04	-0.126E+05	-0.477E+03
8	-236.35	0.136E+01	-0.157E+02	0.556E+04	-0.271E+05	-0.128E+03
	168.54	-0.332E+01	0.433E+01	-0.368E+04	-0.123E+05	-0.425E+03
9	-224.90	0.160E+01	-0.156E+02	0.821E+04	-0.338E+05	-0.829E+02
	190.36	-0.345E+01	0.430E+01	-0.356E+04	-0.119E+05	-0.276E+03
10	-211.44	0.170E+01	-0.156E+02	0.970E+04	-0.374E+05	-0.284E+02
	211.01	-0.353E+01	0.443E+01	-0.345E+04	-0.115E+05	-0.945E+02
11	-196.08	0.168E+01	-0.134E+02	0.970E+04	-0.371E+05	0.104E+02
	230.29	-0.353E+01	0.384E+01	-0.334E+04	-0.111E+05	0.348E+02
12	-178.98	0.154E+01	-0.134E+02	0.933E+04	-0.358E+05	0.312E+02
	248.04	-0.341E+01	0.395E+01	-0.325E+04	-0.108E+05	0.104E+03
13	-160.27	0.132E+01	-0.146E+02	0.838E+04	-0.329E+05	0.759E+02
	264.09	-0.316E+01	0.448E+01	-0.315E+04	-0.105E+05	0.253E+03
14	-140.14	0.104E+01	-0.136E+02	0.585E+04	-0.258E+05	0.133E+03
	278.31	-0.278E+01	0.431E+01	-0.305E+04	-0.101E+05	0.443E+03
15	-118.75	0.742E+00	-0.121E+02	0.209E+04	-0.154E+05	0.168E+03
	290.56	-0.230E+01	0.395E+01	-0.296E+04	-0.985E+04	0.560E+03
16	-96.30	0.481E+00	-0.104E+02	-0.219E+04	-0.154E+05	0.172E+03
	300.73	-0.176E+01	0.347E+01	-0.288E+04	-0.959E+04	0.573E+03
17	-72.98	0.285E+00	-0.876E+01	-0.616E+04	-0.258E+05	0.141E+03
	308.74	-0.123E+01	0.298E+01	-0.282E+04	-0.938E+04	0.470E+03
18	-49.02	0.165E+00	-0.798E+01	-0.898E+04	-0.332E+05	0.860E+02
	314.51	-0.781E+00	0.275E+01	-0.276E+04	-0.917E+04	0.286E+03
19	-24.62	0.111E+00	-0.863E+01	-0.103E+05	-0.366E+05	0.352E+02
	318.00	-0.467E+00	0.272E+01	-0.269E+04	-0.897E+04	0.117E+03
20	0.00	0.963E-01	-0.102E+02	-0.108E+05	-0.377E+05	0.157E+02
	319.17	-0.318E+00	-0.155E+01	-0.268E+04	-0.893E+04	0.522E+02
21	24.62	0.879E-01	-0.849E+01	-0.113E+05	-0.393E+05	-0.770E+01
	318.00	-0.348E+00	-0.290E+01	-0.274E+04	-0.911E+04	-0.256E+02
22	49.02	0.494E-01	-0.799E+01	-0.107E+05	-0.380E+05	-0.644E+02
	314.51	-0.560E+00	-0.276E+01	-0.280E+04	-0.933E+04	-0.215E+03
23	72.98	-0.521E-01	-0.830E+01	-0.853E+04	-0.323E+05	-0.130E+03
	308.74	-0.937E+00	-0.284E+01	-0.286E+04	-0.954E+04	-0.431E+03
24	96.30	-0.236E+00	-0.972E+01	-0.471E+04	-0.223E+05	-0.179E+03
	300.73	-0.143E+01	-0.325E+01	-0.292E+04	-0.974E+04	-0.597E+03

25	118.75	-0.499E+00	-0.115E+02	0.332E+02	-0.101E+05	-0.195E+03
	290.56	-0.198E+01	-0.378E+01	-0.299E+04	-0.997E+04	-0.651E+03
26	140.14	-0.812E+00	-0.136E+02	0.476E+04	-0.230E+05	-0.171E+03
	278.31	-0.249E+01	-0.421E+01	-0.308E+04	-0.102E+05	-0.569E+03
27	160.27	-0.113E+01	-0.156E+02	0.839E+04	-0.330E+05	-0.104E+03
	264.09	-0.291E+01	-0.384E+01	-0.316E+04	-0.105E+05	-0.348E+03
28	178.98	-0.139E+01	-0.144E+02	0.992E+04	-0.373E+05	-0.358E+02
	248.04	-0.320E+01	-0.271E+01	-0.324E+04	-0.108E+05	-0.119E+03
29	196.08	-0.156E+01	-0.129E+02	0.102E+05	-0.383E+05	-0.623E+01
	230.29	-0.336E+01	-0.230E+01	-0.330E+04	-0.110E+05	-0.207E+02
30	211.44	-0.162E+01	-0.155E+02	0.103E+05	-0.387E+05	0.302E+02
	211.01	-0.339E+01	-0.310E+01	-0.337E+04	-0.112E+05	0.101E+03
31	224.90	-0.153E+01	-0.154E+02	0.878E+04	-0.349E+05	0.908E+02
	190.36	-0.332E+01	-0.224E+01	-0.344E+04	-0.115E+05	0.302E+03
32	236.35	-0.132E+01	-0.150E+02	0.588E+04	-0.274E+05	0.138E+03
	168.54	-0.320E+01	-0.183E+01	-0.351E+04	-0.117E+05	0.459E+03
33	245.70	-0.100E+01	-0.130E+02	0.204E+04	-0.173E+05	0.149E+03
	145.73	-0.306E+01	-0.142E+01	-0.356E+04	-0.119E+05	0.495E+03
34	252.84	-0.645E+00	-0.119E+02	-0.139E+04	-0.157E+05	0.117E+03
	122.14	-0.294E+01	-0.125E+01	-0.361E+04	-0.120E+05	0.389E+03
35	257.73	-0.295E+00	-0.120E+02	-0.365E+04	-0.219E+05	0.692E+02
	97.98	-0.285E+01	-0.903E+00	-0.365E+04	-0.121E+05	0.231E+03
36	260.31	0.297E-02	-0.123E+02	-0.473E+04	-0.249E+05	0.240E+02
	73.47	-0.281E+01	-0.312E+00	-0.367E+04	-0.122E+05	0.800E+02
37	260.57	0.228E+00	-0.119E+02	-0.477E+04	-0.250E+05	-0.245E+02
	48.82	-0.280E+01	-0.785E-01	-0.368E+04	-0.122E+05	-0.816E+02
38	258.50	0.378E+00	-0.106E+02	-0.345E+04	-0.214E+05	-0.952E+02
	24.26	-0.280E+01	0.774E+00	-0.366E+04	-0.122E+05	-0.317E+03
39	254.12	0.475E+00	-0.922E+01	0.301E-10	-0.121E+05	-0.182E+03
	0.00	-0.281E+01	0.163E+01	-0.364E+04	-0.121E+05	-0.606E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40863E-03	-0.40863E-03	.29596	0.00000
2	-0.71704E-03	-0.10783E-03	.51933	0.00000
3	-0.83021E-03	0.85584E-06	.60130	0.00000
4	-0.82509E-03	-0.39524E-05	.59760	0.00000
5	-0.73089E-03	-0.93192E-04	.52937	0.00000
6	-0.53073E-03	-0.28194E-03	.38439	0.00000
7	-0.23602E-03	-0.55743E-03	.40373	0.00000
8	0.81961E-04	-0.85099E-03	.61635	0.00000
9	0.31651E-03	-0.10608E-02	.76831	0.00000
10	0.45307E-03	-0.11734E-02	.84984	0.00000
11	0.46481E-03	-0.11633E-02	.84252	0.00000
12	0.44361E-03	-0.11221E-02	.81268	0.00000
13	0.37387E-03	-0.10314E-02	.74699	0.00000
14	0.17197E-03	-0.80860E-03	.58565	0.00000

15	-0.13375E-03	-0.48433E-03	.35079	0.00000
16	-0.48480E-03	-0.11732E-03	.35113	0.00000
17	-0.81104E-03	0.22261E-03	.58741	0.00000
18	-0.10409E-02	0.46506E-03	.75387	0.00000
19	-0.11473E-02	0.58450E-03	.83098	0.00000
20	-0.11824E-02	0.62074E-03	.85635	0.00000
21	-0.12342E-02	0.66233E-03	.89387	0.00000
22	-0.11927E-02	0.60690E-03	.86382	0.00000
23	-0.10143E-02	0.41594E-03	.73467	0.00000
24	-0.70028E-03	0.89054E-04	.50719	0.00000
25	-0.31013E-03	-0.31570E-03	.22865	0.00000
26	0.78128E-04	-0.72115E-03	.52231	0.00000
27	0.37313E-03	-0.10344E-02	.74922	0.00000
28	0.49371E-03	-0.11708E-02	.84798	0.00000
29	0.51080E-03	-0.12007E-02	.86962	0.00000
30	0.51135E-03	-0.12157E-02	.88052	0.00000
31	0.37658E-03	-0.10963E-02	.79404	0.00000
32	0.12691E-03	-0.85981E-03	.62274	0.00000
33	-0.20127E-03	-0.54326E-03	.39347	0.00000
34	-0.49384E-03	-0.26063E-03	.35768	0.00000
35	-0.68765E-03	-0.74655E-04	.49805	0.00000
36	-0.78033E-03	0.13537E-04	.56518	0.00000
37	-0.78388E-03	0.15642E-04	.56775	0.00000
38	-0.67230E-03	-0.93405E-04	.48693	0.00000
39	-0.38013E-03	-0.38013E-03	.27532	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32884	0.00000	0.10814
2	-0.33191	-0.17491	0.28507
3	-0.33371	-0.23860	0.34997
4	-0.33359	-0.23575	0.34703
5	-0.33159	-0.18309	0.29304
6	-0.32700	-0.07143	0.17836
7	-0.31927	0.09228	0.19421
8	-0.30944	0.26785	0.36361
9	-0.29948	0.39543	0.48512
10	-0.28983	0.46696	0.55096
11	-0.28104	0.46742	0.54640
12	-0.27299	0.44951	0.52403
13	-0.26456	0.40345	0.47344
14	-0.25617	0.28153	0.34715
15	-0.24870	0.10065	0.16250
16	-0.24228	-0.10551	0.16420
17	-0.23677	-0.29676	0.35282
18	-0.23169	-0.43236	0.48603
19	-0.22647	-0.49721	0.54850
20	-0.22544	-0.51849	0.56931
21	-0.23009	-0.54449	0.59743
22	-0.23570	-0.51666	0.57222
23	-0.24079	-0.41064	0.46862
24	-0.24594	-0.22662	0.28711
25	-0.25182	0.00160	0.06501
26	-0.25873	0.22947	0.29642
27	-0.26609	0.40412	0.47492
28	-0.27244	0.47789	0.55211
29	-0.27759	0.49137	0.56843
30	-0.28343	0.49585	0.57618
31	-0.28960	0.42288	0.50675
32	-0.29490	0.28329	0.37026
33	-0.29958	0.09819	0.18793
34	-0.30358	-0.06696	0.15912
35	-0.30673	-0.17599	0.27008
36	-0.30854	-0.22792	0.32312
37	-0.30912	-0.22955	0.32510
38	-0.30810	-0.16620	0.26113
39	-0.30591	0.00000	0.09358

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

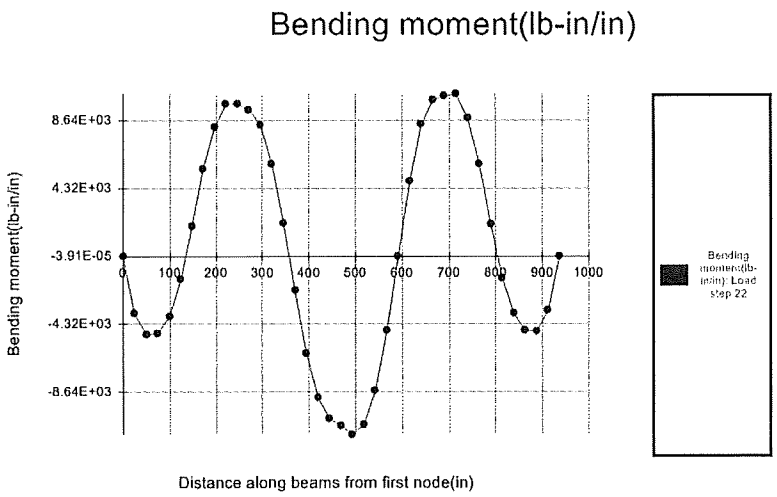
LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

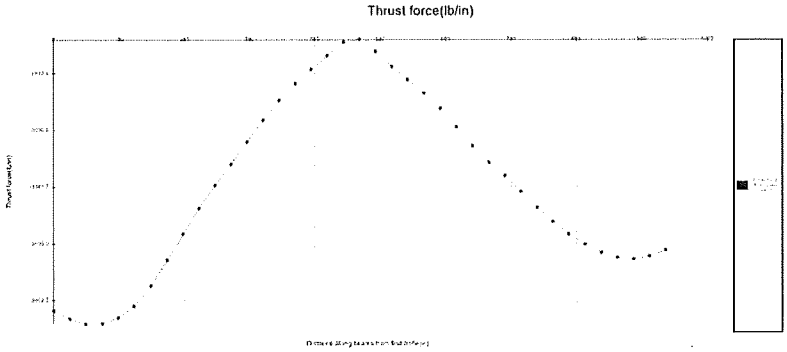
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	3	13215.	30800.	0.429
BUCKLING THRUST (psi)	3	13215.	44526.	0.297
SEAM THRUST (psi)	3	13215.	23052.	0.573
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	21	0.597	1.000	0.597

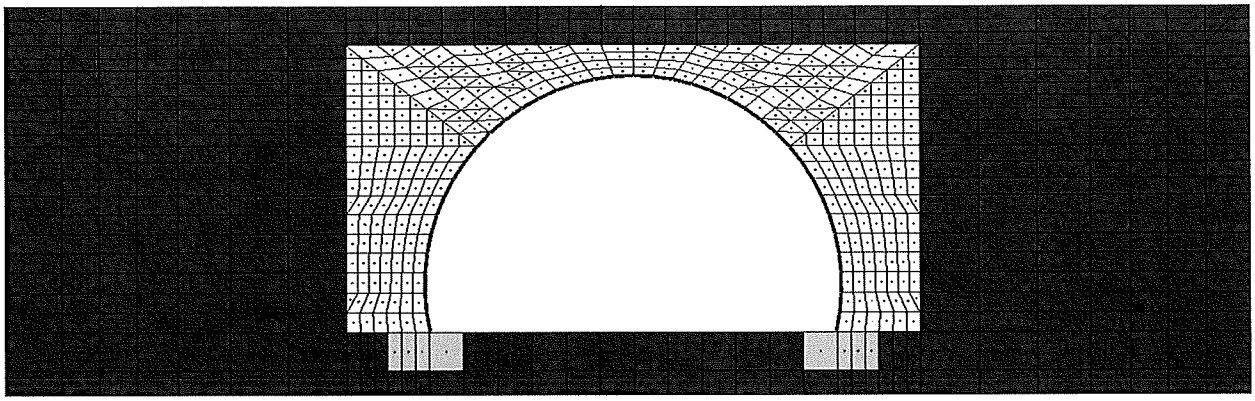
LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.65
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *







*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 7.0ft Cover 5Gage Tandem

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP

AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE........... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION.......... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

- -

REVIEW SYSTEM INPUT DATA

FINITE ELEMENT INPUT CONTROLS (PREP)

THE DATA TO BE RUN IS ENTITLED ...

BRIDGECOR

PRINT AND PLOT CONTROL CODES ...
PRINT CONTROL FOR MESH DATA------------ 3
PLOT FILE CONTROL MESH & RESULS-------- 3
PRINT FINITE ELEMENT RESULTS ---------- 1
INPUT DATA CHECK CODE------------------ 0

BANDWIDTH MINIMIZER IS ON, MINBW------- 1

KEY NUMBERS DESCRIBING MESH ...
THE NUMBER OF LOAD STEPS IS------------ 23
TOTAL NUMBER OF NODES IS--------------- 1245
TOTAL NUMBER OF ELEMENTS IS------------ 1207
TOTAL NUMBER OF BEAM ELEMENTS IS------- 38
MAX NUMBER OF BOUNDARY CONDITIONS IS--- 101

CONTINUOUS LOAD SCALING IS NOT ACTIVATED.

NODAL INPUT DATA TO GENERATE COORDINATES

NODE NUMBER	GENERATE CODE	NODE INCR.	X-AXIS COORD.	Y-AXIS COORD.	SPACING PARAMETER	ARC RADIUS
1	0	1	254.123	0.000	1.00	0.00
2	0	1	258.503	24.256	1.00	0.00
3	0	1	260.573	48.818	1.00	0.00
4	0	1	260.315	73.465	1.00	0.00
5	0	1	257.731	97.978	1.00	0.00
6	0	1	252.844	122.138	1.00	0.00

7	0	1	245.697	145.727	1.00	0.00
8	0	1	236.355	168.537	1.00	0.00
9	0	1	224.901	190.363	1.00	0.00
10	0	1	211.437	211.009	1.00	0.00
11	0	1	196.083	230.292	1.00	0.00
12	0	1	178.978	248.039	1.00	0.00
13	0	1	160.273	264.092	1.00	0.00
14	0	1	140.136	278.307	1.00	0.00
15	0	1	118.747	290.557	1.00	0.00
16	0	1	96.296	300.732	1.00	0.00
17	0	1	72.985	308.742	1.00	0.00
18	0	1	49.022	314.515	1.00	0.00
19	0	1	24.621	318.000	1.00	0.00
20	0	1	0.000	319.165	1.00	0.00
21	0	1	-24.621	318.000	1.00	0.00
22	0	1	-49.022	314.515	1.00	0.00
23	0	1	-72.985	308.742	1.00	0.00
24	0	1	-96.296	300.732	1.00	0.00
25	0	1	-118.747	290.557	1.00	0.00
26	0	1	-140.136	278.307	1.00	0.00
27	0	1	-160.273	264.092	1.00	0.00
28	0	1	-178.978	248.039	1.00	0.00
29	0	1	-196.083	230.292	1.00	0.00
30	0	1	-211.437	211.009	1.00	0.00
31	0	1	-224.901	190.363	1.00	0.00
32	0	1	-236.355	168.537	1.00	0.00
33	0	1	-245.697	145.727	1.00	0.00
34	0	1	-252.844	122.138	1.00	0.00
35	0	1	-257.731	97.978	1.00	0.00
36	0	1	-260.315	73.465	1.00	0.00
37	0	1	-260.573	48.818	1.00	0.00
38	0	1	-258.503	24.256	1.00	0.00
39	0	1	-254.123	0.000	1.00	0.00
40	0	1	258.503	24.256	1.00	0.00
41	0	1	260.573	48.818	1.00	0.00
42	0	1	260.315	73.465	1.00	0.00
43	0	1	257.731	97.978	1.00	0.00
44	0	1	252.844	122.138	1.00	0.00
45	0	1	245.697	145.727	1.00	0.00
46	0	1	236.355	168.537	1.00	0.00
47	0	1	224.901	190.363	1.00	0.00
48	0	1	211.437	211.009	1.00	0.00
49	0	1	196.083	230.292	1.00	0.00
50	0	1	178.978	248.039	1.00	0.00
51	0	1	160.273	264.092	1.00	0.00
52	0	1	140.136	278.307	1.00	0.00
53	0	1	118.747	290.557	1.00	0.00
54	0	1	96.296	300.732	1.00	0.00
55	0	1	72.985	308.742	1.00	0.00
56	0	1	49.022	314.515	1.00	0.00
57	0	1	24.621	318.000	1.00	0.00
58	0	1	0.000	319.165	1.00	0.00
59	0	1	-24.621	318.000	1.00	0.00
60	0	1	-49.022	314.515	1.00	0.00
61	0	1	-72.985	308.742	1.00	0.00
62	0	1	-96.296	300.732	1.00	0.00
63	0	1	-118.747	290.557	1.00	0.00
64	0	1	-140.136	278.307	1.00	0.00
65	0	1	-160.273	264.092	1.00	0.00
66	0	1	-178.978	248.039	1.00	0.00
67	0	1	-196.083	230.292	1.00	0.00
68	0	1	-211.437	211.009	1.00	0.00
69	0	1	-224.901	190.363	1.00	0.00
70	0	1	-236.355	168.537	1.00	0.00
71	0	1	-245.697	145.727	1.00	0.00
72	0	1	-252.844	122.138	1.00	0.00
73	0	1	-257.731	97.978	1.00	0.00
74	0	1	-260.315	73.465	1.00	0.00
75	0	1	-260.573	48.818	1.00	0.00
76	0	1	-258.503	24.256	1.00	0.00
77	0	1	258.503	24.256	1.00	0.00
78	0	1	260.573	48.818	1.00	0.00
79	0	1	260.315	73.465	1.00	0.00
80	0	1	257.731	97.978	1.00	0.00
81	0	1	252.844	122.138	1.00	0.00
82	0	1	245.697	145.727	1.00	0.00
83	0	1	236.355	168.537	1.00	0.00
84	0	1	224.901	190.363	1.00	0.00
85	0	1	211.437	211.009	1.00	0.00
86	0	1	196.083	230.292	1.00	0.00
87	0	1	178.978	248.039	1.00	0.00

88	0	1	160.273	264.092	1.00	0.00
89	0	1	140.136	278.307	1.00	0.00
90	0	1	118.747	290.557	1.00	0.00
91	0	1	96.296	300.732	1.00	0.00
92	0	1	72.985	308.742	1.00	0.00
93	0	1	49.022	314.515	1.00	0.00
94	0	1	24.621	318.000	1.00	0.00
95	0	1	0.000	319.165	1.00	0.00
96	0	1	-24.621	318.000	1.00	0.00
97	0	1	-49.022	314.515	1.00	0.00
98	0	1	-72.985	308.742	1.00	0.00
99	0	1	-96.296	300.732	1.00	0.00
100	0	1	-118.747	290.557	1.00	0.00
101	0	1	-140.136	278.307	1.00	0.00
102	0	1	-160.273	264.092	1.00	0.00
103	0	1	-178.978	248.039	1.00	0.00
104	0	1	-196.083	230.292	1.00	0.00
105	0	1	-211.437	211.009	1.00	0.00
106	0	1	-224.901	190.363	1.00	0.00
107	0	1	-236.355	168.537	1.00	0.00
108	0	1	-245.697	145.727	1.00	0.00
109	0	1	-252.844	122.138	1.00	0.00
110	0	1	-257.731	97.978	1.00	0.00
111	0	1	-260.315	73.465	1.00	0.00
112	0	1	-260.573	48.818	1.00	0.00
113	0	1	-258.503	24.256	1.00	0.00
114	0	1	0.000	355.165	1.00	0.00
115	0	1	0.000	328.165	1.00	0.00
116	0	1	0.000	337.165	1.00	0.00
117	0	1	0.000	346.165	1.00	0.00
118	0	1	0.000	0.000	1.00	0.00
119	0	1	0.000	-47.875	1.00	0.00
120	0	1	356.750	0.000	1.00	0.00
121	0	1	356.750	24.256	1.00	0.00
122	0	1	356.750	48.818	1.00	0.00
123	0	1	356.750	73.465	1.00	0.00
124	0	1	356.750	97.978	1.00	0.00
125	0	1	356.750	122.138	1.00	0.00
126	0	1	356.750	145.727	1.00	0.00
127	0	1	356.750	168.537	1.00	0.00
128	0	1	356.750	190.363	1.00	0.00
129	0	1	356.750	211.009	1.00	0.00
130	0	1	356.750	230.292	1.00	0.00
131	0	1	271.227	0.000	1.00	0.00
132	0	1	288.332	0.000	1.00	0.00
133	0	1	305.436	0.000	1.00	0.00
134	0	1	322.541	0.000	1.00	0.00
135	0	1	339.645	0.000	1.00	0.00
136	0	1	216.167	230.292	1.00	0.00
137	0	1	236.250	230.292	1.00	0.00
138	0	1	256.333	230.292	1.00	0.00
139	0	1	276.417	230.292	1.00	0.00
140	0	1	296.500	230.292	1.00	0.00
141	0	1	316.583	230.292	1.00	0.00
142	0	1	336.667	230.292	1.00	0.00
143	0	1	274.877	24.256	1.00	0.00
144	0	1	291.252	24.256	1.00	0.00
145	0	1	307.626	24.256	1.00	0.00
146	0	1	324.001	24.256	1.00	0.00
147	0	1	340.375	24.256	1.00	0.00
148	0	1	274.313	48.818	1.00	0.00
149	0	1	288.052	48.818	1.00	0.00
150	0	1	301.792	48.818	1.00	0.00
151	0	1	315.531	48.818	1.00	0.00
152	0	1	329.271	48.818	1.00	0.00
153	0	1	343.010	48.818	1.00	0.00
154	0	1	274.092	73.465	1.00	0.00
155	0	1	287.868	73.465	1.00	0.00
156	0	1	301.644	73.465	1.00	0.00
157	0	1	315.421	73.465	1.00	0.00
158	0	1	329.197	73.465	1.00	0.00
159	0	1	342.974	73.465	1.00	0.00
160	0	1	271.877	97.978	1.00	0.00
161	0	1	286.022	97.978	1.00	0.00
162	0	1	300.168	97.978	1.00	0.00
163	0	1	314.313	97.978	1.00	0.00
164	0	1	328.459	97.978	1.00	0.00
165	0	1	342.604	97.978	1.00	0.00
166	0	1	267.688	122.138	1.00	0.00
167	0	1	282.531	122.138	1.00	0.00
168	0	1	297.375	122.138	1.00	0.00

169	0	1	312.219	122.138	1.00	0.00
170	0	1	327.063	122.138	1.00	0.00
171	0	1	341.906	122.138	1.00	0.00
172	0	1	261.562	145.727	1.00	0.00
173	0	1	277.427	145.727	1.00	0.00
174	0	1	293.291	145.727	1.00	0.00
175	0	1	309.156	145.727	1.00	0.00
176	0	1	325.021	145.727	1.00	0.00
177	0	1	340.885	145.727	1.00	0.00
178	0	1	251.404	168.537	1.00	0.00
179	0	1	266.454	168.537	1.00	0.00
180	0	1	281.503	168.537	1.00	0.00
181	0	1	296.552	168.537	1.00	0.00
182	0	1	311.602	168.537	1.00	0.00
183	0	1	326.651	168.537	1.00	0.00
184	0	1	341.701	168.537	1.00	0.00
185	0	1	241.382	190.363	1.00	0.00
186	0	1	257.863	190.363	1.00	0.00
187	0	1	274.344	190.363	1.00	0.00
188	0	1	290.825	190.363	1.00	0.00
189	0	1	307.307	190.363	1.00	0.00
190	0	1	323.788	190.363	1.00	0.00
191	0	1	340.269	190.363	1.00	0.00
192	0	1	229.601	211.009	1.00	0.00
193	0	1	247.765	211.009	1.00	0.00
194	0	1	265.929	211.009	1.00	0.00
195	0	1	284.093	211.009	1.00	0.00
196	0	1	302.258	211.009	1.00	0.00
197	0	1	320.422	211.009	1.00	0.00
198	0	1	338.586	211.009	1.00	0.00
199	0	1	356.750	355.165	1.00	0.00
200	0	1	356.750	245.901	1.00	0.00
201	0	1	356.750	261.510	1.00	0.00
202	0	1	356.750	277.120	1.00	0.00
203	0	1	356.750	292.729	1.00	0.00
204	0	1	356.750	308.338	1.00	0.00
205	0	1	356.750	323.947	1.00	0.00
206	0	1	356.750	339.556	1.00	0.00
207	0	1	216.167	245.901	1.00	0.00
208	0	1	236.250	261.510	1.00	0.00
209	0	1	256.333	277.120	1.00	0.00
210	0	1	276.417	292.729	1.00	0.00
211	0	1	296.500	308.338	1.00	0.00
212	0	1	316.583	323.947	1.00	0.00
213	0	1	336.667	339.556	1.00	0.00
214	0	1	236.250	245.901	1.00	0.00
215	0	1	256.333	245.901	1.00	0.00
216	0	1	276.417	245.901	1.00	0.00
217	0	1	296.500	245.901	1.00	0.00
218	0	1	316.583	245.901	1.00	0.00
219	0	1	336.667	245.901	1.00	0.00
220	0	1	256.333	261.510	1.00	0.00
221	0	1	276.417	261.510	1.00	0.00
222	0	1	296.500	261.510	1.00	0.00
223	0	1	316.583	261.510	1.00	0.00
224	0	1	336.667	261.510	1.00	0.00
225	0	1	276.417	277.120	1.00	0.00
226	0	1	296.500	277.120	1.00	0.00
227	0	1	316.583	277.120	1.00	0.00
228	0	1	336.667	277.120	1.00	0.00
229	0	1	296.500	292.729	1.00	0.00
230	0	1	316.583	292.729	1.00	0.00
231	0	1	336.667	292.729	1.00	0.00
232	0	1	316.583	308.338	1.00	0.00
233	0	1	336.667	308.338	1.00	0.00
234	0	1	336.667	323.947	1.00	0.00
235	0	1	39.639	355.165	1.00	0.00
236	0	1	79.278	355.165	1.00	0.00
237	0	1	118.917	355.165	1.00	0.00
238	0	1	158.556	355.165	1.00	0.00
239	0	1	198.194	355.165	1.00	0.00
240	0	1	237.833	355.165	1.00	0.00
241	0	1	277.472	355.165	1.00	0.00
242	0	1	317.111	355.165	1.00	0.00
243	0	1	28.376	327.291	1.00	0.00
244	0	1	32.130	336.582	1.00	0.00
245	0	1	35.884	345.874	1.00	0.00
246	0	1	56.586	324.678	1.00	0.00
247	0	1	64.150	334.840	1.00	0.00
248	0	1	71.714	345.002	1.00	0.00
249	0	1	82.172	318.027	1.00	0.00

250	0	1	91.358	327.311	1.00	0.00
251	0	1	100.544	336.596	1.00	0.00
252	0	1	109.730	345.880	1.00	0.00
253	0	1	108.748	311.619	1.00	0.00
254	0	1	121.200	322.505	1.00	0.00
255	0	1	133.652	333.392	1.00	0.00
256	0	1	146.104	344.278	1.00	0.00
257	0	1	131.988	301.325	1.00	0.00
258	0	1	145.229	312.093	1.00	0.00
259	0	1	158.471	322.861	1.00	0.00
260	0	1	171.712	333.629	1.00	0.00
261	0	1	184.953	344.397	1.00	0.00
262	0	1	156.419	291.116	1.00	0.00
263	0	1	172.702	303.926	1.00	0.00
264	0	1	188.985	316.736	1.00	0.00
265	0	1	205.268	329.546	1.00	0.00
266	0	1	221.550	342.355	1.00	0.00
267	0	1	177.016	277.102	1.00	0.00
268	0	1	193.759	290.113	1.00	0.00
269	0	1	210.501	303.123	1.00	0.00
270	0	1	227.244	316.134	1.00	0.00
271	0	1	243.987	329.144	1.00	0.00
272	0	1	260.729	342.154	1.00	0.00
273	0	1	196.245	261.430	1.00	0.00
274	0	1	213.511	274.821	1.00	0.00
275	0	1	230.778	288.211	1.00	0.00
276	0	1	248.044	301.602	1.00	0.00
277	0	1	265.311	314.993	1.00	0.00
278	0	1	282.578	328.384	1.00	0.00
279	0	1	299.844	341.774	1.00	0.00
280	0	1	42.354	0.000	1.00	0.00
281	0	1	84.708	0.000	1.00	0.00
282	0	1	127.061	0.000	1.00	0.00
283	0	1	169.415	0.000	1.00	0.00
284	0	1	211.769	0.000	1.00	0.00
285	0	1	254.123	-47.875	1.00	0.00
286	0	1	356.750	-47.875	1.00	0.00
287	0	1	271.227	-47.875	1.00	0.00
288	0	1	288.332	-47.875	1.00	0.00
289	0	1	305.436	-47.875	1.00	0.00
290	0	1	322.541	-47.875	1.00	0.00
291	0	1	339.645	-47.875	1.00	0.00
292	0	1	42.354	-47.875	1.00	0.00
293	0	1	84.708	-47.875	1.00	0.00
294	0	1	127.061	-47.875	1.00	0.00
295	0	1	169.415	-47.875	1.00	0.00
296	0	1	211.769	-47.875	1.00	0.00
297	0	1	-356.750	0.000	1.00	0.00
298	0	1	-356.750	24.256	1.00	0.00
299	0	1	-356.750	48.818	1.00	0.00
300	0	1	-356.750	73.465	1.00	0.00
301	0	1	-356.750	97.978	1.00	0.00
302	0	1	-356.750	122.138	1.00	0.00
303	0	1	-356.750	145.727	1.00	0.00
304	0	1	-356.750	168.537	1.00	0.00
305	0	1	-356.750	190.363	1.00	0.00
306	0	1	-356.750	211.009	1.00	0.00
307	0	1	-356.750	230.292	1.00	0.00
308	0	1	-271.227	0.000	1.00	0.00
309	0	1	-288.332	0.000	1.00	0.00
310	0	1	-305.436	0.000	1.00	0.00
311	0	1	-322.541	0.000	1.00	0.00
312	0	1	-339.645	0.000	1.00	0.00
313	0	1	-216.167	230.292	1.00	0.00
314	0	1	-236.250	230.292	1.00	0.00
315	0	1	-256.333	230.292	1.00	0.00
316	0	1	-276.417	230.292	1.00	0.00
317	0	1	-296.500	230.292	1.00	0.00
318	0	1	-316.583	230.292	1.00	0.00
319	0	1	-336.667	230.292	1.00	0.00
320	0	1	-274.877	24.256	1.00	0.00
321	0	1	-291.252	24.256	1.00	0.00
322	0	1	-307.626	24.256	1.00	0.00
323	0	1	-324.001	24.256	1.00	0.00
324	0	1	-340.375	24.256	1.00	0.00
325	0	1	-274.313	48.818	1.00	0.00
326	0	1	-288.052	48.818	1.00	0.00
327	0	1	-301.792	48.818	1.00	0.00
328	0	1	-315.531	48.818	1.00	0.00
329	0	1	-329.271	48.818	1.00	0.00
330	0	1	-343.010	48.818	1.00	0.00

331	0	1	-274.092	73.465	1.00	0.00
332	0	1	-287.868	73.465	1.00	0.00
333	0	1	-301.644	73.465	1.00	0.00
334	0	1	-315.421	73.465	1.00	0.00
335	0	1	-329.197	73.465	1.00	0.00
336	0	1	-342.974	73.465	1.00	0.00
337	0	1	-271.877	97.978	1.00	0.00
338	0	1	-286.022	97.978	1.00	0.00
339	0	1	-300.168	97.978	1.00	0.00
340	0	1	-314.313	97.978	1.00	0.00
341	0	1	-328.459	97.978	1.00	0.00
342	0	1	-342.604	97.978	1.00	0.00
343	0	1	-267.688	122.138	1.00	0.00
344	0	1	-282.531	122.138	1.00	0.00
345	0	1	-297.375	122.138	1.00	0.00
346	0	1	-312.219	122.138	1.00	0.00
347	0	1	-327.063	122.138	1.00	0.00
348	0	1	-341.906	122.138	1.00	0.00
349	0	1	-261.562	145.727	1.00	0.00
350	0	1	-277.427	145.727	1.00	0.00
351	0	1	-293.291	145.727	1.00	0.00
352	0	1	-309.156	145.727	1.00	0.00
353	0	1	-325.021	145.727	1.00	0.00
354	0	1	-340.885	145.727	1.00	0.00
355	0	1	-251.404	168.537	1.00	0.00
356	0	1	-266.454	168.537	1.00	0.00
357	0	1	-281.503	168.537	1.00	0.00
358	0	1	-296.552	168.537	1.00	0.00
359	0	1	-311.602	168.537	1.00	0.00
360	0	1	-326.651	168.537	1.00	0.00
361	0	1	-341.701	168.537	1.00	0.00
362	0	1	-241.382	190.363	1.00	0.00
363	0	1	-257.863	190.363	1.00	0.00
364	0	1	-274.344	190.363	1.00	0.00
365	0	1	-290.825	190.363	1.00	0.00
366	0	1	-307.307	190.363	1.00	0.00
367	0	1	-323.788	190.363	1.00	0.00
368	0	1	-340.269	190.363	1.00	0.00
369	0	1	-229.601	211.009	1.00	0.00
370	0	1	-247.765	211.009	1.00	0.00
371	0	1	-265.929	211.009	1.00	0.00
372	0	1	-284.093	211.009	1.00	0.00
373	0	1	-302.258	211.009	1.00	0.00
374	0	1	-320.422	211.009	1.00	0.00
375	0	1	-338.586	211.009	1.00	0.00
376	0	1	-356.750	355.165	1.00	0.00
377	0	1	-356.750	245.901	1.00	0.00
378	0	1	-356.750	261.510	1.00	0.00
379	0	1	-356.750	277.120	1.00	0.00
380	0	1	-356.750	292.729	1.00	0.00
381	0	1	-356.750	308.338	1.00	0.00
382	0	1	-356.750	323.947	1.00	0.00
383	0	1	-356.750	339.556	1.00	0.00
384	0	1	-216.167	245.901	1.00	0.00
385	0	1	-236.250	261.510	1.00	0.00
386	0	1	-256.333	277.120	1.00	0.00
387	0	1	-276.417	292.729	1.00	0.00
388	0	1	-296.500	308.338	1.00	0.00
389	0	1	-316.583	323.947	1.00	0.00
390	0	1	-336.667	339.556	1.00	0.00
391	0	1	-236.250	245.901	1.00	0.00
392	0	1	-256.333	245.901	1.00	0.00
393	0	1	-276.417	245.901	1.00	0.00
394	0	1	-296.500	245.901	1.00	0.00
395	0	1	-316.583	245.901	1.00	0.00
396	0	1	-336.667	245.901	1.00	0.00
397	0	1	-256.333	261.510	1.00	0.00
398	0	1	-276.417	261.510	1.00	0.00
399	0	1	-296.500	261.510	1.00	0.00
400	0	1	-316.583	261.510	1.00	0.00
401	0	1	-336.667	261.510	1.00	0.00
402	0	1	-276.417	277.120	1.00	0.00
403	0	1	-296.500	277.120	1.00	0.00
404	0	1	-316.583	277.120	1.00	0.00
405	0	1	-336.667	277.120	1.00	0.00
406	0	1	-296.500	292.729	1.00	0.00
407	0	1	-316.583	292.729	1.00	0.00
408	0	1	-336.667	292.729	1.00	0.00
409	0	1	-316.583	308.338	1.00	0.00
410	0	1	-336.667	308.338	1.00	0.00
411	0	1	-336.667	323.947	1.00	0.00

412	0	1	-39.639	355.165	1.00	0.00
413	0	1	-79.278	355.165	1.00	0.00
414	0	1	-118.917	355.165	1.00	0.00
415	0	1	-158.556	355.165	1.00	0.00
416	0	1	-198.194	355.165	1.00	0.00
417	0	1	-237.833	355.165	1.00	0.00
418	0	1	-277.472	355.165	1.00	0.00
419	0	1	-317.111	355.165	1.00	0.00
420	0	1	-28.376	327.291	1.00	0.00
421	0	1	-32.130	336.582	1.00	0.00
422	0	1	-35.884	345.874	1.00	0.00
423	0	1	-56.586	324.678	1.00	0.00
424	0	1	-64.150	334.840	1.00	0.00
425	0	1	-71.714	345.002	1.00	0.00
426	0	1	-82.172	318.027	1.00	0.00
427	0	1	-91.358	327.311	1.00	0.00
428	0	1	-100.544	336.596	1.00	0.00
429	0	1	-109.730	345.880	1.00	0.00
430	0	1	-108.748	311.619	1.00	0.00
431	0	1	-121.200	322.505	1.00	0.00
432	0	1	-133.652	333.392	1.00	0.00
433	0	1	-146.104	344.278	1.00	0.00
434	0	1	-131.988	301.325	1.00	0.00
435	0	1	-145.229	312.093	1.00	0.00
436	0	1	-158.471	322.861	1.00	0.00
437	0	1	-171.712	333.629	1.00	0.00
438	0	1	-184.953	344.397	1.00	0.00
439	0	1	-156.419	291.116	1.00	0.00
440	0	1	-172.702	303.926	1.00	0.00
441	0	1	-188.985	316.736	1.00	0.00
442	0	1	-205.268	329.546	1.00	0.00
443	0	1	-221.550	342.355	1.00	0.00
444	0	1	-177.016	277.102	1.00	0.00
445	0	1	-193.759	290.113	1.00	0.00
446	0	1	-210.501	303.123	1.00	0.00
447	0	1	-227.244	316.134	1.00	0.00
448	0	1	-243.987	329.144	1.00	0.00
449	0	1	-260.729	342.154	1.00	0.00
450	0	1	-196.245	261.430	1.00	0.00
451	0	1	-213.511	274.821	1.00	0.00
452	0	1	-230.778	288.211	1.00	0.00
453	0	1	-248.044	301.602	1.00	0.00
454	0	1	-265.311	314.993	1.00	0.00
455	0	1	-282.578	328.384	1.00	0.00
456	0	1	-299.844	341.774	1.00	0.00
457	0	1	-42.354	0.000	1.00	0.00
458	0	1	-84.708	0.000	1.00	0.00
459	0	1	-127.061	0.000	1.00	0.00
460	0	1	-169.415	0.000	1.00	0.00
461	0	1	-211.769	0.000	1.00	0.00
462	0	1	-254.123	-47.875	1.00	0.00
463	0	1	-356.750	-47.875	1.00	0.00
464	0	1	-271.227	-47.875	1.00	0.00
465	0	1	-288.332	-47.875	1.00	0.00
466	0	1	-305.436	-47.875	1.00	0.00
467	0	1	-322.541	-47.875	1.00	0.00
468	0	1	-339.645	-47.875	1.00	0.00
469	0	1	-42.354	-47.875	1.00	0.00
470	0	1	-84.708	-47.875	1.00	0.00
471	0	1	-127.061	-47.875	1.00	0.00
472	0	1	-169.415	-47.875	1.00	0.00
473	0	1	-211.769	-47.875	1.00	0.00
474	0	1	-356.750	-100.537	1.00	0.00
475	0	1	-339.645	-100.537	1.00	0.00
476	0	1	-322.541	-100.537	1.00	0.00
477	0	1	-305.436	-100.537	1.00	0.00
478	0	1	-288.332	-100.537	1.00	0.00
479	0	1	-271.227	-100.537	1.00	0.00
480	0	1	-254.123	-100.537	1.00	0.00
481	0	1	-211.769	-100.537	1.00	0.00
482	0	1	-169.415	-100.537	1.00	0.00
483	0	1	-127.061	-100.537	1.00	0.00
484	0	1	-84.708	-100.537	1.00	0.00
485	0	1	-42.354	-100.537	1.00	0.00
486	0	1	0.000	-100.537	1.00	0.00
487	0	1	42.354	-100.537	1.00	0.00
488	0	1	84.708	-100.537	1.00	0.00
489	0	1	127.061	-100.537	1.00	0.00
490	0	1	169.415	-100.537	1.00	0.00
491	0	1	211.769	-100.537	1.00	0.00
492	0	1	254.123	-100.537	1.00	0.00

493	0	1	271.227	-100.537	1.00	0.00
494	0	1	288.332	-100.537	1.00	0.00
495	0	1	305.436	-100.537	1.00	0.00
496	0	1	322.541	-100.537	1.00	0.00
497	0	1	339.645	-100.537	1.00	0.00
498	0	1	356.750	-100.537	1.00	0.00
499	0	1	-356.750	-158.465	1.00	0.00
500	0	1	-339.645	-158.465	1.00	0.00
501	0	1	-322.541	-158.465	1.00	0.00
502	0	1	-305.436	-158.465	1.00	0.00
503	0	1	-288.332	-158.465	1.00	0.00
504	0	1	-271.227	-158.465	1.00	0.00
505	0	1	-254.123	-158.465	1.00	0.00
506	0	1	-211.769	-158.465	1.00	0.00
507	0	1	-169.415	-158.465	1.00	0.00
508	0	1	-127.061	-158.465	1.00	0.00
509	0	1	-84.708	-158.465	1.00	0.00
510	0	1	-42.354	-158.465	1.00	0.00
511	0	1	0.000	-158.465	1.00	0.00
512	0	1	42.354	-158.465	1.00	0.00
513	0	1	84.708	-158.465	1.00	0.00
514	0	1	127.061	-158.465	1.00	0.00
515	0	1	169.415	-158.465	1.00	0.00
516	0	1	211.769	-158.465	1.00	0.00
517	0	1	254.123	-158.465	1.00	0.00
518	0	1	271.227	-158.465	1.00	0.00
519	0	1	288.332	-158.465	1.00	0.00
520	0	1	305.436	-158.465	1.00	0.00
521	0	1	322.541	-158.465	1.00	0.00
522	0	1	339.645	-158.465	1.00	0.00
523	0	1	356.750	-158.465	1.00	0.00
524	0	1	-356.750	-222.187	1.00	0.00
525	0	1	-339.645	-222.187	1.00	0.00
526	0	1	-322.541	-222.187	1.00	0.00
527	0	1	-305.436	-222.187	1.00	0.00
528	0	1	-288.332	-222.187	1.00	0.00
529	0	1	-271.227	-222.187	1.00	0.00
530	0	1	-254.123	-222.187	1.00	0.00
531	0	1	-211.769	-222.187	1.00	0.00
532	0	1	-169.415	-222.187	1.00	0.00
533	0	1	-127.061	-222.187	1.00	0.00
534	0	1	-84.708	-222.187	1.00	0.00
535	0	1	-42.354	-222.187	1.00	0.00
536	0	1	0.000	-222.187	1.00	0.00
537	0	1	42.354	-222.187	1.00	0.00
538	0	1	84.708	-222.187	1.00	0.00
539	0	1	127.061	-222.187	1.00	0.00
540	0	1	169.415	-222.187	1.00	0.00
541	0	1	211.769	-222.187	1.00	0.00
542	0	1	254.123	-222.187	1.00	0.00
543	0	1	271.227	-222.187	1.00	0.00
544	0	1	288.332	-222.187	1.00	0.00
545	0	1	305.436	-222.187	1.00	0.00
546	0	1	322.541	-222.187	1.00	0.00
547	0	1	339.645	-222.187	1.00	0.00
548	0	1	356.750	-222.187	1.00	0.00
549	0	1	-356.750	-292.280	1.00	0.00
550	0	1	-339.645	-292.280	1.00	0.00
551	0	1	-322.541	-292.280	1.00	0.00
552	0	1	-305.436	-292.280	1.00	0.00
553	0	1	-288.332	-292.280	1.00	0.00
554	0	1	-271.227	-292.280	1.00	0.00
555	0	1	-254.123	-292.280	1.00	0.00
556	0	1	-211.769	-292.280	1.00	0.00
557	0	1	-169.415	-292.280	1.00	0.00
558	0	1	-127.061	-292.280	1.00	0.00
559	0	1	-84.708	-292.280	1.00	0.00
560	0	1	-42.354	-292.280	1.00	0.00
561	0	1	0.000	-292.280	1.00	0.00
562	0	1	42.354	-292.280	1.00	0.00
563	0	1	84.708	-292.280	1.00	0.00
564	0	1	127.061	-292.280	1.00	0.00
565	0	1	169.415	-292.280	1.00	0.00
566	0	1	211.769	-292.280	1.00	0.00
567	0	1	254.123	-292.280	1.00	0.00
568	0	1	271.227	-292.280	1.00	0.00
569	0	1	288.332	-292.280	1.00	0.00
570	0	1	305.436	-292.280	1.00	0.00
571	0	1	322.541	-292.280	1.00	0.00
572	0	1	339.645	-292.280	1.00	0.00
573	0	1	356.750	-292.280	1.00	0.00

574	0	1	-356.750	-369.383	1.00	0.00
575	0	1	-339.645	-369.383	1.00	0.00
576	0	1	-322.541	-369.383	1.00	0.00
577	0	1	-305.436	-369.383	1.00	0.00
578	0	1	-288.332	-369.383	1.00	0.00
579	0	1	-271.227	-369.383	1.00	0.00
580	0	1	-254.123	-369.383	1.00	0.00
581	0	1	-211.769	-369.383	1.00	0.00
582	0	1	-169.415	-369.383	1.00	0.00
583	0	1	-127.061	-369.383	1.00	0.00
584	0	1	-84.708	-369.383	1.00	0.00
585	0	1	-42.354	-369.383	1.00	0.00
586	0	1	0.000	-369.383	1.00	0.00
587	0	1	42.354	-369.383	1.00	0.00
588	0	1	84.708	-369.383	1.00	0.00
589	0	1	127.061	-369.383	1.00	0.00
590	0	1	169.415	-369.383	1.00	0.00
591	0	1	211.769	-369.383	1.00	0.00
592	0	1	254.123	-369.383	1.00	0.00
593	0	1	271.227	-369.383	1.00	0.00
594	0	1	288.332	-369.383	1.00	0.00
595	0	1	305.436	-369.383	1.00	0.00
596	0	1	322.541	-369.383	1.00	0.00
597	0	1	339.645	-369.383	1.00	0.00
598	0	1	356.750	-369.383	1.00	0.00
599	0	1	-430.215	-369.383	1.00	0.00
600	0	1	-430.215	-292.280	1.00	0.00
601	0	1	-430.215	-222.187	1.00	0.00
602	0	1	-430.215	-158.465	1.00	0.00
603	0	1	-430.215	-100.537	1.00	0.00
604	0	1	-430.215	-47.875	1.00	0.00
605	0	1	-430.215	0.000	1.00	0.00
606	0	1	-430.215	24.256	1.00	0.00
607	0	1	-430.215	48.818	1.00	0.00
608	0	1	-430.215	73.465	1.00	0.00
609	0	1	-430.215	97.978	1.00	0.00
610	0	1	-430.215	122.138	1.00	0.00
611	0	1	-430.215	145.727	1.00	0.00
612	0	1	-430.215	168.537	1.00	0.00
613	0	1	-430.215	190.363	1.00	0.00
614	0	1	-430.215	211.009	1.00	0.00
615	0	1	-430.215	230.292	1.00	0.00
616	0	1	-430.215	245.901	1.00	0.00
617	0	1	-430.215	261.510	1.00	0.00
618	0	1	-430.215	277.120	1.00	0.00
619	0	1	-430.215	292.729	1.00	0.00
620	0	1	-430.215	308.338	1.00	0.00
621	0	1	-430.215	323.947	1.00	0.00
622	0	1	-430.215	339.556	1.00	0.00
623	0	1	-430.215	355.165	1.00	0.00
624	0	1	-502.477	-369.383	1.00	0.00
625	0	1	-502.477	-292.280	1.00	0.00
626	0	1	-502.477	-222.187	1.00	0.00
627	0	1	-502.477	-158.465	1.00	0.00
628	0	1	-502.477	-100.537	1.00	0.00
629	0	1	-502.477	-47.875	1.00	0.00
630	0	1	-502.477	0.000	1.00	0.00
631	0	1	-502.477	24.256	1.00	0.00
632	0	1	-502.477	48.818	1.00	0.00
633	0	1	-502.477	73.465	1.00	0.00
634	0	1	-502.477	97.978	1.00	0.00
635	0	1	-502.477	122.138	1.00	0.00
636	0	1	-502.477	145.727	1.00	0.00
637	0	1	-502.477	168.537	1.00	0.00
638	0	1	-502.477	190.363	1.00	0.00
639	0	1	-502.477	211.009	1.00	0.00
640	0	1	-502.477	230.292	1.00	0.00
641	0	1	-502.477	245.901	1.00	0.00
642	0	1	-502.477	261.510	1.00	0.00
643	0	1	-502.477	277.120	1.00	0.00
644	0	1	-502.477	292.729	1.00	0.00
645	0	1	-502.477	308.338	1.00	0.00
646	0	1	-502.477	323.947	1.00	0.00
647	0	1	-502.477	339.556	1.00	0.00
648	0	1	-502.477	355.165	1.00	0.00
649	0	1	-567.759	-369.383	1.00	0.00
650	0	1	-567.759	-292.280	1.00	0.00
651	0	1	-567.759	-222.187	1.00	0.00
652	0	1	-567.759	-158.465	1.00	0.00
653	0	1	-567.759	-100.537	1.00	0.00
654	0	1	-567.759	-47.875	1.00	0.00

655	0	1	-567.759	0.000	1.00	0.00
656	0	1	-567.759	24.256	1.00	0.00
657	0	1	-567.759	48.818	1.00	0.00
658	0	1	-567.759	73.465	1.00	0.00
659	0	1	-567.759	97.978	1.00	0.00
660	0	1	-567.759	122.138	1.00	0.00
661	0	1	-567.759	145.727	1.00	0.00
662	0	1	-567.759	168.537	1.00	0.00
663	0	1	-567.759	190.363	1.00	0.00
664	0	1	-567.759	211.009	1.00	0.00
665	0	1	-567.759	230.292	1.00	0.00
666	0	1	-567.759	245.901	1.00	0.00
667	0	1	-567.759	261.510	1.00	0.00
668	0	1	-567.759	277.120	1.00	0.00
669	0	1	-567.759	292.729	1.00	0.00
670	0	1	-567.759	308.338	1.00	0.00
671	0	1	-567.759	323.947	1.00	0.00
672	0	1	-567.759	339.556	1.00	0.00
673	0	1	-567.759	355.165	1.00	0.00
674	0	1	-618.260	-369.383	1.00	0.00
675	0	1	-618.260	-292.280	1.00	0.00
676	0	1	-618.260	-222.187	1.00	0.00
677	0	1	-618.260	-158.465	1.00	0.00
678	0	1	-618.260	-100.537	1.00	0.00
679	0	1	-618.260	-47.875	1.00	0.00
680	0	1	-618.260	0.000	1.00	0.00
681	0	1	-618.260	24.256	1.00	0.00
682	0	1	-618.260	48.818	1.00	0.00
683	0	1	-618.260	73.465	1.00	0.00
684	0	1	-618.260	97.978	1.00	0.00
685	0	1	-618.260	122.138	1.00	0.00
686	0	1	-618.260	145.727	1.00	0.00
687	0	1	-618.260	168.537	1.00	0.00
688	0	1	-618.260	190.363	1.00	0.00
689	0	1	-618.260	211.009	1.00	0.00
690	0	1	-618.260	230.292	1.00	0.00
691	0	1	-618.260	245.901	1.00	0.00
692	0	1	-618.260	261.510	1.00	0.00
693	0	1	-618.260	277.120	1.00	0.00
694	0	1	-618.260	292.729	1.00	0.00
695	0	1	-618.260	308.338	1.00	0.00
696	0	1	-618.260	323.947	1.00	0.00
697	0	1	-618.260	339.556	1.00	0.00
698	0	1	-618.260	355.165	1.00	0.00
699	0	1	-665.088	-369.383	1.00	0.00
700	0	1	-665.088	-292.280	1.00	0.00
701	0	1	-665.088	-222.187	1.00	0.00
702	0	1	-665.088	-158.465	1.00	0.00
703	0	1	-665.088	-100.537	1.00	0.00
704	0	1	-665.088	-47.875	1.00	0.00
705	0	1	-665.088	0.000	1.00	0.00
706	0	1	-665.088	24.256	1.00	0.00
707	0	1	-665.088	48.818	1.00	0.00
708	0	1	-665.088	73.465	1.00	0.00
709	0	1	-665.088	97.978	1.00	0.00
710	0	1	-665.088	122.138	1.00	0.00
711	0	1	-665.088	145.727	1.00	0.00
712	0	1	-665.088	168.537	1.00	0.00
713	0	1	-665.088	190.363	1.00	0.00
714	0	1	-665.088	211.009	1.00	0.00
715	0	1	-665.088	230.292	1.00	0.00
716	0	1	-665.088	245.901	1.00	0.00
717	0	1	-665.088	261.510	1.00	0.00
718	0	1	-665.088	277.120	1.00	0.00
719	0	1	-665.088	292.729	1.00	0.00
720	0	1	-665.088	308.338	1.00	0.00
721	0	1	-665.088	323.947	1.00	0.00
722	0	1	-665.088	339.556	1.00	0.00
723	0	1	-665.088	355.165	1.00	0.00
724	0	1	-711.915	-369.383	1.00	0.00
725	0	1	-711.915	-292.280	1.00	0.00
726	0	1	-711.915	-222.187	1.00	0.00
727	0	1	-711.915	-158.465	1.00	0.00
728	0	1	-711.915	-100.537	1.00	0.00
729	0	1	-711.915	-47.875	1.00	0.00
730	0	1	-711.915	0.000	1.00	0.00
731	0	1	-711.915	24.256	1.00	0.00
732	0	1	-711.915	48.818	1.00	0.00
733	0	1	-711.915	73.465	1.00	0.00
734	0	1	-711.915	97.978	1.00	0.00
735	0	1	-711.915	122.138	1.00	0.00

736	0	1	-711.915	145.727	1.00	0.00
737	0	1	-711.915	168.537	1.00	0.00
738	0	1	-711.915	190.363	1.00	0.00
739	0	1	-711.915	211.009	1.00	0.00
740	0	1	-711.915	230.292	1.00	0.00
741	0	1	-711.915	245.901	1.00	0.00
742	0	1	-711.915	261.510	1.00	0.00
743	0	1	-711.915	277.120	1.00	0.00
744	0	1	-711.915	292.729	1.00	0.00
745	0	1	-711.915	308.338	1.00	0.00
746	0	1	-711.915	323.947	1.00	0.00
747	0	1	-711.915	339.556	1.00	0.00
748	0	1	-711.915	355.165	1.00	0.00
749	0	1	-381.006	24.256	1.00	0.00
750	0	1	-405.568	48.818	1.00	0.00
751	0	1	-454.728	97.978	1.00	0.00
752	0	1	-478.888	122.138	1.00	0.00
753	0	1	-525.287	168.537	1.00	0.00
754	0	1	-547.113	190.363	1.00	0.00
755	0	1	-587.042	230.292	1.00	0.00
756	0	1	-602.651	245.901	1.00	0.00
757	0	1	-633.870	277.120	1.00	0.00
758	0	1	-649.479	292.729	1.00	0.00
759	0	1	-680.697	323.947	1.00	0.00
760	0	1	-696.306	339.556	1.00	0.00
761	0	1	-791.915	-369.383	1.00	0.00
762	0	1	-791.915	-292.280	1.00	0.00
763	0	1	-791.915	-222.187	1.00	0.00
764	0	1	-791.915	-158.465	1.00	0.00
765	0	1	-791.915	-100.537	1.00	0.00
766	0	1	-791.915	-47.875	1.00	0.00
767	0	1	-791.915	0.000	1.00	0.00
768	0	1	-791.915	24.256	1.00	0.00
769	0	1	-791.915	48.818	1.00	0.00
770	0	1	-791.915	73.465	1.00	0.00
771	0	1	-791.915	97.978	1.00	0.00
772	0	1	-791.915	122.138	1.00	0.00
773	0	1	-791.915	145.727	1.00	0.00
774	0	1	-791.915	168.537	1.00	0.00
775	0	1	-791.915	190.363	1.00	0.00
776	0	1	-791.915	211.009	1.00	0.00
777	0	1	-791.915	230.292	1.00	0.00
778	0	1	-791.915	245.901	1.00	0.00
779	0	1	-791.915	261.510	1.00	0.00
780	0	1	-791.915	277.120	1.00	0.00
781	0	1	-791.915	292.729	1.00	0.00
782	0	1	-791.915	308.338	1.00	0.00
783	0	1	-791.915	323.947	1.00	0.00
784	0	1	-791.915	339.556	1.00	0.00
785	0	1	-791.915	355.165	1.00	0.00
786	0	1	-871.915	-369.383	1.00	0.00
787	0	1	-871.915	-292.280	1.00	0.00
788	0	1	-871.915	-222.187	1.00	0.00
789	0	1	-871.915	-158.465	1.00	0.00
790	0	1	-871.915	-100.537	1.00	0.00
791	0	1	-871.915	-47.875	1.00	0.00
792	0	1	-871.915	0.000	1.00	0.00
793	0	1	-871.915	24.256	1.00	0.00
794	0	1	-871.915	48.818	1.00	0.00
795	0	1	-871.915	73.465	1.00	0.00
796	0	1	-871.915	97.978	1.00	0.00
797	0	1	-871.915	122.138	1.00	0.00
798	0	1	-871.915	145.727	1.00	0.00
799	0	1	-871.915	168.537	1.00	0.00
800	0	1	-871.915	190.363	1.00	0.00
801	0	1	-871.915	211.009	1.00	0.00
802	0	1	-871.915	230.292	1.00	0.00
803	0	1	-871.915	245.901	1.00	0.00
804	0	1	-871.915	261.510	1.00	0.00
805	0	1	-871.915	277.120	1.00	0.00
806	0	1	-871.915	292.729	1.00	0.00
807	0	1	-871.915	308.338	1.00	0.00
808	0	1	-871.915	323.947	1.00	0.00
809	0	1	-871.915	339.556	1.00	0.00
810	0	1	-871.915	355.165	1.00	0.00
811	0	1	-951.915	-369.383	1.00	0.00
812	0	1	-951.915	-292.280	1.00	0.00
813	0	1	-951.915	-222.187	1.00	0.00
814	0	1	-951.915	-158.465	1.00	0.00
815	0	1	-951.915	-100.537	1.00	0.00
816	0	1	-951.915	-47.875	1.00	0.00

817	0	1	-951.915	0.000	1.00	0.00
818	0	1	-951.915	24.256	1.00	0.00
819	0	1	-951.915	48.818	1.00	0.00
820	0	1	-951.915	73.465	1.00	0.00
821	0	1	-951.915	97.978	1.00	0.00
822	0	1	-951.915	122.138	1.00	0.00
823	0	1	-951.915	145.727	1.00	0.00
824	0	1	-951.915	168.537	1.00	0.00
825	0	1	-951.915	190.363	1.00	0.00
826	0	1	-951.915	211.009	1.00	0.00
827	0	1	-951.915	230.292	1.00	0.00
828	0	1	-951.915	245.901	1.00	0.00
829	0	1	-951.915	261.510	1.00	0.00
830	0	1	-951.915	277.120	1.00	0.00
831	0	1	-951.915	292.729	1.00	0.00
832	0	1	-951.915	308.338	1.00	0.00
833	0	1	-951.915	323.947	1.00	0.00
834	0	1	-951.915	339.556	1.00	0.00
835	0	1	-951.915	355.165	1.00	0.00
836	0	1	-1031.915	-369.383	1.00	0.00
837	0	1	-1031.915	-292.280	1.00	0.00
838	0	1	-1031.915	-222.187	1.00	0.00
839	0	1	-1031.915	-158.465	1.00	0.00
840	0	1	-1031.915	-100.537	1.00	0.00
841	0	1	-1031.915	-47.875	1.00	0.00
842	0	1	-1031.915	0.000	1.00	0.00
843	0	1	-1031.915	24.256	1.00	0.00
844	0	1	-1031.915	48.818	1.00	0.00
845	0	1	-1031.915	73.465	1.00	0.00
846	0	1	-1031.915	97.978	1.00	0.00
847	0	1	-1031.915	122.138	1.00	0.00
848	0	1	-1031.915	145.727	1.00	0.00
849	0	1	-1031.915	168.537	1.00	0.00
850	0	1	-1031.915	190.363	1.00	0.00
851	0	1	-1031.915	211.009	1.00	0.00
852	0	1	-1031.915	230.292	1.00	0.00
853	0	1	-1031.915	245.901	1.00	0.00
854	0	1	-1031.915	261.510	1.00	0.00
855	0	1	-1031.915	277.120	1.00	0.00
856	0	1	-1031.915	292.729	1.00	0.00
857	0	1	-1031.915	308.338	1.00	0.00
858	0	1	-1031.915	323.947	1.00	0.00
859	0	1	-1031.915	339.556	1.00	0.00
860	0	1	-1031.915	355.165	1.00	0.00
861	0	1	430.215	-369.383	1.00	0.00
862	0	1	430.215	-292.280	1.00	0.00
863	0	1	430.215	-222.187	1.00	0.00
864	0	1	430.215	-158.465	1.00	0.00
865	0	1	430.215	-100.537	1.00	0.00
866	0	1	430.215	-47.875	1.00	0.00
867	0	1	430.215	0.000	1.00	0.00
868	0	1	430.215	24.256	1.00	0.00
869	0	1	430.215	48.818	1.00	0.00
870	0	1	430.215	73.465	1.00	0.00
871	0	1	430.215	97.978	1.00	0.00
872	0	1	430.215	122.138	1.00	0.00
873	0	1	430.215	145.727	1.00	0.00
874	0	1	430.215	168.537	1.00	0.00
875	0	1	430.215	190.363	1.00	0.00
876	0	1	430.215	211.009	1.00	0.00
877	0	1	430.215	230.292	1.00	0.00
878	0	1	430.215	245.901	1.00	0.00
879	0	1	430.215	261.510	1.00	0.00
880	0	1	430.215	277.120	1.00	0.00
881	0	1	430.215	292.729	1.00	0.00
882	0	1	430.215	308.338	1.00	0.00
883	0	1	430.215	323.947	1.00	0.00
884	0	1	430.215	339.556	1.00	0.00
885	0	1	430.215	355.165	1.00	0.00
886	0	1	502.477	-369.383	1.00	0.00
887	0	1	502.477	-292.280	1.00	0.00
888	0	1	502.477	-222.187	1.00	0.00
889	0	1	502.477	-158.465	1.00	0.00
890	0	1	502.477	-100.537	1.00	0.00
891	0	1	502.477	-47.875	1.00	0.00
892	0	1	502.477	0.000	1.00	0.00
893	0	1	502.477	24.256	1.00	0.00
894	0	1	502.477	48.818	1.00	0.00
895	0	1	502.477	73.465	1.00	0.00
896	0	1	502.477	97.978	1.00	0.00
897	0	1	502.477	122.138	1.00	0.00

898	0	1	502.477	145.727	1.00	0.00
899	0	1	502.477	168.537	1.00	0.00
900	0	1	502.477	190.363	1.00	0.00
901	0	1	502.477	211.009	1.00	0.00
902	0	1	502.477	230.292	1.00	0.00
903	0	1	502.477	245.901	1.00	0.00
904	0	1	502.477	261.510	1.00	0.00
905	0	1	502.477	277.120	1.00	0.00
906	0	1	502.477	292.729	1.00	0.00
907	0	1	502.477	308.338	1.00	0.00
908	0	1	502.477	323.947	1.00	0.00
909	0	1	502.477	339.556	1.00	0.00
910	0	1	502.477	355.165	1.00	0.00
911	0	1	567.759	-369.383	1.00	0.00
912	0	1	567.759	-292.280	1.00	0.00
913	0	1	567.759	-222.187	1.00	0.00
914	0	1	567.759	-158.465	1.00	0.00
915	0	1	567.759	-100.537	1.00	0.00
916	0	1	567.759	-47.875	1.00	0.00
917	0	1	567.759	0.000	1.00	0.00
918	0	1	567.759	24.256	1.00	0.00
919	0	1	567.759	48.818	1.00	0.00
920	0	1	567.759	73.465	1.00	0.00
921	0	1	567.759	97.978	1.00	0.00
922	0	1	567.759	122.138	1.00	0.00
923	0	1	567.759	145.727	1.00	0.00
924	0	1	567.759	168.537	1.00	0.00
925	0	1	567.759	190.363	1.00	0.00
926	0	1	567.759	211.009	1.00	0.00
927	0	1	567.759	230.292	1.00	0.00
928	0	1	567.759	245.901	1.00	0.00
929	0	1	567.759	261.510	1.00	0.00
930	0	1	567.759	277.120	1.00	0.00
931	0	1	567.759	292.729	1.00	0.00
932	0	1	567.759	308.338	1.00	0.00
933	0	1	567.759	323.947	1.00	0.00
934	0	1	567.759	339.556	1.00	0.00
935	0	1	567.759	355.165	1.00	0.00
936	0	1	618.260	-369.383	1.00	0.00
937	0	1	618.260	-292.280	1.00	0.00
938	0	1	618.260	-222.187	1.00	0.00
939	0	1	618.260	-158.465	1.00	0.00
940	0	1	618.260	-100.537	1.00	0.00
941	0	1	618.260	-47.875	1.00	0.00
942	0	1	618.260	0.000	1.00	0.00
943	0	1	618.260	24.256	1.00	0.00
944	0	1	618.260	48.818	1.00	0.00
945	0	1	618.260	73.465	1.00	0.00
946	0	1	618.260	97.978	1.00	0.00
947	0	1	618.260	122.138	1.00	0.00
948	0	1	618.260	145.727	1.00	0.00
949	0	1	618.260	168.537	1.00	0.00
950	0	1	618.260	190.363	1.00	0.00
951	0	1	618.260	211.009	1.00	0.00
952	0	1	618.260	230.292	1.00	0.00
953	0	1	618.260	245.901	1.00	0.00
954	0	1	618.260	261.510	1.00	0.00
955	0	1	618.260	277.120	1.00	0.00
956	0	1	618.260	292.729	1.00	0.00
957	0	1	618.260	308.338	1.00	0.00
958	0	1	618.260	323.947	1.00	0.00
959	0	1	618.260	339.556	1.00	0.00
960	0	1	618.260	355.165	1.00	0.00
961	0	1	665.088	-369.383	1.00	0.00
962	0	1	665.088	-292.280	1.00	0.00
963	0	1	665.088	-222.187	1.00	0.00
964	0	1	665.088	-158.465	1.00	0.00
965	0	1	665.088	-100.537	1.00	0.00
966	0	1	665.088	-47.875	1.00	0.00
967	0	1	665.088	0.000	1.00	0.00
968	0	1	665.088	24.256	1.00	0.00
969	0	1	665.088	48.818	1.00	0.00
970	0	1	665.088	73.465	1.00	0.00
971	0	1	665.088	97.978	1.00	0.00
972	0	1	665.088	122.138	1.00	0.00
973	0	1	665.088	145.727	1.00	0.00
974	0	1	665.088	168.537	1.00	0.00
975	0	1	665.088	190.363	1.00	0.00
976	0	1	665.088	211.009	1.00	0.00
977	0	1	665.088	230.292	1.00	0.00
978	0	1	665.088	245.901	1.00	0.00

979	0	1	665.088	261.510	1.00	0.00
980	0	1	665.088	277.120	1.00	0.00
981	0	1	665.088	292.729	1.00	0.00
982	0	1	665.088	308.338	1.00	0.00
983	0	1	665.088	323.947	1.00	0.00
984	0	1	665.088	339.556	1.00	0.00
985	0	1	665.088	355.165	1.00	0.00
986	0	1	711.915	-369.383	1.00	0.00
987	0	1	711.915	-292.280	1.00	0.00
988	0	1	711.915	-222.187	1.00	0.00
989	0	1	711.915	-158.465	1.00	0.00
990	0	1	711.915	-100.537	1.00	0.00
991	0	1	711.915	-47.875	1.00	0.00
992	0	1	711.915	0.000	1.00	0.00
993	0	1	711.915	24.256	1.00	0.00
994	0	1	711.915	48.818	1.00	0.00
995	0	1	711.915	73.465	1.00	0.00
996	0	1	711.915	97.978	1.00	0.00
997	0	1	711.915	122.138	1.00	0.00
998	0	1	711.915	145.727	1.00	0.00
999	0	1	711.915	168.537	1.00	0.00
1000	0	1	711.915	190.363	1.00	0.00
1001	0	1	711.915	211.009	1.00	0.00
1002	0	1	711.915	230.292	1.00	0.00
1003	0	1	711.915	245.901	1.00	0.00
1004	0	1	711.915	261.510	1.00	0.00
1005	0	1	711.915	277.120	1.00	0.00
1006	0	1	711.915	292.729	1.00	0.00
1007	0	1	711.915	308.338	1.00	0.00
1008	0	1	711.915	323.947	1.00	0.00
1009	0	1	711.915	339.556	1.00	0.00
1010	0	1	711.915	355.165	1.00	0.00
1011	0	1	381.006	24.256	1.00	0.00
1012	0	1	405.568	48.818	1.00	0.00
1013	0	1	454.728	97.978	1.00	0.00
1014	0	1	478.888	122.138	1.00	0.00
1015	0	1	525.287	168.537	1.00	0.00
1016	0	1	547.113	190.363	1.00	0.00
1017	0	1	587.042	230.292	1.00	0.00
1018	0	1	602.651	245.901	1.00	0.00
1019	0	1	633.870	277.120	1.00	0.00
1020	0	1	649.479	292.729	1.00	0.00
1021	0	1	680.697	323.947	1.00	0.00
1022	0	1	696.306	339.556	1.00	0.00
1023	0	1	791.915	-369.383	1.00	0.00
1024	0	1	791.915	-292.280	1.00	0.00
1025	0	1	791.915	-222.187	1.00	0.00
1026	0	1	791.915	-158.465	1.00	0.00
1027	0	1	791.915	-100.537	1.00	0.00
1028	0	1	791.915	-47.875	1.00	0.00
1029	0	1	791.915	0.000	1.00	0.00
1030	0	1	791.915	24.256	1.00	0.00
1031	0	1	791.915	48.818	1.00	0.00
1032	0	1	791.915	73.465	1.00	0.00
1033	0	1	791.915	97.978	1.00	0.00
1034	0	1	791.915	122.138	1.00	0.00
1035	0	1	791.915	145.727	1.00	0.00
1036	0	1	791.915	168.537	1.00	0.00
1037	0	1	791.915	190.363	1.00	0.00
1038	0	1	791.915	211.009	1.00	0.00
1039	0	1	791.915	230.292	1.00	0.00
1040	0	1	791.915	245.901	1.00	0.00
1041	0	1	791.915	261.510	1.00	0.00
1042	0	1	791.915	277.120	1.00	0.00
1043	0	1	791.915	292.729	1.00	0.00
1044	0	1	791.915	308.338	1.00	0.00
1045	0	1	791.915	323.947	1.00	0.00
1046	0	1	791.915	339.556	1.00	0.00
1047	0	1	791.915	355.165	1.00	0.00
1048	0	1	871.915	-369.383	1.00	0.00
1049	0	1	871.915	-292.280	1.00	0.00
1050	0	1	871.915	-222.187	1.00	0.00
1051	0	1	871.915	-158.465	1.00	0.00
1052	0	1	871.915	-100.537	1.00	0.00
1053	0	1	871.915	-47.875	1.00	0.00
1054	0	1	871.915	0.000	1.00	0.00
1055	0	1	871.915	24.256	1.00	0.00
1056	0	1	871.915	48.818	1.00	0.00
1057	0	1	871.915	73.465	1.00	0.00
1058	0	1	871.915	97.978	1.00	0.00
1059	0	1	871.915	122.138	1.00	0.00

1060	0	1	871.915	145.727	1.00	0.00
1061	0	1	871.915	168.537	1.00	0.00
1062	0	1	871.915	190.363	1.00	0.00
1063	0	1	871.915	211.009	1.00	0.00
1064	0	1	871.915	230.292	1.00	0.00
1065	0	1	871.915	245.901	1.00	0.00
1066	0	1	871.915	261.510	1.00	0.00
1067	0	1	871.915	277.120	1.00	0.00
1068	0	1	871.915	292.729	1.00	0.00
1069	0	1	871.915	308.338	1.00	0.00
1070	0	1	871.915	323.947	1.00	0.00
1071	0	1	871.915	339.556	1.00	0.00
1072	0	1	871.915	355.165	1.00	0.00
1073	0	1	951.915	-369.383	1.00	0.00
1074	0	1	951.915	-292.280	1.00	0.00
1075	0	1	951.915	-222.187	1.00	0.00
1076	0	1	951.915	-158.465	1.00	0.00
1077	0	1	951.915	-100.537	1.00	0.00
1078	0	1	951.915	-47.875	1.00	0.00
1079	0	1	951.915	0.000	1.00	0.00
1080	0	1	951.915	24.256	1.00	0.00
1081	0	1	951.915	48.818	1.00	0.00
1082	0	1	951.915	73.465	1.00	0.00
1083	0	1	951.915	97.978	1.00	0.00
1084	0	1	951.915	122.138	1.00	0.00
1085	0	1	951.915	145.727	1.00	0.00
1086	0	1	951.915	168.537	1.00	0.00
1087	0	1	951.915	190.363	1.00	0.00
1088	0	1	951.915	211.009	1.00	0.00
1089	0	1	951.915	230.292	1.00	0.00
1090	0	1	951.915	245.901	1.00	0.00
1091	0	1	951.915	261.510	1.00	0.00
1092	0	1	951.915	277.120	1.00	0.00
1093	0	1	951.915	292.729	1.00	0.00
1094	0	1	951.915	308.338	1.00	0.00
1095	0	1	951.915	323.947	1.00	0.00
1096	0	1	951.915	339.556	1.00	0.00
1097	0	1	951.915	355.165	1.00	0.00
1098	0	1	1031.915	-369.383	1.00	0.00
1099	0	1	1031.915	-292.280	1.00	0.00
1100	0	1	1031.915	-222.187	1.00	0.00
1101	0	1	1031.915	-158.465	1.00	0.00
1102	0	1	1031.915	-100.537	1.00	0.00
1103	0	1	1031.915	-47.875	1.00	0.00
1104	0	1	1031.915	0.000	1.00	0.00
1105	0	1	1031.915	24.256	1.00	0.00
1106	0	1	1031.915	48.818	1.00	0.00
1107	0	1	1031.915	73.465	1.00	0.00
1108	0	1	1031.915	97.978	1.00	0.00
1109	0	1	1031.915	122.138	1.00	0.00
1110	0	1	1031.915	145.727	1.00	0.00
1111	0	1	1031.915	168.537	1.00	0.00
1112	0	1	1031.915	190.363	1.00	0.00
1113	0	1	1031.915	211.009	1.00	0.00
1114	0	1	1031.915	230.292	1.00	0.00
1115	0	1	1031.915	245.901	1.00	0.00
1116	0	1	1031.915	261.510	1.00	0.00
1117	0	1	1031.915	277.120	1.00	0.00
1118	0	1	1031.915	292.729	1.00	0.00
1119	0	1	1031.915	308.338	1.00	0.00
1120	0	1	1031.915	323.947	1.00	0.00
1121	0	1	1031.915	339.556	1.00	0.00
1122	0	1	1031.915	355.165	1.00	0.00
1123	0	1	-1031.915	371.165	1.00	0.00
1124	0	1	-951.915	371.165	1.00	0.00
1125	0	1	-871.915	371.165	1.00	0.00
1126	0	1	-791.915	371.165	1.00	0.00
1127	0	1	-711.915	371.165	1.00	0.00
1128	0	1	-665.088	371.165	1.00	0.00
1129	0	1	-618.260	371.165	1.00	0.00
1130	0	1	-567.759	371.165	1.00	0.00
1131	0	1	-502.477	371.165	1.00	0.00
1132	0	1	-430.215	371.165	1.00	0.00
1133	0	1	-356.750	371.165	1.00	0.00
1134	0	1	-317.111	371.165	1.00	0.00
1135	0	1	-277.472	371.165	1.00	0.00
1136	0	1	-237.833	371.165	1.00	0.00
1137	0	1	-198.194	371.165	1.00	0.00
1138	0	1	-158.556	371.165	1.00	0.00
1139	0	1	-118.917	371.165	1.00	0.00
1140	0	1	-79.278	371.165	1.00	0.00

1141	0	1	-39.639	371.165	1.00	0.00
1142	0	1	0.000	371.165	1.00	0.00
1143	0	1	39.639	371.165	1.00	0.00
1144	0	1	79.278	371.165	1.00	0.00
1145	0	1	118.917	371.165	1.00	0.00
1146	0	1	158.556	371.165	1.00	0.00
1147	0	1	198.194	371.165	1.00	0.00
1148	0	1	237.833	371.165	1.00	0.00
1149	0	1	277.472	371.165	1.00	0.00
1150	0	1	317.111	371.165	1.00	0.00
1151	0	1	356.750	371.165	1.00	0.00
1152	0	1	430.215	371.165	1.00	0.00
1153	0	1	502.477	371.165	1.00	0.00
1154	0	1	567.759	371.165	1.00	0.00
1155	0	1	618.260	371.165	1.00	0.00
1156	0	1	665.088	371.165	1.00	0.00
1157	0	1	711.915	371.165	1.00	0.00
1158	0	1	791.915	371.165	1.00	0.00
1159	0	1	871.915	371.165	1.00	0.00
1160	0	1	951.915	371.165	1.00	0.00
1161	0	1	1031.915	371.165	1.00	0.00
1162	0	1	-1031.915	387.165	1.00	0.00
1163	0	1	-951.915	387.165	1.00	0.00
1164	0	1	-871.915	387.165	1.00	0.00
1165	0	1	-791.915	387.165	1.00	0.00
1166	0	1	-711.915	387.165	1.00	0.00
1167	0	1	-665.088	387.165	1.00	0.00
1168	0	1	-618.260	387.165	1.00	0.00
1169	0	1	-567.759	387.165	1.00	0.00
1170	0	1	-502.477	387.165	1.00	0.00
1171	0	1	-430.215	387.165	1.00	0.00
1172	0	1	-356.750	387.165	1.00	0.00
1173	0	1	-317.111	387.165	1.00	0.00
1174	0	1	-277.472	387.165	1.00	0.00
1175	0	1	-237.833	387.165	1.00	0.00
1176	0	1	-198.194	387.165	1.00	0.00
1177	0	1	-158.556	387.165	1.00	0.00
1178	0	1	-118.917	387.165	1.00	0.00
1179	0	1	-79.278	387.165	1.00	0.00
1180	0	1	-39.639	387.165	1.00	0.00
1181	0	1	0.000	387.165	1.00	0.00
1182	0	1	39.639	387.165	1.00	0.00
1183	0	1	79.278	387.165	1.00	0.00
1184	0	1	118.917	387.165	1.00	0.00
1185	0	1	158.556	387.165	1.00	0.00
1186	0	1	198.194	387.165	1.00	0.00
1187	0	1	237.833	387.165	1.00	0.00
1188	0	1	277.472	387.165	1.00	0.00
1189	0	1	317.111	387.165	1.00	0.00
1190	0	1	356.750	387.165	1.00	0.00
1191	0	1	430.215	387.165	1.00	0.00
1192	0	1	502.477	387.165	1.00	0.00
1193	0	1	567.759	387.165	1.00	0.00
1194	0	1	618.260	387.165	1.00	0.00
1195	0	1	665.088	387.165	1.00	0.00
1196	0	1	711.915	387.165	1.00	0.00
1197	0	1	791.915	387.165	1.00	0.00
1198	0	1	871.915	387.165	1.00	0.00
1199	0	1	951.915	387.165	1.00	0.00
1200	0	1	1031.915	387.165	1.00	0.00
1201	0	1	-1031.915	403.165	1.00	0.00
1202	0	1	-951.915	403.165	1.00	0.00
1203	0	1	-871.915	403.165	1.00	0.00
1204	0	1	-791.915	403.165	1.00	0.00
1205	0	1	-711.915	403.165	1.00	0.00
1206	0	1	-665.088	403.165	1.00	0.00
1207	0	1	-618.260	403.165	1.00	0.00
1208	0	1	-567.759	403.165	1.00	0.00
1209	0	1	-502.477	403.165	1.00	0.00
1210	0	1	-430.215	403.165	1.00	0.00
1211	0	1	-356.750	403.165	1.00	0.00
1212	0	1	-317.111	403.165	1.00	0.00
1213	0	1	-277.472	403.165	1.00	0.00
1214	0	1	-237.833	403.165	1.00	0.00
1215	0	1	-198.194	403.165	1.00	0.00
1216	0	1	-158.556	403.165	1.00	0.00
1217	0	1	-118.917	403.165	1.00	0.00
1218	0	1	-79.278	403.165	1.00	0.00
1219	0	1	-39.639	403.165	1.00	0.00
1220	0	1	0.000	403.165	1.00	0.00
1221	0	1	39.639	403.165	1.00	0.00

1222	0	1	79.278	403.165	1.00	0.00
1223	0	1	118.917	403.165	1.00	0.00
1224	0	1	158.556	403.165	1.00	0.00
1225	0	1	198.194	403.165	1.00	0.00
1226	0	1	237.833	403.165	1.00	0.00
1227	0	1	277.472	403.165	1.00	0.00
1228	0	1	317.111	403.165	1.00	0.00
1229	0	1	356.750	403.165	1.00	0.00
1230	0	1	430.215	403.165	1.00	0.00
1231	0	1	502.477	403.165	1.00	0.00
1232	0	1	567.759	403.165	1.00	0.00
1233	0	1	618.260	403.165	1.00	0.00
1234	0	1	665.088	403.165	1.00	0.00
1235	0	1	711.915	403.165	1.00	0.00
1236	0	1	791.915	403.165	1.00	0.00
1237	0	1	871.915	403.165	1.00	0.00
1238	0	1	951.915	403.165	1.00	0.00
1239	0	1	1031.915	403.165	1.00	0.00
1240	0	1	-727.915	371.165	1.00	0.00
1241	0	1	-743.915	387.165	1.00	0.00
1242	0	1	-759.915	403.165	1.00	0.00
1243	0	1	727.915	371.165	1.00	0.00
1244	0	1	743.915	387.165	1.00	0.00
1245	0	1	759.915	403.165	1.00	0.00

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1220	23	F = 0.000	F = -153.2	F = 0.000
1219	23	F = 0.000	F = -153.2	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000

840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1162	1	D =	0.000	F =	0.000	D =	0.000
1201	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1200	1	D =	0.000	F =	0.000	D =	0.000
1239	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3

5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000

19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.575	Factor for load step #21
22	1.575	Factor for load step #22
23	1.750	Factor for load step #23

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 20

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 20
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.355E+00 -0.267E+01	-0.886E+01 0.404E+00	0.152E-10 -0.331E+04	-0.110E+05 -0.110E+05	0.162E+03 0.539E+03
2	-258.50 24.26	-0.218E+00 -0.265E+01	-0.966E+01 0.124E+01	-0.315E+04 -0.329E+04	-0.194E+05 -0.110E+05	0.886E+02 0.295E+03
3	-260.57 48.82	-0.336E-01 -0.265E+01	-0.105E+02 0.207E+01	-0.447E+04 -0.325E+04	-0.228E+05 -0.108E+05	0.272E+02 0.906E+02
4	-260.31 73.47	0.222E+00 -0.266E+01	-0.103E+02 0.222E+01	-0.456E+04 -0.320E+04	-0.228E+05 -0.106E+05	-0.216E+02 -0.718E+02
5	-257.73 97.98	0.547E+00 -0.270E+01	-0.991E+01 0.252E+01	-0.345E+04 -0.313E+04	-0.196E+05 -0.104E+05	-0.713E+02 -0.237E+03

6	-252.84	0.920E+00	-0.991E+01	-0.105E+04	-0.130E+05	-0.119E+03
	122.14	-0.279E+01	0.288E+01	-0.305E+04	-0.102E+05	-0.397E+03
7	-245.70	0.130E+01	-0.108E+02	0.244E+04	-0.164E+05	-0.148E+03
	145.73	-0.292E+01	0.304E+01	-0.297E+04	-0.988E+04	-0.492E+03
8	-236.35	0.162E+01	-0.125E+02	0.626E+04	-0.263E+05	-0.136E+03
	168.54	-0.306E+01	0.342E+01	-0.287E+04	-0.956E+04	-0.453E+03
9	-224.90	0.184E+01	-0.126E+02	0.919E+04	-0.338E+05	-0.933E+02
	190.36	-0.319E+01	0.348E+01	-0.277E+04	-0.924E+04	-0.311E+03
10	-211.44	0.193E+01	-0.130E+02	0.109E+05	-0.381E+05	-0.342E+02
	211.01	-0.325E+01	0.371E+01	-0.268E+04	-0.891E+04	-0.114E+03
11	-196.08	0.186E+01	-0.106E+02	0.109E+05	-0.378E+05	0.960E+01
	230.29	-0.321E+01	0.305E+01	-0.259E+04	-0.863E+04	0.320E+02
12	-178.98	0.168E+01	-0.112E+02	0.105E+05	-0.365E+05	0.388E+02
	248.04	-0.304E+01	0.334E+01	-0.251E+04	-0.837E+04	0.129E+03
13	-160.27	0.139E+01	-0.122E+02	0.910E+04	-0.324E+05	0.954E+02
	264.09	-0.272E+01	0.380E+01	-0.243E+04	-0.809E+04	0.318E+03
14	-140.14	0.105E+01	-0.109E+02	0.589E+04	-0.236E+05	0.156E+03
	278.31	-0.226E+01	0.349E+01	-0.235E+04	-0.783E+04	0.518E+03
15	-118.75	0.703E+00	-0.924E+01	0.150E+04	-0.116E+05	0.186E+03
	290.56	-0.169E+01	0.305E+01	-0.228E+04	-0.761E+04	0.620E+03
16	-96.30	0.403E+00	-0.798E+01	-0.323E+04	-0.161E+05	0.187E+03
	300.73	-0.106E+01	0.256E+01	-0.223E+04	-0.743E+04	0.623E+03
17	-72.98	0.181E+00	-0.698E+01	-0.766E+04	-0.278E+05	0.164E+03
	308.74	-0.461E+00	0.158E+01	-0.220E+04	-0.732E+04	0.546E+03
18	-49.02	0.502E-01	-0.633E+01	-0.113E+05	-0.374E+05	0.123E+03
	314.51	0.368E-01	0.127E+01	-0.217E+04	-0.724E+04	0.411E+03
19	-24.62	-0.418E-02	-0.551E+01	-0.137E+05	-0.438E+05	0.666E+02
	318.00	0.362E+00	0.945E+00	-0.216E+04	-0.718E+04	0.222E+03
20	0.00	-0.150E-01	-0.514E+01	-0.145E+05	-0.440E+05	-0.363E+01
	319.17	0.468E+00	-0.480E-01	-0.215E+04	-0.715E+04	-0.121E+02
21	24.62	-0.271E-01	-0.554E+01	-0.135E+05	-0.433E+05	-0.735E+02
	318.00	0.337E+00	-0.950E+00	-0.216E+04	-0.718E+04	-0.245E+03
22	49.02	-0.850E-01	-0.635E+01	-0.109E+05	-0.364E+05	-0.130E+03
	314.51	-0.113E-01	-0.127E+01	-0.217E+04	-0.724E+04	-0.432E+03
23	72.98	-0.220E+00	-0.705E+01	-0.716E+04	-0.264E+05	-0.169E+03
	308.74	-0.525E+00	-0.161E+01	-0.220E+04	-0.732E+04	-0.564E+03
24	96.30	-0.445E+00	-0.814E+01	-0.262E+04	-0.144E+05	-0.190E+03
	300.73	-0.113E+01	-0.267E+01	-0.223E+04	-0.744E+04	-0.631E+03
25	118.75	-0.744E+00	-0.943E+01	0.213E+04	-0.133E+05	-0.185E+03
	290.56	-0.176E+01	-0.310E+01	-0.229E+04	-0.762E+04	-0.615E+03

26	140.14	-0.108E+01	-0.110E+02	0.642E+04	-0.250E+05	-0.150E+03
	278.31	-0.232E+01	-0.353E+01	-0.235E+04	-0.784E+04	-0.500E+03
27	160.27	-0.141E+01	-0.126E+02	0.945E+04	-0.334E+05	-0.840E+02
	264.09	-0.277E+01	-0.390E+01	-0.244E+04	-0.811E+04	-0.280E+03
28	178.98	-0.168E+01	-0.112E+02	0.105E+05	-0.364E+05	-0.236E+02
	248.04	-0.306E+01	-0.333E+01	-0.252E+04	-0.840E+04	-0.786E+02
29	196.08	-0.185E+01	-0.103E+02	0.105E+05	-0.368E+05	0.117E+01
	230.29	-0.322E+01	-0.296E+01	-0.260E+04	-0.866E+04	0.388E+01
30	211.44	-0.190E+01	-0.126E+02	0.104E+05	-0.366E+05	0.353E+02
	211.01	-0.325E+01	-0.359E+01	-0.268E+04	-0.894E+04	0.118E+03
31	224.90	-0.181E+01	-0.125E+02	0.873E+04	-0.326E+05	0.877E+02
	190.36	-0.318E+01	-0.346E+01	-0.278E+04	-0.925E+04	0.292E+03
32	236.35	-0.159E+01	-0.125E+02	0.598E+04	-0.255E+05	0.129E+03
	168.54	-0.305E+01	-0.344E+01	-0.288E+04	-0.958E+04	0.431E+03
33	245.70	-0.126E+01	-0.109E+02	0.231E+04	-0.161E+05	0.143E+03
	145.73	-0.291E+01	-0.307E+01	-0.297E+04	-0.989E+04	0.475E+03
34	252.84	-0.889E+00	-0.100E+02	-0.108E+04	-0.131E+05	0.116E+03
	122.14	-0.278E+01	-0.291E+01	-0.306E+04	-0.102E+05	0.386E+03
35	257.73	-0.521E+00	-0.100E+02	-0.343E+04	-0.196E+05	0.704E+02
	97.98	-0.270E+01	-0.258E+01	-0.314E+04	-0.104E+05	0.234E+03
36	260.31	-0.200E+00	-0.104E+02	-0.455E+04	-0.228E+05	0.227E+02
	73.47	-0.265E+01	-0.227E+01	-0.320E+04	-0.107E+05	0.756E+02
37	260.57	0.507E-01	-0.105E+02	-0.451E+04	-0.229E+05	-0.257E+02
	48.82	-0.264E+01	-0.207E+01	-0.326E+04	-0.109E+05	-0.856E+02
38	258.50	0.230E+00	-0.955E+01	-0.321E+04	-0.196E+05	-0.893E+02
	24.26	-0.265E+01	-0.116E+01	-0.330E+04	-0.110E+05	-0.297E+03
39	254.12	0.361E+00	-0.864E+01	0.909E-11	-0.111E+05	-0.166E+03
	0.00	-0.266E+01	-0.238E+00	-0.332E+04	-0.111E+05	-0.553E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.34623E-03	-0.34623E-03	.25077	0.00000
2	-0.60766E-03	-0.79732E-04	.44011	0.00000
3	-0.71492E-03	0.35367E-04	.51780	0.00000
4	-0.71637E-03	0.48284E-04	.51885	0.00000
5	-0.61633E-03	-0.38170E-04	.44639	0.00000
6	-0.40739E-03	-0.23087E-03	.29506	0.00000
7	-0.10544E-03	-0.51451E-03	.37265	0.00000
8	0.22501E-03	-0.82509E-03	.59759	0.00000
9	0.48065E-03	-0.10603E-02	.76793	0.00000
10	0.63547E-03	-0.11949E-02	.86545	0.00000
11	0.64622E-03	-0.11876E-02	.86017	0.00000
12	0.61887E-03	-0.11440E-02	.82854	0.00000
13	0.50908E-03	-0.10168E-02	.73644	0.00000
14	0.24809E-03	-0.73922E-03	.53540	0.00000
15	-0.11291E-03	-0.36454E-03	.26402	0.00000
16	-0.50394E-03	0.37436E-04	.36499	0.00000
17	-0.87194E-03	0.41278E-03	.63153	0.00000
18	-0.11720E-02	0.71750E-03	.84888	0.00000

19	-0.13750E-02	0.92435E-03	.99586	0.00000
20	-0.14435E-02	0.99299E-03	1.0455	0.02579
21	-0.13599E-02	0.90914E-03	.98493	0.00000
22	-0.11431E-02	0.68856E-03	.82791	0.00000
23	-0.82998E-03	0.37087E-03	.60113	0.00000
24	-0.45294E-03	-0.13803E-04	.32805	0.00000
25	-0.60755E-04	-0.41733E-03	.30226	0.00000
26	0.29255E-03	-0.78464E-03	.56830	0.00000
27	0.53836E-03	-0.10475E-02	.75870	0.00000
28	0.61556E-03	-0.11426E-02	.82755	0.00000
29	0.61209E-03	-0.11554E-02	.83684	0.00000
30	0.58769E-03	-0.11486E-02	.83191	0.00000
31	0.44215E-03	-0.10228E-02	.74082	0.00000
32	0.20067E-03	-0.80172E-03	.58067	0.00000
33	-0.11699E-03	-0.50396E-03	.36500	0.00000
34	-0.41059E-03	-0.22876E-03	.29738	0.00000
35	-0.61526E-03	-0.40532E-04	.44562	0.00000
36	-0.71611E-03	0.46447E-04	.51866	0.00000
37	-0.71888E-03	0.37612E-04	.52067	0.00000
38	-0.61358E-03	-0.75327E-04	.44440	0.00000
39	-0.34677E-03	-0.34677E-03	.25116	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.27863	0.00000	0.07764
2	-0.27659	-0.15157	0.22807
3	-0.27344	-0.21541	0.29018
4	-0.26882	-0.21954	0.29180
5	-0.26335	-0.16599	0.23535
6	-0.25682	-0.05068	0.11664
7	-0.24945	0.11744	0.17967
8	-0.24146	0.30149	0.35979
9	-0.23323	0.44241	0.49680
10	-0.22511	0.52551	0.57618
11	-0.21785	0.52651	0.57396
12	-0.21128	0.50611	0.55075
13	-0.20429	0.43809	0.47982
14	-0.19762	0.28346	0.32252
15	-0.19211	0.07224	0.10915
16	-0.18771	-0.15543	0.19067
17	-0.18476	-0.36885	0.40298
18	-0.18289	-0.54249	0.57594
19	-0.18132	-0.66015	0.69302
20	-0.18063	-0.69977	0.73240
21	-0.18137	-0.65144	0.68434
22	-0.18289	-0.52587	0.55932
23	-0.18473	-0.34477	0.37890
24	-0.18780	-0.12608	0.16135
25	-0.19237	0.10238	0.13938
26	-0.19800	0.30927	0.34847
27	-0.20488	0.45531	0.49729
28	-0.21206	0.50477	0.54974
29	-0.21862	0.50746	0.55525
30	-0.22570	0.49850	0.54944
31	-0.23366	0.42061	0.47520
32	-0.24185	0.28779	0.34628
33	-0.24985	0.11110	0.17353
34	-0.25726	-0.05220	0.11839
35	-0.26387	-0.16501	0.23464
36	-0.26945	-0.21893	0.29154
37	-0.27413	-0.21719	0.29234
38	-0.27720	-0.15453	0.23137
39	-0.27906	0.00000	0.07788

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 20

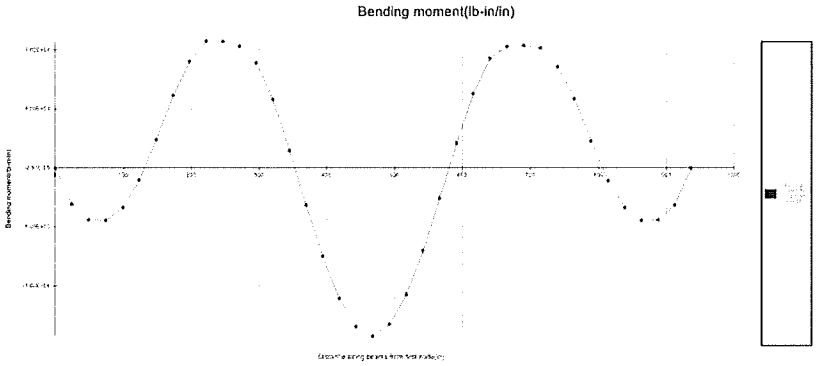
LRFD STRENGTH-LIMIT RATIOS AT STEP 20, FOR STEEL GROUP # 1

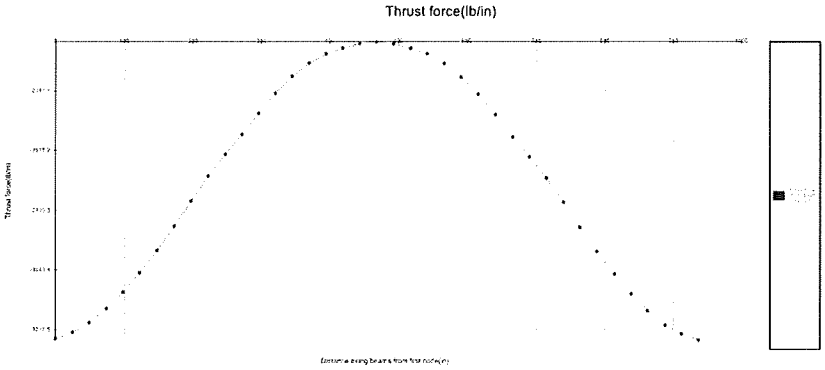
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE

MATERIAL THRUST (psi)	39	11051.	30800.	0.359
BUCKLING THRUST (psi)	39	11051.	47817.	0.231
SEAM THRUST (psi)	39	11051.	23052.	0.479
PLASTIC-PENETRATE (%)	20	2.58	90.00	0.029
COMBINED T&M Ratio	20	0.732	1.000	0.732

LRFD SERVICE PERFORMANCE AT STEP 20, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.74
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.15
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020





STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12	-0.390E+00	-0.959E+01	0.498E-10	-0.128E+05	0.186E+03

	0.00	-0.287E+01	-0.772E+00	-0.385E+04	-0.128E+05	0.618E+03
2	-258.50	-0.271E+00	-0.111E+02	-0.352E+04	-0.222E+05	0.948E+02
	24.26	-0.286E+01	0.364E+00	-0.385E+04	-0.128E+05	0.316E+03
3	-260.57	-0.989E-01	-0.126E+02	-0.479E+04	-0.256E+05	0.234E+02
	48.82	-0.286E+01	0.150E+01	-0.383E+04	-0.128E+05	0.779E+02
4	-260.31	0.149E+00	-0.127E+02	-0.476E+04	-0.253E+05	-0.242E+02
	73.47	-0.287E+01	0.204E+01	-0.378E+04	-0.126E+05	-0.807E+02
5	-257.73	0.471E+00	-0.122E+02	-0.364E+04	-0.221E+05	-0.714E+02
	97.98	-0.292E+01	0.290E+01	-0.372E+04	-0.124E+05	-0.238E+03
6	-252.84	0.842E+00	-0.120E+02	-0.125E+04	-0.154E+05	-0.120E+03
	122.14	-0.300E+01	0.347E+01	-0.363E+04	-0.121E+05	-0.401E+03
7	-245.70	0.122E+01	-0.130E+02	0.230E+04	-0.179E+05	-0.150E+03
	145.73	-0.313E+01	0.364E+01	-0.352E+04	-0.117E+05	-0.501E+03
8	-236.35	0.155E+01	-0.147E+02	0.618E+04	-0.279E+05	-0.137E+03
	168.54	-0.328E+01	0.404E+01	-0.341E+04	-0.114E+05	-0.455E+03
9	-224.90	0.178E+01	-0.147E+02	0.907E+04	-0.352E+05	-0.909E+02
	190.36	-0.341E+01	0.405E+01	-0.330E+04	-0.110E+05	-0.303E+03
10	-211.44	0.186E+01	-0.149E+02	0.107E+05	-0.393E+05	-0.323E+02
	211.01	-0.348E+01	0.423E+01	-0.319E+04	-0.106E+05	-0.107E+03
11	-196.08	0.181E+01	-0.124E+02	0.107E+05	-0.390E+05	0.877E+01
	230.29	-0.344E+01	0.356E+01	-0.309E+04	-0.103E+05	0.292E+02
12	-178.98	0.163E+01	-0.131E+02	0.104E+05	-0.377E+05	0.370E+02
	248.04	-0.328E+01	0.389E+01	-0.300E+04	-0.100E+05	0.123E+03
13	-160.27	0.136E+01	-0.140E+02	0.900E+04	-0.337E+05	0.936E+02
	264.09	-0.298E+01	0.433E+01	-0.291E+04	-0.967E+04	0.312E+03
14	-140.14	0.103E+01	-0.126E+02	0.585E+04	-0.250E+05	0.153E+03
	278.31	-0.253E+01	0.403E+01	-0.281E+04	-0.937E+04	0.510E+03
15	-118.75	0.689E+00	-0.110E+02	0.156E+04	-0.133E+05	0.183E+03
	290.56	-0.198E+01	0.360E+01	-0.273E+04	-0.910E+04	0.610E+03
16	-96.30	0.396E+00	-0.970E+01	-0.307E+04	-0.171E+05	0.184E+03
	300.73	-0.137E+01	0.326E+01	-0.267E+04	-0.887E+04	0.614E+03
17	-72.98	0.179E+00	-0.860E+01	-0.744E+04	-0.286E+05	0.162E+03
	308.74	-0.786E+00	0.234E+01	-0.261E+04	-0.870E+04	0.541E+03
18	-49.02	0.499E-01	-0.787E+01	-0.110E+05	-0.380E+05	0.122E+03
	314.51	-0.301E+00	0.179E+01	-0.257E+04	-0.857E+04	0.408E+03
19	-24.62	-0.422E-02	-0.702E+01	-0.134E+05	-0.440E+05	0.660E+02
	318.00	0.168E-01	0.121E+01	-0.255E+04	-0.848E+04	0.220E+03
20	0.00	-0.158E-01	-0.663E+01	-0.142E+05	-0.440E+05	-0.385E+01
	319.17	0.119E+00	-0.480E-01	-0.253E+04	-0.844E+04	-0.128E+02
21	24.62	-0.289E-01	-0.705E+01	-0.132E+05	-0.438E+05	-0.733E+02
	318.00	-0.986E-02	-0.122E+01	-0.255E+04	-0.848E+04	-0.244E+03

22	49.02	-0.866E-01	-0.790E+01	-0.106E+05	-0.370E+05	-0.129E+03
	314.51	-0.351E+00	-0.180E+01	-0.257E+04	-0.857E+04	-0.430E+03
23	72.98	-0.220E+00	-0.869E+01	-0.691E+04	-0.272E+05	-0.168E+03
	308.74	-0.853E+00	-0.240E+01	-0.261E+04	-0.870E+04	-0.559E+03
24	96.30	-0.440E+00	-0.986E+01	-0.244E+04	-0.154E+05	-0.187E+03
	300.73	-0.145E+01	-0.331E+01	-0.267E+04	-0.888E+04	-0.621E+03
25	118.75	-0.732E+00	-0.111E+02	0.219E+04	-0.150E+05	-0.181E+03
	290.56	-0.205E+01	-0.365E+01	-0.274E+04	-0.911E+04	-0.604E+03
26	140.14	-0.106E+01	-0.128E+02	0.639E+04	-0.265E+05	-0.147E+03
	278.31	-0.260E+01	-0.406E+01	-0.282E+04	-0.938E+04	-0.491E+03
27	160.27	-0.138E+01	-0.144E+02	0.935E+04	-0.347E+05	-0.820E+02
	264.09	-0.303E+01	-0.443E+01	-0.291E+04	-0.969E+04	-0.273E+03
28	178.98	-0.164E+01	-0.131E+02	0.103E+05	-0.376E+05	-0.217E+02
	248.04	-0.331E+01	-0.387E+01	-0.301E+04	-0.100E+05	-0.722E+02
29	196.08	-0.180E+01	-0.121E+02	0.103E+05	-0.379E+05	0.192E+01
	230.29	-0.345E+01	-0.347E+01	-0.310E+04	-0.103E+05	0.641E+01
30	211.44	-0.184E+01	-0.145E+02	0.101E+05	-0.378E+05	0.333E+02
	211.01	-0.347E+01	-0.410E+01	-0.320E+04	-0.106E+05	0.111E+03
31	224.90	-0.174E+01	-0.146E+02	0.862E+04	-0.340E+05	0.852E+02
	190.36	-0.340E+01	-0.404E+01	-0.331E+04	-0.110E+05	0.284E+03
32	236.35	-0.151E+01	-0.147E+02	0.590E+04	-0.271E+05	0.130E+03
	168.54	-0.327E+01	-0.406E+01	-0.342E+04	-0.114E+05	0.433E+03
33	245.70	-0.119E+01	-0.131E+02	0.217E+04	-0.175E+05	0.145E+03
	145.73	-0.312E+01	-0.367E+01	-0.353E+04	-0.117E+05	0.484E+03
34	252.84	-0.811E+00	-0.121E+02	-0.129E+04	-0.155E+05	0.117E+03
	122.14	-0.300E+01	-0.350E+01	-0.363E+04	-0.121E+05	0.390E+03
35	257.73	-0.444E+00	-0.123E+02	-0.362E+04	-0.221E+05	0.704E+02
	97.98	-0.291E+01	-0.299E+01	-0.372E+04	-0.124E+05	0.235E+03
36	260.31	-0.127E+00	-0.128E+02	-0.474E+04	-0.253E+05	0.254E+02
	73.47	-0.286E+01	-0.210E+01	-0.379E+04	-0.126E+05	0.845E+02
37	260.57	0.116E+00	-0.126E+02	-0.483E+04	-0.257E+05	-0.219E+02
	48.82	-0.285E+01	-0.150E+01	-0.384E+04	-0.128E+05	-0.728E+02
38	258.50	0.283E+00	-0.110E+02	-0.359E+04	-0.224E+05	-0.955E+02
	24.26	-0.285E+01	-0.277E+00	-0.386E+04	-0.128E+05	-0.318E+03
39	254.12	0.396E+00	-0.937E+01	-0.296E-11	-0.128E+05	-0.190E+03
	0.00	-0.286E+01	0.949E+00	-0.386E+04	-0.128E+05	-0.633E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED

1	-0.40249E-03	-0.40249E-03	.29152	0.00000
2	-0.69791E-03	-0.10663E-03	.50548	0.00000
3	-0.80191E-03	0.14370E-05	.58081	0.00000
4	-0.79436E-03	0.34578E-05	.57533	0.00000
5	-0.69348E-03	-0.83299E-04	.50227	0.00000
6	-0.48411E-03	-0.27391E-03	.35063	0.00000
7	-0.17503E-03	-0.56155E-03	.40672	0.00000
8	0.16193E-03	-0.87548E-03	.63409	0.00000
9	0.41588E-03	-0.11059E-02	.80100	0.00000
10	0.56522E-03	-0.12323E-02	.89255	0.00000
11	0.57637E-03	-0.12228E-02	.88566	0.00000
12	0.55553E-03	-0.11829E-02	.85674	0.00000
13	0.45097E-03	-0.10581E-02	.76638	0.00000
14	0.19683E-03	-0.78462E-03	.56828	0.00000
15	-0.15507E-03	-0.41616E-03	.30142	0.00000
16	-0.53623E-03	-0.20748E-04	.38838	0.00000
17	-0.89692E-03	0.35110E-03	.64961	0.00000
18	-0.11921E-02	0.65425E-03	.86343	0.00000
19	-0.13916E-02	0.85963E-03	1.0079	0.00485
20	-0.14569E-02	0.92494E-03	1.0552	0.03200
21	-0.13756E-02	0.84357E-03	.99633	0.00000
22	-0.11614E-02	0.62349E-03	.84115	0.00000
23	-0.85286E-03	0.30699E-03	.61770	0.00000
24	-0.48350E-03	-0.73711E-04	.35019	0.00000
25	-0.10190E-03	-0.46979E-03	.34026	0.00000
26	0.24175E-03	-0.83027E-03	.60135	0.00000
27	0.48021E-03	-0.10886E-02	.78845	0.00000
28	0.55146E-03	-0.11805E-02	.85501	0.00000
29	0.54187E-03	-0.11900E-02	.86186	0.00000
30	0.51698E-03	-0.11853E-02	.85846	0.00000
31	0.37754E-03	-0.10684E-02	.77379	0.00000
32	0.13755E-03	-0.85177E-03	.61692	0.00000
33	-0.18674E-03	-0.55055E-03	.39875	0.00000
34	-0.48742E-03	-0.27140E-03	.35302	0.00000
35	-0.69238E-03	-0.85460E-04	.50148	0.00000
36	-0.79394E-03	0.15820E-05	.57503	0.00000
37	-0.80581E-03	0.36829E-05	.58363	0.00000
38	-0.70384E-03	-0.10216E-03	.50977	0.00000
39	-0.40298E-03	-0.40298E-03	.29187	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32391	0.00000	0.10492
2	-0.32373	-0.16976	0.27456
3	-0.32209	-0.23065	0.33439
4	-0.31824	-0.22906	0.33033
5	-0.31256	-0.17518	0.27288
6	-0.30501	-0.06035	0.15338
7	-0.29638	0.11097	0.19882
8	-0.28711	0.29785	0.38028
9	-0.27766	0.43692	0.51401
10	-0.26843	0.51609	0.58814
11	-0.26012	0.51655	0.58422
12	-0.25244	0.49911	0.56283
13	-0.24431	0.43327	0.49295
14	-0.23651	0.28178	0.33772
15	-0.22985	0.07496	0.12779
16	-0.22412	-0.14800	0.19823
17	-0.21962	-0.35831	0.40655
18	-0.21643	-0.53010	0.57694
19	-0.21404	-0.64640	0.69222
20	-0.21307	-0.68540	0.73079
21	-0.21408	-0.63714	0.68297
22	-0.21643	-0.51244	0.55928
23	-0.21964	-0.33300	0.38124
24	-0.22421	-0.11765	0.16792
25	-0.23003	0.10562	0.15854
26	-0.23681	0.30778	0.36386
27	-0.24480	0.45041	0.51034
28	-0.25311	0.49725	0.56132
29	-0.26077	0.49721	0.56522
30	-0.26890	0.48872	0.56103
31	-0.27797	0.41512	0.49239
32	-0.28739	0.28404	0.36663

33	-0.29667	0.10445	0.19246
34	-0.30533	-0.06202	0.15525
35	-0.31299	-0.17425	0.27221
36	-0.31882	-0.22840	0.33005
37	-0.32276	-0.23241	0.33658
38	-0.32431	-0.17274	0.27792
39	-0.32430	0.00000	0.10517

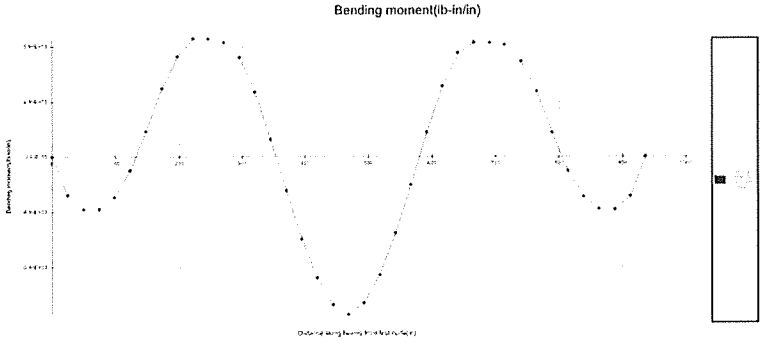
ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

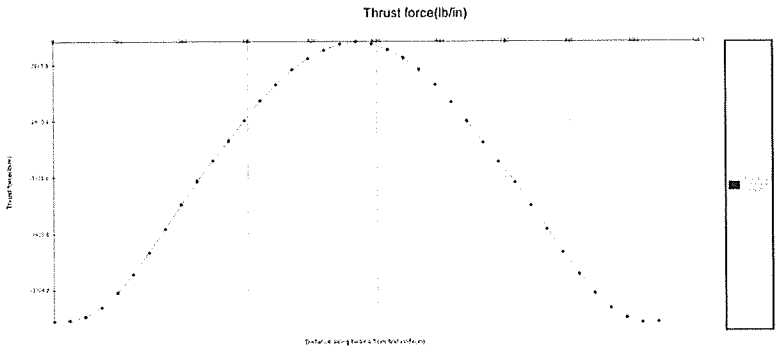
LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	38	12843.	30800.	0.417
BUCKLING THRUST (psi)	38	12843.	48611.	0.264
SEAM THRUST (psi)	38	12843.	23052.	0.557
PLASTIC-PENETRATE (%)	20	3.20	90.00	0.036
COMBINED T&M Ratio	20	0.731	1.000	0.731

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.72
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.14
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020





STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 23

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 23
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.480E+00 -0.313E+01	-0.102E+02 -0.334E+01	0.111E-08 -0.453E+04	-0.151E+05 -0.151E+05	0.219E+03 0.730E+03
2	-258.50 24.26	-0.394E+00 -0.312E+01	-0.128E+02 -0.207E+01	-0.404E+04 -0.458E+04	-0.261E+05 -0.153E+05	0.102E+03 0.340E+03
3	-260.57 48.82	-0.249E+00 -0.312E+01	-0.155E+02 -0.794E+00	-0.519E+04 -0.462E+04	-0.293E+05 -0.154E+05	0.156E+02 0.521E+02
4	-260.31 73.47	-0.217E-01 -0.314E+01	-0.164E+02 0.153E+00	-0.494E+04 -0.463E+04	-0.286E+05 -0.154E+05	-0.293E+02 -0.977E+02
5	-257.73 97.98	0.283E+00 -0.319E+01	-0.156E+02 0.176E+01	-0.386E+04 -0.460E+04	-0.256E+05 -0.153E+05	-0.710E+02 -0.237E+03
6	-252.84 122.14	0.641E+00 -0.327E+01	-0.152E+02 0.257E+01	-0.155E+04 -0.453E+04	-0.192E+05 -0.151E+05	-0.122E+03 -0.408E+03
7	-245.70 145.73	0.101E+01 -0.340E+01	-0.165E+02 0.297E+01	0.208E+04 -0.445E+04	-0.204E+05 -0.148E+05	-0.156E+03 -0.520E+03
8	-236.35 168.54	0.133E+01 -0.355E+01	-0.186E+02 0.371E+01	0.606E+04 -0.435E+04	-0.307E+05 -0.145E+05	-0.139E+03 -0.463E+03
9	-224.90 190.36	0.156E+01 -0.368E+01	-0.186E+02 0.426E+01	0.887E+04 -0.424E+04	-0.378E+05 -0.141E+05	-0.854E+02 -0.284E+03
10	-211.44 211.01	0.165E+01 -0.375E+01	-0.185E+02 0.464E+01	0.102E+05 -0.412E+04	-0.410E+05 -0.137E+05	-0.219E+02 0.728E+02
11	-196.08 230.29	0.160E+01 -0.373E+01	-0.160E+02 0.457E+01	0.992E+04 -0.400E+04	-0.398E+05 -0.133E+05	0.205E+02 0.683E+02
12	-178.98 248.04	0.144E+01 -0.358E+01	-0.168E+02 0.498E+01	0.924E+04 -0.389E+04	-0.376E+05 -0.129E+05	0.538E+02 0.179E+03
13	-160.27 264.09	0.119E+01 -0.331E+01	-0.168E+02 0.516E+01	0.741E+04 -0.377E+04	-0.324E+05 -0.125E+05	0.109E+03 0.362E+03

14	-140.14	0.896E+00	-0.153E+02	0.417E+04	-0.233E+05	0.155E+03
	278.31	-0.293E+01	0.484E+01	-0.366E+04	-0.122E+05	0.518E+03
15	-118.75	0.607E+00	-0.132E+02	0.198E+03	-0.124E+05	0.168E+03
	290.56	-0.245E+01	0.431E+01	-0.356E+04	-0.118E+05	0.558E+03
16	-96.30	0.363E+00	-0.119E+02	-0.349E+04	-0.209E+05	0.147E+03
	300.73	-0.195E+01	0.398E+01	-0.347E+04	-0.116E+05	0.489E+03
17	-72.98	0.187E+00	-0.112E+02	-0.634E+04	-0.282E+05	0.109E+03
	308.74	-0.148E+01	0.382E+01	-0.338E+04	-0.113E+05	0.363E+03
18	-49.02	0.816E-01	-0.112E+02	-0.821E+04	-0.329E+05	0.712E+02
	314.51	-0.110E+01	0.385E+01	-0.330E+04	-0.110E+05	0.237E+03
19	-24.62	0.345E-01	-0.116E+02	-0.940E+04	-0.358E+05	0.459E+02
	318.00	-0.835E+00	0.311E+01	-0.322E+04	-0.107E+05	0.153E+03
20	0.00	0.209E-01	-0.110E+02	-0.103E+05	-0.382E+05	0.228E+02
	319.17	-0.727E+00	-0.129E+01	-0.320E+04	-0.106E+05	0.761E+02
21	24.62	0.960E-02	-0.101E+02	-0.108E+05	-0.396E+05	-0.199E+02
	318.00	-0.788E+00	-0.349E+01	-0.326E+04	-0.108E+05	-0.664E+02
22	49.02	-0.335E-01	-0.102E+02	-0.990E+04	-0.376E+05	-0.790E+02
	314.51	-0.102E+01	-0.353E+01	-0.334E+04	-0.111E+05	-0.263E+03
23	72.98	-0.138E+00	-0.109E+02	-0.756E+04	-0.316E+05	-0.136E+03
	308.74	-0.141E+01	-0.372E+01	-0.342E+04	-0.114E+05	-0.454E+03
24	96.30	-0.321E+00	-0.123E+02	-0.388E+04	-0.220E+05	-0.175E+03
	300.73	-0.189E+01	-0.410E+01	-0.350E+04	-0.117E+05	-0.584E+03
25	118.75	-0.576E+00	-0.139E+02	0.519E+03	-0.133E+05	-0.186E+03
	290.56	-0.242E+01	-0.452E+01	-0.359E+04	-0.120E+05	-0.619E+03
26	140.14	-0.876E+00	-0.159E+02	0.489E+04	-0.254E+05	-0.162E+03
	278.31	-0.291E+01	-0.500E+01	-0.369E+04	-0.123E+05	-0.538E+03
27	160.27	-0.117E+01	-0.179E+02	0.826E+04	-0.348E+05	-0.982E+02
	264.09	-0.330E+01	-0.537E+01	-0.381E+04	-0.127E+05	-0.327E+03
28	178.98	-0.142E+01	-0.170E+02	0.965E+04	-0.388E+05	-0.317E+02
	248.04	-0.357E+01	-0.409E+01	-0.392E+04	-0.131E+05	-0.105E+03
29	196.08	-0.158E+01	-0.155E+02	0.983E+04	-0.397E+05	-0.463E+01
	230.29	-0.371E+01	-0.353E+01	-0.402E+04	-0.134E+05	-0.154E+02
30	211.44	-0.162E+01	-0.181E+02	0.994E+04	-0.403E+05	0.273E+02
	211.01	-0.373E+01	-0.409E+01	-0.411E+04	-0.137E+05	0.909E+02
31	224.90	-0.152E+01	-0.184E+02	0.857E+04	-0.370E+05	0.854E+02
	190.36	-0.365E+01	-0.361E+01	-0.421E+04	-0.140E+05	0.284E+03
32	236.35	-0.130E+01	-0.183E+02	0.582E+04	-0.299E+05	0.136E+03
	168.54	-0.352E+01	-0.327E+01	-0.431E+04	-0.144E+05	0.453E+03
33	245.70	-0.978E+00	-0.163E+02	0.195E+04	-0.199E+05	0.152E+03
	145.73	-0.337E+01	-0.274E+01	-0.440E+04	-0.147E+05	0.505E+03

34	252.84	-0.613E+00	-0.151E+02	-0.157E+04	-0.191E+05	0.119E+03
	122.14	-0.325E+01	-0.247E+01	-0.448E+04	-0.149E+05	0.397E+03
35	257.73	-0.261E+00	-0.155E+02	-0.382E+04	-0.253E+05	0.700E+02
	97.98	-0.316E+01	-0.183E+01	-0.454E+04	-0.151E+05	0.233E+03
36	260.31	0.384E-01	-0.162E+02	-0.491E+04	-0.284E+05	0.302E+02
	73.47	-0.312E+01	-0.245E+00	-0.458E+04	-0.152E+05	0.101E+03
37	260.57	0.261E+00	-0.152E+02	-0.519E+04	-0.291E+05	-0.145E+02
	48.82	-0.310E+01	0.716E+00	-0.457E+04	-0.152E+05	-0.484E+02
38	258.50	0.401E+00	-0.126E+02	-0.406E+04	-0.260E+05	-0.102E+03
	24.26	-0.310E+01	0.205E+01	-0.454E+04	-0.151E+05	-0.341E+03
39	254.12	0.482E+00	-0.996E+01	-0.115E-09	-0.149E+05	-0.221E+03
	0.00	-0.310E+01	0.339E+01	-0.448E+04	-0.149E+05	-0.736E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 23

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.47286E-03	-0.47286E-03	.34248	0.00000
2	-0.81782E-03	-0.14014E-03	.59233	0.00000
3	-0.91800E-03	-0.48076E-04	.66488	0.00000
4	-0.89822E-03	-0.68929E-04	.65056	0.00000
5	-0.80417E-03	-0.15661E-03	.58244	0.00000
6	-0.60383E-03	-0.34344E-03	.43734	0.00000
7	-0.29052E-03	-0.63930E-03	.46303	0.00000
8	0.53536E-04	-0.96281E-03	.69734	0.00000
9	0.30062E-03	-0.11867E-02	.85952	0.00000
10	0.42623E-03	-0.12874E-02	.93247	0.00000
11	0.41384E-03	-0.12504E-02	.90566	0.00000
12	0.36895E-03	-0.11813E-02	.85561	0.00000
13	0.22761E-03	-0.10151E-02	.73524	0.00000
14	-0.32453E-04	-0.73164E-03	.52991	0.00000
15	-0.35513E-03	-0.38832E-03	.28125	0.00000
16	-0.65522E-03	-0.69768E-04	.47456	0.00000
17	-0.88577E-03	0.17851E-03	.64154	0.00000
18	-0.10335E-02	0.34429E-03	.74851	0.00000
19	-0.11238E-02	0.45123E-03	.81394	0.00000
20	-0.11977E-02	0.52634E-03	.86746	0.00000
21	-0.12430E-02	0.56227E-03	.90024	0.00000
22	-0.11795E-02	0.48169E-03	.85430	0.00000
23	-0.99117E-03	0.27667E-03	.71788	0.00000
24	-0.69111E-03	-0.40610E-04	.50055	0.00000
25	-0.33173E-03	-0.41882E-03	.30334	0.00000
26	0.24133E-04	-0.79602E-03	.57653	0.00000
27	0.29486E-03	-0.10912E-02	.79032	0.00000
28	0.39919E-03	-0.12189E-02	.88283	0.00000
29	0.40523E-03	-0.12445E-02	.90139	0.00000
30	0.40383E-03	-0.12633E-02	.91501	0.00000
31	0.27870E-03	-0.11596E-02	.83984	0.00000
32	0.37321E-04	-0.93850E-03	.67973	0.00000
33	-0.29623E-03	-0.62368E-03	.45172	0.00000
34	-0.59992E-03	-0.33652E-03	.43451	0.00000
35	-0.79528E-03	-0.15455E-03	.57600	0.00000
36	-0.88979E-03	-0.66824E-04	.64445	0.00000
37	-0.91295E-03	-0.43045E-04	.66123	0.00000
38	-0.81451E-03	-0.13362E-03	.58993	0.00000
39	-0.46798E-03	-0.46798E-03	.33895	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 23

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.38054	0.00000	0.14481

2	-0.38546	-0.19456	0.34315
3	-0.38872	-0.24976	0.40086
4	-0.38916	-0.23809	0.38954
5	-0.38660	-0.18592	0.33537
6	-0.38116	-0.07476	0.22004
7	-0.37414	0.10014	0.24012
8	-0.36587	0.29180	0.42566
9	-0.35655	0.42702	0.55415
10	-0.34653	0.49200	0.61209
11	-0.33662	0.47782	0.59114
12	-0.32688	0.44509	0.55194
13	-0.31688	0.35680	0.45722
14	-0.30745	0.20074	0.29526
15	-0.29915	0.00953	0.09902
16	-0.29172	-0.16809	0.25319
17	-0.28458	-0.30556	0.38655
18	-0.27731	-0.39556	0.47246
19	-0.27053	-0.45263	0.52582
20	-0.26891	-0.49839	0.57071
21	-0.27388	-0.51833	0.59334
22	-0.28079	-0.47694	0.55579
23	-0.28750	-0.36400	0.44666
24	-0.29443	-0.18676	0.27345
25	-0.30200	0.02500	0.11621
26	-0.31059	0.23547	0.33193
27	-0.32042	0.39794	0.50061
28	-0.32984	0.46456	0.57335
29	-0.33772	0.47366	0.58771
30	-0.34585	0.47865	0.59827
31	-0.35444	0.41293	0.53855
32	-0.36261	0.28016	0.41165
33	-0.37015	0.09401	0.23103
34	-0.37680	-0.07562	0.21760
35	-0.38219	-0.18396	0.33002
36	-0.38492	-0.23628	0.38444
37	-0.38467	-0.24975	0.39772
38	-0.38151	-0.19549	0.34103
39	-0.37661	0.00000	0.14183

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 23

LRFD STRENGTH-LIMIT RATIOS AT STEP 23, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	4	15411.	30800.	0.500
BUCKLING THRUST (psi)	4	15411.	50881.	0.303
SEAM THRUST (psi)	4	15411.	23052.	0.669
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.612	1.000	0.612

LRFD SERVICE PERFORMANCE AT STEP 23, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.61

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

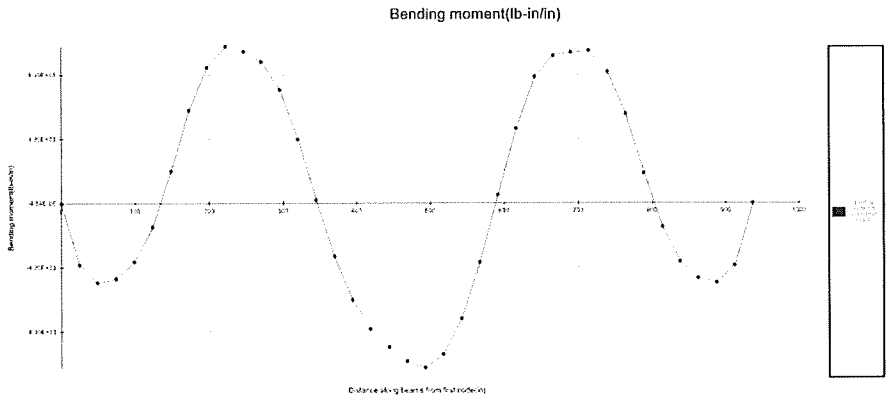
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.12

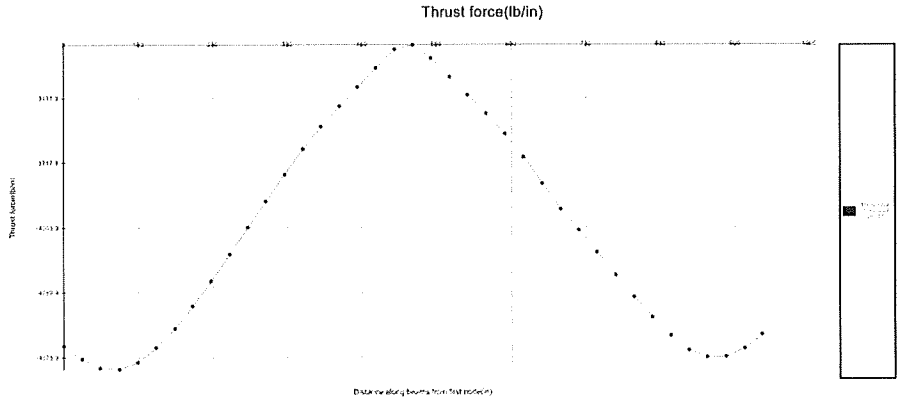
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

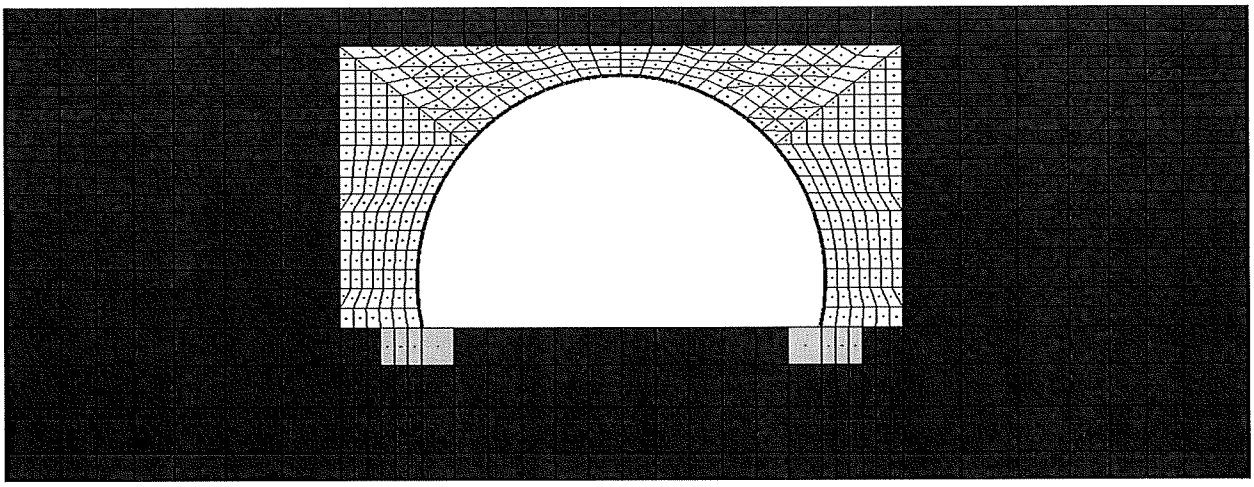
SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020

* * * * NORMAL EXIT FROM CANDE * * * *







*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 7.0ft Cover 5Gage HL-93 TRUCK

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1220	23	F = 0.000	F = -196.1	F = 0.000
1216	23	F = 0.000	F = -196.1	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000

1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1162	1	D =	0.000	F =	0.000	D =	0.000
1201	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1200	1	D =	0.000	F =	0.000	D =	0.000
1239	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000

13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.575	Factor for load step #21
22	1.575	Factor for load step #22
23	1.750	Factor for load step #23

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 23

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 23
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.485E+00 -0.317E+01	-0.104E+02 -0.359E+01	0.987E-09 -0.465E+04	-0.155E+05 -0.155E+05	0.225E+03 0.749E+03
2	-258.50 24.26	-0.400E+00 -0.317E+01	-0.131E+02 -0.215E+01	-0.413E+04 -0.471E+04	-0.267E+05 -0.157E+05	0.103E+03 0.344E+03
3	-260.57 48.82	-0.255E+00 -0.317E+01	-0.159E+02 -0.703E+00	-0.526E+04 -0.475E+04	-0.299E+05 -0.158E+05	0.146E+02 0.485E+02
4	-260.31	-0.270E-01	-0.169E+02	-0.498E+04	-0.291E+05	-0.300E+02

	73.47	-0.318E+01	0.448E+00	-0.475E+04	-0.158E+05	-0.100E+03
5	-257.73	0.279E+00	-0.161E+02	-0.389E+04	-0.261E+05	-0.705E+02
	97.98	-0.323E+01	0.237E+01	-0.471E+04	-0.157E+05	-0.235E+03
6	-252.84	0.640E+00	-0.157E+02	-0.160E+04	-0.197E+05	-0.119E+03
	122.14	-0.332E+01	0.377E+01	-0.462E+04	-0.154E+05	-0.397E+03
7	-245.70	0.101E+01	-0.168E+02	0.191E+04	-0.201E+05	-0.149E+03
	145.73	-0.345E+01	0.472E+01	-0.450E+04	-0.150E+05	-0.495E+03
8	-236.35	0.134E+01	-0.186E+02	0.569E+04	-0.297E+05	-0.130E+03
	168.54	-0.360E+01	0.510E+01	-0.436E+04	-0.145E+05	-0.434E+03
9	-224.90	0.158E+01	-0.183E+02	0.835E+04	-0.364E+05	-0.807E+02
	190.36	-0.373E+01	0.505E+01	-0.423E+04	-0.141E+05	-0.269E+03
10	-211.44	0.168E+01	-0.181E+02	0.975E+04	-0.397E+05	-0.241E+02
	211.01	-0.382E+01	0.510E+01	-0.409E+04	-0.136E+05	-0.801E+02
11	-196.08	0.166E+01	-0.158E+02	0.971E+04	-0.392E+05	0.136E+02
	230.29	-0.381E+01	0.451E+01	-0.397E+04	-0.132E+05	0.452E+02
12	-178.98	0.152E+01	-0.161E+02	0.935E+04	-0.378E+05	0.372E+02
	248.04	-0.369E+01	0.473E+01	-0.386E+04	-0.129E+05	0.124E+03
13	-160.27	0.129E+01	-0.168E+02	0.824E+04	-0.345E+05	0.841E+02
	264.09	-0.344E+01	0.514E+01	-0.374E+04	-0.125E+05	0.280E+03
14	-140.14	0.100E+01	-0.156E+02	0.564E+04	-0.272E+05	0.136E+03
	278.31	-0.306E+01	0.493E+01	-0.363E+04	-0.121E+05	0.454E+03
15	-118.75	0.708E+00	-0.141E+02	0.199E+04	-0.170E+05	0.166E+03
	290.56	-0.258E+01	0.460E+01	-0.352E+04	-0.117E+05	0.552E+03
16	-96.30	0.448E+00	-0.127E+02	-0.210E+04	-0.170E+05	0.169E+03
	300.73	-0.205E+01	0.425E+01	-0.343E+04	-0.114E+05	0.564E+03
17	-72.98	0.251E+00	-0.113E+02	-0.601E+04	-0.272E+05	0.147E+03
	308.74	-0.152E+01	0.384E+01	-0.334E+04	-0.111E+05	0.488E+03
18	-49.02	0.130E+00	-0.104E+02	-0.909E+04	-0.352E+05	0.103E+03
	314.51	-0.107E+01	0.357E+01	-0.326E+04	-0.109E+05	0.344E+03
19	-24.62	0.756E-01	-0.101E+02	-0.110E+05	-0.401E+05	0.519E+02
	318.00	-0.763E+00	0.205E+01	-0.320E+04	-0.107E+05	0.173E+03
20	0.00	0.607E-01	-0.105E+02	-0.118E+05	-0.420E+05	0.574E+01
	319.17	-0.629E+00	-0.102E+01	-0.319E+04	-0.106E+05	0.191E+02
21	24.62	0.495E-01	-0.103E+02	-0.116E+05	-0.419E+05	-0.402E+02
	318.00	-0.687E+00	-0.352E+01	-0.325E+04	-0.108E+05	-0.134E+03
22	49.02	0.472E-02	-0.104E+02	-0.103E+05	-0.386E+05	-0.938E+02
	314.51	-0.932E+00	-0.359E+01	-0.333E+04	-0.111E+05	-0.312E+03
23	72.98	-0.105E+00	-0.111E+02	-0.760E+04	-0.317E+05	-0.145E+03
	308.74	-0.133E+01	-0.378E+01	-0.341E+04	-0.113E+05	-0.482E+03
24	96.30	-0.294E+00	-0.124E+02	-0.373E+04	-0.216E+05	-0.178E+03
	300.73	-0.184E+01	-0.415E+01	-0.349E+04	-0.116E+05	-0.594E+03

25	118.75	-0.557E+00	-0.140E+02	0.755E+03	-0.139E+05	-0.186E+03
	290.56	-0.238E+01	-0.454E+01	-0.358E+04	-0.119E+05	-0.618E+03
26	140.14	-0.864E+00	-0.159E+02	0.513E+04	-0.260E+05	-0.160E+03
	278.31	-0.288E+01	-0.500E+01	-0.368E+04	-0.123E+05	-0.532E+03
27	160.27	-0.117E+01	-0.179E+02	0.849E+04	-0.353E+05	-0.951E+02
	264.09	-0.329E+01	-0.488E+01	-0.379E+04	-0.126E+05	-0.317E+03
28	178.98	-0.142E+01	-0.169E+02	0.980E+04	-0.392E+05	-0.282E+02
	248.04	-0.356E+01	-0.390E+01	-0.390E+04	-0.130E+05	-0.937E+02
29	196.08	-0.158E+01	-0.154E+02	0.993E+04	-0.398E+05	-0.198E+01
	230.29	-0.370E+01	-0.344E+01	-0.399E+04	-0.133E+05	-0.659E+01
30	211.44	-0.162E+01	-0.180E+02	0.999E+04	-0.403E+05	0.290E+02
	211.01	-0.372E+01	-0.402E+01	-0.408E+04	-0.136E+05	0.967E+02
31	224.90	-0.152E+01	-0.183E+02	0.859E+04	-0.369E+05	0.863E+02
	190.36	-0.364E+01	-0.355E+01	-0.418E+04	-0.139E+05	0.287E+03
32	236.35	-0.130E+01	-0.182E+02	0.583E+04	-0.298E+05	0.136E+03
	168.54	-0.351E+01	-0.324E+01	-0.428E+04	-0.143E+05	0.454E+03
33	245.70	-0.982E+00	-0.162E+02	0.196E+04	-0.198E+05	0.152E+03
	145.73	-0.337E+01	-0.275E+01	-0.437E+04	-0.146E+05	0.505E+03
34	252.84	-0.618E+00	-0.150E+02	-0.156E+04	-0.190E+05	0.119E+03
	122.14	-0.324E+01	-0.252E+01	-0.445E+04	-0.148E+05	0.397E+03
35	257.73	-0.265E+00	-0.154E+02	-0.381E+04	-0.252E+05	0.701E+02
	97.98	-0.315E+01	-0.191E+01	-0.452E+04	-0.150E+05	0.233E+03
36	260.31	0.340E-01	-0.161E+02	-0.489E+04	-0.282E+05	0.301E+02
	73.47	-0.311E+01	-0.336E+00	-0.455E+04	-0.152E+05	0.100E+03
37	260.57	0.257E+00	-0.151E+02	-0.517E+04	-0.290E+05	-0.148E+02
	48.82	-0.309E+01	0.621E+00	-0.455E+04	-0.152E+05	-0.493E+02
38	258.50	0.398E+00	-0.125E+02	-0.404E+04	-0.258E+05	-0.102E+03
	24.26	-0.309E+01	0.196E+01	-0.451E+04	-0.150E+05	-0.340E+03
39	254.12	0.479E+00	-0.995E+01	0.322E-09	-0.148E+05	-0.220E+03
	0.00	-0.310E+01	0.330E+01	-0.446E+04	-0.148E+05	-0.733E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 23

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.48565E-03	-0.48565E-03	.35174	0.00000
2	-0.83854E-03	-0.14543E-03	.60733	0.00000
3	-0.93686E-03	-0.55179E-04	.67855	0.00000
4	-0.91399E-03	-0.78118E-04	.66198	0.00000
5	-0.81774E-03	-0.16567E-03	.59227	0.00000
6	-0.61707E-03	-0.34820E-03	.44693	0.00000
7	-0.30958E-03	-0.63071E-03	.45681	0.00000
8	0.21255E-04	-0.93305E-03	.67578	0.00000
9	0.25908E-03	-0.11422E-02	.82728	0.00000
10	0.39010E-03	-0.12456E-02	.90219	0.00000
11	0.39947E-03	-0.12298E-02	.89069	0.00000
12	0.38103E-03	-0.11877E-02	.86022	0.00000

13	0.30012E-03	-0.10822E-02	.78383	0.00000
14	0.94072E-04	-0.85213E-03	.61718	0.00000
15	-0.20161E-03	-0.53464E-03	.38723	0.00000
16	-0.53412E-03	-0.18245E-03	.38685	0.00000
17	-0.85326E-03	0.15457E-03	.61800	0.00000
18	-0.11037E-02	0.42179E-03	.79942	0.00000
19	-0.12587E-02	0.58957E-03	.91167	0.00000
20	-0.13165E-02	0.64661E-03	.95349	0.00000
21	-0.13154E-02	0.63723E-03	.95274	0.00000
22	-0.12115E-02	0.51621E-03	.87744	0.00000
23	-0.99380E-03	0.28177E-03	.71979	0.00000
24	-0.67723E-03	-0.52203E-04	.49050	0.00000
25	-0.31089E-03	-0.43751E-03	.31688	0.00000
26	0.45781E-04	-0.81558E-03	.59070	0.00000
27	0.31561E-03	-0.11086E-02	.80295	0.00000
28	0.41483E-03	-0.12296E-02	.89054	0.00000
29	0.41586E-03	-0.12495E-02	.90500	0.00000
30	0.41082E-03	-0.12643E-02	.91572	0.00000
31	0.28348E-03	-0.11580E-02	.83872	0.00000
32	0.41327E-04	-0.93596E-03	.67789	0.00000
33	-0.29207E-03	-0.62128E-03	.44998	0.00000
34	-0.59565E-03	-0.33440E-03	.43142	0.00000
35	-0.79127E-03	-0.15250E-03	.57310	0.00000
36	-0.88606E-03	-0.64929E-04	.64176	0.00000
37	-0.90894E-03	-0.41914E-04	.65832	0.00000
38	-0.81048E-03	-0.13300E-03	.58701	0.00000
39	-0.46589E-03	-0.46589E-03	.33743	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 23

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.39082	0.00000	0.15274
2	-0.39592	-0.19899	0.35575
3	-0.39917	-0.25313	0.41247
4	-0.39920	-0.23998	0.39934
5	-0.39570	-0.18721	0.34379
6	-0.38840	-0.07720	0.22805
7	-0.37835	0.09220	0.23535
8	-0.36688	0.27398	0.40859
9	-0.35535	0.40232	0.52859
10	-0.34425	0.46963	0.58813
11	-0.33409	0.46776	0.57938
12	-0.32458	0.45039	0.55574
13	-0.31470	0.39688	0.49591
14	-0.30502	0.27166	0.36470
15	-0.29625	0.09562	0.18338
16	-0.28833	-0.10097	0.18410
17	-0.28114	-0.28935	0.36839
18	-0.27440	-0.43799	0.51328
19	-0.26916	-0.53109	0.60354
20	-0.26831	-0.56703	0.63902
21	-0.27289	-0.56066	0.63513
22	-0.27976	-0.49602	0.57429
23	-0.28650	-0.36622	0.44831
24	-0.29350	-0.17945	0.26559
25	-0.30114	0.03636	0.12704
26	-0.30975	0.24730	0.34324
27	-0.31909	0.40890	0.51072
28	-0.32783	0.47211	0.57958
29	-0.33545	0.47814	0.59066
30	-0.34343	0.48094	0.59889
31	-0.35189	0.41386	0.53768
32	-0.35998	0.28058	0.41017
33	-0.36751	0.09452	0.22958
34	-0.37423	-0.07501	0.21505
35	-0.37975	-0.18339	0.32761
36	-0.38266	-0.23575	0.38218
37	-0.38260	-0.24893	0.39531
38	-0.37963	-0.19451	0.33863
39	-0.37492	0.00000	0.14057

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 23

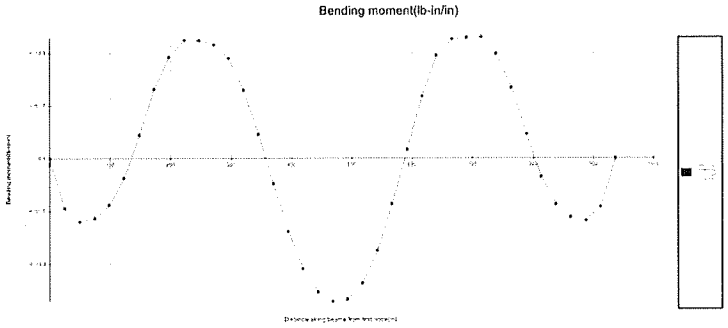
LRFD STRENGTH-LIMIT RATIOS AT STEP 23, FOR STEEL GROUP # 1

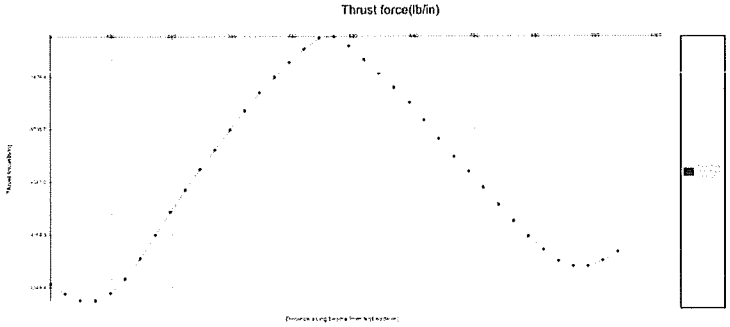
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	4	15808.	30800.	0.513
BUCKLING THRUST (psi)	4	15808.	50729.	0.312
SEAM THRUST (psi)	4	15808.	23052.	0.686
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	20	0.639	1.000	0.639

LRFD SERVICE PERFORMANCE AT STEP 23, FOR STEEL GROUP # 1

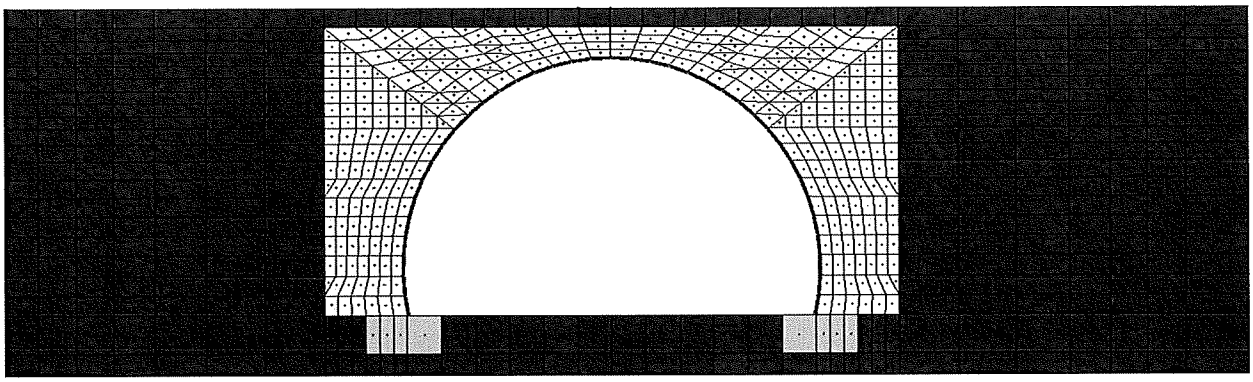
PERCENT VERTICAL DEFLECTION (%).....	0.64
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *





LOAD RATING CALCULATIONS



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage Tandem

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -179.9	F = 0.000
1141	21	F = 0.000	F = -179.9	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000

1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1

3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000

17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 20

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 20
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.411E+00 -0.278E+01	-0.932E+01 -0.286E+00	0.895E-10 -0.358E+04	-0.119E+05 -0.119E+05	0.173E+03 0.576E+03
2	-258.50 24.26	-0.287E+00 -0.277E+01	-0.104E+02 0.743E+00	-0.337E+04 -0.357E+04	-0.209E+05 -0.119E+05	0.918E+02 0.306E+03
3	-260.57 48.82	-0.112E+00 -0.277E+01	-0.115E+02 0.177E+01	-0.471E+04 -0.354E+04	-0.244E+05 -0.118E+05	0.256E+02 0.853E+02
4	-260.31 73.47	0.137E+00 -0.278E+01	-0.115E+02 0.217E+01	-0.475E+04 -0.349E+04	-0.243E+05 -0.116E+05	-0.229E+02 -0.761E+02
5	-257.73 97.98	0.459E+00 -0.283E+01	-0.110E+02 0.279E+01	-0.364E+04 -0.342E+04	-0.211E+05 -0.114E+05	-0.714E+02 -0.238E+03

6	-252.84	0.832E+00	-0.109E+02	-0.125E+04	-0.145E+05	-0.120E+03
	122.14	-0.291E+01	0.316E+01	-0.334E+04	-0.111E+05	-0.399E+03
7	-245.70	0.121E+01	-0.119E+02	0.229E+04	-0.169E+05	-0.149E+03
	145.73	-0.304E+01	0.334E+01	-0.324E+04	-0.108E+05	-0.497E+03
8	-236.35	0.154E+01	-0.136E+02	0.615E+04	-0.269E+05	-0.136E+03
	168.54	-0.319E+01	0.373E+01	-0.314E+04	-0.105E+05	-0.453E+03
9	-224.90	0.177E+01	-0.136E+02	0.907E+04	-0.343E+05	-0.916E+02
	190.36	-0.332E+01	0.377E+01	-0.303E+04	-0.101E+05	-0.305E+03
10	-211.44	0.186E+01	-0.139E+02	0.108E+05	-0.385E+05	-0.326E+02
	211.01	-0.339E+01	0.396E+01	-0.293E+04	-0.976E+04	-0.108E+03
11	-196.08	0.181E+01	-0.115E+02	0.108E+05	-0.383E+05	0.998E+01
	230.29	-0.335E+01	0.331E+01	-0.284E+04	-0.945E+04	0.332E+02
12	-178.98	0.163E+01	-0.121E+02	0.104E+05	-0.369E+05	0.387E+02
	248.04	-0.319E+01	0.361E+01	-0.275E+04	-0.917E+04	0.129E+03
13	-160.27	0.135E+01	-0.131E+02	0.901E+04	-0.330E+05	0.947E+02
	264.09	-0.289E+01	0.406E+01	-0.266E+04	-0.887E+04	0.315E+03
14	-140.14	0.102E+01	-0.117E+02	0.586E+04	-0.243E+05	0.154E+03
	278.31	-0.244E+01	0.375E+01	-0.258E+04	-0.858E+04	0.513E+03
15	-118.75	0.687E+00	-0.101E+02	0.156E+04	-0.125E+05	0.184E+03
	290.56	-0.189E+01	0.333E+01	-0.251E+04	-0.834E+04	0.613E+03
16	-96.30	0.394E+00	-0.882E+01	-0.308E+04	-0.164E+05	0.185E+03
	300.73	-0.128E+01	0.297E+01	-0.244E+04	-0.814E+04	0.616E+03
17	-72.98	0.178E+00	-0.778E+01	-0.744E+04	-0.279E+05	0.163E+03
	308.74	-0.692E+00	0.210E+01	-0.240E+04	-0.798E+04	0.542E+03
18	-49.02	0.493E-01	-0.708E+01	-0.110E+05	-0.373E+05	0.123E+03
	314.51	-0.206E+00	0.161E+01	-0.236E+04	-0.787E+04	0.408E+03
19	-24.62	-0.439E-02	-0.622E+01	-0.134E+05	-0.437E+05	0.663E+02
	318.00	0.112E+00	0.114E+01	-0.234E+04	-0.779E+04	0.221E+03
20	0.00	-0.155E-01	-0.583E+01	-0.142E+05	-0.440E+05	-0.376E+01
	319.17	0.215E+00	-0.466E-01	-0.233E+04	-0.776E+04	-0.125E+02
21	24.62	-0.280E-01	-0.625E+01	-0.132E+05	-0.432E+05	-0.735E+02
	318.00	0.860E-01	-0.115E+01	-0.234E+04	-0.779E+04	-0.245E+03
22	49.02	-0.852E-01	-0.710E+01	-0.106E+05	-0.363E+05	-0.129E+03
	314.51	-0.255E+00	-0.162E+01	-0.236E+04	-0.787E+04	-0.430E+03
23	72.98	-0.218E+00	-0.786E+01	-0.692E+04	-0.265E+05	-0.168E+03
	308.74	-0.758E+00	-0.215E+01	-0.240E+04	-0.798E+04	-0.559E+03
24	96.30	-0.438E+00	-0.899E+01	-0.246E+04	-0.147E+05	-0.187E+03
	300.73	-0.135E+01	-0.302E+01	-0.245E+04	-0.814E+04	-0.624E+03
25	118.75	-0.730E+00	-0.103E+02	0.219E+04	-0.142E+05	-0.182E+03
	290.56	-0.196E+01	-0.338E+01	-0.251E+04	-0.835E+04	-0.607E+03

26	140.14	-0.106E+01	-0.119E+02	0.640E+04	-0.257E+05	-0.149E+03
	278.31	-0.251E+01	-0.379E+01	-0.258E+04	-0.860E+04	-0.495E+03
27	160.27	-0.138E+01	-0.134E+02	0.936E+04	-0.339E+05	-0.832E+02
	264.09	-0.294E+01	-0.415E+01	-0.267E+04	-0.889E+04	-0.277E+03
28	178.98	-0.164E+01	-0.121E+02	0.103E+05	-0.369E+05	-0.234E+02
	248.04	-0.322E+01	-0.359E+01	-0.276E+04	-0.920E+04	-0.780E+02
29	196.08	-0.180E+01	-0.112E+02	0.104E+05	-0.372E+05	0.744E+00
	230.29	-0.336E+01	-0.321E+01	-0.285E+04	-0.948E+04	0.248E+01
30	211.44	-0.183E+01	-0.135E+02	0.102E+05	-0.370E+05	0.336E+02
	211.01	-0.338E+01	-0.384E+01	-0.294E+04	-0.978E+04	0.112E+03
31	224.90	-0.173E+01	-0.136E+02	0.861E+04	-0.331E+05	0.858E+02
	190.36	-0.331E+01	-0.375E+01	-0.304E+04	-0.101E+05	0.286E+03
32	236.35	-0.151E+01	-0.136E+02	0.587E+04	-0.261E+05	0.130E+03
	168.54	-0.318E+01	-0.375E+01	-0.314E+04	-0.105E+05	0.432E+03
33	245.70	-0.118E+01	-0.120E+02	0.216E+04	-0.166E+05	0.144E+03
	145.73	-0.303E+01	-0.337E+01	-0.324E+04	-0.108E+05	0.480E+03
34	252.84	-0.801E+00	-0.110E+02	-0.128E+04	-0.145E+05	0.117E+03
	122.14	-0.291E+01	-0.319E+01	-0.334E+04	-0.111E+05	0.389E+03
35	257.73	-0.433E+00	-0.111E+02	-0.362E+04	-0.211E+05	0.705E+02
	97.98	-0.282E+01	-0.287E+01	-0.343E+04	-0.114E+05	0.235E+03
36	260.31	-0.115E+00	-0.116E+02	-0.474E+04	-0.243E+05	0.240E+02
	73.47	-0.278E+01	-0.222E+01	-0.350E+04	-0.116E+05	0.799E+02
37	260.57	0.129E+00	-0.115E+02	-0.474E+04	-0.245E+05	-0.242E+02
	48.82	-0.276E+01	-0.178E+01	-0.355E+04	-0.118E+05	-0.806E+02
38	258.50	0.299E+00	-0.103E+02	-0.343E+04	-0.211E+05	-0.926E+02
	24.26	-0.277E+01	-0.663E+00	-0.357E+04	-0.119E+05	-0.308E+03
39	254.12	0.416E+00	-0.909E+01	0.592E-10	-0.119E+05	-0.177E+03
	0.00	-0.278E+01	0.453E+00	-0.358E+04	-0.119E+05	-0.590E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.37391E-03	-0.37391E-03	.27081	0.00000
2	-0.65503E-03	-0.90338E-04	.47442	0.00000
3	-0.76449E-03	0.24882E-04	.55370	0.00000
4	-0.76275E-03	0.33705E-04	.55244	0.00000
5	-0.66299E-03	-0.51897E-04	.48019	0.00000
6	-0.45344E-03	-0.24377E-03	.32841	0.00000
7	-0.14668E-03	-0.53069E-03	.38436	0.00000
8	0.18827E-03	-0.84418E-03	.61142	0.00000
9	0.44357E-03	-0.10775E-02	.78041	0.00000
10	0.59573E-03	-0.12081E-02	.87502	0.00000
11	0.60733E-03	-0.12004E-02	.86943	0.00000
12	0.58335E-03	-0.11588E-02	.83927	0.00000
13	0.47731E-03	-0.10340E-02	.74889	0.00000
14	0.22221E-03	-0.76096E-03	.55115	0.00000
15	-0.13107E-03	-0.39254E-03	.28431	0.00000
16	-0.51365E-03	0.28149E-05	.37203	0.00000
17	-0.87477E-03	0.37371E-03	.63358	0.00000
18	-0.11703E-02	0.67611E-03	.84763	0.00000

19	-0.13706E-02	0.88163E-03	.99266	0.00000
20	-0.14369E-02	0.94892E-03	1.0407	0.02358
21	-0.13548E-02	0.86573E-03	.98122	0.00000
22	-0.11401E-02	0.64588E-03	.82575	0.00000
23	-0.83136E-03	0.33025E-03	.60214	0.00000
24	-0.46146E-03	-0.49612E-04	.33423	0.00000
25	-0.78264E-04	-0.44582E-03	.32289	0.00000
26	0.26699E-03	-0.80648E-03	.58411	0.00000
27	0.50656E-03	-0.10645E-02	.77098	0.00000
28	0.57959E-03	-0.11567E-02	.83777	0.00000
29	0.57286E-03	-0.11676E-02	.84566	0.00000
30	0.54757E-03	-0.11612E-02	.84101	0.00000
31	0.40522E-03	-0.10399E-02	.75321	0.00000
32	0.16395E-03	-0.82055E-03	.59430	0.00000
33	-0.15826E-03	-0.51981E-03	.37649	0.00000
34	-0.45653E-03	-0.24147E-03	.33065	0.00000
35	-0.66180E-03	-0.54120E-04	.47933	0.00000
36	-0.76260E-03	0.32178E-04	.55233	0.00000
37	-0.76820E-03	0.27035E-04	.55639	0.00000
38	-0.66075E-03	-0.85997E-04	.47857	0.00000
39	-0.37439E-03	-0.37439E-03	.27116	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.30091	0.00000	0.09054
2	-0.29992	-0.16213	0.25208
3	-0.29760	-0.22663	0.31520
4	-0.29335	-0.22866	0.31472
5	-0.28765	-0.17545	0.25819
6	-0.28054	-0.06020	0.13890
7	-0.27256	0.11025	0.18454
8	-0.26392	0.29642	0.36608
9	-0.25508	0.43671	0.50178
10	-0.24642	0.51790	0.57862
11	-0.23864	0.51901	0.57596
12	-0.23153	0.50017	0.55378
13	-0.22399	0.43390	0.48407
14	-0.21678	0.28227	0.32927
15	-0.21069	0.07507	0.11946
16	-0.20555	-0.14828	0.19053
17	-0.20161	-0.35844	0.39909
18	-0.19886	-0.53012	0.56966
19	-0.19673	-0.64661	0.68531
20	-0.19584	-0.68580	0.72415
21	-0.19677	-0.63751	0.67623
22	-0.19886	-0.51276	0.55231
23	-0.20164	-0.33350	0.37416
24	-0.20564	-0.11824	0.16053
25	-0.21088	0.10553	0.15000
26	-0.21708	0.30820	0.35532
27	-0.22449	0.45105	0.50145
28	-0.23222	0.49850	0.55242
29	-0.23931	0.49969	0.55696
30	-0.24690	0.49059	0.55155
31	-0.25540	0.41491	0.48014
32	-0.26420	0.28265	0.35245
33	-0.27284	0.10380	0.17825
34	-0.28086	-0.06175	0.14063
35	-0.28807	-0.17447	0.25745
36	-0.29390	-0.22818	0.31456
37	-0.29823	-0.22832	0.31726
38	-0.30047	-0.16501	0.25530
39	-0.30129	0.00000	0.09077

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 20

LRFD STRENGTH-LIMIT RATIOS AT STEP 20, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE

MATERIAL THRUST (psi)	39	11931.	30800.	0.387
BUCKLING THRUST (psi)	39	11931.	41967.	0.284
SEAM THRUST (psi)	39	11931.	23052.	0.518
PLASTIC-PENETRATE (%)	20	2.36	90.00	0.026
COMBINED T&M Ratio	20	0.724	1.000	0.724

LRFD SERVICE PERFORMANCE AT STEP 20, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.72
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.14
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.482E+00 -0.285E+01	-0.958E+01 -0.184E+01	0.122E-09 -0.374E+04	-0.125E+05 -0.125E+05	0.182E+03 0.605E+03
2	-258.50 24.26	-0.382E+00 -0.284E+01	-0.110E+02 -0.108E+01	-0.349E+04 -0.378E+04	-0.219E+05 -0.126E+05	0.945E+02 0.315E+03
3	-260.57 48.82	-0.230E+00 -0.284E+01	-0.124E+02 -0.307E+00	-0.483E+04 -0.380E+04	-0.256E+05 -0.126E+05	0.235E+02 0.783E+02
4	-260.31 73.47	-0.785E-03 -0.285E+01	-0.129E+02 -0.787E-01	-0.481E+04 -0.380E+04	-0.255E+05 -0.127E+05	-0.250E+02 -0.834E+02
5	-257.73 97.98	0.303E+00 -0.290E+01	-0.125E+02 0.590E+00	-0.375E+04 -0.379E+04	-0.226E+05 -0.126E+05	-0.713E+02 -0.237E+03
6	-252.84 122.14	0.659E+00 -0.298E+01	-0.124E+02 0.113E+01	-0.143E+04 -0.376E+04	-0.163E+05 -0.125E+05	-0.121E+03 -0.404E+03
7	-245.70 145.73	0.102E+01 -0.311E+01	-0.135E+02 0.149E+01	0.211E+04 -0.371E+04	-0.180E+05 -0.123E+05	-0.155E+03 -0.515E+03
8	-236.35 168.54	0.134E+01 -0.325E+01	-0.157E+02 0.223E+01	0.609E+04 -0.365E+04	-0.284E+05 -0.121E+05	-0.141E+03 -0.470E+03
9	-224.90 190.36	0.156E+01 -0.338E+01	-0.161E+02 0.298E+01	0.899E+04 -0.357E+04	-0.359E+05 -0.119E+05	-0.885E+02 -0.295E+03
10	-211.44 211.01	0.164E+01 -0.344E+01	-0.163E+02 0.381E+01	0.104E+05 -0.348E+04	-0.393E+05 -0.116E+05	-0.212E+02 -0.708E+02
11	-196.08 230.29	0.159E+01 -0.341E+01	-0.139E+02 0.392E+01	0.100E+05 -0.338E+04	-0.380E+05 -0.113E+05	0.273E+02 0.910E+02

12	-178.98	0.142E+01	-0.146E+02	0.907E+04	-0.352E+05	0.650E+02
	248.04	-0.326E+01	0.434E+01	-0.328E+04	-0.109E+05	0.216E+03
13	-160.27	0.117E+01	-0.146E+02	0.695E+04	-0.292E+05	0.121E+03
	264.09	-0.298E+01	0.450E+01	-0.318E+04	-0.106E+05	0.403E+03
14	-140.14	0.875E+00	-0.130E+02	0.344E+04	-0.195E+05	0.166E+03
	278.31	-0.259E+01	0.412E+01	-0.309E+04	-0.103E+05	0.552E+03
15	-118.75	0.593E+00	-0.105E+02	-0.690E+03	-0.119E+05	0.169E+03
	290.56	-0.213E+01	0.346E+01	-0.301E+04	-0.100E+05	0.563E+03
16	-96.30	0.360E+00	-0.904E+01	-0.415E+04	-0.209E+05	0.131E+03
	300.73	-0.164E+01	0.305E+01	-0.294E+04	-0.980E+04	0.435E+03
17	-72.98	0.197E+00	-0.883E+01	-0.626E+04	-0.263E+05	0.779E+02
	308.74	-0.121E+01	0.304E+01	-0.288E+04	-0.958E+04	0.259E+03
18	-49.02	0.101E+00	-0.959E+01	-0.715E+04	-0.284E+05	0.385E+02
	314.51	-0.851E+00	0.331E+01	-0.280E+04	-0.933E+04	0.128E+03
19	-24.62	0.574E-01	-0.111E+02	-0.757E+04	-0.293E+05	0.343E+02
	318.00	-0.606E+00	0.360E+01	-0.272E+04	-0.906E+04	0.114E+03
20	0.00	0.444E-01	-0.105E+02	-0.869E+04	-0.322E+05	0.458E+02
	319.17	-0.485E+00	-0.233E+01	-0.271E+04	-0.902E+04	0.152E+03
21	24.62	0.362E-01	-0.817E+01	-0.102E+05	-0.364E+05	0.187E+02
	318.00	-0.508E+00	-0.286E+01	-0.278E+04	-0.924E+04	0.622E+02
22	49.02	0.147E-02	-0.769E+01	-0.103E+05	-0.371E+05	-0.493E+02
	314.51	-0.695E+00	-0.270E+01	-0.284E+04	-0.947E+04	-0.164E+03
23	72.98	-0.918E-01	-0.808E+01	-0.864E+04	-0.328E+05	-0.125E+03
	308.74	-0.104E+01	-0.279E+01	-0.290E+04	-0.967E+04	-0.415E+03
24	96.30	-0.265E+00	-0.967E+01	-0.507E+04	-0.234E+05	-0.181E+03
	300.73	-0.150E+01	-0.324E+01	-0.296E+04	-0.987E+04	-0.603E+03
25	118.75	-0.516E+00	-0.116E+02	-0.404E+03	-0.112E+05	-0.201E+03
	290.56	-0.202E+01	-0.379E+01	-0.303E+04	-0.101E+05	-0.668E+03
26	140.14	-0.819E+00	-0.138E+02	0.436E+04	-0.220E+05	-0.177E+03
	278.31	-0.252E+01	-0.437E+01	-0.312E+04	-0.104E+05	-0.589E+03
27	160.27	-0.113E+01	-0.158E+02	0.807E+04	-0.323E+05	-0.110E+03
	264.09	-0.294E+01	-0.430E+01	-0.321E+04	-0.107E+05	-0.366E+03
28	178.98	-0.139E+01	-0.147E+02	0.972E+04	-0.369E+05	-0.399E+02
	248.04	-0.322E+01	-0.284E+01	-0.329E+04	-0.110E+05	-0.133E+03
29	196.08	-0.156E+01	-0.132E+02	0.101E+05	-0.381E+05	-0.861E+01
	230.29	-0.337E+01	-0.234E+01	-0.336E+04	-0.112E+05	-0.287E+02
30	211.44	-0.161E+01	-0.158E+02	0.102E+05	-0.388E+05	0.292E+02
	211.01	-0.340E+01	-0.310E+01	-0.343E+04	-0.114E+05	0.973E+02
31	224.90	-0.152E+01	-0.157E+02	0.876E+04	-0.351E+05	0.910E+02
	190.36	-0.333E+01	-0.221E+01	-0.350E+04	-0.117E+05	0.303E+03

32	236.35	-0.131E+01	-0.152E+02	0.587E+04	-0.275E+05	0.139E+03
	168.54	-0.321E+01	-0.174E+01	-0.356E+04	-0.119E+05	0.463E+03
33	245.70	-0.993E+00	-0.131E+02	0.201E+04	-0.174E+05	0.150E+03
	145.73	-0.307E+01	-0.129E+01	-0.361E+04	-0.120E+05	0.500E+03
34	252.84	-0.634E+00	-0.121E+02	-0.142E+04	-0.160E+05	0.118E+03
	122.14	-0.295E+01	-0.110E+01	-0.366E+04	-0.122E+05	0.393E+03
35	257.73	-0.285E+00	-0.122E+02	-0.367E+04	-0.221E+05	0.705E+02
	97.98	-0.286E+01	-0.731E+00	-0.369E+04	-0.123E+05	0.235E+03
36	260.31	0.128E-01	-0.125E+02	-0.475E+04	-0.250E+05	0.257E+02
	73.47	-0.282E+01	-0.123E+00	-0.371E+04	-0.124E+05	0.857E+02
37	260.57	0.237E+00	-0.120E+02	-0.479E+04	-0.252E+05	-0.227E+02
	48.82	-0.281E+01	0.106E+00	-0.371E+04	-0.124E+05	-0.755E+02
38	258.50	0.385E+00	-0.106E+02	-0.348E+04	-0.216E+05	-0.940E+02
	24.26	-0.281E+01	0.943E+00	-0.370E+04	-0.123E+05	-0.313E+03
39	254.12	0.481E+00	-0.926E+01	0.456E-10	-0.122E+05	-0.182E+03
	0.00	-0.282E+01	0.178E+01	-0.366E+04	-0.122E+05	-0.605E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39127E-03	-0.39127E-03	.28339	0.00000
2	-0.68782E-03	-0.10170E-03	.49817	0.00000
3	-0.80215E-03	0.83381E-05	.58098	0.00000
4	-0.80097E-03	0.66143E-05	.58012	0.00000
5	-0.71000E-03	-0.81644E-04	.51424	0.00000
6	-0.51273E-03	-0.27215E-03	.37135	0.00000
7	-0.21010E-03	-0.56488E-03	.40913	0.00000
8	0.12973E-03	-0.89180E-03	.64591	0.00000
9	0.38104E-03	-0.11270E-02	.81627	0.00000
10	0.50757E-03	-0.12346E-02	.89419	0.00000
11	0.48567E-03	-0.11925E-02	.86367	0.00000
12	0.41794E-03	-0.11040E-02	.79962	0.00000
13	0.25049E-03	-0.91534E-03	.66296	0.00000
14	-0.34395E-04	-0.61080E-03	.44239	0.00000
15	-0.37228E-03	-0.25646E-03	.26963	0.00000
16	-0.65536E-03	0.40619E-04	.47466	0.00000
17	-0.82533E-03	0.22436E-03	.59777	0.00000
18	-0.89252E-03	0.30686E-03	.64643	0.00000
19	-0.91930E-03	0.35081E-03	.66583	0.00000
20	-0.10111E-02	0.44383E-03	.73233	0.00000
21	-0.11427E-02	0.56270E-03	.82762	0.00000
22	-0.11641E-02	0.57004E-03	.84314	0.00000
23	-0.10280E-02	0.42144E-03	.74458	0.00000
24	-0.73496E-03	0.11571E-03	.53231	0.00000
25	-0.35081E-03	-0.28297E-03	.25409	0.00000
26	0.40375E-04	-0.69170E-03	.50098	0.00000
27	0.34172E-03	-0.10128E-02	.73357	0.00000
28	0.47098E-03	-0.11593E-02	.83967	0.00000
29	0.49536E-03	-0.11969E-02	.86688	0.00000
30	0.50106E-03	-0.12172E-02	.88155	0.00000
31	0.36940E-03	-0.11007E-02	.79723	0.00000
32	0.12022E-03	-0.86440E-03	.62606	0.00000
33	-0.20873E-03	-0.54654E-03	.39584	0.00000
34	-0.50111E-03	-0.26340E-03	.36294	0.00000
35	-0.69391E-03	-0.77623E-04	.50258	0.00000
36	-0.78593E-03	0.10812E-04	.56923	0.00000
37	-0.78972E-03	0.14084E-04	.57197	0.00000
38	-0.67771E-03	-0.94502E-04	.49085	0.00000
39	-0.38297E-03	-0.38297E-03	.27737	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31488	0.00000	0.09915
2	-0.31768	-0.16828	0.26920
3	-0.31941	-0.23269	0.33472
4	-0.31963	-0.23186	0.33402
5	-0.31854	-0.18040	0.28187
6	-0.31581	-0.06907	0.16881
7	-0.31183	0.10186	0.19910
8	-0.30664	0.29328	0.38731
9	-0.30016	0.43297	0.52307
10	-0.29254	0.50018	0.58576
11	-0.28440	0.48180	0.56268
12	-0.27606	0.43696	0.51317
13	-0.26752	0.33472	0.40628
14	-0.25961	0.16549	0.23289
15	-0.25299	-0.03325	0.09726
16	-0.24736	-0.19982	0.26101
17	-0.24181	-0.30137	0.35984
18	-0.23565	-0.34435	0.39988
19	-0.22875	-0.36466	0.41698
20	-0.22773	-0.41853	0.47040
21	-0.23337	-0.48962	0.54409
22	-0.23904	-0.49788	0.55502
23	-0.24408	-0.41615	0.47572
24	-0.24917	-0.24423	0.30632
25	-0.25502	-0.01948	0.08451
26	-0.26208	0.21018	0.27887
27	-0.27004	0.38890	0.46182
28	-0.27697	0.46807	0.54478
29	-0.28228	0.48585	0.56554
30	-0.28814	0.49331	0.57633
31	-0.29427	0.42208	0.50867
32	-0.29944	0.28269	0.37235
33	-0.30390	0.09699	0.18934
34	-0.30762	-0.06825	0.16288
35	-0.31044	-0.17694	0.27331
36	-0.31189	-0.22875	0.32602
37	-0.31210	-0.23078	0.32818
38	-0.31072	-0.16744	0.26399
39	-0.30819	0.00000	0.09498

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	4	12657.	30800.	0.411
BUCKLING THRUST (psi)	4	12657.	44285.	0.286
SEAM THRUST (psi)	4	12657.	23052.	0.549
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.586	1.000	0.586

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.60

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.12

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020

* * * * NORMAL EXIT FROM CANDE * * * *

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

BEAM OUTPUT FOR HL-93 TANDEM γ_{DL}=1.5, YDL=1.75 (INV), 1.35 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	INV	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	($T_{DL,LLfac}$-T_{DLfac})/1.75	(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.75	(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.35
		kips/ft.	kips/ft.	kips/ft.			
-254.123	0	-42.94	-27.26	-44.93	1.14	22.17	28.74
-258.503	24.256	-42.80	-27.17	-45.33	1.45	17.49	22.67
-260.573	48.818	-42.47	-26.96	-45.58	1.78	14.35	18.60
-260.315	73.465	-41.86	-26.58	-45.61	2.14	12.06	15.63
-257.731	97.978	-41.05	-26.06	-45.46	2.52	10.44	13.53
-252.844	122.138	-40.03	-25.42	-45.07	2.88	9.33	12.10
-245.697	145.727	-38.89	-24.69	-44.50	3.20	8.57	11.11
-236.355	168.537	-37.66	-23.91	-43.76	3.48	8.08	10.47
-224.901	190.363	-36.40	-23.11	-42.83	3.68	7.84	10.16
-211.437	211.009	-35.16	-22.33	-41.75	3.76	7.84	10.17
-196.083	230.292	-34.06	-21.62	-40.58	3.73	8.07	10.46
-178.978	248.039	-33.04	-20.98	-39.39	3.63	8.44	10.94
-160.273	264.092	-31.96	-20.30	-38.18	3.55	8.80	11.41
-140.136	278.307	-30.94	-19.64	-37.05	3.49	9.10	11.80
-118.747	290.557	-30.07	-19.09	-36.10	3.45	9.35	12.13
-96.296	300.732	-29.33	-18.62	-35.30	3.41	9.58	12.42
-72.985	308.742	-28.77	-18.27	-34.51	3.28	10.06	13.04
-49.022	314.515	-28.38	-18.02	-33.63	3.00	11.06	14.34
-24.621	318	-28.07	-17.82	-32.64	2.61	12.77	16.56
0	319.165	-27.95	-17.74	-32.50	2.60	12.85	16.66
24.621	318	-28.08	-17.83	-33.30	2.98	11.17	14.48
49.022	314.515	-28.38	-18.02	-34.11	3.28	10.13	13.13
72.985	308.742	-28.77	-18.27	-34.83	3.46	9.53	12.35
96.296	300.732	-29.35	-18.63	-35.56	3.55	9.20	11.93
118.747	290.557	-30.09	-19.11	-36.39	3.60	8.96	11.61
140.136	278.307	-30.98	-19.67	-37.40	3.67	8.66	11.22
160.273	264.092	-32.04	-20.34	-38.54	3.71	8.40	10.89
178.978	248.039	-33.14	-21.04	-39.52	3.65	8.38	10.87
196.083	230.292	-34.15	-21.68	-40.28	3.50	8.57	11.11
211.437	211.009	-35.23	-22.37	-41.12	3.36	8.76	11.35
224.901	190.363	-36.45	-23.14	-41.99	3.17	9.08	11.78
236.355	168.537	-37.70	-23.94	-42.73	2.87	9.78	12.68
245.697	145.727	-38.94	-24.72	-43.37	2.53	10.83	14.04
252.844	122.138	-40.08	-25.45	-43.90	2.18	12.29	15.93
257.731	97.978	-41.11	-26.10	-44.30	1.82	14.39	18.65
260.315	73.465	-41.94	-26.63	-44.51	1.47	17.59	22.81
260.573	48.818	-42.56	-27.02	-44.54	1.13	22.52	29.19
258.503	24.256	-42.88	-27.22	-44.34	0.84	30.27	39.23
254.123	0	-42.99	-27.30	-43.98	0.56	44.81	58.09

Thrust Load Rating= 7.84 10.16

BEAM OUTPUT FOR HL-93 TANDEM γ_{DL}=1.5, γ_{DL}=1.75 (INV), 1.35 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	INV	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.35
		kips-ft/ft.		kips-ft/ft.			
-254.123	0	0.00	0.00	0.00	0.00		
-258.503	24.256	-3.37	-2.14	-3.49	0.07	137.47	178.20
-260.573	48.818	-4.71	-2.99	-4.83	0.07	129.35	167.68
-260.315	73.465	-4.75	-3.01	-4.81	0.04	244.79	317.31
-257.731	97.978	-3.64	-2.31	-3.75	0.06	168.03	217.82
-252.844	122.138	-1.25	-0.79	-1.43	0.11	106.23	137.70
-245.697	145.727	2.29	1.45	2.11	0.10	106.66	138.26
-236.355	168.537	6.15	3.91	6.09	0.04	228.62	296.36
-224.901	190.363	9.07	5.76	8.99	0.04	156.22	202.51
-211.437	211.009	10.75	6.83	10.38	0.21	28.61	37.09
-196.083	230.292	10.78	6.84	10.00	0.44	13.59	17.62
-178.978	248.039	10.38	6.59	9.07	0.75	8.29	10.74
-160.273	264.092	9.01	5.72	6.95	1.18	5.92	7.67
-140.136	278.307	5.86	3.72	3.44	1.39	6.26	8.12
-118.747	290.557	1.56	0.99	-0.69	1.29	8.57	11.11
-96.296	300.732	-3.08	-1.95	-4.15	0.61	16.66	21.60
-72.985	308.742	-7.44	-4.73	-6.26	0.68	11.54	14.96
-49.022	314.515	-11.01	-6.99	-7.15	2.20	2.67	3.46
-24.621	318	-13.43	-8.52	-7.57	3.35	1.36	1.77
0	319.165	-14.24	-9.04	-8.69	3.17	1.30	1.68
24.621	318	-13.24	-8.40	-10.17	1.75	2.66	3.44
49.022	314.515	-10.65	-6.76	-10.34	0.18	34.38	44.57
72.985	308.742	-6.92	-4.40	-8.64	0.98	8.26	10.70
96.296	300.732	-2.46	-1.56	-5.07	1.49	7.04	9.13
118.747	290.557	2.19	1.39	-0.40	1.48	7.20	9.33
140.136	278.307	6.40	4.06	4.36	1.16	7.21	9.34
160.273	264.092	9.36	5.95	8.07	0.74	9.18	11.90
178.978	248.039	10.35	6.57	9.72	0.36	17.26	22.38
196.083	230.292	10.37	6.59	10.09	0.16	37.88	49.10
211.437	211.009	10.19	6.47	10.24	0.03	195.79	253.81
224.901	190.363	8.61	5.47	8.76	0.09	84.40	109.41
236.355	168.537	5.87	3.73	5.87	0.00	20505.33	26580.98
245.697	145.727	2.16	1.37	2.01	0.08	132.22	171.40
252.844	122.138	-1.28	-0.81	-1.42	0.08	144.72	187.61
257.731	97.978	-3.62	-2.30	-3.67	0.03	337.69	437.74
260.315	73.465	-4.74	-3.01	-4.75	0.01	1386.60	1797.45
260.573	48.818	-4.74	-3.01	-4.79	0.03	318.22	412.51
258.503	24.256	-3.43	-2.18	-3.48	0.03	347.09	449.93
254.123	0	0.00	0.00	0.00	0.00		

Moment Load Rating=	1.30	1.68
Actual Load Rating (from CANDE)	1.30	1.68

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage Tandem-INV
Live loads multiplied by 1.30

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI)..... 0.29000E+08

POISSONS RATIO OF METAL (-) ..... 0.30000E+00

YIELD STRESS OF METAL (PSI)..... 0.44000E+05

LONGITUDINAL SEAM STRENGTH (PSI)... 0.34406E+05

DENSITY OF METAL (PCI)..... 0.28400E+00

MODULUS OF UPPER BI-SLOPE (PSI).... 0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)

(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -233.9	F = 0.000
1141	21	F = 0.000	F = -233.9	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000
856	1	D = 0.000	F = 0.000	D = 0.000
857	1	D = 0.000	F = 0.000	D = 0.000
858	1	D = 0.000	F = 0.000	D = 0.000
859	1	D = 0.000	F = 0.000	D = 0.000
860	1	D = 0.000	F = 0.000	D = 0.000
1123	1	D = 0.000	F = 0.000	D = 0.000
1161	1	D = 0.000	F = 0.000	D = 0.000
1099	1	D = 0.000	F = 0.000	D = 0.000
1100	1	D = 0.000	F = 0.000	D = 0.000
1101	1	D = 0.000	F = 0.000	D = 0.000
1102	1	D = 0.000	F = 0.000	D = 0.000

1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34

36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4

5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.505E+00 -0.287E+01	-0.967E+01 -0.233E+01	0.822E-10 -0.379E+04	-0.126E+05 -0.126E+05	0.183E+03 0.609E+03
2	-258.50 24.26	-0.412E+00 -0.286E+01	-0.111E+02 -0.164E+01	-0.353E+04 -0.384E+04	-0.222E+05 -0.128E+05	0.942E+02 0.314E+03
3	-260.57 48.82	-0.266E+00 -0.286E+01	-0.126E+02 -0.954E+00	-0.487E+04 -0.387E+04	-0.259E+05 -0.129E+05	0.221E+02 0.735E+02
4	-260.31 73.47	-0.433E-01 -0.287E+01	-0.133E+02 -0.769E+00	-0.483E+04 -0.389E+04	-0.259E+05 -0.130E+05	-0.262E+02 -0.874E+02
5	-257.73 97.98	0.255E+00 -0.292E+01	-0.129E+02 -0.849E-01	-0.378E+04 -0.390E+04	-0.231E+05 -0.130E+05	-0.716E+02 -0.238E+03
6	-252.84 122.14	0.606E+00 -0.300E+01	-0.128E+02 0.502E+00	-0.149E+04 -0.388E+04	-0.169E+05 -0.129E+05	-0.122E+03 -0.405E+03
7	-245.70 145.73	0.967E+00 -0.312E+01	-0.140E+02 0.902E+00	0.207E+04 -0.385E+04	-0.183E+05 -0.128E+05	-0.156E+03 -0.520E+03
8	-236.35 168.54	0.128E+01 -0.327E+01	-0.164E+02 0.175E+01	0.608E+04 -0.380E+04	-0.289E+05 -0.126E+05	-0.142E+03 -0.474E+03
9	-224.90 190.36	0.150E+01 -0.339E+01	-0.169E+02 0.270E+01	0.898E+04 -0.373E+04	-0.364E+05 -0.124E+05	-0.874E+02 -0.291E+03
10	-211.44 211.01	0.158E+01 -0.346E+01	-0.170E+02 0.374E+01	0.103E+05 -0.364E+04	-0.397E+05 -0.121E+05	-0.174E+02 -0.579E+02
11	-196.08 230.29	0.152E+01 -0.342E+01	-0.146E+02 0.417E+01	0.979E+04 -0.355E+04	-0.380E+05 -0.118E+05	0.336E+02 0.112E+03
12	-178.98 248.04	0.135E+01 -0.327E+01	-0.154E+02 0.459E+01	0.868E+04 -0.344E+04	-0.347E+05 -0.115E+05	0.753E+02 0.251E+03
13	-160.27 264.09	0.111E+01 -0.300E+01	-0.151E+02 0.464E+01	0.627E+04 -0.334E+04	-0.279E+05 -0.111E+05	0.132E+03 0.441E+03

14	-140.14	0.825E+00	-0.133E+02	0.259E+04	-0.177E+05	0.173E+03
	278.31	-0.263E+01	0.424E+01	-0.324E+04	-0.108E+05	0.576E+03
15	-118.75	0.560E+00	-0.106E+02	-0.152E+04	-0.146E+05	0.167E+03
	290.56	-0.219E+01	0.347E+01	-0.316E+04	-0.105E+05	0.556E+03
16	-96.30	0.348E+00	-0.897E+01	-0.460E+04	-0.226E+05	0.114E+03
	300.73	-0.176E+01	0.304E+01	-0.309E+04	-0.103E+05	0.380E+03
17	-72.98	0.202E+00	-0.911E+01	-0.591E+04	-0.259E+05	0.498E+02
	308.74	-0.137E+01	0.314E+01	-0.302E+04	-0.101E+05	0.166E+03
18	-49.02	0.117E+00	-0.103E+02	-0.587E+04	-0.255E+05	0.927E+01
	314.51	-0.106E+01	0.356E+01	-0.294E+04	-0.980E+04	0.309E+02
19	-24.62	0.773E-01	-0.128E+02	-0.554E+04	-0.243E+05	0.224E+02
	318.00	-0.838E+00	0.427E+01	-0.285E+04	-0.948E+04	0.745E+02
20	0.00	0.637E-01	-0.121E+02	-0.675E+04	-0.275E+05	0.631E+02
	319.17	-0.711E+00	-0.316E+01	-0.284E+04	-0.945E+04	0.210E+03
21	24.62	0.568E-01	-0.874E+01	-0.912E+04	-0.341E+05	0.504E+02
	318.00	-0.699E+00	-0.306E+01	-0.292E+04	-0.972E+04	0.168E+03
22	49.02	0.296E-01	-0.784E+01	-0.103E+05	-0.374E+05	-0.227E+02
	314.51	-0.833E+00	-0.277E+01	-0.299E+04	-0.997E+04	-0.757E+02
23	72.98	-0.504E-01	-0.803E+01	-0.928E+04	-0.350E+05	-0.111E+03
	308.74	-0.112E+01	-0.278E+01	-0.306E+04	-0.102E+05	-0.370E+03
24	96.30	-0.208E+00	-0.979E+01	-0.601E+04	-0.265E+05	-0.181E+03
	300.73	-0.155E+01	-0.328E+01	-0.312E+04	-0.104E+05	-0.604E+03
25	118.75	-0.447E+00	-0.120E+02	-0.131E+04	-0.141E+05	-0.209E+03
	290.56	-0.204E+01	-0.391E+01	-0.319E+04	-0.106E+05	-0.698E+03
26	140.14	-0.742E+00	-0.144E+02	0.369E+04	-0.208E+05	-0.189E+03
	278.31	-0.252E+01	-0.456E+01	-0.328E+04	-0.109E+05	-0.628E+03
27	160.27	-0.105E+01	-0.165E+02	0.767E+04	-0.317E+05	-0.121E+03
	264.09	-0.293E+01	-0.443E+01	-0.337E+04	-0.112E+05	-0.401E+03
28	178.98	-0.131E+01	-0.156E+02	0.955E+04	-0.370E+05	-0.464E+02
	248.04	-0.322E+01	-0.258E+01	-0.345E+04	-0.115E+05	-0.155E+03
29	196.08	-0.148E+01	-0.138E+02	0.100E+05	-0.385E+05	-0.119E+02
	230.29	-0.337E+01	-0.207E+01	-0.351E+04	-0.117E+05	-0.395E+02
30	211.44	-0.154E+01	-0.165E+02	0.103E+05	-0.394E+05	0.280E+02
	211.01	-0.340E+01	-0.280E+01	-0.357E+04	-0.119E+05	0.932E+02
31	224.90	-0.146E+01	-0.163E+02	0.882E+04	-0.357E+05	0.925E+02
	190.36	-0.334E+01	-0.169E+01	-0.363E+04	-0.121E+05	0.308E+03
32	236.35	-0.125E+01	-0.157E+02	0.587E+04	-0.280E+05	0.142E+03
	168.54	-0.322E+01	-0.110E+01	-0.368E+04	-0.123E+05	0.472E+03
33	245.70	-0.937E+00	-0.135E+02	0.197E+04	-0.177E+05	0.152E+03
	145.73	-0.308E+01	-0.648E+00	-0.372E+04	-0.124E+05	0.506E+03
34	252.84	-0.583E+00	-0.124E+02	-0.145E+04	-0.164E+05	0.118E+03

	122.14	-0.296E+01	-0.465E+00	-0.375E+04	-0.125E+05	0.394E+03
35	257.73	-0.239E+00	-0.125E+02	-0.369E+04	-0.224E+05	0.708E+02
	97.98	-0.287E+01	-0.822E-01	-0.377E+04	-0.125E+05	0.236E+03
36	260.31	0.523E-01	-0.128E+02	-0.475E+04	-0.252E+05	0.267E+02
	73.47	-0.283E+01	0.512E+00	-0.377E+04	-0.125E+05	0.890E+02
37	260.57	0.270E+00	-0.121E+02	-0.481E+04	-0.254E+05	-0.215E+02
	48.82	-0.282E+01	0.681E+00	-0.375E+04	-0.125E+05	-0.717E+02
38	258.50	0.412E+00	-0.107E+02	-0.349E+04	-0.217E+05	-0.933E+02
	24.26	-0.282E+01	0.143E+01	-0.372E+04	-0.124E+05	-0.311E+03
39	254.12	0.501E+00	-0.932E+01	0.942E-10	-0.123E+05	-0.181E+03
	0.00	-0.283E+01	0.218E+01	-0.368E+04	-0.123E+05	-0.603E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39606E-03	-0.39606E-03	.28686	0.00000
2	-0.69728E-03	-0.10473E-03	.50503	0.00000
3	-0.81339E-03	0.39652E-05	.58912	0.00000
4	-0.81222E-03	-0.11679E-05	.58827	0.00000
5	-0.72384E-03	-0.90347E-04	.52426	0.00000
6	-0.53007E-03	-0.28070E-03	.38392	0.00000
7	-0.22848E-03	-0.57549E-03	.41682	0.00000
8	0.11326E-03	-0.90705E-03	.65695	0.00000
9	0.36370E-03	-0.11434E-02	.82811	0.00000
10	0.48301E-03	-0.12447E-02	.90148	0.00000
11	0.45059E-03	-0.11917E-02	.86310	0.00000
12	0.36828E-03	-0.10875E-02	.78769	0.00000
13	0.17772E-03	-0.87496E-03	.63371	0.00000
14	-0.12110E-03	-0.55602E-03	.40271	0.00000
15	-0.45782E-03	-0.20258E-03	.33159	0.00000
16	-0.70858E-03	0.62376E-04	.51321	0.00000
17	-0.81180E-03	0.18006E-03	.58797	0.00000
18	-0.79960E-03	0.18465E-03	.57913	0.00000
19	-0.76219E-03	0.16718E-03	.55203	0.00000
20	-0.86215E-03	0.26785E-03	.62443	0.00000
21	-0.10703E-02	0.46013E-03	.77519	0.00000
22	-0.11735E-02	0.54793E-03	.84990	0.00000
23	-0.10979E-02	0.45924E-03	.79515	0.00000
24	-0.83001E-03	0.17850E-03	.60115	0.00000
25	-0.44282E-03	-0.22355E-03	.32073	0.00000
26	-0.33122E-04	-0.65137E-03	.47177	0.00000
27	0.29129E-03	-0.99614E-03	.72148	0.00000
28	0.44040E-03	-0.11620E-02	.84157	0.00000
29	0.47494E-03	-0.12082E-02	.87508	0.00000
30	0.48896E-03	-0.12353E-02	.89471	0.00000
31	0.35979E-03	-0.11193E-02	.81068	0.00000
32	0.10797E-03	-0.87739E-03	.63547	0.00000
33	-0.22308E-03	-0.55416E-03	.40136	0.00000
34	-0.51362E-03	-0.26958E-03	.37200	0.00000
35	-0.70279E-03	-0.84121E-04	.50902	0.00000
36	-0.79227E-03	0.50671E-05	.57382	0.00000
37	-0.79547E-03	0.10850E-04	.57614	0.00000
38	-0.68179E-03	-0.96680E-04	.49380	0.00000
39	-0.38484E-03	-0.38484E-03	.27873	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31873	0.00000	0.10159
2	-0.32271	-0.17012	0.27427

3	-0.32569	-0.23467	0.34074
4	-0.32729	-0.23286	0.33997
5	-0.32761	-0.18188	0.28920
6	-0.32623	-0.07160	0.17802
7	-0.32350	0.09963	0.20428
8	-0.31940	0.29293	0.39495
9	-0.31372	0.43268	0.53110
10	-0.30647	0.49602	0.58995
11	-0.29819	0.47150	0.56042
12	-0.28942	0.41797	0.50174
13	-0.28056	0.30223	0.38094
14	-0.27246	0.12487	0.19910
15	-0.26573	-0.07328	0.14389
16	-0.26002	-0.22135	0.28896
17	-0.25420	-0.28477	0.34938
18	-0.24744	-0.28258	0.34381
19	-0.23941	-0.26683	0.32415
20	-0.23860	-0.32524	0.38217
21	-0.24551	-0.43939	0.49967
22	-0.25169	-0.49422	0.55757
23	-0.25696	-0.44705	0.51308
24	-0.26215	-0.28955	0.35827
25	-0.26813	-0.06295	0.13485
26	-0.27542	0.17750	0.25336
27	-0.28361	0.36963	0.45006
28	-0.29033	0.46004	0.54434
29	-0.29506	0.48324	0.57030
30	-0.30032	0.49505	0.58524
31	-0.30561	0.42465	0.51805
32	-0.30959	0.28290	0.37875
33	-0.31274	0.09505	0.19286
34	-0.31514	-0.07007	0.16938
35	-0.31663	-0.17762	0.27788
36	-0.31675	-0.22892	0.32925
37	-0.31571	-0.23150	0.33117
38	-0.31324	-0.16799	0.26611
39	-0.30970	0.00000	0.09591

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	12973.	30800.	0.421
BUCKLING THRUST (psi)	5	12973.	44574.	0.291
SEAM THRUST (psi)	5	12973.	23052.	0.563
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.590	1.000	0.590

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.57

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.11

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020

* * * * NORMAL EXIT FROM CANDE * * * *

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage Tandem-OPR
LIVE LOADS MULTIPLIED BY 1.68

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000
FULL PLASTIC PENETRATION.....	0.90000
ALLOWABLE % DEFLECTION (SERVICE)...	5.00000
COMBINED MOMENT-THRUST CRITERION...	0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -302.3	F = 0.000
1141	21	F = 0.000	F = -302.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000

852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19

21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000

35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.350	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.505E+00 -0.287E+01	-0.967E+01 -0.234E+01	0.149E-09 -0.379E+04	-0.126E+05 -0.126E+05	0.183E+03 0.609E+03
2	-258.50 24.26	-0.412E+00 -0.286E+01	-0.111E+02 -0.165E+01	-0.353E+04 -0.384E+04	-0.222E+05 -0.128E+05	0.943E+02 0.314E+03
3	-260.57 48.82	-0.266E+00 -0.286E+01	-0.126E+02 -0.954E+00	-0.488E+04 -0.387E+04	-0.259E+05 -0.129E+05	0.222E+02 0.739E+02
4	-260.31 73.47	-0.430E-01 -0.287E+01	-0.132E+02 -0.762E+00	-0.484E+04 -0.389E+04	-0.259E+05 -0.130E+05	-0.262E+02 -0.873E+02
5	-257.73 97.98	0.255E+00 -0.292E+01	-0.129E+02 -0.715E-01	-0.378E+04 -0.389E+04	-0.231E+05 -0.130E+05	-0.716E+02 -0.238E+03
6	-252.84 122.14	0.607E+00 -0.300E+01	-0.128E+02 0.512E+00	-0.149E+04 -0.388E+04	-0.169E+05 -0.129E+05	-0.122E+03 -0.406E+03
7	-245.70 145.73	0.969E+00 -0.312E+01	-0.140E+02 0.896E+00	0.207E+04 -0.384E+04	-0.183E+05 -0.128E+05	-0.156E+03 -0.521E+03
8	-236.35 168.54	0.128E+01 -0.327E+01	-0.164E+02 0.173E+01	0.609E+04 -0.380E+04	-0.289E+05 -0.126E+05	-0.143E+03 -0.475E+03
9	-224.90 190.36	0.150E+01 -0.339E+01	-0.169E+02 0.267E+01	0.900E+04 -0.373E+04	-0.365E+05 -0.124E+05	-0.877E+02 -0.292E+03
10	-211.44	0.158E+01	-0.170E+02	0.103E+05	-0.397E+05	-0.179E+02

	211.01	-0.346E+01	0.373E+01	-0.364E+04	-0.121E+05	-0.597E+02
11	-196.08	0.152E+01	-0.146E+02	0.983E+04	-0.381E+05	0.334E+02
	230.29	-0.342E+01	0.420E+01	-0.354E+04	-0.118E+05	0.111E+03
12	-178.98	0.135E+01	-0.155E+02	0.871E+04	-0.347E+05	0.759E+02
	248.04	-0.327E+01	0.460E+01	-0.344E+04	-0.115E+05	0.253E+03
13	-160.27	0.110E+01	-0.151E+02	0.627E+04	-0.279E+05	0.134E+03
	264.09	-0.300E+01	0.465E+01	-0.333E+04	-0.111E+05	0.446E+03
14	-140.14	0.824E+00	-0.133E+02	0.254E+04	-0.176E+05	0.175E+03
	278.31	-0.263E+01	0.423E+01	-0.324E+04	-0.108E+05	0.583E+03
15	-118.75	0.559E+00	-0.104E+02	-0.163E+04	-0.149E+05	0.167E+03
	290.56	-0.219E+01	0.343E+01	-0.316E+04	-0.105E+05	0.558E+03
16	-96.30	0.346E+00	-0.889E+01	-0.468E+04	-0.228E+05	0.112E+03
	300.73	-0.175E+01	0.301E+01	-0.309E+04	-0.103E+05	0.374E+03
17	-72.98	0.201E+00	-0.912E+01	-0.593E+04	-0.259E+05	0.473E+02
	308.74	-0.137E+01	0.315E+01	-0.302E+04	-0.101E+05	0.158E+03
18	-49.02	0.117E+00	-0.103E+02	-0.581E+04	-0.253E+05	0.642E+01
	314.51	-0.106E+01	0.354E+01	-0.294E+04	-0.979E+04	0.214E+02
19	-24.62	0.777E-01	-0.129E+02	-0.540E+04	-0.239E+05	0.211E+02
	318.00	-0.840E+00	0.432E+01	-0.285E+04	-0.947E+04	0.702E+02
20	0.00	0.641E-01	-0.123E+02	-0.663E+04	-0.271E+05	0.653E+02
	319.17	-0.713E+00	-0.326E+01	-0.284E+04	-0.944E+04	0.218E+03
21	24.62	0.573E-01	-0.867E+01	-0.910E+04	-0.341E+05	0.534E+02
	318.00	-0.698E+00	-0.304E+01	-0.292E+04	-0.972E+04	0.178E+03
22	49.02	0.304E-01	-0.782E+01	-0.103E+05	-0.375E+05	-0.208E+02
	314.51	-0.830E+00	-0.276E+01	-0.299E+04	-0.997E+04	-0.693E+02
23	72.98	-0.491E-01	-0.795E+01	-0.937E+04	-0.352E+05	-0.110E+03
	308.74	-0.112E+01	-0.276E+01	-0.306E+04	-0.102E+05	-0.368E+03
24	96.30	-0.207E+00	-0.974E+01	-0.610E+04	-0.267E+05	-0.182E+03
	300.73	-0.154E+01	-0.326E+01	-0.312E+04	-0.104E+05	-0.606E+03
25	118.75	-0.445E+00	-0.120E+02	-0.136E+04	-0.142E+05	-0.211E+03
	290.56	-0.203E+01	-0.391E+01	-0.319E+04	-0.106E+05	-0.702E+03
26	140.14	-0.741E+00	-0.144E+02	0.367E+04	-0.207E+05	-0.190E+03
	278.31	-0.252E+01	-0.456E+01	-0.327E+04	-0.109E+05	-0.632E+03
27	160.27	-0.105E+01	-0.165E+02	0.770E+04	-0.318E+05	-0.121E+03
	264.09	-0.293E+01	-0.443E+01	-0.337E+04	-0.112E+05	-0.404E+03
28	178.98	-0.131E+01	-0.156E+02	0.959E+04	-0.371E+05	-0.467E+02
	248.04	-0.322E+01	-0.253E+01	-0.345E+04	-0.115E+05	-0.155E+03
29	196.08	-0.148E+01	-0.139E+02	0.101E+05	-0.386E+05	-0.112E+02
	230.29	-0.337E+01	-0.206E+01	-0.351E+04	-0.117E+05	-0.373E+02
30	211.44	-0.154E+01	-0.164E+02	0.103E+05	-0.394E+05	0.287E+02
	211.01	-0.340E+01	-0.274E+01	-0.357E+04	-0.119E+05	0.957E+02

31	224.90	-0.146E+01	-0.163E+02	0.882E+04	-0.357E+05	0.927E+02
	190.36	-0.334E+01	-0.165E+01	-0.363E+04	-0.121E+05	0.309E+03
32	236.35	-0.125E+01	-0.156E+02	0.588E+04	-0.279E+05	0.142E+03
	168.54	-0.322E+01	-0.109E+01	-0.368E+04	-0.122E+05	0.472E+03
33	245.70	-0.938E+00	-0.134E+02	0.197E+04	-0.176E+05	0.152E+03
	145.73	-0.308E+01	-0.653E+00	-0.371E+04	-0.124E+05	0.506E+03
34	252.84	-0.584E+00	-0.124E+02	-0.146E+04	-0.164E+05	0.118E+03
	122.14	-0.296E+01	-0.487E+00	-0.374E+04	-0.125E+05	0.394E+03
35	257.73	-0.240E+00	-0.125E+02	-0.369E+04	-0.224E+05	0.708E+02
	97.98	-0.287E+01	-0.105E+00	-0.376E+04	-0.125E+05	0.236E+03
36	260.31	0.520E-01	-0.128E+02	-0.476E+04	-0.252E+05	0.267E+02
	73.47	-0.283E+01	0.500E+00	-0.376E+04	-0.125E+05	0.889E+02
37	260.57	0.270E+00	-0.121E+02	-0.481E+04	-0.253E+05	-0.216E+02
	48.82	-0.282E+01	0.674E+00	-0.375E+04	-0.125E+05	-0.721E+02
38	258.50	0.412E+00	-0.107E+02	-0.349E+04	-0.217E+05	-0.933E+02
	24.26	-0.282E+01	0.143E+01	-0.372E+04	-0.124E+05	-0.311E+03
39	254.12	0.502E+00	-0.933E+01	0.130E-09	-0.122E+05	-0.181E+03
	0.00	-0.283E+01	0.219E+01	-0.368E+04	-0.122E+05	-0.603E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39579E-03	-0.39579E-03	.28666	0.00000
2	-0.69711E-03	-0.10438E-03	.50490	0.00000
3	-0.81349E-03	0.45802E-05	.58919	0.00000
4	-0.81232E-03	-0.53462E-06	.58834	0.00000
5	-0.72382E-03	-0.89777E-04	.52424	0.00000
6	-0.52979E-03	-0.28033E-03	.38371	0.00000
7	-0.22775E-03	-0.57556E-03	.41687	0.00000
8	0.11455E-03	-0.90774E-03	.65745	0.00000
9	0.36515E-03	-0.11443E-02	.82881	0.00000
10	0.48543E-03	-0.12467E-02	.90294	0.00000
11	0.45399E-03	-0.11946E-02	.86521	0.00000
12	0.37143E-03	-0.10901E-02	.78953	0.00000
13	0.17786E-03	-0.87448E-03	.63336	0.00000
14	-0.12557E-03	-0.55095E-03	.39904	0.00000
15	-0.46654E-03	-0.19339E-03	.33790	0.00000
16	-0.71556E-03	0.69648E-04	.51826	0.00000
17	-0.81273E-03	0.18126E-03	.58864	0.00000
18	-0.79507E-03	0.18043E-03	.57585	0.00000
19	-0.75029E-03	0.15571E-03	.54342	0.00000
20	-0.85193E-03	0.25792E-03	.61703	0.00000
21	-0.10687E-02	0.45855E-03	.77401	0.00000
22	-0.11770E-02	0.55160E-03	.85251	0.00000
23	-0.11052E-02	0.46670E-03	.80046	0.00000
24	-0.83704E-03	0.18578E-03	.60625	0.00000
25	-0.44696E-03	-0.21909E-03	.32372	0.00000
26	-0.33833E-04	-0.65031E-03	.47100	0.00000
27	0.29353E-03	-0.99803E-03	.72285	0.00000
28	0.44425E-03	-0.11653E-02	.84400	0.00000
29	0.47881E-03	-0.12114E-02	.87742	0.00000
30	0.49044E-03	-0.12360E-02	.89519	0.00000
31	0.36070E-03	-0.11191E-02	.81056	0.00000
32	0.10875E-03	-0.87695E-03	.63515	0.00000
33	-0.22254E-03	-0.55345E-03	.40085	0.00000
34	-0.51323E-03	-0.26879E-03	.37172	0.00000
35	-0.70251E-03	-0.83344E-04	.50881	0.00000
36	-0.79208E-03	0.58403E-05	.57368	0.00000

37	-0.79525E-03	0.11555E-04	.57598	0.00000
38	-0.68123E-03	-0.96343E-04	.49340	0.00000
39	-0.38439E-03	-0.38439E-03	.27841	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31851	0.00000	0.10145
2	-0.32250	-0.17017	0.27418
3	-0.32548	-0.23487	0.34081
4	-0.32707	-0.23307	0.34004
5	-0.32737	-0.18204	0.28921
6	-0.32597	-0.07162	0.17788
7	-0.32323	0.09986	0.20434
8	-0.31916	0.29350	0.39537
9	-0.31352	0.43338	0.53168
10	-0.30631	0.49730	0.59112
11	-0.29800	0.47331	0.56212
12	-0.28917	0.41961	0.50323
13	-0.28030	0.30213	0.38070
14	-0.27222	0.12213	0.19623
15	-0.26554	-0.07842	0.14893
16	-0.25990	-0.22544	0.29299
17	-0.25409	-0.28538	0.34994
18	-0.24732	-0.28007	0.34124
19	-0.23924	-0.26012	0.31735
20	-0.23848	-0.31945	0.37633
21	-0.24549	-0.43847	0.49874
22	-0.25166	-0.49630	0.55964
23	-0.25691	-0.45130	0.51730
24	-0.26205	-0.29366	0.36233
25	-0.26800	-0.06542	0.13725
26	-0.27528	0.17699	0.25277
27	-0.28347	0.37081	0.45117
28	-0.29014	0.46211	0.54629
29	-0.29480	0.48528	0.57219
30	-0.29999	0.49566	0.58566
31	-0.30517	0.42486	0.51799
32	-0.30910	0.28300	0.37854
33	-0.31224	0.09500	0.19250
34	-0.31467	-0.07018	0.16919
35	-0.31621	-0.17776	0.27775
36	-0.31636	-0.22909	0.32917
37	-0.31534	-0.23164	0.33108
38	-0.31288	-0.16792	0.26582
39	-0.30934	0.00000	0.09569

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

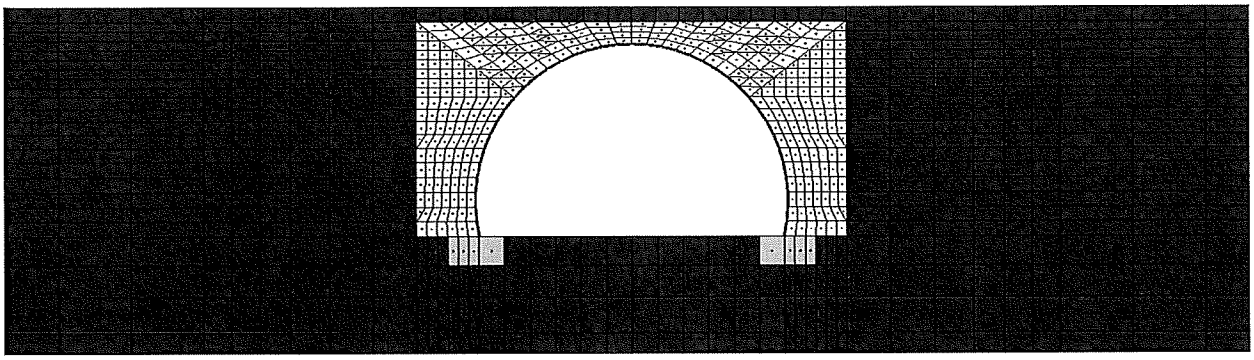
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	12964.	30800.	0.421
BUCKLING THRUST (psi)	5	12964.	44918.	0.289
SEAM THRUST (psi)	5	12964.	23052.	0.562
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.591	1.000	0.591

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.52

RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.10
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage HL-93 TRuck

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -115.1	F = 0.000
1142	22	F = 0.000	F = -115.1	F = 0.000
1138	21	F = 0.000	F = -115.1	F = 0.000
1138	22	F = 0.000	F = -115.1	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000

811	1	D =	0.000	D =	0.000	D =	0.000
836	1	D =	0.000	D =	0.000	D =	0.000
861	1	D =	0.000	D =	0.000	D =	0.000
886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000

8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21
22	1.750	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 20

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 20
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.411E+00 -0.278E+01	-0.932E+01 -0.286E+00	0.895E-10 -0.358E+04	-0.119E+05 -0.119E+05	0.173E+Q3 0.576E+03
2	-258.50 24.26	-0.287E+00 -0.277E+01	-0.104E+02 0.743E+00	-0.337E+04 -0.357E+04	-0.209E+05 -0.119E+05	0.918E+02 0.306E+03

3	-260.57	-0.112E+00	-0.115E+02	-0.471E+04	-0.244E+05	0.256E+02
	48.82	-0.277E+01	0.177E+01	-0.354E+04	-0.118E+05	0.853E+02
4	-260.31	0.137E+00	-0.115E+02	-0.475E+04	-0.243E+05	-0.229E+02
	73.47	-0.278E+01	0.217E+01	-0.349E+04	-0.116E+05	-0.761E+02
5	-257.73	0.459E+00	-0.110E+02	-0.364E+04	-0.211E+05	-0.714E+02
	97.98	-0.283E+01	0.279E+01	-0.342E+04	-0.114E+05	-0.238E+03
6	-252.84	0.832E+00	-0.109E+02	-0.125E+04	-0.145E+05	-0.120E+03
	122.14	-0.291E+01	0.316E+01	-0.334E+04	-0.111E+05	-0.399E+03
7	-245.70	0.121E+01	-0.119E+02	0.229E+04	-0.169E+05	-0.149E+03
	145.73	-0.304E+01	0.334E+01	-0.324E+04	-0.108E+05	-0.497E+03
8	-236.35	0.154E+01	-0.136E+02	0.615E+04	-0.269E+05	-0.136E+03
	168.54	-0.319E+01	0.373E+01	-0.314E+04	-0.105E+05	-0.453E+03
9	-224.90	0.177E+01	-0.136E+02	0.907E+04	-0.343E+05	-0.916E+02
	190.36	-0.332E+01	0.377E+01	-0.303E+04	-0.101E+05	-0.305E+03
10	-211.44	0.186E+01	-0.139E+02	0.108E+05	-0.385E+05	-0.326E+02
	211.01	-0.339E+01	0.396E+01	-0.293E+04	-0.976E+04	-0.108E+03
11	-196.08	0.181E+01	-0.115E+02	0.108E+05	-0.383E+05	0.998E+01
	230.29	-0.335E+01	0.331E+01	-0.284E+04	-0.945E+04	0.332E+02
12	-178.98	0.163E+01	-0.121E+02	0.104E+05	-0.369E+05	0.387E+02
	248.04	-0.319E+01	0.361E+01	-0.275E+04	-0.917E+04	0.129E+03
13	-160.27	0.135E+01	-0.131E+02	0.901E+04	-0.330E+05	0.947E+02
	264.09	-0.289E+01	0.406E+01	-0.266E+04	-0.887E+04	0.315E+03
14	-140.14	0.102E+01	-0.117E+02	0.586E+04	-0.243E+05	0.154E+03
	278.31	-0.244E+01	0.375E+01	-0.258E+04	-0.858E+04	0.513E+03
15	-118.75	0.687E+00	-0.101E+02	0.156E+04	-0.125E+05	0.184E+03
	290.56	-0.189E+01	0.333E+01	-0.251E+04	-0.834E+04	0.613E+03
16	-96.30	0.394E+00	-0.882E+01	-0.308E+04	-0.164E+05	0.185E+03
	300.73	-0.128E+01	0.297E+01	-0.244E+04	-0.814E+04	0.616E+03
17	-72.98	0.178E+00	-0.778E+01	-0.744E+04	-0.279E+05	0.163E+03
	308.74	-0.692E+00	0.210E+01	-0.240E+04	-0.798E+04	0.542E+03
18	-49.02	0.493E-01	-0.708E+01	-0.110E+05	-0.373E+05	0.123E+03
	314.51	-0.206E+00	0.161E+01	-0.236E+04	-0.787E+04	0.408E+03
19	-24.62	-0.439E-02	-0.622E+01	-0.134E+05	-0.437E+05	0.663E+02
	318.00	0.112E+00	0.114E+01	-0.234E+04	-0.779E+04	0.221E+03
20	0.00	-0.155E-01	-0.583E+01	-0.142E+05	-0.440E+05	-0.376E+01
	319.17	0.215E+00	-0.466E-01	-0.233E+04	-0.776E+04	-0.125E+02
21	24.62	-0.280E-01	-0.625E+01	-0.132E+05	-0.432E+05	-0.735E+02
	318.00	0.860E-01	-0.115E+01	-0.234E+04	-0.779E+04	-0.245E+03
22	49.02	-0.852E-01	-0.710E+01	-0.106E+05	-0.363E+05	-0.129E+03
	314.51	-0.255E+00	-0.162E+01	-0.236E+04	-0.787E+04	-0.430E+03

23	72.98	-0.218E+00	-0.786E+01	-0.692E+04	-0.265E+05	-0.168E+03
	308.74	-0.758E+00	-0.215E+01	-0.240E+04	-0.798E+04	-0.559E+03
24	96.30	-0.438E+00	-0.899E+01	-0.246E+04	-0.147E+05	-0.187E+03
	300.73	-0.135E+01	-0.302E+01	-0.245E+04	-0.814E+04	-0.624E+03
25	118.75	-0.730E+00	-0.103E+02	0.219E+04	-0.142E+05	-0.182E+03
	290.56	-0.196E+01	-0.338E+01	-0.251E+04	-0.835E+04	-0.607E+03
26	140.14	-0.106E+01	-0.119E+02	0.640E+04	-0.257E+05	-0.149E+03
	278.31	-0.251E+01	-0.379E+01	-0.258E+04	-0.860E+04	-0.495E+03
27	160.27	-0.138E+01	-0.134E+02	0.936E+04	-0.339E+05	-0.832E+02
	264.09	-0.294E+01	-0.415E+01	-0.267E+04	-0.889E+04	-0.277E+03
28	178.98	-0.164E+01	-0.121E+02	0.103E+05	-0.369E+05	-0.234E+02
	248.04	-0.322E+01	-0.359E+01	-0.276E+04	-0.920E+04	-0.780E+02
29	196.08	-0.180E+01	-0.112E+02	0.104E+05	-0.372E+05	0.744E+00
	230.29	-0.336E+01	-0.321E+01	-0.285E+04	-0.948E+04	0.248E+01
30	211.44	-0.183E+01	-0.135E+02	0.102E+05	-0.370E+05	0.336E+02
	211.01	-0.338E+01	-0.384E+01	-0.294E+04	-0.978E+04	0.112E+03
31	224.90	-0.173E+01	-0.136E+02	0.861E+04	-0.331E+05	0.858E+02
	190.36	-0.331E+01	-0.375E+01	-0.304E+04	-0.101E+05	0.286E+03
32	236.35	-0.151E+01	-0.136E+02	0.587E+04	-0.261E+05	0.130E+03
	168.54	-0.318E+01	-0.375E+01	-0.314E+04	-0.105E+05	0.432E+03
33	245.70	-0.118E+01	-0.120E+02	0.216E+04	-0.166E+05	0.144E+03
	145.73	-0.303E+01	-0.337E+01	-0.324E+04	-0.108E+05	0.480E+03
34	252.84	-0.801E+00	-0.110E+02	-0.128E+04	-0.145E+05	0.117E+03
	122.14	-0.291E+01	-0.319E+01	-0.334E+04	-0.111E+05	0.389E+03
35	257.73	-0.433E+00	-0.111E+02	-0.362E+04	-0.211E+05	0.705E+02
	97.98	-0.282E+01	-0.287E+01	-0.343E+04	-0.114E+05	0.235E+03
36	260.31	-0.115E+00	-0.116E+02	-0.474E+04	-0.243E+05	0.240E+02
	73.47	-0.278E+01	-0.222E+01	-0.350E+04	-0.116E+05	0.799E+02
37	260.57	0.129E+00	-0.115E+02	-0.474E+04	-0.245E+05	-0.242E+02
	48.82	-0.276E+01	-0.178E+01	-0.355E+04	-0.118E+05	-0.806E+02
38	258.50	0.299E+00	-0.103E+02	-0.343E+04	-0.211E+05	-0.926E+02
	24.26	-0.277E+01	-0.663E+00	-0.357E+04	-0.119E+05	-0.308E+03
39	254.12	0.416E+00	-0.909E+01	0.592E-10	-0.119E+05	-0.177E+03
	0.00	-0.278E+01	0.453E+00	-0.358E+04	-0.119E+05	-0.590E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.37391E-03	-0.37391E-03	.27081	0.00000
2	-0.65503E-03	-0.90338E-04	.47442	0.00000
3	-0.76449E-03	0.24882E-04	.55370	0.00000
4	-0.76275E-03	0.33705E-04	.55244	0.00000
5	-0.66299E-03	-0.51897E-04	.48019	0.00000
6	-0.45344E-03	-0.24377E-03	.32841	0.00000

7	-0.14668E-03	-0.53069E-03	.38436	0.00000
8	0.18827E-03	-0.84418E-03	.61142	0.00000
9	0.44357E-03	-0.10775E-02	.78041	0.00000
10	0.59573E-03	-0.12081E-02	.87502	0.00000
11	0.60733E-03	-0.12004E-02	.86943	0.00000
12	0.58335E-03	-0.11588E-02	.83927	0.00000
13	0.47731E-03	-0.10340E-02	.74889	0.00000
14	0.22221E-03	-0.76096E-03	.55115	0.00000
15	-0.13107E-03	-0.39254E-03	.28431	0.00000
16	-0.51365E-03	0.28149E-05	.37203	0.00000
17	-0.87477E-03	0.37371E-03	.63358	0.00000
18	-0.11703E-02	0.67611E-03	.84763	0.00000
19	-0.13706E-02	0.88163E-03	.99266	0.00000
20	-0.14369E-02	0.94892E-03	1.0407	0.02358
21	-0.13548E-02	0.86573E-03	.98122	0.00000
22	-0.11401E-02	0.64588E-03	.82575	0.00000
23	-0.83136E-03	0.33025E-03	.60214	0.00000
24	-0.46146E-03	-0.49612E-04	.33423	0.00000
25	-0.78264E-04	-0.44582E-03	.32289	0.00000
26	0.26699E-03	-0.80648E-03	.58411	0.00000
27	0.50656E-03	-0.10645E-02	.77098	0.00000
28	0.57959E-03	-0.11567E-02	.83777	0.00000
29	0.57286E-03	-0.11676E-02	.84566	0.00000
30	0.54757E-03	-0.11612E-02	.84101	0.00000
31	0.40522E-03	-0.10399E-02	.75321	0.00000
32	0.16395E-03	-0.82055E-03	.59430	0.00000
33	-0.15826E-03	-0.51981E-03	.37649	0.00000
34	-0.45653E-03	-0.24147E-03	.33065	0.00000
35	-0.66180E-03	-0.54120E-04	.47933	0.00000
36	-0.76260E-03	0.32178E-04	.55233	0.00000
37	-0.76820E-03	0.27035E-04	.55639	0.00000
38	-0.66075E-03	-0.85997E-04	.47857	0.00000
39	-0.37439E-03	-0.37439E-03	.27116	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 20

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.30091	0.00000	0.09054
2	-0.29992	-0.16213	0.25208
3	-0.29760	-0.22663	0.31520
4	-0.29335	-0.22866	0.31472
5	-0.28765	-0.17545	0.25819
6	-0.28054	-0.06020	0.13890
7	-0.27256	0.11025	0.18454
8	-0.26392	0.29642	0.36608
9	-0.25508	0.43671	0.50178
10	-0.24642	0.51790	0.57862
11	-0.23864	0.51901	0.57596
12	-0.23153	0.50017	0.55378
13	-0.22399	0.43390	0.48407
14	-0.21678	0.28227	0.32927
15	-0.21069	0.07507	0.11946
16	-0.20555	-0.14828	0.19053
17	-0.20161	-0.35844	0.39909
18	-0.19886	-0.53012	0.56966
19	-0.19673	-0.64661	0.68531
20	-0.19584	-0.68580	0.72415
21	-0.19677	-0.63751	0.67623
22	-0.19886	-0.51276	0.55231
23	-0.20164	-0.33350	0.37416
24	-0.20564	-0.11824	0.16053
25	-0.21080	0.10553	0.15000
26	-0.21708	0.30820	0.35532
27	-0.22449	0.45105	0.50145
28	-0.23222	0.49850	0.55242
29	-0.23931	0.49969	0.55696
30	-0.24690	0.49059	0.55155
31	-0.25540	0.41491	0.48014
32	-0.26420	0.28265	0.35245
33	-0.27284	0.10380	0.17825
34	-0.28086	-0.06175	0.14063
35	-0.28807	-0.17447	0.25745
36	-0.29390	-0.22818	0.31456
37	-0.29823	-0.22832	0.31726
38	-0.30047	-0.16501	0.25530

39	-0.30129	0.00000	0.09077

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 20

LRFD STRENGTH-LIMIT RATIOS AT STEP 20, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	39	11931.	30800.	0.387
BUCKLING THRUST (psi)	39	11931.	41967.	0.284
SEAM THRUST (psi)	39	11931.	23052.	0.518
PLASTIC-PENETRATE (%)	20	2.36	90.00	0.026
COMBINED T&M Ratio	20	0.724	1.000	0.724

LRFD SERVICE PERFORMANCE AT STEP 20, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.72
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.14
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.487E+00 -0.291E+01	-0.977E+01 -0.211E+01	0.713E-10 -0.391E+04	-0.130E+05 -0.130E+05	0.192E+03 0.639E+03
2	-258.50 24.26	-0.388E+00 -0.290E+01	-0.114E+02 -0.118E+01	-0.363E+04 -0.395E+04	-0.229E+05 -0.131E+05	0.986E+02 0.328E+03
3	-260.57 48.82	-0.236E+00 -0.290E+01	-0.130E+02 -0.256E+00	-0.495E+04 -0.397E+04	-0.265E+05 -0.132E+05	0.240E+02 0.799E+02
4	-260.31 73.47	-0.460E-02 -0.291E+01	-0.135E+02 0.202E+00	-0.489E+04 -0.397E+04	-0.263E+05 -0.132E+05	-0.247E+02 -0.824E+02
5	-257.73 97.98	0.302E+00 -0.296E+01	-0.131E+02 0.119E+01	-0.380E+04 -0.394E+04	-0.233E+05 -0.131E+05	-0.703E+02 -0.234E+03
6	-252.84 122.14	0.663E+00 -0.304E+01	-0.131E+02 0.235E+01	-0.148E+04 -0.389E+04	-0.169E+05 -0.129E+05	-0.117E+03 -0.389E+03
7	-245.70 145.73	0.103E+01 -0.317E+01	-0.141E+02 0.394E+01	0.192E+04 -0.380E+04	-0.178E+05 -0.126E+05	-0.143E+03 -0.477E+03

8	-236.35	0.136E+01	-0.157E+02	0.556E+04	-0.271E+05	-0.128E+03
	168.54	-0.332E+01	0.433E+01	-0.368E+04	-0.123E+05	-0.425E+03
9	-224.90	0.160E+01	-0.156E+02	0.821E+04	-0.338E+05	-0.829E+02
	190.36	-0.345E+01	0.430E+01	-0.356E+04	-0.119E+05	-0.276E+03
10	-211.44	0.170E+01	-0.156E+02	0.970E+04	-0.374E+05	-0.284E+02
	211.01	-0.353E+01	0.443E+01	-0.345E+04	-0.115E+05	-0.945E+02
11	-196.08	0.168E+01	-0.134E+02	0.970E+04	-0.371E+05	0.104E+02
	230.29	-0.353E+01	0.384E+01	-0.334E+04	-0.111E+05	0.348E+02
12	-178.98	0.154E+01	-0.134E+02	0.933E+04	-0.358E+05	0.312E+02
	248.04	-0.341E+01	0.395E+01	-0.325E+04	-0.108E+05	0.104E+03
13	-160.27	0.132E+01	-0.146E+02	0.838E+04	-0.329E+05	0.759E+02
	264.09	-0.316E+01	0.448E+01	-0.315E+04	-0.105E+05	0.253E+03
14	-140.14	0.104E+01	-0.136E+02	0.585E+04	-0.258E+05	0.133E+03
	278.31	-0.278E+01	0.431E+01	-0.305E+04	-0.101E+05	0.443E+03
15	-118.75	0.742E+00	-0.121E+02	0.209E+04	-0.154E+05	0.168E+03
	290.56	-0.230E+01	0.395E+01	-0.296E+04	-0.985E+04	0.560E+03
16	-96.30	0.481E+00	-0.104E+02	-0.219E+04	-0.154E+05	0.172E+03
	300.73	-0.176E+01	0.347E+01	-0.288E+04	-0.959E+04	0.573E+03
17	-72.98	0.285E+00	-0.876E+01	-0.616E+04	-0.258E+05	0.141E+03
	308.74	-0.123E+01	0.298E+01	-0.282E+04	-0.938E+04	0.470E+03
18	-49.02	0.165E+00	-0.798E+01	-0.898E+04	-0.332E+05	0.860E+02
	314.51	-0.781E+00	0.275E+01	-0.276E+04	-0.917E+04	0.286E+03
19	-24.62	0.111E+00	-0.863E+01	-0.103E+05	-0.366E+05	0.352E+02
	318.00	-0.467E+00	0.272E+01	-0.269E+04	-0.897E+04	0.117E+03
20	0.00	0.963E-01	-0.102E+02	-0.108E+05	-0.377E+05	0.157E+02
	319.17	-0.318E+00	-0.155E+01	-0.268E+04	-0.893E+04	0.522E+02
21	24.62	0.879E-01	-0.849E+01	-0.113E+05	-0.393E+05	-0.770E+01
	318.00	-0.348E+00	-0.290E+01	-0.274E+04	-0.911E+04	-0.256E+02
22	49.02	0.494E-01	-0.799E+01	-0.107E+05	-0.380E+05	-0.644E+02
	314.51	-0.560E+00	-0.276E+01	-0.280E+04	-0.933E+04	-0.215E+03
23	72.98	-0.521E-01	-0.830E+01	-0.853E+04	-0.323E+05	-0.130E+03
	308.74	-0.937E+00	-0.284E+01	-0.286E+04	-0.954E+04	-0.431E+03
24	96.30	-0.236E+00	-0.972E+01	-0.471E+04	-0.223E+05	-0.179E+03
	300.73	-0.143E+01	-0.325E+01	-0.292E+04	-0.974E+04	-0.597E+03
25	118.75	-0.499E+00	-0.115E+02	0.332E+02	-0.101E+05	-0.195E+03
	290.56	-0.198E+01	-0.378E+01	-0.299E+04	-0.997E+04	-0.651E+03
26	140.14	-0.812E+00	-0.136E+02	0.476E+04	-0.230E+05	-0.171E+03
	278.31	-0.249E+01	-0.421E+01	-0.308E+04	-0.102E+05	-0.569E+03
27	160.27	-0.113E+01	-0.156E+02	0.839E+04	-0.330E+05	-0.104E+03
	264.09	-0.291E+01	-0.384E+01	-0.316E+04	-0.105E+05	-0.348E+03

28	178.98	-0.139E+01	-0.144E+02	0.992E+04	-0.373E+05	-0.358E+02
	248.04	-0.320E+01	-0.271E+01	-0.324E+04	-0.108E+05	-0.119E+03
29	196.08	-0.156E+01	-0.129E+02	0.102E+05	-0.383E+05	-0.623E+01
	230.29	-0.336E+01	-0.230E+01	-0.330E+04	-0.110E+05	-0.207E+02
30	211.44	-0.162E+01	-0.155E+02	0.103E+05	-0.387E+05	0.302E+02
	211.01	-0.339E+01	-0.310E+01	-0.337E+04	-0.112E+05	0.101E+03
31	224.90	-0.153E+01	-0.154E+02	0.878E+04	-0.349E+05	0.908E+02
	190.36	-0.332E+01	-0.224E+01	-0.344E+04	-0.115E+05	0.302E+03
32	236.35	-0.132E+01	-0.150E+02	0.588E+04	-0.274E+05	0.138E+03
	168.54	-0.320E+01	-0.183E+01	-0.351E+04	-0.117E+05	0.459E+03
33	245.70	-0.100E+01	-0.130E+02	0.204E+04	-0.173E+05	0.149E+03
	145.73	-0.306E+01	-0.142E+01	-0.356E+04	-0.119E+05	0.495E+03
34	252.84	-0.645E+00	-0.119E+02	-0.139E+04	-0.157E+05	0.117E+03
	122.14	-0.294E+01	-0.125E+01	-0.361E+04	-0.120E+05	0.389E+03
35	257.73	-0.295E+00	-0.120E+02	-0.365E+04	-0.219E+05	0.692E+02
	97.98	-0.285E+01	-0.903E+00	-0.365E+04	-0.121E+05	0.231E+03
36	260.31	0.297E-02	-0.123E+02	-0.473E+04	-0.249E+05	0.240E+02
	73.47	-0.281E+01	-0.312E+00	-0.367E+04	-0.122E+05	0.800E+02
37	260.57	0.228E+00	-0.119E+02	-0.477E+04	-0.250E+05	-0.245E+02
	48.82	-0.280E+01	-0.785E-01	-0.368E+04	-0.122E+05	-0.816E+02
38	258.50	0.378E+00	-0.106E+02	-0.345E+04	-0.214E+05	-0.952E+02
	24.26	-0.280E+01	0.774E+00	-0.366E+04	-0.122E+05	-0.317E+03
39	254.12	0.475E+00	-0.922E+01	0.301E-10	-0.121E+05	-0.182E+03
	0.00	-0.281E+01	0.163E+01	-0.364E+04	-0.121E+05	-0.606E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40863E-03	-0.40863E-03	.29596	0.00000
2	-0.71704E-03	-0.10783E-03	.51933	0.00000
3	-0.83021E-03	0.85584E-06	.60130	0.00000
4	-0.82509E-03	-0.39524E-05	.59760	0.00000
5	-0.73089E-03	-0.93192E-04	.52937	0.00000
6	-0.53073E-03	-0.28194E-03	.38439	0.00000
7	-0.23602E-03	-0.55743E-03	.40373	0.00000
8	0.81961E-04	-0.85099E-03	.61635	0.00000
9	0.31651E-03	-0.10608E-02	.76831	0.00000
10	0.45307E-03	-0.11734E-02	.84984	0.00000
11	0.46481E-03	-0.11633E-02	.84252	0.00000
12	0.44361E-03	-0.11221E-02	.81268	0.00000
13	0.37387E-03	-0.10314E-02	.74699	0.00000
14	0.17197E-03	-0.80860E-03	.58565	0.00000
15	-0.13375E-03	-0.48433E-03	.35079	0.00000
16	-0.48480E-03	-0.11732E-03	.35113	0.00000
17	-0.81104E-03	0.22261E-03	.58741	0.00000
18	-0.10409E-02	0.46506E-03	.75387	0.00000
19	-0.11473E-02	0.58450E-03	.83098	0.00000
20	-0.11824E-02	0.62074E-03	.85635	0.00000
21	-0.12342E-02	0.66233E-03	.89387	0.00000
22	-0.11927E-02	0.60690E-03	.86382	0.00000
23	-0.10143E-02	0.41594E-03	.73467	0.00000
24	-0.70028E-03	0.89054E-04	.50719	0.00000
25	-0.31013E-03	-0.31570E-03	.22865	0.00000
26	0.78128E-04	-0.72115E-03	.52231	0.00000

27	0.37313E-03	-0.10344E-02	.74922	0.00000
28	0.49371E-03	-0.11708E-02	.84798	0.00000
29	0.51080E-03	-0.12007E-02	.86962	0.00000
30	0.51135E-03	-0.12157E-02	.88052	0.00000
31	0.37658E-03	-0.10963E-02	.79404	0.00000
32	0.12691E-03	-0.85981E-03	.62274	0.00000
33	-0.20127E-03	-0.54326E-03	.39347	0.00000
34	-0.49384E-03	-0.26063E-03	.35768	0.00000
35	-0.68765E-03	-0.74655E-04	.49805	0.00000
36	-0.78033E-03	0.13537E-04	.56518	0.00000
37	-0.78388E-03	0.15642E-04	.56775	0.00000
38	-0.67230E-03	-0.93405E-04	.48693	0.00000
39	-0.38013E-03	-0.38013E-03	.27532	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32884	0.00000	0.10814
2	-0.33191	-0.17491	0.28507
3	-0.33371	-0.23860	0.34997
4	-0.33359	-0.23575	0.34703
5	-0.33159	-0.18309	0.29304
6	-0.32700	-0.07143	0.17836
7	-0.31927	0.09228	0.19421
8	-0.30944	0.26785	0.36361
9	-0.29948	0.39543	0.48512
10	-0.28983	0.46696	0.55096
11	-0.28104	0.46742	0.54640
12	-0.27299	0.44951	0.52403
13	-0.26456	0.40345	0.47344
14	-0.25617	0.28153	0.34715
15	-0.24870	0.10065	0.16250
16	-0.24228	-0.10551	0.16420
17	-0.23677	-0.29676	0.35282
18	-0.23169	-0.43236	0.48603
19	-0.22647	-0.49721	0.54850
20	-0.22544	-0.51849	0.56931
21	-0.23009	-0.54449	0.59743
22	-0.23570	-0.51666	0.57222
23	-0.24079	-0.41064	0.46862
24	-0.24594	-0.22662	0.28711
25	-0.25182	0.00160	0.06501
26	-0.25873	0.22947	0.29642
27	-0.26609	0.40412	0.47492
28	-0.27244	0.47789	0.55211
29	-0.27759	0.49137	0.56843
30	-0.28343	0.49585	0.57618
31	-0.28960	0.42288	0.50675
32	-0.29490	0.28329	0.37026
33	-0.29958	0.09819	0.18793
34	-0.30358	-0.06696	0.15912
35	-0.30673	-0.17599	0.27008
36	-0.30854	-0.22792	0.32312
37	-0.30912	-0.22955	0.32510
38	-0.30810	-0.16620	0.26113
39	-0.30591	0.00000	0.09358

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	3	13215.	30800.	0.429
BUCKLING THRUST (psi)	3	13215.	44526.	0.297
SEAM THRUST (psi)	3	13215.	23052.	0.573
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000

COMBINED T&M Ratio	21	0.597	1.000	0.597

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.65
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

BEAM OUTPUT FOR HL-93 TRUCK γ_{DL}=1.5, γ_{DL}=1.75 (INV), 1.35 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	INV	OPR
		Load Step 20	TDLfac/1.575	Load Step 22	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.35$
		kips/ft.	kips/ft.	kips/ft.			
-254.123	0	-42.94	-27.26	-46.93	2.28	11.09	14.37
-258.503	24.256	-42.80	-27.17	-47.36	2.61	9.71	12.59
-260.573	48.818	-42.47	-26.96	-47.62	2.94	8.67	11.23
-260.315	73.465	-41.86	-26.58	-47.60	3.28	7.88	10.21
-257.731	97.978	-41.05	-26.06	-47.32	3.58	7.34	9.51
-252.844	122.138	-40.03	-25.42	-46.66	3.79	7.09	9.18
-245.697	145.727	-38.89	-24.69	-45.56	3.81	7.21	9.35
-236.355	168.537	-37.66	-23.91	-44.16	3.71	7.58	9.83
-224.901	190.363	-36.40	-23.11	-42.74	3.62	7.96	10.32
-211.437	211.009	-35.16	-22.33	-41.36	3.54	8.33	10.80
-196.083	230.292	-34.06	-21.62	-40.10	3.46	8.71	11.29
-178.978	248.039	-33.04	-20.98	-38.96	3.38	9.07	11.75
-160.273	264.092	-31.96	-20.30	-37.75	3.31	9.44	12.24
-140.136	278.307	-30.94	-19.64	-36.56	3.21	9.90	12.83
-118.747	290.557	-30.07	-19.09	-35.49	3.10	10.41	13.49
-96.296	300.732	-29.33	-18.62	-34.57	3.00	10.91	14.14
-72.985	308.742	-28.77	-18.27	-33.79	2.87	11.50	14.91
-49.022	314.515	-28.38	-18.02	-33.06	2.68	12.40	16.07
-24.621	318	-28.07	-17.82	-32.32	2.43	13.75	17.83
0	319.165	-27.95	-17.74	-32.17	2.41	13.84	17.94
24.621	318	-28.08	-17.83	-32.83	2.72	12.27	15.91
49.022	314.515	-28.38	-18.02	-33.63	3.00	11.05	14.32
72.985	308.742	-28.77	-18.27	-34.36	3.19	10.33	13.39
96.296	300.732	-29.35	-18.63	-35.10	3.29	9.94	12.88
118.747	290.557	-30.09	-19.11	-35.93	3.34	9.66	12.52
140.136	278.307	-30.98	-19.67	-36.92	3.40	9.35	12.12
160.273	264.092	-32.04	-20.34	-37.97	3.39	9.20	11.92
178.978	248.039	-33.14	-21.04	-38.88	3.28	9.33	12.09
196.083	230.292	-34.15	-21.68	-39.61	3.12	9.62	12.48
211.437	211.009	-35.23	-22.37	-40.45	2.98	9.89	12.82
224.901	190.363	-36.45	-23.14	-41.33	2.79	10.32	13.38
236.355	168.537	-37.70	-23.94	-42.08	2.50	11.23	14.56
245.697	145.727	-38.94	-24.72	-42.75	2.18	12.58	16.31
252.844	122.138	-40.08	-25.45	-43.32	1.85	14.47	18.76
257.731	97.978	-41.11	-26.10	-43.77	1.52	17.25	22.36
260.315	73.465	-41.94	-26.63	-44.03	1.19	21.62	28.03
260.573	48.818	-42.56	-27.02	-44.11	0.89	28.67	37.17
258.503	24.256	-42.88	-27.22	-43.97	0.62	40.67	52.72
254.123	0	-42.99	-27.30	-43.65	0.38	66.93	86.77

Thrust Load Rating= 7.09 9.18

BEAM OUTPUT FOR HL-93 TRUCK γ_{DL}=1.5, YDL=1.75 (INV), 1.35 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	INV	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 22	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.35
		kips-ft/ft.		kips-ft/ft.			
-254.123	0	0.00	0.00	0.00	0.00		
-258.503	24.256	-3.37	-2.14	-3.63	0.15	66.16	85.77
-260.573	48.818	-4.71	-2.99	-4.95	0.14	65.51	84.93
-260.315	73.465	-4.75	-3.01	-4.89	0.08	110.35	143.05
-257.731	97.978	-3.64	-2.31	-3.80	0.09	109.04	141.35
-252.844	122.138	-1.25	-0.79	-1.48	0.13	83.94	108.81
-245.697	145.727	2.29	1.45	1.92	0.21	49.80	64.55
-236.355	168.537	6.15	3.91	5.56	0.34	25.12	32.57
-224.901	190.363	9.07	5.76	8.21	0.49	14.15	18.34
-211.437	211.009	10.75	6.83	9.70	0.60	9.95	12.90
-196.083	230.292	10.78	6.84	9.70	0.61	9.80	12.71
-178.978	248.039	10.38	6.59	9.33	0.60	10.34	13.40
-160.273	264.092	9.01	5.72	8.38	0.36	19.27	24.98
-140.136	278.307	5.86	3.72	5.85	0.01	978.82	1268.84
-118.747	290.557	1.56	0.99	2.09	0.30	36.30	47.05
-96.296	300.732	-3.08	-1.95	-2.19	0.51	20.08	26.03
-72.985	308.742	-7.44	-4.73	-6.16	0.73	10.68	13.84
-49.022	314.515	-11.01	-6.99	-8.98	1.16	5.07	6.57
-24.621	318	-13.43	-8.52	-10.32	1.77	2.57	3.33
0	319.165	-14.24	-9.04	-10.77	1.99	2.07	2.69
24.621	318	-13.24	-8.40	-11.30	1.10	4.22	5.48
49.022	314.515	-10.65	-6.76	-10.73	0.05	131.32	170.23
72.985	308.742	-6.92	-4.40	-8.53	0.92	8.85	11.47
96.296	300.732	-2.46	-1.56	-4.71	1.29	8.19	10.61
118.747	290.557	2.19	1.39	0.03	1.23	8.66	11.22
140.136	278.307	6.40	4.06	4.76	0.93	8.97	11.63
160.273	264.092	9.36	5.95	8.39	0.56	12.15	15.76
178.978	248.039	10.35	6.57	9.92	0.24	25.49	33.04
196.083	230.292	10.37	6.59	10.20	0.10	63.01	81.68
211.437	211.009	10.19	6.47	10.30	0.06	101.21	131.20
224.901	190.363	8.61	5.47	8.78	0.09	75.95	98.46
236.355	168.537	5.87	3.73	5.88	0.01	1142.62	1481.17
245.697	145.727	2.16	1.37	2.04	0.07	160.47	208.01
252.844	122.138	-1.28	-0.81	-1.39	0.06	180.56	234.06
257.731	97.978	-3.62	-2.30	-3.65	0.02	546.85	708.87
260.315	73.465	-4.74	-3.01	-4.73	0.00	2998.33	3886.73
260.573	48.818	-4.74	-3.01	-4.77	0.01	635.94	824.37
258.503	24.256	-3.43	-2.18	-3.45	0.01	709.65	919.92
254.123	0	0.00	0.00	0.00	0.00		

Moment Load Rating=	2.07	2.69
Actual Load Rating (from CANDE)	2.07	2.69

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage HL-93 TRUCK INV
LIVE LOADS MULTIPLIED BY 2.07

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -238.3	F = 0.000
1142	22	F = 0.000	F = -238.3	F = 0.000
1138	21	F = 0.000	F = -238.3	F = 0.000
1138	22	F = 0.000	F = -238.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000

856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23

25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21
22	1.750	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.574E+00 -0.303E+01	-0.102E+02 -0.420E+01	0.180E-09 -0.425E+04	-0.141E+05 -0.141E+05	0.207E+03 0.691E+03
2	-258.50 24.26	-0.502E+00 -0.303E+01	-0.124E+02 -0.337E+01	-0.392E+04 -0.434E+04	-0.249E+05 -0.144E+05	0.102E+03 0.339E+03
3	-260.57 48.82	-0.372E+00 -0.303E+01	-0.145E+02 -0.254E+01	-0.523E+04 -0.441E+04	-0.287E+05 -0.147E+05	0.191E+02 0.637E+02
4	-260.31 73.47	-0.159E+00 -0.305E+01	-0.156E+02 -0.198E+01	-0.504E+04 -0.447E+04	-0.284E+05 -0.149E+05	-0.292E+02 -0.974E+02
5	-257.73 97.98	0.132E+00 -0.309E+01	-0.153E+02 -0.602E+00	-0.394E+04 -0.449E+04	-0.255E+05 -0.150E+05	-0.712E+02 -0.237E+03
6	-252.84 122.14	0.479E+00 -0.318E+01	-0.155E+02 0.142E+01	-0.166E+04 -0.447E+04	-0.193E+05 -0.149E+05	-0.115E+03 -0.382E+03
7	-245.70 145.73	0.840E+00 -0.330E+01	-0.165E+02 0.462E+01	0.161E+04 -0.438E+04	-0.189E+05 -0.146E+05	-0.138E+03 -0.459E+03
8	-236.35 168.54	0.116E+01 -0.345E+01	-0.181E+02 0.498E+01	0.507E+04 -0.425E+04	-0.277E+05 -0.141E+05	-0.119E+03 -0.397E+03
9	-224.90 190.36	0.140E+01 -0.359E+01	-0.179E+02 0.495E+01	0.748E+04 -0.412E+04	-0.337E+05 -0.137E+05	-0.708E+02 -0.236E+03
10	-211.44 211.01	0.152E+01 -0.368E+01	-0.176E+02 0.497E+01	0.863E+04 -0.399E+04	-0.364E+05 -0.133E+05	-0.159E+02 -0.530E+02

11	-196.08	0.152E+01	-0.157E+02	0.845E+04	-0.355E+05	0.241E+02
	230.29	-0.369E+01	0.450E+01	-0.387E+04	-0.129E+05	0.804E+02
12	-178.98	0.142E+01	-0.146E+02	0.777E+04	-0.333E+05	0.389E+02
	248.04	-0.361E+01	0.429E+01	-0.376E+04	-0.125E+05	0.130E+03
13	-160.27	0.125E+01	-0.156E+02	0.702E+04	-0.309E+05	0.629E+02
	264.09	-0.343E+01	0.474E+01	-0.365E+04	-0.122E+05	0.210E+03
14	-140.14	0.103E+01	-0.155E+02	0.531E+04	-0.260E+05	0.108E+03
	278.31	-0.313E+01	0.487E+01	-0.354E+04	-0.118E+05	0.360E+03
15	-118.75	0.787E+00	-0.143E+02	0.241E+04	-0.179E+05	0.147E+03
	290.56	-0.274E+01	0.462E+01	-0.344E+04	-0.114E+05	0.491E+03
16	-96.30	0.570E+00	-0.121E+02	-0.123E+04	-0.144E+05	0.153E+03
	300.73	-0.230E+01	0.399E+01	-0.334E+04	-0.111E+05	0.511E+03
17	-72.98	0.404E+00	-0.958E+01	-0.452E+04	-0.230E+05	0.110E+03
	308.74	-0.185E+01	0.325E+01	-0.327E+04	-0.109E+05	0.365E+03
18	-49.02	0.298E+00	-0.890E+01	-0.616E+04	-0.271E+05	0.340E+02
	314.51	-0.146E+01	0.305E+01	-0.319E+04	-0.106E+05	0.113E+03
19	-24.62	0.244E+00	-0.120E+02	-0.597E+04	-0.263E+05	-0.469E+01
	318.00	-0.116E+01	0.399E+01	-0.311E+04	-0.104E+05	-0.156E+02
20	0.00	0.226E+00	-0.161E+02	-0.607E+04	-0.265E+05	0.494E+02
	319.17	-0.951E+00	-0.329E+01	-0.310E+04	-0.103E+05	0.164E+03
21	24.62	0.222E+00	-0.106E+02	-0.897E+04	-0.346E+05	0.830E+02
	318.00	-0.852E+00	-0.357E+01	-0.319E+04	-0.106E+05	0.276E+03
22	49.02	0.207E+00	-0.867E+01	-0.111E+05	-0.405E+05	0.169E+02
	314.51	-0.899E+00	-0.301E+01	-0.328E+04	-0.109E+05	0.562E+02
23	72.98	0.144E+00	-0.821E+01	-0.109E+05	-0.402E+05	-0.865E+02
	308.74	-0.112E+01	-0.285E+01	-0.335E+04	-0.112E+05	-0.288E+03
24	96.30	0.310E-02	-0.101E+02	-0.777E+04	-0.321E+05	-0.179E+03
	300.73	-0.149E+01	-0.340E+01	-0.341E+04	-0.114E+05	-0.595E+03
25	118.75	-0.227E+00	-0.127E+02	-0.273E+04	-0.189E+05	-0.222E+03
	290.56	-0.196E+01	-0.418E+01	-0.349E+04	-0.116E+05	-0.740E+03
26	140.14	-0.523E+00	-0.155E+02	0.281E+04	-0.194E+05	-0.207E+03
	278.31	-0.245E+01	-0.493E+01	-0.358E+04	-0.119E+05	-0.691E+03
27	160.27	-0.838E+00	-0.180E+02	0.737E+04	-0.319E+05	-0.137E+03
	264.09	-0.287E+01	-0.379E+01	-0.368E+04	-0.122E+05	-0.456E+03
28	178.98	-0.111E+01	-0.171E+02	0.961E+04	-0.381E+05	-0.534E+02
	248.04	-0.317E+01	-0.160E+01	-0.373E+04	-0.124E+05	-0.178E+03
29	196.08	-0.130E+01	-0.147E+02	0.101E+05	-0.397E+05	-0.142E+02
	230.29	-0.334E+01	-0.133E+01	-0.377E+04	-0.126E+05	-0.473E+02
30	211.44	-0.138E+01	-0.176E+02	0.105E+05	-0.407E+05	0.270E+02
	211.01	-0.338E+01	-0.211E+01	-0.381E+04	-0.127E+05	0.898E+02

31	224.90	-0.131E+01	-0.173E+02	0.898E+04	-0.368E+05	0.957E+02
	190.36	-0.333E+01	-0.413E+00	-0.385E+04	-0.128E+05	0.319E+03
32	236.35	-0.111E+01	-0.163E+02	0.590E+04	-0.287E+05	0.146E+03
	168.54	-0.321E+01	0.325E+00	-0.387E+04	-0.129E+05	0.486E+03
33	245.70	-0.813E+00	-0.139E+02	0.192E+04	-0.180E+05	0.153E+03
	145.73	-0.308E+01	0.700E+00	-0.387E+04	-0.129E+05	0.509E+03
34	252.84	-0.473E+00	-0.128E+02	-0.149E+04	-0.169E+05	0.117E+03
	122.14	-0.296E+01	0.822E+00	-0.387E+04	-0.129E+05	0.389E+03
35	257.73	-0.143E+00	-0.129E+02	-0.368E+04	-0.227E+05	0.689E+02
	97.98	-0.288E+01	0.121E+01	-0.385E+04	-0.128E+05	0.230E+03
36	260.31	0.134E+00	-0.130E+02	-0.473E+04	-0.254E+05	0.257E+02
	73.47	-0.284E+01	0.175E+01	-0.382E+04	-0.127E+05	0.857E+02
37	260.57	0.338E+00	-0.122E+02	-0.479E+04	-0.254E+05	-0.227E+02
	48.82	-0.283E+01	0.176E+01	-0.378E+04	-0.126E+05	-0.754E+02
38	258.50	0.466E+00	-0.108E+02	-0.346E+04	-0.216E+05	-0.940E+02
	24.26	-0.283E+01	0.234E+01	-0.373E+04	-0.124E+05	-0.313E+03
39	254.12	0.542E+00	-0.943E+01	-0.205E-09	-0.122E+05	-0.180E+03
	0.00	-0.283E+01	0.291E+01	-0.366E+04	-0.122E+05	-0.600E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.44364E-03	-0.44364E-03	.32132	0.00000
2	-0.78217E-03	-0.12407E-03	.56650	0.00000
3	-0.89989E-03	-0.22356E-04	.65177	0.00000
4	-0.88981E-03	-0.43567E-04	.64446	0.00000
5	-0.79975E-03	-0.13886E-03	.57924	0.00000
6	-0.60636E-03	-0.32787E-03	.43917	0.00000
7	-0.32269E-03	-0.59305E-03	.42953	0.00000
8	-0.18638E-04	-0.86939E-03	.62968	0.00000
9	0.19696E-03	-0.10571E-02	.76565	0.00000
10	0.30762E-03	-0.11410E-02	.82637	0.00000
11	0.30428E-03	-0.11129E-02	.80608	0.00000
12	0.25878E-03	-0.10451E-02	.75693	0.00000
13	0.20673E-03	-0.97045E-03	.70287	0.00000
14	0.75214E-04	-0.81559E-03	.59071	0.00000
15	-0.15719E-03	-0.56103E-03	.40634	0.00000
16	-0.45275E-03	-0.24608E-03	.32792	0.00000
17	-0.72026E-03	0.37629E-04	.52167	0.00000
18	-0.85053E-03	0.18284E-03	.61602	0.00000
19	-0.82544E-03	0.17567E-03	.59785	0.00000
20	-0.83228E-03	0.18257E-03	.60280	0.00000
21	-0.10864E-02	0.41900E-03	.78685	0.00000
22	-0.12723E-02	0.58684E-03	.92147	0.00000
23	-0.12611E-02	0.56116E-03	.91340	0.00000
24	-0.10082E-02	0.29458E-03	.73020	0.00000
25	-0.59395E-03	0.13539E-03	.43019	0.00000
26	-0.13848E-03	-0.61031E-03	.44204	0.00000
27	0.23416E-03	-0.10023E-02	.72594	0.00000
28	0.41558E-03	-0.11960E-02	.86625	0.00000
29	0.45695E-03	-0.12446E-02	.90144	0.00000
30	0.48012E-03	-0.12771E-02	.92500	0.00000
31	0.35054E-03	-0.11557E-02	.83701	0.00000
32	0.91135E-04	-0.89926E-03	.65131	0.00000
33	-0.24300E-03	-0.56584E-03	.40983	0.00000
34	-0.52883E-03	-0.27917E-03	.38302	0.00000
35	-0.71123E-03	-0.93782E-04	.51513	0.00000
36	-0.79617E-03	-0.25763E-05	.57665	0.00000
37	-0.79702E-03	0.68623E-05	.57726	0.00000
38	-0.67933E-03	-0.99532E-04	.49202	0.00000

39	-0.38270E-03	-0.38270E-03	.27718	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.35702	0.00000	0.12746
2	-0.36465	-0.18894	0.32191
3	-0.37109	-0.25194	0.38965
4	-0.37557	-0.24296	0.38401
5	-0.37767	-0.18974	0.33238
6	-0.37591	-0.07996	0.22127
7	-0.36847	0.07762	0.21339
8	-0.35732	0.24426	0.37193
9	-0.34611	0.36005	0.47984
10	-0.33532	0.41589	0.52833
11	-0.32539	0.40689	0.51277
12	-0.31639	0.37435	0.47445
13	-0.30730	0.33797	0.43241
14	-0.29791	0.25575	0.34450
15	-0.28899	0.11595	0.19946
16	-0.28119	-0.05934	0.13840
17	-0.27468	-0.21759	0.29304
18	-0.26867	-0.29668	0.36887
19	-0.26145	-0.28742	0.35578
20	-0.26089	-0.29218	0.36025
21	-0.26854	-0.43221	0.50432
22	-0.27580	-0.53376	0.60982
23	-0.28165	-0.52319	0.60251
24	-0.28714	-0.37403	0.45647
25	-0.29347	-0.13165	0.21778
26	-0.30130	0.13546	0.22624
27	-0.30908	0.35499	0.45052
28	-0.31403	0.46270	0.56132
29	-0.31694	0.48853	0.58897
30	-0.32070	0.50452	0.60737
31	-0.32396	0.43244	0.53738
32	-0.32517	0.28435	0.39008
33	-0.32546	0.09269	0.19861
34	-0.32512	-0.07168	0.17738
35	-0.32392	-0.17727	0.28219
36	-0.32140	-0.22784	0.33114
37	-0.31794	-0.23080	0.33188
38	-0.31340	-0.16646	0.26468
39	-0.30797	0.00000	0.09485

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	14956.	30800.	0.486
BUCKL1NG THRUST (psi)	5	14956.	45744.	0.327
SEAM THRUST (psi)	5	14956.	23052.	0.649
PLAST1C-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	22	0.610	1.000	0.610

LRFD SERV1CE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.58

RISE HEIGHT OF VERT1CAL DEFLECTION (1N)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.12

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020

* * * * NORMAL EXIT FROM CANDE * * * *

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage HL-93 TRUCK-OPR
LIVE LOADS X 2.69

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI)..... 0.29000E+08

POISSONS RATIO OF METAL (-) ..... 0.30000E+00

YIELD STRESS OF METAL (PSI)..... 0.44000E+05

LONGITUDINAL SEAM STRENGTH (PSI)... 0.34406E+05

DENSITY OF METAL (PCI)..... 0.28400E+00

MODULUS OF UPPER BI-SLOPE (PSI).... 0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -309.8	F = 0.000
1142	22	F = 0.000	F = -309.8	F = 0.000
1138	21	F = 0.000	F = -309.8	F = 0.000
1138	22	F = 0.000	F = -309.8	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000

838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5

7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000

21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.350	Factor for load step #21
22	1.350	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.576E+00 -0.303E+01	-0.102E+02 -0.428E+01	-0.133E-10 -0.424E+04	-0.141E+05 -0.141E+05	0.208E+03 0.692E+03
2	-258.50 24.26	-0.504E+00 -0.303E+01	-0.124E+02 -0.342E+01	-0.393E+04 -0.434E+04	-0.249E+05 -0.144E+05	0.102E+03 0.340E+03
3	-260.57 48.82	-0.373E+00 -0.303E+01	-0.145E+02 -0.255E+01	-0.524E+04 -0.441E+04	-0.287E+05 -0.147E+05	0.191E+02 0.636E+02
4	-260.31 73.47	-0.160E+00 -0.305E+01	-0.156E+02 -0.197E+01	-0.505E+04 -0.447E+04	-0.284E+05 -0.149E+05	-0.294E+02 -0.979E+02
5	-257.73 97.98	0.131E+00 -0.309E+01	-0.153E+02 -0.553E+00	-0.393E+04 -0.449E+04	-0.255E+05 -0.150E+05	-0.714E+02 -0.238E+03
6	-252.84 122.14	0.479E+00 -0.318E+01	-0.155E+02 0.155E+01	-0.165E+04 -0.447E+04	-0.193E+05 -0.149E+05	-0.115E+03 -0.382E+03

7	-245.70	0.840E+00	-0.164E+02	0.162E+04	-0.189E+05	-0.138E+03
	145.73	-0.330E+01	0.463E+01	-0.438E+04	-0.146E+05	-0.461E+03
8	-236.35	0.116E+01	-0.180E+02	0.511E+04	-0.278E+05	-0.120E+03
	168.54	-0.345E+01	0.497E+01	-0.424E+04	-0.141E+05	-0.400E+03
9	-224.90	0.140E+01	-0.179E+02	0.754E+04	-0.338E+05	-0.709E+02
	190.36	-0.359E+01	0.497E+01	-0.411E+04	-0.137E+05	-0.236E+03
10	-211.44	0.152E+01	-0.176E+02	0.867E+04	-0.364E+05	-0.141E+02
	211.01	-0.368E+01	0.499E+01	-0.398E+04	-0.133E+05	-0.471E+02
11	-196.08	0.152E+01	-0.158E+02	0.842E+04	-0.354E+05	0.279E+02
	230.29	-0.369E+01	0.452E+01	-0.386E+04	-0.129E+05	0.929E+02
12	-178.98	0.142E+01	-0.144E+02	0.762E+04	-0.329E+05	0.417E+02
	248.04	-0.361E+01	0.424E+01	-0.376E+04	-0.125E+05	0.139E+03
13	-160.27	0.125E+01	-0.154E+02	0.685E+04	-0.305E+05	0.608E+02
	264.09	-0.342E+01	0.467E+01	-0.365E+04	-0.122E+05	0.203E+03
14	-140.14	0.102E+01	-0.156E+02	0.527E+04	-0.259E+05	0.104E+03
	278.31	-0.313E+01	0.488E+01	-0.354E+04	-0.118E+05	0.347E+03
15	-118.75	0.789E+00	-0.144E+02	0.247E+04	-0.180E+05	0.146E+03
	290.56	-0.274E+01	0.466E+01	-0.343E+04	-0.114E+05	0.485E+03
16	-96.30	0.574E+00	-0.121E+02	-0.117E+04	-0.142E+05	0.154E+03
	300.73	-0.230E+01	0.400E+01	-0.334E+04	-0.111E+05	0.514E+03
17	-72.98	0.408E+00	-0.941E+01	-0.450E+04	-0.229E+05	0.110E+03
	308.74	-0.186E+01	0.319E+01	-0.326E+04	-0.109E+05	0.365E+03
18	-49.02	0.302E+00	-0.873E+01	-0.608E+04	-0.269E+05	0.301E+02
	314.51	-0.147E+01	0.300E+01	-0.319E+04	-0.106E+05	0.100E+03
19	-24.62	0.249E+00	-0.121E+02	-0.575E+04	-0.257E+05	-0.827E+01
	318.00	-0.117E+01	0.403E+01	-0.311E+04	-0.103E+05	-0.275E+02
20	0.00	0.230E+00	-0.164E+02	-0.582E+04	-0.258E+05	0.523E+02
	319.17	-0.959E+00	-0.315E+01	-0.310E+04	-0.103E+05	0.174E+03
21	24.62	0.227E+00	-0.105E+02	-0.892E+04	-0.345E+05	0.893E+02
	318.00	-0.853E+00	-0.355E+01	-0.319E+04	-0.106E+05	0.297E+03
22	49.02	0.213E+00	-0.859E+01	-0.112E+05	-0.408E+05	0.220E+02
	314.51	-0.893E+00	-0.300E+01	-0.327E+04	-0.109E+05	0.732E+02
23	72.98	0.152E+00	-0.799E+01	-0.111E+05	-0.408E+05	-0.842E+02
	308.74	-0.111E+01	-0.279E+01	0.334E+04	-0.111E+05	-0.281E+03
24	96.30	0.112E-01	-0.987E+01	-0.800E+04	-0.327E+05	-0.181E+03
	300.73	-0.148E+01	-0.333E+01	-0.340E+04	-0.113E+05	-0.603E+03
25	118.75	-0.219E+00	-0.127E+02	-0.286E+04	-0.192E+05	-0.227E+03
	290.56	-0.195E+01	-0.416E+01	-0.348E+04	-0.116E+05	-0.755E+03
26	140.14	-0.517E+00	-0.155E+02	0.280E+04	-0.194E+05	-0.211E+03
	278.31	-0.244E+01	-0.494E+01	-0.357E+04	-0.119E+05	-0.702E+03

27	160.27	-0.834E+00	-0.180E+02	0.743E+04	-0.321E+05	-0.138E+03
	264.09	-0.286E+01	-0.390E+01	-0.367E+04	-0.122E+05	-0.461E+03
28	178.98	-0.111E+01	-0.171E+02	0.969E+04	-0.383E+05	-0.534E+02
	248.04	-0.317E+01	-0.154E+01	-0.372E+04	-0.124E+05	-0.178E+03
29	196.08	-0.130E+01	-0.148E+02	0.102E+05	-0.398E+05	-0.128E+02
	230.29	-0.333E+01	-0.133E+01	-0.376E+04	-0.125E+05	-0.425E+02
30	211.44	-0.138E+01	-0.175E+02	0.105E+05	-0.407E+05	0.285E+02
	211.01	-0.338E+01	-0.200E+01	-0.380E+04	-0.127E+05	0.949E+02
31	224.90	-0.131E+01	-0.172E+02	0.898E+04	-0.368E+05	0.960E+02
	190.36	-0.332E+01	-0.386E+00	-0.384E+04	-0.128E+05	0.320E+03
32	236.35	-0.111E+01	-0.162E+02	0.591E+04	-0.286E+05	0.146E+03
	168.54	-0.321E+01	0.324E+00	-0.385E+04	-0.128E+05	0.485E+03
33	245.70	-0.813E+00	-0.138E+02	0.193E+04	-0.180E+05	0.153E+03
	145.73	-0.307E+01	0.684E+00	-0.386E+04	-0.128E+05	0.509E+03
34	252.84	-0.472E+00	-0.128E+02	-0.149E+04	-0.168E+05	0.117E+03
	122.14	-0.296E+01	0.798E+00	-0.385E+04	-0.128E+05	0.389E+03
35	257.73	-0.143E+00	-0.128E+02	-0.368E+04	-0.226E+05	0.691E+02
	97.98	-0.288E+01	0.119E+01	-0.384E+04	-0.128E+05	0.230E+03
36	260.31	0.135E+00	-0.130E+02	-0.474E+04	-0.253E+05	0.258E+02
	73.47	-0.284E+01	0.174E+01	-0.381E+04	-0.127E+05	0.858E+02
37	260.57	0.338E+00	-0.121E+02	-0.479E+04	-0.254E+05	-0.229E+02
	48.82	-0.282E+01	0.176E+01	-0.377E+04	-0.126E+05	-0.763E+02
38	258.50	0.467E+00	-0.108E+02	-0.345E+04	-0.216E+05	-0.941E+02
	24.26	-0.282E+01	0.234E+01	-0.372E+04	-0.124E+05	-0.313E+03
39	254.12	0.543E+00	-0.944E+01	0.102E-09	-0.122E+05	-0.180E+03
	0.00	-0.283E+01	0.292E+01	-0.365E+04	-0.122E+05	-0.598E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.44340E-03	-0.44340E-03	.32114	0.00000
2	-0.78259E-03	-0.12340E-03	.56681	0.00000
3	-0.90033E-03	-0.21809E-04	.65209	0.00000
4	-0.88999E-03	-0.43275E-04	.64460	0.00000
5	-0.79920E-03	-0.13916E-03	.57884	0.00000
6	-0.60542E-03	-0.32810E-03	.43849	0.00000
7	-0.32134E-03	-0.59331E-03	.42972	0.00000
8	-0.15066E-04	-0.87183E-03	.63145	0.00000
9	0.20281E-03	-0.10618E-02	.76905	0.00000
10	0.31141E-03	-0.11435E-02	.82824	0.00000
11	0.30217E-03	-0.11096E-02	.80364	0.00000
12	0.24649E-03	-0.10317E-02	.74721	0.00000
13	0.19327E-03	-0.95623E-03	.69258	0.00000
14	0.72517E-04	-0.81223E-03	.58828	0.00000
15	-0.15157E-03	-0.56578E-03	.40978	0.00000
16	-0.44689E-03	-0.25090E-03	.32367	0.00000
17	-0.71789E-03	0.36194E-04	.51995	0.00000
18	-0.84385E-03	0.17684E-03	.61118	0.00000
19	-0.80666E-03	0.15763E-03	.58424	0.00000
20	-0.81115E-03	0.16267E-03	.58750	0.00000
21	-0.10811E-02	0.41529E-03	.78303	0.00000

22	-0.12803E-02	0.59639E-03	.92727	0.00000
23	-0.12797E-02	0.58142E-03	.92687	0.00000
24	-0.10270E-02	0.31543E-03	.74385	0.00000
25	-0.60339E-03	-0.12367E-03	.43702	0.00000
26	-0.13821E-03	-0.60819E-03	.44050	0.00000
27	0.24057E-03	-0.10066E-02	.72904	0.00000
28	0.42344E-03	-0.12019E-02	.87049	0.00000
29	0.46414E-03	-0.12496E-02	.90508	0.00000
30	0.48271E-03	-0.12773E-02	.92510	0.00000
31	0.35185E-03	-0.11542E-02	.83594	0.00000
32	0.92698E-04	-0.89796E-03	.65037	0.00000
33	-0.24137E-03	-0.56465E-03	.40896	0.00000
34	-0.52723E-03	-0.27806E-03	.38186	0.00000
35	-0.71002E-03	-0.92406E-04	.51425	0.00000
36	-0.79535E-03	-0.89219E-06	.57606	0.00000
37	-0.79597E-03	0.82566E-05	.57650	0.00000
38	-0.67756E-03	-0.98878E-04	.49074	0.00000
39	-0.38148E-03	-0.38148E-03	.27630	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.35682	0.00000	0.12732
2	-0.36455	-0.18925	0.32215
3	-0.37105	-0.25223	0.38990
4	-0.37552	-0.24310	0.38412
5	-0.37757	-0.18950	0.33206
6	-0.37562	-0.07962	0.22071
7	-0.36803	0.07808	0.21353
8	-0.35687	0.24597	0.37333
9	-0.34564	0.36308	0.48255
10	-0.33483	0.41772	0.52983
11	-0.32488	0.40532	0.51086
12	-0.31594	0.36696	0.46678
13	-0.30700	0.33003	0.42427
14	-0.29764	0.25402	0.34261
15	-0.28864	0.11892	0.20224
16	-0.28077	-0.05627	0.13510
17	-0.27430	-0.21650	0.29174
18	-0.26839	-0.29304	0.36508
19	-0.26115	-0.27685	0.34505
20	-0.26040	-0.28040	0.34821
21	-0.26792	-0.42963	0.50141
22	-0.27518	-0.53880	0.61452
23	-0.28098	-0.53434	0.61329
24	-0.28633	-0.38542	0.46741
25	-0.29255	-0.13773	0.22331
26	-0.30034	0.13493	0.22513
27	-0.30822	0.35806	0.45306
28	-0.31322	0.46664	0.56474
29	-0.31606	0.49203	0.59193
30	-0.31972	0.50530	0.60752
31	-0.32284	0.43239	0.53661
32	-0.32402	0.28442	0.38941
33	-0.32432	0.09281	0.19800
34	-0.32403	-0.07154	0.17653
35	-0.32288	-0.17732	0.28157
36	-0.32039	-0.22809	0.33074
37	-0.31696	-0.23090	0.33136
38	-0.31242	-0.16614	0.26375
39	-0.30700	0.00000	0.09425

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

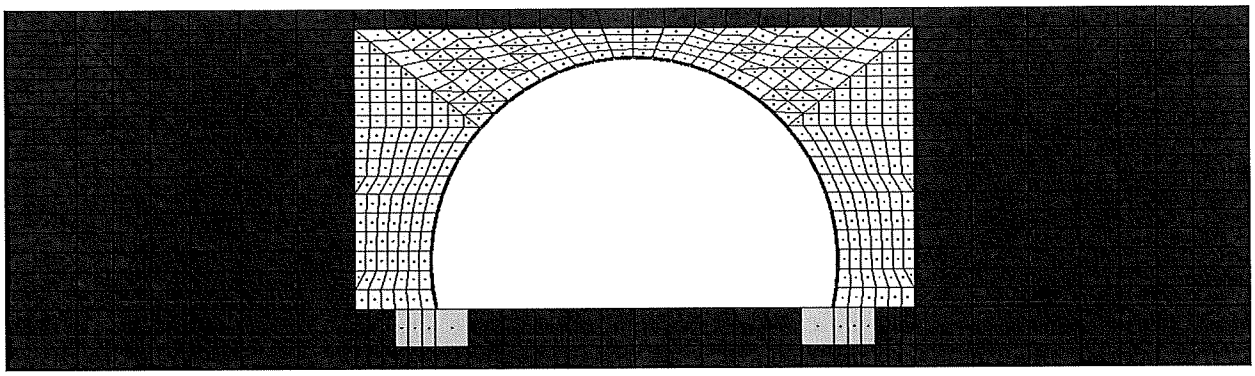
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	14952.	30800.	0.485

BUCKLING THRUST (psi)	5	14952.	46283.	0.323
SEAM THRUST (psi)	5	14952.	23052.	0.649
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	22	0.615	1.000	0.615

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.54
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.11
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage TYPE 3

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -143.9	F = 0.000
1141	21	F = 0.000	F = -143.9	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000

936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1146	21	F =	0.000	F =	-100.8	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000

12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	0.472E+00 -0.284E+01	0.953E+01 -0.163E+01	0.112E-09 -0.371E+04	-0.124E+05 -0.124E+05	0.181E+03 0.602E+03
2	-258.50 24.26	-0.369E+00 -0.283E+01	-0.109E+02 -0.827E+00	-0.347E+04 -0.374E+04	-0.217E+05 -0.125E+05	0.944E+02 0.314E+03
3	-260.57 48.82	-0.214E+00 -0.283E+01	-0.122E+02 -0.279E-01	-0.481E+04 -0.376E+04	-0.254E+05 -0.125E+05	0.241E+02 0.804E+02
4	-260.31 73.47	0.171E-01 -0.284E+01	-0.126E+02 0.215E+00	-0.480E+04 -0.375E+04	-0.253E+05 -0.125E+05	-0.245E+02 -0.817E+02

5	-257.73	0.323E+00	-0.123E+02	-0.373E+04	-0.224E+05	-0.713E+02
	97.98	-0.289E+01	0.871E+00	-0.373E+04	-0.124E+05	-0.237E+03
6	-252.84	0.680E+00	-0.121E+02	-0.141E+04	-0.161E+05	-0.121E+03
	122.14	-0.297E+01	0.137E+01	-0.369E+04	-0.123E+05	-0.403E+03
7	-245.70	0.105E+01	-0.132E+02	0.214E+04	-0.178E+05	-0.154E+03
	145.73	-0.309E+01	0.168E+01	-0.364E+04	-0.121E+05	-0.513E+03
8	-236.35	0.137E+01	-0.154E+02	0.611E+04	-0.282E+05	-0.141E+03
	168.54	-0.324E+01	0.234E+01	-0.357E+04	-0.119E+05	-0.471E+03
9	-224.90	0.159E+01	-0.158E+02	0.903E+04	-0.358E+05	-0.901E+02
	190.36	-0.336E+01	0.299E+01	-0.350E+04	-0.116E+05	-0.300E+03
10	-211.44	0.167E+01	-0.160E+02	0.105E+05	-0.394E+05	-0.237E+02
	211.01	-0.343E+01	0.376E+01	-0.341E+04	-0.113E+05	-0.791E+02
11	-196.08	0.161E+01	-0.135E+02	0.102E+05	-0.382E+05	0.229E+02
	230.29	-0.340E+01	0.340E+01	-0.332E+04	-0.110E+05	0.762E+02
12	-178.98	0.144E+01	-0.143E+02	0.937E+04	-0.358E+05	0.579E+02
	248.04	-0.324E+01	0.425E+01	-0.322E+04	-0.107E+05	0.193E+03
13	-160.27	0.118E+01	-0.145E+02	0.741E+04	-0.302E+05	0.114E+03
	264.09	-0.296E+01	0.446E+01	-0.312E+04	-0.104E+05	0.381E+03
14	-140.14	0.876E+00	-0.129E+02	0.396E+04	-0.207E+05	0.163E+03
	278.31	-0.255E+01	0.410E+01	-0.303E+04	-0.101E+05	0.541E+03
15	-118.75	0.581E+00	-0.107E+02	-0.208E+03	-0.104E+05	0.172E+03
	290.56	-0.206E+01	0.351E+01	-0.295E+04	-0.982E+04	0.573E+03
16	-96.30	0.334E+00	-0.931E+01	-0.396E+04	-0.202E+05	0.145E+03
	300.73	-0.155E+01	0.313E+01	-0.288E+04	-0.960E+04	0.482E+03
17	-72.98	0.159E+00	-0.889E+01	-0.668E+04	-0.272E+05	0.102E+03
	308.74	-0.108E+01	0.305E+01	-0.282E+04	-0.938E+04	0.339E+03
18	-49.02	0.563E-01	-0.928E+01	-0.833E+04	-0.314E+05	0.648E+02
	314.51	-0.700E+00	0.320E+01	-0.275E+04	-0.915E+04	0.216E+03
19	-24.62	0.116E-01	-0.994E+01	-0.940E+04	-0.340E+05	0.476E+02
	318.00	-0.445E+00	0.309E+01	-0.267E+04	-0.890E+04	0.159E+03
20	0.00	-0.268E-03	-0.913E+01	-0.105E+05	-0.369E+05	0.329E+02
	319.17	-0.344E+00	-0.127E+01	-0.266E+04	-0.884E+04	0.110E+03
21	24.62	-0.107E-01	-0.761E+01	-0.112E+05	-0.389E+05	-0.121E+02
	318.00	0.416E+00	-0.266E+01	-0.271E+04	-0.901E+04	-0.402E+02
22	49.02	-0.549E-01	-0.759E+01	-0.103E+05	-0.368E+05	-0.813E+02
	314.51	-0.667E+00	-0.265E+01	-0.277E+04	-0.921E+04	-0.271E+03
23	72.98	-0.164E+00	-0.839E+01	-0.769E+04	-0.300E+05	-0.147E+03
	308.74	-0.107E+01	-0.288E+01	-0.282E+04	-0.941E+04	-0.488E+03
24	96.30	-0.354E+00	-0.101E+02	-0.361E+04	-0.193E+05	-0.187E+03
	300.73	-0.159E+01	-0.338E+01	-0.289E+04	-0.961E+04	-0.622E+03

25	118.75	-0.617E+00	-0.119E+02	0.105E+04	-0.127E+05	-0.190E+03
	290.56	-0.213E+01	-0.388E+01	-0.296E+04	-0.985E+04	-0.634E+03
26	140.14	-0.922E+00	-0.137E+02	0.541E+04	-0.246E+05	-0.157E+03
	278.31	-0.263E+01	-0.434E+01	-0.305E+04	-0.101E+05	-0.524E+03
27	160.27	-0.122E+01	-0.153E+02	0.855E+04	-0.333E+05	-0.909E+02
	264.09	-0.303E+01	-0.470E+01	-0.315E+04	-0.105E+05	-0.303E+03
28	178.98	-0.147E+01	-0.142E+02	0.972E+04	-0.368E+05	-0.287E+02
	248.04	-0.330E+01	-0.418E+01	-0.325E+04	-0.108E+05	-0.956E+02
29	196.08	-0.162E+01	-0.130E+02	0.987E+04	-0.375E+05	-0.382E+01
	230.29	-0.344E+01	-0.336E+01	-0.334E+04	-0.111E+05	-0.127E+02
30	211.44	-0.166E+01	-0.154E+02	0.987E+04	-0.378E+05	0.281E+02
	211.01	-0.345E+01	-0.386E+01	-0.344E+04	-0.114E+05	0.934E+02
31	224.90	-0.156E+01	-0.157E+02	0.849E+04	-0.344E+05	0.840E+02
	190.36	-0.338E+01	-0.332E+01	-0.353E+04	-0.118E+05	0.280E+03
32	236.35	-0.134E+01	-0.156E+02	0.576E+04	-0.275E+05	0.133E+03
	168.54	-0.325E+01	-0.273E+01	-0.362E+04	-0.121E+05	0.443E+03
33	245.70	-0.102E+01	-0.136E+02	0.198E+04	-0.176E+05	0.148E+03
	145.73	-0.311E+01	-0.198E+01	-0.369E+04	-0.123E+05	0.493E+03
34	252.84	-0.650E+00	-0.125E+02	-0.147E+04	-0.164E+05	0.118E+03
	122.14	-0.298E+01	-0.156E+01	-0.375E+04	-0.125E+05	0.392E+03
35	257.73	-0.296E+00	-0.126E+02	-0.374E+04	-0.226E+05	0.703E+02
	97.98	-0.290E+01	-0.104E+01	-0.379E+04	-0.126E+05	0.234E+03
36	260.31	0.632E-02	-0.130E+02	-0.482E+04	-0.256E+05	0.259E+02
	73.47	-0.286E+01	-0.284E+00	-0.382E+04	-0.127E+05	0.861E+02
37	260.57	0.234E+00	-0.124E+02	-0.489E+04	-0.258E+05	-0.224E+02
	48.82	-0.284E+01	0.573E-01	-0.382E+04	-0.127E+05	-0.746E+02
38	258.50	0.383E+00	-0.109E+02	-0.358E+04	-0.222E+05	-0.959E+02
	24.26	-0.284E+01	0.982E+00	-0.380E+04	-0.127E+05	-0.319E+03
39	254.12	0.480E+00	-0.936E+01	0.374E-10	-0.126E+05	-0.188E+03
	0.00	-0.285E+01	0.191E+01	-0.377E+04	-0.126E+05	-0.625E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.38815E-03	-0.38815E-03	.28113	0.00000
2	-0.68186E-03	-0.10015E-03	.49385	0.00000
3	-0.79553E-03	0.10588E-04	.57618	0.00000
4	-0.79453E-03	0.10514E-04	.57546	0.00000
5	-0.70252E-03	-0.77319E-04	.50882	0.00000
6	-0.50387E-03	-0.26785E-03	.36494	0.00000
7	-0.20089E-03	-0.55982E-03	.40547	0.00000
8	0.13880E-03	-0.88583E-03	.64159	0.00000
9	0.39231E-03	-0.11229E-02	.81330	0.00000
10	0.52390E-03	-0.12356E-02	.89492	0.00000
11	0.50588E-03	-0.11988E-02	.86824	0.00000
12	0.44911E-03	-0.11227E-02	.81316	0.00000
13	0.29500E-03	-0.94756E-03	.68629	0.00000

14	0.15992E-04	-0.64895E-03	.47002	0.00000
15	-0.32566E-03	-0.29077E-03	.23587	0.00000
16	-0.63360E-03	0.31336E-04	.45890	0.00000
17	-0.85463E-03	0.26603E-03	.61899	0.00000
18	-0.98586E-03	0.41184E-03	.71404	0.00000
19	-0.10680E-02	0.50915E-03	.77353	0.00000
20	-0.11577E-02	0.60143E-03	.83848	0.00000
21	-0.12199E-02	0.65455E-03	.88352	0.00000
22	-0.11541E-02	0.57593E-03	.83587	0.00000
23	-0.94038E-03	0.35013E-03	.68109	0.00000
24	-0.60455E-03	0.13161E-05	.43786	0.00000
25	-0.22076E-03	-0.39765E-03	.28801	0.00000
26	0.13580E-03	-0.77221E-03	.55929	0.00000
27	0.38836E-03	-0.10459E-02	.75750	0.00000
28	0.47569E-03	-0.11552E-02	.83668	0.00000
29	0.47804E-03	-0.11770E-02	.85244	0.00000
30	0.46887E-03	-0.11870E-02	.85970	0.00000
31	0.34290E-03	-0.10810E-02	.78295	0.00000
32	0.10534E-03	-0.86159E-03	.62403	0.00000
33	-0.21982E-03	-0.55175E-03	.39962	0.00000
34	-0.51481E-03	-0.26892E-03	.37286	0.00000
35	-0.70985E-03	-0.82851E-04	.51413	0.00000
36	-0.80321E-03	0.57079E-05	.58174	0.00000
37	-0.80912E-03	0.10565E-04	.58603	0.00000
38	-0.69763E-03	-0.97519E-04	.50527	0.00000
39	-0.39431E-03	-0.39431E-03	.28559	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31237	0.00000	0.09757
2	-0.31466	-0.16701	0.26602
3	-0.31584	-0.23144	0.33120
4	-0.31547	-0.23113	0.33065
5	-0.31379	-0.17950	0.27796
6	-0.31052	-0.06776	0.16418
7	-0.30609	0.10305	0.19674
8	-0.30058	0.29418	0.38453
9	-0.29398	0.43503	0.52145
10	-0.28638	0.50516	0.58717
11	-0.27880	0.48941	0.56714
12	-0.27105	0.45128	0.52475
13	-0.26257	0.35674	0.42569
14	-0.25469	0.19091	0.25577
15	-0.24804	-0.01002	0.07154
16	-0.24233	-0.19090	0.24963
17	-0.23684	-0.32175	0.37784
18	-0.23097	-0.40129	0.45463
19	-0.22487	-0.45281	0.50337
20	-0.22329	-0.50586	0.55572
21	-0.22747	-0.53815	0.58989
22	-0.23263	-0.49669	0.55081
23	-0.23750	-0.37051	0.42692
24	-0.24273	-0.17395	0.23286
25	-0.24883	0.05079	0.11270
26	-0.25607	0.26069	0.32627
27	-0.26457	0.41177	0.48177
28	-0.27341	0.46823	0.54299
29	-0.28123	0.47516	0.55425
30	-0.28895	0.47540	0.55889
31	-0.29699	0.40881	0.49701
32	0.30430	0.27761	0.37021
33	-0.31046	0.09530	0.19168
34	-0.31535	-0.07059	0.17004
35	-0.31896	-0.18001	0.28175
36	-0.32089	-0.23224	0.33522
37	-0.32132	-0.23534	0.33858
38	-0.31995	-0.17229	0.27466
39	-0.31732	0.00000	0.10069

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	37	12724.	30800.	0.413
BUCKLING THRUST (psi)	37	12724.	44114.	0.288
SEAM THRUST (psi)	37	12724.	23052.	0.552
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	21	0.590	1.000	0.590

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.63
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * NORMAL EXIT FROM CANDE * * * *

BEAM OUTPUT FOR TYPE 3 TRUCK Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-44.58	0.94	32.57
-258.503	24.256	-42.80	-27.17	-44.90	1.20	25.41
-260.573	48.818	-42.47	-26.96	-45.07	1.49	20.68
-260.315	73.465	-41.86	-26.58	-45.02	1.81	17.27
-257.731	97.978	-41.04	-26.06	-44.78	2.13	14.87
-252.844	122.138	-40.03	-25.42	-44.31	2.45	13.24
-245.697	145.727	-38.89	-24.69	-43.68	2.74	12.11
-236.355	168.537	-37.66	-23.91	-42.89	2.99	11.35
-224.901	190.363	-36.40	-23.11	-41.95	3.17	10.96
-211.437	211.009	-35.16	-22.32	-40.87	3.26	10.92
-196.083	230.292	-34.05	-21.62	-39.79	3.28	11.09
-178.978	248.039	-33.04	-20.98	-38.68	3.22	11.47
-160.273	264.092	-31.96	-20.29	-37.47	3.15	11.98
-140.136	278.307	-30.93	-19.64	-36.34	3.09	12.41
-118.747	290.557	-30.06	-19.09	-35.40	3.05	12.78
-96.296	300.732	-29.33	-18.62	-34.58	3.00	13.13
-72.985	308.742	-28.77	-18.27	-33.80	2.87	13.85
-49.022	314.515	-28.38	-18.02	-32.96	2.62	15.31
-24.621	318	-28.08	-17.83	-32.09	2.29	17.56
0	319.165	-27.95	-17.74	-31.86	2.24	18.01
24.621	318	-28.08	-17.83	-32.46	2.50	16.07
49.022	314.515	-28.37	-18.02	-33.20	2.76	14.53
72.985	308.742	-28.77	-18.27	-33.89	2.93	13.60
96.296	300.732	-29.34	-18.63	-34.64	3.02	13.03
118.747	290.557	-30.09	-19.11	-35.51	3.10	12.57
140.136	278.307	-30.98	-19.67	-36.54	3.18	12.06
160.273	264.092	-32.03	-20.34	-37.75	3.27	11.52
178.978	248.039	-33.14	-21.04	-39.02	3.36	10.99
196.083	230.292	-34.15	-21.68	-40.13	3.42	10.61
211.437	211.009	-35.23	-22.37	-41.23	3.43	10.37
224.901	190.363	-36.44	-23.14	-42.38	3.39	10.24
236.355	168.537	-37.70	-23.94	-43.42	3.27	10.37
245.697	145.727	-38.93	-24.72	-44.30	3.07	10.79
252.844	122.138	-40.08	-25.45	-45.00	2.81	11.50
257.731	97.978	-41.11	-26.10	-45.52	2.52	12.58
260.315	73.465	-41.94	-26.63	-45.79	2.20	14.15
260.573	48.818	-42.56	-27.02	-45.85	1.88	16.33
258.503	24.256	-42.88	-27.23	-45.66	1.59	19.23
254.123	0	-43.00	-27.30	-45.28	1.31	23.30

Thrust Load Rating= 10.24

BEAM OUTPUT FOR TYPE 3 TRUCK

Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.47	0.06	208.56
-260.573	48.818	-4.71	-2.99	-4.81	0.06	196.52
-260.315	73.465	-4.75	-3.01	-4.80	0.03	381.88
-257.731	97.978	-3.64	-2.31	-3.73	0.05	248.15
-252.844	122.138	-1.25	-0.79	-1.41	0.09	150.32
-245.697	145.727	2.29	1.45	2.14	0.09	149.83
-236.355	168.537	6.15	3.91	6.11	0.03	383.46
-224.901	190.363	9.07	5.76	9.03	0.02	414.63
-211.437	211.009	10.75	6.83	10.49	0.15	47.90
-196.083	230.292	10.78	6.84	10.16	0.35	20.58
-178.978	248.039	10.39	6.59	9.37	0.58	12.90
-160.273	264.092	9.01	5.72	7.41	0.92	9.15
-140.136	278.307	5.87	3.72	3.96	1.09	9.63
-118.747	290.557	1.56	0.99	-0.21	1.01	13.13
-96.296	300.732	-3.08	-1.96	-3.96	0.51	24.34
-72.985	308.742	-7.45	-4.73	-6.68	0.44	21.33
-49.022	314.515	-11.03	-7.00	-8.33	1.54	4.59
-24.621	318	-13.44	-8.54	-9.40	2.31	2.38
0	319.165	-14.24	-9.04	-10.50	2.13	2.33
24.621	318	-13.23	-8.40	-11.17	1.17	4.80
49.022	314.515	-10.64	-6.75	-10.31	0.19	39.52
72.985	308.742	-6.92	-4.39	-7.69	0.44	22.09
96.296	300.732	-2.45	-1.56	-3.61	0.66	19.15
118.747	290.557	2.20	1.39	1.05	0.65	19.75
140.136	278.307	6.40	4.06	5.41	0.57	17.89
160.273	264.092	9.37	5.95	8.55	0.47	17.50
178.978	248.039	10.35	6.57	9.72	0.36	20.98
196.083	230.292	10.37	6.59	9.87	0.29	25.86
211.437	211.009	10.18	6.47	9.87	0.18	42.58
224.901	190.363	8.61	5.47	8.49	0.07	121.19
236.355	168.537	5.87	3.73	5.76	0.06	177.18
245.697	145.727	2.15	1.37	1.98	0.10	128.64
252.844	122.138	-1.28	-0.81	-1.47	0.10	129.04
257.731	97.978	-3.62	-2.30	-3.74	0.07	182.44
260.315	73.465	-4.74	-3.01	-4.82	0.05	233.13
260.573	48.818	-4.74	-3.01	-4.89	0.08	134.56
258.503	24.256	-3.43	-2.18	-3.58	0.09	139.76
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.33

Actual Load Rating (from CANDE) 2.33

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage TYPE 3
LIVE LOADS X 2.33

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -335.3	F = 0.000
1141	21	F = 0.000	F = -335.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000
856	1	D = 0.000	F = 0.000	D = 0.000
857	1	D = 0.000	F = 0.000	D = 0.000
858	1	D = 0.000	F = 0.000	D = 0.000

859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1146	21	F =	0.000	F =	-234.7	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25

27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.533E+00 -0.289E+01	-0.978E+01 -0.295E+01	0.114E-09 -0.383E+04	-0.127E+05 -0.127E+05	0.183E+03 0.609E+03
2	-258.50 24.26	-0.449E+00 -0.288E+01	-0.113E+02 -0.235E+01	-0.356E+04 -0.389E+04	-0.225E+05 -0.130E+05	0.935E+02 0.312E+03
3	-260.57 48.82	-0.312E+00 -0.288E+01	-0.128E+02 -0.176E+01	-0.491E+04 -0.395E+04	-0.263E+05 -0.131E+05	0.205E+02 0.684E+02
4	-260.31 73.47	-0.970E-01 -0.289E+01	-0.137E+02 -0.163E+01	-0.486E+04 -0.399E+04	-0.263E+05 -0.133E+05	-0.277E+02 -0.922E+02
5	-257.73 97.98	0.194E+00 -0.294E+01	-0.134E+02 -0.938E+00	-0.381E+04 -0.401E+04	-0.235E+05 -0.134E+05	-0.721E+02 -0.240E+03
6	-252.84 122.14	0.538E+00 -0.302E+01	-0.133E+02 -0.320E+00	-0.155E+04 -0.401E+04	-0.175E+05 -0.134E+05	-0.123E+03 -0.408E+03
7	-245.70 145.73	0.894E+00 -0.314E+01	-0.145E+02 0.757E-01	0.202E+04 -0.400E+04	-0.187E+05 -0.133E+05	-0.159E+03 -0.529E+03
8	-236.35 168.54	0.120E+01 -0.328E+01	-0.171E+02 0.956E+00	0.611E+04 -0.397E+04	-0.296E+05 -0.132E+05	-0.146E+03 -0.486E+03
9	-224.90 190.36	0.141E+01 -0.340E+01	-0.178E+02 0.211E+01	0.905E+04 -0.392E+04	-0.373E+05 -0.131E+05	-0.887E+02 -0.295E+03
10	-211.44 211.01	0.149E+01 -0.347E+01	-0.179E+02 0.346E+01	0.103E+05 -0.385E+04	-0.404E+05 -0.128E+05	-0.153E+02 -0.509E+02
11	-196.08 230.29	0.143E+01 -0.343E+01	-0.154E+02 0.379E+01	0.970E+04 -0.376E+04	-0.384E+05 -0.125E+05	0.370E+02 0.123E+03

12	-178.98	0.125E+01	-0.166E+02	0.850E+04	-0.349E+05	0.827E+02
	248.04	-0.328E+01	0.494E+01	-0.365E+04	-0.122E+05	0.275E+03
13	-160.27	0.100E+01	-0.159E+02	0.581E+04	-0.273E+05	0.145E+03
	264.09	-0.300E+01	0.490E+01	-0.354E+04	-0.118E+05	0.484E+03
14	-140.14	0.727E+00	-0.138E+02	0.182E+04	-0.163E+05	0.184E+03
	278.31	-0.264E+01	0.440E+01	-0.344E+04	-0.115E+05	0.612E+03
15	-118.75	0.471E+00	-0.109E+02	-0.239E+04	-0.176E+05	0.169E+03
	290.56	-0.222E+01	0.356E+01	-0.336E+04	-0.112E+05	0.561E+03
16	-96.30	0.272E+00	-0.939E+01	-0.522E+04	-0.249E+05	0.106E+03
	300.73	-0.181E+01	0.318E+01	-0.329E+04	-0.109E+05	0.352E+03
17	-72.98	0.140E+00	-0.982E+01	-0.606E+04	-0.269E+05	0.373E+02
	308.74	-0.146E+01	0.339E+01	-0.321E+04	-0.107E+05	0.124E+03
18	-49.02	0.655E-01	-0.112E+02	-0.552E+04	-0.252E+05	-0.138E+01
	314.51	-0.119E+01	0.385E+01	-0.312E+04	-0.104E+05	-0.459E+01
19	-24.62	0.308E-01	-0.141E+02	-0.485E+04	-0.230E+05	0.224E+02
	318.00	-0.101E+01	0.471E+01	-0.302E+04	-0.101E+05	0.747E+02
20	0.00	0.182E-01	-0.130E+02	-0.619E+04	-0.265E+05	0.738E+02
	319.17	-0.911E+00	-0.311E+01	-0.300E+04	-0.100E+05	0.246E+03
21	24.62	0.100E-01	-0.890E+01	-0.885E+04	-0.339E+05	0.573E+02
	318.00	-0.918E+00	-0.313E+01	-0.309E+04	-0.103E+05	0.191E+03
22	49.02	-0.197E-01	-0.795E+01	-0.100E+05	-0.373E+05	-0.285E+02
	314.51	-0.107E+01	-0.282E+01	-0.316E+04	-0.105E+05	-0.948E+02
23	72.98	-0.102E+00	-0.854E+01	-0.872E+04	-0.341E+05	-0.125E+03
	308.74	-0.137E+01	-0.296E+01	-0.323E+04	-0.107E+05	-0.417E+03
24	96.30	-0.260E+00	-0.110E+02	-0.510E+04	-0.246E+05	-0.191E+03
	300.73	-0.179E+01	-0.368E+01	-0.329E+04	-0.110E+05	-0.635E+03
25	118.75	-0.493E+00	-0.133E+02	-0.390E+03	-0.123E+05	-0.205E+03
	290.56	-0.226E+01	-0.435E+01	-0.338E+04	-0.112E+05	-0.682E+03
26	140.14	-0.773E+00	-0.153E+02	0.419E+04	-0.228E+05	-0.174E+03
	278.31	-0.272E+01	-0.485E+01	-0.347E+04	-0.116E+05	-0.580E+03
27	160.27	-0.106E+01	-0.170E+02	0.763E+04	-0.323E+05	-0.108E+03
	264.09	-0.310E+01	-0.521E+01	-0.358E+04	-0.119E+05	-0.359E+03
28	178.98	-0.129E+01	-0.163E+02	0.915E+04	-0.368E+05	-0.408E+02
	248.04	-0.336E+01	-0.480E+01	-0.370E+04	-0.123E+05	-0.136E+03
29	196.08	-0.144E+01	-0.147E+02	0.947E+04	-0.380E+05	-0.119E+02
	230.29	-0.349E+01	-0.351E+01	-0.380E+04	-0.127E+05	-0.397E+02
30	211.44	-0.149E+01	-0.174E+02	0.970E+04	-0.389E+05	0.213E+02
	211.01	-0.351E+01	-0.377E+01	-0.389E+04	-0.130E+05	0.709E+02
31	224.90	-0.140E+01	-0.177E+02	0.846E+04	-0.359E+05	0.823E+02
	190.36	-0.344E+01	-0.275E+01	-0.398E+04	-0.133E+05	0.274E+03

32	236.35	-0.118E+01	-0.174E+02	0.573E+04	-0.288E+05	0.136E+03
	168.54	-0.331E+01	-0.165E+01	-0.405E+04	-0.135E+05	0.454E+03
33	245.70	-0.865E+00	-0.150E+02	0.186E+04	-0.186E+05	0.152E+03
	145.73	-0.317E+01	-0.605E+00	-0.409E+04	-0.136E+05	0.507E+03
34	252.84	-0.510E+00	-0.138E+02	-0.161E+04	-0.180E+05	0.119E+03
	122.14	-0.305E+01	-0.382E-02	-0.411E+04	-0.137E+05	0.398E+03
35	257.73	-0.167E+00	-0.139E+02	-0.384E+04	-0.240E+05	0.714E+02
	97.98	-0.297E+01	0.693E+00	-0.412E+04	-0.137E+05	0.238E+03
36	260.31	0.121E+00	-0.142E+02	-0.490E+04	-0.267E+05	0.293E+02
	73.47	-0.292E+01	0.153E+01	-0.410E+04	-0.136E+05	0.976E+02
37	260.57	0.333E+00	-0.132E+02	-0.503E+04	-0.270E+05	-0.184E+02
	48.82	-0.291E+01	0.180E+01	-0.406E+04	-0.135E+05	-0.612E+02
38	258.50	0.465E+00	-0.114E+02	-0.371E+04	-0.232E+05	-0.956E+02
	24.26	-0.291E+01	0.256E+01	-0.400E+04	-0.133E+05	-0.318E+03
39	254.12	0.542E+00	-0.964E+01	-0.440E-10	-0.131E+05	-0.192E+03
	0.00	-0.291E+01	0.332E+01	-0.393E+04	-0.131E+05	-0.641E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39994E-03	-0.39994E-03	.28967	0.00000
2	-0.70560E-03	-0.10782E-03	.51105	0.00000
3	-0.82446E-03	-0.23955E-06	.59714	0.00000
4	-0.82396E-03	-0.89613E-05	.59678	0.00000
5	-0.73880E-03	-0.99322E-04	.53510	0.00000
6	-0.54931E-03	-0.28971E-03	.39785	0.00000
7	-0.24883E-03	-0.58761E-03	.42559	0.00000
8	0.96954E-04	-0.92731E-03	.67163	0.00000
9	0.34953E-03	-0.11693E-02	.84687	0.00000
10	0.46488E-03	-0.12688E-02	.91898	0.00000
11	0.42117E-03	-0.12063E-02	.87368	0.00000
12	0.33147E-03	-0.10949E-02	.79303	0.00000
13	0.11701E-03	-0.85706E-03	.62075	0.00000
14	-0.20717E-03	-0.51190E-03	.37075	0.00000
15	-0.55126E-03	-0.15054E-03	.39927	0.00000
16	-0.78122E-03	0.94262E-04	.56582	0.00000
17	-0.84354E-03	0.17225E-03	.61095	0.00000
18	-0.78947E-03	0.13662E-03	.57179	0.00000
19	-0.72210E-03	0.91189E-04	.52300	0.00000
20	-0.83263E-03	0.20360E-03	.60305	0.00000
21	-0.10645E-02	0.41942E-03	.77101	0.00000
22	-0.11691E-02	0.50836E-03	.84678	0.00000
23	-0.10689E-02	0.39461E-03	.77415	0.00000
24	-0.77172E-03	0.83346E-04	.55893	0.00000
25	-0.38537E-03	-0.31997E-03	.27911	0.00000
26	-0.11622E-04	-0.71390E-03	.51706	0.00000
27	0.26533E-03	-0.10143E-02	.73460	0.00000
28	0.38104E-03	-0.11546E-02	.83623	0.00000
29	0.39665E-03	-0.11914E-02	.86290	0.00000
30	0.40644E-03	-0.12204E-02	.88389	0.00000
31	0.29365E-03	-0.11258E-02	.81538	0.00000
32	0.58025E-04	-0.90404E-03	.65478	0.00000
33	-0.27178E-03	-0.58330E-03	.42247	0.00000
34	-0.56519E-03	-0.29457E-03	.40935	0.00000
35	-0.75216E-03	-0.10814E-03	.54477	0.00000
36	-0.83935E-03	-0.16647E-04	.60792	0.00000
37	-0.84572E-03	-0.22395E-05	.61253	0.00000
38	-0.72953E-03	-0.10650E-03	.52838	0.00000
39	-0.41068E-03	-0.41068E-03	.29745	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32185	0.00000	0.10359
2	-0.32730	-0.17162	0.27875
3	-0.33184	-0.23664	0.34676
4	-0.33515	-0.23399	0.34632
5	-0.33724	-0.18360	0.29733
6	-0.33760	-0.07453	0.18850
7	-0.33656	0.09726	0.21054
8	-0.33412	0.29407	0.40570
9	-0.32984	0.43605	0.54485
10	-0.32349	0.49775	0.60240
11	-0.31591	0.46725	0.56704
12	-0.30720	0.40953	0.50390
13	-0.29778	0.27966	0.36833
14	-0.28934	0.08749	0.17120
15	-0.28239	-0.11505	0.19479
16	-0.27641	-0.25135	0.32776
17	-0.27011	-0.29164	0.36459
18	-0.26269	-0.26588	0.33489
19	-0.25386	-0.23350	0.29795
20	-0.25258	-0.29832	0.36211
21	-0.25957	-0.42605	0.49343
22	-0.26588	-0.48162	0.55231
23	-0.27130	-0.42017	0.49377
24	-0.27698	-0.24549	0.32221
25	-0.28381	-0.01878	0.09932
26	-0.29193	0.20163	0.28685
27	-0.30135	0.36737	0.45818
28	-0.31125	0.44088	0.53776
29	-0.31979	0.45594	0.55820
30	-0.32751	0.46707	0.57433
31	-0.33483	0.40753	0.51964
32	-0.34042	0.27621	0.39210
33	-0.34407	0.08944	0.20782
34	-0.34595	-0.07769	0.19737
35	-0.34616	-0.18490	0.30473
36	-0.34443	-0.23620	0.35483
37	-0.34120	-0.24217	0.35858
38	-0.33640	-0.17887	0.29204
39	-0.33050	0.00000	0.10923

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	35	13708.	30800.	0.445
BUCKLING THRUST (psi)	35	13708.	45126.	0.304
SEAM THRUST (psi)	35	13708.	23052.	0.595
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.602	1.000	0.602

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.50

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

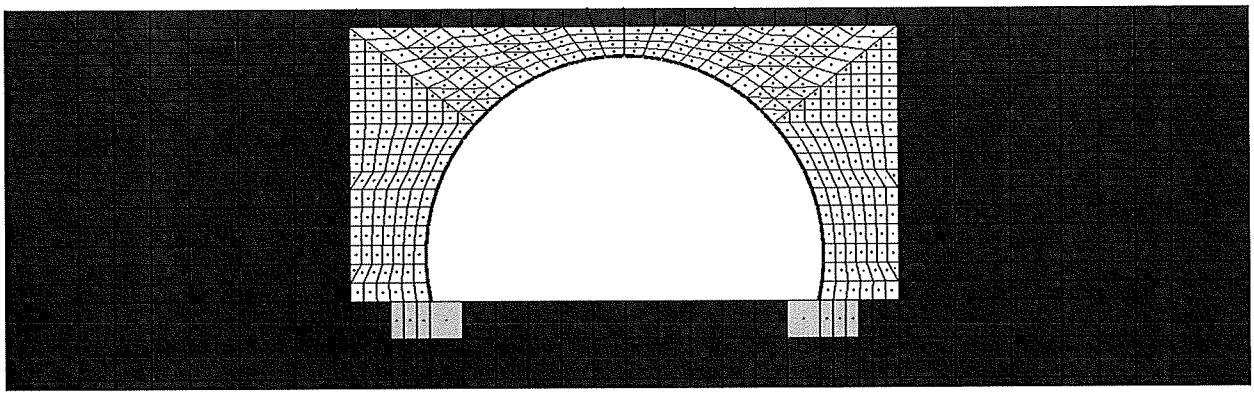
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.10

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage TYPE 3S2

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -143.9	F = 0.000
1141	21	F = 0.000	F = -143.9	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000

1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1146	21	F =	0.000	F =	-86.40	F =	0.000
1133	21	F =	0.000	F =	-118.7	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#

1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000

15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.468E+00 -0.288E+01	-0.968E+01 -0.168E+01	0.722E-10 -0.384E+04	-0.128E+05 -0.128E+05	0.187E+03 0.621E+03
2	-258.50 24.26	-0.365E+00 -0.288E+01	-0.112E+02 -0.714E+00	-0.356E+04 -0.386E+04	-0.224E+05 -0.129E+05	0.961E+02 0.320E+03
3	-260.57 48.82	-0.208E+00 -0.287E+01	-0.126E+02 0.252E+00	-0.489E+04 -0.387E+04	-0.260E+05 -0.129E+05	0.236E+02 0.786E+02
4	-260.31 73.47	0.259E-01 -0.289E+01	-0.131E+02 0.679E+00	-0.485E+04 -0.386E+04	-0.258E+05 -0.128E+05	-0.251E+02 -0.836E+02
5	-257.73 97.98	0.335E+00 -0.293E+01	-0.126E+02 0.149E+01	-0.376E+04 -0.382E+04	-0.228E+05 -0.127E+05	-0.720E+02 -0.240E+03
6	-252.84	0.697E+00	-0.124E+02	-0.139E+04	-0.163E+05	-0.122E+03

	122.14	-0.302E+01	0.209E+01	-0.377E+04	-0.126E+05	-0.407E+03
7	-245.70	0.107E+01	-0.135E+02	0.219E+04	-0.182E+05	-0.155E+03
	145.73	-0.314E+01	0.250E+01	-0.370E+04	-0.123E+05	-0.515E+03
8	-236.35	0.139E+01	-0.156E+02	0.617E+04	-0.285E+05	-0.141E+03
	168.54	-0.329E+01	0.314E+01	-0.361E+04	-0.120E+05	-0.469E+03
9	-224.90	0.161E+01	-0.158E+02	0.908E+04	-0.360E+05	-0.904E+02
	190.36	-0.342E+01	0.354E+01	-0.352E+04	-0.117E+05	-0.301E+03
10	-211.44	0.170E+01	-0.160E+02	0.106E+05	-0.396E+05	-0.249E+02
	211.01	-0.348E+01	0.399E+01	-0.342E+04	-0.114E+05	-0.831E+02
11	-196.08	0.164E+01	-0.135E+02	0.103E+05	-0.385E+05	0.221E+02
	230.29	-0.345E+01	0.351E+01	-0.332E+04	-0.111E+05	0.735E+02
12	-178.98	0.146E+01	-0.144E+02	0.948E+04	-0.361E+05	0.580E+02
	248.04	-0.329E+01	0.427E+01	-0.323E+04	-0.108E+05	0.193E+03
13	-160.27	0.120E+01	-0.145E+02	0.750E+04	-0.305E+05	0.115E+03
	264.09	-0.300E+01	0.447E+01	-0.313E+04	-0.104E+05	0.383E+03
14	-140.14	0.897E+00	-0.129E+02	0.403E+04	-0.209E+05	0.163E+03
	278.31	-0.260E+01	0.411E+01	-0.303E+04	-0.101E+05	0.543E+03
15	-118.75	0.598E+00	-0.107E+02	-0.176E+03	-0.103E+05	0.173E+03
	290.56	-0.210E+01	0.351E+01	-0.295E+04	-0.984E+04	0.574E+03
16	-96.30	0.349E+00	-0.932E+01	-0.396E+04	-0.202E+05	0.145E+03
	300.73	-0.159E+01	0.314E+01	-0.289E+04	-0.961E+04	0.483E+03
17	-72.98	0.171E+00	-0.890E+01	-0.670E+04	-0.273E+05	0.102E+03
	308.74	-0.111E+01	0.306E+01	-0.282E+04	-0.939E+04	0.339E+03
18	-49.02	0.667E-01	-0.929E+01	-0.836E+04	-0.315E+05	0.645E+02
	314.51	-0.720E+00	0.320E+01	-0.275E+04	-0.916E+04	0.215E+03
19	-24.62	0.210E-01	-0.994E+01	-0.944E+04	-0.342E+05	0.468E+02
	318.00	-0.460E+00	0.301E+01	-0.268E+04	-0.892E+04	0.156E+03
20	0.00	0.886E-02	-0.914E+01	-0.105E+05	-0.370E+05	0.314E+02
	319.17	-0.353E+00	-0.134E+01	-0.266E+04	-0.887E+04	0.105E+03
21	24.62	-0.133E-02	-0.764E+01	-0.112E+05	-0.389E+05	-0.139E+02
	318.00	-0.420E+00	-0.267E+01	-0.271E+04	-0.903E+04	-0.462E+02
22	49.02	-0.448E-01	-0.770E+01	-0.103E+05	-0.367E+05	-0.822E+02
	314.51	-0.665E+00	-0.269E+01	-0.277E+04	-0.924E+04	-0.274E+03
23	72.98	-0.153E+00	-0.854E+01	-0.767E+04	-0.299E+05	-0.145E+03
	308.74	-0.107E+01	-0.293E+01	-0.283E+04	-0.944E+04	-0.483E+03
24	96.30	-0.340E+00	-0.102E+02	-0.368E+04	-0.195E+05	-0.184E+03
	300.73	-0.157E+01	-0.340E+01	-0.290E+04	-0.965E+04	-0.611E+03
25	118.75	-0.601E+00	-0.118E+02	0.893E+03	-0.123E+05	-0.188E+03
	290.56	-0.211E+01	-0.386E+01	-0.297E+04	-0.989E+04	-0.627E+03
26	140.14	-0.905E+00	-0.136E+02	0.522E+04	-0.241E+05	-0.158E+03
	278.31	-0.261E+01	-0.432E+01	-0.306E+04	-0.102E+05	-0.525E+03

27	160.27	-0.120E+01	-0.152E+02	0.840E+04	-0.330E+05	-0.937E+02
	264.09	-0.301E+01	-0.468E+01	-0.316E+04	-0.105E+05	-0.312E+03
28	178.98	-0.145E+01	-0.143E+02	0.968E+04	-0.367E+05	-0.315E+02
	248.04	-0.328E+01	-0.421E+01	-0.326E+04	-0.109E+05	-0.105E+03
29	196.08	-0.161E+01	-0.131E+02	0.987E+04	-0.375E+05	-0.564E+01
	230.29	-0.342E+01	-0.303E+01	-0.335E+04	-0.112E+05	-0.188E+02
30	211.44	-0.165E+01	-0.155E+02	0.994E+04	-0.380E+05	0.274E+02
	211.01	-0.344E+01	-0.370E+01	-0.344E+04	-0.114E+05	0.911E+02
31	224.90	-0.155E+01	-0.158E+02	0.855E+04	-0.346E+05	0.850E+02
	190.36	-0.337E+01	-0.308E+01	-0.353E+04	-0.117E+05	0.283E+03
32	236.35	-0.133E+01	-0.155E+02	0.579E+04	-0.275E+05	0.134E+03
	168.54	-0.324E+01	-0.250E+01	-0.361E+04	-0.120E+05	0.447E+03
33	245.70	-0.101E+01	-0.135E+02	0.199E+04	-0.176E+05	0.149E+03
	145.73	-0.310E+01	-0.182E+01	-0.368E+04	-0.122E+05	0.495E+03
34	252.84	-0.647E+00	-0.124E+02	-0.146E+04	-0.163E+05	0.118E+03
	122.14	-0.297E+01	-0.145E+01	-0.373E+04	-0.124E+05	0.393E+03
35	257.73	-0.293E+00	-0.125E+02	-0.372E+04	-0.225E+05	0.704E+02
	97.98	-0.289E+01	-0.966E+00	-0.377E+04	-0.126E+05	0.234E+03
36	260.31	0.818E-02	-0.129E+02	-0.481E+04	-0.255E+05	0.258E+02
	73.47	-0.285E+01	-0.251E+00	-0.379E+04	-0.126E+05	0.859E+02
37	260.57	0.235E+00	-0.123E+02	-0.487E+04	-0.257E+05	-0.225E+02
	48.82	-0.283E+01	0.617E-01	-0.380E+04	-0.126E+05	-0.749E+02
38	258.50	0.385E+00	-0.108E+02	-0.356E+04	-0.221E+05	-0.956E+02
	24.26	-0.284E+01	0.965E+00	-0.378E+04	-0.126E+05	-0.318E+03
39	254.12	0.481E+00	-0.934E+01	-0.114E-09	-0.125E+05	-0.187E+03
	0.00	-0.284E+01	0.187E+01	-0.375E+04	-0.125E+05	-0.621E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40103E-03	-0.40103E-03	.29045	0.00000
2	-0.70246E-03	-0.10474E-03	.50877	0.00000
3	-0.81446E-03	0.53173E-05	.58989	0.00000
4	-0.81024E-03	0.39528E-05	.58684	0.00000
5	-0.71480E-03	-0.84497E-04	.51771	0.00000
6	-0.51083E-03	-0.27688E-03	.36998	0.00000
7	-0.20227E-03	-0.57045E-03	.41316	0.00000
8	0.13974E-03	-0.89460E-03	.64794	0.00000
9	0.39438E-03	-0.11293E-02	.81796	0.00000
10	0.52950E-03	-0.12435E-02	.90066	0.00000
11	0.51474E-03	-0.12091E-02	.87570	0.00000
12	0.45816E-03	-0.11329E-02	.82053	0.00000
13	0.30231E-03	-0.95594E-03	.69237	0.00000
14	0.20675E-04	-0.65468E-03	.47417	0.00000
15	-0.32348E-03	-0.29399E-03	.23429	0.00000
16	-0.63365E-03	0.30373E-04	.45894	0.00000
17	-0.85663E-03	0.26703E-03	.62044	0.00000
18	-0.98909E-03	0.41407E-03	.71637	0.00000
19	-0.10717E-02	0.51167E-03	.77621	0.00000
20	-0.11602E-02	0.60245E-03	.84031	0.00000

21	-0.12198E-02	0.65286E-03	.88350	0.00000
22	-0.11515E-02	0.57163E-03	.83404	0.00000
23	-0.93944E-03	0.34720E-03	.68042	0.00000
24	-0.61111E-03	0.56676E-05	.44262	0.00000
25	-0.23547E-03	-0.38521E-03	.27900	0.00000
26	0.11879E-03	-0.75737E-03	.54854	0.00000
27	0.37502E-03	-0.10346E-02	.74933	0.00000
28	0.47085E-03	-0.11524E-02	.83465	0.00000
29	0.47801E-03	-0.11782E-02	.85331	0.00000
30	0.47442E-03	-0.11925E-02	.86369	0.00000
31	0.34859E-03	-0.10856E-02	.78627	0.00000
32	0.10881E-03	-0.86277E-03	.62488	0.00000
33	-0.21738E-03	-0.55091E-03	.39901	0.00000
34	-0.51196E-03	-0.26781E-03	.37080	0.00000
35	-0.70658E-03	-0.81725E-04	.51176	0.00000
36	-0.79968E-03	0.68537E-05	.57919	0.00000
37	-0.80515E-03	0.11362E-04	.58315	0.00000
38	-0.69357E-03	-0.96837E-04	.50234	0.00000
39	-0.39199E-03	-0.39199E-03	.28391	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32273	0.00000	0.10415
2	-0.32480	-0.17161	0.27710
3	-0.32558	-0.23536	0.34136
4	-0.32443	-0.23376	0.33901
5	-0.32162	-0.18096	0.28440
6	-0.31696	-0.06717	0.16763
7	-0.31092	0.10571	0.20238
8	-0.30374	0.29696	0.38922
9	-0.29573	0.43747	0.52492
10	-0.28731	0.50904	0.59159
11	-0.27938	0.49491	0.57297
12	-0.27150	0.45680	0.53051
13	-0.26301	0.36125	0.43042
14	-0.25511	0.19390	0.25898
15	-0.24846	-0.00847	0.07020
16	-0.24275	-0.19064	0.24957
17	-0.23724	-0.32261	0.37889
18	-0.23137	-0.40285	0.45638
19	-0.22534	-0.45460	0.50538
20	-0.22391	-0.50689	0.55702
21	-0.22814	-0.53766	0.58971
22	-0.23334	-0.49473	0.54918
23	-0.23830	-0.36940	0.42619
24	-0.24362	-0.17708	0.23643
25	-0.24975	0.04299	0.10536
26	-0.25695	0.25155	0.31757
27	-0.26539	0.40471	0.47514
28	-0.27423	0.46604	0.54124
29	-0.28172	0.47549	0.55486
30	-0.28893	0.47857	0.56205
31	-0.29656	0.41176	0.49971
32	-0.30337	0.27894	0.37098
33	-0.30914	0.09576	0.19133
34	-0.31376	-0.07010	0.16854
35	-0.31719	-0.17940	0.28001
36	-0.31901	-0.23156	0.33333
37	-0.31940	-0.23442	0.33644
38	-0.31804	-0.17133	0.27248
39	-0.31545	0.00000	0.09951

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	3	12893.	30800.	0.419

BUCKLING THRUST (psi)	3	12893.	44018.	0.293
SEAM THRUST (psi)	3	12893.	23052.	0.559
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.592	1.000	0.592

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.63
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *
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BEAM OUTPUT FOR TYPE 3S2 TRUCK γ_{DL}=1.5, γ_{DL}= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-46.05	1.78	17.12
-258.503	24.256	-42.80	-27.17	-46.35	2.03	15.06
-260.573	48.818	-42.47	-26.96	-46.46	2.28	13.49
-260.315	73.465	-41.86	-26.58	-46.30	2.54	12.30
-257.731	97.978	-41.04	-26.06	-45.90	2.77	11.45
-252.844	122.138	-40.03	-25.42	-45.23	2.97	10.90
-245.697	145.727	-38.89	-24.69	-44.37	3.13	10.59
-236.355	168.537	-37.66	-23.91	-43.34	3.25	10.45
-224.901	190.363	-36.40	-23.11	-42.20	3.32	10.49
-211.437	211.009	-35.16	-22.32	-41.00	3.34	10.67
-196.083	230.292	-34.05	-21.62	-39.87	3.32	10.93
-178.978	248.039	-33.04	-20.98	-38.74	3.26	11.34
-160.273	264.092	-31.96	-20.29	-37.53	3.18	11.84
-140.136	278.307	-30.93	-19.64	-36.40	3.13	12.27
-118.747	290.557	-30.06	-19.09	-35.46	3.08	12.64
-96.296	300.732	-29.33	-18.62	-34.64	3.04	12.99
-72.985	308.742	-28.77	-18.27	-33.85	2.91	13.70
-49.022	314.515	-28.38	-18.02	-33.02	2.65	15.12
-24.621	318	-28.08	-17.83	-32.16	2.33	17.27
0	319.165	-27.95	-17.74	-31.95	2.29	17.62
24.621	318	-28.08	-17.83	-32.56	2.56	15.72
49.022	314.515	-28.37	-18.02	-33.30	2.81	14.24
72.985	308.742	-28.77	-18.27	-34.01	2.99	13.30
96.296	300.732	-29.34	-18.63	-34.76	3.10	12.73
118.747	290.557	-30.09	-19.11	-35.64	3.17	12.28
140.136	278.307	-30.98	-19.67	-36.67	3.25	11.79
160.273	264.092	-32.03	-20.34	-37.87	3.34	11.29
178.978	248.039	-33.14	-21.04	-39.13	3.43	10.78
196.083	230.292	-34.15	-21.68	-40.20	3.46	10.48
211.437	211.009	-35.23	-22.37	-41.23	3.43	10.37
224.901	190.363	-36.44	-23.14	-42.32	3.36	10.35
236.355	168.537	-37.70	-23.94	-43.29	3.20	10.62
245.697	145.727	-38.93	-24.72	-44.12	2.96	11.19
252.844	122.138	-40.08	-25.45	-44.77	2.68	12.06
257.731	97.978	-41.11	-26.10	-45.26	2.38	13.34
260.315	73.465	-41.94	-26.63	-45.52	2.05	15.21
260.573	48.818	-42.56	-27.02	-45.58	1.73	17.81
258.503	24.256	-42.88	-27.23	-45.39	1.43	21.32
254.123	0	-43.00	-27.30	-45.02	1.15	26.38

Thrust Load Rating= 10.35

BEAM OUTPUT FOR TYPE 352 TRUCK Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.56	0.11	107.55
-260.573	48.818	-4.71	-2.99	-4.89	0.10	108.33
-260.315	73.465	-4.75	-3.01	-4.85	0.06	185.19
-257.731	97.978	-3.64	-2.31	-3.76	0.07	182.21
-252.844	122.138	-1.25	-0.79	-1.39	0.08	163.07
-245.697	145.727	2.29	1.45	2.19	0.05	237.23
-236.355	168.537	6.15	3.91	6.17	0.01	1639.42
-224.901	190.363	9.07	5.76	9.08	0.01	953.51
-211.437	211.009	10.75	6.83	10.57	0.11	68.83
-196.083	230.292	10.78	6.84	10.28	0.29	25.27
-178.978	248.039	10.39	6.59	9.48	0.52	14.54
-160.273	264.092	9.01	5.72	7.50	0.86	9.72
-140.136	278.307	5.87	3.72	4.03	1.05	9.95
-118.747	290.557	1.56	0.99	-0.18	0.99	13.37
-96.296	300.732	-3.08	-1.96	-3.96	0.50	24.48
-72.985	308.742	-7.45	-4.73	-6.70	0.43	21.84
-49.022	314.515	-11.03	-7.00	-8.36	1.52	4.65
-24.621	318	-13.44	-8.54	-9.44	2.29	2.40
0	319.165	-14.24	-9.04	-10.52	2.12	2.34
24.621	318	-13.23	-8.40	-11.16	1.18	4.78
49.022	314.515	-10.64	-6.75	-10.27	0.21	35.11
72.985	308.742	-6.92	-4.39	-7.67	0.43	22.77
96.296	300.732	-2.45	-1.56	-3.68	0.70	18.14
118.747	290.557	2.20	1.39	0.89	0.74	17.29
140.136	278.307	6.40	4.06	5.22	0.67	15.01
160.273	264.092	9.37	5.95	8.40	0.55	14.84
178.978	248.039	10.35	6.57	9.68	0.38	19.56
196.083	230.292	10.37	6.59	9.87	0.29	26.22
211.437	211.009	10.18	6.47	9.94	0.14	53.91
224.901	190.363	8.61	5.47	8.55	0.04	237.60
236.355	168.537	5.87	3.73	5.79	0.04	241.97
245.697	145.727	2.15	1.37	1.99	0.09	136.03
252.844	122.138	-1.28	-0.81	-1.46	0.10	136.79
257.731	97.978	-3.62	-2.30	-3.72	0.06	205.39
260.315	73.465	-4.74	-3.01	-4.81	0.04	280.35
260.573	48.818	-4.74	-3.01	-4.87	0.07	154.64
258.503	24.256	-3.43	-2.18	-3.56	0.07	161.19
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.34

Actual Load Rating (from CANDE) 2.34

* WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage TYPE 3S2
LIVE LOADS X 2.34

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -336.7	F = 0.000
1141	21	F = 0.000	F = -336.7	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000

856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1146	21	F =	0.000	F =	-202.3	F =	0.000
1133	21	F =	0.000	F =	-277.8	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21

23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000

37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.527E+00 -0.297E+01	-0.100E+02 -0.310E+01	0.671E-11 -0.406E+04	-0.135E+05 -0.135E+05	0.194E+03 0.648E+03
2	-258.50 24.26	-0.442E+00 -0.297E+01	-0.119E+02 -0.217E+01	-0.375E+04 -0.413E+04	-0.238E+05 -0.137E+05	0.964E+02 0.321E+03
3	-260.57 48.82	-0.302E+00 -0.297E+01	-0.137E+02 -0.125E+01	-0.506E+04 -0.417E+04	-0.274E+05 -0.139E+05	0.189E+02 0.630E+02
4	-260.31 73.47	-0.819E-01 -0.298E+01	-0.145E+02 -0.782E+00	-0.494E+04 -0.419E+04	-0.272E+05 -0.140E+05	-0.292E+02 -0.971E+02
5	-257.73 97.98	0.215E+00 -0.303E+01	-0.140E+02 0.197E+00	-0.385E+04 -0.419E+04	-0.242E+05 -0.140E+05	-0.738E+02 -0.246E+03
6	-252.84 122.14	0.566E+00 -0.311E+01	-0.139E+02 0.103E+01	-0.151E+04 -0.417E+04	-0.179E+05 -0.139E+05	-0.125E+03 -0.415E+03
7	-245.70 145.73	0.929E+00 -0.324E+01	-0.151E+02 0.163E+01	0.213E+04 -0.412E+04	-0.194E+05 -0.137E+05	-0.159E+03 -0.530E+03
8	-236.35 168.54	0.124E+01 -0.338E+01	-0.174E+02 0.246E+01	0.620E+04 -0.405E+04	-0.301E+05 -0.135E+05	-0.144E+03 -0.481E+03
9	-224.90 190.36	0.146E+01 -0.350E+01	-0.178E+02 0.317E+01	0.913E+04 -0.397E+04	-0.376E+05 -0.132E+05	-0.889E+02 -0.296E+03
10	-211.44 211.01	0.153E+01 -0.357E+01	-0.180E+02 0.393E+01	0.105E+05 -0.388E+04	-0.409E+05 -0.129E+05	-0.172E+02 -0.571E+02

11	-196.08	0.147E+01	-0.155E+02	0.987E+04	-0.390E+05	0.358E+02
	230.29	-0.353E+01	0.398E+01	-0.378E+04	-0.126E+05	0.119E+03
12	-178.98	0.129E+01	-0.167E+02	0.868E+04	-0.354E+05	0.825E+02
	248.04	-0.337E+01	0.497E+01	-0.367E+04	-0.122E+05	0.275E+03
13	-160.27	0.104E+01	-0.160E+02	0.596E+04	-0.278E+05	0.146E+03
	264.09	-0.310E+01	0.493E+01	-0.356E+04	-0.118E+05	0.485E+03
14	-140.14	0.759E+00	-0.139E+02	0.193E+04	-0.167E+05	0.184E+03
	278.31	-0.272E+01	0.442E+01	-0.346E+04	-0.115E+05	0.614E+03
15	-118.75	0.498E+00	-0.109E+02	-0.233E+04	-0.175E+05	0.169E+03
	290.56	-0.229E+01	0.358E+01	-0.337E+04	-0.112E+05	0.563E+03
16	-96.30	0.294E+00	-0.942E+01	-0.521E+04	-0.249E+05	0.106E+03
	300.73	-0.187E+01	0.319E+01	-0.330E+04	-0.110E+05	0.353E+03
17	-72.98	0.158E+00	-0.986E+01	-0.607E+04	-0.270E+05	0.369E+02
	308.74	-0.151E+01	0.341E+01	-0.323E+04	-0.107E+05	0.123E+03
18	-49.02	0.813E-01	-0.112E+02	-0.555E+04	-0.253E+05	-0.242E+01
	314.51	-0.124E+01	0.386E+01	-0.314E+04	-0.105E+05	-0.807E+01
19	-24.62	0.450E-01	-0.142E+02	-0.488E+04	-0.231E+05	0.208E+02
	318.00	-0.105E+01	0.472E+01	-0.303E+04	-0.101E+05	0.692E+02
20	0.00	0.318E-01	-0.130E+02	-0.621E+04	-0.266E+05	0.715E+02
	319.17	-0.936E+00	-0.330E+01	-0.302E+04	-0.101E+05	0.238E+03
21	24.62	0.240E-01	-0.893E+01	-0.882E+04	-0.339E+05	0.540E+02
	318.00	-0.933E+00	-0.314E+01	-0.311E+04	-0.103E+05	0.180E+03
22	49.02	-0.418E-02	-0.814E+01	-0.992E+04	-0.371E+05	-0.307E+02
	314.51	-0.107E+01	-0.288E+01	-0.318E+04	-0.106E+05	-0.102E+03
23	72.98	-0.840E-01	-0.886E+01	-0.867E+04	-0.340E+05	-0.123E+03
	308.74	-0.136E+01	-0.306E+01	-0.325E+04	-0.108E+05	-0.410E+03
24	96.30	-0.238E+00	-0.111E+02	-0.521E+04	-0.250E+05	-0.185E+03
	300.73	-0.177E+01	-0.372E+01	-0.332E+04	-0.110E+05	-0.617E+03
25	118.75	-0.466E+00	-0.132E+02	-0.689E+03	-0.132E+05	-0.201E+03
	290.56	-0.224E+01	-0.431E+01	-0.340E+04	-0.113E+05	-0.670E+03
26	140.14	-0.743E+00	-0.152E+02	0.384E+04	-0.219E+05	-0.175E+03
	278.31	-0.269E+01	-0.482E+01	-0.350E+04	-0.116E+05	-0.583E+03
27	160.27	-0.103E+01	-0.169E+02	0.735E+04	-0.317E+05	-0.113E+03
	264.09	-0.307E+01	-0.519E+01	-0.361E+04	-0.120E+05	-0.375E+03
28	178.98	-0.127E+01	-0.165E+02	0.906E+04	-0.366E+05	-0.459E+02
	248.04	-0.333E+01	-0.487E+01	-0.372E+04	-0.124E+05	-0.153E+03
29	196.08	-0.142E+01	-0.148E+02	0.947E+04	-0.380E+05	-0.153E+02
	230.29	-0.347E+01	-0.291E+01	-0.382E+04	-0.127E+05	-0.508E+02
30	211.44	-0.147E+01	-0.175E+02	0.981E+04	-0.392E+05	0.201E+02
	211.01	-0.349E+01	-0.343E+01	-0.390E+04	-0.130E+05	0.669E+02
31	224.90	-0.138E+01	-0.178E+02	0.856E+04	-0.361E+05	0.841E+02

	190.36	-0.342E+01	-0.225E+01	-0.398E+04	-0.132E+05	0.280E+03
32	236.35	-0.117E+01	-0.173E+02	0.578E+04	-0.289E+05	0.139E+03
	168.54	-0.329E+01	-0.119E+01	-0.403E+04	-0.134E+05	0.462E+03
33	245.70	-0.856E+00	-0.148E+02	0.186E+04	-0.185E+05	0.153E+03
	145.73	-0.315E+01	-0.287E+00	-0.406E+04	-0.135E+05	0.510E+03
34	252.84	-0.502E+00	-0.136E+02	-0.160E+04	-0.179E+05	0.119E+03
	122.14	-0.303E+01	0.201E+00	-0.408E+04	-0.136E+05	0.398E+03
35	257.73	-0.161E+00	-0.137E+02	-0.382E+04	-0.238E+05	0.713E+02
	97.98	-0.295E+01	0.832E+00	-0.408E+04	-0.136E+05	0.238E+03
36	260.31	0.126E+00	-0.140E+02	-0.488E+04	-0.265E+05	0.291E+02
	73.47	-0.291E+01	0.161E+01	-0.406E+04	-0.135E+05	0.971E+02
37	260.57	0.336E+00	-0.131E+02	-0.499E+04	-0.267E+05	-0.186E+02
	48.82	-0.289E+01	0.182E+01	-0.402E+04	-0.134E+05	-0.619E+02
38	258.50	0.468E+00	-0.113E+02	-0.368E+04	-0.230E+05	-0.950E+02
	24.26	-0.289E+01	0.254E+01	-0.396E+04	-0.132E+05	-0.316E+03
39	254.12	0.546E+00	-0.960E+01	0.804E-09	-0.130E+05	-0.190E+03
	0.00	-0.290E+01	0.326E+01	-0.389E+04	-0.130E+05	-0.633E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.42473E-03	-0.42473E-03	.30762	0.00000
2	-0.74536E-03	-0.11678E-03	.53985	0.00000
3	-0.86003E-03	-0.11637E-04	.62290	0.00000
4	-0.85293E-03	-0.23441E-04	.61775	0.00000
5	-0.76094E-03	-0.11548E-03	.55113	0.00000
6	-0.56169E-03	-0.30918E-03	.40682	0.00000
7	-0.25144E-03	-0.60936E-03	.44135	0.00000
8	0.96867E-04	-0.94372E-03	.68351	0.00000
9	0.35080E-03	-0.11804E-02	.85495	0.00000
10	0.47247E-03	-0.12824E-02	.92878	0.00000
11	0.43343E-03	-0.12227E-02	.88560	0.00000
12	0.34419E-03	-0.11113E-02	.80487	0.00000
13	0.12791E-03	-0.87145E-03	.63117	0.00000
14	-0.19945E-03	-0.52299E-03	.37879	0.00000
15	-0.54792E-03	-0.15718E-03	.39684	0.00000
16	-0.78170E-03	0.91513E-04	.56617	0.00000
17	-0.84651E-03	0.17206E-03	.61311	0.00000
18	-0.79381E-03	0.13787E-03	.57494	0.00000
19	-0.72591E-03	0.91984E-04	.52576	0.00000
20	-0.83535E-03	0.20292E-03	.60503	0.00000
21	-0.10647E-02	0.41566E-03	.77110	0.00000
22	-0.11646E-02	0.49976E-03	.84347	0.00000
23	-0.10663E-02	0.38761E-03	.77231	0.00000
24	-0.78324E-03	0.89950E-04	.56728	0.00000
25	-0.41294E-03	-0.29744E-03	.29908	0.00000
26	-0.43463E-04	0.68696E-03	.49755	0.00000
27	0.23961E-03	-0.99325E-03	.71939	0.00000
28	0.37040E-03	-0.11487E-02	.83197	0.00000
29	0.39543E-03	-0.11935E-02	.86441	0.00000
30	0.41509E-03	-0.12299E-02	.89076	0.00000
31	0.30299E-03	-0.11338E-02	.82118	0.00000
32	0.63554E-04	-0.90583E-03	.65607	0.00000
33	-0.26830E-03	-0.58108E-03	.42086	0.00000
34	-0.56074E-03	-0.29198E-03	.40613	0.00000
35	-0.74661E-03	-0.10576E-03	.54075	0.00000
36	-0.83308E-03	-0.14432E-04	.60338	0.00000
37	-0.83850E-03	-0.70207E-06	.60731	0.00000
38	-0.72195E-03	-0.10532E-03	.52289	0.00000
39	-0.40637E-03	-0.40637E-03	.29432	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.34180	0.00000	0.11683
2	-0.34690	-0.18047	0.30081
3	-0.35074	-0.24358	0.36660
4	-0.35263	-0.23815	0.36250
5	-0.35265	-0.18531	0.30968
6	-0.35042	-0.07250	0.19529
7	-0.34637	0.10276	0.22273
8	-0.34075	0.29876	0.41487
9	-0.33382	0.43962	0.55105
10	-0.32588	0.50382	0.61001
11	-0.31760	0.47549	0.57636
12	-0.30866	0.41787	0.51314
13	-0.29918	0.28692	0.37643
14	-0.29069	0.09289	0.17739
15	-0.28371	-0.11218	0.19268
16	-0.27771	-0.25070	0.32783
17	-0.27138	-0.29243	0.36608
18	-0.26394	-0.26749	0.33715
19	-0.25507	-0.23482	0.29988
20	-0.25395	-0.29892	0.36341
21	-0.26114	-0.42500	0.49320
22	-0.26750	-0.47783	0.54939
23	-0.27309	-0.41743	0.49201
24	-0.27896	-0.25070	0.32852
25	-0.28584	-0.03316	0.11486
26	-0.29391	0.18475	0.27113
27	-0.30325	0.35396	0.44592
28	-0.31316	0.43614	0.53421
29	-0.32112	0.45618	0.55930
30	-0.32785	0.47227	0.57976
31	-0.33430	0.41251	0.52426
32	-0.33891	0.27831	0.39317
33	-0.34177	0.08980	0.20661
34	-0.34311	-0.07716	0.19489
35	-0.34297	-0.18399	0.30162
36	-0.34102	-0.23504	0.35133
37	-0.33768	-0.24054	0.35456
38	-0.33287	-0.17704	0.28784
39	-0.32702	0.00000	0.10694

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	13965.	30800.	0.453
BUCKLING THRUST (psi)	5	13965.	44890.	0.311
SEAM THRUST (psi)	5	13965.	23052.	0.606
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.610	1.000	0.610

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.51

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.10

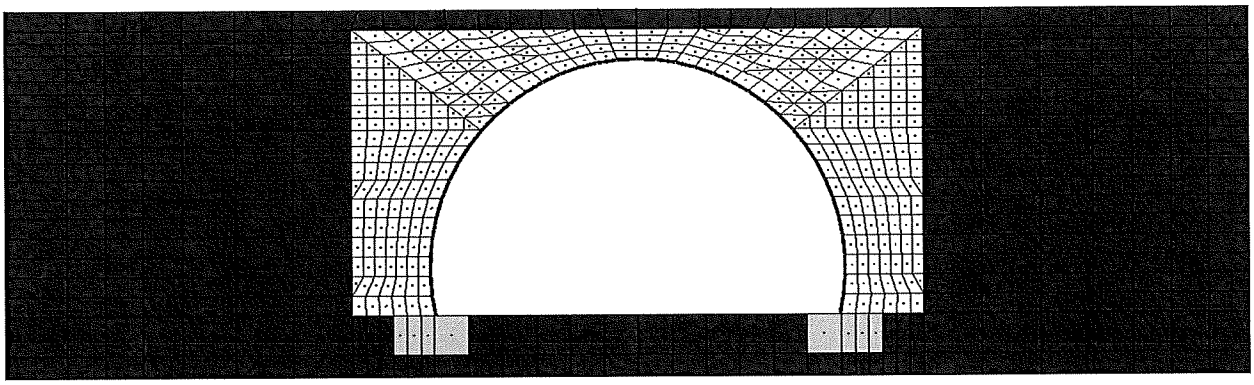
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF..... 0.41

SPAN LENGTH FOR HANDLING AND BUCKLING (IN)..... 521.47

FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB) 0.020

.

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage TYPE 3-2

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -143.9	F = 0.000
1141	21	F = 0.000	F = -143.9	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000

961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1146	21	F =	0.000	F =	-86.40	F =	0.000
1136	21	F =	0.000	F =	-118.7	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS--------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------- 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP--ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000

12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.478E+00 -0.289E+01	0.970E+01 -0.190E+01	0.460E-10 -0.386E+04	-0.128E+05 -0.128E+05	0.187E+03 0.624E+03
2	-258.50 24.26	-0.377E+00 -0.288E+01	-0.112E+02 -0.987E+00	-0.359E+04 -0.389E+04	-0.225E+05 -0.129E+05	0.962E+02 0.320E+03
3	-260.57 48.82	-0.223E+00 -0.288E+01	-0.127E+02 -0.742E-01	-0.491E+04 -0.390E+04	-0.261E+05 -0.130E+05	0.232E+02 0.772E+02
4	-260.31 73.47	0.961E-02 -0.289E+01	-0.132E+02 0.328E+00	-0.487E+04 -0.390E+04	-0.260E+05 -0.130E+05	-0.253E+02 -0.841E+02

5	-257.73	0.318E+00	-0.128E+02	-0.379E+04	-0.230E+05	-0.715E+02
	97.98	-0.294E+01	0.118E+01	-0.387E+04	-0.129E+05	-0.238E+03
6	-252.84	0.678E+00	-0.127E+02	-0.145E+04	-0.166E+05	-0.121E+03
	122.14	-0.302E+01	0.189E+01	-0.382E+04	-0.127E+05	-0.404E+03
7	-245.70	0.105E+01	-0.139E+02	0.210E+04	-0.181E+05	-0.152E+03
	145.73	-0.315E+01	0.256E+01	-0.376E+04	-0.125E+05	-0.505E+03
8	-236.35	0.137E+01	-0.158E+02	0.598E+04	-0.282E+05	-0.136E+03
	168.54	-0.329E+01	0.363E+01	-0.366E+04	-0.122E+05	-0.452E+03
9	-224.90	0.160E+01	-0.157E+02	0.876E+04	-0.352E+05	-0.871E+02
	190.36	-0.342E+01	0.434E+01	-0.355E+04	-0.118E+05	-0.290E+03
10	-211.44	0.169E+01	-0.158E+02	0.103E+05	-0.389E+05	-0.274E+02
	211.01	-0.350E+01	0.449E+01	-0.344E+04	-0.114E+05	-0.913E+02
11	-196.08	0.165E+01	-0.136E+02	0.102E+05	-0.382E+05	0.166E+02
	230.29	-0.347E+01	0.389E+01	-0.333E+04	-0.111E+05	0.552E+02
12	-178.98	0.148E+01	-0.143E+02	0.956E+04	-0.363E+05	0.512E+02
	248.04	-0.333E+01	0.424E+01	-0.323E+04	-0.108E+05	0.171E+03
13	-160.27	0.123E+01	-0.147E+02	0.782E+04	-0.313E+05	0.109E+03
	264.09	-0.305E+01	0.453E+01	-0.313E+04	-0.104E+05	0.364E+03
14	-140.14	0.932E+00	-0.130E+02	0.446E+04	-0.220E+05	0.161E+03
	278.31	-0.265E+01	0.414E+01	-0.303E+04	-0.101E+05	0.536E+03
15	-118.75	0.635E+00	-0.108E+02	0.282E+03	-0.106E+05	0.173E+03
	290.56	-0.216E+01	0.355E+01	-0.295E+04	-0.984E+04	0.576E+03
16	-96.30	0.383E+00	-0.939E+01	-0.356E+04	-0.191E+05	0.148E+03
	300.73	-0.164E+01	0.316E+01	-0.289E+04	-0.961E+04	0.492E+03
17	-72.98	0.202E+00	-0.893E+01	-0.642E+04	-0.265E+05	0.106E+03
	308.74	-0.115E+01	0.307E+01	-0.282E+04	-0.939E+04	0.352E+03
18	-49.02	0.936E-01	-0.930E+01	-0.823E+04	-0.312E+05	0.689E+02
	314.51	-0.748E+00	0.320E+01	-0.275E+04	-0.916E+04	0.230E+03
19	-24.62	0.452E-01	-0.992E+01	-0.946E+04	-0.342E+05	0.509E+02
	318.00	-0.470E+00	0.271E+01	-0.268E+04	-0.894E+04	0.170E+03
20	0.00	0.322E-01	-0.919E+01	-0.107E+05	-0.374E+05	0.352E+02
	319.17	-0.347E+00	-0.158E+01	-0.267E+04	-0.890E+04	0.117E+03
21	24.62	0.227E-01	-0.767E+01	-0.115E+05	-0.397E+05	-0.103E+02
	318.00	-0.399E+00	-0.268E+01	0.273E+04	-0.908E+04	-0.343E+02
22	49.02	-0.194E-01	-0.763E+01	-0.107E+05	-0.378E+05	-0.805E+02
	314.51	-0.635E+00	-0.267E+01	-0.279E+04	-0.929E+04	-0.268E+03
23	72.98	-0.126E+00	-0.838E+01	-0.809E+04	-0.311E+05	-0.148E+03
	308.74	-0.103E+01	-0.288E+01	-0.285E+04	-0.948E+04	-0.491E+03
24	96.30	-0.316E+00	-0.101E+02	-0.397E+04	-0.203E+05	-0.190E+03
	300.73	-0.154E+01	-0.338E+01	-0.291E+04	-0.969E+04	-0.632E+03

25	118.75	-0.580E+00	-0.119E+02	0.805E+03	-0.121E+05	-0.195E+03
	290.56	-0.209E+01	-0.390E+01	-0.298E+04	-0.993E+04	-0.649E+03
26	140.14	-0.889E+00	-0.138E+02	0.531E+04	-0.244E+05	-0.162E+03
	278.31	-0.260E+01	-0.437E+01	-0.307E+04	-0.102E+05	-0.541E+03
27	160.27	-0.119E+01	-0.155E+02	0.860E+04	-0.335E+05	-0.939E+02
	264.09	-0.301E+01	-0.477E+01	-0.317E+04	-0.106E+05	-0.313E+03
28	178.98	-0.144E+01	-0.143E+02	0.982E+04	-0.371E+05	-0.289E+02
	248.04	-0.328E+01	-0.370E+01	-0.327E+04	-0.109E+05	-0.963E+02
29	196.08	-0.160E+01	-0.130E+02	0.997E+04	-0.378E+05	-0.341E+01
	230.29	-0.342E+01	-0.296E+01	-0.335E+04	-0.112E+05	-0.114E+02
30	211.44	-0.164E+01	-0.155E+02	0.999E+04	-0.382E+05	0.293E+02
	211.01	-0.344E+01	-0.368E+01	-0.344E+04	-0.114E+05	0.974E+02
31	224.90	-0.155E+01	-0.157E+02	0.857E+04	-0.346E+05	0.863E+02
	190.36	-0.337E+01	-0.307E+01	-0.353E+04	-0.117E+05	0.287E+03
32	236.35	-0.133E+01	-0.155E+02	0.579E+04	-0.275E+05	0.135E+03
	168.54	-0.324E+01	-0.251E+01	-0.361E+04	-0.120E+05	0.449E+03
33	245.70	-0.101E+01	-0.135E+02	0.199E+04	-0.176E+05	0.149E+03
	145.73	-0.310E+01	-0.183E+01	-0.368E+04	-0.122E+05	0.495E+03
34	252.84	-0.645E+00	-0.124E+02	-0.146E+04	-0.163E+05	0.118E+03
	122.14	-0.298E+01	-0.146E+01	-0.373E+04	-0.124E+05	0.393E+03
35	257.73	-0.292E+00	-0.125E+02	-0.372E+04	-0.225E+05	0.704E+02
	97.98	-0.289E+01	-0.973E+00	-0.377E+04	-0.126E+05	0.234E+03
36	260.31	0.884E-02	-0.129E+02	-0.481E+04	-0.255E+05	0.259E+02
	73.47	-0.285E+01	-0.247E+00	-0.380E+04	-0.126E+05	0.861E+02
37	260.57	0.235E+00	-0.123E+02	-0.487E+04	-0.257E+05	-0.224E+02
	48.82	-0.284E+01	0.727E-01	-0.380E+04	-0.127E+05	-0.746E+02
38	258.50	0.385E+00	-0.108E+02	-0.356E+04	-0.221E+05	-0.955E+02
	24.26	-0.284E+01	0.981E+00	-0.378E+04	-0.126E+05	-0.318E+03
39	254.12	0.481E+00	-0.934E+01	-0.690E-10	-0.125E+05	-0.186E+03
	0.00	-0.284E+01	0.189E+01	-0.375E+04	-0.125E+05	-0.621E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40298E-03	-0.40298E-03	.29187	0.00000
2	-0.70703E-03	-0.10549E-03	.51208	0.00000
3	-0.82006E-03	0.40660E-05	.59395	0.00000
4	-0.81621E-03	0.13365E-05	.59116	0.00000
5	-0.72269E-03	-0.86915E-04	.52343	0.00000
6	-0.52141E-03	-0.27795E-03	.37764	0.00000
7	-0.21586E-03	-0.56891E-03	.41205	0.00000
8	0.11849E-03	-0.88405E-03	.64030	0.00000
9	0.36351E-03	-0.11059E-02	.80100	0.00000
10	0.50238E-03	-0.12205E-02	.88401	0.00000
11	0.50401E-03	-0.12001E-02	.86923	0.00000
12	0.46413E-03	-0.11396E-02	.82541	0.00000
13	0.32853E-03	-0.98271E-03	.71176	0.00000

14	0.56578E-04	-0.69082E-03	.50034	0.00000
15	-0.28506E-03	-0.33245E-03	.24078	0.00000
16	-0.60003E-03	-0.31730E-05	.43458	0.00000
17	-0.83287E-03	0.24337E-03	.60323	0.00000
18	-0.97784E-03	0.40286E-03	.70823	0.00000
19	-0.10743E-02	0.51346E-03	.77810	0.00000
20	-0.11751E-02	0.61501E-03	.85110	0.00000
21	-0.12466E-02	0.67653E-03	.90286	0.00000
22	-0.11873E-02	0.60433E-03	.85995	0.00000
23	-0.97647E-03	0.38133E-03	.70724	0.00000
24	-0.63707E-03	0.28981E-04	.46141	0.00000
25	-0.24406E-03	-0.37918E-03	.27463	0.00000
26	0.12488E-03	-0.76614E-03	.55489	0.00000
27	0.38984E-03	-0.10524E-02	.76223	0.00000
28	0.48216E-03	-0.11656E-02	.84425	0.00000
29	0.48614E-03	-0.11868E-02	.85957	0.00000
30	0.47893E-03	-0.11973E-02	.86719	0.00000
31	0.34981E-03	-0.10871E-02	.78737	0.00000
32	0.10859E-03	-0.86286E-03	.62495	0.00000
33	-0.21774E-03	-0.55091E-03	.39901	0.00000
34	-0.51224E-03	-0.26795E-03	.37100	0.00000
35	-0.70678E-03	-0.81973E-04	.51191	0.00000
36	-0.79987E-03	0.65784E-05	.57933	0.00000
37	-0.80537E-03	0.11149E-04	.58331	0.00000
38	-0.69374E-03	-0.97029E-04	.50246	0.00000
39	-0.39213E-03	-0.39213E-03	.28401	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32430	0.00000	0.10517
2	-0.32694	-0.17270	0.27959
3	-0.32834	-0.23661	0.34441
4	-0.32789	-0.23472	0.34223
5	-0.32577	-0.18253	0.28866
6	-0.32164	-0.06990	0.17335
7	-0.31577	0.10136	0.20108
8	-0.30804	0.28784	0.38273
9	-0.29873	0.42188	0.51112
10	-0.28897	0.49466	0.57816
11	-0.28010	0.48927	0.56772
12	-0.27181	0.46045	0.53433
13	-0.26323	0.37646	0.44575
14	-0.25520	0.21458	0.27971
15	-0.24847	0.01360	0.07534
16	-0.24271	-0.17136	0.23027
17	-0.23720	-0.30899	0.36526
18	-0.23136	-0.39641	0.44993
19	-0.22567	-0.45585	0.50678
20	-0.22484	-0.51476	0.56531
21	-0.22937	-0.55213	0.60474
22	-0.23458	-0.51439	0.56942
23	-0.23947	-0.38983	0.44718
24	-0.24468	-0.19123	0.25109
25	-0.25078	0.03880	0.10168
26	-0.25803	0.25581	0.32239
27	-0.26660	0.41407	0.48515
28	-0.27502	0.47309	0.54873
29	-0.28193	0.48031	0.55979
30	-0.28906	0.48126	0.56481
31	-0.29667	0.41255	0.50056
32	0.30350	0.27891	0.37102
33	-0.30929	0.09565	0.19131
34	-0.31393	-0.07013	0.16869
35	-0.31738	-0.17939	0.28011
36	-0.31920	-0.23154	0.33342
37	-0.31957	-0.23442	0.33655
38	-0.31819	-0.17132	0.27256
39	-0.31557	0.00000	0.09958

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	3	13002.	30800.	0.422
BUCKLING THRUST (psi)	3	13002.	44017.	0.295
SEAM THRUST (psi)	3	13002.	23052.	0.564
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	21	0.605	1.000	0.605

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.64
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

BEAM OUTPUT FOR TYPE 3-2 TRUCK Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-46.28	1.91	15.97
-258.503	24.256	-42.80	-27.17	-46.65	2.20	13.87
-260.573	48.818	-42.47	-26.96	-46.85	2.51	12.28
-260.315	73.465	-41.86	-26.58	-46.79	2.82	11.07
-257.731	97.978	-41.04	-26.06	-46.49	3.11	10.20
-252.844	122.138	-40.03	-25.42	-45.90	3.35	9.66
-245.697	145.727	-38.89	-24.69	-45.06	3.53	9.40
-236.355	168.537	-37.66	-23.91	-43.96	3.60	9.43
-224.901	190.363	-36.40	-23.11	-42.63	3.56	9.77
-211.437	211.009	-35.16	-22.32	-41.24	3.47	10.25
-196.083	230.292	-34.05	-21.62	-39.97	3.38	10.74
-178.978	248.039	-33.04	-20.98	-38.79	3.29	11.26
-160.273	264.092	-31.96	-20.29	-37.56	3.20	11.78
-140.136	278.307	-30.93	-19.64	-36.42	3.14	12.24
-118.747	290.557	-30.06	-19.09	-35.46	3.08	12.63
-96.296	300.732	-29.33	-18.62	-34.64	3.03	13.00
-72.985	308.742	-28.77	-18.27	-33.85	2.90	13.71
-49.022	314.515	-28.38	-18.02	-33.02	2.65	15.13
-24.621	318	-28.08	-17.83	-32.20	2.36	17.07
0	319.165	-27.95	-17.74	-32.08	2.37	17.05
24.621	318	-28.08	-17.83	-32.73	2.66	15.13
49.022	314.515	-28.37	-18.02	-33.48	2.91	13.74
72.985	308.742	-28.77	-18.27	-34.17	3.09	12.89
96.296	300.732	-29.34	-18.63	-34.92	3.18	12.38
118.747	290.557	-30.09	-19.11	-35.79	3.25	11.96
140.136	278.307	-30.98	-19.67	-36.82	3.34	11.48
160.273	264.092	-32.03	-20.34	-38.04	3.43	10.96
178.978	248.039	-33.14	-21.04	-39.25	3.49	10.58
196.083	230.292	-34.15	-21.68	-40.23	3.48	10.43
211.437	211.009	-35.23	-22.37	-41.25	3.44	10.34
224.901	190.363	-36.44	-23.14	-42.34	3.37	10.32
236.355	168.537	-37.70	-23.94	-43.31	3.21	10.59
245.697	145.727	-38.93	-24.72	-44.14	2.97	11.14
252.844	122.138	-40.08	-25.45	-44.80	2.70	12.00
257.731	97.978	-41.11	-26.10	-45.29	2.39	13.26
260.315	73.465	-41.94	-26.63	-45.55	2.06	15.10
260.573	48.818	-42.56	-27.02	-45.60	1.74	17.66
258.503	24.256	-42.88	-27.23	-45.41	1.44	21.14
254.123	0	-43.00	-27.30	-45.03	1.16	26.17

Thrust Load Rating= 9.40

BEAM OUTPUT FOR TYPE 3-2 TRUCK γ_{DL}=1.5, γ_{DL}= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.59	0.13	96.40
-260.573	48.818	-4.71	-2.99	-4.91	0.12	94.78
-260.315	73.465	-4.75	-3.01	-4.87	0.07	155.73
-257.731	97.978	-3.64	-2.31	-3.79	0.08	141.81
-252.844	122.138	-1.25	-0.79	-1.45	0.12	117.24
-245.697	145.727	2.29	1.45	2.10	0.11	121.43
-236.355	168.537	6.15	3.91	5.98	0.10	100.73
-224.901	190.363	9.07	5.76	8.76	0.18	47.49
-211.437	211.009	10.75	6.83	10.27	0.28	26.28
-196.083	230.292	10.78	6.84	10.16	0.35	20.48
-178.978	248.039	10.39	6.59	9.56	0.47	15.87
-160.273	264.092	9.01	5.72	7.82	0.68	12.29
-140.136	278.307	5.87	3.72	4.46	0.81	12.98
-118.747	290.557	1.56	0.99	0.28	0.73	18.16
-96.296	300.732	-3.08	-1.96	-3.56	0.27	44.97
-72.985	308.742	-7.45	-4.73	-6.42	0.59	15.89
-49.022	314.515	-11.03	-7.00	-8.23	1.60	4.43
-24.621	318	-13.44	-8.54	-9.46	2.27	2.41
0	319.165	-14.24	-9.04	-10.69	2.03	2.45
24.621	318	-13.23	-8.40	-11.46	1.01	5.59
49.022	314.515	-10.64	-6.75	-10.68	0.02	300.52
72.985	308.742	-6.92	-4.39	-8.09	0.67	14.55
96.296	300.732	-2.45	-1.56	-3.97	0.87	14.63
118.747	290.557	2.20	1.39	0.81	0.79	16.21
140.136	278.307	6.40	4.06	5.31	0.62	16.23
160.273	264.092	9.37	5.95	8.60	0.44	18.59
178.978	248.039	10.35	6.57	9.82	0.30	24.99
196.083	230.292	10.37	6.59	9.97	0.23	32.76
211.437	211.009	10.18	6.47	9.99	0.11	69.54
224.901	190.363	8.61	5.47	8.57	0.03	319.13
236.355	168.537	5.87	3.73	5.79	0.04	239.54
245.697	145.727	2.15	1.37	1.99	0.10	134.29
252.844	122.138	-1.28	-0.81	-1.46	0.10	136.16
257.731	97.978	-3.62	-2.30	-3.72	0.06	205.92
260.315	73.465	-4.74	-3.01	-4.81	0.04	282.41
260.573	48.818	-4.74	-3.01	-4.87	0.07	154.63
258.503	24.256	-3.43	-2.18	-3.56	0.07	161.35
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.41

Actual Load Rating (from CANDE) 2.41

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage TYPE 3-2 OPR

LIVE LOADS X 2.41

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)		Y-FORCE(F) -OR- Y-DISPLACE.(D)		MOMENT(F) -OR- ROTATION (D)	
1142	21	F =	0.000	F =	-346.8	F =	0.000
1141	21	F =	0.000	F =	-346.8	F =	0.000
574	1	D =	0.000	D =	0.000	D =	0.000
575	1	D =	0.000	D =	0.000	D =	0.000
576	1	D =	0.000	D =	0.000	D =	0.000
577	1	D =	0.000	D =	0.000	D =	0.000
578	1	D =	0.000	D =	0.000	D =	0.000
579	1	D =	0.000	D =	0.000	D =	0.000
580	1	D =	0.000	D =	0.000	D =	0.000
581	1	D =	0.000	D =	0.000	D =	0.000
582	1	D =	0.000	D =	0.000	D =	0.000
583	1	D =	0.000	D =	0.000	D =	0.000
584	1	D =	0.000	D =	0.000	D =	0.000
585	1	D =	0.000	D =	0.000	D =	0.000
586	1	D =	0.000	D =	0.000	D =	0.000
587	1	D =	0.000	D =	0.000	D =	0.000
588	1	D =	0.000	D =	0.000	D =	0.000
589	1	D =	0.000	D =	0.000	D =	0.000
590	1	D =	0.000	D =	0.000	D =	0.000
591	1	D =	0.000	D =	0.000	D =	0.000
592	1	D =	0.000	D =	0.000	D =	0.000
593	1	D =	0.000	D =	0.000	D =	0.000
594	1	D =	0.000	D =	0.000	D =	0.000
595	1	D =	0.000	D =	0.000	D =	0.000
596	1	D =	0.000	D =	0.000	D =	0.000
597	1	D =	0.000	D =	0.000	D =	0.000
598	1	D =	0.000	D =	0.000	D =	0.000
599	1	D =	0.000	D =	0.000	D =	0.000
624	1	D =	0.000	D =	0.000	D =	0.000
649	1	D =	0.000	D =	0.000	D =	0.000
674	1	D =	0.000	D =	0.000	D =	0.000
699	1	D =	0.000	D =	0.000	D =	0.000
724	1	D =	0.000	D =	0.000	D =	0.000
761	1	D =	0.000	D =	0.000	D =	0.000
786	1	D =	0.000	D =	0.000	D =	0.000
811	1	D =	0.000	D =	0.000	D =	0.000
836	1	D =	0.000	D =	0.000	D =	0.000
861	1	D =	0.000	D =	0.000	D =	0.000
886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000

856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1146	21	F =	0.000	F =	-208.1	F =	0.000
1136	21	F =	0.000	F =	-286.1	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21

23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000

37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.550E+00 -0.299E+01	-0.101E+02 -0.365E+01	0.276E-10 -0.412E+04	-0.137E+05 -0.137E+05	0.197E+03 0.656E+03
2	-258.50 24.26	-0.471E+00 -0.299E+01	-0.120E+02 -0.282E+01	-0.381E+04 -0.420E+04	-0.242E+05 -0.140E+05	0.968E+02 0.322E+03
3	-260.57 48.82	-0.336E+00 -0.299E+01	-0.140E+02 -0.199E+01	-0.513E+04 -0.426E+04	-0.279E+05 -0.142E+05	0.178E+02 0.594E+02
4	-260.31 73.47	-0.120E+00 -0.300E+01	-0.150E+02 -0.157E+01	-0.500E+04 -0.430E+04	-0.277E+05 -0.143E+05	-0.298E+02 -0.994E+02
5	-257.73 97.98	0.174E+00 -0.304E+01	-0.146E+02 -0.515E+00	-0.392E+04 -0.432E+04	-0.249E+05 -0.144E+05	-0.732E+02 -0.244E+03
6	-252.84 122.14	0.524E+00 -0.313E+01	-0.144E+02 0.547E+00	-0.161E+04 -0.431E+04	-0.187E+05 -0.143E+05	-0.123E+03 -0.411E+03
7	245.70 145.73	0.886E+00 -0.325E+01	-0.159E+02 0.165E+01	0.198E+04 -0.427E+04	-0.195E+05 -0.142E+05	-0.154E+03 -0.514E+03
8	-236.35 168.54	0.120E+01 -0.340E+01	-0.181E+02 0.335E+01	0.587E+04 -0.419E+04	-0.296E+05 -0.139E+05	-0.135E+03 -0.449E+03
9	-224.90 190.36	0.142E+01 -0.353E+01	-0.178E+02 0.489E+01	0.854E+04 -0.407E+04	-0.364E+05 -0.136E+05	-0.822E+02 -0.274E+03
10	-211.44 211.01	0.151E+01 -0.360E+01	-0.179E+02 0.507E+01	0.990E+04 -0.394E+04	-0.396E+05 -0.131E+05	-0.200E+02 -0.664E+02

11	-196.08	0.147E+01	-0.158E+02	0.960E+04	-0.384E+05	0.298E+02
	230.29	-0.358E+01	0.453E+01	-0.383E+04	-0.127E+05	0.991E+02
12	-178.98	0.132E+01	-0.165E+02	0.864E+04	-0.355E+05	0.737E+02
	248.04	-0.345E+01	0.491E+01	-0.371E+04	-0.124E+05	0.245E+03
13	-160.27	0.109E+01	-0.163E+02	0.635E+04	-0.290E+05	0.135E+03
	264.09	-0.319E+01	0.503E+01	-0.360E+04	-0.120E+05	0.449E+03
14	-140.14	0.821E+00	-0.143E+02	0.263E+04	-0.187E+05	0.179E+03
	278.31	-0.284E+01	0.454E+01	-0.349E+04	-0.116E+05	0.595E+03
15	-118.75	0.567E+00	-0.112E+02	-0.151E+04	-0.154E+05	0.169E+03
	290.56	-0.242E+01	0.367E+01	-0.341E+04	-0.113E+05	0.562E+03
16	-96.30	0.363E+00	-0.961E+01	-0.441E+04	-0.229E+05	0.108E+03
	300.73	-0.200E+01	0.325E+01	-0.333E+04	-0.111E+05	0.361E+03
17	-72.98	0.223E+00	-0.100E+02	-0.539E+04	-0.253E+05	0.404E+02
	308.74	-0.163E+01	0.346E+01	-0.326E+04	-0.108E+05	0.135E+03
18	-49.02	0.140E+00	-0.114E+02	-0.504E+04	-0.240E+05	0.207E+01
	314.51	-0.133E+01	0.391E+01	-0.317E+04	-0.106E+05	0.688E+01
19	-24.62	0.990E-01	-0.144E+02	-0.458E+04	-0.225E+05	0.273E+02
	318.00	-0.111E+01	0.447E+01	-0.307E+04	-0.102E+05	0.909E+02
20	0.00	0.838E-01	-0.133E+02	-0.622E+04	-0.268E+05	0.820E+02
	319.17	-0.961E+00	-0.389E+01	-0.306E+04	-0.102E+05	0.273E+03
21	24.62	0.776E-01	-0.906E+01	-0.928E+04	-0.353E+05	0.661E+02
	318.00	-0.922E+00	-0.319E+01	-0.316E+04	-0.105E+05	0.220E+03
22	49.02	0.534E-01	-0.807E+01	-0.108E+05	-0.395E+05	-0.229E+02
	314.51	-0.103E+01	-0.286E+01	-0.324E+04	-0.108E+05	-0.763E+02
23	72.98	-0.227E-01	-0.850E+01	-0.967E+04	-0.368E+05	-0.126E+03
	308.74	-0.130E+01	-0.295E+01	-0.330E+04	-0.110E+05	-0.419E+03
24	96.30	-0.177E+00	-0.110E+02	-0.599E+04	-0.272E+05	-0.198E+03
	300.73	-0.171E+01	-0.369E+01	-0.337E+04	-0.112E+05	-0.661E+03
25	118.75	-0.410E+00	-0.135E+02	-0.102E+04	-0.142E+05	-0.217E+03
	290.56	-0.219E+01	-0.441E+01	-0.345E+04	-0.115E+05	-0.721E+03
26	140.14	-0.697E+00	-0.156E+02	0.391E+04	-0.223E+05	-0.187E+03
	278.31	-0.266E+01	-0.495E+01	-0.355E+04	-0.118E+05	-0.621E+03
27	160.27	-0.991E+00	-0.177E+02	0.771E+04	-0.328E+05	-0.115E+03
	264.09	0.306E+01	-0.543E+01	-0.366E+04	-0.122E+05	-0.383E+03
28	178.98	-0.124E+01	-0.167E+02	0.935E+04	-0.375E+05	-0.412E+02
	248.04	-0.333E+01	-0.390E+01	-0.377E+04	-0.126E+05	-0.137E+03
29	196.08	-0.140E+01	-0.149E+02	0.967E+04	-0.387E+05	-0.108E+02
	230.29	-0.347E+01	-0.271E+01	-0.385E+04	-0.128E+05	-0.358E+02
30	211.44	-0.145E+01	-0.176E+02	0.992E+04	-0.396E+05	0.240E+02
	211.01	-0.349E+01	-0.334E+01	-0.393E+04	-0.131E+05	0.798E+02

31	224.90	-0.136E+01	-0.178E+02	0.860E+04	-0.363E+05	0.869E+02
	190.36	-0.342E+01	-0.218E+01	-0.400E+04	-0.133E+05	0.289E+03
32	236.35	-0.115E+01	-0.173E+02	0.578E+04	-0.290E+05	0.140E+03
	168.54	-0.330E+01	-0.113E+01	-0.406E+04	-0.135E+05	0.466E+03
33	245.70	-0.842E+00	-0.149E+02	0.185E+04	-0.186E+05	0.153E+03
	145.73	-0.316E+01	-0.217E+00	-0.409E+04	-0.136E+05	0.511E+03
34	252.84	-0.490E+00	-0.137E+02	-0.161E+04	-0.180E+05	0.120E+03
	122.14	-0.304E+01	0.289E+00	-0.410E+04	-0.137E+05	0.398E+03
35	257.73	-0.151E+00	-0.138E+02	-0.382E+04	-0.239E+05	0.715E+02
	97.98	-0.296E+01	0.934E+00	-0.410E+04	-0.137E+05	0.238E+03
36	260.31	0.134E+00	-0.141E+02	-0.488E+04	-0.266E+05	0.295E+02
	73.47	-0.291E+01	0.173E+01	-0.407E+04	-0.136E+05	0.983E+02
37	260.57	0.343E+00	-0.131E+02	-0.500E+04	-0.268E+05	-0.182E+02
	48.82	-0.290E+01	0.195E+01	-0.403E+04	-0.134E+05	-0.607E+02
38	258.50	0.473E+00	-0.114E+02	-0.368E+04	-0.231E+05	-0.948E+02
	24.26	-0.290E+01	0.267E+01	-0.397E+04	-0.132E+05	-0.316E+03
39	254.12	0.548E+00	-0.964E+01	0.117E-08	-0.130E+05	-0.190E+03
	0.00	-0.290E+01	0.338E+01	-0.390E+04	-0.130E+05	-0.633E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.43047E-03	-0.43047E-03	.31178	0.00000
2	-0.75828E-03	-0.11870E-03	.54920	0.00000
3	-0.87537E-03	-0.14721E-04	.63401	0.00000
4	-0.86885E-03	-0.29880E-04	.62929	0.00000
5	-0.78033E-03	-0.12233E-03	.56517	0.00000
6	-0.58545E-03	-0.31475E-03	.42403	0.00000
7	-0.27951E-03	-0.61185E-03	.44315	0.00000
8	0.54808E-04	-0.93000E-03	.67358	0.00000
9	0.29065E-03	-0.11421E-02	.82718	0.00000
10	0.41852E-03	-0.12429E-02	.90021	0.00000
11	0.40527E-03	-0.12047E-02	.87250	0.00000
12	0.33683E-03	-0.11126E-02	.80581	0.00000
13	0.15664E-03	-0.90852E-03	.65802	0.00000
14	-0.14422E-03	-0.58584E-03	.42431	0.00000
15	-0.48254E-03	-0.22955E-03	.34949	0.00000
16	-0.71846E-03	0.21658E-04	.52036	0.00000
17	-0.79245E-03	0.11162E-03	.57395	0.00000
18	-0.75366E-03	0.91518E-04	.54585	0.00000
19	-0.70458E-03	0.63837E-04	.51031	0.00000
20	-0.84115E-03	0.19952E-03	.60922	0.00000
21	-0.11081E-02	0.44806E-03	.80259	0.00000
22	-0.12402E-02	0.56404E-03	.89825	0.00000
23	-0.11561E-02	0.46633E-03	.83734	0.00000
24	-0.85402E-03	0.15018E-03	.61854	0.00000
25	-0.44599E-03	-0.27481E-03	.32302	0.00000
26	-0.42557E-04	-0.69862E-03	.50599	0.00000
27	0.26378E-03	-0.10290E-02	.74527	0.00000
28	0.38994E-03	-0.11779E-02	.85316	0.00000
29	0.40893E-03	-0.12138E-02	.87912	0.00000
30	0.42180E-03	-0.12427E-02	.90009	0.00000
31	0.30318E-03	-0.11398E-02	.82555	0.00000
32	0.60662E-04	-0.90847E-03	.65798	0.00000
33	-0.27176E-03	-0.58283E-03	.42213	0.00000
34	-0.56387E-03	-0.29366E-03	.40840	0.00000
35	-0.74911E-03	-0.10758E-03	.54256	0.00000
36	-0.83522E-03	-0.16040E-04	.60493	0.00000
37	-0.84061E-03	-0.17003E-05	.60883	0.00000

38	-0.72356E-03	-0.10616E-03	.52406	0.00000
39	-0.40726E-03	-0.40726E-03	.29497	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.34642	0.00000	0.12001
2	-0.35288	-0.18363	0.30815
3	-0.35815	-0.24710	0.37537
4	-0.36163	-0.24087	0.37165
5	-0.36321	-0.18891	0.32083
6	-0.36222	-0.07772	0.20892
7	-0.35866	0.09541	0.22405
8	-0.35216	0.28274	0.40676
9	-0.34259	0.41134	0.52871
10	-0.33171	0.47700	0.58704
11	-0.32165	0.46222	0.56568
12	-0.31214	0.41613	0.51356
13	-0.30254	0.30581	0.39734
14	-0.29376	0.12679	0.21308
15	-0.28653	-0.07263	0.15473
16	-0.28037	-0.21249	0.29110
17	-0.27395	-0.25956	0.33461
18	-0.26643	-0.24265	0.31364
19	-0.25782	-0.22061	0.28708
20	-0.25764	-0.29959	0.36597
21	-0.26559	-0.44679	0.51733
22	-0.27207	-0.51800	0.59203
23	-0.27755	-0.46581	0.54285
24	-0.28321	-0.28831	0.36851
25	-0.29003	-0.04915	0.13327
26	-0.29823	0.18836	0.27730
27	-0.30790	0.37116	0.46596
28	-0.31707	0.45015	0.55068
29	-0.32386	0.46589	0.57077
30	-0.33033	0.47790	0.58702
31	-0.33664	0.41429	0.52762
32	-0.34114	0.27824	0.39461
33	-0.34387	0.08931	0.20755
34	-0.34505	-0.07758	0.19664
35	-0.34471	-0.18418	0.30301
36	-0.34252	-0.23519	0.35251
37	-0.33893	-0.24085	0.35572
38	-0.33386	-0.17726	0.28872
39	-0.32775	0.00000	0.10742

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	14383.	30800.	0.467
BUCKLING THRUST (psi)	5	14383.	45023.	0.319
SEAM THRUST (psi)	5	14383.	23052.	0.624
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	22	0.592	1.000	0.592

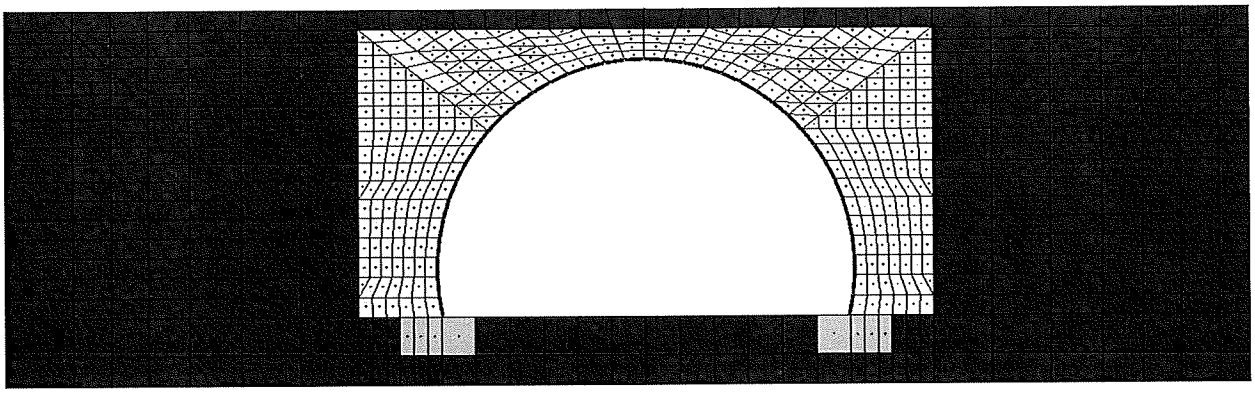
LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.52

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.10
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU4

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -122.3	F = 0.000
1141	21	F = 0.000	F = -122.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000

936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-57.57	F =	0.000
1146	21	F =	0.000	F =	-86.36	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000

11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.472E+00 -0.284E+01	-0.952E+01 -0.160E+01	0.398E-11 -0.370E+04	-0.123E+05 -0.123E+05	0.180E+03 0.599E+03
2	-258.50 24.26	-0.369E+00 -0.283E+01	-0.108E+02 -0.812E+00	-0.346E+04 -0.373E+04	-0.217E+05 -0.124E+05	0.942E+02 0.314E+03
3	-260.57 48.82	-0.214E+00 -0.282E+01	-0.122E+02 -0.212E-01	-0.479E+04 -0.374E+04	-0.253E+05 -0.125E+05	0.242E+02 0.806E+02
4	-260.31	0.174E-01	-0.126E+02	-0.479E+04	-0.253E+05	-0.245E+02

	73.47	-0.284E+01	0.209E+00	-0.374E+04	-0.124E+05	-0.816E+02
5	-257.73	0.323E+00	-0.122E+02	-0.372E+04	-0.223E+05	-0.713E+02
	97.98	-0.288E+01	0.847E+00	-0.372E+04	-0.124E+05	-0.237E+03
6	-252.84	0.680E+00	-0.121E+02	-0.140E+04	-0.160E+05	-0.121E+03
	122.14	-0.297E+01	0.133E+01	-0.368E+04	-0.123E+05	-0.403E+03
7	-245.70	0.105E+01	-0.132E+02	0.214E+04	-0.178E+05	-0.155E+03
	145.73	-0.309E+01	0.159E+01	-0.363E+04	-0.121E+05	-0.515E+03
8	-236.35	0.137E+01	-0.153E+02	0.613E+04	-0.283E+05	-0.143E+03
	168.54	-0.323E+01	0.220E+01	-0.357E+04	-0.119E+05	-0.475E+03
9	-224.90	0.158E+01	-0.158E+02	0.909E+04	-0.359E+05	-0.919E+02
	190.36	-0.336E+01	0.281E+01	-0.349E+04	-0.116E+05	-0.306E+03
10	-211.44	0.166E+01	-0.160E+02	0.106E+05	-0.396E+05	-0.247E+02
	211.01	-0.342E+01	0.365E+01	-0.341E+04	-0.113E+05	-0.822E+02
11	-196.08	0.161E+01	-0.134E+02	0.102E+05	-0.385E+05	0.215E+02
	230.29	-0.339E+01	0.289E+01	-0.332E+04	-0.111E+05	0.717E+02
12	-178.98	0.143E+01	-0.144E+02	0.950E+04	-0.362E+05	0.560E+02
	248.04	-0.323E+01	0.413E+01	-0.324E+04	-0.108E+05	0.186E+03
13	-160.27	0.116E+01	-0.147E+02	0.755E+04	-0.306E+05	0.115E+03
	264.09	-0.294E+01	0.453E+01	-0.314E+04	-0.105E+05	0.383E+03
14	-140.14	0.855E+00	-0.130E+02	0.402E+04	-0.209E+05	0.166E+03
	278.31	-0.253E+01	0.415E+01	-0.304E+04	-0.101E+05	0.553E+03
15	-118.75	0.554E+00	-0.109E+02	-0.298E+03	-0.107E+05	0.179E+03
	290.56	-0.203E+01	0.357E+01	-0.296E+04	-0.987E+04	0.595E+03
16	-96.30	0.304E+00	-0.944E+01	-0.428E+04	-0.211E+05	0.154E+03
	300.73	-0.151E+01	0.318E+01	-0.289E+04	-0.964E+04	0.513E+03
17	-72.98	0.128E+00	-0.881E+01	-0.726E+04	-0.288E+05	0.110E+03
	308.74	-0.104E+01	0.303E+01	-0.283E+04	-0.942E+04	0.367E+03
18	-49.02	0.264E-01	-0.897E+01	-0.906E+04	-0.334E+05	0.670E+02
	314.51	-0.661E+00	0.310E+01	-0.276E+04	-0.920E+04	0.223E+03
19	-24.62	-0.157E-01	-0.932E+01	-0.100E+05	-0.357E+05	0.367E+02
	318.00	-0.425E+00	0.317E+01	-0.269E+04	-0.896E+04	0.122E+03
20	0.00	-0.262E-01	-0.881E+01	-0.106E+05	-0.371E+05	0.945E+01
	319.17	-0.351E+00	-0.379E+00	-0.266E+04	-0.885E+04	0.315E+02
21	24.62	-0.380E-01	-0.838E+01	-0.105E+05	-0.370E+05	-0.298E+02
	318.00	-0.450E+00	-0.289E+01	-0.270E+04	-0.898E+04	-0.991E+02
22	49.02	-0.848E-01	-0.826E+01	-0.939E+04	-0.343E+05	-0.807E+02
	314.51	-0.718E+00	-0.287E+01	-0.276E+04	-0.920E+04	-0.269E+03
23	72.98	-0.195E+00	-0.866E+01	-0.698E+04	-0.281E+05	-0.134E+03
	308.74	-0.113E+01	-0.297E+01	-0.283E+04	-0.941E+04	-0.447E+03
24	96.30	-0.382E+00	-0.995E+01	-0.331E+04	-0.185E+05	-0.173E+03
	300.73	-0.163E+01	-0.333E+01	-0.289E+04	-0.962E+04	-0.576E+03

25	118.75	-0.639E+00	-0.116E+02	0.103E+04	-0.126E+05	-0.182E+03
	290.56	-0.216E+01	-0.380E+01	-0.296E+04	-0.986E+04	-0.606E+03
26	140.14	-0.937E+00	-0.135E+02	0.523E+04	-0.241E+05	-0.154E+03
	278.31	-0.265E+01	-0.428E+01	-0.305E+04	-0.101E+05	-0.514E+03
27	160.27	-0.123E+01	-0.151E+02	0.832E+04	-0.327E+05	-0.922E+02
	264.09	-0.305E+01	-0.465E+01	-0.315E+04	-0.105E+05	-0.307E+03
28	178.98	-0.147E+01	-0.141E+02	0.955E+04	-0.363E+05	-0.323E+02
	248.04	-0.331E+01	-0.417E+01	-0.325E+04	-0.108E+05	-0.107E+03
29	196.08	-0.162E+01	-0.132E+02	0.977E+04	-0.373E+05	-0.628E+01
	230.29	-0.344E+01	-0.376E+01	-0.335E+04	-0.111E+05	-0.209E+02
30	211.44	-0.166E+01	-0.154E+02	0.979E+04	-0.377E+05	0.267E+02
	211.01	-0.346E+01	-0.396E+01	-0.345E+04	-0.115E+05	0.890E+02
31	224.90	-0.156E+01	-0.158E+02	0.845E+04	-0.344E+05	0.826E+02
	190.36	-0.338E+01	-0.343E+01	-0.354E+04	-0.118E+05	0.275E+03
32	236.35	-0.133E+01	-0.157E+02	0.575E+04	-0.275E+05	0.132E+03
	168.54	-0.326E+01	-0.279E+01	-0.363E+04	-0.121E+05	0.441E+03
33	245.70	-0.101E+01	-0.137E+02	0.197E+04	-0.176E+05	0.148E+03
	145.73	-0.311E+01	-0.199E+01	-0.371E+04	-0.123E+05	0.493E+03
34	252.84	-0.648E+00	-0.125E+02	-0.147E+04	-0.165E+05	0.118E+03
	122.14	-0.299E+01	-0.155E+01	-0.376E+04	-0.125E+05	0.392E+03
35	257.73	-0.293E+00	-0.126E+02	-0.374E+04	-0.227E+05	0.703E+02
	97.98	-0.290E+01	-0.101E+01	-0.381E+04	-0.127E+05	0.234E+03
36	260.31	0.879E-02	-0.130E+02	-0.483E+04	-0.257E+05	0.259E+02
	73.47	-0.286E+01	-0.247E+00	-0.383E+04	-0.128E+05	0.864E+02
37	260.57	0.236E+00	-0.125E+02	-0.490E+04	-0.259E+05	-0.223E+02
	48.82	-0.285E+01	0.993E-01	-0.383E+04	-0.128E+05	-0.742E+02
38	258.50	0.385E+00	-0.109E+02	-0.359E+04	-0.223E+05	-0.961E+02
	24.26	-0.285E+01	0.102E+01	-0.382E+04	-0.127E+05	-0.320E+03
39	254.12	0.481E+00	-0.937E+01	-0.672E-10	-0.126E+05	-0.188E+03
	0.00	-0.285E+01	0.195E+01	-0.378E+04	-0.126E+05	-0.627E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.38684E-03	-0.38684E-03	.28018	0.00000
2	-0.67954E-03	-0.99753E-04	.49217	0.00000
3	-0.79324E-03	0.11066E-04	.57452	0.00000
4	-0.79247E-03	0.11219E-04	.57396	0.00000
5	-0.70055E-03	-0.76592E-04	.50739	0.00000
6	-0.50216E-03	-0.26704E-03	.36370	0.00000
7	-0.19946E-03	-0.55907E-03	.40492	0.00000
8	0.14121E-03	-0.88662E-03	.64216	0.00000
9	0.39770E-03	-0.11275E-02	.81662	0.00000
10	0.53199E-03	-0.12436E-02	.90072	0.00000
11	0.51239E-03	-0.12068E-02	.87406	0.00000
12	0.45882E-03	-0.11356E-02	.82248	0.00000

13	0.30529E-03	-0.96114E-03	.69613	0.00000
14	0.19319E-04	-0.65531E-03	.47462	0.00000
15	-0.33465E-03	-0.28461E-03	.24238	0.00000
16	-0.66169E-03	0.56713E-04	.47925	0.00000
17	-0.90457E-03	0.31312E-03	.65516	0.00000
18	-0.10486E-02	0.47126E-03	.75946	0.00000
19	-0.11215E-02	0.55936E-03	.81226	0.00000
20	-0.11637E-02	0.60709E-03	.84287	0.00000
21	-0.11619E-02	0.59832E-03	.84155	0.00000
22	-0.10763E-02	0.49885E-03	.77951	0.00000
23	-0.88090E-03	0.29048E-03	.63802	0.00000
24	-0.57938E-03	-0.24386E-04	.41963	0.00000
25	-0.22263E-03	-0.39619E-03	.28695	0.00000
26	0.12035E-03	-0.75690E-03	.54820	0.00000
27	0.36896E-03	-0.10264E-02	.74336	0.00000
28	0.46109E-03	-0.11403E-02	.82587	0.00000
29	0.46990E-03	-0.11695E-02	.84700	0.00000
30	0.46151E-03	-0.11815E-02	.85574	0.00000
31	0.33832E-03	-0.10788E-02	.78138	0.00000
32	0.10292E-03	-0.86201E-03	.62433	0.00000
33	-0.22176E-03	-0.55285E-03	.40041	0.00000
34	-0.51691E-03	-0.26989E-03	.37439	0.00000
35	-0.71192E-03	-0.83781E-04	.51562	0.00000
36	-0.80517E-03	0.48302E-05	.58316	0.00000
37	-0.81122E-03	0.10028E-04	.58755	0.00000
38	-0.69965E-03	-0.97921E-04	.50674	0.00000
39	-0.39541E-03	-0.39541E-03	.28639	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31131	0.00000	0.09691
2	-0.31357	-0.16646	0.26478
3	-0.31473	-0.23092	0.32997
4	-0.31435	-0.23074	0.32956
5	-0.31270	-0.17914	0.27692
6	-0.30951	-0.06750	0.16330
7	-0.30521	0.10324	0.19640
8	-0.29994	0.29510	0.38506
9	-0.29365	0.43789	0.52412
10	-0.28634	0.50979	0.59178
11	-0.27941	0.49359	0.57166
12	-0.27232	0.45776	0.53192
13	-0.26390	0.36360	0.43324
14	-0.25591	0.19369	0.25918
15	-0.24918	-0.01437	0.07645
16	-0.24343	-0.20626	0.26551
17	-0.23799	-0.34961	0.40624
18	-0.23230	-0.43635	0.49031
19	-0.22618	-0.48257	0.53373
20	-0.22346	-0.50923	0.55916
21	-0.22678	-0.50537	0.55680
22	-0.23233	-0.45222	0.50620
23	-0.23757	-0.33631	0.39275
24	-0.24294	-0.15934	0.21836
25	-0.24899	0.04983	0.11183
26	-0.25613	0.25186	0.31747
27	-0.26452	0.40060	0.47057
28	-0.27328	0.45976	0.53444
29	-0.28148	0.47066	0.54990
30	-0.28971	0.47172	0.55565
31	-0.29797	0.40687	0.49566
32	-0.30544	0.27704	0.37033
33	-0.31168	0.09506	0.19220
34	-0.31659	-0.07092	0.17115
35	-0.32017	-0.18034	0.28285
36	-0.32204	-0.23255	0.33626
37	-0.32238	-0.23578	0.33971
38	-0.32092	-0.17276	0.27575
39	-0.31821	0.00000	0.10126

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	37	12766.	30800.	0.414
BUCKLING THRUST (psi)	37	12766.	44127.	0.289
SEAM THRUST (psi)	37	12766.	23052.	0.554
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.592	1.000	0.592

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.63
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *
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BEAM OUTPUT FOR 5U4 TRUCK γ_{DL}=1.5, γ_{DL}= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	($T_{DL,LLfac}$-T_{DLfac})/1.75	(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-44.42	0.85	35.88
-258.503	24.256	-42.80	-27.17	-44.75	1.11	27.44
-260.573	48.818	-42.47	-26.96	-44.91	1.40	22.03
-260.315	73.465	-41.86	-26.58	-44.86	1.71	18.19
-257.731	97.978	-41.04	-26.06	-44.62	2.05	15.52
-252.844	122.138	-40.03	-25.42	-44.17	2.36	13.70
-245.697	145.727	-38.89	-24.69	-43.55	2.67	12.44
-236.355	168.537	-37.66	-23.91	-42.80	2.94	11.55
-224.901	190.363	-36.40	-23.11	-41.90	3.15	11.05
-211.437	211.009	-35.16	-22.32	-40.86	3.26	10.93
-196.083	230.292	-34.05	-21.62	-39.87	3.33	10.92
-178.978	248.039	-33.04	-20.98	-38.86	3.33	11.12
-160.273	264.092	-31.96	-20.29	-37.66	3.26	11.58
-140.136	278.307	-30.93	-19.64	-36.52	3.19	12.02
-118.747	290.557	-30.06	-19.09	-35.56	3.14	12.40
-96.296	300.732	-29.33	-18.62	-34.74	3.09	12.75
-72.985	308.742	-28.77	-18.27	-33.96	2.97	13.42
-49.022	314.515	-28.38	-18.02	-33.15	2.72	14.70
-24.621	318	-28.08	-17.83	-32.28	2.40	16.78
0	319.165	-27.95	-17.74	-31.89	2.25	17.91
24.621	318	-28.08	-17.83	-32.36	2.45	16.44
49.022	314.515	-28.37	-18.02	-33.15	2.73	14.66
72.985	308.742	-28.77	-18.27	-33.90	2.93	13.57
96.296	300.732	-29.34	-18.63	-34.67	3.04	12.96
118.747	290.557	-30.09	-19.11	-35.53	3.11	12.52
140.136	278.307	-30.98	-19.67	-36.55	3.18	12.04
160.273	264.092	-32.03	-20.34	-37.75	3.26	11.53
178.978	248.039	-33.14	-21.04	-39.00	3.35	11.02
196.083	230.292	-34.15	-21.68	-40.17	3.44	10.54
211.437	211.009	-35.23	-22.37	-41.34	3.49	10.18
224.901	190.363	-36.44	-23.14	-42.52	3.47	10.01
236.355	168.537	-37.70	-23.94	-43.59	3.36	10.09
245.697	145.727	-38.93	-24.72	-44.48	3.17	10.45
252.844	122.138	-40.08	-25.45	-45.18	2.91	11.11
257.731	97.978	-41.11	-26.10	-45.69	2.62	12.11
260.315	73.465	-41.94	-26.63	-45.96	2.29	13.58
260.573	48.818	-42.56	-27.02	-46.00	1.97	15.61
258.503	24.256	-42.88	-27.23	-45.80	1.67	18.31
254.123	0	-43.00	-27.30	-45.41	1.38	22.08

Thrust Load Rating= 10.01

BEAM OUTPUT FOR 5U4 TRUCK γ_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (ir.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.46	0.05	235.08
-260.573	48.818	-4.71	-2.99	-4.79	0.05	220.35
-260.315	73.465	-4.75	-3.01	-4.79	0.02	453.54
-257.731	97.978	-3.64	-2.31	-3.72	0.04	272.05
-252.844	122.138	-1.25	-0.79	-1.40	0.09	155.61
-245.697	145.727	2.29	1.45	2.14	0.08	153.97
-236.355	168.537	6.15	3.91	6.13	0.02	646.69
-224.901	190.363	9.07	5.76	9.09	0.01	606.82
-211.437	211.009	10.75	6.83	10.58	0.10	75.09
-196.083	230.292	10.78	6.84	10.25	0.30	23.95
-178.978	248.039	10.39	6.59	9.50	0.50	14.86
-160.273	264.092	9.01	5.72	7.55	0.84	10.04
-140.136	278.307	5.87	3.72	4.02	1.05	9.93
-118.747	290.557	1.56	0.99	-0.30	1.06	12.50
-96.296	300.732	-3.08	-1.96	-4.28	0.69	17.89
-72.985	308.742	-7.45	-4.73	-7.26	0.11	84.70
-49.022	314.515	-11.03	-7.00	-9.06	1.12	6.29
-24.621	318	-13.44	-8.54	-10.02	1.96	2.81
0	319.165	-14.24	-9.04	-10.57	2.09	2.37
24.621	318	-13.23	-8.40	-10.49	1.56	3.61
49.022	314.515	-10.64	-6.75	-9.39	0.71	10.28
72.985	308.742	-6.92	-4.39	-6.98	0.04	266.29
96.296	300.732	-2.45	-1.56	-3.31	0.49	25.92
118.747	290.557	2.20	1.39	1.03	0.66	19.41
140.136	278.307	6.40	4.06	5.23	0.67	15.09
160.273	264.092	9.37	5.95	8.32	0.60	13.63
178.978	248.039	10.35	6.57	9.55	0.46	16.38
196.083	230.292	10.37	6.59	9.77	0.34	21.85
211.437	211.009	10.18	6.47	9.79	0.22	34.24
224.901	190.363	8.61	5.47	8.45	0.09	91.69
236.355	168.537	5.87	3.73	5.75	0.07	158.85
245.697	145.727	2.15	1.37	1.97	0.10	125.06
252.844	122.138	-1.28	-0.81	-1.47	0.11	124.43
257.731	97.978	-3.62	-2.30	-3.74	0.07	172.27
260.315	73.465	-4.74	-3.01	-4.83	0.05	216.50
260.573	48.818	-4.74	-3.01	-4.90	0.09	126.47
258.503	24.256	-3.43	-2.18	-3.59	0.09	131.38
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.37

Actual Load Rating (from CANDE) 2.37

WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU4-OPR

Live Loads 7 2.37

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -290.0	F = 0.000
1141	21	F = 0.000	F = -290.0	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000
856	1	D = 0.000	F = 0.000	D = 0.000
857	1	D = 0.000	F = 0.000	D = 0.000

858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-136.4	F =	0.000
1146	21	F =	0.000	F =	-204.7	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23

25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.534E+00 -0.288E+01	-0.977E+01 -0.294E+01	-0.406E-10 -0.380E+04	-0.127E+05 -0.127E+05	0.182E+03 0.605E+03
2	-258.50 24.26	-0.451E+00 -0.287E+01	-0.113E+02 -0.237E+01	-0.354E+04 -0.387E+04	-0.223E+05 -0.129E+05	0.931E+02 0.310E+03
3	-260.57 48.82	-0.314E+00 -0.287E+01	-0.128E+02 -0.179E+01	-0.489E+04 -0.392E+04	-0.261E+05 -0.131E+05	0.206E+02 0.685E+02
4	-260.31 73.47	-0.100E+00 -0.289E+01	-0.136E+02 -0.170E+01	-0.484E+04 -0.396E+04	-0.261E+05 -0.132E+05	-0.277E+02 -0.922E+02
5	-257.73 97.98	0.189E+00 -0.293E+01	-0.133E+02 -0.104E+01	-0.380E+04 -0.399E+04	-0.234E+05 -0.133E+05	-0.721E+02 -0.240E+03
6	-252.84 122.14	0.532E+00 -0.301E+01	-0.132E+02 -0.465E+00	-0.154E+04 -0.400E+04	-0.174E+05 -0.133E+05	-0.123E+03 -0.408E+03
7	-245.70 145.73	0.886E+00 -0.313E+01	-0.144E+02 -0.151E+00	0.202E+04 -0.399E+04	-0.187E+05 -0.133E+05	-0.160E+03 -0.532E+03
8	-236.35 168.54	0.120E+01 -0.327E+01	-0.170E+02 0.603E+00	0.614E+04 -0.397E+04	-0.296E+05 -0.132E+05	-0.149E+03 -0.495E+03
9	-224.90 190.36	0.140E+01 -0.339E+01	-0.178E+02 0.169E+01	0.917E+04 -0.393E+04	-0.376E+05 -0.131E+05	-0.923E+02 -0.307E+03
10	-211.44 211.01	0.147E+01 -0.345E+01	-0.181E+02 0.314E+01	0.105E+05 -0.386E+04	-0.410E+05 -0.129E+05	-0.165E+02 -0.550E+02

11	-196.08	0.141E+01	-0.153E+02	0.984E+04	-0.389E+05	0.350E+02
	230.29	-0.341E+01	0.252E+01	-0.379E+04	-0.126E+05	0.117E+03
12	-178.98	0.123E+01	-0.169E+02	0.873E+04	-0.357E+05	0.790E+02
	248.04	-0.325E+01	0.494E+01	-0.370E+04	-0.123E+05	0.263E+03
13	-160.27	0.967E+00	-0.164E+02	0.604E+04	-0.281E+05	0.146E+03
	264.09	-0.297E+01	0.504E+01	-0.359E+04	-0.119E+05	0.486E+03
14	-140.14	0.680E+00	-0.143E+02	0.191E+04	-0.167E+05	0.191E+03
	278.31	-0.259E+01	0.455E+01	-0.348E+04	-0.116E+05	0.637E+03
15	-118.75	0.414E+00	-0.113E+02	-0.263E+04	-0.183E+05	0.183E+03
	290.56	-0.215E+01	0.370E+01	-0.340E+04	-0.113E+05	0.609E+03
16	-96.30	0.209E+00	-0.961E+01	-0.592E+04	-0.269E+05	0.124E+03
	300.73	-0.173E+01	0.325E+01	-0.333E+04	-0.111E+05	0.414E+03
17	-72.98	0.763E-01	-0.962E+01	-0.723E+04	-0.302E+05	0.522E+02
	308.74	-0.138E+01	0.333E+01	-0.325E+04	-0.108E+05	0.174E+03
18	-49.02	0.622E-02	-0.107E+02	-0.689E+04	-0.290E+05	0.159E+01
	314.51	-0.113E+01	0.372E+01	-0.317E+04	-0.106E+05	0.529E+01
19	-24.62	-0.229E-01	-0.129E+02	-0.598E+04	-0.262E+05	0.726E+00
	318.00	-0.987E+00	0.435E+01	-0.307E+04	-0.102E+05	0.242E+01
20	0.00	-0.328E-01	-0.124E+02	-0.620E+04	-0.266E+05	0.266E+02
	319.17	-0.944E+00	-0.105E+01	-0.303E+04	-0.101E+05	0.885E+02
21	24.62	-0.437E-01	-0.107E+02	-0.732E+04	-0.299E+05	0.234E+02
	318.00	-0.101E+01	-0.367E+01	-0.309E+04	-0.103E+05	0.778E+02
22	49.02	-0.781E-01	-0.931E+01	-0.808E+04	-0.322E+05	-0.246E+02
	314.51	-0.118E+01	-0.325E+01	-0.318E+04	-0.106E+05	-0.818E+02
23	72.98	-0.161E+00	-0.918E+01	-0.729E+04	-0.303E+05	-0.984E+02
	308.74	-0.149E+01	-0.317E+01	-0.325E+04	-0.108E+05	-0.328E+03
24	96.30	-0.312E+00	-0.106E+02	-0.456E+04	-0.233E+05	-0.163E+03
	300.73	-0.189E+01	-0.357E+01	-0.332E+04	-0.111E+05	-0.542E+03
25	118.75	-0.532E+00	-0.128E+02	-0.522E+03	-0.127E+05	-0.189E+03
	290.56	-0.234E+01	-0.419E+01	-0.340E+04	-0.113E+05	-0.630E+03
26	140.14	-0.797E+00	-0.151E+02	0.375E+04	-0.217E+05	-0.170E+03
	278.31	-0.277E+01	-0.477E+01	-0.350E+04	-0.116E+05	-0.565E+03
27	160.27	-0.107E+01	-0.167E+02	0.710E+04	-0.310E+05	-0.112E+03
	264.09	-0.313E+01	-0.513E+01	-0.361E+04	-0.120E+05	-0.372E+03
28	178.98	-0.130E+01	-0.163E+02	0.877E+04	-0.358E+05	-0.496E+02
	248.04	-0.338E+01	-0.480E+01	-0.372E+04	-0.124E+05	-0.165E+03
29	196.08	-0.144E+01	-0.152E+02	0.929E+04	-0.376E+05	-0.178E+02
	230.29	-0.351E+01	-0.433E+01	-0.383E+04	-0.128E+05	-0.592E+02
30	211.44	-0.148E+01	-0.175E+02	0.956E+04	-0.387E+05	0.187E+02
	211.01	-0.352E+01	-0.397E+01	-0.394E+04	-0.131E+05	0.623E+02
31	224.90	-0.139E+01	-0.179E+02	0.839E+04	-0.358E+05	0.796E+02

	190.36	-0.345E+01	-0.291E+01	-0.403E+04	-0.134E+05	0.265E+03
32	236.35	-0.117E+01	-0.177E+02	0.571E+04	-0.289E+05	0.135E+03
	168.54	-0.332E+01	-0.171E+01	-0.410E+04	-0.136E+05	0.450E+03
33	245.70	-0.855E+00	-0.152E+02	0.184E+04	-0.187E+05	0.152E+03
	145.73	-0.318E+01	-0.576E+00	-0.414E+04	-0.138E+05	0.506E+03
34	252.84	-0.500E+00	-0.139E+02	-0.163E+04	-0.182E+05	0.120E+03
	122.14	-0.306E+01	0.842E-01	-0.416E+04	-0.139E+05	0.398E+03
35	257.73	-0.157E+00	-0.141E+02	-0.386E+04	-0.242E+05	0.715E+02
	97.98	-0.298E+01	0.821E+00	-0.416E+04	-0.139E+05	0.238E+03
36	260.31	0.130E+00	-0.144E+02	-0.492E+04	-0.269E+05	0.296E+02
	73.47	-0.293E+01	0.169E+01	-0.414E+04	-0.138E+05	0.986E+02
37	260.57	0.341E+00	-0.134E+02	-0.506E+04	-0.272E+05	-0.180E+02
	48.82	-0.292E+01	0.196E+01	-0.410E+04	-0.136E+05	-0.598E+02
38	258.50	0.472E+00	-0.115E+02	-0.374E+04	-0.234E+05	-0.959E+02
	24.26	-0.292E+01	0.272E+01	-0.403E+04	-0.134E+05	-0.319E+03
39	254.12	0.548E+00	-0.967E+01	-0.877E-10	-0.132E+05	-0.194E+03
	0.00	-0.292E+01	0.348E+01	-0.396E+04	-0.132E+05	-0.646E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39743E-03	-0.39743E-03	.28785	0.00000
2	-0.70121E-03	-0.10726E-03	.50787	0.00000
3	-0.82038E-03	0.49338E-06	.59418	0.00000
4	-0.82042E-03	-0.79476E-05	.59421	0.00000
5	-0.73578E-03	-0.98226E-04	.53290	0.00000
6	-0.54714E-03	-0.28838E-03	.39628	0.00000
7	-0.24751E-03	-0.58639E-03	.42471	0.00000
8	0.10051E-03	-0.92978E-03	.67342	0.00000
9	0.35929E-03	-0.11799E-02	.85456	0.00000
10	0.47932E-03	-0.12860E-02	.93143	0.00000
11	0.42927E-03	-0.12212E-02	.88451	0.00000
12	0.34528E-03	-0.11188E-02	.81035	0.00000
13	0.13211E-03	-0.88189E-03	.63873	0.00000
14	-0.20385E-03	-0.52429E-03	.37973	0.00000
15	-0.57543E-03	-0.13493E-03	.41677	0.00000
16	-0.84459E-03	0.14931E-03	.61172	0.00000
17	-0.94670E-03	0.26678E-03	.68567	0.00000
18	-0.90927E-03	0.24708E-03	.65856	0.00000
19	-0.82243E-03	0.18109E-03	.59566	0.00000
20	-0.83620E-03	0.20182E-03	.60564	0.00000
21	-0.93720E-03	0.29147E-03	.67879	0.00000
22	-0.10092E-02	0.34561E-03	.73096	0.00000
23	-0.95113E-03	0.27205E-03	.68888	0.00000
24	-0.72977E-03	0.35760E-04	.52855	0.00000
25	-0.39912E-03	-0.31159E-03	.28908	0.00000
26	-0.50875E-04	-0.67961E-03	.49222	0.00000
27	0.21903E-03	-0.97250E-03	.70436	0.00000
28	0.34695E-03	-0.11247E-02	.81460	0.00000
29	0.37896E-03	-0.11799E-02	.85459	0.00000
30	0.39030E-03	-0.12130E-02	.87856	0.00000
31	0.28288E-03	-0.11247E-02	.81457	0.00000
32	0.51181E-04	-0.90741E-03	.65722	0.00000
33	-0.27808E-03	-0.58729E-03	.42536	0.00000
34	-0.57189E-03	-0.29786E-03	.41421	0.00000
35	-0.75853E-03	-0.11121E-03	.54939	0.00000
36	-0.84531E-03	-0.19397E-04	.61224	0.00000
37	-0.85199E-03	-0.38738E-05	.61707	0.00000
38	-0.73545E-03	-0.10766E-03	.53267	0.00000
39	-0.41382E-03	-0.41382E-03	.29972	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31984	0.00000	0.10229
2	-0.32531	-0.17053	0.27635
3	-0.32990	-0.23568	0.34451
4	-0.33332	-0.23327	0.34437
5	-0.33558	-0.18304	0.29566
6	-0.33620	-0.07429	0.18732
7	-0.33554	0.09729	0.20988
8	-0.33368	0.29580	0.40714
9	-0.33018	0.44190	0.55092
10	-0.32459	0.50684	0.61220
11	-0.31867	0.47387	0.57541
12	-0.31126	0.42035	0.51724
13	-0.30169	0.29112	0.38214
14	-0.29299	0.09200	0.17784
15	-0.28583	-0.12647	0.20817
16	-0.27977	-0.28535	0.36362
17	-0.27358	-0.34839	0.42324
18	-0.26645	-0.33199	0.40299
19	-0.25806	-0.28811	0.35471
20	-0.25473	-0.29884	0.36373
21	-0.25983	-0.35276	0.42027
22	-0.26703	-0.38898	0.46028
23	-0.27324	-0.35118	0.42584
24	-0.27925	-0.21979	0.29777
25	-0.28597	-0.02513	0.10691
26	-0.29393	0.18051	0.26690
27	-0.30318	0.34209	0.43401
28	-0.31295	0.42252	0.52046
29	-0.32229	0.44756	0.55143
30	-0.33104	0.46032	0.56991
31	-0.33872	0.40411	0.51884
32	-0.34453	0.27522	0.39391
33	-0.34821	0.08877	0.21002
34	-0.34997	-0.07868	0.20115
35	-0.34996	-0.18585	0.30832
36	-0.34794	-0.23712	0.35818
37	-0.34438	-0.24350	0.36209
38	-0.33925	-0.18024	0.29533
39	-0.33302	0.00000	0.11090

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	34	13859.	30800.	0.450
BUCKLING THRUST (psi)	34	13859.	45153.	0.307
SEAM THRUST (psi)	34	13859.	23052.	0.601
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.612	1.000	0.612

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

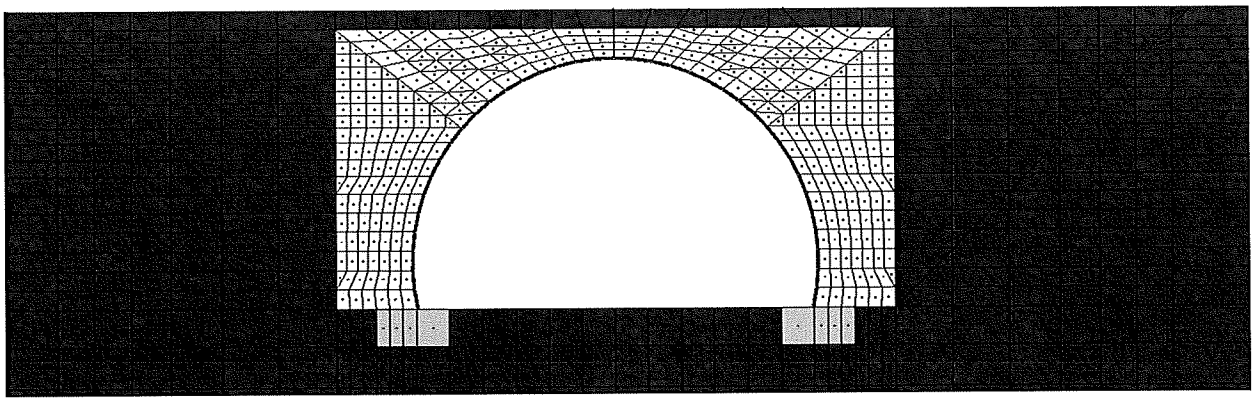
PERCENT VERTICAL DEFLECTION (%)..... 0.50

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.10

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU5

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP

AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -122.3	F = 0.000
1141	21	F = 0.000	F = -122.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000

911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-57.57	F =	0.000
1144	21	F =	0.000	F =	-57.57	F =	0.000
1148	21	F =	0.000	F =	-86.35	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000

9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.476E+00 -0.284E+01	-0.953E+01 -0.169E+01	-0.115E-10 -0.370E+04	-0.123E+05 -0.123E+05	0.180E+03 0.598E+03
2	-258.50 24.26	-0.375E+00 -0.283E+01	-0.108E+02 -0.919E+00	-0.345E+04 -0.373E+04	-0.217E+05 -0.124E+05	0.939E+02 0.313E+03
3	-260.57 48.82	-0.221E+00 -0.282E+01	-0.122E+02 -0.152E+00	-0.479E+04 -0.375E+04	-0.253E+05 -0.125E+05	0.239E+02 0.797E+02
4	-260.31 73.47	0.814E-02 -0.284E+01	-0.126E+02 0.589E-01	-0.479E+04 -0.375E+04	-0.253E+05 -0.125E+05	-0.247E+02 -0.824E+02

5	-257.73	0.312E+00	-0.123E+02	-0.372E+04	-0.224E+05	-0.713E+02
	97.98	-0.288E+01	0.683E+00	-0.373E+04	-0.124E+05	-0.238E+03
6	-252.84	0.667E+00	-0.122E+02	-0.141E+04	-0.161E+05	-0.121E+03
	122.14	-0.297E+01	0.116E+01	-0.370E+04	-0.123E+05	-0.404E+03
7	-245.70	0.103E+01	-0.132E+02	0.214E+04	-0.179E+05	-0.155E+03
	145.73	-0.309E+01	0.141E+01	-0.365E+04	-0.122E+05	-0.516E+03
8	-236.35	0.135E+01	-0.154E+02	0.614E+04	-0.284E+05	-0.144E+03
	168.54	-0.323E+01	0.200E+01	-0.359E+04	-0.120E+05	-0.478E+03
9	-224.90	0.157E+01	-0.159E+02	0.913E+04	-0.361E+05	-0.929E+02
	190.36	-0.336E+01	0.263E+01	-0.352E+04	-0.117E+05	-0.309E+03
10	-211.44	0.165E+01	-0.162E+02	0.106E+05	-0.399E+05	-0.249E+02
	211.01	-0.342E+01	0.355E+01	-0.344E+04	-0.114E+05	-0.829E+02
11	-196.08	0.158E+01	-0.135E+02	0.103E+05	-0.386E+05	0.219E+02
	230.29	-0.338E+01	0.276E+01	-0.336E+04	-0.112E+05	0.728E+02
12	-178.98	0.140E+01	-0.146E+02	0.951E+04	-0.363E+05	0.564E+02
	248.04	-0.322E+01	0.376E+01	-0.328E+04	-0.109E+05	0.188E+03
13	-160.27	0.114E+01	-0.149E+02	0.753E+04	-0.307E+05	0.117E+03
	264.09	-0.293E+01	0.461E+01	-0.318E+04	-0.106E+05	0.389E+03
14	-140.14	0.827E+00	-0.132E+02	0.392E+04	-0.208E+05	0.169E+03
	278.31	-0.251E+01	0.421E+01	-0.309E+04	-0.103E+05	0.564E+03
15	-118.75	0.526E+00	-0.110E+02	-0.489E+03	-0.113E+05	0.182E+03
	290.56	-0.202E+01	0.362E+01	-0.301E+04	-0.100E+05	0.607E+03
16	-96.30	0.276E+00	-0.955E+01	-0.455E+04	-0.219E+05	0.157E+03
	300.73	-0.150E+01	0.322E+01	-0.294E+04	-0.978E+04	0.523E+03
17	-72.98	0.102E+00	-0.888E+01	-0.757E+04	-0.298E+05	0.112E+03
	308.74	-0.103E+01	0.305E+01	-0.287E+04	-0.956E+04	0.372E+03
18	-49.02	0.316E-02	-0.903E+01	-0.934E+04	-0.343E+05	0.661E+02
	314.51	-0.667E+00	0.312E+01	-0.280E+04	-0.933E+04	0.220E+03
19	-24.62	-0.367E-01	-0.932E+01	-0.102E+05	-0.364E+05	0.329E+02
	318.00	-0.446E+00	0.318E+01	-0.273E+04	-0.909E+04	0.110E+03
20	0.00	-0.464E-01	-0.874E+01	-0.106E+05	-0.372E+05	0.133E+01
	319.17	-0.390E+00	0.486E-01	-0.269E+04	-0.896E+04	0.442E+01
21	24.62	-0.592E-01	-0.845E+01	-0.102E+05	-0.363E+05	-0.407E+02
	318.00	-0.508E+00	-0.291E+01	-0.272E+04	-0.907E+04	-0.136E+03
22	49.02	-0.108E+00	-0.882E+01	-0.877E+04	-0.327E+05	-0.866E+02
	314.51	-0.788E+00	-0.305E+01	-0.279E+04	-0.930E+04	-0.288E+03
23	72.98	-0.219E+00	-0.926E+01	-0.634E+04	-0.265E+05	-0.129E+03
	308.74	-0.120E+01	-0.316E+01	-0.286E+04	-0.952E+04	-0.429E+03
24	96.30	-0.404E+00	-0.101E+02	-0.297E+04	-0.177E+05	-0.161E+03
	300.73	-0.170E+01	-0.339E+01	-0.293E+04	-0.975E+04	-0.538E+03

25	118.75	-0.656E+00	-0.115E+02	0.104E+04	-0.128E+05	-0.173E+03
	290.56	-0.222E+01	-0.376E+01	-0.300E+04	-0.999E+04	-0.577E+03
26	140.14	-0.947E+00	-0.134E+02	0.507E+04	-0.238E+05	-0.152E+03
	278.31	-0.270E+01	-0.426E+01	-0.309E+04	-0.103E+05	-0.507E+03
27	160.27	-0.123E+01	-0.152E+02	0.813E+04	-0.323E+05	-0.943E+02
	264.09	-0.308E+01	-0.465E+01	-0.318E+04	-0.106E+05	-0.314E+03
28	178.98	-0.147E+01	-0.143E+02	0.943E+04	-0.362E+05	-0.351E+02
	248.04	-0.334E+01	-0.423E+01	-0.329E+04	-0.110E+05	-0.117E+03
29	196.08	-0.162E+01	-0.134E+02	0.969E+04	-0.372E+05	-0.750E+01
	230.29	-0.347E+01	-0.382E+01	-0.339E+04	-0.113E+05	-0.250E+02
30	211.44	-0.165E+01	-0.156E+02	0.970E+04	-0.376E+05	0.260E+02
	211.01	-0.348E+01	-0.436E+01	-0.349E+04	-0.116E+05	0.867E+02
31	224.90	-0.155E+01	-0.160E+02	0.837E+04	-0.344E+05	0.811E+02
	190.36	-0.341E+01	-0.380E+01	-0.360E+04	-0.120E+05	0.270E+03
32	236.35	-0.132E+01	-0.160E+02	0.572E+04	-0.276E+05	0.131E+03
	168.54	-0.328E+01	-0.308E+01	-0.370E+04	-0.123E+05	0.436E+03
33	245.70	-0.100E+01	-0.140E+02	0.196E+04	-0.178E+05	0.148E+03
	145.73	-0.313E+01	-0.214E+01	-0.378E+04	-0.126E+05	0.492E+03
34	252.84	-0.636E+00	-0.128E+02	-0.150E+04	-0.168E+05	0.118E+03
	122.14	-0.301E+01	-0.157E+01	-0.384E+04	-0.128E+05	0.393E+03
35	257.73	-0.281E+00	-0.129E+02	-0.377E+04	-0.230E+05	0.705E+02
	97.98	-0.292E+01	-0.953E+00	-0.388E+04	-0.129E+05	0.235E+03
36	260.31	0.205E-01	-0.133E+02	-0.486E+04	-0.260E+05	0.264E+02
	73.47	-0.288E+01	-0.126E+00	-0.390E+04	-0.130E+05	0.881E+02
37	260.57	0.247E+00	-0.127E+02	-0.494E+04	-0.262E+05	-0.216E+02
	48.82	-0.287E+01	0.262E+00	-0.390E+04	-0.130E+05	-0.720E+02
38	258.50	0.394E+00	-0.111E+02	-0.363E+04	-0.226E+05	-0.966E+02
	24.26	-0.287E+01	0.120E+01	-0.388E+04	-0.129E+05	-0.322E+03
39	254.12	0.488E+00	-0.945E+01	0.215E-10	-0.128E+05	-0.191E+03
	0.00	-0.288E+01	0.215E+01	-0.384E+04	-0.128E+05	-0.635E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.38671E-03	-0.38671E-03	.28008	0.00000
2	-0.67947E-03	-0.10011E-03	.49212	0.00000
3	-0.79354E-03	0.10476E-04	.57474	0.00000
4	-0.79297E-03	0.10109E-04	.57433	0.00000
5	-0.70165E-03	-0.77910E-04	.50819	0.00000
6	-0.50418E-03	-0.26830E-03	.36516	0.00000
7	-0.20204E-03	-0.56066E-03	.40607	0.00000
8	0.13944E-03	-0.88998E-03	.64459	0.00000
9	0.39757E-03	-0.11334E-02	.82092	0.00000
10	0.53235E-03	-0.12507E-02	.90588	0.00000
11	0.51099E-03	-0.12127E-02	.87836	0.00000
12	0.45520E-03	-0.11406E-02	.82612	0.00000
13	0.29916E-03	-0.96442E-03	.69850	0.00000

14	0.63682E-05	-0.65145E-03	.47183	0.00000
15	-0.35508E-03	-0.27306E-03	.25717	0.00000
16	-0.68853E-03	0.74855E-04	.49869	0.00000
17	-0.93460E-03	0.33457E-03	.67691	0.00000
18	-0.10761E-02	0.49037E-03	.77943	0.00000
19	-0.11411E-02	0.57064E-03	.82646	0.00000
20	-0.11670E-02	0.60318E-03	.84521	0.00000
21	-0.11387E-02	0.56923E-03	.82472	0.00000
22	-0.10271E-02	0.44349E-03	.74391	0.00000
23	-0.83098E-03	0.23337E-03	.60186	0.00000
24	-0.55477E-03	-0.57012E-04	.40180	0.00000
25	-0.22633E-03	-0.40074E-03	.29025	0.00000
26	0.10267E-03	-0.74740E-03	.54132	0.00000
27	0.34959E-03	-0.10151E-02	.73522	0.00000
28	0.44725E-03	-0.11347E-02	.82182	0.00000
29	0.45840E-03	-0.11665E-02	.84487	0.00000
30	0.44913E-03	-0.11789E-02	.85381	0.00000
31	0.32611E-03	-0.10783E-02	.78100	0.00000
32	0.93446E-04	-0.86589E-03	.62715	0.00000
33	-0.23053E-03	-0.55855E-03	.40454	0.00000
34	-0.52645E-03	-0.27524E-03	.38130	0.00000
35	-0.72156E-03	-0.88941E-04	.52261	0.00000
36	-0.81474E-03	0.57703E-07	.59010	0.00000
37	-0.82174E-03	0.69228E-05	.59517	0.00000
38	-0.71001E-03	-0.10030E-03	.51424	0.00000
39	-0.40131E-03	-0.40131E-03	.29066	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31120	0.00000	0.09685
2	-0.31368	-0.16634	0.26474
3	-0.31509	-0.23084	0.33012
4	-0.31500	-0.23057	0.32979
5	-0.31368	-0.17908	0.27747
6	-0.31082	-0.06772	0.16433
7	-0.30689	0.10296	0.19714
8	-0.30200	0.29555	0.38675
9	-0.29609	0.43956	0.52723
10	-0.28906	0.51193	0.59549
11	-0.28237	0.49489	0.57462
12	-0.27579	0.45816	0.53422
13	-0.26768	0.36278	0.43443
14	-0.25956	0.18886	0.25623
15	-0.25275	-0.02355	0.08743
16	-0.24693	-0.21917	0.28014
17	-0.24144	-0.36438	0.42268
18	-0.23570	-0.44975	0.50531
19	-0.22953	-0.49144	0.54413
20	-0.22631	-0.50901	0.56023
21	-0.22913	-0.49035	0.54285
22	-0.23483	-0.42222	0.47736
23	-0.24046	-0.30558	0.36340
24	-0.24616	-0.14291	0.20350
25	-0.25232	0.05007	0.11374
26	-0.25942	0.24406	0.31136
27	-0.26779	0.39181	0.46352
28	-0.27661	0.45418	0.53069
29	-0.28492	0.46652	0.54770
30	-0.29362	0.46740	0.55361
31	-0.30267	0.40322	0.49482
32	-0.31081	0.27543	0.37204
33	-0.31751	0.09418	0.19499
34	-0.32258	-0.07212	0.17618
35	-0.32613	-0.18163	0.28799
36	-0.32781	-0.23393	0.34139
37	-0.32786	-0.23791	0.34541
38	-0.32605	-0.17505	0.28136
39	-0.32295	0.00000	0.10430

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	37	12983.	30800.	0.422
BUCKLING THRUST (psi)	37	12983.	44156.	0.294
SEAM THRUST (psi)	37	12983.	23052.	0.563
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.595	1.000	0.595

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.63
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

BEAM OUTPUT FOR 5U5 TRUCK γ_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-44.41	0.84	36.25
-258.503	24.256	-42.80	-27.17	-44.76	1.12	27.21
-260.573	48.818	-42.47	-26.96	-44.96	1.43	21.57
-260.315	73.465	-41.86	-26.58	-44.95	1.77	17.65
-257.731	97.978	-41.04	-26.06	-44.76	2.12	14.94
-252.844	122.138	-40.03	-25.42	-44.36	2.47	13.11
-245.697	145.727	-38.89	-24.69	-43.79	2.80	11.83
-236.355	168.537	-37.66	-23.91	-43.10	3.11	10.93
-224.901	190.363	-36.40	-23.11	-42.25	3.35	10.39
-211.437	211.009	-35.16	-22.32	-41.25	3.48	10.23
-196.083	230.292	-34.05	-21.62	-40.29	3.57	10.18
-178.978	248.039	-33.04	-20.98	-39.36	3.61	10.24
-160.273	264.092	-31.96	-20.29	-38.20	3.56	10.58
-140.136	278.307	-30.93	-19.64	-37.04	3.49	10.99
-118.747	290.557	-30.06	-19.09	-36.07	3.43	11.35
-96.296	300.732	-29.33	-18.62	-35.24	3.38	11.68
-72.985	308.742	-28.77	-18.27	-34.45	3.25	12.25
-49.022	314.515	-28.38	-18.02	-33.64	3.00	13.34
-24.621	318	-28.08	-17.83	-32.75	2.67	15.06
0	319.165	-27.95	-17.74	-32.29	2.49	16.23
24.621	318	-28.08	-17.83	-32.70	2.64	15.24
49.022	314.515	-28.37	-18.02	-33.51	2.94	13.65
72.985	308.742	-28.77	-18.27	-34.31	3.17	12.56
96.296	300.732	-29.34	-18.63	-35.13	3.30	11.93
118.747	290.557	-30.09	-19.11	-36.01	3.38	11.52
140.136	278.307	-30.98	-19.67	-37.02	3.45	11.10
160.273	264.092	-32.03	-20.34	-38.21	3.53	10.66
178.978	248.039	-33.14	-21.04	-39.47	3.62	10.20
196.083	230.292	-34.15	-21.68	-40.66	3.72	9.75
211.437	211.009	-35.23	-22.37	-41.90	3.81	9.33
224.901	190.363	-36.44	-23.14	-43.19	3.86	9.01
236.355	168.537	-37.70	-23.94	-44.35	3.80	8.92
245.697	145.727	-38.93	-24.72	-45.31	3.64	9.09
252.844	122.138	-40.08	-25.45	-46.03	3.40	9.51
257.731	97.978	-41.11	-26.10	-46.54	3.10	10.21
260.315	73.465	-41.94	-26.63	-46.78	2.76	11.27
260.573	48.818	-42.56	-27.02	-46.79	2.42	12.72
258.503	24.256	-42.88	-27.23	-46.53	2.08	14.64
254.123	0	-43.00	-27.30	-46.09	1.77	17.24

Thrust Load Rating= 8.92

BEAM OUTPUT FOR 5U5 TRUCK

Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.45	0.05	241.78
-260.573	48.818	-4.71	-2.99	-4.79	0.05	224.63
-260.315	73.465	-4.75	-3.01	-4.79	0.02	495.00
-257.731	97.978	-3.64	-2.31	-3.72	0.04	276.74
-252.844	122.138	-1.25	-0.79	-1.41	0.09	151.10
-245.697	145.727	2.29	1.45	2.14	0.09	148.00
-236.355	168.537	6.15	3.91	6.14	0.01	979.01
-224.901	190.363	9.07	5.76	9.13	0.03	249.22
-211.437	211.009	10.75	6.83	10.63	0.07	102.00
-196.083	230.292	10.78	6.84	10.28	0.29	25.24
-178.978	248.039	10.39	6.59	9.51	0.50	15.01
-160.273	264.092	9.01	5.72	7.53	0.85	9.93
-140.136	278.307	5.87	3.72	3.92	1.11	9.42
-118.747	290.557	1.56	0.99	-0.49	1.17	11.33
-96.296	300.732	-3.08	-1.96	-4.55	0.84	14.63
-72.985	308.742	-7.45	-4.73	-7.57	0.06	147.08
-49.022	314.515	-11.03	-7.00	-9.34	0.97	7.33
-24.621	318	-13.44	-8.54	-10.20	1.85	2.97
0	319.165	-14.24	-9.04	-10.57	2.10	2.37
24.621	318	-13.23	-8.40	-10.18	1.74	3.24
49.022	314.515	-10.64	-6.75	-8.77	1.07	6.86
72.985	308.742	-6.92	-4.39	-6.34	0.33	29.82
96.296	300.732	-2.45	-1.56	-2.97	0.30	43.03
118.747	290.557	2.20	1.39	1.04	0.66	19.50
140.136	278.307	6.40	4.06	5.07	0.76	13.26
160.273	264.092	9.37	5.95	8.13	0.70	11.61
178.978	248.039	10.35	6.57	9.43	0.53	14.32
196.083	230.292	10.37	6.59	9.69	0.39	19.11
211.437	211.009	10.18	6.47	9.70	0.27	27.83
224.901	190.363	8.61	5.47	8.37	0.14	62.84
236.355	168.537	5.87	3.73	5.72	0.08	123.21
245.697	145.727	2.15	1.37	1.96	0.11	113.56
252.844	122.138	-1.28	-0.81	-1.50	0.12	109.95
257.731	97.978	-3.62	-2.30	-3.77	0.08	141.15
260.315	73.465	-4.74	-3.01	-4.86	0.07	164.55
260.573	48.818	-4.74	-3.01	-4.94	0.11	98.43
258.503	24.256	-3.43	-2.18	-3.63	0.12	101.38
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.37

Actual Load Rating (from CANDE) 2.37

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU5-OPR
LIVE LOADS X 2.37

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)		Y-FORCE(F) -OR- Y-DISPLACE.(D)		MOMENT(F) -OR- ROTATION (D)	
1142	21	F =	0.000	F =	-290.0	F =	0.000
1141	21	F =	0.000	F =	-290.0	F =	0.000
574	1	D =	0.000	D =	0.000	D =	0.000
575	1	D =	0.000	D =	0.000	D =	0.000
576	1	D =	0.000	D =	0.000	D =	0.000
577	1	D =	0.000	D =	0.000	D =	0.000
578	1	D =	0.000	D =	0.000	D =	0.000
579	1	D =	0.000	D =	0.000	D =	0.000
580	1	D =	0.000	D =	0.000	D =	0.000
581	1	D =	0.000	D =	0.000	D =	0.000
582	1	D =	0.000	D =	0.000	D =	0.000
583	1	D =	0.000	D =	0.000	D =	0.000
584	1	D =	0.000	D =	0.000	D =	0.000
585	1	D =	0.000	D =	0.000	D =	0.000
586	1	D =	0.000	D =	0.000	D =	0.000
587	1	D =	0.000	D =	0.000	D =	0.000
588	1	D =	0.000	D =	0.000	D =	0.000
589	1	D =	0.000	D =	0.000	D =	0.000
590	1	D =	0.000	D =	0.000	D =	0.000
591	1	D =	0.000	D =	0.000	D =	0.000
592	1	D =	0.000	D =	0.000	D =	0.000
593	1	D =	0.000	D =	0.000	D =	0.000
594	1	D =	0.000	D =	0.000	D =	0.000
595	1	D =	0.000	D =	0.000	D =	0.000
596	1	D =	0.000	D =	0.000	D =	0.000
597	1	D =	0.000	D =	0.000	D =	0.000
598	1	D =	0.000	D =	0.000	D =	0.000
599	1	D =	0.000	D =	0.000	D =	0.000
624	1	D =	0.000	D =	0.000	D =	0.000
649	1	D =	0.000	D =	0.000	D =	0.000
674	1	D =	0.000	D =	0.000	D =	0.000
699	1	D =	0.000	D =	0.000	D =	0.000
724	1	D =	0.000	D =	0.000	D =	0.000
761	1	D =	0.000	D =	0.000	D =	0.000
786	1	D =	0.000	D =	0.000	D =	0.000
811	1	D =	0.000	D =	0.000	D =	0.000
836	1	D =	0.000	D =	0.000	D =	0.000
861	1	D =	0.000	D =	0.000	D =	0.000
886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000

859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-136.4	F =	0.000
1144	21	F =	0.000	F =	-136.4	F =	0.000
1148	21	F =	0.000	F =	-204.7	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23

25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.543E+00 -0.288E+01	-0.980E+01 -0.310E+01	0.258E-10 -0.380E+04	-0.127E+05 -0.127E+05	0.181E+03 0.602E+03
2	-258.50 24.26	-0.463E+00 -0.288E+01	-0.113E+02 -0.257E+01	-0.353E+04 -0.387E+04	-0.223E+05 -0.129E+05	0.926E+02 0.308E+03
3	-260.57 48.82	-0.329E+00 -0.287E+01	-0.128E+02 -0.204E+01	-0.489E+04 -0.393E+04	-0.262E+05 -0.131E+05	0.202E+02 0.672E+02
4	-260.31 73.47	-0.118E+00 -0.289E+01	-0.136E+02 -0.198E+01	-0.484E+04 -0.398E+04	-0.262E+05 -0.132E+05	-0.281E+02 -0.936E+02
5	-257.73 97.98	0.168E+00 -0.293E+01	-0.134E+02 -0.134E+01	-0.380E+04 -0.401E+04	-0.235E+05 -0.134E+05	-0.723E+02 -0.241E+03
6	-252.84 122.14	0.508E+00 -0.301E+01	-0.133E+02 -0.767E+00	-0.156E+04 -0.402E+04	-0.176E+05 -0.134E+05	-0.123E+03 -0.409E+03
7	-245.70 145.73	0.860E+00 -0.313E+01	-0.145E+02 -0.501E+00	0.200E+04 -0.403E+04	-0.188E+05 -0.134E+05	-0.161E+03 -0.536E+03
8	-236.35 168.54	0.117E+01 -0.327E+01	-0.171E+02 0.210E+00	0.616E+04 -0.401E+04	-0.298E+05 -0.134E+05	-0.151E+03 -0.502E+03
9	-224.90 190.36	0.137E+01 -0.339E+01	-0.180E+02 0.133E+01	0.924E+04 -0.398E+04	-0.379E+05 -0.133E+05	-0.944E+02 -0.314E+03
10	-211.44 211.01	0.144E+01 -0.345E+01	-0.184E+02 0.288E+01	0.106E+05 -0.392E+04	-0.414E+05 -0.131E+05	-0.176E+02 -0.587E+02
11	-196.08	0.137E+01	-0.156E+02	0.992E+04	-0.394E+05	0.348E+02

	230.29	-0.340E+01	0.227E+01	-0.386E+04	-0.128E+05	0.116E+03
12	-178.98	0.118E+01	-0.172E+02	0.878E+04	-0.361E+05	0.793E+02
	248.04	-0.324E+01	0.413E+01	-0.378E+04	-0.126E+05	0.264E+03
13	-160.27	0.918E+00	-0.170E+02	0.606E+04	-0.284E+05	0.150E+03
	264.09	-0.295E+01	0.523E+01	-0.367E+04	-0.122E+05	0.499E+03
14	-140.14	0.626E+00	-0.147E+02	0.172E+04	-0.165E+05	0.199E+03
	278.31	-0.256E+01	0.467E+01	-0.357E+04	-0.119E+05	0.663E+03
15	-118.75	0.359E+00	-0.116E+02	-0.303E+04	-0.197E+05	0.191E+03
	290.56	-0.213E+01	0.379E+01	-0.348E+04	-0.116E+05	0.636E+03
16	-96.30	0.154E+00	-0.984E+01	-0.649E+04	-0.287E+05	0.131E+03
	300.73	-0.171E+01	0.332E+01	-0.341E+04	-0.113E+05	0.436E+03
17	-72.98	0.253E-01	-0.975E+01	-0.788E+04	-0.322E+05	0.556E+02
	308.74	-0.137E+01	0.338E+01	-0.333E+04	-0.111E+05	0.185E+03
18	-49.02	-0.396E-01	-0.109E+02	-0.747E+04	-0.308E+05	0.687E+00
	314.51	-0.114E+01	0.377E+01	-0.325E+04	-0.108E+05	0.229E+01
19	-24.62	-0.643E-01	-0.129E+02	-0.637E+04	-0.275E+05	-0.629E+01
	318.00	-0.103E+01	0.435E+01	-0.315E+04	-0.105E+05	-0.209E+02
20	0.00	-0.726E-01	-0.122E+02	-0.621E+04	-0.269E+05	0.105E+02
	319.17	-0.102E+01	-0.313E+00	-0.310E+04	-0.103E+05	0.348E+02
21	24.62	-0.855E-01	-0.108E+02	-0.669E+04	-0.284E+05	0.109E+01
	318.00	-0.112E+01	-0.371E+01	-0.315E+04	-0.105E+05	0.364E+01
22	49.02	-0.124E+00	-0.104E+02	-0.680E+04	-0.290E+05	-0.367E+02
	314.51	-0.132E+01	-0.362E+01	-0.324E+04	-0.108E+05	-0.122E+03
23	72.98	-0.209E+00	-0.104E+02	-0.598E+04	-0.270E+05	-0.872E+02
	308.74	-0.163E+01	-0.358E+01	-0.332E+04	-0.111E+05	-0.290E+03
24	96.30	-0.356E+00	-0.110E+02	-0.389E+04	-0.217E+05	-0.139E+03
	300.73	-0.202E+01	-0.369E+01	-0.340E+04	-0.113E+05	-0.462E+03
25	118.75	-0.565E+00	-0.125E+02	-0.555E+03	-0.131E+05	-0.173E+03
	290.56	-0.245E+01	-0.407E+01	-0.348E+04	-0.116E+05	-0.575E+03
26	140.14	-0.817E+00	-0.149E+02	0.341E+04	-0.210E+05	-0.167E+03
	278.31	-0.286E+01	-0.472E+01	-0.357E+04	-0.119E+05	-0.555E+03
27	160.27	-0.108E+01	-0.169E+02	0.675E+04	-0.303E+05	-0.116E+03
	264.09	-0.321E+01	-0.516E+01	-0.368E+04	-0.123E+05	-0.387E+03
28	178.98	-0.129E+01	-0.166E+02	0.853E+04	-0.355E+05	-0.559E+02
	248.04	-0.344E+01	-0.491E+01	-0.380E+04	-0.127E+05	-0.186E+03
29	196.08	-0.143E+01	-0.157E+02	0.914E+04	-0.375E+05	-0.208E+02
	230.29	-0.356E+01	-0.448E+01	-0.392E+04	-0.130E+05	-0.694E+02
30	211.44	-0.146E+01	-0.178E+02	0.939E+04	-0.385E+05	0.177E+02
	211.01	-0.357E+01	-0.483E+01	-0.403E+04	-0.134E+05	0.589E+02
31	224.90	-0.137E+01	-0.183E+02	0.824E+04	-0.358E+05	0.769E+02
	190.36	-0.350E+01	-0.366E+01	-0.414E+04	-0.138E+05	0.256E+03

32	236.35	-0.115E+01	-0.183E+02	0.565E+04	-0.292E+05	0.132E+03
	168.54	-0.337E+01	-0.228E+01	-0.423E+04	-0.141E+05	0.440E+03
33	245.70	-0.833E+00	-0.159E+02	0.182E+04	-0.191E+05	0.152E+03
	145.73	-0.322E+01	-0.850E+00	-0.428E+04	-0.143E+05	0.505E+03
34	252.84	-0.476E+00	-0.145E+02	-0.168E+04	-0.188E+05	0.120E+03
	122.14	-0.310E+01	0.487E-01	-0.431E+04	-0.143E+05	0.400E+03
35	257.73	-0.134E+00	-0.146E+02	-0.391E+04	-0.248E+05	0.720E+02
	97.98	-0.302E+01	0.950E+00	-0.431E+04	-0.143E+05	0.240E+03
36	260.31	0.153E+00	-0.149E+02	-0.498E+04	-0.276E+05	0.308E+02
	73.47	-0.298E+01	0.194E+01	-0.428E+04	-0.142E+05	0.102E+03
37	260.57	0.362E+00	-0.138E+02	-0.515E+04	-0.278E+05	-0.166E+02
	48.82	-0.296E+01	0.229E+01	-0.423E+04	-0.141E+05	-0.552E+02
38	258.50	0.490E+00	-0.118E+02	-0.384E+04	-0.241E+05	-0.969E+02
	24.26	-0.296E+01	0.310E+01	-0.416E+04	-0.138E+05	-0.323E+03
39	254.12	0.562E+00	-0.980E+01	-0.625E-11	-0.136E+05	-0.199E+03
	0.00	-0.296E+01	0.391E+01	-0.407E+04	-0.136E+05	-0.663E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39696E-03	-0.39696E-03	.28751	0.00000
2	-0.70067E-03	-0.10790E-03	.50748	0.00000
3	-0.82082E-03	-0.31444E-06	.59450	0.00000
4	-0.82144E-03	-0.95305E-05	.59495	0.00000
5	-0.73794E-03	-0.10015E-03	.53447	0.00000
6	-0.55116E-03	-0.28999E-03	.39919	0.00000
7	-0.25245E-03	-0.58874E-03	.42641	0.00000
8	0.97404E-04	-0.93586E-03	.67782	0.00000
9	0.35915E-03	-0.11908E-02	.86248	0.00000
10	0.48039E-03	-0.12997E-02	.94134	0.00000
11	0.42912E-03	-0.12350E-02	.89446	0.00000
12	0.34118E-03	-0.11314E-02	.81941	0.00000
13	0.12414E-03	-0.89215E-03	.64616	0.00000
14	-0.22823E-03	-0.51746E-03	.37478	0.00000
15	-0.61752E-03	-0.11000E-03	.44725	0.00000
16	-0.90037E-03	0.18819E-03	.65212	0.00000
17	-0.10090E-02	0.31239E-03	.73078	0.00000
18	-0.96624E-03	0.28761E-03	.69983	0.00000
19	-0.86350E-03	0.20592E-03	.62541	0.00000
20	-0.84354E-03	0.19499E-03	.61095	0.00000
21	-0.89037E-03	0.23269E-03	.64487	0.00000
22	-0.90855E-03	0.23228E-03	.65804	0.00000
23	-0.84880E-03	0.15508E-03	.61476	0.00000
24	-0.68153E-03	-0.28841E-04	.49362	0.00000
25	-0.41026E-03	-0.31722E-03	.29714	0.00000
26	-0.87145E-04	-0.65986E-03	.47792	0.00000
27	0.18103E-03	-0.95098E-03	.68877	0.00000
28	0.31830E-03	-0.11128E-02	.80598	0.00000
29	0.35788E-03	-0.11762E-02	.85186	0.00000
30	0.36657E-03	-0.12092E-02	.87577	0.00000
31	0.25826E-03	-0.11240E-02	.81411	0.00000
32	0.32384E-04	-0.91591E-03	.66337	0.00000
33	-0.29486E-03	-0.59994E-03	.43452	0.00000
34	-0.59064E-03	-0.30933E-03	.42779	0.00000
35	-0.77787E-03	-0.12185E-03	.56340	0.00000
36	-0.86481E-03	-0.28909E-04	.62636	0.00000
37	-0.87336E-03	-0.10027E-04	.63256	0.00000
38	-0.75663E-03	-0.11219E-03	.54801	0.00000
39	-0.42568E-03	-0.42568E-03	.30831	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31945	0.00000	0.10205
2	-0.32535	-0.17019	0.27604
3	-0.33040	-0.23557	0.34474
4	-0.33436	-0.23310	0.34490
5	-0.33722	-0.18311	0.29683
6	-0.33846	-0.07498	0.18954
7	-0.33847	0.09655	0.21112
8	-0.33737	0.29665	0.41047
9	-0.33464	0.44500	0.55698
10	-0.32967	0.51107	0.61975
11	-0.32426	0.47777	0.58291
12	-0.31795	0.42277	0.52386
13	-0.30903	0.29178	0.38728
14	-0.30005	0.08304	0.17307
15	-0.29274	-0.14571	0.23141
16	-0.28656	-0.31253	0.39465
17	-0.28030	-0.37937	0.45794
18	-0.27307	-0.35999	0.43455
19	-0.26459	-0.30703	0.37704
20	-0.26041	-0.29896	0.36677
21	-0.26463	-0.32244	0.39247
22	-0.27212	-0.32754	0.40158
23	-0.27913	-0.28822	0.36613
24	-0.28584	-0.18739	0.26909
25	-0.29272	-0.02671	0.11240
26	-0.30058	0.16443	0.25478
27	-0.30981	0.32500	0.42098
28	-0.31969	0.41088	0.51308
29	-0.32926	0.44043	0.54884
30	-0.33904	0.45240	0.56735
31	-0.34837	0.39686	0.51822
32	-0.35551	0.27226	0.39865
33	-0.36004	0.08759	0.21722
34	-0.36213	-0.08077	0.21190
35	-0.36203	-0.18835	0.31941
36	-0.35961	-0.23999	0.36931
37	-0.35545	-0.24787	0.37422
38	-0.34959	-0.18502	0.30724
39	-0.34257	0.00000	0.11735

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	34	14340.	30800.	0.466
BUCKLING THRUST (psi)	34	14340.	45227.	0.317
SEAM THRUST (psi)	34	14340.	23052.	0.622
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.620	1.000	0.620

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

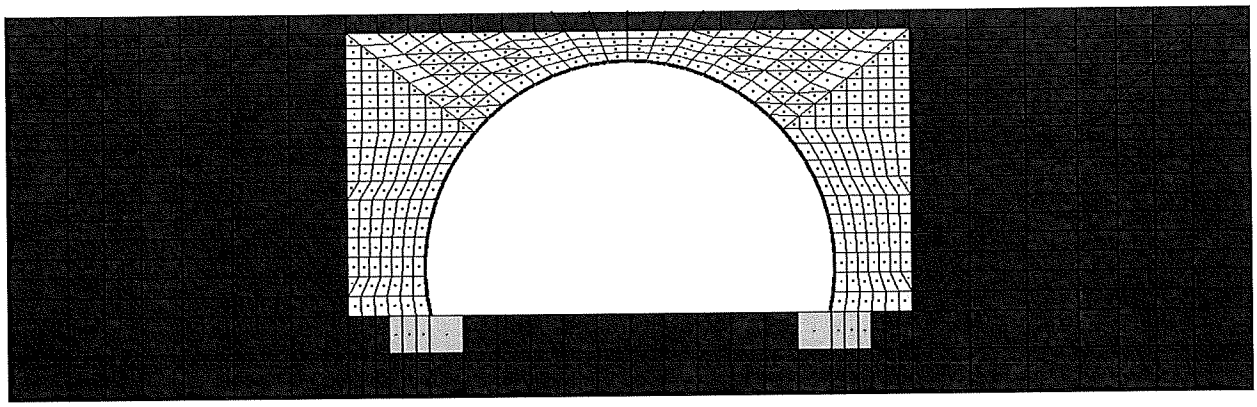
PERCENT VERTICAL DEFLECTION (%)..... 0.49

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.10

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU6

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000
FULL PLASTIC PENETRATION.....	0.90000
ALLOWABLE % DEFLECTION (SERVICE)...	5.00000
COMBINED MOMENT-THRUST CRITERION...	0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -122.3	F = 0.000
1141	21	F = 0.000	F = -122.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000

986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-57.57	F =	0.000
1144	21	F =	0.000	F =	-57.57	F =	0.000
1148	21	F =	0.000	F =	-82.57	F =	0.000
1140	21	F =	0.000	F =	-57.57	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000

11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.487E+00 -0.286E+01	-0.960E+01 -0.196E+01	0.129E-09 -0.376E+04	-0.125E+05 -0.125E+05	0.182E+03 0.606E+03
2	-258.50 24.26	-0.389E+00 -0.285E+01	-0.110E+02 -0.121E+01	-0.351E+04 -0.379E+04	-0.220E+05 -0.126E+05	0.944E+02 0.315E+03
3	-260.57 48.82	-0.238E+00 -0.285E+01	-0.124E+02 -0.459E+00	-0.484E+04 -0.382E+04	-0.257E+05 -0.127E+05	0.232E+02 0.771E+02
4	-260.31	-0.103E-01	-0.130E+02	-0.482E+04	-0.256E+05	-0.254E+02

	73.47	-0.286E+01	-0.239E+00	-0.382E+04	-0.127E+05	-0.845E+02
5	-257.73	0.292E+00	-0.126E+02	-0.375E+04	-0.227E+05	-0.714E+02
	97.98	-0.290E+01	0.430E+00	-0.382E+04	-0.127E+05	-0.238E+03
6	-252.84	0.647E+00	-0.125E+02	-0.145E+04	-0.165E+05	-0.121E+03
	122.14	-0.299E+01	0.987E+00	-0.379E+04	-0.126E+05	-0.404E+03
7	-245.70	0.101E+01	-0.136E+02	0.211E+04	-0.181E+05	-0.155E+03
	145.73	-0.311E+01	0.134E+01	-0.374E+04	-0.125E+05	-0.516E+03
8	-236.35	0.133E+01	-0.159E+02	0.610E+04	-0.286E+05	-0.142E+03
	168.54	-0.325E+01	0.208E+01	-0.369E+04	-0.123E+05	-0.472E+03
9	-224.90	0.155E+01	-0.163E+02	0.901E+04	-0.361E+05	-0.890E+02
	190.36	-0.338E+01	0.286E+01	-0.361E+04	-0.120E+05	-0.296E+03
10	-211.44	0.163E+01	-0.164E+02	0.104E+05	-0.396E+05	-0.213E+02
	211.01	-0.344E+01	0.375E+01	-0.352E+04	-0.117E+05	-0.711E+02
11	-196.08	0.157E+01	-0.139E+02	0.100E+05	-0.382E+05	0.254E+02
	230.29	-0.341E+01	0.348E+01	-0.343E+04	-0.114E+05	0.845E+02
12	-178.98	0.140E+01	-0.148E+02	0.918E+04	-0.357E+05	0.602E+02
	248.04	-0.326E+01	0.438E+01	-0.334E+04	-0.111E+05	0.201E+03
13	-160.27	0.114E+01	-0.147E+02	0.719E+04	-0.300E+05	0.115E+03
	264.09	-0.298E+01	0.454E+01	-0.323E+04	-0.108E+05	0.382E+03
14	-140.14	0.848E+00	-0.132E+02	0.383E+04	-0.207E+05	0.159E+03
	278.31	-0.258E+01	0.420E+01	-0.314E+04	-0.105E+05	0.530E+03
15	-118.75	0.558E+00	-0.111E+02	-0.181E+03	-0.107E+05	0.168E+03
	290.56	-0.210E+01	0.366E+01	-0.306E+04	-0.102E+05	0.560E+03
16	-96.30	0.316E+00	-0.100E+02	-0.381E+04	-0.201E+05	0.145E+03
	300.73	-0.160E+01	0.338E+01	-0.298E+04	-0.993E+04	0.484E+03
17	-72.98	0.143E+00	-0.960E+01	-0.660E+04	-0.273E+05	0.111E+03
	308.74	-0.114E+01	0.329E+01	-0.291E+04	-0.970E+04	0.369E+03
18	-49.02	0.424E-01	-0.955E+01	-0.855E+04	-0.323E+05	0.770E+02
	314.51	-0.766E+00	0.329E+01	-0.284E+04	-0.946E+04	0.256E+03
19	-24.62	-0.793E-03	-0.935E+01	-0.986E+04	-0.356E+05	0.470E+02
	318.00	-0.523E+00	0.313E+01	-0.277E+04	-0.921E+04	0.157E+03
20	0.00	-0.119E-01	-0.867E+01	-0.106E+05	-0.375E+05	0.110E+02
	319.17	-0.440E+00	-0.533E+00	-0.274E+04	-0.911E+04	0.368E+02
21	24.62	-0.235E-01	-0.848E+01	-0.105E+05	-0.372E+05	0.363E+02
	318.00	-0.530E+00	-0.293E+01	-0.278E+04	-0.925E+04	-0.121E+03
22	49.02	-0.691E-01	-0.892E+01	-0.918E+04	-0.340E+05	-0.857E+02
	314.51	-0.788E+00	-0.308E+01	-0.285E+04	-0.948E+04	-0.285E+03
23	72.98	-0.176E+00	-0.936E+01	-0.680E+04	-0.279E+05	-0.131E+03
	308.74	-0.119E+01	-0.320E+01	-0.291E+04	-0.971E+04	-0.435E+03
24	96.30	-0.358E+00	-0.103E+02	-0.338E+04	-0.190E+05	-0.165E+03
	300.73	-0.167E+01	-0.344E+01	-0.298E+04	-0.993E+04	-0.550E+03

25	118.75	-0.609E+00	-0.117E+02	0.729E+03	-0.121E+05	-0.178E+03
	290.56	-0.219E+01	-0.382E+01	-0.306E+04	-0.102E+05	-0.593E+03
26	140.14	-0.902E+00	-0.137E+02	0.488E+04	-0.235E+05	-0.157E+03
	278.31	-0.268E+01	-0.433E+01	-0.314E+04	-0.105E+05	-0.522E+03
27	160.27	-0.119E+01	-0.154E+02	0.808E+04	-0.324E+05	-0.980E+02
	264.09	-0.307E+01	-0.474E+01	-0.324E+04	-0.108E+05	-0.326E+03
28	178.98	-0.143E+01	-0.147E+02	0.947E+04	-0.365E+05	-0.364E+02
	248.04	-0.333E+01	-0.435E+01	-0.335E+04	-0.112E+05	-0.121E+03
29	196.08	-0.158E+01	-0.136E+02	0.974E+04	-0.375E+05	-0.796E+01
	230.29	-0.346E+01	-0.365E+01	-0.345E+04	-0.115E+05	-0.265E+02
30	211.44	-0.162E+01	-0.159E+02	0.981E+04	-0.380E+05	0.259E+02
	211.01	-0.348E+01	-0.396E+01	-0.355E+04	-0.118E+05	0.862E+02
31	224.90	-0.153E+01	-0.162E+02	0.847E+04	-0.348E+05	0.831E+02
	190.36	-0.340E+01	-0.339E+01	-0.364E+04	-0.121E+05	0.277E+03
32	236.35	-0.130E+01	-0.161E+02	0.575E+04	-0.278E+05	0.133E+03
	168.54	-0.328E+01	-0.269E+01	-0.373E+04	-0.124E+05	0.444E+03
33	245.70	-0.982E+00	-0.140E+02	0.195E+04	-0.179E+05	0.149E+03
	145.73	-0.313E+01	-0.182E+01	-0.380E+04	-0.127E+05	0.496E+03
34	252.84	-0.619E+00	-0.128E+02	-0.151E+04	-0.169E+05	0.118E+03
	122.14	-0.301E+01	-0.131E+01	-0.385E+04	-0.128E+05	0.394E+03
35	257.73	-0.267E+00	-0.130E+02	-0.377E+04	-0.230E+05	0.706E+02
	97.98	-0.292E+01	-0.719E+00	-0.389E+04	-0.130E+05	0.235E+03
36	260.31	0.327E-01	-0.133E+02	-0.485E+04	-0.260E+05	0.267E+02
	73.47	-0.288E+01	0.897E-01	-0.391E+04	-0.130E+05	0.891E+02
37	260.57	0.257E+00	-0.127E+02	-0.494E+04	-0.262E+05	-0.213E+02
	48.82	-0.287E+01	0.447E+00	-0.390E+04	-0.130E+05	-0.709E+02
38	258.50	0.402E+00	-0.111E+02	-0.363E+04	-0.226E+05	-0.962E+02
	24.26	-0.287E+01	0.135E+01	-0.388E+04	-0.129E+05	-0.320E+03
39	254.12	0.494E+00	-0.945E+01	-0.508E-10	-0.128E+05	-0.190E+03
	0.00	-0.287E+01	0.226E+01	-0.383E+04	-0.128E+05	-0.633E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39264E-03	-0.39264E-03	.28438	0.00000
2	-0.69048E-03	-0.10248E-03	.50010	0.00000
3	-0.80526E-03	0.72708E-05	.58323	0.00000
4	-0.80401E-03	0.46792E-05	.58232	0.00000
5	-0.71351E-03	-0.83935E-04	.51678	0.00000
6	-0.51697E-03	-0.27448E-03	.37443	0.00000
7	-0.21447E-03	-0.56783E-03	.41127	0.00000
8	0.12622E-03	-0.89636E-03	.64921	0.00000
9	0.37842E-03	-0.11331E-02	.82069	0.00000
10	0.50502E-03	-0.12412E-02	.89898	0.00000
11	0.48187E-03	-0.11991E-02	.86847	0.00000
12	0.42151E-03	-0.11190E-02	.81045	0.00000

13	0.26484E-03	-0.94075E-03	.68136	0.00000
14	-0.67665E-05	-0.64908E-03	.47012	0.00000
15	-0.33447E-03	-0.30415E-03	.24225	0.00000
16	-0.63091E-03	0.75061E-05	.45695	0.00000
17	-0.85817E-03	0.24956E-03	.62155	0.00000
18	-0.10139E-02	0.42052E-03	.73435	0.00000
19	-0.11161E-02	0.53803E-03	.80833	0.00000
20	-0.11755E-02	0.60230E-03	.85136	0.00000
21	-0.11684E-02	0.58779E-03	.84623	0.00000
22	-0.10673E-02	0.47233E-03	.77300	0.00000
23	-0.87478E-03	0.26567E-03	.63358	0.00000
24	-0.59503E-03	-0.28436E-04	.43097	0.00000
25	-0.25837E-03	-0.38061E-03	.27567	0.00000
26	0.81159E-04	-0.73807E-03	.53456	0.00000
27	0.33861E-03	-0.10166E-02	.73633	0.00000
28	0.44392E-03	-0.11443E-02	.82882	0.00000
29	0.45639E-03	-0.11773E-02	.85269	0.00000
30	0.45210E-03	-0.11932E-02	.86417	0.00000
31	0.32950E-03	-0.10910E-02	.79015	0.00000
32	0.92563E-04	-0.87222E-03	.63173	0.00000
33	-0.23380E-03	-0.56068E-03	.40609	0.00000
34	-0.52912E-03	-0.27649E-03	.38323	0.00000
35	-0.72279E-03	-0.90344E-04	.52350	0.00000
36	-0.81498E-03	-0.11716E-05	.59027	0.00000
37	-0.82163E-03	0.63704E-05	.59509	0.00000
38	-0.70931E-03	-0.10058E-03	.51374	0.00000
39	-0.40073E-03	-0.40073E-03	.29024	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.31598	0.00000	0.09984
2	-0.31907	-0.16882	0.27062
3	-0.32109	-0.23328	0.33638
4	-0.32163	-0.23218	0.33562
5	-0.32087	-0.18075	0.28371
6	-0.31846	-0.06962	0.17104
7	-0.31478	0.10145	0.20054
8	-0.30988	0.29359	0.38962
9	-0.30368	0.43397	0.52619
10	-0.29622	0.50135	0.58910
11	-0.28859	0.48261	0.56589
12	-0.28064	0.44228	0.52104
13	-0.27197	0.34613	0.42010
14	-0.26390	0.18441	0.25405
15	-0.25696	-0.00870	0.07474
16	-0.25084	-0.18329	0.24621
17	-0.24489	-0.31803	0.37800
18	-0.23877	-0.41183	0.46884
19	-0.23258	-0.47489	0.52899
20	-0.23011	-0.51124	0.56419
21	-0.23362	-0.50420	0.55878
22	-0.23939	-0.44203	0.49934
23	-0.24509	-0.32743	0.38750
24	-0.25087	-0.16267	0.22561
25	-0.25711	0.03510	0.10120
26	-0.26432	0.23520	0.30507
27	-0.27282	0.38910	0.46353
28	-0.28183	0.45600	0.53543
29	-0.29008	0.46904	0.55319
30	-0.29818	0.47236	0.56127
31	-0.30639	0.40782	0.50169
32	-0.31371	0.27699	0.37541
33	-0.31968	0.09385	0.19604
34	-0.32416	-0.07253	0.17761
35	-0.32718	-0.18158	0.28863
36	-0.32840	-0.23365	0.34150
37	-0.32804	-0.23772	0.34534
38	-0.32588	-0.17477	0.28097
39	-0.32248	0.00000	0.10400

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	36	13005.	30800.	0.422
BUCKLING THRUST (psi)	36	13005.	44251.	0.294
SEAM THRUST (psi)	36	13005.	23052.	0.564
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.589	1.000	0.589

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.62
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.12
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

BEAM OUTPUT FOR 5U6 TRUCK

Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-45.09	1.23	24.78
-258.503	24.256	-42.80	-27.17	-45.53	1.56	19.57
-260.573	48.818	-42.47	-26.96	-45.82	1.92	16.06
-260.315	73.465	-41.86	-26.58	-45.90	2.31	13.52
-257.731	97.978	-41.04	-26.06	-45.79	2.71	11.70
-252.844	122.138	-40.03	-25.42	-45.45	3.09	10.47
-245.697	145.727	-38.89	-24.69	-44.92	3.45	9.62
-236.355	168.537	-37.66	-23.91	-44.22	3.75	9.05
-224.901	190.363	-36.40	-23.11	-43.34	3.96	8.77
-211.437	211.009	-35.16	-22.32	-42.27	4.06	8.76
-196.083	230.292	-34.05	-21.62	-41.18	4.07	8.91
-178.978	248.039	-33.04	-20.98	-40.05	4.01	9.23
-160.273	264.092	-31.96	-20.29	-38.81	3.91	9.63
-140.136	278.307	-30.93	-19.64	-37.66	3.84	9.98
-118.747	290.557	-30.06	-19.09	-36.67	3.78	10.31
-96.296	300.732	-29.33	-18.62	-35.80	3.70	10.67
-72.985	308.742	-28.77	-18.27	-34.95	3.53	11.28
-49.022	314.515	-28.38	-18.02	-34.07	3.25	12.32
-24.621	318	-28.08	-17.83	-33.19	2.92	13.78
0	319.165	-27.95	-17.74	-32.84	2.80	14.43
24.621	318	-28.08	-17.83	-33.34	3.01	13.39
49.022	314.515	-28.37	-18.02	-34.16	3.31	12.11
72.985	308.742	-28.77	-18.27	-34.98	3.54	11.23
96.296	300.732	-29.34	-18.63	-35.80	3.69	10.69
118.747	290.557	-30.09	-19.11	-36.69	3.77	10.32
140.136	278.307	-30.98	-19.67	-37.72	3.85	9.95
160.273	264.092	-32.03	-20.34	-38.93	3.94	9.55
178.978	248.039	-33.14	-21.04	-40.22	4.05	9.13
196.083	230.292	-34.15	-21.68	-41.40	4.14	8.76
211.437	211.009	-35.23	-22.37	-42.55	4.18	8.50
224.901	190.363	-36.44	-23.14	-43.72	4.16	8.36
236.355	168.537	-37.70	-23.94	-44.77	4.04	8.40
245.697	145.727	-38.93	-24.72	-45.62	3.82	8.67
252.844	122.138	-40.08	-25.45	-46.26	3.53	9.16
257.731	97.978	-41.11	-26.10	-46.69	3.19	9.93
260.315	73.465	-41.94	-26.63	-46.86	2.81	11.07
260.573	48.818	-42.56	-27.02	-46.81	2.43	12.65
258.503	24.256	-42.88	-27.23	-46.50	2.07	14.74
254.123	0	-43.00	-27.30	-46.02	1.73	17.62

Thrust Load Rating= 8.36

BEAM OUTPUT FOR 5U6 TRUCK

Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load 5tep 20	M_{DLfac}/1.575	Load 5tep 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.51	0.08	152.30
-260.573	48.818	-4.71	-2.99	-4.84	0.08	142.17
-260.315	73.465	-4.75	-3.01	-4.82	0.04	268.34
-257.731	97.978	-3.64	-2.31	-3.75	0.06	189.38
-252.844	122.138	-1.25	-0.79	-1.45	0.11	120.68
-245.697	145.727	2.29	1.45	2.11	0.10	122.61
-236.355	168.537	6.15	3.91	6.10	0.03	304.25
-224.901	190.363	9.07	5.76	9.01	0.03	255.48
-211.437	211.009	10.75	6.83	10.41	0.20	36.89
-196.083	230.292	10.78	6.84	10.02	0.43	16.74
-178.978	248.039	10.39	6.59	9.18	0.69	10.90
-160.273	264.092	9.01	5.72	7.19	1.04	8.05
-140.136	278.307	5.87	3.72	3.83	1.16	8.99
-118.747	290.557	1.56	0.99	-0.18	1.00	13.34
-96.296	300.732	-3.08	-1.96	-3.81	0.41	29.63
-72.985	308.742	-7.45	-4.73	-6.60	0.49	19.40
-49.022	314.515	-11.03	-7.00	-8.55	1.42	5.00
-24.621	318	-13.44	-8.54	-9.86	2.05	2.68
0	319.165	-14.24	-9.04	-10.61	2.07	2.40
24.621	318	-13.23	-8.40	-10.47	1.58	3.57
49.022	314.515	-10.64	-6.75	-9.18	0.83	8.79
72.985	308.742	-6.92	-4.39	-6.80	0.07	142.39
96.296	300.732	-2.45	-1.56	-3.38	0.53	23.99
118.747	290.557	2.20	1.39	0.73	0.84	15.36
140.136	278.307	6.40	4.06	4.88	0.87	11.65
160.273	264.092	9.37	5.95	8.08	0.74	11.10
178.978	248.039	10.35	6.57	9.47	0.50	14.93
196.083	230.292	10.37	6.59	9.74	0.36	20.69
211.437	211.009	10.18	6.47	9.81	0.22	35.45
224.901	190.363	8.61	5.47	8.47	0.08	104.07
236.355	168.537	5.87	3.73	5.75	0.07	157.60
245.697	145.727	2.15	1.37	1.95	0.12	109.82
252.844	122.138	-1.28	-0.81	-1.51	0.13	105.75
257.731	97.978	-3.62	-2.30	-3.77	0.08	142.17
260.315	73.465	-4.74	-3.01	-4.85	0.06	173.06
260.573	48.818	-4.74	-3.01	-4.94	0.11	100.40
258.503	24.256	-3.43	-2.18	-3.63	0.12	104.29
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.40

Actual Load Rating (from CANDE) 2.40

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU6-OPR
LIVE LOADS X 2.40

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)		Y-FORCE(F) -OR- Y-DISPLACE.(D)		MOMENT(F) -OR- ROTATION (D)	
1142	21	F =	0.000	F =	-293.6	F =	0.000
1141	21	F =	0.000	F =	-293.6	F =	0.000
574	1	D =	0.000	D =	0.000	D =	0.000
575	1	D =	0.000	D =	0.000	D =	0.000
576	1	D =	0.000	D =	0.000	D =	0.000
577	1	D =	0.000	D =	0.000	D =	0.000
578	1	D =	0.000	D =	0.000	D =	0.000
579	1	D =	0.000	D =	0.000	D =	0.000
580	1	D =	0.000	D =	0.000	D =	0.000
581	1	D =	0.000	D =	0.000	D =	0.000
582	1	D =	0.000	D =	0.000	D =	0.000
583	1	D =	0.000	D =	0.000	D =	0.000
584	1	D =	0.000	D =	0.000	D =	0.000
585	1	D =	0.000	D =	0.000	D =	0.000
586	1	D =	0.000	D =	0.000	D =	0.000
587	1	D =	0.000	D =	0.000	D =	0.000
588	1	D =	0.000	D =	0.000	D =	0.000
589	1	D =	0.000	D =	0.000	D =	0.000
590	1	D =	0.000	D =	0.000	D =	0.000
591	1	D =	0.000	D =	0.000	D =	0.000
592	1	D =	0.000	D =	0.000	D =	0.000
593	1	D =	0.000	D =	0.000	D =	0.000
594	1	D =	0.000	D =	0.000	D =	0.000
595	1	D =	0.000	D =	0.000	D =	0.000
596	1	D =	0.000	D =	0.000	D =	0.000
597	1	D =	0.000	D =	0.000	D =	0.000
598	1	D =	0.000	D =	0.000	D =	0.000
599	1	D =	0.000	D =	0.000	D =	0.000
624	1	D =	0.000	D =	0.000	D =	0.000
649	1	D =	0.000	D =	0.000	D =	0.000
674	1	D =	0.000	D =	0.000	D =	0.000
699	1	D =	0.000	D =	0.000	D =	0.000
724	1	D =	0.000	D =	0.000	D =	0.000
761	1	D =	0.000	D =	0.000	D =	0.000
786	1	D =	0.000	D =	0.000	D =	0.000
811	1	D =	0.000	D =	0.000	D =	0.000
836	1	D =	0.000	D =	0.000	D =	0.000
861	1	D =	0.000	D =	0.000	D =	0.000
886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000

857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-138.2	F =	0.000
1144	21	F =	0.000	F =	-138.2	F =	0.000
1148	21	F =	0.000	F =	-198.6	F =	0.000
1140	21	F =	0.000	F =	-138.2	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20

22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000

36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.567E+00 -0.292E+01	-0.994E+01 -0.373E+01	0.115E-09 -0.392E+04	-0.130E+05 -0.130E+05	0.186E+03 0.619E+03
2	-258.50 24.26	-0.492E+00 -0.292E+01	-0.116E+02 -0.321E+01	-0.365E+04 -0.400E+04	-0.231E+05 -0.133E+05	0.936E+02 0.312E+03
3	-260.57 48.82	-0.364E+00 -0.292E+01	-0.133E+02 -0.270E+01	-0.500E+04 -0.408E+04	-0.270E+05 -0.136E+05	0.185E+02 0.615E+02
4	-260.31 73.47	-0.157E+00 -0.293E+01	-0.143E+02 -0.261E+01	-0.492E+04 -0.414E+04	-0.269E+05 -0.138E+05	-0.295E+02 -0.983E+02
5	-257.73 97.98	0.127E+00 -0.297E+01	-0.141E+02 -0.188E+01	-0.388E+04 -0.419E+04	-0.243E+05 -0.140E+05	-0.727E+02 -0.242E+03
6	-252.84 122.14	0.466E+00 -0.306E+01	-0.140E+02 -0.116E+01	-0.164E+04 -0.422E+04	-0.184E+05 -0.140E+05	-0.124E+03 -0.412E+03
7	-245.70 145.73	0.818E+00 -0.318E+01	-0.153E+02 -0.690E+00	0.195E+04 -0.423E+04	-0.193E+05 -0.141E+05	-0.161E+03 -0.537E+03
8	-236.35 168.54	0.113E+01 -0.332E+01	-0.181E+02 0.331E+00	0.609E+04 -0.421E+04	-0.303E+05 -0.140E+05	-0.147E+03 -0.490E+03
9	-224.90 190.36	0.133E+01 -0.344E+01	-0.189E+02 0.176E+01	0.902E+04 -0.418E+04	-0.380E+05 -0.139E+05	-0.870E+02 -0.290E+03
10	-211.44	0.141E+01	-0.189E+02	0.102E+05	-0.410E+05	-0.121E+02

	211.01	-0.350E+01	0.333E+01	-0.411E+04	-0.137E+05	-0.401E+02
11	-196.08	0.134E+01	-0.165E+02	0.950E+04	-0.388E+05	0.416E+02
	230.29	-0.346E+01	0.416E+01	-0.401E+04	-0.134E+05	0.138E+03
12	-178.98	0.117E+01	-0.178E+02	0.818E+04	-0.348E+05	0.911E+02
	248.04	-0.331E+01	0.528E+01	-0.390E+04	-0.130E+05	0.303E+03
13	-160.27	0.928E+00	-0.165E+02	0.526E+04	-0.267E+05	0.152E+03
	264.09	-0.305E+01	0.508E+01	-0.378E+04	-0.126E+05	0.507E+03
14	-140.14	0.662E+00	-0.142E+02	0.129E+04	-0.157E+05	0.180E+03
	278.31	-0.270E+01	0.451E+01	-0.368E+04	-0.123E+05	0.600E+03
15	-118.75	0.418E+00	-0.117E+02	-0.253E+04	-0.187E+05	0.158E+03
	290.56	-0.230E+01	0.385E+01	-0.359E+04	-0.120E+05	0.525E+03
16	-96.30	0.231E+00	-0.110E+02	-0.493E+04	-0.249E+05	0.104E+03
	300.73	-0.192E+01	0.371E+01	-0.351E+04	-0.117E+05	0.347E+03
17	-72.98	0.106E+00	-0.114E+02	-0.582E+04	-0.270E+05	0.541E+02
	308.74	-0.159E+01	0.391E+01	-0.342E+04	-0.114E+05	0.180E+03
18	-49.02	0.371E-01	-0.120E+02	-0.581E+04	-0.266E+05	0.250E+02
	314.51	-0.134E+01	0.412E+01	-0.333E+04	-0.111E+05	0.832E+02
19	-24.62	0.586E-02	-0.128E+02	-0.568E+04	-0.259E+05	0.234E+02
	318.00	-0.119E+01	0.433E+01	-0.322E+04	-0.107E+05	0.779E+02
20	0.00	-0.536E-02	-0.120E+02	-0.630E+04	-0.274E+05	0.287E+02
	319.17	-0.113E+01	-0.141E+01	-0.319E+04	-0.106E+05	0.956E+02
21	24.62	-0.158E-01	-0.109E+02	-0.725E+04	-0.302E+05	0.807E+01
	318.00	-0.117E+01	-0.374E+01	-0.326E+04	-0.108E+05	0.269E+02
22	49.02	-0.477E-01	-0.107E+02	-0.759E+04	-0.314E+05	-0.360E+02
	314.51	-0.133E+01	-0.372E+01	-0.335E+04	-0.111E+05	-0.120E+03
23	72.98	-0.125E+00	-0.107E+02	-0.688E+04	-0.298E+05	-0.906E+02
	308.74	-0.161E+01	-0.367E+01	-0.343E+04	-0.114E+05	-0.302E+03
24	96.30	-0.265E+00	-0.113E+02	-0.474E+04	-0.244E+05	-0.146E+03
	300.73	-0.198E+01	-0.379E+01	-0.351E+04	-0.117E+05	-0.487E+03
25	118.75	-0.472E+00	-0.128E+02	-0.121E+04	-0.152E+05	-0.183E+03
	290.56	-0.240E+01	-0.419E+01	-0.360E+04	-0.120E+05	-0.610E+03
26	140.14	-0.728E+00	-0.154E+02	0.304E+04	-0.204E+05	-0.177E+03
	278.31	-0.282E+01	-0.488E+01	-0.369E+04	-0.123E+05	-0.591E+03
27	160.27	-0.994E+00	0.175E+02	0.665E+04	-0.305E+05	-0.124E+03
	264.09	-0.317E+01	-0.536E+01	-0.381E+04	-0.127E+05	-0.414E+03
28	178.98	-0.122E+01	-0.174E+02	0.863E+04	-0.362E+05	-0.578E+02
	248.04	-0.342E+01	-0.515E+01	-0.393E+04	-0.131E+05	-0.192E+03
29	196.08	-0.137E+01	-0.160E+02	0.924E+04	-0.382E+05	-0.209E+02
	230.29	-0.355E+01	-0.422E+01	-0.404E+04	-0.135E+05	-0.695E+02
30	211.44	-0.141E+01	-0.184E+02	0.958E+04	-0.394E+05	0.174E+02
	211.01	-0.356E+01	-0.394E+01	-0.415E+04	-0.138E+05	0.580E+02

31	224.90	-0.132E+01	-0.188E+02	0.843E+04	-0.366E+05	0.806E+02
	190.36	-0.349E+01	-0.283E+01	-0.424E+04	-0.141E+05	0.268E+03
32	236.35	-0.110E+01	-0.185E+02	0.572E+04	-0.296E+05	0.137E+03
	168.54	-0.337E+01	-0.150E+01	-0.430E+04	-0.143E+05	0.457E+03
33	245.70	-0.794E+00	-0.160E+02	0.180E+04	-0.193E+05	0.154E+03
	145.73	-0.322E+01	-0.225E+00	-0.434E+04	-0.144E+05	0.513E+03
34	252.84	-0.441E+00	-0.146E+02	-0.170E+04	-0.190E+05	0.121E+03
	122.14	-0.310E+01	0.574E+00	-0.435E+04	-0.145E+05	0.402E+03
35	257.73	-0.103E+00	-0.147E+02	-0.392E+04	-0.249E+05	0.722E+02
	97.98	-0.302E+01	0.143E+01	-0.434E+04	-0.144E+05	0.241E+03
36	260.31	0.180E+00	-0.150E+02	-0.498E+04	-0.276E+05	0.314E+02
	73.47	-0.298E+01	0.239E+01	-0.429E+04	-0.143E+05	0.105E+03
37	260.57	0.384E+00	-0.139E+02	-0.515E+04	-0.279E+05	-0.159E+02
	48.82	-0.296E+01	0.268E+01	-0.424E+04	-0.141E+05	-0.530E+02
38	258.50	0.508E+00	-0.118E+02	-0.383E+04	-0.241E+05	-0.962E+02
	24.26	-0.296E+01	0.342E+01	-0.416E+04	-0.138E+05	-0.320E+03
39	254.12	0.575E+00	-0.983E+01	-0.756E-09	-0.135E+05	-0.198E+03
	0.00	-0.296E+01	0.417E+01	-0.407E+04	-0.135E+05	-0.658E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40950E-03	-0.40950E-03	.29659	0.00000
2	-0.72429E-03	-0.11270E-03	.52458	0.00000
3	-0.84602E-03	-0.68811E-05	.61275	0.00000
4	-0.84547E-03	-0.20576E-04	.61235	0.00000
5	-0.76359E-03	-0.11261E-03	.55305	0.00000
6	-0.57819E-03	-0.30349E-03	.41877	0.00000
7	-0.27793E-03	-0.60528E-03	.43839	0.00000
8	0.70847E-04	-0.95153E-03	.68917	0.00000
9	0.32055E-03	-0.11931E-02	.86416	0.00000
10	0.42760E-03	-0.12857E-02	.93120	0.00000
11	0.37745E-03	-0.12162E-02	.88086	0.00000
12	0.27805E-03	-0.10934E-02	.79196	0.00000
13	0.45592E-04	-0.83639E-03	.60578	0.00000
14	-0.27671E-03	-0.49238E-03	.35662	0.00000
15	-0.58737E-03	-0.16329E-03	.42542	0.00000
16	-0.78032E-03	0.46745E-04	.56517	0.00000
17	-0.84567E-03	0.13033E-03	.61250	0.00000
18	-0.83466E-03	0.13935E-03	.60452	0.00000
19	-0.81351E-03	0.13958E-03	.58921	0.00000
20	-0.86128E-03	0.19312E-03	.62381	0.00000
21	-0.94864E-03	0.26808E-03	.68707	0.00000
22	-0.98639E-03	0.28681E-03	.71442	0.00000
23	-0.93614E-03	0.21867E-03	.67803	0.00000
24	-0.76463E-03	0.30135E-04	.55381	0.00000
25	-0.47744E-03	-0.27456E-03	.34580	0.00000
26	-0.13118E-03	-0.64088E-03	.46417	0.00000
27	0.16029E-03	-0.95602E-03	.69242	0.00000
28	0.31316E-03	-0.11345E-02	.82167	0.00000
29	0.35251E-03	-0.11975E-02	.86734	0.00000
30	0.37072E-03	-0.12371E-02	.89599	0.00000
31	0.26417E-03	-0.11493E-02	.83242	0.00000
32	0.30308E-04	-0.92914E-03	.67296	0.00000
33	-0.30227E-03	-0.60429E-03	.43767	0.00000
34	-0.59708E-03	-0.31173E-03	.43245	0.00000
35	-0.78161E-03	-0.12436E-03	.56610	0.00000
36	-0.86657E-03	-0.31004E-04	.62763	0.00000

37	-0.87415E-03	-0.10936E-04	.63313	0.00000
38	-0.75578E-03	-0.11289E-03	.54739	0.00000
39	-0.42477E-03	-0.42477E-03	.30765	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32954	0.00000	0.10860
2	-0.33678	-0.17559	0.28901
3	-0.34319	-0.24092	0.35870
4	-0.34848	-0.23683	0.35826
5	-0.35256	-0.18690	0.31120
6	-0.35476	-0.07887	0.20473
7	-0.35538	0.09398	0.22028
8	-0.35436	0.29353	0.41910
9	-0.35110	0.43458	0.55786
10	-0.34528	0.49189	0.61111
11	-0.33749	0.45754	0.57144
12	-0.32810	0.39376	0.50141
13	-0.31820	0.25322	0.35447
14	-0.30947	0.06192	0.15769
15	-0.30205	-0.12175	0.21299
16	-0.29517	-0.23745	0.32458
17	-0.28784	-0.28021	0.36306
18	-0.27978	-0.27964	0.35792
19	-0.27117	-0.27364	0.34717
20	-0.26834	-0.30355	0.37556
21	-0.27384	-0.34932	0.42431
22	-0.28149	-0.36554	0.44478
23	-0.28869	-0.33155	0.41490
24	-0.29554	-0.22818	0.31553
25	-0.30259	-0.05825	0.14981
26	-0.31066	0.14634	0.24284
27	-0.32018	0.32050	0.42301
28	-0.33048	0.41562	0.52483
29	-0.34002	0.44502	0.56063
30	-0.34860	0.46161	0.58313
31	-0.35616	0.40582	0.53267
32	-0.36167	0.27546	0.40627
33	-0.36478	0.08671	0.21977
34	-0.36568	-0.08192	0.21565
35	-0.36454	-0.18870	0.32159
36	-0.36116	-0.23989	0.37033
37	-0.35614	-0.24783	0.37467
38	-0.34953	-0.18458	0.30675
39	-0.34184	0.00000	0.11685

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

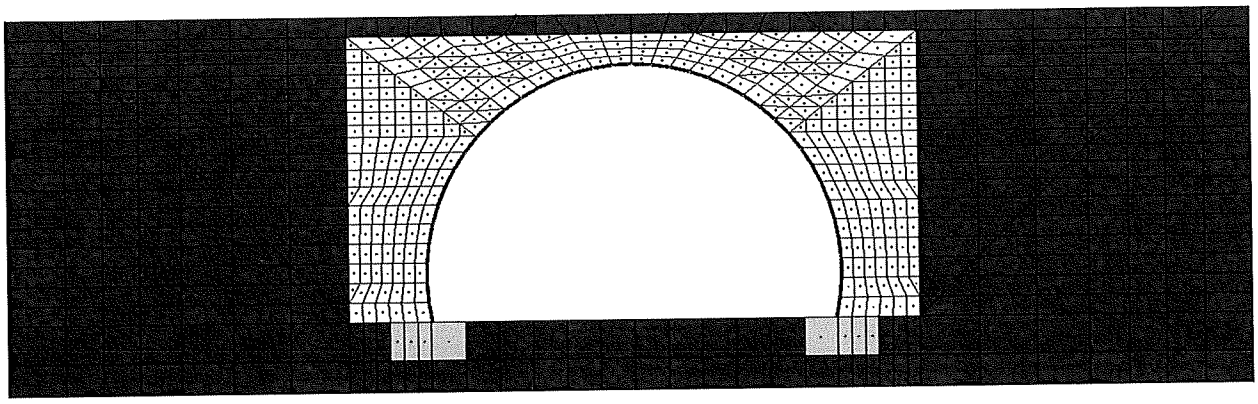
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	34	14481.	30800.	0.470
BUCKLING THRUST (psi)	34	14481.	45442.	0.319
SEAM THRUST (psi)	34	14481.	23052.	0.628
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.611	1.000	0.611

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.46

RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.09
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU7

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -122.3	F = 0.000
1141	21	F = 0.000	F = -122.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000

1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-57.57	F =	0.000
1144	21	F =	0.000	F =	-57.57	F =	0.000
1148	21	F =	0.000	F =	-82.57	F =	0.000
1140	21	F =	0.000	F =	-57.57	F =	0.000
1138	21	F =	0.000	F =	-57.57	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000

12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.495E+00 -0.288E+01	-0.969E+01 -0.221E+01	0.139E-09 -0.382E+04	-0.127E+05 -0.127E+05	0.185E+03 0.616E+03
2	-258.50 24.26	-0.400E+00 -0.287E+01	-0.112E+02 -0.145E+01	-0.356E+04 -0.386E+04	-0.224E+05 -0.129E+05	0.951E+02 0.317E+03
3	-260.57 48.82	-0.251E+00 -0.287E+01	-0.127E+02 -0.687E+00	-0.490E+04 -0.389E+04	-0.261E+05 -0.130E+05	0.224E+02 0.747E+02
4	-260.31 73.47	-0.246E-01 -0.288E+01	-0.133E+02 -0.429E+00	-0.486E+04 -0.391E+04	-0.260E+05 -0.130E+05	-0.260E+02 -0.864E+02

5	-257.73	0.277E+00	-0.129E+02	-0.379E+04	-0.231E+05	-0.715E+02
	97.98	-0.293E+01	0.311E+00	-0.390E+04	-0.130E+05	-0.238E+03
6	-252.84	0.632E+00	-0.128E+02	-0.148E+04	-0.169E+05	-0.121E+03
	122.14	-0.301E+01	0.969E+00	-0.387E+04	-0.129E+05	-0.404E+03
7	-245.70	0.998E+00	-0.140E+02	0.207E+04	-0.183E+05	-0.154E+03
	145.73	-0.314E+01	0.149E+01	-0.383E+04	-0.127E+05	-0.513E+03
8	-236.35	0.132E+01	-0.163E+02	0.601E+04	-0.286E+05	-0.138E+03
	168.54	-0.328E+01	0.247E+01	-0.376E+04	-0.125E+05	-0.460E+03
9	-224.90	0.154E+01	-0.165E+02	0.881E+04	-0.358E+05	-0.847E+02
	190.36	-0.341E+01	0.342E+01	-0.368E+04	-0.123E+05	-0.282E+03
10	-211.44	0.162E+01	-0.165E+02	0.101E+05	-0.390E+05	-0.201E+02
	211.01	-0.347E+01	0.434E+01	-0.358E+04	-0.119E+05	-0.669E+02
11	-196.08	0.158E+01	-0.141E+02	0.981E+04	-0.378E+05	0.255E+02
	230.29	-0.345E+01	0.405E+01	-0.347E+04	-0.116E+05	0.849E+02
12	-178.98	0.141E+01	-0.146E+02	0.900E+04	-0.353E+05	0.580E+02
	248.04	-0.331E+01	0.433E+01	-0.337E+04	-0.112E+05	0.193E+03
13	-160.27	0.117E+01	-0.147E+02	0.719E+04	-0.301E+05	0.107E+03
	264.09	-0.304E+01	0.452E+01	-0.327E+04	-0.109E+05	0.356E+03
14	-140.14	0.881E+00	-0.134E+02	0.413E+04	-0.216E+05	0.150E+03
	278.31	-0.265E+01	0.425E+01	-0.317E+04	-0.106E+05	0.499E+03
15	-118.75	0.597E+00	-0.115E+02	0.377E+03	-0.113E+05	0.162E+03
	290.56	-0.219E+01	0.378E+01	-0.309E+04	-0.103E+05	0.540E+03
16	-96.30	0.356E+00	-0.104E+02	-0.317E+04	-0.185E+05	0.146E+03
	300.73	-0.169E+01	0.350E+01	-0.301E+04	-0.100E+05	0.487E+03
17	-72.98	0.181E+00	-0.985E+01	-0.609E+04	-0.261E+05	0.117E+03
	308.74	-0.122E+01	0.337E+01	-0.294E+04	-0.978E+04	0.390E+03
18	-49.02	0.761E-01	-0.963E+01	-0.829E+04	-0.317E+05	0.851E+02
	314.51	-0.828E+00	0.331E+01	-0.286E+04	-0.953E+04	0.283E+03
19	-24.62	0.297E-01	-0.933E+01	-0.985E+04	-0.356E+05	0.534E+02
	318.00	-0.565E+00	0.280E+01	-0.279E+04	-0.930E+04	0.178E+03
20	0.00	0.174E-01	-0.871E+01	-0.108E+05	-0.380E+05	0.147E+02
	319.17	-0.461E+00	-0.797E+00	-0.277E+04	-0.923E+04	0.491E+02
21	24.62	0.669E-02	-0.854E+01	-0.107E+05	-0.381E+05	-0.348E+02
	318.00	-0.533E+00	-0.295E+01	-0.282E+04	-0.938E+04	-0.116E+03
22	49.02	-0.369E-01	-0.900E+01	-0.951E+04	-0.350E+05	-0.861E+02
	314.51	-0.777E+00	-0.311E+01	-0.289E+04	-0.961E+04	-0.287E+03
23	72.98	-0.142E+00	-0.945E+01	-0.712E+04	-0.289E+05	-0.133E+03
	308.74	-0.117E+01	-0.323E+01	-0.296E+04	-0.984E+04	-0.442E+03
24	96.30	-0.323E+00	-0.104E+02	-0.364E+04	-0.198E+05	-0.169E+03
	300.73	-0.165E+01	-0.349E+01	-0.302E+04	-0.101E+05	-0.561E+03

25	118.75	-0.575E+00	-0.118E+02	0.554E+03	-0.118E+05	-0.182E+03
	290.56	-0.217E+01	-0.387E+01	-0.310E+04	-0.103E+05	-0.605E+03
26	140.14	-0.870E+00	-0.139E+02	0.481E+04	-0.235E+05	-0.160E+03
	278.31	-0.266E+01	-0.439E+01	-0.319E+04	-0.106E+05	-0.533E+03
27	160.27	-0.116E+01	-0.157E+02	0.809E+04	-0.326E+05	-0.100E+03
	264.09	-0.305E+01	-0.482E+01	-0.329E+04	-0.110E+05	-0.334E+03
28	178.98	-0.141E+01	-0.150E+02	0.953E+04	-0.368E+05	-0.363E+02
	248.04	-0.332E+01	-0.443E+01	-0.340E+04	-0.113E+05	-0.121E+03
29	196.08	-0.156E+01	-0.136E+02	0.978E+04	-0.378E+05	-0.769E+01
	230.29	-0.345E+01	-0.312E+01	-0.349E+04	-0.116E+05	-0.256E+02
30	211.44	-0.160E+01	-0.161E+02	0.988E+04	-0.383E+05	0.260E+02
	211.01	-0.347E+01	-0.382E+01	-0.358E+04	-0.119E+05	0.867E+02
31	224.90	-0.151E+01	-0.163E+02	0.852E+04	-0.350E+05	0.846E+02
	190.36	-0.340E+01	-0.316E+01	-0.367E+04	-0.122E+05	0.282E+03
32	236.35	-0.129E+01	-0.161E+02	0.577E+04	-0.279E+05	0.135E+03
	168.54	-0.327E+01	-0.246E+01	-0.375E+04	-0.125E+05	0.449E+03
33	245.70	-0.969E+00	-0.140E+02	0.194E+04	-0.179E+05	0.150E+03
	145.73	-0.313E+01	-0.163E+01	-0.382E+04	-0.127E+05	0.498E+03
34	252.84	-0.607E+00	-0.129E+02	-0.151E+04	-0.169E+05	0.118E+03
	122.14	-0.301E+01	-0.114E+01	-0.387E+04	-0.129E+05	0.394E+03
35	257.73	-0.256E+00	-0.130E+02	-0.377E+04	-0.231E+05	0.707E+02
	97.98	-0.292E+01	-0.557E+00	-0.390E+04	-0.130E+05	0.235E+03
36	260.31	0.413E-01	-0.134E+02	-0.485E+04	-0.260E+05	0.270E+02
	73.47	-0.288E+01	0.236E+00	-0.391E+04	-0.130E+05	0.898E+02
37	260.57	0.264E+00	-0.127E+02	-0.493E+04	-0.262E+05	-0.210E+02
	48.82	-0.287E+01	0.574E+00	-0.390E+04	-0.130E+05	-0.701E+02
38	258.50	0.408E+00	-0.111E+02	-0.362E+04	-0.226E+05	-0.959E+02
	24.26	-0.287E+01	0.146E+01	-0.387E+04	-0.129E+05	-0.319E+03
39	254.12	0.498E+00	-0.946E+01	-0.426E-10	-0.128E+05	-0.190E+03
	0.00	-0.287E+01	0.234E+01	-0.383E+04	-0.128E+05	-0.631E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.39939E-03	-0.39939E-03	.28927	0.00000
2	-0.70265E-03	-0.10505E-03	.50891	0.00000
3	-0.81781E-03	0.38841E-05	.59232	0.00000
4	-0.81555E-03	-0.77777E-06	.59069	0.00000
5	-0.72537E-03	-0.89869E-04	.52537	0.00000
6	-0.52900E-03	-0.28059E-03	.38314	0.00000
7	-0.22622E-03	-0.57390E-03	.41566	0.00000
8	0.11094E-03	-0.89755E-03	.65007	0.00000
9	0.35425E-03	-0.11231E-02	.81342	0.00000
10	0.47727E-03	-0.12247E-02	.88702	0.00000
11	0.46030E-03	-0.11858E-02	.85886	0.00000
12	0.40236E-03	-0.11068E-02	.80160	0.00000
13	0.26167E-03	-0.94460E-03	.68415	0.00000

14	0.15006E-04	-0.67762E-03	.49078	0.00000
15	-0.29074E-03	-0.35406E-03	.25644	0.00000
16	-0.58007E-03	-0.48825E-04	.42013	0.00000
17	-0.81780E-03	0.20418E-03	.59231	0.00000
18	-0.99411E-03	0.39583E-03	.72001	0.00000
19	-0.11177E-02	0.53390E-03	.80954	0.00000
20	-0.11928E-02	0.61218E-03	.86389	0.00000
21	-0.11957E-02	0.60691E-03	.86602	0.00000
22	-0.10991E-02	0.49579E-03	.79605	0.00000
23	-0.90634E-03	0.28873E-03	.65644	0.00000
24	-0.62164E-03	-0.10462E-04	.45024	0.00000
25	-0.27747E-03	-0.37033E-03	.26822	0.00000
26	0.70134E-04	-0.73608E-03	.53312	0.00000
27	0.33508E-03	-0.10224E-02	.74053	0.00000
28	0.44414E-03	-0.11543E-02	.83602	0.00000
29	0.45524E-03	-0.11847E-02	.85808	0.00000
30	0.45500E-03	-0.12029E-02	.87124	0.00000
31	0.33106E-03	-0.10984E-02	.79557	0.00000
32	0.91437E-04	-0.87586E-03	.63437	0.00000
33	-0.23607E-03	-0.56211E-03	.40712	0.00000
34	-0.53084E-03	-0.27755E-03	.38448	0.00000
35	-0.72360E-03	-0.91460E-04	.52409	0.00000
36	-0.81521E-03	-0.20856E-05	.59044	0.00000
37	-0.82163E-03	0.59233E-05	.59509	0.00000
38	-0.70892E-03	-0.10084E-03	.51345	0.00000
39	-0.40039E-03	-0.40039E-03	.28999	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32141	0.00000	0.10330
2	-0.32500	-0.17157	0.27720
3	-0.32750	-0.23591	0.34317
4	-0.32847	-0.23393	0.34182
5	-0.32803	-0.18245	0.29006
6	-0.32576	-0.07132	0.17744
7	-0.32195	0.09982	0.20347
8	-0.31651	0.28954	0.38972
9	-0.30936	0.42415	0.51985
10	-0.30075	0.48864	0.57909
11	-0.29193	0.47261	0.55783
12	-0.28343	0.43328	0.51361
13	-0.27479	0.34632	0.42184
14	-0.26662	0.19886	0.26994
15	-0.25945	0.01818	0.08549
16	-0.25305	-0.15252	0.21656
17	-0.24691	-0.29342	0.35438
18	-0.24073	-0.39906	0.45701
19	-0.23491	-0.47419	0.52937
20	-0.23310	-0.51904	0.57337
21	-0.23692	-0.51754	0.57367
22	-0.24276	-0.45790	0.51683
23	-0.24851	-0.34311	0.40487
24	-0.25434	-0.17547	0.24016
25	-0.26066	0.02666	0.09460
26	-0.26796	0.23147	0.30327
27	-0.27658	0.38975	0.46624
28	-0.28575	0.45891	0.54057
29	-0.29354	0.47085	0.55701
30	-0.30094	0.47599	0.56656
31	-0.30877	0.41041	0.50575
32	-0.31563	0.27772	0.37734
33	-0.32117	0.09361	0.19676
34	-0.32528	-0.07272	0.17853
35	-0.32796	-0.18149	0.28905
36	-0.32886	-0.23345	0.34160
37	-0.32822	-0.23759	0.34532
38	-0.32582	-0.17458	0.28074
39	-0.32221	0.00000	0.10382

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	36	13023.	30800.	0.423
BUCKLING THRUST (psi)	36	13023.	44304.	0.294
SEAM THRUST (psi)	36	13023.	23052.	0.565
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.579	1.000	0.579

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.61
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.12
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

*

BEAM OUTPUT FOR 5U7 TRUCK Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-45.87	1.67	18.22
-258.503	24.256	-42.80	-27.17	-46.38	2.05	14.94
-260.573	48.818	-42.47	-26.96	-46.74	2.44	12.62
-260.315	73.465	-41.86	-26.58	-46.87	2.87	10.88
-257.731	97.978	-41.04	-26.06	-46.81	3.29	9.63
-252.844	122.138	-40.03	-25.42	-46.49	3.69	8.78
-245.697	145.727	-38.89	-24.69	-45.94	4.03	8.23
-236.355	168.537	-37.66	-23.91	-45.17	4.29	7.91
-224.901	190.363	-36.40	-23.11	-44.15	4.43	7.85
-211.437	211.009	-35.16	-22.32	-42.92	4.43	8.03
-196.083	230.292	-34.05	-21.62	-41.66	4.35	8.36
-178.978	248.039	-33.04	-20.98	-40.45	4.23	8.74
-160.273	264.092	-31.96	-20.29	-39.21	4.14	9.10
-140.136	278.307	-30.93	-19.64	-38.05	4.07	9.44
-118.747	290.557	-30.06	-19.09	-37.02	3.98	9.79
-96.296	300.732	-29.33	-18.62	-36.11	3.88	10.17
-72.985	308.742	-28.77	-18.27	-35.23	3.69	10.77
-49.022	314.515	-28.38	-18.02	-34.35	3.41	11.74
-24.621	318	-28.08	-17.83	-33.52	3.11	12.94
0	319.165	-27.95	-17.74	-33.26	3.04	13.27
24.621	318	-28.08	-17.83	-33.81	3.28	12.29
49.022	314.515	-28.37	-18.02	-34.64	3.58	11.18
72.985	308.742	-28.77	-18.27	-35.46	3.82	10.41
96.296	300.732	-29.34	-18.63	-36.30	3.97	9.92
118.747	290.557	-30.09	-19.11	-37.20	4.06	9.59
140.136	278.307	-30.98	-19.67	-38.24	4.15	9.24
160.273	264.092	-32.03	-20.34	-39.47	4.25	8.86
178.978	248.039	-33.14	-21.04	-40.78	4.37	8.46
196.083	230.292	-34.15	-21.68	-41.89	4.42	8.20
211.437	211.009	-35.23	-22.37	-42.95	4.41	8.07
224.901	190.363	-36.44	-23.14	-44.06	4.35	7.98
236.355	168.537	-37.70	-23.94	-45.04	4.19	8.09
245.697	145.727	-38.93	-24.72	-45.83	3.94	8.40
252.844	122.138	-40.08	-25.45	-46.42	3.62	8.93
257.731	97.978	-41.11	-26.10	-46.80	3.25	9.74
260.315	73.465	-41.94	-26.63	-46.93	2.85	10.93
260.573	48.818	-42.56	-27.02	-46.84	2.45	12.57
258.503	24.256	-42.88	-27.23	-46.50	2.07	14.77
254.123	0	-43.00	-27.30	-45.98	1.71	17.85

Thrust Load Rating= 7.85

BEAM OUTPUT FOR 5U7 TRUCK

Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.56	0.11	107.94
-260.573	48.818	-4.71	-2.99	-4.90	0.11	101.90
-260.315	73.465	-4.75	-3.01	-4.86	0.06	179.27
-257.731	97.978	-3.64	-2.31	-3.79	0.08	143.44
-252.844	122.138	-1.25	-0.79	-1.48	0.13	102.24
-245.697	145.727	2.29	1.45	2.07	0.12	103.45
-236.355	168.537	6.15	3.91	6.01	0.08	125.63
-224.901	190.363	9.07	5.76	8.81	0.15	56.03
-211.437	211.009	10.75	6.83	10.15	0.35	20.88
-196.083	230.292	10.78	6.84	9.81	0.55	13.14
-178.978	248.039	10.39	6.59	9.00	0.79	9.43
-160.273	264.092	9.01	5.72	7.19	1.04	8.07
-140.136	278.307	5.87	3.72	4.13	0.99	10.54
-118.747	290.557	1.56	0.99	0.38	0.68	19.61
-96.296	300.732	-3.08	-1.96	-3.17	0.05	246.33
-72.985	308.742	-7.45	-4.73	-6.09	0.78	12.11
-49.022	314.515	-11.03	-7.00	-8.29	1.57	4.52
-24.621	318	-13.44	-8.54	-9.85	2.06	2.67
0	319.165	-14.24	-9.04	-10.78	1.98	2.51
24.621	318	-13.23	-8.40	-10.75	1.42	3.97
49.022	314.515	-10.64	-6.75	-9.51	0.65	11.35
72.985	308.742	-6.92	-4.39	-7.12	0.12	83.25
96.296	300.732	-2.45	-1.56	-3.64	0.68	18.64
118.747	290.557	2.20	1.39	0.55	0.94	13.72
140.136	278.307	6.40	4.06	4.81	0.91	11.09
160.273	264.092	9.37	5.95	8.09	0.73	11.22
178.978	248.039	10.35	6.57	9.53	0.47	16.03
196.083	230.292	10.37	6.59	9.78	0.34	21.98
211.437	211.009	10.18	6.47	9.88	0.17	44.32
224.901	190.363	8.61	5.47	8.52	0.05	165.20
236.355	168.537	5.87	3.73	5.77	0.06	180.98
245.697	145.727	2.15	1.37	1.94	0.12	107.19
252.844	122.138	-1.28	-0.81	-1.51	0.13	103.93
257.731	97.978	-3.62	-2.30	-3.77	0.08	143.92
260.315	73.465	-4.74	-3.01	-4.85	0.06	179.56
260.573	48.818	-4.74	-3.01	-4.93	0.11	101.81
258.503	24.256	-3.43	-2.18	-3.62	0.11	106.32
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.51

Actual Load Rating (from CANDE) 2.51

** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage SU7

LIVE LOADS X 2.51

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -307.1	F = 0.000
1141	21	F = 0.000	F = -307.1	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000
856	1	D = 0.000	F = 0.000	D = 0.000

857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-144.5	F =	0.000
1144	21	F =	0.000	F =	-144.5	F =	0.000
1148	21	F =	0.000	F =	-207.7	F =	0.000
1140	21	F =	0.000	F =	-144.5	F =	0.000
1138	21	F =	0.000	F =	-144.5	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19

21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000

35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.592E+00 -0.297E+01	-0.102E+02 -0.413E+01	0.249E-10 -0.408E+04	-0.136E+05 -0.136E+05	0.193E+03 0.643E+03
2	-258.50 24.26	-0.526E+00 -0.297E+01	-0.121E+02 -0.377E+01	-0.379E+04 -0.418E+04	-0.240E+05 -0.139E+05	0.950E+02 0.316E+03
3	-260.57 48.82	-0.403E+00 -0.297E+01	-0.140E+02 -0.341E+01	-0.515E+04 -0.427E+04	-0.280E+05 -0.142E+05	0.163E+02 0.544E+02
4	-260.31 73.47	-0.199E+00 -0.299E+01	-0.152E+02 -0.325E+01	-0.501E+04 -0.435E+04	-0.279E+05 -0.145E+05	-0.315E+02 -0.105E+03
5	-257.73 97.98	0.826E-01 -0.303E+01	-0.150E+02 -0.235E+01	-0.397E+04 -0.441E+04	-0.253E+05 -0.147E+05	-0.734E+02 -0.245E+03
6	-252.84 122.14	0.421E+00 -0.311E+01	-0.148E+02 -0.140E+01	-0.172E+04 -0.445E+04	-0.194E+05 -0.148E+05	-0.124E+03 -0.414E+03
7	-245.70 145.73	0.774E+00 -0.323E+01	-0.164E+02 -0.572E+00	0.189E+04 -0.445E+04	-0.199E+05 -0.148E+05	-0.160E+03 -0.533E+03
8	-236.35 168.54	0.108E+01 -0.338E+01	-0.192E+02 0.976E+00	0.595E+04 -0.443E+04	-0.307E+05 -0.148E+05	-0.140E+03 -0.467E+03
9	-224.90 190.36	0.129E+01 -0.350E+01	-0.194E+02 0.290E+01	0.864E+04 -0.437E+04	-0.377E+05 -0.146E+05	-0.788E+02 -0.262E+03
10	-211.44	0.138E+01	-0.193E+02	0.973E+04	-0.402E+05	-0.886E+01

	211.01	-0.357E+01	0.497E+01	-0.427E+04	-0.142E+05	-0.295E+02
11	-196.08	0.133E+01	-0.173E+02	0.908E+04	-0.381E+05	0.458E+02
	230.29	-0.354E+01	0.497E+01	-0.415E+04	-0.138E+05	0.153E+03
12	-178.98	0.118E+01	-0.179E+02	0.767E+04	-0.339E+05	0.951E+02
	248.04	-0.341E+01	0.532E+01	-0.403E+04	-0.134E+05	0.317E+03
13	-160.27	0.956E+00	-0.163E+02	0.489E+04	-0.261E+05	0.143E+03
	264.09	-0.318E+01	0.498E+01	-0.391E+04	-0.130E+05	0.476E+03
14	-140.14	0.712E+00	-0.145E+02	0.155E+04	-0.168E+05	0.159E+03
	278.31	-0.285E+01	0.460E+01	-0.380E+04	-0.127E+05	0.531E+03
15	-118.75	0.486E+00	-0.127E+02	-0.155E+04	-0.165E+05	0.142E+03
	290.56	-0.249E+01	0.417E+01	-0.371E+04	-0.123E+05	0.472E+03
16	-96.30	0.306E+00	-0.120E+02	-0.362E+04	-0.217E+05	0.102E+03
	300.73	-0.212E+01	0.404E+01	-0.362E+04	-0.120E+05	0.339E+03
17	-72.98	0.181E+00	-0.121E+02	-0.461E+04	-0.240E+05	0.629E+02
	308.74	-0.179E+01	0.414E+01	-0.352E+04	-0.117E+05	0.209E+03
18	-49.02	0.106E+00	-0.123E+02	-0.496E+04	-0.247E+05	0.373E+02
	314.51	-0.153E+01	0.424E+01	-0.342E+04	-0.114E+05	0.124E+03
19	-24.62	0.694E-01	-0.132E+02	-0.523E+04	-0.250E+05	0.348E+02
	318.00	-0.134E+01	0.430E+01	-0.332E+04	-0.111E+05	0.116E+03
20	0.00	0.558E-01	-0.124E+02	-0.625E+04	-0.277E+05	0.386E+02
	319.17	-0.123E+01	-0.219E+01	-0.330E+04	-0.110E+05	0.129E+03
21	24.62	0.471E-01	-0.111E+02	-0.758E+04	-0.315E+05	0.147E+02
	318.00	-0.123E+01	-0.384E+01	-0.338E+04	-0.112E+05	0.491E+02
22	49.02	0.206E-01	-0.111E+02	-0.818E+04	-0.334E+05	-0.334E+02
	314.51	-0.135E+01	-0.384E+01	-0.347E+04	-0.116E+05	-0.111E+03
23	72.98	-0.497E-01	-0.109E+02	-0.763E+04	-0.322E+05	-0.924E+02
	308.74	-0.160E+01	-0.376E+01	-0.356E+04	-0.119E+05	-0.308E+03
24	96.30	-0.185E+00	-0.116E+02	-0.546E+04	-0.267E+05	-0.153E+03
	300.73	-0.195E+01	-0.389E+01	-0.364E+04	-0.121E+05	-0.509E+03
25	118.75	-0.390E+00	-0.133E+02	-0.176E+04	-0.171E+05	-0.193E+03
	290.56	-0.237E+01	-0.433E+01	-0.373E+04	-0.124E+05	-0.642E+03
26	140.14	-0.648E+00	-0.160E+02	0.274E+04	-0.201E+05	-0.187E+03
	278.31	-0.279E+01	-0.506E+01	-0.383E+04	-0.127E+05	-0.624E+03
27	160.27	-0.919E+00	-0.182E+02	0.660E+04	-0.308E+05	-0.131E+03
	264.09	-0.315E+01	-0.558E+01	-0.395E+04	-0.131E+05	-0.437E+03
28	178.98	-0.115E+01	-0.183E+02	0.872E+04	-0.369E+05	-0.581E+02
	248.04	-0.341E+01	-0.542E+01	-0.407E+04	-0.136E+05	-0.193E+03
29	196.08	-0.131E+01	-0.162E+02	0.927E+04	-0.387E+05	-0.204E+02
	230.29	-0.354E+01	-0.312E+01	-0.418E+04	-0.139E+05	-0.681E+02
30	211.44	-0.135E+01	-0.190E+02	0.972E+04	-0.402E+05	0.170E+02
	211.01	-0.356E+01	-0.360E+01	-0.426E+04	-0.142E+05	0.566E+02

31	224.90	-0.127E+01	-0.193E+02	0.854E+04	-0.373E+05	0.836E+02
	190.36	-0.350E+01	-0.230E+01	-0.434E+04	-0.145E+05	0.278E+03
32	236.35	-0.106E+01	-0.188E+02	0.575E+04	-0.300E+05	0.141E+03
	168.54	-0.337E+01	-0.928E+00	-0.439E+04	-0.146E+05	0.469E+03
33	245.70	-0.751E+00	-0.162E+02	0.178E+04	-0.195E+05	0.156E+03
	145.73	-0.323E+01	0.297E+00	-0.442E+04	-0.147E+05	0.520E+03
34	252.84	-0.402E+00	-0.148E+02	-0.173E+04	-0.193E+05	0.121E+03
	122.14	-0.311E+01	0.106E+01	-0.441E+04	-0.147E+05	0.404E+03
35	257.73	-0.680E-01	-0.150E+02	-0.393E+04	-0.251E+05	0.727E+02
	97.98	-0.303E+01	0.193E+01	-0.439E+04	-0.146E+05	0.242E+03
36	260.31	0.210E+00	-0.152E+02	-0.499E+04	-0.278E+05	0.324E+02
	73.47	-0.298E+01	0.289E+01	-0.434E+04	-0.144E+05	0.108E+03
37	260.57	0.410E+00	-0.139E+02	-0.516E+04	-0.280E+05	-0.150E+02
	48.82	-0.297E+01	0.314E+01	-0.427E+04	-0.142E+05	-0.501E+02
38	258.50	0.529E+00	-0.119E+02	-0.384E+04	-0.242E+05	-0.956E+02
	24.26	-0.297E+01	0.373E+01	-0.418E+04	-0.139E+05	-0.318E+03
39	254.12	0.591E+00	-0.991E+01	0.334E-08	-0.136E+05	-0.197E+03
	0.00	-0.297E+01	0.432E+01	-0.408E+04	-0.136E+05	-0.656E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.42607E-03	-0.42607E-03	.30859	0.00000
2	-0.75442E-03	-0.11862E-03	.54641	0.00000
3	-0.87772E-03	-0.14508E-04	.63571	0.00000
4	-0.87485E-03	-0.33977E-04	.63363	0.00000
5	-0.79379E-03	-0.12800E-03	.57492	0.00000
6	-0.60906E-03	-0.32000E-03	.44113	0.00000
7	-0.30680E-03	-0.62410E-03	.45202	0.00000
8	0.35737E-04	-0.96222E-03	.69691	0.00000
9	0.26762E-03	-0.11815E-02	.85577	0.00000
10	0.36969E-03	-0.12621E-02	.91410	0.00000
11	0.32826E-03	-0.11951E-02	.86556	0.00000
12	0.22250E-03	-0.10639E-02	.77053	0.00000
13	0.19511E-05	-0.81882E-03	.59305	0.00000
14	-0.26711E-03	-0.52777E-03	.38225	0.00000
15	-0.51765E-03	-0.25738E-03	.37492	0.00000
16	-0.68191E-03	-0.74175E-04	.49389	0.00000
17	-0.75467E-03	0.18212E-04	.54659	0.00000
18	-0.77352E-03	0.57785E-04	.56024	0.00000
19	-0.78576E-03	0.91402E-04	.56911	0.00000
20	-0.86854E-03	0.17765E-03	.62906	0.00000
21	-0.98886E-03	0.28315E-03	.71621	0.00000
22	-0.10489E-02	0.32348E-03	.75966	0.00000
23	-0.10116E-02	0.26781E-03	.73271	0.00000
24	-0.83889E-03	0.77605E-04	.60759	0.00000
25	-0.53739E-03	-0.24187E-03	.38922	0.00000
26	-0.16995E-03	-0.62999E-03	.45629	0.00000
27	0.14168E-03	-0.96616E-03	.69977	0.00000
28	0.30596E-03	-0.11572E-02	.83814	0.00000
29	0.34104E-03	-0.12138E-02	.87916	0.00000
30	0.37025E-03	-0.12607E-02	.91308	0.00000
31	0.26249E-03	-0.11695E-02	.84704	0.00000
32	0.23695E-04	-0.94165E-03	.68202	0.00000
33	-0.31244E-03	-0.61049E-03	.44216	0.00000
34	-0.60658E-03	-0.31602E-03	.43933	0.00000
35	-0.78857E-03	-0.12867E-03	.57114	0.00000
36	-0.87176E-03	-0.34549E-04	.63140	0.00000

37	-0.87891E-03	-0.12467E-04	.63657	0.00000
38	-0.75871E-03	-0.11429E-03	.54951	0.00000
39	-0.42616E-03	-0.42616E-03	.30865	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.34288	0.00000	0.11757
2	-0.35129	-0.18254	0.30595
3	-0.35901	-0.24783	0.37672
4	-0.36569	-0.24142	0.37514
5	-0.37091	-0.19115	0.32872
6	-0.37383	-0.08299	0.22274
7	-0.37457	0.09110	0.23140
8	-0.37279	0.28652	0.42549
9	-0.36774	0.41606	0.55130
10	-0.35908	0.46849	0.59743
11	-0.34878	0.43735	0.55900
12	-0.33854	0.36932	0.48393
13	-0.32869	0.23565	0.34368
14	-0.31984	0.07484	0.17714
15	-0.31185	-0.07473	0.17198
16	-0.30423	-0.17448	0.26704
17	-0.29633	-0.22190	0.30971
18	-0.28799	-0.23867	0.32161
19	-0.27939	-0.25184	0.32990
20	-0.27748	-0.30119	0.37819
21	-0.28396	-0.36520	0.44583
22	-0.29187	-0.39400	0.47919
23	-0.29930	-0.36734	0.45692
24	-0.30632	-0.26313	0.35696
25	-0.31355	-0.08485	0.18316
26	-0.32188	0.13208	0.23569
27	-0.33175	0.31807	0.42812
28	-0.34252	0.42009	0.53741
29	-0.35119	0.44641	0.56975
30	-0.35829	0.46825	0.59662
31	-0.36496	0.41113	0.54433
32	-0.36936	0.27716	0.41359
33	-0.37136	0.08557	0.22348
34	-0.37123	-0.08342	0.22123
35	-0.36908	-0.18946	0.32568
36	-0.36468	-0.24037	0.37336
37	-0.35867	-0.24876	0.37740
38	-0.35127	-0.18502	0.30841
39	-0.34295	0.00000	0.11761

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

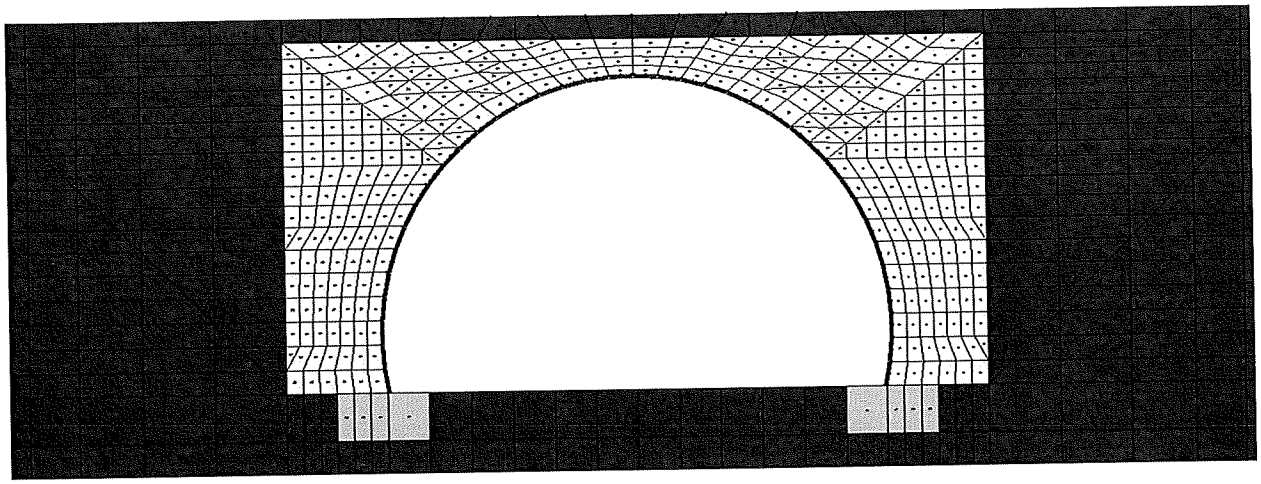
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	7	14833.	30800.	0.482
BUCKLING THRUST (psi)	7	14833.	45633.	0.325
SEAM THRUST (psi)	7	14833.	23052.	0.643
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.597	1.000	0.597

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.44

RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.09
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version Apri1 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage NRL

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	I.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION I2.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000
FULL PLASTIC PENETRATION.....	0.90000
ALLOWABLE % DEFLECTION (SERVICE)...	5.00000
COMBINED MOMENT-THRUST CRITERION...	0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -122.3	F = 0.000
1141	21	F = 0.000	F = -I22.3	F = 0.000
574	I	D = 0.000	D = 0.000	D = 0.000
575	I	D = 0.000	D = 0.000	D = 0.000
576	I	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	I	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	I	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	I	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	I	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	I	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	I	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	I	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	I	D = 0.000	D = 0.000	D = 0.000
86I	1	D = 0.000	D = 0.000	D = 0.000
886	I	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000

1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-57.57	F =	0.000
1144	21	F =	0.000	F =	-57.57	F =	0.000
1146	21	F =	0.000	F =	-43.17	F =	0.000
1140	21	F =	0.000	F =	-57.57	F =	0.000
1138	21	F =	0.000	F =	-57.57	F =	0.000
1137	21	F =	0.000	F =	-57.57	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000

10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12	-0.501E+00	-0.977E+01	0.108E-09	-0.130E+05	0.188E+03
	0.00	-0.290E+01	-0.241E+01	-0.389E+04	-0.130E+05	0.627E+03
2	-258.50	-0.408E+00	-0.114E+02	-0.362E+04	-0.228E+05	0.959E+02
	24.26	-0.290E+01	-0.161E+01	-0.394E+04	-0.131E+05	0.319E+03
3	-260.57	-0.260E+00	-0.130E+02	-0.495E+04	-0.265E+05	0.218E+02
	48.82	-0.289E+01	-0.816E+00	-0.397E+04	-0.132E+05	0.725E+02

4	-260.31	-0.337E-01	-0.136E+02	-0.489E+04	-0.264E+05	-0.265E+02
	73.47	-0.291E+01	-0.495E+00	-0.399E+04	-0.133E+05	-0.881E+02
5	-257.73	0.269E+00	-0.132E+02	-0.382E+04	-0.235E+05	-0.717E+02
	97.98	-0.295E+01	0.336E+00	-0.398E+04	-0.133E+05	-0.239E+03
6	-252.84	0.624E+00	-0.131E+02	-0.151E+04	-0.172E+05	-0.121E+03
	122.14	-0.304E+01	0.112E+01	-0.395E+04	-0.132E+05	-0.404E+03
7	-245.70	0.991E+00	-0.144E+02	0.204E+04	-0.184E+05	-0.152E+03
	145.73	-0.316E+01	0.185E+01	-0.390E+04	-0.130E+05	-0.507E+03
8	-236.35	0.131E+01	-0.166E+02	0.591E+04	-0.285E+05	-0.134E+03
	168.54	-0.331E+01	0.314E+01	-0.382E+04	-0.127E+05	-0.445E+03
9	-224.90	0.153E+01	-0.164E+02	0.858E+04	-0.353E+05	-0.815E+02
	190.36	-0.344E+01	0.434E+01	-0.372E+04	-0.124E+05	-0.272E+03
10	-211.44	0.163E+01	-0.164E+02	0.993E+04	-0.385E+05	-0.210E+02
	211.01	-0.351E+01	0.465E+01	-0.360E+04	-0.120E+05	-0.700E+02
11	-196.08	0.159E+01	-0.142E+02	0.970E+04	-0.376E+05	0.226E+02
	230.29	-0.349E+01	0.407E+01	-0.349E+04	-0.116E+05	0.754E+02
12	-178.98	0.144E+01	-0.145E+02	0.900E+04	-0.354E+05	0.529E+02
	248.04	-0.335E+01	0.430E+01	-0.339E+04	-0.113E+05	0.176E+03
13	-160.27	0.120E+01	-0.148E+02	0.741E+04	-0.308E+05	0.101E+03
	264.09	-0.310E+01	0.456E+01	-0.329E+04	-0.109E+05	0.336E+03
14	-140.14	0.916E+00	-0.135E+02	0.451E+04	-0.227E+05	0.146E+03
	278.31	-0.272E+01	0.431E+01	-0.319E+04	-0.106E+05	0.487E+03
15	-118.75	0.634E+00	-0.117E+02	0.817E+03	-0.125E+05	0.162E+03
	290.56	-0.225E+01	0.385E+01	-0.310E+04	-0.103E+05	0.540E+03
16	-96.30	0.390E+00	-0.106E+02	-0.280E+04	-0.175E+05	0.150E+03
	300.73	-0.175E+01	0.355E+01	-0.302E+04	-0.101E+05	0.498E+03
17	-72.98	0.211E+00	-0.989E+01	-0.586E+04	-0.255E+05	0.121E+03
	308.74	-0.127E+01	0.339E+01	-0.295E+04	-0.982E+04	0.404E+03
18	-49.02	0.103E+00	-0.964E+01	-0.820E+04	-0.315E+05	0.887E+02
	314.51	-0.866E+00	0.331E+01	-0.288E+04	-0.958E+04	0.296E+03
19	-24.62	0.541E-01	-0.932E+01	-0.988E+04	-0.358E+05	0.556E+02
	318.00	-0.588E+00	0.255E+01	-0.281E+04	-0.936E+04	0.185E+03
20	0.00	0.409E-01	-0.876E+01	-0.109E+05	-0.384E+05	0.155E+02
	319.17	-0.469E+00	-0.102E+01	-0.280E+04	-0.931E+04	0.515E+02
21	24.62	0.308E-01	-0.859E+01	-0.109E+05	-0.386E+05	-0.353E+02
	318.00	-0.527E+00	-0.297E+01	-0.284E+04	-0.947E+04	-0.117E+03
22	49.02	-0.111E-01	-0.907E+01	-0.967E+04	-0.355E+05	-0.877E+02
	314.51	-0.761E+00	-0.314E+01	-0.291E+04	-0.970E+04	-0.292E+03
23	72.98	-0.114E+00	-0.956E+01	-0.726E+04	-0.293E+05	-0.135E+03
	308.74	-0.114E+01	-0.327E+01	-0.298E+04	-0.993E+04	-0.449E+03
24	96.30	-0.293E+00	-0.106E+02	-0.376E+04	-0.202E+05	-0.170E+03

	300.73	-0.162E+01	-0.355E+01	-0.305E+04	-0.102E+05	-0.564E+03
25	118.75	-0.543E+00	-0.120E+02	0.424E+03	-0.116E+05	-0.181E+03
	290.56	-0.214E+01	-0.393E+01	-0.313E+04	-0.104E+05	-0.604E+03
26	140.14	-0.838E+00	-0.139E+02	0.464E+04	-0.231E+05	-0.160E+03
	278.31	-0.262E+01	-0.441E+01	-0.322E+04	-0.107E+05	-0.532E+03
27	160.27	-0.113E+01	-0.158E+02	0.793E+04	-0.323E+05	-0.101E+03
	264.09	-0.302E+01	-0.483E+01	-0.332E+04	-0.111E+05	-0.336E+03
28	178.98	-0.138E+01	-0.150E+02	0.941E+04	-0.366E+05	-0.385E+02
	248.04	-0.329E+01	-0.400E+01	-0.342E+04	-0.114E+05	-0.128E+03
29	196.08	-0.154E+01	-0.137E+02	0.975E+04	-0.377E+05	-0.106E+02
	230.29	-0.343E+01	-0.280E+01	-0.351E+04	-0.117E+05	-0.353E+02
30	211.44	-0.158E+01	-0.163E+02	0.995E+04	-0.385E+05	0.247E+02
	211.01	-0.345E+01	-0.346E+01	-0.359E+04	-0.119E+05	0.823E+02
31	224.90	-0.149E+01	-0.164E+02	0.860E+04	-0.352E+05	0.859E+02
	190.36	-0.338E+01	-0.260E+01	-0.367E+04	-0.122E+05	0.286E+03
32	236.35	-0.127E+01	-0.160E+02	0.580E+04	-0.279E+05	0.137E+03
	168.54	-0.325E+01	-0.190E+01	-0.374E+04	-0.124E+05	0.456E+03
33	245.70	-0.957E+00	-0.139E+02	0.195E+04	-0.178E+05	0.150E+03
	145.73	-0.311E+01	-0.120E+01	-0.379E+04	-0.126E+05	0.501E+03
34	252.84	-0.598E+00	-0.127E+02	-0.150E+04	-0.168E+05	0.118E+03
	122.14	-0.299E+01	-0.828E+00	-0.383E+04	-0.128E+05	0.394E+03
35	257.73	-0.250E+00	-0.129E+02	-0.374E+04	-0.228E+05	0.707E+02
	97.98	-0.290E+01	-0.330E+00	-0.386E+04	-0.128E+05	0.235E+03
36	260.31	0.458E-01	-0.132E+02	-0.482E+04	-0.257E+05	0.269E+02
	73.47	-0.286E+01	0.387E+00	-0.386E+04	-0.129E+05	0.895E+02
37	260.57	0.267E+00	-0.125E+02	-0.489E+04	-0.259E+05	-0.212E+02
	48.82	-0.285E+01	0.653E+00	-0.385E+04	-0.128E+05	-0.707E+02
38	258.50	0.410E+00	-0.110E+02	-0.358E+04	-0.223E+05	-0.950E+02
	24.26	-0.285E+01	0.148E+01	-0.382E+04	-0.127E+05	-0.316E+03
39	254.12	0.500E+00	-0.941E+01	0.806E-10	-0.126E+05	-0.187E+03
	0.00	-0.286E+01	0.230E+01	-0.378E+04	-0.126E+05	-0.622E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40661E-03	-0.40661E-03	.29450	0.00000
2	-0.71526E-03	-0.10773E-03	.51805	0.00000
3	-0.83041E-03	0.43234E-06	.60145	0.00000
4	-0.82693E-03	-0.59455E-05	.59892	0.00000
5	-0.73643E-03	-0.95444E-04	.53338	0.00000
6	-0.53942E-03	-0.28637E-03	.39069	0.00000
7	-0.23608E-03	-0.57894E-03	.41932	0.00000
8	0.96307E-04	-0.89523E-03	.64839	0.00000
9	0.33132E-03	-0.11084E-02	.80281	0.00000
10	0.45672E-03	-0.12093E-02	.87584	0.00000
11	0.44859E-03	-0.11783E-02	.85342	0.00000

12	0.40090E-03	-0.11095E-02	.80357	0.00000
13	0.27840E-03	-0.96534E-03	.69917	0.00000
14	0.44958E-04	-0.71122E-03	.51512	0.00000
15	-0.25552E-03	-0.39253E-03	.28430	0.00000
16	-0.55047E-03	-0.81388E-04	.39869	0.00000
17	-0.80003E-03	0.18352E-03	.57944	0.00000
18	-0.98859E-03	0.38739E-03	.71601	0.00000
19	-0.11227E-02	0.53522E-03	.81312	0.00000
20	-0.12045E-02	0.61908E-03	.87242	0.00000
21	-0.12115E-02	0.61720E-03	.87746	0.00000
22	-0.11155E-02	0.50661E-03	.80794	0.00000
23	-0.92091E-03	0.29759E-03	.66699	0.00000
24	-0.63430E-03	-0.37375E-05	.45941	0.00000
25	-0.29140E-03	-0.36261E-03	.26263	0.00000
26	0.53428E-04	-0.72579E-03	.52567	0.00000
27	0.31829E-03	-0.10122E-02	.73310	0.00000
28	0.43179E-03	-0.11474E-02	.83100	0.00000
29	0.45148E-03	-0.11844E-02	.85785	0.00000
30	0.45967E-03	-0.12093E-02	.87583	0.00000
31	0.33781E-03	-0.11045E-02	.79995	0.00000
32	0.95864E-04	-0.87674E-03	.63500	0.00000
33	-0.23263E-03	-0.55948E-03	.40522	0.00000
34	-0.52575E-03	-0.27467E-03	.38079	0.00000
35	-0.71693E-03	-0.88772E-04	.51925	0.00000
36	-0.80752E-03	0.56250E-06	.58487	0.00000
37	-0.81268E-03	0.79055E-05	.58860	0.00000
38	-0.69941E-03	-0.99156E-04	.50656	0.00000
39	-0.39475E-03	-0.39475E-03	.28591	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32722	0.00000	0.10707
2	-0.33115	-0.17443	0.28409
3	-0.33396	-0.23854	0.35007
4	-0.33513	-0.23571	0.34802
5	-0.33473	-0.18403	0.29607
6	-0.33228	-0.07265	0.18306
7	-0.32795	0.09844	0.20599
8	-0.32147	0.28467	0.38802
9	-0.31269	0.41336	0.51114
10	-0.30280	0.47831	0.57000
11	-0.29362	0.46709	0.55330
12	-0.28511	0.43364	0.51493
13	-0.27641	0.35708	0.43348
14	-0.26809	0.21710	0.28897
15	-0.26076	0.03934	0.10733
16	-0.25424	-0.13468	0.19932
17	-0.24807	-0.28238	0.34392
18	-0.24191	-0.39505	0.45357
19	-0.23638	-0.47599	0.53186
20	-0.23506	-0.52440	0.57966
21	-0.23913	-0.52503	0.58221
22	-0.24501	-0.46572	0.52575
23	-0.25081	-0.34984	0.41274
24	-0.25673	-0.18104	0.24695
25	-0.26316	0.02044	0.08970
26	-0.27054	0.22372	0.29691
27	-0.27920	0.38198	0.45994
28	-0.28793	0.45338	0.53628
29	0.29492	0.46967	0.55665
30	-0.30161	0.47915	0.57012
31	-0.30849	0.41409	0.50926
32	-0.31421	0.27924	0.37797
33	-0.31873	0.09384	0.19543
34	-0.32207	-0.07209	0.17582
35	-0.32419	-0.18035	0.28545
36	-0.32470	-0.23200	0.33743
37	-0.32382	-0.23559	0.34045
38	-0.32132	-0.17233	0.27558
39	-0.31768	0.00000	0.10092

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	4	13271.	30800.	0.431
BUCKLING THRUST (psi)	4	13271.	44367.	0.299
SEAM THRUST (psi)	4	13271.	23052.	0.576
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	21	0.582	1.000	0.582

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.62
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.12
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

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BEAM OUTPUT FOR NRL TRUCK Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 21	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.45$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-46.69	2.15	14.20
-258.503	24.256	-42.80	-27.17	-47.26	2.55	12.00
-260.573	48.818	-42.47	-26.96	-47.66	2.97	10.38
-260.315	73.465	-41.86	-26.58	-47.82	3.41	9.15
-257.731	97.978	-41.04	-26.06	-47.77	3.84	8.26
-252.844	122.138	-40.03	-25.42	-47.42	4.22	7.67
-245.697	145.727	-38.89	-24.69	-46.80	4.52	7.33
-236.355	168.537	-37.66	-23.91	-45.87	4.69	7.23
-224.901	190.363	-36.40	-23.11	-44.62	4.70	7.40
-211.437	211.009	-35.16	-22.32	-43.21	4.60	7.74
-196.083	230.292	-34.05	-21.62	-41.90	4.49	8.10
-178.978	248.039	-33.04	-20.98	-40.69	4.37	8.46
-160.273	264.092	-31.96	-20.29	-39.44	4.28	8.82
-140.136	278.307	-30.93	-19.64	-38.26	4.19	9.17
-118.747	290.557	-30.06	-19.09	-37.21	4.09	9.53
-96.296	300.732	-29.33	-18.62	-36.28	3.97	9.92
-72.985	308.742	-28.77	-18.27	-35.40	3.79	10.50
-49.022	314.515	-28.38	-18.02	-34.52	3.51	11.42
-24.621	318	-28.08	-17.83	-33.73	3.23	12.46
0	319.165	-27.95	-17.74	-33.54	3.20	12.61
24.621	318	-28.08	-17.83	-34.13	3.46	11.64
49.022	314.515	-28.37	-18.02	-34.96	3.76	10.64
72.985	308.742	-28.77	-18.27	-35.79	4.01	9.92
96.296	300.732	-29.34	-18.63	-36.64	4.17	9.46
118.747	290.557	-30.09	-19.11	-37.55	4.26	9.13
140.136	278.307	-30.98	-19.67	-38.61	4.36	8.79
160.273	264.092	-32.03	-20.34	-39.84	4.46	8.44
178.978	248.039	-33.14	-21.04	-41.09	4.54	8.13
196.083	230.292	-34.15	-21.68	-42.09	4.54	8.00
211.437	211.009	-35.23	-22.37	-43.04	4.46	7.97
224.901	190.363	-36.44	-23.14	-44.02	4.33	8.03
236.355	168.537	-37.70	-23.94	-44.84	4.08	8.32
245.697	145.727	-38.93	-24.72	-45.48	3.74	8.85
252.844	122.138	-40.08	-25.45	-45.96	3.36	9.63
257.731	97.978	-41.11	-26.10	-46.26	2.95	10.76
260.315	73.465	-41.94	-26.63	-46.34	2.51	12.40
260.573	48.818	-42.56	-27.02	-46.21	2.09	14.73
258.503	24.256	-42.88	-27.23	-45.85	1.70	17.96
254.123	0	-43.00	-27.30	-45.33	1.34	22.80

Thrust Load Rating= 7.23

BEAM OUTPUT FOR NRL TRUCK

Y_{DL}=1.5, YDL= 1.45 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load 5tep 20	M_{DLfac}/1.575	Load 5tep 21	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.45
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.62	0.15	82.92
-260.573	48.818	-4.71	-2.99	-4.95	0.14	79.43
-260.315	73.465	-4.75	-3.01	-4.89	0.08	133.95
-257.731	97.978	-3.64	-2.31	-3.82	0.10	117.09
-252.844	122.138	-1.25	-0.79	-1.51	0.15	91.31
-245.697	145.727	2.29	1.45	2.04	0.14	91.37
-236.355	168.537	6.15	3.91	5.91	0.14	73.66
-224.901	190.363	9.07	5.76	8.58	0.28	30.17
-211.437	211.009	10.75	6.83	9.93	0.47	15.44
-196.083	230.292	10.78	6.84	9.70	0.62	11.74
-178.978	248.039	10.39	6.59	9.00	0.79	9.48
-160.273	264.092	9.01	5.72	7.41	0.91	9.19
-140.136	278.307	5.87	3.72	4.51	0.78	13.48
-118.747	290.557	1.56	0.99	0.82	0.43	31.15
-96.296	300.732	-3.08	-1.96	-2.80	0.16	76.00
-72.985	308.742	-7.45	-4.73	-5.86	0.91	10.37
-49.022	314.515	-11.03	-7.00	-8.20	1.61	4.38
-24.621	318	-13.44	-8.54	-9.88	2.03	2.70
0	319.165	-14.24	-9.04	-10.89	1.91	2.60
24.621	318	-13.23	-8.40	-10.90	1.33	4.24
49.022	314.515	-10.64	-6.75	-9.67	0.55	13.26
72.985	308.742	-6.92	-4.39	-7.26	0.20	49.57
96.296	300.732	-2.45	-1.56	-3.76	0.75	17.00
118.747	290.557	2.20	1.39	0.42	1.01	12.72
140.136	278.307	6.40	4.06	4.64	1.00	10.07
160.273	264.092	9.37	5.95	7.93	0.82	9.96
178.978	248.039	10.35	6.57	9.41	0.53	14.06
196.083	230.292	10.37	6.59	9.75	0.36	21.12
211.437	211.009	10.18	6.47	9.95	0.13	56.66
224.901	190.363	8.61	5.47	8.60	0.01	979.89
236.355	168.537	5.87	3.73	5.80	0.04	263.30
245.697	145.727	2.15	1.37	1.95	0.12	109.73
252.844	122.138	-1.28	-0.81	-1.50	0.12	110.32
257.731	97.978	-3.62	-2.30	-3.74	0.07	172.08
260.315	73.465	-4.74	-3.01	-4.82	0.05	247.73
260.573	48.818	-4.74	-3.01	-4.89	0.09	129.82
258.503	24.256	-3.43	-2.18	-3.58	0.09	138.97
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.60

Actual Load Rating (from CANDE) 2.60

WELCOME TO CANDE-2019 (Version Apri1 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage NRL-OPR
LIVE LOADS X 2.60

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)		Y-FORCE(F) -OR- Y-DISPLACE.(D)		MOMENT(F) -OR- ROTATION (D)	
1142	21	F =	0.000	F =	-318.1	F =	0.000
1141	21	F =	0.000	F =	-318.1	F =	0.000
574	1	D =	0.000	D =	0.000	D =	0.000
575	1	D =	0.000	D =	0.000	D =	0.000
576	1	D =	0.000	D =	0.000	D =	0.000
577	1	D =	0.000	D =	0.000	D =	0.000
578	1	D =	0.000	D =	0.000	D =	0.000
579	1	D =	0.000	D =	0.000	D =	0.000
580	1	D =	0.000	D =	0.000	D =	0.000
581	1	D =	0.000	D =	0.000	D =	0.000
582	1	D =	0.000	D =	0.000	D =	0.000
583	1	D =	0.000	D =	0.000	D =	0.000
584	1	D =	0.000	D =	0.000	D =	0.000
585	1	D =	0.000	D =	0.000	D =	0.000
586	1	D =	0.000	D =	0.000	D =	0.000
587	1	D =	0.000	D =	0.000	D =	0.000
588	1	D =	0.000	D =	0.000	D =	0.000
589	1	D =	0.000	D =	0.000	D =	0.000
590	1	D =	0.000	D =	0.000	D =	0.000
591	1	D =	0.000	D =	0.000	D =	0.000
592	1	D =	0.000	D =	0.000	D =	0.000
593	1	D =	0.000	D =	0.000	D =	0.000
594	1	D =	0.000	D =	0.000	D =	0.000
595	1	D =	0.000	D =	0.000	D =	0.000
596	1	D =	0.000	D =	0.000	D =	0.000
597	1	D =	0.000	D =	0.000	D =	0.000
598	1	D =	0.000	D =	0.000	D =	0.000
599	1	D =	0.000	D =	0.000	D =	0.000
624	1	D =	0.000	D =	0.000	D =	0.000
649	1	D =	0.000	D =	0.000	D =	0.000
674	1	D =	0.000	D =	0.000	D =	0.000
699	1	D =	0.000	D =	0.000	D =	0.000
724	1	D =	0.000	D =	0.000	D =	0.000
761	1	D =	0.000	D =	0.000	D =	0.000
786	1	D =	0.000	D =	0.000	D =	0.000
811	1	D =	0.000	D =	0.000	D =	0.000
836	1	D =	0.000	D =	0.000	D =	0.000
861	1	D =	0.000	D =	0.000	D =	0.000
886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000

858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1143	21	F =	0.000	F =	-149.7	F =	0.000
1144	21	F =	0.000	F =	-149.7	F =	0.000
1146	21	F =	0.000	F =	-112.3	F =	0.000
1140	21	F =	0.000	F =	-149.7	F =	0.000
1138	21	F =	0.000	F =	-149.7	F =	0.000
1137	21	F =	0.000	F =	-149.7	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19

21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000

35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.450	Factor for load step #21

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 21

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 21
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.611E+00 -0.303E+01	-0.104E+02 -0.387E+01	0.704E-10 -0.426E+04	-0.142E+05 -0.142E+05	0.201E+03 0.670E+03
2	-258.50 24.26	-0.551E+00 -0.303E+01	-0.125E+02 -0.392E+01	-0.395E+04 -0.436E+04	-0.251E+05 -0.145E+05	0.969E+02 0.323E+03
3	-260.57 48.82	-0.433E+00 -0.303E+01	-0.146E+02 -0.397E+01	-0.530E+04 -0.446E+04	-0.290E+05 -0.149E+05	0.141E+02 0.470E+02
4	-260.31 73.47	-0.231E+00 -0.305E+01	-0.161E+02 -0.365E+01	-0.511E+04 -0.455E+04	-0.288E+05 -0.152E+05	-0.336E+02 -0.112E+03
5	-257.73 97.98	0.513E-01 -0.309E+01	-0.158E+02 -0.250E+01	-0.404E+04 -0.462E+04	-0.262E+05 -0.154E+05	-0.745E+02 -0.248E+03
6	-252.84 122.14	0.391E+00 -0.318E+01	-0.157E+02 -0.125E+01	-0.178E+04 -0.466E+04	-0.203E+05 -0.155E+05	-0.125E+03 -0.417E+03
7	-245.70 145.73	0.745E+00 -0.330E+01	-0.174E+02 0.804E-01	0.185E+04 -0.466E+04	-0.205E+05 -0.155E+05	-0.157E+03 -0.522E+03
8	-236.35 168.54	0.106E+01 -0.344E+01	-0.201E+02 0.237E+01	0.575E+04 -0.461E+04	-0.307E+05 -0.154E+05	-0.131E+03 -0.437E+03
9	-224.90 190.36	0.128E+01 -0.357E+01	-0.196E+02 0.512E+01	0.820E+04 -0.451E+04	-0.369E+05 -0.150E+05	-0.722E+02 -0.240E+03

10	-211.44	0.137E+01	-0.195E+02	0.929E+04	-0.394E+05	-0.868E+01
	211.01	-0.365E+01	0.551E+01	-0.437E+04	-0.145E+05	-0.289E+02
11	-196.08	0.134E+01	-0.178E+02	0.878E+04	-0.376E+05	0.451E+02
	230.29	-0.364E+01	0.510E+01	-0.424E+04	-0.141E+05	0.150E+03
12	-178.98	0.120E+01	-0.178E+02	0.747E+04	-0.337E+05	0.905E+02
	248.04	-0.352E+01	0.529E+01	-0.411E+04	-0.137E+05	0.301E+03
13	-160.27	0.100E+01	-0.164E+02	0.505E+04	-0.268E+05	0.131E+03
	264.09	-0.331E+01	0.502E+01	-0.400E+04	-0.133E+05	0.435E+03
14	-140.14	0.771E+00	-0.152E+02	0.218E+04	-0.188E+05	0.149E+03
	278.31	-0.300E+01	0.480E+01	-0.389E+04	-0.129E+05	0.496E+03
15	-118.75	0.553E+00	-0.134E+02	-0.682E+03	-0.144E+05	0.140E+03
	290.56	-0.265E+01	0.440E+01	-0.379E+04	-0.126E+05	0.466E+03
16	-96.30	0.374E+00	-0.124E+02	-0.281E+04	-0.198E+05	0.107E+03
	300.73	-0.228E+01	0.418E+01	-0.369E+04	-0.123E+05	0.355E+03
17	-72.98	0.245E+00	-0.123E+02	-0.397E+04	-0.226E+05	0.685E+02
	308.74	-0.195E+01	0.422E+01	-0.360E+04	-0.120E+05	0.228E+03
18	-49.02	0.165E+00	-0.125E+02	-0.450E+04	-0.237E+05	0.414E+02
	314.51	-0.166E+01	0.431E+01	-0.350E+04	-0.116E+05	0.138E+03
19	-24.62	0.123E+00	-0.134E+02	-0.496E+04	-0.246E+05	0.380E+02
	318.00	-0.144E+01	0.397E+01	-0.340E+04	-0.113E+05	0.126E+03
20	0.00	0.108E+00	-0.127E+02	-0.617E+04	-0.277E+05	0.418E+02
	319.17	-0.130E+01	-0.268E+01	-0.338E+04	-0.113E+05	0.139E+03
21	24.62	0.100E+00	-0.114E+02	-0.772E+04	-0.322E+05	0.170E+02
	318.00	-0.127E+01	-0.393E+01	-0.347E+04	-0.116E+05	0.565E+02
22	49.02	0.785E-01	-0.113E+02	-0.848E+04	-0.345E+05	-0.336E+02
	314.51	-0.135E+01	-0.393E+01	-0.357E+04	-0.119E+05	-0.112E+03
23	72.98	0.151E-01	-0.113E+02	-0.802E+04	-0.336E+05	-0.946E+02
	308.74	-0.157E+01	-0.387E+01	-0.366E+04	-0.122E+05	-0.315E+03
24	96.30	-0.112E+00	-0.121E+02	-0.589E+04	-0.282E+05	-0.155E+03
	300.73	-0.191E+01	-0.405E+01	-0.374E+04	-0.125E+05	-0.515E+03
25	118.75	-0.311E+00	-0.137E+02	-0.225E+04	-0.188E+05	-0.194E+03
	290.56	-0.231E+01	-0.446E+01	-0.383E+04	-0.128E+05	-0.645E+03
26	140.14	-0.566E+00	-0.162E+02	0.224E+04	-0.191E+05	-0.190E+03
	278.31	-0.273E+01	-0.513E+01	-0.393E+04	-0.131E+05	-0.634E+03
27	160.27	-0.838E+00	-0.186E+02	0.622E+04	-0.301E+05	-0.136E+03
	264.09	-0.309E+01	-0.570E+01	-0.405E+04	-0.135E+05	-0.454E+03
28	178.98	-0.108E+01	-0.187E+02	0.850E+04	-0.366E+05	-0.639E+02
	248.04	-0.335E+01	-0.474E+01	-0.417E+04	-0.139E+05	-0.213E+03
29	196.08	-0.124E+01	-0.166E+02	0.925E+04	-0.389E+05	-0.256E+02
	230.29	-0.349E+01	-0.230E+01	-0.426E+04	-0.142E+05	-0.851E+02
30	211.44	-0.129E+01	-0.195E+02	0.985E+04	-0.407E+05	0.153E+02

	211.01	-0.351E+01	-0.270E+01	-0.432E+04	-0.144E+05	0.509E+02
31	224.90	-0.122E+01	-0.196E+02	0.869E+04	-0.378E+05	0.865E+02
	190.36	-0.345E+01	-0.100E+01	-0.437E+04	-0.146E+05	0.288E+03
32	236.35	-0.101E+01	-0.188E+02	0.581E+04	-0.302E+05	0.145E+03
	168.54	-0.333E+01	0.387E+00	-0.439E+04	-0.146E+05	0.484E+03
33	245.70	-0.712E+00	-0.159E+02	0.175E+04	-0.193E+05	0.159E+03
	145.73	-0.319E+01	0.134E+01	-0.439E+04	-0.146E+05	0.528E+03
34	252.84	-0.369E+00	-0.146E+02	-0.174E+04	-0.192E+05	0.121E+03
	122.14	-0.307E+01	0.184E+01	-0.436E+04	-0.145E+05	0.404E+03
35	257.73	-0.409E-01	-0.147E+02	-0.391E+04	-0.248E+05	0.726E+02
	97.98	-0.299E+01	0.255E+01	-0.432E+04	-0.144E+05	0.242E+03
36	260.31	0.231E+00	-0.149E+02	-0.494E+04	-0.274E+05	0.325E+02
	73.47	-0.295E+01	0.339E+01	-0.425E+04	-0.142E+05	0.108E+03
37	260.57	0.426E+00	-0.136E+02	-0.510E+04	-0.275E+05	-0.153E+02
	48.82	-0.294E+01	0.352E+01	-0.417E+04	-0.139E+05	-0.508E+02
38	258.50	0.541E+00	-0.117E+02	-0.376E+04	-0.236E+05	-0.940E+02
	24.26	-0.294E+01	0.367E+01	-0.408E+04	-0.136E+05	-0.313E+03
39	254.12	0.600E+00	-0.990E+01	-0.598E-07	-0.133E+05	-0.191E+03
	0.00	-0.294E+01	0.381E+01	-0.398E+04	-0.133E+05	-0.637E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.44492E-03	-0.44492E-03	.32224	0.00000
2	-0.78713E-03	-0.12439E-03	.57010	0.00000
3	-0.91103E-03	-0.21471E-04	.65984	0.00000
4	-0.90421E-03	-0.47290E-04	.65489	0.00000
5	-0.82217E-03	-0.14367E-03	.59547	0.00000
6	-0.63569E-03	-0.33742E-03	.46041	0.00000
7	-0.33105E-03	-0.64188E-03	.46490	0.00000
8	0.58192E-06	-0.96393E-03	.69815	0.00000
9	0.21701E-03	-0.11586E-02	.83916	0.00000
10	0.32265E-03	-0.12357E-02	.89498	0.00000
11	0.29379E-03	-0.11795E-02	.85428	0.00000
12	0.19627E-03	-0.10562E-02	.76500	0.00000
13	0.62719E-05	-0.84154E-03	.60951	0.00000
14	-0.22326E-03	-0.58918E-03	.42673	0.00000
15	-0.45289E-03	-0.33847E-03	.32802	0.00000
16	-0.62120E-03	-0.15031E-03	.44992	0.00000
17	-0.70891E-03	-0.42536E-04	.51345	0.00000
18	-0.74293E-03	0.12483E-04	.53808	0.00000
19	-0.77055E-03	0.60732E-04	.55809	0.00000
20	-0.87020E-03	0.16166E-03	.63027	0.00000
21	-0.10097E-02	0.28476E-03	.73128	0.00000
22	-0.10837E-02	0.33861E 03	.78488	0.00000
23	-0.10545E-02	0.29047E-03	.76374	0.00000
24	-0.88506E-03	0.10295E-03	.64103	0.00000
25	-0.58907E-03	-0.21171E-03	.42665	0.00000
26	-0.22333E-03	-0.59859E-03	.43354	0.00000
27	0.98704E-04	-0.94557E-03	.68485	0.00000
28	0.27711E-03	-0.11492E-02	.83233	0.00000
29	0.33095E-03	-0.12206E-02	.88405	0.00000
30	0.37462E-03	-0.12774E-02	.92519	0.00000
31	0.27206E-03	-0.11858E-02	.85881	0.00000
32	0.28501E-04	-0.94647E-03	.68550	0.00000
33	-0.31125E-03	-0.60567E-03	.43867	0.00000
34	-0.60165E-03	-0.31027E-03	.43576	0.00000
35	-0.77905E-03	-0.12391E-03	.56425	0.00000

36	-0.85933E-03	-0.29792E-04	.62239	0.00000
37	-0.86406E-03	-0.78532E-05	.62582	0.00000
38	-0.74137E-03	-0.11137E-03	.53695	0.00000
39	-0.41620E-03	-0.41620E-03	.30145	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 21

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.35805	0.00000	0.12820
2	-0.36677	-0.19028	0.32480
3	-0.37522	-0.25540	0.39618
4	-0.38286	-0.24602	0.39260
5	-0.38863	-0.19480	0.34583
6	-0.39156	-0.08563	0.23895
7	-0.39148	0.08924	0.24250
8	-0.38763	0.27691	0.42717
9	-0.37888	0.39495	0.53850
10	-0.36738	0.44740	0.58237
11	-0.35639	0.42299	0.55000
12	-0.34603	0.35960	0.47933
13	-0.33609	0.24341	0.35637
14	-0.32691	0.10506	0.21192
15	-0.31843	-0.03285	0.13425
16	-0.31044	-0.13519	0.23157
17	-0.30236	-0.19132	0.28274
18	-0.29391	-0.21688	0.30326
19	-0.28561	-0.23866	0.32024
20	-0.28459	-0.29708	0.37807
21	-0.29169	-0.37164	0.45672
22	-0.29980	-0.40835	0.49822
23	-0.30742	-0.38614	0.48065
24	-0.31470	-0.28366	0.38270
25	-0.32221	-0.10834	0.21216
26	-0.33072	0.10774	0.21711
27	-0.34076	0.29982	0.41593
28	-0.35090	0.40949	0.53263
29	-0.35797	0.44546	0.57360
30	-0.36326	0.47430	0.60626
31	-0.36765	0.41854	0.55371
32	-0.36937	0.27992	0.41635
33	-0.36895	0.08453	0.22065
34	-0.36693	-0.08365	0.21829
35	-0.36333	-0.18809	0.32010
36	-0.35776	-0.23816	0.36616
37	-0.35084	-0.24582	0.36891
38	-0.34312	-0.18087	0.29861
39	-0.33494	0.00000	0.11219

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 21

LRFD STRENGTH-LIMIT RATIOS AT STEP 21, FOR STEEL GROUP # 1

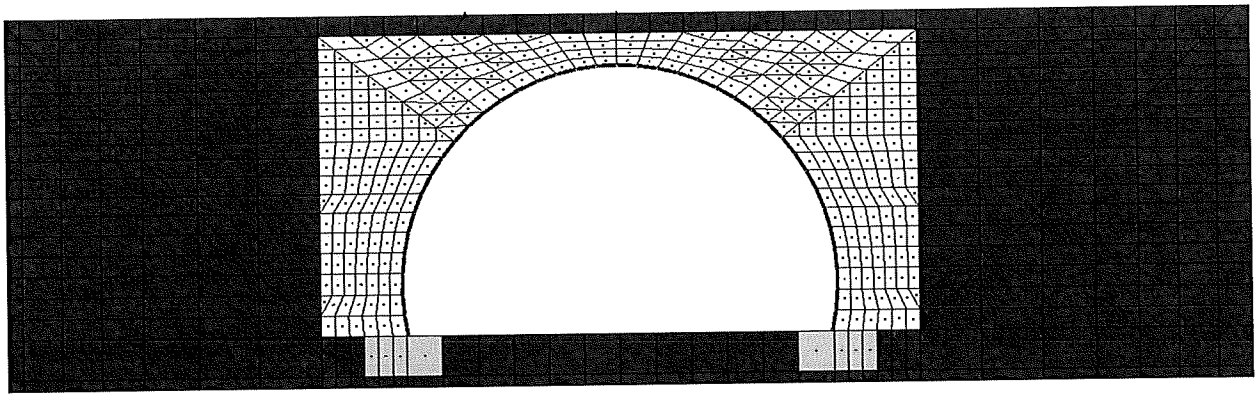
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	6	15506.	30800.	0.503
BUCKLING THRUST (psi)	6	15506.	45800.	0.339
SEAM THRUST (psi)	6	15506.	23052.	0.673
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	30	0.606	1.000	0.606

LRFD SERVICE PERFORMANCE AT STEP 21, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.45

RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.09
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage EV2

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -120.5	F = 0.000
1142	22	F = 0.000	F = -120.5	F = 0.000
1137	21	F = 0.000	F = -86.36	F = 0.000
1137	22	F = 0.000	F = -86.36	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000

911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000

12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21
22	1.750	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12	-0.477E+00	-0.969E+01	0.545E-10	-0.129E+05	0.190E+03
	0.00	-0.289E+01	-0.187E+01	-0.386E+04	-0.129E+05	0.632E+03
2	-258.50	-0.376E+00	-0.112E+02	-0.359E+04	-0.226E+05	0.981E+02
	24.26	-0.288E+01	-0.954E+00	-0.389E+04	-0.130E+05	0.327E+03
3	-260.57	-0.221E+00	-0.128E+02	-0.492E+04	-0.262E+05	0.246E+02
	48.82	-0.288E+01	-0.335E-01	-0.391E+04	-0.130E+05	0.820E+02

4	-260.31	0.124E-01	-0.132E+02	-0.488E+04	-0.260E+05	-0.241E+02
	73.47	-0.289E+01	0.381E+00	-0.390E+04	-0.130E+05	-0.803E+02
5	-257.73	0.321E+00	-0.128E+02	-0.379E+04	-0.230E+05	-0.705E+02
	97.98	-0.294E+01	0.126E+01	-0.387E+04	-0.129E+05	-0.235E+03
6	-252.84	0.683E+00	-0.127E+02	-0.145E+04	-0.166E+05	-0.119E+03
	122.14	-0.302E+01	0.211E+01	-0.382E+04	-0.127E+05	-0.397E+03
7	-245.70	0.105E+01	-0.140E+02	0.205E+04	-0.179E+05	-0.147E+03
	145.73	-0.315E+01	0.314E+01	-0.374E+04	-0.125E+05	-0.490E+03
8	-236.35	0.138E+01	-0.156E+02	0.577E+04	-0.275E+05	-0.131E+03
	168.54	-0.330E+01	0.430E+01	-0.364E+04	-0.121E+05	-0.436E+03
9	-224.90	0.161E+01	-0.154E+02	0.849E+04	-0.344E+05	-0.858E+02
	190.36	-0.343E+01	0.426E+01	-0.352E+04	-0.117E+05	-0.286E+03
10	-211.44	0.171E+01	-0.156E+02	0.100E+05	-0.381E+05	-0.302E+02
	211.01	-0.351E+01	0.441E+01	-0.340E+04	-0.113E+05	-0.100E+03
11	-196.08	0.168E+01	-0.133E+02	0.100E+05	-0.378E+05	0.949E+01
	230.29	-0.349E+01	0.380E+01	-0.330E+04	-0.110E+05	0.316E+02
12	-178.98	0.152E+01	-0.137E+02	0.965E+04	-0.365E+05	0.356E+02
	248.04	-0.336E+01	0.405E+01	-0.320E+04	-0.107E+05	0.119E+03
13	-160.27	0.128E+01	-0.148E+02	0.840E+04	-0.328E+05	0.900E+02
	264.09	-0.309E+01	0.455E+01	-0.310E+04	-0.103E+05	0.300E+03
14	-140.14	0.984E+00	-0.134E+02	0.538E+04	-0.244E+05	0.151E+03
	278.31	-0.269E+01	0.426E+01	-0.300E+04	-0.100E+05	0.502E+03
15	-118.75	0.682E+00	-0.115E+02	0.118E+04	-0.129E+05	0.180E+03
	290.56	-0.219E+01	0.377E+01	-0.292E+04	-0.972E+04	0.598E+03
16	-96.30	0.420E+00	-0.970E+01	-0.325E+04	-0.182E+05	0.170E+03
	300.73	-0.165E+01	0.324E+01	-0.285E+04	-0.949E+04	0.568E+03
17	-72.98	0.229E+00	-0.831E+01	-0.698E+04	-0.279E+05	0.128E+03
	308.74	-0.113E+01	0.284E+01	-0.279E+04	-0.928E+04	0.426E+03
18	-49.02	0.116E+00	-0.789E+01	-0.933E+04	-0.340E+05	0.689E+02
	314.51	-0.712E+00	0.272E+01	-0.273E+04	-0.908E+04	0.230E+03
19	-24.62	0.666E-01	-0.868E+01	-0.102E+05	-0.362E+05	0.204E+02
	318.00	-0.430E+00	0.295E+01	-0.266E+04	-0.886E+04	0.679E+02
20	0.00	0.540E-01	-0.104E+02	-0.103E+05	-0.363E+05	0.709E+01
	319.17	-0.313E+00	-0.105E+01	-0.264E+04	-0.879E+04	0.236E+02
21	24.62	0.445E-01	-0.859E+01	-0.107E+05	-0.375E+05	-0.853E+01
	318.00	-0.367E+00	-0.292E+01	-0.269E+04	-0.895E+04	-0.284E+02
22	49.02	0.392E-02	-0.793E+01	-0.102E+05	-0.363E+05	-0.602E+02
	314.51	-0.594E+00	-0.274E+01	-0.276E+04	-0.918E+04	-0.200E+03
23	72.98	-0.988E-01	-0.816E+01	-0.809E+04	-0.310E+05	-0.123E+03
	308.74	-0.976E+00	-0.279E+01	-0.282E+04	-0.938E+04	-0.410E+03
24	96.30	-0.282E+00	-0.948E+01	-0.444E+04	-0.215E+05	-0.173E+03

	300.73	-0.147E+01	-0.317E+01	-0.288E+04	-0.958E+04	-0.576E+03
25	118.75	-0.542E+00	-0.113E+02	0.144E+03	-0.102E+05	-0.191E+03
	290.56	-0.201E+01	-0.369E+01	-0.294E+04	-0.980E+04	-0.634E+03
26	140.14	-0.851E+00	-0.134E+02	0.476E+04	-0.228E+05	-0.167E+03
	278.31	-0.252E+01	-0.425E+01	-0.303E+04	-0.101E+05	-0.558E+03
27	160.27	-0.116E+01	-0.153E+02	0.831E+04	-0.326E+05	-0.103E+03
	264.09	-0.293E+01	-0.432E+01	-0.312E+04	-0.104E+05	-0.343E+03
28	178.98	-0.142E+01	-0.142E+02	0.982E+04	-0.369E+05	-0.364E+02
	248.04	-0.322E+01	-0.300E+01	-0.321E+04	-0.107E+05	-0.121E+03
29	196.08	-0.159E+01	-0.128E+02	0.101E+05	-0.380E+05	-0.723E+01
	230.29	-0.337E+01	-0.248E+01	-0.327E+04	-0.109E+05	-0.241E+02
30	211.44	-0.164E+01	-0.154E+02	0.102E+05	-0.385E+05	0.293E+02
	211.01	-0.340E+01	-0.326E+01	-0.335E+04	-0.111E+05	0.977E+02
31	224.90	-0.155E+01	-0.154E+02	0.874E+04	-0.348E+05	0.894E+02
	190.36	-0.333E+01	-0.248E+01	-0.342E+04	-0.114E+05	0.298E+03
32	236.35	-0.134E+01	-0.149E+02	0.587E+04	-0.273E+05	0.137E+03
	168.54	-0.320E+01	-0.207E+01	-0.349E+04	-0.116E+05	0.456E+03
33	245.70	-0.102E+01	-0.129E+02	0.204E+04	-0.173E+05	0.148E+03
	145.73	-0.306E+01	-0.162E+01	-0.355E+04	-0.118E+05	0.494E+03
34	252.84	-0.658E+00	-0.119E+02	-0.139E+04	-0.157E+05	0.117E+03
	122.14	-0.294E+01	-0.143E+01	-0.361E+04	-0.120E+05	0.389E+03
35	257.73	-0.306E+00	-0.120E+02	-0.366E+04	-0.219E+05	0.693E+02
	97.98	-0.286E+01	-0.106E+01	-0.365E+04	-0.121E+05	0.231E+03
36	260.31	-0.596E-02	-0.124E+02	-0.474E+04	-0.249E+05	0.240E+02
	73.47	-0.281E+01	-0.452E+00	-0.367E+04	-0.122E+05	0.798E+02
37	260.57	0.221E+00	-0.119E+02	-0.478E+04	-0.250E+05	-0.246E+02
	48.82	-0.280E+01	-0.193E+00	-0.368E+04	-0.123E+05	-0.819E+02
38	258.50	0.372E+00	-0.106E+02	-0.346E+04	-0.215E+05	-0.955E+02
	24.26	-0.280E+01	0.686E+00	-0.367E+04	-0.122E+05	-0.318E+03
39	254.12	0.471E+00	-0.922E+01	-0.420E-10	-0.122E+05	-0.183E+03
	0.00	-0.281E+01	0.156E+01	-0.365E+04	-0.122E+05	-0.609E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40350E-03	-0.40350E-03	.29225	0.00000
2	-0.70799E-03	-0.10544E-03	.51278	0.00000
3	-0.82087E-03	0.41215E-05	.59454	0.00000
4	-0.81678E-03	0.13642E-05	.59158	0.00000
5	-0.72271E-03	-0.87106E-04	.52344	0.00000
6	-0.52125E-03	-0.27756E-03	.37753	0.00000
7	-0.21951E-03	-0.56272E-03	.40757	0.00000
8	0.10442E-03	-0.86433E-03	.62602	0.00000
9	0.34437E-03	-0.10797E-02	.78199	0.00000
10	0.48514E-03	-0.11966E-02	.86666	0.00000
11	0.49633E-03	-0.11861E-02	.85905	0.00000

12	0.47452E-03	-0.11442E-02	.82870	0.00000
13	0.38074E-03	-0.10292E-02	.74543	0.00000
14	0.13750E-03	-0.76537E-03	.55434	0.00000
15	-0.20614E-03	-0.40408E-03	.29267	0.00000
16	-0.57037E-03	-0.25047E-04	.41310	0.00000
17	-0.87702E-03	0.29450E-03	.63521	0.00000
18	-0.10680E-02	0.49800E-03	.77355	0.00000
19	-0.11353E-02	0.57902E-03	.82224	0.00000
20	-0.11391E-02	0.58615E-03	.82500	0.00000
21	-0.11781E-02	0.61623E-03	.85325	0.00000
22	-0.11402E-02	0.56438E-03	.82582	0.00000
23	-0.97296E-03	0.38460E-03	.70469	0.00000
24	-0.67318E-03	0.72215E-04	.48757	0.00000
25	-0.29551E-03	-0.31973E-03	.23157	0.00000
26	0.83356E-04	-0.71573E-03	.51839	0.00000
27	0.37085E-03	-0.10229E-02	.74086	0.00000
28	0.48883E-03	-0.11587E-02	.83920	0.00000
29	0.50757E-03	-0.11915E-02	.86294	0.00000
30	0.50821E-03	-0.12074E-02	.87452	0.00000
31	0.37518E-03	-0.10907E-02	.79000	0.00000
32	0.12751E-03	-0.85744E-03	.62102	0.00000
33	-0.20017E-03	-0.54251E-03	.39293	0.00000
34	-0.49359E-03	-0.26002E-03	.35750	0.00000
35	-0.68834E-03	-0.73976E-04	.49855	0.00000
36	-0.78161E-03	0.14034E-04	.56610	0.00000
37	-0.78557E-03	0.15891E-04	.56897	0.00000
38	-0.67435E-03	-0.93310E-04	.48841	0.00000
39	-0.38133E-03	-0.38133E-03	.27619	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32472	0.00000	0.10544
2	-0.32730	-0.17299	0.28012
3	-0.32864	-0.23686	0.34486
4	-0.32810	-0.23489	0.34255
5	-0.32585	-0.18248	0.28866
6	-0.32142	-0.06996	0.17328
7	-0.31475	0.09854	0.19761
8	-0.30577	0.27813	0.37163
9	-0.29587	0.40885	0.49639
10	-0.28627	0.48283	0.56478
11	-0.27754	0.48303	0.56006
12	-0.26946	0.46473	0.53734
13	-0.26092	0.40480	0.47288
14	-0.25264	0.25922	0.32305
15	-0.24554	0.05683	0.11712
16	-0.23958	-0.15656	0.21396
17	-0.23440	-0.33635	0.39129
18	-0.22937	-0.44961	0.50222
19	-0.22382	-0.49218	0.54227
20	-0.22195	-0.49613	0.54539
21	-0.22607	-0.51515	0.56626
22	-0.23169	-0.48939	0.54307
23	-0.23674	-0.38976	0.44581
24	-0.24181	-0.21401	0.27248
25	-0.24756	0.00695	0.06824
26	-0.25445	0.22942	0.29417
27	-0.26237	0.40015	0.46899
28	-0.26953	0.47301	0.54565
29	-0.27518	0.48780	0.56352
30	-0.28136	0.49257	0.57173
31	-0.28793	0.42087	0.50377
32	-0.29371	0.28278	0.36904
33	-0.29884	0.09829	0.18759
34	-0.30324	-0.06706	0.15901
35	-0.30674	-0.17639	0.27048
36	-0.30886	-0.22843	0.32383
37	-0.30970	-0.23010	0.32602
38	-0.30889	-0.16682	0.26223
39	-0.30688	0.00000	0.09417

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	3	13014.	30800.	0.423
BUCKLING THRUST (psi)	3	13014.	44389.	0.293
SEAM THRUST (psi)	3	13014.	23052.	0.565
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	30	0.572	1.000	0.572

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.64
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.13
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

8EAM OUTPUT FOR EV2 γ_{DL}=1.5, YDL= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 22	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.30$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-46.34	1.94	17.50
-258.503	24.256	-42.80	-27.17	-46.71	2.23	15.26
-260.573	48.818	-42.47	-26.96	-46.90	2.53	13.56
-260.315	73.465	-41.86	-26.58	-46.82	2.84	12.27
-257.731	97.978	-41.04	-26.06	-46.50	3.12	11.35
-252.844	122.138	-40.03	-25.42	-45.87	3.34	10.83
-245.697	145.727	-38.89	-24.69	-44.92	3.44	10.74
-236.355	168.537	-37.66	-23.91	-43.63	3.41	11.09
-224.901	190.363	-36.40	-23.11	-42.22	3.33	11.66
-211.437	211.009	-35.16	-22.32	-40.85	3.25	12.21
-196.083	230.292	-34.05	-21.62	-39.61	3.17	12.77
-178.978	248.039	-33.04	-20.98	-38.45	3.09	13.33
-160.273	264.092	-31.96	-20.29	-37.23	3.01	13.95
-140.136	278.307	-30.93	-19.64	-36.05	2.93	14.63
-118.747	290.557	-30.06	-19.09	-35.04	2.84	15.27
-96.296	300.732	-29.33	-18.62	-34.19	2.78	15.83
-72.985	308.742	-28.77	-18.27	-33.45	2.67	16.60
-49.022	314.515	-28.38	-18.02	-32.73	2.48	17.98
-24.621	318	-28.08	-17.83	-31.94	2.21	20.35
0	319.165	-27.95	-17.74	-31.67	2.13	21.12
24.621	318	-28.08	-17.83	-32.26	2.39	18.77
49.022	314.515	-28.37	-18.02	-33.06	2.68	16.67
72.985	308.742	-28.77	-18.27	-33.78	2.86	15.50
96.296	300.732	-29.34	-18.63	-34.51	2.95	14.90
118.747	290.557	-30.09	-19.11	-35.33	2.99	14.51
140.136	278.307	-30.98	-19.67	-36.31	3.05	14.03
160.273	264.092	-32.03	-20.34	-37.44	3.09	13.59
178.978	248.039	-33.14	-21.04	-38.46	3.04	13.53
196.083	230.292	-34.15	-21.68	-39.27	2.93	13.83
211.437	211.009	-35.23	-22.37	-40.15	2.81	14.11
224.901	190.363	-36.44	-23.14	-41.09	2.65	14.61
236.355	168.537	-37.70	-23.94	-41.91	2.41	15.72
245.697	145.727	-38.93	-24.72	-42.65	2.12	17.42
252.844	122.138	-40.08	-25.45	-43.27	1.83	19.77
257.731	97.978	-41.11	-26.10	-43.77	1.52	23.21
260.315	73.465	-41.94	-26.63	-44.07	1.22	28.50
260.573	48.818	-42.56	-27.02	-44.19	0.93	36.68
258.503	24.256	-42.88	-27.23	-44.08	0.69	49.68
254.123	0	-43.00	-27.30	-43.79	0.46	74.63

Thrust Load Rating= 10.74

BEAM OUTPUT FOR EV2 — γ_{DL}=1.5, γ_{DL}= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 22	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.3
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.59	0.13	104.66
-260.573	48.818	-4.71	-2.99	-4.92	0.12	103.15
-260.315	73.465	-4.75	-3.01	-4.88	0.07	168.94
-257.731	97.978	-3.64	-2.31	-3.79	0.08	159.31
-252.844	122.138	-1.25	-0.79	-1.45	0.12	129.86
-245.697	145.727	2.29	1.45	2.05	0.14	102.78
-236.355	168.537	6.15	3.91	5.77	0.22	52.79
-224.901	190.363	9.07	5.76	8.49	0.33	28.21
-211.437	211.009	10.75	6.83	10.02	0.42	19.44
-196.083	230.292	10.78	6.84	10.03	0.43	18.89
-178.978	248.039	10.39	6.59	9.65	0.42	19.83
-160.273	264.092	9.01	5.72	8.40	0.35	26.97
-140.136	278.307	5.87	3.72	5.38	0.28	42.20
-118.747	290.557	1.56	0.99	1.18	0.22	67.65
-96.296	300.732	-3.08	-1.96	-3.25	0.10	140.13
-72.985	308.742	-7.45	-4.73	-6.98	0.27	39.14
-49.022	314.515	-11.03	-7.00	-9.33	0.97	8.16
-24.621	318	-13.44	-8.54	-10.22	1.84	3.32
0	319.165	-14.24	-9.04	-10.30	2.25	2.46
24.621	318	-13.23	-8.40	-10.70	1.45	4.35
49.022	314.515	-10.64	-6.75	-10.16	0.27	30.05
72.985	308.742	-6.92	-4.39	-8.09	0.67	16.25
96.296	300.732	-2.45	-1.56	-4.44	1.14	12.45
118.747	290.557	2.20	1.39	0.14	1.17	12.25
140.136	278.307	6.40	4.06	4.76	0.94	12.05
160.273	264.092	9.37	5.95	8.31	0.60	15.07
178.978	248.039	10.35	6.57	9.82	0.30	27.79
196.083	230.292	10.37	6.59	10.13	0.14	59.68
211.437	211.009	10.18	6.47	10.23	0.02	347.17
224.901	190.363	8.61	5.47	8.74	0.07	134.86
236.355	168.537	5.87	3.73	5.87	0.00	5132.70
245.697	145.727	2.15	1.37	2.04	0.06	221.94
252.844	122.138	-1.28	-0.81	-1.39	0.06	240.50
257.731	97.978	-3.62	-2.30	-3.66	0.02	594.52
260.315	73.465	-4.74	-3.01	-4.74	0.00	4323.35
260.573	48.818	-4.74	-3.01	-4.78	0.02	590.04
258.503	24.256	-3.43	-2.18	-3.46	0.02	629.21
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.46

Actual Load Rating (from CANDE) 2.46

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage EV2-OPR

LIVE LOADS X 2.46

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000
FULL PLASTIC PENETRATION.....	0.90000
ALLOWABLE % DEFLECTION (SERVICE)...	5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage EV2-OPR

LIVE LOADS X 2.46

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI)..... 0.29000E+08

POISSONS RATIO OF METAL (-) ..... 0.30000E+00

YIELD STRESS OF METAL (PSI)..... 0.44000E+05

LONGITUDINAL SEAM STRENGTH (PSI)... 0.34406E+05

DENSITY OF METAL (PCI)..... 0.28400E+00

MODULUS OF UPPER BI-SLOPE (PSI).... 0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -296.5	F = 0.000
1142	22	F = 0.000	F = -296.5	F = 0.000
1137	21	F = 0.000	F = -212.4	F = 0.000
1137	22	F = 0.000	F = -212.4	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000

853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20

22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000

36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.300	Factor for load step #21
22	1.300	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.537E+00 -0.297E+01	-0.999E+01 -0.328E+01	0.513E-10 -0.407E+04	-0.135E+05 -0.135E+05	0.200E+03 0.664E+03
2	-258.50 24.26	-0.454E+00 -0.297E+01	-0.119E+02 -0.245E+01	-0.378E+04 -0.414E+04	-0.239E+05 -0.138E+05	0.100E+03 0.334E+03
3	-260.57 48.82	-0.314E+00 -0.297E+01	-0.137E+02 -0.161E+01	-0.510E+04 -0.419E+04	-0.276E+05 -0.140E+05	0.215E+02 0.716E+02
4	-260.31 73.47	-0.938E-01 -0.298E+01	-0.146E+02 -0.116E+01	-0.497E+04 -0.422E+04	-0.273E+05 -0.141E+05	-0.271E+02 -0.901E+02
5	-257.73 97.98	0.204E+00 -0.302E+01	-0.142E+02 -0.558E-01	-0.388E+04 -0.423E+04	-0.245E+05 -0.141E+05	-0.713E+02 -0.237E+03
6	-252.84 122.14	0.556E+00 -0.311E+01	-0.142E+02 0.118E+01	-0.156E+04 -0.421E+04	-0.182E+05 -0.140E+05	-0.120E+03 -0.398E+03
7	-245.70 145.73	0.920E+00 -0.323E+01	-0.156E+02 0.285E+01	0.194E+04 -0.414E+04	-0.190E+05 -0.138E+05	-0.146E+03 -0.486E+03
8	-236.35 168.54	0.124E+01 -0.338E+01	-0.172E+02 0.475E+01	0.557E+04 -0.403E+04	-0.283E+05 -0.134E+05	-0.126E+03 -0.420E+03
9	-224.90 190.36	0.147E+01 -0.351E+01	-0.170E+02 0.469E+01	0.812E+04 -0.390E+04	-0.347E+05 -0.130E+05	-0.789E+02 -0.263E+03

10	-211.44	0.157E+01	-0.170E+02	0.947E+04	-0.379E+05	-0.230E+02
	211.01	-0.359E+01	0.480E+01	-0.378E+04	-0.126E+05	-0.767E+02
11	-196.08	0.155E+01	-0.148E+02	0.933E+04	-0.372E+05	0.183E+02
	230.29	-0.358E+01	0.425E+01	-0.367E+04	-0.122E+05	0.609E+02
12	-178.98	0.141E+01	-0.148E+02	0.873E+04	-0.352E+05	0.440E+02
	248.04	-0.347E+01	0.438E+01	-0.356E+04	-0.119E+05	0.146E+03
13	-160.27	0.119E+01	-0.158E+02	0.742E+04	-0.313E+05	0.921E+02
	264.09	-0.323E+01	0.485E+01	-0.345E+04	-0.115E+05	0.307E+03
14	-140.14	0.929E+00	-0.147E+02	0.455E+04	-0.233E+05	0.149E+03
	278.31	-0.288E+01	0.466E+01	-0.335E+04	-0.111E+05	0.497E+03
15	-118.75	0.662E+00	-0.126E+02	0.529E+03	-0.122E+05	0.176E+03
	290.56	-0.244E+01	0.412E+01	-0.325E+04	-0.108E+05	0.587E+03
16	-96.30	0.434E+00	-0.101E+02	-0.360E+04	-0.202E+05	0.154E+03
	300.73	-0.197E+01	0.337E+01	-0.317E+04	-0.106E+05	0.514E+03
17	-72.98	0.271E+00	-0.847E+01	-0.651E+04	-0.277E+05	0.882E+02
	308.74	-0.153E+01	0.290E+01	-0.311E+04	-0.104E+05	0.294E+03
18	-49.02	0.176E+00	-0.859E+01	-0.741E+04	-0.299E+05	0.987E+01
	314.51	-0.118E+01	0.296E+01	-0.304E+04	-0.101E+05	0.329E+02
19	-24.62	0.133E+00	-0.113E+02	-0.661E+04	-0.275E+05	-0.261E+02
	318.00	-0.944E+00	0.377E+01	-0.296E+04	-0.984E+04	-0.870E+02
20	0.00	0.118E+00	-0.153E+02	-0.603E+04	-0.259E+05	0.257E+02
	319.17	-0.811E+00	-0.174E+01	-0.293E+04	-0.976E+04	0.856E+02
21	24.62	0.112E+00	-0.104E+02	-0.818E+04	-0.319E+05	0.647E+02
	318.00	-0.785E+00	-0.350E+01	-0.300E+04	-0.999E+04	0.215E+03
22	49.02	0.885E-01	-0.841E+01	-0.988E+04	-0.367E+05	0.116E+02
	314.51	-0.892E+00	-0.291E+01	-0.308E+04	-0.103E+05	0.385E+02
23	72.98	0.165E-01	-0.790E+01	-0.959E+04	-0.361E+05	-0.801E+02
	308.74	-0.115E+01	-0.273E+01	-0.315E+04	-0.105E+05	-0.267E+03
24	96.30	-0.132E+00	-0.939E+01	-0.673E+04	-0.287E+05	-0.166E+03
	300.73	-0.154E+01	-0.316E+01	-0.321E+04	-0.107E+05	-0.552E+03
25	118.75	-0.363E+00	-0.119E+02	-0.203E+04	-0.164E+05	-0.209E+03
	290.56	-0.202E+01	-0.389E+01	-0.328E+04	-0.109E+05	-0.696E+03
26	140.14	-0.654E+00	-0.146E+02	0.319E+04	-0.197E+05	-0.195E+03
	278.31	-0.250E+01	-0.465E+01	-0.337E+04	-0.112E+05	-0.649E+03
27	160.27	-0.960E+00	-0.169E+02	0.742E+04	-0.314E+05	-0.128E+03
	264.09	-0.291E+01	-0.498E+01	-0.347E+04	-0.116E+05	-0.426E+03
28	178.98	-0.123E+01	-0.161E+02	0.949E+04	-0.372E+05	-0.514E+02
	248.04	-0.320E+01	-0.244E+01	-0.356E+04	-0.118E+05	-0.171E+03
29	196.08	-0.140E+01	-0.142E+02	0.100E+05	-0.388E+05	-0.147E+02
	230.29	-0.336E+01	-0.191E+01	-0.361E+04	-0.120E+05	-0.489E+02
30	211.44	-0.147E+01	-0.169E+02	0.103E+05	-0.398E+05	0.261E+02

	211.01	-0.340E+01	-0.259E+01	-0.367E+04	-0.122E+05	0.868E+02
31	224.90	-0.139E+01	-0.167E+02	0.887E+04	-0.361E+05	0.923E+02
	190.36	-0.334E+01	-0.123E+01	-0.372E+04	-0.124E+05	0.307E+03
32	236.35	-0.119E+01	-0.159E+02	0.589E+04	-0.283E+05	0.142E+03
	168.54	-0.321E+01	-0.583E+00	-0.376E+04	-0.125E+05	0.474E+03
33	245.70	-0.882E+00	-0.137E+02	0.196E+04	-0.178E+05	0.151E+03
	145.73	-0.308E+01	-0.140E+00	-0.378E+04	-0.126E+05	0.504E+03
34	252.84	-0.534E+00	-0.126E+02	-0.147E+04	-0.166E+05	0.117E+03
	122.14	-0.296E+01	0.391E-01	-0.380E+04	-0.126E+05	0.389E+03
35	257.73	-0.196E+00	-0.127E+02	-0.369E+04	-0.225E+05	0.692E+02
	97.98	-0.288E+01	0.459E+00	-0.380E+04	-0.127E+05	0.230E+03
36	260.31	0.894E-01	-0.129E+02	-0.475E+04	-0.253E+05	0.253E+02
	73.47	-0.284E+01	0.105E+01	-0.379E+04	-0.126E+05	0.844E+02
37	260.57	0.301E+00	-0.122E+02	-0.481E+04	-0.254E+05	-0.233E+02
	48.82	-0.282E+01	0.116E+01	-0.377E+04	-0.125E+05	-0.775E+02
38	258.50	0.437E+00	-0.108E+02	-0.348E+04	-0.217E+05	-0.950E+02
	24.26	-0.282E+01	0.184E+01	-0.373E+04	-0.124E+05	-0.316E+03
39	254.12	0.521E+00	-0.939E+01	0.406E-10	-0.122E+05	-0.182E+03
	0.00	-0.283E+01	0.252E+01	-0.367E+04	-0.122E+05	-0.606E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.42518E-03	-0.42518E-03	.30795	0.00000
2	-0.74903E-03	-0.11550E-03	.54250	0.00000
3	-0.86530E-03	-0.10468E-04	.62671	0.00000
4	-0.85814E-03	-0.24268E-04	.62153	0.00000
5	-0.76726E-03	-0.11687E-03	.55570	0.00000
6	-0.57008E-03	-0.30884E-03	.41289	0.00000
7	-0.27014E-03	-0.59535E-03	.43120	0.00000
8	0.45999E-04	-0.88880E-03	.64374	0.00000
9	0.27336E-03	-0.10894E-02	.78903	0.00000
10	0.39955E-03	-0.11898E-02	.86171	0.00000
11	0.39972E-03	-0.11662E-02	.84463	0.00000
12	0.36004E-03	-0.11045E-02	.79999	0.00000
13	0.26177E-03	-0.98352E-03	.71234	0.00000
14	0.32388E-04	-0.73173E-03	.52998	0.00000
15	-0.29549E-03	-0.38422E-03	.27828	0.00000
16	-0.63378E-03	-0.29711E-04	.45903	0.00000
17	-0.87075E-03	0.22117E-03	.63067	0.00000
18	-0.93902E-03	0.30368E-03	.68011	0.00000
19	-0.86313E-03	0.24535E-03	.62514	0.00000
20	-0.81153E-03	0.19768E-03	.58777	0.00000
21	-0.99981E-03	0.37286E-03	.72414	0.00000
22	-0.11509E-02	0.50664E-03	.83359	0.00000
23	-0.11333E-02	0.47506E-03	.82084	0.00000
24	-0.90040E-03	0.22924E-03	.65214	0.00000
25	-0.51311E-03	-0.17270E-03	.37163	0.00000
26	-0.84433E-04	-0.61964E-03	.44879	0.00000
27	0.25969E-03	-0.98567E-03	.71389	0.00000
28	0.42427E-03	-0.11679E-02	.84586	0.00000
29	0.46447E-03	-0.12189E-02	.88286	0.00000
30	0.48318E-03	-0.12497E-02	.90514	0.00000
31	0.35504E-03	-0.11330E-02	.82058	0.00000
32	0.10126E-03	-0.88659E-03	.64213	0.00000
33	-0.23087E-03	-0.55963E-03	.40533	0.00000
34	-0.51980E-03	-0.27403E-03	.37648	0.00000
35	-0.70675E-03	-0.88072E-04	.51188	0.00000

36	-0.79485E-03	0.25417E-05	.57569	0.00000
37	-0.79710E-03	0.10023E-04	.57732	0.00000
38	-0.68108E-03	-0.97549E-04	.49329	0.00000
39	-0.38385E-03	-0.38385E-03	.27801	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.34216	0.00000	0.11708
2	-0.34787	-0.18189	0.30290
3	-0.35239	-0.24542	0.36960
4	-0.35506	-0.23941	0.36548
5	-0.35575	-0.18673	0.31329
6	-0.35365	-0.07500	0.20007
7	-0.34825	0.09337	0.21465
8	-0.33912	0.26838	0.38339
9	-0.32836	0.39126	0.49908
10	-0.31796	0.45630	0.55739
11	-0.30841	0.44957	0.54469
12	-0.29957	0.42049	0.51023
13	-0.29042	0.35753	0.44187
14	-0.28140	0.21938	0.29857
15	-0.27350	0.02547	0.10027
16	-0.26697	-0.17343	0.24471
17	-0.26137	-0.31350	0.38181
18	-0.25565	-0.35679	0.42214
19	-0.24858	-0.31825	0.38004
20	-0.24647	-0.29056	0.35130
21	-0.25227	-0.39410	0.45774
22	-0.25925	-0.47589	0.54310
23	-0.26487	-0.46178	0.53193
24	-0.27006	-0.32432	0.39725
25	-0.27595	-0.09773	0.17388
26	-0.28330	0.15366	0.23392
27	-0.29211	0.35755	0.44288
28	-0.29921	0.45711	0.54664
29	-0.30359	0.48332	0.57548
30	-0.30844	0.49752	0.59266
31	-0.31302	0.42722	0.52520
32	-0.31599	0.28362	0.38347
33	-0.31808	0.09439	0.19556
34	-0.31942	-0.07056	0.17259
35	-0.31982	-0.17762	0.27991
36	-0.31880	-0.22893	0.33057
37	-0.31670	-0.23173	0.33203
38	-0.31330	-0.16753	0.26569
39	-0.30891	0.00000	0.09542

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

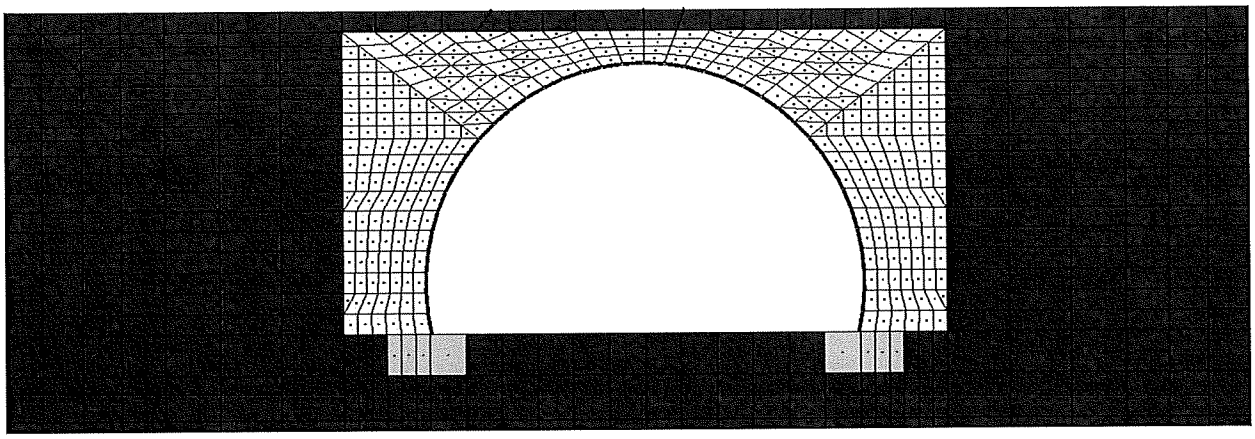
DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	14088.	30800.	0.457
BUCKLING THRUST (psi)	5	14088.	45938.	0.307
SEAM THRUST (psi)	5	14088.	23052.	0.611
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	30	0.593	1.000	0.593

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.52

RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.10
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage EV3

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -111.5	F = 0.000
1142	22	F = 0.000	F = -111.5	F = 0.000
1143	21	F = 0.000	F = -111.5	F = 0.000
1143	22	F = 0.000	F = -111.5	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000

886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1137	21	F =	0.000	F =	-86.35	F =	0.000
1137	22	F =	0.000	F =	-86.35	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000

9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21
22	1.750	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.510E+00 -0.290E+01	-0.977E+01 -0.255E+01	0.958E-10 -0.388E+04	-0.129E+05 -0.129E+05	0.190E+03 0.633E+03
2	-258.50 24.26	-0.419E+00 -0.290E+01	-0.114E+02 -0.180E+01	-0.361E+04 -0.394E+04	-0.228E+05 -0.131E+05	0.978E+02 0.326E+03
3	-260.57 48.82	-0.275E+00 -0.289E+01	-0.130E+02 -0.106E+01	-0.495E+04 -0.397E+04	-0.265E+05 -0.132E+05	0.236E+02 0.784E+02

4	-260.31	-0.518E-01	-0.137E+02	-0.489E+04	-0.264E+05	-0.250E+02
	73.47	-0.291E+01	-0.797E+00	-0.399E+04	-0.133E+05	-0.831E+02
5	-257.73	0.247E+00	-0.133E+02	-0.382E+04	-0.235E+05	-0.702E+02
	97.98	-0.295E+01	0.860E-02	-0.400E+04	-0.133E+05	-0.234E+03
6	-252.84	0.599E+00	-0.132E+02	-0.152E+04	-0.173E+05	-0.120E+03
	122.14	-0.304E+01	0.751E+00	-0.398E+04	-0.132E+05	-0.401E+03
7	-245.70	0.963E+00	-0.144E+02	0.204E+04	-0.186E+05	-0.154E+03
	145.73	-0.316E+01	0.134E+01	-0.394E+04	-0.131E+05	-0.513E+03
8	-236.35	0.128E+01	-0.166E+02	0.602E+04	-0.290E+05	-0.140E+03
	168.54	-0.330E+01	0.235E+01	-0.388E+04	-0.129E+05	-0.466E+03
9	-224.90	0.150E+01	-0.169E+02	0.889E+04	-0.364E+05	-0.882E+02
	190.36	-0.343E+01	0.331E+01	-0.379E+04	-0.126E+05	-0.294E+03
10	-211.44	0.158E+01	-0.169E+02	0.103E+05	-0.399E+05	-0.247E+02
	211.01	-0.350E+01	0.409E+01	-0.369E+04	-0.123E+05	-0.823E+02
11	-196.08	0.153E+01	-0.142E+02	0.101E+05	-0.389E+05	0.156E+02
	230.29	-0.347E+01	0.336E+01	-0.360E+04	-0.120E+05	0.521E+02
12	-178.98	0.136E+01	-0.154E+02	0.956E+04	-0.372E+05	0.470E+02
	248.04	-0.332E+01	0.458E+01	-0.350E+04	-0.117E+05	0.156E+03
13	-160.27	0.110E+01	-0.161E+02	0.782E+04	-0.322E+05	0.111E+03
	264.09	-0.303E+01	0.496E+01	-0.339E+04	-0.113E+05	0.369E+03
14	-140.14	0.797E+00	-0.145E+02	0.421E+04	-0.222E+05	0.174E+03
	278.31	-0.263E+01	0.461E+01	-0.329E+04	-0.109E+05	0.578E+03
15	-118.75	0.498E+00	-0.123E+02	-0.535E+03	-0.121E+05	0.200E+03
	290.56	-0.214E+01	0.405E+01	-0.320E+04	-0.106E+05	0.665E+03
16	-96.30	0.250E+00	-0.101E+02	-0.532E+04	-0.246E+05	0.180E+03
	300.73	-0.163E+01	0.341E+01	-0.312E+04	-0.104E+05	0.600E+03
17	-72.98	0.822E-01	-0.823E+01	-0.898E+04	-0.342E+05	0.117E+03
	308.74	-0.118E+01	0.284E+01	-0.306E+04	-0.102E+05	0.388E+03
18	-49.02	-0.649E-02	-0.787E+01	-0.105E+05	-0.382E+05	0.309E+02
	314.51	-0.850E+00	0.274E+01	-0.299E+04	-0.997E+04	0.103E+03
19	-24.62	-0.382E-01	-0.856E+01	-0.998E+04	-0.364E+05	-0.444E+02
	318.00	-0.686E+00	0.293E+01	-0.292E+04	-0.974E+04	-0.148E+03
20	0.00	-0.459E-01	-0.115E+02	-0.795E+04	-0.307E+05	-0.686E+02
	319.17	-0.681E+00	0.231E+01	0.285E+04	-0.950E+04	-0.228E+03
21	24.62	-0.596E-01	-0.128E+02	-0.645E+04	-0.268E+05	-0.382E+02
	318.00	-0.810E+00	-0.419E+01	-0.287E+04	-0.957E+04	-0.127E+03
22	49.02	-0.102E+00	-0.106E+02	-0.625E+04	-0.266E+05	-0.238E+02
	314.51	-0.105E+01	-0.356E+01	-0.297E+04	-0.988E+04	-0.791E+02
23	72.98	-0.192E+00	-0.956E+01	-0.574E+04	-0.255E+05	-0.574E+02
	308.74	-0.138E+01	-0.323E+01	-0.305E+04	-0.101E+05	-0.191E+03

24	96.30	-0.345E+00	-0.941E+01	-0.404E+04	-0.212E+05	-0.113E+03
	300.73	-0.178E+01	-0.313E+01	-0.312E+04	-0.104E+05	-0.376E+03
25	118.75	-0.562E+00	-0.109E+02	-0.800E+03	-0.128E+05	-0.158E+03
	290.56	-0.223E+01	-0.356E+01	-0.319E+04	-0.106E+05	-0.528E+03
26	140.14	-0.827E+00	-0.135E+02	0.326E+04	-0.196E+05	-0.160E+03
	278.31	-0.267E+01	-0.428E+01	-0.327E+04	-0.109E+05	-0.534E+03
27	160.27	-0.110E+01	-0.155E+02	0.676E+04	-0.293E+05	-0.115E+03
	264.09	-0.303E+01	-0.475E+01	-0.337E+04	-0.112E+05	-0.383E+03
28	178.98	-0.134E+01	-0.155E+02	0.875E+04	-0.350E+05	-0.557E+02
	248.04	-0.329E+01	-0.460E+01	-0.348E+04	-0.116E+05	-0.186E+03
29	196.08	-0.149E+01	-0.142E+02	0.945E+04	-0.372E+05	-0.214E+02
	230.29	-0.342E+01	-0.361E+01	-0.358E+04	-0.119E+05	-0.711E+02
30	211.44	-0.154E+01	-0.166E+02	0.981E+04	-0.384E+05	0.184E+02
	211.01	-0.345E+01	-0.350E+01	-0.367E+04	-0.122E+05	0.611E+02
31	224.90	-0.145E+01	-0.169E+02	0.859E+04	-0.354E+05	0.825E+02
	190.36	-0.338E+01	-0.243E+01	-0.375E+04	-0.125E+05	0.275E+03
32	236.35	-0.123E+01	-0.164E+02	0.581E+04	-0.282E+05	0.136E+03
	168.54	-0.325E+01	-0.157E+01	-0.381E+04	-0.127E+05	0.454E+03
33	245.70	-0.921E+00	-0.141E+02	0.194E+04	-0.180E+05	0.150E+03
	145.73	-0.311E+01	-0.817E+00	-0.385E+04	-0.128E+05	0.499E+03
34	252.84	-0.565E+00	-0.129E+02	-0.151E+04	-0.170E+05	0.117E+03
	122.14	-0.299E+01	-0.430E+00	-0.388E+04	-0.129E+05	0.390E+03
35	257.73	-0.220E+00	-0.130E+02	-0.375E+04	-0.230E+05	0.691E+02
	97.98	-0.291E+01	0.119E+00	-0.390E+04	-0.130E+05	0.230E+03
36	260.31	0.715E-01	-0.133E+02	-0.482E+04	-0.258E+05	0.254E+02
	73.47	-0.287E+01	0.826E+00	-0.389E+04	-0.130E+05	0.847E+02
37	260.57	0.288E+00	-0.126E+02	-0.490E+04	-0.260E+05	-0.228E+02
	48.82	-0.285E+01	0.103E+01	-0.387E+04	-0.129E+05	-0.760E+02
38	258.50	0.428E+00	-0.110E+02	-0.358E+04	-0.223E+05	-0.970E+02
	24.26	-0.286E+01	0.179E+01	-0.383E+04	-0.128E+05	-0.323E+03
39	254.12	0.514E+00	-0.944E+01	-0.123E-09	-0.126E+05	-0.189E+03
	0.00	-0.286E+01	0.254E+01	-0.378E+04	-0.126E+05	-0.628E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40578E-03	-0.40578E-03	.29390	0.00000
2	-0.71418E-03	-0.10819E-03	.51726	0.00000
3	-0.83016E-03	-0.35892E-06	.60126	0.00000
4	-0.82721E-03	-0.76453E-05	.59913	0.00000
5	-0.73782E-03	-0.97687E-04	.53439	0.00000
6	-0.54280E-03	-0.28843E-03	.39314	0.00000
7	-0.24001E-03	-0.58270E-03	.42204	0.00000
8	0.99624E-04	-0.90950E-03	.65873	0.00000
9	0.34939E-03	-0.11420E-02	.82713	0.00000

10	0.47990E-03	-0.12519E-02	.90675	0.00000
11	0.46960E-03	-0.12220E-02	.88505	0.00000
12	0.43578E-03	-0.11680E-02	.84594	0.00000
13	0.30163E-03	-0.10105E-02	.73188	0.00000
14	0.10060E-04	-0.69681E-03	.50469	0.00000
15	-0.37883E-03	-0.28907E-03	.27438	0.00000
16	-0.77221E-03	0.11995E-03	.55929	0.00000
17	-0.10730E-02	0.43409E-03	.77718	0.00000
18	-0.11973E-02	0.57137E-03	.86716	0.00000
19	-0.11425E-02	0.53141E-03	.82748	0.00000
20	-0.96429E-03	0.36654E-03	.69841	0.00000
21	-0.84106E-03	0.24077E-03	.60916	0.00000
22	-0.83372E-03	0.21398E-03	.60384	0.00000
23	-0.80002E-03	0.16345E-03	.57944	0.00000
24	-0.66441E-03	0.12962E-04	.48122	0.00000
25	-0.40023E-03	-0.26599E-03	.28987	0.00000
26	-0.67908E-04	-0.61560E-03	.44586	0.00000
27	0.21527E-03	-0.91960E-03	.66605	0.00000
28	0.37050E-03	-0.10975E-02	.79493	0.00000
29	0.41844E-03	-0.11662E-02	.84465	0.00000
30	0.43988E-03	-0.12063E-02	.87368	0.00000
31	0.32889E-03	-0.11119E-02	.80535	0.00000
32	0.89260E-04	-0.88518E-03	.64111	0.00000
33	-0.24017E-03	-0.56513E-03	.40931	0.00000
34	-0.53263E-03	-0.27895E-03	.38577	0.00000
35	-0.72197E-03	-0.92689E-04	.52291	0.00000
36	-0.81113E-03	-0.24668E-05	.58748	0.00000
37	-0.81571E-03	0.64350E-05	.59080	0.00000
38	-0.70114E-03	-0.10011E-03	.50782	0.00000
39	-0.39528E-03	-0.39528E-03	.28629	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32655	0.00000	0.10664
2	-0.33090	-0.17398	0.28348
3	-0.33418	-0.23824	0.34992
4	-0.33592	-0.23530	0.34815
5	-0.33619	-0.18379	0.29681
6	-0.33447	-0.07303	0.18490
7	-0.33104	0.09839	0.20797
8	-0.32587	0.28972	0.39592
9	-0.31893	0.42819	0.52990
10	-0.31065	0.49722	0.59372
11	-0.30274	0.48566	0.57731
12	-0.29462	0.46044	0.54724
13	-0.28523	0.37672	0.45808
14	-0.27633	0.20295	0.27931
15	-0.26875	-0.02577	0.09800
16	-0.26245	-0.25614	0.32502
17	-0.25710	-0.43270	0.49880
18	-0.25185	-0.50779	0.57122
19	-0.24589	-0.48059	0.54105
20	-0.24000	-0.38291	0.44051
21	-0.24154	-0.31060	0.36894
22	-0.24937	-0.30080	0.36298
23	-0.25614	-0.27662	0.34223
24	-0.26213	-0.19448	0.26319
25	-0.26807	-0.03854	0.11040
26	-0.27503	0.15724	0.23288
27	-0.28341	0.32583	0.40615
28	-0.29254	0.42148	0.50706
29	-0.30088	0.45496	0.54548
30	-0.30838	0.47262	0.56772
31	-0.31508	0.41367	0.51295
32	-0.32026	0.27977	0.38233
33	-0.32404	0.09330	0.19830
34	-0.32656	-0.07283	0.17947
35	-0.32780	-0.18067	0.28812
36	-0.32737	-0.23217	0.33934
37	-0.32563	-0.23604	0.34208
38	-0.32241	-0.17256	0.27650
39	-0.31810	0.00000	0.10119

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	13313.	30800.	0.432
BUCKLING THRUST (psi)	5	13313.	45158.	0.295
SEAM THRUST (psi)	5	13313.	23052.	0.578
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.594	1.000	0.594

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.58
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.12
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

8EAM OUTPUT FOR EV3 Y_{DL}=1.5, YDL= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 22	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.30$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-46.60	2.09	16.25
-258.503	24.256	-42.80	-27.17	-47.22	2.53	13.49
-260.573	48.818	-42.47	-26.96	-47.69	2.98	11.51
-260.315	73.465	-41.86	-26.58	-47.94	3.47	10.02
-257.731	97.978	-41.04	-26.06	-47.98	3.96	8.94
-252.844	122.138	-40.03	-25.42	-47.73	4.40	8.21
-245.697	145.727	-38.89	-24.69	-47.24	4.77	7.75
-236.355	168.537	-37.66	-23.91	-46.50	5.05	7.49
-224.901	190.363	-36.40	-23.11	-45.51	5.21	7.45
-211.437	211.009	-35.16	-22.32	-44.33	5.24	7.58
-196.083	230.292	-34.05	-21.62	-43.20	5.23	7.75
-178.978	248.039	-33.04	-20.98	-42.04	5.15	8.02
-160.273	264.092	-31.96	-20.29	-40.70	5.00	8.42
-140.136	278.307	-30.93	-19.64	-39.43	4.86	8.81
-118.747	290.557	-30.06	-19.09	-38.35	4.74	9.17
-96.296	300.732	-29.33	-18.62	-37.45	4.64	9.47
-72.985	308.742	-28.77	-18.27	-36.69	4.52	9.81
-49.022	314.515	-28.38	-18.02	-35.94	4.32	10.34
-24.621	318	-28.08	-17.83	-35.09	4.01	11.21
0	319.165	-27.95	-17.74	-34.25	3.60	12.49
24.621	318	-28.08	-17.83	-34.47	3.65	12.29
49.022	314.515	-28.37	-18.02	-35.59	4.12	10.84
72.985	308.742	-28.77	-18.27	-36.55	4.45	9.98
96.296	300.732	-29.34	-18.63	-37.41	4.61	9.54
118.747	290.557	-30.09	-19.11	-38.25	4.66	9.31
140.136	278.307	-30.98	-19.67	-39.25	4.73	9.05
160.273	264.092	-32.03	-20.34	-40.44	4.80	8.74
178.978	248.039	-33.14	-21.04	-41.75	4.92	8.37
196.083	230.292	-34.15	-21.68	-42.94	5.02	8.05
211.437	211.009	-35.23	-22.37	-44.01	5.01	7.91
224.901	190.363	-36.44	-23.14	-44.96	4.87	7.96
236.355	168.537	-37.70	-23.94	-45.70	4.57	8.28
245.697	145.727	-38.93	-24.72	-46.24	4.18	8.85
252.844	122.138	-40.08	-25.45	-46.60	3.73	9.68
257.731	97.978	-41.11	-26.10	-46.78	3.24	10.91
260.315	73.465	-41.94	-26.63	-46.72	2.73	12.73
260.573	48.818	-42.56	-27.02	-46.47	2.23	15.35
258.503	24.256	-42.88	-27.23	-46.01	1.79	19.04
254.123	0	-43.00	-27.30	-45.39	1.37	24.78

Thrust Load Rating= 7.45

BEAM OUTPUT FOR EV3 γ_{DL}=1.5, YDL= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 22	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.3
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.61	0.14	95.94
-260.573	48.818	-4.71	-2.99	-4.95	0.14	90.89
-260.315	73.465	-4.75	-3.01	-4.89	0.08	158.58
-257.731	97.978	-3.64	-2.31	-3.82	0.10	134.44
-252.844	122.138	-1.25	-0.79	-1.52	0.15	98.85
-245.697	145.727	2.29	1.45	2.04	0.14	101.48
-236.355	168.537	6.15	3.91	6.02	0.08	143.93
-224.901	190.363	9.07	5.76	8.89	0.10	92.06
-211.437	211.009	10.75	6.83	10.32	0.25	32.94
-196.083	230.292	10.78	6.84	10.08	0.40	20.38
-178.978	248.039	10.39	6.59	9.56	0.47	17.70
-160.273	264.092	9.01	5.72	7.82	0.68	13.77
-140.136	278.307	5.87	3.72	4.21	0.94	12.36
-118.747	290.557	1.56	0.99	-0.54	1.20	12.36
-96.296	300.732	-3.08	-1.96	-5.32	1.28	10.72
-72.985	308.742	-7.45	-4.73	-8.98	0.87	12.02
-49.022	314.515	-11.03	-7.00	-10.54	0.28	28.51
-24.621	318	-13.44	-8.54	-9.98	1.98	3.09
0	319.165	-14.24	-9.04	-7.95	3.59	1.54
24.621	318	-13.23	-8.40	-6.45	3.87	1.62
49.022	314.515	-10.64	-6.75	-6.25	2.51	3.26
72.985	308.742	-6.92	-4.39	-5.74	0.67	16.24
96.296	300.732	-2.45	-1.56	-4.04	0.91	15.63
118.747	290.557	2.20	1.39	-0.80	1.71	8.39
140.136	278.307	6.40	4.06	3.26	1.79	6.29
160.273	264.092	9.37	5.95	6.76	1.49	6.13
178.978	248.039	10.35	6.57	8.75	0.91	9.19
196.083	230.292	10.37	6.59	9.45	0.53	15.80
211.437	211.009	10.18	6.47	9.81	0.21	40.10
224.901	190.363	8.61	5.47	8.59	0.01	699.55
236.355	168.537	5.87	3.73	5.81	0.03	348.37
245.697	145.727	2.15	1.37	1.94	0.12	116.03
252.844	122.138	-1.28	-0.81	-1.51	0.13	114.77
257.731	97.978	-3.62	-2.30	-3.75	0.07	181.90
260.315	73.465	-4.74	-3.01	-4.82	0.05	264.75
260.573	48.818	-4.74	-3.01	-4.90	0.09	136.39
258.503	24.256	-3.43	-2.18	-3.58	0.09	150.40
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 1.54

Actual Load Rating (from CANDE) 1.54

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage EV3-OPR

LIVE LOADS X 1.54
EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000
FULL PLASTIC PENETRATION.....	0.90000
ALLOWABLE % DEFLECTION (SERVICE)...	5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -171.8	F = 0.000
1142	22	F = 0.000	F = -171.8	F = 0.000
1143	21	F = 0.000	F = -171.8	F = 0.000
1143	22	F = 0.000	F = -171.8	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000
856	1	D = 0.000	F = 0.000	D = 0.000
857	1	D = 0.000	F = 0.000	D = 0.000
858	1	D = 0.000	F = 0.000	D = 0.000
859	1	D = 0.000	F = 0.000	D = 0.000

860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1137	21	F =	0.000	F =	-133.0	F =	0.000
1137	22	F =	0.000	F =	-133.0	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)---------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25

27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.300	Factor for load step #21
22	1.300	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.526E+00 -0.292E+01	-0.984E+01 -0.291E+01	0.122E-10 -0.392E+04	-0.130E+05 -0.130E+05	0.192E+03 0.638E+03
2	-258.50 24.26	-0.440E+00 -0.291E+01	-0.115E+02 -0.220E+01	-0.365E+04 -0.398E+04	-0.230E+05 -0.132E+05	0.983E+02 0.327E+03
3	-260.57 48.82	-0.299E+00 -0.291E+01	-0.131E+02 -0.149E+01	-0.499E+04 -0.403E+04	-0.267E+05 -0.134E+05	0.229E+02 0.763E+02
4	-260.31 73.47	-0.796E-01 -0.292E+01	-0.139E+02 -0.123E+01	-0.490E+04 -0.406E+04	-0.266E+05 -0.135E+05	-0.257E+02 -0.856E+02
5	-257.73 97.98	0.216E+00 -0.297E+01	-0.136E+02 -0.391E+00	-0.383E+04 -0.407E+04	-0.238E+05 -0.136E+05	-0.704E+02 -0.234E+03
6	-252.84 122.14	0.566E+00 -0.305E+01	-0.135E+02 0.391E+00	-0.154E+04 -0.406E+04	-0.176E+05 -0.135E+05	-0.121E+03 -0.402E+03
7	-245.70 145.73	0.927E+00 -0.317E+01	-0.147E+02 0.100E+01	0.203E+04 -0.403E+04	-0.188E+05 -0.134E+05	-0.155E+03 -0.517E+03
8	-236.35 168.54	0.124E+01 -0.332E+01	-0.170E+02 0.207E+01	0.604E+04 -0.397E+04	-0.294E+05 -0.132E+05	-0.141E+03 -0.470E+03
9	-224.90 190.36	0.146E+01 -0.344E+01	-0.173E+02 0.313E+01	0.892E+04 -0.390E+04	-0.368E+05 -0.130E+05	-0.881E+02 -0.293E+03
10	-211.44 211.01	0.154E+01 -0.351E+01	-0.174E+02 0.405E+01	0.103E+05 -0.380E+04	-0.402E+05 -0.127E+05	-0.227E+02 -0.757E+02
11	-196.08	0.148E+01	-0.146E+02	0.100E+05	-0.391E+05	0.182E+02

	230.29	-0.348E+01	0.332E+01	-0.371E+04	-0.123E+05	0.607E+02
12	-178.98	0.131E+01	-0.160E+02	0.942E+04	-0.372E+05	0.509E+02
	248.04	-0.333E+01	0.474E+01	-0.361E+04	-0.120E+05	0.170E+03
13	-160.27	0.105E+01	-0.165E+02	0.754E+04	-0.318E+05	0.116E+03
	264.09	-0.304E+01	0.508E+01	-0.350E+04	-0.116E+05	0.388E+03
14	-140.14	0.754E+00	-0.148E+02	0.381E+04	-0.215E+05	0.179E+03
	278.31	-0.264E+01	0.472E+01	-0.339E+04	-0.113E+05	0.595E+03
15	-118.75	0.461E+00	-0.126E+02	-0.102E+04	-0.137E+05	0.203E+03
	290.56	-0.216E+01	0.415E+01	-0.329E+04	-0.110E+05	0.677E+03
16	-96.30	0.222E+00	-0.103E+02	-0.583E+04	-0.263E+05	0.180E+03
	300.73	-0.167E+01	0.345E+01	-0.322E+04	-0.107E+05	0.599E+03
17	-72.98	0.638E-01	-0.810E+01	-0.935E+04	-0.355E+05	0.107E+03
	308.74	-0.125E+01	0.280E+01	-0.315E+04	-0.105E+05	0.357E+03
18	-49.02	-0.169E-01	-0.792E+01	-0.105E+05	-0.382E+05	0.114E+02
	314.51	-0.954E+00	0.277E+01	-0.309E+04	-0.103E+05	0.381E+02
19	-24.62	-0.441E-01	-0.884E+01	-0.925E+04	-0.348E+05	-0.686E+02
	318.00	-0.821E+00	0.302E+01	-0.302E+04	-0.100E+05	-0.229E+03
20	0.00	-0.511E-01	-0.127E+02	-0.656E+04	-0.273E+05	-0.827E+02
	319.17	-0.836E+00	0.301E+01	-0.293E+04	-0.977E+04	-0.275E+03
21	24.62	-0.649E-01	-0.142E+02	-0.499E+04	-0.232E+05	-0.271E+02
	318.00	-0.962E+00	-0.461E+01	-0.295E+04	-0.982E+04	-0.902E+02
22	49.02	-0.104E+00	-0.110E+02	-0.546E+04	-0.248E+05	0.194E+01
	314.51	-0.117E+01	-0.367E+01	-0.305E+04	-0.102E+05	0.648E+01
23	72.98	-0.185E+00	-0.971E+01	-0.568E+04	-0.256E+05	-0.336E+02
	308.74	-0.147E+01	-0.328E+01	-0.314E+04	-0.104E+05	-0.112E+03
24	96.30	-0.325E+00	-0.915E+01	-0.459E+04	-0.229E+05	-0.991E+02
	300.73	-0.184E+01	-0.305E+01	-0.321E+04	-0.107E+05	-0.330E+03
25	118.75	-0.529E+00	-0.108E+02	-0.157E+04	-0.151E+05	-0.158E+03
	290.56	-0.226E+01	-0.351E+01	-0.328E+04	-0.109E+05	-0.527E+03
26	140.14	-0.785E+00	-0.137E+02	0.261E+04	-0.182E+05	-0.169E+03
	278.31	-0.268E+01	-0.434E+01	-0.336E+04	-0.112E+05	-0.562E+03
27	160.27	-0.105E+01	-0.158E+02	0.636E+04	-0.285E+05	-0.125E+03
	264.09	-0.304E+01	-0.487E+01	-0.346E+04	-0.115E+05	-0.417E+03
28	178.98	-0.129E+01	-0.161E+02	0.859E+04	-0.349E+05	0.628E+02
	248.04	-0.329E+01	-0.478E+01	-0.357E+04	-0.119E+05	-0.209E+03
29	196.08	-0.144E+01	-0.147E+02	0.939E+04	-0.374E+05	-0.244E+02
	230.29	-0.343E+01	-0.385E+01	-0.368E+04	-0.122E+05	-0.812E+02
30	211.44	-0.149E+01	-0.171E+02	0.981E+04	-0.388E+05	0.171E+02
	211.01	-0.345E+01	-0.340E+01	-0.377E+04	-0.125E+05	0.571E+02
31	224.90	-0.141E+01	-0.173E+02	0.861E+04	-0.358E+05	0.825E+02
	190.36	-0.339E+01	-0.218E+01	-0.384E+04	-0.128E+05	0.275E+03

32	236.35	-0.119E+01	-0.167E+02	0.582E+04	-0.285E+05	0.137E+03
	168.54	-0.326E+01	-0.123E+01	-0.390E+04	-0.130E+05	0.457E+03
33	245.70	-0.884E+00	-0.143E+02	0.192E+04	-0.182E+05	0.151E+03
	145.73	-0.312E+01	-0.439E+00	-0.393E+04	-0.131E+05	0.503E+03
34	252.84	-0.530E+00	-0.131E+02	-0.154E+04	-0.173E+05	0.117E+03
	122.14	-0.300E+01	-0.380E-01	-0.395E+04	-0.132E+05	0.391E+03
35	257.73	-0.189E+00	-0.133E+02	-0.377E+04	-0.233E+05	0.692E+02
	97.98	-0.292E+01	0.544E+00	-0.396E+04	-0.132E+05	0.230E+03
36	260.31	0.997E-01	-0.135E+02	-0.484E+04	-0.261E+05	0.261E+02
	73.47	-0.288E+01	0.127E+01	-0.394E+04	-0.131E+05	0.868E+02
37	260.57	0.313E+00	-0.127E+02	-0.493E+04	-0.262E+05	-0.224E+02
	48.82	-0.286E+01	0.146E+01	-0.391E+04	-0.130E+05	-0.745E+02
38	258.50	0.448E+00	-0.111E+02	-0.361E+04	-0.225E+05	-0.973E+02
	24.26	-0.287E+01	0.216E+01	-0.386E+04	-0.129E+05	-0.324E+03
39	254.12	0.530E+00	-0.950E+01	-0.118E-09	-0.127E+05	-0.190E+03
	0.00	-0.287E+01	0.287E+01	-0.380E+04	-0.127E+05	-0.631E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40909E-03	-0.40909E-03	.29630	0.00000
2	-0.72141E-03	-0.10961E-03	.52250	0.00000
3	-0.83881E-03	-0.24749E-05	.60753	0.00000
4	-0.83523E-03	-0.12595E-04	.60494	0.00000
5	-0.74682E-03	-0.10380E-03	.54090	0.00000
6	-0.55318E-03	-0.29511E-03	.40066	0.00000
7	-0.25020E-03	-0.59134E-03	.42830	0.00000
8	0.91189E-04	-0.92149E-03	.66741	0.00000
9	0.34113E-03	-0.11554E-02	.83682	0.00000
10	0.46857E-03	-0.12629E-02	.91467	0.00000
11	0.45125E-03	-0.12262E-02	.88808	0.00000
12	0.41256E-03	-0.11671E-02	.84527	0.00000
13	0.26694E-03	-0.99748E-03	.72245	0.00000
14	-0.34449E-04	-0.67348E-03	.48779	0.00000
15	-0.43004E-03	-0.25857E-03	.31147	0.00000
16	-0.82500E-03	0.15238E-03	.59753	0.00000
17	-0.11139E-02	0.45471E-03	.80676	0.00000
18	-0.11998E-02	0.55388E-03	.86897	0.00000
19	-0.10907E-02	0.46037E-03	.78998	0.00000
20	-0.85614E-03	0.24156E-03	.62008	0.00000
21	-0.72670E-03	0.11035E-03	.52633	0.00000
22	-0.77686E-03	0.13935E-03	.56266	0.00000
23	-0.80418E-03	0.14894E-03	.58245	0.00000
24	-0.71986E-03	0.49459E-04	.52137	0.00000
25	-0.47382E-03	-0.21112E-03	.34318	0.00000
26	-0.13193E-03	-0.57023E-03	.41301	0.00000
27	0.17171E-03	-0.89496E-03	.64819	0.00000
28	0.34708E-03	-0.10936E-02	.79208	0.00000
29	0.40384E-03	-0.11721E-02	.84891	0.00000
30	0.42940E-03	-0.12166E-02	.88115	0.00000
31	0.32079E-03	-0.11237E-02	.81389	0.00000
32	0.80921E-04	-0.89520E-03	.64837	0.00000
33	-0.25009E-03	-0.57174E-03	.41410	0.00000
34	-0.54206E-03	-0.28407E-03	.39260	0.00000
35	-0.72958E-03	-0.97519E-04	.52842	0.00000
36	-0.81763E-03	-0.61595E-05	.59219	0.00000
37	-0.82230E-03	0.50708E-05	.59557	0.00000
38	-0.70596E-03	-0.10118E-03	.51131	0.00000
39	-0.39725E-03	-0.39725E-03	.28772	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32922	0.00000	0.10838
2	-0.33438	-0.17565	0.28746
3	-0.33851	-0.24012	0.35471
4	-0.34114	-0.23618	0.35256
5	-0.34227	-0.18461	0.30176
6	-0.34133	-0.07409	0.19060
7	-0.33862	0.09794	0.21261
8	-0.33409	0.29074	0.40236
9	-0.32764	0.42966	0.53700
10	-0.31960	0.49710	0.59925
11	-0.31181	0.48159	0.57881
12	-0.30359	0.45351	0.54568
13	-0.29395	0.36302	0.44943
14	-0.28485	0.18347	0.26461
15	-0.27708	-0.04923	0.12600
16	-0.27065	-0.28061	0.35386
17	-0.26524	-0.45035	0.52070
18	-0.25989	-0.50348	0.57102
19	-0.25363	-0.44532	0.50965
20	-0.24677	-0.31598	0.37687
21	-0.24800	-0.24032	0.30183
22	-0.25652	-0.26305	0.32885
23	-0.26365	-0.27364	0.34316
24	-0.26975	-0.22087	0.29364
25	-0.27560	-0.07542	0.15138
26	-0.28253	0.12584	0.20566
27	-0.29102	0.30624	0.39093
28	-0.30039	0.41363	0.50386
29	-0.30912	0.45245	0.54801
30	-0.31675	0.47257	0.57290
31	-0.32308	0.41473	0.51911
32	-0.32765	0.28025	0.38760
33	-0.33068	0.09235	0.20170
34	-0.33241	-0.07407	0.18457
35	-0.33281	-0.18147	0.29223
36	-0.33147	-0.23298	0.34285
37	-0.32883	-0.23754	0.34567
38	-0.32477	-0.17364	0.27911
39	-0.31968	0.00000	0.10220

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	13554.	30800.	0.440
BUCKLING THRUST (psi)	5	13554.	46068.	0.294
SEAM THRUST (psi)	5	13554.	23052.	0.588
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.599	1.000	0.599

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

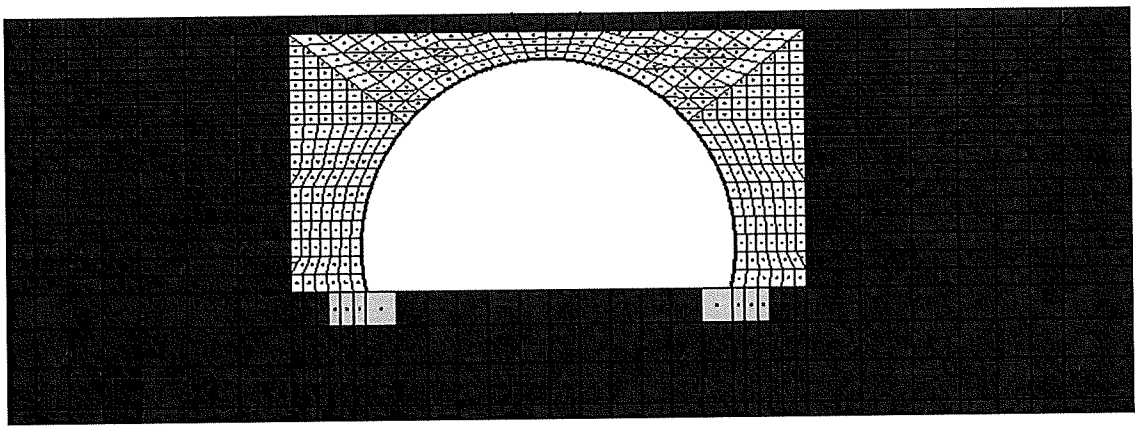
PERCENT VERTICAL DEFLECTION (%)..... 0.50

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.10

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage PERMIT

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -77.96	F = 0.000
1142	22	F = 0.000	F = -77.96	F = 0.000
1143	21	F = 0.000	F = -77.96	F = 0.000
1143	22	F = 0.000	F = -77.96	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000

724	1	D =	0.000	D =	0.000	D =	0.000
761	1	D =	0.000	D =	0.000	D =	0.000
786	1	D =	0.000	D =	0.000	D =	0.000
811	1	D =	0.000	D =	0.000	D =	0.000
836	1	D =	0.000	D =	0.000	D =	0.000
861	1	D =	0.000	D =	0.000	D =	0.000
886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1132	21	F =	0.000	F =	-89.94	F =	0.000
1132	22	F =	0.000	F =	-89.94	F =	0.000
1141	21	F =	0.000	F =	-77.96	F =	0.000
1141	22	F =	0.000	F =	-77.96	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP

1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21
22	1.750	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12	-0.482E+00	-0.973E+01	0.106E-09	-0.129E+05	0.188E+03
	0.00	-0.290E+01	-0.197E+01	-0.386E+04	-0.129E+05	0.627E+03

2	-258.50	-0.385E+00	-0.112E+02	-0.357E+04	-0.225E+05	0.972E+02
	24.26	-0.289E+01	-0.108E+01	-0.389E+04	-0.130E+05	0.324E+03
3	-260.57	-0.234E+00	-0.128E+02	-0.489E+04	-0.261E+05	0.239E+02
	48.82	-0.289E+01	-0.204E+00	-0.391E+04	-0.130E+05	0.796E+02
4	-260.31	-0.509E-02	-0.133E+02	-0.484E+04	-0.260E+05	-0.248E+02
	73.47	-0.290E+01	0.121E+00	-0.391E+04	-0.130E+05	-0.827E+02
5	-257.73	0.298E+00	-0.129E+02	-0.374E+04	-0.230E+05	-0.711E+02
	97.98	-0.295E+01	0.835E+00	-0.389E+04	-0.130E+05	-0.237E+03
6	-252.84	0.654E+00	-0.127E+02	-0.140E+04	-0.166E+05	-0.122E+03
	122.14	-0.303E+01	0.133E+01	-0.386E+04	-0.128E+05	-0.405E+03
7	-245.70	0.102E+01	-0.138E+02	0.218E+04	-0.185E+05	-0.156E+03
	145.73	-0.316E+01	0.155E+01	-0.380E+04	-0.127E+05	-0.519E+03
8	-236.35	0.134E+01	-0.160E+02	0.622E+04	-0.291E+05	-0.144E+03
	168.54	-0.330E+01	0.202E+01	-0.374E+04	-0.125E+05	-0.479E+03
9	-224.90	0.155E+01	-0.166E+02	0.922E+04	-0.369E+05	-0.914E+02
	190.36	-0.342E+01	0.256E+01	-0.368E+04	-0.122E+05	-0.304E+03
10	-211.44	0.163E+01	-0.169E+02	0.107E+05	-0.405E+05	-0.205E+02
	211.01	-0.349E+01	0.351E+01	-0.359E+04	-0.120E+05	-0.683E+02
11	-196.08	0.156E+01	-0.142E+02	0.102E+05	-0.389E+05	0.279E+02
	230.29	-0.345E+01	0.265E+01	-0.352E+04	-0.117E+05	0.930E+02
12	-178.98	0.138E+01	-0.154E+02	0.924E+04	-0.362E+05	0.648E+02
	248.04	-0.329E+01	0.403E+01	-0.344E+04	-0.114E+05	0.216E+03
13	-160.27	0.112E+01	-0.154E+02	0.699E+04	-0.298E+05	0.125E+03
	264.09	-0.299E+01	0.475E+01	-0.334E+04	-0.111E+05	0.417E+03
14	-140.14	0.814E+00	-0.136E+02	0.317E+04	-0.193E+05	0.173E+03
	278.31	-0.259E+01	0.432E+01	-0.324E+04	-0.108E+05	0.576E+03
15	-118.75	0.525E+00	-0.111E+02	-0.130E+04	-0.140E+05	0.176E+03
	290.56	-0.211E+01	0.364E+01	-0.315E+04	-0.105E+05	0.587E+03
16	-96.30	0.291E+00	-0.947E+01	-0.513E+04	-0.240E+05	0.137E+03
	300.73	-0.163E+01	0.318E+01	-0.308E+04	-0.103E+05	0.455E+03
17	-72.98	0.132E+00	-0.896E+01	-0.753E+04	-0.302E+05	0.775E+02
	308.74	-0.121E+01	0.306E+01	-0.302E+04	-0.100E+05	0.258E+03
18	-49.02	0.443E-01	-0.953E+01	-0.839E+04	-0.322E+05	0.258E+02
	314.51	-0.884E+00	0.325E+01	-0.294E+04	-0.980E+04	0.859E+02
19	-24.62	0.835E-02	-0.105E+02	-0.832E+04	-0.318E+05	0.762E+00
	318.00	-0.691E+00	0.350E+01	-0.286E+04	-0.953E+04	0.254E+01
20	0.00	-0.174E-02	-0.106E+02	-0.816E+04	-0.312E+05	-0.555E+01
	319.17	-0.634E+00	-0.742E-01	-0.282E+04	-0.938E+04	-0.185E+02
21	24.62	-0.128E-01	-0.107E+02	-0.806E+04	-0.311E+05	-0.973E+01
	318.00	-0.711E+00	-0.356E+01	-0.286E+04	-0.953E+04	-0.324E+02

22	49.02	-0.512E-01	-0.962E+01	-0.798E+04	-0.311E+05	-0.317E+02
	314.51	-0.920E+00	-0.327E+01	-0.294E+04	-0.981E+04	-0.105E+03
23	72.98	-0.141E+00	-0.904E+01	-0.700E+04	-0.288E+05	-0.815E+02
	308.74	-0.125E+01	-0.307E+01	-0.302E+04	-0.101E+05	-0.271E+03
24	96.30	-0.300E+00	-0.961E+01	-0.454E+04	-0.224E+05	-0.138E+03
	300.73	-0.168E+01	-0.321E+01	-0.309E+04	-0.103E+05	-0.460E+03
25	118.75	-0.530E+00	-0.113E+02	-0.727E+03	-0.125E+05	-0.174E+03
	290.56	-0.215E+01	-0.368E+01	-0.316E+04	-0.105E+05	-0.579E+03
26	140.14	-0.810E+00	-0.137E+02	0.363E+04	-0.205E+05	-0.167E+03
	278.31	-0.261E+01	-0.434E+01	-0.324E+04	-0.108E+05	-0.556E+03
27	160.27	-0.110E+01	-0.157E+02	0.725E+04	-0.305E+05	-0.114E+03
	264.09	-0.300E+01	-0.482E+01	-0.334E+04	-0.111E+05	-0.380E+03
28	178.98	-0.134E+01	-0.154E+02	0.913E+04	-0.359E+05	-0.498E+02
	248.04	-0.326E+01	-0.429E+01	-0.345E+04	-0.115E+05	-0.166E+03
29	196.08	-0.150E+01	-0.139E+02	0.968E+04	-0.376E+05	-0.171E+02
	230.29	-0.341E+01	-0.258E+01	-0.353E+04	-0.118E+05	-0.570E+02
30	211.44	-0.155E+01	-0.165E+02	0.100E+05	-0.388E+05	0.215E+02
	211.01	-0.343E+01	-0.326E+01	-0.361E+04	-0.120E+05	0.716E+02
31	224.90	-0.147E+01	-0.166E+02	0.868E+04	-0.355E+05	0.860E+02
	190.36	-0.336E+01	-0.221E+01	-0.368E+04	-0.123E+05	0.287E+03
32	236.35	-0.125E+01	-0.160E+02	0.583E+04	-0.280E+05	0.138E+03
	168.54	-0.324E+01	-0.151E+01	-0.374E+04	-0.124E+05	0.458E+03
33	245.70	-0.939E+00	-0.138E+02	0.196E+04	-0.178E+05	0.150E+03
	145.73	-0.310E+01	-0.895E+00	-0.378E+04	-0.126E+05	0.499E+03
34	252.84	-0.582E+00	-0.127E+02	-0.148E+04	-0.167E+05	0.117E+03
	122.14	-0.298E+01	-0.581E+00	-0.382E+04	-0.127E+05	0.389E+03
35	257.73	-0.236E+00	-0.128E+02	-0.372E+04	-0.227E+05	0.691E+02
	97.98	-0.289E+01	-0.934E-01	-0.384E+04	-0.128E+05	0.230E+03
36	260.31	0.578E-01	-0.131E+02	-0.480E+04	-0.256E+05	0.251E+02
	73.47	-0.285E+01	0.560E+00	-0.384E+04	-0.128E+05	0.835E+02
37	260.57	0.277E+00	-0.124E+02	-0.486E+04	-0.257E+05	-0.232E+02
	48.82	-0.284E+01	0.750E+00	-0.382E+04	-0.127E+05	-0.774E+02
38	258.50	0.419E+00	-0.109E+02	-0.355E+04	-0.221E+05	-0.965E+02
	24.26	-0.284E+01	0.152E+01	-0.379E+04	-0.126E+05	-0.321E+03
39	254.12	0.508E+00	-0.937E+01	-0.149E-09	-0.125E+05	-0.187E+03
	0.00	-0.285E+01	0.229E+01	-0.375E+04	-0.125E+05	-0.623E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40331E-03	-0.40331E-03	.29211	0.00000

2	-0.70641E-03	-0.10729E-03	.51164	0.00000
3	-0.81901E-03	0.12247E-05	.59319	0.00000
4	-0.81458E-03	-0.29739E-05	.58998	0.00000
5	-0.72094E-03	-0.92764E-04	.52216	0.00000
6	-0.52066E-03	-0.28511E-03	.37710	0.00000
7	-0.21471E-03	-0.58046E-03	.42041	0.00000
8	0.13017E-03	-0.91275E-03	.66108	0.00000
9	0.38904E-03	-0.11571E-02	.83805	0.00000
10	0.51872E-03	-0.12696E-02	.91957	0.00000
11	0.48540E-03	-0.12202E-02	.88374	0.00000
12	0.41634E-03	-0.11345E-02	.82169	0.00000
13	0.23755E-03	-0.93466E-03	.67695	0.00000
14	-0.71929E-04	-0.60448E-03	.43781	0.00000
15	-0.43885E-03	-0.22028E-03	.31785	0.00000
16	-0.75277E-03	0.10830E-03	.54521	0.00000
17	-0.94665E-03	0.31628E-03	.68563	0.00000
18	-0.10116E-02	0.39655E-03	.73266	0.00000
19	-0.99683E-03	0.39901E-03	.72198	0.00000
20	-0.97811E-03	0.38790E-03	.70842	0.00000
21	-0.97501E-03	0.37685E-03	.70617	0.00000
22	-0.97668E-03	0.36126E-03	.70739	0.00000
23	-0.90263E-03	0.27187E-03	.65375	0.00000
24	-0.70329E-03	0.58354E-04	.50937	0.00000
25	-0.39084E-03	-0.26895E-03	.28308	0.00000
26	-0.33985E-04	-0.64334E-03	.46596	0.00000
27	0.25870E-03	-0.95714E-03	.69323	0.00000
28	0.40584E-03	-0.11264E-02	.81586	0.00000
29	0.44298E-03	-0.11809E-02	.85533	0.00000
30	0.46303E-03	-0.12165E-02	.88106	0.00000
31	0.34355E-03	-0.11125E-02	.80578	0.00000
32	0.98722E-04	-0.87990E-03	.63729	0.00000
33	-0.23093E-03	-0.55970E-03	.40538	0.00000
34	-0.52290E-03	-0.27460E-03	.37872	0.00000
35	-0.71310E-03	-0.88400E-04	.51648	0.00000
36	-0.80311E-03	0.14438E-05	.58167	0.00000
37	-0.80734E-03	0.85960E-05	.58474	0.00000
38	-0.69370E-03	-0.98441E-04	.50243	0.00000
39	-0.39141E-03	-0.39141E-03	.28349	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32457	0.00000	0.10534
2	-0.32741	-0.17201	0.27921
3	-0.32906	-0.23549	0.34377
4	-0.32896	-0.23302	0.34123
5	-0.32741	-0.18035	0.28755
6	-0.32422	-0.06763	0.17275
7	-0.31996	0.10501	0.20738
8	-0.31489	0.29943	0.39858
9	-0.30904	0.44390	0.53941
10	-0.30215	0.51345	0.60474
11	-0.29566	0.48968	0.57709
12	-0.28897	0.44525	0.52876
13	-0.28050	0.33655	0.41523
14	-0.27217	0.15290	0.22698
15	-0.26522	-0.06275	0.13309
16	-0.25932	-0.24722	0.31446
17	-0.25364	-0.36259	0.42693
18	-0.24747	-0.40428	0.46552
19	-0.24055	0.40075	0.45861
20	-0.23696	-0.39301	0.44916
21	-0.24068	-0.38812	0.44605
22	-0.24763	-0.38413	0.44545
23	-0.25380	-0.33720	0.40162
24	-0.25950	-0.21867	0.28601
25	-0.26548	-0.03500	0.10548
26	-0.27254	0.17495	0.24923
27	-0.28104	0.34907	0.42805
28	-0.28995	0.43993	0.52400
29	-0.29694	0.46624	0.55441
30	-0.30316	0.48219	0.57410
31	-0.30942	0.41805	0.51379
32	-0.31433	0.28097	0.37977
33	-0.31813	0.09439	0.19560

34	-0.32089	-0.07129	0.17426
35	-0.32251	-0.17935	0.28336
36	-0.32257	-0.23099	0.33504
37	-0.32140	-0.23426	0.33755
38	-0.31874	-0.17090	0.27250
39	-0.31499	0.00000	0.09922

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	3	13031.	30800.	0.423
BUCKLING THRUST (psi)	3	13031.	45131.	0.289
SEAM THRUST (psi)	3	13031.	23052.	0.565
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.605	1.000	0.605

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.58
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.12
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

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8EAM OUTPUT FOR PERMIT

Y_{DL}=1.5, YDL= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 22	$(T_{DL,LLfac}-T_{DLfac})/1.75$	$(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.30$
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-46.32	1.93	17.61
-258.503	24.256	-42.80	-27.17	-46.72	2.24	15.20
-260.573	48.818	-42.47	-26.96	-46.96	2.57	13.38
-260.315	73.465	-41.86	-26.58	-46.94	2.91	11.97
-257.731	97.978	-41.04	-26.06	-46.72	3.24	10.91
-252.844	122.138	-40.03	-25.42	-46.27	3.56	10.14
-245.697	145.727	-38.89	-24.69	-45.66	3.87	9.56
-236.355	168.537	-37.66	-23.91	-44.94	4.16	9.11
-224.901	190.363	-36.40	-23.11	-44.10	4.40	8.81
-211.437	211.009	-35.16	-22.32	-43.12	4.55	8.73
-196.083	230.292	-34.05	-21.62	-42.19	4.65	8.71
-178.978	248.039	-33.04	-20.98	-41.24	4.69	8.81
-160.273	264.092	-31.96	-20.29	-40.03	4.61	9.12
-140.136	278.307	-30.93	-19.64	-38.84	4.52	9.47
-118.747	290.557	-30.06	-19.09	-37.85	4.45	9.76
-96.296	300.732	-29.33	-18.62	-37.01	4.39	10.02
-72.985	308.742	-28.77	-18.27	-36.20	4.24	10.46
-49.022	314.515	-28.38	-18.02	-35.31	3.96	11.28
-24.621	318	-28.08	-17.83	-34.33	3.57	12.57
0	319.165	-27.95	-17.74	-33.81	3.35	13.41
24.621	318	-28.08	-17.83	-34.35	3.58	12.53
49.022	314.515	-28.37	-18.02	-35.34	3.98	11.23
72.985	308.742	-28.77	-18.27	-36.22	4.25	10.43
96.296	300.732	-29.34	-18.63	-37.03	4.39	10.01
118.747	290.557	-30.09	-19.11	-37.89	4.45	9.75
140.136	278.307	-30.98	-19.67	-38.89	4.52	9.46
160.273	264.092	-32.03	-20.34	-40.10	4.61	9.11
178.978	248.039	-33.14	-21.04	-41.38	4.71	8.75
196.083	230.292	-34.15	-21.68	-42.37	4.70	8.60
211.437	211.009	-35.23	-22.37	-43.26	4.59	8.64
224.901	190.363	-36.44	-23.14	-44.15	4.41	8.80
236.355	168.537	-37.70	-23.94	-44.86	4.09	9.26
245.697	145.727	-38.93	-24.72	-45.40	3.69	10.00
252.844	122.138	-40.08	-25.45	-45.79	3.27	11.06
257.731	97.978	-41.11	-26.10	-46.02	2.81	12.59
260.315	73.465	-41.94	-26.63	-46.03	2.34	14.86
260.573	48.818	-42.56	-27.02	-45.86	1.89	18.15
258.503	24.256	-42.88	-27.23	-45.48	1.49	22.87
254.123	0	-43.00	-27.30	-44.95	1.12	30.42

Thrust Load Rating= 8.60

BEAM OUTPUT FOR PERMIT

γ_{DL}=1.5, YDL= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 22	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.3
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.57	0.12	115.08
-260.573	48.818	-4.71	-2.99	-4.89	0.11	119.03
-260.315	73.465	-4.75	-3.01	-4.84	0.05	241.77
-257.731	97.978	-3.64	-2.31	-3.74	0.06	228.53
-252.844	122.138	-1.25	-0.79	-1.40	0.09	170.66
-245.697	145.727	2.29	1.45	2.18	0.06	229.41
-236.355	168.537	6.15	3.91	6.22	0.04	323.12
-224.901	190.363	9.07	5.76	9.22	0.09	109.66
-211.437	211.009	10.75	6.83	10.66	0.05	152.14
-196.083	230.292	10.78	6.84	10.17	0.35	23.16
-178.978	248.039	10.39	6.59	9.24	0.65	12.81
-160.273	264.092	9.01	5.72	6.99	1.16	8.10
-140.136	278.307	5.87	3.72	3.17	1.54	7.59
-118.747	290.557	1.56	0.99	-1.30	1.64	9.05
-96.296	300.732	-3.08	-1.96	-5.13	1.17	11.69
-72.985	308.742	-7.45	-4.73	-7.53	0.04	245.49
-49.022	314.515	-11.03	-7.00	-8.39	1.50	5.24
-24.621	318	-13.44	-8.54	-8.32	2.93	2.09
0	319.165	-14.24	-9.04	-8.16	3.47	1.60
24.621	318	-13.23	-8.40	-8.06	2.95	2.13
49.022	314.515	-10.64	-6.75	-7.98	1.52	5.38
72.985	308.742	-6.92	-4.39	-7.00	0.05	230.39
96.296	300.732	-2.45	-1.56	-4.54	1.19	11.87
118.747	290.557	2.20	1.39	-0.73	1.67	8.60
140.136	278.307	6.40	4.06	3.63	1.58	7.13
160.273	264.092	9.37	5.95	7.25	1.21	7.53
178.978	248.039	10.35	6.57	9.13	0.69	12.08
196.083	230.292	10.37	6.59	9.68	0.40	21.14
211.437	211.009	10.18	6.47	10.01	0.10	86.29
224.901	190.363	8.61	5.47	8.68	0.04	253.49
236.355	168.537	5.87	3.73	5.83	0.02	605.82
245.697	145.727	2.15	1.37	1.96	0.11	129.58
252.844	122.138	-1.28	-0.81	-1.48	0.11	133.41
257.731	97.978	-3.62	-2.30	-3.72	0.06	231.13
260.315	73.465	-4.74	-3.01	-4.80	0.03	376.20
260.573	48.818	-4.74	-3.01	-4.86	0.07	177.27
258.503	24.256	-3.43	-2.18	-3.55	0.07	192.73
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 1.60

Actual Load Rating (from CANDE) 1.60

WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage PERMIT
LIVE LOADS MULTIPLIED BY 1.60

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -124.7	F = 0.000
1142	22	F = 0.000	F = -124.7	F = 0.000
1143	21	F = 0.000	F = -124.7	F = 0.000
1143	22	F = 0.000	F = -124.7	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000

856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1132	21	F =	0.000	F =	-143.9	F =	0.000
1132	22	F =	0.000	F =	-143.9	F =	0.000
1141	21	F =	0.000	F =	-124.7	F =	0.000
1141	22	F =	0.000	F =	-124.7	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...

THE NUMBER OF DATA ERRORS IS----------	0
THE NUMBER OF SOIL MATERIALS IS--------	4
THE NUMBER OF PIPE-TYPE GROUPS IS------	1
THE NUMBER OF INTERFACE MATERIALS IS---	37
BAND WIDTH ESTIMATE (MAX)----------	2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19

21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000

35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.300	Factor for load step #21
22	1.300	Factor for load step #22

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STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.498E+00 -0.292E+01	-0.980E+01 -0.231E+01	0.143E-09 -0.390E+04	-0.130E+05 -0.130E+05	0.190E+03 0.633E+03
2	-258.50 24.26	-0.405E+00 -0.291E+01	-0.114E+02 -0.146E+01	-0.361E+04 -0.394E+04	-0.228E+05 -0.131E+05	0.975E+02 0.325E+03
3	-260.57 48.82	-0.258E+00 -0.291E+01	-0.130E+02 -0.610E+00	-0.492E+04 -0.397E+04	-0.264E+05 -0.132E+05	0.231E+02 0.769E+02
4	-260.31 73.47	-0.337E-01 -0.292E+01	-0.136E+02 -0.289E+00	-0.485E+04 -0.398E+04	-0.262E+05 -0.133E+05	-0.256E+02 -0.854E+02
5	-257.73 97.98	0.266E+00 -0.297E+01	-0.132E+02 0.450E+00	-0.376E+04 -0.397E+04	-0.233E+05 -0.132E+05	-0.713E+02 -0.238E+03
6	-252.84 122.14	0.619E+00 -0.305E+01	-0.131E+02 0.971E+00	-0.142E+04 -0.395E+04	-0.169E+05 -0.131E+05	-0.122E+03 -0.406E+03
7	-245.70 145.73	0.981E+00 -0.318E+01	-0.142E+02 0.118E+01	0.217E+04 -0.390E+04	-0.188E+05 -0.130E+05	-0.157E+03 -0.523E+03
8	-236.35 168.54	0.130E+01 -0.332E+01	-0.165E+02 0.163E+01	0.624E+04 -0.385E+04	-0.295E+05 -0.128E+05	-0.145E+03 -0.484E+03
9	-224.90 190.36	0.151E+01 -0.344E+01	-0.171E+02 0.222E+01	0.927E+04 -0.379E+04	-0.374E+05 -0.126E+05	-0.918E+02 -0.306E+03
10	-211.44	0.158E+01	-0.175E+02	0.107E+05	-0.409E+05	-0.185E+02

	211.01	-0.350E+01	0.334E+01	-0.372E+04	-0.124E+05	-0.615E+02
11	-196.08	0.151E+01	-0.147E+02	0.101E+05	-0.391E+05	0.316E+02
	230.29	-0.346E+01	0.254E+01	-0.364E+04	-0.121E+05	0.105E+03
12	-178.98	0.133E+01	-0.161E+02	0.907E+04	-0.361E+05	0.715E+02
	248.04	-0.330E+01	0.413E+01	-0.356E+04	-0.119E+05	0.238E+03
13	-160.27	0.106E+01	-0.159E+02	0.658E+04	-0.291E+05	0.135E+03
	264.09	-0.301E+01	0.492E+01	-0.346E+04	-0.115E+05	0.450E+03
14	-140.14	0.764E+00	-0.139E+02	0.252E+04	-0.179E+05	0.182E+03
	278.31	-0.261E+01	0.444E+01	-0.336E+04	-0.112E+05	0.607E+03
15	-118.75	0.484E+00	-0.111E+02	-0.212E+04	-0.166E+05	0.179E+03
	290.56	-0.215E+01	0.365E+01	-0.328E+04	-0.109E+05	0.596E+03
16	-96.30	0.263E+00	-0.935E+01	-0.582E+04	-0.262E+05	0.127E+03
	300.73	-0.169E+01	0.314E+01	-0.321E+04	-0.107E+05	0.423E+03
17	-72.98	0.117E+00	-0.903E+01	-0.771E+04	-0.311E+05	0.556E+02
	308.74	-0.130E+01	0.309E+01	-0.314E+04	-0.104E+05	0.185E+03
18	-49.02	0.399E-01	-0.990E+01	-0.783E+04	-0.311E+05	-0.203E+01
	314.51	-0.103E+01	0.336E+01	-0.306E+04	-0.102E+05	-0.676E+01
19	-24.62	0.878E-02	-0.116E+02	-0.698E+04	-0.285E+05	-0.195E+02
	318.00	-0.866E+00	0.384E+01	-0.297E+04	-0.989E+04	-0.651E+02
20	0.00	-0.948E-03	-0.118E+02	-0.650E+04	-0.271E+05	-0.668E+01
	319.17	-0.821E+00	-0.580E-02	-0.292E+04	-0.972E+04	-0.223E+02
21	24.62	-0.116E-01	-0.119E+02	-0.666E+04	-0.277E+05	0.981E+01
	318.00	-0.885E+00	-0.394E+01	-0.297E+04	-0.989E+04	0.327E+02
22	49.02	-0.450E-01	-0.100E+02	-0.737E+04	-0.299E+05	-0.279E+01
	314.51	-0.106E+01	-0.339E+01	-0.306E+04	-0.102E+05	-0.929E+01
23	72.98	-0.124E+00	-0.909E+01	-0.719E+04	-0.297E+05	-0.583E+02
	308.74	-0.135E+01	-0.309E+01	-0.314E+04	-0.104E+05	-0.194E+03
24	96.30	-0.269E+00	-0.944E+01	-0.526E+04	-0.247E+05	-0.128E+03
	300.73	-0.173E+01	-0.315E+01	-0.321E+04	-0.107E+05	-0.426E+03
25	118.75	-0.485E+00	-0.113E+02	-0.157E+04	-0.151E+05	-0.177E+03
	290.56	-0.218E+01	-0.369E+01	-0.328E+04	-0.109E+05	-0.590E+03
26	140.14	-0.756E+00	-0.141E+02	0.296E+04	-0.191E+05	-0.177E+03
	278.31	-0.262E+01	-0.447E+01	-0.336E+04	-0.112E+05	-0.588E+03
27	160.27	-0.104E+01	-0.162E+02	0.683E+04	-0.298E+05	-0.124E+03
	264.09	-0.300E+01	-0.499E+01	-0.347E+04	-0.115E+05	-0.414E+03
28	178.98	-0.128E+01	-0.161E+02	0.896E+04	-0.358E+05	-0.569E+02
	248.04	-0.327E+01	-0.444E+01	-0.357E+04	-0.119E+05	-0.189E+03
29	196.08	-0.145E+01	-0.144E+02	0.961E+04	-0.379E+05	-0.208E+02
	230.29	-0.341E+01	-0.247E+01	-0.366E+04	-0.122E+05	-0.693E+02
30	211.44	-0.150E+01	-0.171E+02	0.100E+05	-0.392E+05	0.197E+02
	211.01	-0.344E+01	-0.305E+01	-0.373E+04	-0.124E+05	0.655E+02

31	224.90	-0.142E+01	-0.171E+02	0.872E+04	-0.360E+05	0.866E+02
	190.36	-0.337E+01	-0.181E+01	-0.379E+04	-0.126E+05	0.288E+03
32	236.35	-0.120E+01	-0.164E+02	0.585E+04	-0.284E+05	0.139E+03
	168.54	-0.325E+01	-0.103E+01	-0.384E+04	-0.128E+05	0.464E+03
33	245.70	-0.894E+00	-0.141E+02	0.193E+04	-0.181E+05	0.151E+03
	145.73	-0.311E+01	-0.411E+00	-0.388E+04	-0.129E+05	0.503E+03
34	252.84	-0.540E+00	-0.129E+02	-0.151E+04	-0.170E+05	0.117E+03
	122.14	-0.299E+01	-0.963E-01	-0.390E+04	-0.130E+05	0.390E+03
35	257.73	-0.198E+00	-0.131E+02	-0.374E+04	-0.230E+05	0.691E+02
	97.98	-0.291E+01	0.417E+00	-0.390E+04	-0.130E+05	0.230E+03
36	260.31	0.913E-01	-0.133E+02	-0.481E+04	-0.258E+05	0.257E+02
	73.47	-0.286E+01	0.109E+01	-0.389E+04	-0.130E+05	0.855E+02
37	260.57	0.306E+00	-0.125E+02	-0.490E+04	-0.260E+05	-0.227E+02
	48.82	-0.285E+01	0.125E+01	-0.387E+04	-0.129E+05	-0.757E+02
38	258.50	0.443E+00	-0.110E+02	-0.357E+04	-0.223E+05	-0.967E+02
	24.26	-0.285E+01	0.195E+01	-0.382E+04	-0.127E+05	-0.322E+03
39	254.12	0.527E+00	-0.944E+01	-0.178E-09	-0.125E+05	-0.188E+03
	0.00	-0.286E+01	0.266E+01	-0.377E+04	-0.125E+05	-0.625E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.40767E-03	-0.40767E-03	.29527	0.00000
2	-0.71473E-03	-0.10964E-03	.51766	0.00000
3	-0.82830E-03	-0.21682E-05	.59991	0.00000
4	-0.82313E-03	-0.91877E-05	.59617	0.00000
5	-0.73035E-03	-0.10015E-03	.52898	0.00000
6	-0.53169E-03	-0.29281E-03	.38509	0.00000
7	-0.22603E-03	-0.58975E-03	.42714	0.00000
8	0.12093E-03	-0.92607E-03	.67073	0.00000
9	0.38110E-03	-0.11736E-02	.85000	0.00000
10	0.50789E-03	-0.12846E-02	.93039	0.00000
11	0.46622E-03	-0.12275E-02	.88908	0.00000
12	0.38840E-03	-0.11332E-02	.82078	0.00000
13	0.18999E-03	-0.91327E-03	.66146	0.00000
14	-0.13949E-03	-0.56255E-03	.40744	0.00000
15	-0.51991E-03	-0.16461E-03	.37656	0.00000
16	-0.82340E-03	0.15355E-03	.59637	0.00000
17	-0.97478E-03	0.31933E-03	.70601	0.00000
18	-0.97624E-03	0.33699E-03	.70707	0.00000
19	-0.89530E-03	0.27490E-03	.64845	0.00000
20	-0.84938E-03	0.23785E-03	.61519	0.00000
21	-0.86866E-03	0.24822E-03	.62915	0.00000
22	-0.93823E-03	0.29876E-03	.67954	0.00000
23	-0.93086E-03	0.27516E-03	.67420	0.00000
24	-0.77654E-03	0.10643E-03	.56243	0.00000
25	-0.47434E-03	-0.21058E-03	.34355	0.00000
26	-0.10294E-03	-0.59971E-03	.43436	0.00000
27	0.21044E-03	-0.93474E-03	.67701	0.00000
28	0.37782E-03	-0.11249E-02	.81476	0.00000
29	0.42424E-03	-0.11887E-02	.86098	0.00000
30	0.45211E-03	-0.12312E-02	.89171	0.00000
31	0.33517E-03	-0.11282E-02	.81711	0.00000
32	0.88856E-04	-0.89183E-03	.64593	0.00000
33	-0.24293E-03	-0.56705E-03	.41070	0.00000
34	-0.53407E-03	-0.28029E-03	.38682	0.00000
35	-0.72191E-03	-0.93893E-04	.52286	0.00000
36	-0.81030E-03	-0.29978E-05	.58688	0.00000

37	-0.81454E-03	0.67941E-05	.58995	0.00000
38	-0.69895E-03	-0.99796E-04	.50623	0.00000
39	-0.39360E-03	-0.39360E-03	.28507	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.32808	0.00000	0.10763
2	-0.33171	-0.17372	0.28375
3	-0.33416	-0.23718	0.34885
4	-0.33490	-0.23369	0.34585
5	-0.33418	-0.18093	0.29261
6	-0.33176	-0.06858	0.17865
7	-0.32825	0.10443	0.21217
8	-0.32397	0.30060	0.40555
9	-0.31887	0.44636	0.54804
10	-0.31252	0.51463	0.61230
11	-0.30634	0.48629	0.58013
12	-0.29971	0.43687	0.52669
13	-0.29103	0.31675	0.40145
14	-0.28248	0.12146	0.20126
15	-0.27544	-0.10201	0.17787
16	-0.26953	-0.28049	0.35313
17	-0.26374	-0.37154	0.44110
18	-0.25722	-0.37703	0.44320
19	-0.24963	-0.33597	0.39829
20	-0.24554	-0.31297	0.37326
21	-0.24965	-0.32066	0.38299
22	-0.25731	-0.35514	0.42135
23	-0.26384	-0.34626	0.41587
24	-0.26964	-0.25350	0.32621
25	-0.27559	-0.07572	0.15168
26	-0.28273	0.14262	0.22256
27	-0.29144	0.32879	0.41373
28	-0.30062	0.43145	0.52182
29	-0.30762	0.46310	0.55772
30	-0.31348	0.48328	0.58154
31	-0.31909	0.42013	0.52195
32	-0.32310	0.28156	0.38595
33	-0.32592	0.09305	0.19927
34	-0.32768	-0.07286	0.18024
35	-0.32826	-0.18031	0.28806
36	-0.32725	-0.23178	0.33887
37	-0.32502	-0.23581	0.34144
38	-0.32140	-0.17202	0.27531
39	-0.31675	0.00000	0.10033

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	4	13262.	30800.	0.431
BUCKLING THRUST (psi)	4	13262.	46082.	0.288
SEAM THRUST (psi)	4	13262.	23052.	0.575
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	10	0.612	1.000	0.612

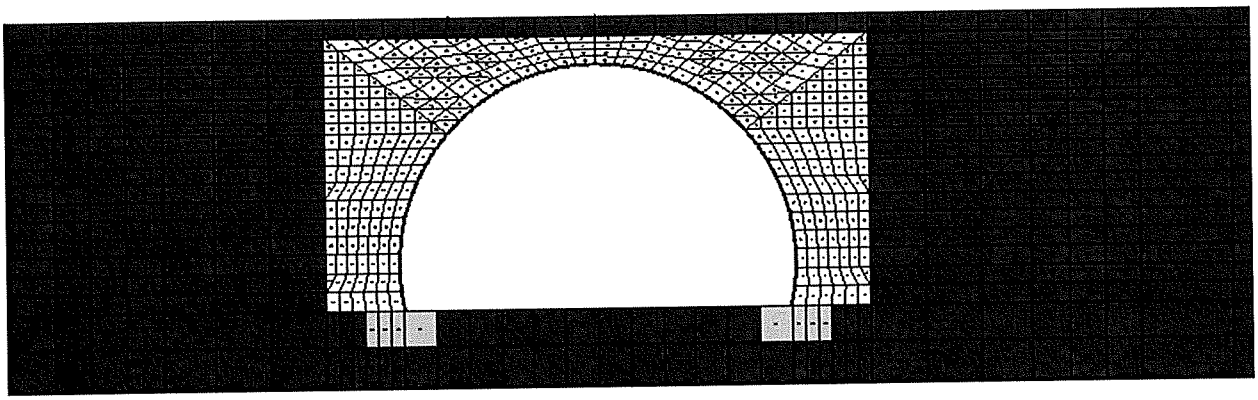
LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.49

RISE HEIGHT OF VERTICAL DEFLECTION (IN)...........	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.10
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF...........	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN)........	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

- -



*** WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage modified tandem

EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05

DENSITY OF METAL (PCI)..... 0.28400E+00

MODULUS OF UPPER BI-SLOPE (PSI).... 0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN) 0.30030

MOM. OF INERTIA (IN**4/IN) 1.14360

SECTION MODULUS (IN**3/IN) 0.37410

PLASTIC SECTION MOD(IN**3/IN) 0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING 0.70000

BUCKLING STRESS FAILURE..... 0.70000

SEAM STRENGTH FAILURE 0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -89.95	F = 0.000
1142	22	F = 0.000	F = -89.95	F = 0.000
1143	21	F = 0.000	F = -89.95	F = 0.000
1143	22	F = 0.000	F = -89.95	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000

596	1	D =	0.000	D =	0.000	D =	0.000
597	1	D =	0.000	D =	0.000	D =	0.000
598	1	D =	0.000	D =	0.000	D =	0.000
599	1	D =	0.000	D =	0.000	D =	0.000
624	1	D =	0.000	D =	0.000	D =	0.000
649	1	D =	0.000	D =	0.000	D =	0.000
674	1	D =	0.000	D =	0.000	D =	0.000
699	1	D =	0.000	D =	0.000	D =	0.000
724	1	D =	0.000	D =	0.000	D =	0.000
761	1	D =	0.000	D =	0.000	D =	0.000
786	1	D =	0.000	D =	0.000	D =	0.000
811	1	D =	0.000	D =	0.000	D =	0.000
836	1	D =	0.000	D =	0.000	D =	0.000
861	1	D =	0.000	D =	0.000	D =	0.000
886	1	D =	0.000	D =	0.000	D =	0.000
911	1	D =	0.000	D =	0.000	D =	0.000
936	1	D =	0.000	D =	0.000	D =	0.000
961	1	D =	0.000	D =	0.000	D =	0.000
986	1	D =	0.000	D =	0.000	D =	0.000
1023	1	D =	0.000	D =	0.000	D =	0.000
1048	1	D =	0.000	D =	0.000	D =	0.000
1073	1	D =	0.000	D =	0.000	D =	0.000
1098	1	D =	0.000	D =	0.000	D =	0.000
837	1	D =	0.000	F =	0.000	D =	0.000
838	1	D =	0.000	F =	0.000	D =	0.000
839	1	D =	0.000	F =	0.000	D =	0.000
840	1	D =	0.000	F =	0.000	D =	0.000
841	1	D =	0.000	F =	0.000	D =	0.000
842	1	D =	0.000	F =	0.000	D =	0.000
843	1	D =	0.000	F =	0.000	D =	0.000
844	1	D =	0.000	F =	0.000	D =	0.000
845	1	D =	0.000	F =	0.000	D =	0.000
846	1	D =	0.000	F =	0.000	D =	0.000
847	1	D =	0.000	F =	0.000	D =	0.000
848	1	D =	0.000	F =	0.000	D =	0.000
849	1	D =	0.000	F =	0.000	D =	0.000
850	1	D =	0.000	F =	0.000	D =	0.000
851	1	D =	0.000	F =	0.000	D =	0.000
852	1	D =	0.000	F =	0.000	D =	0.000
853	1	D =	0.000	F =	0.000	D =	0.000
854	1	D =	0.000	F =	0.000	D =	0.000
855	1	D =	0.000	F =	0.000	D =	0.000
856	1	D =	0.000	F =	0.000	D =	0.000
857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1137	21	F =	0.000	F =	-89.95	F =	0.000
1137	22	F =	0.000	F =	-89.95	F =	0.000
1138	21	F =	0.000	F =	-89.95	F =	0.000
1138	22	F =	0.000	F =	-89.95	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)-------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20
22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000
36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.750	Factor for load step #21
22	1.750	Factor for load step #22

STEEL, FACTORED-EVALUATION FOR GROUP 1, LOAD-STEP 22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22

UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.520E+00 -0.297E+01	-0.998E+01 -0.298E+01	0.489E-11 -0.407E+04	-0.136E+05 -0.136E+05	0.200E+03 0.665E+03
2	-258.50 24.26	-0.433E+00 -0.296E+01	-0.118E+02 -0.209E+01	-0.377E+04 -0.413E+04	-0.238E+05 -0.138E+05	0.100E+03 0.334E+03
3	-260.57 48.82	-0.289E+00 -0.296E+01	-0.137E+02 -0.119E+01	-0.509E+04 -0.418E+04	-0.275E+05 -0.139E+05	0.220E+02 0.734E+02
4	-260.31 73.47	-0.652E-01 -0.298E+01	-0.145E+02 -0.693E+00	-0.497E+04 -0.420E+04	-0.273E+05 -0.140E+05	-0.264E+02 -0.880E+02
5	-257.73 97.98	0.236E+00 -0.302E+01	-0.141E+02 0.444E+00	-0.388E+04 -0.419E+04	-0.243E+05 -0.140E+05	-0.706E+02 -0.235E+03
6	-252.84 122.14	0.592E+00 -0.311E+01	-0.141E+02 0.184E+01	-0.157E+04 -0.415E+04	-0.180E+05 -0.138E+05	-0.117E+03 -0.389E+03
7	-245.70 145.73	0.961E+00 -0.323E+01	-0.153E+02 0.385E+01	0.182E+04 -0.407E+04	-0.184E+05 -0.135E+05	-0.143E+03 -0.475E+03
8	-236.35 168.54	0.129E+01 -0.338E+01	-0.168E+02 0.463E+01	0.543E+04 -0.395E+04	-0.277E+05 -0.132E+05	-0.126E+03 -0.418E+03
9	-224.90 190.36	0.152E+01 -0.352E+01	-0.166E+02 0.458E+01	0.802E+04 -0.382E+04	-0.342E+05 -0.127E+05	-0.809E+02 -0.269E+03
10	-211.44 211.01	0.163E+01 -0.360E+01	-0.165E+02 0.466E+01	0.947E+04 -0.370E+04	-0.377E+05 -0.123E+05	-0.286E+02 -0.951E+02
11	-196.08 230.29	0.162E+01 -0.360E+01	-0.142E+02 0.406E+01	0.955E+04 -0.359E+04	-0.375E+05 -0.120E+05	0.626E+01 0.208E+02
12	-178.98 248.04	0.149E+01 -0.349E+01	-0.143E+02 0.421E+01	0.936E+04 -0.349E+04	-0.366E+05 -0.116E+05	0.247E+02 0.822E+02
13	-160.27 264.09	0.127E+01 -0.325E+01	-0.159E+02 0.486E+01	0.859E+04 -0.338E+04	-0.342E+05 -0.113E+05	0.736E+02 0.245E+03
14	-140.14 278.31	0.987E+00 -0.287E+01	-0.148E+02 0.468E+01	0.602E+04 -0.327E+04	-0.270E+05 -0.109E+05	0.139E+03 0.463E+03
15	-118.75 290.56	0.695E+00 -0.239E+01	-0.132E+02 0.431E+01	0.204E+04 -0.318E+04	-0.160E+05 -0.106E+05	0.181E+03 0.604E+03
16	-96.30 300.73	0.437E+00 -0.186E+01	-0.113E+02 0.375E+01	-0.263E+04 -0.309E+04	-0.173E+05 -0.103E+05	0.189E+03 0.628E+03
17	-72.98 308.74	0.244E+00 -0.134E+01	-0.913E+01 0.312E+01	-0.699E+04 -0.302E+04	-0.288E+05 -0.101E+05	0.153E+03 0.508E+03
18	-49.02 314.51	0.131E+00 -0.922E+00	-0.798E+01 0.277E+01	-0.991E+04 -0.296E+04	-0.364E+05 -0.987E+04	0.826E+02 0.275E+03
19	-24.62 318.00	0.822E-01 -0.648E+00	-0.812E+01 0.281E+01	-0.109E+05 -0.290E+04	-0.387E+05 -0.965E+04	0.600E+01 0.200E+02

20	0.00	0.698E-01	-0.102E+02	-0.101E+05	-0.366E+05	-0.381E+02
	319.17	-0.547E+00	0.428E+00	-0.286E+04	-0.951E+04	-0.127E+03
21	24.62	0.592E-01	-0.115E+02	-0.908E+04	-0.339E+05	-0.408E+02
	318.00	-0.612E+00	-0.381E+01	-0.289E+04	-0.964E+04	-0.136E+03
22	49.02	0.199E-01	-0.102E+02	-0.842E+04	-0.324E+05	-0.492E+02
	314.51	-0.827E+00	-0.346E+01	-0.298E+04	-0.992E+04	-0.164E+03
23	72.98	-0.737E-01	-0.950E+01	-0.712E+04	-0.292E+05	-0.896E+02
	308.74	-0.117E+01	-0.323E+01	-0.306E+04	-0.102E+05	-0.298E+03
24	96.30	-0.239E+00	-0.986E+01	-0.453E+04	-0.225E+05	-0.141E+03
	300.73	-0.161E+01	-0.329E+01	-0.313E+04	-0.104E+05	-0.470E+03
25	118.75	-0.476E+00	-0.114E+02	-0.639E+03	-0.124E+05	-0.176E+03
	290.56	-0.210E+01	-0.374E+01	-0.320E+04	-0.107E+05	-0.585E+03
26	140.14	-0.764E+00	-0.139E+02	0.378E+04	-0.210E+05	-0.168E+03
	278.31	-0.258E+01	-0.440E+01	-0.328E+04	-0.109E+05	-0.560E+03
27	160.27	-0.106E+01	-0.160E+02	0.745E+04	-0.312E+05	-0.113E+03
	264.09	-0.297E+01	-0.494E+01	-0.339E+04	-0.113E+05	-0.377E+03
28	178.98	-0.131E+01	-0.155E+02	0.927E+04	-0.364E+05	-0.474E+02
	248.04	-0.325E+01	-0.345E+01	-0.349E+04	-0.116E+05	-0.158E+03
29	196.08	-0.148E+01	-0.139E+02	0.979E+04	-0.380E+05	-0.158E+02
	230.29	-0.339E+01	-0.237E+01	-0.356E+04	-0.118E+05	-0.526E+02
30	211.44	-0.153E+01	-0.166E+02	0.101E+05	-0.391E+05	0.229E+02
	211.01	-0.342E+01	-0.311E+01	-0.362E+04	-0.121E+05	0.761E+02
31	224.90	-0.145E+01	-0.166E+02	0.874E+04	-0.357E+05	0.878E+02
	190.36	-0.336E+01	-0.194E+01	-0.369E+04	-0.123E+05	0.292E+03
32	236.35	-0.124E+01	-0.160E+02	0.585E+04	-0.281E+05	0.139E+03
	168.54	-0.323E+01	-0.125E+01	-0.375E+04	-0.125E+05	0.463E+03
33	245.70	-0.925E+00	-0.137E+02	0.196E+04	-0.178E+05	0.150E+03
	145.73	-0.309E+01	-0.684E+00	-0.379E+04	-0.126E+05	0.500E+03
34	252.84	-0.570E+00	-0.126E+02	-0.148E+04	-0.167E+05	0.117E+03
	122.14	-0.297E+01	-0.413E+00	-0.381E+04	-0.127E+05	0.389E+03
35	257.73	-0.227E+00	-0.128E+02	-0.372E+04	-0.227E+05	0.690E+02
	97.98	-0.289E+01	0.517E-01	-0.383E+04	-0.128E+05	0.230E+03
36	260.31	0.640E-01	-0.130E+02	-0.478E+04	-0.255E+05	0.251E+02
	73.47	-0.285E+01	0.697E+00	-0.383E+04	-0.127E+05	0.836E+02
37	260.57	0.281E+00	-0.123E+02	-0.485E+04	-0.257E+05	-0.232E+02
	48.82	-0.283E+01	0.876E+00	-0.381E+04	-0.127E+05	-0.774E+02
38	258.50	0.421E+00	-0.109E+02	-0.353E+04	-0.220E+05	-0.961E+02
	24.26	-0.284E+01	0.163E+01	-0.377E+04	-0.126E+05	-0.320E+03
39	254.12	0.508E+00	-0.938E+01	0.681E-10	-0.124E+05	-0.186E+03
	0.00	-0.284E+01	0.238E+01	-0.373E+04	-0.124E+05	-0.618E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.42553E-03	-0.42553E-03	.30820	0.00000
2	-0.74812E-03	-0.11526E-03	.54184	0.00000
3	-0.86298E-03	-0.96159E-05	.62504	0.00000
4	-0.85571E-03	-0.21257E-04	.61977	0.00000
5	-0.76345E-03	-0.11277E-03	.55295	0.00000
6	-0.56589E-03	-0.30214E-03	.40986	0.00000
7	-0.27230E-03	-0.57808E-03	.41869	0.00000
8	0.42384E-04	-0.86785E-03	.62856	0.00000
9	0.27295E-03	-0.10722E-02	.77660	0.00000
10	0.40753E-03	-0.11816E-02	.85578	0.00000
11	0.42550E-03	-0.11765E-02	.85209	0.00000
12	0.41997E-03	-0.11496E-02	.83263	0.00000
13	0.36671E-03	-0.10736E-02	.77761	0.00000
14	0.16287E-03	-0.84704E-03	.61349	0.00000
15	-0.16115E-03	-0.50278E-03	.36415	0.00000
16	-0.54404E-03	-0.10259E-03	.39403	0.00000
17	-0.90244E-03	0.27029E-03	.65361	0.00000
18	-0.11412E-02	0.52198E-03	.82652	0.00000
19	-0.12145E-02	0.60886E-03	.87961	0.00000
20	-0.11470E-02	0.54875E-03	.83074	0.00000
21	-0.10640E-02	0.45916E-03	.77066	0.00000
22	-0.10173E-02	0.39454E-03	.73682	0.00000
23	-0.91679E-03	0.27803E-03	.66401	0.00000
24	-0.70664E-03	0.53198E-04	.51180	0.00000
25	-0.38792E-03	-0.28071E-03	.28096	0.00000
26	-0.26008E-04	-0.66045E-03	.47835	0.00000
27	0.27061E-03	-0.97863E-03	.70880	0.00000
28	0.41365E-03	-0.11420E-02	.82712	0.00000
29	0.44968E-03	-0.11927E-02	.86385	0.00000
30	0.46882E-03	-0.12264E-02	.88824	0.00000
31	0.34689E-03	-0.11189E-02	.81042	0.00000
32	0.99260E-04	-0.88218E-03	.63894	0.00000
33	-0.23133E-03	-0.55985E-03	.40549	0.00000
34	-0.52265E-03	-0.27442E-03	.37854	0.00000
35	-0.71188E-03	-0.88391E-04	.51560	0.00000
36	-0.80120E-03	0.14935E-05	.58029	0.00000
37	-0.80490E-03	0.87831E-05	.58297	0.00000
38	-0.69057E-03	-0.98347E-04	.50016	0.00000
39	-0.38953E-03	-0.38953E-03	.28213	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.34245	0.00000	0.11727
2	-0.34740	-0.18170	0.30238
3	-0.35111	-0.24500	0.36828
4	-0.35287	-0.23958	0.36409
5	-0.35257	-0.18681	0.31112
6	-0.34928	-0.07572	0.19772
7	-0.34217	0.08779	0.20487
8	-0.33215	0.26133	0.37165
9	-0.32162	0.38621	0.48965
10	-0.31145	0.45623	0.55324
11	-0.30218	0.45993	0.55124
12	-0.29359	0.45063	0.53683
13	-0.28445	0.41353	0.49444
14	-0.27530	0.28995	0.36574
15	-0.26715	0.09808	0.16945
16	-0.26019	-0.12674	0.19444
17	-0.25436	-0.33669	0.40139
18	-0.24914	-0.47749	0.53957
19	-0.24368	-0.52349	0.58287
20	-0.24019	-0.48767	0.54537
21	-0.24339	-0.43732	0.49656
22	-0.25059	-0.40535	0.46815
23	-0.25702	-0.34304	0.40910
24	-0.26293	-0.21815	0.28729
25	-0.26904	-0.03078	0.10316

26	-0.27621	0.18215	0.25844
27	-0.28489	0.35866	0.43983
28	-0.29307	0.44663	0.53252
29	-0.29898	0.47154	0.56093
30	-0.30483	0.48670	0.57962
31	-0.31065	0.42084	0.51735
32	-0.31503	0.28178	0.38102
33	-0.31835	0.09432	0.19567
34	-0.32072	-0.07127	0.17413
35	-0.32201	-0.17901	0.28270
36	-0.32178	-0.23046	0.33400
37	-0.32034	-0.23361	0.33623
38	-0.31744	-0.17003	0.27080
39	-0.31348	0.00000	0.09827

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	4	13974.	30800.	0.454
BUCKLING THRUST (psi)	4	13974.	44974.	0.311
SEAM THRUST (psi)	4	13974.	23052.	0.606
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	19	0.583	1.000	0.583

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%).....	0.62
RISE HEIGHT OF VERTICAL DEFLECTION (IN).....	319.17
RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-).....	0.12
HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *

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BEAM OUTPUT FOR MOD TANDEM γ_{DL}=1.5, YDL= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Thrust (DL) T_{DLfac}	Thrust (DL) T_{DLs}	Thrust (DL+LL) $T_{DL,LLfac}$	Thrust (LL) T_{LLs}	Thrust Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	TDLfac/1.575	Load Step 22	($T_{DL,LLfac}$-T_{DLfac})/1.75	(T_{cap}-T_{DLs}*1.5)/T_{LLs}*1.30
		kips/ft.	kips/ft.	kips/ft.		
-254.123	0	-42.94	-27.26	-48.87	3.39	10.03
-258.503	24.256	-42.80	-27.17	-49.58	3.87	8.81
-260.573	48.818	-42.47	-26.96	-50.10	4.37	7.87
-260.315	73.465	-41.86	-26.58	-50.36	4.86	7.17
-257.731	97.978	-41.04	-26.06	-50.31	5.30	6.68
-252.844	122.138	-40.03	-25.42	-49.84	5.61	6.44
-245.697	145.727	-38.89	-24.69	-48.83	5.68	6.51
-236.355	168.537	-37.66	-23.91	-47.40	5.57	6.80
-224.901	190.363	-36.40	-23.11	-45.90	5.43	7.15
-211.437	211.009	-35.16	-22.32	-44.45	5.31	7.48
-196.083	230.292	-34.05	-21.62	-43.12	5.18	7.82
-178.978	248.039	-33.04	-20.98	-41.90	5.06	8.15
-160.273	264.092	-31.96	-20.29	-40.59	4.93	8.53
-140.136	278.307	-30.93	-19.64	-39.29	4.77	8.97
-118.747	290.557	-30.06	-19.09	-38.12	4.61	9.43
-96.296	300.732	-29.33	-18.62	-37.13	4.46	9.86
-72.985	308.742	-28.77	-18.27	-36.30	4.30	10.32
-49.022	314.515	-28.38	-18.02	-35.55	4.10	10.90
-24.621	318	-28.08	-17.83	-34.77	3.83	11.73
0	319.165	-27.95	-17.74	-34.28	3.62	12.44
24.621	318	-28.08	-17.83	-34.73	3.80	11.80
49.022	314.515	-28.37	-18.02	-35.76	4.22	10.59
72.985	308.742	-28.77	-18.27	-36.68	4.52	9.82
96.296	300.732	-29.34	-18.63	-37.52	4.67	9.41
118.747	290.557	-30.09	-19.11	-38.39	4.74	9.15
140.136	278.307	-30.98	-19.67	-39.42	4.82	8.87
160.273	264.092	-32.03	-20.34	-40.65	4.93	8.53
178.978	248.039	-33.14	-21.04	-41.82	4.96	8.30
196.083	230.292	-34.15	-21.68	-42.66	4.87	8.31
211.437	211.009	-35.23	-22.37	-43.50	4.72	8.39
224.901	190.363	-36.44	-23.14	-44.33	4.51	8.60
236.355	168.537	-37.70	-23.94	-44.96	4.15	9.13
245.697	145.727	-38.93	-24.72	-45.43	3.71	9.95
252.844	122.138	-40.08	-25.45	-45.77	3.25	11.10
257.731	97.978	-41.11	-26.10	-45.95	2.77	12.77
260.315	73.465	-41.94	-26.63	-45.92	2.27	15.28
260.573	48.818	-42.56	-27.02	-45.71	1.80	19.02
258.503	24.256	-42.88	-27.23	-45.30	1.38	24.62
254.123	0	-43.00	-27.30	-44.73	0.99	34.19

Thrust Load Rating= 6.44

BEAM OUTPUT FOR MOD TANDEM

γ_{DL}=1.5, γ_{DL}= 1.30 (OPR)

X-coordinate (in.)	Y-coordinate (in.)	Moment (DL) M_{DLfac}	Moment (DL) M_{DLs}	Moment (DL+LL) $M_{DL,LLfac}$	Moment (LL) M_{LLs}	Moment Load Rating
		factored from CANDE	unfactored	factored from CANDE	unfactored	OPR
		Load Step 20	M_{DLfac}/1.575	Load Step 22	($M_{DL,LLfac}$-M_{DLfac})/1.75	(M_{cap}-M_{DLs}*1.5)/M_{LLs}*1.3
		kips-ft/ft.		kips-ft/ft.		
-254.123	0	0.00	0.00	0.00	0.00	
-258.503	24.256	-3.37	-2.14	-3.77	0.23	58.14
-260.573	48.818	-4.71	-2.99	-5.09	0.22	57.43
-260.315	73.465	-4.75	-3.01	-4.97	0.13	96.46
-257.731	97.978	-3.64	-2.31	-3.88	0.13	98.63
-252.844	122.138	-1.25	-0.79	-1.57	0.18	81.70
-245.697	145.727	2.29	1.45	1.82	0.27	53.62
-236.355	168.537	6.15	3.91	5.43	0.42	27.52
-224.901	190.363	9.07	5.76	8.02	0.60	15.57
-211.437	211.009	10.75	6.83	9.47	0.73	11.06
-196.083	230.292	10.78	6.84	9.55	0.70	11.51
-178.978	248.039	10.39	6.59	9.36	0.59	14.20
-160.273	264.092	9.01	5.72	8.59	0.24	38.42
-140.136	278.307	5.87	3.72	6.02	0.09	132.69
-118.747	290.557	1.56	0.99	2.04	0.27	54.85
-96.296	300.732	-3.08	-1.96	-2.63	0.26	53.59
-72.985	308.742	-7.45	-4.73	-6.99	0.26	39.75
-49.022	314.515	-11.03	-7.00	-9.91	0.64	12.41
-24.621	318	-13.44	-8.54	-10.87	1.47	4.16
0	319.165	-14.24	-9.04	-10.13	2.35	2.36
24.621	318	-13.23	-8.40	-9.08	2.37	2.65
49.022	314.515	-10.64	-6.75	-8.42	1.27	6.44
72.985	308.742	-6.92	-4.39	-7.12	0.12	93.55
96.296	300.732	-2.45	-1.56	-4.53	1.19	11.93
118.747	290.557	2.20	1.39	-0.64	1.62	8.87
140.136	278.307	6.40	4.06	3.78	1.50	7.53
160.273	264.092	9.37	5.95	7.45	1.10	8.31
178.978	248.039	10.35	6.57	9.27	0.61	13.64
196.083	230.292	10.37	6.59	9.79	0.33	25.13
211.437	211.009	10.18	6.47	10.11	0.05	188.53
224.901	190.363	8.61	5.47	8.74	0.07	135.51
236.355	168.537	5.87	3.73	5.85	0.01	1208.76
245.697	145.727	2.15	1.37	1.96	0.11	128.61
252.844	122.138	-1.28	-0.81	-1.48	0.11	133.72
257.731	97.978	-3.62	-2.30	-3.72	0.05	248.96
260.315	73.465	-4.74	-3.01	-4.78	0.03	464.66
260.573	48.818	-4.74	-3.01	-4.85	0.06	199.01
258.503	24.256	-3.43	-2.18	-3.53	0.06	226.23
254.123	0	0.00	0.00	0.00	0.00	

Moment Load Rating= 2.36

Actual Load Rating (from CANDE) 2.36

* WELCOME TO CANDE-2019 (Version April 1, 2019) ***

MASTER CONTROL AND PIPE-TYPE DATA FOR PROBLEM # 1

USER TITLE: Single Radius 58S 5.0ft Cover 5Gage MODIFIED TANDEM

LIVE LOADS X 2.36
EXECUTION MODE ..... ANALYS

SOLUTION LEVEL ..... #3 USER

METHODOLOGY (LRFD OR SERVICE) ... LRFD

NUMBER OF PIPE-ELEMENT GROUPS 1

MAXIMUM ITERATIONS PER STEP ..... -99

PIPE ELEMENT TYPE ..... STEEL

NUMBER OF BEAM ELEMENTS 38

STEEL ELEMENT PROPERTIES ARE AS FOLLOWS:

YOUNGS MODULUS OF METAL (PSI).....	0.29000E+08
POISSONS RATIO OF METAL (-)	0.30000E+00
YIELD STRESS OF METAL (PSI).....	0.44000E+05
LONGITUDINAL SEAM STRENGTH (PSI)...	0.34406E+05
DENSITY OF METAL (PCI).....	0.28400E+00
MODULUS OF UPPER BI-SLOPE (PSI)....	0.00000E+00

MATERIAL CHARACTER CODE, NONLIN 2

NONLIN=2,MEANS BILINEAR ELASTIC-PLASTIC

LARGE DEFORMATION/BUCKLING CODE, IBUCK... 4

IBUCK=4, MEANS LARGE DEFORMATION THEORY FOR GROUP
AND SIMPLIFIED BUCKLING PREDICTION, AASHTO 12.8.9.6-1

SECTION PROPERTIES OF CROSS-SECTION:

THRUST AREA (IN**2/IN)	0.30030
MOM. OF INERTIA (IN**4/IN)	1.14360
SECTION MODULUS (IN**3/IN)	0.37410
PLASTIC SECTION MOD(IN**3/IN)	0.52430

NOTE: AASHTO COMBINED T&M CRITERION 12.8.9.5 IS ACTIVATED.

LRFD RESISTANCE FACTORS FOR STRENGTH-LIMIT STATES
AND DEFLECTION LIMIT AT SERVICE LOAD

THRUST STRESS YIELDING	0.70000
BUCKLING STRESS FAILURE.....	0.70000
SEAM STRENGTH FAILURE	0.67000

FULL PLASTIC PENETRATION..... 0.90000

ALLOWABLE % DEFLECTION (SERVICE)... 5.00000

COMBINED MOMENT-THRUST CRITERION... 0.90000

BOUNDARY CONDITIONS AS GENERATED FROM INPUT
(FORCE=LBS/INCH; MOMENT=IN-LBS/INCH; DISPLACEMENT=INCHES; ROTATION=DEGREES)
(ONLY BEAM-ELEMENT NODES CAN SUSTAIN AN APPLIED MOMENT OR ROTATION)

BOUNDARY NODE	LOAD STEP	X-FORCE(F) -OR- X-DISPLACE.(D)	Y-FORCE(F) -OR- Y-DISPLACE.(D)	MOMENT(F) -OR- ROTATION (D)
1142	21	F = 0.000	F = -212.3	F = 0.000
1142	22	F = 0.000	F = -212.3	F = 0.000
1143	21	F = 0.000	F = -212.3	F = 0.000
1143	22	F = 0.000	F = -212.3	F = 0.000
574	1	D = 0.000	D = 0.000	D = 0.000
575	1	D = 0.000	D = 0.000	D = 0.000
576	1	D = 0.000	D = 0.000	D = 0.000
577	1	D = 0.000	D = 0.000	D = 0.000
578	1	D = 0.000	D = 0.000	D = 0.000
579	1	D = 0.000	D = 0.000	D = 0.000
580	1	D = 0.000	D = 0.000	D = 0.000
581	1	D = 0.000	D = 0.000	D = 0.000
582	1	D = 0.000	D = 0.000	D = 0.000
583	1	D = 0.000	D = 0.000	D = 0.000
584	1	D = 0.000	D = 0.000	D = 0.000
585	1	D = 0.000	D = 0.000	D = 0.000
586	1	D = 0.000	D = 0.000	D = 0.000
587	1	D = 0.000	D = 0.000	D = 0.000
588	1	D = 0.000	D = 0.000	D = 0.000
589	1	D = 0.000	D = 0.000	D = 0.000
590	1	D = 0.000	D = 0.000	D = 0.000
591	1	D = 0.000	D = 0.000	D = 0.000
592	1	D = 0.000	D = 0.000	D = 0.000
593	1	D = 0.000	D = 0.000	D = 0.000
594	1	D = 0.000	D = 0.000	D = 0.000
595	1	D = 0.000	D = 0.000	D = 0.000
596	1	D = 0.000	D = 0.000	D = 0.000
597	1	D = 0.000	D = 0.000	D = 0.000
598	1	D = 0.000	D = 0.000	D = 0.000
599	1	D = 0.000	D = 0.000	D = 0.000
624	1	D = 0.000	D = 0.000	D = 0.000
649	1	D = 0.000	D = 0.000	D = 0.000
674	1	D = 0.000	D = 0.000	D = 0.000
699	1	D = 0.000	D = 0.000	D = 0.000
724	1	D = 0.000	D = 0.000	D = 0.000
761	1	D = 0.000	D = 0.000	D = 0.000
786	1	D = 0.000	D = 0.000	D = 0.000
811	1	D = 0.000	D = 0.000	D = 0.000
836	1	D = 0.000	D = 0.000	D = 0.000
861	1	D = 0.000	D = 0.000	D = 0.000
886	1	D = 0.000	D = 0.000	D = 0.000
911	1	D = 0.000	D = 0.000	D = 0.000
936	1	D = 0.000	D = 0.000	D = 0.000
961	1	D = 0.000	D = 0.000	D = 0.000
986	1	D = 0.000	D = 0.000	D = 0.000
1023	1	D = 0.000	D = 0.000	D = 0.000
1048	1	D = 0.000	D = 0.000	D = 0.000
1073	1	D = 0.000	D = 0.000	D = 0.000
1098	1	D = 0.000	D = 0.000	D = 0.000
837	1	D = 0.000	F = 0.000	D = 0.000
838	1	D = 0.000	F = 0.000	D = 0.000
839	1	D = 0.000	F = 0.000	D = 0.000
840	1	D = 0.000	F = 0.000	D = 0.000
841	1	D = 0.000	F = 0.000	D = 0.000
842	1	D = 0.000	F = 0.000	D = 0.000
843	1	D = 0.000	F = 0.000	D = 0.000
844	1	D = 0.000	F = 0.000	D = 0.000
845	1	D = 0.000	F = 0.000	D = 0.000
846	1	D = 0.000	F = 0.000	D = 0.000
847	1	D = 0.000	F = 0.000	D = 0.000
848	1	D = 0.000	F = 0.000	D = 0.000
849	1	D = 0.000	F = 0.000	D = 0.000
850	1	D = 0.000	F = 0.000	D = 0.000
851	1	D = 0.000	F = 0.000	D = 0.000
852	1	D = 0.000	F = 0.000	D = 0.000
853	1	D = 0.000	F = 0.000	D = 0.000
854	1	D = 0.000	F = 0.000	D = 0.000
855	1	D = 0.000	F = 0.000	D = 0.000
856	1	D = 0.000	F = 0.000	D = 0.000

857	1	D =	0.000	F =	0.000	D =	0.000
858	1	D =	0.000	F =	0.000	D =	0.000
859	1	D =	0.000	F =	0.000	D =	0.000
860	1	D =	0.000	F =	0.000	D =	0.000
1123	1	D =	0.000	F =	0.000	D =	0.000
1161	1	D =	0.000	F =	0.000	D =	0.000
1099	1	D =	0.000	F =	0.000	D =	0.000
1100	1	D =	0.000	F =	0.000	D =	0.000
1101	1	D =	0.000	F =	0.000	D =	0.000
1102	1	D =	0.000	F =	0.000	D =	0.000
1103	1	D =	0.000	F =	0.000	D =	0.000
1104	1	D =	0.000	F =	0.000	D =	0.000
1105	1	D =	0.000	F =	0.000	D =	0.000
1106	1	D =	0.000	F =	0.000	D =	0.000
1107	1	D =	0.000	F =	0.000	D =	0.000
1108	1	D =	0.000	F =	0.000	D =	0.000
1109	1	D =	0.000	F =	0.000	D =	0.000
1110	1	D =	0.000	F =	0.000	D =	0.000
1111	1	D =	0.000	F =	0.000	D =	0.000
1112	1	D =	0.000	F =	0.000	D =	0.000
1113	1	D =	0.000	F =	0.000	D =	0.000
1114	1	D =	0.000	F =	0.000	D =	0.000
1115	1	D =	0.000	F =	0.000	D =	0.000
1116	1	D =	0.000	F =	0.000	D =	0.000
1117	1	D =	0.000	F =	0.000	D =	0.000
1118	1	D =	0.000	F =	0.000	D =	0.000
1119	1	D =	0.000	F =	0.000	D =	0.000
1120	1	D =	0.000	F =	0.000	D =	0.000
1121	1	D =	0.000	F =	0.000	D =	0.000
1122	1	D =	0.000	F =	0.000	D =	0.000
1137	21	F =	0.000	F =	-212.3	F =	0.000
1137	22	F =	0.000	F =	-212.3	F =	0.000
1138	21	F =	0.000	F =	-212.3	F =	0.000
1138	22	F =	0.000	F =	-212.3	F =	0.000

* * * * * COMPLETED MESH GENERATION * * * * *

BRIDGECOR

CALCULATED KEY NUMBERS ...
THE NUMBER OF DATA ERRORS IS---------- 0
THE NUMBER OF SOIL MATERIALS IS-------- 4
THE NUMBER OF PIPE-TYPE GROUPS IS------ 1
THE NUMBER OF INTERFACE MATERIALS IS--- 37
BAND WIDTH ESTIMATE (MAX)------------- 2060

* * * * MESH DATA HAS BEEN SAVED ON UNIT 14 * * * *

BEAM-NODE SEQUENCE NUMBERS FOR EACH GROUP

BEAM-ELEMENT GROUP NUMBER = 1

BEAM-NODE SEQUENCE	MESH-NODE NUMBER	CONNECTED-GROUP-ELEMENTS FOREWARD-#	BACKWARD-#
1	39	1	0
2	38	2	1
3	37	3	2
4	36	4	3
5	35	5	4
6	34	6	5
7	33	7	6
8	32	8	7
9	31	9	8
10	30	10	9
11	29	11	10
12	28	12	11
13	27	13	12
14	26	14	13
15	25	15	14
16	24	16	15
17	23	17	16
18	22	18	17
19	21	19	18
20	20	20	19
21	19	21	20

22	18	22	21
23	17	23	22
24	16	24	23
25	15	25	24
26	14	26	25
27	13	27	26
28	12	28	27
29	11	29	28
30	10	30	29
31	9	31	30
32	8	32	31
33	7	33	32
34	6	34	33
35	5	35	34
36	4	36	35
37	3	37	36
38	2	38	37
39	1	0	38

MATERIAL DESCRIPTION FOR SOILS AND INTERFACE
(ALL DENSITY UNITS ARE pcf, ALL MODULUS UNITS ARE psi)

PROPERTIES FOR MATERIAL 1 ********In Situ

DENSITY = 0.10000E+01

YOUNGS MODULUS= 0.3000E+04
POISSONS RATIO= 0.3000E+00
CONFINED MOD.= 0.4038E+04
LATERAL COEFF.= 0.4286E+00

PROPERTIES FOR MATERIAL 2 ********Footing

DENSITY = 0.15000E+03

YOUNGS MODULUS= 0.3500E+07
POISSONS RATIO= 0.1800E+00
CONFINED MOD.= 0.3800E+07
LATERAL COEFF.= 0.2195E+00

PROPERTIES FOR MATERIAL 3 ********SW95

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH SELIG HYPERBOLIC BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SW95

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 48.0000

10-FOLD REDUCTION IN PHIO(DEG).. 8.0000

SCALED MODULUS NUMBER ZK 950.0000

MODULUS EXPONENT ZN 0.6000

FAILURE RATIO RF 0.7000

INIT. BULK MODULUS NUMBER BI.... 74.8000

ULT. VOLUMETRIC STRAIN EU 0.0200

PROPERTIES FOR MATERIAL 4 ********SM90

DENSITY = 0.12000E+03

CONTROLS FOR DUNCAN SOIL MODEL
WITH DUNCAN POWER-LAW BULK MODULUS FORMULATION

LRFD STRESS CONTROL..... 0

ENTERING ELEMENT RATIO..... 0.5000

ORIGINAL FORMULATION, ... NEWDS = 0

HYPERBOLIC STRESS-STRAIN PARAMETERS

SOIL CLASSIFICATION SM90

COHESION INTERCEPT C 0.0000

FRICTION ANGLE PHIO (DEG)..... 32.0000

10-FOLD REDUCTION IN PHIO(DEG).. 4.0000

SCALED MODULUS NUMBER ZK 300.0000

MODULUS EXPONENT ZN 0.2500

FAILURE RATIO RF 0.7000

BULK MODULUS NUMBER BK 250.0000

BULK MODULUS EXPONENT BM 0.0000

INTERFACE ELEMENT MATERIAL-GROUP PROPERTIES

MAT. NO.	NORMAL-ANGLE	COEF-FRICTION	TENSILE-RUPTURE	INITIAL-GAP
1	-7.53	0.30000	50.00000	0.00000
2	-2.11	0.30000	50.00000	0.00000
3	3.31	0.30000	50.00000	0.00000
4	8.73	0.30000	50.00000	0.00000
5	14.14	0.30000	50.00000	0.00000
6	19.56	0.30000	50.00000	0.00000
7	24.98	0.30000	50.00000	0.00000
8	30.40	0.30000	50.00000	0.00000
9	35.82	0.30000	50.00000	0.00000
10	41.24	0.30000	50.00000	0.00000
11	46.65	0.30000	50.00000	0.00000
12	52.07	0.30000	50.00000	0.00000
13	57.49	0.30000	50.00000	0.00000
14	62.91	0.30000	50.00000	0.00000
15	68.33	0.30000	50.00000	0.00000
16	73.75	0.30000	50.00000	0.00000
17	79.16	0.30000	50.00000	0.00000
18	84.58	0.30000	50.00000	0.00000
19	90.00	0.30000	50.00000	0.00000
20	95.42	0.30000	50.00000	0.00000
21	100.84	0.30000	50.00000	0.00000
22	106.25	0.30000	50.00000	0.00000
23	111.67	0.30000	50.00000	0.00000
24	117.09	0.30000	50.00000	0.00000
25	122.51	0.30000	50.00000	0.00000
26	127.93	0.30000	50.00000	0.00000
27	133.35	0.30000	50.00000	0.00000
28	138.76	0.30000	50.00000	0.00000
29	144.18	0.30000	50.00000	0.00000
30	149.60	0.30000	50.00000	0.00000
31	155.02	0.30000	50.00000	0.00000
32	160.44	0.30000	50.00000	0.00000
33	165.85	0.30000	50.00000	0.00000
34	171.27	0.30000	50.00000	0.00000
35	176.69	0.30000	50.00000	0.00000

36	182.11	0.30000	50.00000	0.00000
37	187.53	0.30000	50.00000	0.00000

LRFD TOTAL LOAD FACTORS PER LOAD STEP

LOAD STEP	LOAD FACTOR	USER COMMENT
1	1.575	Factor for load step #1
2	1.575	Factor for load step #2
3	1.575	Factor for load step #3
4	1.575	Factor for load step #4
5	1.575	Factor for load step #5
6	1.575	Factor for load step #6
7	1.575	Factor for load step #7
8	1.575	Factor for load step #8
9	1.575	Factor for load step #9
10	1.575	Factor for load step #10
11	1.575	Factor for load step #11
12	1.575	Factor for load step #12
13	1.575	Factor for load step #13
14	1.575	Factor for load step #14
15	1.575	Factor for load step #15
16	1.575	Factor for load step #16
17	1.575	Factor for load step #17
18	1.575	Factor for load step #18
19	1.575	Factor for load step #19
20	1.575	Factor for load step #20
21	1.300	Factor for load step #21
22	1.300	Factor for load step #22

STRUCTURAL RESPONSES OF STEEL-GROUP 1, LOAD STEP 22
UNITS INCH-LB SYSTEM: (FORCE = LB/IN, MOMENT = IN-LB/IN, STRESS = PSI)

NODE	X-COORD Y-COORD	X-DISP. Y-DISP.	N-PRES. S-PRES.	MOMENT THRUST	MAX-STRESS HOOP-STRESS	SHEAR S-STRESS
1	-254.12 0.00	-0.610E+00 -0.310E+01	-0.105E+02 -0.446E+01	-0.979E-10 -0.443E+04	-0.148E+05 -0.148E+05	0.217E+03 0.723E+03
2	-258.50 24.26	-0.548E+00 -0.310E+01	-0.129E+02 -0.402E+01	-0.410E+04 -0.454E+04	-0.261E+05 -0.151E+05	0.105E+03 0.348E+03
3	-260.57 48.82	-0.426E+00 -0.310E+01	-0.152E+02 -0.358E+01	-0.541E+04 -0.464E+04	-0.299E+05 -0.154E+05	0.168E+02 0.561E+02
4	-260.31 73.47	-0.218E+00 -0.311E+01	-0.167E+02 -0.292E+01	-0.515E+04 -0.471E+04	-0.295E+05 -0.157E+05	-0.316E+02 -0.105E+03
5	-257.73 97.98	0.699E-01 -0.316E+01	-0.163E+02 -0.136E+01	-0.403E+04 -0.476E+04	-0.266E+05 -0.159E+05	-0.722E+02 -0.240E+03
6	-252.84 122.14	0.415E+00 -0.324E+01	-0.165E+02 0.792E+00	-0.173E+04 -0.476E+04	-0.205E+05 -0.158E+05	-0.117E+03 -0.388E+03
7	-245.70 145.73	0.775E+00 -0.337E+01	-0.177E+02 0.408E+01	0.161E+04 -0.468E+04	-0.199E+05 -0.156E+05	-0.140E+03 -0.465E+03
8	-236.35 168.54	0.110E+01 -0.352E+01	-0.192E+02 0.530E+01	0.509E+04 -0.455E+04	-0.288E+05 -0.152E+05	-0.120E+03 -0.399E+03
9	-224.90 190.36	0.133E+01 -0.365E+01	-0.190E+02 0.525E+01	0.751E+04 -0.441E+04	-0.348E+05 -0.147E+05	-0.716E+02 -0.238E+03
10	-211.44 211.01	0.145E+01 -0.375E+01	-0.186E+02 0.525E+01	0.869E+04 -0.428E+04	-0.375E+05 -0.142E+05	-0.180E+02 -0.601E+02
11	-196.08	0.145E+01	-0.164E+02	0.858E+04	-0.368E+05	0.167E+02

	230.29	-0.376E+01	0.470E+01	-0.415E+04	-0.138E+05	0.556E+02
12	-178.98	0.135E+01	-0.157E+02	0.819E+04	-0.353E+05	0.271E+02
	248.04	-0.368E+01	0.459E+01	-0.404E+04	-0.134E+05	0.903E+02
13	-160.27	0.117E+01	-0.176E+02	0.771E+04	-0.337E+05	0.631E+02
	264.09	-0.348E+01	0.535E+01	-0.392E+04	-0.130E+05	0.210E+03
14	-140.14	0.929E+00	-0.171E+02	0.568E+04	-0.278E+05	0.128E+03
	278.31	-0.317E+01	0.536E+01	-0.379E+04	-0.126E+05	0.425E+03
15	-118.75	0.676E+00	-0.157E+02	0.207E+04	-0.178E+05	0.181E+03
	290.56	-0.276E+01	0.510E+01	-0.368E+04	-0.122E+05	0.602E+03
16	-96.30	0.450E+00	-0.131E+02	-0.258E+04	-0.188E+05	0.196E+03
	300.73	-0.229E+01	0.436E+01	-0.358E+04	-0.119E+05	0.653E+03
17	-72.98	0.283E+00	-0.952E+01	-0.695E+04	-0.302E+05	0.143E+03
	308.74	-0.185E+01	0.326E+01	-0.350E+04	-0.117E+05	0.476E+03
18	-49.02	0.187E+00	-0.822E+01	-0.902E+04	-0.355E+05	0.359E+02
	314.51	-0.150E+01	0.288E+01	-0.343E+04	-0.114E+05	0.120E+03
19	-24.62	0.146E+00	-0.961E+01	-0.821E+04	-0.331E+05	-0.631E+02
	318.00	-0.128E+01	0.330E+01	-0.335E+04	-0.112E+05	-0.210E+03
20	0.00	0.133E+00	-0.146E+02	-0.565E+04	-0.260E+05	-0.766E+02
	319.17	-0.119E+01	0.203E+01	-0.328E+04	-0.109E+05	-0.255E+03
21	24.62	0.124E+00	-0.168E+02	-0.461E+04	-0.234E+05	0.554E+00
	318.00	-0.120E+01	-0.544E+01	-0.332E+04	-0.111E+05	0.184E+01
22	49.02	0.102E+00	-0.123E+02	-0.639E+04	-0.285E+05	0.417E+02
	314.51	-0.129E+01	-0.411E+01	-0.344E+04	-0.115E+05	0.139E+03
23	72.98	0.466E-01	-0.103E+02	-0.779E+04	-0.326E+05	-0.851E+01
	308.74	-0.148E+01	-0.349E+01	-0.354E+04	-0.118E+05	-0.283E+02
24	96.30	-0.688E-01	-0.933E+01	-0.721E+04	-0.313E+05	-0.103E+03
	300.73	-0.178E+01	-0.314E+01	-0.361E+04	-0.120E+05	-0.343E+03
25	118.75	-0.260E+00	-0.115E+02	-0.378E+04	-0.224E+05	-0.189E+03
	290.56	-0.217E+01	-0.378E+01	-0.368E+04	-0.123E+05	-0.629E+03
26	140.14	-0.518E+00	-0.154E+02	0.138E+04	-0.162E+05	-0.208E+03
	278.31	-0.259E+01	-0.489E+01	-0.377E+04	-0.126E+05	-0.692E+03
27	160.27	-0.802E+00	-0.184E+02	0.610E+04	-0.292E+05	-0.151E+03
	264.09	-0.297E+01	-0.569E+01	-0.389E+04	-0.129E+05	-0.504E+03
28	178.98	-0.106E+01	-0.183E+02	0.874E+04	-0.367E+05	-0.697E+02
	248.04	-0.325E+01	-0.384E+01	-0.400E+04	-0.133E+05	-0.232E+03
29	196.08	-0.123E+01	-0.160E+02	0.960E+04	-0.392E+05	-0.263E+02
	230.29	-0.340E+01	-0.177E+01	-0.406E+04	-0.135E+05	-0.876E+02
30	211.44	-0.130E+01	-0.188E+02	0.102E+05	-0.409E+05	0.178E+02
	211.01	-0.344E+01	-0.219E+01	-0.411E+04	-0.137E+05	0.591E+02
31	224.90	-0.123E+01	-0.187E+02	0.888E+04	-0.376E+05	0.902E+02
	190.36	-0.338E+01	-0.392E+00	-0.415E+04	-0.138E+05	0.300E+03

32	236.35	-0.103E+01	-0.176E+02	0.587E+04	-0.296E+05	0.146E+03
	168.54	-0.326E+01	0.682E+00	-0.416E+04	-0.139E+05	0.485E+03
33	245.70	-0.736E+00	-0.149E+02	0.183E+04	-0.187E+05	0.155E+03
	145.73	-0.313E+01	0.132E+01	-0.415E+04	-0.138E+05	0.516E+03
34	252.84	-0.396E+00	-0.138E+02	-0.161E+04	-0.181E+05	0.117E+03
	122.14	-0.301E+01	0.162E+01	-0.413E+04	-0.138E+05	0.391E+03
35	257.73	-0.705E-01	-0.138E+02	-0.379E+04	-0.238E+05	0.690E+02
	97.98	-0.293E+01	0.219E+01	-0.410E+04	-0.136E+05	0.230E+03
36	260.31	0.202E+00	-0.140E+02	-0.484E+04	-0.264E+05	0.273E+02
	73.47	-0.289E+01	0.287E+01	-0.404E+04	-0.135E+05	0.910E+02
37	260.57	0.398E+00	-0.128E+02	-0.495E+04	-0.265E+05	-0.213E+02
	48.82	-0.288E+01	0.289E+01	-0.397E+04	-0.132E+05	-0.708E+02
38	258.50	0.517E+00	-0.113E+02	-0.359E+04	-0.226E+05	-0.963E+02
	24.26	-0.288E+01	0.339E+01	-0.389E+04	-0.130E+05	-0.321E+03
39	254.12	0.582E+00	-0.969E+01	-0.574E-09	-0.127E+05	-0.187E+03
	0.00	-0.288E+01	0.389E+01	-0.380E+04	-0.127E+05	-0.623E+03

STRAIN AND YIELDING DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	INNER-FIBER STRAIN	OUTER-FIBER STRAIN	STRAIN RATIO MAX-TO-YIELD	FRACTION OF WALL YIELDED
1	-0.46319E-03	-0.46319E-03	.33548	0.00000
2	-0.81861E-03	-0.13015E-03	.59290	0.00000
3	-0.93832E-03	-0.30798E-04	.67960	0.00000
4	-0.92435E-03	-0.60948E-04	.66948	0.00000
5	-0.83508E-03	-0.15978E-03	.60483	0.00000
6	-0.64194E-03	-0.35208E-03	.46494	0.00000
7	-0.35402E-03	-0.62449E-03	.45230	0.00000
8	-0.48667E-04	-0.90269E-03	.65379	0.00000
9	0.16865E-03	-0.10905E-02	.78982	0.00000
10	0.28231E-03	-0.11758E-02	.85161	0.00000
11	0.28597E-03	-0.11535E-02	.83542	0.00000
12	0.26530E-03	-0.11090E-02	.80319	0.00000
13	0.23781E-03	-0.10564E-02	.76516	0.00000
14	0.79749E-04	-0.87240E-03	.63186	0.00000
15	-0.21032E-03	-0.55818E-03	.40427	0.00000
16	-0.59027E-03	-0.15737E-03	.42752	0.00000
17	-0.94830E-03	0.21708E-03	.68683	0.00000
18	-0.11148E-02	0.39773E-03	.80742	0.00000
19	-0.10392E-02	0.33843E-03	.75269	0.00000
20	-0.81635E-03	0.12939E-03	.59126	0.00000
21	-0.73393E-03	0.40229E-04	.53157	0.00000
22	-0.89499E-03	0.17620E-03	.64822	0.00000
23	-0.10227E-02	0.28388E-03	.74071	0.00000
24	-0.98232E-03	0.22740E-03	.71147	0.00000
25	-0.70224E-03	-0.67814E-04	.50862	0.00000
26	-0.27887E-03	-0.50984E-03	.36927	0.00000
27	0.10501E-03	-0.91771E-03	.66467	0.00000
28	0.31523E-03	-0.11506E-02	.83336	0.00000
29	0.38024E-03	-0.12294E-02	.89046	0.00000
30	0.42332E-03	-0.12830E-02	.92925	0.00000
31	0.31079E-03	-0.11786E-02	.85361	0.00000
32	0.57894E-04	-0.92765E-03	.67187	0.00000
33	-0.28019E-03	-0.58778E-03	.42571	0.00000
34	-0.56718E-03	-0.29632E-03	.41080	0.00000
35	-0.74612E-03	-0.10984E-03	.54039	0.00000
36	-0.82802E-03	-0.16277E-04	.59972	0.00000
37	-0.83028E-03	0.33292E-06	.60135	0.00000
38	-0.70802E-03	-0.10500E-03	.51280	0.00000
39	-0.39703E-03	-0.39703E-03	.28756	0.00000

COMBINED THRUST AND MOMENT DIAGNOSTICS OF STEEL-GROUP 1, LOAD STEP 22

NODE	FACTORED THRUST-RATIO P/(P-resist)	FACTORED MOMENT-RATIO M/(M-resist)	FACTORED COMBINED-RATIO AASHTO 12.8.9.5
1	-0.37276	0.00000	0.13895
2	-0.38176	-0.19766	0.34340
3	-0.38995	-0.26055	0.41262
4	-0.39646	-0.24789	0.40507
5	-0.40031	-0.19388	0.35413
6	-0.39997	-0.08322	0.24320
7	-0.39373	0.07765	0.23268
8	-0.38280	0.24519	0.39173
9	-0.37093	0.36150	0.49909
10	-0.35952	0.41863	0.54789
11	-0.34906	0.41326	0.53510
12	-0.33947	0.39455	0.50979
13	-0.32940	0.37159	0.48009
14	-0.31894	0.27336	0.37509
15	-0.30922	0.09987	0.19549
16	-0.30083	-0.12429	0.21479
17	-0.29423	-0.33459	0.42116
18	-0.28853	-0.43425	0.51750
19	-0.28198	-0.39553	0.47504
20	-0.27589	-0.27234	0.34846
21	-0.27913	-0.22226	0.30018
22	-0.28923	-0.30754	0.39120
23	-0.29728	-0.37512	0.46350
24	-0.30376	-0.34732	0.43959
25	-0.30985	-0.18215	0.27816
26	-0.31736	0.06632	0.16703
27	-0.32701	0.29363	0.40056
28	-0.33614	0.42085	0.53384
29	-0.34170	0.46215	0.57891
30	-0.34591	0.48989	0.60955
31	-0.34917	0.42760	0.54952
32	-0.34997	0.28295	0.40543
33	-0.34925	0.08831	0.21029
34	-0.34745	-0.07777	0.19849
35	-0.34442	-0.18268	0.30130
36	-0.33973	-0.23306	0.34847
37	-0.33395	-0.23847	0.34999
38	-0.32714	-0.17313	0.28015
39	-0.31951	0.00000	0.10209

ASSESSMENT SUMMARY STEEL-GROUP 1, LOAD-STEP 22

LRFD STRENGTH-LIMIT RATIOS AT STEP 22, FOR STEEL GROUP # 1

DESIGN-CRITERION	CONTROL NODE	FACTORED DEMAND	FACTORED CAPACITY	RATIO VALUE
MATERIAL THRUST (psi)	5	15852.	30800.	0.515
BUCKLING THRUST (psi)	5	15852.	46824.	0.339
SEAM THRUST (psi)	5	15852.	23052.	0.688
PLASTIC-PENETRATE (%)	20	0.00	90.00	0.000
COMBINED T&M Ratio	30	0.610	1.000	0.610

LRFD SERVICE PERFORMANCE AT STEP 22, FOR STEEL GROUP # 1

PERCENT VERTICAL DEFLECTION (%)..... 0.47

RISE HEIGHT OF VERTICAL DEFLECTION (IN)..... 319.17

RATIO OF VERTICAL DEFLECTION TO ALLOWABLE (-)..... 0.09

HANDLING FACTOR RATIO = (SPAN**2/EI)/FF.....	0.41
SPAN LENGTH FOR HANDLING AND BUCKLING (IN).....	521.47
FLEXIBILITY FACTOR (FF) FOR HANDLING (IN/LB)	0.020

* * * * NORMAL EXIT FROM CANDE * * * *