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 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylv 05000388
 AUTH. NAME: KEISER, H.W. AUTHOR AFFILIATION: Pennsylvania Power & Light Co.
 RECIP. NAME: BUTLER, W.R. RECIPIENT AFFILIATION: Licensing Branch 2

SUBJECT: Suppls util 850904 ltr re resolution of fire protection concerns. Listed replacement pages re sprinkler protection for control structure elevation & shutdown paths encl.

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 TITLE: OR Submittal: Fire Protection

NOTES: 1cy NMSS/FCAF/PM. LPDR 2cys Transcripts. 05000387
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	NRR STANG, J	07	2	2	NRR WERMEIL, J06		1 0
	NRR/DE/CEB	09	2	2	NRR/DL DIR		1 1
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Pennsylvania Power & Light Company

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Harold W. Keiser
Vice President-Nuclear Operations
215/770-7502

OCT 03 1985

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
RESOLUTION OF FIRE PROTECTION CONCERNS
ER 100450 FILE 841-2, 143
PLA-2541

Docket Nos. 50-387
50-388

Dear Dr. Butler:

This letter supplements PLA-2529, dated September 4, 1985. Enclosed are replacement pages as follows:

<u>Page</u>	<u>Description of Change</u>
Page 3 of Concern #1	Revise Section 2.2 to clarify use of non-rated boundaries
Page 2 of Request #6 in Appendix A to Concern #1	Sprinkler protection for the Control Structure Elevation 754'-0" support steel is partial protection
Figure 6 of Appendix B to Concern #1	Shutdown paths 3 & 4 were added to zone 1-6C
Figure 9 of Appendix B to Concern #1	Shutdown paths 3 & 4 were added to zone 1-6C
Figure 10 of Appendix B to Concern #1	Shutdown paths 3 & 4 were added to zone 1-6C
Figure 11 of Appendix B to Concern #1	Added the amount of combustibile loading for zone 1-5C

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Page 2

SSES PLA-2541
ER 100450 File 841-2, 143
Dr. W. R. Butler

<u>Page</u>	<u>Description of Change</u>
Page 3 to Attachment 2 of Appendix B to Concern #1	Added notes to page regarding the control structure

The above changes are editorial clarifications which do not affect the conclusions of the analysis.

Should you have any questions please contact us.

Very truly yours,



H. W. Keiser
Vice President-Nuclear Operations

cc: M. J. Campagnone - NRC
R. H. Jacobs - NRC

- iii) Identifying on a case by case the specific barrier components which are not rated and providing a justification for their use.

Any additional fire rated protection required as a result of this redefinition will be in accordance with 10CFR50 Appendix R, Section III.G.

2.2 Other Safety Related Buildings

The methodology used in the Control Structure, the Diesel Generator buildings and the ESSW pumphouse was somewhat different since the majority of the fire zone boundaries are fire rated and, as a result, our fire zone boundaries are equivalent to fire area boundaries. For these buildings each fire zone was reviewed for its safe shutdown division. Fire zones having a common safe shutdown division were grouped into fire areas. Each fire area was reviewed to assure that all of its boundaries were fire rated construction, or if a non-rated boundary was acceptable.

3.0 ASSUMPTIONS & NRC GUIDANCE

- 3.1 The analysis was performed in accordance with the following NRC guidance:

- a. 10 CFR 50, Appendix R Section III.G.
- b. Generic Letters 83-33 and 85-01.
- c. NRC letter to PP&L dated April 18, 1985 which states:

"The reassessment of non-rated construction should be in accordance with guidance presented at the site audit. That is, to provide reasonable assurance that fire propagation will not occur beyond non-fire-rated zone boundaries, the boundaries should be upgraded, to be continuous barriers with a fire rating sufficient to withstand the effects of a fire involving in-situ and transient combustibles, with conservative margin. If boundary construction is not upgraded, your reassessment should assume that fire spread will occur into the next most immediate fire zone (horizontally and/or vertically)."

- 3.2 The analysis performed was based on the following assumptions:

- a. The concrete block or reinforced concrete used in the construction of walls, floors and ceilings are acceptable as being fire rated.
- b. Evaluation of the fire rating of existing doors by Factory Mutual Research is acceptable to the NRC staff.
- c. The unprotected structural steel will be shown to be acceptable using a methodology acceptable to the NRC.

[The text in this section is extremely faint and illegible, appearing as a series of scattered characters and noise.]

FIRE ZONE BELOW/
FIRE ZONE ABOVE

SPRINKLER
PROTECTION BELOW
STRUCTURAL STEEL

COMBUSTIBLE LOADING

Unit #2 - Reactor Building (Cont.)

2-3B-N/2-4A-S	Yes	16 min
2-3B-N/2-4G	Yes	16 min
2-3B-W/2-4C	Yes	16 min
2-3B-W/2-4D	Yes	16 min
2-4A-S/2-5A-W	Yes	15 min
2-4A-W/2-5A-N	Yes	15 min
2-4A-W/2-5A-W	Yes	15 min
2-4G/2-5B	No	4 min
2-4A-W/2-5E	Yes	15 min
2-4A-W/2-5F	Yes	15 min
2-4A-W/2-5G	Yes	15 min
2-5A-S/2-6A	Yes	6 min
2-5C/2-6A	No	6 min
2-6A/2-4G	No	6 min

Control Structure Elevation 754'-0 Support Steel	Yes (Part)	62 min
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JUSTIFICATION:

Unit #1 and #2 Reactor Buildings:

All fire zones have sprinkler protection below the exposed structural steel except for Fire Zones 1-1E, 1-1F, 2-1E, 2-1F, 2-4G, 2-5C and 2-6A. In these fire zones the maximum combustibile rating is 18 minutes, and minimal transient combustibles are expected. Finally, the in-situ combustibles in these fire zones are generally located near the floor at a distance from where the structural steel forming the fire area barrier is located.

CONTROL STRUCTURE:

Automatic detection and protection is provided below the exposed structural steel. The majority of the combustibles in the area below the exposed structural steel are cables. The majority of the cables are located either below the raised (computer type) floor in the Control Room or in 2 hour fire rated cable chases on the north and south walls of the control structure where only one structural member is effected. There is approximately 20 feet between the raised computer floor and the exposed structural steel supporting elevation 754'-0. Finally, the Control Room comprises the majority of the area beneath this steel and it is continually staffed.

EXEMPTION REQUEST:

Exposed structural steel supporting the identified fire area barriers is acceptable and does not require fire proofing.

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CONTROL STRUCTURE

<u>FIRE AREA</u>	<u>FIRE ZONE(S)</u>
CS-1	0-21B,029A
CS-2	0-22B, 0-29C,D
CS-3	0-21A, 0-22A, 0-22C, 0-23, 0-24A-G, 0-25A,E
CS-4	0-24I,L
CS-5	0-24K
CS-6	0-24J, 0-25B, 0-26B,S, 0-27F, 0-28P
CS-7	0-24L,M, 0-25C,D, 0-26C,D, 0-26T,V, 0-27G,H, 0-28Q,R
CS-8	0-28S
CS-9**	0-26A,E-N,P,R
CS-10**	0-27A-E
CS-11	0-28A Subzone I (Room C-613)
CS-12	0-28C
CS-13	0-28E
CS-14	0-28G
CS-15	0-28H
CS-16	0-28J
CS-17	0-28B Subzone I (Room C-604)
CS-18	0-28M
CS-19	0-28N
CS-20	0-28A Subzone II (Rooms C-611, C-612)
CS-21	0-28T
CS-22	0-28D
CS-23	0-28F
CS-24	0-28B Subzone II (Rooms C-605, C-606)
CS-25	0-28I
CS-26	0-28K
CS-27	0-28L
CS-28	0-29B, 0-30A,B*

* These fire zones contain no safe shutdown cables and function as a "buffer" fire zone.

** The floor/ceiling between Fire Area CS-9 and CS-10 has unprotected support steel. See Exemption Request Number 6.

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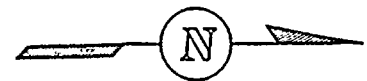
8-10

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EL. 872'-6"

REACTOR BUILDING



EL. 818'-1"

EL. 799'-1"

EL. 779'-1"

EL. 749'-1"

EL. 739'-7"

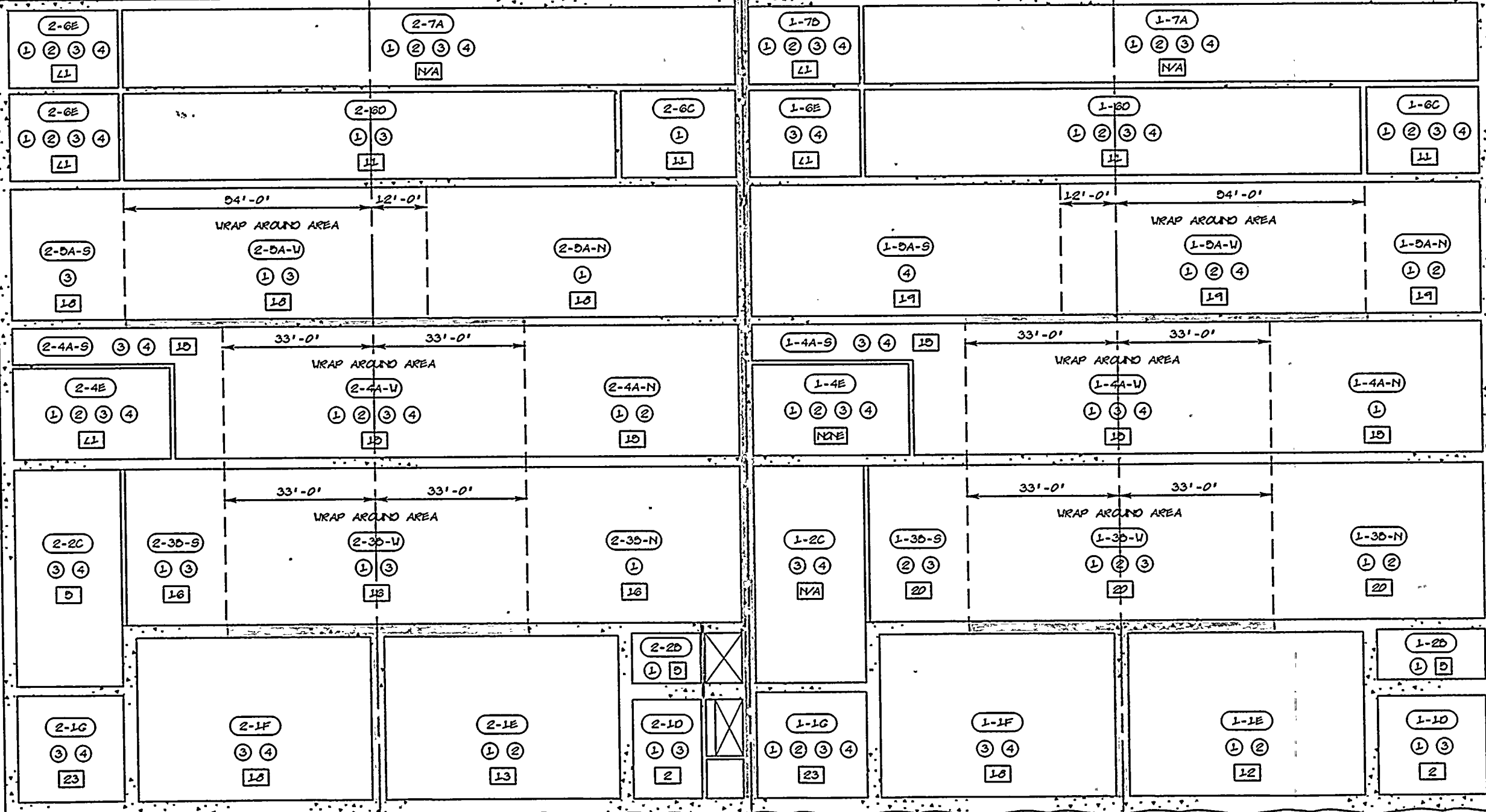
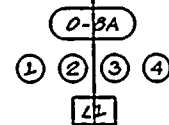
EL. 719'-1"

EL. 683'-0"

EL. 670'-0"

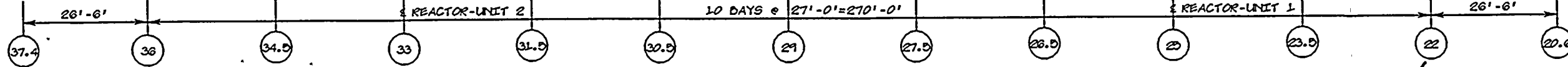
EL. 654'-2"

EL. 645'-0"



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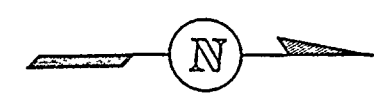
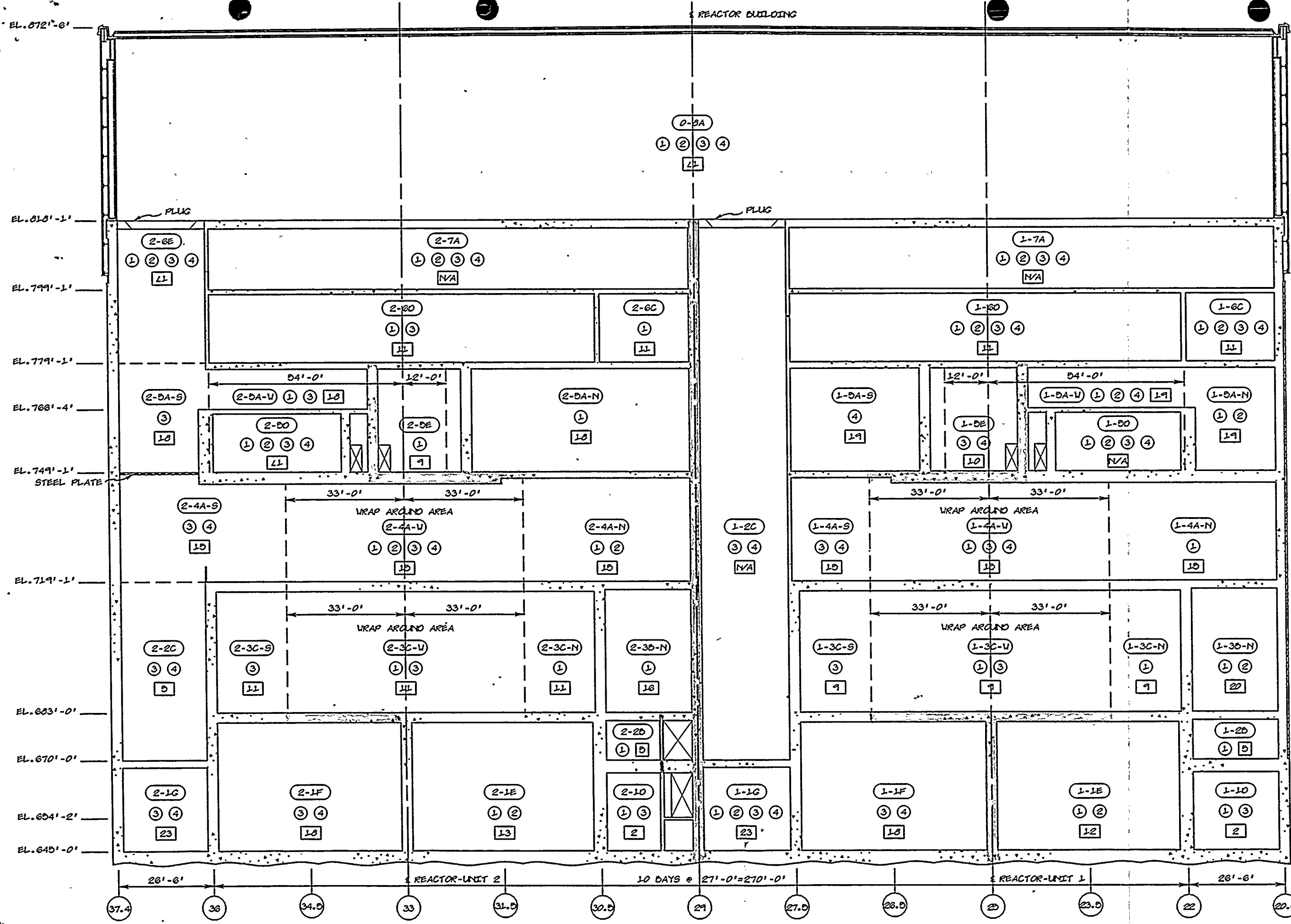


SECTION A-A

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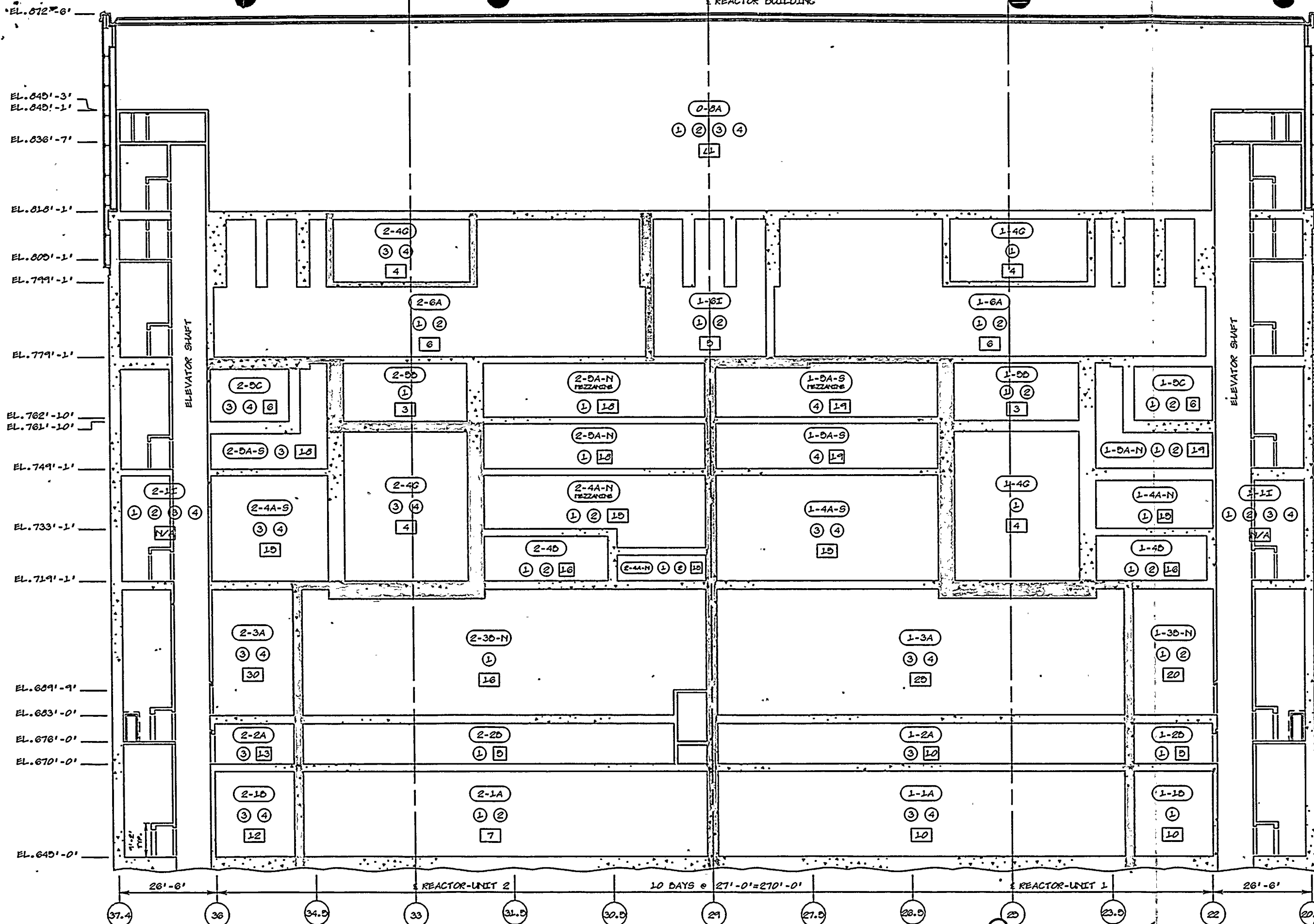
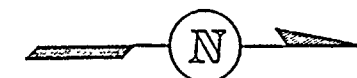
SECTION D-D

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1960-1961
1962-1963

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REACTOR BUILDING



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SECTION C-C

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