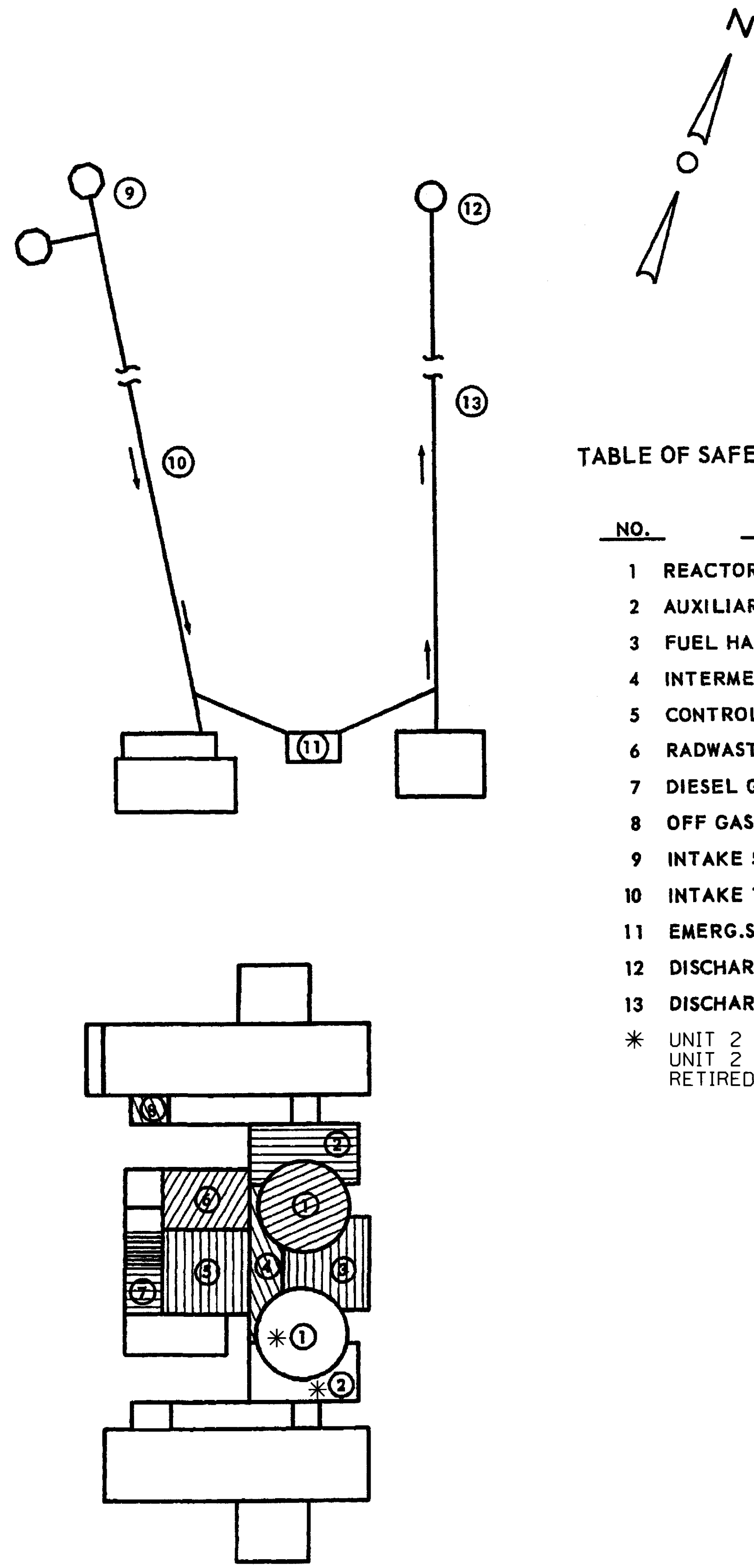


TABLE OF SAFETY CLASS STRUCTURES

NO.	STRUCTURE
1	REACTOR BUILDING COMPLEX
2	AUXILIARY BUILDING
3	FUEL HANDLING BUILDING
4	INTERMEDIATE BUILDING
5	CONTROL COMPLEX
6	RADWASTE BUILDING
7	DIESEL GENERATOR BUILDING
8	OFF GAS BUILDING
9	INTAKE STRUCTURES
10	INTAKE TUNNEL
11	EMERG.SERV.WATER PUMPHOUSE
12	DISCHARGE STRUCTURE
13	DISCHARGE TUNNEL
*	UNIT 2 REACTOR BUILDING COMPLEX AND UNIT 2 AUXILIARY BUILDING ARE ABANDONED, RETIRED-IN-PLACE

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

LOCATION OF
SAFETY CLASS STRUCTURES

FIGURE 3.2-1

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 574'-10" - EAST

FIGURE 3.6-1

(DWG. D-303-0601-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN
AND BREAK EXCLUSION PIPING,
FOR REACTOR BUILDING, ELEV. 574'-10" -WEST
FIGURE 3.6-2
(DWG. D-303-0602-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 599'-9" - EAST

FIGURE 3.6-3

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 599'-9" - WEST

FIGURE 3.6-4

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 620'-6" - EAST

FIGURE 3.6-5

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 620'-6" - WEST

FIGURE 3.6-6

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PIPING ARRANGEMENTS FOR FEEDWATER IN REACTOR BUILDING AND STEAM TUNNEL

FIGURE 3.6-7
(DWG. D-304-0078-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 642'-0" - EAST

FIGURE 3.6-8

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 642'-0" - WEST

FIGURE 3.6-9

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND
BREAK EXCLUSION PIPING, FOR
REACTOR BUILDING, STANDBY LIQUID CONTROL
FIGURE 3.6-10
(DWG. D-304-0691-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, STANDBY LIQUID CONTROL

FIGURE 3.6-11

(DWG. D-304-0692-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 652'-2" - EAST

FIGURE 3.6-12

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 652'-2" - WEST

FIGURE 3.6-13

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 664'-7" - EAST

FIGURE 3.6-14

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, ELEV. 664'-7" - WEST

FIGURE 3.6-15

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, CONTAINMENT SPRAY

FIGURE 3.6-16

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR REACTOR BUILDING, CONTAINMENT SPRAY

FIGURE 3.6-17

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND
BREAK EXCLUSION PIPING, FOR
AUXILIARY BUILDING, ELEV. 574'-10" - EAST

FIGURE 3.6-18

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR AUXILIARY BUILDING, ELEV. 574′-10″ - WEST

FIGURE 3.6-19

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND
BREAK EXCLUSION PIPING, FOR
AUXILIARY BUILDING, ELEV. 599'-0" - EAST

FIGURE 3.6-20

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR AUXILIARY BUILDING, ELEV. 599'-0" - WEST

FIGURE 3.6-21

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND
BREAK EXCLUSION PIPING, FOR
AUXILIARY BUILDING, ELEV. 620'-6" - EAST

FIGURE 3.6-22

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR AUXILIARY BUILDING, ELEV. 620'-6" - WEST

FIGURE 3.6-23

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND
BREAK EXCLUSION PIPING, FOR
AUXILIARY BUILDING, STEAM TUNNEL,
ELEVS. 614'-6" AND 620'-6"
FIGURE 3.6-24

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 574'-10" - NORTHWEST

FIGURE 3.6-25

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 574'-10" - SOUTHWEST

FIGURE 3.6-26

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 574'-10" - CENTER

FIGURE 3.6-27

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 574'-10" - EAST

FIGURE 3.6-28

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 599'-0" - NORTHWEST

FIGURE 3.6-29

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 599'-0" - SOUTHWEST

FIGURE 3.6-30

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 620'-6" - NORTHWEST

FIGURE 3.6-31

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 620'-6" - SOUTHWEST

FIGURE 3.6-32

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 620'-6" - CENTER

FIGURE 3.6-33

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 639'-6" - NORTHWEST

FIGURE 3.6-34

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 639'-6" - SOUTHWEST

FIGURE 3.6-35

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 654'-6" - NORTHWEST

FIGURE 3.6-36

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 654′-6" - SOUTHWEST

FIGURE 3.6-37

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR INTERMEDIATE BUILDING, ELEV. 655′-0" - WEST

FIGURE 3.6-38

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SCOPE OF HIGH ENERGY, SAFE SHUTDOWN AND BREAK EXCLUSION PIPING, FOR CONTROL COMPLEX, ELEV. 574'-10" - EAST

FIGURE 3.6-39

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PIPING ARRANGEMENT FOR CCCW-CONTROL COMPLEX, ELEV. 574'-10" - WEST

FIGURE 3.6-40
(DWG. D-923-0002-00000)

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PIPING ARRANGEMENT FOR ESW-CONTROL COMPLEX

FIGURE 3.6-41
(DWG. D-304-0804-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PIPING ARRANGEMENT FOR ESW-CONTROL COMPLEX

FIGURE 3.6-42
(DWG. D-304-0802-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PIPING ARRANGEMENT FOR
CCCW-CONTROL COMPLEX, ELEV. 679'-6" - EAST

FIGURE 3.6-43
(DWG. D-923-0005-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PIPING ARRANGEMENT FOR
CCCW-CONTROL COMPLEX, ELEV. 679'-6" - WEST

FIGURE 3.6-44
(DWG. D-923-0004-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PIPING ARRANGEMENT FOR
ESW-DIESEL GENERATOR BUILDING

FIGURE 3.6-45
(DWG. D-304-0805-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

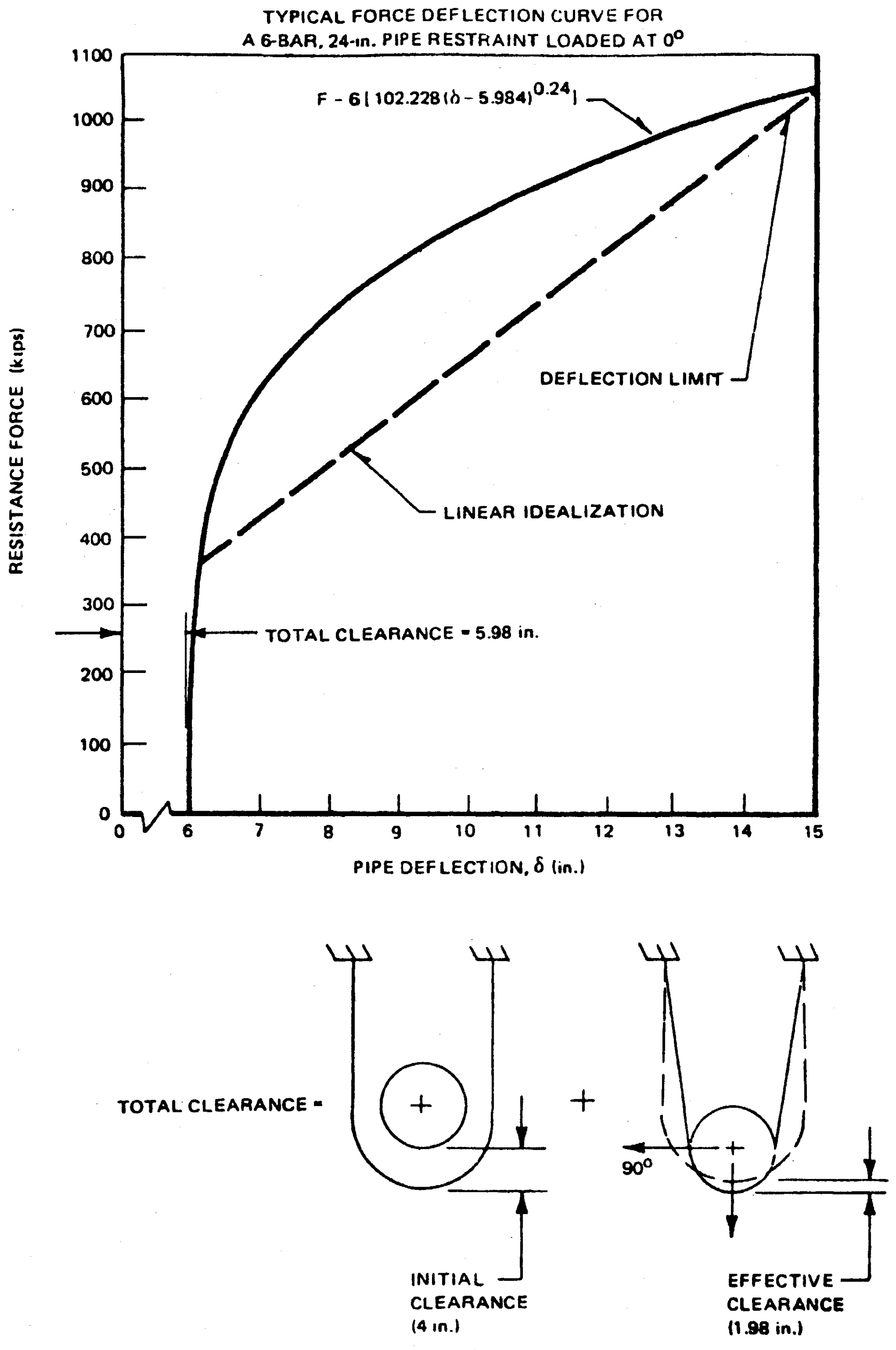
PIPING ARRANGEMENT FOR RADWASTE BUILDING AUXILIARY STEAM

FIGURE 3.6-46
(DWG. D-304-0058-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP EMERGENCY
SERVICE WATER PUMPHOUSE
PLANS AND ELEVATIONS
FIGURE 3.11-47
(DWG. E-022-0067-00000)

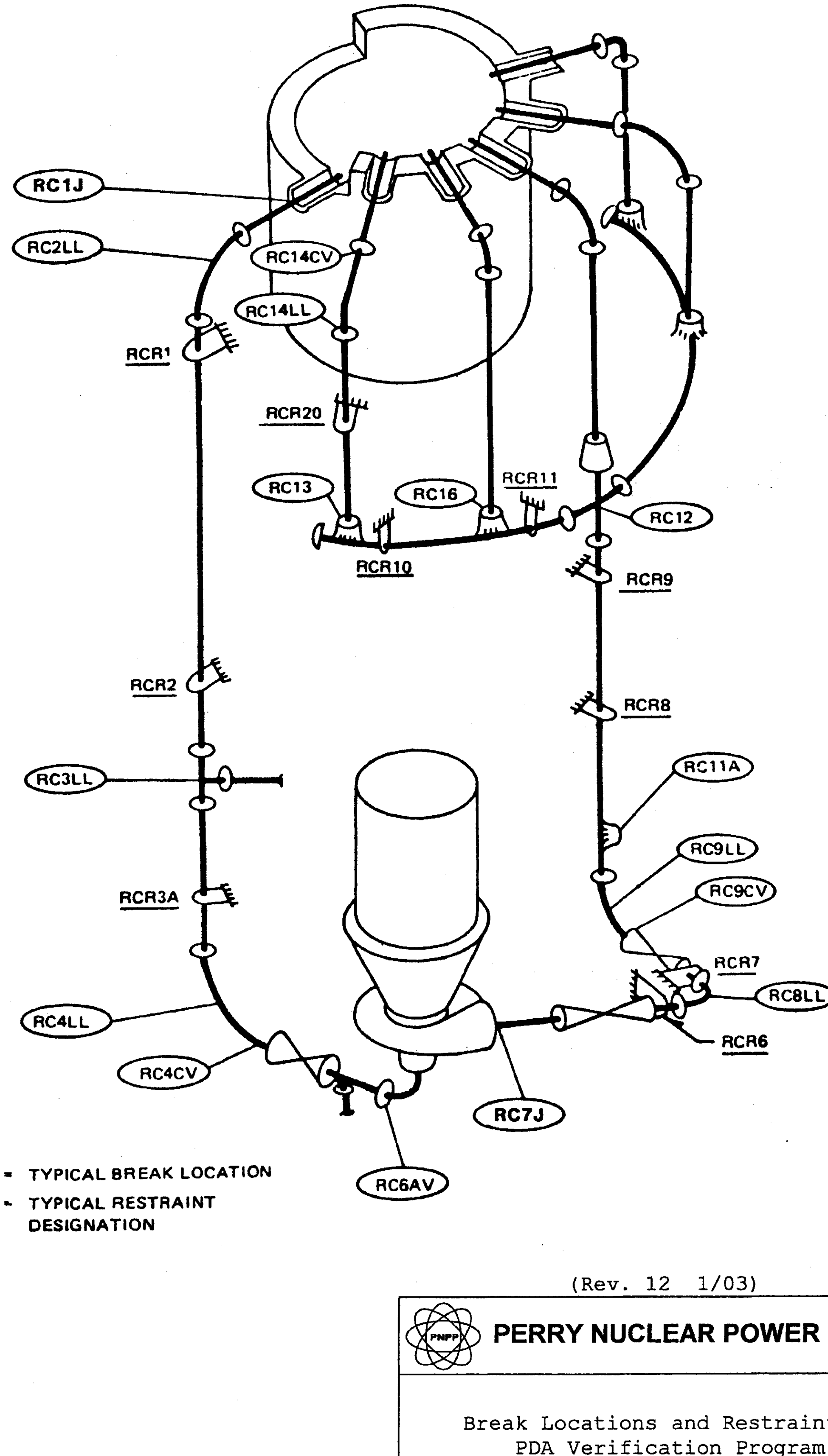


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Restraint Force-
Deflection Curve

Figure 3.6-48



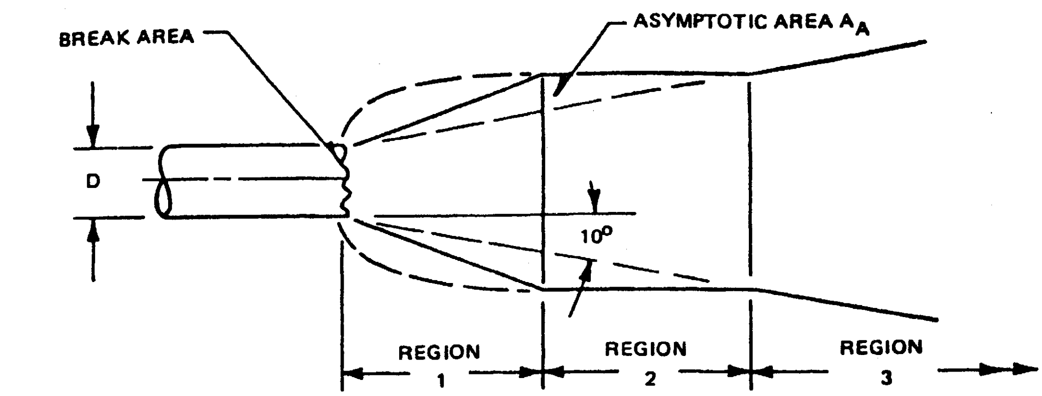
(Rev. 12 1/03)

PNPP

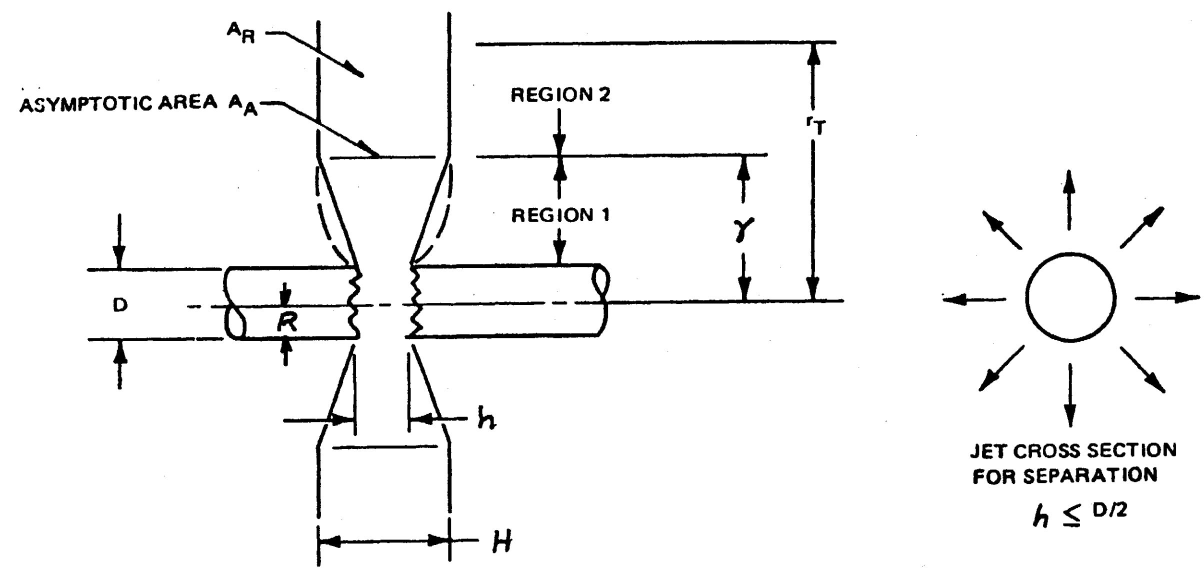
PERRY NUCLEAR POWER PLANT

Break Locations and Restraints - PDA Verification Program

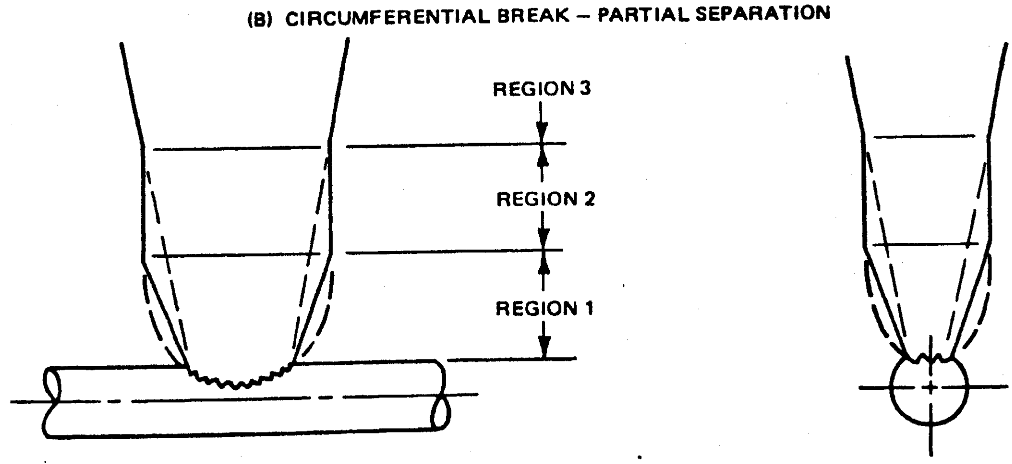
Figure 3.6-49



(A) CIRCUMFERENTIAL BREAK – FULL SEPARATION



(B) CIRCUMFERENTIAL BREAK – PARTIAL SEPARATION



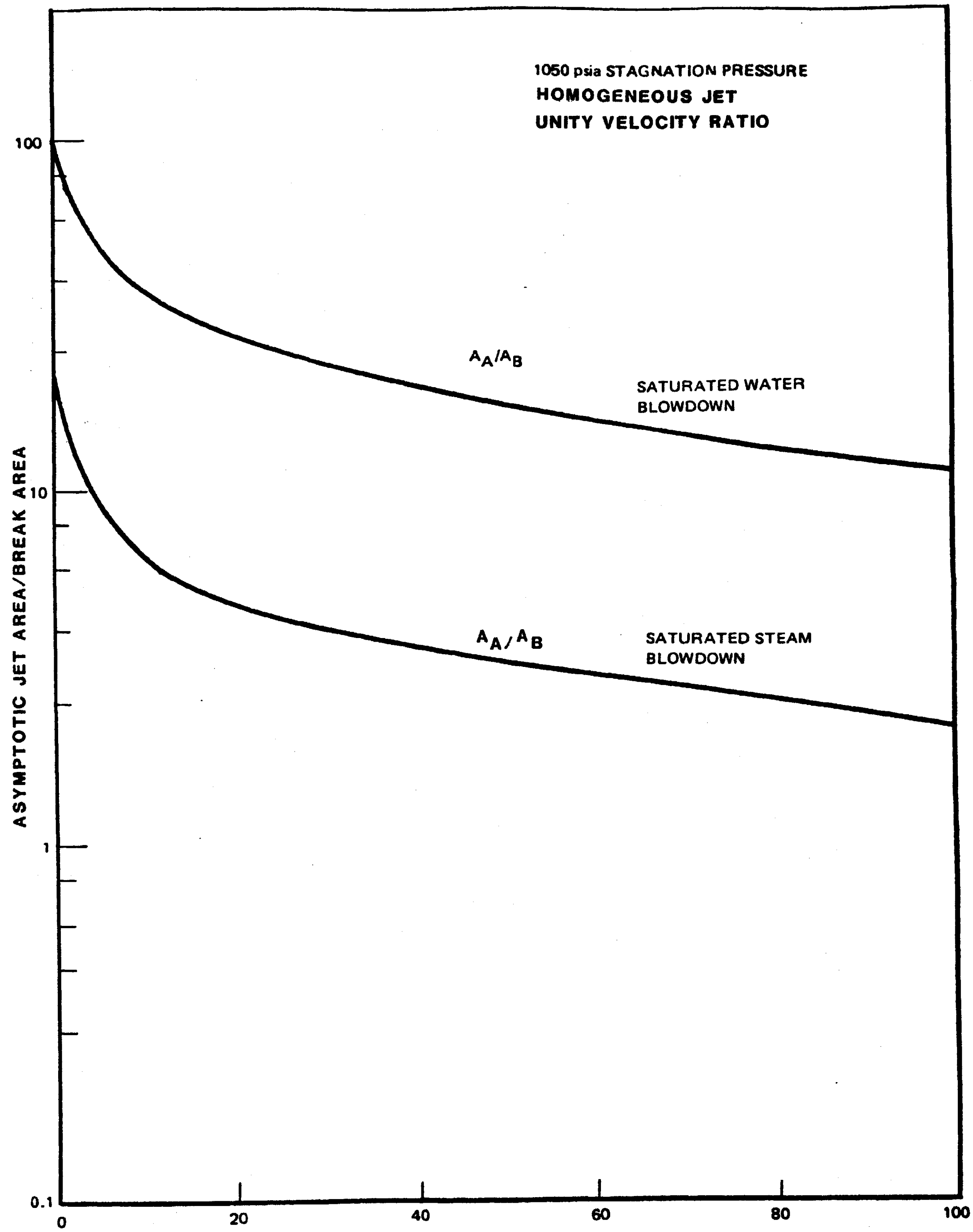
(C) LONGITUDINAL BREAK

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Jet Characteristics

Figure 3.6-50

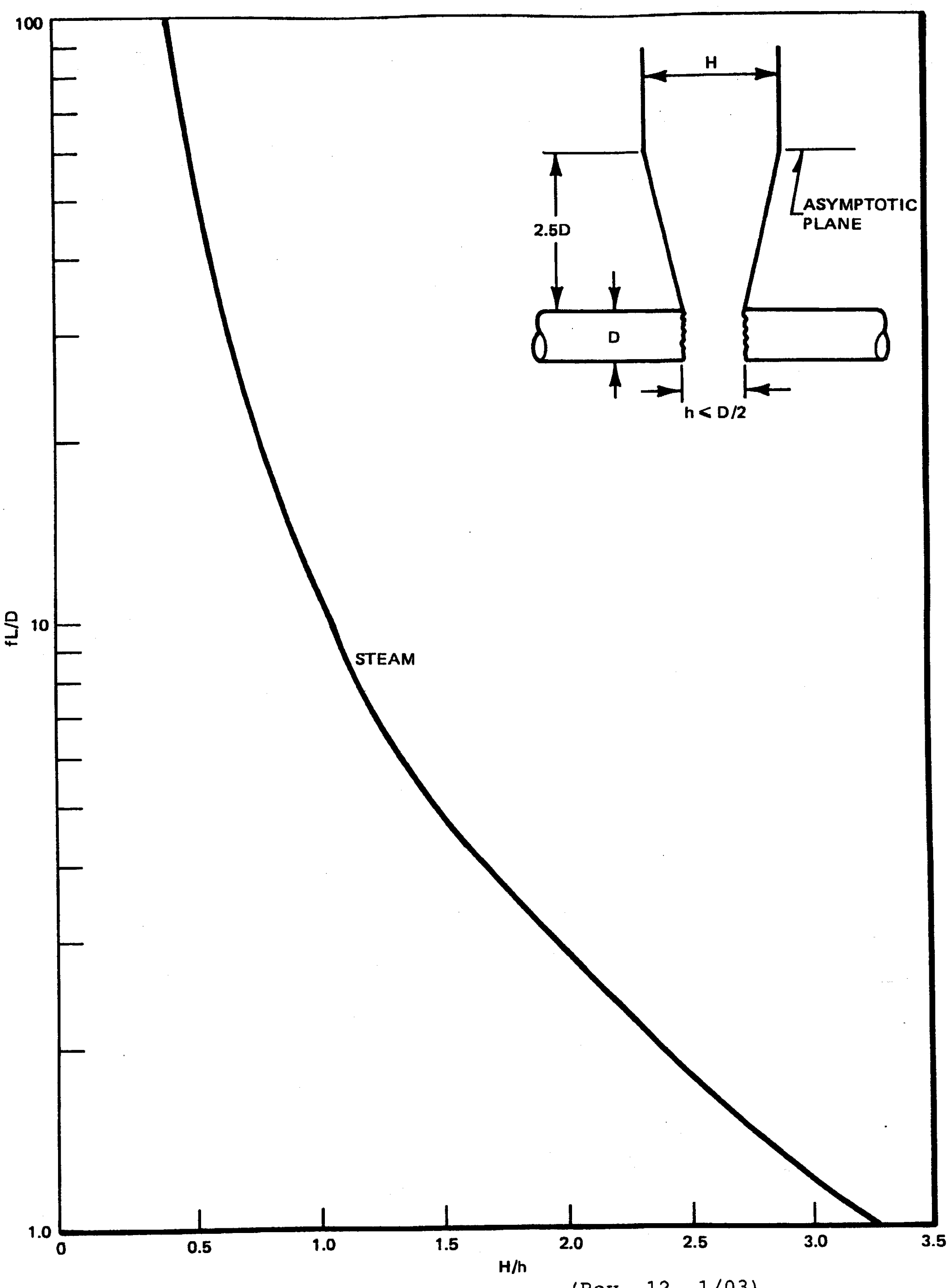


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Homogeneous Jet Asymptotic Area-
Saturated Water and Steam
Blowdown

Figure 3.6-51

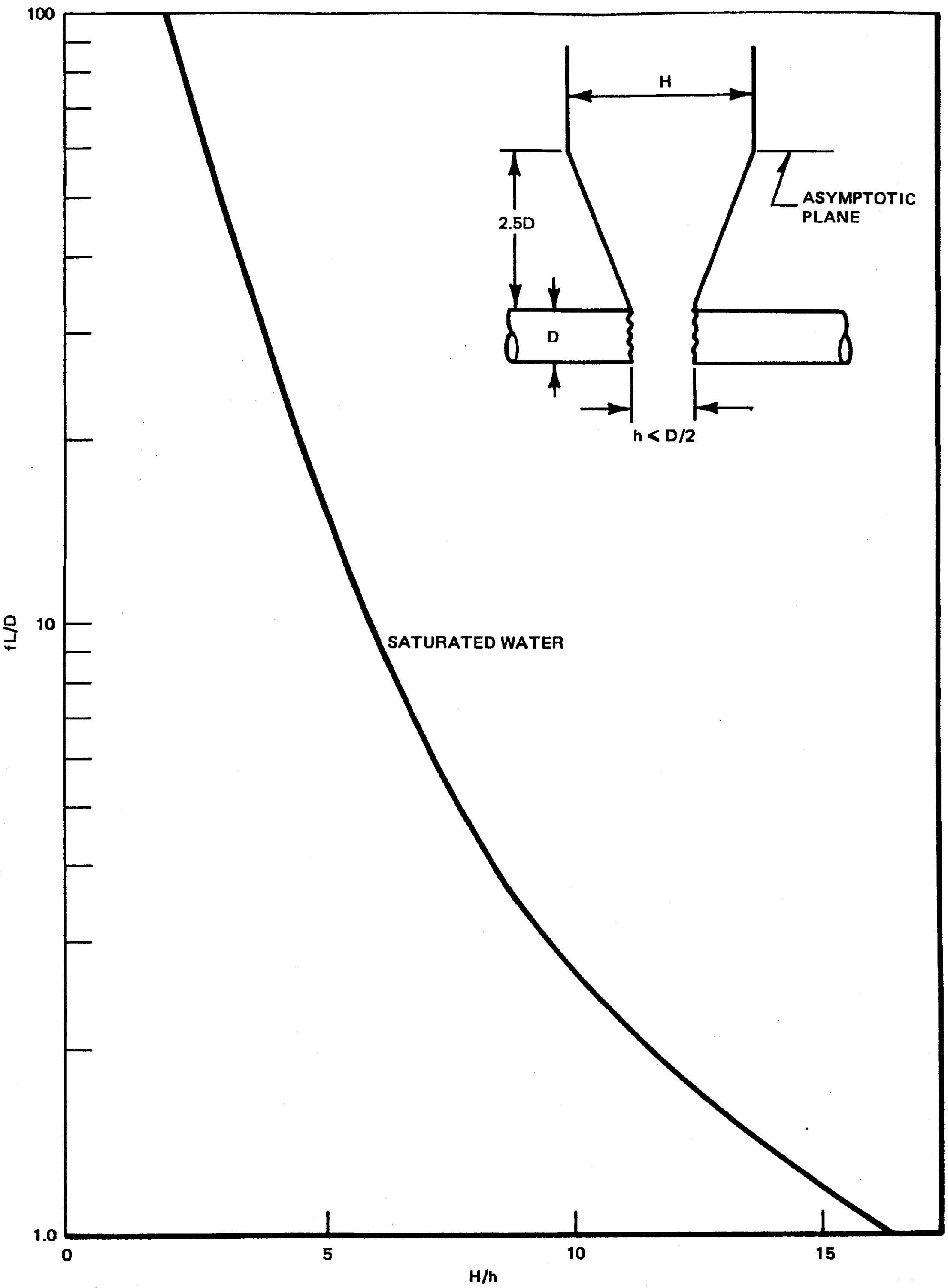


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

fl/D Versus Ratio of Width of Jet at Asymptotic Plane to Width of Jet at Break Plane - Steam

Figure 3.6-52

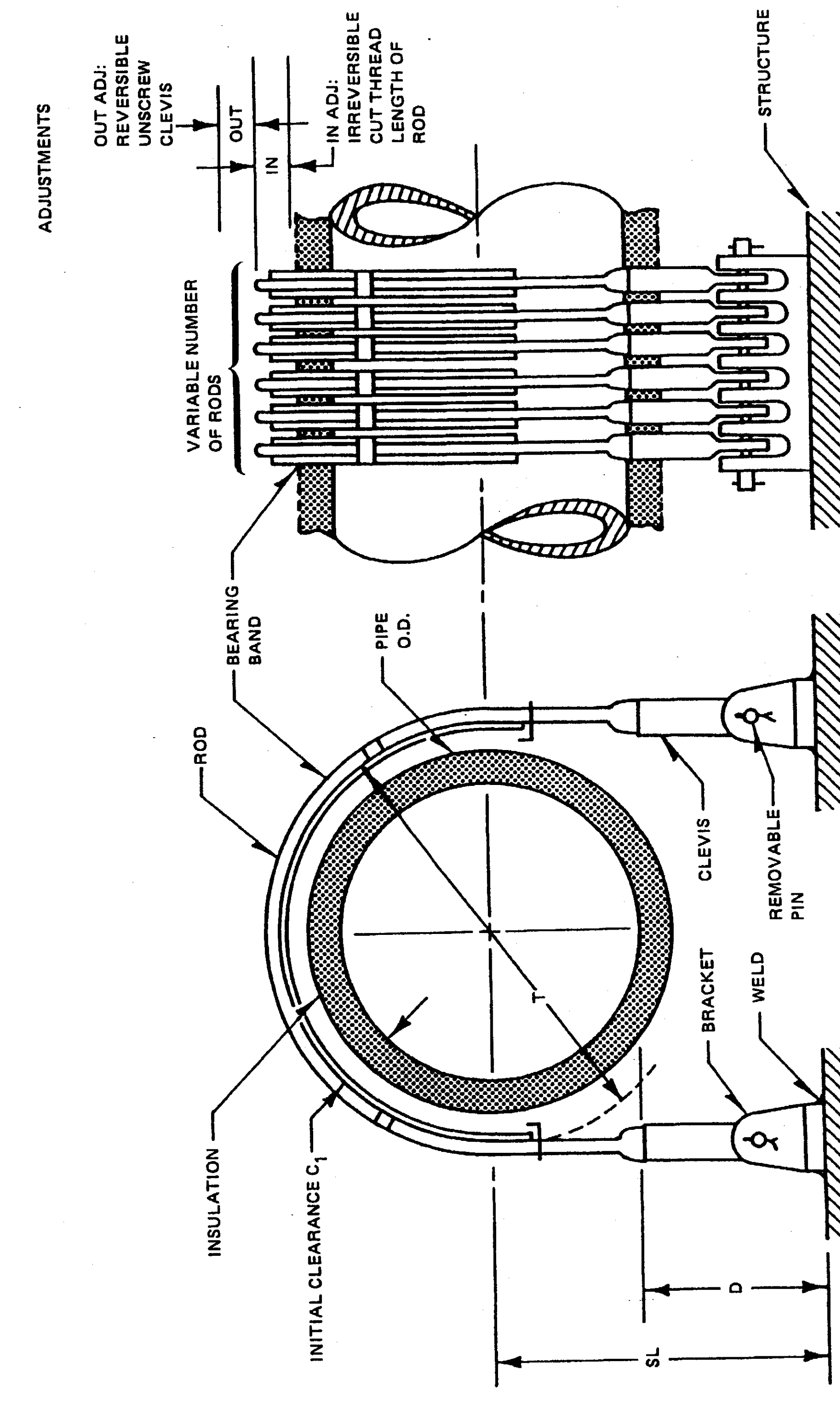


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

fl/D Versus Ratio of Width of Jet at Asymptotic Plane to Width of Jet at Break Plane - Saturated Water

Figure 3.6-53

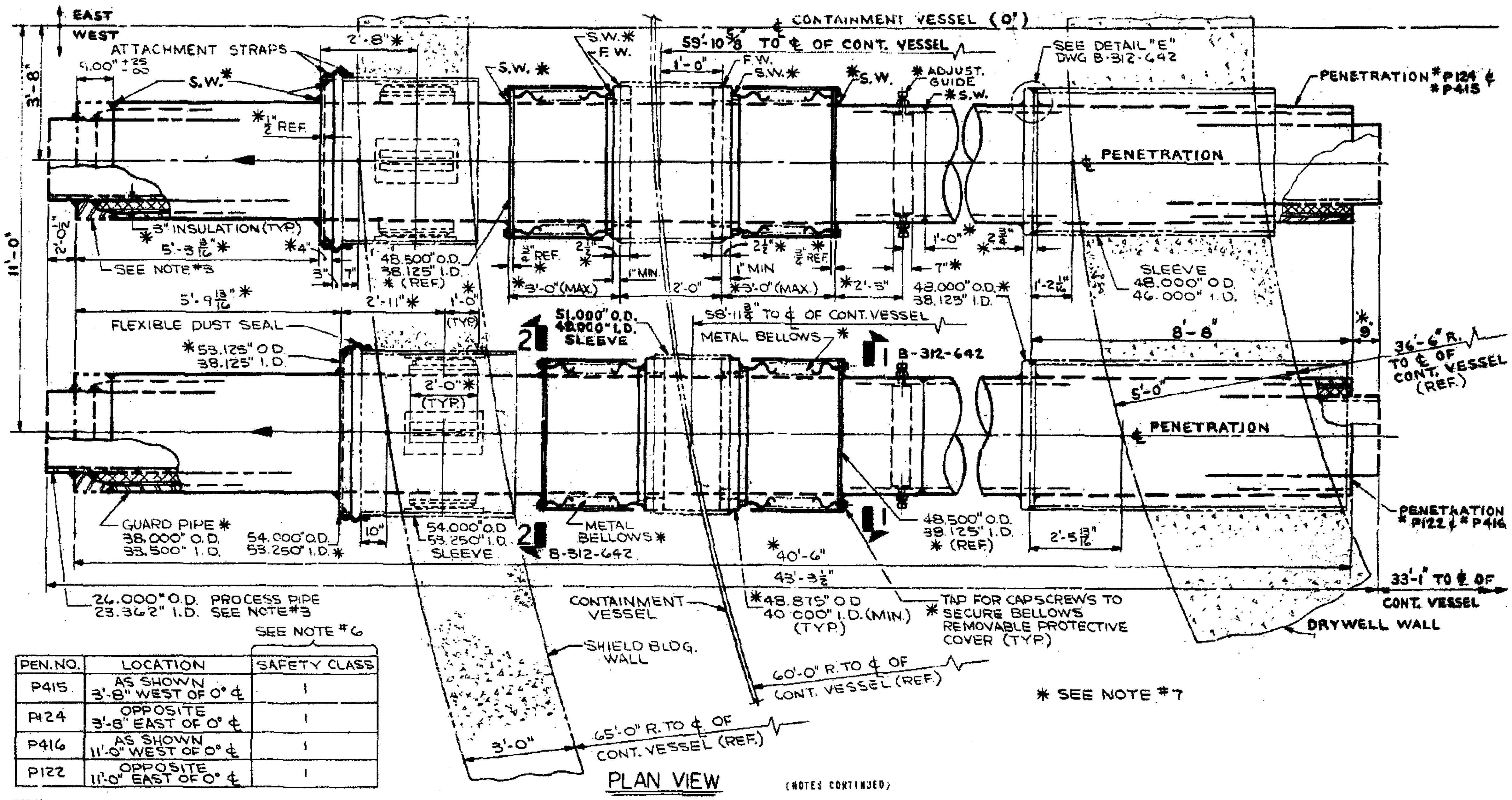


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Pipe Whip
Restraint Configuration

Figure 3.6-54



SEE NOTE #6

PEN. NO.	LOCATION	SAFETY CLASS
P415	AS SHOWN 3'-8" WEST OF 0° ℄	1
P124	OPPOSITE 3'-8" EAST OF 0° ℄	1
P416	AS SHOWN 11'-0" WEST OF 0° ℄	1
P122	OPPOSITE 11'-0" EAST OF 0° ℄	1

PLAN VIEW

NOTES.-

1. FOR WELD END DETAILS, SEE DWG. B-301-801.
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH B-312-801 THRU B-312-805 (CONTAINMENT VESSEL PENETRATION LIST).
3. FLUED HEADS AND STEAM PIPES TO BE SUPPLIED BY G.E. PENETRATION ASSEMBLY FABRICATION BY SP-525 CONTRACTOR, INSTALLATION BY SP-38 CONTRACTOR.
4. FOR SECTION AND DETAILS, SEE DWG. B-312-642.
5. S.W. INDICATES SHOP WELD. - F.W. INDICATES FIELD WELD.
6. SAFETY CLASS REFERS TO PROCESS PIPE ONLY. PROCESS PIPE SUPPORTS TO BE IN ACCORDANCE WITH NF, OTHER INTEGRAL PARTS TO BE IN ACCORDANCE WITH MC OF THE ASME SECTION III CODE.
7. ALL ATTACHMENTS AND COMPONENTS MARKED THUS * ARE INTEGRAL PARTS OF THE CONTAINMENT PENETRATION ASSEMBLY.
8. FOR MATERIAL AND SPECIFICATIONS, SEE GAI SPEC. SP-527-4549-00 AND SP-525-4549-00.
9. PROVIDE 22" X 6" X 2-1/2" LUBITE PAD. BOTTOM SURFACE OF PAD TO BE MACHINED IN FIELD TO ACCOMMODATE MISALIGNMENT AND TOLERANCE.

(NOTES CONTINUED)

10. AFTER THREADING THE GUARD PIPE, BUILD UP SUFFICIENT WELD AROUND THE HOLE TO HAVE A FLAT SURFACE (TO BE MACHINED FLAT) AS A CONTACT AREA FOR THE LOCKNUT.
11. NUT IS TO BE TIGHTENED IN A MANNER TO PREVENT ANY SLIPPAGE BETWEEN THE PROCESS PIPE AND PROCESS PIPE CLAMP AND THEN TACK WELDED TO BOLT.
12. DIMENSIONS NOT SHOWN ON BOTH OF THE ABOVE DETAILS ARE TYPICAL FOR ALL TYPE K PENETRATION.

FOR FIELD WELD REQUIREMENTS SEE ECN# 5166-38-88, 5166-38-88/A, #5292-44-417, 6556-44-641, & 5166-38-88/B
THIS DWG. DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFO. SEE TUBE TURN DWGS. 70195Y-C1-4, 70195Y-D17.1, 70195Y-C1-3.

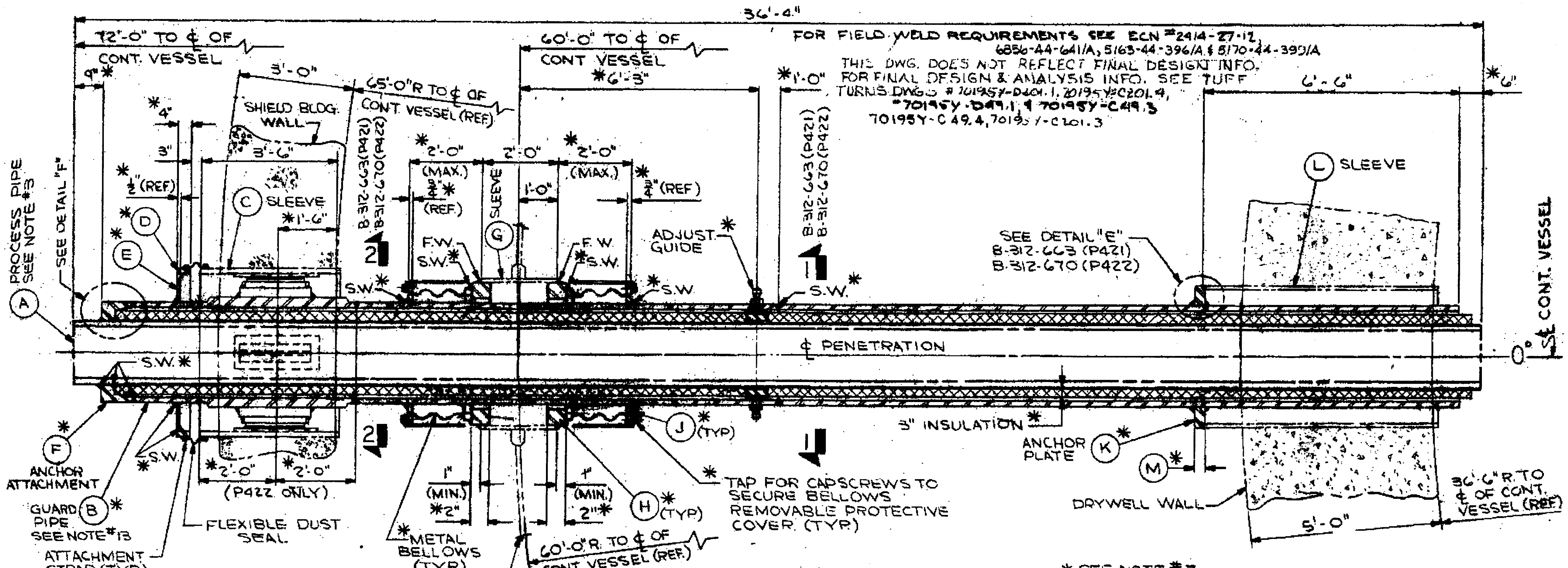
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

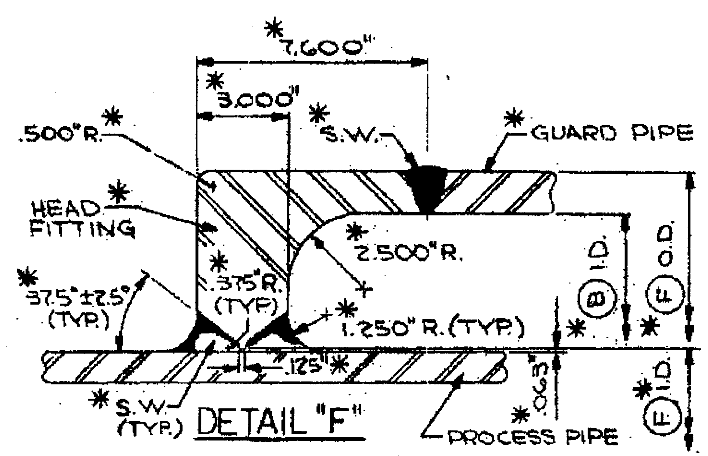
Penetration Guard Pipe Type "K" Main Steam

Figure 3.6-55
(Dwg. B-312-641)



PLAN VIEW

PEN. NO.	LOCATION	SAFETY CLASS	(A) I.D.	(A) O.D.	(B) I.D.	(B) O.D.	(C) I.D.	(C) O.D.	(D) I.D.	(D) O.D.	(E) I.D.	(E) O.D.	(F) I.D.	(F) O.D.	(G) I.D.	(G) O.D.	(H) I.D.(MIN)	(H) O.D.	(J) I.D.	(J) O.D.	(K) I.D.	(K) O.D.	(L) I.D.	(L) O.D.	(M) THK.
P421	0°	1	17.938	20.000	29.250	32.000	45.250	46.000	45.250	46.000	32.125	45.125	20.125	32.000	43.250	44.750	34.000	43.125	32.125	42.750	32.125	40.000	38.500	40.000	2.000
P422	0°	1	9.564	10.750	19.750	22.000	33.250	34.000	33.250	34.000	22.125	33.125	10.875	22.000	30.000	32.250	24.000	29.875	22.125	29.500	22.125	30.000	28.500	30.000	2.250



DETAIL "F"

NOTES:-

1. FOR WELD END DETAILS, SEE DWG. D-301-801.
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH B-312-601 THRU B-312-605 (CONTAINMENT VESSEL PENETRATION LIST)
3. PROCESS PIPE SUPPLIED BY SP-627 CONTRACTOR PENETRATION ASSEMBLY FABRICATED BY SP-525 CONTRACTOR AND INSTALLED BY SP-44 CONTRACTOR.
4. FOR SECTIONS AND DETAILS, SEE DWG. B-312-663 (P421) AND B-312-670 (P422).
5. S.W. - INDICATES SHOP WELD.
   F.W. - INDICATES FIELD WELD.
6. SAFETY CLASS REFERS TO PROCESS PIPE ONLY. PROCESS PIPE SUPPORTS TO BE IN ACCORDANCE WITH NF, OTHER INTEGRAL PARTS TO BE IN ACCORDANCE WITH MC OF THE ASME SECTION III CODE.
7. ALL ATTACHMENTS AND COMPONENTS MARKED THUS * ~~ARE~~ INTEGRAL PARTS OF THE CONTAINMENT PENETRATION ASSEMBLY.
8. FOR MATERIAL AND SPECIFICATIONS, SEE GAI SPEC SP-627-4549-00 AND SP-525-4549-00.
9. PROVIDE 22" X 8" 2-1/4" LUBRITE PAD. BOTTOM SURFACE OF PAD TO BE MACHINED IN FIELD TO ACCOMODATE MISALIGNMENT AND TOLERANCES.
10. AFTER THREADING THE GUARD PIPE, BUILD-UP SUFFICIENT WELD AROUND THE HOLE TO HAVE A FLAT SURFACE (TO BE MACHINED FLAT) AS A CONTACT AREA FOR THE LOCKNUT.
11. NUT IS TO BE TIGHTENED IN A MANNER TO PREVENT ANY SLIPPAGE BETWEEN THE PROCESS PIPE AND PROCESS PIPE CLAMP. AND THEN TACK WELDED TO BOLT.
12. ALL DIMENSIONS SHOWN IN CHART ARE IN INCHES.
13. GUARD PIPE TO BE 23.750" O.D. X 19.750" I.D. AT GUARD PIPE GUIDE FOR PEN. P422 ONLY.

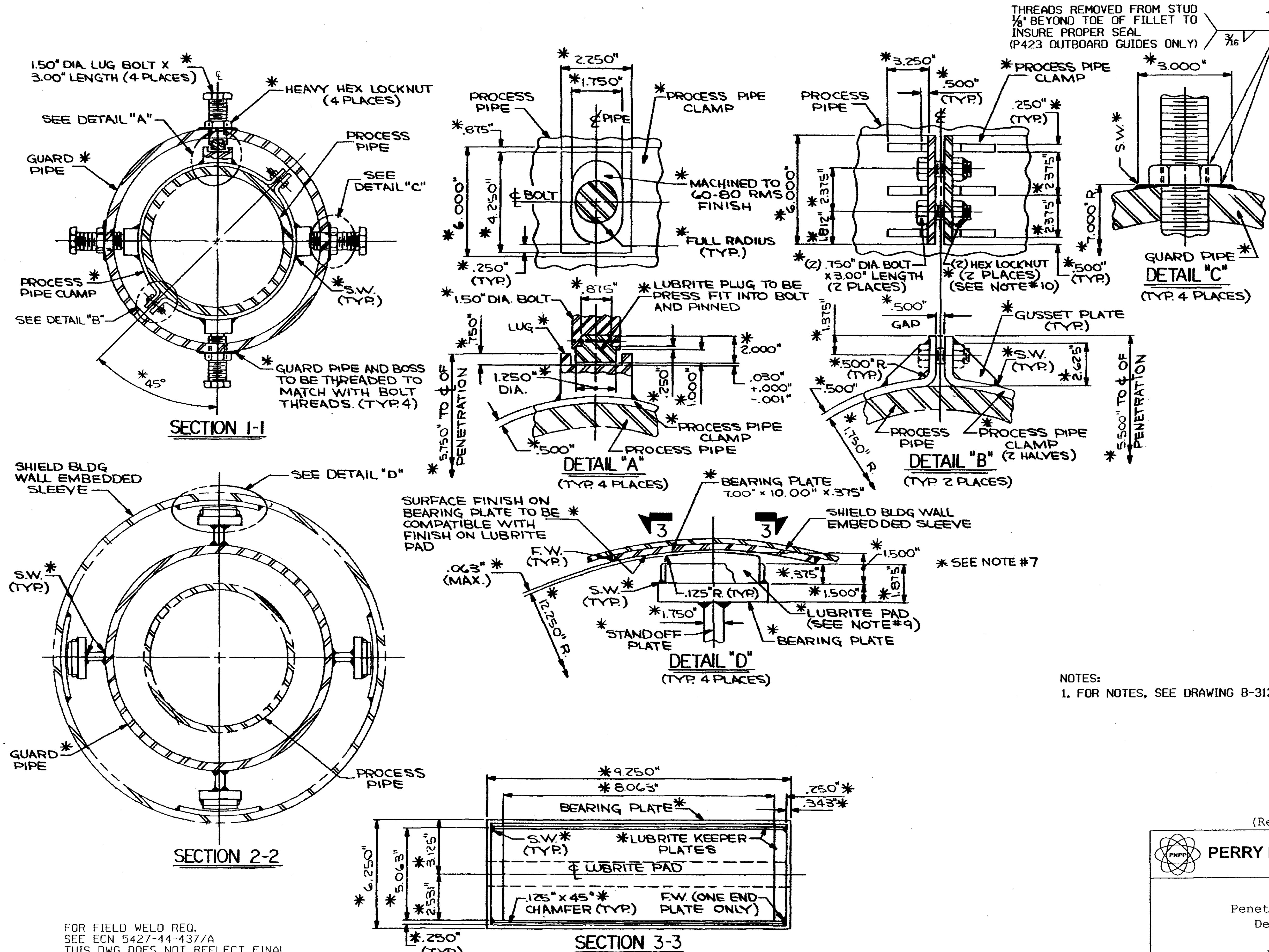
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe Type "J" RCIC AND RHR

Figure 3.6-56
(Dwg. B-312-639)



NOTES:
1. FOR NOTES, SEE DRAWING B-312-0656-00000.

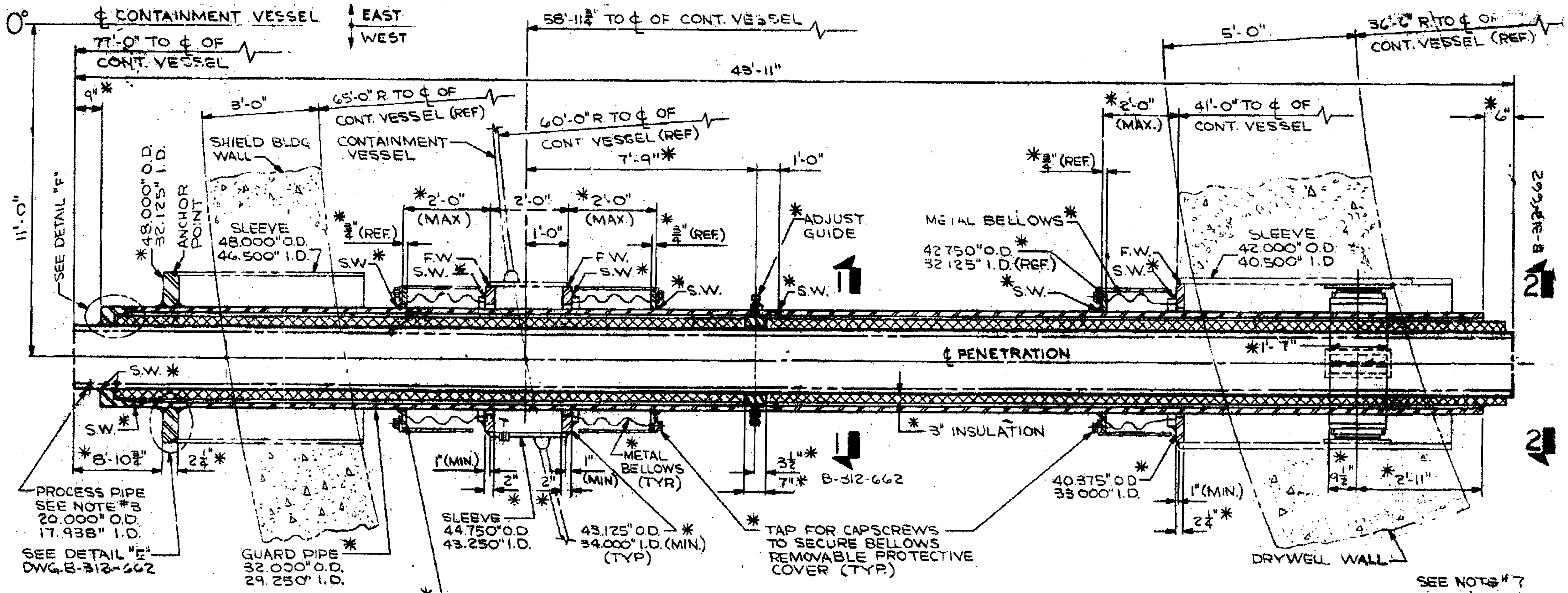
FOR FIELD WELD REQ.
SEE ECN 5427-44-437/A
THIS DWG. DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFO SEE TUBE TURN DWGS. 7019SY-C193.4 & C70195Y-C193.3.

(Rev. 13 12/03)

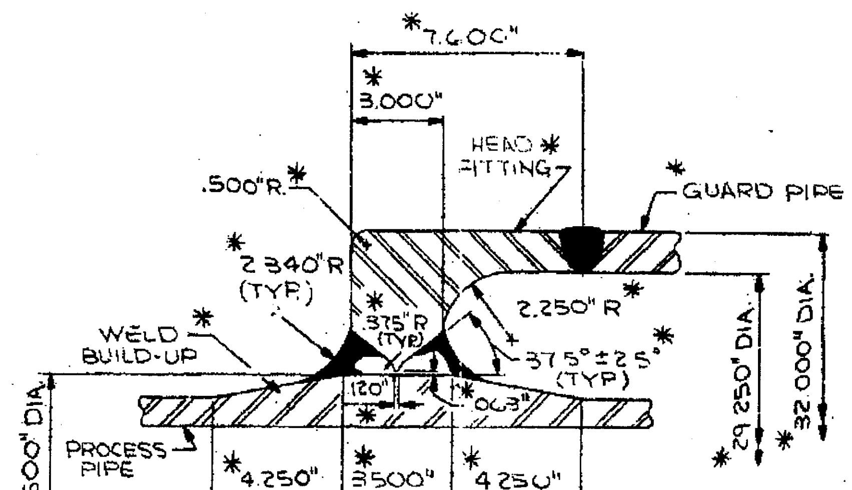
PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe
Details Type "J"

Figure 3.6-57
(Dwg. B-312-640)



PLAN VIEW



DETAIL "F"

FOR FIELD WELD REQUIREMENTS SEE ECN 5150-44-393/A & 6856-44-641/A

THIS DWG. DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFO. SEE TUBE TURN DWGS. #70195Y-D33.1, 70195Y-C33.4 & 70195Y. C33.3.

NOTES.-

1. FOR WELD END DETAILS, SEE DWG. D-301-601, (FIGURE NO. 3)
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH B-312-601 THRU B-312-605 (CONTAINMENT VESSEL PENETRATION LIST).
3. PROCESS PIPE SUPPLIED BY SP-527 CONTRACTOR. PENETRATION ASSEMBLY FABRICATION BY SP-525 CONTRACTOR, INSTALLATION BY SP-44 CONTRACTOR.
4. FOR SECTIONS AND DETAILS, SEE DWG. B-312-662.
5. S.W. INDICATES SHOP WELD.
   F.W. INDICATES FIELD WELD.
6. ALL ATTACHMENTS AND COMPONENTS MARKED THUS ✱ ARE INTEGRAL PARTS OF THE CONTAINMENT PENETRATION ASSEMBLY.
7. SAFETY CLASS REFERS TO PROCESS PIPE ONLY. PROCESS PIPE SUPPORTS TO BE IN ACCORDANCE WITH NF. OTHER INTEGRAL PARTS TO BE IN ACCORDANCE WITH NC OF THE ASME SECTION III CODE.
8. FOR MATERIAL AND SPECIFICATIONS, SEE GAI SPECIFICATION SP-527-4549-00 AND SP-525-4549-00.
9. PROVIDE 17" X 3" X 2-1/4" LUBRITE PAD. BOTTOM SURFACE OF PAD TO BE MACHINED IN FIELD TO ACCOMMODATE MISALIGNMENT AND TOLERANCES.
10. AFTER THREADING THE GUARD PIPE, BUILD UP SUFFICIENT WELD AROUND THE HOLE TO HAVE A FLAT SURFACE (TO BE MACHINED FLAT) AS A CONTACT AREA FOR THE LOCKNUT.
11. NUT IS TO BE TIGHTENED IN A MANNER TO PREVENT ANY SLIPPAGE BETWEEN THE PROCESS PIPE AND PROCESS PIPE CLAMP AND THEN TACK WELDED TO BOLT.

SEE NOTE # 7

PEN. NO	LOCATION	SAFETY CLASS
P414	AS DRAWN 11'-0" WEST OF 0° ℄	1
P121	OPPOSITE 11'-0" EAST OF 0° ℄	1

✱ SEE NOTE # 6

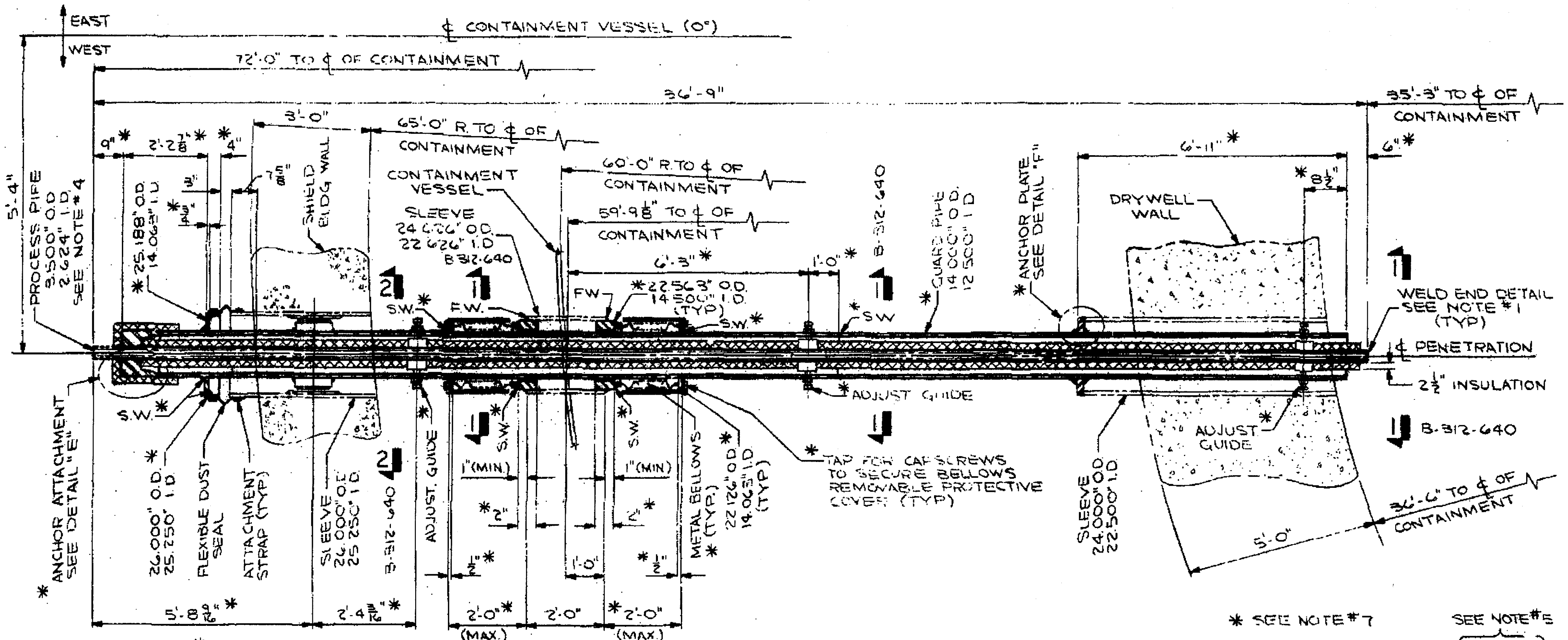
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe
Type "Q" Feedwater

Figure 3.6-58
(Dwg. B-312-650)

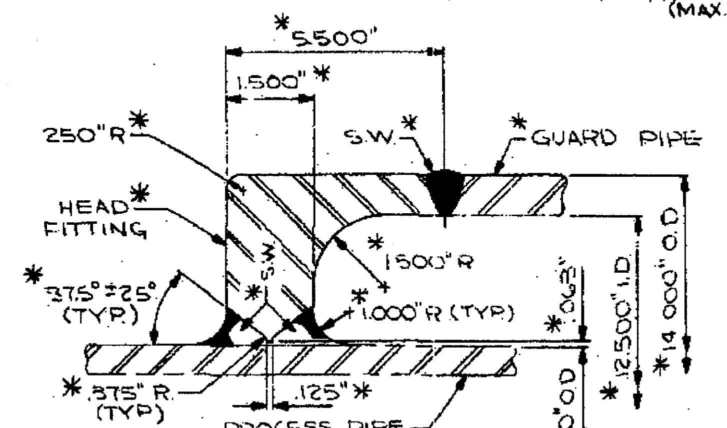


* SEE NOTE #7

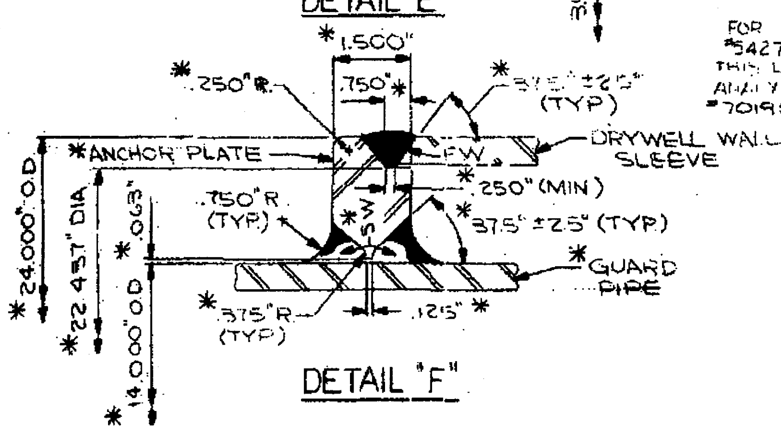
SEE NOTE #5

PEN NO	LOCATION	SAFETY CLASS
P423	5'-4" WEST OF 0° ℄	1

PLAN VIEW



DETAIL "E"



DETAIL "F"

NOTES:

1. FOR WELD END DETAILS, SEE DWG. D-301-601.
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH DWG. B-312-601 THRU B-312-605 (CONTAINMENT VESSEL PENETRATION LIST).
3. S.W. – INDICATES SHOP WELD.
   F.W. – INDICATES FIELD WELD.
4. PROCESS PIPE SUPPLIED BY SP-527 CONTRACTOR, PENETRATION ASSEMBLY FABRICATED BY SP-525 CONTRACTOR AND INSTALLED BY SP-44 CONTRACTOR.
5. SAFETY CLASS REFERS TO PROCESS PIPE ONLY. PROCESS PIPE SUPPORTS TO BE IN ACCORDANCE WITH NF, OTHER INTEGRAL PARTS TO BE IN ACCORDANCE WITH MC OF THE ASME SECTION III CODE.
6. FOR SECTIONS AND DETAILS, SEE DWG. B-312-640.
7. ALL ATTACHMENTS AND COMPONENTS MARKED THUS * ARE INTEGRAL PARTS OF THE CONTAINMENT PENETRATION ASSEMBLY.
8. FOR MATERIAL AND SPECIFICATIONS, SEE GAI SPECIFICATION SP-527-4549-00 AND SP-525-4549-00.
9. PROVIDE 8" X 5" X 2" LUBITE PAD. BOTTOM SURFACE OF PAD TO BE MACHINED IN FIELD TO ACCOMMODATE MISALIGNMENT AND TOLERANCES.
10. NUT IS TO BE TIGHTENED IN A MANNER TO PREVENT ANY SLIPPAGE BETWEEN THE PROCESS PIPE AND PROCESS PIPE CLAMP AND THEN TACK WELDED TO BOLT.

FOR FIELD WELD REQUIREMENTS SEE ECN #5427-44-437/A & 6856-44-641/A

THIS DWG. DOES NOT REFLECT FINAL DES[illegible] FOR FINAL DESIGN & ANALYSIS INFO. SEE TURC TURNOVER DWG. #7019SY-C193.4, #7019SY-D193.1, & 7019SY-C193.3

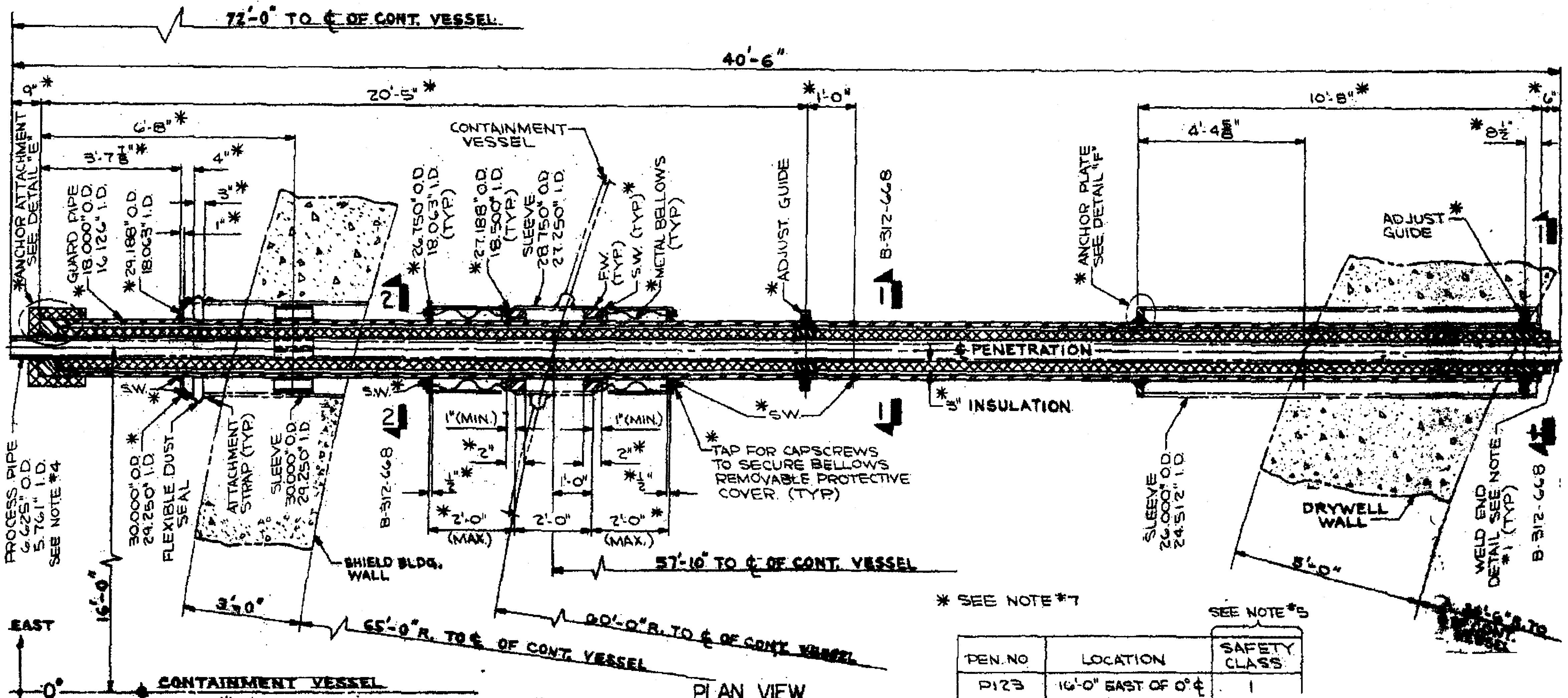
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

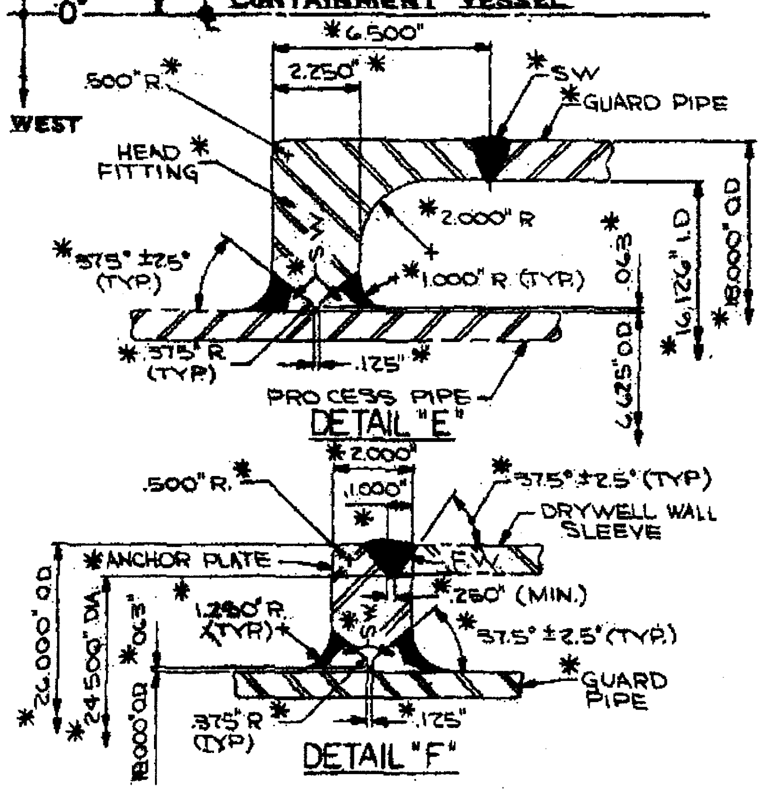
Penetration Guard Pipe
Type "J" MS Drain

Figure 3.6-59
(Dwg. B-312-656)



PLAN VIEW

PEN. NO	LOCATION	SAFETY CLASS
P123	16'-0" EAST OF 0° ¢	1



DETAIL "E"

DETAIL "F"

NOTES:-

1. FOR WELD END DETAILS, SEE DWG. B-301-801
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH DWG. B-312-601 THRU B-312-605 (CONTAINMENT VESSEL PENETRATION LIST).
3. S.W. - INDICATED SHOP WELD
   F.W. - INDICATED FIELD WELD.
4. PROCESS PIPE SUPPLIED BY SP-527 CONTRACTOR, PENETRATION ASSEMBLY FABRICATED BY SP-525 CONTRACTOR AND INSTALLED BY SP-44 CONTRACTOR.
5. SAFETY CLASS REFERS TO PROCESS PIPE ONLY. PROCESS PIPE SUPPORTS TO BE IN ACCORDANCE WITH NF, OTHER INTEGRAL PARTS TO BE IN ACCORDANCE WITH NC OF THE ASME SECTION III CODE.
6. FOR SECTIONS AND DETAILS, SEE DWG. B-312-668.
7. ALL ATTACHMENTS AND COMPONENTS MARKED THUS * ARE INTEGRAL PARTS OF THE CONTAINMENT PENETRATION ASSEMBLY.
8. FOR MATERIAL AND SPECIFICATIONS, SEE GAI SPECIFICATION SP-527-4549-00 AND SP-525-4549-00.
9. PROVIDE 8" X 5" X 2" LUSITE PAD. BOTTOM SURFACE OF PAD TO BE MACHINED IN FIELD TO ACCOMMODATE MISALIGNMENT AND TOLERANCES.
10. NUT IS TO BE TIGHTENED IN A MANNER TO PREVENT ANY SLIPPAGE BETWEEN THE PROCESS PIPE AND PROCESS PIPE CLAMP AND THEN TACK WELDED TO BOLT.

THIS DWG DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFO. SEE TUBE TURNS DWG. #70195Y-0117.1, #70195Y-C117.4 & #70195Y-C117.3.

FOR FIELD WELD REQUIREMENTS SEE ECN #2412-20-431, 5175-44-401/A & 6856-44-641/A

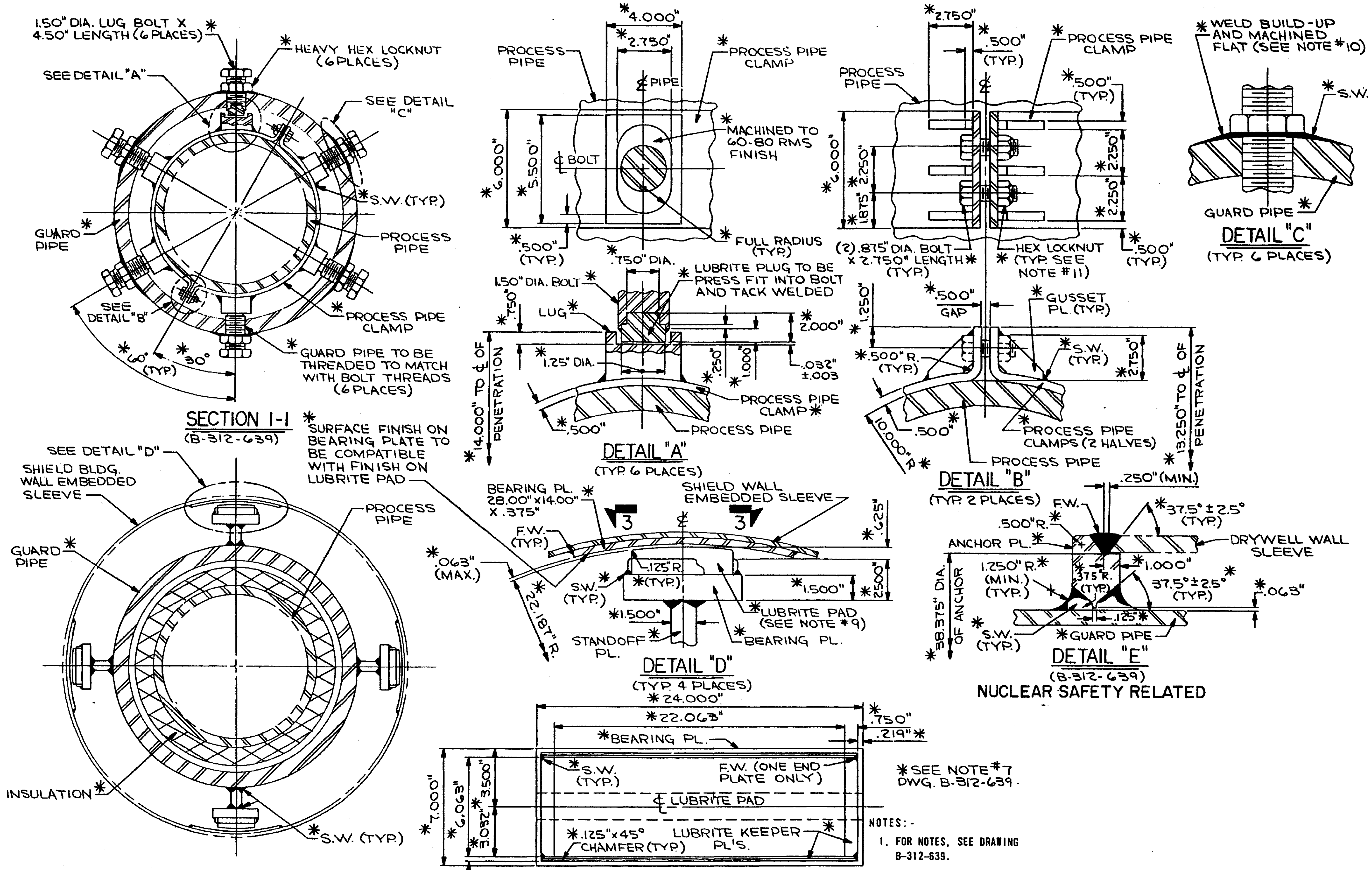
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe
Type "J" RCIC

Figure 3.6-60
(Dwg. B-312-657)



NOTES:-

1. FOR NOTES, SEE DRAWING B-312-639.

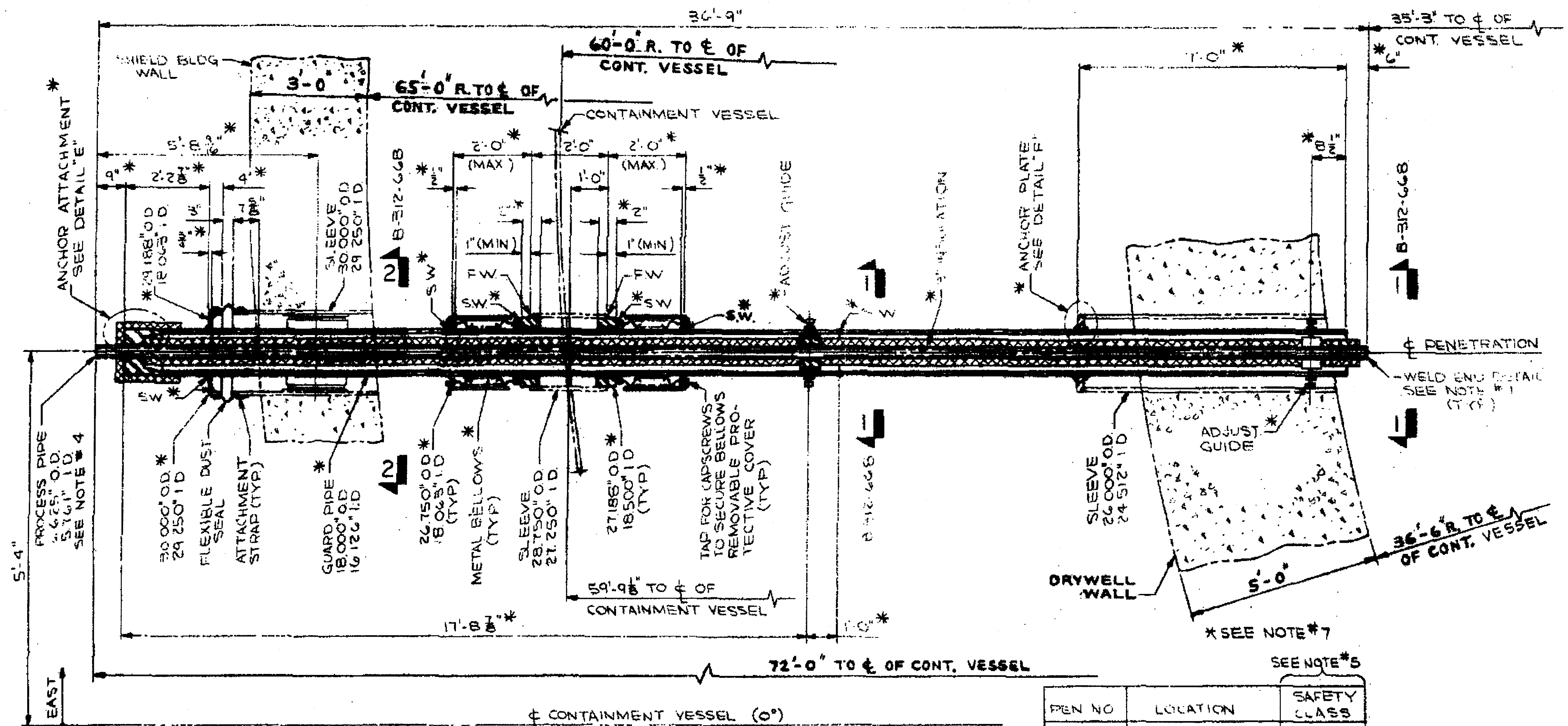
FOR FIELD WELD REQUIREMENTS SEE ECN # 5163-44-596/A. THIS DWG. DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFORMATION SEE TUBE TURNS DWGS. #70195Y-D49.1, #70195Y-C49.3, #70195Y-C49.4 #70195Y-D201.1, C201.3, C201.4

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe
Details Type "J"

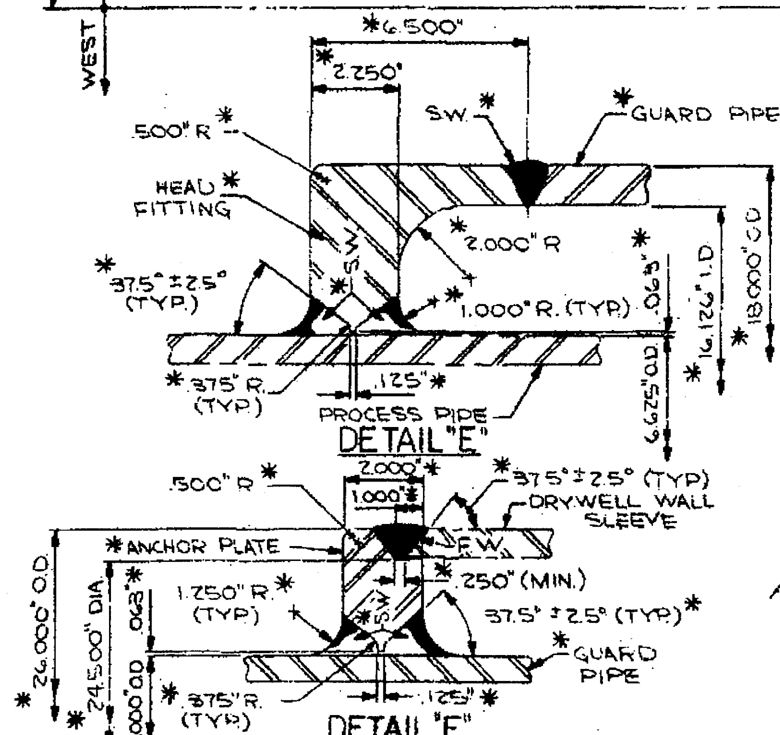
Figure 3.6-61
(Dwg. B-312-663)



SEE NOTE #5

PEN NO	LOCATION	SAFETY CLASS
P131	5'-4" EAST OF 0° ℄	1

PLAN VIEW



NOTES:-

1. FOR WELD END DETAILS, SEE DWG. D-301-601.
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH DWG B-312-801 THRU B-312-805 (CONTAINMENT VESSEL PENETRATION LIST).
3. S.W. - INDICATED SHOP WELD
   F.W. - INDICATED FIELD WELD
4. PROCESS PIPE SUPPLIED BY SP-527 CONTRACTOR. PENETRATION ASSEMBLY FABRICATED BY SP-525 CONTRACTOR AND INSTALLED BY SP-44 CONTRACTOR.
5. SAFETY CLASS REFERS TO PROCESS PIPE ONLY. PROCESS PIPE SUPPORTS TO BE IN ACCORDANCE WITH NF, OTHER INTEGRAL PARTS TO BE IN ACCORDANCE WITH MC OF THE ASME SECTION III CODE
6. FOR SECTIONS AND DETAILS, SEE DWG. B-312-668.
7. ALL ATTACHMENTS AND COMPONENTS MARKED THUS * ARE INTEGRAL PARTS OF THE CONTAINMENT PENETRATION ASSEMBLY.
8. FOR MATERIAL AND SPECIFICATIONS, SEE GAI SPECIFICATION SP-527-4549-00 AND SP-525-4549-00.
9. PROVIDE 8" X 3" X 2" LUBRITE PAD. BOTTOM SURFACE OF PAD TO BE MACHINED IN FIELD TO ACCOMODATE MISALIGNMENT AND TOLERANCES.
10. NUT IS TO BE TIGHTENED IN A MANNER TO PREVENT ANY SLIPPAGE BETWEEN THE PROCESS PIPE AND PROLESS PIPE CLAMP AND THEN TACK WELDED TO BOLT.

THIS DWG. DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFO. SEE TUBE TURNS DWGS. #70195Y-D123.3 #70195Y-D125.1, #70195Y-C117.4

FOR FIELD WELD REQUIREMENTS SEE ECN #2440-44-52, #2413-44-[illegible] 5165-44-398/A & 6856-44-[illegible]

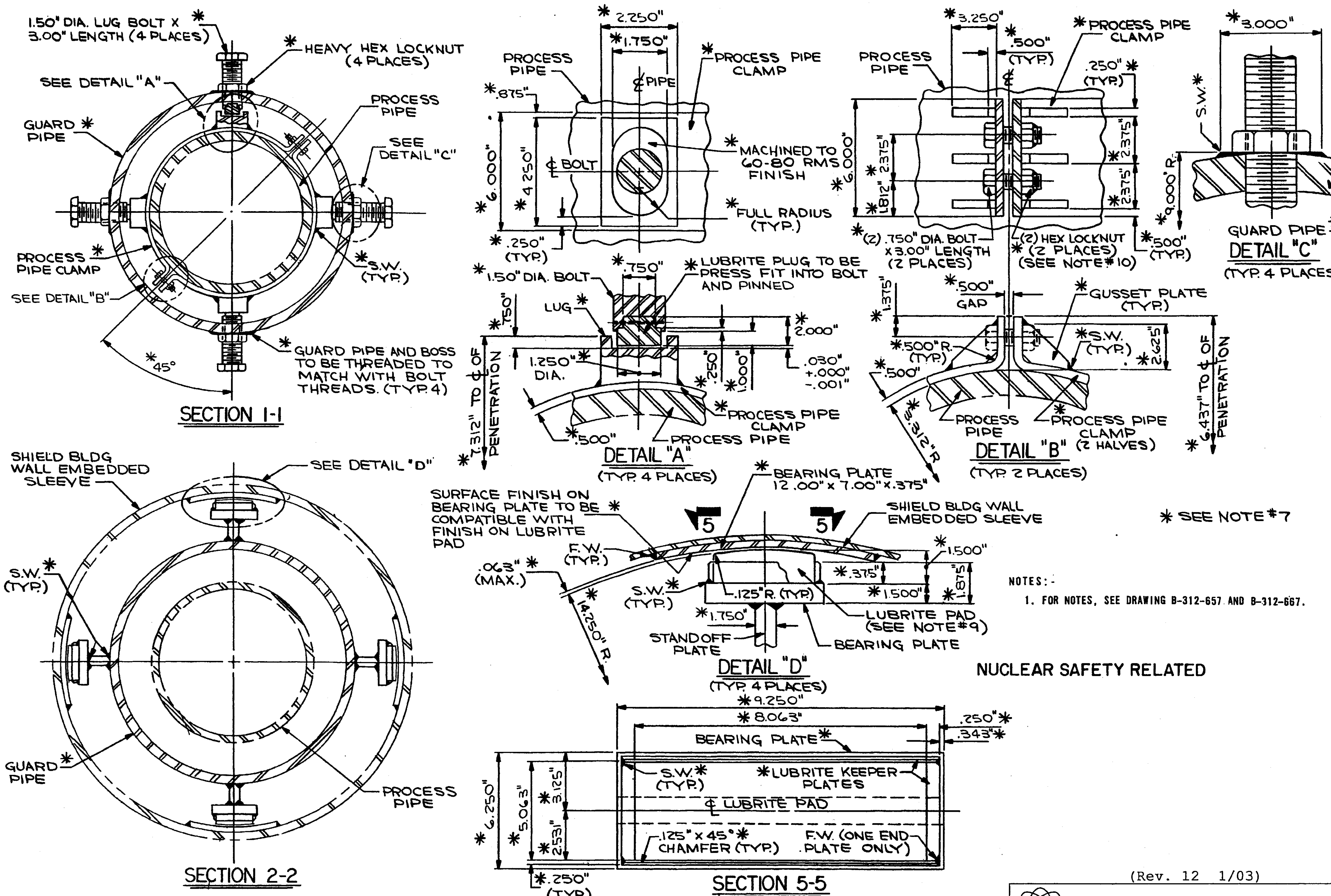
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe
Type "J" RWCU

Figure 3.6-62
(Dwg. B-312-667)



* SEE NOTE #7

NOTES:-

1. FOR NOTES, SEE DRAWING B-312-657 AND B-312-667.

NUCLEAR SAFETY RELATED

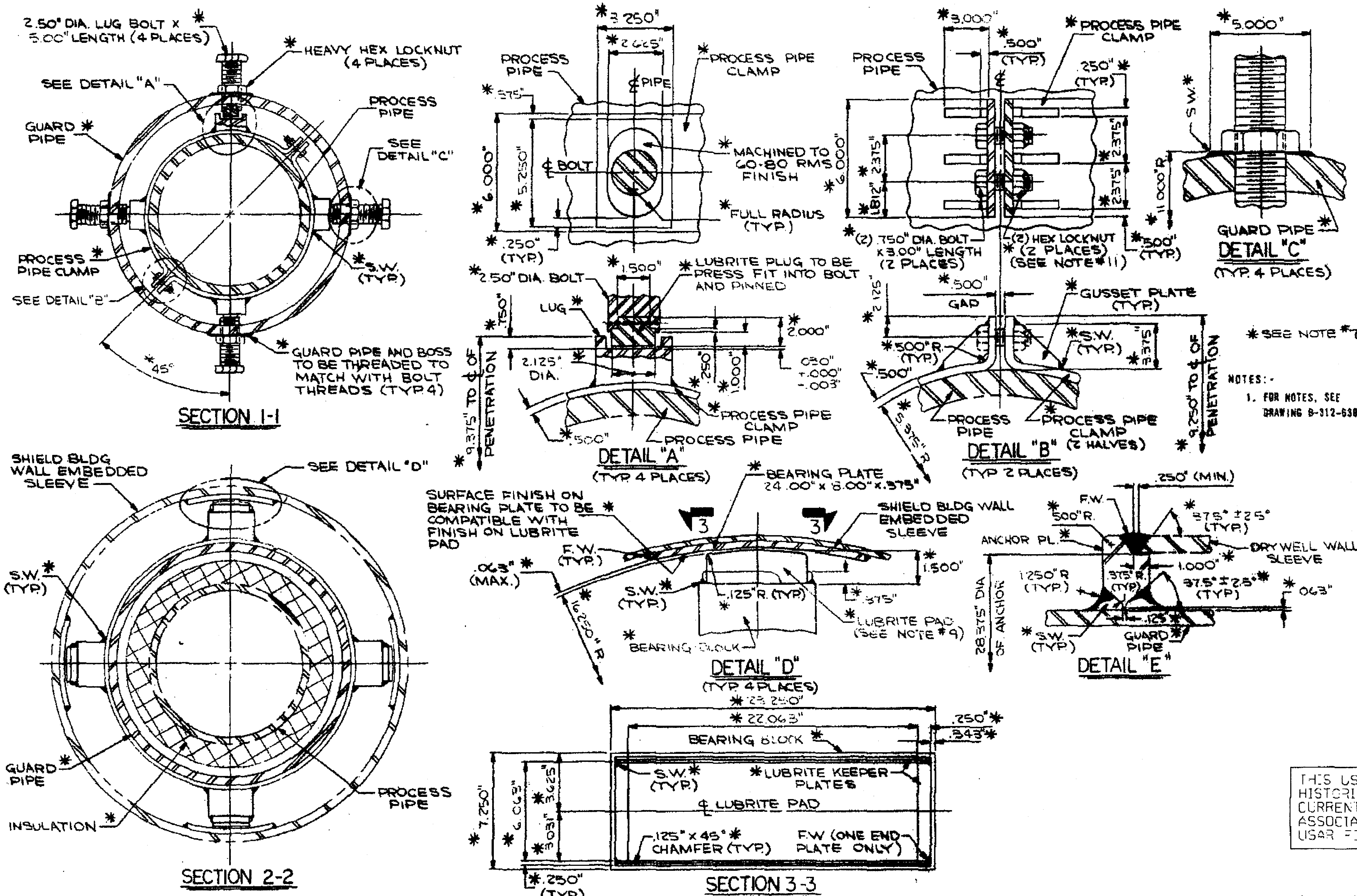
THIS DWG. DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFO. SEE TUBE TURN DWGS. #70195Y-D117.1, #70195Y-C117.4 & #70195Y-C117.3.
FOR FIELD WELD REQUIREMENTS SEE ECN #2440-44-52, #2413-44-52, #2442-44-51, #2412-20-431, 5165-44-398/A & 5175-44-401/A

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe
Details Type "J"

Figure 3.6-63
(Dwg. B-312-668)



FOR FIELD WELD REQUIREMENTS SEE ECN# 2414-27-12 #5170-44-399/A

THIS DWG. DOES NOT REFLECT FINAL DESIGN INFO. FOR FINAL DESIGN & ANALYSIS INFO. SEE TUBE TURNS DWGS. #70195Y-D201.1, C201.3, C201.4 & #70195Y-D49.1, C49.3, C49.4.

THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

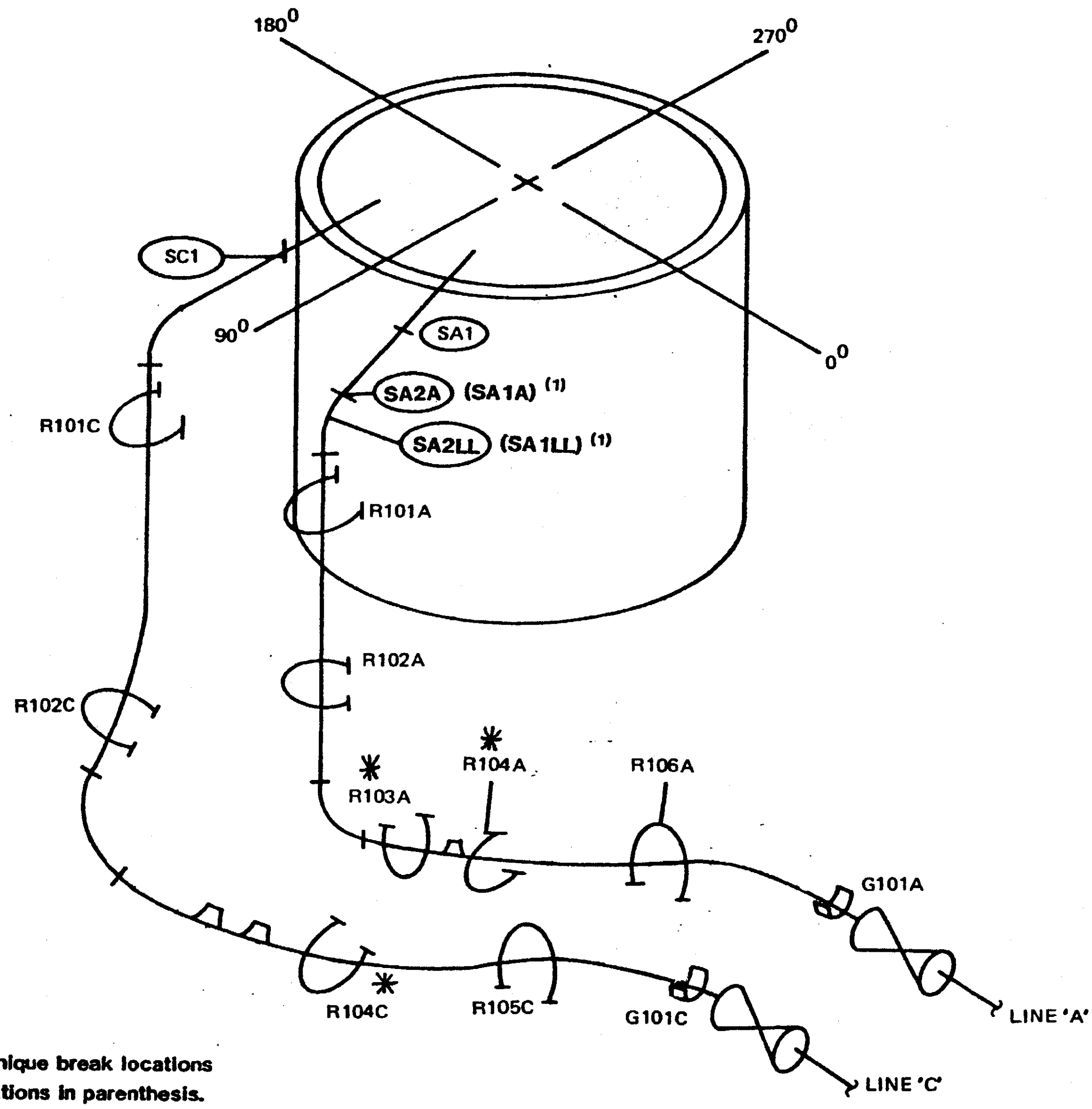
(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Penetration Guard Pipe
Details Type "J"

Figure 3.6-64
(Dwg. B-312-670)

✱ INACTIVE PIPE WHIP RESTRAINT



NOTE: 1) Perry unique break locations designations in parenthesis.

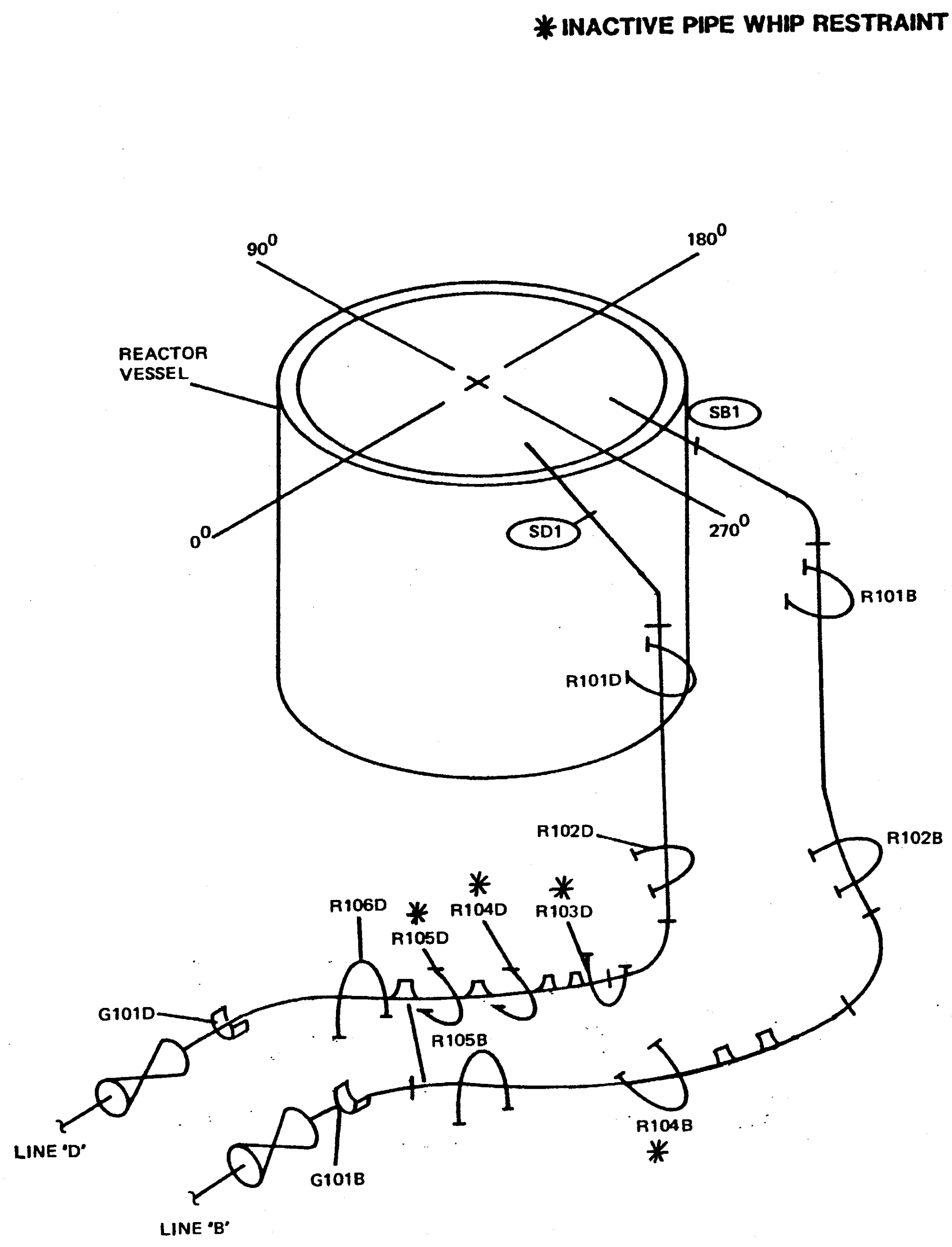
STEAM LINES A & C SHOWN

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Main Steam System Piping
Postulated Break Locations
and Restraint Locations

Figure 3.6-65 (Sheet 1 of 2)

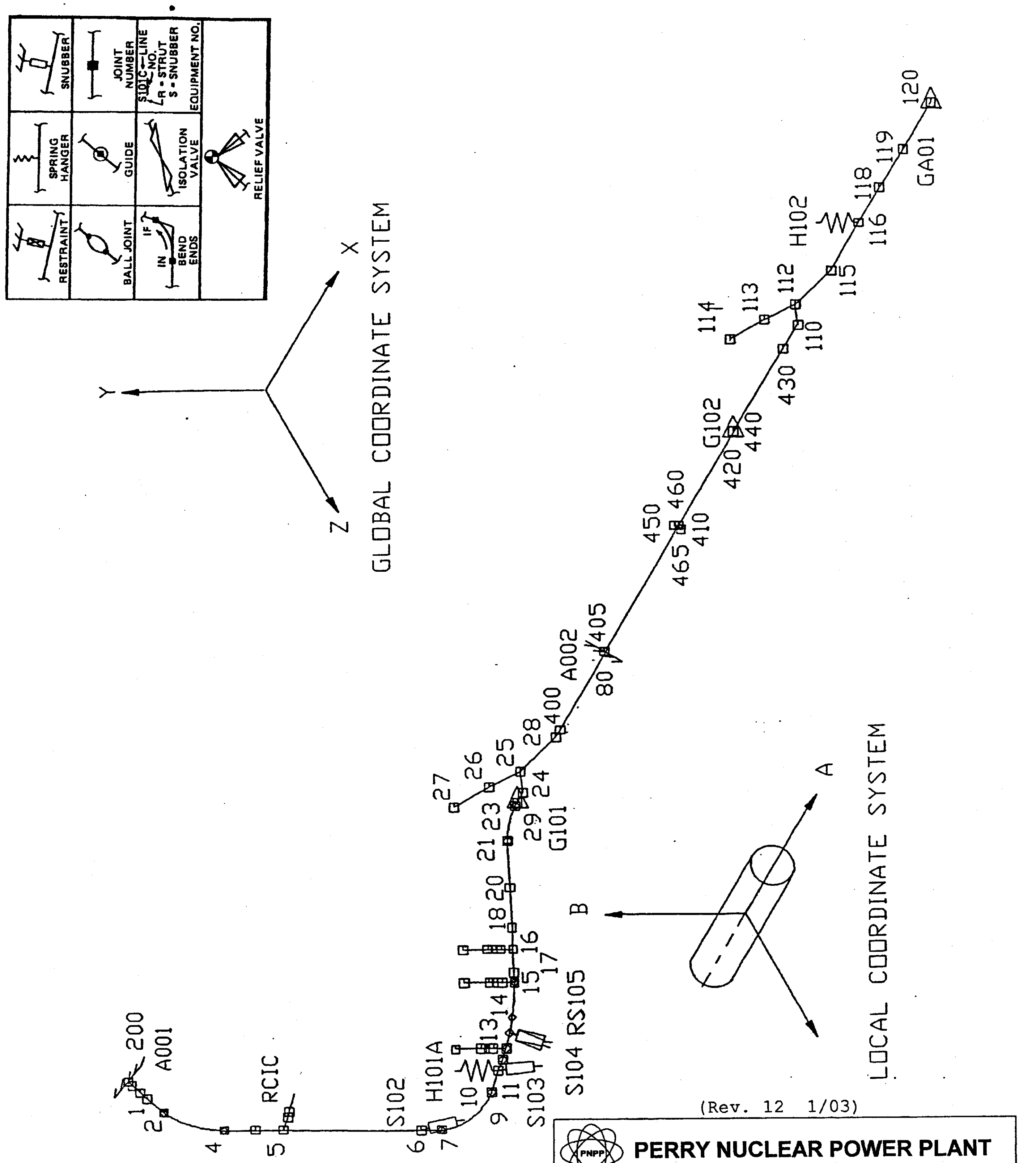


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Main Steam System Piping
Postulated Break Locations
and Restraint Locations

Figure 3.6-65 (Sheet 2 of 2)

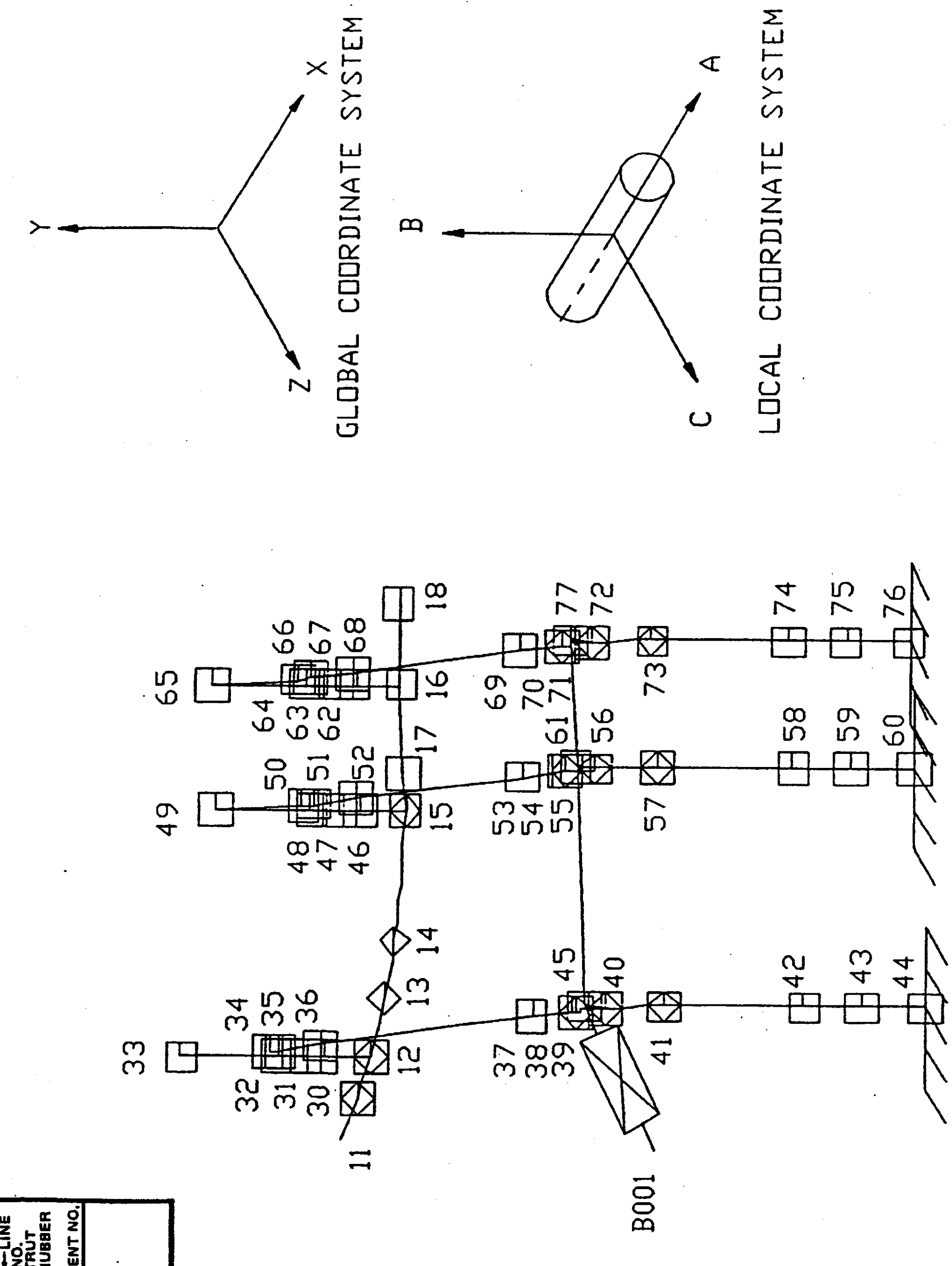


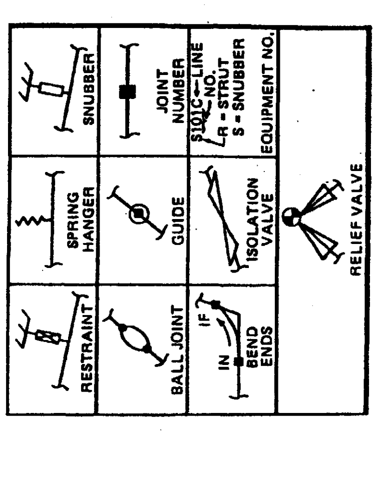
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Line A - Main Steam
Piping Stress
Node Locations

Figure 3.6-65a



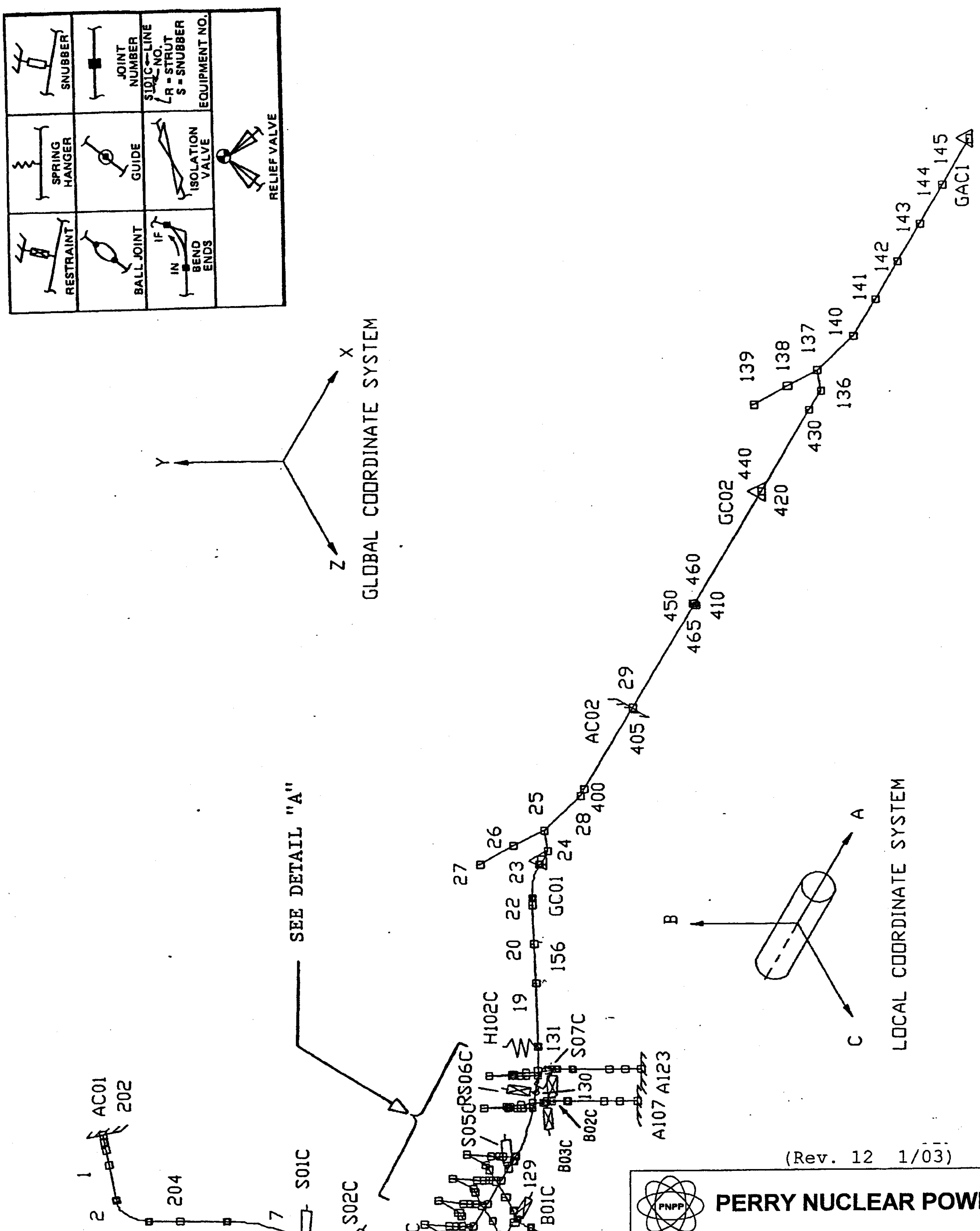


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Line A - Main Steam Piping
Stress Node Locations (Sweepolet)

Figure 3.6-65b

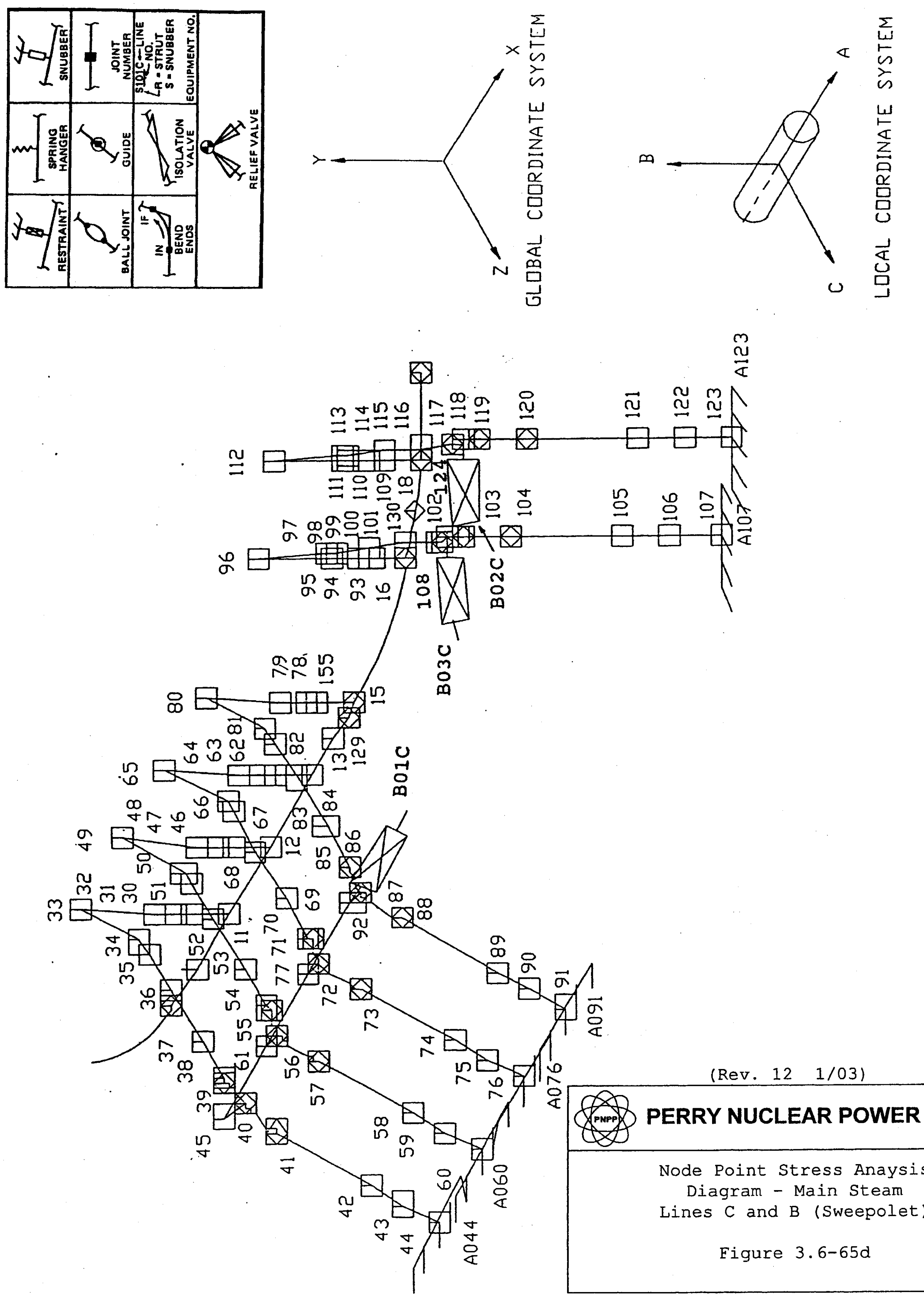


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Node Point Stress Analysis
Diagram - Main Steam
Lines C and B

Figure 3.6-65c

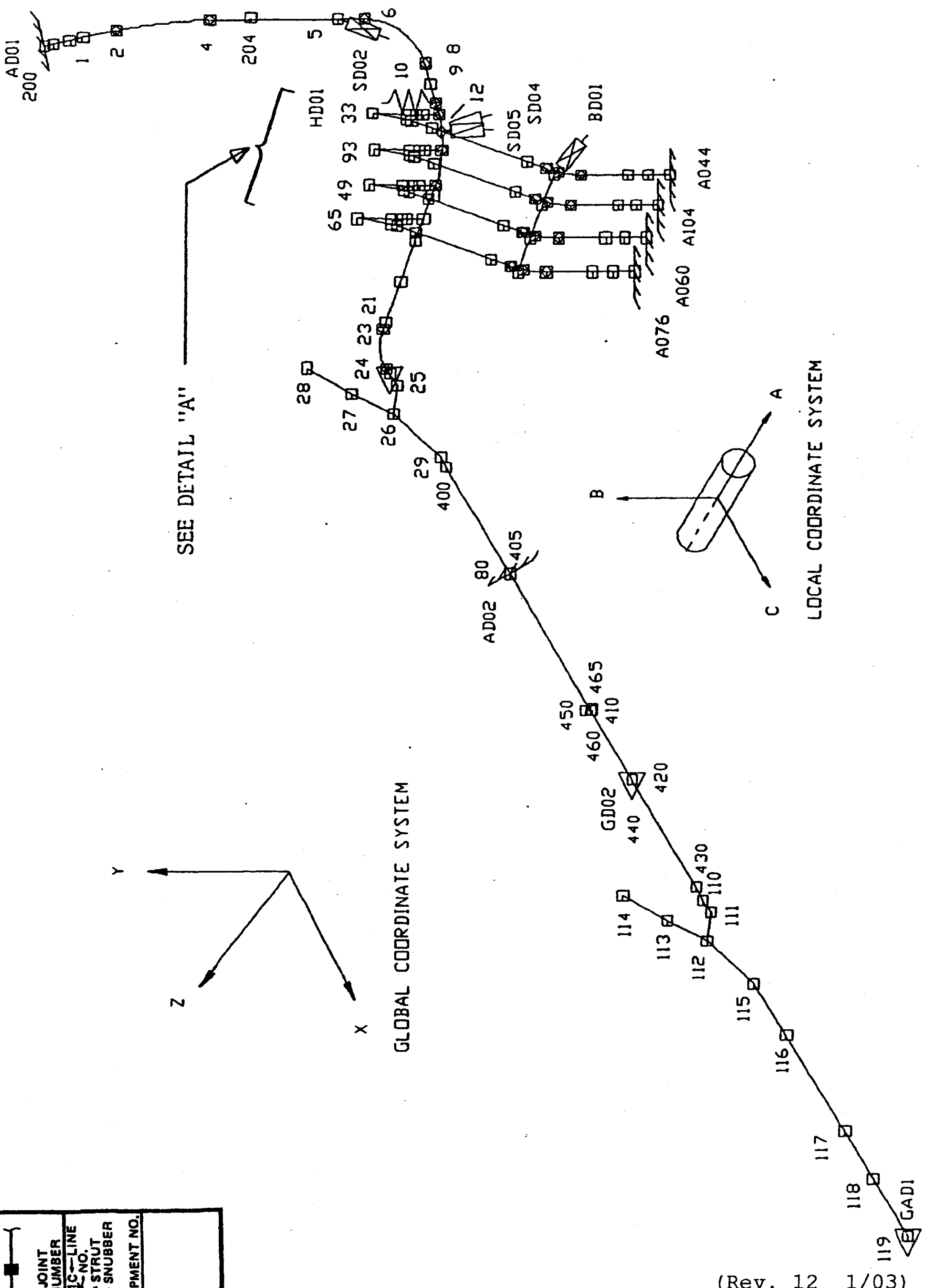


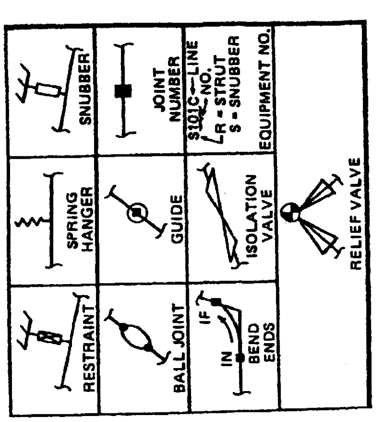
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Node Point Stress Anaysis
Diagram - Main Steam
Lines C and B (Sweepolet)

Figure 3.6-65d



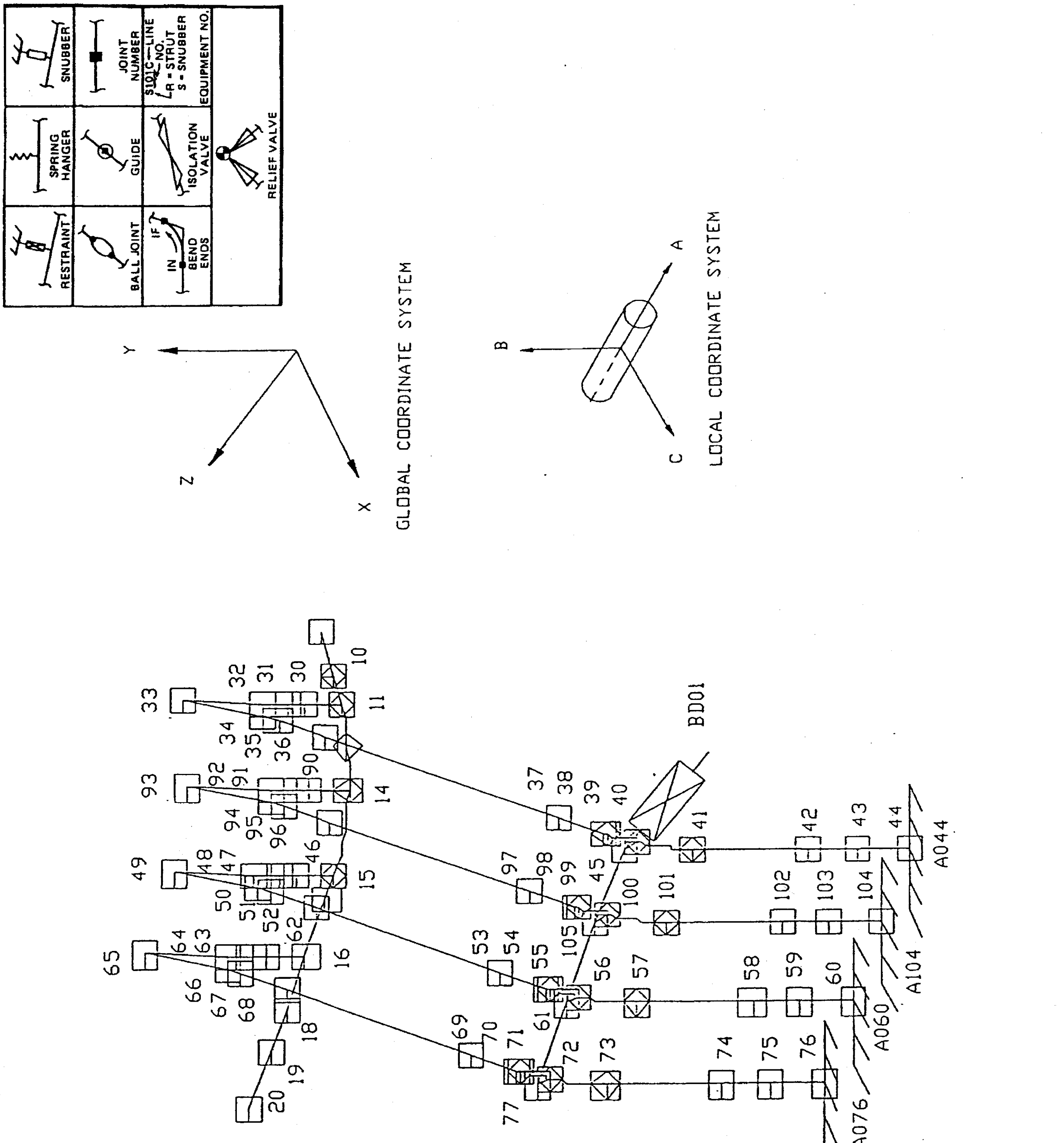


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Node Point Stress Analysis
Diagram - Main Steam Line D

Figure 3.6-65e

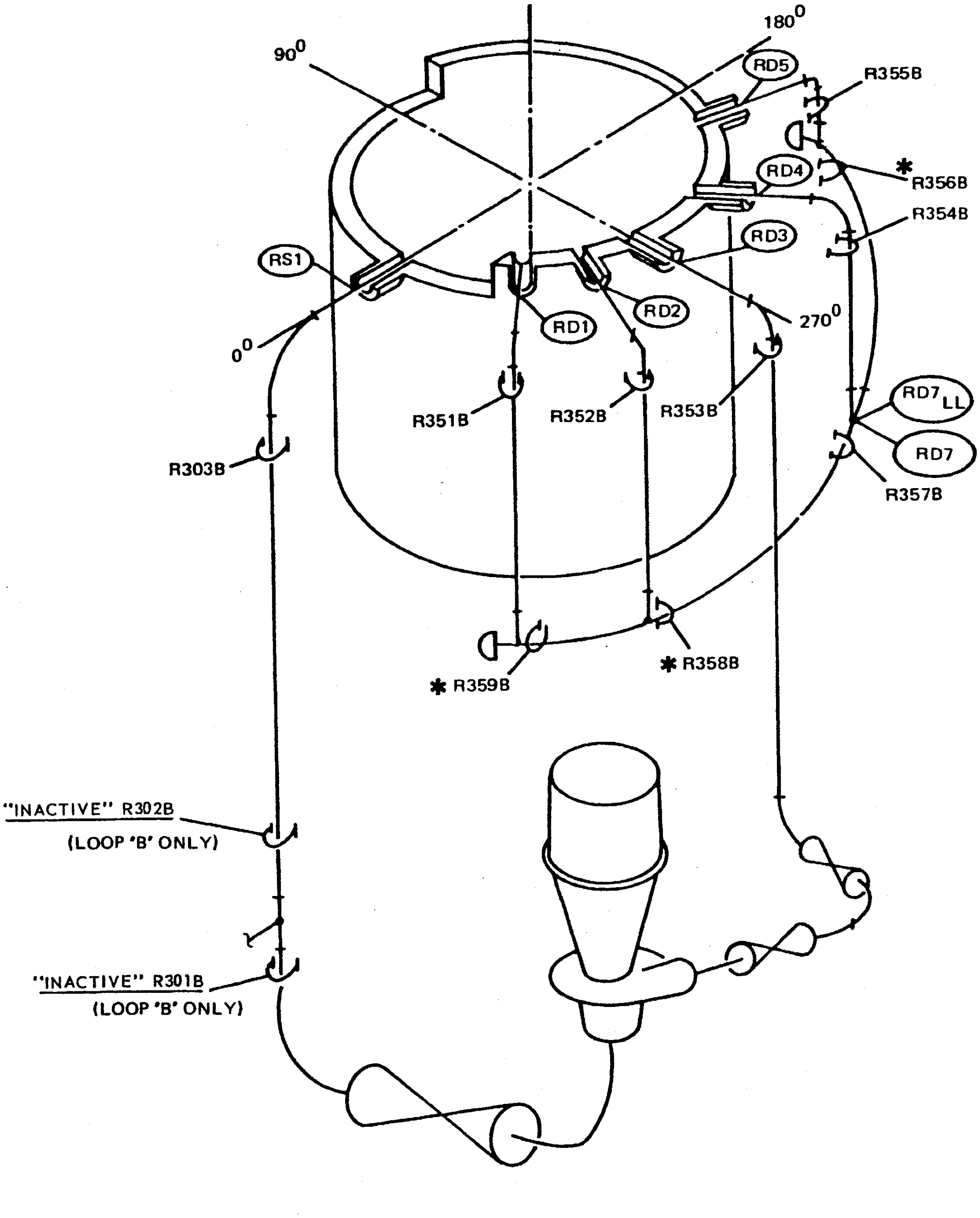


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Node Point Stress Analysis
Diagram - Main Steam
Line D (Sweepolet)

Figure 3.6-65f



THIS IS REPRESENTATIVE OF LOOP 'B'
LOOP 'A' SAME AS LOOP 'B' (EXCEPT FOR RHR SUCTION)

BREAKS ARE POSTULATED ONLY
AT NUMBERED LOCATIONS SHOWN

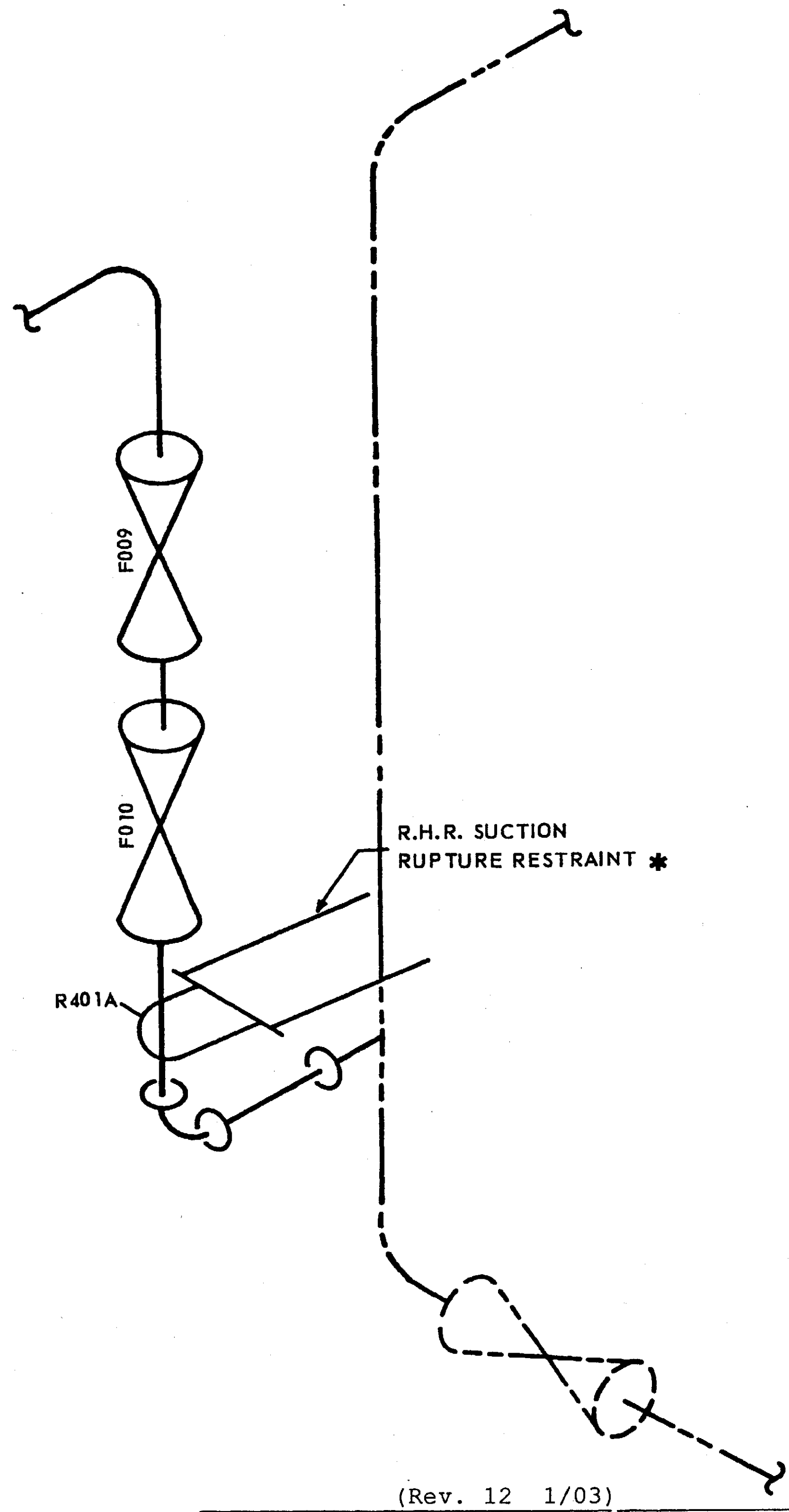
*** INACTIVE - THE PIPE BREAKS ASSOCIATED WITH THESE RESTRAINTS HAVE BEEN DELETED.**

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Recirculation System Piping
Postulated Break Locations
and Restraint Locations

Figure 3.6-66



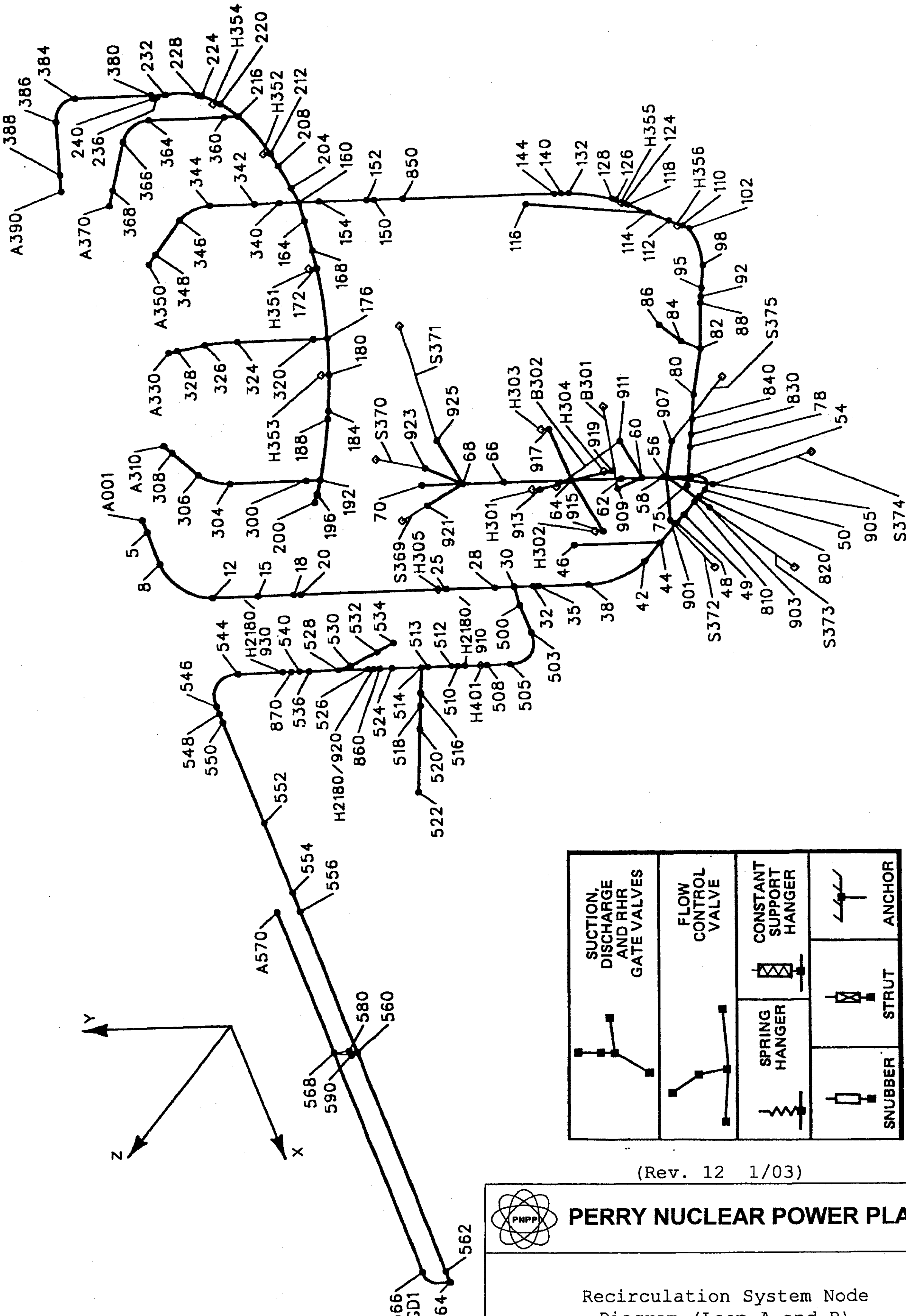
*** "INACTIVE": POSTULATED BREAKS ASSOCIATED WITH THIS RESTRAINT HAVE BEEN DELETED.**

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RHR Suction Line Postulated Break Locations and Restraint Locations

Figure 3.6-66a

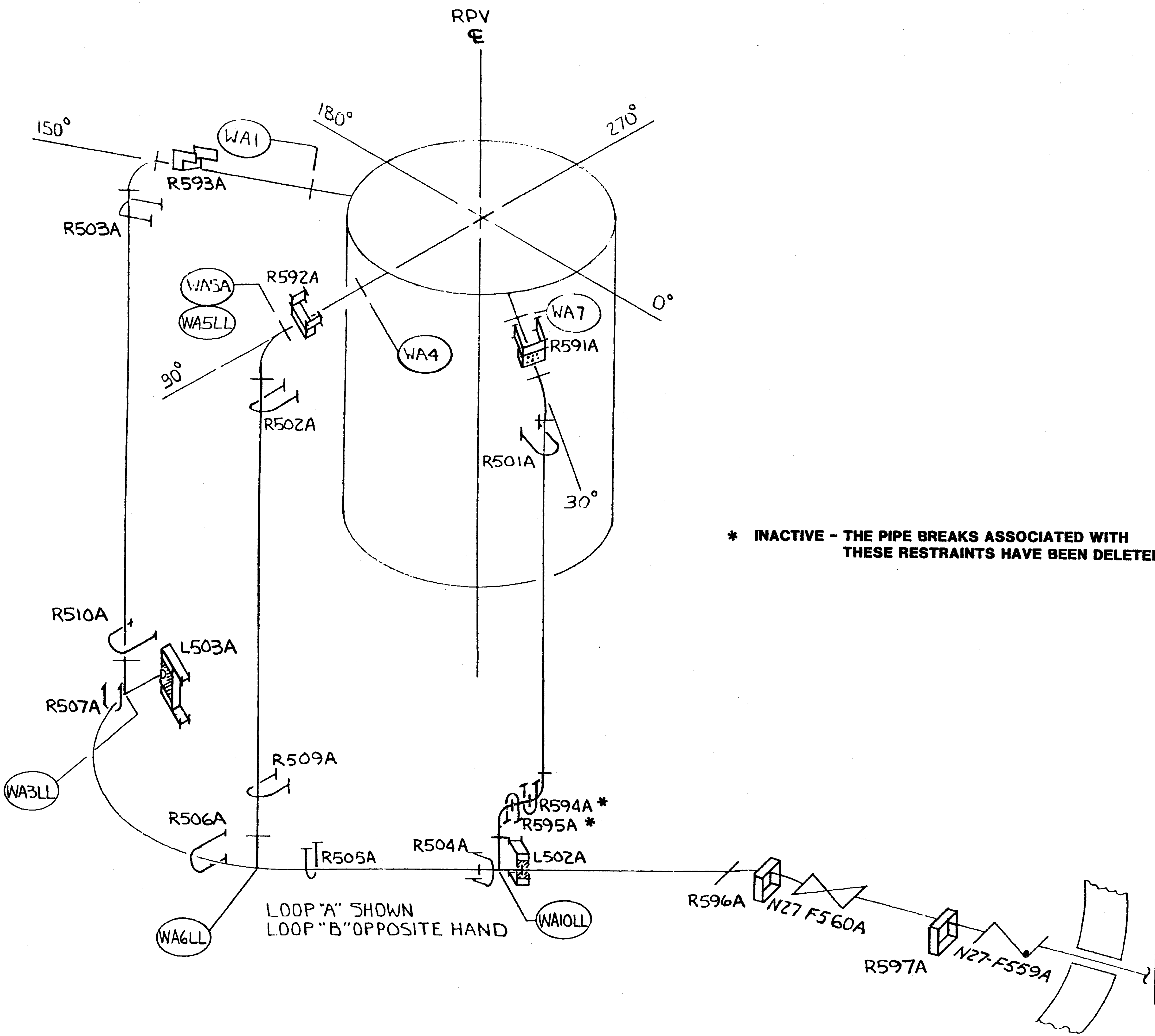


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Recirculation System Node Diagram (Loop A and B)

Figure 3.6-66b



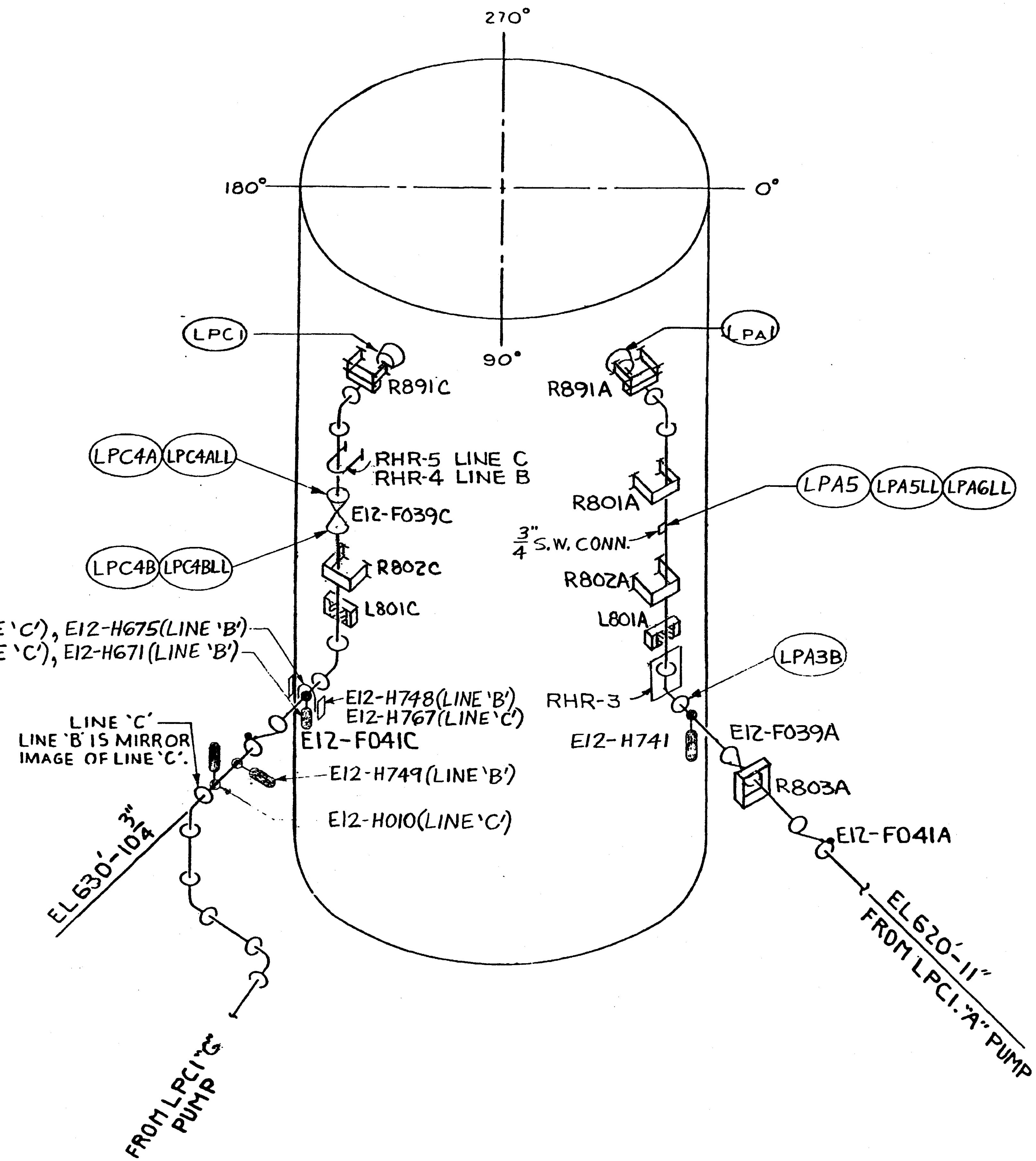
*** INACTIVE - THE PIPE BREAKS ASSOCIATED WITH THESE RESTRAINTS HAVE BEEN DELETED**

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations
Feedwater Inside Containment

Figure 3.6-67

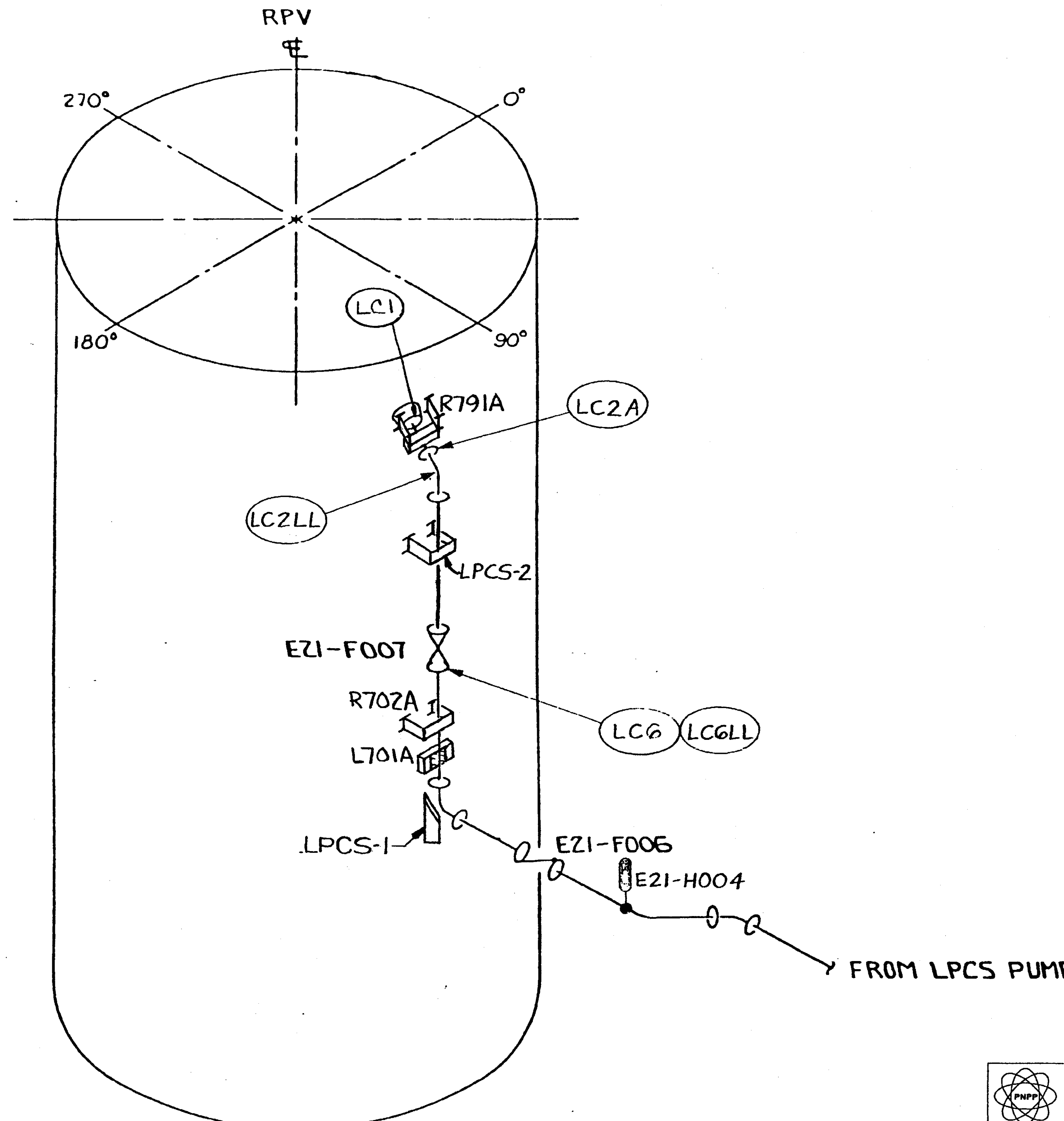


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations
LPCI (RHR) Inside Containment

Figure 3.6-68



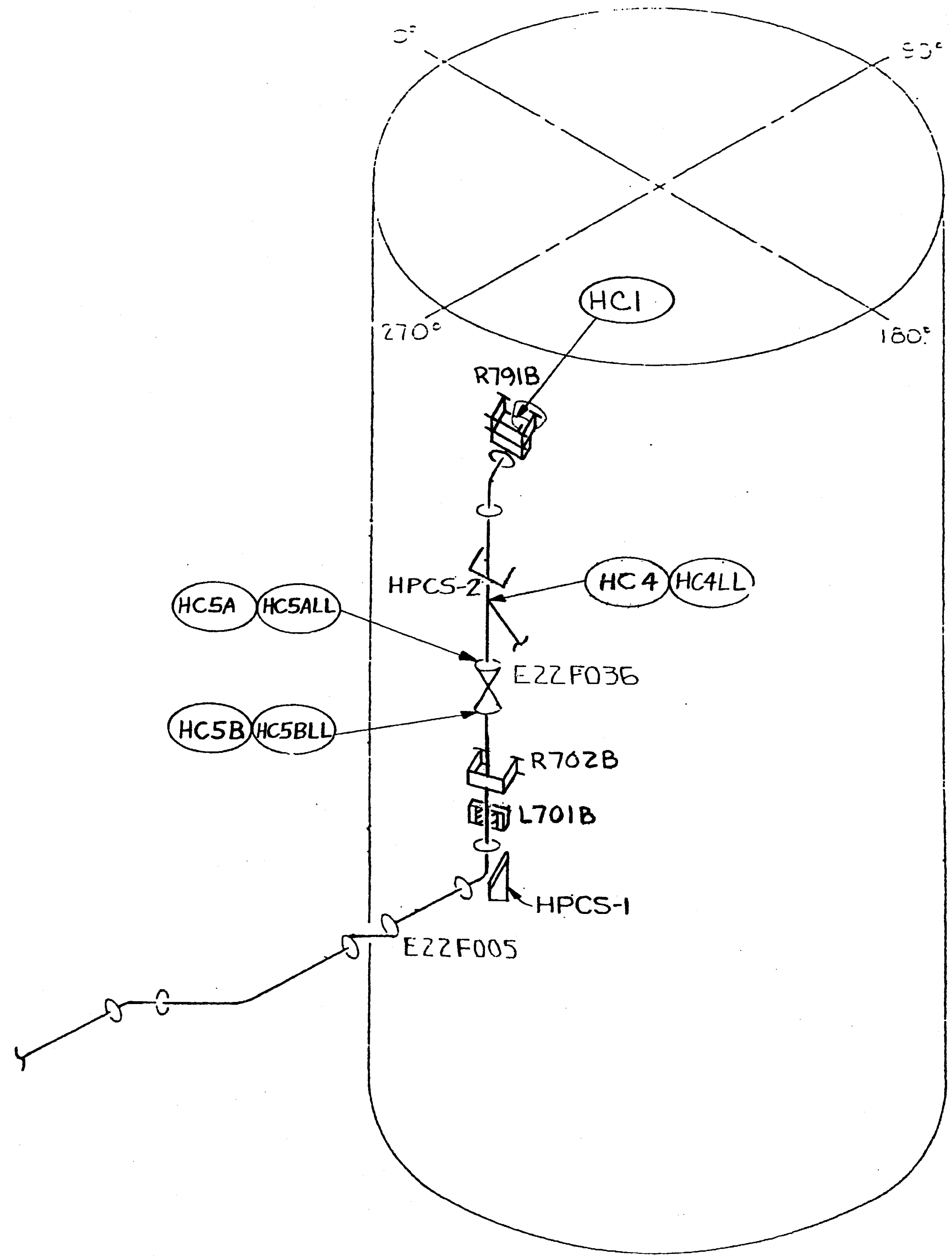
NOTES:
1- BREAKS ARE POSTULATED ONLY AT NUMBERED LOCATIONS SHOWN.

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations
Low Pressure Core Spray
Inside Containment

Figure 3.6-69a



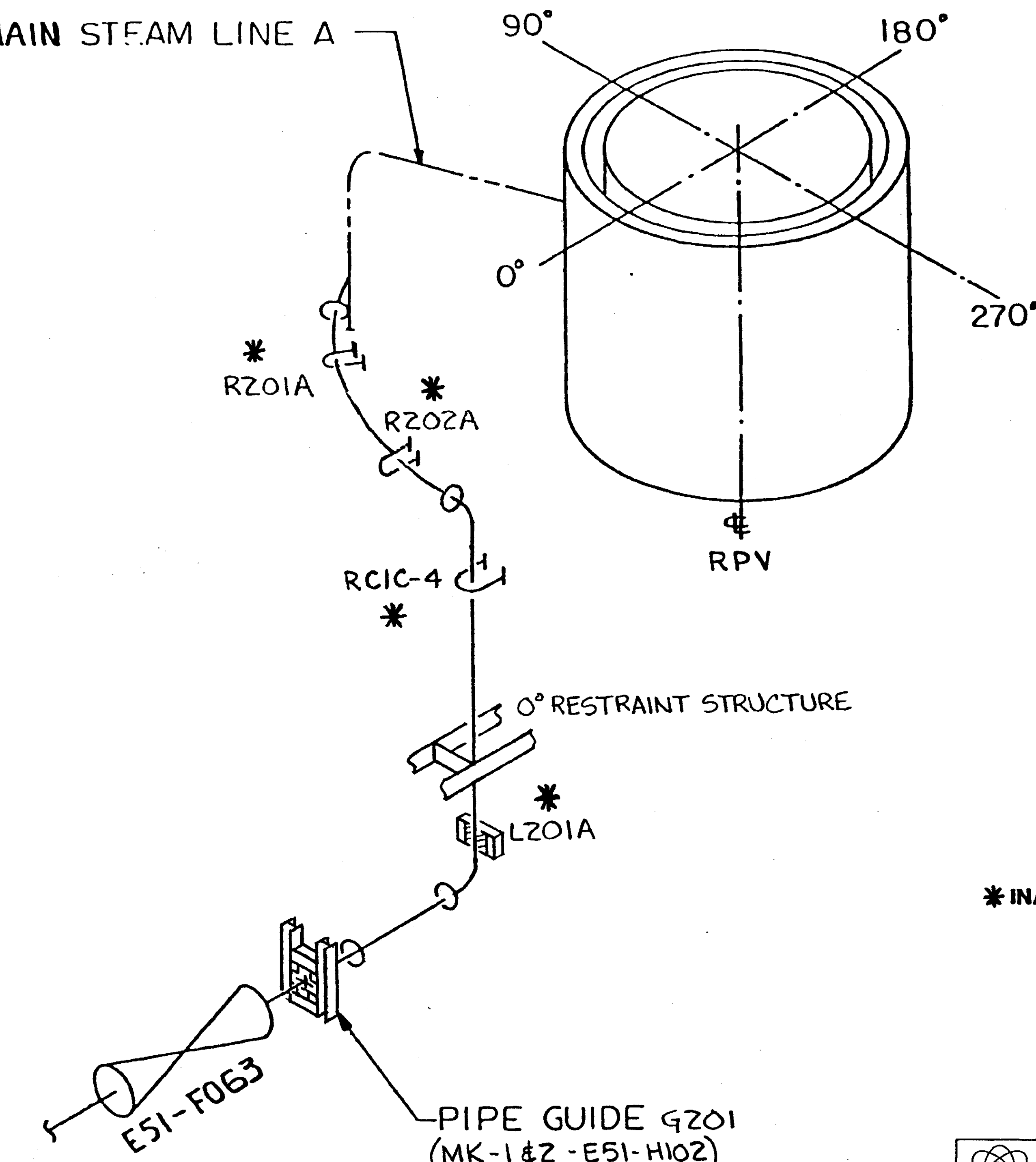
NOTE:
1- BREAKS ARE POSTULATED ONLY AT NUMBERED LOCATIONS SHOWN.

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations
High Pressure Core Spray
Inside Containment

Figure 3.6-69b



✱ INACTIVE PIPE WHIP RESTRAINT

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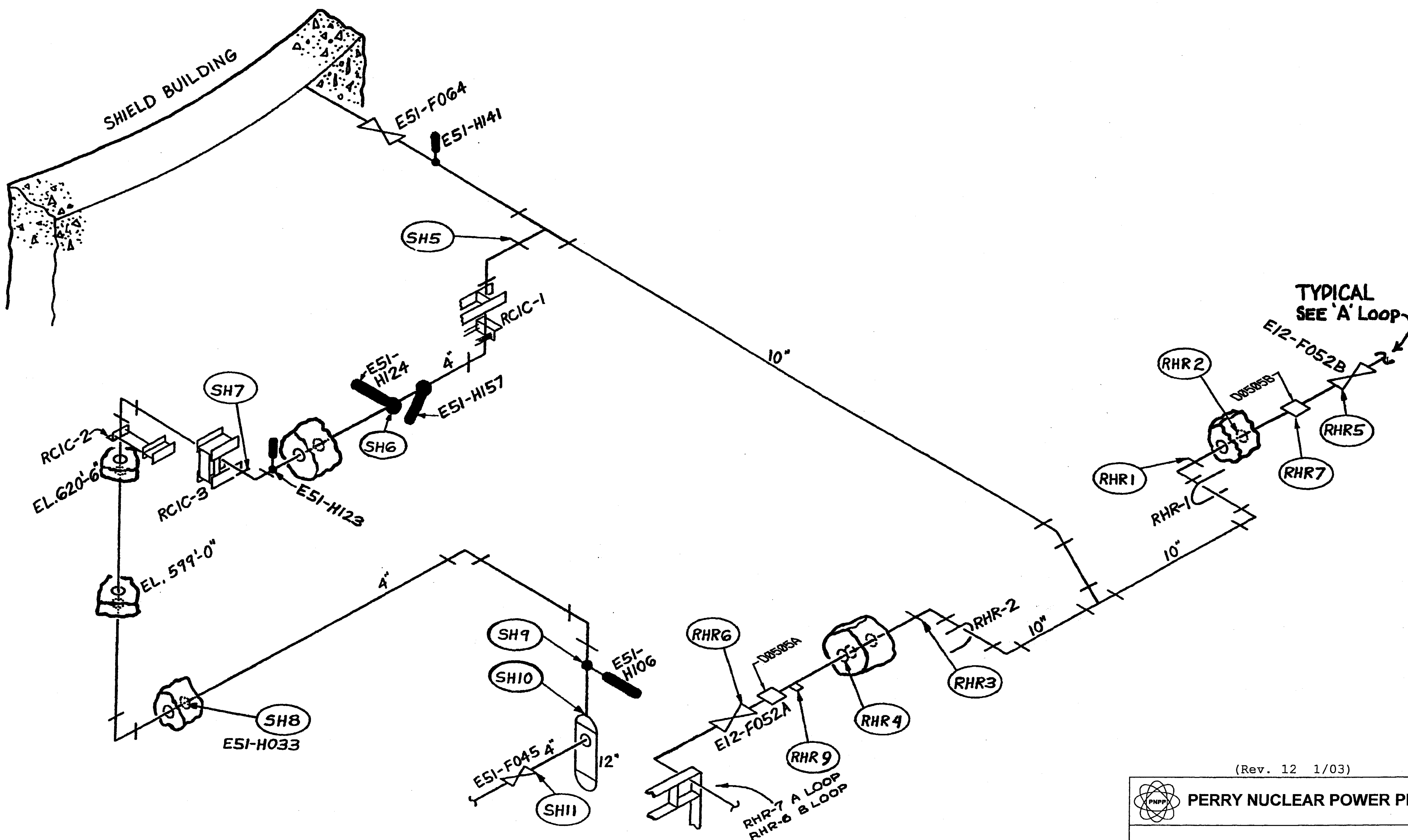
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations
RCIC Steam - Inside Containment

Figure 3.6-70



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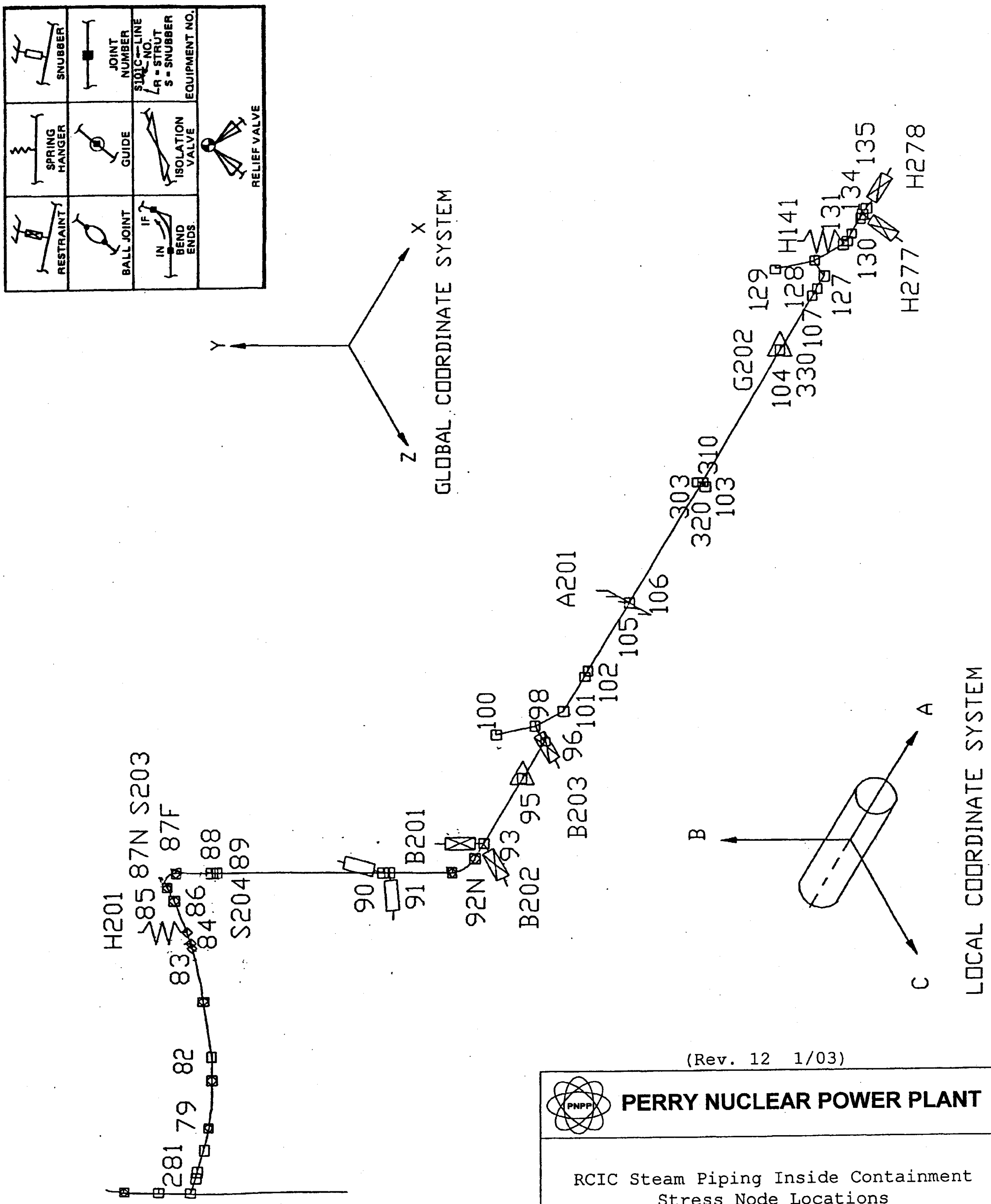
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations RCIC
Steam Supply - Outside Containment

Figure 3.6-70a



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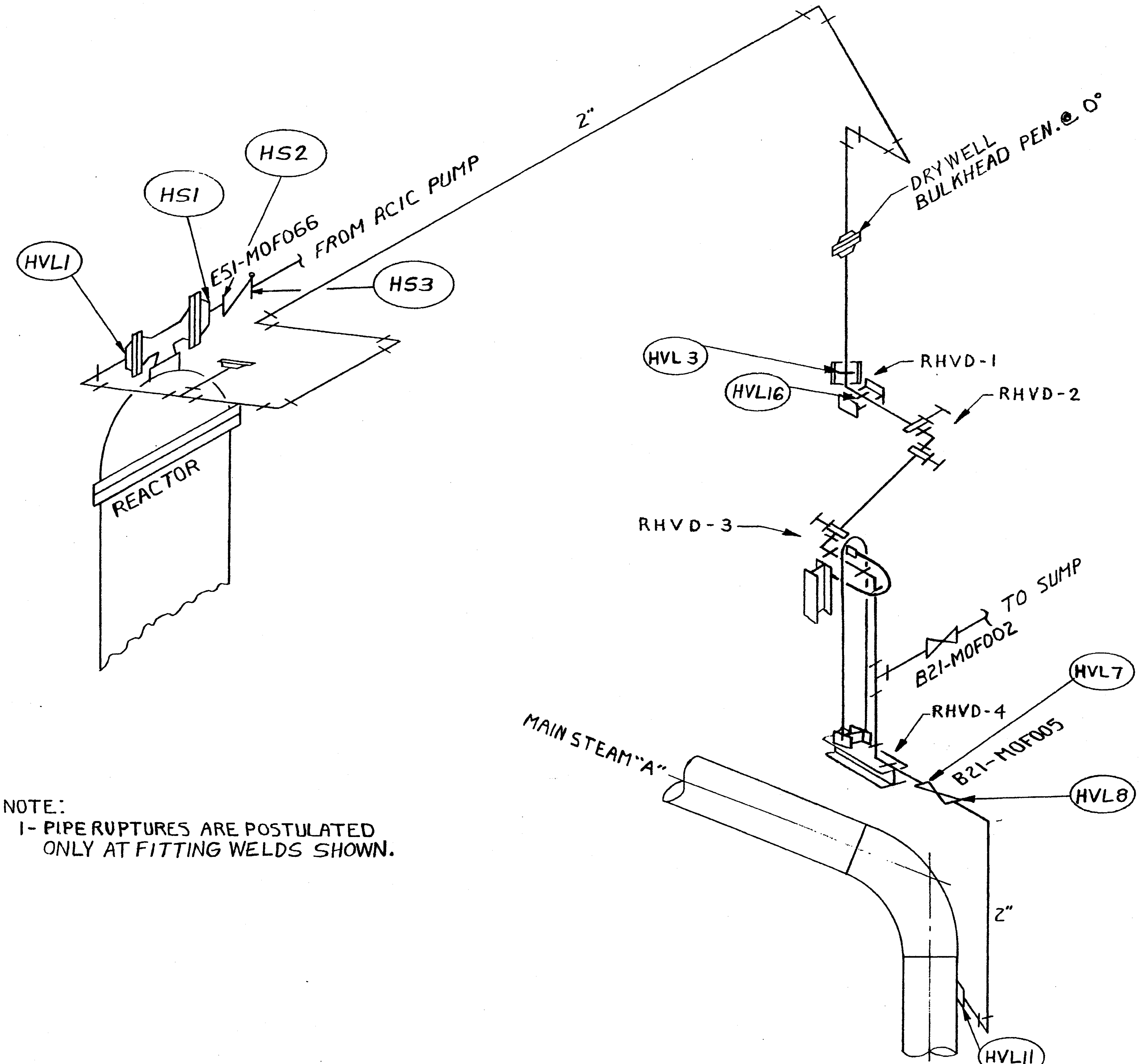
PERRY NUCLEAR POWER PLANT

RCIC Steam Piping Inside Containment
Stress Node Locations

Figure 3.6-70b



NOTE:
1- PIPE RUPTURES ARE POSTULATED ONLY AT FITTING WELDS SHOWN.

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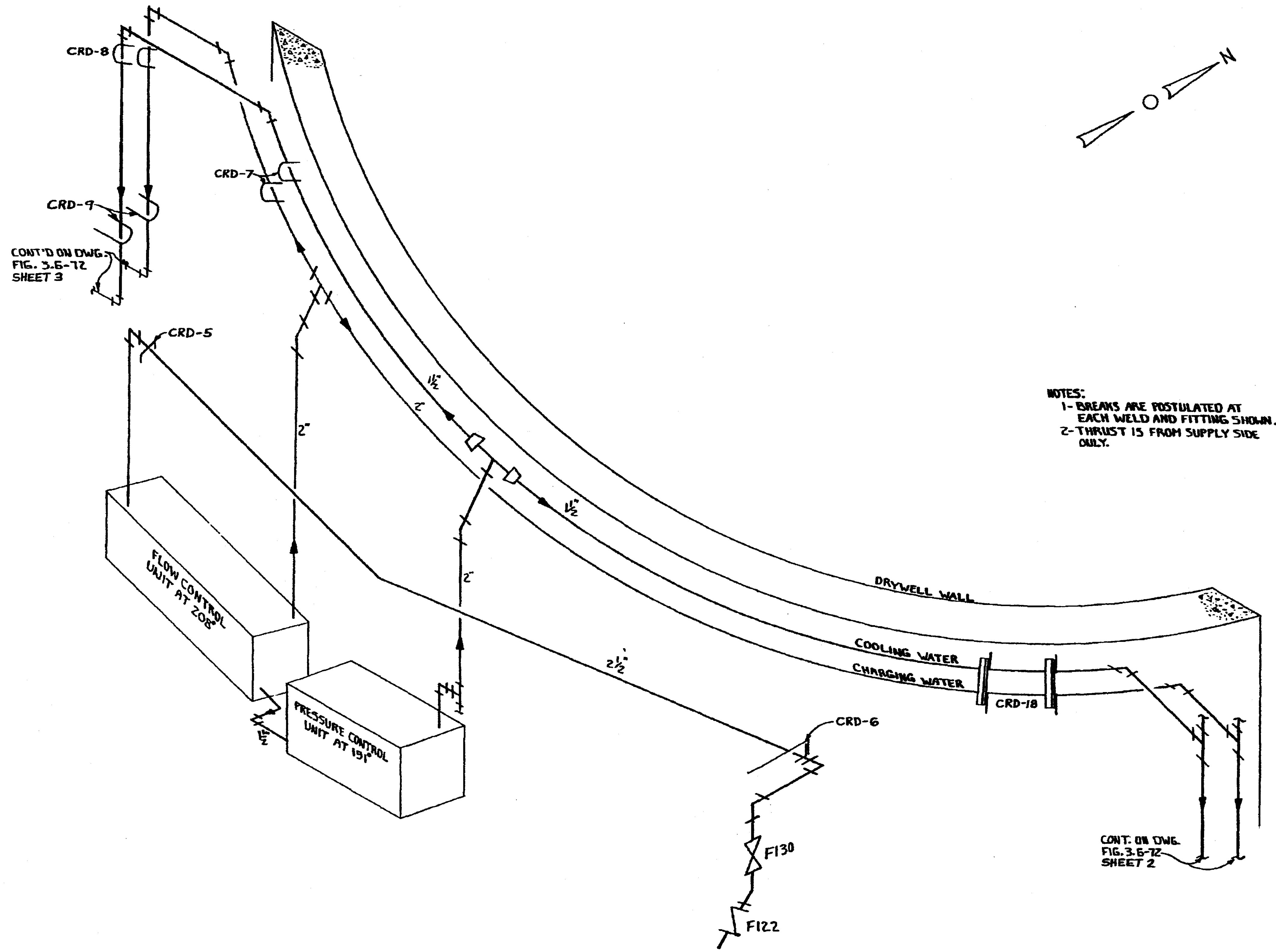
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations Head Spray Fitting Drain to MS "A"

Figure 3.6-71



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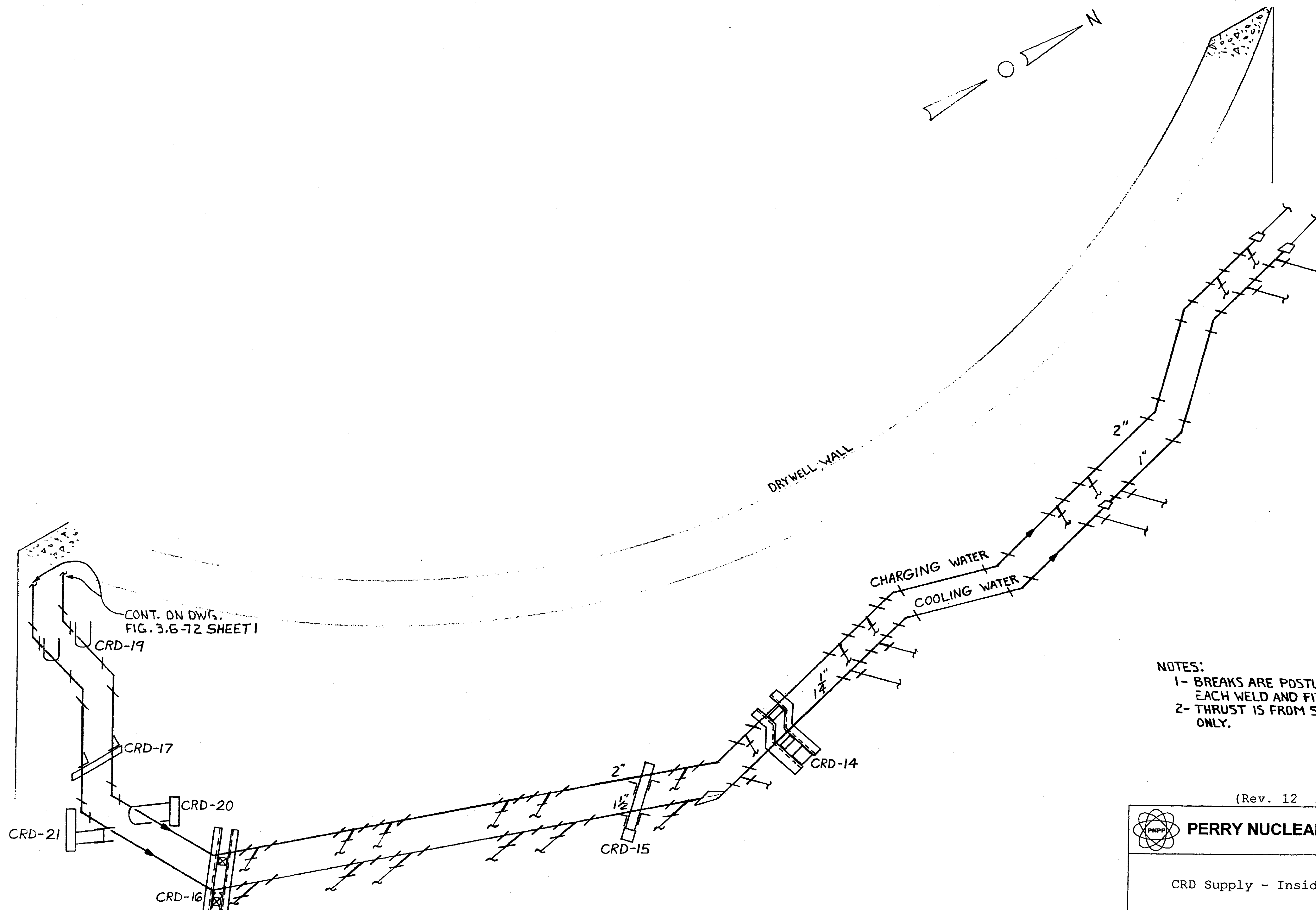
PERRY NUCLEAR POWER PLANT

CRD Supply - Inside Containment

Figure 3.6-72 (Sheet 1 of 3)



NOTES:
1- BREAKS ARE POSTULATED AT EACH WELD AND FITTING SHOWN.
2- THRUST IS FROM SUPPLY SIDE ONLY.

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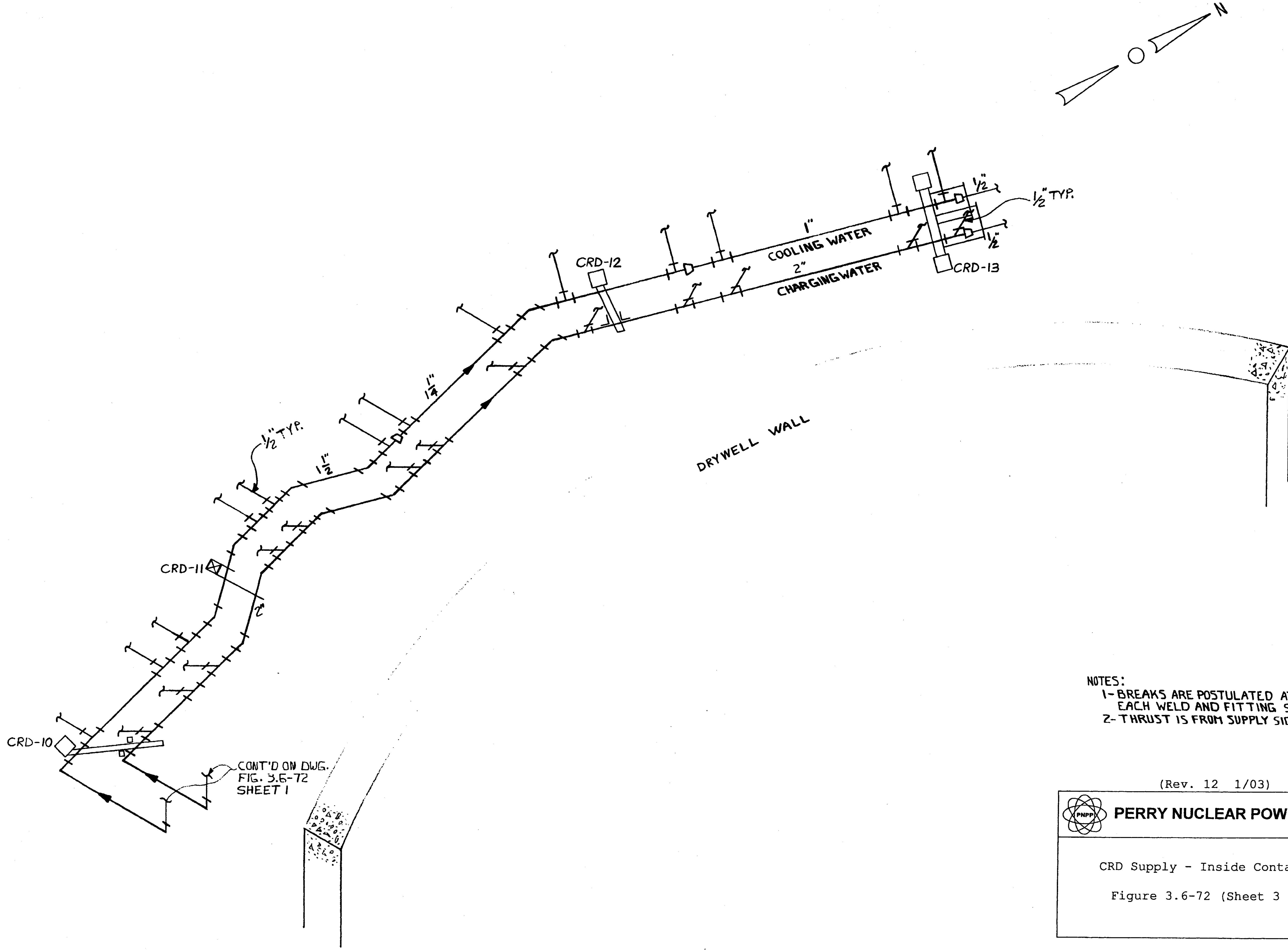
PERRY NUCLEAR POWER PLANT

CRD Supply - Inside Containment

Figure 3.6-72 (Sheet 2 of 3)



NOTES:
1- BREAKS ARE POSTULATED AT EACH WELD AND FITTING SHOWN.
2- THRUST IS FROM SUPPLY SIDE ONLY.

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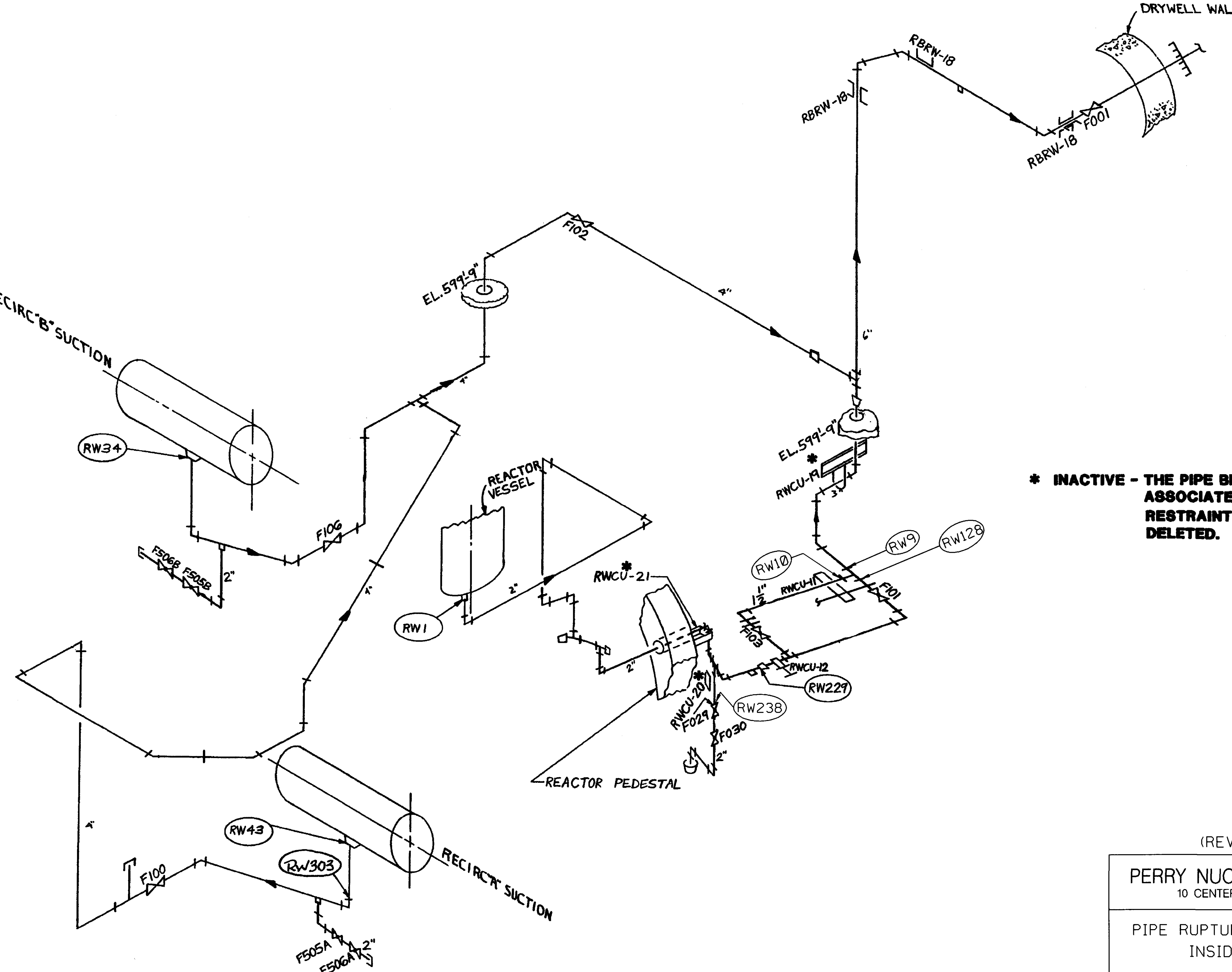
PERRY NUCLEAR POWER PLANT

CRD Supply - Inside Containment

Figure 3.6-72 (Sheet 3 of 3)



* **INACTIVE - THE PIPE BREAKS ASSOCIATED WITH THESE RESTRAINTS HAVE BEEN DELETED.**

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PERRY NUCLEAR POWER PLANT
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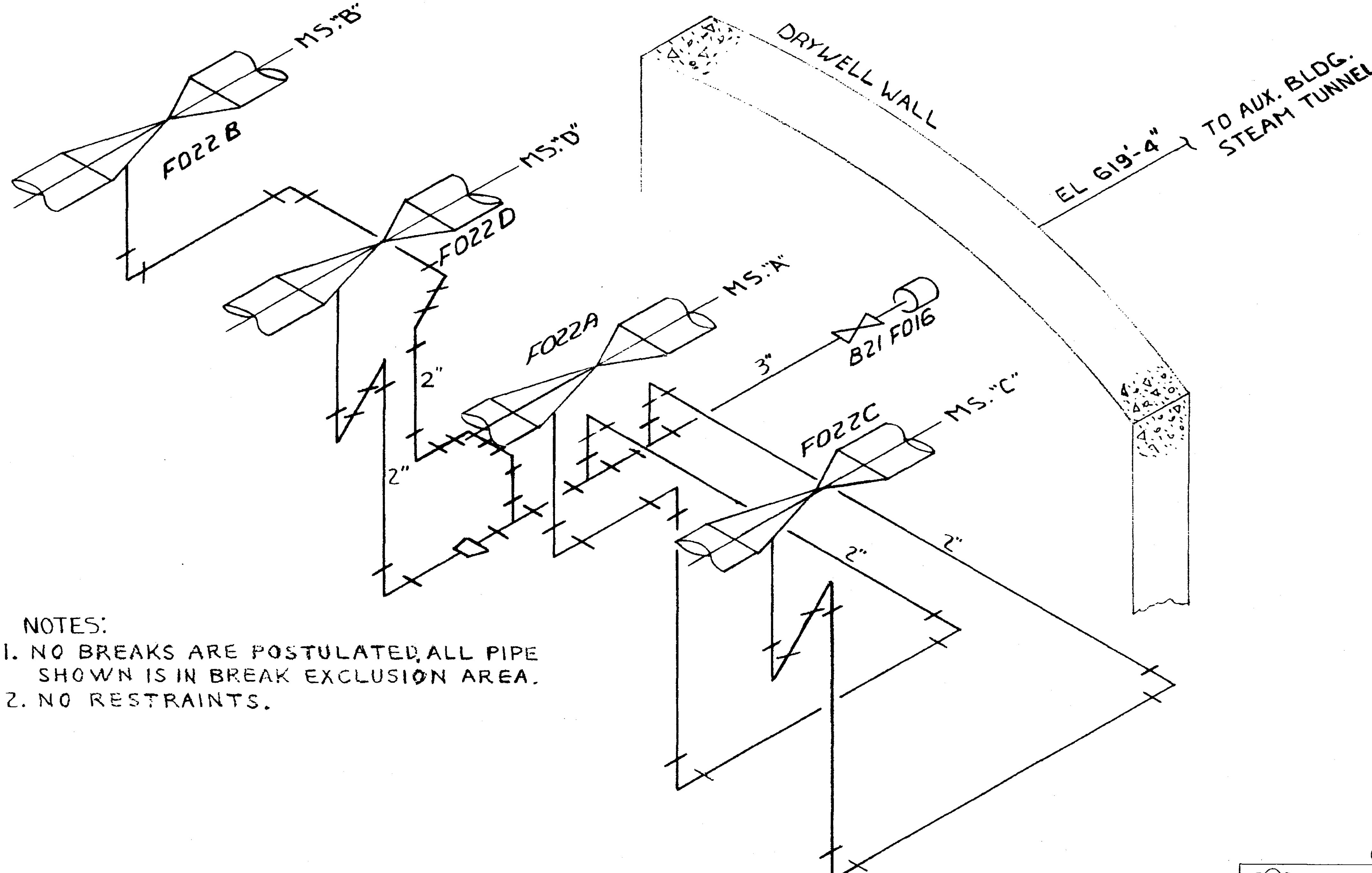
PIPE RUPTURE LOCATIONS RWCU - INSIDE CONTAINMENT

FIGURE 3.6-73



NOTES:

1. NO BREAKS ARE POSTULATED, ALL PIPE SHOWN IS IN BREAK EXCLUSION AREA.
2. NO RESTRAINTS.

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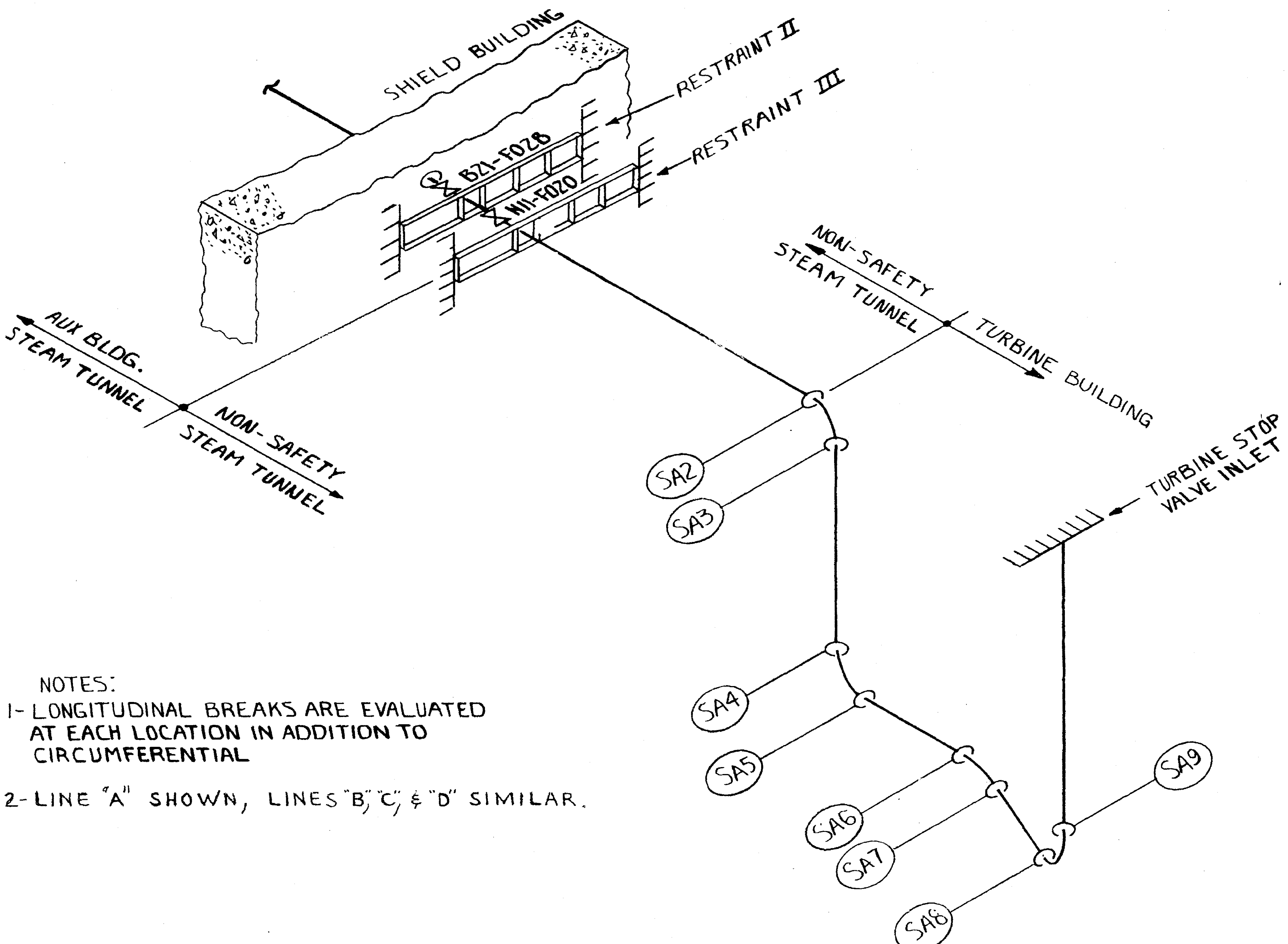
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations MS Drain Inside Containment

Figure 3.6-74



NOTES:

1- LONGITUDINAL BREAKS ARE EVALUATED AT EACH LOCATION IN ADDITION TO CIRCUMFERENTIAL

2- LINE "A" SHOWN, LINES "B", "C", & "D" SIMILAR.

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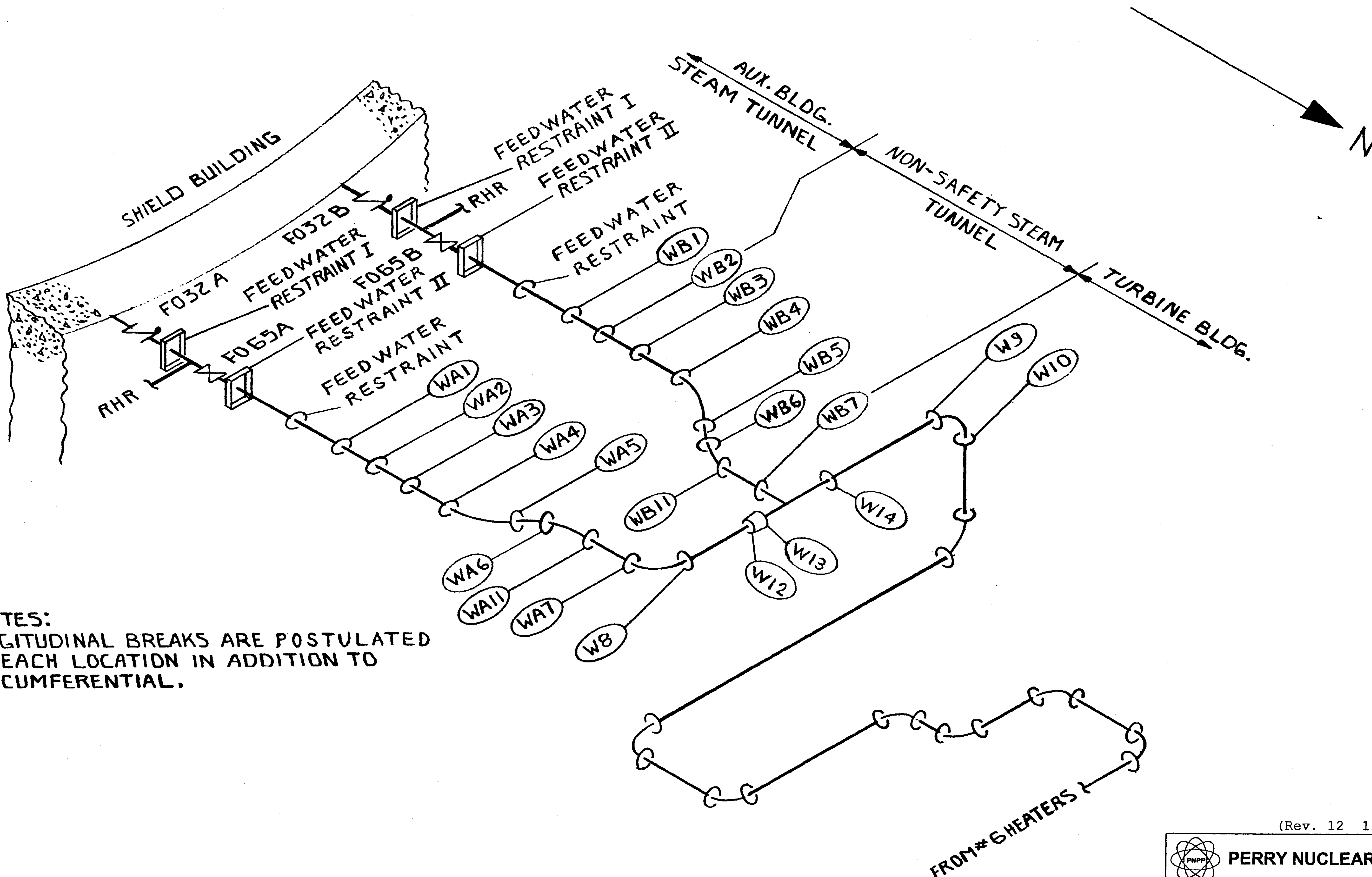
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations MS
Outside Containment

Figure 3.6-75



NOTES:
1-LONGITUDINAL BREAKS ARE POSTULATED AT EACH LOCATION IN ADDITION TO CIRCUMFERENTIAL.

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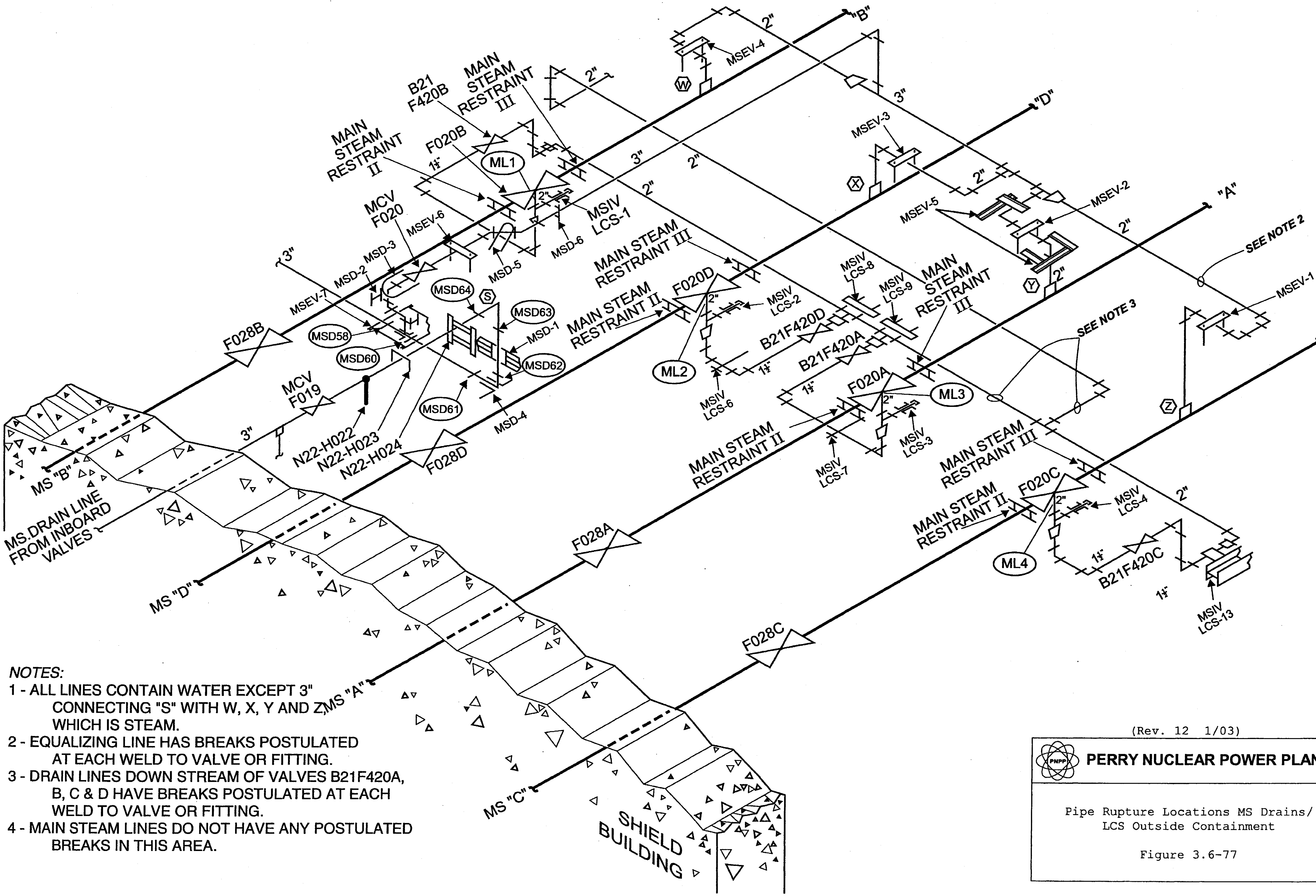
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations FW
Outside Containment

Figure 3.6-76



NOTES:

1 - ALL LINES CONTAIN WATER EXCEPT 3" CONNECTING "S" WITH W, X, Y AND Z, WHICH IS STEAM.
2 - EQUALIZING LINE HAS BREAKS POSTULATED AT EACH WELD TO VALVE OR FITTING.
3 - DRAIN LINES DOWN STREAM OF VALVES B21F420A, B, C & D HAVE BREAKS POSTULATED AT EACH WELD TO VALVE OR FITTING.
4 - MAIN STEAM LINES DO NOT HAVE ANY POSTULATED BREAKS IN THIS AREA.

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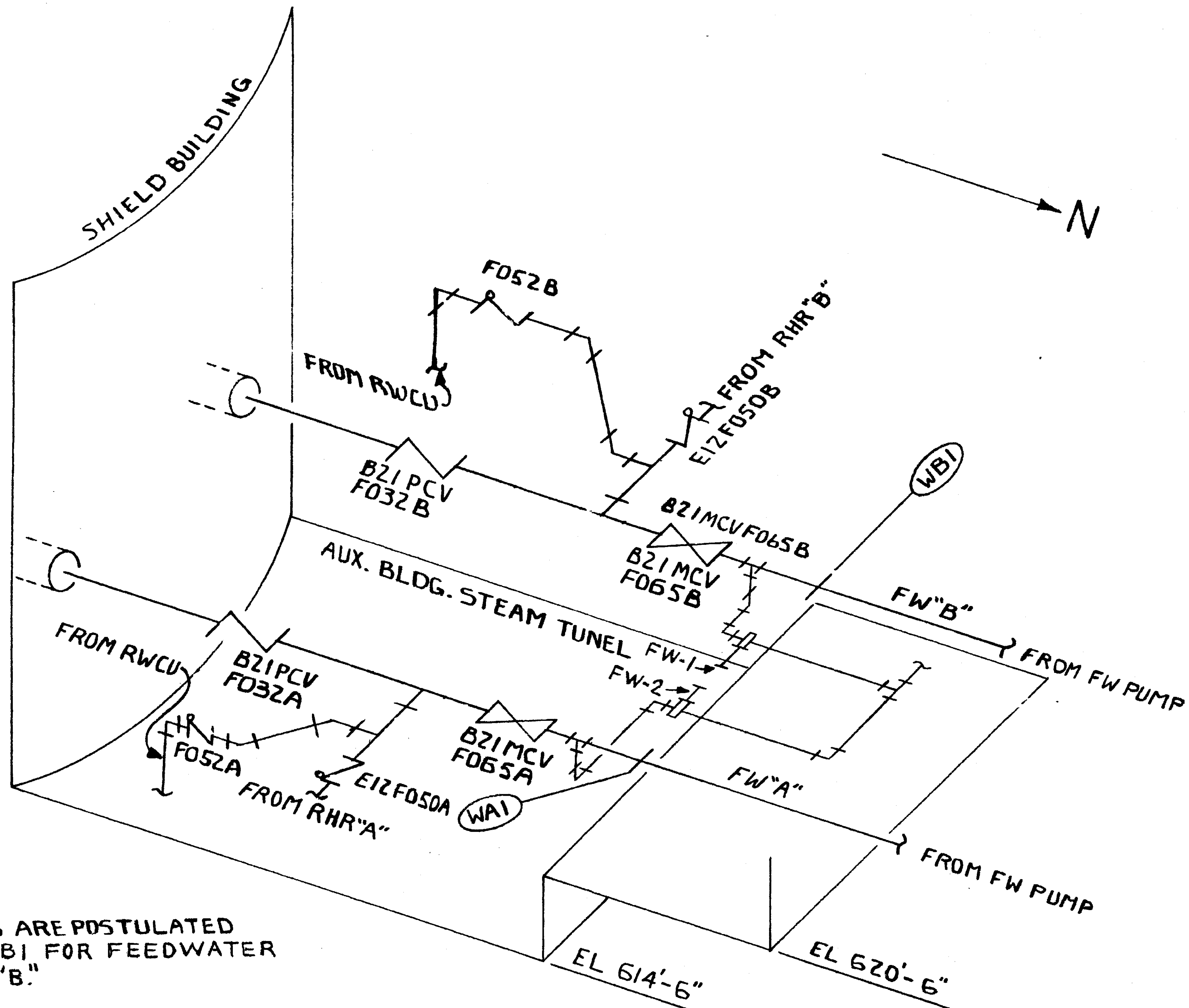
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations MS Drains/ LCS Outside Containment

Figure 3.6-77



NOTES:

1- PIPE RUPTURES ARE POSTULATED AT WA1 AND WB1 FOR FEEDWATER LINES "A" AND "B."

2 LINES FROM RWCU AND RHR SHOWN ARE PART OF THE FEEDWATER BREAK EXCLUSION AREA.

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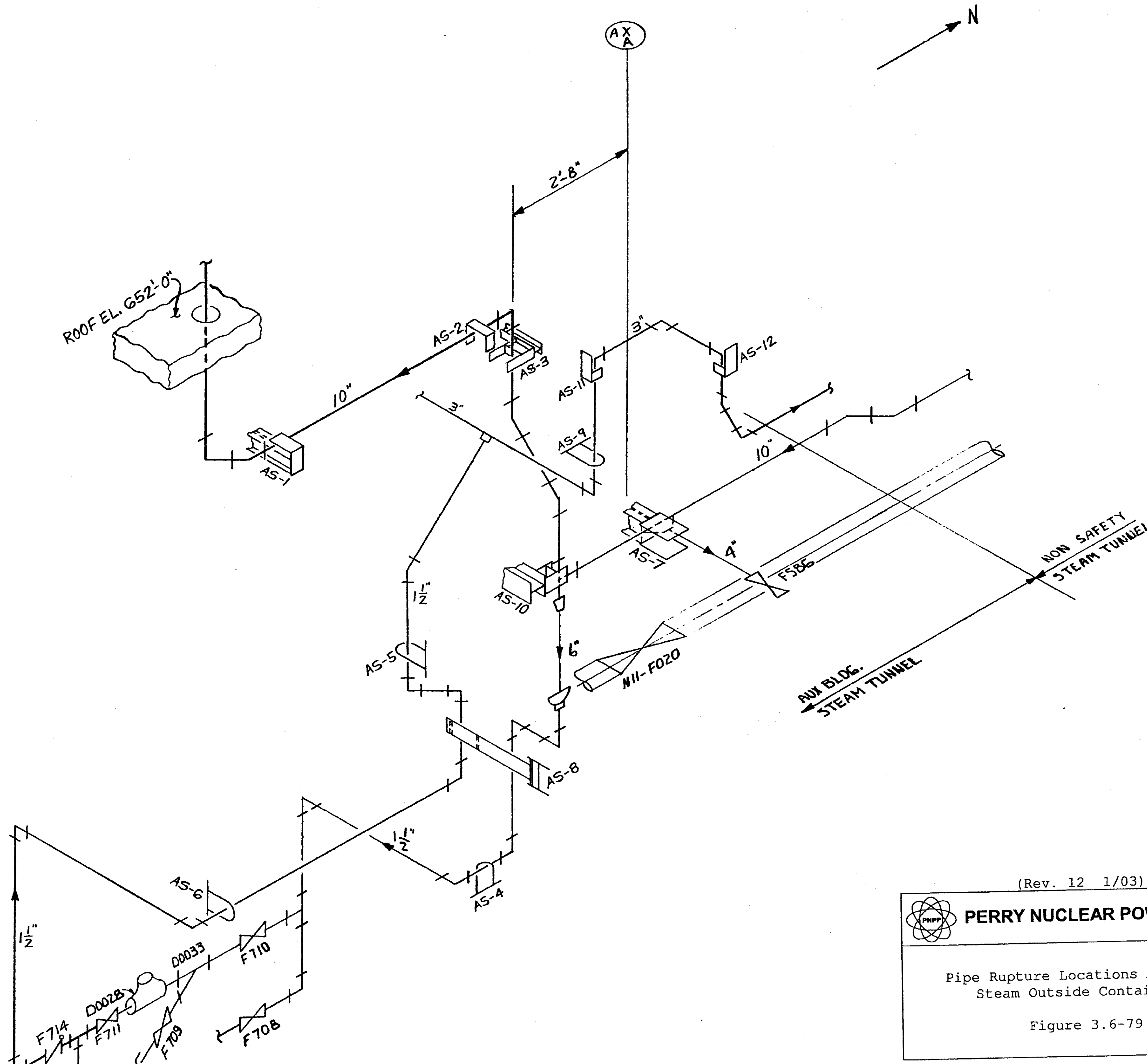
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations RWCU/RHR
To FW Outside Containment

Figure 3.6-78



NOTES:
1. THRUST FROM BOILER SIDE ONLY.
2. PIPE RUPTURES ARE POSTULATED AT EACH WELD, VALVE, & FITTING SHOWN.

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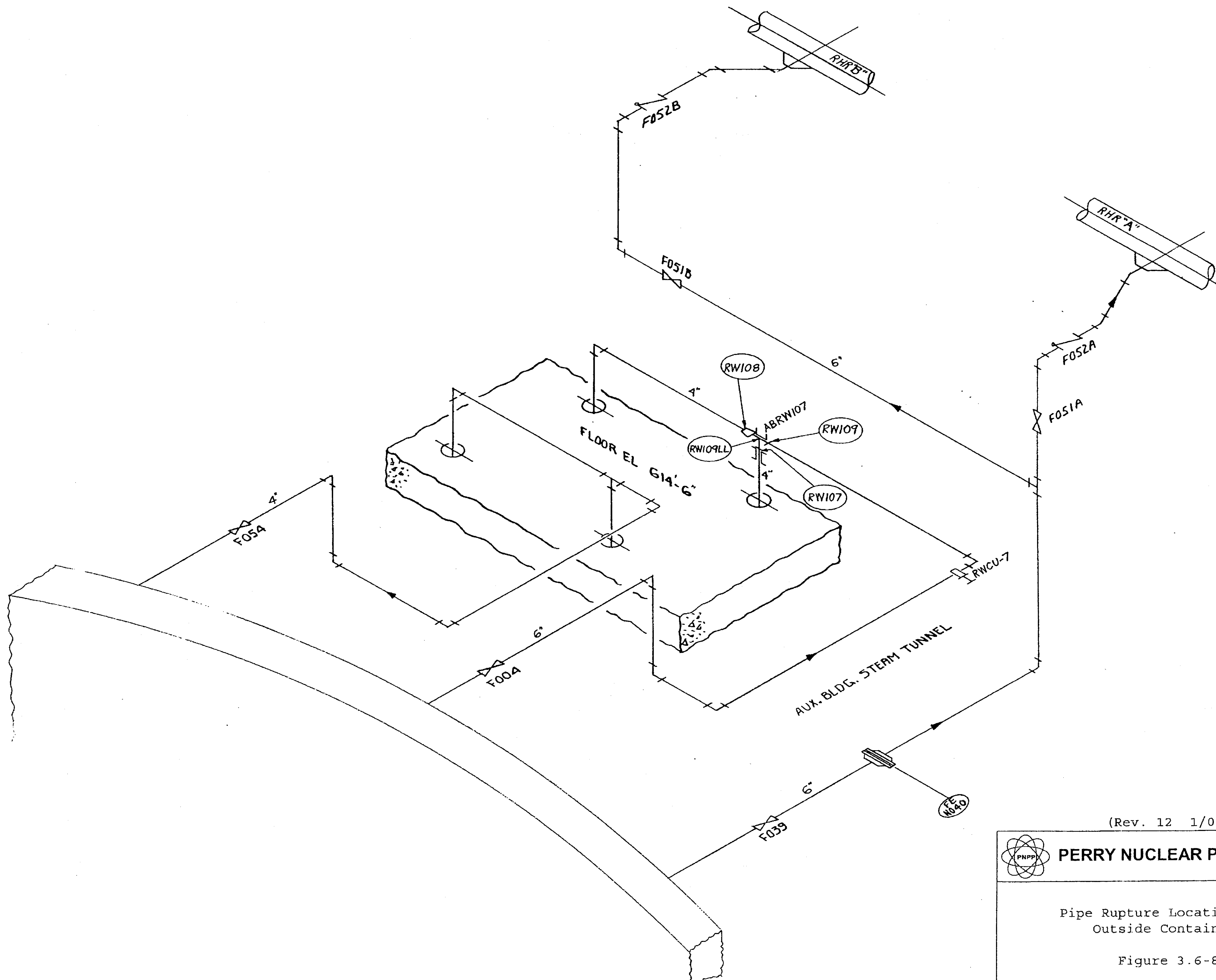
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations Auxiliary Steam Outside Containment

Figure 3.6-79



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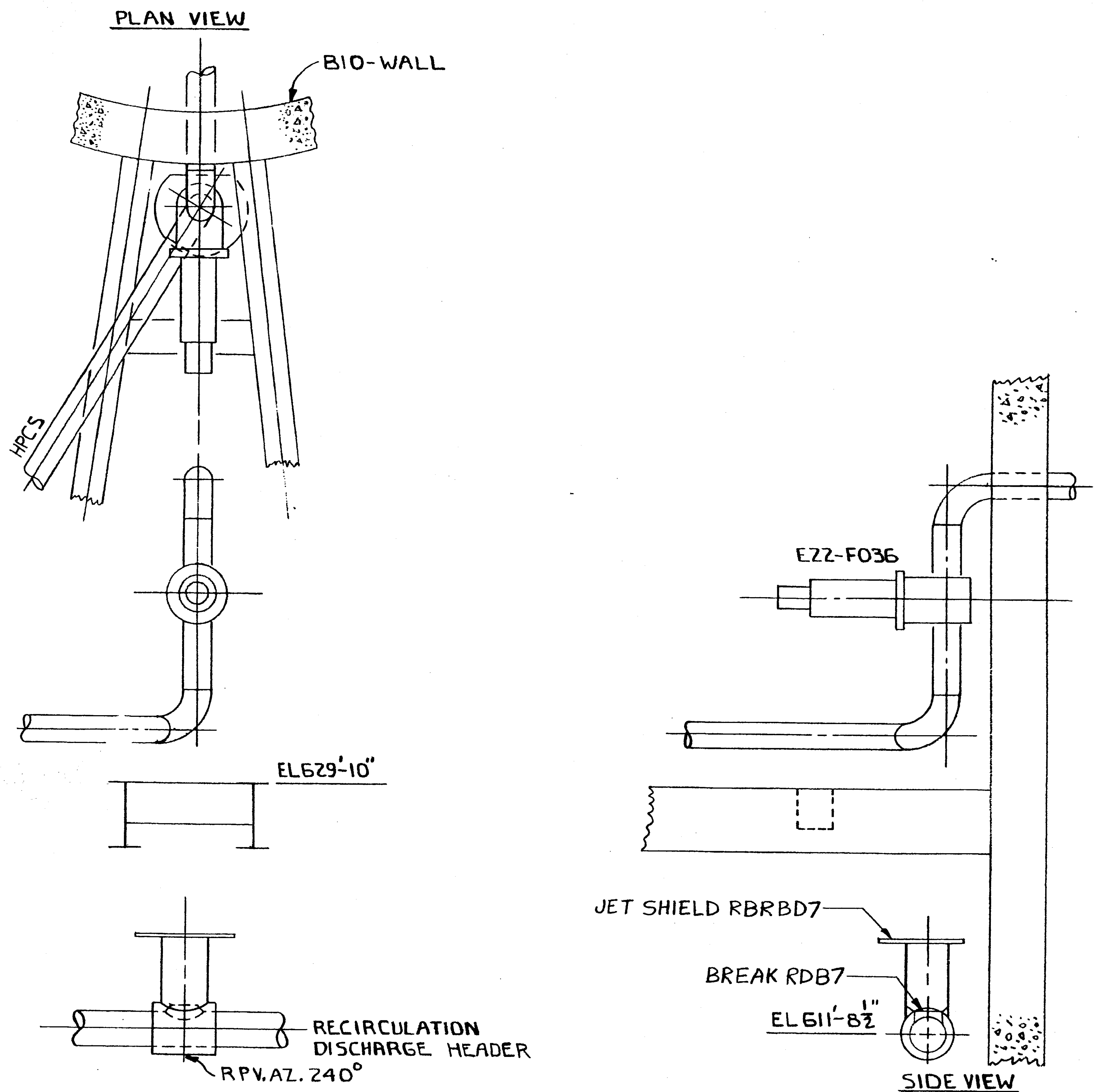
PERRY NUCLEAR POWER PLANT

Pipe Rupture Locations RWCU
Outside Containment

Figure 3.6-80



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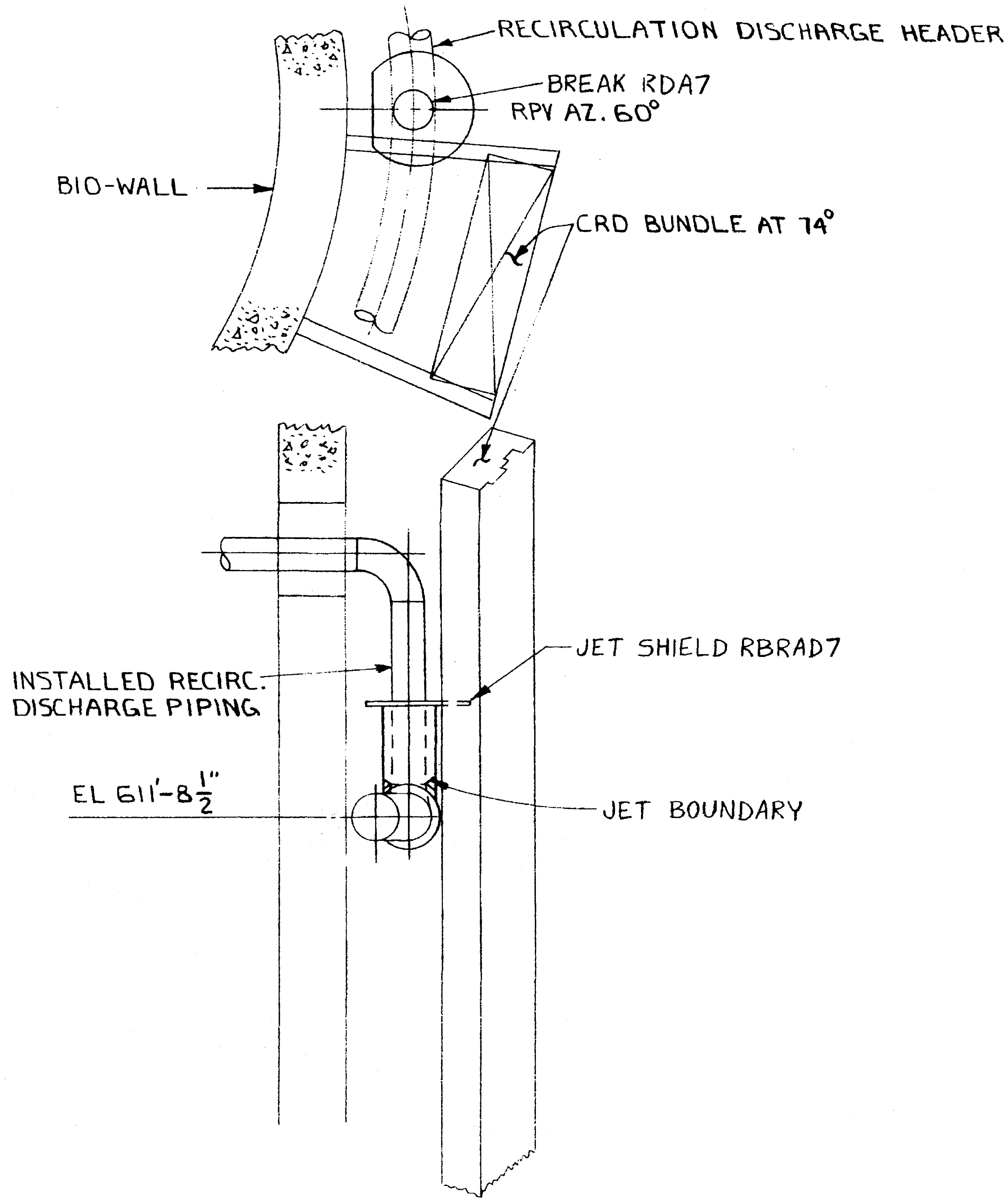
PERRY NUCLEAR POWER PLANT

Jet Impingement Recirculation Jet Striking HPCS

Figure 3.6-84



NOTES:

1- IMPINGEMENT ON 106° BUNDLE FROM RDA8 AT 120° IS OPPOSITE HAND.
2- IMPINGEMENT ON 254° BUNDLE FROM RDB7 AT 240° IS SIMILAR TO THAT SHOWN FOR RDA7.
3- IMPINGEMENT ON 286° BUNDLE FROM RDB8 AT 300° IS SIMILAR TO RDA8.

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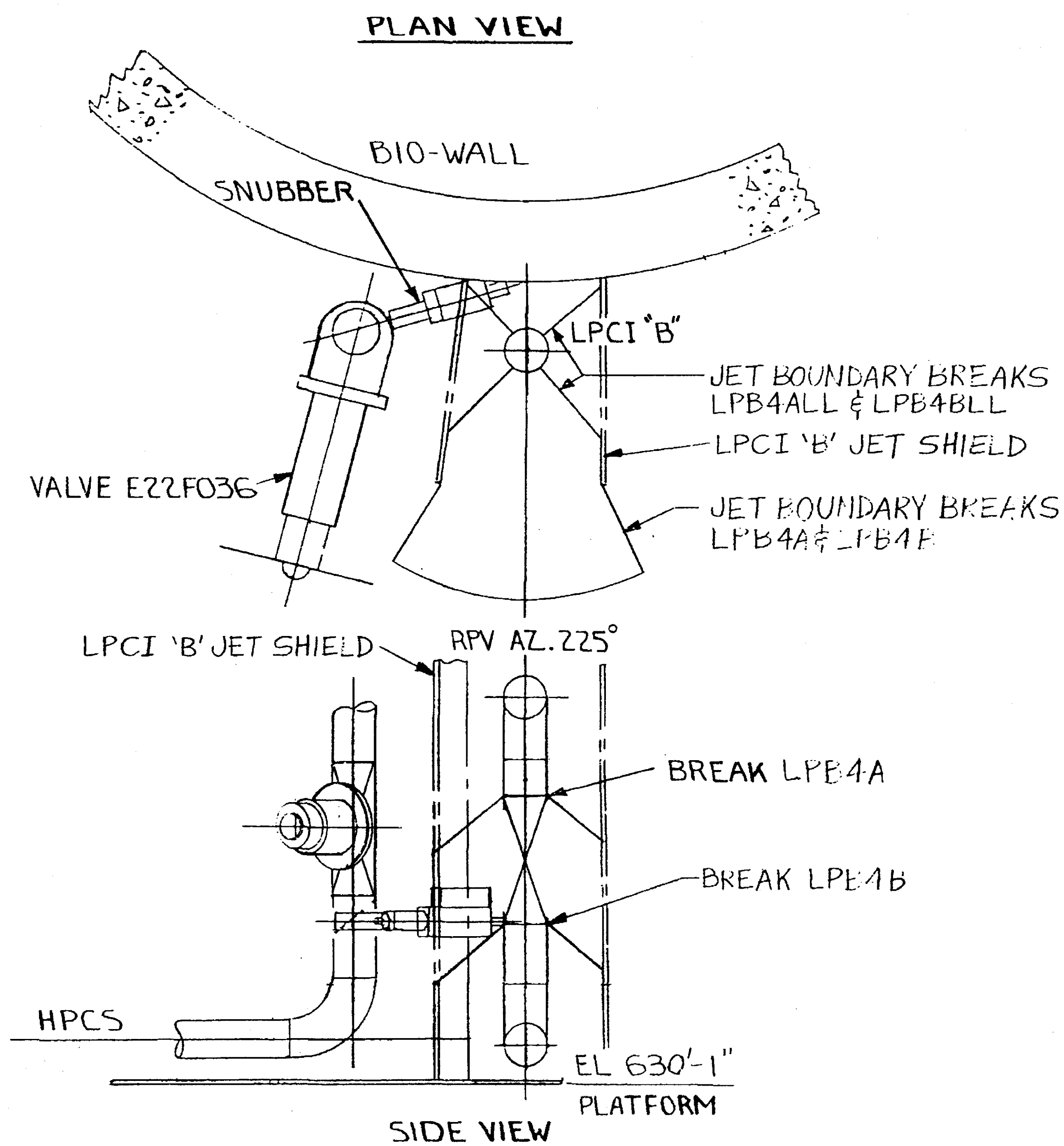
PERRY NUCLEAR POWER PLANT

Jet Impingement Recirculation Jet Striking CRD Lines

Figure 3.6-85



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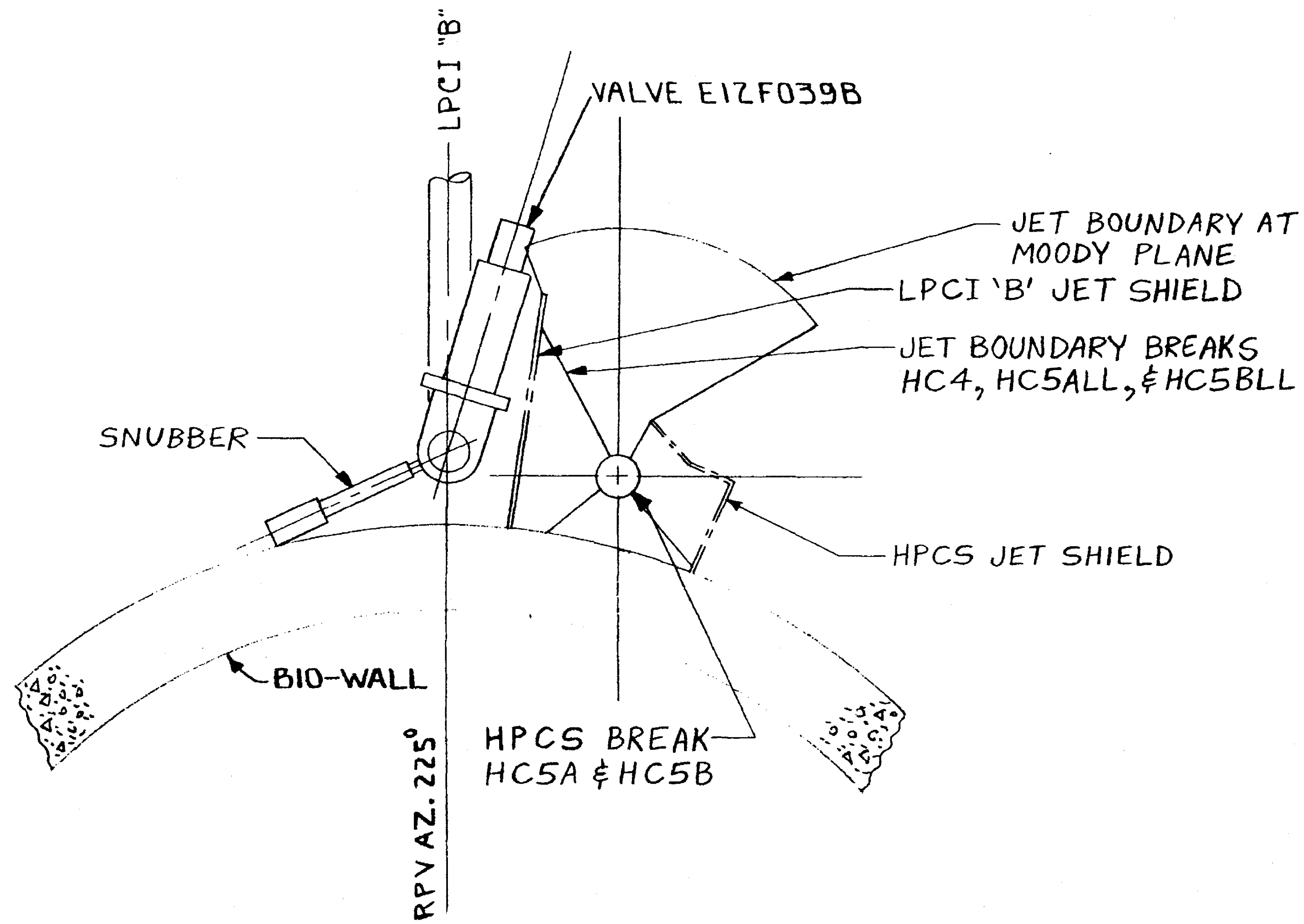
PERRY NUCLEAR POWER PLANT

Jet Impingement LPCI "B"
Jet Striking HPCS

Figure 3.6-90



PLAN VIEW

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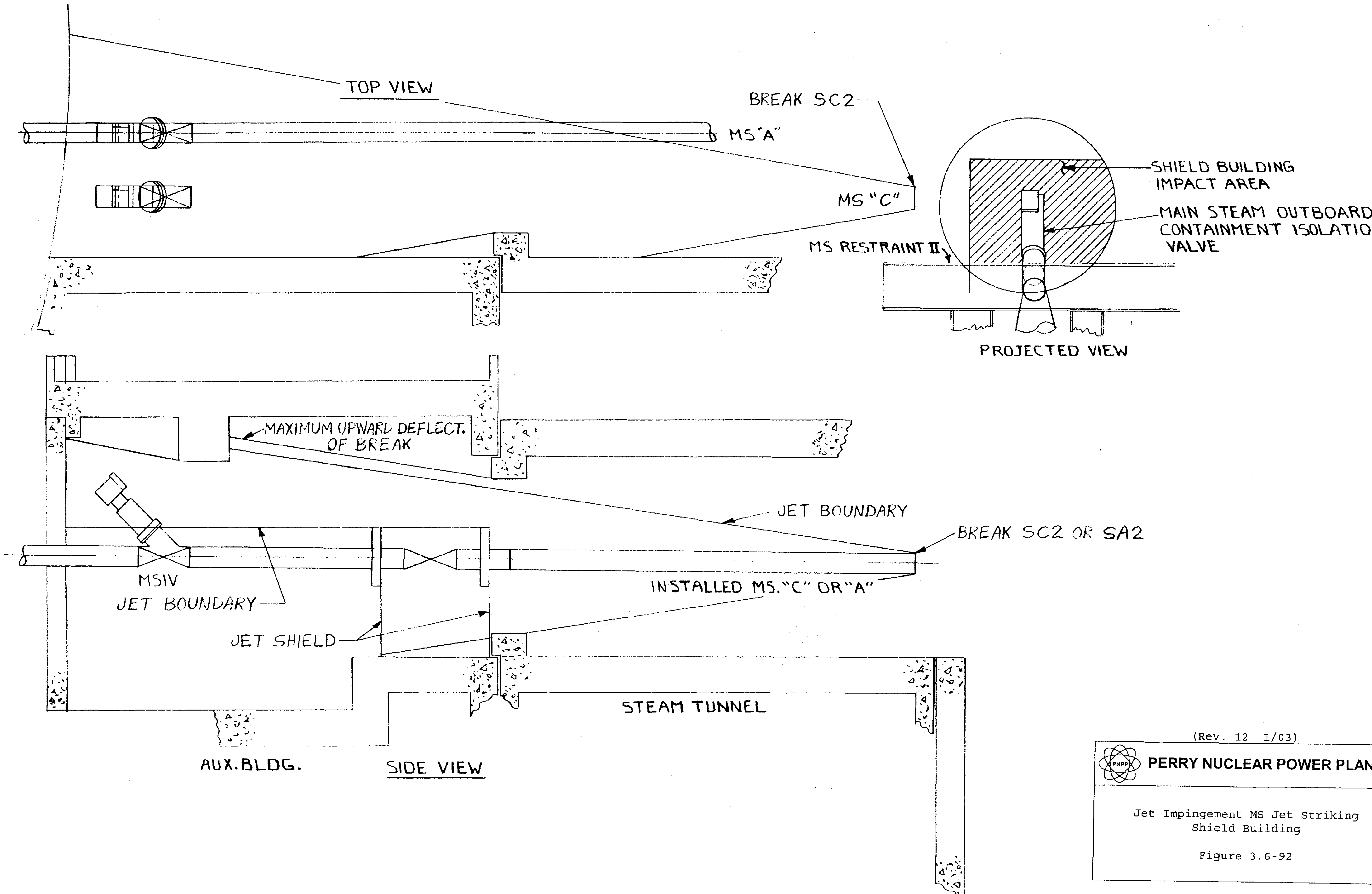
PERRY NUCLEAR POWER PLANT

Jet Impingement HPCS Jet Striking LPCI "B"

Figure 3.6-91



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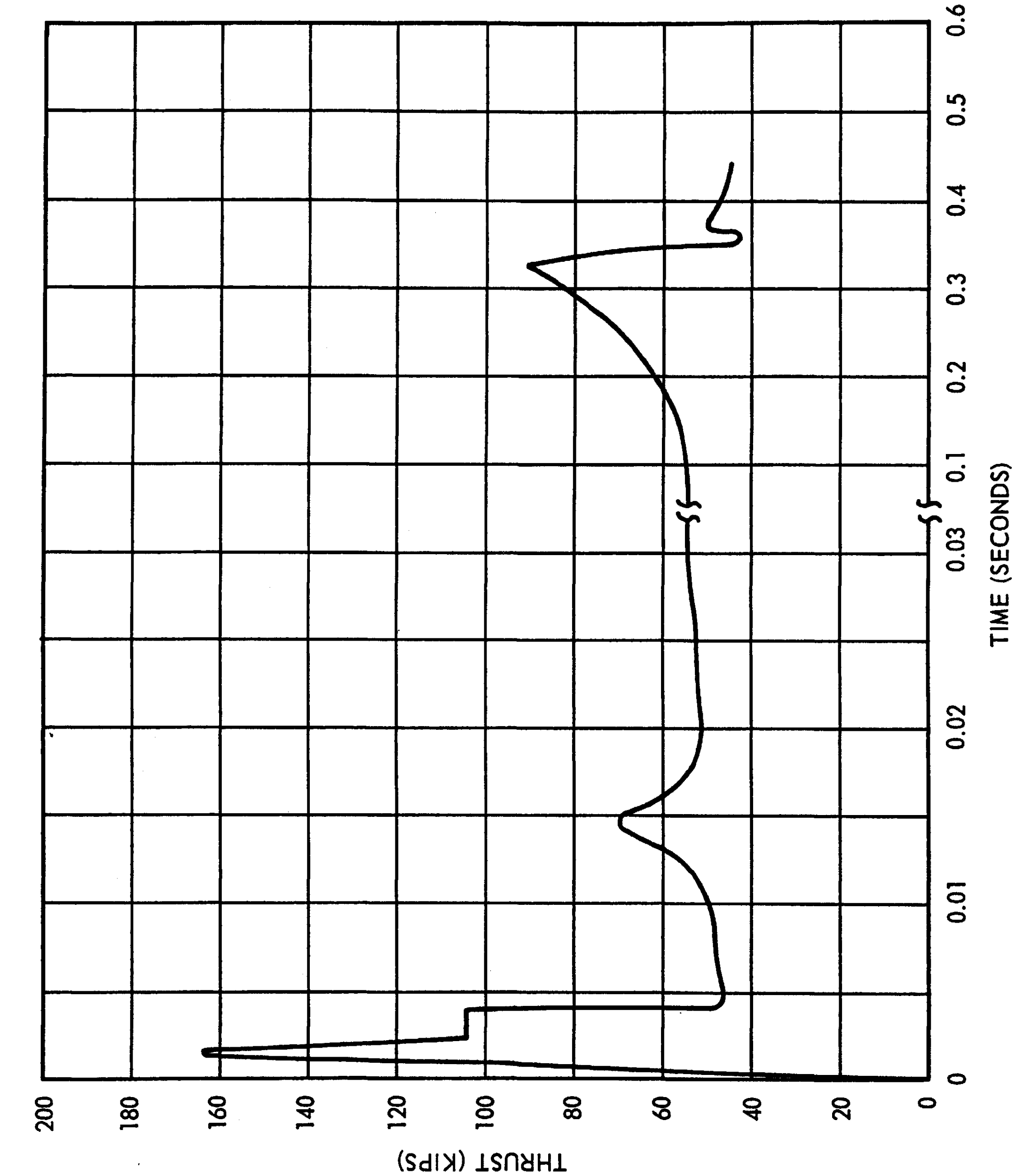
PERRY NUCLEAR POWER PLANT

Jet Impingement MS Jet Striking
Shield Building

Figure 3.6-92



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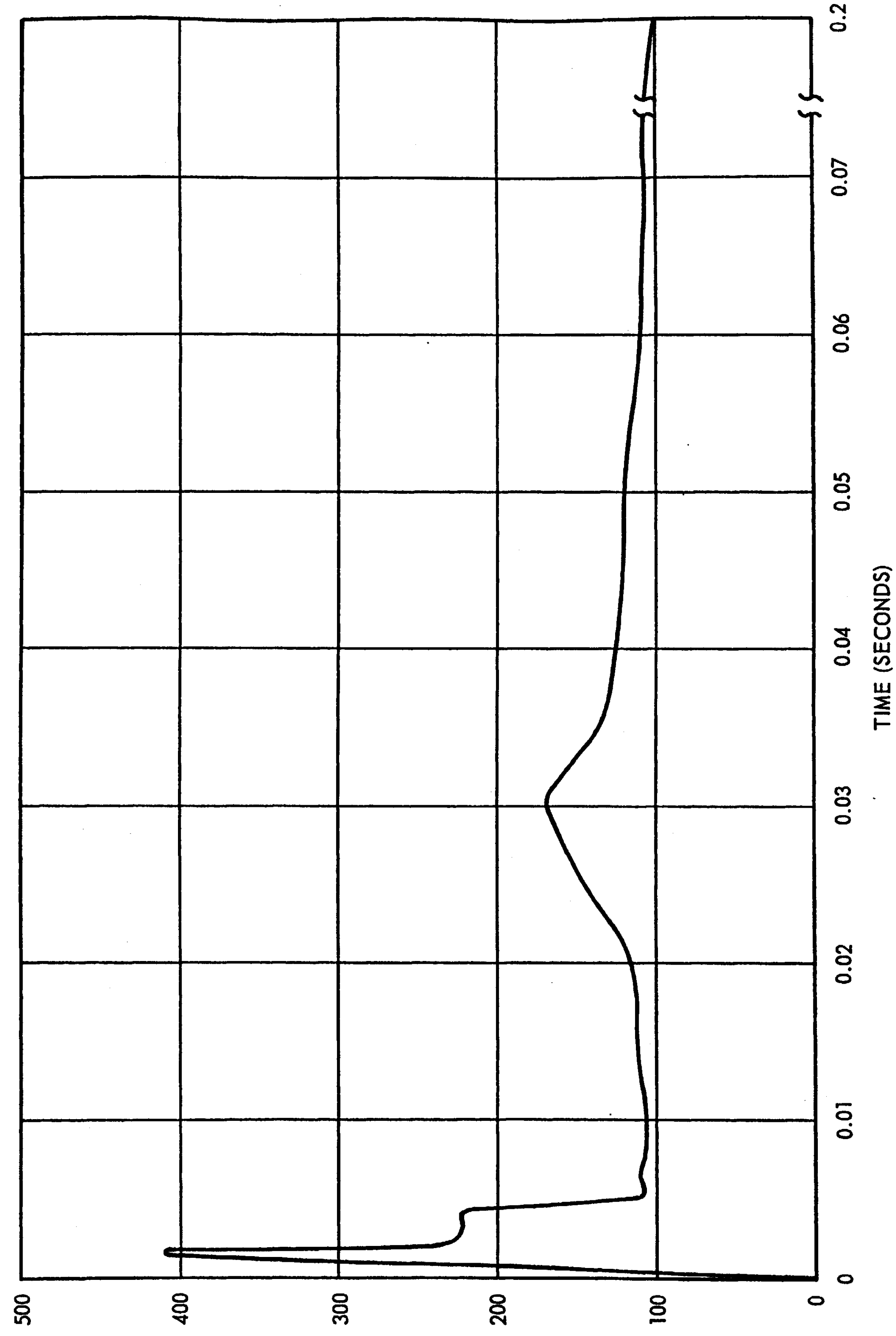
PERRY NUCLEAR POWER PLANT

Feedwater Break WB9C -
Reactor Vessel Side (14″ line)

Figure 3.6-95



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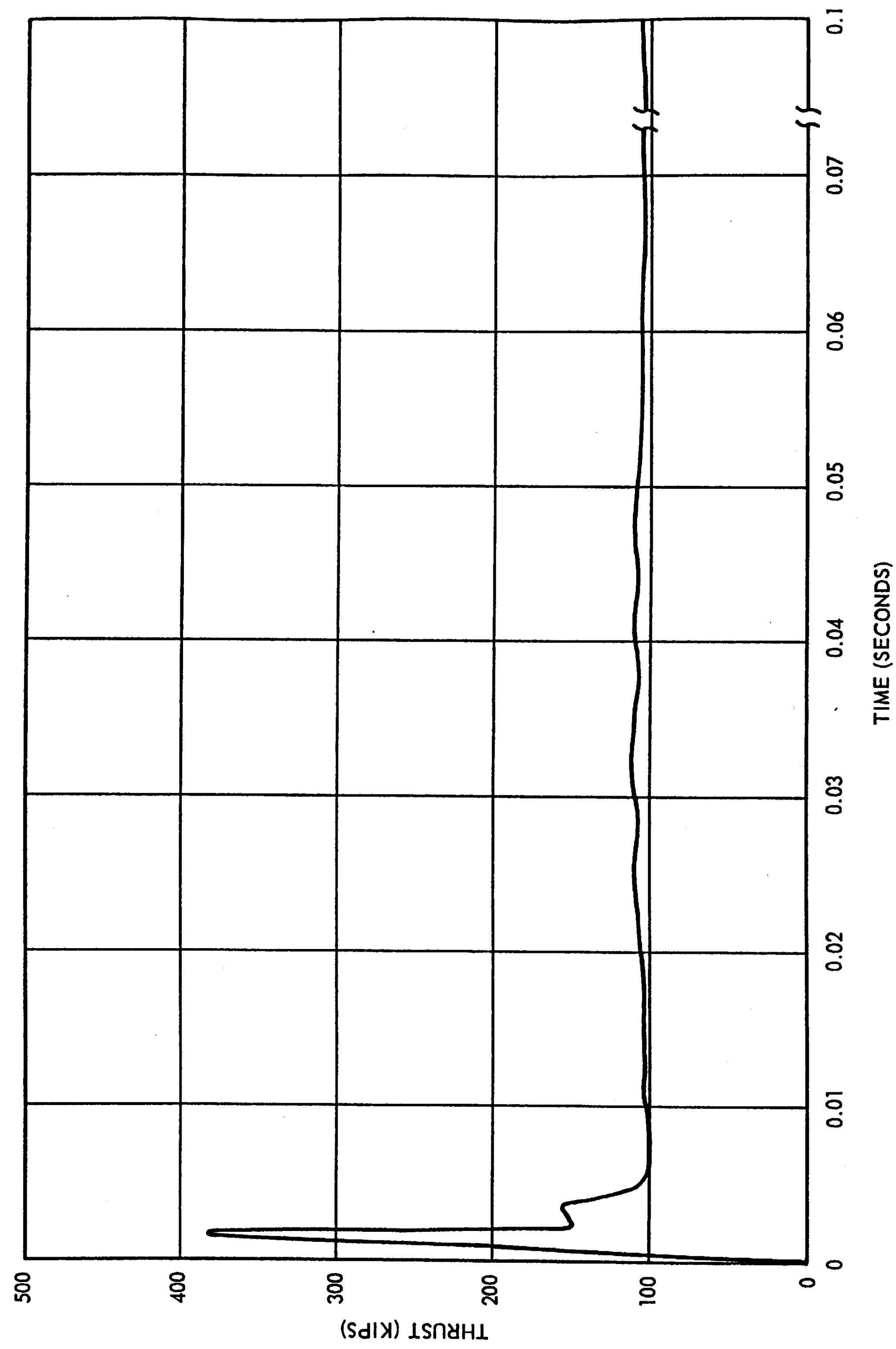
PERRY NUCLEAR POWER PLANT

Feedwater Break WB12C -
Reactor Vessel Side (20" line)

Figure 3.6-96



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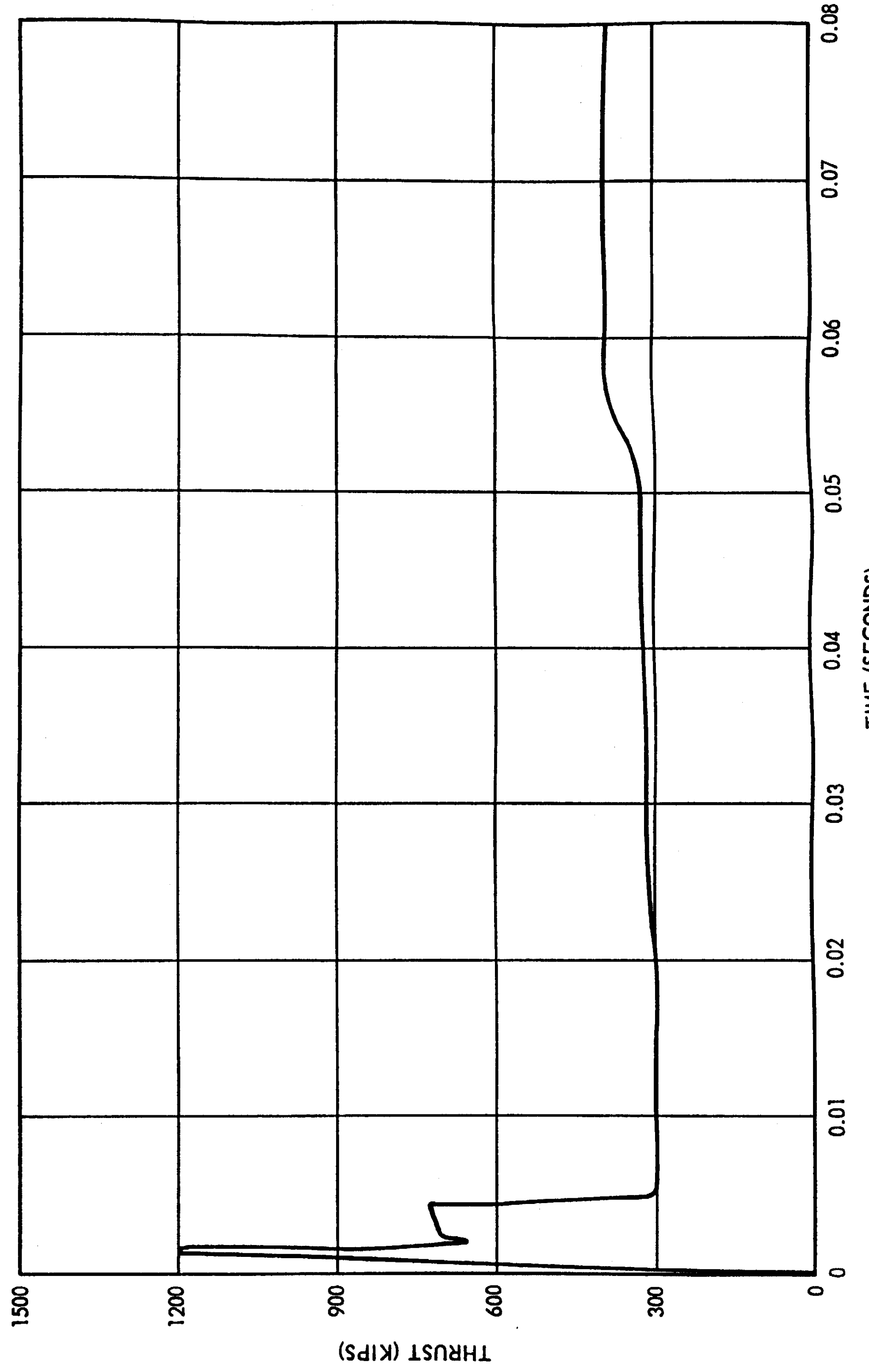
PERRY NUCLEAR POWER PLANT

Feedwater Break WB11 -
End Cap Break (20" line)

Figure 3.6-97



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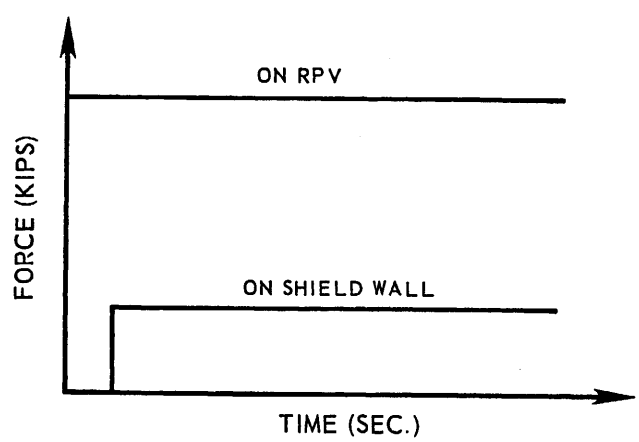
PERRY NUCLEAR POWER PLANT

Feedwater Longitudinal Break
at Node 46 In Turbine Building

Figure 3.6-98



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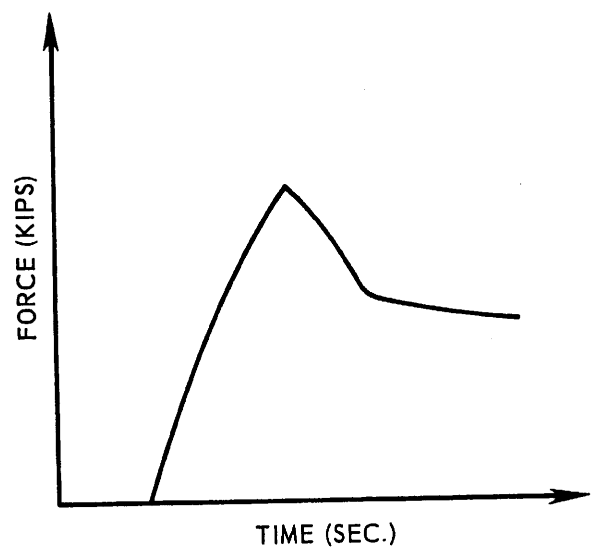
PERRY NUCLEAR POWER PLANT

Typical Jet Impingement Force Time History (Example is a Feedwater Line Break at the RPV Nozzle)

Figure 3.6-99



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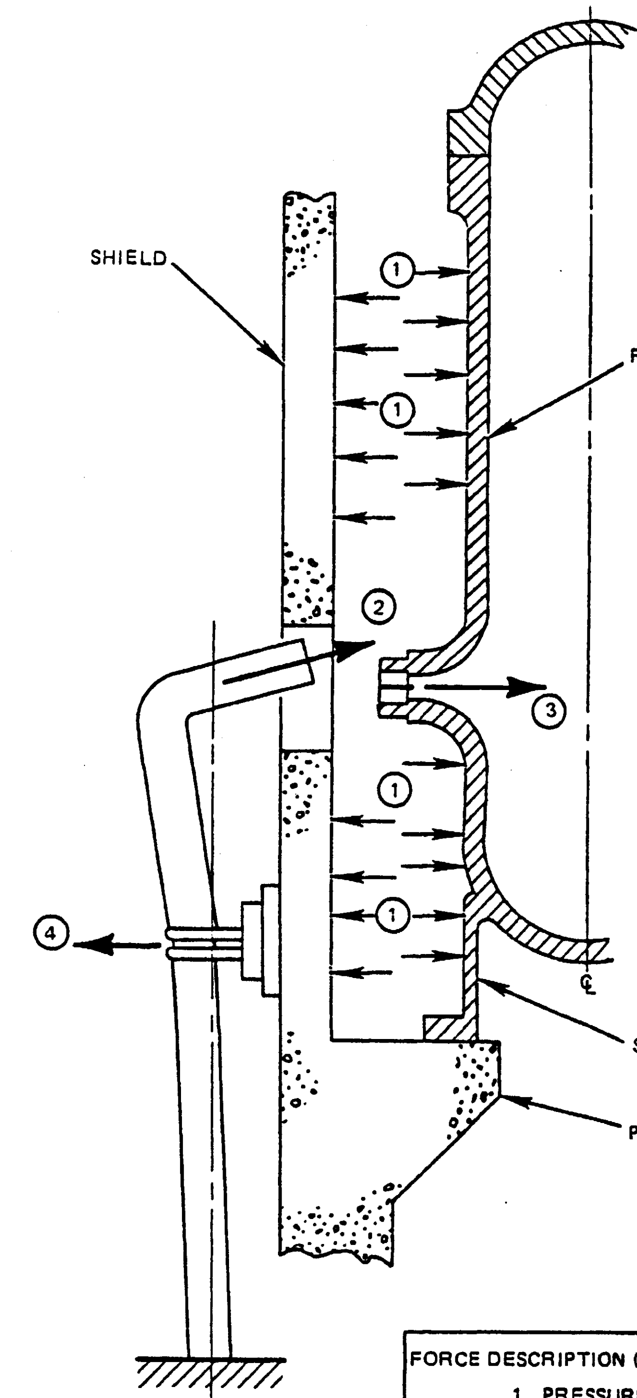
PNPP

PERRY NUCLEAR POWER PLANT

Typical Pipe Whip Restraint Force

Figure 3.6-100



FORCE DESCRIPTION (ALL FUNCTIONS OF TIME)

1. PRESSURE LOADS
2. JET IMPINGEMENT FORCE
3. JET REACTION FORCE
4. PIPE RESTRAINT LOAD

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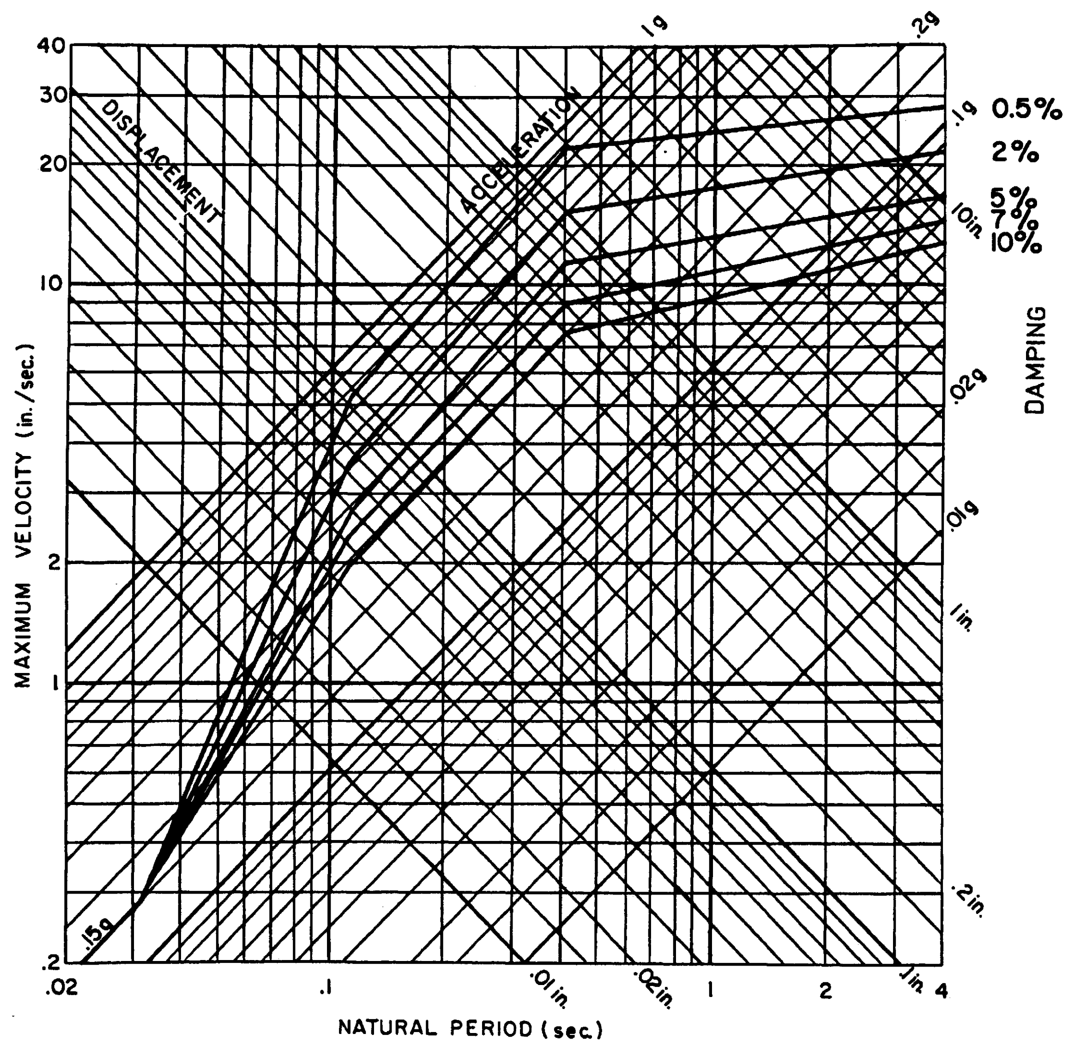
PERRY NUCLEAR POWER PLANT

Pressure/Forces in Asymmetric Loading Analyses

Figure 3.6-101



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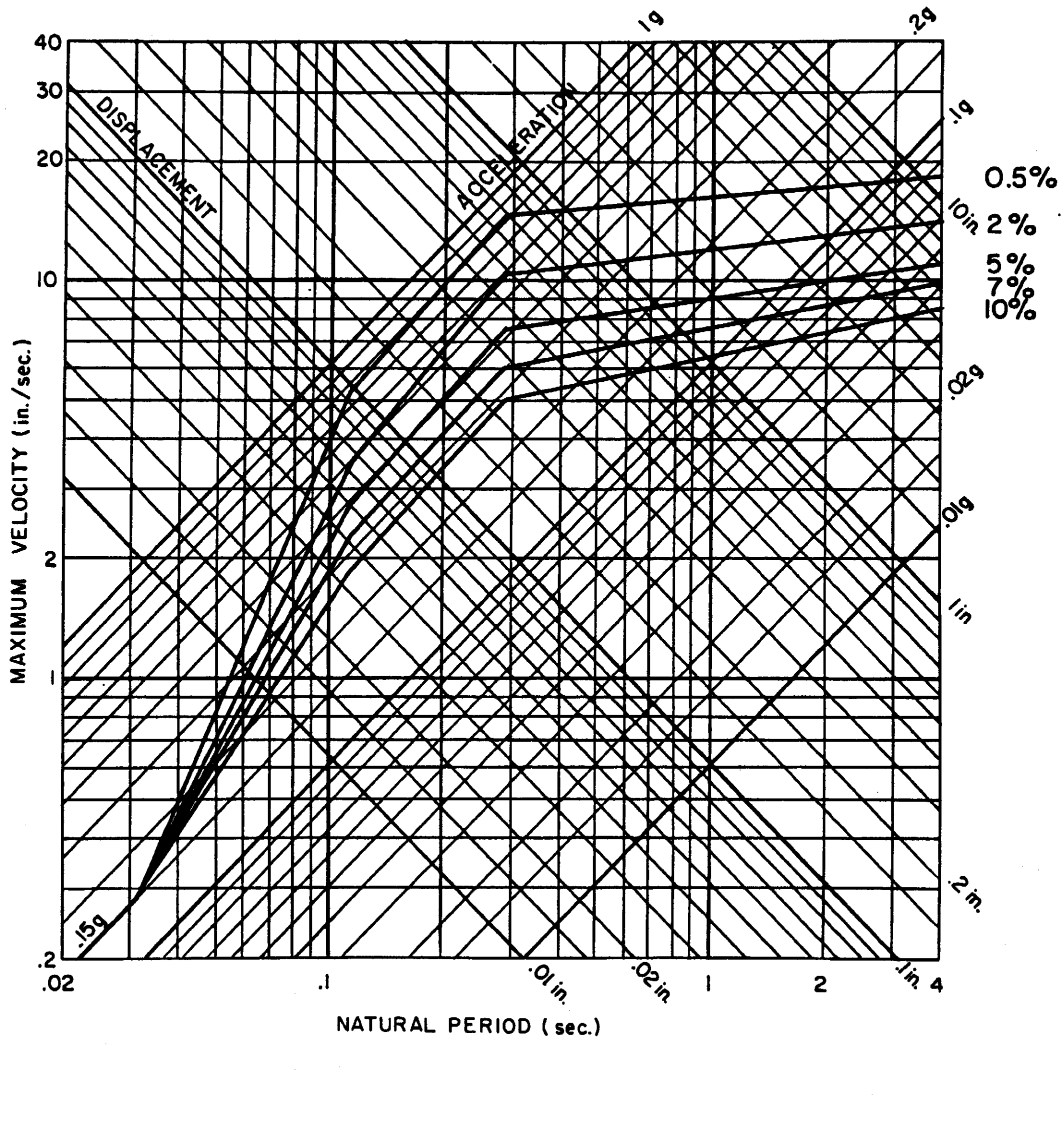
PERRY NUCLEAR POWER PLANT

Safe Shutdown Earthquake
Design Response Spectra -
Horizontal Motion

Figure 3.7-1



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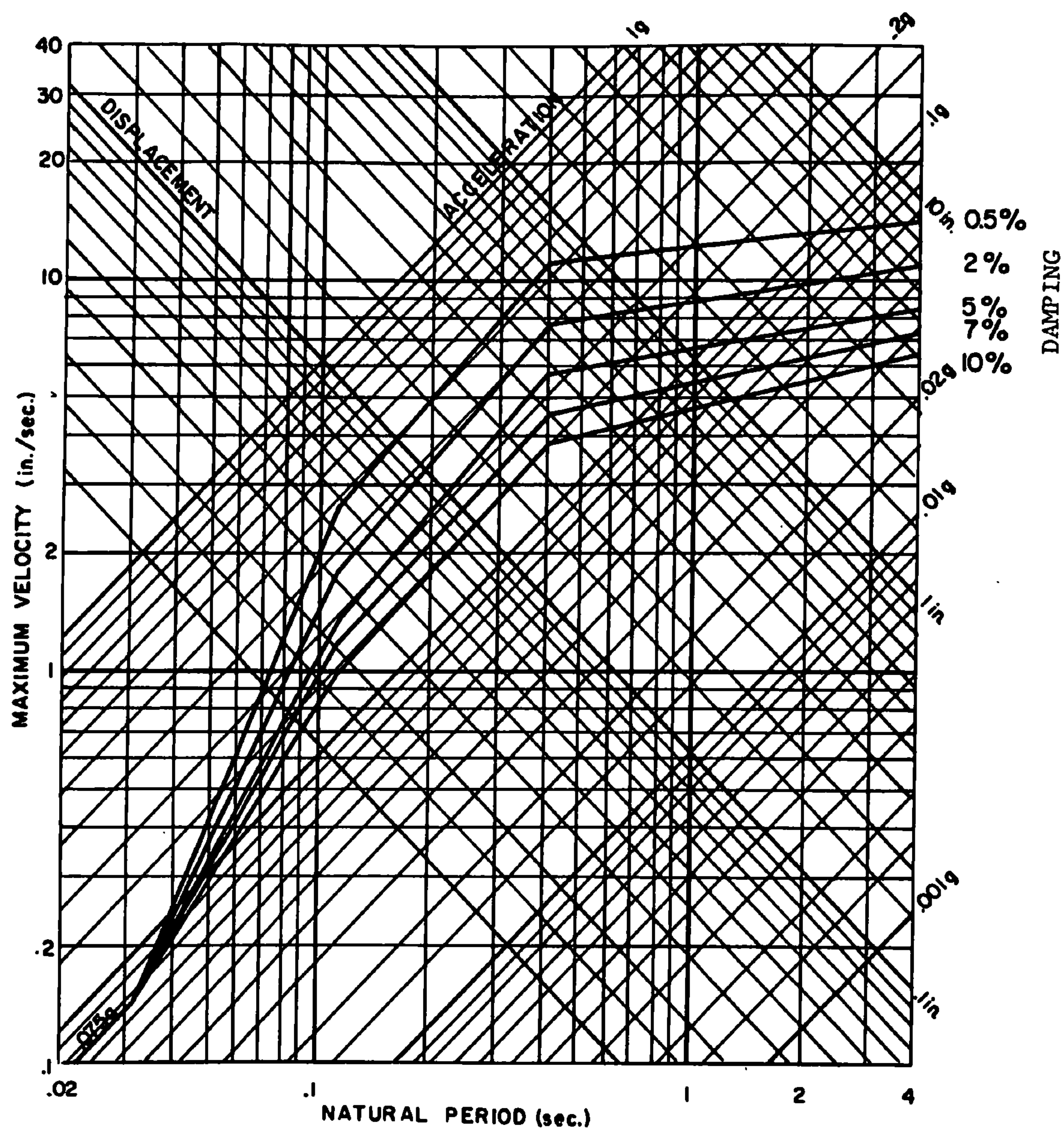
PERRY NUCLEAR POWER PLANT

Safe Shutdown Earthquake
Design Response Spectra -
Vertical Motion

Figure 3.7-2



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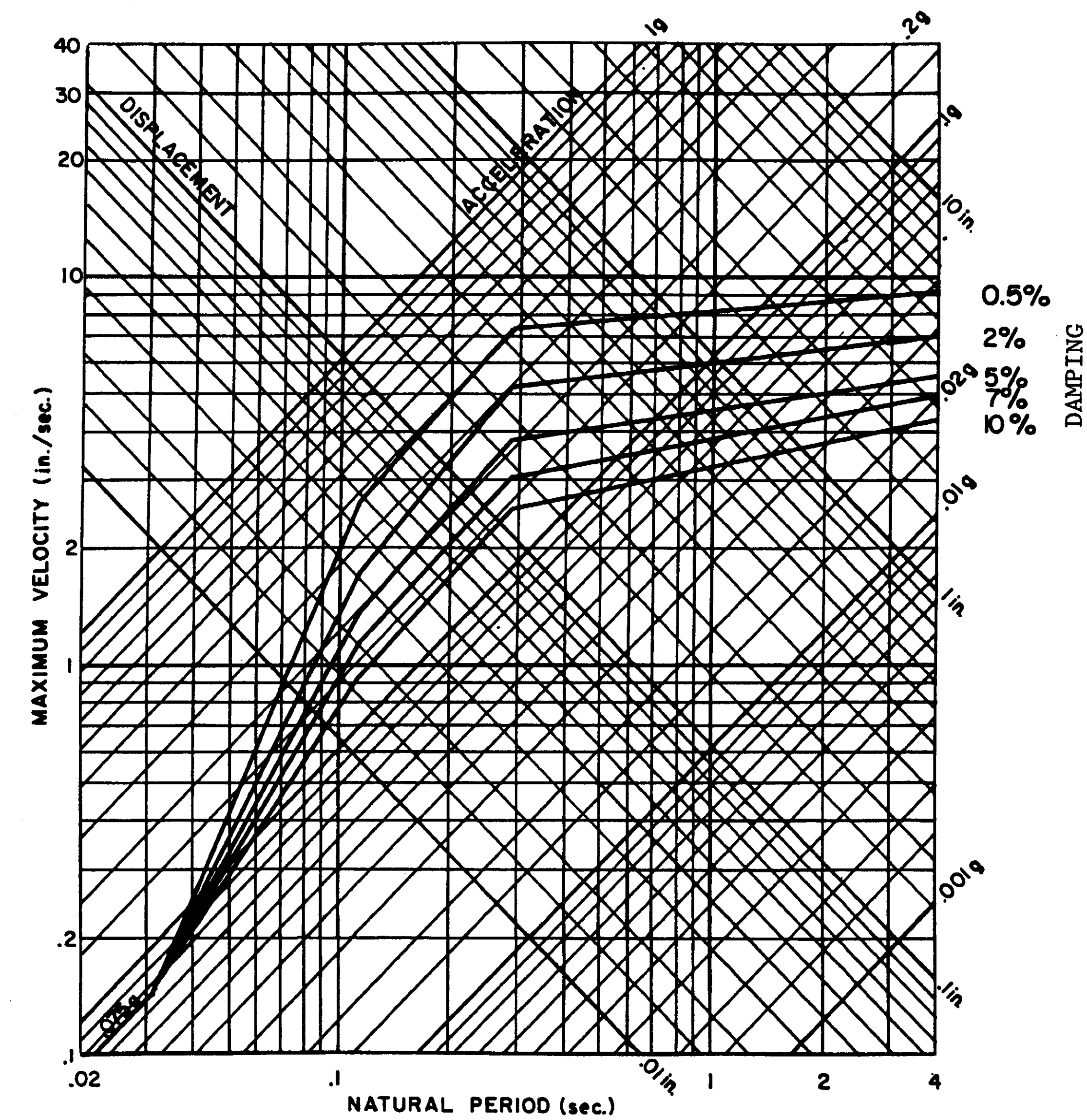
PERRY NUCLEAR POWER PLANT

Operating Basis Earthquake
Design Response Spectra -
Horizontal Motion

Figure 3.7-3



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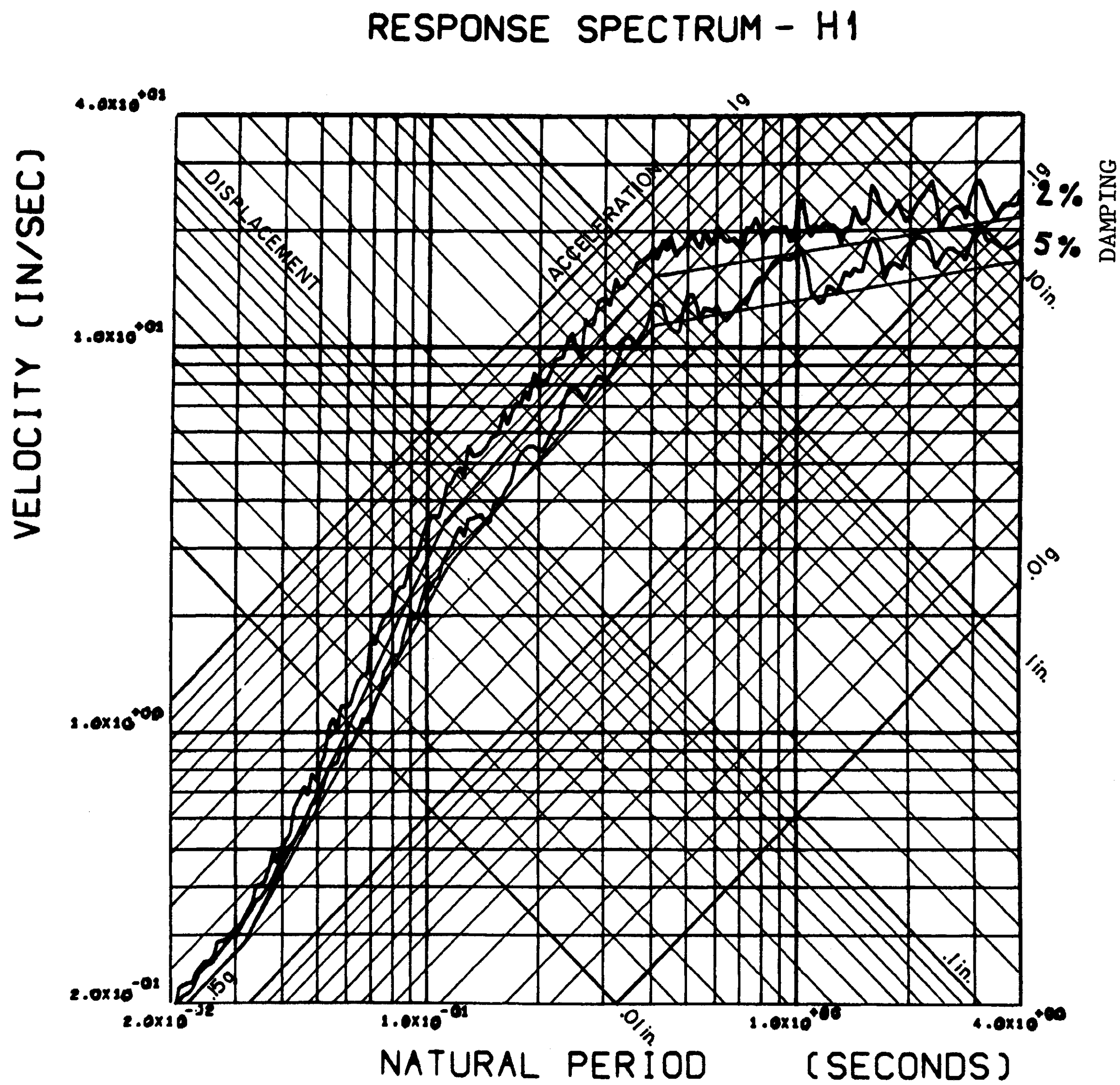
PERRY NUCLEAR POWER PLANT

Operating Basis Earthquake
Design Response Spectra -
Vertical Motion

Figure 3.7-4



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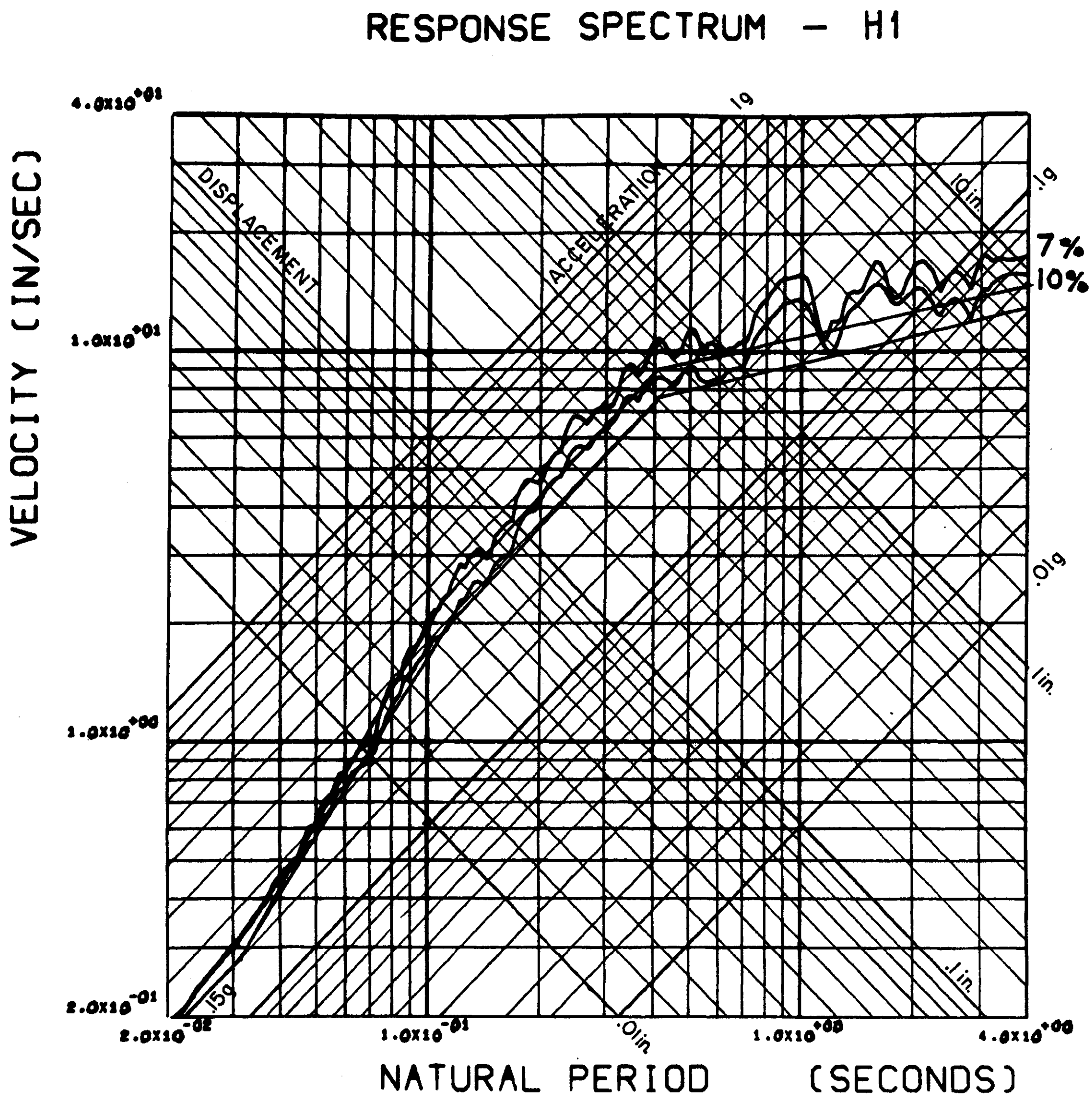
PERRY NUCLEAR POWER PLANT

Response Spectra -
Horizontal Motion H1
(2% and 5% Damping)

Figure 3.7-5



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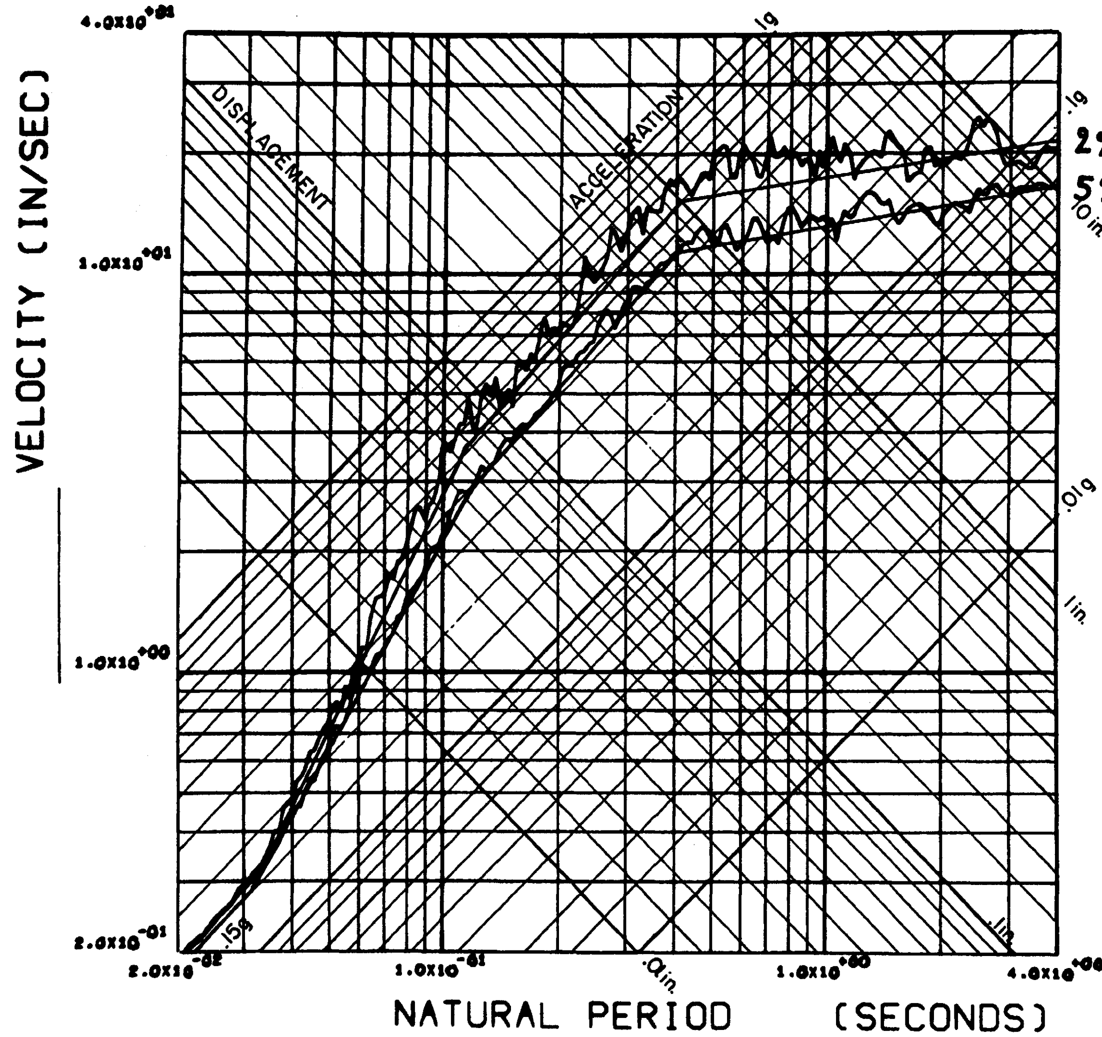
PERRY NUCLEAR POWER PLANT

Response Spectra –
Horizontal Motion H1
(7% and 10% Damping)

Figure 3.7-6

RESPONSE SPECTRUM - H2



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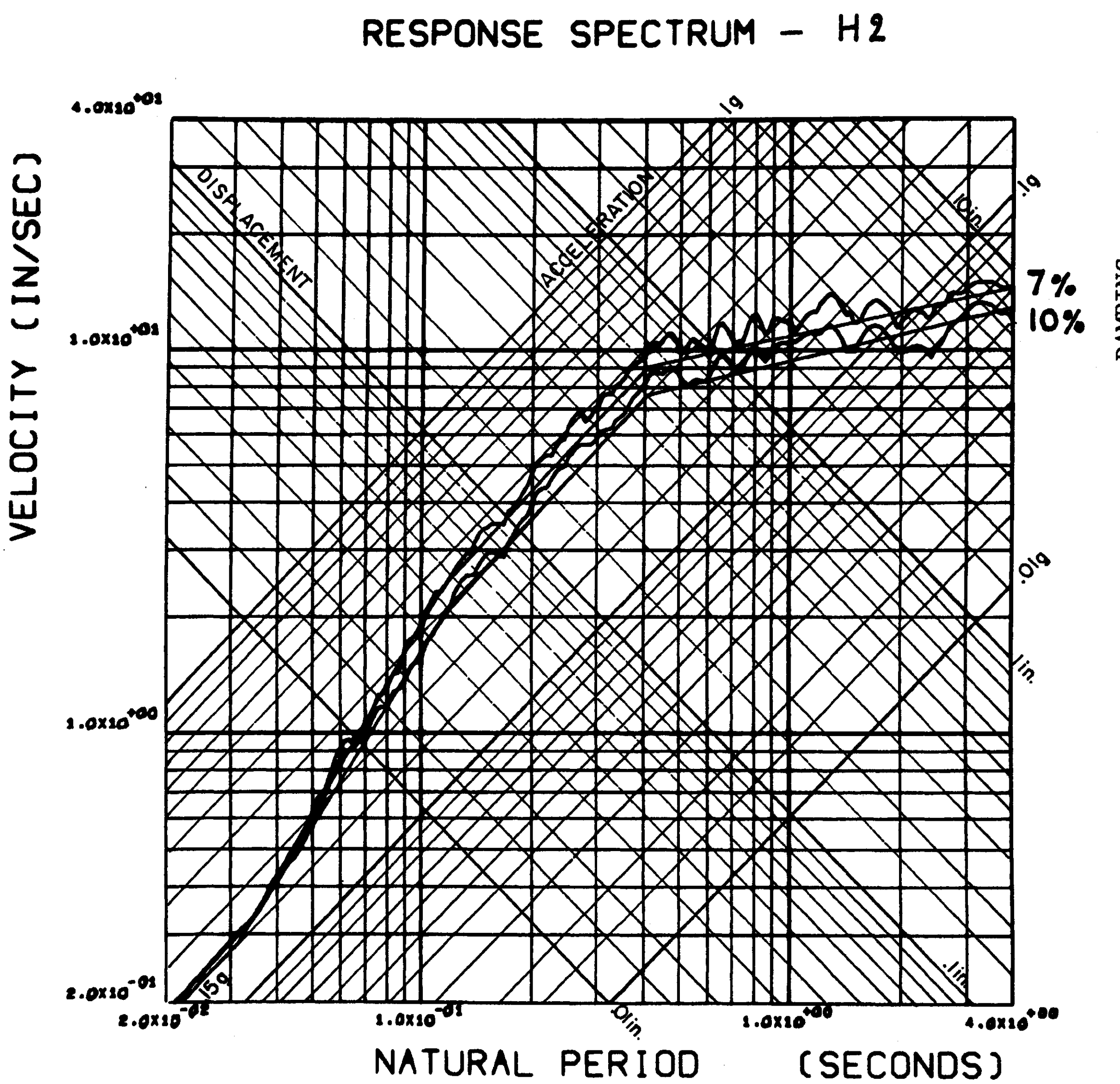
PERRY NUCLEAR POWER PLANT

Response Spectra -
Horizontal Motion H2
(2% and 5% Damping)

Figure 3.7-7



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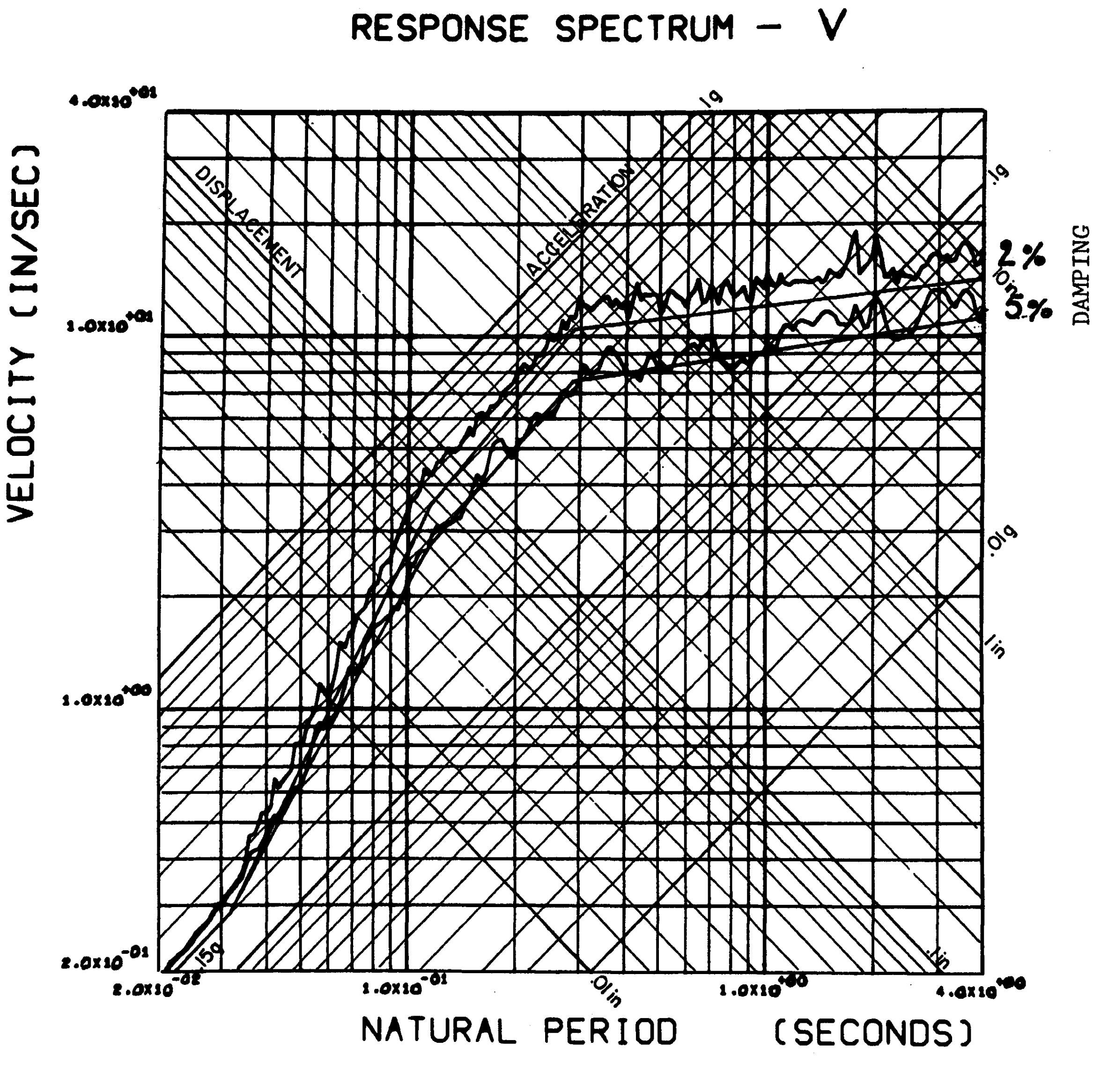
PERRY NUCLEAR POWER PLANT

Response Spectra -
Horizontal Motion H2
(7% and 10% Damping)

Figure 3.7-8



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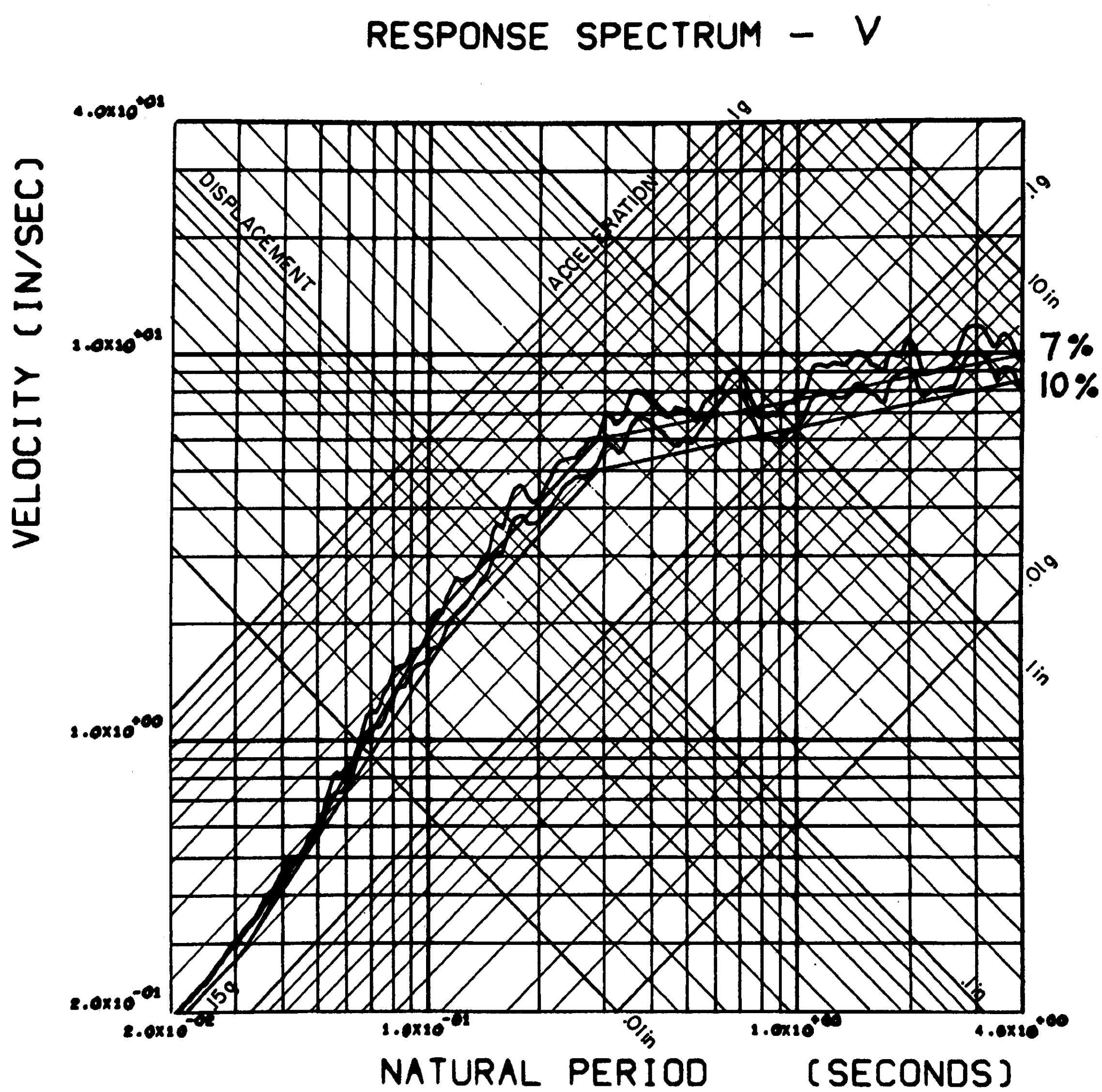
PERRY NUCLEAR POWER PLANT

Response Spectra -
Vertical Motion
(2% and 5% Damping)

Figure 3.7-9



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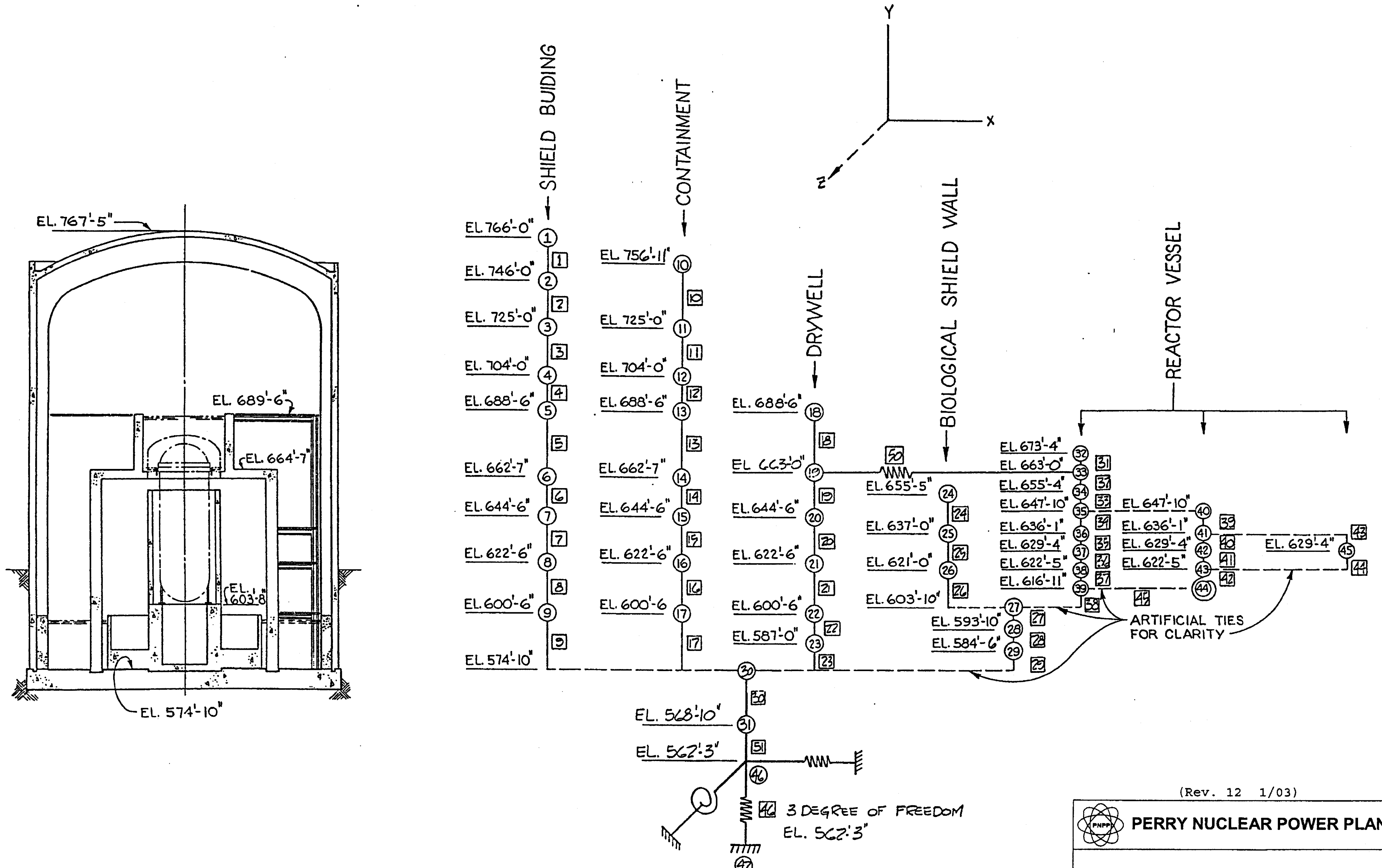
PERRY NUCLEAR POWER PLANT

Response Spectra -
Vertical Motion
(7% and 10% Damping)

Figure 3.7-10



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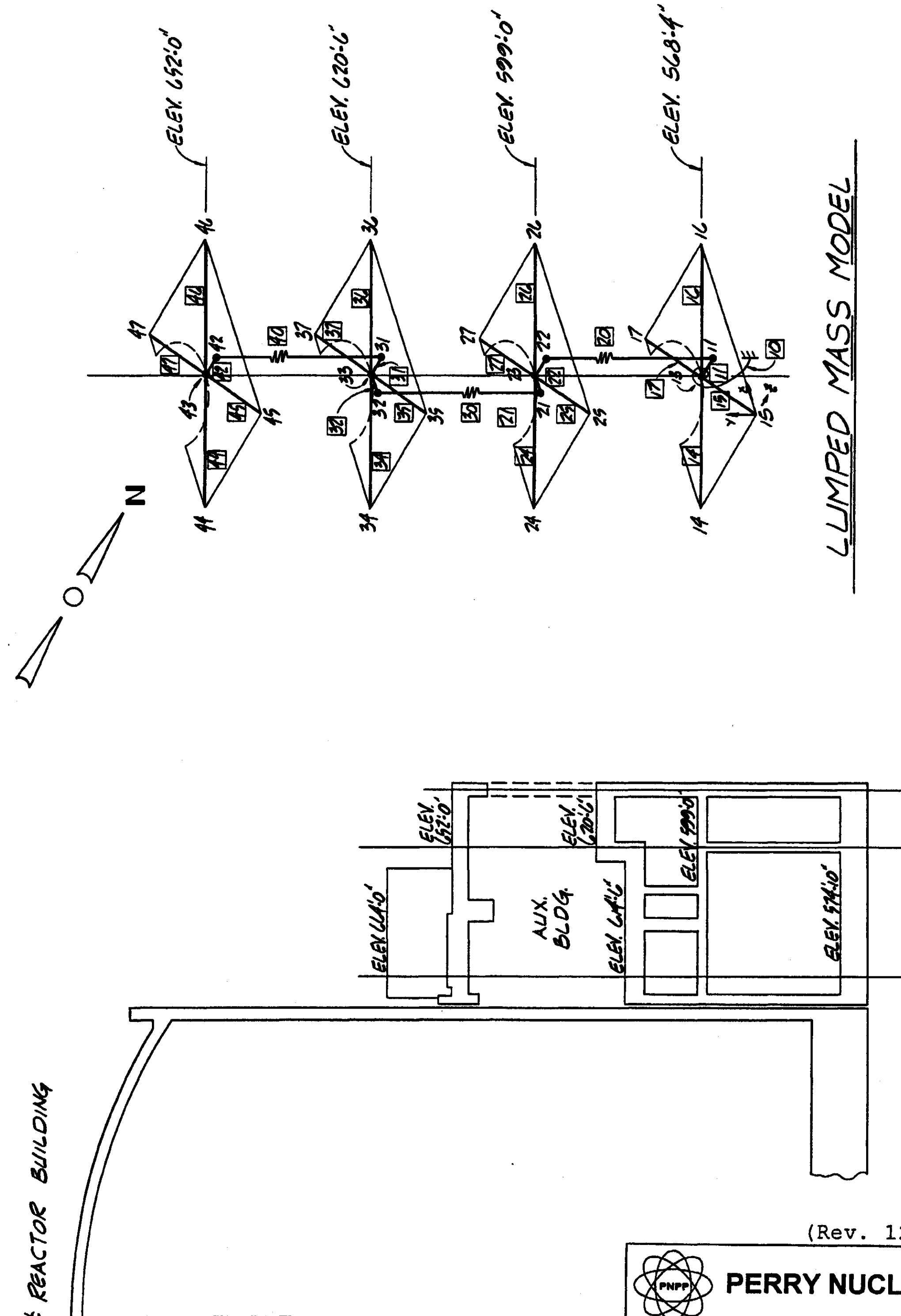
PERRY NUCLEAR POWER PLANT

Seismic Model for the Reactor Building

Figure 3.7-11



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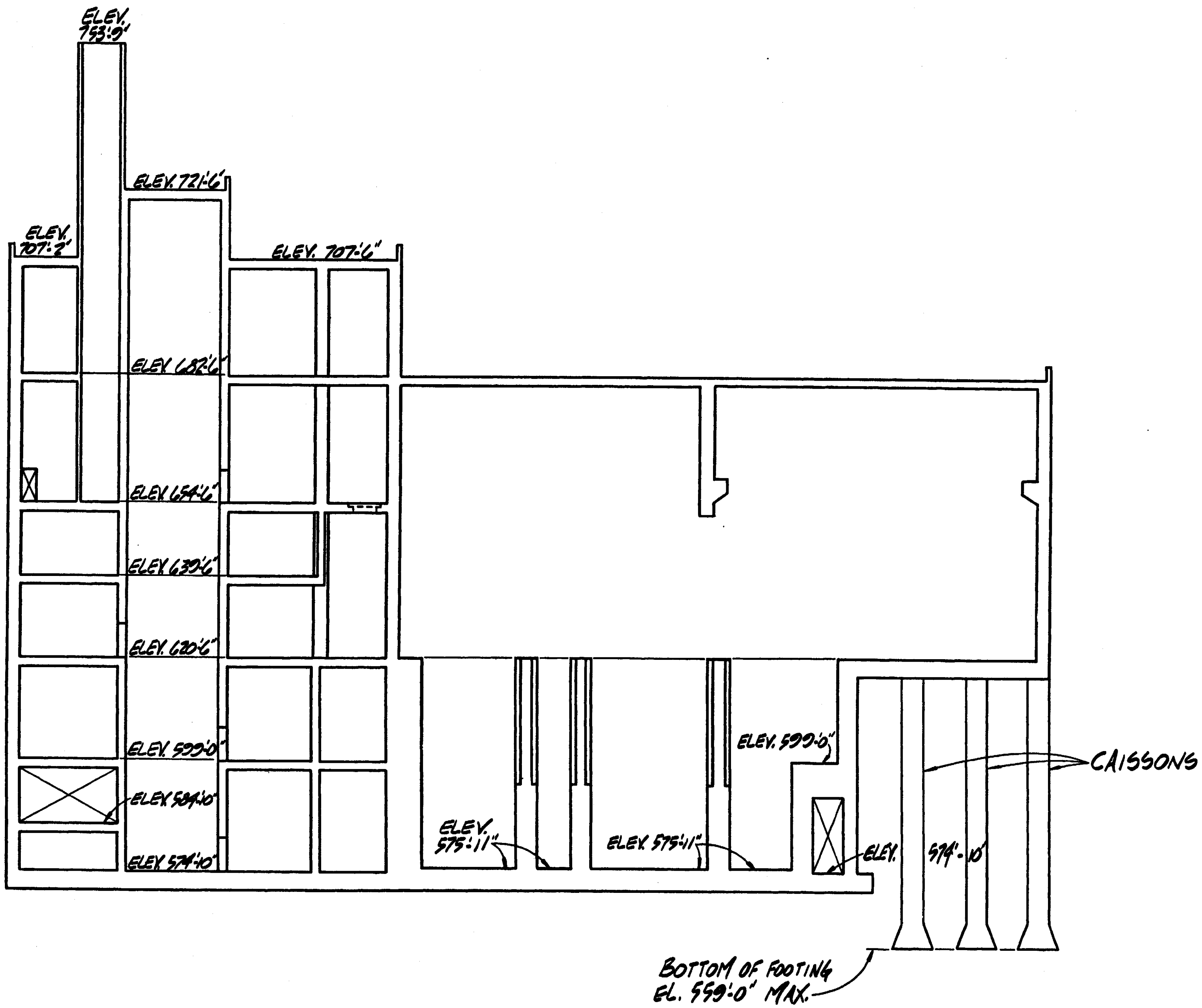
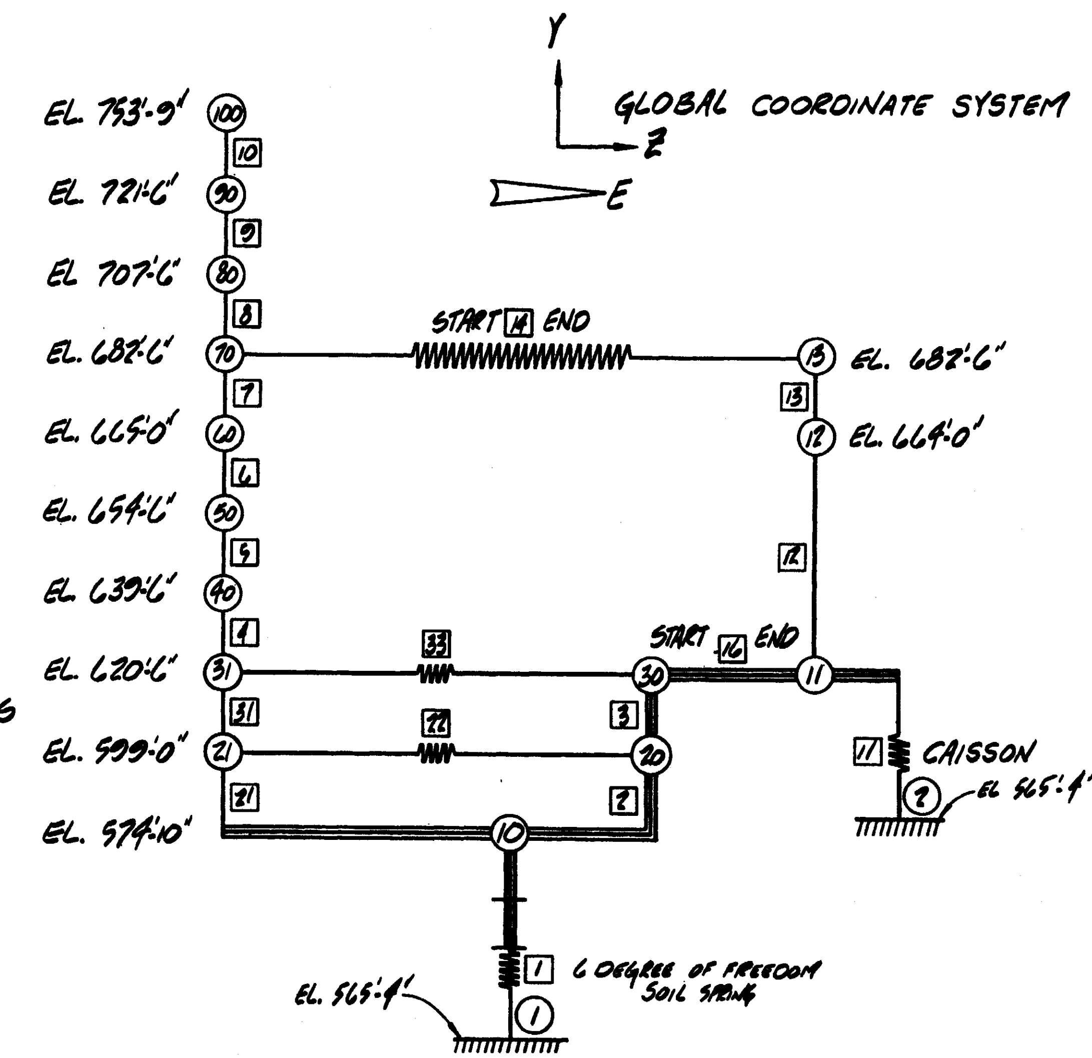
PERRY NUCLEAR POWER PLANT

Seismic Model for
Auxiliary Building

Figure 3.7-12





LUMPED MASS MODEL

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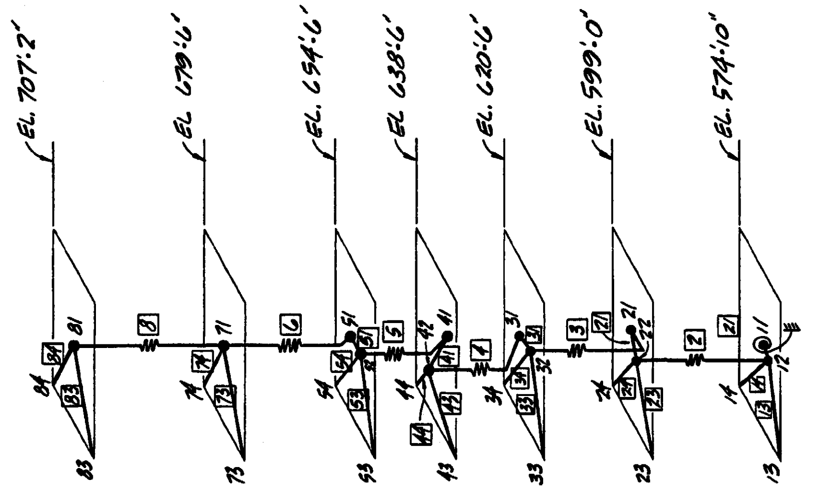
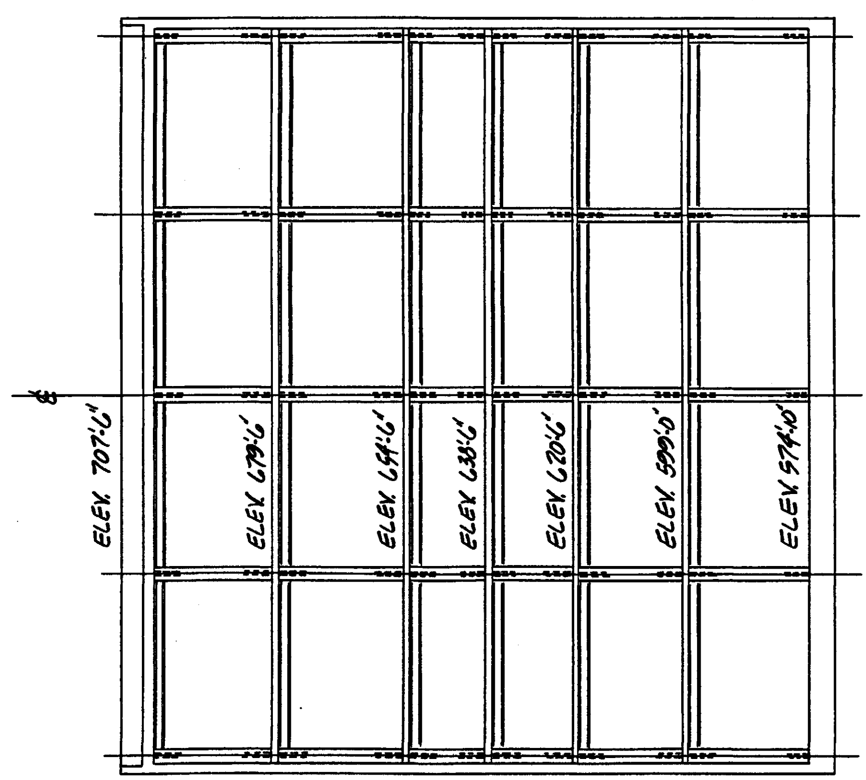
PERRY NUCLEAR POWER PLANT

Seismic Model for
Intermediate and Fuel
Handling Buildings

Figure 3.7-13



LUMPED MASS MODEL



CROSS SECTION

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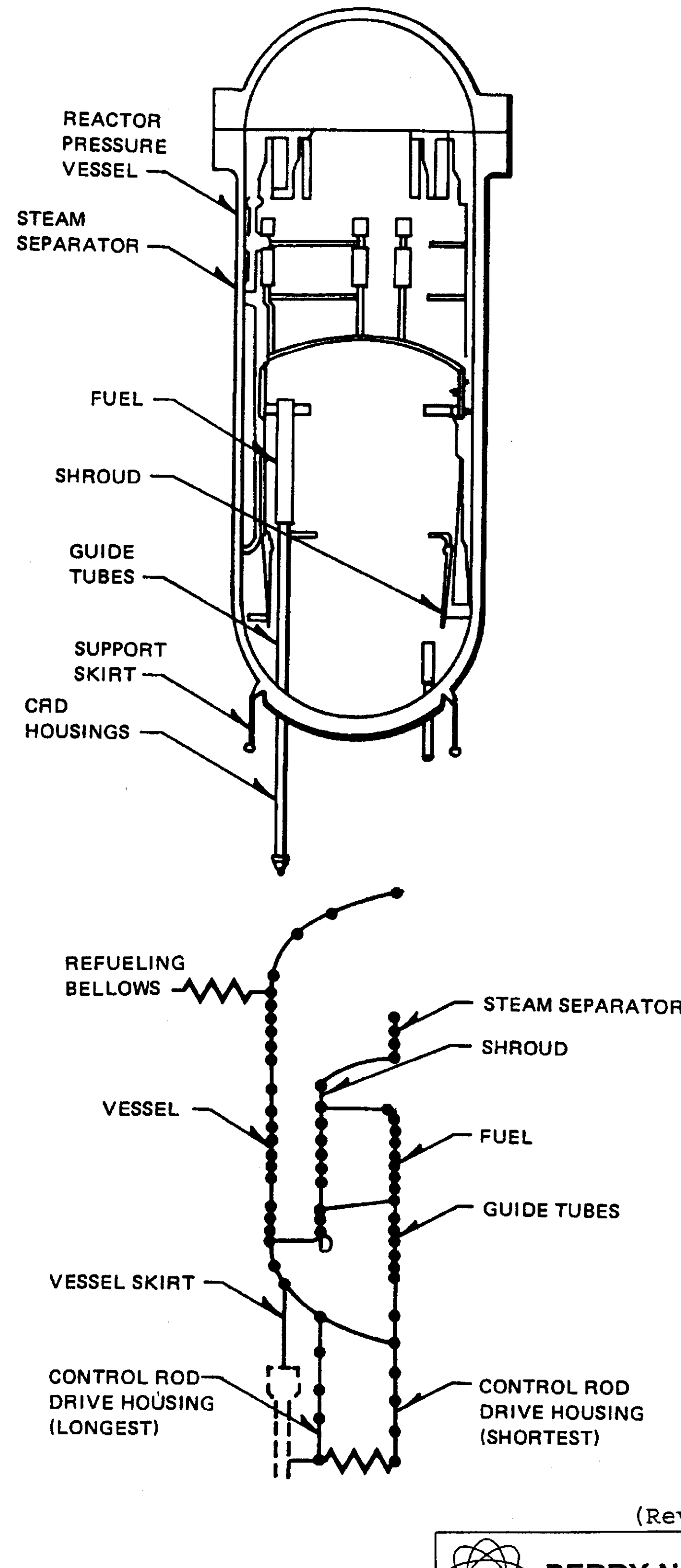
PERRY NUCLEAR POWER PLANT

Seismic Model for
Control Complex

Figure 3.7-14



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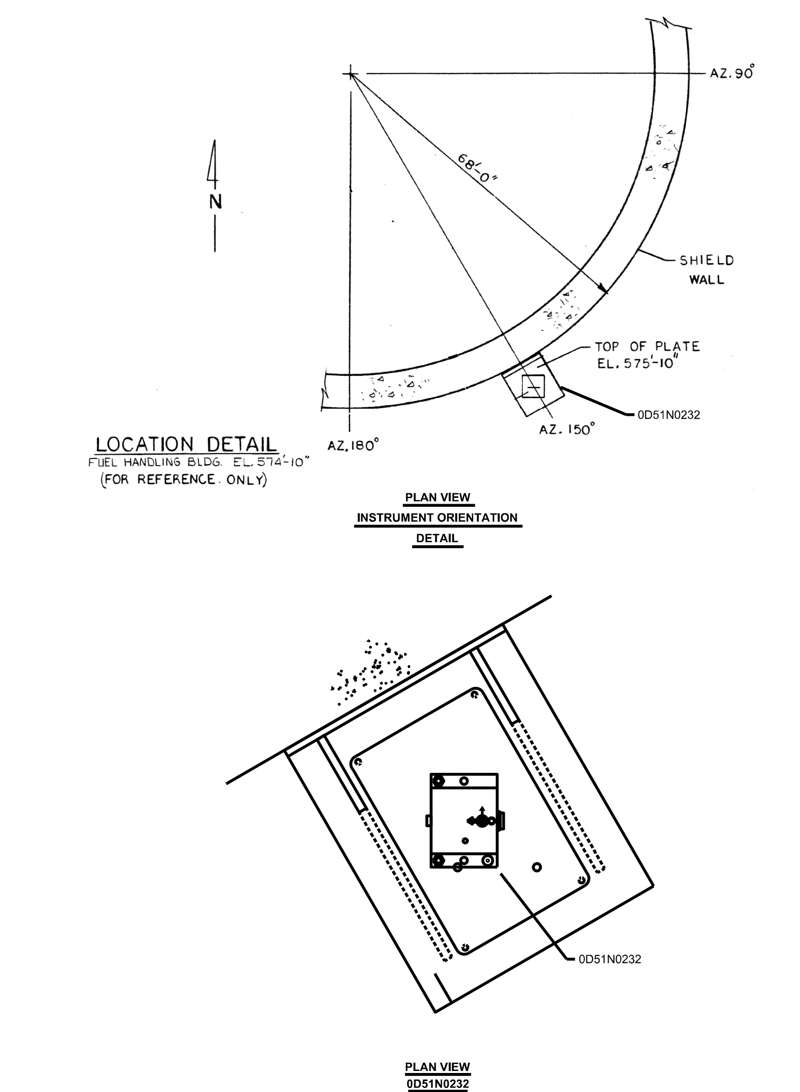
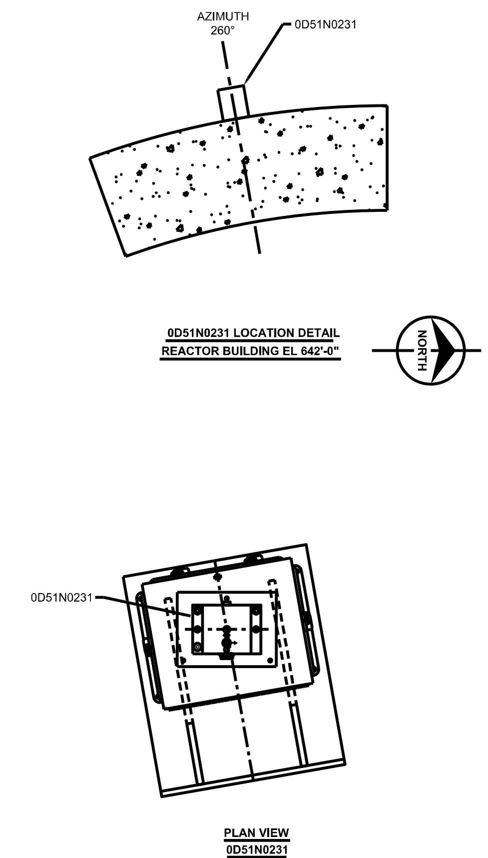
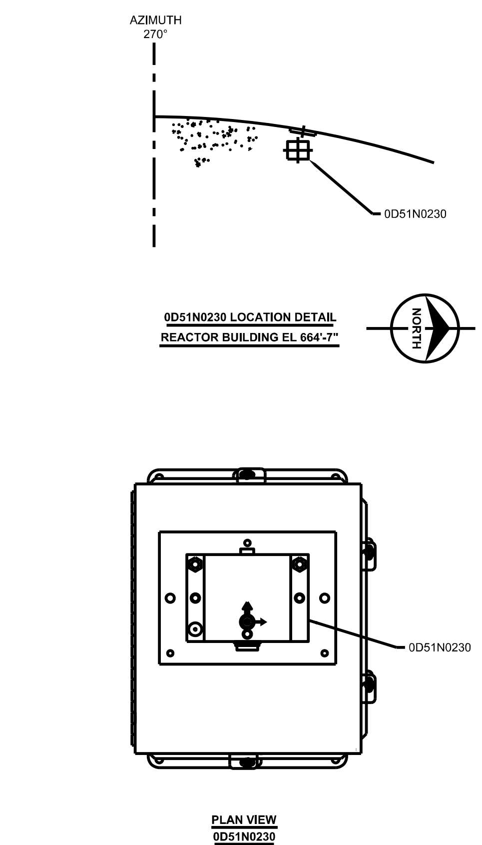
PERRY NUCLEAR POWER PLANT

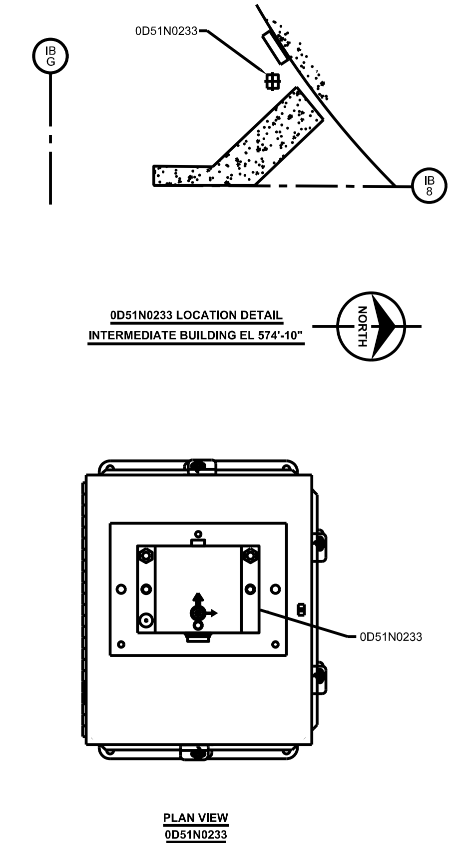
Reactor Pressure Vessel
and Internals Seismic Model

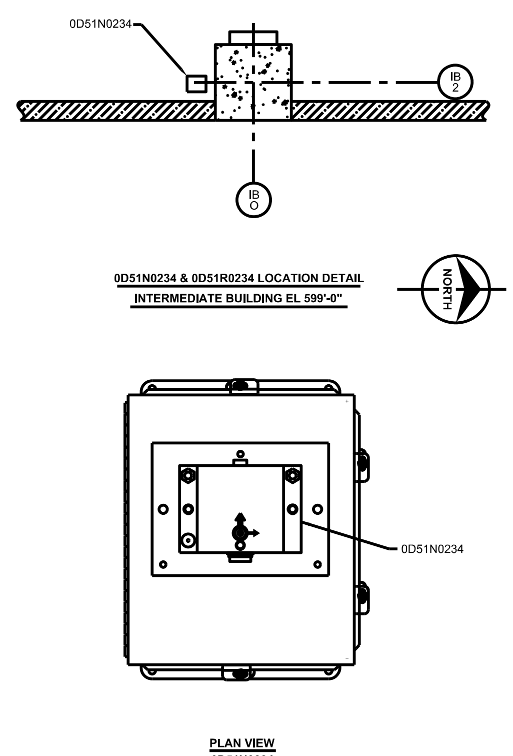
Figure 3.7-16

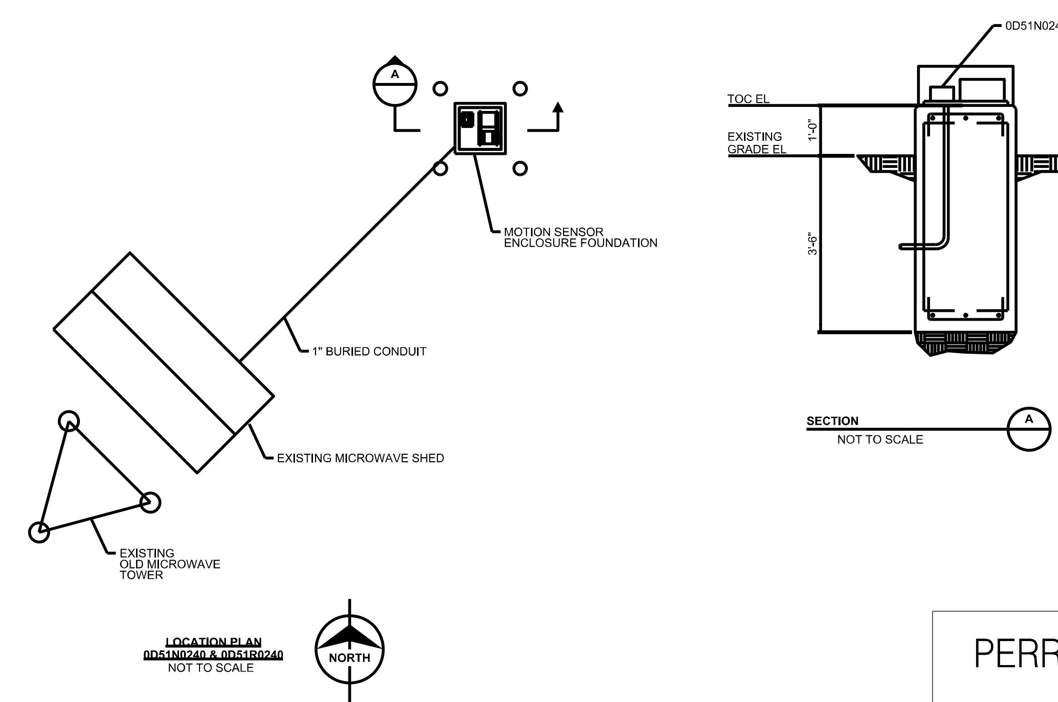










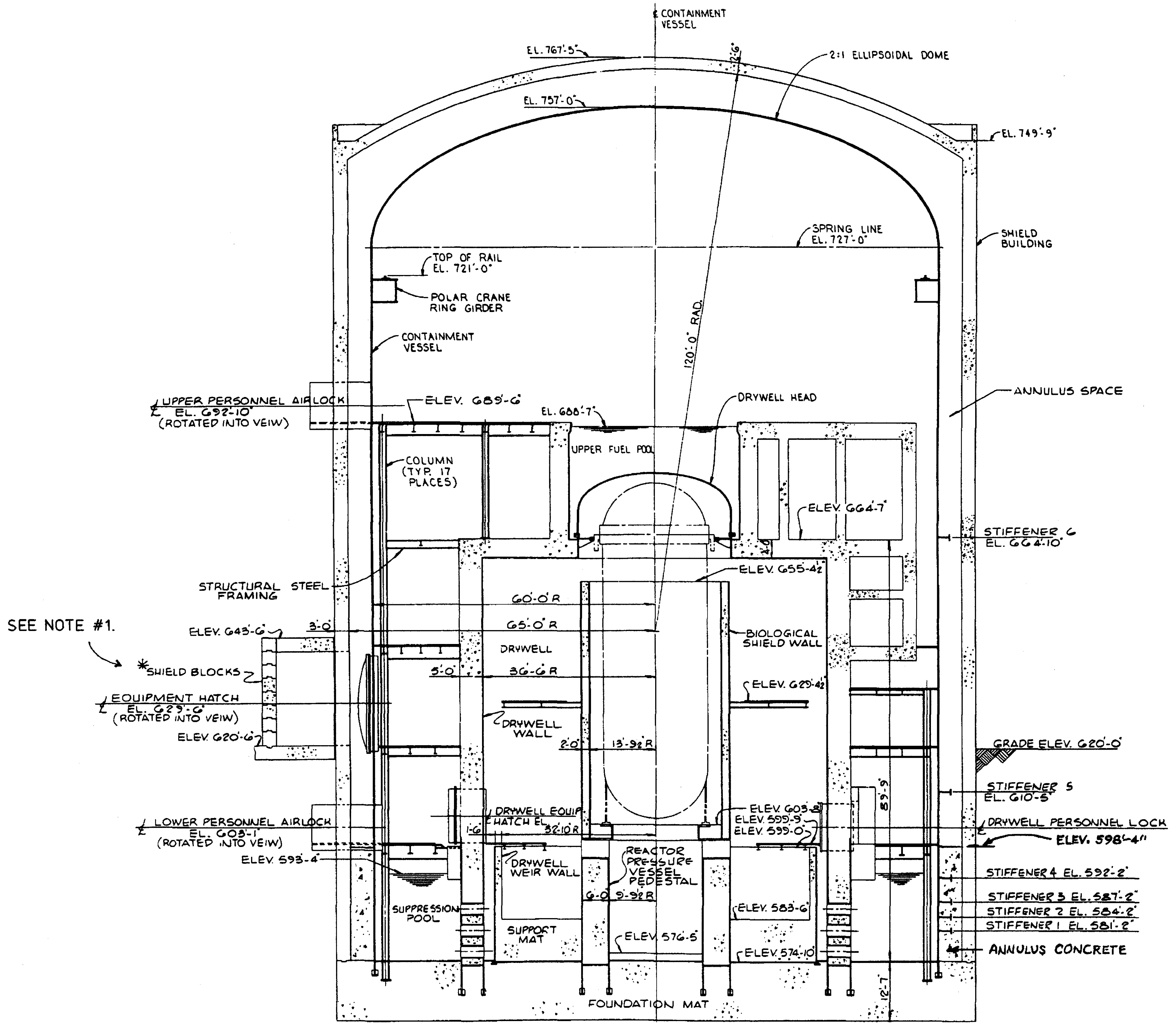


(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SEISMIC INSTRUMENTATION
INSTALLATION DETAILS

FIGURE 3.7-17
(DWG. D-814-0663-00000)



NOTES:

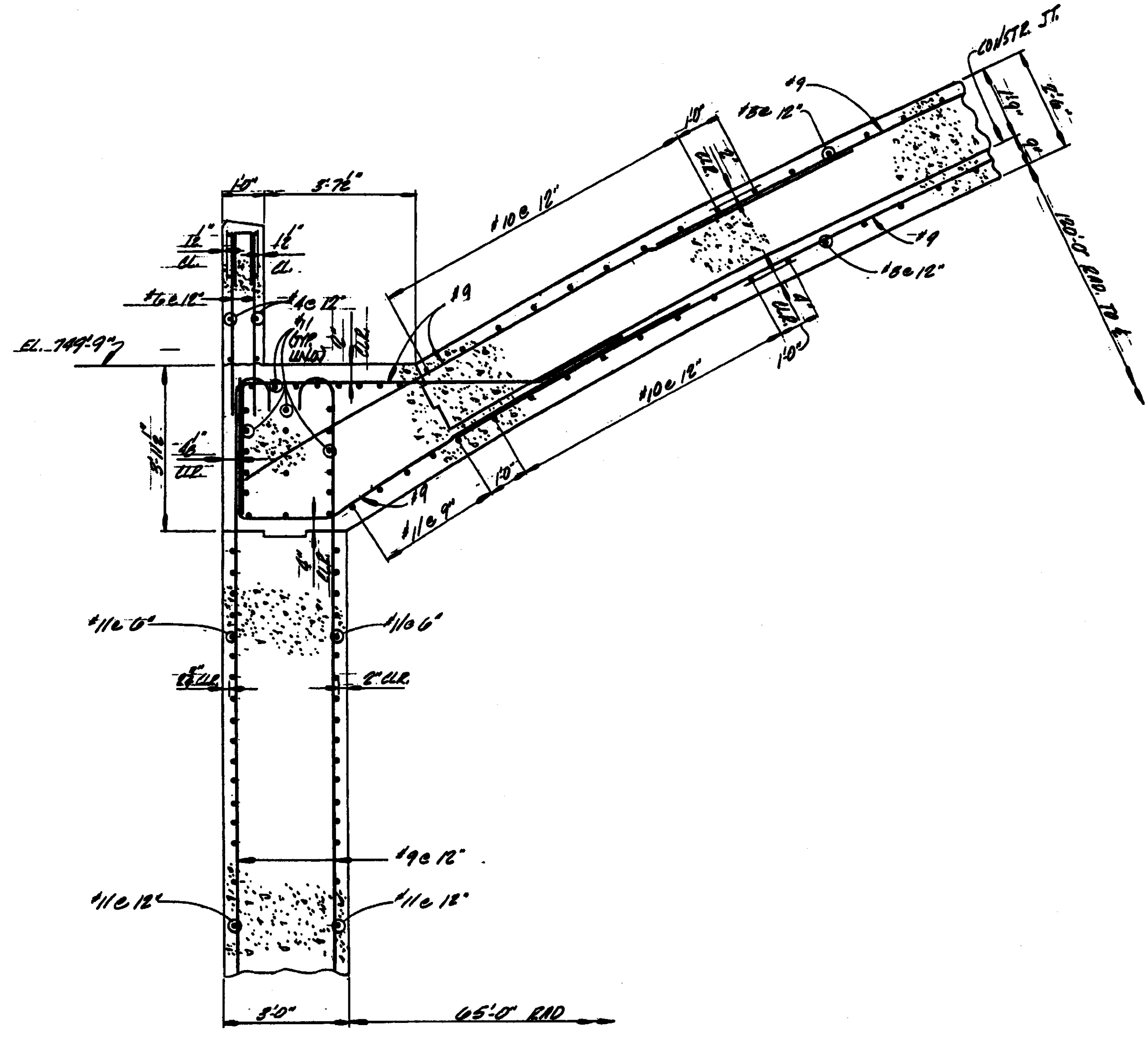
1. ONE SHIELD BLOCK MAY BE ELIMINATED FROM THE UNIT #2 EQUIPMENT HATCH PROVIDED THAT UNIT #2 IS NOT OPERATIONAL.

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Section of
Reactor Building Complex

Figure 3.8-1



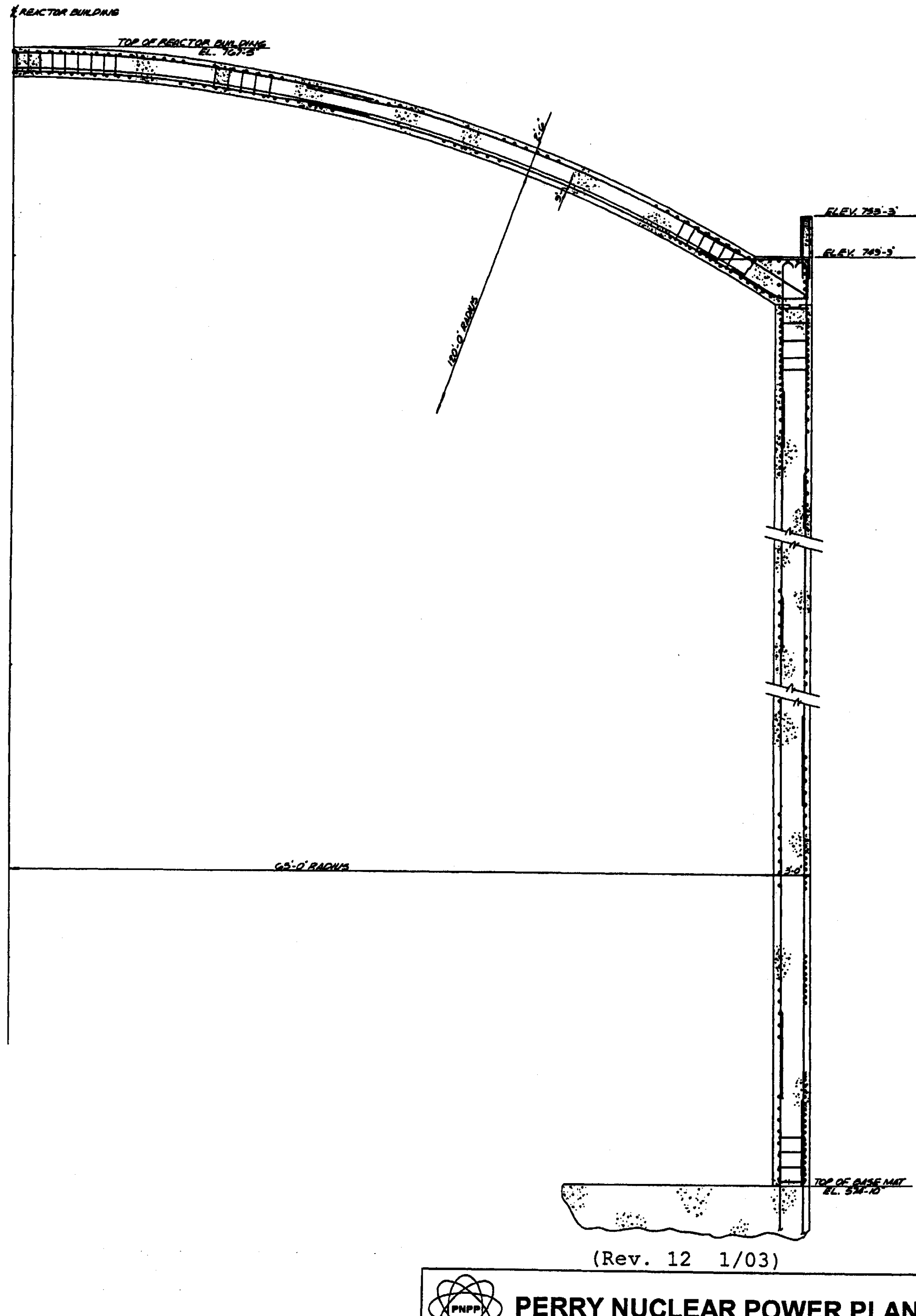
RING GIRDER DETAIL

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Section Through Ring Grinder of Shield Building Wall

Figure 3.8-2

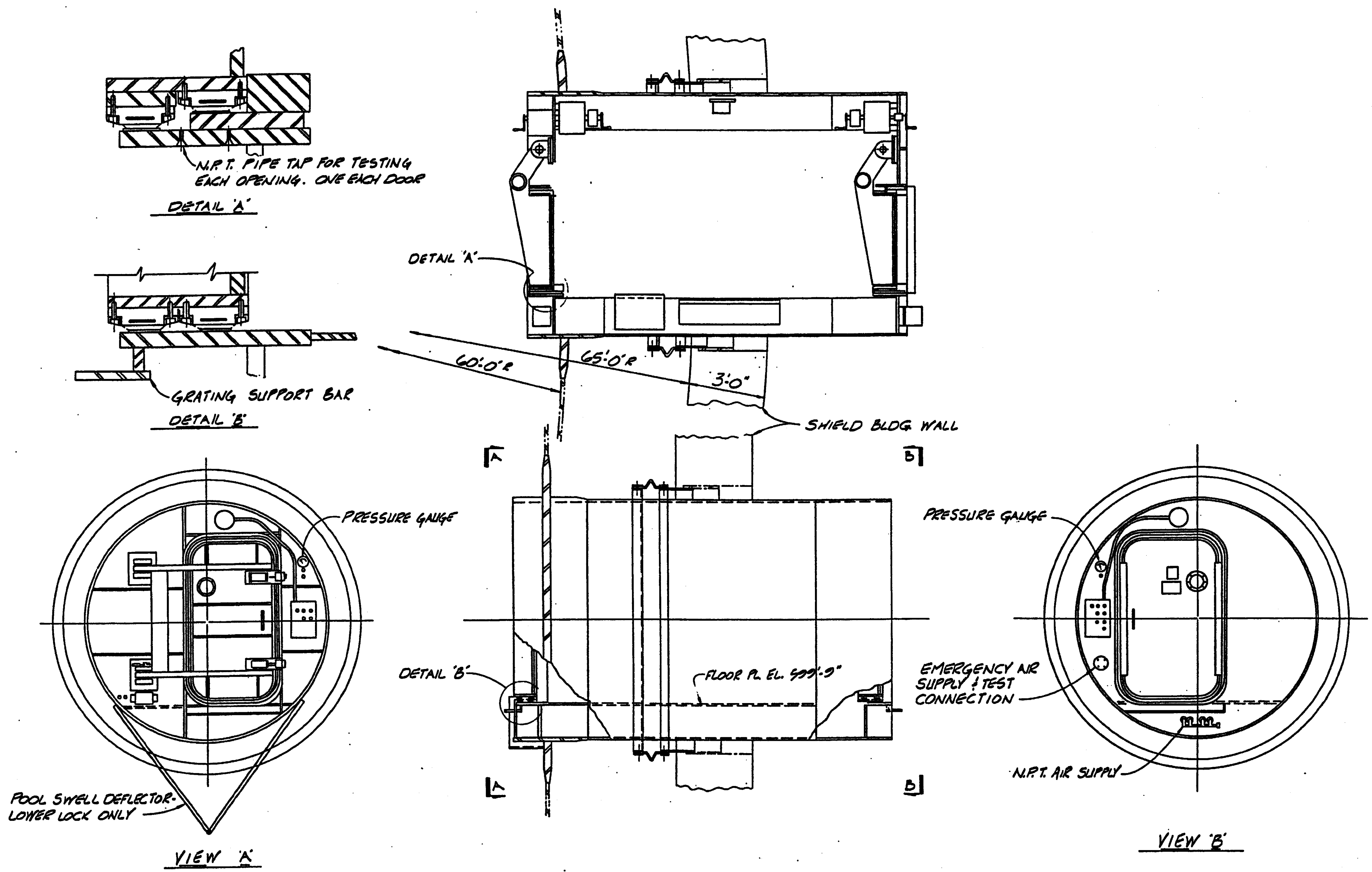


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Reinforced Section for
the Shield Building Wall and Dome

Figure 3.8-3

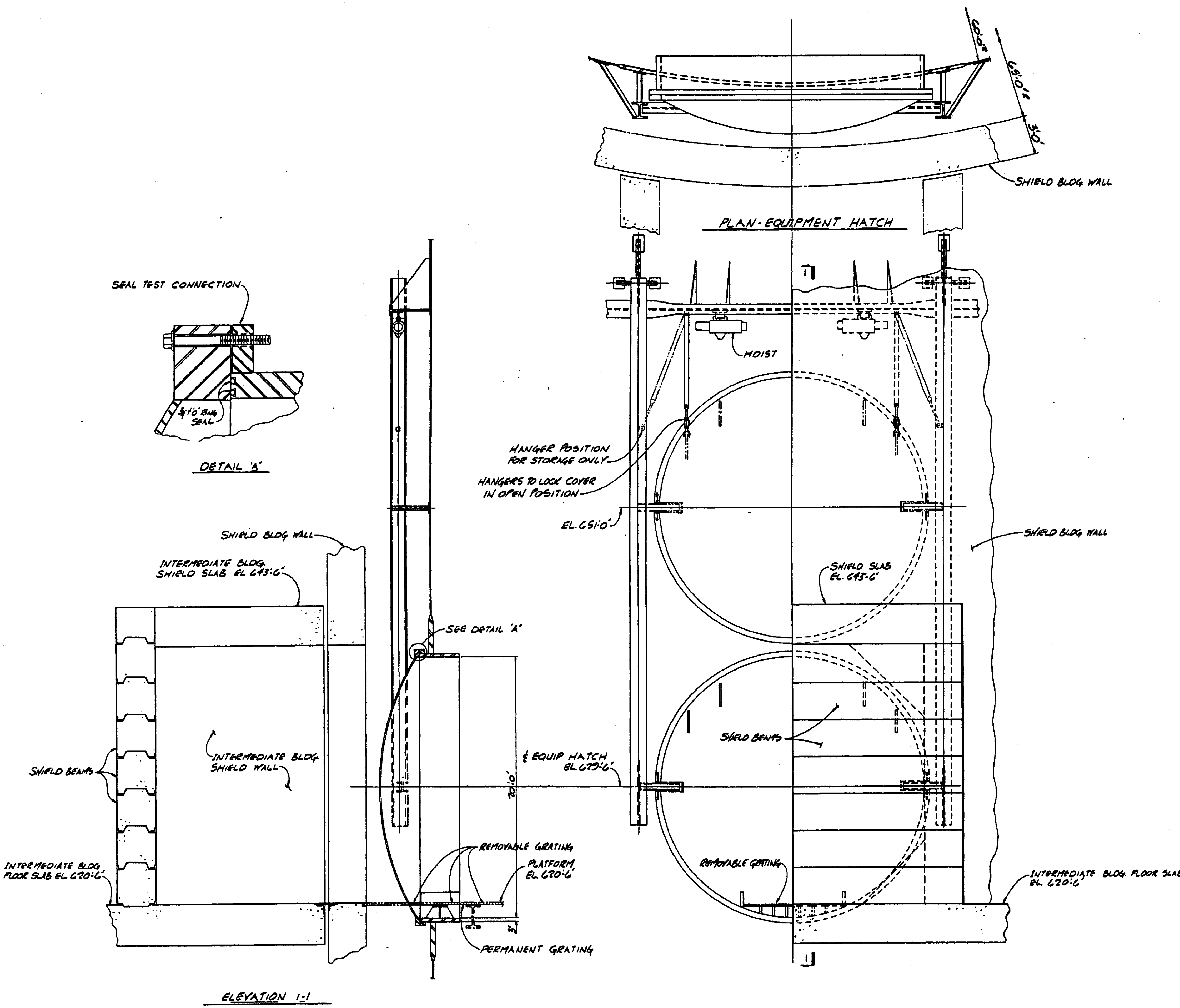


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Vessel Personnel Access Airlock Detail

Figure 3.8-4



NOTES:

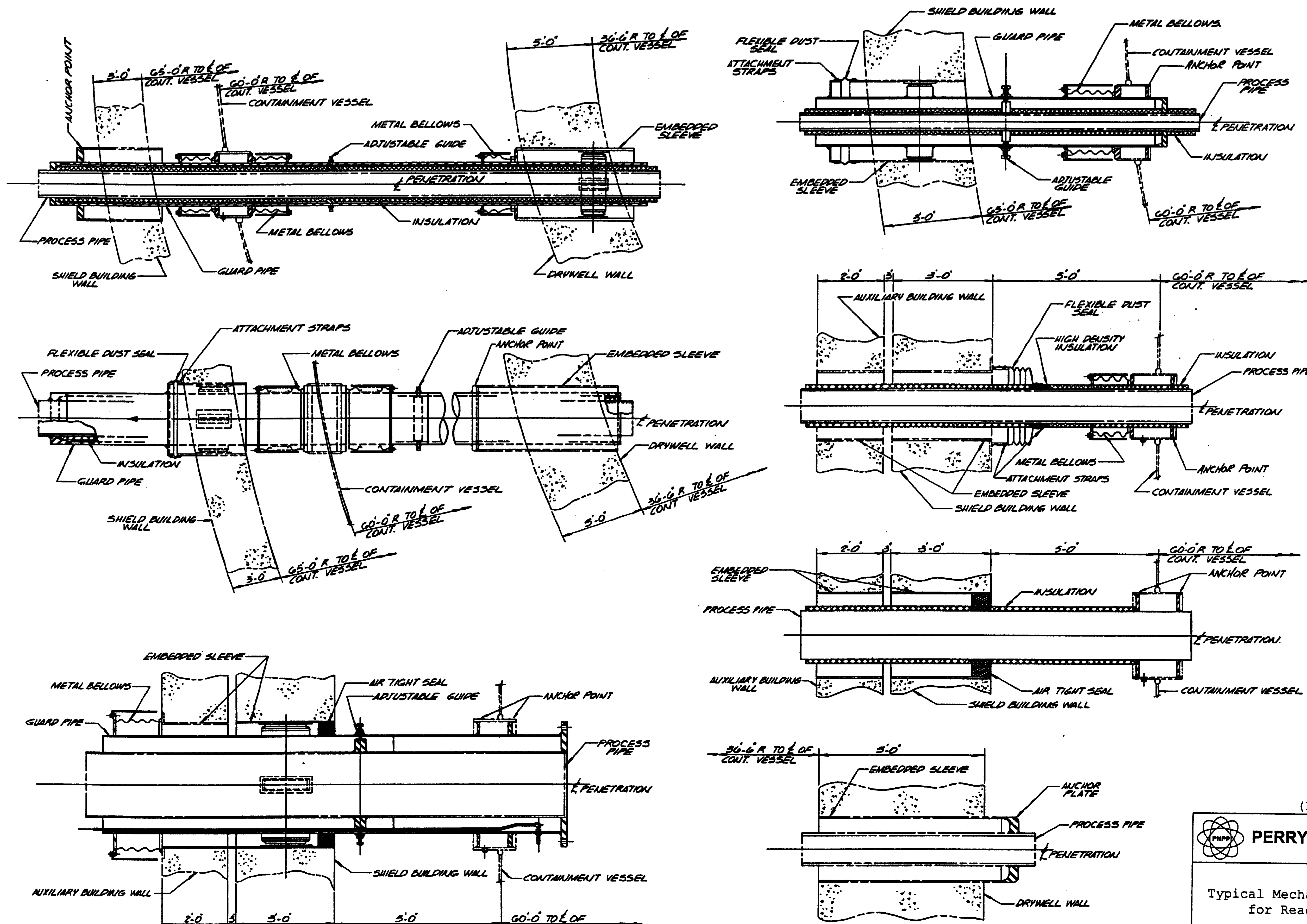
1. ONE SHIELD BLOCK MAY BE ELIMINATED FROM THE UNIT #2 EQUIPMENT HATCH PROVIDED THAT UNIT #2 IS NOT OPERATIONAL.

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Vessel Equipment Access Hatch and Shield Structure

Figure 3.8-5

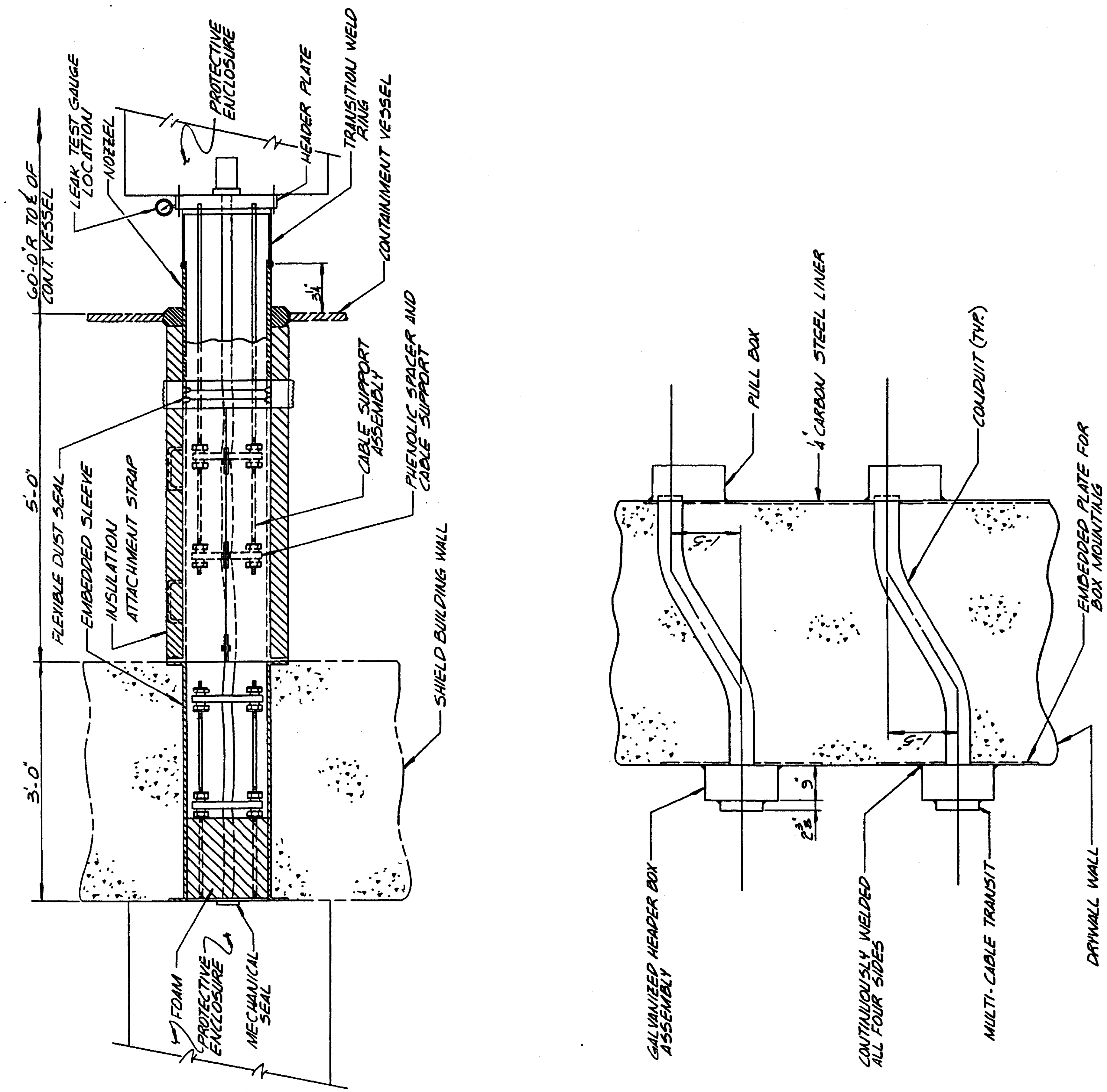


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Mechanical Penetration Details for Reactor Building Complex

Figure 3.8-6

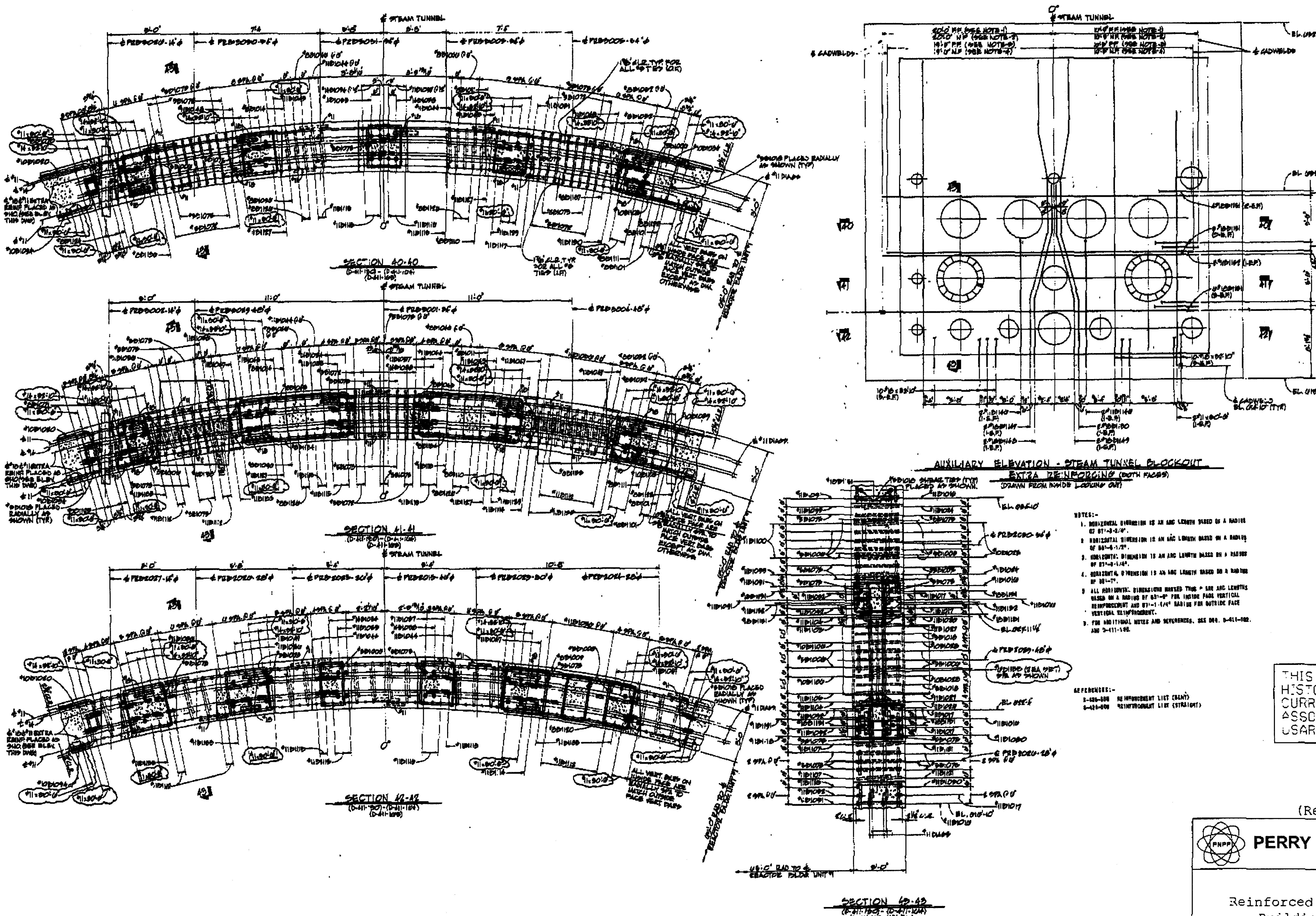


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Electrical Penetration Details for Reactor Building Complex

Figure 3.8-7



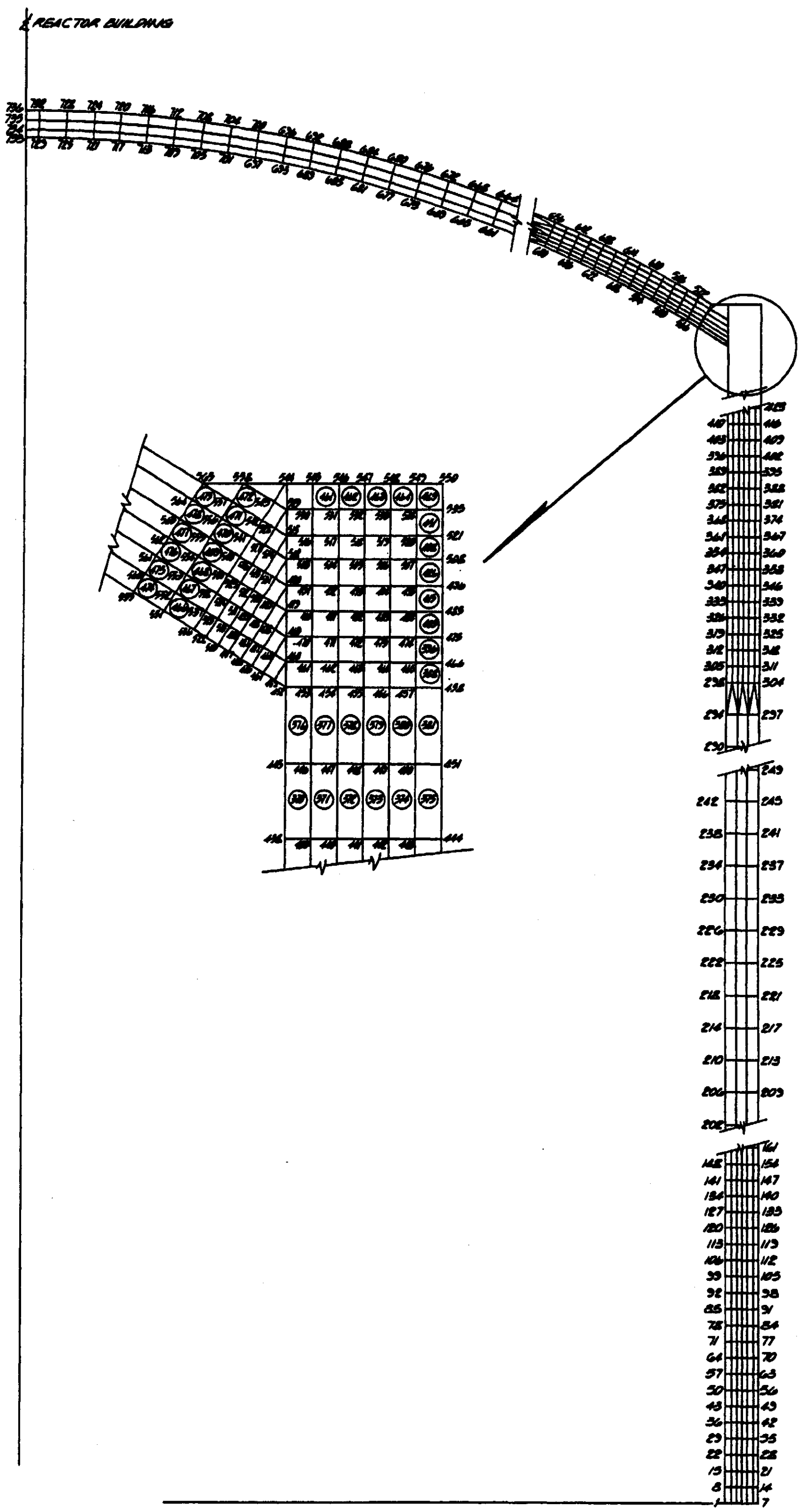
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Reinforced Sections of the Shield Building Steam Tunnel Area

Figure 3.8-8
(Dwg. D-411-165)

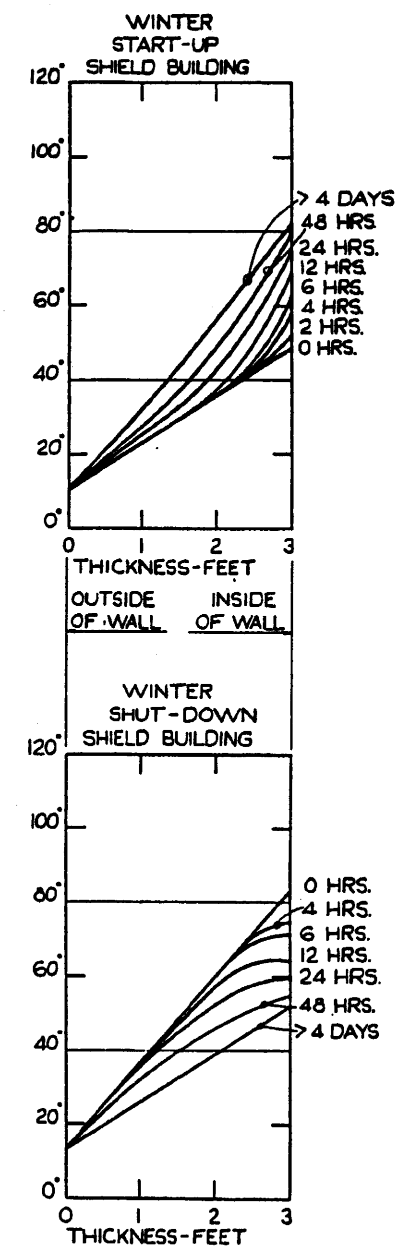


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analytical Model of
Shield Building

Figure 3.8-9

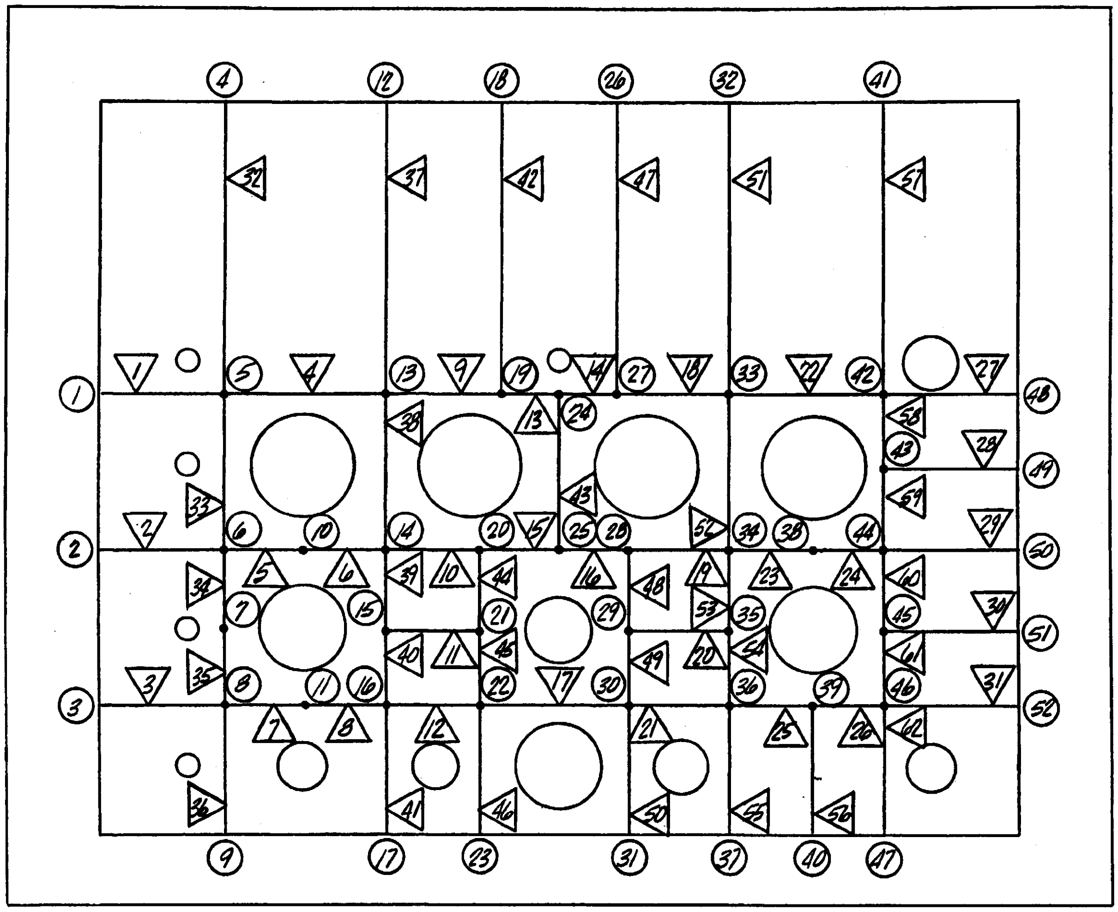


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Temperature Profiles Through Shield Building

Figure 3.8-10

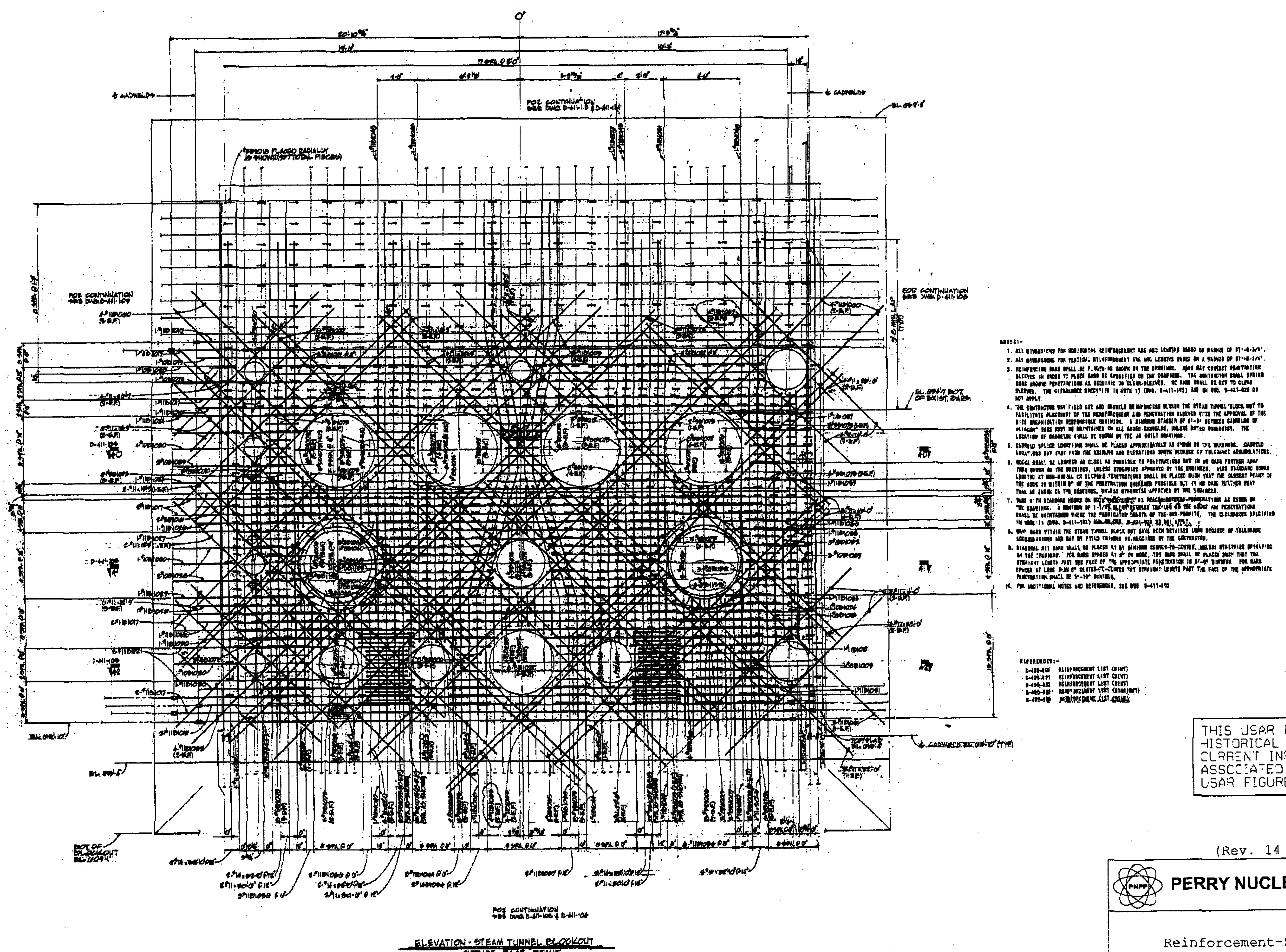


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analytical Model of the
Shield Steam Tunnel Area

Figure 3.8-11



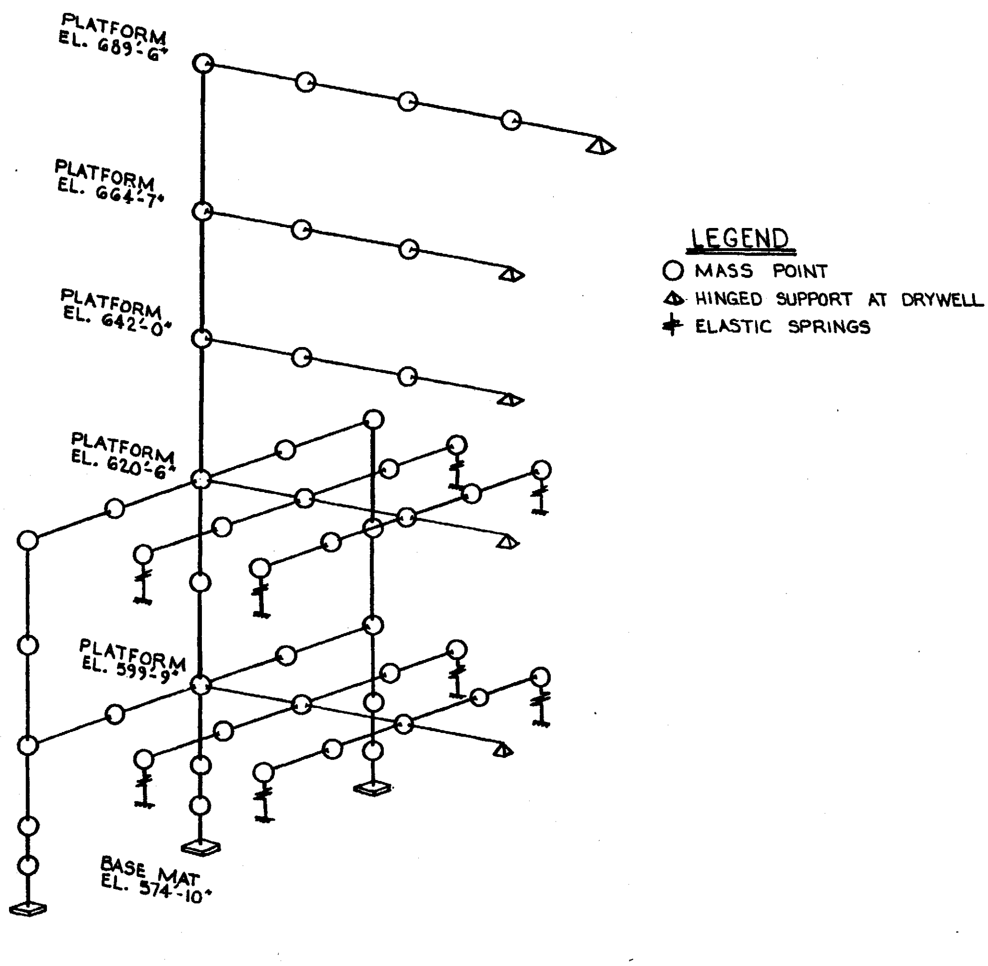
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Reinforcement-Shield Building
Steam Tunnel Area

Figure 3.8-12
(Dwg. D-411-130)

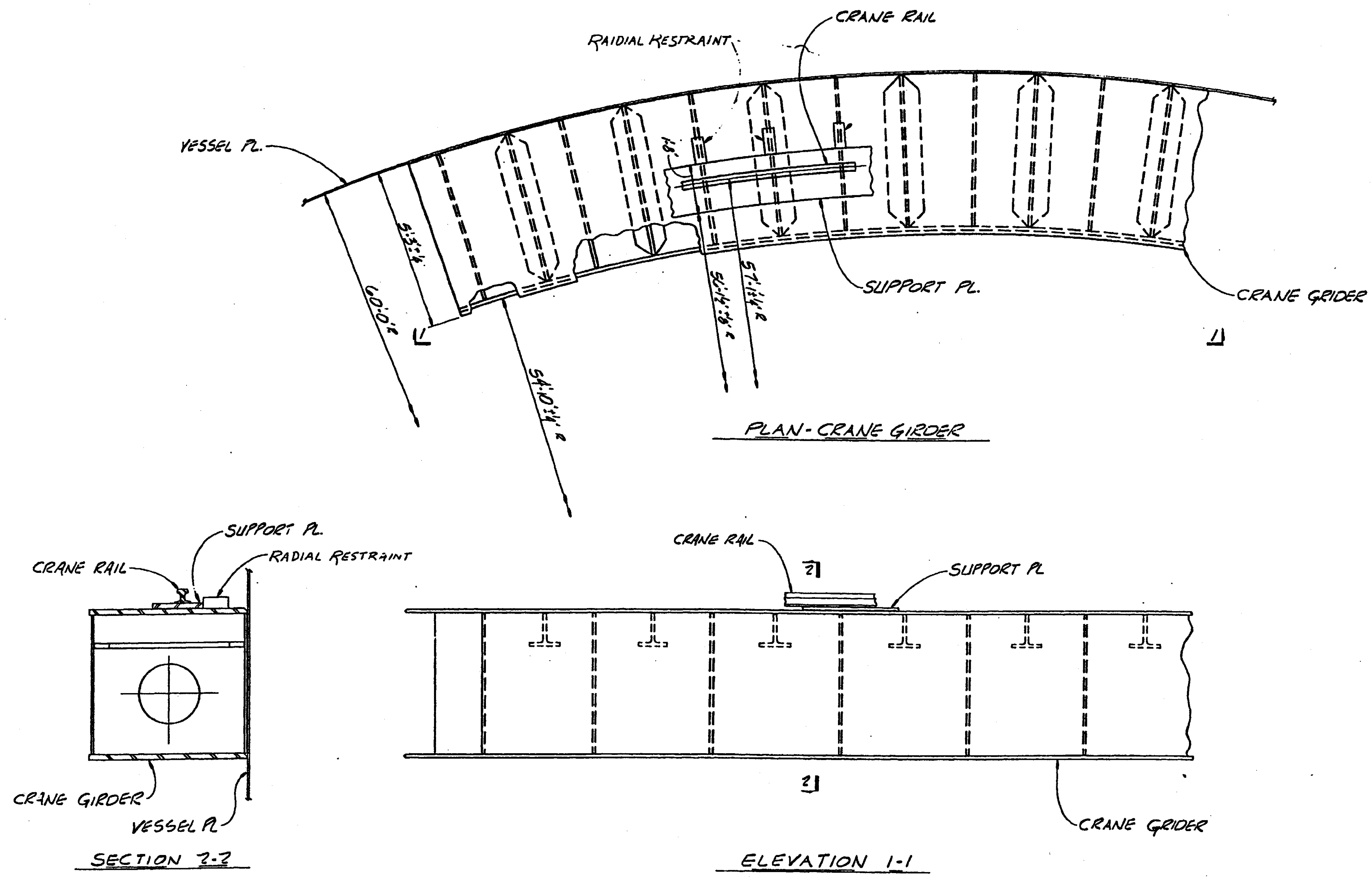


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Building Steel Frame
Pool Swell Analysis Model

Figure 3.8-13

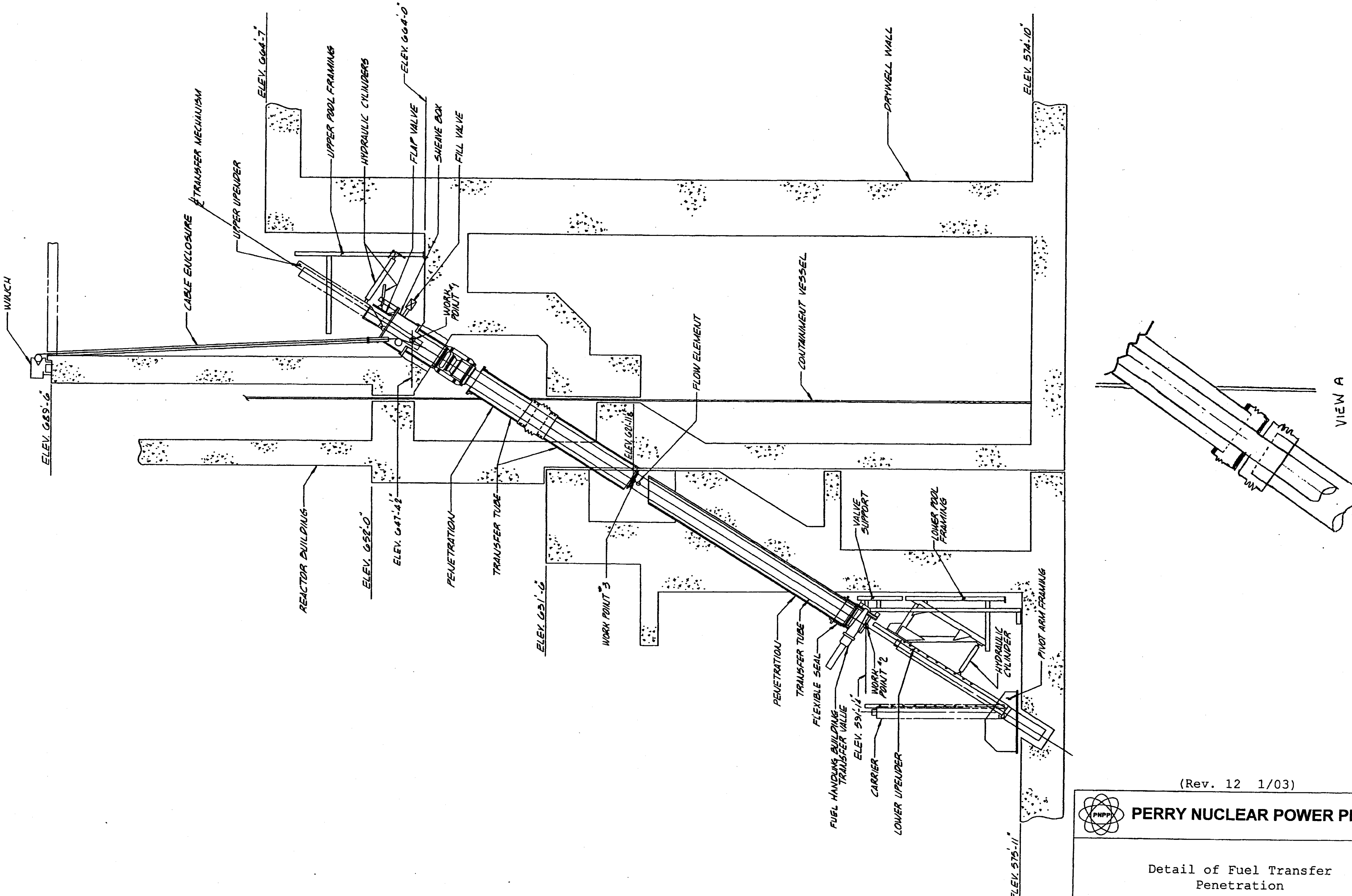


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Detail of Containment
Vessel Polar Crane Bracket

Figure 3.8-14

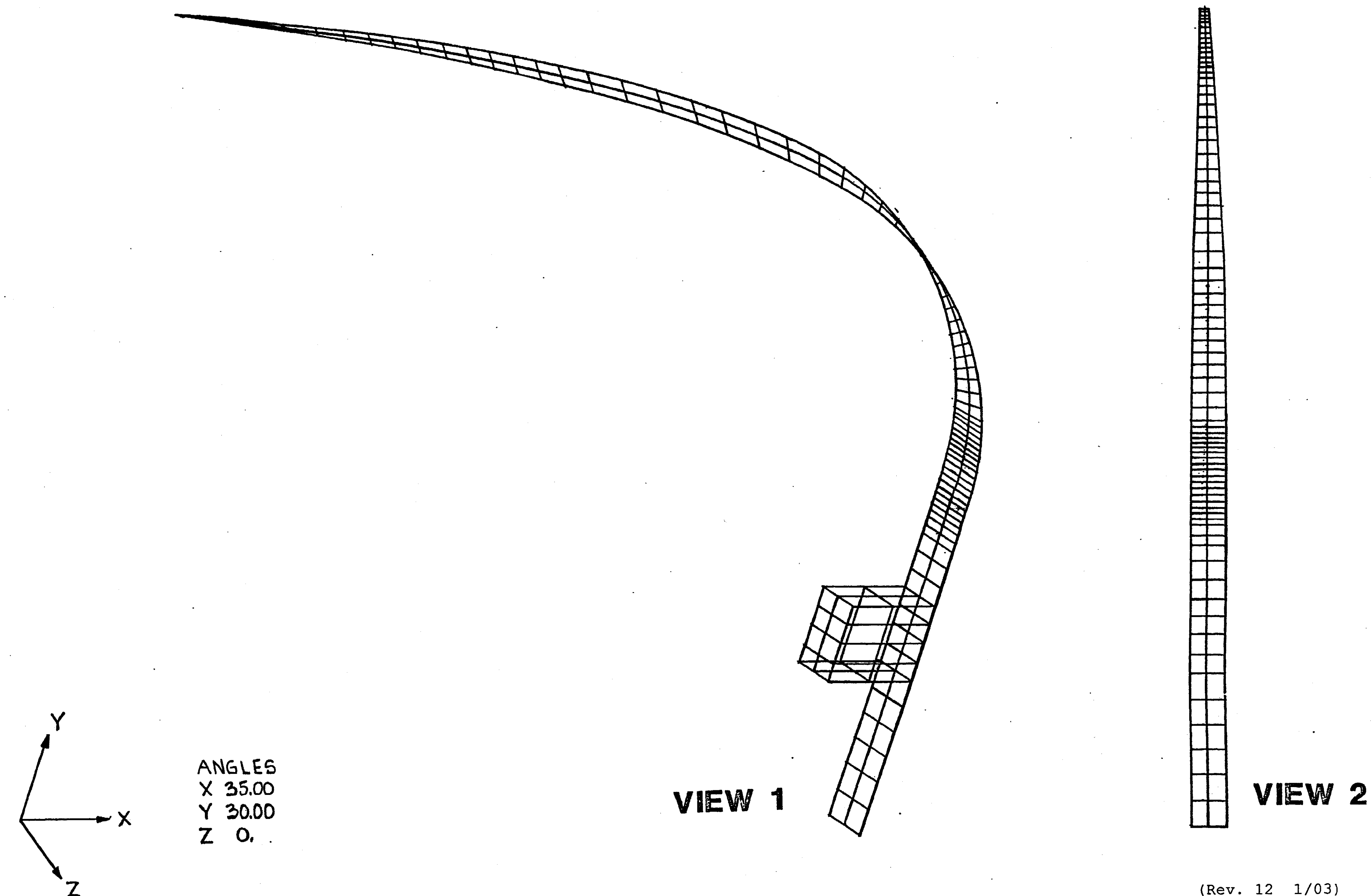


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Detail of Fuel Transfer Penetration

Figure 3.8-15



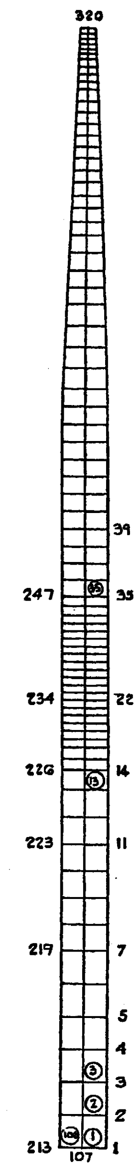
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment - Finite Element
Model - STRAP

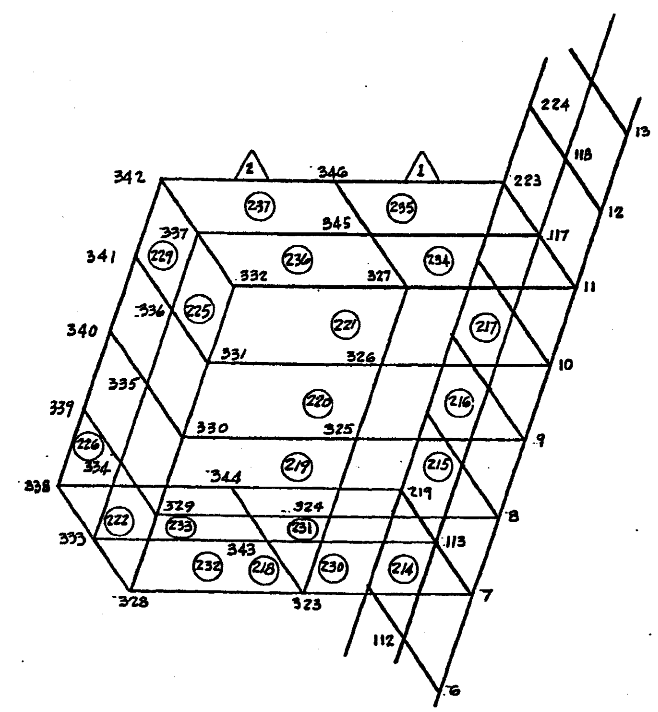
Figure 3.8-16 (Sheet 1 of 2)

VIEW 2 SHOWN HERE
HAS BEEN ROTATED 90°
ABOUT THE VERTICAL (Y)
AXIS.
THE PLOT SHOWS THE
NODE AND ELEMENT
NUMBERS OF THE MODEL
N = NODE NO.
(N) = ELEMENT NO.

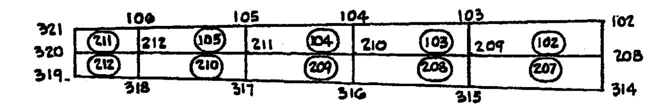


VIEW 2 (ENLARGED)

ANGLES
X 35.00
Y 30.00
Z 0.



THE ABOVE PLOT SHOWS THE NODE AND ELEMENT NUMBERS FOR THE POLAR CRANE GIRDER MODEL, WHICH HAS BEEN ROTATED INTO VIEW.



ANGLES
X -90.0
Y 0.
Z 0.

THIS PLOT SHOWS AN ENLARGEMENT OF THE NODES AND ELEMENTS AT THE TOP OF THE DOME.
THE MODEL HAS BEEN ROTATED -90° ABOUT THE X AXIS.

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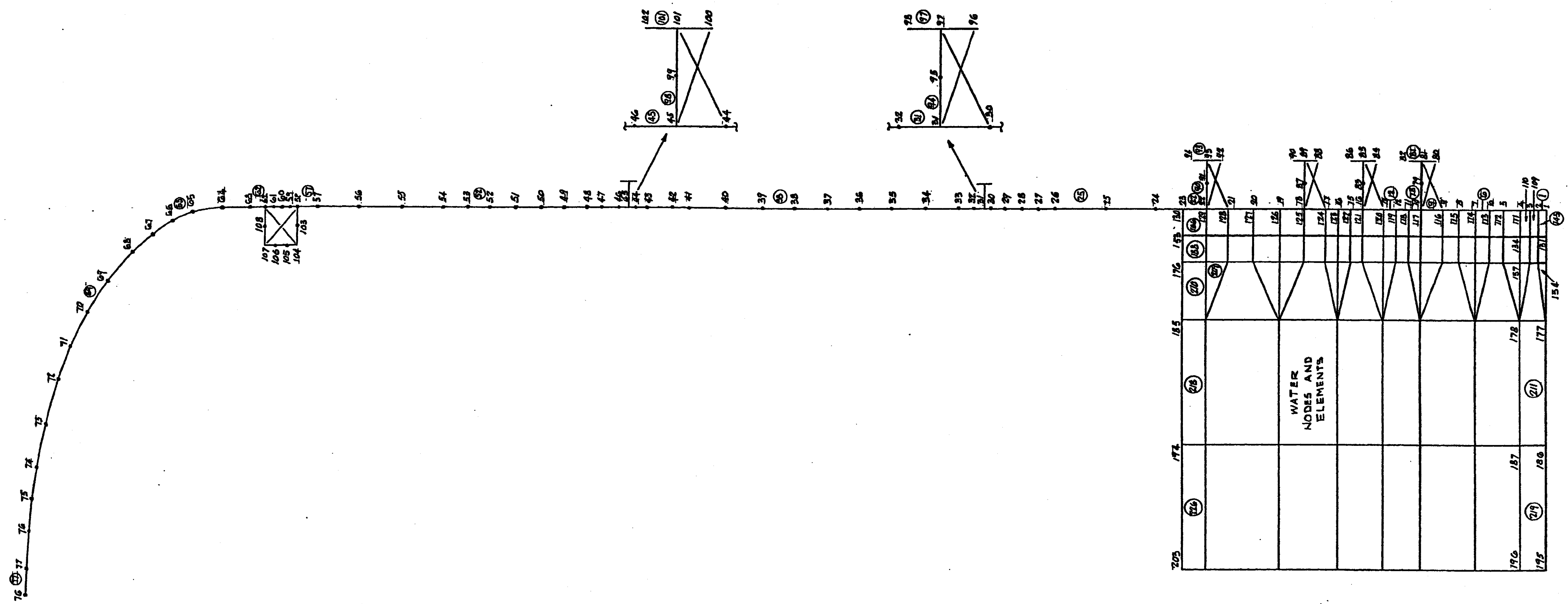
PERRY NUCLEAR POWER PLANT

Containment - Finite Element Model - STRAP

Figure 3.8-16 (Sheet 2 of 2)

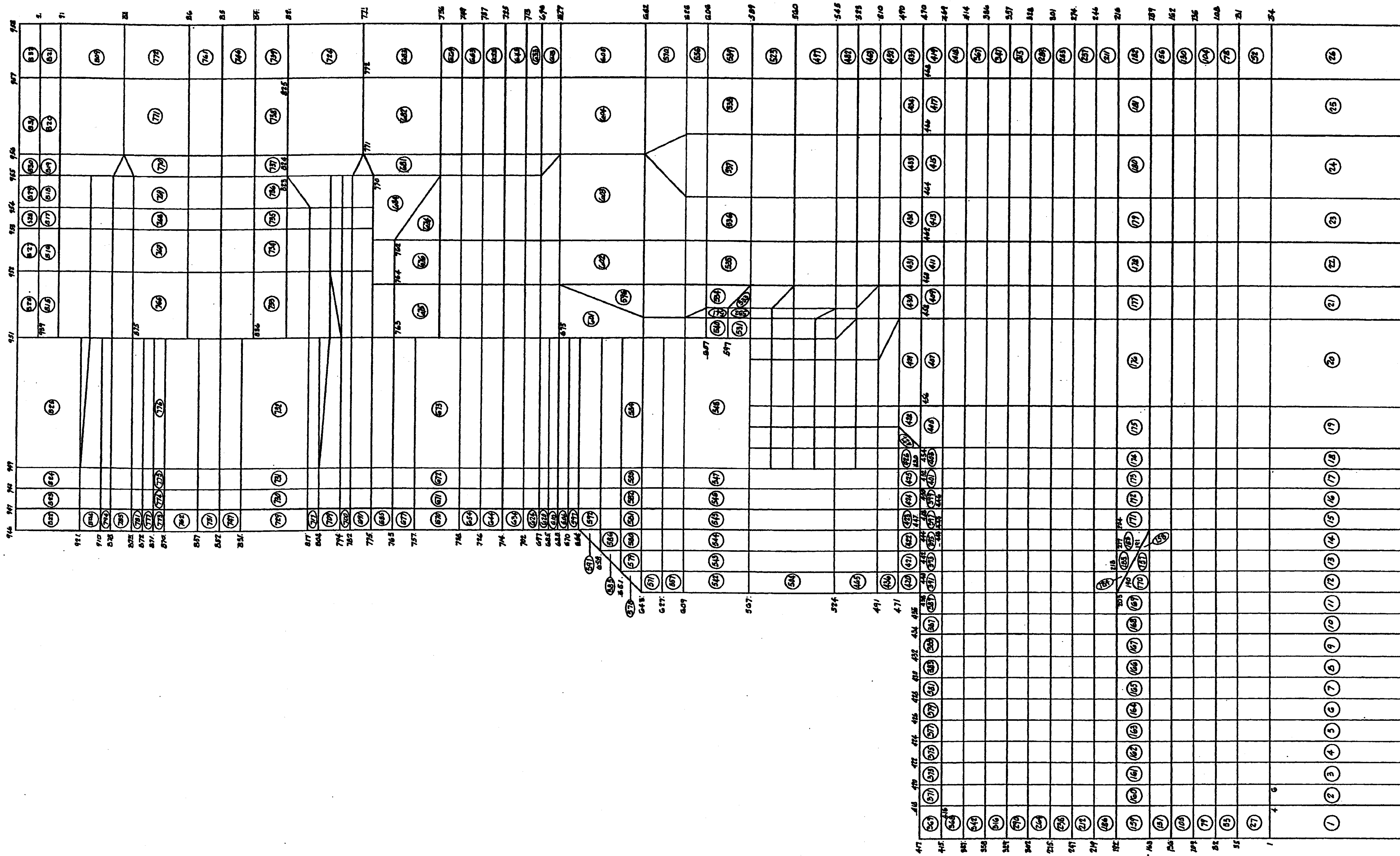


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment - Finite Element
Model - GHOSH WILSON

Figure 3.8-17

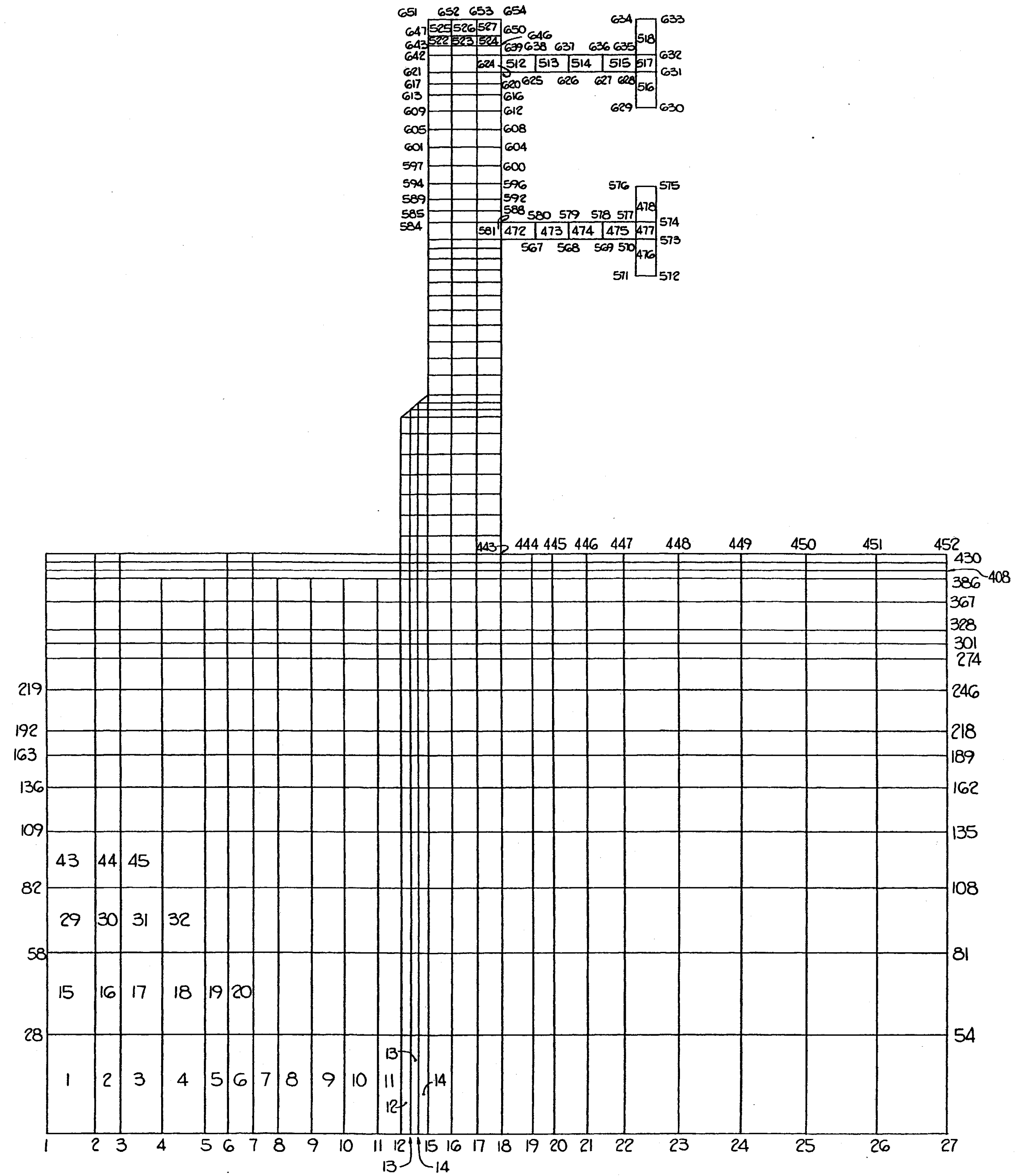


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Vessel Embedment Model

Figure 3.8-18



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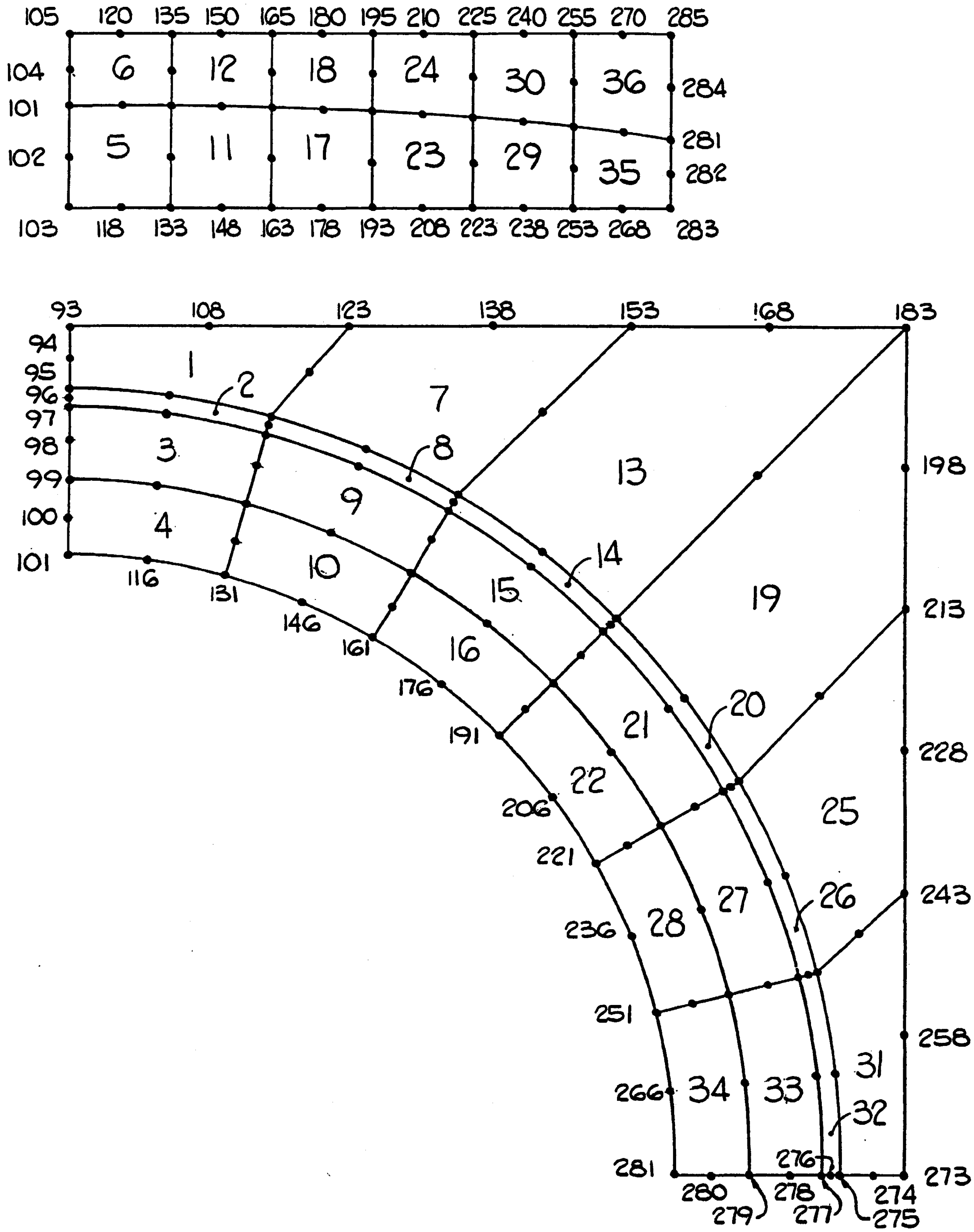
PERRY NUCLEAR POWER PLANT

Containment Vessel Embedment Model

Figure 3.8-19



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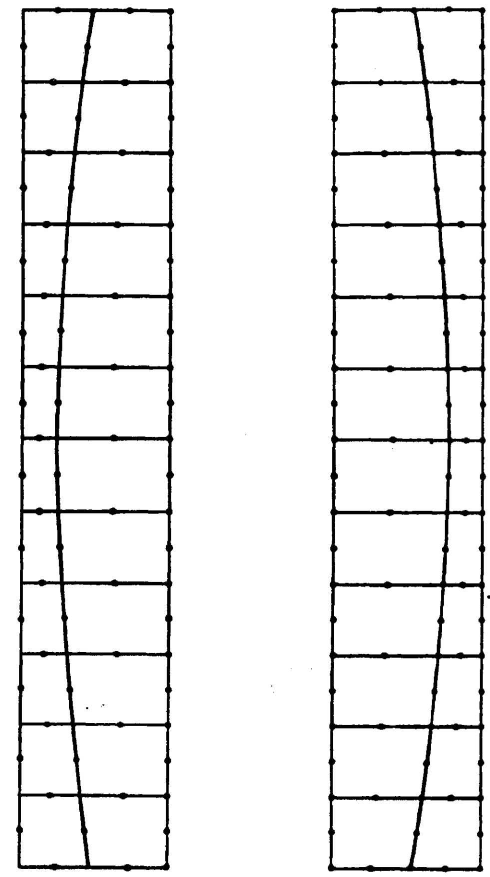
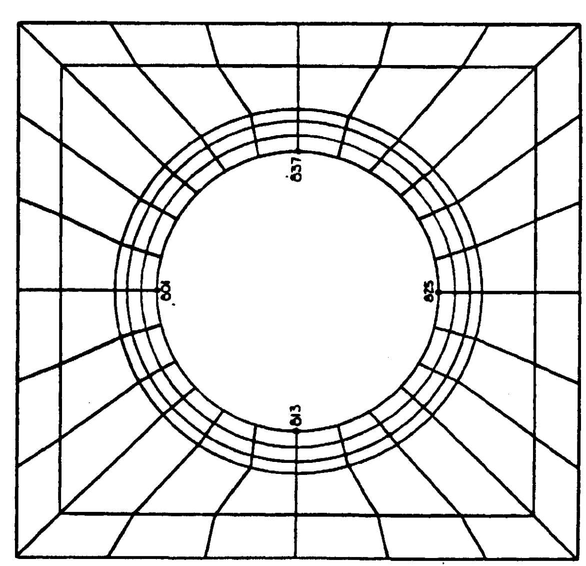
PERRY NUCLEAR POWER PLANT

Containment Vessel Equipment Hatch
Finite Element Model

Figure 3.8-20



COLLAR AND BARREL
FINITE ELEMENT MODEL (BARREL)



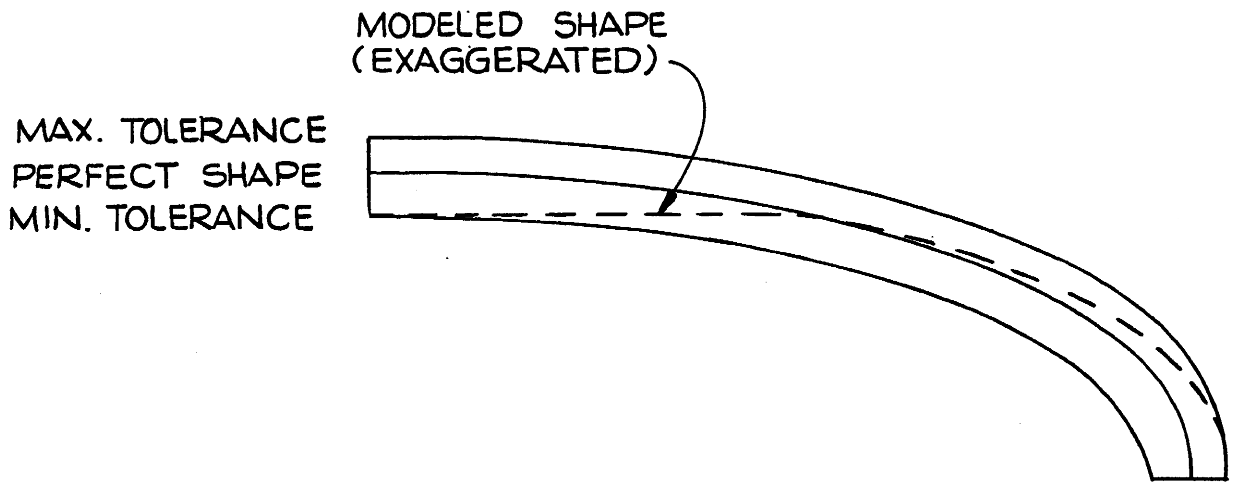
PERSONNEL AIR LOCK COLLAR AND BARREL
FINITE ELEMENT COMPUTER MODEL

(Rev. 12 1/03)

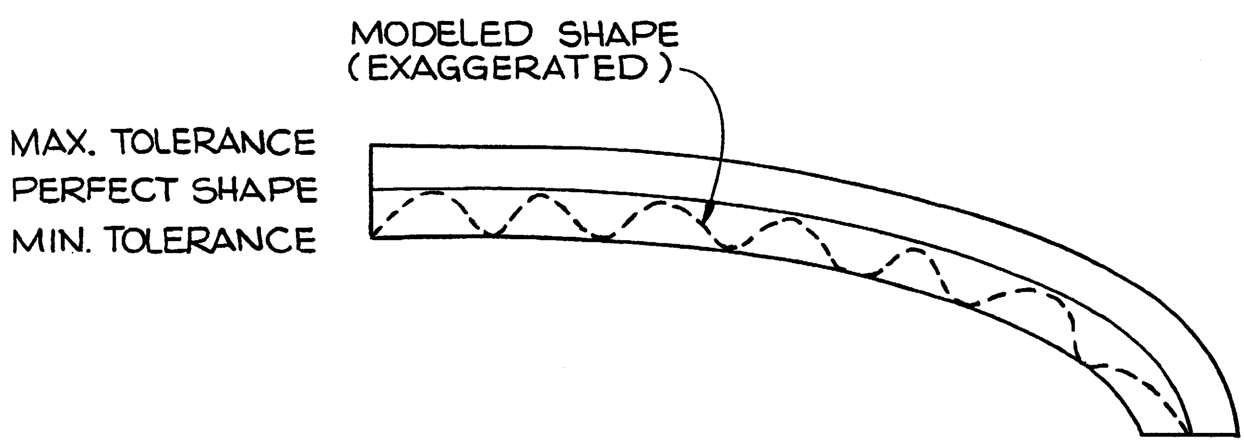
PERRY NUCLEAR POWER PLANT

Containment Vessel Airlock
Finite Element Model

Figure 3.8-21



"FLAT" DOME BUCKLING SHAPE - MARC PROGRAM



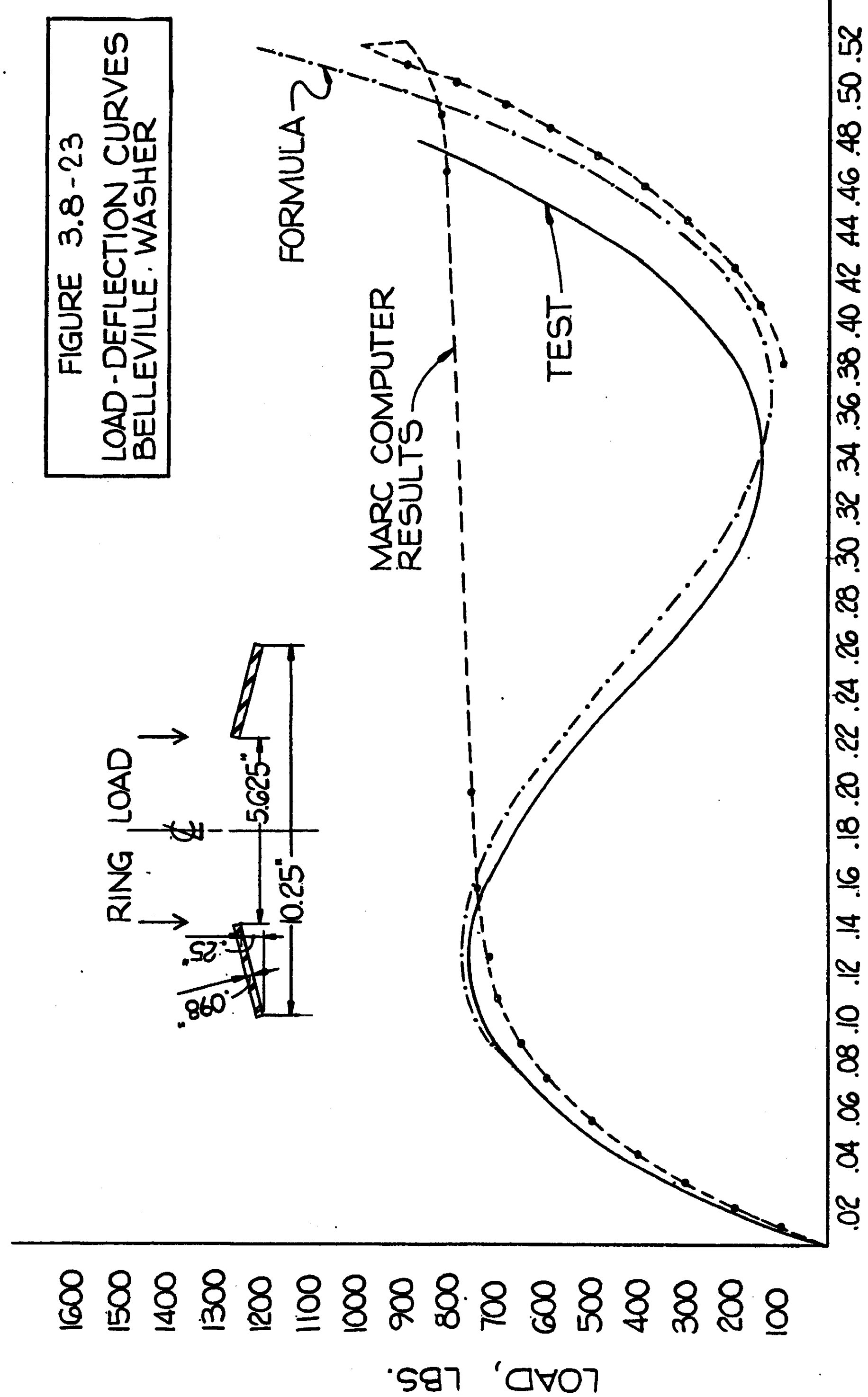
"WAVY" DOME BUCKLING SHAPE - MARC PROGRAM

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Vessel Flat Dome Buckling Program and Wavy Dome Buckling Program

Figure 3.8-22

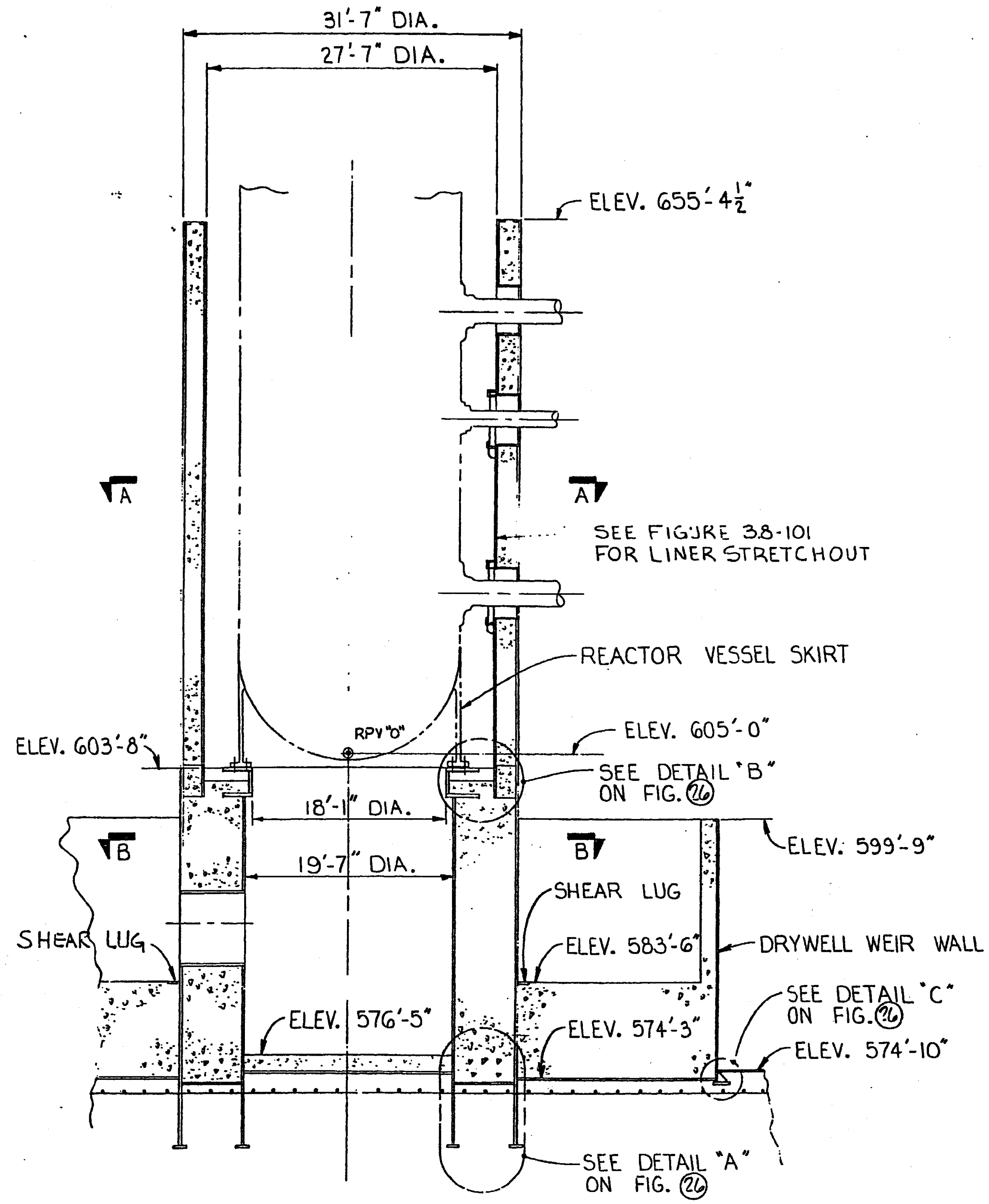


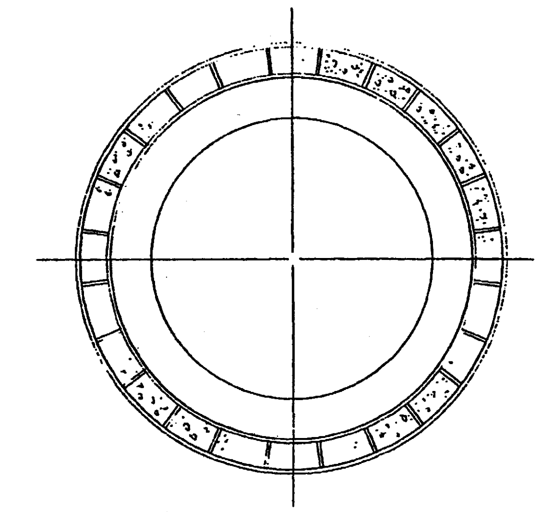
(Rev. 12 1/03)

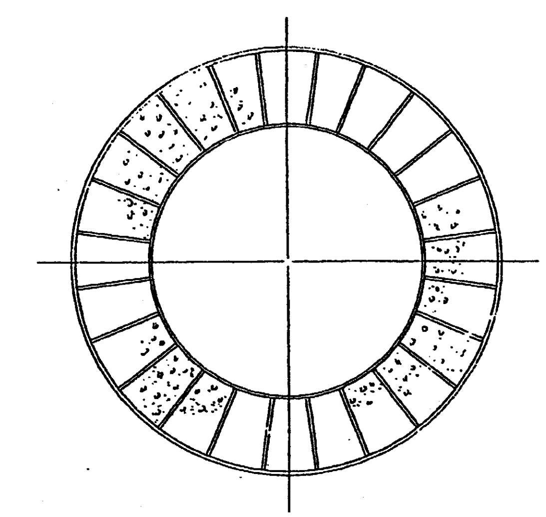
PERRY NUCLEAR POWER PLANT

Bellville Washer Load-
Deflection Curve

Figure 3.8-23




SECTION A-A

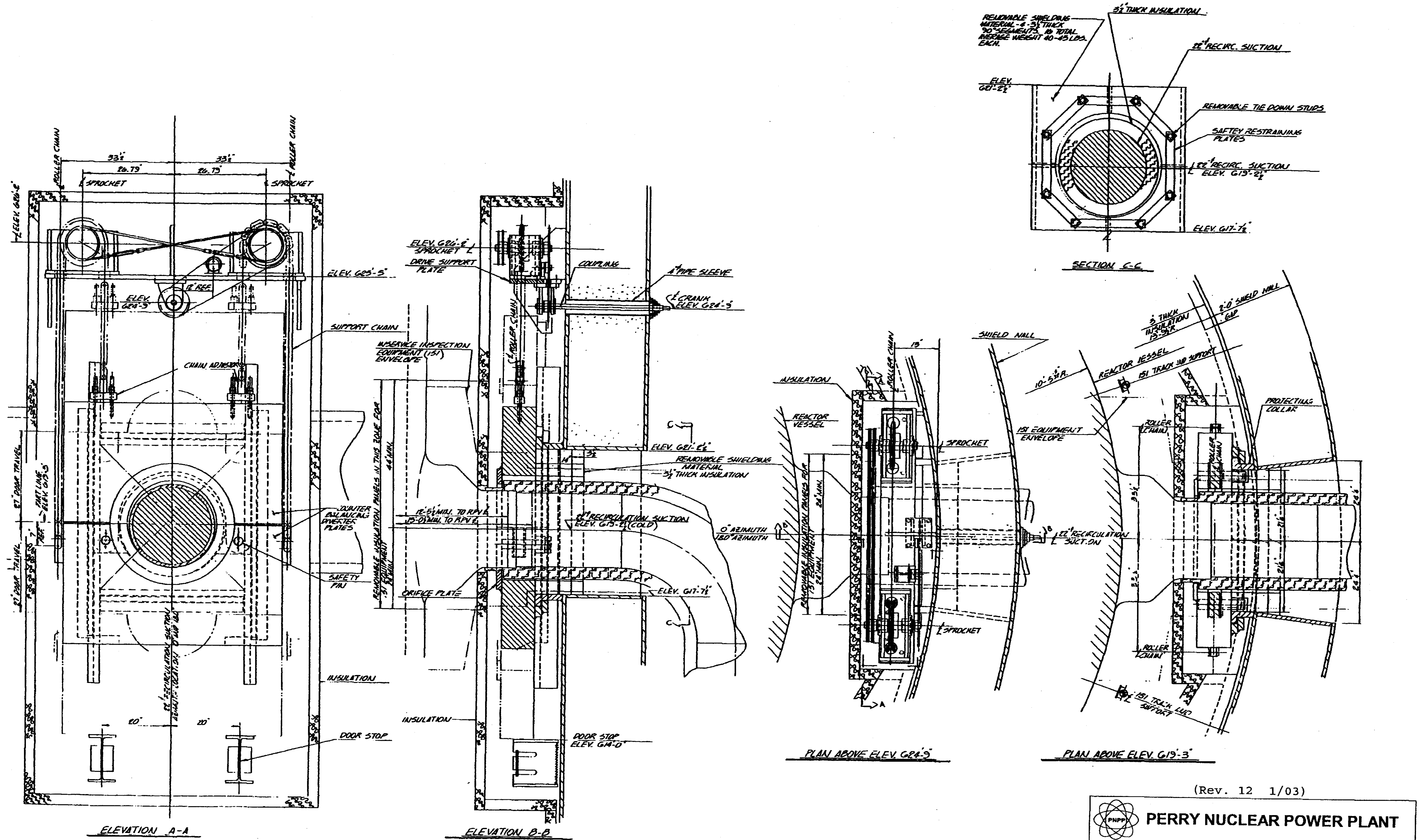

SECTION B-B

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

General Arrangement of Bio Shield
Wall, RPV Pedestal and Mat

Figure 3.8-24

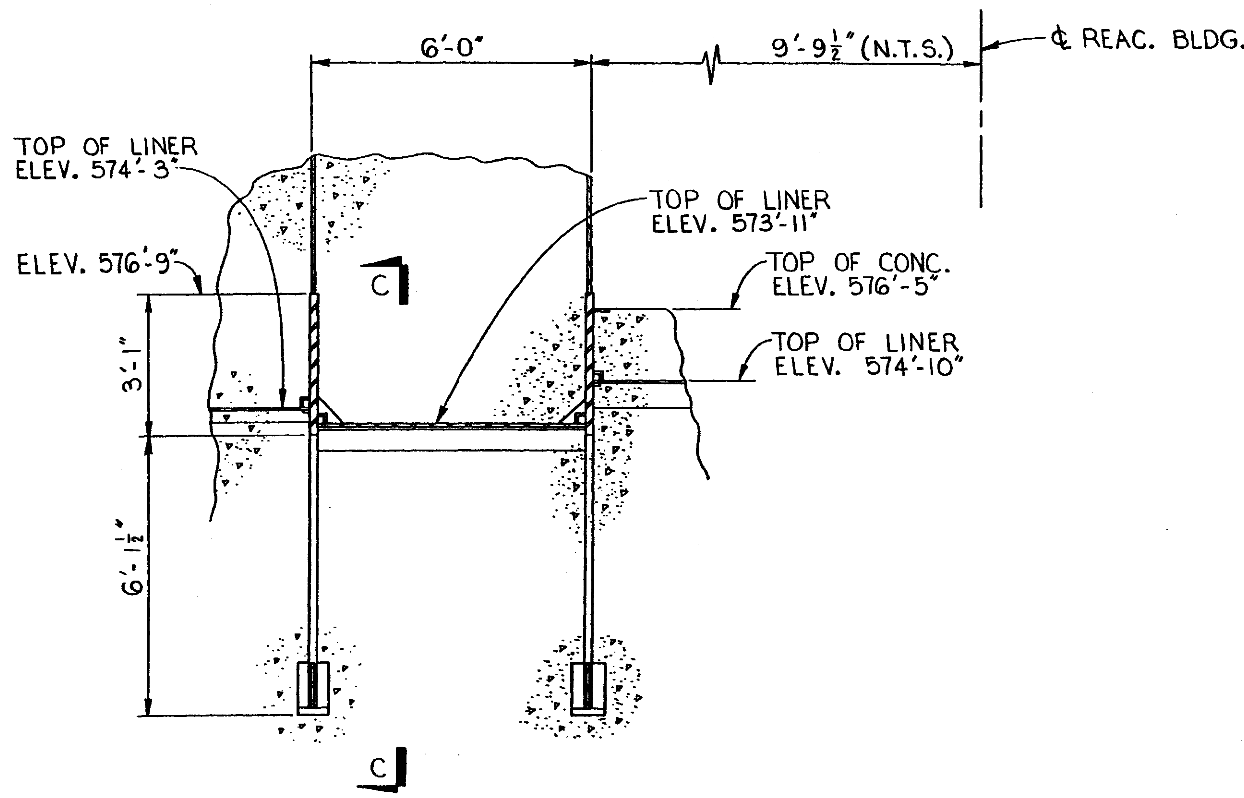


(Rev. 12 1/03)

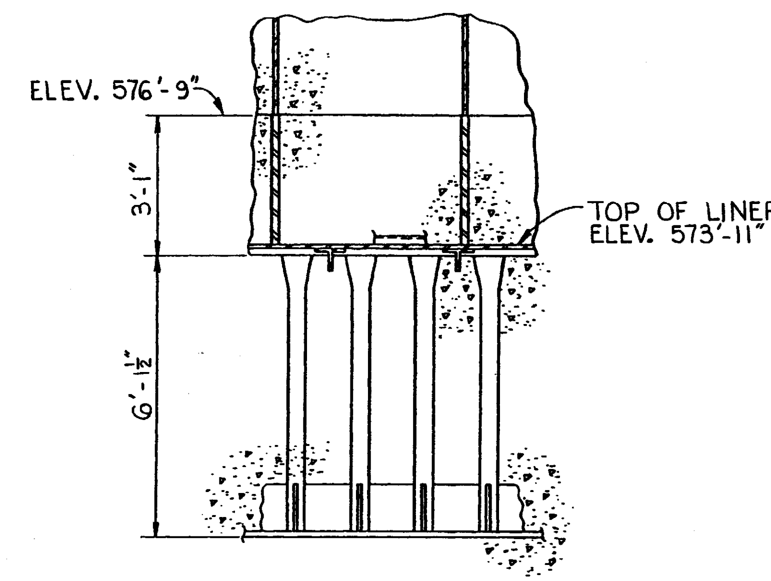
PERRY NUCLEAR POWER PLANT

Recirculation Suction
Flow Diverter

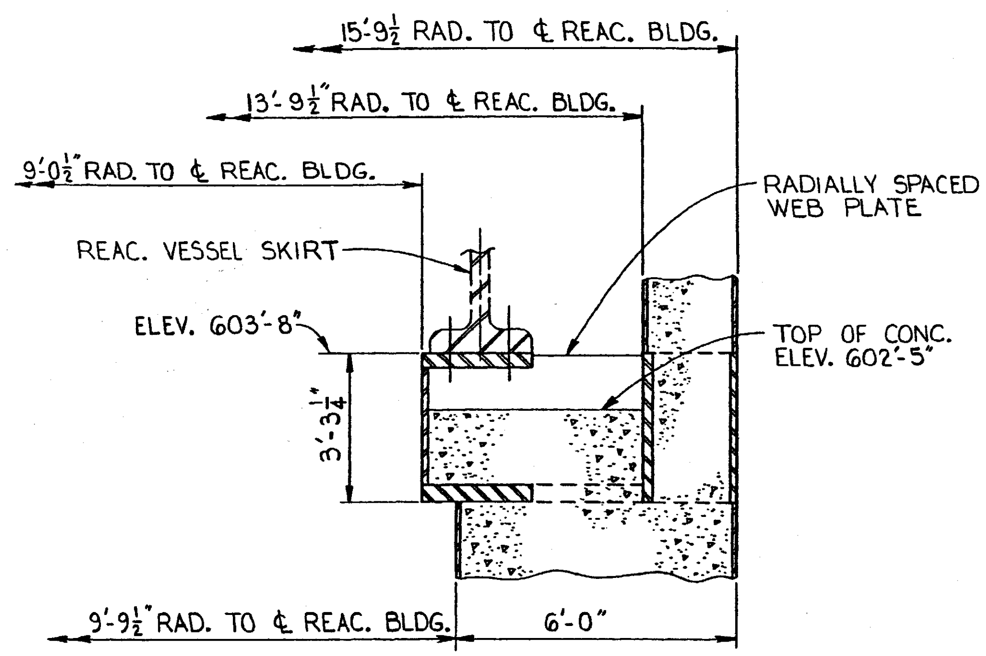
Figure 3.8-25
(Dwg. E-018-001)



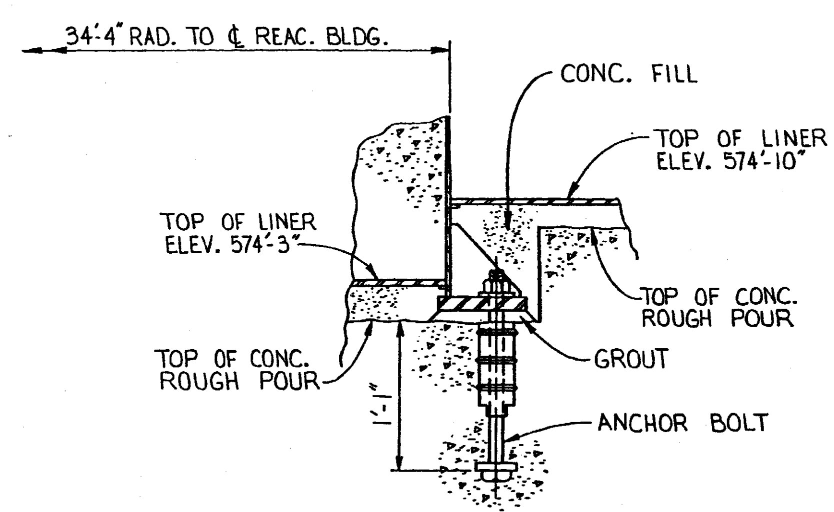
DETAIL "A"
SHOWING RPV PEDESTAL EMBEDMENT



SECTION C-C



DETAIL "B"
SHOWING REACTOR HOLD DOWN AREA



DETAIL "C"
SHOWING WEIR WALL LINER EMBEDMENT

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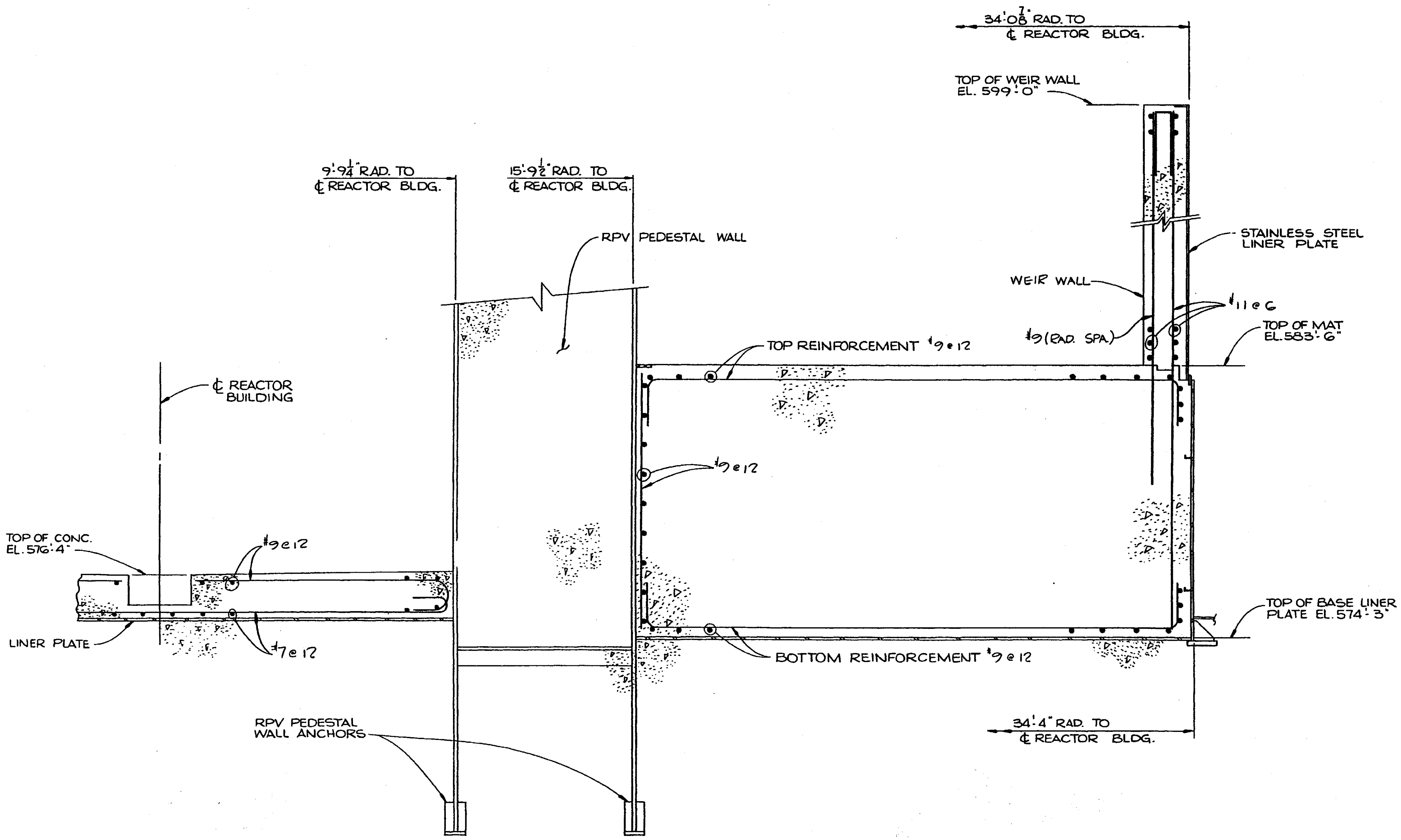
PERRY NUCLEAR POWER PLANT

RPV Pedestal Embedment Weir Wall
Liner Embedment and Reactor
Hold Down Area

Figure 3.8-26

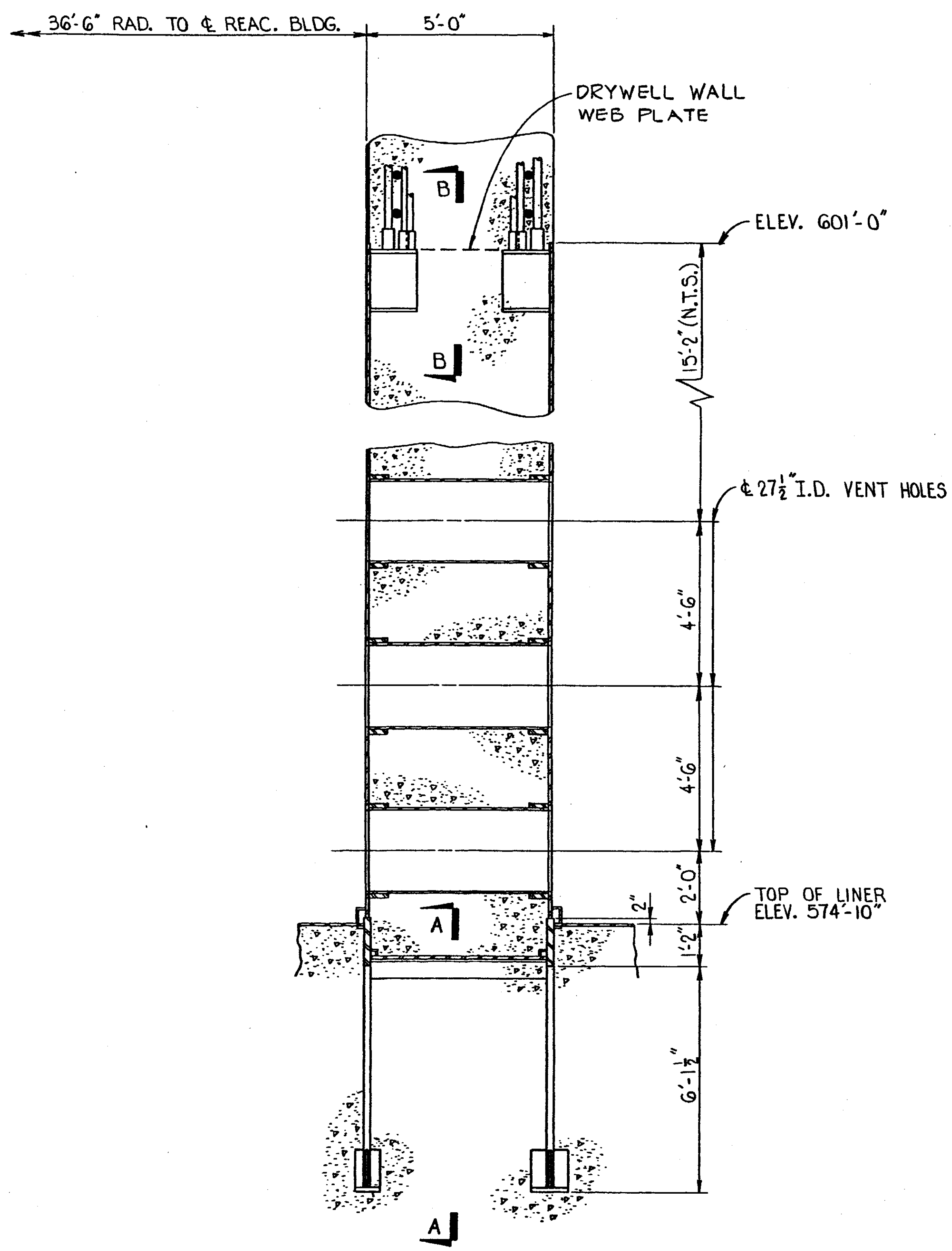


(Rev. 12 1/03)

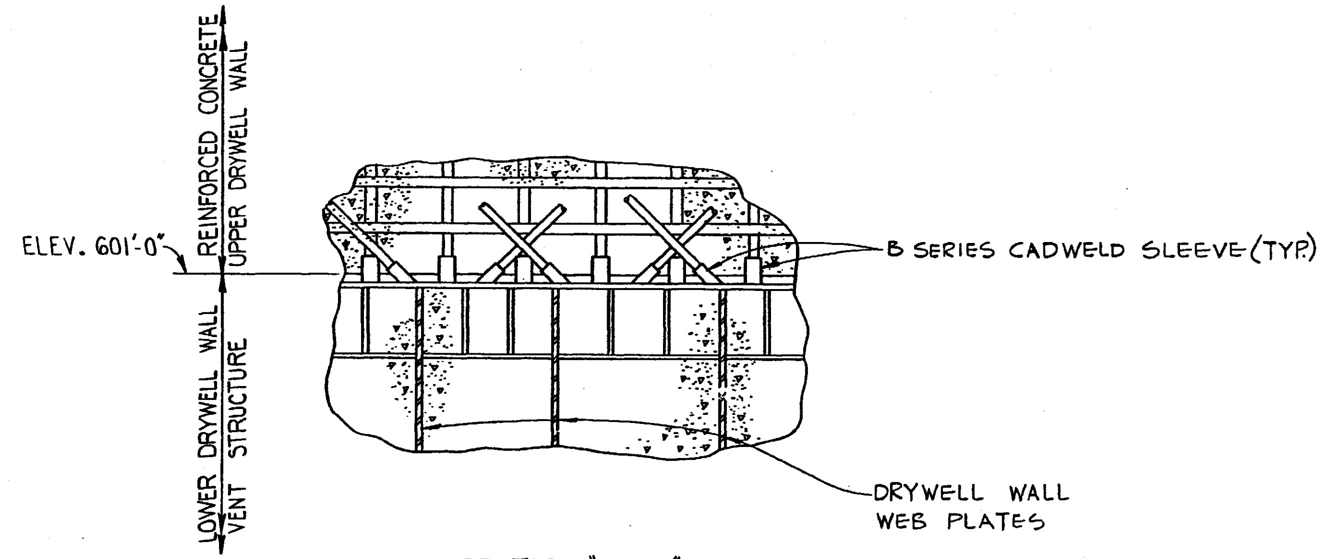
PERRY NUCLEAR POWER PLANT

Typical Reinforced Section of
Weir Mat and Weir Wall

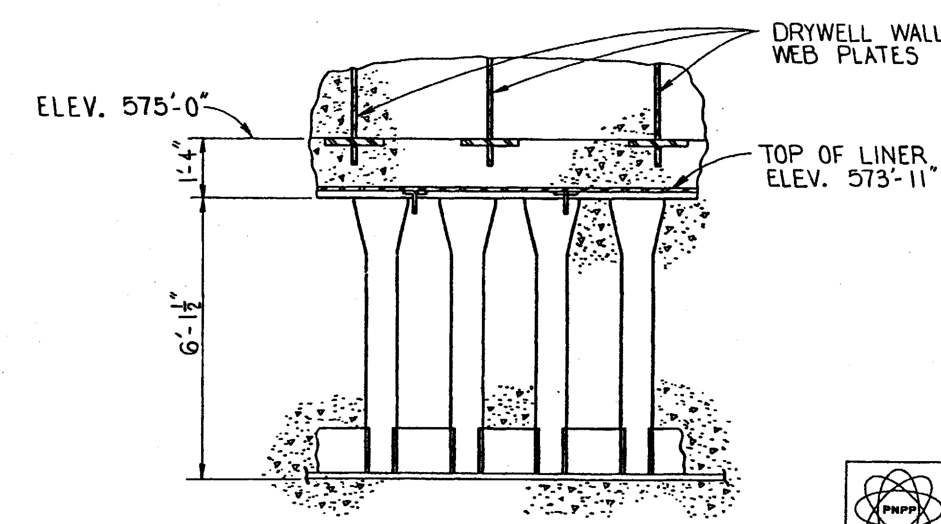
Figure 3.8-27



SECTION SHOWING DRYWELL WALL VENT STRUCTURE & BASE MAT EMBEDMENT



SECTION "B-B"



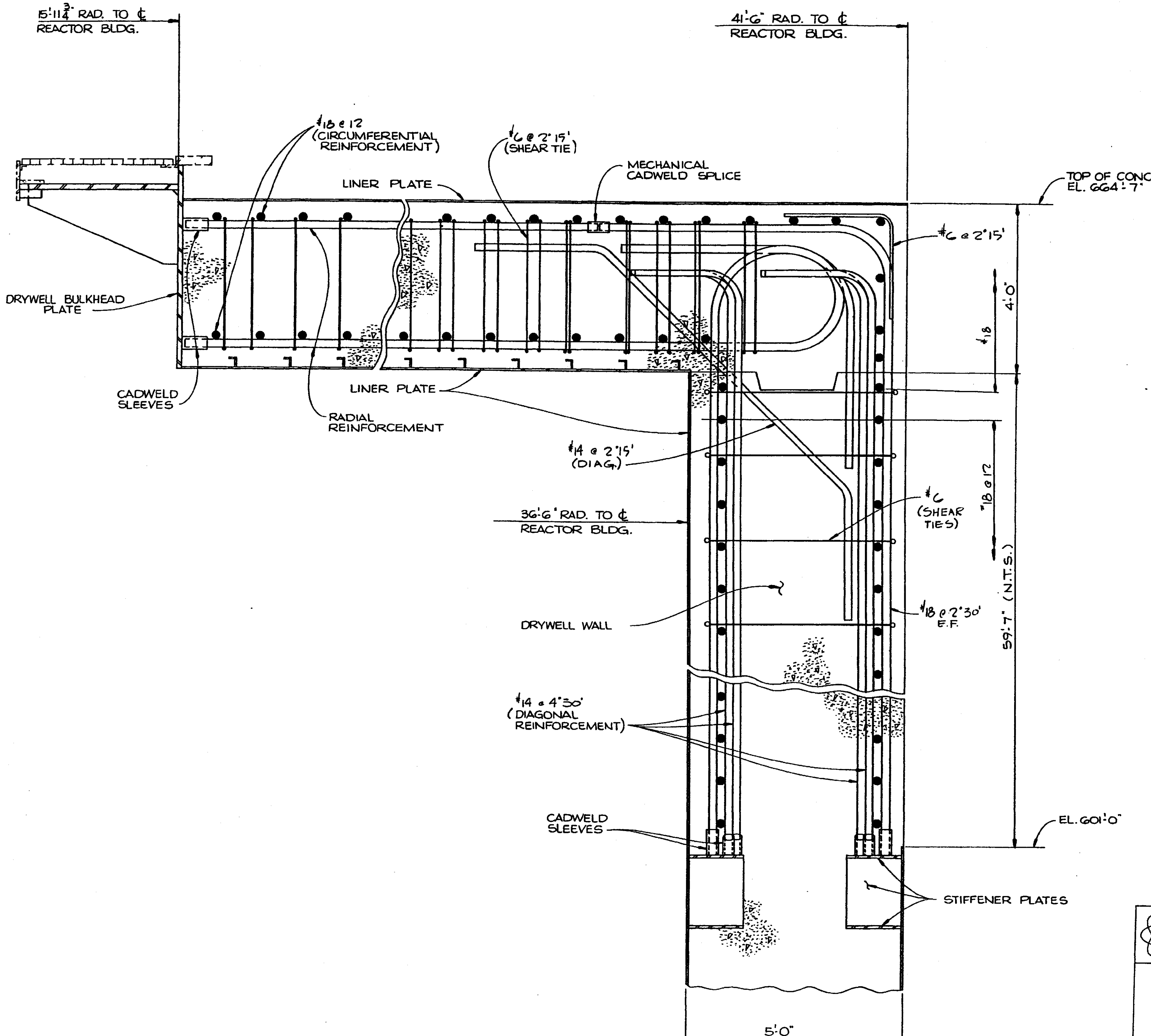
SECTION A-A

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Vent Structure,
Base Mat Embedment and
Transition to Reinforced Concrete

Figure 3.8-28



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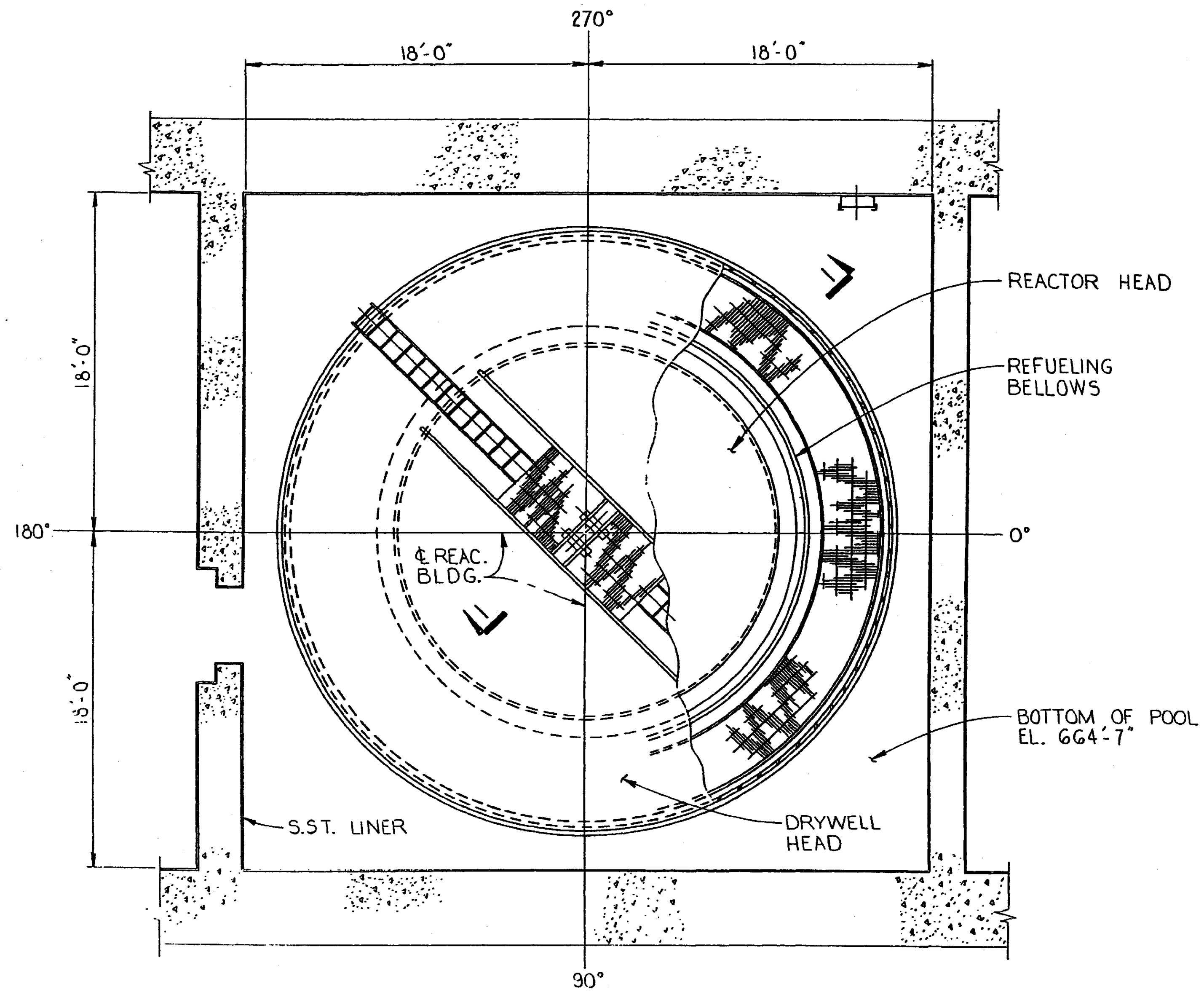
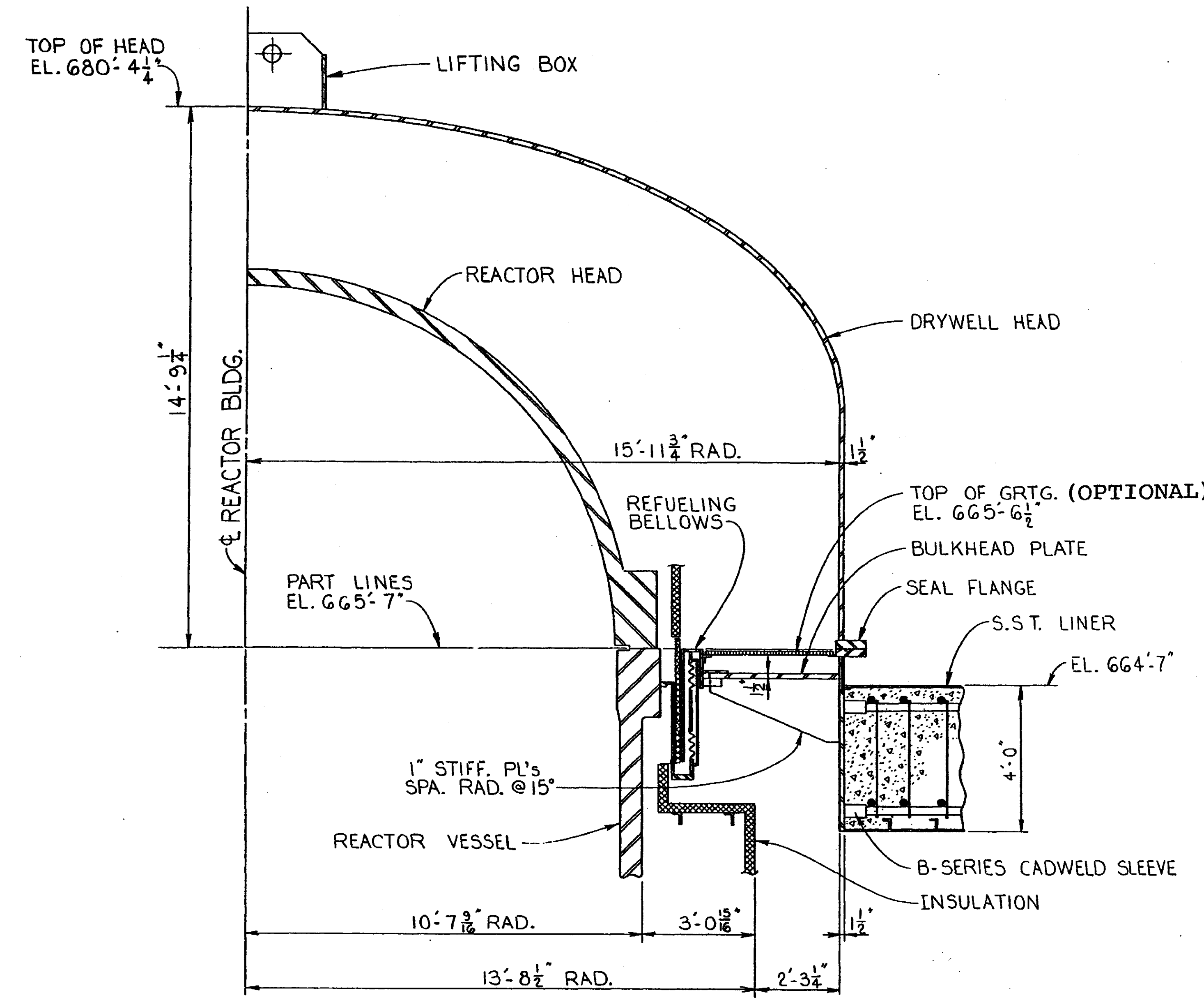
PERRY NUCLEAR POWER PLANT

Typical Reinforced Section
Through Drywell Wall

Figure 3.8-29



PLAN
DRYWELL HEAD



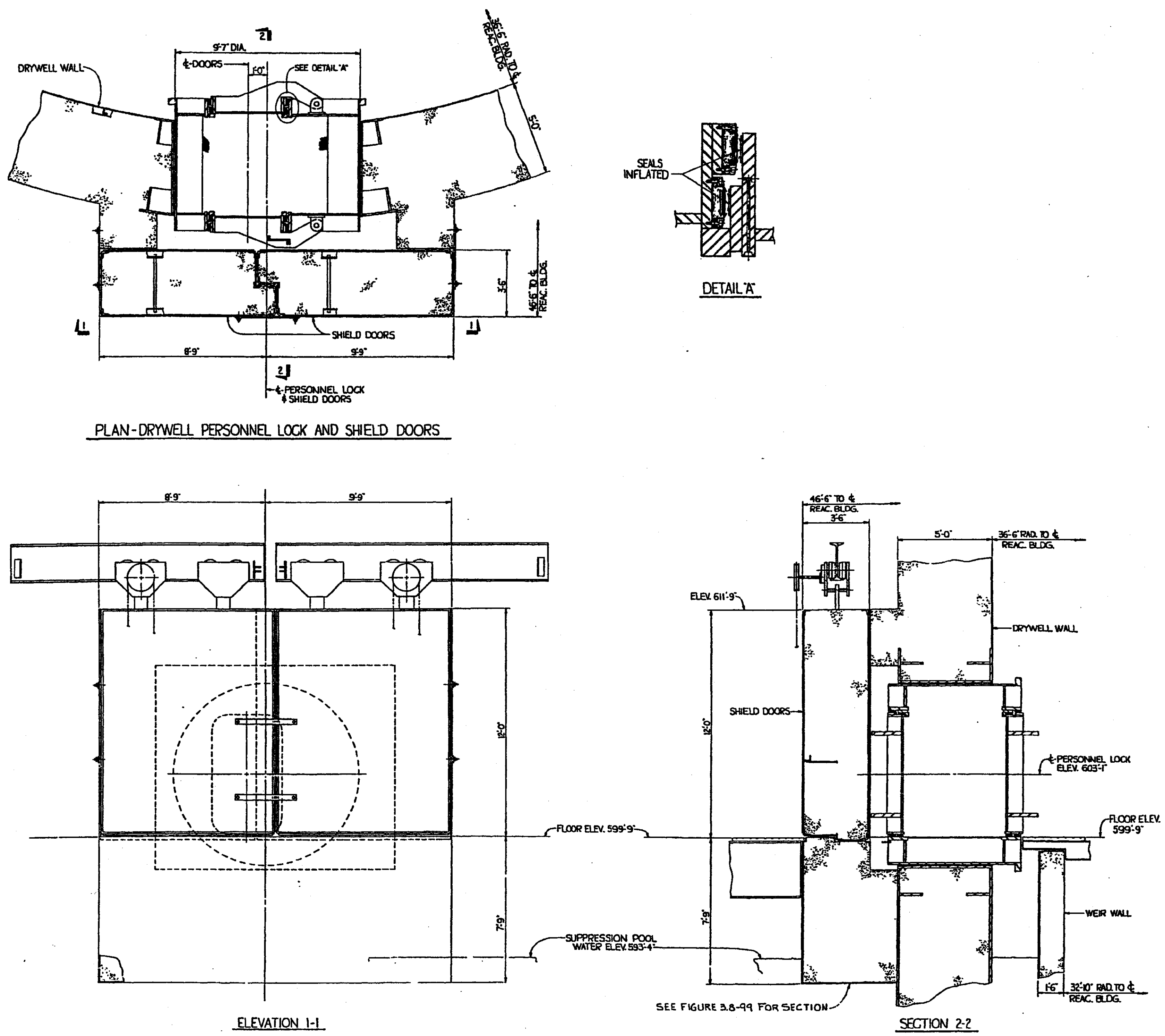
SECTION 1-1

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Details of Drywell Head,
Bulkhead Plate and Seal

Figure 3.8-30



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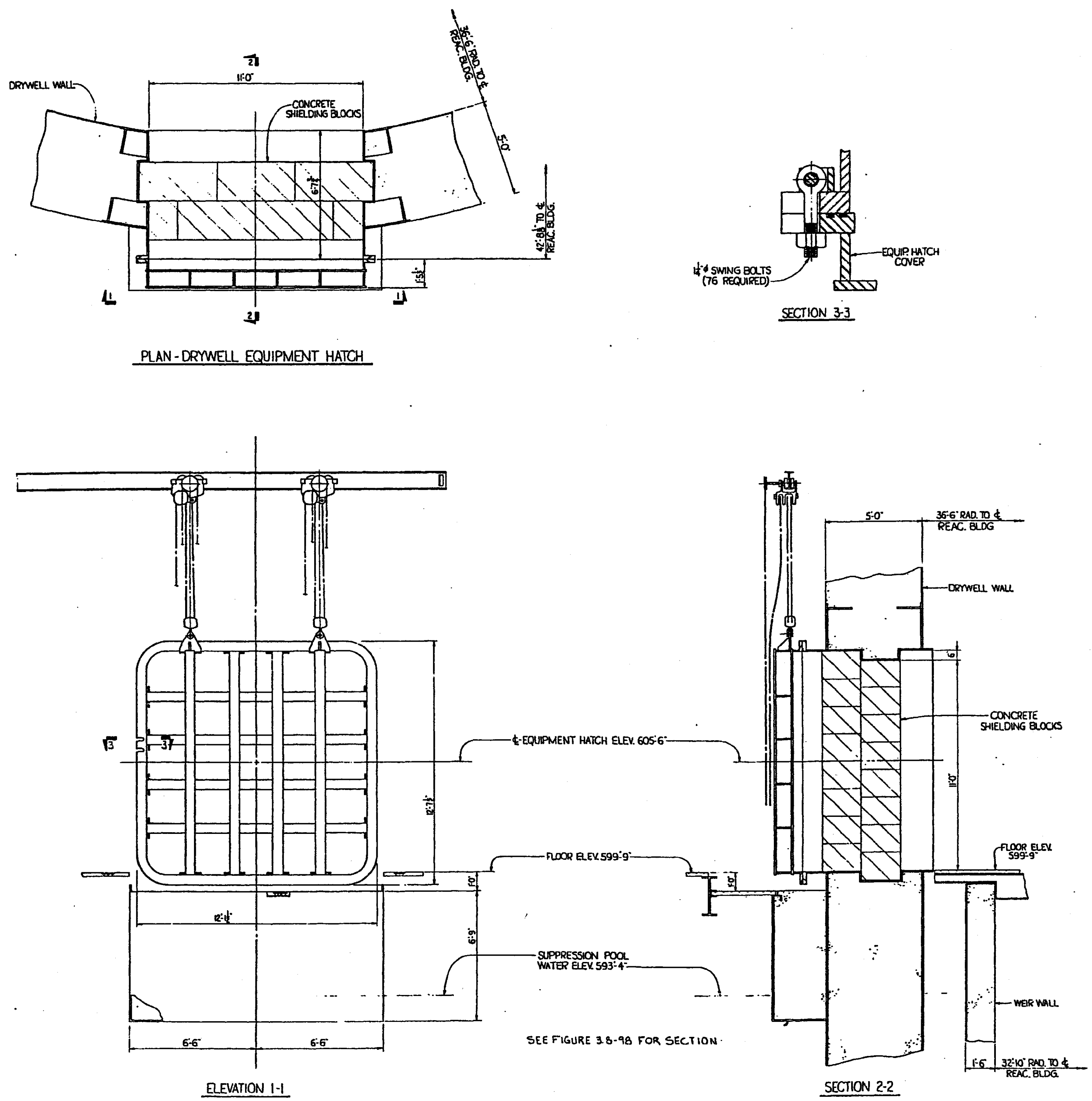
PERRY NUCLEAR POWER PLANT

Drywell Personnel Access Lock
and Shield Door

Figure 3.8-31



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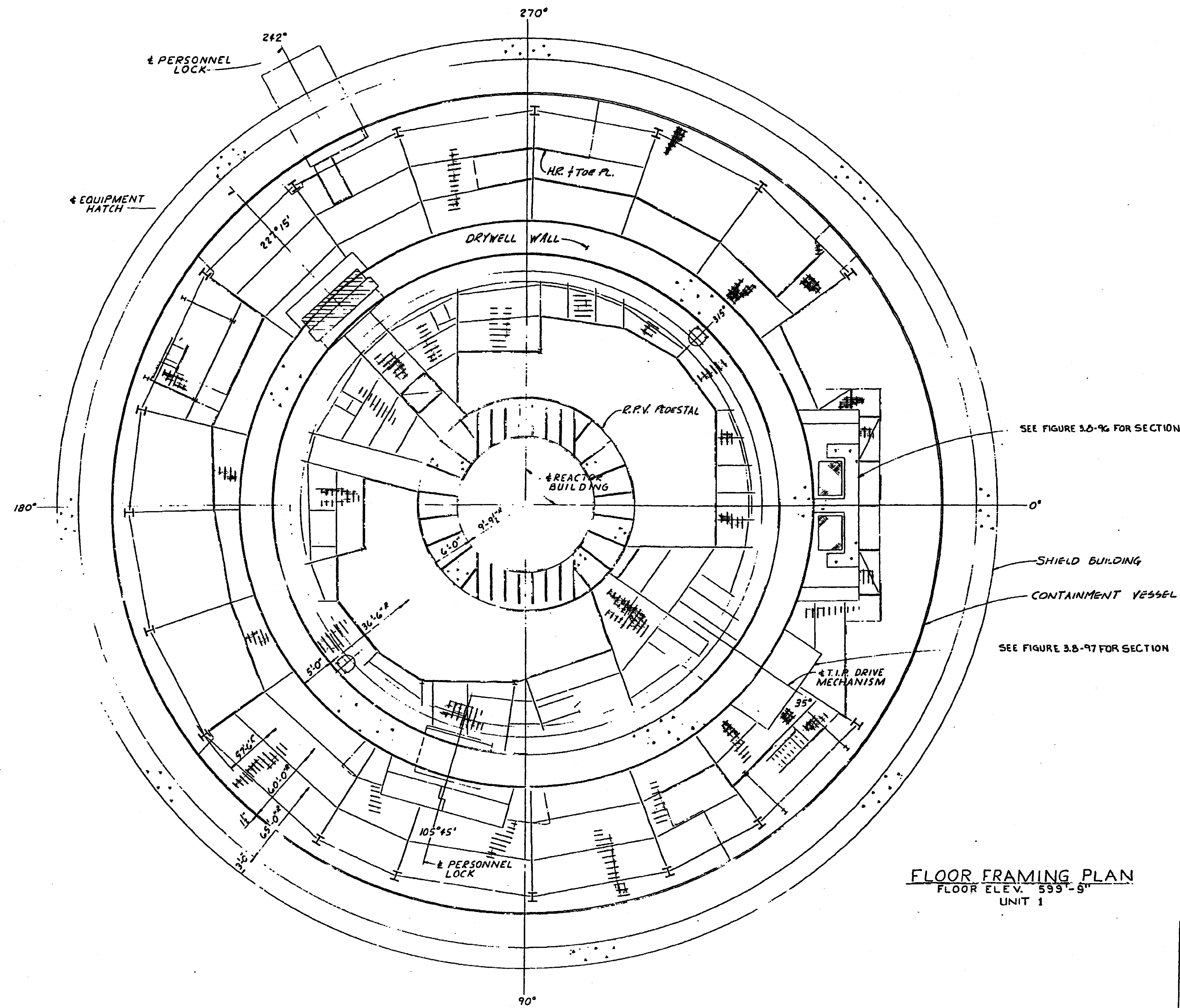
PERRY NUCLEAR POWER PLANT

Drywell Equipment Access Hatch

Figure 3.8-32



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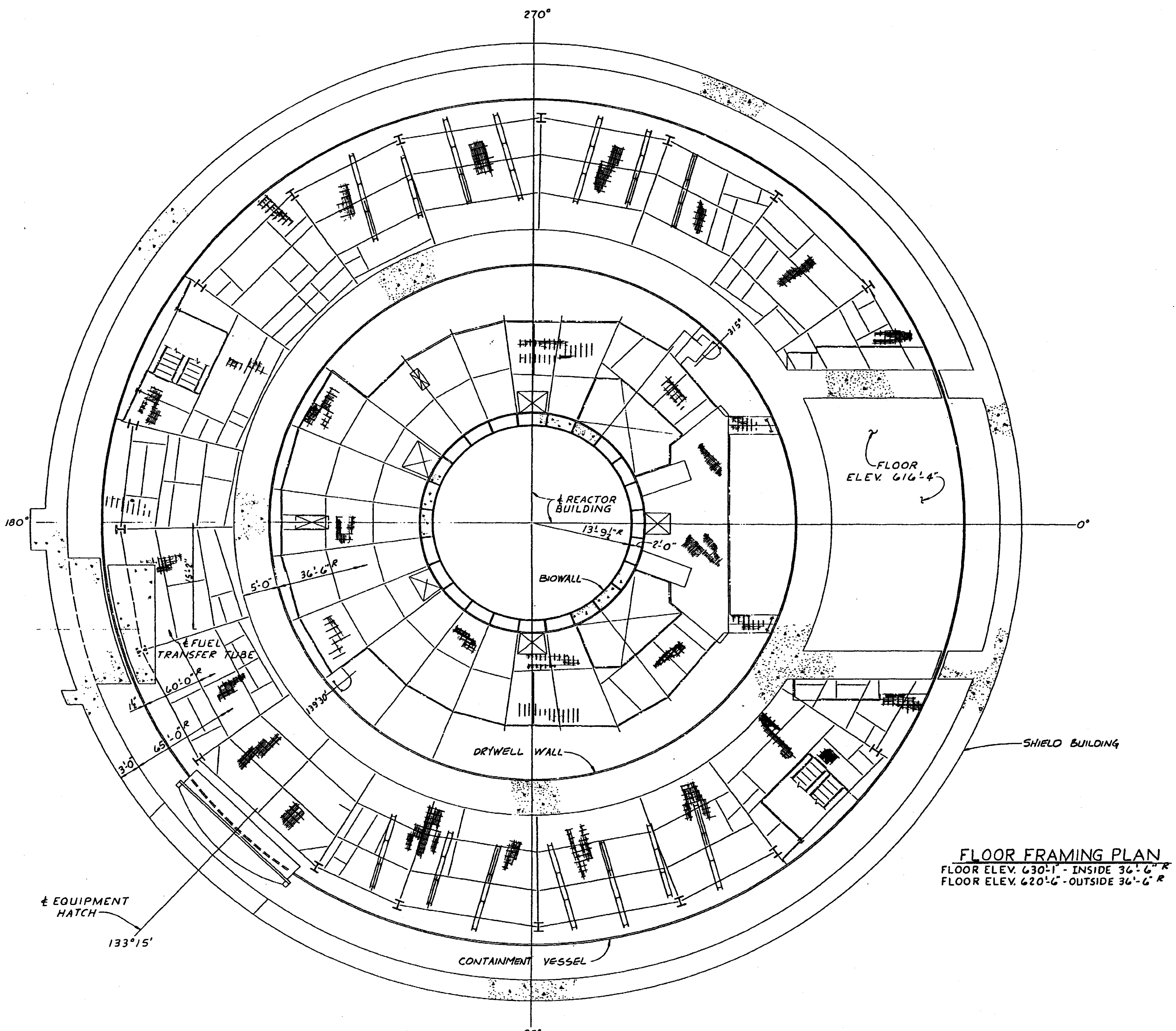
PERRY NUCLEAR POWER PLANT

Reactor Building Complex Floor Plan at Elev. 599'-9"

Figure 3.8-33



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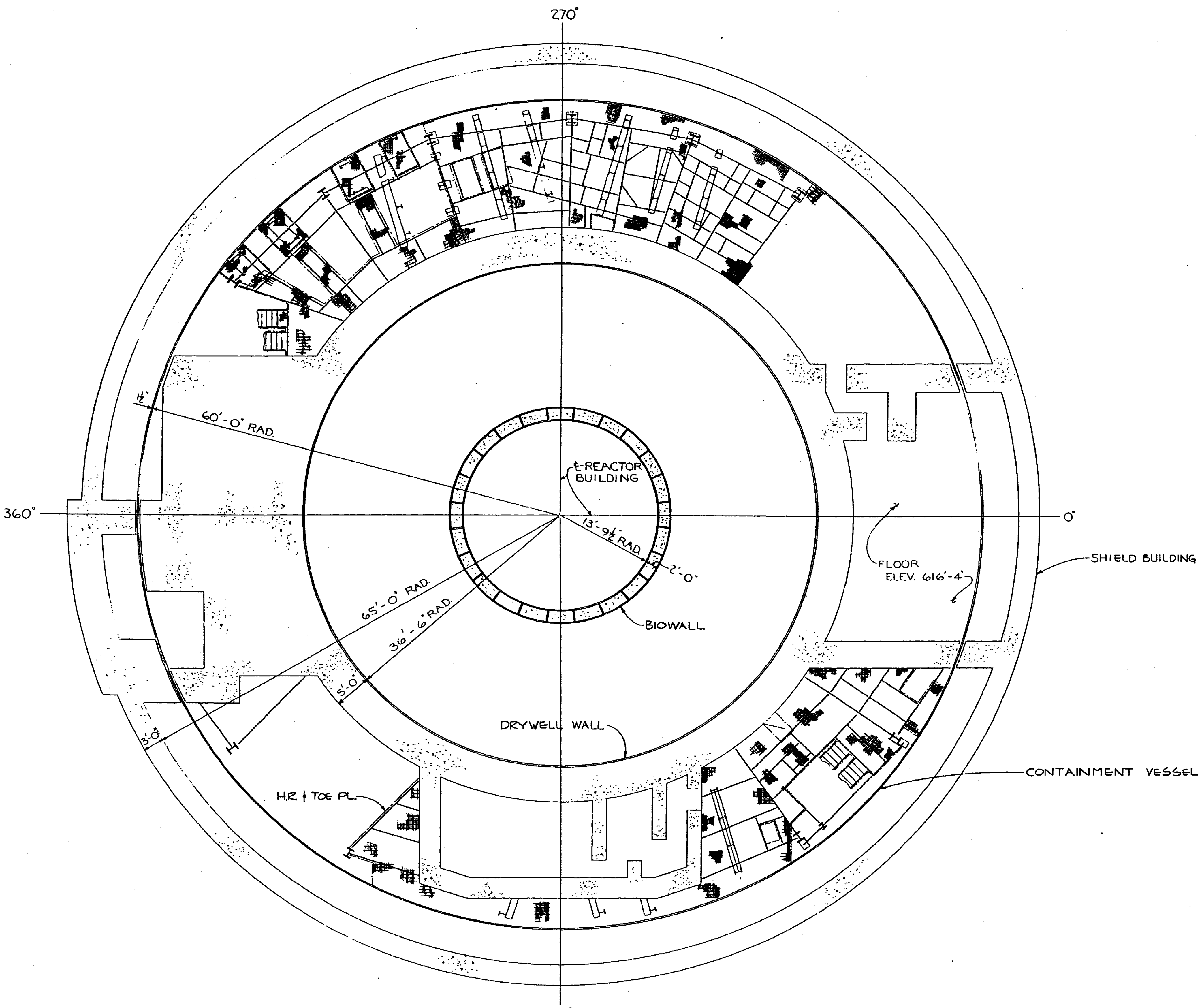
PERRY NUCLEAR POWER PLANT

Reactor Building Complex
Floor Plan at Elev. 620′-6″
and 630′-1″

Figure 3.8-34



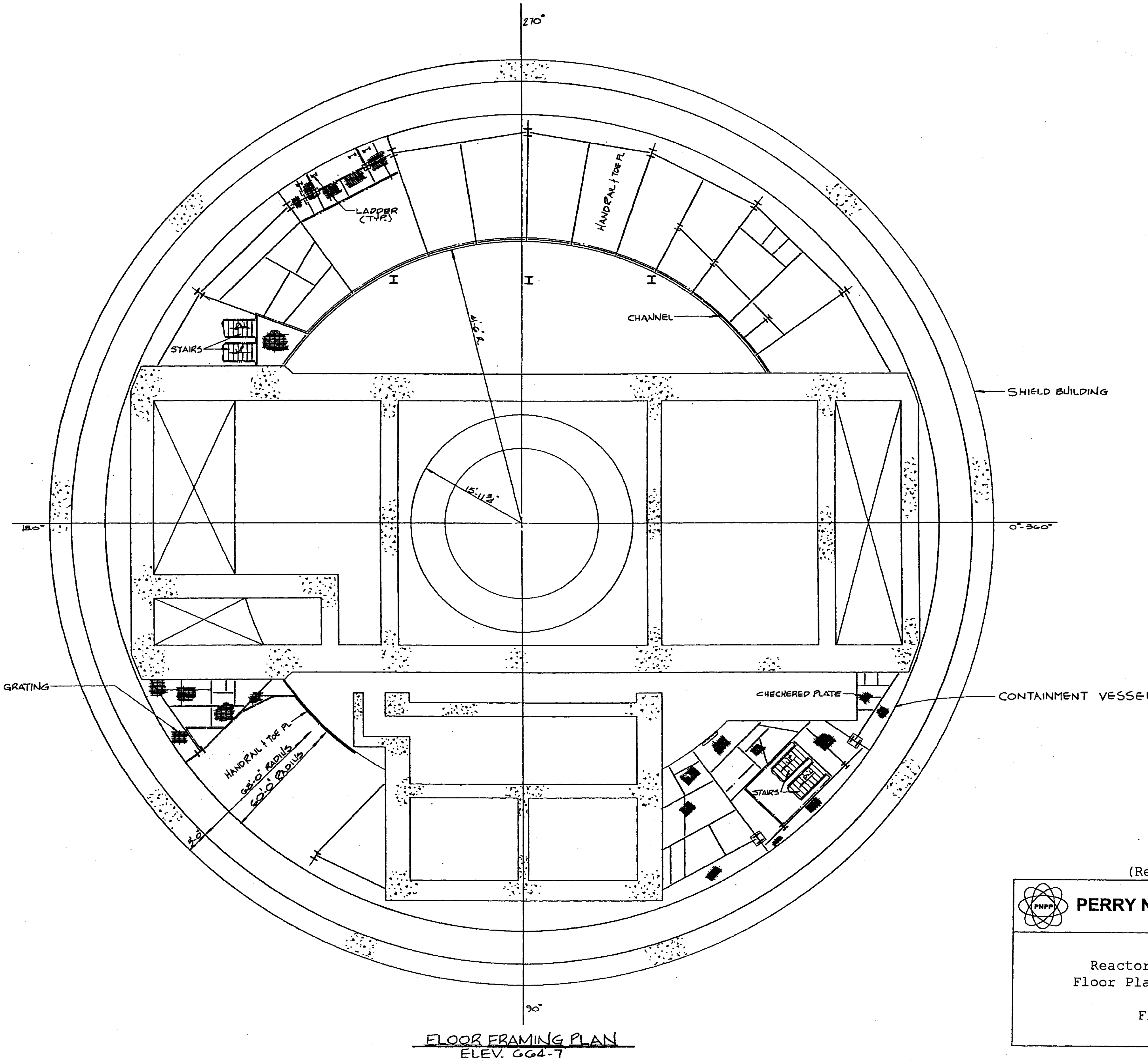
FLOOR FRAMING PLAN
EL. 642'-0"

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Building Complex
Floor Plan at Elev. 642'-0"

Figure 3.8-35

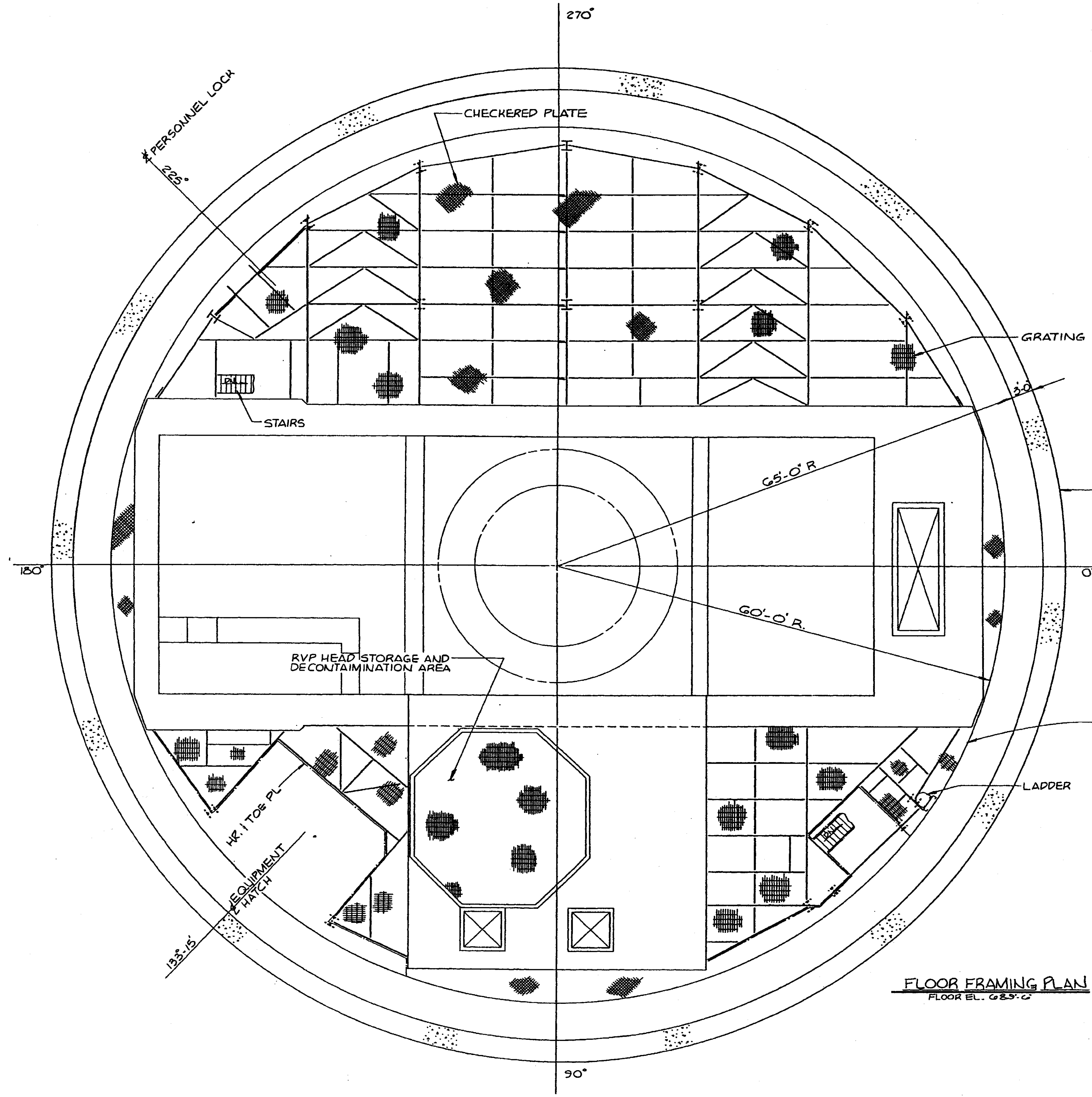


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Building Complex
Floor Plan at Elev. 664'-7"

Figure 3.8-36

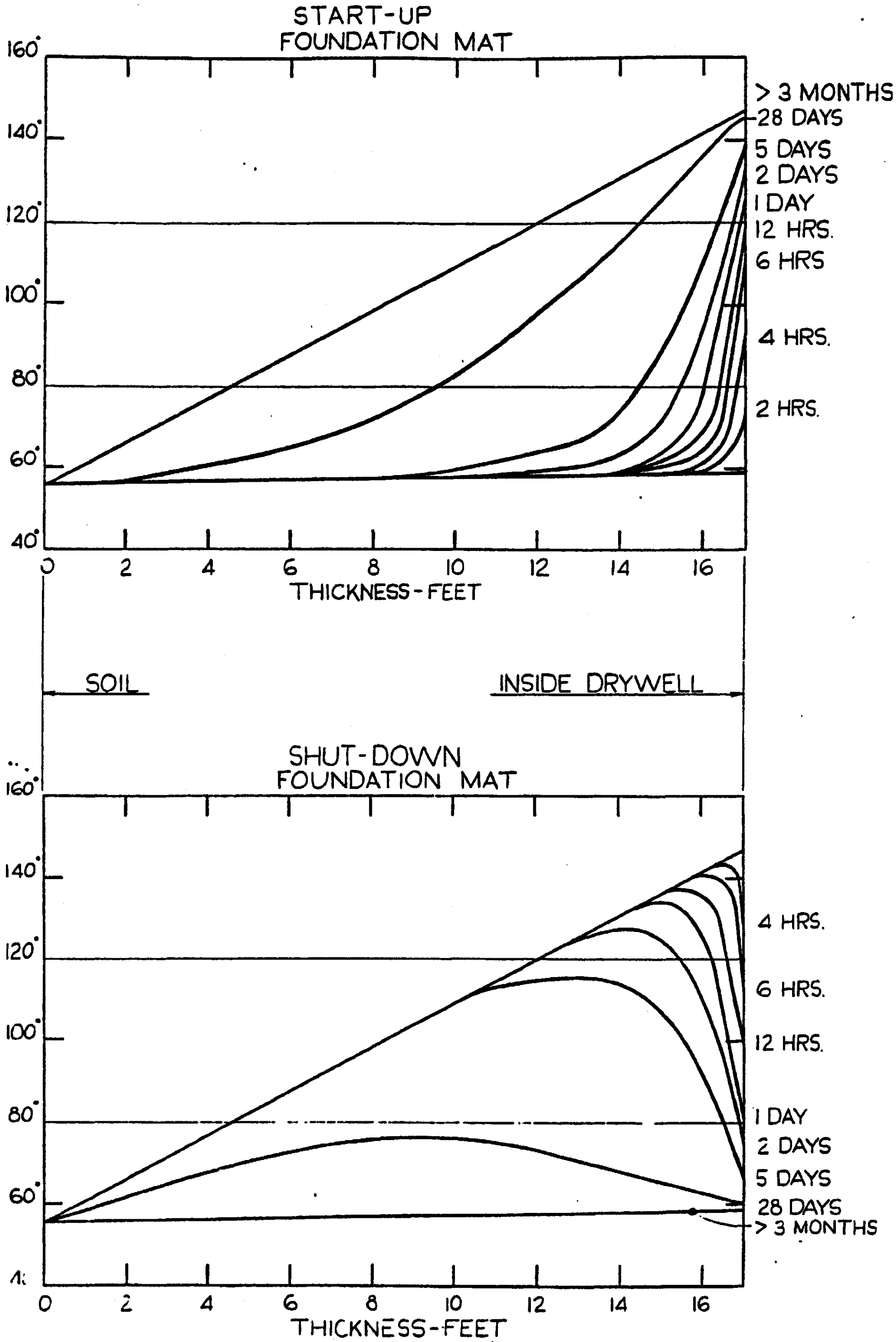


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Building Complex
Floor Plan at Elev. 689'-6"

Figure 3.8-37



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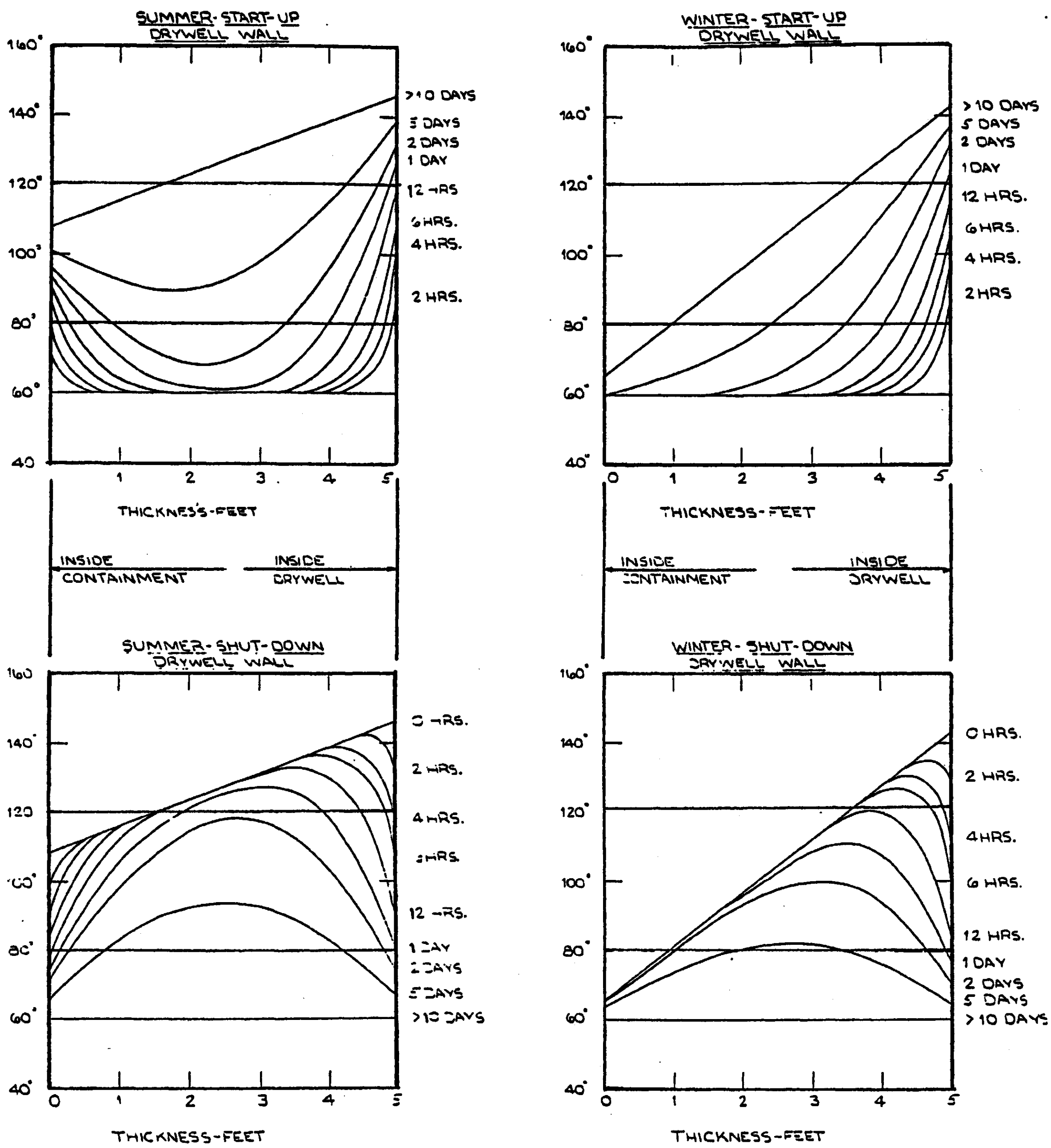
PERRY NUCLEAR POWER PLANT

Temperature Profiles Through Foundation Mat

Figure 3.8-38



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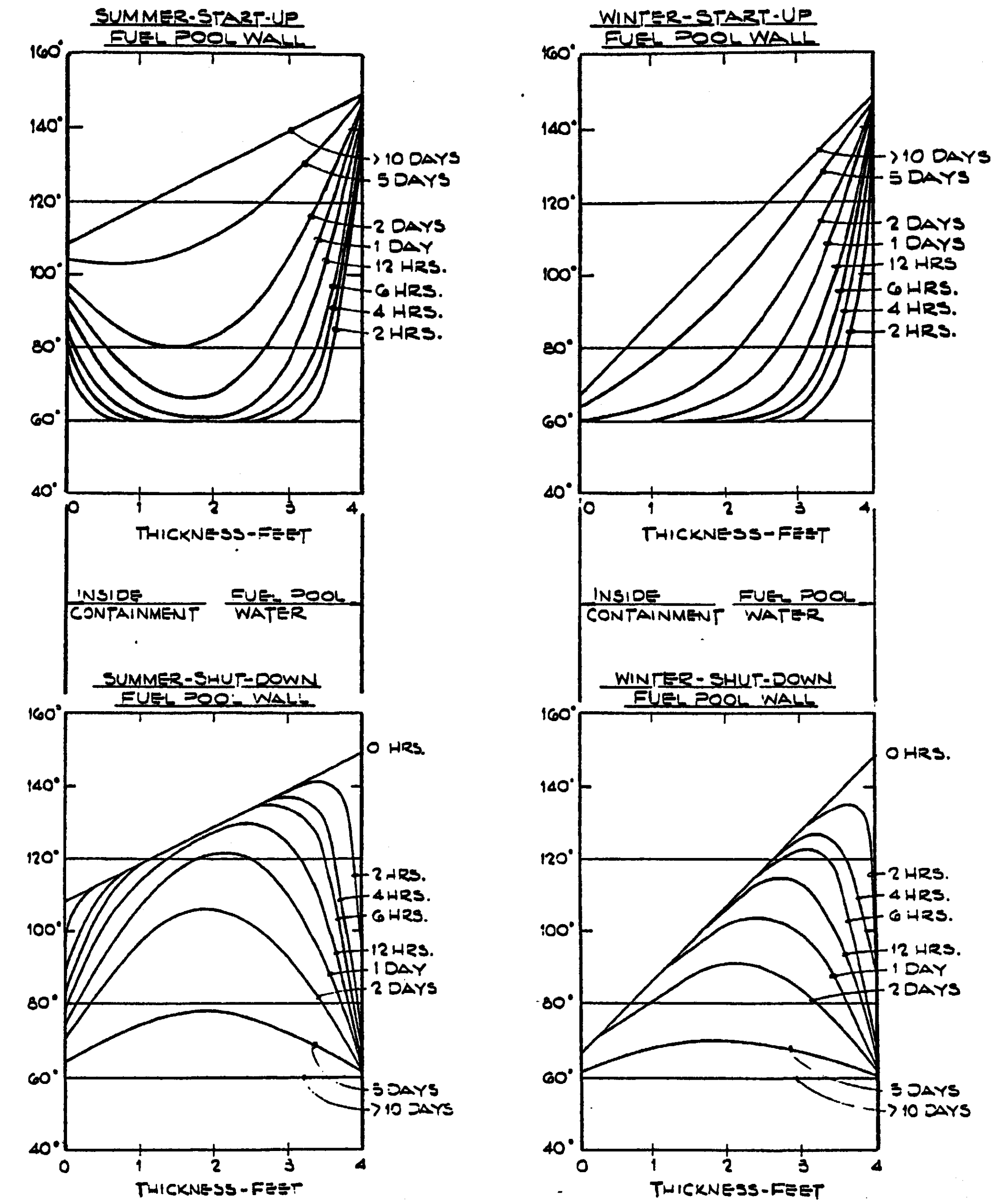
PERRY NUCLEAR POWER PLANT

Temperature Profiles Through Drywell Wall

Figure 3.8-40



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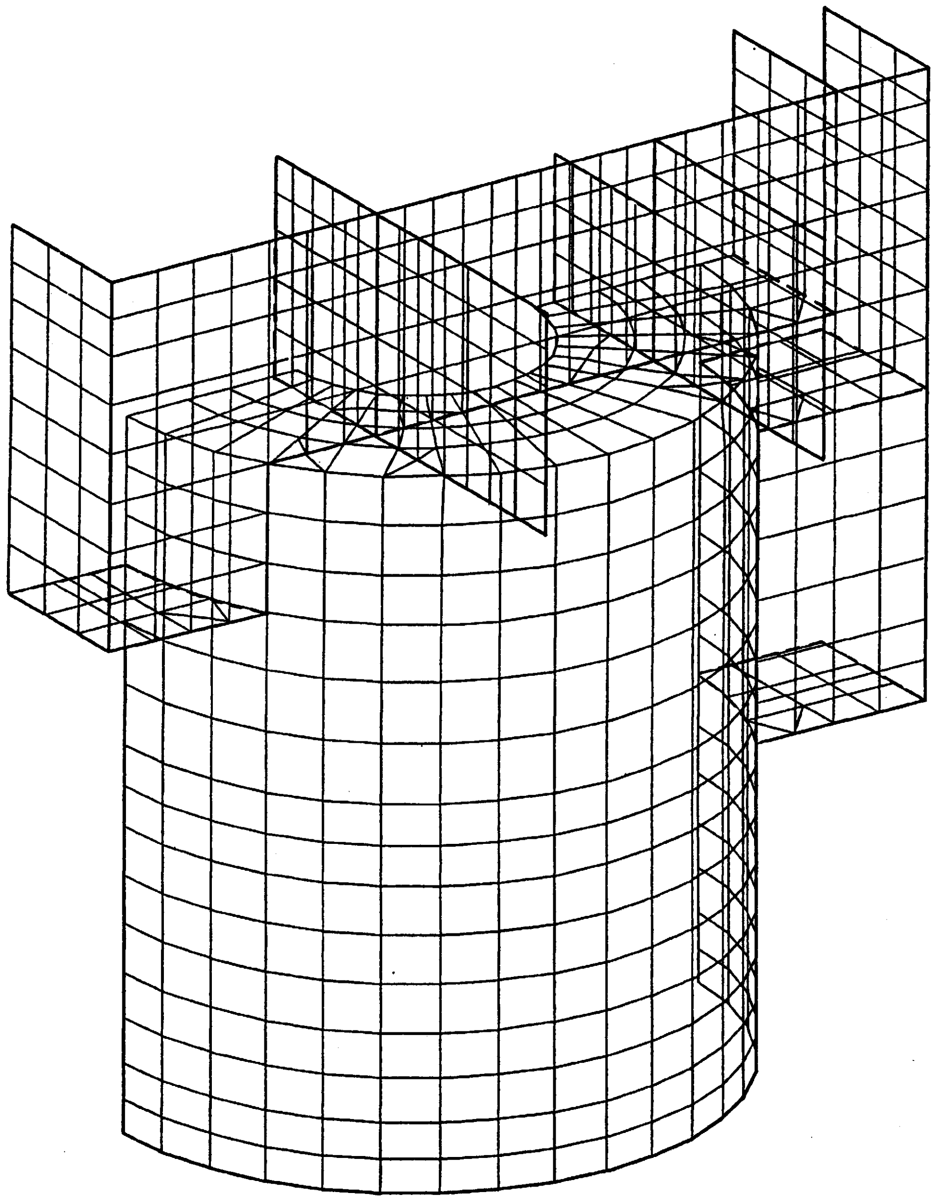
PERRY NUCLEAR POWER PLANT

Temperature Profiles Through Drywell Top Slab and Fuel Pool Wall

Figure 3.8-41

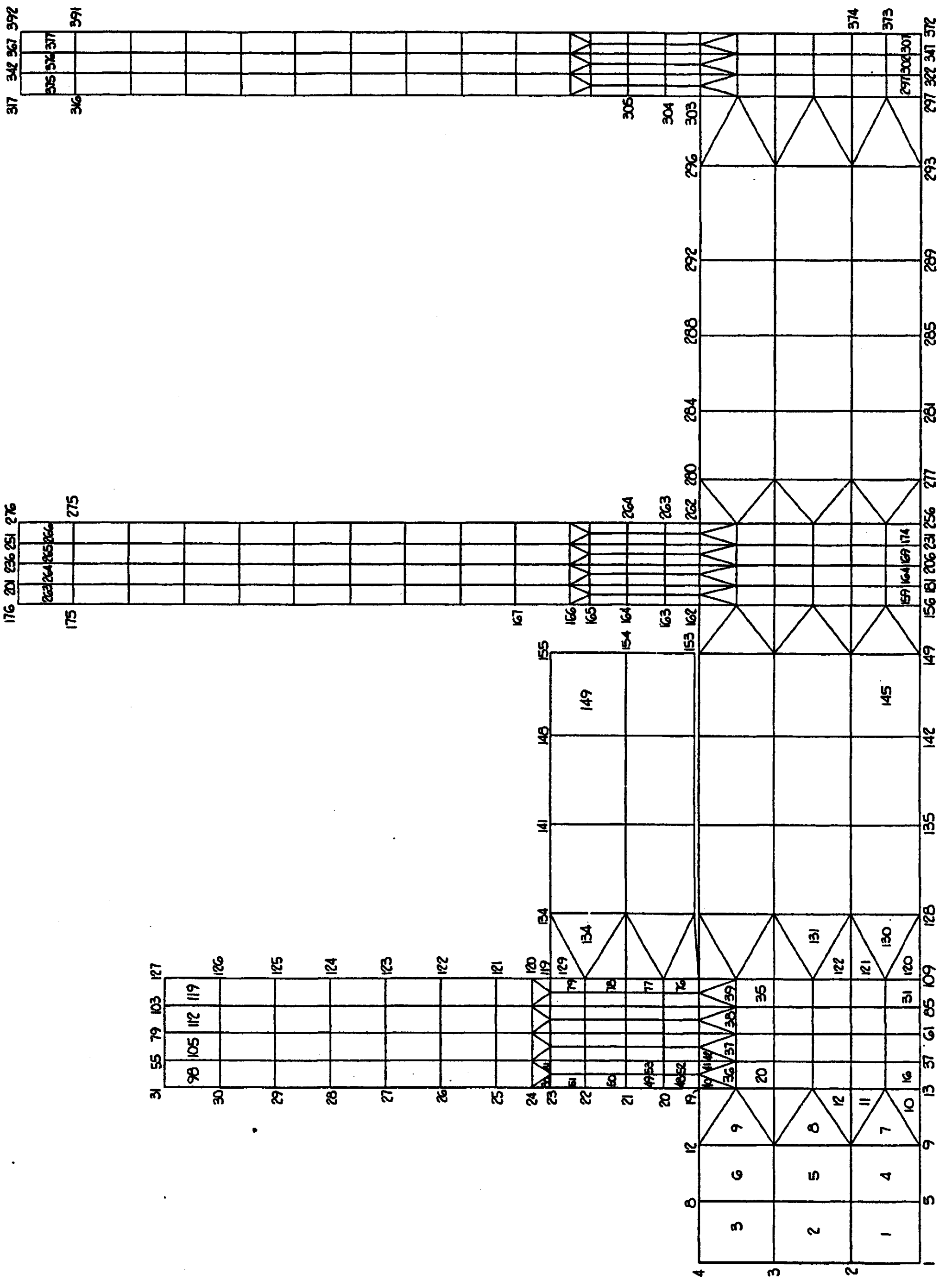


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Finite Element Model

Figure 3.8-42

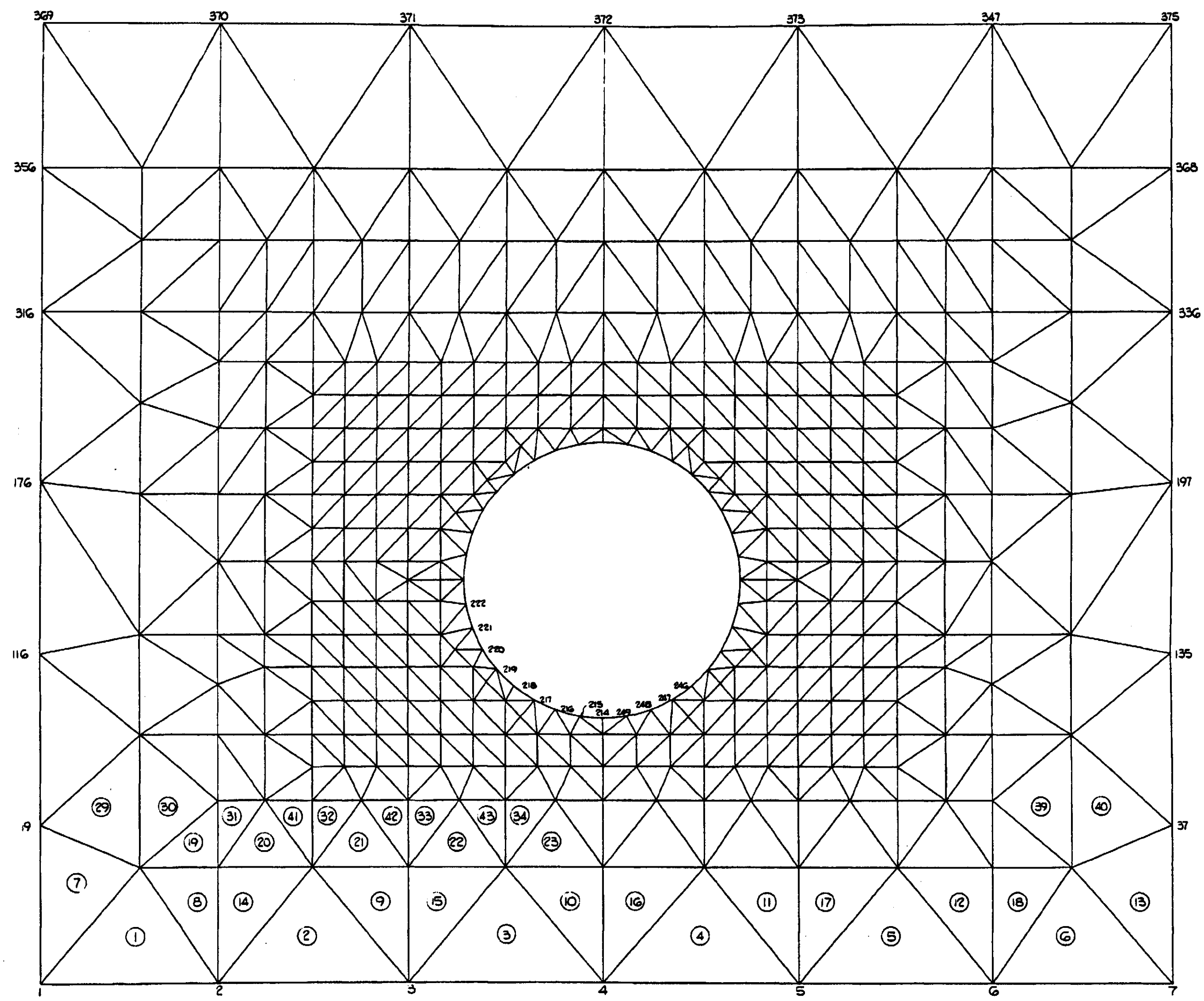


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Elastic Model for Predicting
Thermal Induced Forces

Figure 3.8-43

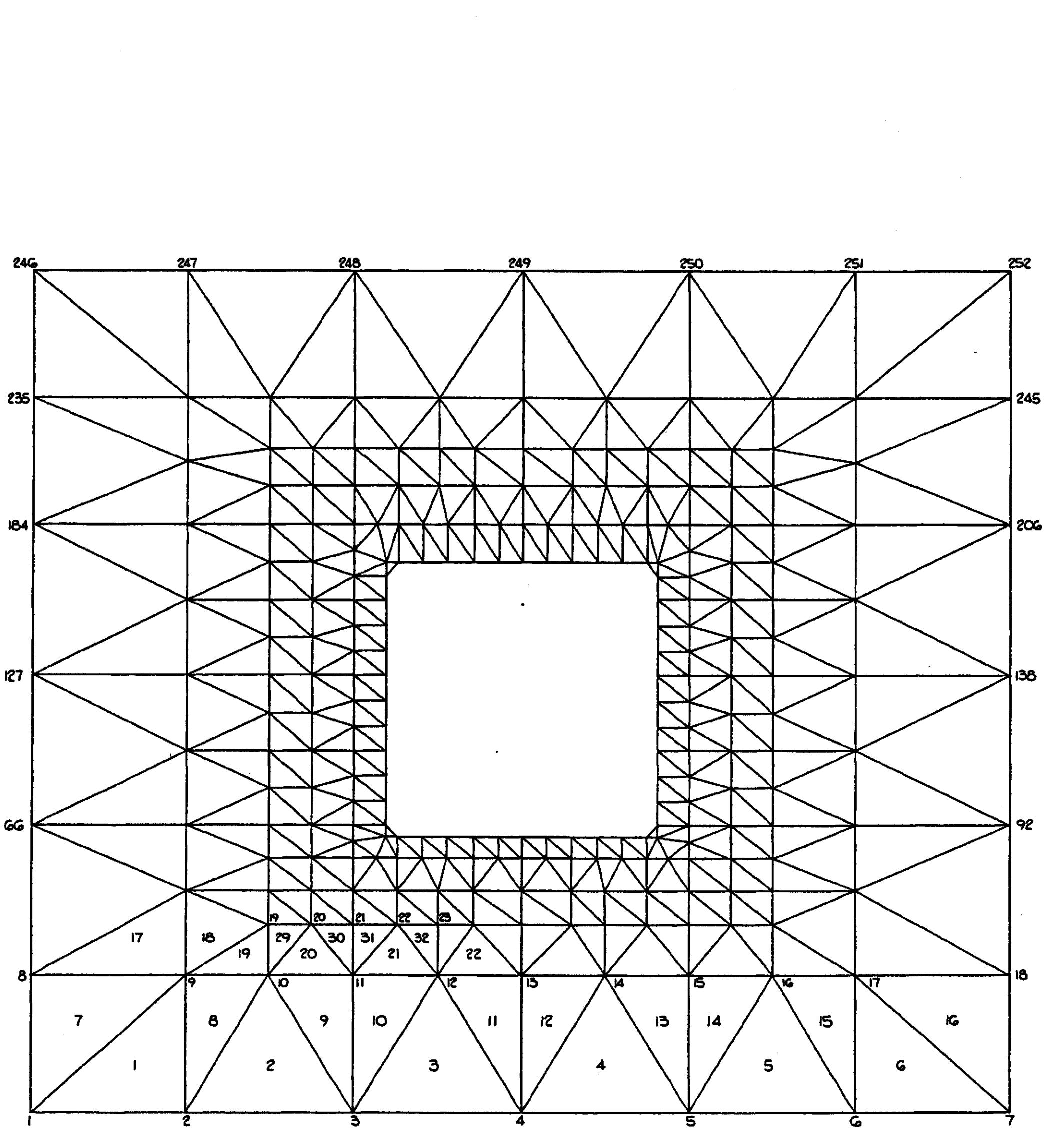


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Personnel Access
Airlock
Finite Element Model

Figure 3.8-44



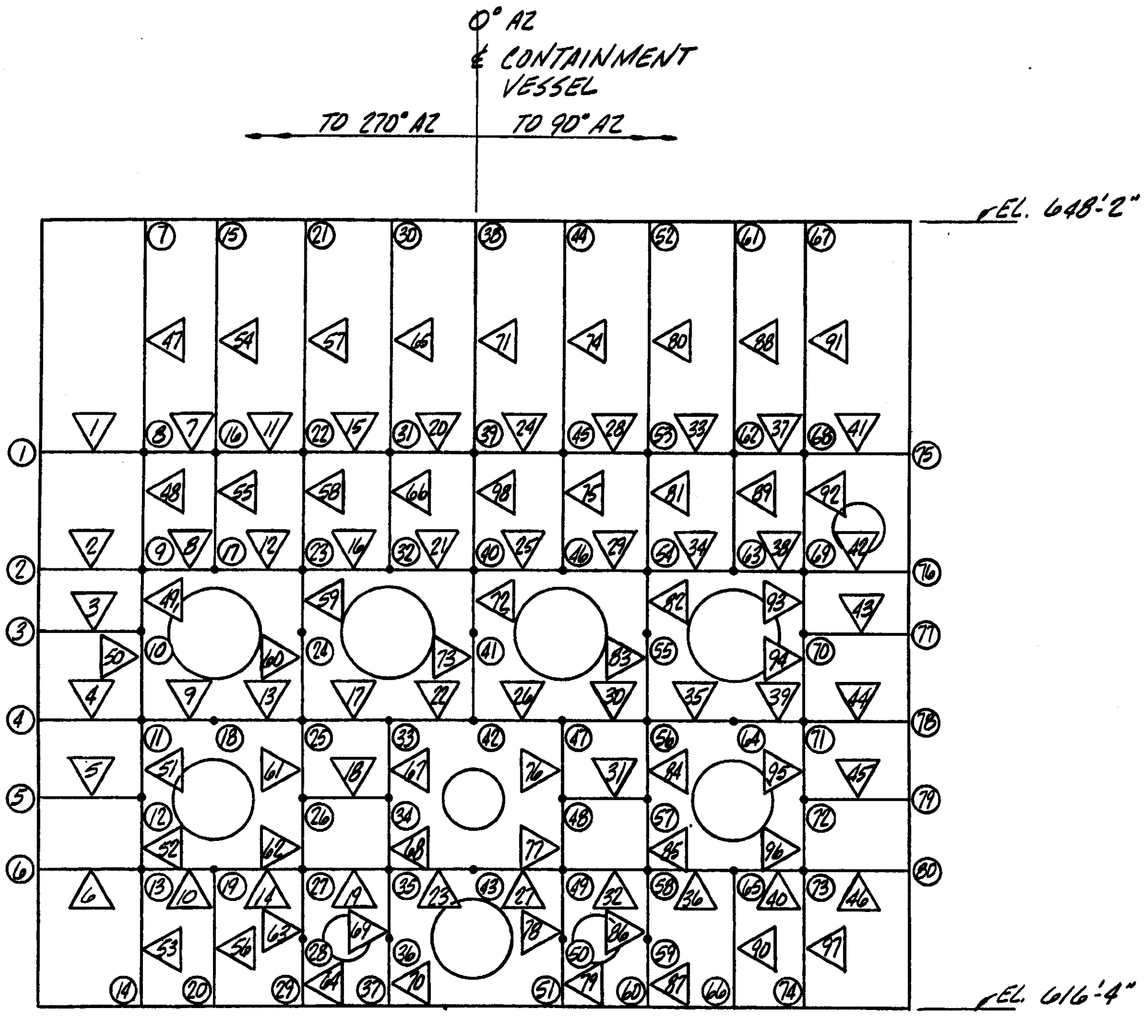
View Looking At Outside Surface

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Equipment Hatch
Finite Element Model

Figure 3.8-45

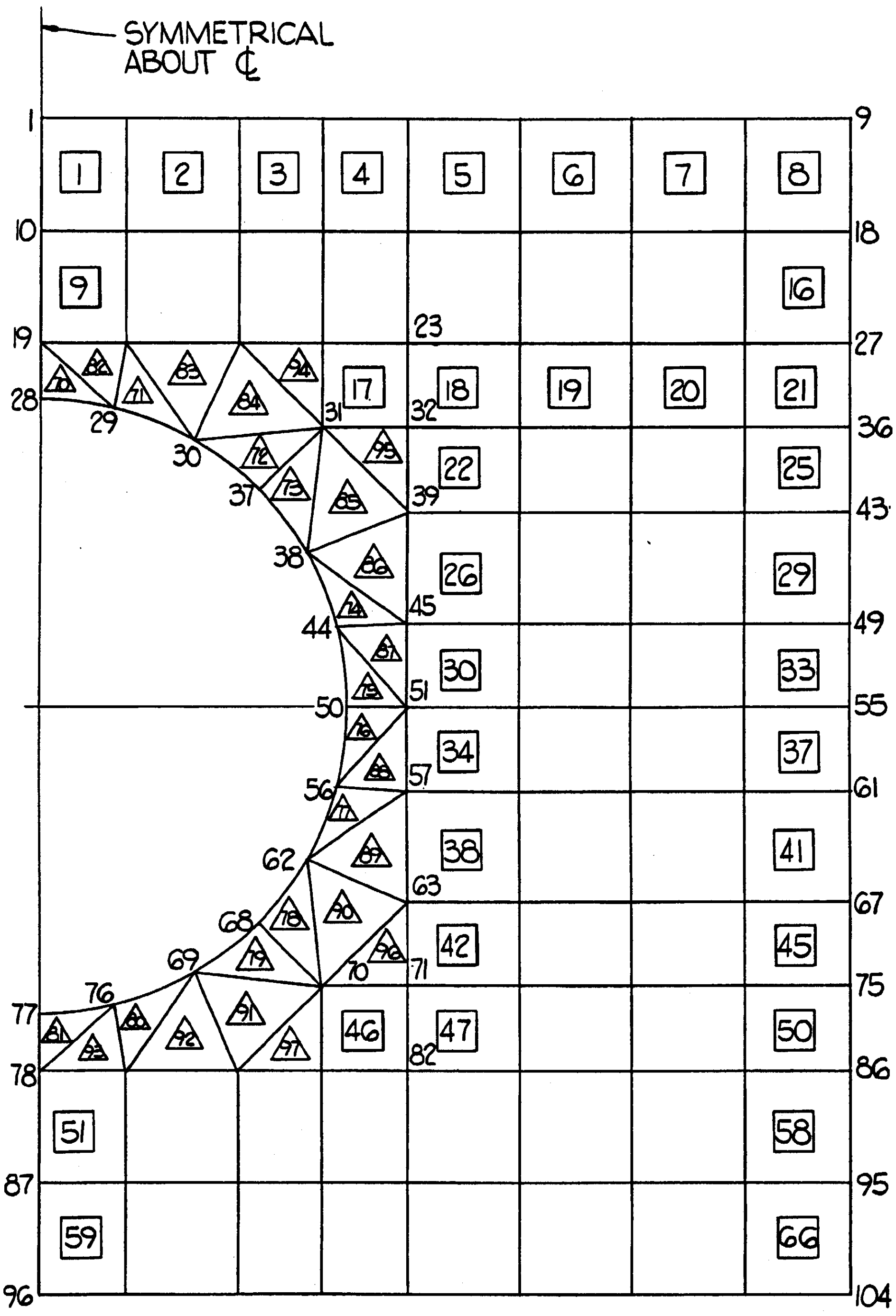


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analytical Model of Drywell
Steam Tunnel Area

Figure 3.8-46

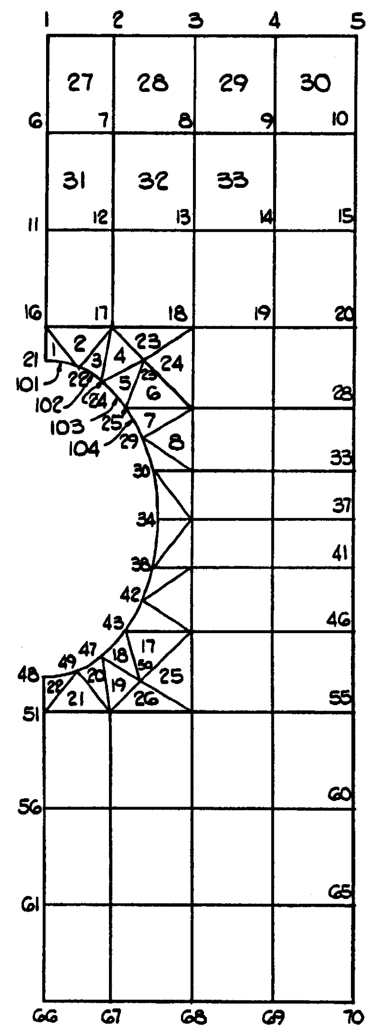


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Vent Structure
Finite Element Model

Figure 3.8-47

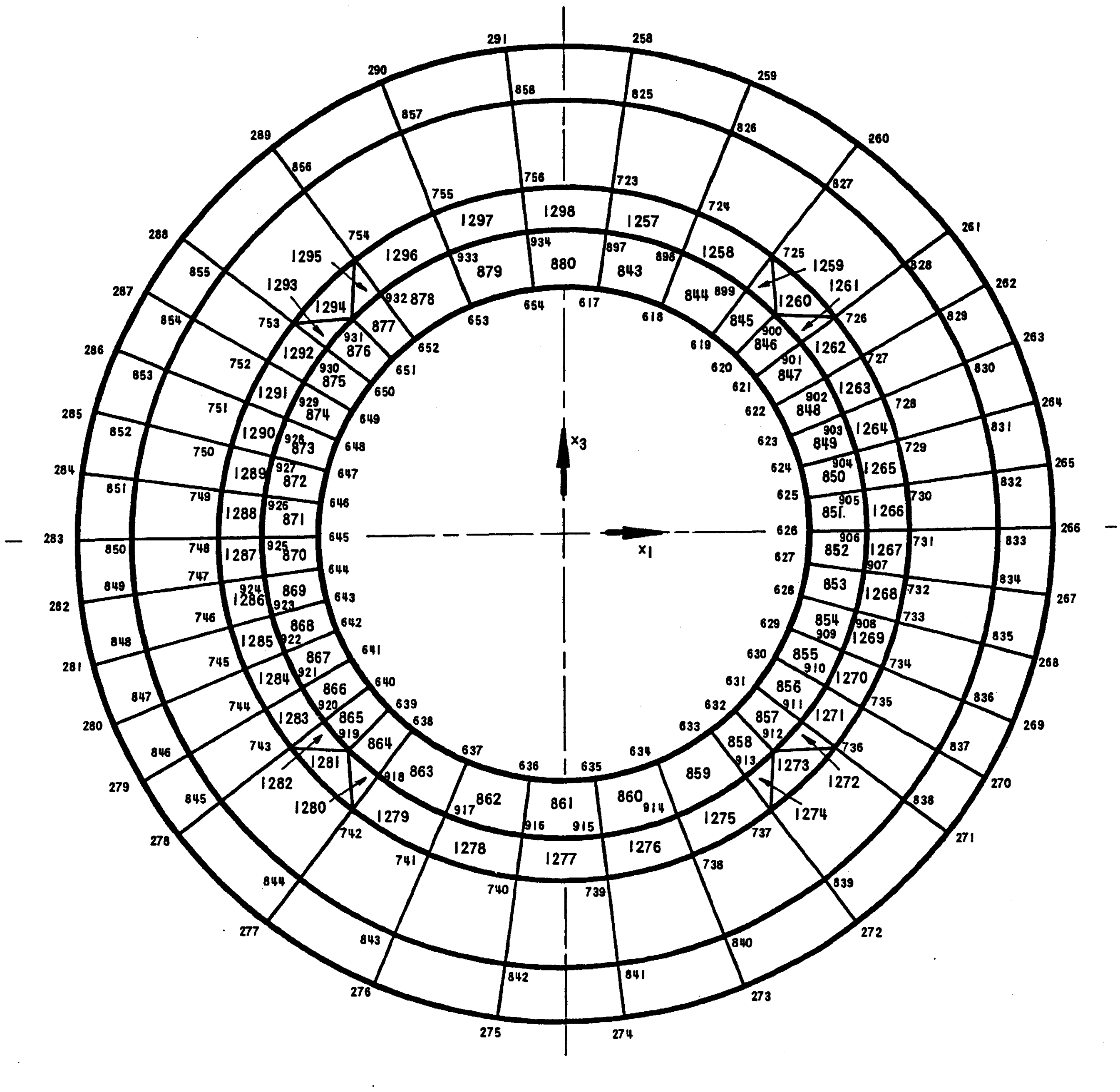


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Vent Structure Steam
Relief Valve Penetration
Finite Element Model

Figure 3.8-48



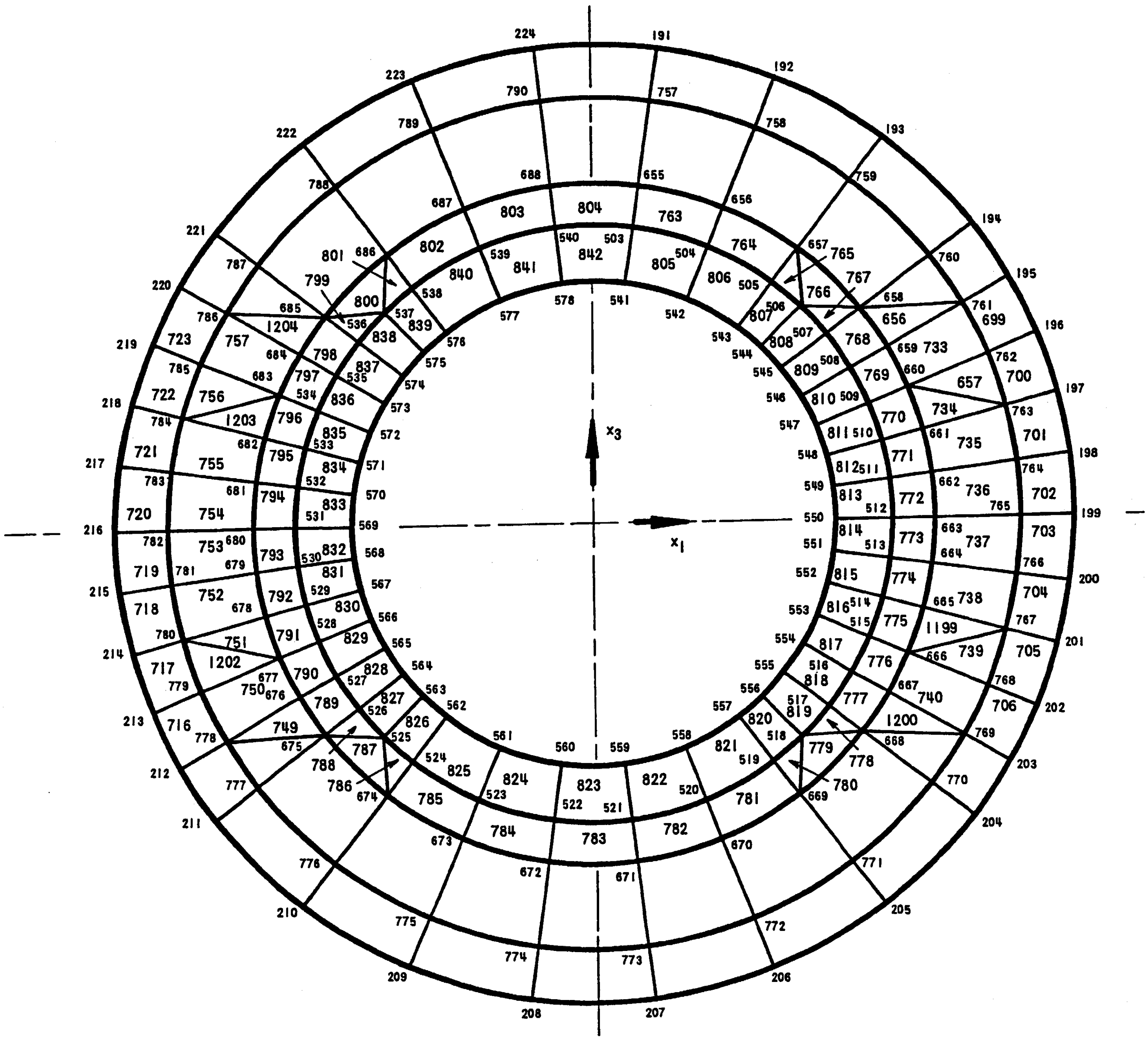
RPV PEDESTAL STARDYNE MODEL
LOOKING DOWN AT ELEV. 7244"
(B10 WALL RPV INTERFACE)

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RPV Pedestal Finite Element Model

Figure 3.8-49 (Sheet 1 of 7)



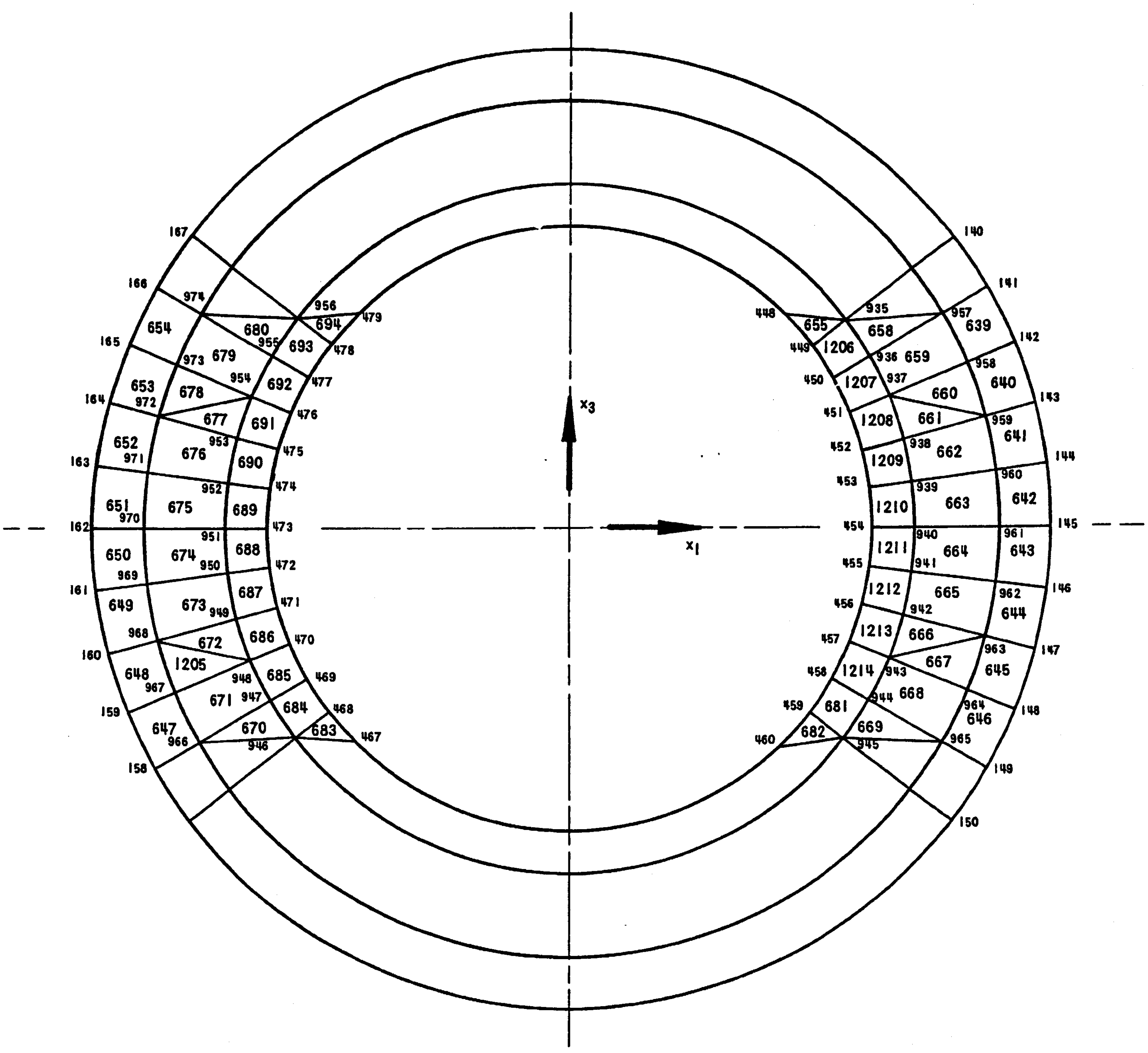
RPV PEDESTAL STARDYNE MODEL
LOOKING DOWN AT ELEV. 7204.75"
(TOP OF CRD OPENING)

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RPV Pedestal Finite Element Model

Figure 3.8-49 (Sheet 2 of 7)



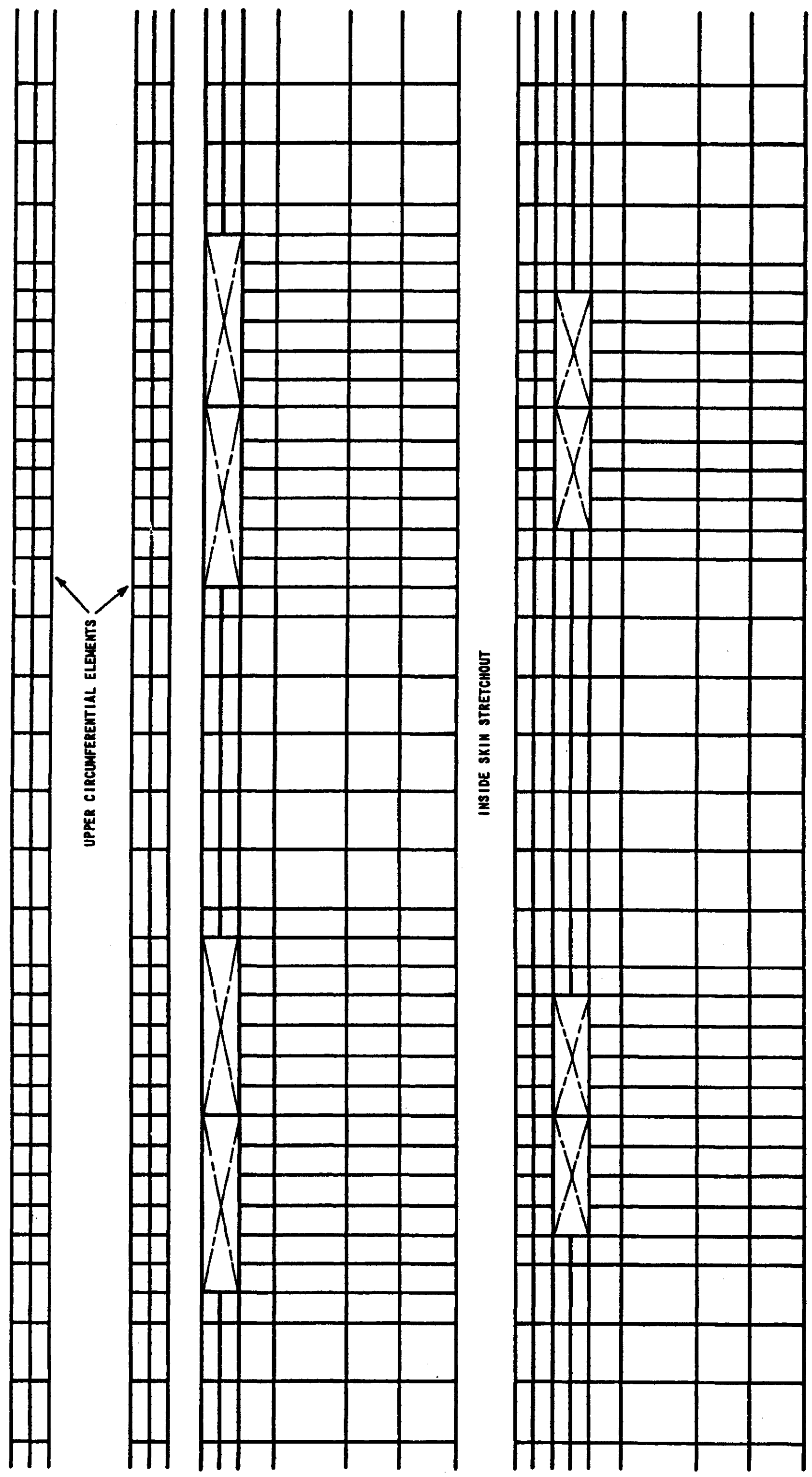
RPV PEDESTAL STARDYNE MODEL
BOTTOM OF CRD OPENING

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RPV Pedestal Finite Element Model

Figure 3.8-49 (Sheet 3 of 7)

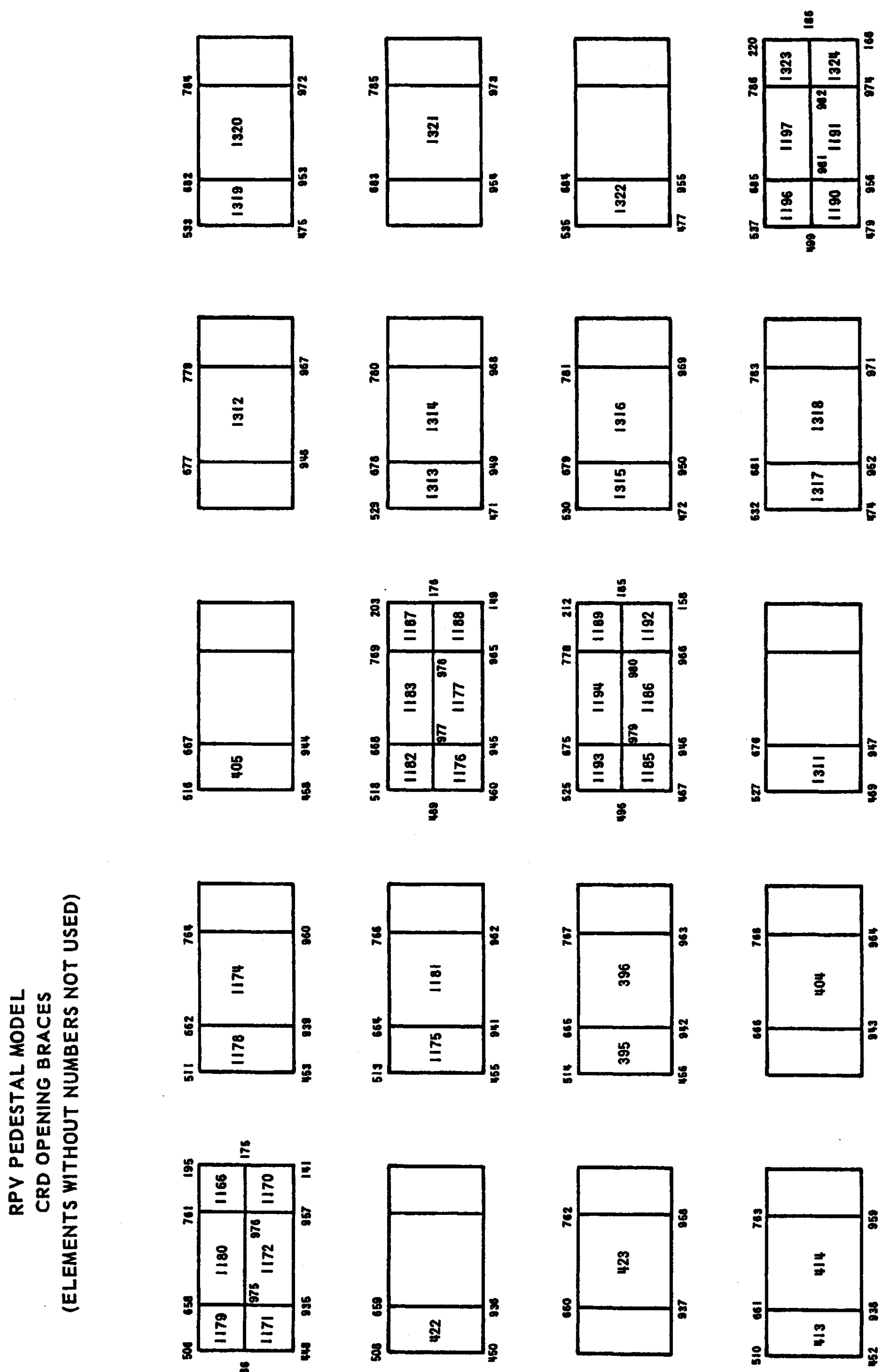


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RPV Pedestal Finite Element Model

Figure 3.8-49 (Sheet 4 of 7)

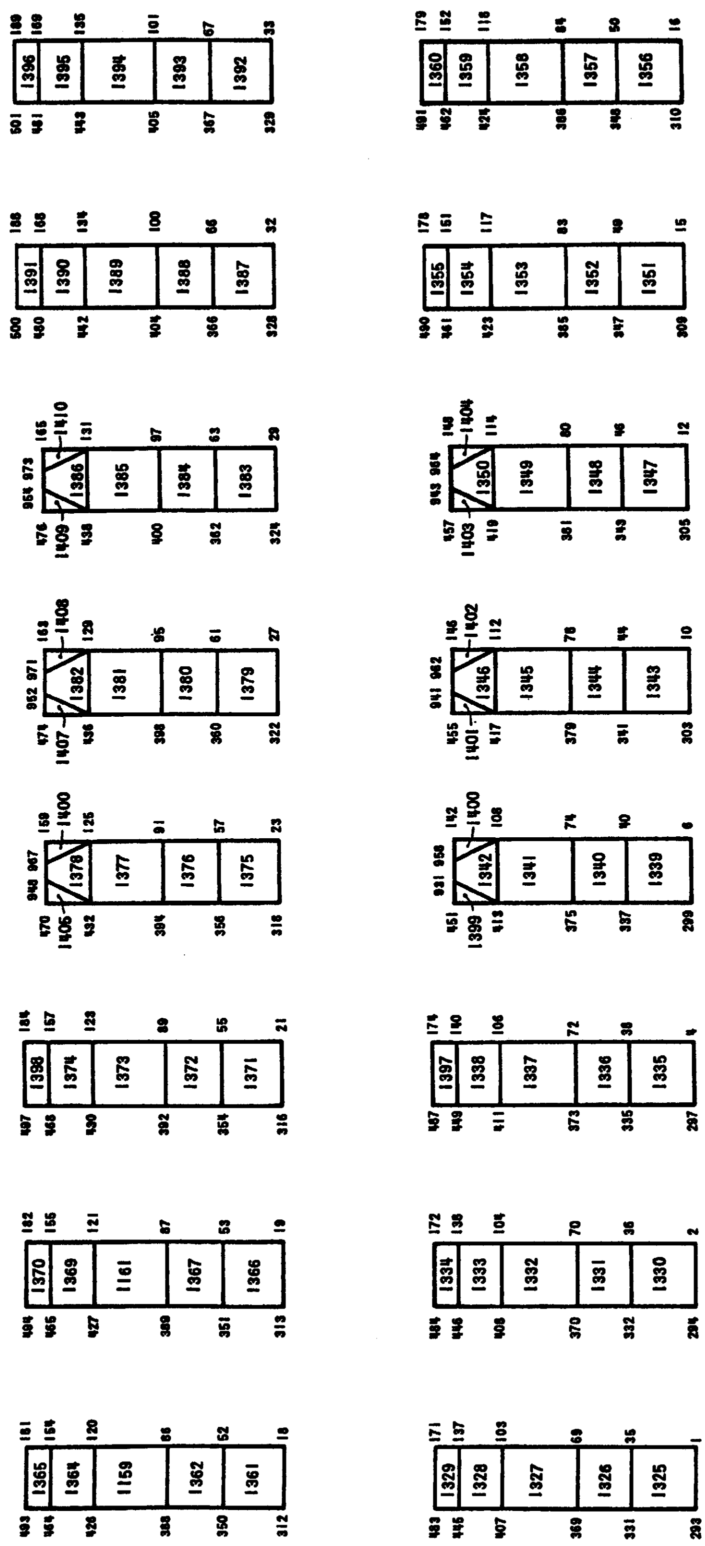


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RPV Pedestal Finite Element Model

Figure 3.8-49 (Sheet 5 of 7)



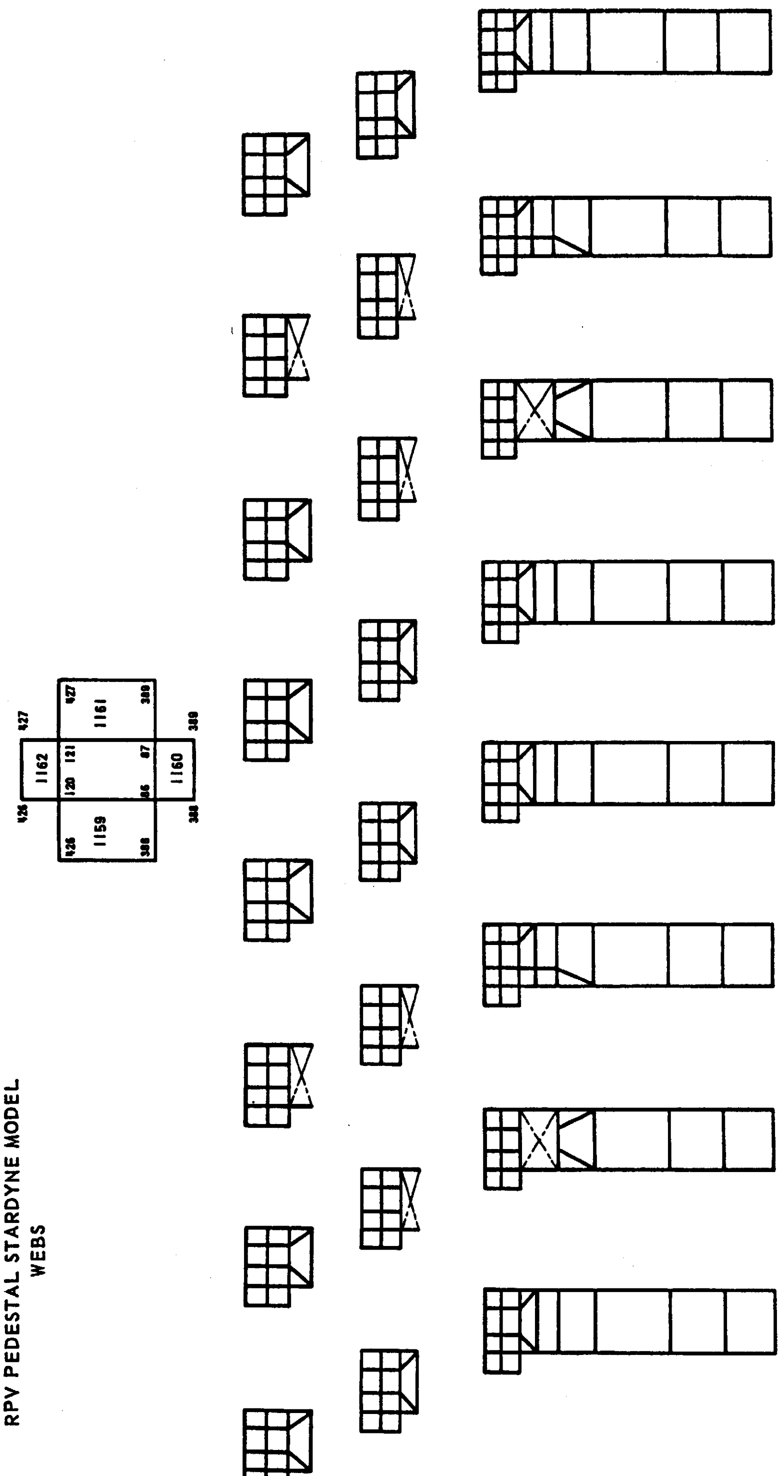
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RPV Pedestal Finite Element Model

Figure 3.8-49 (Sheet 6 of 7)

RPV PEDESTAL STARDYNE MODEL
WEBS

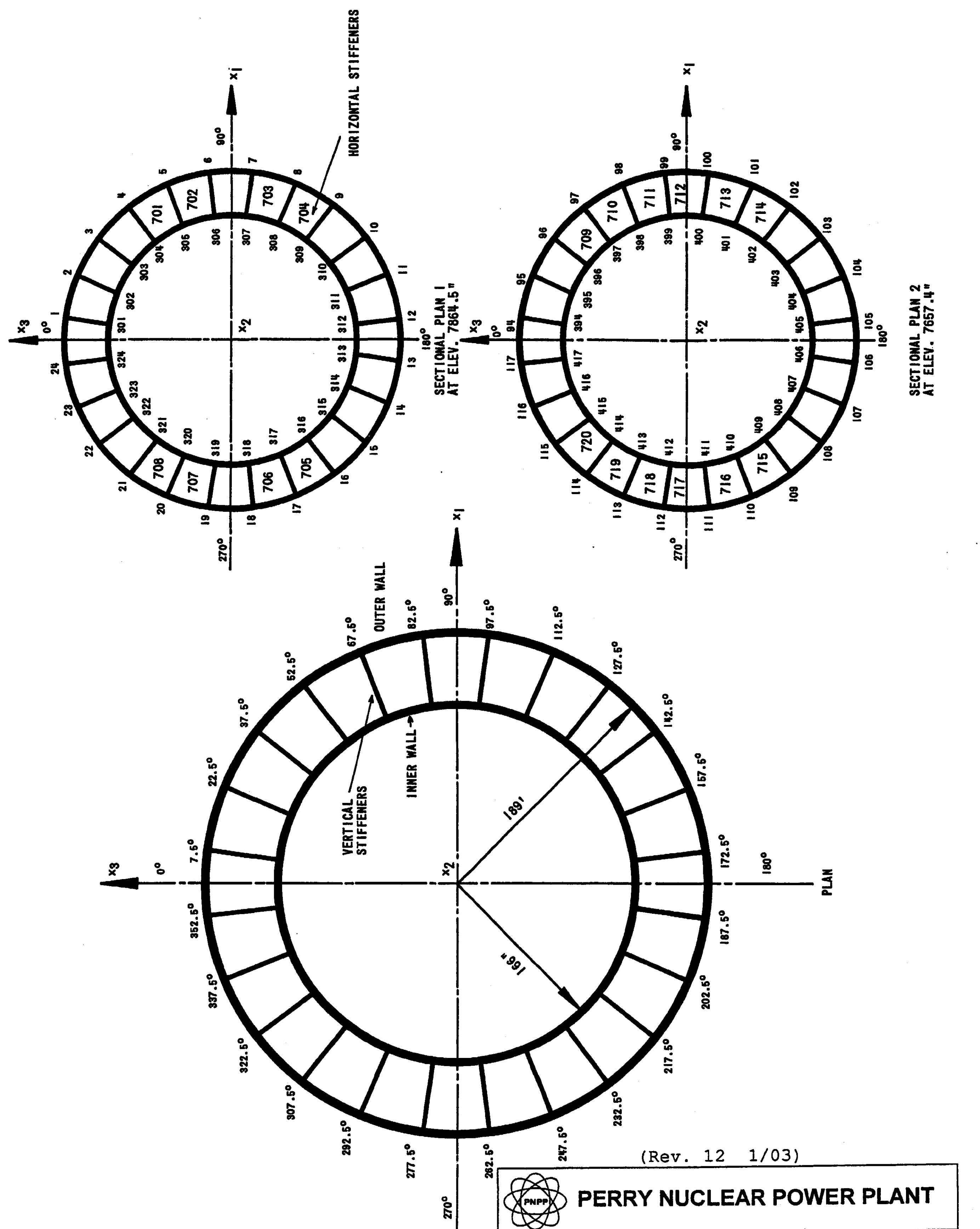


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

RPV Pedestal Finite Element Model

Figure 3.8-49 (Sheet 7 of 7)

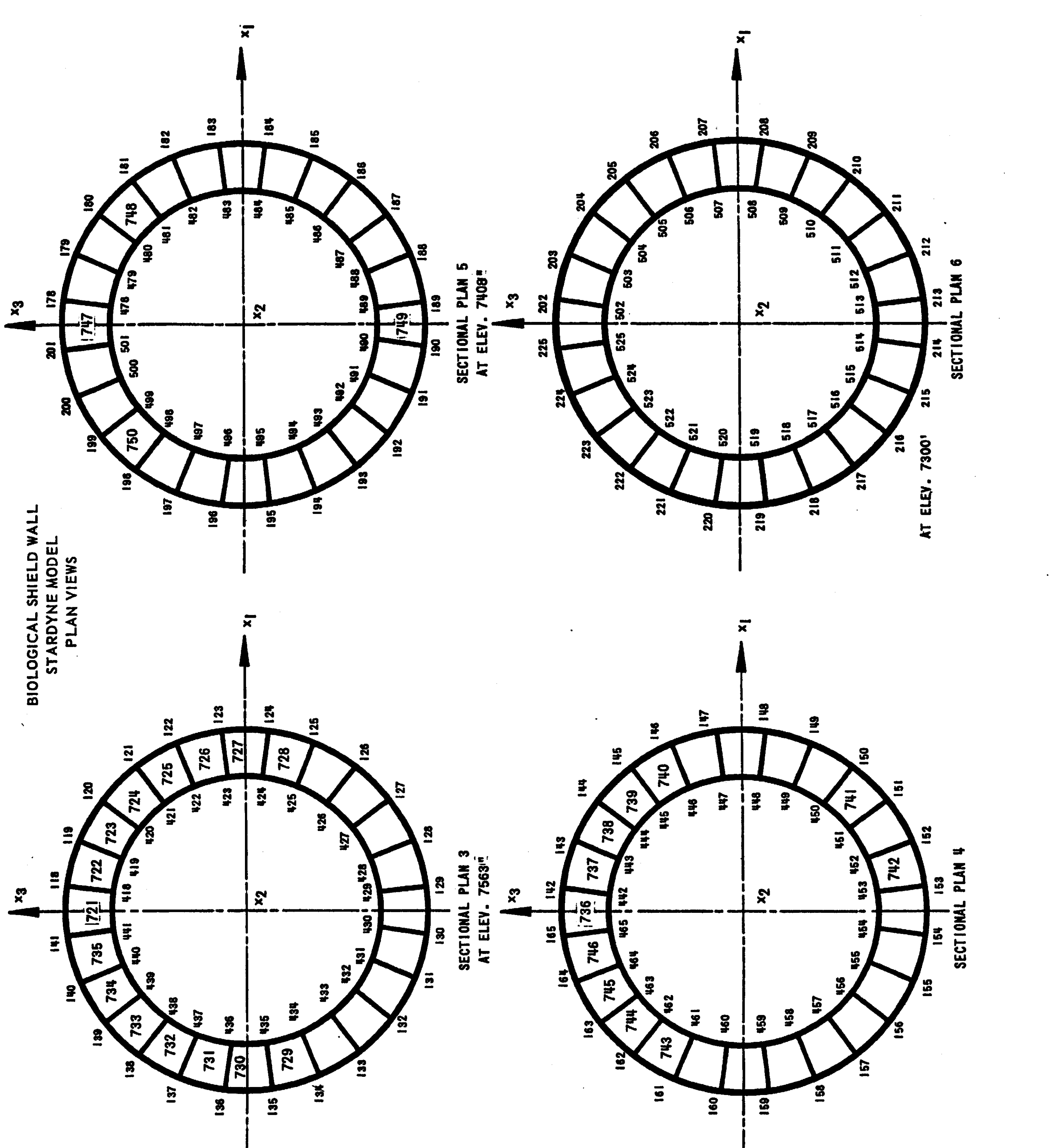


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Biological Shield Wall
Finite Element Model

Figure 3.8-50 (Sheet 1 of 6)

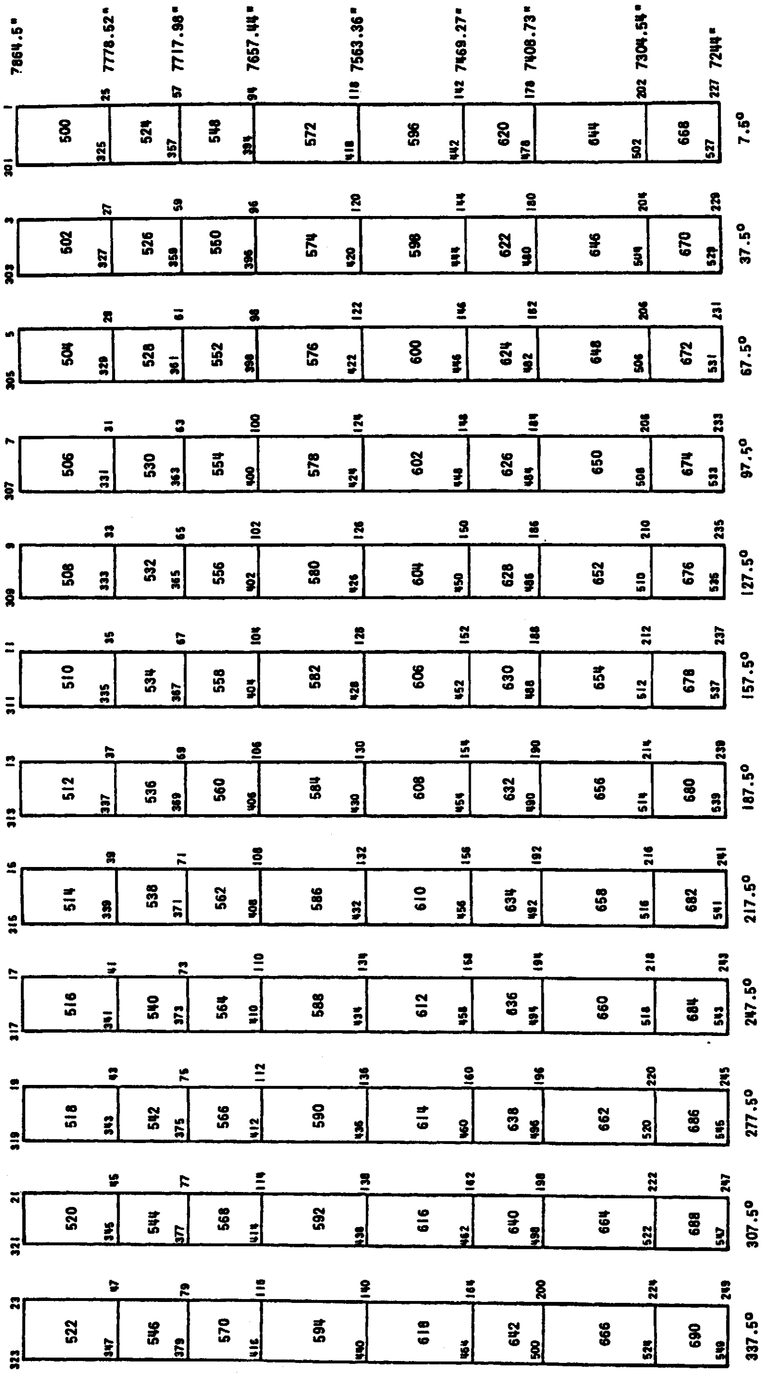


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Biological Shield Wall
Finite Element Model

Figure 3.8-50 (Sheet 2 of 6)



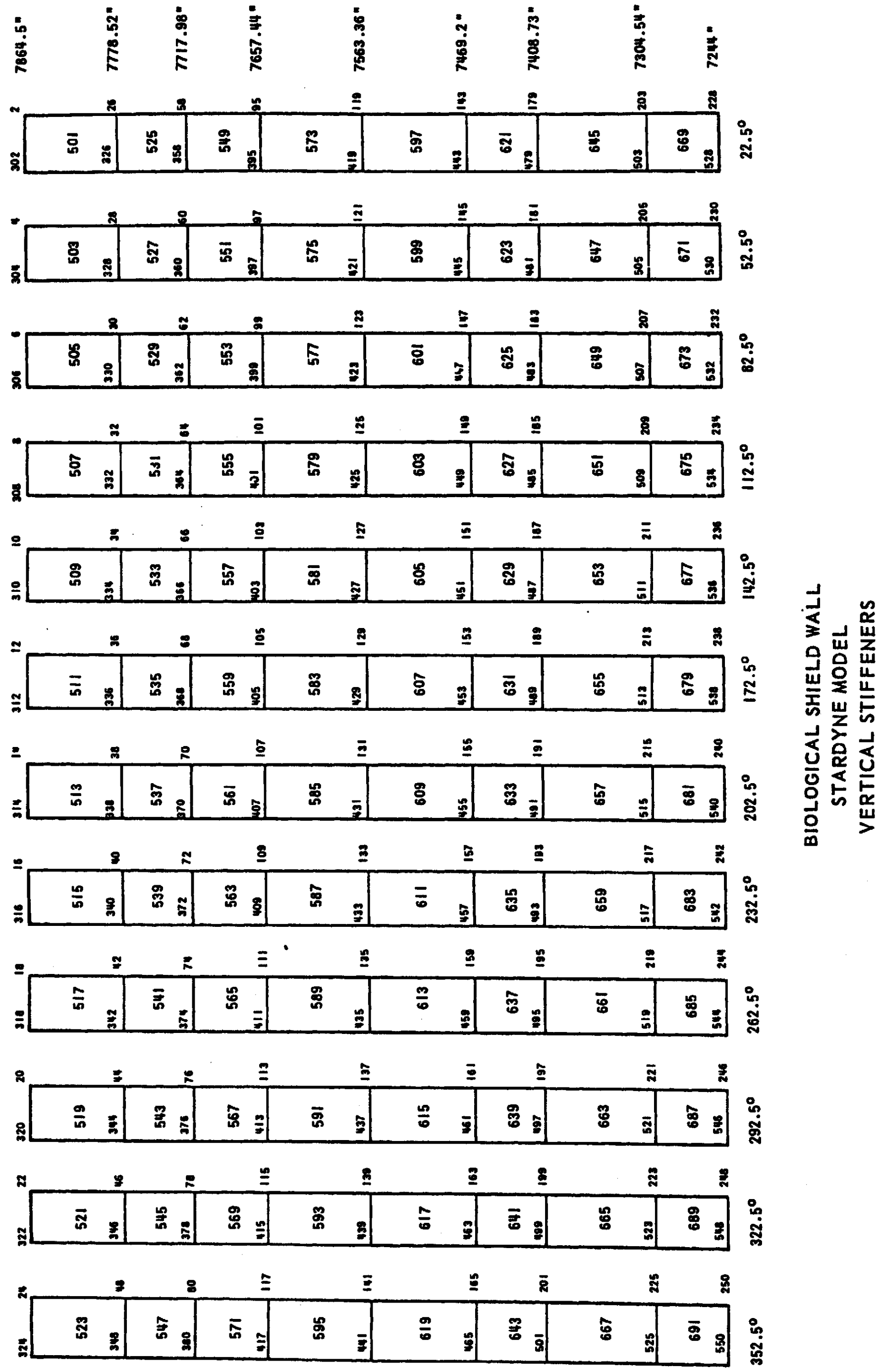
BIOLOGICAL SHIELD WALL
STARDYNE MODEL
VERTICAL STIFFENERS

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Biological Shield Wall
Finite Element Model

Figure 3.8-50 (Sheet 3 of 6)

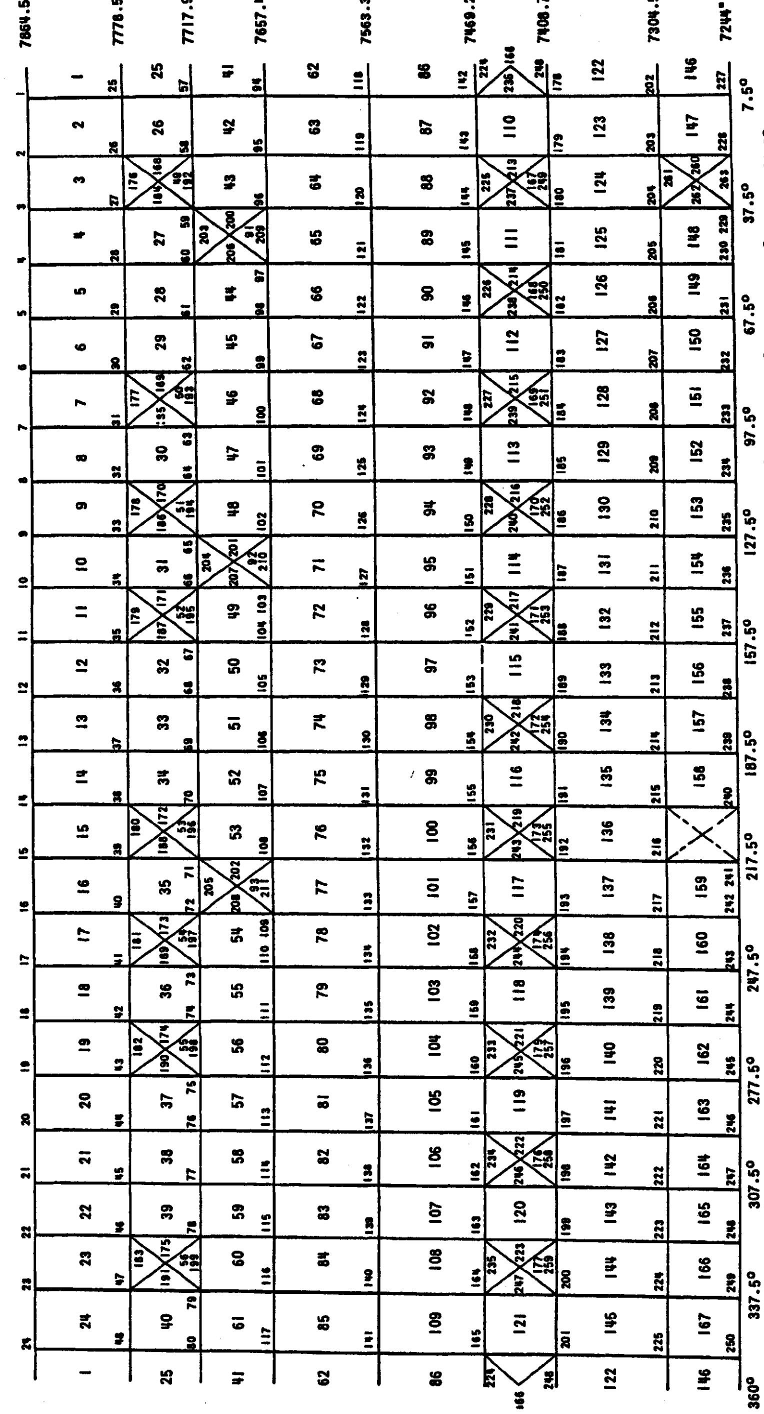


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Biological Shield Wall
Finite Element Model

Figure 3.8-50 (Sheet 4 of 6)



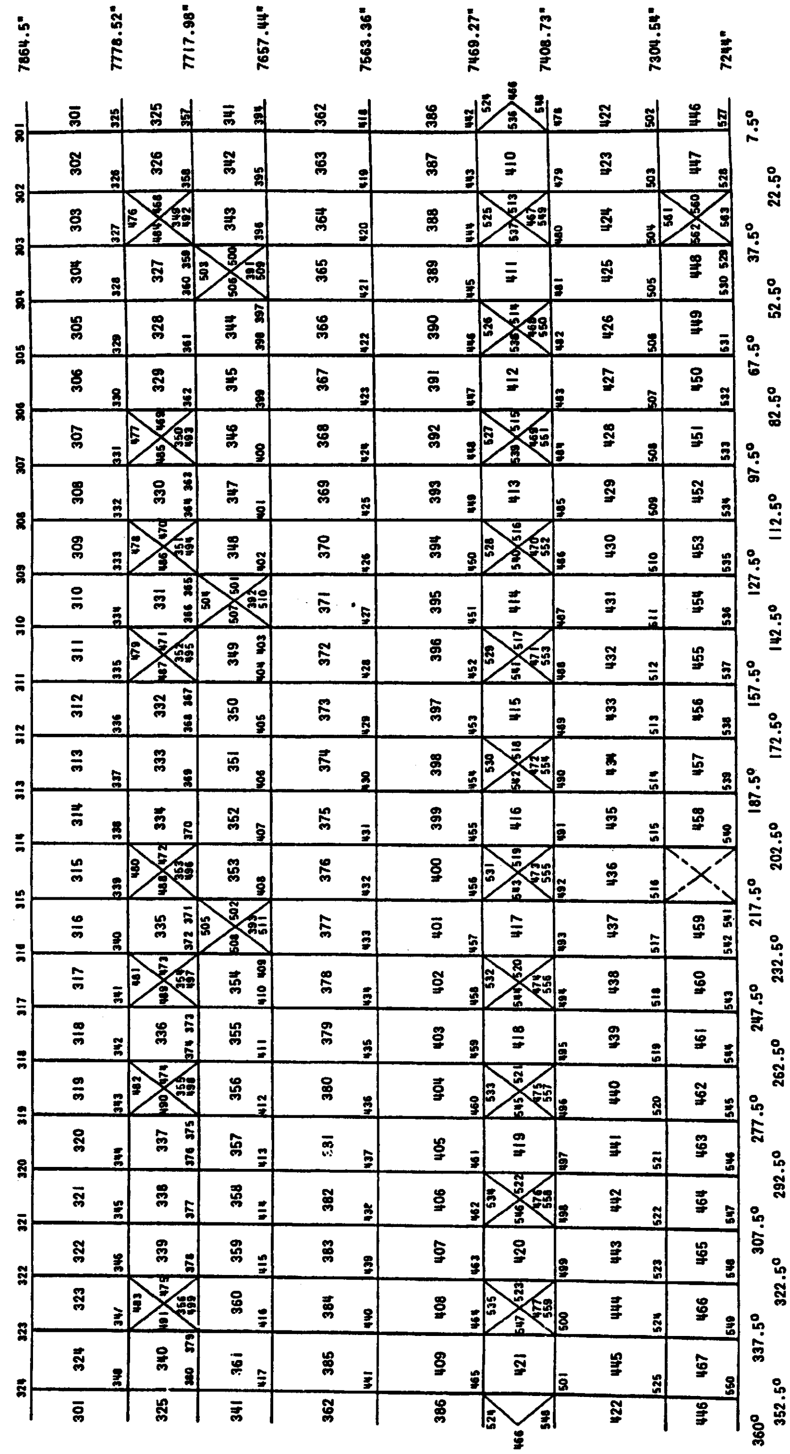
BIOLOGICAL SHIELD WALL
STARDYNE MODEL
OUTER LINER STRETCHOUT

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Biological Shield Wall
Finite Element Model

Figure 3.8-50 (Sheet 5 of 6)



BIOLOGICAL SHIELD WALL
STARDYNE MODEL
INNER LINER STRETCHOUT

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Biological Shield Wall
Finite Element Model

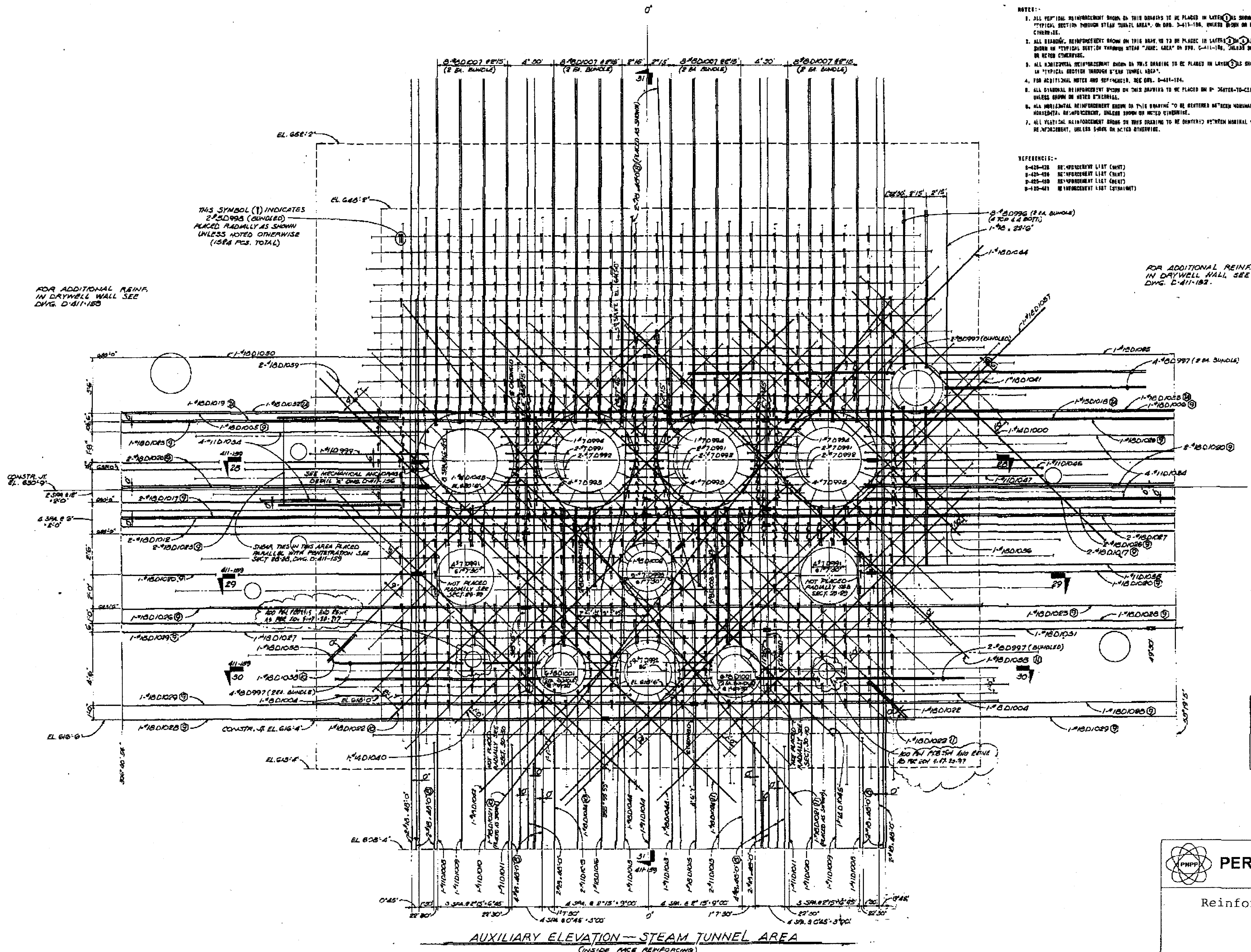
Figure 3.8-50 (Sheet 6 of 6)

NOTES:-

1. ALL VERTICAL REINFORCEMENT SHOWN ON THIS DRAWING TO BE PLACED IN LAYER 1 AS SHOWN IN "TYPICAL SECTION THROUGH STEAM TUNNEL AREA", ON DWG. D-411-156, UNLESS SHOWN OR NOTED OTHERWISE.
2. ALL DIAGONAL REINFORCEMENT SHOWN ON THIS DRAWING TO BE PLACED IN LAYERS 3 OR 4 AS SHOWN IN "TYPICAL SECTION THROUGH STEAM TUNNEL AREA" ON DWG. D-411-156, UNLESS SHOWN OR NOTED OTHERWISE.
3. ALL HORIZONTAL REINFORCEMENT SHOWN ON THIS DRAWING TO BE PLACED IN LAYER 2 AS SHOWN IN "TYPICAL SECTION THROUGH STEAM TUNNEL AREA".
4. FOR ADDITIONAL NOTES AND REFERENCES, SEE DWG. D-411-124.
5. ALL DIAGONAL REINFORCEMENT SHOWN ON THIS DRAWING TO BE PLACED ON 8" CENTER-TO-CENTER, UNLESS SHOWN OR NOTED OTHERWISE.
6. ALL HORIZONTAL REINFORCEMENT SHOWN ON THIS DRAWING TO BE CENTERED BETWEEN NOMINAL HORIZONTAL REINFORCEMENT, UNLESS SHOWN OR NOTED OTHERWISE.
7. ALL VERTICAL REINFORCEMENT SHOWN ON THIS DRAWING TO BE CENTERED BETWEEN NOMINAL VERTICAL REINFORCEMENT, UNLESS SHOWN OR NOTED OTHERWISE.

REFERENCES:-

B-420-428 REINFORCEMENT LIST (BENT)
B-420-429 REINFORCEMENT LIST (BENT)
B-420-430 REINFORCEMENT LIST (BENT)
B-420-431 REINFORCEMENT LIST (STRAIGHT)



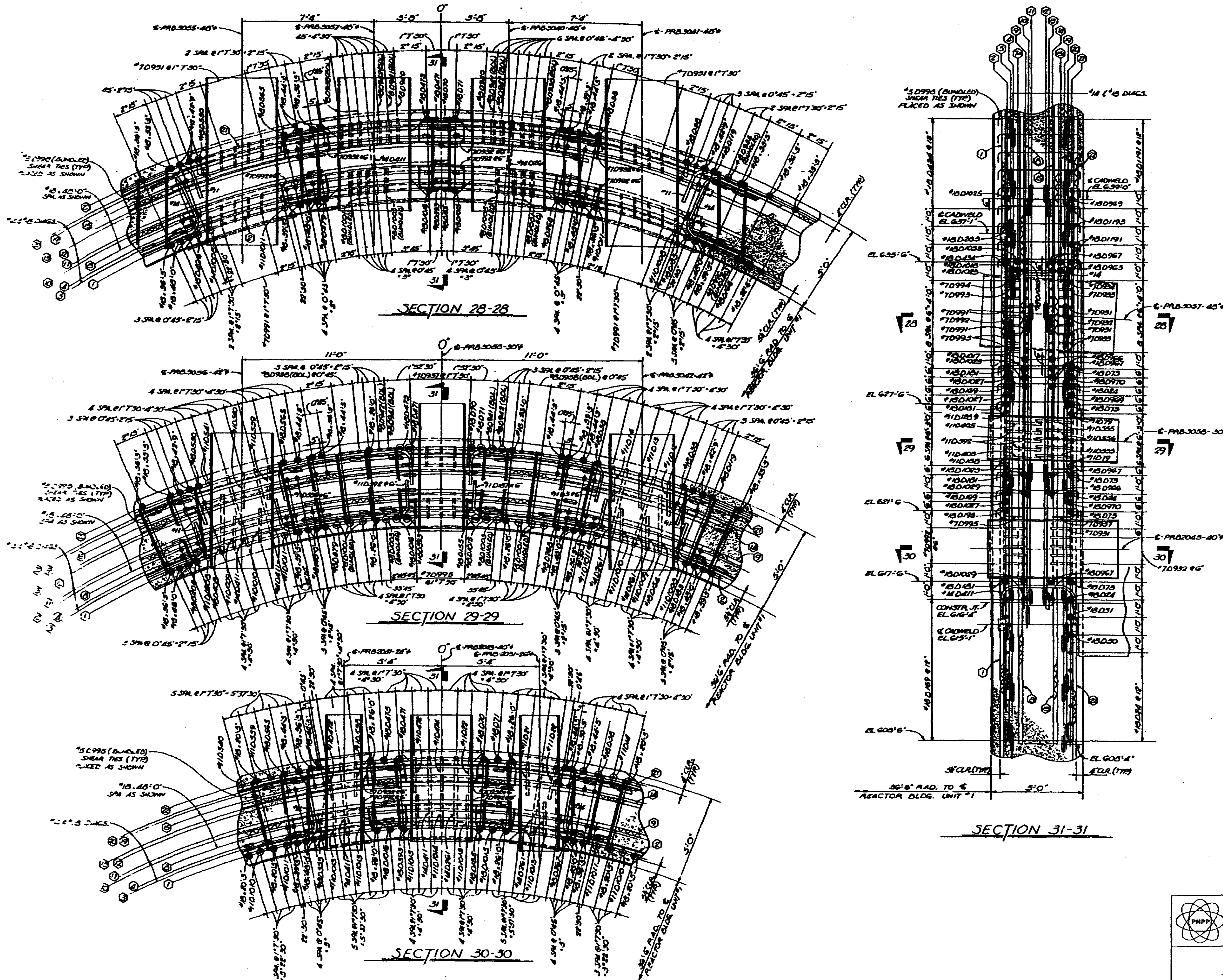
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Reinforcement-Drywell Wall Steam Tunnel Area

Figure 3.8-51
(Dwg. D-411-157)



(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reinforced Section of the
Drywell Wall Steam Tunnel Area

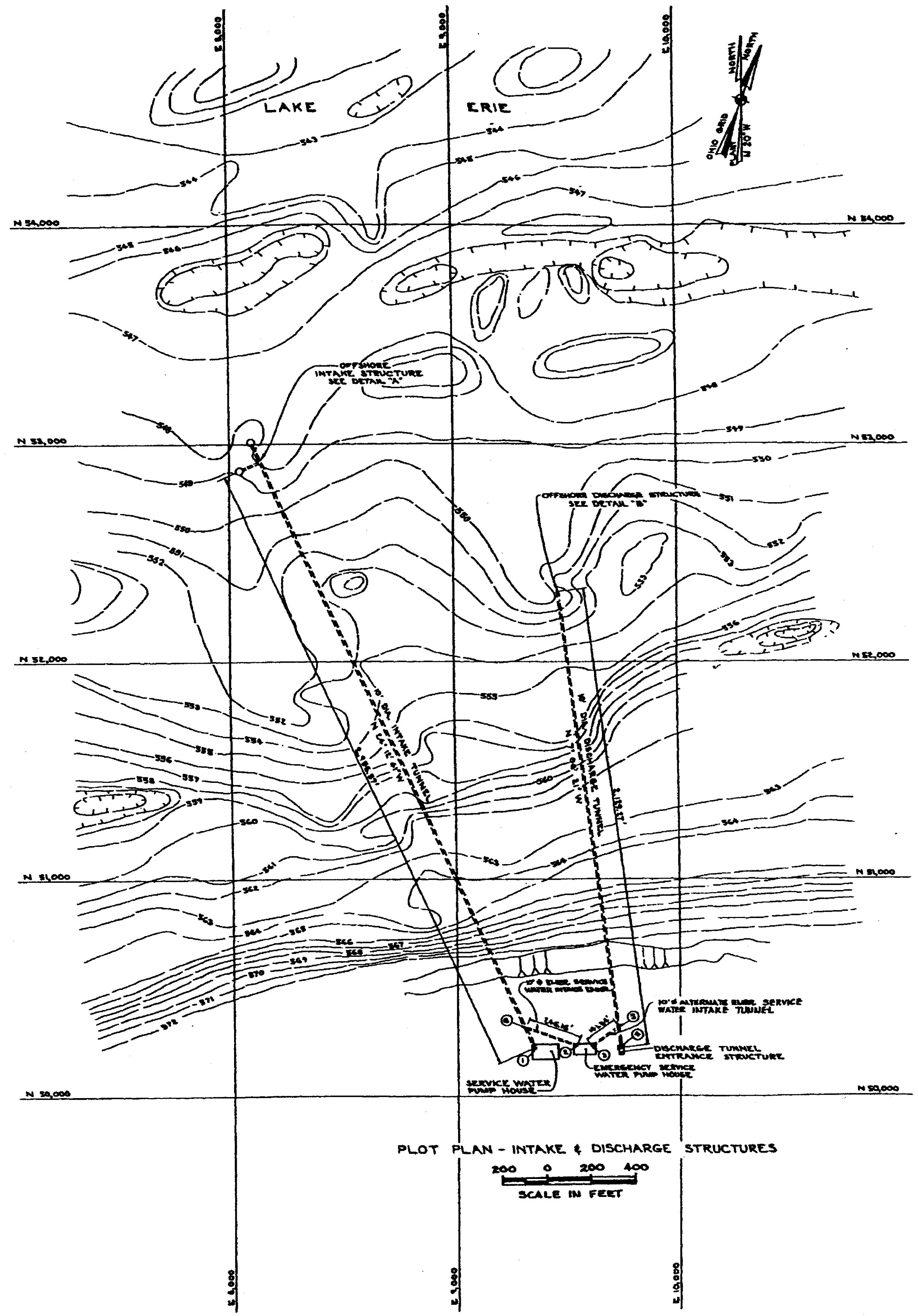
Figure 3.8-52
(Dwg. D-411-159)

Removed in Accordance with RIS 2015-17

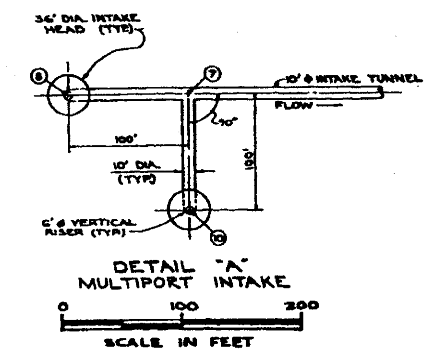
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

EMERGENCY SERVICE
WATER PUMPHOUSE

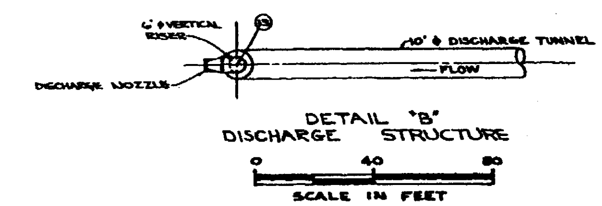
FIGURE 3.8-64
(DWG. E-015-0002-00000)



PLOT PLAN - INTAKE & DISCHARGE STRUCTURES



DETAIL "A"
MULTIPORT INTAKE



DETAIL "B"
DISCHARGE STRUCTURE

PT.	PLANT SITE GRID COORDINATES		OHIO STATE GRID COORDINATES	
	NORTH COORD.	EAST COORD.	NORTH COORD.	EAST COORD.
1	50,234.5000	9,340.0000	705,101.3300	[illegible]
2	50,223.[illegible]	[illegible]	705,240.7500	2,368,383.3742
3	50,220.0000	9,613.5000	704,273.8000	2,368,865.3313
4	50,210.0000	8,736.0000	705,300.0217	2,368,772.5072
5	50,314.2360	9,722.9207	705,300.0300	2,368,738.0436
6	50,315.7000	9,305.5000	705,233.5402	2,368,337.2347
7	52,921.0000	8,130.4077	703,301.0423	2,367,340.3230
8	53,012.2003	8,804.4672	703,372.0006	2,367,275.3062
10	52,870.9004	8,044.2030	703,231.2010	2,367,272.8457
13	52,331.0776	8,471.3001	703,204.4200	2,368,082.3384

NOTE:

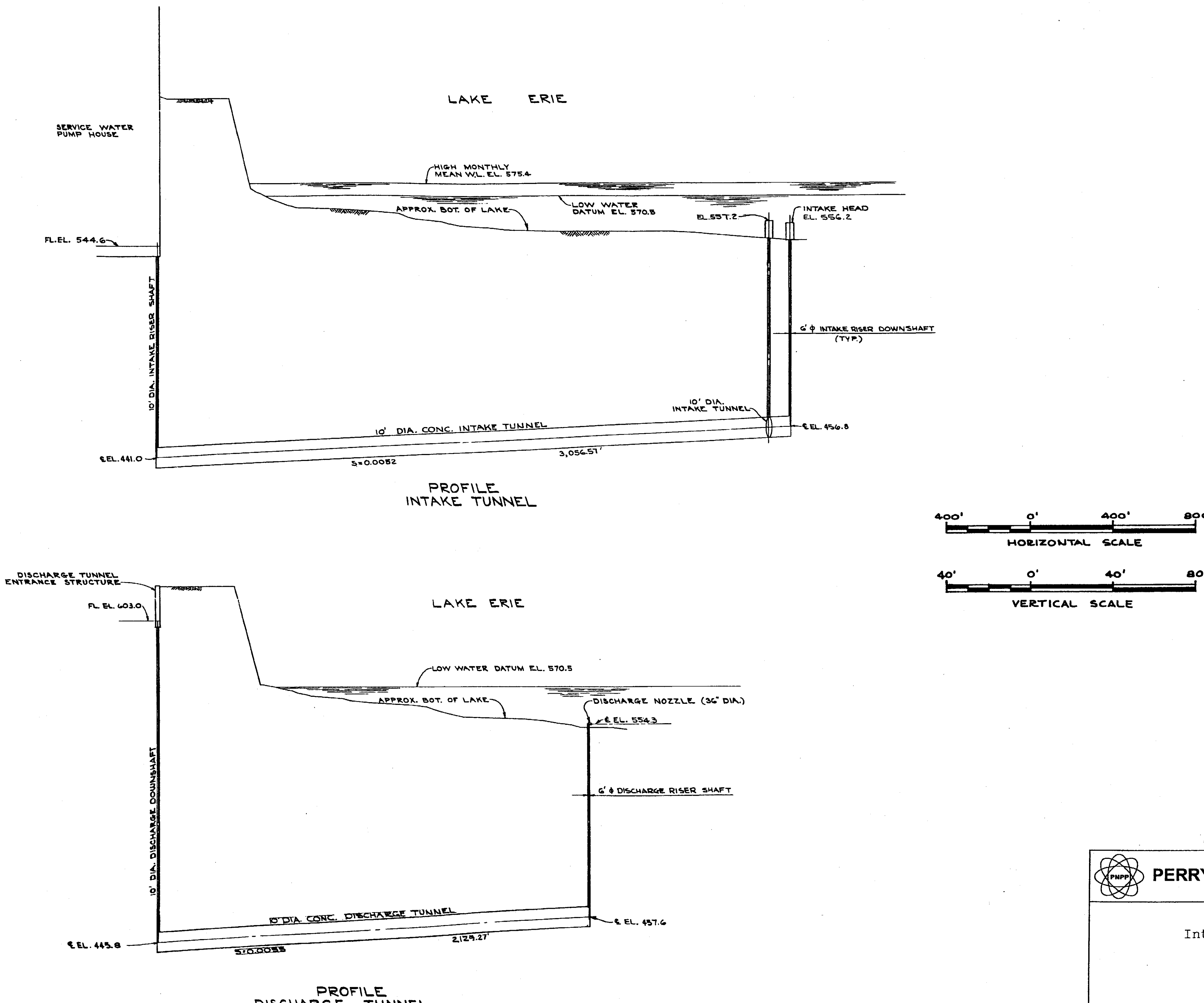
COORDINATE LOCATIONS OF INTAKE AND DISCHARGE STRUCTURES SHOWN IN THE CHART ABOVE ARE GIVEN TO TEN THOUSANDTHS PLACE ACCURACY FOR MATHEMATICAL VERIFICATION ONLY.

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Offshore Intake and Discharge Structures

Figure 3.8-65
(Dwg. D-736-012)

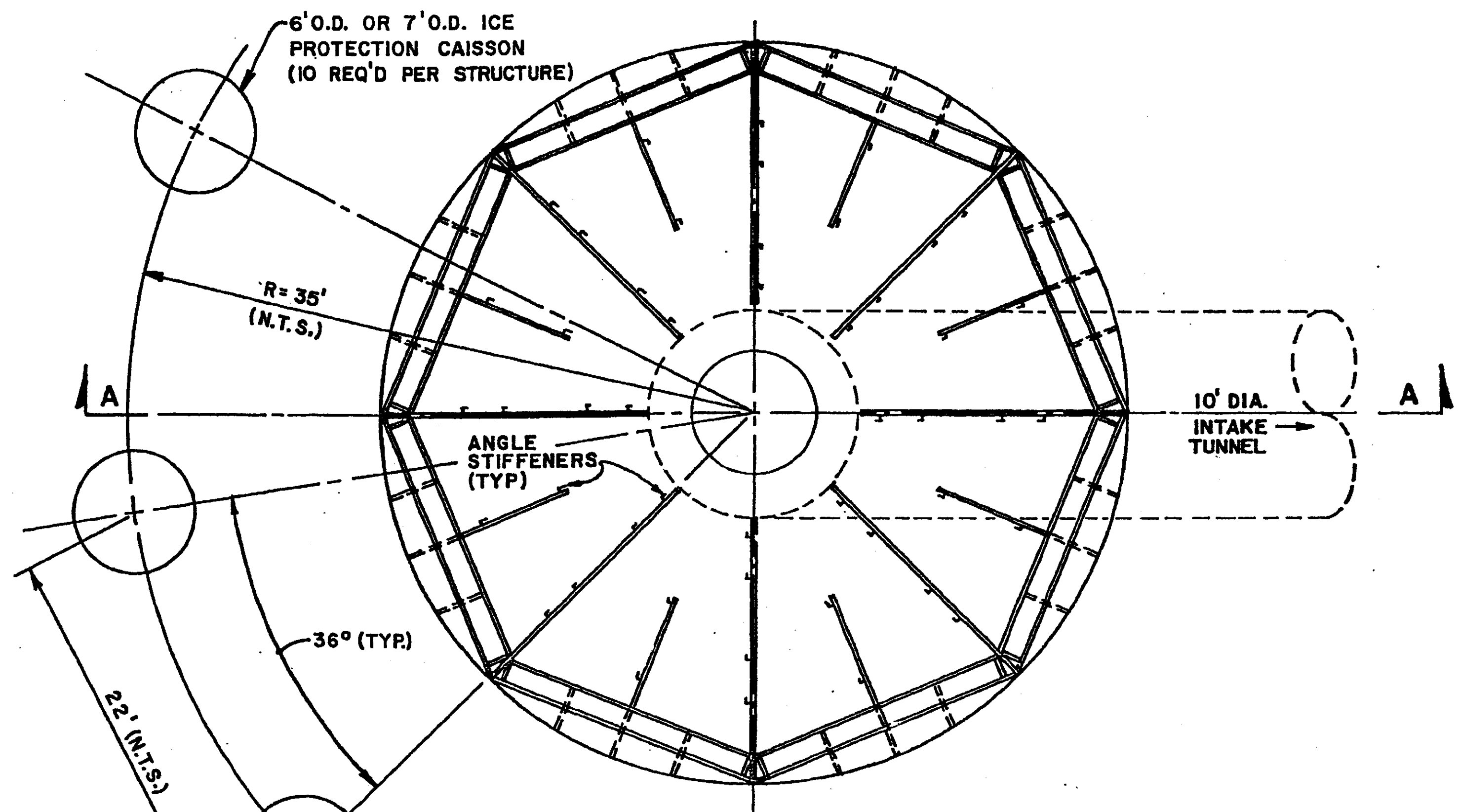


(Rev. 12 1/03)

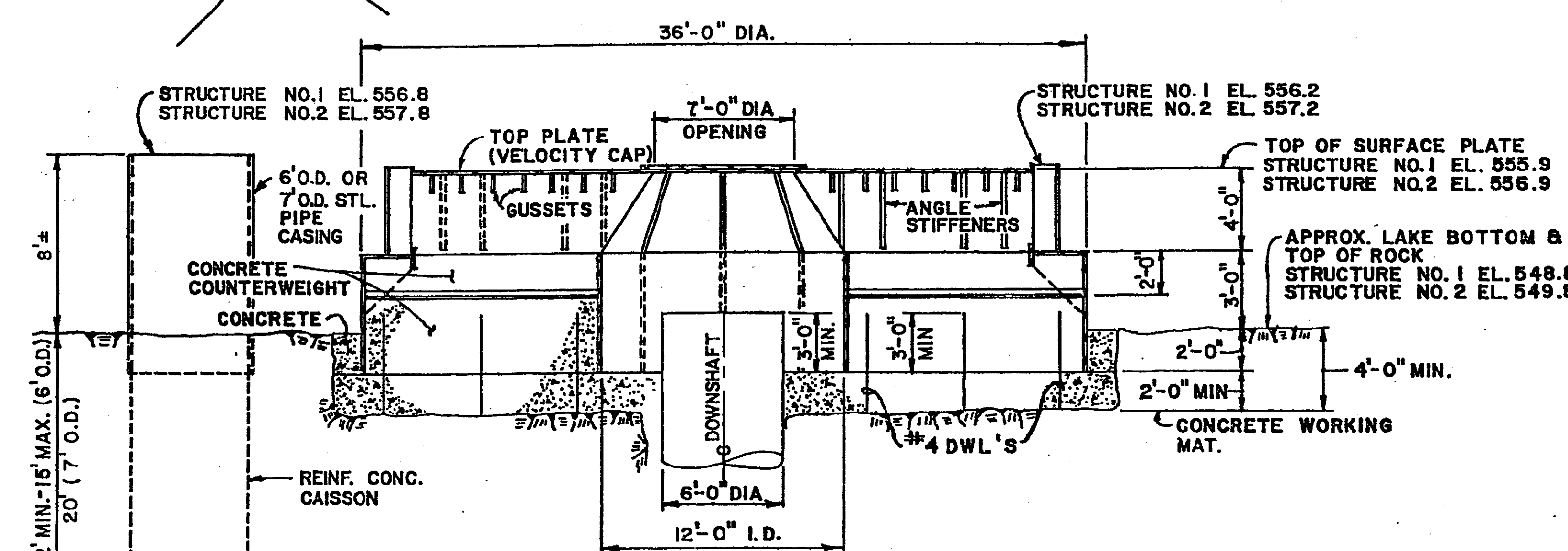
PERRY NUCLEAR POWER PLANT

Intake and Discharge
Tunnel Profiles

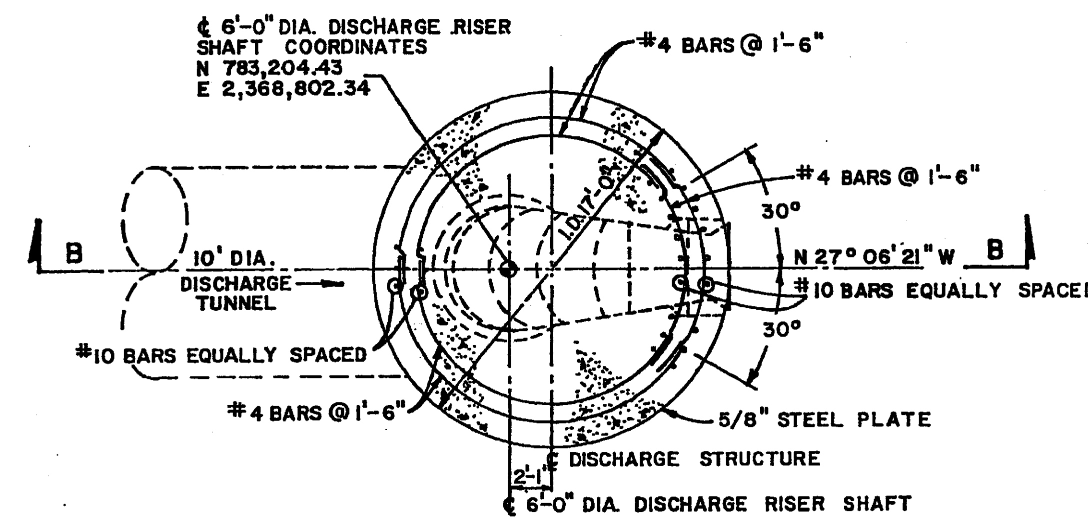
Figure 3.8-66
(Dwg. D-736-013)



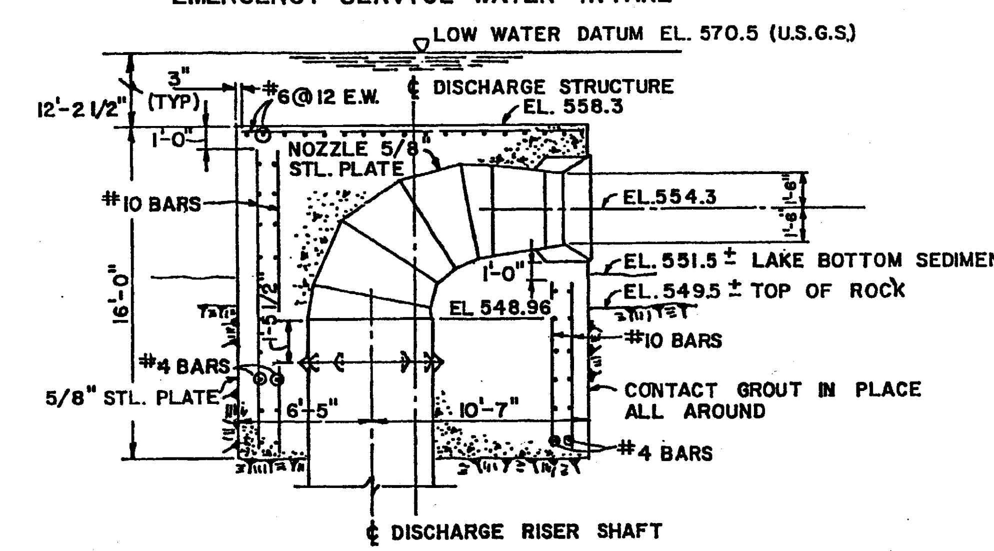
PLAN
INTAKE STRUCTURE



SECTION A-A
TYPICAL INTAKE STRUCTURE - 2 REQUIRED



PLAN
DISCHARGE STRUCTURE & ALTERNATE EMERGENCY SERVICE WATER INTAKE



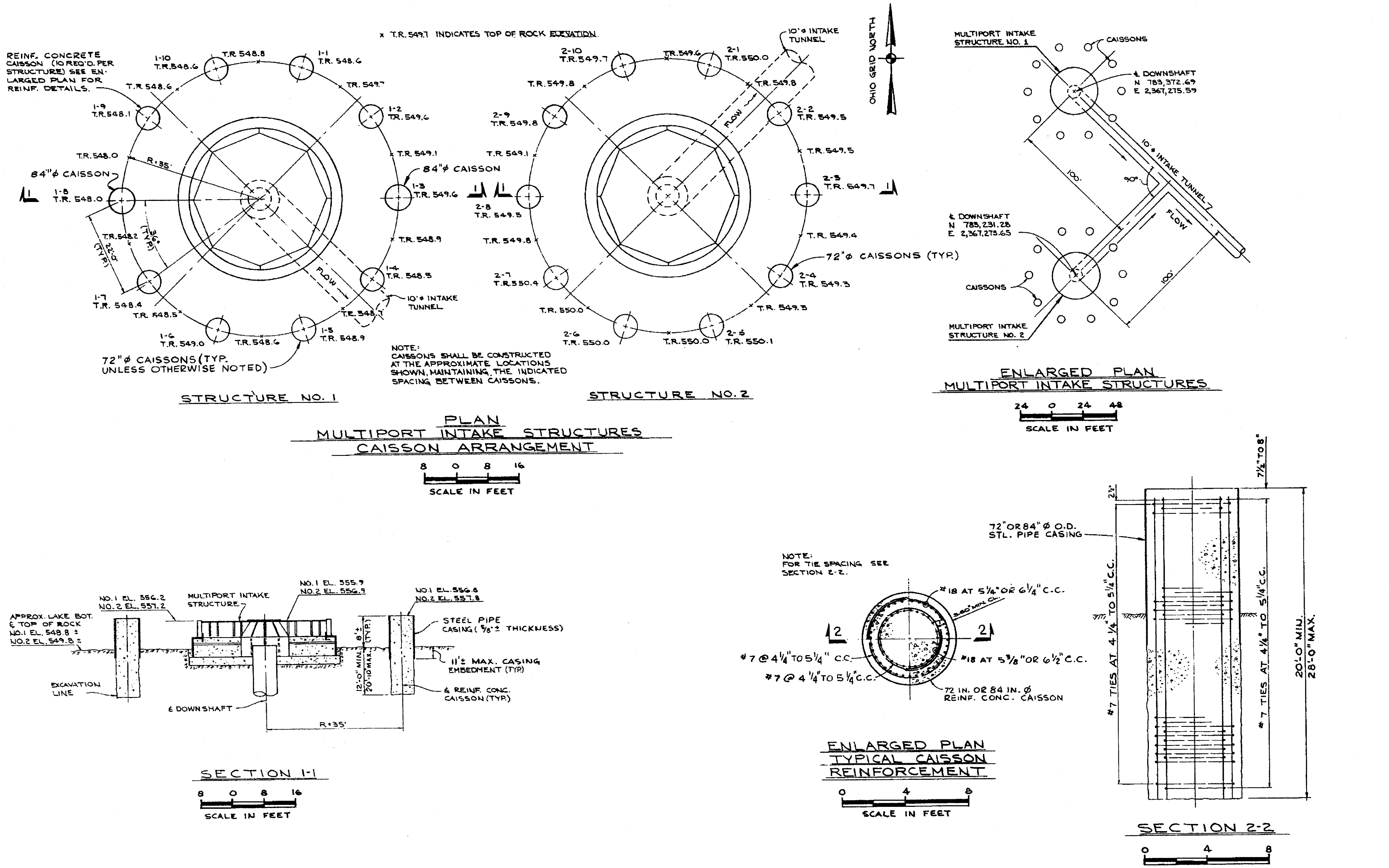
SECTION B-B

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Intake Structure, Discharge
Structure and Alternate Emergency
Service Water Intake

Figure 3.8-67

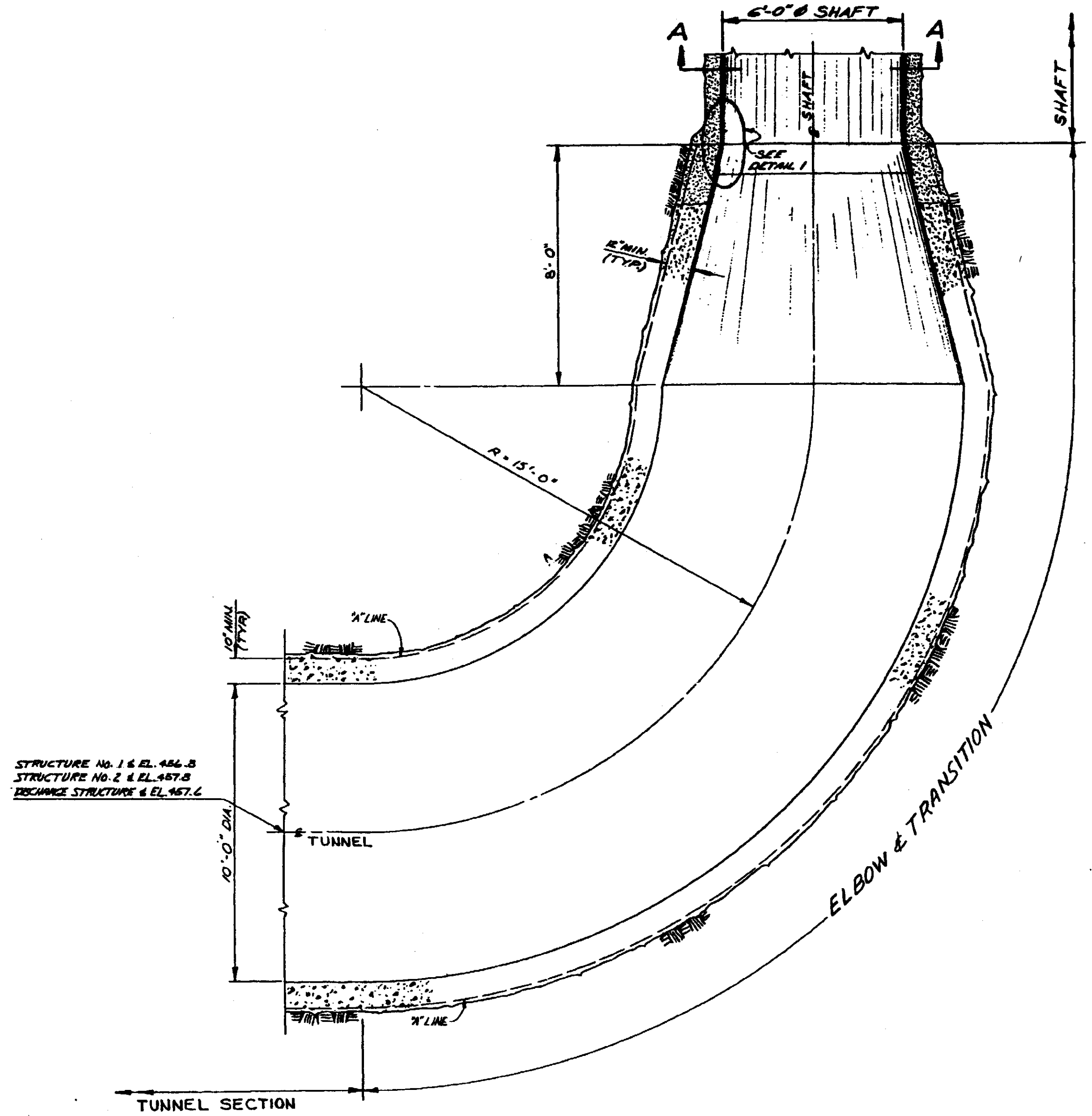


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

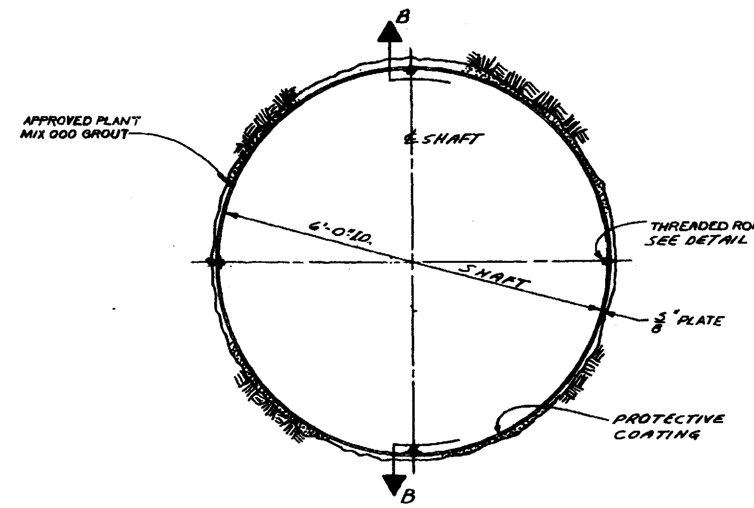
Multiport Intake Structures – Caisson Arrangement

Figure 3.8-68



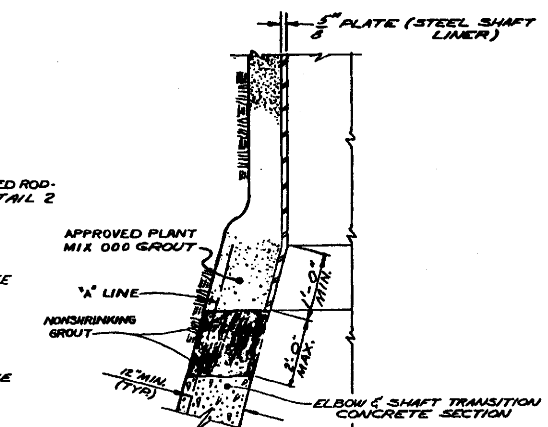
TYPICAL OFFSHORE ELBOW AND SHAFT TRANSITION

0 4 8
SCALE IN FEET



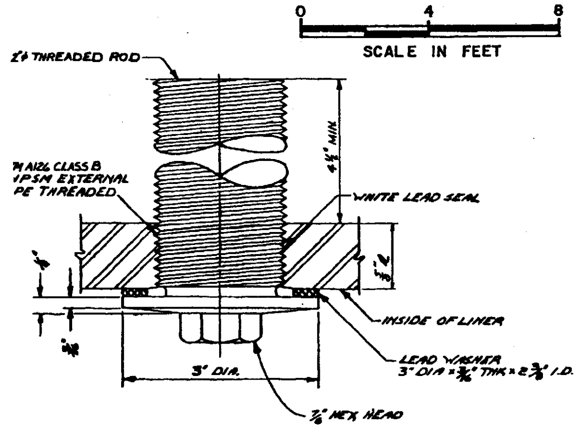
SECTION A-A

0 2 4
SCALE IN FEET



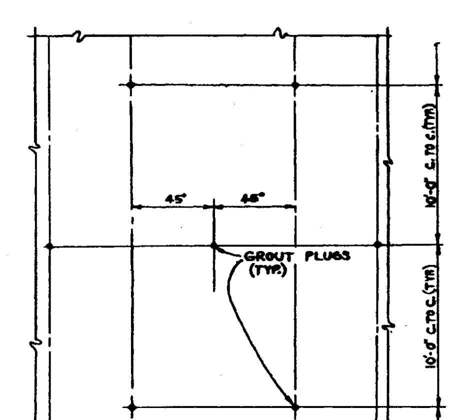
DETAIL 1

0 2 4
SCALE IN FEET



DETAIL 2 - THREADED ROD ASSY. (GROUT PLUG OPENINGS)

NOT TO SCALE



SECTION B-B
DEVELOPED VIEW OF SHAFT LINING
GROUT PLUG LAYOUT

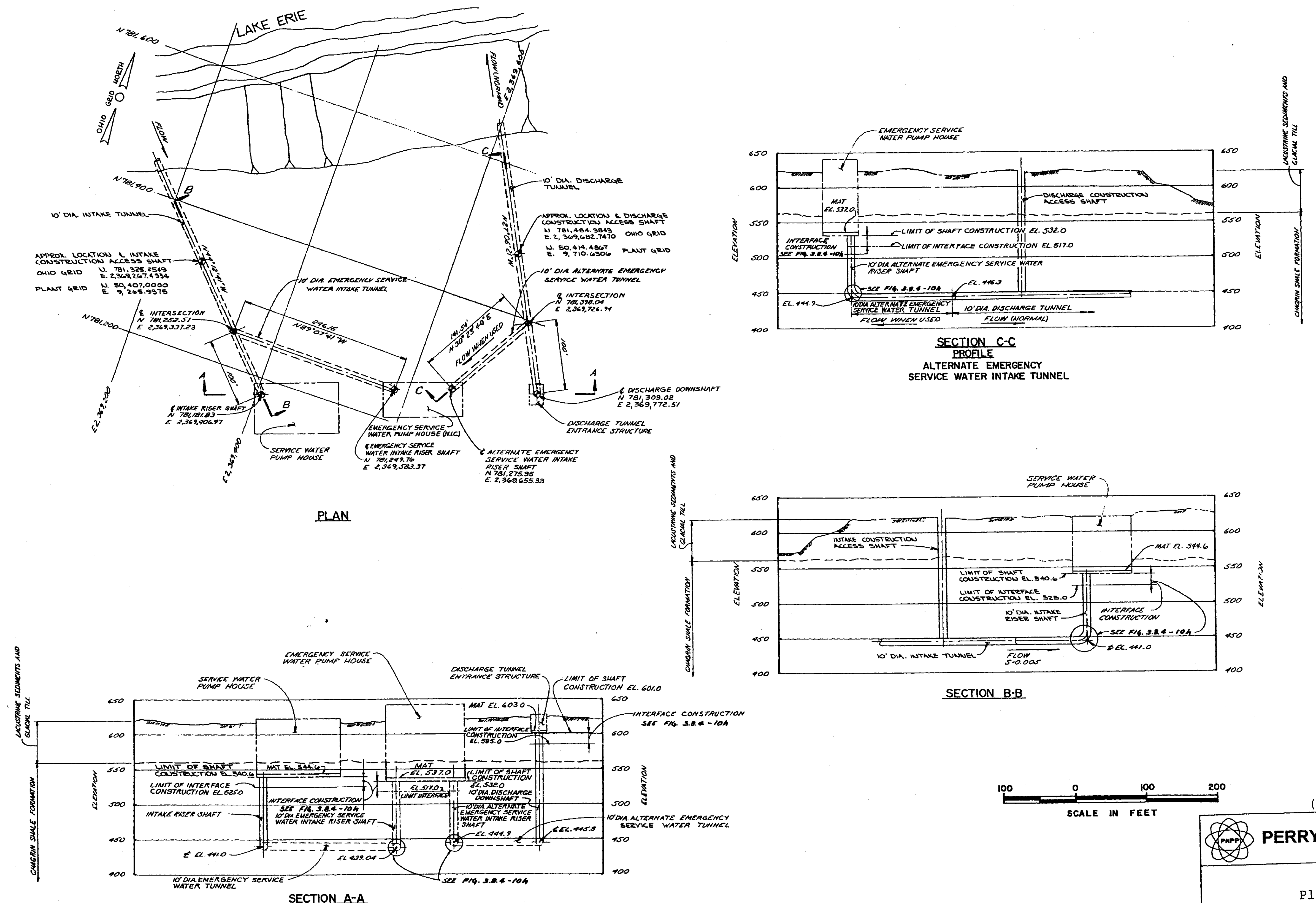
0 8 16
SCALE IN FEET

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Offshore Elbow and Shaft Transition

Figure 3.8-69

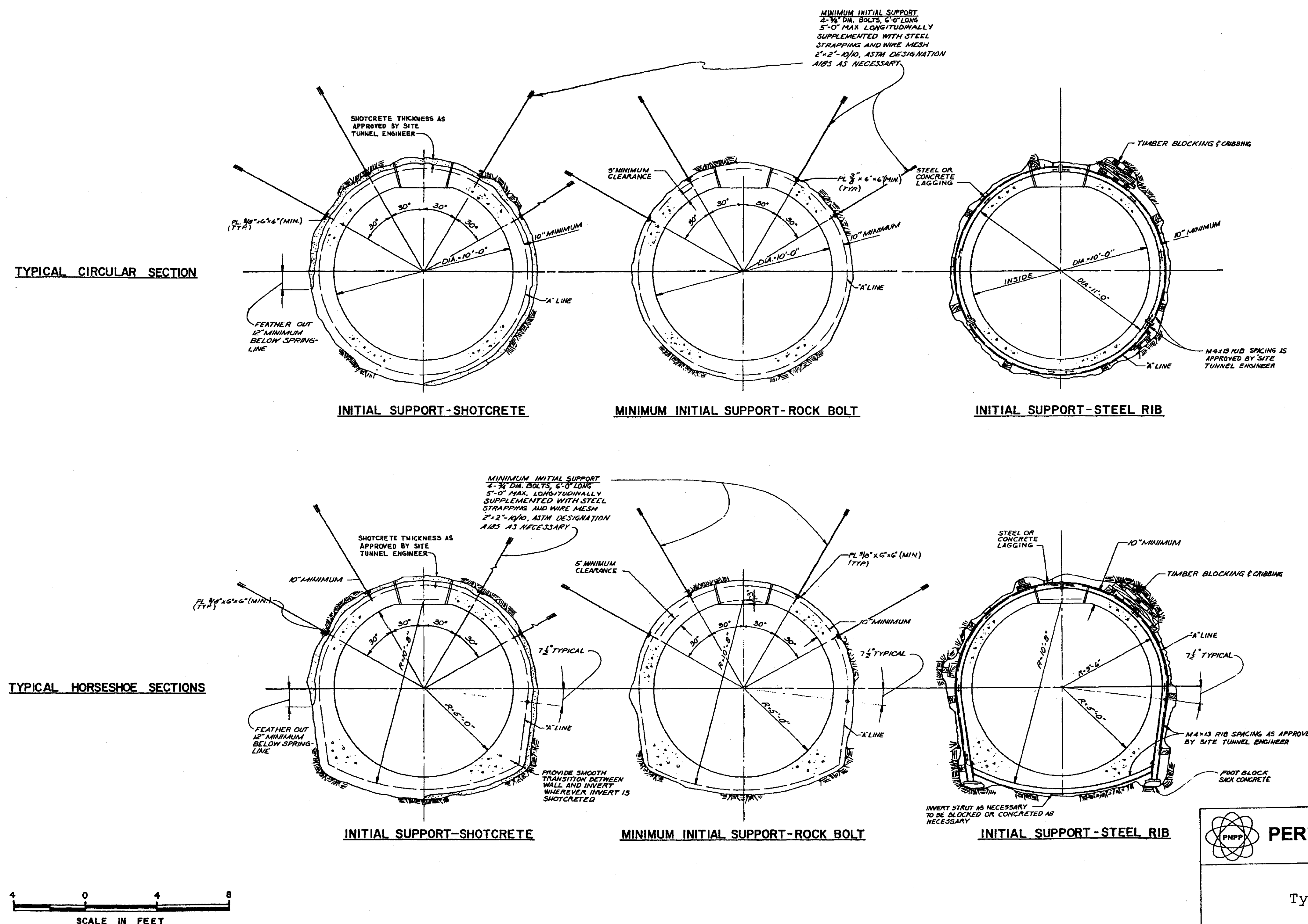


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Plan and Profiles -
Service Water Tunnels

Figure 3.8-70

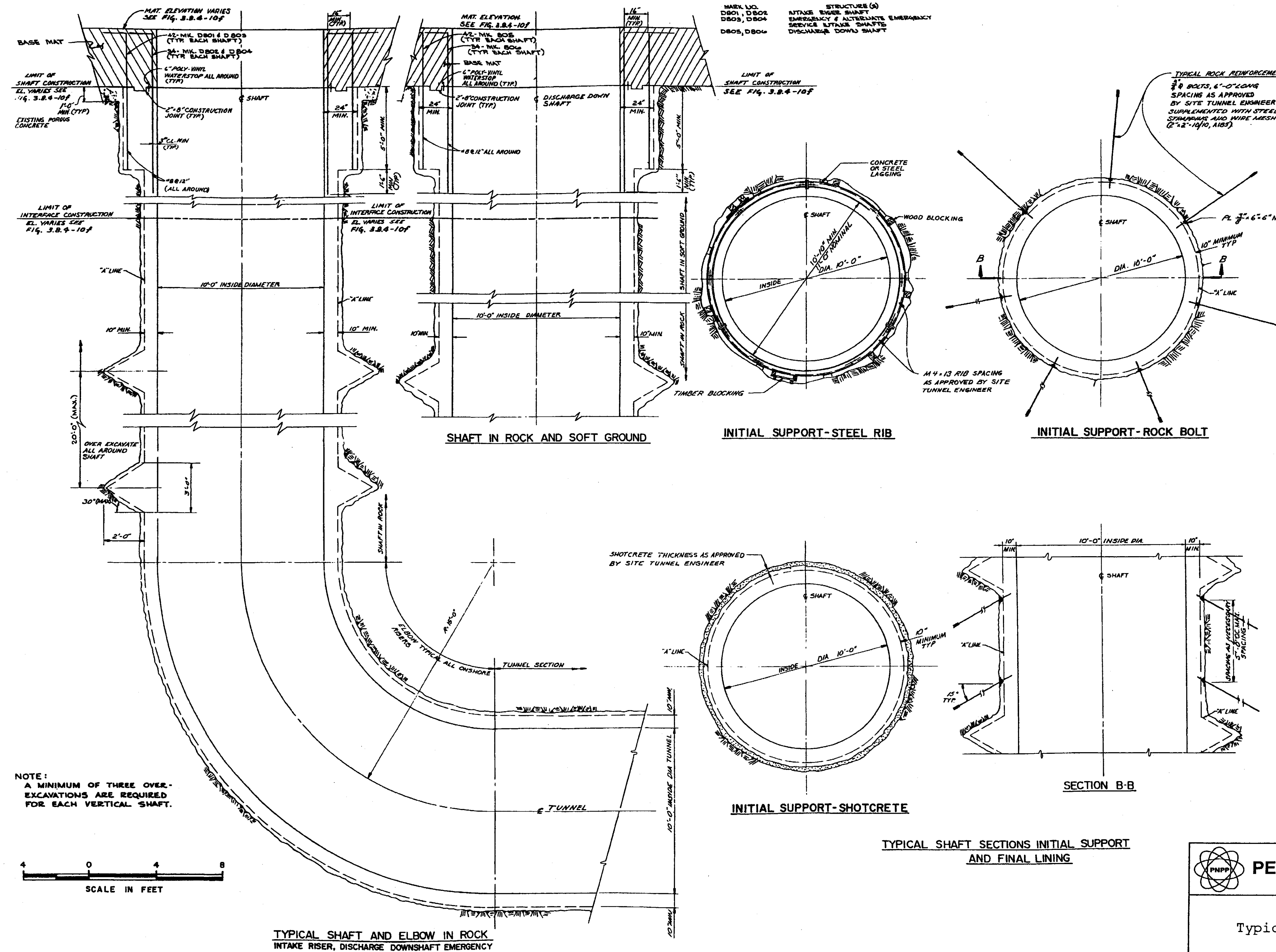


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Tunnel Sections

Figure 3.8-71

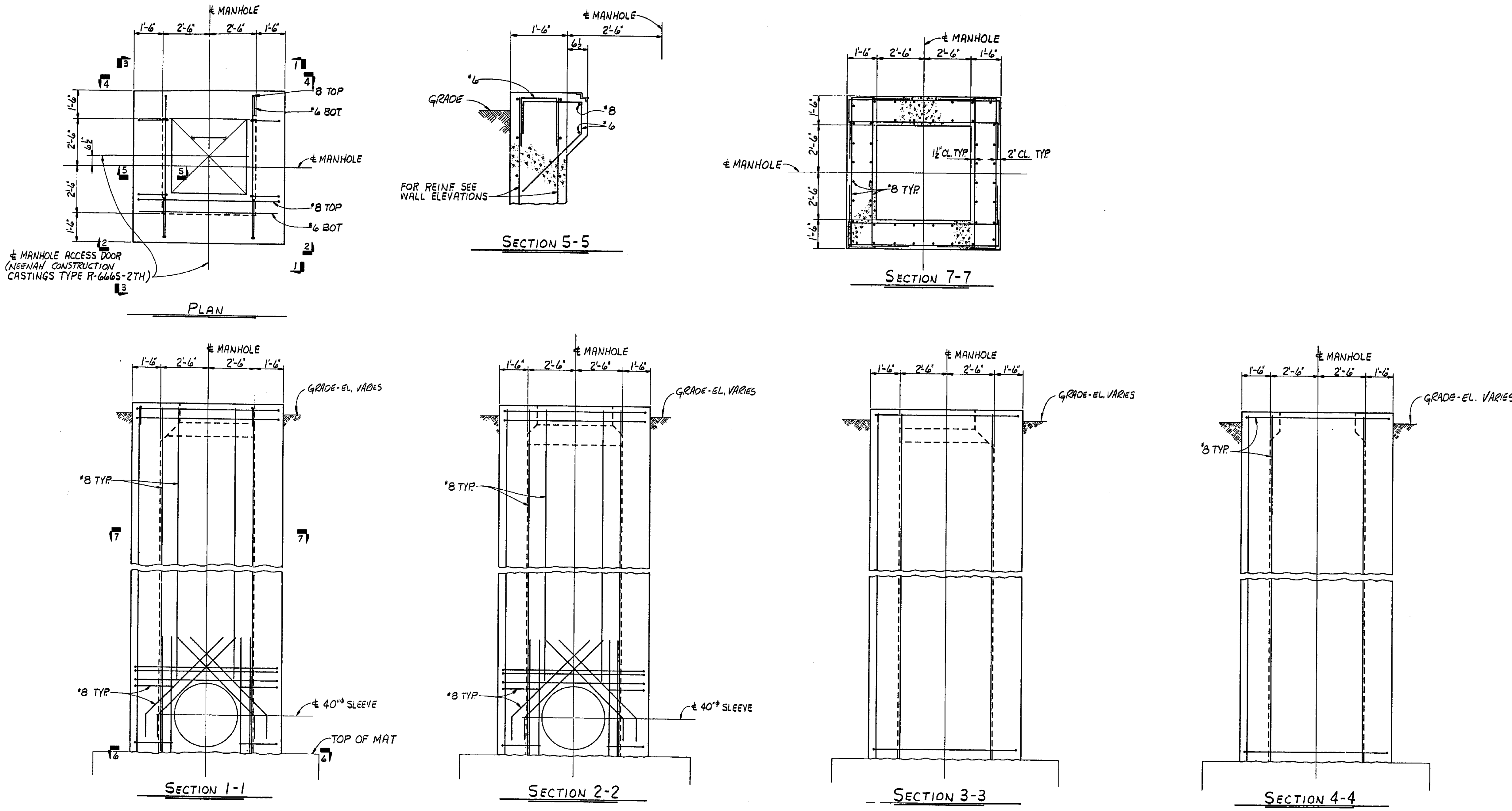


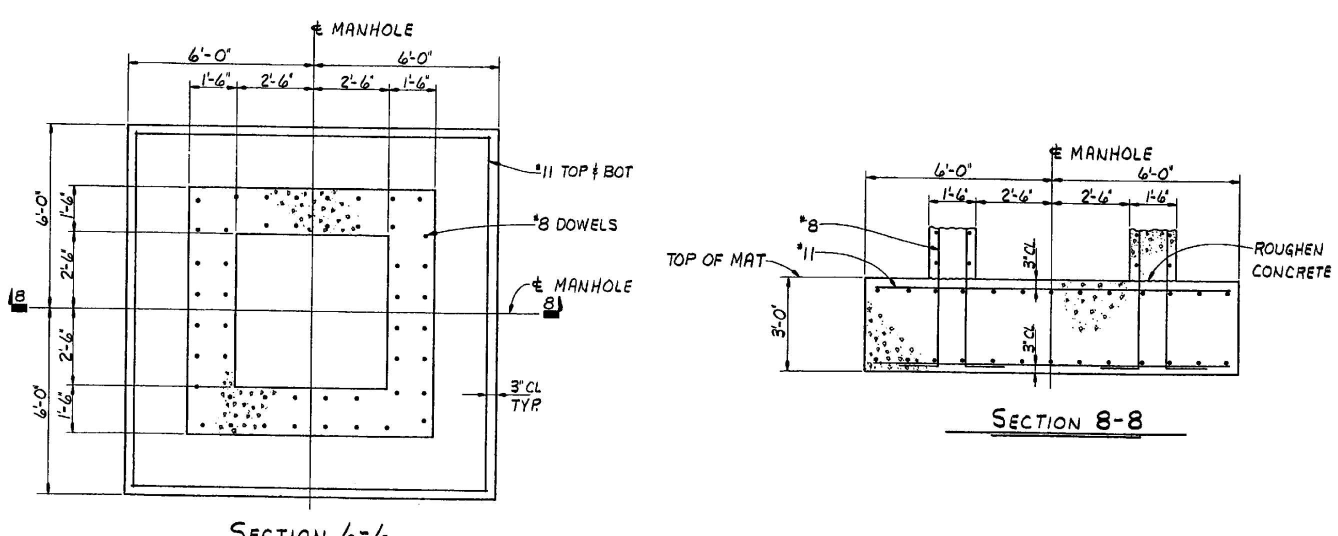
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Shaft and Elbow in Rock

Figure 3.8-72





Note:

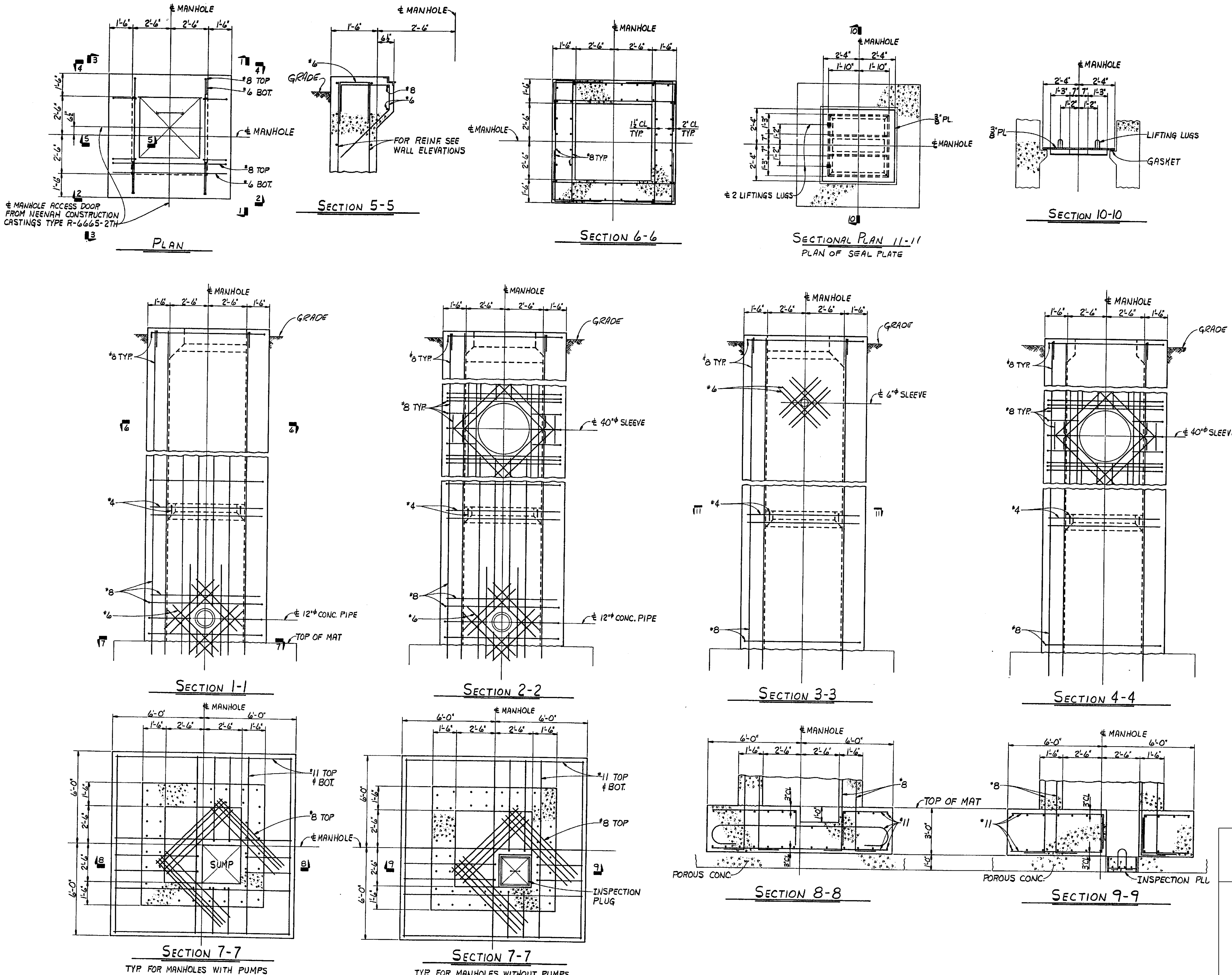
Approved alternate watertight access covers may be substituted for exterior manholes.

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

UNDERDRAIN GRAVITY
DISCHARGE MANHOLES

FIGURE 3.8-73 (SHEET 1 OF 2)



Note:

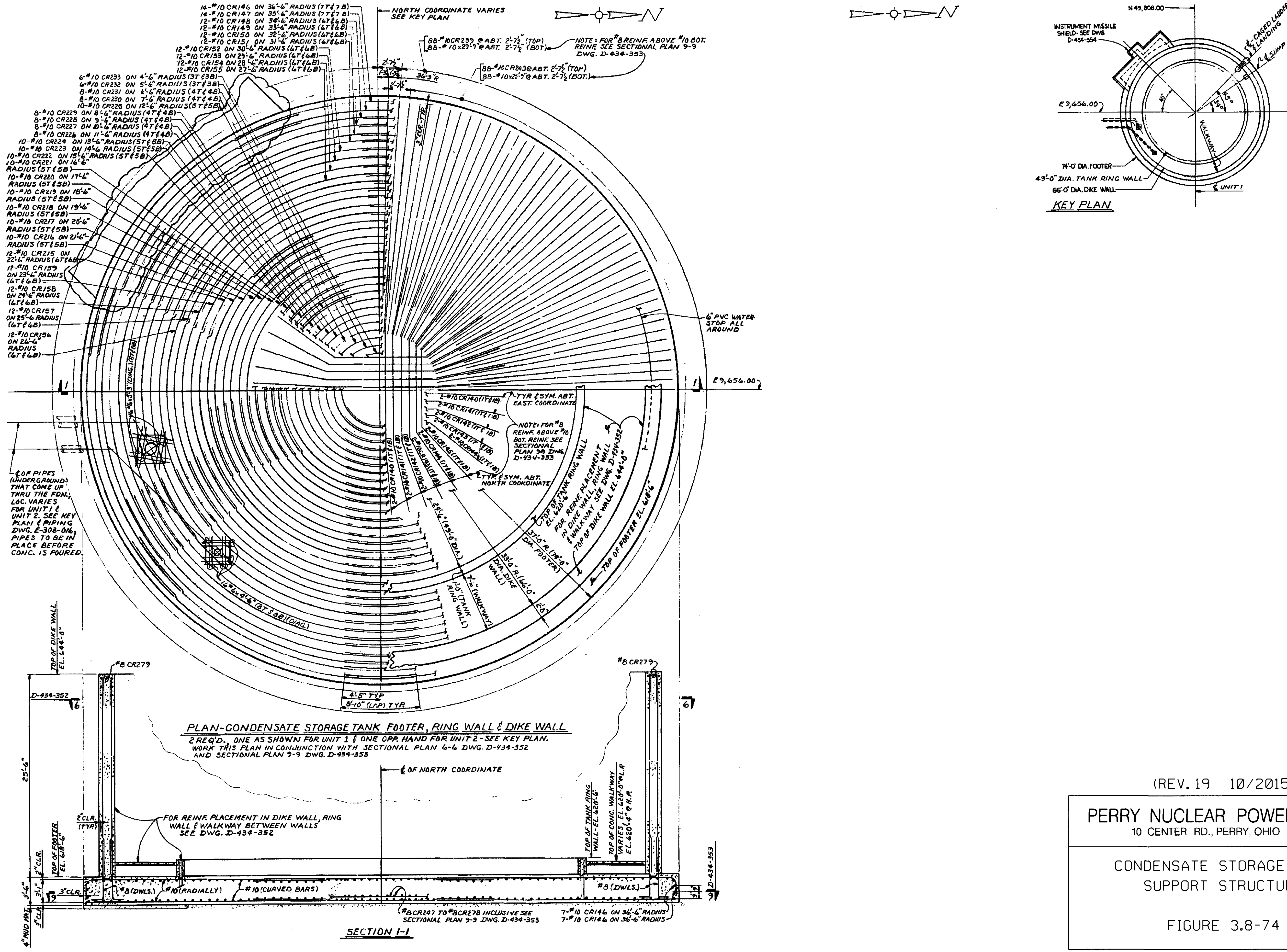
Approved alternate watertight access covers may be substituted for exterior manholes.

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

UNDERDRAIN GRAVITY DISCHARGE MANHOLES

FIGURE 3.8-73 (SHEET 2 OF 2)

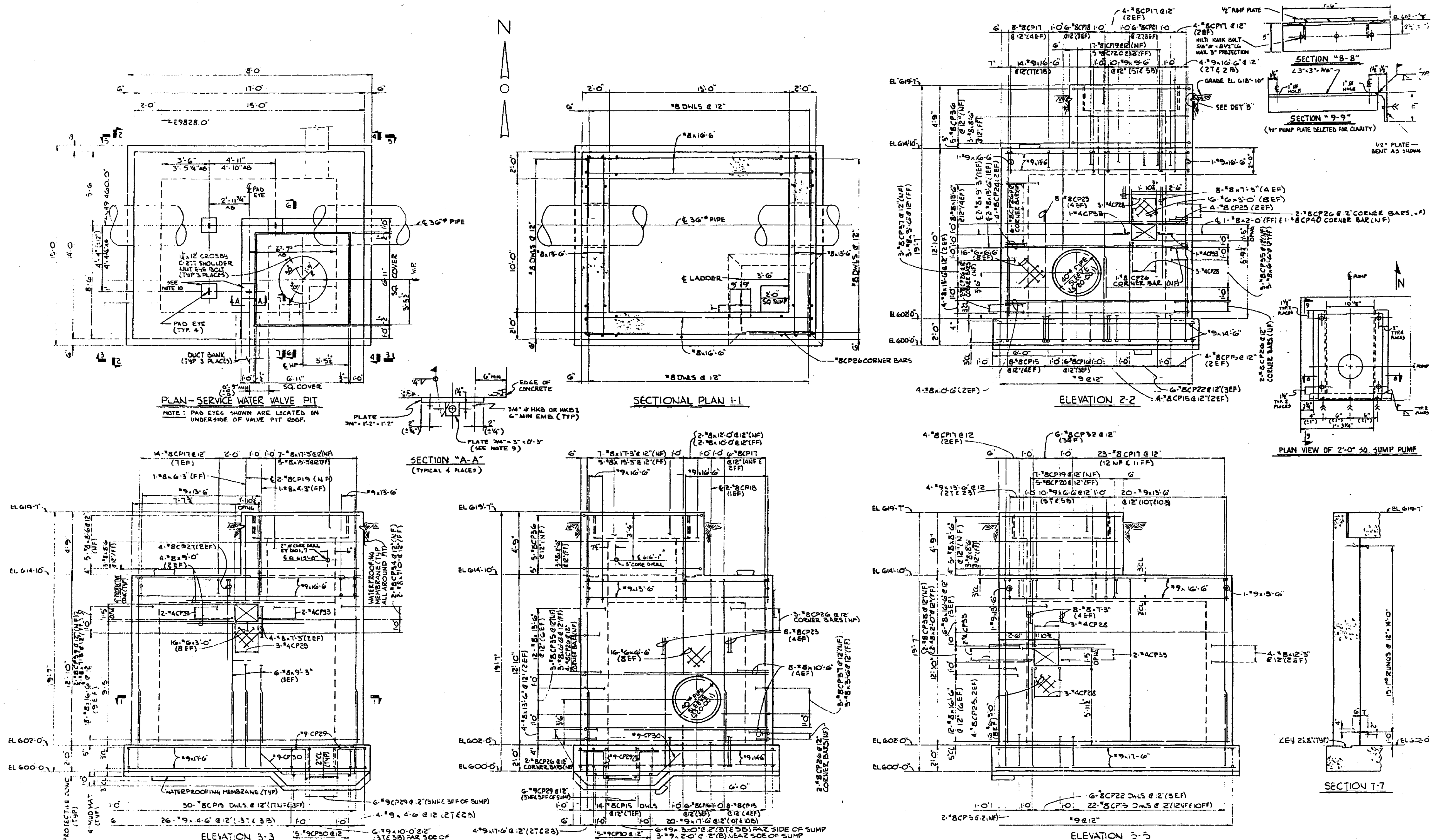


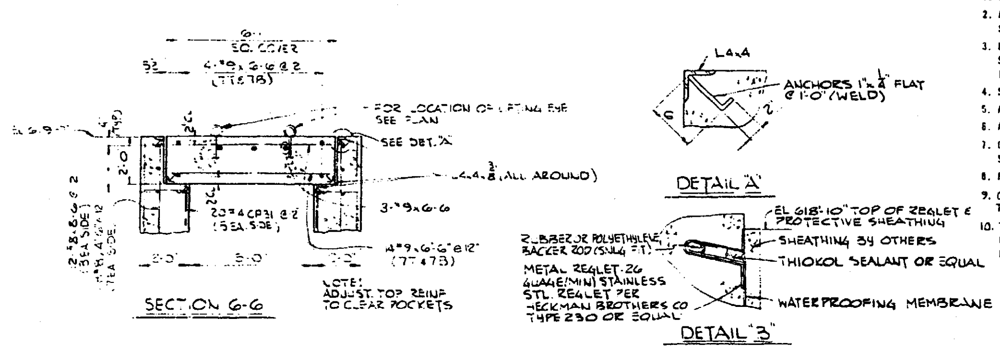
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE STORAGE TANK SUPPORT STRUCTURE

FIGURE 3.8-74





NOTES:-

1. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.
2. ALL WORK INDICATED ON THIS DRAWING TO BE INCLUDED WITH AND SHALL BE DONE IN ACCORDANCE WITH SPECIFICATION SP-93-4549-00 AND ITS ATTACHMENT SPECIFICATIONS.
3. EMBEDDED STEEL SHOWN ON THIS DRAWING SHALL BE FABRICATED AND DELIVERED IN ACCORDANCE WITH SPECIFICATION SP-667-4549-00 AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SP-93-4549-00 AND ITS ATTACHMENT SPECIFICATIONS.
4. SIDES OF KEYS TO HAVE A 2" IN 12" SLOPE.
5. ALL EXPOSED CORNERS TO HAVE A 3/4" CHAMFER.
6. ALL CONSTRUCTION JOINTS BELOW GRADE TO HAVE A 6" PVC WATERSTOP.
7. CONCRETE INDICATED AS "MUD MAT" OR PROTECTIVE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI AT THE END OF 28 DAYS.
8. FOR SLEEVE INSTALLATION, SEE DWG. B-422-001.
9. CENTERLINE OF PADEYE TO BE ON CENTERLINE OF HILTI PLATE ± 2". THE MAXIMUM ALLOWABLE LOAD FOR EACH LIFTING LUG IS 5800LBS.
10. TO FACILITATE INSTALLATION OF THE SOUTH-WEST AND SOUTH-EAST PADEYES, A TOTAL OF ONE (1) EXISTING REBAR, AT EACH LOCATION, MAY BE CUT.

REFERENCES:-

7-393-018	PIPING
J-216-028	ELECTRICAL
S-42[illegible]-555	REINFORCEMENT LIST
S-424-563	REINFORCEMENT LIST
S-422-808	SLEEVE LIST
B-015-034	LAYOUT

NUCLEAR SAFETY RELATED

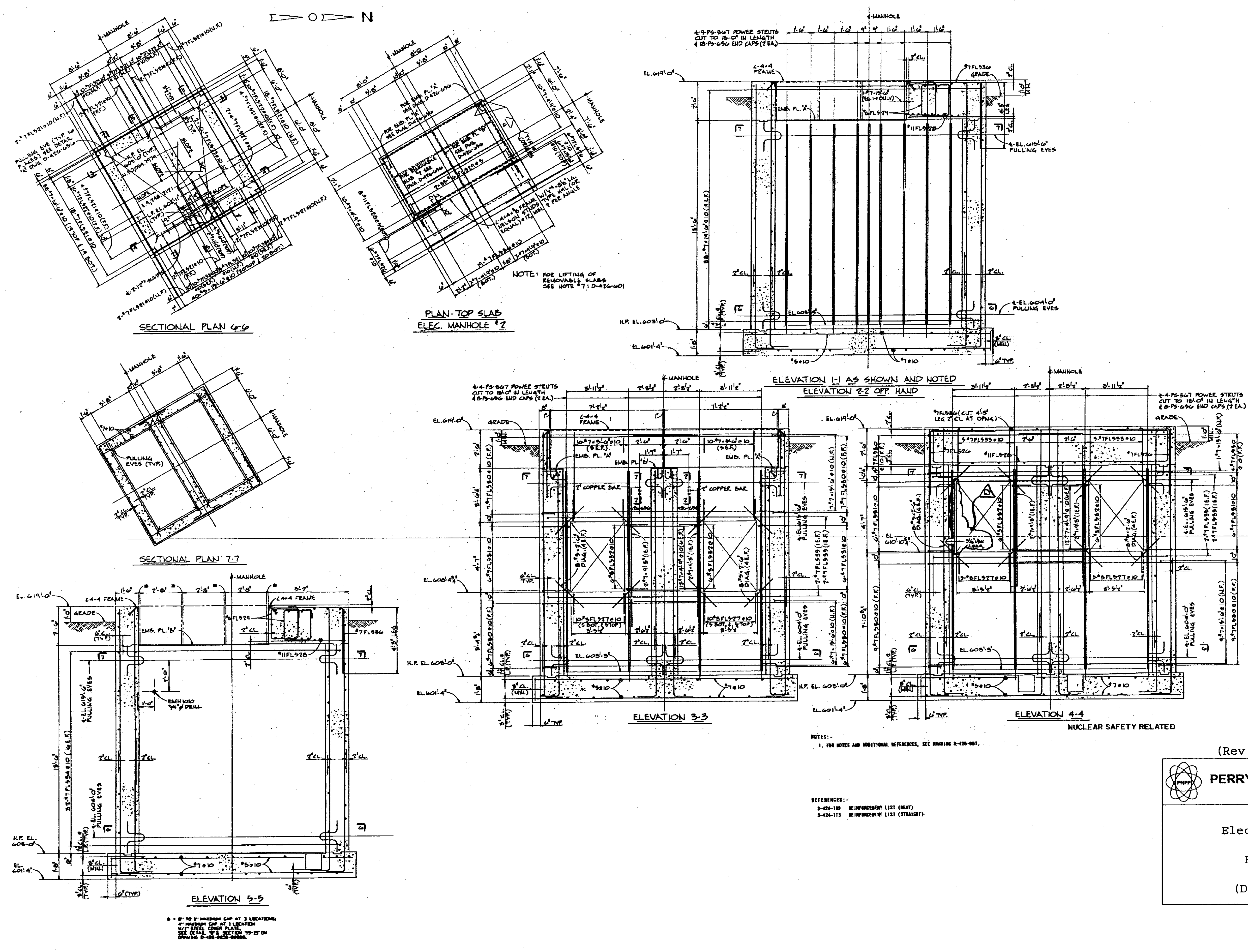
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Layout-Service Water Valve Pit

Figure 3.8-75

(Dwg. D-434-561)



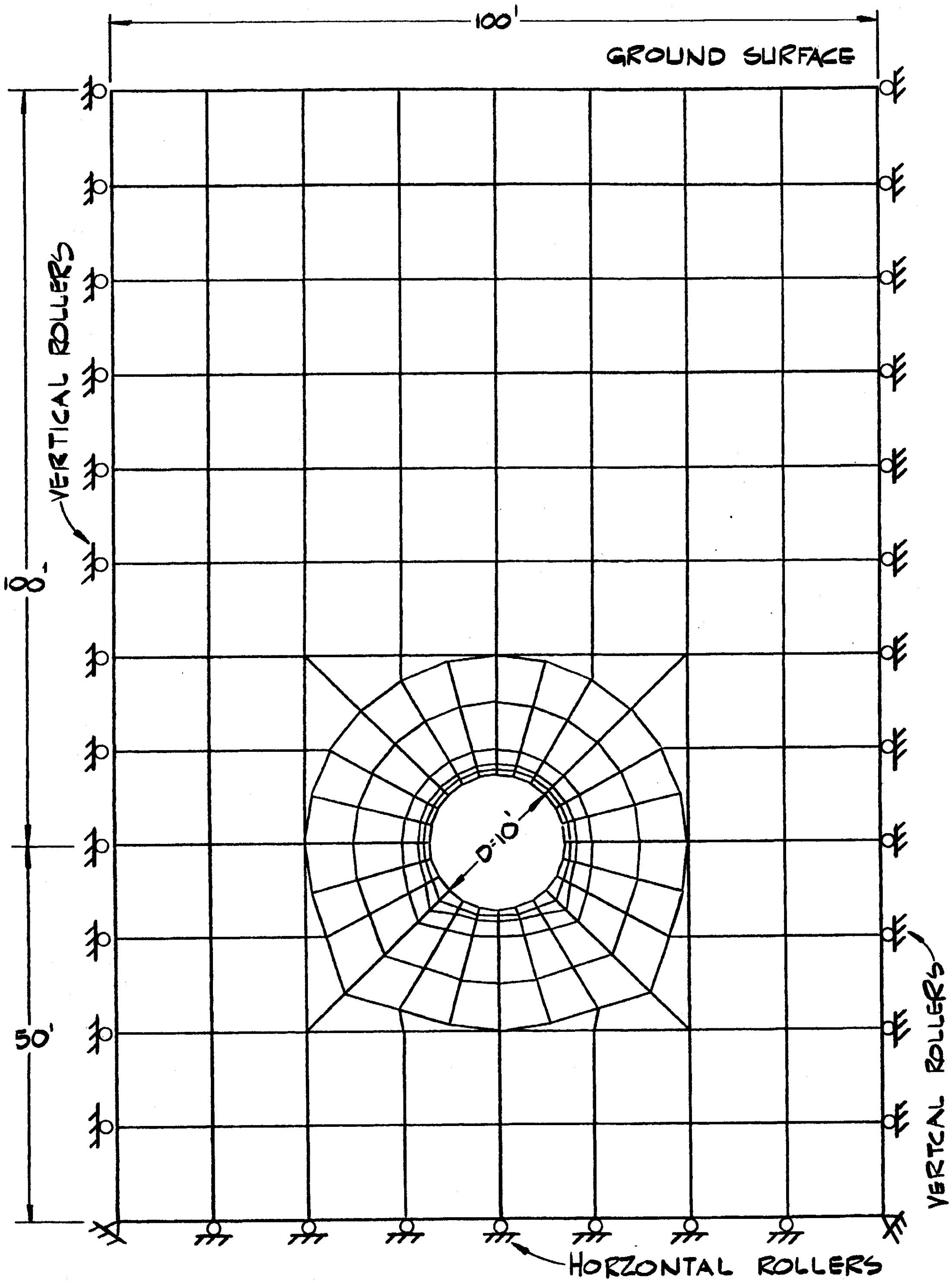
(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Electrical Manholes

Figure 3.8-76

(Dwg. D-426-602)

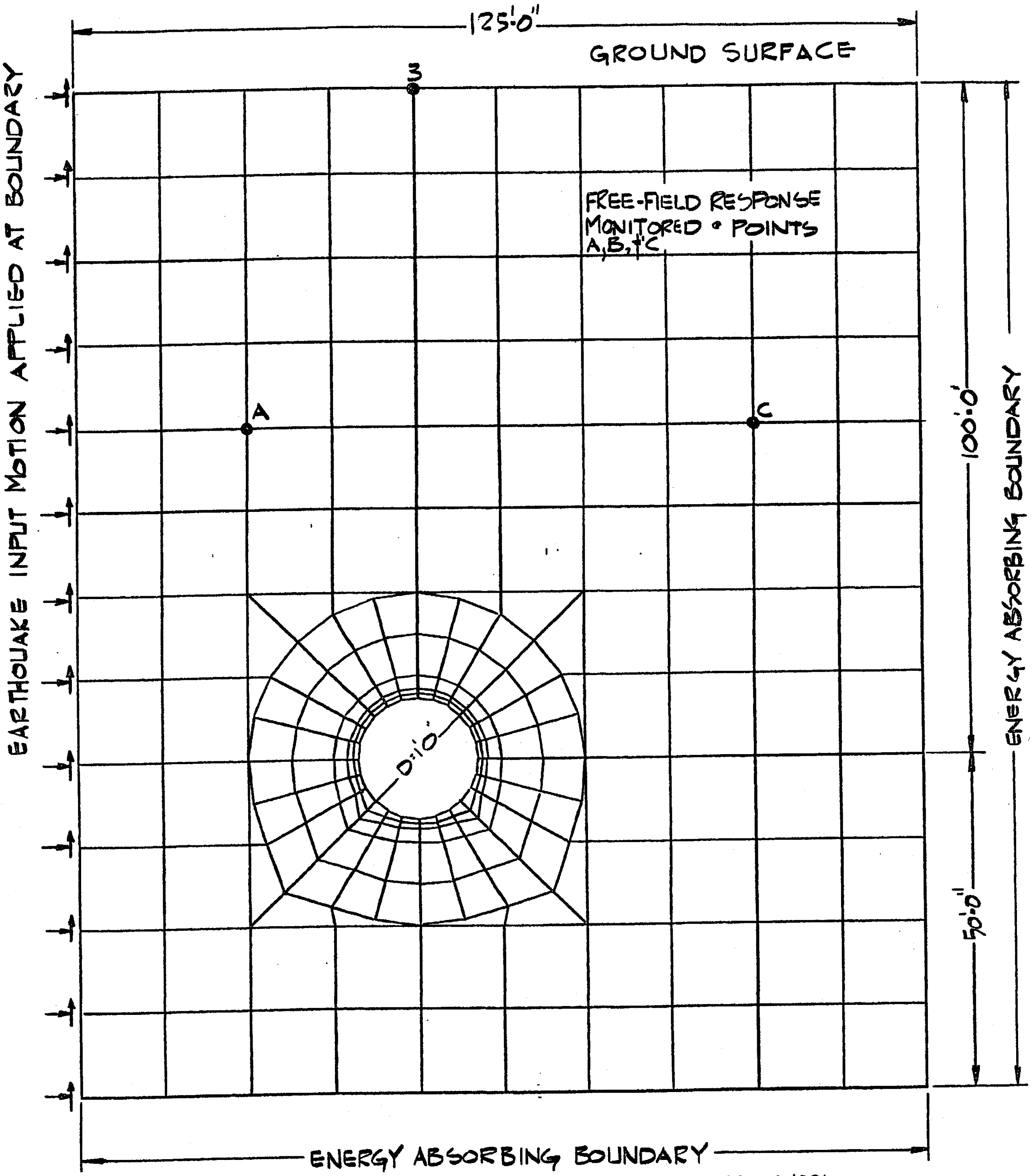


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Finite Element Model for
Static Stress Analysis of Tunnels

Figure 3.8-77

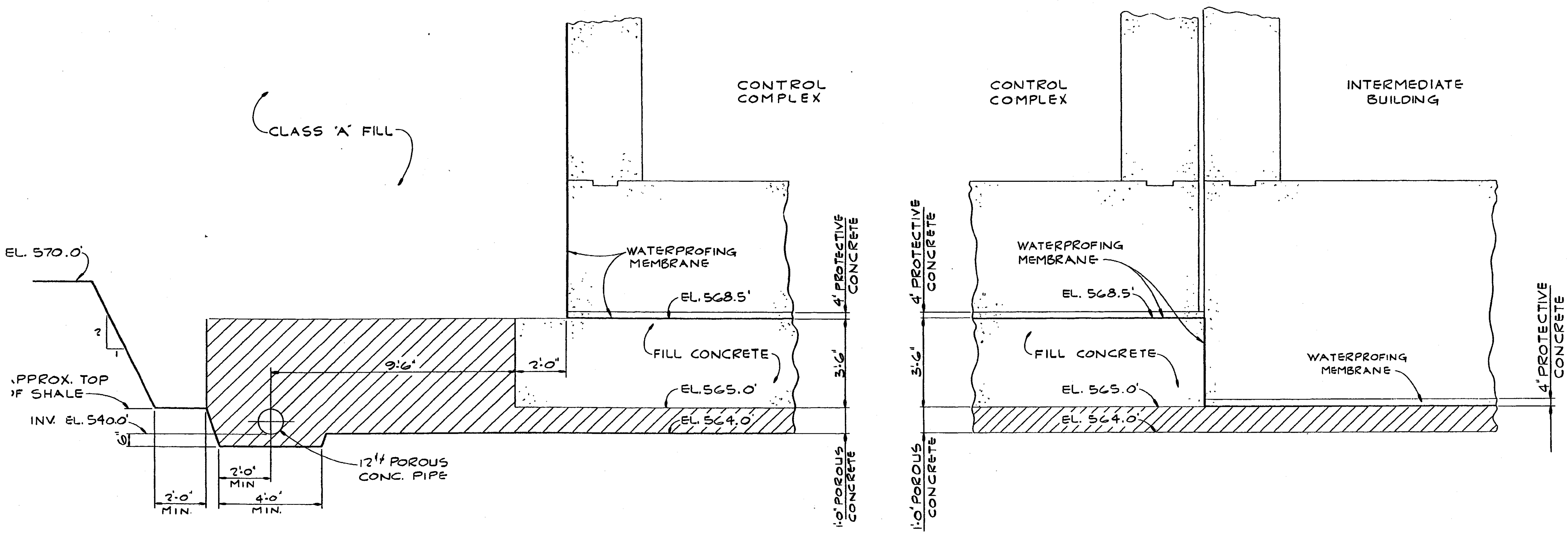


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Finite Element Model for
Seismic Analysis of Tunnels

Figure 3.8-78



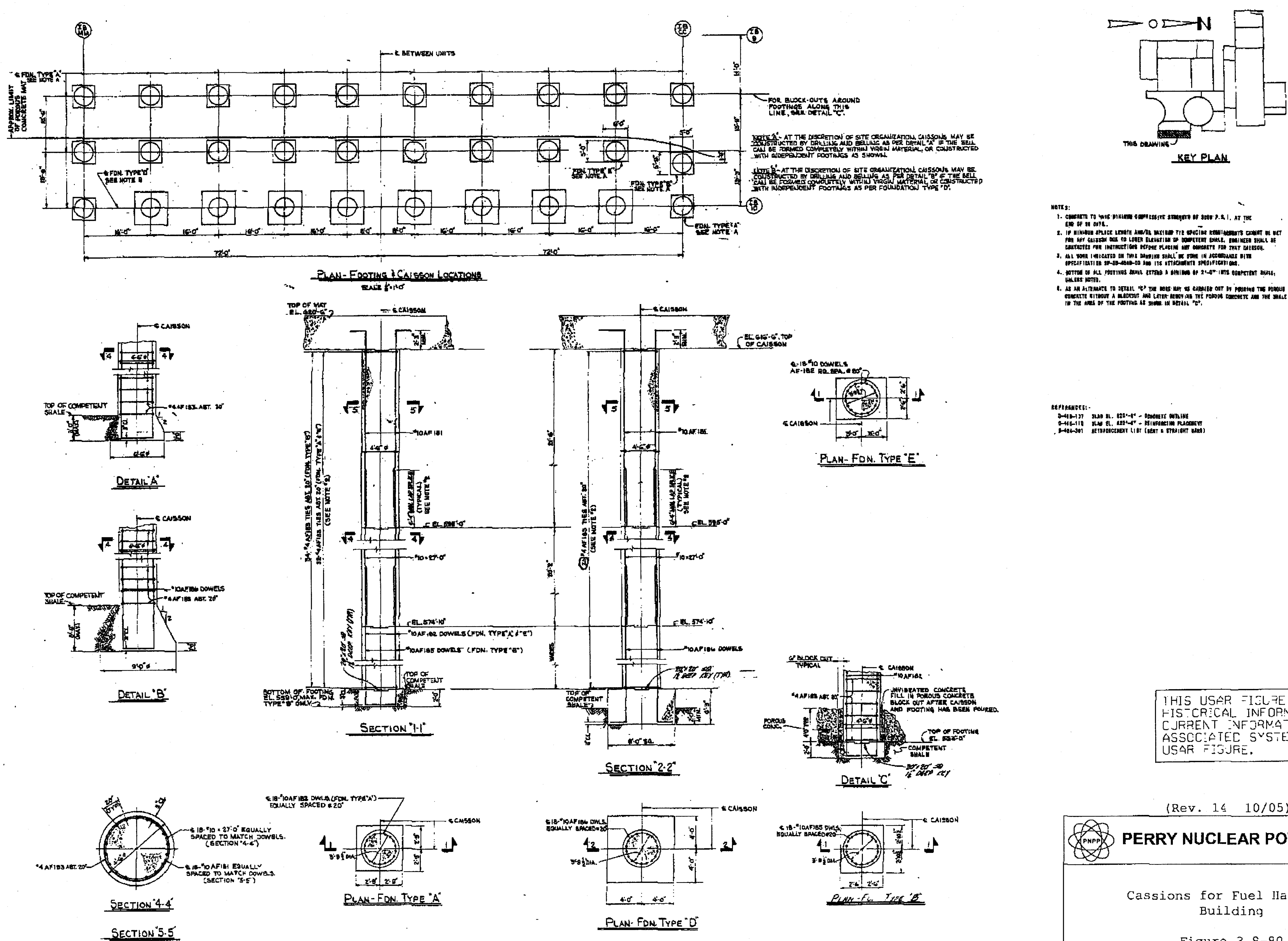
TYP WATERPROFING DETAILS

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Waterproofing Details

Figure 3.8-79



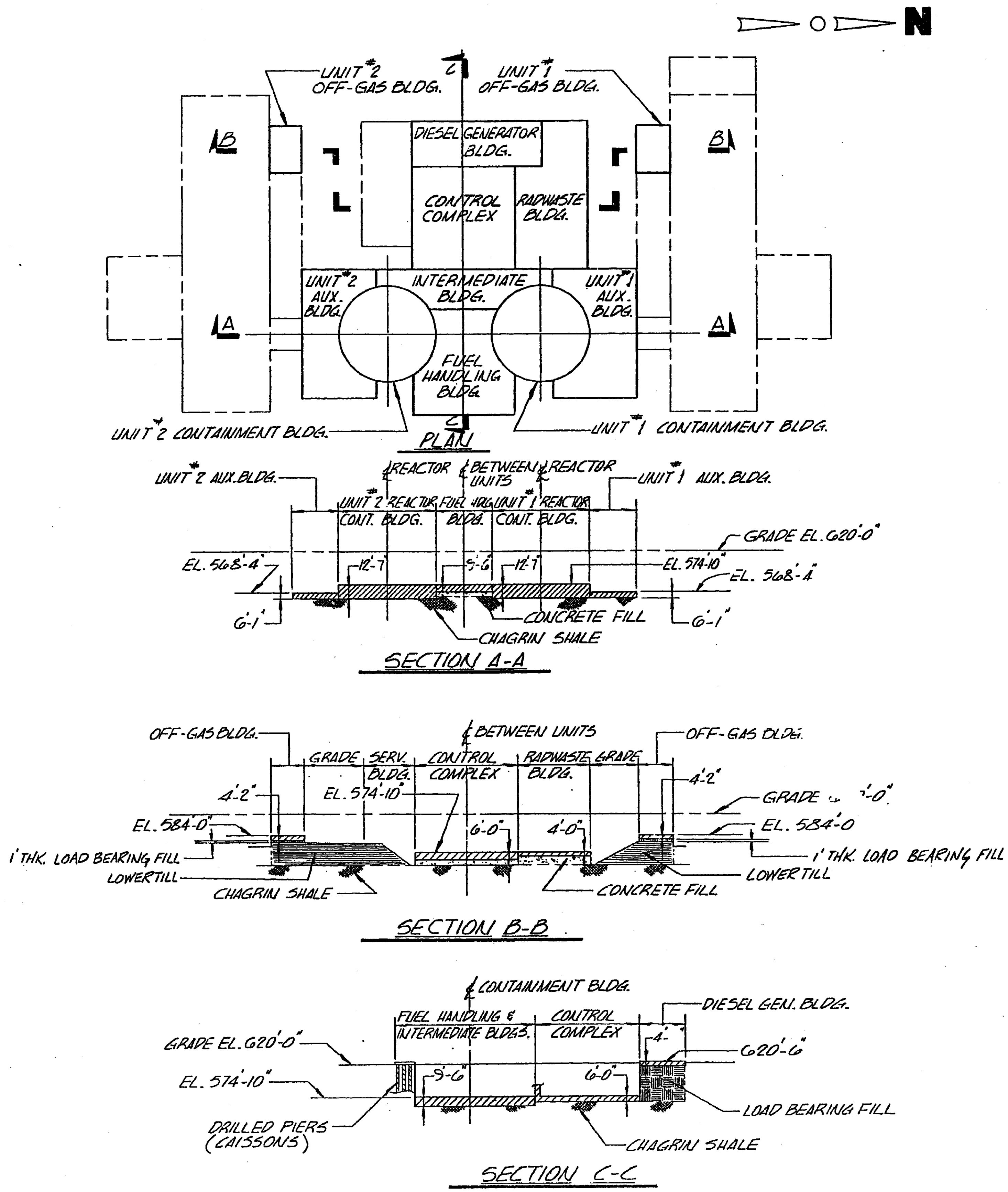
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Cassions for Fuel Handling Building

Figure 3.8-80
(Dwg. D-415-111)

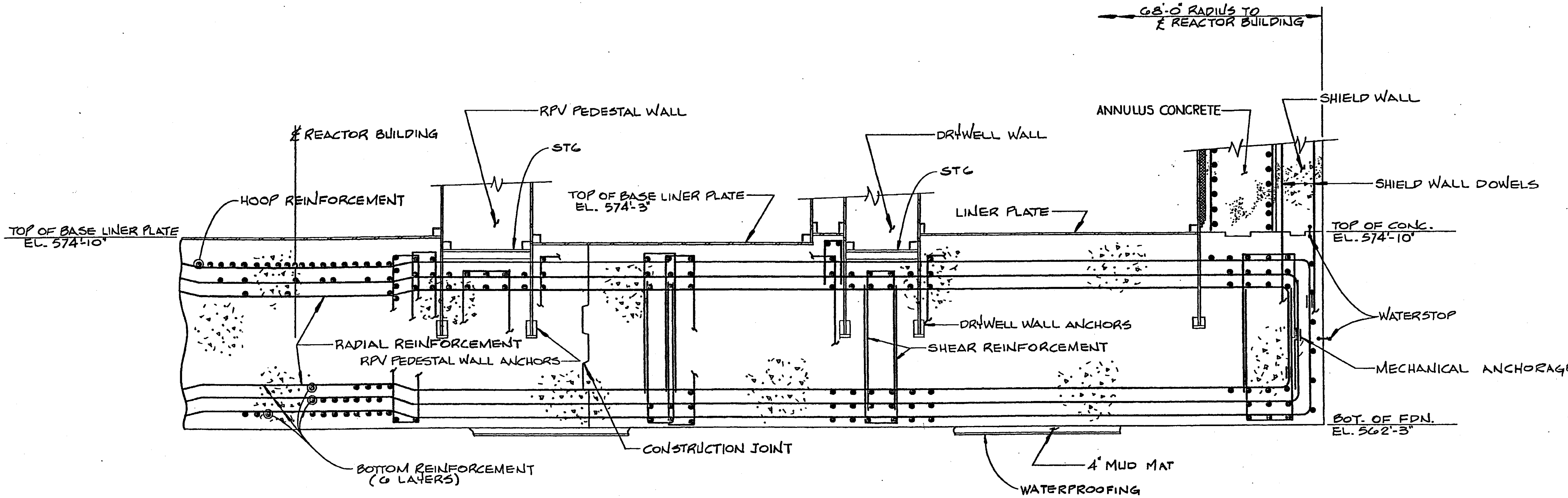


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Foundation Details of Safety Class Structures

Figure 3.8-81



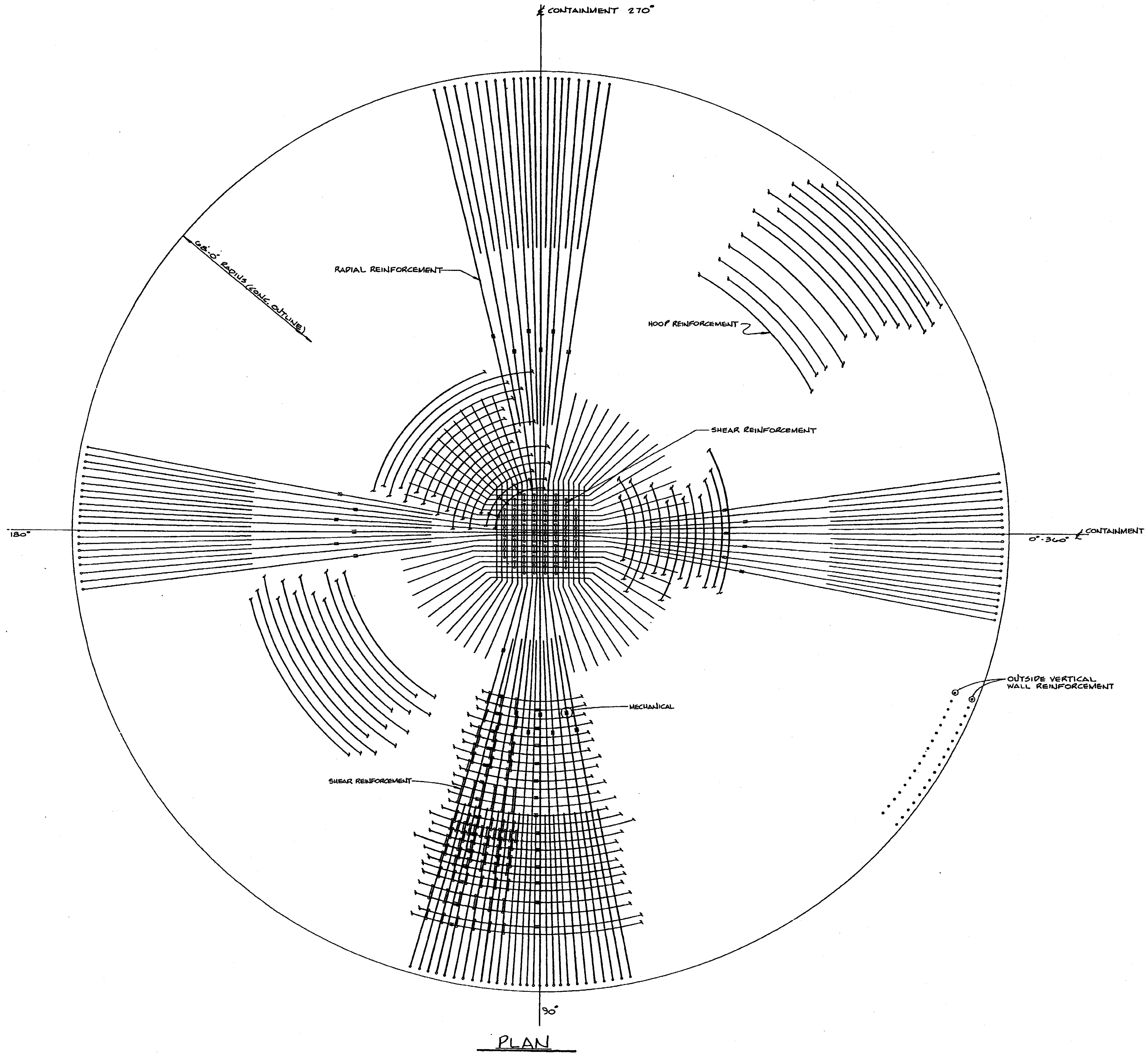
SECTION THRU CONTAINMENT FOUNDATION MAT

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Section Through Reactor
Building Foundation Mat

Figure 3.8-82

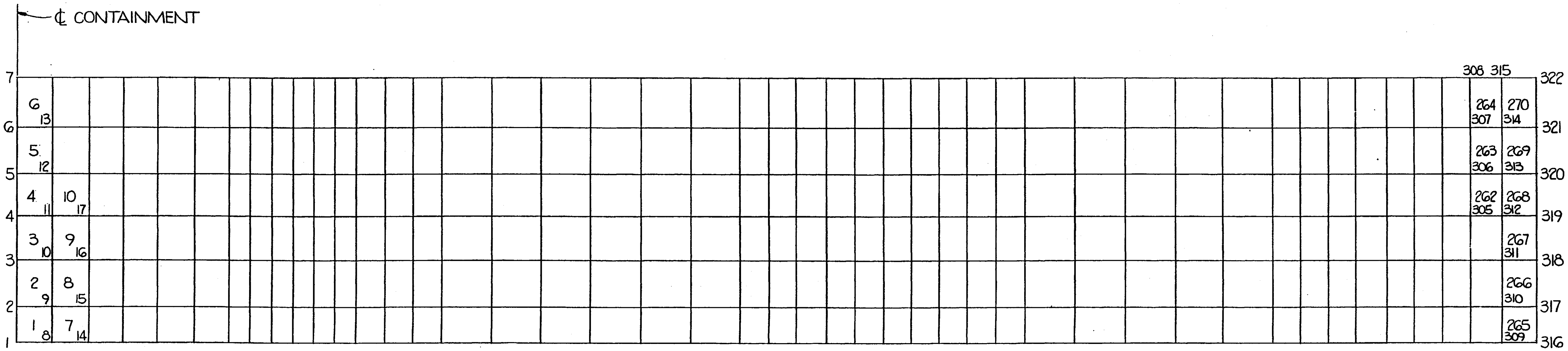


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reinforcement Plan of
Reactor Building Foundation Mat

Figure 3.8-83

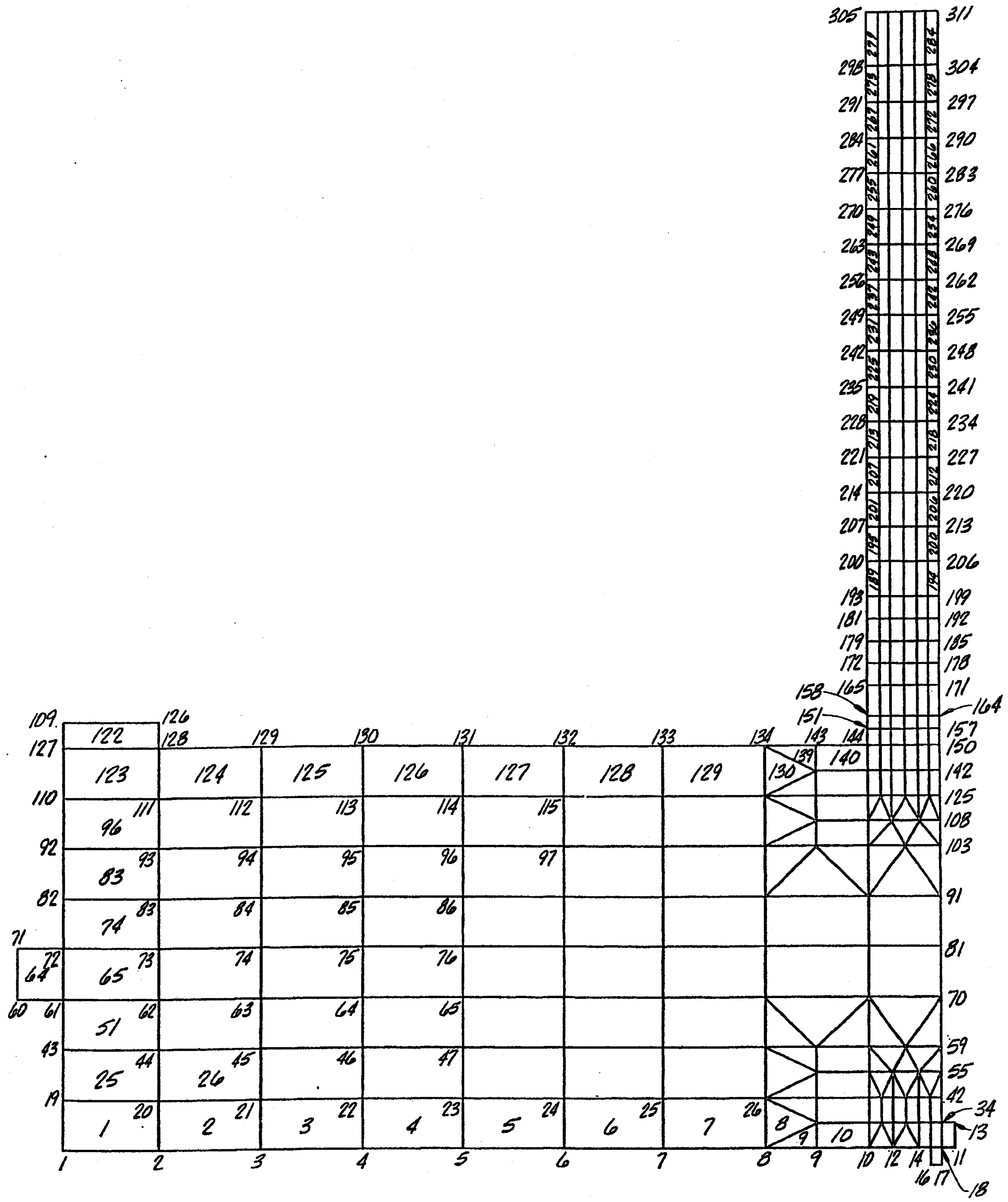


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analytical Model of
Reactor Building Complex
Foundation Mat

Figure 3.8-84

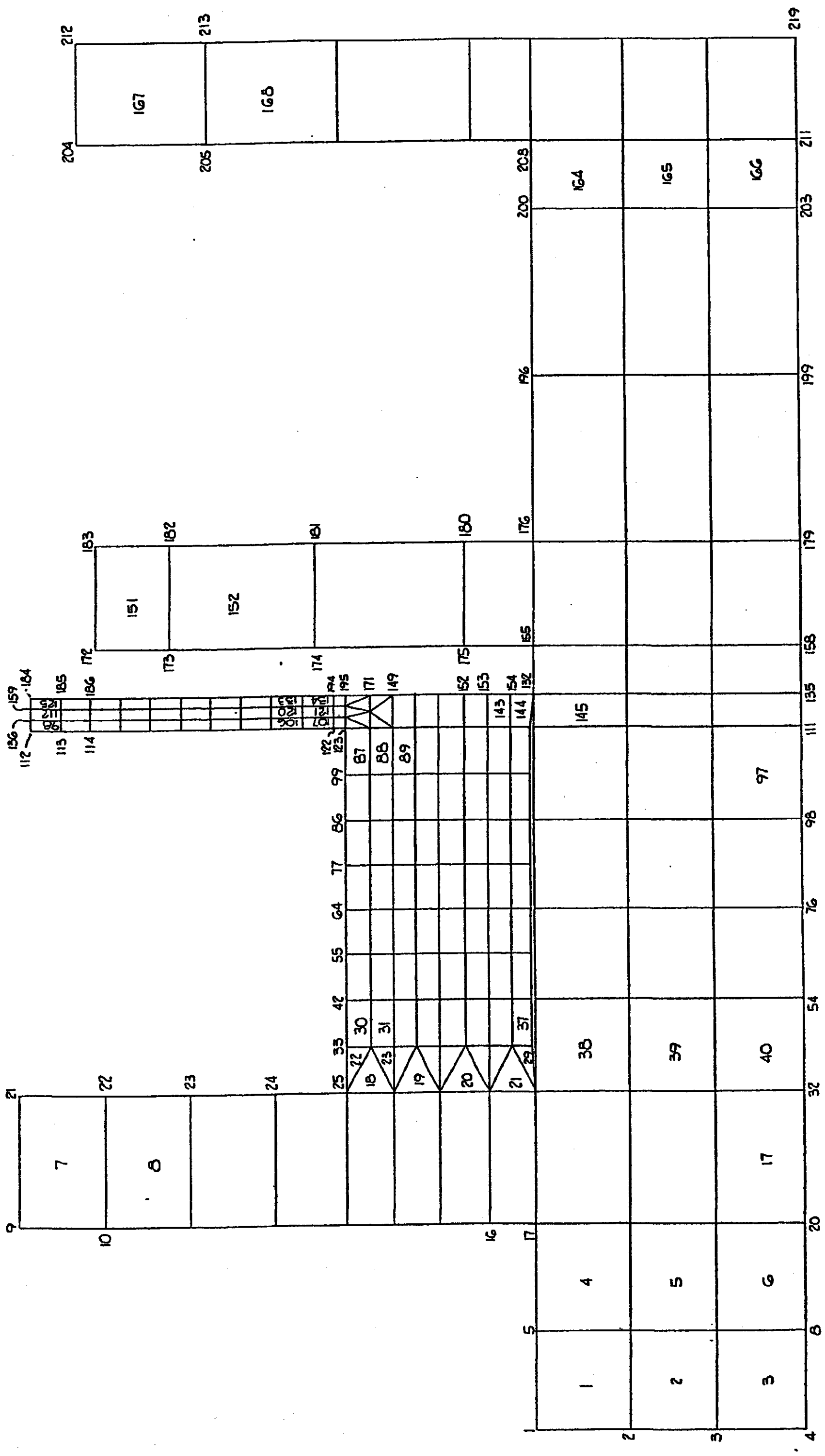


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Weir Mat and Wall
Finite Element Model

Figure 3.8-85

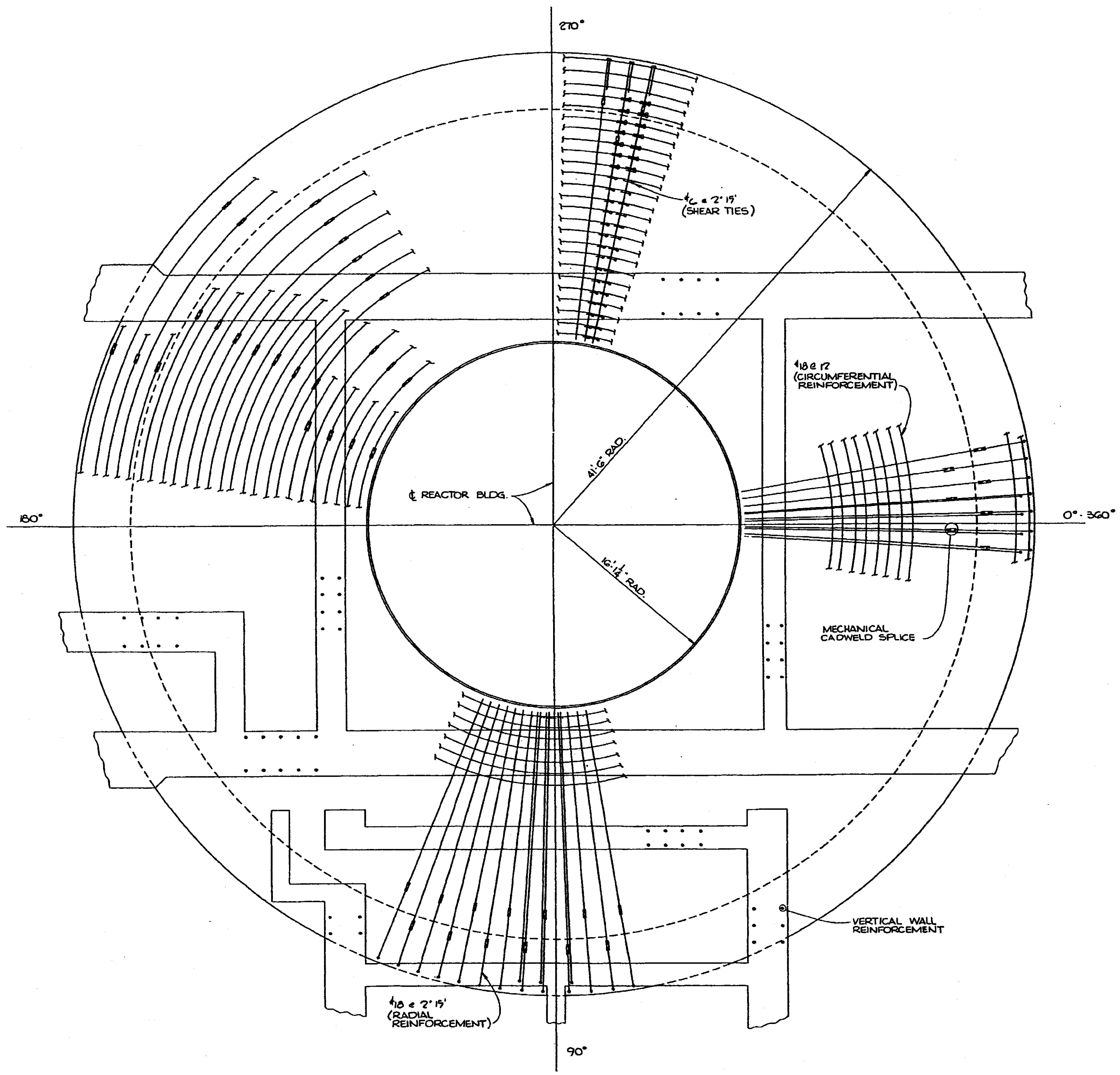


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Elastic Model for Predicting
Thermal Induced Forces of
Weir Wall and Mat

Figure 3.8-86

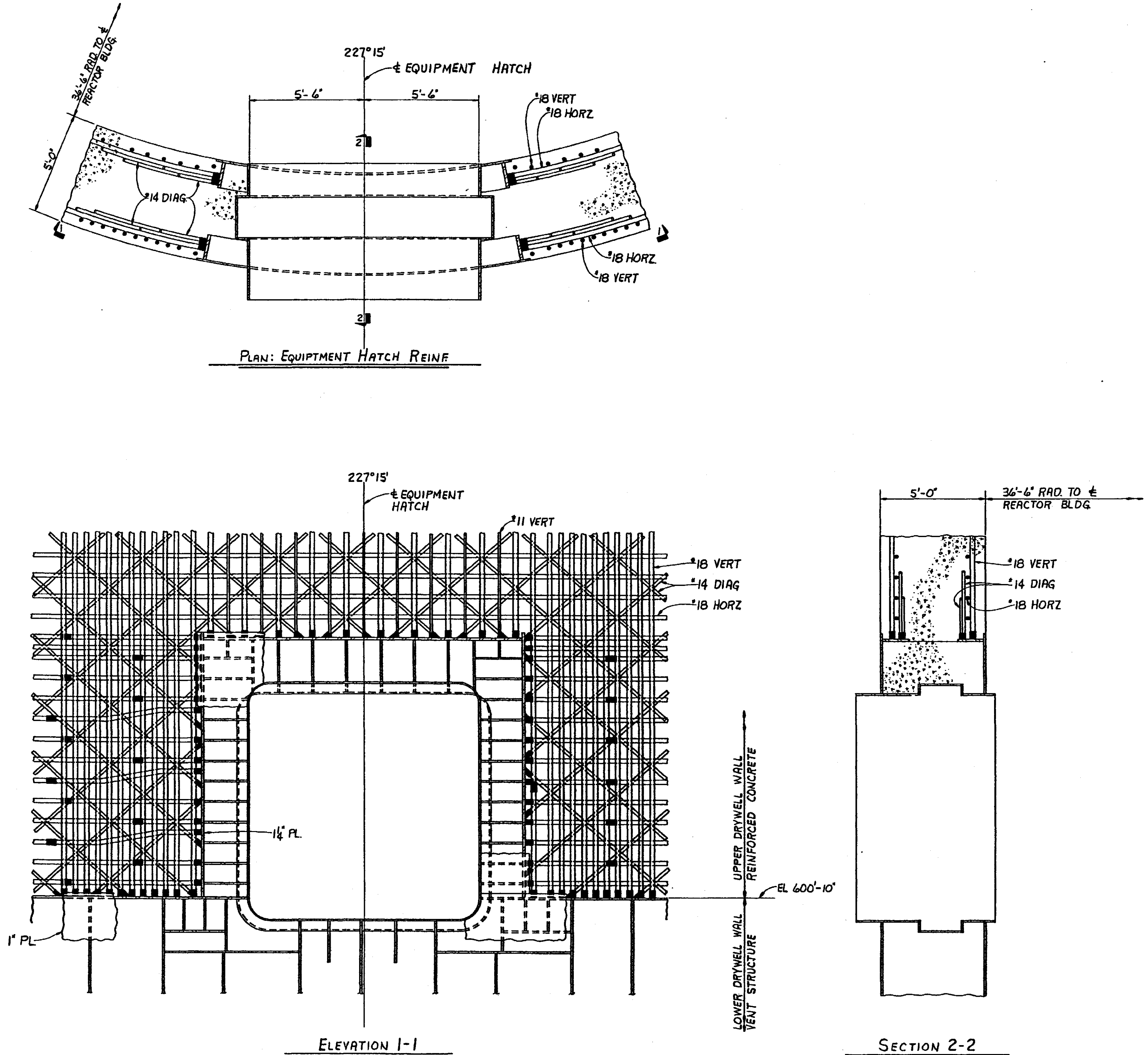


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Plan View-Drywell Top Slab
(Elev. 664'-7") Reinforcement

Figure 3.8-87

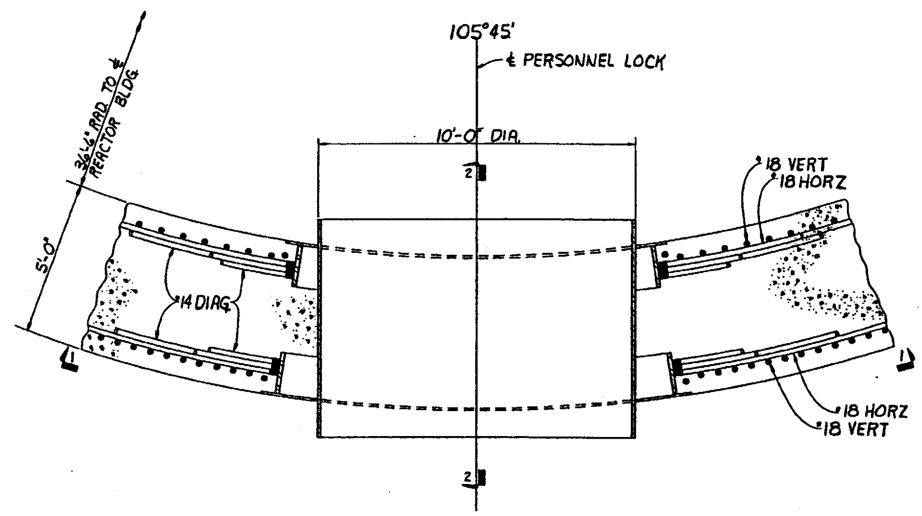


(Rev. 12 1/03)

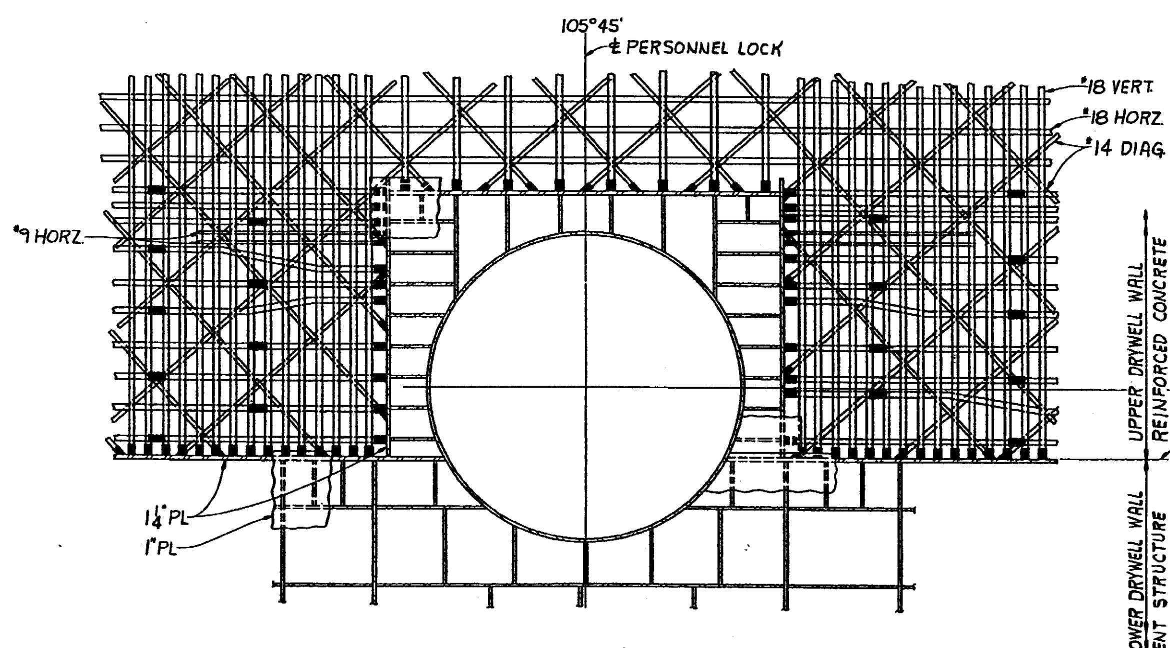
PERRY NUCLEAR POWER PLANT

Reinforcing Drawing of Drywell
Equipment Hatch Area

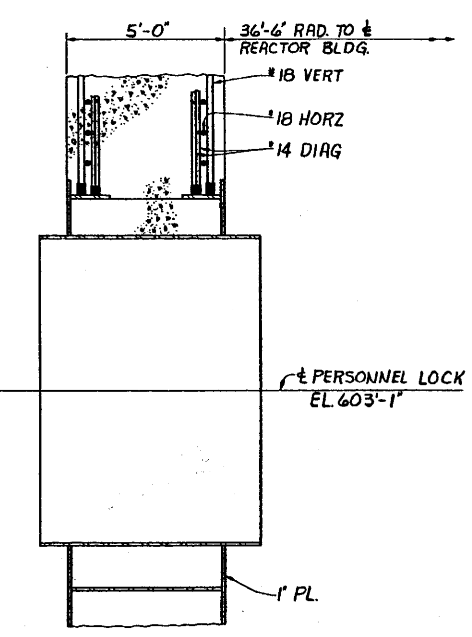
Figure 3.8-88



PLAN: DRYWELL PERSONNEL LOCK REINF.



ELEVATION 1-1



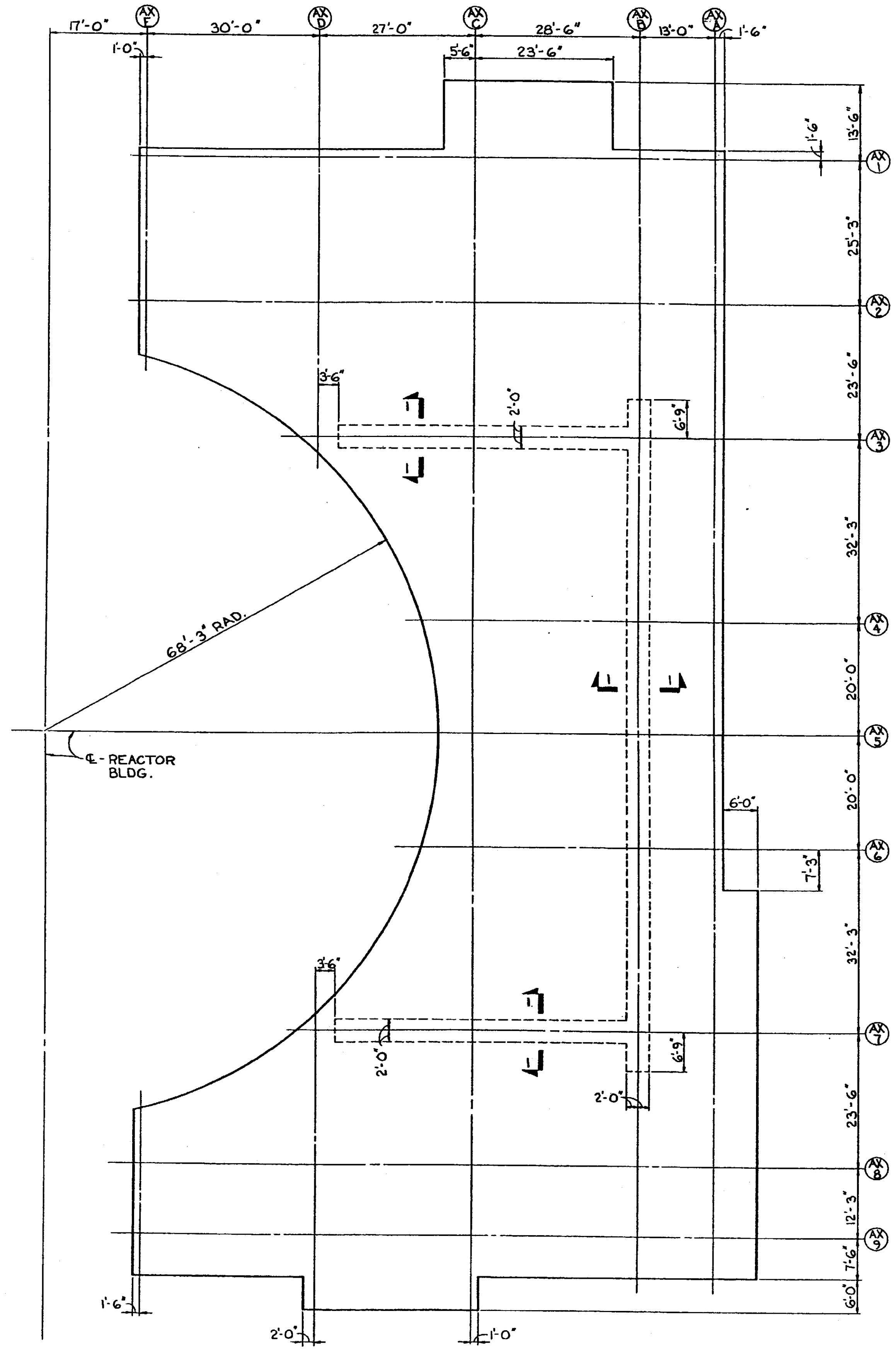
SECTION 2-2

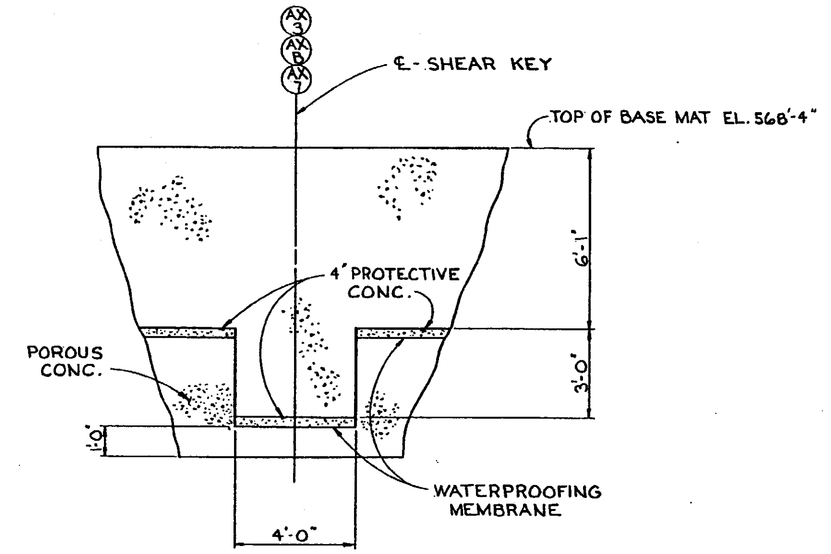
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reinforcing Drawing of Drywell
Personnel Lock Area

Figure 3.8-89





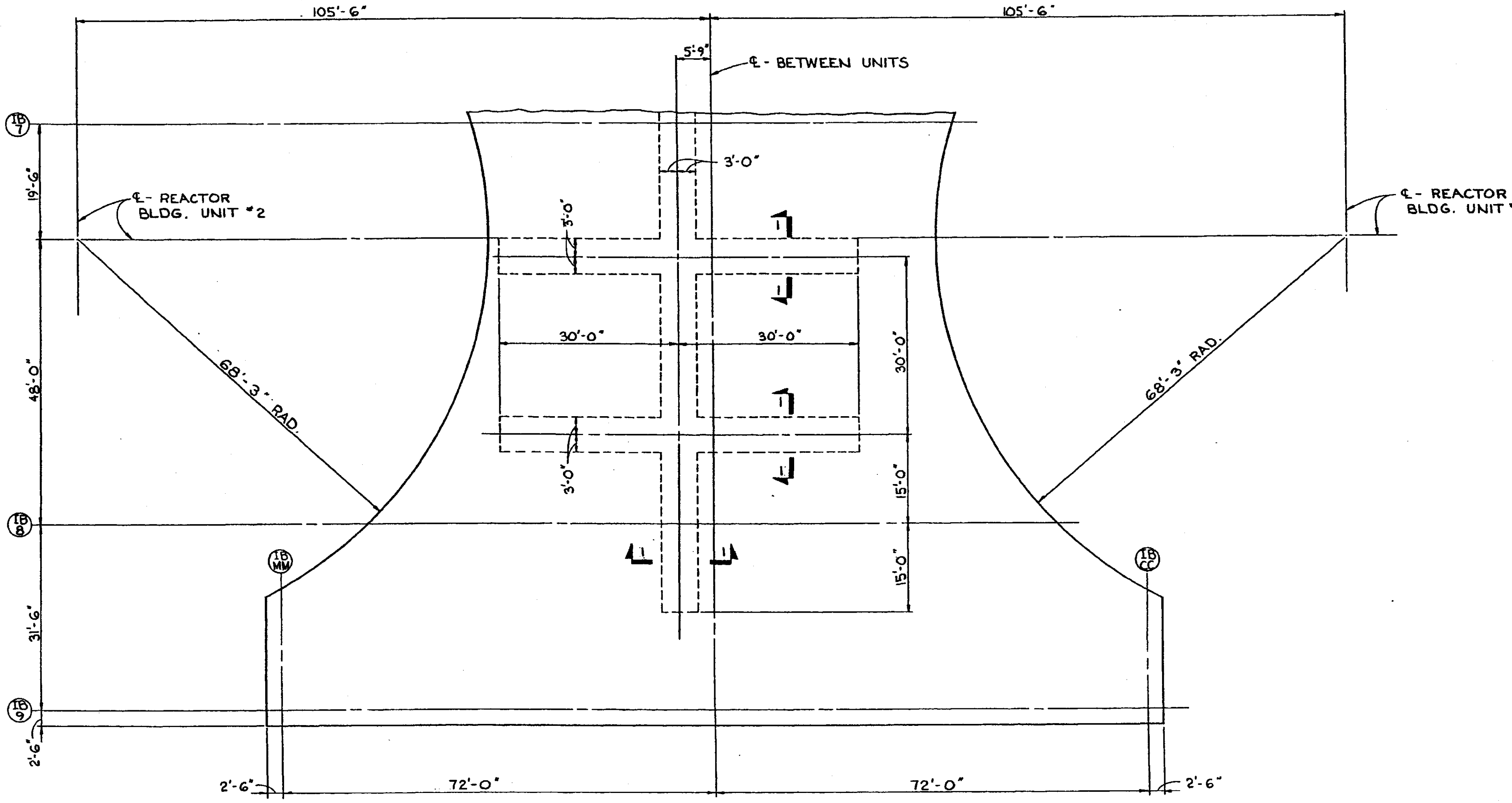
SECTION 1-1

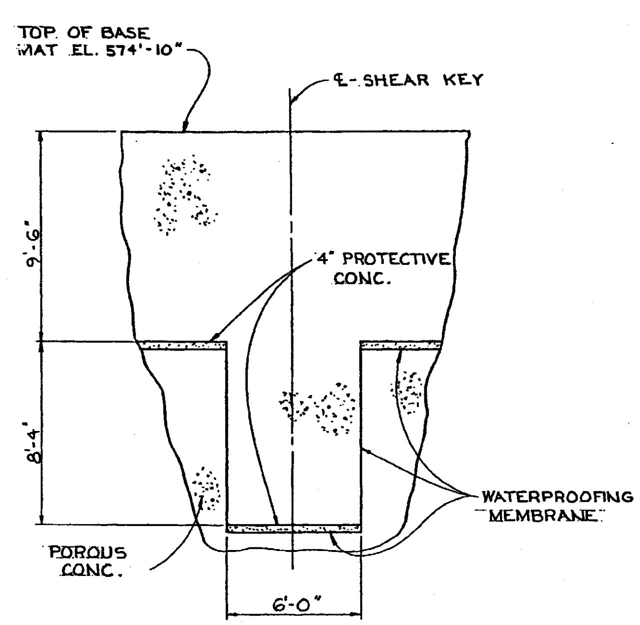
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Base Mat Shear Key Arrangement - Auxiliary Building

Figure 3.8-90





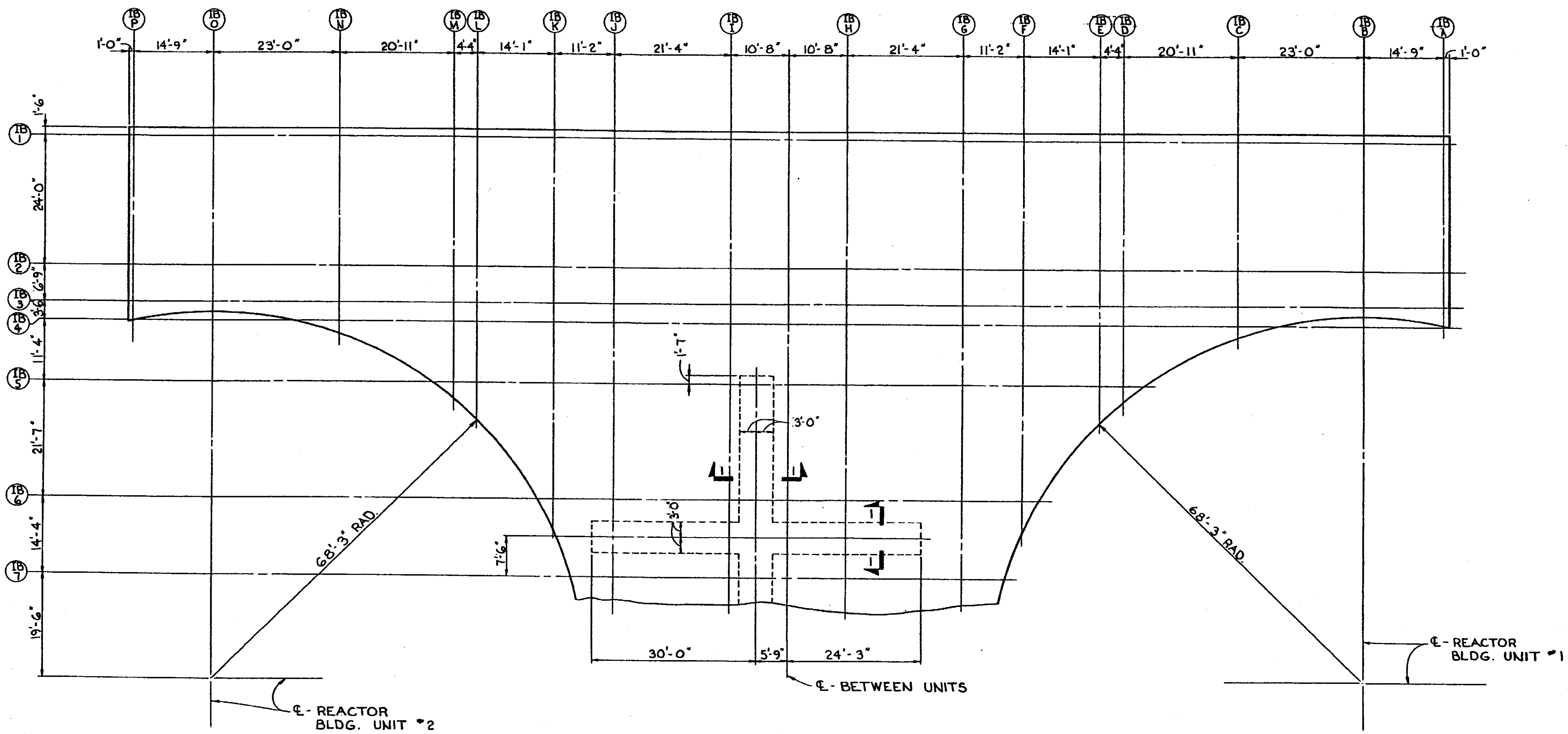
SECTION 1-1

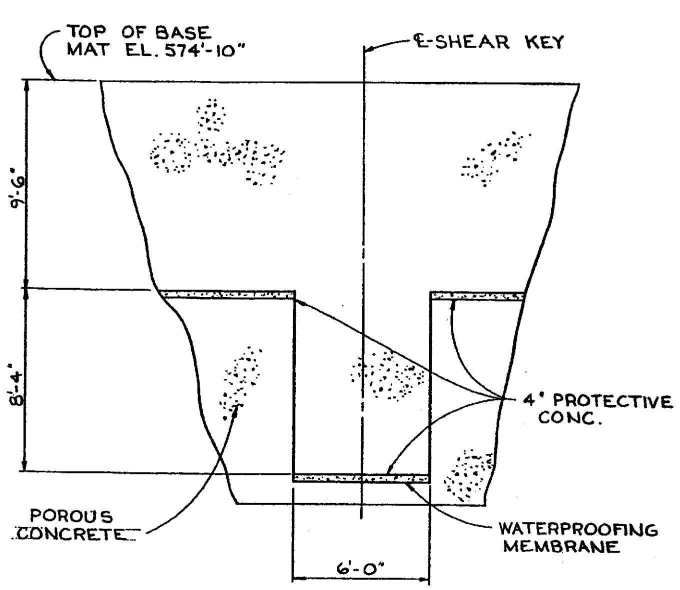
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Base Mat Shear Key Arrangement - Fuel Handling Building

Figure 3.8-91





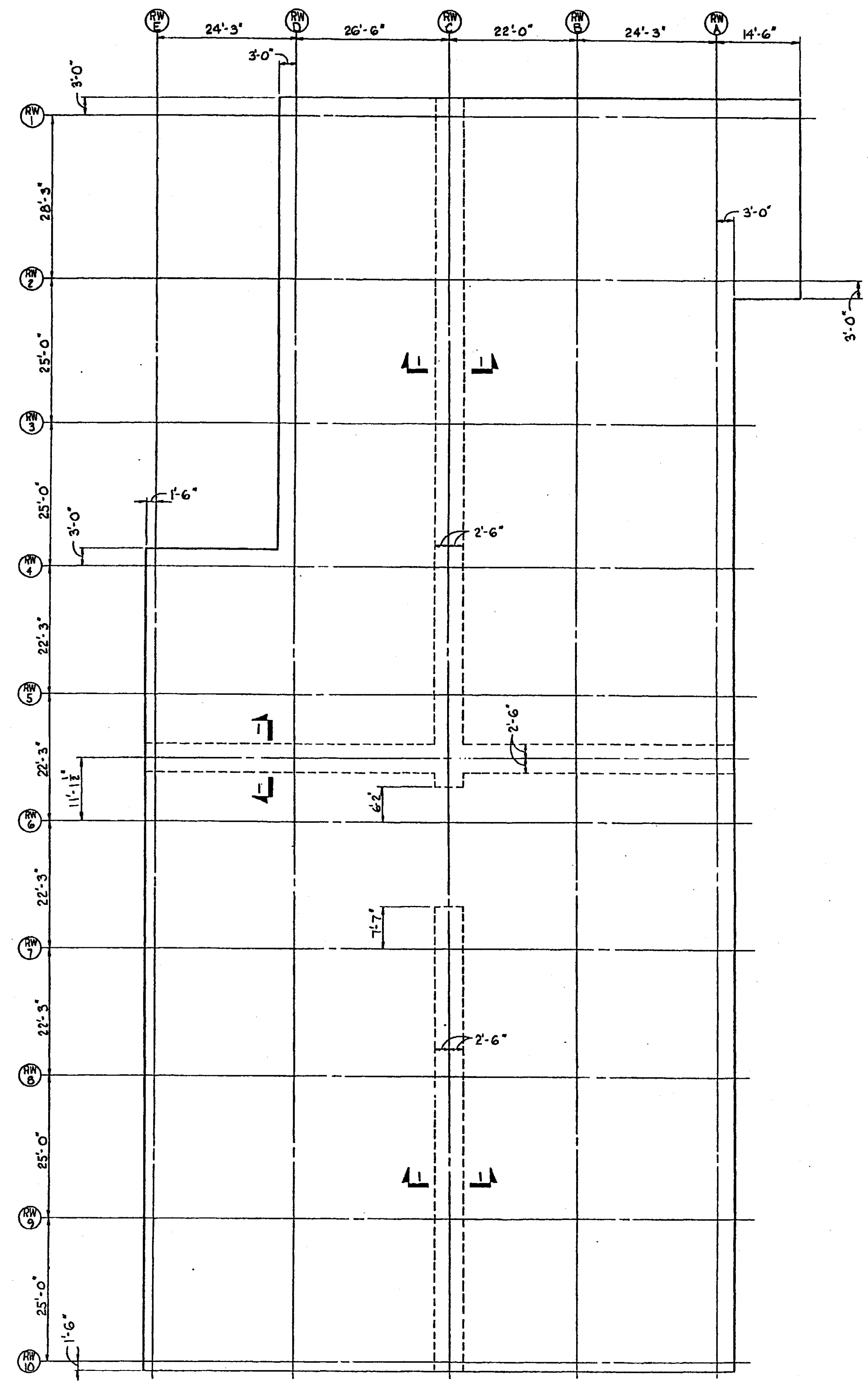
SECTION 1-1

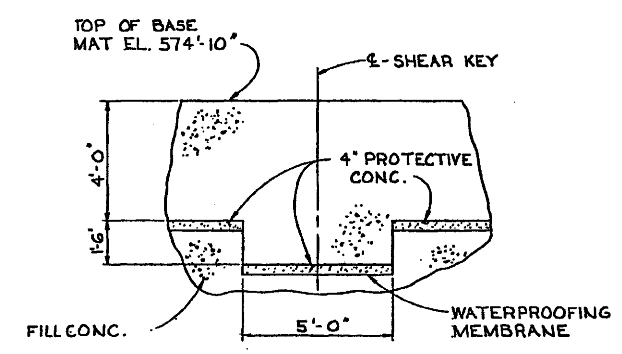
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Base Mat Shear Key Arrangement - Intermediate Building

Figure 3.8-92





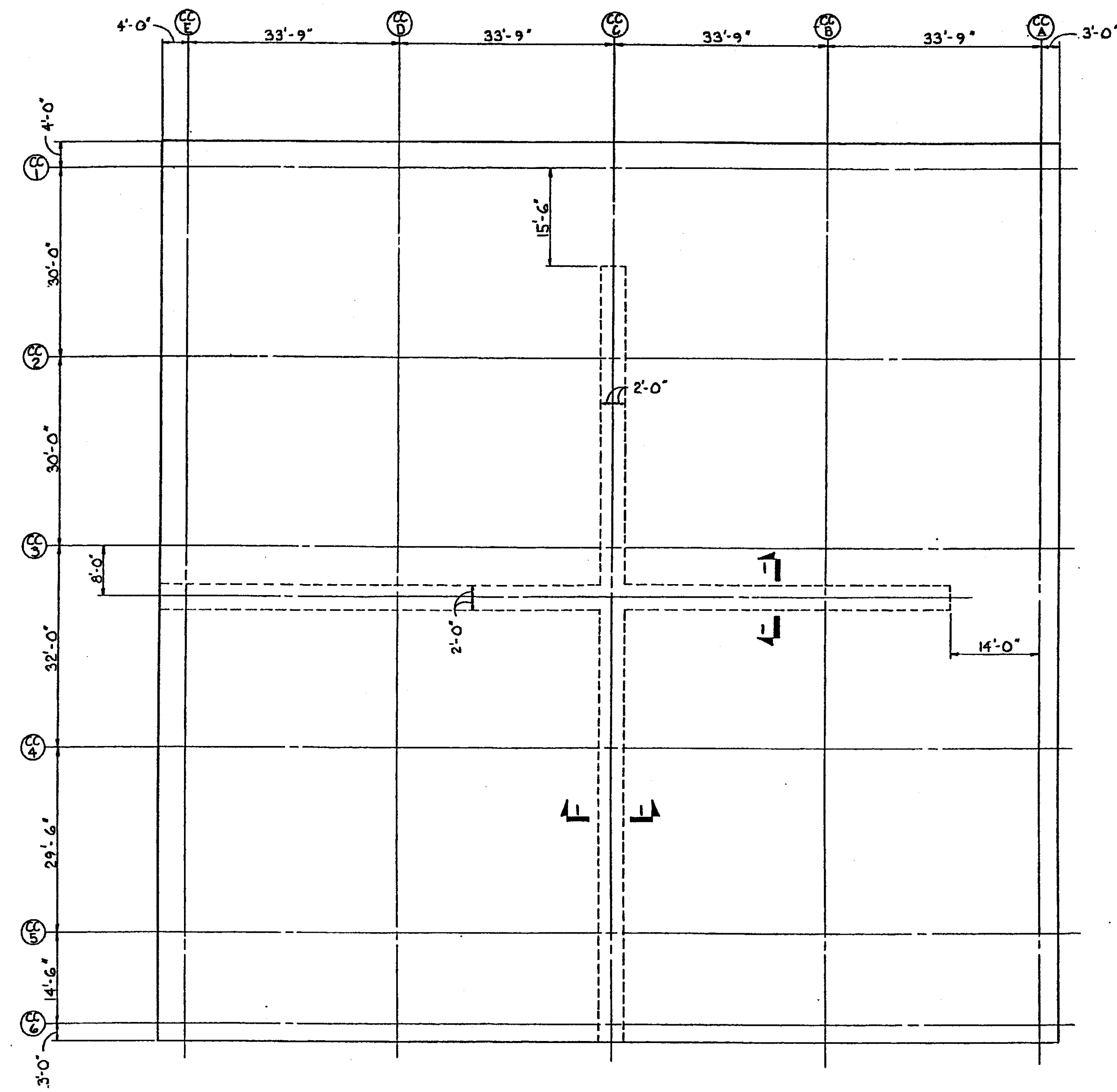
SECTION 1-1

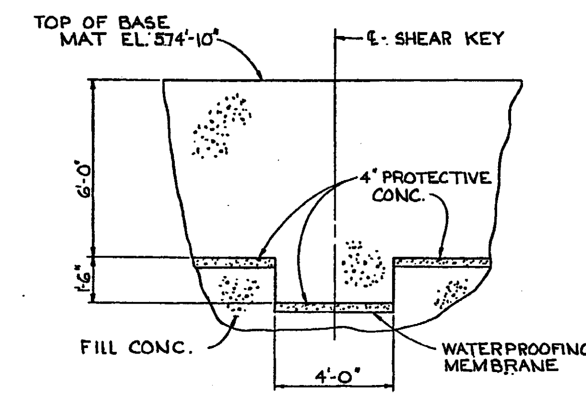
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Base Mat Shear Key Arrangement - Radwaste Building

Figure 3.8-93





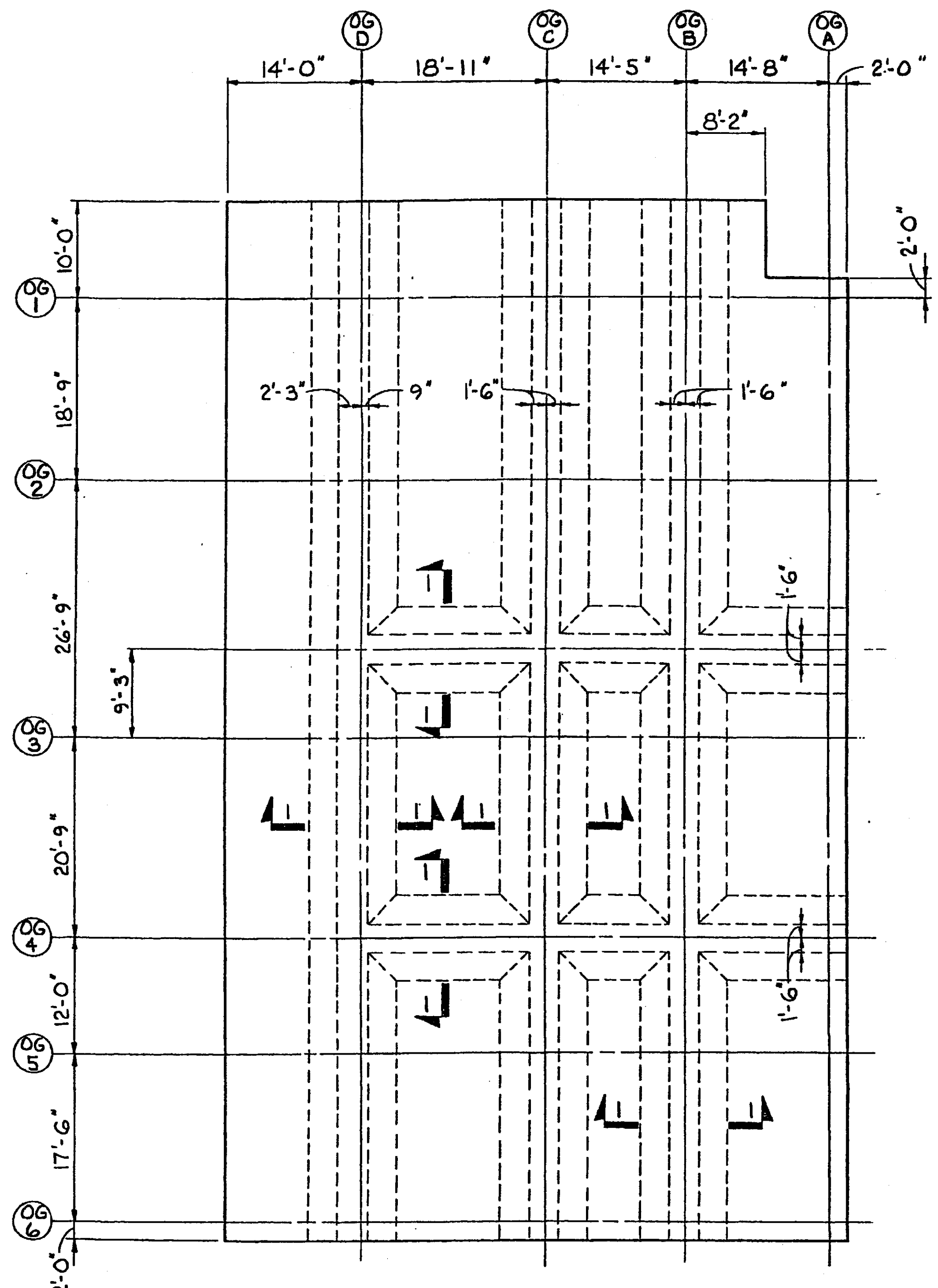
SECTION 1-1

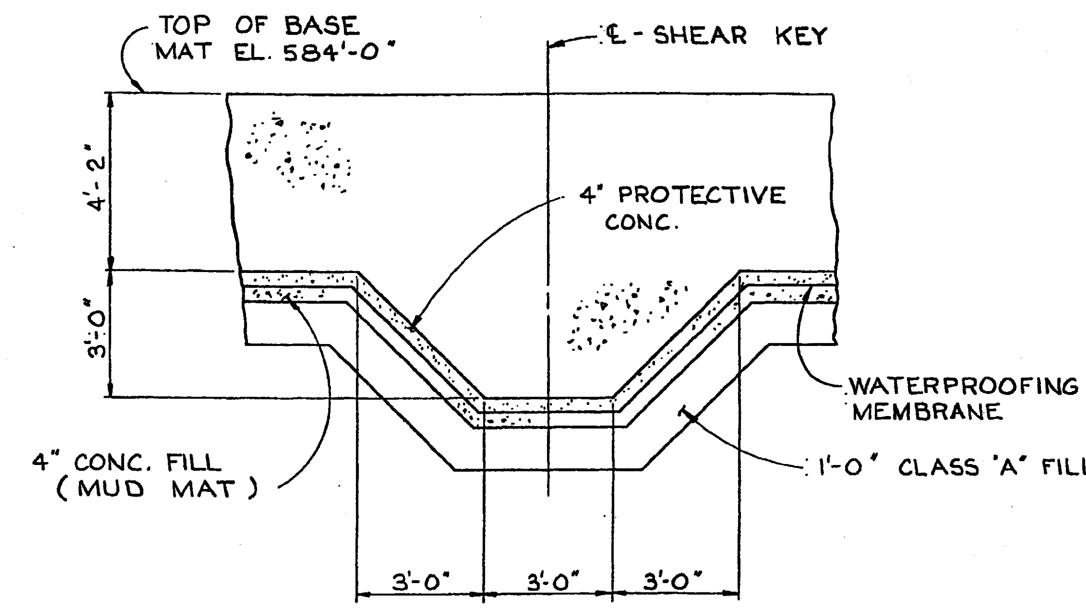
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Base Mat Shear Key Arrangement – Control Complex

Figure 3.8-94





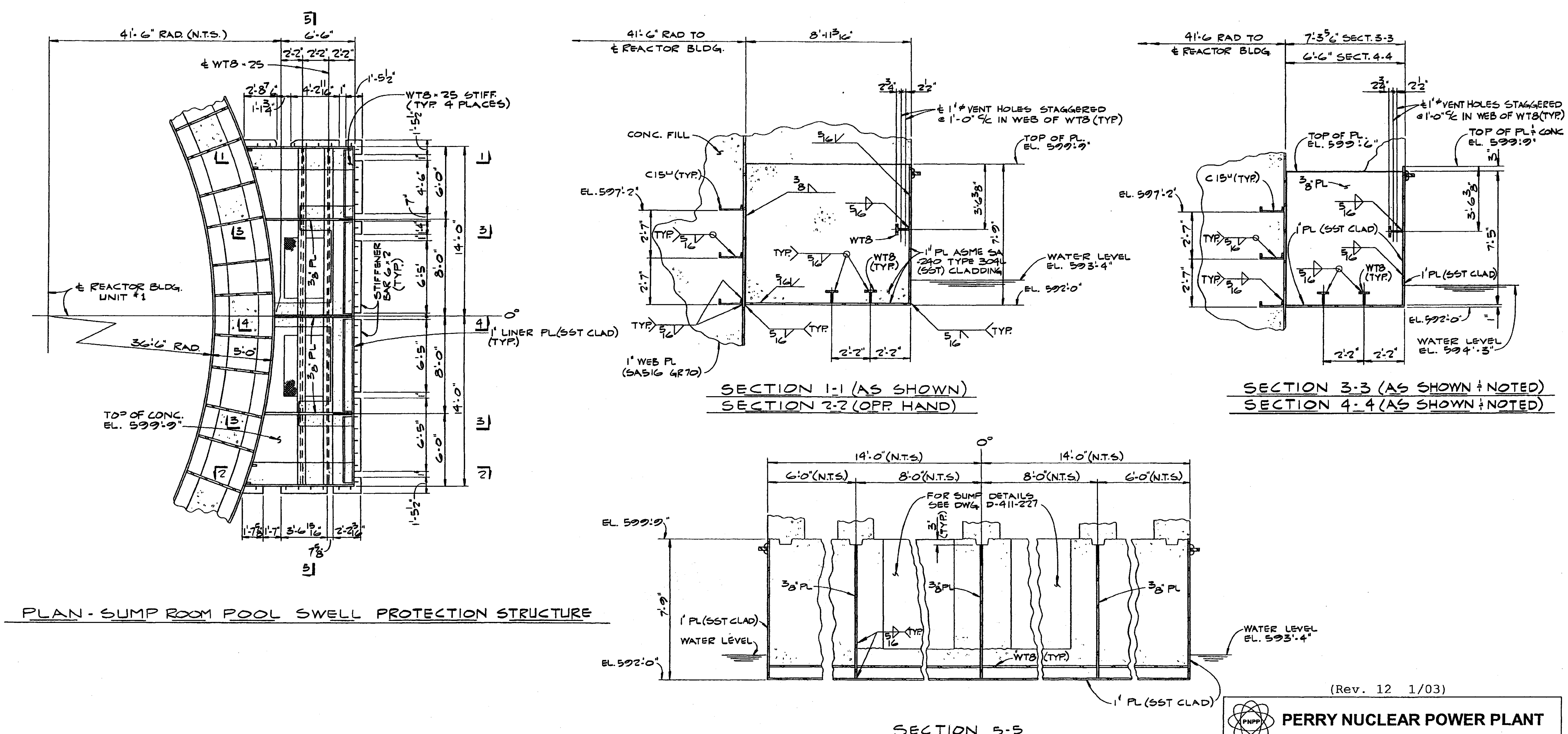
SECTION 1-1

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Base Mat Shear Key Arrangement - Offgas Building

Figure 3.8-95

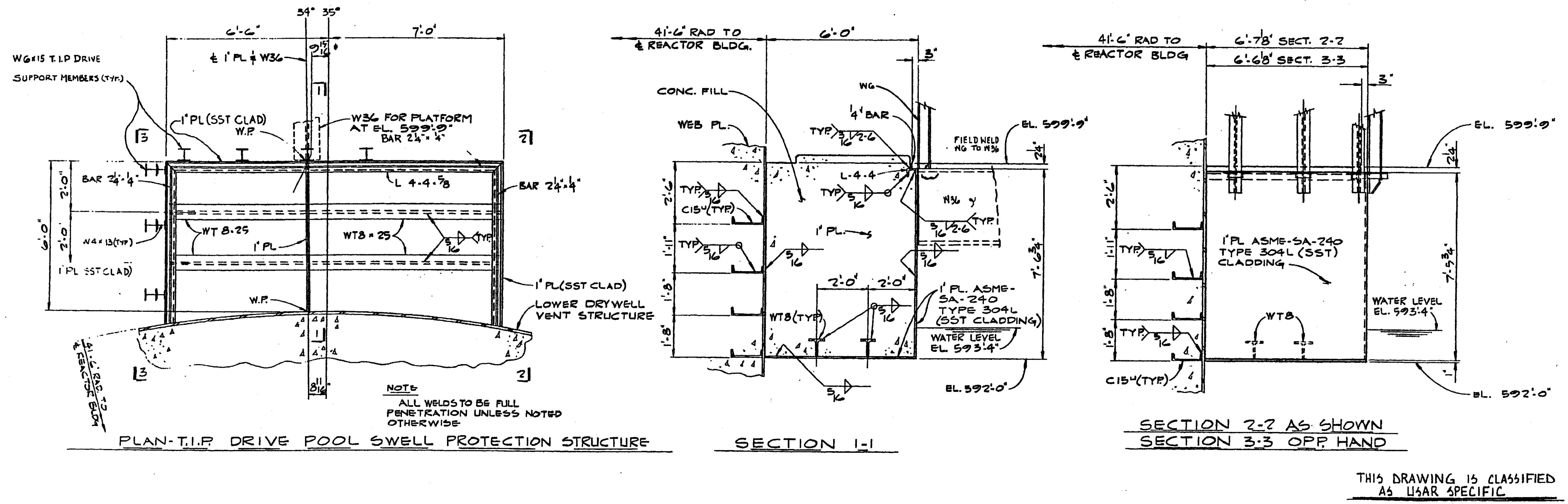


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Sump Room
Pool Swell Protection Structure

Figure 3.8-96

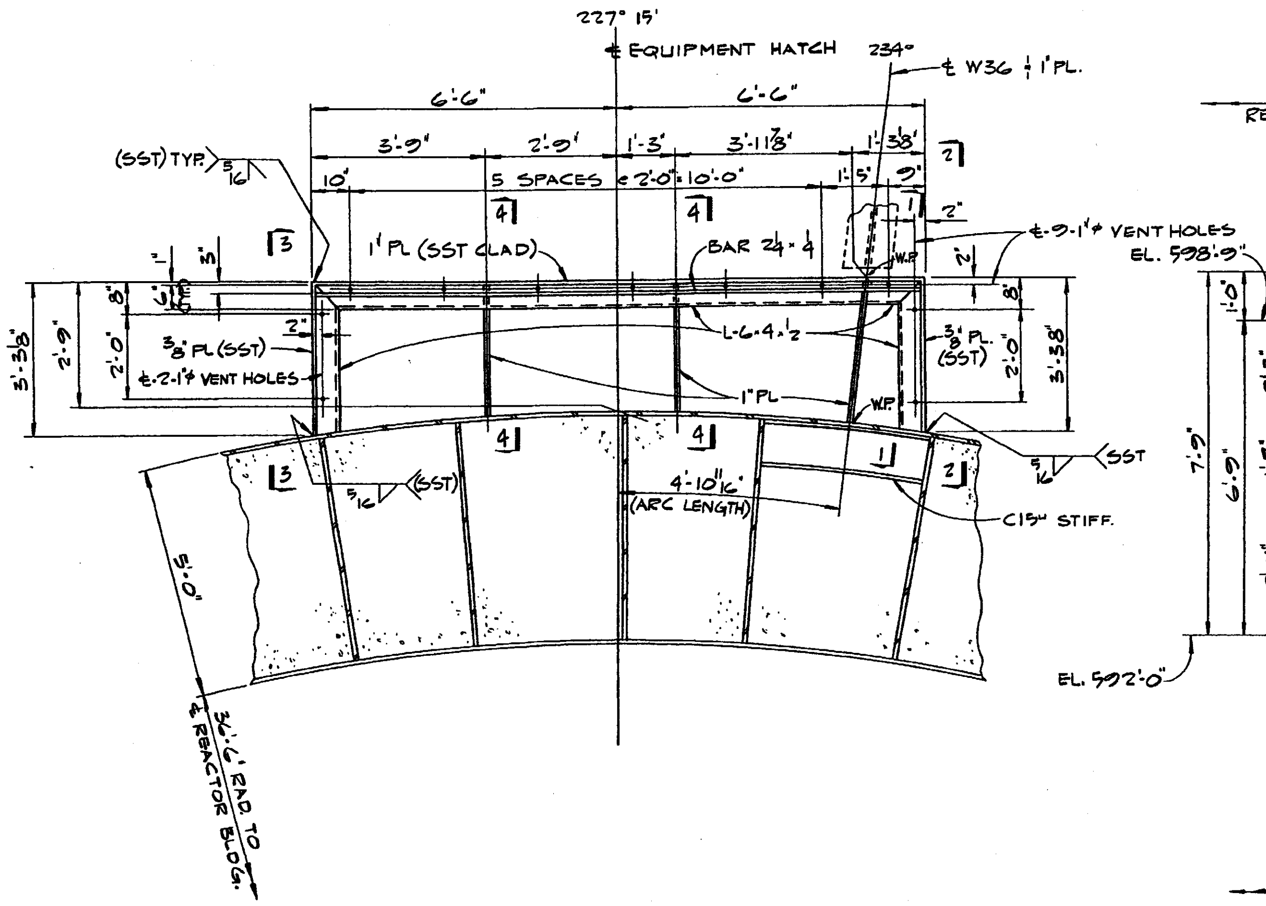


(Rev. 12 1/03)

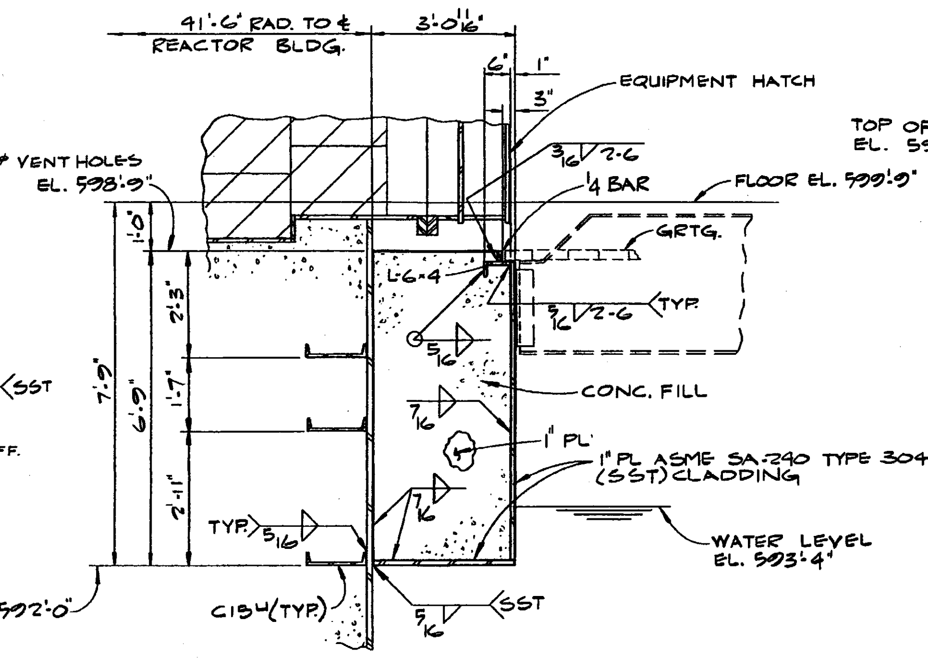
PERRY NUCLEAR POWER PLANT

Drywell T.I.P. Drive Pool
Swell Protection Structure

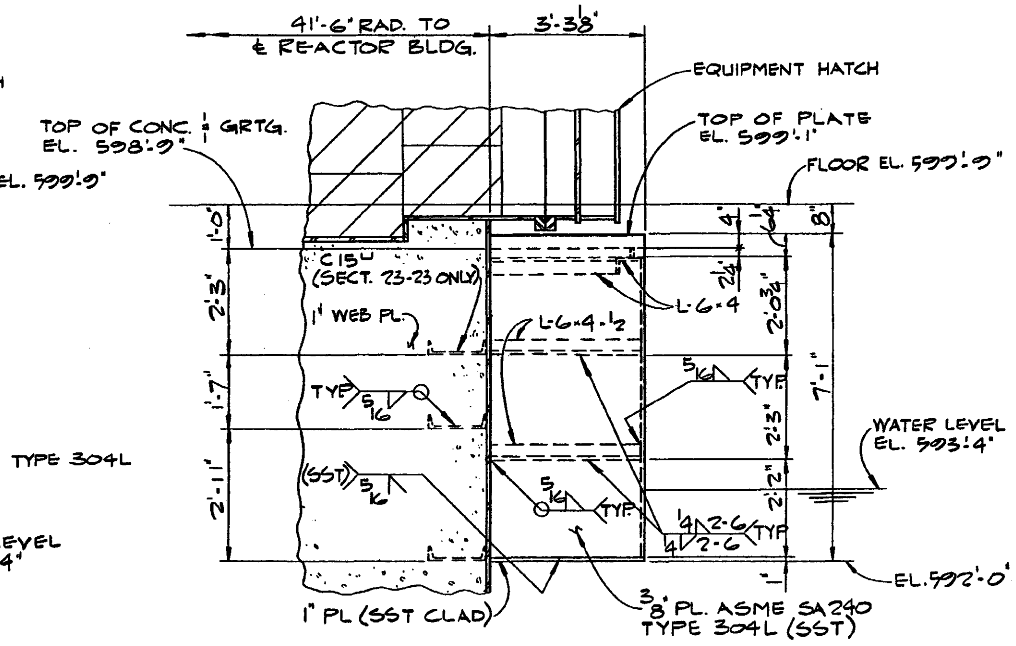
Figure 3.8-97



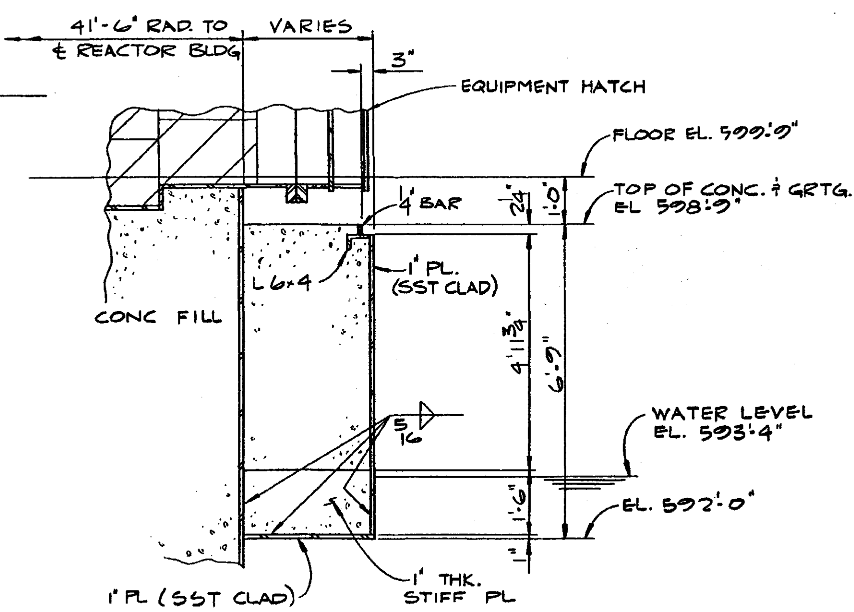
PLAN - EQUIPMENT HATCH POOL SWELL PROTECTION STRUCTURE



SECTION 1-1



SECTION 2-2 (AS SHOWN)
SECTION 3-3 (OPP. HAND)



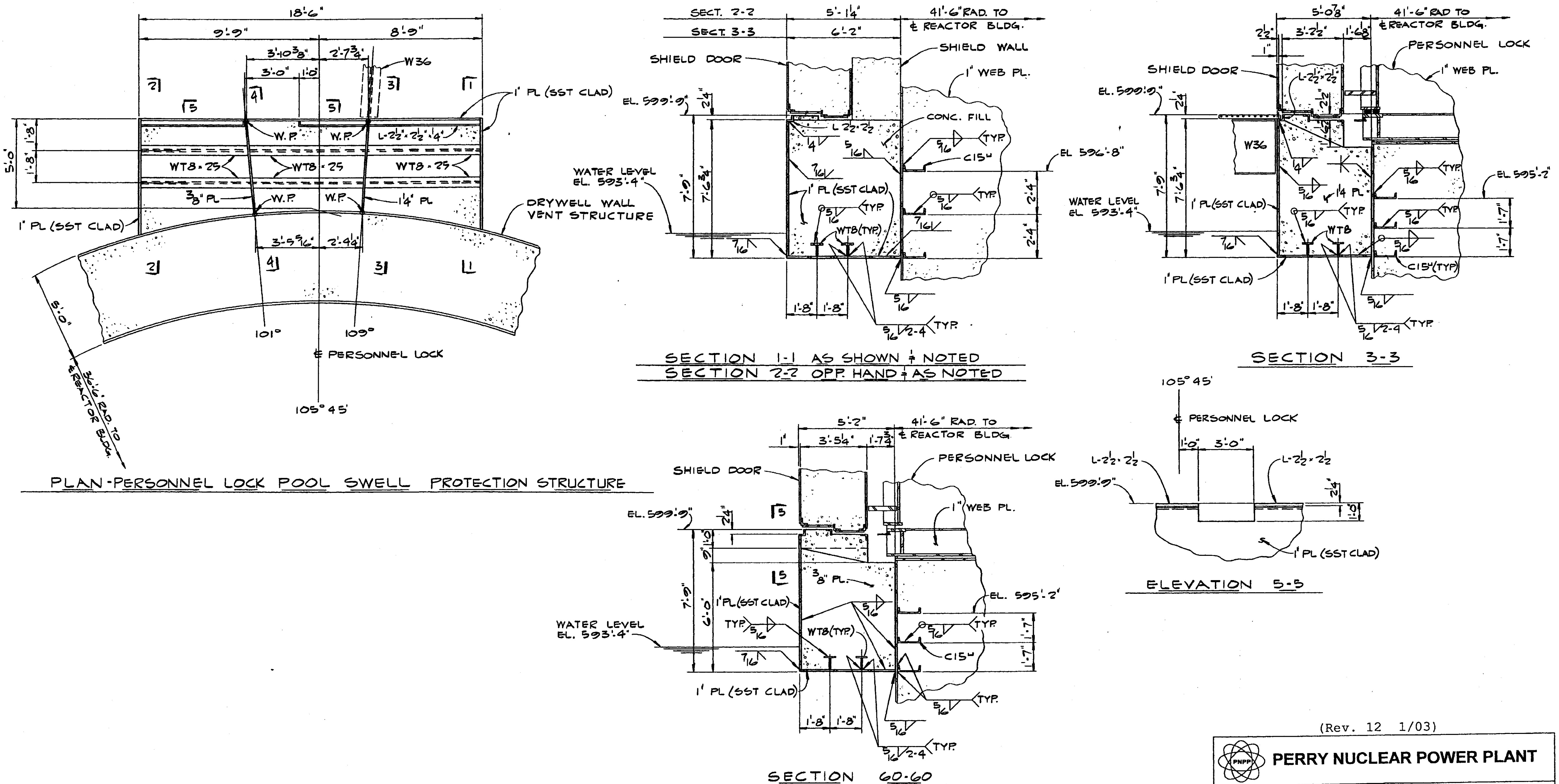
SECTION 4-4

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Equipment Hatch
Pool Swell Protection Structure

Figure 3.8-98

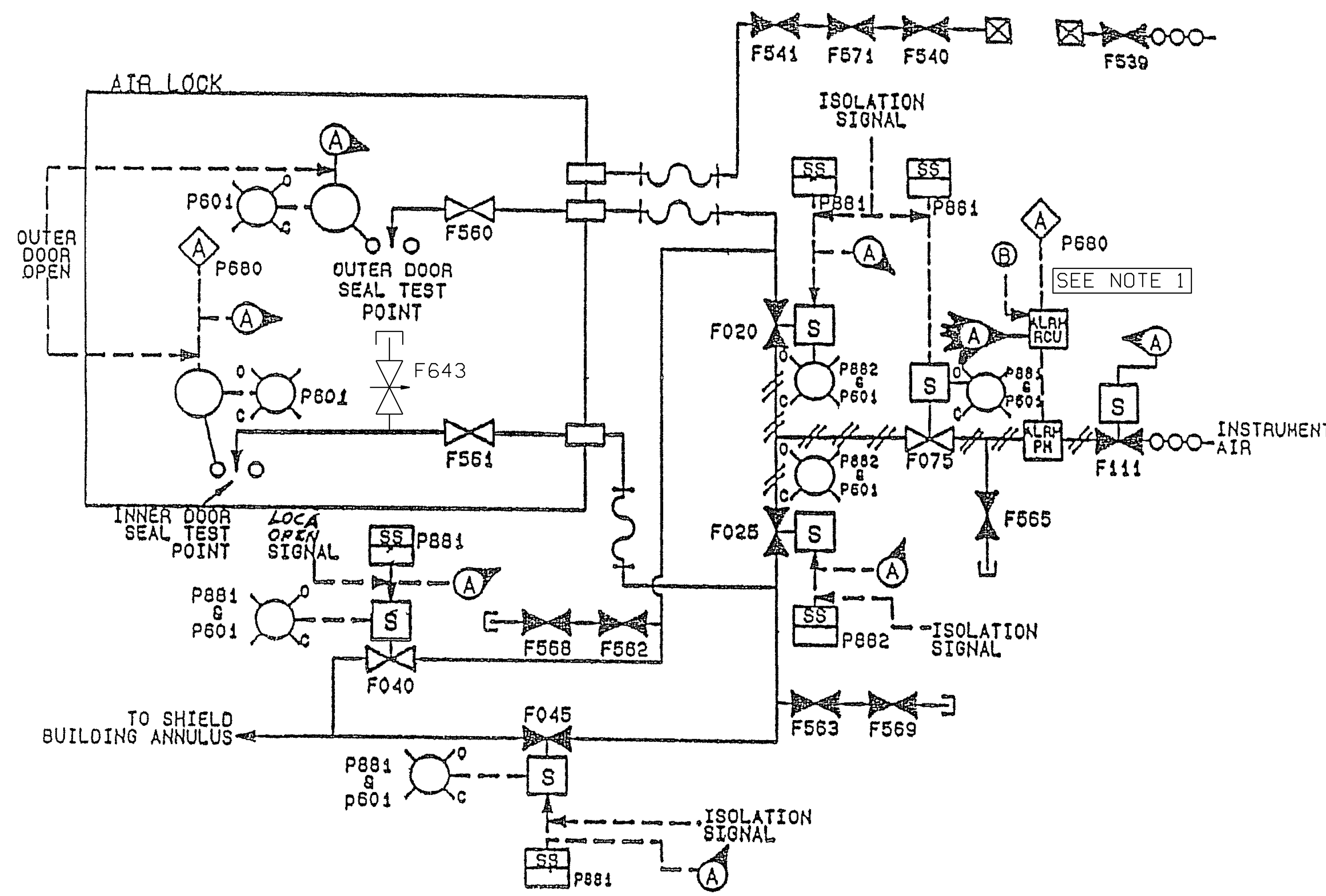


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Personnel Lock
Pool Swell Protection Switch

Figure 3.8-99



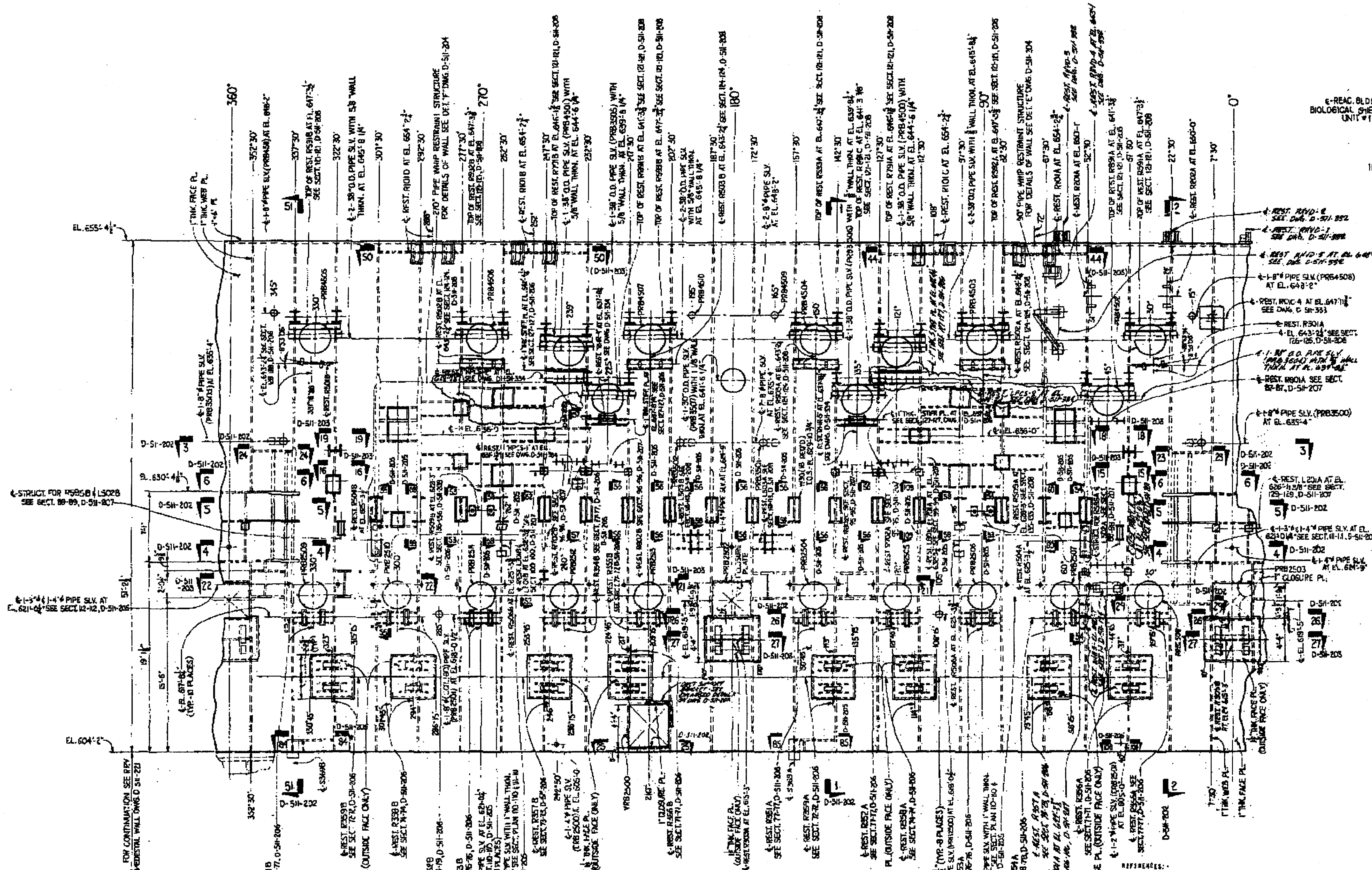
NOTE 1: AUTOMATIC FUNCTIONS OF THE ALARMS WERE DISABLED DUE TO EQUIPMENT OBSOLESCENCE.

(REV. 21 10/2019)

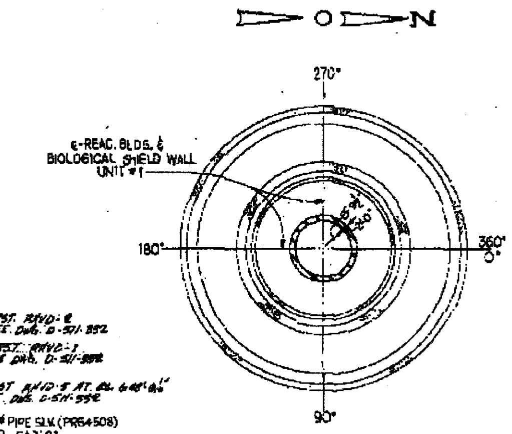
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PERSONNEL AIR LOCK
SEAL TEST SYSTEM TYPICAL

FIGURE 3.8-100



BIOLOGICAL SHIELD WALL - STRETCH-OUT
VIEW OF OUTSIDE FACE LOOKING TOWARD ℄ REAC. BLDG.



LOCATION PLAN

NOTES:

1. ALL WORK SHOWN ON THIS DRAWING SHALL BE FABRICATED AND DELIVERED IN ACCORDANCE WITH SPECIFICATION SP-005-4549-00 AND ITS ATTACHMENT SPECIFICATIONS.
2. ALL WORK SHOWN ON THIS DRAWING SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATION SP-20-4549-00 AND ITS ATTACHMENT SPECIFICATIONS.
3. ALL STEEL USED TO FABRICATE BIOLOGICAL SHIELD WALL TO BE SA-516, GRADE 70 UNLESS NOTED OTHERWISE.
4. ALL PIPE SLEEVE PENETRATIONS TO BE SCHEDULE 40 PIPE, UNLESS NOTED OTHERWISE.
5. ALL WELDING TO BE FULL PENETRATION, UNLESS SHOWN OR NOTED OTHERWISE.
6. ALL FACE PLATES AND WEB PLATES TO BE 1" THICK, UNLESS SHOWN OR NOTED OTHERWISE.
7. ALL CONCRETE FILL AS SHOWN ON DRAWINGS SHALL BE DONE IN ACCORDANCE WITH SPECIFICATION SP-20-4549-00 AND ITS ATTACHMENT SPECIFICATIONS.
8. ALL PENETRATIONS, WEB PLATES, AND OPENINGS SHOWN ARE RADIALLY LOCATED, UNLESS SHOWN OR NOTED OTHERWISE.
9. ALL PADS FOR GUIDES, RESTRAINTS, SNUBBERS AND HANGERS WILL BE SUPPLIED AND INSTALLED BY OTHERS.
10. ACCESS HOLES TO FACILITATE THE PLACEMENT OF CONCRETE IN THE BIOLOGICAL SHIELD WALL MAY BE CUT TO MEET THE SPECIFICATION SP-20-4549-00 CONTRACTOR'S REQUIREMENTS, AS DIRECTED BY THE SITE ORGANIZATION.

THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

REFERENCES:

D-511-221	R.P.V. PEDESTAL WALL LINER DETAILS STRETCH-OUT EL. 570'-9" TO EL. 604'-2"
D-511-181	0° PIPE WHIP RESTRAINT STRUCTURE
D-511-182	90° PIPE WHIP RESTRAINT STRUCTURE
D-511-186	270° PIPE WHIP RESTRAINT STRUCTURE
D-511-183	145° AND 325° RECIRCULATING PUMP MOTOR SUPPORT AND RESTRAINT STRUCTURE - PLAN, SECTIONS, AND DETAILS.
D-511-188	37° AND 323° PIPE WHIP RESTRAINT STRUCTURE
D-511-202	BIOLOGICAL SHIELD WALL LINER DETAILS - SECTIONS AND DETAILS
D-511-203	BIOLOGICAL SHIELD WALL LINER DETAILS - SECTIONS AND DETAILS
D-511-204	BIOLOGICAL SHIELD WALL LINER DETAILS - SECTIONS AND DETAILS
D-511-205	BIOLOGICAL SHIELD WALL LINER DETAILS - SECTIONS AND DETAILS
D-511-190	PIPE WHIP RESTRAINT STRUCTURE PLATFORM EL. 630'-1" - PLAN
D-511-206	BIOLOGICAL SHIELD WALL LINER DETAILS - SECTIONS AND DETAILS
D-511-207	BIOLOGICAL SHIELD WALL LINER DETAILS - SECTIONS AND DETAILS
D-511-208	BIOLOGICAL SHIELD WALL LINER DETAILS - SECTIONS AND DETAILS
D-511-209	BIOLOGICAL SHIELD WALL LINER - MISCELLANEOUS ATTACHMENT DETAILS
D-511-332	MISCELLANEOUS RESTRAINTS - PLANS, SECTIONS, AND DETAILS
D-511-333	MISCELLANEOUS RESTRAINTS - PLANS, SECTIONS, AND DETAILS
D-511-334	MISCELLANEOUS RESTRAINTS - PLANS, SECTIONS, AND DETAILS
D-511-335	MISCELLANEOUS RESTRAINTS - PLANS, SECTIONS, AND DETAILS

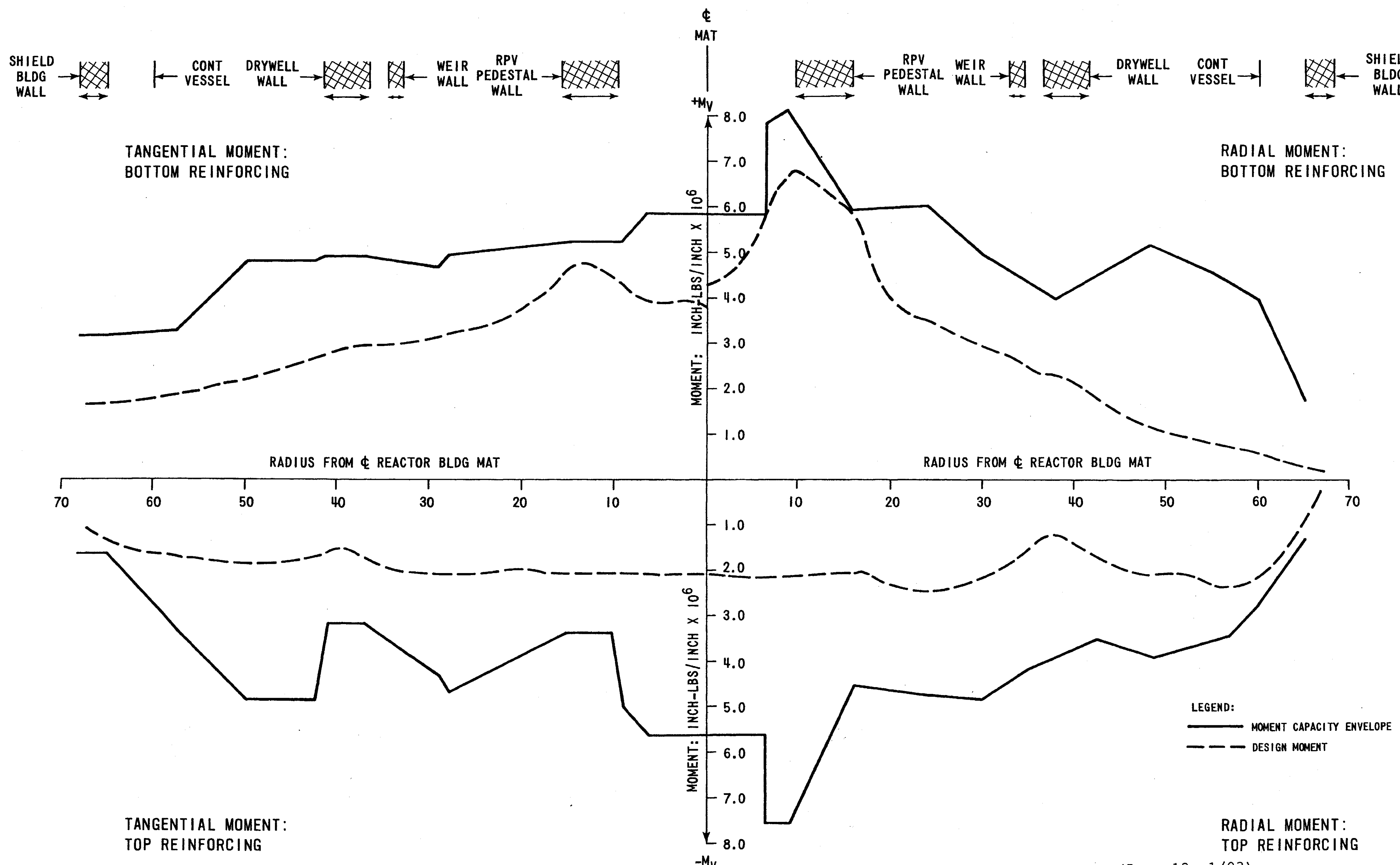
NOTE:
FOR MISCELLANEOUS ATTACHMENT AND INTERNAL STIFFENER DETAILS NOT SHOWN ON THIS DRAWING, SEE STRETCH-OUT ON DRAWING D-511-209.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Reactor Building Biological Shield Wall Liner Details

Figure 3.8-101
(Dwg. D-511-201)

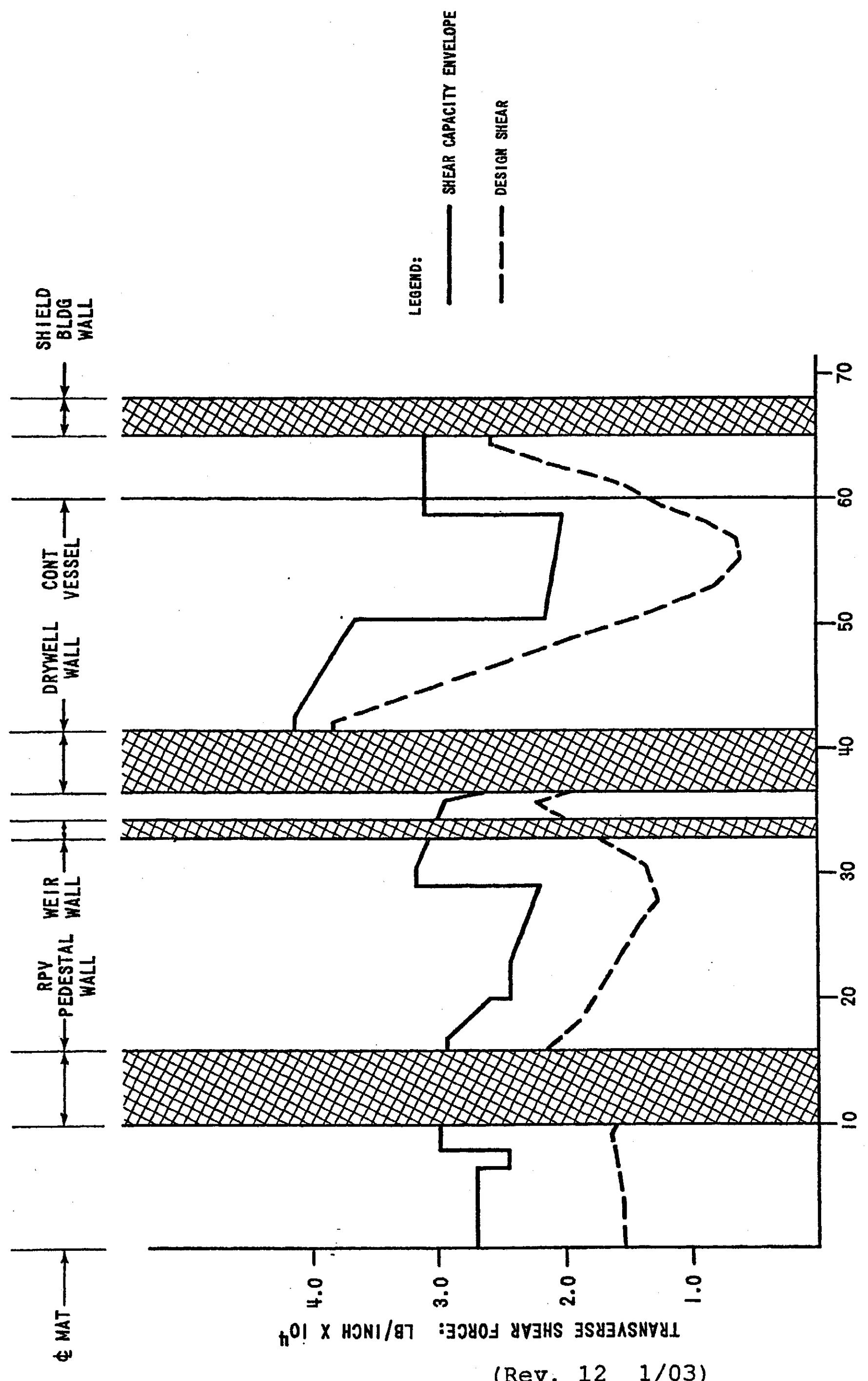


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Building Basemat: Design Moment vs. Reinforced Section Moment Capacity

Figure 3.8-102

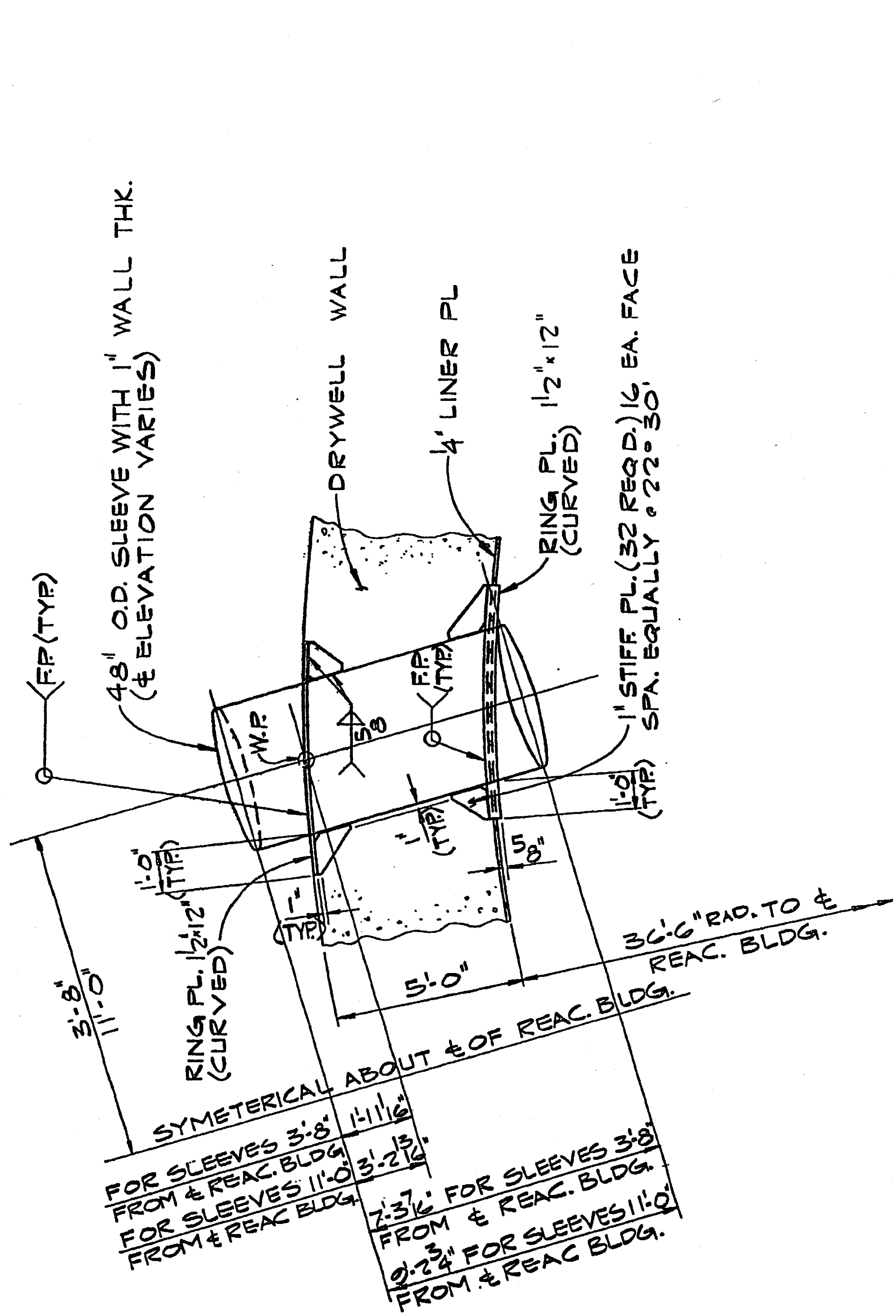


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Building Mat: Design Shear Envelope vs. Mat Shear Capacity

Figure 3.8-103

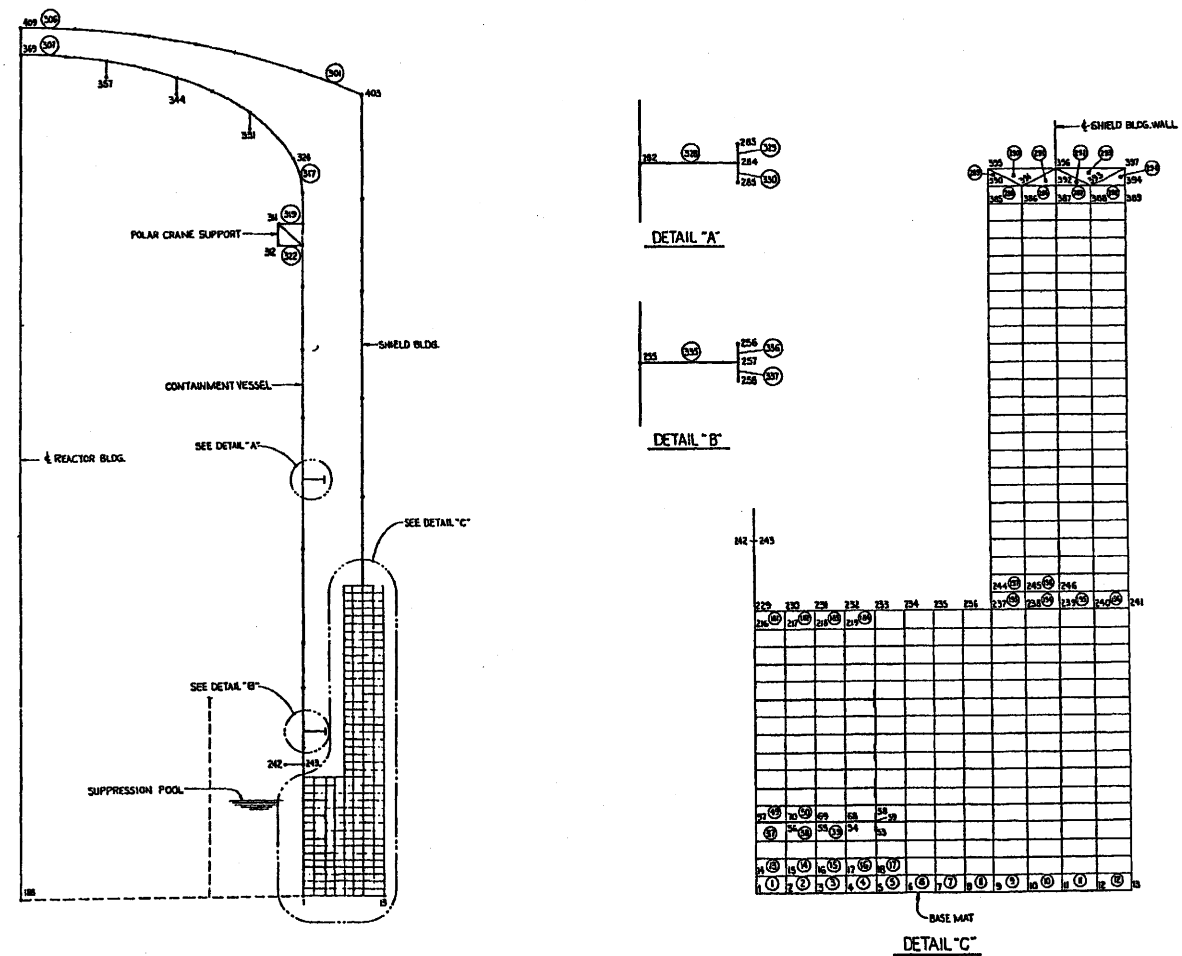


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Main Steam Drywell Wall
Embedded Sleeve Detail

Figure 3.8-104

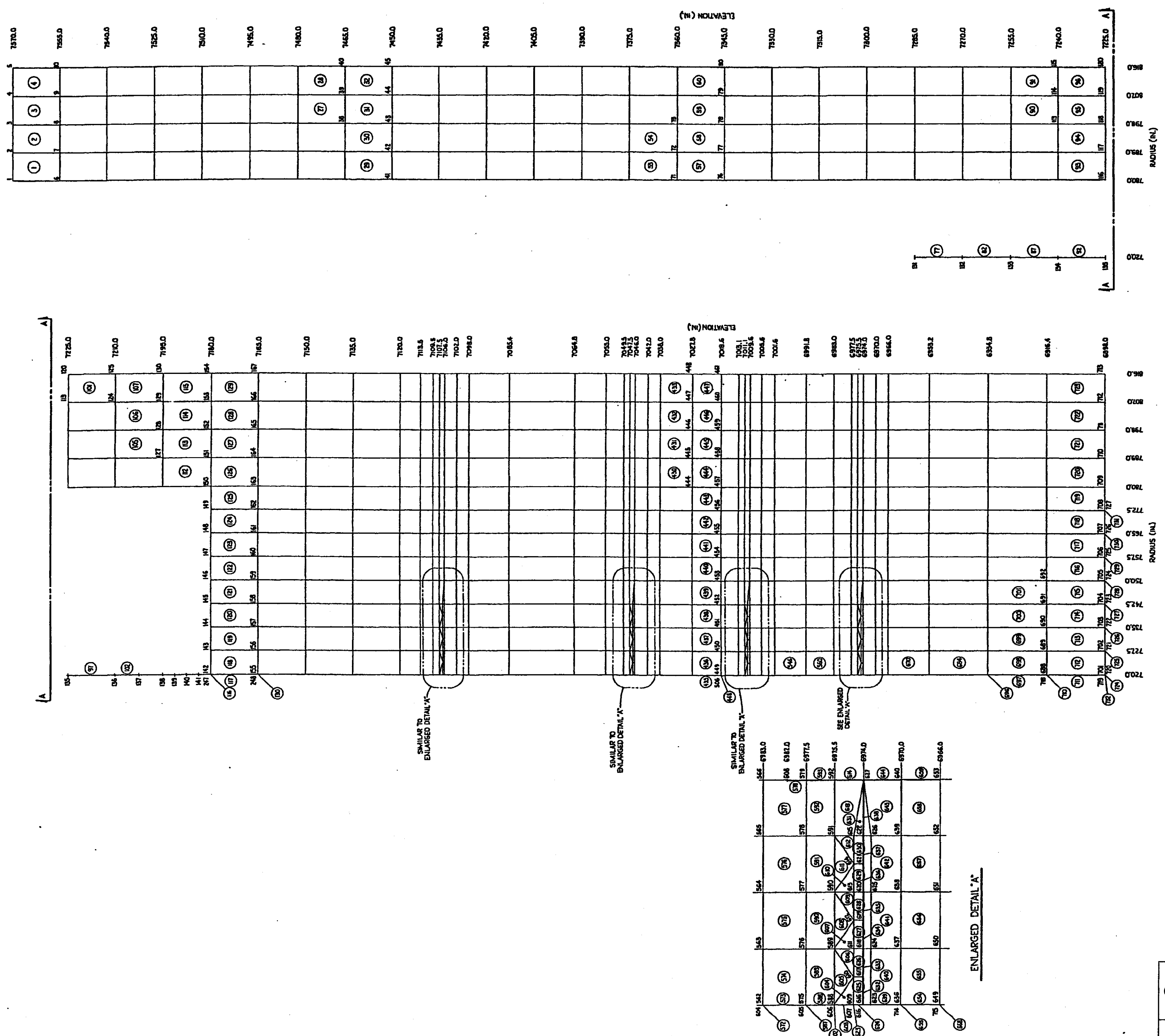


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

ASHSD 2 Model for Annulus Concrete Design

Figure 3.8-105

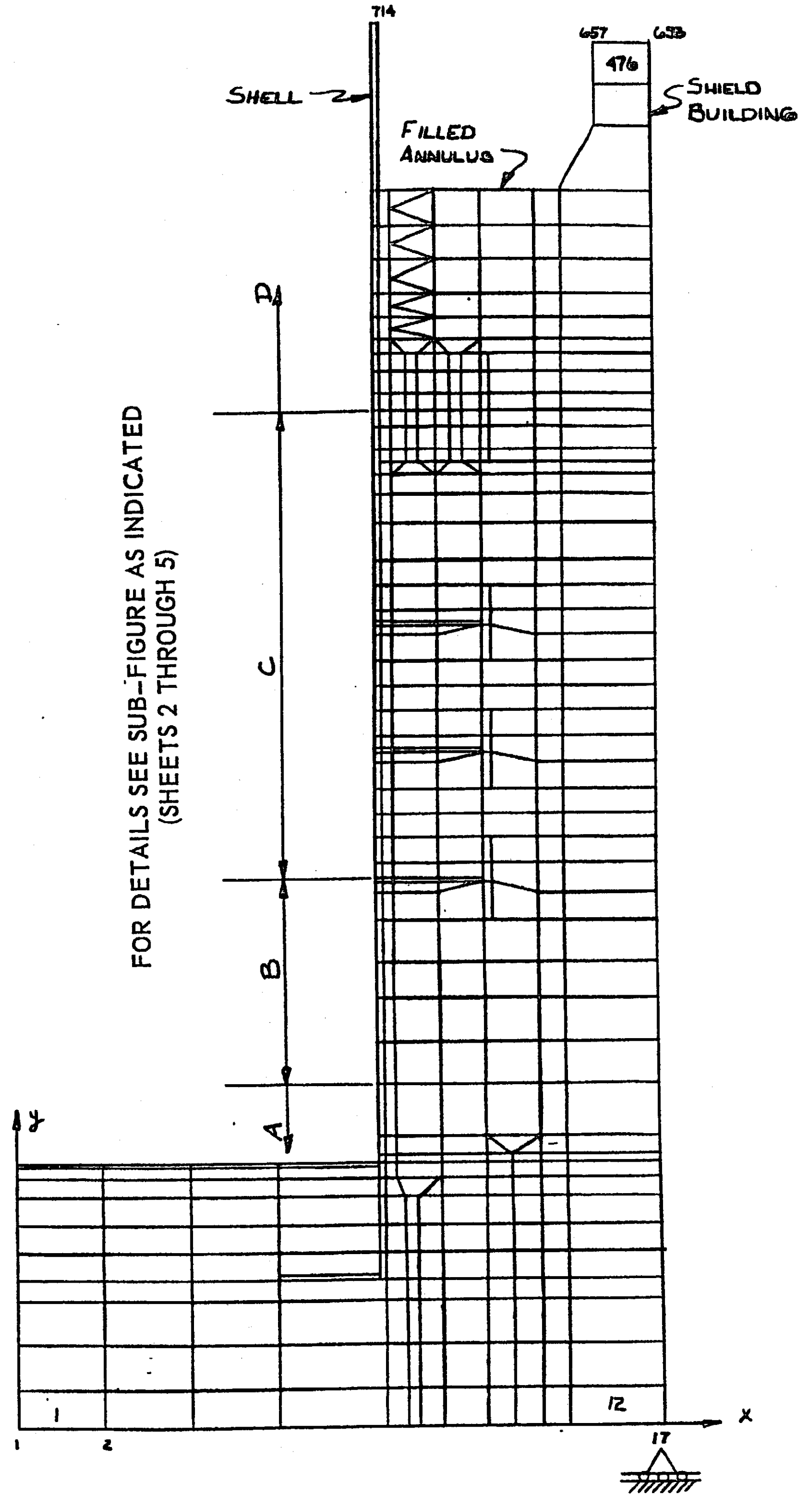


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

ANSYS Thermal Model
for Annulus Concrete Design

Figure 3.8-106

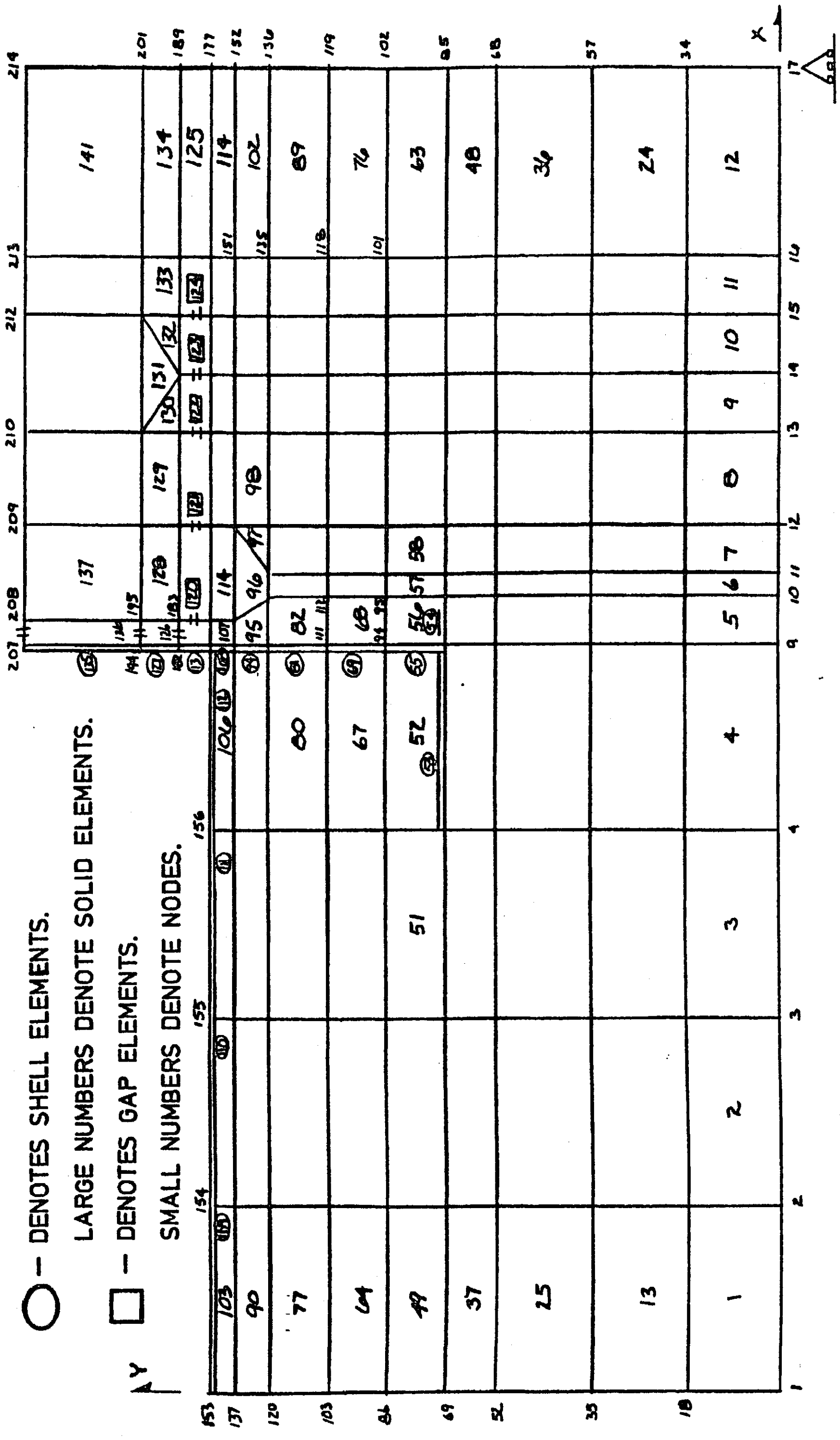


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Fix Thermal Stress Model

Figure 3.8-107 (Sheet 1 of 5)



(Rev. 12 1/03)

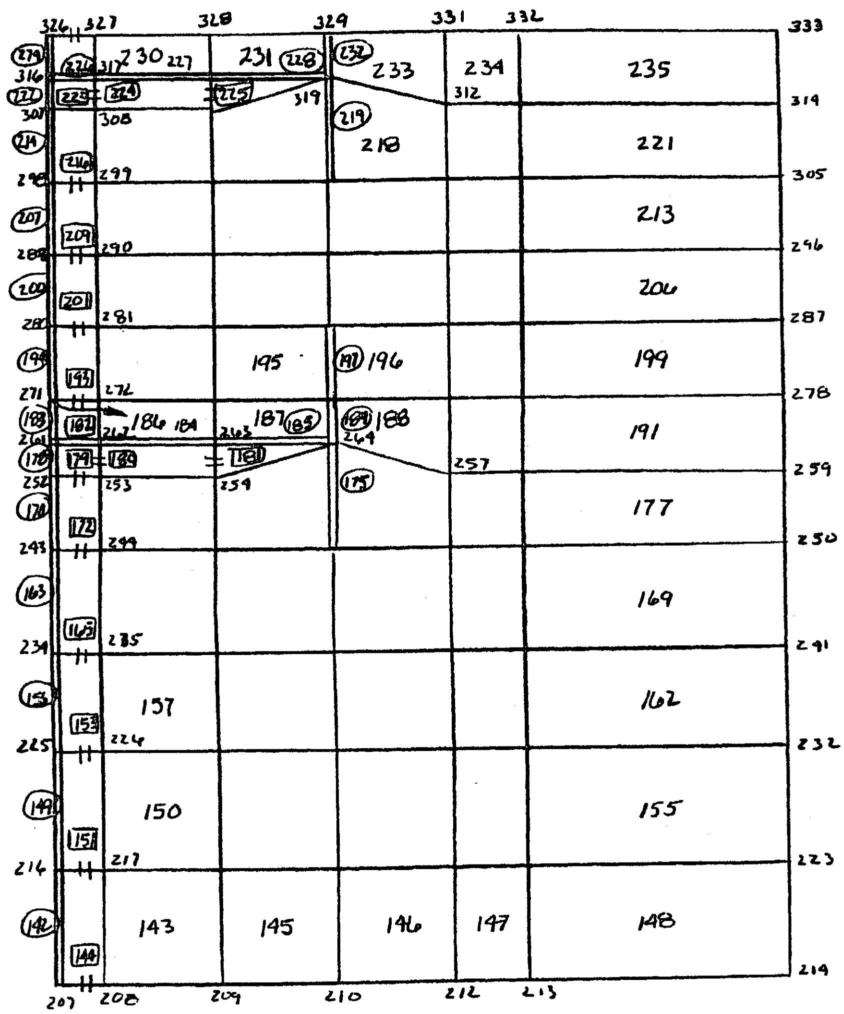
NOT TO SCALE

PERRY NUCLEAR POWER PLANT

Containment Fix Thermal
Stress Model

Figure 3.8-107 (Sheet 2 of 5)

1 ROW OF COMPRESSIBLE MATERIAL ELEMENTS ON TOP OF ALL STIFFENER WEBS



SUB-FIGURE B
FIRST LEVEL FIXED MODEL

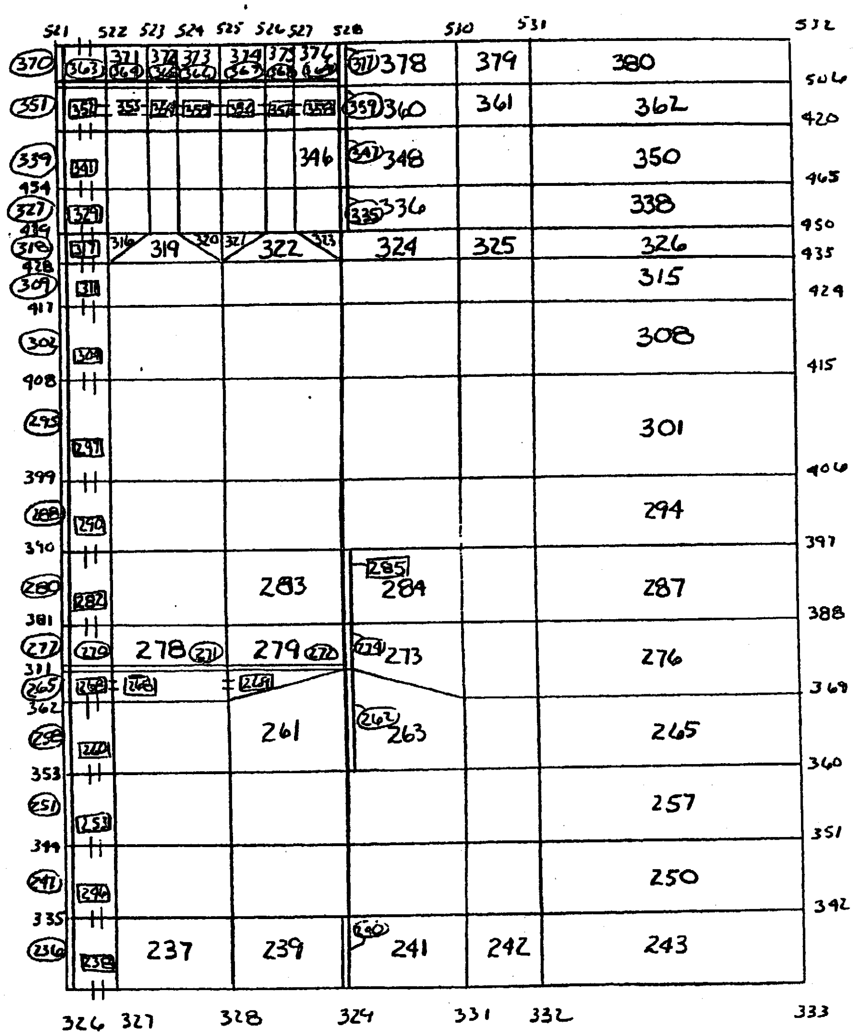
NOT TO SCALE

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Fix Thermal Stress Model

Figure 3.8-107 (Sheet 3 of 5)



SUB-FIGURE C
SECOND LEVEL FIXED MODEL

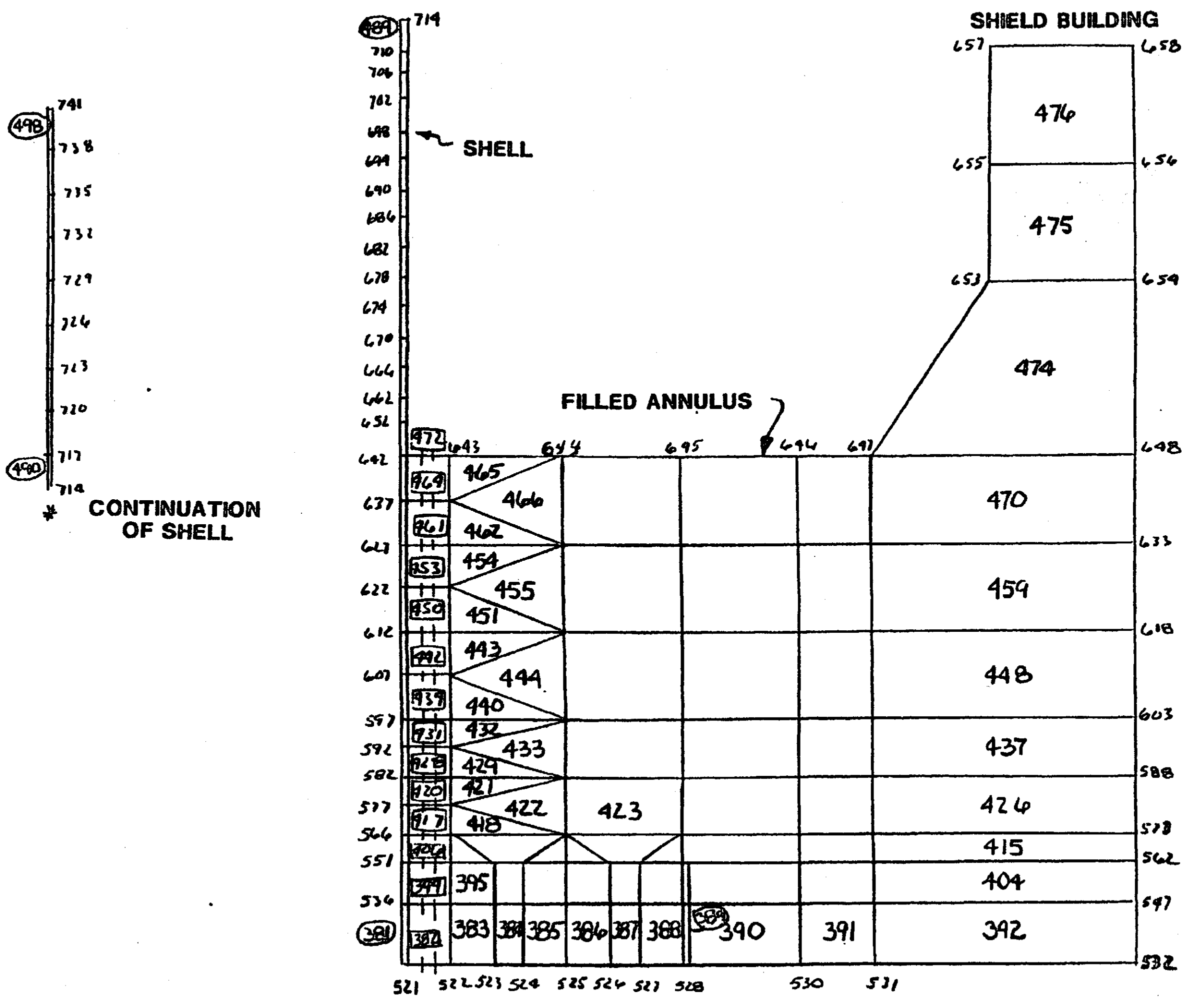
NOT TO SCALE

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Fix Thermal
Stress Model

Figure 3.8-107 (Sheet 4 of 5)



SUB-FIGURE D
TOP OF FIX MODEL

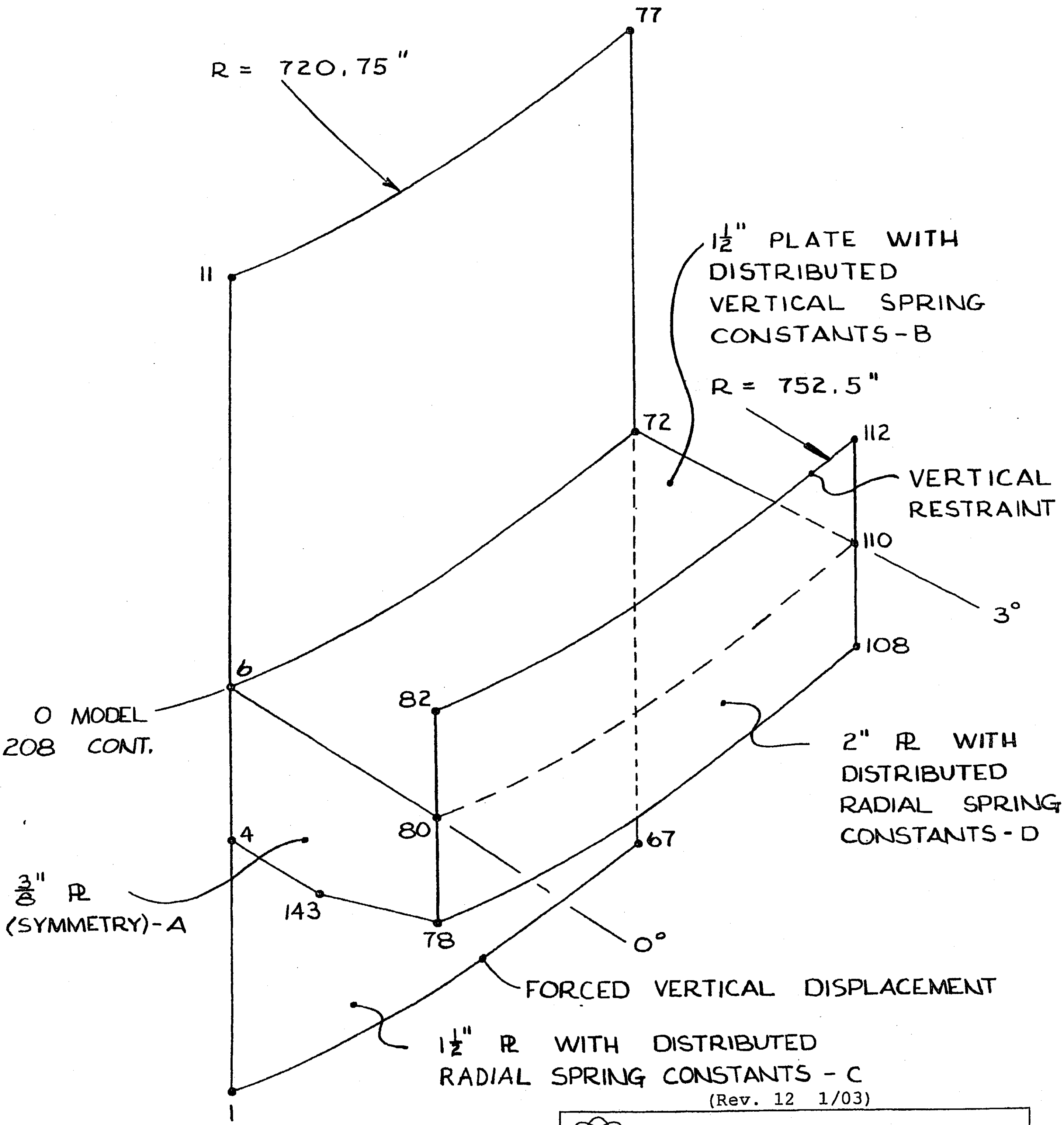
NOT TO SCALE

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Fix Thermal
Stress Model

Figure 3.8-107 (Sheet 5 of 5)

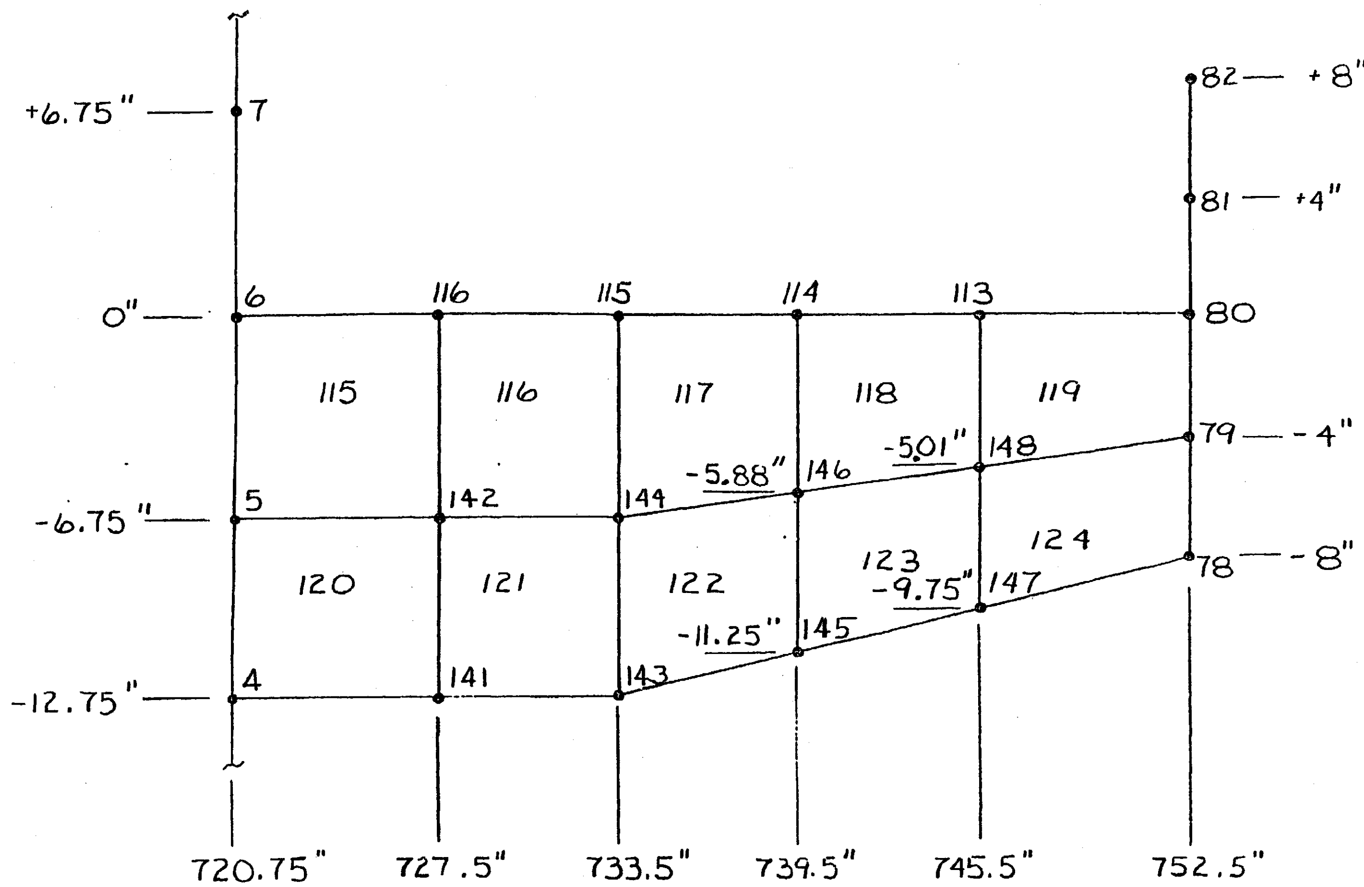


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Stiffener
Chock Model

Figure 3.8-108 (Sheet 1 of 5)



FLANGE, WEB, AND SHELL NODE AND ELEMENT LAYOUTS INCLUDE AN ALPHABETICAL REFERENCE TO NODE SPRING CONSTANTS, INTENDED TO REPRESENT CONCRETE OR CRUSHABLE MATERIAL. SPRINGS ON SHELL AND FLANGE ARE RADIAL, AND ON WEB ARE VERTICAL.

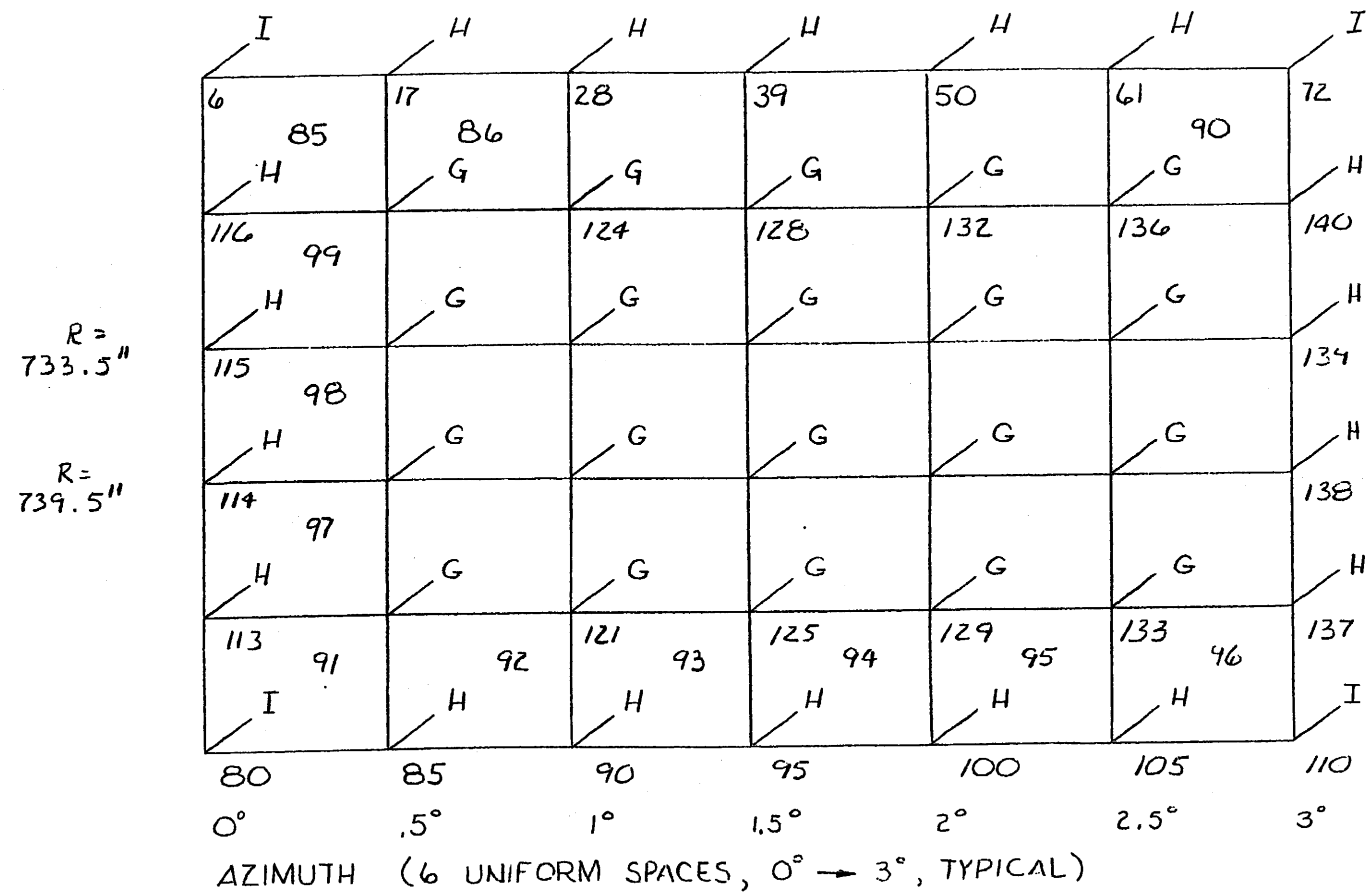
SUB-FIGURE A
CHOCK MODEL
(CHOCK NODES AND ELEMENTS)

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Stiffener
Chock Model

Figure 3.8-108 (Sheet 2 of 5)



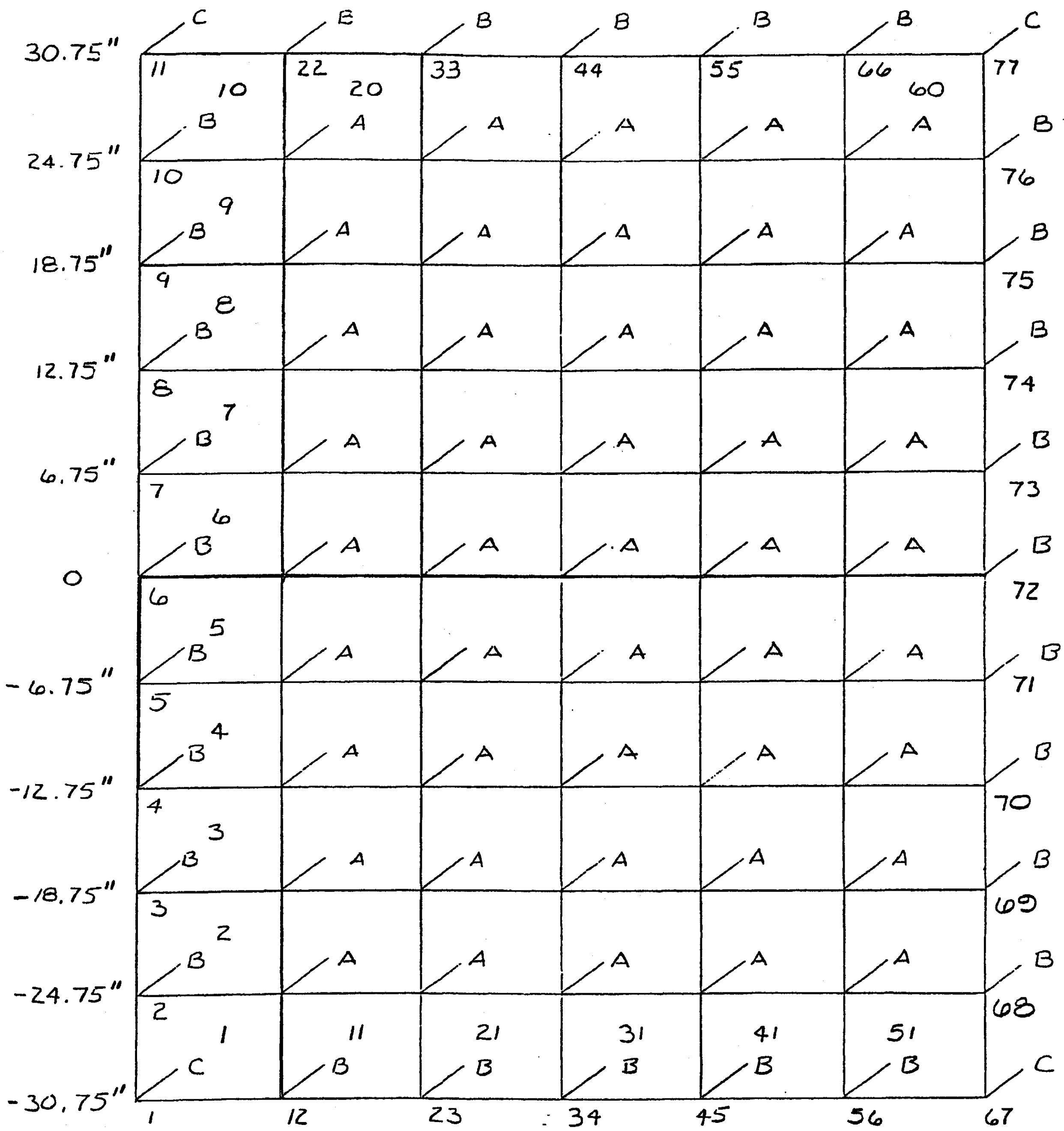
SUB-FIGURE B
STIFFENER WEB MODEL
(WEB NODES AND ELEMENTS (NTS))

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Stiffener
Chock Model

Figure 3.8-108 (Sheet 3 of 5)



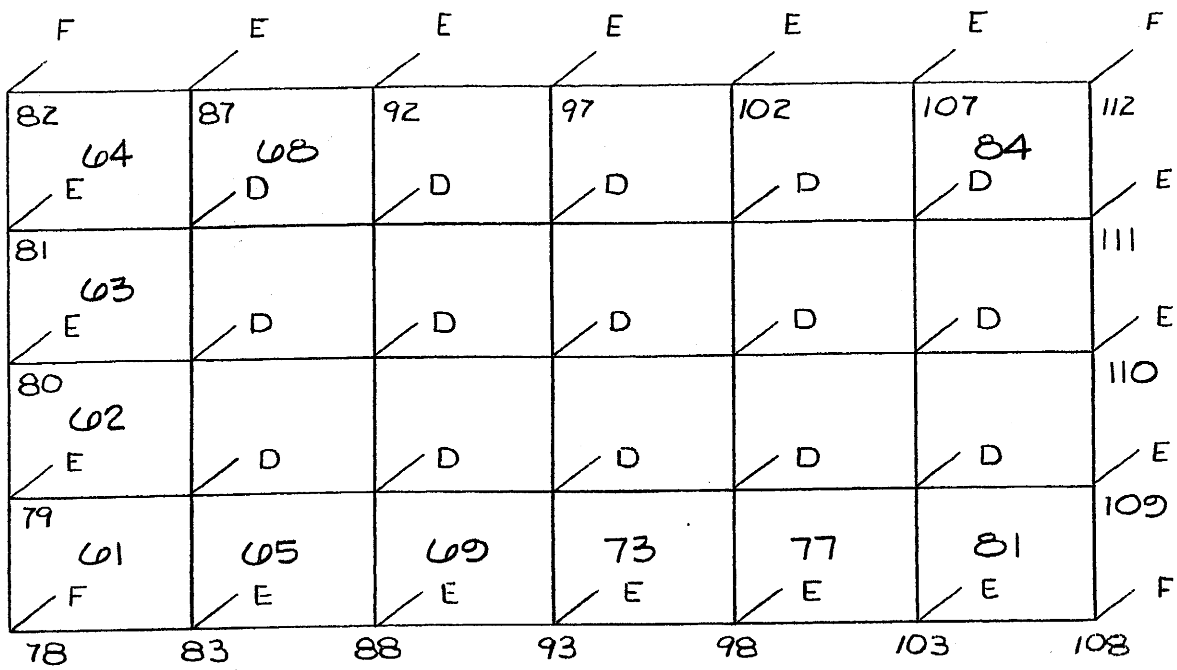
SUB-FIGURE C
SHELL MODEL
(SHELL NODES AND ELEMENTS (NTS))

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Stiffener
Chock Model

Figure 3.8-108 (Sheet 4 of 5)



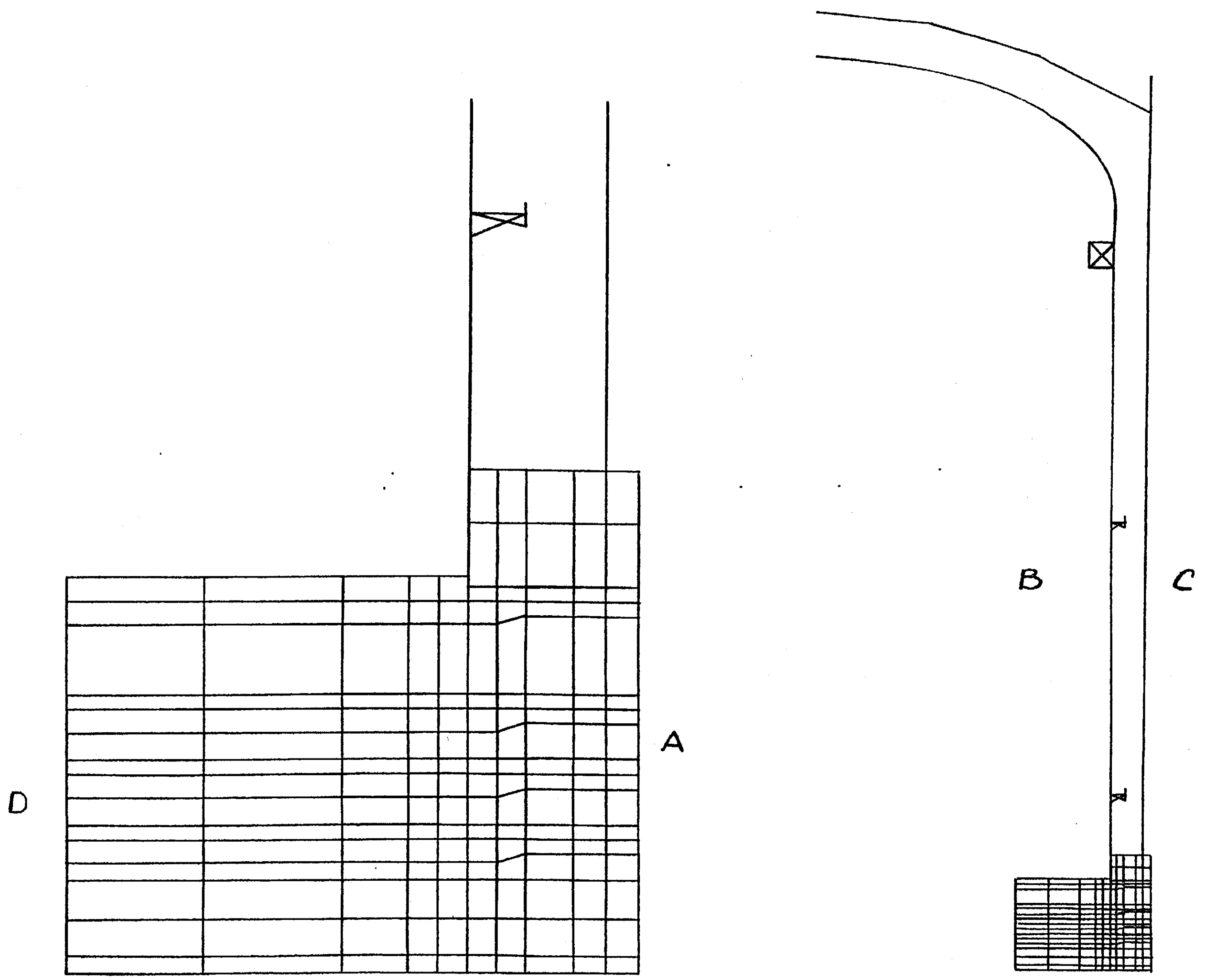
SUB-FIGURE D
STIFFENER FLANGE MODEL
(FLANGE NODES AND ELEMENTS (NTS))

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Stiffener
Chock Model

Figure 3.8-108 (Sheet 5 of 5)



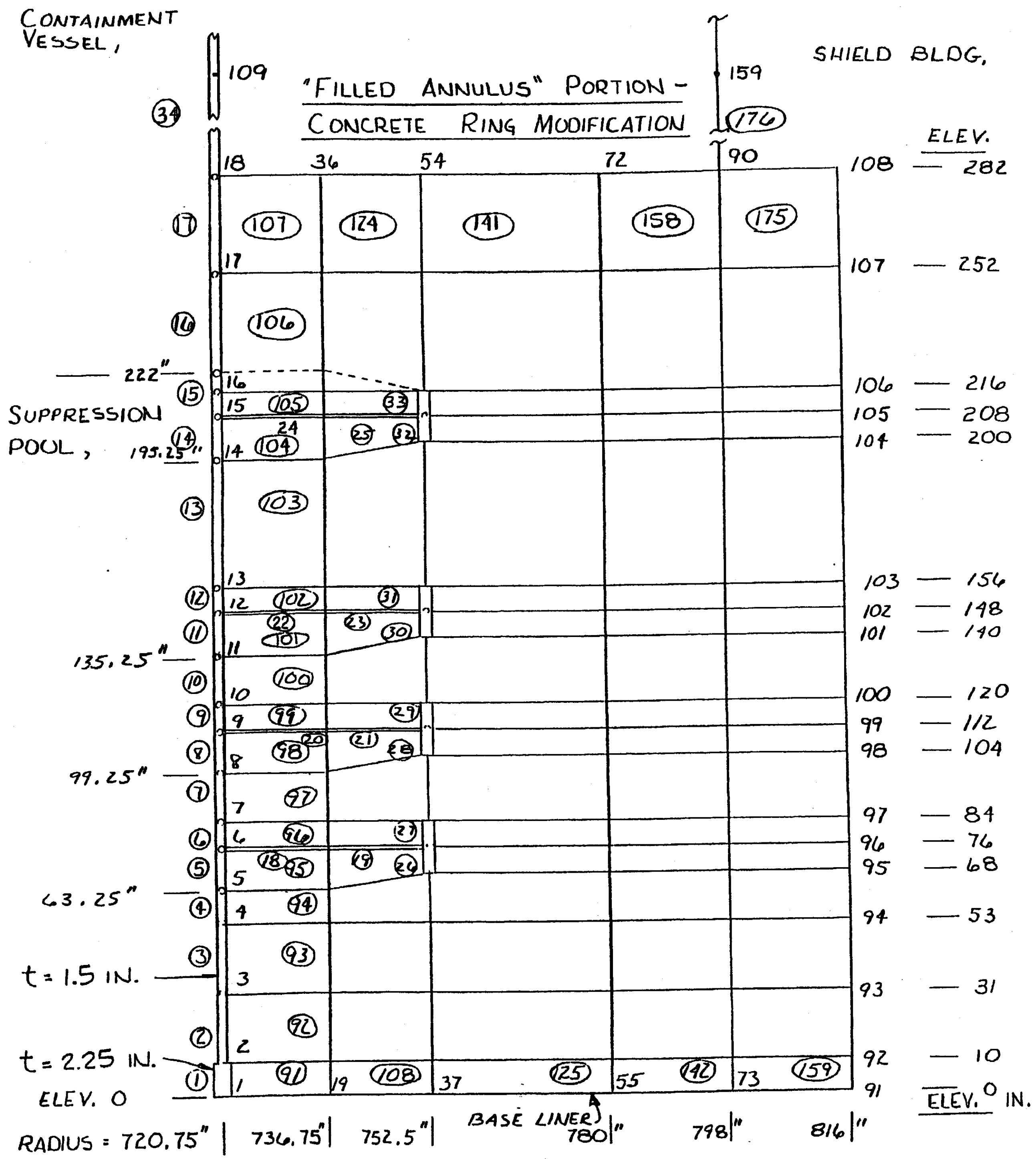
SEE SUB–FIGURES A, B, C, AND D
FOR DETAILS (SHEETS 2 THROUGH 5)

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Response Spectra Model

Figure 3.8-109 (Sheet 1 of 5)



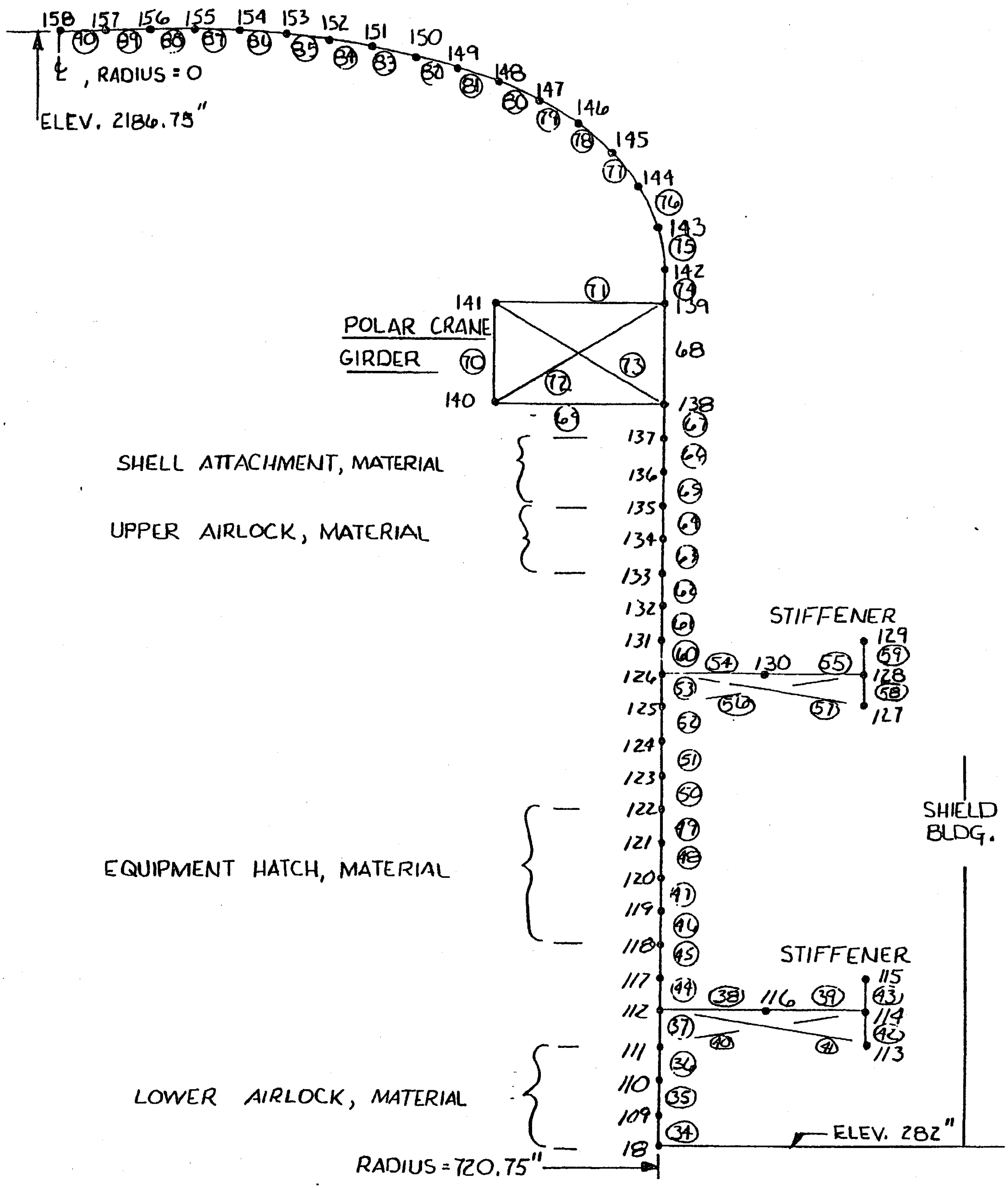
SUB-FIGURE A
CONCRETE FIX MODEL

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Response Spectra Model

Figure 3.8-109 (Sheet 2 of 5)



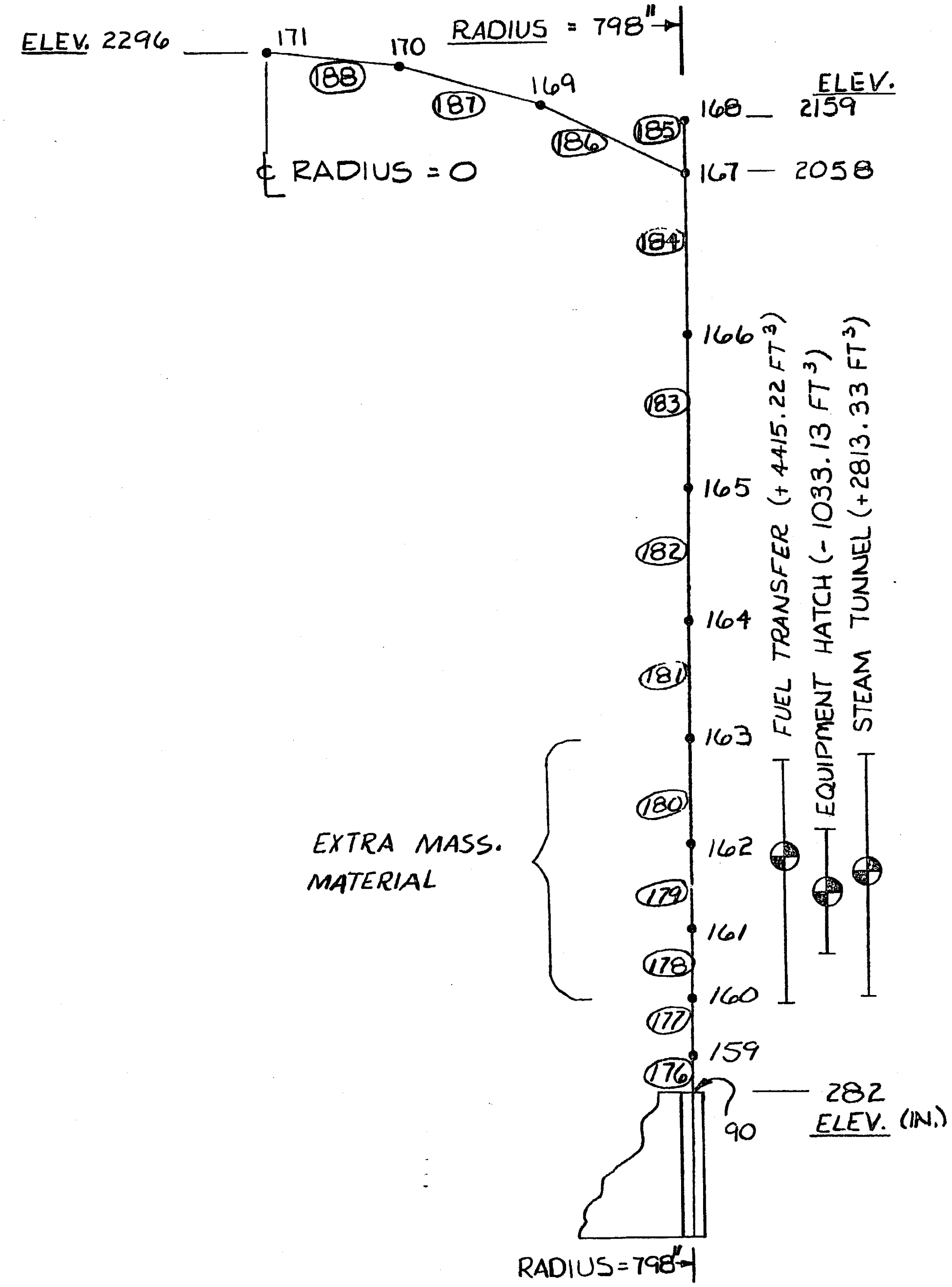
(Rev. 12 1/03)

SUB-FIGURE B
SHELL MODEL

PERRY NUCLEAR POWER PLANT

Response Spectra Model

Figure 3.8-109 (Sheet 3 of 5)



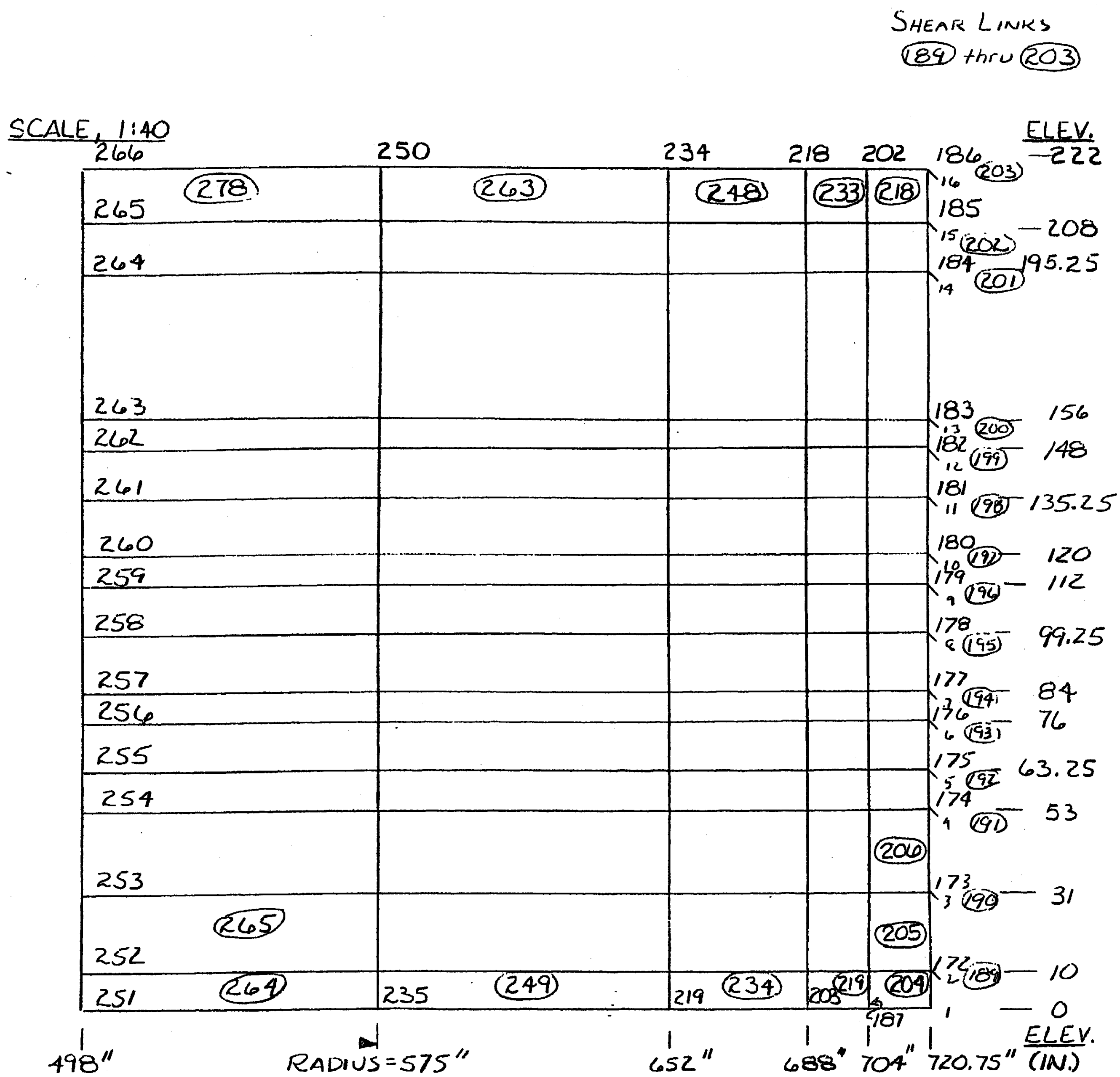
(Rev. 12 1/03)

SUB-FIGURE C
SHIELD BUILDING MODEL

PERRY NUCLEAR POWER PLANT

Response Spectra Model

Figure 3.8-109 (Sheet 4 of 5)



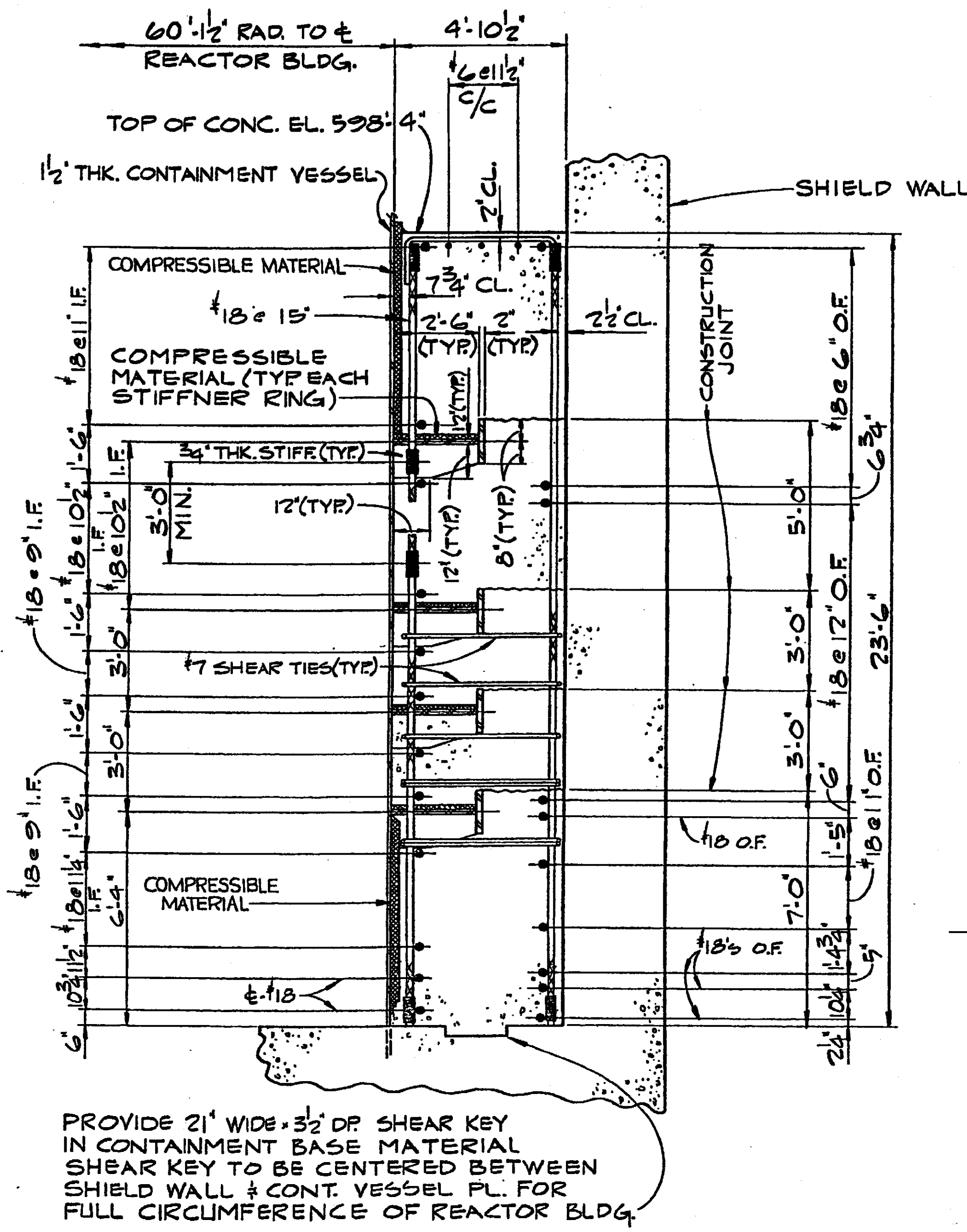
SUB-FIGURE D
SUPPRESSION POOL MODEL

(Rev. 12 1/03)

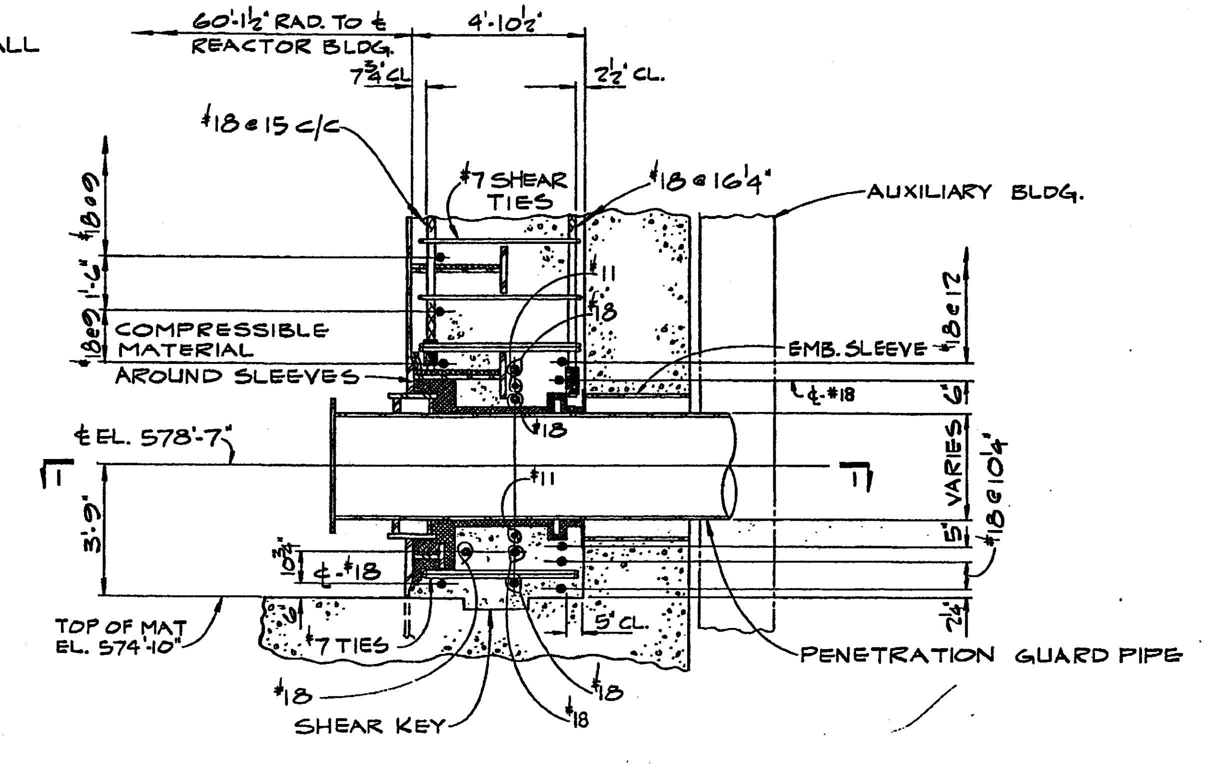
PERRY NUCLEAR POWER PLANT

Response Spectra Model

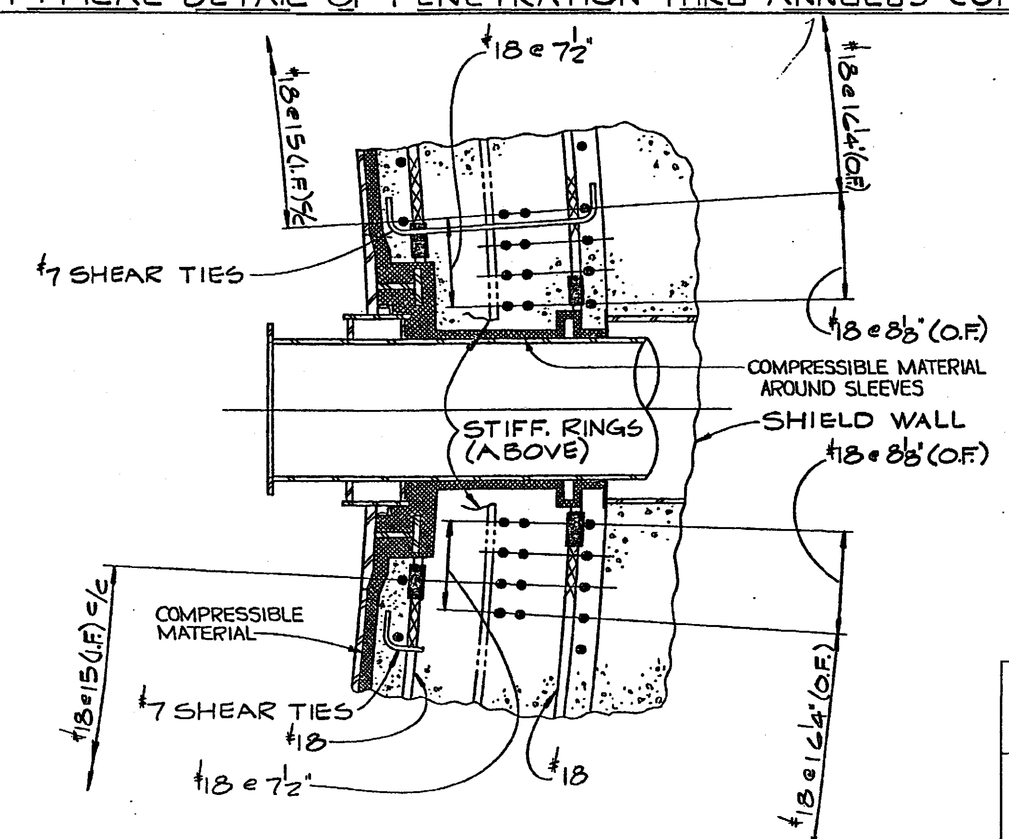
Figure 3.8-109 (Sheet 5 of 5)



TYPICAL CROSS SECTION SHOWING ANNULUS CONCRETE AND REINFORING DETAILS



TYPICAL DETAIL OF PENETRATION THRU ANNULUS CONCRETE



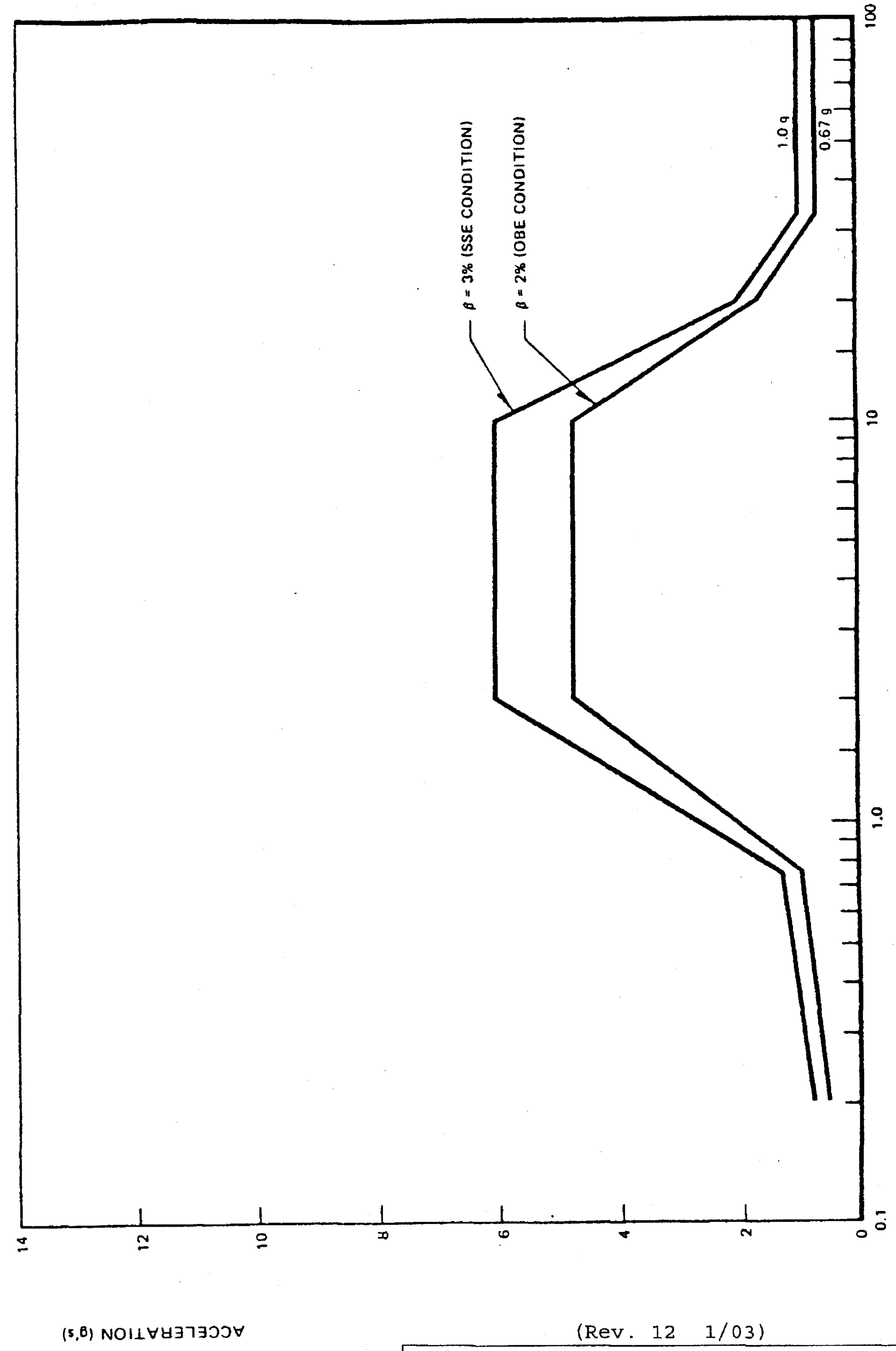
SECTION 1-1

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Compressible Material
Around Penetration

Figure 3.8-110

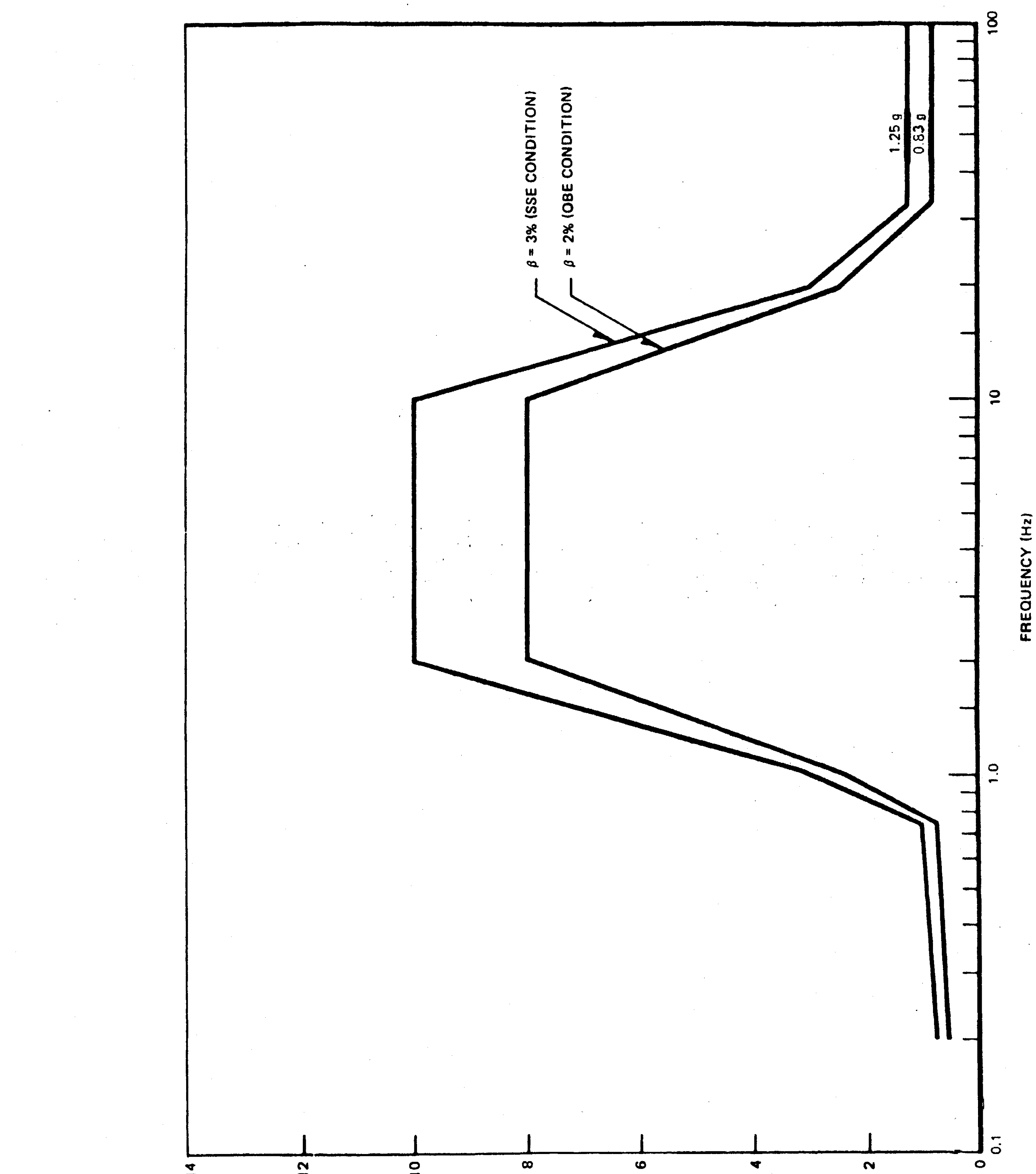


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Horizontal Spectrum RCIC Turbine

Figure 3.9-1

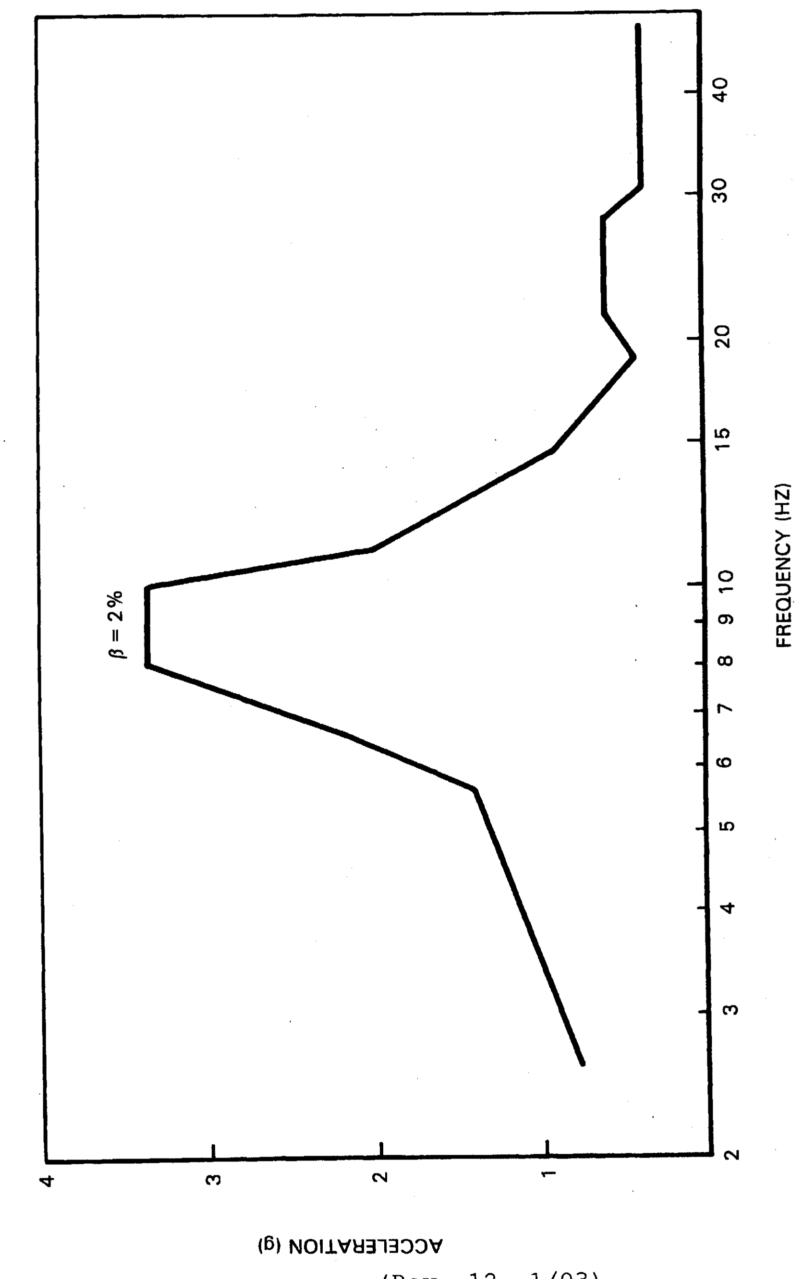


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Vertical Spectrum RCIC Turbine

Figure 3.9-2

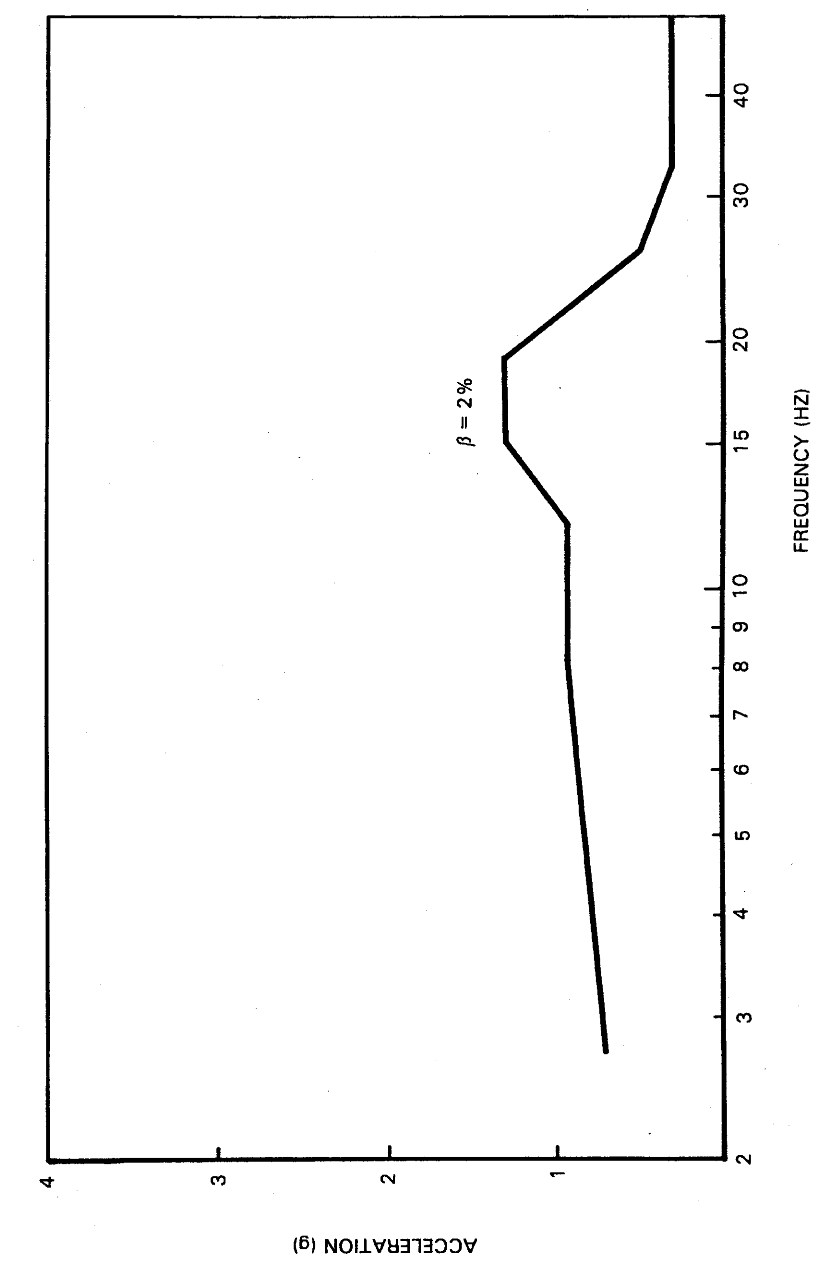


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Horizontal Spectrum SSE
Condition for the RHR
Heat Exchanger

Figure 3.9-3



(Rev. 12 1/03)

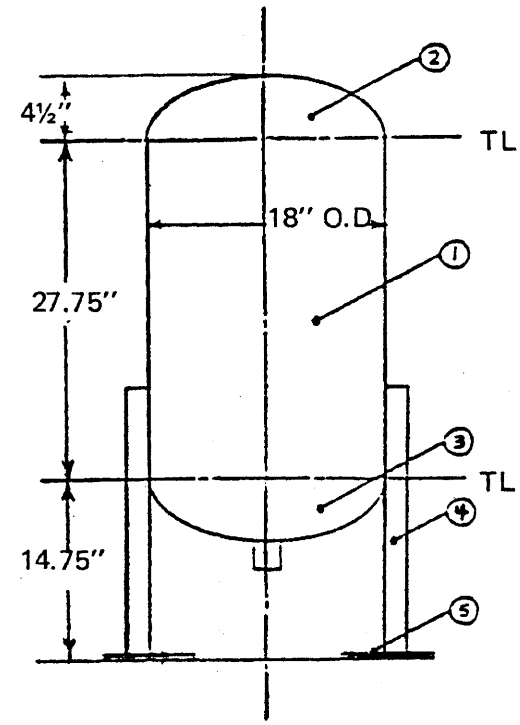
PNPP

PERRY NUCLEAR POWER PLANT

Vertical Spectrum SSE
Condition for the RHR
Heat Exchanger

Figure 3.9-4

Item	Name	Material
1	Shell-Cylinder	304L S.S.
2	Head-Ellip.	304L S.S.
3	Head-Ellip. w/Nozzle	304L S.S.
4	Leg—L2½X2½X3/8	304 S.S.
5	Anchor Bolt	N/A



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 71.6 Hz
2. Fundamental Mode: Lateral motion of the tank causing cantilever flexing of the support legs

B. Stress Analysis Summary

1. Status of Stress Levels for Original Design: Satisfactory, no reinforcing pads required
2. Overstressed Items in Original Design: None
3. Plant Condition During Overstressing: N/A
4. Modifications to Overstressed Items: None
5. Final Status of Stress Levels for Modified Design: Satisfactory

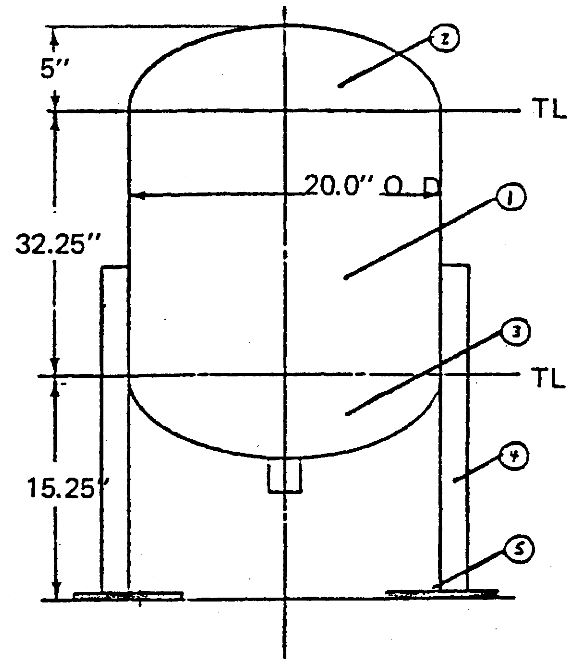
(Rev. 12 1/03)

PNPP PERRY NUCLEAR POWER PLANT

Analysis Summary for Main Steam Isolation Valve Accumulator Tank-Tank No. 1, 1B21-A001A, etc.

Figure 3.9-5

Item	Name	Material
1	Shell-Cylinder	304L S.S.
2	Head-Ellip	304L S.S.
3	Head-Ellip w/Nozzle	304L S.S.
4	Leg—L2½X2½X3/8	304 S.S.
5	Anchor Bolt	N/A



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 63.7 Hz
2. Fundamental Mode: Lateral motion of the tank causing cantilever flexing of the support legs.

B. Stress Analysis Summary

1. Status of Stress Levels for Original Design: Satisfactory, no reinforcing pads required
2. Overstressed Items in Original Design: None
3. Plant Condition During Overstressing: N/A
4. Modifications to Overstressed Items: None
5. Final Status of Stress Levels for Modified Design: Satisfactory

(Rev. 12 1/03)

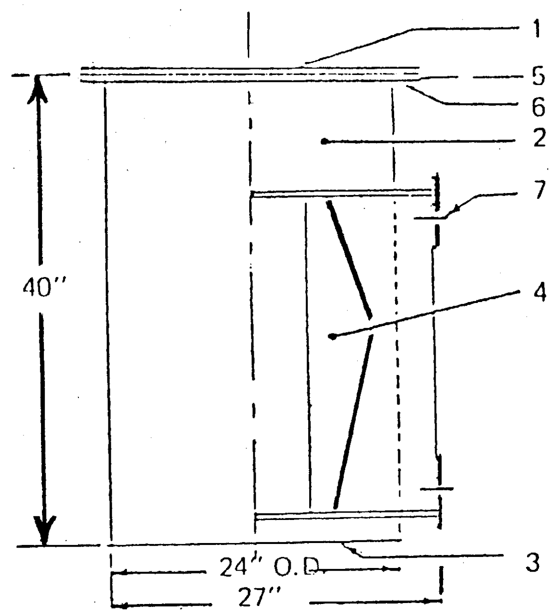
PERRY NUCLEAR POWER PLANT

Analysis Summary for ADS Safety/
Relief Valve Accumulator Tank-
Tank No. 2, 1B21-A003A, etc.

Figure 3.9-6

Item	Name	Material
1	3/8" Flat Top *	SA283–C
2	¼" Cyl. Shell *	SA283–C
3	3/8" Flat Bottom *	SA283–C
4	3/8" & ½" Bracket	SA283–C
5	5/8" Flange	SA283–C
6	Bolts – ½" Dia.	SA307–B
7	Bolts – 1" Dia.	N/A

* Corroded Thickness



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 251 Hz
2. Fundamental Mode: Vertical motion of tank causing the bracket support to flex.

B. Stress Analysis Summary

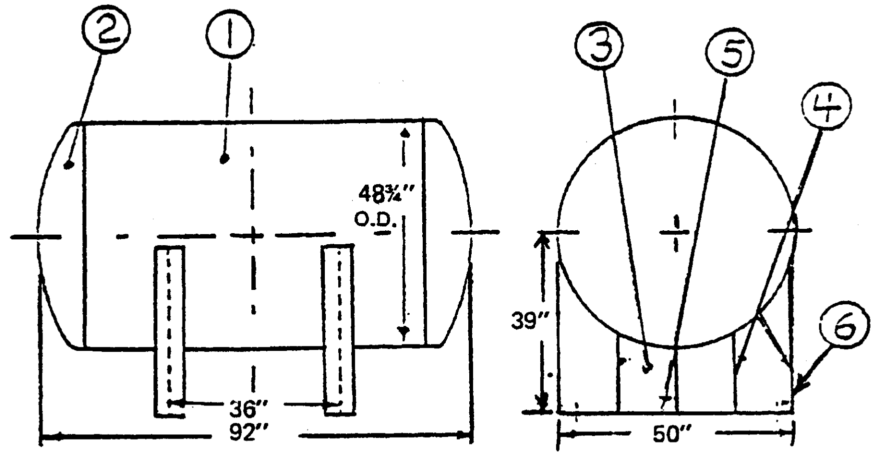
1. Status of Stress Levels for Original Design: Satisfactory with reinforcing pad
2. Overstressed Items in Original Design: None
3. Plant Condition During Overstressing: N/A
4. Modifications to Overstressed Items: None
5. Final Status of Stress Levels for Modified Design: Satisfactory

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analysis Summary for Control Complex Chilled Water Expansion Tank-Tank No. 3, P47-A002A, etc.

Figure 3.9-7



Item	Name	Material
1	¼" Cyl. Shell *	SA283–C
2	¼" F & D Head *	SA283–C
3	¼" Web	SA 36
4	5/16" Rib	SA 36
5	3/8" Base Plate	SA 36
6	Bolts – 1" Dia.	N/A

* Corroded Thickness

A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 23.9 Hz
2. Fundamental Mode: Axial motion of the tank causing saddles to flex.

B. Stress Analysis Summary

1. Status of Stress Levels for Original Design: Satisfactory with reinforcing pad sizes from
2. Overstressed Items in Original Design: None
3. Plant Condition During Overstressing: N/A
4. Modifications to Overstressed Items: None
5. Final Status of Stress Levels for Modified Design: Satisfactory

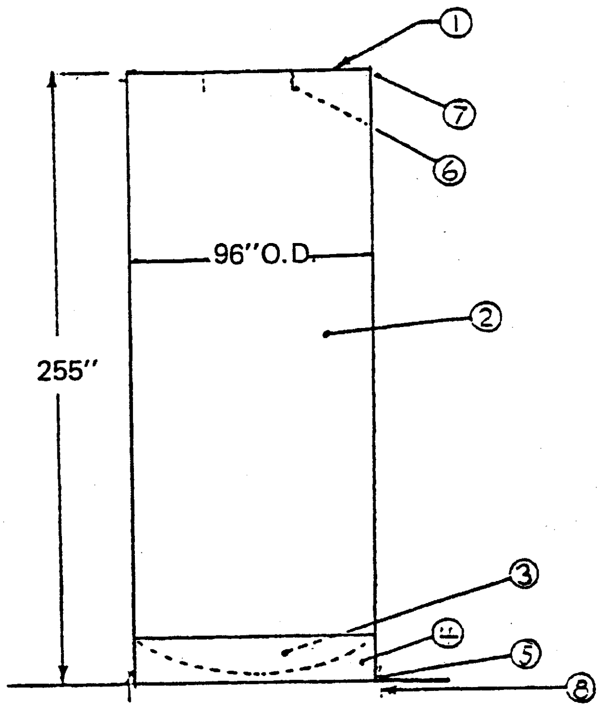
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analysis Summary for Emergency Closed Cooling Surge Tank-Tank No. 4, 1P42-A001A, etc.

Figure 3.9-8

Item	Name	Material
1	¼" Flat Top	304L S.S.
2	¼" Cyl. Shell	304L S.S.
3	¼" F & D Bottom	304L S.S.
4	¼" Skirt	304 S.S.
5	3/8" Gusset	304 S.S.
6	8" X ½" Bar	304L S.S.
7	L3" X 2" X ¼"	304 S.S.
8	Bolts – 1¼" Dia.	N/A



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 15.0 Hz
2. Fundamental Mode: Cantilever flexing of the tank on the skirt support

B. Stress Analysis Summary

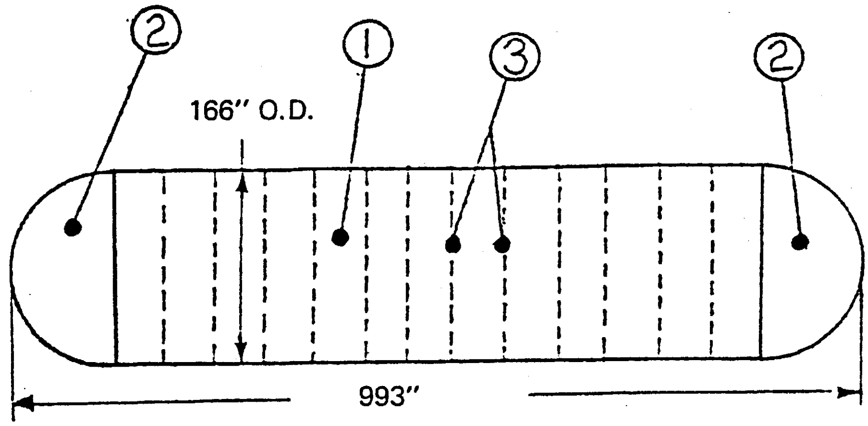
1. Status of Stress Levels for Original Design: Unsatisfactory
2. Overstressed Items in Original Design: 8
3. Plant Condition During Overstressing: Faulted
4. Modifications to Overstressed Items:
   a. Item 8 – 1¼" Dia. Bolts replaced by 1½" Dia. Bolts
   b. Necessary reinforcing pad sizes
   c. Necessary base plate dimensions to accommodate the 1½" Dia. Bolts
5. Final Status of Stress Levels for Modified Design: Satisfactory

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analysis Summary for Fuel Pool Surge Tank-Tank No. 5, G41-A002A, etc.

Figure 3.9-9



Item	Name	Material
1	5/16" Cylinder*	SA283–C
2	1/2" F & D Head*	SA283–C
3	L 5 x 3-1/2 x 3/8*	SA36

*Corroded Thickness

A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: N/A

2. Fundamental Mode: N/A, soil displacements influence the structural behavior of tank under seismic conditions. Refer to Section VI for details.

B. Stress Analysis Summary

1. Status of Stress Levels for Original Design: Unsatisfactory

2. Overstressed Items in Original Design: 3

3. Plant Condition During Overstressing: Upset + OBE, Faulted

4. Modifications to Overstressed Items:
   a. Item 3 – L 5 X 3½ X 7/16 ring stiffener replaced by WT 5 X 30 ring stiffener.
   b. Necessary reinforcing pad sizes

5. Final Status of Stress Levels for Modified Design: Satisfactory

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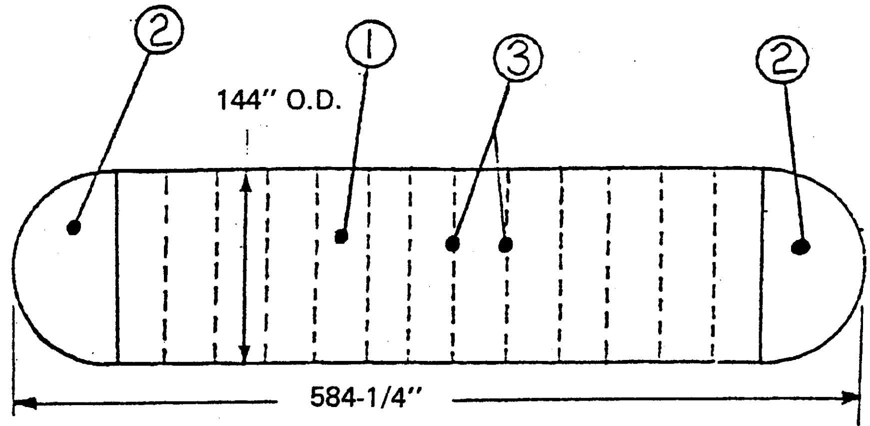
PERRY NUCLEAR POWER PLANT

Analysis Summary for Standby Diesel Generator Fuel Oil Storage Tank-Tank No. 6, 1R45-A002A, etc.

Figure 3.9-10



Item	Name	Material
1	5/16" Cylinder*	SA283–C
2	7/16" F & D Head*	SA283–C
3	L 4 x 4 x 7/16*	SA36

*Corroded Thickness

A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: N/A
2. Fundamental Mode: N/A, soil displacements influence the structural behavior of tank under seismic conditions.

B. Stress Analysis Summary

1. Predicted Fundamental Frequency: N/A
2. Overstressed Items in Original Design: 3
3. Plant Condition During Overstressing: Upset + OBE, Faulted
4. Modifications to Overstressed Items:
   a. Item 3 – L 4 X 4 ½ ring stiffener replaced by WT 5 X 22.5 ring stiffener.
   b. Item 3 – WT 5 X 22.5 moved from outside of tank to inside of tank.
   c. Necessary reinforcing pad sizes
5. Final Status of Stress Levels for Modified Design: Satisfactory

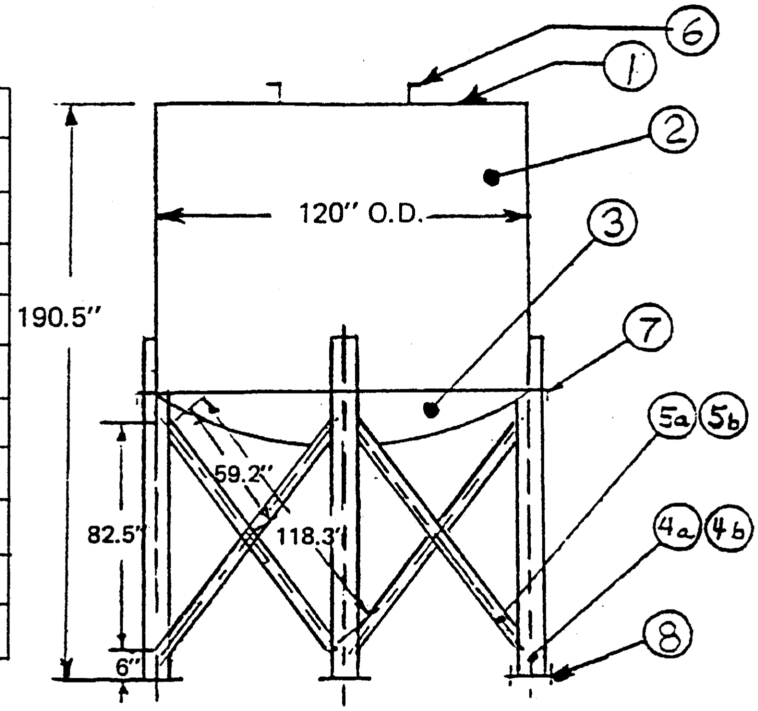
(Rev. 12 1/03)

PNPP PERRY NUCLEAR POWER PLANT

Analysis Summary for HPCS Diesel Generator Fuel Oil Storage Tank-Tank No. 7, 1R45-A004, etc.

Figure 3.9-11

Item	Name	Material
1	5/16" Flat Head	304L S.S.
2	¼" Cyl. Shell	304L S.S.
3	¼" Bottom	304L S.S.
4a	8" sch 40,l = 6"	A53B
4b	8" sch 40, l = 92.5"	A53B
5a	3" sch 40, l = 59.2"	A53B
5b	3" sch 40, l - 118.3"	A53B
6	L 6 X 4 X ¼	A36
7	L 6 X 4 X 3/8	A36
8	Bolts – 2" Dia.	N/A



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 9.6 Hz

2. Fundamental Mode: Lateral motion of the tank causing cantilever flexing of the supports.

B. Stress Analysis Summary

1. Status of Stress Levels for Original Design: Unsatifactory

2. Overstressed Items in Original Design: 7

3. Plant Condition During Overstressing: Faulted

4. Modifications to Overstressed Items:
   a. Item 7 – L 6 X 4 X 3/8 ring stiffener replaced by L 6 X 6 X 3/8 ring stiffener
   b. Item 6 – L 6 X 4 X ¼ roof beam unavailable. L 6 X 4 X 3/8 roof beam will be used instead.
   c. Necessary reinforcing pad sizes

5. Final Status of Stress Levels for Modified Design: Satisfactory

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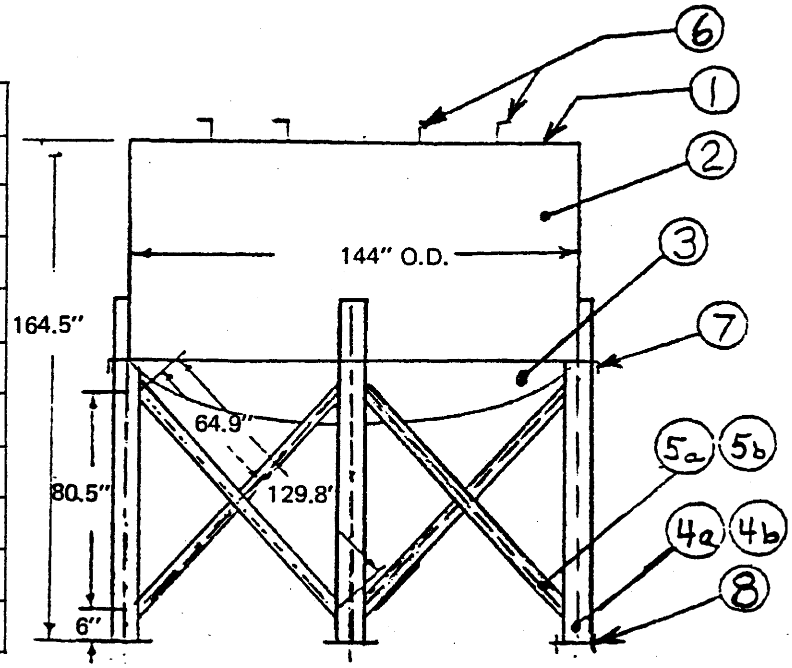
PERRY NUCLEAR POWER PLANT

Analysis Summary for Reactor Water Cleanup F/D BW Settling Tank-Tank No. 8, G50-A013A, etc.

Figure 3.9-12

Item	Name	Material
1	3/8" Flat Head	Incoloy 825
2	¼" Cyl. Shell	Incoloy 825
3	¼" Bottom	Incoloy 825
4a	8" sch 40, l = 6"	A53B
4b	8" sch 40, l = 80.5"	A53B
5a	3" sch 40, l = 69.4"	A53B
5b	3" sch 40, l = 129.8"	A53B
6	L 7 X 4 X 3/8	A36
7	L 6 X 4 X 3/8	A36
8	Bolts – 2" Dia.	N/A



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 8.9 Hz
2. Fundamental Mode: Lateral motion of tank causing cantilever flexing of supports

B. Stress Analysis Summary

1. Status of Stress Levels for Original Design: Unsatisfactory
2. Overstressed Items in Original Design: 4a , 4b , 5a , 5b , 7
3. Plant Condition During Overstressing: Upset + OBE, Faulted
4. Modifications to Overstressed Items:
   a. Item 4a , 4b – 8" Sch 40 pipe column replaced by 8" Sch 80 pipe column
   b. Item 5a , 5b – 3" Sch 40 pipe brace replaced by 4" Sch 40 pipe brace
   c. Item 7 – L6 X 4 X 3/8 ring stiffener replaced by WT 6 X 22.5 ring stiffener
   d. Necessary reinforcing pad sizes
5. Final Status of Stress Levels for Modified Design: Satisfactory

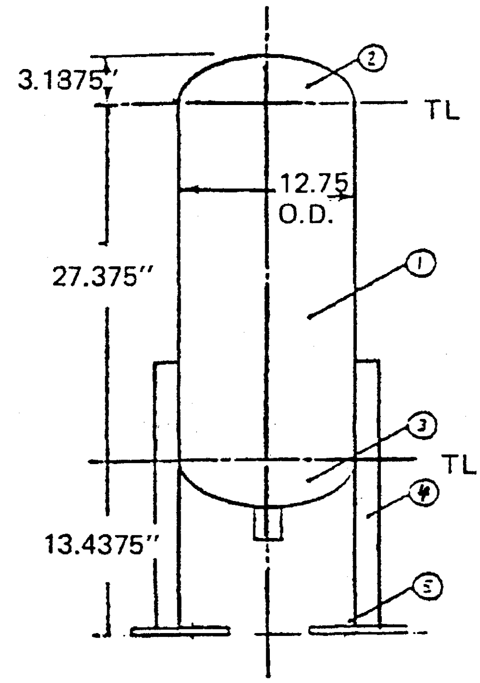
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analysis Summary for Concentrated Waste Tank-Tank No. 9, G50-A006A, etc.

Figure 3.9-13

Item	Name	Material
1	Shell-Cylin.	304L S.S.
2	Head—Ellip.	304L S.S.
3	Head-Ellip w/Nozzle	304L S.S.
4	Leg- L 2½X2½X3/8	304 S.S.
5	Anchor Bolt	N/A



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 87.8 Hz
2. Fundamental Mode: Lateral motion of the tank causing cantilever flexing of the support legs.

B. Stress Analysis Summary

1. Status of Stress Levels for Original Design: Satisfactory, no reinforcing pads required
2. Overstressed Items in Original Design: None
3. Plant Condition During Overstressing: N/A
4. Modifications to Overstressed Items: None
5. Final Status of Stress Levels for Modified Design: Satisfactory

(Rev. 12 1/03)

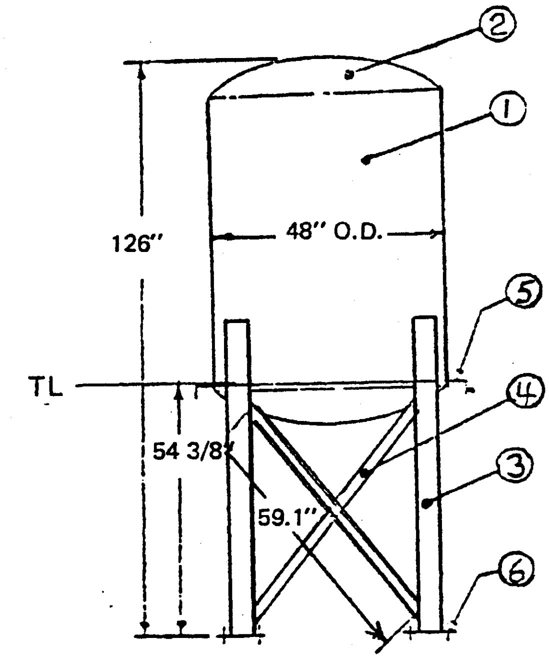
PERRY NUCLEAR POWER PLANT

Analysis Summary for Safety Relief
Valve Accumulator Tank-
Tank No. 10, 1B21-A004A, etc.

Figure 3.9-14

Item	Name	Material
1	¼" Cyl. Shell *	SA283–C
2	¼" F & D Head *	SA283–C
3	4" Sch 40, l = 54 3/8	SA53–E/B
4	2" Sch 40, l = 59.1	SA53–E/B
5	L 4 X 3 X ¼	SA36
6	Bolts – 1¼" Dia.	N/A

* Corroded Thickness



A. Seismic Analysis Summary

1. Predicted Fundamental Frequency: 20.3 Hz
2. Fundamental Mode: Lateral motion of tank causing cantilever flexing of supports

B. Stress Analysis Summary

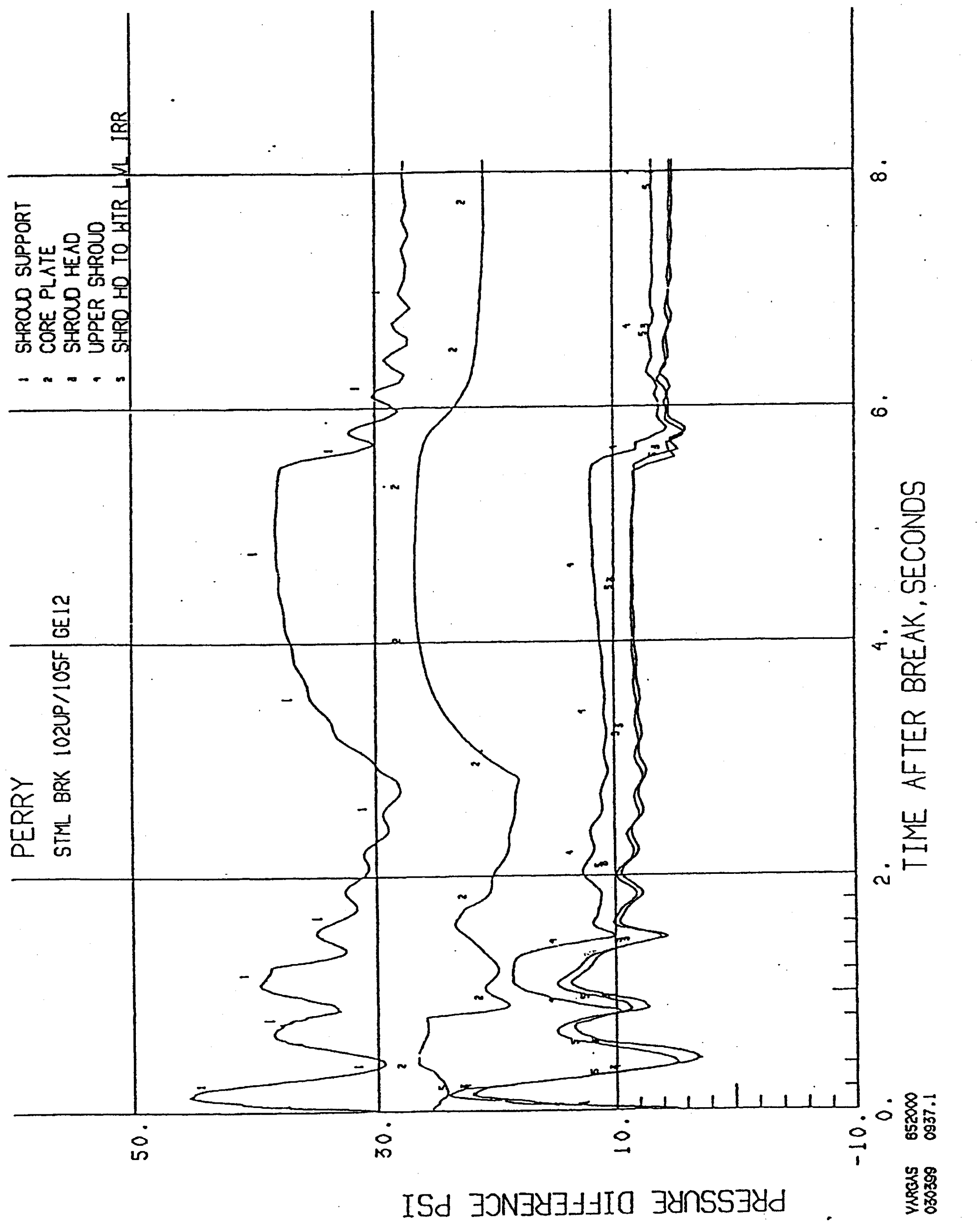
1. Status of Stress Levels for Original Design: Satisfactory with reinforcing pad sizes from
2. Overstressed Items in Original Design: None
3. Plant Condition During Overstressing: N/A
4. Modifications to Overstressed Items: None
5. Final Status of Stress Levels for Modified Design: Satisfactory

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Analysis Summary for HPCS Diesel
Fuel Oil Day Tank-
Tank No. 12, 1R45-A005, etc.

Figure 3.9-15

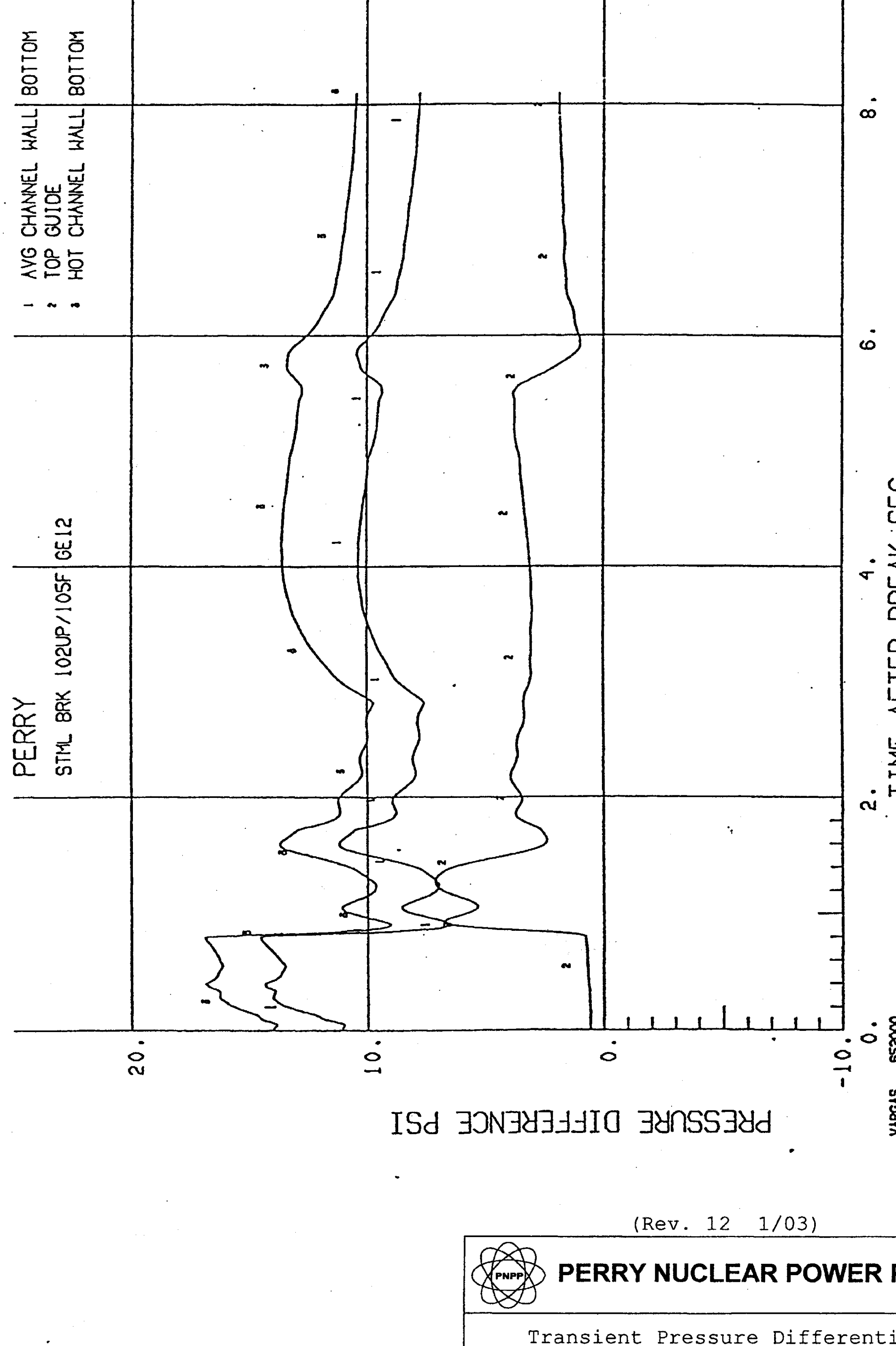


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Transient Pressure Differentials
Following a Steamline Break
(Shroud Support, Core Plate,
Upper Shroud)

Figure 3.9-16

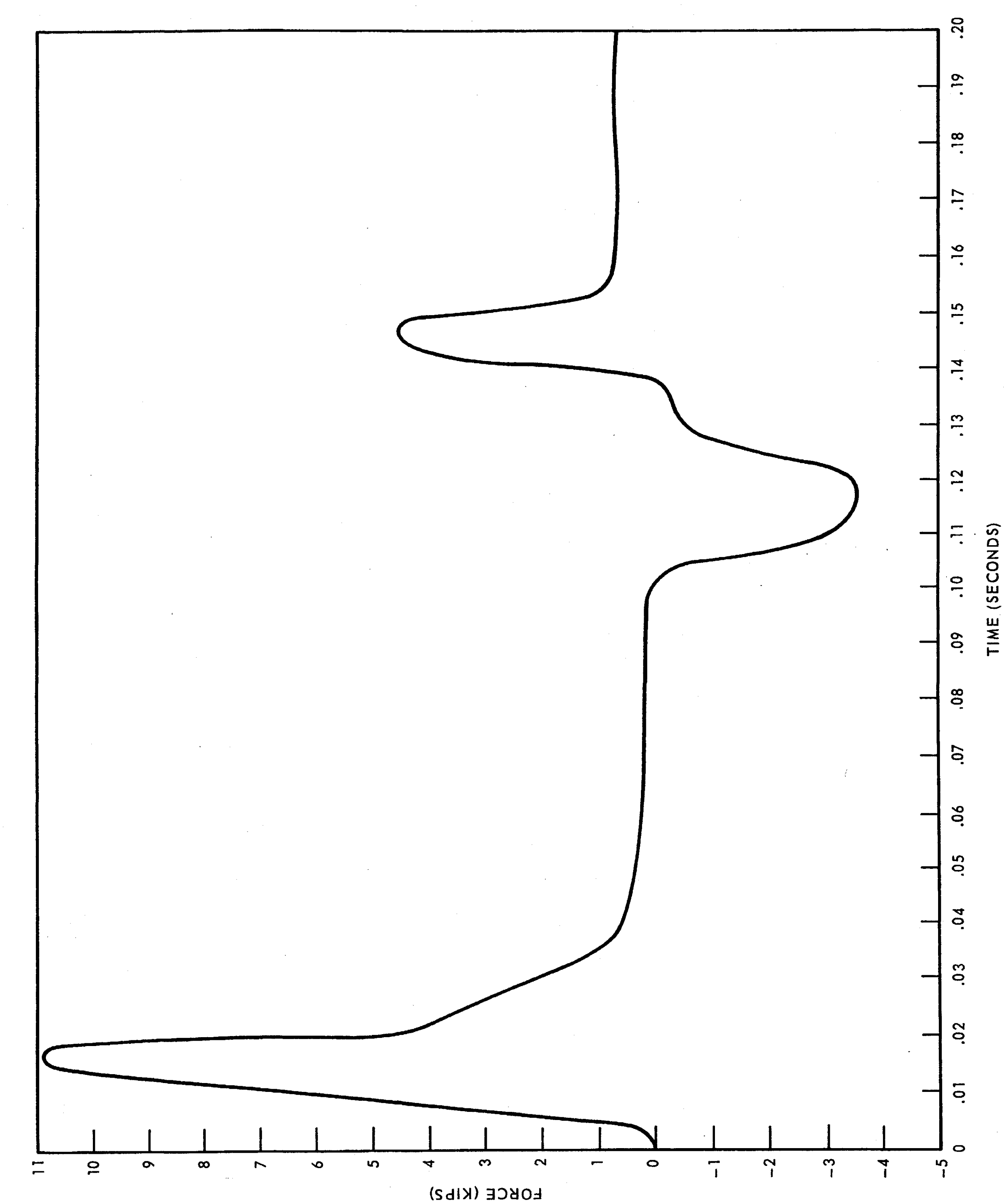


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Transient Pressure Differentials
Following a Steamline Break
(Average Channel Wall Bottom,
Top Guide)

Figure 3.9-17

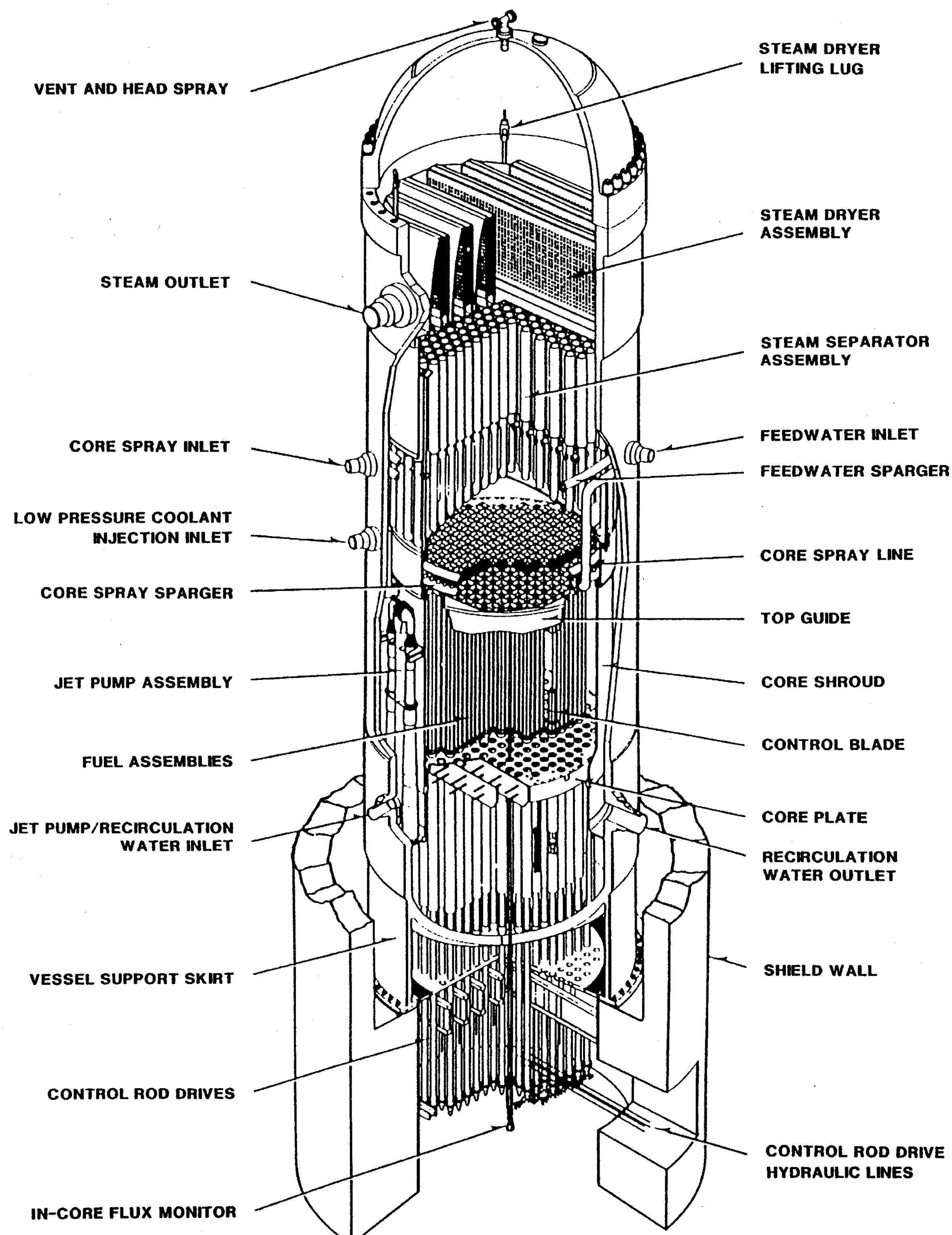


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Relief Valve Opening
Transient Forcing Function

Figure 3.9-18



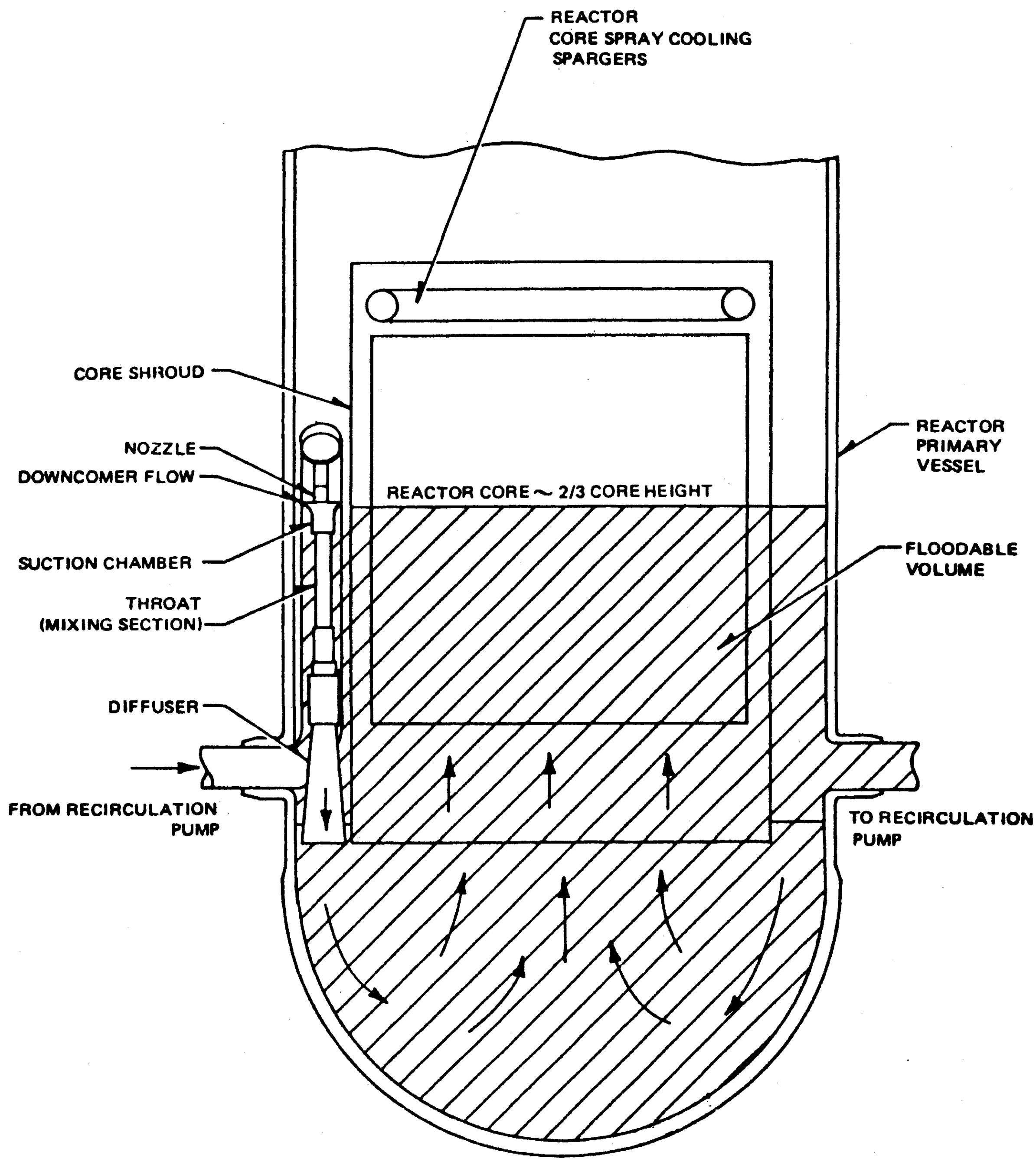
NOTE:
THIS FIGURE SHOWS GENERAL LOCATION AND CONFIGURATION OF MAJOR COMPONENTS ONLY

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Vessel Cutaway

Figure 3.9-19

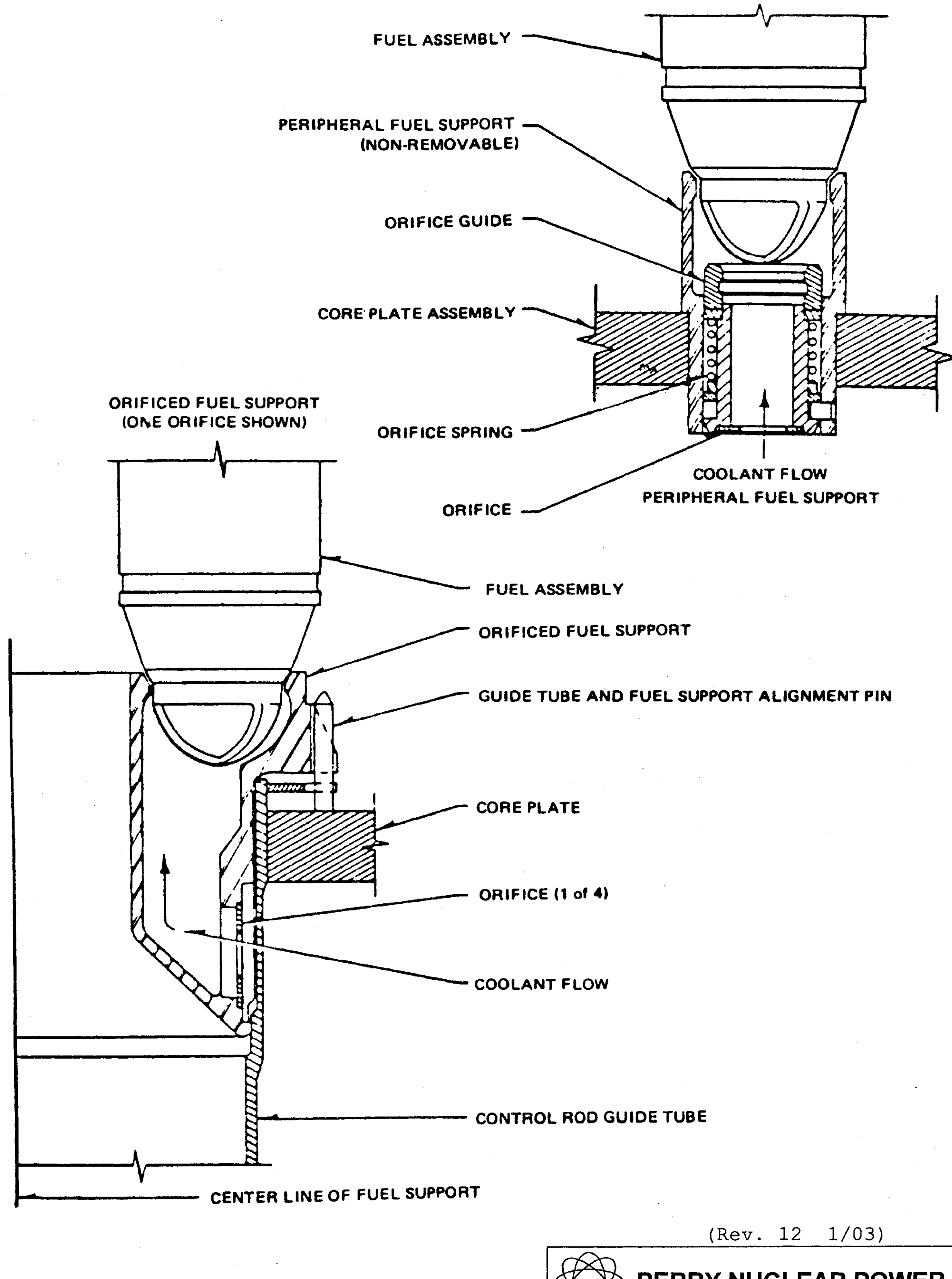


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Internals Flow Paths

Figure 3.9-20

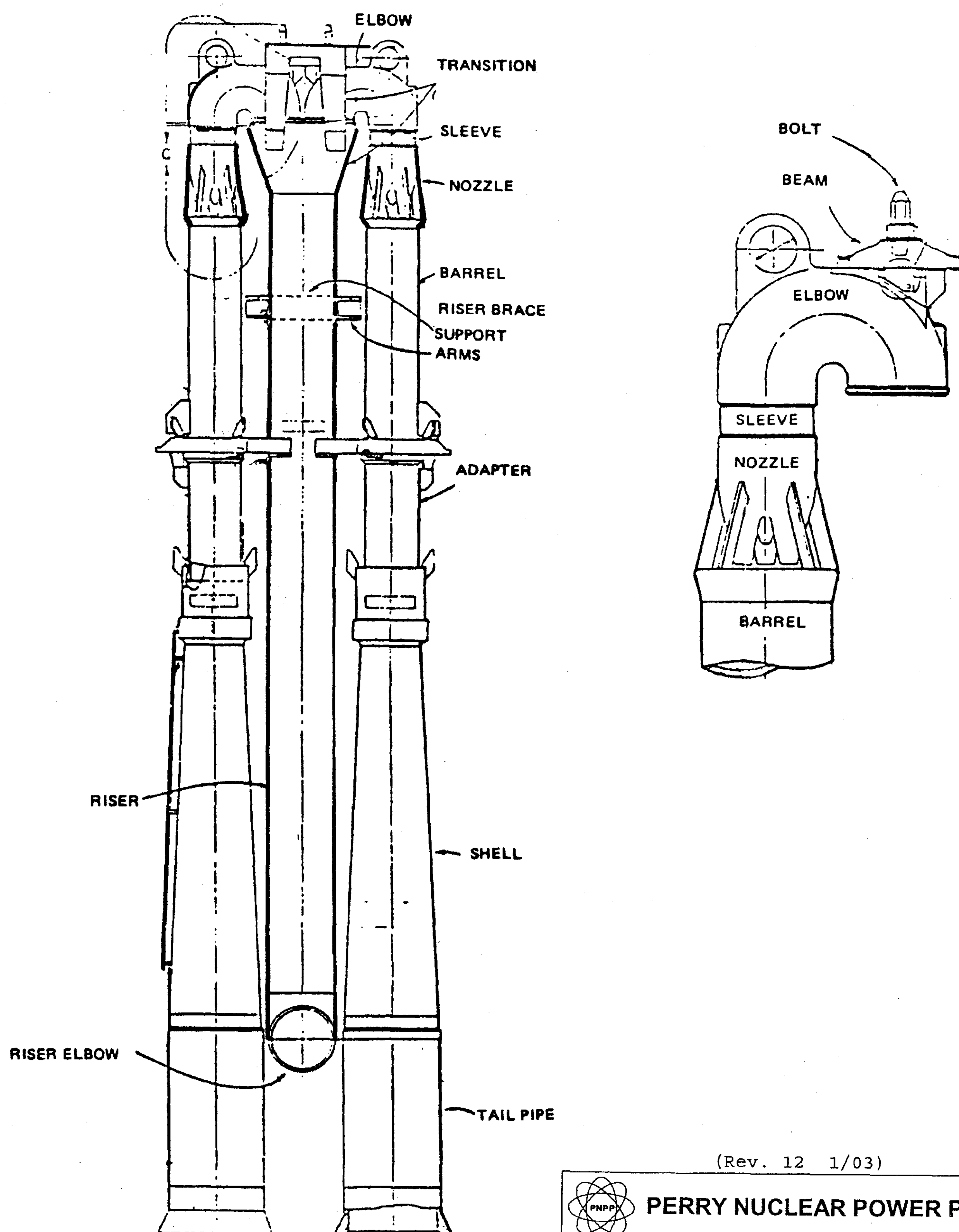


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Fuel Support Pieces

Figure 3.9-21

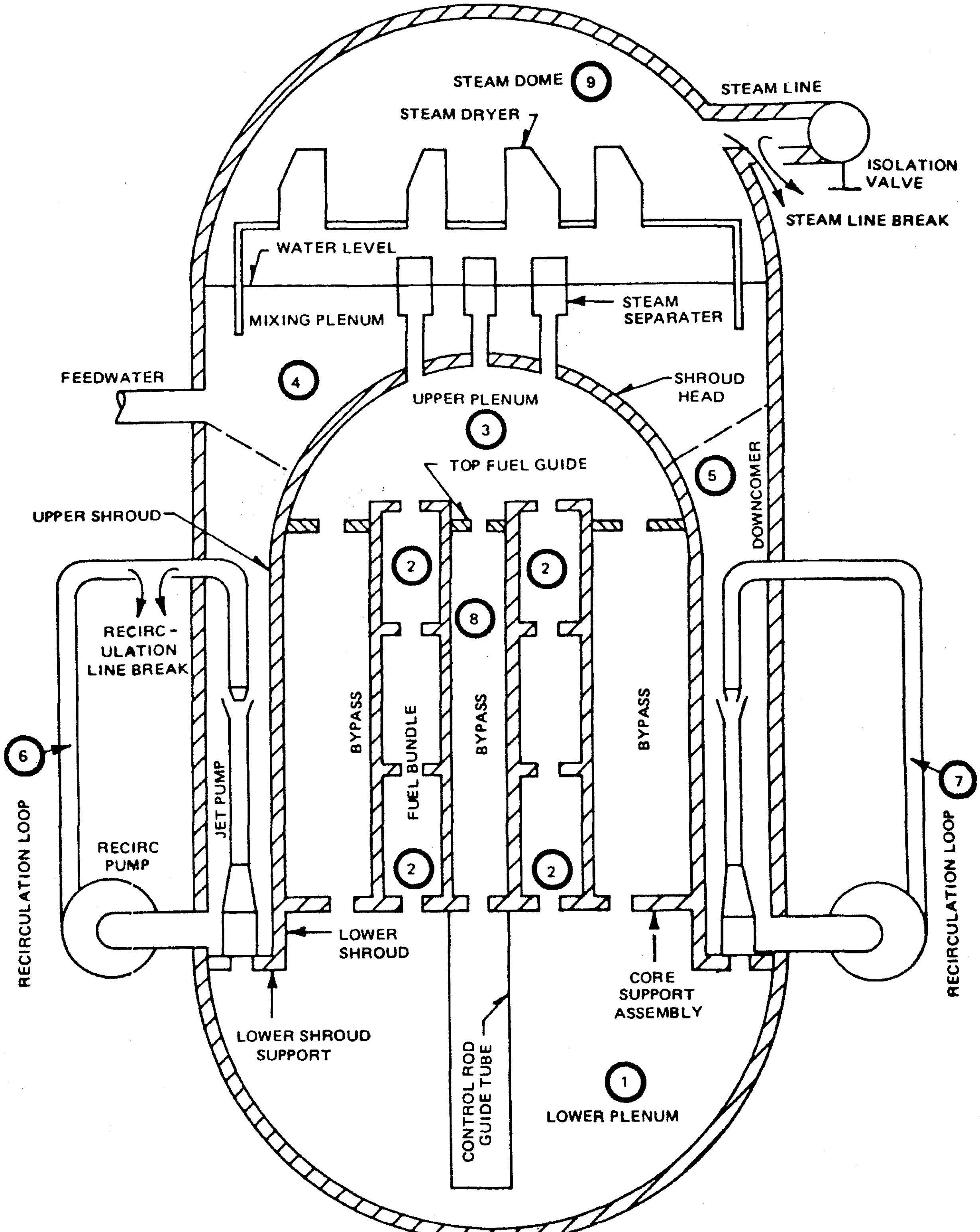


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Jet Pump

Figure 3.9-22

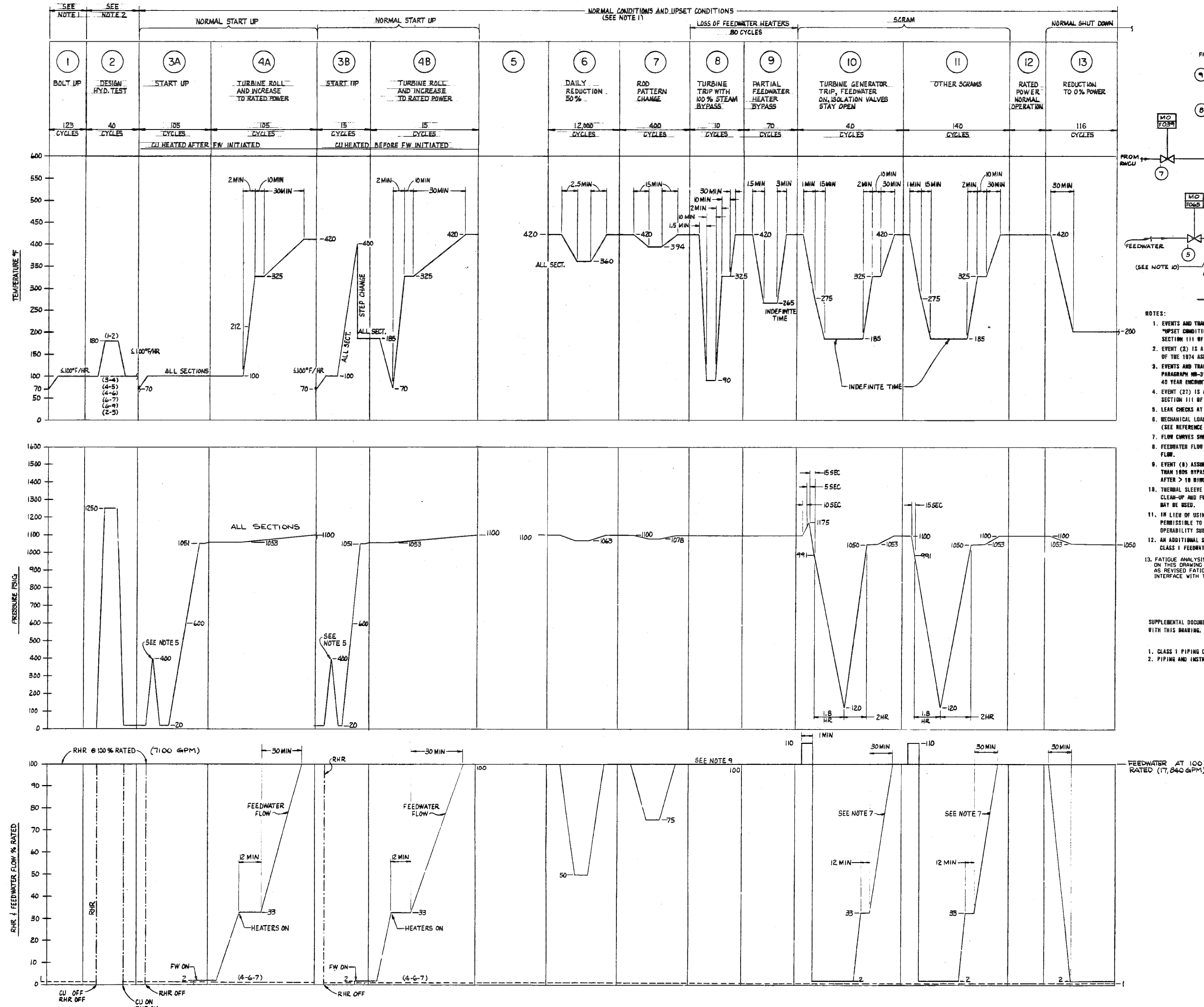


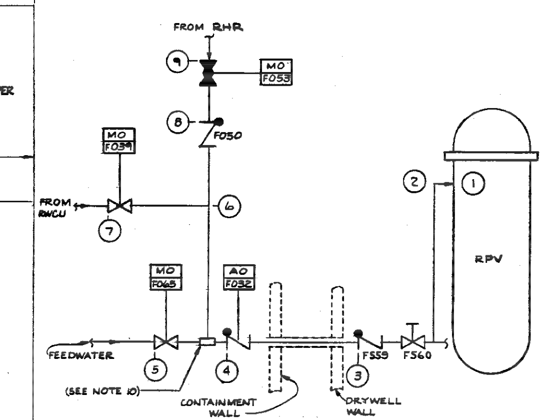
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Pressure Nodes Used for Depressurizaion Analysis

Figure 3.9-23





PIPE SECTION DIAGRAM

NOTES:

1. EVENTS AND TRANSIENT (1) AND (3) THROUGH (21) ARE "NORMAL CONDITIONS" OR "UPSET CONDITIONS" AS DEFINED IN PARAGRAPHS NB-3113.1 AND NB-3113.2 OF SECTION III OF THE 1974 ASME B AND PV CODE.
2. EVENT (2) IS A "TESTING CONDITION" AS DEFINED IN PARAGRAPH NB-3114 OF SECTION III OF THE 1974 ASME B AND PV CODE.
3. EVENTS AND TRANSIENTS (22) THROUGH (26) ARE "EMERGENCY CONDITIONS" AS DEFINED IN PARAGRAPH NB-3113.3 OF SECTION III OF THE 1974 ASME B AND PV CODE. THE ACTUAL 40 YEAR ENCOUNTER PROBABILITIES ARE L10^{-1}.
4. EVENT (27) IS A "FAULTED CONDITION" AS DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B AND PV CODE.
5. LEAK CHECKS AT 400 PSIG PRIOR TO POWER OPERATIONS. 3 CYCLES/START-UP.
6. MECHANICAL LOADS DUE TO SAFETY RELIEF VALVE DISCHARGE SHOULD ALSO BE CONSIDERED, (SEE REFERENCE 1).
7. FLOW CURVES SHOW RECOVERY AFTER CLEARING CONDITIONS THAT CAUSED SCRAM.
8. FEEDWATER FLOW TURNED OFF – ON 6 TIMES PER HOUR DURING PERIODS OF LOW FEEDWATER FLOW.
9. EVENT (8) ASSUMES 100% STEAM BYPASS CAPABILITY. FOR REACTOR PLANTS WITH LESS THAN 100% BYPASS CAPABILITY, THE TRANSIENTS WILL BE LESS SEVERE. FLOW INCREASES AFTER > 10 MINUTES.
10. THERMAL SLEEVE IS SHOWN AS ONE POSSIBLE METHOD OF ACCOMMODATING ΔT BETWEEN CLEAN-UP AND FW STREAMS. OTHER METHODS WHICH MEET APPLICABLE CODE REQUIREMENTS MAY BE USED.
11. IN LIEU OF USING THE PEAK PRESSURE AS DESIGN PRESSURE FOR ACTIVE VALVES, IT IS PERMISSIBLE TO DEMONSTRATE BY OVERPRESSURE TESTING THAT THE VALVE RETAINS OPERABILITY SUBSEQUENT TO THE TRANSIENT.
12. AN ADDITIONAL SINGLE CYCLE EMERGENCY CONDITION OF 1580 PSIG AT 575°F EXISTS FOR THE CLASS 1 FEEDWATER PIPING UPSTREAM OF F560.
13. FATIGUE ANALYSIS RESULTS OF COMPONENTS THAT CONSIDER THE CYCLIC INFORMATION CONTAINED ON THIS DRAWING HAVE BEEN USED AS INPUT TO THE FATIGUE MONITORING PROGRAM. NEW AS WELL AS REVISED FATIGUE ANALYSES UTILIZING THE CYCLIC INFORMATION CONTAINED HEREIN REQUIRE INTERFACE WITH THE FATIGUE MONITORING PROGRAM SOFTWARE ADMINISTRATOR.

SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.

	REFERENCE DESIGNATOR
1. CLASS 1 PIPING CYCLES MAIN STEAM	B21-3000
2. PIPING AND INSTRUMENT SYMBOLS	A42-1010

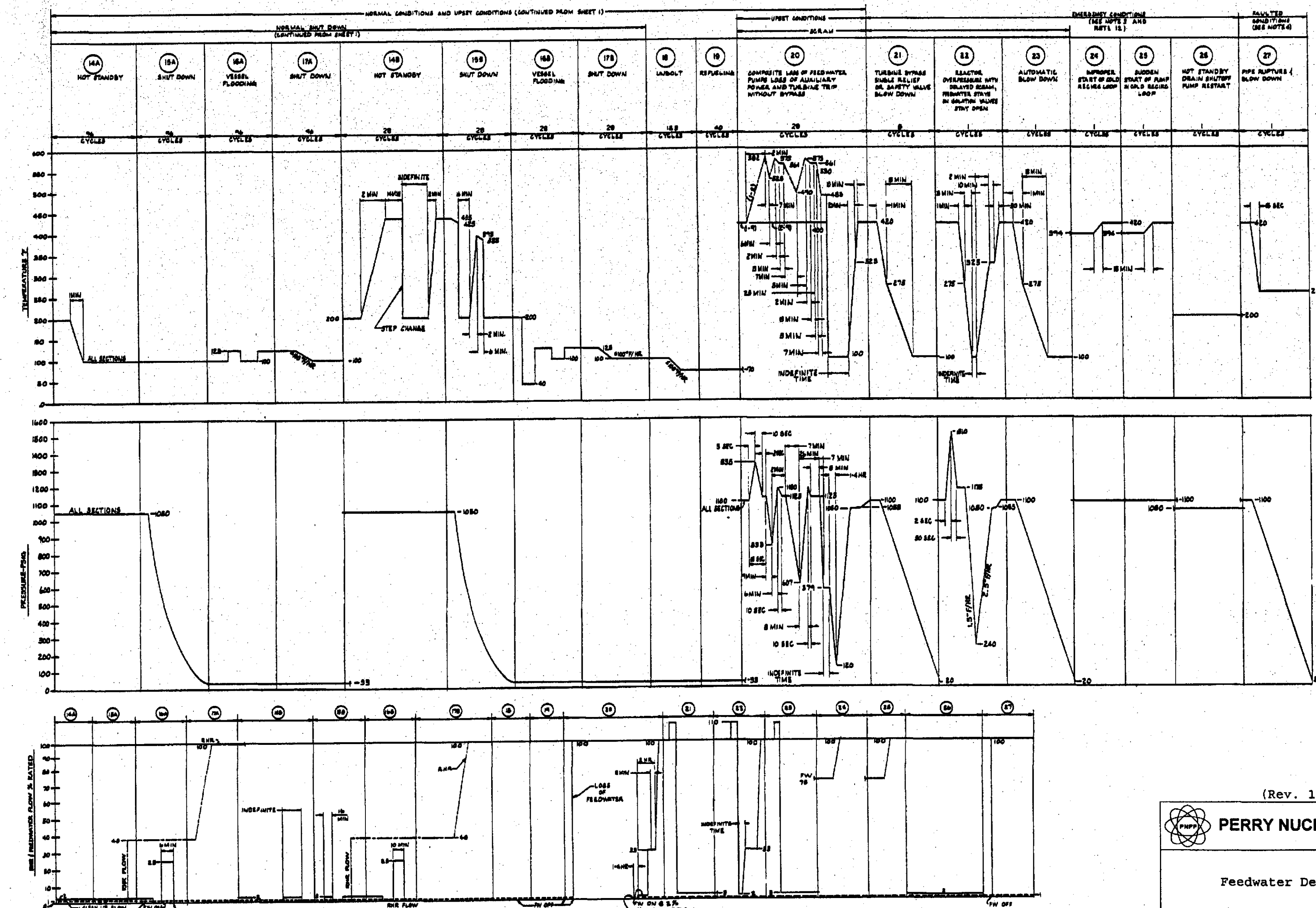
NUCLEAR SAFETY RELATED

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

Feedwater Design Transients

Figure 3.9-24 (Sheet 1 of 2)
(DWG. D-306-0081-00000)



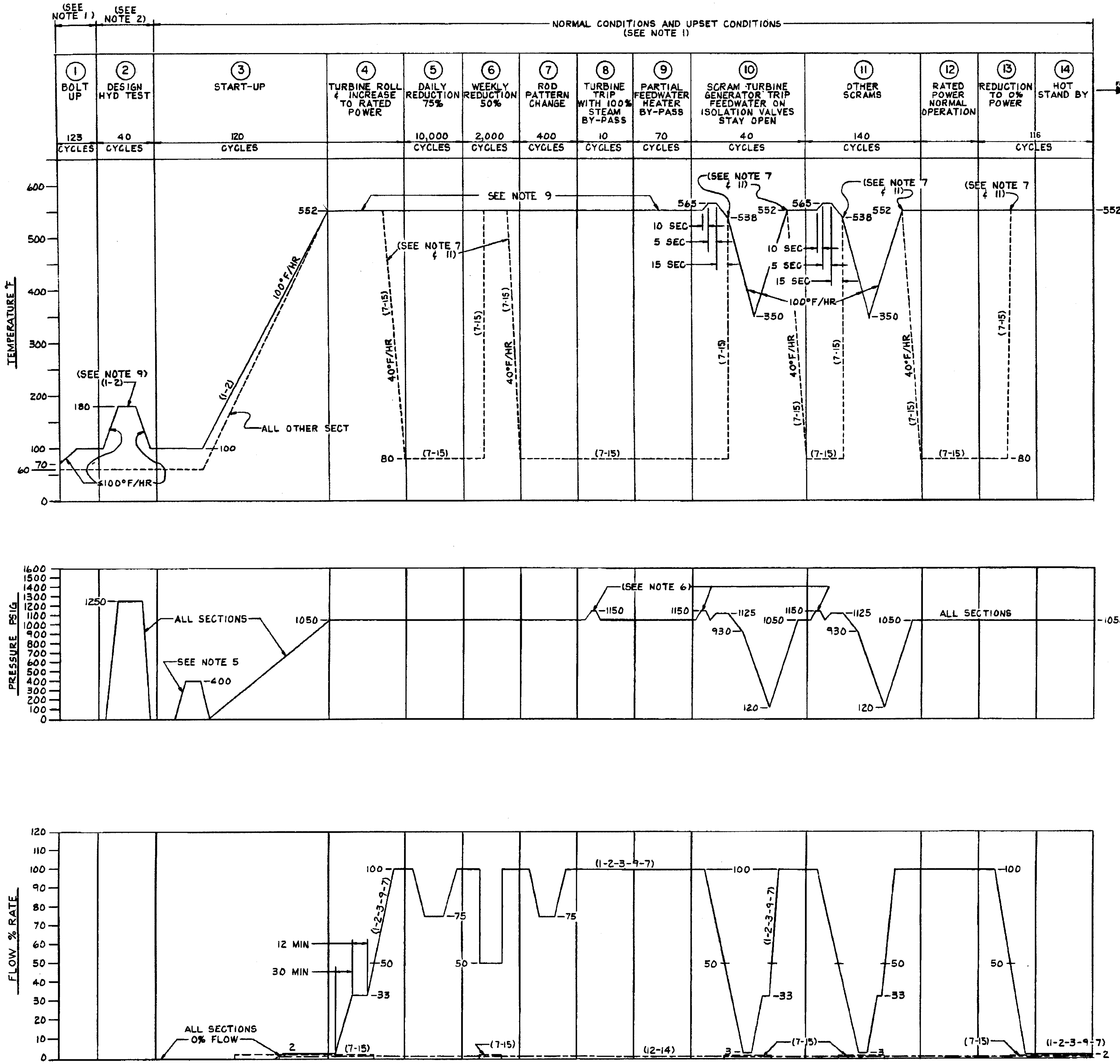
(Rev. 16 10/09)

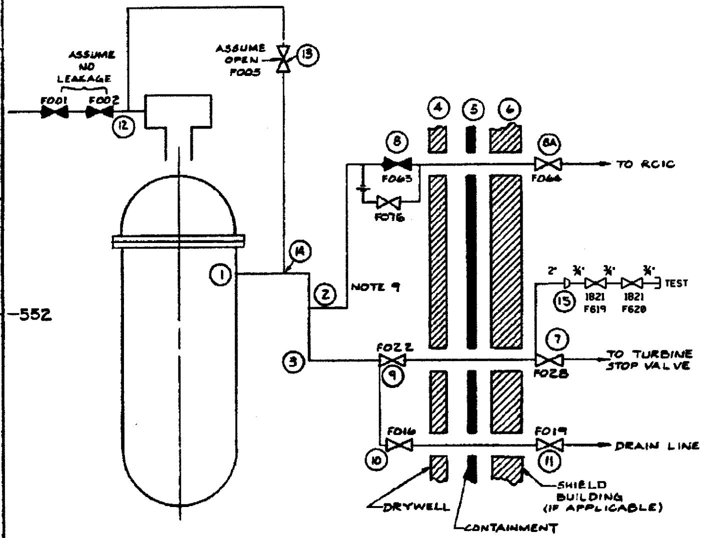
PERRY NUCLEAR POWER PLANT

Feedwater Design Transients

Figure 3.9-24 (Sheet 2 of 2)

(Dwg. D-306-082)





NOTES:-

1. EVENTS AND TRANSIENTS (1) AND (3) THROUGH (21) ARE "NORMAL CONDITIONS" OR "UPSET CONDITIONS" AS DEFINED IN PARAGRAPHS NB-3113.1 AND NB-3113.2 OF SECTION III OF THE 1974 ASME B AND PV CODE.
2. EVENT (2) IS A "TESTING CONDITION" AS DEFINED IN PARAGRAPH NB-3114 OF SECTION III OF THE 1974 ASME B AND PV CODE.
3. EVENTS AND TRANSIENTS (22) THROUGH (26) ARE "EMERGENCY CONDITIONS" AS DEFINED IN PARAGRAPH NB-3113.3 OF THE 1974 ASME B AND PV CODE. THE ACTUAL 40 YEAR ENCOUNTER PROBABILITIES ARE L10-1.
4. EVENT (27) IS A "FAULTED CONDITION" AS DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B AND PV CODE.
5. LEAK CHECKS AT 400 PSIG PRIOR TO POWER OPERATION 3 CYCLES/START-UP (SEE TABLE 1).
6. DURING EVENTS 8, 10, AND 11 THERE WILL BE A PRESSURE PULSE IN THE MAIN STEAM LINE CAUSED BY TURBINE STOP VALVE CLOSURE. MAGNITUDE IS DEPENDENT UPON M.S.L. PIPE CONFIGURATION AND VALVE STROKE TIME AND IS TO BE DETERMINED BY AE. VALUE SHOWN IS MAXIMUM PERMISSIBLE. SRVS DO NOT ACTUATE DUE TO SHORT DURATION OF PULSE.
7. IF THE STEAM DRAIN LINES DIFFER FROM THE MAIN STEAM LINE THEY WILL BE REPRESENTED BY A DASH LINE. THE STEAM LINE DRAINS (7-15) OPEN WHEN STEAM FLOW DROPS BELOW 50% RATED.
8. DURING THE "PAUSE" BETWEEN EVENTS 15 AND 16 THE STEAM TEMPERATURE RISES FROM 345°F TO THE TEMPERATURE OF THE METAL PIPING, 400°F AT THIS POINT THE FLUID TEMPERATURE AND PIPE TEMPERATURE BECOMES THE SAME. FLOODING STARTS AFTER REACHES 400°F NOT AFTER ANY SET TIME STEAM HEAT UP TIME FROM 350°F TO 400°F IS > 5 MINIMUM.
9. TURBINE LINES SECTION 1-2-3-9-7 HEAD VENT SECTION 12-13-14 RCIC SECTION 2-8-8A DRAIN LINES SECTION 9-10-11.
10. THIS "STEP CHANGE" DEPICTS A STRAIGHT TEMPERATURE DROP AS SOON AS FLOW STARTS.
11. THE STEAM DRAIN TEMPERATURE WILL DROP AT 40°F/HOUR TO AMBIENT TEMPERATURE AS LONG AS MAIN STEAM FLOW REMAINS ABOVE 50% RATED THE RISE IN DRAIN TEMPERATURE WHEN FLOW IS BELOW 50% RATED IS A STEP CHANGE DUE TO IMMEDIATE STEAM FLOW THROUGH DRAIN LINES.
12. TOTAL NUMBER OF MULTIPLE SAFETY RELIEF VALVE LIFTS EQUALS TOTAL OF EVENTS 10, 11, AND 20, 3 TIMES PER EVENT = 210 PLUS THE SRV LIFTS IN EVENTS 21, 22, AND 23. UNLESS OTHERWISE NOTED, THESE SHOULD BE CONSIDERED TO BE 2/3 TO ALL OF THE VALVES INDEPENDENT OF PEAK PRESSURE SHOWN ON THE DIAGRAM.
13. TOTAL NUMBER OF RELIEF VALVE LIFTS FOR ALL EVENTS IS 1000. THIS IS FOR THE HIGHEST DUTY CYCLE VALUE
14. FOR PART 2. TWO ADDITIONAL EMERGENCY EVENTS INADVERTENT SCRR ADS AND ACTUAL SCRR ADS HAVE BEEN COMBINED AND ENVELOPED BY CURVES SHOWN.
15. IN LIEU OF USING THE PEAK PRESSURE AS DESIGN PRESSURE FOR ACTIVE VALVES IT IS PERMISSIBLE TO DEMONSTRATE BY OVERPRESSURE TESTING THAT THE VALVE RETAINS OPERABILITY SUBSEQUENT TO THE TRANSIENTS.
16. FATIGUE ANALYSIS RESULTS OF COMPONENTS THAT CONSIDER THE CYCLIC INFORMATION CONTAINED ON THIS DRAWING HAVE BEEN USED AS INPUT TO THE FATIGUE MONITORING PROGRAM. NEW AS WELL AS REVISED FATIGUE ANALYSES UTILIZING THE CYCLIC INFORMATION CONTAINED HEREIN REQUIRE INTERFACE WITH THE FATIGUE MONITORING PROGRAM SOFTWARE ADMINISTRATOR.

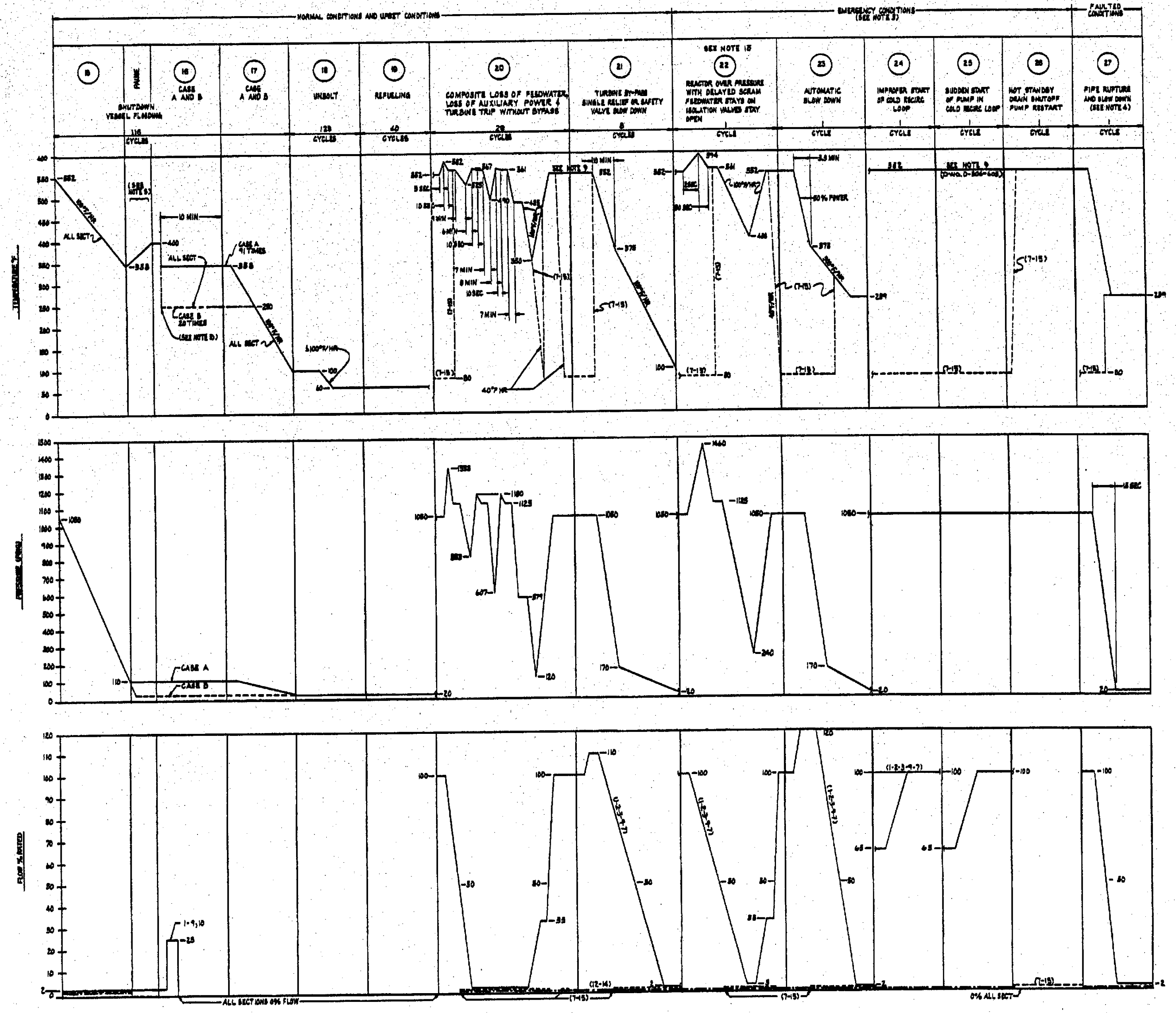
SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.

	REFERENCE DESIGNATOR
1. PIPING AND INSTRUMENT SYMBOLS	A42-1010

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

MAIN STEAM
DRAINS DESIGN TRANSIENTS
FIGURE 3.9-25 (SHEET 1 OF 2)
(DWG. D-306-0605-00000)

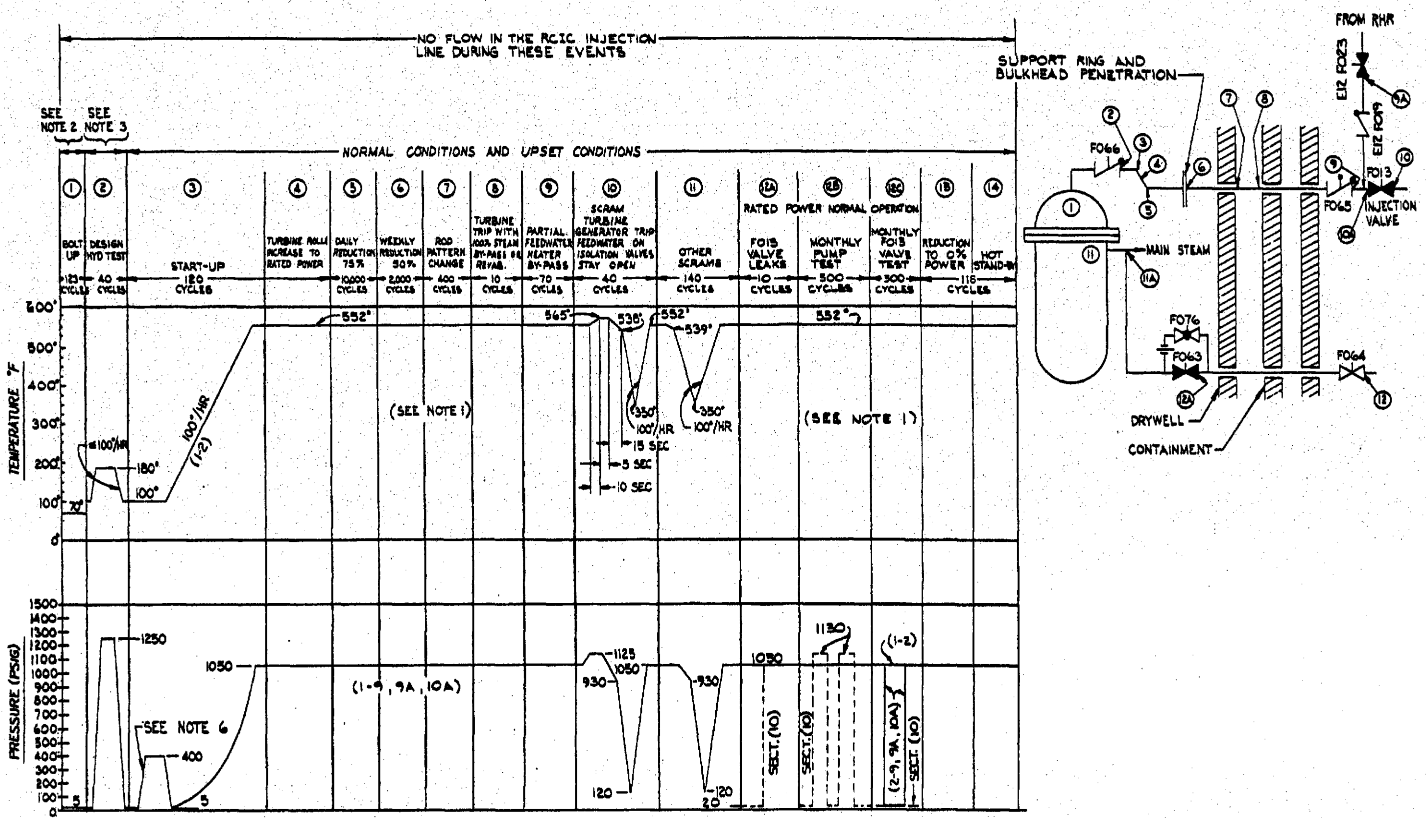


(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Main Steam Drains
Design Transients

Figure 3.9-25 (Sheet 2 of 2)
(Dwg. D-306-606)



CLASS 1 PIPING BETWEEN REACTOR HEAD SPRAY NOZZLE AND OUTBOARD ISOLATION VALVE MO-F013

NOTES:

1. BEYOND POINT (2), NO REACTOR VESSEL THERMAL TRANSIENTS PROPOGATE. DURING PLANT OPERATION, AN AXIAL THERMAL GRADIENT EXISTS FROM POINT (2) TO PENETRATION AT SUPPORT RING AND BULKHEAD. THE TEMPERATURE GRADIENT IS SHOWN ON FIGURE 2 OF THIS DESIGN SPECIFICATION. BEYOND THE SUPPORT RING AND BULDHEAD PENETRATION, THE LINES ARE AT AMBIENT CONDITIONS.
2. EVENTS AND TRANSIENTS (1) AND (3) THROUGH (21) ARE "NORMAL CONDITIONS" OR "UPSET CONDITIONS" AS DEFINED IN PARAGRAPH NB-3113.1 AND NB-3113.2 OF SECTION III OF THE 1974 ASME B AND PV CODE.
3. EVENT (2) IS A "TESTING CONDITION" AS DEFINED IN PARAGRAPH NB-3114 OF SECTION III OF THE 1974 ASME B AND PV CODE. IN ADDITION TO THE 40 PRESSURE TESTING CONDITION CYCLES SHOWN, THERE MAY BE UP TO 10 ADDITIONAL HYDROTEST CYCLES THAT ARE NOT REQUIRED BY ABOVE CODE TO BE INCLUDED IN FATIGUE EVALUATION.
4. EVENTS AND TRANSIENTS (22) THROUGH (26) ARE "EMERGENCY CONDITIONS" AS DEFINED IN PARAGRAPH NB-3113.3 OF THE 1974 ASME B AND PV CODE. THE ACTUAL 40 YEAR ENCOUNTER PROBABILITIES ARE < 10 - 1.
5. EVENT (27) IS A "FAULTED CONDITION" AS DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B AND PV CODE.
6. LEAK CHECKS AT 400 PSIG PRIOR TO POWER OPERATION 3 CYCLES/START-UP.
7. DURING EVENTS (8), (10), AND (11) THERE WILL BE A PRESSURE PULSE IN THE MAIN STEAM LINE CAUSED BY TURBINE STOP VALVE CLOSURE. MAGNITUDE IS DEPENDENT UPON M.S.L. PIPE CONFIGURATION AND VALVE STROKE TIME AND IS DETERMINED BY AE. VALUE SHOWN IS MAXIMUM PERMISSIBLE. SRV'S DO NOT ACTUATE DUE TO SHORT DURATION OF PULSE.
8. DURING THE "PAUSE" BETWEEN EVENTS (15) AND (16) THE STEAM TEMPERATURE RISES FROM 350°F TO THE TEMPERATURE OF THE METAL PIPING, 400°F. AT THIS POINT THE FLUID TEMPERATURE AND PIPE TEMPERATURE BECOMES THE SAME. ALSO, AT THIS TIME, FLOODING STARTS. STEAM HEAT UP TIME FROM 350° TO 400°F IS ≥ 5 MINUTES.

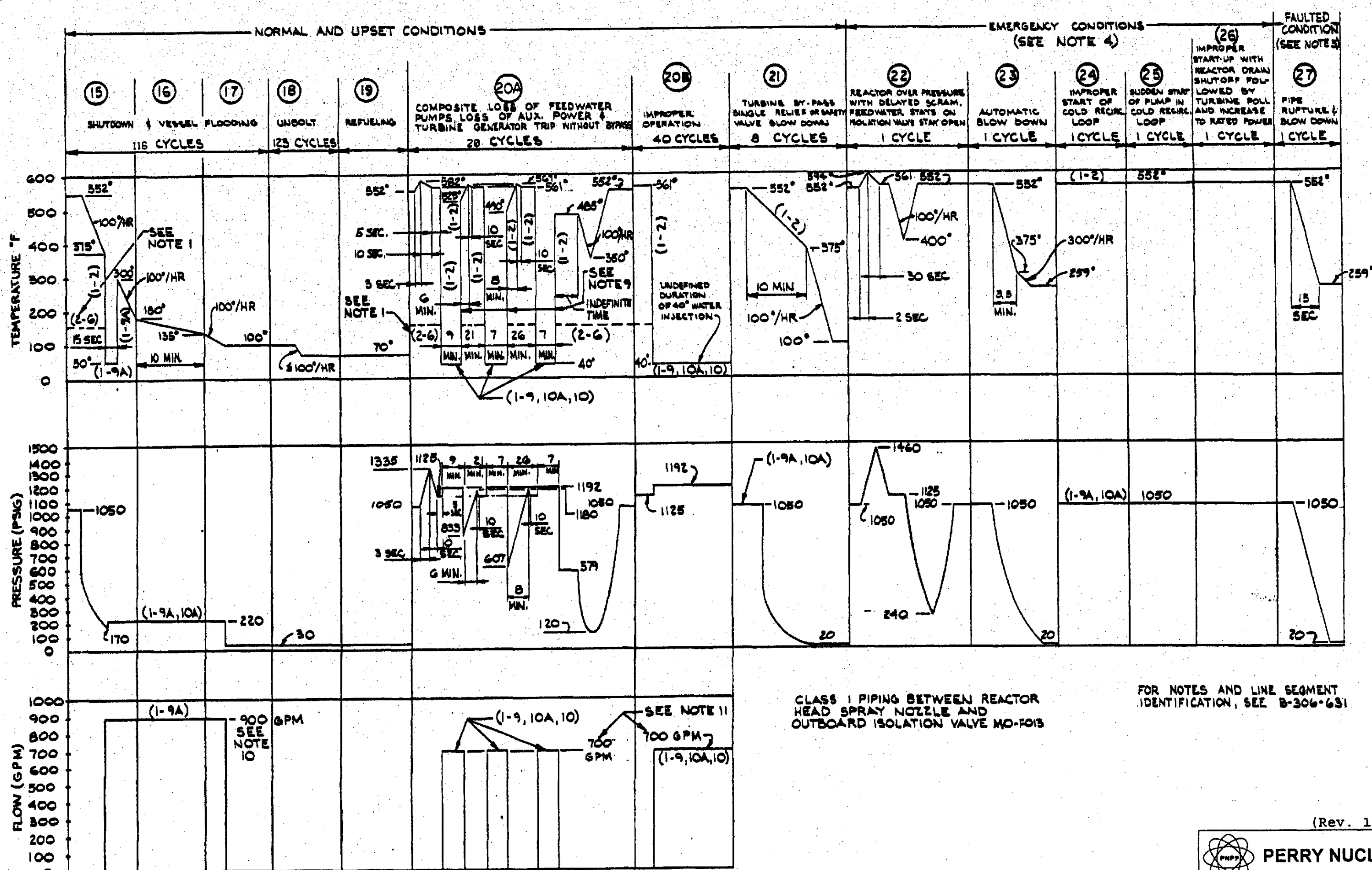
NOTES: (CONTINUED ON B-306-634)

(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Reactor Core Isolation Cooling Design Transients

Figure 3.9-26 (Sheet 1 of 4)
(Dwg. B-306-631)

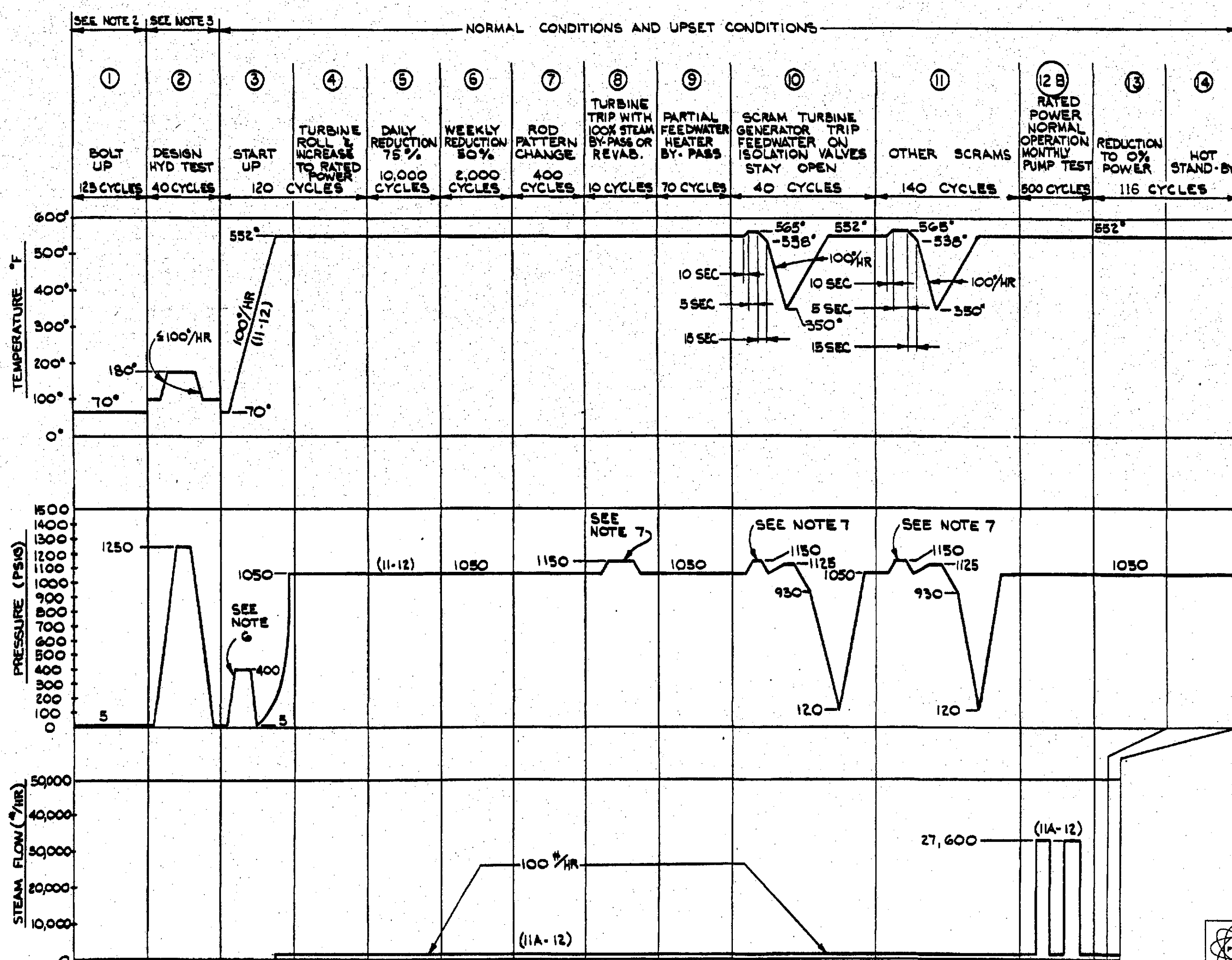


(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Reactor Core Isolation
Cooling Design Transients

Figure 3.9-26 (Sheet 2 of 4)
(Dwg. B-306-632)



CLASS 1 PIPING BETWEEN MAIN STEAM "A" AND OUTBOARD ISOLATION VALVE MO-F064

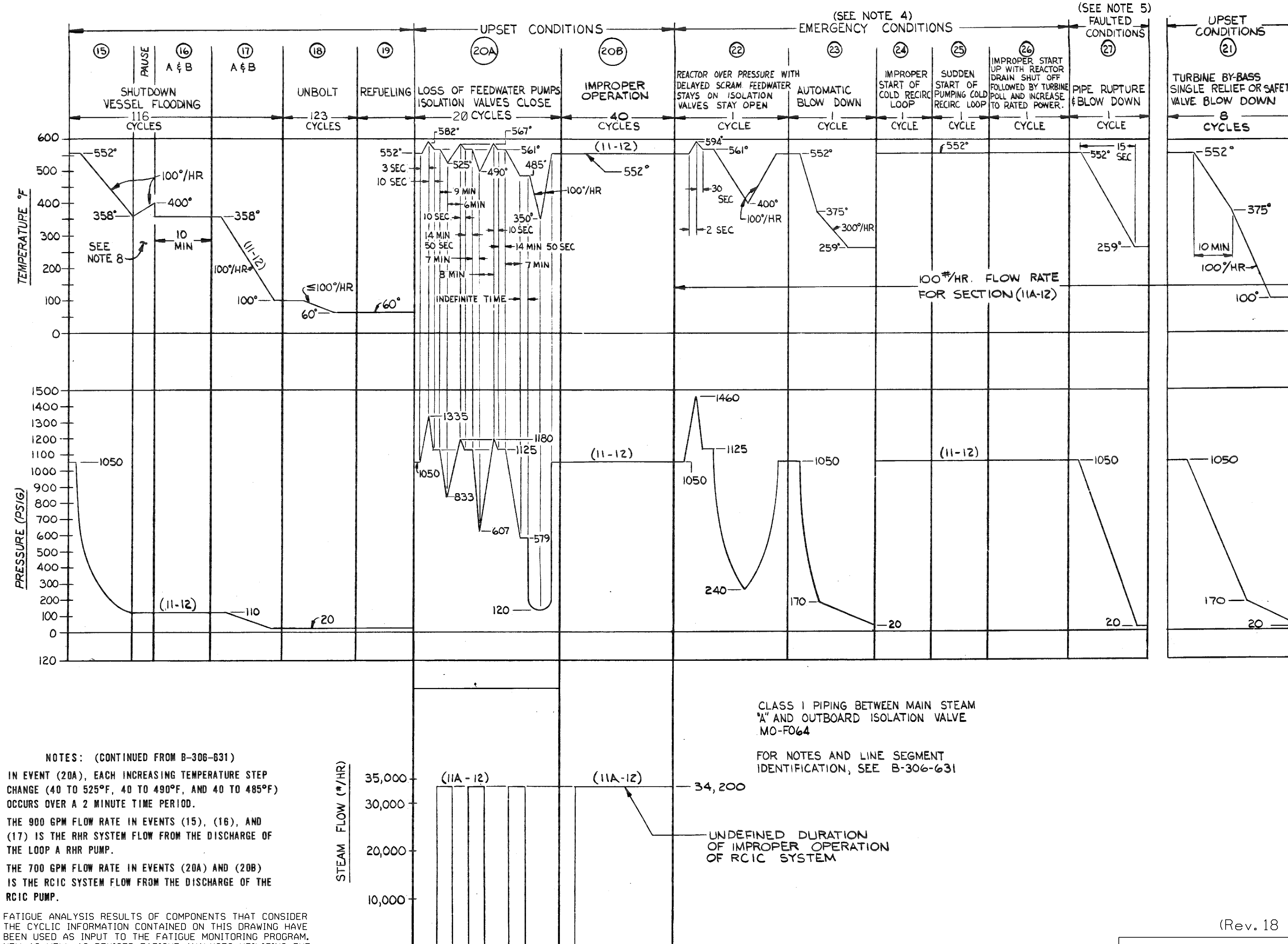
FOR NOTES AND LINE SEGMENT IDENTIFICATION, SEE B-306-631

(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Reactor Core Isolation Cooling Design Transients

Figure 3.9-26 (Sheet 3 of 4)
(Dwg. B-306-633)



CLASS I PIPING BETWEEN MAIN STEAM "A" AND OUTBOARD ISOLATION VALVE MO-F064

FOR NOTES AND LINE SEGMENT IDENTIFICATION, SEE B-306-631

NOTES: (CONTINUED FROM B-306-631)

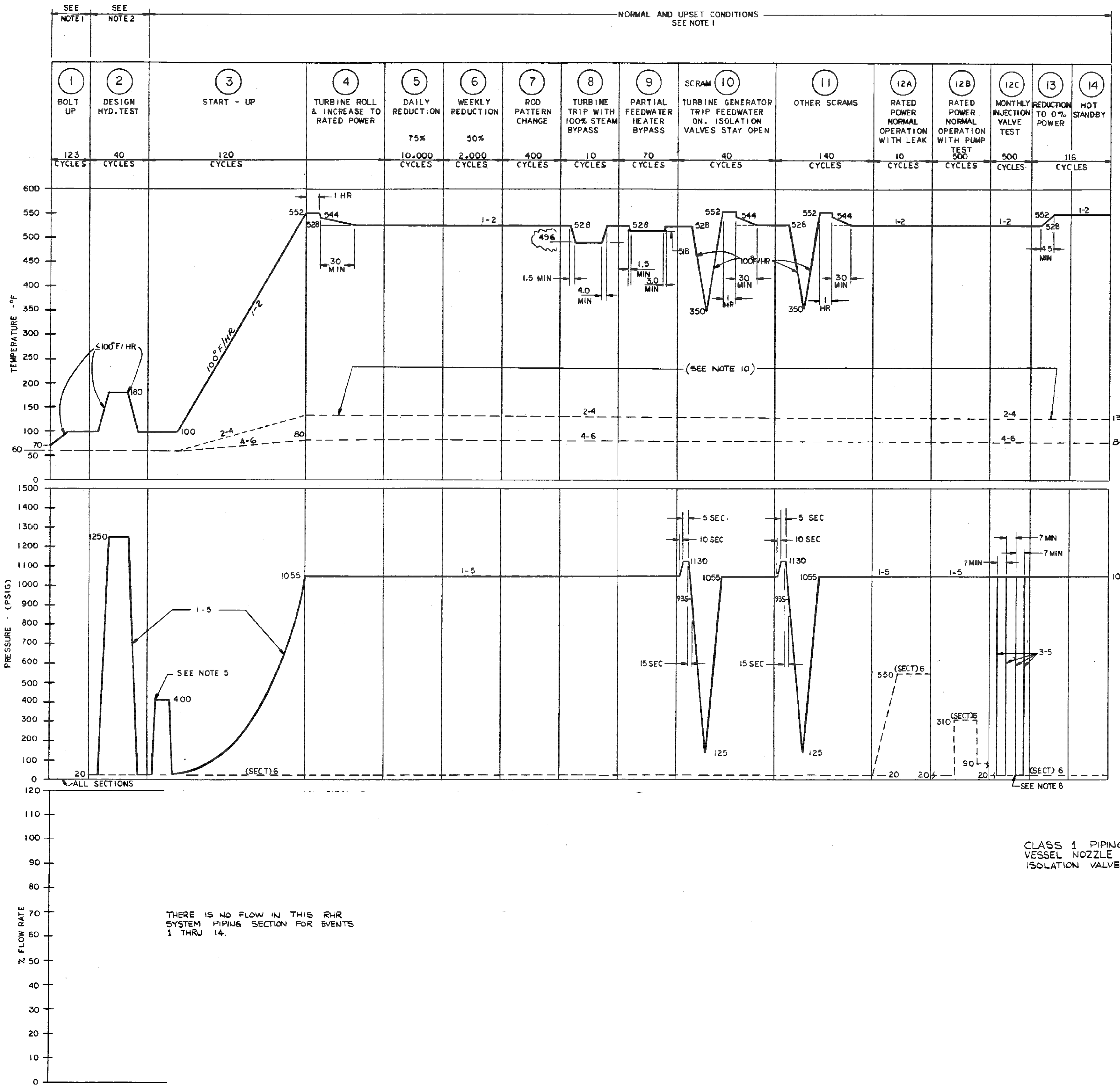
9. IN EVENT (20A), EACH INCREASING TEMPERATURE STEP CHANGE (40 TO 525°F, 40 TO 490°F, AND 40 TO 485°F) OCCURS OVER A 2 MINUTE TIME PERIOD.
10. THE 900 GPM FLOW RATE IN EVENTS (15), (16), AND (17) IS THE RHR SYSTEM FLOW FROM THE DISCHARGE OF THE LOOP A RHR PUMP.
11. THE 700 GPM FLOW RATE IN EVENTS (20A) AND (20B) IS THE RCIC SYSTEM FLOW FROM THE DISCHARGE OF THE RCIC PUMP.
12. FATIGUE ANALYSIS RESULTS OF COMPONENTS THAT CONSIDER THE CYCLIC INFORMATION CONTAINED ON THIS DRAWING HAVE BEEN USED AS INPUT TO THE FATIGUE MONITORING PROGRAM. NEW AS WELL AS REVISED FATIGUE ANALYSES UTILIZING THE CYCLIC INFORMATION CONTAINED HEREIN REQUIRE INTERFACE WITH THE FATIGUE MONITORING PROGRAM SOFTWARE ADMINISTRATOR.

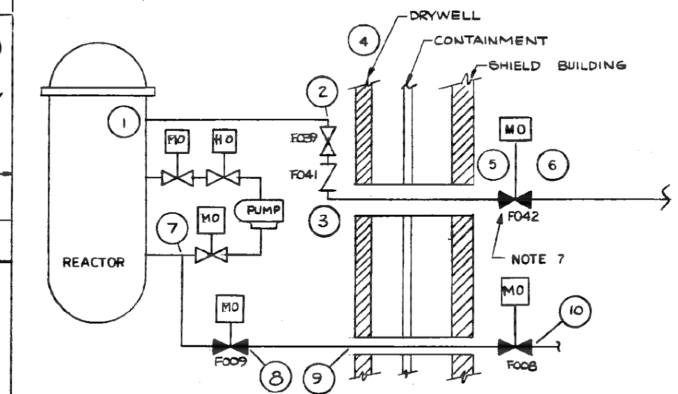
(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

Reactor Core Isolation Cooling Design Transients

Figure 3.9-26 (Sheet 4 of 4)
(DWG. B-306-0634-00000)





PIPE SECTION DIAGRAM

NOTES:

1. EVENTS AND TRANSIENTS (1) AND (3) THROUGH (21) ARE "NORMAL CONDITIONS" OR "UPSET CONDITIONS" AS DEFINED IN PARAGRAPHS NB-3113.1 AND NB-3113.2 OF SECTION III OF THE 1974 ASME B AND PV CODE.
2. EVENT (2) IS A "TESTING CONDITION" AS DEFINED IN PARAGRAPH NB-3114 OF SECTION III OF THE 1974 ASME B AND PV CODE.
3. EVENTS AND TRANSIENTS (22) THROUGH (26) ARE "EMERGENCY CONDITIONS" AS DEFINED IN PARAGRAPH NB-3113.3 OF SECTION III OF THE 1974 ASME B AND PV CODE. THE ACTUAL 40 YEAR ENCOUNTER PROBABILITIES ARE $\leq 10^{-1}$.
4. EVENT (27) IS A "FAULTED CONDITION" AS DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B AND PV CODE.
5. LEAKS AT 400 PSIG PRIOR TO POWER OPERATIONS. 3 CYCLES/START-UP.
6. MECHANICAL LOADS DUE TO SAFETY RELIEF VALVE DISCHARGE SHOULD ALSO BE CONSIDERED. (SEE REFERENCE 1).
7. THIS DIAGRAM SHOWS LOCATIONS FOR LOOP C. FOR LOOPS A AND B, THE INJECTION VALVE IS BETWEEN CONTAINMENT AND DRYWELL.
8. SECTION 6 GETS A PRESSURE PULSE (INSTANTANEOUS) TO 550 PSIG AT THIS POINT.
9. IN LIEU OF USING THE PEAK PRESSURE AS DESIGN PRESSURE FOR ACTIVE VALVES, IT IS PERMISSIBLE TO DEMONSTRATE BY OVERPRESSURE TESTING THAT THE VALVE RETAINS OPERABILITY SUBSEQUENT TO THE TRANSIENT.
10. NO REACTOR VESSEL THERMAL GRADIENTS PROPOGATE BEYOND POINT (2). DURING PLANT OPERATION, AN AXIAL THERMAL GRADIENT EXISTS FROM POINT (2) TO THE DRYWELL WALL PENETRATION. THIS TEMPERATURE GRADIENT IS SHOWN ON FIGURE 2 OF THE DESIGN SPECIFICATION. BEYOND THE DRYWELL WALL PENETRATION, THE LINES ARE AT AMBIENT CONDITIONS.
11. FATIGUE ANALYSIS RESULTS OF COMPONENTS THAT CONSIDER THE CYCLIC INFORMATION CONTAINED ON THIS DRAWING HAVE BEEN USED AS INPUT TO THE FATIGUE MONITORING PROGRAM. NEW AS WELL AS REVISED FATIGUE ANALYSES UTILIZING THE CYCLIC INFORMATION CONTAINED HEREIN REQUIRE INTERFACE WITH THE FATIGUE MONITORING PROGRAM SOFTWARE ADMINISTRATOR.

SUPPLIMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.

	REFERENCE DESIGNATOR
1. CLASS 1 PIPING CYCLES MAIN STEAM	B21-3080
2. PIPING AND INSTRUMENT SYMBOLS	A42-1010

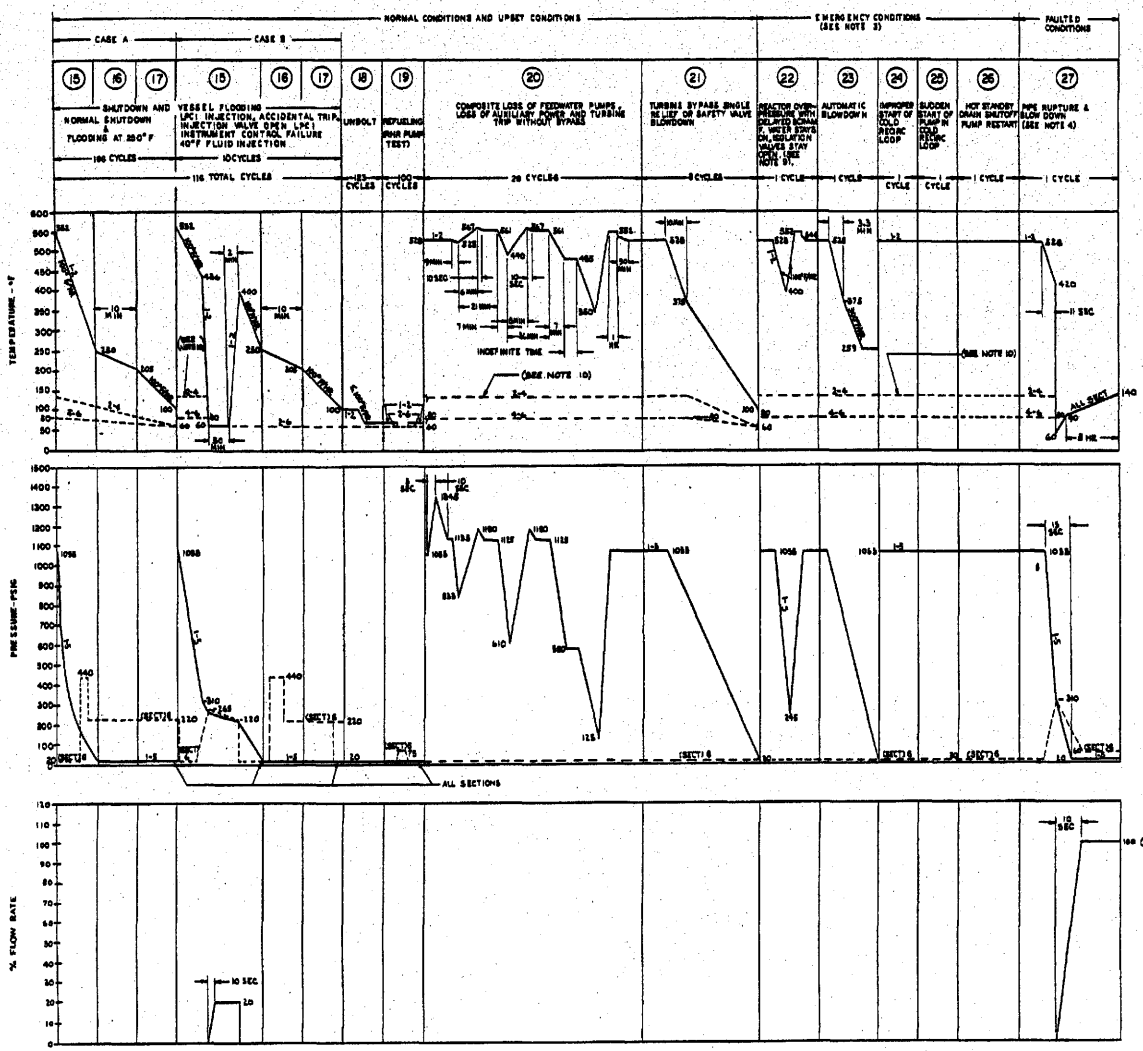
CLASS 1 PIPING BETWEEN REACTOR VESSEL NOZZLE AND OUTBOARD ISOLATION VALVE F042

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

Residual Heat Removal
Design Transients

Figure 3.9-27 (Sheet 1 of 4)
(DWG. D-306-0641-00000)



CLASS 1 PIPING BETWEEN REACTOR VESSEL NOZZLE AND OUTBOARD ISOLATION VALVE F042

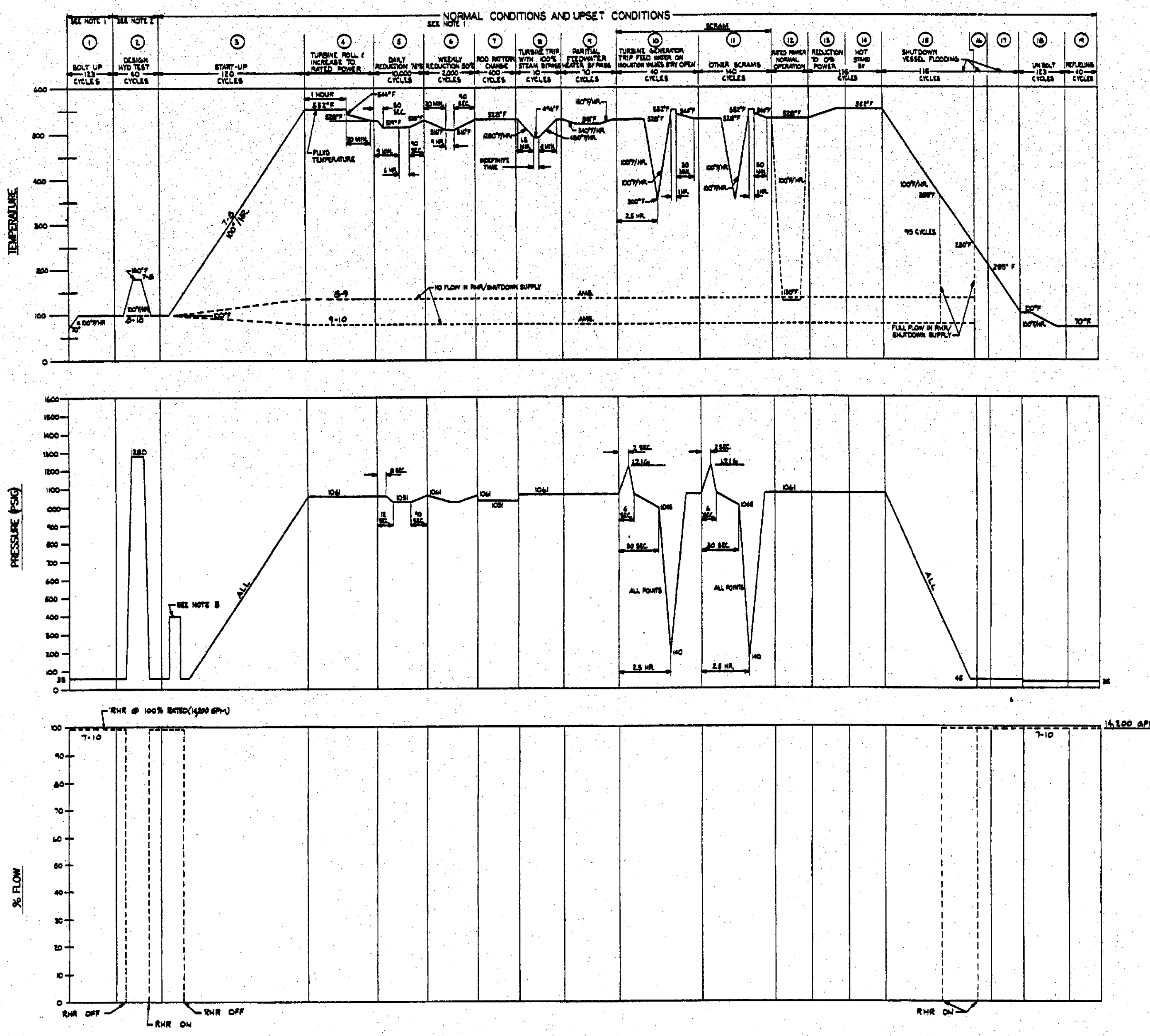
FOR NOTES AND LINE SEGMENT IDENTIFICATION, SEE DWG. D-306-641

(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal
Design Transients

Figure 3.9-27 (Sheet 2 of 4)
(Dwg. D-306-642)



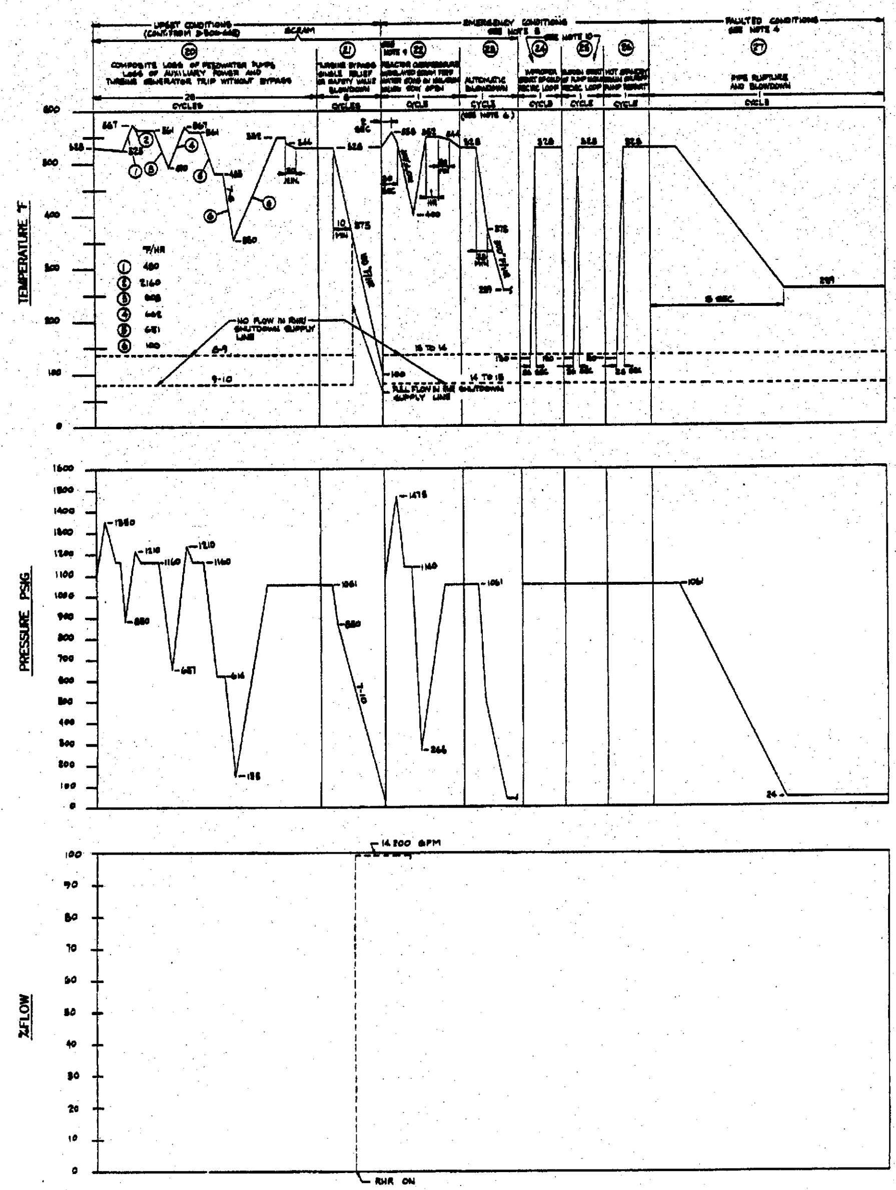
RHR SHUTDOWN SUCTION LINE (CLASS 1 PIPING) FROM RECIRCULATION LOOP "B" TO OUTBOARD ISOLATION VALVE F008

(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal
Design Transients

Figure 3.9-27 (Sheet 3 of 4)
(Dwg. D-306-643)



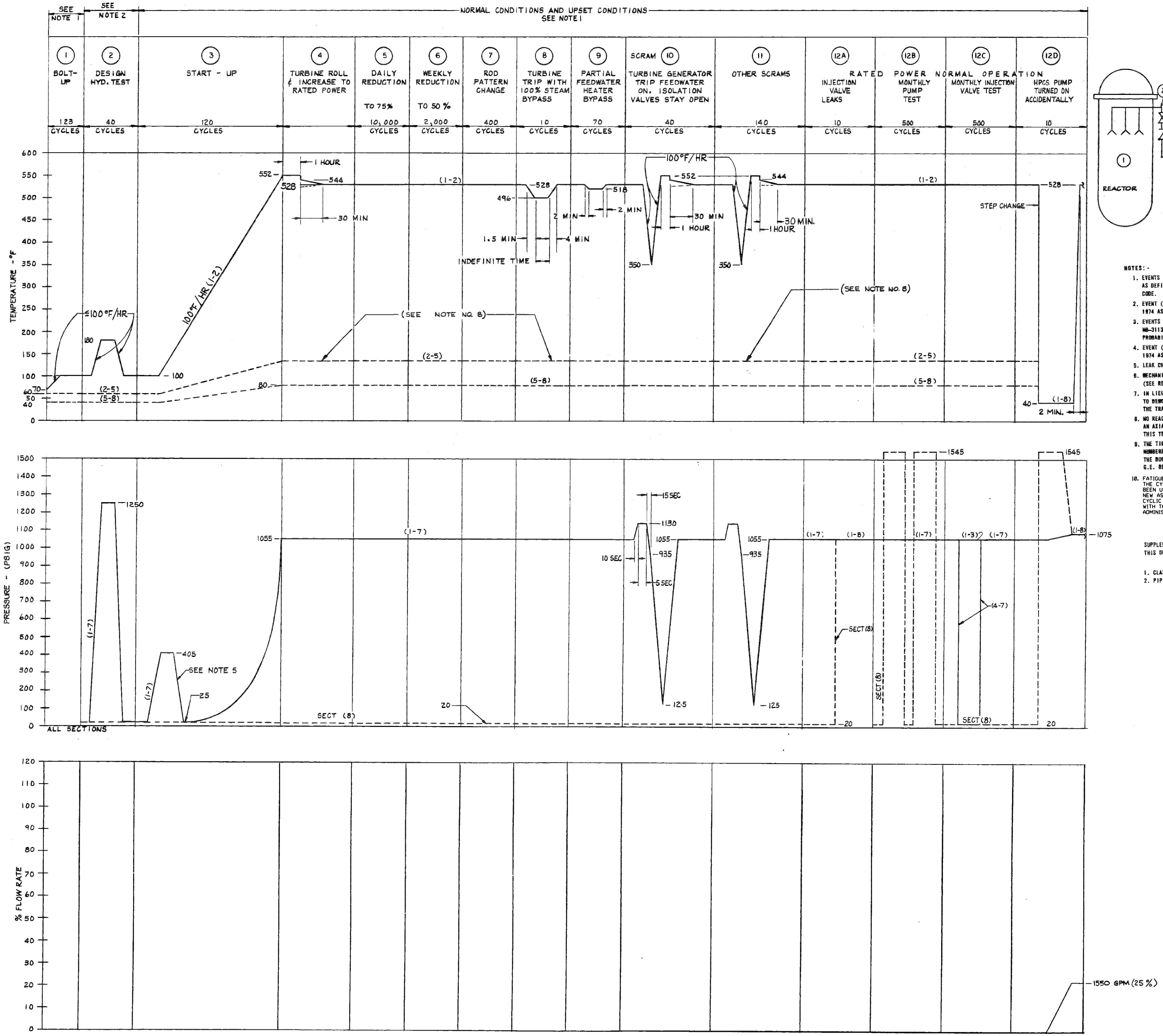
RHR SHUTDOWN SUCTION LINE (CLASS 1 PIPING) FROM RECIRCULATION LOOP "B" TO OUTBOARD ISOLATION VALVE F008

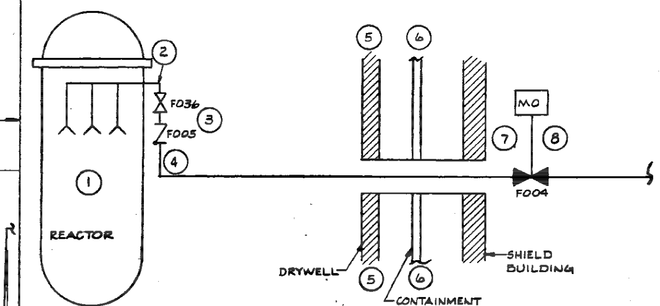
(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal
Design Transients

(Figure 3.9-27 (Sheet 4 of 4)
(Dwg. D-306-644)





PIPE SECTION DIAGRAM

NOTES:-

1. EVENTS AND TRANSIENTS (1) AND (3) THROUGH (21) ARE "NORMAL CONDITIONS" OR "UPSET CONDITIONS" AS DEFINED IN PARAGRAPHS NB-3113.1 AND NB-3113.2 OF SECTION III OF THE 1974 ASME B AND PV CODE.
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3. EVENTS AND TRANSIENTS (22) THROUGH (26) ARE "EMERGENCY CONDITIONS" AS DEFINED IN PARAGRAPH NB-3113.3 OF SECTION III OF THE 1974 ASME B AND PV CODE. THE ACTUAL 40 YEAR ENCOUNTER PROBABILITIES ARE $<10^{-1}$.
4. EVENT (27) IS A "FAULTED CONDITION" AS DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B AND PV CODE.
5. LEAK CHECKS AT 400 PSIG PRIOR TO POWER OPERATION 3 CYCLES/START-UP.
6. MECHANICAL LOADS DUE TO SAFETY RELIEF VALVE DISCHARGE SHOULD ALSO BE CONSIDERED (SEE REFERENCE 1).
7. IN LIEU OF USING THE PEAK PRESSURE AS DESIGN PRESSURE FOR ACTIVE VALVES, IT IS PERMISSIBLE TO DEMONSTRATE BY OVERPRESSURE TESTING THAT THE VALVE RETAINS OPERABILITY SUBSEQUENT TO THE TRANSIENT.
8. NO REACTOR VESSEL THERMAL GRADIENTS PROPOGATE BEYOND POINT 2. DURING PLANT OPERATION, AN AXIAL THERMAL GRADIENT EXISTS FROM POINT 2 TO THE DRYWELL WALL PENETRATION. THIS TEMPERATURE GRADIENT IS SHOWN ON FIGURE 2 OF THIS DESIGN SPECIFICATION.
9. THE TIME INTERVALS FOR THE PRESSURE/TEMPERATURE CYCLES OF EVENT (20) ARE SHOWN ON THE SAME NUMBERED EVENT ON THE G.E. REACTOR CYCLES DRAWING (GAI FOLDER NO. 4549-08-037-2-6). THE DURATION OF THE FLOW/TEMPERATURE TRANSIENTS FOR EVENT (20) IS SHOWN ON THE G.E. REACTOR VESSEL NOZZLE THERMAL CYCLES DRAWING (GAI FOLDER NO. 4549-08-341-7-2).
10. FATIGUE ANALYSIS RESULTS OF COMPONENTS THAT CONSIDER THE CYCLIC INFORMATION CONTAINED ON THIS DRAWING HAVE BEEN USED AS INPUT TO THE FATIGUE MONITORING PROGRAM. NEW AS WELL AS REVISED FATIGUE ANALYSES UTILIZING THE CYCLIC INFORMATION CONTAINED HEREIN REQUIRE INTERFACE WITH THE FATIGUE MONITORING PROGRAM SOFTWARE ADMINISTRATOR.

SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.

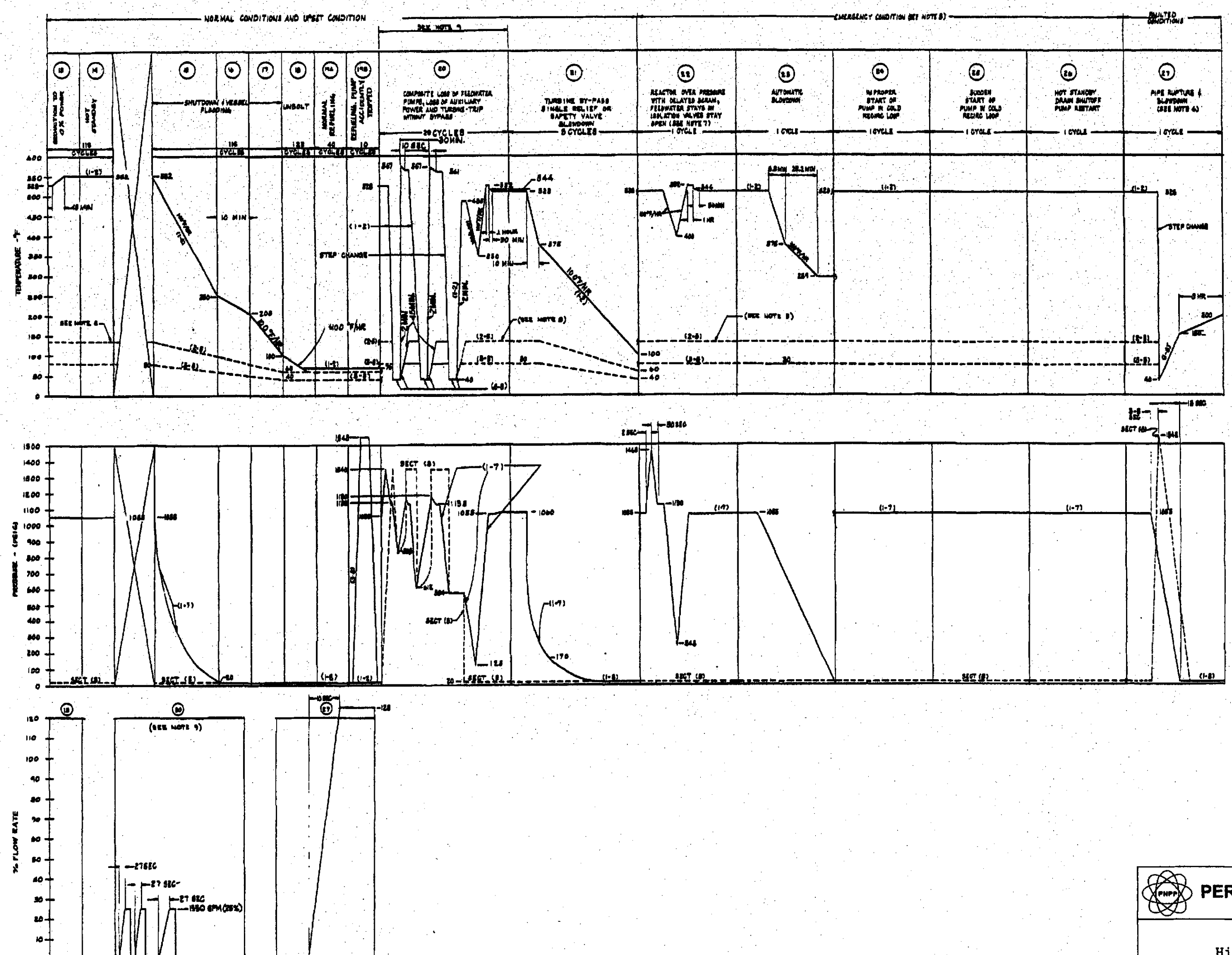
	REFERENCE DESIGNATOR
1. CLASS 1 PIPING CYCLES MAIN STEAM	B21-3000
2. PIPING AND INSTRUMENT SYMBOLS	A42-1010

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

High Pressure Core Spray
Design Transients

Figure 3.9-28 (Sheet 1 of 2)
(DWG. D-306-0701-00000)

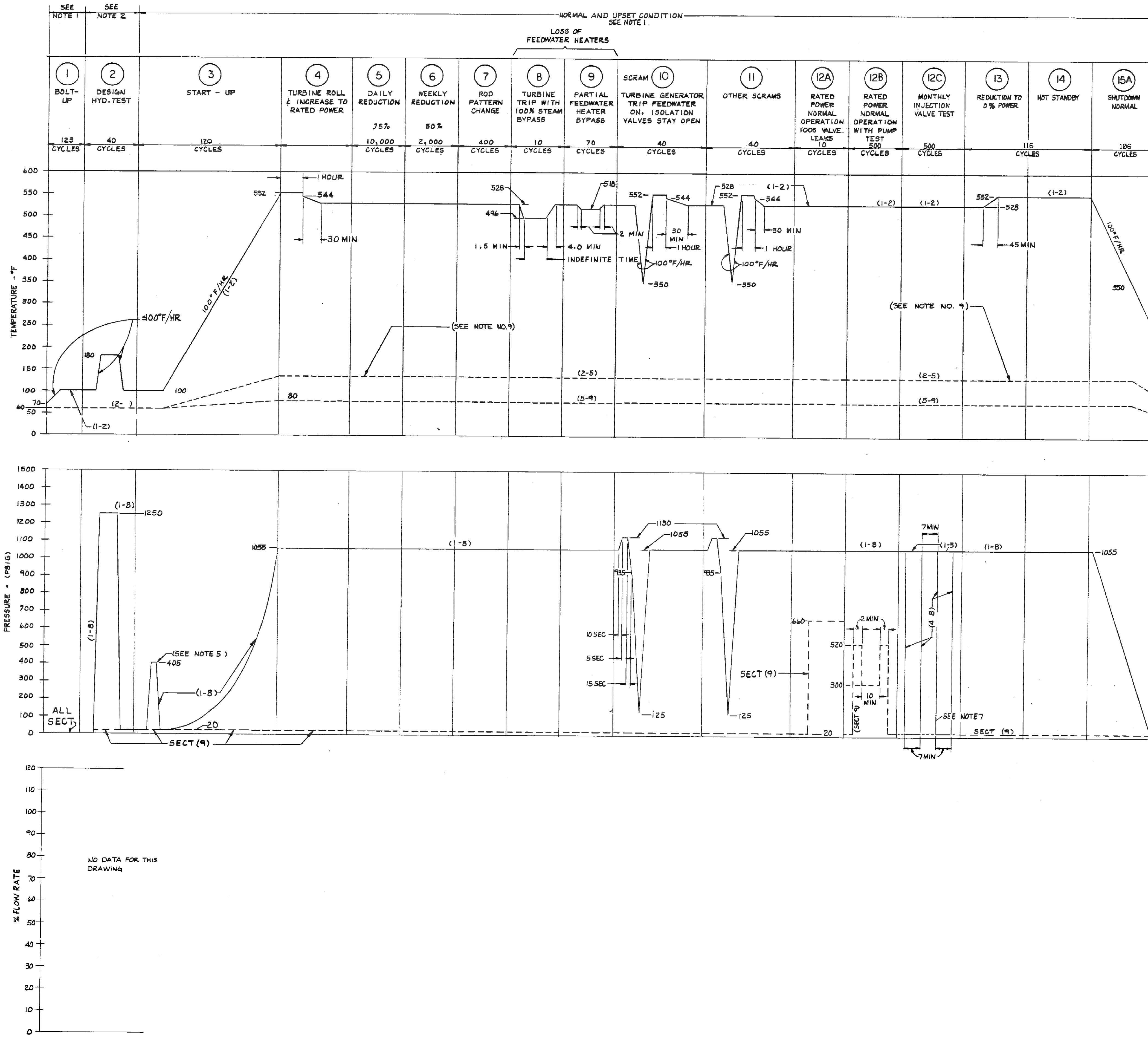


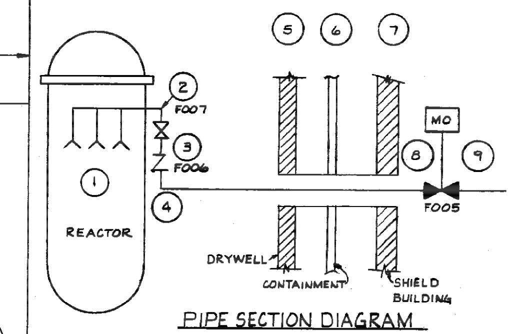
(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

High Pressure Core Spray
Design Transients

Figure 3.9-28 (Sheet 2 of 2)
(Dwg. D-306-702)





PIPE SECTION DIAGRAM

NOTES:

1. EVENTS AND TRANSIENTS (1) AND (3) THROUGH (21) ARE "NORMAL CONDITIONS" OR "UPSET CONDITIONS" AS DEFINED IN PARAGRAPHS NB-3113.1 AND NB-3113.2 OF SECTION III OF THE 1974 ASME B AND PV CODE.
2. EVENT (2) IS A "TESTING CONDITION" AS DEFINED IN PARAGRAPH NB-3114 OF SECTION III OF THE 1974 ASME B AND PV CODE.
3. EVENTS AND TRANSIENTS (22) THROUGH (26) ARE "EMERGENCY CONDITIONS" AS DEFINED IN PARAGRAPH NB-3113.3 OF SECTION III OF THE 1974 ASME B AND PV CODE. THE ACTUAL 40 YEAR ENCOUNTER PROBABILITIES ARE <10-1.
4. EVENT (27) IS A "FAULTED CONDITION" AS DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B AND PV CODE.
5. LEAK CHECKS AT 400 PSIG PRIOR TO POWER OPERATION. 3 CYCLES/START-UP.
6. MECHANICAL LOADS DUE TO SAFETY RELIEF VALVE DISCHARGE SHOULD ALSO BE CONSIDERED (SEE REFERENCE 1).
7. SECTION 9 GETS A PRESSURE PULSE (INSTANTANEOUS) TO 660 PSIG AT THIS POINT.
8. IN LIEU OF USING THE PEAK PRESSURE AS DESIGN PRESSURE FOR ACTIVE VALVES, IT IS PERMISSIBLE TO DEMONSTRATE BY OVERPRESSURF TESTING THAT THE VALVE RETAINS OPERABILITY SUBSEQUENT TO THE TRANSIENT.
9. NO REACTOR VESSEL THERMAL GRADIENTS PROPOGATE BEYOND POINT 2. DURING PLANT OPERATION, AN AXIAL THERMAL GRADIENT EXISTS FROM POINT 2 TO THE DRYWELL WALL PENETRATION. THIS TEMPERATURE GRADIENT IS SHOWN ON FIGURE 2 OF THIS DESIGN SPECIFICATION. BEYOND THE DRYWELL WALL PENETRATION, THE LINES ARE AT AMBIENT CONDITIONS.
10. FATIGUE ANALYSIS RESULTS OF COMPONENTS THAT CONSIDER THE CYCLIC INFORMATION CONTAINED ON THIS DRAWING HAVE BEEN USED AS INPUT TO THE FATIGUE MONITORING PROGRAM. NEW AS WELL AS REVISED FATIGUE ANALYSES UTILIZING THE CYCLIC INFORMATION CONTAINED HEREIN REQUIRE INTERFACE WITH THE FATIGUE MONITORING PROGRAM SOFTWARE ADMINISTRATOR.

SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.

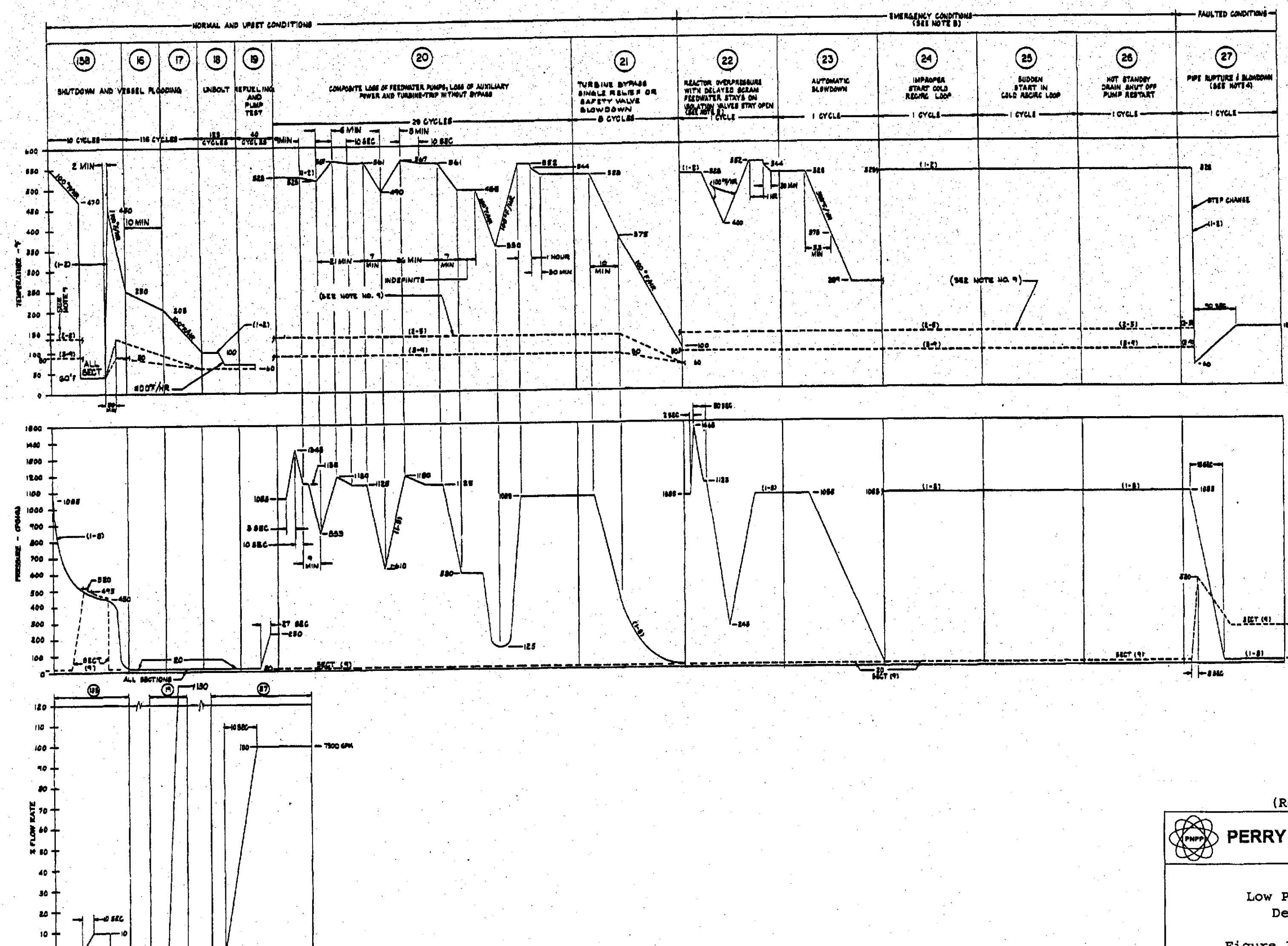
	REFERENCE DESIGNATOR
1. CLASS 1 PIPING CYCLES - MAIN STEAM	B21-3000
2. PIPING AND INSTRUMENT SYMBOLS	A42-1010

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

Low Pressure Core Spray
Design Transients

Figure 3.9-29 (Sheet 1 of 2)
(DWG. D-306-0705-00000)

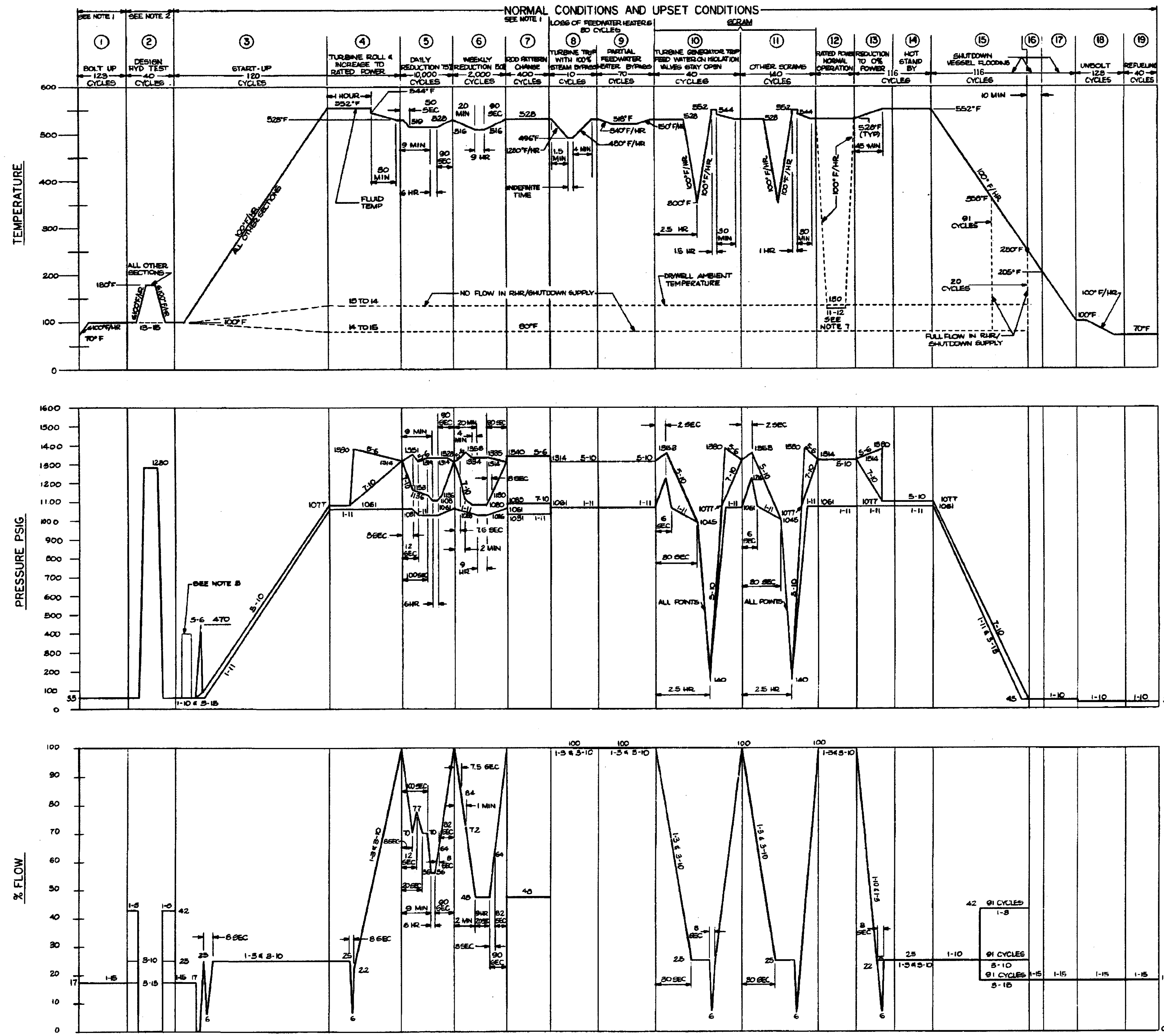


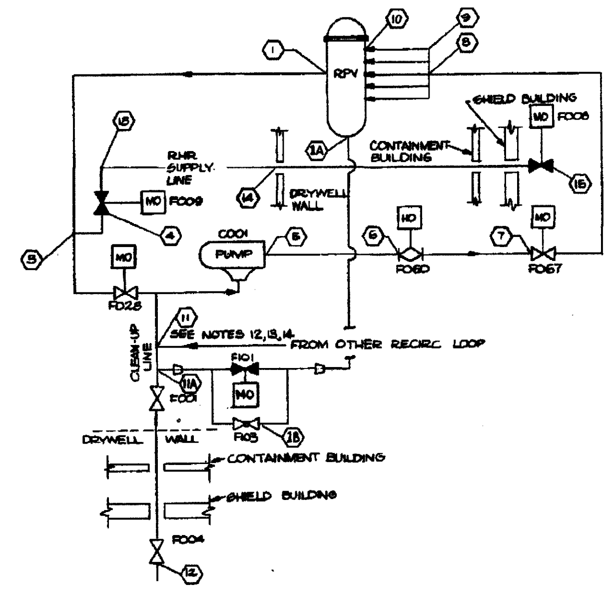
(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Low Pressure Core Spray Design Transients

Figure 3.9-29 (Sheet 2 of 2)
(Dwg. D-306-706)





NOTES

1. EVENTS & TRANSIENTS (1) THROUGH (21) ARE 'NORMAL CONDITIONS' OR 'UPSET CONDITIONS' AS DEFINED IN PARAGRAPHS NB-3113.1 & 3113.2 OF SECT. III OF THE 1974 ASME B&PV CODE.
2. EVENT 2 IS A "TESTING" CONDITION DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B & PV CODE
3. EVENTS & TRANSIENTS (22) THROUGH (26) ARE 'EMERGENCY CONDITIONS AS DEFINED IN PARAGRAPH NB-3113.3 OF SECTION III OF THE 1974 B & PV CODE. THE ACTUAL 40 YR. ENCOUNTER PROBABILITIES ARE 10^{-1}
4. EVENT 27 IS A 'FAULTED CONDITION' DEFINED IN PARAGRAPH NB-3113.4 OF SECTION III OF THE 1974 ASME B & PV CODE.
5. LEAK CHECKS - PRIOR TO POWER OPERATION. 3 PRESSURE CYCLES/START-UP
6. MECHANICAL LOADS DUE TO SAFETY RELIEF VALVE DISCHARGE SHOULD ALSO BE CONSIDERED (SEE REF 1).
7. 250 CLEANUP SYSTEM TRIPS SHALL BE ASSUMED. (ZERO RWCU FLOW)
8. ACTIVE LOOP SAME AS EVENT 12.
9. THE TEMPERATURES SHALL BE USED AS BOUNDARY CONDITIONS FOR THE RECIRC. LOOP PIPING AND EQUIPMENT IN CONTACT WITH THE CONTAINED FLUID.
10. THERE 4-6' RISERS DEPENDING ON THE PLANT. SEE REAC RECIRC SYS P&ID DATA FOR SPECIFIC PLANT. THE FLOW IN SECT 7-8 WILL DIVIDE EQUALLY IN THE RISERS.
11. FOR THE CASE WHEN ONE RECIRCULATION LOOP IS OUT OF SERVICE AND VALVED OFF A LEAKY SUCTION VALVE CAN MAINTAIN THE SUCTION LINE AT 546°F WHILE THE DISCHARGE LINE COOLS TO 185°F OR A LEAKY DISCHARGE VALVE CAN MAINTAIN THE DISCHARGE LINE AT 546°F WHILE THE SUCTION LINE COOLS TO 185°F 20 TIMES MAX AT ≤ 100°F/HR.
12. FLOW IN SEGMENT 11-12 IS ~ 1% OF RATED SUCTION LINE FLOW.
13. WITH THE EXCEPTION OF EVENT 12 THE TEMP IN SEGMENT 11-12 IS THE SAME AS SEGMENT 1-11.
14. FOR ALL EVENTS THE PRESSURE 11-12 IS THE SAME AS SEGMENT 1-11.
15. % FLOW SHOWN FOR A GIVEN PIPE SEGMENT IS THE RATIO OF THE PIPE SEGMENT'S FLOW TO THAT SEGMENT'S RATED FLOW. THE ONLY EXCEPTION IN SEGMENT 5-4 (LOOP B ONLY) WHERE THE 1% FLOW IS THE RATIO OF THE ACTUAL FLOW TO THE SUCTION PIPING RATED FLOW. RATED FLOW FOR SEGMENT 5-4 (RHR SUCTION LINE) IS 17% OF THE RATED SUCTION LINE FLOW.
16. FOR PART 2, TWO ADDITIONAL EMERGENCY EVENTS (INADVERTENT SRV/ADS & ACTUAL SRV/ADS HAVE BEEN COMBINED AND ENVELOPED BY CURVE SHOWN.
17. IN LIEU OF USING THE PEAK PRESSURE AS DESIGN PRESSURE FOR ACTIVE VALVES, IT IS PERMISSIBLE TO DEMONSTRATE BY OVERPRESSURE TESTING THAT THE VALVE RETAINS OPERABILITY SUBSEQUENT TO THE TRANSIENT.
18. FATIGUE ANALYSIS RESULTS OF COMPONENTS THAT CONSIDER THE CYCLIC INFORMATION CONTAINED ON THIS DRAWING HAVE BEEN USED AS INPUT TO THE FATIGUE MONITORING PROGRAM. NEW AS WELL AS REVISED FATIGUE ANALYSES UTILIZING THE CYCLIC INFORMATION CONTAINED HEREIN REQUIRE INTERFACE WITH THE FATIGUE MONITORING PROGRAM SOFTWARE ADMINISTRATOR.
19. SINGLE LOOP REACTOR RECIRCULATION PUMP OPERATION HAS BEEN ADDED AS A LICENSE CONDITION IN USAR APPENDIX 15F. DURING THIS CONDITION THE IDLE RECIRCULATION LOOP AND ASSOCIATED REACTOR WATER CLEAN-UP VALVES ARE NOT ISOLATED AND REMAIN AT TEMPERATURE. ISOLATION OF THE IDLE LOOP IS CONSIDERED AN EMERGENCY CONDITION AND IS LIMITED TO 5 THERMAL CYCLES OVER THE PLANT LIFE (REFERENCE GE LETTER JB894045).

SUPPLEMENTAL DOCUMENTS: DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING

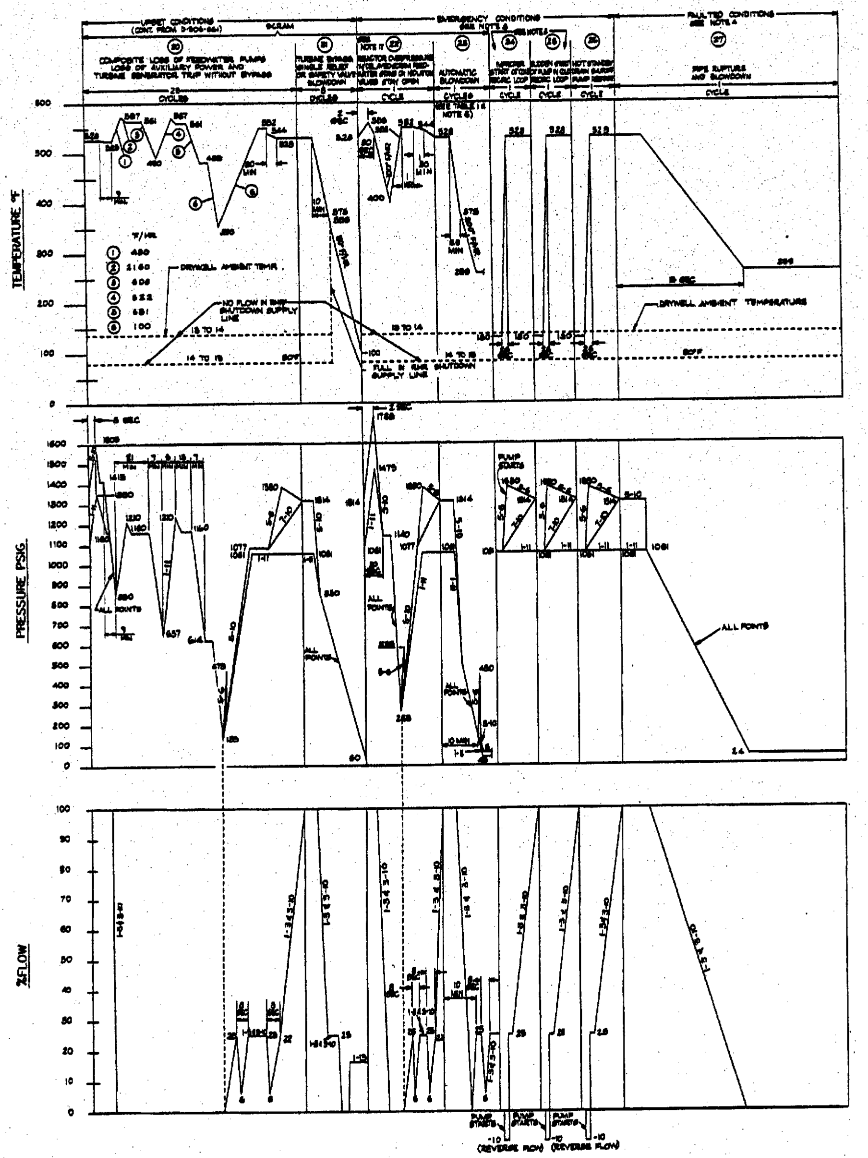
	REFERENCE DESIGNATOR
1. CLASS 1 PIPING CYCLES - MAIN STEAM	B21-8000
2. PIPING AND INSTRUMENTATION SYMBOLS	A42-1010

CLASS 1 PIPING BETWEEN REACTOR RECIRCULATION LOOPS AND OUTBOARD ISOLATION VALVE F004.

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

REACTOR WATER CLEAN-UP
DESIGN TRANSIENTS
FIGURE 3.9-30 (SHEET 1 OF 4)
(DWG. D-306-0661-00000)



CLASS 1 PIPING BETWEEN REACTOR RECIRCULATION LOOPS AND OUTBOARD ISOLATION VALVE F004.

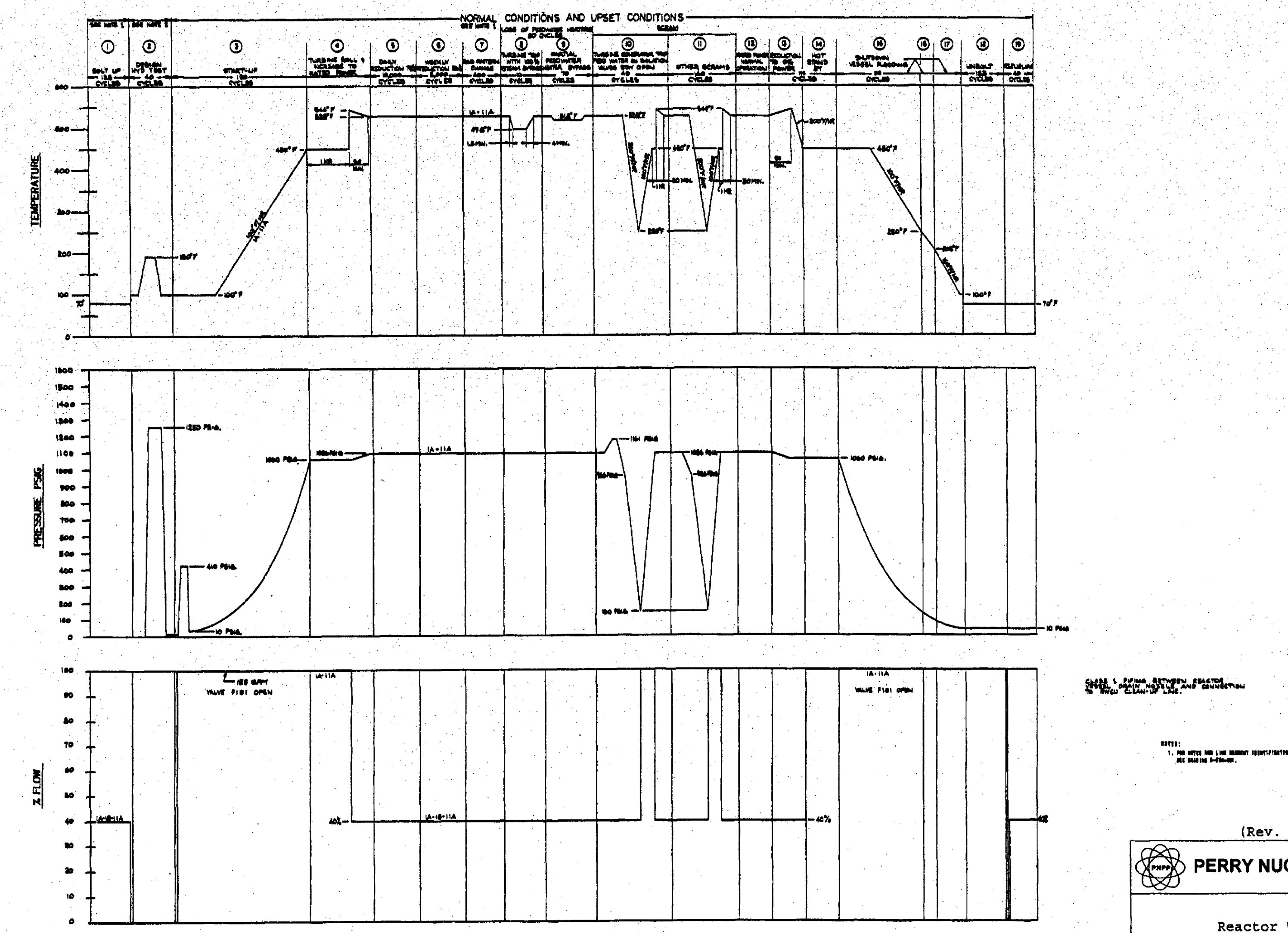
NOTES:
1. FOR NOTES AND LINE SEGMENT IDENTIFICATION, SEE DRAWING D-306-661.

(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Reactor Water Clean-Up
Design Transients

Figure 3.9-30 (Sheet 2 of 4)
(Dwg. D-306-662)

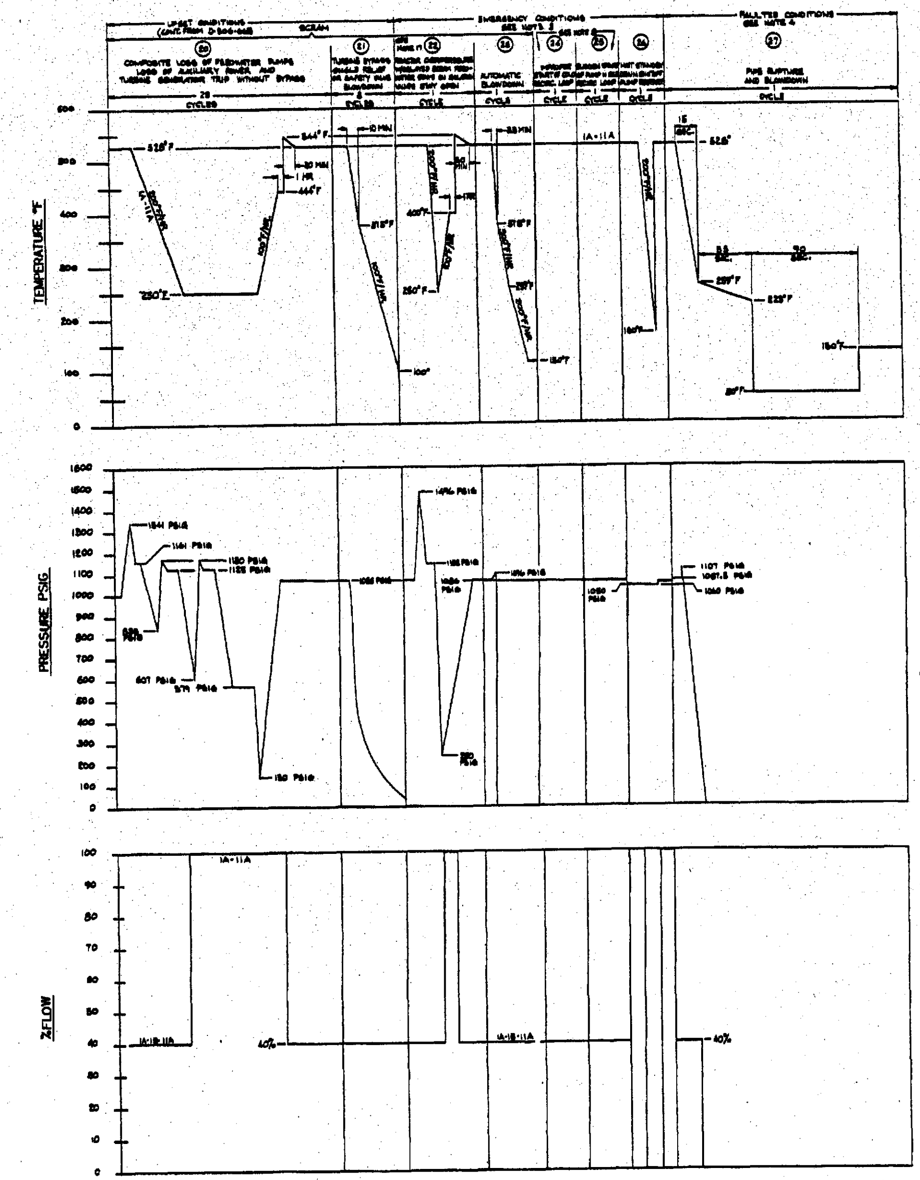


(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Reactor Water Clean-Up
Design Transients

Figure 3.9-30 (Sheet 3 of 4)
(Dwg. D-306-663)



CLASS 1 PIPING BETWEEN REACTOR VESSEL DRAIN NOZZLE AND CONNECTION TO RWCU CLEAN-UP LINE.

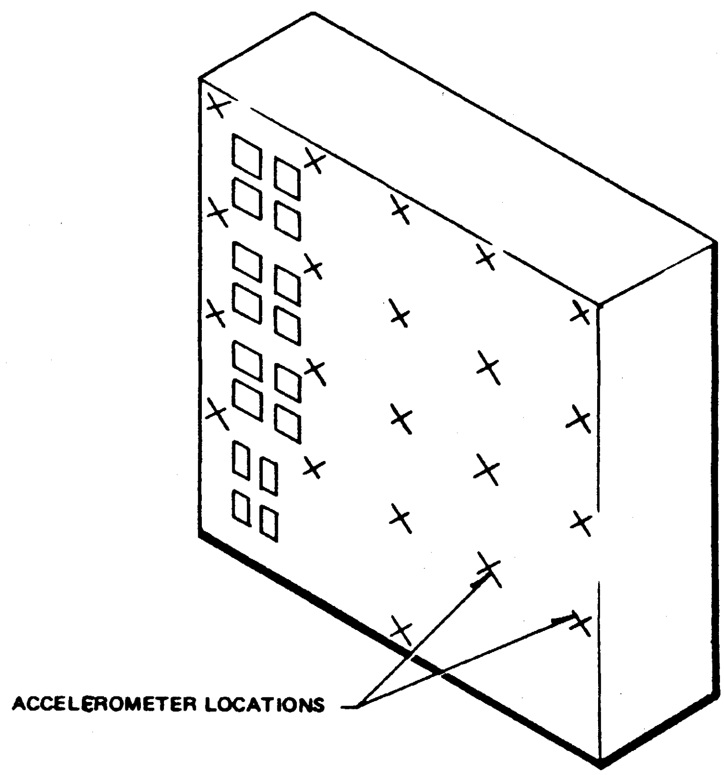
NOTES:

(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Reactor Water Clean-Up
Design Transients

Figure 3.9-30 (Sheet 4 of 4)
(Dwg. D-306-664)

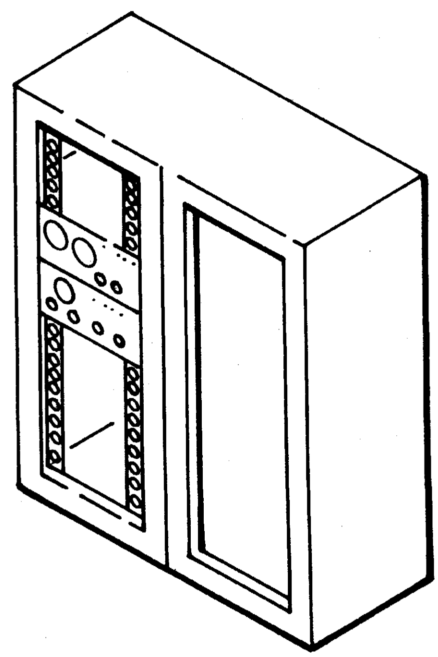


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Vertical Board

Figure 3.10-1

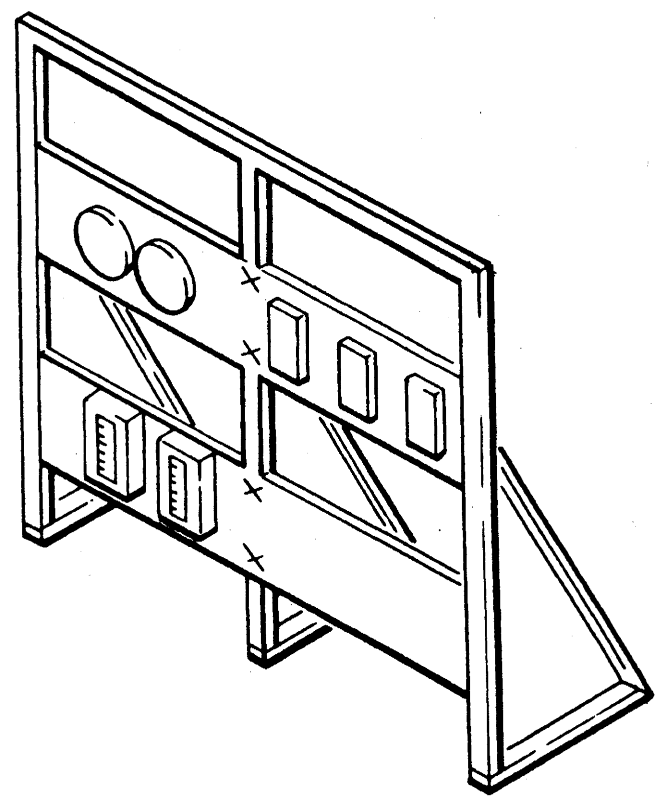


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Instrument Rack

Figure 3.10-2

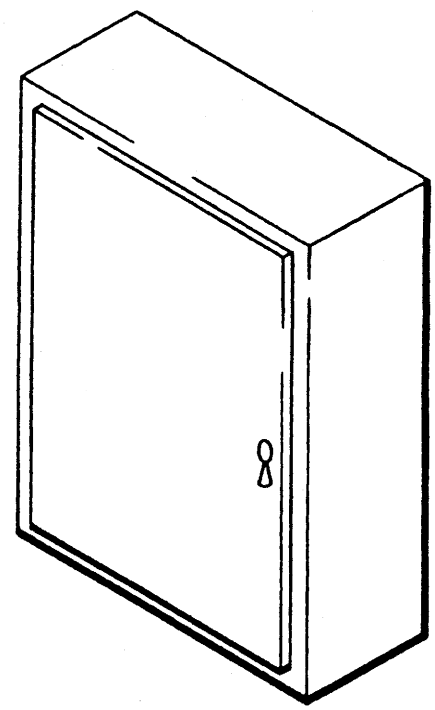


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical Local Rack

Figure 3.10-3



(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Typical NEMA-12 Enclosure

Figure 3.10-4

ZONE	DRAWING	CLASS	DESCRIPTION	TYPICAL EQUIPMENT
			AUXILIARY BUILDING	
AB-1	002	HARSH	HVAC EQUIPMENT AREAS	AUXILIARY BUILDING HVAC EQUIPMENT PANELS,INST & CONTROLS
AB-1E	002	HARSH	HVAC EQUIPMENT AREAS ELEVATION 620'-6"	AUXILIARY BUILDING HVAC EQUIPMENT PANELS,INST & CONTROLS
AB-2E	002	HARSH	LPCS PUMP ROOMS	LPCS PUMP, MOTOR, PANELS, I & C
AB-2W	002	HARSH	HPCS PUMP ROOMS	HPCS PUMP, MOTOR, PANELS, I & C
AB-3	003	HARSH	RCIC TURBINE & PUMP ROOMS	RCIC PUMP,TURBINE,GLAND SEAL & COMPRESSOR PANEL,INST & CONTROLS
AB-4	004	HARSH	RHR PUMP ROOMS	RHR PUMPS & MOTORS,HEAT EXCHANGER PANELS,INST & CONTROLS
AB-5	005	HARSH	RWCU PUMP ROOMS	RWCU PUMPS & MOTORS PANEL, INSTRUMENTS & CONTROLS
AB-6	005	MILD	CORRIDORS OUTSIDE ECCS ROOMS	MISC. INTRUMENTS AND CONTROL PANELS
AB-7E	006	HARSH	STEAM TUNNEL	MSIV'S & NS SHUTOFF SYSTEM MSIV LEAK DETECTION EQUIPMENT
AB-7W	006	HARSH	STEAM TUNNEL	MSIV'S & NS SHUTOFF SYSTEM MSIV LEAK DETECTION EQUIPMENT
AB-8	007	HARSH	PIPING CONTAINMENT PENETRATIONS/CHASE	MISC. PIPING/ISOLATION VALVES
AB-9	007	HARSH	CORRIDORS OUTSIDE ECCS PUMP ROOMS	PANELS,INSTRUMENTS & CONTROLS
AB-10	008	HARSH	ADHR HEAT EXCHANGER AREA	ADHR HEAT EXCHANGER, MISC. PIPING & VALVES
			CONTROL BUILDING	
CB-1	010	MILD	CONTROL ROOM	CONTROL BOARD PGCC
CB-2-B	010	MILD	DIV.1/DIV.2 AND HPCS BATTERY ROOMS	DC SYSTEM/BATTERIES
CB-2-620	010	MILD	MCC, SWITCHGEAR, AND MISC. EQUIPMENT AREAS	SWITCHGEAR, LOAD CENTERS, MCC'S. RPS MG SETS, REMOTE S/D PANEL
CB-2-638	010	MILD	DC SWITCHGEAR AND CABLE SPREADING AREA	DC SWITCHGEAR, CABLES, ELECTRICAL DISTRIBUTION PANELS
CB-3	010	MILD	HVAC EQUIPMENT AREAS	FANS,CHILLERS & CHILLER PUMPS PANELS,INST & CONTROLS
CB-4	011	MILD	CONTROLLED ACCESS & MISC EQUIPMENT AREA	CONTROL ACCESS LABS,LOCKER ROOMS,NUCLEAR CLOSED COOLING WATER PUMPS & HEAT EXC. COMPUTER
CB-5	012	MILD	EMERGENCY CLOSED COOLING PUMP AREA	EMERGENCY CLOSED COOLING PUMP & HEAT EXCH CONTROL COMPLEX CHILLED WATER INST./SERVICE AIR
			CONTAINMENT	
CT-0	020	HARSH	CONTAINMENT ANNULUS	ISOLATION VALVES
CT-1	020 021	HARSH	ABOVE REFUELING FLOOR	REFUELING PLATFORM,FUEL PREPARATION MACHINES,RADIATION & ATMOSPHERE MONITORS
CT-2	021	HARSH	IMMEDIATELY ABOVE SUPPRESSION POOL	TIP DRIVE SYSTEM, C&I PANELS
CT-3	022	HARSH	HCU FLOOR	HCU UNITS & PANELS,MULTIPLEXER
CT-4	022 023	HARSH	SLCS AREA	SLC SYSTEM EQUIPMENT & PANEL
CT-5	023 024	HARSH	RWCU ROOMS	RWCU HEAT EXCH & F/D UNITS & PUMPS,BACKWASH RECEIVING TANK & VALVE HOLDING PUMP
CT-6	024	HARSH	STEAM TUNNEL	MAIN STEAM PIPING,FW PIPING RWCU PIPING,RADWASTE PIPING
CT-7	025	HARSH	SLCS AREA (SUBJECT TO CONTAINMENT SPRAY)	SLC SYSTEM EQUIPMENT & PANELS
CT-8	025 026	HARSH	AREAS ADJACENT TO RWCU ROOMS(SUBJ.TO CONT.SPRAY)	RWCU EQUIPMENT
			DIESEL GENERATOR BUILDING	
DG-1	027	MILD	GENERAL AREA - DIV. 1 / 2	DIESEL GENERATOR & ACCESSORIES,DIESEL GENERATOR CONTROL PANELS & MOTOR CONTROL CENTER
DG-2	027	MILD	GENERAL AREA - DIV. 3	DIESEL GENERATOR & ACCESSORIES,DIESEL GENERATOR CONTROL PANELS & MOTOR CONTROL CENTER
			DRYWELL	
DW-1	030	HARSH	OUTSIDE RPV SHIELD WALL-NOT AT CORE MIDPLANE	RECIRCULATION SYSTEM EQUIPMENT RECIRCULATION SUSPENSION
DW-2	030 031	HARSH	OUTSIDE RPV SHIELD WALL-AT CORE MIDPLANE	CONDENSER CHAMBERS,GROSS GAMMA DETECTION, SAFETY/RELIEF VALVES,MSIV'S
DW-3	031	HARSH	UNDER RPV	CONTROL ROD DRIVES,NEUTRON MONITORS, VESSEL SKIRT FLANGE,BOTTOM HEAD INSULATION, CRD REMOVAL PLATFORM
DW-4	032	HARSH	DRYWELL DOME	VESSEL HEAD AND INSULATION VESSEL-TO-DRYWELL SEAL
DW-5	032	HARSH	RPV SKIRT	VESSEL SUPPORT SKIRT

ZONE	DRAWING	CLASS	DESCRIPTION	TYPICAL EQUIPMENT
			EMERGENCY SERVICE WATER PUMPHOUSE	
ES-W	035	MILD	GENERAL AREA	EMERGENCY SERVICE WATER PUMPS & MOTORS
			FUEL BUILDING/INTERMEDIATE BUILDING	
FB-1	040 SH. 1	MILD	FUEL POOL PUMP AREA	FUEL POOL PUMP & MOTORS,RAD MONITORS,PANELS, INST & CONTROLS,LEAK DETECTION EQUIP, FUEL POOL HEAT EXCH, CHILLED WATER PUMPS & SERVICE AIR
FB-2	040 SH. 1	MILD	OPERATING FLOOR	NEUTRON SYS AMPLIFIERS,POOL RAD MONITORS,AUX PLATFORMS FUEL PREP MACHINES, PANELS, INST & CONTROLS
				CRD PUMPS & MOTORS, RADIATION MONITORS, FUEL HANDLING HVAC EQUIPMENT
FB-3-574	040 SH. 1	HARSH	AREA AT 574' ELEVATION	
FB-3-N	040 SH. 2	HARSH	NORTHERN HALF AT 599' ELEVATION	
FB-3-S	040 SH. 2	HARSH	SOUTHERN HALF AT 599' ELEVATION	
FB-4	041	MILD	HVAC EQUIPMENT AREAS	AEGTS FANS, FILTERS, CONTROLS, CV & DW PURGE SYS FANS FILTERS & CONTROLS, FUEL HANDLING AREA VENT SYSTEM FANS, FILTERS INTERM. BLDG HVAC EQUIPMENT PAGE/PARTY BATTERY BACKUP SYSTEM
FB-5	041	MILD	ELECTRICAL PENETRATION AREA	ELECTRICAL PENETRATIONS PANELS, INST & CONTROLS
FB-6	041	HARSH	PIPE CHASE(EL.585'-0")	MISC INSTRUMENTATION
FB-7	042	HARSH	AEGTS AREA	ANNULUS EXHAUST GAS TREATMENT SYSTEM EQUIPMENT AND CONTROLS
FB-8	042	HARSH	FUEL HANDLING BUILDING EXHAUST FILTER ROOM	FH BLDG EXHAUST FILTER & INSTRUMENTATION
			HEATER BAY INSTRUMENT ROOM	
HB-1	047	MILD	HEATER BAY EL.667'-6"	INSTRUMENTS
			OFF-GAS BUILDING	
OG-B	046	MILD	OFF-GAS BUILDING EXHAUST AREA	OFF-GAS TREATMENT AND MONITORING EQUIPMENT
			OUTSIDE	
OU-T	047	MILD	GENERAL YARD AREA	INSTRUMENTS,VALVES
			TURBINE BUILDING	
TB-1	050	HARSH	STEAM LINE AREA UNDER HP TURBINE	STOP VALVES,CONTROL VALVES & PRESSURE TRANSMITTERS
TB-2	050 051	HARSH	HEATER BAY & TURB BLDG OUTSIDE SHIELD WALLS	PANELS,INST & CONTROLS
TB-3	051	HARSH	TURBINE BLDG WEST END EL.620'-6"	TURBINE MAINTENANCE EQUIPMENT

NOTES:

1. ZONES ARE ILLUSTRATED ON DRAWING E-022-0060 THROUGH E-022-0067 AND B-022-0068 ENVIRONMENTAL CONDITIONS IN EACH ZONE ARE PROVIDED BY DRAWING B-022-0002 THROUGH B-022-0051
2. DRAWINGS AS LISTED ARE PRECEEDED BY B-022-
3. CLASSIFICATION DEFINITIONS:
   HARSH ENVIRONMENT - THOSE ZONES WHERE THE ENVIRONMENTAL CONDITIONS EXCEED SIGNIFICANTLY THE NORMAL/ABNORMAL RANGE AS A RESULT OF A DBE.
   MILD ENVIRONMENT - THOSE ZONES WHERE THE ENVIRONMENTAL CONDITIONS DO NOT SIGNIFICANTLY EXCEED THE NORMAL/ABNORMAL RANGE AS A RESULT OF A DBE.

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONES
LEAD SHEET
FIGURE 3.11-10
(DWG. B-022-0001-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE AB-1 / AB-1E (HARSH) HVAC EQUIPMENT AREAS									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	115 60 90	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	124	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT SAFETY RELATED COOLING SYSTEM RUNNING	1		124 114	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				3.76×10^{1}	3.32×10^{1} 2.25×10^{2} 3.52×10^{2} 4.00×10^{2} 4.00×10^{2} 4.00×10^{2}	
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 8 HR 24 HR 30 DAYS 60 DAYS 180 DAYS				1.77×10^{4}	1.36×10^{4} 4.47×10^{4} 6.09×10^{4} 9.78×10^{4} 1.02×10^{5} 1.04×10^{5}	(11)
ACCIDENT	RHR 10" LINE BREAK-STEAM SUPPLY LINE W/LOOP IN ZONE AB-4	1	0 SEC 1.0 SEC 2.0 SEC 10.0 SEC 19.0 SEC 25.0 SEC 30.0 SEC 45.0 SEC 3.0 MIN 15 MIN 35 MIN 60 MIN 1 DAY	115 193 224 296 302 298 288 264 237 200 184 155 123	90 100 100 100 100 100 100 90 90 90 90 90 90	ATMOSPHERE 0.3 PSIG 0.3 PSIG 0.3 PSIG 0.3 PSIG 0.3 PSIG 0.3 PSIG ATMOSPHERE ATMOSPHERE ATMOSPHERE ATMOSPHERE ATMOSPHERE ATMOSPHERE			AIR STEAM STEAM STEAM STEAM STEAM STEAM STEAM AIR AIR AIR AIR AIR
ZONE AB-2E (HARSH) LPCS PUMP ROOM									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	107 71 84	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	3.5×10^{0}	1.57×10^{5}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	126 126	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		146 146	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 TO 1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.42×10^{5}	1.88×10^{5} 7.34×10^{5} 1.85×10^{6} 1.55×10^{7} 2.90×10^{7} 4.09×10^{7}	(8)
ZONE AB-2W (HARSH) HPCS PUMP ROOM									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	111 75 88	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	3.5×10^{0}	1.57×10^{5}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	126	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		154 154	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 TO 1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.42×10^{5}	1.88×10^{5} 7.34×10^{5} 1.85×10^{6} 1.55×10^{7} 2.90×10^{7} 4.09×10^{7}	(8)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDE THE FOLLOWING:

   A. NORMAL FULL POWER OPERATION

   B. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS.

   C. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS.

   D. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS.

   E. TESTING (DURATIONS VARY.)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60°F.
5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER (LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.
11. ZONE AB-1E ONLY. HVAC EQUIPMENT AREA - ELEVATION 620'-6".

REFERENCES:

022-0001-00000 ENVIRONMENTAL CONDITIONS - PLANT LAYOUT, LEAD SHEET

022-0003-00000 ENVIRONMENTAL CONDITIONS - AUXILIARY BUILDING

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR AUXILIARY BUILDING

FIGURE 3.11-11

(DWG. B-022-0002-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE AB-3 (HARSH) RCIC TURBINE AND PUMP ROOM									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION TESTING	1	8407 HRS 3503 HRS 338,390 HRS	126 98 109	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-2} 1.16×10^{0}	8.8×10^{3} 1.16×10^{0}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC TOTAL NON-ACCIDENT INTEGRATED DOSE	1	100 HRS	141	90 20	ATMOSPHERE ATMOSPHERE		9.4×10^{3}	(6) 9.4×10^{3} IS THE SUM OF TESTING TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES.
									ENVIRONMENTAL MEDIUM
ACCIDENT	RWCU BREAK IN ZONE AB-5	1	0 SEC 14 SEC 30 SEC 40 SEC 10 MIN 71 MIN 1 DAY 180 DAYS	126 155 151 151 147 126 126 126	90 100 100 90 90 90 90 90	0.0 PSIG 3.0 PSIG 0.4 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			AIR STEAM STEAM STEAM/AIR AIR AIR AIR AIR
ACCIDENT	RCIC BREAK IN ZONE AB-3 W/LOOP	1	0 SEC 1.0 SEC 2.0 SEC 4.0 SEC 10.5 SEC 20.0 SEC 30.0 SEC 40.0 SEC 130.0 SEC 300.0 SEC 30 MIN 166 MIN 4 HR	126 237 252 269 284 282 278 277 206 191 160 140 126	90 100 100 100 100 100 100 90 90 90 90 90 90	0.0 PSIG 4.0 PSIG 2.6 PSIG 1.3 PSIG 1.1 PSIG 1.0 PSIG 0.1 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			AIR STEAM STEAM STEAM STEAM STEAM STEAM/AIR STEAM/AIR STEAM/AIR STEAM/AIR AIR AIR AIR
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA IN CONTAINMENT EMERGENCY EQUIPMENT RUNNING IN ZONE AB-3	1		143 143	90 max 20 min	0.0 PSIG 0.0 PSIG 0.0 PSIG			(7)
ACCIDENT	CONTROL ROD DROP ACCIDENT (CRDA)	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				4.86×10^{3}	3.08×10^{3} 3.27×10^{3} 3.27×10^{3} 3.37×10^{3} 3.44×10^{3} 3.52×10^{3}	
	ANTICIPATED TRANSIENT WITHOUT SCRAM (ATWS)	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.51×10^{5}	4.45×10^{4} 4.73×10^{4} 4.71×10^{4} 4.83×10^{4} 4.93×10^{4} 5.04×10^{4}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

REFERENCE DRAWINGS:

B-022-001
B-022-002

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR AUXILIARY BUILDING
FIGURE 3.11-12
(DWG. B-022-0003-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE AB-4 (HARSH) RHR PUMP ROOMS									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8298 HRS 3457 HRS 333,985 HRS	114 71 92	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	1.72×10^{0}	3.0×10^{5}	(4) (9) (10)
NORMAL MAX MIN	PLANT SHUTDOWN (SHUTDOWN COOLING MODE)	120	30 HRS	144	90 20	ATMOSPHERE			
NORMAL MAX MIN	PLANT SHUTDOWN (SUPPRESSION POOL COOLING)	30	8 HRS	129	90 20	ATMOSPHERE			
NORMAL MAX MIN	PLANT SHUTDOWN (SRV TRANSIENTS)	108	6.67 HRS	129	90 20	ATMOSPHERE			
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	124	90 20	ATMOSPHERE			(6) ENVIRONMENTAL MEDIUM
ACCIDENT	RHR 10" LINE BREAK-STEAM SUPPLY LINE W/LOOP	1	0 SEC 1.0 SEC 2.0 SEC 10.0 SEC 19.0 SEC 25.0 SEC 30.0 SEC 45.0 SEC 3 MIN 15.0 MIN 35.0 MIN 60 MIN 1 DAY	114 193 224 296 302 298 288 264 237 200 184 155 123	90 100 100 100 100 100 100 90 90 90 90 90 90	0.0 PSIG 2.7 PSIG 2.6 PSIG 2.6 PSIG 2.6 PSIG 2.2 PSIG 0.9 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			AIR STEAM STEAM STEAM STEAM STEAM STEAM STEAM AIR AIR AIR AIR AIR
ACCIDENT	LOCA IN CONTAINMENT EMERGENCY EQUIPMENT RUNNING IN ZONE AB-4	1	0 MIN 60 MIN 30 HRS 120 HRS 180 DAY AVERAGE	114 158 158 125 125	90 MAX 20 MIN	ATMOSPHERE ATMOSPHERE ATMOSPHERE ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA IN CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				3.52×10^{5}	2.65×10^{5} 9.94×10^{5} 2.33×10^{6} 1.85×10^{7} 3.32×10^{7} 4.64×10^{7}	(8)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   B. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   C. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT. THIS CONDITION REFLECTS THE 'SHUTDOWN COOLING MODE' AND ENVELOPS ALL OTHER ACCIDENT MODES (SUPPRESSION POOL COOLING) IN THE RHR PUMP ROOM.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR AUXILIARY BUILDING
FIGURE 3.11-13
(DWG. B-022-0004-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE AB-5 (HARSH) RWCU PUMP ROOMS									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	122 91 100	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	7.0×10^{0}	2.5×10^{6}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	120	90 20	ATMOSPHERE			(6)
ACCIDENT	RCIC 4" LINE BREAK IN ZONE AB-3 W/LOOP	1	0 SEC 1.0 SEC 2.0 SEC 4.0 SEC 10.5 SEC 20.0 SEC 30.0 SEC 40.0 SEC 130.0 SEC 300.0 SEC 30 MIN 166 MIN 4 HR	121 200 230 259 283 281 278 276 206 191 160 140 127	90 100 100 100 100 100 100 90 90 90 90 90 90	0.0 PSIG 2.5 PSIG 1.5 PSIG 0.7 PSIG 0.6 PSIG 0.5 PSIG 0.1 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM STEAM STEAM STEAM/AIR AIR AIR AIR AIR AIR
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT IE COOLING SYSTEM RUNNING	1		123 118	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				4.41×10^{5}	4.20×10^{5} 1.37×10^{6} 2.63×10^{6} 7.67×10^{6} 1.01×10^{7} 1.16×10^{7}	(8)
ZONE AB-6 (MILD) CORRIDORS OUTSIDE ECCS PUMP ROOMS (EL.568'-4")									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	107 78 89	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (5) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	122	90 20	ATMOSPHERE			
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		124 123	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT		1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.77×10^{1}	1.99×10^{1} 6.95×10^{1} 1.81×10^{2} 1.20×10^{3} 1.89×10^{3} 2.16×10^{3}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT. THIS CONDITION REFLECTS THE 'SHUTDOWN COOILING MODE' AND ENVELOPS ALL OTHER ACCIDENT MODES (STEAM CONDENSING AND SUPRESSION POOL COOLING) IN THE RHR PUMP ROOM.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR AUXILIARY BUILDING
FIGURE 3.11-14
(DWG. B-022-0005-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE AB-7E (HARSH) STEAM TUNNEL EAST									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8407 HRS 3503 HRS 338,390 HRS	 138 119 129	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	8.4×10^{0}	2.4×10^{6}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	150	90 20	ATMOSPHERE			(6)
ACCIDENT	MAIN STEAM LINE BREAK IN ZONE AB-7	1	0.0 SEC 1.0 SEC 6.2 SEC 1.5 HRS 2.0 HRS 2.5 HRS 3.5 HRS 5.0 HRS 9.0 HRS 12.0 HRS 24 HRS 180 DAYS	132 310 310 310 212 160 150 140 130 125 117 117	90 100 100 100 100 100 100 100 100 100 90 90	0.0 PSIG 8.5 PSIG 1.0 PSIG 1.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM STEAM/AIR STEAM/AIR STEAM/AIR AIR AIR AIR AIR
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.32×10^{6}	1.40×10^{6} 4.50×10^{6} 8.45×10^{6} 1.78×10^{7} 1.89×10^{7} 1.93×10^{7}	(8)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		152 144	90 max 20 min	ATMOSPHERE ATMOSPHERE			
ZONE AB-7W (HARSH) STEAM TUNNEL WEST									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8407 HRS 3503 HRS 338,390 HRS	 144 118 132	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	8.4×10^{0}	2.4×10^{6}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	150	90 20	ATMOSPHERE			(6)
ACCIDENT	MAIN STEAM LINE BREAK IN ZONE AB-7	1	0.0 SEC 1.0 SEC 6.2 SEC 1.5 HRS 2.0 HRS 2.5 HRS 3.5 HRS 5.0 HRS 9.0 HRS 12.0 HRS 24 HRS 180 DAYS	144 310 310 310 212 160 150 140 130 125 117 117	90 100 100 100 100 100 100 100 100 100 90 90	0.0 PSIG 8.5 PSIG 1.0 PSIG 1.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM STEAM/AIR STEAM/AIR STEAM/AIR AIR AIR AIR AIR
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.32×10^{6}	1.40×10^{6} 4.50×10^{6} 8.45×10^{6} 1.78×10^{7} 1.89×10^{7} 1.93×10^{7}	(8)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		152 144	90 max 20 min	ATMOSPHERE ATMOSPHERE			

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   A. NORMAL FULL POWER OPERATION
   B. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   C. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   D. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   E. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR AUXILIARY BUILDING
FIGURE 3.11-15
(DWG. B-022-0006-000000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3)		SUPPLEMENTARY DATA
				°F			MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	
ZONE AB-8 (HARSH) PIPING CONTAINMENT PENETRATION/CHASE									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338.390 HRS	114 63 88	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.2×10^{1}	7.75×10^{6}	(4) (9) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	119	90 20	ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		147 147	90 MAX 20 MIN	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.16×10^{5}	8.82×10^{4} 3.57×10^{5} 9.02×10^{5} 7.17×10^{6} 1.33×10^{7} 2.04×10^{7}	(8)
ZONE AB-9 (HARSH) CORRIDORS OUTSIDE ECCS PUMP ROOMS (EL.599'-0")									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338.390 HRS	108 78 89	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (9) (10) (12) (13)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	121	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		128 123	90 MAX 20 MIN	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	RWCU BREAK IN RWCU PUMP ROOM IN ZONE AB-9	1	0.0 SEC 15 SEC 30 SEC 40 SEC 1 MIN 6 MIN 30 MIN 82 MIN 136 MIN 1 DAY 180 DAYS	108 217 196 192 189 163 150 128 108 108 108	90 100 100 90 90 90 90 90 90 90 90	0.0 PSIG 1.6 PSIG 0.4 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM/AIR AIR AIR AIR AIR AIR AIR AIR
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0.5 HR 8 HRS 24 HRS 5 DAYS 10 DAYS 30 DAYS 60 DAYS 180 DAYS				1.61×10^{4}	7.24×10^{3} 6.53×10^{4} 9.73×10^{4} 1.82×10^{5} 2.35×10^{5} 3.80×10^{5} 5.30×10^{5} 1.03×10^{6}	(8) (11)
ACCIDENT	RCIC LINE BREAK IN ZONE AB-3	1	0.0 SEC 1.0 SEC 6 SEC 10 SEC 15 SEC 20 SEC 30 SEC 40 SEC 62 SEC 90 SEC 180 SEC 300 SEC 10 MIN 15 MIN 75 MIN 1 DAY 180 DAYS	108 115 139 160 181 200 223 222 207 193 171 158 142 135 108 108 108	90 100 100 100 90 90 90 90 90 90 90 90 90 90 90 90 90	0.0 PSIG 0.4 PSIG 0.1 PSIG 0.1 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM/AIR AIR AIR AIR AIR AIR AIR AIR AIR AIR AIR AIR AIR

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.

8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.

9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

10. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

11. REFERENCE ECP 05-0238.

12. DUCT AND PIPING PENETRATION IN THE LEAD BLANKET SHIELDING ADJACENT TO THE CONCRETE WALL SEPARATING AB-9 AND AB-10 PROVIDE STREAMING PATHWAYS IN THE OVERHEAD AREAS IN AB-9. THE AREA IMPACTED BY THE STREAMING EXTENDS 20' NORTH OF THE 8' CONCRETE WALL FROM EL. 608'-0" TO THE OVERHEAD SLAB AS SHOWN IN THE FOLLOWING TABLE:

DESCRIPTION	MAXIMUM DOSE RATE (rads/hr)	INTEGRATED DOSE (rad)
FROM BLANKETS TO NORTH FACE OF CONCRETE WALL	$7.0\cdot10^{-2}$	$2.5\cdot10^{4}$
0-10' NORTH OF WALL	$2.0\cdot10^{-2}$	$7.0\cdot10^{3}$
10-20' NORTH OF WALL	$6.0\cdot10^{-3}$	$2.1\cdot10^{3}$
>20' NORTH OF WALL	$2.5\cdot10^{-3}$	$8.8\cdot10^{2}$

THESE DOSE RATES AND DOSES CONSERVATIVELY APPLY IN THE SPECIFIED AREA NORTH OF THE BLANKETS FROM EL. 608'-0" UP TO THE OVERHEAD SLAB AND FROM COLUMN LINE AX-8 WEST TO THE INSIDE BUILDING WALL (COLUMN LINE AX-7).

13. INSIDE THE LEAD BLANKET SHIELD AROUND THE 1M38B0008 DUCT:

MAXIMUM DOSE RATE = $2.5\cdot10^{-2}$ RADS/HR

INTEGRATED DOSE = $8.8\cdot10^{3}$ RADS

(REV. 19 10/2015)

REFERENCE DRAWINGS:

B-022-001

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR AUXILIARY BUILDING

FIGURE 3.11-16

(DWG. B-022-0007-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE F°	RELATIVE HUMIDITY (2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION (3) MAX DOSE RATE RADS/HR	GAMMA RADIATION (3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE AB-10(HARSH) ADHR HEAT EXCHANGER AREA (EL. 599'-0")									
NORMAL	NORMAL FULL POWER OPERATION	1					2.2×10^{0}	7.7×10^{5}	(4) (9) (10)
MAX			8407 HRS	108	90	ATMOSPHERE			
MIN			3503 HRS	78	20	ATMOSPHERE			
AVERAGE			338, 390 HRS	89	50	ATMOSPHERE			
ABNORMAL	LOSS OF HVAC	1	100 HRS						(5) (6)
MAX				121	90	ATMOSPHERE			
MIN					20	ATMOSPHERE			
ACCIDENT	LOCA INSIDE CONTAINMENT	1							(7)
MAX				128	90 MAX	ATMOSPHERE			
AVERAGE (180 DAYS)				123	20 MIN	ATMOSPHERE			ENVIRONMENTAL MEDIUM
ACCIDENT	RWCU BREAK IN RWCU PUMP ROOM IN ZONE AB-9	1	0.0 SEC	108	90	0.0 PSIG			AIR
			15 SEC	217	100	1.6 PSIG			STEAM
			30 SEC	196	100	0.4 PSIG			STEAM
			40 SEC	192	90	0.0 PSIG			STEAM/AIR
			1 MIN	189	90	0.0 PSIG			AIR
			6 MIN	163	90	0.0 PSIG			AIR
			30 MIN	150	90	0.0 PSIG			AIR
			82 MIN	128	90	0.0 PSIG			AIR
			136 MIN	108	90	0.0 PSIG			AIR
			1 DAY	108	90	0.0 PSIG			AIR
			180 DAYS	108	90	0.0 PSIG			AIR
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0.5 HR				1.61×10^{4}	7.24×10^{3}	(8) (11)
			8 HRS					6.53×10^{4}	
			24 HRS					9.73×10^{4}	
			5 DAYS					1.82×10^{5}	
			10 DAYS					2.35×10^{5}	
			30 DAYS					3.80×10^{5}	
			60 DAYS					5.30×10^{5}	
			180 DAYS					1.03×10^{6}	ENVIRONMENTAL MEDIUM
ACCIDENT	RCIC LINE BREAK IN ZONE AB-3	1	0.0 SEC	108	90	0.0 PSIG			AIR
			1.0 SEC	115	100	0.4 PSIG			STEAM
			6 SEC	139	100	0.1 PSIG			STEAM
			10 SEC	160	100	0.1 PSIG			STEAM
			15 SEC	181	90	0.0 PSIG			STEAM/AIR
			20 SEC	200	90	0.0 PSIG			AIR
			30 SEC	223	90	0.0 PSIG			AIR
			40 SEC	222	90	0.0 PSIG			AIR
			62 SEC	207	90	0.0 PSIG			AIR
			90 SEC	193	90	0.0 PSIG			AIR
			180 SEC	171	90	0.0 PSIG			AIR
			300 SEC	158	90	0.0 PSIG			AIR
			10 MIN	142	90	0.0 PSIG			AIR
			15 MIN	135	90	0.0 PSIG			AIR
			75 MIN	108	90	0.0 PSIG			AIR
			1 DAY	108	90	0.0 PSIG			AIR
			180 DAYS	108	90	0.0 PSIG			AIR

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE PASTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350, 400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER (LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPETATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.
11. REFERENCE ECP 04-0239.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR AUXILIARY BUILDING
FIGURE 3.11-16A
(DWG. B-022-0008-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CB-1 (MILD) CONTROL ROOM									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	75 69 75	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.8×10^{2}	(4) (5) (8)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		89 88	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 HR 1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				5.8×10^{-1}	2.6×10^{-1} 1.41×10^{0} 1.97×10^{0} 7.5×10^{0} 7.5×10^{0} 7.5×10^{0}	
ZONE CB-2-B (MILD) DIV. 1/DIV. 2 AND HPCS BATTERY ROOMS									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	80 72 77	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.8×10^{2}	(4) (8)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	81	90 20	ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		81	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	
ZONE CB-2-620 (MILD) FLR. ELEV. 620′-6", MCC, SWITCHGEAR & MISC EQUIPMENT AREA (EXCLUDING HPCS BATTERY ROOMS)									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	85 65 74	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.8×10^{2}	(4) (8)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	9 85	90 20	ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		85 85	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	
ZONE CB-2-638 (MILD) FLR. ELEV. 638′-6", MCC, SWITCHGEAR & MISC EQUIP. AREA (EXCLUDING DIV.1/DIV.2 BATTERY ROOMS)									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	85 65 79	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.8×10^{2}	(4) (8)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	92	90 20	ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		85 85	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	
ZONE CB-3 (MILD) HVAC EQUIPMENT AREA									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	86 74 81	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (5) (8)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		86 85	90 20	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
8. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

9. LOSS OF HVAC TEMPERATURE IN THE UNIT 2 TELEPHONE EQUIPMENT ROOM (FORMERLY THE UNIT 2 REMOTE SHUTDOWN ROOM) WILL EXCEED 85 F. THE HIGHER 90 °F TEMPERATURE DETERMINED FOR THIS ROOM IS ACCEPTABLE SINCE THIS ROOM DOES NOT CONTAIN SAFETY RELATED EQUIPMENT.

REFERENCE DRAWINGS:

B-022-0001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR CONTROL BUILDINGS
FIGURE 3.11-17
(DWG. D-022-0010-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CB-4 (MILD) NUCLEAR CLOSED COOLING HEAT EXCHANGER ROOM									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	95 92 94	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.80×10^{2}	(4) (8) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	100	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		86 86	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	
ZONE CB-4 (MILD) NUCLEAR CLOSED COOLING PUMP ROOM									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	84 82 84	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.80×10^{2}	(4) (8) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	179	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		86 86	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	
ZONE CB-4 (MILD) WEST END,FLOOR ELEVATION 599'-0"									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	75 73 74	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.80×10^{2}	(4) (8) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	92	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		83 83	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.

8. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

9. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR CONTROL BUILDINGS
FIGURE 3.11-18
(DWG. B-022-0011-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CB-5 (MILD) EMERGENCY CLOSED COOLING PUMP AREA									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8410 HRS 3504 HRS 338,486 HRS	 89 86 88	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.80×10^{2}	(4) (5) (8) (9)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		80 80	90 max 20 min	ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HR 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   A. NORMAL FULL POWER OPERATION
   B. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   C. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   D. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   E. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

7. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.

8. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

9. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR CONTROL BUILDINGS
FIGURE 3.11-19
(DWG. B-022-0012-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	BETA RADIATION MAX DOSE RATE RADS/HR	BETA RADIATION DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CT-0 (HARSH) CONTAINMENT ANNULUS											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	105 66 87	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}			(4) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	128	90 20	ATMOSPHERE ATMOSPHERE					(6)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 MIN 16.6 MIN 50 MIN 83.3 MIN 2.8 HRS 4.1 HRS 5.5 HRS 6.9 HRS 8.3 HRS 11.1 HRS 16.6 HRS 19.4 HRS 1 DAY 100 DAYS 180 DAYS	105 108 114 119 129 135 139 141 143 145 148 149 150 105 105	90 MAX 20 MIN	ATMOSPHERE VARIES OVER 0.1 PSI RANGE FOR 180 DAYS DURATION					
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.63×10^{6}	6.18×10^{5} 2.07×10^{6} 4.33×10^{6} 1.41×10^{7} 2.02×10^{7} 2.53×10^{7}	1.28×10^{3}	7.76×10^{2} 6.89×10^{3} 2.15×10^{4} 7.48×10^{4} 9.77×10^{4} 1.13×10^{5}	(10) (8)
ZONE CT-1 (HARSH) AREA ABOVE REFUELING FLOOR											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8363 HRS 3485 HRS 336,616 HRS	104 80 91	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	NEGLIGIBLE	NEGLIGIBLE	(4) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	137	90 20	ATMOSPHERE ATMOSPHERE					(6)
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0 MIN 30 MIN 90 MIN 2 HRS 3 HRS 4 HRS 5 HRS 6 HRS 7 HRS 8 HRS 9 HRS 10 HRS 11 HRS 12 HRS 13 HRS 17 HRS	90.0 96.6 109.0 112.7 117.7 119.7 120.0 118.1 116.9 115.9 115.1 114.7 114.2 105.0 101.7 90.0	90 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	ATMOSPHERE 0.4 PSIG 1.1 PSIG 1.4 PSIG 1.7 PSIG 1.9 PSIG 1.9 PSIG 1.8 PSIG 1.7 PSIG 1.6 PSIG 1.6 PSIG 1.6 PSIG 1.2 PSIG 1.0 PSIG 0.8 PSIG 0.0 PSIG	2.1×10^{1}	2.5×10^{3}	NEGLIGIBLE	NEGLIGIBLE	
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							2.71×10^{5}			SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 SEC 3 SEC 10 SEC 30 SEC 100 SEC 1 HR 7 HR 18 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	104 100 150 150 150 135 140 135 133 120 95 95	90 100 100 100 100 100 100 100 100 100 100 100	1.0 5.3 5.8 6.8 5.8 5.8 6.5 6.4 6.2 2.5 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13) AIR,SPRAY (7) (13)

ZONE CT-1 CONTINUED ON B-022-021

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", WHEN M-14 PURGE AND VENT SYSTEM OPERATING OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, DURING THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE, OR WHEN M-14 SYSTEM OPERATING THE PLANT HEATING SYSTEM ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. DELETED
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. THIS AREA IS SUBJECT TO WATER SPRAY FROM THE CONTAINMENT SPRAY SYSTEM. THE WATER CHEMISTRY OF THE SPRAY IS AS NOTED IN SECTION 3.11.5.1.2 OF THE FSAR. DURATION OF THE CONTAINMENT SPRAYS IS CONTROLLED ADMINISTRATIVELY, HOWEVER PLANT TECHNICAL SPECIFICATIONS SHALL STATE THAT THE SPRAYS SHALL BE TERMINATED AT A MAXIMUM OF 30 HOURS POST ACCIDENT. SPRAYS MAY BE TURNED ON AGAIN IF REQUIRED TO LIMIT CONTAINMENT AIRSPACE TEMPERATURE 185° F. REACTIVATION OF SPRAYS COULD BE REQUIRED ANY TIME DURING THE POSTULATED 180 DAY ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. AREAS WITHIN THE ANNULUS WHICH ARE BELOW EL.598'-4" NEED NOT CONSIDER BETA RADIATION . THESE AREAS ARE SHIELDED WITH CONCRETE BY THE CONTAINMENT FIX AS SHOWN ON DWG E-015-012.
11. EQUIPMENT IS SUBJECT TO SUBMERGENCE BETWEEN ELEVATIONS 593'-6" AND 612'-6". FROTH AND SPRAY OCCUR FROM ELEVATIONS 612'-6" TO 623'-4". TIME DURATION IS 5 SECONDS.
12. PORTIONS OF ZONES CT-3 AND CT-4 DIRECTLY BELOW OPEN GRATING ON ZONES CT-7 AND CT-8 ELEVATIONS MAY BE SUBJECT TO RUN-OFF DRIPPING FROM CONTAINMENT SPRAYS.
13. ABOVE CONTAINMENT ELEVATION 730'-0" THE STRATIFIED TEMPERATURES FOLLOWING A RWCU LINE BREAK WILL BE 220° F FROM 0 TO 3 HOURS POST LOCA.

REFERENCE DRAWINGS:

B-022-001
B-022-021

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR CONTAINMENT BUILDING
FIGURE 3.11-20
(DWG. B-020-0020-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3)		BETA RADIATION		SUPPLEMENTARY DATA
							MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	
ZONE CT-1 (HARSH) AREA ABOVE REFUELING FLOOR (CONTINUED FROM B-022-020)											
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				4.14×10^{6}	1.69×10^{6} 5.96×10^{6} 1.31×10^{7} 3.19×10^{7} 3.34×10^{7} 3.39×10^{7}	2.46×10^{7}	5.81×10^{6} 1.46×10^{7} 2.69×10^{7} 7.15×10^{7} 9.53×10^{7} 1.17×10^{8}	(8)
ZONE CT-2 (HARSH) AREA ABOVE SUPPRESSION POOL											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8363 HRS 3485 HRS 336,616 HRS	 104 80 91	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	NEGLIGIBLE	NEGLIGIBLE	(4) (9) (14)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	137	90 20	ATMOSPHERE ATMOSPHERE					(6)
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0 MIN 30 MIN 90 MIN 2 HRS 3 HRS 4 HRS 5 HRS 6 HRS 7 HRS 8 HRS 9 HRS 10 HRS 11 HRS 12 HRS 13 HRS 17 HRS	90.0 96.6 109.0 112.7 117.7 119.7 120.0 118.1 116.9 115.9 115.1 114.7 109.2 105.0 101.7 90.0	90 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	ATMOSPHERE 0.4 PSIG 1.1 PSIG 1.4 PSIG 1.7 PSIG 1.9 PSIG 1.9 PSIG 1.8 PSIG 1.7 PSIG 1.6 PSIG 1.6 PSIG 1.6 PSIG 1.2 PSIG 1.0 PSIG 0.8 PSIG 0.0 PSIG	2.1×10^{1}	2.5×10^{3}	NEGLIGIBLE	NEGLIGIBLE	
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							2.71×10^{5}			SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 SEC 2 SEC 10 SEC 30 SEC 100 SEC 1 HR 7 HR 18 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	104 100 150 150 150 135 140 135 133 120 95 95		1.0 11.4 5.8 6.9 5.8 5.8 6.5 6.4 6.2 2.5 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE AIR, SPRAY (11), SUBMERGENCE
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.62×10^{6}	7.49×10^{5} 3.21×10^{6} 7.32×10^{6} 2.66×10^{7} 3.50×10^{7} 3.98×10^{7}	2.46×10^{7}	5.81×10^{6} 1.46×10^{7} 2.69×10^{7} 7.15×10^{7} 9.53×10^{7} 1.17×10^{8}	(8)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", WHEN M-14 PURGE AND VENT SYSTEM OPERATING OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, DURING THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE, OR WHEN M-14 SYSTEM OPERATING THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. DELETED

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

7. THIS AREA IS SUBJECT TO WATER SPRAY FROM THE CONTAINMENT SPRAY SYSTEM. THE WATER CHEMISTRY OF THE SPRAY IS AS NOTED IN SECTION 3.11.5.1.2 OF THE FSAR. DURATION OF THE CONTAINMENT SPRAYS IS CONTROLLED ADMINISTRATIVELY, HOWEVER PLANT TECHNICAL SPECIFICATIONS SHALL STATE THAT THE SPRAYS SHALL BE TERMINATED AT A MAXIMUM OF 30 HOURS POST ACCIDENT. SPRAYS MAY BE TURNED ON AGAIN IF REQUIRED TO LIMIT CONTAINMENT AIRSPACE TEMPERATURE 185° F. REACTIVATION OF SPRAYS COULD BE REQUIRED ANY TIME DURING THE POSTULATED 180 DAY ACCIDENT.

8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.

9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

10. AREAS WITHIN THE ANNULUS WHICH ARE BELOW EL.598'-4" NEED NOT CONSIDER BETA RADIATION . THESE AREAS ARE SHIELDED WITH CONCRETE BY THE CONTAINMENT FIX AS SHOWN ON DWG E-015-012.

11. EQUIPMENT IS SUBJECT TO SUBMERGENCE BETWEEN ELEVATIONS 593'-6" AND 612'-6". FROTH AND SPRAY OCCUR FROM ELEVATIONS 612'-6" TO 623'-4". TIME DURATION IS 5 SECONDS.

12. PORTIONS OF ZONES CT-3 AND CT-4 DIRECTLY BELOW OPEN GRATING ON ZONES CT-7 AND CT-8 ELEVATIONS MAY BE SUBJECT TO RUN-OFF DRIPPING FROM CONTAINMENT SPRAYS.

13. ABOVE CONTAINMENT ELEVATION 730'-0" THE STRATIFIED TEMPERATURES FOLLOWING A RWCU LINE BREAK WILL BE 220° F FROM 0 TO 3 HOURS POST LOCA.

14. AS REACTOR POWER INCREASES, DOSE RATES AT THE DRYWELL PERSONNEL AIRLOCK SHIELD DOORS WILL INCREASE. IF ANY EQUIPMENT IS TO BE ADDED IN THE VICINITY OF THE SHIELD DOORS, CONSIDERATION SHOULD BE GIVEN TO THE INCREASED RADIATION LEVELS DUE TO STREAMING FROM OPEN SHIELD DOORS.

REFERENCE DRAWINGS:

B-022-001
B-022-020

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR CONTAINMENT BUILDING
FIGURE 3.11-21
(DWG. B-022-0021-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	BETA RADIATION MAX DOSE RATE RADS/HR	BETA RADIATION DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CT-3 (HARSH) HCU FLOOR											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8363 HRS 3485 HRS 336,616 HRS	104 80 91	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	NEGLIGIBLE	NEGLIGIBLE	(4) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	137	90 20	ATMOSPHERE ATMOSPHERE					(6)
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0 MIN 30 MIN 90 MIN 2 HRS 3 HRS 4 HRS 5 HRS 6 HRS 7 HRS 8 HRS 9 HRS 10 HRS 11 HRS 12 HRS 13 HRS 17 HRS	90.0 96.6 109.0 112.7 117.7 119.7 120.0 118.1 116.9 115.9 115.1 114.7 109.2 105.0 101.7 90.0	90 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	ATMOSPHERE 0.4 PSIG 1.1 PSIG 1.4 PSIG 1.7 PSIG 1.9 PSIG 1.9 PSIG 1.8 PSIG 1.7 PSIG 1.6 PSIG 1.6 PSIG 1.6 PSIG 1.2 PSIG 1.0 PSIG 0.8 PSIG 0.0 PSIG	2.1×10^{1}	2.5×10^{3}	NEGLIGIBLE	NEGLIGIBLE	
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							2.71×10^{5}			SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 SEC 3 SEC 10 SEC 30 SEC 100 SEC 1 HR 7 HR 18 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	104 100 150 150 150 135 140 135 133 120 95 95	90 100 100 100 100 100 100 100 100 100 100 100	1.0 5.3 5.8 6.8 5.8 5.8 6.5 6.4 6.2 2.5 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE AIR, SPRAY (11,12), SUBMERGENCE
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.62×10^{6}	7.49×10^{5} 3.21×10^{6} 7.32×10^{6} 2.66×10^{7} 3.50×10^{7} 3.98×10^{7}	2.46×10^{7}	5.81×10^{6} 1.46×10^{7} 2.69×10^{7} 7.15×10^{7} 9.53×10^{7} 1.17×10^{8}	(8)
ZONE CT-4 (HARSH) SLCS FLOOR											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8363 HRS 3485 HRS 336,616 HRS	104 80 91	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	NEGLIGIBLE	NEGLIGIBLE	(4) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	137	90 20	ATMOSPHERE ATMOSPHERE					(6)

ZONE CT-4 CONTINUED ON B-022-023

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", WHEN M-14 PURGE AND VENT SYSTEM OPERATING OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, DURING THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE, OR WHEN M-14 SYSTEM OPERATING THE PLANT HEATING SYSTEM ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. DELETED

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

7. THIS AREA IS SUBJECT TO WATER SPRAY FROM THE CONTAINMENT SPRAY SYSTEM. THE WATER CHEMISTRY OF THE SPRAY IS AS NOTED IN SECTION 3.11.5.1.2 OF THE FSAR. DURATION OF THE CONTAINMENT SPRAYS IS CONTROLLED ADMINISTRATIVELY, HOWEVER PLANT TECHNICAL SPECIFICATIONS SHALL STATE THAT THE SPRAYS SHALL BE TERMINATED AT A MAXIMUM OF 30 HOURS POST ACCIDENT. SPRAYS MAY BE TURNED ON AGAIN IF REQUIRED TO LIMIT CONTAINMENT AIRSPACE TEMPERATURE 185° F. REACTIVATION OF SPRAYS COULD BE REQUIRED ANY TIME DURING THE POSTULATED 180 DAY ACCIDENT.

8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.

9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

10. AREAS WITHIN THE ANNULUS WHICH ARE BELOW EL.598'-4" NEED NOT CONSIDER BETA RADIATION . THESE AREAS ARE SHIELDED WITH CONCRETE BY THE CONTAINMENT FIX AS SHOWN ON DWG E-015-012.

11. EQUIPMENT IS SUBJECT TO SUBMERGENCE BETWEEN ELEVATIONS 593'-6" AND 612'-6". FROTH AND SPRAY OCCUR FROM ELEVATIONS 612'-6" TO 623'-4". TIME DURATION IS 5 SECONDS.

12. PORTIONS OF ZONES CT-3 AND CT-4 DIRECTLY BELOW OPEN GRATING ON ZONES CT-7 AND CT-8 ELEVATIONS MAY BE SUBJECT TO RUN-OFF DRIPPING FROM CONTAINMENT SPRAYS.

13. ABOVE CONTAINMENT ELEVATION 730'-0" THE STRATIFIED TEMPERATURES FOLLOWING A RWCU LINE BREAK WILL BE 220° F FROM 0 TO 3 HOURS POST LOCA.

REFERENCE DRAWINGS:

B-022-001
B-022-023

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR CONTAINMENT BUILDING
FIGURE 3.11-22
(DWG. B-022-0022-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	BETA RADIATION MAX DOSE RATE RADS/HR	BETA RADIATION DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CT-4 (HARSH) SLCS FLOOR (CONTINUED FROM B-022-022)											
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0 MIN	90.0	90	ATMOSPHERE	2.1×10^{1}	2.5×10^{3}	NEGLIGIBLE	NEGLIGIBLE	
			30 MIN	96.6	100	0.4 PSIG					
			90 MIN	109.0	100	1.1 PSIG					
			2 HRS	112.7	100	1.4 PSIG					
			3 HRS	117.7	100	1.7 PSIG					
			4 HRS	119.7	100	1.9 PSIG					
			5 HRS	120.0	100	1.9 PSIG					
			6 HRS	118.1	100	1.8 PSIG					
			7 HRS	116.9	100	1.7 PSIG					
			8 HRS	115.9	100	1.6 PSIG					
			9 HRS	115.1	100	1.6 PSIG					
			10 HRS	114.7	100	1.6 PSIG					
			11 HRS	109.2	100	1.2 PSIG					
			12 HRS	105.0	100	1.0 PSIG					
			13 HRS	101.7	100	0.8 PSIG					
			17 HRS	90.0	100	0.0 PSIG					
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							2.71×10^{5}			SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES
ACCIDENT	LOCA INSIDE CONTAINMENT	1									ACCIDENT ENVIRONMENTAL MEDIUM
			0 SEC	104	90	1.0					AIR, SPRAY (12)
			3 SEC	100	100	5.3					AIR, SPRAY (12)
			10 SEC	150	100	5.8					AIR, SPRAY (12)
			30 SEC	150	100	6.8					AIR, SPRAY (12)
			100 SEC	150	100	5.8					AIR, SPRAY (12)
			1 HR	135	100	5.8					AIR, SPRAY (12)
			7 HR	140	100	6.5					AIR, SPRAY (12)
			18 HR	135	100	6.4					AIR, SPRAY (12)
			27.8 HR	133	100	6.2					AIR, SPRAY (12)
			11.6 DAYS	120	100	2.5					AIR, SPRAY (12)
			100 DAYS	95	100	0.0					AIR, SPRAY (12)
			180 DAYS	95	100	0.0					AIR, SPRAY (12)
ACCIDENT	LOCA INSIDE CONTAINMENT	1					1.62×10^{6}		2.46×10^{7}		(8)
			1 HR					7.49×10^{5}		5.81×10^{6}	
			6 HRS					3.21×10^{6}		1.46×10^{7}	
			24 HRS					7.32×10^{6}		2.69×10^{7}	
			30 DAYS					2.66×10^{7}		7.15×10^{7}	
			100 DAYS					3.50×10^{7}		9.53×10^{7}	
			180 DAYS					3.98×10^{7}		1.17×10^{8}	
ZONE CT-5 (HARSH) RWCU ROOMS											
NORMAL	NORMAL FULL POWER OPERATION	1					100	2.8×10^{7}	NEGLIGIBLE	NEGLIGIBLE	(4) (9)
MAX			8363 HRS	110	90	ATMOSPHERE					
MIN			3485 HRS	99	20	ATMOSPHERE					
AVERAGE			336,616 HRS	105	50	ATMOSPHERE					
ABNORMAL	LOSS OF HVAC	1	100 HRS								(6)
MAX				151	90	ATMOSPHERE					
MIN					20	ATMOSPHERE					
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0.0 MIN	90.0	90	ATMOSPHERE	2.1×10^{1}	2.5×10^{3}	NEGLIGIBLE	NEGLIGIBLE	
			30.0 MIN	96.6	100	0.4 PSIG					
			90 MIN	109.0	100	1.1 PSIG					
			2 HRS	112.7	100	1.4 PSIG					
			3 HRS	117.7	100	1.7 PSIG					
			4 HRS	119.7	100	1.9 PSIG					
			5 HRS	120.0	100	1.9 PSIG					
			6 HRS	118.1	100	1.8 PSIG					
			7 HRS	116.9	100	1.7 PSIG					
			8 HRS	115.9	100	1.6 PSIG					
			9 HRS	115.1	100	1.6 PSIG					
			10 HRS	114.7	100	1.6 PSIG					
			11 HRS	109.2	100	1.2 PSIG					
			12 HRS	105.0	100	1.0 PSIG					
			13 HRS	101.7	100	0.0 PSIG					
			17 HRS	90	100	0.0 PSIG					
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							2.8×10^{7}			2.8×10^{7} IS THE SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES

ZONE CT-5 CONTINUED ON B-022-024

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", WHEN M-14 PURGE AND VENT SYSTEM OPERATING OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, DURING THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE, OR WHEN M-14 SYSTEM OPERATING THE PLANT HEATING SYSTEM ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. DELETED
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. THIS AREA IS SUBJECT TO WATER SPRAY FROM THE CONTAINMENT SPRAY SYSTEM. THE WATER CHEMISTRY OF THE SPRAY IS AS NOTED IN SECTION 3.11.5.1.2 OF THE FSAR. DURATION OF THE CONTAINMENT SPRAYS IS CONTROLLED ADMINISTRATIVELY, HOWEVER PLANT TECHNICAL SPECIFICATIONS SHALL STATE THAT THE SPRAYS SHALL BE TERMINATED AT A MAXIMUM OF 30 HOURS POST ACCIDENT. SPRAYS MAY BE TURNED ON AGAIN IF REQUIRED TO LIMIT CONTAINMENT AIRSPACE TEMPERATURE 185° F. REACTIVATION OF SPRAYS COULD BE REQUIRED ANY TIME DURING THE POSTULATED 180 DAY ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. AREAS WITHIN THE ANNULUS WHICH ARE BELOW EL.598'-4" NEED NOT CONSIDER BETA RADIATION . THESE AREAS ARE SHIELDED WITH CONCRETE BY THE CONTAINMENT FIX AS SHOWN ON DWG E-015-012.
11. EQUIPMENT IS SUBJECT TO SUBMERGENCE BETWEEN ELEVATIONS 593'-6" AND 612'-6". FROTH AND SPRAY OCCUR FROM ELEVATIONS 612'-6" TO 623'-4". TIME DURATION IS 5 SECONDS.
12. PORTIONS OF ZONES CT-3 AND CT-4 DIRECTLY BELOW OPEN GRATING ON ZONES CT-7 AND CT-8 ELEVATIONS MAY BE SUBJECT TO RUN-OFF DRIPPING FROM CONTAINMENT SPRAYS.
13. ABOVE CONTAINMENT ELEVATION 730'-0" THE STRATIFIED TEMPERATURES FOLLOWING A RWCU LINE BREAK WILL BE 220° F FROM 0 TO 3 HOURS POST LOCA.

REFERENCE DRAWINGS:

B-022-001
B-022-022
B-022-024

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR CONTAINMENT BUILDING
FIGURE 3.11-23
(DWG. B-022-0023-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	BETA RADIATION MAX DOSE RATE RADS/HR	BETA RADIATION DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CT-5 (HARSH) RWCU ROOMS (CONTINUED FROM B-022-023)											
ACCIDENT	RWCU BREAK INSIDE CONTAINMENT	1	0 SEC 1.3 SEC 18.5 SEC 34 SEC 1.5 HR 2.5 HR 3.5 HR 5.0 HR 12.0 HR 24 HR 48 HR 180 DAYS	140 215 240 230 230 160 150 140 125 110 98 98	90 100 100 100 100 100 100 100 100 100 100 100	0.0 3.0 10.3 5.3 5.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM AIR AIR AIR AIR AIR AIR AIR
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.62×10^{6}	7.49×10^{5} 3.21×10^{6} 7.32×10^{6} 2.66×10^{7} 3.50×10^{7} 3.98×10^{7}	2.46×10^{7}	5.81×10^{6} 1.46×10^{7} 2.69×10^{7} 7.15×10^{7} 9.53×10^{7} 1.17×10^{8}	(8)
ZONE CT-6 (HARSH) STEAM TUNNEL INSIDE CONTAINMENT											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8363 HRS 3485 HRS 336,616 HRS	144 119 132	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	10.7	3.0×10^{6}	NEGLIGIBLE	NEGLIGIBLE	(4) (9) (14)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	137	90 20	ATMOSPHERE ATMOSPHERE					(6)
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0 MIN 30 MIN 90 MIN 2 HRS 3 HRS 4 HRS 5 HRS 6 HRS 7 HRS 8 HRS 9 HRS 10 HRS 11 HRS 12 HRS 13 HRS 17 HRS	90.0 96.6 109.0 112.7 117.7 119.7 120.0 118.1 116.9 115.9 115.1 114.7 109.2 105.0 101.7 90.0	90 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	ATMOSPHERE 0.4 PSIG 1.1 PSIG 1.4 PSIG 1.7 PSIG 1.9 PSIG 1.9 PSIG 1.8 PSIG 1.7 PSIG 1.6 PSIG 1.6 PSIG 1.6 PSIG 1.2 PSIG 1.0 PSIG 0.8 PSIG 0.0 PSIG	2.1×10^{1}	2.5×10^{3}			
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							3.3×10^{6}			3.3×10^{6} IS THE SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES
ACCIDENT	LOCA & RWCU LINE BREAK COMPOSITE	1	0 SEC 3 SEC 10 SEC 30 SEC 100 SEC 1 HR 7 HR 18 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	144 213 220 227 150 135 140 135 133 119 95 95		1.0 5.3 5.8 6.8 5.8 5.8 6.5 6.4 6.2 2.5 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM AIR AIR AIR AIR AIR AIR AIR AIR
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.62×10^{6}	7.49×10^{5} 3.21×10^{6} 7.32×10^{6} 2.66×10^{7} 3.50×10^{7} 3.98×10^{7}	2.46×10^{7}	5.81×10^{6} 1.46×10^{7} 2.69×10^{7} 7.15×10^{7} 9.53×10^{7} 1.17×10^{8}	(8)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", WHEN M-14 PURGE AND VENT SYSTEM OPERATING OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, DURING THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE, OR WHEN M-14 SYSTEM OPERATING THE PLANT HEATING SYSTEM ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. DELETED
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. THIS AREA IS SUBJECT TO WATER SPRAY FROM THE CONTAINMENT SPRAY SYSTEM. THE WATER CHEMISTRY OF THE SPRAY IS AS NOTED IN SECTION 3.11.5.1.2 OF THE FSAR. DURATION OF THE CONTAINMENT SPRAYS IS CONTROLLED ADMINISTRATIVELY, HOWEVER PLANT TECHNICAL SPECIFICATIONS SHALL STATE THAT THE SPRAYS SHALL BE TERMINATED AT A MAXIMUM OF 30 HOURS POST ACCIDENT. SPRAYS MAY BE TURNED ON AGAIN IF REQUIRED TO LIMIT CONTAINMENT AIRSPACE TEMPERATURE 185° F. REACTIVATION OF SPRAYS COULD BE REQUIRED ANY TIME DURING THE POSTULATED 180 DAY ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. AREAS WITHIN THE ANNULUS WHICH ARE BELOW EL.598'-4" NEED NOT CONSIDER BETA RADIATION . THESE AREAS ARE SHIELDED WITH CONCRETE BY THE CONTAINMENT FIX AS SHOWN ON DWG E-015-012.
11. EQUIPMENT IS SUBJECT TO SUBMERGENCE BETWEEN ELEVATIONS 593'-6" AND 612'-6". FROTH AND SPRAY OCCUR FROM ELEVATIONS 612'-6" TO 623'-4". TIME DURATION IS 5 SECONDS.
12. PORTIONS OF ZONES CT-3 AND CT-4 DIRECTLY BELOW OPEN GRATING ON ZONES CT-7 AND CT-8 ELEVATIONS MAY BE SUBJECT TO RUN-OFF DRIPPING FROM CONTAINMENT SPRAYS.
13. ABOVE CONTAINMENT ELEVATION 730'-0" THE STRATIFIED TEMPERATURES FOLLOWING A RWCU LINE BREAK WILL BE 220° F FROM 0 TO 3 HOURS POST LOCA.
14. THIS AREA, CT-6, IS SUBJECT TO THE POSSIBILITY OF SPRAY DURING NORMAL OPERATIONS DUE TO THE INSTALLATION OF RELIEF VALVES ON THE 4" PIPE INTO PENETRATION #424.

REFERENCE DRAWINGS:
B-022-001
B-022-023

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR CONTAINMENT BUILDING
FIGURE 3.11-24
(DWG. B-022-0024-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	BETA RADIATION MAX DOSE RATE RADS/HR	BETA RADIATION DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE CT-7 (HARSH) FLOOR ELEVATIONS 652'-0" THROUGH 670'-6"											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8363 HRS 3485 HRS 336,616 HRS	104 80 91	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	NEGLIGIBLE	NEGLIGIBLE	(4) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	137	90 20	ATMOSPHERE ATMOSPHERE					(6)
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0 MIN 30 MIN 90 MIN 2 HRS 3 HRS 4 HRS 5 HRS 6 HRS 7 HRS 8 HRS 9 HRS 10 HRS 11 HRS 12 HRS 13 HRS 17 HRS	90.0 96.6 109.0 112.7 117.7 119.7 120.0 118.1 116.9 115.9 115.1 114.7 109.2 105.0 101.7 90.0	90 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	ATMOSPHERE 0.4 PSIG 1.1 PSIG 1.4 PSIG 1.7 PSIG 1.9 PSIG 1.9 PSIG 1.8 PSIG 1.7 PSIG 1.6 PSIG 1.6 PSIG 1.6 PSIG 1.2 PSIG 1.0 PSIG 0.8 PSIG 0.0 PSIG	2.1×10^{1}	2.5×10^{3}	NEGLIGIBLE	NEGLIGIBLE	
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							2.71×10^{5}			SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 SEC 3 SEC 10 SEC 30 SEC 100 SEC 1 HR 7 HR 18 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	104 100 150 150 150 135 140 135 133 120 95 95	90 100 100 100 100 100 100 100 100 100 100 100	1.0 5.3 5.8 6.8 5.8 5.8 6.5 6.4 6.2 2.5 0.0 0.0					(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.62×10^{6}	7.49×10^{5} 3.21×10^{6} 7.32×10^{6} 2.66×10^{7} 3.50×10^{7} 3.98×10^{7}	2.46×10^{7}	5.81×10^{6} 1.46×10^{7} 2.69×10^{7} 7.15×10^{7} 9.53×10^{7} 1.17×10^{8}	(8)
ZONE CT-8 (HARSH) FLOOR ELEVATIONS 652'-0" THROUGH 670'-6"											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8363 HRS 3485 HRS 336,616 HRS	104 80 91	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	NEGLIGIBLE	NEGLIGIBLE	(4) (9)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	137	90 20	ATMOSPHERE ATMOSPHERE					(6)
ABNORMAL	SAFETY RELIEF VALVE DISCHARGE	108	0 MIN 30 MIN 90 MIN 2 HRS 3 HRS 4 HRS 5 HRS 6 HRS 7 HRS 8 HRS 9 HRS 10 HRS 11 HRS 12 HRS 13 HRS 17 HRS	90.0 96.6 109.0 112.7 117.7 119.7 120.0 118.1 116.9 115.9 115.1 114.7 109.2 105.0 101.7 90.0	90 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	ATMOSPHERE 0.4 PSIG 1.1 PSIG 1.4 PSIG 1.7 PSIG 1.9 PSIG 1.9 PSIG 1.8 PSIG 1.7 PSIG 1.6 PSIG 1.6 PSIG 1.6 PSIG 1.2 PSIG 1.0 PSIG 0.8 PSIG 0.0 PSIG	2.1×10^{1}	2.5×10^{3}	NEGLIGIBLE	NEGLIGIBLE	

ZONE CT-8 CONTINUED ON B-022-026

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   A. NORMAL FULL POWER OPERATION
   B. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   C. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   D. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   E. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", WHEN M-14 PURGE AND VENT SYSTEM OPERATING OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, DURING THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE, OR WHEN M-14 SYSTEM OPERATING THE PLANT HEATING SYSTEM ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. DELETED
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. THIS AREA IS SUBJECT TO WATER SPRAY FROM THE CONTAINMENT SPRAY SYSTEM. THE WATER CHEMISTRY OF THE SPRAY IS AS NOTED IN SECTION 3.11.5.1.2 OF THE FSAR. DURATION OF THE CONTAINMENT SPRAYS IS CONTROLLED ADMINISTRATIVELY, HOWEVER PLANT TECHNICAL SPECIFICATIONS SHALL STATE THAT THE SPRAYS SHALL BE TERMINATED AT A MAXIMUM OF 30 HOURS POST ACCIDENT. SPRAYS MAY BE TURNED ON AGAIN IF REQUIRED TO LIMIT CONTAINMENT AIRSPACE TEMPERATURE 185° F. REACTIVATION OF SPRAYS COULD BE REQUIRED ANY TIME DURING THE POSTULATED 180 DAY ACCIDENT.
8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
10. AREAS WITHIN THE ANNULUS WHICH ARE BELOW EL.598'-4" NEED NOT CONSIDER BETA RADIATION . THESE AREAS ARE SHIELDED WITH CONCRETE BY THE CONTAINMENT FIX AS SHOWN ON DWG E-015-012.
11. EQUIPMENT IS SUBJECT TO SUBMERGENCE BETWEEN ELEVATIONS 593'-6" AND 612'-6". FROTH AND SPRAY OCCUR FROM ELEVATIONS 612'-6" TO 623'-4". TIME DURATION IS 5 SECONDS.
12. PORTIONS OF ZONES CT-3 AND CT-4 DIRECTLY BELOW OPEN GRATING ON ZONES CT-7 AND CT-8 ELEVATIONS MAY BE SUBJECT TO RUN-OFF DRIPPING FROM CONTAINMENT SPRAYS.
13. ABOVE CONTAINMENT ELEVATION 730'-0" THE STRATIFIED TEMPERATURES FOLLOWING A RWCU LINE BREAK WILL BE 220° F FROM 0 TO 3 HOURS POST LOCA.

REFERENCE DRAWINGS:

B-022-001
B-022-026

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR CONTAINMENT BUILDING
FIGURE 3.11-25
(DWG. B-022-0025-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3)		BETA RADIATION		SUPPLEMENTARY DATA
							MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	
ZONE CT-8 (HARSH) FLOOR ELEVATIONS 652'-0" THROUGH 670'-6" (CONTINUED FROM B-022-025)											
ABNORMAL	TOTAL NON-ACCIDENT INTEGRATED DOSE							2.71×10^{5}			SUM OF SRVD TRANSIENTS PLUS NORMAL PLANT OPERATION RADIATION DOSES
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 SEC 3 SEC 10 SEC 30 SEC 100 SEC 1 HR 7 HR 18 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	104 100 150 150 150 135 140 135 133 120 95 95	90 100 100 100 100 100 100 100 100 100 100 100	1.0 5.3 5.8 6.8 5.8 5.8 6.5 6.4 6.2 2.5 0.0 0.0					(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				1.62×10^{6}	7.49×10^{5} 3.21×10^{6} 7.32×10^{6} 2.66×10^{7} 3.50×10^{7} 3.98×10^{7}	2.46×10^{7}	5.81×10^{6} 1.46×10^{7} 2.69×10^{7} 7.15×10^{7} 9.53×10^{7} 1.17×10^{8}	(8)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE "PLANT OFF", WHEN M-14 PURGE AND VENT SYSTEM OPERATING OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, DURING THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE, OR WHEN M-14 SYSTEM OPERATING THE PLANT HEATING SYSTEM ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. DELETED

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

7. THIS AREA IS SUBJECT TO WATER SPRAY FROM THE CONTAINMENT SPRAY SYSTEM. THE WATER CHEMISTRY OF THE SPRAY IS AS NOTED IN SECTION 3.11.5.1.2 OF THE FSAR. DURATION OF THE CONTAINMENT SPRAYS IS CONTROLLED ADMINISTRATIVELY, HOWEVER PLANT TECHNICAL SPECIFICATIONS SHALL STATE THAT THE SPRAYS SHALL BE TERMINATED AT A MAXIMUM OF 30 HOURS POST ACCIDENT. SPRAYS MAY BE TURNED ON AGAIN IF REQUIRED TO LIMIT CONTAINMENT AIRSPACE TEMPERATURE 185° F. REACTIVATION OF SPRAYS COULD BE REQUIRED ANY TIME DURING THE POSTULATED 180 DAY ACCIDENT.

8. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.

9. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

10. AREAS WITHIN THE ANNULUS WHICH ARE BELOW EL.598'-4" NEED NOT CONSIDER BETA RADIATION. THESE AREAS ARE SHIELDED WITH CONCRETE BY THE CONTAINMENT FIX AS SHOWN ON DWG E-015-012.

11. EQUIPMENT IS SUBJECT TO SUBMERGENCE BETWEEN ELEVATIONS 593'-6" AND 612'-6". FROTH AND SPRAY OCCUR FROM ELEVATIONS 612'-6" TO 623'-4". TIME DURATION IS 5 SECONDS.

12. PORTIONS OF ZONES CT-3 AND CT-4 DIRECTLY BELOW OPEN GRATING ON ZONES CT-7 AND CT-8 ELEVATIONS MAY BE SUBJECT TO RUN-OFF DRIPPING FROM CONTAINMENT SPRAYS.

13. ABOVE CONTAINMENT ELEVATION 730'-0" THE STRATIFIED TEMPERATURES FOLLOWING A RWCU LINE BREAK WILL BE 220° F FROM 0 TO 3 HOURS POST LOCA.

REFERENCE DRAWINGS:

B-022-001
B-022-025

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR CONTAINMENT BUILDING
FIGURE 3.11-26
(DWG. B-022-0026-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE DG-1 (MILD) GENERAL AREAS - DIV. 1 / 2 DG BAYS									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8398 HRS 3499 HRS 338,023 HRS	 109 60 90	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.8×10^{2}	(4) (5) (8) (9)
NORMAL MAX MIN	TESTING	480	1 HR	 122 109	 90 20	 ATMOSPHERE ATMOSPHERE			
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	 122	 90 20	 ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 HR 15 MIN 180 DAYS	109 122 122	90 max 20 min	ATMOSPHERE ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

ZONE DG-2 (MILD) GENERAL AREAS - HPCS DG BAY

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8398 HRS 3499 HRS 338,023 HRS	 102 60 95	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.8×10^{2}	(4) (5) (8) (9)
NORMAL MAX MIN	TESTING	480	1 HR	 106 102	 90 20	 ATMOSPHERE ATMOSPHERE			
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	 106	 90 20	 ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 HR 15 MIN 180 DAYS	102 106 106	90 max 20 min	ATMOSPHERE ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   A. NORMAL FULL POWER OPERATION
   B. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   C. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   D. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   E. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER (LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL OPERATING CONDITION MAXIMUM TEMPERATURE.

7. ACCIDENT TEMPERATURES ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.

8. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

9. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:
B-022-0001-00000

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR DIESEL GENERATOR AREAS
FIGURE 3.11-27
(DWG. B-022-0027-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	BETA RADIATION MAX DOSE RATE RADS/HR	BETA RADIATION DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE DW-1 (HARSH) DRYWELL OUTSIDE RPV SHIELD WALL (NOT AT CORE MIDPLANE)											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8400 HRS 3500 HRS 338,100 HRS	145 122 134	90 20 50	0.0 PSIG -.1" WG	1.0×10^{2}	2.8×10^{7}	NEGLIGIBLE	NEGLIGIBLE	(4) (5) (10) (16)
ABNORMAL MAX MIN	SCRAM	600	30 MIN	148	90 20	0.0 PSIG -.1" WG					(16)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	149	90 20	0.0 PSIG -.1" WG					(6) (16)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (LARGE LINE BREAK)	1	0.0 SEC 0.8 SEC 6.0 SEC 6.1 SEC 25 SEC 30 SEC 100 SEC 9.7 MIN 10 MIN 30 MIN 38 MIN 5.6 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	145 329 329 329 329 329 320 265 265 260 260 250 250 129 100 100	90 STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM 100 100 100	1.0 23.5 23.5 16.6 15.3 13.6 9.1 9.1 10.8 10.8 12.8 14.3 13.6 9.2 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM SPRAY,SUBMERGENCE IMPACT, AND DRAG DURING NEGATIVE PRESSURE TRANSIENT ABOVE WEIR (7) (8)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (SMALL LINE BREAK)	1	0 SEC 45 SEC 3 HRS 6 HRS 30 HRS 2 DAYS 100 DAYS	145 330 330 310 250 238 90	90 STEAM STEAM STEAM STEAM STEAM 100	0.0 PSIG 15 PSIG 15 PSIG 14 PSIG 10 PSIG 9 PSIG 0.0 PSIG					
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				9.84×10^{6}	2.87×10^{6} 1.37×10^{7} 2.93×10^{7} 6.06×10^{7} 6.96×10^{7} 7.51×10^{7}	1.30×10^{8}	2.80×10^{7} 6.83×10^{7} 1.24×10^{8} 1.93×10^{8} 2.15×10^{8} 2.35×10^{8}	(9)
ZONE DW-2 (HARSH) DRYWELL OUTSIDE RPV SHIELD WALL (AT CORE MIDPLANE)											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8400 HRS 3500 HRS 338,100 HRS	145 122 134	90 20 50	0.0 PSIG -.1" WG	1.6×10^{2}	4.5×10^{7}	NEGLIGIBLE	NEGLIGIBLE	(4) (10) (13)
ABNORMAL MAX MIN	SCRAM	600	30 MIN	148	90 20	0.0 PSIG -.1" WG					
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	149	90 20	0.0 PSIG -.1" WG					(6)

ZONE DW-2 CONTINUED ON B-022-031

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. NEUTRON FLUENCE IS 1.11×10^{6} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.12×10^{15} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.

6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

7. EQUIPMENT LOCATED IN ZONE DW-1 IS SUBJECT TO WEIR SWELL SUBMERGENCE EFFECTS FROM ELEVATION 599'-0" TO ELEVATIONS 613'-0". ADDITIONALLY, WEIR SWELL SUBMERGENCE WILL OCCUR BELOW ELEVATION 599'-0" IN THE REGION OF ZONE DW-1 OUTSIDE THE WEIR WALL BUT STILL WITHIN THE DRYWELL. THE TOTAL DURATION OF THE WEIR SWELL EVENT IS 5 SECONDS.

8. ALTHOUGH NOT SHOWN HERE, THE COMPOSITE PRESSURE ENVELOPE INCLUDES A PRESSURE DECAY AT A RATE OF 20 PSI PER SECOND TO -14 PSIG. THE PRESSURE REMAINS AT -14 PSIG FOR 2 SECONDS AND THEN INCREASES AT 4.5 PSI PER SECOND. THE TOTAL TIME PRESSURE REMAINS BELOW 0 PSIG IS 7 SECONDS.

9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.

10. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

11. DW-2 IS NOT AFFECTED BY WEIR SWELL.

12. FOLLOWING A LOCA, THE ENTIRE AREA WITHIN THE DRYWELL BELOW ELEVATION 599'-0" SHOULD BE ASSUMED TO BE FLOODED.

13. NEUTRON FLUENCE IS 2.02×10^{6} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX. DOSE RATE AND 2.02×10^{15} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.

14. NEUTRON FLUENCE IS 1.12×10^{5} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.12×10^{14} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.

15. NEUTRON FLUENCE IS 1.23×10^{6} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.23×10^{15} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.

16. LOCALIZED HOT SPOTS EXIST IN AREAS OF THIS ZONE (REFERENCE CR 89-0118). REFER TO TAF 81620 FOR ADDITIONAL INFORMATION.

REFERENCE DRAWINGS: B-022-001
B-022-031

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR DRYWELL AREA
FIGURE 3.11-28
(DWG. B-022-0030-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	BETA RADIATION MAX DOSE RATE RADS/HR	BETA RADIATION DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE DW-2 (HARSH) DRYWELL OUTSIDE RPV SHIELD WALL AT CORE MIDPOINT (CONTINUED FROM B-022-030)											
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (LARGE LINE BREAK)	1	0.0 SEC 0.8 SEC 6.0 SEC 6.1 SEC 25 SEC 30 SEC 100 SEC 9.7 MIN 10 MIN 30 MIN 38 MIN 5.6 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	145 329 329 329 329 329 320 265 265 260 260 250 250 129 100 100	90 STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM 100 100 100	1.0 23.5 23.5 16.6 15.3 13.6 9.1 9.1 10.8 10.8 12.8 14.3 13.6 9.2 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM STEAM & AIR ONLY (11) (8)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (SMALL LINE BREAK)	1	0 SEC 45 SEC 3 HRS 6 HRS 30 HRS 2 DAYS 100 DAYS	145 330 330 310 250 238 90	90 STEAM STEAM STEAM STEAM STEAM 100	0.0 PSIG 15 PSIG 15 PSIG 14 PSIG 10 PSIG 9 PSIG 0.0 PSIG					
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				9.84×10^{6}	2.87×10^{6} 1.37×10^{7} 2.93×10^{7} 6.06×10^{7} 6.96×10^{7} 7.51×10^{7}	1.30×10^{8}	2.80×10^{7} 6.83×10^{7} 1.24×10^{8} 1.93×10^{8} 2.15×10^{8} 2.35×10^{8}	(9)
ZONE DW-3 (HARSH) DRYWELL UNDER PRESSURE VESSEL											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8402 HRS 3501 HRS 338,197 HRS	127 80 127	90 20 50	0.0 PSIG -.1" WG	7.0×10^{0}	2.0×10^{6}	NEGLIGIBLE	NEGLIGIBLE	(4) (10) (14)
ABNORMAL MAX MIN	SCRAM	600	30 MIN	141	90 20	0.0 PSIG -.1" WG					
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (LARGE LINE BREAK)	1	0.0 SEC 0.8 SEC 6.0 SEC 6.1 SEC 25 SEC 30 SEC 100 SEC 9.7 MIN 10 MIN 30 MIN 38 MIN 5.6 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	145 329 329 329 329 329 320 265 265 260 260 250 250 129 100 100	90 STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM 100 100 100	1.0 23.5 23.5 16.6 15.3 13.6 9.1 9.1 10.8 10.8 12.8 14.3 13.6 9.2 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM INCLUDES AIR,STEAM, AND FLOODING (8) (12)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (SMALL LINE BREAK)	1	0 SEC 45 SEC 3 HRS 6 HRS 30 HRS 2 DAYS 100 DAYS 180 DAYS	145 330 330 310 250 238 90 90	90 STEAM STEAM STEAM STEAM STEAM 100 100	0.0 PSIG 15 PSIG 15 PSIG 14 PSIG 10 PSIG 9 PSIG 0.0 PSIG 0.0 PSIG					
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				9.84×10^{6}	2.87×10^{6} 1.37×10^{7} 2.93×10^{7} 6.06×10^{7} 6.96×10^{7} 7.51×10^{7}	1.30×10^{8}	2.80×10^{7} 6.83×10^{7} 1.24×10^{8} 1.93×10^{8} 2.15×10^{8} 2.35×10^{8}	(9)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. NEUTRON FLUENCE IS 1.11×10^{6} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.12×10^{15} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. EQUIPMENT LOCATED IN ZONE DW-1 IS SUBJECT TO WEIR SWELL SUBMERGENCE EFFECTS FROM ELEVATION 599'-0" TO ELEVATIONS 613'-0". ADDITIONALLY, WEIR SWELL SUBMERGENCE WILL OCCUR BELOW ELEVATION 599'-0" IN THE REGION OF ZONE DW-1 OUTSIDE THE WEIR WALL BUT STILL WITHIN THE DRYWELL. THE TOTAL DURATION OF THE WEIR SWELL EVENT IS 5 SECONDS.
8. ALTHOUGH NOT SHOWN HERE, THE COMPOSITE PRESSURE ENVELOPE INCLUDES A PRESSURE DECAY AT A RATE OF 20 PSI PER SECOND TO -14 PSIG. THE PRESSURE REMAINS AT -14 PSIG FOR 2 SECONDS AND THEN INCREASES AT 4.5 PSI PER SECOND. THE TOTAL TIME PRESSURE REMAINS BELOW 0 PSIG IS 7 SECONDS.
9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
10. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
11. DW-2 IS NOT AFFECTED BY WEIR SWELL.
12. FOLLOWING A LOCA, THE ENTIRE AREA WITHIN THE DRYWELL BELOW ELEVATION 599'-0" SHOULD BE ASSUMED TO BE FLOODED.
13. NEUTRON FLUENCE IS 2.02×10^{6} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX. DOSE RATE AND 2.02×10^{15} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.
14. NEUTRON FLUENCE IS 1.12×10^{5} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.12×10^{14} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.
15. NEUTRON FLUENCE IS 1.23×10^{6} NTN/CM^{2}/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.23×10^{15} NTN/CM^{2} FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.

REFERENCE DRAWINGS: B-022-001
B-022-030

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR DRYWELL AREA
FIGURE 3.11-29
(DWG. B-022-0031-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3)		BETA RADIATION		SUPPLEMENTARY DATA
							MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	
ZONE DW-4 (HARSH) DRYWELL DOME											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	145 130 134	90 20 50	0.0 PSIG -.1" WG	1.0×10^{2}	2.8×10^{7}	NEGLIGIBLE	NEGLIGIBLE	(4) (10) (15)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (LARGE LINE BREAK)	1	0.0 SEC 0.8 SEC 6.0 SEC 6.1 SEC 25 SEC 30 SEC 100 SEC 9.7 MIN 10 MIN 30 MIN 38 MIN 5.6 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	145 329 329 329 329 329 320 265 265 260 260 250 250 129 100 100	90 STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM 100 100 100	1.0 23.5 23.5 16.6 15.3 13.6 9.1 9.1 10.8 10.8 12.8 14.3 13.6 9.2 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM INCLUDES STEAM & AIR ONLY (8)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (SMALL LINE BREAK)	1	0 SEC 45 SEC 3 HRS 6 HRS 30 HRS 2 DAYS 100 DAYS 180 DAYS	145 330 330 310 250 238 90 90	90 STEAM STEAM STEAM STEAM STEAM 100 100	0.0 PSIG 15 PSIG 15 PSIG 14 PSIG 10 PSIG 9 PSIG 0.0 PSIG 0.0 PSIG					
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				9.84×10^{6}	2.87×10^{6} 1.37×10^{7} 2.93×10^{7} 6.06×10^{7} 6.96×10^{7} 7.51×10^{7}	1.30×10^{8}	2.80×10^{7} 6.83×10^{7} 1.24×10^{8} 1.93×10^{8} 2.15×10^{8} 2.35×10^{8}	(9)
ZONE DW-5 (HARSH) REACTOR PRESSURE VESSEL SKIRT											
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	120 80 119	90 20 50	0.0 PSIG -.1" WG	1.0×10^{2}	2.8×10^{7}	NEGLIGIBLE	NEGLIGIBLE	(4) (10) (15)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (LARGE LINE BREAK)	1	0.0 SEC 0.8 SEC 6.0 SEC 6.1 SEC 25 SEC 30 SEC 100 SEC 9.7 MIN 10 MIN 30 MIN 38 MIN 5.6 HR 27.8 HR 11.6 DAYS 100 DAYS 180 DAYS	145 329 329 329 329 329 320 265 265 260 260 250 250 129 100 100	90 STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM 100 100 100	1.0 23.5 23.5 16.6 15.3 13.6 9.1 9.1 10.8 10.8 12.8 14.3 13.6 9.2 0.0 0.0					ACCIDENT ENVIRONMENTAL MEDIUM INCLUDES STEAM & AIR ONLY (8)
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL (SMALL LINE BREAK)	1	0 SEC 45 SEC 3 HRS 6 HRS 30 HRS 2 DAYS 100 DAYS 180 DAYS	145 330 330 310 250 238 90 90	90 STEAM STEAM STEAM STEAM STEAM 100 100	0.0 PSIG 15 PSIG 15 PSIG 14 PSIG 10 PSIG 9 PSIG 0.0 PSIG 0.0 PSIG					
ACCIDENT	LOCA INSIDE CONTAINMENT DRYWELL	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				9.84×10^{6}	2.87×10^{6} 1.37×10^{7} 2.93×10^{7} 6.06×10^{7} 6.96×10^{7} 7.51×10^{7}	1.30×10^{8}	2.80×10^{7} 6.83×10^{7} 1.24×10^{8} 1.93×10^{8} 2.15×10^{8} 2.35×10^{8}	(9)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. NEUTRON FLUENCE IS 1.11×10^{6} NTN/CM^2/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.12×10^{15} NTN/CM^2 FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. EQUIPMENT LOCATED IN ZONE DW-1 IS SUBJECT TO WEIR SWELL SUBMERGENCE EFFECTS FROM ELEVATION 599'-0" TO ELEVATIONS 613'-0". ADDITIONALLY, WEIR SWELL SUBMERGENCE WILL OCCUR BELOW ELEVATION 599'-0" IN THE REGION OF ZONE DW-1 OUTSIDE THE WEIR WALL BUT STILL WITHIN THE DRYWELL. THE TOTAL DURATION OF THE WEIR SWELL EVENT IS 5 SECONDS.
8. ALTHOUGH NOT SHOWN HERE, THE COMPOSITE PRESSURE ENVELOPE INCLUDES A PRESSURE DECAY AT A RATE OF 20 PSI PER SECOND TO -14 PSIG. THE PRESSURE REMAINS AT -14 PSIG FOR 2 SECONDS AND THEN INCREASES AT 4.5 PSI PER SECOND. THE TOTAL TIME PRESSURE REMAINS BELOW 0 PSIG IS 7 SECONDS.
9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
10. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
11. DW-2 IS NOT AFFECTED BY WEIR SWELL.
12. FOLLOWING A LOCA, THE ENTIRE AREA WITHIN THE DRYWELL BELOW ELEVATION 599'-0" SHOULD BE ASSUMED TO BE FLOODED.
13. NEUTRON FLUENCE IS 2.02×10^{6} NTN/CM^2/SEC FOR NORMAL OPERATION MAX. DOSE RATE AND 2.02×10^{15} NTN/CM^2 FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.
14. NEUTRON FLUENCE IS 1.12×10^{5} NTN/CM^2/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.12×10^{14} NTN/CM^2 FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.
15. NEUTRON FLUENCE IS 1.23×10^{6} NTN/CM^2/SEC FOR NORMAL OPERATION MAX DOSE RATE AND 1.23×10^{15} NTN/CM^2 FOR NORMAL 40 YEAR PLANT OPERATION INTEGRATED DOSE.

REFERENCE DRAWINGS: B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR DRYWELL AREA
FIGURE 3.11-30
(DWG. B-022-0032-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE ESW (MILD) EMERGENCY SERVICE WATER PUMPHOUSE									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 6463 HRS 2693 HRS 260,124 HRS	 99 60 81	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	5.0×10^{-4}	1.8×10^{2}	(4) (5) (8)
NORMAL MAX MIN	SHUTDOWN	111	234 HRS	 104 99	 90 20	ATMOSPHERE ATMOSPHERE ATMOSPHERE			(6)
NORMAL MAX MIN	CONTINUATION OF SHUTDOWN	40	720 HRS	 104 99	 90 20	 ATMOSPHERE ATMOSPHERE			(6)
NORMAL MAX MIN	HOT STANDBY	220	120 HRS	 104 99	 90 20	 ATMOSPHERE ATMOSPHERE			(6)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 HR 1 HR 180 DAYS	99 104 104	90 max 20 min	ATMOSPHERE ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE EMERGENCY SERVICE WATER SYSTEM SHUTDOWN CONDITION. THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 40° F.

5. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.

6. THIS OPERATING MODE IS CONSIDERED PART OF NORMAL PLANT OPERATION. IT IS SHOWN SEPARATELY HERE BECAUSE IT REPRESENTS A SIGNIFICANT TRANSIENT ABOVE THE NORMAL AVERAGE TEMPERATURE.

7. ACCIDENT TEMPERATURES ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.

8. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

REFERENCE DRAWINGS: B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR EMERGENCY SERVICE WATER PUMPHOUSE
FIGURE 3.11-31
(DWG. B-022-0035-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE FB-1 (MILD) INTERMEDIATE BLDG: FUEL POOL PUMP AREA (ELEVATION 574'-10", 599'-0")									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	127 96 113	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	125	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		133 121	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				4.9×10^{1}	4.0×10^{1} 2.43×10^{2} 3.86×10^{2} 5.59×10^{2} 9.50×10^{2} 1.03×10^{3}	
ZONE FB-2 (MILD) FUEL HANDLING AREA OPERATING FLOOR									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	102 51 74	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	107	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		108 94	90 max 20 min	ATMOSPHERE ATMOSPHERE ATMOSPHERE			(8)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				6.0×10^{1}	4.0×10^{1} 2.43×10^{2} 3.86×10^{2} 5.59×10^{2} 9.50×10^{2} 1.03×10^{3}	(11)
ZONE FB-3-574 (HARSH) FUEL HANDLING AREA AT 574'-10" ELEVATION									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	115 89 95	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	115	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		108 91	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8) (9)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				6.0×10^{1}	4.0×10^{1} 2.43×10^{2} 3.86×10^{2} 5.59×10^{2} 9.50×10^{2} 1.03×10^{3}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. DELETED

6. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.

7. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITON MAXIMUM TEMPERATURE.

8. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.

9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.

10. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

11. DURING A SEISMIC EVENT, SLOSHING OF WATER WITHIN THE FUEL POOL WALLS WILL CAUSE LOCALIZED WETTING/SPRAY. THE PREDICTED SLOSH HEIGHT IS 8.74 FEET ABOVE THE NORMAL POOL WATER SURFACE OF 619'-6". FLOODING IN THE POOL AREA IS ANTICIPATED SINCE ONLY 1 FOOT OF FREEBOARD IS PROVIDED BY THE FUEL POOL WALLS, WITH TOP OF WALL ELEVATION AT 620'-6". SPRAY UP TO ELEVATION 628'-3" ABOVE THE POOL IS ANTICIPATED.

12. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR INTERMEDIATE BUILDING
FIGURE 3.11-32 (SHEET 1 OF 2)
(DWG. B-022-0040-00001)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE FB-3-N (HARSH) FUEL HANDLING AREA-NORTHERN HALF AT 599'-0" ELEVATION									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8407 HRS 3503 HRS 338,390 HRS	 102 65 80	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	123	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		124 114	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8) (9)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				6.0×10^{1}	4.0×10^{1} 2.43×10^{2} 3.86×10^{2} 5.59×10^{2} 9.50×10^{2} 1.03×10^{3}	
ZONE FB-3-S (HARSH) FUEL HANDLING AREA-SOUTHERN HALF AT 599'-0" ELEVATION									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8407 HRS 3503 HRS 338,390 HRS	 108 78 86	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	120	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		121 107	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8) (9)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				6.0×10^{1}	4.0×10^{1} 2.43×10^{2} 3.86×10^{2} 5.59×10^{2} 9.50×10^{2} 1.03×10^{3}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. DELETED
6. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
7. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITON MAXIMUM TEMPERATURE.
8. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
10. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
11. DURING A SEISMIC EVENT, SLOSHING OF WATER WITHIN THE FUEL POOL WALLS WILL CAUSE LOCALIZED WETTING/SPRAY. THE PREDICTED SLOSH HEIGHT IS 8.74 FEET ABOVE THE NORMAL POOL WATER SURFACE OF 619'-6". FLOODING IN THE POOL AREA IS ANTICIPATED SINCE ONLY 1 FOOT OF FREEBOARD IS PROVIDED BY THE FUEL POOL WALLS, WITH TOP OF WALL ELEVATION AT 620'-6". SPRAY UP TO ELEVATION 628'-3" ABOVE THE POOL IS ANTICIPATED.
12. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR INTERMEDIATE BUILDING
FIGURE 3.11-32 (SHEET 2 OF 2)
(DWG. B-022-0040-00002)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE FB-4 (MILD) HVAC EQUIPMENT AREA									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	116 60 94	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (10) (12) (13)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	130	90 20	ATMOSPHERE ATMOSPHERE			(6) (7) (13)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		133 123	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8) (13)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				3.65×10^{1}	4.10×10^{1} 2.53×10^{2} 4.19×10^{2} 6.08×10^{2} 6.22×10^{2} 6.34×10^{2}	
ZONE FB-5 (MILD) ELECTRICAL PENETRATION AREA									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8409 HRS 3504 HRS 338,486 HRS	118 83 98	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (6) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	130	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		135 122	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				3.65×10^{1}	4.10×10^{1} 2.53×10^{2} 4.19×10^{2} 6.08×10^{2} 6.22×10^{2} 6.34×10^{2}	
ZONE FB-6 (HARSH) PIPE CHASE, ELEVATIONS 585'-0"									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	122 114 116	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.7×10^{1}	9.4×10^{6}	(4) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	125	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		119 115	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				8.4×10^{3}	6.51×10^{3} 2.63×10^{4} 6.69×10^{4} 5.43×10^{5} 1.01×10^{6} 1.48×10^{6}	(9)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. DELETED

6. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.

7. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.

8. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.

9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.

10. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

11. DURING A SEISMIC EVENT, SLOSHING OF WATER WITHIN THE FUEL POOL WALLS WILL CAUSE LOCALIZED WETTING/SPRAY. THE PREDICTED SLOSH HEIGHT IS 8.74 FEET ABOVE THE NORMAL POOL WATER SURFACE OF 619'-6". FLOODING IN THE POOL AREA IS ANTICIPATED SINCE ONLY 1 FOOT OF FREEBOARD IS PROVIDED BY THE FUEL POOL WALLS, WITH TOP OF WALL ELEVATION AT 620'-6". SPRAY UP TO ELEVATION 628'-3" ABOVE THE POOL IS ANTICIPATED.

12. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

13. PER ECP 14-0564, CALCULATION ECA-007 WAS UPDATED TO GENERATE NEW OPERATING CONDITION TEMPERATURES FOR ROOM IB-620-10 DUE TO THE NEW ROOM CONFIGURATION. THIS ROOM WAS PREVIOUSLY CLASSIFIED AS ZONE FB-7, BUT IS NOW CLASSIFIED AS ZONE FB-4. THESE NEW OPERATING CONDITION TEMPERATURES CAN BE SEEN IN CALCULATION ECA-007. THE TEMPERATURES IDENTIFIED IN THIS CALCULATION WILL NOT AFFECT THE CURRENT OPERATING CONDITION TEMPERATURES OF ZONE FB-4. ROOM IB-620-8 IS ALSO CLASSIFIED AS ZONE FB-4. THE TEMPERATURES IN THIS ROOM WILL BE THE SAME AS THE TEMPERATURES OF ZONE FB-4 DURING ALL PLANT OPERATING CONDITIONS.

REFERENCE DRAWINGS:

B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR INTERMEDIATE BUILDING
FIGURE 3.11-33
(DWG. B-022-0041-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE FB-7 (HARSH) ANNULUS EXHAUST GAS TREATMENT AREA									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	124 90 103	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	142	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		144 135	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				4.9×10^{3}	4.69×10^{3} 2.62×10^{4} 9.36×10^{4} 7.52×10^{5} 8.17×10^{5} 8.29×10^{5}	(9)
ZONE FB-8 (HARSH) FUEL HANDLING AREA EXHAUST FILTER AREA									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	114 60 86	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-2}	8.8×10^{3}	(4) (10) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	119	90 20	ATMOSPHERE ATMOSPHERE			(6) (7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		120 103	90 max 20 min	ATMOSPHERE ATMOSPHERE			(8)
ACCIDENT	FUEL HANDLING ACCIDENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				3.66×10^{2}	4.03×10^{2} 2.42×10^{3} 9.66×10^{3} 9.66×10^{4} 1.00×10^{5} 1.00×10^{5}	(9)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. DELETED
6. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS.
7. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
8. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
10. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
11. DURING A SEISMIC EVENT, SLOSHING OF WATER WITHIN THE FUEL POOL WALLS WILL CAUSE LOCALIZED WETTING/SPRAY. THE PREDICTED SLOSH HEIGHT IS 8.74 FEET ABOVE THE NORMAL POOL WATER SURFACE OF 619'-6". FLOODING IN THE POOL AREA IS ANTICIPATED SINCE ONLY 1 FOOT OF FREEBOARD IS PROVIDED BY THE FUEL POOL WALLS, WITH TOP OF WALL ELEVATION AT 620'-6". SPRAY UP TO ELEVATION 628'-3" ABOVE THE POOL IS ANTICIPATED.
12. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS: B-022-001

(REV. 22 10/2021)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR INTERMEDIATE BUILDING
FIGURE 3.11-34
(DWG. B-022-0042-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE OG-B (MILD) GENERAL AREAS									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	 8407 HRS 3503 HRS 338,390 HRS	 97 60 81	 90 20 50	 ATMOSPHERE ATMOSPHERE ATMOSPHERE	1.0×10^{-1}	3.5×10^{4}	(4) (5) (6) (10)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	 91	 90 20	 ATMOSPHERE ATMOSPHERE			(7)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		 91 75	 90 max 20 min	 ATMOSPHERE ATMOSPHERE			(8) (9)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 35° F.
5. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
6. UNDER LOSS OF HVAC, THE ZONE MINIMUM TEMPERATURE COULD REACH 35° F ON A -5° F DAY. THE LOSS OF HVAC TEMPERATURE SHOWN UNDER ABNORMAL EVENT IS BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
8. ACCIDENT TEMPERATURES SHOWN ARE BASED ON HEAT LOADS FROM SYSTEMS OPERATING IN THE DESIGNATED AREA WHICH ARE ESSENTIAL TO BRINGING THE PLANT TO SHUTDOWN CONDITION FOLLOWING AN ACCIDENT.
9. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
10. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS: B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR GENERAL AREAS OF THE OFFGAS BUILDING

FIGURE 3.11-35

(DWG. B-022-0046-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE OU-T (MILD) OUTSIDE - AROUND CONDENSATE STORAGE TANK									
NORMAL MAX MIN AVERAGE	NONE			104 -10 58	100 20	ATMOSPHERE ATMOSPHERE ATMOSPHERE		7.4×10^{3}	(5) (6)
ACCIDENT	LOCA INSIDE CONTAINMENT	1						7.78×10^{3}	
ZONE HB-1 (MILD) HEATER BAY FAN ROOMS									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8410 HRS 3504 HRS 338,486 HRS	118 60 93	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.77×10^{2}	(4) (5) (6)
ACCIDENT	LOCA INSIDE CONTAINMENT	1	0 HR 1 HR 180 DAYS	118 122 122	90 max 20 max	ATMOSPHERE ATMOSPHERE ATMOSPHERE			
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).

2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.

3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.

4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.

5. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.

6. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS: B-022-001

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
HEATER BAY FAN ROOM & OUTSIDE
AROUND CONDENSATE STORAGE TANK
FIGURE 3.11-36
(DWG. B-022-0047-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE TB-1 (HARSH) BELOW TURBINE OPERATING FLOOR									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	130°F 113°F 122°F	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	1.07×10^{1}	3.0×10^{6}	(4) (8) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	168	90 20	ATMOSPHERE ATMOSPHERE			(5) (6)
ACCIDENT	MAIN STEAM LINE BREAK	1	0.0 SEC 1.0 SEC 6.2 SEC 1.5 HRS 2.0 HRS 2.5 HRS 3.5 HRS 5.0 HRS 9.0 HRS 12.0 HRS 24 HRS 48 HRS 180 DAYS	130 310 310 310 212 160 150 140 130 125 110 98 98	90 100 100 100 100 100 100 100 100 100 90 90 90	0.0 PSIG 7.0 PSIG 1.0 PSIG 1.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG 0.0 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM STEAM AIR AIR AIR
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		168 167	90 max 20 min	ATMOSPHERE ATMOSPHERE			
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	(7)
ZONE TB-2 (HARSH) HEATER BAY (EAST SIDE)									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	124 60 103	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (8) (12)
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	157	90 20	ATMOSPHERE ATMOSPHERE ATMOSPHERE			(9) (6)
ACCIDENT	MAIN STEAM LINE BREAK	1	0.0 SEC 1.0 SEC 3.0 SEC 6.2 SEC 7 DAYS	124 212 212 212 212	90 100 100 100 100	0.0 PSIG 1.6 PSIG 1.6 PSIG 0.5 PSIG 0.5 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		157 144	90 max 20 min	ATMOSPHERE ATMOSPHERE			
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	(7)
ZONE TB-2 (HARSH) HEATER BAY (WEST SIDE)									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3503 HRS 338,390 HRS	115 65 92	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	2.5×10^{-3}	8.8×10^{2}	(4) (8) (12)

ZONE TB-2 CONTINUED ON DWG. B-022-051

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. UNDER LOSS OF HVAC, THE ZONE MINIMUM TEMPERATURE COULD REACH 35° F ON A -5° F DAY. THE LOSS OF HVAC TEMPERATURE SHOWN UNDER THE ABNORMAL EVENT IS BASED ON A INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
8. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
9. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS. FOR MODERATE ENERGY PIPE BREAK ANALYSIS SEE SECTION 3.6.0 OF THE FSAR.
10. ENVIRONMENT SHOWN DOES NOT INCLUDE STEAM LINE BREAKS WHICH COULD OCCUR IN OR ADJACENT TO THIS ZONE.
11. ENVIRONMENTAL CONDITIONS SHOWN FOR MAIN STEAM LINE BREAK ARE THE SAME AS FOR TB-2 WHICH IS PART OF THE SAME FLOOR. THERE ARE NO INTERMEDIATE WALLS AND THIS IS CONSIDERED THE WORST POSSIBLE CONDITION.
12. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS: B-022-001 B-022-051

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS FOR TURBINE BUILDING
FIGURE 3.11-37
(DWG. B-022-0050-00000)

PLANT OPERATING CONDITION	SIGNIFICANT EVENT	CYCLES	CONDITION DURATION (1)	TEMPERATURE °F	RELATIVE HUMIDITY(2) @ T FINAL (%)	PRESSURE	GAMMA RADIATION(3) MAX DOSE RATE RADS/HR	GAMMA RADIATION(3) DOSE INTEGRATED RADS	SUPPLEMENTARY DATA
ZONE TB-2 (HARSH) HEATER BAY (WEST SIDE, CONTINUED FROM B-022-050)									
ABNORMAL MAX MIN	LOSS OF HVAC	1	100 HRS	127	90 20	ATMOSPHERE ATMOSPHERE			(9) (6)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		127 109	90 max 20 min	ATMOSPHERE ATMOSPHERE			
ACCIDENT	MAIN STEAM LINE BREAK	1	0.0 SEC 1.0 SEC 3.0 SEC 6.2 SEC 7 DAYS	124 212 212 212 212	90 100 100 100 100	0.0 PSIG 1.6 PSIG 1.6 PSIG 0.5 PSIG 0.5 PSIG			ENVIRONMENTAL MEDIUM AIR STEAM STEAM STEAM STEAM
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	(7)
ZONE TB-3 (HARSH) TURBINE BUILDING WEST END EL. 620'-6"									
NORMAL MAX MIN AVERAGE	NORMAL FULL POWER OPERATION	1	8407 HRS 3504 HRS 338,390 HRS	109 60 105	90 20 50	ATMOSPHERE ATMOSPHERE ATMOSPHERE	5×10^{-4}	1.75×10^{2}	(4) (8) (12)
ABNORMAL	LOSS OF HVAC	1	100 HRS	122	90 20	ATMOSPHERE ATMOSPHERE			(10)
ACCIDENT MAX AVERAGE (180 DAYS)	LOCA INSIDE CONTAINMENT	1		122 109	90 max 20 min	ATMOSPHERE ATMOSPHERE			
ACCIDENT	MAIN STEAM LINE BREAK	1	0.0 SEC 1.0 SEC 3.0 SEC 6.2 SEC 7 DAYS	124 212 212 212 212	90 100 100 100 100	0.0 PSIG 1.6 PSIG 1.6 PSIG 0.5 PSIG 0.5 PSIG			ENVIRONMENTAL MEDIUM AIR (11) STEAM STEAM STEAM STEAM
ACCIDENT	LOCA INSIDE CONTAINMENT	1	1 HR 6 HRS 24 HRS 30 DAYS 100 DAYS 180 DAYS				2.9×10^{1}	2.70×10^{1} 2.03×10^{2} 3.09×10^{2} 3.63×10^{2} 3.69×10^{2} 3.76×10^{2}	(7)

NOTES:

1. TIME DURATION SHOWN IS FOR EACH OCCURRENCE OF THE LISTED SIGNIFICANT EVENT. FOR NORMAL FULL POWER OPERATION, HOURS REPRESENT THE TIME FOR WHICH THE MAXIMUM, MINIMUM, AND NORMAL WEIGHTED AVERAGE TEMPERATURE OCCUR OVER THE POSTULATED 40 YEAR PLANT LIFE. THE ONE CYCLE LISTED FOR THE NORMAL FULL POWER OPERATION REPRESENTS THIS 40 YEAR DURATION MINUS ANY SIGNIFICANT TRANSIENTS. THE SUM OF THE NORMAL AND THE ABNORMAL DURATIONS SHOULD THEREFORE EQUAL 40 YEARS (350,400 HOURS).
2. CONDITION DURATION DOES NOT APPLY TO PERCENT RELATIVE HUMIDITY. PERCENT RELATIVE HUMIDITY IN RELATION TO SPECIFIED TIME DURATIONS HAS NOT BEEN POSTULATED EXCEPT FOR HIGH ENERGY LINE BREAK TRANSIENTS.
3. INTEGRATED GAMMA RADIATION IS OVER 40 YEARS FOR NORMAL PLANT OPERATION, AND 180 DAYS FOR ACCIDENT CONDITIONS. FOR ACCIDENT CONDITIONS, RADIATION DOSES ARE BASED ON RELEASES INSIDE CONTAINMENT ONLY, UNLESS OTHERWISE NOTED.
4. TEMPERATURES SHOWN OCCUR DURING NORMAL PLANT OPERATING MODES. THESE NORMAL PLANT OPERATING MODES INCLUDED THE FOLLOWING:
   a. NORMAL FULL POWER OPERATION
   b. HOT STANDBY (OCCURS APPROXIMATELY 5.5 TIMES PER YEAR FOR 5 DAYS)
   c. NORMAL SHUTDOWN (OCCURS APPROXIMATELY 2.7 TIMES PER YEAR FOR 10 DAYS)
   d. CONTINUATION OF SHUTDOWN (OCCURS APPROXIMATELY 1 TIME PER YEAR FOR 30 DAYS)
   e. TESTING (DURATIONS VARY)

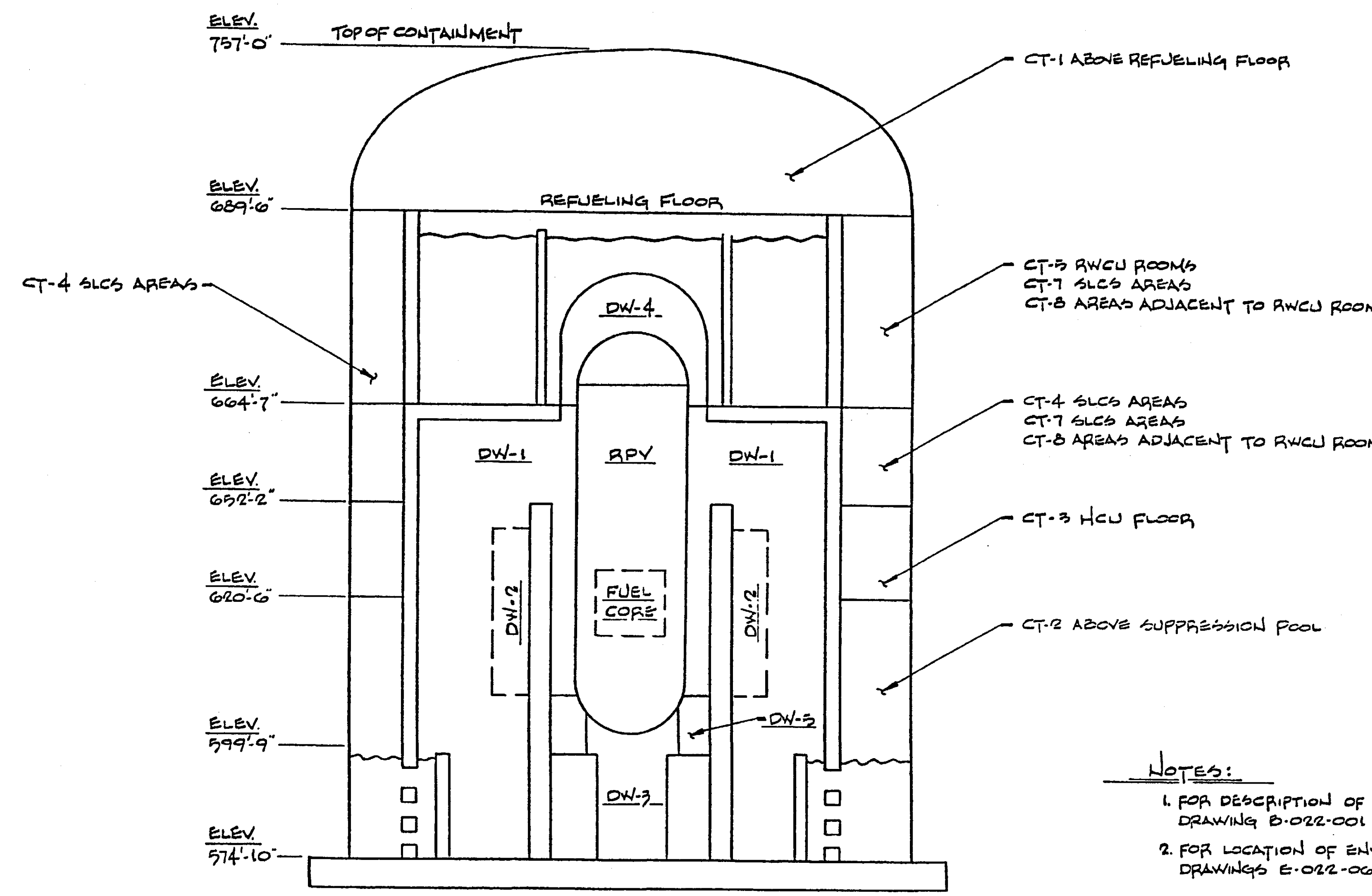
   MINIMUM TEMPERATURES SHOWN ARE BASED ON SYSTEM OPERATION DURING THE ABOVE NORMAL PLANT OPERATING MODES. MINIMUM TEMPERATURES FOR THE 'PLANT OFF', OR TOTAL SHUTDOWN CONDITION ARE NOT SHOWN. DURING THE PLANT OFF CONDITION, (OR THOSE TIMES WHEN A SYSTEM OR EQUIPMENT IS NOT IN OPERATION WITHIN A ZONE), THE PLANT HEATING SYSTEMS ARE DESIGNED TO MAINTAIN A MINIMUM TEMPERATURE OF 60° F.
5. UNDER LOSS OF HVAC, THE ZONE MINIMUM TEMPERATURE COULD REACH 35° F ON A -5° F DAY. THE LOSS OF HVAC TEMPERATURE SHOWN UNDER THE ABNORMAL EVENT IS BASED ON A INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
6. LOSS OF HVAC IN THE CONTEXT OF THESE TABLES MEANS LOSS OF NON-SAFETY HVAC DUE TO A LOSS OF OFFSITE POWER(LOOP). THE TEMPERATURES SHOWN ARE BASED ON AN ASSUMED INITIAL TEMPERATURE EQUAL TO THE NORMAL PLANT OPERATING CONDITION MAXIMUM TEMPERATURE.
7. FOR QUALIFICATION OF EQUIPMENT TO AN ATWS EVENT, A RADIATION ENVIRONMENT EQUIVALENT TO 10% OF THE GIVEN LOCA DOSES MAY BE USED.
8. FOR TYPICAL NORMAL OPERATION RADIATION SOURCES REFER TO USAR SECTION 3.11.5.2.1.
9. MODERATE ENERGY PIPE BREAKS IN THIS ZONE COULD CAUSE LOCALIZED WETTING AND 100 PERCENT RELATIVE HUMIDITY FOR A DURATION OF 24 HOURS MAXIMUM. FLUID TEMPERATURES IN LOCAL MODERATE ENERGY LINES MAY EXCEED THE LISTED MAXIMUM AMBIENT TEMPERATURE FOR THIS ZONE AND SHOULD BE ADDRESSED IF THE EQUIPMENT TO BE QUALIFIED IS WETTED BY SPRAY FROM MODERATE ENERGY BREAKS. FOR MODERATE ENERGY PIPE BREAK ANALYSIS SEE SECTION 3.6.0 OF THE FSAR.
10. ENVIRONMENT SHOWN DOES NOT INCLUDE STEAM LINE BREAKS WHICH COULD OCCUR IN OR ADJACENT TO THIS ZONE.
11. ENVIRONMENTAL CONDITIONS SHOWN FOR MAIN STEAM LINE BREAK ARE THE SAME AS FOR TB-2 WHICH IS PART OF THE SAME FLOOR. THERE ARE NO INTERMEDIATE WALLS AND THIS IS CONSIDERED THE WORST POSSIBLE CONDITION.
12. A RELATIVE HUMIDITY (RH) OF 20% IS THE AVERAGE MINIMUM RH GENERIC TO BWR6/MARK III PLANTS. THIS IS NOT A REQUIREMENT SINCE THE MINIMUM RH DOES NOT NEED TO BE CONTROLLED. THE RH MAY DROP BELOW 20% WITH NO ADVERSE AFFECT ON PLANT EQUIPMENT.

REFERENCE DRAWINGS: B-022-001
B-022-050

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL CONDITIONS
FOR TURBINE BUILDING
FIGURE 3.11-38
(DWG. B-022-0051-00000)



NOTES:

1. FOR DESCRIPTION OF ENVIRONMENTAL ZONES, SEE DRAWING B-022-001
2. FOR LOCATION OF ENVIRONMENTAL ZONES, SEE DRAWINGS E-022-060 THRU E-022-067

DW-1 OUTSIDE RPV SHIELDWALL, NOT AT CORE MIDPLANE

DW-2 OUTSIDE RPV SHIELDWALL, AT CORE MIDPLANE EXTENDING TO A RADIUS OF 24 FT. FROM RPV CENTERLINE, TO A HEIGHT 22 FT. ABOVE FUEL CORE MIDPLANE AND 16 FT. BELOW FUEL CORE MIDPLANE AND INCLUDING MAJOR RPV SHIELDWALL PENETRATIONS.

DW-3 AREA UNDER RPV INSIDE PEDESTAL

DW-4 WITHIN DRYWELL HEAD

DW-5 OUTSIDE RPV SKIRT

CT-7, CT-8 AREAS SUBJECT TO CONTAINMENT SPRAY

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PERRY NUCLEAR POWER PLANT

Drywell and Containment Environmental Zones

Figure 3.11-39
(Dwg. B-022-068)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP PLAN A
ABOVE EL. 568'-6" EL. 574'-10", EL. 577'-6"
& EL. 580'-6" PLANT COMPLEX
FIGURE 3.11-40
(DWG. E-022-0060-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP,
PLAN B ABOVE EL 593-6, 599-0,
600-6, 602-6 & 605-6 PLANT COMPLEX
FIGURE 3.11-41
(DWG. E-022-0061-00000)

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP PLAN "C"
ABOVE ELEVS. 620'-6", 623'-6", AND
624'-6", PLANT COMPLEX
FIGURE 3.11-42
(DWG. E-022-0062-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP PLAN "D"
ABOVE ELEVS. 638'-6", 642'-0"
AND 647'-6", PLANT COMPLEX
FIGURE 3.11-43
(DWG. E-022-0063-00000)

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT 10 CENTER RD., PERRY, OHIO 44081
ENVIRONMENTAL ZONE MAP PLAN "E" ABOVE ELEVS. 652'-0" AND 654'-6", PLANT COMPLEX FIGURE 3.11-44 (DWG. E-022-0064-00000)

Removed in Accordance with RIS 2015-17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP PLAN
"F" ABOVE ELEVS. 664'-6",
665'-0" AND 670'-6" PLANT COMPLEX
FIGURE 3.11-45
(DWG. E-022-0065-00000)

Removed in Accordance with RIS 2015–17

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP
PLAN "G" ABOVE EL. 689'-6"
PLANT COMPLEX
FIGURE 3.11-46
(DWG. 022-0066-00000)

Removed in Accordance with RIS 2015–17

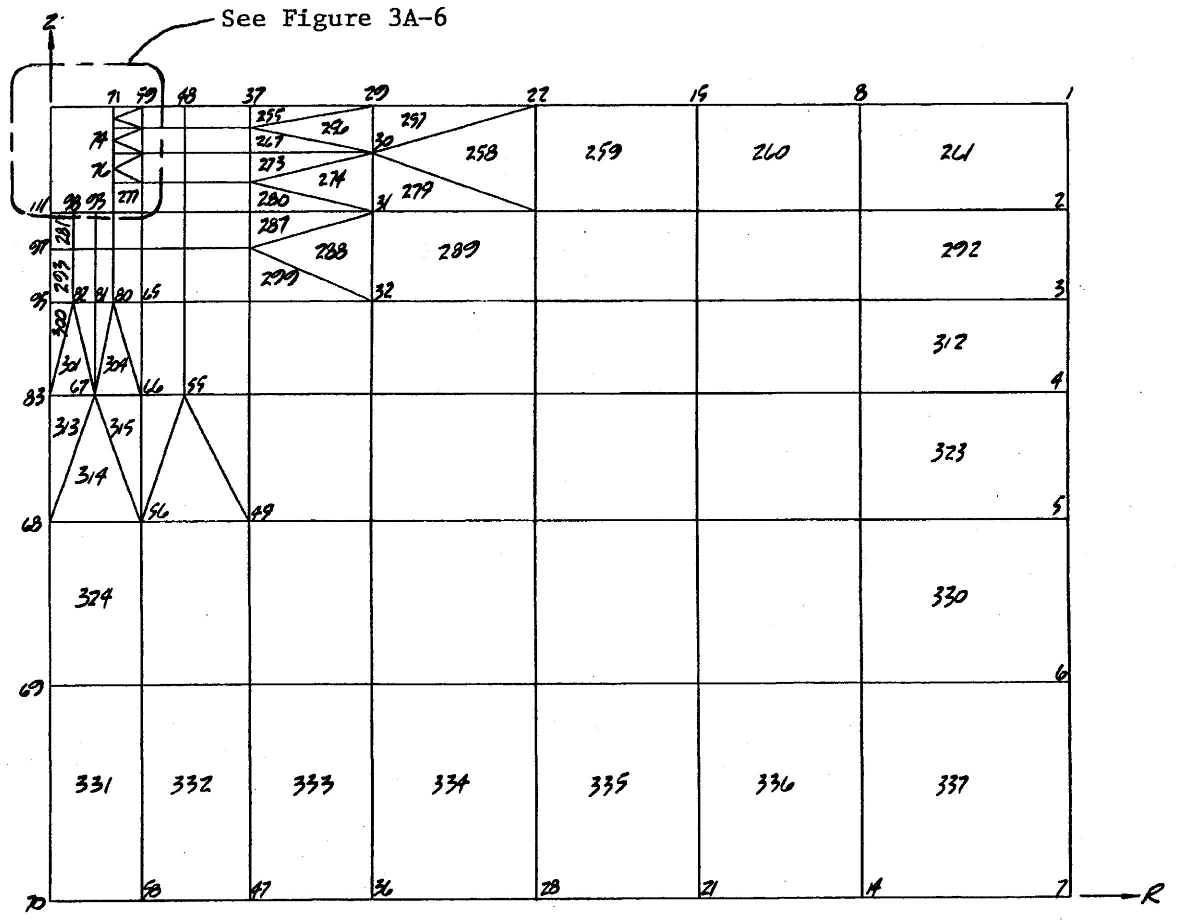
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

ENVIRONMENTAL ZONE MAP EMERGENCY SERVICE WATER PUMPHOUSE PLANS AND ELEVATIONS

FIGURE 3.11-47

(DWG. E-022-0067-00000)

See Figure 3A-6



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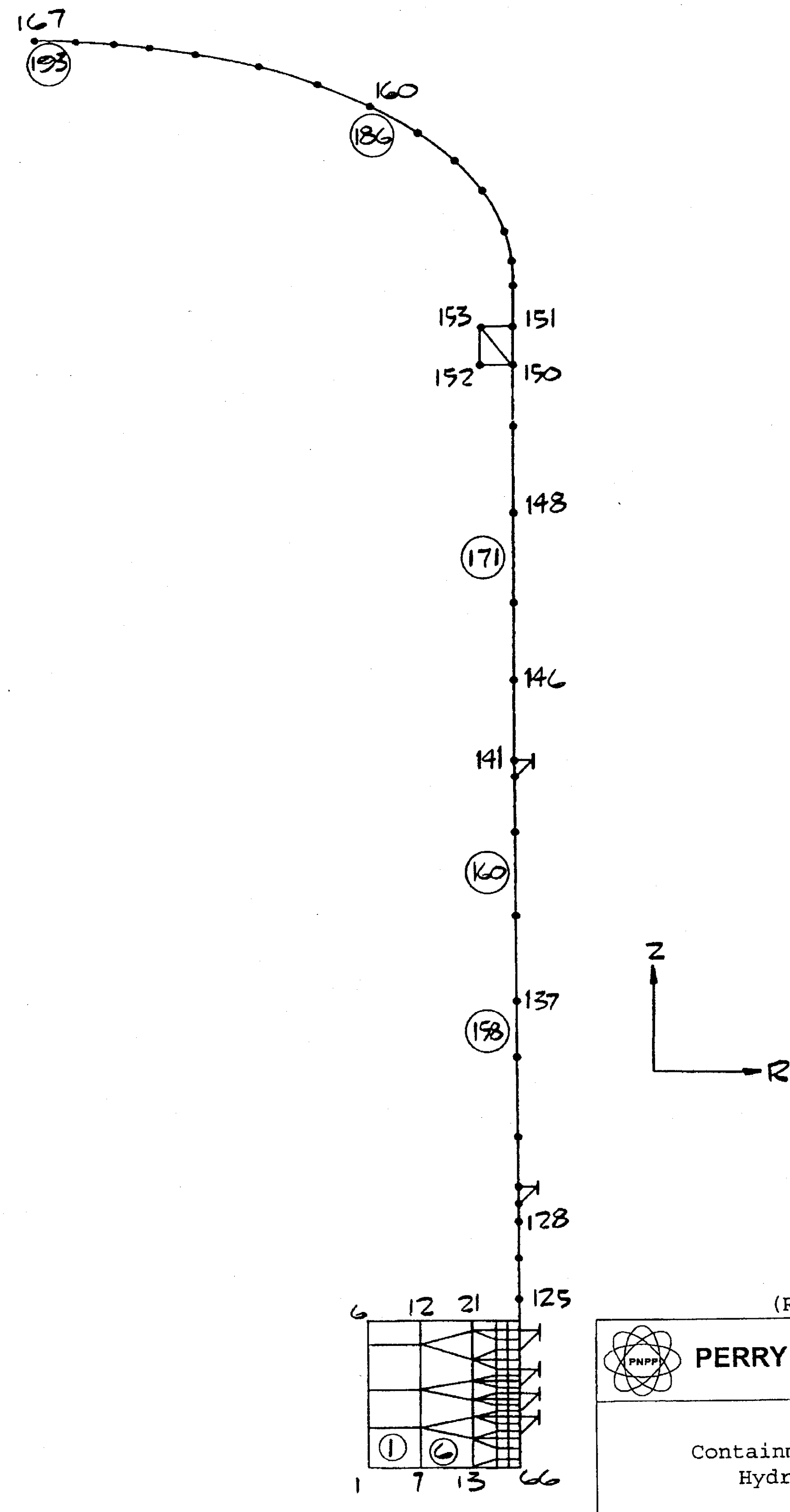
PERRY NUCLEAR POWER PLANT

Reactor Building Model for Hydrodynamic Analysis Soil Elements

Figure 3A-1

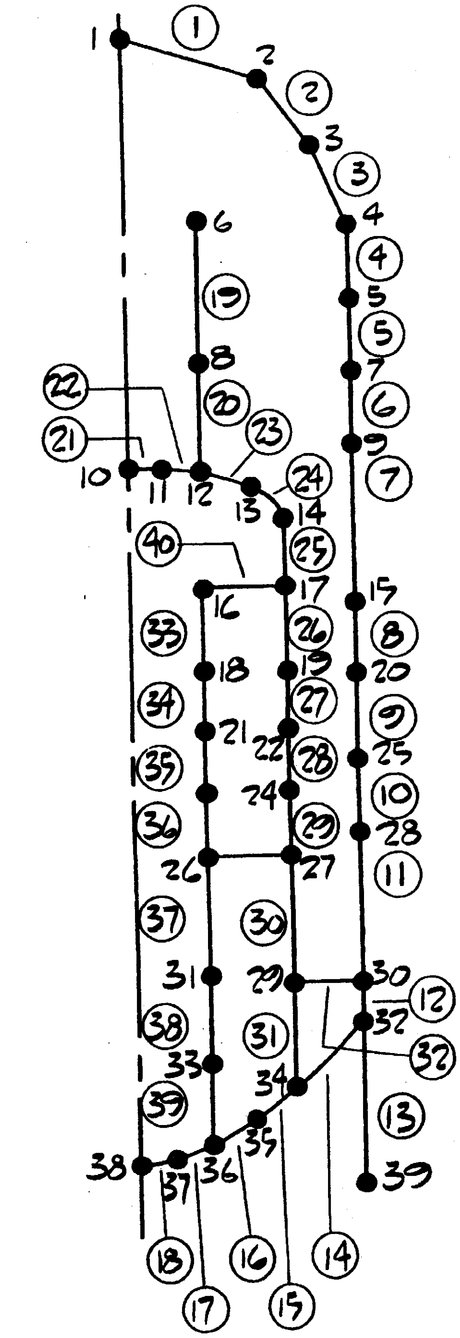


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Containment Vessel Model for Hydrodynamic Analysis

Figure 3A-2



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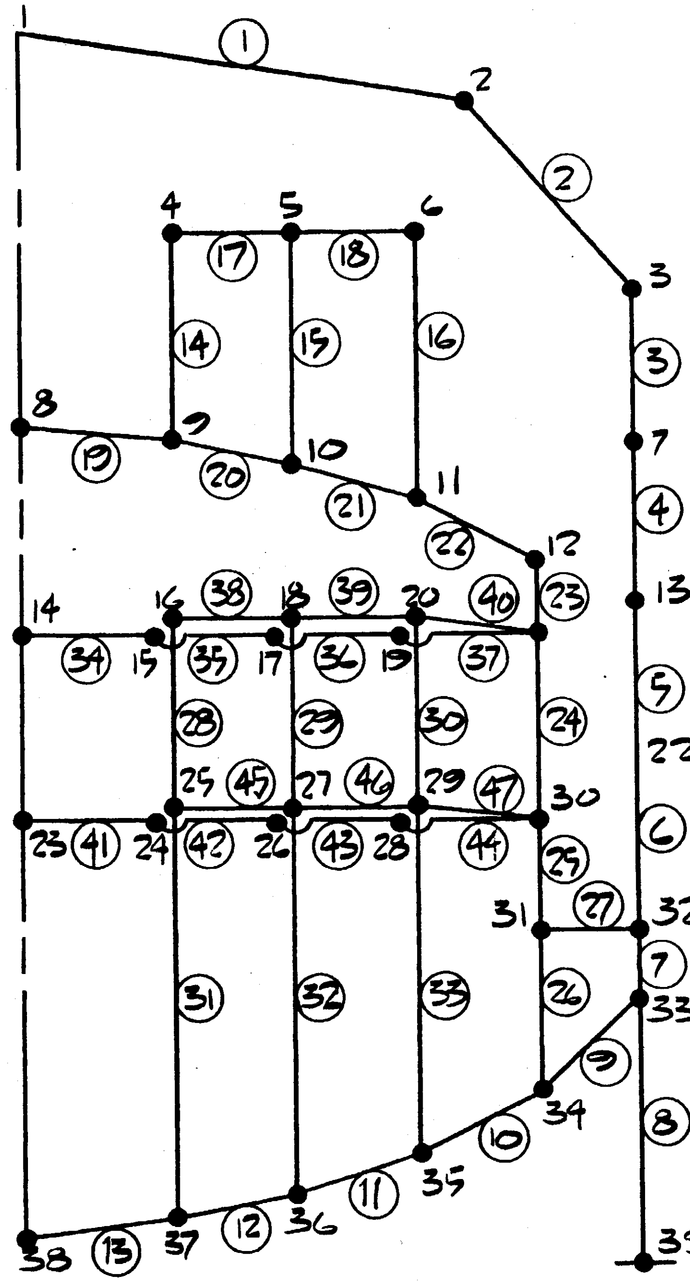
PERRY NUCLEAR POWER PLANT

RPV Horizontal Model

Figure 3A-3



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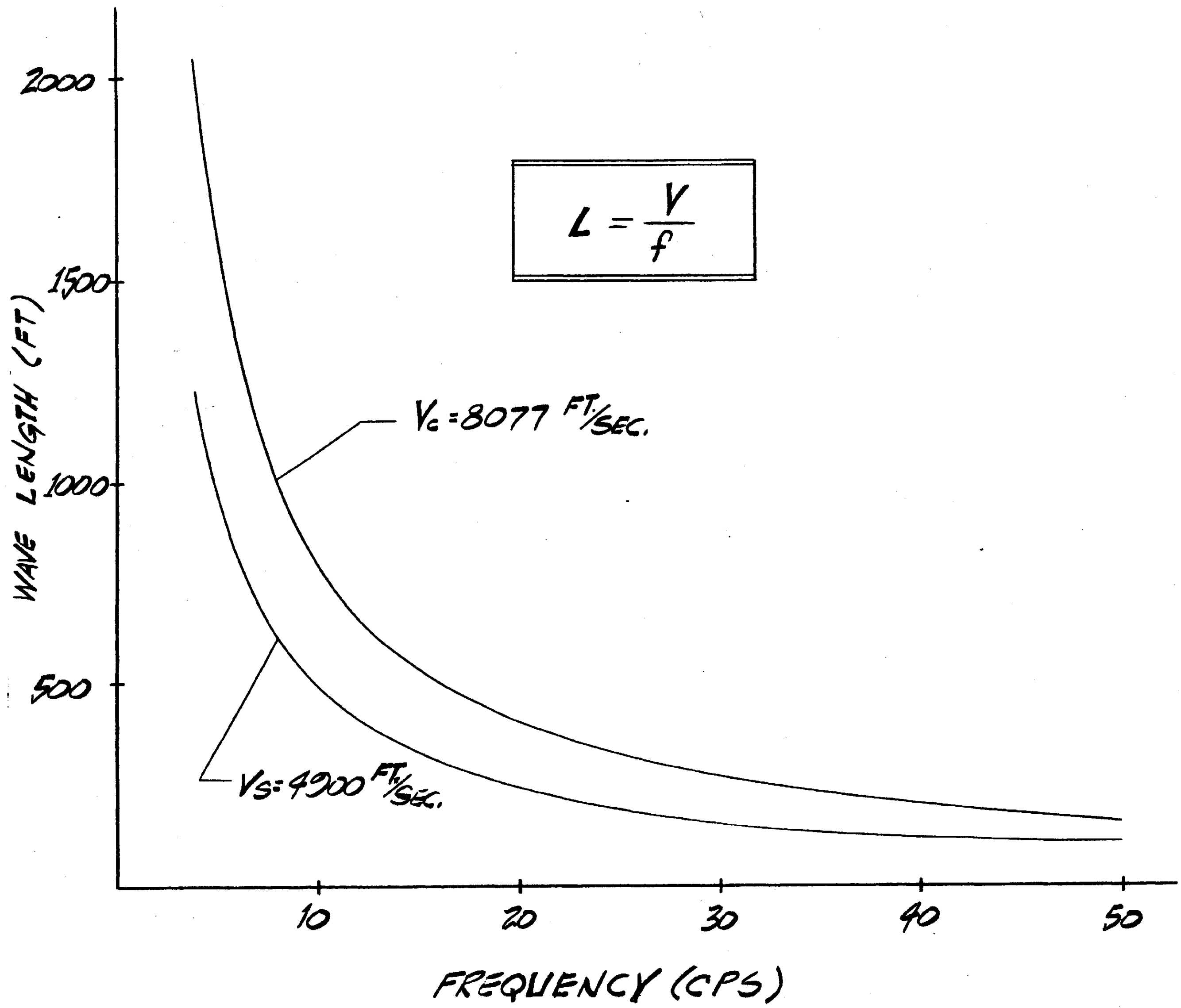
PERRY NUCLEAR POWER PLANT

RPV Vertical Model

Figure 3A-4



f	4	8	12	16	20	24	28	40	50	CPS
L_S	1225	613	408	306	245	204	175	123	98	FT
L_C	2019	1010	673	504	404	336	289	203	162	FT

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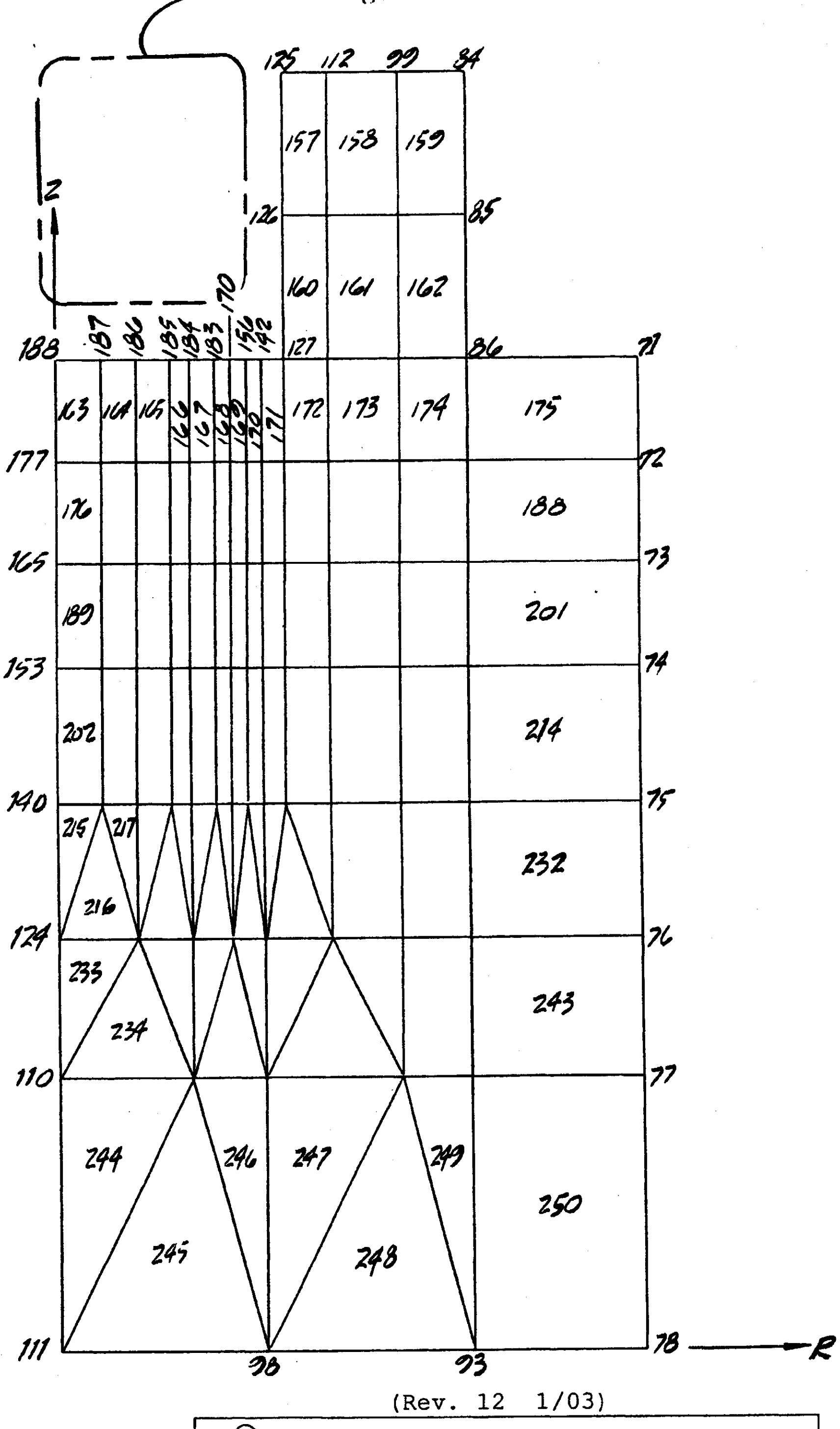
PERRY NUCLEAR POWER PLANT

Chagrin Shale Dynamic Characteristics

Figure 3A-5



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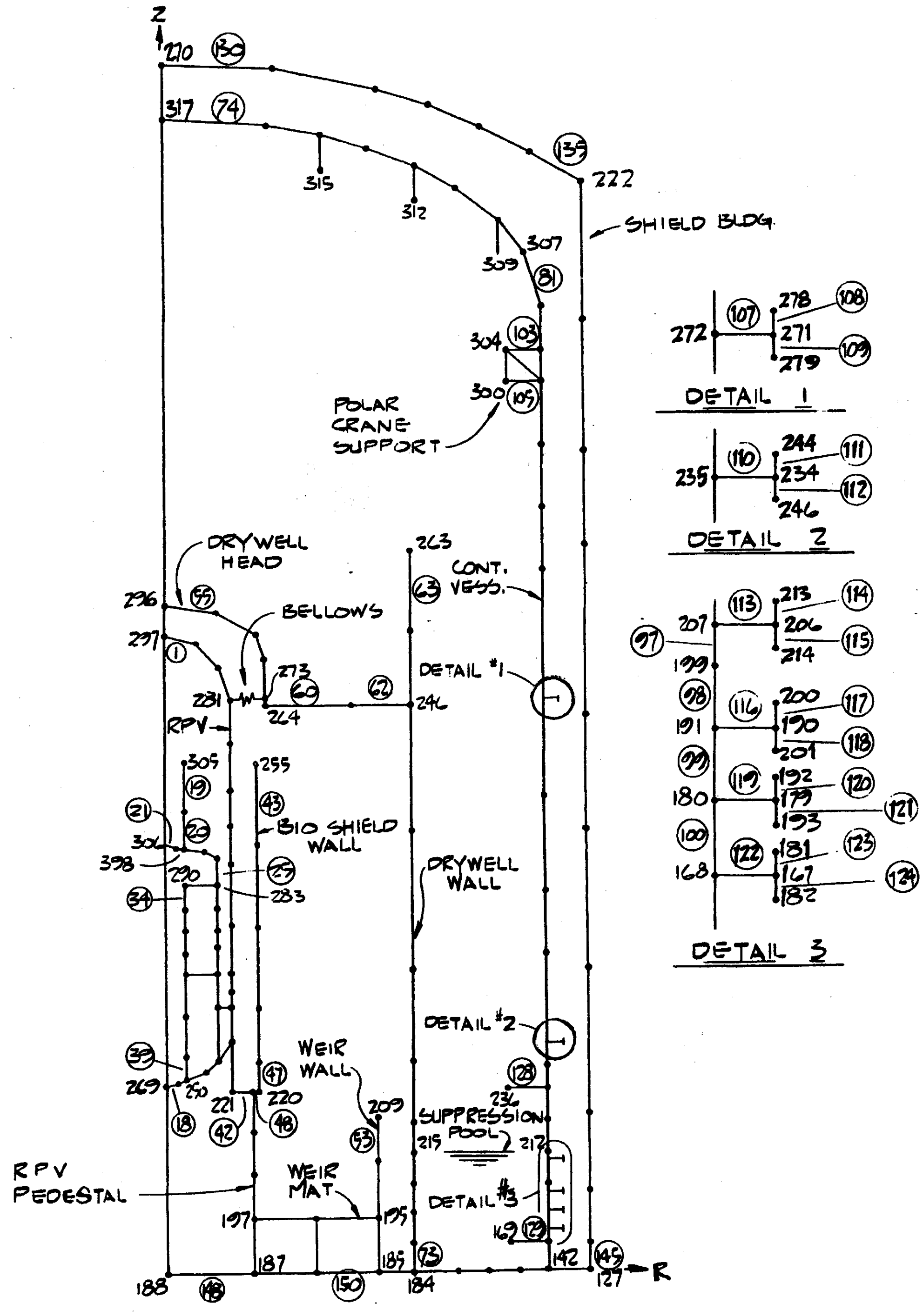
PERRY NUCLEAR POWER PLANT

Reactor Building Model for Hydrodynamic Analysis

Figure 3A-6



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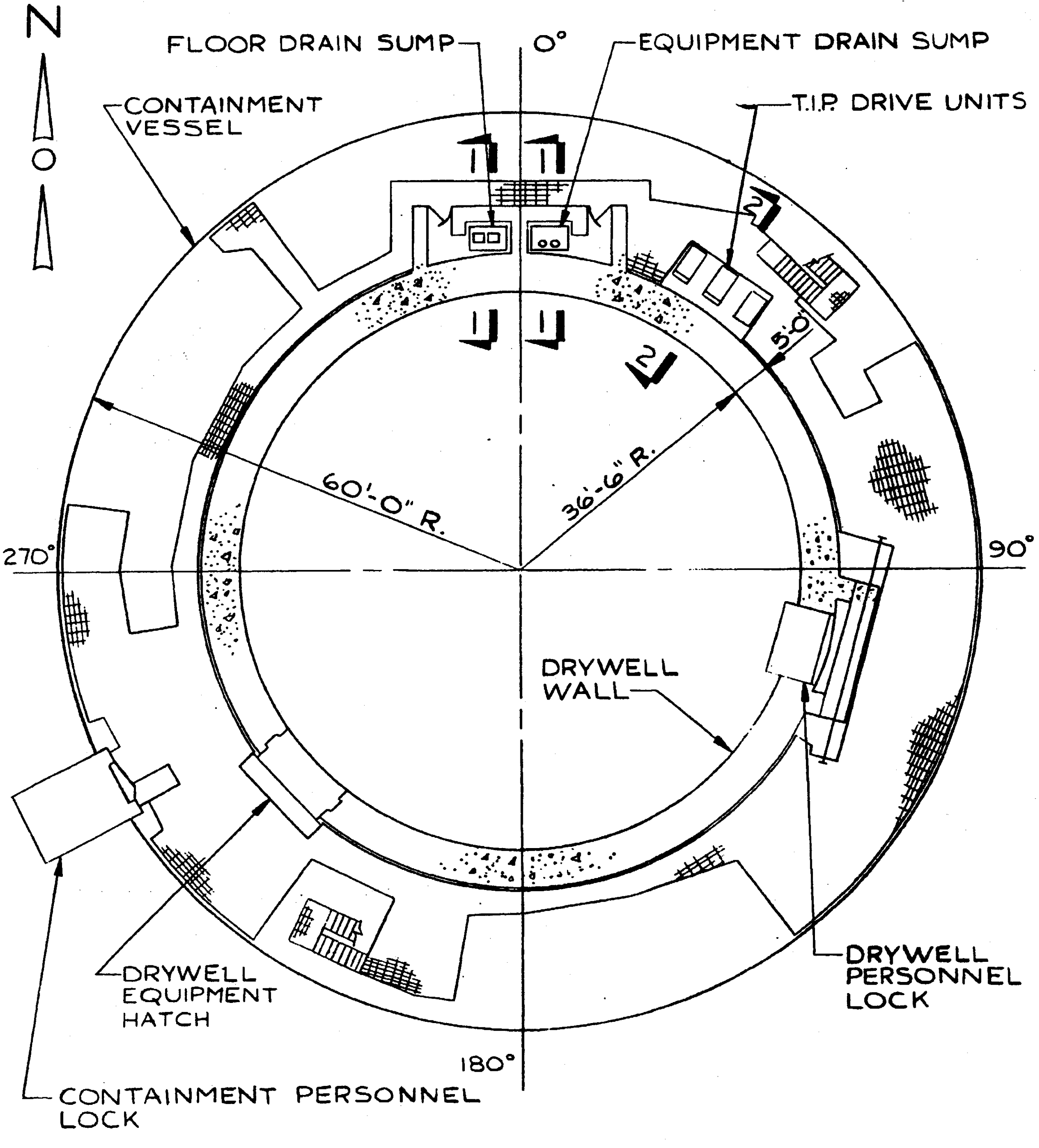
PERRY NUCLEAR POWER PLANT

Reactor Building Model for Hydrodynamic Analysis

Figure 3A-7



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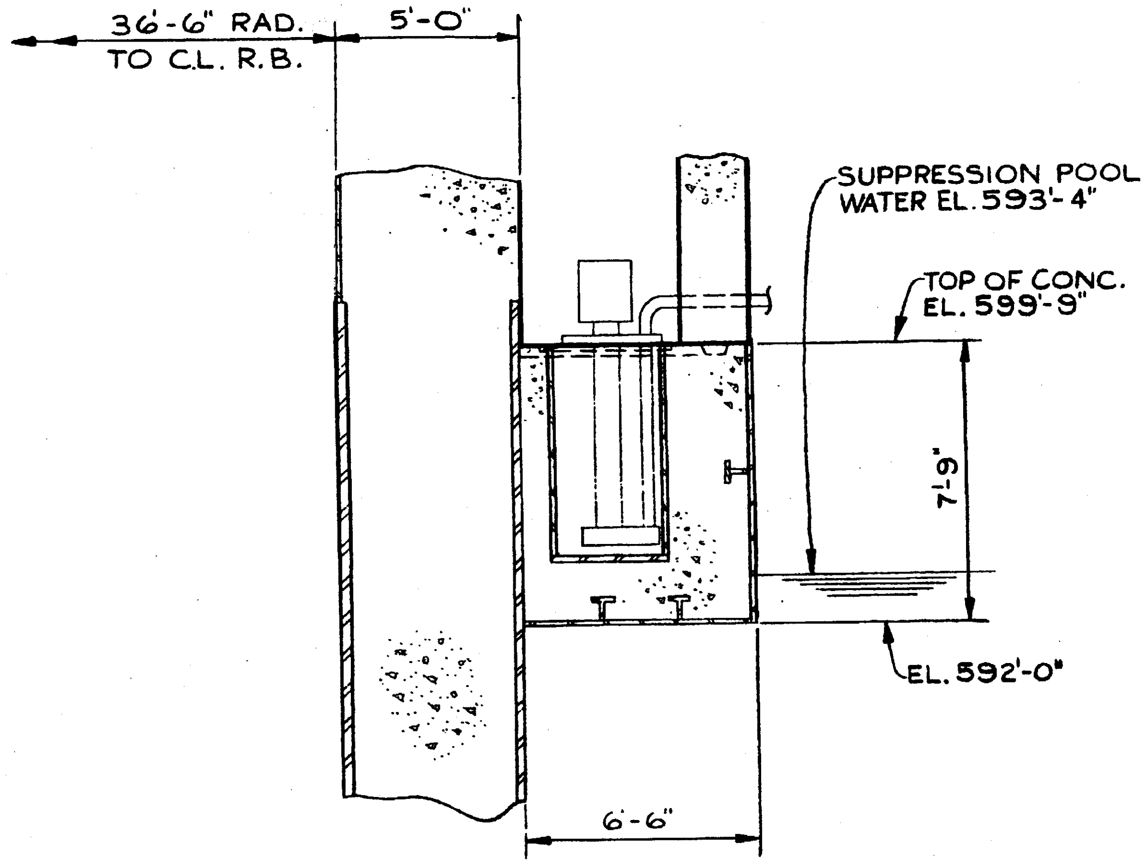
PERRY NUCLEAR POWER PLANT

Plan at Elevation 599′-9″

Figure 3B-1



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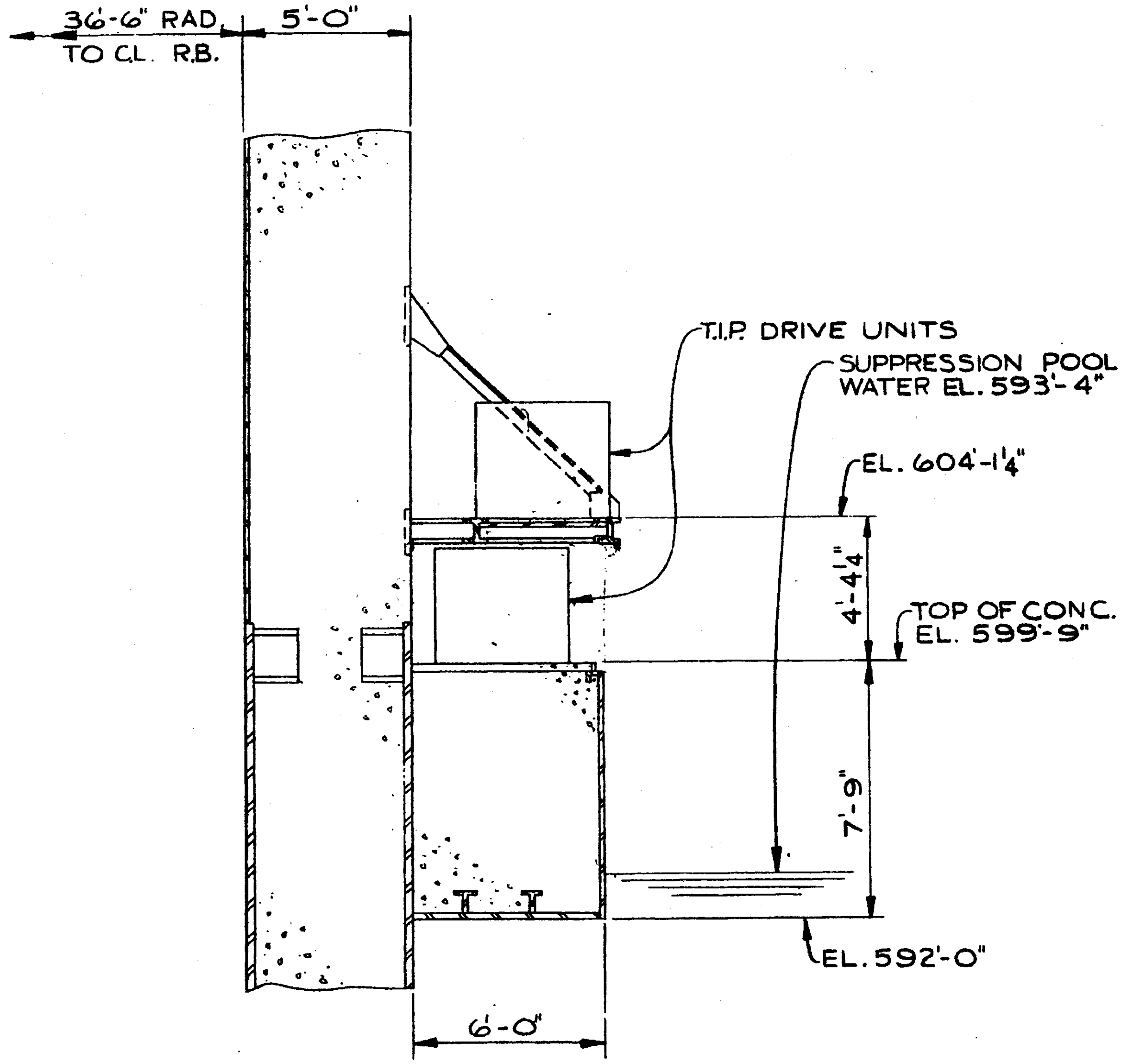
PERRY NUCLEAR POWER PLANT

Section 1-1 Through Sump

Figure 3B-2



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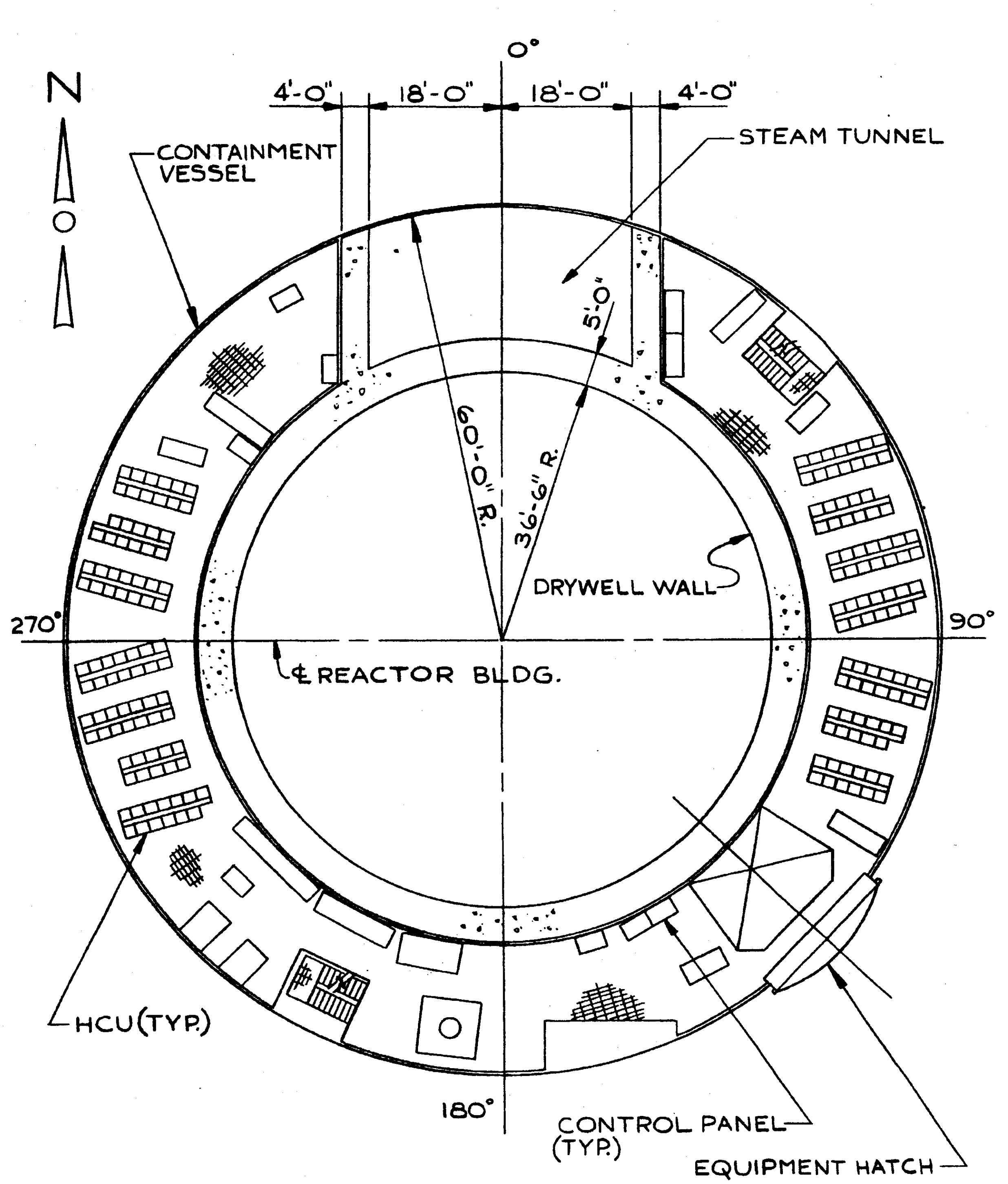
PERRY NUCLEAR POWER PLANT

Section 2-2 Through TIP Platform

Figure 3B-3



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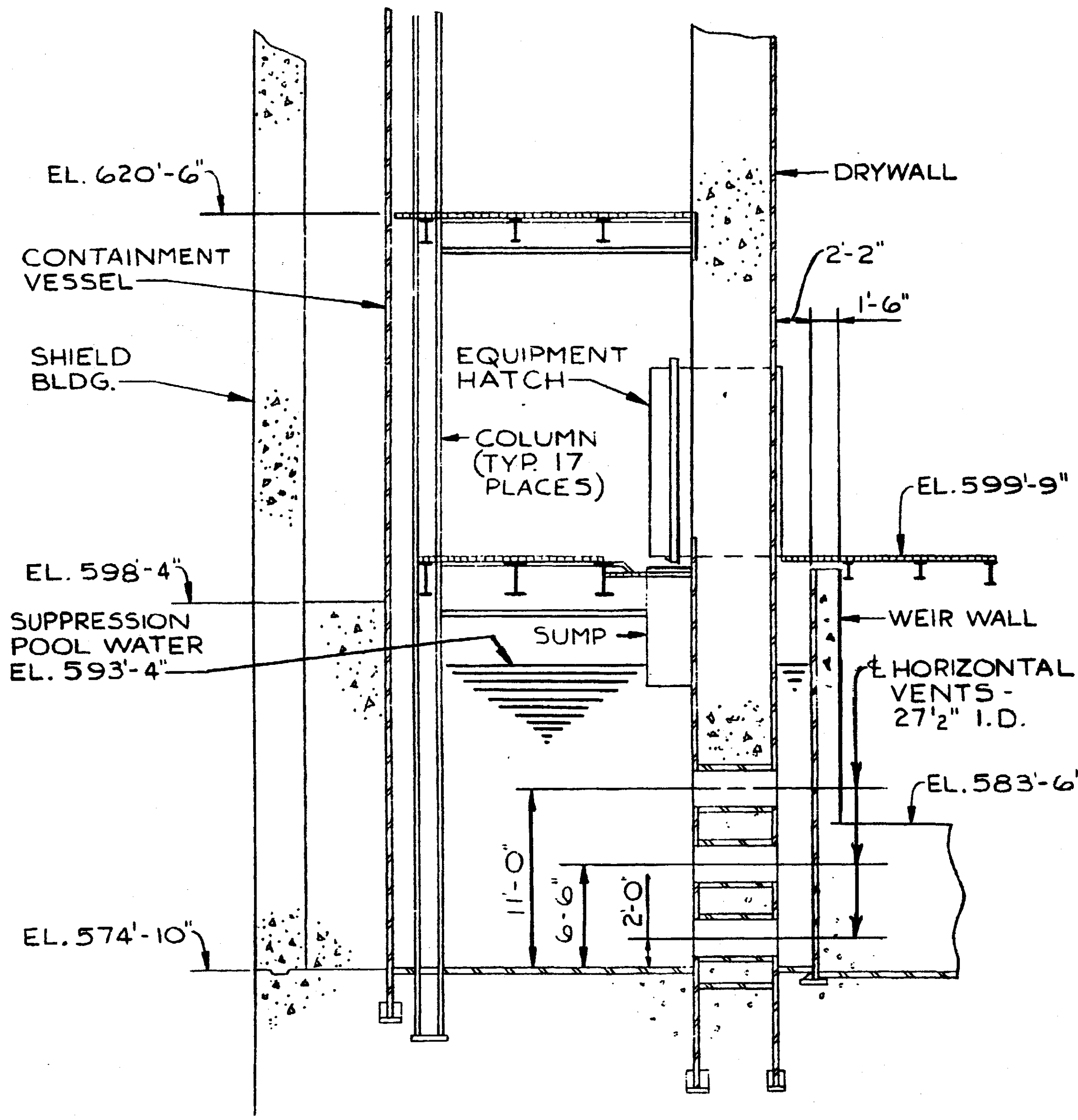
PERRY NUCLEAR POWER PLANT

Plan at Elevation 620'-6"

Figure 3B-4



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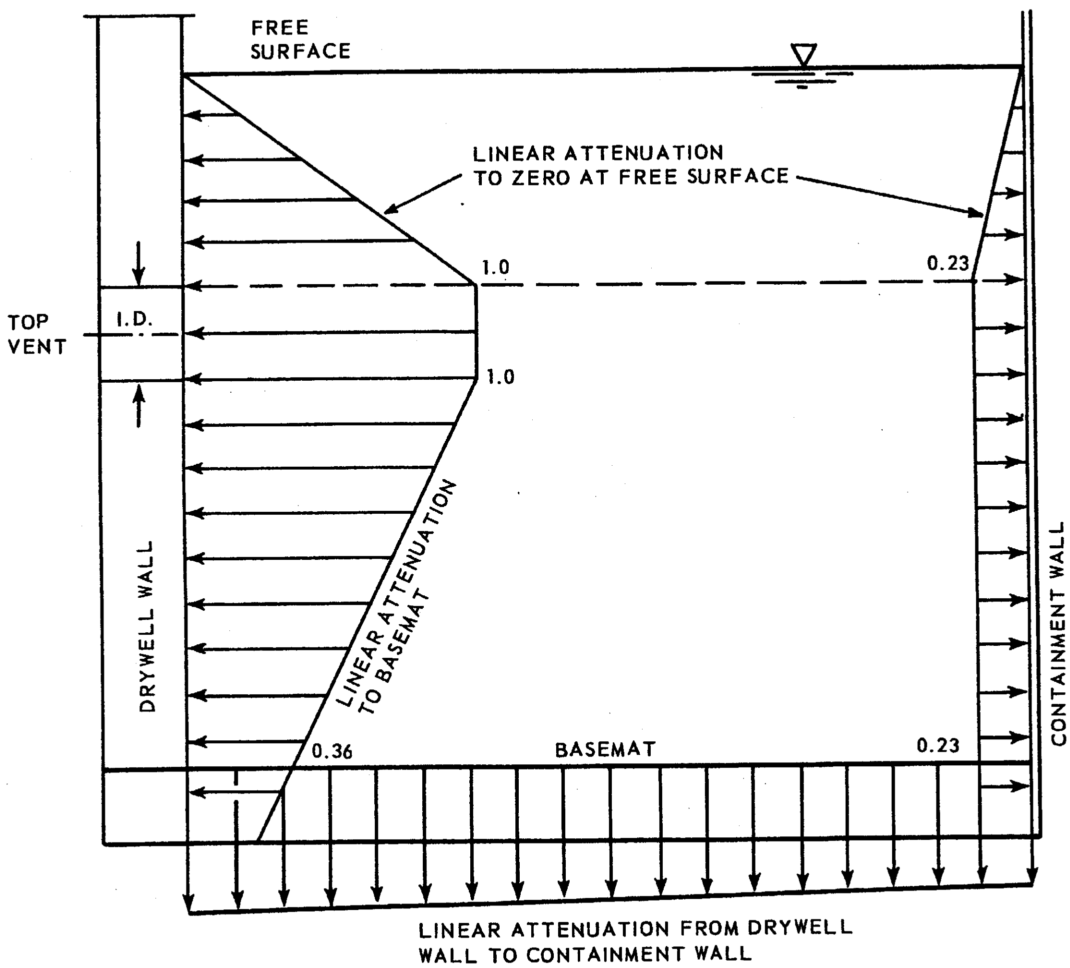
PERRY NUCLEAR POWER PLANT

Suppression Pool Cross Section

Figure 3B-5



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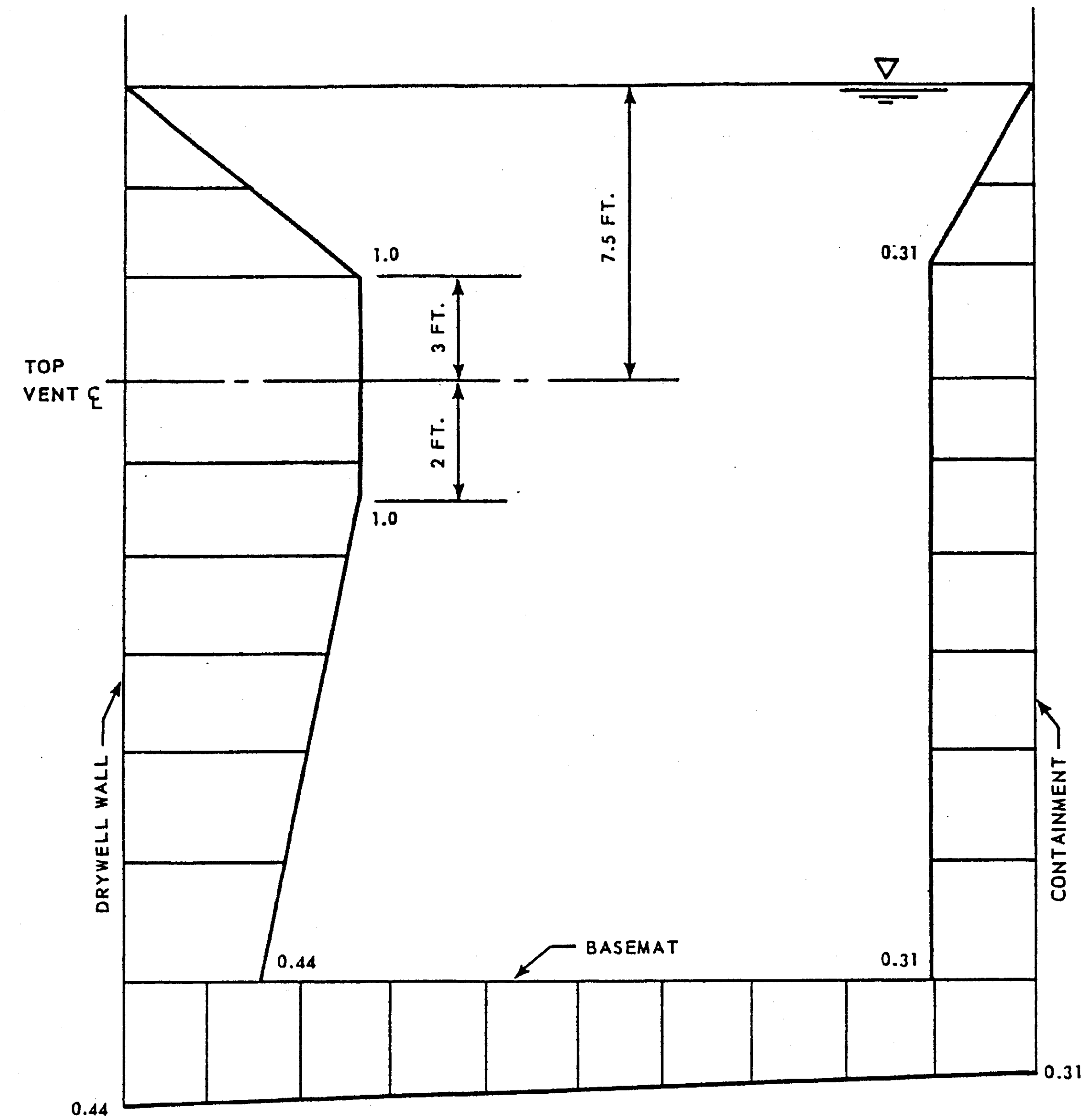
PERRY NUCLEAR POWER PLANT

Condensation Oscillation Load
Spatial Distribution on the
Drywell Wall Containment Wall
and Basemat

Figure 3B-6



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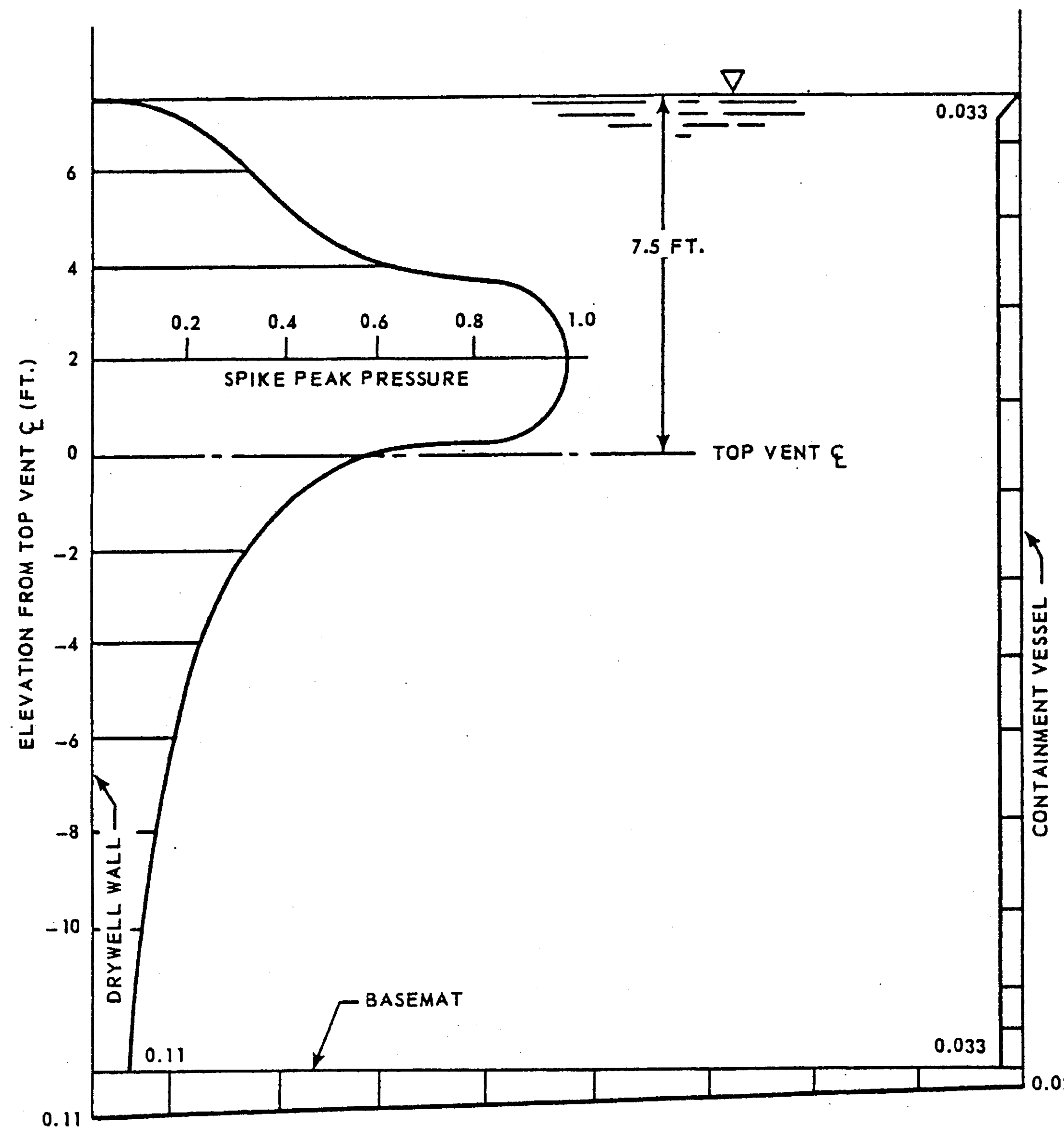
PERRY NUCLEAR POWER PLANT

Suppression Pool Chugging
Normalized Peak Underpressure
Attenuation

Figure 3B-7



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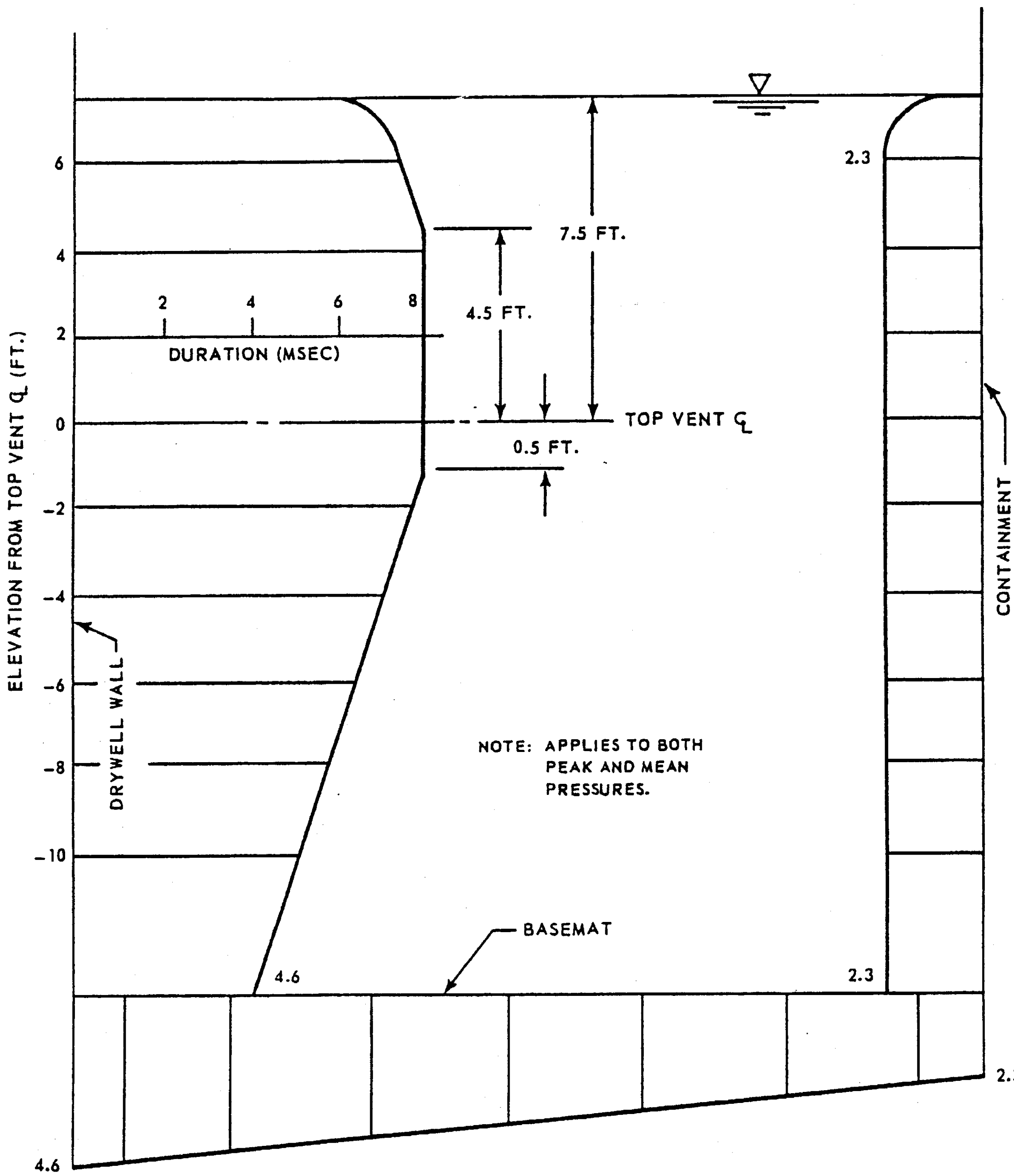
PERRY NUCLEAR POWER PLANT

Suppression Pool Chugging
Normalized Spike Attenuation

Figure 3B-8



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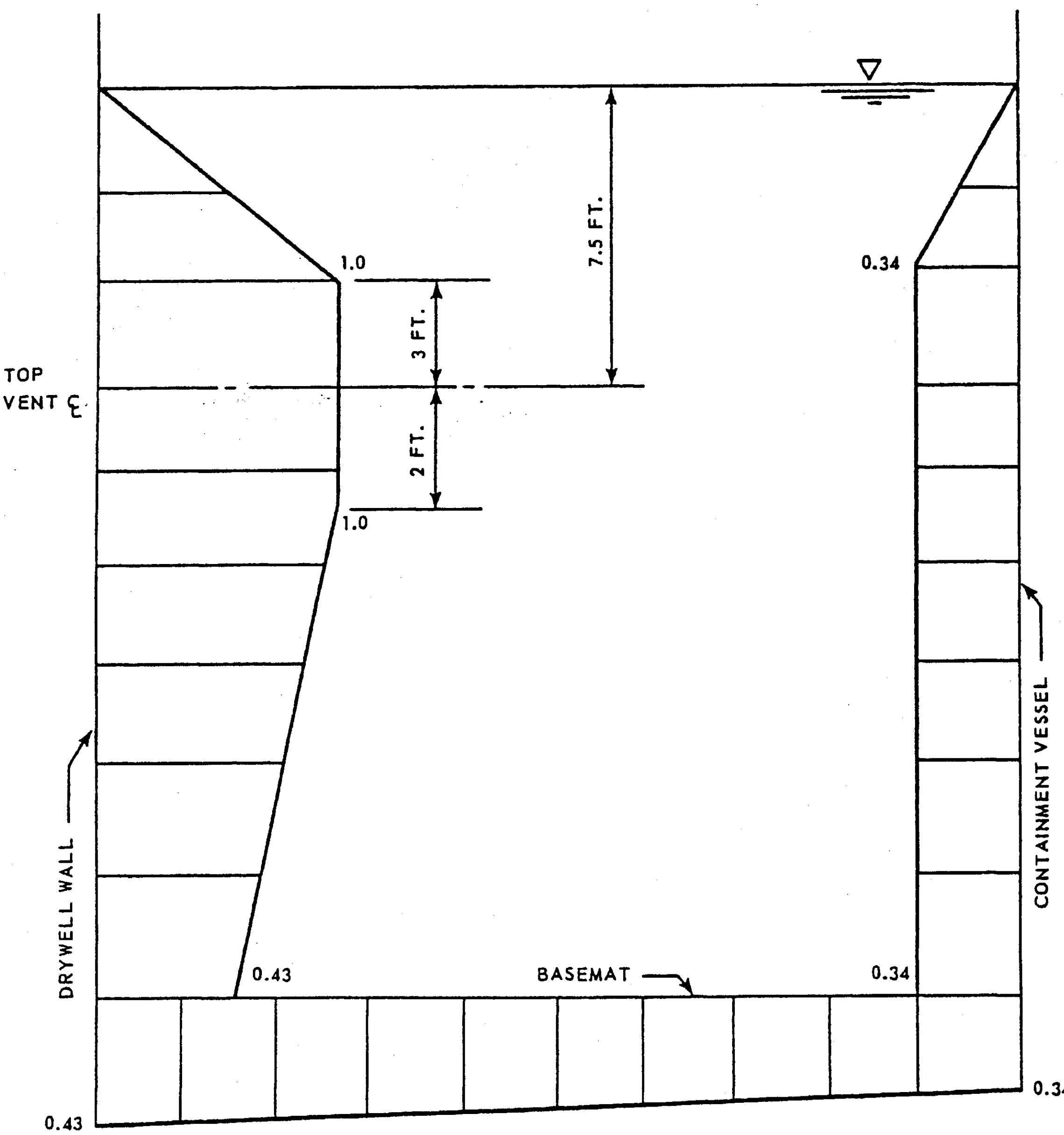
PERRY NUCLEAR POWER PLANT

Suppression Pool Chugging Spike Duration d as a Function of Location in the Pool

Figure 3B-9



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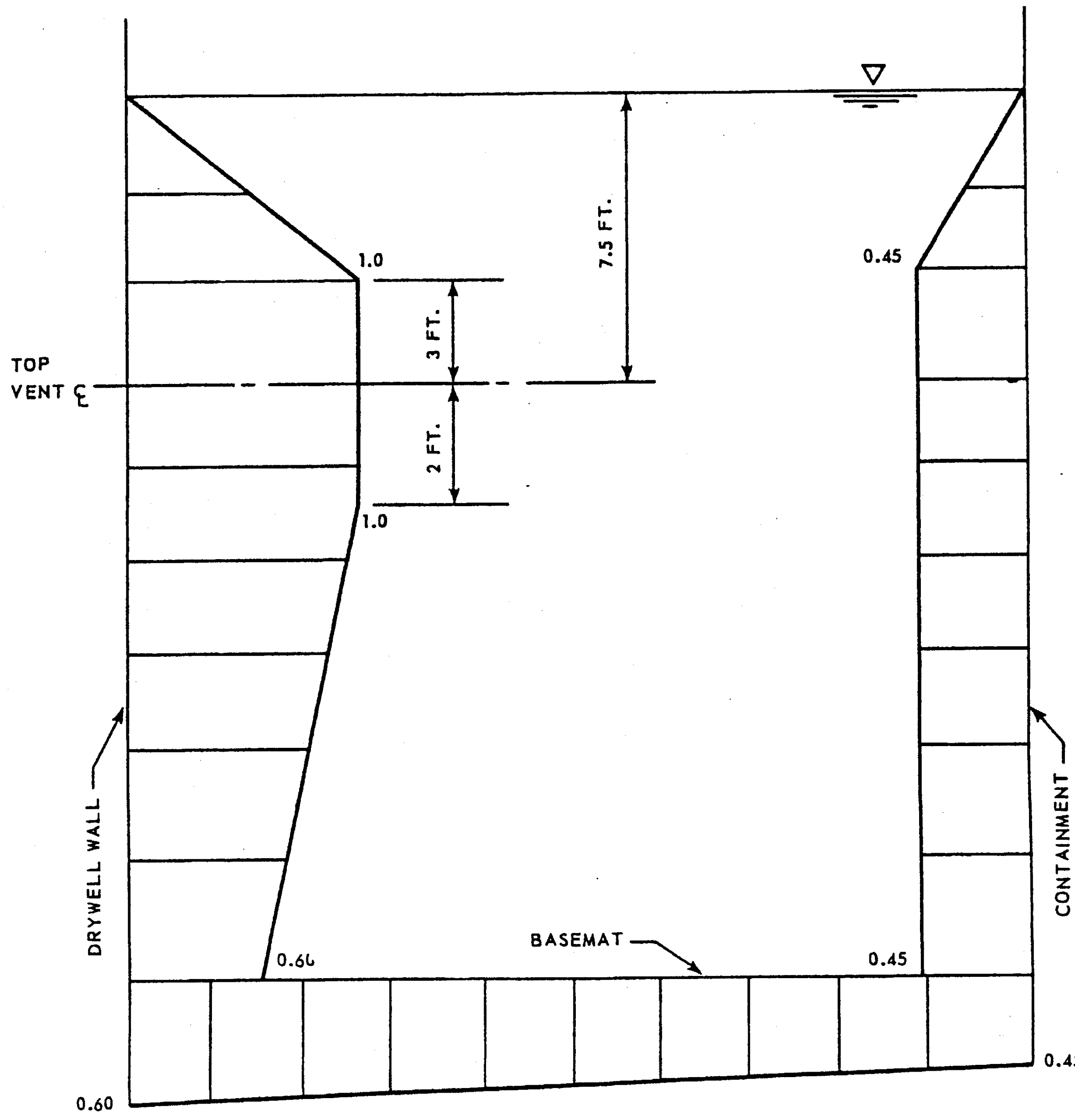
PERRY NUCLEAR POWER PLANT

Suppression Pool Chugging
Normalized Peak Post-Chug
Oscillations

Figure 3B-10



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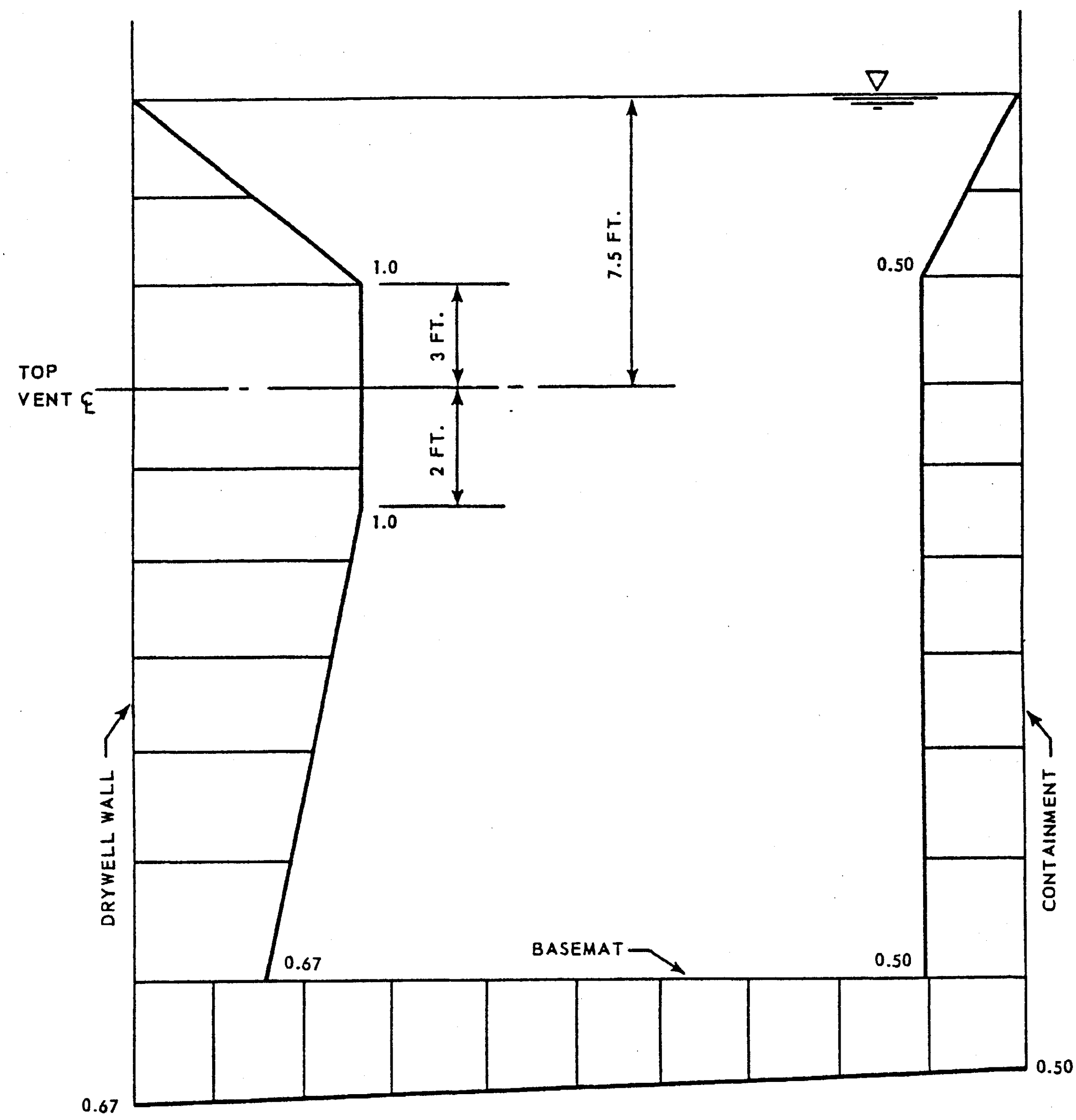
PERRY NUCLEAR POWER PLANT

Suppression Pool Chugging
Normalized Mean Underpressure
Attenuation

Figure 3B-11



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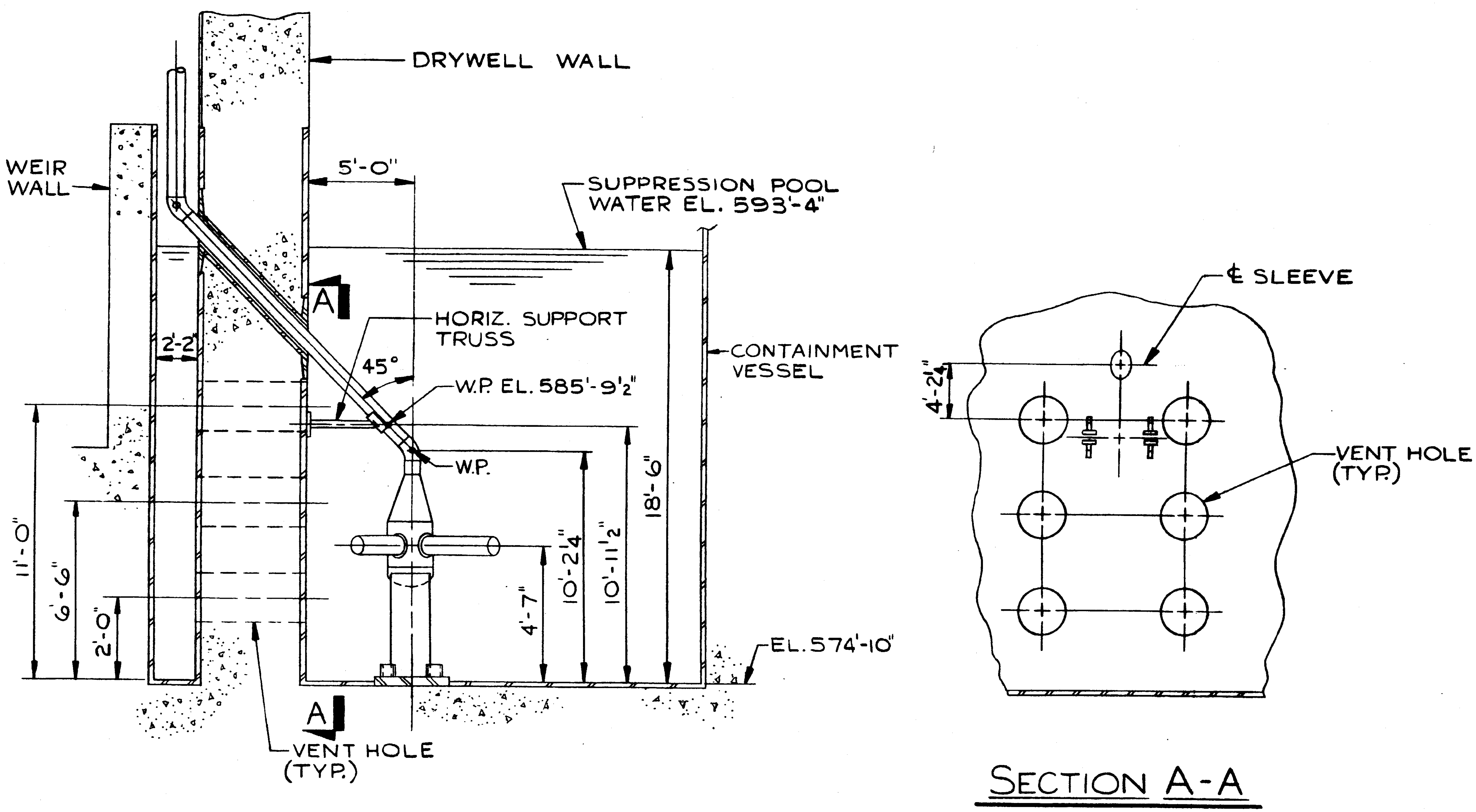
PERRY NUCLEAR POWER PLANT

Suppression Pool Chugging
Normalized Post-Chug Oscillation
Attenuation

Figure 3B-12



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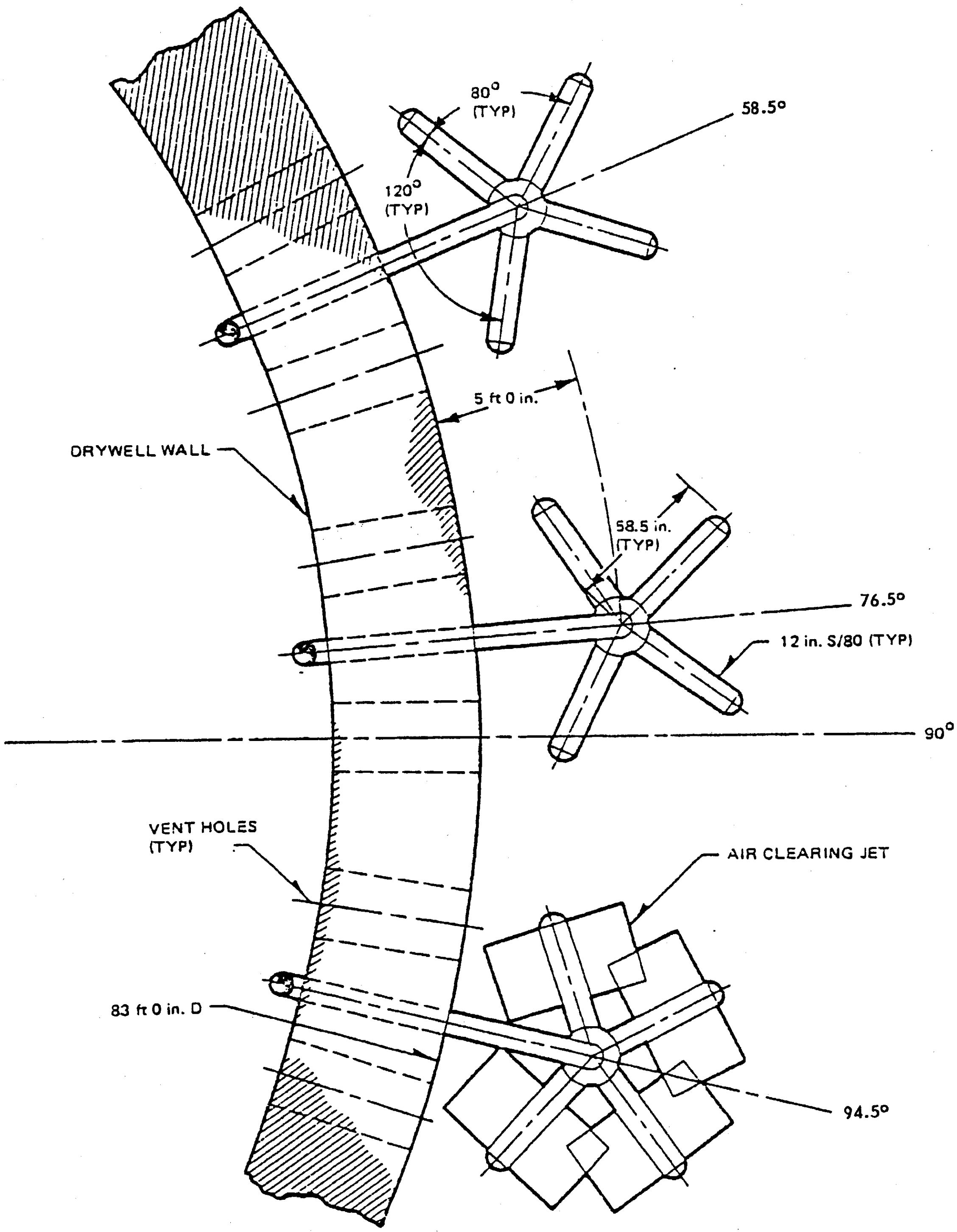
PERRY NUCLEAR POWER PLANT

Quencher Arrangement Elevation
Perry Nuclear Power Plant

Figure 3BA-1



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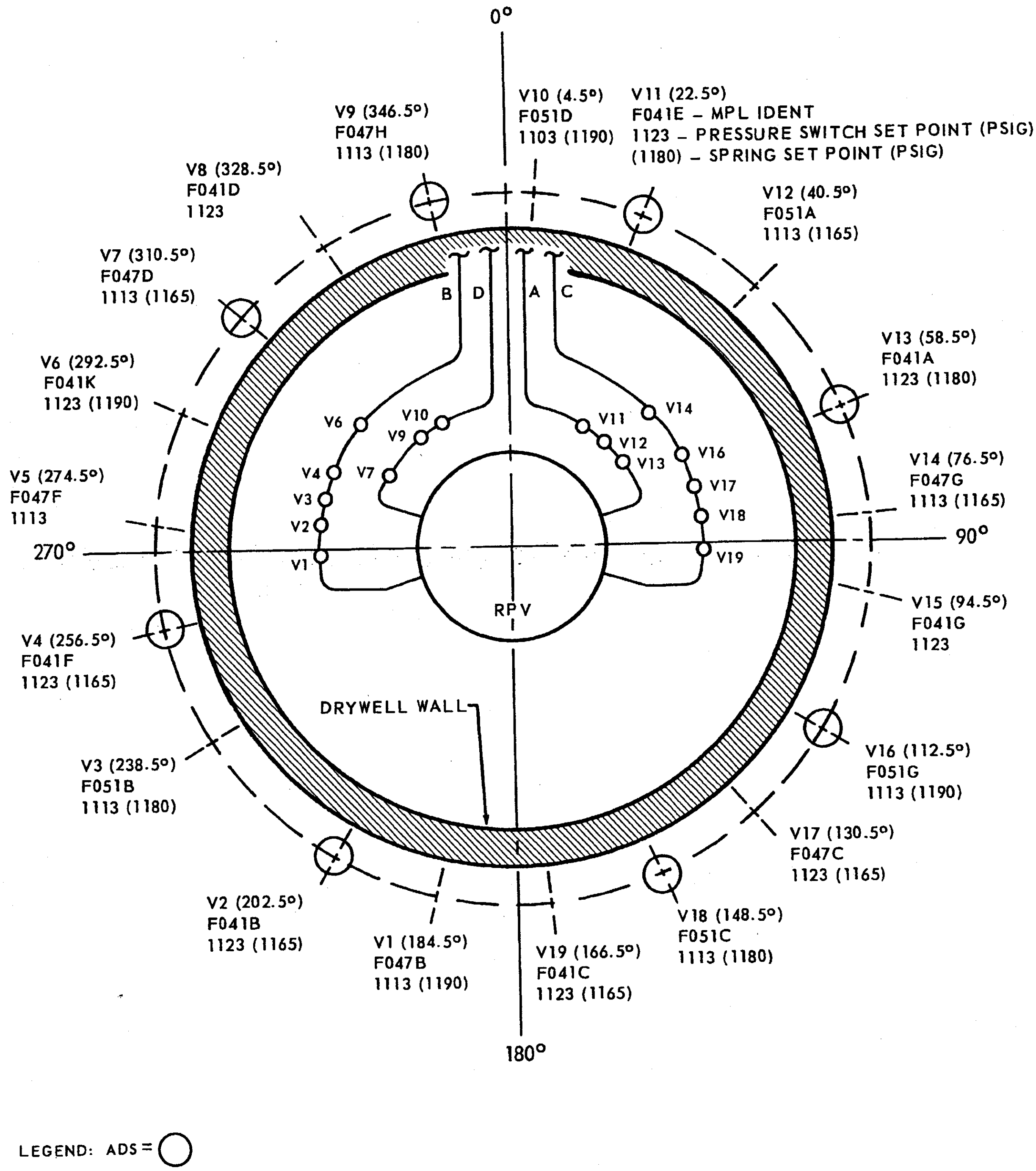
PERRY NUCLEAR POWER PLANT

Typical Quencher Plan View F

Figure 3BA-2



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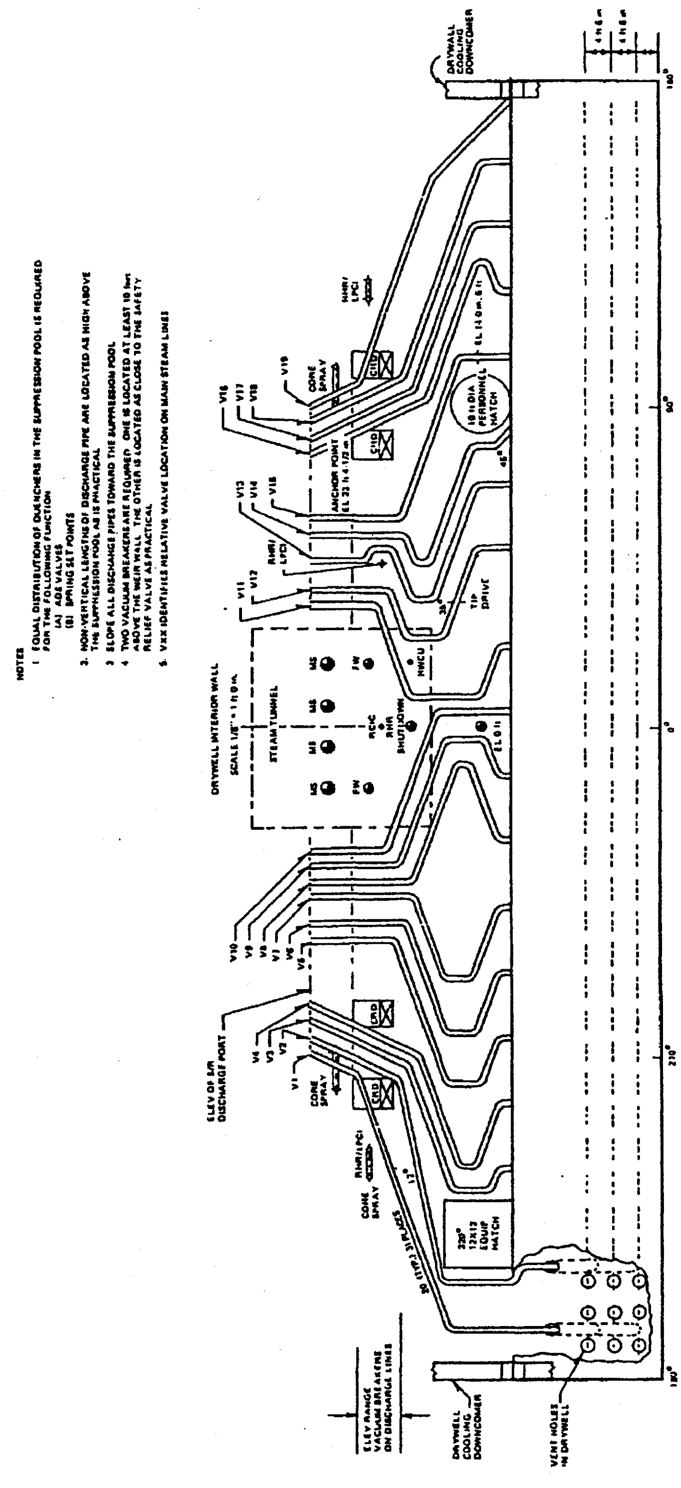
PERRY NUCLEAR POWER PLANT

Safety/Relief Valve
Discharge Locations

Figure 3BA-3



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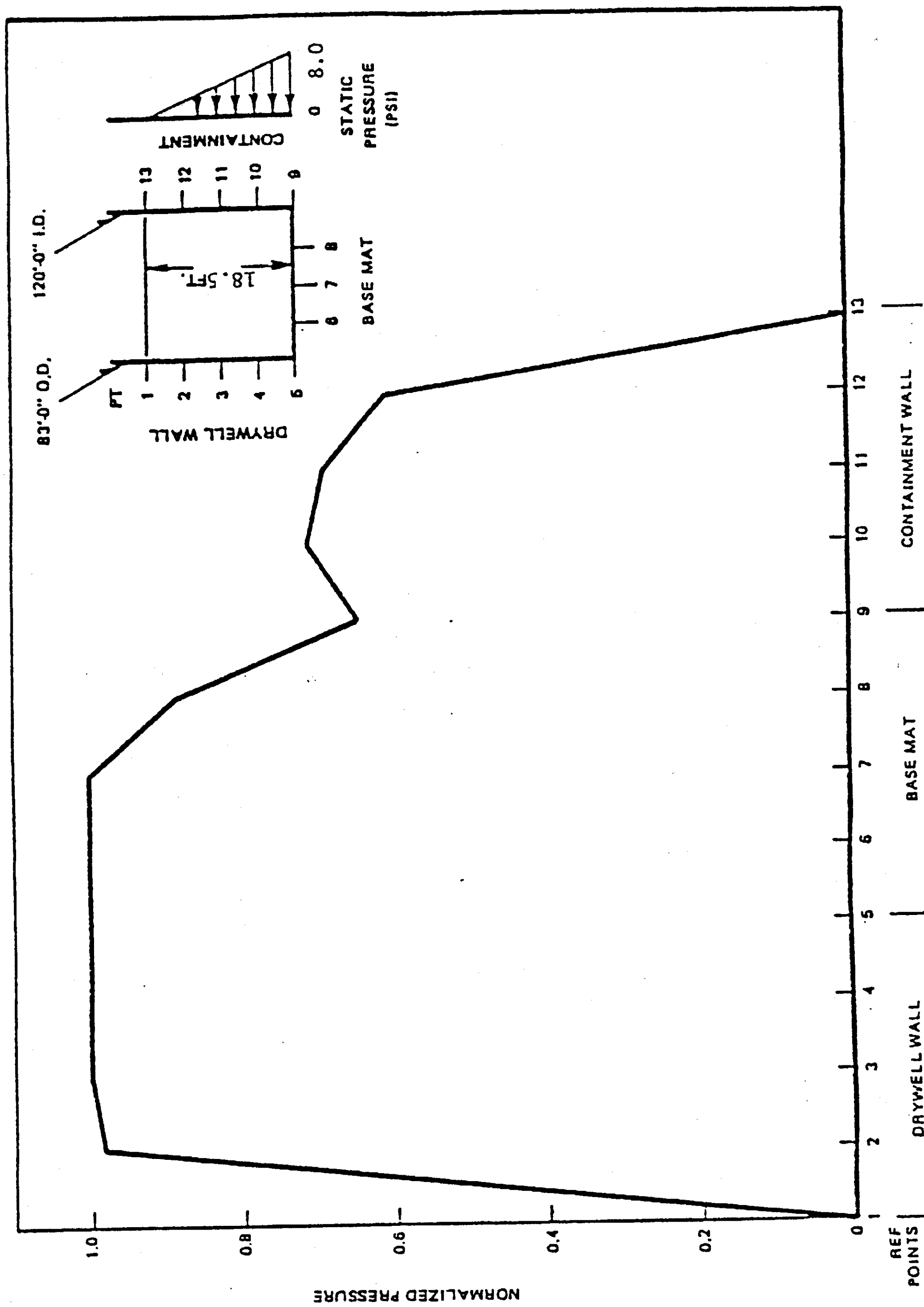
PERRY NUCLEAR POWER PLANT

Safety/Relief Valve Discharge
Piping Arrangement

Figure 3BA-4



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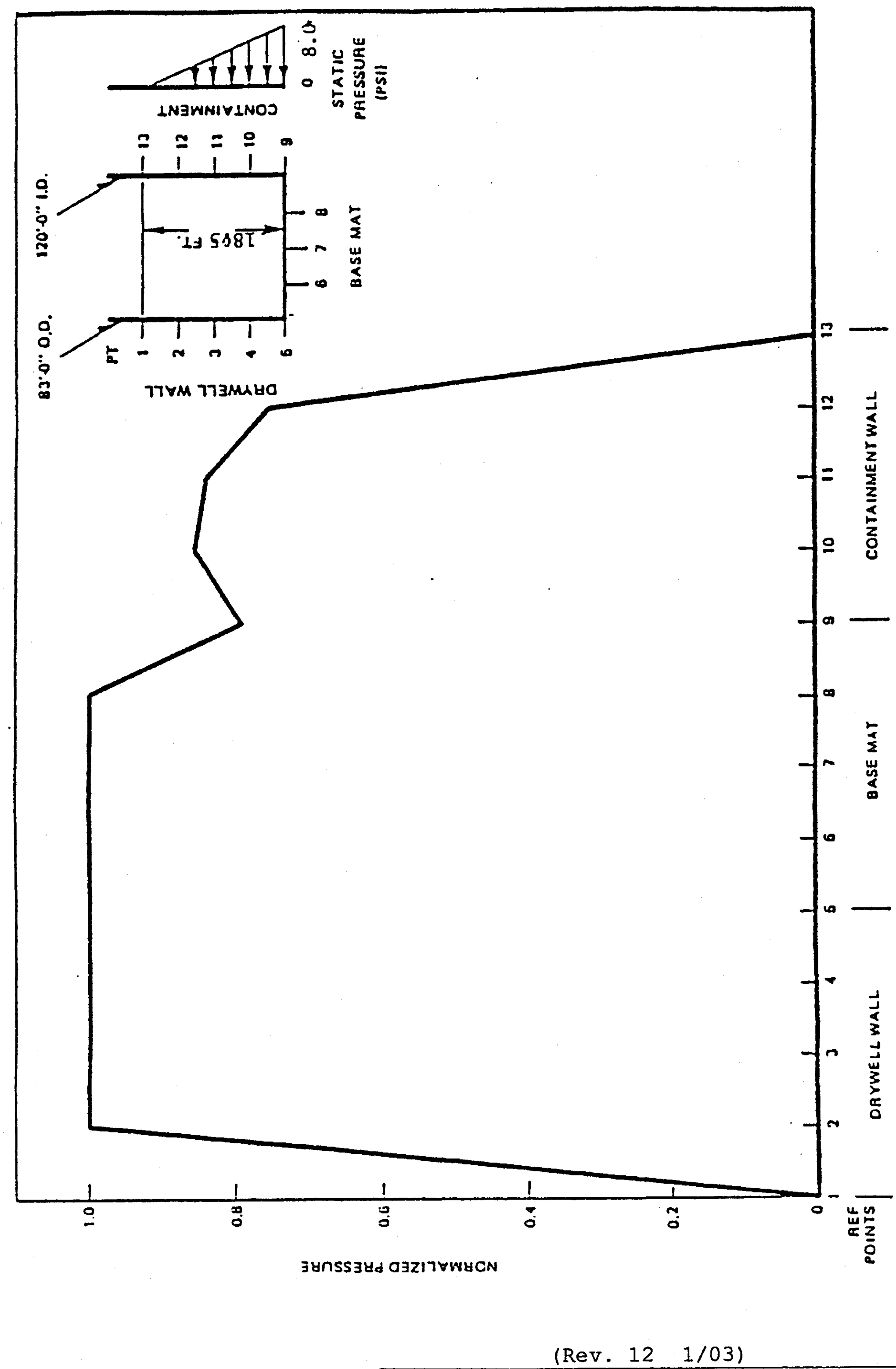
PERRY NUCLEAR POWER PLANT

One Safety/Relief Valve Normalized
Wall Pressure at 4.5°

Figure 3BA-5



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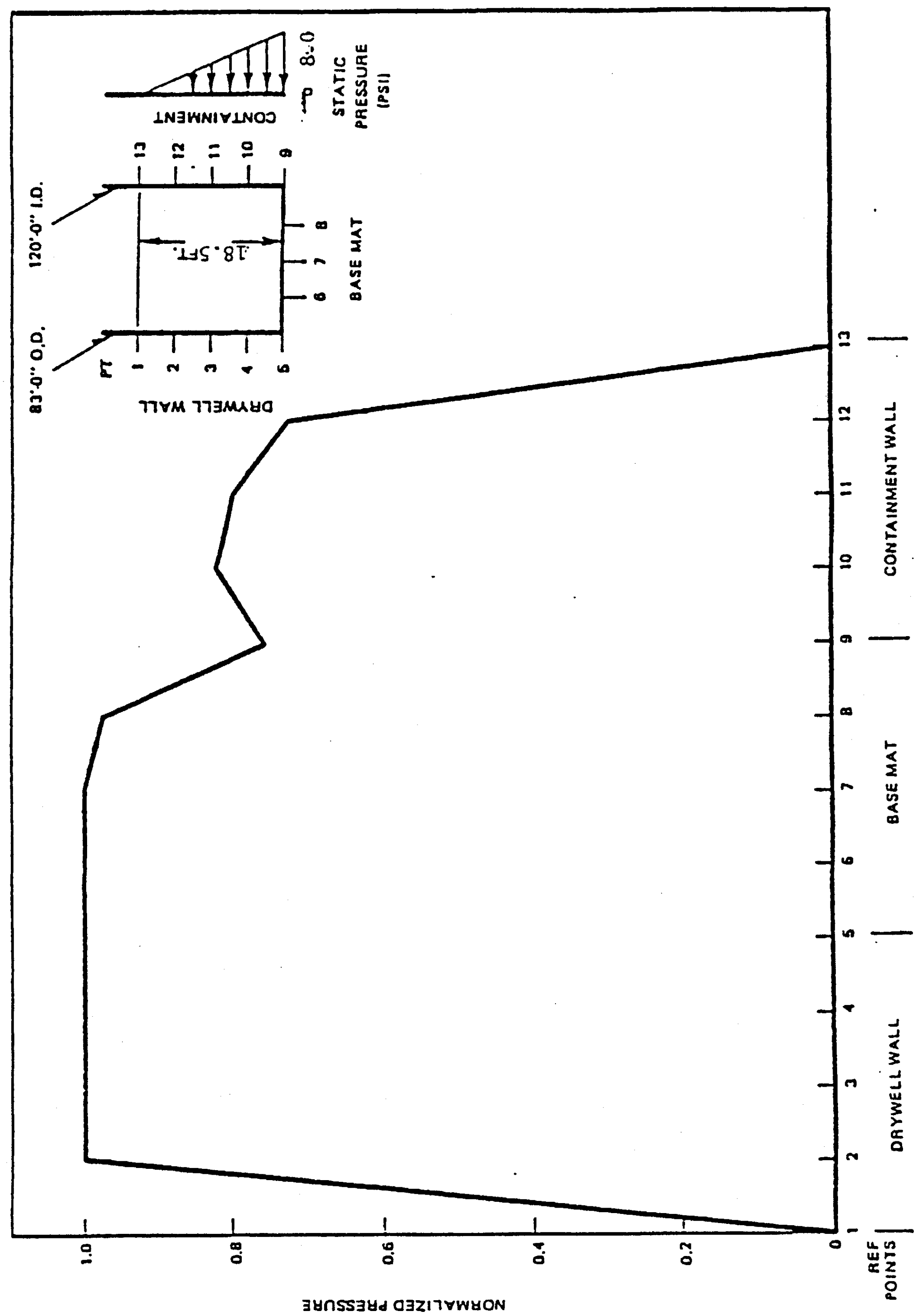
PERRY NUCLEAR POWER PLANT

Two Safety/Relief Valves Normalized
Wall Pressure at 355.5°

Figure 3BA-6



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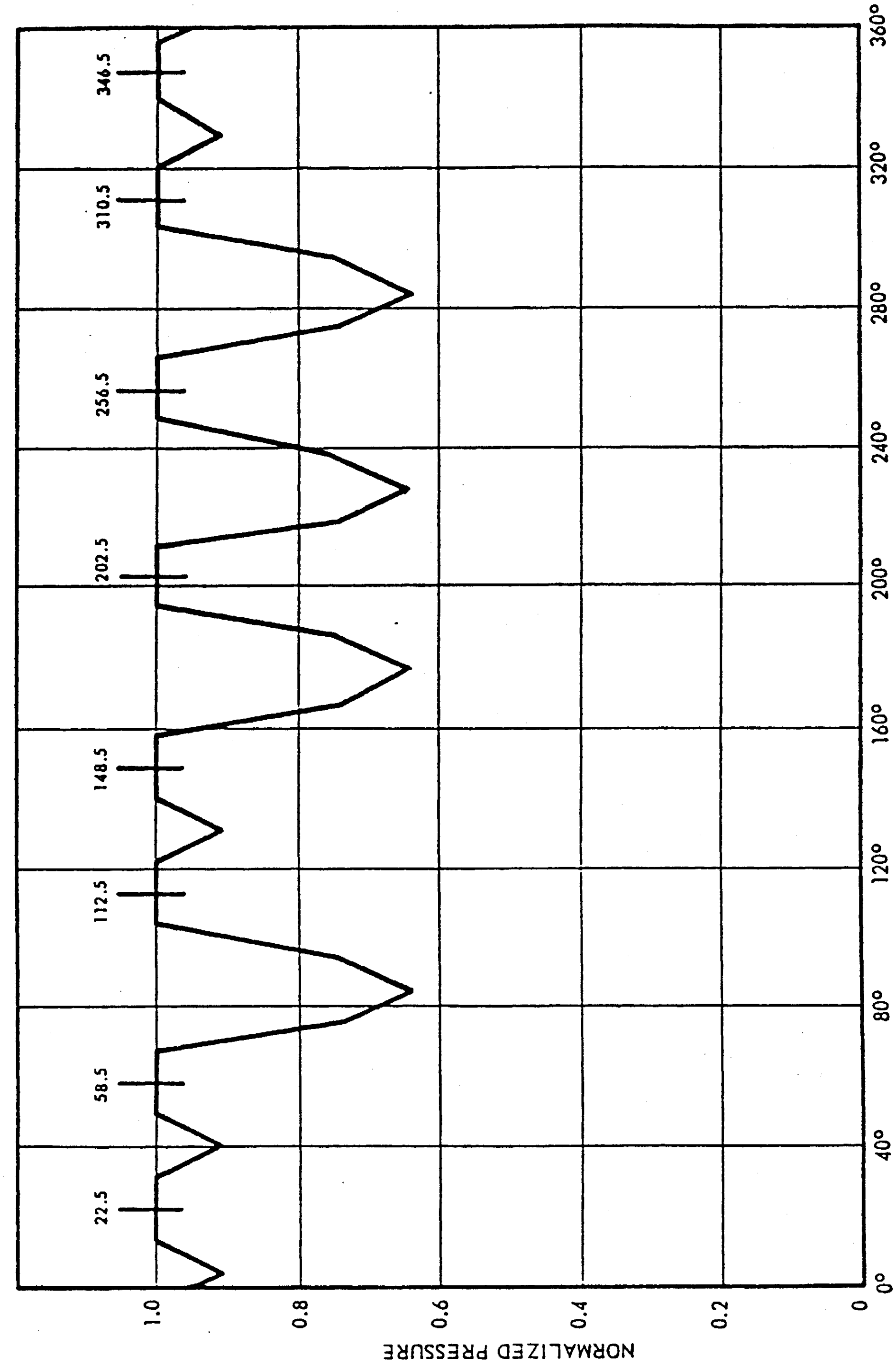
PERRY NUCLEAR POWER PLANT

Eight Safety/Relief Valves Normalized Wall Pressure at 346.5° Azimuth

Figure 3BA-7

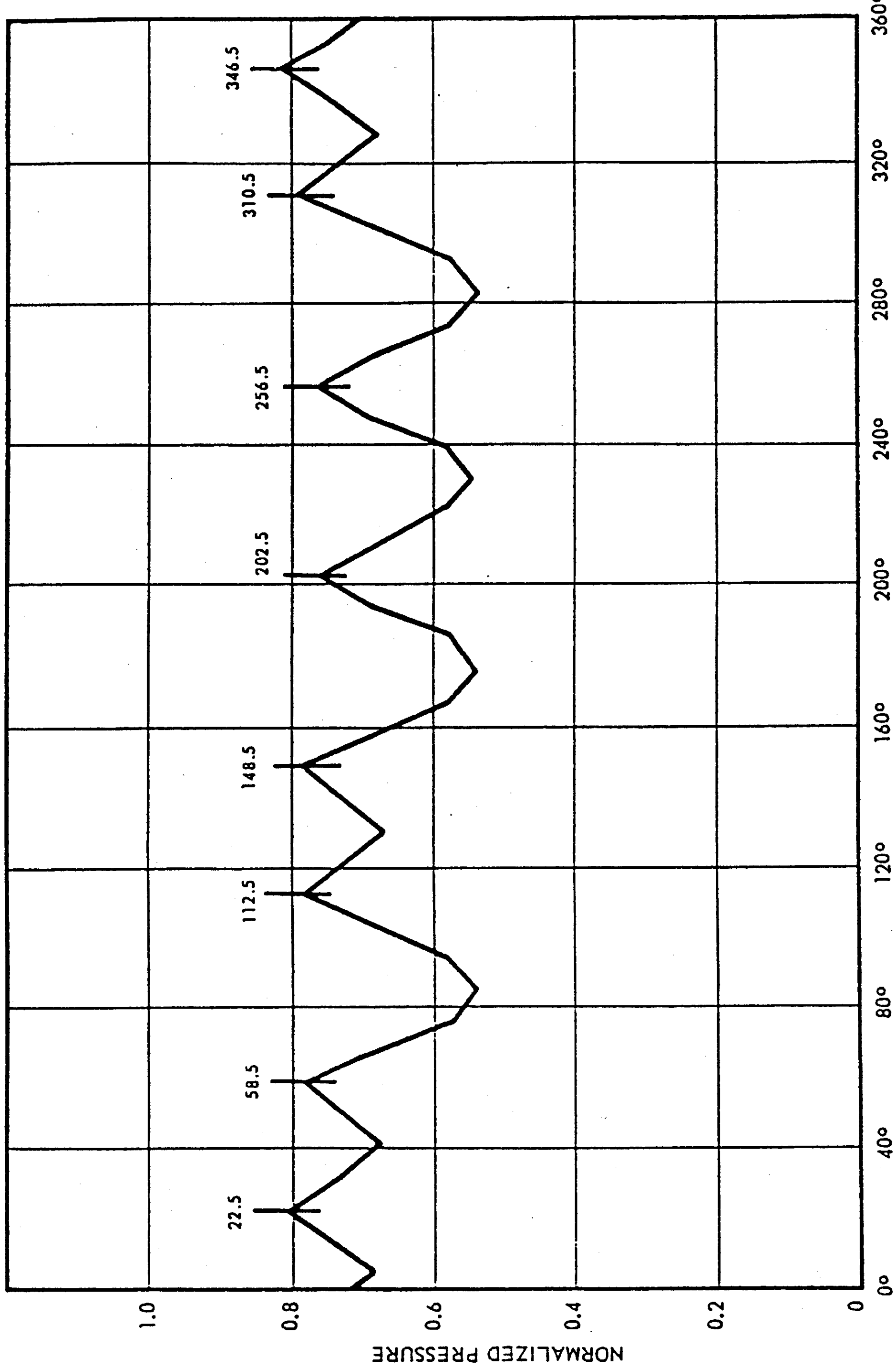


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Eight Safety/Relief Valves
Reference Point 4
(Circumferential Distribution)

Figure 3BA-8

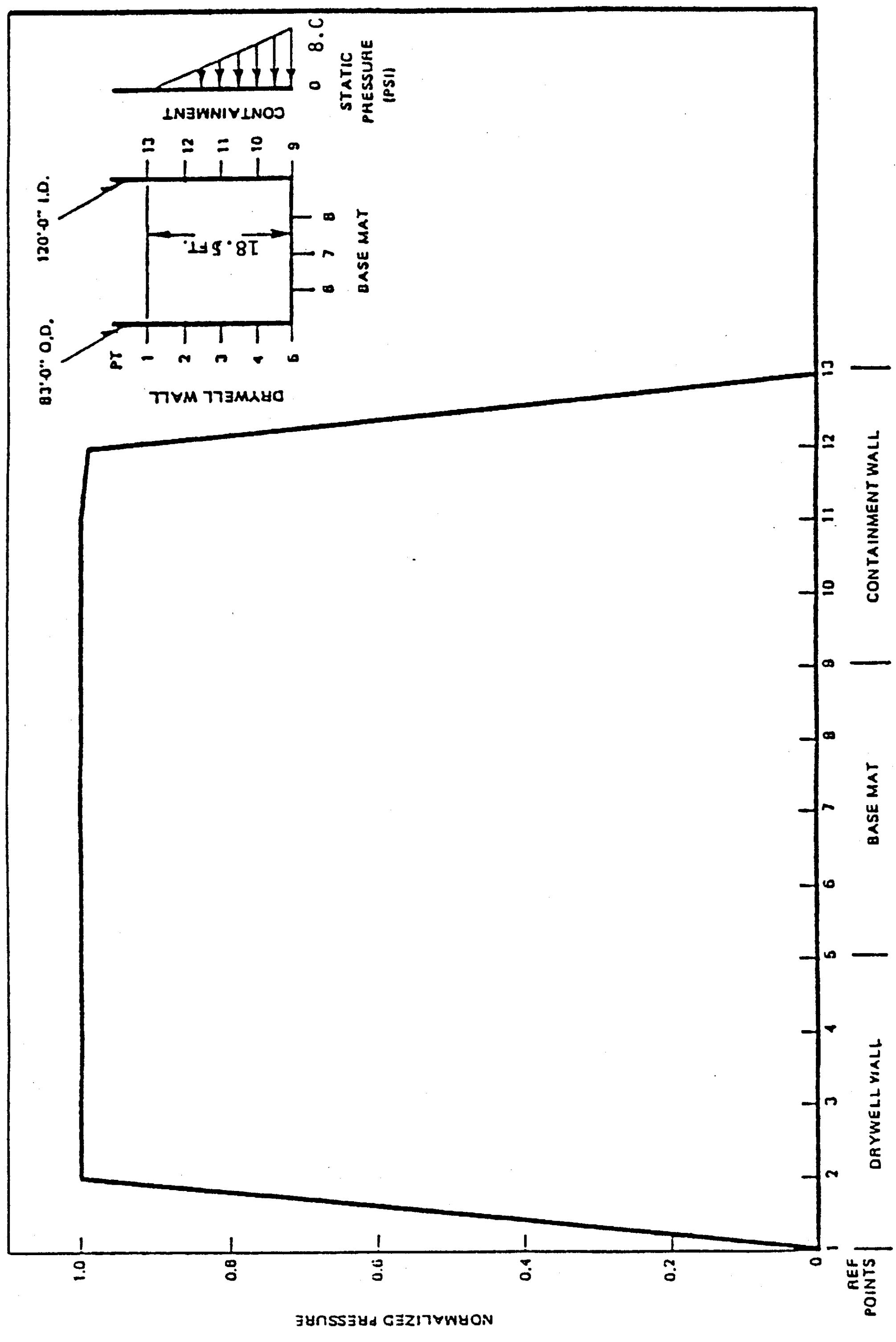


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Eight Safety/Relief Valves
Reference Point 10
(Circumferential Distribution)

Figure 3BA-9



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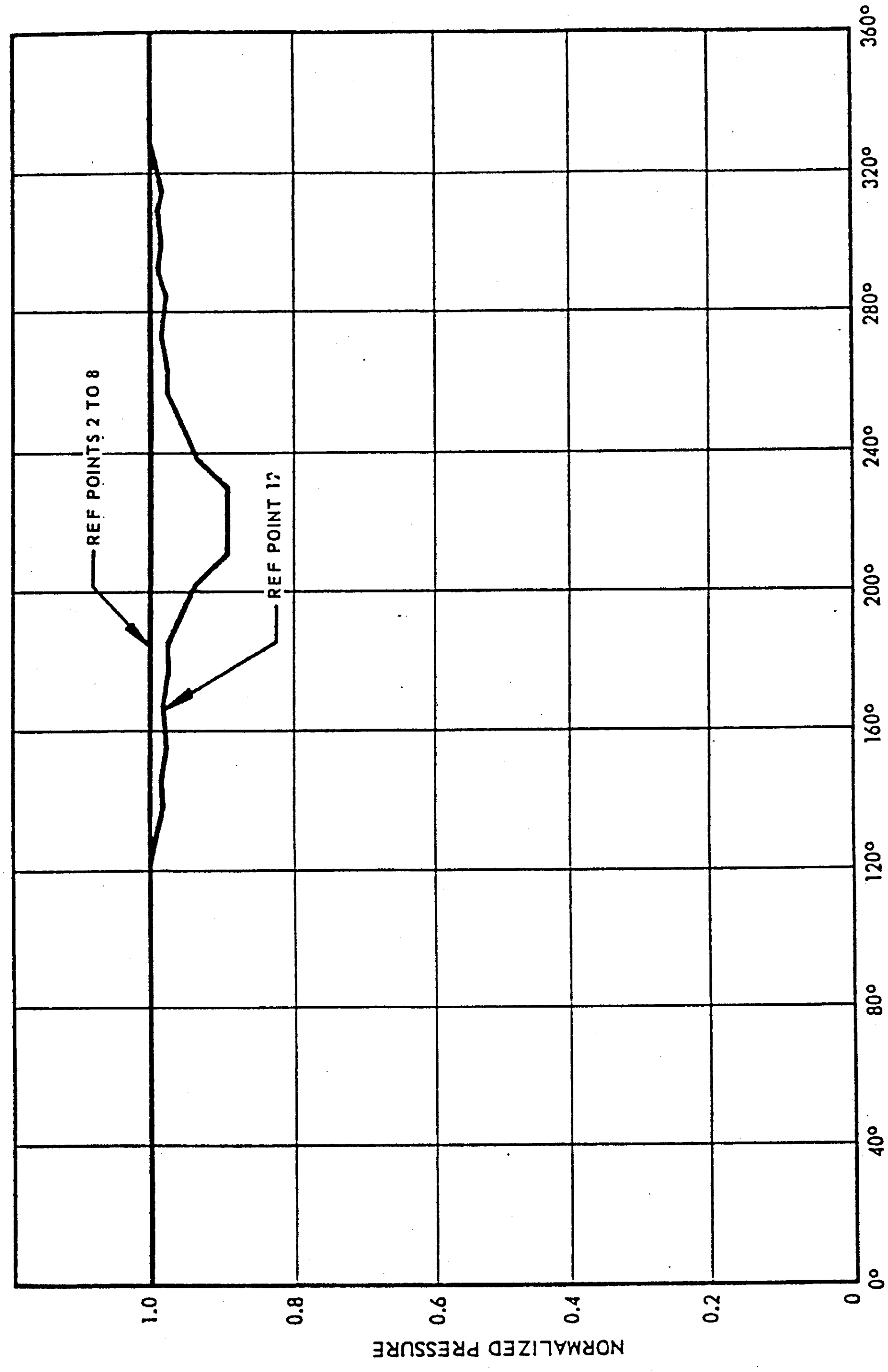
PERRY NUCLEAR POWER PLANT

Nineteen Safety/Relief Valves
Normalized Wall Pressure
At 130.5° Azimuth

Figure 3BA-10



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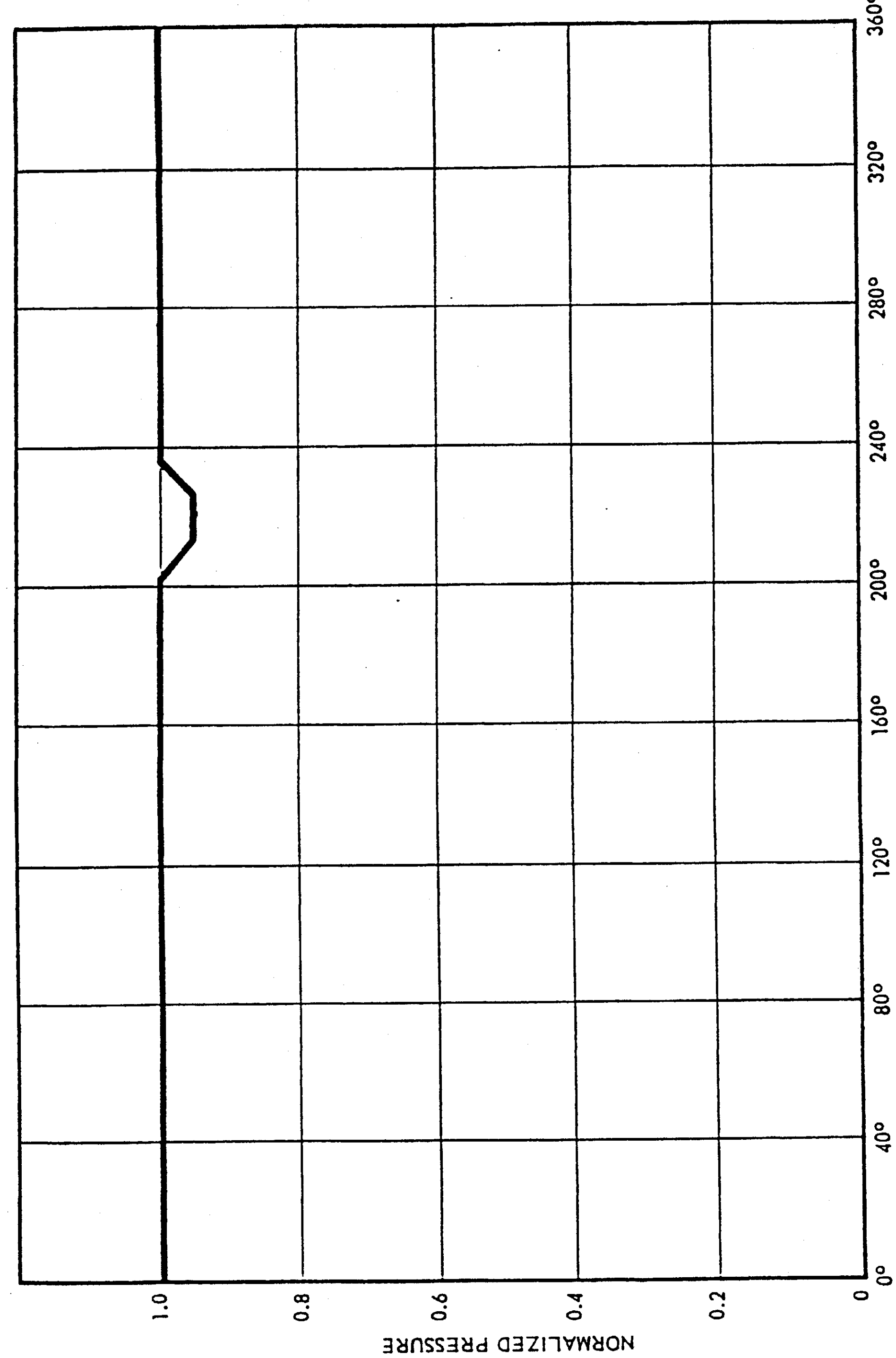
PERRY NUCLEAR POWER PLANT

Suppression Pool Chugging
Normalized Mean Underpressure
Attenuation

Figure 3BA-11



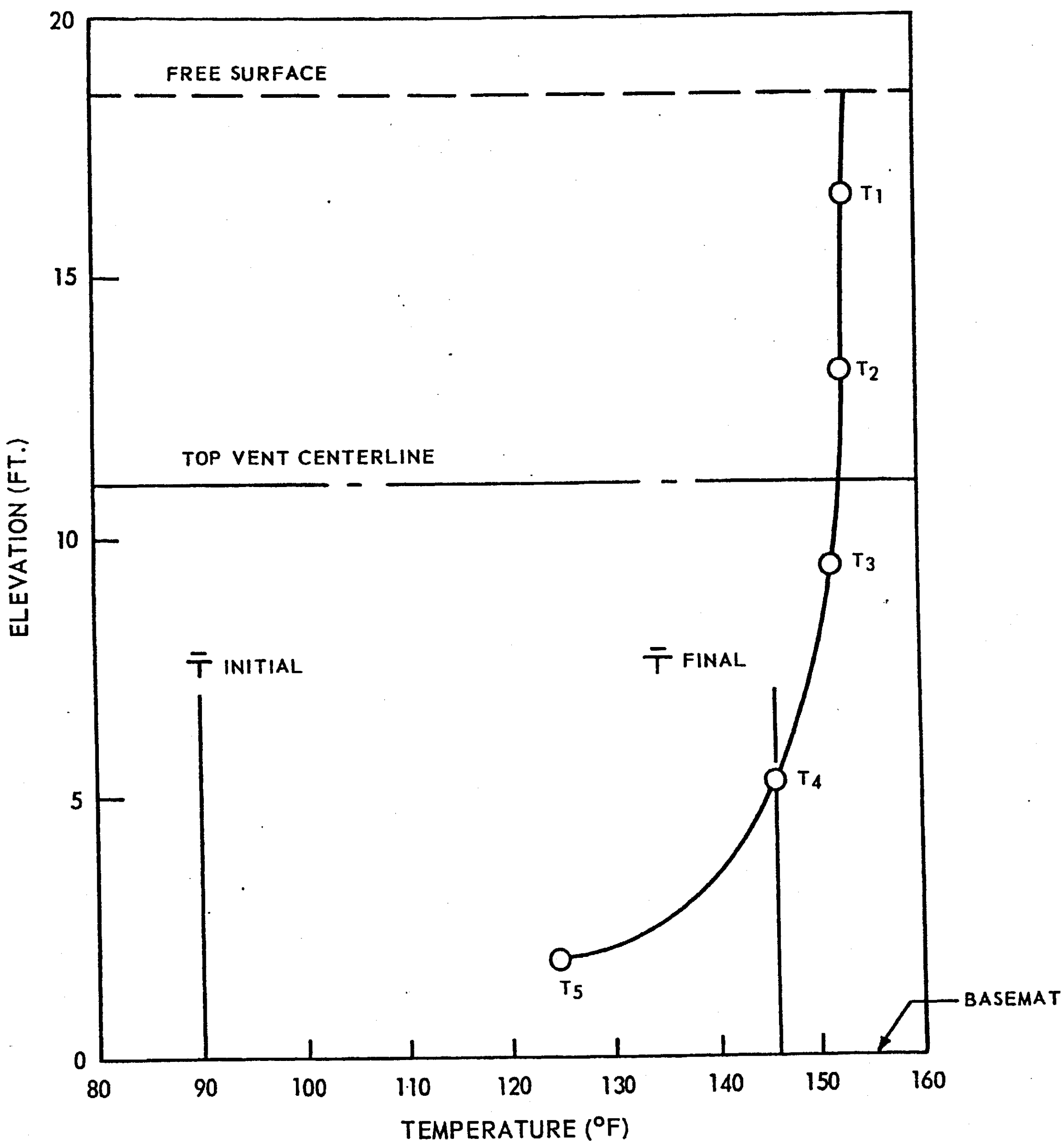
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Nineteen Safety/Relief Valves
Reference Point 10
(Circumferential Distribution)

Figure 3BA-12

INITIAL POOL TEMP.	95°F
TOTAL POOL MASS	7.12×10^6 LB
POOL DEPTH	18.5 FT.
TOTAL ENERGY RELEASE	4.0×10^8 BTU
FINAL BULK POOL TEMP.	146°F



(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Suppression Pool Temperature
Profile for Large Breaks
(DBA)

Figure 3BI-1