

BIG ROCK POINT
FHA MODIFICATIONS
PRELIMINARY DESIGN

8101100 320

DESIGN BASES AND CRITERIA FOR DETECTOR MODIFICATION

Modification Description

Detectors shall be installed in the following fire areas:

<u>Fire Area #</u>	<u>Location</u>
5	Emergency Diesel Generator Room
6	Screen Well and Pump House
12	Control Room
13	Computer Room - Service Building
15	Electrical Equipment Room (Lower Part of Room)
29	Condensate Pump Area
37	Control Rod Drive Accumulator Area
38	Shutdown Heat Exchanger Room (Room 417)
42	Core Spray Pump Room

The electronics cabinet shall be located outside the control room. A fire area annunciator panel shall be mounted in the control room on the side of the main panel, in the same area as existing annunciator panels. The alarm shall be tied into the existing alarm for other fire systems.

Functional Requirements

The fire detection system shall provide audible and visual alarm to define the fire area and connect to the existing fire detection (Pry-a-larm) system in the control room. Local audible alarms shall also sound at the location of the fire.

Fire alarms shall be distinctive and unique. They should not be capable of being confused with any other plant system alarms.

Qualification Requirements

Equipment shall be qualified in accordance with applicable FM or UL requirements. Certification shall be furnished documenting this qualification.

NOTE: Photoelectric detector DPS-1 is not UL certified, but is acceptable for use in this modification. The device is not UL approved due to the supervision of the light source in the detector. UL requires that a light failure produce a "trouble" alarm and the design of the detector is such that it produces a "fire" alarm on failure of the light source or sensing amplifier. It is felt that adequate supervision of the light source is provided by this means and the intent of the UL requirement is met.

Surveillance and Maintenance Testing

The detector system shall be designed for periodic on-line testing of the individual detectors and of the complete system.

The system shall be designed to allow maintenance of individual detectors without disabling the complete system.

DESIGN BASES AND CRITERIA FOR HOSE REEL MODIFICATION

Modification Description

For fire Areas 37 and 33A, provide two new hose reel stations with 75 feet of 1-1/2" woven jacket lined fire hose near the Control Rod Drive (CRD) accumulator area and interior cable penetration area. These hoses shall be furnished with electrically safe nozzles.

Mount the first hose under the stairs in the lower level outside the CRD area and the second adjacent to the interior cable penetration area.

Functional Requirements

Hose reel stations shall be able to provide an effective stream of water and shall be equipped with an OS&Y (Outside Screw and Yoke) gate valve or other approved shutoff valve. It shall be assumed there are no coincident fires; each hose reel station shall be sized for single fire incident.

DESIGN BASES AND CRITERIA FOR FIRE BARRIER AND FIRE STOP MODIFICATION

Modification Description

Typical types of openings that must be sealed are:

1. Cable trays or stacks of cable trays routed through walls, floor and ceilings.
2. Conduits and piping with openings between outside of conduit or piping and wall, floor or ceilings.
3. Conduits with openings between inside of conduit and cable.
4. Large openings in walls or between wall and ceilings in which concrete fill is not applicable or desirable.
5. Openings between ventilation ducts and walls, floor or ceiling.

Affected Fire Areas

<u>Fire Area #</u>	<u>Location</u>
5	Emergency Diesel Generator Room
6	Screen Well and Pump House
12	Control Room
13	Computer Room
15	Electrical Equipment Room
16	Heating Boiler Room
17	Machine Shop
21-24	Turbine Lube Oil Room Zone A, B, C and D
25	Tool Crib
26	RDS-UPS Battery Rooms
29	Condensate Pump Area
31	Turbine-Generator Operating Floor
32	Pipe Tunnel Area
35	Area West of Heat Exchanger (Next to Clean-Up Demineralizer Area)
37	Control Rod Drive Accumulator Area
38	Shutdown Heat Exchanger Room
41	Emergency Condenser Floor Area
42	Core Spray Pump Room

Fire stops will be installed in cable trays in the areas listed below:

<u>Fire Area #</u>	<u>Location</u>	<u>Tray Location</u>
41	Emergency Condenser Floor Area	Vertical Cable Tray (TC02)

Functional Requirements

The opening shall be sealed to give protection at least equivalent to that required of the fire barrier (wall, floor or ceiling) in which they are located.

Fire stops installed in horizontal and vertical cable trays shall prevent the propagation of a fire for a minimum period of 30 minutes.

The material used shall not cause any adverse effects on process lines (stainless steel), ducts or cables - chemical reaction, thermal expansion or cable overheating.

Openings inside conduit larger than 4 inches in diameter shall be sealed at the fire barrier penetration.

Openings inside conduit 4 inches or less in diameter shall be sealed at the fire barrier unless the conduit extends at least 5 feet on each side of the fire barrier and is sealed either at both ends or at the fire barrier with noncombustible material to prevent the passage of smoke and hot gases.

Qualification Requirements

Documentation shall be obtained on materials qualification in similar applications where available. If documentation is not available, the barrier material and application design shall be qualified by tests. The barrier qualification tests shall meet Sections 3, 4, 6, 7, 8, 9 and 10 of ASTM E-119 "Fire Test of Building Construction and Materials."

DESIGN BASES AND CRITERIA FOR WATERPROOFING CABLE SPLICES MODIFICATION

Modification Description

Protect the existing cable splices from water damage due to the operation or malfunction of the overhead sprinkler system.

These splices are located on low voltage instrumentation and control cables at the ends of the penetration sleeves on both sides of the containment sphere.

The installation of any material shall not impair the operation or maintenance of any equipment connected to the cables and will allow troubleshooting of the cables, if necessary.

The waterproofing material installed inside the containment shall protect the existing cable splices through a Loss of Coolant Accident (LOCA) to allow safe shutdown of the plant.

Applicable Fire Areas

<u>Fire Area #</u>	<u>Location</u>
7	Exterior Penetration Room
33	Interior Penetration Room

Performance Requirements

Waterproofing: The splices shall be designed and installed to allow wetting down by deluge water without electrical faulting of the protected electrical circuit.

Flame Retardancy: The flame retardancy of the splices, as assembled, shall meet or exceed the flame retardancy characteristics of the protected cable.

Insulation Properties: The material used and the method of installation shall not cause degradation of the insulation properties of the original cable insulation materials and shall have properties such that ground currents in shields associated with the protected cable are included.

Installation Temperature: The required installation temperature of the splice covering shall be compatible with the existing cable insulation.

Design Life: The material used shall have a design life of 25 years.

Effect on Tray Design: The effect on cable tray fill and support system shall be evaluated as a part of final design.

DESIGN BASES AND CRITERIA FOR THE INDEPENDENT SHUTDOWN CIRCUITS

Modification Description

Provide the design for an independent reactor safe shutdown and decay heat removal circuit which will provide these functions under conditions of a design basis fire in the electrical equipment room (Fire Area 15), external penetration room (Fire Area 7), internal penetration (Fire Area 33), area south of reactor (Fire Area 33A) or emergency condenser floor area (Fire Area 41).

The independent shutdown circuits shall be comprised of rerouted power and control circuits for both the emergency condenser outlet valves and the main steam stop valve. The independent circuits shall be powered by a new and independent power source.

The existing circuits will be modified such that the cables for these circuits do not pass through any of the areas of concern. The control switches for these circuits will remain in the control room at existing locations. Power for these circuits shall be provided from an independent source which is not located in the fire areas. The existing motor control centers for the emergency condenser outlet valves and main steam stop valve now located in the electrical equipment room shall be relocated (or replaced with new units) to areas independent of those of concern.

Although not required for safety, the new cables for control of the emergency condenser shall be groups and routed separately as follows to gain some immunity to single failures:

Group A: Emergency Condenser Outlet Valve MO-7053 Cables

Group B: Emergency Condenser Outlet Valve MO-7063 Cables

The main steam stop valve cables shall be routed separately or in either Group A or Group B and shall not cross from one group to the other.

The independent shutdown circuits shall have electrical, physical and fire separation from circuits of other diverse systems.

The independent shutdown circuits shall be routed through the personnel hatch to allow containment penetration. If necessary, the equipment hatch or emergency exist hatch areas will be used for additional wiring penetrations.

Functional Requirements

The independent shutdown circuitry and equipment shall provide the means for a safe shutdown of the reactor and removal of decay heat, under the assumption that a fire in any fire area may destroy the cables in that area.

If the normal equipment used for decay heat removal is not available, the emergency condenser system shall be used. The inlet valves to the emergency condenser are opened during plant start-up and are then electrically disabled, so they cannot close even with loss of cabling in the areas of concern. The only valves which must be operated are the d-c motor-operated outlet valves and the makeup water valve from the fire water system. The manual valve must be opened after 4 hours of condenser operation. Since the makeup line is smaller than the overflow line on the condenser, the makeup valve may be opened at any time within the 4-hour limit and left open.

Power for operation of these valves shall be supplied from a source independent of the station batteries, now located in the electrical equipment room (Area 15). The new batteries and associated chargers shall be located outside the electrical equipment room in an area which has a 3-hour fire rating and proper ventilation. Additional fire walls and ventilation shall be added for the area selected.

Qualification Requirements

The equipment shall be seismically and environmentally qualified.

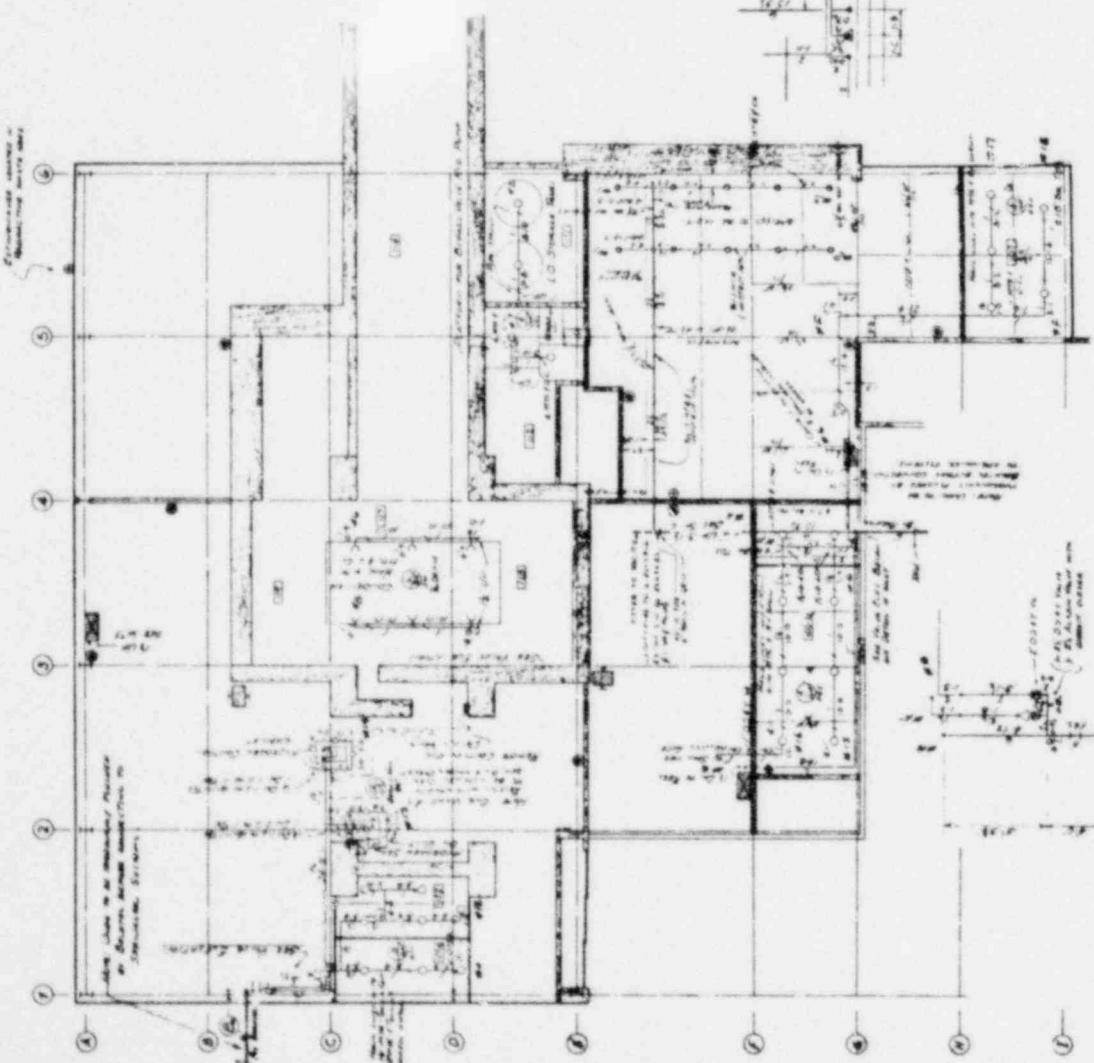
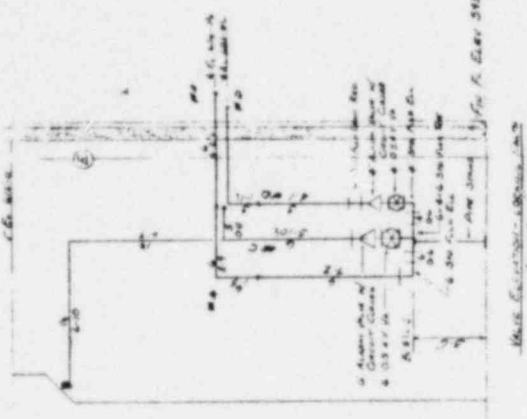
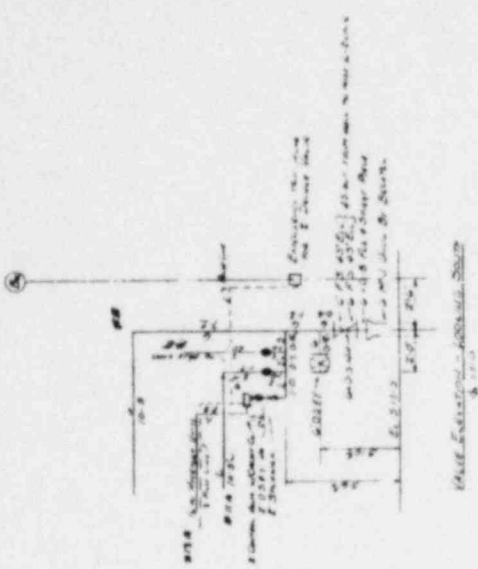
Cable and equipment vendors shall supply documentation for qualification as required by the system in which the material is being installed.

The cable installed inside the reactor building shall be qualified for LOCA conditions and be flame resistant. The cable installed outside the reactor building shall be flame resistant.

NO.	DATE	REVISION

M-2-1-3

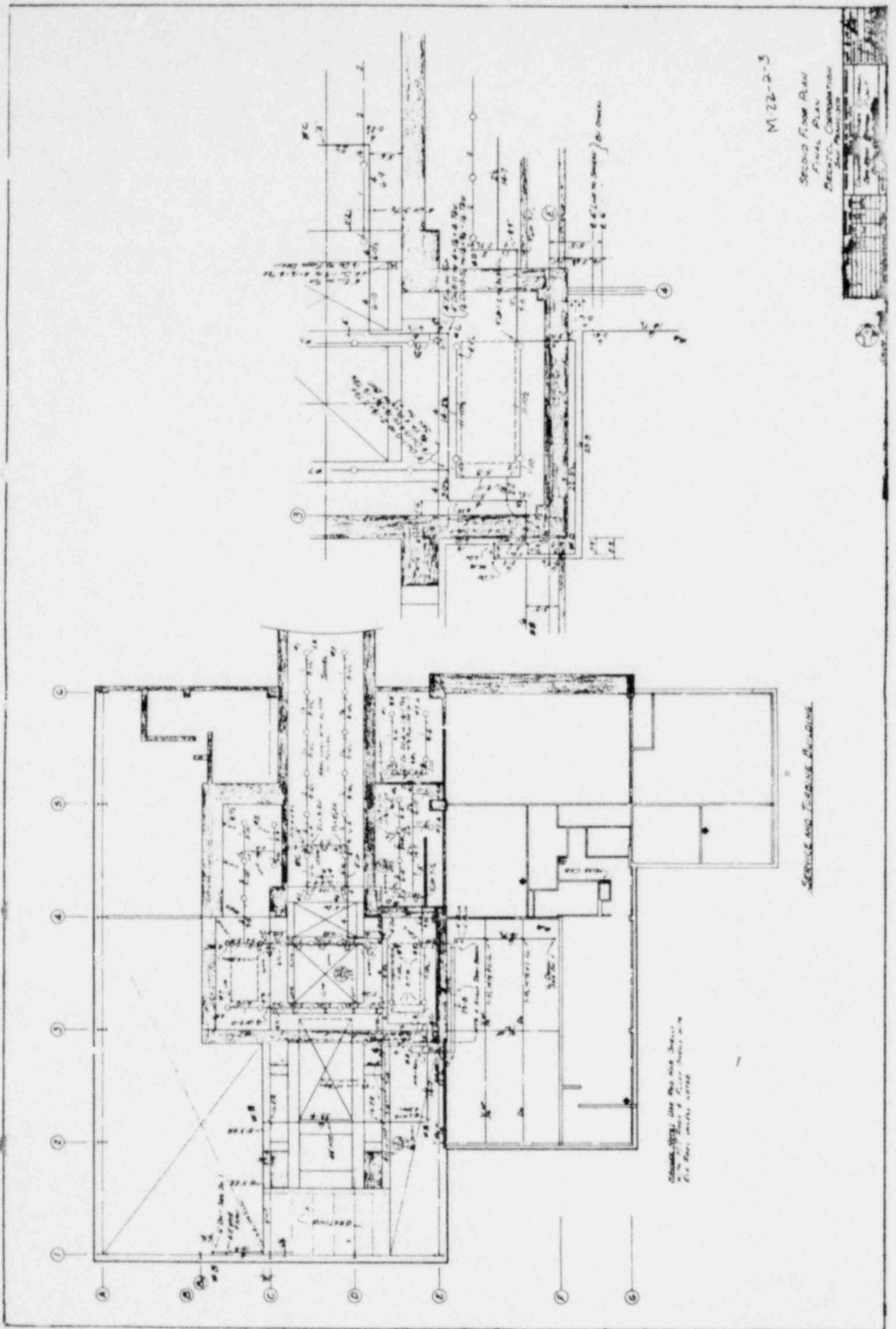
FIRST FLOOR PLAN
 SERVICE AND TUBING BUILDING



SERVICE AND TUBING BUILDING

BASE EXHAUSTION - ACROSSING STREET

POOR ORIGINAL



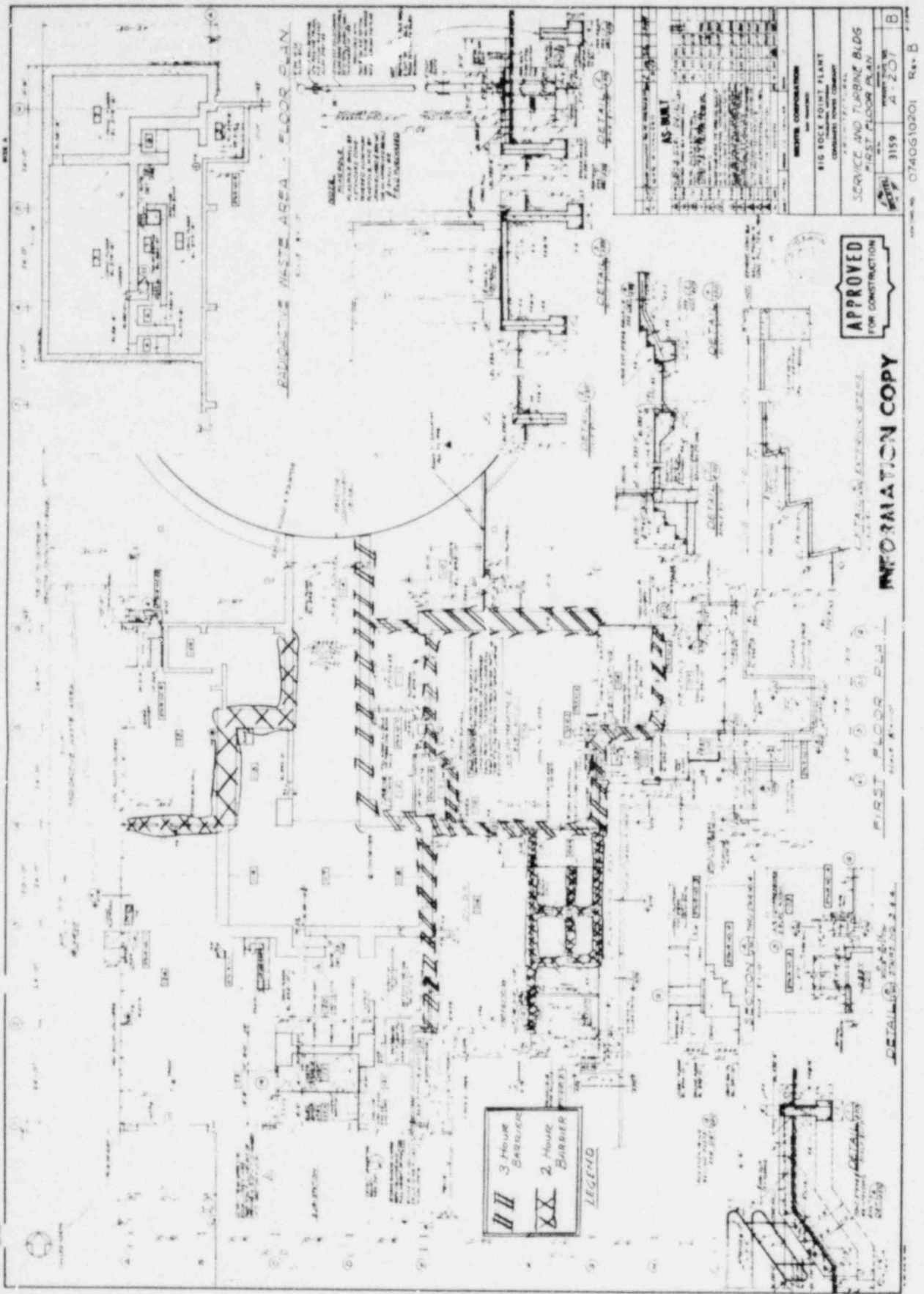
M 22-2-3

SECOND FLOOR PLAN
FINAL PLAN
ELECTRICAL CONNECTION

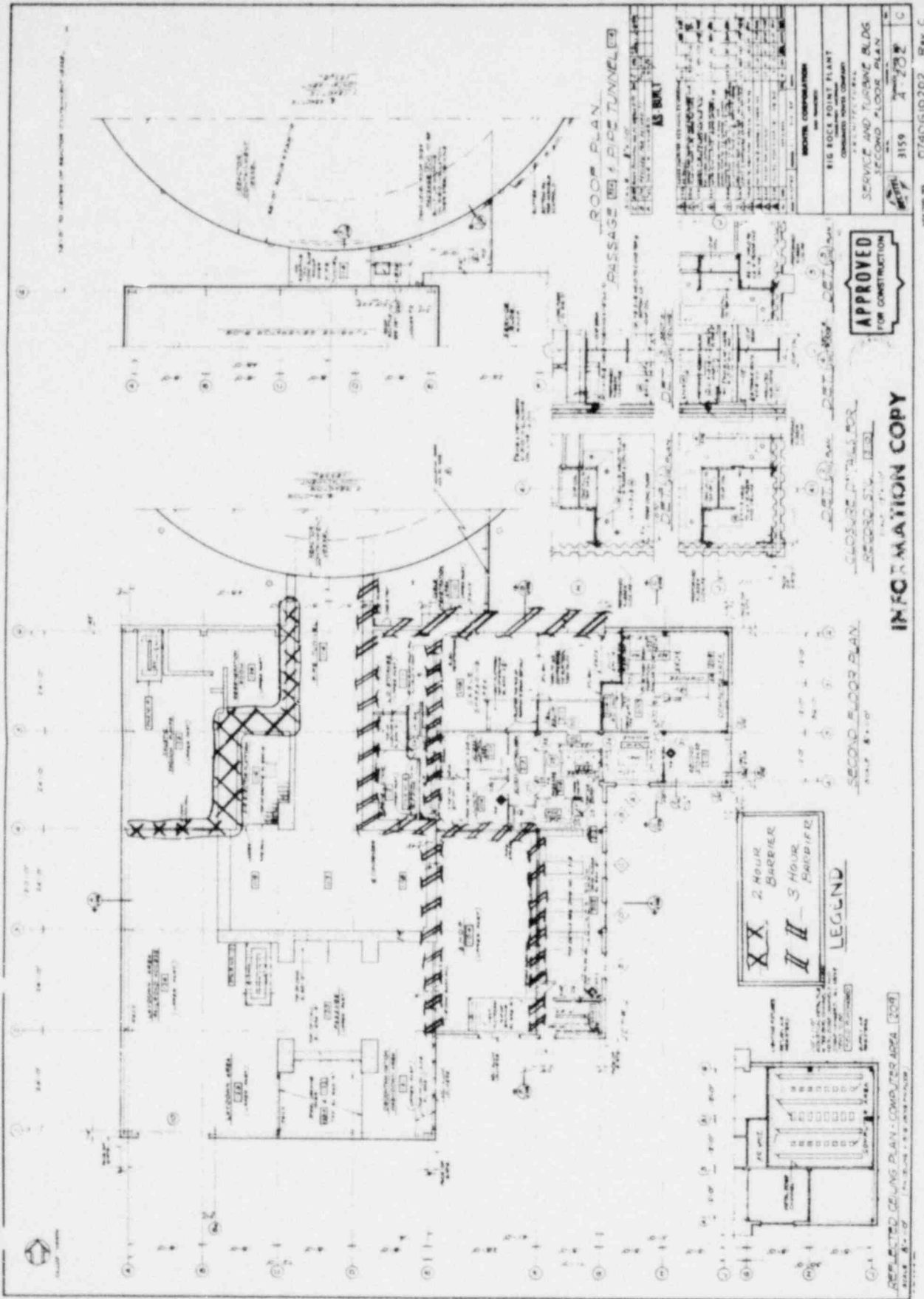
SERVICE AND TOILET BUILDING

CONSTRUCTION BY THE NEW YORK STATE DEPARTMENT OF CORRECTIONS

POOR ORIGINAL



POOR ORIGINAL

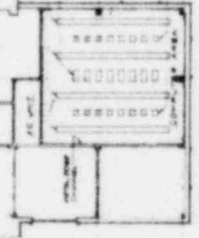


APPROVED FOR CONSTRUCTION

SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

XX 2 HOUR BARRIER
 || 5 HOUR BARRIER
 LEGEND

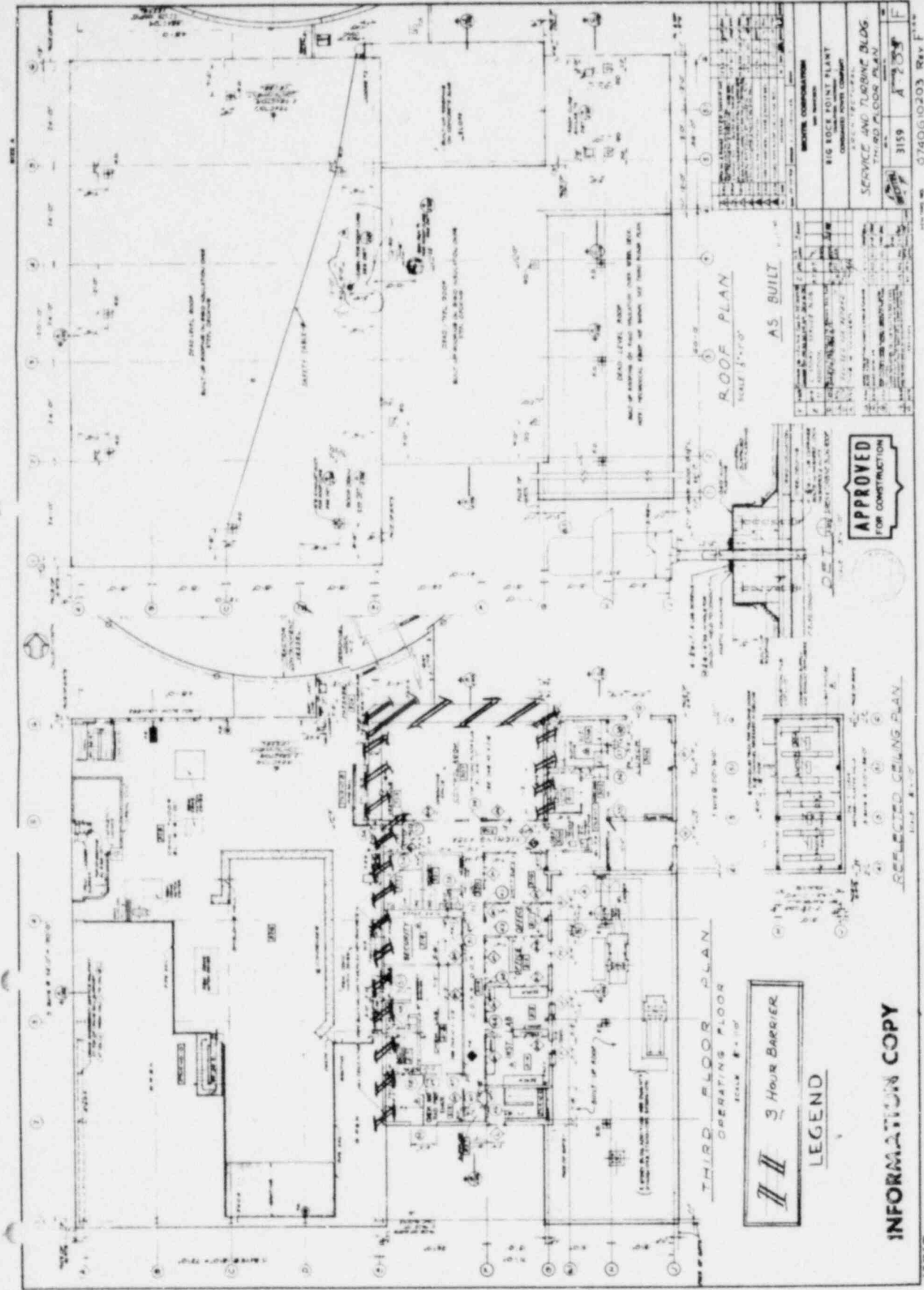


REFLECTED CEILING PLAN - COMPUTER AREA

INFORMATION COPY

NO. 3159	REV. C
SERVICE AND TURNING BLDG SECOND FLOOR PLAN	
BIG ROCK POINT PLANT CONTRACT NO. 0740G10202	
REVISED COMPILATION	

POOR ORIGINAL



APPROVED
FOR CONSTRUCTION

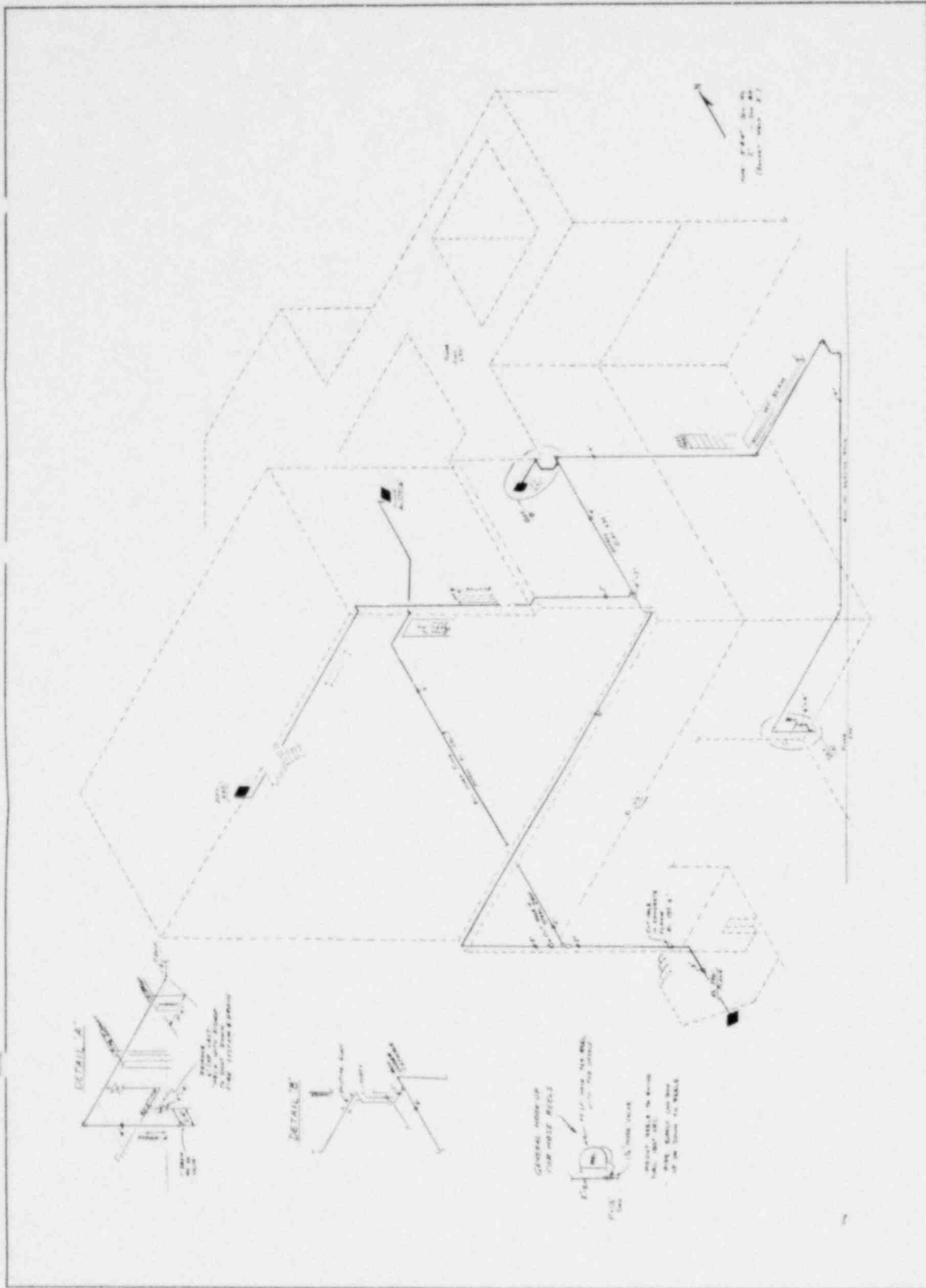
3 HOUR BARRIER

LEGEND

INFORMATION COPY

PROJECT: SERVICE AND TUBING BLDG. THIRD FLOOR PLAN
 DRAWING NO: 3159 A-203 F
 0740G10203 Rev F

POOR ORIGINAL



BIG ROCK POINT PLANT PIPE SYSTEM PIPING LOCATION SKETCH		15
CONSUMERS POWER CO.	DATE: 11/15/54	15
PROJECT NO. 100-1000	DATE: 11/15/54	15
DESIGNED BY: J. H. BROWN	DATE: 11/15/54	15
CHECKED BY: J. H. BROWN	DATE: 11/15/54	15
APPROVED BY: J. H. BROWN	DATE: 11/15/54	15
SCALE: AS SHOWN	DATE: 11/15/54	15
PROJECT NO. 100-1000	DATE: 11/15/54	15
DESIGNED BY: J. H. BROWN	DATE: 11/15/54	15
CHECKED BY: J. H. BROWN	DATE: 11/15/54	15
APPROVED BY: J. H. BROWN	DATE: 11/15/54	15
SCALE: AS SHOWN	DATE: 11/15/54	15

POOR ORIGINAL

D 7/17/78

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)
DISTRIBUTION FOR INCOMING MATERIAL 50-155

REC: ZIEMANN D L
NRC

ORG: SKIBITSKY W S
CONSUMERS PWR

DOCDATE: 07/14/78
DATE RCVD: 07/17/78

DOCTYPE: LETTER NOTARIZED: NO
SUBJECT:

COPIES RECEIVED
LTR 1 ENCL 40

SUBMITTAL OF ADDITIONAL INFO CONCERNING SUBJECT FACILITY FIRE HAZARDS ANALYSIS.

PLANT NAME: BIG ROCK PT

REVIEWER INITIAL: XRS
DISTRIBUTOR INITIAL: *MC*

***** DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS *****

FIRE PROTECTION INFORMATION (AFTER ISSUANCE OF DL).
(DISTRIBUTION CODE A006)

FOR ACTION: BR CHIEF ORS#2 EC**W/4 ENCL

INTERNAL:

REG FILE**W/ENCL
I-8 E**W/2 ENCL
AUXILIARY SYS BR**W/2 ENCL
PLANT SYSTEMS BR**W/5 ENCL
R. MURANKA**W/ENCL

NRC PDR**W/ENCL
OELD**LTR ONLY
AD FOR SYS & PROJ**W/ENCL
WAMBACH**W/ENCL
HANAUER**W/ENCL

EXTERNAL:

LPDR'S
CHARLEVOIX, MI**W/ENCL
TERA**W/ENCL
NSIC**W/ENCL
ACRS CAT B**W/16 ENCL

POOR ORIGINAL *MTA 2*

DISTRIBUTION: LTR 39 ENCL 38
SIZE: 1P+11P+16P

CONTROL NBR: ~~781980162~~

***** THE END *****

CP

D 7/17/78

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)
DISTRIBUTION FOR INCOMING MATERIAL

50-155

REC: ZIEMANN D L
NRC

ORG: SKIBITSKY W S
CONSUMERS PWR

DOCDATE: 07/14/78
DATE RCVD: 07/17/78

DOCTYPE: LETTER NOTARIZED: NO

COPIES RECEIVED
LTR 1 ENCL 40

SUBJECT: SUBMITTAL OF ADDITIONAL INFO CONCERNING SUBJECT FACILITY FIRE HAZARDS ANALYSIS

PLANT NAME: BIG ROCK PT

REVIEWER INITIAL: XRS

DISTRIBUTOR INITIAL: *MC*

***** DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS *****

FIRE PROTECTION INFORMATION (AFTER ISSUANCE OF OL).
(DISTRIBUTION CODE A006)

FOR ACTION: BR CHIEF ORB#2 BC**W/4 ENCL

INTERNAL: REG FILE**W/ENCL
I & E**W/2 ENCL
AUXILIARY SYS BR**W/2 ENCL
PLANT SYSTEMS BR**W/5 ENCL
R. MURANKA**W/ENCL

NRC PDR**W/ENCL
OELD**LTR ONLY
AD FOR SYS & PROJ**W/ENCL
WAMBACH**W/ENCL
HANAUER**W/ENCL

EXTERNAL: LPDR'S
CHARLEVOIX, MI**W/ENCL
TERA**W/ENCL
NSIC**W/ENCL
ACRS CAT B**W/16 ENCL

POOR ORIGINAL

TTA

DISTRIBUTION: LTR 39 ENCL 38
E: 1P+11P+16P

CONTROL NBR: ~~781990142~~
1

***** THE END *****

CP

