



DEPARTMENT OF VETERANS AFFAIRS  
MINNEAPOLIS, MN. MEDICAL CENTER

# INSTALL OPERATING ROOM BOOMS

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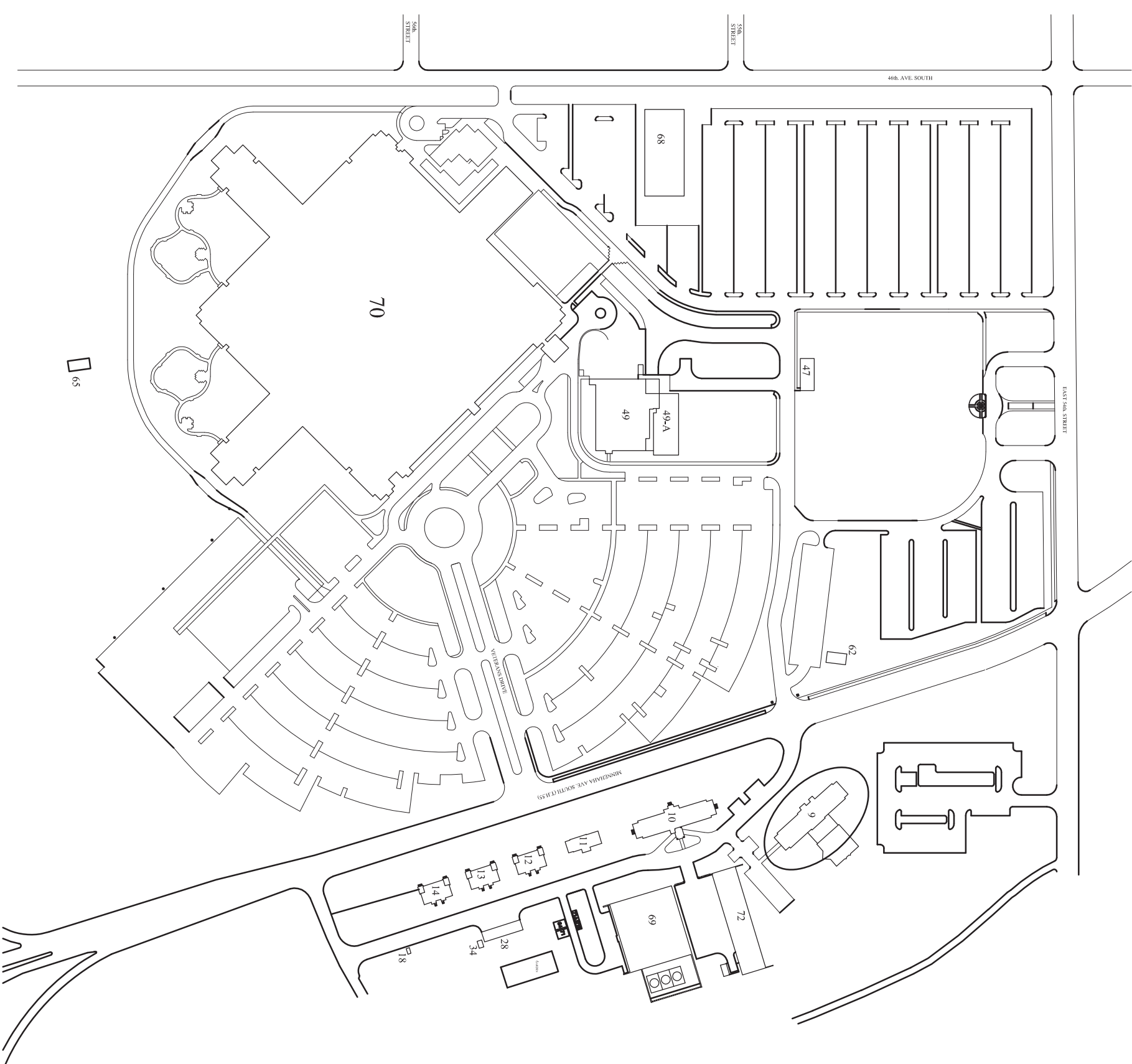
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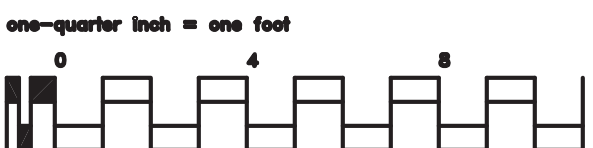
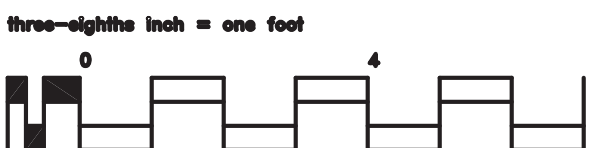
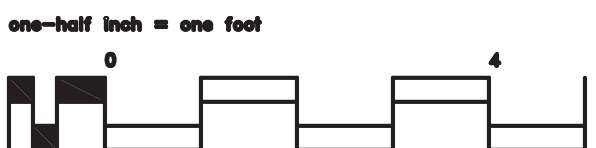
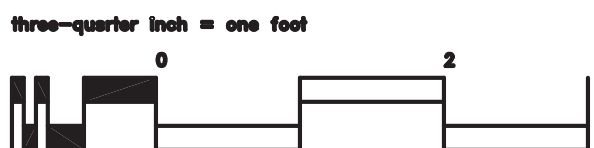
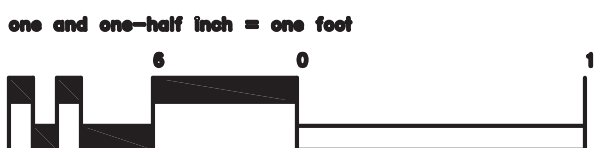
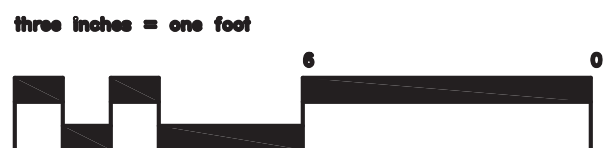
1245-E001	ELECTRICAL TITLE SHEET SHEET 12 OF 18
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LOCATION MAP: MPLS. VAMC

APPROVED BY:	DATE
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ENGINEERING PROJECT SECTION CHIEF	
ENGINEERING CHIEF	
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INFECTION CONTROL	
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SAFETY MANAGER	
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SURGERY DEPARTMENT CHIEF	
BIOMEDICAL CHIEF	
<hr/>	
UNION 1369	
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UNION 3669	
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VA POLICE	
<hr/>	
MAINTENANCE CHIEF	

INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
FOR INFORMATION ONLY

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## GENERAL NOTES

[illegible]

**B W B R**

Lawson Commons  
330 Saint Peter Street,  
Suite 600  
Saint Paul, MN 55102-1996  
612-222-0701

3530 Zachary Ln N  
Maple Grove, MN 55369  
763-391-5620  
763-391-5611

  
**versa**con

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER OF THE STATE OF MINNESOTA.

REGISTRATION NUMBER: 20095

*Bob J. Lindquist*

Drawing Scale: 1" = 1'-0"

Plot Scale: 12" = 1'-0"

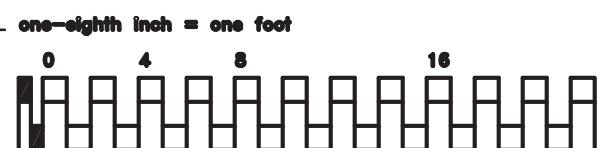
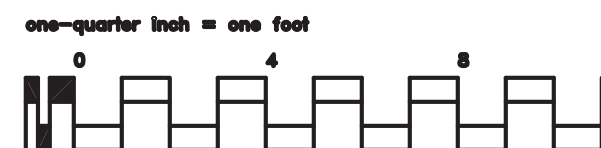
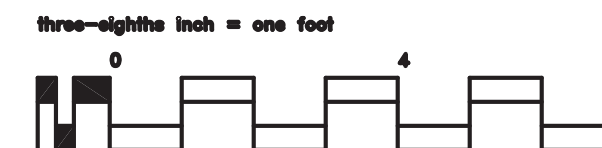
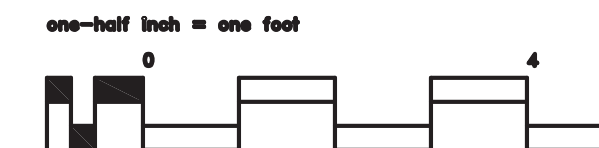
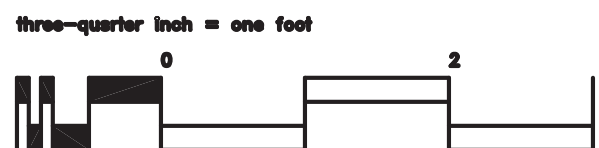
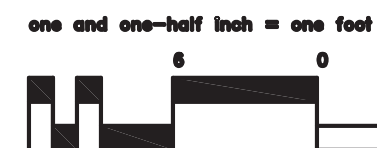
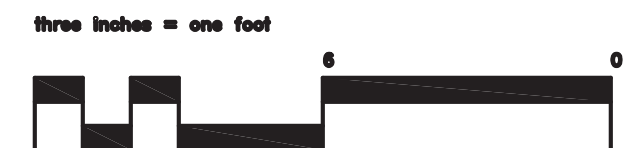
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GENERAL INFORMATION - TITLE SHEET	INSTALL OPERATING ROOM BOOMS <b>PHASE 1</b>		
Approved: Division Chief	Location	EXAMING NO.	70
	V.A. MEDICAL CENTER ONE VETERANS DRIVE MINNEAPOLIS, MN 55417	1245-G1001	
Approved: Service Director	Date	Order#	Dwg. 1
	03-09-2012	KF	0118

Office of  
Facilities  
Management

 Department of  
Veterans Affairs

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## ARCHITECTURAL ABBREVIATIONS

INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
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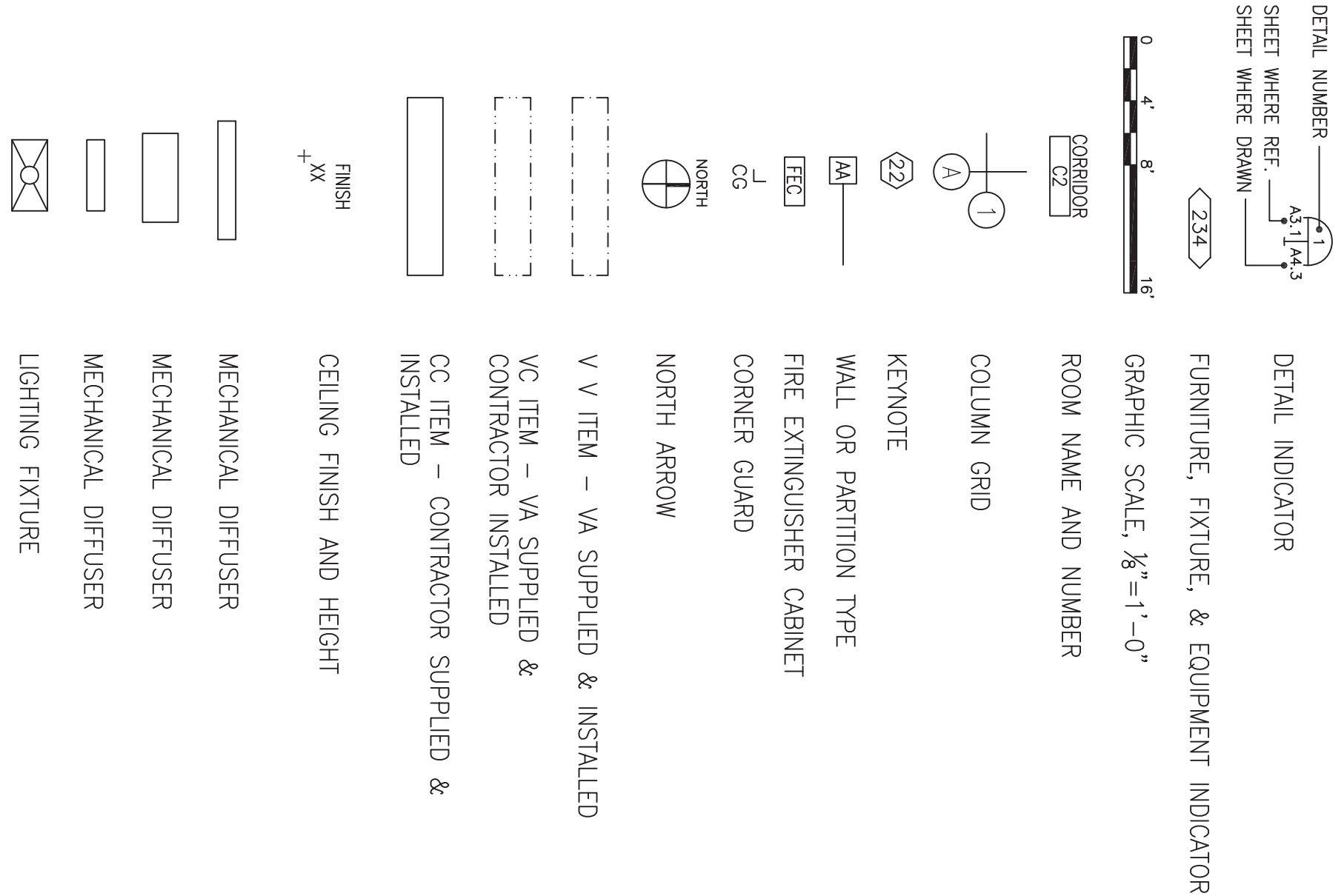
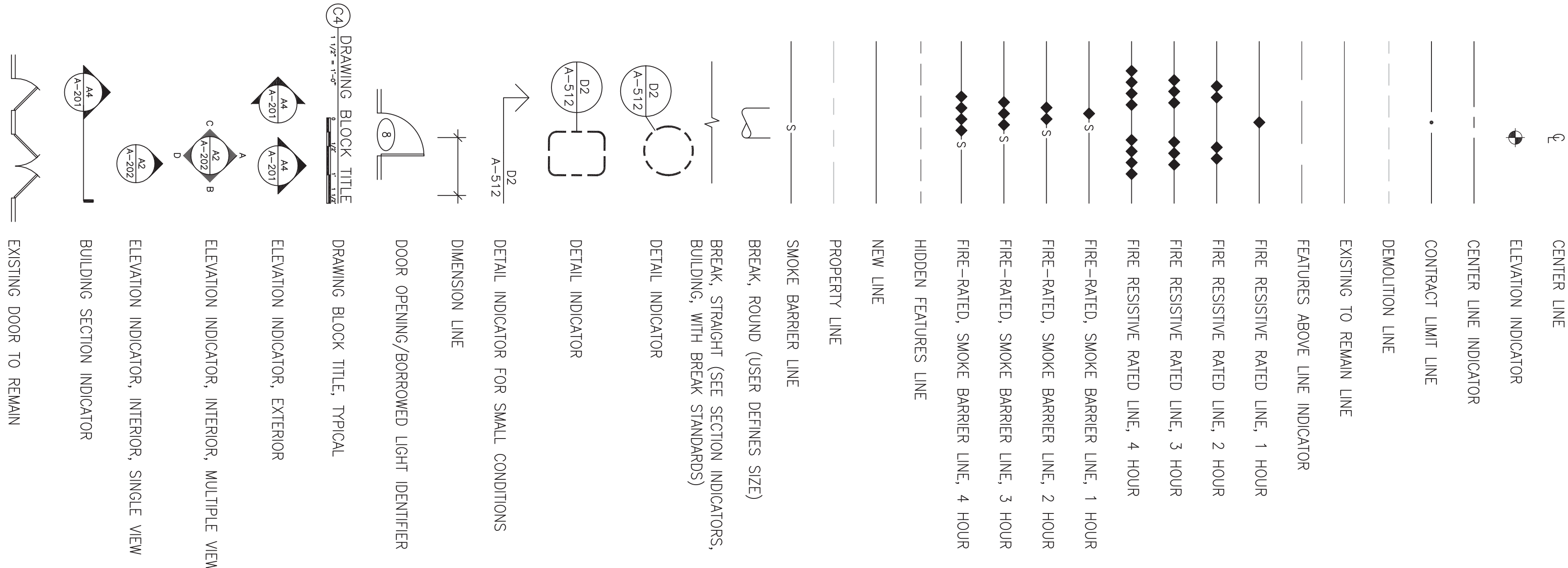
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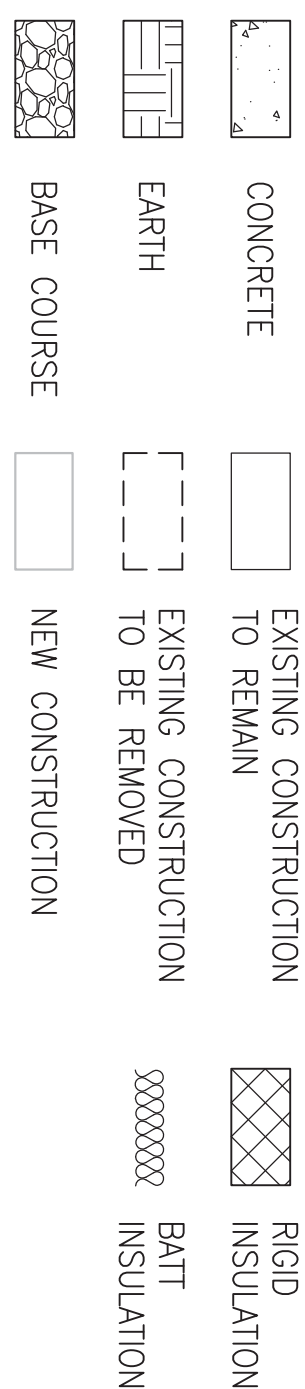
Department of  
Veterans Affairs



## ARCHITECTURAL SYMBOLS



## MATERIALS LEGEND



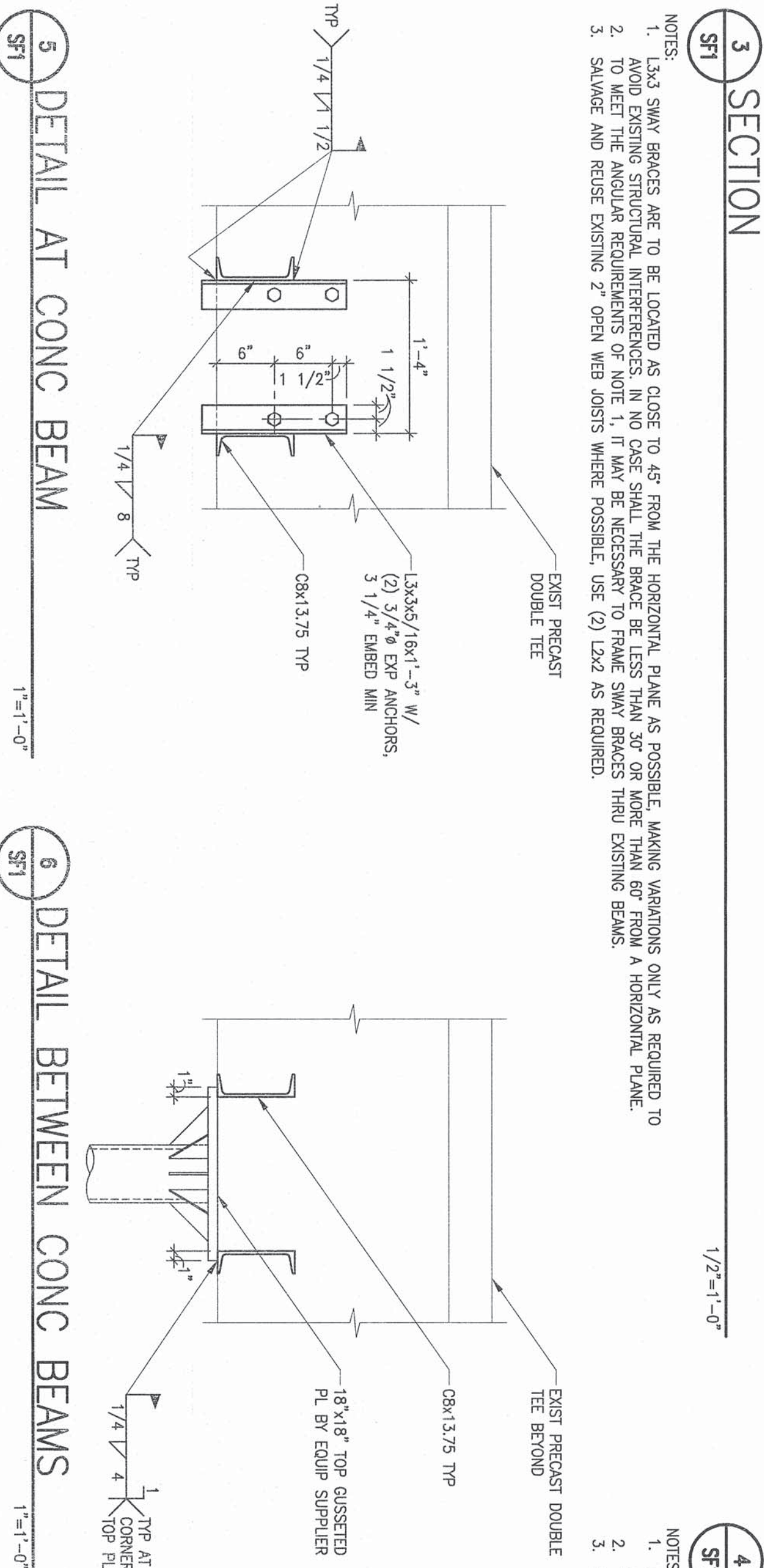
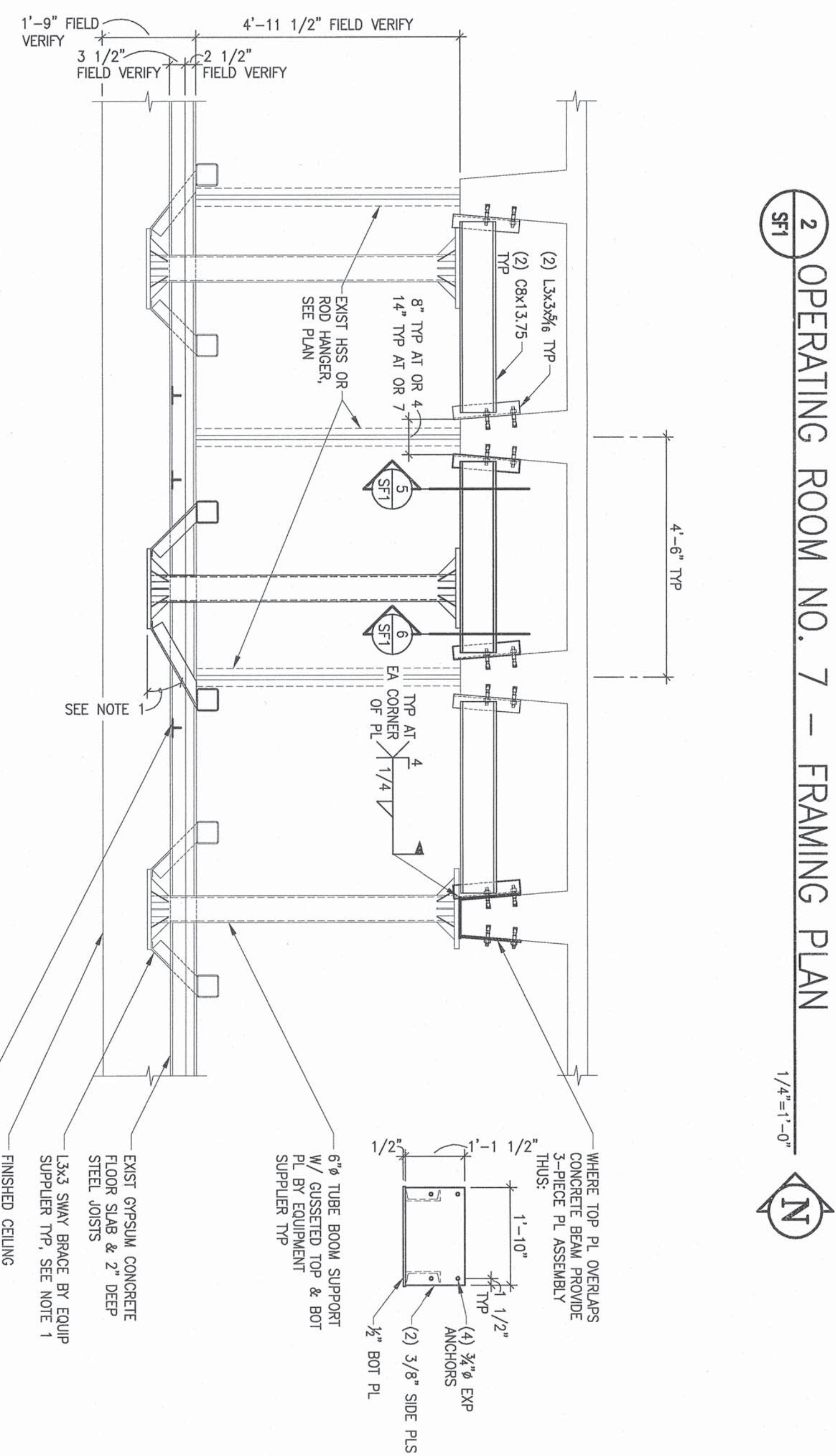
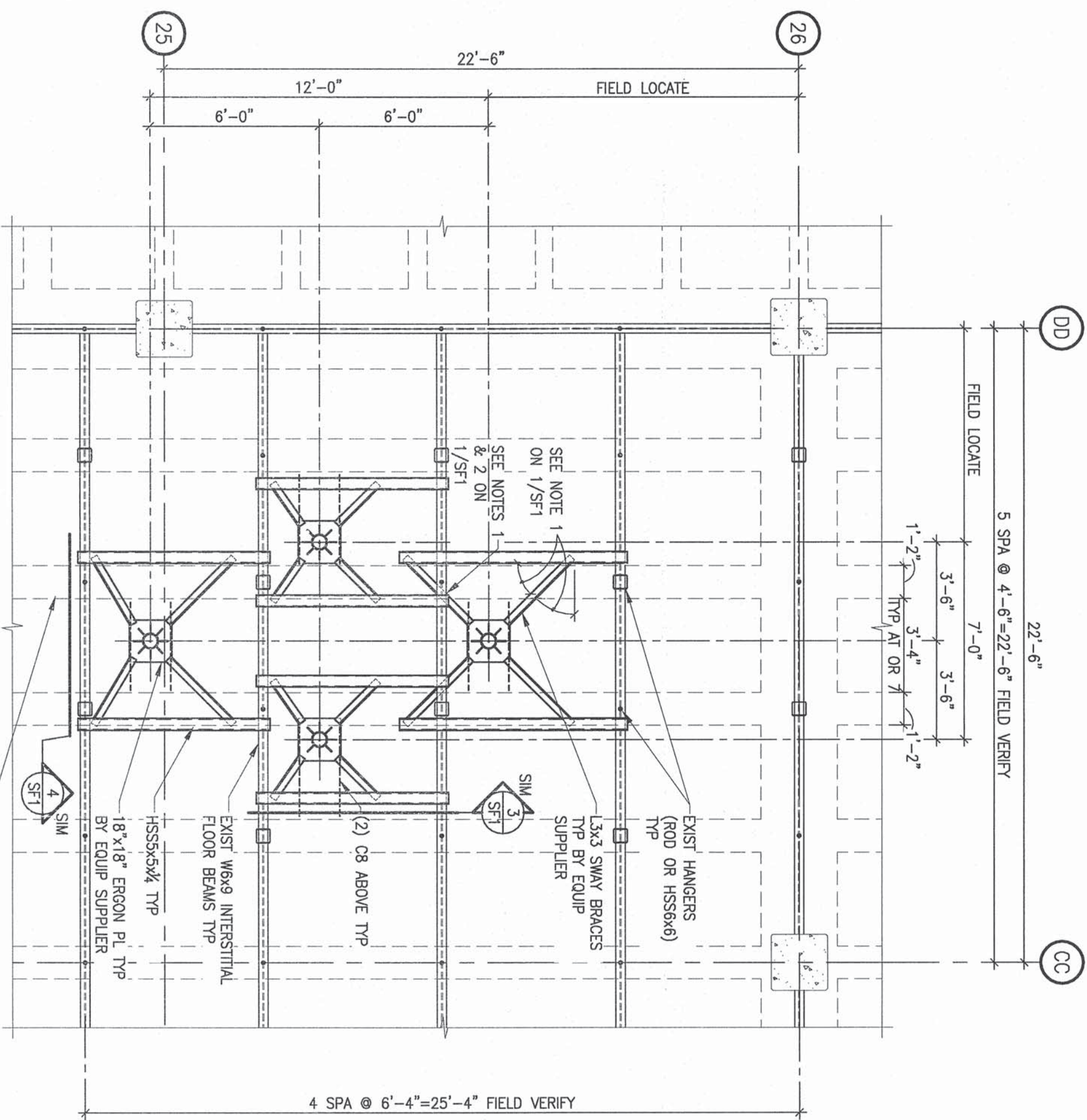
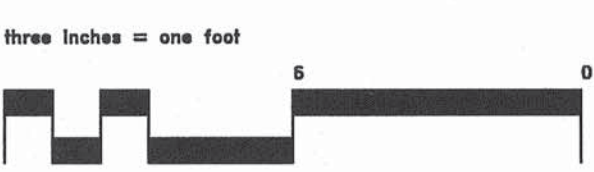
INSTALL OPERATING ROOM BOOMS  
PHASE 2  
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1. L3x3 SWAY BRACES ARE TO BE LOCATED AS CLOSE TO 45° FROM THE HORIZONTAL PLANE AS POSSIBLE, MAKING VARIATIONS ONLY AS REQUIRED TO AVOID EXISTING STRUCTURAL INTERFERENCE. IN NO CASE SHALL THE BRACE BE LESS THAN 30° OR MORE THAN 60° FROM A HORIZONTAL PLANE.
2. TO MEET THE ANGULAR REQUIREMENTS OF NOTE 1, IT MAY BE NECESSARY TO FRAME SWAY BRACES THRU EXISTING BEAMS.
3. SALVAGE AND REUSE EXISTING 2" OPEN WEB JOISTS WHERE POSSIBLE. USE (2) L3x2 AS REQUIRED.

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**INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
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## GENERAL STRUCTURAL NOTES

- I. BUILDING CODE: \_\_\_\_\_ BUILDING CODE (IBC) IN CONJUNCTION WITH MINNESOTA STATE BUILDING CODE.
- II. DESIGN LOADS: \_\_\_\_\_ WEIGHT AND MOMENT AS PROVIDED BY EQUIPMENT SUPPLIER.  
A. EQUIPMENT BOOMS: \_\_\_\_\_  
B. INTERSTITIAL FLOOR: \_\_\_\_\_ LIVE LOAD (PER ORIGINAL DESIGN DRAWINGS) \_\_\_\_\_ 25 PSF
- III. REINFORCED GYPSUM CONCRETE: \_\_\_\_\_  
A. DESIGNING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318),  
B. LATEST ADOPTION, \_\_\_\_\_  
C. CONCRETE MIX SHALL MEET THE REQUIREMENTS OF ASTM C 317, CLASS A.  
D. MATERIAL STRENGTHS \_\_\_\_\_  
1. COMPRESSIVE STRENGTH (f'<sub>c</sub>) AT 28 DAYS: \_\_\_\_\_ ASTM C 317 - 500 PSI  
2. REINFORCING MESH: \_\_\_\_\_ \_\_\_\_\_  
3. SUBPURLINS: \_\_\_\_\_ \_\_\_\_\_  
ASTM A62
- D. NOTES: \_\_\_\_\_  
1. PLACEMENT OF CONCRETE AND REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI AND CRS STANDARDS.  
2. PLACE MESH WITH MAIN LONGITUDINAL WIRES PERPENDICULAR TO SUBPURLINS.  
3. PROVIDE MESH LAPS NOT LESS THAN 4".

- A. DESIGN CODE SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF  
1. STRUCTURAL STEEL FOR BUILDINGS (ISO), LATEST ADOPTION. ASTM A36
- B. MATERIAL SPECIFICATIONS FOR STEEL SHAPES, FLAT STEEL BARS ASTM A36
1. STRUCTURAL STEEL (I BEAMS, CHANNELS, PLATES, SHAPES) ASTM A36
2. STRUCTURAL STEEL (TUBING (HOLLOW STRUCTURAL SECTIONS)) ASTM A36
3. CONNECTION BOLTS ASTM A308
4. WELDING RODS (ELECTRODES) ASTM A308
5. EXPANSION ANCHORS KNIK OR EQUAL
6. NON-SHIM GROUT (7,000 PSI) ASTM C1107, OR
- C. NOTES:  
1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED ACCORDING TO THE SPECIFICATIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC),  
2. ALLOWING ANCHOR BOLTS, BASE PLATES ETC., HAVE BEEN DESIGNED FOR THE FINAL COMPLETED CONDITION AND HAVE NOT BEEN INVESTIGATED FOR POTENTIAL LOADINGS ENCOUNTERED DURING STEEL ERECTION AND CONSTRUCTION  
3. THE SOLE RESPONSIBILITY OF THE CONTRACTOR (SEE GENERAL NOTES)  
4. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1 (UNLESS SPECIFIED OTHERWISE)  
5. MEETING MINIMUM THICKNESSES ALLOWED PER THICKNESS OF MATERIAL YIELDED  
6. ALL FILLER MATERIAL SHALL HAVE A MINIMUM YIELD STRENGTH OF 58 KSI  
7. PROVIDE WITH SMOOTH EDGES, BURNING OF HOLES AND NOTCH CUTTING AT THE SITE IS NOT PERMITTED WITHOUT PERMISSION OF THE STRUCTURAL ENGINEER OF RECORD  
8. REINFORCING STEEL SHALL RECEIVE A SHOP COAT OF ZINC RICH PRIMER, DAMAGE DURING TRANSPORTING, ERECTING AND FIELD WELDING PROCESSES SHALL BE

- [illegible]

3. COORDINATION WITH OTHER TRADES: THE CONTRACTOR SHALL COORDINATE ALL DEPRESSIONS, DIMENSIONS, ELEVATIONS, STEVES, CHASES, HANGERS, OPENINGS, INSERT ANCHORS, EQUIPMENT SUPPORTS, AND DETAILS WITH THE ENTIRE CONTRACT DOCUMENT PACKAGE, INCLUDING SPECIFICATIONS AND ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, DRAWINGS, FOR CONCRETE AND MASONRY CONSTRUCTION THE INSERS, EMBEDDED PLATES, ETC. SHALL NOT INTERFERE WITH REINFORCEMENT LOCATIONS, CONTAINED HEREIN.

**VI. SPECIAL INSPECTION:**  
A. SPECIAL INSPECTION IS REQUIRED IN ACCORDANCE WITH IBC SECTION 1701 THE FOLLOWING

PORTIONS OF CONSTRUCTION:  
1. STRUCTURAL WELDING:

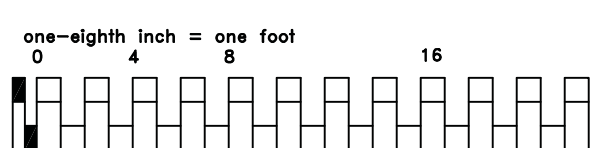
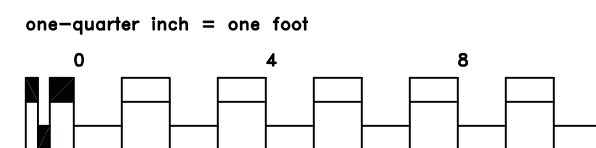
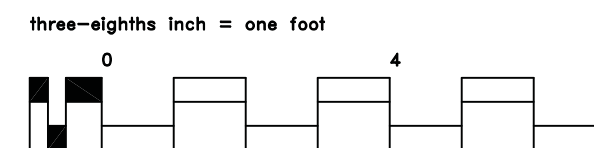
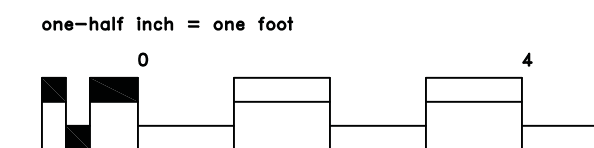
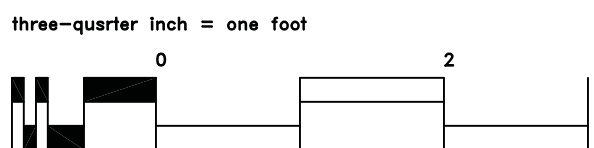
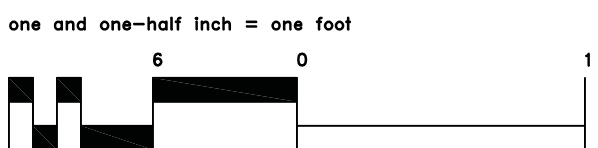
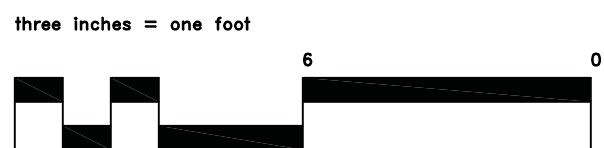
- a. PERIODIC INSPECTION,
- b. VERIFICATION OF WELDER QUALIFICATIONS, WELDING PROCEDURES AND MATERIALS,
- c. VERIFICATION OF MATERIALS,
- d. PERIODIC INSPECTION.

- C. EXPANSION AND SHRINKAGE MEASUREMENTS.
- D. REPORTS FOR THE ABOVE SHALL BE SUBMITTED TO THE ENGINEER. ALL REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN 48 HOURS OF THE COMPLETION OF THE TESTS.
- E. THE CONTRACTOR SHALL NOTIFY THE SPECIAL INSPECTOR AT LEAST 48 HOURS IN ADVANCE FOR WORK THAT WILL REQUIRE INSPECTION OR TESTING.
- F. THE SPECIAL INSPECTOR SHALL SUBMIT A REPORT TO THE ENGINEER WITHIN 48 HOURS OF THE COMPLETION OF THE TESTS.
- G. LETTER STATING COMPLIANCE WITH AND VARIANCES FROM THE PROJECT REQUIREMENTS (S) SHALL BE SUBMITTED TO THE ENGINEER WITHIN 48 HOURS OF THE COMPLETION OF THE TESTS.
- H. UPON COMPLETION OF THE PROJECT, THE SPECIAL INSPECTOR SHALL SUBMIT A LETTER TO THE ENGINEER STATING COMPLIANCE WITH THE PROJECT REQUIREMENTS INCLUDING MEASURES TAKEN TO CORRECT PREVIOUSLY IDENTIFIED NON-COMPLYING ITEMS.







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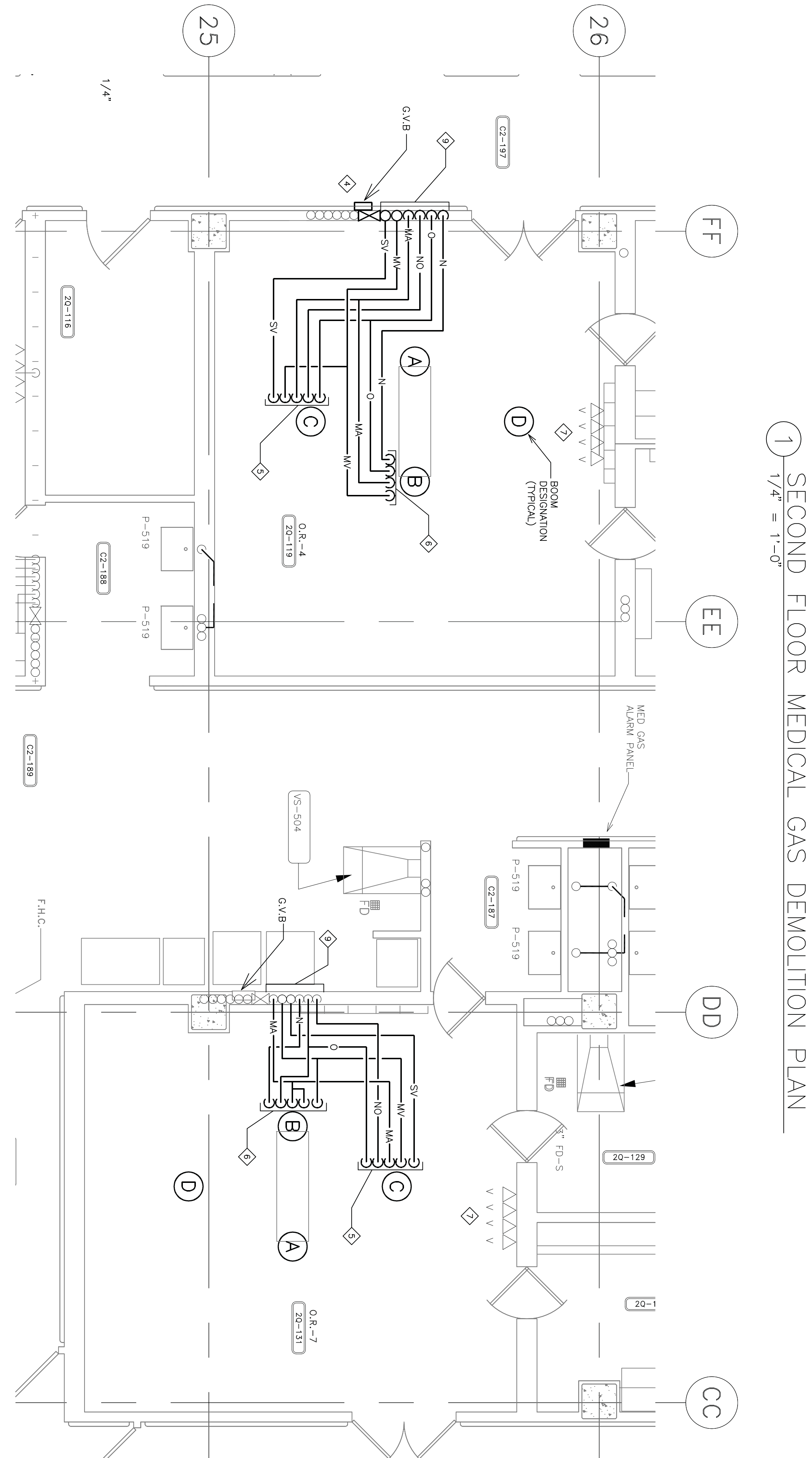
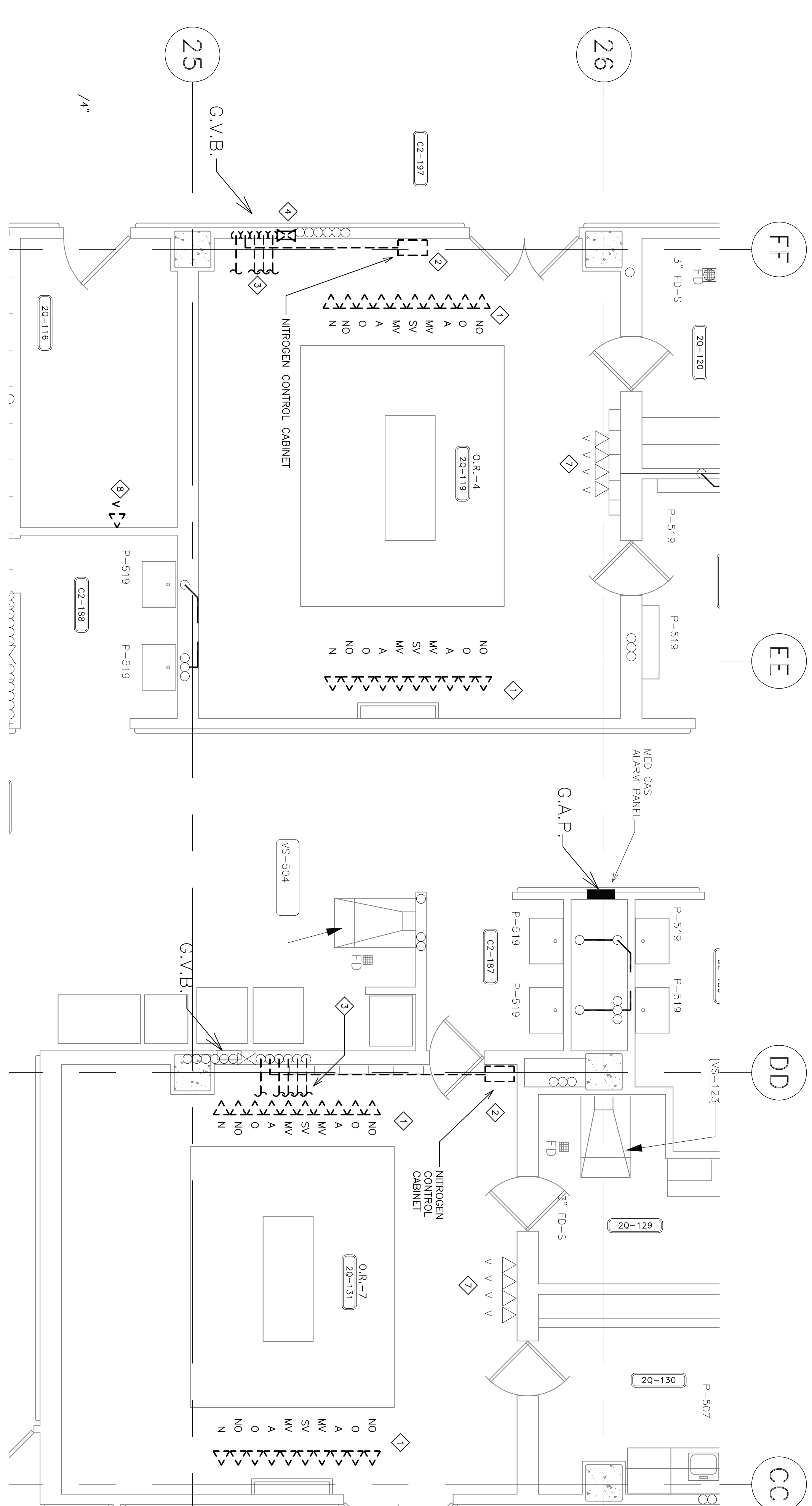
## GENERAL

**NOTES:**




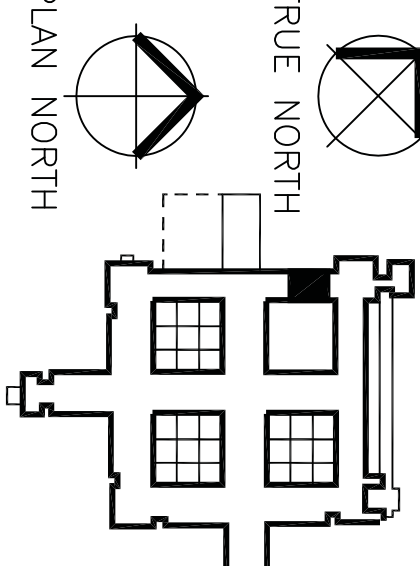
GENERAL CONTRACTOR AND/OR SUBCONTRACTORS SHALL FOLLOW ALL DIMENSIONS SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADJUSTMENT TO THE PLANS SHALL BE MADE WITHOUT THE PRIOR APPROVAL OF THE PROJECT ENGINEER.

EXISTING FLOORS AND THE EXISTING CONCRETE FLOORWORK OF ALL STRUCTURES SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY. WORK DURING THE CONSTRUCTION OF THE STRUCTURE SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY. WORK DURING THE CONSTRUCTION OF THE STRUCTURE SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY. REMOVAL OF DEBRIS RESULTING FROM DEMOLITION, CLIPPING, AND/OR DRILLING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. MATCHING AND REPAIR OF CONCRETE WALLS, FLOOR, OR STRUCTURE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. REPAIR OF EXISTING CONCRETE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ANY AND ALL UTILITIES INSTALLED BY THE VARIOUS SUBCONTRACTORS.



INSTALL OPERATING ROOM BOOMS  
PHASE 2  
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 <p><b>DUNHAM</b></p> <p>Dunham Associates, Inc.          50 South Sixth Street / Suite 1100          Minneapolis, Minnesota 55402-1940          Tel: 612.464.7501          Fax: 612.464.7501          web: dunhaminc.com</p>	<p>mechanical + electrical consulting engineering</p>	
	<p>TRUE NORTH</p>  <p>PLAN NORTH</p>  	
<p>DESCRIPTION OF PROJECT: SECOND FLOOR GAS PIPING FOR THE VA MEDICAL CENTER, MINNEAPOLIS, MN. PROJECT LOCATION: MINNEAPOLIS, MN. PROJECT NUMBER: 42401</p> <p><i>Dr. [Signature]</i></p> <p>Drawing Scale: AS NOTED</p> <p>Plot Scale: 12" = 1'-0"</p>		
<p>Approved: Division Chief</p> <p>Approved: Service Director</p>		
<p>Location: V.A. MEDICAL CENTER ONE VETERANS DRIVE MINNEAPOLIS, MN 55417</p> <p>Project Title: INSTALL OPERATING ROOM BOOMS</p> <p>Project Title: <span style="border: 1px solid red; padding: 2px;">PHASE I</span></p>		
<p>DRAWING NO. 1245-M002</p> <p>Dwg. 7 of 18</p> <p>Building Number: 70</p> <p>VA Proj # 68-11-14          DUNHAM Proj #423950-02</p>		

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GENERAL NOTES:

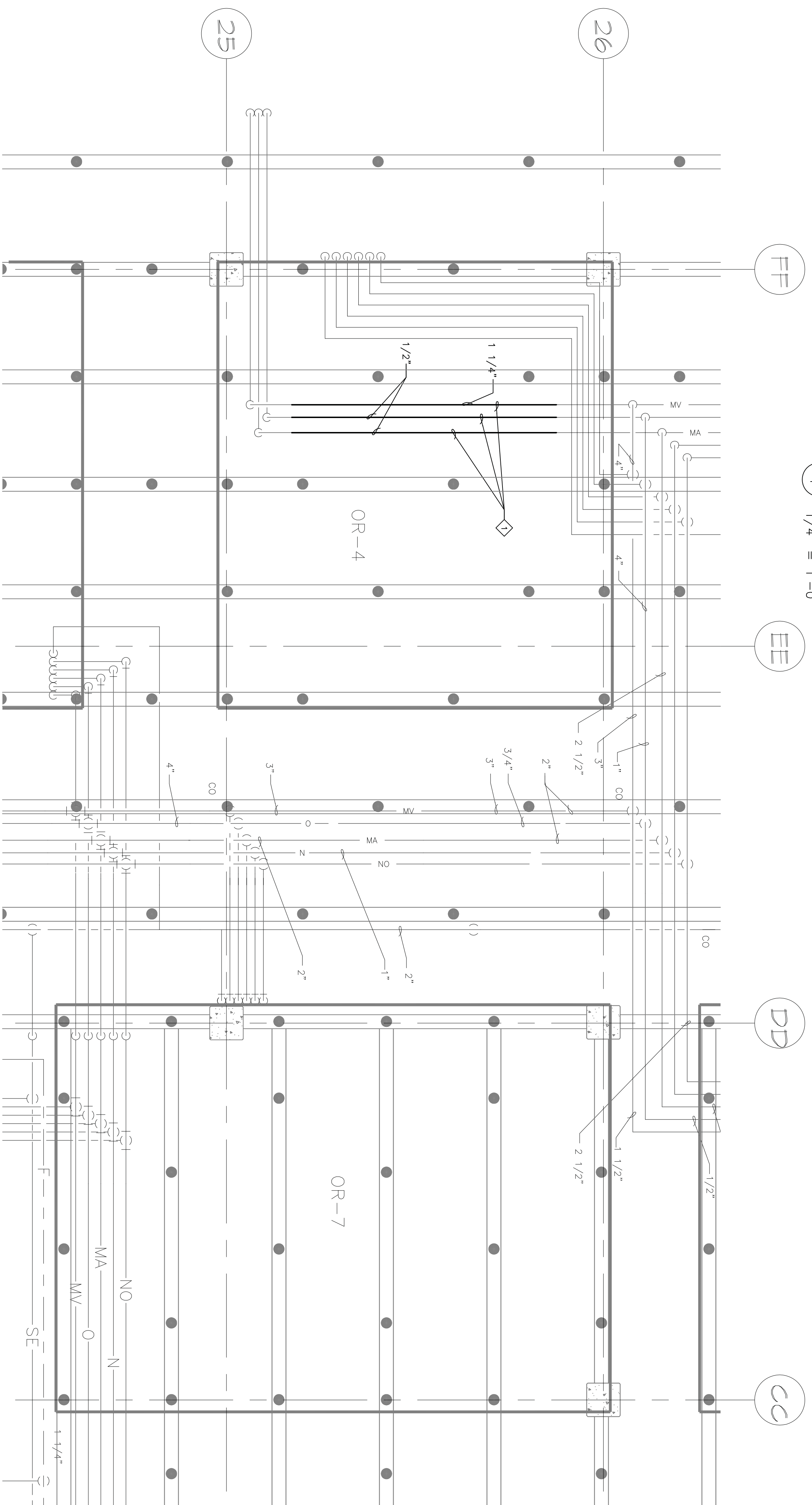
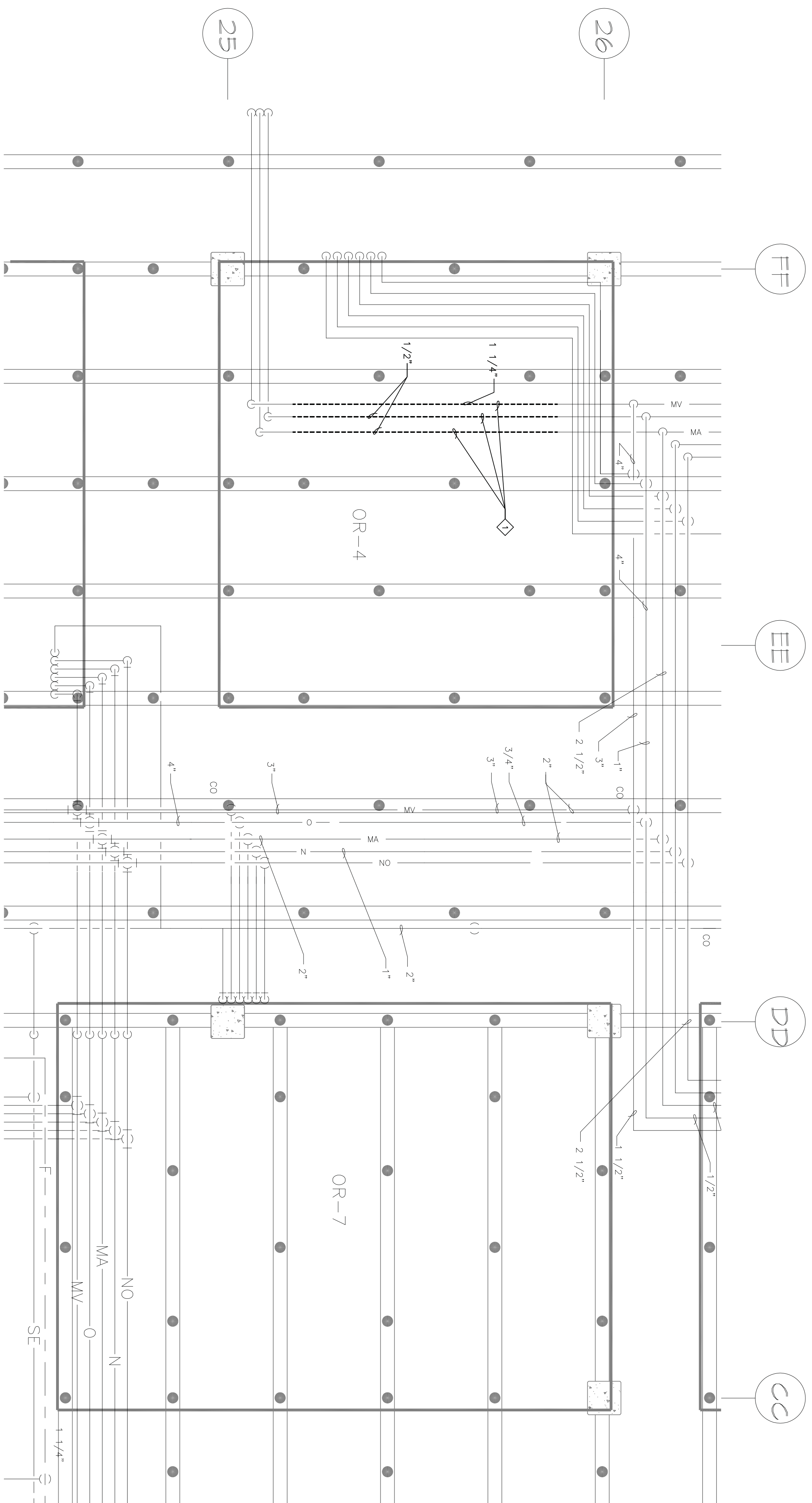
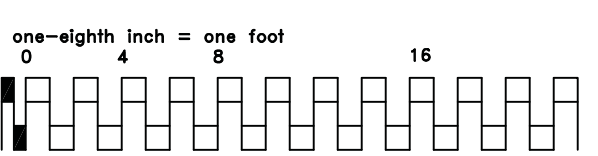
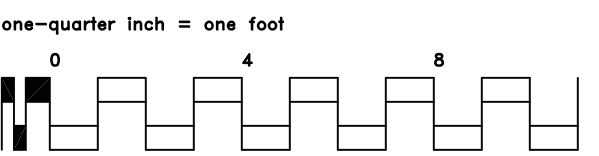
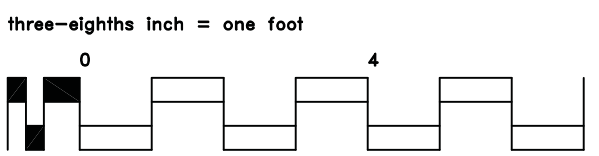
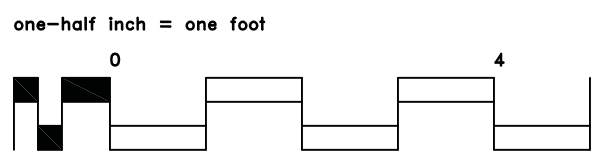
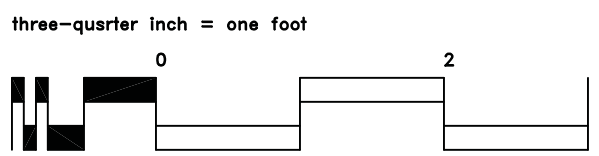
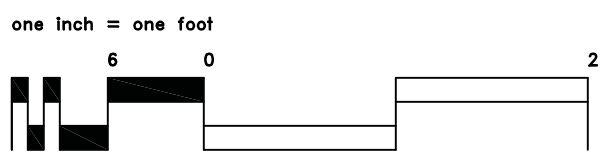
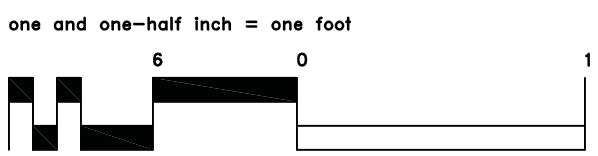
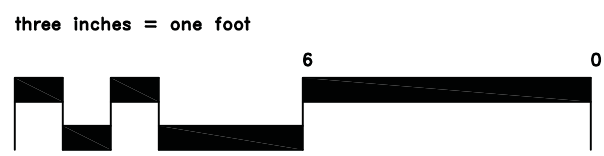
A. DISS CONNECTORS PROVIDED BY BOOM MANUFACTURER.  
MECHANICAL CONTRACTOR TO CONNECT TO BOOM GAS PIPES

MECHANICAL CONNECTION TO CONNECT TO DOWN GWS FILES

KEY NOTES:

- 1 REMOVE EXISTING MEDICAL GAS CEILING OUTLET AND ASSOCIATED PIPING BACK TO GAS WALK BOX AS REQUIRED FOR ROUTING TO NEW BOOMS.
- 2 REMOVE EXISTING NITROGEN CONTROL CABINET AND PIPING BACK TO GAS WALK BOX AS NEEDED FOR ROUTING TO NEW BOOMS.
- 3 REMOVE EXISTING MEDICAL GAS PIPING BACK AS REQUIRED TO RE-ROUTE NITROGEN TO NEW BOOMS.
- 4 RELOCATE EXISTING GAS WALK BOX TO ADJACENT CORRIDOR. UNBOLTED NEW LOCK BOX DOOR MUST BE RELOCATED TO ADJACENT CORRIDOR. RE-ROUTE GAS WALK BOX TO BE RE-ROUTED IF POSSIBLE. COORDINATE LOCATION WITH EXISTING WALL SPACE. RE-ROUTE EXISTING MEDICAL GAS TO GAS WALK BOX AS NEEDED TO RE-ROUTE TO NEW BOOMS. RELOCATE LOCATION OF NEW BOOMS. INSTALL AS PER NFPA 99.
- 5 CONNECT 1/2" MEDICAL GASES: OXYGEN, NITROUS OXIDE, MEDICAL AIR AND 3/4" VACUUMS: MEDICAL VACUUM, SMOGGER VACUUM TO BOOM "C" BOOM RISER PIPES AS PER MANUFACTURERS INSTRUCTIONS.
- 6 CONNECT 1/2" MEDICAL GASES: NITROGEN, OXYGEN, MEDICAL AIR AND 3/4" MEDICAL VACUUM TO BOOM "B" BOOM RISER PIPES AS PER MANUFACTURERS INSTRUCTIONS.
- 7 EXISTING VACUUM WALL OUTLETS TO REMAIN.
- 8 EXISTING EXISTING VACUUM WALL OUTLET AND ASSOCIATED PIPING CAP PIPED AT MAIN.
- 9 1" MEDICAL VACUUM, 3/4" SMOGGER VACUUM, 3/4" MEDICAL AIR, 1/2" OXYGEN, 1/2" NITROGEN, 1/2" NITROUS OXIDE.





KEY NOTES:

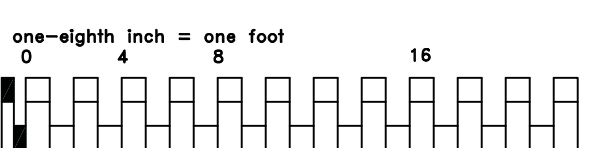
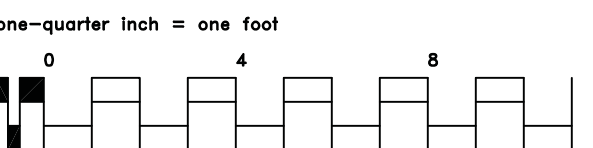
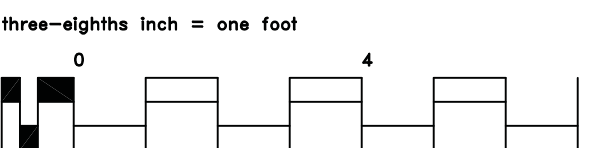
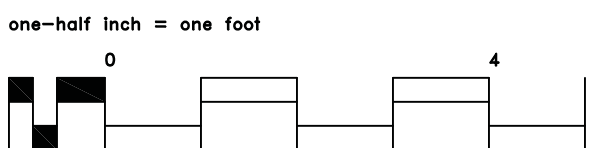
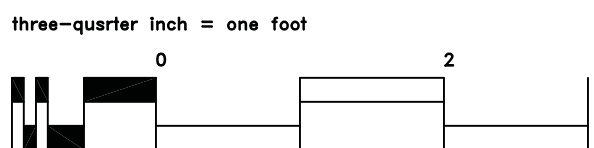
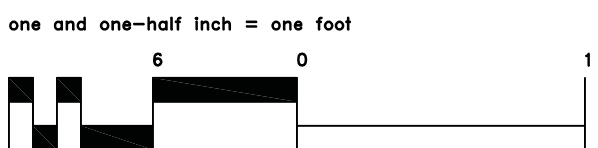
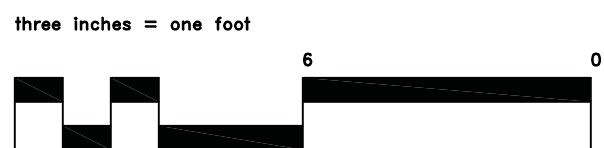
- 1 RELOCATE EXISTING MEDICAL GAS PIPES AS NEEDED TO INSTALL BOOMS.

INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
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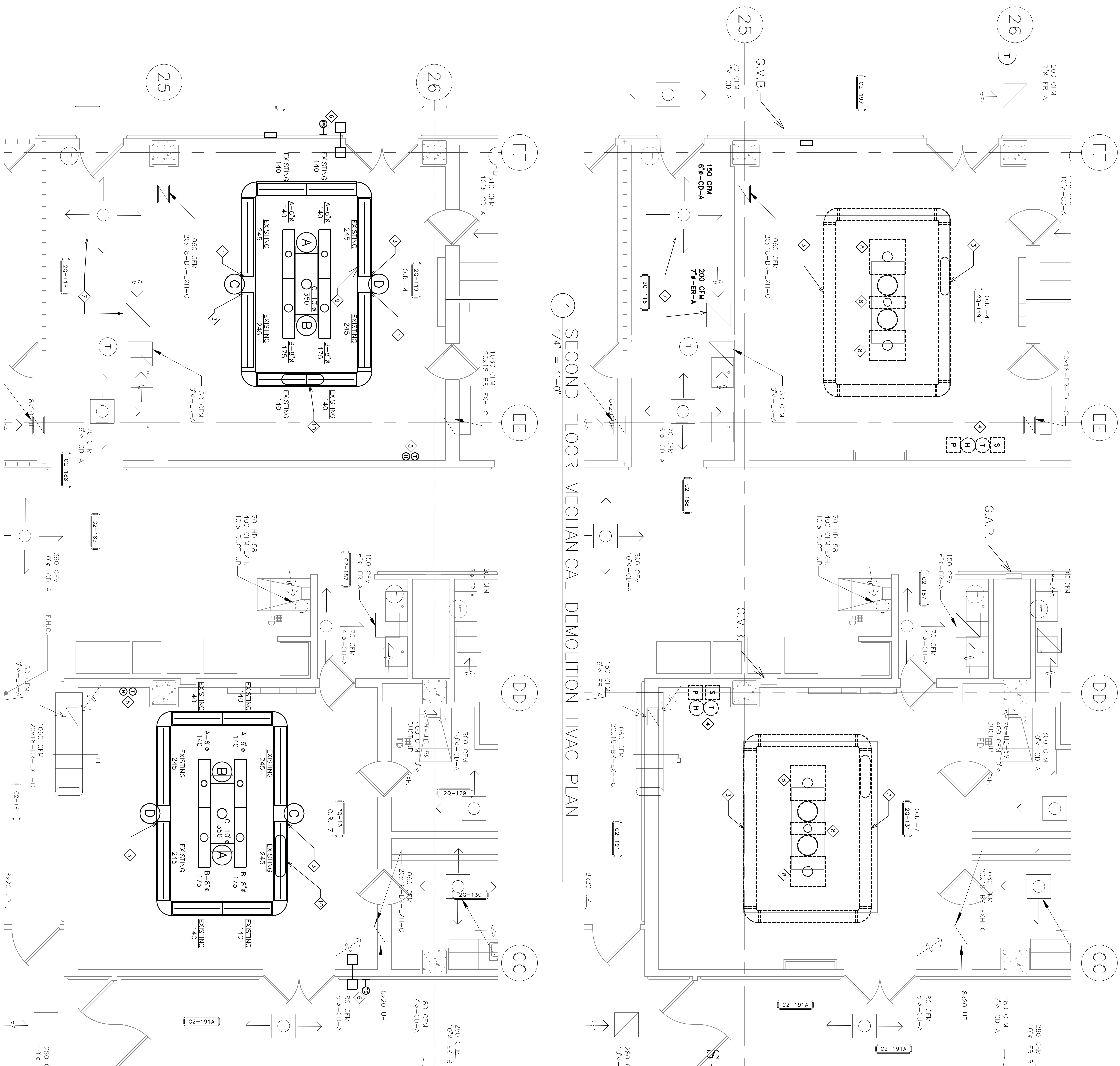
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## GENERAL

[illegible]

## SECOND FLOOR MECHANICAL DEMOLITION HVAC PLAN

**GENERAL NOTES:**

A. MODIFY SPRINKLER HEAD LOCATION AND RUN-OUT PIPING AS NEEDED. NEW SPRINKLER LAYOUT SHOULD MEET NFPA-13.

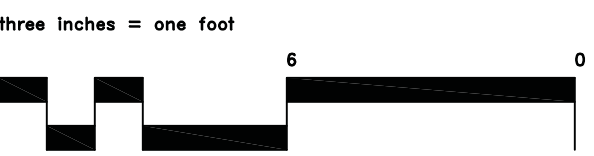
## KEY NOTES:

- ◆ RENNAL PLINIA ABOVE CEILING RECONNECTING A COMPLETE SECTION WITH ROOMS.
- ◆ NOT USED.
- ◆ REMOVE MEHR DIFFUSERS AND SEPARATE AT JOINT, RENNAL STEEL ROBBER JOINT EXISTING AND RE-BALANCE TO CIV SHOW, COORDINATE NEW LUMIER DIFFUSER AND PLINIA LOCATION WITH NEW BOO PLATE. SEE ARCHITECTURAL FOR EXACT LOCATION.
- ◆ DEMO EXISTING ROOM THERMOSTAT, PRESSURE AND HUMIDITY CONTROLS TO BE REPLACED WITH NEW DDC CONTROLS IN SAME LOCATION.
- ◆ INSTALL NEW LED THERMOSTAT, CONTROL DISPLAY SCREEN, REMOTE EXISTING MONITOR WAS REQUIRED TO REMAIN, WILL BE RE-TIED INTO NEW LED DISPLAY SCREEN IN OPERATING ROOMS.
- ◆ NEW ROOM PRESSURE MONITOR AND PRESSURE SENSING SENSOR TO BE TIED INTO NEW LED DISPLAY SCREEN IN OPERATING ROOMS.
- ◆ RE-BALANCE EXISTING VAV BOX SERVING INTEGRATION ROOM (20-116) TO 350 CFM OR THE MAX AVAILABLE CFM ABOVE 300 NEUTRAL PRESSURE.
- ◆ REMOVE EXISTING LAMINA DIFFUSER AND ASSOCIATED DUTTERWORK, PATCH INTERSTITIAL FLOOR WHERE REQUIRED.
- ◆ NOT USED.
- ◆ INSTALL NEW 42"x18" OVAL DROP FROM INTERSTITIAL TO PLINIA.

INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
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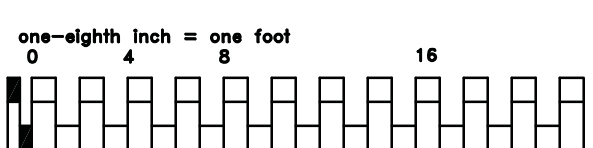
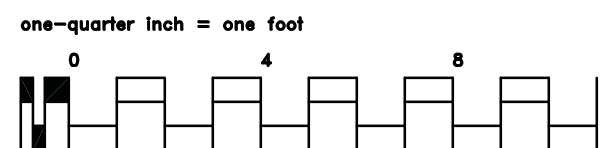
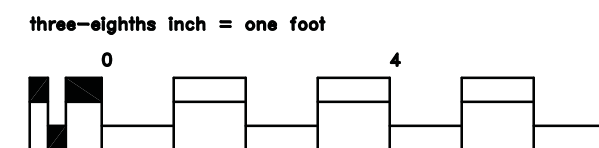
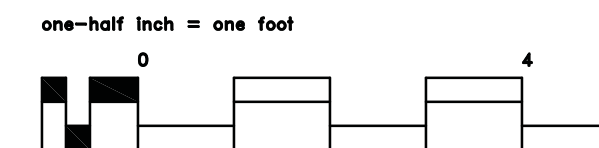
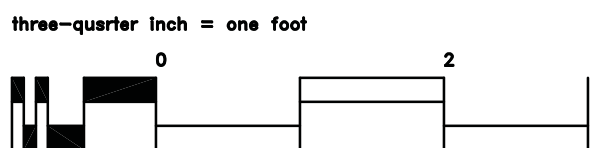
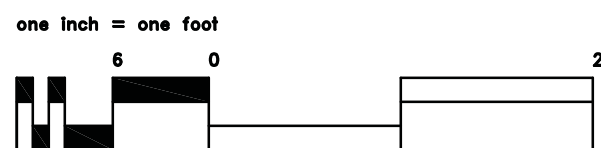
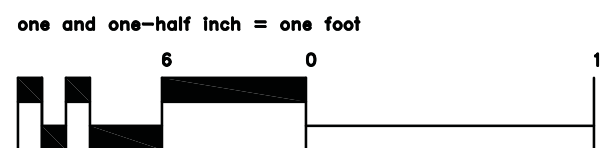
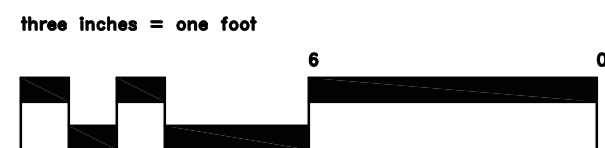
## KEY NOTES:

1. RELOCATE EXISTING 6" SUPPLY DUCT AS NEEDED FOR INSTALLATION AND LOCATION OF BOOM SUCH THAT THE BOOM AND DUCT HAVE CLEARANCE.
2. REMOVE EXISTING FLOW MONITORING STATION AND PNEUMATIC CONTROLLER. EXHAUST DUCT AND INSTALL NEW DIGITAL DAMPER CONTROLLER.
3. RELOCATE EXISTING HANG, HARM, STEEL, AND CONDENSATE PIPES AS NEEDED TO ACCOMMODATE NEW BOOM LOCATION. INSTALLATION, ROUTE NEW HANG AND HARM TO RELOCATED REHEAT COIL.
4. RE-BALANCE EXISTING WYE BOX TO ITS MAXIMUM CFM.
5. RELOCATE EXISTING 40/20 SUPPLY DUCT TO OTHER SIDE OF STRUCTURE AND REINSTALL AS A 20/40.
6. 40"/20" DOWN NEW RELOCATED DAMPER, CONTRACTOR TO FIELD VERIFY LOCATION OF NEW RELOCATED INTERSTITIAL FLOOR. DUCT AS NEEDED TO CONNECT TO PLenum. DUCTWALL ENGINEER TO INSPECT AND APPROVE ANY NECESSARY FITTINGS NEEDED FOR CONNECTION.
7. 6" DOWN WITH VOLUME DAMPER.
8. 6" DOWN WITH VOLUME DAMPER.
9. DEMONSTRATE EXISTING STEAM HUMIDIFIER DEMONSTRATOR ASSOCIATED PIPING AND CAP IT IN WAYS.
10. RELOCATE EXISTING WYE REHEAT COIL. CONTROL VALVE WITH NEW DIGITAL CONTROL VALVE.
11. REPLACE PNEUMATIC WYE DAMPER CONTROLLER WITH NEW DIGITAL DAMPER CONTROLLER.
12. RELOCATE PIPE AS NEEDED FOR INSTALLATION OF BOOM.
13. RELOCATE REHEAT COIL.
14. 10" DOWN WITH VOLUME DAMPER.





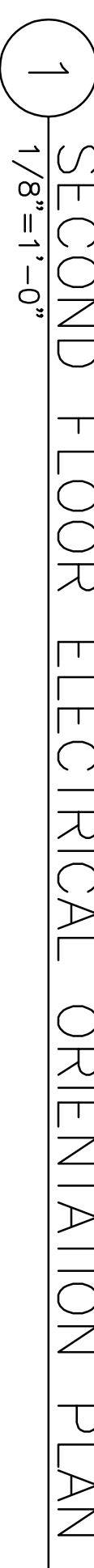
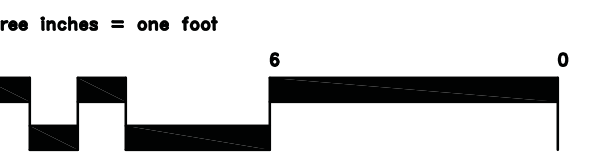
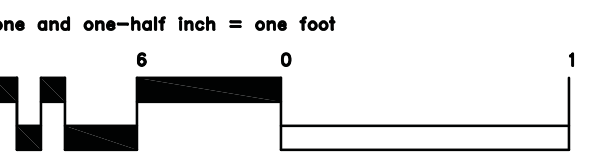
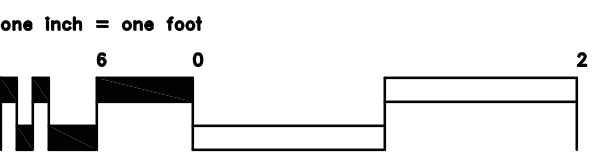
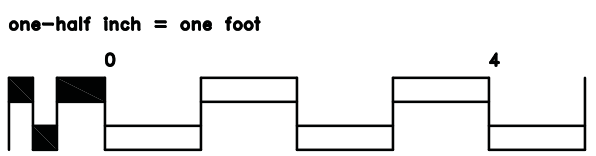
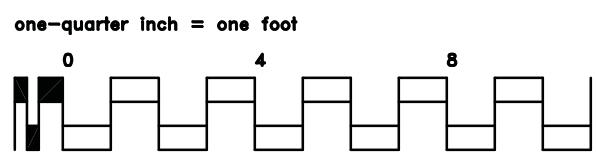




ELECTRICAL SYMBOLS - DIAGRAM			ELECTRICAL SYMBOLS - POWER PLAN			ELECTRICAL SYMBOLS - POWER PLAN			ELECTRICAL SYMBOLS - LIGHTING PLAN			ELECTRICAL SHEET INDEX																																																																																													
 DELTA CONNECTION	 MOTOR, SINGLE-PHASE	 MOTOR, THREE-PHASE	 TRANSFORMER	 WYE CONNECTION	 EARTH GROUND	 JUNCTION BOX	 PULL BOX	 PRESSURE SWITCH-CLOSE ON INCREASE	 PRESSURE SWITCH-OPEN ON INCREASE	 SWITCH, MULTIPPOSITION	 SWITCH, NORMALLY CLOSED FLOAT	 SWITCH, NORMALLY CLOSED FOOT OPERATED	 SWITCH, NORMALLY CLOSED LIMIT	 SWITCH, NORMALLY CLOSED TEMPERATURE ACTIVATED	 SWITCH, NORMALLY CLOSED TIME DELAY	 SWITCH, NORMALLY OPEN FLOAT	 SWITCH, NORMALLY OPEN LIMIT	 SWITCH, NORMALLY OPEN TEMPERATURE ACTIVATED	 SWITCH, NORMALLY OPEN TIME DELAY	 SWITCH, SINGLE BREAK	 NORMALLY CLOSED RELAY CONTACT	 NORMALLY OPEN RELAY CONTACT	 FUSE WITH RATING	 MOLDED CASE CIRCUIT BREAKER	 LOW-VOLTAGE DRAWOUT AIR CIRCUIT BREAKER	 HIGH-VOLTAGE OIL CIRCUIT BREAKER	 HIGH-VOLTAGE DRAWOUT AIR CIRCUIT BREAKER	 SWITCH AND FUSE UNIT	 FUSED DRAWOUT POTENTIAL TRANSFORMER	 RELAY	 50 = INSTANTANEOUS OVERCURRENT OR RATE-OF-RISE	 51 = AC-TIME OVERCURRENT	 87 = AC-DIRECTIONAL OVERCURRENT	 88 = LOCKING OUT	 DISCONNECT SWITCH, FUSED	 DISCONNECT SWITCH, UNFUSED	 FUSIBLE LINK	 STARTER OR MOTOR CONTROLLER	 TIME CLOCK	 GENERATOR, POWER	 BATTERY	 CAPACITOR	 POTHEAD	 STRESS CONE	 RECTIFIER, CATHODIC PROTECTION SANITARY	 LIGHTING ARRESTER	 DROP COND. SINGLE CONVENIENCE OUTLET, 3-WIRE	 GROUNDING TYPE, 20A, W/#12 CONDUCTORS IN FLEXIBLE CORD	 ELECTRICAL STRIP MOLD	 3-GANG COMPARTMENT BOX IN FLOOR FOR TELEPHONE, DATA & RECEPTACLE	 RELAY; LETTER INDICATES RELAY TYPE	 50 = INSTANTANEOUS OVERCURRENT OR RATE-OF-RISE	 51 = AC-TIME OVERCURRENT	 87 = AC-DIRECTIONAL OVERCURRENT	 88 = LOCK OUT	 DISCONNECT SWITCH, FUSED	 DISCONNECT SWITCH, UNFUSED	 STARTER OR MOTOR CONTROLLER	 VARIABLE FREQUENCY DRIVE	 TIME CLOCK	 POTHEAD	 STRESS CONE	 RECTIFIER, CATHODIC PROTECTION SANITARY	 VENTILATOR OR FAN COIL UNIT OUTLET	 CONDUIT TERMINATED W/COUPLING	 SWITCH	 F = FUSED	 L = LOCK	 M = MANUAL, MOTOR STARTING	 MP = MOTOR SNAP WITH PILOT LIGHT	 PB = PUSH BUTTON STATION	 WP = WEATHER PROOF	 RC = REMOTE CONTROL	 X = EXPLOSION PROOF	 SWITCH, LAMP HOLDER POLE	 LIGHT FIXTURE CEILING MOUNTED	 LIGHT FIXTURE ID	 FIXT SCHEDULE OVERRIDES	 A - INDICATES LIGHT FIXTURE TYPE	 b - INDICATES SWITCHING	 LIGHT FIXTURE CIRCUIT TYPE	 NO HATCH INDICATES NORMAL CIRCUIT	 ANGLED HATCH INDICATES CRITICAL CIRCUIT	 SOLID HATCH INDICATES LIFE SAFETY CIRCUIT	 TROFFER TYPE LIGHT FIXTURE, SIZE AS INDICATED	 LIGHT TRACK WITH HEADS AS SHOWN	 LIGHT FIXTURE, STRIP/INDUSTRIAL FLUORESCENT; LETTER INDICATES TYPE.	 LIGHT FIXTURE, WALL MOUNTED	 LIGHTING, ONE HEAD EMERGENCY BATTERY POWER	 LIGHTING, TWO HEAD EMERGENCY BATTERY POWER	 LIGHTING, THREE HEAD EMERGENCY BATTERY POWER	 STREET LIGHT WITH BRACKET	 LIGHT POLE, ONE MAST ARM, ONE LUMINAIRE	 LIGHT POLE, TWO MAST ARMS, TWO LUMINAIRES	 LIGHT POLE, POST TOP MOUNT LUMINAIRE	 LIGHT POLE, ONE LUMINAIRE	 LIGHT POLE, TWO LUMINAIRES	 LIGHTING, EXTERIOR BUILDING	 EXIT SIGN, WALL MOUNTED WITH DIRECTIONAL ARROWS AND FACES AS SHOWN	 EXIT SIGN, CEILING MOUNTED WITH DIRECTIONAL ARROWS AND FACES AS SHOWN	 LIGHT FIXTURE, BOLLARD	 LIGHT FIXTURE, DIRECTIONAL	<div><div>INSTALL OPERATING ROOM BOOMS</div><div>PHASE 2</div><div>PROJECT NO.: 618-12-302</div><div>FOR INFORMATION ONLY</div></div>		

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INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
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[illegible]

## GENERAL

[illegible]

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**mechanical • electrical consulting engineering**

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND AM A DULY REGISTERED ENGINEER UNDER THE STATE OF MINNESOTA

REGISTRATION NUMBER: 23994

*Maureen M. Wickham*

**Drawing Scale**  
AS NOTED

**Plot Scale**  
12" = 1'-0"

Drawing Title	ELECTRICAL SECOND FLOOR ORIENTATION PLAN
Approved: Division Chief	
Approved: Service Director	

Project Title	<h1>INSTALL OPERATING ROOM BOOMS</h1> <h2>PHASE 1</h2>			
Location	VA MEDICAL CENTER ONE VETERANS BLVD MINNEAPOLIS, MN 55417			
Date	05-09-2012	Checked SW	Drawn CB	

Project No.  
AIA Proj # 618-11-114  
DUNHAM Proj #412950-012

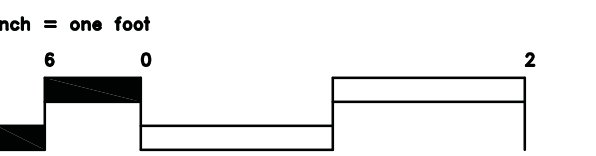
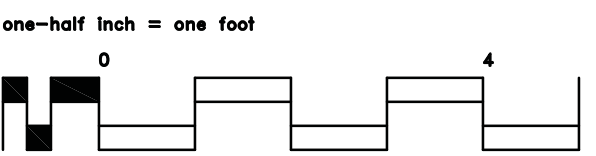
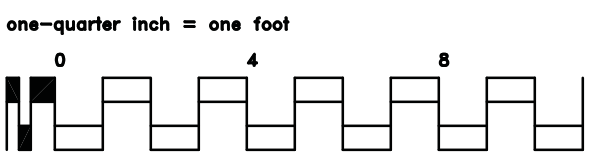
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DRAWING NO.  
1245-E002

Dwg. 13 of 18

Office of  
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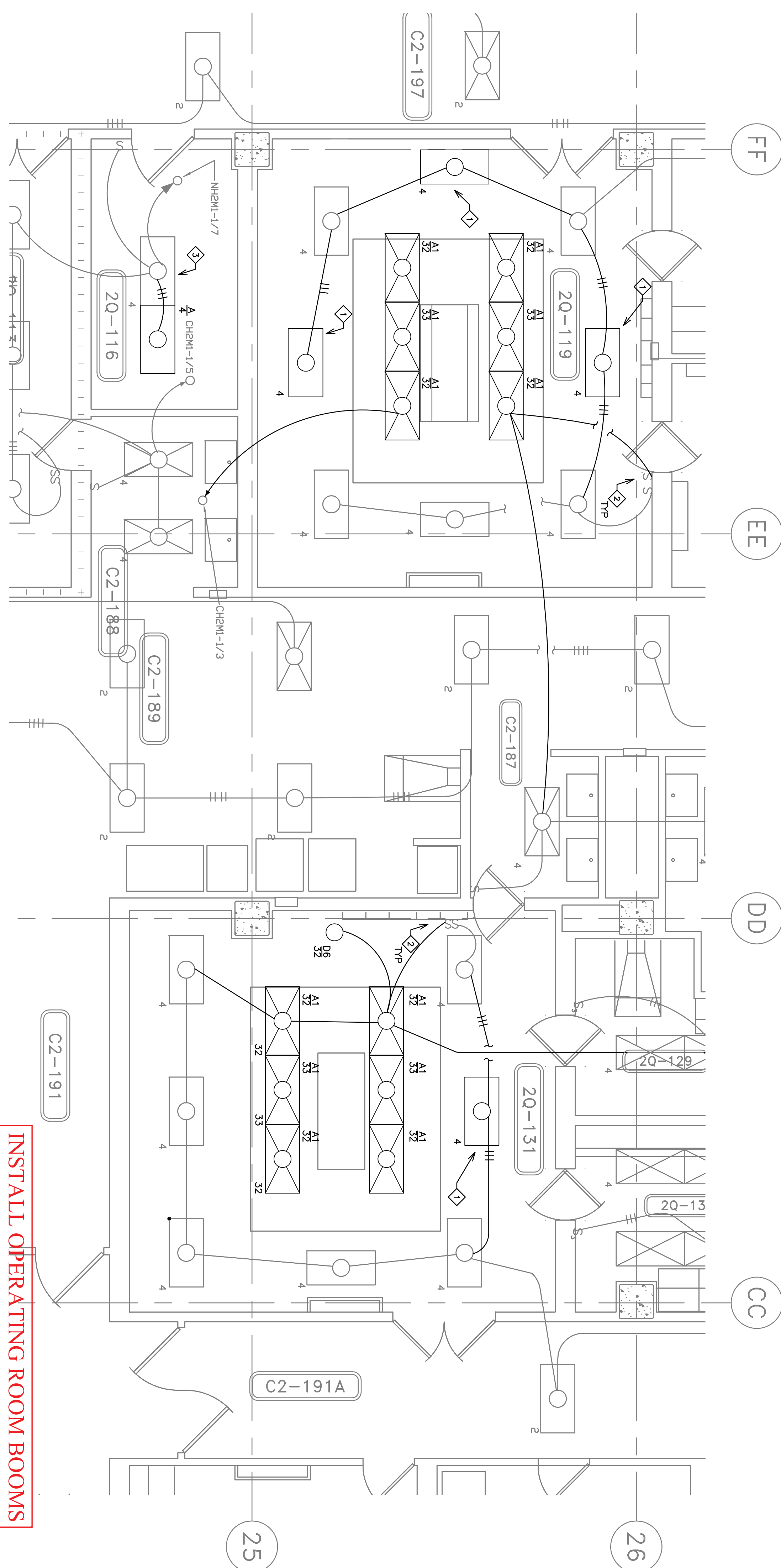
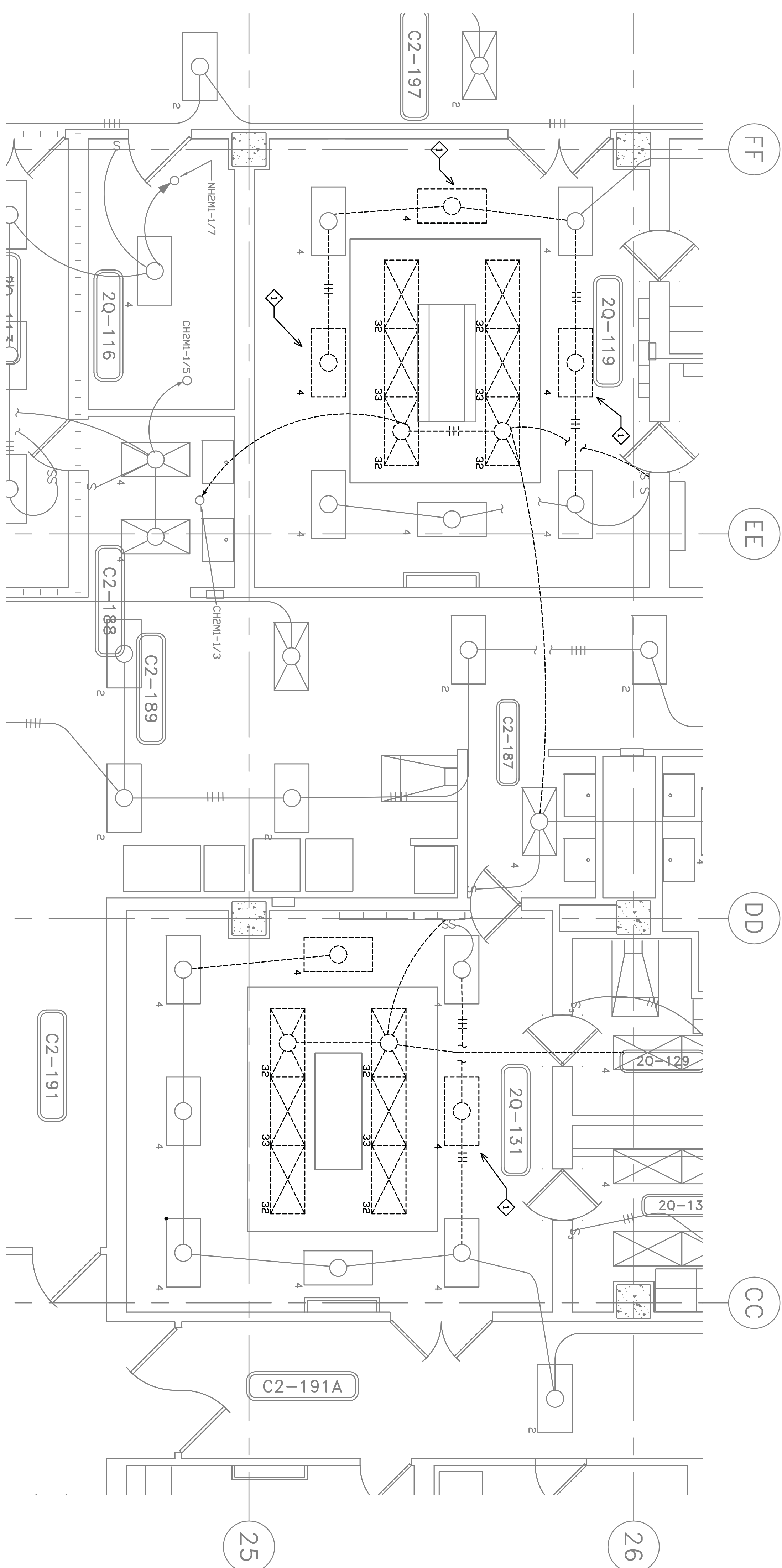
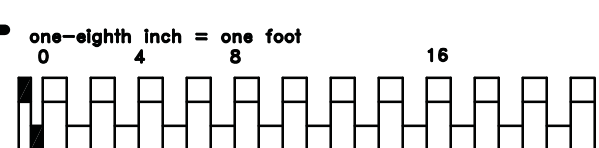
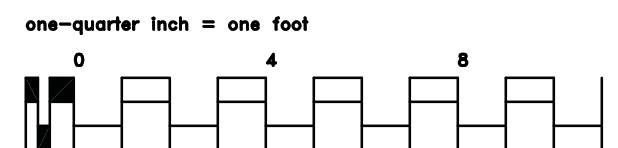
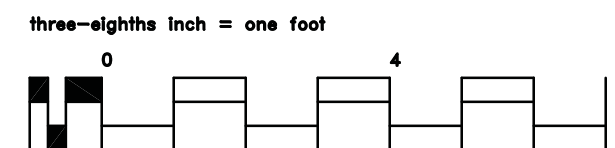
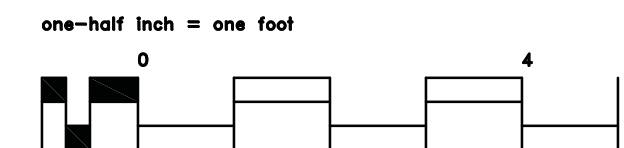
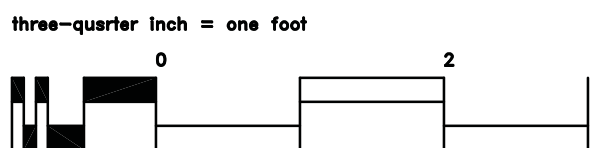
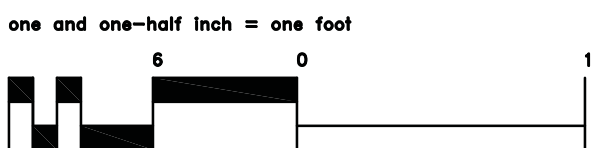
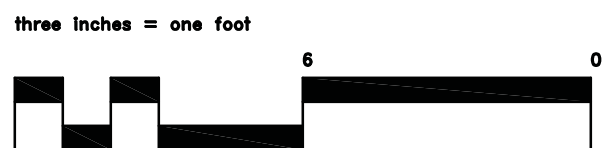
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2 SECOND FLOOR LIGHTING NEW WORK PLAN  
1/4" = 1'-0"

**INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
FOR INFORMATION ONLY**

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KEY NOTES	
❖	CLEAN AND RETRAP LIGHT FIXTURES FOR REINSTALLATION IN NEW CEILING. EXTEND WIRE AND CONDUIT AS REQUIRED.
❖	MODIFY EXISTING ROOM LIGHTING CIRCUIT AS REQUIRED TO EXTEND TO RELOCATED LIGHT FIXTURES.
❖	RELOCATE LIGHT FIXTURE AS REQUIRED FOR GATE INSTALLATION.

**GENERAL NOTES**

**A.** BUILDING WILL BE IN USE DURING CONSTRUCTION, SCHEDULING AND CARRY OUT THE WORK IN SUCH A MANNER AS TO AVOID ANY UNNECESSARY INCONVENIENCE DUE TO SERVICE INTERRUPTION. TEMPORARY SERVICES (FEEDER, BRANCH CIRCUIT, AND SOCIAL SYSTEMS) SHALL BE INSTALLED IF ONE AREA OF THE BUILDING IS TO BE REMOVED OR IF THE EQUIPMENT, CONDUCITS OR FEEDERS HAVE TO BE RELOCATED TO ANOTHER AREA OF THE BUILDING) OR IF THE SERVICE INTERRUPTIONS SHALL BE CONFINED TO THE SMALLEST AREA POSSIBLE AT ANY ONE TIME AND OWNERS SITE REPRESENTATIVE SHALL BE DESIGNATED AREAS WHERE INTERRUPTIONS LIMITED TO AND SHALL BE CONDUCTED AFTER HOURS (9:00 PM AND EARLIER) AND THE CONTRACTOR SHALL HAVE BEEN RESTORED FOLLOWING AN INTERRUPTION. HAS INSPECT AREAS AFFECTED BY THE INTERRUPTION AND CONTROLLED EQUIPMENT TO THE SAME OPERATING CONDITION WHICH EXISTED PRIOR TO THE INTERRUPTION.

**B.** REMOVE, REPLACE, RELOCATE, ETC. ANY ELECTRICAL DEVICES AND/OR ANY CONDUIT/WIRING AS REQUIRED TO ACCOMMODATE THE NEW EQUIPMENT AS INDICATED IN THE CONTRACT DOCUMENTS.

**C.** DRAWINGS INDICATE EXISTING CONDITIONS AS THEY WERE INDICATED ON OWNER PROVIDED AS-BUILT DRAWINGS AND SITE VERIFICATION. ACTUAL CONDITIONS MAY VARY FROM THE INDICATED CONDITIONS. INDICATED THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXACT CONDITIONS.

**D.** ALL DEVICES, EQUIPMENT, CABLING, ETC. INDICATED IN THE CONTRACT DOCUMENTS TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN THE NECESSARY PERMITS AND TO COMPLY WITH ALL FEDERAL REGULATIONS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

**E.** CONNECT NEW SYSTEM DEVICES, EXISTING TO EXISTING SYSTEMS. PROVIDE NEW DEVICES TO MATCH THE EXISTING SYSTEMS.

**F.** HOME RUN CONDUITS TO BE ROUTED UP THROUGH INTERFLOOR SPACE.

[illegible]

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 DIRECT SUPERVISION AND THAT I AM  
 A LICENSED PROFESSIONAL ENGINEER UNDER  
 STATE OF MINNESOTA  
 REGISTRATION NUMBER: 23994  
*Shawn M. A. Schell*  
 Drawing Scale  
 AS NOTED  
 Plot Scale  
 12" = 1'-0"

Drawing Title

SECOND FLOOR LIGHTING PLAN

Approved: Division Chief

Approved: Service Director

Project Title	
INSTALL OPERATING ROOM BOOMS PHASE 1	
Location	V.A. MEDICAL CENTER ONE VETERANS DRIVE MINNEAPOLIS, MN 55417
Date	05-09-2012
Checked	SW
Drawn	CB

Project No.  
VA Proj # 618-11-114  
DUNHAM Proj #412950-012

Building Number  
70

DRAWING NO.  
1245-E004

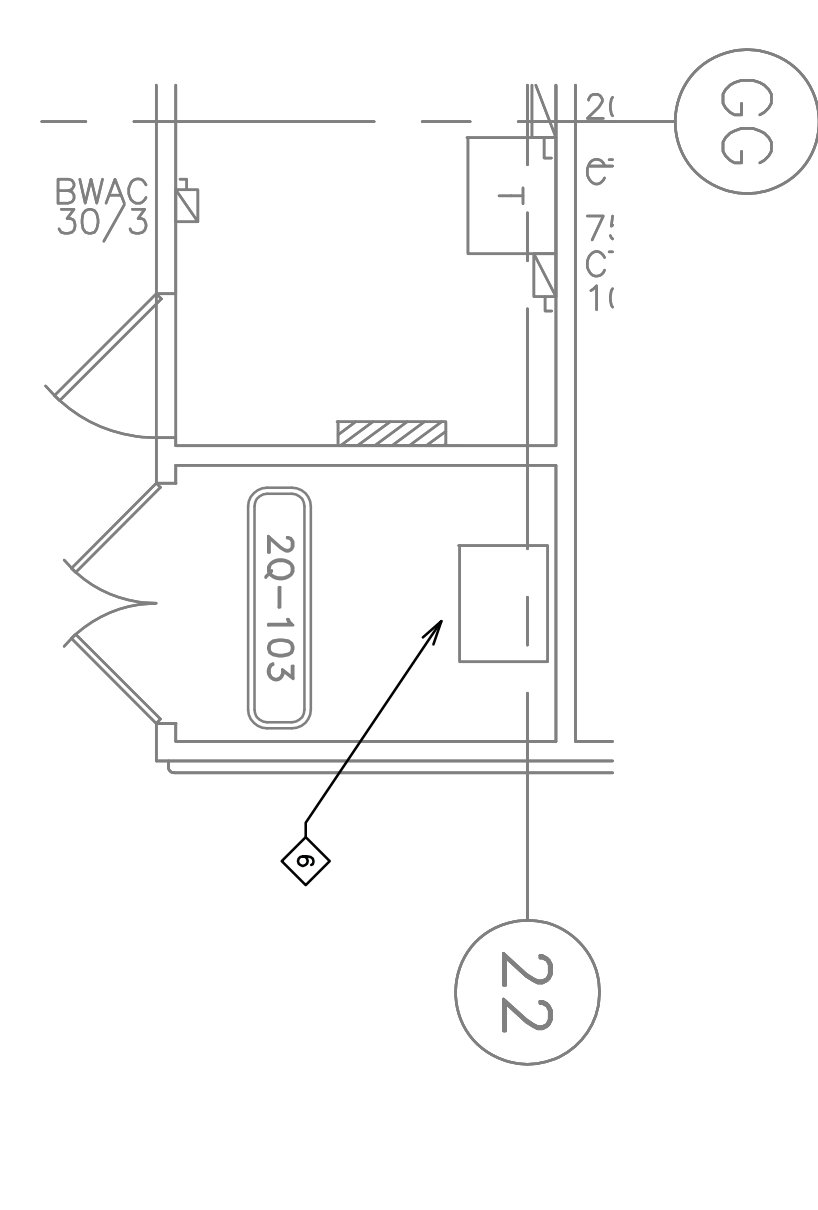
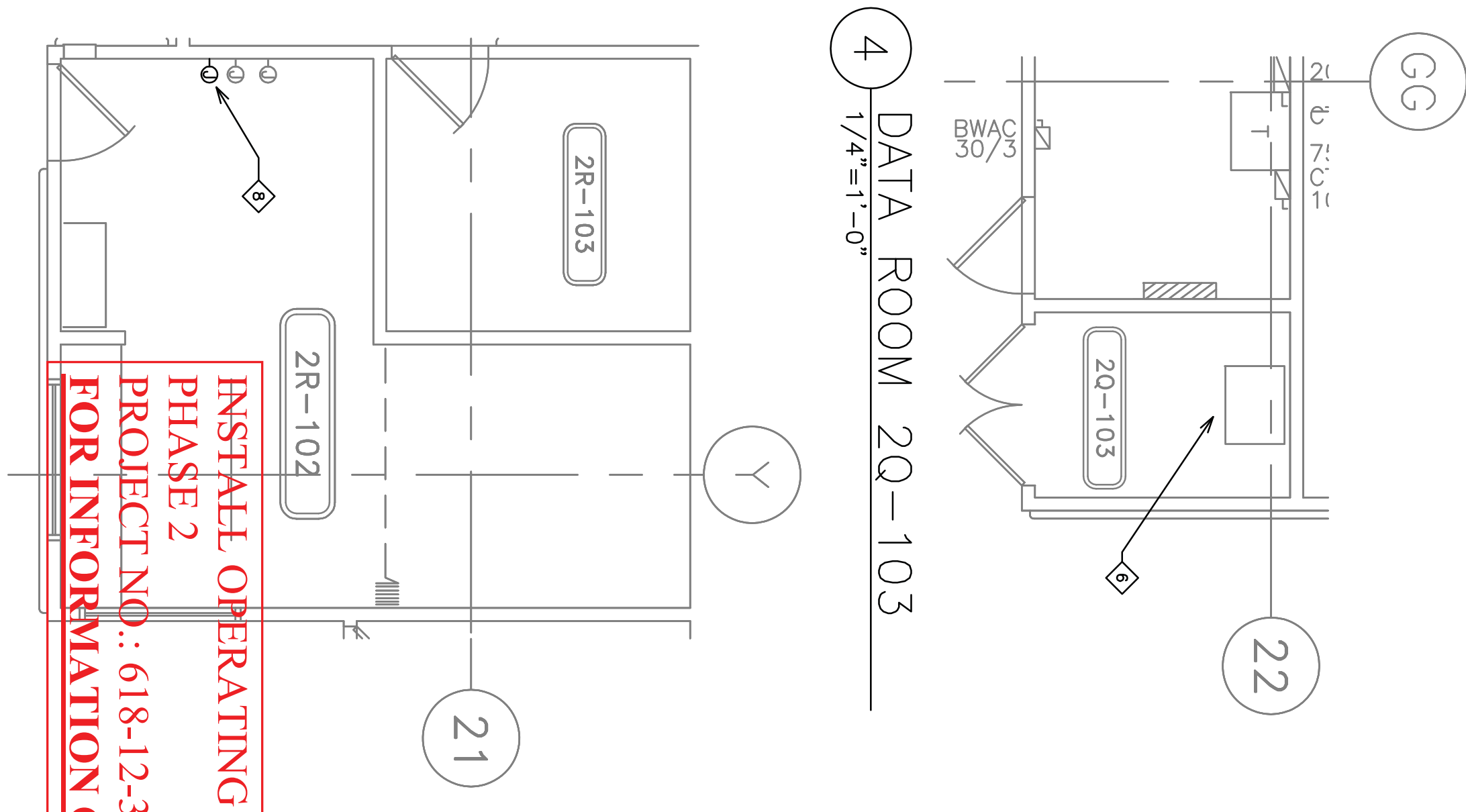
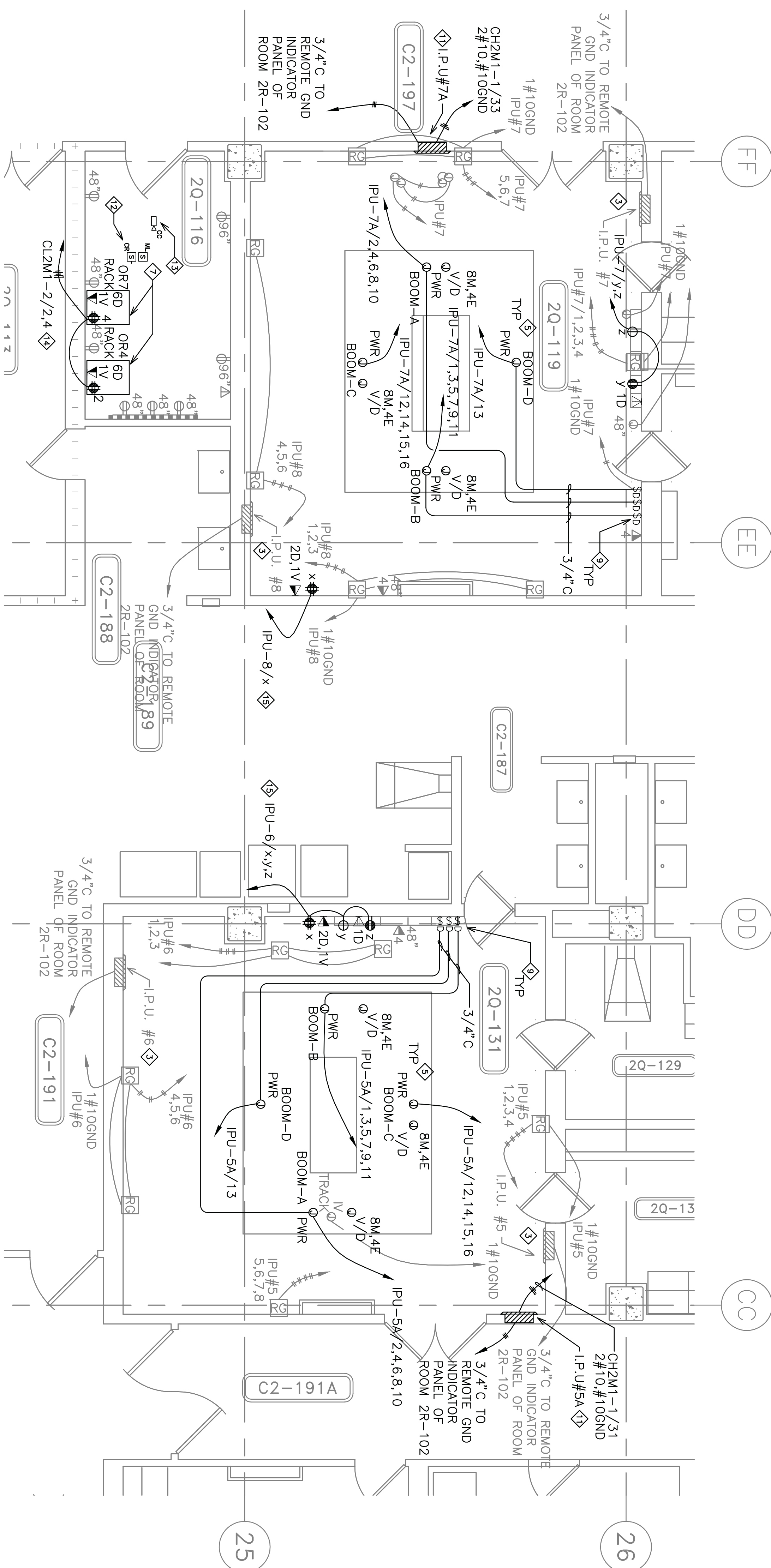
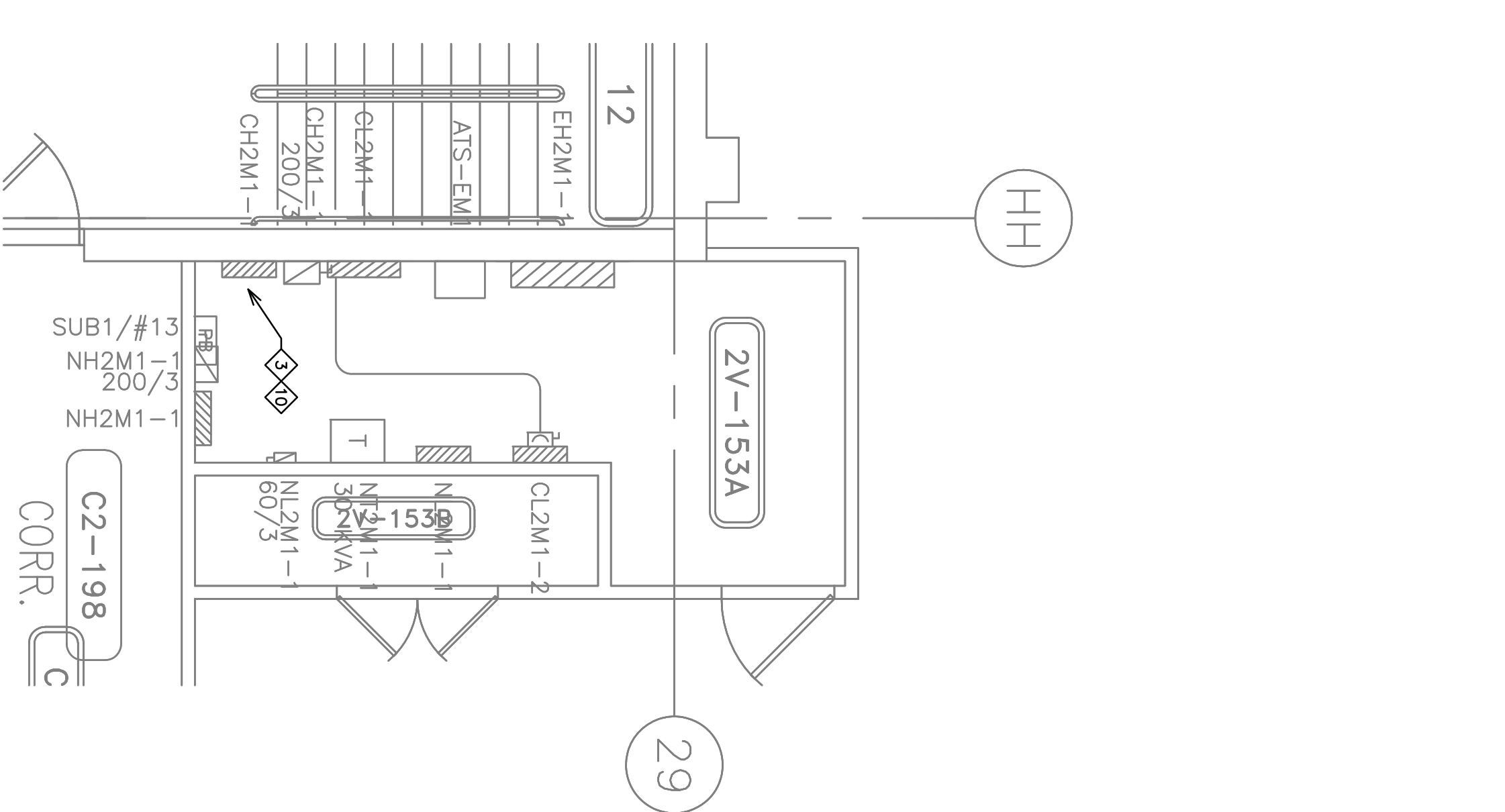
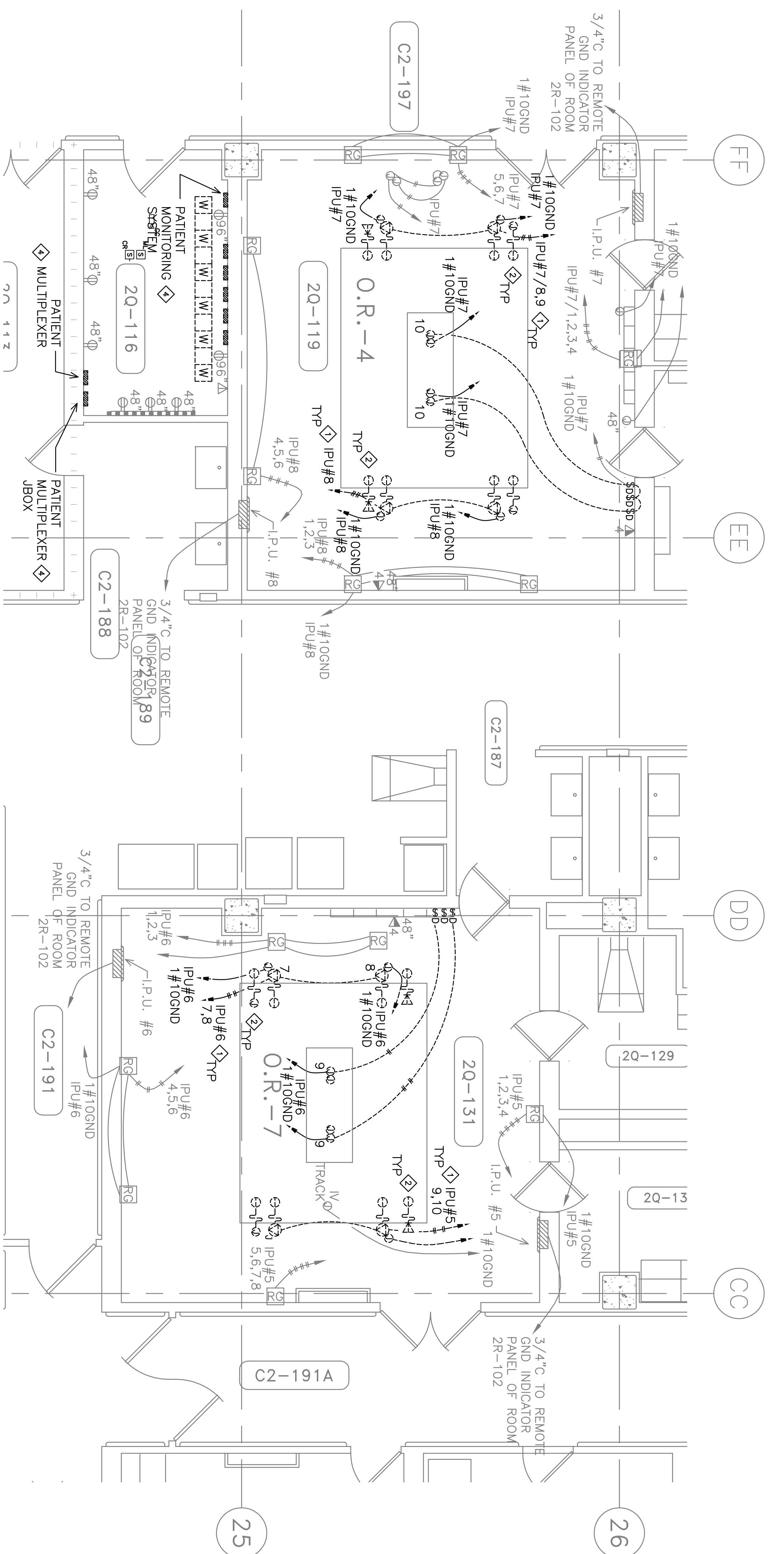
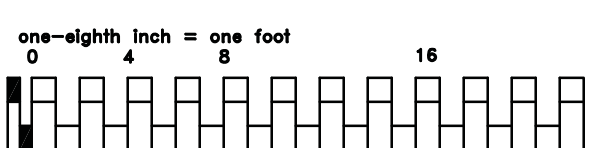
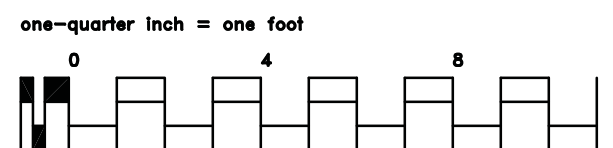
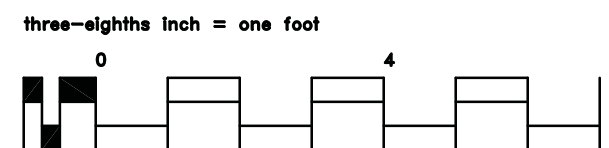
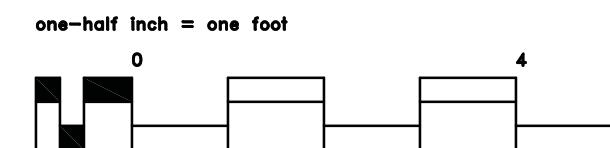
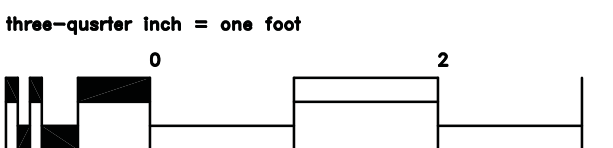
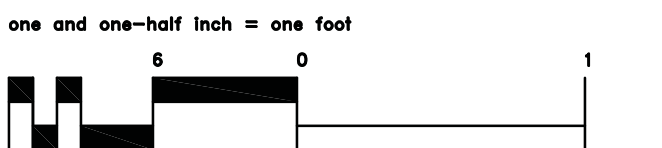
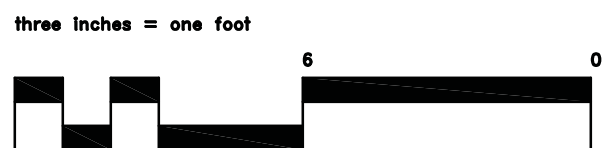
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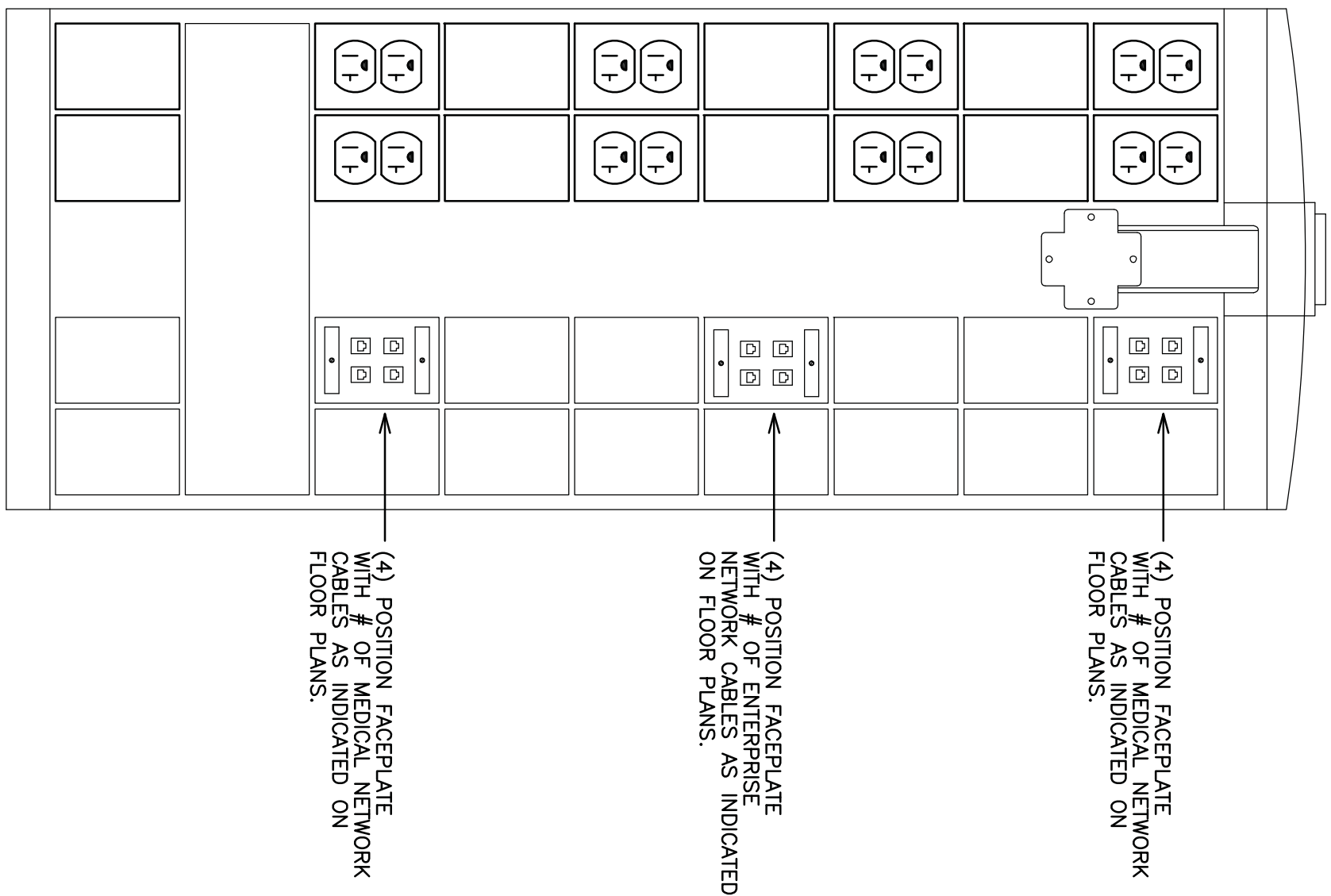
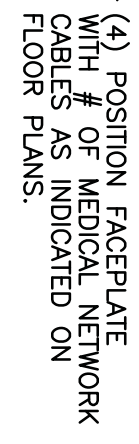
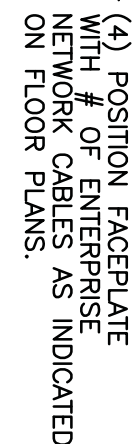
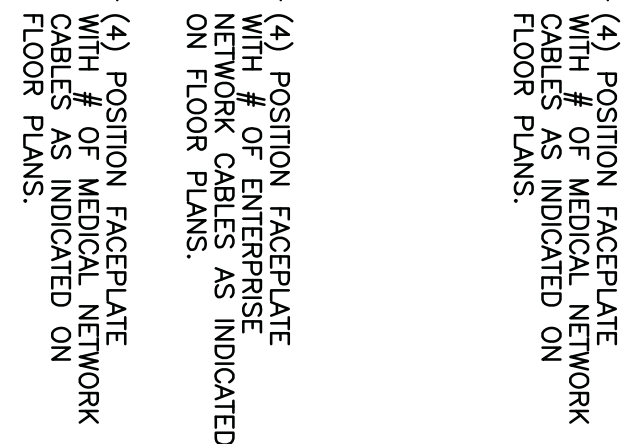
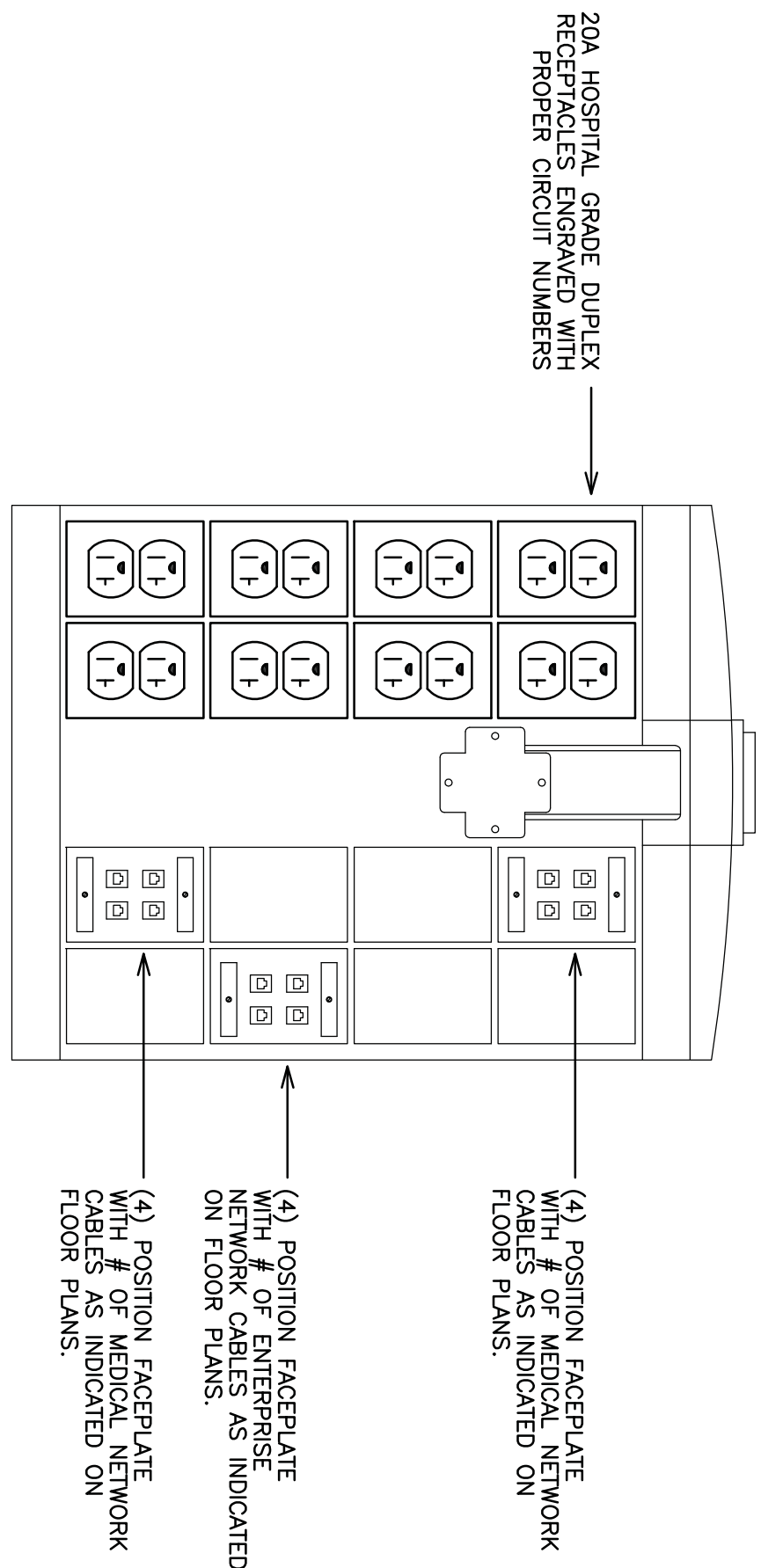
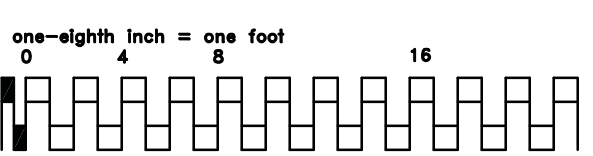
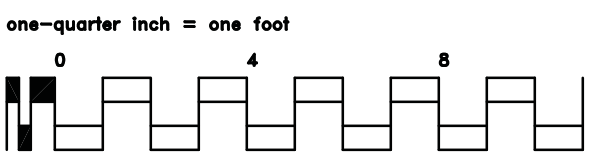
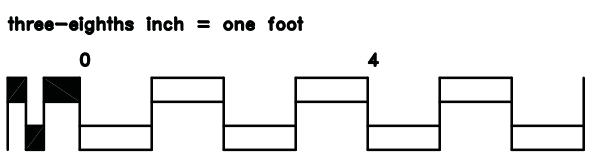
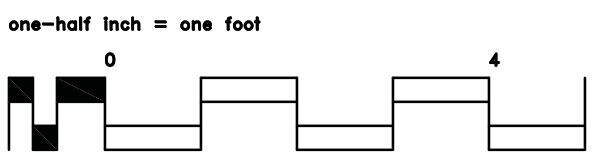
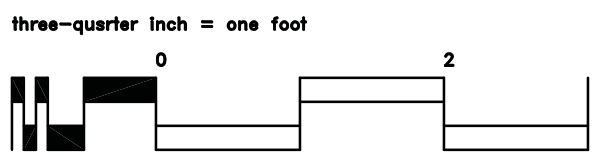
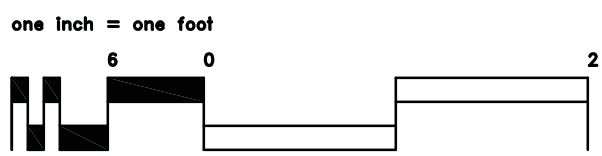
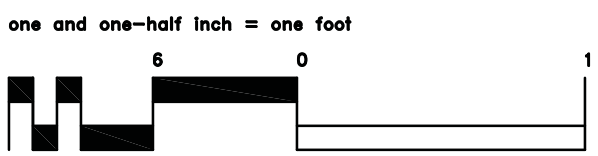
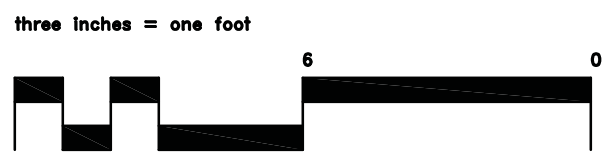


- GENERAL NOTES**
- A. BUILDING WILL BE IN USE DURING CONSTRUCTION. SCHEDULE AND CARRY OUT THE WORK IN SUCH A MANNER AS TO MINIMIZE DISRUPTION OF BUSINESS OR OCCUPANCY DUE TO SERVICE INTERRUPTIONS. TEMPORARY SERVICES (FEEDER, BRANCH CIRCUIT, TRANSFORMER, ETC.) SHALL BE INSTALLED IN SUCH A MANNER AS NOT TO DISRUPT SERVICE TO ANY OTHER AREA OF THE BUILDING(S) OR IF THE EQUIPMENT, CONDUITS OR FEEDERS HAVE TO BE RELOCATED, THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE SERVICE INTERRUPTIONS SHALL BE COMPLETED WITHIN THE SHORTEST TIME POSSIBLE AT ANY ONE TIME AND SHALL BE CONDUCTED AFTER HOURS (9:00 PM AND EARLIER SITE REPRESENTATIVE). THERE SHALL BE DESIGNATED AREAS WHERE INTERRUPTIONS LIMITED TO AND SHALL BE CONDUCTED AFTER HOURS (9:00 PM AND EARLIER). THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORED FOLLOWING AN INTERRUPTION. INSPECT AREAS AFFECTED BY THE INTERRUPTION AND CONTROLLED EQUIPMENT PRIOR TO THE SAME OPERATING CONDITION WHICH EXISTED PRIOR TO THE INTERRUPTION.
- B. REMOVE, REPLACE, RELOCATE, ETC., ANY ELECTRICAL EQUIPMENT OR MATERIALS THAT ARE OBSERVED TO COMPETE, REMOVED AS INDICATED IN THE CONTRACT DOCUMENTS.
- C. DRAWINGS INDICATE EXISTING CONDITIONS AS THEY WERE INDICATED ON OWNER PROVIDED AS-BUILT CONDITIONS MAY VARY FROM THE CONDITIONS INDICATED. THE CONTRACTOR IS RESPONSIBLE TO ALL VERY EXACT CONDITIONS.
- D. ALLEYS, EQUIPMENT, CABLING, ETC., INDICATED BY THE CONTRACT DOCUMENTS TO BE REMOVED SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL AND FEDERAL REGULATIONS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- E. LABEL NEW REQUIREMENTS AS NOTED IN SPECIFICATIONS SECTION 602.26 PART 2.
- F. CONNECT OR Rerun ELECTRICAL CIRCUITS TO ISOLATE ADDITIONAL CIRCUITS SHALL ORIGINATE FROM ELECTRICAL ROOM 2A-153A.
- G. ROUTE LOW VOLTAGE CABLEING TO DATA ROOM 2B-103 TO MATCH EXISTING ROOM CABLE ROUTING, INCLUDING THE EXISTING ROOM CABLE ROUTING, ENTERPRISE NETWORKS, AND/OR FOR MEDICAL AND CLEAN AND PROTECT FINE ALARM SERVICES PLUMBING, CONSTRUCTION. ANY NEW DEVICES DAMAGED DURING CONSTRUCTION MUST BE REPLACED.
- H. GLEAN AND PROTECT FIRE ALARM SERVICES PLUMBING, CONSTRUCTION. ANY NEW DEVICES DAMAGED DURING CONSTRUCTION MUST BE REPLACED.
- I. CONNECT NEW SYSTEM DEVICES TO EXISTING EQUIPMENT. PROVIDE RELAY DEVICES SUITABLE TO EXISTING.
- J. PROVIDE DOUBLE GROUND BOX WITH SINGLE GROUND ROD AND 3/4" CONDUIT TO INTERFERENTIAL SPACE POWER/DATA DEVICES UNLESS NOTED OTHERWISE.
- K. HOME RUN CONDUITS TO BE ROUTED UP THROUGH ELECTRICAL SPACE.

- |    | KEY NOTES  |
|----|--|
| 1  | DRAPOSH CEILING MOUNTED RECEPTACLES. REUSE EXISTING DRAPOSH CIRCUIT FOR CONNECTION TO NEW LOADS.   |
| 2  | DRAPOSH CEILING MOUNTED JUNCTION BOX. REPAIR AND DATA CABLE BACK TO SOURCE.  |
| 3  | INDICATE CIRCUIT MODIFICATIONS ON NEW THERMTRON PATENT SCHEDULE.   |
| 4  | DRAPOSH ABANDONED PATIENT MONITORING SYSTEM. SEE DETAILS ON SHEET E06G AND E07 FOR ASSOCIATED WIRINGS AND SYSTEM CABLEING.   |
| 5  | SEE DETAILS ON SHEET E06G AND E07 FOR THE ROOM DRAMINGS FOR FINAL INSTALLATION REQUIREMENTS.   |
| 6  | ROUTE NEW MEDICAL AND NETWORK CABLEING THROUGH INTERSTITIAL SPACE TO EXISTING DATA RACK IN ROOM 20-101. PROVIDE (1) NEW 48 PORT 48 PORT PATCH PANEL FOR ENTERPRISE NETWORK CONNECTIONS. MEDICAL NETWORK CABLEING AND HARDWARE SHALL BE BLUE ENTERPRISE CABLING AND HARDWARE SHALL BE BLUE ENTERPRISE CABLING AND EQUIPMENT BY OWNERS ELECTRICAL CONTRACTOR. SEE INTEGRATION DRAMINGS FOR ADDITIONAL INSTALLATION REQUIREMENTS. |
| 7  | INSTALL NEW ISOLATION POWER PANEL. PROVIDE AND INSTALL NEW ISOLATION POWER PANEL CONSTRUCTED OF STAINLESS STEEL WITH CAPACITY FOR (16) PG LEAKING OR#1 - REMOVE ANNUATORS. CONNECT ALL ISOLATION POWER PANELS IN OR#4 AND OR#7 TO NEW ANNUNCIATORS. RE-LABEL ABANDONED MONITORS AS SPARE UNIT.   |
| 8  | WITH LIGHTING CONTROL UNIT PROVIDED BY ROOM VENDOR INSTALLED BY EC. UTILIZE EXISTING CIRCUIT FOR CONNECTION TO NEW LIGHTING CONTROL UNIT.  |
| 9  | PROVIDE AND INSTALL (2) 30A/1P/77V CIRCUIT BREAKERS FOR EXISTING WESTINGHOUSE NEW ISOLATION POWER PANELS.  |
| 10 | REMOVE AND INSTALL NEW UTILITY UNIT POST SECONDARY ISOLATED POWER PANEL WITH (16) TWO POLE, 20A BRANCH CIRCUIT BREAKERS A MAIN DISCONNECT SWITCH. BRANCH CIRCUITS SHALL BE TYPE NMW.   |
| 11 | REMOVE AND INSTALL NEW UTILITY UNIT POST SECONDARY ISOLATED POWER PANEL WITH (16) TWO POLE, 20A BRANCH CIRCUIT BREAKERS A MAIN DISCONNECT SWITCH. BRANCH CIRCUITS SHALL BE TYPE NMW.   |
| 12 | CONNECTION TO SECURITY SYSTEM IN ROOM 2V-15-4. PROVIDE DEVICES COMPATIBLE WITH OWNER'S LEVEL SECURITY SYSTEM BUILDING STANDARD.  |
| 13 | REMOVE CAMERA, TO CLOSE EQUIPMENT IN MEDICAL WANT IT CLOSED.   |
| 14 | UTILIZE SPARES IN EXISTING PANELBOARD FOR NEW BRANCH CIRCUITS.   |
| 15 | UTILIZE SPARE CIRCUITS CREATED DURING DEMOLITION FOR NEW BRANCH CIRCUITS.  |

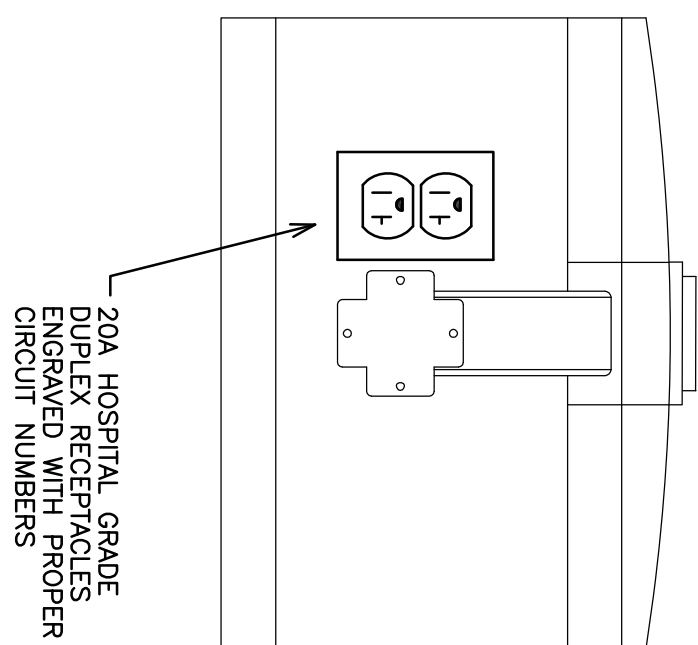
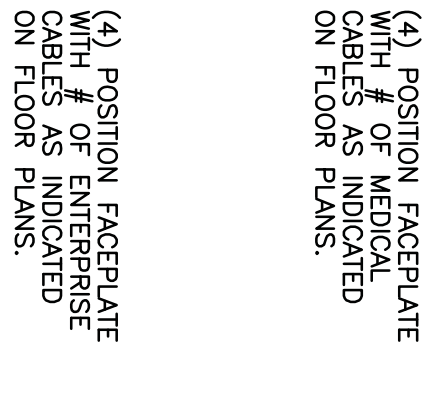
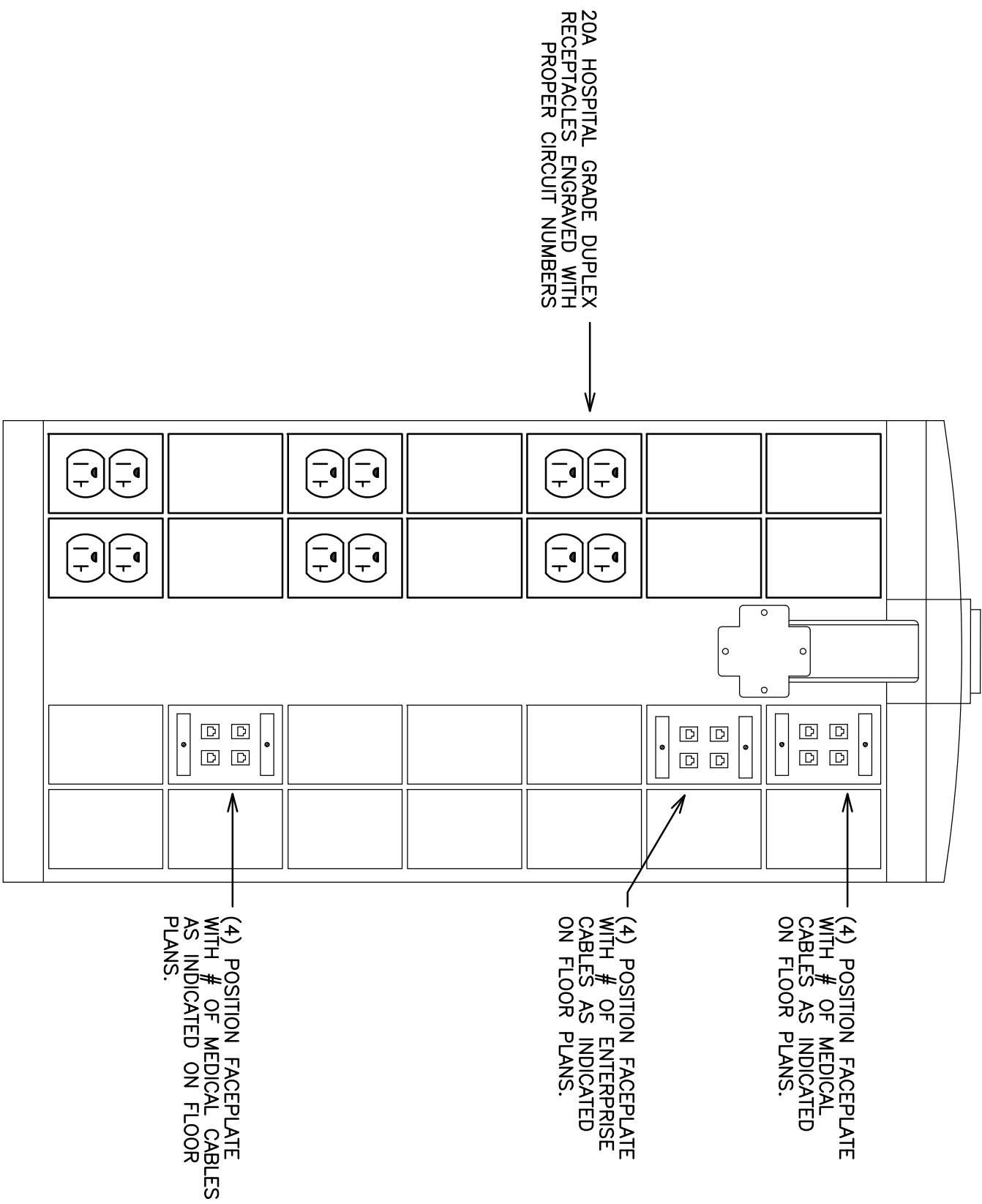
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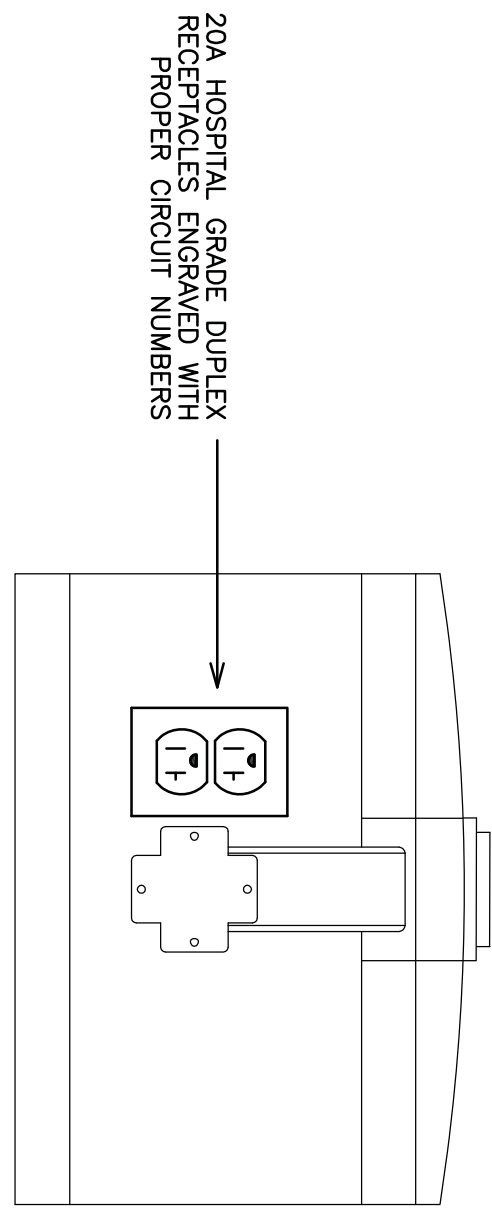
## BOOM A – UTILITY BOOM

BOOM B – EQUIPMENT BOOM



## BOOM C – ANESTHESIA BOOM

## BOOM C – MONITOR BOOM



## BOOM D – MONITOR BOOM

## GENERAL NOTES

- A. DEDAL REPRESENTS POWER AND DATA LAYOUT ON BOARD COLUMN. SEE BOOM DETAILS FOR ADDITIONAL INFORMATION.
- B. BOOM MANUFACTURER PROVIDES WIRING AND ELECTRICAL MATERIALS FOR CONNECTION FROM PLUTONE TO JUNCTION BOX. 4-5/8" X 1-3/4" SUPPLIED BY BOOM MANUFACTURER. JUNCTION BOX INSTALLATION AND FIELD CONNECTIONS BY THE ELECTRICAL CONTRACTOR.
- C. FIBER OPTIC CONNECTION BOXES BY BOOM MANUFACTURER. CONTRACTOR TO INSTALL COPPER LOW VOLTAGE WIRE AND CONNECT TO TERMINATION BOX PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
- D. BOOM RECEPTACLES SUPPLIED WITH CIRCUIT, ELECTRICAL CONTRACTOR TO MAKE FINAL CONNECTION PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
- E. LABEL EACH RECEPTACLE WITH CIRCUIT INFORMATION DESCRIBED IN SPECIFICATIONS.
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## GENERAL

**NOTES:**

GENERAL CONTRACTOR AND/OR ALL SUBCONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR CORRECTING ANY DISCREPANCIES. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADJUSTMENT TO THE WORK WILL BE MADE WITHOUT THE PRIOR APPROVAL OF THE PROJECT ENGINEER.

A GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL DEMOLITION INCLUDING REMOVAL OF WALLS, PARTITIONS, DOORS & PARTITIONS, ROOFING, FLOORING, CEILING, MECHANICAL, ELECTRICAL, PLUMBING, AND HVAC SYSTEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES, STRUCTURES, AND EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES, STRUCTURES, AND EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES, STRUCTURES, AND EQUIPMENT.

GENERAL CONTRACTOR PATCHING AND REPAIR OF CONCRETE WALLS, FLOOR, OR STRUCTURE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. REMOVAL OF DEBRIS RESULTING FROM DEMOLITION, CUTTING, AND/OR DRILLING IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL DEBRIS RESULTING FROM DEMOLITION, CUTTING, AND/OR DRILLING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL DEBRIS RESULTING FROM DEMOLITION, CUTTING, AND/OR DRILLING.

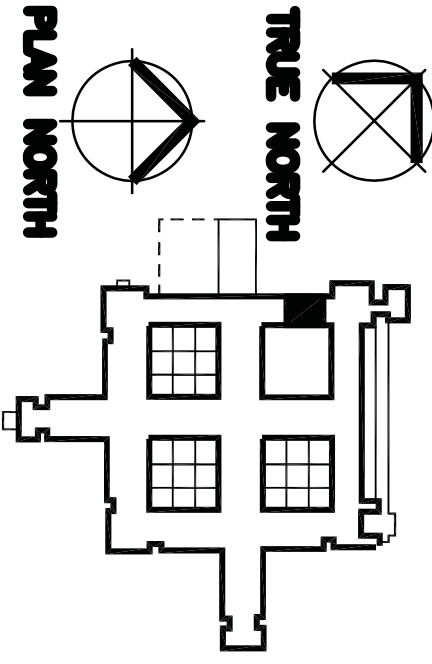
BY THE AMOROUS SUBCONTRACTORS.

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**DUNHAM**

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PHONE: 612.465.7550 FAX: 612.465.7551  
WEB: [dunhaminc.com](http://dunhaminc.com)

**mechanical + electrical consulting engineering**



I HEREBY CERTIFY THAT THIS PLAN,  
 SPECIFICATION OR REPORT WAS  
 PREPARED BY ME OR UNDER MY  
 DIRECT SUPERVISION AND THAT I AM A  
 LICENSED PROFESSIONAL ENGINEER UNDER THE  
 STATE OF MINNESOTA.  
 REGISTRATION NUMBER: 23994  
*Mark W. Beck*  
 Drawing Scale  
 AS NOTED  
 Plot Scale  
 12" = 1'-0"

Drawing Title	
ELECTRICAL DETAILS	
Approved: Division Chief	
Approved: Service Director	

Project Title	INSTALL OPERATING ROOM BOOMS PHASE 1		
Location	V.A. MEDICAL CENTER ONE VETERANS DRIVE MINNEAPOLIS, MN 55417		
Date	05-09-2012	Checked SW	Drawn CB

Project No.  
VA Proj # 618-11-114  
EDUNHAM Proj #412960-012

Building Number  
70

DRAWING NO.  
1245-E006  
Dwg. 17 Of 18

Office of  
Facilities  
Management  
 Department of  
Veterans Affairs

INSTALL OPERATING ROOM BOOMS  
PHASE 2  
PROJECT NO.: 618-12-302  
**FOR INFORMATION ONLY**

# FULLY SPRINKLERED



