

# START ENGINEERING CHANGE NOTICE

ECN 167437  
Proj.   
ECN 341

9 2 1 2 6 3 5 1 8 3 6

2. ECN Category (mark one)		Supplemental <input type="checkbox"/>	Change ECN <input type="checkbox"/>	Supersedure <input checked="" type="checkbox"/>
Cancel/Void <input type="checkbox"/>		Direct Revision <input type="checkbox"/>	Temporary <input type="checkbox"/>	Discovery <input type="checkbox"/>
3. Originator's Name, Organization, MSIN, and Telephone No. R. G. Egge, 81440, R2-77, 3-2774			4. Date November 17, 1992	
5. Project Title/No./Work Order No. Electrical Upgrade to the 105-F Building		6. Bldg./Sys./Fac. No. 105-F		7. Impact Level 4
8. Document Number Affected (include rev. and sheet no.) H-W-74569, Sheet 1, Rev. 11; H-W-71658, Sheet 1, Rev. 24; H-W-71659, Sheet 1, Rev 7.		9. Related ECN No(s). ECN 167424 ECN 167412		10. Related PO No. N/A
11a. Modification Work <input checked="" type="checkbox"/> Yes (fill out Blk. 11b) <input type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package Doc. No. LOI 9250975 Rev. 2	11c. Complete Installation Work  Cog. Engineer Signature & Date		11d. Complete Restoration (Temp. ECN only) N/A  Cog. Engineer Signature & Date
12. Description of Change This ECN 167437 replaces ECN 167424. And ECN 167424 replaced ECN 167412. See outline as described on page three of this ECN.				
13a. Justification (mark one)		Criteria Change <input type="checkbox"/>	Environmental <input type="checkbox"/>	Facilitate Const. <input type="checkbox"/>
Design Error/Omission <input type="checkbox"/>		Design Improvement <input checked="" type="checkbox"/>	As-Found <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>
13b. Justification Details The electrical distribution system in the 105-F building that is utilized for lighting doesn't met the NEC code and presents a electrical safety hazard to personnel that enter the building for maintenance or surveillance activities.				
14. Distribution (include name, MSIN, and no. of copies)			RELEASE STAMP	
R. G. Egge R2-77 (2) B. F. Weaver T3-11 (1) M. R. Morton R2-77 (1) S. R. Durfee T3-11 (1)			OFFICIAL RELEASE BY WHC DATE NOV 24 1992 dta. 4	

# ENGINEERING CHANGE NOTICE

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1. ECN (use no. from pg. 1)

167437

<b>15. Design Verification Required</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>16. Cost Impact</b> <table style="width: 100%;"> <tr> <th style="text-align: center;">ENGINEERING</th> <th style="text-align: center;">CONSTRUCTION</th> </tr> <tr> <td>Additional <input type="checkbox"/> \$</td> <td>Additional <input type="checkbox"/> \$</td> </tr> <tr> <td>Savings <input type="checkbox"/> \$</td> <td>Savings <input type="checkbox"/> \$</td> </tr> </table>	ENGINEERING	CONSTRUCTION	Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	<b>17. Schedule Impact (days)</b> Improvement <input type="checkbox"/> Delay <input type="checkbox"/>
ENGINEERING	CONSTRUCTION							
Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$							
Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$							

**18. Change Impact Review:** Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD <input type="checkbox"/>	Seismic/Stress Analysis <input checked="" type="checkbox"/>	Tank Calibration Manual <input type="checkbox"/>
Functional Design Criteria <input type="checkbox"/>	Stress/Design Report <input type="checkbox"/>	Health Physics Procedure <input checked="" type="checkbox"/>
Operating Specification <input type="checkbox"/>	Interface Control Drawing <input type="checkbox"/>	Spares Multiple Unit Listing <input type="checkbox"/>
Criticality Specification <input type="checkbox"/>	Calibration Procedure <input type="checkbox"/>	Test Procedures/Specification <input type="checkbox"/>
Conceptual Design Report <input type="checkbox"/>	Installation Procedure <input type="checkbox"/>	Component Index <input type="checkbox"/>
Equipment Spec. <input type="checkbox"/>	Maintenance Procedure <input type="checkbox"/>	ASME Coded Item <input type="checkbox"/>
Const. Spec. <input type="checkbox"/>	Engineering Procedure <input type="checkbox"/>	Human Factor Consideration <input type="checkbox"/>
Procurement Spec. <input type="checkbox"/>	Operating Instruction <input type="checkbox"/>	Computer Software <input type="checkbox"/>
Vendor Information <input type="checkbox"/>	Operating Procedure <input type="checkbox"/>	Electric Circuit Schedule <input checked="" type="checkbox"/>
OM Manual <input type="checkbox"/>	Operational Safety Requirement <input type="checkbox"/>	ICRS Procedure <input type="checkbox"/>
FSAR/SAR <input type="checkbox"/>	IEFD Drawing <input type="checkbox"/>	Process Control Manual/Plan <input type="checkbox"/>
Safety Equipment List <input type="checkbox"/>	Cell Arrangement Drawing <input type="checkbox"/>	Process Flow Chart <input type="checkbox"/>
Radiation Work Permit <input checked="" type="checkbox"/>	Essential Material Specification <input type="checkbox"/>	Purchase Requisition <input checked="" type="checkbox"/>
Environmental Impact Statement <input type="checkbox"/>	Fac. Proc. Samp. Schedule <input type="checkbox"/>	Preventative Maintenance <input type="checkbox"/>
Environmental Report <input type="checkbox"/>	Inspection Plan <input type="checkbox"/>	
Environmental Permit <input type="checkbox"/>	Inventory Adjustment Request <input type="checkbox"/>	

**19. Other Affected Documents:** (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
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**20. Approvals**

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer R. G. Egge <i>RGE</i>	<u>11-17-92</u>	PE	_____
Cog./Project Engr. Mgr. M. R. Morton <i>MRM</i>	<u>11-18-92</u>	QA	_____
QA	_____	Safety	_____
Safety	_____	Design	_____
Security	_____	Other	_____
Proj. Prog./Dept. Mgr.	_____		_____
Def. React. Div.	_____		_____
Chem. Proc. Div.	_____		_____
Def. Wst. Mgmt. Div.	_____		_____
Adv. React. Dev. Div.	_____	DEPARTMENT OF ENERGY	_____
Proj. Dept.	_____		_____
Environ. Div.	_____	ADDITIONAL	_____
IRM Dept.	_____		_____
Facility Rep. (Ops.) B. F. Weaver <i>BFW</i>	<u>11-19-92</u>		_____
Other	_____		_____

WORK SCOPE OUTLINE:

1. Electrical equipment placement is general. Place all equipment as shown on the drawings within three (3) feet. Field run EMT or flex conduit when needed as outlined in the drawings. Use existing conduit where possible to minimize the amount of new conduit that is needed. All conduit used (either new or existing) mark every twenty (20) feet "IN SERVICE". All mountings will be to typical industrial standards. All electrical equipment will be rain-tight configuration.

CAUTION: 480 VAC and 230/115 VAC electrical shock hazard is present. Installation of CAUTION tags will be necessary. Utilize plant Electricians to Lock & Tag circuits.

NOTE: Always perform a Zero Energy Check after locking out the necessary system before starting work.

2. Relocate existing 240 VAC service line to the new weather head positioned where the old 480 VAC feed entered the 105-F building. Field run parallel 3" rigid conduit from the weather heads to the new service disconnect and then thru the Equipment Room down the hallway to the new location of the distribution panel. All electrical power must be removed from circuits that are being modified per this ECN.

3. Field mount, using EMT and flex conduit, the lines for the distribution panel and lighting contactors on the north wall of the Electrical Equipment Room. Mark the lighting contactors as to which area of the building that it serves.

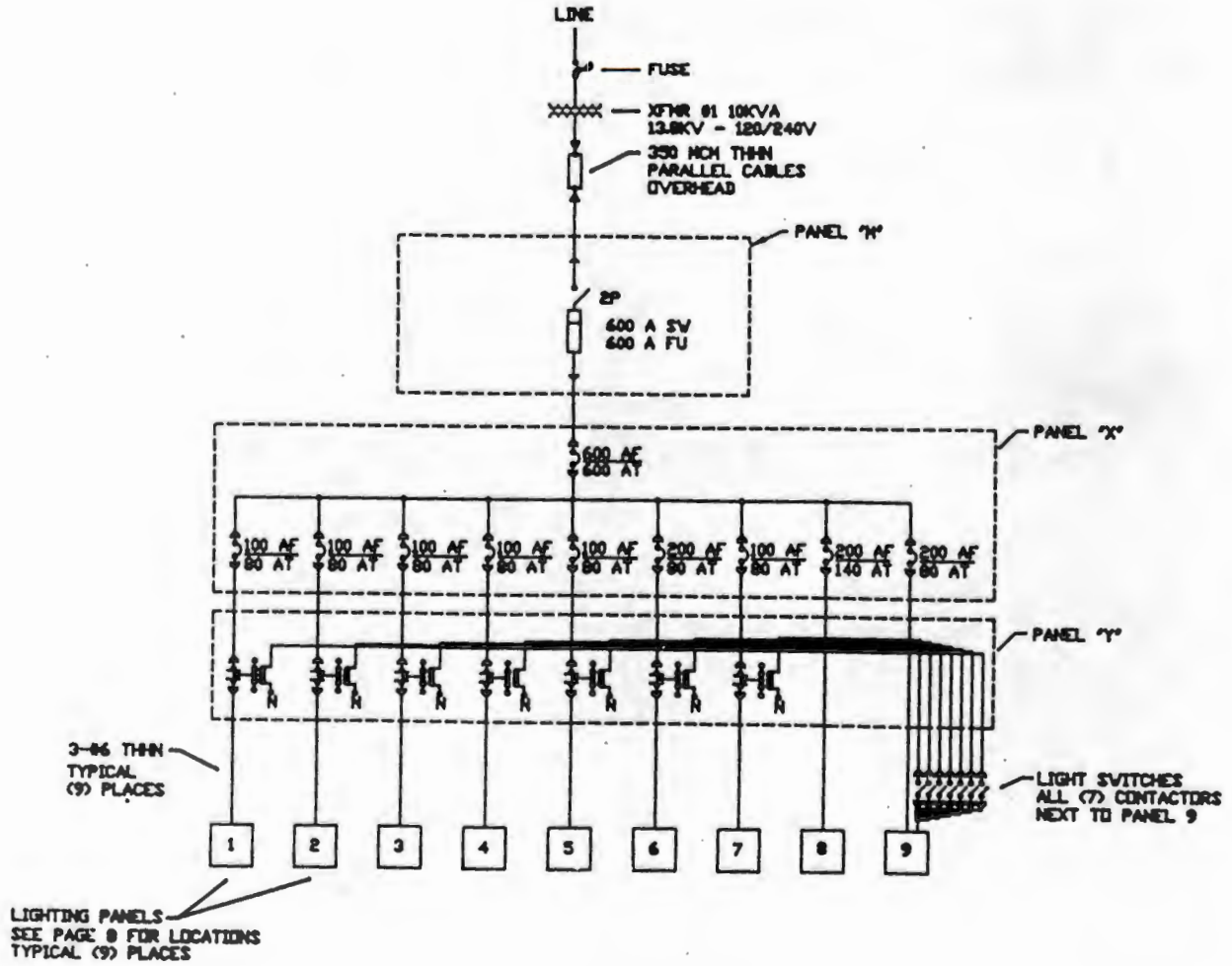
4. Field run wires from the lighting contactors through existing conduit where possible to locations through the building as shown on the attached drawings. All lighting breakers to be 20 Amps. The stove breaker to be a 40 Amp.

5. Field run wires from the panel boxes to the light locations as shown on the attached drawings using existing conduit where possible. The lighting will consist of 350 watt halogen floodlights and 150 watt caged incandescent lights, with no more than 2100 watts being utilized from any given breaker/contactors.

6. Mount all lights at least eight (8) feet high to be out of the way of personnel. Do not place lights closer than one (1) foot of any flammable materials. The lights may be clustered in order to obtain maximum illumination with the minimum of mounting locations.

9 2 1 2 6 3 5 1 8 3 8

Simplified One-Line Electrical Diagram



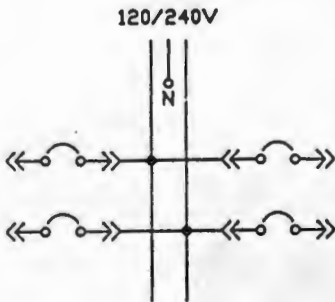
9 2 1 2 6 3 5 1 8 3 9

Panel Schedules  
(For Panels 1-3)

PANEL 1

LOCATION: FAN ROOM  
SEE PAGE 10 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
(4) 500 WATT HALOGEN LIGHTS	2000W	20A
(4) 500 WATT HALOGEN LIGHTS	2000W	20A

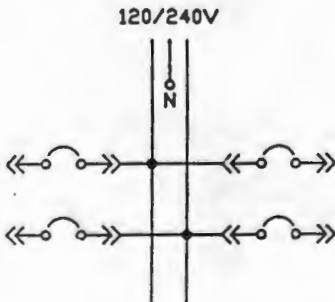


BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	1500W	(3) 500 WATT HALOGEN LIGHTS
20A GFI	2400W MAXIMUM	TO OUTLETS

PANEL 2

LOCATION: WALKWAY BY VALVE PIT  
SEE PAGE 11 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
(4) 500 WATT HALOGEN LIGHTS	2000W	20A
(4) 500 WATT HALOGEN LIGHTS	2000W	20A

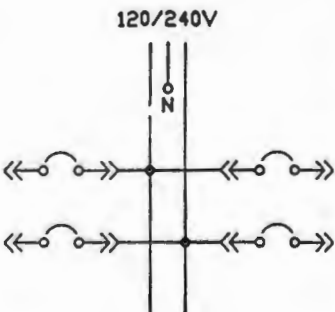


BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	1500W	(3) 500 WATT HALOGEN LIGHTS
20A GFI	2400W MAXIMUM	TO OUTLETS

PANEL 3

LOCATION: NEAR WORK AREA  
SEE PAGE 12 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
(4) 500 WATT HALOGEN LIGHTS	2000W	20A
(4) 500 WATT HALOGEN LIGHTS	2000W	20A



BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	1500W	(3) 500 WATT HALOGEN LIGHTS
20A GFI	2400W MAXIMUM	TO OUTLETS

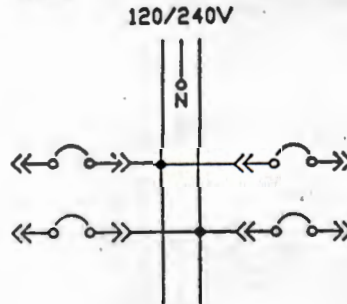
92126351840

Panel Schedules  
(For Panels 4-6)

PANEL 4

LOCATION: NEAR WORK AREA  
SEE PAGES 13 AND 14 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
(4) 500 WATT HALOGEN LIGHTS	2000W	20A
(4) 500 WATT HALOGEN LIGHTS	2000W	20A



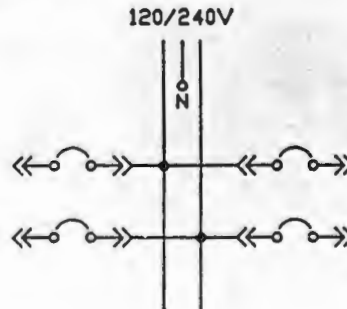
BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	1500W	(3) 500 WATT HALOGEN LIGHTS
20A GFI	2400W MAXIMUM	TO OUTLETS

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PANEL 5

LOCATION: BY 'D' ELEVATOR  
SEE PAGES 15 AND 16 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
(4) 500 WATT HALOGEN LIGHTS	2000W	20A
(4) 500 WATT HALOGEN LIGHTS	2000W	20A

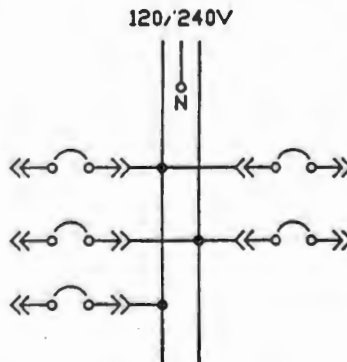


BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	1500W	(3) 500 WATT HALOGEN LIGHTS
20A GFI	2400W MAXIMUM	TO OUTLETS

PANEL 6

LOCATION: STORAGE AREA  
SEE PAGE 17 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
(6) 350 WATT HALOGEN LIGHTS	2100W	20A
(6) 350 WATT HALOGEN LIGHTS	2100W	20A
(6) 350 WATT HALOGEN LIGHTS	2100W	20A



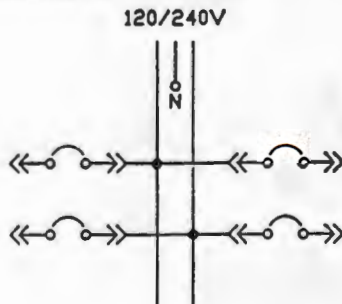
BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	1050W	(3) 350 WATT HALOGEN LIGHTS
20A GFI	2400W MAXIMUM	TO OUTLETS

Panel Schedules  
(For Panels 7-9)

PANEL 7

LOCATION: HALLWAY TO 'D' ELEVATOR  
SEE PAGES 19, 20 AND 21 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
(14) 150 WATT INCANDESCENT LIGHTS	2100W	20A
(14) 150 WATT INCANDESCENT LIGHTS	2100W	20A



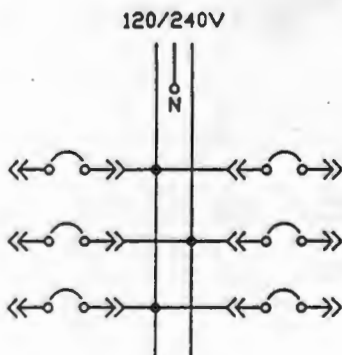
BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	1050W	(7) 150 WATT INCANDESCENT LIGHTS
20A GFI	2400W MAXIMUM	TO OUTLETS

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PANEL 8

LOCATION: OUTSIDE MISC. STORAGE ROOM  
SEE PAGE 22 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
AIR CONDITIONER	2400W MAXIMUM	20A
REFRIDGERATOR	2400W MAXIMUM	20A
(14) 150 WATT INCANDESCENT LIGHTS	2100W	20A

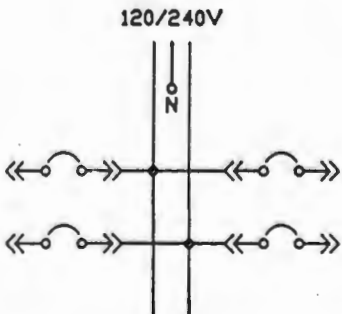


BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	2400W MAXIMUM	HOT WATER HEATER
40A	4800W MAXIMUM	STOVE
20A	2100W	(14) 150 WATT INCANDESCENT LIGHTS

PANEL 9

LOCATION: FRONT DOOR  
SEE PAGE 23 FOR LIGHT LOCATIONS

DESCRIPTION OF LOAD	LOAD WATTS	BRKR AMPS
FIRE ALARM	2400W MAXIMUM	20A
HEAT TAPE	2400W MAXIMUM	20A

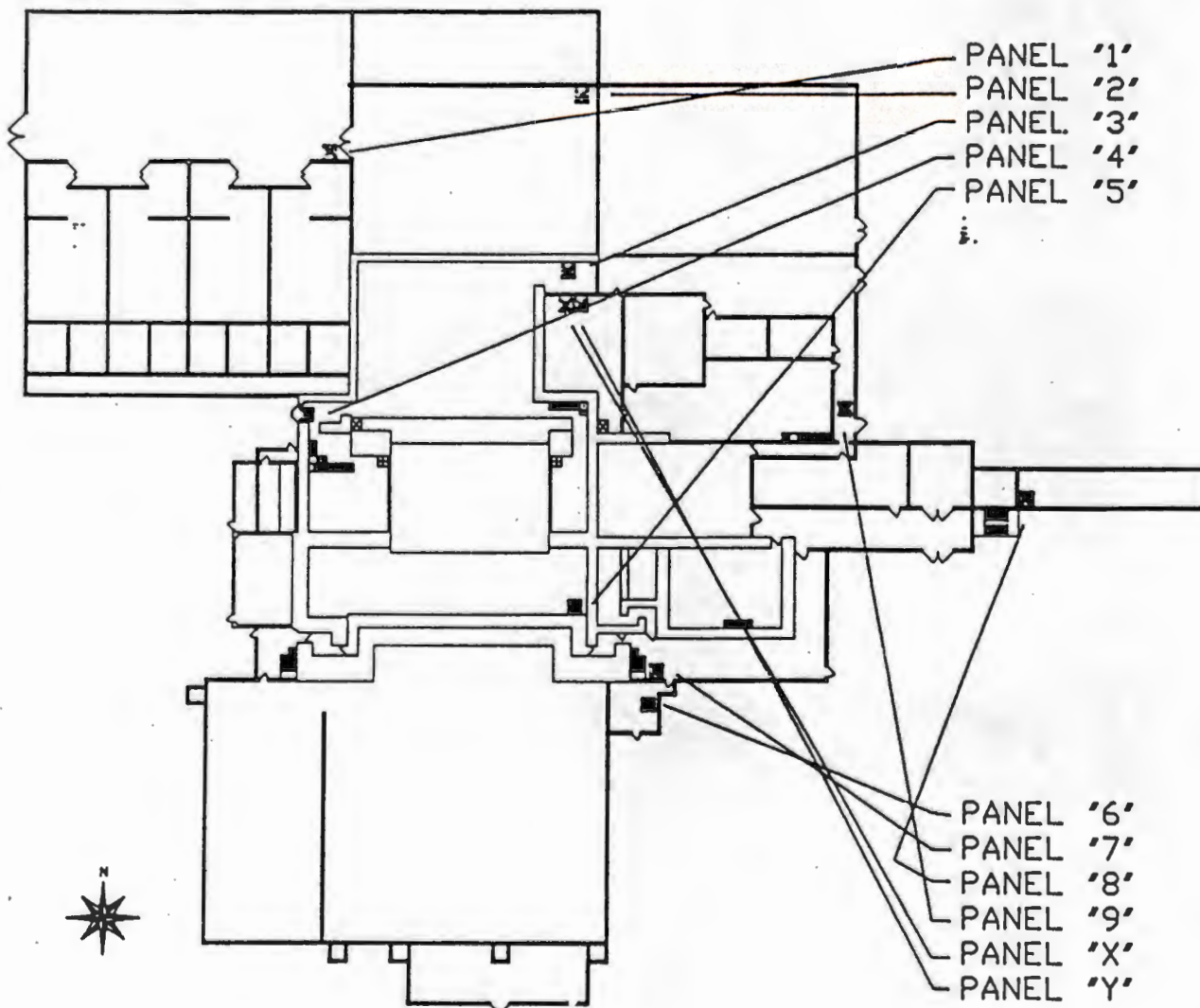


BRKR AMPS	LOAD WATTS	DESCRIPTION OF LOAD
20A	2100W	(14) 150 WATT INCANDESCENT LIGHTS
20A	2100W	(14) 150 WATT INCANDESCENT LIGHTS

9 2 1 2 6 3 5 1 8 4 2

Panel Box Locations  
(Use Existing Conduits Per H-W-74569)

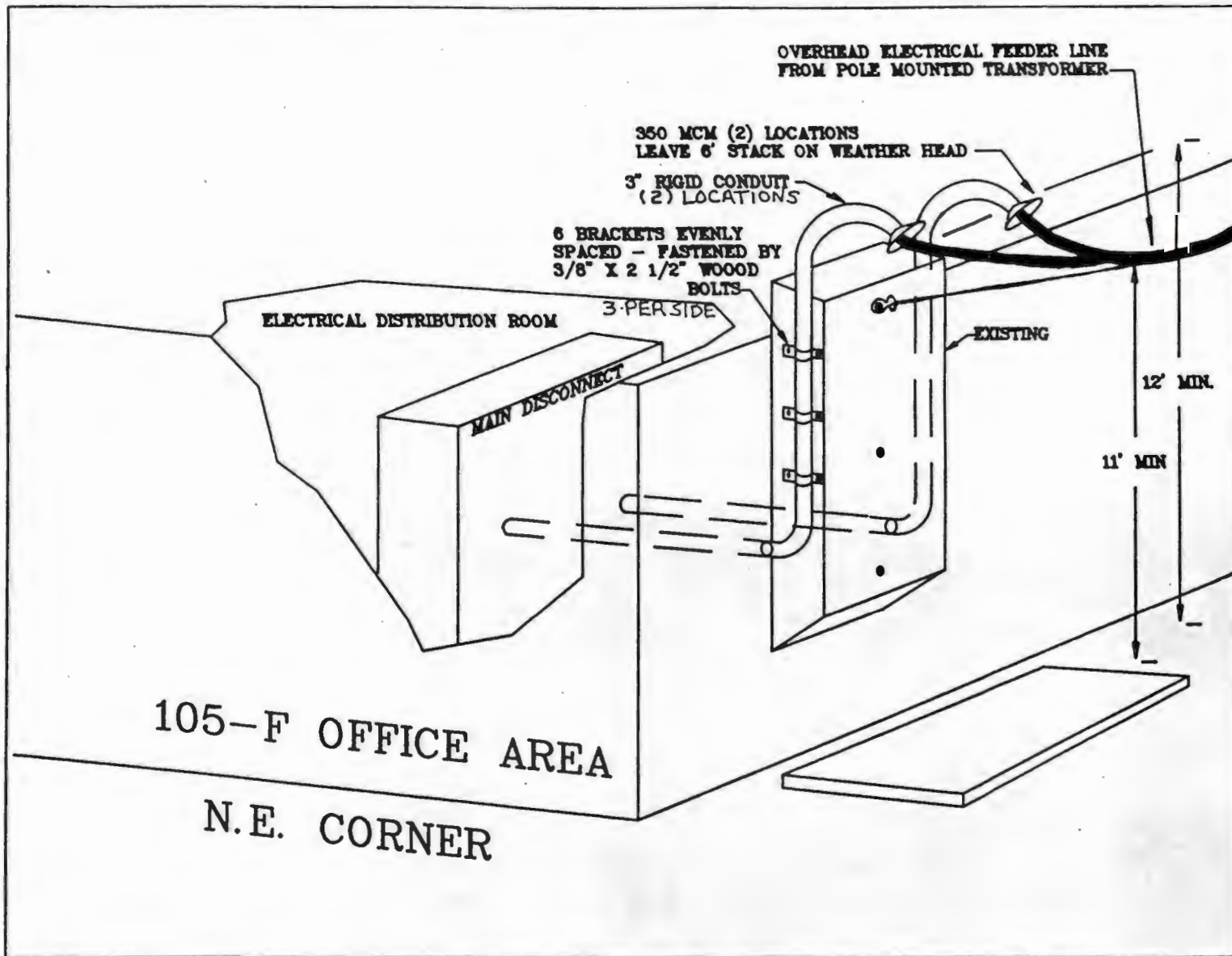
9 2 1 2 6 3 5 1 8 4 3





9 2 1 2 6 3 5 | 8 4 4

A-7320-036.2 (11/88) (EF) GEF094  
Engineering Change Notice Continuation Sheet



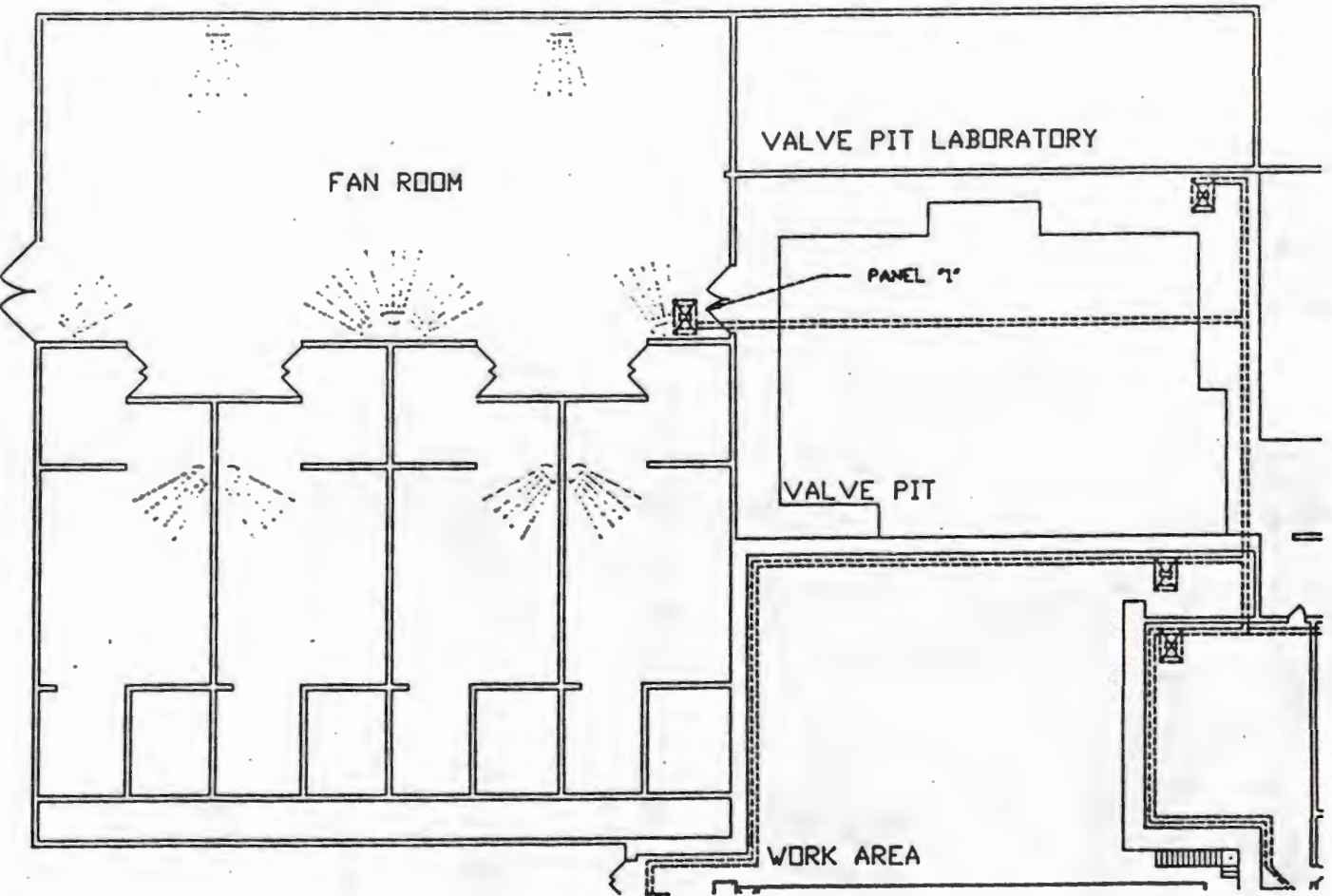
Electrical Feed to 105-F

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

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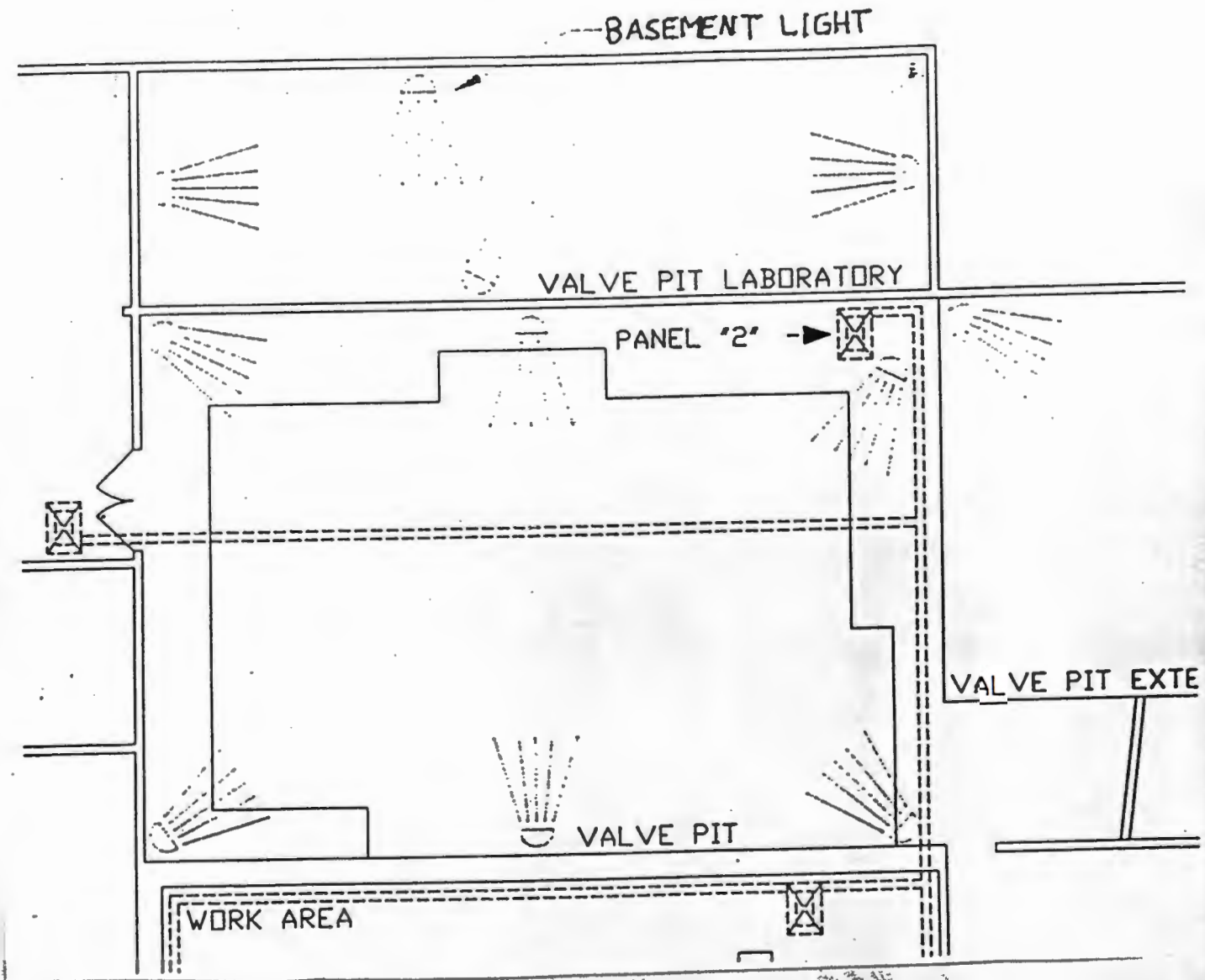
1 EFM  
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9 2 1 2 5 3 5 1 8 4 5



Lighting Locations for Fan House  
(Eleven 500 Watt Halogen Lights)

9 2 1 2 6 3 5 1 8 4 6



ENGINEERING CHANGE NOTICE CONTINUATION SHEET

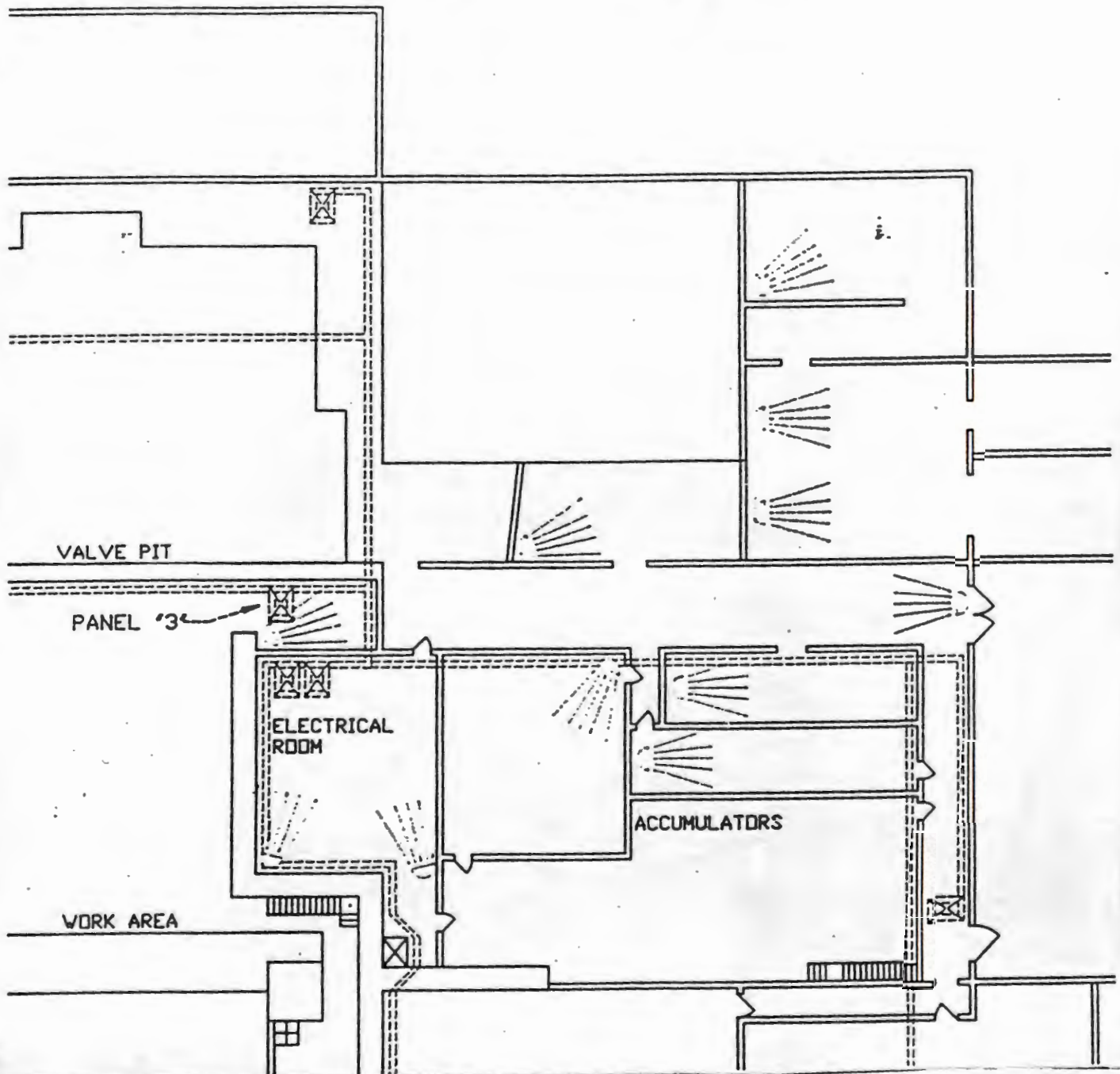
Page 11 of 23

1. ECM  
167437

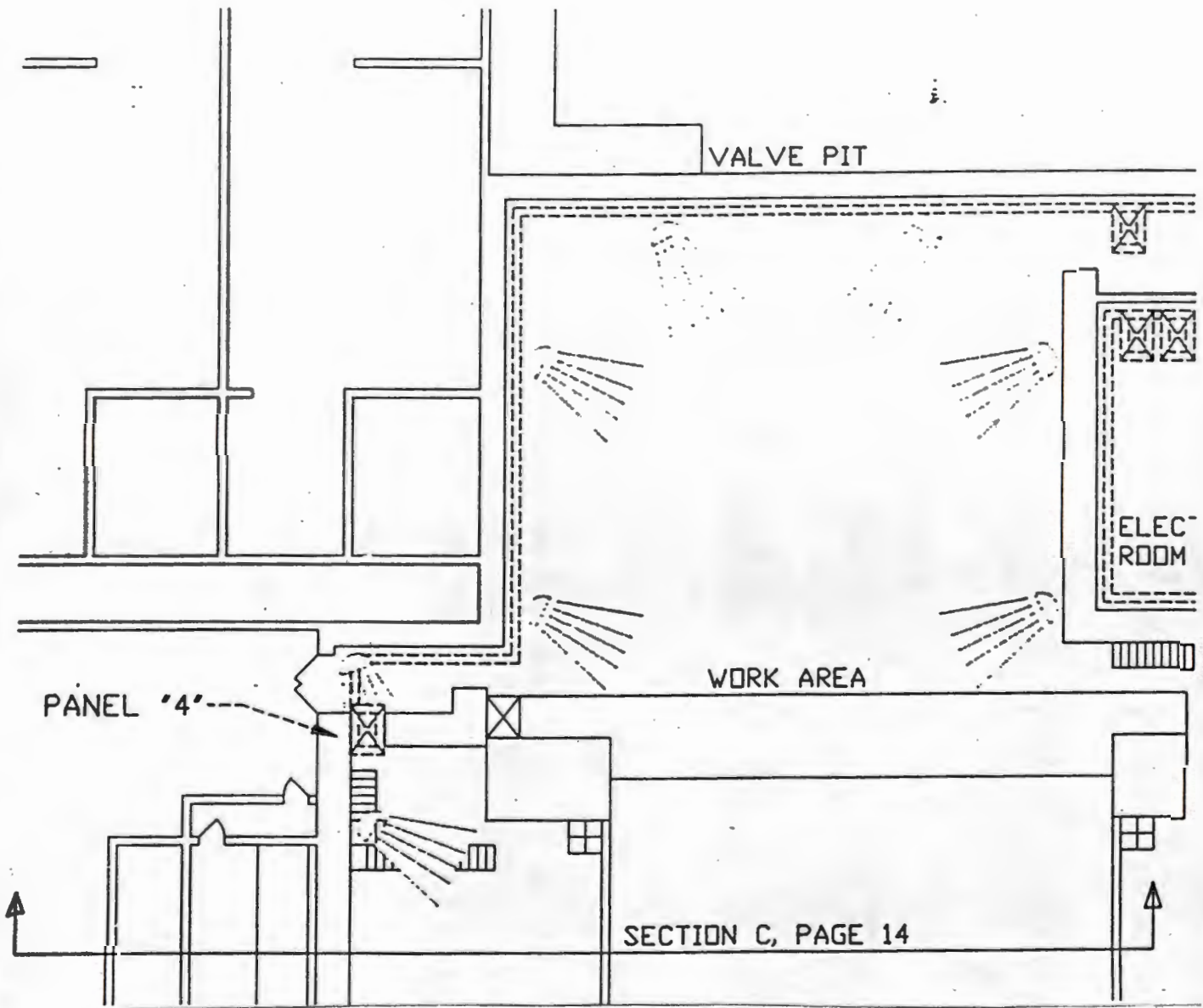
Lighting Locations for Valve Pit and Laboratory  
(Eleven 500 Watt Halogen Lights)

Lighting Locations for Charge Prep and Offices  
(Eleven 500 Watt Halogen Lights)

9 2 1 2 3 5 1 8 4 7



9 2 1 2 6 3 5 1 8 4 3



ENGINEERING CHANGE NOTICE CONTINUATION SHEET

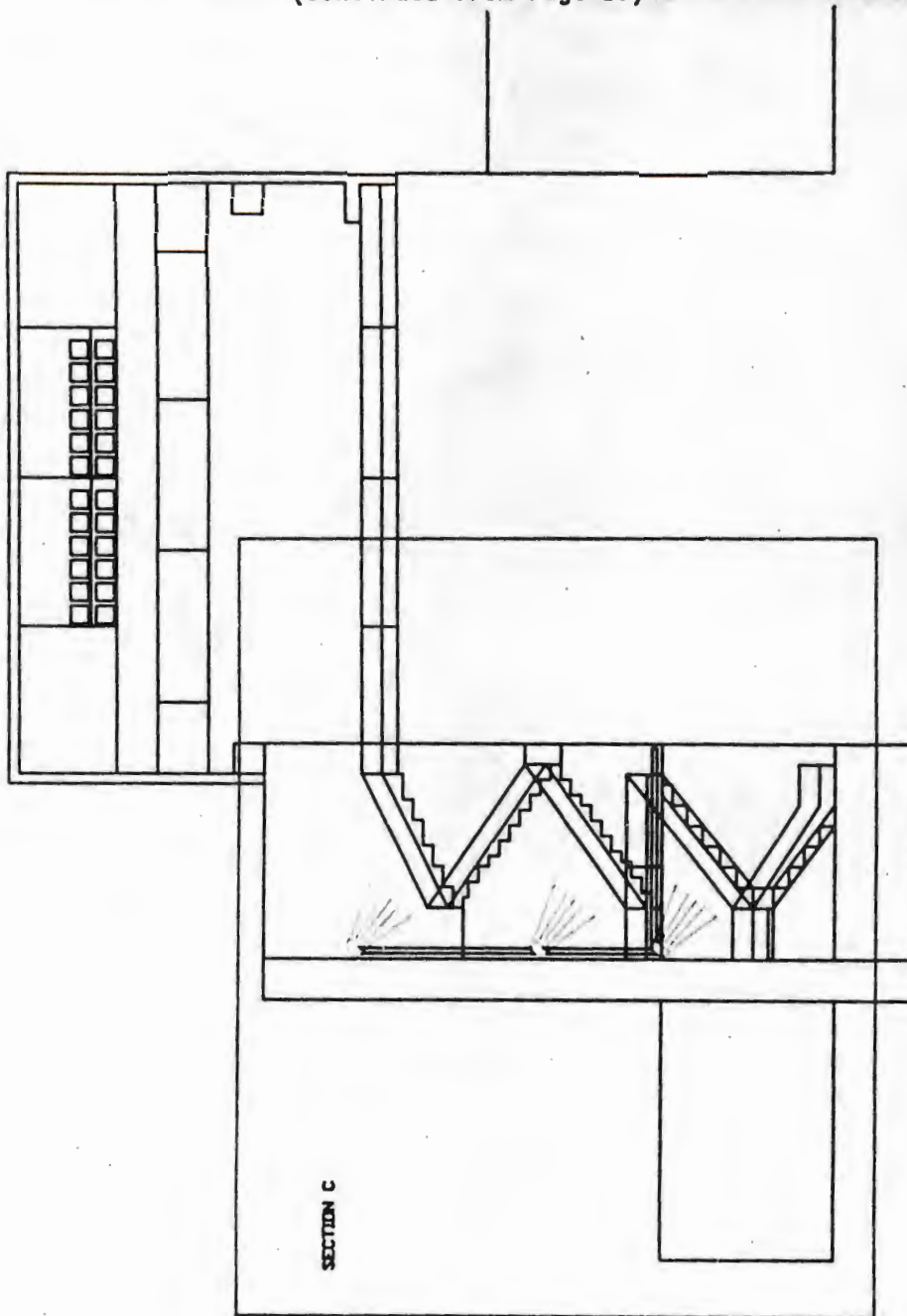
Page 13 of 23

1. ECH  
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Lighting Locations for Work Area and Stairs (Going to the Top of Reactor Block)  
(Eleven 500 Watt Halogen Lights)  
(Continued on Page 14)

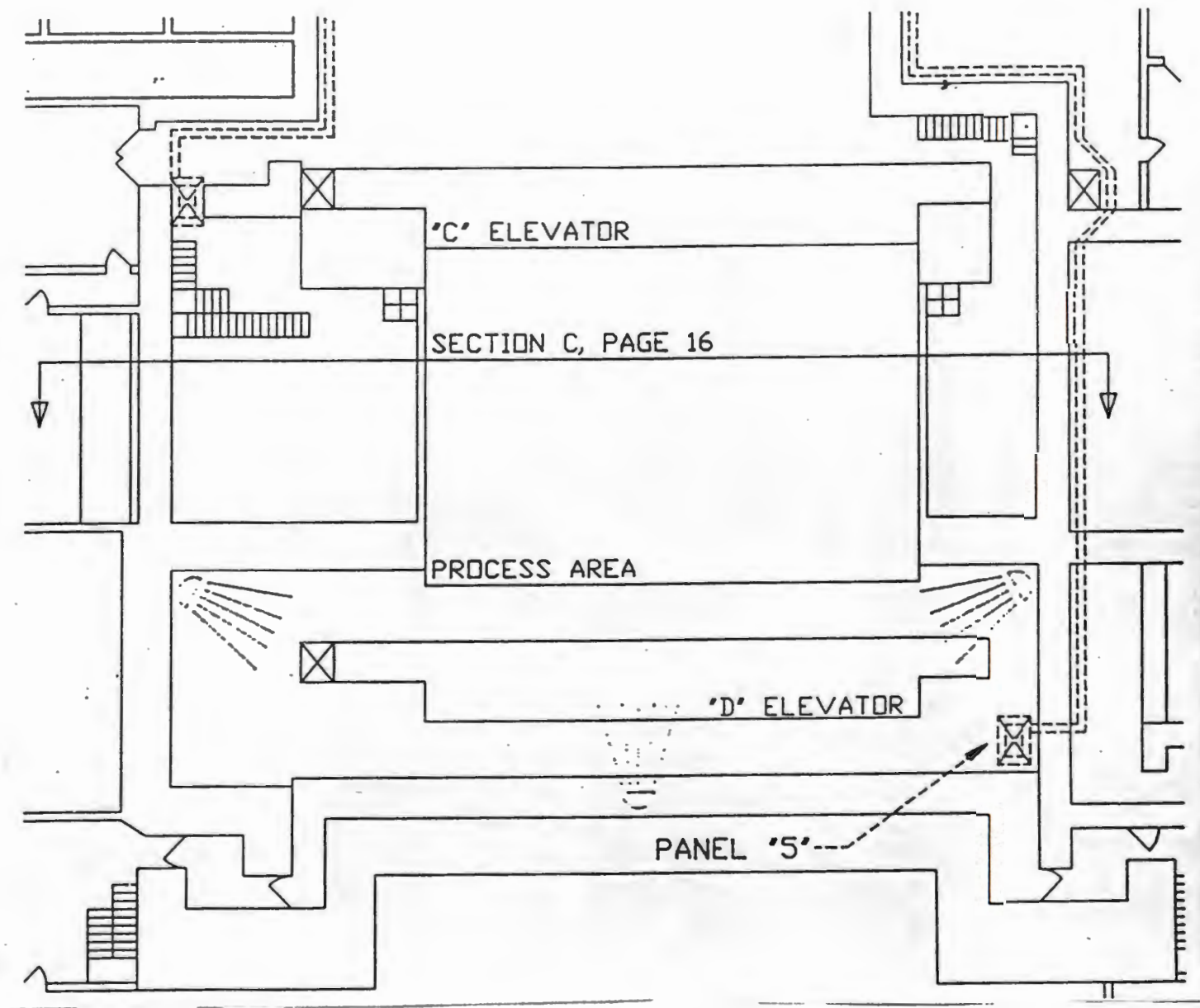
Lighting Locations for Work Area and Stairs (Going to the Top of Reactor Block)  
(Eleven 500 Watt Halogen Lights)  
(Continued from Page 13)

9 2 1 2 6 3 5 1 8 4 9



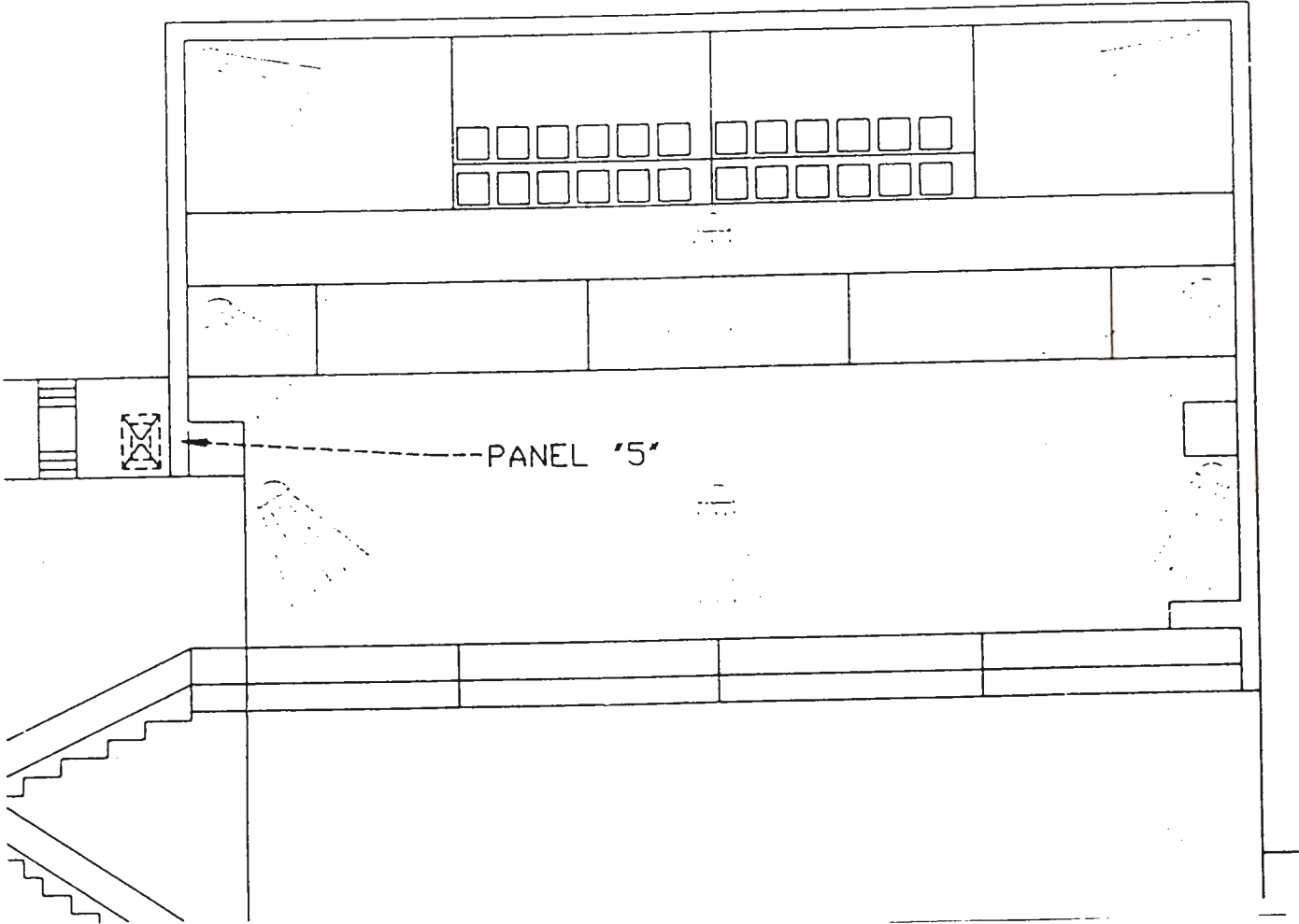
9 2 1 2 5 3 5 1 8 5 0

Lighting Locations for 'D' Elevator Room and Top of Unit  
(Eleven 500 Watt Halogen Lights)  
(Continued on Page 16)



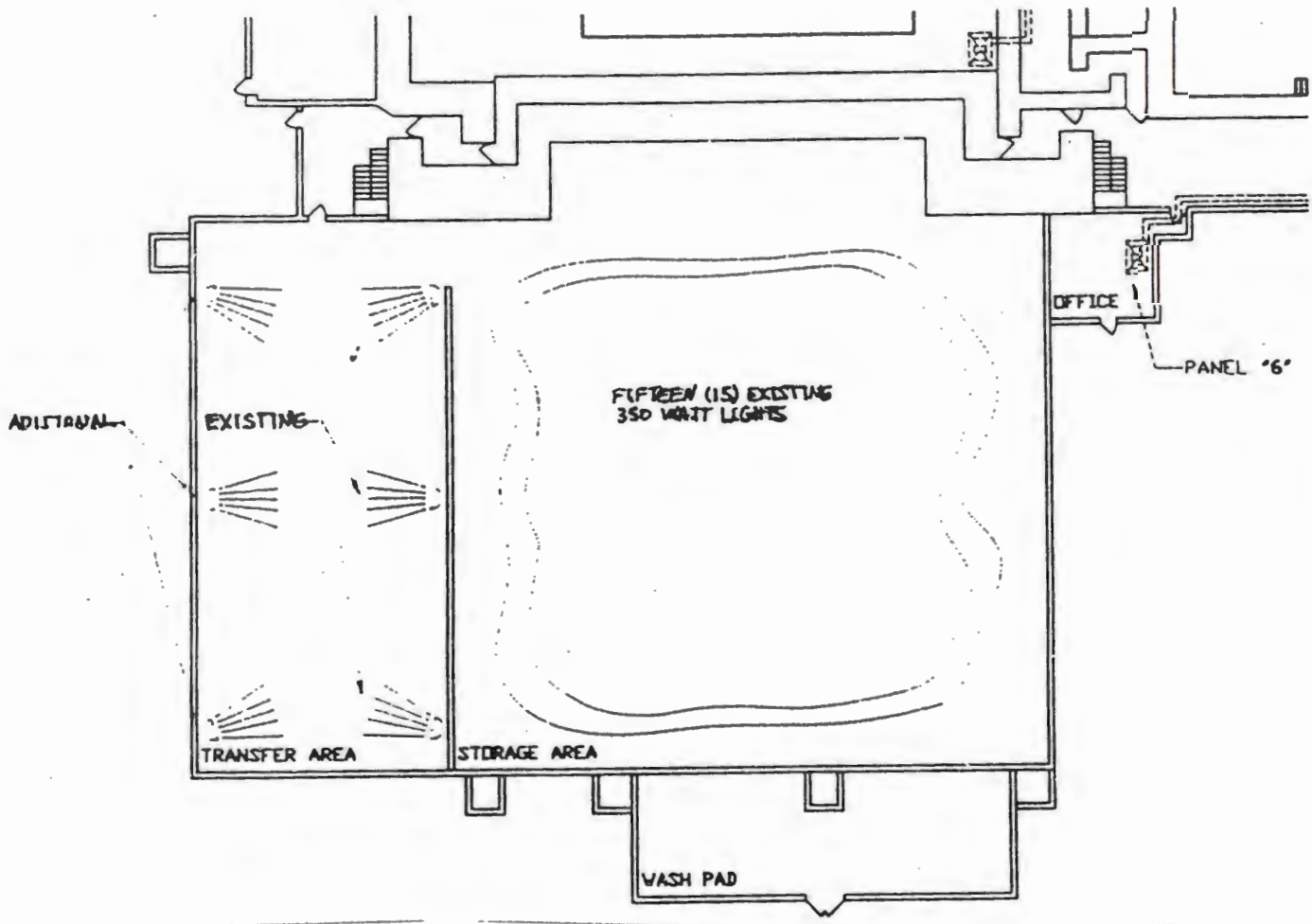
Lighting Locations for "D" Elevator Room and Top of Unit  
(Eleven 500 Watt Halogen Lights)  
(Continued from Page 15)

SECTION C

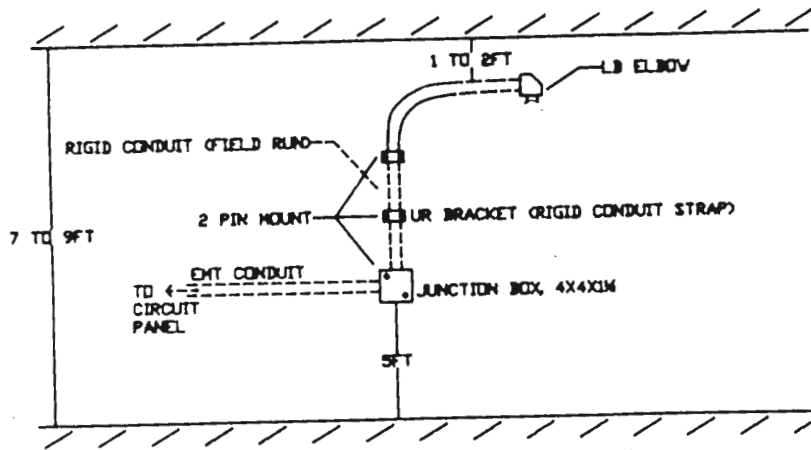




Lighting Locations for Storage and Transfer Bay Area  
(Twenty-One 3500 Watt Miser Bulbs)  
(Installation Diagram on Page 18)

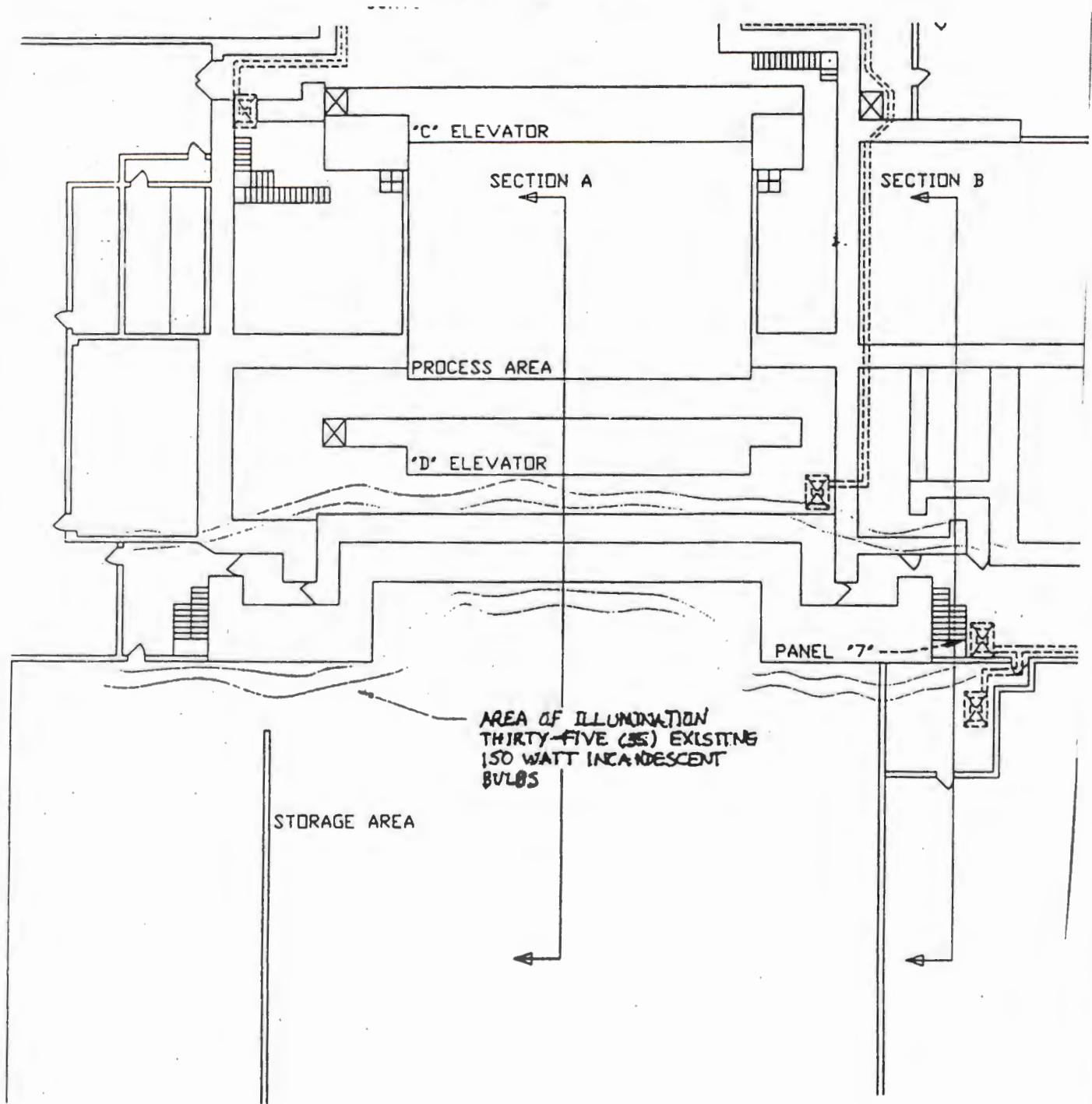


Halogen Lighting Installation Diagram



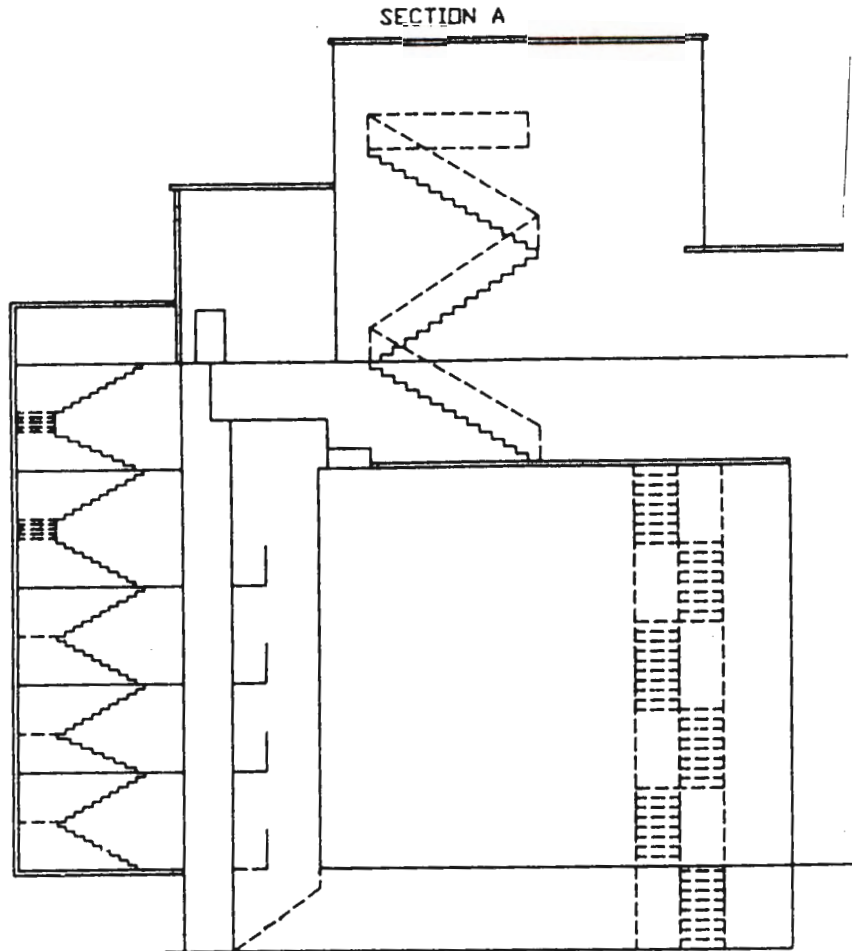
Lighting Locations for Stairs Leading to "D" Elevator Room  
(Twenty-Five 150 Watt Caged Incandescent Lights)  
(Continued on Pages 20 and 21)

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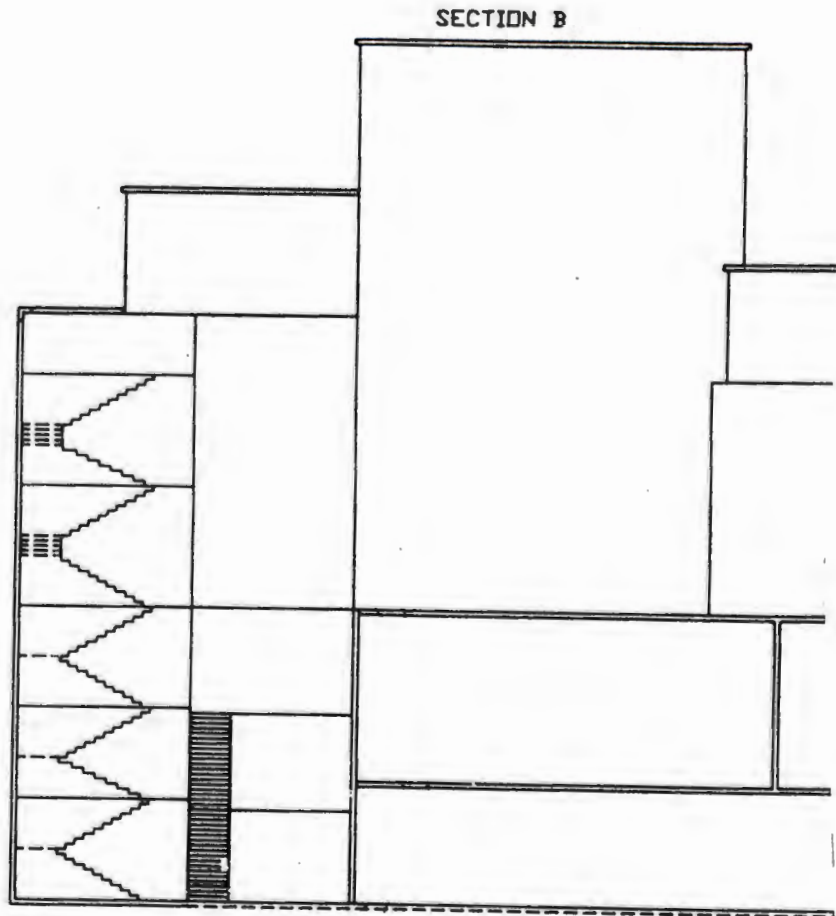
Lighting Locations for Stairs Leading to "D" Elevator Room  
(Thirty-five 150 Watt Caged Incandescent Lights)  
(Continued from Page 19)

9 4 1 2 1 3 1 0 5

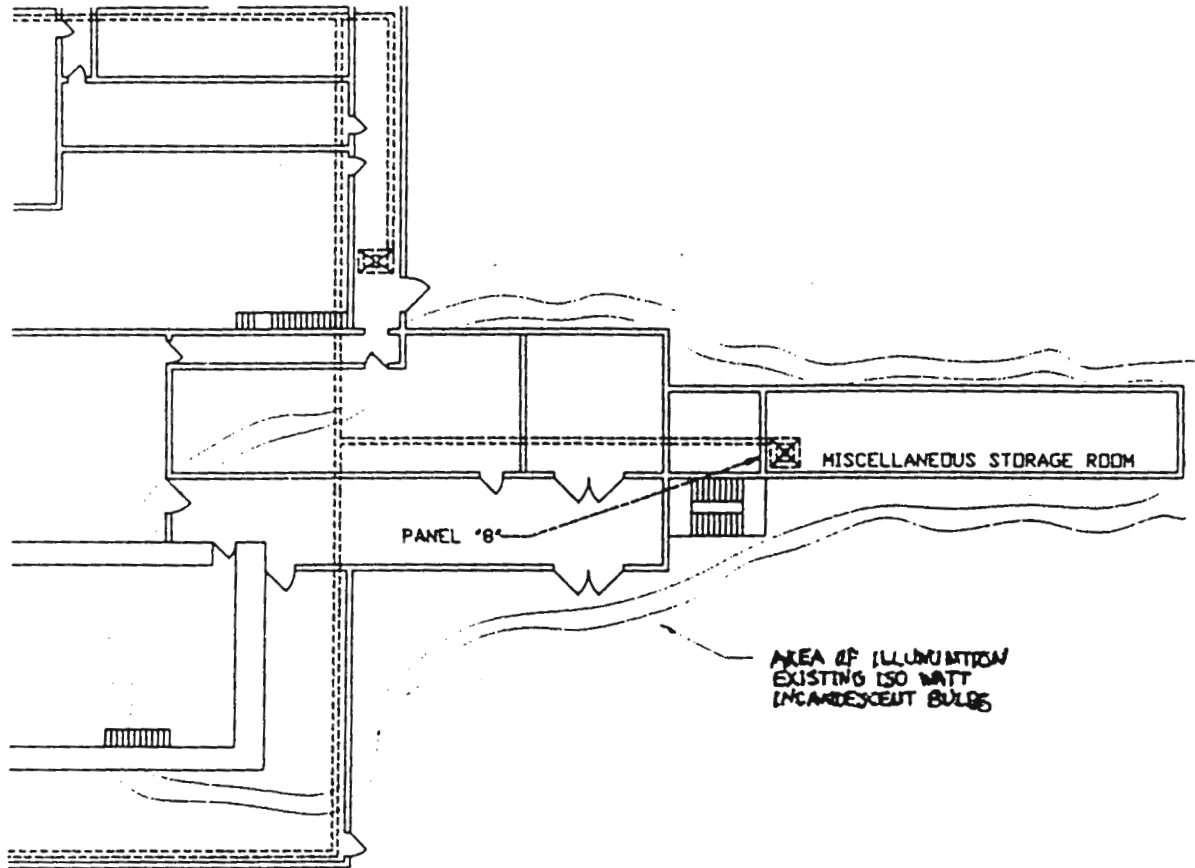


Lighting Locations for Stairs Leading to "D" Elevator Room  
(Thirty-five 150 Watt Caged Incandescent Lights)  
(Continued from Page 19)

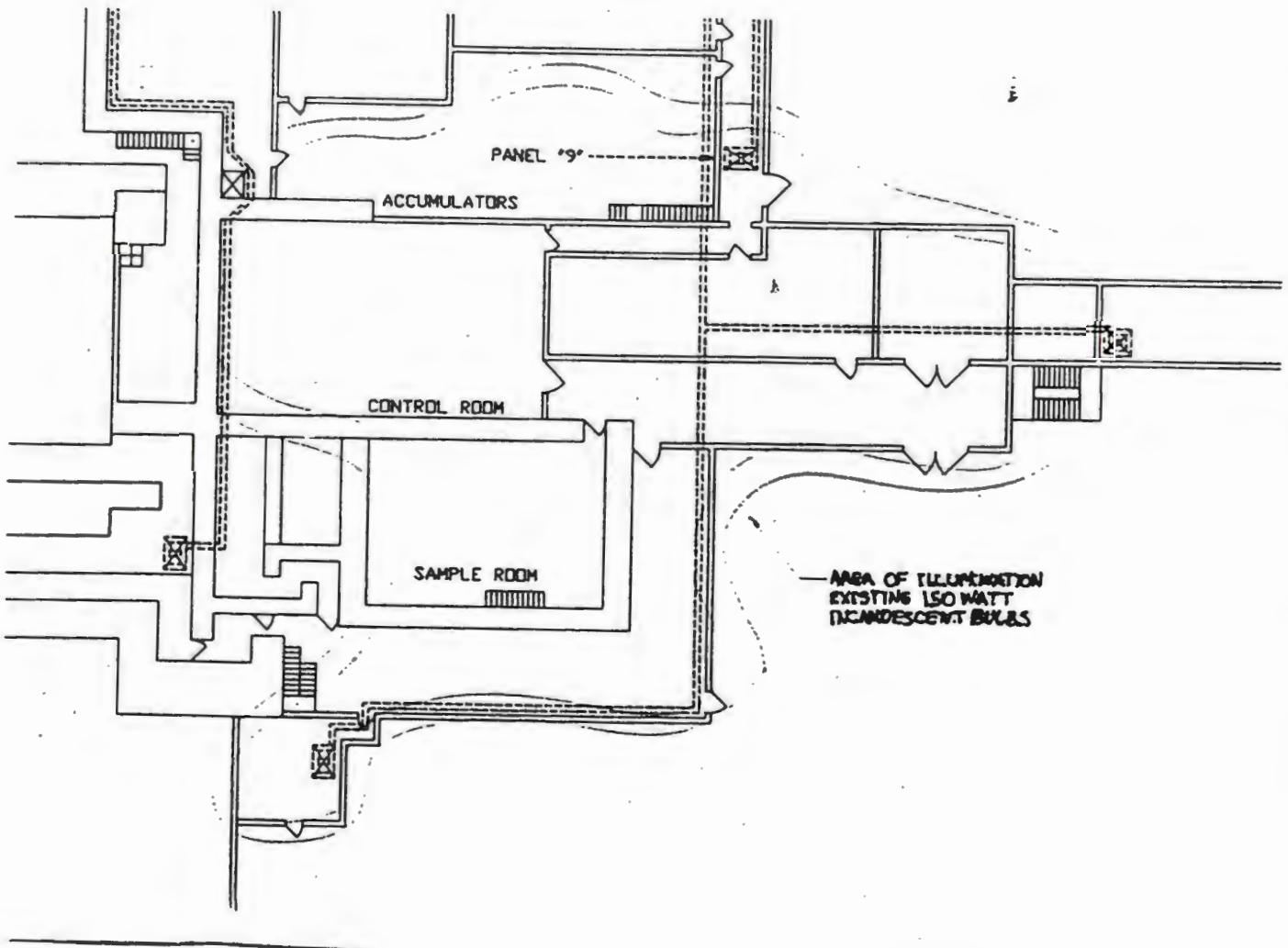
0 2 1 2 0 3 5 1 3 0 6



Lighting Locations for New Lunch Room/Change Room  
(Use Existing Lights and New Panel)



Lighting Locations for Control Room, Hallways and Accumulator Room  
(Use Existing Lights and New Panel)



9 2 1 2 5 1 3 3