

# ATTACHMENT D

9104240285 910415  
PDR ADOCK 05000244  
P PDR



Design Verification

Ginna Station

Containment Foundation Mat Analysis

ROCHESTER GAS AND ELECTRIC CORPORATION

89 EAST AVENUE

ROCHESTER, NEW YORK 14649

EWR #5327

Revision 0

October 1, 1990

Prepared By: Leonard P. Sucheski 10/1/90  
Structural Engineer Date

Reviewed By: Sam J. [Signature] 10/1/90  
Structural Engineer Date

Approved By: A. Gary [Signature] 10/4/90  
Manager, Structural Engineering Date

12



# REVISION STATUS SHEET

Page	Latest Rev.	Page	Latest Rev.	Page	Latest Rev.
i	0				
ii	0				
1	0				
2	0				
3	0				



## Design Review

### 1.0 Summary Description of the Design

Recent licensing activities relative to Ginna Station license extension have prompted an analytical investigation of the Containment Building. This analysis is made to address the adequacy of the foundation mat to resist upward hydrostatic pressure loads.

### 2.0 Referenced Documents

Letter "Request For Additional Information (RAI), Concerns Related to the Integrity of Containment at Ginna (TAC No. 67427)" from Allen Johnson, USNRC to Robert Mecredy dated July 9, 1990.

### 3.0 Discussion

Not applicable.

### 4.0 Summary

The analysis that was done on STARDYNE is very conservative and shows the mat to be acceptable for water at elevation 265 and slightly overstressed for water at elevation 270. The MSC PAL results confirm the STARDYNE results at elevation 265 and demonstrated, with a less conservative model, that the slab is also adequate for water at elevation 270.

### 5.0 Justification for Manager's Verification

Not applicable.

LAS/170

DESIGN REVIEW CHECKLIST

	YES	NO
(1) Were the inputs correctly selected and incorporated into design?	<u>X</u>	_____
(2) Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent re-verifications when the detailed design activities are completed?	<u>X</u>	_____
(3) Are the appropriate quality and quality assurance requirements specified?	<u>X</u>	_____
(4) Are the applicable codes, standards and regulatory requirements including issue and addenda properly identified and are their requirements for design met?	<u>X</u>	_____
(5) Have applicable construction and operating experience been considered?	<u>X</u>	_____
(6) Have the design interface requirements been satisfied?	<u>X</u>	_____
(7) Was an appropriate design method used?	<u>X</u>	_____
(8) Is the output reasonable compared to inputs?	<u>X</u>	_____
(9) Are the specified parts, equipment and processes suitable for the required application?	<u>N/A</u>	_____
(10) Are the specified materials compatible with each other and the design environmental conditions to which the material will be exposed?	<u>N/A</u>	_____
(10a) For 10CFR50.49 specified items, are all requirements in sections 4, 5 and 6 of the applicable EEQ-1 forms properly incorporated in the design outputs?	<u>N/A</u>	_____
(11) Have adequate maintenance features and requirements been specified?	<u>N/A</u>	_____



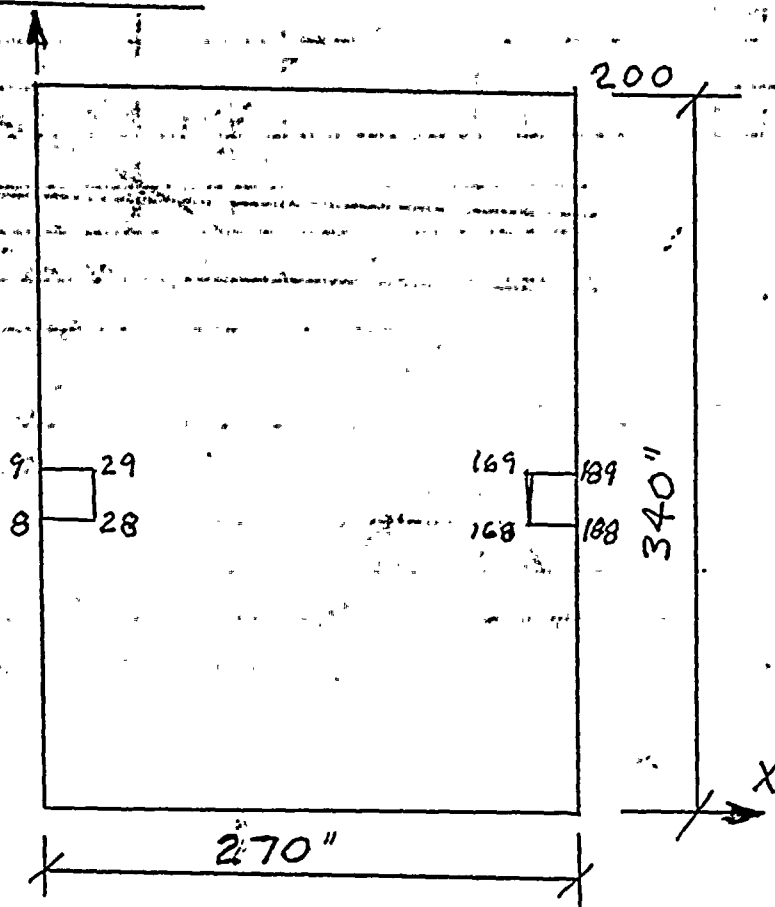
- |  |            |       |
|--|------------|-------|
| (12) Are accessibility and other design provisions adequate for performance of needed maintenance and repair?  | <u>N/A</u> | _____ |
| (13) Has adequate accessibility been provided to perform the in-service inspection expected to be required during the plant life?                                      | <u>N/A</u> | _____ |
| (14) Has the design properly considered radiation exposure to the public and plant personnel?  | <u>N/A</u> | _____ |
| (15) Are the acceptance criteria incorporated in the design documents sufficient to allow verification that design requirements have been satisfactorily accomplished? | <u>X</u>   | _____ |
| (16) Have adequate pre-operational and subsequent periodic test requirements been appropriately specified?   | <u>N/A</u> | _____ |
| (17) Have the characteristics of existing equipment important to the conduct of tests been reviewed to assure the characteristics can meet the test requirements?      | <u>N/A</u> | _____ |
| (18) Are adequate handling, storage, cleaning and shipping requirements specified?   | <u>N/A</u> | _____ |
| (19) Are adequate identification requirements specified?   | <u>N/A</u> | _____ |
| (20) Are requirements for record preparation, review, approval, retention, etc., adequately specified?   | <u>X</u>   | _____ |
| (21) Are the requirements for fire protection specified in the Design Criteria adequately incorporated in the drawings and specifications?                             | <u>N/A</u> | _____ |
| (22) Have the Environmental qualification requirements of the Design Criteria, including compliance with QE-328 and 10 CFR 50.49 been satisfied?                       | <u>N/A</u> | _____ |
| (23) Has design process been performed in accordance with approved RG&E Engineering Procedures?  | <u>X</u>   | _____ |

[LAS/172]

ENG. DEPT.	STATION: <i>GINNA STATION</i>	DATE: <i>9/28/90</i>	PAGE <i>1</i> OF <i>2</i>
JOB: <i>C.V. FOUNDATION / SLAB</i>	MADE BY: <i>LAS</i>		CK:

AS A VERIFICATION OF THE  
STARDYNE MODEL AN INDEPENDENT  
ANALYSIS OF A PORTION OF THE  
FOUNDATION SLAB WILL BE  
CHECKED WITH MSC PAL2. (SEE  
ATTACHMENT 1). AN UPWARD  
PRESSURE OF 16.6 PSI WILL BE  
APPLIED. THE VERTICAL DEAD  
LOAD OF COLUMNS C103 AND  
C104 WILL ALSO BE IMPOSED.

ENG. DEPT.	STATION: <i>GINNA STATION</i>	DATE: <i>10/1/90</i>	PAGE <i>2</i> OF <i>2</i>
JOB: <i>C.V. FOUNDATION SLAB</i>	MADE BY: <i>LAS</i>	CK:	

PAL2 MODEL

$$t = 24"$$

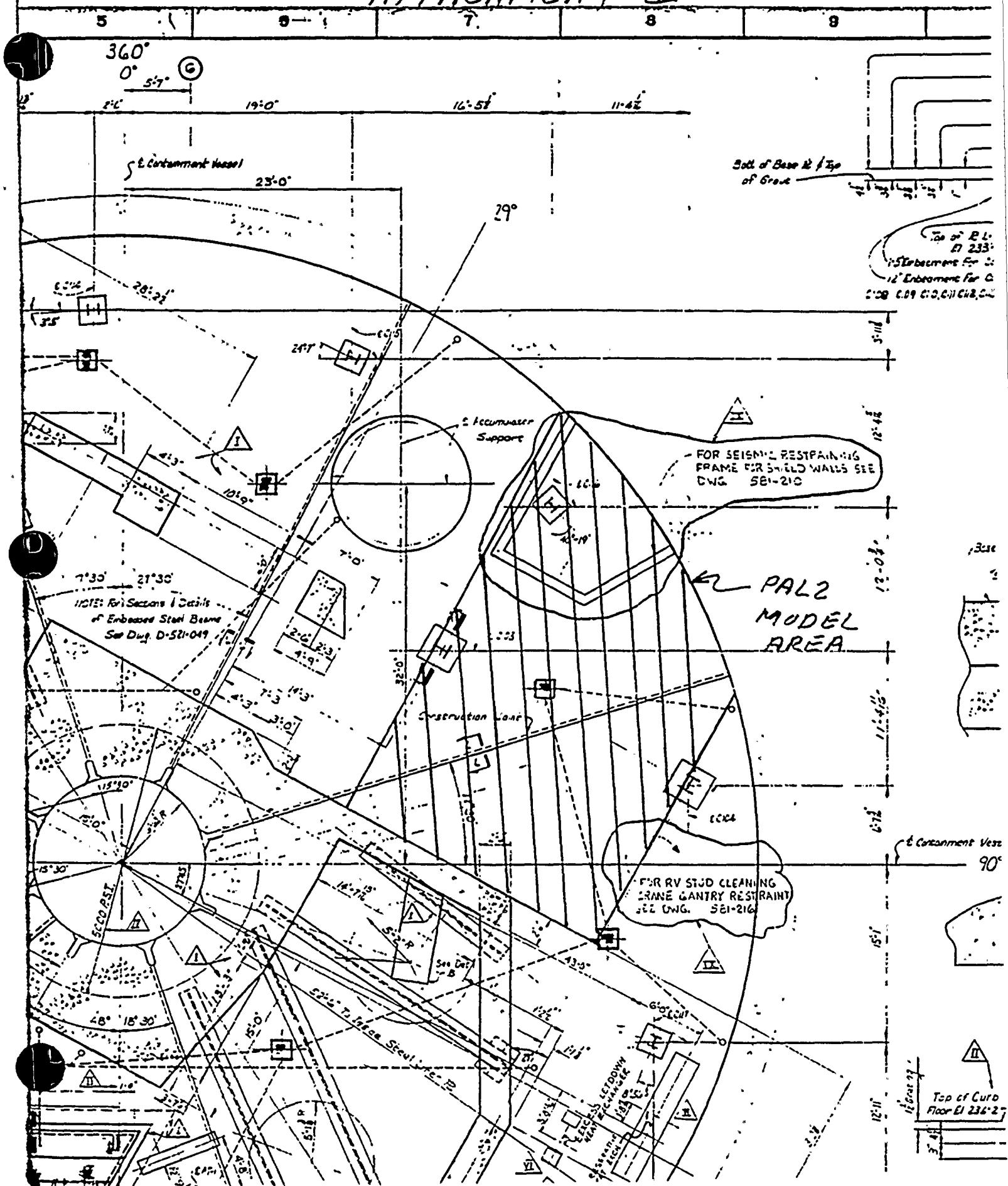
SEE PG. 1 OF COMPUTER OUTPUT

MAXIMUM STRESS = 934 PSI ELEM. 17

PERMISSIBLE STRESS = 1277 PSI

SLAB IS ADEQUATE FOR INCREASED  
GROUND WATER LEVEL.

ATTACHMENT 1





# GEOMETRY 1/2

1: TITLE C/V BASE SLAB

2: NOOAL POINT LOCATIONS 1

3: 1 0 0

4: 0 0 340

5: 200 270 340

6: 181 270 0

7: -- BLANK LINE --

8: NOOAL POINT LOCATIONS 21

9: 1 20 200 1 20

10: -- BLANK LINE --

11: QUADRILATERAL PLATE TYPE 0 1 24

12: MATERIAL PROPERTIES 3000000 1160000 .000224 0

13: GENERATE CONNECTS 1 20 200 1 20

14: ZERO 1

15: TX ALL

16: TY ALL

17: RZ ALL

18: ALL 1

19: ALL 21

20: ALL 41

--ENTER EDIT COMMAND OR LINE NUMBER--

Replace, Delete, Add, Insert, Copy, Move, Print, Get, Save, Quit



2/2

17: RZ ALL

18: ALL 1

19: ALL 21

20: ALL 41

0

--ENTER EDIT COMMAND OR LINE NUMBER--

Replace, Delete, Add, Insert, Copy, Move, Print, Get, Save, Quit  
P20

20: ALL 41

21: ALL 61

22: ALL 81

23: ALL 101

24: ALL 121

25: ALL 141

26: ALL 161

27: ALL 181

28: -- BLANK LINE --

29: ELIMINATE

30: -- BLANK LINE --

31: END DEFINITION

--ENTER EDIT COMMAND OR LINE NUMBER--

Replace, Delete, Add, Insert, Copy, Move, Print, Get, Save, Quit

0

0





# LOAD FILE

--ENTER EDIT COMMAND OR LINE NUMBER--

Replace, Delete, Add, Insert, Copy, Move, Print, Get, Save, Quit

P

1: TITLE C/V SLAB HYDROSTATIC LOADS

2: DISPLACEMENTS APPLIED 11

3: RA 0 1 THROUGH 20

4: RA 0 181 THROUGH 200

5: TA 0 20 THROUGH 200 STEP 20

6: RA 0 20 THROUGH 200 STEP 20

7:

8: FORCES AND MOMENTS APPLIED 11

9: FZ 6663 1 THROUGH 200 STEP 1

10: FZ -10000 9 THROUGH 10 STEP 1

11: FZ -10000 28 THROUGH 29 STEP 1

12: FZ -10000 168 THROUGH 169 STEP 1

13: FZ -10000 188 THROUGH 189 STEP 1

14:

15: SOLVE

16: END DEFINITION

--ENTER EDIT COMMAND OR LINE NUMBER--

Replace, Delete, Add, Insert, Copy, Move, Print, Get, Save, Quit

## C/V BASE SLAB

## STATIC ANALYSIS SUBCASE NO. 1 ELEMENT RECOVERY

MAXIMUM STRESSES FOR QUAD ELEMENT				VON MISES CRITERION		
ELEMENT	NODE	MAJOR	MINOR	SHEAR	STRESS	% YIELD
77	0	7.094E+02	-7.094E+02	2.520E+02	6.323E+02	0.0
77	81	8.613E+02	-8.613E+02	3.044E+02	7.669E+02	0.0
77	82	5.579E+02	-5.579E+02	1.997E+02	4.979E+02	0.0
77	102	5.576E+02	-5.576E+02	1.996E+02	4.977E+02	0.0
77	101	8.609E+02	-8.609E+02	3.043E+02	7.665E+02	0.0
78	0	4.351E+02	-4.351E+02	1.587E+02	3.898E+02	0.0
78	82	5.629E+02	-5.629E+02	2.015E+02	5.024E+02	0.0
78	83	3.075E+02	-3.075E+02	1.160E+02	2.776E+02	0.0
78	103	3.075E+02	-3.075E+02	1.161E+02	2.776E+02	0.0
78	102	5.625E+02	-5.625E+02	2.014E+02	5.021E+02	0.0
79	0	2.090E+02	-2.090E+02	8.504E+01	1.925E+02	0.0
79	83	3.135E+02	-3.135E+02	1.182E+02	2.830E+02	0.0
79	84	1.043E+02	-1.043E+02	5.181E+01	1.040E+02	0.0
79	104	1.045E+02	-1.045E+02	5.196E+01	1.042E+02	0.0
79	103	3.134E+02	-3.134E+02	1.182E+02	2.829E+02	0.0
80	0	3.136E+01	-3.136E+01	2.958E+01	5.126E+01	0.0
80	84	1.108E+02	-1.108E+02	5.411E+01	1.096E+02	0.0
80	85	6.522E+01	-6.522E+01	4.851E+00	6.095E+01	0.0
80	105	6.533E+01	-6.533E+01	5.115E+00	6.087E+01	0.0
80	104	1.110E+02	-1.110E+02	5.423E+01	1.097E+02	0.0
	0	1.130E+02	-1.130E+02	1.018E+01	1.044E+02	0.0
	85	6.337E+01	-6.337E+01	7.068E+00	5.762E+01	0.0
81	86	1.773E+02	-1.773E+02	2.773E+01	1.571E+02	0.0
81	106	1.767E+02	-1.767E+02	2.738E+01	1.567E+02	0.0
81	105	6.352E+01	-6.352E+01	7.302E+00	5.762E+01	0.0
82	0	2.189E+02	-2.189E+02	3.728E+01	1.928E+02	0.0
82	86	1.717E+02	-1.717E+02	2.575E+01	1.526E+02	0.0
82	87	2.666E+02	-2.666E+02	4.914E+01	2.335E+02	0.0
82	107	2.661E+02	-2.661E+02	4.879E+01	2.331E+02	0.0
82	106	1.712E+02	-1.712E+02	2.544E+01	1.523E+02	0.0
83	0	2.954E+02	-2.954E+02	5.502E+01	2.586E+02	0.0
83	87	2.620E+02	-2.620E+02	4.752E+01	2.297E+02	0.0
83	88	3.291E+02	-3.291E+02	6.278E+01	2.877E+02	0.0
83	108	3.290E+02	-3.290E+02	6.259E+01	2.876E+02	0.0
83	107	2.615E+02	-2.615E+02	4.718E+01	2.294E+02	0.0
84	0	3.479E+02	-3.479E+02	6.657E+01	3.041E+02	0.0
84	88	3.258E+02	-3.258E+02	6.160E+01	2.849E+02	0.0
84	89	3.701E+02	-3.701E+02	7.165E+01	3.232E+02	0.0
84	109	3.704E+02	-3.704E+02	7.172E+01	3.235E+02	0.0
84	108	3.253E+02	-3.253E+02	6.131E+01	2.846E+02	0.0
85	0	3.803E+02	-3.803E+02	7.417E+01	3.320E+02	0.0
85	89	3.680E+02	-3.680E+02	7.091E+01	3.215E+02	0.0
85	90	3.924E+02	-3.924E+02	7.739E+01	3.424E+02	0.0
85	110	3.930E+02	-3.930E+02	7.760E+01	3.428E+02	0.0

85	109	3.678E+02	-3.678E+02	7.077E+01	3.213E+02	0.0
	0	3.939E+02	-3.939E+02	7.856E+01	3.434E+02	0.0
	90	3.914E+02	-3.914E+02	7.702E+01	3.415E+02	0.0
	91	3.959E+02	-3.959E+02	7.991E+01	3.450E+02	0.0
86	111	3.965E+02	-3.965E+02	8.019E+01	3.455E+02	0.0
86	110	3.916E+02	-3.916E+02	7.714E+01	3.417E+02	0.0
87	0	3.880E+02	-3.880E+02	7.928E+01	3.379E+02	0.0
87	91	3.962E+02	-3.962E+02	8.000E+01	3.452E+02	0.0
87	92	3.793E+02	-3.793E+02	7.828E+01	3.301E+02	0.0
87	112	3.799E+02	-3.799E+02	7.855E+01	3.306E+02	0.0
87	111	3.968E+02	-3.968E+02	8.029E+01	3.457E+02	0.0
88	0	3.610E+02	-3.610E+02	7.520E+01	3.141E+02	0.0
88	92	3.811E+02	-3.811E+02	7.893E+01	3.317E+02	0.0
88	93	3.404E+02	-3.404E+02	7.123E+01	2.961E+02	0.0
88	113	3.409E+02	-3.409E+02	7.144E+01	2.965E+02	0.0
88	112	3.818E+02	-3.818E+02	7.922E+01	3.322E+02	0.0
89	0	3.101E+02	-3.101E+02	6.479E+01	2.698E+02	0.0
89	93	3.437E+02	-3.437E+02	7.241E+01	2.989E+02	0.0
89	94	2.761E+02	-2.761E+02	5.699E+01	2.403E+02	0.0
89	114	2.764E+02	-2.764E+02	5.713E+01	2.406E+02	0.0
89	113	3.443E+02	-3.443E+02	7.264E+01	2.994E+02	0.0
90	0	2.317E+02	-2.317E+02	4.608E+01	2.021E+02	0.0
90	94	2.807E+02	-2.807E+02	5.865E+01	2.442E+02	0.0
90	95	1.824E+02	-1.824E+02	3.339E+01	1.598E+02	0.0
90	115	1.826E+02	-1.826E+02	3.346E+01	1.600E+02	0.0
90	114	2.812E+02	-2.812E+02	5.881E+01	2.446E+02	0.0
91	0	1.216E+02	-1.216E+02	1.668E+01	1.088E+02	0.0
91	95	1.881E+02	-1.881E+02	3.543E+01	1.646E+02	0.0
91	96	5.917E+01	-5.917E+01	2.184E+00	5.711E+01	0.0
	116	5.919E+01	-5.919E+01	2.180E+00	5.714E+01	0.0
	115	1.884E+02	-1.884E+02	3.552E+01	1.648E+02	0.0
92	0	2.715E+01	-2.715E+01	2.605E+01	4.513E+01	0.0
92	96	6.173E+01	-6.173E+01	5.529E-01	6.118E+01	0.0
92	97	1.112E+02	-1.112E+02	5.225E+01	1.080E+02	0.0
92	117	1.113E+02	-1.113E+02	5.230E+01	1.081E+02	0.0
92	116	6.182E+01	-6.182E+01	5.638E-01	6.127E+01	0.0
93	0	2.124E+02	-2.124E+02	8.467E+01	1.945E+02	0.0
93	97	1.045E+02	-1.045E+02	4.987E+01	1.022E+02	0.0
93	98	3.202E+02	-3.202E+02	1.194E+02	2.882E+02	0.0
93	118	3.205E+02	-3.205E+02	1.195E+02	2.885E+02	0.0
93	117	1.045E+02	-1.045E+02	4.989E+01	1.023E+02	0.0
94	0	4.448E+02	-4.448E+02	1.614E+02	3.981E+02	0.0
94	98	3.139E+02	-3.139E+02	1.172E+02	2.827E+02	0.0
94	99	5.753E+02	-5.753E+02	2.055E+02	5.133E+02	0.0
94	119	5.758E+02	-5.758E+02	2.056E+02	5.137E+02	0.0
94	118	3.142E+02	-3.142E+02	1.173E+02	2.829E+02	0.0
95	0	7.246E+02	-7.246E+02	2.572E+02	6.457E+02	0.0
95	99	5.702E+02	-5.702E+02	2.037E+02	5.087E+02	0.0
95	100	8.784E+02	-8.784E+02	3.105E+02	7.821E+02	0.0
95	120	8.791E+02	-8.791E+02	3.107E+02	7.827E+02	0.0
95	119	5.706E+02	-5.706E+02	2.038E+02	5.091E+02	0.0



D	MAXIMUM STRESSES FOR SHELL ELEMENTS			VON MISES
	MAJOR	MINOR	SHEAR	STRESS CRITERION
81	8.613E+02	-8.613E+02	3.044E+02	7.669E+02
82	5.604E+02	-5.604E+02	2.006E+02	5.001E+02
83	3.105E+02	-3.105E+02	1.171E+02	2.803E+02
84	1.076E+02	-1.076E+02	5.296E+01	1.068E+02
85	6.430E+01	-6.430E+01	5.959E+00	5.929E+01
86	1.745E+02	-1.745E+02	2.674E+01	1.548E+02
87	2.643E+02	-2.643E+02	4.833E+01	2.316E+02
88	3.275E+02	-3.275E+02	6.219E+01	2.863E+02
89	3.691E+02	-3.691E+02	7.128E+01	3.224E+02
90	3.919E+02	-3.919E+02	7.721E+01	3.419E+02
91	3.961E+02	-3.961E+02	7.995E+01	3.451E+02
92	3.802E+02	-3.802E+02	7.860E+01	3.309E+02
93	3.421E+02	-3.421E+02	7.182E+01	2.975E+02
94	2.784E+02	-2.784E+02	5.782E+01	2.422E+02
95	1.853E+02	-1.853E+02	3.441E+01	1.622E+02
96	6.045E+01	-6.045E+01	1.368E+00	5.915E+01
97	1.079E+02	-1.079E+02	5.106E+01	1.051E+02
98	3.170E+02	-3.170E+02	1.183E+02	2.855E+02
99	5.727E+02	-5.727E+02	2.046E+02	5.110E+02
100	8.784E+02	-8.784E+02	3.105E+02	7.821E+02
101	8.609E+02	-8.609E+02	3.043E+02	7.665E+02
102	5.601E+02	-5.601E+02	2.005E+02	4.999E+02
103	3.105E+02	-3.105E+02	1.171E+02	2.802E+02
104	1.077E+02	-1.077E+02	5.310E+01	1.070E+02
105	6.443E+01	-6.443E+01	6.209E+00	5.924E+01
106	1.740E+02	-1.740E+02	2.641E+01	1.545E+02
107	2.638E+02	-2.638E+02	4.798E+01	2.313E+02
108	3.271E+02	-3.271E+02	6.195E+01	2.861E+02
109	3.691E+02	-3.691E+02	7.125E+01	3.224E+02
110	3.923E+02	-3.923E+02	7.737E+01	3.423E+02
111	3.966E+02	-3.966E+02	8.024E+01	3.456E+02
112	3.808E+02	-3.808E+02	7.888E+01	3.314E+02
113	3.426E+02	-3.426E+02	7.204E+01	2.979E+02
114	2.788E+02	-2.788E+02	5.797E+01	2.426E+02
115	1.855E+02	-1.855E+02	3.449E+01	1.624E+02
116	6.051E+01	-6.051E+01	1.372E+00	5.920E+01
117	1.079E+02	-1.079E+02	5.110E+01	1.052E+02
118	3.173E+02	-3.173E+02	1.184E+02	2.857E+02
119	5.732E+02	-5.732E+02	2.047E+02	5.114E+02
120	8.791E+02	-8.791E+02	3.107E+02	7.827E+02



## C/V BASE SLAB

## STATIC ANALYSIS SUBCASE NO. 1 ELEMENT RECOVERY

MAXIMUM STRESSES FOR QUAD ELEMENT					VON MISES CRITERION	
ELEMENT	NOOE	MAJOR	MINOR	SHEAR	STRESS	% YIELD
2	0	1.962E+02	-1.962E+02	8.176E+01	1.821E+02	0.0
2	2	7.773E+02	-7.773E+02	3.137E+02	7.142E+02	0.0
2	3	8.115E+02	-8.115E+02	2.725E+02	7.164E+02	0.0
2	23	4.615E+02	-4.615E+02	1.669E+02	4.127E+02	0.0
2	22	3.559E+02	-3.559E+02	1.172E+02	3.133E+02	0.0
22	0	1.823E+02	-1.823E+02	6.154E+01	1.610E+02	0.0
22	23	8.011E+01	-8.011E+01	4.327E+01	8.351E+01	0.0
22	24	2.988E+02	-2.988E+02	9.698E+01	2.626E+02	0.0
22	44	6.628E+01	-6.628E+01	4.199E+01	7.668E+01	0.0
22	43	3.338E+02	-3.338E+02	1.139E+02	2.954E+02	0.0
42	0	5.581E+01	-5.581E+01	4.657E+01	8.119E+01	0.0
42	44	1.632E+02	-1.632E+02	6.444E+01	1.490E+02	0.0
42	45	1.316E+02	-1.316E+02	6.191E+01	1.279E+02	0.0
42	65	8.564E+01	-8.564E+01	4.538E+01	8.832E+01	0.0
42	64	1.065E+02	-1.065E+02	5.838E+01	1.120E+02	0.0
62	0	1.289E+02	-1.289E+02	3.123E+01	1.116E+02	0.0
62	65	8.864E+01	-8.864E+01	2.887E+01	7.793E+01	0.0
62	66	1.651E+02	-1.651E+02	4.053E+01	1.430E+02	0.0
62	86	1.887E+02	-1.887E+02	3.905E+01	1.642E+02	0.0
62	85	8.507E+01	-8.507E+01	2.847E+01	7.507E+01	0.0
62	0	2.189E+02	-2.189E+02	3.728E+01	1.928E+02	0.0
62	86	1.717E+02	-1.717E+02	2.575E+01	1.526E+02	0.0
82	87	2.666E+02	-2.666E+02	4.914E+01	2.335E+02	0.0
82	107	2.661E+02	-2.661E+02	4.879E+01	2.331E+02	0.0
82	106	1.712E+02	-1.712E+02	2.544E+01	1.523E+02	0.0
102	0	2.902E+02	-2.902E+02	6.120E+01	2.524E+02	0.0
102	107	2.665E+02	-2.665E+02	5.165E+01	2.327E+02	0.0
102	108	3.329E+02	-3.329E+02	6.596E+01	2.903E+02	0.0
102	128	2.988E+02	-2.988E+02	6.614E+01	2.593E+02	0.0
102	127	2.629E+02	-2.629E+02	6.125E+01	2.279E+02	0.0
122	0	2.928E+02	-2.928E+02	7.695E+01	2.536E+02	0.0
122	128	3.172E+02	-3.172E+02	7.388E+01	2.750E+02	0.0
122	129	3.405E+02	-3.405E+02	7.660E+01	2.954E+02	0.0
122	149	3.005E+02	-3.005E+02	9.301E+01	2.627E+02	0.0
122	148	2.130E+02	-2.130E+02	6.466E+01	1.859E+02	0.0
142	0	2.695E+02	-2.695E+02	1.101E+02	2.486E+02	0.0
142	149	2.519E+02	-2.519E+02	6.651E+01	2.183E+02	0.0
142	150	3.131E+02	-3.131E+02	9.218E+01	2.726E+02	0.0
142	170	2.144E+02	-2.144E+02	1.235E+02	2.324E+02	0.0
142	169	2.987E+02	-2.987E+02	1.584E+02	3.081E+02	0.0





## MAXIMUM STRESSES FOR SHELL ELEMENTS

## VON MISES

	MAJOR	MINOR	SHEAR	STRESS CRITERION
2	7.773E+02	-7.773E+02	3.137E+02	7.142E+02
3	8.115E+02	-8.115E+02	2.725E+02	7.164E+02
22	3.559E+02	-3.559E+02	1.172E+02	3.133E+02
23	2.708E+02	-2.708E+02	1.051E+02	2.481E+02
24	2.988E+02	-2.988E+02	9.698E+01	2.626E+02
43	3.338E+02	-3.338E+02	1.139E+02	2.954E+02
44	1.147E+02	-1.147E+02	5.321E+01	1.128E+02
45	1.316E+02	-1.316E+02	6.191E+01	1.279E+02
64	1.065E+02	-1.065E+02	5.838E+01	1.120E+02
65	8.714E+01	-8.714E+01	3.713E+01	8.312E+01
66	1.651E+02	-1.651E+02	4.053E+01	1.430E+02
85	8.507E+01	-8.507E+01	2.847E+01	7.507E+01
86	1.802E+02	-1.802E+02	3.240E+01	1.584E+02
87	2.666E+02	-2.666E+02	4.914E+01	2.335E+02
106	1.712E+02	-1.712E+02	2.544E+01	1.523E+02
107	2.663E+02	-2.663E+02	5.022E+01	2.329E+02
108	3.329E+02	-3.329E+02	6.596E+01	2.903E+02
127	2.629E+02	-2.629E+02	6.125E+01	2.279E+02
128	3.080E+02	-3.080E+02	7.001E+01	2.671E+02
129	3.405E+02	-3.405E+02	7.660E+01	2.954E+02
148	2.130E+02	-2.130E+02	6.466E+01	1.859E+02
149	2.762E+02	-2.762E+02	7.976E+01	2.405E+02
150	3.131E+02	-3.131E+02	9.218E+01	2.726E+02
169	2.987E+02	-2.987E+02	1.584E+02	3.081E+02
170	2.144E+02	-2.144E+02	1.235E+02	2.324E+02

## C/V BASE SLAB

## STATIC ANALYSIS SUBCASE NO. 1 ELEMENT RECOVERY

MAXIMUM STRESSES FOR QUAD ELEMENT				VON MISES CRITERION		
ELEMENT	NODE	MAJOR	MINOR	SHEAR	STRESS	% YIELD
17	0	9.304E+01	-9.304E+01	4.714E+01	9.367E+01	0.0
17	17	9.344E+02	-9.344E+02	3.402E+02	8.368E+02	0.0
17	18	9.137E+02	-9.137E+02	3.648E+02	8.370E+02	0.0
17	38	7.215E+01	-7.215E+01	3.927E+01	7.555E+01	0.0
17	37	3.067E+02	-3.067E+02	1.107E+02	2.742E+02	0.0
37	0	4.137E+02	-4.137E+02	1.313E+02	3.626E+02	0.0
37	38	4.869E+02	-4.869E+02	1.592E+02	4.283E+02	0.0
37	39	3.813E+02	-3.813E+02	1.157E+02	3.327E+02	0.0
37	59	5.696E+02	-5.696E+02	1.888E+02	5.019E+02	0.0
37	58	2.174E+02	-2.174E+02	6.190E+01	1.889E+02	0.0
57	0	6.782E+02	-6.782E+02	2.391E+02	6.036E+02	0.0
57	59	4.629E+02	-4.629E+02	1.591E+02	4.102E+02	0.0
57	60	8.098E+02	-8.098E+02	2.848E+02	7.204E+02	0.0
57	80	8.655E+02	-8.655E+02	3.074E+02	7.713E+02	0.0
57	79	5.746E+02	-5.746E+02	2.052E+02	5.126E+02	0.0
77	0	7.094E+02	-7.094E+02	2.520E+02	6.323E+02	0.0
77	81	8.613E+02	-8.613E+02	3.044E+02	7.669E+02	0.0
77	82	5.579E+02	-5.579E+02	1.997E+02	4.979E+02	0.0
77	102	5.576E+02	-5.576E+02	1.996E+02	4.977E+02	0.0
77	101	8.609E+02	-8.609E+02	3.043E+02	7.665E+02	0.0
97	0	4.310E+02	-4.310E+02	1.555E+02	3.853E+02	0.0
97	102	5.633E+02	-5.633E+02	2.014E+02	5.026E+02	0.0
97	103	3.086E+02	-3.086E+02	1.165E+02	2.786E+02	0.0
97	123	3.150E+02	-3.150E+02	1.145E+02	2.820E+02	0.0
97	122	5.374E+02	-5.374E+02	1.896E+02	4.783E+02	0.0
117	0	1.954E+02	-1.954E+02	7.377E+01	1.764E+02	0.0
117	123	2.903E+02	-2.903E+02	1.084E+02	2.614E+02	0.0
117	124	1.282E+02	-1.282E+02	6.101E+01	1.252E+02	0.0
117	144	5.580E+01	-5.580E+01	3.459E+01	6.355E+01	0.0
117	143	3.283E+02	-3.283E+02	1.123E+02	2.907E+02	0.0
137	0	7.557E+01	-7.557E+01	6.081E+01	1.064E+02	0.0
137	144	1.738E+02	-1.738E+02	7.618E+01	1.641E+02	0.0
137	145	1.404E+02	-1.404E+02	7.317E+01	1.434E+02	0.0
137	165	1.902E+02	-1.902E+02	6.973E+01	1.706E+02	0.0
137	164	1.943E+02	-1.943E+02	1.024E+02	1.998E+02	0.0
157	0	8.318E+01	-8.318E+01	7.079E+01	1.232E+02	0.0
157	165	2.958E+02	-2.958E+02	1.468E+02	2.947E+02	0.0
157	166	1.132E+02	-1.132E+02	4.589E+01	1.042E+02	0.0
157	186	7.800E+02	-7.800E+02	3.511E+02	7.442E+02	0.0
157	185	8.403E+02	-8.403E+02	2.801E+02	7.411E+02	0.0



## MAXIMUM STRESSES FOR SHELL ELEMENTS

## VON MISES

	MAJOR	MINOR	SHEAR	STRESS CRITERION
17	9.344E+02	-9.344E+02	3.402E+02	8.368E+02
18	9.137E+02	-9.137E+02	3.648E+02	8.370E+02
37	3.067E+02	-3.067E+02	1.107E+02	2.742E+02
38	2.795E+02	-2.795E+02	9.926E+01	2.519E+02
39	3.813E+02	-3.813E+02	1.157E+02	3.327E+02
58	2.174E+02	-2.174E+02	6.190E+01	1.889E+02
59	5.162E+02	-5.162E+02	1.740E+02	4.561E+02
60	8.098E+02	-8.098E+02	2.848E+02	7.204E+02
79	5.746E+02	-5.746E+02	2.052E+02	5.126E+02
80	8.655E+02	-8.655E+02	3.074E+02	7.713E+02
81	8.613E+02	-8.613E+02	3.044E+02	7.669E+02
82	5.579E+02	-5.579E+02	1.997E+02	4.979E+02
101	8.609E+02	-8.609E+02	3.043E+02	7.665E+02
102	5.604E+02	-5.604E+02	2.005E+02	5.002E+02
103	3.086E+02	-3.086E+02	1.165E+02	2.786E+02
122	5.374E+02	-5.374E+02	1.896E+02	4.783E+02
123	3.027E+02	-3.027E+02	1.114E+02	2.717E+02
124	1.282E+02	-1.282E+02	6.101E+01	1.252E+02
143	3.283E+02	-3.283E+02	1.123E+02	2.907E+02
144	1.148E+02	-1.148E+02	5.538E+01	1.138E+02
145	1.404E+02	-1.404E+02	7.317E+01	1.434E+02
164	1.943E+02	-1.943E+02	1.024E+02	1.998E+02
165	2.430E+02	-2.430E+02	1.083E+02	2.327E+02
166	1.132E+02	-1.132E+02	4.589E+01	1.042E+02
185	8.403E+02	-8.403E+02	2.801E+02	7.411E+02
	7.800E+02	-7.800E+02	3.511E+02	7.442E+02