VERMONT YANKEE
NUCLEAR POWER CORPORATION

RD 5, Box 169, Ferry Road, Brattleboro, VT 05301

REPLY TO:
ENGINEERING OFFICE
1671 WORCESTER ROAD
FRAMINGHAM, MASSACHUSETTS 01701
TELEPHONE 617-872-8100

July 26, 1985

VYL 85-47

Mr. Robert Hermann
United States Nuclear Regulatory Commission
Old Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland 20014

Dear Mr. Hermann:

This letter is pursuant to our July 16, 1985 meeting in Bethesda to discuss our Appendix R, Section III.G, exemption requests. At the meeting, NRR requested further information and raised a number of concerns.

Attachment 1 provides some of the information that was requested. We plan to provide the remaining information and a proposed resolution of the NRR concerns in two additional informal submittals. The first of these submittals will be mailed on August 2, 1985 and the second will be mailed on August 9, 1985. After your review of our informal submittals has been completed and we have received your comments, we will resubmit a complete package on the docket.

In the meantime, if you have any questions concerning the information provided in Attachment 1 to this letter, please let us know.

Thanks for your cooperation.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

W. D. Hinkle

W. D. Hinkle
Assistant Project Manager

WDH/mmt

Attachments

50-271

A006
1/1

ATTACHMENT 1

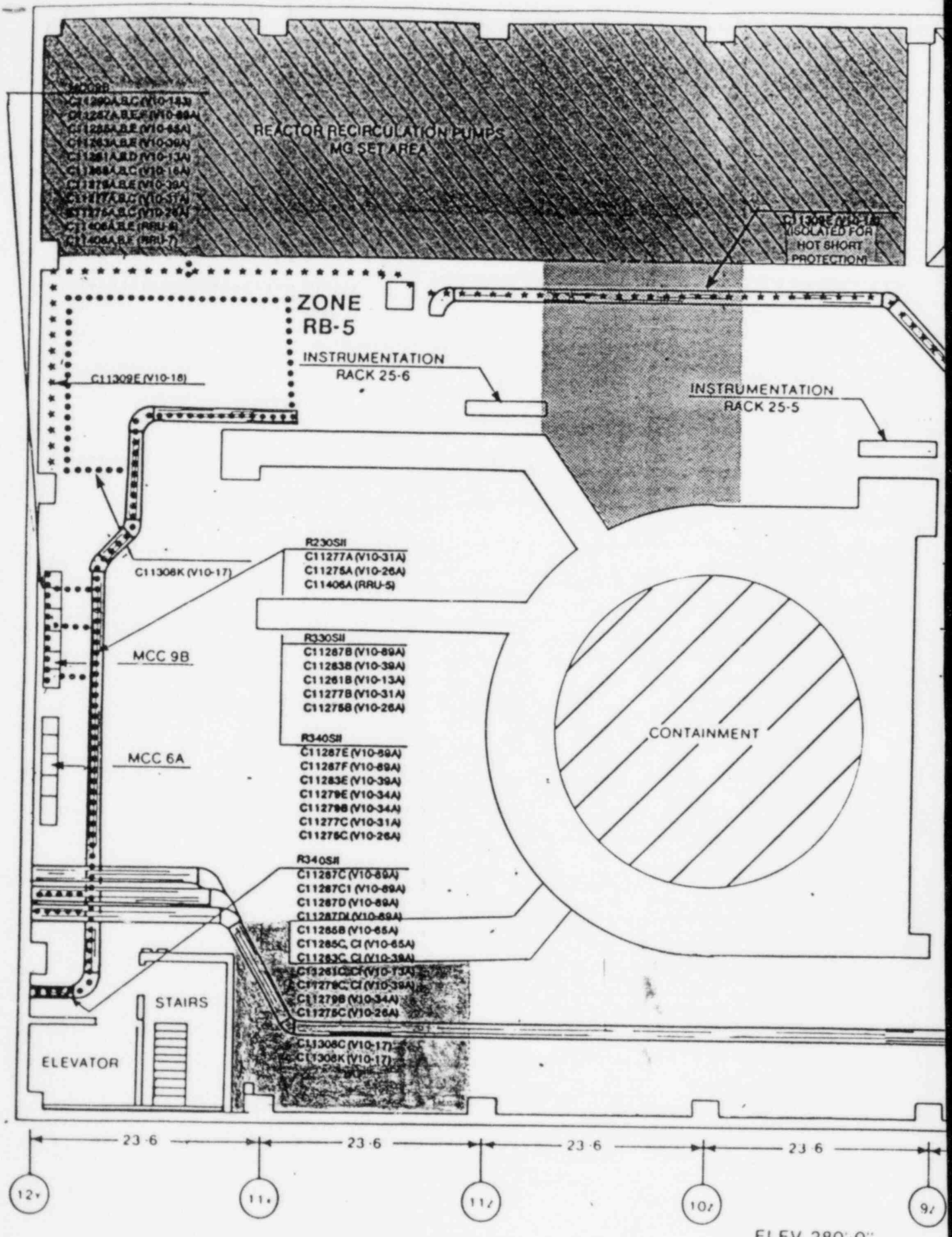
Information Requested by NRR at July 16, 1985 Meeting

1. Corrected versions of Figures 3-5, 3-9 and 3-13.

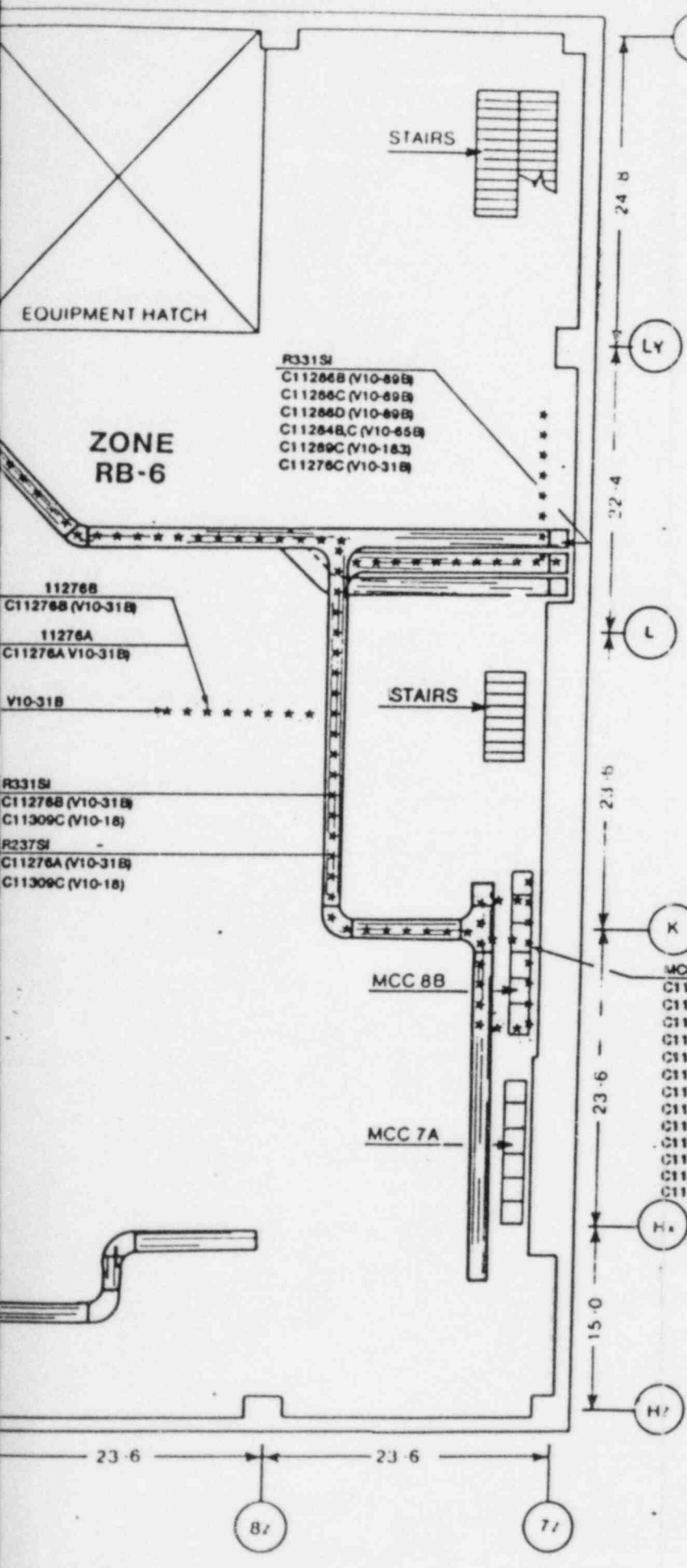
2. Copies of photos/plan views used as basis for July 16, 1985 discussion of Exemptions 1-8.

3. Elevation views of Reactor Building.

4. Fire stop design description and copy of test report used as basis for design. (Reference Exemption Requests 1, 5, 7 and 8)


REACTOR RECIRCULATION PUMPS
MG SET AREA
C11308E (V10-18)
ISOLATED FOR
HOT SHORT
PROTECTION
ZONE
RB-5
INSTRUMENTATION
RACK 25-6
INSTRUMENTATION
RACK 25-5
C11309E (V10-18)
C11308K (V10-17)
R230SII
C11277A (V10-31A)
C11275A (V10-26A)
C11406A (RRU-5)
MCC 9B
R330SII
C11287B (V10-89A)
C11283B (V10-39A)
C11261B (V10-13A)
C11277B (V10-31A)
C11275B (V10-26A)
MCC 6A
R340SII
C11287E (V10-89A)
C11287F (V10-89A)
C11283E (V10-39A)
C11279E (V10-34A)
C11279B (V10-34A)
C11277C (V10-31A)
C11275C (V10-26A)
R340SII
C11287C (V10-89A)
C11287C1 (V10-89A)
C11287D (V10-89A)
C11287D1 (V10-89A)
C11285B (V10-65A)
C11285C, C1 (V10-65A)
C11283C, C1 (V10-39A)
C11261C,C1 (V10-13A)
C11279C, C1 (V10-39A)
C11279B (V10-34A)
C11275C (V10-26A)
C11308C (V10-17)
C11308K (V10-17)
CONTAINMENT
STAIRS
ELEVATOR
23-6
23-6
23-6
23-6
12
11
11
10
9
ELEV. 280'-0"

P147-P-001-4



NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown only.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11312A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191149 REV. 12
G191336 REV. 18

LEGEND:

- * * * RHR, RHR SW (DIV. I)
- • • • • RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT
- SUPPRESSION

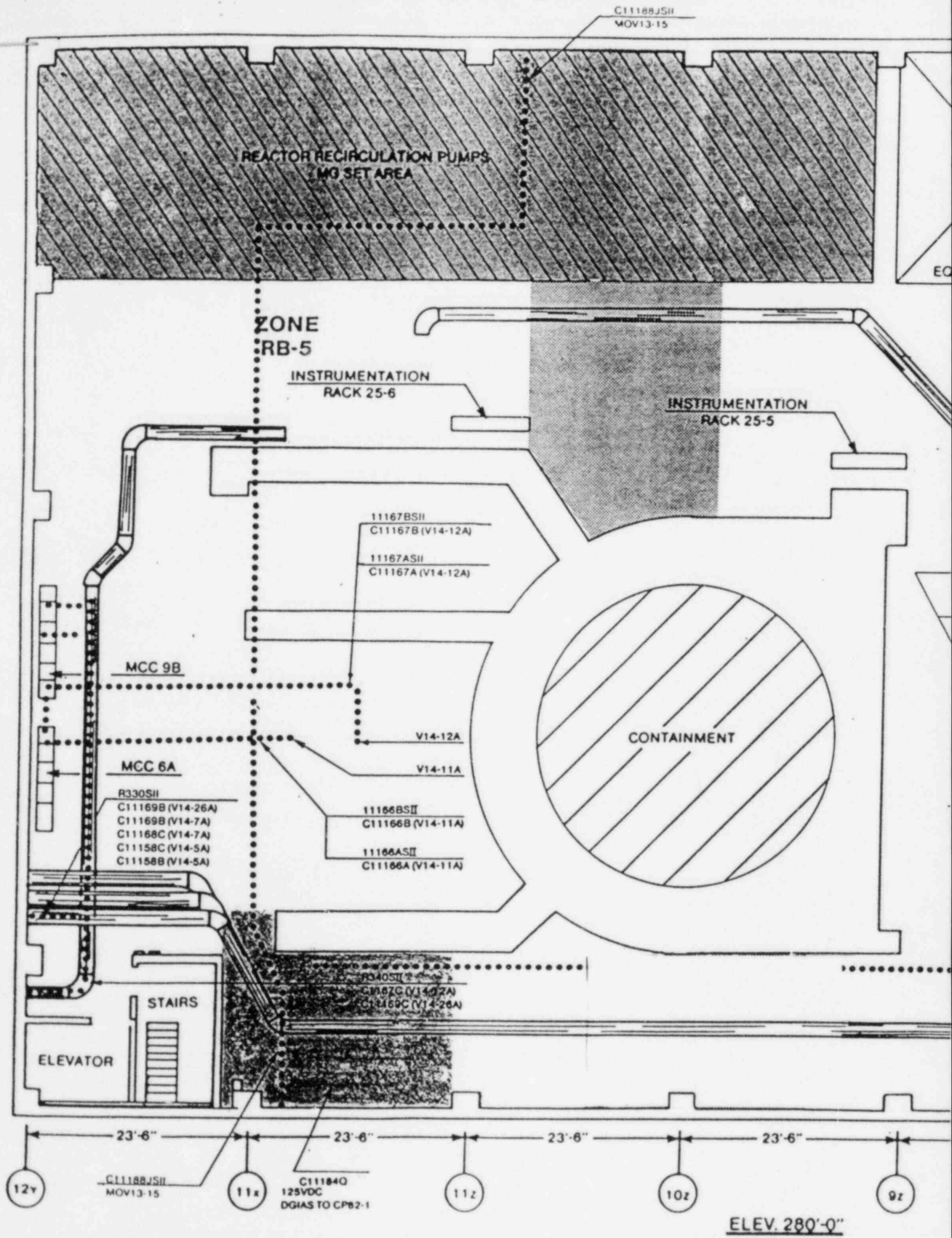
REV NO	DATE	DESCRIPTION	PREP. BY	REV. BY	APPR. BY
1	8/7/85	ISSUED FOR REPORT	MJ	WH	EH

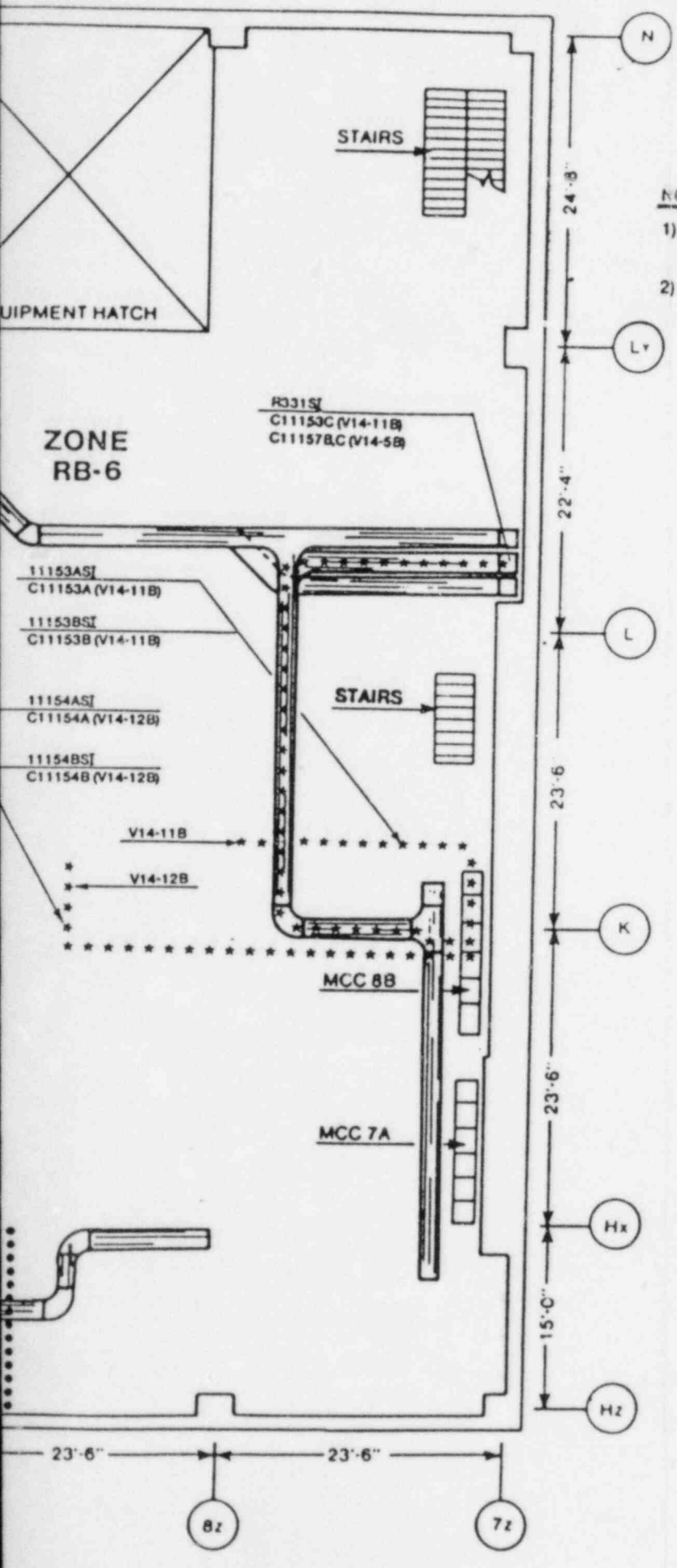
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.
Three Speen Street, Framingham, MA

FIGURE NO
3-5


C11188JSII
MOV13-15
REACTOR RECIRCULATION PUMPS
MG SET AREA
ZONE
RB-5
INSTRUMENTATION
RACK 25-6
INSTRUMENTATION
RACK 25-5
11167BSII
C11167B (V14-12A)
11167ASII
C11167A (V14-12A)
MCC 9B
MCC 6A
V14-12A
V14-11A
CONTAINMENT
R330SII
C11169B (V14-26A)
C11169B (V14-7A)
C11168C (V14-7A)
C11158C (V14-5A)
C11158B (V14-5A)
11166BSII
C11166B (V14-11A)
11166ASII
C11166A (V14-11A)
STAIRS
ELEVATOR
23'-6"
23'-6"
23'-6"
23'-6"
12Y
11X
11Z
10Z
9Z
C11188JSII
MOV13-15
C11184Q
125VDC
DGIAS TO CP82-1
ELEV. 280'-0"



NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191149 REV. 12
G191336 REV. 18

LEGEND:

- * * * CORE SPRAY, ADS, HPCI DIV. I
- •••• CORE SPRAY, ADS, RCIC DIV. II
- SEPARATION ZONE
- CONTAINMENT
- SUPPRESSION

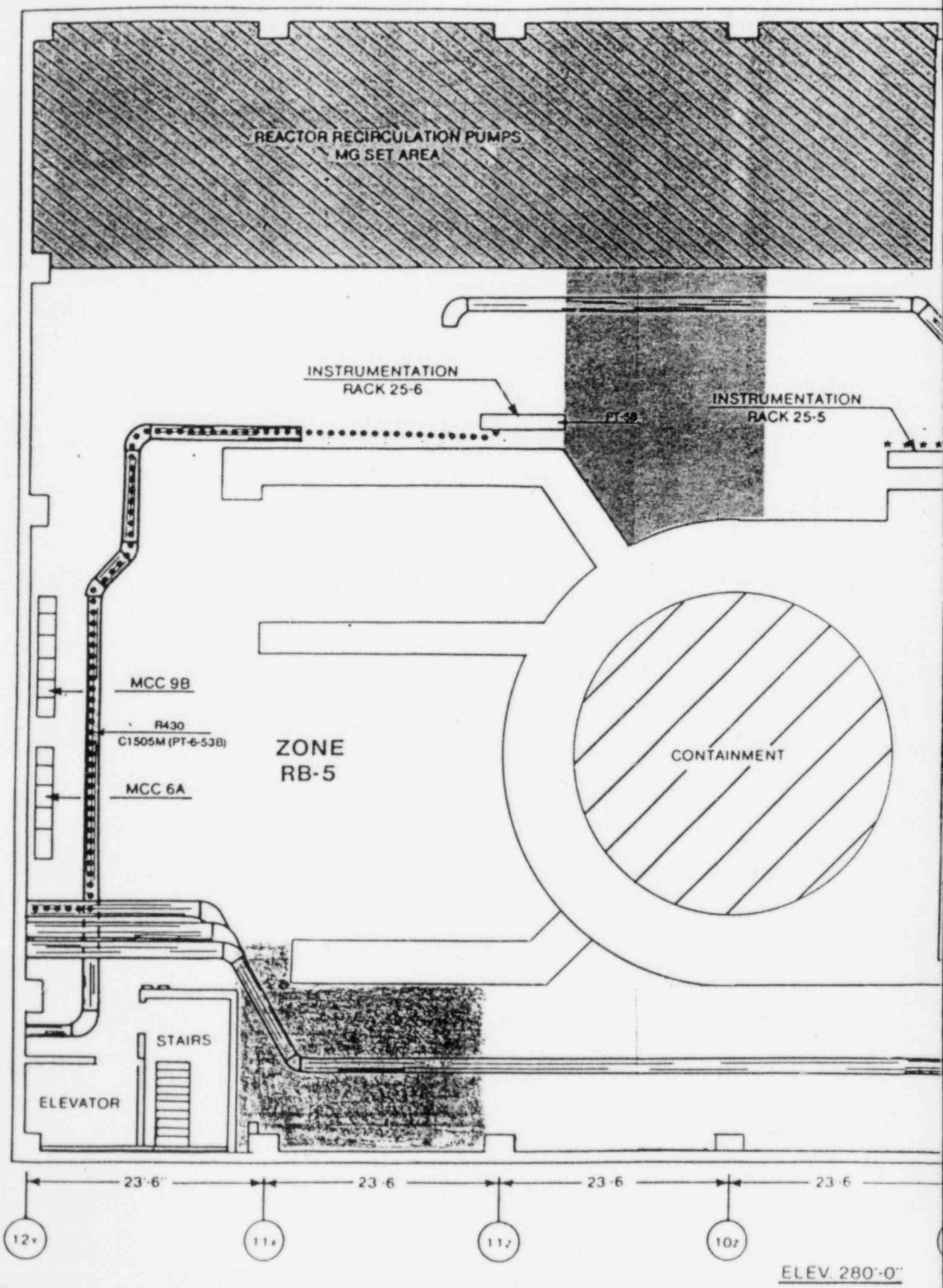
REV NO	DATE	DESCRIPTION	PREP. BY	REV BY	APPR BY
1	2/7/80	ISSUED FOR REPORT	MM	WR	EN

VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

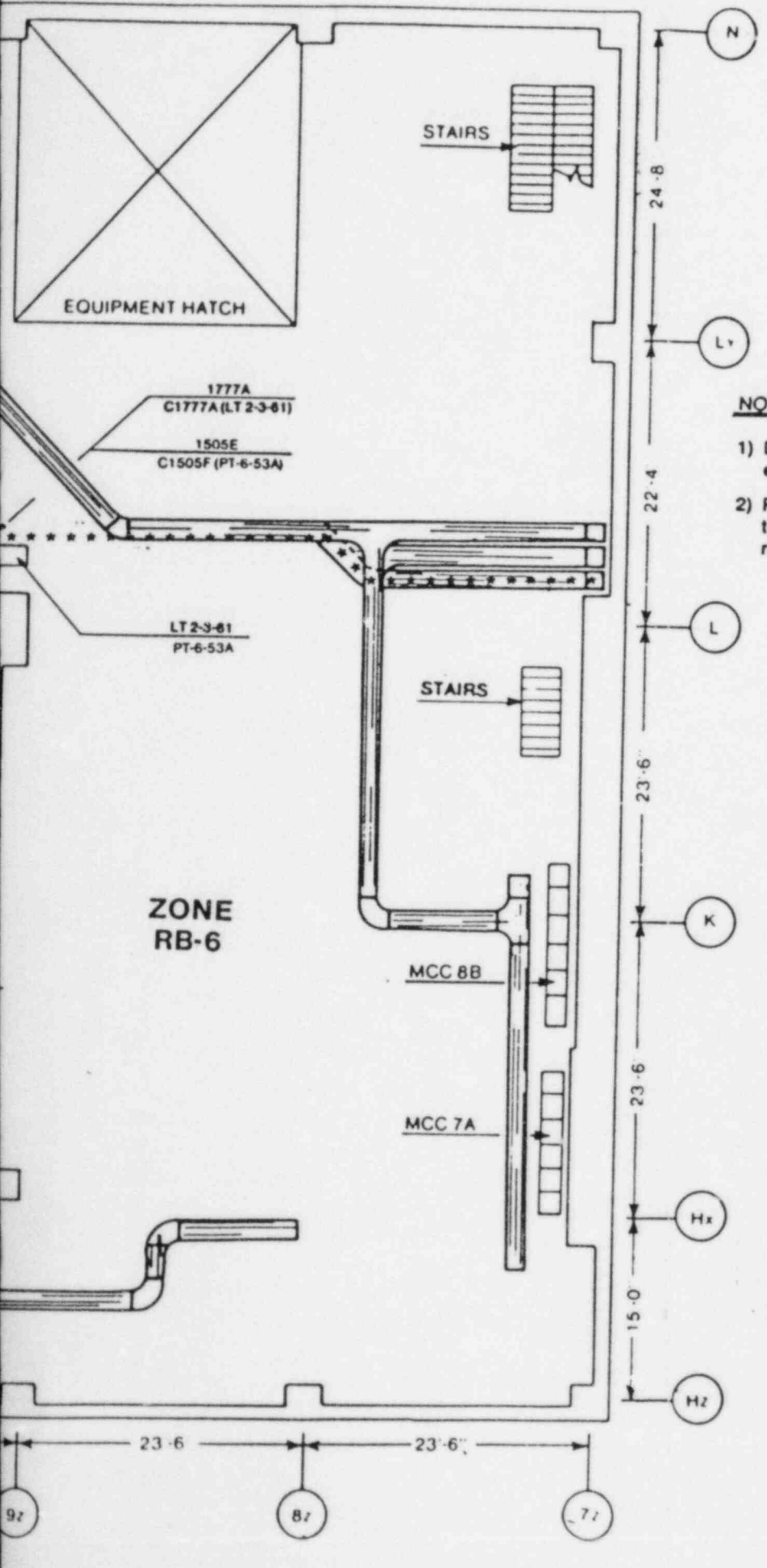
REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF CORE SPRAY, ADS, RCIC AND HPCI

Engineering Planning and Management, Inc.
Three Speen Street, Framingham, MA

FIGURE NO. 3-9


REACTOR RECIRCULATION PUMPS
MG SET AREA
INSTRUMENTATION
RACK 25-6
PT-58
INSTRUMENTATION
RACK 25-5
MCC 9B
R430
C1505M (PT-6-538)
MCC 6A
ZONE
RB-5
CONTAINMENT
STAIRS
ELEVATOR
23'-6"
23'-6
23'-6
23'-6
12
11
11
10
ELEV. 280'-0"

84-YY-0172



NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191149 REV 12
G191336 REV 13

LEGEND:

- — DIV. I INSTRUMENTATION
- — DIV. II INSTRUMENTATION
- — SEPARATION ZONE
- — CONTAINMENT
- — SUPPRESSION

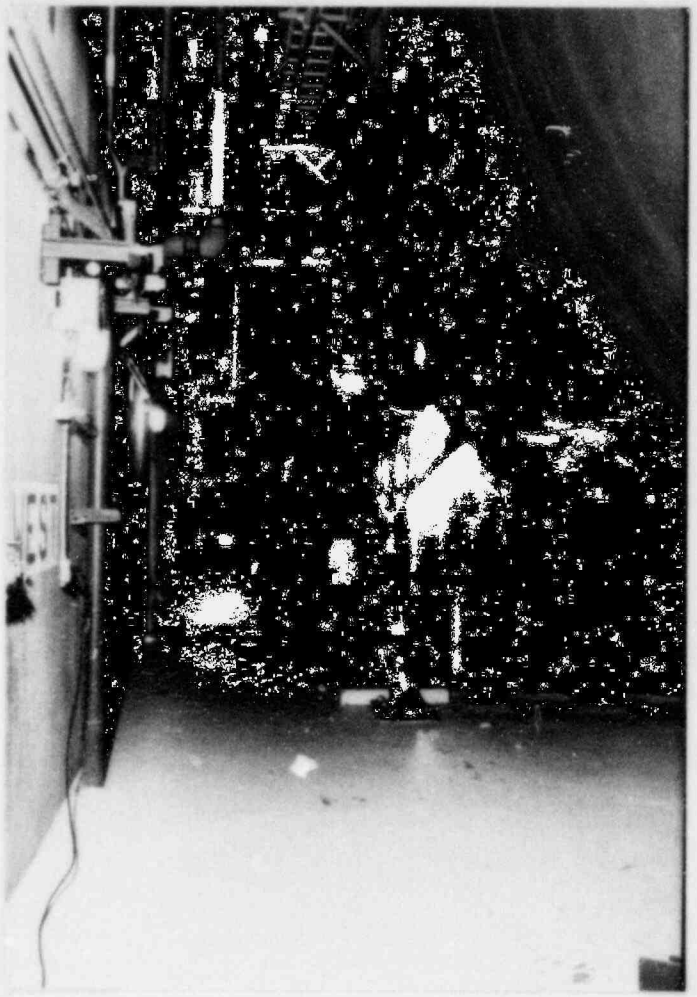
REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPR BY
1	8/7/85	ISSUED FOR REPORT	MF	DMH	EH

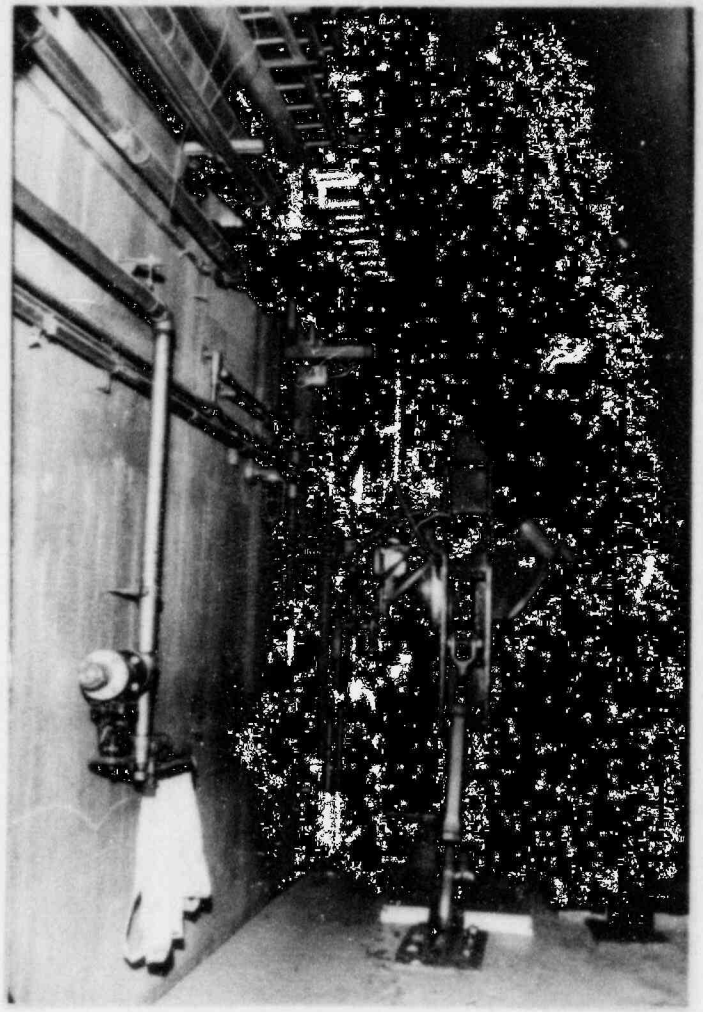
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

REACTOR BUILDING RACEWAY AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II PROCESS MONITORING

Engineering Planning and Management, Inc.
Three Seven Street Framingham, MA

FIGURE NO
3-13

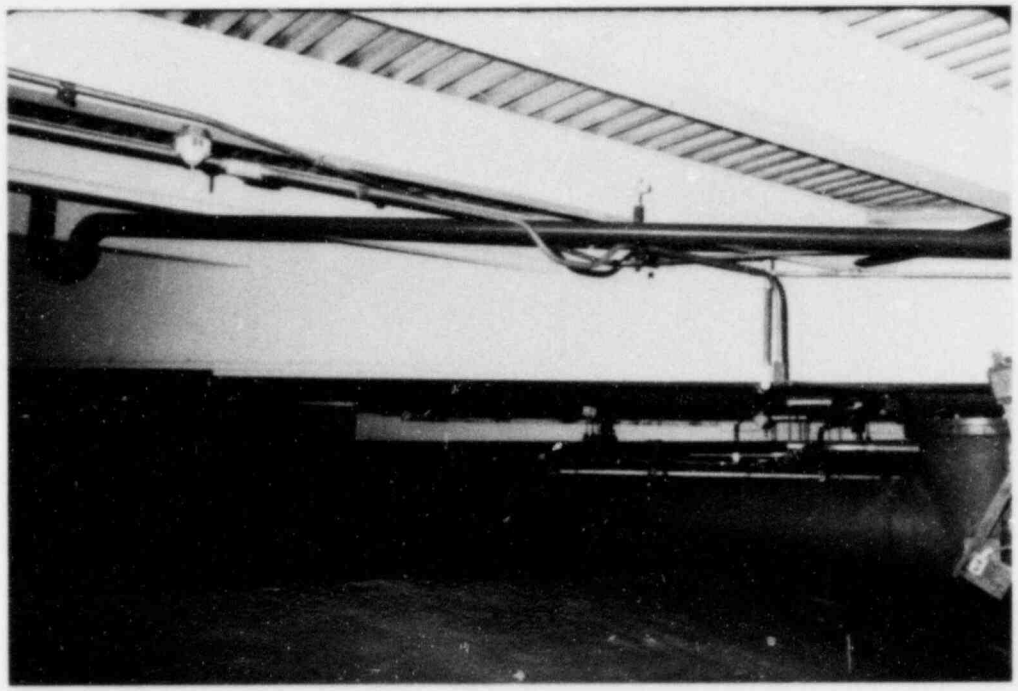




EXEMPTION REQUEST NO. 1

REACTOR BUILDING - TORUS AREA

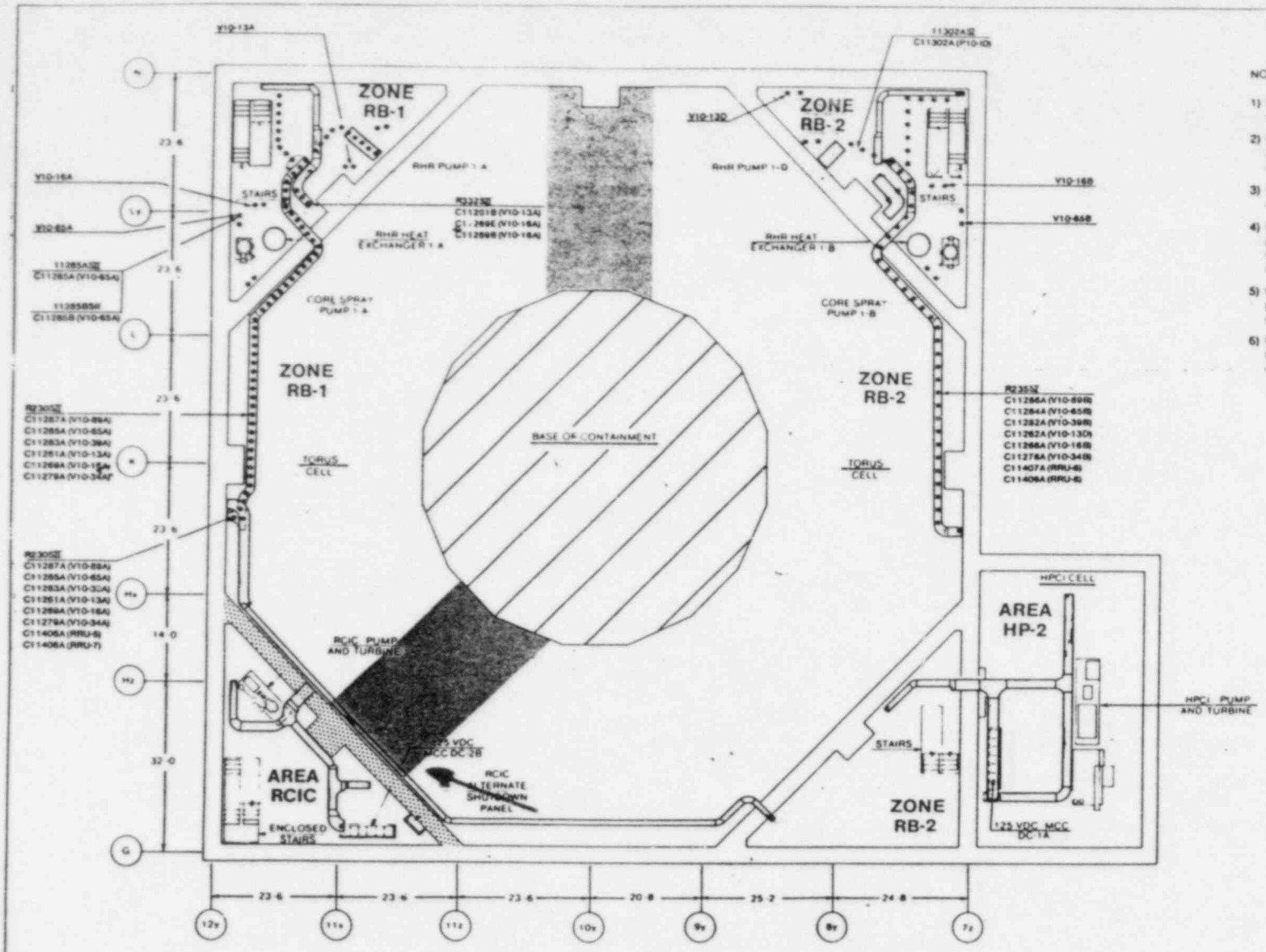
SHOWING NO COMBUSTIBLES IN AREA



EXEMPTION REQUEST NUMBER 1

REACTOR BUILDING - TORUS AREA

SHOWN DETECTION AND NO COMBUSTIBLES IN AREA



ELEVATION 213'-9"

FIRE AREA BARRIER

NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11313A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191148 REV. 9
G191329 REV. 11
G191330 REV. 13
G191331 REV. 10

LEGEND:

- REACTOR BUILDING FIRE BARRIER, 3-HR RATING
- RHR, RHR SW (DIV. I)
- RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT

REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPR BY
1	4/85	ISSUED FOR REPORT			

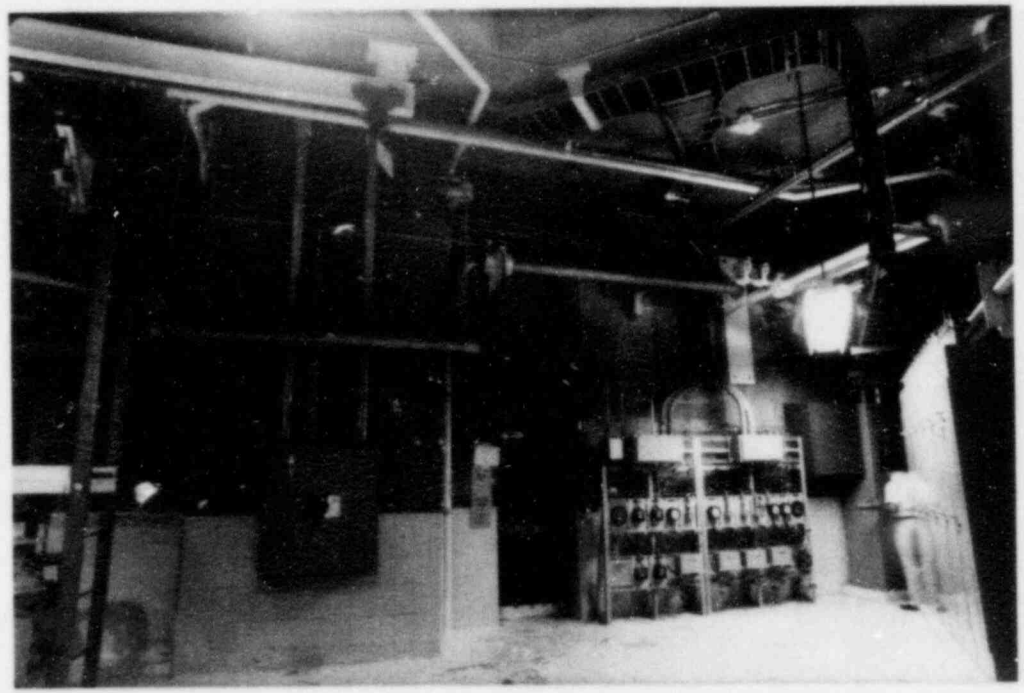
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.
Three Speen Street, Framingham, MA

FIGURE NO 13-2

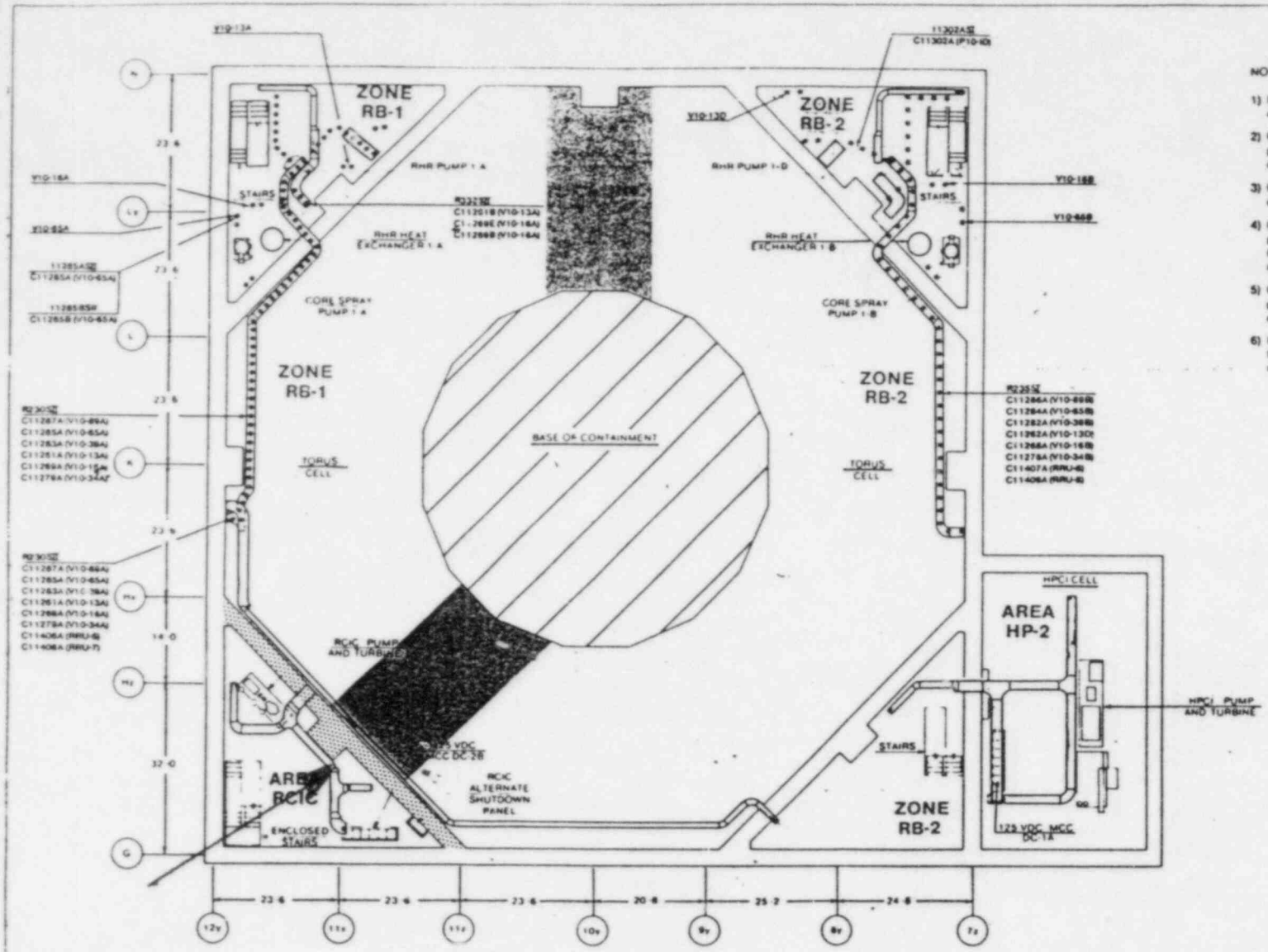
84-VY-0173
P147-F-001-1



EXEMPTION REQUEST NUMBER 2

REACTOR BUILDING - RCIC ROOM

SHOWING NO COMBUSTIBLES IN IMMEDIATE VICINITY OF DOOR



ELEVATION 213'-9"

NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11313A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191148 REV. 9
G191329 REV. 11
G191330 REV. 13
G191331 REV. 10

LEGEND:

- REACTOR BUILDING FIRE BARRIER, 3-HR RATING
- RHR, RHR SW (DIV. I)
- RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT

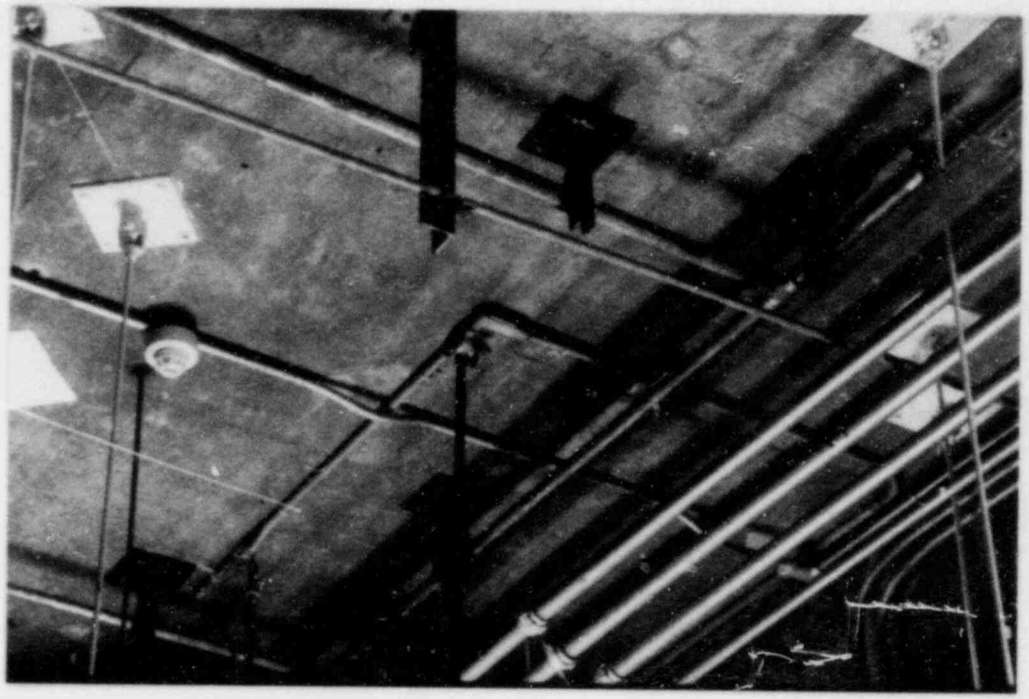
REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPVD BY
1	4/9/85	ISSUED FOR REPORT	MF	[illegible]	

VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.

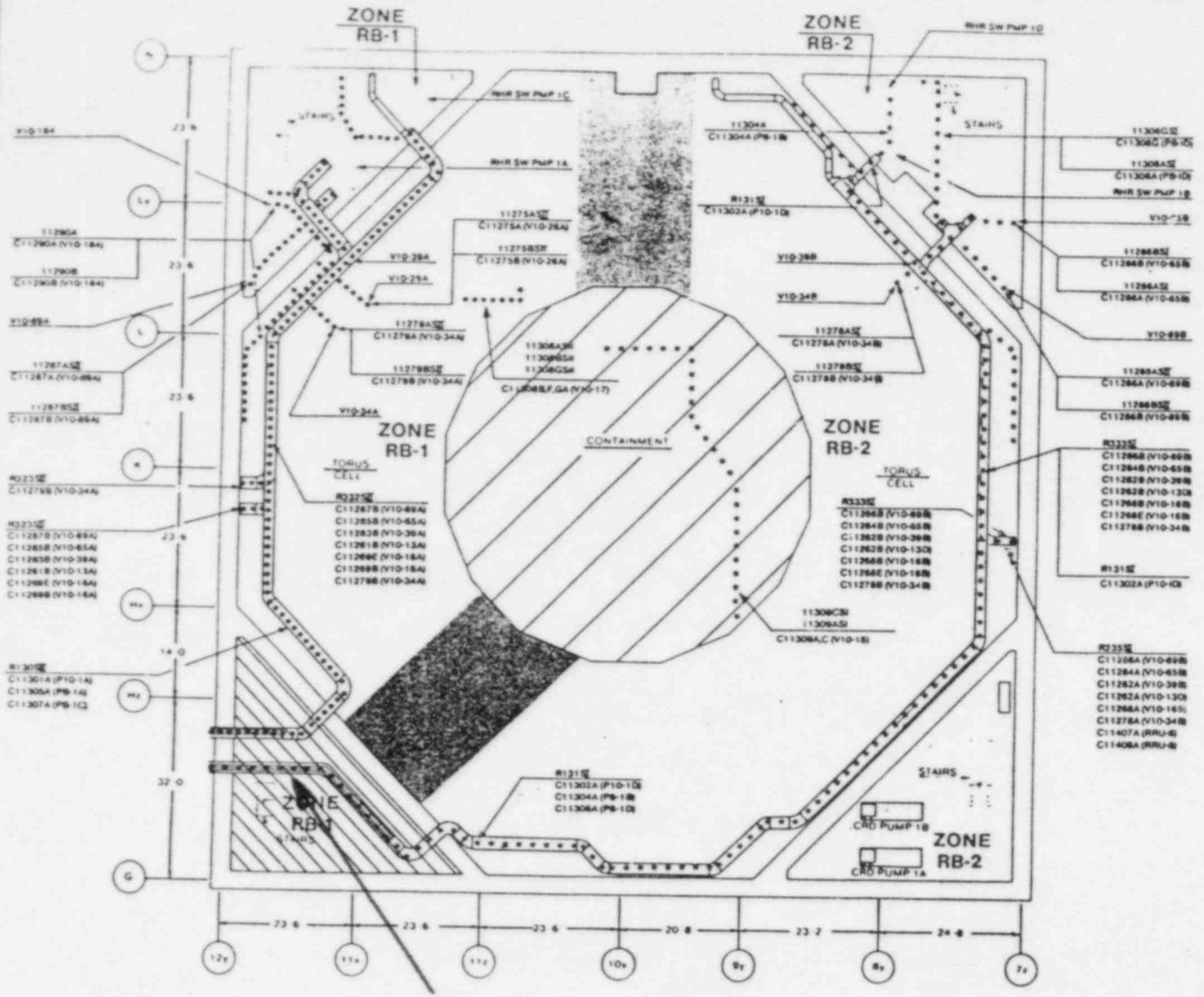
FIGURE NO 13-2



EXEMPTION REQUEST NO. 3

REACTOR BUILDING - NW CORNER ROOM-ELEV. 232'

SHOWING SEPARATION OF CONDUITS



ELEVATION 232'-6"

NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11313A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191148 REV. 9
G191332 REV. 18
G191333 REV. 14

LEGEND:

- * * * RHR, RHR SW (DIV. I)
- **** RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT
- SUPPRESSION
- CONDUIT IN TRAY

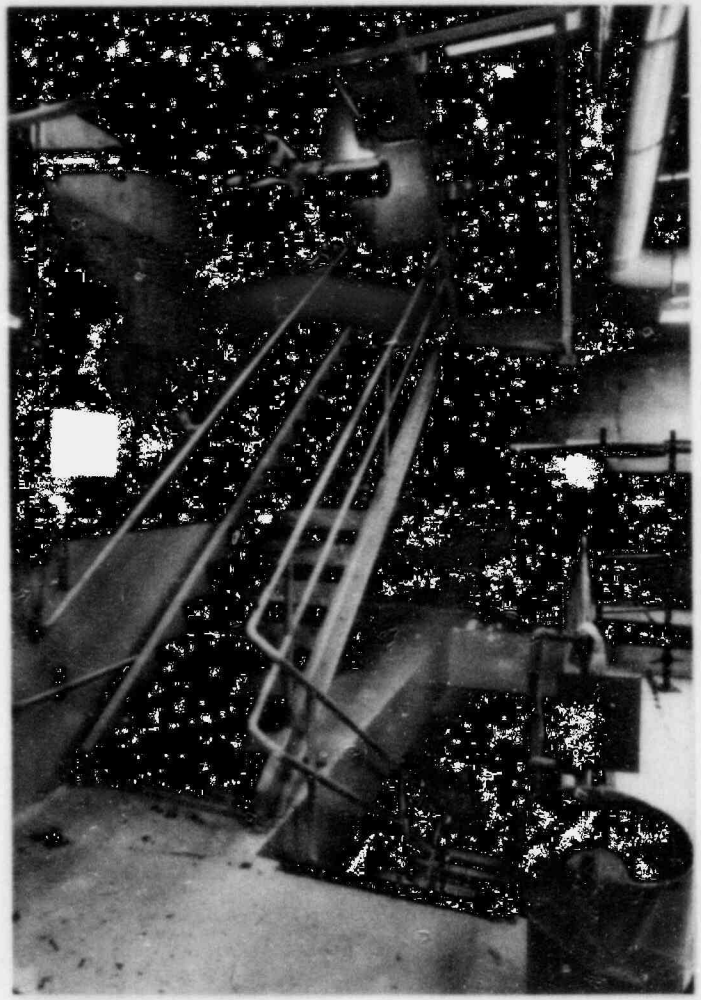
REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPR BY
1	3/9/85	ISSUED FOR PERMIT	[illegible]	[illegible]	[illegible]

VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.
Three Speen Street, Framingham, MA

FIGURE NO 3-3

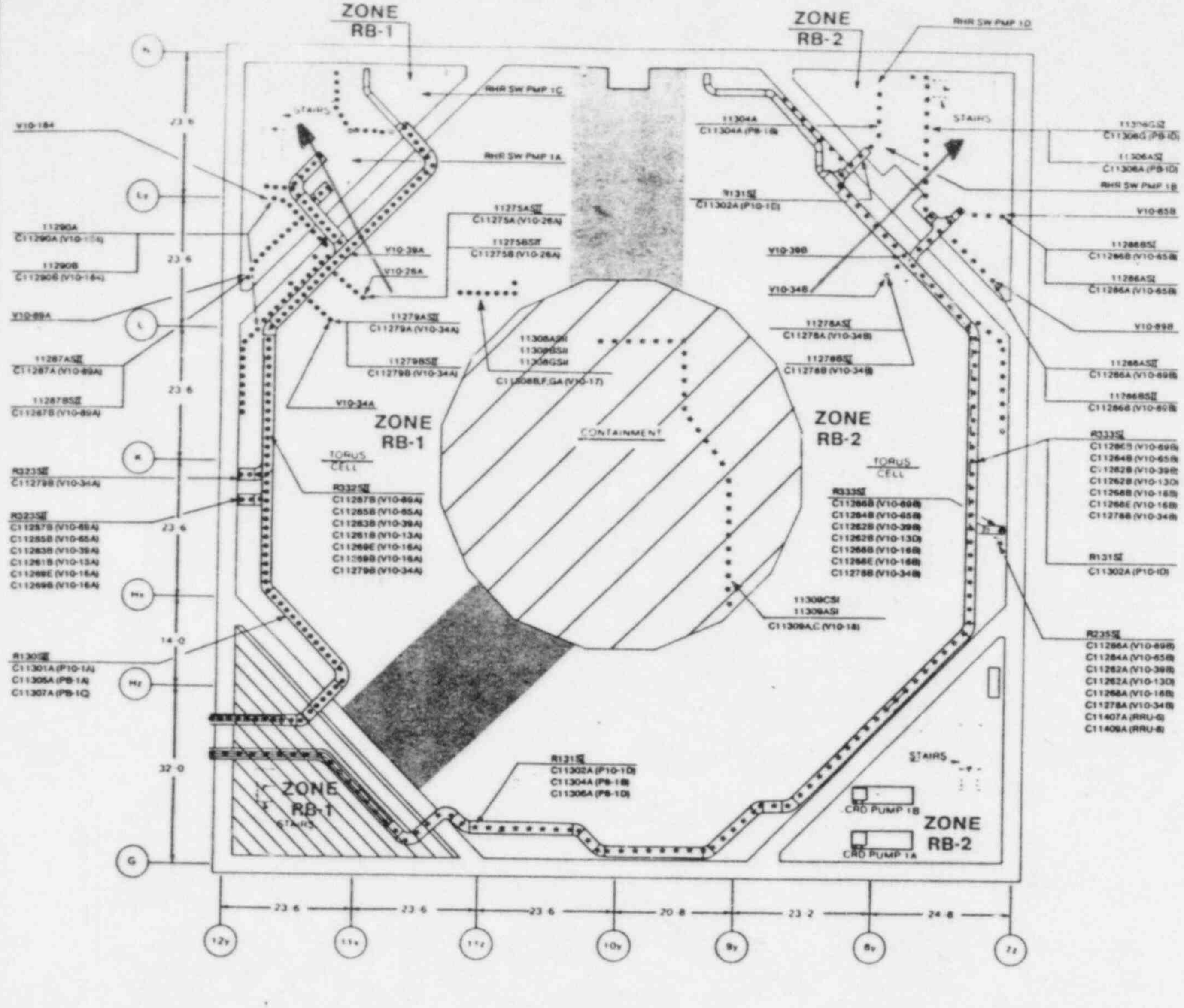


EXEMPTION REQUEST NO.4

REACTOR BUILDING-NE AND SE CORNER ROOMS

SHOWING NO COMBUSTIBLES BETWEEN

THE ROOMS



ELEVATION 232'-6"

NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11313A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191148 REV. 9
G191332 REV. 18
G191333 REV. 14

LEGEND:

- • • • RHR, RHR SW (DIV. I)
- •••• RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT
- SUPPRESSION
- CONDUIT IN TRAY

REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPR BY
1	2/85	ISSUED FOR REPORT	MF	QH	EH

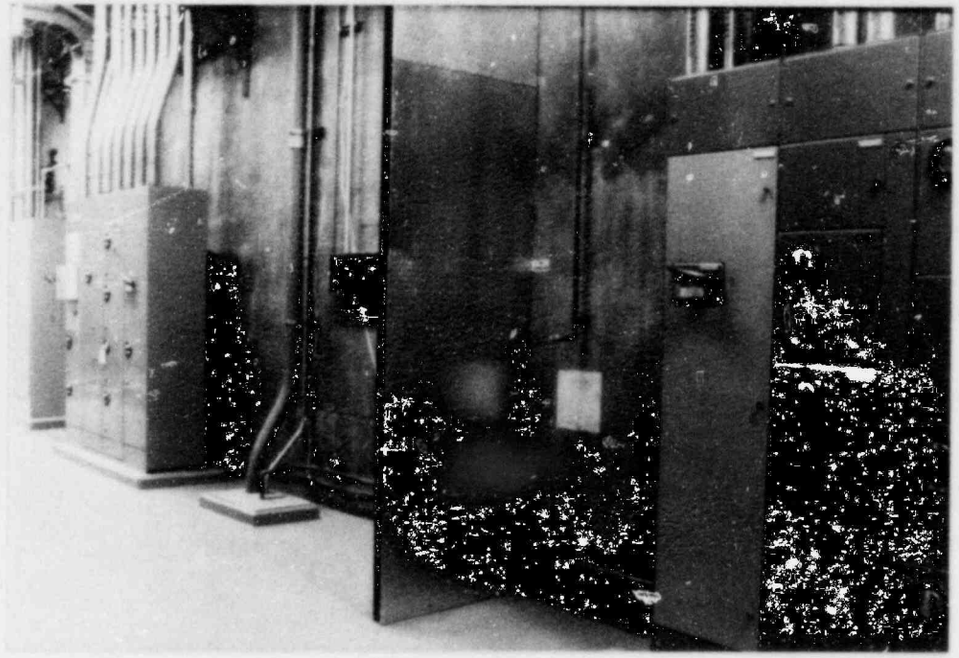
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.
Three Speen Street, Framingham, MA

FIGURE NO 3-3

84-VY-0172
P142-F-001-3

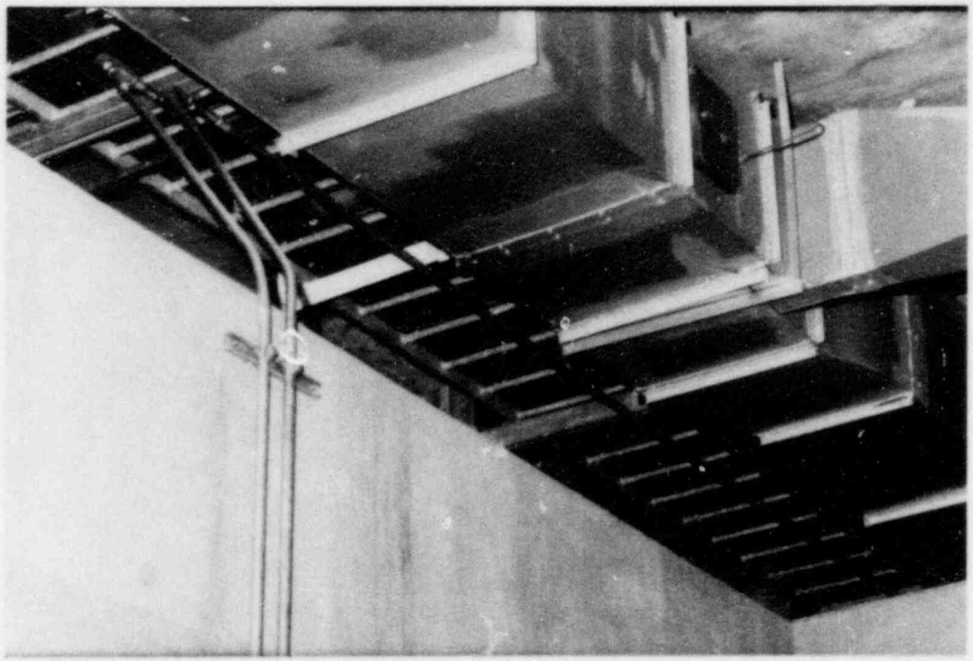


EXEMPTION REQUEST NO. 5

REACTOR BUILDING-EAST SIDE-ELEV. 252

VITAL MCC AREA

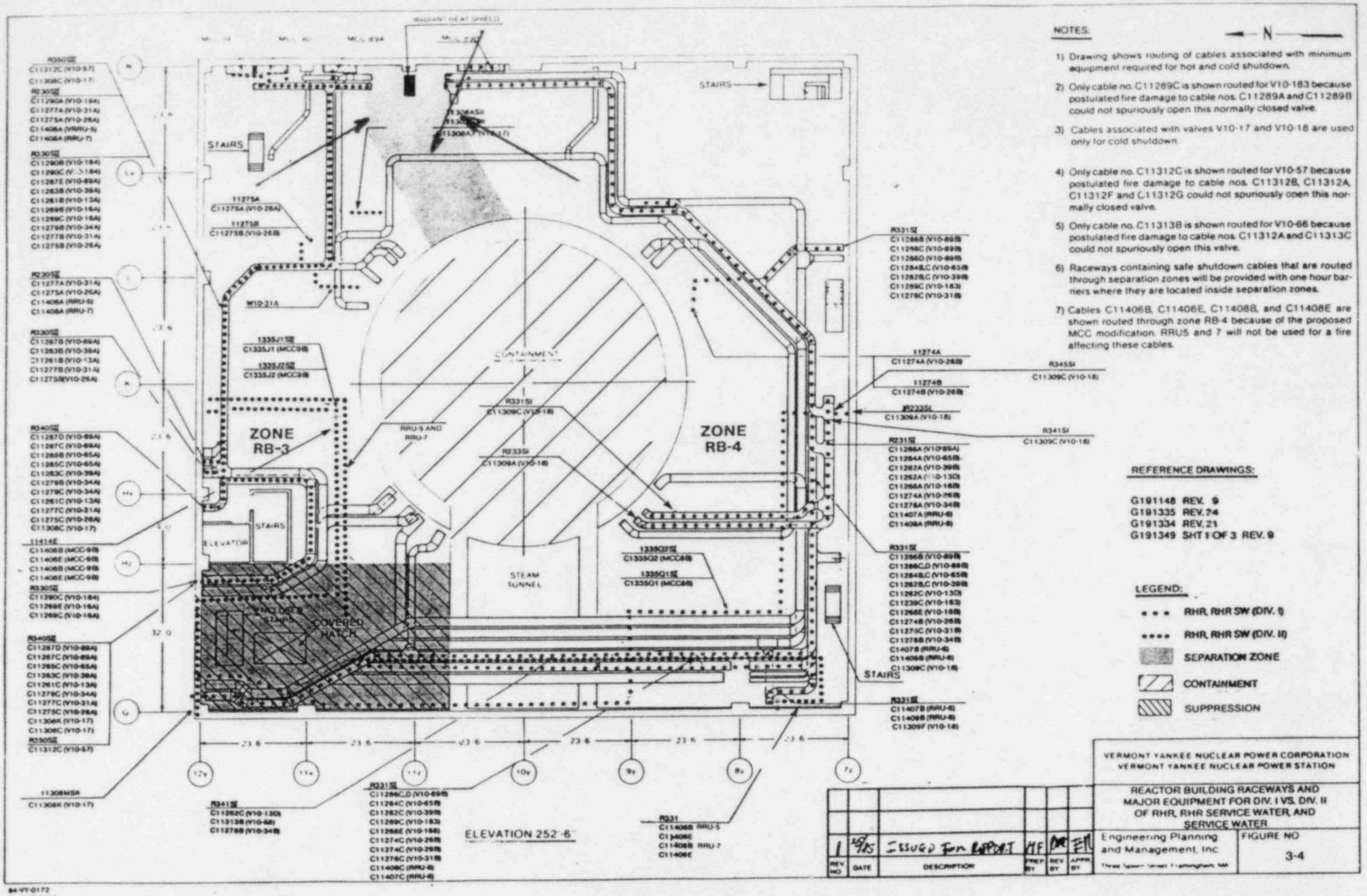
SHOWING NO COMBUSTIBLES IN AREA



EXEMPTION REQUEST NUMBER 5

REACTOR BUILDING - EAST SIDE - ELEV. 252'

SHOWING TRAYS TO BE FIRE STOPPED



NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11312A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.
7) Cables C11406B, C11406E, C11408B, and C11408E are shown routed through zone RB-4 because of the proposed MCC modification. RRU5 and 7 will not be used for a fire affecting these cables.

REFERENCE DRAWINGS:

G191148 REV. 9
G191335 REV. 24
G191334 REV. 21
G191349 SHT 1 OF 3 REV. 9

LEGEND:

- RHR, RHR SW (DIV. I)
- RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT
- SUPPRESSION

REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPR BY
1	2/9/85	ISSUED FOR REPORT	MF	DK	FH

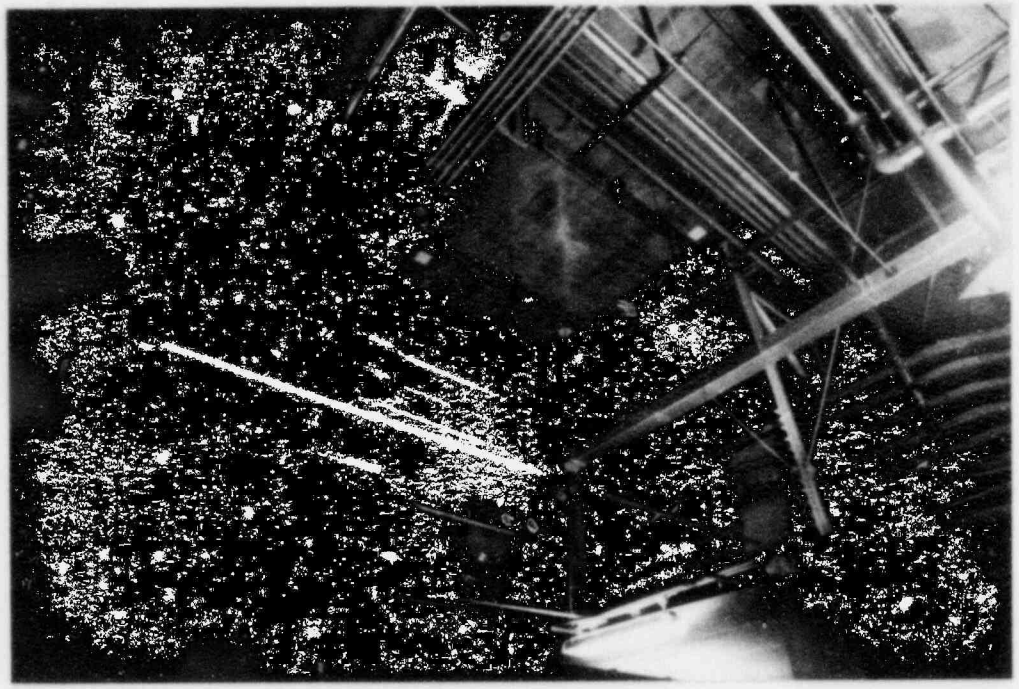
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

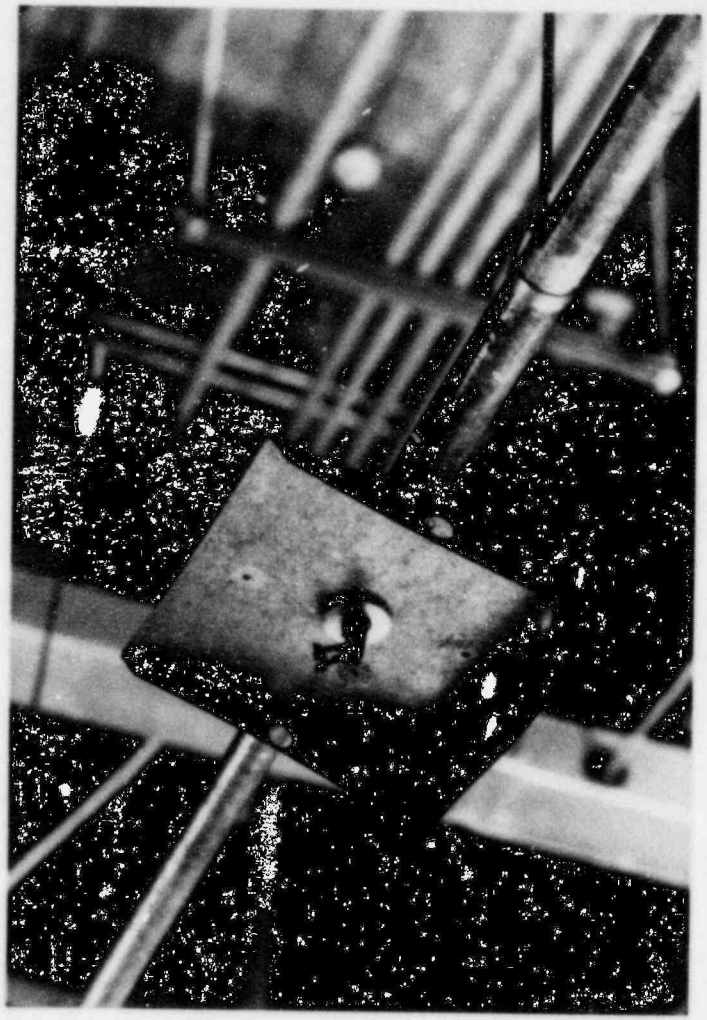
REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.

FIGURE NO 3-4

84-VY-0172

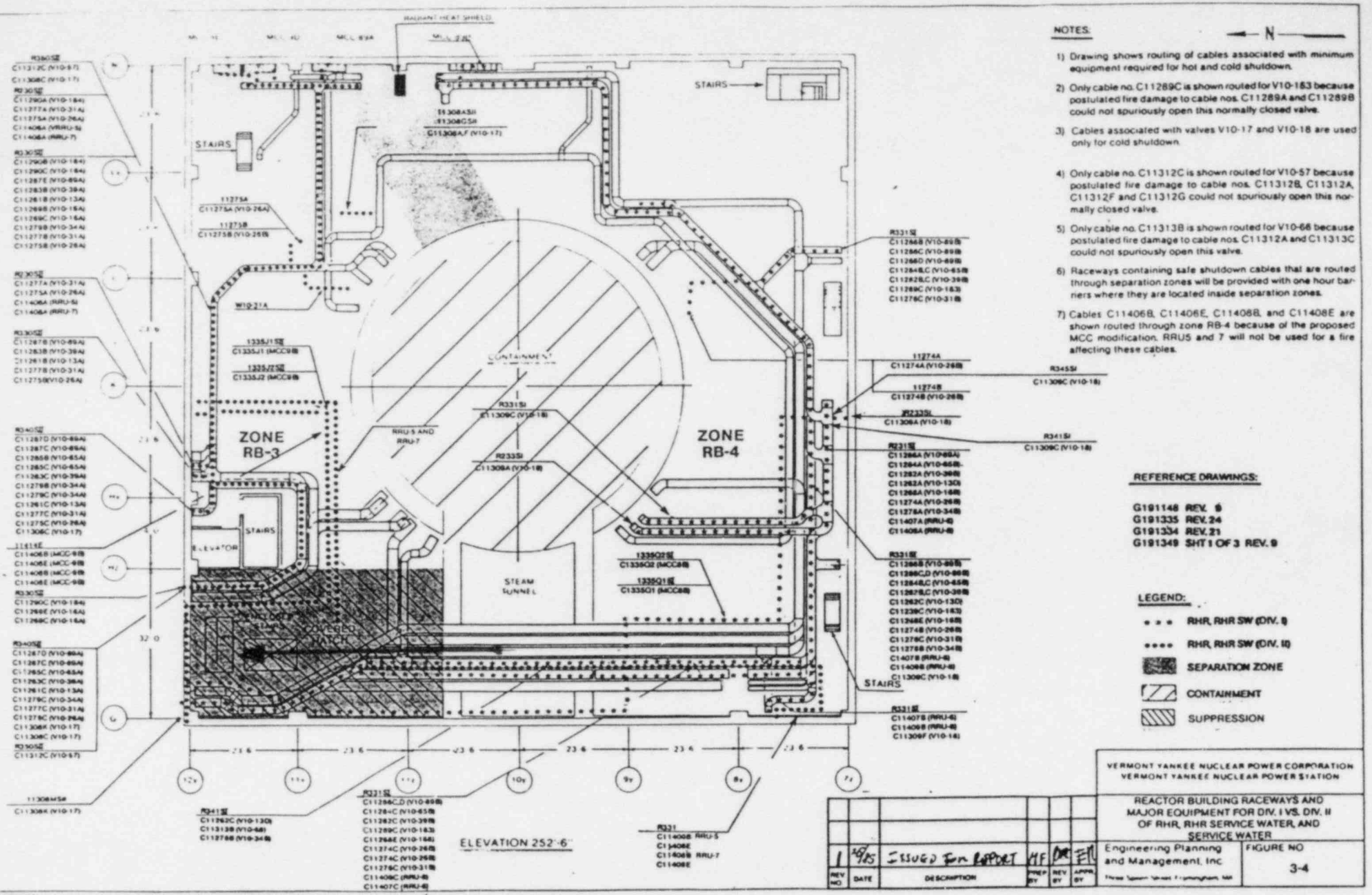




EXEMPTION REQUEST NO.6

REACTOR BUILDING-NW CORNER-ELEV. 252

SHOWING SEPARATION OF DIVISIONS



REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPR BY
1	2/9/85	ISSUED FOR REPORT	MF	DR	FL

VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION

REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.

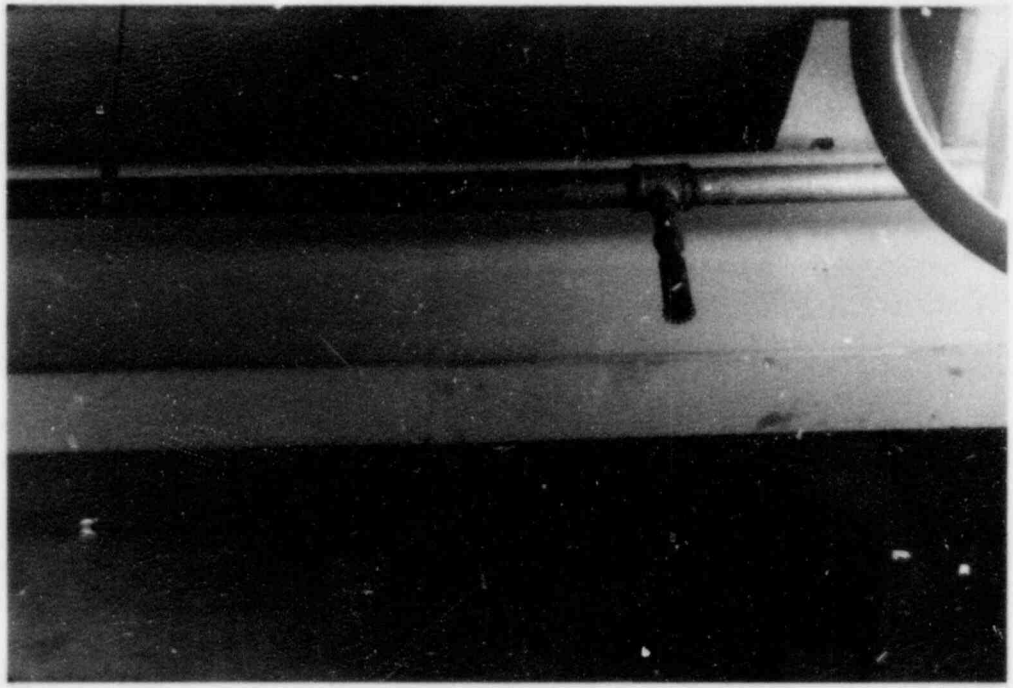
FIGURE NO 3-4

EXEMPTION REQUEST NO. 7

REACTOR BUILDING -EAST SIDE-ELEV. 280'

SHOWING NO COMBUSTIBLES IN AREA AND TRAY

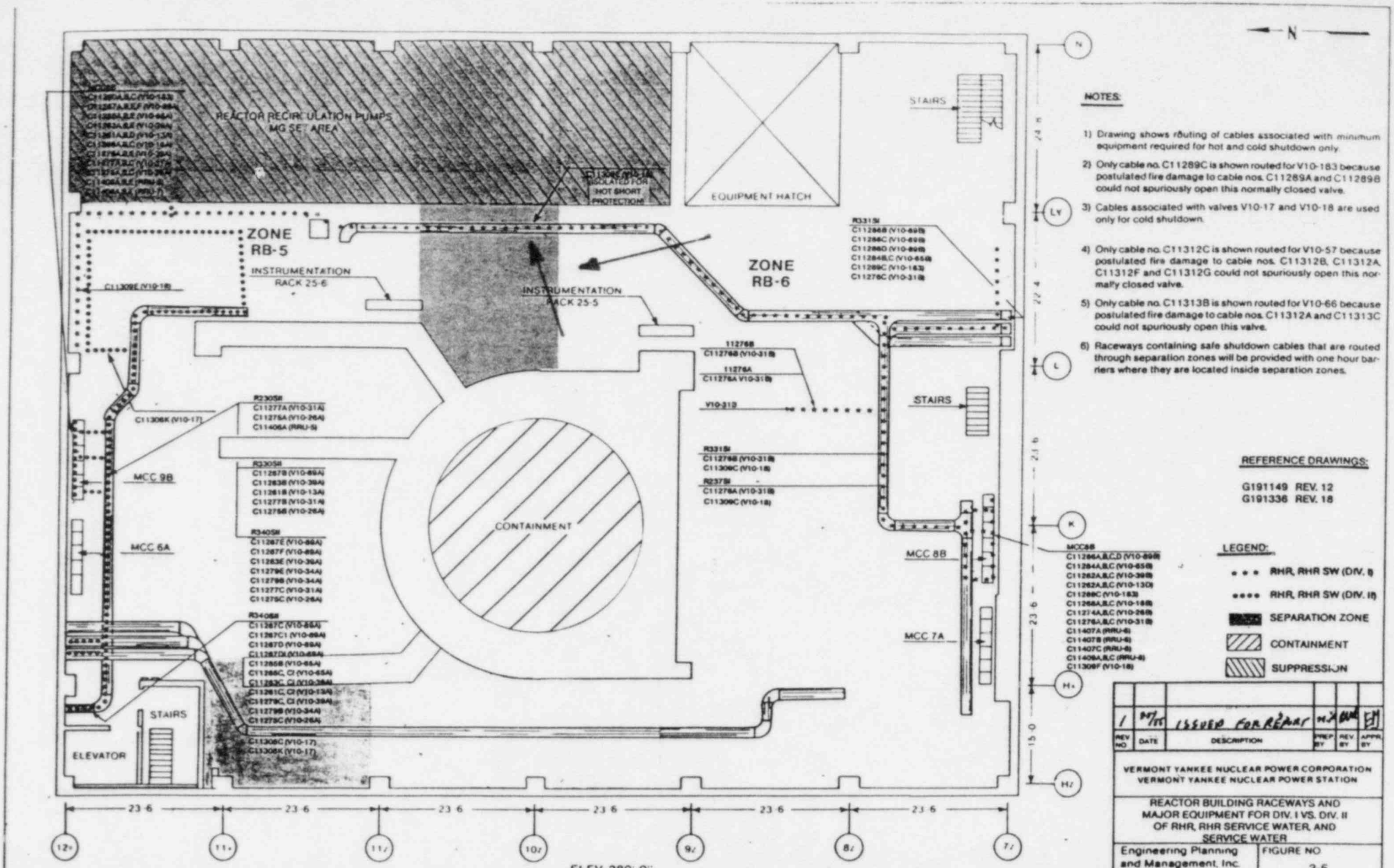
TO BE STOPPED



EXEMPTION REQUEST NUMBER 7

REACTOR BUILDING - EAST SIDE - ELEV. 280'

SHOWING SUPPRESSION OVER MG SET AREA



NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown only.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11312A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191149 REV. 12
G191336 REV. 18

LEGEND:

- RHR, RHR SW (DIV. I)
- RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT
- SUPPRESSION

REV NO	DATE	DESCRIPTION	PREP BY	REV BY	APPR BY
1	8/7/75	ISSUED FOR REPAY	HKB		FM

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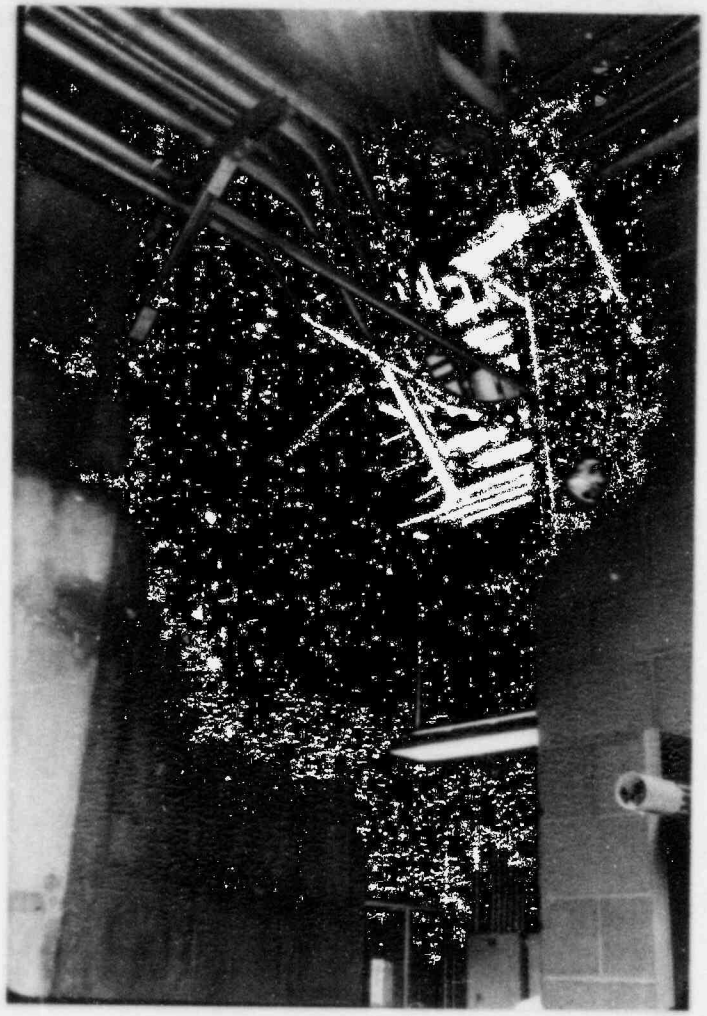
REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.
Three Speen Street, Framingham, MA

FIGURE NO. 3-5

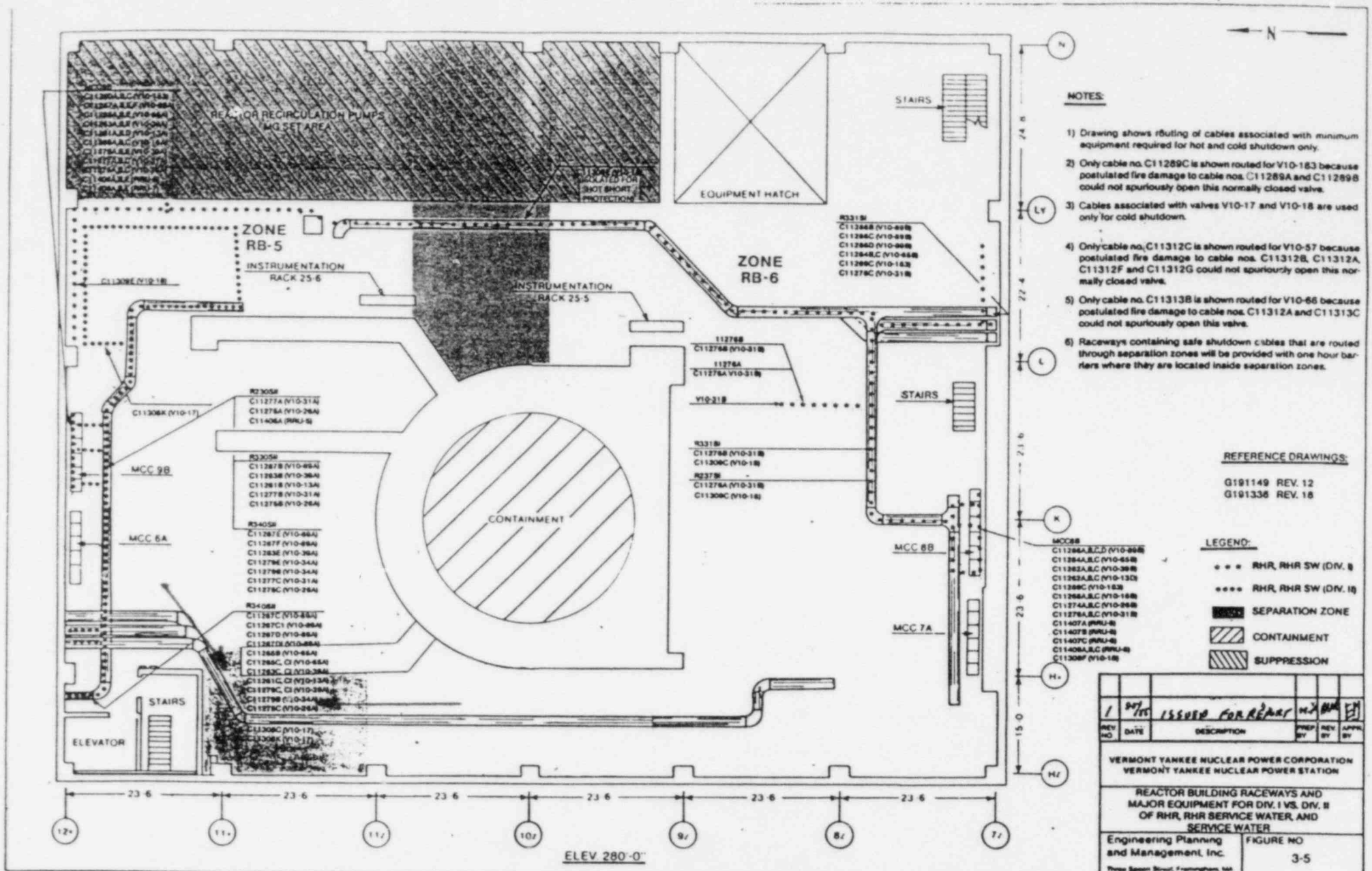
84-VYNK 72
F147-P801-4

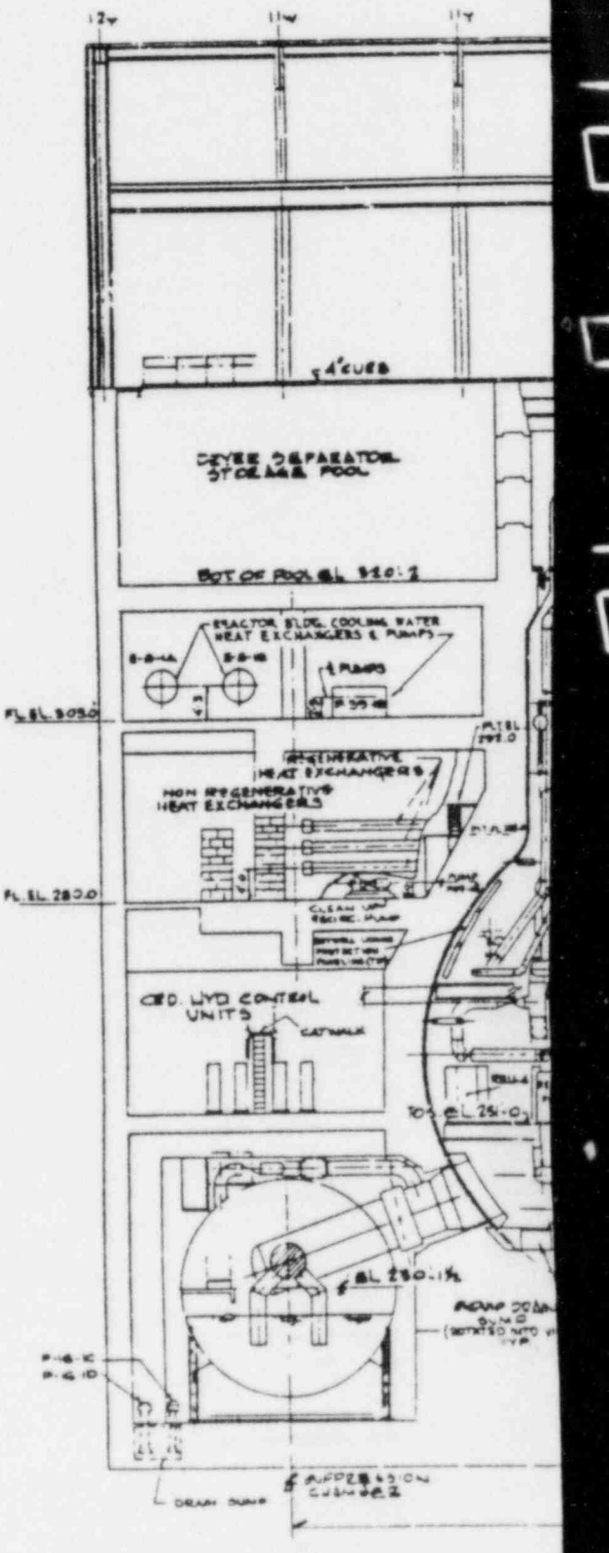


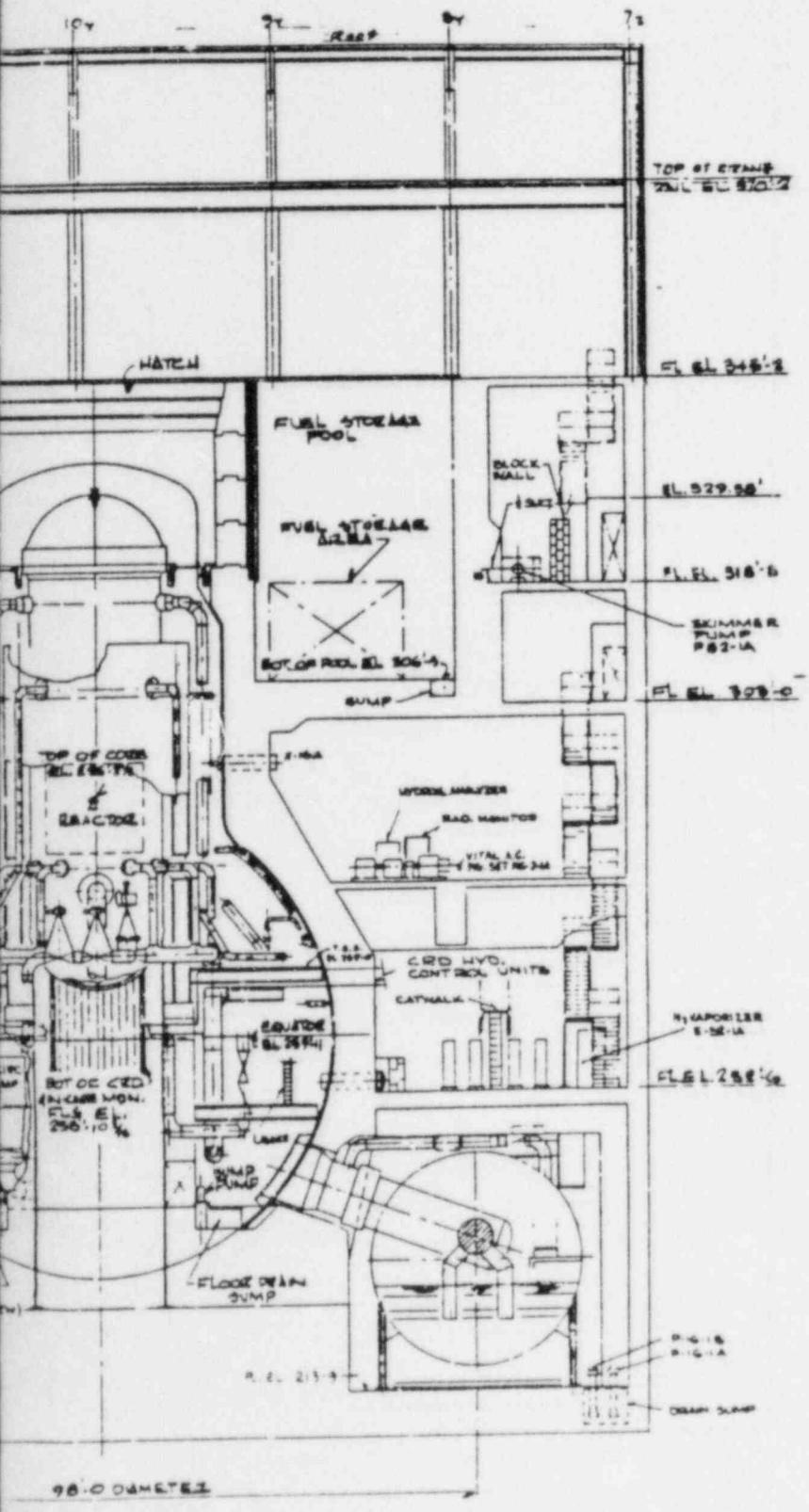
EXEMPTION REQUEST NUMBER 8

REACTOR BUILDING - NW CORNER - ELEV. 280'

SHOWING NO COMBUSTIBLES IN AREA


N
REACTOR RECIRCULATION PUMPS M-G SET AREA
EQUIPMENT HATCH
STAIRS
ZONE RB-5
ZONE RB-6
INSTRUMENTATION RACK 25-6
INSTRUMENTATION RACK 25-5
CONTAINMENT
MCC 9B
MCC 6A
MCC 8B
MCC 7A
STAIRS
ELEVATOR
STAIRS
23'-6"
ELEV 280'-0"
NOTES:
1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown only.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11312A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.
REFERENCE DRAWINGS:
G191149 REV. 12
G191336 REV. 18
LEGEND:
RHR, RHR SW (DIV. I)
RHR, RHR SW (DIV. II)
SEPARATION ZONE
CONTAINMENT
SUPPRESSION
1 9/7/85 ISSUED FOR REPAIR
REV NO. DATE DESCRIPTION PREP BY REV BY APPR BY
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER
Engineering Planning and Management, Inc.
Three Speen Street, Framingham, MA
FIGURE NO 3-5


12-W
11-W
11-Y
4 CUES
DRYER SEPARATOR STORAGE POOL
BOT OF POOL EL 320.2
REACTOR BLDG. COOLING WATER HEAT EXCHANGERS & PUMPS
2 PUMPS
FL EL 303.0
REGENERATIVE HEAT EXCHANGERS
NON REGENERATIVE HEAT EXCHANGERS
FL EL 280.0
CRD HYD CONTROL UNITS
CATWALK
EL 251.0
EL 230.1½
DRAIN DUCT



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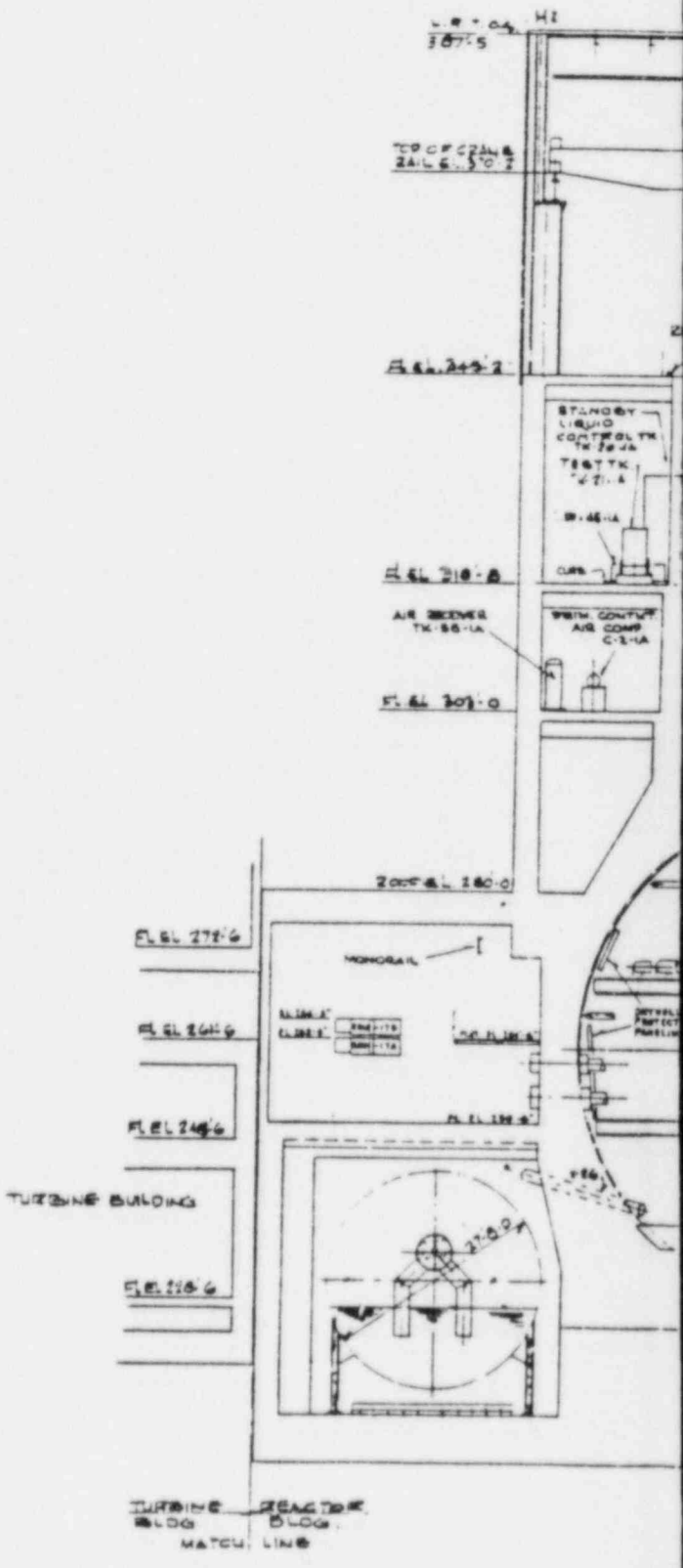
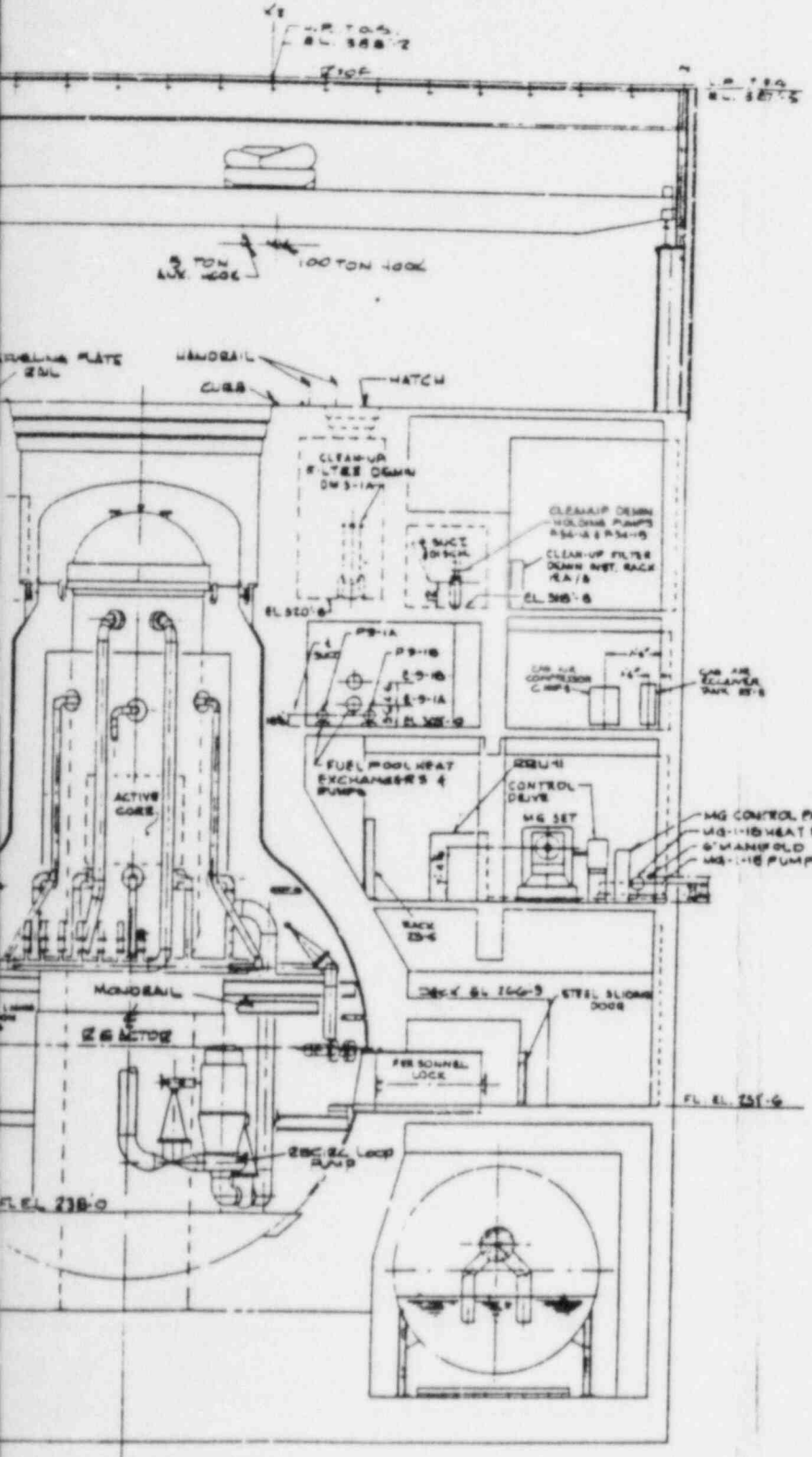
VERMONT YANKEE
NUCLEAR POWER STATION
FINAL SAFETY ANALYSIS REPORT

REACTOR BUILDING
SECTION A-A

FIGURE 12.2-7


TOP OF CRANE RAIL EL. 350'-2"
FL EL. 345'-2"
STANDBY LIQUID CONTROL TK TK-20-1A
TEST TK TK-27-1A
FL EL. 318'-8"
AIR RECEIVER TK-55-1A
SYSTEM CONTROL AIR COMP C-2-1A
FL EL. 307'-0"
ROOF EL. 280'-0"
FL EL. 277'-6"
MONORAIL
FL EL. 261'-6"
FL EL. 246'-6"
TURBINE BUILDING
FL EL. 218'-6"
TURBINE BLDG
REACTOR BLDG
MATCH LINE



SECTION B-B

VERMONT YANKEE
NUCLEAR POWER STATION
FINAL SAFETY ANALYSIS REPORT

REACTOR BUILDING
SECTION B-B

FIGURE 12.2-8

The attached material provides a description of the design and materials to be used in establishing 20-foot corridors of "no intervening combustibles" by fire stopping the cable trays which traverse the corridors. Enclosure 1 describes the design and specifies the location and configuration in which the fire stop material is to be applied. Manufacturer's data and application information for the subject material is provided as part of Enclosure 2. Finally, Enclosure 3 provides the Factory Mutual Research Test Report concerning the use of Thermalastic 83 as a fire stop coating for electrical power and control cable.

ENCLOSURE 1

The design of the cable tray is intended to establish minimum 20-foot corridors of "no intervening combustibles", and to prevent the propagation of fire through the subject corridors. The material will be applied in accordance with manufacturer's recommendations, and consistent with configurations described in Enclosures (2) and (3). Figure 1 shows a typical application of Thermalastic 83 materiai within a cable tray to establish fire stops. Figures 2, 3 and 4 provide the location of the cable tray fire stops relative to the Reactor Building fire zones.

The fire stops within each tray will be applied in accordance with the manufacturer's recommendations. They should be placed such that there is a minimum of 20 feet between the outside edges; however, in some instances it may be advantageous to coat the entire tray section. Since the function of the cables is not a consideration, it is not necessary to coat the tray supports.

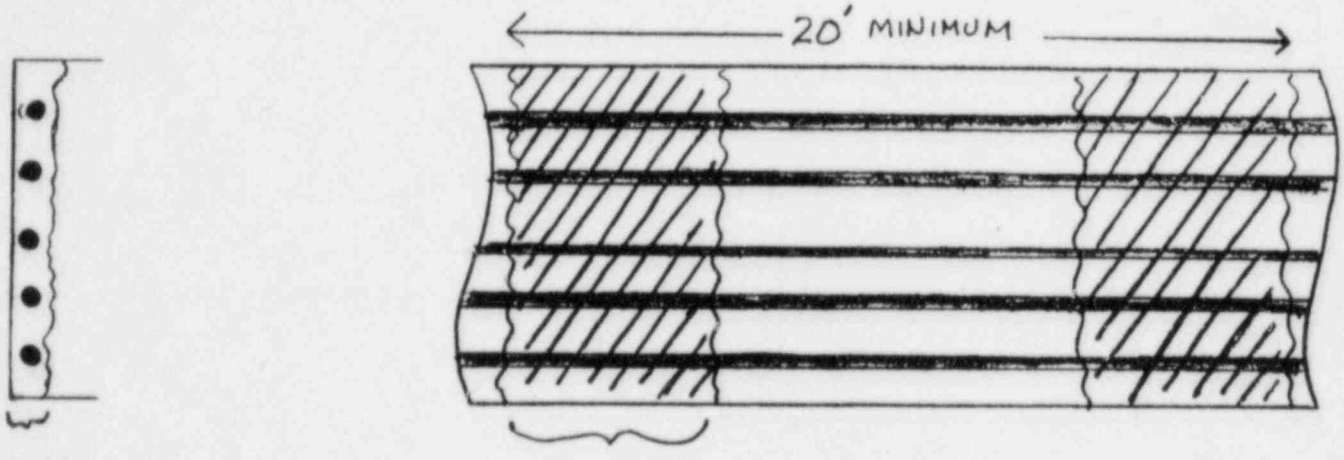
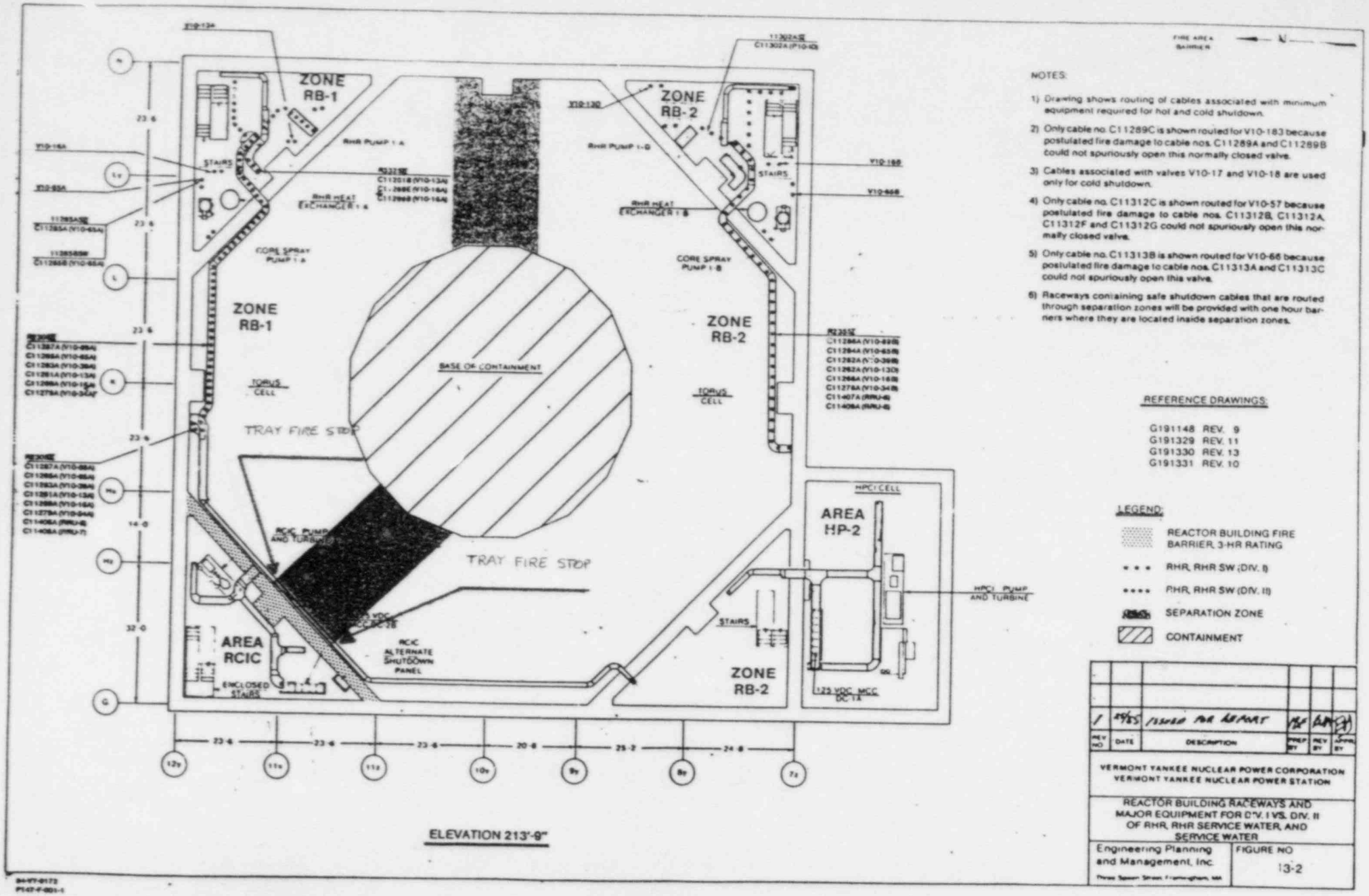


FIG. 1



ELEVATION 213'-9"

NOTES:

1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11313A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.

REFERENCE DRAWINGS:

G191148 REV. 9
G191329 REV. 11
G191330 REV. 13
G191331 REV. 10

LEGEND:

- REACTOR BUILDING FIRE BARRIER, 3-HR RATING
- RHR, RHR SW (DIV. I)
- RHR, RHR SW (DIV. II)
- SEPARATION ZONE
- CONTAINMENT

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1	2/9/85	ISSUED FOR REPAIR			

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REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER

Engineering Planning and Management, Inc.

FIGURE NO. 13-2

FIG. 2

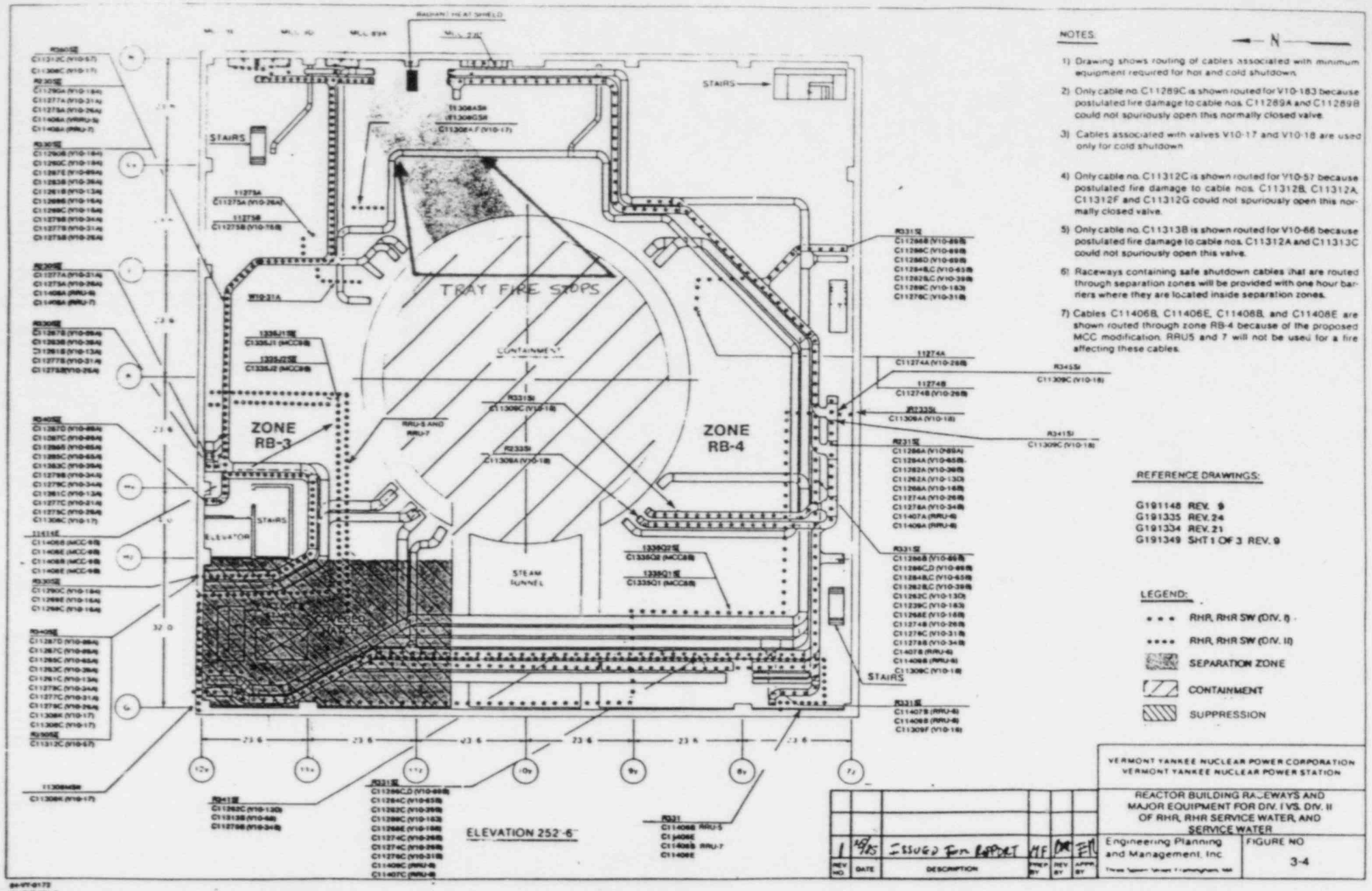

RADIANT HEAT SHIELD
STAIRS
TRAY FIRE STOPS
CONTAINMENT
ZONE RB-3
ZONE RB-4
STEAM TUNNEL
ELEVATOR
ELEVATION 252'-6"
NOTES
1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11312A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.
7) Cables C11406B, C11406E, C11408B, and C11408E are shown routed through zone RB-4 because of the proposed MCC modification. RRU5 and 7 will not be used for a fire affecting these cables.
REFERENCE DRAWINGS:
G191148 REV. 9
G191335 REV. 24
G191334 REV. 21
G191349 SHT 1 OF 3 REV. 9
LEGEND:
RHR, RHR SW (DIV. I)
RHR, RHR SW (DIV. II)
SEPARATION ZONE
CONTAINMENT
SUPPRESSION
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER
Engineering Planning and Management, Inc.
FIGURE NO 3-4
1 12/15 ISSUED FOR REPORT MF DK EH
REV NO DATE DESCRIPTION PREP BY REV BY APPR BY

FIG. 3

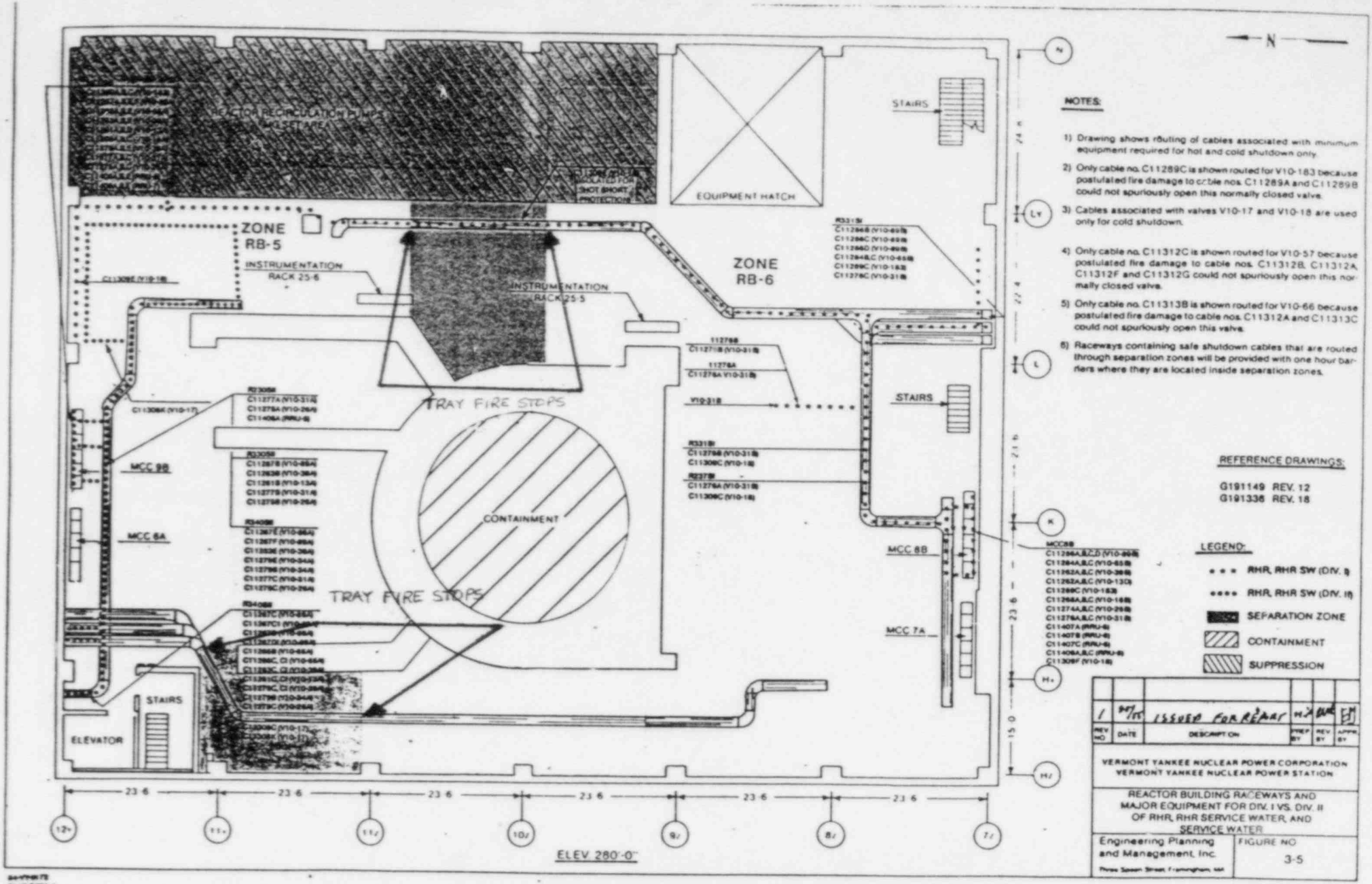

N
REACTOR RECIRCULATION PUMP MG SET AREA
EQUIPMENT HATCH
STAIRS
ZONE RB-5
INSTRUMENTATION RACK 25-6
INSTRUMENTATION RACK 25-5
ZONE RB-6
TRAY FIRE STOPS
CONTAINMENT
TRAY FIRE STOPS
STAIRS
MCC 9B
MCC 8A
MCC 8B
MCC 7A
STAIRS
ELEVATOR
23-6
23-6
23-6
23-6
23-6
23-6
ELEV 280'-0"
NOTES:
1) Drawing shows routing of cables associated with minimum equipment required for hot and cold shutdown only.
2) Only cable no. C11289C is shown routed for V10-183 because postulated fire damage to cable nos. C11289A and C11289B could not spuriously open this normally closed valve.
3) Cables associated with valves V10-17 and V10-18 are used only for cold shutdown.
4) Only cable no. C11312C is shown routed for V10-57 because postulated fire damage to cable nos. C11312B, C11312A, C11312F and C11312G could not spuriously open this normally closed valve.
5) Only cable no. C11313B is shown routed for V10-66 because postulated fire damage to cable nos. C11312A and C11313C could not spuriously open this valve.
6) Raceways containing safe shutdown cables that are routed through separation zones will be provided with one hour barriers where they are located inside separation zones.
REFERENCE DRAWINGS:
G191149 REV. 12
G191336 REV. 18
LEGEND:
RHR, RHR SW (DIV. I)
RHR, RHR SW (DIV. II)
SEPARATION ZONE
CONTAINMENT
SUPPRESSION
1 ISSUED FOR REPAIR
REV NO | DATE | DESCRIPTION | PREP BY | REV BY | APPR BY
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
REACTOR BUILDING RACEWAYS AND MAJOR EQUIPMENT FOR DIV. I VS. DIV. II OF RHR, RHR SERVICE WATER, AND SERVICE WATER
Engineering Planning and Management, Inc.
FIGURE NO 3-5

FIG. 4

ENCLOSURE 2

FIRE-STOP SYSTEMS

Thermalastic 83™

DATA SHEET

PRODUCT DESCRIPTION

THERMALASTIC 83™ is a single package, water based, high solids, fire protection elastomer coating. THERMALASTIC 83™ coating is designed to prevent propagation of fire in grouped electrical cables and protect electrical cables from fire. Constant service temperature range is from -30°F (-34°C) to 195°F (91°C) after curing.

THERMALASTIC 83™ coating contains no asbestos or chlorinated hydrocarbons, and meets all applicable OSHA and EPA regulations. THERMALASTIC 83™ will not support combustion.

RECOMMENDED USES

At approximately 1/16 inch (1.6mm) dry film thickness, THERMALASTIC 83™ will halt fire spread in grouped electrical cables and protect cables from fire exposure. Protection endurance from fire exposure will depend on coating thickness and greater thickness will provide more endurance. No electrical derating of the cables is necessary at 1/16 inch (1.6 mm) dry film thickness of coating.

THERMALASTIC 83™ provides a barrier that has excellent resistance to water, fire, corrosion, toxic or corrosive gasses and fuels or lubricants.

COVERAGE

THERMALASTIC 83™, applied at approximately 1/8 inch (3.2 mm) wet film thickness, will be approximately 1/16 inch (1.6 mm) thick (dry) and coverage is approximately 12 square feet (1.1m²) of cable tray surface per gallon.

SURFACE PREPARATION

No surface preparation is normally required. THERMALASTIC 83™ has adequate adhesion to all types of cable jackets, without any surface preparation, and application may be considered permanent. THERMALASTIC 83™ coating can be removed from the cable where necessary.

APPLICATION

THERMALASTIC 83™ can be applied with air atomized or airless spray equipment. It can also be applied by brush, trowel or hand gloving techniques. Manufacturer should be consulted for recommendations on exact equipment specifications. THERMALASTIC 83™ has good adhesive properties and will readily adhere to vertical or overhead surfaces. THERMALASTIC 83™ may be applied within a temperature range of 40°F (4°C) to 100°F (38°C). THERMALASTIC 83™ should be preconditioned to a minimum of 50°F (10°C) for 24 to 72 hours prior to spraying to achieve optimum results. Best spray results are obtained by applying a thin (fog) coat and allowing this to dry to the touch before building up to the recommended 1/8 inch (3.2 mm) wet thickness which, when completely dry, will be approximately 1/16 inch (1.6 mm) thick.

Application should be performed by an experienced FIRE-STOP SYSTEMS factory approved applicator.

THERMALASTIC 83™ coating is normally dry to the touch in 10 minutes to 4 hours. This, of course, depends upon the coating thickness, temperature and relative humidity. Curing is normally complete in 3 to 5 days. After curing, the coating remains very pliable and individual cables may be removed from a grouping, if necessary; any damaged portions of the protective coating may be repaired by spraying, brushing or gloving.

Clean-up is accomplished with clean water.

THINNING

Material is supplied at spraying consistency. If thinned, material may lose its thixotropic (no drip) properties.

SPECIFICATIONS AND PHYSICAL DATA

Average Solids Content of Material: 69%

Color: White

Weight: Per Gallon (3.78 litres), 11.5 lbs. (5.2 kg)
Per 5 Gallon (18.92 litres) Pail, 61 lbs. (27.7 kg)

Elongation: 150%

Impact Resistance: Excellent
Vibration Resistance: Excellent

Thermal Shock: Freeze thaw cycling, consisting of seven cycles of 24 hours each at 160°F (71°C) and -40°F (-40°C). Samples retained original appearance.

Salt Water Immersion: Thirty cycles of eight hours being immersed in 150°F (66°C) salt water and 16 hours of drying. Sample showed no deterioration.

RECOMMENDED FILM THICKNESS:

Approx. 1/16 inch (1.6 mm) Dry.
Approx. 1/8 inch (3.2 mm) Wet.

SHELF LIFE: 24 months minimum when stored between 40°F and 90°F.

Coverage: (per Gallon) 12 sq. ft. (1.1 m²) of cable tray at approx. 1/8 inch (3.2 mm) wet.

Consistency: Thixotropic

Packaging: 5 Gallon containers. 18.92 litres

Flash Point: (Pensky-Martens Closed Cup) None

Flamespread (ASTM E-84)	10
Smoke Development (ASTM-84)	35
Fuel Contribution (ASTM E-84)	0

KEEP FROM FREEZING:

THERMALASTIC 83™, like most waterbase coatings, can conduct electricity until it is thoroughly dry. Appropriate caution should be exercised when the material is applied to energized cables or equipment. In any instance, the material should never be applied without the supervision of plant safety personnel. Hazards that may be encountered include, but are not limited to, open buss ducts, cable potheads, exposed conductors, faulty cable insulation and transformer bushings.

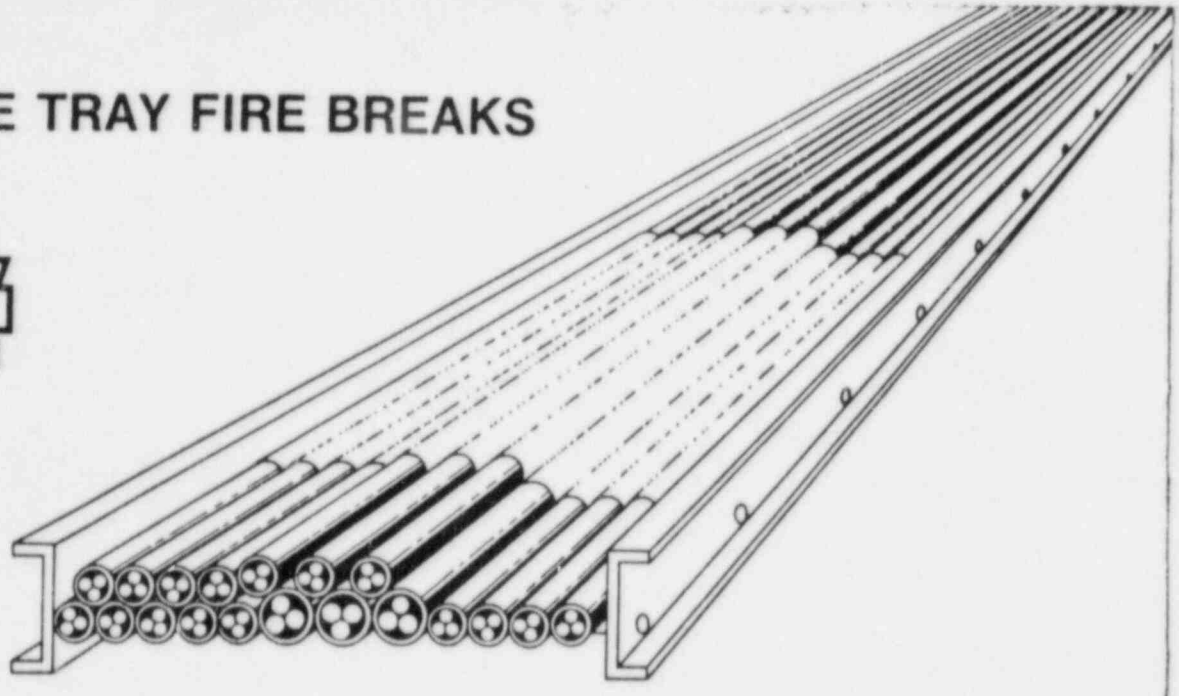
The information presented herein is based on data believed to be reliable. FIRE-STOP SYSTEMS makes specific recommendations for the use and application of THERMALASTIC 83™ which are important factors in its performance. Since FIRE-STOP SYSTEMS may not have control over the use and application, it cannot insure that your results will be the same as those described.

It is necessary as a condition of sale that FIRE-STOP SYSTEMS only responsibility is to replace such quantity of THERMALASTIC 83™ as is proved to be defective by our laboratory. FIRE-STOP SYSTEMS shall not be liable for injury, loss or damage, direct or consequential, arising out of the use or inability to use THERMALASTIC 83™.

CABLE TRAY FIRE BREAKS

Factory Mutual System

Approved



The Need for Cable Tray Fire Protection

There is significant misunderstanding about the flame spread resistance of cables which are I.E.E.E.-383 qualified. The common mistaken assumption is that these cables are "self-extinguishing."

Why do cable insulations "self extinguish" during the I.E.E.E.-383 test and yet, in actual plant installations do just the opposite, spreading flames vigorously along hundreds of feet of cable trays?

In the I.E.E.E.-383 test, cables are arranged across the tray in just one row, and each cable is separated by one-half (1/2) a cable diameter. This cable arrangement is not representative of the way most cables are laid in plant installations. In addition, the I.E.E.E.-383 test layout practically eliminates the major stimulants of propagation, (i.e., RE-ENTRY HEAT and RADIATIVE FEEDBACK).

The only cables arranged in one row and separated by one-half (1/2) a cable diameter, in the plant, are power cables. Control and instrument cables are usually laid in the tray at random, directly against and on top of each other and are commonly found stacked many layers deep in the average tray.

Cable insulations that burn, such as Hypalon, Chlorinated Polyethylene, Ethylene Propylene, Neoprene, PolyVinyl Chloride, Crosslinked Polyethylene, Geoprene, L.C.F.R.-P.V.C., etc. will spread flames when they are laid the way control and instrument cables are commonly found in plants.

What Stimulates Flame Spread?

The primary stimulant for flame spread in solid fuel sources, (i.e., cables) is called RE-ENTRY HEAT which is heat rising from burning cables that, in turn, preheats cables stacked above. This preheating causes the cable insulation to degrade and emit flammable gasses that spread the fire.

If cables are not stacked on top of each other, RE-ENTRY HEAT stimulation is almost totally lost. RE-ENTRY HEAT is the same stimulant that makes several logs, stacked in the fireplace, burn well. When only one log is used, it is almost impossible to keep it burning.

The second most important stimulant for fire spread is called RADIATIVE FEEDBACK. This is the heat radiating downward from the flame that causes the continued heating and off-gasing of the cable insulation.

When cables are spread apart and arranged so that almost all of the primary flame spread stimulant and 50% of the secondary flame spread stimulant are lost, they will not burn well unless the insulation is extremely flammable. As an example, if Red Oak which is the benchmark of flammable solids, was arranged according to the I.E.E.E.—383 test specifications, it would "self extinguish."

When I.E.E.E.-383 qualified cables are stacked as we find them in the average plant with instrument and control cables piled on top of each other, they will not only burn, but will propagate vigorously and the fire will spread vertically, horizontally, and from tray-to-tray where stacked tray conditions exist.

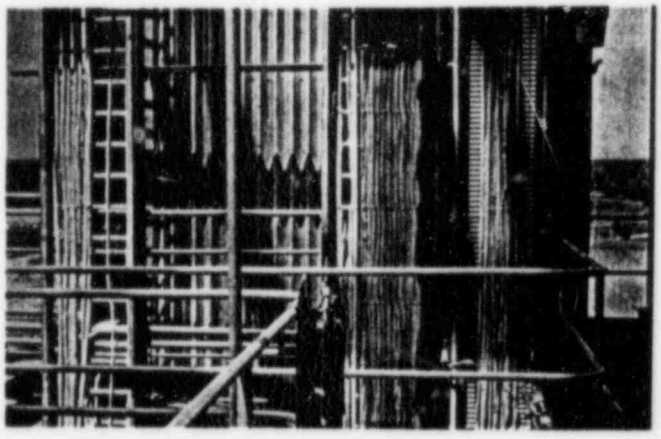
Effective Fire Breaks

FIRE-STOP SYSTEMS' Thermalastic 83™ Fire Retardant Cable Coating is Factory Mutual Approved for preventing flame spread in grouped electrical cables. Thermalastic 83™ functions by cutting off oxygen from the fuel source, inhibiting the combustion process in the immediate vicinity of the cable insulation and reducing heat transmission to the protected cables. In the simplest sense, the coating converts a group of cables into one large single cable, covered with a fire retardant jacket.

Cable Coating Fire Breaks have been proven to be an effective, dependable and economical way to prevent fire spread in cable trays. Some practical locations for fire breaks are:

- Where vertical trays pass through grated floors or other floor penetrations where penetration fire seals are not practical;

- At vertical and horizontal cable tray trees and crosses;
- In cable trays running under grated floors where flammable materials and trash collect;
- In long horizontal tray runs, particularly where stacked tray conditions exist.



Total Electrical Cable Fire Protection

Thermalastic 83'™ Cable Coating is also one of the most economical and maintenance-free ways to protect cables from fire in electrical equipment, cable spreader and control rooms. It is totally reliable because there are no electrical or mechanical activating devices to fail, no human error to be concerned about, no tanks to refill and no periodic maintenance.

Thermalastic 83'™ provides reliable, maintenance free, low cost fire protection that few, if any other, systems can match.

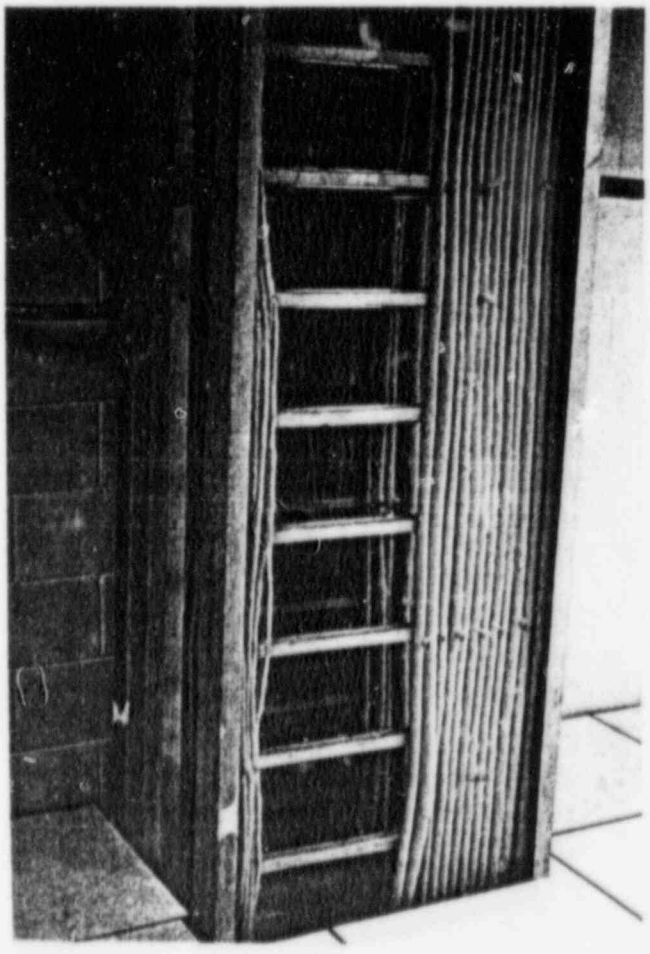
Thermalastic 83'™ also protects cable insulation from exposure type fires such as those caused by burning trash, lube oil or other flammables that may accumulate around some cable trays.

The duration of time that Thermalastic 83'™ can protect electrical cables from a fire before the insulation begins to deteriorate will depend on the intensity of the flame, type and size of cables, type of insulation and other variables. In the event that a maximum time lapse protection from exposure fire is desired, a heavier coating can be applied to those areas.

How Does Thermalastic 83'™ Work?

When exposed to fire:

- Thermalastic 83'™ produces cooling vapors from metallic hydrates in the coating. These vapors reduce the heat transmission to the protected cables.
- Inorganic components in the coating form a surface of high emissivity that results in the radiation of significant amounts of heat away from the cables.
- Fire retardants in the coating form products in the fire that inhibit the combustion process in the immediate vicinity of the cables.



Effect on Current Carrying Ampacity

While Thermalastic 83'™ is very effective in blocking the extreme heat of fire because of high temperature changes that take place in the coating, it has no adverse effect on low temperature heat dissipation that might effect cable ampacity. The reasons for this are:

- The low temperature thermal conducivity of Thermalastic 83'™ is almost identical to P.V.C.
- The increase in cable diameter and slightly rougher surface after the cable coating is applied provides more cooling surface area to the cable.

NO ELECTRICAL DE-RATING OF THE CABLES IS NECESSARY.

ENCLOSURE 3