

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M4 Condensate Receiver Insulation

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 3 Deficiency Code: 18, 8



Room Number	Room Name	SQFT of Area (if Applicable)
120	West Mechanical Room	

Department or Area

Mechanical Room

Priority Year

2027

Narrative Description of Deficiency / Problem:

Condensate return unit A-8 located in Mech 120 is missing a significant amount of insulation from its body. While this insulation may have been modified to reduce the temperature of the condensate and prevent cavitation in the pumps, it should be done in a clearly intentional manner. This appears to have not been done intentionally and be a consequence of the age of the unit. This is a source of energy loss for the steam system.

Narrative Description of Correction / Resolution:

the condensate return temperature should be examined at full load of the steam equipment it serves. The measured temperature should be compared with the manufacturer-recommended temperature. If the temperature is sufficiently low then the unit should be reinsulated. If the condensate is returning at the appropriate temperature then the unit should be reinsulated leaving approximately the same amount of area uninsulated and it should be done in a clean manner and intentional manner.

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M5 Condensate Receiver Insulation

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 3 Deficiency Code: 18, 8



Room Number	Room Name	SQFT of Area (if Applicable)
112	Boiler Room	

Department or Area

Mechanical Space

Priority Year

2027

Narrative Description of Deficiency / Problem:

The condensate return unit is not insulated within the mechanical room. This causes increased heat transmission to the environment, and is a source of energy loss in the system. However it should be noted that sometimes when the condensate return temperature is too high cavitation issues can occur in the pump. This unit may be uninsulated if condensate return temperature is too high.

Narrative Description of Correction / Resolution:

Condensate return temperature should be monitored on peak design day, which would correspond to the lowest storage time. If the condensate return temperature is sufficiently low then the condensate return unit should be insulated to prevent excessive heat loss.

Remarks

While this would be a minor part of the heat issue in the boiler room it would help a little with the overheating they experience.

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M6 CRU-1 (A-9) Leak and Damage

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 2 Deficiency Code: 18



Room Number	Room Name	SQFT of Area (if Applicable)
112	Boiler Room	

Department or Area
 Mechanical Space

Priority Year
 2026

Narrative Description of Deficiency / Problem:
 The condensate return unit installed in 2006 CRU-1 has 2 issues visible here. The vibration isolators on both of the pumps appear to be crushed. One of the duplex pumps also appears to be leaking. This is likely due to a lack of support for the weight of the pipe.

Narrative Description of Correction / Resolution:
 The leaking pump needs to be repaired or replaced. The vibration isolators need to be replaced and properly supported to prevent them from expiriencing excessive weight. While down the condensate receiver should be checked for signs of corrosion and further actions may need to be taken from possible damage from the pool of condensate that has formed.

Remarks
 There appears to be an unused support beam near the condensate receiver that was likely used to serve to support the piping. This was likely used to support the riser in the past.

**South Peninsula Hospital
SPH Facility Assessment and Phased Renovation Plan
Homer, Alaska**

M7 Air Management Strategy

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 3 Deficiency Code: 18



Room Number	Room Name	SQFT of Area (if Applicable)
XX & 109	East Mechanical Room & Boiler Room	

Department or Area

Mechanical Spaces

Priority Year

2027

Narrative Description of Deficiency / Problem:

The hydronic heating system installed in 1999 feeds off the heat exchangers installed and used in the 1983 addition. The two systems pumps are installed in parallel and share the same fluid. The issue is the 1983 addition uses a air over water compression tank, and the 1999 addition uses an expansion tank. On the 1999 addition there is a automatic air vent. This will remove air from the system, air will diffuse back in to the system through the compression tank and cause it to repeatedly waterlog.

Narrative Description of Correction / Resolution:

The systems should use compatible air management techniques. Both locations should use conventional compression tanks with air management systems; or both should use expansion tanks with air elimination systems, or a single tank that can support the expansion from both systems should be installed.

Remarks

Generally a hydronic system should have only a single expansion tank or a single location they attach to they system. Interaction between multiple expansion tanks needs to be explored further. In addition the waterlogging is likely happening at a slower rate due to the air separator being nonoptimally located on the downstream side of the pumps for the 1999 ltc addition.

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M8 Pump-2A/B Cavitation

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 1 Deficiency Code: 18



Room Number	Room Name	SQFT of Area (if Applicable)
112	Boiler Room	

Department or Area
 Mechanical Room

Priority Year
 2025

Narrative Description of Deficiency / Problem:
 Pump 2B 2006 which pumps the HWS was producing a gravel-like sound that is often caused by cavitation in the pump. This reduces the pump efficiency but will also greatly reduce the life of the pump.

Narrative Description of Correction / Resolution:
 The Pump should be investigated to confirm cavitation is occurring, then an investigation and resolution should be found to prevent future cavitation. Pump 2A was not running during the visit but it should also be investigated for the same issue. The impellers should also be examined if the damage from the cavitation is sufficient then the impellers may need to be replaced.

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M9 Crawl Space Corrosion

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 3 Deficiency Code: 10, 18, 22, 17



Room Number	Room Name	SQFT of Area (if Applicable)
XX	East Mechanical Room	

Department or Area
 Mechanical Space

Priority Year
 2027

Narrative Description of Deficiency / Problem:
 There were large amounts on corrosion on all surfaces in the space. Likely due to the washdown chemicals used in the spaces above.

Narrative Description of Correction / Resolution:
 seal the room above to prevent the chemicals from penetrating the floor assembly.

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M10 No Cooling in older Ventilation Systems AHU-4,5,6,7

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 1 Deficiency Code: 1

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Room Number Room Name SQFT of Area (if Applicable)

120	W mechanical and crawl space 4 line	
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Department or Area

Mechanical Space

Priority Year

2025

Narrative Description of Deficiency / Problem:

Air handlers 4, 5, 6 and 7 installed in 1983 do not include mechanical cooling. The program spaces served by these air handlers are chronically overheated , especially in summer .

Narrative Description of Correction / Resolution:

Mechanical cooling could be added to each air handler because there was space allocated for that purpose in the original design . However, the air handlers are 40 years old and should be replaced with modern equipment . The replacement should take into consideration future renovations and expansions rather than just replace in kind.

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M11 AHU-8 beyond service life

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 1 Deficiency Code: 18

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Room Number Room Name SQFT of Area (if Applicable)

XX	Central mechanical 139	
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Department or Area

Mechanical Space

Priority Year

2025

Narrative Description of Deficiency / Problem:

Air handler 8 located in central mechanical is the oldest remaining air handler at the facility . At 50 years old it is well beyond its surface life. It is also a multi zone type air handler which is not space efficient or energy efficient . Arts for the mechanical refrigeration system are becoming difficult to source

Narrative Description of Correction / Resolution:

Replace air handler 8 with a modern cabinet type unit similar to air handler 9. Connect into the future expansion capabilities of the cooling system installed with the OR renovation.

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M13 No Dehumidification in OR AHU-9

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 5 **Deficiency Code:** 1

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Room Number	Room Name	SQFT of Area (if Applicable)
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XX		
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Department or Area

Mechanical Space

Priority Year

2029

Narrative Description of Deficiency / Problem:
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Dehumidification is not available in operating room air handler 9 , presenting a risk for excursions in humidity control above 60% , particularly in summer months at coastal locations .

Narrative Description of Correction / Resolution:

Evaluate need for dehumidification and install dehumidification equipment if warranted . Alternatively , include dehumidification in hair handling system for new location of operating rooms suite .

Remarks

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South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M14 Equipment Replacement Backlog

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 0 Deficiency Code: 8, 18

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Room Number	Room Name	SQFT of Area (if Applicable)
XX	East Mechanical Room	

Department or Area
 Mechanical Space

Priority Year
 2024

Narrative Description of Deficiency / Problem:
 Many mechanical components exceed 30 or 40 year age and are no longer serviceable . Refer to separate list of individual equipment . Up to 70 individual components are beyond their service life and need immediate replacement .

Narrative Description of Correction / Resolution:
 Prioritize list of equipment replacement needs and plan for their replacement in coordination with renovation plans .

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
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M15 Fuel Oil Storage Capacity?

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 2 Deficiency Code: 2

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Room Number Room Name SQFT of Area (if Applicable)

XX	East Mechanical Room	
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Department or Area

Mechanical Space

Priority Year

2026

Narrative Description of Deficiency / Problem:

Fuel oil capacity may not be adequate to comply with NFPA 110 requirements , depending on interpretation of the hospital's classification and level . In addition , the boilers and generators may require separate fuel storage systems .

Narrative Description of Correction / Resolution:

The fuel storage system should be thoroughly reviewed for NFPA 110 capacity and turnover/freshness considerations.

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M16 Filters upstream of Humidifiers in older AHUs & OR AHU-9

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 1 Deficiency Code: 1

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Room Number	Room Name	SQFT of Area (if Applicable)
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XX	East Mechanical Room	
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Department or Area

Mechanical Space

Priority Year

2025

Narrative Description of Deficiency / Problem:

Best practice for hospital air handler component installation sequence is to place filters at the end of the supply side to be the last component before air delivery . The 1983 air handlers and the air handler for the operating rooms all have humidifiers after the final filters , presenting some risk of contaminating the Airstream .

Narrative Description of Correction / Resolution:

Review requirements for filtration and air delivery for selected air handling systems . Where required , relocate humidifiers or filters to comply with requirements . Alternatively provide replacement air handlers with correct sequence of filtration components .

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
 Homer, Alaska

M17 Boiler Room Overheating Adjacent Spaces

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 1 Deficiency Code: 8, 10, 18

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Room Number	Room Name	SQFT of Area (if Applicable)
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XX	East Mechanical Room	
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Department or Area

Mechanical Space

Priority Year

2025

Narrative Description of Deficiency / Problem:

The boiler room is chronically overheated And affects comfort and material durability in adjacent spaces above the boiler room . The mechanical ventilation system for the boiler room cannot overcome the heat load , even when supplemented by outside air through the boiler doors .

Narrative Description of Correction / Resolution:

Develop a comprehensive strategy for reducing boiler load and recovering waste heat from the boiler room space . Evaluate pros and cons of relocating the boiler room outside the footprint of the existing hospital .

Remarks

South Peninsula Hospital
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M18 Comm rooms too hot

Mechanical

Observed Deficiency and Proposed Correction



Priority Code: 5 Deficiency Code: 4, 8

Room Number	Room Name	SQFT of Area (if Applicable)
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Department or Area

Priority Year
2029

Narrative Description of Deficiency / Problem:
Various communications closets and rooms have been added to the hospital over the years. Several of them are overheating.

Narrative Description of Correction / Resolution:
Develop a strategy to capture and reuse the heat from communications and server rooms , providing cooling to the rooms and energy savings by reusing the heat .

Remarks

Remarks

South Peninsula Hospital
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M21 Showers in LTC have poor temperature control

Mechanical

Observed Deficiency and Proposed Correction

Priority Code: 1 Deficiency Code: 1

Room Number	Room Name	SQFT of Area (if Applicable)
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Department or Area

Priority Year

2025

Narrative Description of Deficiency / Problem:
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Staff reports unsatisfactory temperature control of the patient showers in the long term care program space .

Narrative Description of Correction / Resolution:

Evaluate existing equipment capabilities and provide a design for a replacement or repair

Remarks

South Peninsula Hospital
 SPH Facility Assessment and Phased Renovation Plan
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M23 Energy issues: constant volume air; temperature reset schedules;
 Mechanical
 Observed Deficiency and Proposed Correction



Priority Code: 1 Deficiency Code: 8, 18, 19

Room Number	Room Name	SQFT of Area (if Applicable)
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Department or Area

Priority Year

2025

Narrative Description of Deficiency / Problem:

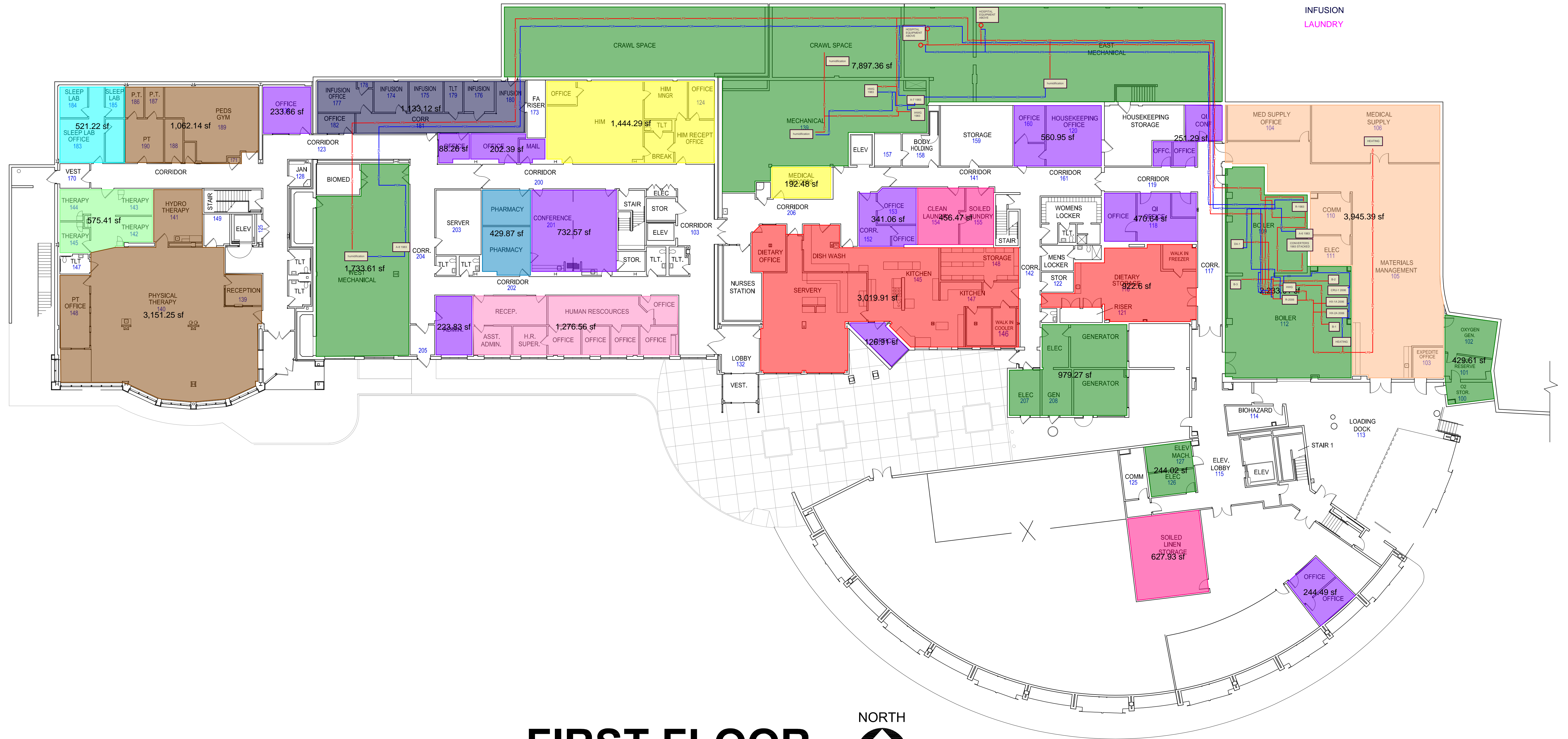
Several older air handling systems are constant volume type delivering a constant amount of air regardless of actual need . There are also no air or heating water temperature delivery optimization procedures or reset schedules based on outside air temperature . These are common sources of wasted energy in hospital facilities

Narrative Description of Correction / Resolution:

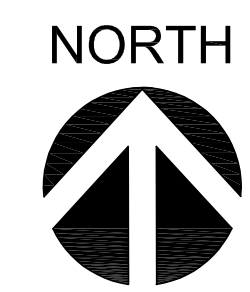
Develop and implement reset schedules and temperature delivery optimization using the control system . When replacing or renovating HVAC systems , use variable air volume and or Dedicated outside air type systems wherever allowed.

Remarks

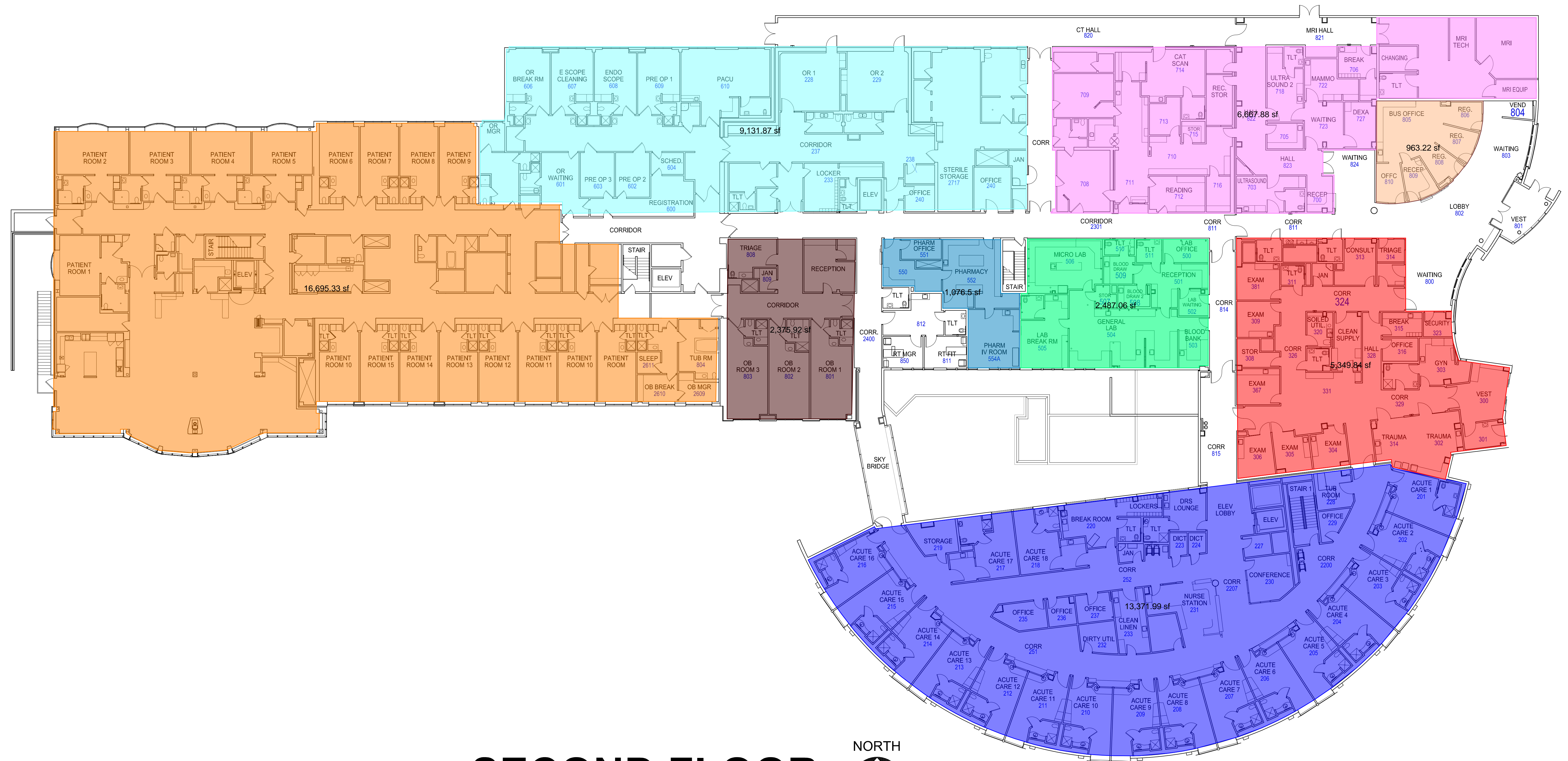
- MECHANICAL / ELECTRICAL
- MATERIAL MANAGEMENT
- ADMIN
- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
- HUMAN RESOURCES
- PHARMACY
- SLEEP THERAPY
- THERAPY
- INFUSION
- LAUNDRY



FIRST FLOOR



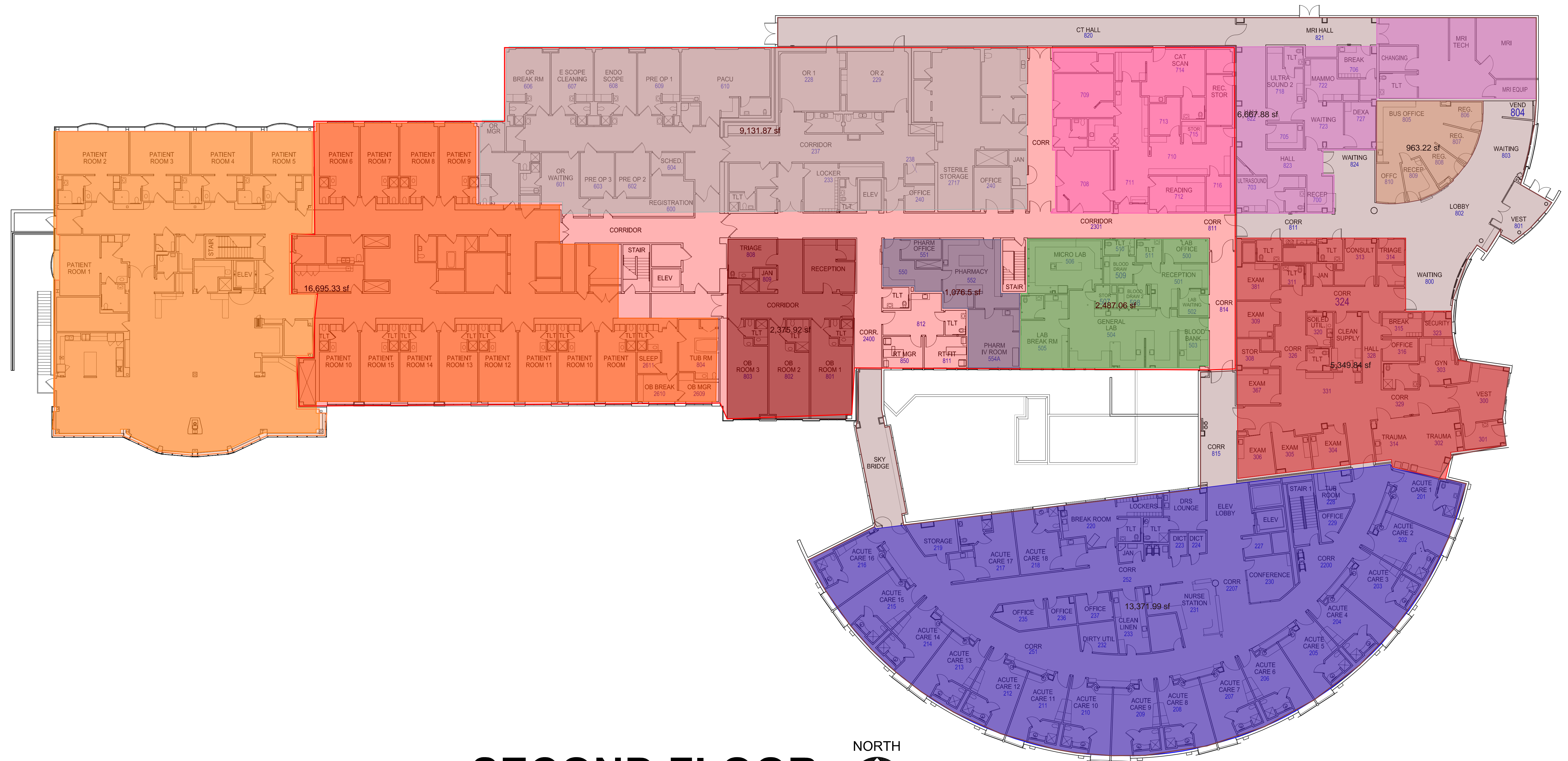
- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION



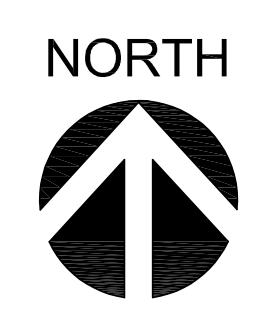
SECOND FLOOR

NORTH

- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION



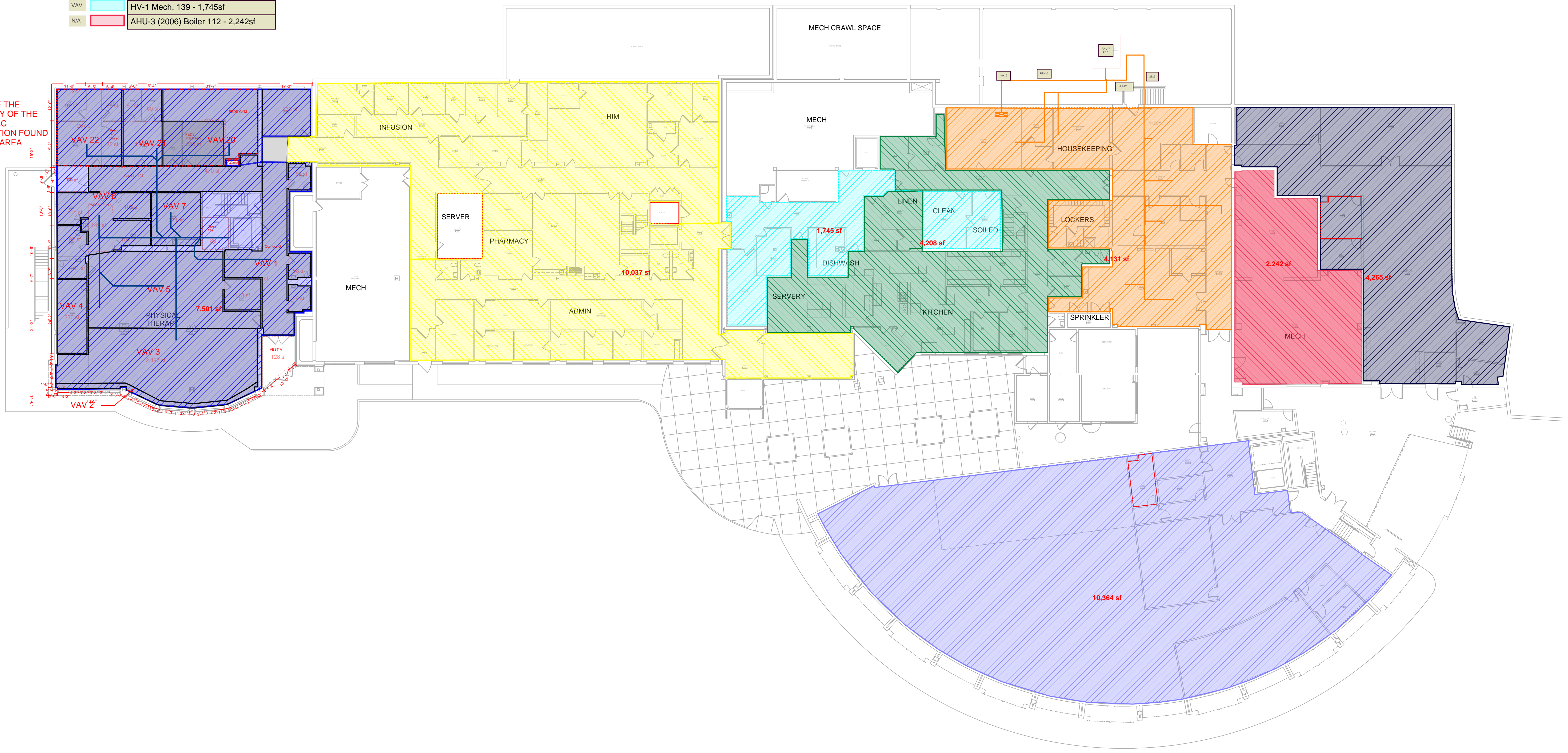
SECOND FLOOR



VAV	AHU-1(1999) Roof - 15,414sf
VAV	AHU-2 (AHU-1 2006) Roof - 22,618sf
VAV	AHU-3 (AHU-1 2009)Roof - 24,732sf
RHC	AHU-4 (SF-1) West Mech. - 13,723sf
RHC	AHU-5 (SF-2) West Mech. - 10,037sf
RHC	AHU-6 (SF-3) West Mech. - 1,640sf
RHC	AHU-7 (SF-4) Crawl Space 4 - 8,001sf
VAV	AHU-8 (AC-1) Mech. 139 - 7,136sf
VAV	AHU-9 (AC-2) Mech. 139 - 3,645sf
VAV	AHU-10 Roof - 1,333sf
VAV	HV-1 Mech. 139 - 1,745sf
N/A	AHU-3 (2006) Boiler 112 - 2,242sf

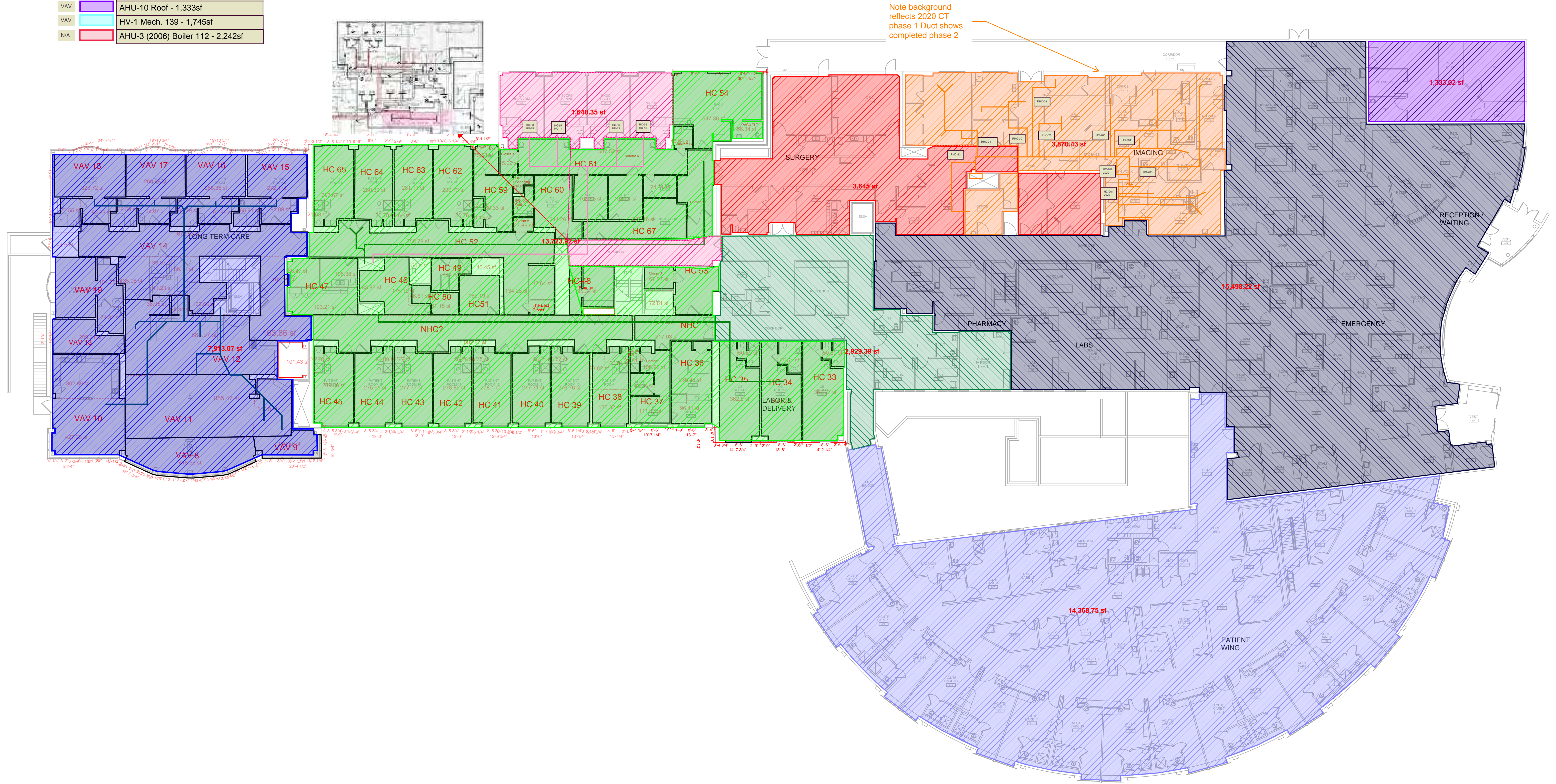
— AHU-1 Main Duct Route
 — SF-1 Main Duct Route

NOT SURE THE ACCURACY OF THE ZONE/HVAC INFORMATION FOUND FOR THIS AREA

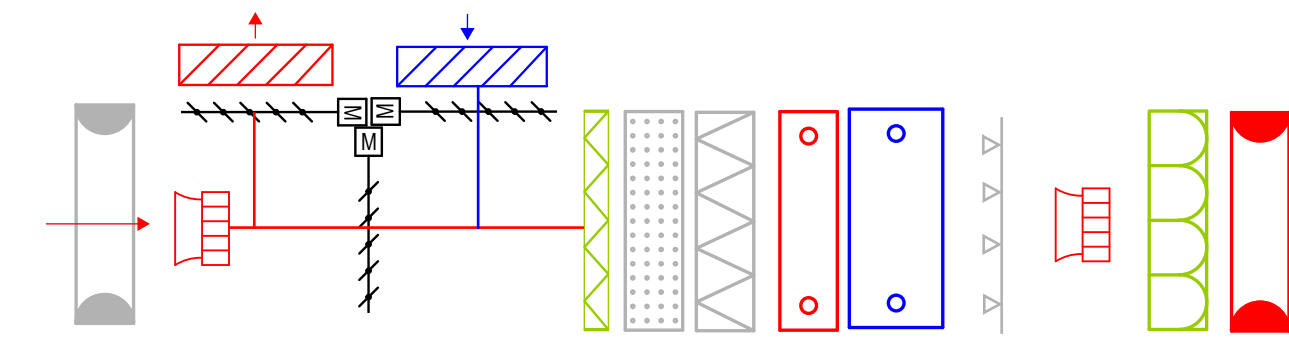


VAV	Blue	AHU-1(1999) Roof - 15,414sf
VAV	Grey	AHU-2 (AHU-1 2006) Roof - 22,618sf
VAV	Light Blue	AHU-3 (AHU-1 2009)Roof - 24,732sf
RHC	Green	AHU-4 (SF-1) West Mech. - 13,723sf
RHC	Yellow	AHU-5 (SF-2) West Mech. - 10,037sf
RHC	Pink	AHU-6 (SF-3) West Mech. - 1,640sf
RHC	Orange	AHU-7 (SF-4) Crawl Space 4 - 8,001sf
VAV	Dark Green	AHU-8 (AC-1) Mech. 139 - 7,136sf
VAV	Red	AHU-9 (AC-2) Mech. 139 - 3,645sf
VAV	Purple	AHU-10 Roof - 1,333sf
VAV	Cyan	HV-1 Mech. 139 - 1,745sf
N/A	Red	AHU-3 (2006) Boiler 112 - 2,242sf

AHU-1 Main Duct Route
SF-1 Main Duct Route

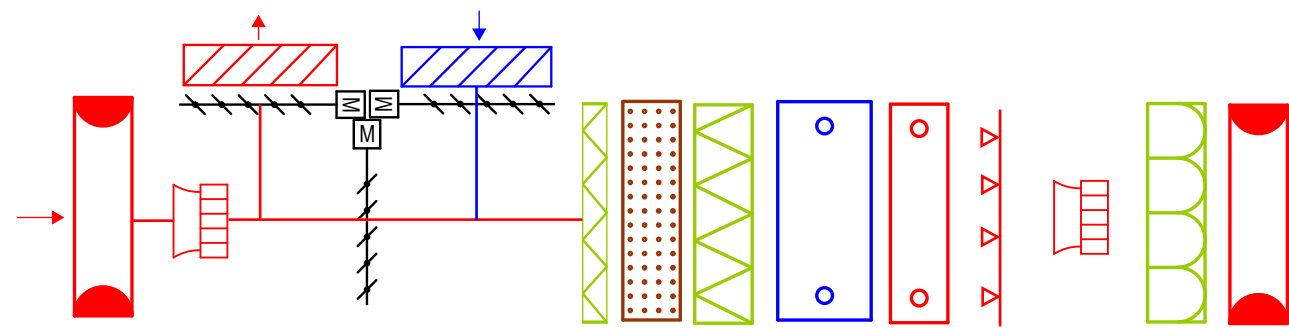


AHU-1
 14,100 CFM
 15,414 SF
 0.91 CFM/SF



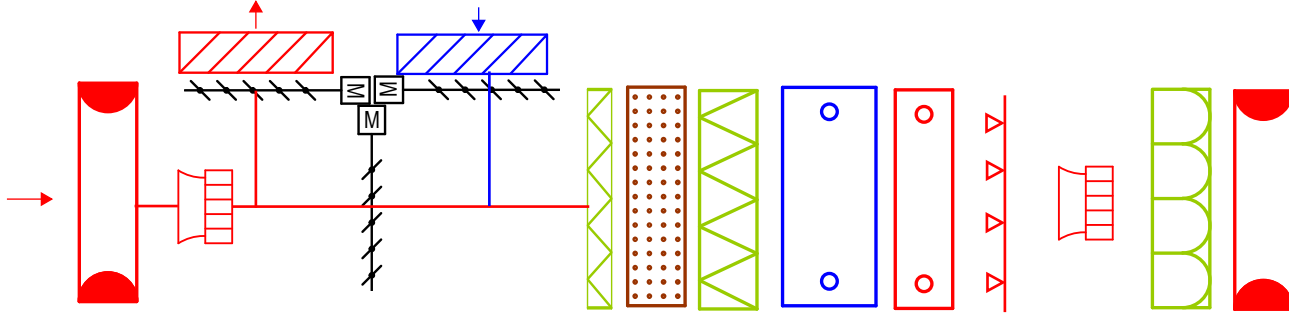
LONG TERM CARE
 PHYSICAL THERAPY
 SLEEP LAB

AHU-2
 18,000 CFM
 22,618 SF
 0.80 CFM/SF



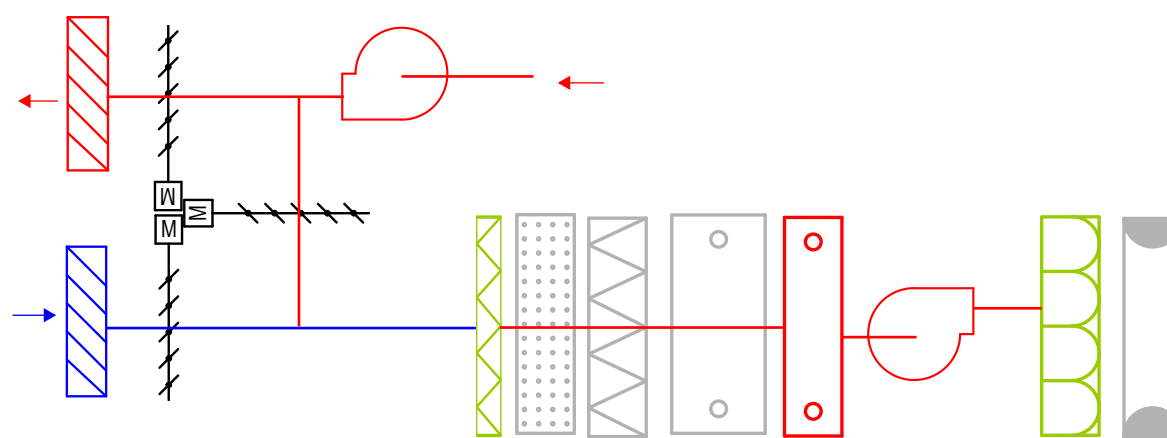
EMERGENCY ROOM
 WOMEN'S IMAGING
 BUSINESS OFFICE
 LAB, PHARMACY
 [RESPIRATION]
 MATERIALS
 MANAGEMENT & SUPPLY

AHU-3
 28,000 CFM
 24,732 SF
 1.13 CFM/SF



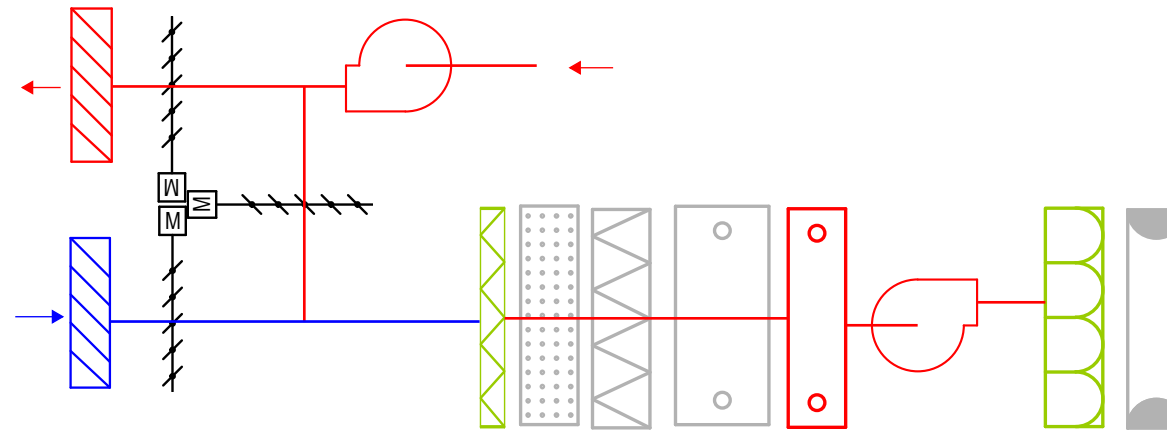
ACUTE CARE
 HELIPAD
 [PHARMACY]
 [INFUSION]
 [SHELL SPACE]

AHU-4
 13,200 CFM
 13,723 SF
 0.96 CFM/SF



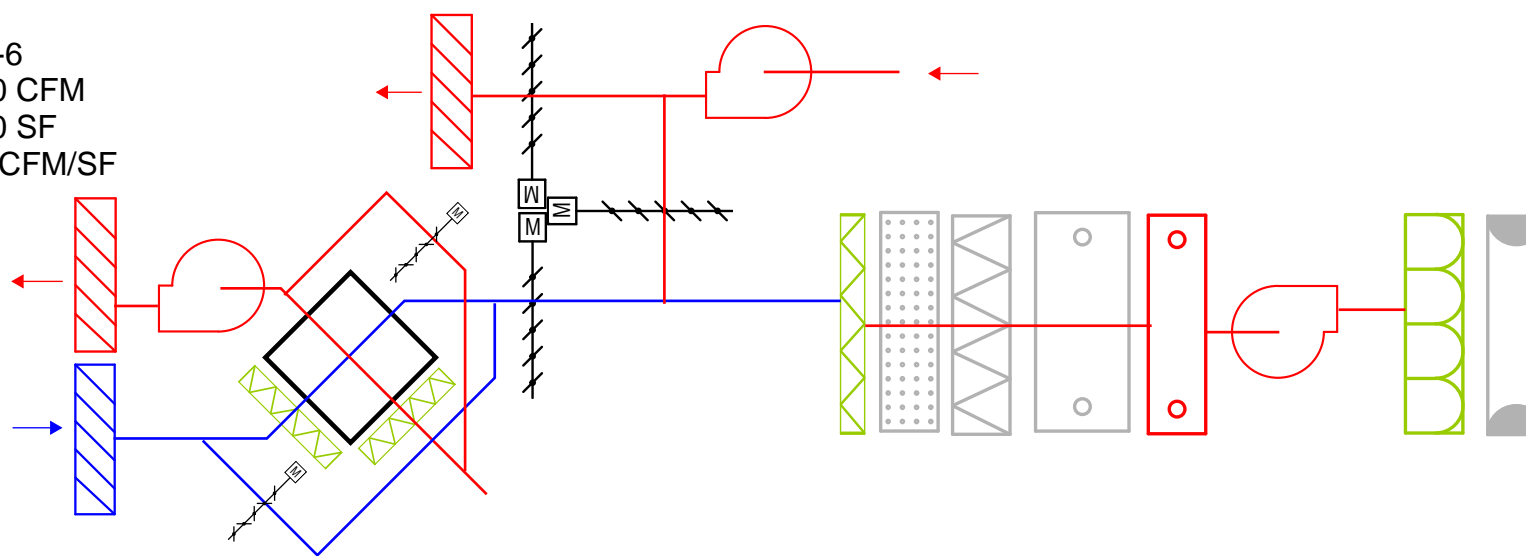
LONG TERM CARE
 OB, L&D
 PRE-OP & OR WAIT
 PACU

AHU-5
 13,300 CFM
 10,037 SF
 1.32 CFM/SF



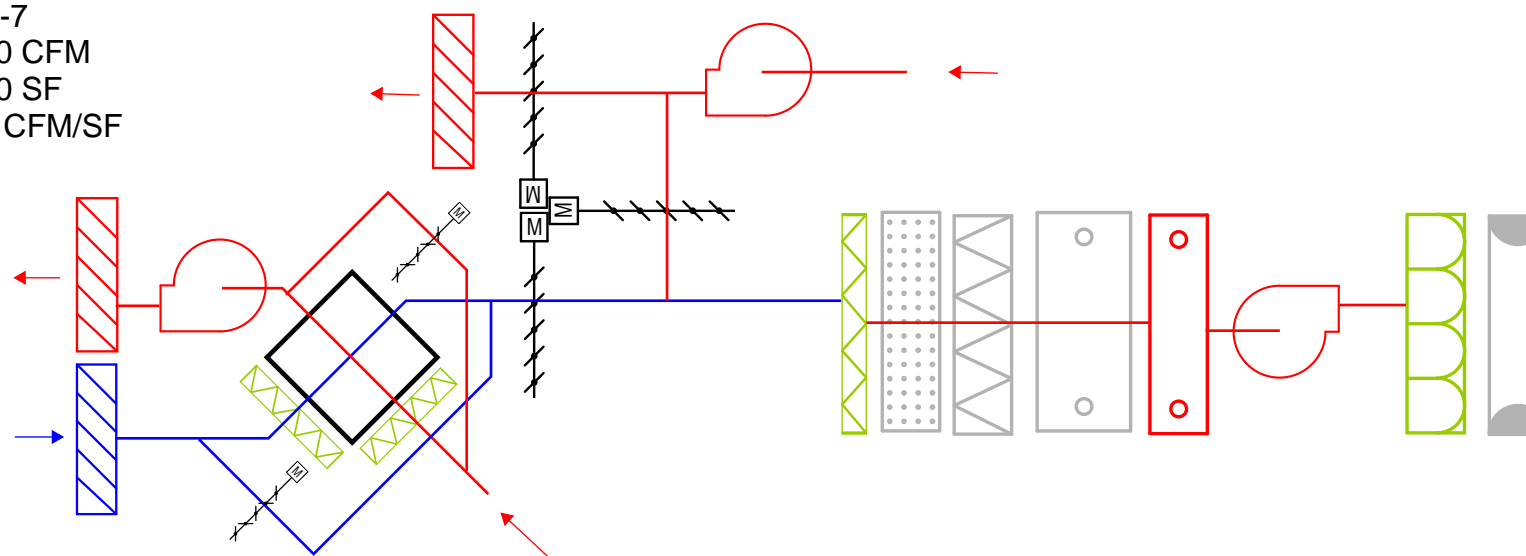
NEUROLOGY
 HIM [OR DOCS]
 PHARMACY
 CONFERENCE
 HR/ADMIN
 DINING

AHU-6
 2,700 CFM
 1,640 SF
 1.65 CFM/SF



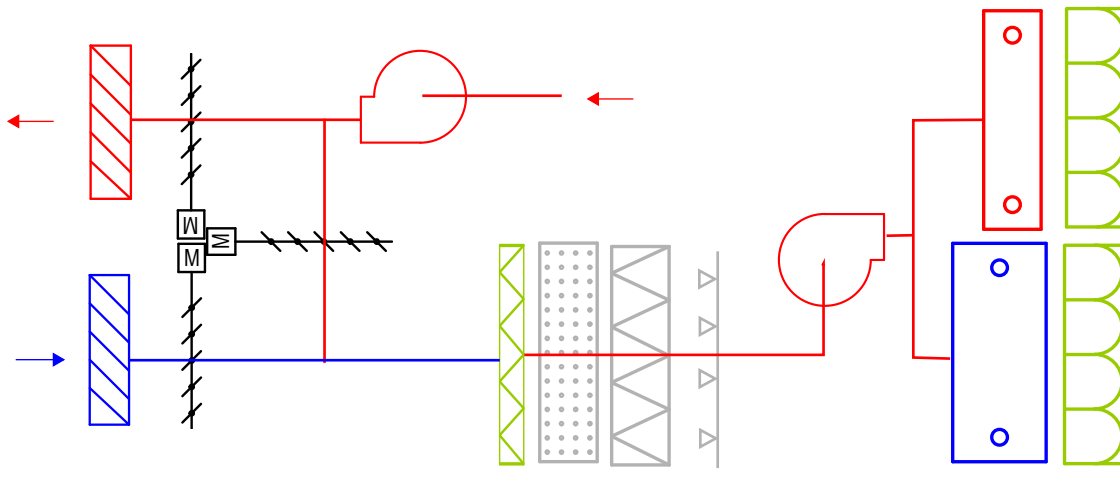
ENDOSCOPY
 OR BREAK RM
 PRE-OP

AHU-7
 9,200 CFM
 8,000 SF
 1.15 CFM/SF



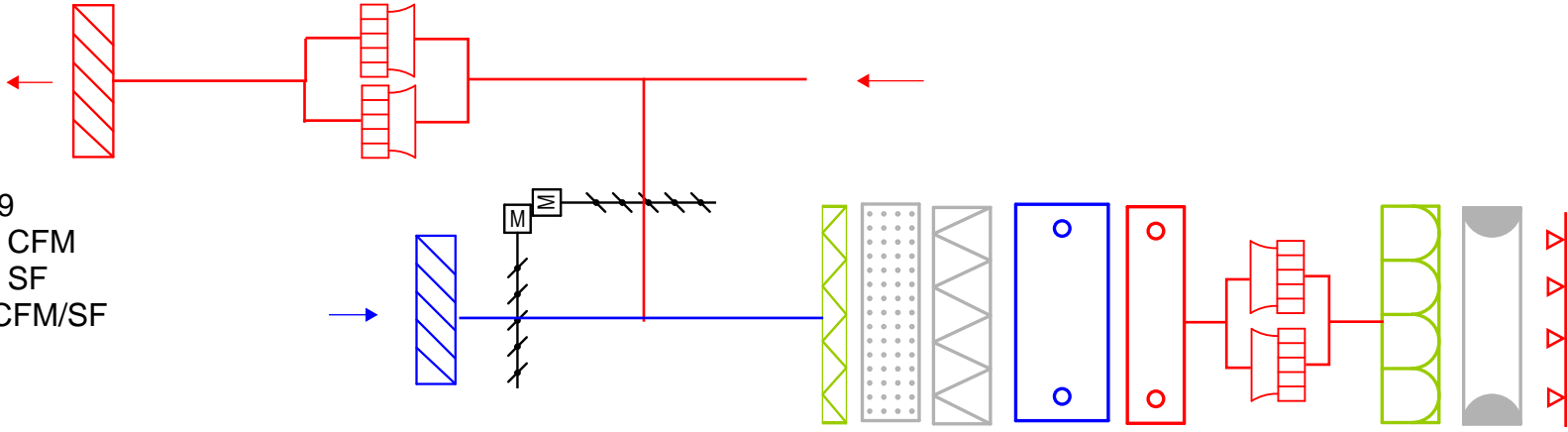
IMAGING/X-RAY
 RADIOLOGY
 STERILE PROCESSING
 LOCKERS
 HOUSEKEEPING &
 DIETARY STORAGE

AHU-8
8,920 CFM
7,136 SF
1.25 CFM/SF



OB RECEPTION
TRIAGE
RESPIRATION
[SPEC CT & HOT
LAB]
KITCHEN
SERVERY
LINENS OFFICE
BODY HOLDING

AHU-9
6,000 CFM
3,645 SF
1.64 CFM/SF



OR SUITE

Deficiency ID	Title	Priority Code	Deficiency Code
E1	Generator Annunciator	0	2,3
E10	Loads and equipment on incorrect branch of power distribution system	1	2,3
E3	Generator Room Clearance	2	2,3
E9	Mislabeled and inconsistent labels for equipment and breakers	2	3
E12	Lack of telecom rooms for full SPH coverage	2	5
E2	Generator Age	3	9,19
E4	Age of Electrical Switchgear	3	3,5,19
E5	Age of Electrical panels	3	2,3,19
E6	Age of Electrical Motor Control Centers	3	3,19
E7	Age of Transformers	3	3,8,19
E8	Clearance in Main Electrical room	3	2,3
E11	Power capacity limitations at west and central areas	4	9
E13	Lack of pathways between telecom rooms	4	5
E14	Lack of cable tray through SPH halls	5	5

Legend	
Priority Year Code	Deficiency Code
0	Emergency or address soon
1	Address within 12 months
2	Address within 2 years
3	Address within 3 years
4	Address within 4 years
5	Address within 5 years
1	Patient Care
2	Life Safety Compliance
3	General Safety
4	Environmental Compliance
5	Program Deficiencies
6	Unmet Supportable Space Needs
7	Handicapped Compliance
8	Energy Conservation
9	Plant Management
10-16	Architectural Maintenance & Repair
17	Structural Maintenance & Repair
18	Mechanical Maintenance & Repair
19	Electrical Maintenance & Repair
20	Utilities Maintenance & Repair
21	Grounds Maintenance & Repair
22	Painting Maintenance & Repair
23	Roof Maintenance & Repair
24	Seismic Mitigation
25	Other

Deficiency ID	Title	Priority Code	Deficiency Code
L8	Manually controlled egress lighting	0	2
L1	Fixtures with bad ballasts	1	19
L2	Broken Light Switch	1	3, 19
L3	Failed Lamps	1	19
L7	Lighting fed from Life Safety branch distribution	3	2
L4	Inconsistent Egress Signage	5	3
L5	Inefficient Light Source(s)	5	8
L6	Elevator cab lighting power source	5	2

Legend	
Priority Year Code	Deficiency Code
0	Emergency or address soon
1	Address within 12 months
2	Address within 2 years
3	Address within 3 years
4	Address within 4 years
5	Address within 5 years
1	Patient Care
2	Life Safety Compliance
3	General Safety
4	Environmental Compliance
5	Program Deficiencies
6	Unmet Supportable Space Needs
7	Handicapped Compliance
8	Energy Conservation
9	Plant Management
10-16	Architectural Maintenance & Repair
17	Structural Maintenance & Repair
18	Mechanical Maintenance & Repair
19	Electrical Maintenance & Repair
20	Utilities Maintenance & Repair
21	Grounds Maintenance & Repair
22	Painting Maintenance & Repair
23	Roof Maintenance & Repair
24	Seismic Mitigation
25	Other

Deficiency ID	Title	Priority Code	Deficiency Code
L8	Manually controlled egress lighting	0	2
L1	Fixtures with bad ballasts	1	19
L2	Broken Light Switch	1	3, 19
L3	Failed Lamps	1	19
L7	Lighting fed from Life Safety branch distribution	3	2
L4	Inconsistent Egress Signage	5	3
L5	Inefficient Light Source(s)	5	8
L6	Elevator cab lighting power source	5	2

Legend			
Priority Year Code		Deficiency Code	
0	Emergency or address soon	1	Patient Care
1	Address within 12 months	2	Life Safety Compliance
2	Address within 2 years	3	General Safety
3	Address within 3 years	4	Environmental Compliance
4	Address within 4 years	5	Program Deficiencies
5	Address within 5 years	6	Unmet Supportable Space Needs
		7	Handicapped Compliance
		8	Energy Conservation
		9	Plant Management
		10-16	Architectural Maintenance & Repair
		17	Structural Maintenance & Repair
		18	Mechanical Maintenance & Repair
		19	Electrical Maintenance & Repair
		20	Utilities Maintenance & Repair
		21	Grounds Maintenance & Repair
		22	Painting Maintenance & Repair
		23	Roof Maintenance & Repair
		24	Seismic Mitigation
		25	Other

L1 Fixtures with bad ballasts
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 1

Deficiency Code:

19



Room Number	Room Name	SQFT of Area (if Applicable)
	Conference Room/HR Entry Vestibule	
	Dining Room	

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Entry - Recessed downlight reported to have bad ballast per Maintenance personnel. Fixture was observed 'off' for duration of site visit.
 Dining - Recessed downlight observed flickering while on site.

Narrative Description of Correction / Resolution:

Replace entire fixture with LED type luminaire.

Remarks

Record drawings indicate that the fixture with bad ballast in the entry way is the only fixture in that space fed from the Life Safety branch. As is, upon loss of normal power, there would be no illumination within the Entryway. See related deficiency L8.

L2 Broken Light Switch
Electrical
Observed Deficiency and Proposed Correction

Priority Code: 1

Deficiency Code: 3, 19



Room Number	Room Name	SQFT of Area (if Applicable)
	Surgery Suite Corridor	

Department or Area
 Surgery

Priority Year

Narrative Description of Deficiency / Problem:

Light switch in corridor was not operable at the time of the site visit.

Narrative Description of Correction / Resolution:

Replace lighting control switch.

Remarks

L3 Failed Lamps

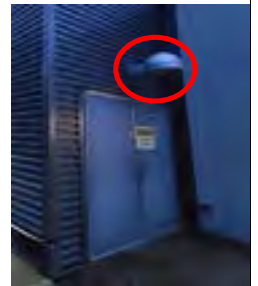
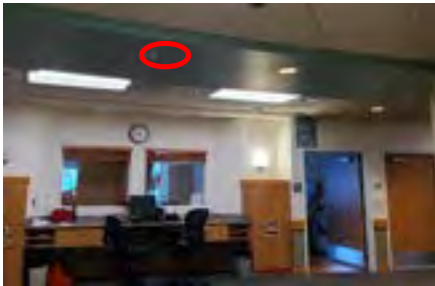
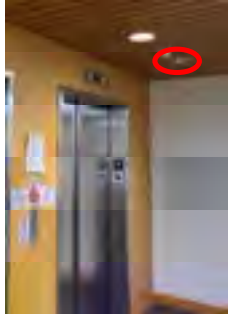
Electrical

Observed Deficiency and Proposed Correction

Priority Code: 1

Deficiency Code:

19



Room Number	Room Name	SQFT of Area (if Applicable)
	SPH - Main Facility	

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Numerous fixtures observed with lamps that have failed or reached end of life. Fixtures were observed 'off' during site visit.
 1st Floor - Recessed 2x4 in Corridor outside Electrical Room
 2nd Floor - Recessed downlights at: Reception in ER lobby, Corridor outside Elevator A, Corridor outside Acute care patient room, and Corridor outside Imaging Suite. Linear fixtures in ER entryway.
 3rd Floor - Recessed 2x4 in Elevator lobby
 Exterior - Linear strip fixture at ER entry, recessed MH downlight at southwest LTC entrance, wall-mounted fixture above doorway on north side.

Narrative Description of Correction / Resolution:

Interim: Provide new lamps in existing fixtures.
 Long Term: Replace entire fixture with LED type luminaire.

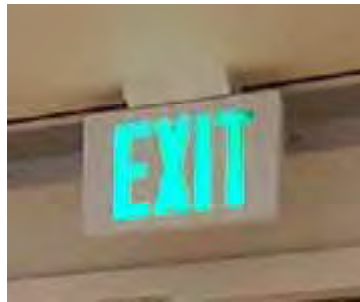
Remarks

L4 Inconsistent Egress Signage
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 5

Deficiency Code:

3



Room Number	Room Name	SQFT of Area (if Applicable)
	SPH - Main Facility	

Department or Area
 Entire Facility

Priority Year

Narrative Description of Deficiency / Problem:

Multiple types of exit signs were observed throughout the Facility with the following variations:
 Types: Non-illuminated (powered) and illuminated (powered)
 Housing Colors: White, Black, Aluminum
 Housing Materials: Plastic, Aluminum
 Lettering Colors: Red and Green
 Accessories: With and without emergency lighting units (bug-eyes)

Narrative Description of Correction / Resolution:

Standardize style of exit signs throughout building.

Remarks

L5 Inefficient Light Source(s)
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 5

Deficiency Code:

8



Room Number	Room Name	SQFT of Area (if Applicable)
	SPH - Main Facility	

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

There are a mix of light sources present throughout the facility. Though most of the fluorescent type fixtures have been retrofitted with LED lamps, there are still fixtures with fluorescent, incandescent, and metal halide light sources.

While retrofitting existing fixtures with LED lamps helps reduce the lighting loads, the fixtures themselves are not as efficient as the equivalent LED fixture types.

Narrative Description of Correction / Resolution:

Replace existing fixtures with LED types.

Remarks

L6 Elevator cab lighting power source

Electrical

Observed Deficiency and Proposed Correction

Priority Code: 5

Deficiency Code:

2



Room Number	Room Name	SQFT of Area (if Applicable)
	Elevators	

Department or Area
 Elevators

Priority Year

Narrative Description of Deficiency / Problem:

The elevator cab lighting is powered from the Critical and Equipment branch distribution systems.

NEC 517 .33 The Life-Safety branch shall supply power as follows:

NEC 517.33 (G): Elevator cab lighting, control, communications, and signal systems

Elevator car lights in photo above are fed from Panel 1CLC, circuit # 9.

Narrative Description of Correction / Resolution:

Provide power to elevator cab lighting from Life Safety distribution equipment.

Remarks

L7 Lighting fed from Life Safety branch distribution

Electrical

Observed Deficiency and Proposed Correction

Priority Code: 3

Deficiency Code:

2



Room Number	Room Name	SQFT of Area (if Applicable)
	Various	

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Various lights within bathrooms and utility spaces are powered from Life Safety branch.
 NEC 517.33 Life Safety Branch - No functions other than those listed in 517.33(A)-(H) shall be connected to the life safety branch.
 517.33(A) Illumination of Means of Egress: Illumination of means of egress, such as lighting required for corridors, passageways, stairways, and landings at exit doors, and all necessary ways of approach to exits.
 Where not required by code to illuminate means of egress, fixtures shall be powered from the Critical or Normal branch distribution systems in accordance with NEC 517.

Narrative Description of Correction / Resolution:

Provide power to fixtures from Critical or Equipment branch distribution equipment.

Remarks

Fixtures in photo above are fed from Life Safety Panel 1XA, circuit # 12 and manually controlled on/off via wall switch (not shown).

L8 Manually controlled egress lighting

Electrical

Observed Deficiency and Proposed Correction

Priority Code: 0

Deficiency Code:

2



Room Number	Room Name	SQFT of Area (if Applicable)
	Conference Room/HR Entryway and Vestibule	

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

There are 3 fixtures within the entryway and vestibule that are controlled via manual on/off wall switch, and powered from the Life Safety branch. It appears that these fixtures are intended to provide illumination along egress path through the entry and vestibule. If these fixtures are not switched 'on' manually, upon loss of normal power, there is no illumination throughout the vestibule, and entryway which is designated as a path of egress.
 NFPA 101 7.8.1.2: Illumination of means of egress shall be continuous during the time that the conditions of occupancy require that the means of egress be available for use, unless otherwise provided in 7.8.1.2.2.

Narrative Description of Correction / Resolution:

Remove manual controller and provide un-switched power from Life Safety branch equipment.
 Alternatively, replace manual controller with an automatic control device complying with NFPA 101 7.8.1.2.2.

Remarks

Record drawings indicate that the fixture with bad ballast in the entry way (not shown in picture above) is the only fixture in that space fed from the Life Safety branch. As is, upon loss of normal power, there would be no illumination within the Entryway. See related deficiency L1.

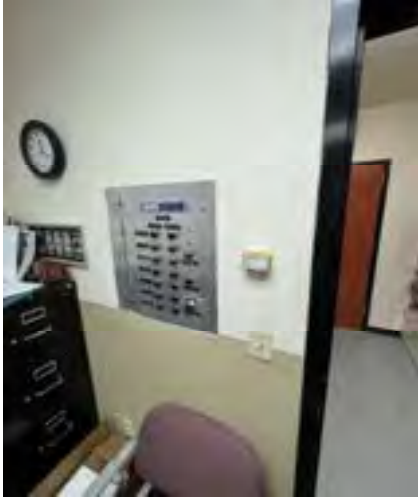
Deficiency ID	Title	Priority Code	Deficiency Code
E1	Generator Annunciator	0	2,3
E10	Loads and equipment on incorrect branch of power distribution system	1	2,3
E3	Generator Room Clearance	2	2,3
E9	Mislabeled and inconsistent labels for equipment and breakers	2	3
E12	Lack of telecom rooms for full SPH coverage	2	5
E2	Generator Age	3	9,19
E4	Age of Electrical Switchgear	3	3,5,19
E5	Age of Electrical panels	3	2,3,19
E6	Age of Electrical Motor Control Centers	3	3,19
E7	Age of Transformers	3	3,8,19
E8	Clearance in Main Electrical room	3	2,3
E11	Power capacity limitations at west and central areas	4	9
E13	Lack of pathways between telecom rooms	4	5
E14	Lack of cable tray through SPH halls	5	5

Legend			
Priority Year Code		Deficiency Code	
0	Emergency or address soon	1	Patient Care
1	Address within 12 months	2	Life Safety Compliance
2	Address within 2 years	3	General Safety
3	Address within 3 years	4	Environmental Compliance
4	Address within 4 years	5	Program Deficiencies
5	Address within 5 years	6	Unmet Supportable Space Needs
		7	Handicapped Compliance
		8	Energy Conservation
		9	Plant Management
		10-16	Architectural Maintenance & Repair
		17	Structural Maintenance & Repair
		18	Mechanical Maintenance & Repair
		19	Electrical Maintenance & Repair
		20	Utilities Maintenance & Repair
		21	Grounds Maintenance & Repair
		22	Painting Maintenance & Repair
		23	Roof Maintenance & Repair
		24	Seismic Mitigation
		25	Other

E1 Generator Annunciator
Electrical
Observed Deficiency and Proposed Correction

Priority Code: 0

Deficiency Code: 2,3



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Generator is not monitoring and reporting required alarms at the annunciator panels. The annunciator points and reporting means are not compliant with current code requirements including NFPA and State of Alaska. The annunciator panel upstairs in the acute care nurse office is associated with this comment as well (no photo).

Narrative Description of Correction / Resolution:

Replace generator monitoring and annunciator equipment.

Remarks

E2 Generator Age
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 3

Deficiency Code: 9,19



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Generator 1 (plan north) was replaced about 2005 and generator 2 (plan south) was replaced in 1983. Generator 2 is quite old and in fair to poor condition.

Narrative Description of Correction / Resolution:

Replace generator 2. Consider relocating and replacing both generators.

Remarks

E3 Generator Room Clearance
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 2

Deficiency Code: 2,3



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

NEC required front and/or top equipment clearance is not always met in this room. This room is very full.

Narrative Description of Correction / Resolution:

Relocate some equipment or replace with smaller footprint enclosures and relayout to provide code required clearances. Reroute pipes, ducts, conduits, and items from above panels that are not permitted in equipment clearance areas.

Remarks

E4 Age of Electrical Switchgear
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 3

Deficiency Code: 3,5,19



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Main sections of switchgear in the main electrical rooms are quite old. Some of the switchgear is from 1974 (MDP and HMDP). Some of the switchgear (CDP4, EQDP6, Sub MDP, and CMDP) were installed in 1983. Some of the switchboards (EQDP8, CDP6, and NMDP) were installed in 1999. There are some lower ampacity distribuion panels that were installed in the late 70's and early 80's in the central mech room and plan north of the main conference room. Parts and components to maintain and repair these will becoming increasingly hard to find.

Narrative Description of Correction / Resolution:

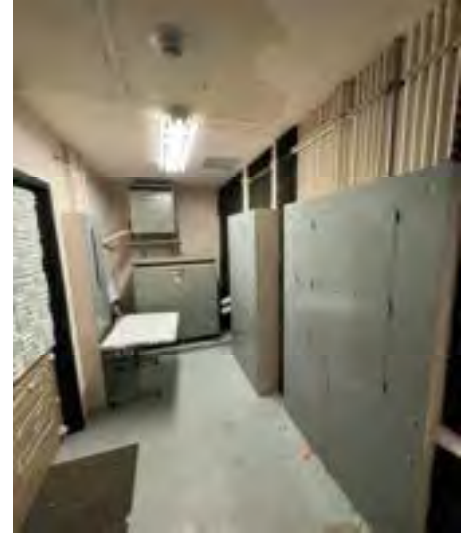
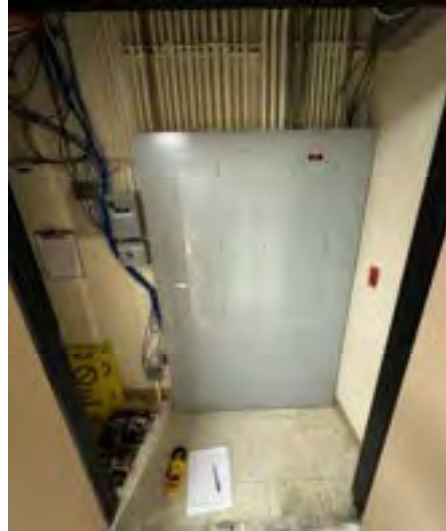
Replace main switchgear with smaller footprint equipment and include electronic trip breakers for coordination requirements.

Remarks

E5 Age of Electrical panels
Electrical
Observed Deficiency and Proposed Correction

Priority Code: 3

Deficiency Code: 2,3,19



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Many panels are from the late 70's and early 80's. Many other panels are from 1999. There are a few panels that have been installed more recently as well. Parts and components to maintain and repair these will becoming increasingly hard to find.

Narrative Description of Correction / Resolution:

Replace panels. Provide electronic trip breakers for coordination.

Remarks

E6 Age of Electrical Motor Control Centers
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 3

Deficiency Code: 3,19



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

The 2 motor control centers in the west mechanical room are quite old (installed in 1983).

Narrative Description of Correction / Resolution:

Replace MCC's with new MCC's or panels and local starter/disconnects or VFD's.

Remarks

E7 Age of Transformers
Electrical
Observed Deficiency and Proposed Correction

Priority Code: 3

Deficiency Code: 3,8,19



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Many transformers were installed in the late 70's and early 80's. These were not energy efficient like transformers manufactured today. These are nearing their end of expected useful life.

Narrative Description of Correction / Resolution:

Replace old transformers and associated feeders.

Remarks

E8 Clearance in Main Electrical room

Electrical

Observed Deficiency and Proposed Correction

Priority Code: 3

Deficiency Code: 2,3



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Electrical rooms do not have the full code required clearance (front and top). The exterior doors on both main elec rooms were somewhat stiff to open. Current code also requires doors swing out and have panic hardware.

Narrative Description of Correction / Resolution:

Replace equipment with smaller footprint enclosures. Revise layout and obstructoins above and in clearance spaces to be code compliant. Replace door hardware and swing on one door.

Remarks

E9 Mislabeled and inconsistent labels for equipment and breakers

Electrical

Observed Deficiency and Proposed Correction

Priority Code: 2

Deficiency Code: 3



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Switchboards, panels, ATS's, transformers, breakers on feeders and panel schedules were often mislabeled and inconsistently labeled. Labels on equipment covers were often different than label on panel schedule or feeder breaker. Label on one transfer switch indicated it was a manual switch when it is an automatic transfer switch.

Narrative Description of Correction / Resolution:

Clarify branches of power distribution system, ATS's, and downstream loads. Relabel items on covers, feeder breakers, and panel schedules. Ideally any renamed panels would have branch circuits relabeled as well. Three switchgear items are labeled with reference to main distribution.

Remarks

E10 Loads and equipment on incorrect branch of power distribution system
Electrical
Observed Deficiency and Proposed Correction

Priority Code: 1

Deficiency Code: 2,3



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Labels on items were also misleading on what equipment branch it is fed from. Various projects over the years have had different naming systems and names of those panels when refed or changed have not always been updated or aligned with branch panel or equipment is actually connected to. Examples from life safety branch include "EPS" and "ELS". Examples from the critical branch include "LA", "LB", "LK", "PA", "PB", "1NA", "2NA", "SDP", "PK-1", "KK-1", "1NH", "RP". Examples from the equipment branch include "MCC-C1", "1NB", "2ND", "1NHA", "2NLA", "2NLB", "1A".

Narrative Description of Correction / Resolution:

Relabel panels, switchboards, and equipment for the branch that it is connected to and served from with a consistent convention for the SPH facility. Revise branch circuits for loads to be on the correct branch of the essential electrical system (ie life safety, critical, equipment, or normal) per specified requirements of the National Electrical Code article 517.

Remarks

Initial focus on code alignment might be just on the life safety branch. Or Life safety and critical branches to start.

E11 Power capacity limitations at west and central areas

Electrical

Observed Deficiency and Proposed Correction



Priority Code: 4

Deficiency Code: 9



Room Number	Room Name	SQFT of Area (if Applicable)
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Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

Switchboards and panels rated more than 250A are primarily located in the main electrical room areas in the plan southeast area of the SPH facility. Switchboards and panels at 480Y/277V are also primarily located in this same area. Most distributed panels around SPH are 225A or smaller and typically 208Y/120V. This limits power capacity for additional equipment and loads without bringing feeders to a project area on that project.

Narrative Description of Correction / Resolution:

Create 480V distribution infrastructure on the essential electrical system (EES) throughout areas at SPH. Ideally this would be on both floors but one floor could possibly be served from either above or below. Having 480V EES infrastructure at SPH and on both floors would minimize impacts on other departments during remodels. To save space in ceiling bus ducts could be considered. The 480V feeders and infrastructure would be for 4 branches: Life Safety, Critical, Equipment, and Normal.

Remarks

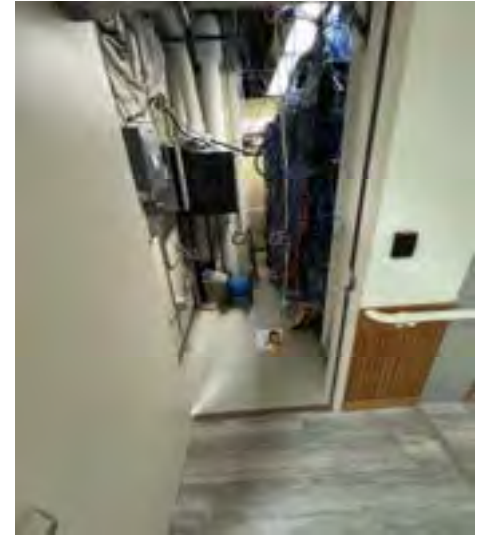
E12 Lack of telecom rooms for full SPH coverage

Electrical

Observed Deficiency and Proposed Correction

Priority Code: 2

Deficiency Code: 5



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

There are some telecom rooms but not enough rooms and the existing rooms are not large enough to properly cover SPH entire facility. The majority of the telecom rooms are on the lower floor and some are a closet or space in a nurses area. Most of the available space for additional comm cabling and equipment is in the newer rooms and the main server room. Some of the existing telecom spaces are too small and do not have proper room and equipment access clearances. UTP copper network cabling is limited to 290 feet to pass standard tests for cable bandwidths. With limited rooms and capacity, cabling would be too long to pass cable tests without building additional telecommunication infrastructure.

Narrative Description of Correction / Resolution:

Provide 2-3 additional telecom rooms with racks and dedicated front and rear rack and equipment access. Rooms would be sized and laid out per BISC standards and recommendations.

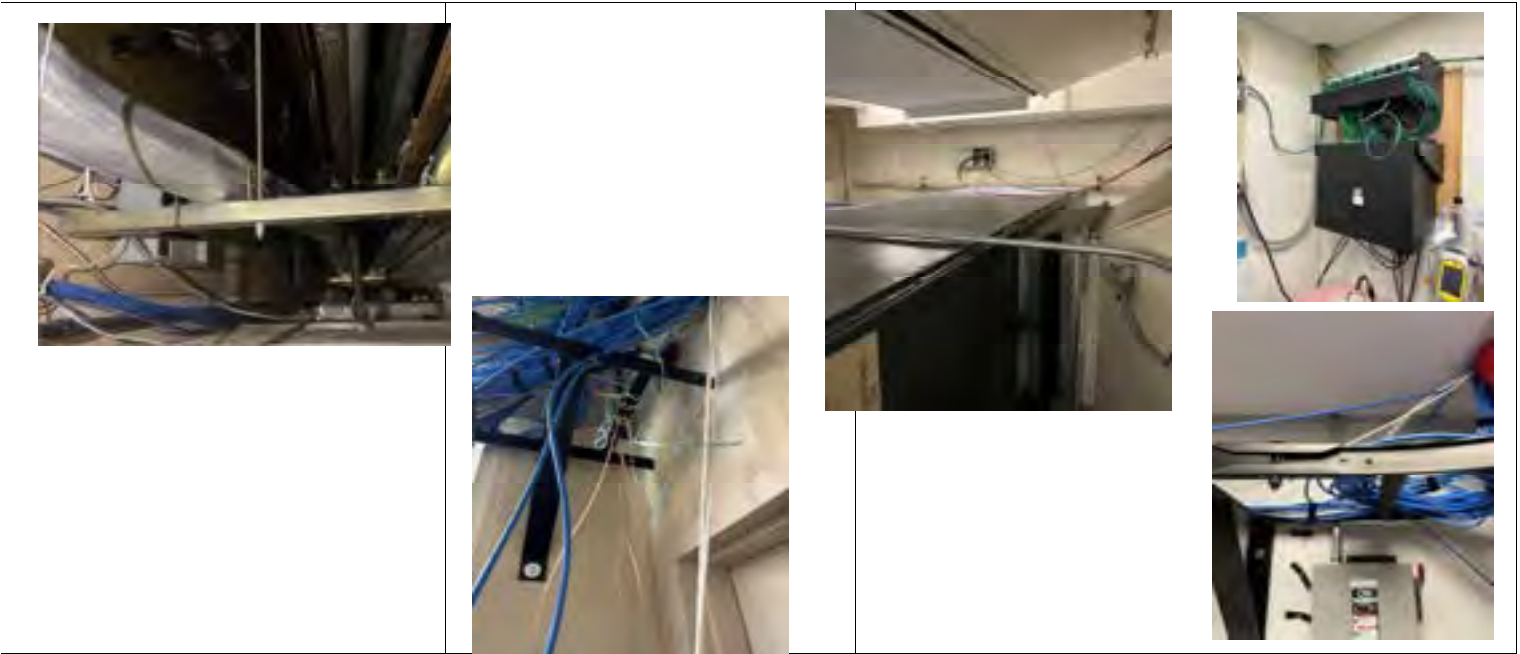
Remarks

E13 Lack of pathways between telecom rooms

Electrical

Observed Deficiency and Proposed Correction

Priority Code: 4 Deficiency Code: 5



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

There are very limited conduits and cable tray pathways between the existing telecom rooms, closets, and cabinets added in nurse spaces. There are some sections of raceways and cable tray but many of the backbone cables are routed in accessible ceiling spaces and sometimes supported by j-hooks.

Narrative Description of Correction / Resolution:

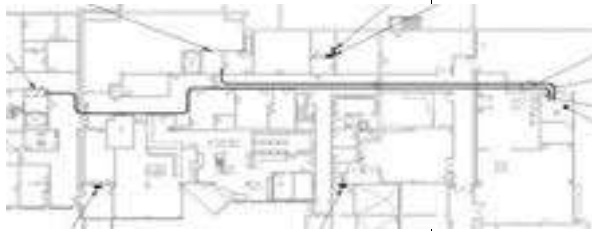
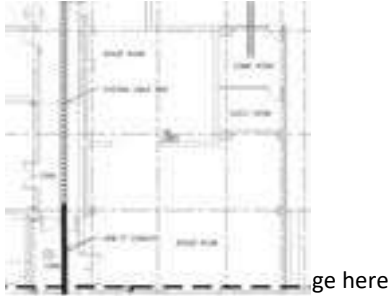
Provide conduit and cable tray pathways between telecom rooms. Ideally there would be multiple conduits between each and each conduit pathway would have multiple innerducts which would allow for flexibility and ease during moves, revisions, updates, and remodels.

Remarks

E14 Lack of cable tray through SPH halls
 Electrical
 Observed Deficiency and Proposed Correction

Priority Code: 5

Deficiency Code: 5



Room Number	Room Name	SQFT of Area (if Applicable)

Department or Area

Priority Year

Narrative Description of Deficiency / Problem:

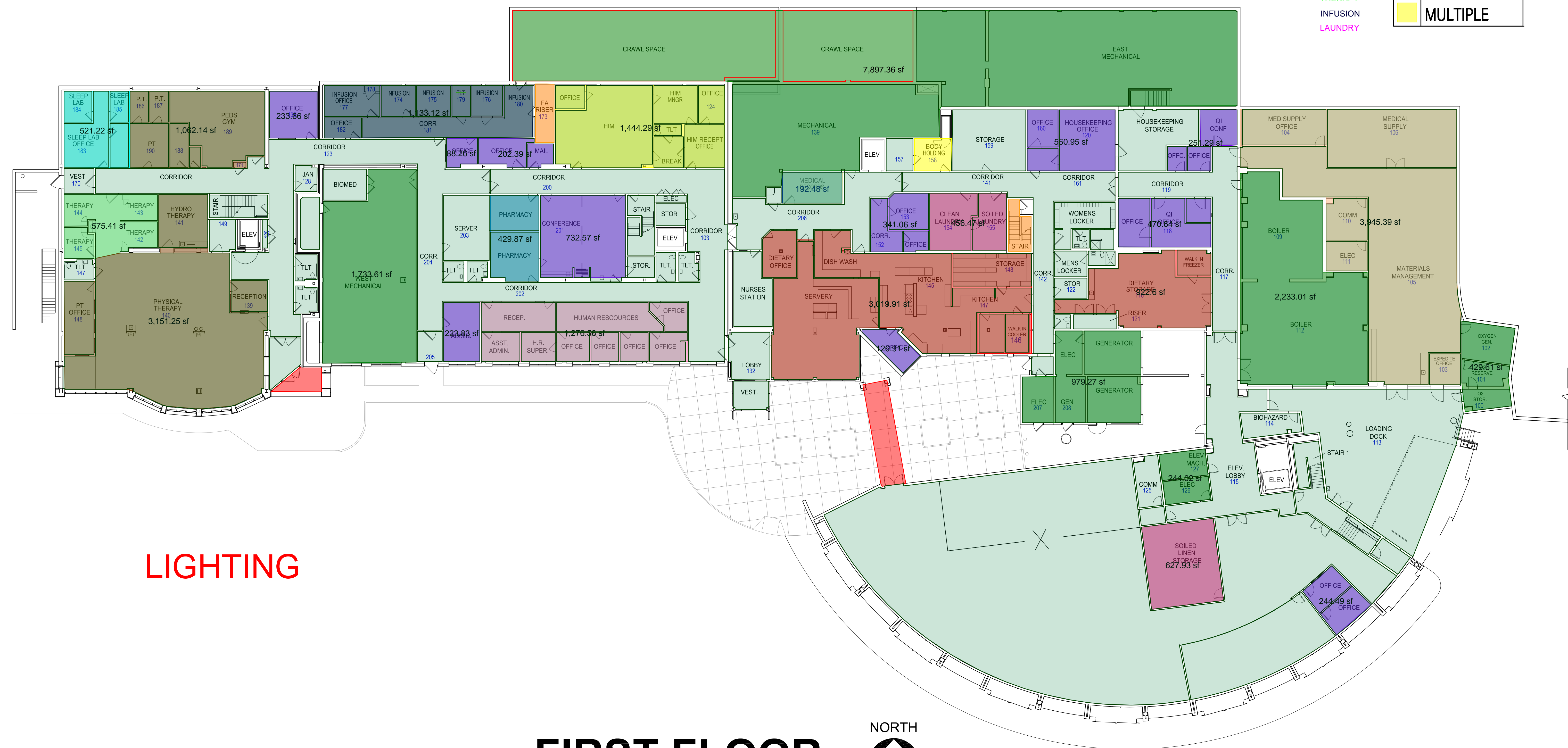
There is limited cable tray in hallways and accessible spaces at SPH. Sections that do exist are generally very full. The limited locations and cable tray capacity limit the ability in remodel projects to utilize existing infrastructure. This was especially true in the long term care addition.

Narrative Description of Correction / Resolution:

Provide conduit and cable tray pathways through SPH hallways for use during project remodels.

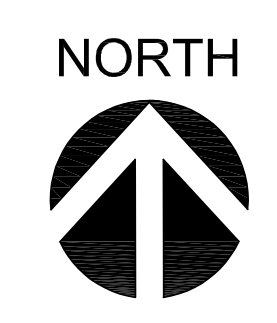
Remarks

MECHANICAL / ELECTRICAL		LIGHT SOURCE(S)	
MATERIAL MANAGEMENT	FLUORESCENT	PHYSICAL THERAPY	LED (YELLOW)
ADMIN	LED	PHYSICAL THERAPY	LED RETROFIT
NUTRITION SERVICES	METAL HALIDE	PHARMACY	MULTIPLE
HEALTH INFORMATION MANAGEMENT		SLEEP THERAPY	
PHYSICAL THERAPY		THERAPY	
HUMAN RESOURCES		INFUSION	
PHARMACY		LAUNDRY	
SLEEP THERAPY			
THERAPY			
INFUSION			
LAUNDRY			



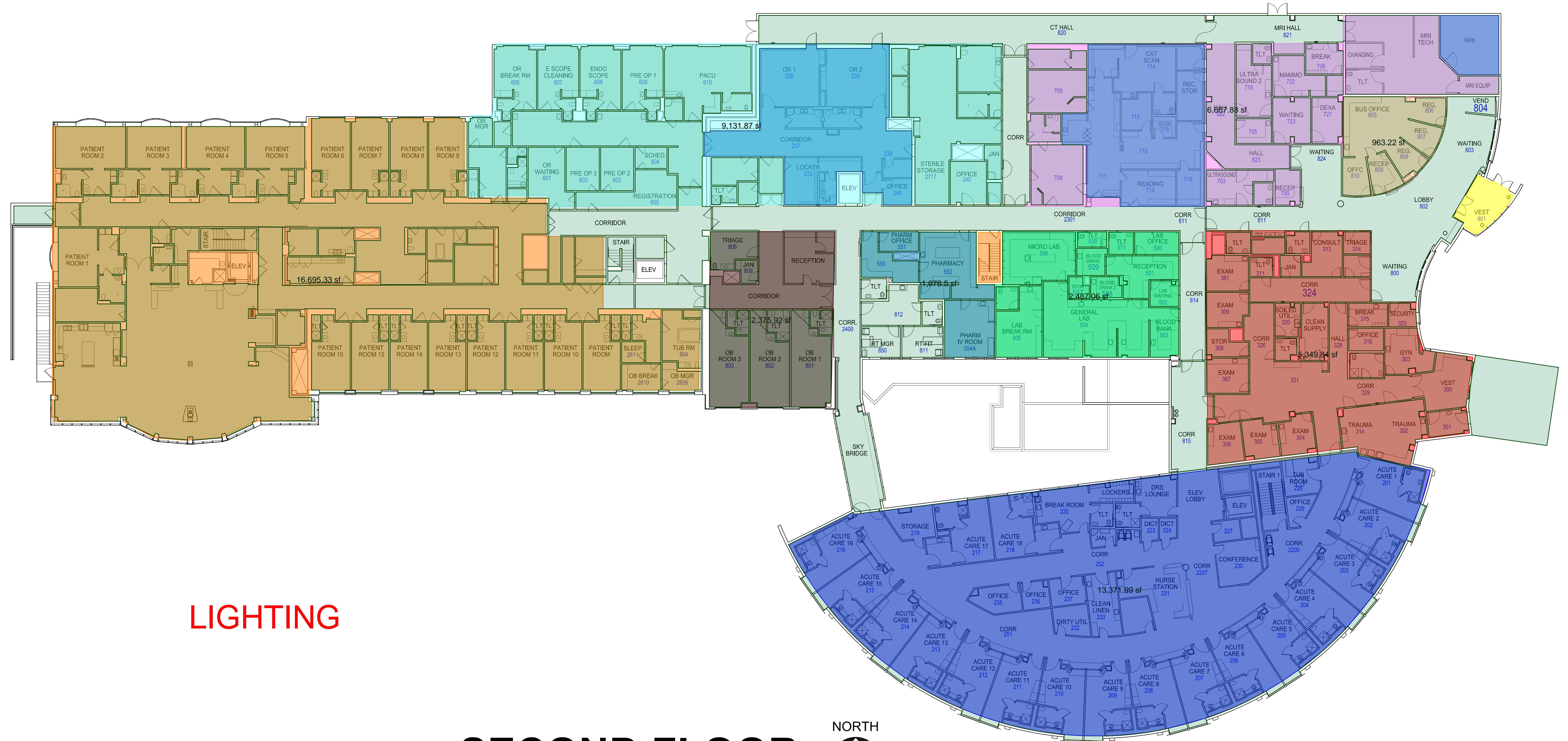
LIGHTING

FIRST FLOOR



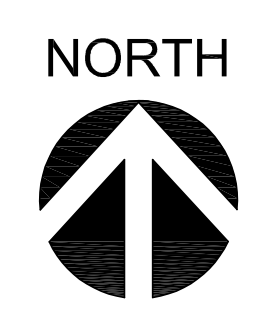
- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

LIGHT SOURCE(S)	
	FLUORESCENT
	LED
	LED RETROFIT
	MULTIPLE

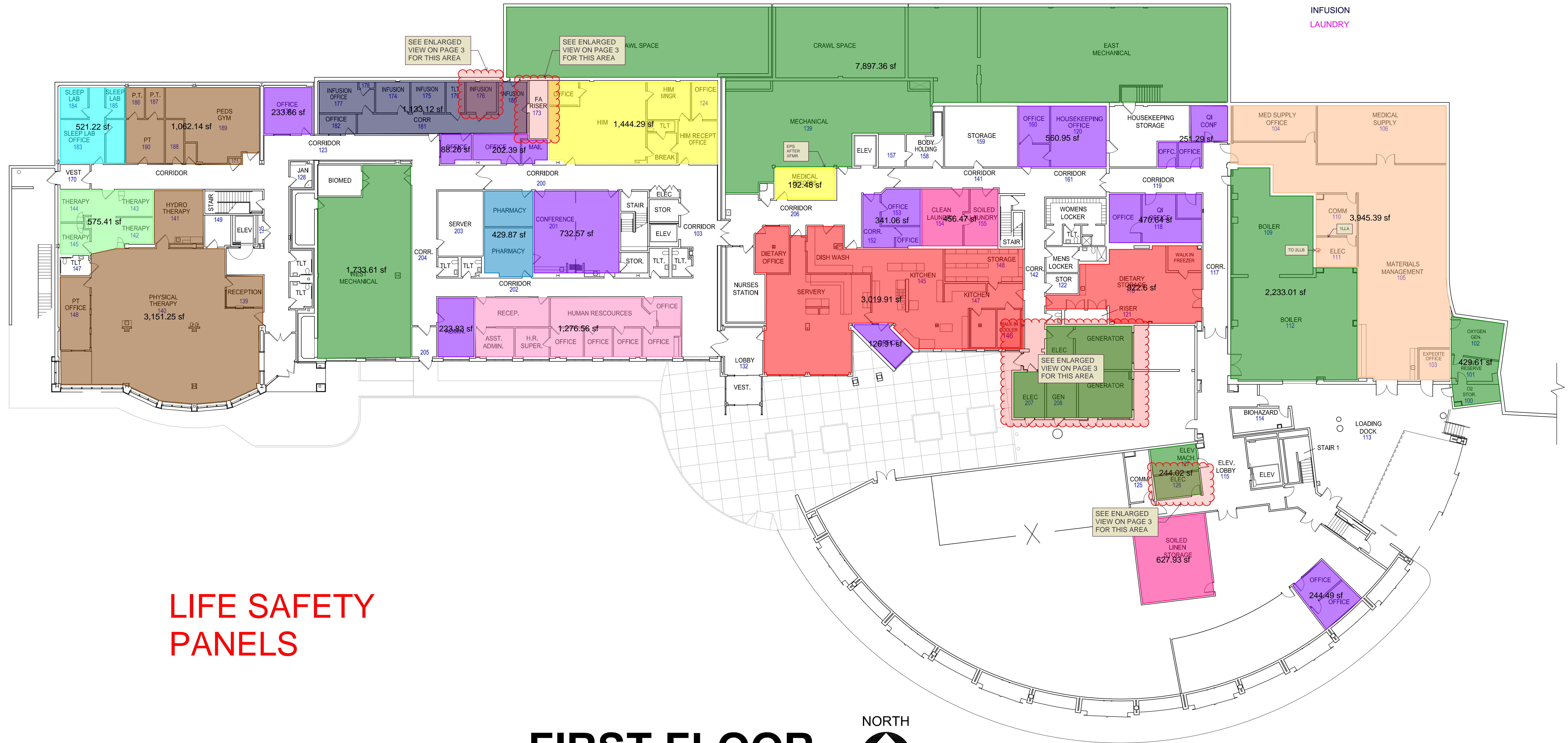


LIGHTING

SECOND FLOOR

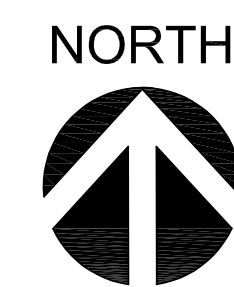


- MECHANICAL / ELECTRICAL
- MATERIAL MANAGEMENT
- ADMIN
- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
- HUMAN RESOURCES
- PHARMACY
- SLEEP THERAPY
- THERAPY
- INFUSION
- LAUNDRY

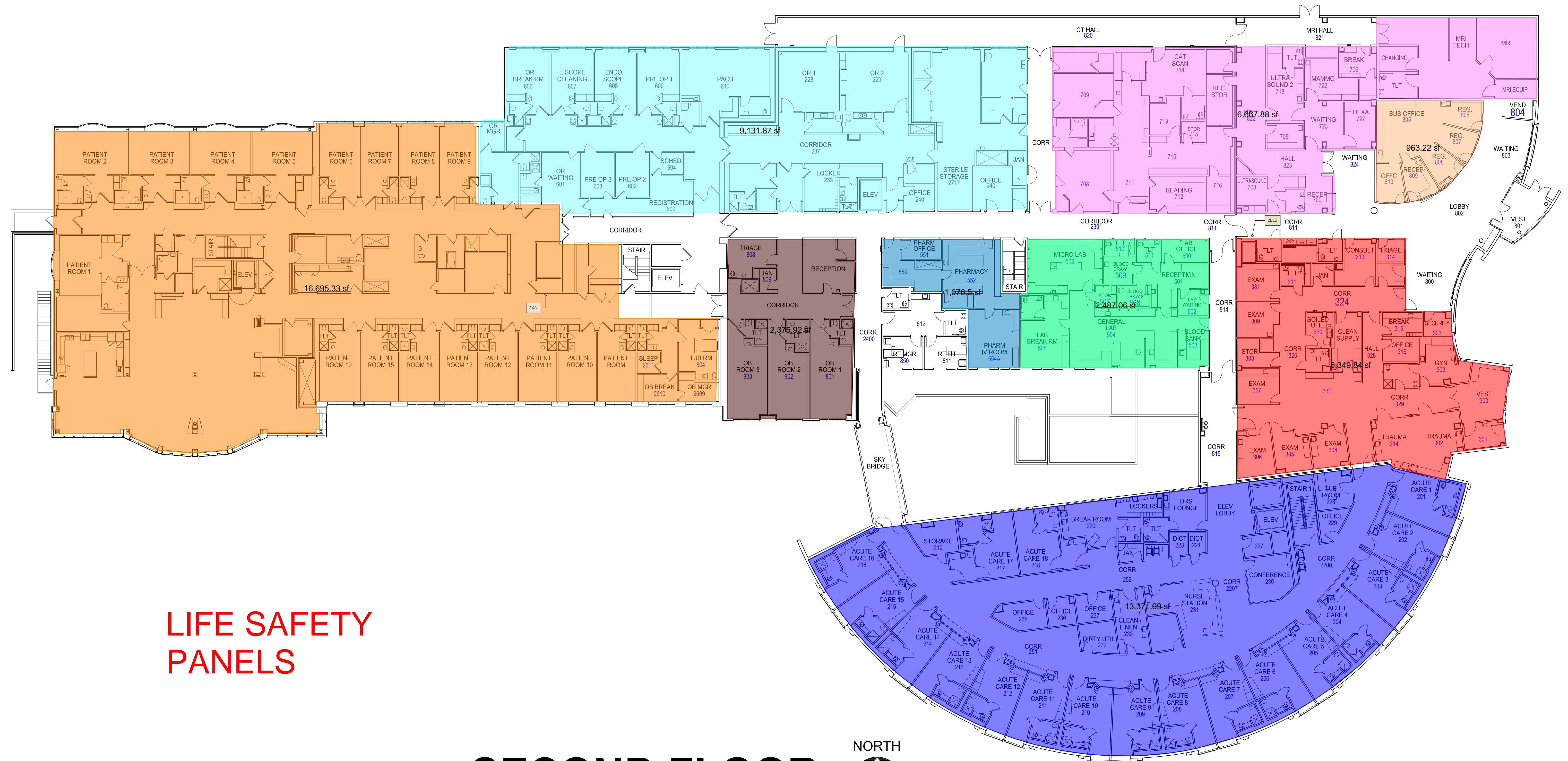


**LIFE SAFETY
PANELS**

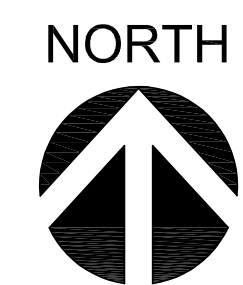
FIRST FLOOR



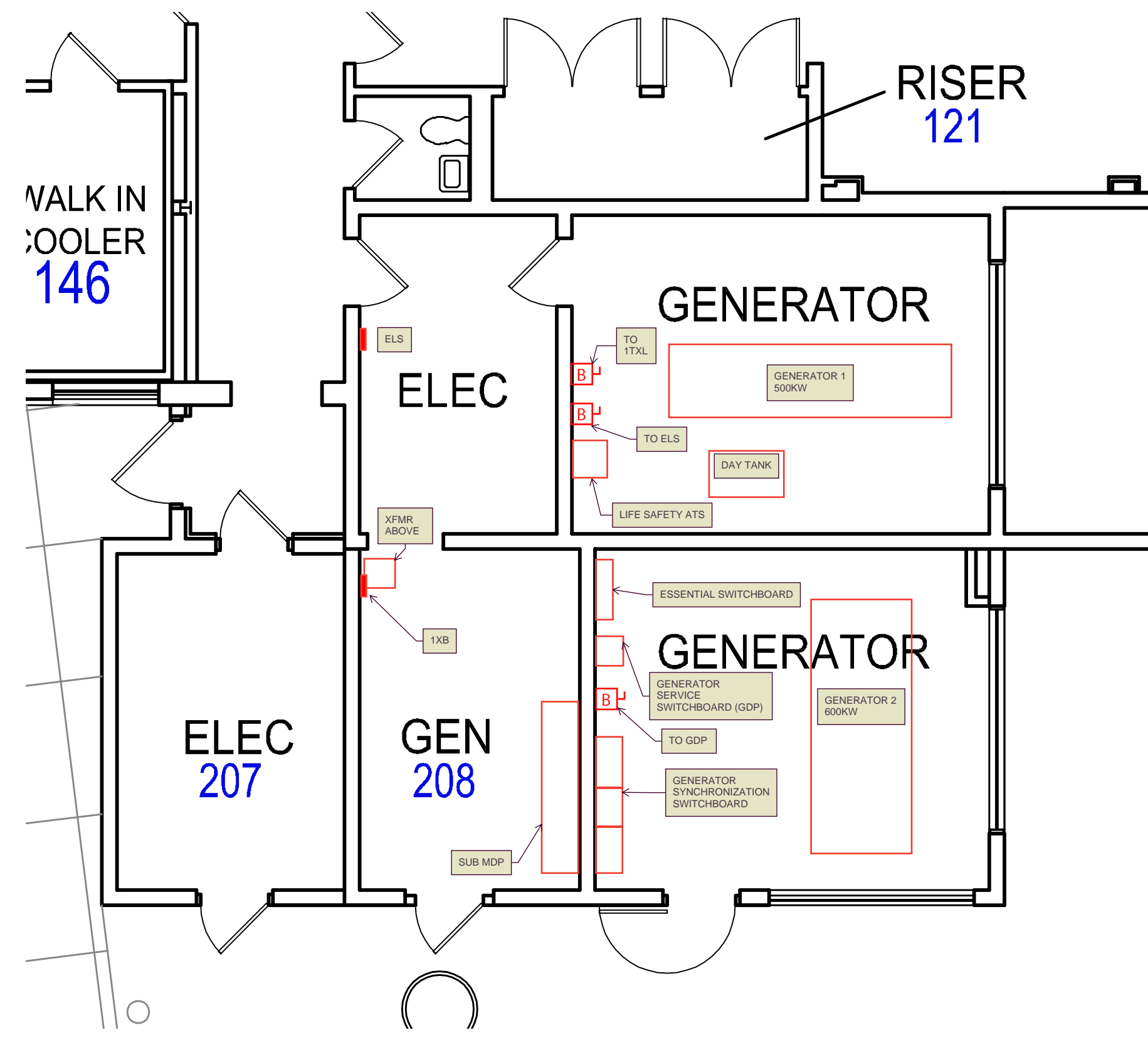
- EMERGENCY
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- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION



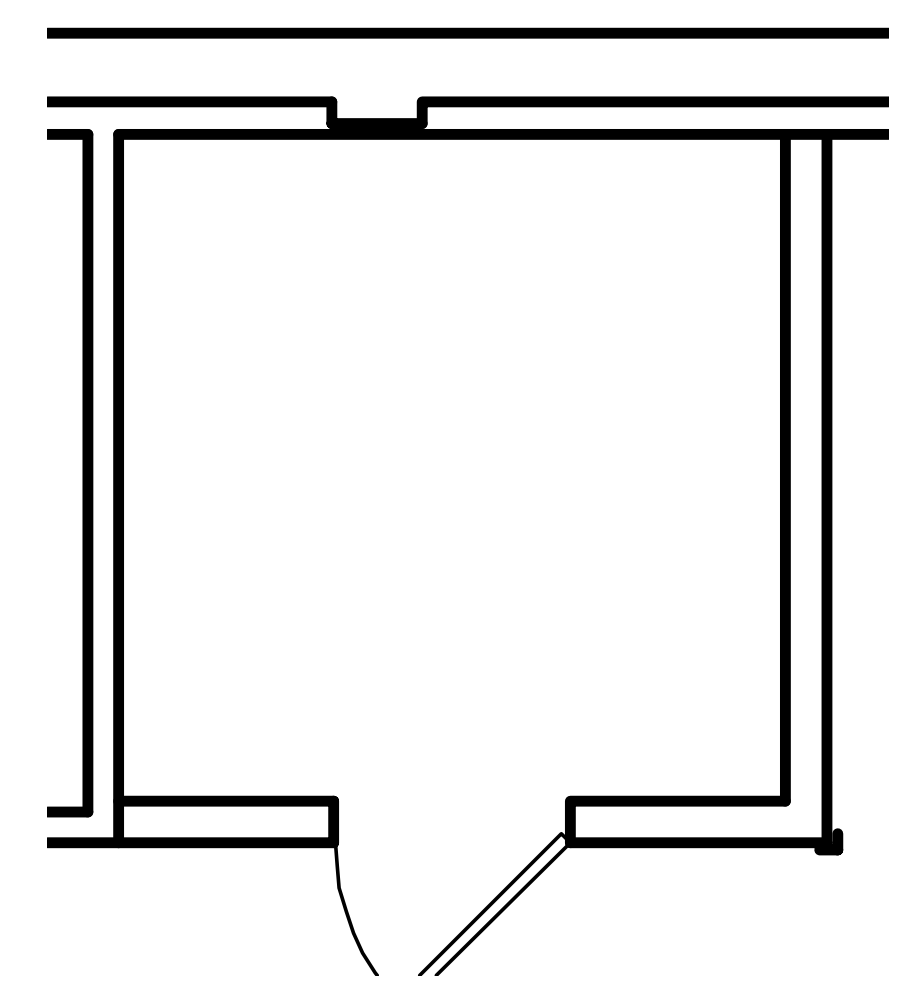
SECOND FLOOR



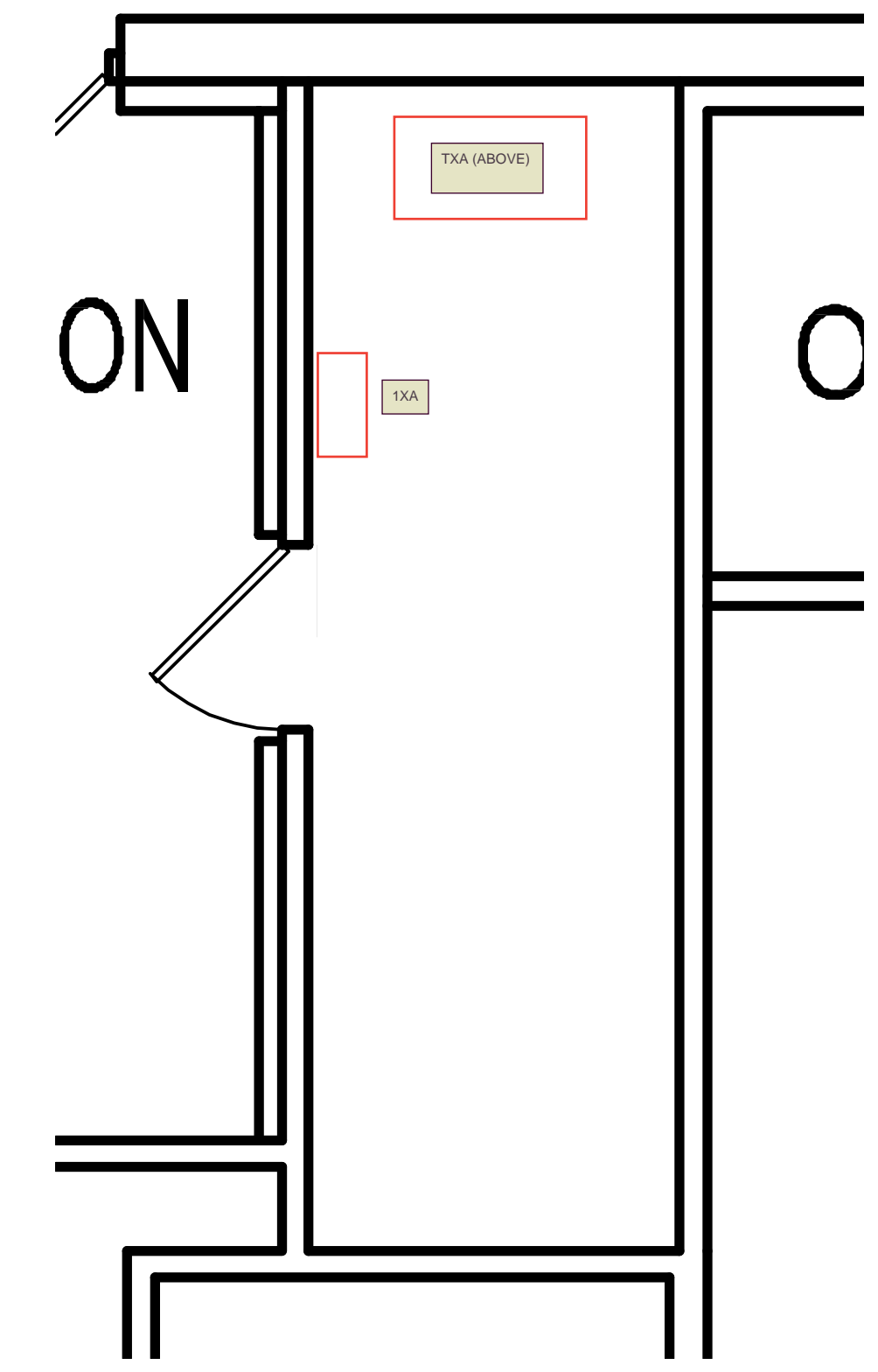
GENERATOR AND ELECTRICAL SPACE FIRST FLOOR



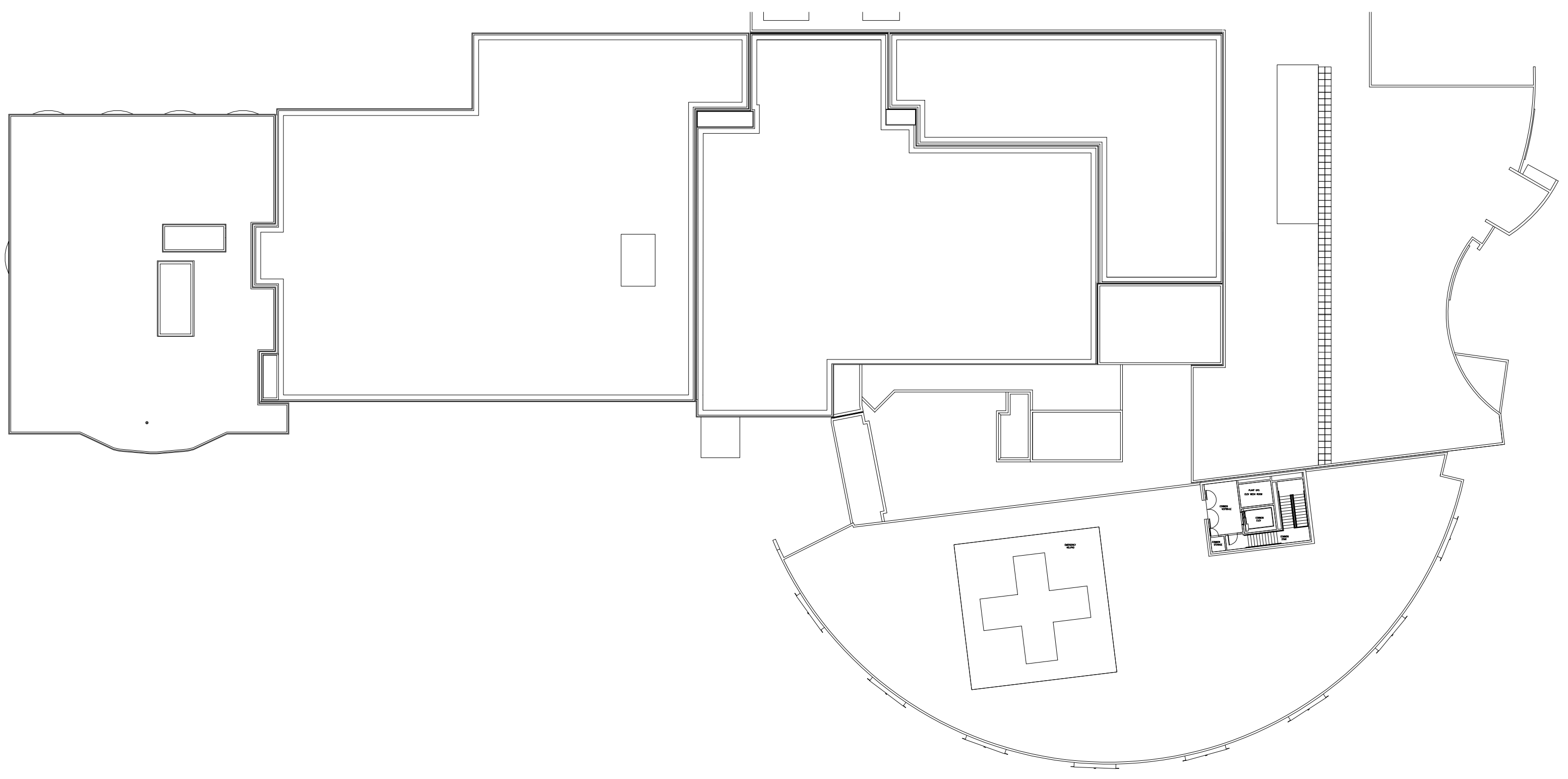
INFUSION 176 FIRST FLOOR



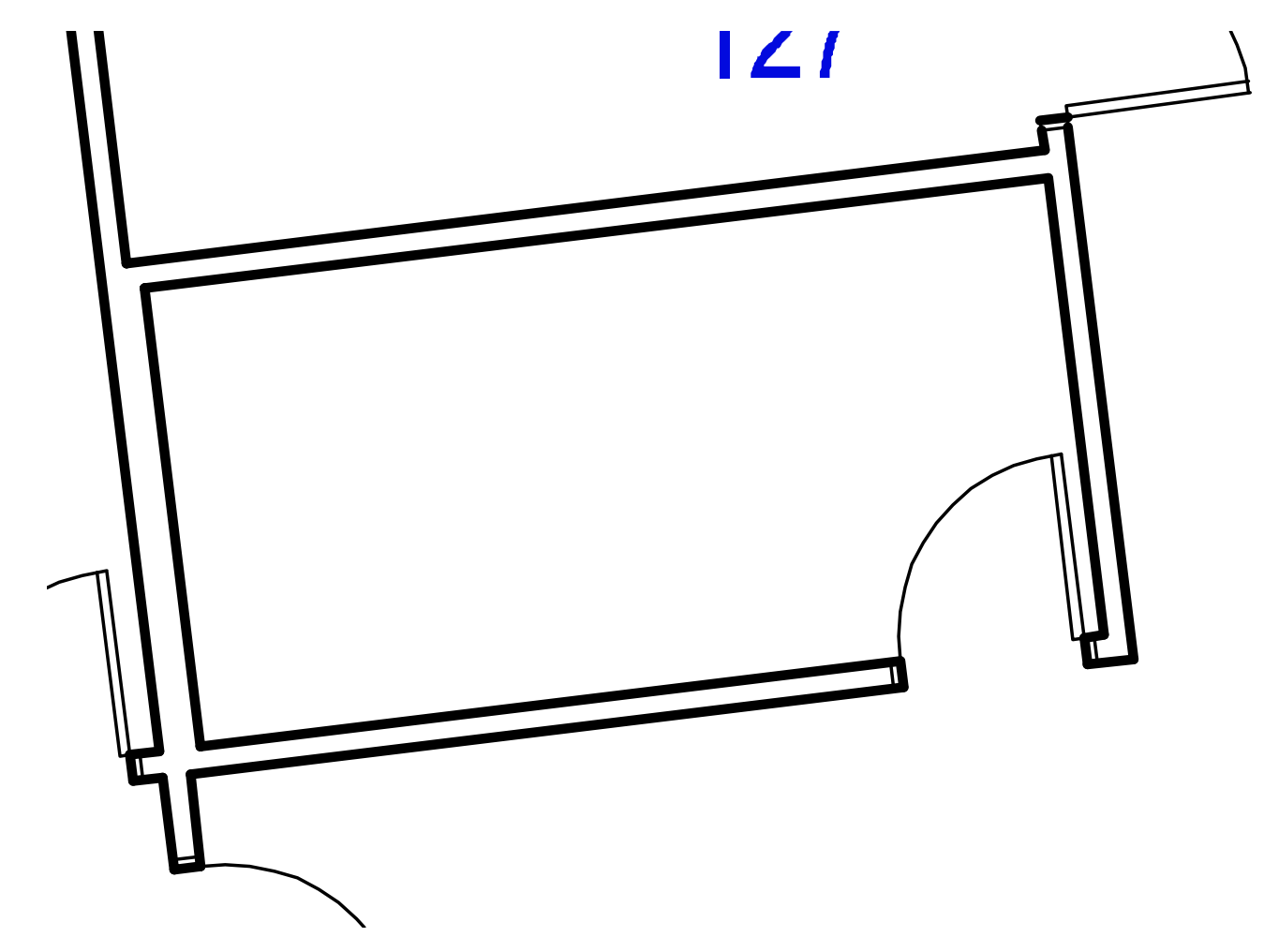
FA RISER 173 FIRST FLOOR



HOSPITAL ROOF PLAN

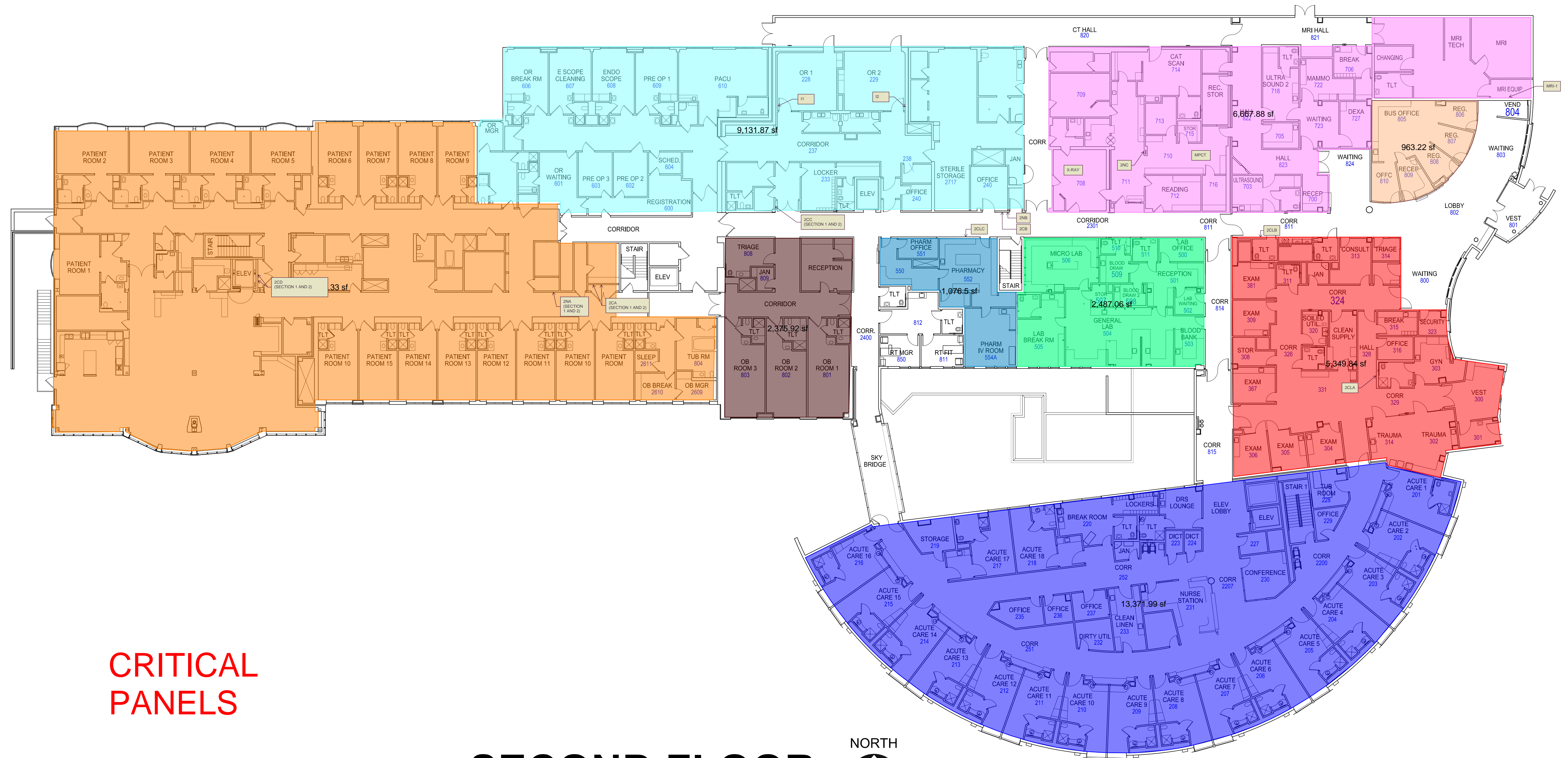


ELECTRICAL 126 FIRST FLOOR



LIFE SAFETY PANELS

- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

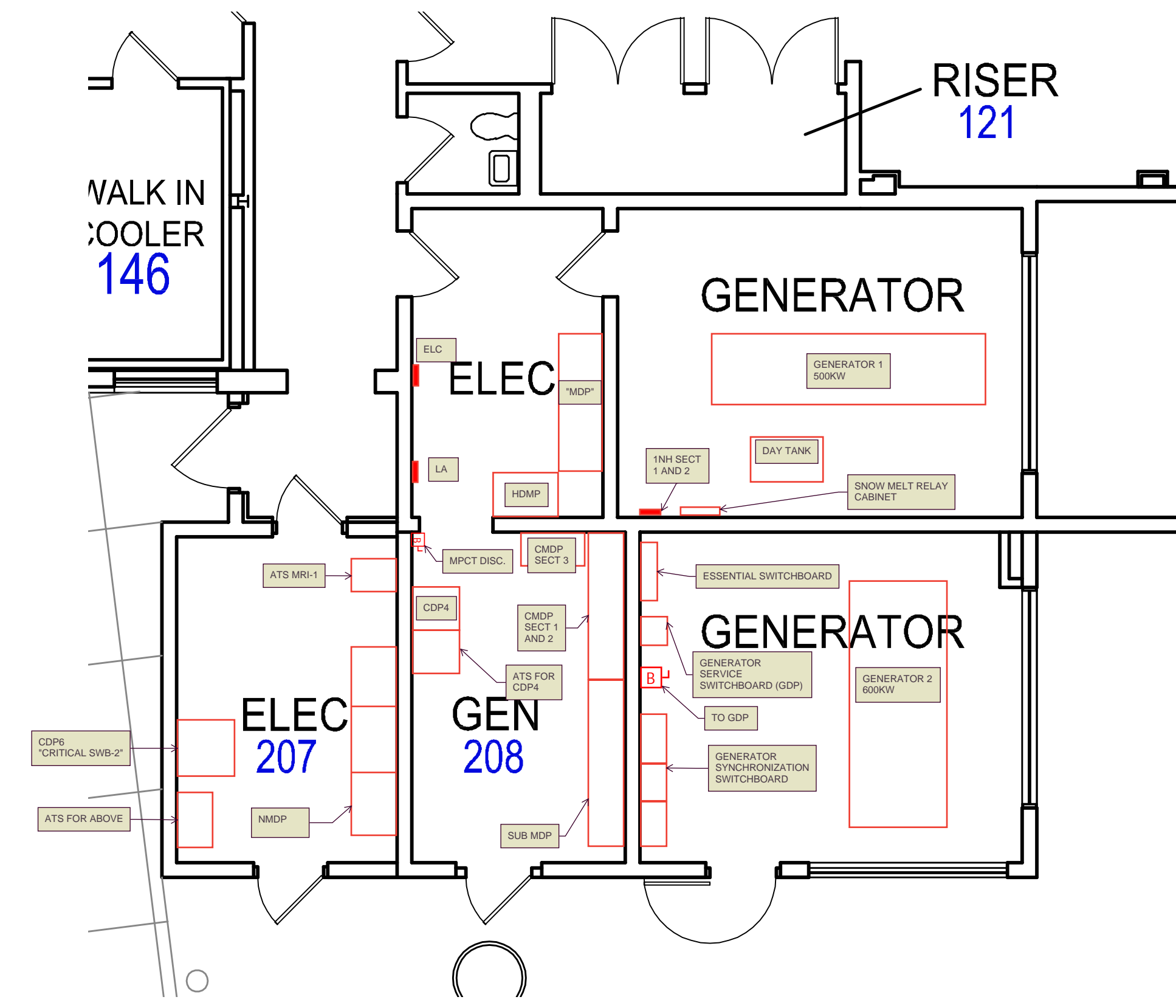


**CRITICAL
PANELS**

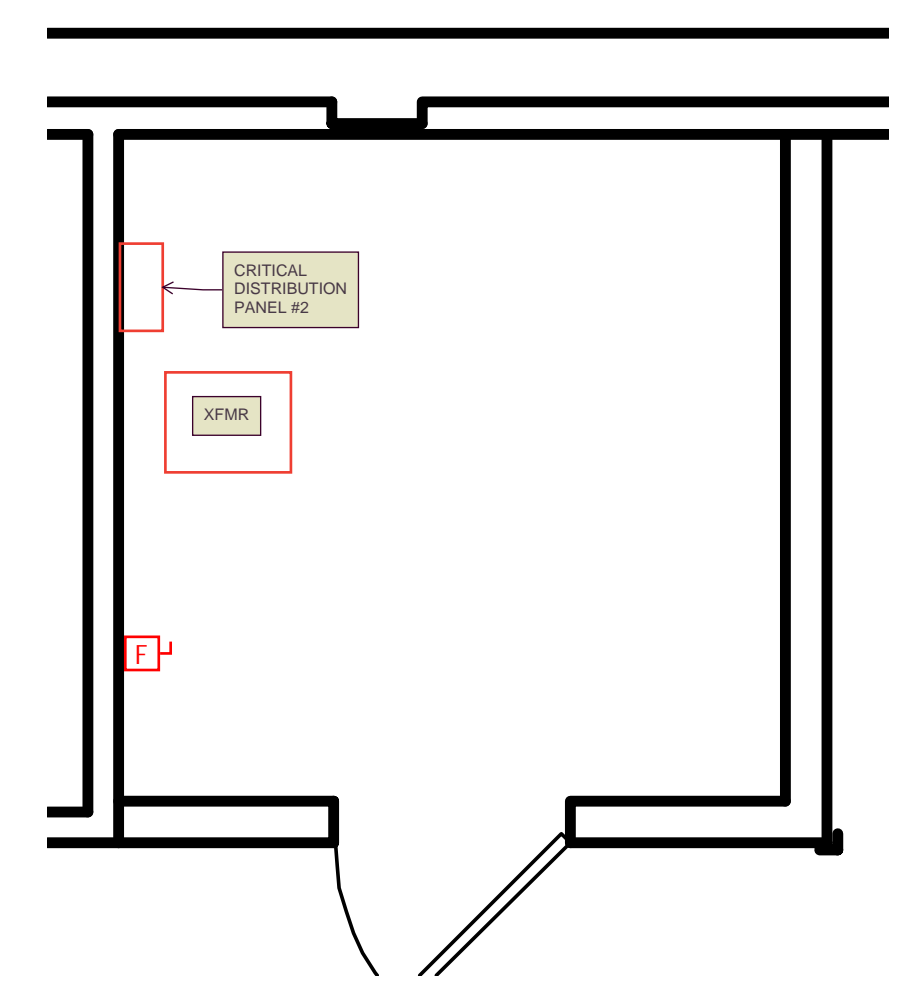
SECOND FLOOR



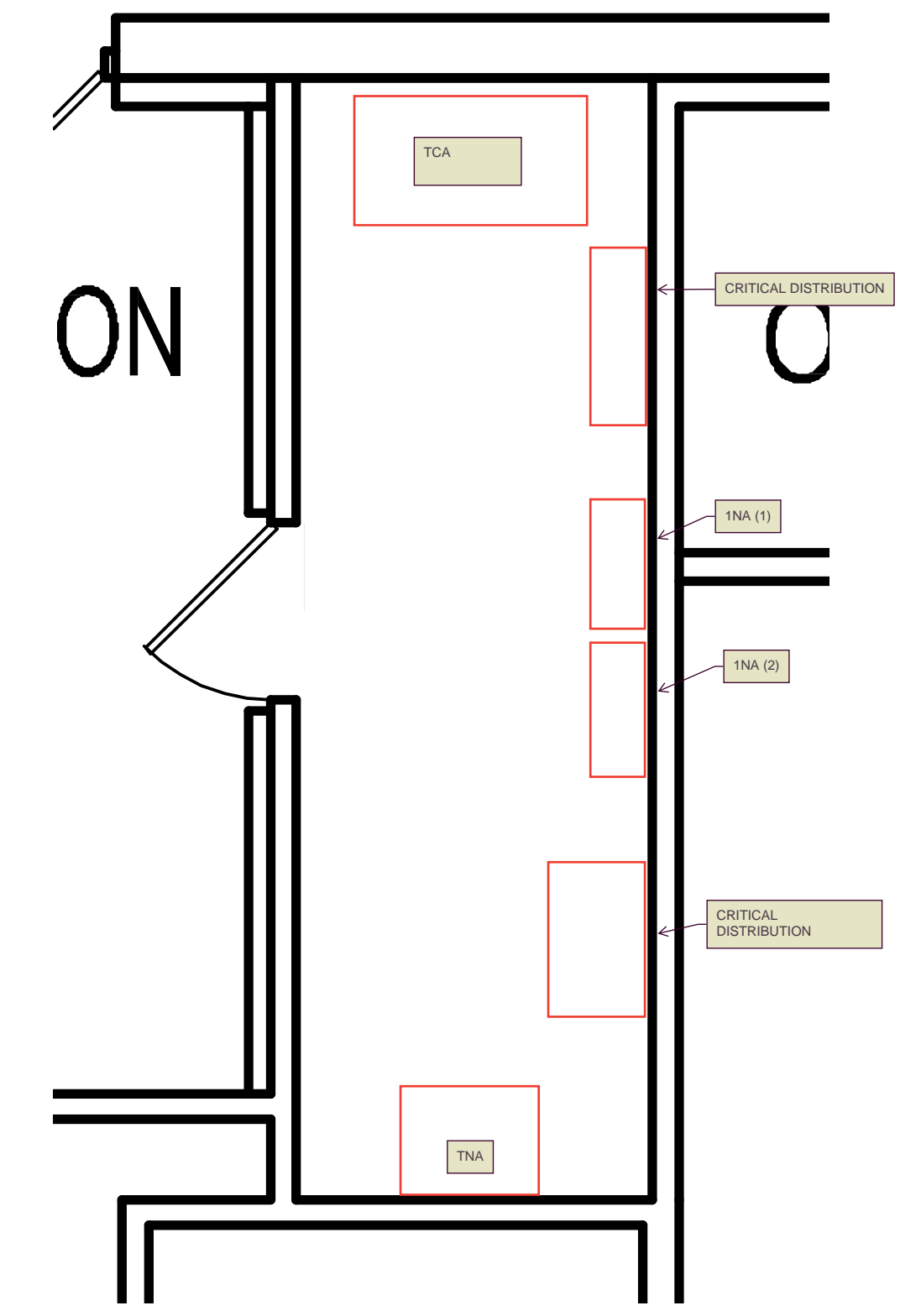
GENERATOR AND ELECTRICAL SPACE FIRST FLOOR



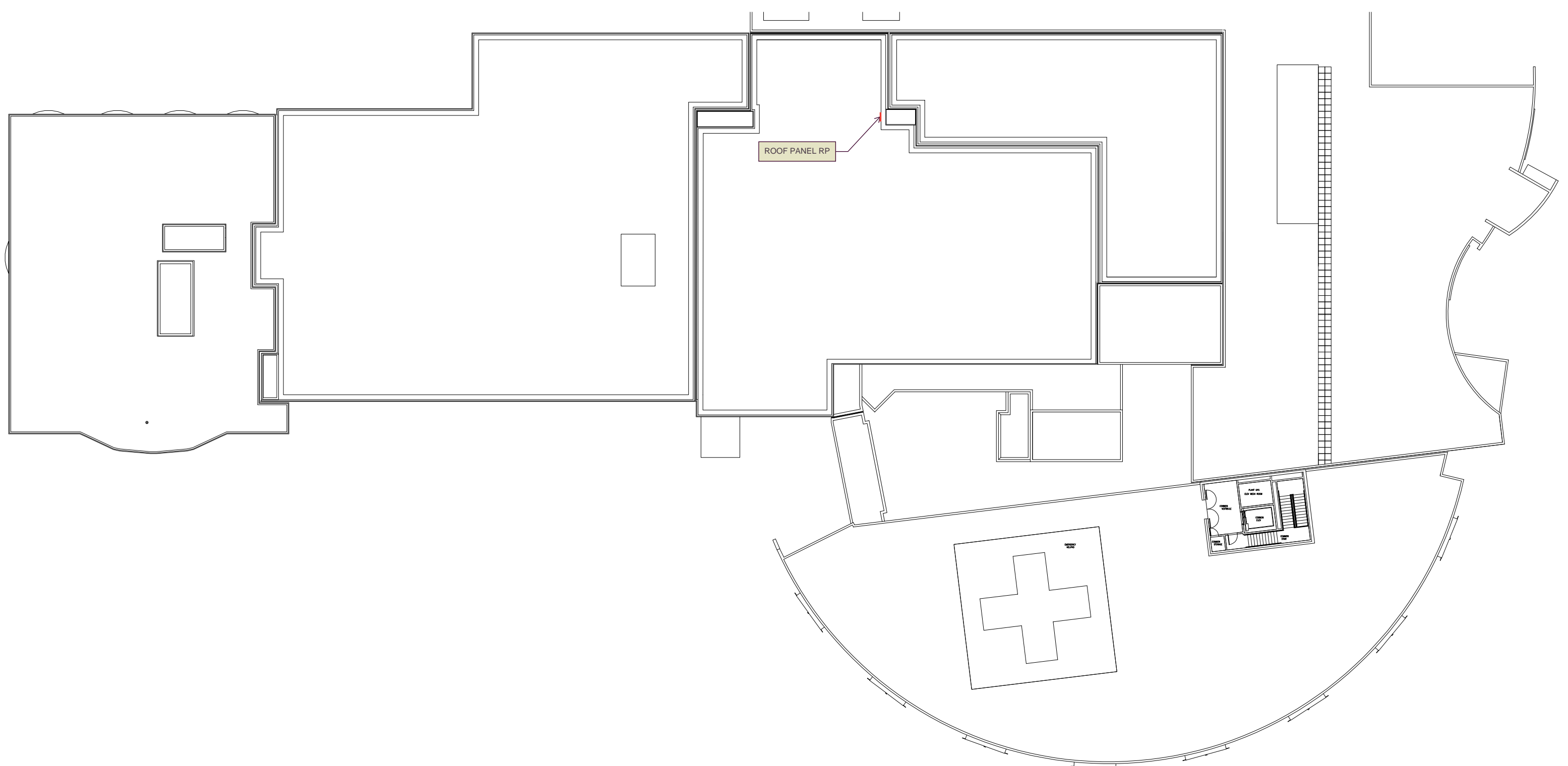
INFUSION 176 FIRST FLOOR



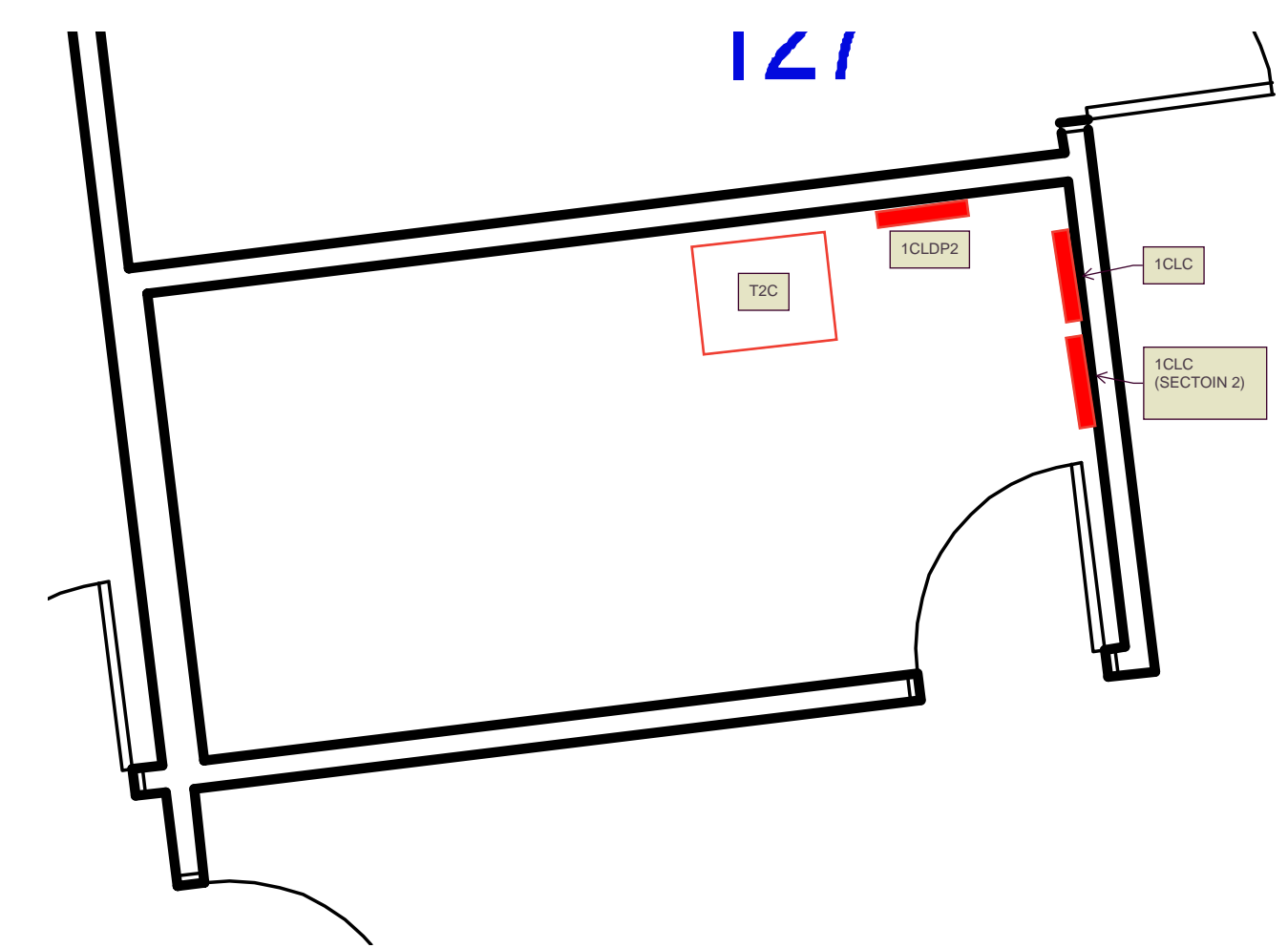
FA RISER 173 FIRST FLOOR



HOSPITAL ROOF PLAN

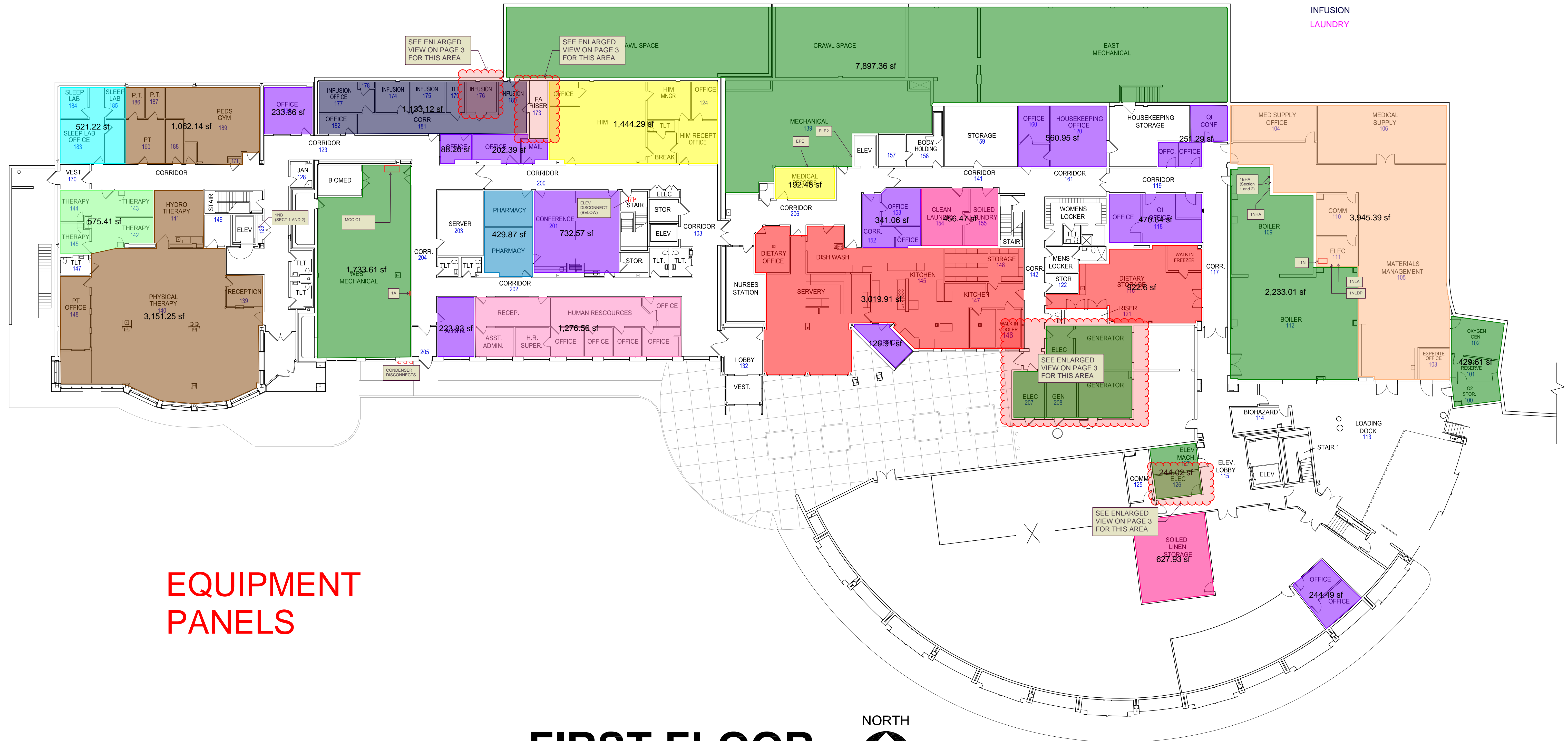


ELECTRICAL 126 FIRST FLOOR



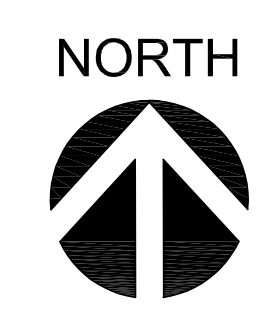
CRITICAL PANELS

- MECHANICAL / ELECTRICAL
- MATERIAL MANAGEMENT
- ADMIN
- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
- HUMAN RESOURCES
- PHARMACY
- SLEEP THERAPY
- THERAPY
- INFUSION
- LAUNDRY

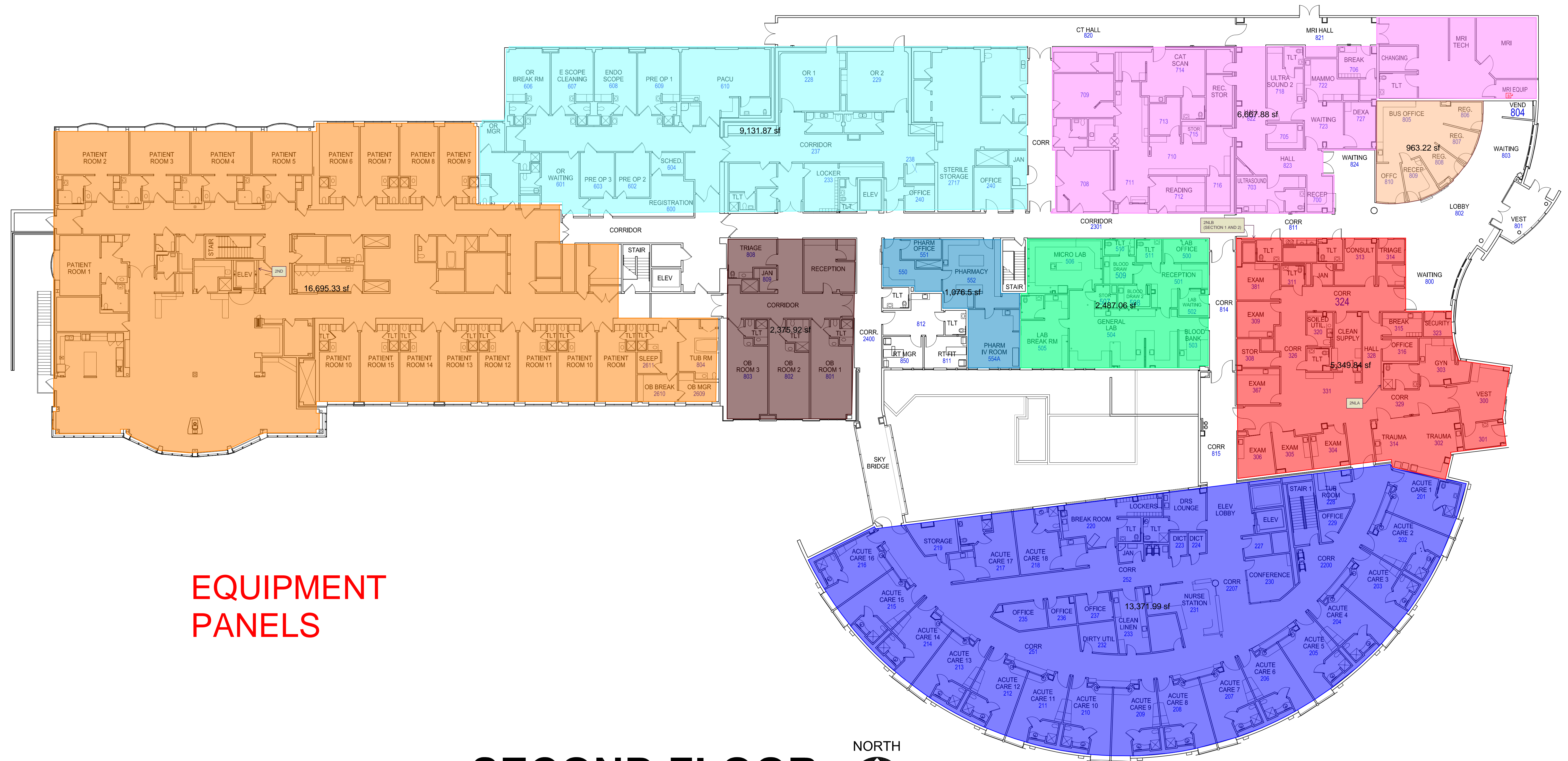


**EQUIPMENT
PANELS**

FIRST FLOOR



- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

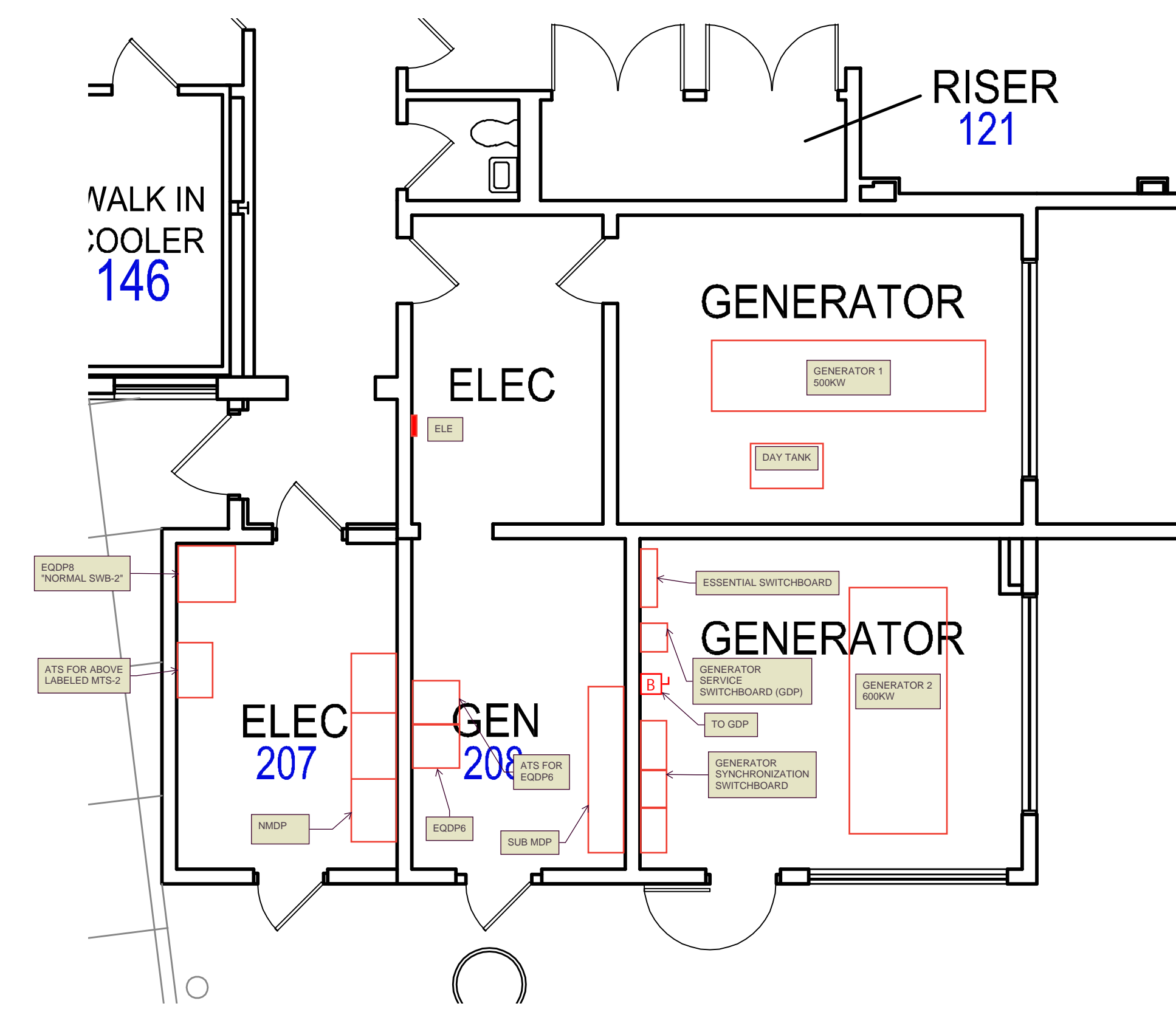


EQUIPMENT
PANELS

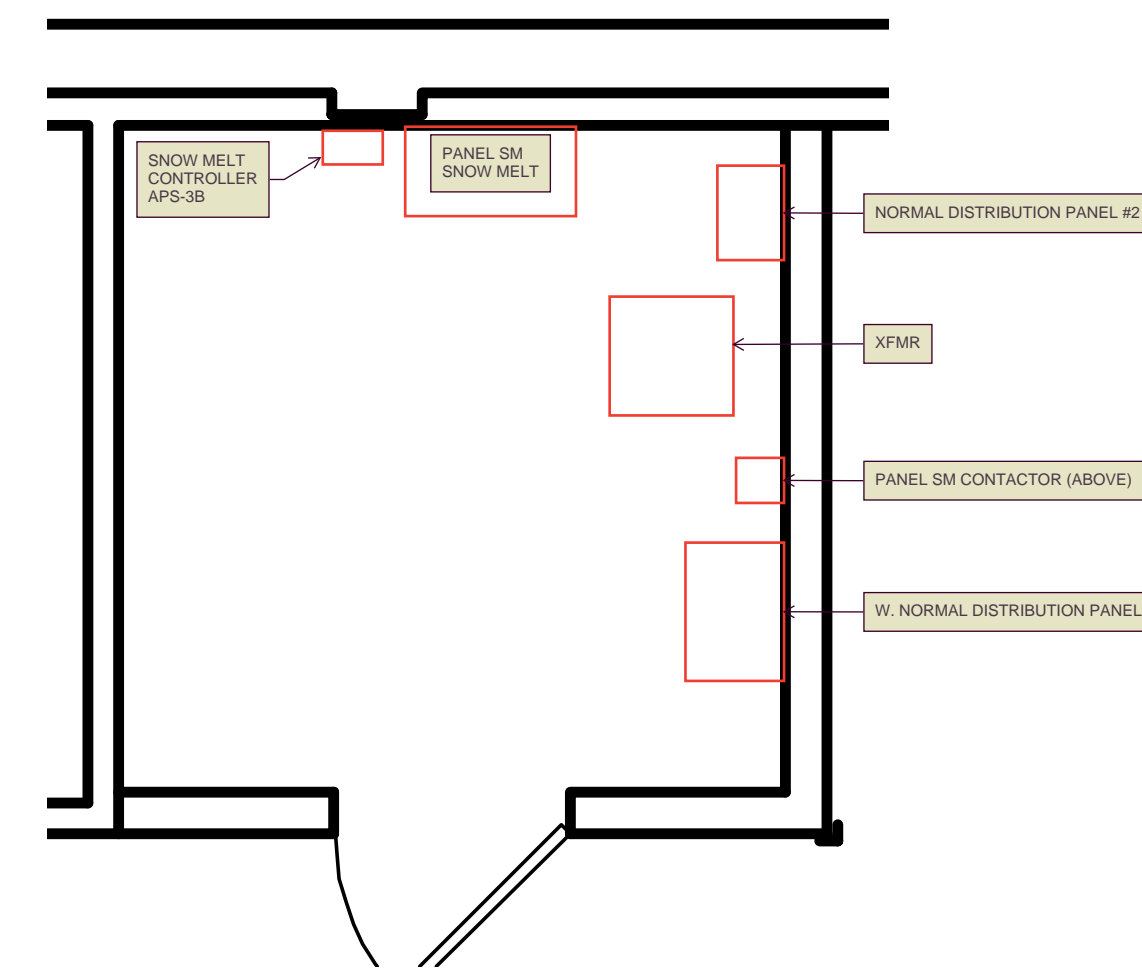
SECOND FLOOR



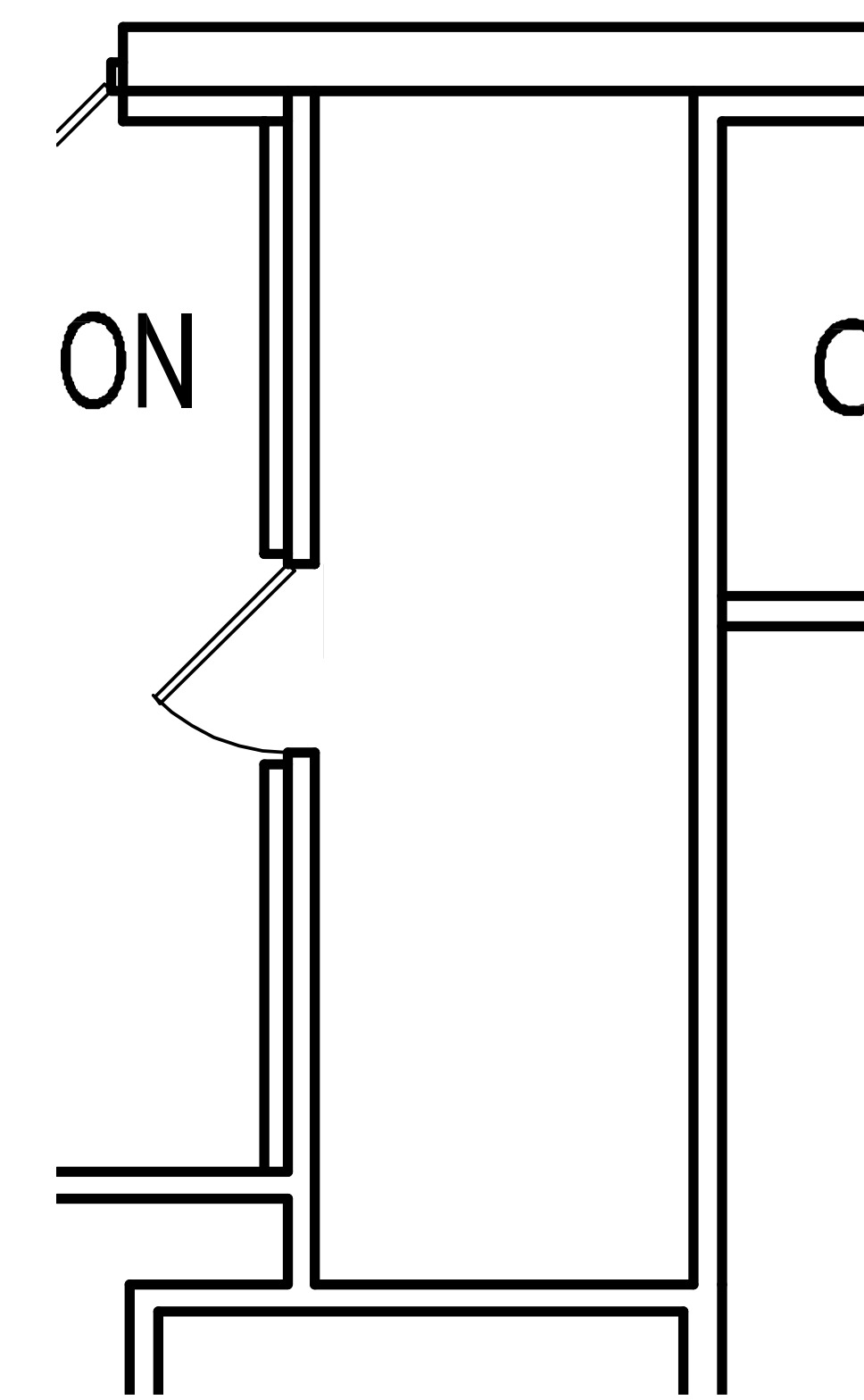
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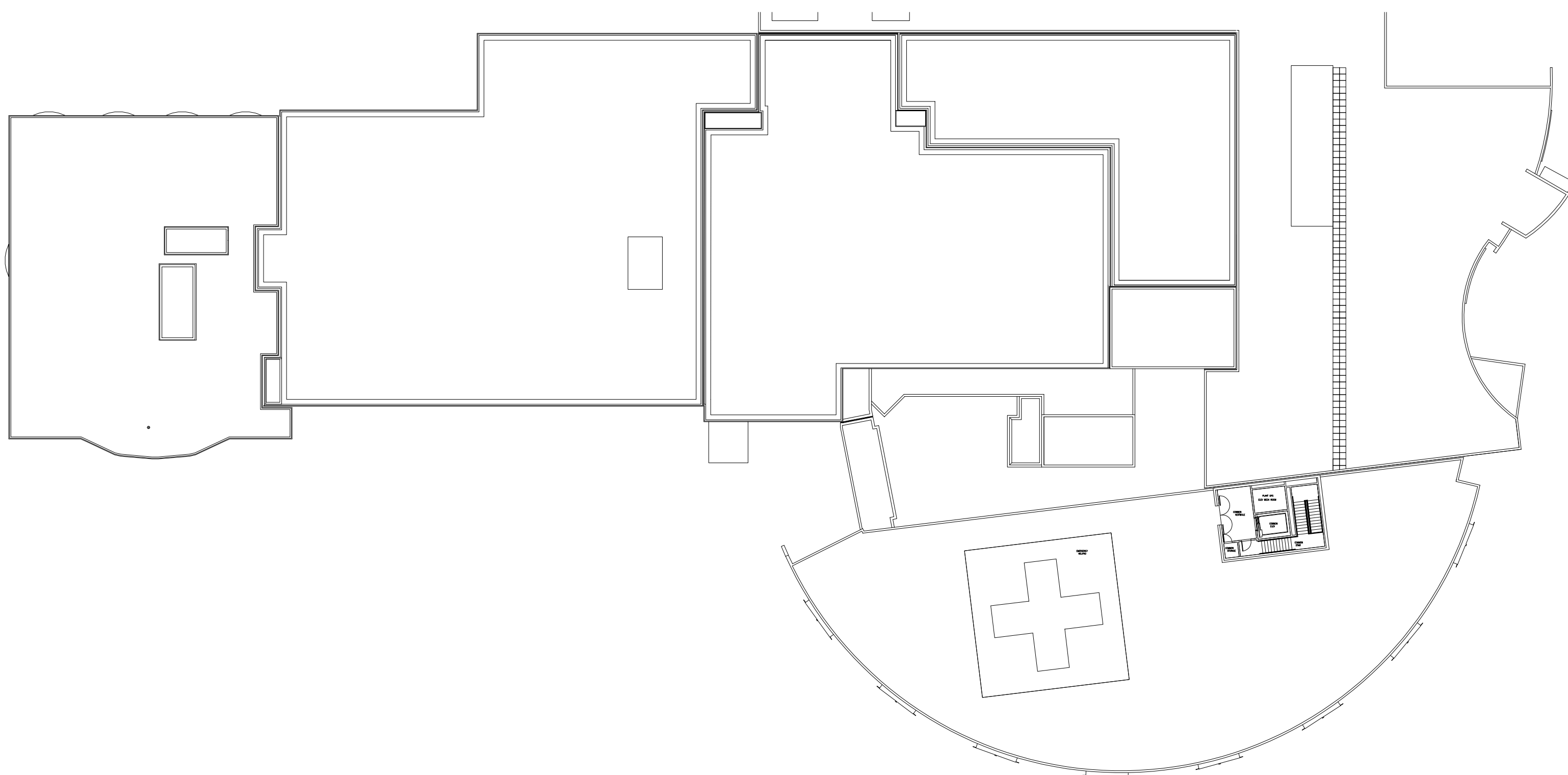
INFUSION 176 FIRST FLOOR



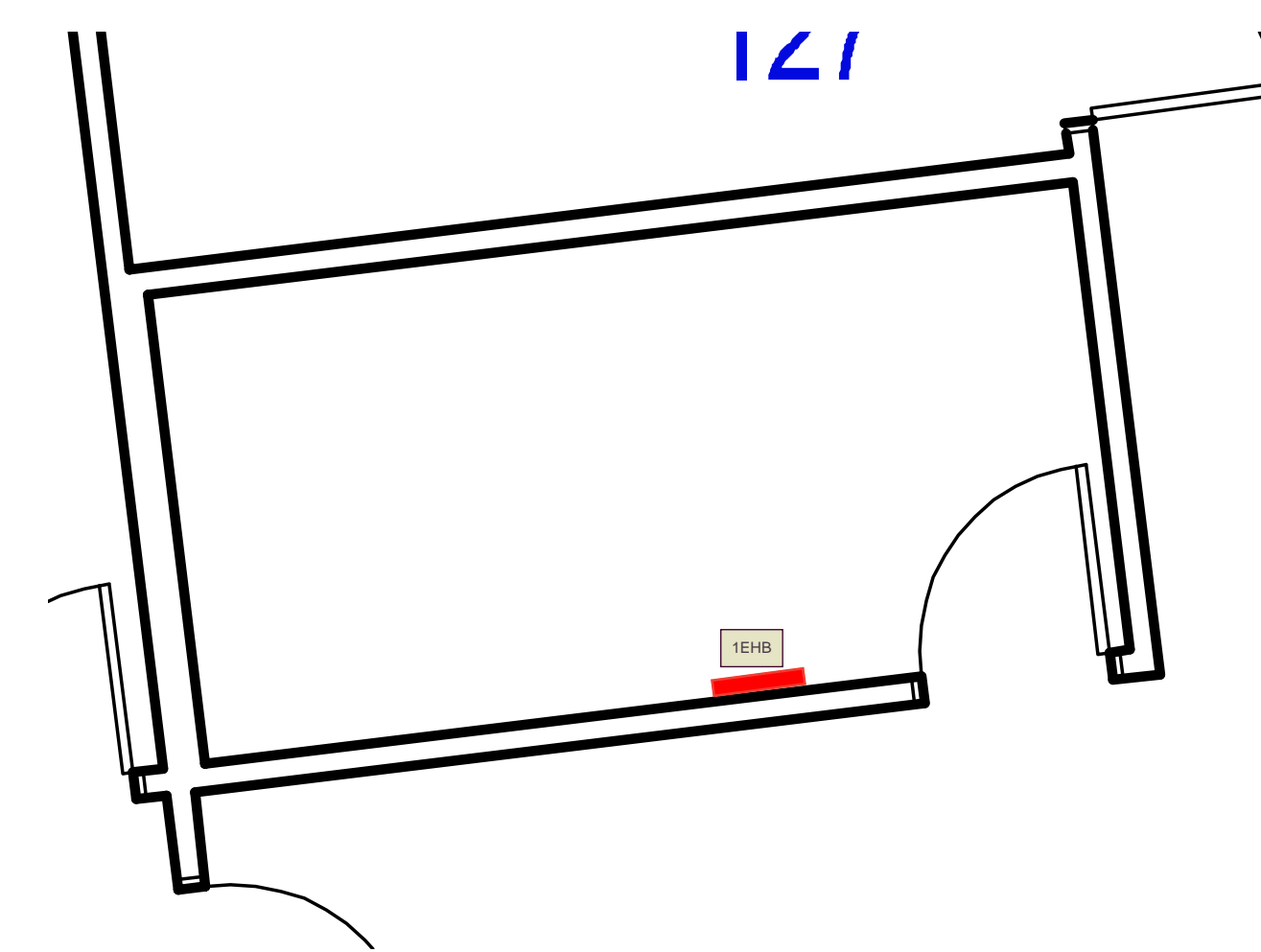
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HOSPITAL ROOF PLAN

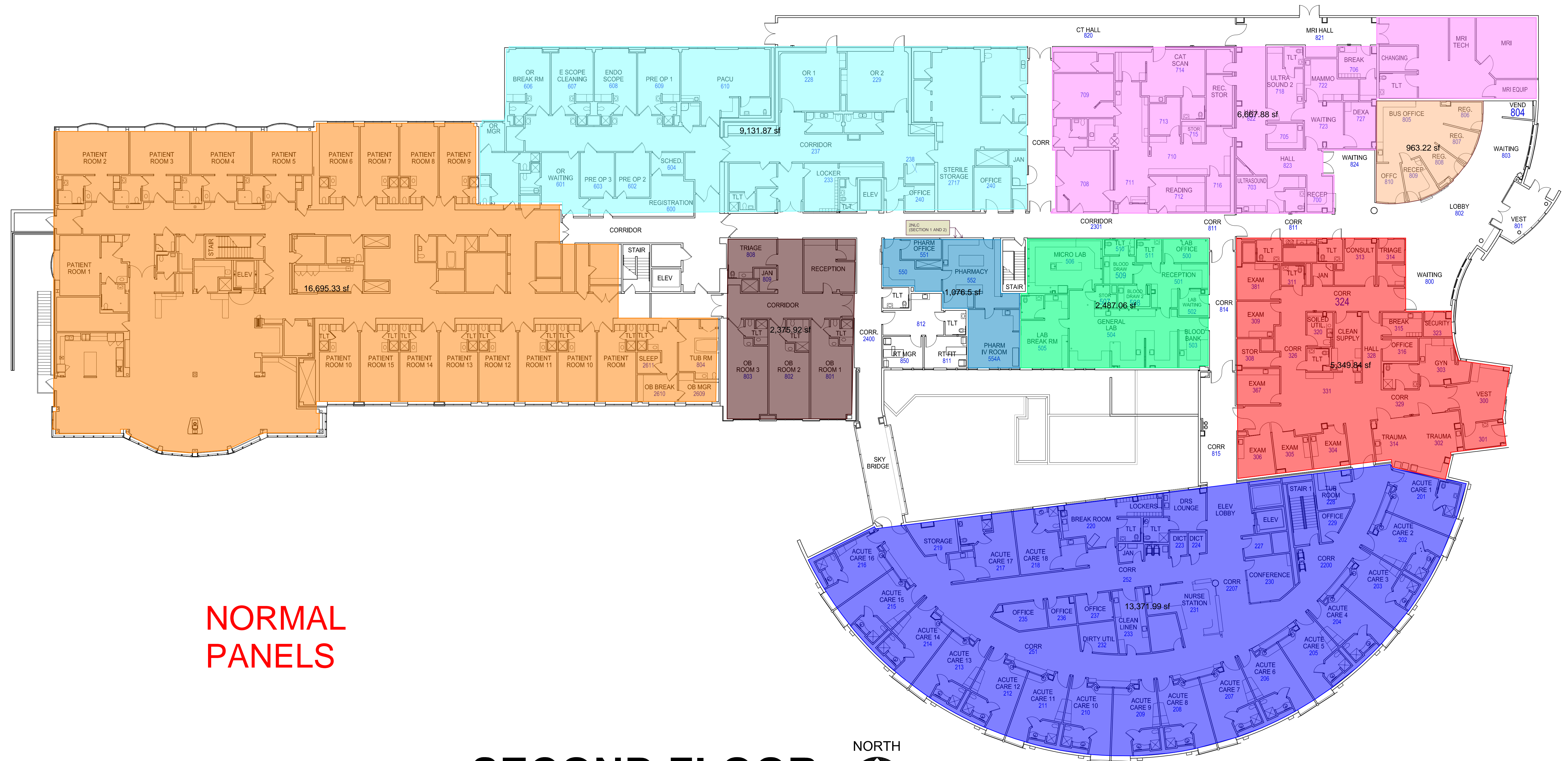


ELECTRICAL 126 FIRST FLOOR



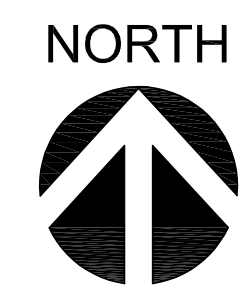
EQUIPMENT PANELS

- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

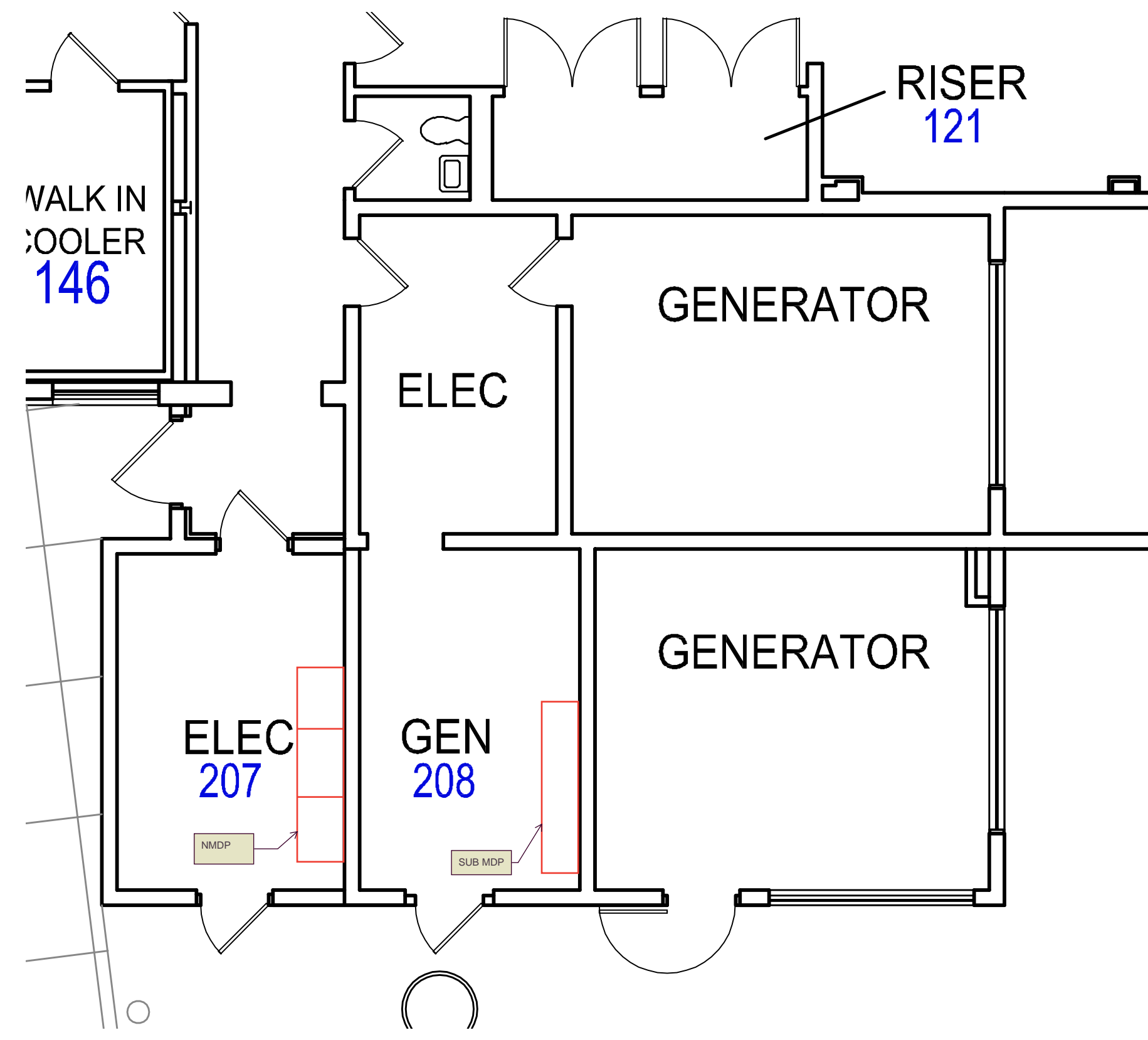


**NORMAL
PANELS**

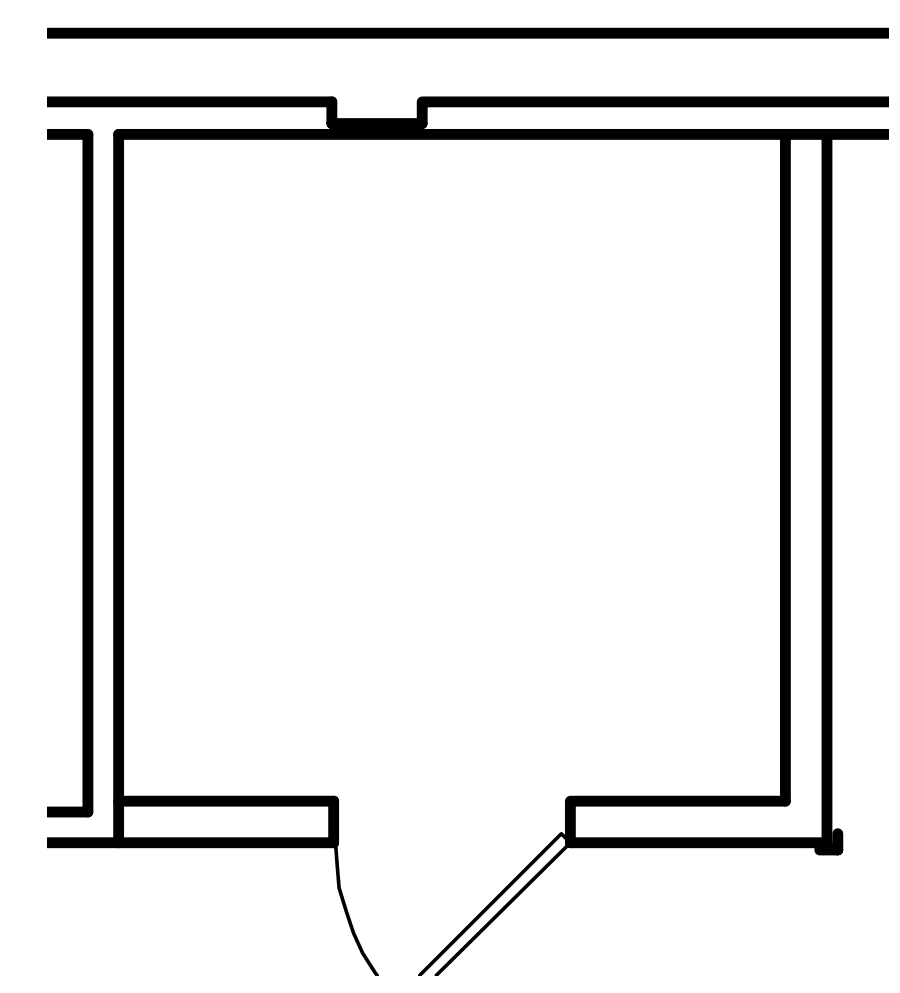
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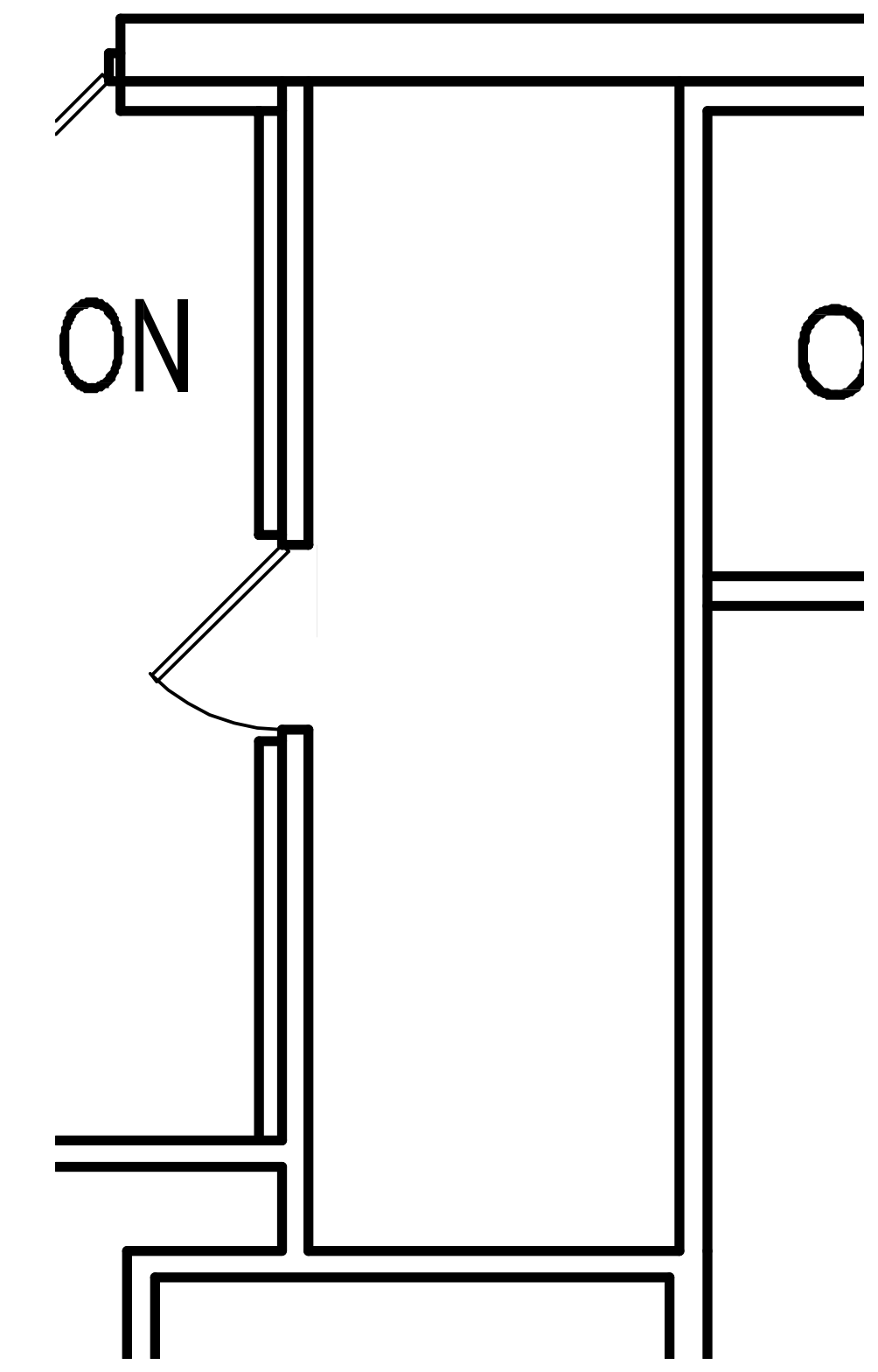
GENERATOR AND ELECTRICAL SPACE FIRST FLOOR



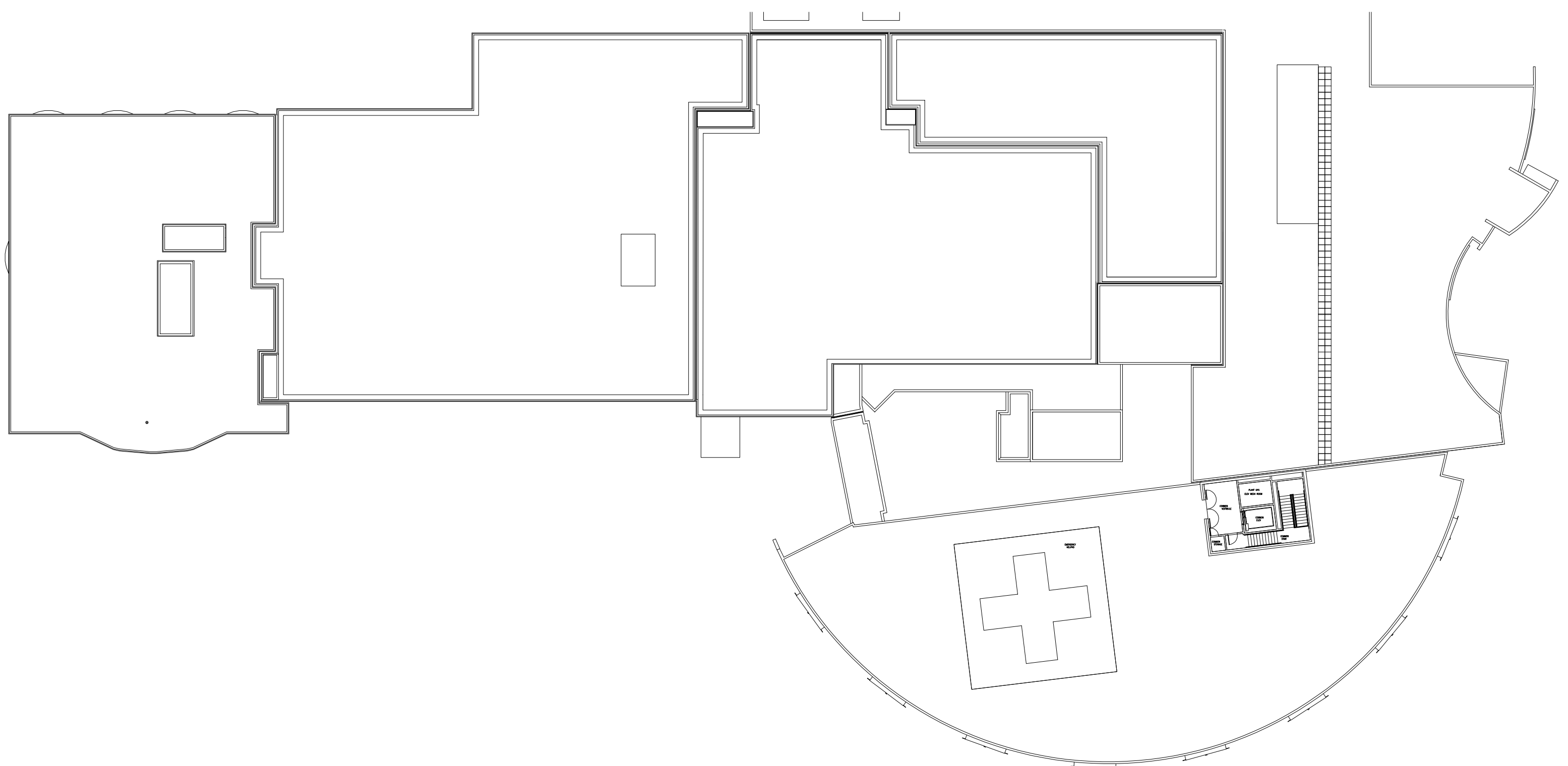
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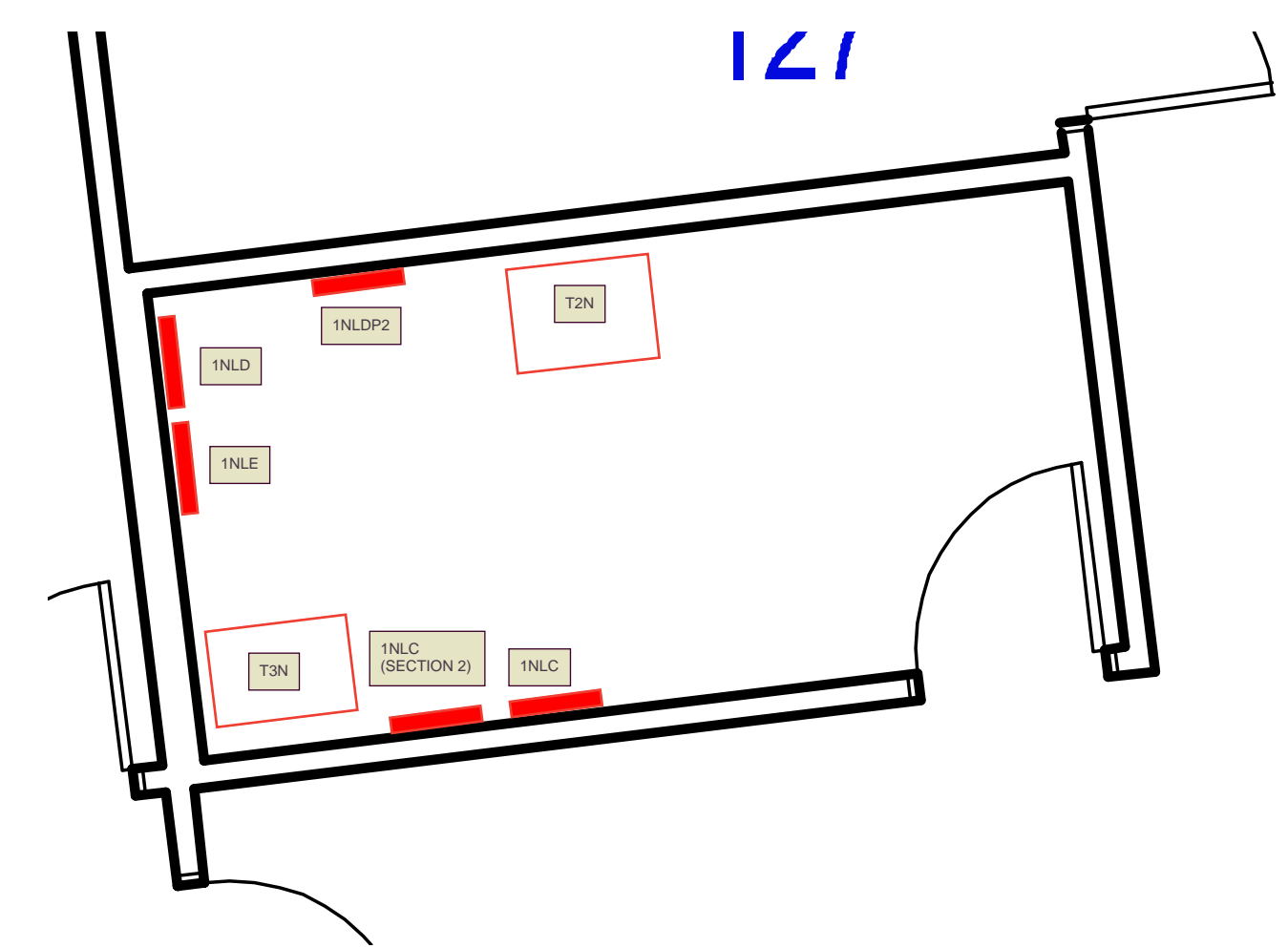
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HOSPITAL ROOF PLAN

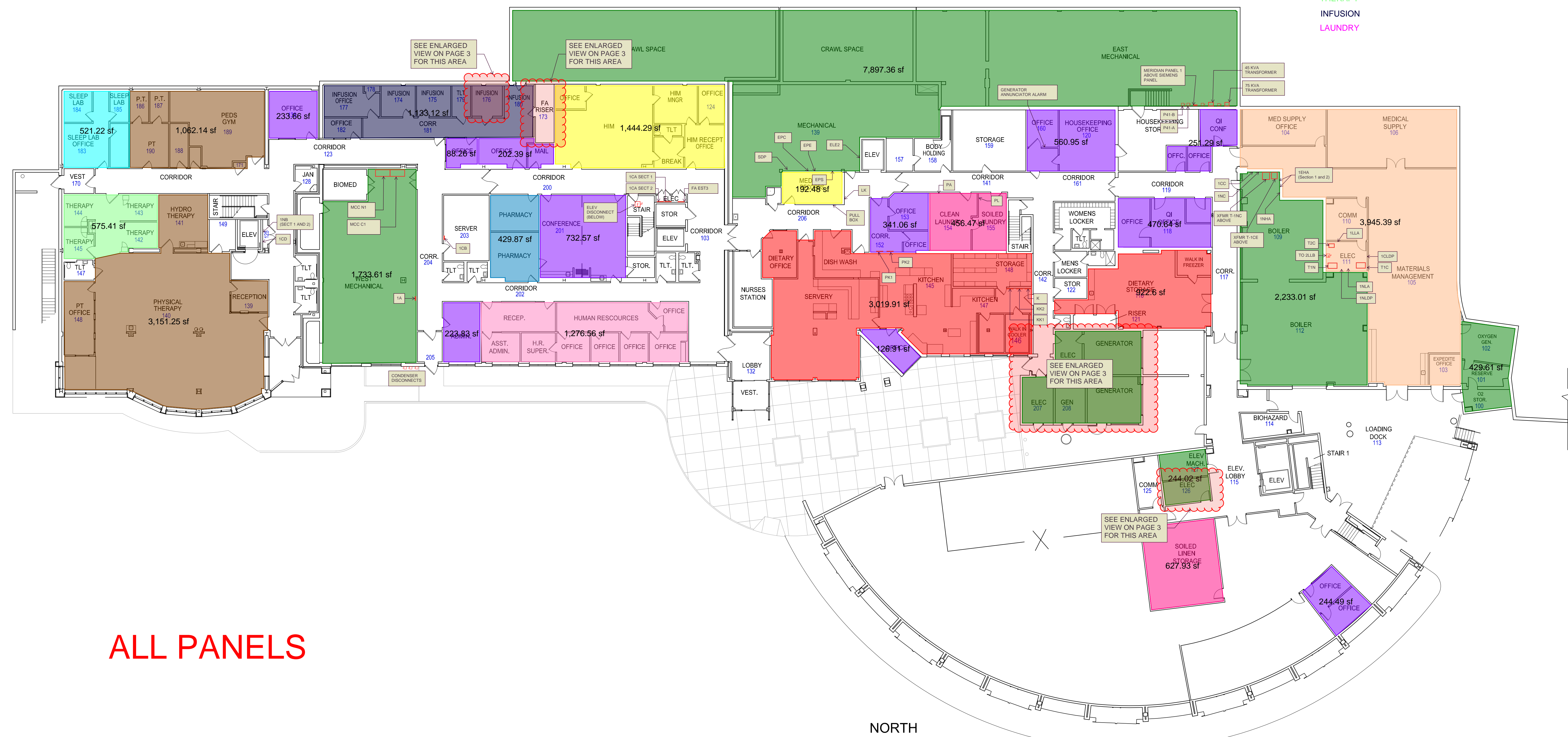


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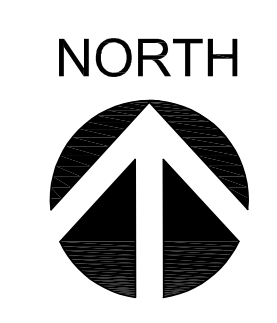
NORMAL PANELS

- MECHANICAL / ELECTRICAL
- MATERIAL MANAGEMENT
- ADMIN
- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
- HUMAN RESOURCES
- PHARMACY
- SLEEP THERAPY
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- INFUSION
- LAUNDRY

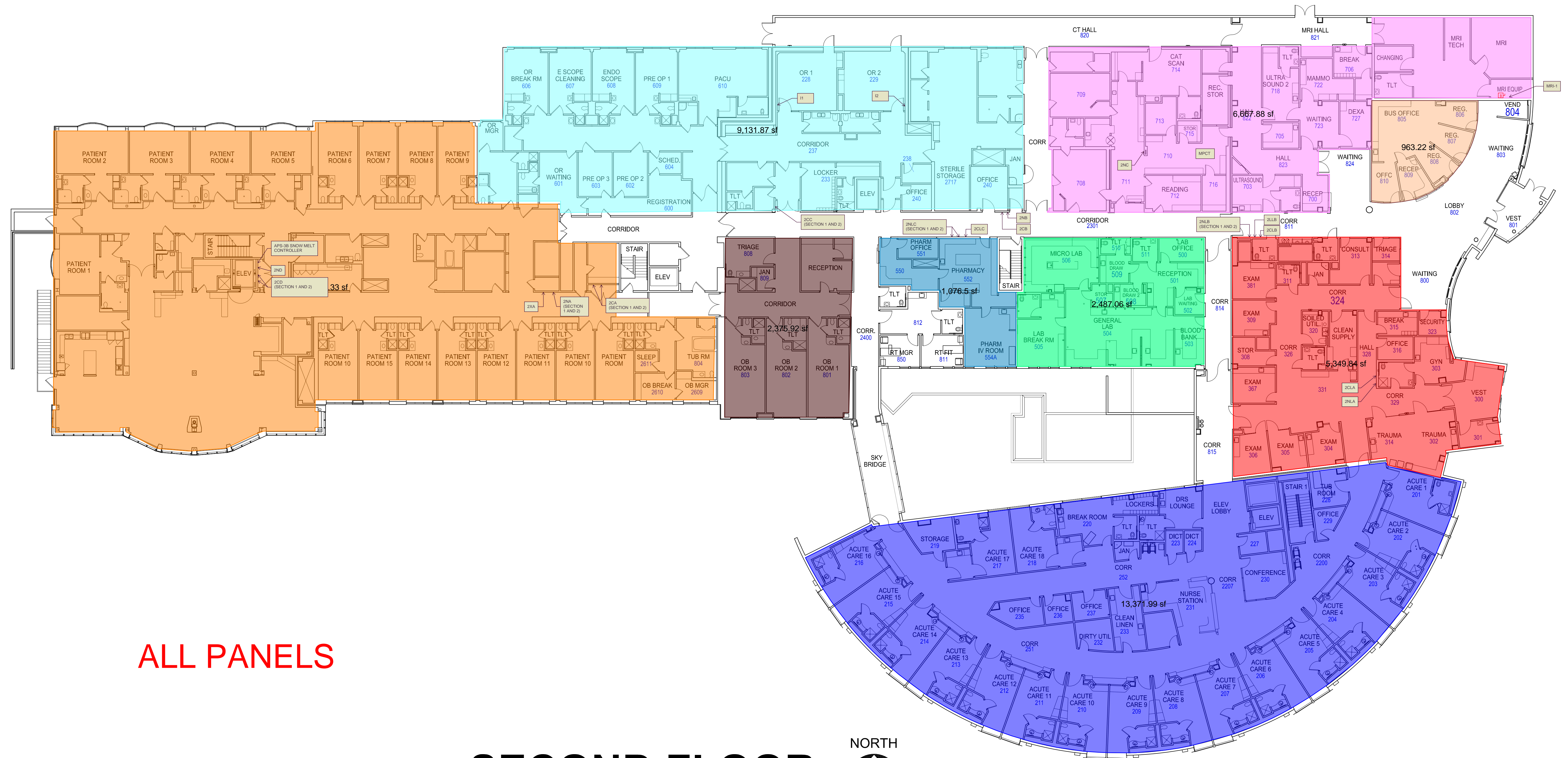


ALL PANELS

FIRST FLOOR



- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

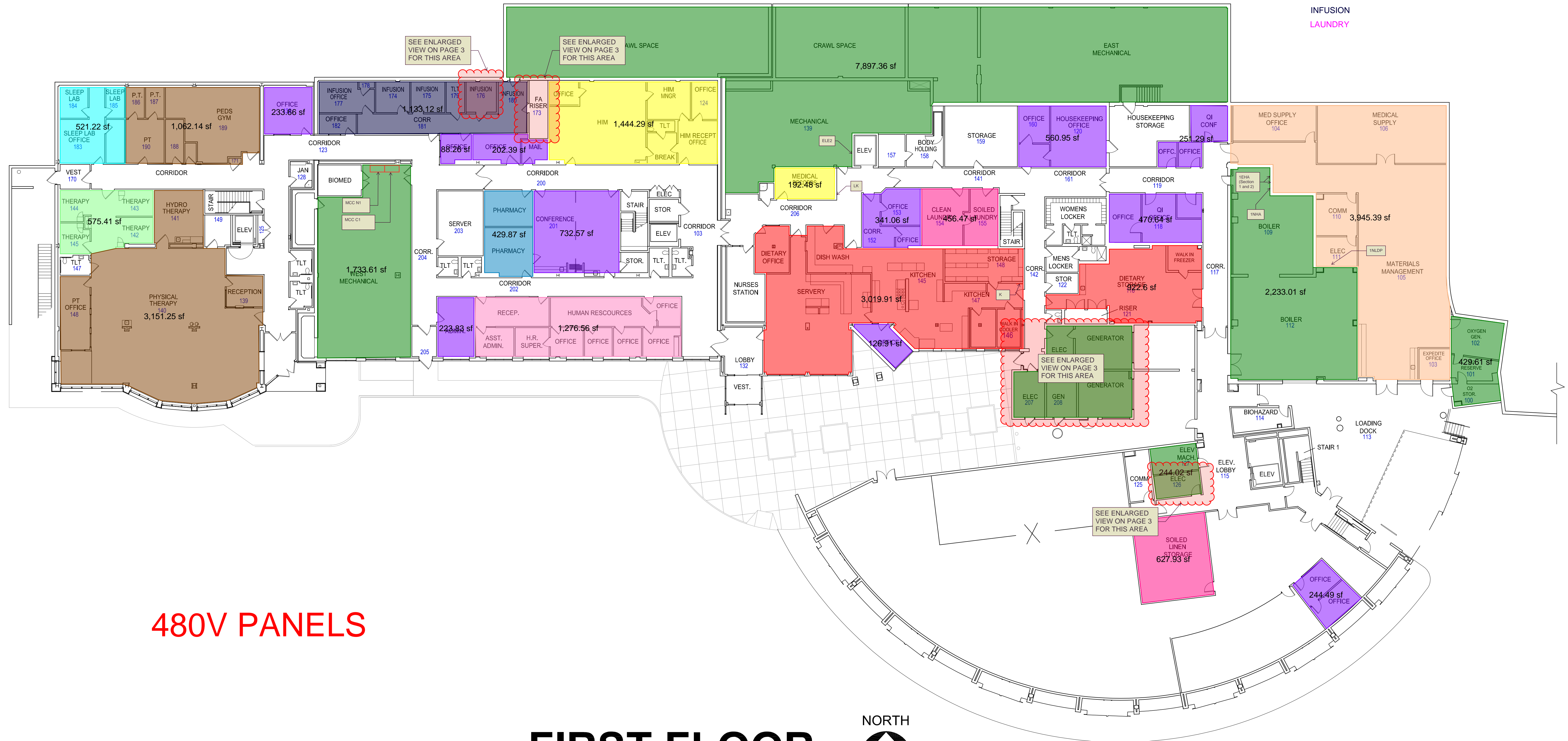


ALL PANELS

SECOND FLOOR



- MECHANICAL / ELECTRICAL
- MATERIAL MANAGEMENT
- ADMIN
- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
- HUMAN RESOURCES
- PHARMACY
- SLEEP THERAPY
- THERAPY
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- LAUNDRY

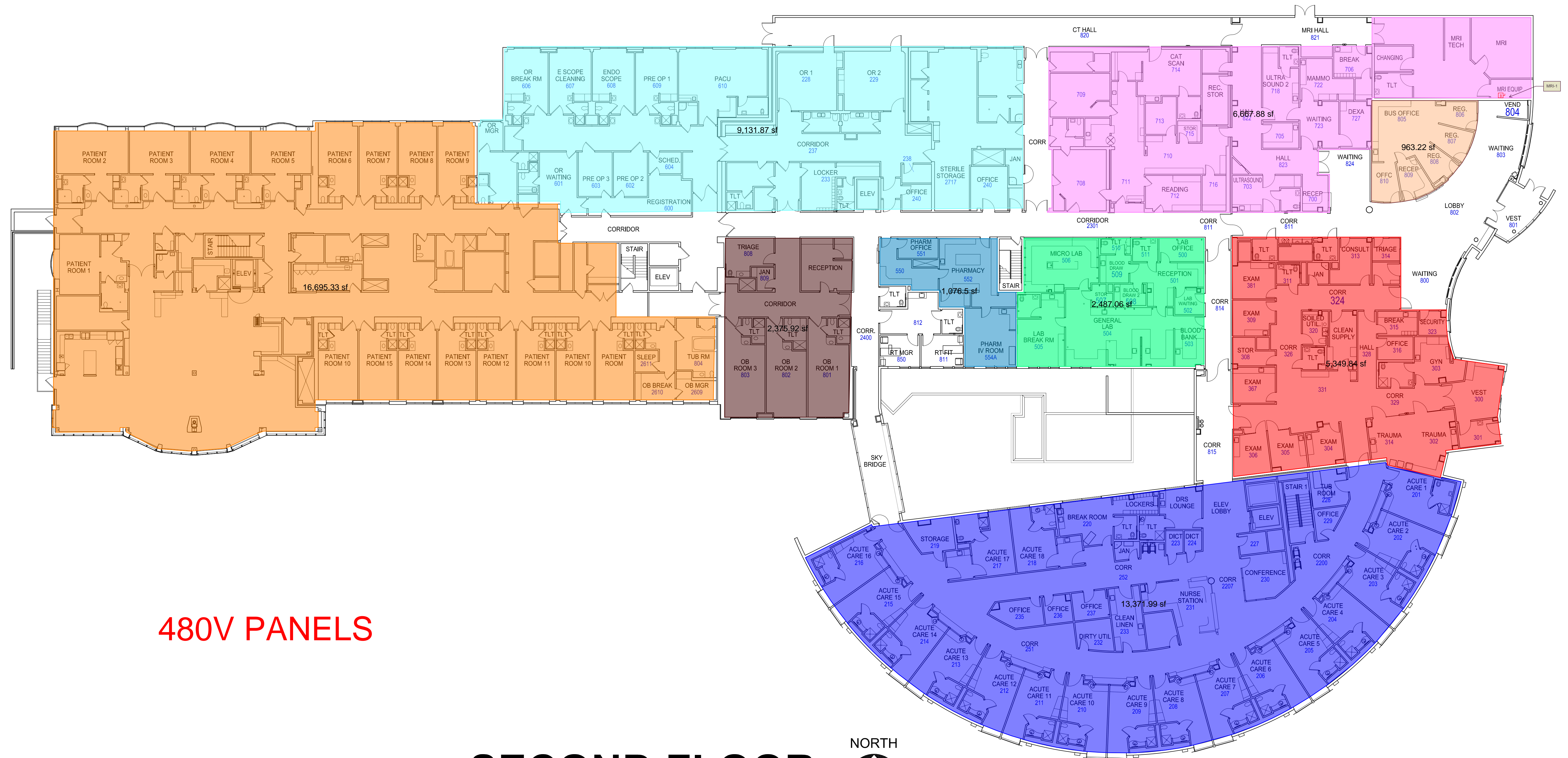


480V PANELS

FIRST FLOOR

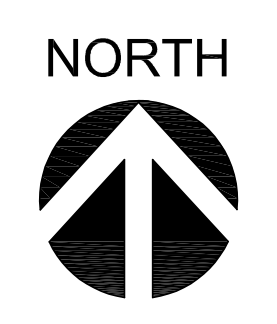


- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

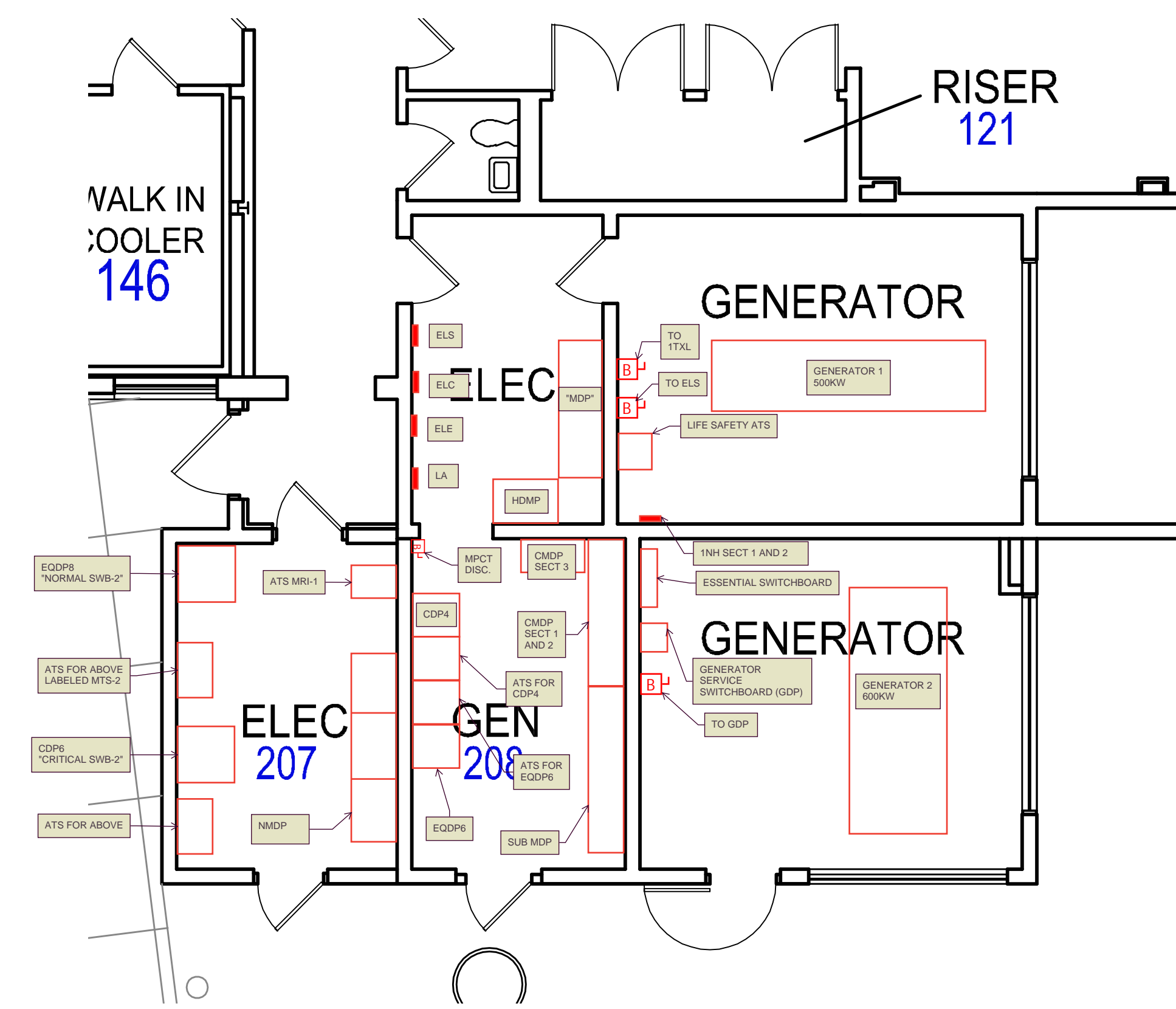


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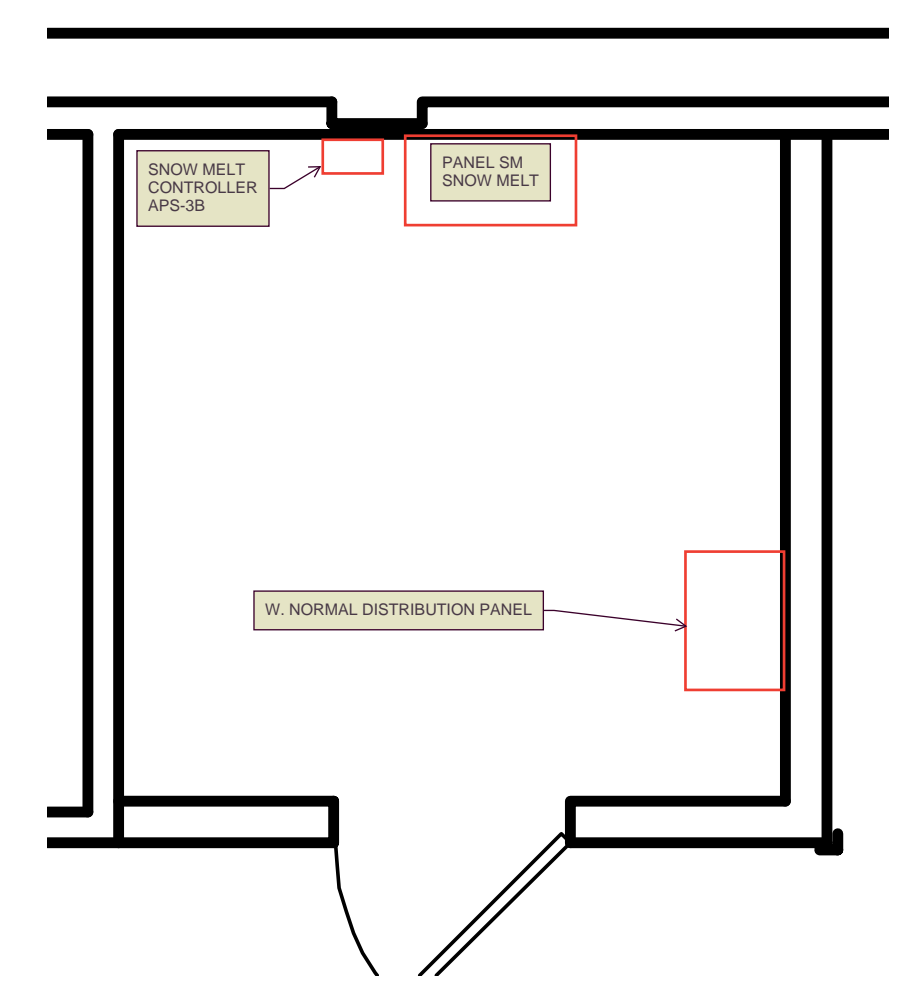
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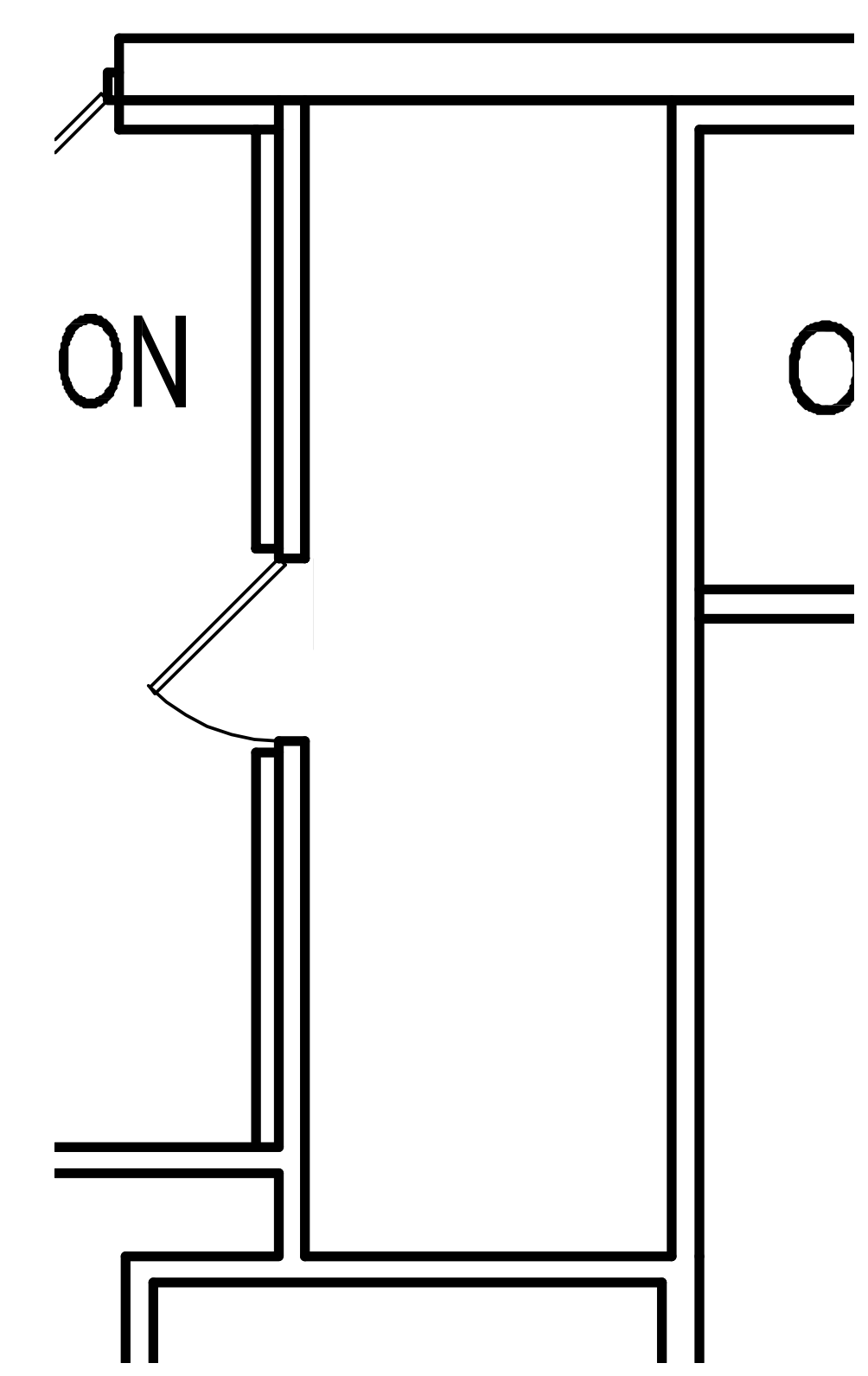
GENERATOR AND ELECTRICAL SPACE FIRST FLOOR



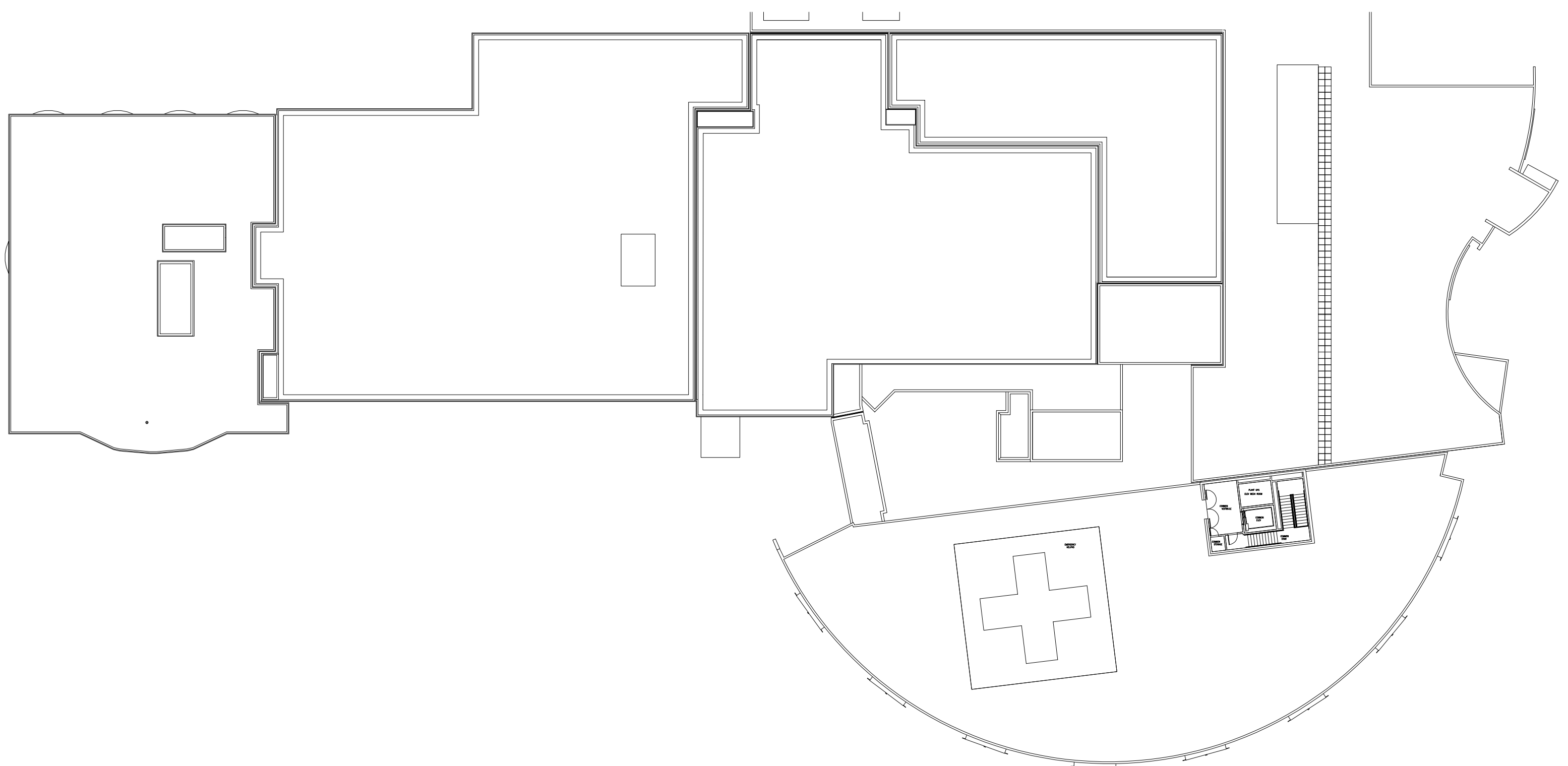
INFUSION 176 FIRST FLOOR



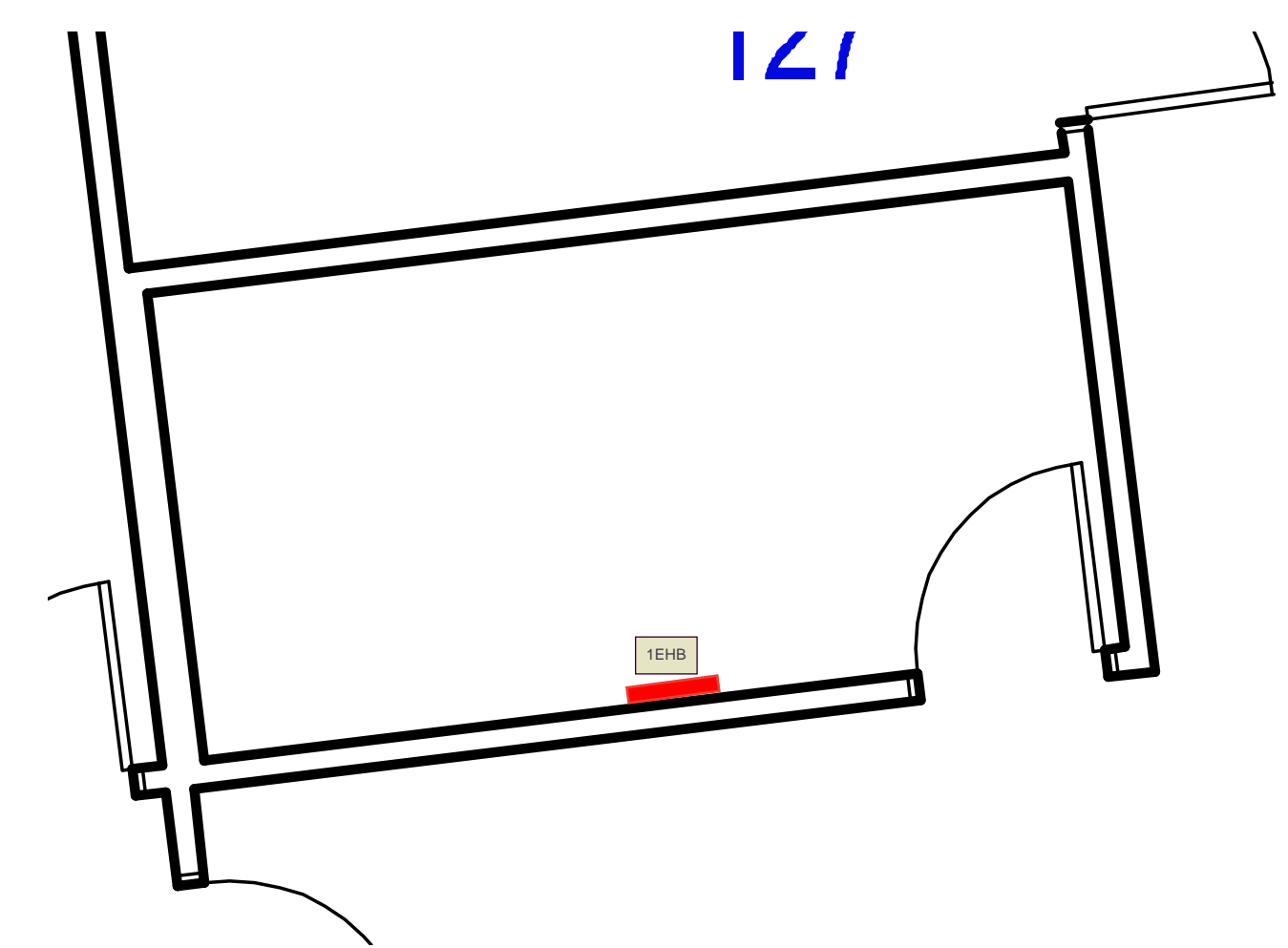
FA RISER 173 FIRST FLOOR



HOSPITAL ROOF PLAN

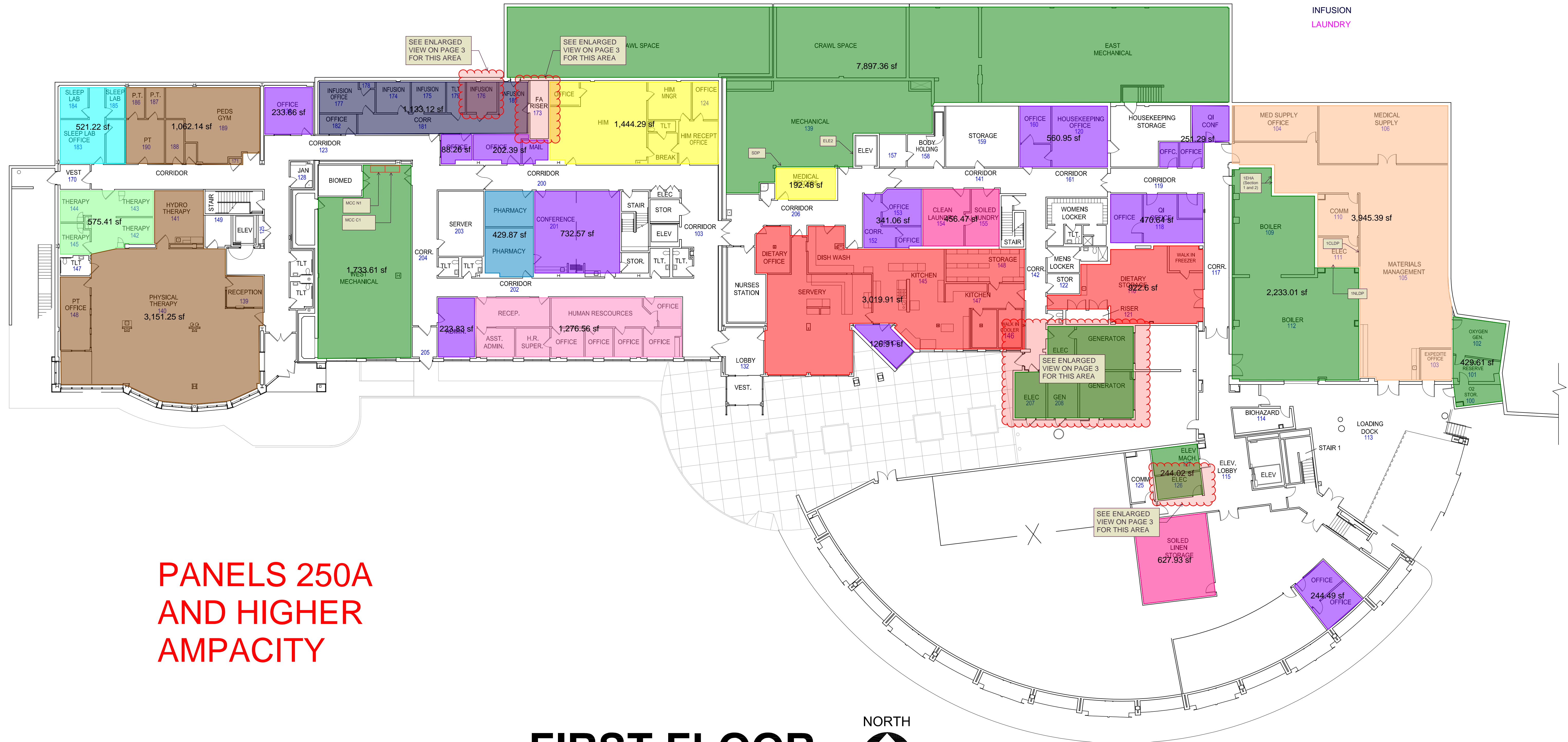


ELECTRICAL 126 FIRST FLOOR



480V PANELS

- MECHANICAL / ELECTRICAL
- MATERIAL MANAGEMENT
- ADMIN
- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
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- PHARMACY
- SLEEP THERAPY
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- LAUNDRY



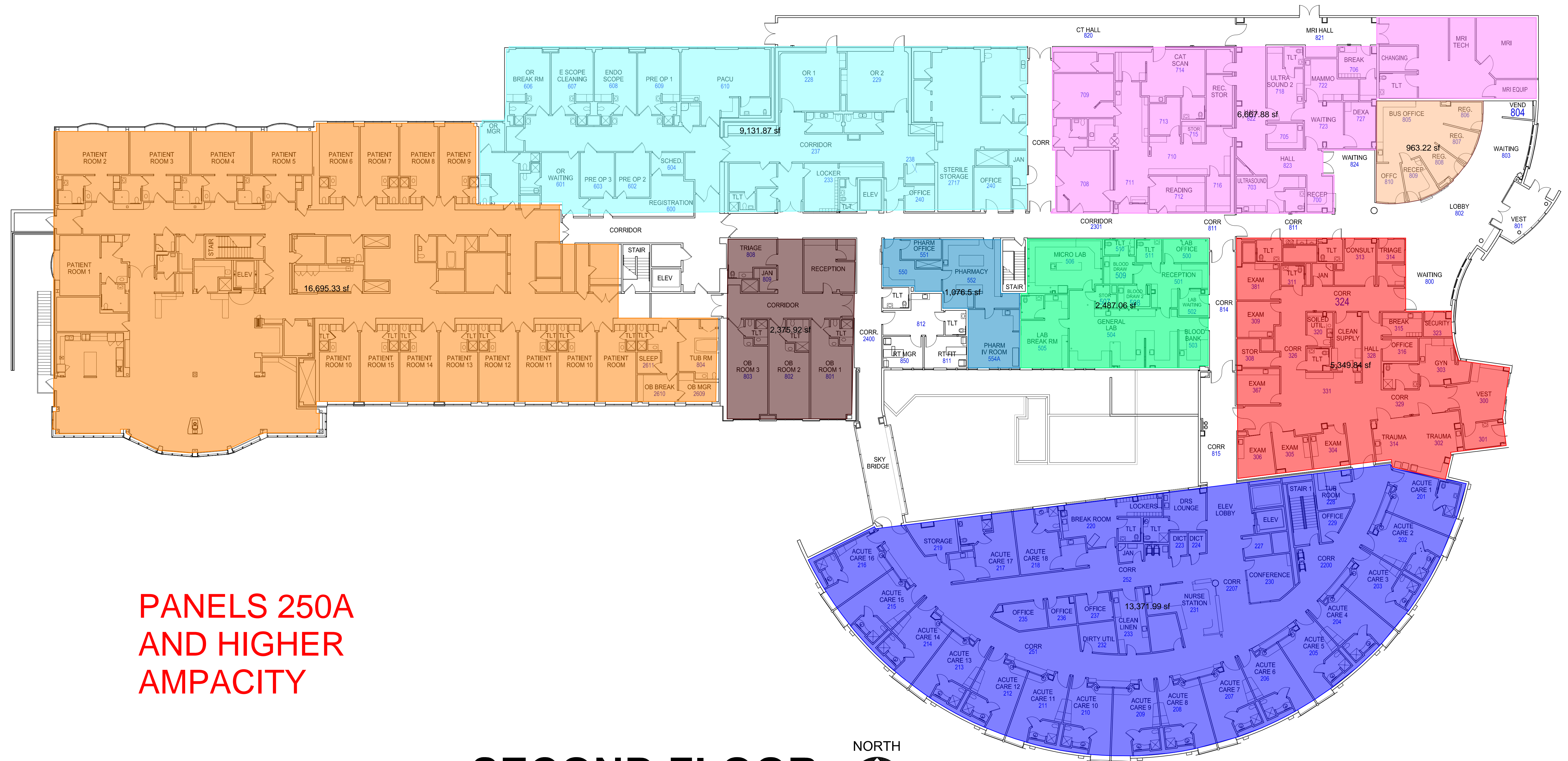
SEE ENLARGED VIEW ON PAGE 3 FOR THIS AREA

SEE ENLARGED VIEW ON PAGE 3 FOR THIS AREA

SEE ENLARGED VIEW ON PAGE 3 FOR THIS AREA

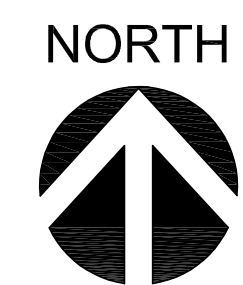
SEE ENLARGED VIEW ON PAGE 3 FOR THIS AREA

- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

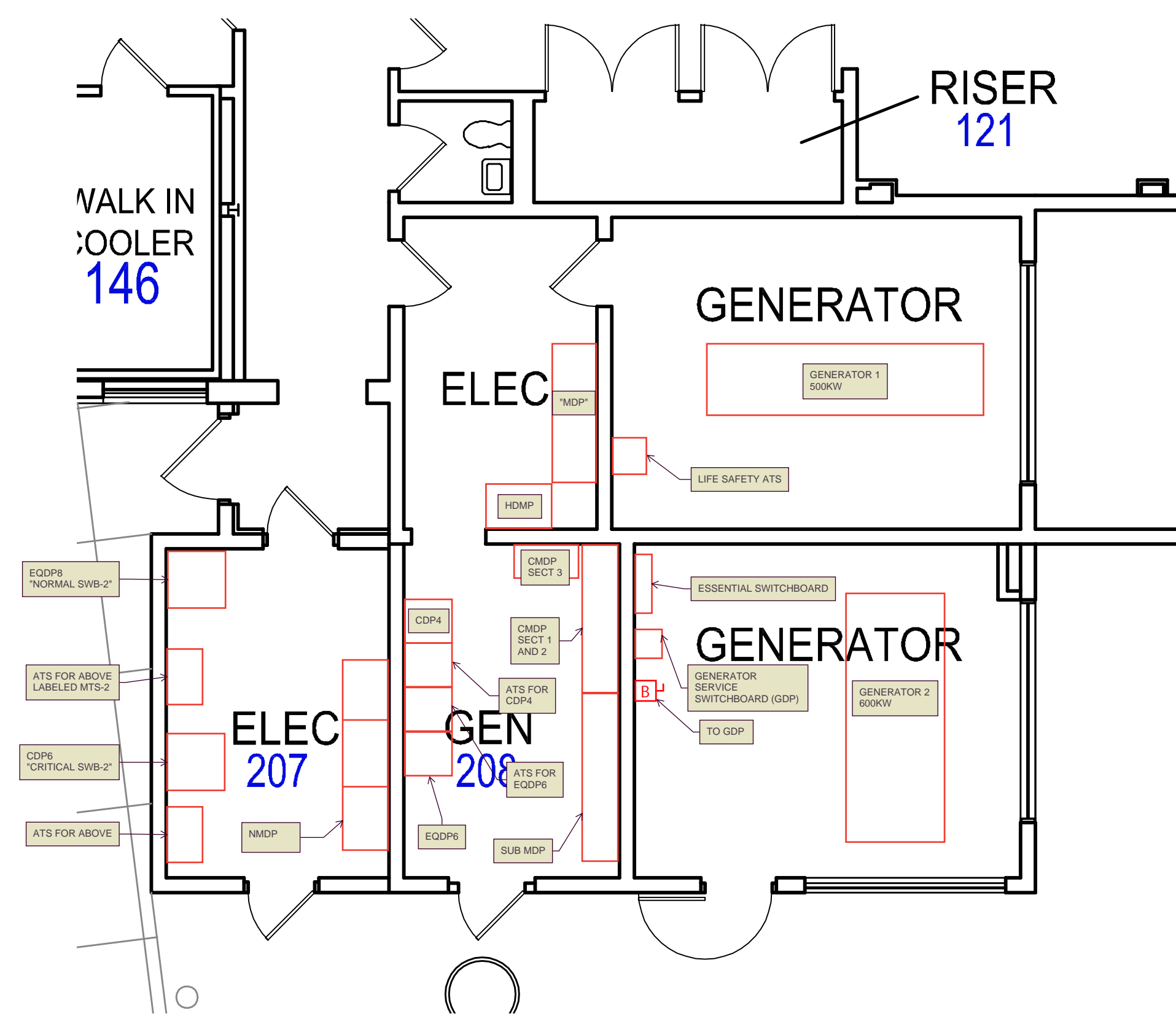


**PANELS 250A
AND HIGHER
AMPACITY**

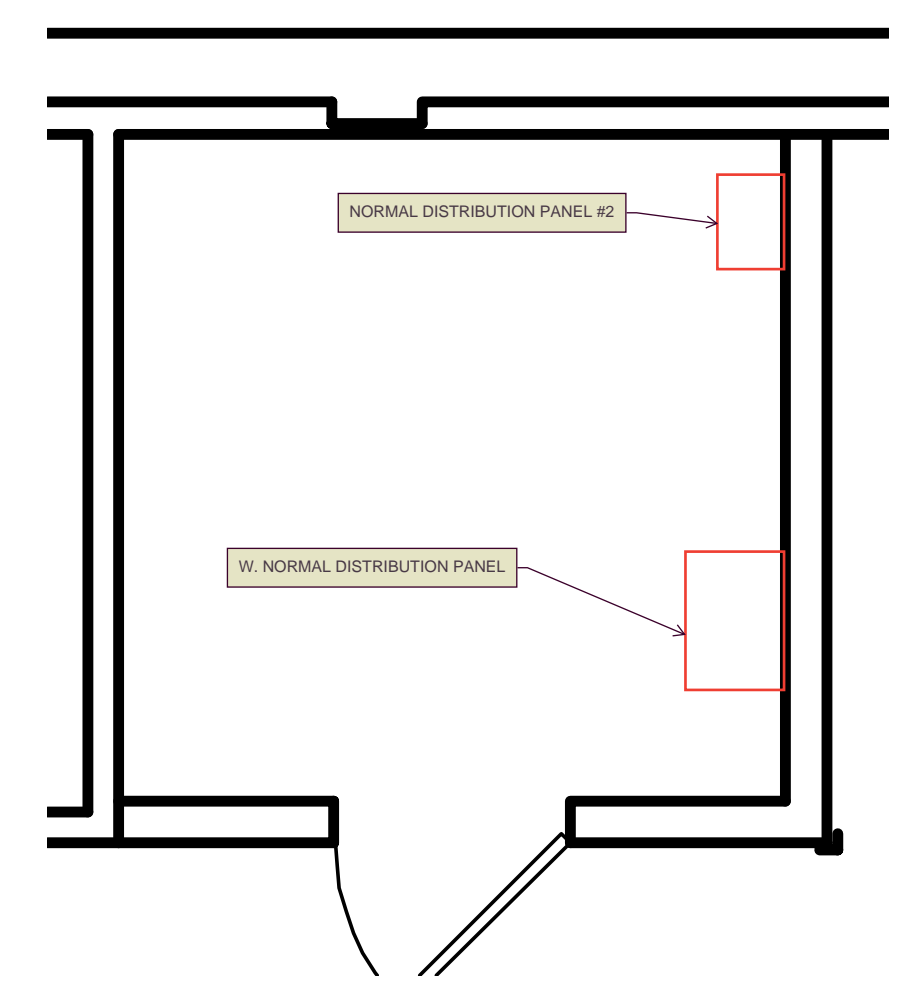
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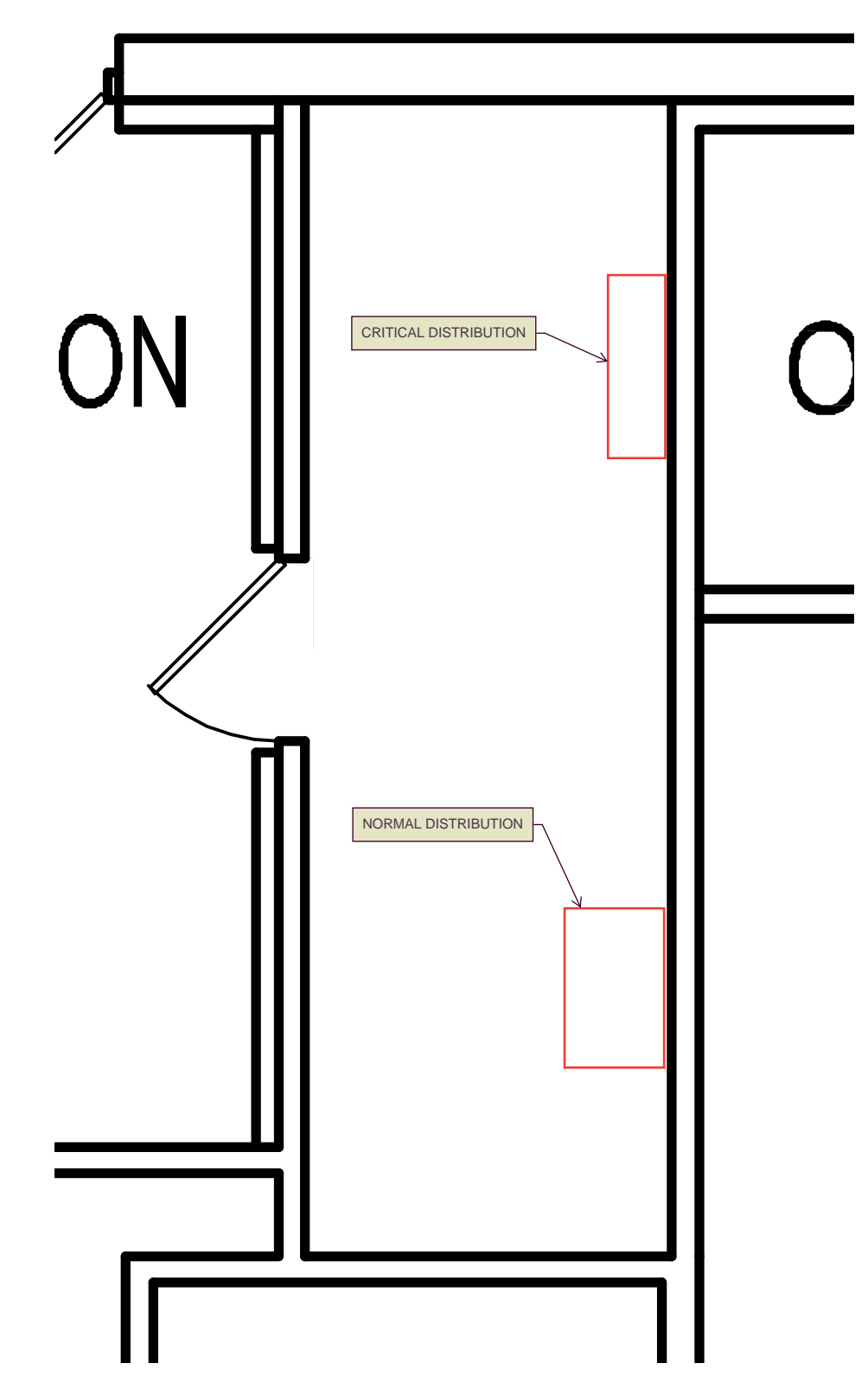
GENERATOR AND ELECTRICAL SPACE FIRST FLOOR



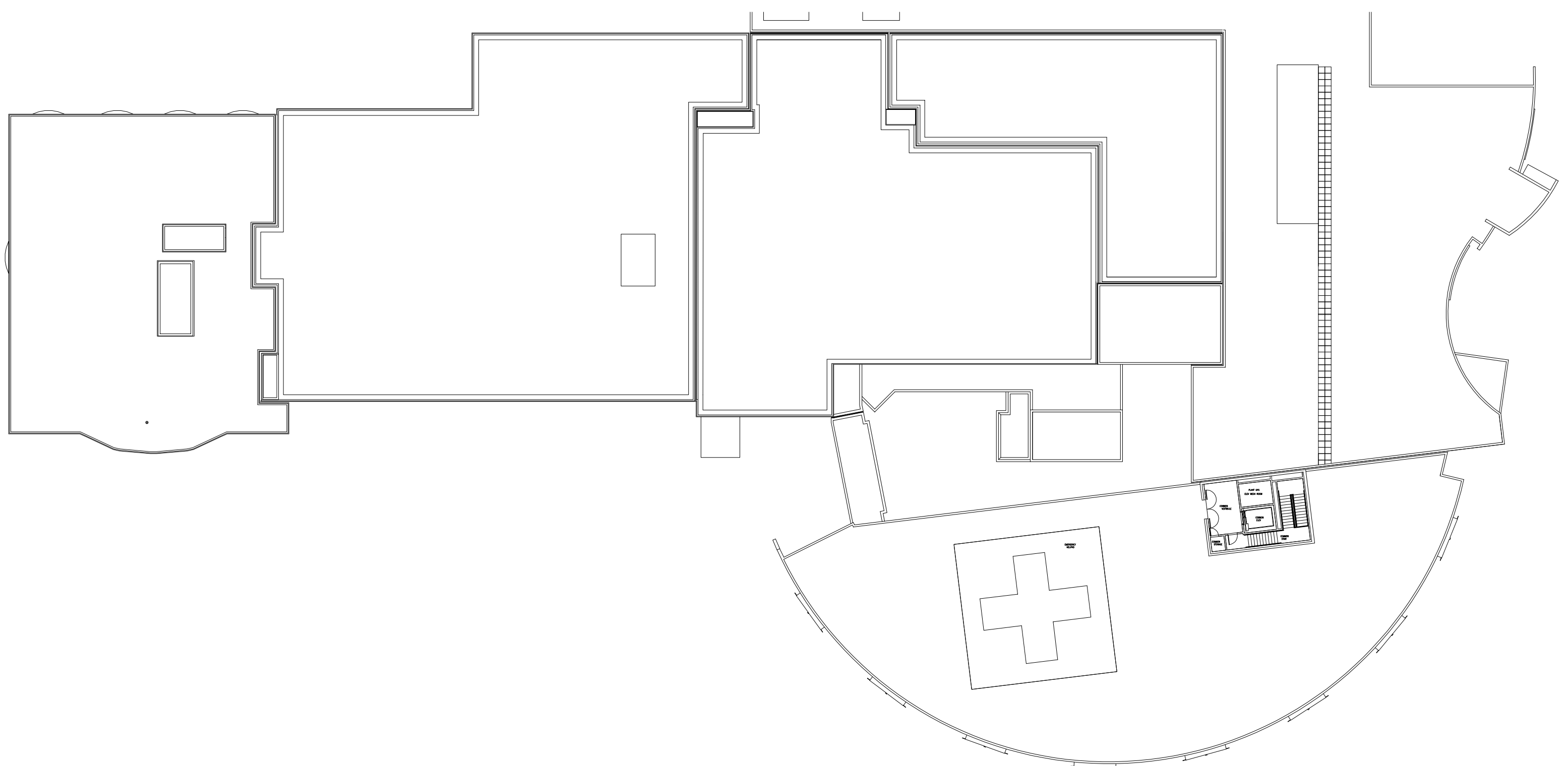
INFUSION 176 FIRST FLOOR



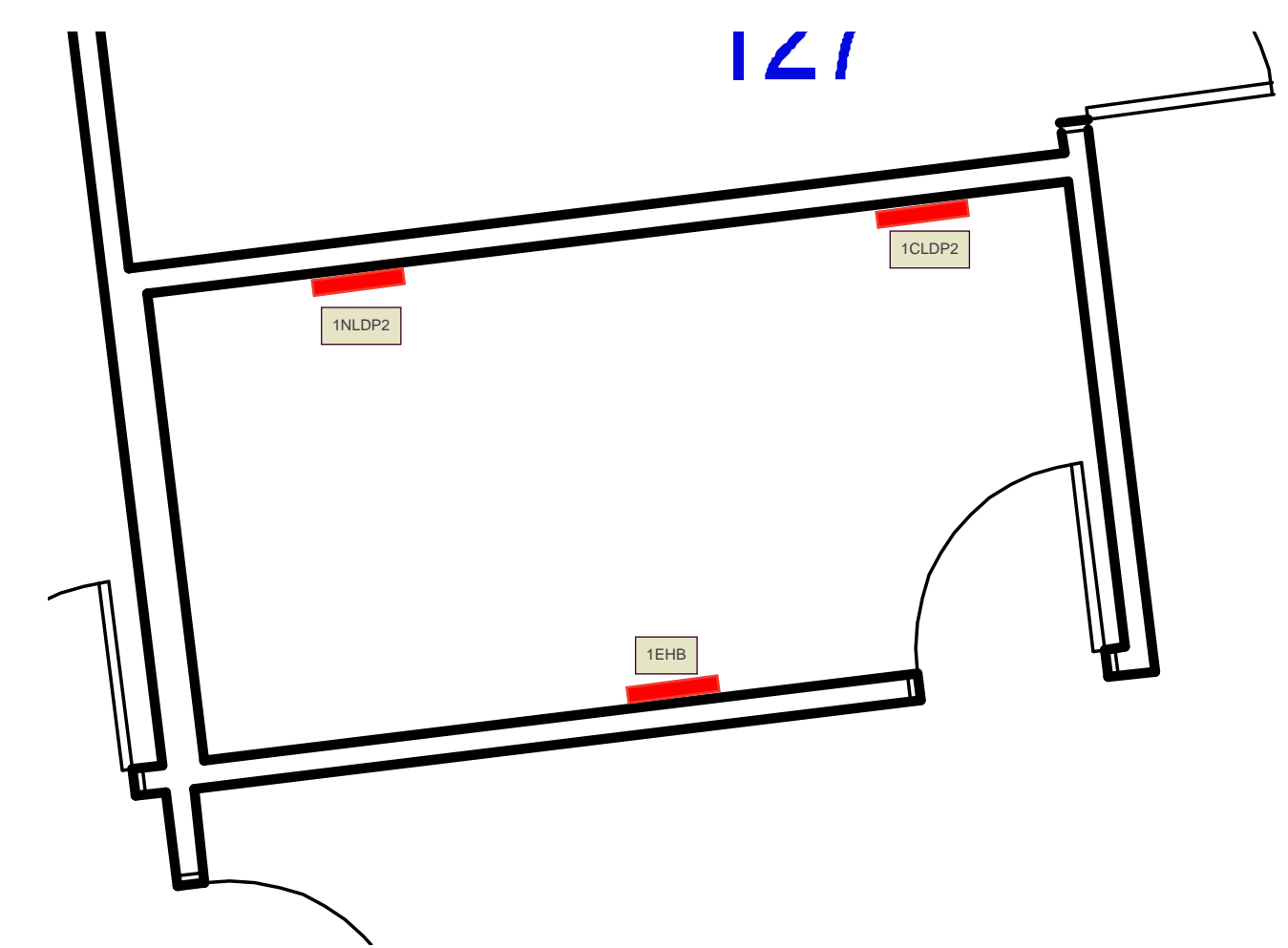
FA RISER 173 FIRST FLOOR



HOSPITAL ROOF PLAN



ELECTRICAL 126 FIRST FLOOR



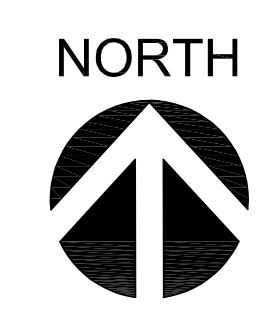
PANELS 250A AND HIGHER AMPACITY

- MECHANICAL / ELECTRICAL
- MATERIAL MANAGEMENT
- ADMIN
- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
- HUMAN RESOURCES
- PHARMACY
- SLEEP THERAPY
- THERAPY
- INFUSION
- LAUNDRY

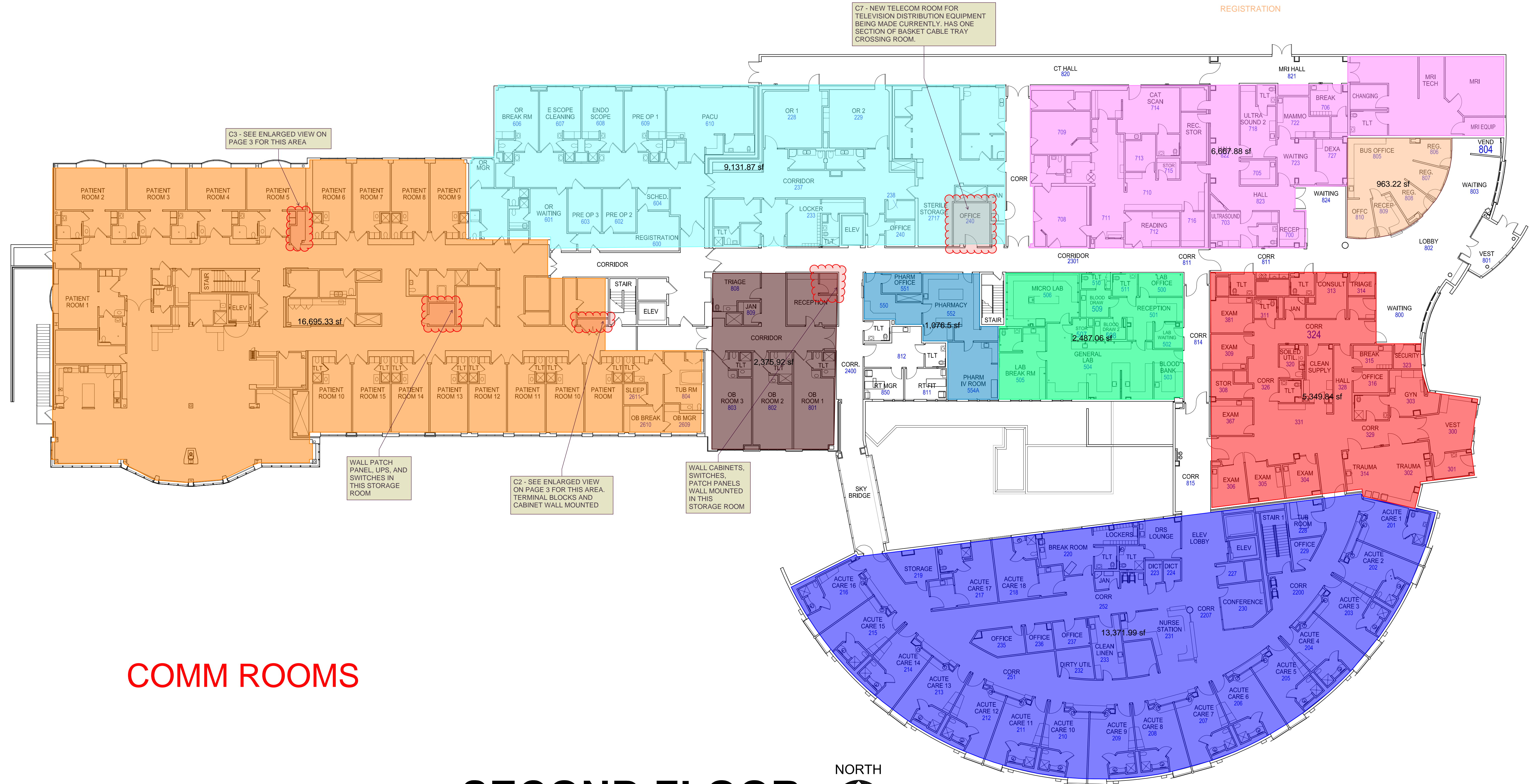


COMM ROOMS

FIRST FLOOR

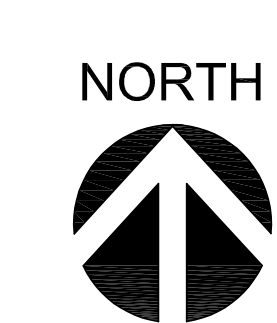


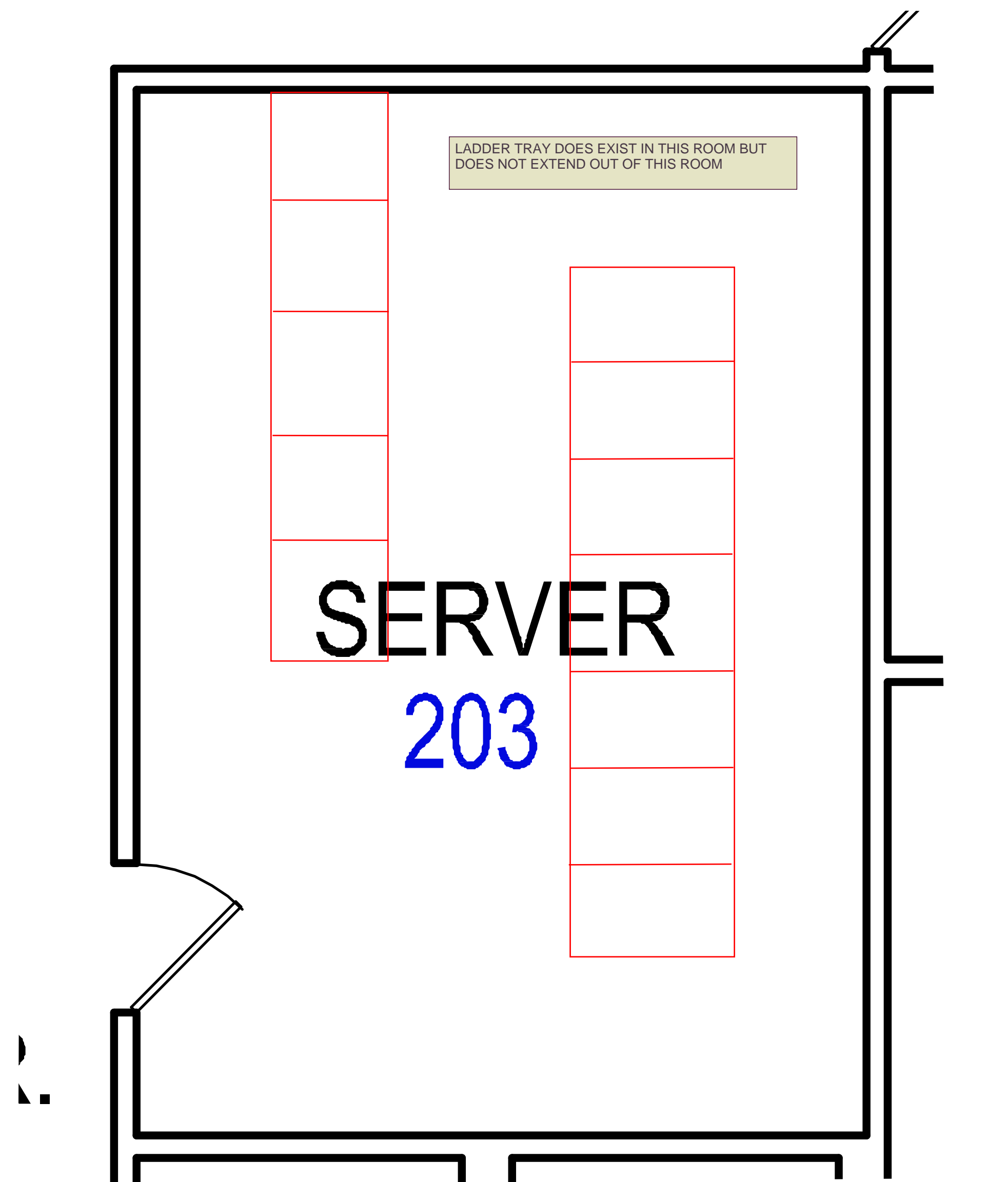
- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION



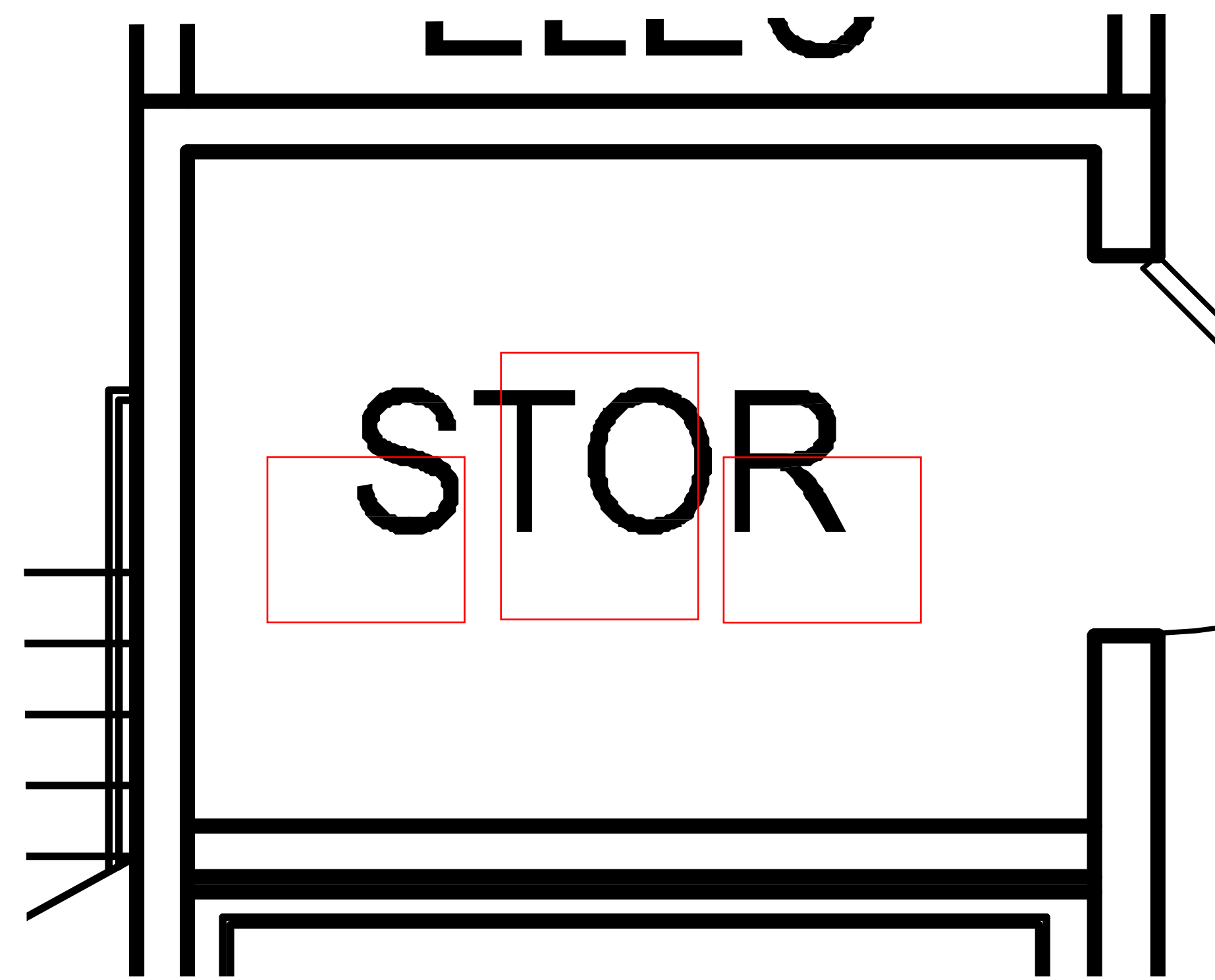
COMM ROOMS

SECOND FLOOR

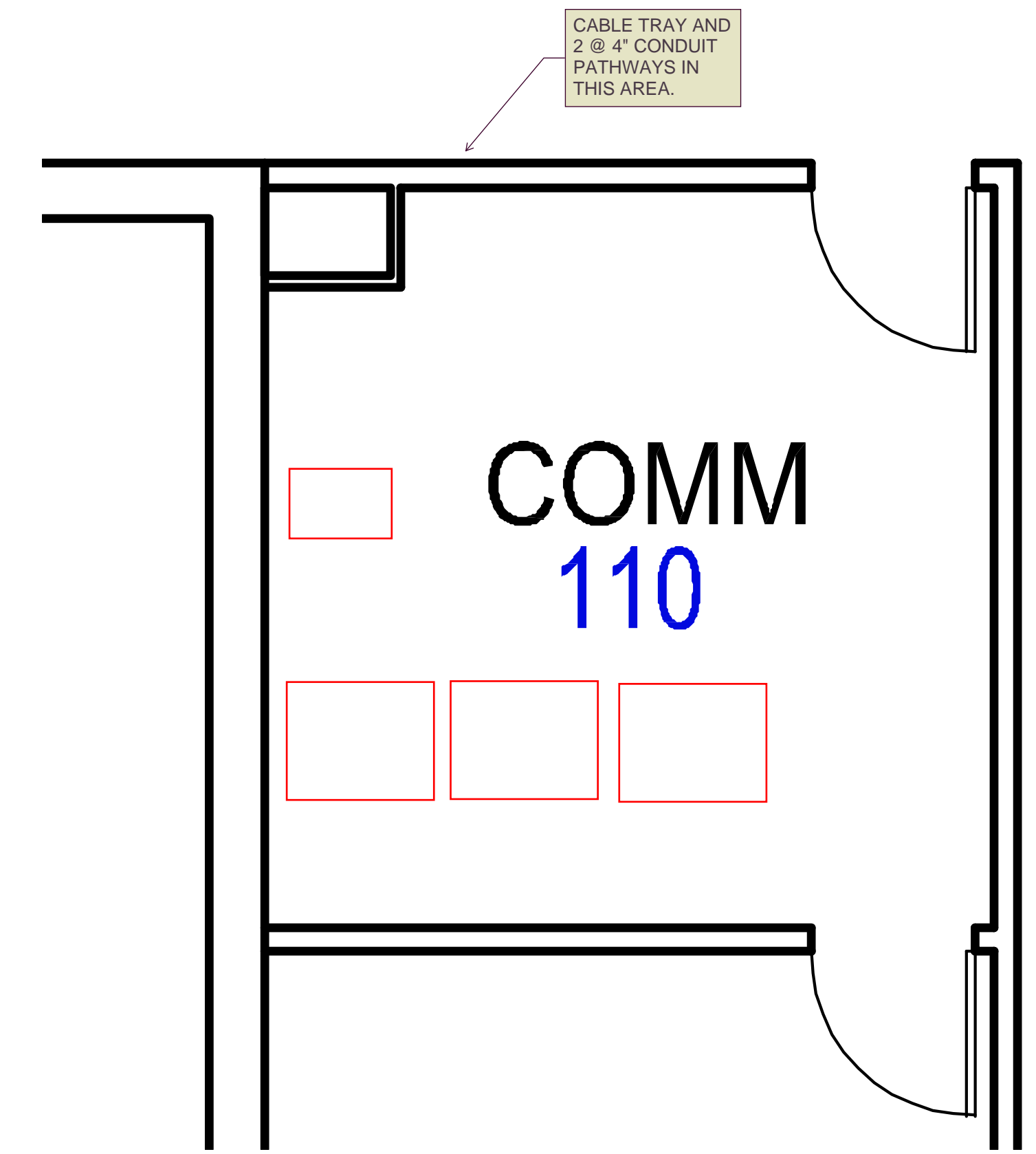




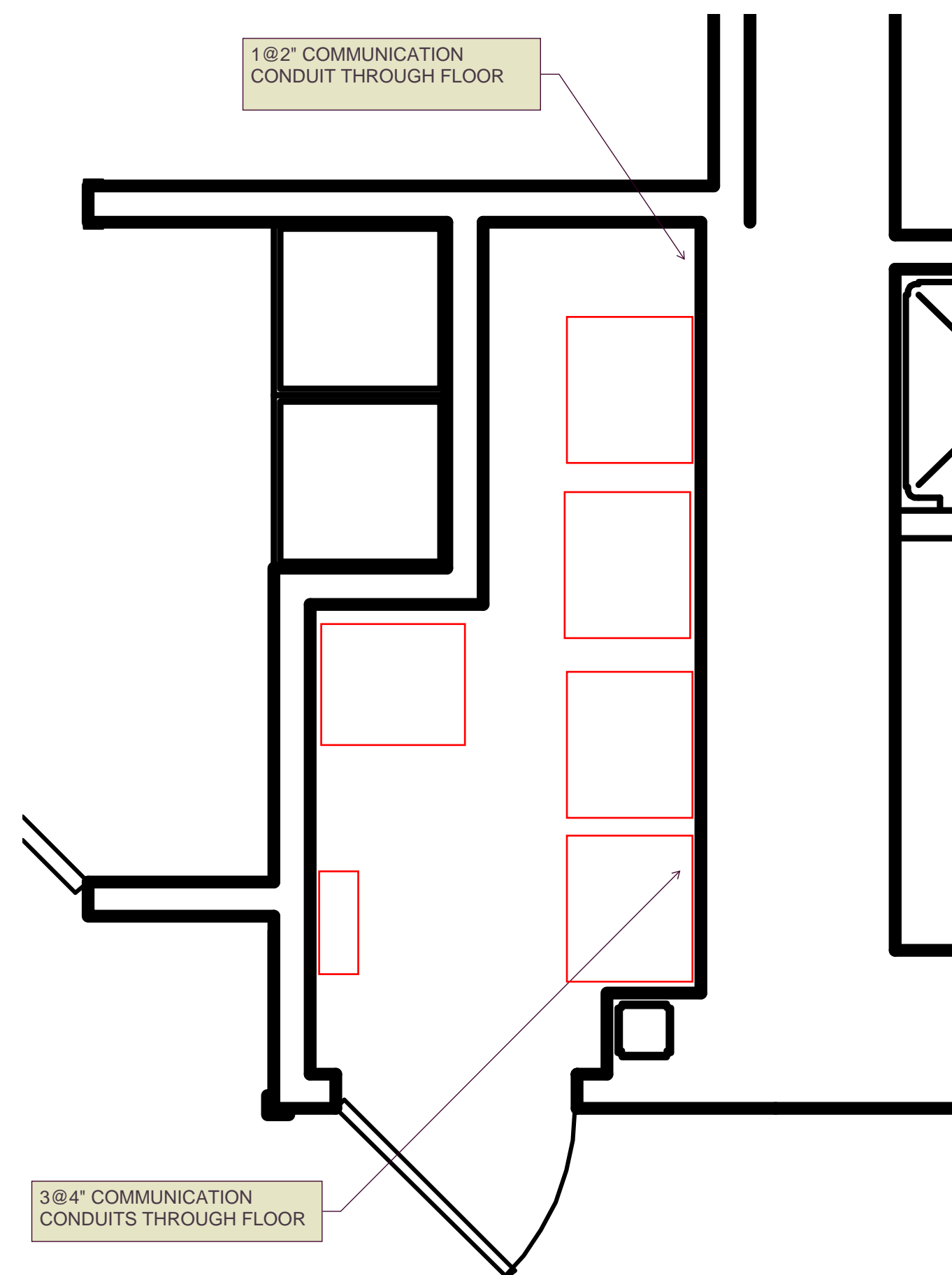
MAIN SERVER ROOM FIRST FLOOR



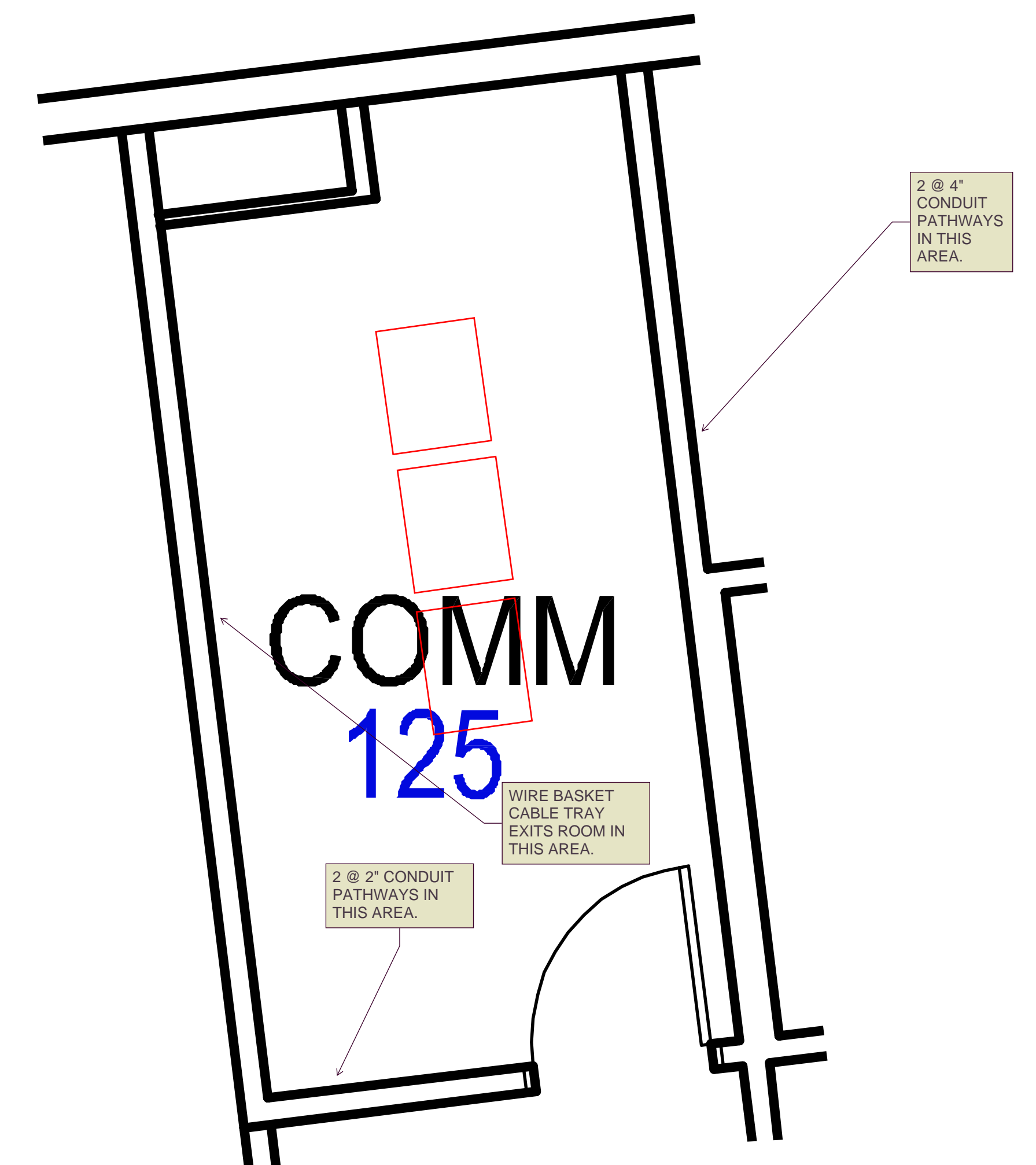
C1 - CENTRAL COMM ROOM FIRST FLOOR



C5 - MATERIALS MANAGEMENT COMM ROOM FIRST FLOOR



C3 - LTC COMM CLOSET SECOND FLOOR



C6 - SHELL SPACE ROOM FIRST FLOOR - CURRENTLY MAINLY SUPPORTING FLOOR ABOVE

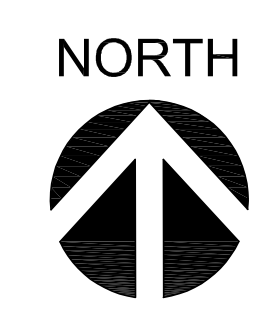
MECHANICAL / ELECTRICAL
 FIBER OPTIC CABLING DOES RUN BETWEEN MAIN SERVER ROOMS AND MAIN COMM ROOMS BUT IS GENERALLY ABOVE CEILING IN J-HOOKS OR ON CEILING TILES. LIMITED COMM PATHWAYS ARE SHOWN OR NOTED.

- NUTRITION SERVICES
- HEALTH INFORMATION MANAGEMENT (YELLOW)
- PHYSICAL THERAPY
- HUMAN RESOURCES
- PHARMACY
- SLEEP THERAPY
- THERAPY
- INFUSION
- LAUNDRY



**COMM
 BACKBONE
 PATHWAYS**

FIRST FLOOR



CABLE TRAY 12X4 (RED)

4" CONDUIT PATHWAYS (MAGENTA)

4" CONDUIT PATHWAYS (MAGENTA)

VERTICAL CHASE FOR COMMUNICATION CABLING ABOVE THIS ROOM. GOES UP THROUGH WALL IN OFFICE ABOVE AND TO 2ND FLOOR ACCESSIBLE CEILING SPACE.

CABLE TRAY IN THIS AREA (VERY FULL). 24X4 AND SMALLER

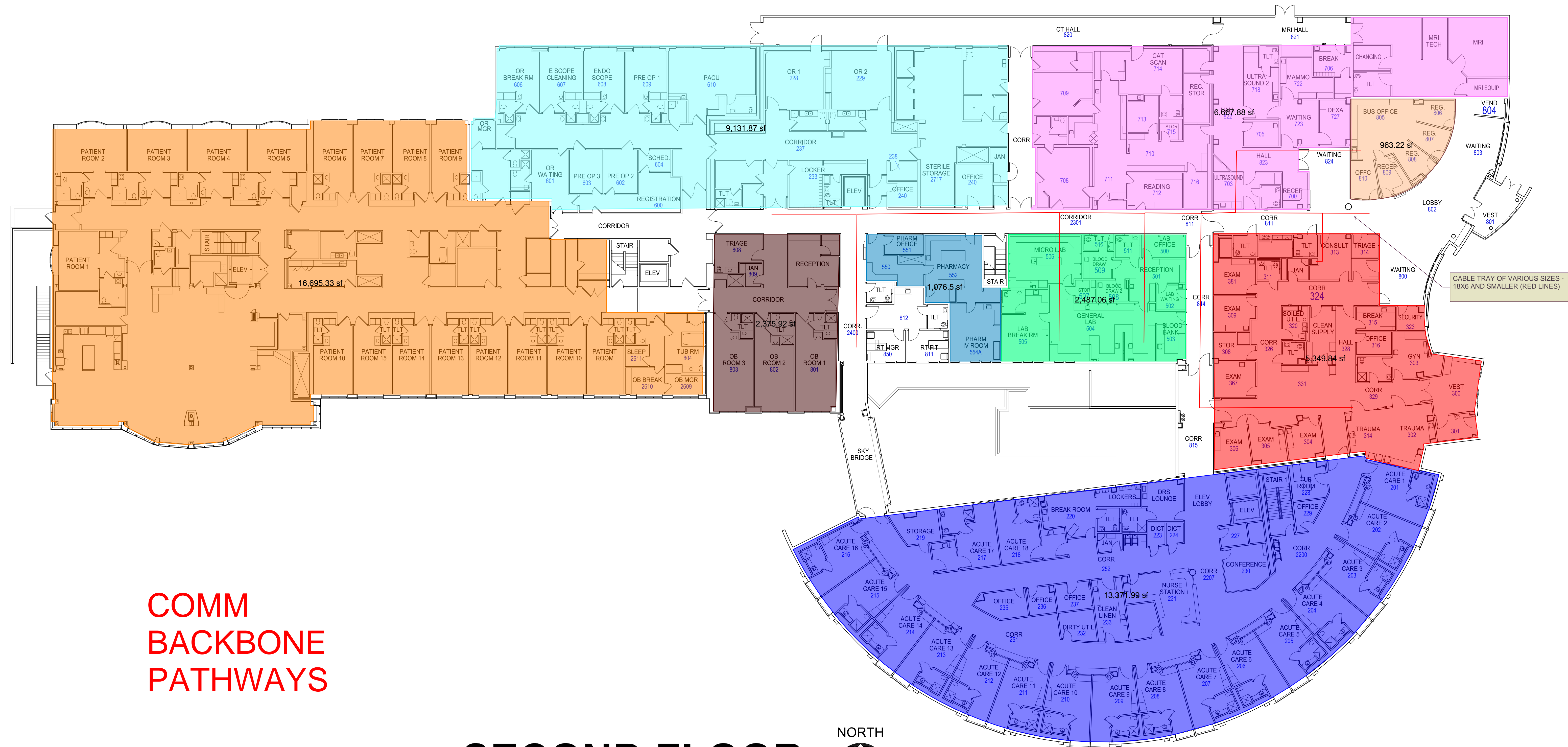
2 @ 2" CONDUIT PATHWAYS IN THIS AREA.

2 @ 4" CONDUIT PATHWAYS IN THIS AREA.

- EMERGENCY
- IMAGING
- PHARMACY
- SURGERY
- LONG TERM CARE
- LABORATORIES
- ACUTE CARE
- OBSTETRICS
- REGISTRATION

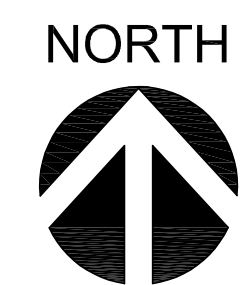
COMMUNICATION CABLING DOES RUN BETWEEN SERVERS AND CLOSETS BUT IS GENERALLY ABOVE CEILING IN J-HOOKS OR ON CEILING TILES. LIMITED COMM PATHWAYS ARE SHOWN OR NOTED.

NO KNOWN BACKBONE PATHWAYS BETWEEN ANY OF THESE TELECOM AREAS AND ROOMS EXCEPT FOR COUPLE NOTED.



**COMM
BACKBONE
PATHWAYS**

SECOND FLOOR



South Peninsula Hospital Energy Audit

Level 1 Report

FINAL

November 1, 2024

Prepared by:

Randall S. Williams PE

RESPEC

Contents

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2. INTRODUCTION	4
3. FACILITY DESCRIPTION	5
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7. ENERGY SAVING OPPORTUNITIES	12
APPENDICES	15

1. EXECUTIVE SUMMARY

A Level 1 Energy Audit has been performed for South Peninsula Hospital. The Audit follows the procedures and requirements established by ASHRAE Standard 211-2018 - Commercial Building Energy Audits. The main purpose of Level 1 Audits is to establish an energy use baseline against which candidate Energy Efficiency Measures (EEM) can be evaluated.

a. Overall assessment of benchmarking and energy performance

South Peninsula Hospital's energy use is currently on par with similar facilities in similar climates. The 127,400 square foot hospital consumes approximately 255 kBtu per square foot per year, at a cost of \$8.25 per square foot. The majority of the energy used is in the form of natural gas; however, electricity accounts for the majority of the cost.

b. Potential savings and return on investment (ROI)

The hospital is at a crossroads given the age and condition of much of the HVAC equipment. Repair and replacement needs are widespread; but merely replacing the equipment will not lead to large energy savings. A significant reduction in energy consumption is only realistic if major changes are made to the HVAC systems and strategies currently deployed in the hospital. Some of those strategies are listed below. All of them require a significant capital investment. ROI is generally poor to fair given the need to add cooling capability and the associated increase in energy consumption, in addition to the low cost of thermal energy (gas) which hinders the economics of EEMs.

c. Table of recommended measures with estimated level of savings and ROI

Low-Cost and No-Cost Recommendations	Modified System	Cost	Typical ROI	Priority
Aggressively reset and tune Heating Water Supply Temperature	Heating Controls	Low	Med	Med
Standardize & tune Supply Air Temperature reset strategy	HVAC Controls	Low	Med	Med
Improve Economizer operation	HVAC	Low	Med	Low
Convert remaining lighting to LED	Lighting	Low	Med	Low
Potential Capital Recommendations	Modified System	Cost	Typical ROI	Priority
Consolidate Cooling for IT and Server Rooms and Capture Waste Heat for re-use	CRACs, DHW	High	Med	Med
Replace VAV- and CV-reheat HVAC in non-clinical areas with Variable Refrigerant Flow Fan Coils and water-cooled heat pump (or water-source heat pump loop) with Dedicated Outdoor Air Supply. Add Dry Coolers for heat rejection. Add dedicated low temperature condensing water boilers for heat source.	HVAC	High	Med	Med
Convert Domestic Hot Water Heaters from storage-type to instantaneous (reduces steam load)	Water Heaters	Med	Low	Med
Replace Steam Heating Boilers with Condensing Water. Reduce Steam Plant size. Reset Heating-water supply temperature. Consider relocating plant.	Boilers, Heating	High	Low	Med

2. INTRODUCTION

a. Audit scope

Energy use was audited for the South Peninsula main hospital building at 4300 Bartlett St. in Homer, AK. A Level 1 Audit was chosen as the best use of available data and consultant costs.

Level 1 Audits consist of the following procedures:

- Establish scope of systems to be included in audit.
- Benchmark the existing energy consumption using utility records.
 - Calculate the Energy Use Intensity (EUI) in kBtu per Gross Square Foot per Year
 - Calculate the Energy Cost Index (ECI) in \$ per Gross Square Foot per Year
 - Compare EUI to a Peer Sample
- Review Utility Rate Structure
- Perform a Facility Site Survey
 - Identify O&M problems & needs.
 - Identify major energy-using systems.
 - Identify current space use, thermal or IAQ problems, and planned improvements.
- Complete a space function analysis.
- Identify Low- and No-Cost Energy Efficiency Measure (EEM) Recommendations.
- Identify Potential EEM Capital Recommendations.

b. Key dates

The Facility Site Survey visit was performed on November 6-8 in conjunction with a condition survey. Utility energy consumption data and trend logs of the HVAC equipment from the building automation system were obtained in November and December of 2023. Utility records spanned from October of 2020 through December of 2023, providing three full years of gas and electric data.

c. Contact information

For further information about this report, please contact the RESPEC Project Manager Rand Williams, PE at 907-743-3200 or randall.williams@RESPEC.com.

3. FACILITY DESCRIPTION

a. Site information

All Audit Levels - Building Characteristics

Building Name*	South Peninsula Hospital	user input
Building Owner	Kenai Peninsula Borough	calculated
Energy Auditor	RESPEC	
Street*	4300 Bartlett St	
City*	Homer	
State*	AK	
Postal Code*	99603	
Date of site visit(s)	11/9/2023	
Primary Building use type*	Hospital (General Medical & Surgical)	
Client Name	Kenai Peninsula Borough	
Key Contacts	Harrison Smith	

Year of construction*	1974
Last Renovation*	2023
Year of Prior Energy Audit	-
Year Last Commissioned	-
Building automation system? (Y/N)	Y
Historical landmark status? (Y/N)	N
Percent owned (%)	100%
Percent leased (%)	

Gross floor area*	127,400	sq ft
Total Number of Floors	2	
Total conditioned area (both heated and cooled)	58,131	sq ft
Conditioned area (heated only)	58,991	sq ft
Conditioned area (cooled only)	-	sq ft
Conditioned Floors Above grade*	2	
Conditioned Floors Below grade*	-	

Spaces excluded from gross floor area
Outdoor areas (loading dock), crawl spaces.

Space Function*	Floor Area	%
Hospital (General Medical & Surgical)	59,907	55%
Outpatient Rehabilitation/Physical Therapy	10,000	9%
Medical Office	8,000	7%
Senior Care Community	20,000	18%
Urgent Care/Clinic/Other Outpatient	12,000	11%
Total	109,907	

Occupancy*		
Typical occupancy	168	hours/week
Typical occupancy	52	weeks/year
Typical number of occupants (during occ hours)	400	ESTIMATED ONLY
Number of Dwelling Units in Building (Multifamily Only)		
% of Dwelling Units currently Occupied (Multifamily Only)		

Energy Sources**			
Energy Source	ID	Type	Rate schedule
Electricity	Acct 14376026 Meter #600428	Master meter without sub-metering	Large Gen Svc
Electricity			
Natural gas	Acct 3211928858 Meter #1636	Master meter without sub-metering	G4 Commercial
Chilled Water			
Hot Water			
Fuel Oil			
Steam			
Renewable Energy			
Other			

b. Notable conditions

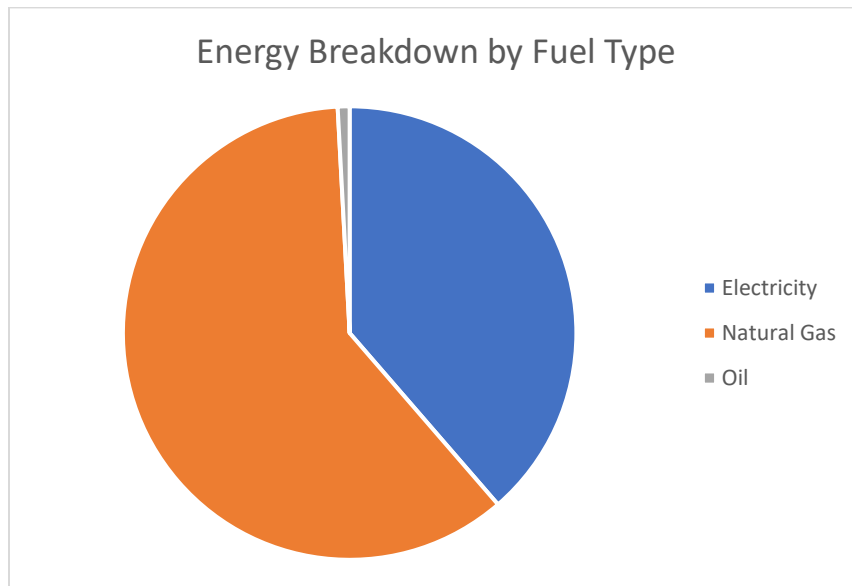
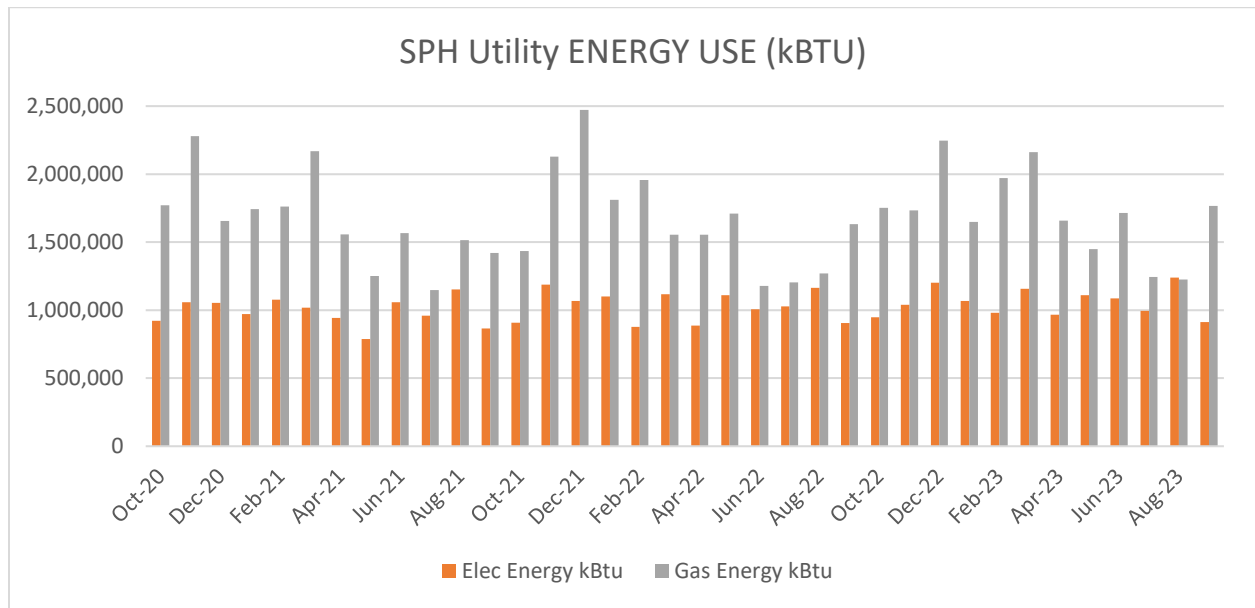
Observed and known issues in the building related to energy consumption include the following:

Facility Description - Notable Conditions
Lack of Cooling in Long Term Care; Overheating in Emergency Department; Lack of Cooling in AHU-4, 5, 6, 7; Inadequate cooling for Server Room(s); Backlog of Deferred Maintenance & Scheduled Replacement; Storage-type domestic hot water system; Heating Piping failures in West Expansion; Lack of heat recovery systems for multiple AHUs;

4. HISTORICAL UTILITY DATA

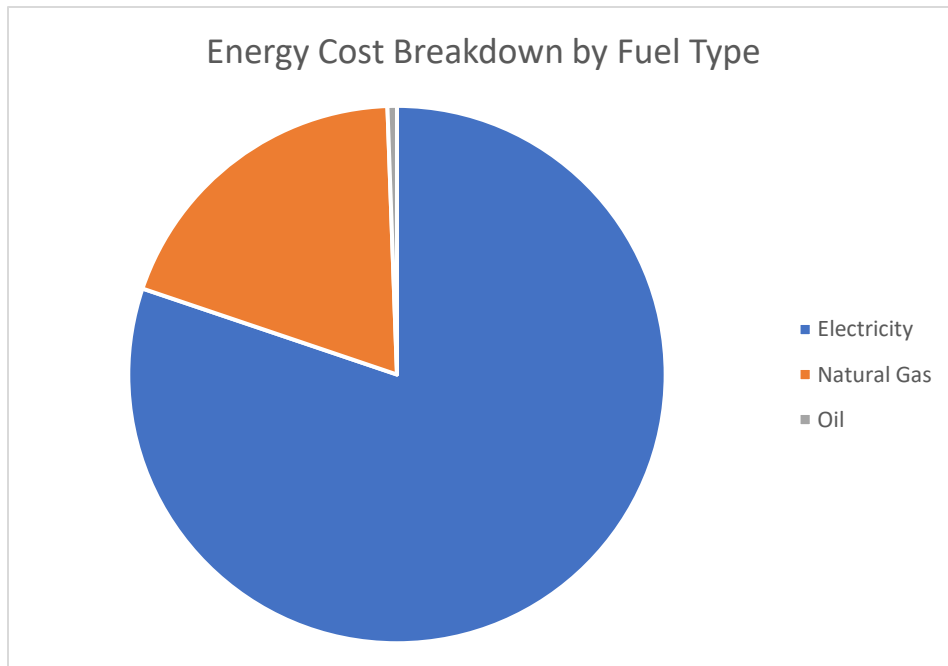
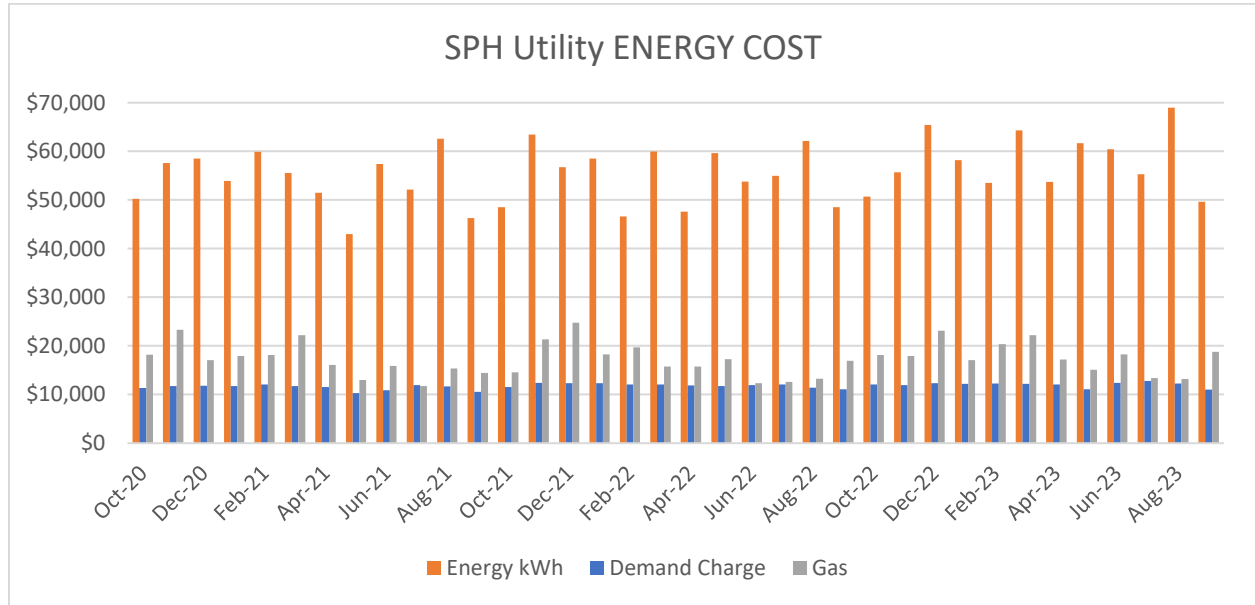
a. Data summary and rate schedules

Below are graphs depicting the monthly energy consumption over the three-year period from 2020-2023.



Electricity consumption is steady at approximately 1 million kbtu per month. Thermal energy consumption varies with weather conditions and is therefore higher in winter months and lower in summer but never drops below 1.2 million kbtu per month. Natural gas accounts for nearly 2/3 of the energy consumed at the hospital.

The corresponding costs for the same time period are shown in the two graphs below. It's evident that the demand charge for electricity is nearly constant, and that electrical energy charges dominate the expenses. Total energy costs per year run approximately \$1 million. Over 3/4 of the energy cost is associated with electricity.



All Audit Levels - Annual Summary

Summary for Existing Building

user input
calculated

Imported Energy (E_{imp})

Energy Type	Total Annual Use*	Units	Conversion Multiplier	Thousands BTU (kBtu)	Total Annual Cost (\$)
Electricity	3,723,120	kWh	3.4	12,703,285	\$ 847,226
Natural Gas	198,909	therms	100.0	19,890,915	\$ 203,342
Oil	2000	gallons (Fuel Oil #2)	139.0	278,000	\$ 6,000
E_{imp} Total				32,872,200	\$ 1,056,569

Fuel oil was included because it serves as a backup for natural gas, and the generators also run on fuel oil. A nominal amount of fuel is used for generator testing every month. Overall fuel oil is not a significant contributor to energy consumption during normal operations.

Electric Utility Rate is Homer Electric Large General Service:

SERVICE TYPE	MONTHLY CUSTOMER CHARGE (A)	ENERGY CHARGE PER KWH (H)	SYSTEM DELIVERY CHARGE (B)	DEMAND CHARGE PER KW (I)	MINIMUM DEMAND CHARGE (C)	COST OF POWER ADJUSTMENT PER KWH (D)	REGULATORY COST CHARGE (G)
Large General Service (F)	\$50.00	\$0.10883	\$0	\$22.387	\$447.74	\$0.08868	\$0.001028

Gas Utility Rate is ENSTAR G4:

G4 Rates

Customer Charge	\$538.00 per account
Service Charge (Base)	\$0.06580 per CCF
RCC	0.327% of the total bill
GCA	\$0.86517 per CCF

b. Annual Energy Use Intensity (EUI), Energy Cost Index (ECI)

Existing Building EUI/ECI

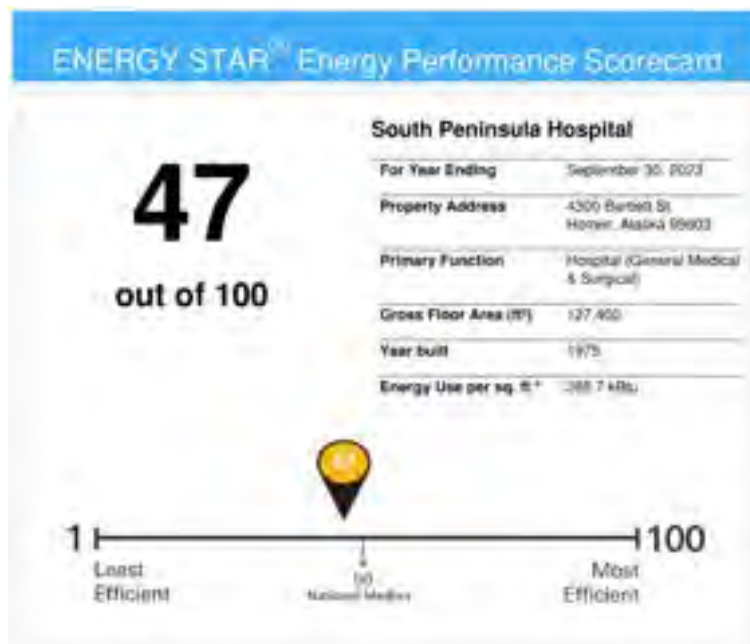
Building Name	South Peninsula Hospital
Gross Conditioned Square Feet	127,400
EUI [building] (kBtu/sf/yr)	255.8
EUI [site] (kBtu/sf/yr)	255.8
Site ECI (energy cost index or \$/sf/yr)	\$ 8.25

*EUI: Energy Use Intensity

What is not known is the effect of the missing cooling equipment on the EUI for SPH. Because roughly half the square footage of the hospital does not have mechanical cooling, the reported energy consumption is lower than it would be with cooling equipment running during the summer. However, summers are short and cool in Homer and the actual net effect of adding mechanical cooling on electrical load is likely relatively small. The most likely scenario would be increased demand charges in the summer, with an accompanying slight increase in electrical energy consumption.

5. BENCHMARKING

Entering the same utility data into the online Energy Star Portfolio Manager leads to a score of 47 out of 100. This means that approximately half of similar facilities use more and half use less energy than South Peninsula Hospital. Put another way, South Peninsula Hospital is about average in energy consumption among similar hospitals.



For further comparison to similar facilities, the EPA publishes median EUI data for dozens of specific market sectors, including healthcare which is excerpted below. From the table a large difference can be

seen between hospital properties and other healthcare related occupancies. For example, outpatient facilities range from 62 to 64.5 EUI, compared to 234.3 EUI for General Medical and Surgical facilities such as South Peninsula Hospital. This illustrates the fact that hospital facilities are some of the highest energy use buildings in the United States.

Market Sector	Property type	Source EUI (kBtu/ft ²)	Site EUI (kBtu/ft ²)
Healthcare	Ambulatory Surgical Center	138.3	62.0
Healthcare	Hospital (General Medical & Surgical)	426.9	234.3
Healthcare	Other/Specialty Hospital	433.9	206.7
Healthcare	Medical Office	121.7	51.2
Healthcare	Outpatient Rehabilitation/Physical Therapy	138.3	62.0
Healthcare	Urgent Care/Clinic/Other Outpatient	145.8	64.5

Median EUIs in the United States (from EPA Portfolio Manager, see [Portfolio Manager Technical Reference: U.S. National Energy Use Intensity](#))

Another comparison to peer facilities can be found in the American Society for Healthcare Engineering (ASHE) 2023 publication "Energy benchmarking for hospitals". The publication surveyed 538 hospital facilities across climate and size variations throughout the United States. South Peninsula Hospital is considered a "Small" hospital in a "Very Cold" climate zone.

Size Category	# Beds	Typical Gross Square Footage (GSF)
Critical Access Hospital (CAH) ¹	25 or less	<50,000
Small	26–99	50,000–250,000
Medium	100–399	250,000–825,000
Large	400+	825,000+



Based on those criteria, the average EUI would be expected to be 255, which compares favorably to the calculations of approximately 255-265, and supports the statement that SPH is about average energy consumption.

CY2022 Building America Zone	Site EUI Small	Site EUI Medium	Site EUI Large	Site EUI All
Hot-Humid	364	230	212	232
Hot-Dry	245	222	197	235
Marine	238	208	199	210
Mixed-Humid	239	245	248	242
Cold	242	225	220	230
Very Cold	255	Insufficient Data		253

6. ESTABLISH TARGET AND ESTIMATE SAVINGS

ASHRAE and EPA encourage setting a target for energy savings so that progress can be measured over time. Since SPH sits at the middle of the pack, there is ample room for improvement. Energy Star suggests targeting a score of 75 as an achievable goal, which seems reasonable for SPH.

ENERGY STAR® Progress & Goals Report

47
ENERGY STAR® Score¹

South Peninsula Hospital

Primary Property Type: Hospital (General Medical & Surgical)
Gross Floor Area (ft²): 127,400
Built: 1975

Property Address: South Peninsula Hospital
4300 Barklett St
Homer, Alaska 99603

For Year Ending: September 30, 2023
Date Generated: February 04, 2024

Property ID: 31-45375

1. This ENERGY STAR score is a useful assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

	Progress			Performance Goals		
	Baseline (Ending Date: 9/30/2023)	(Ending Date: 9/30/2023)	% Change	Property's Target	National Median	ENERGY STAR Score of 75
ENERGY STAR Score	47	47		75	50	75
Energy						
Site EUI (kBtu/ft ²)	265.7	265.7		227.5	281.8	227.5
Source EUI (kBtu/ft ²)	453.5	453.5		388.2	446.9	388.2
Energy Cost (\$)	1,061,746.11	1,061,746.11		908,969.24	1,046,365.5	908,969.24
Energy Cost Intensity (\$/ft ²)	8.33	8.33		7.13	8.21	7.13
Total (Location-Based) GHG Emissions						
Total (Location-Based) GHG Emissions (Metric Tons CO ₂ e)	2,936.2	2,936.2		2,513.7	2,893.7	2,513.7
Total (Location-Based) GHG Emissions Intensity (kgCO ₂ e/ft ²)	23	23		19.7	22.7	19.7

Moving from a score of 47 to a score of 75 requires a reduction in site EUI from 265.7 to 227.5, and a corresponding reduction in Energy Cost Intensity from \$8.33 to \$7.13. Progress toward these goals can be tracked through the portfolio manager by entering each month's utility data over time and then checking this report regularly.

Benchmarking & Target EUI/ECI

Benchmark Source	ASHE Energy Benchmarking for US Hospitals	
Benchmark EUI (kBtu/sf/yr)	258.0	
Target EUI [building] (kBtu/sf/yr)	227.5	
Target EUI [site] (kBtu/sf/yr)	227.5	
Target ECI [site] (\$/sf)	\$ 7.13	
Annual Energy Savings to Reach Target	3,888,700	kBTU
Annual Cost Savings to Reach Target	\$ 148,207	(if available)

If those targets can be achieved, it would save nearly 4 million KBTU and nearly \$150,000 per year. Actual cost savings will vary considerably depending on whether electrical or thermal energy is saved. Electrical energy is much more costly, so the larger the electrical portion saved, the larger the cost savings will be. Achieving those targets will be challenging for SPH, because of the recognized need to add cooling to much of the building. It may be more strategic to set a goal of not increasing cost or energy use while providing better occupant comfort.

7. ENERGY SAVING OPPORTUNITIES

a. Low-cost/no-cost savings measures

Several inexpensive strategies can be applied to help reduce energy consumption and stabilize operation. Some or all of these may already be partially deployed, but a comprehensive strategy review is recommended.

Level 1 Audit - Recommended Energy Efficiency Measure Summary							
Low-Cost and No-Cost Recommendations	Modified System	Impact on Occupant Comfort or IEQ	Other Non-Energy Impacts	Cost	Savings Impact	Typical ROI	Priority
Aggressively reset and tune Heating Water Supply Temperature	Heating Controls	-	-	Low	Low	Med	Med
Standardize & tune Supply Air Temperature reset strategy	HVAC Controls	-	-	Low	Low	Med	Med
Improve Economizer operation	HVAC	Improved Cooling	Better SA Temperature control	Low	Low	Med	Low

Level 1 Audit - Recommended Energy Efficiency Measure Summary							
Low-Cost and No-Cost Recommendations	Modified System	Impact on Occupant Comfort or IEQ	Other Non-Energy Impacts	Cost	Savings Impact	Typical ROI	Priority
Convert remaining lighting to LED	Lighting	-	Improved lighting	Low	Low	Med	Low

b. Capital projects

The hospital is at a bit of a crossroads given the age and condition of much of the HVAC equipment. Repair and replacement needs are widespread; but just replacing the equipment will not lead to energy savings. Significant Reduction in energy consumption is only realistic if major changes are made to the systems and strategies currently deployed in the hospital. Some of those strategies are listed below. Not surprisingly, all of them require a significant capital investment.

Level 1 Audit - Recommended Energy Efficiency Measure Summary							
Potential Capital Recommendations	Modified System	Impact on Occupant Comfort or IEQ	Other Non-Energy Impacts	Cost	Savings Impact	Typical ROI	Priority
Consolidate Cooling for IT and Server Rooms and Capture Waste Heat for re-use	CRACs, DHW,	Address overheated IT spaces	Improve IT eq't service life	High	Med	Med	Med
Replace VAV- and CV-reheat HVAC in non-clinical areas with Variable Refrigerant Flow Fan Coils and water-cooled heat pump (or water-source heat pump loop) with Dedicated Outdoor Air Supply. Add Dry Coolers for heat rejection. Add dedicated low temperature condensing water boilers for heat source.	HVAC	Adds Cooling capability	-	High	Med	Med	Med
Convert Domestic Hot Water Heaters from storage-type to instantaneous (reduces steam load)	Water Heaters	-	Reduce risk of Legionella	Med	Med	Low	Med
Replace Steam Heating Boilers with Condensing Water. Reduce Steam Plant size. Reset heating-water supply temperature. Consider relocating plant.	Boilers, Heating	Addresses overheating in ER	-	High	Med	Low	Med
Replace fixtures with LED lamps with fixtures with an integral LED source	Lighting	-	Improved lighting and controls	Med	Med	Med	Low

APPENDICES

- Tabulated utility data
- Utility rate schedules
- Basis for savings and cost estimates
- Lighting and equipment inventory tables

Tabulated utility data

All Audit Levels - Metered Energy			
Building Name	South Peninsula Hospital	sq ft	user input
Gross floor area	127,400		calculated
Date	12/21/2023		
Utility #1	Electricity		
Utility #2	Natural Gas		
Utility #3			

Utility #1 - Shall be Electricity if present at the site

If sampling of meters was performed during utility analysis, describe methodology here:

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Utility #1 Electricity

MAIN DATA FOR ANALYSIS - Electricity						
Start Date	End Date	Days	Electricity Use (kWh)	Electricity Peak (kW)	Electricity Cost (\$)	Electricity Load Factor
10/4/2022	11/2/2022	29	277,520	559.52	\$ 63,183.00	71%
11/2/2022	12/2/2022	30	304,800	553.28	\$ 68,056.17	77%
12/2/2022	1/4/2023	33	352,080	569.92	\$ 78,219.03	78%
1/4/2023	2/2/2023	29	313,040	564.16	\$ 70,802.82	80%
2/2/2023	3/2/2023	28	287,760	566	\$ 66,120.99	76%
3/2/2023	4/4/2023	33	338,960	563.04	\$ 76,904.41	76%
4/4/2023	5/2/2023	28	283,120	558.24	\$ 66,159.55	75%
5/2/2023	6/5/2023	34	325,280	511.92	\$ 73,191.79	78%
6/5/2023	7/6/2023	31	318,240	572.4	\$ 73,261.83	75%
7/6/2023	8/2/2023	27	291,360	590.16	\$ 68,514.91	76%
8/2/2023	9/6/2023	35	363,360	565.76	\$ 81,731.07	76%
9/6/2023	10/4/2023	28	267,600	508.72	\$ 61,080.56	78%

Annual Total	365	3,723,120	590.2	\$ 847,226	
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SUPPORTING ANNUAL USE DATA - Electricity						
Start Date	End Date	Days	Electricity Use (kWh)	Electricity Peak (kW)	Electricity Cost (\$)	Electricity Load Factor
10/6/2021	11/4/2021	29	265,920	535.12	\$ 60,407.50	71%
11/4/2021	12/8/2021	34	348,000	573.6	\$ 76,284.39	74%
12/8/2021	1/7/2022	30	313,120	569.04	\$ 69,439.47	76%
1/7/2022	2/7/2022	31	322,880	570.64	\$ 71,252.01	76%
2/7/2022	3/4/2022	25	257,360	557.44	\$ 59,072.29	77%
3/4/2022	4/6/2022	33	327,520	559.2	\$ 72,549.45	74%
4/6/2022	5/4/2022	28	259,920	550	\$ 59,900.15	70%
5/4/2022	6/7/2022	34	325,520	547.76	\$ 71,803.87	73%
6/7/2022	7/5/2022	28	294,800	550.8	\$ 66,060.56	80%
7/5/2022	8/3/2022	29	301,360	556.72	\$ 67,390.54	78%
8/3/2022	9/6/2022	34	340,960	527.52	\$ 74,014.59	79%
9/6/2022	10/4/2022	28	265,600	512.88	\$ 59,985.83	77%
Annual Total		363	3,622,960	573.6	\$ 808,161	72%

SUPPORTING ANNUAL USE DATA - Electricity						
Start Date	End Date	Days	Electricity Use (kWh)	Electricity Peak (kW)	Electricity Cost (\$)	Electricity Load Factor
10/5/2020	11/4/2020	30	270,240	526.08	\$ 61,869	71%
11/4/2020	12/8/2020	34	310,080	542	\$ 69,642	70%
12/8/2020	1/8/2021	31	308,960	546.32	\$ 70,655	76%
1/8/2021	2/5/2021	28	284,400	544.24	\$ 65,940	78%
2/5/2021	3/8/2021	31	316,080	556.64	\$ 72,271	76%

3/8/2021	4/7/2021	30	298,480	544.4	\$ 67,624	76%
4/7/2021	5/7/2021	30	276,400	533.04	\$ 63,254	72%
5/7/2021	6/4/2021	28	230,960	475.52	\$ 53,522	72%
6/4/2021	7/7/2021	33	310,000	503.76	\$ 68,639	78%
7/7/2021	8/4/2021	28	281,600	552.96	\$ 64,422	76%
8/4/2021	9/8/2021	35	338,080	539.76	\$ 74,639	75%
9/8/2021	10/6/2021	28	253,680	489.2	\$ 57,176	77%
Annual Total		365	3,478,960	556.6	789,654	71%

Utility #1: Definition

Units	kWh
kBtu/unit	3.41

[note: this formula may be overridden if other units are used]

Utility #2 Natural Gas

MAIN DATA FOR ANALYSIS - Natural Gas				
Start Date	End Date	Days	Natural Gas Use (therms)	Natural Gas Cost (\$)
10/7/2020	11/4/2020	28	17711.87	\$ 18,216
11/4/2020	12/9/2020	35	22799.42	\$ 23,296
12/9/2020	1/5/2021	27	16562.37	\$ 17,068
1/5/2021	2/3/2021	29	17420.8	\$ 17,925
2/3/2021	3/3/2021	28	17619.32	\$ 18,124
3/3/2021	4/7/2021	35	21676.75	\$ 22,175
4/7/2021	5/5/2021	28	15564.45	\$ 16,072
5/5/2021	6/2/2021	28	12512.31	\$ 13,024
6/2/2021	7/7/2021	35	15659.68	\$ 15,864
7/7/2021	8/4/2021	28	11482.87	\$ 11,774
8/4/2021	9/8/2021	35	15144.62	\$ 15,360